FRONT COVER/TITLE PAGE **TITLE**

IBM®

Maintenance Library

PSG	MIM	PCM*	MDM	ECM*	MSM*
INTRO MLX START REPAIR MD SC-FRU EC INDEX (PSG) INDEX (MASTER)	LGND/GLOS LOC PWR CARR MAP–REF RD SAFETY INDEX	VISUAL INDEX CATALOG NUMERIC INDEX	MICROFICHE CARD/CABLE/ VOLTAGE CHARTS CABLE LISTS A BOARD LRM B BOARD LRM C BOARD LRM POWER DIAGRAMS INST INDEX	HELP SENSE IC ECDs INDEX	OPER DIAG INDEX
VOL. R05	VOL. R10	VOL. R20	VOL. R30	VOL. R40	VOL. R60

*These volumes are shipped in microfiche and are located in volume R30.

3380

Direct Access Storage Models D and E Maintenance Information

3380 MDM	AA000 Side 1 of 5	2329108 Part No.	465357 29Mar85	. .	. .	. .	. .

PREFACE

This manual was prepared for use only with IBM 3380 Direct Access Storage Models AD4, BD4, AE4, and BE4.

For maintenance on any of these models, use the IBM Maintenance Device diskette and the Maintenance Library manuals that were shipped with the machine and/or that were shipped with the AD4 or AE4 model to which the machine and the IBM Maintenance Device attach.

Always start any maintenance action on a 3380 Model AD4, BD4, AE4, and BE4 by following the instructions in the Product Service Guide (PSG), Volume R05, in the 3380 Maintenance Library.

If a 3380 Model AD4 or AE4 is connected to the same IBM 3880 storage director as a 3380 Model A04 or AA4, instructions in the MD or notes in the 3380 manual will say when to use the information included in the 3380 Maintenance Library manuals.

In this manual, the following terms are used to simplify the distinction among the different 3380 models.

3380	= all 3380 models
3380-D	= 3380 AD4, BD4
3380-E	= 3380 AE4, BE4
3380-DE	= 3380 AD4, BD4, AE4, BE4
A unit	= 3380 AD4, AE4
B unit	= 3380 BD4, BE4

The complete model name will be used to specify a single model. (For example, 3380 Model A04.)

IBM has prepared this maintenance manual for the use of IBM customer engineers in the installation, maintenance, and repair of the specific machines indicated. IBM makes no representation that it is suitable for any other purpose.

Information contained in this manual is subject to change from time to time. Any such change will be reported in subsequent revisions.

It is possible that this material may contain reference to, or information about, IBM products (machines and programs), programming, or services that are not announced in your country. Such references or information must not be construed to mean that IBM intends to announce such IBM products, programming, or services in your country.

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MAINTENANCE MANUAL ORDERING PROCEDURE (IBM Internal)

Parts of this manual can be ordered from the San Jose plant by using the Wiring Diagram/Logic Page Request, Order No. Z150-0130 (U/M 015). In the logic page columns, enter the page identifier information: part number 2, and engineering change (EC) number 3.

Groups of pages can be ordered by including a description (section, volume) and the machine serial number.

HOW TO UPDATE THIS MANUAL

This manual is under normal logic engineering change controls. Put pages in by sequence number and side number 1. The EC level and date are given in the EC history strip 3.

RELATED PUBLICATIONS

The following is a list of documents that may help to understand or repair the 3380.

Title of Document	Order No.
IBM 3380 Models A04, AA4, and B04 Direct Access Storage Description and User's Guide	GA26-1664
IBM 3380 Models AD4, BD4, AE4, and BE4 Direct Access Storage General Information	GC26-4193
Planning for IBM 3380 Direct Access Storage	GC26-4208
Migration to IBM 3380 Direct Access Storage	GC26-4197
IBM 3880 Storage Control Models 1, 2, 3, and 4	
Reference Manual	GA26-1661
Separator tabs	GX26-1663
Maintenance Library	Z150-0130
Device Support Facilities User's Guide and Reference Manual	GC35-0033
IBM Disk Storage User's Guide	GA26-1668
IBM Disk Storage Management Guide	GBOF-1205

EC LEVEL CONTROL

This page provides a convenient place to record the EC level of the maintenance package and machine components.

MAINTENANCE PACKAGE

Product Service Guide (Vol R05)

ECA Number	EC Number

Parts Catalog Manual (Vol R20)

ECA Number	EC Number

Error Condition Manual (Vol R40)

ECA Number	EC Number

Maintenance Device Diskette

ECA Number	EC Number

Mechanical

ECA Number	EC Number

Maintenance Information Manual (Vol R10)

ECA Number	EC Number

Maintenance Diagrams Manual (Vol R30)

ECA Number	EC Number

Maintenance Support Manual (Vol R60)

ECA Number	EC Number

Power

ECA Number	EC Number

CE SAFETY PRACTICES

Be constantly aware of hazardous situations when working on this product. Take time to review the CE safety practices listed below which have been reprinted from the pocket-size card available from Mechanicsburg (Order No. S299-8124). The DANGER and CAUTION notices on a page indicate potential harm to the user of the manual. All customer engineers are expected to take every precaution possible and observe the following safety practices while maintaining IBM equipment.

1. You should not work alone under hazardous conditions or around equipment with dangerous voltage. Always advise your manager if you MUST work alone.
2. Remove all power, ac and dc, when removing or assembling major components, working in immediate area of power supplies, performing mechanical inspection of power supplies, and installing changes in machine circuitry.
3. A wall box power switch, when turned off, should be locked or tagged in the Off position. The Do Not Operate tags (Order No. G229-0237) should be affixed when applicable. Pull power supply cord whenever possible.
4. When it is absolutely necessary to work on equipment having exposed operating mechanical parts or exposed live electrical circuitry anywhere in the machine, the following precautions must be followed:
   a. Another person familiar with power-off controls must be in immediate vicinity.
   b. Rings, wrist watches, chains, bracelets, metal cuff links, must not be worn.
   c. Only insulated pliers and screwdrivers shall be used.
   d. Keep one hand in pocket.
   e. When using test instruments, be certain controls are set correctly and proper capacity, insulated probes are used.
   f. Avoid contacting ground potential (metal floor strips, machine frames, etc. – use suitable rubber mats purchased locally if necessary).
5. Safety glasses must be worn when:
   a. Using a hammer to drive pins, riveting, staking, etc.
   b. Power hand drilling, reaming, grinding, etc.
   c. Using spring hooks, attaching springs.
   d. Soldering, wire cutting, removing steel bands.
   e. Parts cleaning, using solvents, sprays, cleaners, chemicals, etc.
   f. All other conditions that may be hazardous to your eyes. REMEMBER – THEY ARE YOUR EYES.
6. Special safety instructions such as handling cathode ray tubes and extreme high voltages must be followed as outlined in CEMs and the Safety section of the maintenance manuals.
7. Do not use solvents, chemicals, greases, or oils that have not been approved by IBM.
8. Avoid using tools or test equipment that have not been approved by IBM.
9. Replace worn or broken tools and test equipment.
10. The maximum load to be lifted is that which in the opinion of you and management does not jeopardize your own health or well-being or that of other employees.
11. All safety devices such as guards, shields, signs, ground wires, etc., shall be restored after maintenance.

Knowing safety rules is not enough. An unsafe act will inevitably lead to an accident.

Use good judgment – eliminate unsafe acts.

12. Each Customer Engineer is responsible to be certain that no action on his part renders a product unsafe or exposes hazards to customer personnel.
13. Place removed machine covers in a safe out-of-the-way place where no one can trip over them.
14. All machine covers must be in place before a machine is returned to the customer.
15. Always place CE tool kit away from walk areas where no one can trip over it (for example, under desk or table).
16. Avoid touching mechanical moving parts (for example, when lubricating, checking for play, etc.).
17. When using a stroboscope, do not touch ANYTHING - it may be moving.
18. Avoid wearing loose clothing that may be caught in machinery. Shirt sleeves must be left buttoned or rolled above the elbow.
19. Ties must be tucked in shirt or have a tie clasp (preferably nonconductive) approximately 3 inches from end. Tie chains are not recommended.
20. Before starting equipment, make certain fellow CEs and customer personnel are not in a hazardous position.
21. Maintain good housekeeping in area of machine while performing and after completing maintenance.

ARTIFICAL RESPIRATION

Rescue Breathing for Children

1. **Clear throat** of water, mucus, food, etc.
2. **Place child's face down,** to loosen foreign matter in air passage. **With head in down position, pat him firmly on the back.** This should take only a few seconds.
3. **Lay child on his back.**
4. **Lift the neck** and tilt the head back to open the air passage.
5. **Place mouth firmly over child's mouth and nose** to prevent air leakage when you blow.
6. **Blow smoothly and gently at the same time** until his chest rises.
7. **Move your free hand to child's abdomen and apply continuous pressure** to prevent stomach filling with air.
8. **When lungs are filled, remove your lips from child's mouth and nose** to allow his lungs to empty naturally.
9. **Repeat mouth-to-mouth breathings** 20 times per minute.
10. **If you feel resistance – chest does not rise,** repeat step number 2, then quickly resume mouth-to-mouth breathings. **Continue rescue breathing until he breathes for himself.**

Mouth-to-Mouth Resuscitation Position

Rescue Breathing for Adults

Lay Victim on His Back Immediately

1. **Clear throat** of water, food, or other foreign matter.
2. **Lift the neck** and tilt the head back to open the air passage.
3. **Pinch nostrils** to prevent air leakage when you blow.
4. **Blow** until you see chest rise.
5. **Remove your lips** and allow lungs to empty.
6. **Listen** for snoring and gurgling, signs of throat obstruction.
7. **Repeat mouth-to-mouth breathings** 10-20 times a minute. **Continue rescue breathing until he breathes for himself.**

SAFETY NOTICES

Effective August, 1980, the Danger and Caution notices have new meanings and a new category of Warning has been added.

DANGER
Danger is used only to give notice to a situation that is extremely hazardous to people.

CAUTION
Used to give notice to a situation that could cause injury, but to a lesser degree than a Danger situation.

Warning: Used to give notice of any condition or action that could cause damage to a product.

The following Danger statements appear in this manual.

DANGER STATEMENTS

Servicing of live ac assemblies outside their machine frame mount is not permitted on the 3380-DE. (CARR-5)

Line voltage is present at the fan plug if the fan assembly is being removed while 3380-DE power is on. (CARR-140)

Line voltage is present at the receptacle for the fan plug if the fan assembly is being installed while 3380-DE power is on. (CARR-140)

Use the high-voltage test probes only to touch the outlet receptacle until step 3 is completed. (INST-175)

Do not touch internal parts (pins and sockets) of the outlet until step 5 is completed. (INST-175)

Do not touch the outlet receptacle until step 2 is completed. (INST-175)

Before rewiring the transformers, ensure that the 3380-DE power cable is not connected to the ac outlet. (INST-185)

Power is now present throughout the A unit. Use caution in touching electrical parts with hands or tools. (INST-205)

Lethal voltages present. (PWR-103)

Lethal voltages are present in this area of the machine. (PWR-100, 102, 705, 706, 720, 801, 806, 824, 831, 880)

Lethal voltages are present in the power servicing area. Safety is most important. Treat all circuits as live until measured. Capacitors are possible exploding devices. Wear safety glasses when working in the power area. Always reinstall all safety covers before powering on the machine. (PWR-910, 911, 912, 913)

Lethal ac voltage present. (PWR-921)

Line voltage is present. (PWR-925, 930, 935, 940, 945, 947, 950, 955, 960, 965, 970)

Perform the correct Power-Off procedure listed in the Replacement Information column before replacing a tripped CB or CP. (PWR-920)

Do not touch CB200 input terminals until step 4 is completed. (PWR-990)

If measured voltage values are less than 1.0 Vac, the outlet socket can be touched. Do not touch the internal parts (pins and sockets) of the outlet. (INST-175)

Line voltage is present at relay K215. (PWR-104)

The exposed motor and pulley could start turning. (PWR-801)

CAUTION STATEMENTS

When wearing the ESD grounding wrist strap, ensure that the flex grounding cord remains connected. Failure to do this creates a safety exposure in the same manner as wearing jewelry while working on live exposed electrical circuits. (CARR-5)

The HDA weighs approximately 32 kilograms (70 pounds). Use caution when lifting; two persons may be needed to remove or install an HDA. (CARR-25, 35, 335)

+24 Vdc is present at J787. (CARR-60, 385)

The brake assembly may be hot; use caution while performing the following steps. (CARR-95)

The drive access power supply weighs over 35 kilograms (78 pounds). Use caution when lifting; two persons are needed to remove or install the power supply. (CARR-375, 380)

Do not connect the power cable until instructed to do so. (INST-75)

Both controller A1 and A2 power supplies have the same part numbers. Before beginning maintenance activity, turn off power to the correct power supply. (LOC-26)

Line voltage is still present at CB201 and the line side of contactor K420. To remove all power from a B unit, set CB201 to off and then disconnect the associated power cable going to the A unit. To remove all power from an A unit, perform the 3380 String Power-Off procedure on PWR-900. (PWR-901)

Before continuing, discharge the capacitor by placing a screwdriver across the capacitor terminals. (PWR-910)

Before continuing, discharge any capacitors in the rectifier circuits by placing a screwdriver across the capacitor terminals. (PWR-910)

Sharp edges might be present. (PWR-101, 925)

Ensure you are working on the DCA box for the failing drive. PWR-800, 805, 811, 812, 827)

The blower motor could be hot. Reach down and feel the motor with your fingers. (PWR-820)

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EC HISTORY

28FEB85 462762	ERRATA SHEET (FOR NOTATIONS)
	PRINT 23APR85 1774 PN 2179955 PAGE 1 OF 1
	MACH 3380 HPN PNAME HEC 462762 LOC

IBM CORP

A80S0

YA → YA

YB → YB

YC → YC

YD → YD

YE → YE

YF → YF

YG → YG

YH → YH

YJ → YJ

DISABLE SW & RDY LED
HPN 2330693

YK → YK

YL → YL

YM → YM

YN → YN

YP → YP

YQ → YQ

YR → YR

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X
FRONT LH R-W CNTL CABLE HPN 2230550 TO 1C-C08ZA	FRONT LH POWER AMP CABLE HPN 2330614 TO 1C-C4P1	FRONT LH SERVO TEST SOCKET	FRONT LH SERVO ANALOG CARD MODEL AE4/BE4 HPN 2136440	FRONT RH SERVO ANALOG CARD MODEL AE4/BE4 HPN 2136440	UNUSED	FRONT LH SEQ SERVO MPC CARD LEDS HPN 2315680	FRONT LH PORT POWER CONTROL CARD LEDS HPN 2315674	FRONT SEQ SERVO CONTROL CARD HPN 2315766 OR 2315796	FRONT RH PORT POWER CONTROL CARD LEDS HPN 2315674	FRONT RH SEQ SERVO MPC CARD LEDS HPN 2315680	REAR LH SEQ SERVO MPC CARD LEDS HPN 2315680	REAR LH PORT POWER CONTROL CARD LEDS HPN 2315674	REAR SEQ SERVO CONTROL CARD HPN 2315766 OR 2315796	REAR RH PORT POWER CONTROL CARD LEDS HPN 2315674	REAR RH SEQ SERVO MPC CARD LEDS HPN 2315680	UNUSED	REAR LH SERVO ANALOG CARD MODEL AE4/BE4 HPN 2136440	REAR RH SERVO ANALOG CARD MODEL AE4/BE4 HPN 2136440	REAR LH SERVO TEST SOCKET	REAR LH POWER AMP CABLE HPN 2330615 TO 1C-C4P3	REAR LH R-W CTRL CABLE HPN 2330550 TO 1C-C28ZA
FRONT LH R-W CTRL CABLE HPN 2330550 TO 1C-C08ZB	FRONT RH POWER AMP CABLE HPN 2330614 TO 1C-C4P2	FRONT RH SERVO TEST SOCKET	MODEL AD4/BD4 HPN 2315704 * NOTE 3	MODEL AD4/BD4 HPN 2315704 * NOTE 3		TCC XXX XXX			TCC XXX XXX		TCC XXX XXX			TCC XXX XXX			MODEL AD4/BD4 HPN 2315704 * NOTE 3	MODEL AD4/BD4 HPN 2315704 * NOTE 3	REAR RH SERVO TEST SOCKET	REAR RH POWER AMP CABLE HPN 2330615 TO 1C-C4P4	REAR LH R-W CTRL CABLE HPN 2330550 TO 1C-C28ZB
FRONT RH R-W CTRL CABLE HPN 2330550 TO 1C-C1B2A	FRONT LOW LEVEL SERVO PLO CLOCKS CABLE HPN *2330601A *2330600B TO 1A-A1YC	A2 CDP TERM CARD HPN 2315494						TCC YYY YYY					TCC YYY YYY						A1 CDP TERM CARD HPN 2315494	REAR LOW LEVEL SERVO PLO CLOCKS CABLE HPN *2330601A *2330600B TO 1A-A1YF	REAR RH R-W CTRL CABLE HPN 2330550 TO 1C-C3B2A
FRONT RH R-W CTRL CABLE HPN 2330550 TO 1C-C1B2B	A1 CDP CABLE HPN *2330490A *2330489B TO 1A-A1YH	FRONT MOTOR CTRL SENSE CABLE HPN *2330531A *2330532B						TCC ZZZ ZZZ					TCC ZZZ ZZZ						REAR MOTOR CTRL SENSE CABLE HPN *2330531A *2330532B	A2 CDP CABLE HPN *2330490A *2330489B TO 1A-A1YB	REAR RH R-W CTRL CABLE HPN 2330550 TO 1C-C3B2B
			BD200	BE200		BG200	BH200	BJ200	BK200	BL200	BM200	BN200	BP200	BQ200	BR200		BT200	BU200			

ZA FRONT POWER CABLE HPN= 2330468 → ZA

ZB FRONT POWER CABLE HPN= 2330468 → ZB

ZC FRONT POWER CABLE HPN= 2330468 → ZC

ZD FRONT VOLTAGE TEST SOCKET LH- RH AND COMMON POWER → ZD

ZE REAR VOLTAGE TEST SOCKET LH- RH AND COMMON POWER → ZE

ZF REAR POWER CABLE HPN= 2330468 → ZF

ZG REAR POWER CABLE HPN= 2330468 → ZG

ZH REAR POWER CABLE HPN= 2330468 → ZH

* = CABLE EXAMPLE(HPN)2330601A FOR 'A' MODEL ONLY (AD4 & AE4).
2330600B FOR 'B' MODEL ONLY (BD4 & BE4).
ALL OTHER (HPN)——— FOR BOTH 'A' & 'B' MODELS(AD4, AE4, BD4 & BE4).

NOTE 1: CARDS LISTED IN A LOCATION AND SEPARATED BY "OR" ARE FUNCTIONALLY INTERCHANGEABLE.

NOTE 3: EARLIER MACHINES MAY HAVE HPN 2136438 IN THIS LOCATION.

BOARD HARDWARE PART NUMBER: 2315642 OR 2315646

NOTE 2: THIS PAGE IS FOR THE '1B-B1 BOARD' ONLY. PAGE AF200 IN THE PLUG CHART LISTING SHOWS THE BOARD TO BOARD CABLING. THE CABLE NUMBERS LISTED FOR OTHER 'B BOXES' CONNECTED TO AN 'A BOX' WILL GO THREW THE INTERFRAME CONNECTOR ON THE 'A BOX'.

EC HISTORY

12OCT84 462763	B BOARD
16APR85 462762	FRONT & REAR DRIVE CONTROL
29MAY85 1301017	MODELS AE4, BE4, AD4 BD4
29MAY85 1301021	
12SEP85 1301505	PRINT 12SEP85 1832 PN 2179947 PAGE 1 OF 1

MACH 3380 HPN
PNAME HEC #301505
LOC 1B-B1

IBM CORP

H D A VIEW

018 TO J672 CONN ON POWER AMP 1C-C4P1 — POWER AMP

029 TO 'B' BOARD 1B-B1A3 — RD/WR CONTROL

034 TO 'B' BOARD 1B-B1A2 — RD/WR CONTROL

044 TO 'A' BOARD 1A-A1YF — * SEE NOTE 2 FOR ADDITIONAL STRING CABLING

051 TO DC POWER SUPPLY

1C-C0B2 (DEV 0) READ/WRITE CHANNEL BOARD LEFT FRONT

J180 CONN ON HDA

* SEE NOTE 1

ARM 4 3 2 1

A B C D E F G H

FRONT HDA (DRIVE 0)

J180 CONN ON HDA

1C-C1B2 (DEV 1) READ/WRITE CHANNEL BOARD RIGHT FRONT

ARM 1 2 3 4

H G F E

* SEE NOTE 1

D C B A

POWER AMP — TO J672 CONN ON POWER AMP 1C-C4P2

TO DC POWER SUPPLY — 029

RD/WR CONTROL — TO 'B' BOARD 1B-B1A4 — 045

RD/WR CONTROL — TO 'B' BOARD 1B-B1A5 — 051

RD/WR PLO LOW LEVEL SERVO

059 TO J672 CONN ON POWER AMP 1C-C4P3 — POWER AMP

068 TO 'B' BOARD 1B-B1X3 — RD/WR CONTROL

074 TO 'B' BOARD 1B-B1X2 — RD/WR CONTROL

090 TO DC POWER SUPPLY

1C-C2B2 (DEV 2) READ/WRITE CHANNEL BOARD LEFT REAR

J180 CONN ON HDA

* SEE NOTE 1

ARM 4 3 2 1

A B C D E F G H

REAR HDA (DRIVE 1)

J180 CONN ON HDA

1C-C3B2 (DEV 3) READ/WRITE CHANNEL BOARD RIGHT REAR

ARM 1 2 3 4

H G F E

* SEE NOTE 1

D C B A

RD/WR CONTROL — TO J672 CONN ON POWER AMP 1C-C4P4 — 059

RD/WR CONTROL — TO DC POWER SUPPLY — 068

RD/WR CONTROL — TO 'B' BOARD 1B-B1X4 — 084

RD/WR CONTROL — TO 'B' BOARD 1B-B1X5 — 090

```
////////////////////////////////////////////////
/   SPECIAL ASIGNMENTS FOR R/W CHAN BD         /
/   (NOTE: THE SCK IS A DUMMY AND THE PIN      /
/    IS BOTH THE SCK AND PIN ASIGNMENT)        /
/                                              /
/  01  C-  CO  B2   B02   A NORMAL BOARD       /
/  FRM GT  BD  SCK  PIN                        /
/                                              /
/  01  C-  CO  B2   A     A1   R/W CHAN BD     /
/  FRM GT  BD  DUMMY (SCK PIN) AS ONE(AA1)     /
/                                              /
/ THE BOARDS WILL BE CALLED CO. C1. C2 & C3     /
/ TO MATCH THE ADDRESSING OF 0. 1. 2 & 3.       /
/                                              /
/ THE DUMMY SOCKET WILL BE CALLED B2.          /
/                                              /
/ THE 1ST OF 3 PIN ASSIGNMENTS IS TO REFLECT   /
/ THE SOCKET (FOR THIS BOARD A-H).             /
/                                              /
/ THE 2ND OF 3 PIN ASSIGNMENTS IS TO REFLECT   /
/ THE COLUMN (FOR THIS BOARD A-B OR A-B-C).    /
/                                              /
/ THE 3RD OF 3 PIN ASSIGNMENTS IS TO REFLECT   /
/ THE PIN IN THE COLUMN. THESE WILL BE         /
/ COUNTED IN HEXI-DECIMAL: 1. 2. 3. 4. 5.      /
/ 6. 7. 8. 9. A. B. C & D.                     /
////////////////////////////////////////////////
```

LEFT SIDE OF HDA'S

A & B CONN — C CONN — D CONN — E CONN — F CONN — G CONN — H CONN

(4) (3) (2) (1) — (ARM) — (1) (2) (3) (4)

RIGHT SIDE OF HDA'S

H CONN — G CONN — F CONN — E CONN — A & B CONN — C CONN — D CONN

NOTE 1: THE BACK SIDE OF THE BOARDS ARE SHOWN HERE AS THE FRONT SIDE OF THE BOARDS FACE THE HDA'S. THEREFORE: ALL PIN ASSIGNMENTS ARE FOR THE BACK SIDE OF THE CONNECTORS LOOKING AT THE BOARDS MOUNTED ON THE MACHINE.

NOTE 2: FOR ADDITIONAL STRING CABLING PLEASE REFER TO PAGE AF200 TO LOCATE THE CORRECT INTERFRAME CONNECTORS.

HARDWARE PART NUMBERS=2136446 OR 2315676
READ/WRITE CHANNEL BOARD (2 PER HDA)

NOTE: BOARDS LISTED IN A LOCATION AND SEPARATED BY "OR" ARE FUNCTIONALLY INTERCHANGEABLE.

EC HISTORY

11OCT84 462763	READ/WRITE CHANNEL BOARD
15JAN85 462762	HDA VIEW
08JUL85 301260	
	PRINT 08JUL85 1746 PN 2179944
	PAGE 1 OF 1
MACH 3380	HPN
PNAME	HEC #301260
LOC 1C-C(0-3)	

IBM CORP

AD200

REFERENCE DRAWING FOR THE POWER AMP CARD.

THE LEFT AND RIGHT LINE TITLES MATCH PAGE HPA10 FOR THE CORRECT PIN ASSIGNMENTS. HPA20 IS THE RH FRONT, HPA30 IS THE LH REAR. AND HPA40 IS THE RH REAR FOR NAME DIFFERENCES.
PAGE PART NUMBER 2179950 (9 OF 16 THREW 16 OF 16)
NOTE THAT THE LINES ARE COMPACTED TO THE TOP OF THE PAGE FOR THESE PAGES AND ONE MUST COMPARE THE LINE TITLES AND PIN NUMBERS FOR A PROPER MATCH. NOT BY USING LINE NUMBERS.

032 + LH INHIBIT POWER AMP FRONT — B02
034 LH POWER AMP DRIVE FRONT — B04
036 – LH POWER AMP DRIVE FRONT — B06

040 + 36V LH POWER AMP FRONT — B12
042 + 36V LH RETURN POWER AMP FRONT — B11
044 – 36V LH POWER AMP FRONT — D10
046 – 36V LH RETURN POWER AMP FRONT — D11

CONVERSION TABLE FOR B/D PIN (CARD) TO CONNECTOR PIN (J672AL) NUMBERS

B02	1	D02	2
B03	3	D03	4
B04	5	D04	6
BLANK		D05	8
B06	9	BLANK	
B07	11	D07	12
B08	13	D08	14
B09	15	D09	16
B10	17	D10	18
B11	19	D11	20
B12	21	BLANK	
BLANK		D13	24

B02/1 (SEE TABLE)

POWER AMPLIFIER

D04 — LH VCM VOLTAGE SIG FRONT — 032
B08 — LH VCM CURRENT SIG FRONT — 034

D02 — LH LIMITED SIG TP FRONT — 038

LH VCM CURRENT SIG RETURN FRONT
D05 — LH POWER AMP COMMON FRONT — 044
B10 — LH POWER AMP COMMON FRONT — 046

B09 — LH VOICE COIL MOTOR 1 FRONT — 050
D09 — LH VOICE COIL MOTOR 1 FRONT — 052
B07 — LH VOICE COIL MOTOR 2 FRONT — 054
D07 — LH VOICE COIL MOTOR 2 FRONT — 056

LH VOICE COIL MOTOR 1 FRONT
P1B09
P1D09
J180 CONN 1

LH VOICE COIL MOTOR 2 FRONT
P1B07
P1D07
J180 CONN 3

VOICE COIL MOTOR LEFT FRONT

104 GND CABLE (A) — D08 — B1–B2D08.B1–B3D08
106 + LH CABLE SWITCHED FRONT — B02 — B1–B2B02. B1–B3B02
108 – LH MOD D FRONT — D12 — B1–B2D12

CONN J180 2 4 5 6 *
FOR PAGES HPA10 AND HPA30 ONLY.

CONN J180 2 4 5 6 *
FOR PAGES HPA20 AND HPA40 ONLY

* J180 PINS 2 & 5 JUMPERED IN MODEL 'D' MACHINES ONLY.

LOC=1C–C4P1. 1C–C4P2. 1C–C4P3 1C–C4P4
HPN:0948301 QUANITY=4

CARDS LISTED IN A LOCATION AND SEPARATED BY 'OR' ARE FUNTIONALLY INTERCHAGEABLE.

EC HISTORY
28SEP84 462763
01MAR85 462762

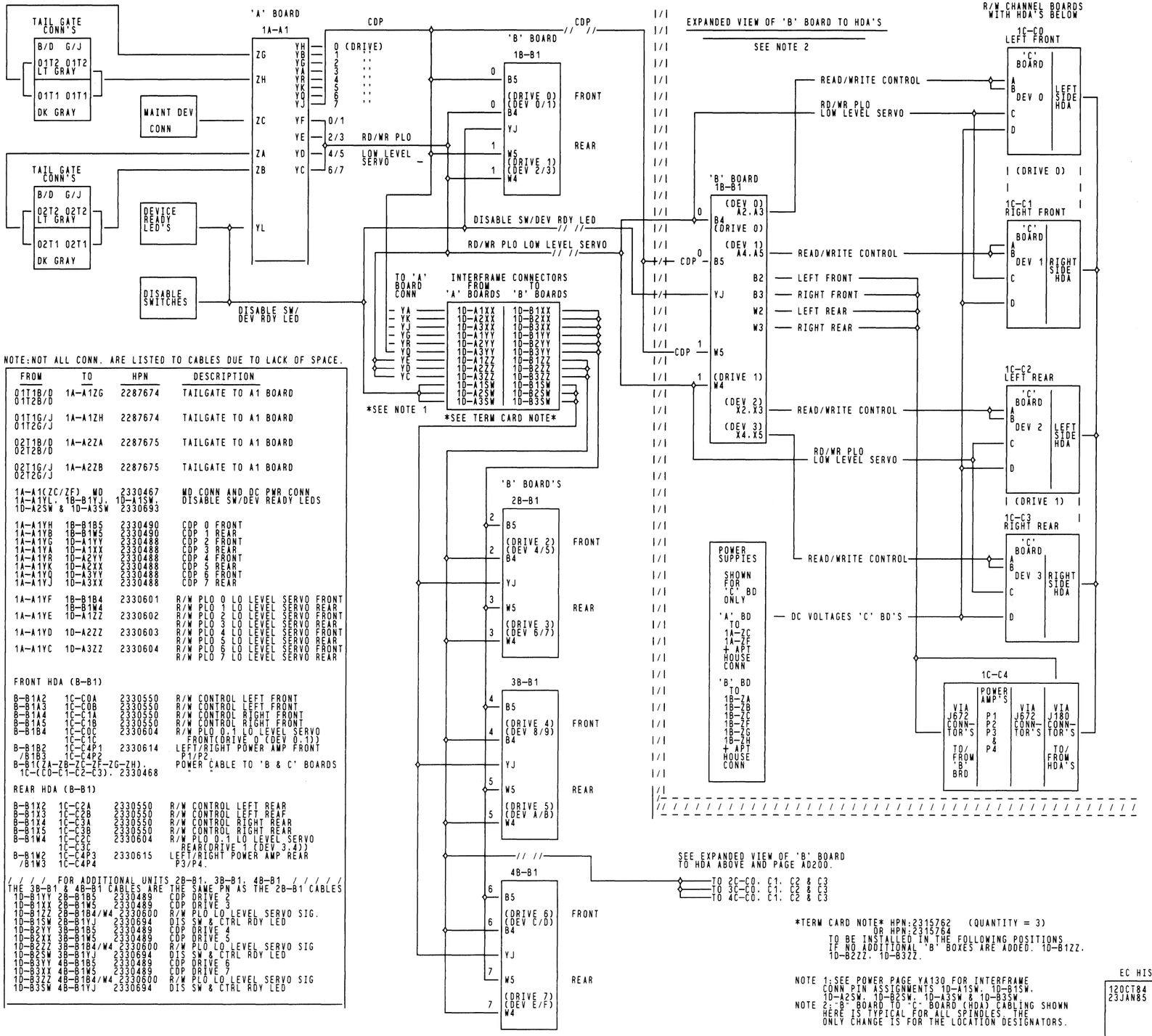
SERVO POWER AMPLIFIER CARD
REFERENCE DRAWING

PRINT 01MAR85 0086 PN 2179948
PAGE 1 OF 1

MACH 3380 HPN
PNAME HEC 462762
LOC 1C–C4(P1–P4)

IBM CORP

AE200



NOTE:NOT ALL CONN. ARE LISTED TO CABLES DUE TO LACK OF SPACE.

FROM	TO	HPN	DESCRIPTION
01T1B/D 01T2B/D	1A-A1ZG	2287674	TAILGATE TO A1 BOARD
01T1G/J 01T2G/J	1A-A1ZH	2287674	TAILGATE TO A1 BOARD
02T1B/D 02T2B/D	1A-A2ZA	2287675	TAILGATE TO A1 BOARD
02T1G/J 02T2G/J	1A-A2ZB	2287675	TAILGATE TO A1 BOARD
1A-A1(ZC/ZF) MD 1A-A1YL, 1B-B1YJ, 1D-A1SW, 1D-A2SW & 1D-A3SW		2330467 2330693	MD CONN AND DC PWR CONN DISABLE SW/DEV READY LEDS
1A-A1YH	1B-B1B5	2330490	CDP 0 FRONT
1A-A1YB	1B-B1W5	2330490	CDP 1 REAR
1A-A1YG	1D-A1YY	2330488	CDP 2 FRONT
1A-A1YA	1D-A1XX	2330488	CDP 3 REAR
1A-A1YR	1D-A2YY	2330488	CDP 4 FRONT
1A-A1YK	1D-A2XX	2330488	CDP 5 REAR
1A-A1YQ	1D-A3YY	2330488	CDP 6 FRONT
1A-A1YJ	1D-A3XX	2330488	CDP 7 REAR
1A-A1YF	1B-B1B4 1B-B1W4	2330601	R/W PLO 0 LO LEVEL SERVO FRONT R/W PLO 1 LO LEVEL SERVO REAR
1A-A1YE	1D-A1ZZ	2330602	R/W PLO 2 LO LEVEL SERVO FRONT R/W PLO 3 LO LEVEL SERVO REAR
1A-A1YD	1D-A2ZZ	2330603	R/W PLO 4 LO LEVEL SERVO FRONT R/W PLO 5 LO LEVEL SERVO REAR
1A-A1YC	1D-A3ZZ	2330604	R/W PLO 6 LO LEVEL SERVO FRONT R/W PLO 7 LO LEVEL SERVO REAR

FRONT HDA (B-B1)

B-B1A2	1C-C0A	2330550	R/W CONTROL LEFT FRONT
B-B1A3	1C-C0B	2330550	R/W CONTROL LEFT FRONT
B-B1A4	1C-C1A	2330550	R/W CONTROL RIGHT FRONT
B-B1A5	1C-C1B	2330550	R/W CONTROL RIGHT FRONT
B-B1B4	1C-C0C 1C-C1C	2330604	R/W PLO 0.1 LO LEVEL SERVO FRONT(DRIVE 0 (DEV 0.1))
B-B1B2 /B1B3	1C-C4P1 1C-C4P2	2330614	LEFT/RIGHT POWER AMP FRONT P1/P2.
B-B1(ZA-ZB-ZC-ZF-ZG-ZH). 1C-(C0-C1-C2-C3).		2330468	POWER CABLE TO 'B & C' BOARDS

REAR HDA (B-B1)

B-B1X2	1C-C2A	2330550	R/W CONTROL LEFT REAR
B-B1X3	1C-C2B	2330550	R/W CONTROL LEFT REAF
B-B1X4	1C-C3A	2330550	R/W CONTROL RIGHT REAR
B-B1X5	1C-C3B	2330550	R/W CONTROL RIGHT REAR
B-B1W4	1C-C2C 1C-C3C	2330604	R/W PLO 0.1 LO LEVEL SERVO REAR(DRIVE 1 (DEV 3.4))
B-B1W2 /B1W3	1C-C4P3 1C-C4P4	2330615	LEFT/RIGHT POWER AMP REAR P3/P4.

/ / / / FOR ADDITIONAL UNITS 2B-B1, 3B-B1, 4B-B1 / / / / /
THE 3B-B1 & 4B-B1 CABLES ARE THE SAME PN AS THE 2B-B1 CABLES

1D-B1YY	2B-B1B5	2330489	CDP DRIVE 2
1D-B1XX	2B-B1W5	2330489	CDP DRIVE 3
1D-B1ZZ	2B-B1B4/W4	2330600	R/W PLO LO LEVEL SERVO SIG.
1D-B1SW	2B-B1YJ	2330694	DIS SW & CTRL RDY LED
1D-B2YY	3B-B1B5	2330489	CDP DRIVE 4
1D-B2XX	3B-B1W5	2330489	CDP DRIVE 5
1D-B2ZZ	3B-B1B4/W4	2330600	R/W PLO LO LEVEL SERVO SIG
1D-B2SW	3B-B1YJ	2330694	DIS SW & CTRL RDY LED
1D-B3YY	4B-B1B5	2330489	CDP DRIVE 6
1D-B3XX	4B-B1W5	2330489	CDP DRIVE 7
1D-B3ZZ	4B-B1B4/W4	2330600	R/W PLO LO LEVEL SERVO SIG
1D-B3SW	4B-B1YJ	2330694	DIS SW & CTRL RDY LED

TERM CARD NOTE HPN:2315762 (QUANTITY = 3)
OR HPN:2315764
TO BE INSTALLED IN THE FOLLOWING POSITIONS IF NO ADDITIONAL 'B' BOXES ARE ADDED. 1D-B1ZZ. 1D-B2ZZ. 1D-B3ZZ.

NOTE 1:SEE POWER PAGE YA130 FOR INTERFRAME CONN PIN ASSIGNMENTS 1D-A1SW, 1D-B1SW, 1D-A2SW, 1D-B2SW, 1D-A3SW & 1D-B3SW.
NOTE 2: 'B' BOARD TO 'C' BOARD (HDA) CABLING SHOWN HERE IS TYPICAL FOR ALL SPINDLES. THE ONLY CHANGE IS FOR THE LOCATION DESIGNATORS.

EC HISTORY

12OCT84 462763	BOARD TO BOARD CABLING
23JAN85 462762	

PRINT 25JUN85 0076 PN 2179945 PAGE 1 OF 1

MACH 3380 HPN
PNAME HEC 462762
LOC

IBM CORP

AF200

LEFT SIDE VOLTAGES

+ 5/24V LEFT
C6E02 YA410R023
H5B04
J6C04

+ 5/24V RIGHT
D6A02 YA410R097
K5B04
K6B02

+ 5V LEFT
B2A14 YA410R006
B3E01 YA410R007
B3A14 YA410R025
B4E01 YA410R026
B4A14 YA410R018
B5E01 YA410R019
C2D03
C3D03
D2D03
D3D03
D4D03
D5D03
G2D03
G2B06
G3D03
G3B06
G4D03
G4B06
G5D03
G5B06
H2D03
H2B06
H3D03
H3B06
H4D03
H4B06
H5D03
H5B04
H5B06
H5B08
L6A02

+ 5V RIGHT
F6D02 YA410R080
F6E02 YA410R093
G6A02 YA410R081
G6B02 YA410R092
E2D03
E3D03
E4D03
E5D03
K2D03
K2B06
K3D03
K3B06
K4D03
K4B06
K5D03
K5B06
K5B08
K6A02
L2D03
L2B06
L3D03
L3B06
L4D03
L4B06
L5D03
L5B06

+ 5V COMMON
G6D02 YA410R009
G6E02 YA410R083
H6A02 YA410R082
H6B02 YA410R095
F2D03
F2B06
F3D03
F3B06
F4D03
F4B06
F5D03
F5B06
H3B13
J2D03
J2B06
J3D03
J3B06
J4D03
J4B06
J5D03
J5B06
J6D02
K3B13

+ 15V LEFT
A6C02 YA410R012
A6D02 YA410R013
C2D05
D3D05
D5D05
L6C02

+ 15V RIGHT
C3D05
D6B02 YA410R086
D6C02 YA410R087
E3D05
E5D05
L6B04

- 5V LEFT
C6A02 YA410R016
C6B02 YA410R024
D2B06
D3B06
G5D04
J3D06
K6C04

- 5V RIGHT
E2B06
E3B06
E6E02 YA410R090
F6A02 YA410R098
L5D04
J4B09
K6E02

- 15V LEFT
A6A02 YA410R014
A6B02 YA410R015
C2B02
D3B02
D5B02
J6E04

- 15V RIGHT
A6E02 YA410R088
B6A02 YA410R089
C3B02
E3B02
E5B02
L6D02

- 36V LEFT
D5B08
D6E02 YA410R020
L6D04

- 36V RIGHT
E5B08
E6A02 YA410R094
J6C02

ALL ONE GROUND PLANE

A2D08
A3D08
A4D08
A5D08
A6A04 YA450R014
A6B04 YA450R015
A6C04 YA450R012
A6D04 YA450R013
A6E04 YA450R088
B1B06
B1B11
B2D08
B2E14 YA450R006
B3A01 YA450R007
B3D08
B3E14 YA450R025
B4A01 YA450R026
B4D08
B4E14 YA450R018
B5A01 YA450R019
B5D08
B6A04 YA450R009
B6B04
B6C04
B6D04
B6E04
C2D08
C3D08
C4D08
C5B07 YA110R116
C5D08
C6A04 YA450R016
C6B04 YA450R024
C6E04 YA450R023
D1A07
D2D08
D3D08
D4D08
D5D08
D6A04 YA450R097
D6B04 YA450R086
D6C04 YA450R087
D6D04
D6E04 YA450R020

E1A06
E1E06
E2E07
E1A11
E2D08
E3D08
E4D08
E5D08
E6A04 YA450R094
E6B04
E6C04
E6D04
E6E04 YA450R090
F1E07
F2D08
F2B11
F3D08
F3B11
F4D08
F4B11
F5D08
F5B11
F6A04 YA450R098
F6D04 YA450R080
F6E04 YA450R099
G1E06
G1A07
G1B07
G1C07
G1D07
G1E07
G1E11
G2D08
G2B11
G3D08
G3B11
G4D08
G4B11
G5D08
G5B11
G6A04 YA450R081
G6B04 YA450R092
G6C04
G6D04 YA450R009
G6E04 YA450R083

H1A07
H1B07
H1C07
H1D07
H2D08
H2B11
H3D08
H3B11
H4D08
H4B11
H5D08
H5D11
H6A04 YA450R021
H6B04 YA450R095
H6C04
H6D04
H6E04
J1D07
J1E07
J2D08
J2B11
J3D08
J3B11
J4D08
J4B11
J5D08
J5B11
J6E03
K1D06
K1A07
K1B07
K1C07
K1D07
K1D11
K1E07
K2D08
K2B11
K3D08
K3B11
K4D08
K4B11
K5D08
K5B11

K6D02
K6A03
K6B03
K6C03
K6D03
K6E03
L1A07
L1B07
L1C07
L2D08
L2B11
L3D08
L3B11
L4D08
L4B11
L5D08
L5B11
L6A03
L6B03
M1D07
M1E07
M2D08
M2B11
M3D08
M3B11
M4D08
M4B11
M5D08
M5B11
M6D03
M6E03
N1C06
N1A07
N1B07
N1C07
N1D07
N1E07
N1C11
N2D08
N2B11
N3D08
N3B11

RIGHT SIDE VOLTAGES

+ 5/25V LEFT
N5B04
N6B02
S6E02 YA420R023

+ 5/24V RIGHT
N6E02
Q5B04
T6A02 YA420R097

+ 5V LEFT
P6A02
R6D02 YA420R006
R6E02 YA420R019
S6A02 YA420R007
S6B02 YA420R018
M2D03
M2B06
M3D03
M3B06
M4D03
M4B06
M5D03
M5B06
N2D03
N2B06
N3D03
N3B06
N4D03
N4B06
N5D03
N5B06
N5B08
T2D03
T3D03
T4D03
T5D03

+ 5V RIGHT
M6C02
Q2D03
Q2B06
Q3D03
Q3B06
Q4D03
Q4B06
Q5D03
Q5B06
Q5B08
R2D03
R2B06
R3D03
R3B06
R4D03
R4B06
R5D03
R5B06
U2D03
U3D03
U4D03
U5D03
V2D03
V3D03
V4D03
V5D03
W2A14 YA420R080
W3E01 YA420R081
W3A14 YA420R099
W4E01 YA420R100
W4A14 YA420R092
W5E01 YA420R093

+ 5 V COMMON
N3B13
Q3B13
Q6E02 YA420R009
R6A02 YA420R083
R6B02 YA420R021
R6C02 YA420R095
P2D03
P2B06
P3D03
P3B06
P4D03
P4B06
P5D03
P5B06
P6C02
S2D03
S2B06
S3D03
S3B06
S4D03
S4B06
S5D03
S5B06
T6A02

+ 15V LEFT
M6B02
T3D05
T5D05
T6C02 YA420R012
T6D02 YA420R013
V2D05

+ 15V RIGHT
M6A02
U3D05
U5D05
U6C02 YA420R087
U6D02 YA420R0
V3D05

- 5V LEFT
M6E02
M5D04
P3D06
T2B06
T3B06
V6E02 YA420R016
W6A02 YA420R024

- 5V RIGHT
M6B04
P4B09
R5D04
U2B06
U3B06
X6A02 YA420R090
X6B02 YA420R098

- 15V LEFT
N6D04
T3B02
T5B02
U6A02 YA420R014
U6B02 YA420R015
V2B02

- 15V RIGHT
P6A04
U3B02
U5B02
V3B02
X6D02 YA420R088
X6E02 YA420R089

- 36V LEFT
N6B04
T5B08
U6E02 YA420R16

- 36V RIGHT
P6C04
U5B08
V6A02 YA420R094

ALL ONE GROUND PLANE

N4D08
N4B11
N5D08
N5B11
N6C02
N6A03
N6B03
N6C03
N6D03
N6E03
P1A07
P2D08
P2B11
P3D08
P3B11
P4D08
P4B11
P5D08
P5B11
P6A03
Q1D07
Q1E07
Q2D08
Q2B11
Q3D08
Q3B11
Q4D08
Q4B11
Q5D08
Q6C03
Q6D03
Q6E03
Q6A04
Q6B04
Q6C04

Q6D04
Q6E04 YA460R009
R1B06
R1A07
R1B07
R1C07
R1D07
R1E07
R1B11
R2D08
R2B11
R3D08
R3B11
R4D08
R4B11
R5D08
R5B11
R6B02
R6A03
R6B03
R6C03
R6D03
R6E03
R6A04 YA460R083
R6B04 YA460R021
R6C04 YA460R095
R6D04 YA460R006
R6E04
S1A07
S2D08
S2B11
S3D08
S3B11
S4D08
S4B11
S5D08
S5B11
S6A04 YA460R007
S6B04 YA460R018
S6E04 YA460R023
T1B07

T2D08
T3D08
T4D08
T5D08
T6B03
T6C03
T6D03
T6E03
T6A04 YA460R097
T6B04
T6C04 YA460R012
T6D04 YA460R013
T6E04
U1A06
U1A07
U1B07
U1C07
U1D07
U1A11
U2D08
U3D08
U4D08
U5D08
U6A03
U6B03
U6C03
U6D03
U6A04 YA460R014
U6B04 YA460R015
U6C04 YA460R086
U6D04 YA460R087
U6E04 YA460R020
V2D08
V3D08
V4D08
V5B07 YA110R117
V5D08
V6A04 YA460R094
V6D04
V6E04 YA460R016

W1E06
W1E11
W2D08
W2E14 YA460R080
W3A01 YA460R081
W3D08
W3E14 YA460R099
W4A01 YA460R100
W4D08
W4E14 YA460R092
W5A01 YA460R093
W5D08
W6A04 YA460R024
W6B04
W6C04
W6D04
W6E04
X2D08
X2E08
X2B11
X3D08
X3B11
X4D08
X4B11
X5D08
X5B11
X6A04
X6B04 YA460R098
X6C04
X6D04 YA460R088
X6E04 YA460R089

NOTE: EACH VOLTAGE LISTED IS CONTROLLED SEPARATELY FROM THE OTHER VOLTAGES. THIS LIST IS A REFERENCE AS TO THE COMPLETE NET. SOME OF THE PINS MAY BE CALLED OUT ON THE CROSS REFERENCE PAGES. THE YA--- PAGES AT PRESENT DO NOT CALL OUT THE LRM PAGES.

EC HISTORY

24SEP84 462763 21NOV84 462762	'B' BOARD VOLTAGE PINS AND GROUND PINS

PRINT 21NOV84 1765 PN 2179952
PAGE 1 OF 1

MACH 3380 HPN
PNAME HEC 462762
LOC 1B-B1

AH100

IBM CORP

MASTER INDEX PAGE MIP AB061

MASTER INDEX PAGE MIP AB061

ENGLISH LINE NAME	PGEID-LN #
+ LH MEMORY BIT 7 FRONT	BG210-R029
+ LH MEMORY BIT 7 REAR	BM210-R029
+ LH MEMORY BIT 8 FRONT	BG210-R030
+ LH MEMORY BIT 8 REAR	BM210-R030
+ LH MEMORY BIT 9 FRONT	BG210-R031
+ LH MEMORY BIT 9 REAR	BM210-R031
+ LH MOTOR CONT PICKED OUT FRONT	BH200-L049
+ LH MOTOR CONT PICKED OUT REAR	BN200-L049
+ LH MOTOR CONTROL FRONT	BG200-L023
+ LH MOTOR CONTROL REAR	BM200-L023
+ LH OUTER GUARD BAND FRONT	BG200-R066
+ LH OUTER GUARD BAND REAR	BM200-R065
+ LH PARM TRANSFER EN FRONT	BG200-L060
+ LH PARM TRANSFER EN REAR	BM200-L060
+ LH PARM TRANSFER FRONT	BG200-L014
+ LH PARM TRANSFER REAR	BM200-L014
+ LH PES INTEGRATE FRONT	BD200-L019
+ LH PES INTEGRATE REAR	BM200-R053
+ LH PES LOW TP FRONT	BD200-R036
+ LH PES LOW TP REAR	BT200-R036
+ LH PES P FRONT	BD200-L003
+ LH PES P REAR	BT200-L003
+ LH PES Q FRONT	BD200-L004
+ LH PES Q REAR	BT200-L004
+ LH POSITION ERROR SIG A FRONT	BD200-R005
+ LH POSITION ERROR SIG A REAR	BM200-L042
+ LH POSITION ERROR SIG B FRONT	BD200-R003
+ LH POSITION ERROR SIG B REAR	BM200-L043
+ LH PROGRAM MEMORY FRONT	BG200-L058
+ LH PROGRAM MEMORY REAR	BM200-L058
+ LH PULSE RATE FRONT	BG200-R061
+ LH PULSE RATE REAR	BM200-R060
+ LH R-W ACTIVE FRONT	BG200-L051
+ LH R-W ACTIVE REAR	BM200-L051
+ LH R-W CHECK FRONT	BH200-L023
+ LH R-W CHECK REAR	BN200-L023
+ LH R-W MODE SEL FRONT	BH200-R064
+ LH R-W MODE SEL REAR	BN200-R064
+ LH READY LED TERM FRONT	BH210-R019
+ LH READY LED TERM REAR	BN210-R019
+ LH RECORD READY IRPT FRONT	BG200-R028
+ LH RECORD READY IRPT REAR	BM200-R028
+ LH RPS CHECK FRONT	BG200-R029
+ LH RPS CHECK REAR	BM200-R029
+ LH RPS CLOCK T-0 (L1) FRONT	BG200-R067
+ LH RPS CLOCK T-0 (L1) REAR	BM200-R066
+ LH RPS CLOCK 3 FRONT	BD200-R017
+ LH RPS CLOCK 3 REAR	BM200-L048
+ LH RPS CLOCK 4 FRONT	BD200-R020
+ LH RPS CLOCK 4 REAR	BM200-L049
+ LH SAFETY INHIB TP FRONT	BJ210-R032
+ LH SEEK INCOMPLETE FRONT	BG200-L045
+ LH SEEK INCOMPLETE REAR	BM200-L045
+ LH SEGMENT BOUNDARY FRONT	BG200-R064
+ LH SEGMENT BOUNDARY REAR	BM200-R063
+ LH SEL A1/A2 FRONT	BH210-R014
+ LH SEL A1/A2 REAR	BN210-R014
+ LH SENSE SOFT START LT FRONT	BG200-L055
+ LH SENSE SOFT START LT REAR	BM200-L055
+ LH SEQ CHECK FRONT	BG200-R025
+ LH SEQ CHECK REAR	BM200-R025
+ LH SEQ MOVE FORMAT FRONT	BG200-R024
+ LH SEQ MOVE FORMAT REAR	BM200-R024
+ LH SEQ STATUS STROBE FRONT	BG200-R021
+ LH SEQ STATUS STROBE REAR	BM200-R021
+ LH SEQ WRITE BUS BIT FRONT P	BG200-R011
+ LH SEQ WRITE BUS BIT FRONT 0	BG200-R003

ENGLISH LINE NAME	PGEID-LN #
+ LH SEQ WRITE BUS BIT FRONT 1	BG200-R004
+ LH SEQ WRITE BUS BIT FRONT 2	BG200-R005
+ LH SEQ WRITE BUS BIT FRONT 3	BG200-R006
+ LH SEQ WRITE BUS BIT FRONT 4	BG200-R007
+ LH SEQ WRITE BUS BIT FRONT 5	BG200-R008
+ LH SEQ WRITE BUS BIT FRONT 6	BG200-R009
+ LH SEQ WRITE BUS BIT FRONT 7	BG200-R010
+ LH SEQ WRITE BUS BIT REAR P	BM200-R011
+ LH SEQ WRITE BUS BIT REAR 0	BM200-R003
+ LH SEQ WRITE BUS BIT REAR 1	BM200-R004
+ LH SEQ WRITE BUS BIT REAR 2	BM200-R005
+ LH SEQ WRITE BUS BIT REAR 3	BM200-R006
+ LH SEQ WRITE BUS BIT REAR 4	BM200-R007
+ LH SEQ WRITE BUS BIT REAR 5	BM200-R008
+ LH SEQ WRITE BUS BIT REAR 6	BM200-R009
+ LH SEQ WRITE BUS BIT REAR 7	BM200-R010
+ LH SERVO CTRL CHECK FRONT	BG200-R027
+ LH SERVO CTRL CHECK REAR	BM200-R027
+ LH SERVO GUARD 1 FRONT	BD200-L032
+ LH SERVO GUARD 1 REAR	BT200-L032
+ LH SERVO PAD CLOCK FRONT	BD200-R035
+ LH SERVO PAD CLOCK REAR	BT200-R035
+ LH SET HEAD ARM ADR REG FRONT	BG200-R030
+ LH SET HEAD ARM ADR REG REAR	BM210-R052
+ LH SVO CLOCK CABLE ERR FRONT	BD200-R039
+ LH SVO CLOCK CABLE ERR REAR	BP200-L035
+ LH TRACK FOLLOW FRONT	BD200-L022
+ LH TRACK FOLLOW REAR	BM200-R057
+ LH VCM CURRENT SIG REAR	BT200-L027
+ LH VCO CONTROL TP FRONT	BD200-R033
+ LH VCO CONTROL TP REAR	BT200-R033
+ LH VGA GAIN INCREASE TP FRONT	BD200-R011
+ LH VGA GAIN INCREASE TP REAR	BT200-R011
+ LH 3.17V PES GAIN REF TP FRONT	BD200-R030
+ LH 3.17V PES GAIN TP REAR	BT200-R030
+ NO AIR FRONT	BH200-L043
+ NO AIR REAR	BN200-L043
+ READ DATA ARM 1 LF	HC1A1-R017
+ READ DATA ARM 1 LR	HC3A1-R017
+ READ DATA ARM 1 RF	HC2A1-R017
+ READ DATA ARM 1 RR	HC4A1-R017
+ READ DATA ARM 2 LF	HC1A1-R025
+ READ DATA ARM 2 LR	HC3A1-R025
+ READ DATA ARM 2 RF	HC2A1-R025
+ READ DATA ARM 2 RR	HC4A1-R025
+ READ DATA ARM 3 LF	HC1A1-R032
+ READ DATA ARM 3 LR	HC3A1-R032
+ READ DATA ARM 3 RF	HC2A1-R032
+ READ DATA ARM 3 RR	HC4A1-R032
+ READ DATA ARM 4 LF	HC1A1-R037
+ READ DATA ARM 4 LR	HC3A1-R037
+ READ DATA ARM 4 RF	HC2A1-R037
+ READ DATA ARM 4 RR	HC4A1-R037
+ READY LED DEVICE 0	BH210-R025
+ READY LED DEVICE 1	BK210-R026
+ READY LED DEVICE 2	BN210-R026
+ READY LED DEVICE 3	BQ210-R025
+ RH |PESP| LESS THAN .44V REAR	BU200-R016
+ RH AGC ACTIVE FRONT	BE200-R012
+ RH AGC ACTIVE REAR	BM200-L018
+ RH AGC MULT TP REAR	BU200-R040
+ RH AM SEARCH FRONT	BJ210-R025
+ RH AM SEARCH REAR	BP210-R025
+ RH BRAKE CONT PICKED OUT FRONT	BK200-L050
+ RH BRAKE CONT PICKED OUT REAR	BQ200-L050
+ RH BUSY W/O PIP FRONT	BK200-R037
+ RH BUSY W/O PIP REAR	BQ200-R037

ENGLISH LINE NAME	PGEID-LN #
+ RH CABLE SWITCHED REAR	HPA40-L011
+ RH CDP DATA BUS PWR BIT FRNT P	BJ200-L011
+ RH CDP DATA BUS PWR BIT FRNT 0	BJ200-L003
+ RH CDP DATA BUS PWR BIT FRNT 1	BJ200-L004
+ RH CDP DATA BUS PWR BIT FRNT 2	BJ200-L005
+ RH CDP DATA BUS PWR BIT FRNT 3	BJ200-L006
+ RH CDP DATA BUS PWR BIT FRNT 4	BJ200-L007
+ RH CDP DATA BUS PWR BIT FRNT 5	BJ200-L008
+ RH CDP DATA BUS PWR BIT FRNT 6	BJ200-L009
+ RH CDP DATA BUS PWR BIT FRNT 7	BJ200-L010
+ RH CDP DATA BUS PWR BIT REAR P	BP200-L011
+ RH CDP DATA BUS PWR BIT REAR 0	BP200-L003
+ RH CDP DATA BUS PWR BIT REAR 1	BP200-L004
+ RH CDP DATA BUS PWR BIT REAR 2	BP200-L005
+ RH CDP DATA BUS PWR BIT REAR 3	BP200-L006
+ RH CDP DATA BUS PWR BIT REAR 4	BP200-L007
+ RH CDP DATA BUS PWR BIT REAR 5	BP200-L008
+ RH CDP DATA BUS PWR BIT REAR 6	BP200-L009
+ RH CDP DATA BUS PWR BIT REAR 7	BP200-L010
+ RH CHECK 2 FRONT	BJ200-L032
+ RH CHECK 2 REAR	BP200-L032
+ RH CHIP DISABLE FRONT	BL200-L056
+ RH CHIP DISABLE REAR	BR200-L057
+ RH CHK POINT LOG CHECK FRONT	BK200-L019
+ RH CHK POINT LOG CHECK REAR	BQ200-L019
+ RH COMMAND FRONT	BK200-R034
+ RH COMMAND REAR	BQ200-R034
+ RH COMPRESS FRONT	BE200-L036
+ RH COMPRESS REAR	BR200-R046
+ RH CYLINDER PULSE FRONT	BL200-R056
+ RH CYLINDER PULSE REAR	BR200-R055
+ RH D CLOCK POWERED FRONT	BL210-R051
+ RH D CLOCK POWERED REAR	BR210-R051
+ RH DATA HEAD SIGNAL TP FRONT	HC2A1-R015
+ RH DATA HEAD SIGNAL TP REAR	HC4A1-R015
+ RH DIF COUNT 1 FRONT	BE200-L009
+ RH DIF COUNT 1 REAR	BR200-R043
+ RH DIF COUNT 128 FRONT	BE200-L016
+ RH DIF COUNT 128 REAR	BR200-R036
+ RH DIF COUNT 16 FRONT	BE200-L013
+ RH DIF COUNT 16 REAR	BR200-R039
+ RH DIF COUNT 2 FRONT	BE200-L010
+ RH DIF COUNT 2 REAR	BR200-R042
+ RH DIF COUNT 256 FRONT	BE200-L017
+ RH DIF COUNT 256 REAR	BR200-R035
+ RH DIF COUNT 32 FRONT	BE200-L014
+ RH DIF COUNT 32 REAR	BR200-R038
+ RH DIF COUNT 4 FRONT	BE200-L011
+ RH DIF COUNT 4 REAR	BR200-R041
+ RH DIF COUNT 64 FRONT	BE200-L015
+ RH DIF COUNT 64 REAR	BR200-R037
+ RH DIF COUNT 8 FRONT	BE200-L012
+ RH DIF COUNT 8 REAR	BR200-R040
+ RH DISABLE MEMORY OUTPUT FRONT	BL200-L055
+ RH DISABLE MEMORY OUTPUT REAR	BR200-L056
+ RH DRIVE OWE INTERRUPT REAR	BQ210-R027
+ RH DRIVE OWE INTERUPT FRONT	BK210-R028
+ RH EVERGREEN ID BIT FRONT	BE200-R045
+ RH EVERGREEN ID BIT REAR	BQ210-L043
+ RH FLAT CABLE CHECK FRONT	BJ200-R015
+ RH FLAT CABLE CHECK REAR	BP200-R015
+ RH FLAT CABLE CHK RETURN FRONT	BJ200-L021
+ RH FLAT CABLE CHK RETURN REAR	BP200-L021
+ RH GATE CHK POINT REG FRONT	BK200-R031
+ RH GATE CHK POINT REG REAR	BQ200-R031
+ RH GATE DIF LOW REG FRONT	BK200-R029
+ RH GATE DIF LOW REG REAR	BQ200-R029

ENGLISH LINE NAME	PGEID-LN #
+ RH GATE HEAD ADDR REG FRONT	BJ210-L016
+ RH GATE HEAD ADDR REG REAR	BP210-L017
+ RH GATE R-W STATUS 1 FRONT	BJ210-L012
+ RH GATE R-W STATUS 1 REAR	BP210-L013
+ RH GATE R-W STATUS 2 FRONT	BJ210-L013
+ RH GATE R-W STATUS 2 REAR	BP210-L014
+ RH GATE R-W STATUS 3 FRONT	BJ210-L014
+ RH GATE R-W STATUS 3 REAR	BP210-L015
+ RH GATE R-W STATUS 4 FRONT	BJ210-L015
+ RH GATE R-W STATUS 4 REAR	BP210-L016
+ RH GATE TARGET REG FRONT	BK200-R030
+ RH GATE TARGET REG REAR	BQ200-R030
+ RH GATED R/W CHECK FRONT	BJ210-R029
+ RH GATED R/W CHECK REAR	BP210-R029
+ RH HL SERVO TP FRONT	BE200-R009
+ RH HL SERVO TP REAR	BU200-R009
+ RH INDEX 1 FRONT	BJ200-L017
+ RH INDEX 1 REAR	BP200-L017
+ RH INDEX 2 FRONT	BJ200-L018
+ RH INDEX 2 REAR	BP200-L018
+ RH INHIBIT POWER AMP FRONT	BE200-R004
+ RH INHIBIT POWER AMP REAR	BU200-R004
+ RH INNER GUARD BAND FRONT	BL200-R065
+ RH INNER GUARD BAND REAR	BR200-R064
+ RH ISAR 1 TP FRONT	BL210-R050
+ RH ISAR 1 TP REAR	BR210-R050
+ RH ISAR 1024 TP FRONT	BL210-R040
+ RH ISAR 1024 TP REAR	BR210-R040
+ RH ISAR 128 TP FRONT	BL210-R043
+ RH ISAR 128 TP REAR	BR210-R043
+ RH ISAR 16 TP FRONT	BL210-R046
+ RH ISAR 16 TP REAR	BR210-R046
+ RH ISAR 2 TP FRONT	BL210-R049
+ RH ISAR 2 TP REAR	BR210-R049
+ RH ISAR 2K FRONT	BL210-R052
+ RH ISAR 2K REAR	BR210-R054
+ RH ISAR 256 TP FRONT	BL210-R042
+ RH ISAR 256 TP REAR	BR210-R042
+ RH ISAR 32 TP FRONT	BL210-R045
+ RH ISAR 32 TP REAR	BR210-R045
+ RH ISAR 4 TP FRONT	BL210-R048
+ RH ISAR 4 TP REAR	BR210-R048
+ RH ISAR 4K FRONT	BL210-R053
+ RH ISAR 4K REAR	BR210-R055
+ RH ISAR 512 TP FRONT	BL210-R041
+ RH ISAR 512 TP REAR	BR210-R041
+ RH ISAR 64 TP FRONT	BL210-R044
+ RH ISAR 64 TP REAR	BR210-R044
+ RH ISAR 8 TP FRONT	BL210-R047
+ RH ISAR 8 TP REAR	BR210-R047
+ RH LOAD POWER CTRL REG FRONT	BH210-L038
+ RH LOAD POWER CTRL REG REAR	BN210-L038
+ RH LOAD SEQ STATUS REG FRONT	BK200-L027
+ RH LOAD SEQ STATUS REG REAR	BQ200-L027
+ RH LOW LEVEL SERVO FRONT	BE200-L030
+ RH LOW LEVEL SERVO REAR	BU200-L030
+ RH MEMORY BIT 0 FRONT	BL210-R022
+ RH MEMORY BIT 0 REAR	BR210-R022
+ RH MEMORY BIT 1 FRONT	BL210-R023
+ RH MEMORY BIT 1 REAR	BR210-R023
+ RH MEMORY BIT 10 FRONT	BL210-R032
+ RH MEMORY BIT 10 REAR	BR210-R032
+ RH MEMORY BIT 11 FRONT	BL210-R033
+ RH MEMORY BIT 11 REAR	BR210-R033
+ RH MEMORY BIT 12 FRONT	BL210-R034
+ RH MEMORY BIT 12 REAR	BR210-R034
+ RH MEMORY BIT 13 FRONT	BL210-R035

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ENGLISH LINE NAME	PGEID-LN #
+ RH MEMORY BIT 13 REAR	BR210-R035
+ RH MEMORY BIT 14 FRONT	BL210-R036
+ RH MEMORY BIT 14 REAR	BR210-R036
+ RH MEMORY BIT 15 FRONT	BL210-R037
+ RH MEMORY BIT 15 REAR	BR210-R037
+ RH MEMORY BIT 16 FRONT	BL210-R038
+ RH MEMORY BIT 16 REAR	BR210-R038
+ RH MEMORY BIT 17 FRONT	BL210-R039
+ RH MEMORY BIT 17 REAR	BR210-R039
+ RH MEMORY BIT 2 FRONT	BL210-R024
+ RH MEMORY BIT 2 REAR	BR210-R024
+ RH MEMORY BIT 3 FRONT	BL210-R025
+ RH MEMORY BIT 3 REAR	BR210-R025
+ RH MEMORY BIT 4 FRONT	BL210-R026
+ RH MEMORY BIT 4 REAR	BR210-R026
+ RH MEMORY BIT 5 FRONT	BL210-R027
+ RH MEMORY BIT 5 REAR	BR210-R027
+ RH MEMORY BIT 6 FRONT	BL210-R028
+ RH MEMORY BIT 6 REAR	BR210-R028
+ RH MEMORY BIT 7 FRONT	BL210-R029
+ RH MEMORY BIT 7 REAR	BR210-R029
+ RH MEMORY BIT 8 FRONT	BL210-R030
+ RH MEMORY BIT 8 REAR	BR210-R030
+ RH MEMORY BIT 9 FRONT	BL210-R031
+ RH MEMORY BIT 9 REAR	BR210-R031
+ RH MOTOR CONT PICKED OUT FRONT	BK200-L049
+ RH MOTOR CONT PICKED OUT REAR	BQ200-L049
+ RH MOTOR CONTROL FRONT	BK200-R040
+ RH MOTOR CONTROL REAR	BQ200-R040
+ RH MULT TP FRONT	BE200-R042
+ RH OUTER GUARD BAND FRONT	BL200-R066
+ RH OUTER GUARD BAND REAR	BR200-R065
+ RH PARM TRANSFER EN FRONT	BK210-R027
+ RH PARM TRANSFER EN REAR	BQ210-R026
+ RH PARM TRANSFER FRONT	BK200-R036
+ RH PARM TRANSFER REAR	BQ200-R036
+ RH PES INTEGRATE FRONT	BE200-L019
+ RH PES INTEGRATE REAR	BR200-R053
+ RH PES LOW TP FRONT	BE200-R036
+ RH PES LOW TP REAR	BU200-R036
+ RH PES P FRONT	BE200-L003
+ RH PES P REAR	BU200-L003
+ RH PES Q FRONT	BE200-L004
+ RH PES Q REAR	BU200-L004
+ RH POSITION ERROR SIG A FRONT	BE200-R005
+ RH POSITION ERROR SIG A REAR	BR200-L042
+ RH POSITION ERROR SIG B FRONT	BE200-R003
+ RH POSITION ERROR SIG B REAR	BR200-L043
+ RH PROGRAM MEMORY REAR	BR200-L058
+ RH PULSE RATE FRONT	BG200-L022
+ RH PULSE RATE REAR	BM200-L022
+ RH R-W ACTIVE FRONT	BJ200-R005
+ RH R-W ACTIVE REAR	BP200-R005
+ RH R-W CHECK FRONT	BJ200-R008
+ RH R-W CHECK REAR	BP200-R008
+ RH R-W MODE SEL FRONT	BJ210-L011
+ RH R-W MODE SEL REAR	BP210-L012
+ RH RD AMP UNSQ LATCHED FRONT	BJ210-R027
+ RH RD AMP UNSQ LATCHED REAR	BP210-R027
+ RH RD AMP UNSQUELCH FRONT	BJ210-R035
+ RH RD AMP UNSQUELCH REAR	BP210-R033
+ RH READY LED TERM FRONT	BK210-R019
+ RH READY LED TERM REAR	BQ210-R019
+ RH RECORD READY IRPT FRONT	BK200-L040
+ RH RECORD READY IRPT REAR	BQ200-L040
+ RH RPS CHECK FRONT	BK200-L022
+ RH RPS CHECK REAR	BQ200-L022
+ RH RPS CLOCK T-0 (L1) FRONT	BJ200-L033
+ RH RPS CLOCK T-0 (L1) REAR	BP200-L033
+ RH RPS CLOCK 3 FRONT	BE200-R017
+ RH RPS CLOCK 3 REAR	BR200-L048
+ RH RPS CLOCK 4 FRONT	BE200-R020
+ RH RPS CLOCK 4 REAR	BR200-L049
+ RH SAFETY INHIB TP FRONT	BJ210-R031
+ RH SEEK INCOMPLETE FRONT	BK200-R038
+ RH SEEK INCOMPLETE REAR	BQ200-R038
+ RH SEGMENT BOUNDARY FRONT	BJ200-L019
+ RH SEGMENT BOUNDARY REAR	BP200-L019
+ RH SEL A1/A2 FRONT	BJ210-L017
+ RH SEL A1/A2 REAR	BP210-L018
+ RH SENSE SOFT START LT FRONT	BK210-R024
+ RH SENSE SOFT START LT REAR	BQ210-R023
+ RH SEQ CHECK FRONT	BK200-L020
+ RH SEQ CHECK REAR	BQ200-L020
+ RH SEQ MOVE FORMAT FRONT	BK200-L025
+ RH SEQ MOVE FORMAT REAR	BQ200-L025
+ RH SEQ STATUS STROBE FRONT	BK200-L026
+ RH SEQ STATUS STROBE REAR	BQ200-L026
+ RH SEQ WRITE BUS BIT FRONT P	BK210-L037
+ RH SEQ WRITE BUS BIT FRONT 0	BK210-L029
+ RH SEQ WRITE BUS BIT FRONT 1	BK210-L030
+ RH SEQ WRITE BUS BIT FRONT 2	BH210-L039
+ RH SEQ WRITE BUS BIT FRONT 3	BK210-L032
+ RH SEQ WRITE BUS BIT FRONT 4	BK210-L033
+ RH SEQ WRITE BUS BIT FRONT 5	BK210-L034
+ RH SEQ WRITE BUS BIT FRONT 6	BK210-L035
+ RH SEQ WRITE BUS BIT FRONT 7	BK210-L036
+ RH SEQ WRITE BUS BIT REAR P	BQ210-L037
+ RH SEQ WRITE BUS BIT REAR 0	BQ210-L029
+ RH SEQ WRITE BUS BIT REAR 1	BQ210-L030
+ RH SEQ WRITE BUS BIT REAR 2	BN210-L039
+ RH SEQ WRITE BUS BIT REAR 3	BQ210-L032
+ RH SEQ WRITE BUS BIT REAR 4	BQ210-L033
+ RH SEQ WRITE BUS BIT REAR 5	BQ210-L034
+ RH SEQ WRITE BUS BIT REAR 6	BQ210-L035
+ RH SEQ WRITE BUS BIT REAR 7	BQ210-L036
+ RH SERVO CTRL CHECK FRONT	BK200-L021
+ RH SERVO CTRL CHECK REAR	BQ200-L021
+ RH SERVO GUARD 1 FRONT	BE200-L032
+ RH SERVO GUARD 1 REAR	BU200-L032
+ RH SERVO PAD CLOCK FRONT	BE200-R035
+ RH SERVO PAD CLOCK REAR	BU200-R035
+ RH SET HEAD ARM ADR REG FRONT	BJ200-L016
+ RH SET HEAD ARM ADR REG REAR	BP200-L016
+ RH SVO CLOCK CABLE ERR FRONT	BE200-R039
+ RH SVO CLOCK CABLE ERR REAR	BP200-L028
+ RH TRACK FOLLOW FRONT	BE200-L022
+ RH TRACK FOLLOW REAR	BR200-R057
+ RH VCO CONTROL TP FRONT	BE200-R033
+ RH VCO CONTROL TP REAR	BU200-R033
+ RH VGA GAIN INCREASE TP FRONT	BE200-R011
+ RH VGA GAIN INCREASE TP REAR	BU200-R011
+ RH 3.17V PES GAIN REF REAR	BU200-R030
+ RH 3.17V PES GAIN REF TP FRONT	BE200-R030
+ RH 5V COMMON POR REAR	BN200-L041
+ SENSE DCA RELAY OFF FRONT	BH200-L045
+ SENSE DCA RELAY OFF REAR	BN200-L045
+ SENSE MOTOR CONT OFF FRONT	BH200-L044
+ SENSE MOTOR CONT OFF REAR	BN200-L044
+ SERVO DATA ARM 2 LF	HC1A1-R024
+ SERVO DATA ARM 2 LR	HC3A1-R024
+ SERVO DATA ARM 2 RF	HC2A1-R024
+ SERVO DATA ARM 2 RR	HC4A1-R024
+ WRITE DATA ARM 1 LF	HC1A1-L041
+ WRITE DATA ARM 1 LR	HC3A1-L041
+ WRITE DATA ARM 1 RF	HC2A1-L041
+ WRITE DATA ARM 1 RR	HC4A1-L041
+ WRITE DATA ARM 2 LF	HC1A1-L050
+ WRITE DATA ARM 2 LR	HC3A1-L050
+ WRITE DATA ARM 2 RF	HC2A1-L050
+ WRITE DATA ARM 2 RR	HC4A1-L050
+ WRITE DATA ARM 3 LF	HC1A1-L059
+ WRITE DATA ARM 3 LR	HC3A1-L059
+ WRITE DATA ARM 3 RF	HC2A1-L059
+ WRITE DATA ARM 3 RR	HC4A1-L059
+ WRITE DATA ARM 4 LF	HC1A1-L066
+ WRITE DATA ARM 4 LR	HC3A1-L066
+ WRITE DATA ARM 4 RF	HC2A1-L066
+ WRITE DATA ARM 4 RR	HC4A1-L066
+ 15V LEFT R-W CHANNEL BD FRONT	HC1A1-L069
+ 15V LEFT R-W CHANNEL BD REAR	HC3A1-L069
+ 15V LH SVO ANALOG FRONT	BD200-L040
+ 15V LH SVO ANALOG REAR	BT200-L040
+ 15V RH SVO ANALOG FRONT	BE200-L040
+ 15V RH SVO ANALOG REAR	BU200-L040
+ 15V RIGHT R-W CHANNEL BD FRONT	HC2A1-L069
+ 15V RIGHT R-W CHANNEL BD REAR	HC4A1-L069
+ 36V LH POWER AMP FRONT	HPA10-L006
+ 36V LH POWER AMP REAR	HPA30-L006
+ 36V LH RETURN POWER AMP FRONT	HPA10-L007
+ 36V LH RETURN POWER AMP REAR	HPA30-L007
+ 36V RH POWER AMP FRONT	HPA20-L006
+ 36V RH POWER AMP REAR	HPA40-L006
+ 36V RH RETURN POWER AMP FRONT	HPA20-L007
+ 36V RH RETURN POWER AMP REAR	HPA40-L007
+ 5/24V LH LED FRONT	BH210-R023
+ 5/24V LH LED REAR	BN210-R021
+ 5/24V LH PORT FRONT	BH210-L042
+ 5/24V LH PORT REAR	BN210-L042
+ 5/24V RH LED FRONT	BK210-R021
+ 5/24V RH LED REAR	BQ210-R021
+ 5/24V RH PORT FRONT	BK210-L042
+ 5/24V RH PORT REAR	BQ210-L042
+ 5V LEFT R-W CHANNEL BD FRONT	HC1A1-L028
+ 5V LEFT R-W CHANNEL BD REAR	HC3A1-L028
+ 5V LH COMMON LED FRONT	BH210-R022
+ 5V LH COMMON LED REAR	BN210-R020
+ 5V LH LED FRONT	BH210-R024
+ 5V LH LED REAR	BN210-R022
+ 5V LH SERVO, PORT, & SEQ FRONT	BH210-L040
+ 5V LH SERVO, PORT, & SEQ REAR	BN210-L040
+ 5V R-W CTRL, PT2 FRONT	BH210-L041
+ 5V R-W CTRL, PT2 REAR	BN210-L041
+ 5V RH COMMON LED FRONT	BK210-R020
+ 5V RH COMMON LED REAR	BQ210-R020
+ 5V RH LED FRONT	BK210-R022
+ 5V RH LED REAR	BQ210-R022
+ 5V RH SERVO, PORT, & SEQ FRONT	BK210-L040
+ 5V RH SERVO, PORT, & SEQ REAR	BQ210-L040
+ 5V RIGHT R-W CHANNEL BD FRONT	HC2A1-L028
+ 5V RIGHT R-W CHANNEL BD REAR	HC4A1-L028
- AE SEL 4 ARM 4 LF	HC1A1-L068
- AE SEL 4 ARM 4 LR	HC3A1-L068
- AE SEL 4 ARM 4 RF	HC2A1-L068
- AE SEL 4 ARM 4 RR	HC4A1-L068
- AE SELECT 1 ARM 1 LF	HC1A1-L043
- AE SELECT 1 ARM 1 LR	HC3A1-L043
- AE SELECT 1 ARM 1 RF	HC2A1-L043
- AE SELECT 1 ARM 1 RR	HC4A1-L043
- AE SELECT 2 ARM 2 LF	HC1A1-L054
- AE SELECT 2 ARM 2 LR	HC3A1-L054
- AE SELECT 2 ARM 2 RF	HC2A1-L054
- AE SELECT 2 ARM 2 RR	HC4A1-L054
- AE SELECT 3 ARM 3 LF	HC1A1-L061
- AE SELECT 3 ARM 3 LR	HC3A1-L061
- AE SELECT 3 ARM 3 RF	HC2A1-L061
- AE SELECT 3 ARM 3 RR	HC4A1-L061
- A1 R-W DATA FROM/TO 0 FRONT	HC1A1-L020
- A1 R-W DATA FROM/TO 0 REAR	HC3A1-L020
- A1 SERVO VCO FRONT	BD200-R024
- A1 SERVO VCO REAR	BT200-R024
- A2 R-W DATA FROM/TO 0 FRONT	HC1A1-L022
- A2 R-W DATA FROM/TO 0 REAR	HC3A1-L022
- A2 SERVO VCO FRONT	BD200-R038
- A2 SERVO VCO REAR	BT200-R038
- CLOCK CHECK HOLD FRONT	BG200-L040
- CLOCK CHECK HOLD REAR	BM200-L040
- CONTINUED FROM PAGE BG200	BG210-R003
- CONTINUED FROM PAGE BH200	BH210-L003
- CONTINUED FROM PAGE BJ200	BJ210-L003
- CONTINUED FROM PAGE BK200	BK210-L003
- CONTINUED FROM PAGE BL200	BL210-R003
- CONTINUED FROM PAGE BM200	BM210-R003
- CONTINUED FROM PAGE BN200	BN210-L003
- CONTINUED FROM PAGE BP200	BP210-L003
- CONTINUED FROM PAGE BQ200	BQ210-L003
- CONTINUED FROM PAGE BR200	BR210-R003
- CONTINUED ON PAGE BG210	BG200-R069
- CONTINUED ON PAGE BH210	BH200-L069
- CONTINUED ON PAGE BJ210	BJ200-L068
- CONTINUED ON PAGE BK210	BK200-L069
- CONTINUED ON PAGE BL210	BL200-R069
- CONTINUED ON PAGE BM210	BM200-R068
- CONTINUED ON PAGE BN210	BN200-L069
- CONTINUED ON PAGE BP210	BP200-L068
- CONTINUED ON PAGE BQ210	BQ200-L069
- CONTINUED ON PAGE BR210	BR200-R068
- DISABLE SWITCH DEVICE 0	BG200-L024
- DISABLE SWITCH DEVICE 1	BL200-L024
- DISABLE SWITCH DEVICE 2	BM200-L024
- DISABLE SWITCH DEVICE 3	BR200-L024
- DRIVE CONT RELAY FRONT	BH200-R063
- DRIVE CONT RELAY REAR	BN200-R063
- DRIVE MOTOR RUN FRONT	BH200-R043
- DRIVE MOTOR RUN REAR	BN200-R043
- DRIVE SWITCH OFF FRONT	BH200-L046
- DRIVE SWITCH OFF REAR	BN200-L046
- DRIVE SWITCH ON FRONT	BH200-L047
- DRIVE SWITCH ON REAR	BN200-L047
- ERROR 1 ARM 1 LF	HC1A1-R019
- ERROR 1 ARM 1 LR	HC3A1-R019
- ERROR 1 ARM 1 RF	HC2A1-R019
- ERROR 1 ARM 1 RR	HC4A1-R019
- ERROR 1 ARM 2 LF	HC1A1-R027
- ERROR 1 ARM 2 LR	HC3A1-R027
- ERROR 1 ARM 2 RF	HC2A1-R027
- ERROR 1 ARM 2 RR	HC4A1-R027
- ERROR 1 ARM 3 LF	HC1A1-R034
- ERROR 1 ARM 3 LR	HC3A1-R034
- ERROR 1 ARM 3 RF	HC2A1-R034
- ERROR 1 ARM 3 RR	HC4A1-R034
- ERROR 1 ARM 4 LF	HC1A1-R039
- ERROR 1 ARM 4 LR	HC3A1-R039
- ERROR 1 ARM 4 RF	HC2A1-R039
- ERROR 1 ARM 4 RR	HC4A1-R039
- ERROR 2 ARM 1 LF	HC1A1-R021
- ERROR 2 ARM 1 LR	HC3A1-R021
- ERROR 2 ARM 1 RF	HC2A1-R021

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ENGLISH LINE NAME	PGEID-LN #
- ERROR 2 ARM 1 RR	HC4A1-R021
- ERROR 2 ARM 2 LF	HC1A1-R030
- ERROR 2 ARM 2 LR	HC3A1-R030
- ERROR 2 ARM 2 RF	HC2A1-R030
- ERROR 2 ARM 2 RR	HC4A1-R030
- ERROR 2 ARM 3 LF	HC1A1-R036
- ERROR 2 ARM 3 LR	HC3A1-R036
- ERROR 2 ARM 3 RF	HC2A1-R036
- ERROR 2 ARM 3 RR	HC4A1-R036
- ERROR 2 ARM 4 LF	HC1A1-R041
- ERROR 2 ARM 4 LR	HC3A1-R041
- ERROR 2 ARM 4 RF	HC2A1-R041
- ERROR 2 ARM 4 RR	HC4A1-R041
- LH + 5V PWR ON RESET OUT FRONT	BH200-L051
- LH + 5V PWR ON RESET OUT REAR	BN200-L051
- LH AGC MULT FRONT	BD200-R041
- LH AGC MULT TP REAR	BT200-R041
- LH CHK POINT/TAR/DIF FRONT P	BG200-R020
- LH CHK POINT/TAR/DIF FRONT 0	BG200-R012
- LH CHK POINT/TAR/DIF FRONT 1	BG200-R013
- LH CHK POINT/TAR/DIF FRONT 2	BG200-R014
- LH CHK POINT/TAR/DIF FRONT 3	BG200-R015
- LH CHK POINT/TAR/DIF FRONT 4	BG200-R016
- LH CHK POINT/TAR/DIF FRONT 5	BG200-R017
- LH CHK POINT/TAR/DIF FRONT 6	BG200-R018
- LH CHK POINT/TAR/DIF FRONT 7	BG200-R019
- LH CHK POINT/TAR/DIF REAR P	BM200-R020
- LH CHK POINT/TAR/DIF REAR 0	BM200-R012
- LH CHK POINT/TAR/DIF REAR 1	BM200-R013
- LH CHK POINT/TAR/DIF REAR 2	BM200-R014
- LH CHK POINT/TAR/DIF REAR 3	BM200-R015
- LH CHK POINT/TAR/DIF REAR 4	BM200-R016
- LH CHK POINT/TAR/DIF REAR 5	BM200-R017
- LH CHK POINT/TAR/DIF REAR 6	BM200-R018
- LH CHK POINT/TAR/DIF REAR 7	BM200-R019
- LH CLOCK CHECK STATUS FRONT	BJ210-R023
- LH CLOCK PRWSE CHECK TP FRONT	BJ210-R024
- LH COARSE TRACK FRONT	BG200-R059
- LH COARSE TRACK REAR	BM200-R058
- LH CYLINDER PULSE FRONT	BD200-L025
- LH CYLINDER PULSE REAR	BM200-R054
- LH DATA HEAD SIGNAL TP FRONT	HC1A1-R016
- LH DATA HEAD SIGNAL TP REAR	HC3A1-R016
- LH DEGATE CHECK LATCH FRONT	BJ200-L067
- LH DEGATE CHECK LATCH REAR	BP200-R053
- LH DEV SELECTED FRONT	BG200-L013
- LH DEV SELECTED REAR	BM200-L013
- LH DEVICE CHECK 2 RESET FRONT	BG200-L016
- LH DEVICE CHECK 2 RESET REAR	BM200-L016
- LH DRIVE CHECK INHIBIT FRONT	BJ200-R042
- LH DRIVE CHECK INHIBIT REAR	BP200-R042
- LH DRIVE CHECK RESET FRONT	BJ200-R043
- LH DRIVE CHECK RESET REAR	BP200-R043
- LH DRIVE PWR SWITCH OFF FRONT	BG200-L021
- LH DRIVE PWR SWITCH OFF REAR	BM200-L021
- LH DRIVE STATUS BIT P FRONT	BJ200-L055
- LH DRIVE STATUS BIT P REAR	BP200-L057
- LH DRIVE STATUS BIT 0 FRONT	BJ200-L047
- LH DRIVE STATUS BIT 0 REAR	BP200-L049
- LH DRIVE STATUS BIT 1 FRONT	BJ200-L048
- LH DRIVE STATUS BIT 1 REAR	BP200-L050
- LH DRIVE STATUS BIT 2 FRONT	BJ200-L049
- LH DRIVE STATUS BIT 2 REAR	BP200-L051
- LH DRIVE STATUS BIT 3 FRONT	BJ200-L050
- LH DRIVE STATUS BIT 3 REAR	BP200-L052
- LH DRIVE STATUS BIT 4 FRONT	BJ200-L051
- LH DRIVE STATUS BIT 4 REAR	BP200-L053

ENGLISH LINE NAME	PGEID-LN #
- LH DRIVE STATUS BIT 5 FRONT	BJ200-L052
- LH DRIVE STATUS BIT 5 REAR	BP200-L054
- LH DRIVE STATUS BIT 6 FRONT	BJ200-L053
- LH DRIVE STATUS BIT 6 REAR	BP200-L055
- LH DRIVE STATUS BIT 7 FRONT	BJ200-L054
- LH DRIVE STATUS BIT 7 REAR	BP200-L056
- LH ENABLE NON AGC OUTPUT FRONT	HC1A1-R013
- LH ENABLE NON AGC OUTPUT REAR	HC3A1-R013
- LH FORWARD FRONT	BG200-R049
- LH FORWARD REAR	BM200-R048
- LH GAP FRONT	BD200-R018
- LH GAP REAR	BM200-L050
- LH GATE DIFFERENCE TP FRONT	BG200-R053
- LH GATE DIFFERENCE TP REAR	BM200-R052
- LH GATE SERVO A1 CLK ON FRONT	BD200-L034
- LH GATE SERVO A1 CLK ON REAR	BP200-R056
- LH GATE SERVO A2 CLK ON FRONT	BD200-L035
- LH GATE SERVO A2 CLK ON REAR	BP200-R057
- LH GATE SERVO PAD CLOCK FRONT	BD200-L033
- LH GATE SERVO PAD CLOCK REAR	BP200-R045
- LH HAR BIT P FRONT	BJ200-R050
- LH HAR BIT P REAR	BP200-R050
- LH HAR BIT 4 FRONT	BJ200-R046
- LH HAR BIT 4 REAR	BP200-R046
- LH HAR BIT 5 FRONT	BJ200-R047
- LH HAR BIT 5 REAR	BP200-R047
- LH HAR BIT 6 FRONT	BJ200-R048
- LH HAR BIT 6 REAR	BP200-R048
- LH HAR BIT 7 FRONT	BJ200-R049
- LH HAR BIT 7 REAR	BP200-R049
- LH HL SERVO TP FRONT	BD200-R010
- LH HL SERVO TP REAR	BT200-R010
- LH INDEX FRONT	BH210-L014
- LH INDEX REAR	BN210-L014
- LH INHIBIT FRONT	BD200-L024
- LH INHIBIT REAR	BM200-R044
- LH LOAD REG 3 FRONT	BG200-R031
- LH LOAD REG 3 REAR	BM200-R030
- LH LOAD SEQ STATUS REG FRONT	BG200-R023
- LH LOW LEVEL SERVO FRONT	BD200-L031
- LH LOW LEVEL SERVO REAR	BT200-L031
- LH MOD D FRONT	BG200-L059
- LH MOD D REAR	BM200-L059
- LH MULTIPLEXER GATE FRONT	BJ200-R054
- LH MULTIPLEXER GATE REAR	BP200-R054
- LH OFFSET ACTIVE FRONT	BD200-L020
- LH OFFSET ACTIVE REAR	BM200-R051
- LH PAD DATA SELECT FRONT	BJ200-R044
- LH PAD DATA SELECT REAR	BP200-R044
- LH PADDING MODE FRONT	BH210-L018
- LH PADDING MODE REAR	BN210-L018
- LH PARK FRONT	BD200-L028
- LH PARK REAR	BM200-R045
- LH PARK SIG TP FRONT	BD200-R045
- LH PES GAIN ERROR FRONT	BD200-R046
- LH PES GAIN ERROR REAR	BT200-R043
- LH PES REF CORRECTION FRONT	BD200-R013
- LH PES REF CORRECTION REAR	BT200-R013
- LH PIP SYNC FRONT	BH210-L012
- LH PIP SYNC REAR	BN210-L012
- LH POR SYNC TO CLOCK FRONT	BG200-L054
- LH POR SYNC TO CLOCK REAR	BM200-L054
- LH PORT FENCED FRONT	BG200-L020
- LH PORT FENCED REAR	BM200-L020
- LH POWER AMP DRIVE FRONT	HPA10-L005
- LH POWER AMP DRIVE REAR	HPA30-L005
- LH POWER CHECK 2 FRONT	BH200-R056

ENGLISH LINE NAME	PGEID-LN #
- LH POWER CLOCK 2 REAR	BN200-R056
- LH POWER ON RESET OUT FRONT	BH200-L042
- LH POWER ON RESET OUT REAR	BN200-L042
- LH POWER ON RESET POWER FRONT	BD200-L039
- LH POWER ON RESET POWER REAR	BM200-L015
- LH POWER ON RESET SWITCH FRONT	BH200-L048
- LH POWER ON RESET SWITCH REAR	BN200-L048
- LH R-W POWER GOOD FRONT	HC1A1-R042
- LH R-W POWER GOOD REAR	HC3A1-R042
- LH R-W 1-2-3-4/HAR BIT FRONT P	BH210-L008
- LH R-W 1-2-3-4/HAR BIT FRONT 0	BH200-L057
- LH R-W 1-2-3-4/HAR BIT FRONT 1	BH200-L059
- LH R-W 1-2-3-4/HAR BIT FRONT 2	BH200-L061
- LH R-W 1-2-3-4/HAR BIT FRONT 3	BH200-L063
- LH R-W 1-2-3-4/HAR BIT FRONT 4	BH200-L065
- LH R-W 1-2-3-4/HAR BIT FRONT 5	BH200-L067
- LH R-W 1-2-3-4/HAR BIT FRONT 6	BH210-L004
- LH R-W 1-2-3-4/HAR BIT FRONT 7	BH210-L006
- LH R-W 1-2-3-4/HAR BIT REAR P	BN210-L008
- LH R-W 1-2-3-4/HAR BIT REAR 0	BN200-L057
- LH R-W 1-2-3-4/HAR BIT REAR 1	BN200-L059
- LH R-W 1-2-3-4/HAR BIT REAR 2	BN200-L061
- LH R-W 1-2-3-4/HAR BIT REAR 3	BN200-L063
- LH R-W 1-2-3-4/HAR BIT REAR 4	BN200-L065
- LH R-W 1-2-3-4/HAR BIT REAR 5	BN200-L067
- LH R-W 1-2-3-4/HAR BIT REAR 6	BN210-L004
- LH R-W 1-2-3-4/HAR BIT REAR 7	BN210-L006
- LH RAMP SELECT 0 FRONT	BD200-L005
- LH RAMP SELECT 0 REAR	BM200-R031
- LH RAMP SELECT 1 FRONT	BD200-L006
- LH RAMP SELECT 1 REAR	BM200-R032
- LH RAMP SELECT 2 FRONT	BD200-L007
- LH RAMP SELECT 2 REAR	BM200-R033
- LH RAMP SELECT 3 FRONT	BD200-L008
- LH RAMP SELECT 3 REAR	BM200-R034
- LH RD AMP UNSQ LATCHED REAR	BP210-R028
- LH RD AMP UNSQUELCH FRONT	BJ210-R034
- LH RD AMP UNSQUELCH REAR	BP210-R035
- LH READ TRANSMIT FRONT	BJ200-R059
- LH READ TRANSMIT REAR	BP200-R059
- LH READY LED FRONT	BH210-R018
- LH READY LED REAR	BN210-R018
- LH RESET CLOCK RING FRONT	BH200-L052
- LH RESET CLOCK RING REAR	BN200-L052
- LH RESET FILTER FRONT	BD200-L037
- LH RESET FILTER REAR	BM200-R050
- LH REVERSE FRONT	BD200-L021
- LH REVERSE REAR	BM200-R047
- LH REZERO FRONT	BD200-L023
- LH REZERO REAR	BM200-R049
- LH RPS CLOCK 1 FRONT	BD200-R019
- LH RPS CLOCK 1 REAR	BM200-L047
- LH SEGMENT BOUNDARY FRONT	BH210-L016
- LH SEGMENT BOUNDARY REAR	BN210-L016
- LH SEL A1/ + SEL A2 FRONT	BJ200-R055
- LH SEL A1/ + SEL A2 REAR	BP200-R055
- LH SERVO IMF TP FRONT	HC1A1-R012
- LH SERVO IMF TP REAR	HC3A1-R012
- LH SET R-W FRONT	BJ200-R039
- LH SET R-W REAR	BP200-R039
- LH SET R-W SAFE FRONT	BJ200-R038
- LH SET R-W SAFE REAR	BP200-R038
- LH SPINDLE ID ON BOARD FRONT	BH210-L045
- LH SPINDLE ID ON BOARD REAR	BN210-L045
- LH SYNC TP FRONT	BD200-R014
- LH SYNC TP REAR	BT200-R014
- LH TIEDOWN FRONT	BJ210-L021

ENGLISH LINE NAME	PGEID-LN #
- LH TRACK FOLLOW FRONT	BD200-L018
- LH TRACK FOLLOW REAR	BM200-R056
- LH VCO CONTROL TP FRONT	BD200-R034
- LH VCO CONTROL TP REAR	BT200-R034
- LH WRITE GATE 1 FRONT	BJ200-R051
- LH WRITE GATE 1 REAR	BP200-R051
- LH WRITE GATE 2 FRONT	BJ200-R052
- LH WRITE GATE 2 REAR	BP200-R052
- LH WRITE INHIBIT FRONT	BD200-R006
- LH WRITE INHIBIT REAR	BM200-L044
- LH WRITE READY FRONT	BG200-R060
- LH WRITE READY REAR	BM200-R059
- LH 5V COMMON POR FRONT	BH210-R021
- LH 5V COMMON POR REAR	BN210-R025
- PICK LOGIC POWER CONT FRONT	BH200-R044
- PICK LOGIC POWER CONT REAR	BN200-R044
- POWER ON RESET FRONT	BH200-R060
- POWER ON RESET REAR	BN200-R060
- READ DATA ARM 1 LF	HC1A1-R018
- READ DATA ARM 1 LR	HC3A1-R018
- READ DATA ARM 1 RF	HC2A1-R018
- READ DATA ARM 1 RR	HC4A1-R018
- READ DATA ARM 2 LF	HC1A1-R026
- READ DATA ARM 2 LR	HC3A1-R026
- READ DATA ARM 2 RF	HC2A1-R026
- READ DATA ARM 2 RR	HC4A1-R026
- READ DATA ARM 3 LF	HC1A1-R033
- READ DATA ARM 3 LR	HC3A1-R033
- READ DATA ARM 3 RF	HC2A1-R033
- READ DATA ARM 3 RR	HC4A1-R033
- READ DATA ARM 4 LF	HC1A1-R038
- READ DATA ARM 4 LR	HC3A1-R038
- READ DATA ARM 4 RF	HC2A1-R038
- READ DATA ARM 4 RR	HC4A1-R038
- RELEASE BRAKE FRONT	BH200-R042
- RELEASE BRAKE REAR	BN200-R042
- RESET CHECK 1 FRONT	BH210-R016
- RESET CHECK 1 REAR	BN210-R016
- RESET CLOCK RING FRONT	BH200-R061
- RESET CLOCK RING REAR	BN200-R061
- RH + 5V PWR ON RESET OUT FRONT	BK200-L051
- RH + 5V PWR ON RESET OUT REAR	BQ200-L051
- RH AGC MULT TP REAR	BU200-R041
- RH CABLE SWITCHED FRONT	BH200-L037
- RH CABLE SWITCHED REAR	BN200-L037
- RH CHK POINT/TAR/DIF FRONT P	BK210-L028
- RH CHK POINT/TAR/DIF FRONT 0	BK210-L020
- RH CHK POINT/TAR/DIF FRONT 1	BK210-L021
- RH CHK POINT/TAR/DIF FRONT 2	BK210-L022
- RH CHK POINT/TAR/DIF FRONT 3	BK210-L023
- RH CHK POINT/TAR/DIF FRONT 4	BK210-L024
- RH CHK POINT/TAR/DIF FRONT 5	BK210-L025
- RH CHK POINT/TAR/DIF FRONT 6	BK210-L026
- RH CHK POINT/TAR/DIF FRONT 7	BK210-L027
- RH CHK POINT/TAR/DIF REAR P	BQ210-L028
- RH CHK POINT/TAR/DIF REAR 0	BQ210-L020
- RH CHK POINT/TAR/DIF REAR 1	BQ210-L021
- RH CHK POINT/TAR/DIF REAR 2	BQ210-L022
- RH CHK POINT/TAR/DIF REAR 3	BQ210-L023
- RH CHK POINT/TAR/DIF REAR 4	BQ210-L024
- RH CHK POINT/TAR/DIF REAR 5	BQ210-L025
- RH CHK POINT/TAR/DIF REAR 6	BQ210-L026
- RH CHK POINT/TAR/DIF REAR 7	BQ210-L027
- RH CLOCK CHECK STATUS REAR	BP210-R023
- RH CLOCK PRWSE CHECK TP REAR	BP210-R024
- RH COARSE TRACK FRONT	BJ200-L030
- RH COARSE TRACK REAR	BP200-L030

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ENGLISH LINE NAME	PGEID-LN #
- RH CYLINDER PULSE FRONT	BE200-L025
- RH CYLINDER PULSE REAR	BR200-R054
- RH DATA HEAD SIGNAL TP FRONT	HC2A1-R016
- RH DATA HEAD SIGNAL TP REAR	HC4A1-R016
- RH DEGATE CHECK LATCH FRONT	BJ200-L014
- RH DEGATE CHECK LATCH REAR	BP200-L014
- RH DEV SELECTED FRONT	BH200-L017
- RH DEV SELECTED REAR	BN200-L017
- RH DEVICE CHECK 2 RESET FRONT	BJ200-L013
- RH DEVICE CHECK 2 RESET REAR	BP200-L013
- RH DRIVE CHECK INHIBIT FRONT	BJ200-R023
- RH DRIVE CHECK INHIBIT REAR	BP200-R023
- RH DRIVE CHECK RESET FRONT	BJ200-R024
- RH DRIVE CHECK RESET REAR	BP200-R024
- RH DRIVE PWR SWITCH OFF FRONT	BK200-R041
- RH DRIVE PWR SWITCH OFF REAR	BQ200-R041
- RH DRIVE STATUS BIT P FRONT	BJ200-L029
- RH DRIVE STATUS BIT P REAR	BP200-L029
- RH DRIVE STATUS BIT 0 FRONT	BJ200-L022
- RH DRIVE STATUS BIT 0 REAR	BP200-L022
- RH DRIVE STATUS BIT 1 FRONT	BJ200-L023
- RH DRIVE STATUS BIT 1 REAR	BP200-L023
- RH DRIVE STATUS BIT 2 FRONT	BJ200-L024
- RH DRIVE STATUS BIT 2 REAR	BP200-L024
- RH DRIVE STATUS BIT 3 FRONT	BJ200-L025
- RH DRIVE STATUS BIT 3 REAR	BP200-L025
- RH DRIVE STATUS BIT 4 FRONT	BJ200-L026
- RH DRIVE STATUS BIT 4 REAR	BP200-L026
- RH DRIVE STATUS BIT 5 FRONT	BJ200-L027
- RH DRIVE STATUS BIT 5 REAR	BP200-L027
- RH DRIVE STATUS BIT 6 FRONT	BJ200-L034
- RH DRIVE STATUS BIT 6 REAR	BP200-L034
- RH DRIVE STATUS BIT 7 FRONT	BJ200-L020
- RH DRIVE STATUS BIT 7 REAR	BP200-L020
- RH ENABLE NON AGC OUTPUT FRONT	HC2A1-R013
- RH ENABLE NON AGC OUTPUT REAR	HC4A1-R013
- RH FORWARD FRONT	BL200-R049
- RH FORWARD REAR	BR200-R048
- RH GAP FRONT	BE200-R018
- RH GAP REAR	BR200-L050
- RH GATE DIFFERENCE TP FRONT	BL200-R053
- RH GATE DIFFERENCE TP REAR	BR200-R052
- RH GATE SERVO A1 CLK ON FRONT	BE200-L034
- RH GATE SERVO A1 CLK ON REAR	BP200-R021
- RH GATE SERVO A2 CLK ON FRONT	BE200-L035
- RH GATE SERVO A2 CLK ON REAR	BP200-R022
- RH GATE SERVO PAD CLOCK FRONT	BE200-L033
- RH GATE SERVO PAD CLOCK REAR	BP200-R004
- RH HAR BIT P FRONT	BJ200-R014
- RH HAR BIT P REAR	BP200-R014
- RH HAR BIT 4 FRONT	BJ200-R010
- RH HAR BIT 4 REAR	BP200-R010
- RH HAR BIT 5 FRONT	BJ200-R011
- RH HAR BIT 5 REAR	BP200-R011
- RH HAR BIT 6 FRONT	BJ200-R013
- RH HAR BIT 6 REAR	BP200-R013
- RH HAR BIT 7 FRONT	BJ200-R012
- RH HAR BIT 7 REAR	BP200-R012
- RH HL SERVO TP FRONT	BE200-R010
- RH HL SERVO TP REAR	BU200-R010
- RH INDEX FRONT	BJ210-R008
- RH INDEX REAR	BP210-R008
- RH INHIBIT FRONT	BE200-L024
- RH INHIBIT REAR	BQ200-L039
- RH LOAD REG 3 FRONT	BL200-R031
- RH LOAD REG 3 REAR	BR200-R030
- RH LOW LEVEL SERVO FRONT	BE200-L031
- RH LOW LEVEL SERVO REAR	BU200-L031
- RH MOD D FRONT	BL200-L059
- RH MOD D REAR	BR200-L059
- RH MULT TP FRONT	BE200-R043
- RH MULTIPLEXER GATE FRONT	BJ200-R018
- RH MULTIPLEXER GATE REAR	BP200-R018
- RH OFFSET ACTIVE FRONT	BE200-L020
- RH OFFSET ACTIVE REAR	BQ200-L038
- RH PAD DATA SELECT FRONT	BJ200-R003
- RH PAD DATA SELECT REAR	BP200-R003
- RH PADDING MODE FRONT	BJ210-R006
- RH PADDING MODE REAR	BP210-R006
- RH PARK FRONT	BE200-L028
- RH PARK REAR	BR200-R045
- RH PARK SIG TP REAR	BU200-R046
- RH PES GAIN ERROR FRONT	BE200-R044
- RH PES GAIN ERROR REAR	BU200-R043
- RH PES REF CORRECTION FRONT	BE200-R013
- RH PES REF CORRECTION REAR	BU200-R013
- RH PIP SYNC FRONT	BH210-L010
- RH PIP SYNC REAR	BN210-L010
- RH POR SYNC TO CLOCK FRONT	BL200-L054
- RH POR SYNC TO CLOCK REAR	BR200-L054
- RH PORT FENCED FRONT	BK200-R039
- RH PORT FENCED REAR	BQ200-R039
- RH POWER AMP DRIVE FRONT	HPA20-L005
- RH POWER AMP DRIVE REAR	HPA40-L005
- RH POWER CHECK 2 FRONT	BK200-R056
- RH POWER CHECK 2 REAR	BQ200-R056
- RH POWER ON RESET OUT FRONT	BK200-L042
- RH POWER ON RESET OUT REAR	BQ200-L042
- RH POWER ON RESET POWER FRONT	BE200-L039
- RH POWER ON RESET POWER REAR	BM200-L041
- RH POWER ON RESET SWITCH FRONT	BH200-L056
- RH POWER ON RESET SWITCH REAR	BN200-L056
- RH PROGRAM MEMORY FRONT	BL200-L057
- RH R-W POWER GOOD FRONT	HC2A1-R042
- RH R-W POWER GOOD REAR	HC4A1-R042
- RH R-W 1-2-3-4/HAR BIT FRONT P	BJ200-R068
- RH R-W 1-2-3-4/HAR BIT FRONT 0	BJ200-R060
- RH R-W 1-2-3-4/HAR BIT FRONT 1	BJ200-R061
- RH R-W 1-2-3-4/HAR BIT FRONT 2	BJ200-R062
- RH R-W 1-2-3-4/HAR BIT FRONT 3	BJ200-R063
- RH R-W 1-2-3-4/HAR BIT FRONT 4	BJ200-R064
- RH R-W 1-2-3-4/HAR BIT FRONT 5	BJ200-R065
- RH R-W 1-2-3-4/HAR BIT FRONT 6	BJ200-R066
- RH R-W 1-2-3-4/HAR BIT FRONT 7	BJ200-R067
- RH R-W 1-2-3-4/HAR BIT REAR P	BP200-R068
- RH R-W 1-2-3-4/HAR BIT REAR 0	BP200-R060
- RH R-W 1-2-3-4/HAR BIT REAR 1	BP200-R061
- RH R-W 1-2-3-4/HAR BIT REAR 2	BP200-R062
- RH R-W 1-2-3-4/HAR BIT REAR 3	BP200-R063
- RH R-W 1-2-3-4/HAR BIT REAR 4	BP200-R064
- RH R-W 1-2-3-4/HAR BIT REAR 5	BP200-R065
- RH R-W 1-2-3-4/HAR BIT REAR 6	BP200-R066
- RH R-W 1-2-3-4/HAR BIT REAR 7	BP200-R067
- RH RAMP SELECT 0 FRONT	BE200-L005
- RH RAMP SELECT 0 REAR	BR200-R031
- RH RAMP SELECT 1 FRONT	BE200-L006
- RH RAMP SELECT 1 REAR	BR200-R032
- RH RAMP SELECT 2 FRONT	BE200-L007
- RH RAMP SELECT 2 REAR	BR200-R033
- RH RAMP SELECT 3 FRONT	BE200-L008
- RH RAMP SELECT 3 REAR	BR200-R034
- RH RD AMP UNSQ LATCHED FRONT	BJ210-R028
- RH RD AMP UNSQUELCH FRONT	BJ210-R033
- RH RD AMP UNSQUELCH REAR	BP210-R034
- RH READ TRANSMIT FRONT	BJ200-R009
- RH READ TRANSMIT REAR	BP200-R009
- RH READY LED FRONT	BK210-R018
- RH READY LED REAR	BQ210-R018
- RH RESET CLOCK RING OUT FRONT	BH200-L055
- RH RESET CLOCK RING OUT REAR	BN200-L055
- RH RESET FILTER FRONT	BE200-L037
- RH RESET FILTER REAR	BR200-R050
- RH REVERSE FRONT	BE200-L021
- RH REVERSE REAR	BR200-R047
- RH REZERO FRONT	BE200-L023
- RH REZERO REAR	BR200-R049
- RH RPS CLOCK 1 FRONT	BE200-R019
- RH RPS CLOCK 1 REAR	BR200-L047
- RH SEGMENT BOUNDARY FRONT	BJ210-R007
- RH SEGMENT BOUNDARY REAR	BP210-R007
- RH SEL A1/ + SEL A2 FRONT	BJ200-R020
- RH SEL A1/ + SEL A2 REAR	BP200-R020
- RH SERVO IMF TP FRONT	HC2A1-R012
- RH SERVO IMF TP REAR	HC4A1-R012
- RH SET R-W FRONT	BJ200-R006
- RH SET R-W REAR	BP200-R006
- RH SET R-W SAFE FRONT	BJ200-R007
- RH SET R-W SAFE REAR	BP200-R007
- RH SPINDLE ID ON BOARD FRONT	BK210-L045
- RH SPINDLE ID ON BOARD REAR	BQ210-L045
- RH SYNC TP FRONT	BE200-R014
- RH SYNC TP REAR	BU200-R014
- RH TRACK FOLLOW FRONT	BE200-L018
- RH TRACK FOLLOW REAR	BR200-R056
- RH VCO CONTROL TP FRONT	BE200-R034
- RH VCO CONTROL TP REAR	BU200-R034
- RH WRITE GATE 1 FRONT	BJ200-R017
- RH WRITE GATE 1 REAR	BP200-R017
- RH WRITE GATE 2 FRONT	BJ200-R016
- RH WRITE GATE 2 REAR	BP200-R016
- RH WRITE INHIBIT FRONT	BE200-R006
- RH WRITE INHIBIT REAR	BQ210-L044
- RH WRITE READY FRONT	BJ200-L031
- RH WRITE READY REAR	BP200-L031
- RH 5V COMMON POR FRONT	BH200-L041
- SERVO DATA ARM 2 LF	HC1A1-R029
- SERVO DATA ARM 2 LR	HC3A1-R029
- SERVO DATA ARM 2 RF	HC2A1-R029
- SERVO DATA ARM 2 RR	HC4A1-R029
- WRITE DATA ARM 1 LF	HC1A1-L040
- WRITE DATA ARM 1 LR	HC3A1-L040
- WRITE DATA ARM 1 RF	HC2A1-L040
- WRITE DATA ARM 1 RR	HC4A1-L040
- WRITE DATA ARM 2 LF	HC1A1-L049
- WRITE DATA ARM 2 LR	HC3A1-L049
- WRITE DATA ARM 2 RF	HC2A1-L049
- WRITE DATA ARM 2 RR	HC4A1-L049
- WRITE DATA ARM 3 LF	HC1A1-L058
- WRITE DATA ARM 3 LR	HC3A1-L058
- WRITE DATA ARM 3 RF	HC2A1-L058
- WRITE DATA ARM 3 RR	HC4A1-L058
- WRITE DATA ARM 4 LF	HC1A1-L065
- WRITE DATA ARM 4 LR	HC3A1-L065
- WRITE DATA ARM 4 RF	HC2A1-L065
- WRITE DATA ARM 4 RR	HC4A1-L065
- WRITE MODE VERIFY ARM 1 LF	HC1A1-R020
- WRITE MODE VERIFY ARM 1 LR	HC3A1-R020
- WRITE MODE VERIFY ARM 1 RF	HC2A1-R020
- WRITE MODE VERIFY ARM 1 RR	HC4A1-R020
- WRITE MODE VERIFY ARM 2 LF	HC1A1-R028
- WRITE MODE VERIFY ARM 2 LR	HC3A1-R028
- WRITE MODE VERIFY ARM 2 RF	HC2A1-R028
- WRITE MODE VERIFY ARM 2 RR	HC4A1-R028
- WRITE MODE VERIFY ARM 3 LF	HC1A1-R035
- WRITE MODE VERIFY ARM 3 LR	HC3A1-R035
- WRITE MODE VERIFY ARM 3 RF	HC2A1-R035
- WRITE MODE VERIFY ARM 3 RR	HC4A1-R035
- WRITE MODE VERIFY ARM 4 LF	HC1A1-R040
- WRITE MODE VERIFY ARM 4 LR	HC3A1-R040
- WRITE MODE VERIFY ARM 4 RF	HC2A1-R040
- WRITE MODE VERIFY ARM 4 RR	HC4A1-R040
- WRITE SELECT ARM 1 LF	HC1A1-L039
- WRITE SELECT ARM 1 LR	HC3A1-L039
- WRITE SELECT ARM 1 RF	HC2A1-L039
- WRITE SELECT ARM 1 RR	HC4A1-L039
- WRITE SELECT ARM 2 LF	HC1A1-L048
- WRITE SELECT ARM 2 LR	HC3A1-L048
- WRITE SELECT ARM 2 RF	HC2A1-L048
- WRITE SELECT ARM 2 RR	HC4A1-L048
- WRITE SELECT ARM 3 LF	HC1A1-L057
- WRITE SELECT ARM 3 LR	HC3A1-L057
- WRITE SELECT ARM 3 RF	HC2A1-L057
- WRITE SELECT ARM 3 RR	HC4A1-L057
- WRITE SELECT ARM 4 LF	HC1A1-L064
- WRITE SELECT ARM 4 LR	HC3A1-L064
- WRITE SELECT ARM 4 RF	HC2A1-L064
- WRITE SELECT ARM 4 RR	HC4A1-L064
- 15V LH SVO ANALOG FRONT	BD200-L042
- 15V LH SVO ANALOG REAR	BT200-L042
- 15V RH SVO ANALOG FRONT	BE200-L042
- 15V RH SVO ANALOG REAR	BU200-L042
- 36V LH FRONT	BD200-L044
- 36V LH POWER AMP FRONT	HPA10-L008
- 36V LH POWER AMP REAR	HPA30-L008
- 36V LH REAR	BT200-L044
- 36V LH RETURN POWER AMP FRONT	HPA10-L009
- 36V LH RETURN POWER AMP REAR	HPA30-L009
- 36V RH FRONT	BE200-L044
- 36V RH POWER AMP FRONT	HPA20-L008
- 36V RH POWER AMP REAR	HPA40-L008
- 36V RH REAR	BU200-L044
- 36V RH RETURN POWER AMP FRONT	HPA20-L009
- 36V RH RETURN POWER AMP REAR	HPA40-L009
- 5V LEFT R-W CHANNEL BD FRONT	HC1A1-L034
- 5V LEFT R-W CHANNEL BD REAR	HC3A1-L034
- 5V LH LEFT FRONT	BD200-L045
- 5V LH RIGHT FRONT	BE200-L045
- 5V RH LEFT REAR	BM200-L061
- 5V RH RIGHT REAR	BP210-L022
- 5V RIGHT R-W CHANNEL BD FRONT	HC2A1-L034
- 5V RIGHT R-W CHANNEL BD REAR	HC4A1-L034
- 5V SERVO (POWER CONN) LF	HC1A1-L051
- 5V SERVO (POWER CONN) LR	HC3A1-L051
- 5V SERVO (POWER CONN) RF	HC2A1-L051
- 5V SERVO (POWER CONN) RR	HC4A1-L051
GND CABLE (A)	HPA10-L010
GND CABLE (B)	HPA20-L010
GND CABLE (C)	HPA30-L010
GND CABLE (D)	HPA40-L010
GND LEFT R-W CHANNEL BD FRONT	HC1A1-L031
GND LEFT R-W CHANNEL BD REAR	HC3A1-L031
GND RIGHT R-W CHANNEL BD FRONT	HC2A1-L031
GND RIGHT R-W CHANNEL BD REAR	HC4A1-L031
GND SERVO (POWER CONN) LF	HC1A1-L052
GND SERVO (POWER CONN) LR	HC3A1-L052
GND SERVO (POWER CONN) RF	HC2A1-L052
GND SERVO (POWER CONN) RR	HC4A1-L052
GND SERVO SHIELD LF	HC1A1-L044

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ENGLISH LINE NAME	PGEID-LN #
GND SERVO SHIELD LR	HC3A1-L044
GND SERVO SHIELD RF	HC2A1-L044
GND SERVO SHIELD RR	HC4A1-L044
IMF ARM 1 LR	HC3A1-L042
IMF ARM 1 RF	HC2A1-L042
IMF ARM 2 LF	HC1A1-L053
IMF ARM 2 LR	HC3A1-L053
IMF ARM 2 RF	HC2A1-L053
IMF ARM 2 RR	HC4A1-L053
IMF ARM 3 LF	HC1A1-L060
IMF ARM 3 LR	HC3A1-L060
IMF ARM 3 RF	HC2A1-L060
IMF ARM 3 RR	HC4A1-L060
IMF ARM 4 LF	HC1A1-L067
IMF ARM 4 LR	HC3A1-L067
IMF ARM 4 RF	HC2A1-L067
IMF ARM 4 RR	HC4A1-L067
LH |PESP| LESS THAN .44V REAR	BT200-R016
LH BURST W.I. SIG TP FRONT	BD200-R023
LH BURST W.I. SIG TP REAR	BT200-R023
LH CURRENT TP FRONT	BD200-R029
LH CURRENT TP REAR	BT200-R029
LH CURVE TP FRONT	BD200-R027
LH CURVE TP REAR	BT200-R027
LH DAC TACK 2ND STAGE TP FRONT	BD200-R031
LH INTEGRATOR TP FRONT	BD200-R026
LH INTEGRATOR TP REAR	BT200-R026
LH LIMITED SIG TP FRONT	HPA10-R005
LH LIMITED SIG TP REAR	HPA30-R005
LH PARK SIG TP REAR	BT200-R046
LH PES W.I. SIG TP FRONT	BD200-R044
LH PES W.I. SIG TP REAR	BT200-R045
LH POWER AMP COMMON FRONT	BD200-L026
LH POWER AMP COMMON REAR	BT200-L026
LH POWER AMP DRIVE FRONT	BD200-R008
LH POWER AMP DRIVE REAR	BT200-R008
LH POWER AMP DRIVE TWIST FRONT	BD200-R025
LH POWER AMP DRIVE TWIST REAR	BT200-R025
LH PSPESR TP FRONT	BD200-R028
LH PSPESR TP REAR	BT200-R028
LH SAFETY INHIBIT TP REAR	BP210-R032
LH TAC 2ND STAGE REAR	BT200-R031
LH TACH SIGNAL TP FRONT	BD200-R032
LH TACH SIGNAL TP REAR	BT200-R032
LH TFDRSIG TP REAR	BT200-L029
LH TRANSFER FUNC IN FRONT	BD200-L029
LH VCM CURRENT SIG FRONT	BD200-L027
LH VCM VOLTAGE SIG FRONT	BD200-L038
LH VCM VOLTAGE SIG REAR	BT200-L038
LH VCM W.I. SIG TP FRONT	BD200-R015
LH VCM W.I. SIG TP REAR	BT200-R015
LH VOICE COIL MOTOR 1 FRONT	HPA10-R008
LH VOICE COIL MOTOR 1 REAR	HPA30-R008
LH VOICE COIL MOTOR 2 FRONT	HPA10-R010
LH VOICE COIL MOTOR 2 REAR	HPA30-R010
RH |PESP| LESS THAN .44V FRONT	BE200-R041
RH BURST W.I. SIG TP FRONT	BE200-R023
RH BURST W.I. SIG TP REAR	BU200-R023
RH CURRENT TP FRONT	BE200-R029
RH CURRENT TP REAR	BU200-R029
RH CURVE TP FRONT	BE200-R027
RH CURVE TP REAR	BU200-R027
RH INTEGRATOR TP FRONT	BE200-R026
RH INTEGRATOR TP REAR	BU200-R026
RH LIMITED SIG TP FRONT	HPA20-R005
RH LIMITED SIG TP REAR	HPA40-R005
RH PARK SIG TP FRONT	BE200-R046

ENGLISH LINE NAME	PGEID-LN #
RH PES W.I. SIG TP FRONT	BE200-R015
RH PES W.I. SIG TP REAR	BU200-R045
RH POWER AMP COMMON FRONT	BE200-L026
RH POWER AMP COMMON REAR	BU200-L026
RH POWER AMP DRIVE FRONT	BE200-R008
RH POWER AMP DRIVE REAR	BU200-R008
RH POWER AMP DRIVE TWIST FRONT	BE200-R025
RH POWER AMP DRIVE TWIST REAR	BU200-R025
RH PSPESR TP FRONT	BE200-R028
RH PSPESR TP REAR	BU200-R028
RH SAFETY INHIBIT TP REAR	BP210-R031
RH TACH SIGNAL TP FRONT	BE200-R032
RH TACH SIGNAL TP REAR	BU200-R032
RH TACH 2ND STAGE TP REAR	BU200-R031
RH TAK 2ND STAGE TP FRONT	BE200-R031
RH TRANSFER FUNC IN FRONT	BE200-L029
RH TRANSFER FUNT IN REAR	BU200-L029
RH VCM CURRENT SIG FRONT	BE200-L027
RH VCM CURRENT SIG REAR	BU200-L027
RH VCM VOLTAGE SIG FRONT	BE200-L038
RH VCM VOLTAGE SIG REAR	BU200-L038
RH VCM W.I. SIG TP FRONT	BE200-R016
RH VCM W.I. SIG TP REAR	BU200-R015
RH VOICE COIL MOTOR 1 FRONT	HPA20-R008
RH VOICE COIL MOTOR 1 REAR	HPA40-R008
RH VOICE COIL MOTOR 2 FRONT	HPA20-R010
RH VOICE COIL MOTOR 2 REAR	HPA40-R010
SERVO IMF ARM 2 LF	HC1A1-R031
SERVO IMF ARM 2 LR	HC3A1-R031
SERVO IMF ARM 2 RF	HC2A1-R031
SERVO IMF ARM 2 RR	HC4A1-R031

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SEQNO	PGE OF	FICHE CD	FICHE FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
EF000	1	1	A01	N/A	BLI	N/A	N/A	N/A	N/A	N/A
EF000	3	1	A05	BD200	CRD	SERVOL	NA	NA	NA	1B-B1D2
EF000	4	1	A07	BD200	XRL	SERVOL	NA	NA	NA	1B-B1D2
EF000	6	1	A11	BD200	CRD	SERVOL	NA	NA	NA	1B-B1D2
EF000	7	1	A13	BE200	CRD	SERVOR	NA	NA	NA	1B-B1E2
EF000	8	1	A15	BE200	XRL	SERVOR	NA	NA	NA	1B-B1E2
EF000	10	1	B01	BE200	CRD	SERVOR	NA	NA	NA	1B-B1E2
EF000	11	1	B03	BG200	CRD	SVOL	NA	NA	NA	1B-B1G2
EF000	12	1	B05	BG200	XRL	SVOL	NA	NA	NA	1B-B1G2
EF000	14	1	B09	BG210	CRD	SVOL	NA	NA	NA	1B-B1G2
EF000	15	1	B11	BG210	XRL	SVOL	NA	NA	NA	1B-B1G2
EF000	16	1	B13	BH200	CRD	PORT	NA	NA	NA	1B-B1H2
EF000	17	1	B15	BH200	XRL	PORT	NA	NA	NA	1B-B1H2
EF000	20	1	C03	BH210	CRD	PORT	NA	NA	NA	1B-B1H2
EF000	21	1	C05	BH210	XRL	PORT	NA	NA	NA	1B-B1H2
EF000	23	1	C09	BJ200	CRD	RDWR	NA	NA	NA	1B-B1J2
EF000	24	1	C11	BJ200	XRL	RDWR	NA	NA	NA	1B-B1J2
EF000	27	1	C17	BJ210	CRD	RDWR	NA	NA	NA	1B-B1J2
EF000	28	1	D01	BJ210	XRL	RDWR	NA	NA	NA	1B-B1J2
EF000	29	1	D03	BK200	CRD	PORT	NA	NA	NA	1B-B1K2
EF000	30	1	D05	BK200	XRL	PORT	NA	NA	NA	1B-B1K2
EF000	33	1	D11	BK210	CRD	PORT	NA	NA	NA	1B-B1K2
EF000	34	1	D13	BK210	XRL	PORT	NA	NA	NA	1B-B1K2
EF000	36	1	D17	BL200	CRD	SVOR	NA	NA	NA	1B-B1L2
EF000	37	1	E01	BL200	XRL	SVOR	NA	NA	NA	1B-B1L2
EF000	39	1	E05	BL210	CRD	SVOR	NA	NA	NA	1B-B1L2
EF000	40	1	E07	BL210	XRL	SVOR	NA	NA	NA	1B-B1L2
EF000	41	1	E09	BM200	CRD	SVOL	NA	NA	NA	1B-B1M2
EF000	42	1	E11	BM200	XRL	SVOL	NA	NA	NA	1B-B1M2
EF000	44	1	E15	BM210	CRD	SVOL	NA	NA	NA	1B-B1M2
EF000	45	1	E17	BM210	XRL	SVOL	NA	NA	NA	1B-B1M2
EF000	46	2	A01	N/A	BLI	N/A	N/A	N/A	N/A	N/A
EF000	48	2	A05	BN200	CRD	PORT	NA	NA	NA	1B-B1N2
EF000	49	2	A07	BN200	XRL	PORT	NA	NA	NA	1B-B1N2
EF000	52	2	A13	BN210	CRD	PORT	NA	NA	NA	1B-B1N2
EF000	53	2	A15	BN210	XRL	PORT	NA	NA	NA	1B-B1N2
EF000	55	2	B01	BP200	CRD	RDWR	NA	NA	NA	1B-B1P2
EF000	56	2	B03	BP200	XRL	RDWR	NA	NA	NA	1B-B1P2
EF000	59	2	B09	BP210	CRD	RDWR	NA	NA	NA	1B-B1P2
EF000	60	2	B11	BP210	XRL	RDWR	NA	NA	NA	1B-B1P2
EF000	61	2	B13	BQ200	CRD	PORT	NA	NA	NA	1B-B1Q2
EF000	62	2	B15	BQ200	XRL	PORT	NA	NA	NA	1B-B1Q2
EF000	65	2	C03	BQ210	CRD	PORT	NA	NA	NA	1B-B1Q2
EF000	66	2	C05	BQ210	XRL	PORT	NA	NA	NA	1B-B1Q2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
FRM	FRAME (MICROFICHE)
MDM	MAINTENANCE DIAGRAM MANUAL - VOLUME R30
XRL	CROSS REFERENCE LIST

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND * * AS THE CABLE SOCKET PINS

NOTE: THE SIGNAL NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL MATCH THE SIGNAL NAME IN THE LRM EXACTLY.

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
EF000	68	2	C09	BR200	CRD	SVOR	NA	NA	NA	1B-B1R2
EF000	69	2	C11	BR200	XRL	SVOR	NA	NA	NA	1B-B1R2
EF000	71	2	C15	BR210	CRD	SVOR	NA	NA	NA	1B-B1R2
EF000	72	2	C17	BR210	XRL	SVOR	NA	NA	NA	1B-B1R2
EF000	73	2	D01	BT200	CRD	SERVOL	NA	NA	NA	1B-B1T2
EF000	74	2	D03	BT200	XRL	SERVOL	NA	NA	NA	1B-B1T2
EF000	76	2	D07	BT200	CRD	SERVOL	NA	NA	NA	1B-B1T2
EF000	77	2	D09	BU200	CRD	SERVOR	NA	NA	NA	1B-B1U2
EF000	78	2	D11	BU200	XRL	SERVOR	NA	NA	NA	1B-B1U2

BOARD LOGIC INDEX PAGE BLI N/A

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
FRM	FRAME (MICROFICHE)
MDM	MAINTENANCE DIAGRAM MANUAL - VOLUME R30
XRL	CROSS REFERENCE LIST

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BOARD LOGIC INDEX PAGE BLI N/A

003 + LH PES P FRONT ---------- M05
004 + LH PES Q FRONT ---------- M04
005 - LH RAMP SELECT 0 FRONT ------- M11
006 - LH RAMP SELECT 1 FRONT ------- J02
007 - LH RAMP SELECT 2 FRONT ------- G03
008 - LH RAMP SELECT 3 FRONT ------- G04
009 + LH DIF COUNT 1 FRONT --------- J11
010 + LH DIF COUNT 2 FRONT --------- J13
011 + LH DIF COUNT 4 FRONT --------- J12
012 + LH DIF COUNT 8 FRONT --------- G12
013 + LH DIF COUNT 16 FRONT -------- G13
014 + LH DIF COUNT 32 FRONT -------- G11
015 + LH DIF COUNT 64 FRONT -------- M02
016 + LH DIF COUNT 128 FRONT ------- P02
017 + LH DIF COUNT 256 FRONT ------- J10
018 - LH TRACK FOLLOW FRONT -------- B02
019 + LH PES INTEGRATE FRONT ------- P07
020 - LH OFFSET ACTIVE FRONT ------- P06
021 - LH REVERSE FRONT ------------- M13
022 + LH TRACK FOLLOW FRONT -------- D02
023 - LH REZERO FRONT -------------- B03
024 - LH INHIBIT FRONT ------------- P13
025 - LH CYLINDER PULSE FRONT ------ M07
026 LH POWER AMP COMMON FRONT ------ B13
027 LH VCM CURRENT SIG FRONT ------- D13
028 - LH PARK FRONT ---------------- B04
029 LH TRANSFER FUNC IN FRONT ------ P05
030 + LH LOW LEVEL SERVO FRONT ----- U06
031 - LH LOW LEVEL SERVO FRONT ----- S06
032 + LH SERVO GUARD 1 FRONT ------- U07
033 - LH GATE SERVO PAD CLOCK FRONT M03
034 - LH GATE SERVO A1 CLK ON FRONT S05
035 - LH GATE SERVO A2 CLK ON FRONT P04
036 + LH COMPRESS FRONT ------------ D04
037 - LH RESET FILTER FRONT -------- D05
038 LH VCM VOLTAGE SIG FRONT ------- U02
039 - LH POWER ON RESET POWER FRONT S07
040 + 15V LH SVO ANALOG FRONT ------ J05
041 + 15V LH SVO ANALOG FRONT ------ U05
042 - 15V LH SVO ANALOG FRONT ------ G02
043 - 15V LH SVO ANALOG FRONT ------ S02
044 - 36V LH FRONT ----------------- S08
045 - 5V LH LEFT FRONT ------------- B06
046 - 5V LH LEFT FRONT ------------- G06

SERVO ANALOG CARD

INTRODUCTION

The servo analog card is the interface between the servo head preamplifier and the voice coil power amplifier. It is a major part of the servo control loop that provides accurate head-to-disk positioning and optimum track-to-track seek movements.

DESCRIPTION

The servo analog card provides the following functions:

- Phase locks a local oscillator to the 3 megahertz servo signal and provides clock signals for the data channel.
- Provides signals from which index, inner, and outer guard bands can be detected.
- Amplifies and demodulates the low-level servo signal into primary and four position error signals.
- Inhibits the power amplifier when either the '-POR' or the '-INHIBIT' line is active or when the -15 volt, -5 volt or +5 volt supply is off.
- Posts a Cable Error when the Servo VCO A1 or the Servo VCO A2 cable is improperly terminated, or when two Servo VCO outputs are active on the same cable.
- Automatically sets the position error signal's (PES) gain at the end of a rezero function.
- Sends a 'write inhibit' signal when the offtrack error and the voice coil current and voltage exceed specified limits.
- Provides a logic signal that indicates that the automatic gain control (AGC) circuit is functioning.
- Receives analog signals from the power amplifier proportional to voice coil current and voltage.
- Receives digital control signals from the servo control card, for servo mode control and operation sequences.
- Provides the servo control card with digital position signals.
- In the park mode, upon command, the servo loop is bypassed, and the servo card drives the power amplifier to effect a 200 milliamp voice coil current to hold the actuator assembly at the outer guard band.
- In the compress mode, upon command, the servo loop is bypassed, and the servo card drives the power amplifier to effect a 3 amp coil current to pull the actuator assembly against the outer crash stop.
- In the rezero mode, the servo loop moves the head assembly to track zero at a specified constant velocity.
- In the track follow mode, the servo holds the heads over the center of a track.
- In the offset mode, the servo holds the heads off the center of a track by a distance proportional to the difference count input.
- In the seek mode, the servo moves the heads from one track to another.

See next page for more.

M12 + LH POSITION ERROR SIG B FRONT 003
P11 + LH INHIBIT POWER AMP FRONT --- 004
G07 + LH POSITION ERROR SIG A FRONT 005
B10 - LH WRITE INHIBIT FRONT ------- 006
G10 - LH WRITE INHIBIT FRONT ------- 007
B05 LH POWER AMP DRIVE FRONT ------- 008
M08 + LH HL SERVO TP FRONT --------- 009
P09 - LH HL SERVO TP FRONT --------- 010
M09 + LH VGA GAIN INCREASE TP FRONT 011
S13 + LH AGC ACTIVE FRONT ---------- 012
M10 - LH PES REF CORRECTION FRONT -- 013
P12 - LH SYNC TP FRONT ------------- 014
P10 LH VCM W.I. SIG TP FRONT ------- 015
S03 + LH |PESP| LESS THAN .44V FRONT 016
U04 + LH RPS CLOCK 3 FRONT --------- 017
U09 - LH GAP FRONT ----------------- 018
U10 - LH RPS CLOCK 1 FRONT --------- 019
S09 + LH RPS CLOCK 4 FRONT --------- 020
S12 + LH PES P FRONT --------------- 021
U12 + LH PES Q FRONT --------------- 022
J09 LH BURST W.I. SIG TP FRONT ----- 023
B12 - A1 SERVO VCO FRONT ----------- 024
J07 LH POWER AMP DRIVE TWIST FRONT - 025
G09 LH INTEGRATOR TP FRONT --------- 026
G08 LH CURVE TP FRONT -------------- 027
G05 LH PSPESR TP FRONT ------------- 028
J04 LH CURRENT TP FRONT ------------ 029
J06 + LH 3.17V PES GAIN REF TP FRONT 030
D12 LH DAC TACK 2ND STAGE TP FRONT - 031
D11 LH TACH SIGNAL TP FRONT -------- 032
D10 + LH VCO CONTROL TP FRONT ------ 033
D09 - LH VCO CONTROL TP FRONT ------ 034
D07 + LH SERVO PAD CLOCK FRONT ----- 035
D06 + LH PES LOW TP FRONT ---------- 036
B07 + A2 SERVO VCO FRONT ----------- 037
B09 - A2 SERVO VCO FRONT ----------- 038
B08 + LH SVO CLOCK CABLE ERR FRONT - 039
S10 + LH AGC MULT FRONT ------------ 040
S11 - LH AGC MULT FRONT ------------ 041
B11 + A1 SERVO VCO FRONT ----------- 042
U13 + LH EVERGREEN ID BIT FRONT ---- 043
M06 LH PES W.I. SIG TP FRONT ------- 044
U11 - LH PARK SIG TP FRONT --------- 045
S04 - LH PES GAIN ERROR FRONT ------ 046

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ LH PES P FRONT	D2M05	BD200-L003
	(D2S12)	BD200-R021
	C2D06	
L004		
+ LH PES Q FRONT	D2M04	BD200-L004
	(D2U12)	BD200-R022
	C2B07	
L005		
- LH RAMP SELECT 0 FRONT	D2M11	BD200-L005
	(G2B13)	BG200-R032
L006		
- LH RAMP SELECT 1 FRONT	D2J02	BD200-L006
	(G2C08)	BG200-R033
L007		
- LH RAMP SELECT 2 FRONT	D2G03	BD200-L007
	(G2C12)	BG200-R034
L008		
- LH RAMP SELECT 3 FRONT	D2G04	BD200-L008
	(G2D09)	BG200-R035
L009		
+ LH DIF COUNT 1 FRONT	D2J11	BD200-L009
	(G2G09)	BG200-R044
L010		
+ LH DIF COUNT 2 FRONT	D2J13	BD200-L010
	(G2H08)	BG200-R043
L011		
+ LH DIF COUNT 4 FRONT	D2J12	BD200-L011
	(G2H07)	BG200-R042
L012		
+ LH DIF COUNT 8 FRONT	D2G12	BD200-L012
	(G2J10)	BG200-R041
L013		
+ LH DIF COUNT 16 FRONT	D2G13	BD200-L013
	(G2H09)	BG200-R040
L014		
+ LH DIF COUNT 32 FRONT	D2G11	BD200-L014
	(G2G10)	BG200-R039
L015		
+ LH DIF COUNT 64 FRONT	D2M02	BD200-L015
	(G2G07)	BG200-R038
L016		
+ LH DIF COUNT 128 FRONT	D2P02	BD200-L016
	(G2J07)	BG200-R037
L017		
+ LH DIF COUNT 256 FRONT	D2J10	BD200-L017
	(G2M10)	BG200-R036
L018		
- LH TRACK FOLLOW FRONT	D2B02	BD200-L018
	(G2B12)	BG200-R057
L019		
+ LH PES INTEGRATE FRONT	D2P07	BD200-L019
	(G2J09)	BG200-R054
L020		
- LH OFFSET ACTIVE FRONT	D2P06	BD200-L020
	(G2P02)	BG200-R052
	H2H12	BH200-L038
L021		
- LH REVERSE FRONT	D2M13	BD200-L021
	(G2J13)	BG200-R048
L022		
+ LH TRACK FOLLOW FRONT	D2D02	BD200-L022
	(G2D11)	BG200-R058
L023		
- LH REZERO FRONT	D2B03	BD200-L023
	(G2J06)	BG200-R050
L024		
- LH INHIBIT FRONT	D2P13	BD200-L024
	(G2H06)	BG200-R045
	H2N02	BH200-L039
L025		
- LH CYLINDER PULSE FRONT	D2M07	BD200-L025
	(G2D10)	BG200-R055
	C2D09	
L026		
LH POWER AMP COMMON FRONT	D2B13	BD200-L026
	1C-C4 (P1D05)	HPA10-R006
	1C-C4 (P1B10)	HPA10-R007
	AE200 *TABLE*	
	J672- *PIN08*	
	J672- *PIN17*	
	B2B13	
	C2D07	
L027		
LH VCM CURRENT SIG FRONT	D2D13	BD200-L027
	1C-C4 (P1B08)	HPA10-R004
	AE200 *TABLE*	
	J672- *PIN13*	
	B2D13	
	C2B06	
L028		
- LH PARK FRONT	D2B04	BD200-L028
	(G2H05)	BG200-R046
L029		
LH TRANSFER FUNC IN FRONT	D2P05	BD200-L029
	C2B09	
L030		
+ LH LOW LEVEL SERVO FRONT	D2U06	BD200-L030
	1C-C0 B2CA7	HC1A1-L026
	B4B04	
L031		
- LH LOW LEVEL SERVO FRONT	D2S06	BD200-L031
	1C-C0 B2CB7	HC1A1-L027
	B4B03	
L032		
+ LH SERVO GUARD 1 FRONT	D2U07	BD200-L032
	1C-C0 B2CA6	HC1A1-L024
	1C-C0 B2CB6	HC1A1-L025
	B4B02	
	B4B05	
L033		
- LH GATE SERVO PAD CLOCK FRONT	D2M03	BD200-L033
	(J2S03)	BJ200-R045
L034		
- LH GATE SERVO A1 CLK ON FRONT	D2S05	BD200-L034
	(J2U13)	BJ200-R056
L035		
- LH GATE SERVO A2 CLK ON FRONT	D2P04	BD200-L035
	(J2T12)	BJ200-R057
L036		
+ LH COMPRESS FRONT	D2D04	BD200-L036
	(G2G05)	BG200-R047
L037		
- LH RESET FILTER FRONT	D2D05	BD200-L037
	(G2H10)	BG200-R051
L038		
LH VCM VOLTAGE SIG FRONT	D2U02	BD200-L038
	1C-C4 (P1D04)	HPA10-R003
	AE200 *TABLE*	
	J672- *PIN06*	
	B2D10	
L039		
- LH POWER ON RESET POWER FRONT	D2S07	BD200-L039
	(H2N06)	BH200-R062
	G2P06	BG200-L015
	J2N11	BJ200-L037
	K2B07	BK200-L018
	L2S04	BL200-L041
	1C-C0 B2AB2	HC1A1-L070
	A2D02	
L040		
+ 15V LH SVO ANALOG FRONT	D2J05	BD200-L040
	D2U05	BD200-L041
	C2D05	
	L6C02	
	A6C02	
	YA410 *-R012*	
	A6D02	
	YA410 *-R013*	
	J675- *PIN05*	
L041		
+ 15V LH SVO ANALOG FRONT	D2U05	BD200-L041
	D2J05	BD200-L040
	C2D05	
	L6C02	
	A6C02	
	YA410 *-R012*	
	A6D02	
	YA410 *-R013*	
	J675- *PIN05*	
L042		
- 15V LH SVO ANALOG FRONT	D2G02	BD200-L042
	D2S02	BD200-L043
	C2B02	
	J6E04	
	A6A02	
	YA410 *-R014*	
	A6B02	
	YA410 *-R015*	
	J675- *PIN06*	
L043		
- 15V LH SVO ANALOG FRONT	D2S02	BD200-L043
	D2G02	BD200-L042
	C2B02	
	J6E04	
	A6A02	
	YA410 *-R014*	
	A6B02	
	YA410 *-R015*	
	J675- *PIN06*	
L044		
- 36V LH FRONT	D2S08	BD200-L044
	L6D04	
	D6E02	
	YA410 *-R020*	
	J675- *PIN10*	
L045		
- 5V LH LEFT FRONT	D2B06	BD200-L045
	D2G06	BD200-L046
	G2U04	BG200-L061
	J2J06	BJ210-L022
	-TP-- *K6C04*	
	YA410 *-R016*	
	J675- *PIN07*	
	C6B02	
	YA410 *-R024*	
	J675- *PIN14*	
	C6A02	
L046		
- 5V LH LEFT FRONT	D2G06	BD200-L046
	D2B06	BD200-L045
	G2U04	BG200-L061
	J2J06	BJ210-L022
	-TP-- *K6C04*	
	YA410 *-R016*	
	J675- *PIN07*	
	C6B02	
	YA410 *-R024*	
	J675- *PIN14*	
	C6A02	
R003		
+ LH POSITION ERROR SIG B FRONT	(D2M12)	BD200-R003
	G2H02	BG200-L043
R004		
+ LH INHIBIT POWER AMP FRONT	(D2P11)	BD200-R004
	1C-C4 P1B02	HPA10-L003
	AE200 *TABLE*	
	J672- *PIN01*	
	B2B10	
R005		
+ LH POSITION ERROR SIG A FRONT	(D2G07)	BD200-R005
	G2H03	BG200-L042
R006		
- LH WRITE INHIBIT FRONT	(D2B10)	BD200-R006
	(D2G10)	BD200-R007
	G2G04	BG200-L044
	H2G04	BH210-L044
	C2B10	
R007		
- LH WRITE INHIBIT FRONT	(D2G10)	BD200-R007
	(D2B10)	BD200-R006
	G2G04	BG200-L044
	H2G04	BH210-L044
	C2B10	
R008		
LH POWER AMP DRIVE FRONT	(D2B05)	BD200-R008
	1C-C4 P1B04	HPA10-L004
	AE200 *TABLE*	
	J672- *PIN05*	
	B2D11	
R009		
+ LH HL SERVO TP FRONT	(D2M08)	BD200-R009
R010		
- LH HL SERVO TP FRONT	(D2P09)	BD200-R010
R011		
+ LH VGA GAIN INCREASE TP FRONT	(D2M09)	BD200-R011
R012		
+ LH AGC ACTIVE FRONT	(D2S13)	BD200-R012
	G2N04	BG200-L017
	L2P05	BL200-L018
R013		
- LH PES REF CORRECTION FRONT	(D2M10)	BD200-R013
R014		
- LH SYNC TP FRONT	(D2P12)	BD200-R014
R015		
LH VCM W.I. SIG TP FRONT	(D2P10)	BD200-R015
R016		
+ LH |PESP| LESS THAN .44V FRONT	(D2S03)	BD200-R016
R017		
+ LH RPS CLOCK 3 FRONT	(D2U04)	BD200-R017
	G2C04	BG200-L048
R018		
- LH GAP FRONT	(D2U09)	BD200-R018
	G2B08	BG200-L050
R019		
- LH RPS CLOCK 1 FRONT	(D2U10)	BD200-R019
	G2C06	BG200-L047

LH PES/SERVO ANALOG XRL BD200

LINE/SIGNAL	PIN	SHEET/LINE
R020		
+ LH RPS CLOCK 4 FRONT		
	(D2S09)	BD200-R020
	G2C11	BG200-L049
R021		
+ LH PES P FRONT		
	(D2S12)	BD200-R021
	D2M05	BD200-L003
	C2D06	
R022		
+ LH PES Q FRONT		
	(D2U12)	BD200-R022
	D2M04	BD200-L004
	C2B07	
R023		
LH BURST W.I. SIG TP FRONT		
	(D2J09)	BD200-R023
R024		
- A1 SERVO VCO FRONT		
	(D2B12)	BD200-R024
	(E2B12)	BE200-R024
	B4B07	
	B4D07	
R025		
LH POWER AMP DRIVE TWIST FRONT		
	(D2J07)	BD200-R025
	B2B11	
	C2D10	
R026		
LH INTEGRATOR TP FRONT		
	(D2G09)	BD200-R026
	C2B04	
R027		
LH CURVE TP FRONT		
	(D2G08)	BD200-R027
R028		
LH PSPESR TP FRONT		
	(D2G05)	BD200-R028
	C2B13	
R029		
LH CURRENT TP FRONT		
	(D2J04)	BD200-R029
	C2D04	
R030		
+ LH 3.17V PES GAIN REF TP FRONT		
	(D2J06)	BD200-R030
	C2D02	
R031		
LH DAC TACK 2ND STAGE TP FRONT		
	(D2D12)	BD200-R031
R032		
LH TACH SIGNAL TP FRONT		
	(D2D11)	BD200-R032
R033		
+ LH VCO CONTROL TP FRONT		
	(D2D10)	BD200-R033
R034		
- LH VCO CONTROL TP FRONT		
	(D2D09)	BD200-R034
R035		
+ LH SERVO PAD CLOCK FRONT		
	(D2D07)	BD200-R035
1C-C0	B2AAC	HC1A1-L008
	A2D13	
R036		
+ LH PES LOW TP FRONT		
	(D2D06)	BD200-R036
R037		
+ A2 SERVO VCO FRONT		
	(D2B07)	BD200-R037
	(E2B07)	BE200-R037
	B4B08	
	B4D09	
R038		
- A2 SERVO VCO FRONT		
	(D2B09)	BD200-R038
	(E2B09)	BE200-R038
	B4B09	
	B4D10	
R039		
+ LH SVO CLOCK CABLE ERR FRONT		
	(D2B08)	BD200-R039
	J2N07	BJ210-L020
R040		
+ LH AGC MULT FRONT		
	(D2S10)	BD200-R040
R041		
- LH AGC MULT FRONT		
	(D2S11)	BD200-R041
R042		
+ A1 SERVO VCO FRONT		
	(D2B11)	BD200-R042
	(E2B11)	BE200-R047
	B4B06	
	B4D06	
R043		
+ LH EVERGREEN ID BIT FRONT		
	(D2U13)	BD200-R043
	H2H08	BH210-L043
R044		
LH PES W.I. SIG TP FRONT		
	(D2M06)	BD200-R044
R045		
- LH PARK SIG TP FRONT		
	(D2U11)	BD200-R045
R046		
- LH PES GAIN ERROR FRONT		
	(D2S04)	BD200-R046

LH PES/SERVO ANALOG XRL BD200

See previous page for more.

PRIMARY PARTS

The servo analog card contains the following parts:

- Automatic gain control circuits
  - Variable gain amplifier
  - Four pole active filter
  - Demodulator
  - VGA driver
- Phase-locked loop circuit
  - Voltage controlled oscillator
  - Phase detector
- Primary and four position error demodulation
  - PES decode logic module
  - Synchronous demodulators
  - Three pole active low-pass filter
  - Differential input to single output amplifier
- Sync detector
- Gates clock and driver circuits
- Automatic PES gain circuit
- Burst write inhibit circuit
- PES ramp circuits
  - Ramp selection
  - Fine track comparators (PES A/B)
  - Offset
  - Integrator
- Difference count D/A converter
- Velocity trajector curve/generator
- Electronic tachometer
- System compensator
- Auxiliary function circuits
  - Rezero
  - Inhibit
  - Park/compress
  - Reference voltage circuits

003 + RH PES P FRONT ---------- M05
004 + RH PES Q FRONT ---------- M04
005 - RH RAMP SELECT 0 FRONT ------- M11
006 - RH RAMP SELECT 1 FRONT ------- J02
007 - RH RAMP SELECT 2 FRONT ------- G03
008 - RH RAMP SELECT 3 FRONT ------- G04
009 + RH DIF COUNT 1 FRONT --------- J11
010 + RH DIF COUNT 2 FRONT --------- J13
011 + RH DIF COUNT 4 FRONT --------- J12
012 + RH DIF COUNT 8 FRONT --------- G12
013 + RH DIF COUNT 16 FRONT -------- G13
014 + RH DIF COUNT 32 FRONT -------- G11
015 + RH DIF COUNT 64 FRONT -------- M02
016 + RH DIF COUNT 128 FRONT ------- P02
017 + RH DIF COUNT 256 FRONT ------- J10
018 - RH TRACK FOLLOW FRONT -------- B02
019 + RH PES INTEGRATE FRONT ------- P07
020 - RH OFFSET ACTIVE FRONT ------- P06
021 - RH REVERSE FRONT ------------- M13
022 + RH TRACK FOLLOW FRONT -------- D02
023 - RH REZERO FRONT -------------- B03
024 - RH INHIBIT FRONT ------------- P13
025 - RH CYLINDER PULSE FRONT ------ M07
026 RH POWER AMP COMMON FRONT ------ B13
027 RH VCM CURRENT SIG FRONT ------- D13
028 - RH PARK FRONT ---------------- B04
029 RH TRANSFER FUNC IN FRONT ------ P05
030 + RH LOW LEVEL SERVO FRONT ----- U06
031 - RH LOW LEVEL SERVO FRONT ----- S06
032 + RH SERVO GUARD 1 FRONT ------- U07
033 - RH GATE SERVO PAD CLOCK FRONT M03
034 - RH GATE SERVO A1 CLK ON FRONT S05
035 - RH GATE SERVO A2 CLK ON FRONT P04
036 + RH COMPRESS FRONT ------------ D04
037 - RH RESET FILTER FRONT -------- D05
038 RH VCM VOLTAGE SIG FRONT ------- U02
039 - RH POWER ON RESET POWER FRONT S07
040 + 15V RH SVO ANALOG FRONT ------ J05
041 + 15V RH SVO ANALOG FRONT ------ U05
042 - 15V RH SVO ANALOG FRONT ------ G02
043 - 15V RH SVO ANALOG FRONT ------ S02
044 - 36V RH FRONT ----------------- S08
045 - 5V LH RIGHT FRONT ------------ B06
046 - 5V LH RIGHT FRONT ------------ G06

SERVO ANALOG CARD

INTRODUCTION

The servo analog card is the interface between the servo head preamplifier and the voice coil power amplifier. It is a major part of the servo control loop that provides accurate head-to-disk positioning and optimum track-to-track seek movements.

DESCRIPTION

The servo analog card provides the following functions:

- Phase locks a local oscillator to the 3 megahertz servo signal and provides clock signals for the data channel.
- Provides signals from which index, inner, and outer guard bands can be detected.
- Amplifies and demodulates the low-level servo signal into primary and four position error signals.
- Inhibits the power amplifier when either the '-POR' or the '-INHIBIT' line is active or when the -15 volt, -5 volt or +5 volt supply is off.
- Posts a Cable Error when the the Servo VCO A1 or the Servo VCO A2 cable is improperly terminated, or when two Servo VCO outputs are active on the same cable.
- Automatically sets the position error signal's (PES) gain at the end of a rezero function.
- Sends a 'write inhibit' signal when the offtrack error and the voice coil current and voltage exceed specified limits.
- Provides a logic signal that indicates that the automatic gain control (AGC) circuit is functioning.
- Receives analog signals from the power amplifier proportional to voice coil current and voltage.
- Receives digital control signals from the servo control card, for servo mode control and operation sequences.
- Provides the servo control card with digital position signals.
- In the park mode, upon command, the servo loop is bypassed, and the servo card drives the power amplifier to effect a 200 milliamp voice coil current to hold the actuator assembly at the outer guard band.
- In the compress mode, upon command, the servo loop is bypassed, and the servo card drives the power amplifier to effect a 3 amp coil current to pull the actuator assembly against the outer crash stop.
- In the rezero mode, the servo loop moves the head assembly to track zero at a specified constant velocity.
- In the track follow mode, the servo holds the heads over the center of a track.
- In the offset mode, the servo holds the heads off the center of a track by a distance proportional to the difference count input.
- In the seek mode, the servo moves the heads from one track to another.

See next page for more.

M12 + RH POSITION ERROR SIG B FRONT 003
P11 + RH INHIBIT POWER AMP FRONT --- 004
G07 + RH POSITION ERROR SIG A FRONT 005
B10 - RH WRITE INHIBIT FRONT ------- 006
G10 - RH WRITE INHIBIT FRONT ------- 007
B05 RH POWER AMP DRIVE FRONT ------- 008
M08 + RH HL SERVO TP FRONT --------- 009
P09 - RH HL SERVO TP FRONT --------- 010
M09 + RH VGA GAIN INCREASE TP FRONT 011
S13 + RH AGC ACTIVE FRONT ---------- 012
M10 - RH PES REF CORRECTION FRONT -- 013
P12 - RH SYNC TP FRONT ------------- 014
M06 RH PES W.I. SIG TP FRONT ------- 015
P10 RH VCM W.I. SIG TP FRONT ------- 016
U04 + RH RPS CLOCK 3 FRONT --------- 017
U09 - RH GAP FRONT ----------------- 018
U10 - RH RPS CLOCK 1 FRONT --------- 019
S09 + RH RPS CLOCK 4 FRONT --------- 020
S12 + RH PES P FRONT --------------- 021
U12 + RH PES Q FRONT --------------- 022
J09 RH BURST W.I. SIG TP FRONT ----- 023
B12 - A1 SERVO VCO FRONT ----------- 024
J07 RH POWER AMP DRIVE TWIST FRONT - 025
G09 RH INTEGRATOR TP FRONT --------- 026
G08 RH CURVE TP FRONT -------------- 027
G05 RH PSPESR TP FRONT ------------- 028
J04 RH CURRENT TP FRONT ------------ 029
J06 + RH 3.17V PES GAIN REF TP FRONT 030
D12 RH TAK 2ND STAGE TP FRONT ------ 031
D11 RH TACH SIGNAL TP FRONT -------- 032
D10 + RH VCO CONTROL TP FRONT ------ 033
D09 - RH VCO CONTROL TP FRONT ------ 034
D07 + RH SERVO PAD CLOCK FRONT ----- 035
D06 + RH PES LOW TP FRONT ---------- 036
B07 + A2 SERVO VCO FRONT ----------- 037
B09 - A2 SERVO VCO FRONT ----------- 038
B08 + RH SVO CLOCK CABLE ERR FRONT - 039
M06 RH PES W.I. SIG TP FRONT ------- 040
S03 RH |PESP| LESS THAN .44V FRONT - 041
S10 + RH MULT TP FRONT ------------- 042
S11 - RH MULT TP FRONT ------------- 043
S04 - RH PES GAIN ERROR FRONT ------ 044
U13 + RH EVERGREEN ID BIT FRONT ---- 045
U11 RH PARK SIG TP FRONT ----------- 046
B11 + A1 SERVO VCO FRONT ----------- 047

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ RH PES P FRONT		
	E2M05	BE200-L003
	(E2S12)	BE200-R021
	C3D06	
L004		
+ RH PES Q FRONT		
	E2M04	BE200-L004
	(E2U12)	BE200-R022
	C3B07	
L005		
- RH RAMP SELECT 0 FRONT		
	E2M11	BE200-L005
	(L2B13)	BL200-R032
L006		
- RH RAMP SELECT 1 FRONT		
	E2J02	BE200-L006
	(L2C08)	BL200-R033
L007		
- RH RAMP SELECT 2 FRONT		
	E2G03	BE200-L007
	(L2C12)	BL200-R034
L008		
- RH RAMP SELECT 3 FRONT		
	E2G04	BE200-L008
	(L2D09)	BL200-R035
L009		
+ RH DIF COUNT 1 FRONT		
	E2J11	BE200-L009
	(L2G09)	BL200-R044
L010		
+ RH DIF COUNT 2 FRONT		
	E2J13	BE200-L010
	(L2H08)	BL200-R043
L011		
+ RH DIF COUNT 4 FRONT		
	E2J12	BE200-L011
	(L2H07)	BL200-R042
L012		
+ RH DIF COUNT 8 FRONT		
	E2G12	BE200-L012
	(L2J10)	BL200-R041
L013		
+ RH DIF COUNT 16 FRONT		
	E2G13	BE200-L013
	(L2H09)	BL200-R040
L014		
+ RH DIF COUNT 32 FRONT		
	E2G11	BE200-L014
	(L2G10)	BL200-R039
L015		
+ RH DIF COUNT 64 FRONT		
	E2M02	BE200-L015
	(L2G07)	BL200-R038
L016		
+ RH DIF COUNT 128 FRONT		
	E2P02	BE200-L016
	(L2J07)	BL200-R037
L017		
+ RH DIF COUNT 256 FRONT		
	E2J10	BE200-L017
	(L2M10)	BL200-R036
L018		
- RH TRACK FOLLOW FRONT		
	E2B02	BE200-L018
	(L2B12)	BL200-R057
L019		
+ RH PES INTEGRATE FRONT		
	E2P07	BE200-L019
	(L2J09)	BL200-R054
L020		
- RH OFFSET ACTIVE FRONT		
	E2P06	BE200-L020
	(L2P02)	BL200-R052
	K2H12	BK200-L038
L021		
- RH REVERSE FRONT		
	E2M13	BE200-L021
	(L2J13)	BL200-R048
L022		
+ RH TRACK FOLLOW FRONT		
	E2D02	BE200-L022
	(L2D11)	BL200-R058
L023		
- RH REZERO FRONT		
	E2B03	BE200-L023
	(L2J06)	BL200-R050
L024		
- RH INHIBIT FRONT		
	E2P13	BE200-L024
	(L2H06)	BL200-R045
	K2N02	BK200-L039
L025		
- RH CYLINDER PULSE FRONT		
	E2M07	BE200-L025
	(L2D10)	BL200-R055
	C3D09	
L026		
RH POWER AMP COMMON FRONT		
	E2B13	BE200-L026
1C-C4	(P2D05)	HPA20-R006
1C-C4	(P2B10)	HPA20-R007
AE200	*TABLE*	
J672-	*PIN08*	
J672-	*PIN17*	
	B3B13	
	C3D07	
L027		
RH VCM CURRENT SIG FRONT		
	E2D13	BE200-L027
1C-C4	(P2B08)	HPA20-R004
AE200	*TABLE*	
J672-	*PIN13*	
	B3D13	
	C3B06	
L028		
- RH PARK FRONT		
	E2B04	BE200-L028
	(L2H05)	BL200-R046
L029		
RH TRANSFER FUNC IN FRONT		
	E2P05	BE200-L029
	C3B09	
	C2B08	
L030		
+ RH LOW LEVEL SERVO FRONT		
	E2U06	BE200-L030
1C-C1	B2CA7	HC2A1-L026
	B4B12	
L031		
- RH LOW LEVEL SERVO FRONT		
	E2S06	BE200-L031
1C-C1	B2CB7	HC2A1-L027
	B4B11	
L032		
+ RH SERVO GUARD 1 FRONT		
	E2U07	BE200-L032
1C-C1	B2CA6	HC2A1-L024
1C-C1	B2CB6	HC2A1-L025
	B4B10	
	B4B13	
L033		
- RH GATE SERVO PAD CLOCK FRONT		
	E2M03	BE200-L033
	(J2C08)	BJ200-R004
L034		
- RH GATE SERVO A1 CLK ON FRONT		
	E2S05	BE200-L034
	(J2T05)	BJ200-R021
L035		
- RH GATE SERVO A2 CLK ON FRONT		
	E2P04	BE200-L035
	(J2T08)	BJ200-R022
L036		
+ RH COMPRESS FRONT		
	E2D04	BE200-L036
	(L2G05)	BL200-R047
L037		
- RH RESET FILTER FRONT		
	E2D05	BE200-L037
	(L2H10)	BL200-R051
L038		
RH VCM VOLTAGE SIG FRONT		
	E2U02	BE200-L038
1C-C4	(P2D04)	HPA20-R003
AE200	*TABLE*	
J672-	*PIN06*	
	B3D10	
L039		
- RH POWER ON RESET POWER FRONT		
	E2S07	BE200-L039
	(K2N06)	BK200-R062
	G2S04	BG200-L041
	H2B07	BH200-L018
	J2B10	BJ200-L036
	L2P06	BL200-L015
1C-C1	B2AB2	HC2A1-L070
	A4D02	
L040		
+ 15V RH SVO ANALOG FRONT		
	E2J05	BE200-L040
	E2U05	BE200-L041
	C3D05	
	L6B04	
	D6B02	
YA410	*-R086*	
	D6C02	
YA410	*-R087*	
J676-	*PIN05*	
L041		
+ 15V RH SVO ANALOG FRONT		
	E2U05	BE200-L041
	E2J05	BE200-L040
	C3D05	
	L6B04	
	D6B02	
YA410	*-R086*	
	D6C02	
YA410	*-R087*	
J676-	*PIN05*	
L042		
- 15V RH SVO ANALOG FRONT		
	E2G02	BE200-L042
	E2S02	BE200-L043
	C3B02	
	L6D02	
	A6E02	
YA410	*-R088*	
	B6A02	
YA410	*-R089*	
J676-	*PIN06*	
L043		
- 15V RH SVO ANALOG FRONT		
	E2S02	BE200-L043
	E2G02	BE200-L042
	C3B02	
	L6D02	
	A6E02	
YA410	*-R088*	
	B6A02	
YA410	*-R089*	
J676-	*PIN06*	
L044		
- 36V RH FRONT		
	E2S08	BE200-L044
	J6C02	
	E6A02	
YA410	*-R094*	
J676-	*PIN10*	
L045		
- 5V LH RIGHT FRONT		
	E2B06	BE200-L045
	E2G06	BE200-L046
	J2M09	BJ210-L023
	L2U04	BL200-L061
-TP--	*K6E02*	
YA410	*-R090*	
J676-	*PIN07*	
	F6A02	
YA410	*-R098*	
J676-	*PIN14*	
	E6E02	
L046		
- 5V LH RIGHT FRONT		
	E2G06	BE200-L046
	E2B06	BE200-L045
	J2M09	BJ210-L023
	L2U04	BL200-L061
-TP--	*K6E02*	
YA410	*-R090*	
J676-	*PIN07*	
	F6A02	
YA410	*-R098*	
J676-	*PIN14*	
	E6E02	
R003		
+ RH POSITION ERROR SIG B FRONT		
	(E2M12)	BE200-R003
	L2H02	BL200-L043
R004		
+ RH INHIBIT POWER AMP FRONT		
	(E2P11)	BE200-R004
1C-C4	P2B02	HPA20-L003
J672-	*PIN01*	
	B3B10	
R005		
+ RH POSITION ERROR SIG A FRONT		
	(E2G07)	BE200-R005
	L2H03	BL200-L042
R006		
- RH WRITE INHIBIT FRONT		
	(E2B10)	BE200-R006
	(E2G10)	BE200-R007
	K2G04	BK210-L044
	L2G04	BL200-L044
	C3B10	
R007		
- RH WRITE INHIBIT FRONT		
	(E2G10)	BE200-R007
	(E2B10)	BE200-R006
	K2G04	BK210-L044
	L2G04	BL200-L044
	C3B10	
R008		
RH POWER AMP DRIVE FRONT		
	(E2B05)	BE200-R008
1C-C4	P2B04	HPA20-L004
J672-	*PIN05*	
	B3D11	
R009		
+ RH HL SERVO TP FRONT		
	(E2M08)	BE200-R009
R010		
- RH HL SERVO TP FRONT		
	(E2P09)	BE200-R010
R011		
+ RH VGA GAIN INCREASE TP FRONT		
	(E2M09)	BE200-R011
R012		
+ RH AGC ACTIVE FRONT		
	(E2S13)	BE200-R012
	G2P05	BG200-L018
	L2N04	BL200-L017
R013		
- RH PES REF CORRECTION FRONT		
	(E2M10)	BE200-R013
R014		
- RH SYNC TP FRONT		
	(E2P12)	BE200-R014
R015		
RH PES W.I. SIG TP FRONT		
	(E2M06)	BE200-R015
	(E2M06)	BE200-R040
R016		
RH VCM W.I. SIG TP FRONT		
	(E2P10)	BE200-R016
R017		
+ RH RPS CLOCK 3 FRONT		
	(E2U04)	BE200-R017
	L2C04	BL200-L048
R018		
- RH GAP FRONT		
	(E2U09)	BE200-R018
	L2B08	BL200-L050
R019		
- RH RPS CLOCK 1 FRONT		
	(E2U10)	BE200-R019
	L2C06	BL200-L047

LINE/SIGNAL	PIN	SHEET/LINE
R020		
+ RH RPS CLOCK 4 FRONT		
	(E2S09)	BE200-R020
	L2C11	BL200-L049
R021		
+ RH PES P FRONT		
	(E2S12)	BE200-R021
	E2M05	BE200-L003
	C3D06	
R022		
+ RH PES Q FRONT		
	(E2U12)	BE200-R022
	E2M04	BE200-L004
	C3B07	
R023		
RH BURST W.I. SIG TP FRONT		
	(E2J09)	BE200-R023
R024		
- A1 SERVO VCO FRONT		
	(E2B12)	BE200-R024
	(D2B12)	BD200-R024
	B4B07	
	B4D07	
R025		
RH POWER AMP DRIVE TWIST FRONT		
	(E2J07)	BE200-R025
	B3B11	
	C3D10	
R026		
RH INTEGRATOR TP FRONT		
	(E2G09)	BE200-R026
	C3B04	
R027		
RH CURVE TP FRONT		
	(E2G08)	BE200-R027
R028		
RH PSPESR TP FRONT		
	(E2G05)	BE200-R028
	C3B13	
R029		
RH CURRENT TP FRONT		
	(E2J04)	BE200-R029
	C3D04	
R030		
+ RH 3.17V PES GAIN REF TP FRONT		
	(E2J06)	BE200-R030
	C3D02	
R031		
RH TAK 2ND STAGE TP FRONT		
	(E2D12)	BE200-R031
R032		
RH TACH SIGNAL TP FRONT		
	(E2D11)	BE200-R032
R033		
+ RH VCO CONTROL TP FRONT		
	(E2D10)	BE200-R033
R034		
- RH VCO CONTROL TP FRONT		
	(E2D09)	BE200-R034
R035		
+ RH SERVO PAD CLOCK FRONT		
	(E2D07)	BE200-R035
1C-C1	B2AAC	HC2A1-L008
	A4D13	
R036		
+ RH PES LOW TP FRONT		
	(E2D06)	BE200-R036
R037		
+ A2 SERVO VCO FRONT		
	(E2B07)	BE200-R037
	(D2B07)	BD200-R037
	B4B08	
	B4D09	
R038		
- A2 SERVO VCO FRONT		
	(E2B09)	BE200-R038
	(D2B09)	BD200-R038
	B4B09	
	B4D10	
R039		
+ RH SVO CLOCK CABLE ERR FRONT		
	(E2B08)	BE200-R039
	J2G02	BJ200-L028
R040		
RH PES W.I. SIG TP FRONT		
	(E2M06)	BE200-R040
	(E2M06)	BE200-R015
R041		
RH |PESP| LESS THAN .44V FRONT		
	(E2S03)	BE200-R041
R042		
+ RH MULT TP FRONT		
	(E2S10)	BE200-R042
R043		
- RH MULT TP FRONT		
	(E2S11)	BE200-R043
R044		
- RH PES GAIN ERROR FRONT		
	(E2S04)	BE200-R044
R045		
+ RH EVERGREEN ID BIT FRONT		
	(E2U13)	BE200-R045
	K2H08	BK210-L043
R046		
RH PARK SIG TP FRONT		
	(E2U11)	BE200-R046
R047		
+ A1 SERVO VCO FRONT		
	(E2B11)	BE200-R047
	(D2B11)	BD200-R042
	B4B06	
	B4D06	

RH PES/SERVO ANAL CRD BE200

See previous page for more.

PRIMARY PARTS

The servo analog card contains the following parts:

- Automatic gain control circuits
  - Variable gain amplifier
  - Four pole active filter
  - Demodulator
  - VGA driver
- Phase-locked loop circuit
  - Voltage controlled oscillator
  - Phase detector
- Primary and four position error demodulation
  - PES decode logic module
  - Synchronous demodulators
  - Three pole active low-pass filter
  - Differential input to single output amplifier
- Sync detector
- Gates clock and driver circuits
- Automatic PES gain circuit
- Burst write inhibit circuit
- PES ramp circuits
  - Ramp selection
  - Fine track comparators (PES A/B)
  - Offset
  - Integrator
- Difference count D/A converter
- Velocity trajector curve/generator
- Electronic tachometer
- System compensator
- Auxiliary function circuits
  - Rezero
  - Inhibit
  - Park/compress
  - Reference voltage circuits

RH PES/SERVO ANAL CRD BE200

003 + LH CDP DATA BUS PWR BIT FRNT 0 S02
004 + LH CDP DATA BUS PWR BIT FRNT 1 P13
005 + LH CDP DATA BUS PWR BIT FRNT 2 P11
006 + LH CDP DATA BUS PWR BIT FRNT 3 D02
007 + LH CDP DATA BUS PWR BIT FRNT 4 S10
008 + LH CDP DATA BUS PWR BIT FRNT 5 T07
009 + LH CDP DATA BUS PWR BIT FRNT 6 T11
010 + LH CDP DATA BUS PWR BIT FRNT 7 N13
011 + LH CDP DATA BUS PWR BIT FRNT P S09
012 + LH COMMAND FRONT ---------- T08
013 - LH DEV SELECTED FRONT -------- T10
014 + LH PARM TRANSFER FRONT ------- T09
015 - LH POWER ON RESET POWER FRONT P06
016 - LH DEVICE CHECK 2 RESET FRONT T06
017 + LH AGC ACTIVE FRONT ---------- N04
018 + RH AGC ACTIVE FRONT ---------- P05
019 + LH BUSY W/O PIP FRONT -------- N05
020 - LH PORT FENCED FRONT --------- M05
021 - LH DRIVE PWR SWITCH OFF FRONT P04
022 + RH PULSE RATE FRONT ---------- P07
023 + LH MOTOR CONTROL FRONT ------- P10
024 - DISABLE SWITCH DEVICE 0 ------ M09
025 + A CLOCK FRONT ---------------- M02
026 + B CLOCK FRONT ---------------- N07
027 + B CLOCK FRONT ---------------- U09
028 + C CLOCK FRONT ---------------- C03
029 + D CLOCK FRONT ---------------- M03
030 + E CLOCK FRONT ---------------- N12
031 + E CLOCK FRONT ---------------- U10
032 + F CLOCK FRONT ---------------- M08
033 + G CLOCK FRONT ---------------- C02
034 + G CLOCK FRONT ---------------- S07
035 + H CLOCK FRONT ---------------- T12
036 + AB CLOCK FRONT --------------- B03
037 + CD CLOCK FRONT --------------- C05
038 + EF CLOCK FRONT --------------- M13
039 + GH CLOCK FRONT --------------- B02
040 - CLOCK CHECK HOLD FRONT ------- T04
041 - RH POWER ON RESET POWER FRONT S04
042 + LH POSITION ERROR SIG A FRONT H03
043 + LH POSITION ERROR SIG B FRONT H02
044 - LH WRITE INHIBIT FRONT ------- G04
045 + LH SEEK INCOMPLETE FRONT ----- G08
046 + LH GATE CHK POINT REG FRONT -- N03
047 - LH RPS CLOCK 1 FRONT --------- C06
048 + LH RPS CLOCK 3 FRONT --------- C04
049 + LH RPS CLOCK 4 FRONT --------- C11
050 - LH GAP FRONT ----------------- B08
051 + LH R-W ACTIVE FRONT ---------- D12
052 + LH GATE TARGET REG FRONT ----- C09
053 + LH GATE DIF LOW REG FRONT ---- C07
054 - LH POR SYNC TO CLOCK FRONT --- S13
055 + LH SENSE SOFT START LT FRONT - N11
056 + LH DISABLE MEMORY OUTPUT FRONT Y12
057 + LH CHIP DISABLE FRONT -------- Y23
058 + LH PROGRAM MEMORY FRONT ------ Y27
059 - LH MOD D FRONT --------------- M12
060 + LH PARM TRANSFER EN FRONT ---- S08
061 - 5V LH LEFT FRONT ------------- U04

DEVICE SEQUENCER/SERVO/RPS CARD

INTRODUCTION

The device sequencer/servo/RPS card communicates with the controller, controls actuator motion, performs power sequencing and performs rotational position sensing. There is one device sequencer/servo/RPS card for each actuator.

DESCRIPTION

Communication with the Controller

The device sequencer receives commands, performs the requested functions and generates the response to the controller.

Control of Actuator Motion

The device sequencer and servo control logic have the responsibility of placing the heads over a specific track on the disk surface for the purpose of transferring data. This logic also ensures that the head remains at the specified location until told to move to another location on the disk surface.

Power Sequencing

The device sequencer controls the purge, warm-up cycle, and sweep operation during power on. It controls the park, coast, and brake cycles during power off.

Rotational Position Sensing (RPS)

The RPS function provides 'index' and 'cell boundary' signals during a read/write function.

A record ready interrupt of RPS allows the disconnection from the channel while searching for a record. This disconnection allows the channel to be available for other activities during the rotational delay of the disk.

PRIMARY PARTS

- Parts related to device sequencer functions:
  - EPROMS
  - Two memory data registers
  - Incremental storage address register
  - Sequencer control register
- Parts related to servo control functions:
  - Difference high and difference low counters
  - Checkpoint log register
  - Servo control registers 4 and 6
  - Cylinder pulse generation
  - Crash stop protection
  - Ramp select decode
- Parts related to RPS functions:
  - Index and guard band detection
  - Target register
  - Interrupt counter
  - Clock counters
  - Sector counters
  - RPS clock generation

See next page for more.

U02 + LH SEQ WRITE BUS BIT FRONT 0 - 003
U11 + LH SEQ WRITE BUS BIT FRONT 1 - 004
T02 + LH SEQ WRITE BUS BIT FRONT 2 - 005
U12 + LH SEQ WRITE BUS BIT FRONT 3 - 006
T03 + LH SEQ WRITE BUS BIT FRONT 4 - 007
S05 + LH SEQ WRITE BUS BIT FRONT 5 - 008
S03 + LH SEQ WRITE BUS BIT FRONT 6 - 009
U05 + LH SEQ WRITE BUS BIT FRONT 7 - 010
U07 + LH SEQ WRITE BUS BIT FRONT P - 011
D05 - LH CHK POINT/TAR/DIF FRONT 0 - 012
G13 - LH CHK POINT/TAR/DIF FRONT 1 - 013
B05 - LH CHK POINT/TAR/DIF FRONT 2 - 014
B04 - LH CHK POINT/TAR/DIF FRONT 3 - 015
B07 - LH CHK POINT/TAR/DIF FRONT 4 - 016
H12 - LH CHK POINT/TAR/DIF FRONT 5 - 017
J12 - LH CHK POINT/TAR/DIF FRONT 6 - 018
H13 - LH CHK POINT/TAR/DIF FRONT 7 - 019
G12 - LH CHK POINT/TAR/DIF FRONT P - 020
N02 + LH SEQ STATUS STROBE FRONT --- 021
N10 + LH LOAD POWER CTRL REG FRONT - 022
N09 - LH LOAD SEQ STATUS REG FRONT - 023
M04 + LH SEQ MOVE FORMAT FRONT ----- 024
U06 + LH SEQ CHECK FRONT ----------- 025
G02 + LH CHK POINT LOG CHECK FRONT - 026
H11 + LH SERVO CTRL CHECK FRONT ---- 027
D04 + LH RECORD READY IRPT FRONT --- 028
B10 + LH RPS CHECK FRONT ----------- 029
N08 + LH SET HEAD ARM ADR REG FRONT 030
N06 - LH LOAD REG 3 FRONT ---------- 031
B13 - LH RAMP SELECT 0 FRONT ------- 032
C08 - LH RAMP SELECT 1 FRONT ------- 033
C12 - LH RAMP SELECT 2 FRONT ------- 034
D09 - LH RAMP SELECT 3 FRONT ------- 035
M10 + LH DIF COUNT 256 FRONT ------- 036
J07 + LH DIF COUNT 128 FRONT ------- 037
G07 + LH DIF COUNT 64 FRONT -------- 038
G10 + LH DIF COUNT 32 FRONT -------- 039
H09 + LH DIF COUNT 16 FRONT -------- 040
J10 + LH DIF COUNT 8 FRONT --------- 041
H07 + LH DIF COUNT 4 FRONT --------- 042
H08 + LH DIF COUNT 2 FRONT --------- 043
G09 + LH DIF COUNT 1 FRONT --------- 044
H06 - LH INHIBIT FRONT ------------- 045
H05 - LH PARK FRONT ---------------- 046
G05 + LH COMPRESS FRONT ------------ 047
J13 - LH REVERSE FRONT ------------- 048
J05 - LH FORWARD FRONT ------------- 049
J06 - LH REZERO FRONT -------------- 050
H10 - LH RESET FILTER FRONT -------- 051
P02 - LH OFFSET ACTIVE FRONT ------- 052
J11 - LH GATE DIFFERENCE TP FRONT -- 053
J09 + LH PES INTEGRATE FRONT ------- 054
D10 - LH CYLINDER PULSE FRONT ------ 055
C10 + LH CYLINDER PULSE FRONT ------ 056
B12 - LH TRACK FOLLOW FRONT -------- 057
D11 + LH TRACK FOLLOW FRONT -------- 058
D06 - LH COARSE TRACK FRONT -------- 059
D07 - LH WRITE READY FRONT --------- 060
B09 + LH PULSE RATE FRONT ---------- 061
G03 + LH INDEX 1 FRONT ------------- 062
C13 + LH INDEX 2 FRONT ------------- 063
D13 + LH SEGMENT BOUNDARY FRONT ---- 064
J02 + LH INNER GUARD BAND FRONT ---- 065
H04 + LH OUTER GUARD BAND FRONT ---- 066
M07 + LH RPS CLOCK T-0 (L1) FRONT -- 067
S12 - LH POR SYNC TO CLOCK FRONT --- 068
---- - CONTINUED ON PAGE BG210 ------ 069

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ LH CDP DATA BUS PWR BIT FRNT 0		
	G2S02	BG200-L003
	(H2C02)	BH200-R045
	J2G05	BJ200-L038
L004		
+ LH CDP DATA BUS PWR BIT FRNT 1		
	G2P13	BG200-L004
	(H2C07)	BH200-R046
	J2G04	BJ200-L039
L005		
+ LH CDP DATA BUS PWR BIT FRNT 2		
	G2P11	BG200-L005
	(H2C10)	BH200-R047
	J2G03	BJ200-L040
L006		
+ LH CDP DATA BUS PWR BIT FRNT 3		
	G2D02	BG200-L006
	(H2B09)	BH200-R048
	J2H05	BJ200-L041
L007		
+ LH CDP DATA BUS PWR BIT FRNT 4		
	G2S10	BG200-L007
	(H2B10)	BH200-R049
	J2H03	BJ200-L042
L008		
+ LH CDP DATA BUS PWR BIT FRNT 5		
	G2T07	BG200-L008
	(H2C09)	BH200-R050
	J2J05	BJ200-L043
L009		
+ LH CDP DATA BUS PWR BIT FRNT 6		
	G2T11	BG200-L009
	(H2B04)	BH200-R051
	J2J04	BJ200-L044
L010		
+ LH CDP DATA BUS PWR BIT FRNT 7		
	G2N13	BG200-L010
	(H2C08)	BH200-R052
	J2H06	BJ200-L045
L011		
+ LH CDP DATA BUS PWR BIT FRNT P		
	G2S09	BG200-L011
	(H2C04)	BH200-R053
	J2H04	BJ200-L046
L012		
+ LH COMMAND FRONT		
	G2T08	BG200-L012
	(H2T06)	BH200-R034
L013		
- LH DEV SELECTED FRONT		
	G2T10	BG200-L013
	(H2N04)	BH200-R033
	J2P04	BJ200-L058
	K2M04	BK200-L017
L014		
+ LH PARM TRANSFER FRONT		
	G2T09	BG200-L014
	(H2N08)	BH200-R036
L015		
- LH POWER ON RESET POWER FRONT		
	G2P06	BG200-L015
	(H2N06)	BH200-R062
	D2S07	BD200-L039
	J2N11	BJ200-L037
	K2B07	BK200-L018
	L2S04	BL200-L041
1C-C0	B2AB2	HC1A1-L070
	A2D02	
L016		
- LH DEVICE CHECK 2 RESET FRONT		
	G2T06	BG200-L016
	(H2J11)	BH200-R035
	J2N04	BJ200-L057
L017		
+ LH AGC ACTIVE FRONT		
	G2N04	BG200-L017
	(D2S13)	BD200-R012
	L2P05	BL200-L018
L018		
+ RH AGC ACTIVE FRONT		
	G2P05	BG200-L018
	(E2S13)	BE200-R012
	L2N04	BL200-L017
L019		
+ LH BUSY W/O PIP FRONT		
	G2N05	BG200-L019
	(H2G12)	BH200-R037
L020		
- LH PORT FENCED FRONT		
	G2M05	BG200-L020
	(H2G10)	BH200-R039
L021		
- LH DRIVE PWR SWITCH OFF FRONT		
	G2P04	BG200-L021
	(H2M03)	BH200-R041
L022		
+ RH PULSE RATE FRONT		
	G2P07	BG200-L022
	(L2B09)	BL200-R061
L023		
+ LH MOTOR CONTROL FRONT		
	G2P10	BG200-L023
	(H2B02)	BH200-R040
L024		
- DISABLE SWITCH DEVICE 0		
	G2M09	BG200-L024
YA120	*-R060*	
	A1A13	
L025		
+ A CLOCK FRONT		
	G2M02	BG200-L025
	(J2S07)	BJ200-R029
	H2T09	BH200-L028
	K2T09	BK200-L028
	L2M02	BL200-L025
L026		
+ B CLOCK FRONT		
	G2N07	BG200-L026
	(J2U05)	BJ200-R030
	G2U09	BG200-L027
	H2T05	BH200-L029
	K2T05	BK200-L029
	L2N07	BL200-L026
	L2U09	BL200-L027
L027		
+ B CLOCK FRONT		
	G2U09	BG200-L027
	(J2U05)	BJ200-R030
	G2N07	BG200-L026
	H2T05	BH200-L029
	K2T05	BK200-L029
	L2N07	BL200-L026
	L2U09	BL200-L027
L028		
+ C CLOCK FRONT		
	G2C03	BG200-L028
	(J2T03)	BJ200-R031
	H2T08	BH200-L030
	K2T08	BK200-L030
	L2C03	BL200-L028
L029		
+ D CLOCK FRONT		
	G2M03	BG200-L029
	(J2S08)	BJ200-R032
	H2T07	BH200-L031
	K2T07	BK200-L031
	L2M03	BL200-L029
L030		
+ E CLOCK FRONT		
	G2N12	BG200-L030
	(J2U10)	BJ200-R033
	G2U10	BG200-L031
	H2U06	BH200-L032
	K2U06	BK200-L032
	L2N12	BL200-L030
	L2U10	BL200-L031
L031		
+ E CLOCK FRONT		
	G2U10	BG200-L031
	(J2U10)	BJ200-R033
	G2N12	BG200-L030
	H2U06	BH200-L032
	K2U06	BK200-L032
	L2N12	BL200-L030
	L2U10	BL200-L031
L032		
+ F CLOCK FRONT		
	G2M08	BG200-L032
	(J2U11)	BJ200-R034
	H2S03	BH200-L033
	K2S03	BK200-L033
	L2M08	BL200-L032
L033		
+ G CLOCK FRONT		
	G2C02	BG200-L033
	(J2T11)	BJ200-R035
	G2S07	BG200-L034
	H2T03	BH200-L034
	K2T03	BK200-L034
	L2C02	BL200-L033
	L2S07	BL200-L034
L034		
+ G CLOCK FRONT		
	G2S07	BG200-L034
	(J2T11)	BJ200-R035
	G2C02	BG200-L033
	H2T03	BH200-L034
	K2T03	BK200-L034
	L2C02	BL200-L033
	L2S07	BL200-L034
L035		
+ H CLOCK FRONT		
	G2T12	BG200-L035
	(J2U04)	BJ200-R036
	H2U05	BH200-L035
	H2D13	BH200-L053
	K2U05	BK200-L035
	K2D13	BK200-L053
	L2T12	BL200-L035
L036		
+ AB CLOCK FRONT		
	G2B03	BG200-L036
	(J2T10)	BJ200-R025
	L2B03	BL200-L036
L037		
+ CD CLOCK FRONT		
	G2C05	BG200-L037
	(J2U09)	BJ200-R026
	L2C05	BL200-L037
L038		
+ EF CLOCK FRONT		
	G2M13	BG200-L038
	(J2U07)	BJ200-R027
	L2M13	BL200-L038
L039		
+ GH CLOCK FRONT		
	G2B02	BG200-L039
	(J2T06)	BJ200-R028
	L2B02	BL200-L039
L040		
- CLOCK CHECK HOLD FRONT		
	G2T04	BG200-L040
	(J2U02)	BJ200-R037
	H2G03	BH200-L036
	K2G03	BK200-L036
	L2T04	BL200-L040
L041		
- RH POWER ON RESET POWER FRONT		
	G2S04	BG200-L041
	(K2N06)	BK200-R062
	E2S07	BE200-L039
	H2B07	BH200-L018
	J2B10	BJ200-L036
	L2P06	BL200-L015
1C-C1	B2AB2	HC2A1-L070
	A4D02	
L042		
+ LH POSITION ERROR SIG A FRONT		
	G2H03	BG200-L042
	(D2G07)	BD200-R005
L043		
+ LH POSITION ERROR SIG B FRONT		
	G2H02	BG200-L043
	(D2M12)	BD200-R003
L044		
- LH WRITE INHIBIT FRONT		
	G2G04	BG200-L044
	(D2B10)	BD200-R006
	(D2G10)	BD200-R007
	H2G04	BH210-L044
	C2B10	
L045		
+ LH SEEK INCOMPLETE FRONT		
	G2G08	BG200-L045
	(H2H10)	BH200-R038
L046		
+ LH GATE CHK POINT REG FRONT		
	G2N03	BG200-L046
	(H2B08)	BH200-R031
L047		
- LH RPS CLOCK 1 FRONT		
	G2C06	BG200-L047
	(D2U10)	BD200-R019
L048		
+ LH RPS CLOCK 3 FRONT		
	G2C04	BG200-L048
	(D2U04)	BD200-R017
L049		
+ LH RPS CLOCK 4 FRONT		
	G2C11	BG200-L049
	(D2S09)	BD200-R020
L050		
- LH GAP FRONT		
	G2B08	BG200-L050
	(D2U09)	BD200-R018
L051		
+ LH R-W ACTIVE FRONT		
	G2D12	BG200-L051
	(J2P13)	BJ200-R041
L052		
+ LH GATE TARGET REG FRONT		
	G2C09	BG200-L052
	(H2D07)	BH200-R030
L053		
+ LH GATE DIF LOW REG FRONT		
	G2C07	BG200-L053
	(H2C05)	BH200-R029
L054		
- LH POR SYNC TO CLOCK FRONT		
	G2S13	BG200-L054
	(G2S12)	BG200-R068
L055		
+ LH SENSE SOFT START LT FRONT		
	G2N11	BG200-L055
	(H2H04)	BH210-R020
	L2N11	BL200-L058
L056		
+ LH DISABLE MEMORY OUTPUT FRONT		
	G2Y12	BG200-L056
L057		
+ LH CHIP DISABLE FRONT		
	G2Y23	BG200-L057
L058		
+ LH PROGRAM MEMORY FRONT		
	G2Y27	BG200-L058
L059		
- LH MOD D FRONT		
	G2M12	BG200-L059
1C-C4	P1D12	HPA10-L012
YA500	*-L066*	
J180-	*PIN05*	
J672-	*PIN22*	
	B2D12	
L060		
+ LH PARM TRANSFER EN FRONT		
	G2S08	BG200-L060
	(H2B03)	BH210-R026
L061		
- 5V LH LEFT FRONT		
	G2U04	BG200-L061
	D2B06	BD200-L045
	D2G06	BD200-L046
	J2J06	BJ210-L022
-TP--	*K6C04*	
YA410	*-R016*	
J675-	*PIN07*	
	C6B02	
YA410	*-R024*	
J675-	*PIN14*	
	C6A02	

SEQ, SERVO, RPS LH XRL BG200

LINE/SIGNAL	PIN	SHEET/LINE
R003		
+ LH SEQ WRITE BUS BIT FRONT 0	(G2U02)	BG200-R003
	(G2X30)	BG210-R004
	H2X30	BH210-L029
R004		
+ LH SEQ WRITE BUS BIT FRONT 1	(G2U11)	BG200-R004
	(G2X28)	BG210-R005
	H2X28	BH210-L030
R005		
+ LH SEQ WRITE BUS BIT FRONT 2	(G2T02)	BG200-R005
	(G2X32)	BG210-R006
	H2X32	BH210-L031
	K2J04	BK210-L039
R006		
+ LH SEQ WRITE BUS BIT FRONT 3	(G2U12)	BG200-R006
	(G2X24)	BG210-R007
	H2X24	BH210-L032
R007		
+ LH SEQ WRITE BUS BIT FRONT 4	(G2T03)	BG200-R007
	(G2X33)	BG210-R008
	H2X33	BH210-L033
R008		
+ LH SEQ WRITE BUS BIT FRONT 5	(G2S05)	BG200-R008
	(G2X03)	BG210-R009
	H2X03	BH210-L034
R009		
+ LH SEQ WRITE BUS BIT FRONT 6	(G2S03)	BG200-R009
	(G2X10)	BG210-R010
	H2X10	BH210-L035
R010		
+ LH SEQ WRITE BUS BIT FRONT 7	(G2U05)	BG200-R010
	(G2X09)	BG210-R011
	H2X09	BH210-L036
R011		
+ LH SEQ WRITE BUS BIT FRONT P	(G2U07)	BG200-R011
	(G2X29)	BG210-R012
	H2X29	BH210-L037
R012		
- LH CHK POINT/TAR/DIF FRONT 0	(G2D05)	BG200-R012
	(G2X06)	BG210-R013
	H2X06	BH210-L020
R013		
- LH CHK POINT/TAR/DIF FRONT 1	(G2G13)	BG200-R013
	(G2X07)	BG210-R014
	H2X07	BH210-L021
R014		
- LH CHK POINT/TAR/DIF FRONT 2	(G2B05)	BG200-R014
	(G2X26)	BG210-R015
	H2X26	BH210-L022
R015		
- LH CHK POINT/TAR/DIF FRONT 3	(G2B04)	BG200-R015
	(G2X13)	BG210-R016
	H2X13	BH210-L023
R016		
- LH CHK POINT/TAR/DIF FRONT 4	(G2B07)	BG200-R016
	(G2X02)	BG210-R017
	H2X02	BH210-L024
R017		
- LH CHK POINT/TAR/DIF FRONT 5	(G2H12)	BG200-R017
	(G2X25)	BG210-R018
	H2X25	BH210-L025
R018		
- LH CHK POINT/TAR/DIF FRONT 6	(G2J12)	BG200-R018
	(G2X05)	BG210-R019
	H2X05	BH210-L026
R019		
- LH CHK POINT/TAR/DIF FRONT 7	(G2H13)	BG200-R019
	(G2X11)	BG210-R020
	H2X11	BH210-L027
R020		
- LH CHK POINT/TAR/DIF FRONT P	(G2G12)	BG200-R020
	(G2X22)	BG210-R021
	H2X22	BH210-L028
R021		
+ LH SEQ STATUS STROBE FRONT	(G2N02)	BG200-R021
	H2C03	BH200-L026
R022		
+ LH LOAD POWER CTRL REG FRONT	(G2N10)	BG200-R022
	H2D06	BH200-L024
	K2M08	BK210-L038
R023		
- LH LOAD SEQ STATUS REG FRONT	(G2N09)	BG200-R023
	H2P02	BH200-L027
R024		
+ LH SEQ MOVE FORMAT FRONT	(G2M04)	BG200-R024
	H2D04	BH200-L025
R025		
+ LH SEQ CHECK FRONT	(G2U06)	BG200-R025
	H2G09	BH200-L020
R026		
+ LH CHK POINT LOG CHECK FRONT	(G2G02)	BG200-R026
	H2P05	BH200-L019
R027		
+ LH SERVO CTRL CHECK FRONT	(G2H11)	BG200-R027
	H2C13	BH200-L021
R028		
+ LH RECORD READY IRPT FRONT	(G2D04)	BG200-R028
	H2J12	BH200-L040
R029		
+ LH RPS CHECK FRONT	(G2B10)	BG200-R029
	H2J05	BH200-L022
R030		
+ LH SET HEAD ARM ADR REG FRONT	(G2N08)	BG200-R030
	J2P05	BJ200-L059
R031		
- LH LOAD REG 3 FRONT	(G2N06)	BG200-R031
R032		
- LH RAMP SELECT 0 FRONT	(G2B13)	BG200-R032
	D2M11	BD200-L005
R033		
- LH RAMP SELECT 1 FRONT	(G2C08)	BG200-R033
	D2J02	BD200-L006
R034		
- LH RAMP SELECT 2 FRONT	(G2C12)	BG200-R034
	D2G03	BD200-L007
R035		
- LH RAMP SELECT 3 FRONT	(G2D09)	BG200-R035
	D2G04	BD200-L008
R036		
+ LH DIF COUNT 256 FRONT	(G2M10)	BG200-R036
	D2J10	BD200-L017
R037		
+ LH DIF COUNT 128 FRONT	(G2J07)	BG200-R037
	D2P02	BD200-L016
R038		
+ LH DIF COUNT 64 FRONT	(G2G07)	BG200-R038
	D2M02	BD200-L015
R039		
+ LH DIF COUNT 32 FRONT	(G2G10)	BG200-R039
	D2G11	BD200-L014
R040		
+ LH DIF COUNT 16 FRONT	(G2H09)	BG200-R040
	D2G13	BD200-L013
R041		
+ LH DIF COUNT 8 FRONT	(G2J10)	BG200-R041
	D2G12	BD200-L012
R042		
+ LH DIF COUNT 4 FRONT	(G2H07)	BG200-R042
	D2J12	BD200-L011
R043		
+ LH DIF COUNT 2 FRONT	(G2H08)	BG200-R043
	D2J13	BD200-L010
R044		
+ LH DIF COUNT 1 FRONT	(G2G09)	BG200-R044
	D2J11	BD200-L009
R045		
- LH INHIBIT FRONT	(G2H06)	BG200-R045
	D2P13	BD200-L024
	H2N02	BH200-L039
R046		
- LH PARK FRONT	(G2H05)	BG200-R046
	D2B04	BD200-L028
R047		
+ LH COMPRESS FRONT	(G2G05)	BG200-R047
	D2D04	BD200-L036
R048		
- LH REVERSE FRONT	(G2J13)	BG200-R048
	D2M13	BD200-L021
R049		
- LH FORWARD FRONT	(G2J05)	BG200-R049
	C2B11	
R050		
- LH REZERO FRONT	(G2J06)	BG200-R050
	D2B03	BD200-L023
R051		
- LH RESET FILTER FRONT	(G2H10)	BG200-R051
	D2D05	BD200-L037
R052		
- LH OFFSET ACTIVE FRONT	(G2P02)	BG200-R052
	D2P06	BD200-L020
	H2H12	BH200-L038
R053		
- LH GATE DIFFERENCE TP FRONT	(G2J11)	BG200-R053
	C2D11	
R054		
+ LH PES INTEGRATE FRONT	(G2J09)	BG200-R054
	D2P07	BD200-L019
R055		
- LH CYLINDER PULSE FRONT	(G2D10)	BG200-R055
	D2M07	BD200-L025
	C2D09	
R056		
+ LH CYLINDER PULSE FRONT	(G2C10)	BG200-R056
R057		
- LH TRACK FOLLOW FRONT	(G2B12)	BG200-R057
	D2B02	BD200-L018
R058		
+ LH TRACK FOLLOW FRONT	(G2D11)	BG200-R058
	D2D02	BD200-L022
R059		
- LH COARSE TRACK FRONT	(G2D06)	BG200-R059
	J2D09	BJ200-L063
	C2B03	
R060		
- LH WRITE READY FRONT	(G2D07)	BG200-R060
	J2C09	BJ200-L064
R061		
+ LH PULSE RATE FRONT	(G2B09)	BG200-R061
	L2P07	BL200-L022
R062		
+ LH INDEX 1 FRONT	(G2G03)	BG200-R062
	J2N06	BJ200-L060
	A2B03	
	C2B05	
R063		
+ LH INDEX 2 FRONT	(G2C13)	BG200-R063
	J2P06	BJ200-L061
R064		
+ LH SEGMENT BOUNDARY FRONT	(G2D13)	BG200-R064
	J2P07	BJ200-L062
	A3D12	
R065		
+ LH INNER GUARD BAND FRONT	(G2J02)	BG200-R065
	C2D12	
R066		
+ LH OUTER GUARD BAND FRONT	(G2H04)	BG200-R066
	C2B12	
R067		
+ LH RPS CLOCK T-0 (L1) FRONT	(G2M07)	BG200-R067
	J2N08	BJ200-L066
R068		
- LH POR SYNC TO CLOCK FRONT	(G2S12)	BG200-R068
	G2S13	BG200-L054
R069		
- CONTINUED ON PAGE BG210	(G2)	BG200-R069

SEQ, SERVO, RPS LH XRL BG200

See previous page for more.

ERROR CHECKING

The following checks cause a device sequencer/servo/RPS check:

- Sequencer Check
- RPS Check

A servo error is caused by one of the following:

- A difference high and low counter register parity error. The difference high and low counters are checked for correct parity while the registers are loaded.
- A servo control register 4 or 6 parity error.
- A checkpoint log register error.

A servo-inhibited error is caused by one of the following:

- Crash stop inhibit - Crash stop protection logic monitors the access mechanism for abnormal movement.
- Overshoot inhibit - When the actuator motion exceeds +1-1/2 tracks while attempting to settle on the target track at the end of a seek operation.
- Unexpected GBOD signal - If the guard band outer diameter (GBOD) signal is detected under conditions other than park, rezero, or seek to -3 track operations.
- Loss of AGC - Loss of automatic gain control (AGC) indicates that the disk is rotating below a threshold speed.

---- - CONTINUED FROM PAGE BG200 ---- 003
X30 + LH SEQ WRITE BUS BIT FRONT 0 - 004
X28 + LH SEQ WRITE BUS BIT FRONT 1 - 005
X32 + LH SEQ WRITE BUS BIT FRONT 2 - 006
X24 + LH SEQ WRITE BUS BIT FRONT 3 - 007
X33 + LH SEQ WRITE BUS BIT FRONT 4 - 008
X03 + LH SEQ WRITE BUS BIT FRONT 5 - 009
X10 + LH SEQ WRITE BUS BIT FRONT 6 - 010
X09 + LH SEQ WRITE BUS BIT FRONT 7 - 011
X29 + LH SEQ WRITE BUS BIT FRONT P - 012
X06 - LH CHK POINT/TAR/DIF FRONT 0 - 013
X07 - LH CHK POINT/TAR/DIF FRONT 1 - 014
X26 - LH CHK POINT/TAR/DIF FRONT 2 - 015
X13 - LH CHK POINT/TAR/DIF FRONT 3 - 016
X02 - LH CHK POINT/TAR/DIF FRONT 4 - 017
X25 - LH CHK POINT/TAR/DIF FRONT 5 - 018
X05 - LH CHK POINT/TAR/DIF FRONT 6 - 019
X11 - LH CHK POINT/TAR/DIF FRONT 7 - 020
X22 - LH CHK POINT/TAR/DIF FRONT P - 021
Z02 + LH MEMORY BIT 0 FRONT -------- 022
Z22 + LH MEMORY BIT 1 FRONT -------- 023
Z03 + LH MEMORY BIT 2 FRONT -------- 024
Z23 + LH MEMORY BIT 3 FRONT -------- 025
Z04 + LH MEMORY BIT 4 FRONT -------- 026
Z24 + LH MEMORY BIT 5 FRONT -------- 027
Z05 + LH MEMORY BIT 6 FRONT -------- 028
Z25 + LH MEMORY BIT 7 FRONT -------- 029
Z06 + LH MEMORY BIT 8 FRONT -------- 030
Z26 + LH MEMORY BIT 9 FRONT -------- 031
Z07 + LH MEMORY BIT 10 FRONT ------- 032
Z27 + LH MEMORY BIT 11 FRONT ------- 033
Z08 + LH MEMORY BIT 12 FRONT ------- 034
Z28 + LH MEMORY BIT 13 FRONT ------- 035
Z09 + LH MEMORY BIT 14 FRONT ------- 036
Z29 + LH MEMORY BIT 15 FRONT ------- 037
Z10 + LH MEMORY BIT 16 FRONT ------- 038
Z30 + LH MEMORY BIT 17 FRONT ------- 039
Y10 + LH ISAR 2K FRONT ------------- 040
Y04 + LH ISAR 4K FRONT ------------- 041
Y11 + LH ISAR 1024 TP FRONT -------- 042
Y13 + LH ISAR 512 TP FRONT --------- 043
Y33 + LH ISAR 256 TP FRONT --------- 044
Y32 + LH ISAR 128 TP FRONT --------- 045
Y30 + LH ISAR 64 TP FRONT ---------- 046
Y29 + LH ISAR 32 TP FRONT ---------- 047
Y28 + LH ISAR 16 TP FRONT ---------- 048
Y26 + LH ISAR 8 TP FRONT ----------- 049
Y25 + LH ISAR 4 TP FRONT ----------- 050
Y24 + LH ISAR 2 TP FRONT ----------- 051
Y22 + LH ISAR 1 TP FRONT ----------- 052
Y02 + LH D CLOCK POWERED FRONT ----- 053

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- CONTINUED FROM PAGE BG200		
	(G2)	BG210-R003
R004		
+ LH SEQ WRITE BUS BIT FRONT 0		
	(G2X30)	BG210-R004
	(G2U02)	BG200-R003
	H2X30	BH210-L029
R005		
+ LH SEQ WRITE BUS BIT FRONT 1		
	(G2X28)	BG210-R005
	(G2U11)	BG200-R004
	H2X28	BH210-L030
R006		
+ LH SEQ WRITE BUS BIT FRONT 2		
	(G2X32)	BG210-R006
	(G2T02)	BG200-R005
	H2X32	BH210-L031
	K2J04	BK210-L039
R007		
+ LH SEQ WRITE BUS BIT FRONT 3		
	(G2X24)	BG210-R007
	(G2U12)	BG200-R006
	H2X24	BH210-L032
R008		
+ LH SEQ WRITE BUS BIT FRONT 4		
	(G2X33)	BG210-R008
	(G2T03)	BG200-R007
	H2X33	BH210-L033
R009		
+ LH SEQ WRITE BUS BIT FRONT 5		
	(G2X03)	BG210-R009
	(G2S05)	BG200-R008
	H2X03	BH210-L034
R010		
+ LH SEQ WRITE BUS BIT FRONT 6		
	(G2X10)	BG210-R010
	(G2S03)	BG200-R009
	H2X10	BH210-L035
R011		
+ LH SEQ WRITE BUS BIT FRONT 7		
	(G2X09)	BG210-R011
	(G2U05)	BG200-R010
	H2X09	BH210-L036
R012		
+ LH SEQ WRITE BUS BIT FRONT P		
	(G2X29)	BG210-R012
	(G2U07)	BG200-R011
	H2X29	BH210-L037
R013		
- LH CHK POINT/TAR/DIF FRONT 0		
	(G2X06)	BG210-R013
	(G2D05)	BG200-R012
	H2X06	BH210-L020
R014		
- LH CHK POINT/TAR/DIF FRONT 1		
	(G2X07)	BG210-R014
	(G2G13)	BG200-R013
	H2X07	BH210-L021
R015		
- LH CHK POINT/TAR/DIF FRONT 2		
	(G2X26)	BG210-R015
	(G2B05)	BG200-R014
	H2X26	BH210-L022
R016		
- LH CHK POINT/TAR/DIF FRONT 3		
	(G2X13)	BG210-R016
	(G2B04)	BG200-R015
	H2X13	BH210-L023
R017		
- LH CHK POINT/TAR/DIF FRONT 4		
	(G2X02)	BG210-R017
	(G2B07)	BG200-R016
	H2X02	BH210-L024
R018		
- LH CHK POINT/TAR/DIF FRONT 5		
	(G2X25)	BG210-R018
	(G2H12)	BG200-R017
	H2X25	BH210-L025
R019		
- LH CHK POINT/TAR/DIF FRONT 6		
	(G2X05)	BG210-R019
	(G2J12)	BG200-R018
	H2X05	BH210-L026
R020		
- LH CHK POINT/TAR/DIF FRONT 7		
	(G2X11)	BG210-R020
	(G2H13)	BG200-R019
	H2X11	BH210-L027
R021		
- LH CHK POINT/TAR/DIF FRONT P		
	(G2X22)	BG210-R021
	(G2G12)	BG200-R020
	H2X22	BH210-L028
R022		
+ LH MEMORY BIT 0 FRONT		
	(G2Z02)	BG210-R022
R023		
+ LH MEMORY BIT 1 FRONT		
	(G2Z22)	BG210-R023
R024		
+ LH MEMORY BIT 2 FRONT		
	(G2Z03)	BG210-R024
R025		
+ LH MEMORY BIT 3 FRONT		
	(G2Z23)	BG210-R025
R026		
+ LH MEMORY BIT 4 FRONT		
	(G2Z04)	BG210-R026
R027		
+ LH MEMORY BIT 5 FRONT		
	(G2Z24)	BG210-R027
R028		
+ LH MEMORY BIT 6 FRONT		
	(G2Z05)	BG210-R028
R029		
+ LH MEMORY BIT 7 FRONT		
	(G2Z25)	BG210-R029
R030		
+ LH MEMORY BIT 8 FRONT		
	(G2Z06)	BG210-R030
R031		
+ LH MEMORY BIT 9 FRONT		
	(G2Z26)	BG210-R031
R032		
+ LH MEMORY BIT 10 FRONT		
	(G2Z07)	BG210-R032
R033		
+ LH MEMORY BIT 11 FRONT		
	(G2Z27)	BG210-R033
R034		
+ LH MEMORY BIT 12 FRONT		
	(G2Z08)	BG210-R034
R035		
+ LH MEMORY BIT 13 FRONT		
	(G2Z28)	BG210-R035
R036		
+ LH MEMORY BIT 14 FRONT		
	(G2Z09)	BG210-R036
R037		
+ LH MEMORY BIT 15 FRONT		
	(G2Z29)	BG210-R037
R038		
+ LH MEMORY BIT 16 FRONT		
	(G2Z10)	BG210-R038
R039		
+ LH MEMORY BIT 17 FRONT		
	(G2Z30)	BG210-R039
R040		
+ LH ISAR 2K FRONT		
	(G2Y10)	BG210-R040
R041		
+ LH ISAR 4K FRONT		
	(G2Y04)	BG210-R041
R042		
+ LH ISAR 1024 TP FRONT		
	(G2Y11)	BG210-R042
R043		
+ LH ISAR 512 TP FRONT		
	(G2Y13)	BG210-R043
R044		
+ LH ISAR 256 TP FRONT		
	(G2Y33)	BG210-R044
R045		
+ LH ISAR 128 TP FRONT		
	(G2Y32)	BG210-R045
R046		
+ LH ISAR 64 TP FRONT		
	(G2Y30)	BG210-R046
R047		
+ LH ISAR 32 TP FRONT		
	(G2Y29)	BG210-R047
R048		
+ LH ISAR 16 TP FRONT		
	(G2Y28)	BG210-R048
R049		
+ LH ISAR 8 TP FRONT		
	(G2Y26)	BG210-R049
R050		
+ LH ISAR 4 TP FRONT		
	(G2Y25)	BG210-R050
R051		
+ LH ISAR 2 TP FRONT		
	(G2Y24)	BG210-R051
R052		
+ LH ISAR 1 TP FRONT		
	(G2Y22)	BG210-R052
R053		
+ LH D CLOCK POWERED FRONT		
	(G2Y02)	BG210-R053

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003 + A1 PORT 0 CHECK 1 RESET ------ H02
004 + A1 LOGIC POWER CONTROL 0 ----- U07
005 + A1 GATE PORT 0 DEV CHECK 1 --- D02
006 + A1 CDP 0 TAG OUT BIT 0 ------- S12
007 + A1 CDP 0 TAG OUT BIT 1 ------- S09
008 + A1 CDP 0 TAG OUT BIT 2 ------- S07
009 + A1 CDP 0 SPLIT BUS OP -------- S02
010 + A2 PORT 0 CHECK 1 RESET ------ G02
011 + A2 LOGIC POWER CONTROL 0 ----- T04
012 + A2 GATE PORT 0 DEV CHECK 1 --- H06
013 + A2 CDP 0 TAG OUT BIT 0 ------- U02
014 + A2 CDP 0 TAG OUT BIT 1 ------- U09
015 + A2 CDP 0 TAG OUT BIT 2 ------- S05
016 + A2 CDP 0 SPLIT BUS OP -------- U04
017 - RH DEV SELECTED FRONT -------- M04
018 - RH POWER ON RESET POWER FRONT  B07
019 + LH CHK POINT LOG CHECK FRONT - P05
020 + LH SEQ CHECK FRONT ----------- G09
021 + LH SERVO CTRL CHECK FRONT ---- C13
022 + LH RPS CHECK FRONT ----------- J05
023 + LH R-W CHECK FRONT ----------- N03
024 + LH LOAD POWER CTRL REG FRONT - D06
025 + LH SEQ MOVE FORMAT FRONT ----- D04
026 + LH SEQ STATUS STROBE FRONT --- C03
027 - LH LOAD SEQ STATUS REG FRONT - P02
028 + A CLOCK FRONT ---------------- T09
029 + B CLOCK FRONT ---------------- T05
030 + C CLOCK FRONT ---------------- T08
031 + D CLOCK FRONT ---------------- T07
032 + E CLOCK FRONT ---------------- U06
033 + F CLOCK FRONT ---------------- S03
034 + G CLOCK FRONT ---------------- T03
035 + H CLOCK FRONT ---------------- U05
036 - CLOCK CHECK HOLD FRONT ------- G03
037 - RH CABLE SWITCHED FRONT ------ M02
038 - LH OFFSET ACTIVE FRONT ------- H12
039 - LH INHIBIT FRONT ------------- N02
040 + LH RECORD READY IRPT FRONT --- J12
041 - RH 5V COMMON POR FRONT ------- N05
042 - LH POWER ON RESET OUT FRONT -- T10
043 + NO AIR FRONT ----------------- G08
044 + SENSE MOTOR CONT OFF FRONT --- T13
045 + SENSE DCA RELAY OFF FRONT ---- U10
046 - DRIVE SWITCH OFF FRONT ------- H05
047 - DRIVE SWITCH ON FRONT -------- H03
048 - LH POWER ON RESET SWITCH FRONT S13
049 + LH MOTOR CONT PICKED OUT FRONT D12
050 + LH BRAKE CONT PICKED OUT FRONT C06
051 - LH + 5V PWR ON RESET OUT FRONT M09
052 - LH RESET CLOCK RING FRONT ---- P12
053 + H CLOCK FRONT ---------------- D13
054 + LH CABLE SWITCHED FRONT ------ T02
055 - RH RESET CLOCK RING OUT FRONT  N11
056 - RH POWER ON RESET SWITCH FRONT N10
057 - LH R-W 1-2-3-4/HAR BIT FRONT 0 Y09
058 - LH R-W 1-2-3-4/HAR BIT FRONT 0 Z09
059 - LH R-W 1-2-3-4/HAR BIT FRONT 1 Y29
060 - LH R-W 1-2-3-4/HAR BIT FRONT 1 Z29
061 - LH R-W 1-2-3-4/HAR BIT FRONT 2 Y10
062 - LH R-W 1-2-3-4/HAR BIT FRONT 2 Z10
063 - LH R-W 1-2-3-4/HAR BIT FRONT 3 Y30
064 - LH R-W 1-2-3-4/HAR BIT FRONT 3 Z30
065 - LH R-W 1-2-3-4/HAR BIT FRONT 4 Y11
066 - LH R-W 1-2-3-4/HAR BIT FRONT 4 Z11
067 - LH R-W 1-2-3-4/HAR BIT FRONT 5 Y33
068 - LH R-W 1-2-3-4/HAR BIT FRONT 5 Z33
069 - CONTINUED ON PAGE BH210 ------ ----
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PORT AND POWER CONTROL CARD

INTRODUCTION

There are two port and power cards per drive. Each is capable of communication with controllers A1 and A2 in the DLS(device level selection) environment.

DESCRIPTION

The port and power control card performs the following major functions:

Port Control Functions

- Provides controller-to-device-port (CDP) communication at the access mechanism level.
- Ensures correct selection of devices.
- Presents device interrupts and check-1 errors.
- Processes most 5X and 74 status sense commands and controls the gating of other commands (59, 5A, 5B, 4X, 6X, 7X) and following parameter transfer requests to the sequencer.
- Sets or resets the customer Ready LED on the operator panel.
- Provides the capability of Set/Reset online, to Enable or Disable a device.

Power Control Functions:

- Provides the capability of powering on and off the drive either remotely or locally, and also provides the drive control function to power on the drive.
- Translates sequencer status register into device status byte 1 and 2.
- Maintains device interrupt generation logic.
- Provides single access mechanism capability.
- Provides power monitoring on +5 V (common), +5 V for the left and right actuator logic.

PRIMARY PARTS

- Long line drivers
- Device address switch
- Miscellaneous

ERROR CHECKING

Either a device check 1 or device check 2 is detected by the following checks:

Device check 1

- CDP check
- Port check
- Clock check

Device check 2 by either error detected or collected

- Sequencer card check
- Servo card check
- RPS check
- Checkpoint log check
- Sequencer write bus parity check
- Read/write card check
- Power check
- Funnel selection check


```
M10 + A1 CDP 0 TAG IN BIT 0 -------- 003
P10 + A1 CDP 0 TAG IN BIT 1 -------- 004
N13 + A1 PORT 0 CHECK 1 ------------ 005
P13 + A1 DEVICE DRIVER ACTIVE 0 ---- 006
P06 + A1 CDP 0 BIDI DATA 0 --------- 007
N09 + A1 CDP 0 BIDI DATA 1 --------- 008
G05 + A1 CDP 0 BIDI DATA 2 --------- 009
N12 + A1 CDP 0 BIDI DATA 3 --------- 010
M12 + A1 CDP 0 BIDI DATA 4 --------- 011
G07 + A1 CDP 0 BIDI DATA 5 --------- 012
C12 + A1 CDP 0 BIDI DATA 6 --------- 013
B12 + A1 CDP 0 BIDI DATA 7 --------- 014
J13 + A1 CDP 0 BIDI DATA P --------- 015
J07 + A2 CDP 0 TAG IN BIT 0 -------- 016
H07 + A2 CDP 0 TAG IN BIT 1 -------- 017
J09 + A2 PORT 0 CHECK 1 ------------ 018
H09 + A2 DEVICE DRIVER ACTIVE 0 ---- 019
B13 + A2 CDP 0 BIDI DATA 0 --------- 020
H13 + A2 CDP 0 BIDI DATA 1 --------- 021
H11 + A2 CDP 0 BIDI DATA 2 --------- 022
D09 + A2 CDP 0 BIDI DATA 3 --------- 023
J10 + A2 CDP 0 BIDI DATA 4 --------- 024
D10 + A2 CDP 0 BIDI DATA 5 --------- 025
D11 + A2 CDP 0 BIDI DATA 6 --------- 026
C11 + A2 CDP 0 BIDI DATA 7 --------- 027
B05 + A2 CDP 0 BIDI DATA P --------- 028
C05 + LH GATE DIF LOW REG FRONT ---- 029
D07 + LH GATE TARGET REG FRONT ----- 030
B08 + LH GATE CHK POINT REG FRONT -- 031
J06 + LH CHECK 2 FRONT ------------- 032
N04 - LH DEV SELECTED FRONT -------- 033
T06 + LH COMMAND FRONT ------------- 034
J11 - LH DEVICE CHECK 2 RESET FRONT  035
N08 + LH PARM TRANSFER FRONT ------- 036
G12 + LH BUSY W/O PIP FRONT -------- 037
H10 + LH SEEK INCOMPLETE FRONT ----- 038
G10 - LH PORT FENCED FRONT --------- 039
B02 + LH MOTOR CONTROL FRONT ------- 040
M03 - LH DRIVE PWR SWITCH OFF FRONT  041
P09 - RELEASE BRAKE FRONT ---------- 042
N07 - DRIVE MOTOR RUN FRONT -------- 043
S10 - PICK LOGIC POWER CONT FRONT -- 044
C02 + LH CDP DATA BUS PWR BIT FRNT 0 045
C07 + LH CDP DATA BUS PWR BIT FRNT 1 046
C10 + LH CDP DATA BUS PWR BIT FRNT 2 047
B09 + LH CDP DATA BUS PWR BIT FRNT 3 048
B10 + LH CDP DATA BUS PWR BIT FRNT 4 049
C09 + LH CDP DATA BUS PWR BIT FRNT 5 050
B04 + LH CDP DATA BUS PWR BIT FRNT 6 051
C08 + LH CDP DATA BUS PWR BIT FRNT 7 052
C04 + LH CDP DATA BUS PWR BIT FRNT P 053
T11 + LH MOTOR CONT PICKED OUT FRONT 054
T12 + LH BRAKE CONT PICKED OUT FRONT 055
J02 - LH POWER CHECK 2 FRONT ------- 056
M13 - LH + 5V PWR ON RESET OUT FRONT 057
P11 - LH RESET CLOCK RING FRONT ---- 058
P07 - LH POWER ON RESET OUT FRONT -- 059
M05 - POWER ON RESET FRONT --------- 060
P04 - RESET CLOCK RING FRONT ------- 061
N06 - LH POWER ON RESET POWER FRONT  062
U12 - DRIVE CONT RELAY FRONT ------- 063
Y02 + LH R-W MODE SEL FRONT -------- 064
Z02 + LH R-W MODE SEL FRONT -------- 065
---- - CONTINUED ON PAGE BH210 ------ 066
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LH PORT/POWER CONTROL XRL BH200

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ A1 PORT 0 CHECK 1 RESET		
	H2H02	BH200-L003
1A-A1	(U2U07)	CU210-R004
	K2H02	BK200-L003
	N2H02	BN200-L003
	Q2H02	BQ200-L003
	B5D09	
	V4D12	
1A-A1	*X1A06*	
L004		
+ A1 LOGIC POWER CONTROL 0		
	H2U07	BH200-L004
1A-A1	(V2S03)	CV200-R027
	K2U07	BK200-L004
	N2U07	BN200-L004
	Q2U07	BQ200-L004
	B5B04	
1A-A1	*W1A08*	
L005		
+ A1 GATE PORT 0 DEV CHECK 1		
	H2D02	BH200-L005
1A-A1	(U2U11)	CU200-R065
	K2D02	BK200-L005
	N2D02	BN200-L005
	Q2D02	BQ200-L005
	B5D07	
	V4D11	
1A-A1	*W1D06*	
L006		
+ A1 CDP 0 TAG OUT BIT 0		
	H2S12	BH200-L006
1A-A1	(U2D06)	CU200-R049
	K2S12	BK200-L006
	N2S12	BN200-L006
	Q2S12	BQ200-L006
	B5B09	
	V4D05	
1A-A1	*X1A08*	
L007		
+ A1 CDP 0 TAG OUT BIT 1		
	H2S09	BH200-L007
1A-A1	(U2D05)	CU200-R050
	K2S09	BK200-L007
	N2S09	BN200-L007
	Q2S09	BQ200-L007
	B5D10	
	V4D06	
1A-A1	*X1B06*	
L008		
+ A1 CDP 0 TAG OUT BIT 2		
	H2S07	BH200-L008
1A-A1	(U2D04)	CU200-R051
	K2S07	BK200-L008
	N2S07	BN200-L008
	Q2S07	BQ200-L008
	B5B10	
	V4D07	
1A-A1	*X1B08*	

LINE/SIGNAL	PIN	SHEET/LINE
L009		
+ A1 CDP 0 SPLIT BUS OP		
	H2S02	BH200-L009
1A-A1	(U2B03)	CU200-R052
	K2S02	BK200-L009
	N2S02	BN200-L009
	Q2S02	BQ200-L009
	B5D11	
	V4D09	
1A-A1	*X1C06*	
L010		
+ A2 PORT 0 CHECK 1 RESET		
	H2G02	BH200-L010
1A-A1	(D2U07)	CD210-R004
	K2G02	BK200-L010
	N2G02	BN200-L010
	Q2G02	BQ200-L010
	C4D12	
	W5D09	
1A-A1	*E1B06*	
L011		
+ A2 LOGIC POWER CONTROL 0		
	H2T04	BH200-L011
1A-A1	(C2S03)	CC200-R027
	K2T04	BK200-L011
	N2T04	BN200-L011
	Q2T04	BQ200-L011
	C4D10	
	W5B04	
1A-A1	*D1B08*	
L012		
+ A2 GATE PORT 0 DEV CHECK 1		
	H2H06	BH200-L012
1A-A1	(D2U11)	CD200-R065
	K2H06	BK200-L012
	N2H06	BN200-L012
	Q2H06	BQ200-L012
	C4D11	
	W5D07	
1A-A1	*D1E06*	
L013		
+ A2 CDP 0 TAG OUT BIT 0		
	H2U02	BH200-L013
1A-A1	(D2D06)	CD200-R049
	K2U02	BK200-L013
	N2U02	BN200-L013
	Q2U02	BQ200-L013
	C4D05	
	W5B09	
1A-A1	*E1B08*	
L014		
+ A2 CDP 0 TAG OUT BIT 1		
	H2U09	BH200-L014
1A-A1	(D2D05)	CD200-R050
	K2U09	BK200-L014
	N2U09	BN200-L014
	Q2U09	BQ200-L014
	C4D06	
	W5D10	
1A-A1	*E1C06*	

LINE/SIGNAL	PIN	SHEET/LINE
L015		
+ A2 CDP 0 TAG OUT BIT 2		
	H2S05	BH200-L015
1A-A1	(D2D04)	CD200-R051
	K2S05	BK200-L015
	N2S05	BN200-L015
	Q2S05	BQ200-L015
	C4D07	
	W5B10	
1A-A1	*E1C08*	
L016		
+ A2 CDP 0 SPLIT BUS OP		
	H2U04	BH200-L016
1A-A1	(D2B03)	CD200-R052
	K2U04	BK200-L016
	N2U04	BN200-L016
	Q2U04	BQ200-L016
	C4D09	
	W5D11	
1A-A1	*E1D06*	
L017		
- RH DEV SELECTED FRONT		
	H2M04	BH200-L017
	(K2N04)	BK200-R033
	J2S10	BJ200-L015
	L2T10	BL200-L013
L018		
- RH POWER ON RESET POWER FRONT		
	H2B07	BH200-L018
	(K2N06)	BK200-R062
	E2S07	BE200-L039
	G2S04	BG200-L041
	J2B10	BJ200-L036
	L2P06	BL200-L015
1C-C1	B2AB2	HC2A1-L070
	A4D02	
L019		
+ LH CHK POINT LOG CHECK FRONT		
	H2P05	BH200-L019
	(G2G02)	BG200-R026
L020		
+ LH SEQ CHECK FRONT		
	H2G09	BH200-L020
	(G2U06)	BG200-R025
L021		
+ LH SERVO CTRL CHECK FRONT		
	H2C13	BH200-L021
	(G2H11)	BG200-R027
L022		
+ LH RPS CHECK FRONT		
	H2J05	BH200-L022
	(G2B10)	BG200-R029
L023		
+ LH R-W CHECK FRONT		
	H2N03	BH200-L023
	(J2P12)	BJ200-R040

LINE/SIGNAL	PIN	SHEET/LINE
L024		
+ LH LOAD POWER CTRL REG FRONT		
	H2D06	BH200-L024
	(G2N10)	BG200-R022
	K2M08	BK210-L038
L025		
+ LH SEQ MOVE FORMAT FRONT		
	H2D04	BH200-L025
	(G2M04)	BG200-R024
L026		
+ LH SEQ STATUS STROBE FRONT		
	H2C03	BH200-L026
	(G2N02)	BG200-R021
L027		
- LH LOAD SEQ STATUS REG FRONT		
	H2P02	BH200-L027
	(G2N09)	BG200-R023
L028		
+ A CLOCK FRONT		
	H2T09	BH200-L028
	(J2S07)	BJ200-R029
	G2M02	BG200-L025
	K2T09	BK200-L028
	L2M02	BL200-L025
L029		
+ B CLOCK FRONT		
	H2T05	BH200-L029
	(J2U05)	BJ200-R030
	G2N07	BG200-L026
	G2U09	BG200-L027
	K2T05	BK200-L029
	L2N07	BL200-L026
	L2U09	BL200-L027
L030		
+ C CLOCK FRONT		
	H2T08	BH200-L030
	(J2T03)	BJ200-R031
	G2C03	BG200-L028
	K2T08	BK200-L030
	L2C03	BL200-L028
L031		
+ D CLOCK FRONT		
	H2T07	BH200-L031
	(J2S08)	BJ200-R032
	G2M03	BG200-L029
	K2T07	BK200-L031
	L2M03	BL200-L029
L032		
+ E CLOCK FRONT		
	H2U06	BH200-L032
	(J2U10)	BJ200-R033
	G2N12	BG200-L030
	G2U10	BG200-L031
	K2U06	BK200-L032
	L2N12	BL200-L030
	L2U10	BL200-L031

LINE/SIGNAL	PIN	SHEET/LINE
L033		
+ F CLOCK FRONT		
	H2S03	BH200-L033
	(J2U11)	BJ200-R034
	G2M08	BG200-L032
	K2S03	BK200-L033
	L2M08	BL200-L032
L034		
+ G CLOCK FRONT		
	H2T03	BH200-L034
	(J2T11)	BJ200-R035
	G2C02	BG200-L033
	G2S07	BG200-L034
	K2T03	BK200-L034
	L2C02	BL200-L033
	L2S07	BL200-L034
L035		
+ H CLOCK FRONT		
	H2U05	BH200-L035
	(J2U04)	BJ200-R036
	G2T12	BG200-L035
	H2D13	BH200-L053
	K2U05	BK200-L035
	K2D13	BK200-L053
	L2T12	BL200-L035
L036		
- CLOCK CHECK HOLD FRONT		
	H2G03	BH200-L036
	(J2U02)	BJ200-R037
	G2T04	BG200-L040
	K2G03	BK200-L036
	L2T04	BL200-L040
L037		
- RH CABLE SWITCHED FRONT		
	H2M02	BH200-L037
	K2M02	BK200-L037
1C-C4	P2B02	HPA20-L011
J180-	*PIN04*	
YA500	*-L030*	
YA500	*-L032*	
	B2B03	
	B3B03	
L038		
- LH OFFSET ACTIVE FRONT		
	H2H12	BH200-L038
	(G2P02)	BG200-R052
	D2P06	BD200-L020
L039		
- LH INHIBIT FRONT		
	H2N02	BH200-L039
	(G2H06)	BG200-R045
	D2P13	BD200-L024
L040		
+ LH RECORD READY IRPT FRONT		
	H2J12	BH200-L040
	(G2D04)	BG200-R028

LINE/SIGNAL	PIN	SHEET/LINE
L041		
- RH 5V COMMON POR FRONT		
	H2N05	BH200-L041
	(K2M07)	BK210-R025
L042		
- LH POWER ON RESET OUT FRONT		
	H2T10	BH200-L042
	(H2P07)	BH200-R059
L043		
+ NO AIR FRONT		
	H2G08	BH200-L043
	K2G08	BK200-L043
YA110	*-R097*	
TB485	*----5*	
	C5D10	
L044		
+ SENSE MOTOR CONT OFF FRONT		
	H2T13	BH200-L044
	K2T13	BK200-L044
YA600	*-R083*	
K417-	*----4*	
	C5B12	
L045		
+ SENSE DCA RELAY OFF FRONT		
	H2U10	BH200-L045
	K2U10	BK200-L045
YA200	*-R037*	
J794A	*----6*	
	C5D06	
L046		
- DRIVE SWITCH OFF FRONT		
	H2H05	BH200-L046
	K2H05	BK200-L046
YA410	*-R118*	
J679-	*----2*	
	C5B02	
L047		
- DRIVE SWITCH ON FRONT		
	H2H03	BH200-L047
	K2H03	BK200-L047
YA410	*-R116*	
J679-	*----1*	
	C5D02	
L048		
- LH POWER ON RESET SWITCH FRONT		
	H2S13	BH200-L048
	K2N10	BK200-L056
YA410	*-R017*	
J675-	*PIN08*	
	G6C02	
L049		
+ LH MOTOR CONT PICKED OUT FRONT		
	H2D12	BH200-L049
	(H2T11)	BH200-R054
L050		
+ LH BRAKE CONT PICKED OUT FRONT		
	H2C06	BH200-L050
	(H2T12)	BH200-R055

LINE/SIGNAL	PIN	SHEET/LINE
L051		
- LH + 5V PWR ON RESET OUT FRONT		
	H2M09	BH200-L051
	(H2M13)	BH200-R057
L052		
- LH RESET CLOCK RING FRONT		
	H2P12	BH200-L052
	(H2P11)	BH200-R058
	K2N11	BK200-L055
L053		
+ H CLOCK FRONT		
	H2D13	BH200-L053
	(J2U04)	BJ200-R036
	G2T12	BG200-L035
	H2U05	BH200-L035
	K2U05	BK200-L035
	K2D13	BK200-L053
	L2T12	BL200-L035
L054		
+ LH CABLE SWITCHED FRONT		
	H2T02	BH200-L054
	K2T02	BK200-L054
1C-C4	P1B02	HPA10-L011
YA500	*-L062*	
YA500	*-L060*	
J180-	*PIN04*	
	B2B02	
	B3B02	
L055		
- RH RESET CLOCK RING OUT FRONT		
	H2N11	BH200-L055
	(K2P11)	BK200-R058
	K2P12	BK200-L052
L056		
- RH POWER ON RESET SWITCH FRONT		
	H2N10	BH200-L056
	K2S13	BK200-L048
YA410	*-R091*	
J676-	*PIN08*	
	H6C02	
L057		
- LH R-W 1-2-3-4/HAR BIT FRONT 0		
	H2Y09	BH200-L057
	(J2Z09)	BJ210-R009
	H2Z09	BH200-L058
L058		
- LH R-W 1-2-3-4/HAR BIT FRONT 0		
	H2Z09	BH200-L058
	(J2Z09)	BJ210-R009
	H2Y09	BH200-L057
L059		
- LH R-W 1-2-3-4/HAR BIT FRONT 1		
	H2Y29	BH200-L059
	(J2Z29)	BJ210-R010
	H2Z29	BH200-L060

LINE/SIGNAL	PIN	SHEET/LINE
L060		
- LH R-W 1-2-3-4/HAR BIT FRONT 1		
	H2Z29	BH200-L060
	(J2Z29)	BJ210-R010
	H2Y29	BH200-L059
L061		
- LH R-W 1-2-3-4/HAR BIT FRONT 2		
	H2Y10	BH200-L061
	(J2Z10)	BJ210-R011
	H2Z10	BH200-L062
L062		
- LH R-W 1-2-3-4/HAR BIT FRONT 2		
	H2Z10	BH200-L062
	(J2Z10)	BJ210-R011
	H2Y10	BH200-L061
L063		
- LH R-W 1-2-3-4/HAR BIT FRONT 3		
	H2Y30	BH200-L063
	(J2Z30)	BJ210-R012
	H2Z30	BH200-L064
L064		
- LH R-W 1-2-3-4/HAR BIT FRONT 3		
	H2Z30	BH200-L064
	(J2Z30)	BJ210-R012
	H2Y30	BH200-L063
L065		
- LH R-W 1-2-3-4/HAR BIT FRONT 4		
	H2Y11	BH200-L065
	(J2Z11)	BJ210-R013
	H2Z11	BH200-L066
L066		
- LH R-W 1-2-3-4/HAR BIT FRONT 4		
	H2Z11	BH200-L066
	(J2Z11)	BJ210-R013
	H2Y11	BH200-L065
L067		
- LH R-W 1-2-3-4/HAR BIT FRONT 5		
	H2Y33	BH200-L067
	(J2Z33)	BJ210-R014
	H2Z33	BH200-L068
L068		
- LH R-W 1-2-3-4/HAR BIT FRONT 5		
	H2Z33	BH200-L068
	(J2Z33)	BJ210-R014
	H2Y33	BH200-L067
L069		
- CONTINUED ON PAGE BH210		
	H2	BH200-L069
	(H2)	BH200-R066

LINE/SIGNAL	PIN	SHEET/LINE
R003		
+ A1 CDP 0 TAG IN BIT 0		
	(H2M10)	BH200-R003
	(K2M10)	BK200-R003
	(N2M10)	BN200-R003
	(Q2M10)	BQ200-R003
1A-A1	U2G03	CU200-L009
	B5D12	
1A-A1	*X1D06*	
R004		
+ A1 CDP 0 TAG IN BIT 1		
	(H2P10)	BH200-R004
	(K2P10)	BK200-R004
	(N2P10)	BN200-R004
	(Q2P10)	BQ200-R004
1A-A1	U2B08	CU200-L010
	B5B12	
1A-A1	*X1D08*	
R005		
+ A1 PORT 0 CHECK 1		
	(H2N13)	BH200-R005
	(K2N13)	BK200-R005
	(N2N13)	BN200-R005
	(Q2N13)	BQ200-R005
1A-A1	U2B09	CU200-L005
	B5D13	
1A-A1	*X1E06*	
R006		
+ A1 DEVICE DRIVER ACTIVE 0		
	(H2P13)	BH200-R006
	(K2P13)	BK200-R006
	(N2P13)	BN200-R006
	(Q2P13)	BQ200-R006
1A-A1	U2U02	CU200-L017
	B5B11	
1A-A1	*X1C08*	
R007		
+ A1 CDP 0 BIDI DATA 0		
	(H2P06)	BH200-R007
	(K2P06)	BK200-R007
	(N2P06)	BN200-R007
	(Q2P06)	BQ200-R007
1A-A1	(U2J13)	CU200-R003
	B5B02	
	V4B02	
1A-A1	*V1D08*	
R008		
+ A1 CDP 0 BIDI DATA 1		
	(H2N09)	BH200-R008
	(K2N09)	BK200-R008
	(N2N09)	BN200-R008
	(Q2N09)	BQ200-R008
1A-A1	(U2G12)	CU200-R004
	B5D04	
	V4B03	
1A-A1	*W1A06*	

LINE/SIGNAL	PIN	SHEET/LINE
R009		
+ A1 CDP 0 BIDI DATA 2		
	(H2G05)	BH200-R009
	(K2G05)	BK200-R009
	(N2G05)	BN200-R009
	(Q2G05)	BQ200-R009
1A-A1	(U2J11)	CU200-R005
	B5D03	
	V4B04	
1A-A1	*V1E06*	
R010		
+ A1 CDP 0 BIDI DATA 3		
	(H2N12)	BH200-R010
	(K2N12)	BK200-R010
	(N2N12)	BN200-R010
	(Q2N12)	BQ200-R010
1A-A1	(U2J10)	CU200-R006
	B5B03	
	V4B05	
1A-A1	*V1E08*	
R011		
+ A1 CDP 0 BIDI DATA 4		
	(H2M12)	BH200-R011
	(K2M12)	BK200-R011
	(N2M12)	BN200-R011
	(Q2M12)	BQ200-R011
1A-A1	(U2P04)	CU200-R007
	B5D05	
	V4B07	
1A-A1	*W1B06*	
R012		
+ A1 CDP 0 BIDI DATA 5		
	(H2G07)	BH200-R012
	(K2G07)	BK200-R012
	(N2G07)	BN200-R012
	(Q2G07)	BQ200-R012
1A-A1	(U2G10)	CU200-R008
	B5B05	
	V4B08	
1A-A1	*W1B08*	
R013		
+ A1 CDP 0 BIDI DATA 6		
	(H2C12)	BH200-R013
	(K2C12)	BK200-R013
	(N2C12)	BN200-R013
	(Q2C12)	BQ200-R013
1A-A1	(U2J09)	CU200-R009
	B5D06	
	V4B09	
1A-A1	*W1C06*	
R014		
+ A1 CDP 0 BIDI DATA 7		
	(H2B12)	BH200-R014
	(K2B12)	BK200-R014
	(N2B12)	BN200-R014
	(Q2B12)	BQ200-R014
1A-A1	(U2G08)	CU200-R010
	B5B06	
	V4B10	
1A-A1	*W1C08*	

LINE/SIGNAL	PIN	SHEET/LINE
R015		
+ A1 CDP 0 BIDI DATA P		
	(H2J13)	BH200-R015
	(K2J13)	BK200-R015
	(N2J13)	BN200-R015
	(Q2J13)	BQ200-R015
1A-A1	(U2S03)	CU200-R011
	B5B08	
	V4B12	
1A-A1	*W1E08*	
R016		
+ A2 CDP 0 TAG IN BIT 0		
	(H2J07)	BH200-R016
	(K2J07)	BK200-R016
	(N2J07)	BN200-R016
	(Q2J07)	BQ200-R016
1A-A1	D2G03	CD200-L009
	W5D12	
1A-A1	*E1E06*	
R017		
+ A2 CDP 0 TAG IN BIT 1		
	(H2H07)	BH200-R017
	(K2H07)	BK200-R017
	(N2H07)	BN200-R017
	(Q2H07)	BQ200-R017
1A-A1	D2B08	CD200-L010
	W5B12	
1A-A1	*E1E08*	
R018		
+ A2 PORT 0 CHECK 1		
	(H2J09)	BH200-R018
	(K2J09)	BK200-R018
	(N2J09)	BN200-R018
	(Q2J09)	BQ200-R018
1A-A1	D2B09	CD200-L005
	W5D13	
1A-A1	*F1A06*	
R019		
+ A2 DEVICE DRIVER ACTIVE 0		
	(H2H09)	BH200-R019
	(K2H09)	BK200-R019
	(N2H09)	BN200-R019
	(Q2H09)	BQ200-R019
1A-A1	D2U02	CD200-L017
	W5B11	
1A-A1	*E1D08*	
R020		
+ A2 CDP 0 BIDI DATA 0		
	(H2B13)	BH200-R020
	(K2B13)	BK200-R020
	(N2B13)	BN200-R020
	(Q2B13)	BQ200-R020
1A-A1	(D2J13)	CD200-R003
	C4B02	
	W5B02	
1A-A1	*C1E08*	

LINE/SIGNAL	PIN	SHEET/LINE
R021		
+ A2 CDP 0 BIDI DATA 1		
	(H2H13)	BH200-R021
	(K2H13)	BK200-R021
	(N2H13)	BN200-R021
	(Q2H13)	BQ200-R021
1A-A1	(D2G12)	CD200-R004
	C4B03	
	W5D04	
1A-A1	*D1B06*	
R022		
+ A2 CDP 0 BIDI DATA 2		
	(H2H11)	BH200-R022
	(K2H11)	BK200-R022
	(N2H11)	BN200-R022
	(Q2H11)	BQ200-R022
1A-A1	(D2J11)	CD200-R005
	C4B04	
	W5D03	
1A-A1	*D1A06*	
R023		
+ A2 CDP 0 BIDI DATA 3		
	(H2D09)	BH200-R023
	(K2D09)	BK200-R023
	(N2D09)	BN200-R023
	(Q2D09)	BQ200-R023
1A-A1	(D2J10)	CD200-R006
	C4B05	
	W5B03	
1A-A1	*D1A08*	
R024		
+ A2 CDP 0 BIDI DATA 4		
	(H2J10)	BH200-R024
	(K2J10)	BK200-R024
	(N2J10)	BN200-R024
	(Q2J10)	BQ200-R024
1A-A1	(D2P04)	CD200-R007
	C4B07	
	W5D05	
1A-A1	*D1C06*	
R025		
+ A2 CDP 0 BIDI DATA 5		
	(H2D10)	BH200-R025
	(K2D10)	BK200-R025
	(N2D10)	BN200-R025
	(Q2D10)	BQ200-R025
1A-A1	(D2G10)	CD200-R008
	C4B08	
	W5B05	
1A-A1	*D1C08*	
R026		
+ A2 CDP 0 BIDI DATA 6		
	(H2D11)	BH200-R026
	(K2D11)	BK200-R026
	(N2D11)	BN200-R026
	(Q2D11)	BQ200-R026
1A-A1	(D2J09)	CD200-R009
	C4B09	
	W5D06	
1A-A1	*D1D06*	

LINE/SIGNAL	PIN	SHEET/LINE
R027		
+ A2 CDP 0 BIDI DATA 7		
	(H2C11)	BH200-R027
	(K2C11)	BK200-R027
	(N2C11)	BN200-R027
	(Q2C11)	BQ200-R027
1A-A1	(D2G08)	CD200-R010
	C4B10	
	W5B06	
1A-A1	*D1D08*	
R028		
+ A2 CDP 0 BIDI DATA P		
	(H2B05)	BH200-R028
	(K2B05)	BK200-R028
	(N2B05)	BN200-R028
	(Q2B05)	BQ200-R028
1A-A1	(D2S03)	CD200-R011
	C4B12	
	W5B08	
1A-A1	*E1A08*	
R029		
+ LH GATE DIF LOW REG FRONT		
	(H2C05)	BH200-R029
	G2C07	BG200-L053
R030		
+ LH GATE TARGET REG FRONT		
	(H2D07)	BH200-R030
	G2C09	BG200-L052
R031		
+ LH GATE CHK POINT REG FRONT		
	(H2B08)	BH200-R031
	G2N03	BG200-L046
R032		
+ LH CHECK 2 FRONT		
	(H2J06)	BH200-R032
	J2P09	BJ200-L065
R033		
- LH DEV SELECTED FRONT		
	(H2N04)	BH200-R033
	G2T10	BG200-L013
	J2P04	BJ200-L058
	K2M04	BK200-L017
R034		
+ LH COMMAND FRONT		
	(H2T06)	BH200-R034
	G2T08	BG200-L012
R035		
- LH DEVICE CHECK 2 RESET FRONT		
	(H2J11)	BH200-R035
	G2T06	BG200-L016
	J2N04	BJ200-L057
R036		
+ LH PARM TRANSFER FRONT		
	(H2N08)	BH200-R036
	G2T09	BG200-L014

LINE/SIGNAL	PIN	SHEET/LINE
R037		
+ LH BUSY W/O PIP FRONT		
	(H2G12)	BH200-R037
	G2N05	BG200-L019
R038		
+ LH SEEK INCOMPLETE FRONT		
	(H2H10)	BH200-R038
	G2G08	BG200-L045
R039		
- LH PORT FENCED FRONT		
	(H2G10)	BH200-R039
	G2M05	BG200-L020
R040		
+ LH MOTOR CONTROL FRONT		
	(H2B02)	BH200-R040
	G2P10	BG200-L023
R041		
- LH DRIVE PWR SWITCH OFF FRONT		
	(H2M03)	BH200-R041
	G2P04	BG200-L021
R042		
- RELEASE BRAKE FRONT		
	(H2P09)	BH200-R042
	(K2P09)	BK200-R042
YA600	*-L076*	
K416-	*----B*	
	C5D13	
R043		
- DRIVE MOTOR RUN FRONT		
	(H2N07)	BH200-R043
	(K2N07)	BK200-R043
YA600	*-L077*	
K418-	*----X*	
	C5D12	
R044		
- PICK LOGIC POWER CONT FRONT		
	(H2S10)	BH200-R044
	(K2S10)	BK200-R044
YA600	*-L057*	
K420-	*----B*	
	C5D04	
R045		
+ LH CDP DATA BUS PWR BIT FRNT 0		
	(H2C02)	BH200-R045
	G2S02	BG200-L003
	J2G05	BJ200-L038
R046		
+ LH CDP DATA BUS PWR BIT FRNT 1		
	(H2C07)	BH200-R046
	G2P13	BG200-L004
	J2G04	BJ200-L039

LINE/SIGNAL	PIN	SHEET/LINE
R047		
+ LH CDP DATA BUS PWR BIT FRNT 2		
	(H2C10)	BH200-R047
	G2P11	BG200-L005
	J2G03	BJ200-L040
R048		
+ LH CDP DATA BUS PWR BIT FRNT 3		
	(H2B09)	BH200-R048
	G2D02	BG200-L006
	J2H05	BJ200-L041
R049		
+ LH CDP DATA BUS PWR BIT FRNT 4		
	(H2B10)	BH200-R049
	G2S10	BG200-L007
	J2H03	BJ200-L042
R050		
+ LH CDP DATA BUS PWR BIT FRNT 5		
	(H2C09)	BH200-R050
	G2T07	BG200-L008
	J2J05	BJ200-L043
R051		
+ LH CDP DATA BUS PWR BIT FRNT 6		
	(H2B04)	BH200-R051
	G2T11	BG200-L009
	J2J04	BJ200-L044
R052		
+ LH CDP DATA BUS PWR BIT FRNT 7		
	(H2C08)	BH200-R052
	G2N13	BG200-L010
	J2H06	BJ200-L045
R053		
+ LH CDP DATA BUS PWR BIT FRNT P		
	(H2C04)	BH200-R053
	G2S09	BG200-L011
	J2H04	BJ200-L046
R054		
+ LH MOTOR CONT PICKED OUT FRONT		
	(H2T11)	BH200-R054
	H2D12	BH200-L049
R055		
+ LH BRAKE CONT PICKED OUT FRONT		
	(H2T12)	BH200-R055
	H2C06	BH200-L050
R056		
- LH POWER CHECK 2 FRONT		
	(H2J02)	BH200-R056
R057		
- LH + 5V PWR ON RESET OUT FRONT		
	(H2M13)	BH200-R057
	H2M09	BH200-L051
R058		
- LH RESET CLOCK RING FRONT		
	(H2P11)	BH200-R058
	H2P12	BH200-L052
	K2N11	BK200-L055

LINE/SIGNAL	PIN	SHEET/LINE
R059		
- LH POWER ON RESET OUT FRONT		
	(H2P07)	BH200-R059
	H2T10	BH200-L042
R060		
- POWER ON RESET FRONT		
	(H2M05)	BH200-R060
	(K2M05)	BK200-R060
	J2U06	BJ200-L012
R061		
- RESET CLOCK RING FRONT		
	(H2P04)	BH200-R061
	(K2P04)	BK200-R061
	J2S05	BJ200-L035
R062		
- LH POWER ON RESET POWER FRONT		
	(H2N06)	BH200-R062
	D2S07	BD200-L039
	G2P06	BG200-L015
	J2N11	BJ200-L037
	K2B07	BK200-L018
	L2S04	BL200-L041
1C-C0	B2AB2	HC1A1-L070
	A2D02	
R063		
- DRIVE CONT RELAY FRONT		
	(H2U12)	BH200-R063
	(K2U12)	BK200-R063
YA200	*-L012*	
J794-	*---A3*	
	C5D05	
R064		
+ LH R-W MODE SEL FRONT		
	(H2Y02)	BH200-R064
	(H2Z02)	BH200-R065
	J2Z02	BJ210-L004
R065		
+ LH R-W MODE SEL FRONT		
	(H2Z02)	BH200-R065
	(H2Y02)	BH200-R064
	J2Z02	BJ210-L004
R066		
- CONTINUED ON PAGE BH210		
	(H2)	BH200-R066
	H2	BH200-L069

003	- CONTINUED FROM PAGE BH200 ---- ----	---- - CONTINUED FROM PAGE BH200 ---- 003
004	- LH R-W 1-2-3-4/HAR BIT FRONT 6 Y27	Y22 + LH GATE R-W STATUS 1 FRONT --- 004
005	- LH R-W 1-2-3-4/HAR BIT FRONT 6 Z27	Z22 + LH GATE R-W STATUS 1 FRONT --- 005
006	- LH R-W 1-2-3-4/HAR BIT FRONT 7 Y32	Y03 + LH GATE R-W STATUS 2 FRONT --- 006
007	- LH R-W 1-2-3-4/HAR BIT FRONT 7 Z32	Z03 + LH GATE R-W STATUS 2 FRONT --- 007
008	- LH R-W 1-2-3-4/HAR BIT FRONT P Y13	Y28 + LH GATE R-W STATUS 3 FRONT --- 008
009	- LH R-W 1-2-3-4/HAR BIT FRONT P Z13	Z28 + LH GATE R-W STATUS 3 FRONT --- 009
010	- RH PIP SYNC FRONT ---------- Y24	Y07 + LH GATE R-W STATUS 4 FRONT --- 010
011	- RH PIP SYNC FRONT ---------- Z24	Z07 + LH GATE R-W STATUS 4 FRONT --- 011
012	- LH PIP SYNC FRONT ---------- Y05	Y04 + LH GATE HEAD ADDR REG FRONT -- 012
013	- LH PIP SYNC FRONT ---------- Z05	Z04 + LH GATE HEAD ADDR REG FRONT -- 013
014	- LH INDEX FRONT ---------- Y25	Y12 + LH SEL A1/A2 FRONT ---------- 014
015	- LH INDEX FRONT ---------- Z25	Z12 + LH SEL A1/A2 FRONT ---------- 015
016	- LH SEGMENT BOUNDARY FRONT ---- Y06	Y23 - RESET CHECK 1 FRONT ---------- 016
017	- LH SEGMENT BOUNDARY FRONT ---- Z06	Z23 - RESET CHECK 1 FRONT ---------- 017
018	- LH PADDING MODE FRONT -------- Y26	W23 - LH READY LED FRONT ---------- 018
019	- LH PADDING MODE FRONT -------- Z26	W03 + LH READY LED TERM FRONT ------ 019
020	- LH CHK POINT/TAR/DIF FRONT 0 - X06	H04 + LH SENSE SOFT START LT FRONT - 020
021	- LH CHK POINT/TAR/DIF FRONT 1 - X07	M07 - LH 5V COMMON POR FRONT ------- 021
022	- LH CHK POINT/TAR/DIF FRONT 2 - X26	W12 + 5V LH COMMON LED FRONT ------- 022
023	- LH CHK POINT/TAR/DIF FRONT 3 - X13	W06 + 5/24V LH LED FRONT ---------- 023
024	- LH CHK POINT/TAR/DIF FRONT 4 - X02	W09 + 5V LH LED FRONT -------------- 024
025	- LH CHK POINT/TAR/DIF FRONT 5 - X25	U13 + READY LED DEVICE 0 ---------- 025
026	- LH CHK POINT/TAR/DIF FRONT 6 - X05	B03 + LH PARM TRANSFER EN FRONT ---- 026
027	- LH CHK POINT/TAR/DIF FRONT 7 - X11	W11 + LH DRIVE OWE INTERUPT FRONT -- 027
028	- LH CHK POINT/TAR/DIF FRONT P - X22	
029	+ LH SEQ WRITE BUS BIT FRONT 0 - X30	
030	+ LH SEQ WRITE BUS BIT FRONT 1 - X28	
031	+ LH SEQ WRITE BUS BIT FRONT 2 - X32	
032	+ LH SEQ WRITE BUS BIT FRONT 3 - X24	
033	+ LH SEQ WRITE BUS BIT FRONT 4 - X33	
034	+ LH SEQ WRITE BUS BIT FRONT 5 - X03	
035	+ LH SEQ WRITE BUS BIT FRONT 6 - X10	
036	+ LH SEQ WRITE BUS BIT FRONT 7 - X09	
037	+ LH SEQ WRITE BUS BIT FRONT P - X29	
038	+ RH LOAD POWER CTRL REG FRONT - M08	
039	+ RH SEQ WRITE BUS BIT FRONT 2 - J04	
040	+ 5V LH SERVO, PORT, & SEQ FRONT S08	
041	+ 5V R-W CTRL, PT2 FRONT ------- G13	
042	+ 5/24V LH PORT FRONT ---------- S04	
043	+ LH EVERGREEN ID BIT FRONT ---- H08	
044	- LH WRITE INHIBIT FRONT ------- G04	
045	- LH SPINDLE ID ON BOARD FRONT - D05	

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CONTINUED FROM PAGE BH200		
	H2	BH210-L003
	(H2)	BH210-R003
L004		
- LH R-W 1-2-3-4/HAR BIT FRONT 6		
	H2Y27	BH210-L004
	(J2Z27)	BJ210-R015
	H2Z27	BH210-L005
L005		
- LH R-W 1-2-3-4/HAR BIT FRONT 6		
	H2Z27	BH210-L005
	(J2Z27)	BJ210-R015
	H2Y27	BH210-L004
L006		
- LH R-W 1-2-3-4/HAR BIT FRONT 7		
	H2Y32	BH210-L006
	(J2Z32)	BJ210-R016
	H2Z32	BH210-L007
L007		
- LH R-W 1-2-3-4/HAR BIT FRONT 7		
	H2Z32	BH210-L007
	(J2Z32)	BJ210-R016
	H2Y32	BH210-L006
L008		
- LH R-W 1-2-3-4/HAR BIT FRONT P		
	H2Y13	BH210-L008
	(J2Z13)	BJ210-R017
	H2Z13	BH210-L009
L009		
- LH R-W 1-2-3-4/HAR BIT FRONT P		
	H2Z13	BH210-L009
	(J2Z13)	BJ210-R017
	H2Y13	BH210-L008
L010		
- RH PIP SYNC FRONT		
	H2Y24	BH210-L010
	(J2Y05)	BJ210-R004
	(J2Z24)	BJ210-R005
	H2Z24	BH210-L011
	K2Y05	BK210-L012
	K2Z05	BK210-L013
L011		
- RH PIP SYNC FRONT		
	H2Z24	BH210-L011
	(J2Y05)	BJ210-R004
	(J2Z24)	BJ210-R005
	H2Y24	BH210-L010
	K2Y05	BK210-L012
	K2Z05	BK210-L013
L012		
- LH PIP SYNC FRONT		
	H2Y05	BH210-L012
	(J2Y24)	BJ210-R018
	(J2Z05)	BJ210-R019
	H2Z05	BH210-L013
	K2Y24	BK210-L010
	K2Z24	BK210-L011
L013		
- LH PIP SYNC FRONT		
	H2Z05	BH210-L013
	(J2Y24)	BJ210-R018
	(J2Z05)	BJ210-R019
	H2Y05	BH210-L012
	K2Y24	BK210-L010
	K2Z24	BK210-L011
L014		
- LH INDEX FRONT		
	H2Y25	BH210-L014
	(J2Z25)	BJ210-R022
	H2Z25	BH210-L015
L015		
- LH INDEX FRONT		
	H2Z25	BH210-L015
	(J2Z25)	BJ210-R022
	H2Y25	BH210-L014
L016		
- LH SEGMENT BOUNDARY FRONT		
	H2Y06	BH210-L016
	(J2Z06)	BJ210-R021
	H2Z06	BH210-L017
L017		
- LH SEGMENT BOUNDARY FRONT		
	H2Z06	BH210-L017
	(J2Z06)	BJ210-R021
	H2Y06	BH210-L016
L018		
- LH PADDING MODE FRONT		
	H2Y26	BH210-L018
	(J2Z26)	BJ210-R020
	H2Z26	BH210-L019
L019		
- LH PADDING MODE FRONT		
	H2Z26	BH210-L019
	(J2Z26)	BJ210-R020
	H2Y26	BH210-L018
L020		
- LH CHK POINT/TAR/DIF FRONT 0		
	H2X06	BH210-L020
	(G2D05)	BG200-R012
	(G2X06)	BG210-R013
L021		
- LH CHK POINT/TAR/DIF FRONT 1		
	H2X07	BH210-L021
	(G2G13)	BG200-R013
	(G2X07)	BG210-R014
L022		
- LH CHK POINT/TAR/DIF FRONT 2		
	H2X26	BH210-L022
	(G2B05)	BG200-R014
	(G2X26)	BG210-R015
L023		
- LH CHK POINT/TAR/DIF FRONT 3		
	H2X13	BH210-L023
	(G2B04)	BG200-R015
	(G2X13)	BG210-R016
L024		
- LH CHK POINT/TAR/DIF FRONT 4		
	H2X02	BH210-L024
	(G2B07)	BG200-R016
	(G2X02)	BG210-R017
L025		
- LH CHK POINT/TAR/DIF FRONT 5		
	H2X25	BH210-L025
	(G2H12)	BG200-R017
	(G2X25)	BG210-R018
L026		
- LH CHK POINT/TAR/DIF FRONT 6		
	H2X05	BH210-L026
	(G2J12)	BG200-R018
	(G2X05)	BG210-R019
L027		
- LH CHK POINT/TAR/DIF FRONT 7		
	H2X11	BH210-L027
	(G2H13)	BG200-R019
	(G2X11)	BG210-R020
L028		
- LH CHK POINT/TAR/DIF FRONT P		
	H2X22	BH210-L028
	(G2G12)	BG200-R020
	(G2X22)	BG210-R021
L029		
+ LH SEQ WRITE BUS BIT FRONT 0		
	H2X30	BH210-L029
	(G2U02)	BG200-R003
	(G2X30)	BG210-R004
L030		
+ LH SEQ WRITE BUS BIT FRONT 1		
	H2X28	BH210-L030
	(G2U11)	BG200-R004
	(G2X28)	BG210-R005
L031		
+ LH SEQ WRITE BUS BIT FRONT 2		
	H2X32	BH210-L031
	(G2T02)	BG200-R005
	(G2X32)	BG210-R006
	K2J04	BK210-L039
L032		
+ LH SEQ WRITE BUS BIT FRONT 3		
	H2X24	BH210-L032
	(G2U12)	BG200-R006
	(G2X24)	BG210-R007
L033		
+ LH SEQ WRITE BUS BIT FRONT 4		
	H2X33	BH210-L033
	(G2T03)	BG200-R007
	(G2X33)	BG210-R008
L034		
+ LH SEQ WRITE BUS BIT FRONT 5		
	H2X03	BH210-L034
	(G2S05)	BG200-R008
	(G2X03)	BG210-R009
L035		
+ LH SEQ WRITE BUS BIT FRONT 6		
	H2X10	BH210-L035
	(G2S03)	BG200-R009
	(G2X10)	BG210-R010
L036		
+ LH SEQ WRITE BUS BIT FRONT 7		
	H2X09	BH210-L036
	(G2U05)	BG200-R010
	(G2X09)	BG210-R011
L037		
+ LH SEQ WRITE BUS BIT FRONT P		
	H2X29	BH210-L037
	(G2U07)	BG200-R011
	(G2X29)	BG210-R012
L038		
+ RH LOAD POWER CTRL REG FRONT		
	H2M08	BH210-L038
	(L2N10)	BL200-R022
	K2D06	BK200-L024
L039		
+ RH SEQ WRITE BUS BIT FRONT 2		
	H2J04	BH210-L039
	(L2T02)	BL200-R005
	(L2X32)	BL210-R006
	K2X32	BK210-L031
L040		
+ 5V LH SERVO, PORT, & SEQ FRONT		
	H2S08	BH210-L040
	-----	*B3E01*
	YA410	*-R007*
	-----	*B2A14*
	YA410	*-R006*
	J675-	*PIN01*
L041		
+ 5V R-W CTRL, PT2 FRONT		
	H2G13	BH210-L041
	K2G13	BK210-L041
	-----	*G6D02*
	YA410	*-R009*
	J675-	*PIN03*
	-----	*G6E02*
	YA410	*-R083*
	J676-	*PIN03*
	-----	*H6A02*
	YA410	*-R021*
	J675-	*PIN11*
	-----	*H6B02*
	YA410	*-R095*
	J676-	*PIN11*
L042		
+ 5/24V LH PORT FRONT		
	H2S04	BH210-L042
		J6C04
	-----	*C6E02*
	YA410	*-R023*
	J675-	*PIN13*
L043		
+ LH EVERGREEN ID BIT FRONT		
	H2H08	BH210-L043
	(D2U13)	BD200-R043
L044		
- LH WRITE INHIBIT FRONT		
	H2G04	BH210-L044
	(D2B10)	BD200-R006
	(D2G10)	BD200-R007
	G2G04	BG200-L044
	C2B10	
L045		
- LH SPINDLE ID ON BOARD FRONT		
	H2D05	BH210-L045
R003		
- CONTINUED FROM PAGE BH200		
	(H2)	BH210-R003
	H2	BH210-L003
R004		
+ LH GATE R-W STATUS 1 FRONT		
	(H2Y22)	BH210-R004
	(H2Z22)	BH210-R005
	J2Z22	BJ210-L005
R005		
+ LH GATE R-W STATUS 1 FRONT		
	(H2Z22)	BH210-R005
	(H2Y22)	BH210-R004
	J2Z22	BJ210-L005
R006		
+ LH GATE R-W STATUS 2 FRONT		
	(H2Y03)	BH210-R006
	(H2Z03)	BH210-R007
	J2Z03	BJ210-L006
R007		
+ LH GATE R-W STATUS 2 FRONT		
	(H2Z03)	BH210-R007
	(H2Y03)	BH210-R006
	J2Z03	BJ210-L006
R008		
+ LH GATE R-W STATUS 3 FRONT		
	(H2Y28)	BH210-R008
	(H2Z28)	BH210-R009
	J2Z28	BJ210-L007
R009		
+ LH GATE R-W STATUS 3 FRONT		
	(H2Z28)	BH210-R009
	(H2Y28)	BH210-R008
	J2Z28	BJ210-L007
R010		
+ LH GATE R-W STATUS 4 FRONT		
	(H2Y07)	BH210-R010
	(H2Z07)	BH210-R011
	J2Z07	BJ210-L008
R011		
+ LH GATE R-W STATUS 4 FRONT		
	(H2Z07)	BH210-R011
	(H2Y07)	BH210-R010
	J2Z07	BJ210-L008
R012		
+ LH GATE HEAD ADDR REG FRONT		
	(H2Y04)	BH210-R012
	(H2Z04)	BH210-R013
	J2Z04	BJ210-L009
R013		
+ LH GATE HEAD ADDR REG FRONT		
	(H2Z04)	BH210-R013
	(H2Y04)	BH210-R012
	J2Z04	BJ210-L009
R014		
+ LH SEL A1/A2 FRONT		
	(H2Y12)	BH210-R014
	(H2Z12)	BH210-R015
	J2Z12	BJ210-L010
R015		
+ LH SEL A1/A2 FRONT		
	(H2Z12)	BH210-R015
	(H2Y12)	BH210-R014
	J2Z12	BJ210-L010
R016		
- RESET CHECK 1 FRONT		
	(H2Y23)	BH210-R016
	(H2Z23)	BH210-R017
	(K2Y23)	BK210-R016
	(K2Z23)	BK210-R017
	J2Y23	BJ210-L018
	J2Z23	BJ210-L019
R017		
- RESET CHECK 1 FRONT		
	(H2Z23)	BH210-R017
	(H2Y23)	BH210-R016
	(K2Y23)	BK210-R016
	(K2Z23)	BK210-R017
	J2Y23	BJ210-L018
	J2Z23	BJ210-L019
R018		
- LH READY LED FRONT		
	(H2W23)	BH210-R018
R019		
+ LH READY LED TERM FRONT		
	(H2W03)	BH210-R019
R020		
+ LH SENSE SOFT START LT FRONT		
	(H2H04)	BH210-R020
	G2N11	BG200-L055
	L2N11	BL200-L058

LH PORT/POWER CONTROL XRL BH210

LINE/SIGNAL	PIN	SHEET/LINE
R021		
- LH 5V COMMON POR FRONT		
	(H2M07)	BH210-R021
	K2N05	BK200-L041
R022		
+ 5V LH COMMON LED FRONT		
	(H2W12)	BH210-R022
R023		
+ 5/24V LH LED FRONT		
	(H2W06)	BH210-R023
R024		
+ 5V LH LED FRONT		
	(H2W09)	BH210-R024
R025		
+ READY LED DEVICE 0		
	(H2U13)	BH210-R025
-----	*B1D13*	
YA120	*-L006*	
R026		
+ LH PARM TRANSFER EN FRONT		
	(H2B03)	BH210-R026
	G2S08	BG200-L060
R027		
+ LH DRIVE OWE INTERUPT FRONT		
	(H2W11)	BH210-R027

003 + RH CDP DATA BUS PWR BIT FRNT 0 N05
004 + RH CDP DATA BUS PWR BIT FRNT 1 M05
005 + RH CDP DATA BUS PWR BIT FRNT 2 M04
006 + RH CDP DATA BUS PWR BIT FRNT 3 N03
007 + RH CDP DATA BUS PWR BIT FRNT 4 M03
008 + RH CDP DATA BUS PWR BIT FRNT 5 M02
009 + RH CDP DATA BUS PWR BIT FRNT 6 H13
010 + RH CDP DATA BUS PWR BIT FRNT 7 G13
011 + RH CDP DATA BUS PWR BIT FRNT P G12
012 - POWER ON RESET FRONT --------- U06
013 - RH DEVICE CHECK 2 RESET FRONT G09
014 - RH DEGATE CHECK LATCH FRONT -- H11
015 - RH DEV SELECTED FRONT -------- S10
016 + RH SET HEAD ARM ADR REG FRONT G10
017 + RH INDEX 1 FRONT ------------- G08
018 + RH INDEX 2 FRONT ------------- G07
019 + RH SEGMENT BOUNDARY FRONT ---- H10
020 - RH DRIVE STATUS BIT 7 FRONT -- J10
021 + RH FLAT CABLE CHK RETURN FRONT P02
022 - RH DRIVE STATUS BIT 0 FRONT -- N02
023 - RH DRIVE STATUS BIT 1 FRONT -- J13
024 - RH DRIVE STATUS BIT 2 FRONT -- J12
025 - RH DRIVE STATUS BIT 3 FRONT -- H12
026 - RH DRIVE STATUS BIT 4 FRONT -- J11
027 - RH DRIVE STATUS BIT 5 FRONT -- J09
028 + RH SVO CLOCK CABLE ERR FRONT - G02
029 - RH DRIVE STATUS BIT P FRONT -- H08
030 - RH COARSE TRACK FRONT -------- B12
031 - RH WRITE READY FRONT --------- C11
032 + RH CHECK 2 FRONT ------------- H09
033 + RH RPS CLOCK T-0 (L1) FRONT -- H07
034 - RH DRIVE STATUS BIT 6 FRONT -- J07
035 - RESET CLOCK RING FRONT ------- S05
036 - RH POWER ON RESET POWER FRONT B10
037 - LH POWER ON RESET POWER FRONT N11
038 + LH CDP DATA BUS PWR BIT FRNT 0 G05
039 + LH CDP DATA BUS PWR BIT FRNT 1 G04
040 + LH CDP DATA BUS PWR BIT FRNT 2 G03
041 + LH CDP DATA BUS PWR BIT FRNT 3 H05
042 + LH CDP DATA BUS PWR BIT FRNT 4 H03
043 + LH CDP DATA BUS PWR BIT FRNT 5 J05
044 + LH CDP DATA BUS PWR BIT FRNT 6 J04
045 + LH CDP DATA BUS PWR BIT FRNT 7 H06
046 + LH CDP DATA BUS PWR BIT FRNT P H04
047 - LH DRIVE STATUS BIT 0 FRONT -- J02
048 - LH DRIVE STATUS BIT 1 FRONT -- H02
049 - LH DRIVE STATUS BIT 2 FRONT -- D13
050 - LH DRIVE STATUS BIT 3 FRONT -- C13
051 - LH DRIVE STATUS BIT 4 FRONT -- D12
052 - LH DRIVE STATUS BIT 5 FRONT -- C12
053 - LH DRIVE STATUS BIT 6 FRONT -- B13
054 - LH DRIVE STATUS BIT 7 FRONT -- D11
055 - LH DRIVE STATUS BIT P FRONT -- D10
056 + LH FLAT CABLE CHK RETURN FRONT C10
057 - LH DEVICE CHECK 2 RESET FRONT N04
058 - LH DEV SELECTED FRONT -------- P04
059 + LH SET HEAD ARM ADR REG FRONT P05
060 + LH INDEX 1 FRONT ------------- N06
061 + LH INDEX 2 FRONT ------------- P06
062 + LH SEGMENT BOUNDARY FRONT ---- P07
063 - LH COARSE TRACK FRONT -------- D09
064 - LH WRITE READY FRONT --------- C09
065 + LH CHECK 2 FRONT ------------- P09
066 + LH RPS CLOCK T-0 (L1) FRONT -- N08
067 - LH DEGATE CHECK LATCH FRONT -- M08
068 - CONTINUED ON PAGE BJ210 ------ ----

READ/WRITE CONTROL CARD

:h3f intoduction

The R/W control card's primary function is to provide the using system a means to communicate with the read/write recording channel within the drive. With information available from within the drive, controller instructions, and subsystem commands received by the CDP, the read/write control logic is able to instruct the read/write channel board to perform a read or write operation.

This card interconnects with the Port and Power control card, the device sequencer/servo/RPS card, the R/W channel board, and the servo analog card.

A total of two similar sets of R/W logic is packaged on one logic board to operate the four access mechanisms (which represent four device addresses) in each unit.

DESCRIPTION

The read/write card provides the following functions:

- Stores head address register (HAR) value
- Detects errors and stores them in the R/W status-2 and R/W status-3 registers
- Controls drive padding
- Responds to control of the R/W operation

The card is powered by +5 V.+10% and ground.

Both actuators on one drive receive control signals from one read/write control card.

This means the R/W control card should not be unplugged until the drive is powered off as it is a common card.

The R/W control card is a 4W x 3H card ELSI card with top-card connectors to both port and power control cards.

Mounted on it are 8 modules (one module is the 3380 port clock module, 3 P/Ns - read/write, read write regs and padding have two modules, one for each device(one serves the left side and the other serves the right side) and the read xmit module serves both sides. Also a 24 Mhz oscillator drives the clock module.

PRIMARY PARTS

The following functions are on the card:

- Head address register
- R/W Status 2 register
- R/W Status 3 register
- R/W drive padding controls

ERROR CHECKING

The following checks cause a R/W card check:

- Read/Write channel check
- Padding check
- Sequence check (combination of bits 2, 3, and 4 read sequence check, write sequence check, and control check)
- Servo cable check
- Write overrun check
- Read/write servo check
- HAR parity error
- Parity check R/W channel status lines on flat cables
- Cable check of flat cables to R/W channel (ensure they are plugged in)

B09 - RH PAD DATA SELECT FRONT ----- 003
C08 - RH GATE SERVO PAD CLOCK FRONT 004
B08 + RH R-W ACTIVE FRONT ---------- 005
B07 - RH SET R-W FRONT ------------- 006
B05 - RH SET R-W SAFE FRONT -------- 007
D07 + RH R-W CHECK FRONT ----------- 008
C07 - RH READ TRANSMIT FRONT ------- 009
D06 - RH HAR BIT 4 FRONT ----------- 010
D05 - RH HAR BIT 5 FRONT ----------- 011
D04 - RH HAR BIT 7 FRONT ----------- 012
C06 - RH HAR BIT 6 FRONT ----------- 013
C05 - RH HAR BIT P FRONT ----------- 014
C04 + RH FLAT CABLE CHECK FRONT ---- 015
T07 - RH WRITE GATE 2 FRONT -------- 016
T09 - RH WRITE GATE 1 FRONT -------- 017
M10 - RH MULTIPLEXER GATE FRONT ---- 018
N10 - RH DEGATE CHECK LATCH FRONT -- 019
T04 - RH SEL A1/ + SEL A2 FRONT ---- 020
T05 - RH GATE SERVO A1 CLK ON FRONT 021
T08 - RH GATE SERVO A2 CLK ON FRONT 022
P10 - RH DRIVE CHECK INHIBIT FRONT - 023
S09 - RH DRIVE CHECK RESET FRONT --- 024
T10 + AB CLOCK FRONT --------------- 025
U09 + CD CLOCK FRONT --------------- 026
U07 + EF CLOCK FRONT --------------- 027
T06 + GH CLOCK FRONT --------------- 028
S07 + A CLOCK FRONT ---------------- 029
U05 + B CLOCK FRONT ---------------- 030
T03 + C CLOCK FRONT ---------------- 031
S08 + D CLOCK FRONT ---------------- 032
U10 + E CLOCK FRONT ---------------- 033
U11 + F CLOCK FRONT ---------------- 034
T11 + G CLOCK FRONT ---------------- 035
U04 + H CLOCK FRONT ---------------- 036
U02 - CLOCK CHECK HOLD FRONT ------- 037
P11 - LH SET R-W SAFE FRONT -------- 038
N12 - LH SET R-W FRONT ------------- 039
P12 + LH R-W CHECK FRONT ----------- 040
P13 + LH R-W ACTIVE FRONT ---------- 041
M12 - LH DRIVE CHECK INHIBIT FRONT - 042
M13 - LH DRIVE CHECK RESET FRONT --- 043
S02 - LH PAD DATA SELECT FRONT ----- 044
S03 - LH GATE SERVO PAD CLOCK FRONT 045
B02 - LH HAR BIT 4 FRONT ----------- 046
B03 - LH HAR BIT 5 FRONT ----------- 047
B04 - LH HAR BIT 6 FRONT ----------- 048
D02 - LH HAR BIT 7 FRONT ----------- 049
C02 - LH HAR BIT P FRONT ----------- 050
S12 - LH WRITE GATE 1 FRONT -------- 051
S13 - LH WRITE GATE 2 FRONT -------- 052
C03 - LH DEGATE CHECK LATCH FRONT -- 053
N09 - LH MULTIPLEXER GATE FRONT ---- 054
U12 - LH SEL A1/ + SEL A2 FRONT ---- 055
U13 - LH GATE SERVO A1 CLK ON FRONT 056
T12 - LH GATE SERVO A2 CLK ON FRONT 057
N13 + LH FLAT CABLE CHECK FRONT ---- 058
T02 - LH READ TRANSMIT FRONT ------- 059
Y09 - RH R-W 1-2-3-4/HAR BIT FRONT 0 060
Y29 - RH R-W 1-2-3-4/HAR BIT FRONT 1 061
Y10 - RH R-W 1-2-3-4/HAR BIT FRONT 2 062
Y30 - RH R-W 1-2-3-4/HAR BIT FRONT 3 063
Y11 - RH R-W 1-2-3-4/HAR BIT FRONT 4 064
Y33 - RH R-W 1-2-3-4/HAR BIT FRONT 5 065
Y27 - RH R-W 1-2-3-4/HAR BIT FRONT 6 066
Y32 - RH R-W 1-2-3-4/HAR BIT FRONT 7 067
Y13 - RH R-W 1-2-3-4/HAR BIT FRONT P 068
---- - CONTINUED ON PAGE BJ210 ------ 069

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ RH CDP DATA BUS PWR BIT FRNT 0		
	J2N05	BJ200-L003
	(K2C02)	BK200-R045
	L2S02	BL200-L003
L004		
+ RH CDP DATA BUS PWR BIT FRNT 1		
	J2M05	BJ200-L004
	(K2C07)	BK200-R046
	L2P13	BL200-L004
L005		
+ RH CDP DATA BUS PWR BIT FRNT 2		
	J2M04	BJ200-L005
	(K2C10)	BK200-R047
	L2P11	BL200-L005
L006		
+ RH CDP DATA BUS PWR BIT FRNT 3		
	J2N03	BJ200-L006
	(K2B09)	BK200-R048
	L2D02	BL200-L006
L007		
+ RH CDP DATA BUS PWR BIT FRNT 4		
	J2M03	BJ200-L007
	(K2B10)	BK200-R049
	L2S10	BL200-L007
L008		
+ RH CDP DATA BUS PWR BIT FRNT 5		
	J2M02	BJ200-L008
	(K2C09)	BK200-R050
	L2T07	BL200-L008
L009		
+ RH CDP DATA BUS PWR BIT FRNT 6		
	J2H13	BJ200-L009
	(K2B04)	BK200-R051
	L2T11	BL200-L009
L010		
+ RH CDP DATA BUS PWR BIT FRNT 7		
	J2G13	BJ200-L010
	(K2C08)	BK200-R052
	L2N13	BL200-L010
L011		
+ RH CDP DATA BUS PWR BIT FRNT P		
	J2G12	BJ200-L011
	(K2C04)	BK200-R053
	L2S09	BL200-L011
L012		
- POWER ON RESET FRONT		
	J2U06	BJ200-L012
	(H2M05)	BH200-R060
	(K2M05)	BK200-R060
L013		
- RH DEVICE CHECK 2 RESET FRONT		
	J2G09	BJ200-L013
	(K2J11)	BK200-R035
	L2T06	BL200-L016
L014		
- RH DEGATE CHECK LATCH FRONT		
	J2H11	BJ200-L014
	(J2N10)	BJ200-R019
L015		
- RH DEV SELECTED FRONT		
	J2S10	BJ200-L015
	(K2N04)	BK200-R033
	H2M04	BH200-L017
	L2T10	BL200-L013
L016		
+ RH SET HEAD ARM ADR REG FRONT		
	J2G10	BJ200-L016
	(L2N08)	BL200-R030
L017		
+ RH INDEX 1 FRONT		
	J2G08	BJ200-L017
	(L2G03)	BL200-R062
	C3B05	
L018		
+ RH INDEX 2 FRONT		
	J2G07	BJ200-L018
	(L2C13)	BL200-R063
L019		
+ RH SEGMENT BOUNDARY FRONT		
	J2H10	BJ200-L019
	(L2D13)	BL200-R064
L020		
- RH DRIVE STATUS BIT 7 FRONT		
	J2J10	BJ200-L020
1C-C1	(B2AA8)	HC2A1-R010
	A4D09	
L021		
+ RH FLAT CABLE CHK RETURN FRONT		
	J2P02	BJ200-L021
1C-C1	(B2BBB)	HC2A1-R014
	A5B13	
L022		
- RH DRIVE STATUS BIT 0 FRONT		
	J2N02	BJ200-L022
1C-C1	(B2ABB)	HC2A1-R003
	A4B13	
L023		
- RH DRIVE STATUS BIT 1 FRONT		
	J2J13	BJ200-L023
1C-C1	(B2BA9)	HC2A1-R004
	A5D10	
L024		
- RH DRIVE STATUS BIT 2 FRONT		
	J2J12	BJ200-L024
1C-C1	(B2BBA)	HC2A1-R005
	A5B12	
L025		
- RH DRIVE STATUS BIT 3 FRONT		
	J2H12	BJ200-L025
1C-C1	(B2BAC)	HC2A1-R006
	A5D13	
L026		
- RH DRIVE STATUS BIT 4 FRONT		
	J2J11	BJ200-L026
1C-C1	(B2BAA)	HC2A1-R007
	A5D11	
L027		
- RH DRIVE STATUS BIT 5 FRONT		
	J2J09	BJ200-L027
1C-C1	(B2AAA)	HC2A1-R008
	A4D11	
L028		
+ RH SVO CLOCK CABLE ERR FRONT		
	J2G02	BJ200-L028
	(E2B08)	BE200-R039
L029		
- RH DRIVE STATUS BIT P FRONT		
	J2H08	BJ200-L029
1C-C1	(B2ABA)	HC2A1-R011
	A4B12	
L030		
- RH COARSE TRACK FRONT		
	J2B12	BJ200-L030
	(L2D06)	BL200-R059
	C3B03	
L031		
- RH WRITE READY FRONT		
	J2C11	BJ200-L031
	(L2D07)	BL200-R060
L032		
+ RH CHECK 2 FRONT		
	J2H09	BJ200-L032
	(K2J06)	BK200-R032
L033		
+ RH RPS CLOCK T-0 (L1) FRONT		
	J2H07	BJ200-L033
	(L2M07)	BL200-R067
L034		
- RH DRIVE STATUS BIT 6 FRONT		
	J2J07	BJ200-L034
1C-C1	(B2AA9)	HC2A1-R009
	A4D10	
L035		
- RESET CLOCK RING FRONT		
	J2S05	BJ200-L035
	(H2P04)	BH200-R061
	(K2P04)	BK200-R061
L036		
- RH POWER ON RESET POWER FRONT		
	J2B10	BJ200-L036
	(K2N06)	BK200-R062
	E2S07	BE200-L039
	G2S04	BG200-L041
	H2B07	BH200-L018
	L2P06	BL200-L015
1C-C1	B2AB2	HC2A1-L070
	A4D02	
L037		
- LH POWER ON RESET POWER FRONT		
	J2N11	BJ200-L037
	(H2N06)	BH200-R062
	D2S07	BD200-L039
	G2P06	BG200-L015
	K2B07	BK200-L018
	L2S04	BL200-L041
1C-C0	B2AB2	HC1A1-L070
	A2D02	
L038		
+ LH CDP DATA BUS PWR BIT FRNT 0		
	J2G05	BJ200-L038
	(H2C02)	BH200-R045
	G2S02	BG200-L003
L039		
+ LH CDP DATA BUS PWR BIT FRNT 1		
	J2G04	BJ200-L039
	(H2C07)	BH200-R046
	G2P13	BG200-L004
L040		
+ LH CDP DATA BUS PWR BIT FRNT 2		
	J2G03	BJ200-L040
	(H2C10)	BH200-R047
	G2P11	BG200-L005
L041		
+ LH CDP DATA BUS PWR BIT FRNT 3		
	J2H05	BJ200-L041
	(H2B09)	BH200-R048
	G2D02	BG200-L006
L042		
+ LH CDP DATA BUS PWR BIT FRNT 4		
	J2H03	BJ200-L042
	(H2B10)	BH200-R049
	G2S10	BG200-L007
L043		
+ LH CDP DATA BUS PWR BIT FRNT 5		
	J2J05	BJ200-L043
	(H2C09)	BH200-R050
	G2T07	BG200-L008
L044		
+ LH CDP DATA BUS PWR BIT FRNT 6		
	J2J04	BJ200-L044
	(H2B04)	BH200-R051
	G2T11	BG200-L009
L045		
+ LH CDP DATA BUS PWR BIT FRNT 7		
	J2H06	BJ200-L045
	(H2C08)	BH200-R052
	G2N13	BG200-L010
L046		
+ LH CDP DATA BUS PWR BIT FRNT P		
	J2H04	BJ200-L046
	(H2C04)	BH200-R053
	G2S09	BG200-L011
L047		
- LH DRIVE STATUS BIT 0 FRONT		
	J2J02	BJ200-L047
1C-C0	(B2ABB)	HC1A1-R003
	A2B13	
L048		
- LH DRIVE STATUS BIT 1 FRONT		
	J2H02	BJ200-L048
1C-C0	(B2BA9)	HC1A1-R004
	A3D10	
L049		
- LH DRIVE STATUS BIT 2 FRONT		
	J2D13	BJ200-L049
1C-C0	(B2BBA)	HC1A1-R005
	A3B12	
L050		
- LH DRIVE STATUS BIT 3 FRONT		
	J2C13	BJ200-L050
1C-C0	(B2BAC)	HC1A1-R006
	A3D13	
L051		
- LH DRIVE STATUS BIT 4 FRONT		
	J2D12	BJ200-L051
1C-C0	(B2BAA)	HC1A1-R007
	A3D11	
L052		
- LH DRIVE STATUS BIT 5 FRONT		
	J2C12	BJ200-L052
1C-C0	(B2AAA)	HC1A1-R008
	A2D11	
L053		
- LH DRIVE STATUS BIT 6 FRONT		
	J2B13	BJ200-L053
1C-C0	(B2AA9)	HC1A1-R009
	A2D10	
L054		
- LH DRIVE STATUS BIT 7 FRONT		
	J2D11	BJ200-L054
1C-C0	(B2AA8)	HC1A1-R010
	A2D09	
L055		
- LH DRIVE STATUS BIT P FRONT		
	J2D10	BJ200-L055
1C-C0	(B2ABA)	HC1A1-R011
	A2B12	
L056		
+ LH FLAT CABLE CHK RETURN FRONT		
	J2C10	BJ200-L056
1C-C0	(B2BBB)	HC1A1-R014
	A3B13	
L057		
- LH DEVICE CHECK 2 RESET FRONT		
	J2N04	BJ200-L057
	(H2J11)	BH200-R035
	G2T06	BG200-L016
L058		
- LH DEV SELECTED FRONT		
	J2P04	BJ200-L058
	(H2N04)	BH200-R033
	G2T10	BG200-L013
	K2M04	BK200-L017
L059		
+ LH SET HEAD ARM ADR REG FRONT		
	J2P05	BJ200-L059
	(G2N08)	BG200-R030
L060		
+ LH INDEX 1 FRONT		
	J2N06	BJ200-L060
	(G2G03)	BG200-R062
	A2B03	
	C2B05	
L061		
+ LH INDEX 2 FRONT		
	J2P06	BJ200-L061
	(G2C13)	BG200-R063
L062		
+ LH SEGMENT BOUNDARY FRONT		
	J2P07	BJ200-L062
	(G2D13)	BG200-R064
	A3D12	
L063		
- LH COARSE TRACK FRONT		
	J2D09	BJ200-L063
	(G2D06)	BG200-R059
	C2B03	
L064		
- LH WRITE READY FRONT		
	J2C09	BJ200-L064
	(G2D07)	BG200-R060
L065		
+ LH CHECK 2 FRONT		
	J2P09	BJ200-L065
	(H2J06)	BH200-R032
L066		
+ LH RPS CLOCK T-0 (L1) FRONT		
	J2N08	BJ200-L066
	(G2M07)	BG200-R067
L067		
- LH DEGATE CHECK LATCH FRONT		
	J2M08	BJ200-L067
	(J2C03)	BJ200-R053

LINE/SIGNAL	PIN	SHEET/LINE
L068		
- CONTINUED ON PAGE BJ210		
	J2	BJ200-L068
	(J2)	BJ200-R069
R003		
- RH PAD DATA SELECT FRONT		
	(J2B09)	BJ200-R003
1C-C1	B2BB3	HC2A1-L013
	A5B03	
R004		
- RH GATE SERVO PAD CLOCK FRONT		
	(J2C08)	BJ200-R004
	E2M03	BE200-L033
R005		
+ RH R-W ACTIVE FRONT		
	(J2B08)	BJ200-R005
	L2D12	BL200-L051
R006		
- RH SET R-W FRONT		
	(J2B07)	BJ200-R006
1C-C1	B2BA7	HC2A1-L015
	A5D07	
R007		
- RH SET R-W SAFE FRONT		
	(J2B05)	BJ200-R007
1C-C1	B2BB8	HC2A1-L016
	A5B09	
R008		
+ RH R-W CHECK FRONT		
	(J2D07)	BJ200-R008
	K2N03	BK200-L023
R009		
- RH READ TRANSMIT FRONT		
	(J2C07)	BJ200-R009
1C-C1	B2BB4	HC2A1-L017
	A5B04	
R010		
- RH HAR BIT 4 FRONT		
	(J2D06)	BJ200-R010
1C-C1	B2AB6	HC2A1-L003
	A4B07	
R011		
- RH HAR BIT 5 FRONT		
	(J2D05)	BJ200-R011
1C-C1	B2BA5	HC2A1-L004
	A5D05	
R012		
- RH HAR BIT 7 FRONT		
	(J2D04)	BJ200-R012
1C-C1	B2AA5	HC2A1-L006
	A4D05	
R013		
- RH HAR BIT 6 FRONT		
	(J2C06)	BJ200-R013
1C-C1	B2BB6	HC2A1-L005
	A5B07	

LINE/SIGNAL	PIN	SHEET/LINE
R014		
- RH HAR BIT P FRONT		
	(J2C05)	BJ200-R014
1C-C1	B2BB5	HC2A1-L007
	A5B05	
R015		
+ RH FLAT CABLE CHECK FRONT		
	(J2C04)	BJ200-R015
1C-C1	B2AB9	HC2A1-L012
	A4B10	
R016		
- RH WRITE GATE 2 FRONT		
	(J2T07)	BJ200-R016
1C-C1	B2BB7	HC2A1-L018
	A5B08	
R017		
- RH WRITE GATE 1 FRONT		
	(J2T09)	BJ200-R017
1C-C1	B2AA6	HC2A1-L009
	A4D06	
R018		
- RH MULTIPLEXER GATE FRONT		
	(J2M10)	BJ200-R018
1C-C1	B2AA7	HC2A1-L010
	A4D07	
R019		
- RH DEGATE CHECK LATCH FRONT		
	(J2N10)	BJ200-R019
	J2H11	BJ200-L014
R020		
- RH SEL A1/ + SEL A2 FRONT		
	(J2T04)	BJ200-R020
1C-C1	B2BA4	HC2A1-L014
	A5D04	
R021		
- RH GATE SERVO A1 CLK ON FRONT		
	(J2T05)	BJ200-R021
	E2S05	BE200-L034
R022		
- RH GATE SERVO A2 CLK ON FRONT		
	(J2T08)	BJ200-R022
	E2P04	BE200-L035
R023		
- RH DRIVE CHECK INHIBIT FRONT		
	(J2P10)	BJ200-R023
1C-C1	B2AB8	HC2A1-L011
	A4B09	
R024		
- RH DRIVE CHECK RESET FRONT		
	(J2S09)	BJ200-R024
1C-C1	B2BB9	HC2A1-L019
	A5B10	

LINE/SIGNAL	PIN	SHEET/LINE
R025		
+ AB CLOCK FRONT		
	(J2T10)	BJ200-R025
	G2B03	BG200-L036
	L2B03	BL200-L036
R026		
+ CD CLOCK FRONT		
	(J2U09)	BJ200-R026
	G2C05	BG200-L037
	L2C05	BL200-L037
R027		
+ EF CLOCK FRONT		
	(J2U07)	BJ200-R027
	G2M13	BG200-L038
	L2M13	BL200-L038
R028		
+ GH CLOCK FRONT		
	(J2T06)	BJ200-R028
	G2B02	BG200-L039
	L2B02	BL200-L039
R029		
+ A CLOCK FRONT		
	(J2S07)	BJ200-R029
	G2M02	BG200-L025
	H2T09	BH200-L028
	K2T09	BK200-L028
	L2M02	BL200-L025
R030		
+ B CLOCK FRONT		
	(J2U05)	BJ200-R030
	G2N07	BG200-L026
	G2U09	BG200-L027
	H2T05	BH200-L029
	K2T05	BK200-L029
	L2N07	BL200-L026
	L2U09	BL200-L027
R031		
+ C CLOCK FRONT		
	(J2T03)	BJ200-R031
	G2C03	BG200-L028
	H2T08	BH200-L030
	K2T08	BK200-L030
	L2C03	BL200-L028
R032		
+ D CLOCK FRONT		
	(J2S08)	BJ200-R032
	G2M03	BG200-L029
	H2T07	BH200-L031
	K2T07	BK200-L031
	L2M03	BL200-L029

LINE/SIGNAL	PIN	SHEET/LINE
R033		
+ E CLOCK FRONT		
	(J2U10)	BJ200-R033
	G2N12	BG200-L030
	G2U10	BG200-L031
	H2U06	BH200-L032
	K2U06	BK200-L032
	L2N12	BL200-L030
	L2U10	BL200-L031
R034		
+ F CLOCK FRONT		
	(J2U11)	BJ200-R034
	G2M08	BG200-L032
	H2S03	BH200-L033
	K2S03	BK200-L033
	L2M08	BL200-L032
R035		
+ G CLOCK FRONT		
	(J2T11)	BJ200-R035
	G2C02	BG200-L033
	G2S07	BG200-L034
	H2T03	BH200-L034
	K2T03	BK200-L034
	L2C02	BL200-L033
	L2S07	BL200-L034
R036		
+ H CLOCK FRONT		
	(J2U04)	BJ200-R036
	G2T12	BG200-L035
	H2U05	BH200-L035
	H2D13	BH200-L053
	K2U05	BK200-L035
	K2D13	BK200-L053
	L2T12	BL200-L035
R037		
- CLOCK CHECK HOLD FRONT		
	(J2U02)	BJ200-R037
	G2T04	BG200-L040
	H2G03	BH200-L036
	K2G03	BK200-L036
	L2T04	BL200-L040
R038		
- LH SET R-W SAFE FRONT		
	(J2P11)	BJ200-R038
1C-C0	B2BB8	HC1A1-L016
	A3B09	
R039		
- LH SET R-W FRONT		
	(J2N12)	BJ200-R039
1C-C0	B2BA7	HC1A1-L015
	A3D07	
R040		
+ LH R-W CHECK FRONT		
	(J2P12)	BJ200-R040
	H2N03	BH200-L023
R041		
+ LH R-W ACTIVE FRONT		
	(J2P13)	BJ200-R041
	G2D12	BG200-L051

LINE/SIGNAL	PIN	SHEET/LINE
R042		
- LH DRIVE CHECK INHIBIT FRONT		
	(J2M12)	BJ200-R042
1C-C0	B2AB8	HC1A1-L011
	A2B09	
R043		
- LH DRIVE CHECK RESET FRONT		
	(J2M13)	BJ200-R043
1C-C0	B2BB9	HC1A1-L019
	A3B10	
R044		
- LH PAD DATA SELECT FRONT		
	(J2S02)	BJ200-R044
1C-C0	B2BB3	HC1A1-L013
	A3B03	
R045		
- LH GATE SERVO PAD CLOCK FRONT		
	(J2S03)	BJ200-R045
	D2M03	BD200-L033
R046		
- LH HAR BIT 4 FRONT		
	(J2B02)	BJ200-R046
1C-C0	B2AB6	HC1A1-L003
	A2B07	
R047		
- LH HAR BIT 5 FRONT		
	(J2B03)	BJ200-R047
1C-C0	B2BA5	HC1A1-L004
	A3D05	
R048		
- LH HAR BIT 6 FRONT		
	(J2B04)	BJ200-R048
1C-C0	B2BB6	HC1A1-L005
	A3B07	
R049		
- LH HAR BIT 7 FRONT		
	(J2D02)	BJ200-R049
1C-C0	B2AA5	HC1A1-L006
	A2D05	
R050		
- LH HAR BIT P FRONT		
	(J2C02)	BJ200-R050
1C-C0	B2BB5	HC1A1-L007
	A3B05	
R051		
- LH WRITE GATE 1 FRONT		
	(J2S12)	BJ200-R051
1C-C0	B2AA6	HC1A1-L009
	A2D06	
R052		
- LH WRITE GATE 2 FRONT		
	(J2S13)	BJ200-R052
1C-C0	B2BB7	HC1A1-L018
	A3B08	

LINE/SIGNAL	PIN	SHEET/LINE
R053		
- LH DEGATE CHECK LATCH FRONT		
	(J2C03)	BJ200-R053
	J2M08	BJ200-L067
R054		
- LH MULTIPLEXER GATE FRONT		
	(J2N09)	BJ200-R054
1C-C0	B2AA7	HC1A1-L010
	A2D07	
R055		
- LH SEL A1/ + SEL A2 FRONT		
	(J2U12)	BJ200-R055
1C-C0	B2BA4	HC1A1-L014
	A3D04	
R056		
- LH GATE SERVO A1 CLK ON FRONT		
	(J2U13)	BJ200-R056
	D2S05	BD200-L034
R057		
- LH GATE SERVO A2 CLK ON FRONT		
	(J2T12)	BJ200-R057
	D2P04	BD200-L035
R058		
+ LH FLAT CABLE CHECK FRONT		
	(J2N13)	BJ200-R058
1C-C0	B2AB9	HC1A1-L012
	A2B10	
R059		
- LH READ TRANSMIT FRONT		
	(J2T02)	BJ200-R059
1C-C0	B2BB4	HC1A1-L017
	A3B04	
R060		
- RH R-W 1-2-3-4/HAR BIT FRONT 0		
	(J2Y09)	BJ200-R060
	K2Y09	BK200-L057
	K2Z09	BK200-L058
R061		
- RH R-W 1-2-3-4/HAR BIT FRONT 1		
	(J2Y29)	BJ200-R061
	K2Y29	BK200-L059
	K2Z29	BK200-L060
R062		
- RH R-W 1-2-3-4/HAR BIT FRONT 2		
	(J2Y10)	BJ200-R062
	K2Y10	BK200-L061
	K2Z10	BK200-L062
R063		
- RH R-W 1-2-3-4/HAR BIT FRONT 3		
	(J2Y30)	BJ200-R063
	K2Y30	BK200-L063
	K2Z30	BK200-L064

READ/WRITE CONTROL XRL BJ200

LINE/SIGNAL	PIN	SHEET/LINE
R064		
- RH R-W 1-2-3-4/HAR BIT FRONT 4		
	(J2Y11)	BJ200-R064
	K2Y11	BK200-L065
	K2Z11	BK200-L066
R065		
- RH R-W 1-2-3-4/HAR BIT FRONT 5		
	(J2Y33)	BJ200-R065
	K2Y33	BK200-L067
	K2Z33	BK200-L068
R066		
- RH R-W 1-2-3-4/HAR BIT FRONT 6		
	(J2Y27)	BJ200-R066
	K2Y27	BK210-L004
	K2Z27	BK210-L005
R067		
- RH R-W 1-2-3-4/HAR BIT FRONT 7		
	(J2Y32)	BJ200-R067
	K2Y32	BK210-L006
	K2Z32	BK210-L007
R068		
- RH R-W 1-2-3-4/HAR BIT FRONT P		
	(J2Y13)	BJ200-R068
	K2Y13	BK210-L008
	K2Z13	BK210-L009
R069		
- CONTINUED ON PAGE BJ210		
	(J2)	BJ200-R069
	J2	BJ200-L068

READ/WRITE CONTROL XRL BJ200

003	-	CONTINUED FROM PAGE BJ200 ----	----
004	+	LH R-W MODE SEL FRONT --------	Z02
005	+	LH GATE R-W STATUS 1 FRONT ---	Z22
006	+	LH GATE R-W STATUS 2 FRONT ---	Z03
007	+	LH GATE R-W STATUS 3 FRONT ---	Z28
008	+	LH GATE R-W STATUS 4 FRONT ---	Z07
009	+	LH GATE HEAD ADDR REG FRONT --	Z04
010	+	LH SEL A1/A2 FRONT ----------	Z12
011	+	RH R-W MODE SEL FRONT --------	Y02
012	+	RH GATE R-W STATUS 1 FRONT ---	Y22
013	+	RH GATE R-W STATUS 2 FRONT ---	Y03
014	+	RH GATE R-W STATUS 3 FRONT ---	Y28
015	+	RH GATE R-W STATUS 4 FRONT ---	Y07
016	+	RH GATE HEAD ADDR REG FRONT --	Y04
017	+	RH SEL A1/A2 FRONT ----------	Y12
018	-	RESET CHECK 1 FRONT ----------	Y23
019	-	RESET CHECK 1 FRONT ----------	Z23
020	+	LH SVO CLOCK CABLE ERR FRONT -	N07
021	-	LH TIEDOWN FRONT -------------	X32
022	-	5V LH LEFT FRONT -------------	J06
023	-	5V LH RIGHT FRONT ------------	M09

----	-	CONTINUED FROM PAGE BJ200 ----	003
Y05	-	RH PIP SYNC FRONT ------------	004
Z24	-	RH PIP SYNC FRONT ------------	005
Y26	-	RH PADDING MODE FRONT --------	006
Y06	-	RH SEGMENT BOUNDARY FRONT ----	007
Y25	-	RH INDEX FRONT ---------------	008
Z09	-	LH R-W 1-2-3-4/HAR BIT FRONT 0	009
Z29	-	LH R-W 1-2-3-4/HAR BIT FRONT 1	010
Z10	-	LH R-W 1-2-3-4/HAR BIT FRONT 2	011
Z30	-	LH R-W 1-2-3-4/HAR BIT FRONT 3	012
Z11	-	LH R-W 1-2-3-4/HAR BIT FRONT 4	013
Z33	-	LH R-W 1-2-3-4/HAR BIT FRONT 5	014
Z27	-	LH R-W 1-2-3-4/HAR BIT FRONT 6	015
Z32	-	LH R-W 1-2-3-4/HAR BIT FRONT 7	016
Z13	-	LH R-W 1-2-3-4/HAR BIT FRONT P	017
Y24	-	LH PIP SYNC FRONT ------------	018
Z05	-	LH PIP SYNC FRONT ------------	019
Z26	-	LH PADDING MODE FRONT --------	020
Z06	-	LH SEGMENT BOUNDARY FRONT ----	021
Z25	-	LH INDEX FRONT ---------------	022
X22	-	LH CLOCK CHECK STATUS FRONT --	023
W33	-	LH CLOCK PRWSE CHECK TP FRONT	024
S04	+	RH AM SEARCH FRONT -----------	025
M07	+	LH AM SEARCH FRONT -----------	026
X08	+	RH RD AMP UNSQ LATCHED FRONT -	027
X28	-	RH RD AMP UNSQ LATCHED FRONT -	028
X25	+	RH GATED R/W CHECK FRONT -----	029
X04	+	LH GATED R/W CHECK FRONT -----	030
X23	+	RH SAFETY INHIB TP FRONT -----	031
X02	+	LH SAFETY INHIB TP FRONT -----	032
X11	-	RH RD AMP UNSQUELCH FRONT ----	033
X30	-	LH RD AMP UNSQUELCH FRONT ----	034
X31	+	RH RD AMP UNSQUELCH FRONT ----	035

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CONTINUED FROM PAGE BJ200		
	J2	BJ210-L003
	(J2)	BJ210-R003
L004		
+ LH R-W MODE SEL FRONT		
	J2Z02	BJ210-L004
	(H2Y02)	BH200-R064
	(H2Z02)	BH200-R065
L005		
+ LH GATE R-W STATUS 1 FRONT		
	J2Z22	BJ210-L005
	(H2Y22)	BH210-R004
	(H2Z22)	BH210-R005
L006		
+ LH GATE R-W STATUS 2 FRONT		
	J2Z03	BJ210-L006
	(H2Y03)	BH210-R006
	(H2Z03)	BH210-R007
L007		
+ LH GATE R-W STATUS 3 FRONT		
	J2Z28	BJ210-L007
	(H2Y28)	BH210-R008
	(H2Z28)	BH210-R009
L008		
+ LH GATE R-W STATUS 4 FRONT		
	J2Z07	BJ210-L008
	(H2Y07)	BH210-R010
	(H2Z07)	BH210-R011
L009		
+ LH GATE HEAD ADDR REG FRONT		
	J2Z04	BJ210-L009
	(H2Y04)	BH210-R012
	(H2Z04)	BH210-R013
L010		
+ LH SEL A1/A2 FRONT		
	J2Z12	BJ210-L010
	(H2Y12)	BH210-R014
	(H2Z12)	BH210-R015
L011		
+ RH R-W MODE SEL FRONT		
	J2Y02	BJ210-L011
	(K2Y02)	BK200-R064
	(K2Z02)	BK200-R065
L012		
+ RH GATE R-W STATUS 1 FRONT		
	J2Y22	BJ210-L012
	(K2Y22)	BK210-R004
	(K2Z22)	BK210-R005
L013		
+ RH GATE R-W STATUS 2 FRONT		
	J2Y03	BJ210-L013
	(K2Z03)	BK210-R006
	(K2Y03)	BK210-R007
	(K2Z03)	BK210-R023
L014		
+ RH GATE R-W STATUS 3 FRONT		
	J2Y28	BJ210-L014
	(K2Y28)	BK210-R008
	(K2Z28)	BK210-R009
L015		
+ RH GATE R-W STATUS 4 FRONT		
	J2Y07	BJ210-L015
	(K2Y07)	BK210-R010
	(K2Z07)	BK210-R011
L016		
+ RH GATE HEAD ADDR REG FRONT		
	J2Y04	BJ210-L016
	(K2Y04)	BK210-R012
	(K2Z04)	BK210-R013
L017		
+ RH SEL A1/A2 FRONT		
	J2Y12	BJ210-L017
	(K2Y12)	BK210-R014
	(K2Z12)	BK210-R015
L018		
- RESET CHECK 1 FRONT		
	J2Y23	BJ210-L018
	(H2Y23)	BH210-R016
	(H2Z23)	BH210-R017
	(K2Y23)	BK210-R016
	(K2Z23)	BK210-R017
	J2Z23	BJ210-L019
L019		
- RESET CHECK 1 FRONT		
	J2Z23	BJ210-L019
	(H2Y23)	BH210-R016
	(H2Z23)	BH210-R017
	(K2Y23)	BK210-R016
	(K2Z23)	BK210-R017
	J2Y23	BJ210-L018
L020		
+ LH SVO CLOCK CABLE ERR FRONT		
	J2N07	BJ210-L020
	(D2B08)	BD200-R039
L021		
- LH TIEDOWN FRONT		
	J2X32	BJ210-L021
L022		
- 5V LH LEFT FRONT		
	J2J06	BJ210-L022
	D2B06	BD200-L045
	D2G06	BD200-L046
	G2U04	BG200-L061
-TP--	*K6C04*	
YA410	*-R016*	
J675-	*PIN07*	
	C6B02	
YA410	*-R024*	
J675-	*PIN14*	
	C6A02	
L023		
- 5V LH RIGHT FRONT		
	J2M09	BJ210-L023
	E2B06	BE200-L045
	E2G06	BE200-L046
	L2U04	BL200-L061
-TP--	*K6E02*	
YA410	*-R090*	
J676-	*PIN07*	
	F6A02	
YA410	*-R098*	
J676-	*PIN14*	
	E6E02	
R003		
- CONTINUED FROM PAGE BJ200		
	(J2)	BJ210-R003
	J2	BJ210-L003
R004		
- RH PIP SYNC FRONT		
	(J2Y05)	BJ210-R004
	(J2Z24)	BJ210-R005
	H2Y24	BH210-L010
	H2Z24	BH210-L011
	K2Y05	BK210-L012
	K2Z05	BK210-L013
R005		
- RH PIP SYNC FRONT		
	(J2Z24)	BJ210-R005
	(J2Y05)	BJ210-R004
	H2Y24	BH210-L010
	H2Z24	BH210-L011
	K2Y05	BK210-L012
	K2Z05	BK210-L013
R006		
- RH PADDING MODE FRONT		
	(J2Y26)	BJ210-R006
	K2Y26	BK210-L018
	K2Z26	BK210-L019
R007		
- RH SEGMENT BOUNDARY FRONT		
	(J2Y06)	BJ210-R007
	K2Y06	BK210-L016
	K2Z06	BK210-L017
R008		
- RH INDEX FRONT		
	(J2Y25)	BJ210-R008
	K2Y25	BK210-L014
	K2Z25	BK210-L015
R009		
- LH R-W 1-2-3-4/HAR BIT FRONT 0		
	(J2Z09)	BJ210-R009
	H2Y09	BH200-L057
	H2Z09	BH200-L058
R010		
- LH R-W 1-2-3-4/HAR BIT FRONT 1		
	(J2Z29)	BJ210-R010
	H2Y29	BH200-L059
	H2Z29	BH200-L060
R011		
- LH R-W 1-2-3-4/HAR BIT FRONT 2		
	(J2Z10)	BJ210-R011
	H2Y10	BH200-L061
	H2Z10	BH200-L062
R012		
- LH R-W 1-2-3-4/HAR BIT FRONT 3		
	(J2Z30)	BJ210-R012
	H2Y30	BH200-L063
	H2Z30	BH200-L064
R013		
- LH R-W 1-2-3-4/HAR BIT FRONT 4		
	(J2Z11)	BJ210-R013
	H2Y11	BH200-L065
	H2Z11	BH200-L066
R014		
- LH R-W 1-2-3-4/HAR BIT FRONT 5		
	(J2Z33)	BJ210-R014
	H2Y33	BH200-L067
	H2Z33	BH200-L068
R015		
- LH R-W 1-2-3-4/HAR BIT FRONT 6		
	(J2Z27)	BJ210-R015
	H2Y27	BH210-L004
	H2Z27	BH210-L005
R016		
- LH R-W 1-2-3-4/HAR BIT FRONT 7		
	(J2Z32)	BJ210-R016
	H2Y32	BH210-L006
	H2Z32	BH210-L007
R017		
- LH R-W 1-2-3-4/HAR BIT FRONT P		
	(J2Z13)	BJ210-R017
	H2Y13	BH210-L008
	H2Z13	BH210-L009
R018		
- LH PIP SYNC FRONT		
	(J2Y24)	BJ210-R018
	(J2Z05)	BJ210-R019
	H2Y05	BH210-L012
	H2Z05	BH210-L013
	K2Y24	BK210-L010
	K2Z24	BK210-L011
R019		
- LH PIP SYNC FRONT		
	(J2Z05)	BJ210-R019
	(J2Y24)	BJ210-R018
	H2Y05	BH210-L012
	H2Z05	BH210-L013
	K2Y24	BK210-L010
	K2Z24	BK210-L011
R020		
- LH PADDING MODE FRONT		
	(J2Z26)	BJ210-R020
	H2Y26	BH210-L018
	H2Z26	BH210-L019
R021		
- LH SEGMENT BOUNDARY FRONT		
	(J2Z06)	BJ210-R021
	H2Y06	BH210-L016
	H2Z06	BH210-L017
R022		
- LH INDEX FRONT		
	(J2Z25)	BJ210-R022
	H2Y25	BH210-L014
	H2Z25	BH210-L015
R023		
- LH CLOCK CHECK STATUS FRONT		
	(J2X22)	BJ210-R023
R024		
- LH CLOCK PRWSE CHECK TP FRONT		
	(J2W33)	BJ210-R024
R025		
+ RH AM SEARCH FRONT		
	(J2S04)	BJ210-R025
1C-C1	B2AAB	HC2A1-L071
	B3D08	
	A4D12	
R026		
+ LH AM SEARCH FRONT		
	(J2M07)	BJ210-R026
1C-C0	B2AAB	HC1A1-L071
	A2D12	
R027		
+ RH RD AMP UNSQ LATCHED FRONT		
	(J2X08)	BJ210-R027
R028		
- RH RD AMP UNSQ LATCHED FRONT		
	(J2X28)	BJ210-R028
R029		
+ RH GATED R/W CHECK FRONT		
	(J2X25)	BJ210-R029
R030		
+ LH GATED R/W CHECK FRONT		
	(J2X04)	BJ210-R030
R031		
+ RH SAFETY INHIB TP FRONT		
	(J2X23)	BJ210-R031
R032		
+ LH SAFETY INHIB TP FRONT		
	(J2X02)	BJ210-R032
R033		
- RH RD AMP UNSQUELCH FRONT		
	(J2X11)	BJ210-R033
R034		
- LH RD AMP UNSQUELCH FRONT		
	(J2X30)	BJ210-R034
R035		
+ RH RD AMP UNSQUELCH FRONT		
	(J2X31)	BJ210-R035

PORT AND POWER CONTROL CARD

INTRODUCTION

There are two port and power cards per drive. Each is capable of communication with controllers A1 and A2 in the DLS(device level selection) environment.

DESCRIPTION

The port and power control card performs the following major functions:

Port Control Functions

- Provides controller-to-device-port (CDP) communication at the access mechanism level.
- Ensures correct selection of devices.
- Presents device interrupts and check-1 errors.
- Processes most 5X and 74 status sense commands and controls the gating of other commands (59, 5A, 5B, 4X, 6X, 7X) and following parameter transfer requests to the sequencer.
- Sets or resets the customer Ready LED on the operator panel.
- Provides the capability of Set/Reset online, to Enable or Disable a device.

Power Control Functions:

- Provides the capability of powering on and off the drive either remotely or locally, and also provides the drive control function to power on the drive.
- Translates sequencer status register into device status byte 1 and 2.
- Maintains device interrupt generation logic.
- Provides single access mechanism capability.
- Provides power monitoring on +5 V (common), +5 V for the left and right actuator logic.

PRIMARY PARTS

- Long line drivers
- Device address switch
- Miscellaneous

ERROR CHECKING

Either a device check 1 or device check 2 is detected by the following checks:

Device check 1

- CDP check
- Port check
- Clock check

Device check 2 by either error detected or collected

- Sequencer card check
- Servo card check
- RPS check
- Checkpoint log check
- Sequencer write bus parity check
- Read/write card check
- Power check
- Funnel selection check

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ A1 PORT 0 CHECK 1 RESET		
	K2H02	BK200-L003
1A-A1	(U2U07)	CU210-R004
	H2H02	BH200-L003
	N2H02	BN200-L003
	Q2H02	BQ200-L003
	B5D09	
	V4D12	
1A-A1	*X1A06*	
L004		
+ A1 LOGIC POWER CONTROL 0		
	K2U07	BK200-L004
1A-A1	(V2S03)	CV200-R027
	H2U07	BH200-L004
	N2U07	BN200-L004
	Q2U07	BQ200-L004
	B5B04	
1A-A1	*W1A08*	
L005		
+ A1 GATE PORT 0 DEV CHECK 1		
	K2D02	BK200-L005
1A-A1	(U2U11)	CU200-R065
	H2D02	BH200-L005
	N2D02	BN200-L005
	Q2D02	BQ200-L005
	B5D07	
	V4D11	
1A-A1	*W1D06*	
L006		
+ A1 CDP 0 TAG OUT BIT 0		
	K2S12	BK200-L006
1A-A1	(U2D06)	CU200-R049
	H2S12	BH200-L006
	N2S12	BN200-L006
	Q2S12	BQ200-L006
	B5B09	
	V4D05	
1A-A1	*X1A08*	
L007		
+ A1 CDP 0 TAG OUT BIT 1		
	K2S09	BK200-L007
1A-A1	(U2D05)	CU200-R050
	H2S09	BH200-L007
	N2S09	BN200-L007
	Q2S09	BQ200-L007
	B5D10	
	V4D06	
1A-A1	*X1B06*	
L008		
+ A1 CDP 0 TAG OUT BIT 2		
	K2S07	BK200-L008
1A-A1	(U2D04)	CU200-R051
	H2S07	BH200-L008
	N2S07	BN200-L008
	Q2S07	BQ200-L008
	B5B10	
	V4D07	
1A-A1	*X1B08*	

LINE/SIGNAL	PIN	SHEET/LINE
L009		
+ A1 CDP 0 SPLIT BUS OP		
	K2S02	BK200-L009
1A-A1	(U2B03)	CU200-R052
	H2S02	BH200-L009
	N2S02	BN200-L009
	Q2S02	BQ200-L009
	B5D11	
	V4D09	
1A-A1	*X1C06*	
L010		
+ A2 PORT 0 CHECK 1 RESET		
	K2G02	BK200-L010
1A-A1	(D2U07)	CD210-R004
	H2G02	BH200-L010
	N2G02	BN200-L010
	Q2G02	BQ200-L010
	C4D12	
	W5D09	
1A-A1	*E1B06*	
L011		
+ A2 LOGIC POWER CONTROL 0		
	K2T04	BK200-L011
1A-A1	(C2S03)	CC200-R027
	H2T04	BH200-L011
	N2T04	BN200-L011
	Q2T04	BQ200-L011
	C4D10	
	W5B04	
1A-A1	*D1B08*	
L012		
+ A2 GATE PORT 0 DEV CHECK 1		
	K2H06	BK200-L012
1A-A1	(D2U11)	CD200-R065
	H2H06	BH200-L012
	N2H06	BN200-L012
	Q2H06	BQ200-L012
	C4D11	
	W5D07	
1A-A1	*D1E06*	
L013		
+ A2 CDP 0 TAG OUT BIT 0		
	K2U02	BK200-L013
1A-A1	(D2D06)	CD200-R049
	H2U02	BH200-L013
	N2U02	BN200-L013
	Q2U02	BQ200-L013
	C4D05	
	W5B09	
1A-A1	*E1B08*	
L014		
+ A2 CDP 0 TAG OUT BIT 1		
	K2U09	BK200-L014
1A-A1	(D2D05)	CD200-R050
	H2U09	BH200-L014
	N2U09	BN200-L014
	Q2U09	BQ200-L014
	C4D06	
	W5D10	
1A-A1	*E1C06*	

LINE/SIGNAL	PIN	SHEET/LINE
L015		
+ A2 CDP 0 TAG OUT BIT 2		
	K2S05	BK200-L015
1A-A1	(D2D04)	CD200-R051
	H2S05	BH200-L015
	N2S05	BN200-L015
	Q2S05	BQ200-L015
	C4D07	
	W5B10	
1A-A1	*E1C08*	
L016		
+ A2 CDP 0 SPLIT BUS OP		
	K2U04	BK200-L016
1A-A1	(D2B03)	CD200-R052
	H2U04	BH200-L016
	N2U04	BN200-L016
	Q2U04	BQ200-L016
	C4D09	
	W5D11	
1A-A1	*E1D06*	
L017		
- LH DEV SELECTED FRONT		
	K2M04	BK200-L017
	(H2N04)	BH200-R033
	G2T10	BG200-L013
	J2P04	BJ200-L058
L018		
- LH POWER ON RESET POWER FRONT		
	K2B07	BK200-L018
	(H2N06)	BH200-R062
	D2S07	BD200-L039
	G2P06	BG200-L015
	J2N11	BJ200-L037
	L2S04	BL200-L041
1C-C0	B2AB2	HC1A1-L070
	A2D02	
L019		
+ RH CHK POINT LOG CHECK FRONT		
	K2P05	BK200-L019
	(L2G02)	BL200-R026
L020		
+ RH SEQ CHECK FRONT		
	K2G09	BK200-L020
	(L2U06)	BL200-R025
L021		
+ RH SERVO CTRL CHECK FRONT		
	K2C13	BK200-L021
	(L2H11)	BL200-R027
L022		
+ RH RPS CHECK FRONT		
	K2J05	BK200-L022
	(L2B10)	BL200-R029
L023		
+ RH R-W CHECK FRONT		
	K2N03	BK200-L023
	(J2D07)	BJ200-R008

LINE/SIGNAL	PIN	SHEET/LINE
L024		
+ RH LOAD POWER CTRL REG FRONT		
	K2D06	BK200-L024
	(L2N10)	BL200-R022
	H2M08	BH210-L038
L025		
+ RH SEQ MOVE FORMAT FRONT		
	K2D04	BK200-L025
	(L2M04)	BL200-R024
L026		
+ RH SEQ STATUS STROBE FRONT		
	K2C03	BK200-L026
	(L2N02)	BL200-R021
L027		
+ RH LOAD SEQ STATUS REG FRONT		
	K2P02	BK200-L027
	(L2N09)	BL200-R023
L028		
+ A CLOCK FRONT		
	K2T09	BK200-L028
	(J2S07)	BJ200-R029
	G2M02	BG200-L025
	H2T09	BH200-L028
	L2M02	BL200-L025
L029		
+ B CLOCK FRONT		
	K2T05	BK200-L029
	(J2U05)	BJ200-R030
	G2N07	BG200-L026
	G2U09	BG200-L027
	H2T05	BH200-L029
	L2N07	BL200-L026
	L2U09	BL200-L027
L030		
+ C CLOCK FRONT		
	K2T08	BK200-L030
	(J2T03)	BJ200-R031
	G2C03	BG200-L028
	H2T08	BH200-L030
	L2C03	BL200-L028
L031		
+ D CLOCK FRONT		
	K2T07	BK200-L031
	(J2S08)	BJ200-R032
	G2M03	BG200-L029
	H2T07	BH200-L031
	L2M03	BL200-L029
L032		
+ E CLOCK FRONT		
	K2U06	BK200-L032
	(J2U10)	BJ200-R033
	G2N12	BG200-L030
	G2U10	BG200-L031
	H2U06	BH200-L032
	L2N12	BL200-L030
	L2U10	BL200-L031

LINE/SIGNAL	PIN	SHEET/LINE
L033		
+ F CLOCK FRONT		
	K2S03	BK200-L033
	(J2U11)	BJ200-R034
	G2M08	BG200-L032
	H2S03	BH200-L033
	L2M08	BL200-L032
L034		
+ G CLOCK FRONT		
	K2T03	BK200-L034
	(J2T11)	BJ200-R035
	G2C02	BG200-L033
	G2S07	BG200-L034
	H2T03	BH200-L034
	L2C02	BL200-L033
	L2S07	BL200-L034
L035		
+ H CLOCK FRONT		
	K2U05	BK200-L035
	(J2U04)	BJ200-R036
	G2T12	BG200-L035
	H2U05	BH200-L035
	H2D13	BH200-L053
	K2D13	BK200-L053
	L2T12	BL200-L035
L036		
- CLOCK CHECK HOLD FRONT		
	K2G03	BK200-L036
	(J2U02)	BJ200-R037
	G2T04	BG200-L040
	H2G03	BH200-L036
	L2T04	BL200-L040
L037		
- RH CABLE SWITCHED FRONT		
	K2M02	BK200-L037
	H2M02	BH200-L037
1C-C4	P2B02	HPA20-L011
J180-	*PIN04*	
YA500	*-L030*	
YA500	*-L032*	
	B2B03	
	B3B03	
L038		
- RH OFFSET ACTIVE FRONT		
	K2H12	BK200-L038
	(L2P02)	BL200-R052
	E2P06	BE200-L020
L039		
- RH INHIBIT FRONT		
	K2N02	BK200-L039
	(L2H06)	BL200-R045
	E2P13	BE200-L024
L040		
+ RH RECORD READY IRPT FRONT		
	K2J12	BK200-L040
	(L2D04)	BL200-R028

LINE/SIGNAL	PIN	SHEET/LINE
L041		
- LH 5V COMMON POR FRONT		
	K2N05	BK200-L041
	(H2M07)	BH210-R021
L042		
- RH POWER ON RESET OUT FRONT		
	K2T10	BK200-L042
	(K2P07)	BK200-R059
L043		
+ NO AIR FRONT		
	K2G08	BK200-L043
	H2G08	BH200-L043
YA110	*-R097*	
TB485	*----5*	
	C5D10	
L044		
+ SENSE MOTOR CONT OFF FRONT		
	K2T13	BK200-L044
	H2T13	BH200-L044
YA600	*-R083*	
K417-	*----4*	
	C5B12	
L045		
+ SENSE DCA RELAY OFF FRONT		
	K2U10	BK200-L045
	H2U10	BH200-L045
YA200	*-R037*	
J794A	*----6*	
	C5D06	
L046		
- DRIVE SWITCH OFF FRONT		
	K2H05	BK200-L046
	H2H05	BH200-L046
YA410	*-R118*	
J679-	*----2*	
	C5B02	
L047		
- DRIVE SWITCH ON FRONT		
	K2H03	BK200-L047
	H2H03	BH200-L047
YA410	*-R116*	
J679-	*----1*	
	C5D02	
L048		
- RH POWER ON RESET SWITCH FRONT		
	K2S13	BK200-L048
	H2N10	BH200-L056
YA410	*-R091*	
J676-	*PIN08*	
	H6C02	
L049		
+ RH MOTOR CONT PICKED OUT FRONT		
	K2D12	BK200-L049
	(K2T11)	BK200-R054
L050		
+ RH BRAKE CONT PICKED OUT FRONT		
	K2C06	BK200-L050
	(K2T12)	BK200-R055

LINE/SIGNAL	PIN	SHEET/LINE
L051		
- RH + 5V PWR ON RESET OUT FRONT		
	K2M09	BK200-L051
	(K2M13)	BK200-R057
L052		
- RH RESET CLOCK RING OUT FRONT		
	K2P12	BK200-L052
	(K2P11)	BK200-R058
	H2N11	BH200-L055
L053		
+ H CLOCK FRONT		
	K2D13	BK200-L053
	(J2U04)	BJ200-R036
	G2T12	BG200-L035
	H2U05	BH200-L035
	H2D13	BH200-L053
	K2U05	BK200-L035
	L2T12	BL200-L035
L054		
+ LH CABLE SWITCHED FRONT		
	K2T02	BK200-L054
	H2T02	BH200-L054
1C-C4	P1B02	HPA10-L011
YA500	*-L062*	
YA500	*-L060*	
J180-	*PIN04*	
	B2B02	
	B3B02	
L055		
- LH RESET CLOCK RING FRONT		
	K2N11	BK200-L055
	(H2P11)	BH200-R058
	H2P12	BH200-L052
L056		
- LH POWER ON RESET SWITCH FRONT		
	K2N10	BK200-L056
	H2S13	BH200-L048
YA410	*-R017*	
J675-	*PIN08*	
	G6C02	
L057		
- RH R-W 1-2-3-4/HAR BIT FRONT 0		
	K2Y09	BK200-L057
	(J2Y09)	BJ200-R060
	K2Z09	BK200-L058
L058		
- RH R-W 1-2-3-4/HAR BIT FRONT 0		
	K2Z09	BK200-L058
	(J2Y09)	BJ200-R060
	K2Y09	BK200-L057
L059		
- RH R-W 1-2-3-4/HAR BIT FRONT 1		
	K2Y29	BK200-L059
	(J2Y29)	BJ200-R061
	K2Z29	BK200-L060

LINE/SIGNAL	PIN	SHEET/LINE
L060		
- RH R-W 1-2-3-4/HAR BIT FRONT 1		
	K2Z29	BK200-L060
	(J2Y29)	BJ200-R061
	K2Y29	BK200-L059
L061		
- RH R-W 1-2-3-4/HAR BIT FRONT 2		
	K2Y10	BK200-L061
	(J2Y10)	BJ200-R062
	K2Z10	BK200-L062
L062		
- RH R-W 1-2-3-4/HAR BIT FRONT 2		
	K2Z10	BK200-L062
	(J2Y10)	BJ200-R062
	K2Y10	BK200-L061
L063		
- RH R-W 1-2-3-4/HAR BIT FRONT 3		
	K2Y30	BK200-L063
	(J2Y30)	BJ200-R063
	K2Z30	BK200-L064
L064		
- RH R-W 1-2-3-4/HAR BIT FRONT 3		
	K2Z30	BK200-L064
	(J2Y30)	BJ200-R063
	K2Y30	BK200-L063
L065		
- RH R-W 1-2-3-4/HAR BIT FRONT 4		
	K2Y11	BK200-L065
	(J2Y11)	BJ200-R064
	K2Z11	BK200-L066
L066		
- RH R-W 1-2-3-4/HAR BIT FRONT 4		
	K2Z11	BK200-L066
	(J2Y11)	BJ200-R064
	K2Y11	BK200-L065
L067		
- RH R-W 1-2-3-4/HAR BIT FRONT 5		
	K2Y33	BK200-L067
	(J2Y33)	BJ200-R065
	K2Z33	BK200-L068
L068		
- RH R-W 1-2-3-4/HAR BIT FRONT 5		
	K2Z33	BK200-L068
	(J2Y33)	BJ200-R065
	K2Y33	BK200-L067
L069		
- CONTINUED ON PAGE BK210		
	K2	BK200-L069
	(K2)	BK200-R066

LINE/SIGNAL	PIN	SHEET/LINE
R003		
+ A1 CDP 0 TAG IN BIT 0		
	(K2M10)	BK200-R003
	(H2M10)	BH200-R003
	(N2M10)	BN200-R003
	(Q2M10)	BQ200-R003
1A-A1	U2G03	CU200-L009
	B5D12	
1A-A1	*X1D06*	
R004		
+ A1 CDP 0 TAG IN BIT 1		
	(K2P10)	BK200-R004
	(H2P10)	BH200-R004
	(N2P10)	BN200-R004
	(Q2P10)	BQ200-R004
1A-A1	U2B08	CU200-L010
	B5B12	
1A-A1	*X1D08*	
R005		
+ A1 PORT 0 CHECK 1		
	(K2N13)	BK200-R005
	(H2N13)	BH200-R005
	(N2N13)	BN200-R005
	(Q2N13)	BQ200-R005
1A-A1	U2B09	CU200-L005
	B5D13	
1A-A1	*X1E06*	
R006		
+ A1 DEVICE DRIVER ACTIVE 0		
	(K2P13)	BK200-R006
	(H2P13)	BH200-R006
	(N2P13)	BN200-R006
	(Q2P13)	BQ200-R006
1A-A1	U2U02	CU200-L017
	B5B11	
1A-A1	*X1C08*	
R007		
+ A1 CDP 0 BIDI DATA 0		
	(K2P06)	BK200-R007
	(H2P06)	BH200-R007
	(N2P06)	BN200-R007
	(Q2P06)	BQ200-R007
1A-A1	(U2J13)	CU200-R003
	B5B02	
	V4B02	
1A-A1	*V1D08*	
R008		
+ A1 CDP 0 BIDI DATA 1		
	(K2N09)	BK200-R008
	(H2N09)	BH200-R008
	(N2N09)	BN200-R008
	(Q2N09)	BQ200-R008
1A-A1	(U2G12)	CU200-R004
	B5D04	
	V4B03	
1A-A1	*W1A06*	

LINE/SIGNAL	PIN	SHEET/LINE
R009		
+ A1 CDP 0 BIDI DATA 2		
	(K2G05)	BK200-R009
	(H2G05)	BH200-R009
	(N2G05)	BN200-R009
	(Q2G05)	BQ200-R009
1A-A1	(U2J11)	CU200-R005
	B5D03	
	V4B04	
1A-A1	*V1E06*	
R010		
+ A1 CDP 0 BIDI DATA 3		
	(K2N12)	BK200-R010
	(H2N12)	BH200-R010
	(N2N12)	BN200-R010
	(Q2N12)	BQ200-R010
1A-A1	(U2J10)	CU200-R006
	B5B03	
	V4B05	
1A-A1	*V1E08*	
R011		
+ A1 CDP 0 BIDI DATA 4		
	(K2M12)	BK200-R011
	(H2M12)	BH200-R011
	(N2M12)	BN200-R011
	(Q2M12)	BQ200-R011
1A-A1	(U2P04)	CU200-R007
	B5D05	
	V4B07	
1A-A1	*W1B06*	
R012		
+ A1 CDP 0 BIDI DATA 5		
	(K2G07)	BK200-R012
	(H2G07)	BH200-R012
	(N2G07)	BN200-R012
	(Q2G07)	BQ200-R012
1A-A1	(U2G10)	CU200-R008
	B5B05	
	V4B08	
1A-A1	*W1B08*	
R013		
+ A1 CDP 0 BIDI DATA 6		
	(K2C12)	BK200-R013
	(H2C12)	BH200-R013
	(N2C12)	BN200-R013
	(Q2C12)	BQ200-R013
1A-A1	(U2J09)	CU200-R009
	B5D06	
	V4B09	
1A-A1	*W1C06*	
R014		
+ A1 CDP 0 BIDI DATA 7		
	(K2B12)	BK200-R014
	(H2B12)	BH200-R014
	(N2B12)	BN200-R014
	(Q2B12)	BQ200-R014
1A-A1	(U2G08)	CU200-R010
	B5B06	
	V4B10	
1A-A1	*W1C08*	

LINE/SIGNAL	PIN	SHEET/LINE
R015		
+ A1 CDP 0 BIDI DATA P		
	(K2J13)	BK200-R015
	(H2J13)	BH200-R015
	(N2J13)	BN200-R015
	(Q2J13)	BQ200-R015
1A-A1	(U2S03)	CU200-R011
	B5B08	
	V4B12	
1A-A1	*W1E08*	
R016		
+ A2 CDP 0 TAG IN BIT 0		
	(K2J07)	BK200-R016
	(H2J07)	BH200-R016
	(N2J07)	BN200-R016
	(Q2J07)	BQ200-R016
1A-A1	D2G03	CD200-L009
	W5D12	
1A-A1	*E1E06*	
R017		
+ A2 CDP 0 TAG IN BIT 1		
	(K2H07)	BK200-R017
	(H2H07)	BH200-R017
	(N2H07)	BN200-R017
	(Q2H07)	BQ200-R017
1A-A1	D2B08	CD200-L010
	W5B12	
1A-A1	*E1E08*	
R018		
+ A2 PORT 0 CHECK 1		
	(K2J09)	BK200-R018
	(H2J09)	BH200-R018
	(N2J09)	BN200-R018
	(Q2J09)	BQ200-R018
1A-A1	D2B09	CD200-L005
	W5D13	
1A-A1	*F1A06*	
R019		
+ A2 DEVICE DRIVER ACTIVE 0		
	(K2H09)	BK200-R019
	(H2H09)	BH200-R019
	(N2H09)	BN200-R019
	(Q2H09)	BQ200-R019
1A-A1	D2U02	CD200-L017
	W5B11	
1A-A1	*E1D08*	
R020		
+ A2 CDP 0 BIDI DATA 0		
	(K2B13)	BK200-R020
	(H2B13)	BH200-R020
	(N2B13)	BN200-R020
	(Q2B13)	BQ200-R020
1A-A1	(D2J13)	CD200-R003
	C4B02	
	W5B02	
1A-A1	*C1E08*	

LINE/SIGNAL	PIN	SHEET/LINE
R021		
+ A2 CDP 0 BIDI DATA 1		
	(K2H13)	BK200-R021
	(H2H13)	BH200-R021
	(N2H13)	BN200-R021
	(Q2H13)	BQ200-R021
1A-A1	(D2G12)	CD200-R004
	C4B03	
	W5D04	
1A-A1	*D1B06*	
R022		
+ A2 CDP 0 BIDI DATA 2		
	(K2H11)	BK200-R022
	(H2H11)	BH200-R022
	(N2H11)	BN200-R022
	(Q2H11)	BQ200-R022
1A-A1	(D2J11)	CD200-R005
	C4B04	
	W5D03	
1A-A1	*D1A06*	
R023		
+ A2 CDP 0 BIDI DATA 3		
	(K2D09)	BK200-R023
	(H2D09)	BH200-R023
	(N2D09)	BN200-R023
	(Q2D09)	BQ200-R023
1A-A1	(D2J10)	CD200-R006
	C4B05	
	W5B03	
1A-A1	*D1A08*	
R024		
+ A2 CDP 0 BIDI DATA 4		
	(K2J10)	BK200-R024
	(H2J10)	BH200-R024
	(N2J10)	BN200-R024
	(Q2J10)	BQ200-R024
1A-A1	(D2P04)	CD200-R007
	C4B07	
	W5D05	
1A-A1	*D1C06*	
R025		
+ A2 CDP 0 BIDI DATA 5		
	(K2D10)	BK200-R025
	(H2D10)	BH200-R025
	(N2D10)	BN200-R025
	(Q2D10)	BQ200-R025
1A-A1	(D2G10)	CD200-R008
	C4B08	
	W5B05	
1A-A1	*D1C08*	
R026		
+ A2 CDP 0 BIDI DATA 6		
	(K2D11)	BK200-R026
	(H2D11)	BH200-R026
	(N2D11)	BN200-R026
	(Q2D11)	BQ200-R026
1A-A1	(D2J09)	CD200-R009
	C4B09	
	W5D06	
1A-A1	*D1D06*	

RH PORT/PORT POWER CONTROL XRL BK200

LINE/SIGNAL	PIN	SHEET/LINE
R027		
+ A2 CDP 0 BIDI DATA 7		
	(K2C11)	BK200-R027
	(H2C11)	BH200-R027
	(N2C11)	BN200-R027
	(Q2C11)	BQ200-R027
1A-A1	(D2G08)	CD200-R010
	C4B10	
	W5B06	
1A-A1	*D1D08*	
R028		
+ A2 CDP 0 BIDI DATA P		
	(K2B05)	BK200-R028
	(H2B05)	BH200-R028
	(N2B05)	BN200-R028
	(Q2B05)	BQ200-R028
1A-A1	(D2S03)	CD200-R011
	C4B12	
	W5B08	
1A-A1	*E1A08*	
R029		
+ RH GATE DIF LOW REG FRONT		
	(K2C05)	BK200-R029
	L2C07	BL200-L053
R030		
+ RH GATE TARGET REG FRONT		
	(K2D07)	BK200-R030
	L2C09	BL200-L052
R031		
+ RH GATE CHK POINT REG FRONT		
	(K2B08)	BK200-R031
	L2N03	BL200-L046
R032		
+ RH CHECK 2 FRONT		
	(K2J06)	BK200-R032
	J2H09	BJ200-L032
R033		
- RH DEV SELECTED FRONT		
	(K2N04)	BK200-R033
	H2M04	BH200-L017
	J2S10	BJ200-L015
	L2T10	BL200-L013
R034		
+ RH COMMAND FRONT		
	(K2T06)	BK200-R034
	L2T08	BL200-L012
R035		
- RH DEVICE CHECK 2 RESET FRONT		
	(K2J11)	BK200-R035
	J2G09	BJ200-L013
	L2T06	BL200-L016
R036		
+ RH PARM TRANSFER FRONT		
	(K2N08)	BK200-R036
	L2T09	BL200-L014

LINE/SIGNAL	PIN	SHEET/LINE
R037		
+ RH BUSY W/O PIP FRONT		
	(K2G12)	BK200-R037
	L2N05	BL200-L019
R038		
+ RH SEEK INCOMPLETE FRONT		
	(K2H10)	BK200-R038
	L2G08	BL200-L045
R039		
- RH PORT FENCED FRONT		
	(K2G10)	BK200-R039
	L2M05	BL200-L020
R040		
+ RH MOTOR CONTROL FRONT		
	(K2B02)	BK200-R040
	L2P10	BL200-L023
R041		
- RH DRIVE PWR SWITCH OFF FRONT		
	(K2M03)	BK200-R041
	L2P04	BL200-L021
R042		
- RELEASE BRAKE FRONT		
	(K2P09)	BK200-R042
	(H2P09)	BH200-R042
YA600	*-L076*	
K416-	*----B*	
	C5D13	
R043		
- DRIVE MOTOR RUN FRONT		
	(K2N07)	BK200-R043
	(H2N07)	BH200-R043
YA600	*-L077*	
K418-	*----X*	
	C5D12	
R044		
- PICK LOGIC POWER CONT FRONT		
	(K2S10)	BK200-R044
	(H2S10)	BH200-R044
YA600	*-L057*	
K420-	*----B*	
	C5D04	
R045		
+ RH CDP DATA BUS PWR BIT FRNT 0		
	(K2C02)	BK200-R045
	J2N05	BJ200-L003
	L2S02	BL200-L003
R046		
+ RH CDP DATA BUS PWR BIT FRNT 1		
	(K2C07)	BK200-R046
	J2M05	BJ200-L004
	L2P13	BL200-L004

LINE/SIGNAL	PIN	SHEET/LINE
R047		
+ RH CDP DATA BUS PWR BIT FRNT 2		
	(K2C10)	BK200-R047
	J2M04	BJ200-L005
	L2P11	BL200-L005
R048		
+ RH CDP DATA BUS PWR BIT FRNT 3		
	(K2B09)	BK200-R048
	J2N03	BJ200-L006
	L2D02	BL200-L006
R049		
+ RH CDP DATA BUS PWR BIT FRNT 4		
	(K2B10)	BK200-R049
	J2M03	BJ200-L007
	L2S10	BL200-L007
R050		
+ RH CDP DATA BUS PWR BIT FRNT 5		
	(K2C09)	BK200-R050
	J2M02	BJ200-L008
	L2T07	BL200-L008
R051		
+ RH CDP DATA BUS PWR BIT FRNT 6		
	(K2B04)	BK200-R051
	J2H13	BJ200-L009
	L2T11	BL200-L009
R052		
+ RH CDP DATA BUS PWR BIT FRNT 7		
	(K2C08)	BK200-R052
	J2G13	BJ200-L010
	L2N13	BL200-L010
R053		
+ RH CDP DATA BUS PWR BIT FRNT P		
	(K2C04)	BK200-R053
	J2G12	BJ200-L011
	L2S09	BL200-L011
R054		
+ RH MOTOR CONT PICKED OUT FRONT		
	(K2T11)	BK200-R054
	K2D12	BK200-L049
R055		
+ RH BRAKE CONT PICKED OUT FRONT		
	(K2T12)	BK200-R055
	K2C06	BK200-L050
R056		
- RH POWER CHECK 2 FRONT		
	(K2J02)	BK200-R056
R057		
- RH + 5V PWR ON RESET OUT FRONT		
	(K2M13)	BK200-R057
	K2M09	BK200-L051
R058		
- RH RESET CLOCK RING OUT FRONT		
	(K2P11)	BK200-R058
	H2N11	BH200-L055
	K2P12	BK200-L052

LINE/SIGNAL	PIN	SHEET/LINE
R059		
- RH POWER ON RESET OUT FRONT		
	(K2P07)	BK200-R059
	K2T10	BK200-L042
R060		
- POWER ON RESET FRONT		
	(K2M05)	BK200-R060
	(H2M05)	BH200-R060
	J2U06	BJ200-L012
R061		
- RESET CLOCK RING FRONT		
	(K2P04)	BK200-R061
	(H2P04)	BH200-R061
	J2S05	BJ200-L035
R062		
- RH POWER ON RESET POWER FRONT		
	(K2N06)	BK200-R062
	E2S07	BE200-L039
	G2S04	BG200-L041
	H2B07	BH200-L018
	J2B10	BJ200-L036
	L2P06	BL200-L015
1C-C1	B2AB2	HC2A1-L070
	A4D02	
R063		
- DRIVE CONT RELAY FRONT		
	(K2U12)	BK200-R063
	(H2U12)	BH200-R063
YA200	*-L012*	
J794-	*---A3*	
	C5D05	
R064		
+ RH R-W MODE SEL FRONT		
	(K2Y02)	BK200-R064
	(K2Z02)	BK200-R065
	J2Y02	BJ210-L011
R065		
+ RH R-W MODE SEL FRONT		
	(K2Z02)	BK200-R065
	(K2Y02)	BK200-R064
	J2Y02	BJ210-L011
R066		
- CONTINUED ON PAGE BK210		
	(K2)	BK200-R066
	K2	BK200-L069

RH PORT/PORT POWER CONTROL XRL BK200

003	- CONTINUED FROM PAGE BK200 ----	----
004	- RH R-W 1-2-3-4/HAR BIT FRONT 6	Y27
005	- RH R-W 1-2-3-4/HAR BIT FRONT 6	Z27
006	- RH R-W 1-2-3-4/HAR BIT FRONT 7	Y32
007	- RH R-W 1-2-3-4/HAR BIT FRONT 7	Z32
008	- RH R-W 1-2-3-4/HAR BIT FRONT P	Y13
009	- RH R-W 1-2-3-4/HAR BIT FRONT P	Z13
010	- LH PIP SYNC FRONT ----------	Y24
011	- LH PIP SYNC FRONT ----------	Z24
012	- RH PIP SYNC FRONT ----------	Y05
013	- RH PIP SYNC FRONT ----------	Z05
014	- RH INDEX FRONT ----------	Y25
015	- RH INDEX FRONT ----------	Z25
016	- RH SEGMENT BOUNDARY FRONT ----	Y06
017	- RH SEGMENT BOUNDARY FRONT ----	Z06
018	- RH PADDING MODE FRONT --------	Y26
019	- RH PADDING MODE FRONT --------	Z26
020	- RH CHK POINT/TAR/DIF FRONT 0 -	X06
021	- RH CHK POINT/TAR/DIF FRONT 1 -	X07
022	- RH CHK POINT/TAR/DIF FRONT 2 -	X26
023	- RH CHK POINT/TAR/DIF FRONT 3 -	X13
024	- RH CHK POINT/TAR/DIF FRONT 4 -	X02
025	- RH CHK POINT/TAR/DIF FRONT 5 -	X25
026	- RH CHK POINT/TAR/DIF FRONT 6 -	X05
027	- RH CHK POINT/TAR/DIF FRONT 7 -	X11
028	- RH CHK POINT/TAR/DIF FRONT P -	X22
029	+ RH SEQ WRITE BUS BIT FRONT 0 -	X30
030	+ RH SEQ WRITE BUS BIT FRONT 1 -	X28
031	+ RH SEQ WRITE BUS BIT FRONT 2 -	X32
032	+ RH SEQ WRITE BUS BIT FRONT 3 -	X24
033	+ RH SEQ WRITE BUS BIT FRONT 4 -	X33
034	+ RH SEQ WRITE BUS BIT FRONT 5 -	X03
035	+ RH SEQ WRITE BUS BIT FRONT 6 -	X10
036	+ RH SEQ WRITE BUS BIT FRONT 7 -	X09
037	+ RH SEQ WRITE BUS BIT FRONT P -	X29
038	+ LH LOAD POWER CTRL REG FRONT -	M08
039	+ LH SEQ WRITE BUS BIT FRONT 2 -	J04
040	+ 5V RH SERVO, PORT, & SEQ FRONT	S08
041	+ 5V R-W CTRL, PT2 FRONT -------	G13
042	+ 5/24V RH PORT FRONT ----------	S04
043	+ RH EVERGREEN ID BIT FRONT ----	H08
044	- RH WRITE INHIBIT FRONT -------	G04
045	- RH SPINDLE ID ON BOARD FRONT -	D05

RH PORT/PORT POWER CONTROL CRD BK210

----	- CONTINUED FROM PAGE BK200 ----	003
Y22	+ RH GATE R-W STATUS 1 FRONT ---	004
Z22	+ RH GATE R-W STATUS 1 FRONT ---	005
Z03	+ RH GATE R-W STATUS 2 FRONT ---	006
Y03	+ RH GATE R-W STATUS 2 FRONT ---	007
Y28	+ RH GATE R-W STATUS 3 FRONT ---	008
Z28	+ RH GATE R-W STATUS 3 FRONT ---	009
Y07	+ RH GATE R-W STATUS 4 FRONT ---	010
Z07	+ RH GATE R-W STATUS 4 FRONT ---	011
Y04	+ RH GATE HEAD ADDR REG FRONT --	012
Z04	+ RH GATE HEAD ADDR REG FRONT --	013
Y12	+ RH SEL A1/A2 FRONT ----------	014
Z12	+ RH SEL A1/A2 FRONT ----------	015
Y23	- RESET CHECK 1 FRONT ---------	016
Z23	- RESET CHECK 1 FRONT ---------	017
W23	- RH READY LED FRONT ----------	018
W03	+ RH READY LED TERM FRONT ------	019
W12	+ 5V RH COMMON LED FRONT -------	020
W06	+ 5/24V RH LED FRONT ----------	021
W09	+ 5V RH LED FRONT -------------	022
Z03	+ RH GATE R-W STATUS 2 FRONT ---	023
H04	+ RH SENSE SOFT START LT FRONT -	024
M07	- RH 5V COMMON POR FRONT -------	025
U13	+ READY LED DEVICE 1 ----------	026
B03	+ RH PARM TRANSFER EN FRONT ----	027
W11	+ RH DRIVE OWE INTERUPT FRONT --	028

RH PORT/PORT POWER CONTROL XRL BK210

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CONTINUED FROM PAGE BK200		
	K2	BK210-L003
	(K2)	BK210-R003
L004		
- RH R-W 1-2-3-4/HAR BIT FRONT 6		
	K2Y27	BK210-L004
	(J2Y27)	BJ200-R066
	K2Z27	BK210-L005
L005		
- RH R-W 1-2-3-4/HAR BIT FRONT 6		
	K2Z27	BK210-L005
	(J2Y27)	BJ200-R066
	K2Y27	BK210-L004
L006		
- RH R-W 1-2-3-4/HAR BIT FRONT 7		
	K2Y32	BK210-L006
	(J2Y32)	BJ200-R067
	K2Z32	BK210-L007
L007		
- RH R-W 1-2-3-4/HAR BIT FRONT 7		
	K2Z32	BK210-L007
	(J2Y32)	BJ200-R067
	K2Y32	BK210-L006
L008		
- RH R-W 1-2-3-4/HAR BIT FRONT P		
	K2Y13	BK210-L008
	(J2Y13)	BJ200-R068
	K2Z13	BK210-L009
L009		
- RH R-W 1-2-3-4/HAR BIT FRONT P		
	K2Z13	BK210-L009
	(J2Y13)	BJ200-R068
	K2Y13	BK210-L008
L010		
- LH PIP SYNC FRONT		
	K2Y24	BK210-L010
	(J2Y24)	BJ210-R018
	(J2Z05)	BJ210-R019
	H2Y05	BH210-L012
	H2Z05	BH210-L013
	K2Z24	BK210-L011
L011		
- LH PIP SYNC FRONT		
	K2Z24	BK210-L011
	(J2Y24)	BJ210-R018
	(J2Z05)	BJ210-R019
	H2Y05	BH210-L012
	H2Z05	BH210-L013
	K2Y24	BK210-L010
L012		
- RH PIP SYNC FRONT		
	K2Y05	BK210-L012
	(J2Y05)	BJ210-R004
	(J2Z24)	BJ210-R005
	H2Y24	BH210-L010
	H2Z24	BH210-L011
	K2Z05	BK210-L013
L013		
- RH PIP SYNC FRONT		
	K2Z05	BK210-L013
	(J2Y05)	BJ210-R004
	(J2Z24)	BJ210-R005
	H2Y24	BH210-L010
	H2Z24	BH210-L011
	K2Y05	BK210-L012
L014		
- RH INDEX FRONT		
	K2Y25	BK210-L014
	(J2Y25)	BJ210-R008
	K2Z25	BK210-L015
L015		
- RH INDEX FRONT		
	K2Z25	BK210-L015
	(J2Y25)	BJ210-R008
	K2Y25	BK210-L014
L016		
- RH SEGMENT BOUNDARY FRONT		
	K2Y06	BK210-L016
	(J2Y06)	BJ210-R007
	K2Z06	BK210-L017
L017		
- RH SEGMENT BOUNDARY FRONT		
	K2Z06	BK210-L017
	(J2Y06)	BJ210-R007
	K2Y06	BK210-L016
L018		
- RH PADDING MODE FRONT		
	K2Y26	BK210-L018
	(J2Y26)	BJ210-R006
	K2Z26	BK210-L019
L019		
- RH PADDING MODE FRONT		
	K2Z26	BK210-L019
	(J2Y26)	BJ210-R006
	K2Y26	BK210-L018
L020		
- RH CHK POINT/TAR/DIF FRONT 0		
	K2X06	BK210-L020
	(L2D05)	BL200-R012
	(L2X06)	BL210-R013
L021		
- RH CHK POINT/TAR/DIF FRONT 1		
	K2X07	BK210-L021
	(L2G13)	BL200-R013
	(L2X07)	BL210-R014
L022		
- RH CHK POINT/TAR/DIF FRONT 2		
	K2X26	BK210-L022
	(L2B05)	BL200-R014
	(L2X26)	BL210-R015
L023		
- RH CHK POINT/TAR/DIF FRONT 3		
	K2X13	BK210-L023
	(L2B04)	BL200-R015
	(L2X13)	BL210-R016
L024		
- RH CHK POINT/TAR/DIF FRONT 4		
	K2X02	BK210-L024
	(L2B07)	BL200-R016
	(L2X02)	BL210-R017
L025		
- RH CHK POINT/TAR/DIF FRONT 5		
	K2X25	BK210-L025
	(L2H12)	BL200-R017
	(L2X25)	BL210-R018
L026		
- RH CHK POINT/TAR/DIF FRONT 6		
	K2X05	BK210-L026
	(L2J12)	BL200-R018
	(L2X05)	BL210-R019
L027		
- RH CHK POINT/TAR/DIF FRONT 7		
	K2X11	BK210-L027
	(L2H13)	BL200-R019
	(L2X11)	BL210-R020
L028		
- RH CHK POINT/TAR/DIF FRONT P		
	K2X22	BK210-L028
	(L2G12)	BL200-R020
	(L2X22)	BL210-R021
L029		
+ RH SEQ WRITE BUS BIT FRONT 0		
	K2X30	BK210-L029
	(L2U02)	BL200-R003
	(L2X30)	BL210-R004
L030		
+ RH SEQ WRITE BUS BIT FRONT 1		
	K2X28	BK210-L030
	(L2U11)	BL200-R004
	(L2X28)	BL210-R005
L031		
+ RH SEQ WRITE BUS BIT FRONT 2		
	K2X32	BK210-L031
	(L2T02)	BL200-R005
	(L2X32)	BL210-R006
	H2J04	BH210-L039
L032		
+ RH SEQ WRITE BUS BIT FRONT 3		
	K2X24	BK210-L032
	(L2U12)	BL200-R006
	(L2X24)	BL210-R007
L033		
+ RH SEQ WRITE BUS BIT FRONT 4		
	K2X33	BK210-L033
	(L2T03)	BL200-R007
	(L2X33)	BL210-R008
L034		
+ RH SEQ WRITE BUS BIT FRONT 5		
	K2X03	BK210-L034
	(L2S05)	BL200-R008
	(L2X03)	BL210-R009
L035		
+ RH SEQ WRITE BUS BIT FRONT 6		
	K2X10	BK210-L035
	(L2S03)	BL200-R009
	(L2X10)	BL210-R010
L036		
+ RH SEQ WRITE BUS BIT FRONT 7		
	K2X09	BK210-L036
	(L2U05)	BL200-R010
	(L2X09)	BL210-R011
L037		
+ RH SEQ WRITE BUS BIT FRONT P		
	K2X29	BK210-L037
	(L2U07)	BL200-R011
	(L2X29)	BL210-R012
L038		
+ LH LOAD POWER CTRL REG FRONT		
	K2M08	BK210-L038
	(G2N10)	BG200-R022
	H2D06	BH200-L024
L039		
+ LH SEQ WRITE BUS BIT FRONT 2		
	K2J04	BK210-L039
	(G2T02)	BG200-R005
	(G2X32)	BG210-R006
	H2X32	BH210-L031
L040		
+ 5V RH SERVO, PORT, & SEQ FRONT		
	K2S08	BK210-L040
	F6D02	
YA410	*-R080*	
	F6E02	
YA410	*-R093*	
J676-	*PIN01*	
	G6A02	
YA410	*-R081*	
	G6B02	
YA410	*-R092*	
J676-	*PIN09*	
L041		
+ 5V R-W CTRL, PT2 FRONT		
	K2G13	BK210-L041
	H2G13	BH210-L041
-----	*G6D02*	
YA410	*-R009*	
J675-	*PIN03*	
-----	*G6E02*	
YA410	*-R083*	
J676-	*PIN03*	
-----	*H6A02*	
YA410	*-R021*	
J675-	*PIN11*	
-----	*H6B02*	
YA410	*-R095*	
J676-	*PIN11*	
L042		
+ 5/24V RH PORT FRONT		
	K2S04	BK210-L042
	K6B02	
YA410	*D6A02*	
YA410	*-R097*	
J676-	*PIN13*	
L043		
+ RH EVERGREEN ID BIT FRONT		
	K2H08	BK210-L043
	(E2U13)	BE200-R045
L044		
- RH WRITE INHIBIT FRONT		
	K2G04	BK210-L044
	(E2B10)	BE200-R006
	(E2G10)	BE200-R007
	L2G04	BL200-L044
	C3B10	
L045		
- RH SPINDLE ID ON BOARD FRONT		
	K2D05	BK210-L045
	K2D08	
R003		
- CONTINUED FROM PAGE BK200		
	(K2)	BK210-R003
	K2	BK210-L003
R004		
+ RH GATE R-W STATUS 1 FRONT		
	(K2Y22)	BK210-R004
	(K2Z22)	BK210-R005
	J2Y22	BJ210-L012
R005		
+ RH GATE R-W STATUS 1 FRONT		
	(K2Z22)	BK210-R005
	(K2Y22)	BK210-R004
	J2Y22	BJ210-L012
R006		
+ RH GATE R-W STATUS 2 FRONT		
	(K2Z03)	BK210-R006
	(K2Y03)	BK210-R007
	(K2Z03)	BK210-R023
	J2Y03	BJ210-L013
R007		
+ RH GATE R-W STATUS 2 FRONT		
	(K2Y03)	BK210-R007
	(K2Z03)	BK210-R006
	(K2Z03)	BK210-R023
	J2Y03	BJ210-L013
R008		
+ RH GATE R-W STATUS 3 FRONT		
	(K2Y28)	BK210-R008
	(K2Z28)	BK210-R009
	J2Y28	BJ210-L014
R009		
+ RH GATE R-W STATUS 3 FRONT		
	(K2Z28)	BK210-R009
	(K2Y28)	BK210-R008
	J2Y28	BJ210-L014
R010		
+ RH GATE R-W STATUS 4 FRONT		
	(K2Y07)	BK210-R010
	(K2Z07)	BK210-R011
	J2Y07	BJ210-L015
R011		
+ RH GATE R-W STATUS 4 FRONT		
	(K2Z07)	BK210-R011
	(K2Y07)	BK210-R010
	J2Y07	BJ210-L015
R012		
+ RH GATE HEAD ADDR REG FRONT		
	(K2Y04)	BK210-R012
	(K2Z04)	BK210-R013
	J2Y04	BJ210-L016
R013		
+ RH GATE HEAD ADDR REG FRONT		
	(K2Z04)	BK210-R013
	(K2Y04)	BK210-R012
	J2Y04	BJ210-L016
R014		
+ RH SEL A1/A2 FRONT		
	(K2Y12)	BK210-R014
	(K2Z12)	BK210-R015
	J2Y12	BJ210-L017
R015		
+ RH SEL A1/A2 FRONT		
	(K2Z12)	BK210-R015
	(K2Y12)	BK210-R014
	J2Y12	BJ210-L017
R016		
- RESET CHECK 1 FRONT		
	(K2Y23)	BK210-R016
	(H2Y23)	BH210-R016
	(H2Z23)	BH210-R017
	(K2Z23)	BK210-R017
	J2Y23	BJ210-L018
	J2Z23	BJ210-L019
R017		
- RESET CHECK 1 FRONT		
	(K2Z23)	BK210-R017
	(H2Y23)	BH210-R016
	(H2Z23)	BH210-R017
	(K2Y23)	BK210-R016
	J2Y23	BJ210-L018
	J2Z23	BJ210-L019
R018		
- RH READY LED FRONT		
	(K2W23)	BK210-R018
R019		
+ RH READY LED TERM FRONT		
	(K2W03)	BK210-R019

RH PORT/PORT POWER CONTROL XRL BK210

LINE/SIGNAL	PIN	SHEET/LINE
R020		
+ 5V RH COMMON LED FRONT		
	(K2W12)	BK210-R020
R021		
+ 5/24V RH LED FRONT		
	(K2W06)	BK210-R021
R022		
+ 5V RH LED FRONT		
	(K2W09)	BK210-R022
R023		
+ RH GATE R-W STATUS 2 FRONT		
	(K2Z03)	BK210-R023
	(K2Z03)	BK210-R006
	(K2Y03)	BK210-R007
	J2Y03	BJ210-L013
R024		
+ RH SENSE SOFT START LT FRONT		
	(K2H04)	BK210-R024
R025		
- RH 5V COMMON POR FRONT		
	(K2M07)	BK210-R025
	H2N05	BH200-L041
R026		
+ READY LED DEVICE 1		
	(K2U13)	BK210-R026
YA120	*-L008*	
	C1A13	
R027		
+ RH PARM TRANSFER EN FRONT		
	(K2B03)	BK210-R027
	L2S08	BL200-L060
R028		
+ RH DRIVE CWE INTERUPT FRONT		
	(K2W11)	BK210-R028

003 + RH CDP DATA BUS PWR BIT FRNT 0 S02
004 + RH CDP DATA BUS PWR BIT FRNT 1 P13
005 + RH CDP DATA BUS PWR BIT FRNT 2 P11
006 + RH CDP DATA BUS PWR BIT FRNT 3 D02
007 + RH CDP DATA BUS PWR BIT FRNT 4 S10
008 + RH CDP DATA BUS PWR BIT FRNT 5 T07
009 + RH CDP DATA BUS PWR BIT FRNT 6 T11
010 + RH CDP DATA BUS PWR BIT FRNT 7 N13
011 + RH CDP DATA BUS PWR BIT FRNT P S09
012 + RH COMMAND FRONT ---------- T08
013 - RH DEV SELECTED FRONT -------- T10
014 + RH PARM TRANSFER FRONT ------- T09
015 - RH POWER ON RESET POWER FRONT P06
016 - RH DEVICE CHECK 2 RESET FRONT T06
017 + RH AGC ACTIVE FRONT ---------- N04
018 + LH AGC ACTIVE FRONT ---------- P05
019 + RH BUSY W/O PIP FRONT -------- N05
020 - RH PORT FENCED FRONT --------- M05
021 - RH DRIVE PWR SWITCH OFF FRONT P04
022 + LH PULSE RATE FRONT ---------- P07
023 + RH MOTOR CONTROL FRONT ------- P10
024 - DISABLE SWITCH DEVICE 1 ------ M09
025 + A CLOCK FRONT ---------------- M02
026 + B CLOCK FRONT ---------------- N07
027 + B CLOCK FRONT ---------------- U09
028 + C CLOCK FRONT ---------------- C03
029 + D CLOCK FRONT ---------------- M03
030 + E CLOCK FRONT ---------------- N12
031 + E CLOCK FRONT ---------------- U10
032 + F CLOCK FRONT ---------------- M08
033 + G CLOCK FRONT ---------------- C02
034 + G CLOCK FRONT ---------------- S07
035 + H CLOCK FRONT ---------------- T12
036 + AB CLOCK FRONT --------------- B03
037 + CD CLOCK FRONT --------------- C05
038 + EF CLOCK FRONT --------------- M13
039 + GH CLOCK FRONT --------------- B02
040 - CLOCK CHECK HOLD FRONT ------- T04
041 - LH POWER ON RESET POWER FRONT S04
042 + RH POSITION ERROR SIG A FRONT H03
043 + RH POSITION ERROR SIG B FRONT H02
044 - RH WRITE INHIBIT FRONT ------- G04
045 + RH SEEK INCOMPLETE FRONT ----- G08
046 + RH GATE CHK POINT REG FRONT -- N03
047 - RH RPS CLOCK 1 FRONT --------- C06
048 + RH RPS CLOCK 3 FRONT --------- C04
049 + RH RPS CLOCK 4 FRONT --------- C11
050 - RH GAP FRONT ----------------- B08
051 + RH R-W ACTIVE FRONT ---------- D12
052 + RH GATE TARGET REG FRONT ----- C09
053 + RH GATE DIF LOW REG FRONT ---- C07
054 - RH POR SYNC TO CLOCK FRONT --- S13
055 + RH DISABLE MEMORY OUTPUT FRONT Y12
056 + RH CHIP DISABLE FRONT -------- Y23
057 - RH PROGRAM MEMORY FRONT ------ Y27
058 + LH SENSE SOFT START LT FRONT - N11
059 - RH MOD D FRONT --------------- M12
060 + RH PARM TRANSFER EN FRONT ---- S08
061 - 5V LH RIGHT FRONT ------------ U04

DEVICE SEQUENCER/SERVO/RPS CARD

INTRODUCTION

The device sequencer/servo/RPS card communicates with the controller, controls actuator motion, performs power sequencing and performs rotational position sensing. There is one device sequencer/servo/RPS card for each actuator.

DESCRIPTION

Communication with the Controller

The device sequencer receives commands, performs the requested functions and generates the response to the controller.

Control of Actuator Motion

The device sequencer and servo control logic have the responsibility of placing the heads over a specific track on the disk surface for the purpose of transferring data. This logic also ensures that the head remains at the specified location until told to move to another location on the disk surface.

Power Sequencing

The device sequencer controls the purge, warm-up cycle, and sweep operation during power on. It controls the park, coast, and brake cycles during power off.

Rotational Position Sensing (RPS)

The RPS function provides 'index' and 'cell boundary' signals during a read/write function.

A record ready interrupt of RPS allows the disconnection from the channel while searching for a record. This disconnection allows the channel to be available for other activities during the rotational delay of the disk.

PRIMARY PARTS

- Parts related to device sequencer functions:
  - EPROMS
  - Two memory data registers
  - Incremental storage address register
  - Sequencer control register
- Parts related to servo control functions:
  - Difference high and difference low counters
  - Checkpoint log register
  - Servo control registers 4 and 6
  - Cylinder pulse generation
  - Crash stop protection
  - Ramp select decode
- Parts related to RPS functions:
  - Index and guard band detection
  - Target register
  - Interrupt counter
  - Clock counters
  - Sector counters
  - RPS clock generation

See next page for more.

U02 + RH SEQ WRITE BUS BIT FRONT 0 - 003
U11 + RH SEQ WRITE BUS BIT FRONT 1 - 004
T02 + RH SEQ WRITE BUS BIT FRONT 2 - 005
U12 + RH SEQ WRITE BUS BIT FRONT 3 - 006
T03 + RH SEQ WRITE BUS BIT FRONT 4 - 007
S05 + RH SEQ WRITE BUS BIT FRONT 5 - 008
S03 + RH SEQ WRITE BUS BIT FRONT 6 - 009
U05 + RH SEQ WRITE BUS BIT FRONT 7 - 010
U07 + RH SEQ WRITE BUS BIT FRONT P - 011
D05 - RH CHK POINT/TAR/DIF FRONT 0 - 012
G13 - RH CHK POINT/TAR/DIF FRONT 1 - 013
B05 - RH CHK POINT/TAR/DIF FRONT 2 - 014
B04 - RH CHK POINT/TAR/DIF FRONT 3 - 015
B07 - RH CHK POINT/TAR/DIF FRONT 4 - 016
H12 - RH CHK POINT/TAR/DIF FRONT 5 - 017
J12 - RH CHK POINT/TAR/DIF FRONT 6 - 018
H13 - RH CHK POINT/TAR/DIF FRONT 7 - 019
G12 - RH CHK POINT/TAR/DIF FRONT P - 020
N02 + RH SEQ STATUS STROBE FRONT --- 021
N10 + RH LOAD POWER CTRL REG FRONT - 022
N09 + RH LOAD SEQ STATUS REG FRONT - 023
M04 + RH SEQ MOVE FORMAT FRONT ----- 024
U06 + RH SEQ CHECK FRONT ----------- 025
G02 + RH CHK POINT LOG CHECK FRONT - 026
H11 + RH SERVO CTRL CHECK FRONT ---- 027
D04 + RH RECORD READY IRPT FRONT --- 028
B10 + RH RPS CHECK FRONT ----------- 029
N08 + RH SET HEAD ARM ADR REG FRONT 030
N06 - RH LOAD REG 3 FRONT ---------- 031
B13 - RH RAMP SELECT 0 FRONT ------- 032
C08 - RH RAMP SELECT 1 FRONT ------- 033
C12 - RH RAMP SELECT 2 FRONT ------- 034
D09 - RH RAMP SELECT 3 FRONT ------- 035
M10 + RH DIF COUNT 256 FRONT ------- 036
J07 + RH DIF COUNT 128 FRONT ------- 037
G07 + RH DIF COUNT 64 FRONT -------- 038
G10 + RH DIF COUNT 32 FRONT -------- 039
H09 + RH DIF COUNT 16 FRONT -------- 040
J10 + RH DIF COUNT 8 FRONT --------- 041
H07 + RH DIF COUNT 4 FRONT --------- 042
H08 + RH DIF COUNT 2 FRONT --------- 043
G09 + RH DIF COUNT 1 FRONT --------- 044
H06 - RH INHIBIT FRONT ------------- 045
H05 - RH PARK FRONT ---------------- 046
G05 + RH COMPRESS FRONT ------------ 047
J13 - RH REVERSE FRONT ------------- 048
J05 - RH FORWARD FRONT ------------- 049
J06 - RH REZERO FRONT -------------- 050
H10 - RH RESET FILTER FRONT -------- 051
P02 - RH OFFSET ACTIVE FRONT ------- 052
J11 - RH GATE DIFFERENCE TP FRONT -- 053
J09 + RH PES INTEGRATE FRONT ------- 054
D10 - RH CYLINDER PULSE FRONT ------ 055
C10 + RH CYLINDER PULSE FRONT ------ 056
B12 - RH TRACK FOLLOW FRONT -------- 057
D11 + RH TRACK FOLLOW FRONT -------- 058
D06 - RH COARSE TRACK FRONT -------- 059
D07 - RH WRITE READY FRONT --------- 060
B09 + RH PULSE RATE FRONT ---------- 061
G03 + RH INDEX 1 FRONT ------------- 062
C13 + RH INDEX 2 FRONT ------------- 063
D13 + RH SEGMENT BOUNDARY FRONT ---- 064
J02 + RH INNER GUARD BAND FRONT ---- 065
H04 + RH OUTER GUARD BAND FRONT ---- 066
M07 + RH RPS CLOCK T-0 (L1) FRONT -- 067
S12 - RH POR SYNC TO CLOCK FRONT --- 068
---- - CONTINUED ON PAGE BL210 ------ 069

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ RH CDP DATA BUS PWR BIT FRNT 0		
	L2S02	BL200-L003
	(K2C02)	BK200-R045
	J2N05	BJ200-L003
L004		
+ RH CDP DATA BUS PWR BIT FRNT 1		
	L2P13	BL200-L004
	(K2C07)	BK200-R046
	J2M05	BJ200-L004
L005		
+ RH CDP DATA BUS PWR BIT FRNT 2		
	L2P11	BL200-L005
	(K2C10)	BK200-R047
	J2M04	BJ200-L005
L006		
+ RH CDP DATA BUS PWR BIT FRNT 3		
	L2D02	BL200-L006
	(K2B09)	BK200-R048
	J2N03	BJ200-L006
L007		
+ RH CDP DATA BUS PWR BIT FRNT 4		
	L2S10	BL200-L007
	(K2B10)	BK200-R049
	J2M03	BJ200-L007
L008		
+ RH CDP DATA BUS PWR BIT FRNT 5		
	L2T07	BL200-L008
	(K2C09)	BK200-R050
	J2M02	BJ200-L008
L009		
+ RH CDP DATA BUS PWR BIT FRNT 6		
	L2T11	BL200-L009
	(K2B04)	BK200-R051
	J2H13	BJ200-L009
L010		
+ RH CDP DATA BUS PWR BIT FRNT 7		
	L2N13	BL200-L010
	(K2C08)	BK200-R052
	J2G13	BJ200-L010
L011		
+ RH CDP DATA BUS PWR BIT FRNT P		
	L2S09	BL200-L011
	(K2C04)	BK200-R053
	J2G12	BJ200-L011
L012		
+ RH COMMAND FRONT		
	L2T08	BL200-L012
	(K2T06)	BK200-R034
L013		
- RH DEV SELECTED FRONT		
	L2T10	BL200-L013
	(K2N04)	BK200-R033
	H2M04	BH200-L017
	J2S10	BJ200-L015
L014		
+ RH PARM TRANSFER FRONT		
	L2T09	BL200-L014
	(K2N08)	BK200-R036
L015		
- RH POWER ON RESET POWER FRONT		
	L2P06	BL200-L015
	(K2N06)	BK200-R062
	E2S07	BE200-L039
	G2S04	BG200-L041
	H2B07	BH200-L018
	J2B10	BJ200-L036
1C-C1	B2AB2	HC2A1-L070
	A4D02	
L016		
- RH DEVICE CHECK 2 RESET FRONT		
	L2T06	BL200-L016
	(K2J11)	BK200-R035
	J2G09	BJ200-L013
L017		
+ RH AGC ACTIVE FRONT		
	L2N04	BL200-L017
	(E2S13)	BE200-R012
	G2P05	BG200-L018
L018		
+ LH AGC ACTIVE FRONT		
	L2P05	BL200-L018
	(D2S13)	BD200-R012
	G2N04	BG200-L017
L019		
+ RH BUSY W/O PIP FRONT		
	L2N05	BL200-L019
	(K2G12)	BK200-R037
L020		
- RH PORT FENCED FRONT		
	L2M05	BL200-L020
	(K2G10)	BK200-R039
L021		
- RH DRIVE PWR SWITCH OFF FRONT		
	L2P04	BL200-L021
	(K2M03)	BK200-R041
L022		
+ LH PULSE RATE FRONT		
	L2P07	BL200-L022
	(G2B09)	BG200-R061
L023		
+ RH MOTOR CONTROL FRONT		
	L2P10	BL200-L023
	(K2B02)	BK200-R040
L024		
- DISABLE SWITCH DEVICE 1		
	L2M09	BL200-L024
YA120	*-R062*	
	A1A13	
L025		
+ A CLOCK FRONT		
	L2M02	BL200-L025
	(J2S07)	BJ200-R029
	G2M02	BG200-L025
	H2T09	BH200-L028
	K2T09	BK200-L028
L026		
+ B CLOCK FRONT		
	L2N07	BL200-L026
	(J2U05)	BJ200-R030
	G2N07	BG200-L026
	G2U09	BG200-L027
	H2T05	BH200-L029
	K2T05	BK200-L029
	L2U09	BL200-L027
L027		
+ B CLOCK FRONT		
	L2U09	BL200-L027
	(J2U05)	BJ200-R030
	G2N07	BG200-L026
	G2U09	BG200-L027
	H2T05	BH200-L029
	K2T05	BK200-L029
	L2N07	BL200-L026
L028		
+ C CLOCK FRONT		
	L2C03	BL200-L028
	(J2T03)	BJ200-R031
	G2C03	BG200-L028
	H2T08	BH200-L030
	K2T08	BK200-L030
L029		
+ D CLOCK FRONT		
	L2M03	BL200-L029
	(J2S08)	BJ200-R032
	G2M03	BG200-L029
	H2T07	BH200-L031
	K2T07	BK200-L031
L030		
+ E CLOCK FRONT		
	L2N12	BL200-L030
	(J2U10)	BJ200-R033
	G2N12	BG200-L030
	G2U10	BG200-L031
	H2U06	BH200-L032
	K2U06	BK200-L032
	L2U10	BL200-L031
L031		
+ E CLOCK FRONT		
	L2U10	BL200-L031
	(J2U10)	BJ200-R033
	G2N12	BG200-L030
	G2U10	BG200-L031
	H2U06	BH200-L032
	K2U06	BK200-L032
	L2N12	BL200-L030
L032		
+ F CLOCK FRONT		
	L2M08	BL200-L032
	(J2U11)	BJ200-R034
	G2M08	BG200-L032
	H2S03	BH200-L033
	K2S03	BK200-L033
L033		
+ G CLOCK FRONT		
	L2C02	BL200-L033
	(J2T11)	BJ200-R035
	G2C02	BG200-L033
	G2S07	BG200-L034
	H2T03	BH200-L034
	K2T03	BK200-L034
	L2S07	BL200-L034
L034		
+ G CLOCK FRONT		
	L2S07	BL200-L034
	(J2T11)	BJ200-R035
	G2C02	BG200-L033
	G2S07	BG200-L034
	H2T03	BH200-L034
	K2T03	BK200-L034
	L2C02	BL200-L033
L035		
+ H CLOCK FRONT		
	L2T12	BL200-L035
	(J2U04)	BJ200-R036
	G2T12	BG200-L035
	H2U05	BH200-L035
	H2D13	BH200-L053
	K2U05	BK200-L035
	K2D13	BK200-L053
L036		
+ AB CLOCK FRONT		
	L2B03	BL200-L036
	(J2T10)	BJ200-R025
	G2B03	BG200-L036
L037		
+ CD CLOCK FRONT		
	L2C05	BL200-L037
	(J2U09)	BJ200-R026
	G2C05	BG200-L037
L038		
+ EF CLOCK FRONT		
	L2M13	BL200-L038
	(J2U07)	BJ200-R027
	G2M13	BG200-L038
L039		
+ GH CLOCK FRONT		
	L2B02	BL200-L039
	(J2T06)	BJ200-R028
	G2B02	BG200-L039
L040		
- CLOCK CHECK HOLD FRONT		
	L2T04	BL200-L040
	(J2U02)	BJ200-R037
	G2T04	BG200-L040
	H2G03	BH200-L036
	K2G03	BK200-L036
L041		
- LH POWER ON RESET POWER FRONT		
	L2S04	BL200-L041
	(H2N06)	BH200-R062
	D2S07	BD200-L039
	G2P06	BG200-L015
	J2N11	BJ200-L037
	K2B07	BK200-L018
1C-C0	B2AB2	HC1A1-L070
	A2D02	
L042		
+ RH POSITION ERROR SIG A FRONT		
	L2H03	BL200-L042
	(E2G07)	BE200-R005
L043		
+ RH POSITION ERROR SIG B FRONT		
	L2H02	BL200-L043
	(E2M12)	BE200-R003
L044		
- RH WRITE INHIBIT FRONT		
	L2G04	BL200-L044
	(E2B10)	BE200-R006
	(E2G10)	BE200-R007
	K2G04	BK210-L044
	C3B10	
L045		
+ RH SEEK INCOMPLETE FRONT		
	L2G08	BL200-L045
	(K2H10)	BK200-R038
L046		
+ RH GATE CHK POINT REG FRONT		
	L2N03	BL200-L046
	(K2B08)	BK200-R031
L047		
- RH RPS CLOCK 1 FRONT		
	L2C06	BL200-L047
	(E2U10)	BE200-R019
L048		
+ RH RPS CLOCK 3 FRONT		
	L2C04	BL200-L048
	(E2U04)	BE200-R017
L049		
+ RH RPS CLOCK 4 FRONT		
	L2C11	BL200-L049
	(E2S09)	BE200-R020
L050		
- RH GAP FRONT		
	L2B08	BL200-L050
	(E2U09)	BE200-R018
L051		
+ RH R-W ACTIVE FRONT		
	L2D12	BL200-L051
	(J2B08)	BJ200-R005
L052		
+ RH GATE TARGET REG FRONT		
	L2C09	BL200-L052
	(K2D07)	BK200-R030
L053		
+ RH GATE DIF LOW REG FRONT		
	L2C07	BL200-L053
	(K2C05)	BK200-R029
L054		
- RH POR SYNC TO CLOCK FRONT		
	L2S13	BL200-L054
	(L2S12)	BL200-R068
L055		
+ RH DISABLE MEMORY OUTPUT FRONT		
	L2Y12	BL200-L055
L056		
+ RH CHIP DISABLE FRONT		
	L2Y23	BL200-L056
L057		
- RH PROGRAM MEMORY FRONT		
	L2Y27	BL200-L057
L058		
+ LH SENSE SOFT START LT FRONT		
	L2N11	BL200-L058
	(H2H04)	BH210-R020
	G2N11	BG200-L055
L059		
- RH MOD D FRONT		
	L2M12	BL200-L059
1C-C4	P2D12	HPA20-L012
YA500	*-L036*	
AE200	*TABLE*	
J180-	*PIN05*	
J672-	*PIN22*	
	B3D12	
L060		
+ RH PARM TRANSFER EN FRONT		
	L2S08	BL200-L060
	(K2B03)	BK210-R027
L061		
- 5V LH RIGHT FRONT		
	L2U04	BL200-L061
	E2B06	BE200-L045
	E2G06	BE200-L046
	J2M09	BJ210-L023
-TP--	*K6E02*	
YA410	*-R090*	
J676-	*PIN07*	
	F6A02	
YA410	*-R098*	
J676-	*PIN14*	
	E6E02	

LINE/SIGNAL	PIN	SHEET/LINE
R003		
+ RH SEQ WRITE BUS BIT FRONT 0		
	(L2U02)	BL200-R003
	(L2X30)	BL210-R004
	K2X30	BK210-L029
R004		
+ RH SEQ WRITE BUS BIT FRONT 1		
	(L2U11)	BL200-R004
	(L2X28)	BL210-R005
	K2X28	BK210-L030
R005		
+ RH SEQ WRITE BUS BIT FRONT 2		
	(L2T02)	BL200-R005
	(L2X32)	BL210-R006
	H2J04	BH210-L039
	K2X32	BK210-L031
R006		
+ RH SEQ WRITE BUS BIT FRONT 3		
	(L2U12)	BL200-R006
	(L2X24)	BL210-R007
	K2X24	BK210-L032
R007		
+ RH SEQ WRITE BUS BIT FRONT 4		
	(L2T03)	BL200-R007
	(L2X33)	BL210-R008
	K2X33	BK210-L033
R008		
+ RH SEQ WRITE BUS BIT FRONT 5		
	(L2S05)	BL200-R008
	(L2X03)	BL210-R009
	K2X03	BK210-L034
R009		
+ RH SEQ WRITE BUS BIT FRONT 6		
	(L2S03)	BL200-R009
	(L2X10)	BL210-R010
	K2X10	BK210-L035
R010		
+ RH SEQ WRITE BUS BIT FRONT 7		
	(L2U05)	BL200-R010
	(L2X09)	BL210-R011
	K2X09	BK210-L036
R011		
+ RH SEQ WRITE BUS BIT FRONT P		
	(L2U07)	BL200-R011
	(L2X29)	BL210-R012
	K2X29	BK210-L037
R012		
- RH CHK POINT/TAR/DIF FRONT 0		
	(L2D05)	BL200-R012
	(L2X06)	BL210-R013
	K2X06	BK210-L020
R013		
- RH CHK POINT/TAR/DIF FRONT 1		
	(L2G13)	BL200-R013
	(L2X07)	BL210-R014
	K2X07	BK210-L021

LINE/SIGNAL	PIN	SHEET/LINE
R014		
- RH CHK POINT/TAR/DIF FRONT 2		
	(L2B05)	BL200-R014
	(L2X26)	BL210-R015
	K2X26	BK210-L022
R015		
- RH CHK POINT/TAR/DIF FRONT 3		
	(L2B04)	BL200-R015
	(L2X13)	BL210-R016
	K2X13	BK210-L023
R016		
- RH CHK POINT/TAR/DIF FRONT 4		
	(L2B07)	BL200-R016
	(L2X02)	BL210-R017
	K2X02	BK210-L024
R017		
- RH CHK POINT/TAR/DIF FRONT 5		
	(L2H12)	BL200-R017
	(L2X25)	BL210-R018
	K2X25	BK210-L025
R018		
- RH CHK POINT/TAR/DIF FRONT 6		
	(L2J12)	BL200-R018
	(L2X05)	BL210-R019
	K2X05	BK210-L026
R019		
- RH CHK POINT/TAR/DIF FRONT 7		
	(L2H13)	BL200-R019
	(L2X11)	BL210-R020
	K2X11	BK210-L027
R020		
- RH CHK POINT/TAR/DIF FRONT P		
	(L2G12)	BL200-R020
	(L2X22)	BL210-R021
	K2X22	BK210-L028
R021		
+ RH SEQ STATUS STROBE FRONT		
	(L2N02)	BL200-R021
	K2C03	BK200-L026
R022		
+ RH LOAD POWER CTRL REG FRONT		
	(L2N10)	BL200-R022
	H2M08	BH210-L038
	K2D06	BK200-L024
R023		
+ RH LOAD SEQ STATUS REG FRONT		
	(L2N09)	BL200-R023
	K2P02	BK200-L027
R024		
+ RH SEQ MOVE FORMAT FRONT		
	(L2M04)	BL200-R024
	K2D04	BK200-L025

LINE/SIGNAL	PIN	SHEET/LINE
R025		
+ RH SEQ CHECK FRONT		
	(L2U06)	BL200-R025
	K2G09	BK200-L020
R026		
+ RH CHK POINT LOG CHECK FRONT		
	(L2G02)	BL200-R026
	K2P05	BK200-L019
R027		
+ RH SERVO CTRL CHECK FRONT		
	(L2H11)	BL200-R027
	K2C13	BK200-L021
R028		
+ RH RECORD READY IRPT FRONT		
	(L2D04)	BL200-R028
	K2J12	BK200-L040
R029		
+ RH RPS CHECK FRONT		
	(L2B10)	BL200-R029
	K2J05	BK200-L022
R030		
+ RH SET HEAD ARM ADR REG FRONT		
	(L2N08)	BL200-R030
	J2G10	BJ200-L016
R031		
- RH LOAD REG 3 FRONT		
	(L2N06)	BL200-R031
R032		
- RH RAMP SELECT 0 FRONT		
	(L2B13)	BL200-R032
	E2M11	BE200-L005
R033		
- RH RAMP SELECT 1 FRONT		
	(L2C08)	BL200-R033
	E2J02	BE200-L006
R034		
- RH RAMP SELECT 2 FRONT		
	(L2C12)	BL200-R034
	E2G03	BE200-L007
R035		
- RH RAMP SELECT 3 FRONT		
	(L2D09)	BL200-R035
	E2G04	BE200-L008
R036		
+ RH DIF COUNT 256 FRONT		
	(L2M10)	BL200-R036
	E2J10	BE200-L017
R037		
+ RH DIF COUNT 128 FRONT		
	(L2J07)	BL200-R037
	E2P02	BE200-L016

LINE/SIGNAL	PIN	SHEET/LINE
R038		
+ RH DIF COUNT 64 FRONT		
	(L2G07)	BL200-R038
	E2M02	BE200-L015
R039		
+ RH DIF COUNT 32 FRONT		
	(L2G10)	BL200-R039
	E2G11	BE200-L014
R040		
+ RH DIF COUNT 16 FRONT		
	(L2H09)	BL200-R040
	E2G13	BE200-L013
R041		
+ RH DIF COUNT 8 FRONT		
	(L2J10)	BL200-R041
	E2G12	BE200-L012
R042		
+ RH DIF COUNT 4 FRONT		
	(L2H07)	BL200-R042
	E2J12	BE200-L011
R043		
+ RH DIF COUNT 2 FRONT		
	(L2H08)	BL200-R043
	E2J13	BE200-L010
R044		
+ RH DIF COUNT 1 FRONT		
	(L2G09)	BL200-R044
	E2J11	BE200-L009
R045		
- RH INHIBIT FRONT		
	(L2H06)	BL200-R045
	E2P13	BE200-L024
	K2N02	BK200-L039
R046		
- RH PARK FRONT		
	(L2H05)	BL200-R046
	E2B04	BE200-L028
R047		
+ RH COMPRESS FRONT		
	(L2G05)	BL200-R047
	E2D04	BE200-L036
R048		
- RH REVERSE FRONT		
	(L2J13)	BL200-R048
	E2M13	BE200-L021
R049		
- RH FORWARD FRONT		
	(L2J05)	BL200-R049
	C3B11	
R050		
- RH REZERO FRONT		
	(L2J06)	BL200-R050
	E2B03	BE200-L023

LINE/SIGNAL	PIN	SHEET/LINE
R051		
- RH RESET FILTER FRONT		
	(L2H10)	BL200-R051
	E2D05	BE200-L037
R052		
- RH OFFSET ACTIVE FRONT		
	(L2P02)	BL200-R052
	E2P06	BE200-L020
	K2H12	BK200-L038
R053		
- RH GATE DIFFERENCE TP FRONT		
	(L2J11)	BL200-R053
	C3D11	
R054		
+ RH PES INTEGRATE FRONT		
	(L2J09)	BL200-R054
	E2P07	BE200-L019
R055		
- RH CYLINDER PULSE FRONT		
	(L2D10)	BL200-R055
	E2M07	BE200-L025
	C3D09	
R056		
+ RH CYLINDER PULSE FRONT		
	(L2C10)	BL200-R056
R057		
- RH TRACK FOLLOW FRONT		
	(L2B12)	BL200-R057
	E2B02	BE200-L018
R058		
+ RH TRACK FOLLOW FRONT		
	(L2D11)	BL200-R058
	E2D02	BE200-L022
R059		
- RH COARSE TRACK FRONT		
	(L2D06)	BL200-R059
	J2B12	BJ200-L030
	C3B03	
R060		
- RH WRITE READY FRONT		
	(L2D07)	BL200-R060
	J2C11	BJ200-L031
R061		
+ RH PULSE RATE FRONT		
	(L2B09)	BL200-R061
	G2P07	BG200-L022
R062		
+ RH INDEX 1 FRONT		
	(L2G03)	BL200-R062
	J2G08	BJ200-L017
	C3B05	
R063		
+ RH INDEX 2 FRONT		
	(L2C13)	BL200-R063
	J2G07	BJ200-L018

LINE/SIGNAL	PIN	SHEET/LINE
R064		
+ RH SEGMENT BOUNDARY FRONT		
	(L2D13)	BL200-R064
	J2H10	BJ200-L019
R065		
+ RH INNER GUARD BAND FRONT		
	(L2J02)	BL200-R065
	C3D12	
R066		
+ RH OUTER GUARD BAND FRONT		
	(L2H04)	BL200-R066
	C3B12	
R067		
+ RH RPS CLOCK T-0 (L1) FRONT		
	(L2M07)	BL200-R067
	J2H07	BJ200-L033
R068		
- RH POR SYNC TO CLOCK FRONT		
	(L2S12)	BL200-R068
	L2S13	BL200-L054
R069		
- CONTINUED ON PAGE BL210		
	(L2)	BL200-R069

See previous page for more.

ERROR CHECKING

The following checks cause a device sequencer/servo/RPS check:

- Sequencer Check
- RPS Check

A servo error is caused by one of the following:

- A difference high and low counter register parity error. The difference high and low counters are checked for correct parity while the registers are loaded.
- A servo control register 4 or 6 parity error.
- A checkpoint log register error.

A servo-inhibited error is caused by one of the following:

- Crash stop inhibit - Crash stop protection logic monitors the access mechanism for abnormal movement.
- Overshoot inhibit - When the actuator motion exceeds +1-1/2 tracks while attempting to settle on the target track at the end of a seek operation.
- Unexpected GBOD signal - If the guard band outer diameter (GBOD) signal is detected under conditions other than park, rezero, or seek to -3 track operations.
- Loss of AGC - Loss of automatic gain control (AGC) indicates that the disk is rotating below a threshold speed.


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---- - CONTINUED FROM PAGE BL200 ---- 003
X30 + RH SEQ WRITE BUS BIT FRONT 0 - 004
X28 + RH SEQ WRITE BUS BIT FRONT 1 - 005
X32 + RH SEQ WRITE BUS BIT FRONT 2 - 006
X24 + RH SEQ WRITE BUS BIT FRONT 3 - 007
X33 + RH SEQ WRITE BUS BIT FRONT 4 - 008
X03 + RH SEQ WRITE BUS BIT FRONT 5 - 009
X10 + RH SEQ WRITE BUS BIT FRONT 6 - 010
X09 + RH SEQ WRITE BUS BIT FRONT 7 - 011
X29 + RH SEQ WRITE BUS BIT FRONT P - 012
X06 - RH CHK POINT/TAR/DIF FRONT 0 - 013
X07 - RH CHK POINT/TAR/DIF FRONT 1 - 014
X26 - RH CHK POINT/TAR/DIF FRONT 2 - 015
X13 - RH CHK POINT/TAR/DIF FRONT 3 - 016
X02 - RH CHK POINT/TAR/DIF FRONT 4 - 017
X25 - RH CHK POINT/TAR/DIF FRONT 5 - 018
X05 - RH CHK POINT/TAR/DIF FRONT 6 - 019
X11 - RH CHK POINT/TAR/DIF FRONT 7 - 020
X22 - RH CHK POINT/TAR/DIF FRONT P - 021
Z02 + RH MEMORY BIT 0 FRONT -------- 022
Z22 + RH MEMORY BIT 1 FRONT -------- 023
Z03 + RH MEMORY BIT 2 FRONT -------- 024
Z23 + RH MEMORY BIT 3 FRONT -------- 025
Z04 + RH MEMORY BIT 4 FRONT -------- 026
Z24 + RH MEMORY BIT 5 FRONT -------- 027
Z05 + RH MEMORY BIT 6 FRONT -------- 028
Z25 + RH MEMORY BIT 7 FRONT -------- 029
Z06 + RH MEMORY BIT 8 FRONT -------- 030
Z26 + RH MEMORY BIT 9 FRONT -------- 031
Z07 + RH MEMORY BIT 10 FRONT ------- 032
Z27 + RH MEMORY BIT 11 FRONT ------- 033
Z08 + RH MEMORY BIT 12 FRONT ------- 034
Z28 + RH MEMORY BIT 13 FRONT ------- 035
Z09 + RH MEMORY BIT 14 FRONT ------- 036
Z29 + RH MEMORY BIT 15 FRONT ------- 037
Z10 + RH MEMORY BIT 16 FRONT ------- 038
Z30 + RH MEMORY BIT 17 FRONT ------- 039
Y11 + RH ISAR 1024 TP FRONT -------- 040
Y13 + RH ISAR 512 TP FRONT --------- 041
Y33 + RH ISAR 256 TP FRONT --------- 042
Y32 + RH ISAR 128 TP FRONT --------- 043
Y30 + RH ISAR 64 TP FRONT ---------- 044
Y29 + RH ISAR 32 TP FRONT ---------- 045
Y28 + RH ISAR 16 TP FRONT ---------- 046
Y26 + RH ISAR 8 TP FRONT ----------- 047
Y25 + RH ISAR 4 TP FRONT ----------- 048
Y24 + RH ISAR 2 TP FRONT ----------- 049
Y22 + RH ISAR 1 TP FRONT ----------- 050
Y02 + RH D CLOCK POWERED FRONT ----- 051
Y10 + RH ISAR 2K FRONT ------------- 052
Y04 + RH ISAR 4K FRONT ------------- 053
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LINE/SIGNAL	PIN	SHEET/LINE
R003		
- CONTINUED FROM PAGE BL200		
	(L2)	BL210-R003
R004		
+ RH SEQ WRITE BUS BIT FRONT 0		
	(L2X30)	BL210-R004
	(L2U02)	BL200-R003
	K2X30	BK210-L029
R005		
+ RH SEQ WRITE BUS BIT FRONT 1		
	(L2X28)	BL210-R005
	(L2U11)	BL200-R004
	K2X28	BK210-L030
R006		
+ RH SEQ WRITE BUS BIT FRONT 2		
	(L2X32)	BL210-R006
	(L2T02)	BL200-R005
	H2J04	BH210-L039
	K2X32	BK210-L031
R007		
+ RH SEQ WRITE BUS BIT FRONT 3		
	(L2X24)	BL210-R007
	(L2U12)	BL200-R006
	K2X24	BK210-L032
R008		
+ RH SEQ WRITE BUS BIT FRONT 4		
	(L2X33)	BL210-R008
	(L2T03)	BL200-R007
	K2X33	BK210-L033
R009		
+ RH SEQ WRITE BUS BIT FRONT 5		
	(L2X03)	BL210-R009
	(L2S05)	BL200-R008
	K2X03	BK210-L034
R010		
+ RH SEQ WRITE BUS BIT FRONT 6		
	(L2X10)	BL210-R010
	(L2S03)	BL200-R009
	K2X10	BK210-L035
R011		
+ RH SEQ WRITE BUS BIT FRONT 7		
	(L2X09)	BL210-R011
	(L2U05)	BL200-R010
	K2X09	BK210-L036
R012		
+ RH SEQ WRITE BUS BIT FRONT P		
	(L2X29)	BL210-R012
	(L2U07)	BL200-R011
	K2X29	BK210-L037
R013		
- RH CHK POINT/TAR/DIF FRONT 0		
	(L2X06)	BL210-R013
	(L2D05)	BL200-R012
	K2X06	BK210-L020

LINE/SIGNAL	PIN	SHEET/LINE
R014		
- RH CHK POINT/TAR/DIF FRONT 1		
	(L2X07)	BL210-R014
	(L2G13)	BL200-R013
	K2X07	BK210-L021
R015		
- RH CHK POINT/TAR/DIF FRONT 2		
	(L2X26)	BL210-R015
	(L2B05)	BL200-R014
	K2X26	BK210-L022
R016		
- RH CHK POINT/TAR/DIF FRONT 3		
	(L2X13)	BL210-R016
	(L2B04)	BL200-R015
	K2X13	BK210-L023
R017		
- RH CHK POINT/TAR/DIF FRONT 4		
	(L2X02)	BL210-R017
	(L2B07)	BL200-R016
	K2X02	BK210-L024
R018		
- RH CHK POINT/TAR/DIF FRONT 5		
	(L2X25)	BL210-R018
	(L2H12)	BL200-R017
	K2X25	BK210-L025
R019		
- RH CHK POINT/TAR/DIF FRONT 6		
	(L2X05)	BL210-R019
	(L2J12)	BL200-R018
	K2X05	BK210-L026
R020		
- RH CHK POINT/TAR/DIF FRONT 7		
	(L2X11)	BL210-R020
	(L2H13)	BL200-R019
	K2X11	BK210-L027
R021		
- RH CHK POINT/TAR/DIF FRONT P		
	(L2X22)	BL210-R021
	(L2G12)	BL200-R020
	K2X22	BK210-L028
R022		
+ RH MEMORY BIT 0 FRONT		
	(L2Z02)	BL210-R022
R023		
+ RH MEMORY BIT 1 FRONT		
	(L2Z22)	BL210-R023
R024		
+ RH MEMORY BIT 2 FRONT		
	(L2Z03)	BL210-R024
R025		
+ RH MEMORY BIT 3 FRONT		
	(L2Z23)	BL210-R025

LINE/SIGNAL	PIN	SHEET/LINE
R026		
+ RH MEMORY BIT 4 FRONT		
	(L2Z04)	BL210-R026
R027		
+ RH MEMORY BIT 5 FRONT		
	(L2Z24)	BL210-R027
R028		
+ RH MEMORY BIT 6 FRONT		
	(L2Z05)	BL210-R028
R029		
+ RH MEMORY BIT 7 FRONT		
	(L2Z25)	BL210-R029
R030		
+ RH MEMORY BIT 8 FRONT		
	(L2Z06)	BL210-R030
R031		
+ RH MEMORY BIT 9 FRONT		
	(L2Z26)	BL210-R031
R032		
+ RH MEMORY BIT 10 FRONT		
	(L2Z07)	BL210-R032
R033		
+ RH MEMORY BIT 11 FRONT		
	(L2Z27)	BL210-R033
R034		
+ RH MEMORY BIT 12 FRONT		
	(L2Z08)	BL210-R034
R035		
+ RH MEMORY BIT 13 FRONT		
	(L2Z28)	BL210-R035
R036		
+ RH MEMORY BIT 14 FRONT		
	(L2Z09)	BL210-R036
R037		
+ RH MEMORY BIT 15 FRONT		
	(L2Z29)	BL210-R037
R038		
+ RH MEMORY BIT 16 FRONT		
	(L2Z10)	BL210-R038
R039		
+ RH MEMORY BIT 17 FRONT		
	(L2Z30)	BL210-R039
R040		
+ RH ISAR 1024 TP FRONT		
	(L2Y11)	BL210-R040
R041		
+ RH ISAR 512 TP FRONT		
	(L2Y13)	BL210-R041

LINE/SIGNAL	PIN	SHEET/LINE
R042		
+ RH ISAR 256 TP FRONT		
	(L2Y33)	BL210-R042
R043		
+ RH ISAR 128 TP FRONT		
	(L2Y32)	BL210-R043
R044		
+ RH ISAR 64 TP FRONT		
	(L2Y30)	BL210-R044
R045		
+ RH ISAR 32 TP FRONT		
	(L2Y29)	BL210-R045
R046		
+ RH ISAR 16 TP FRONT		
	(L2Y28)	BL210-R046
R047		
+ RH ISAR 8 TP FRONT		
	(L2Y26)	BL210-R047
R048		
+ RH ISAR 4 TP FRONT		
	(L2Y25)	BL210-R048
R049		
+ RH ISAR 2 TP FRONT		
	(L2Y24)	BL210-R049
R050		
+ RH ISAR 1 TP FRONT		
	(L2Y22)	BL210-R050
R051		
+ RH D CLOCK POWERED FRONT		
	(L2Y02)	BL210-R051
R052		
+ RH ISAR 2K FRONT		
	(L2Y10)	BL210-R052
R053		
+ RH ISAR 4K FRONT		
	(L2Y04)	BL210-R053

```
003 + LH CDP DATA BUS PWR BIT REAR 0 S02
004 + LH CDP DATA BUS PWR BIT REAR 1 P13
005 + LH CDP DATA BUS PWR BIT REAR 2 P11
006 + LH CDP DATA BUS PWR BIT REAR 3 D02
007 + LH CDP DATA BUS PWR BIT REAR 4 S10
008 + LH CDP DATA BUS PWR BIT REAR 5 T07
009 + LH CDP DATA BUS PWR BIT REAR 6 T11
010 + LH CDP DATA BUS PWR BIT REAR 7 N13
011 + LH CDP DATA BUS PWR BIT REAR P S09
012 + LH COMMAND REAR ---------------- T08
013 - LH DEV SELECTED REAR ---------- T10
014 + LH FARM TRANSFER REAR --------- T09
015 - LH POWER ON RESET POWER REAR   P06
016 - LH DEVICE CHECK 2 RESET REAR   T06
017 + LH AGC ACTIVE REAR ------------ N04
018 + RH AGC ACTIVE REAR ------------ P05
019 + LH BUSY W/O PIP REAR  --------- N05
020 - LH PORT FENCED REAR  ---------- M05
021 - LH DRIVE PWR SWITCH OFF REAR   P04
022 + RH PULSE RATE REAR  ----------- P07
023 + LH MOTOR CONTROL REAR  -------- P10
024 - DISABLE SWITCH DEVICE 2 ------- M09
025 + A CLOCK REAR  ----------------- M02
026 + B CLOCK REAR  ----------------- N07
027 + B CLOCK REAR  ----------------- U09
028 + C CLOCK REAR  ----------------- C03
029 + D CLOCK REAR  ----------------- M03
030 + E CLOCK REAR  ----------------- N12
031 + E CLOCK REAR  ----------------- U10
032 + F CLOCK REAR  ----------------- M08
033 + G CLOCK REAR  ----------------- C02
034 + G CLOCK REAR  ----------------- S07
035 + H CLOCK REAR  ----------------- T12
036 + AB CLOCK REAR  ---------------- B03
037 + CD CLOCK REAR  ---------------- C05
038 + EF CLOCK REAR  ---------------- M13
039 + GH CLOCK REAR  ---------------- B02
040 - CLOCK CHECK HOLD REAR  -------- T04
041 - RH POWER ON RESET POWER REAR   S04
042 + LH POSITION ERROR SIG A REAR - H03
043 + LH POSITION ERROR SIG B REAR - H02
044 - LH WRITE INHIBIT REAR  -------- G04
045 + LH SEEK INCOMPLETE REAR ------- G08
046 + LH GATE CHK POINT REG REAR  -- N03
047 - LH RPS CLOCK 1 REAR  ---------- C06
048 + LH RPS CLOCK 3 REAR  ---------- C04
049 + LH RPS CLOCK 4 REAR  ---------- C11
050 - LH GAP REAR  ------------------ B08
051 + LH R-W ACTIVE REAR  ----------- D12
052 + LH GATE TARGET REG REAR  ------ C09
053 + LH GATE DIF LOW REG REAR  ----- C07
054 - LH POR SYNC TO CLOCK REAR  --- S13
055 + LH SENSE SOFT START LT REAR -- N11
056 + LH DISABLE MEMORY OUTPUT REAR  Y12
057 + LH CHIP DISABLE REAR ---------- Y23
058 + LH PROGRAM MEMORY REAR -------- Y27
059 - LH MOD D REAR ----------------- M12
060 + LH FARM TRANSFER EN REAR ------ S08
061 - 5V RH LEFT REAR --------------- U04
```

DEVICE SEQUENCER/SERVO/RPS CARD

INTRODUCTION

The device sequencer/servo/RPS card communicates with the controller, controls actuator motion, performs power sequencing and performs rotational position sensing. There is one device sequencer/servo/RPS card for each actuator.

DESCRIPTION

Communication with the Controller

The device sequencer receives commands, performs the requested functions and generates the response to the controller.

Control of Actuator Motion

The device sequencer and servo control logic have the responsibility of placing the heads over a specific track on the disk surface for the purpose of transferring data. This logic also ensures that the head remains at the specified location until told to move to another location on the disk surface.

Power Sequencing

The device sequencer controls the purge, warm-up cycle, and sweep operation during power on. It controls the park, coast, and brake cycles during power off.

Rotational Position Sensing (RPS)

The RPS function provides 'index' and 'cell boundary' signals during a read/write function.

A record ready interrupt of RPS allows the disconnection from the channel while searching for a record. This disconnection allows the channel to be available for other activities during the rotational delay of the disk.

PRIMARY PARTS

- Parts related to device sequencer functions:
  - EPROMS
  - Two memory data registers
  - Incremental storage address register
  - Sequencer control register
- Parts related to servo control functions:
  - Difference high and difference low counters
  - Checkpoint log register
  - Servo control registers 4 and 6
  - Cylinder pulse generation
  - Crash stop protection
  - Ramp select decode
- Parts related to RPS functions:
  - Index and guard band detection
  - Target register
  - Interrupt counter
  - Clock counters
  - Sector counters
  - RPS clock generation

See next page for more.


```
U02 + LH SEQ WRITE BUS BIT REAR 0 -- 003
U11 + LH SEQ WRITE BUS BIT REAR 1 -- 004
T02 + LH SEQ WRITE BUS BIT REAR 2 -- 005
U12 + LH SEQ WRITE BUS BIT REAR 3 -- 006
T03 + LH SEQ WRITE BUS BIT REAR 4 -- 007
S05 + LH SEQ WRITE BUS BIT REAR 5 -- 008
S03 + LH SEQ WRITE BUS BIT REAR 6 -- 009
U05 + LH SEQ WRITE BUS BIT REAR 7 -- 010
U07 + LH SEQ WRITE BUS BIT REAR P -- 011
D05 - LH CHK POINT/TAR/DIF REAR 0 -- 012
G13 - LH CHK POINT/TAR/DIF REAR 1 -- 013
B05 - LH CHK POINT/TAR/DIF REAR 2 -- 014
B04 - LH CHK POINT/TAR/DIF REAR 3 -- 015
B07 - LH CHK POINT/TAR/DIF REAR 4 -- 016
H12 - LH CHK POINT/TAR/DIF REAR 5 -- 017
J12 - LH CHK POINT/TAR/DIF REAR 6 -- 018
H13 - LH CHK POINT/TAR/DIF REAR 7 -- 019
G12 - LH CHK POINT/TAR/DIF REAR P -- 020
N02 + LH SEQ STATUS STROBE REAR  --- 021
N10 + LH LOAD POWER CTRL REG REAR  - 022
N09 + LH LOAD SEQ STATUS REG REAR  - 023
M04 + LH SEQ MOVE FORMAT REAR  ----- 024
U06 + LH SEQ CHECK REAR  ----------- 025
G02 + LH CHK POINT LOG CHECK REAR  - 026
H11 + LH SERVO CTRL CHECK REAR  ---- 027
D04 + LH RECORD READY IRPT REAR  --- 028
B10 + LH RPS CHECK REAR  ----------- 029
N06 - LH LOAD REG 3 REAR  ---------- 030
B13 - LH RAMP SELECT 0 REAR -------- 031
C08 - LH RAMP SELECT 1 REAR -------- 032
C12 - LH RAMP SELECT 2 REAR -------- 033
D09 - LH RAMP SELECT 3 REAR -------- 034
M10 + LH DIF COUNT 256 REAR  ------- 035
J07 + LH DIF COUNT 128 REAR  ------- 036
G07 + LH DIF COUNT 64 REAR  -------- 037
G10 + LH DIF COUNT 32 REAR  -------- 038
H09 + LH DIF COUNT 16 REAR  -------- 039
J10 + LH DIF COUNT 8 REAR  --------- 040
H07 + LH DIF COUNT 4 REAR  --------- 041
H08 + LH DIF COUNT 2 REAR  --------- 042
G09 + LH DIF COUNT 1 REAR  --------- 043
H06 - LH INHIBIT REAR  ------------- 044
H05 - LH PARK REAR  ---------------- 045
G05 + LH COMPRESS REAR  ------------ 046
J13 - LH REVERSE REAR  ------------- 047
J05 - LH FORWARD REAR  ------------- 048
J06 - LH REZERO REAR  -------------- 049
H10 - LH RESET FILTER REAR  -------- 050
P02 - LH OFFSET ACTIVE REAR  ------- 051
J11 - LH GATE DIFFERENCE TP REAR  -- 052
J09 + LH PES INTEGRATE REAR -------- 053
D10 - LH CYLINDER PULSE REAR  ------ 054
C10 + LH CYLINDER PULSE REAR  ------ 055
B12 - LH TRACK FOLLOW REAR  -------- 056
D11 + LH TRACK FOLLOW REAR  -------- 057
D06 - LH COARSE TRACK REAR  -------- 058
D07 - LH WRITE READY REAR  --------- 059
B09 + LH PULSE RATE REAR  ---------- 060
G03 + LH INDEX 1 REAR  ------------- 061
C13 + LH INDEX 2 REAR  ------------- 062
D13 + LH SEGMENT BOUNDARY REAR ----- 063
J02 + LH INNER GUARD BAND REAR  ---- 064
H04 + LH OUTER GUARD BAND REAR  ---- 065
M07 + LH RPS CLOCK T-0 (L1) REAR --- 066
S12 - LH POR SYNC TO CLOCK REAR  --- 067
---- - CONTINUED ON PAGE BM210 ------ 068
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ LH CDP DATA BUS PWR BIT REAR 0		
	M2S02	BM200-L003
	(N2C02)	BN200-R045
	P2G05	BP200-L040
L004		
+ LH CDP DATA BUS PWR BIT REAR 1		
	M2P13	BM200-L004
	(N2C07)	BN200-R046
	P2G04	BP200-L041
L005		
+ LH CDP DATA BUS PWR BIT REAR 2		
	M2P11	BM200-L005
	(N2C10)	BN200-R047
	P2G03	BP200-L042
L006		
+ LH CDP DATA BUS PWR BIT REAR 3		
	M2D02	BM200-L006
	(N2B09)	BN200-R048
	P2H05	BP200-L043
L007		
+ LH CDP DATA BUS PWR BIT REAR 4		
	M2S10	BM200-L007
	(N2B10)	BN200-R049
	P2H03	BP200-L044
L008		
+ LH CDP DATA BUS PWR BIT REAR 5		
	M2T07	BM200-L008
	(N2C09)	BN200-R050
	P2J05	BP200-L045
L009		
+ LH CDP DATA BUS PWR BIT REAR 6		
	M2T11	BM200-L009
	(N2B04)	BN200-R051
	P2J04	BP200-L046
L010		
+ LH CDP DATA BUS PWR BIT REAR 7		
	M2N13	BM200-L010
	(N2C08)	BN200-R052
	P2H06	BP200-L047
L011		
+ LH CDP DATA BUS PWR BIT REAR P		
	M2S09	BM200-L011
	(N2C04)	BN200-R053
	P2H04	BP200-L048
L012		
+ LH COMMAND REAR		
	M2T08	BM200-L012
	(N2T06)	BN200-R034
L013		
- LH DEV SELECTED REAR		
	M2T10	BM200-L013
	(N2N04)	BN200-R033
	P2P04	BP200-L060
	Q2M04	BQ200-L017

LINE/SIGNAL	PIN	SHEET/LINE
L014		
+ LH PARM TRANSFER REAR		
	M2T09	BM200-L014
	(N2N08)	BN200-R036
L015		
- LH POWER ON RESET POWER REAR		
	M2P06	BM200-L015
	(N2N06)	BN200-R062
	P2N11	BP200-L039
	R2S04	BR200-L041
	T2S07	BT200-L039
1C-C2	B2AB2	HC3A1-L070
	X2D02	
L016		
- LH DEVICE CHECK 2 RESET REAR		
	M2T06	BM200-L016
	(N2J11)	BN200-R035
	P2N04	BP200-L059
L017		
+ LH AGC ACTIVE REAR		
	M2N04	BM200-L017
	(T2S13)	BT200-R012
	R2P05	BR200-L018
L018		
+ RH AGC ACTIVE REAR		
	M2P05	BM200-L018
	(U2S13)	BU200-R012
	R2N04	BR200-L017
L019		
+ LH BUSY W/O PIP REAR		
	M2N05	BM200-L019
	(N2G12)	BN200-R037
L020		
- LH PORT FENCED REAR		
	M2M05	BM200-L020
	(N2G10)	BN200-R039
L021		
- LH DRIVE PWR SWITCH OFF REAR		
	M2P04	BM200-L021
	(N2M03)	BN200-R041
	(N2M03)	BN210-R023
L022		
+ RH PULSE RATE REAR		
	M2P07	BM200-L022
	(R2B09)	BR200-R060
L023		
+ LH MOTOR CONTROL REAR		
	M2P10	BM200-L023
	(N2B02)	BN200-R040
L024		
- DISABLE SWITCH DEVICE 2		
	M2M09	BM200-L024
YA120	*-R064*	
	A1E13	

LINE/SIGNAL	PIN	SHEET/LINE
L025		
+ A CLOCK REAR		
	M2M02	BM200-L025
	(P2S07)	BP200-R029
	N2T09	BN200-L028
	Q2T09	BQ200-L028
	R2M02	BR200-L025
L026		
+ B CLOCK REAR		
	M2N07	BM200-L026
	(P2U05)	BP200-R030
	M2U09	BM200-L027
	N2T05	BN200-L029
	Q2T05	BQ200-L029
	R2N07	BR200-L026
	R2U09	BR200-L027
L027		
+ B CLOCK REAR		
	M2U09	BM200-L027
	(P2U05)	BP200-R030
	M2N07	BM200-L026
	N2T05	BN200-L029
	Q2T05	BQ200-L029
	R2N07	BR200-L026
	R2U09	BR200-L027
L028		
+ C CLOCK REAR		
	M2C03	BM200-L028
	(P2T03)	BP200-R031
	N2T08	BN200-L030
	Q2T08	BQ200-L030
	R2C03	BR200-L028
L029		
+ D CLOCK REAR		
	M2M03	BM200-L029
	(P2S08)	BP200-R032
	N2T07	BN200-L031
	Q2T07	BQ200-L031
	R2M03	BR200-L029
L030		
+ E CLOCK REAR		
	M2N12	BM200-L030
	(P2U10)	BP200-R033
	M2U10	BM200-L031
	N2U06	BN200-L032
	Q2U06	BQ200-L032
	R2N12	BR200-L030
	R2U10	BR200-L031
L031		
+ E CLOCK REAR		
	M2U10	BM200-L031
	(P2U10)	BP200-R033
	M2N12	BM200-L030
	N2U06	BN200-L032
	Q2U06	BQ200-L032
	R2N12	BR200-L030
	R2U10	BR200-L031

LINE/SIGNAL	PIN	SHEET/LINE
L032		
+ F CLOCK REAR		
	M2M08	BM200-L032
	(P2U11)	BP200-R034
	N2S03	BN200-L033
	Q2S03	BQ200-L033
	R2M08	BR200-L032
L033		
+ G CLOCK REAR		
	M2C02	BM200-L033
	(P2T11)	BP200-R035
	M2S07	BM200-L034
	N2T03	BN200-L034
	Q2T03	BQ200-L034
	R2C02	BR200-L033
	R2S07	BR200-L034
L034		
+ G CLOCK REAR		
	M2S07	BM200-L034
	(P2T11)	BP200-R035
	M2C02	BM200-L033
	N2T03	BN200-L034
	Q2T03	BQ200-L034
	R2C02	BR200-L033
	R2S07	BR200-L034
L035		
+ H CLOCK REAR		
	M2T12	BM200-L035
	(P2U04)	BP200-R036
	N2U05	BN200-L035
	N2D13	BN200-L053
	Q2U05	BQ200-L035
	Q2D13	BQ200-L053
	R2T12	BR200-L035
L036		
+ AB CLOCK REAR		
	M2B03	BM200-L036
	(P2T10)	BP200-R025
	R2B03	BR200-L036
L037		
+ CD CLOCK REAR		
	M2C05	BM200-L037
	(P2U09)	BP200-R026
	R2C05	BR200-L037
L038		
+ EF CLOCK REAR		
	M2M13	BM200-L038
	(P2U07)	BP200-R027
	R2M13	BR200-L038
L039		
+ GH CLOCK REAR		
	M2B02	BM200-L039
	(P2T06)	BP200-R028
	R2B02	BR200-L039

LINE/SIGNAL	PIN	SHEET/LINE
L040		
- CLOCK CHECK HOLD REAR		
	M2T04	BM200-L040
	(P2U02)	BP200-R037
	N2G03	BN200-L036
	Q2G03	BQ200-L036
	R2T04	BR200-L040
L041		
- RH POWER ON RESET POWER REAR		
	M2S04	BM200-L041
	(Q2N06)	BQ200-R062
	N2B07	BN200-L018
	P2B10	BP200-L038
	R2P06	BR200-L015
	U2S07	BU200-L039
1C-C3	B2AB2	HC4A1-L070
	X4D02	
L042		
+ LH POSITION ERROR SIG A REAR		
	M2H03	BM200-L042
	(T2G07)	BT200-R005
L043		
+ LH POSITION ERROR SIG B REAR		
	M2H02	BM200-L043
	(T2M12)	BT200-R003
L044		
- LH WRITE INHIBIT REAR		
	M2G04	BM200-L044
	(T2B10)	BT200-R006
	(T2G10)	BT200-R007
	N2G04	BN210-L044
	V2B10	
L045		
+ LH SEEK INCOMPLETE REAR		
	M2G08	BM200-L045
	(N2H10)	BN200-R038
L046		
+ LH GATE CHK POINT REG REAR		
	M2N03	BM200-L046
	(N2B08)	BN200-R031
L047		
- LH RPS CLOCK 1 REAR		
	M2C06	BM200-L047
	(T2U10)	BT200-R019
L048		
+ LH RPS CLOCK 3 REAR		
	M2C04	BM200-L048
	(T2U04)	BT200-R017
L049		
+ LH RPS CLOCK 4 REAR		
	M2C11	BM200-L049
	(T2S09)	BT200-R020
L050		
- LH GAP REAR		
	M2B08	BM200-L050
	(T2U09)	BT200-R018

LINE/SIGNAL	PIN	SHEET/LINE
L051		
+ LH R-W ACTIVE REAR		
	M2D12	BM200-L051
	(P2P13)	BP200-R041
L052		
+ LH GATE TARGET REG REAR		
	M2C09	BM200-L052
	(N2D07)	BN200-R030
L053		
+ LH GATE DIF LOW REG REAR		
	M2C07	BM200-L053
	(N2C05)	BN200-R029
L054		
- LH POR SYNC TO CLOCK REAR		
	M2S13	BM200-L054
	(M2S12)	BM200-R067
L055		
+ LH SENSE SOFT START LT REAR		
	M2N11	BM200-L055
	(N2H04)	BN210-R024
L056		
+ LH DISABLE MEMORY OUTPUT REAR		
	M2Y12	BM200-L056
L057		
+ LH CHIP DISABLE REAR		
	M2Y23	BM200-L057
L058		
+ LH PROGRAM MEMORY REAR		
	M2Y27	BM200-L058
L059		
- LH MOD D REAR		
	M2M12	BM200-L059
1C-C4	P3D12	HPA30-L012
J180-	*PIN05*	
YA500	*-L121*	
AE200	*TABLE*	
J672-	*PIN22*	
J180-	*PIN05*	
	W2D12	
L060		
+ LH PARM TRANSFER EN REAR		
	M2S08	BM200-L060
	(N2B03)	BN210-R027
L061		
- 5V RH LEFT REAR		
	M2U04	BM200-L061
	P2J06	BP210-L021
	T2B06	BT200-L045
	T2G06	BT200-L046
-TP--	*M6E02*	
YA420	*-R016*	
J681-	*PIN07*	
	W6A02	
YA420	*-R024*	
J681-	*PIN14*	
	V6E02	

LINE/SIGNAL	PIN	SHEET/LINE
R003		
+ LH SEQ WRITE BUS BIT REAR 0		
	(M2U02)	BM200-R003
	(M2X30)	BM210-R004
	N2X30	BN210-L029
R004		
+ LH SEQ WRITE BUS BIT REAR 1		
	(M2U11)	BM200-R004
	(M2X28)	BM210-R005
	N2X28	BN210-L030
R005		
+ LH SEQ WRITE BUS BIT REAR 2		
	(M2T02)	BM200-R005
	(M2X32)	BM210-R006
	N2X32	BN210-L031
	Q2J05	BQ210-L039
R006		
+ LH SEQ WRITE BUS BIT REAR 3		
	(M2U12)	BM200-R006
	(M2X24)	BM210-R007
	N2X24	BN210-L032
R007		
+ LH SEQ WRITE BUS BIT REAR 4		
	(M2T03)	BM200-R007
	(M2X33)	BM210-R008
	N2X33	BN210-L033
R008		
+ LH SEQ WRITE BUS BIT REAR 5		
	(M2S05)	BM200-R008
	(M2X03)	BM210-R009
	N2X03	BN210-L034
R009		
+ LH SEQ WRITE BUS BIT REAR 6		
	(M2S03)	BM200-R009
	(M2X10)	BM210-R010
	N2X10	BN210-L035
R010		
+ LH SEQ WRITE BUS BIT REAR 7		
	(M2U05)	BM200-R010
	(M2X09)	BM210-R011
	N2X09	BN210-L036
R011		
+ LH SEQ WRITE BUS BIT REAR P		
	(M2U07)	BM200-R011
	(M2X29)	BM210-R012
	N2X29	BN210-L037
R012		
- LH CHK POINT/TAR/DIF REAR 0		
	(M2D05)	BM200-R012
	(M2X06)	BM210-R013
	N2X06	BN210-L020
R013		
- LH CHK POINT/TAR/DIF REAR 1		
	(M2G13)	BM200-R013
	(M2X07)	BM210-R014
	N2X07	BN210-L021
R014		
- LH CHK POINT/TAR/DIF REAR 2		
	(M2B05)	BM200-R014
	(M2X26)	BM210-R015
	N2X26	BN210-L022
R015		
- LH CHK POINT/TAR/DIF REAR 3		
	(M2B04)	BM200-R015
	(M2X13)	BM210-R016
	N2X13	BN210-L023
R016		
- LH CHK POINT/TAR/DIF REAR 4		
	(M2B07)	BM200-R016
	(M2X02)	BM210-R017
	N2X02	BN210-L024
R017		
- LH CHK POINT/TAR/DIF REAR 5		
	(M2H12)	BM200-R017
	(M2X25)	BM210-R018
	N2X25	BN210-L025
R018		
- LH CHK POINT/TAR/DIF REAR 6		
	(M2J12)	BM200-R018
	(M2X05)	BM210-R019
	N2X05	BN210-L026
R019		
- LH CHK POINT/TAR/DIF REAR 7		
	(M2H13)	BM200-R019
	(M2X11)	BM210-R020
	N2X11	BN210-L027
R020		
- LH CHK POINT/TAR/DIF REAR P		
	(M2G12)	BM200-R020
	(M2X22)	BM210-R021
	N2X22	BN210-L028
R021		
+ LH SEQ STATUS STROBE REAR		
	(M2N02)	BM200-R021
	N2C03	BN200-L026
R022		
+ LH LOAD POWER CTRL REG REAR		
	(M2N10)	BM200-R022
	N2D06	BN200-L024
	Q2M08	BQ210-L038
R023		
+ LH LOAD SEQ STATUS REG REAR		
	(M2N09)	BM200-R023
	N2P02	BN200-L027
R024		
+ LH SEQ MOVE FORMAT REAR		
	(M2M04)	BM200-R024
	N2D04	BN200-L025
R025		
+ LH SEQ CHECK REAR		
	(M2U06)	BM200-R025
	N2G09	BN200-L020
R026		
+ LH CHK POINT LOG CHECK REAR		
	(M2G02)	BM200-R026
	N2P05	BN200-L019
R027		
+ LH SERVO CTRL CHECK REAR		
	(M2H11)	BM200-R027
	N2C13	BN200-L021
R028		
+ LH RECORD READY IRPT REAR		
	(M2D04)	BM200-R028
	N2J12	BN200-L040
R029		
+ LH RPS CHECK REAR		
	(M2B10)	BM200-R029
	N2J05	BN200-L022
R030		
- LH LOAD REG 3 REAR		
	(M2N06)	BM200-R030
R031		
- LH RAMP SELECT 0 REAR		
	(M2B13)	BM200-R031
	T2M11	BT200-L005
R032		
- LH RAMP SELECT 1 REAR		
	(M2C08)	BM200-R032
	T2J02	BT200-L006
R033		
- LH RAMP SELECT 2 REAR		
	(M2C12)	BM200-R033
	T2G03	BT200-L007
R034		
- LH RAMP SELECT 3 REAR		
	(M2D09)	BM200-R034
	T2G04	BT200-L008
R035		
+ LH DIF COUNT 256 REAR		
	(M2M10)	BM200-R035
	T2J10	BT200-L017
R036		
+ LH DIF COUNT 128 REAR		
	(M2J07)	BM200-R036
	T2P02	BT200-L016
R037		
+ LH DIF COUNT 64 REAR		
	(M2G07)	BM200-R037
	T2M02	BT200-L015
R038		
+ LH DIF COUNT 32 REAR		
	(M2G10)	BM200-R038
	T2G11	BT200-L014
R039		
+ LH DIF COUNT 16 REAR		
	(M2H09)	BM200-R039
	T2G13	BT200-L013
R040		
+ LH DIF COUNT 8 REAR		
	(M2J10)	BM200-R040
	T2G12	BT200-L012
R041		
+ LH DIF COUNT 4 REAR		
	(M2H07)	BM200-R041
	T2J12	BT200-L011
R042		
+ LH DIF COUNT 2 REAR		
	(M2H08)	BM200-R042
	T2J13	BT200-L010
R043		
+ LH DIF COUNT 1 REAR		
	(M2G09)	BM200-R043
	T2J11	BT200-L009
R044		
- LH INHIBIT REAR		
	(M2H06)	BM200-R044
	N2N02	BN200-L039
	T2P13	BT200-L024
R045		
- LH PARK REAR		
	(M2H05)	BM200-R045
	T2B04	BT200-L028
R046		
+ LH COMPRESS REAR		
	(M2G05)	BM200-R046
	T2D04	BT200-L036
R047		
- LH REVERSE REAR		
	(M2J13)	BM200-R047
	T2M13	BT200-L021
R048		
- LH FORWARD REAR		
	(M2J05)	BM200-R048
	V2B11	
R049		
- LH REZERO REAR		
	(M2J06)	BM200-R049
	T2B03	BT200-L023
R050		
- LH RESET FILTER REAR		
	(M2H10)	BM200-R050
	T2D05	BT200-L037
R051		
- LH OFFSET ACTIVE REAR		
	(M2P02)	BM200-R051
	N2H12	BN200-L038
	T2P06	BT200-L020
R052		
- LH GATE DIFFERENCE TP REAR		
	(M2J11)	BM200-R052
	V2D11	
R053		
+ LH PES INTEGRATE REAR		
	(M2J09)	BM200-R053
	T2P07	BT200-L019
R054		
- LH CYLINDER PULSE REAR		
	(M2D10)	BM200-R054
	T2M07	BT200-L025
	V2D09	
R055		
+ LH CYLINDER PULSE REAR		
	(M2C10)	BM200-R055
R056		
- LH TRACK FOLLOW REAR		
	(M2B12)	BM200-R056
	T2B02	BT200-L018
R057		
+ LH TRACK FOLLOW REAR		
	(M2D11)	BM200-R057
	T2D02	BT200-L022
R058		
- LH COARSE TRACK REAR		
	(M2D06)	BM200-R058
	P2D09	BP200-L065
	V2B03	
R059		
- LH WRITE READY REAR		
	(M2D07)	BM200-R059
	P2C09	BP200-L066
R060		
+ LH PULSE RATE REAR		
	(M2B09)	BM200-R060
	R2P07	BR200-L022
R061		
+ LH INDEX 1 REAR		
	(M2G03)	BM200-R061
	P2N06	BP200-L062
	X2B03	
	V2B05	
R062		
+ LH INDEX 2 REAR		
	(M2C13)	BM200-R062
	P2P06	BP200-L063
R063		
+ LH SEGMENT BOUNDARY REAR		
	(M2D13)	BM200-R063
	P2P07	BP200-L064
	X3D12	
R064		
+ LH INNER GUARD BAND REAR		
	(M2J02)	BM200-R064
	V2D12	
R065		
+ LH OUTER GUARD BAND REAR		
	(M2H04)	BM200-R065
	V2B12	
R066		
+ LH RPS CLOCK T-0 (LI) REAR		
	(M2M07)	BM200-R066
	P2N08	BP200-L036
R067		
- LH POR SYNC TO CLOCK REAR		
	(M2S12)	BM200-R067
	M2S13	BM200-L054
R068		
- CONTINUED ON PAGE BM210		
	(M2)	BM200-R068

See previous page for more.

ERROR CHECKING

The following checks cause a device sequencer/servo/RPS check:

- Sequencer Check
- RPS Check

A servo error is caused by one of the following:

- A difference high and low counter register parity error. The difference high and low counters are checked for correct parity while the registers are loaded.
- A servo control register 4 or 6 parity error.
- A checkpoint log register error.

A servo-inhibited error is caused by one of the following:

- Crash stop inhibit - Crash stop protection logic monitors the access mechanism for abnormal movement.
- Overshoot inhibit - When the actuator motion exceeds +1-1/2 tracks while attempting to settle on the target track at the end of a seek operation.
- Unexpected GBOD signal - If the guard band outer diameter (GBOD) signal is detected under conditions other than park, rezero, or seek to -3 track operations.
- Loss of AGC - Loss of automatic gain control (AGC) indicates that the disk is rotating below a threshold speed.

---- - CONTINUED FROM PAGE BM200 ---- 003
X30 + LH SEQ WRITE BUS BIT REAR 0 -- 004
X28 + LH SEQ WRITE BUS BIT REAR 1 -- 005
X32 + LH SEQ WRITE BUS BIT REAR 2 -- 006
X24 + LH SEQ WRITE BUS BIT REAR 3 -- 007
X33 + LH SEQ WRITE BUS BIT REAR 4 -- 008
X03 + LH SEQ WRITE BUS BIT REAR 5 -- 009
X10 + LH SEQ WRITE BUS BIT REAR 6 -- 010
X09 + LH SEQ WRITE BUS BIT REAR 7 -- 011
X29 + LH SEQ WRITE BUS BIT REAR P -- 012
X06 - LH CHK POINT/TAR/DIF REAR 0 -- 013
X07 - LH CHK POINT/TAR/DIF REAR 1 -- 014
X26 - LH CHK POINT/TAR/DIF REAR 2 -- 015
X13 - LH CHK POINT/TAR/DIF REAR 3 -- 016
X02 - LH CHK POINT/TAR/DIF REAR 4 -- 017
X25 - LH CHK POINT/TAR/DIF REAR 5 -- 018
X05 - LH CHK POINT/TAR/DIF REAR 6 -- 019
X11 - LH CHK POINT/TAR/DIF REAR 7 -- 020
X22 - LH CHK POINT/TAR/DIF REAR P -- 021
Z02 + LH MEMORY BIT 0 REAR --------- 022
Z22 + LH MEMORY BIT 1 REAR --------- 023
Z03 + LH MEMORY BIT 2 REAR --------- 024
Z23 + LH MEMORY BIT 3 REAR --------- 025
Z04 + LH MEMORY BIT 4 REAR --------- 026
Z24 + LH MEMORY BIT 5 REAR --------- 027
Z05 + LH MEMORY BIT 6 REAR --------- 028
Z25 + LH MEMORY BIT 7 REAR --------- 029
Z06 + LH MEMORY BIT 8 REAR --------- 030
Z26 + LH MEMORY BIT 9 REAR --------- 031
Z07 + LH MEMORY BIT 10 REAR -------- 032
Z27 + LH MEMORY BIT 11 REAR -------- 033
Z08 + LH MEMORY BIT 12 REAR -------- 034
Z28 + LH MEMORY BIT 13 REAR -------- 035
Z09 + LH MEMORY BIT 14 REAR -------- 036
Z29 + LH MEMORY BIT 15 REAR -------- 037
Z10 + LH MEMORY BIT 16 REAR -------- 038
Z30 + LH MEMORY BIT 17 REAR -------- 039
Y11 + LH ISAR 1024 TP REAR -------- 040
Y13 + LH ISAR 512 TP REAR ---------- 041
Y33 + LH ISAR 256 TP REAR ---------- 042
Y32 + LH ISAR 128 TP REAR ---------- 043
Y30 + LH ISAR 64 TP REAR ----------- 044
Y29 + LH ISAR 32 TP REAR ----------- 045
Y28 + LH ISAR 16 TP REAR ----------- 046
Y26 + LH ISAR 8 TP REAR ------------ 047
Y25 + LH ISAR 4 TP REAR ------------ 048
Y24 + LH ISAR 2 TP REAR ------------ 049
Y22 + LH ISAR 1 TP REAR ------------ 050
Y02 + LH D CLOCK POWERED REAR ----- 051
N08 + LH SET HEAD ARM ADR REG REAR - 052
Y10 + LH ISAR 2K REAR -------------- 053
Y04 + LH ISAR 4K REAR -------------- 054

SEQ, SERVO, RPS LH XRL BM210

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- CONTINUED FROM PAGE BM200		
	(M2)	BM210-R003
R004		
+ LH SEQ WRITE BUS BIT REAR 0		
	(M2X30)	BM210-R004
	(M2U02)	BM200-R003
	N2X30	BN210-L029
R005		
+ LH SEQ WRITE BUS BIT REAR 1		
	(M2X28)	BM210-R005
	(M2U11)	BM200-R004
	N2X28	BN210-L030
R006		
+ LH SEQ WRITE BUS BIT REAR 2		
	(M2X32)	BM210-R006
	(M2T02)	BM200-R005
	N2X32	BN210-L031
	Q2J05	BQ210-L039
R007		
+ LH SEQ WRITE BUS BIT REAR 3		
	(M2X24)	BM210-R007
	(M2U12)	BM200-R006
	N2X24	BN210-L032
R008		
+ LH SEQ WRITE BUS BIT REAR 4		
	(M2X33)	BM210-R008
	(M2T03)	BM200-R007
	N2X33	BN210-L033
R009		
+ LH SEQ WRITE BUS BIT REAR 5		
	(M2X03)	BM210-R009
	(M2S05)	BM200-R008
	N2X03	BN210-L034
R010		
+ LH SEQ WRITE BUS BIT REAR 6		
	(M2X10)	BM210-R010
	(M2S03)	BM200-R009
	N2X10	BN210-L035
R011		
+ LH SEQ WRITE BUS BIT REAR 7		
	(M2X09)	BM210-R011
	(M2U05)	BM200-R010
	N2X09	BN210-L036
R012		
+ LH SEQ WRITE BUS BIT REAR P		
	(M2X29)	BM210-R012
	(M2U07)	BM200-R011
	N2X29	BN210-L037
R013		
- LH CHK POINT/TAR/DIF REAR 0		
	(M2X06)	BM210-R013
	(M2D05)	BM200-R012
	N2X06	BN210-L020
R014		
- LH CHK POINT/TAR/DIF REAR 1		
	(M2X07)	BM210-R014
	(M2G13)	BM200-R013
	N2X07	BN210-L021
R015		
- LH CHK POINT/TAR/DIF REAR 2		
	(M2X26)	BM210-R015
	(M2B05)	BM200-R014
	N2X26	BN210-L022
R016		
- LH CHK POINT/TAR/DIF REAR 3		
	(M2X13)	BM210-R016
	(M2B04)	BM200-R015
	N2X13	BN210-L023
R017		
- LH CHK POINT/TAR/DIF REAR 4		
	(M2X02)	BM210-R017
	(M2B07)	BM200-R016
	N2X02	BN210-L024
R018		
- LH CHK POINT/TAR/DIF REAR 5		
	(M2X25)	BM210-R018
	(M2H12)	BM200-R017
	N2X25	BN210-L025
R019		
- LH CHK POINT/TAR/DIF REAR 6		
	(M2X05)	BM210-R019
	(M2J12)	BM200-R018
	N2X05	BN210-L026
R020		
- LH CHK POINT/TAR/DIF REAR 7		
	(M2X11)	BM210-R020
	(M2H13)	BM200-R019
	N2X11	BN210-L027
R021		
- LH CHK POINT/TAR/DIF REAR P		
	(M2X22)	BM210-R021
	(M2G12)	BM200-R020
	N2X22	BN210-L028
R022		
+ LH MEMORY BIT 0 REAR		
	(M2Z02)	BM210-R022
R023		
+ LH MEMORY BIT 1 REAR		
	(M2Z22)	BM210-R023
R024		
+ LH MEMORY BIT 2 REAR		
	(M2Z03)	BM210-R024
R025		
+ LH MEMORY BIT 3 REAR		
	(M2Z23)	BM210-R025
R026		
+ LH MEMORY BIT 4 REAR		
	(M2Z04)	BM210-R026
R027		
+ LH MEMORY BIT 5 REAR		
	(M2Z24)	BM210-R027
R028		
+ LH MEMORY BIT 6 REAR		
	(M2Z05)	BM210-R028
R029		
+ LH MEMORY BIT 7 REAR		
	(M2Z25)	BM210-R029
R030		
+ LH MEMORY BIT 8 REAR		
	(M2Z06)	BM210-R030
R031		
+ LH MEMORY BIT 9 REAR		
	(M2Z26)	BM210-R031
R032		
+ LH MEMORY BIT 10 REAR		
	(M2Z07)	BM210-R032
R033		
+ LH MEMORY BIT 11 REAR		
	(M2Z27)	BM210-R033
R034		
+ LH MEMORY BIT 12 REAR		
	(M2Z08)	BM210-R034
R035		
+ LH MEMORY BIT 13 REAR		
	(M2Z28)	BM210-R035
R036		
+ LH MEMORY BIT 14 REAR		
	(M2Z09)	BM210-R036
R037		
+ LH MEMORY BIT 15 REAR		
	(M2Z29)	BM210-R037
R038		
+ LH MEMORY BIT 16 REAR		
	(M2Z10)	BM210-R038
R039		
+ LH MEMORY BIT 17 REAR		
	(M2Z30)	BM210-R039
R040		
+ LH ISAR 1024 TP REAR		
	(M2Y11)	BM210-R040
R041		
+ LH ISAR 512 TP REAR		
	(M2Y13)	BM210-R041
R042		
+ LH ISAR 256 TP REAR		
	(M2Y33)	BM210-R042
R043		
+ LH ISAR 128 TP REAR		
	(M2Y32)	BM210-R043
R044		
+ LH ISAR 64 TP REAR		
	(M2Y30)	BM210-R044
R045		
+ LH ISAR 32 TP REAR		
	(M2Y29)	BM210-R045
R046		
+ LH ISAR 16 TP REAR		
	(M2Y28)	BM210-R046
R047		
+ LH ISAR 8 TP REAR		
	(M2Y26)	BM210-R047
R048		
+ LH ISAR 4 TP REAR		
	(M2Y25)	BM210-R048
R049		
+ LH ISAR 2 TP REAR		
	(M2Y24)	BM210-R049
R050		
+ LH ISAR 1 TP REAR		
	(M2Y22)	BM210-R050
R051		
+ LH D CLOCK POWERED REAR		
	(M2Y02)	BM210-R051
R052		
+ LH SET HEAD ARM ADR REG REAR		
	(M2N08)	BM210-R052
	P2P05	BP200-L061
R053		
+ LH ISAR 2K REAR		
	(M2Y10)	BM210-R053
R054		
+ LH ISAR 4K REAR		
	(M2Y04)	BM210-R054

SEQ, SERVO, RPS LH XRL BM210

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
EF000	1	1	A01	N/A	BLI	N/A	N/A	N/A	N/A	N/A
EF000	3	1	A05	BD200	CRD	SERVOL	NA	NA	NA	1B-B1D2
EF000	4	1	A07	BD200	XRL	SERVOL	NA	NA	NA	1B-B1D2
EF000	6	1	A11	BD200	CRD	SERVOL	NA	NA	NA	1B-B1D2
EF000	7	1	A13	BE200	CRD	SERVOR	NA	NA	NA	1B-B1E2
EF000	8	1	A15	BE200	XRL	SERVOR	NA	NA	NA	1B-B1E2
EF000	10	1	B01	BE200	CRD	SERVOR	NA	NA	NA	1B-B1E2
EF000	11	1	B03	BG200	CRD	SVOL	NA	NA	NA	1B-B1G2
EF000	12	1	B05	BG200	XRL	SVOL	NA	NA	NA	1B-B1G2
EF000	14	1	B09	BG210	CRD	SVOL	NA	NA	NA	1B-B1G2
EF000	15	1	B11	BG210	XRL	SVOL	NA	NA	NA	1B-B1G2
EF000	16	1	B13	BH200	CRD	PORT	NA	NA	NA	1B-B1H2
EF000	17	1	B15	BH200	XRL	PORT	NA	NA	NA	1B-B1H2
EF000	20	1	C03	BH210	CRD	PORT	NA	NA	NA	1B-B1H2
EF000	21	1	C05	BH210	XRL	PORT	NA	NA	NA	1B-B1H2
EF000	23	1	C09	BJ200	CRD	RDWR	NA	NA	NA	1B-B1J2
EF000	24	1	C11	BJ200	XRL	RDWR	NA	NA	NA	1B-B1J2
EF000	27	1	C17	BJ210	CRD	RDWR	NA	NA	NA	1B-B1J2
EF000	28	1	D01	BJ210	XRL	RDWR	NA	NA	NA	1B-B1J2
EF000	29	1	D03	BK200	CRD	PORT	NA	NA	NA	1B-B1K2
EF000	30	1	D05	BK200	XRL	PORT	NA	NA	NA	1B-B1K2
EF000	33	1	D11	BK210	CRD	PORT	NA	NA	NA	1B-B1K2
EF000	34	1	D13	BK210	XRL	PORT	NA	NA	NA	1B-B1K2
EF000	36	1	D17	BL200	CRD	SVOR	NA	NA	NA	1B-B1L2
EF000	37	1	E01	BL200	XRL	SVOR	NA	NA	NA	1B-B1L2
EF000	39	1	E05	BL210	CRD	SVOR	NA	NA	NA	1B-B1L2
EF000	40	1	E07	BL210	XRL	SVOR	NA	NA	NA	1B-B1L2
EF000	41	1	E09	BM200	CRD	SVOL	NA	NA	NA	1B-B1M2
EF000	42	1	E11	BM200	XRL	SVOL	NA	NA	NA	1B-B1M2
EF000	44	1	E15	BM210	CRD	SVOL	NA	NA	NA	1B-B1M2
EF000	45	1	E17	BM210	XRL	SVOL	NA	NA	NA	1B-B1M2
EF000	46	2	A01	N/A	BLI	N/A	N/A	N/A	N/A	N/A
EF000	48	2	A05	BN200	CRD	PORT	NA	NA	NA	1B-B1N2
EF000	49	2	A07	BN200	XRL	PORT	NA	NA	NA	1B-B1N2
EF000	52	2	A13	BN210	CRD	PORT	NA	NA	NA	1B-B1N2
EF000	53	2	A15	BN210	XRL	PORT	NA	NA	NA	1B-B1N2
EF000	55	2	B01	BP200	CRD	RDWR	NA	NA	NA	1B-B1P2
EF000	56	2	B03	BP200	XRL	RDWR	NA	NA	NA	1B-B1P2
EF000	59	2	B09	BP210	CRD	RDWR	NA	NA	NA	1B-B1P2
EF000	60	2	B11	BP210	XRL	RDWR	NA	NA	NA	1B-B1P2
EF000	61	2	B13	BQ200	CRD	PORT	NA	NA	NA	1B-B1Q2
EF000	62	2	B15	BQ200	XRL	PORT	NA	NA	NA	1B-B1Q2
EF000	65	2	C03	BQ210	CRD	PORT	NA	NA	NA	1B-B1Q2
EF000	66	2	C05	BQ210	XRL	PORT	NA	NA	NA	1B-B1Q2

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
FRM	FRAME (MICROFICHE)
MDM	MAINTENANCE DIAGRAM MANUAL - VOLUME R30
XRL	CROSS REFERENCE LIST

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND * * AS THE CABLE SOCKET PINS

NOTE: THE SIGNAL NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL MATCH THE SIGNAL NAME IN THE LRM EXACTLY.

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
EF000	68	2	C09	BR200	CRD	SVOR	NA	NA	NA	1B-B1R2
EF000	69	2	C11	BR200	XRL	SVOR	NA	NA	NA	1B-B1R2
EF000	71	2	C15	BR210	CRD	SVOR	NA	NA	NA	1B-B1R2
EF000	72	2	C17	BR210	XRL	SVOR	NA	NA	NA	1B-B1R2
EF000	73	2	D01	BT200	CRD	SERVOL	NA	NA	NA	1B-B1T2
EF000	74	2	D03	BT200	XRL	SERVOL	NA	NA	NA	1B-B1T2
EF000	76	2	D07	BT200	CRD	SERVOL	NA	NA	NA	1B-B1T2
EF000	77	2	D09	BU200	CRD	SERVOR	NA	NA	NA	1B-B1U2
EF000	78	2	D11	BU200	XRL	SERVOR	NA	NA	NA	1B-B1U2

BOARD LOGIC INDEX PAGE BLI N/A

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
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FRM	FRAME (MICROFICHE)
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```
003 + A1 PORT 0 CHECK 1 RESET ------ H02
004 + A1 LOGIC POWER CONTROL 0 ----- U07
005 + A1 GATE PORT 0 DEV CHECK 1 --- D02
006 + A1 CDP 0 TAG OUT BIT 0 ------- S12
007 + A1 CDP 0 TAG OUT BIT 1 ------- S09
008 + A1 CDP 0 TAG OUT BIT 2 ------- S07
009 + A1 CDP 0 SPLIT BUS OP -------- S02
010 + A2 PORT 0 CHECK 1 RESET ------ G02
011 + A2 LOGIC POWER CONTROL 0 ----- T04
012 + A2 GATE PORT 0 DEV CHECK 1 --- H06
013 + A2 CDP 0 TAG OUT BIT 0 ------- U02
014 + A2 CDP 0 TAG OUT BIT 1 ------- U09
015 + A2 CDP 0 TAG OUT BIT 2 ------- S05
016 + A2 CDP 0 SPLIT BUS OP -------- U04
017 - RH DEV SELECTED REAR --------- M04
018 - RH POWER ON RESET POWER REAR - B07
019 + LH CHK POINT LOG CHECK REAR  - P05
020 + LH SEQ CHECK REAR ------------ G09
021 + LH SERVO CTRL CHECK REAR ---- C13
022 + LH RPS CHECK REAR ------------ J05
023 + LH R-W CHECK REAR ------------ N03
024 + LH LOAD POWER CTRL REG REAR  - D06
025 + LH SEQ MOVE FORMAT REAR ----- D04
026 + LH SEQ STATUS STROBE REAR --- C03
027 + LH LOAD SEQ STATUS REG REAR -- P02
028 + A CLOCK REAR ----------------- T09
029 + B CLOCK REAR ----------------- T05
030 + C CLOCK REAR ----------------- T08
031 + D CLOCK REAR ----------------- T07
032 + E CLOCK REAR ----------------- U06
033 + F CLOCK REAR ----------------- S03
034 + G CLOCK REAR ----------------- T03
035 + H CLOCK REAR ----------------- U05
036 - CLOCK CHECK HOLD REAR -------- G03
037 - RH CABLE SWITCHED REAR ------ M02
038 - LH OFFSET ACTIVE REAR ------- H12
039 - LH INHIBIT REAR -------------- N02
040 + LH RECORD READY IRPT REAR --- J12
041 + RH 5V COMMON POR REAR -------- N05
042 - LH POWER ON RESET OUT REAR -- T10
043 + NO AIR REAR ------------------ G08
044 + SENSE MOTOR CONT OFF REAR --- T13
045 + SENSE DCA RELAY OFF REAR ----- U10
046 - DRIVE SWITCH OFF REAR -------- H05
047 - DRIVE SWITCH ON REAR --------- H03
048 - LH POWER ON RESET SWITCH REAR  S13
049 + LH MOTOR CONT PICKED OUT REAR  D12
050 + LH BRAKE CONT PICKED OUT REAR  C06
051 - LH + 5V PWR ON RESET OUT REAR  M09
052 - LH RESET CLOCK RING REAR ----  P12
053 + H CLOCK REAR ----------------- D13
054 + LH CABLE SWITCHED REAR ------ T02
055 - RH RESET CLOCK RING OUT REAR   N11
056 - RH POWER ON RESET SWITCH REAR  N10
057 - LH R-W 1-2-3-4/HAR BIT REAR 0  Y09
058 - LH R-W 1-2-3-4/HAR BIT REAR 0  Z09
059 - LH R-W 1-2-3-4/HAR BIT REAR 1  Y29
060 - LH R-W 1-2-3-4/HAR BIT REAR 1  Z29
061 - LH R-W 1-2-3-4/HAR BIT REAR 2  Y10
062 - LH R-W 1-2-3-4/HAR BIT REAR 2  Z10
063 - LH R-W 1-2-3-4/HAR BIT REAR 3  Y30
064 - LH R-W 1-2-3-4/HAR BIT REAR 3  Z30
065 - LH R-W 1-2-3-4/HAR BIT REAR 4  Y11
066 - LH R-W 1-2-3-4/HAR BIT REAR 4  Z11
067 - LH R-W 1-2-3-4/HAR BIT REAR 5  Y33
068 - LH R-W 1-2-3-4/HAR BIT REAR 5  Z33
069 - CONTINUED ON PAGE BN210 ------ ----
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PORT AND POWER CONTROL CARD

INTRODUCTION

There are two port and power cards per drive. Each is capable of communication with controllers A1 and A2 in the DLS(device level selection) environment.

DESCRIPTION

The port and power control card performs the following major functions:

Port Control Functions

- Provides controller-to-device-port (CDP) communication at the access mechanism level.
- Ensures correct selection of devices.
- Presents device interrupts and check-1 errors.
- Processes most 5X and 74 status sense commands and controls the gating of other commands (59, 5A, 5B, 4X, 6X, 7X) and following parameter transfer requests to the sequencer.
- Sets or resets the customer Ready LED on the operator panel.
- Provides the capability of Set/Reset online, to Enable or Disable a device.

Power Control Functions:

- Provides the capability of powering on and off the drive either remotely or locally, and also provides the drive control function to power on the drive.
- Translates sequencer status register into device status byte 1 and 2.
- Maintains device interrupt generation logic.
- Provides single access mechanism capability.
- Provides power monitoring on +5 V (common), +5 V for the left and right actuator logic.

PRIMARY PARTS

- Long line drivers
- Device address switch
- Miscellaneous

ERROR CHECKING

Either a device check 1 or device check 2 is detected by the following checks:

Device check 1

- CDP check
- Port check
- Clock check

Device check 2 by either error detected or collected

- Sequencer card check
- Servo card check
- RPS check
- Checkpoint log check
- Sequencer write bus parity check
- Read/write card check
- Power check
- Funnel selection check


```
M10 + A1 CDP 0 TAG IN BIT 0 -------- 003
P10 + A1 CDP 0 TAG IN BIT 1 -------- 004
N13 + A1 PORT 0 CHECK 1 ------------ 005
P13 + A1 DEVICE DRIVER ACTIVE 0 ---- 006
P06 + A1 CDP 0 BIDI DATA 0 --------- 007
N09 + A1 CDP 0 BIDI DATA 1 --------- 008
G05 + A1 CDP 0 BIDI DATA 2 --------- 009
N12 + A1 CDP 0 BIDI DATA 3 --------- 010
M12 + A1 CDP 0 BIDI DATA 4 --------- 011
G07 + A1 CDP 0 BIDI DATA 5 --------- 012
C12 + A1 CDP 0 BIDI DATA 6 --------- 013
B12 + A1 CDP 0 BIDI DATA 7 --------- 014
J13 + A1 CDP 0 BIDI DATA P --------- 015
J07 + A2 CDP 0 TAG IN BIT 0 -------- 016
H07 + A2 CDP 0 TAG IN BIT 1 -------- 017
J09 + A2 PORT 0 CHECK 1 ------------ 018
H09 + A2 DEVICE DRIVER ACTIVE 0 ---- 019
B13 + A2 CDP 0 BIDI DATA 0 --------- 020
H13 + A2 CDP 0 BIDI DATA 1 --------- 021
H11 + A2 CDP 0 BIDI DATA 2 --------- 022
D09 + A2 CDP 0 BIDI DATA 3 --------- 023
J10 + A2 CDP 0 BIDI DATA 4 --------- 024
D10 + A2 CDP 0 BIDI DATA 5 --------- 025
D11 + A2 CDP 0 BIDI DATA 6 --------- 026
C11 + A2 CDP 0 BIDI DATA 7 --------- 027
B05 + A2 CDP 0 BIDI DATA P --------- 028
C05 + LH GATE DIF LOW REG REAR ----- 029
D07 + LH GATE TARGET REG REAR ------ 030
B08 + LH GATE CHK POINT REG REAR -- 031
J06 + LH CHECK 2 REAR -------------- 032
N04 - LH DEV SELECTED REAR -------- 033
T06 + LH COMMAND REAR -------------- 034
J11 - LH DEVICE CHECK 2 RESET REAR - 035
N08 + LH PARM TRANSFER REAR ------- 036
G12 + LH BUSY W/O PIP REAR -------- 037
H10 + LH SEEK INCOMPLETE REAR ----- 038
G10 - LH PORT FENCED REAR --------- 039
B02 + LH MOTOR CONTROL REAR ------- 040
M03 - LH DRIVE PWR SWITCH OFF REAR - 041
P09 - RELEASE BRAKE REAR ---------- 042
N07 - DRIVE MOTOR RUN REAR -------- 043
S10 - PICK LOGIC POWER CONT REAR -- 044
C02 + LH CDP DATA BUS PWR BIT REAR 0 045
C07 + LH CDP DATA BUS PWR BIT REAR 1 046
C10 + LH CDP DATA BUS PWR BIT REAR 2 047
B09 + LH CDP DATA BUS PWR BIT REAR 3 048
B10 + LH CDP DATA BUS PWR BIT REAR 4 049
C09 + LH CDP DATA BUS PWR BIT REAR 5 050
B04 + LH CDP DATA BUS PWR BIT REAR 6 051
C08 + LH CDP DATA BUS PWR BIT REAR 7 052
C04 + LH CDP DATA BUS PWR BIT REAR P 053
T11 + LH MOTOR CONT PICKED OUT REAR  054
T12 + LH BRAKE CONT PICKED OUT REAR  055
J02 - LH POWER CLOCK 2 REAR -------- 056
M13 - LH + 5V PWR ON RESET OUT REAR  057
P11 - LH RESET CLOCK RING REAR ----  058
P07 - LH POWER ON RESET OUT REAR --  059
M05 - POWER ON RESET REAR ---------- 060
P04 - RESET CLOCK RING REAR -------- 061
N06 - LH POWER ON RESET POWER REAR - 062
U12 - DRIVE CONT RELAY REAR -------- 063
Y02 + LH R-W MODE SEL REAR -------- 064
Z02 + LH R-W MODE SEL REAR -------- 065
---- - CONTINUED ON PAGE BN210 ------ 066
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ A1 PORT 0 CHECK 1 RESET		
	N2H02	BN200-L003
1A-A1	(U2U07)	CU210-R004
	H2H02	BH200-L003
	K2H02	BK200-L003
	Q2H02	BQ200-L003
	B5D09	
	V4D12	
1A-A1	*X1A06*	
L004		
+ A1 LOGIC POWER CONTROL 0		
	N2U07	BN200-L004
1A-A1	(V2S03)	CV200-R027
	H2U07	BH200-L004
	K2U07	BK200-L004
	Q2U07	BQ200-L004
	B5B04	
1A-A1	*W1A08*	
L005		
+ A1 GATE PORT 0 DEV CHECK 1		
	N2D02	BN200-L005
1A-A1	(U2U11)	CU200-R065
	H2D02	BH200-L005
	K2D02	BK200-L005
	Q2D02	BQ200-L005
	B5D07	
	V4D11	
1A-A1	*W1D06*	
L006		
+ A1 CDP 0 TAG OUT BIT 0		
	N2S12	BN200-L006
1A-A1	(U2D06)	CU200-R049
	H2S12	BH200-L006
	K2S12	BK200-L006
	Q2S12	BQ200-L006
	B5B09	
	V4D05	
1A-A1	*X1A08*	
L007		
+ A1 CDP 0 TAG OUT BIT 1		
	N2S09	BN200-L007
1A-A1	(U2D05)	CU200-R050
	H2S09	BH200-L007
	K2S09	BK200-L007
	Q2S09	BQ200-L007
	B5D10	
	V4D06	
1A-A1	*X1B06*	
L008		
+ A1 CDP 0 TAG OUT BIT 2		
	N2S07	BN200-L008
1A-A1	(U2D04)	CU200-R051
	H2S07	BH200-L008
	K2S07	BK200-L008
	Q2S07	BQ200-L008
	B5B10	
	V4D07	
1A-A1	*X1B08*	

LINE/SIGNAL	PIN	SHEET/LINE
L009		
+ A1 CDP 0 SPLIT BUS OP		
	N2S02	BN200-L009
1A-A1	(U2B03)	CU200-R052
	H2S02	BH200-L009
	K2S02	BK200-L009
	Q2S02	BQ200-L009
	B5D11	
	V4D09	
1A-A1	*X1C06*	
L010		
+ A2 PORT 0 CHECK 1 RESET		
	N2G02	BN200-L010
1A-A1	(D2U07)	CD210-R004
	H2G02	BH200-L010
	K2G02	BK200-L010
	Q2G02	BQ200-L010
	C4D12	
	W5D09	
1A-A1	*E1B06*	
L011		
+ A2 LOGIC POWER CONTROL 0		
	N2T04	BN200-L011
1A-A1	(C2S03)	CC200-R027
	H2T04	BH200-L011
	K2T04	BK200-L011
	Q2T04	BQ200-L011
	C4D10	
	W5B04	
1A-A1	*D1B08*	
L012		
+ A2 GATE PORT 0 DEV CHECK 1		
	N2H06	BN200-L012
1A-A1	(D2U11)	CD200-R065
	H2H06	BH200-L012
	K2H06	BK200-L012
	Q2H06	BQ200-L012
	C4D11	
	W5D07	
1A-A1	*D1E06*	
L013		
+ A2 CDP 0 TAG OUT BIT 0		
	N2U02	BN200-L013
1A-A1	(D2D06)	CD200-R049
	H2U02	BH200-L013
	K2U02	BK200-L013
	Q2U02	BQ200-L013
	C4D05	
	W5B09	
1A-A1	*E1B08*	
L014		
+ A2 CDP 0 TAG OUT BIT 1		
	N2U09	BN200-L014
1A-A1	(D2D05)	CD200-R050
	H2U09	BH200-L014
	K2U09	BK200-L014
	Q2U09	BQ200-L014
	C4D06	
	W5D10	
1A-A1	*E1C06*	

LINE/SIGNAL	PIN	SHEET/LINE
L015		
+ A2 CDP 0 TAG OUT BIT 2		
	N2S05	BN200-L015
1A-A1	(D2D04)	CD200-R051
	H2S05	BH200-L015
	K2S05	BK200-L015
	Q2S05	BQ200-L015
	C4D07	
	W5B10	
1A-A1	*E1C08*	
L016		
+ A2 CDP 0 SPLIT BUS OP		
	N2U04	BN200-L016
1A-A1	(D2B03)	CD200-R052
	H2U04	BH200-L016
	K2U04	BK200-L016
	Q2U04	BQ200-L016
	C4D09	
	W5D11	
1A-A1	*E1D06*	
L017		
- RH DEV SELECTED REAR		
	N2M04	BN200-L017
	(Q2N04)	BQ200-R033
	P2S10	BP200-L015
	R2T10	BR200-L013
L018		
- RH POWER ON RESET POWER REAR		
	N2B07	BN200-L018
	(Q2N06)	BQ200-R062
	M2S04	BM200-L041
	P2B10	BP200-L038
	R2P06	BR200-L015
	U2S07	BU200-L039
1C-C3	B2AB2	HC4A1-L070
	X4D02	
L019		
+ LH CHK POINT LOG CHECK REAR		
	N2P05	BN200-L019
	(M2G02)	BM200-R026
L020		
+ LH SEQ CHECK REAR		
	N2G09	BN200-L020
	(M2U06)	BM200-R025
L021		
+ LH SERVO CTRL CHECK REAR		
	N2C13	BN200-L021
	(M2H11)	BM200-R027
L022		
+ LH RPS CHECK REAR		
	N2J05	BN200-L022
	(M2B10)	BM200-R029
L023		
+ LH R-W CHECK REAR		
	N2N03	BN200-L023
	(P2P12)	BP200-R040

LINE/SIGNAL	PIN	SHEET/LINE
L024		
+ LH LOAD POWER CTRL REG REAR		
	N2D06	BN200-L024
	(M2N10)	BM200-R022
	Q2M08	BQ210-L038
L025		
+ LH SEQ MOVE FORMAT REAR		
	N2D04	BN200-L025
	(M2M04)	BM200-R024
L026		
+ LH SEQ STATUS STROBE REAR		
	N2C03	BN200-L026
	(M2N02)	BM200-R021
L027		
+ LH LOAD SEQ STATUS REG REAR		
	N2P02	BN200-L027
	(M2N09)	BM200-R023
L028		
+ A CLOCK REAR		
	N2T09	BN200-L028
	(P2S07)	BP200-R029
	M2M02	BM200-L025
	Q2T09	BQ200-L028
	R2M02	BR200-L025
L029		
+ B CLOCK REAR		
	N2T05	BN200-L029
	(P2U05)	BP200-R030
	M2N07	BM200-L026
	M2U09	BM200-L027
	Q2T05	BQ200-L029
	R2N07	BR200-L026
	R2U09	BR200-L027
L030		
+ C CLOCK REAR		
	N2T08	BN200-L030
	(P2T03)	BP200-R031
	M2C03	BM200-L028
	Q2T08	BQ200-L030
	R2C03	BR200-L028
L031		
+ D CLOCK REAR		
	N2T07	BN200-L031
	(P2S08)	BP200-R032
	M2M03	BM200-L029
	Q2T07	BQ200-L031
	R2M03	BR200-L029
L032		
+ E CLOCK REAR		
	N2U06	BN200-L032
	(P2U10)	BP200-R033
	M2N12	BM200-L030
	M2U10	BM200-L031
	Q2U06	BQ200-L032
	R2N12	BR200-L030
	R2U10	BR200-L031

LINE/SIGNAL	PIN	SHEET/LINE
L033		
+ F CLOCK REAR		
	N2S03	BN200-L033
	(P2U11)	BP200-R034
	M2M08	BM200-L032
	Q2S03	BQ200-L033
	R2M08	BR200-L032
L034		
+ G CLOCK REAR		
	N2T03	BN200-L034
	(P2T11)	BP200-R035
	M2C02	BM200-L033
	M2S07	BM200-L034
	Q2T03	BQ200-L034
	R2C02	BR200-L033
	R2S07	BR200-L034
L035		
+ H CLOCK REAR		
	N2U05	BN200-L035
	(P2U04)	BP200-R036
	M2T12	BM200-L035
	N2D13	BN200-L053
	Q2U05	BQ200-L035
	Q2D13	BQ200-L053
	R2T12	BR200-L035
L036		
- CLOCK CHECK HOLD REAR		
	N2G03	BN200-L036
	(P2U02)	BP200-R037
	M2T04	BM200-L040
	Q2G03	BQ200-L036
	R2T04	BR200-L040
L037		
- RH CABLE SWITCHED REAR		
	N2M02	BN200-L037
	Q2M02	BQ200-L037
J180-	*PIN04*	
YA500	*-L090*	
YA500	*-L092*	
	W2B03	
	W3B03	
L038		
- LH OFFSET ACTIVE REAR		
	N2H12	BN200-L038
	(M2P02)	BM200-R051
	T2P06	BT200-L020
L039		
- LH INHIBIT REAR		
	N2N02	BN200-L039
	(M2H06)	BM200-R044
	T2P13	BT200-L024
L040		
+ LH RECORD READY IRPT REAR		
	N2J12	BN200-L040
	(M2D04)	BM200-R028
L041		
+ RH 5V COMMON POR REAR		
	N2N05	BN200-L041
	(Q2M07)	BQ210-R024

LINE/SIGNAL	PIN	SHEET/LINE
L042		
- LH POWER ON RESET OUT REAR		
	N2T10	BN200-L042
	(N2P07)	BN200-R059
L043		
+ NO AIR REAR		
	N2G08	BN200-L043
	Q2G08	BQ200-L043
YA110	*-R099*	
TB485	*----5*	
	V5D10	
L044		
+ SENSE MOTOR CONT OFF REAR		
	N2T13	BN200-L044
	Q2T13	BQ200-L044
YA600	*-R096*	
EC488	*-----*	
	V5B12	
L045		
+ SENSE DCA RELAY OFF REAR		
	N2U10	BN200-L045
	Q2U10	BQ200-L045
YA200	*-R024*	
J749B	*----6*	
	V5D06	
L046		
- DRIVE SWITCH OFF REAR		
	N2H05	BN200-L046
	Q2H05	BQ200-L046
YA420	*-R118*	
J680@	*----2*	
	V5B02	
L047		
- DRIVE SWITCH ON REAR		
	N2H03	BN200-L047
	Q2H03	BQ200-L047
YA420	*-R116*	
J680@	*----1*	
	V5D02	
L048		
- LH POWER ON RESET SWITCH REAR		
	N2S13	BN200-L048
	Q2N10	BQ200-L056
-TP--	*M6E02*	
YA420	*-R017*	
J682-	*PIN08*	
	V6D02	
L049		
+ LH MOTOR CONT PICKED OUT REAR		
	N2D12	BN200-L049
	(N2T11)	BN200-R054
L050		
+ LH BRAKE CONT PICKED OUT REAR		
	N2C06	BN200-L050
	(N2T12)	BN200-R055

LH PORT/POWER CONTROL XRL BN200

LINE/SIGNAL	PIN	SHEET/LINE
L051		
- LH + 5V PWR ON RESET OUT REAR		
	N2M09	BN200-L051
	(N2M13)	BN200-R057
L052		
- LH RESET CLOCK RING REAR		
	N2P12	BN200-L052
	(N2P11)	BN200-R058
	Q2N11	BQ200-L055
L053		
+ H CLOCK REAR		
	N2D13	BN200-L053
	(P2U04)	BP200-R036
	M2T12	BM200-L035
	N2U05	BN200-L035
	Q2U05	BQ200-L035
	Q2D13	BQ200-L053
	R2T12	BR200-L035
L054		
+ LH CABLE SWITCHED REAR		
	N2T02	BN200-L054
	Q2T02	BQ200-L054
1C-C4	P3B02	HPA30-L011
J180-	*PIN04*	
YA500	*-L119*	
YA500	*-L118*	
	W2B02	
	W3B02	
L055		
- RH RESET CLOCK RING OUT REAR		
	N2N11	BN200-L055
	(Q2P11)	BQ200-R058
	Q2P12	BQ200-L052
L056		
- RH POWER ON RESET SWITCH REAR		
	N2N10	BN200-L056
	Q2S13	BQ200-L048
	X6C02	
YA420	*-R091*	
J682-	*PIN08*	
	X6C02	
L057		
- LH R-W 1-2-3-4/HAR BIT REAR 0		
	N2Y09	BN200-L057
	(P2Z09)	BP210-R009
	N2Z09	BN200-L058
L058		
- LH R-W 1-2-3-4/HAR BIT REAR 0		
	N2Z09	BN200-L058
	(P2Z09)	BP210-R009
	N2Y09	BN200-L057
L059		
- LH R-W 1-2-3-4/HAR BIT REAR 1		
	N2Y29	BN200-L059
	(P2Z29)	BP210-R010
	N2Z29	BN200-L060

LINE/SIGNAL	PIN	SHEET/LINE
L060		
- LH R-W 1-2-3-4/HAR BIT REAR 1		
	N2Z29	BN200-L060
	(P2Z29)	BP210-R010
	N2Y29	BN200-L059
L061		
- LH R-W 1-2-3-4/HAR BIT REAR 2		
	N2Y10	BN200-L061
	(P2Z10)	BP210-R011
	N2Z10	BN200-L062
L062		
- LH R-W 1-2-3-4/HAR BIT REAR 2		
	N2Z10	BN200-L062
	(P2Z10)	BP210-R011
	N2Y10	BN200-L061
L063		
- LH R-W 1-2-3-4/HAR BIT REAR 3		
	N2Y30	BN200-L063
	(P2Z30)	BP210-R012
	N2Z30	BN200-L064
L064		
- LH R-W 1-2-3-4/HAR BIT REAR 3		
	N2Z30	BN200-L064
	(P2Z30)	BP210-R012
	N2Y30	BN200-L063
L065		
- LH R-W 1-2-3-4/HAR BIT REAR 4		
	N2Y11	BN200-L065
	(P2Z11)	BP210-R013
	N2Z11	BN200-L066
L066		
- LH R-W 1-2-3-4/HAR BIT REAR 4		
	N2Z11	BN200-L066
	(P2Z11)	BP210-R013
	N2Y11	BN200-L065
L067		
- LH R-W 1-2-3-4/HAR BIT REAR 5		
	N2Y33	BN200-L067
	(P2Z33)	BP210-R014
	N2Z33	BN200-L068
L068		
- LH R-W 1-2-3-4/HAR BIT REAR 5		
	N2Z33	BN200-L068
	(P2Z33)	BP210-R014
	N2Y33	BN200-L067
L069		
- CONTINUED ON PAGE BN210		
	N2	BN200-L069
	(N2)	BN200-R066

LINE/SIGNAL	PIN	SHEET/LINE
R003		
+ A1 CDP 0 TAG IN BIT 0		
	(N2M10)	BN200-R003
	(H2M10)	BH200-R003
	(K2M10)	BK200-R003
	(Q2M10)	BQ200-R003
1A-A1	U2G03	CU200-L009
	B5D12	
1A-A1	*X1D06*	
R004		
+ A1 CDP 0 TAG IN BIT 1		
	(N2P10)	BN200-R004
	(H2P10)	BH200-R004
	(K2P10)	BK200-R004
	(Q2P10)	BQ200-R004
1A-A1	U2B08	CU200-L010
	B5B12	
1A-A1	*X1D08*	
R005		
+ A1 PORT 0 CHECK 1		
	(N2N13)	BN200-R005
	(H2N13)	BH200-R005
	(K2N13)	BK200-R005
	(Q2N13)	BQ200-R005
1A-A1	U2B09	CU200-L005
	B5D13	
1A-A1	*X1E06*	
R006		
+ A1 DEVICE DRIVER ACTIVE 0		
	(N2P13)	BN200-R006
	(H2P13)	BH200-R006
	(K2P13)	BK200-R006
	(Q2P13)	BQ200-R006
1A-A1	U2U02	CU200-L017
	B5B11	
1A-A1	*X1C08*	
R007		
+ A1 CDP 0 BIDI DATA 0		
	(N2P06)	BN200-R007
	(H2P06)	BH200-R007
	(K2P06)	BK200-R007
	(Q2P06)	BQ200-R007
1A-A1	(U2J13)	CU200-R003
	B5B02	
	V4B02	
1A-A1	*V1D08*	
R008		
+ A1 CDP 0 BIDI DATA 1		
	(N2N09)	BN200-R008
	(H2N09)	BH200-R008
	(K2N09)	BK200-R008
	(Q2N09)	BQ200-R008
1A-A1	(U2G12)	CU200-R004
	B5D04	
	V4B03	
1A-A1	*W1A06*	

LINE/SIGNAL	PIN	SHEET/LINE
R009		
+ A1 CDP 0 BIDI DATA 2		
	(N2G05)	BN200-R009
	(H2G05)	BH200-R009
	(K2G05)	BK200-R009
	(Q2G05)	BQ200-R009
1A-A1	(U2J11)	CU200-R005
	B5D03	
	V4B04	
1A-A1	*V1E06*	
R010		
+ A1 CDP 0 BIDI DATA 3		
	(N2N12)	BN200-R010
	(H2N12)	BH200-R010
	(K2N12)	BK200-R010
	(Q2N12)	BQ200-R010
1A-A1	(U2J10)	CU200-R006
	B5B03	
	V4B05	
1A-A1	*V1E08*	
R011		
+ A1 CDP 0 BIDI DATA 4		
	(N2M12)	BN200-R011
	(H2M12)	BH200-R011
	(K2M12)	BK200-R011
	(Q2M12)	BQ200-R011
1A-A1	(U2P04)	CU200-R007
	B5D05	
	V4B07	
1A-A1	*W1B06*	
R012		
+ A1 CDP 0 BIDI DATA 5		
	(N2G07)	BN200-R012
	(H2G07)	BH200-R012
	(K2G07)	BK200-R012
	(Q2G07)	BQ200-R012
1A-A1	(U2G10)	CU200-R008
	B5B05	
	V4B08	
1A-A1	*W1B08*	
R013		
+ A1 CDP 0 BIDI DATA 6		
	(N2C12)	BN200-R013
	(H2C12)	BH200-R013
	(K2C12)	BK200-R013
	(Q2C12)	BQ200-R013
1A-A1	(U2J09)	CU200-R009
	B5D06	
	V4B09	
1A-A1	*W1C06*	
R014		
+ A1 CDP 0 BIDI DATA 7		
	(N2B12)	BN200-R014
	(H2B12)	BH200-R014
	(K2B12)	BK200-R014
	(Q2B12)	BQ200-R014
1A-A1	(U2G08)	CU200-R010
	B5B06	
	V4B10	
1A-A1	*W1C08*	

LINE/SIGNAL	PIN	SHEET/LINE
R015		
+ A1 CDP 0 BIDI DATA P		
	(N2J13)	BN200-R015
	(H2J13)	BH200-R015
	(K2J13)	BK200-R015
	(Q2J13)	BQ200-R015
1A-A1	(U2S03)	CU200-R011
	B5B08	
	V4B12	
1A-A1	*W1E08*	
R016		
+ A2 CDP 0 TAG IN BIT 0		
	(N2J07)	BN200-R016
	(H2J07)	BH200-R016
	(K2J07)	BK200-R016
	(Q2J07)	BQ200-R016
1A-A1	D2G03	CD200-L009
	W5D12	
1A-A1	*E1E06*	
R017		
+ A2 CDP 0 TAG IN BIT 1		
	(N2H07)	BN200-R017
	(H2H07)	BH200-R017
	(K2H07)	BK200-R017
	(Q2H07)	BQ200-R017
1A-A1	D2B08	CD200-L010
	W5B12	
1A-A1	*E1E08*	
R018		
+ A2 PORT 0 CHECK 1		
	(N2J09)	BN200-R018
	(H2J09)	BH200-R018
	(K2J09)	BK200-R018
	(Q2J09)	BQ200-R018
1A-A1	D2B09	CD200-L005
	W5D13	
1A-A1	*F1A06*	
R019		
+ A2 DEVICE DRIVER ACTIVE 0		
	(N2H09)	BN200-R019
	(H2H09)	BH200-R019
	(K2H09)	BK200-R019
	(Q2H09)	BQ200-R019
1A-A1	D2U02	CD200-L017
	W5B11	
1A-A1	*E1D08*	
R020		
+ A2 CDP 0 BIDI DATA 0		
	(N2B13)	BN200-R020
	(H2B13)	BH200-R020
	(K2B13)	BK200-R020
	(Q2B13)	BQ200-R020
1A-A1	(D2J13)	CD200-R003
	C4B02	
	W5B02	
1A-A1	*C1E08*	

LINE/SIGNAL	PIN	SHEET/LINE
R021		
+ A2 CDP 0 BIDI DATA 1		
	(N2H13)	BN200-R021
	(H2H13)	BH200-R021
	(K2H13)	BK200-R021
	(Q2H13)	BQ200-R021
1A-A1	(D2G12)	CD200-R004
	C4B03	
	W5D04	
1A-A1	*D1B06*	
R022		
+ A2 CDP 0 BIDI DATA 2		
	(N2H11)	BN200-R022
	(H2H11)	BH200-R022
	(K2H11)	BK200-R022
	(Q2H11)	BQ200-R022
1A-A1	(D2J11)	CD200-R005
	C4B04	
	W5D03	
1A-A1	*D1A06*	
R023		
+ A2 CDP 0 BIDI DATA 3		
	(N2D09)	BN200-R023
	(H2D09)	BH200-R023
	(K2D09)	BK200-R023
	(Q2D09)	BQ200-R023
1A-A1	(D2J10)	CD200-R006
	C4B05	
	W5B03	
1A-A1	*D1A08*	
R024		
+ A2 CDP 0 BIDI DATA 4		
	(N2J10)	BN200-R024
	(H2J10)	BH200-R024
	(K2J10)	BK200-R024
	(Q2J10)	BQ200-R024
1A-A1	(D2P04)	CD200-R007
	C4B07	
	W5D05	
1A-A1	*D1C06*	
R025		
+ A2 CDP 0 BIDI DATA 5		
	(N2D10)	BN200-R025
	(H2D10)	BH200-R025
	(K2D10)	BK200-R025
	(Q2D10)	BQ200-R025
1A-A1	(D2G10)	CD200-R008
	C4B08	
	W5B05	
1A-A1	*D1C08*	
R026		
+ A2 CDP 0 BIDI DATA 6		
	(N2D11)	BN200-R026
	(H2D11)	BH200-R026
	(K2D11)	BK200-R026
	(Q2D11)	BQ200-R026
1A-A1	(D2J09)	CD200-R009
	C4B09	
	W5D06	
1A-A1	*D1D06*	

LH PORT/POWER CONTROL XRL BN200

LINE/SIGNAL	PIN	SHEET/LINE
R027		
+ A2 CDP 0 BIDI DATA 7		
	(N2C11)	BN200-R027
	(H2C11)	BH200-R027
	(K2C11)	BK200-R027
	(Q2C11)	BQ200-R027
1A-A1	(D2G08)	CD200-R010
	C4B10	
	W5B06	
1A-A1	*D1D08*	
R028		
+ A2 CDP 0 BIDI DATA P		
	(N2B05)	BN200-R028
	(H2B05)	BH200-R028
	(K2B05)	BK200-R028
	(Q2B05)	BQ200-R028
1A-A1	(D2S03)	CD200-R011
	C4B12	
	W5B08	
1A-A1	*E1A08*	
R029		
+ LH GATE DIF LOW REG REAR		
	(N2C05)	BN200-R029
	M2C07	BM200-L053
R030		
+ LH GATE TARGET REG REAR		
	(N2D07)	BN200-R030
	M2C09	BM200-L052
R031		
+ LH GATE CHK POINT REG REAR		
	(N2B08)	BN200-R031
	M2N03	BM200-L046
R032		
+ LH CHECK 2 REAR		
	(N2J06)	BN200-R032
	P2P09	BP200-L067
R033		
- LH DEV SELECTED REAR		
	(N2N04)	BN200-R033
	M2T10	BM200-L013
	P2P04	BP200-L060
	Q2M04	BQ200-L017
R034		
+ LH COMMAND REAR		
	(N2T06)	BN200-R034
	M2T08	BM200-L012
R035		
- LH DEVICE CHECK 2 RESET REAR		
	(N2J11)	BN200-R035
	M2T06	BM200-L016
	P2N04	BP200-L059
R036		
+ LH PARM TRANSFER REAR		
	(N2N08)	BN200-R036
	M2T09	BM200-L014

LINE/SIGNAL	PIN	SHEET/LINE
R037		
+ LH BUSY W/O PIP REAR		
	(N2G12)	BN200-R037
	M2N05	BM200-L019
R038		
+ LH SEEK INCOMPLETE REAR		
	(N2H10)	BN200-R038
	M2G08	BM200-L045
R039		
- LH PORT FENCED REAR		
	(N2G10)	BN200-R039
	M2M05	BM200-L020
R040		
+ LH MOTOR CONTROL REAR		
	(N2B02)	BN200-R040
	M2P10	BM200-L023
R041		
- LH DRIVE PWR SWITCH OFF REAR		
	(N2M03)	BN200-R041
	(N2M03)	BN210-R023
	M2P04	BM200-L021
R042		
- RELEASE BRAKE REAR		
	(N2P09)	BN200-R042
	(Q2P09)	BQ200-R042
YA600	*-L092*	
K417@	*----B*	
	V5D13	
R043		
- DRIVE MOTOR RUN REAR		
	(N2N07)	BN200-R043
	(Q2N07)	BQ200-R043
YA600	*-L094*	
K419@	*----X*	
	V5D12	
R044		
- PICK LOGIC POWER CONT REAR		
	(N2S10)	BN200-R044
	(Q2S10)	BQ200-R044
YA600	*-L058*	
K420@	*----B*	
	V5D04	
R045		
+ LH CDP DATA BUS PWR BIT REAR 0		
	(N2C02)	BN200-R045
	M2S02	BM200-L003
	P2G05	BP200-L040
R046		
+ LH CDP DATA BUS PWR BIT REAR 1		
	(N2C07)	BN200-R046
	M2P13	BM200-L004
	P2G04	BP200-L041

LINE/SIGNAL	PIN	SHEET/LINE
R047		
+ LH CDP DATA BUS PWR BIT REAR 2		
	(N2C10)	BN200-R047
	M2P11	BM200-L005
	P2G03	BP200-L042
R048		
+ LH CDP DATA BUS PWR BIT REAR 3		
	(N2B09)	BN200-R048
	M2D02	BM200-L006
	P2H05	BP200-L043
R049		
+ LH CDP DATA BUS PWR BIT REAR 4		
	(N2B10)	BN200-R049
	M2S10	BM200-L007
	P2H03	BP200-L044
R050		
+ LH CDP DATA BUS PWR BIT REAR 5		
	(N2C09)	BN200-R050
	M2T07	BM200-L008
	P2J05	BP200-L045
R051		
+ LH CDP DATA BUS PWR BIT REAR 6		
	(N2B04)	BN200-R051
	M2T11	BM200-L009
	P2J04	BP200-L046
R052		
+ LH CDP DATA BUS PWR BIT REAR 7		
	(N2C08)	BN200-R052
	M2N13	BM200-L010
	P2H06	BP200-L047
R053		
+ LH CDP DATA BUS PWR BIT REAR P		
	(N2C04)	BN200-R053
	M2S09	BM200-L011
	P2H04	BP200-L048
R054		
+ LH MOTOR CONT PICKED OUT REAR		
	(N2T11)	BN200-R054
	N2D12	BN200-L049
R055		
+ LH BRAKE CONT PICKED OUT REAR		
	(N2T12)	BN200-R055
	N2C06	BN200-L050
R056		
- LH POWER CLOCK 2 REAR		
	(N2J02)	BN200-R056
	Q2B07	BQ200-L018
R057		
- LH + 5V PWR ON RESET OUT REAR		
	(N2M13)	BN200-R057
	N2M09	BN200-L051

LINE/SIGNAL	PIN	SHEET/LINE
R058		
- LH RESET CLOCK RING REAR		
	(N2P11)	BN200-R058
	N2P12	BN200-L052
	Q2N11	BQ200-L055
R059		
- LH POWER ON RESET OUT REAR		
	(N2P07)	BN200-R059
	N2T10	BN200-L042
R060		
- POWER ON RESET REAR		
	(N2M05)	BN200-R060
	(Q2M05)	BQ200-R060
	P2U06	BP200-L012
R061		
- RESET CLOCK RING REAR		
	(N2P04)	BN200-R061
	(Q2P04)	BQ200-R061
	P2S05	BP200-L037
R062		
- LH POWER ON RESET POWER REAR		
	(N2N06)	BN200-R062
	M2P06	BM200-L015
	P2N11	BP200-L039
	R2S04	BR200-L041
	T2S07	BT200-L039
1C-C2	B2AB2	HC3A1-L070
	X2D02	
R063		
- DRIVE CONT RELAY REAR		
	(N2U12)	BN200-R063
	(Q2U12)	BQ200-R063
YA200	*-L008*	
J749B	*----3*	
	V5D05	
R064		
+ LH R-W MODE SEL REAR		
	(N2Y02)	BN200-R064
	(N2Z02)	BN200-R065
	P2Z02	BP210-L005
R065		
+ LH R-W MODE SEL REAR		
	(N2Z02)	BN200-R065
	(N2Y02)	BN200-R064
	P2Z02	BP210-L005
R066		
- CONTINUED ON PAGE BN210		
	(N2)	BN200-R066
	N2	BN200-L069

003	- CONTINUED FROM PAGE BN200 ----	----
004	- LH R-W 1-2-3-4/HAR BIT REAR 6	Y27
005	- LH R-W 1-2-3-4/HAR BIT REAR 6	Z27
006	- LH R-W 1-2-3-4/HAR BIT REAR 7	Y32
007	- LH R-W 1-2-3-4/HAR BIT REAR 7	Z32
008	- LH R-W 1-2-3-4/HAR BIT REAR P	Y13
009	- LH R-W 1-2-3-4/HAR BIT REAR P	Z13
010	- RH PIP SYNC REAR ----------	Y24
011	- RH PIP SYNC REAR ----------	Z24
012	- LH PIP SYNC REAR ----------	Y05
013	- LH PIP SYNC REAR ----------	Z05
014	- LH INDEX REAR ----------	Y25
015	- LH INDEX REAR ----------	Z25
016	- LH SEGMENT BOUNDARY REAR -----	Y06
017	- LH SEGMENT BOUNDARY REAR -----	Z06
018	- LH PADDING MODE REAR --------	Y26
019	- LH PADDING MODE REAR --------	Z26
020	- LH CHK POINT/TAR/DIF REAR 0 --	X06
021	- LH CHK POINT/TAR/DIF REAR 1 --	X07
022	- LH CHK POINT/TAR/DIF REAR 2 --	X26
023	- LH CHK POINT/TAR/DIF REAR 3 --	X13
024	- LH CHK POINT/TAR/DIF REAR 4 --	X02
025	- LH CHK POINT/TAR/DIF REAR 5 --	X25
026	- LH CHK POINT/TAR/DIF REAR 6 --	X05
027	- LH CHK POINT/TAR/DIF REAR 7 --	X11
028	- LH CHK POINT/TAR/DIF REAR P --	X22
029	+ LH SEQ WRITE BUS BIT REAR 0 --	X30
030	+ LH SEQ WRITE BUS BIT REAR 1 --	X28
031	+ LH SEQ WRITE BUS BIT REAR 2 --	X32
032	+ LH SEQ WRITE BUS BIT REAR 3 --	X24
033	+ LH SEQ WRITE BUS BIT REAR 4 --	X33
034	+ LH SEQ WRITE BUS BIT REAR 5 --	X03
035	+ LH SEQ WRITE BUS BIT REAR 6 --	X10
036	+ LH SEQ WRITE BUS BIT REAR 7 --	X09
037	+ LH SEQ WRITE BUS BIT REAR P --	X29
038	+ RH LOAD POWER CTRL REG REAR --	M08
039	+ RH SEQ WRITE BUS BIT REAR 2 --	J04
040	+ 5V LH SERVO, PORT, & SEQ REAR	S08
041	+ 5V R-W CTRL, PT2 REAR --------	G13
042	+ 5/24V LH PORT REAR ----------	S04
043	+ LH EVERGREEN ID BIT REAR -----	H08
044	- LH WRITE INHIBIT REAR --------	G04
045	- LH SPINDLE ID ON BOARD REAR --	D05

LH PORT/POWER CONTROL CRD BN210

----	- CONTINUED FROM PAGE BN200 ----	003
Y22	+ LH GATE R-W STATUS 1 REAR ---	004
Z22	+ LH GATE R-W STATUS 1 REAR ---	005
Y03	+ LH GATE R-W STATUS 2 REAR ---	006
Z03	+ LH GATE R-W STATUS 2 REAR ---	007
Y28	+ LH GATE R-W STATUS 3 REAR ---	008
Z28	+ LH GATE R-W STATUS 3 REAR ---	009
Y07	+ LH GATE R-W STATUS 4 REAR ---	010
Z07	+ LH GATE R-W STATUS 4 REAR ---	011
Y04	+ LH GATE HEAD ADDR REG REAR --	012
Z04	+ LH GATE HEAD ADDR REG REAR --	013
Y12	+ LH SEL A1/A2 REAR ----------	014
Z12	+ LH SEL A1/A2 REAR ----------	015
Y23	- RESET CHECK 1 REAR ----------	016
Z23	- RESET CHECK 1 REAR ----------	017
W23	- LH READY LED REAR ----------	018
W03	+ LH READY LED TERM REAR -------	019
W12	+ 5V LH COMMON LED REAR --------	020
W06	+ 5/24V LH LED REAR ----------	021
W09	+ 5V LH LED REAR ----------	022
M03	- LH DRIVE PWR SWITCH OFF REAR -	023
H04	+ LH SENSE SOFT START LT REAR --	024
M07	- LH 5V COMMON POR REAR --------	025
U13	+ READY LED DEVICE 2 ----------	026
B03	+ LH PARM TRANSFER EN REAR -----	027
W11	+ LH DRIVE OWE INTERRUPT REAR --	028

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CONTINUED FROM PAGE BN200		
	N2	BN210-L003
	(N2)	BN210-R003
L004		
- LH R-W 1-2-3-4/HAR BIT REAR 6		
	N2Y27	BN210-L004
	(P2Z27)	BP210-R015
	N2Z27	BN210-L005
L005		
- LH R-W 1-2-3-4/HAR BIT REAR 6		
	N2Z27	BN210-L005
	(P2Z27)	BP210-R015
	N2Y27	BN210-L004
L006		
- LH R-W 1-2-3-4/HAR BIT REAR 7		
	N2Y32	BN210-L006
	(P2Z32)	BP210-R016
	N2Z32	BN210-L007
L007		
- LH R-W 1-2-3-4/HAR BIT REAR 7		
	N2Z32	BN210-L007
	(P2Z32)	BP210-R016
	N2Y32	BN210-L006
L008		
- LH R-W 1-2-3-4/HAR BIT REAR P		
	N2Y13	BN210-L008
	(P2Z13)	BP210-R017
	N2Z13	BN210-L009
L009		
- LH R-W 1-2-3-4/HAR BIT REAR P		
	N2Z13	BN210-L009
	(P2Z13)	BP210-R017
	N2Y13	BN210-L008
L010		
- RH PIP SYNC REAR		
	N2Y24	BN210-L010
	(P2Y05)	BP210-R004
	(P2Z24)	BP210-R005
	N2Z24	BN210-L011
	Q2Y05	BQ210-L012
	Q2Z05	BQ210-L013
L011		
- RH PIP SYNC REAR		
	N2Z24	BN210-L011
	(P2Y05)	BP210-R004
	(P2Z24)	BP210-R005
	N2Y24	BN210-L010
	Q2Y05	BQ210-L012
	Q2Z05	BQ210-L013
L012		
- LH PIP SYNC REAR		
	N2Y05	BN210-L012
	(P2Y24)	BP210-R018
	(P2Z05)	BP210-R019
	N2Z05	BN210-L013
	Q2Y24	BQ210-L010
	Q2Z24	BQ210-L011

LINE/SIGNAL	PIN	SHEET/LINE
L013		
- LH PIP SYNC REAR		
	N2Z05	BN210-L013
	(P2Y24)	BP210-R018
	(P2Z05)	BP210-R019
	N2Y05	BN210-L012
	Q2Y24	BQ210-L010
	Q2Z24	BQ210-L011
L014		
- LH INDEX REAR		
	N2Y25	BN210-L014
	(P2Z25)	BP210-R022
	N2Z25	BN210-L015
L015		
- LH INDEX REAR		
	N2Z25	BN210-L015
	(P2Z25)	BP210-R022
	N2Y25	BN210-L014
L016		
- LH SEGMENT BOUNDARY REAR		
	N2Y06	BN210-L016
	(P2Z06)	BP210-R021
	N2Z06	BN210-L017
L017		
- LH SEGMENT BOUNDARY REAR		
	N2Z06	BN210-L017
	(P2Z06)	BP210-R021
	N2Y06	BN210-L016
L018		
- LH PADDING MODE REAR		
	N2Y26	BN210-L018
	(P2Z26)	BP210-R020
	N2Z26	BN210-L019
L019		
- LH PADDING MODE REAR		
	N2Z26	BN210-L019
	(P2Z26)	BP210-R020
	N2Y26	BN210-L018
L020		
- LH CHK POINT/TAR/DIF REAR 0		
	N2X06	BN210-L020
	(M2D05)	BM200-R012
	(M2X06)	BM210-R013
L021		
- LH CHK POINT/TAR/DIF REAR 1		
	N2X07	BN210-L021
	(M2G13)	BM200-R013
	(M2X07)	BM210-R014
L022		
- LH CHK POINT/TAR/DIF REAR 2		
	N2X26	BN210-L022
	(M2B05)	BM200-R014
	(M2X26)	BM210-R015

LINE/SIGNAL	PIN	SHEET/LINE
L023		
- LH CHK POINT/TAR/DIF REAR 3		
	N2X13	BN210-L023
	(M2B04)	BM200-R015
	(M2X13)	BM210-R016
L024		
- LH CHK POINT/TAR/DIF REAR 4		
	N2X02	BN210-L024
	(M2B07)	BM200-R016
	(M2X02)	BM210-R017
L025		
- LH CHK POINT/TAR/DIF REAR 5		
	N2X25	BN210-L025
	(M2H12)	BM200-R017
	(M2X25)	BM210-R018
L026		
- LH CHK POINT/TAR/DIF REAR 6		
	N2X05	BN210-L026
	(M2J12)	BM200-R018
	(M2X05)	BM210-R019
L027		
- LH CHK POINT/TAR/DIF REAR 7		
	N2X11	BN210-L027
	(M2H13)	BM200-R019
	(M2X11)	BM210-R020
L028		
- LH CHK POINT/TAR/DIF REAR P		
	N2X22	BN210-L028
	(M2G12)	BM200-R020
	(M2X22)	BM210-R021
L029		
+ LH SEQ WRITE BUS BIT REAR 0		
	N2X30	BN210-L029
	(M2U02)	BM200-R003
	(M2X30)	BM210-R004
L030		
+ LH SEQ WRITE BUS BIT REAR 1		
	N2X28	BN210-L030
	(M2U11)	BM200-R004
	(M2X28)	BM210-R005
L031		
+ LH SEQ WRITE BUS BIT REAR 2		
	N2X32	BN210-L031
	(M2T02)	BM200-R005
	(M2X32)	BM210-R006
	Q2J05	BQ210-L039
L032		
+ LH SEQ WRITE BUS BIT REAR 3		
	N2X24	BN210-L032
	(M2U12)	BM200-R006
	(M2X24)	BM210-R007
L033		
+ LH SEQ WRITE BUS BIT REAR 4		
	N2X33	BN210-L033
	(M2T03)	BM200-R007
	(M2X33)	BM210-R008

LINE/SIGNAL	PIN	SHEET/LINE
L034		
+ LH SEQ WRITE BUS BIT REAR 5		
	N2X03	BN210-L034
	(M2S05)	BM200-R008
	(M2X03)	BM210-R009
L035		
+ LH SEQ WRITE BUS BIT REAR 6		
	N2X10	BN210-L035
	(M2S03)	BM200-R009
	(M2X10)	BM210-R010
L036		
+ LH SEQ WRITE BUS BIT REAR 7		
	N2X09	BN210-L036
	(M2U05)	BM200-R010
	(M2X09)	BM210-R011
L037		
+ LH SEQ WRITE BUS BIT REAR P		
	N2X29	BN210-L037
	(M2U07)	BM200-R011
	(M2X29)	BM210-R012
L038		
+ RH LOAD POWER CTRL REG REAR		
	N2M08	BN210-L038
	(R2N10)	BR200-R022
	Q2D06	BQ200-L024
L039		
+ RH SEQ WRITE BUS BIT REAR 2		
	N2J04	BN210-L039
	(R2T02)	BR200-R005
	(R2X32)	BR210-R006
	Q2X32	BQ210-L031
L040		
+ 5V LH SERVO, PORT, & SEQ REAR		
	N2S08	BN210-L040
	R6D02	
YA420	*-R006*	
	S6A02	
YA420	*-R007*	
J681-	*PIN01*	
	R6E02	
YA420	*-R019*	
	S6B02	
YA420	*-R018*	
J681-	*PIN09*	
L041		
+ 5V R-W CTRL, PT2 REAR		
	N2G13	BN210-L041
	Q2G13	BQ210-L041
	Q6E02	
YA420	*-R009*	
J681-	*PIN03*	
	R6A02	
YA420	*-R083*	
J682-	*PIN03*	
	R6B02	
YA420	*-R021*	
J681-	*PIN11*	
	R6C02	
YA420	*-R095*	
J682-	*PIN11*	

LINE/SIGNAL	PIN	SHEET/LINE
L042		
+ 5/24V LH PORT REAR		
	N2S04	BN210-L042
	N6B02	
	S6E02	
YA420	*-R023*	
J681-	*PIN13*	
L043		
+ LH EVERGREEN ID BIT REAR		
	N2H08	BN210-L043
	(T2U13)	BT200-R044
L044		
- LH WRITE INHIBIT REAR		
	N2G04	BN210-L044
	(T2B10)	BT200-R006
	(T2G10)	BT200-R007
	M2G04	BM200-L044
	V2B10	
L045		
- LH SPINDLE ID ON BOARD REAR		
	N2D05	BN210-L045
R003		
- CONTINUED FROM PAGE BN200		
	(N2)	BN210-R003
	N2	BN210-L003
R004		
+ LH GATE R-W STATUS 1 REAR		
	(N2Y22)	BN210-R004
	(N2Z22)	BN210-R005
	P2Z22	BP210-L006
R005		
+ LH GATE R-W STATUS 1 REAR		
	(N2Z22)	BN210-R005
	(N2Y22)	BN210-R004
	P2Z22	BP210-L006
R006		
+ LH GATE R-W STATUS 2 REAR		
	(N2Y03)	BN210-R006
	(N2Z03)	BN210-R007
	P2Z03	BP210-L007
R007		
+ LH GATE R-W STATUS 2 REAR		
	(N2Z03)	BN210-R007
	(N2Y03)	BN210-R006
	P2Z03	BP210-L007
R008		
+ LH GATE R-W STATUS 3 REAR		
	(N2Y28)	BN210-R008
	(N2Z28)	BN210-R009
	P2Z28	BP210-L008
R009		
+ LH GATE R-W STATUS 3 REAR		
	(N2Z28)	BN210-R009
	(N2Y28)	BN210-R008
	P2Z28	BP210-L008

LINE/SIGNAL	PIN	SHEET/LINE
R010		
+ LH GATE R-W STATUS 4 REAR		
	(N2Y07)	BN210-R010
	(N2Z07)	BN210-R011
	P2Z07	BP210-L009
R011		
+ LH GATE R-W STATUS 4 REAR		
	(N2Z07)	BN210-R011
	(N2Y07)	BN210-R010
	P2Z07	BP210-L009
R012		
+ LH GATE HEAD ADDR REG REAR		
	(N2Y04)	BN210-R012
	(N2Z04)	BN210-R013
	P2Z04	BP210-L010
R013		
+ LH GATE HEAD ADDR REG REAR		
	(N2Z04)	BN210-R013
	(N2Y04)	BN210-R012
	P2Z04	BP210-L010
R014		
+ LH SEL A1/A2 REAR		
	(N2Y12)	BN210-R014
	(N2Z12)	BN210-R015
	P2Z12	BP210-L011
R015		
+ LH SEL A1/A2 REAR		
	(N2Z12)	BN210-R015
	(N2Y12)	BN210-R014
	P2Z12	BP210-L011
R016		
- RESET CHECK 1 REAR		
	(N2Y23)	BN210-R016
	(N2Z23)	BN210-R017
	(Q2Y23)	BQ210-R016
	(Q2Z23)	BQ210-R017
	P2Y23	BP210-L019
	P2Z23	BP210-L020
R017		
- RESET CHECK 1 REAR		
	(N2Z23)	BN210-R017
	(N2Y23)	BN210-R016
	(Q2Y23)	BQ210-R016
	(Q2Z23)	BQ210-R017
	P2Y23	BP210-L019
	P2Z23	BP210-L020
R018		
- LH READY LED REAR		
	(N2W23)	BN210-R018
R019		
+ LH READY LED TERM REAR		
	(N2W03)	BN210-R019
R020		
+ 5V LH COMMON LED REAR		
	(N2W12)	BN210-R020

LH PORT/POWER CONTROL XRL BN210

LINE/SIGNAL	PIN	SHEET/LINE
R021		
+ 5/24V LH LED REAR		
	(N2W06)	BN210-R021
R022		
+ 5V LH LED REAR		
	(N2W09)	BN210-R022
R023		
- LH DRIVE PWR SWITCH OFF REAR		
	(N2M03)	BN210-R023
	(N2M03)	BN200-R041
	M2P04	BM200-L021
R024		
+ LH SENSE SOFT START LT REAR		
	(N2H04)	BN210-R024
	M2N11	BM200-L055
R025		
- LH 5V COMION POR REAR		
	(N2M07)	BN210-R025
	Q2N05	BQ200-L041
R026		
+ READY LED DEVICE 2		
	(N2U13)	BN210-R026
YA120	*-L008*	
	A1A11	
R027		
+ LH PARM TRANSFER EN REAR		
	(N2B03)	BN210-R027
	M2S08	BM200-L060
R028		
+ LH DRIVE OWE INTERRUPT REAR		
	(N2W11)	BN210-R028

003 + RH CDP DATA BUS PWR BIT REAR 0 N05
004 + RH CDP DATA BUS PWR BIT REAR 1 M05
005 + RH CDP DATA BUS PWR BIT REAR 2 M04
006 + RH CDP DATA BUS PWR BIT REAR 3 N03
007 + RH CDP DATA BUS PWR BIT REAR 4 M03
008 + RH CDP DATA BUS PWR BIT REAR 5 M02
009 + RH CDP DATA BUS PWR BIT REAR 6 H13
010 + RH CDP DATA BUS PWR BIT REAR 7 G13
011 + RH CDP DATA BUS PWR BIT REAR P G12
012 - POWER ON RESET REAR ---------- U06
013 - RH DEVICE CHECK 2 RESET REAR G09
014 - RH DEGATE CHECK LATCH REAR -- H11
015 - RH DEV SELECTED REAR --------- S10
016 + RH SET HEAD ARM ADR REG REAR - G10
017 + RH INDEX 1 REAR ------------- G08
018 + RH INDEX 2 REAR ------------- G07
019 + RH SEGMENT BOUNDARY REAR ----- H10
020 - RH DRIVE STATUS BIT 7 REAR -- J10
021 + RH FLAT CABLE CHK RETURN REAR P02
022 - RH DRIVE STATUS BIT 0 REAR -- N02
023 - RH DRIVE STATUS BIT 1 REAR -- J13
024 - RH DRIVE STATUS BIT 2 REAR -- J12
025 - RH DRIVE STATUS BIT 3 REAR -- H12
026 - RH DRIVE STATUS BIT 4 REAR -- J11
027 - RH DRIVE STATUS BIT 5 REAR -- J09
028 + RH SVO CLOCK CABLE ERR REAR - G02
029 - RH DRIVE STATUS BIT P REAR -- H08
030 - RH COARSE TRACK REAR -------- B12
031 - RH WRITE READY REAR --------- C11
032 + RH CHECK 2 REAR ------------- H09
033 + RH RPS CLOCK T-0 (L1) REAR -- H07
034 - RH DRIVE STATUS BIT 6 REAR -- J07
035 + LH SVO CLOCK CABLE ERR REAR -- N07
036 + LH RPS CLOCK T-0 (L1) REAR --- N08
037 - RESET CLOCK RING REAR ------- S05
038 - RH POWER ON RESET POWER REAR B10
039 - LH POWER ON RESET POWER REAR N11
040 + LH CDP DATA BUS PWR BIT REAR 0 G05
041 + LH CDP DATA BUS PWR BIT REAR 1 G04
042 + LH CDP DATA BUS PWR BIT REAR 2 G03
043 + LH CDP DATA BUS PWR BIT REAR 3 H05
044 + LH CDP DATA BUS PWR BIT REAR 4 H03
045 + LH CDP DATA BUS PWR BIT REAR 5 J05
046 + LH CDP DATA BUS PWR BIT REAR 6 J04
047 + LH CDP DATA BUS PWR BIT REAR 7 H06
048 + LH CDP DATA BUS PWR BIT REAR P H04
049 - LH DRIVE STATUS BIT 0 REAR --- J02
050 - LH DRIVE STATUS BIT 1 REAR --- H02
051 - LH DRIVE STATUS BIT 2 REAR --- D13
052 - LH DRIVE STATUS BIT 3 REAR --- C13
053 - LH DRIVE STATUS BIT 4 REAR --- D12
054 - LH DRIVE STATUS BIT 5 REAR --- C12
055 - LH DRIVE STATUS BIT 6 REAR --- B13
056 - LH DRIVE STATUS BIT 7 REAR --- D11
057 - LH DRIVE STATUS BIT P REAR --- D10
058 + LH FLAT CABLE CHK RETURN REAR C10
059 - LH DEVICE CHECK 2 RESET REAR N04
060 - LH DEV SELECTED REAR -------- P04
061 + LH SET HEAD ARM ADR REG REAR P05
062 + LH INDEX 1 REAR ------------- N06
063 + LH INDEX 2 REAR ------------- P06
064 + LH SEGMENT BOUNDARY REAR ----- P07
065 - LH COARSE TRACK REAR -------- D09
066 - LH WRITE READY REAR --------- C09
067 + LH CHECK 2 REAR ------------- P09
068 - CONTINUED ON PAGE BP210 ------ ----

READ/WRITE CONTROL CARD

:h3f intoduction

The R/W control card's primary function is to provide the using system a means to communicate with the read/write recording channel within the drive. With information available from within the drive, controller instructions, and subsystem commands received by the CDP, the read/write control logic is able to instruct the read/write channel board to perform a read or write operation.

This card interconnects with the Port and Power control card, the device sequencer/servo/RPS card, the R/W channel board, and the servo analog card.

A total of two similar sets of R/W logic is packaged on one logic board to operate the four access mechanisms (which represent four device addresses) in each unit.

DESCRIPTION

The read/write card provides the following functions:

- Stores head address register (HAR) value
- Detects errors and stores them in the R/W status-2 and R/W status-3 registers
- Controls drive padding
- Responds to control of the R/W operation

The card is powered by +5 V.+10% and ground.

Both actuators on one drive receive control signals from one read/write control card.

This means the R/W control card should not be unplugged until the drive is powered off as it is a common card.

The R/W control card is a 4W x 3H card ELSI card with top-card connectors to both port and power control cards.

Mounted on it are 8 modules (one module is the 3380 port clock module, 3 P/Ns - read/write, read write regs and padding have two modules, one for each device(one serves the left side and the other serves the right side) and the read xmit module serves both sides. Also a 24 Mhz oscillator drives the clock module.

PRIMARY PARTS

The following functions are on the card:

- Head address register
- R/W Status 2 register
- R/W Status 3 register
- R/W drive padding controls

ERROR CHECKING

The following checks cause a R/W card check:

- Read/Write channel check
- Padding check
- Sequence check (combination of bits 2, 3, and 4 read sequence check, write sequence check, and control check)
- Servo cable check
- Write overrun check
- Read/write servo check
- HAR parity error
- Parity check R/W channel status lines on flat cables
- Cable check of flat cables to R/W channel (ensure they are plugged in)

B09 - RH PAD DATA SELECT REAR ------ 003
C08 - RH GATE SERVO PAD CLOCK REAR - 004
B08 + RH R-W ACTIVE REAR ---------- 005
B07 - RH SET R-W REAR ------------- 006
B05 - RH SET R-W SAFE REAR -------- 007
D07 + RH R-W CHECK REAR ----------- 008
C07 - RH READ TRANSMIT REAR ------- 009
D06 - RH HAR BIT 4 REAR ----------- 010
D05 - RH HAR BIT 5 REAR ----------- 011
D04 - RH HAR BIT 7 REAR ----------- 012
C06 - RH HAR BIT 6 REAR ----------- 013
C05 - RH HAR BIT P REAR ----------- 014
C04 + RH FLAT CABLE CHECK REAR ----- 015
T07 - RH WRITE GATE 2 REAR -------- 016
T09 - RH WRITE GATE 1 REAR -------- 017
M10 - RH MULTIPLEXER GATE REAR ---- 018
N10 - RH DEGATE CHECK LATCH REAR -- 019
T04 - RH SEL A1/ + SEL A2 REAR ---- 020
T05 - RH GATE SERVO A1 CLK ON REAR - 021
T08 - RH GATE SERVO A2 CLK ON REAR - 022
P10 - RH DRIVE CHECK INHIBIT REAR - 023
S09 - RH DRIVE CHECK RESET REAR --- 024
T10 + AB CLOCK REAR --------------- 025
U09 + CD CLOCK REAR --------------- 026
U07 + EF CLOCK REAR --------------- 027
T06 + GH CLOCK REAR --------------- 028
S07 + A CLOCK REAR ---------------- 029
U05 + B CLOCK REAR ---------------- 030
T03 + C CLOCK REAR ---------------- 031
S08 + D CLOCK REAR ---------------- 032
U10 + E CLOCK REAR ---------------- 033
U11 + F CLOCK REAR ---------------- 034
T11 + G CLOCK REAR ---------------- 035
U04 + H CLOCK REAR ---------------- 036
U02 - CLOCK CHECK HOLD REAR ------- 037
P11 - LH SET R-W SAFE REAR -------- 038
N12 - LH SET R-W REAR ------------- 039
P12 + LH R-W CHECK REAR ----------- 040
P13 + LH R-W ACTIVE REAR ---------- 041
M12 - LH DRIVE CHECK INHIBIT REAR - 042
M13 - LH DRIVE CHECK RESET REAR ---- 043
S02 - LH PAD DATA SELECT REAR ------ 044
S03 - LH GATE SERVO PAD CLOCK REAR - 045
B02 - LH HAR BIT 4 REAR ----------- 046
B03 - LH HAR BIT 5 REAR ----------- 047
B04 - LH HAR BIT 6 REAR ----------- 048
D02 - LH HAR BIT 7 REAR ----------- 049
C02 - LH HAR BIT P REAR ----------- 050
S12 - LH WRITE GATE 1 REAR -------- 051
S13 - LH WRITE GATE 2 REAR -------- 052
C03 - LH DEGATE CHECK LATCH REAR -- 053
N09 - LH MULTIPLEXER GATE REAR ---- 054
U12 - LH SEL A1/ + SEL A2 REAR ---- 055
U13 - LH GATE SERVO A1 CLK ON REAR - 056
T12 - LH GATE SERVO A2 CLK ON REAR - 057
N13 + LH FLAT CABLE CHECK REAR ----- 058
T02 - LH READ TRANSMIT REAR ------- 059
Y09 - RH R-W 1-2-3-4/HAR BIT REAR 0 060
Y29 - RH R-W 1-2-3-4/HAR BIT REAR 1 061
Y10 - RH R-W 1-2-3-4/HAR BIT REAR 2 062
Y30 - RH R-W 1-2-3-4/HAR BIT REAR 3 063
Y11 - RH R-W 1-2-3-4/HAR BIT REAR 4 064
Y33 - RH R-W 1-2-3-4/HAR BIT REAR 5 065
Y27 - RH R-W 1-2-3-4/HAR BIT REAR 6 066
Y32 - RH R-W 1-2-3-4/HAR BIT REAR 7 067
Y13 - RH R-W 1-2-3-4/HAR BIT REAR P 068
---- - CONTINUED ON PAGE BP210 ------ 069

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ RH CDP DATA BUS PWR BIT REAR 0		
	P2N05	BP200-L003
	(Q2C02)	BQ200-R045
	R2S02	BR200-L003
L004		
+ RH CDP DATA BUS PWR BIT REAR 1		
	P2M05	BP200-L004
	(Q2C07)	BQ200-R046
	R2P13	BR200-L004
L005		
+ RH CDP DATA BUS PWR BIT REAR 2		
	P2M04	BP200-L005
	(Q2C10)	BQ200-R047
	R2P11	BR200-L005
L006		
+ RH CDP DATA BUS PWR BIT REAR 3		
	P2N03	BP200-L006
	(Q2B09)	BQ200-R048
	R2D02	BR200-L006
L007		
+ RH CDP DATA BUS PWR BIT REAR 4		
	P2M03	BP200-L007
	(Q2B10)	BQ200-R049
	R2S10	BR200-L007
L008		
+ RH CDP DATA BUS PWR BIT REAR 5		
	P2M02	BP200-L008
	(Q2C09)	BQ200-R050
	R2T07	BR200-L008
L009		
+ RH CDP DATA BUS PWR BIT REAR 6		
	P2H13	BP200-L009
	(Q2B04)	BQ200-R051
	R2T11	BR200-L009
L010		
+ RH CDP DATA BUS PWR BIT REAR 7		
	P2G13	BP200-L010
	(Q2C08)	BQ200-R052
	R2N13	BR200-L010
L011		
+ RH CDP DATA BUS PWR BIT REAR P		
	P2G12	BP200-L011
	(Q2C04)	BQ200-R053
	R2S09	BR200-L011
L012		
- POWER ON RESET REAR		
	P2U06	BP200-L012
	(N2M05)	BN200-R060
	(Q2M05)	BQ200-R060
L013		
- RH DEVICE CHECK 2 RESET REAR		
	P2G09	BP200-L013
	(Q2J11)	BQ200-R035
	R2T06	BR200-L016
L014		
- RH DEGATE CHECK LATCH REAR		
	P2H11	BP200-L014
	(P2N10)	BP200-R019
L015		
- RH DEV SELECTED REAR		
	P2S10	BP200-L015
	(Q2N04)	BQ200-R033
	N2M04	BN200-L017
	R2T10	BR200-L013
L016		
+ RH SET HEAD ARM ADR REG REAR		
	P2G10	BP200-L016
	(R2N08)	BR210-R052
L017		
+ RH INDEX 1 REAR		
	P2G08	BP200-L017
	(R2G03)	BR200-R061
	X4B03	
	V3B05	
L018		
+ RH INDEX 2 REAR		
	P2G07	BP200-L018
	(R2C13)	BR200-R062
L019		
+ RH SEGMENT BOUNDARY REAR		
	P2H10	BP200-L019
	(R2D13)	BR200-R063
	X5D12	
L020		
- RH DRIVE STATUS BIT 7 REAR		
	P2J10	BP200-L020
1C-C3	(B2AA8)	HC4A1-R010
	X4D09	
L021		
+ RH FLAT CABLE CHK RETURN REAR		
	P2P02	BP200-L021
1C-C3	(B2BBB)	HC4A1-R014
	X5B13	
L022		
- RH DRIVE STATUS BIT 0 REAR		
	P2N02	BP200-L022
1C-C3	(B2ABB)	HC4A1-R003
	X4B13	
L023		
- RH DRIVE STATUS BIT 1 REAR		
	P2J13	BP200-L023
1C-C3	(B2BA9)	HC4A1-R004
	X5D10	
L024		
- RH DRIVE STATUS BIT 2 REAR		
	P2J12	BP200-L024
1C-C3	(B2BBA)	HC4A1-R005
	X5B12	
L025		
- RH DRIVE STATUS BIT 3 REAR		
	P2H12	BP200-L025
1C-C3	(B2BAC)	HC4A1-R006
	X5D13	
L026		
- RH DRIVE STATUS BIT 4 REAR		
	P2J11	BP200-L026
1C-C3	(B2BAA)	HC4A1-R007
	X5D11	
L027		
- RH DRIVE STATUS BIT 5 REAR		
	P2J09	BP200-L027
1C-C3	(B2AAA)	HC4A1-R008
	X4D11	
L028		
+ RH SVO CLOCK CABLE ERR REAR		
	P2G02	BP200-L028
	(U2B08)	BU200-R039
L029		
- RH DRIVE STATUS BIT P REAR		
	P2H08	BP200-L029
1C-C3	(B2ABA)	HC4A1-R011
	X4B12	
L030		
- RH COARSE TRACK REAR		
	P2B12	BP200-L030
	(R2D06)	BR200-R058
	V3B03	
L031		
- RH WRITE READY REAR		
	P2C11	BP200-L031
	(R2D07)	BR200-R059
L032		
+ RH CHECK 2 REAR		
	P2H09	BP200-L032
	(Q2J06)	BQ200-R032
L033		
+ RH RPS CLOCK T-0 (L1) REAR		
	P2H07	BP200-L033
	(R2M07)	BR200-R066
	(R2M07)	BR210-R053
L034		
- RH DRIVE STATUS BIT 6 REAR		
	P2J07	BP200-L034
1C-C3	(B2AA9)	HC4A1-R009
	X4D10	
L035		
+ LH SVO CLOCK CABLE ERR REAR		
	P2N07	BP200-L035
	(T2B08)	BT200-R039
L036		
+ LH RPS CLOCK T-0 (L1) REAR		
	P2N08	BP200-L036
	(M2M07)	BM200-R066
L037		
- RESET CLOCK RING REAR		
	P2S05	BP200-L037
	(N2P04)	BN200-R061
	(Q2P04)	BQ200-R061
L038		
- RH POWER ON RESET POWER REAR		
	P2B10	BP200-L038
	(Q2N06)	BQ200-R062
	M2S04	BM200-L041
	N2B07	BN200-L018
	R2P06	BR200-L015
	U2S07	BU200-L039
1C-C3	B2AB2	HC4A1-L070
	X4D02	
L039		
- LH POWER ON RESET POWER REAR		
	P2N11	BP200-L039
	(N2N06)	BN200-R062
	M2P06	BM200-L015
	R2S04	BR200-L041
	T2S07	BT200-L039
1C-C2	B2AB2	HC3A1-L070
	X2D02	
L040		
+ LH CDP DATA BUS PWR BIT REAR 0		
	P2G05	BP200-L040
	(N2C02)	BN200-R045
	M2S02	BM200-L003
L041		
+ LH CDP DATA BUS PWR BIT REAR 1		
	P2G04	BP200-L041
	(N2C07)	BN200-R046
	M2P13	BM200-L004
L042		
+ LH CDP DATA BUS PWR BIT REAR 2		
	P2G03	BP200-L042
	(N2C10)	BN200-R047
	M2P11	BM200-L005
L043		
+ LH CDP DATA BUS PWR BIT REAR 3		
	P2H05	BP200-L043
	(N2B09)	BN200-R048
	M2D02	BM200-L006
L044		
+ LH CDP DATA BUS PWR BIT REAR 4		
	P2H03	BP200-L044
	(N2B10)	BN200-R049
	M2S10	BM200-L007
L045		
+ LH CDP DATA BUS PWR BIT REAR 5		
	P2J05	BP200-L045
	(N2C09)	BN200-R050
	M2T07	BM200-L008
L046		
+ LH CDP DATA BUS PWR BIT REAR 6		
	P2J04	BP200-L046
	(N2B04)	BN200-R051
	M2T11	BM200-L009
L047		
+ LH CDP DATA BUS PWR BIT REAR 7		
	P2H06	BP200-L047
	(N2C08)	BN200-R052
	M2N13	BM200-L010
L048		
+ LH CDP DATA BUS PWR BIT REAR P		
	P2H04	BP200-L048
	(N2C04)	BN200-R053
	M2S09	BM200-L011
L049		
- LH DRIVE STATUS BIT 0 REAR		
	P2J02	BP200-L049
1C-C2	(B2ABB)	HC3A1-R003
	X2B13	
L050		
- LH DRIVE STATUS BIT 1 REAR		
	P2H02	BP200-L050
1C-C2	(B2BA9)	HC3A1-R004
	X3D10	
L051		
- LH DRIVE STATUS BIT 2 REAR		
	P2D13	BP200-L051
1C-C2	(B2BBA)	HC3A1-R005
	X3B12	
L052		
- LH DRIVE STATUS BIT 3 REAR		
	P2C13	BP200-L052
1C-C2	(B2BAC)	HC3A1-R006
	X3D13	
L053		
- LH DRIVE STATUS BIT 4 REAR		
	P2D12	BP200-L053
1C-C2	(B2BAA)	HC3A1-R007
	X3D11	
L054		
- LH DRIVE STATUS BIT 5 REAR		
	P2C12	BP200-L054
1C-C2	(B2AAA)	HC3A1-R008
	X2D11	
L055		
- LH DRIVE STATUS BIT 6 REAR		
	P2B13	BP200-L055
1C-C2	(B2AA9)	HC3A1-R009
	X2D10	
L056		
- LH DRIVE STATUS BIT 7 REAR		
	P2D11	BP200-L056
1C-C2	(B2AA8)	HC3A1-R010
	X2D09	
L057		
- LH DRIVE STATUS BIT P REAR		
	P2D10	BP200-L057
1C-C2	(B2ABA)	HC3A1-R011
	X2B12	
L058		
+ LH FLAT CABLE CHK RETURN REAR		
	P2C10	BP200-L058
1C-C2	(B2BBB)	HC3A1-R014
	X3B13	
L059		
- LH DEVICE CHECK 2 RESET REAR		
	P2N04	BP200-L059
	(N2J11)	BN200-R035
	M2T06	BM200-L016
L060		
- LH DEV SELECTED REAR		
	P2P04	BP200-L060
	(N2N04)	BN200-R033
	M2T10	BM200-L013
	Q2M04	BQ200-L017
L061		
+ LH SET HEAD ARM ADR REG REAR		
	P2P05	BP200-L061
	(M2N08)	BM210-R052
L062		
+ LH INDEX 1 REAR		
	P2N06	BP200-L062
	(M2G03)	BM200-R061
	X2B03	
	V2B05	
L063		
+ LH INDEX 2 REAR		
	P2P06	BP200-L063
	(M2C13)	BM200-R062
L064		
+ LH SEGMENT BOUNDARY REAR		
	P2P07	BP200-L064
	(M2D13)	BM200-R063
	X3D12	
L065		
- LH COARSE TRACK REAR		
	P2D09	BP200-L065
	(M2D06)	BM200-R058
	V2B03	
L066		
- LH WRITE READY REAR		
	P2C09	BP200-L066
	(M2D07)	BM200-R059
L067		
+ LH CHECK 2 REAR		
	P2P09	BP200-L067
	(N2J06)	BN200-R032

LINE/SIGNAL	PIN	SHEET/LINE
L068		
- CONTINUED ON PAGE BP210		
	P2	BP200-L068
	(P2)	BP200-R069
R003		
- RH PAD DATA SELECT REAR		
	(P2B09)	BP200-R003
1C-C3	B2BB3	HC4A1-L013
	W2D08	
R004		
- RH GATE SERVO PAD CLOCK REAR		
	(P2C08)	BP200-R004
	U2M03	BU200-L033
R005		
+ RH R-W ACTIVE REAR		
	(P2B08)	BP200-R005
	R2D12	BR200-L051
R006		
- RH SET R-W REAR		
	(P2B07)	BP200-R006
1C-C3	B2BA7	HC4A1-L015
	X5D07	
R007		
- RH SET R-W SAFE REAR		
	(P2B05)	BP200-R007
1C-C3	B2BB8	HC4A1-L016
	X5B09	
R008		
+ RH R-W CHECK REAR		
	(P2D07)	BP200-R008
	Q2N03	BQ200-L023
R009		
- RH READ TRANSMIT REAR		
	(P2C07)	BP200-R009
1C-C3	B2BB4	HC4A1-L017
	X5B04	
R010		
- RH HAR BIT 4 REAR		
	(P2D06)	BP200-R010
1C-C3	B2AB6	HC4A1-L003
	X4B07	
R011		
- RH HAR BIT 5 REAR		
	(P2D05)	BP200-R011
1C-C3	B2BA5	HC4A1-L004
	X5D05	
R012		
- RH HAR BIT 7 REAR		
	(P2D04)	BP200-R012
1C-C3	B2AA5	HC4A1-L006
	X4D05	
R013		
- RH HAR BIT 6 REAR		
	(P2C06)	BP200-R013
1C-C3	B2BB6	HC4A1-L005
	X5B07	

LINE/SIGNAL	PIN	SHEET/LINE
R014		
- RH HAR BIT P REAR		
	(P2C05)	BP200-R014
1C-C3	B2BB5	HC4A1-L007
	X5B05	
R015		
+ RH FLAT CABLE CHECK REAR		
	(P2C04)	BP200-R015
1C-C3	B2AB9	HC4A1-L012
	X4B10	
R016		
- RH WRITE GATE 2 REAR		
	(P2T07)	BP200-R016
1C-C3	B2BB7	HC4A1-L018
	X5B08	
R017		
- RH WRITE GATE 1 REAR		
	(P2T09)	BP200-R017
1C-C3	B2AA6	HC4A1-L009
	X4D06	
R018		
- RH MULTIPLEXER GATE REAR		
	(P2M10)	BP200-R018
1C-C3	B2AA7	HC4A1-L010
	X4D07	
R019		
- RH DEGATE CHECK LATCH REAR		
	(P2N10)	BP200-R019
	P2H11	BP200-L014
R020		
- RH SEL A1/ + SEL A2 REAR		
	(P2T04)	BP200-R020
1C-C3	B2BA4	HC4A1-L014
	X5D04	
R021		
- RH GATE SERVO A1 CLK ON REAR		
	(P2T05)	BP200-R021
	U2S05	BU200-L034
R022		
- RH GATE SERVO A2 CLK ON REAR		
	(P2T08)	BP200-R022
	U2P04	BU200-L035
R023		
- RH DRIVE CHECK INHIBIT REAR		
	(P2P10)	BP200-R023
1C-C3	B2AB8	HC4A1-L011
	X4B09	
R024		
- RH DRIVE CHECK RESET REAR		
	(P2S09)	BP200-R024
1C-C3	B2BB9	HC4A1-L019
	X5B10	

LINE/SIGNAL	PIN	SHEET/LINE
R025		
+ AB CLOCK REAR		
	(P2T10)	BP200-R025
	M2B03	BM200-L036
	R2B03	BR200-L036
R026		
+ CD CLOCK REAR		
	(P2U09)	BP200-R026
	M2C05	BM200-L037
	R2C05	BR200-L037
R027		
+ EF CLOCK REAR		
	(P2U07)	BP200-R027
	M2M13	BM200-L038
	R2M13	BR200-L038
R028		
+ GH CLOCK REAR		
	(P2T06)	BP200-R028
	M2B02	BM200-L039
	R2B02	BR200-L039
R029		
+ A CLOCK REAR		
	(P2S07)	BP200-R029
	M2M02	BM200-L025
	N2T09	BN200-L028
	Q2T09	BQ200-L028
	R2M02	BR200-L025
R030		
+ B CLOCK REAR		
	(P2U05)	BP200-R030
	M2N07	BM200-L026
	M2U09	BM200-L027
	N2T05	BN200-L029
	Q2T05	BQ200-L029
	R2N07	BR200-L026
	R2U09	BR200-L027
R031		
+ C CLOCK REAR		
	(P2T03)	BP200-R031
	M2C03	BM200-L028
	N2T08	BN200-L030
	Q2T08	BQ200-L030
	R2C03	BR200-L028
R032		
+ D CLOCK REAR		
	(P2S08)	BP200-R032
	M2M03	BM200-L029
	N2T07	BN200-L031
	Q2T07	BQ200-L031
	R2M03	BR200-L029
R033		
+ E CLOCK REAR		
	(P2U10)	BP200-R033
	M2N12	BM200-L030
	M2U10	BM200-L031
	N2U06	BN200-L032
	Q2U06	BQ200-L032
	R2N12	BR200-L030
	R2U10	BR200-L031

LINE/SIGNAL	PIN	SHEET/LINE
R034		
+ F CLOCK REAR		
	(P2U11)	BP200-R034
	M2M08	BM200-L032
	N2S03	BN200-L033
	Q2S03	BQ200-L033
	R2M08	BR200-L032
R035		
+ G CLOCK REAR		
	(P2T11)	BP200-R035
	M2C02	BM200-L033
	M2S07	BM200-L034
	N2T03	BN200-L034
	Q2T03	BQ200-L034
	R2C02	BR200-L033
	R2S07	BR200-L034
R036		
+ H CLOCK REAR		
	(P2U04)	BP200-R036
	M2T12	BM200-L035
	N2U05	BN200-L035
	N2D13	BN200-L053
	Q2U05	BQ200-L035
	Q2D13	BQ200-L053
	R2T12	BR200-L035
R037		
- CLOCK CHECK HOLD REAR		
	(P2U02)	BP200-R037
	M2T04	BM200-L040
	N2G03	BN200-L036
	Q2G03	BQ200-L036
	R2T04	BR200-L040
R038		
- LH SET R-W SAFE REAR		
	(P2P11)	BP200-R038
1C-C2	B2BB8	HC3A1-L016
	X3B09	
R039		
- LH SET R-W REAR		
	(P2N12)	BP200-R039
1C-C2	B2BA7	HC3A1-L015
	X3D07	
R040		
+ LH R-W CHECK REAR		
	(P2P12)	BP200-R040
	N2N03	BN200-L023
R041		
+ LH R-W ACTIVE REAR		
	(P2P13)	BP200-R041
	M2D12	BM200-L051
R042		
- LH DRIVE CHECK INHIBIT REAR		
	(P2M12)	BP200-R042
1C-C2	B2AB8	HC3A1-L011
	X2B09	

LINE/SIGNAL	PIN	SHEET/LINE
R043		
- LH DRIVE CHECK RESET REAR		
	(P2M13)	BP200-R043
1C-C2	B2BB9	HC3A1-L019
	X3B10	
R044		
- LH PAD DATA SELECT REAR		
	(P2S02)	BP200-R044
1C-C2	B2BB3	HC3A1-L013
	X3B03	
R045		
- LH GATE SERVO PAD CLOCK REAR		
	(P2S03)	BP200-R045
	T2M03	BT200-L033
R046		
- LH HAR BIT 4 REAR		
	(P2B02)	BP200-R046
1C-C2	B2AB6	HC3A1-L003
	X2B07	
R047		
- LH HAR BIT 5 REAR		
	(P2B03)	BP200-R047
1C-C2	B2BA5	HC3A1-L004
	X3D05	
R048		
- LH HAR BIT 6 REAR		
	(P2B04)	BP200-R048
1C-C2	B2BB6	HC3A1-L005
	X3B07	
R049		
- LH HAR BIT 7 REAR		
	(P2D02)	BP200-R049
1C-C2	B2AA5	HC3A1-L006
	X2D05	
R050		
- LH HAR BIT P REAR		
	(P2C02)	BP200-R050
1C-C2	B2BB5	HC3A1-L007
	X3B05	
R051		
- LH WRITE GATE 1 REAR		
	(P2S12)	BP200-R051
1C-C2	B2AA6	HC3A1-L009
	X2D06	
R052		
- LH WRITE GATE 2 REAR		
	(P2S13)	BP200-R052
1C-C2	B2BB7	HC3A1-L018
	X3B08	
R053		
- LH DEGATE CHECK LATCH REAR		
	(P2C03)	BP200-R053
	P2M08	BP210-L004

LINE/SIGNAL	PIN	SHEET/LINE
R054		
- LH MULTIPLEXER GATE REAR		
	(P2N09)	BP200-R054
1C-C2	B2AA7	HC3A1-L010
	X2D07	
R055		
- LH SEL A1/ + SEL A2 REAR		
	(P2U12)	BP200-R055
1C-C2	B2BA4	HC3A1-L014
	X3D04	
R056		
- LH GATE SERVO A1 CLK ON REAR		
	(P2U13)	BP200-R056
	T2S05	BT200-L034
R057		
- LH GATE SERVO A2 CLK ON REAR		
	(P2T12)	BP200-R057
	T2P04	BT200-L035
R058		
+ LH FLAT CABLE CHECK REAR		
	(P2N13)	BP200-R058
1C-C2	B2AB9	HC3A1-L012
	X2B10	
R059		
- LH READ TRANSMIT REAR		
	(P2T02)	BP200-R059
1C-C2	B2BB4	HC3A1-L017
	X3B04	
R060		
- RH R-W 1-2-3-4/HAR BIT REAR 0		
	(P2Y09)	BP200-R060
	Q2Y09	BQ200-L057
	Q2Z09	BQ200-L058
R061		
- RH R-W 1-2-3-4/HAR BIT REAR 1		
	(P2Y29)	BP200-R061
	Q2Y29	BQ200-L059
	Q2Z29	BQ200-L060
R062		
- RH R-W 1-2-3-4/HAR BIT REAR 2		
	(P2Y10)	BP200-R062
	Q2Y10	BQ200-L061
	Q2Z10	BQ200-L062
R063		
- RH R-W 1-2-3-4/HAR BIT REAR 3		
	(P2Y30)	BP200-R063
	Q2Y30	BQ200-L063
	Q2Z30	BQ200-L064
R064		
- RH R-W 1-2-3-4/HAR BIT REAR 4		
	(P2Y11)	BP200-R064
	Q2Y11	BQ200-L065
	Q2Z11	BQ200-L066

LINE/SIGNAL	PIN	SHEET/LINE
R065		
- RH R-W 1-2-3-4/HAR BIT REAR 5		
	(P2Y33)	BP200-R065
	Q2Y33	BQ200-L067
	Q2Z33	BQ200-L068
R066		
- RH R-W 1-2-3-4/HAR BIT REAR 6		
	(P2Y27)	BP200-R066
	Q2Y27	BQ210-L004
	Q2Z27	BQ210-L005
R067		
- RH R-W 1-2-3-4/HAR BIT REAR 7		
	(P2Y32)	BP200-R067
	Q2Y32	BQ210-L006
	Q2Z32	BQ210-L007
R068		
- RH R-W 1-2-3-4/HAR BIT REAR P		
	(P2Y13)	BP200-R068
	Q2Y13	BQ210-L008
	Q2Z13	BQ210-L009
R069		
- CONTINUED ON PAGE BP210		
	(P2)	BP200-R069
	P2	BP200-L068

003	-	CONTINUED FROM PAGE BP200 ----	----
004	-	LH DEGATE CHECK LATCH REAR ---	M08
005	+	LH R-W MODE SEL REAR ---------	Z02
006	+	LH GATE R-W STATUS 1 REAR ----	Z22
007	+	LH GATE R-W STATUS 2 REAR ----	Z03
008	+	LH GATE R-W STATUS 3 REAR ----	Z28
009	+	LH GATE R-W STATUS 4 REAR ----	Z07
010	+	LH GATE HEAD ADDR REG REAR ---	Z04
011	+	LH SEL A1/A2 REAR ------------	Z12
012	+	RH R-W MODE SEL REAR ---------	Y02
013	+	RH GATE R-W STATUS 1 REAR ----	Y22
014	+	RH GATE R-W STATUS 2 REAR ----	Y03
015	+	RH GATE R-W STATUS 3 REAR ----	Y28
016	+	RH GATE R-W STATUS 4 REAR ----	Y07
017	+	RH GATE HEAD ADDR REG REAR ---	Y04
018	+	RH SEL A1/A2 REAR ------------	Y12
019	-	RESET CHECK 1 REAR ----------	Y23
020	-	RESET CHECK 1 REAR ----------	Z23
021	-	5V RH LEFT REAR -------------	J06
022	-	5V RH RIGHT REAR ------------	M09

READ/WRITE CONTROL CRD BP210

----	-	CONTINUED FROM PAGE BP200 ----	003
Y05	-	RH PIP SYNC REAR ------------	004
Z24	-	RH PIP SYNC REAR ------------	005
Y26	-	RH PADDING MODE REAR --------	006
Y06	-	RH SEGMENT BOUNDARY REAR -----	007
Y25	-	RH INDEX REAR ---------------	008
Z09	-	LH R-W 1-2-3-4/HAR BIT REAR 0	009
Z29	-	LH R-W 1-2-3-4/HAR BIT REAR 1	010
Z10	-	LH R-W 1-2-3-4/HAR BIT REAR 2	011
Z30	-	LH R-W 1-2-3-4/HAR BIT REAR 3	012
Z11	-	LH R-W 1-2-3-4/HAR BIT REAR 4	013
Z33	-	LH R-W 1-2-3-4/HAR BIT REAR 5	014
Z27	-	LH R-W 1-2-3-4/HAR BIT REAR 6	015
Z32	-	LH R-W 1-2-3-4/HAR BIT REAR 7	016
Z13	-	LH R-W 1-2-3-4/HAR BIT REAR P	017
Y24	-	LH PIP SYNC REAR ------------	018
Z05	-	LH PIP SYNC REAR ------------	019
Z26	-	LH PADDING MODE REAR --------	020
Z06	-	LH SEGMENT BOUNDARY REAR -----	021
Z25	-	LH INDEX REAR ---------------	022
X22	-	RH CLOCK CHECK STATUS REAR ---	023
W33	-	RH CLOCK PRWSE CHECK TP REAR -	024
S04	+	RH AM SEARCH REAR ------------	025
M07	+	LH AM SEARCH REAR ------------	026
X08	+	RH RD AMP UNSQ LATCHED REAR --	027
X28	-	LH RD AMP UNSQ LATCHED REAR --	028
X25	+	RH GATED R/W CHECK REAR ------	029
X04	+	LH GATED R/W CHECK REAR ------	030
X23		RH SAFETY INHIBIT TP REAR ------	031
X02		LH SAFETY INHIBIT TP REAR ------	032
X31	+	RH RD AMP UNSQUELCH REAR -----	033
X11	-	RH RD AMP UNSQUELCH REAR -----	034
X30	-	LH RD AMP UNSQUELCH REAR -----	035

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CONTINUED FROM PAGE BP200		
	P2	BP210-L003
	(P2)	BP210-R003
L004		
- LH DEGATE CHECK LATCH REAR		
	P2M08	BP210-L004
	(P2C03)	BP200-R053
L005		
+ LH R-W MODE SEL REAR		
	P2Z02	BP210-L005
	(N2Y02)	BN200-R064
	(N2Z02)	BN200-R065
L006		
+ LH GATE R-W STATUS 1 REAR		
	P2Z22	BP210-L006
	(N2Y22)	BN210-R004
	(N2Z22)	BN210-R005
L007		
+ LH GATE R-W STATUS 2 REAR		
	P2Z03	BP210-L007
	(N2Y03)	BN210-R006
	(N2Z03)	BN210-R007
L008		
+ LH GATE R-W STATUS 3 REAR		
	P2Z28	BP210-L008
	(N2Y28)	BN210-R008
	(N2Z28)	BN210-R009
L009		
+ LH GATE R-W STATUS 4 REAR		
	P2Z07	BP210-L009
	(N2Y07)	BN210-R010
	(N2Z07)	BN210-R011
L010		
+ LH GATE HEAD ADDR REG REAR		
	P2Z04	BP210-L010
	(N2Y04)	BN210-R012
	(N2Z04)	BN210-R013
L011		
+ LH SEL A1/A2 REAR		
	P2Z12	BP210-L011
	(N2Y12)	BN210-R014
	(N2Z12)	BN210-R015
L012		
+ RH R-W MODE SEL REAR		
	P2Y02	BP210-L012
	(Q2Y02)	BQ200-R064
	(Q2Z02)	BQ200-R065
L013		
+ RH GATE R-W STATUS 1 REAR		
	P2Y22	BP210-L013
	(Q2Y22)	BQ210-R004
	(Q2Z22)	BQ210-R005

LINE/SIGNAL	PIN	SHEET/LINE
L014		
+ RH GATE R-W STATUS 2 REAR		
	P2Y03	BP210-L014
	(Q2Y03)	BQ210-R006
	(Q2Z03)	BQ210-R007
L015		
+ RH GATE R-W STATUS 3 REAR		
	P2Y28	BP210-L015
	(Q2Y28)	BQ210-R008
	(Q2Z28)	BQ210-R009
L016		
+ RH GATE R-W STATUS 4 REAR		
	P2Y07	BP210-L016
	(Q2Y07)	BQ210-R010
	(Q2Z07)	BQ210-R011
L017		
+ RH GATE HEAD ADDR REG REAR		
	P2Y04	BP210-L017
	(Q2Y04)	BQ210-R012
	(Q2Z04)	BQ210-R013
L018		
+ RH SEL A1/A2 REAR		
	P2Y12	BP210-L018
	(Q2Y12)	BQ210-R014
	(Q2Z12)	BQ210-R015
L019		
- RESET CHECK 1 REAR		
	P2Y23	BP210-L019
	(N2Y23)	BN210-R016
	(N2Z23)	BN210-R017
	(Q2Y23)	BQ210-R016
	(Q2Z23)	BQ210-R017
	P2Z23	BP210-L020
L020		
- RESET CHECK 1 REAR		
	P2Z23	BP210-L020
	(N2Y23)	BN210-R016
	(N2Z23)	BN210-R017
	(Q2Y23)	BQ210-R016
	(Q2Z23)	BQ210-R017
	P2Y23	BP210-L019
L021		
- 5V RH LEFT REAR		
	P2J06	BP210-L021
	M2U04	BM200-L061
	T2B06	BT200-L045
	T2G06	BT200-L046
-TP--	*M6E02*	
YA420	*-R016*	
J681-	*PIN07*	
	W6A02	
YA420	*-R024*	
J681-	*PIN14*	
	V6E02	

LINE/SIGNAL	PIN	SHEET/LINE
L022		
- 5V RH RIGHT REAR		
	P2M09	BP210-L022
	R2U04	BR200-L061
	U2B06	BU200-L045
	U2G06	BU200-L046
-TP--	*M6B04*	
YA420	*-R090*	
	X6B02	
YA420	*-R098*	
-TP--	*M6B04*	
YA420	*-R090*	
J682-	*PIN07*	
	X6B02	
YA420	*-R098*	
J682-	*PIN14*	
	X6A02	
R003		
- CONTINUED FROM PAGE BP200		
	(P2)	BP210-R003
	P2	BP210-L003
R004		
- RH PIP SYNC REAR		
	(P2Y05)	BP210-R004
	(P2Z24)	BP210-R005
	N2Y24	BN210-L010
	N2Z24	BN210-L011
	Q2Y05	BQ210-L012
	Q2Z05	BQ210-L013
R005		
- RH PIP SYNC REAR		
	(P2Z24)	BP210-R005
	(P2Y05)	BP210-R004
	N2Y24	BN210-L010
	N2Z24	BN210-L011
	Q2Y05	BQ210-L012
	Q2Z05	BQ210-L013
R006		
- RH PADDING MODE REAR		
	(P2Y26)	BP210-R006
	Q2Y26	BQ210-L018
	Q2Z26	BQ210-L019
R007		
- RH SEGMENT BOUNDARY REAR		
	(P2Y06)	BP210-R007
	Q2Y06	BQ210-L016
	Q2Z06	BQ210-L017
R008		
- RH INDEX REAR		
	(P2Y25)	BP210-R008
	Q2Y25	BQ210-L014
	Q2Z25	BQ210-L015
R009		
- LH R-W 1-2-3-4/HAR BIT REAR 0		
	(P2Z09)	BP210-R009
	N2Y09	BN200-L057
	N2Z09	BN200-L058

LINE/SIGNAL	PIN	SHEET/LINE
R010		
- LH R-W 1-2-3-4/HAR BIT REAR 1		
	(P2Z29)	BP210-R010
	N2Y29	BN200-L059
	N2Z29	BN200-L060
R011		
- LH R-W 1-2-3-4/HAR BIT REAR 2		
	(P2Z10)	BP210-R011
	N2Y10	BN200-L061
	N2Z10	BN200-L062
R012		
- LH R-W 1-2-3-4/HAR BIT REAR 3		
	(P2Z30)	BP210-R012
	N2Y30	BN200-L063
	N2Z30	BN200-L064
R013		
- LH R-W 1-2-3-4/HAR BIT REAR 4		
	(P2Z11)	BP210-R013
	N2Y11	BN200-L065
	N2Z11	BN200-L066
R014		
- LH R-W 1-2-3-4/HAR BIT REAR 5		
	(P2Z33)	BP210-R014
	N2Y33	BN200-L067
	N2Z33	BN200-L068
R015		
- LH R-W 1-2-3-4/HAR BIT REAR 6		
	(P2Z27)	BP210-R015
	N2Y27	BN210-L004
	N2Z27	BN210-L005
R016		
- LH R-W 1-2-3-4/HAR BIT REAR 7		
	(P2Z32)	BP210-R016
	N2Y32	BN210-L006
	N2Z32	BN210-L007
R017		
- LH R-W 1-2-3-4/HAR BIT REAR P		
	(P2Z13)	BP210-R017
	N2Y13	BN210-L008
	N2Z13	BN210-L009
R018		
- LH PIP SYNC REAR		
	(P2Y24)	BP210-R018
	(P2Z05)	BP210-R019
	N2Y05	BN210-L012
	N2Z05	BN210-L013
	Q2Y24	BQ210-L010
	Q2Z24	BQ210-L011
R019		
- LH PIP SYNC REAR		
	(P2Z05)	BP210-R019
	(P2Y24)	BP210-R018
	N2Y05	BN210-L012
	N2Z05	BN210-L013
	Q2Y24	BQ210-L010
	Q2Z24	BQ210-L011

LINE/SIGNAL	PIN	SHEET/LINE
R020		
- LH PADDING MODE REAR		
	(P2Z26)	BP210-R020
	N2Y26	BN210-L018
	N2Z26	BN210-L019
R021		
- LH SEGMENT BOUNDARY REAR		
	(P2Z06)	BP210-R021
	N2Y06	BN210-L016
	N2Z06	BN210-L017
R022		
- LH INDEX REAR		
	(P2Z25)	BP210-R022
	N2Y25	BN210-L014
	N2Z25	BN210-L015
R023		
- RH CLOCK CHECK STATUS REAR		
	(P2X22)	BP210-R023
R024		
- RH CLOCK PRWSE CHECK TP REAR		
	(P2W33)	BP210-R024
R025		
+ RH AM SEARCH REAR		
	(P2S04)	BP210-R025
1C-C3	B2AAB	HC4A1-L071
	X4D12	
R026		
+ LH AM SEARCH REAR		
	(P2M07)	BP210-R026
1C-C2	B2AAB	HC3A1-L071
	X2D12	
R027		
+ RH RD AMP UNSQ LATCHED REAR		
	(P2X08)	BP210-R027
R028		
- LH RD AMP UNSQ LATCHED REAR		
	(P2X28)	BP210-R028
R029		
+ RH GATED R/W CHECK REAR		
	(P2X25)	BP210-R029
R030		
+ LH GATED R/W CHECK REAR		
	(P2X04)	BP210-R030
R031		
RH SAFETY INHIBIT TP REAR		
	(P2X23)	BP210-R031
R032		
LH SAFETY INHIBIT TP REAR		
	(P2X02)	BP210-R032
R033		
+ RH RD AMP UNSQUELCH REAR		
	(P2X31)	BP210-R033

LINE/SIGNAL	PIN	SHEET/LINE
R034		
- RH RD AMP UNSQUELCH REAR		
	(P2X11)	BP210-R034
R035		
- LH RD AMP UNSQUELCH REAR		
	(P2X30)	BP210-R035

```
003 + A1 PORT 0 CHECK 1 RESET ------ H02
004 + A1 LOGIC POWER CONTROL 0 ----- U07
005 + A1 GATE PORT 0 DEV CHECK 1 --- D02
006 + A1 CDP 0 TAG OUT BIT 0 ------- S12
007 + A1 CDP 0 TAG OUT BIT 1 ------- S09
008 + A1 CDP 0 TAG OUT BIT 2 ------- S07
009 + A1 CDP 0 SPLIT BUS OP -------- S02
010 + A2 PORT 0 CHECK 1 RESET ------ G02
011 + A2 LOGIC POWER CONTROL 0 ----- T04
012 + A2 GATE PORT 0 DEV CHECK 1 --- H06
013 + A2 CDP 0 TAG OUT BIT 0 ------- U02
014 + A2 CDP 0 TAG OUT BIT 1 ------- U09
015 + A2 CDP 0 TAG OUT BIT 2 ------- S05
016 + A2 CDP 0 SPLIT BUS OP -------- U04
017 - LH DEV SELECTED REAR --------- M04
018 - LH POWER CLOCK 2 REAR -------- B07
019 + RH CHK POINT LOG CHECK REAR  - P05
020 + RH SEQ CHECK REAR  ----------- G09
021 + RH SERVO CTRL CHECK REAR  ---- C13
022 + RH RPS CHECK REAR  ----------- J05
023 + RH R-W CHECK REAR  ----------- N03
024 + RH LOAD POWER CTRL REG REAR  - D06
025 + RH SEQ MOVE FORMAT REAR  ----- D04
026 + RH SEQ STATUS STROBE REAR  --- C03
027 + RH LOAD SEQ STATUS REG REAR -- P02
028 + A CLOCK REAR  ---------------- T09
029 + B CLOCK REAR  ---------------- T05
030 + C CLOCK REAR  ---------------- T08
031 + D CLOCK REAR  ---------------- T07
032 + E CLOCK REAR  ---------------- U06
033 + F CLOCK REAR  ---------------- S03
034 + G CLOCK REAR  ---------------- T03
035 + H CLOCK REAR  ---------------- U05
036 - CLOCK CHECK HOLD REAR  ------- G03
037 - RH CABLE SWITCHED REAR  ------ M02
038 - RH OFFSET ACTIVE REAR  ------- H12
039 - RH INHIBIT REAR  ------------- N02
040 + RH RECORD READY IRPT REAR  --- J12
041 - LH 5V COMMON POR REAR -------- N05
042 - RH POWER ON RESET OUT REAR  -- T10
043 + NO AIR REAR  ----------------- G08
044 + SENSE MOTOR CONT OFF REAR  --- T13
045 + SENSE DCA RELAY OFF REAR ----- U10
046 - DRIVE SWITCH OFF REAR  ------- H05
047 - DRIVE SWITCH ON REAR  -------- H03
048 - RH POWER ON RESET SWITCH REAR  S13
049 + RH MOTOR CONT PICKED OUT REAR  D12
050 + RH BRAKE CONT PICKED OUT REAR  C06
051 - RH + 5V PWR ON RESET OUT REAR  M09
052 - RH RESET CLOCK RING OUT REAR - P12
053 + H CLOCK REAR  ---------------- D13
054 + LH CABLE SWITCHED REAR  ------ T02
055 - LH RESET CLOCK RING REAR ----- N11
056 - LH POWER ON RESET SWITCH REAR  N10
057 - RH R-W 1-2-3-4/HAR BIT REAR 0  Y09
058 - RH R-W 1-2-3-4/HAR BIT REAR 0  Z09
059 - RH R-W 1-2-3-4/HAR BIT REAR 1  Y29
060 - RH R-W 1-2-3-4/HAR BIT REAR 1  Z29
061 - RH R-W 1-2-3-4/HAR BIT REAR 2  Y10
062 - RH R-W 1-2-3-4/HAR BIT REAR 2  Z10
063 - RH R-W 1-2-3-4/HAR BIT REAR 3  Y30
064 - RH R-W 1-2-3-4/HAR BIT REAR 3  Z30
065 - RH R-W 1-2-3-4/HAR BIT REAR 4  Y11
066 - RH R-W 1-2-3-4/HAR BIT REAR 4  Z11
067 - RH R-W 1-2-3-4/HAR BIT REAR 5  Y33
068 - RH R-W 1-2-3-4/HAR BIT REAR 5  Z33
069 - CONTINUED ON PAGE BQ210 ------ ----
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PORT AND POWER CONTROL CARD

INTRODUCTION

There are two port and power cards per drive. Each is capable of communication with controllers A1 and A2 in the DLS(device level selection) environment.

DESCRIPTION

The port and power control card performs the following major functions:

Port Control Functions

- Provides controller-to-device-port (CDP) communication at the access mechanism level.
- Ensures correct selection of devices.
- Presents device interrupts and check-1 errors.
- Processes most 5X and 74 status sense commands and controls the gating of other commands (59, 5A, 5B, 4X, 6X, 7X) and following parameter transfer requests to the sequencer.
- Sets or resets the customer Ready LED on the operator panel.
- Provides the capability of Set/Reset online, to Enable or Disable a device.

Power Control Functions:

- Provides the capability of powering on and off the drive either remotely or locally, and also provides the drive control function to power on the drive.
- Translates sequencer status register into device status byte 1 and 2.
- Maintains device interrupt generation logic.
- Provides single access mechanism capability.
- Provides power monitoring on +5 V (common), +5 V for the left and right actuator logic.

PRIMARY PARTS

- Long line drivers
- Device address switch
- Miscellaneous

ERROR CHECKING

Either a device check 1 or device check 2 is detected by the following checks:

Device check 1

- CDP check
- Port check
- Clock check

Device check 2 by either error detected or collected

- Sequencer card check
- Servo card check
- RPS check
- Checkpoint log check
- Sequencer write bus parity check
- Read/write card check
- Power check
- Funnel selection check


```
M10 + A1 CDP 0 TAG IN BIT 0 -------- 003
P10 + A1 CDP 0 TAG IN BIT 1 -------- 004
N13 + A1 PORT 0 CHECK 1 ------------ 005
P13 + A1 DEVICE DRIVER ACTIVE 0 ---- 006
P06 + A1 CDP 0 BIDI DATA 0 --------- 007
N09 + A1 CDP 0 BIDI DATA 1 --------- 008
G05 + A1 CDP 0 BIDI DATA 2 --------- 009
N12 + A1 CDP 0 BIDI DATA 3 --------- 010
M12 + A1 CDP 0 BIDI DATA 4 --------- 011
G07 + A1 CDP 0 BIDI DATA 5 --------- 012
C12 + A1 CDP 0 BIDI DATA 6 --------- 013
B12 + A1 CDP 0 BIDI DATA 7 --------- 014
J13 + A1 CDP 0 BIDI DATA P --------- 015
J07 + A2 CDP 0 TAG IN BIT 0 -------- 016
H07 + A2 CDP 0 TAG IN BIT 1 -------- 017
J09 + A2 PORT 0 CHECK 1 ------------ 018
H09 + A2 DEVICE DRIVER ACTIVE 0 ---- 019
B13 + A2 CDP 0 BIDI DATA 0 --------- 020
H13 + A2 CDP 0 BIDI DATA 1 --------- 021
H11 + A2 CDP 0 BIDI DATA 2 --------- 022
D09 + A2 CDP 0 BIDI DATA 3 --------- 023
J10 + A2 CDP 0 BIDI DATA 4 --------- 024
D10 + A2 CDP 0 BIDI DATA 5 --------- 025
D11 + A2 CDP 0 BIDI DATA 6 --------- 026
C11 + A2 CDP 0 BIDI DATA 7 --------- 027
B05 + A2 CDP 0 BIDI DATA P --------- 028
C05 + RH GATE DIF LOW REG REAR ----- 029
D07 + RH GATE TARGET REG REAR ------ 030
B08 + RH GATE CHK POINT REG REAR  -- 031
J06 + RH CHECK 2 REAR  ------------- 032
N04 - RH DEV SELECTED REAR  -------- 033
T06 + RH COMMAND REAR  ------------- 034
J11 - RH DEVICE CHECK 2 RESET REAR - 035
N08 + RH PARM TRANSFER REAR  ------- 036
G12 + RH BUSY W/O PIP REAR  -------- 037
H10 + RH SEEK INCOMPLETE REAR  ----- 038
G10 - RH PORT FENCED REAR  --------- 039
B02 + RH MOTOR CONTROL REAR  ------- 040
M03 - RH DRIVE PWR SWITCH OFF REAR - 041
P09 - RELEASE BRAKE REAR ----------- 042
N07 - DRIVE MOTOR RUN REAR --------- 043
S10 - PICK LOGIC POWER CONT REAR  -- 044
C02 + RH CDP DATA BUS PWR BIT REAR 0 045
C07 + RH CDP DATA BUS PWR BIT REAR 1 046
C10 + RH CDP DATA BUS PWR BIT REAR 2 047
B09 + RH CDP DATA BUS PWR BIT REAR 3 048
B10 + RH CDP DATA BUS PWR BIT REAR 4 049
C09 + RH CDP DATA BUS PWR BIT REAR 5 050
B04 + RH CDP DATA BUS PWR BIT REAR 6 051
C08 + RH CDP DATA BUS PWR BIT REAR 7 052
C04 + RH CDP DATA BUS PWR BIT REAR P 053
T11 + RH MOTOR CONT PICKED OUT REAR  054
T12 + RH BRAKE CONT PICKED OUT REAR  055
J02 - RH POWER CHECK 2 REAR -------- 056
M13 - RH + 5V PWR ON RESET OUT REAR  057
P11 - RH RESET CLOCK RING OUT REAR - 058
P07 - RH POWER ON RESET OUT REAR  -- 059
M05 - POWER ON RESET REAR  --------- 060
P04 - RESET CLOCK RING REAR  ------- 061
N06 - RH POWER ON RESET POWER REAR - 062
U12 - DRIVE CONT RELAY REAR -------- 063
Y02 + RH R-W MODE SEL REAR  -------- 064
Z02 + RH R-W MODE SEL REAR  -------- 065
---- - CONTINUED ON PAGE BQ210 ------ 066
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ A1 PORT 0 CHECK 1 RESET		
	Q2H02	BQ200-L003
1A-A1	(U2U07)	CU210-R004
	H2H02	BH200-L003
	K2H02	BK200-L003
	N2H02	BN200-L003
	B5D09	
	V4D12	
1A-A1	*X1A06*	
L004		
+ A1 LOGIC POWER CONTROL 0		
	Q2U07	BQ200-L004
1A-A1	(V2S03)	CV200-R027
	H2U07	BH200-L004
	K2U07	BK200-L004
	N2U07	BN200-L004
	B5B04	
1A-A1	*W1A08*	
L005		
+ A1 GATE PORT 0 DEV CHECK 1		
	Q2D02	BQ200-L005
1A-A1	(U2U11)	CU200-R065
	H2D02	BH200-L005
	K2D02	BK200-L005
	N2D02	BN200-L005
	B5D07	
	V4D11	
1A-A1	*W1D06*	
L006		
+ A1 CDP 0 TAG OUT BIT 0		
	Q2S12	BQ200-L006
1A-A1	(U2D06)	CU200-R049
	H2S12	BH200-L006
	K2S12	BK200-L006
	N2S12	BN200-L006
	B5B09	
	V4D05	
1A-A1	*X1A08*	
L007		
+ A1 CDP 0 TAG OUT BIT 1		
	Q2S09	BQ200-L007
1A-A1	(U2D05)	CU200-R050
	H2S09	BH200-L007
	K2S09	BK200-L007
	N2S09	BN200-L007
	B5D10	
	V4D06	
1A-A1	*X1B06*	
L008		
+ A1 CDP 0 TAG OUT BIT 2		
	Q2S07	BQ200-L008
1A-A1	(U2D04)	CU200-R051
	H2S07	BH200-L008
	K2S07	BK200-L008
	N2S07	BN200-L008
	B5B10	
	V4D07	
1A-A1	*X1B08*	

LINE/SIGNAL	PIN	SHEET/LINE
L009		
+ A1 CDP 0 SPLIT BUS OP		
	Q2S02	BQ200-L009
1A-A1	(U2B03)	CU200-R052
	H2S02	BH200-L009
	K2S02	BK200-L009
	N2S02	BN200-L009
	B5D11	
	V4D09	
1A-A1	*X1C06*	
L010		
+ A2 PORT 0 CHECK 1 RESET		
	Q2G02	BQ200-L010
1A-A1	(D2U07)	CD210-R004
	H2G02	BH200-L010
	K2G02	BK200-L010
	N2G02	BN200-L010
	C4D12	
	W5D09	
1A-A1	*E1B06*	
L011		
+ A2 LOGIC POWER CONTROL 0		
	Q2T04	BQ200-L011
1A-A1	(C2S03)	CC200-R027
	H2T04	BH200-L011
	K2T04	BK200-L011
	N2T04	BN200-L011
	C4D10	
	W5B04	
1A-A1	*D1B08*	
L012		
+ A2 GATE PORT 0 DEV CHECK 1		
	Q2H06	BQ200-L012
1A-A1	(D2U11)	CD200-R065
	H2H06	BH200-L012
	K2H06	BK200-L012
	N2H06	BN200-L012
	C4D11	
	W5D07	
1A-A1	*D1E06*	
L013		
+ A2 CDP 0 TAG OUT BIT 0		
	Q2U02	BQ200-L013
1A-A1	(D2D06)	CD200-R049
	H2U02	BH200-L013
	K2U02	BK200-L013
	N2U02	BN200-L013
	C4D05	
	W5B09	
1A-A1	*E1B08*	
L014		
+ A2 CDP 0 TAG OUT BIT 1		
	Q2U09	BQ200-L014
1A-A1	(D2D05)	CD200-R050
	H2U09	BH200-L014
	K2U09	BK200-L014
	N2U09	BN200-L014
	C4D06	
	W5D10	
1A-A1	*E1C06*	

LINE/SIGNAL	PIN	SHEET/LINE
L015		
+ A2 CDP 0 TAG OUT BIT 2		
	Q2S05	BQ200-L015
1A-A1	(D2D04)	CD200-R051
	H2S05	BH200-L015
	K2S05	BK200-L015
	N2S05	BN200-L015
	C4D07	
	W5B10	
1A-A1	*E1C08*	
L016		
+ A2 CDP 0 SPLIT BUS OP		
	Q2U04	BQ200-L016
1A-A1	(D2B03)	CD200-R052
	H2U04	BH200-L016
	K2U04	BK200-L016
	N2U04	BN200-L016
	C4D09	
	W5D11	
1A-A1	*E1D06*	
L017		
- LH DEV SELECTED REAR		
	Q2M04	BQ200-L017
	(N2N04)	BN200-R033
	M2T10	BM200-L013
	P2P04	BP200-L060
L018		
- LH POWER CLOCK 2 REAR		
	Q2B07	BQ200-L018
	(N2J02)	BN200-R056
L019		
+ RH CHK POINT LOG CHECK REAR		
	Q2P05	BQ200-L019
	(R2G02)	BR200-R026
L020		
+ RH SEQ CHECK REAR		
	Q2G09	BQ200-L020
	(R2U06)	BR200-R025
L021		
+ RH SERVO CTRL CHECK REAR		
	Q2C13	BQ200-L021
	(R2H11)	BR200-R027
L022		
+ RH RPS CHECK REAR		
	Q2J05	BQ200-L022
	(R2B10)	BR200-R029
L023		
+ RH R-W CHECK REAR		
	Q2N03	BQ200-L023
	(P2D07)	BP200-R008
L024		
+ RH LOAD POWER CTRL REG REAR		
	Q2D06	BQ200-L024
	(R2N10)	BR200-R022
	N2M08	BN210-L038

LINE/SIGNAL	PIN	SHEET/LINE
L025		
+ RH SEQ MOVE FORMAT REAR		
	Q2D04	BQ200-L025
	(R2M04)	BR200-R024
L026		
+ RH SEQ STATUS STROBE REAR		
	Q2C03	BQ200-L026
	(R2N02)	BR200-R021
L027		
+ RH LOAD SEQ STATUS REG REAR		
	Q2P02	BQ200-L027
	(R2N09)	BR200-R023
L028		
+ A CLOCK REAR		
	Q2T09	BQ200-L028
	(P2S07)	BP200-R029
	M2M02	BM200-L025
	N2T09	BN200-L028
	R2M02	BR200-L025
L029		
+ B CLOCK REAR		
	Q2T05	BQ200-L029
	(P2U05)	BP200-R030
	M2N07	BM200-L026
	M2U09	BM200-L027
	N2T05	BN200-L029
	R2N07	BR200-L026
	R2U09	BR200-L027
L030		
+ C CLOCK REAR		
	Q2T08	BQ200-L030
	(P2T03)	BP200-R031
	M2C03	BM200-L028
	N2T08	BN200-L030
	R2C03	BR200-L028
L031		
+ D CLOCK REAR		
	Q2T07	BQ200-L031
	(P2S08)	BP200-R032
	M2M03	BM200-L029
	N2T07	BN200-L031
	R2M03	BR200-L029
L032		
+ E CLOCK REAR		
	Q2U06	BQ200-L032
	(P2U10)	BP200-R033
	M2N12	BM200-L030
	M2U10	BM200-L031
	N2U06	BN200-L032
	R2N12	BR200-L030
	R2U10	BR200-L031
L033		
+ F CLOCK REAR		
	Q2S03	BQ200-L033
	(P2U11)	BP200-R034
	M2M08	BM200-L032
	N2S03	BN200-L033
	R2M08	BR200-L032

LINE/SIGNAL	PIN	SHEET/LINE
L034		
+ G CLOCK REAR		
	Q2T03	BQ200-L034
	(P2T11)	BP200-R035
	M2C02	BM200-L033
	M2S07	BM200-L034
	N2T03	BN200-L034
	R2C02	BR200-L033
	R2S07	BR200-L034
L035		
+ H CLOCK REAR		
	Q2U05	BQ200-L035
	(P2U04)	BP200-R036
	M2T12	BM200-L035
	N2U05	BN200-L035
	N2D13	BN200-L053
	Q2D13	BQ200-L053
	R2T12	BR200-L035
L036		
- CLOCK CHECK HOLD REAR		
	Q2G03	BQ200-L036
	(P2U02)	BP200-R037
	M2T04	BM200-L040
	N2G03	BN200-L036
	R2T04	BR200-L040
L037		
- RH CABLE SWITCHED REAR		
	Q2M02	BQ200-L037
	N2M02	BN200-L037
J180-	*PIN04*	
YA500	*-L090*	
YA500	*-L092*	
	W2B03	
	W3B03	
L038		
- RH OFFSET ACTIVE REAR		
	Q2H12	BQ200-L038
	(R2P02)	BR200-R051
	U2P06	BU200-L020
L039		
- RH INHIBIT REAR		
	Q2N02	BQ200-L039
	(R2H06)	BR200-R044
	U2P13	BU200-L024
L040		
+ RH RECORD READY IRPT REAR		
	Q2J12	BQ200-L040
	(R2D04)	BR200-R028
L041		
- LH 5V COMMON POR REAR		
	Q2N05	BQ200-L041
	(N2M07)	BN210-R025
L042		
- RH POWER ON RESET OUT REAR		
	Q2T10	BQ200-L042
	(Q2P07)	BQ200-R059

LINE/SIGNAL	PIN	SHEET/LINE
L043		
+ NO AIR REAR		
	Q2G08	BQ200-L043
	N2G08	BN200-L043
YA110	*-R099*	
TB485	*----5*	
	V5D10	
L044		
+ SENSE MOTOR CONT OFF REAR		
	Q2T13	BQ200-L044
	N2T13	BN200-L044
YA600	*-R096*	
EC488	*-----*	
	V5B12	
L045		
+ SENSE DCA RELAY OFF REAR		
	Q2U10	BQ200-L045
	N2U10	BN200-L045
YA200	*-R024*	
J749B	*----6*	
	V5D06	
L046		
- DRIVE SWITCH OFF REAR		
	Q2H05	BQ200-L046
	N2H05	BN200-L046
YA420	*-R118*	
J680Ø	*----2*	
	V5B02	
L047		
- DRIVE SWITCH ON REAR		
	Q2H03	BQ200-L047
	N2H03	BN200-L047
YA420	*-R116*	
J680Ø	*----1*	
	V5D02	
L048		
- RH POWER ON RESET SWITCH REAR		
	Q2S13	BQ200-L048
	N2N10	BN200-L056
	X6C02	
YA420	*-R091*	
J682-	*PIN08*	
	X6C02	
L049		
+ RH MOTOR CONT PICKED OUT REAR		
	Q2D12	BQ200-L049
	(Q2T11)	BQ200-R054
L050		
+ RH BRAKE CONT PICKED OUT REAR		
	Q2C06	BQ200-L050
	(Q2T12)	BQ200-R055
L051		
- RH + 5V PWR ON RESET OUT REAR		
	Q2M09	BQ200-L051
	(Q2M13)	BQ200-R057

LINE/SIGNAL	PIN	SHEET/LINE
L052		
- RH RESET CLOCK RING OUT REAR		
	Q2P12	BQ200-L052
	(Q2P11)	BQ200-R058
	N2N11	BN200-L055
L053		
+ H CLOCK REAR		
	Q2D13	BQ200-L053
	(P2U04)	BP200-R036
	M2T12	BM200-L035
	N2U05	BN200-L035
	N2D13	BN200-L053
	Q2U05	BQ200-L035
	R2T12	BR200-L035
L054		
+ LH CABLE SWITCHED REAR		
	Q2T02	BQ200-L054
	N2T02	BN200-L054
1C-C4	P3B02	HPA30-L011
J180-	*PIN04*	
YA500	*-L119*	
YA500	*-L118*	
	W2B02	
	W3B02	
L055		
- LH RESET CLOCK RING REAR		
	Q2N11	BQ200-L055
	(N2P11)	BN200-R058
	N2P12	BN200-L052
L056		
- LH POWER ON RESET SWITCH REAR		
	Q2N10	BQ200-L056
	N2S13	BN200-L048
-TP--	*M6E02*	
YA420	*-R017*	
J682-	*PIN08*	
	V6D02	
L057		
- RH R-W 1-2-3-4/HAR BIT REAR 0		
	Q2Y09	BQ200-L057
	(P2Y09)	BP200-R060
	Q2Z09	BQ200-L058
L058		
- RH R-W 1-2-3-4/HAR BIT REAR 0		
	Q2Z09	BQ200-L058
	(P2Y09)	BP200-R060
	Q2Y09	BQ200-L057
L059		
- RH R-W 1-2-3-4/HAR BIT REAR 1		
	Q2Y29	BQ200-L059
	(P2Y29)	BP200-R061
	Q2Z29	BQ200-L060
L060		
- RH R-W 1-2-3-4/HAR BIT REAR 1		
	Q2Z29	BQ200-L060
	(P2Y29)	BP200-R061
	Q2Y29	BQ200-L059

LINE/SIGNAL	PIN	SHEET/LINE
L061		
- RH R-W 1-2-3-4/HAR BIT REAR 2		
	Q2Y10	BQ200-L061
	(P2Y10)	BP200-R062
	Q2Z10	BQ200-L062
L062		
- RH R-W 1-2-3-4/HAR BIT REAR 2		
	Q2Z10	BQ200-L062
	(P2Y10)	BP200-R062
	Q2Y10	BQ200-L061
L063		
- RH R-W 1-2-3-4/HAR BIT REAR 3		
	Q2Y30	BQ200-L063
	(P2Y30)	BP200-R063
	Q2Z30	BQ200-L064
L064		
- RH R-W 1-2-3-4/HAR BIT REAR 3		
	Q2Z30	BQ200-L064
	(P2Y30)	BP200-R063
	Q2Y30	BQ200-L063
L065		
- RH R-W 1-2-3-4/HAR BIT REAR 4		
	Q2Y11	BQ200-L065
	(P2Y11)	BP200-R064
	Q2Z11	BQ200-L066
L066		
- RH R-W 1-2-3-4/HAR BIT REAR 4		
	Q2Z11	BQ200-L066
	(P2Y11)	BP200-R064
	Q2Y11	BQ200-L065
L067		
- RH R-W 1-2-3-4/HAR BIT REAR 5		
	Q2Y33	BQ200-L067
	(P2Y33)	BP200-R065
	Q2Z33	BQ200-L068
L068		
- RH R-W 1-2-3-4/HAR BIT REAR 5		
	Q2Z33	BQ200-L068
	(P2Y33)	BP200-R065
	Q2Y33	BQ200-L067
L069		
- CONTINUED ON PAGE BQ210		
	Q2	BQ200-L069
	(Q2)	BQ200-R066
R003		
+ A1 CDP 0 TAG IN BIT 0		
	(Q2M10)	BQ200-R003
	(H2M10)	BH200-R003
	(K2M10)	BK200-R003
	(N2M10)	BN200-R003
1A-A1	U2G03	CU200-L009
	B5D12	
1A-A1	*X1D06*	

LINE/SIGNAL	PIN	SHEET/LINE
R004		
+ A1 CDP 0 TAG IN BIT 1		
	(Q2P10)	BQ200-R004
	(H2P10)	BH200-R004
	(K2P10)	BK200-R004
	(N2P10)	BN200-R004
1A-A1	U2B08	CU200-L010
	B5B12	
1A-A1	*X1D08*	
R005		
+ A1 PORT 0 CHECK 1		
	(Q2N13)	BQ200-R005
	(H2N13)	BH200-R005
	(K2N13)	BK200-R005
	(N2N13)	BN200-R005
1A-A1	U2B09	CU200-L005
	B5D13	
1A-A1	*X1E06*	
R006		
+ A1 DEVICE DRIVER ACTIVE 0		
	(Q2P13)	BQ200-R006
	(H2P13)	BH200-R006
	(K2P13)	BK200-R006
	(N2P13)	BN200-R006
1A-A1	U2U02	CU200-L017
	B5B11	
1A-A1	*X1C08*	
R007		
+ A1 CDP 0 BIDI DATA 0		
	(Q2P06)	BQ200-R007
	(H2P06)	BH200-R007
	(K2P06)	BK200-R007
	(N2P06)	BN200-R007
1A-A1	(U2J13)	CU200-R003
	B5B02	
	V4B02	
1A-A1	*V1D08*	
R008		
+ A1 CDP 0 BIDI DATA 1		
	(Q2N09)	BQ200-R008
	(H2N09)	BH200-R008
	(K2N09)	BK200-R008
	(N2N09)	BN200-R008
1A-A1	(U2G12)	CU200-R004
	B5D04	
	V4B03	
1A-A1	*W1A06*	
R009		
+ A1 CDP 0 BIDI DATA 2		
	(Q2G05)	BQ200-R009
	(H2G05)	BH200-R009
	(K2G05)	BK200-R009
	(N2G05)	BN200-R009
1A-A1	(U2J11)	CU200-R005
	B5D03	
	V4B04	
1A-A1	*V1E06*	

LINE/SIGNAL	PIN	SHEET/LINE
R010		
+ A1 CDP 0 BIDI DATA 3		
	(Q2N12)	BQ200-R010
	(H2N12)	BH200-R010
	(K2N12)	BK200-R010
	(N2N12)	BN200-R010
1A-A1	(U2J10)	CU200-R006
	B5B03	
	V4B05	
1A-A1	*V1E08*	
R011		
+ A1 CDP 0 BIDI DATA 4		
	(Q2M12)	BQ200-R011
	(H2M12)	BH200-R011
	(K2M12)	BK200-R011
	(N2M12)	BN200-R011
1A-A1	(U2P04)	CU200-R007
	B5D05	
	V4B07	
1A-A1	*W1B06*	
R012		
+ A1 CDP 0 BIDI DATA 5		
	(Q2G07)	BQ200-R012
	(H2G07)	BH200-R012
	(K2G07)	BK200-R012
	(N2G07)	BN200-R012
1A-A1	(U2G10)	CU200-R008
	B5B05	
	V4B08	
1A-A1	*W1B08*	
R013		
+ A1 CDP 0 BIDI DATA 6		
	(Q2C12)	BQ200-R013
	(H2C12)	BH200-R013
	(K2C12)	BK200-R013
	(N2C12)	BN200-R013
1A-A1	(U2J09)	CU200-R009
	B5D06	
	V4B09	
1A-A1	*W1C06*	
R014		
+ A1 CDP 0 BIDI DATA 7		
	(Q2B12)	BQ200-R014
	(H2B12)	BH200-R014
	(K2B12)	BK200-R014
	(N2B12)	BN200-R014
1A-A1	(U2G08)	CU200-R010
	B5B06	
	V4B10	
1A-A1	*W1C08*	
R015		
+ A1 CDP 0 BIDI DATA P		
	(Q2J13)	BQ200-R015
	(H2J13)	BH200-R015
	(K2J13)	BK200-R015
	(N2J13)	BN200-R015
1A-A1	(U2S03)	CU200-R011
	B5B08	
	V4B12	
1A-A1	*W1E08*	

LINE/SIGNAL	PIN	SHEET/LINE
R016		
+ A2 CDP 0 TAG IN BIT 0		
	(Q2J07)	BQ200-R016
	(H2J07)	BH200-R016
	(K2J07)	BK200-R016
	(N2J07)	BN200-R016
1A-A1	D2G03	CD200-L009
	W5D12	
1A-A1	*E1E06*	
R017		
+ A2 CDP 0 TAG IN BIT 1		
	(Q2H07)	BQ200-R017
	(H2H07)	BH200-R017
	(K2H07)	BK200-R017
	(N2H07)	BN200-R017
1A-A1	D2B08	CD200-L010
	W5B12	
1A-A1	*E1E08*	
R018		
+ A2 PORT 0 CHECK 1		
	(Q2J09)	BQ200-R018
	(H2J09)	BH200-R018
	(K2J09)	BK200-R018
	(N2J09)	BN200-R018
1A-A1	D2B09	CD200-L005
	W5D13	
1A-A1	*F1A06*	
R019		
+ A2 DEVICE DRIVER ACTIVE 0		
	(Q2H09)	BQ200-R019
	(H2H09)	BH200-R019
	(K2H09)	BK200-R019
	(N2H09)	BN200-R019
1A-A1	D2U02	CD200-L017
	W5B11	
1A-A1	*E1D08*	
R020		
+ A2 CDP 0 BIDI DATA 0		
	(Q2B13)	BQ200-R020
	(H2B13)	BH200-R020
	(K2B13)	BK200-R020
	(N2B13)	BN200-R020
1A-A1	(D2J13)	CD200-R003
	C4B02	
	W5B02	
1A-A1	*C1E08*	
R021		
+ A2 CDP 0 BIDI DATA 1		
	(Q2H13)	BQ200-R021
	(H2H13)	BH200-R021
	(K2H13)	BK200-R021
	(N2H13)	BN200-R021
1A-A1	(D2G12)	CD200-R004
	C4B03	
	W5D04	
1A-A1	*D1B06*	

LINE/SIGNAL	PIN	SHEET/LINE
R022		
+ A2 CDP 0 BIDI DATA 2		
	(Q2H11)	BQ200-R022
	(H2H11)	BH200-R022
	(K2H11)	BK200-R022
	(N2H11)	BN200-R022
1A-A1	(D2J11)	CD200-R005
	C4B04	
	W5D03	
1A-A1	*D1A06*	
R023		
+ A2 CDP 0 BIDI DATA 3		
	(Q2D09)	BQ200-R023
	(H2D09)	BH200-R023
	(K2D09)	BK200-R023
	(N2D09)	BN200-R023
1A-A1	(D2J10)	CD200-R006
	C4B05	
	W5B03	
1A-A1	*D1A08*	
R024		
+ A2 CDP 0 BIDI DATA 4		
	(Q2J10)	BQ200-R024
	(H2J10)	BH200-R024
	(K2J10)	BK200-R024
	(N2J10)	BN200-R024
1A-A1	(D2P04)	CD200-R007
	C4B07	
	W5D05	
1A-A1	*D1C06*	
R025		
+ A2 CDP 0 BIDI DATA 5		
	(Q2D10)	BQ200-R025
	(H2D10)	BH200-R025
	(K2D10)	BK200-R025
	(N2D10)	BN200-R025
1A-A1	(D2G10)	CD200-R008
	C4B08	
	W5B05	
1A-A1	*D1C08*	
R026		
+ A2 CDP 0 BIDI DATA 6		
	(Q2D11)	BQ200-R026
	(H2D11)	BH200-R026
	(K2D11)	BK200-R026
	(N2D11)	BN200-R026
1A-A1	(D2J09)	CD200-R009
	C4B09	
	W5D06	
1A-A1	*D1D06*	
R027		
+ A2 CDP 0 BIDI DATA 7		
	(Q2C11)	BQ200-R027
	(H2C11)	BH200-R027
	(K2C11)	BK200-R027
	(N2C11)	BN200-R027
1A-A1	(D2G08)	CD200-R010
	C4B10	
	W5B06	
1A-A1	*D1D08*	

RH PORT/POWER CONTROL XRL BQ200

LINE/SIGNAL	PIN	SHEET/LINE
R028		
+ A2 CDP 0 BIDI DATA P		
	(Q2B05)	BQ200-R028
	(H2B05)	BH200-R028
	(K2B05)	BK200-R028
	(N2B05)	BN200-R028
1A-A1	(D2S03)	CD200-R011
	C4B12	
	W5B08	
1A-A1	*E1A08*	
R029		
+ RH GATE DIF LOW REG REAR		
	(Q2C05)	BQ200-R029
	R2C07	BR200-L053
R030		
+ RH GATE TARGET REG REAR		
	(Q2D07)	BQ200-R030
	R2C09	BR200-L052
R031		
+ RH GATE CHK POINT REG REAR		
	(Q2B08)	BQ200-R031
	R2N03	BR200-L046
R032		
+ RH CHECK 2 REAR		
	(Q2J06)	BQ200-R032
	P2H09	BP200-L032
R033		
- RH DEV SELECTED REAR		
	(Q2N04)	BQ200-R033
	N2M04	BN200-L017
	P2S10	BP200-L015
	R2T10	BR200-L013
R034		
+ RH COMMAND REAR		
	(Q2T06)	BQ200-R034
	R2T08	BR200-L012
R035		
- RH DEVICE CHECK 2 RESET REAR		
	(Q2J11)	BQ200-R035
	P2G09	BP200-L013
	R2T06	BR200-L016
R036		
+ RH PARM TRANSFER REAR		
	(Q2N08)	BQ200-R036
	R2T09	BR200-L014
R037		
+ RH BUSY W/O PIP REAR		
	(Q2G12)	BQ200-R037
	R2N05	BR200-L019
R038		
+ RH SEEK INCOMPLETE REAR		
	(Q2H10)	BQ200-R038
	R2G08	BR200-L045

LINE/SIGNAL	PIN	SHEET/LINE
R039		
- RH PORT FENCED REAR		
	(Q2G10)	BQ200-R039
	R2M05	BR200-L020
R040		
+ RH MOTOR CONTROL REAR		
	(Q2B02)	BQ200-R040
	R2P10	BR200-L023
R041		
- RH DRIVE PWR SWITCH OFF REAR		
	(Q2M03)	BQ200-R041
	R2P04	BR200-L021
R042		
- RELEASE BRAKE REAR		
	(Q2P09)	BQ200-R042
	(N2P09)	BN200-R042
YA600	*-L092*	
K417∋	*----B*	
	V5D13	
R043		
- DRIVE MOTOR RUN REAR		
	(Q2N07)	BQ200-R043
	(N2N07)	BN200-R043
YA600	*-L094*	
K419∋	*----X*	
	V5D12	
R044		
- PICK LOGIC POWER CONT REAR		
	(Q2S10)	BQ200-R044
	(N2S10)	BN200-R044
YA600	*-L058*	
K420∋	*----B*	
	V5D04	
R045		
+ RH CDP DATA BUS PWR BIT REAR 0		
	(Q2C02)	BQ200-R045
	P2N05	BP200-L003
	R2S02	BR200-L003
R046		
+ RH CDP DATA BUS PWR BIT REAR 1		
	(Q2C07)	BQ200-R046
	P2M05	BP200-L004
	R2P13	BR200-L004
R047		
+ RH CDP DATA BUS PWR BIT REAR 2		
	(Q2C10)	BQ200-R047
	P2M04	BP200-L005
	R2P11	BR200-L005
R048		
+ RH CDP DATA BUS PWR BIT REAR 3		
	(Q2B09)	BQ200-R048
	P2N03	BP200-L006
	R2D02	BR200-L006

LINE/SIGNAL	PIN	SHEET/LINE
R049		
+ RH CDP DATA BUS PWR BIT REAR 4		
	(Q2B10)	BQ200-R049
	P2M03	BP200-L007
	R2S10	BR200-L007
R050		
+ RH CDP DATA BUS PWR BIT REAR 5		
	(Q2C09)	BQ200-R050
	P2M02	BP200-L008
	R2T07	BR200-L008
R051		
+ RH CDP DATA BUS PWR BIT REAR 6		
	(Q2B04)	BQ200-R051
	P2H13	BP200-L009
	R2T11	BR200-L009
R052		
+ RH CDP DATA BUS PWR BIT REAR 7		
	(Q2C08)	BQ200-R052
	P2G13	BP200-L010
	R2N13	BR200-L010
R053		
+ RH CDP DATA BUS PWR BIT REAR P		
	(Q2C04)	BQ200-R053
	P2G12	BP200-L011
	R2S09	BR200-L011
R054		
+ RH MOTOR CONT PICKED OUT REAR		
	(Q2T11)	BQ200-R054
	Q2D12	BQ200-L049
R055		
+ RH BRAKE CONT PICKED OUT REAR		
	(Q2T12)	BQ200-R055
	Q2C06	BQ200-L050
R056		
- RH POWER CHECK 2 REAR		
	(Q2J02)	BQ200-R056
R057		
- RH + 5V PWR ON RESET OUT REAR		
	(Q2M13)	BQ200-R057
	Q2M09	BQ200-L051
R058		
- RH RESET CLOCK RING OUT REAR		
	(Q2P11)	BQ200-R058
	N2N11	BN200-L055
	Q2P12	BQ200-L052
R059		
- RH POWER ON RESET OUT REAR		
	(Q2P07)	BQ200-R059
	Q2T10	BQ200-L042
R060		
- POWER ON RESET REAR		
	(Q2M05)	BQ200-R060
	(N2M05)	BN200-R060
	P2U06	BP200-L012

LINE/SIGNAL	PIN	SHEET/LINE
R061		
- RESET CLOCK RING REAR		
	(Q2P04)	BQ200-R061
	(N2P04)	BN200-R061
	P2S05	BP200-L037
R062		
- RH POWER ON RESET POWER REAR		
	(Q2N06)	BQ200-R062
	M2S04	BM200-L041
	N2B07	BN200-L018
	P2B10	BP200-L038
	R2P06	BR200-L015
	U2S07	BU200-L039
1C-C3	B2AB2	HC4A1-L070
	X4D02	
R063		
- DRIVE CONT RELAY REAR		
	(Q2U12)	BQ200-R063
	(N2U12)	BN200-R063
YA200	*-L008*	
J749B	*----3*	
	V5D05	
R064		
+ RH R-W MODE SEL REAR		
	(Q2Y02)	BQ200-R064
	(Q2Z02)	BQ200-R065
	P2Y02	BP210-L012
R065		
+ RH R-W MODE SEL REAR		
	(Q2Z02)	BQ200-R065
	(Q2Y02)	BQ200-R064
	P2Y02	BP210-L012
R066		
- CONTINUED ON PAGE BQ210		
	(Q2)	BQ200-R066
	Q2	BQ200-L069

003 -	CONTINUED FROM PAGE BQ200 ----	----
004 -	RH R-W 1-2-3-4/HAR BIT REAR 6	Y27
005 -	RH R-W 1-2-3-4/HAR BIT REAR 6	Z27
006 -	RH R-W 1-2-3-4/HAR BIT REAR 7	Y32
007 -	RH R-W 1-2-3-4/HAR BIT REAR 7	Z32
008 -	RH R-W 1-2-3-4/HAR BIT REAR P	Y13
009 -	RH R-W 1-2-3-4/HAR BIT REAR P	Z13
010 -	LH PIP SYNC REAR ----------	Y24
011 -	LH PIP SYNC REAR ----------	Z24
012 -	RH PIP SYNC REAR ----------	Y05
013 -	RH PIP SYNC REAR ----------	Z05
014 -	RH INDEX REAR ----------	Y25
015 -	RH INDEX REAR ----------	Z25
016 -	RH SEGMENT BOUNDARY REAR -----	Y06
017 -	RH SEGMENT BOUNDARY REAR -----	Z06
018 -	RH PADDING MODE REAR --------	Y26
019 -	RH PADDING MODE REAR ---------	Z26
020 -	RH CHK POINT/TAR/DIF REAR 0 --	X06
021 -	RH CHK POINT/TAR/DIF REAR 1 --	X07
022 -	RH CHK POINT/TAR/DIF REAR 2 --	X26
023 -	RH CHK POINT/TAR/DIF REAR 3 --	X13
024 -	RH CHK POINT/TAR/DIF REAR 4 --	X02
025 -	RH CHK POINT/TAR/DIF REAR 5 --	X25
026 -	RH CHK POINT/TAR/DIF REAR 6 --	X05
027 -	RH CHK POINT/TAR/DIF REAR 7 --	X11
028 -	RH CHK POINT/TAR/DIF REAR P --	X22
029 +	RH SEQ WRITE BUS BIT REAR 0 --	X30
030 +	RH SEQ WRITE BUS BIT REAR 1 --	X28
031 +	RH SEQ WRITE BUS BIT REAR 2 --	X32
032 +	RH SEQ WRITE BUS BIT REAR 3 --	X24
033 +	RH SEQ WRITE BUS BIT REAR 4 --	X33
034 +	RH SEQ WRITE BUS BIT REAR 5 --	X03
035 +	RH SEQ WRITE BUS BIT REAR 6 --	X10
036 +	RH SEQ WRITE BUS BIT REAR 7 --	X09
037 +	RH SEQ WRITE BUS BIT REAR P --	X29
038 +	LH LOAD POWER CTRL REG REAR --	M08
039 +	LH SEQ WRITE BUS BIT REAR 2 --	J05
040 +	5V RH SERVO, PORT, & SEQ REAR	S08
041 +	5V R-W CTRL, PT2 REAR --------	G13
042 +	5/24V RH PORT REAR ----------	S04
043 +	RH EVERGREEN ID BIT REAR -----	H08
044 -	RH WRITE INHIBIT REAR --------	G04
045 -	RH SPINDLE ID ON BOARD REAR --	D05

---- -	CONTINUED FROM PAGE BQ200 ----	003
Y22 +	RH GATE R-W STATUS 1 REAR ---	004
Z22 +	RH GATE R-W STATUS 1 REAR ---	005
Y03 +	RH GATE R-W STATUS 2 REAR ---	006
Z03 +	RH GATE R-W STATUS 2 REAR ---	007
Y28 +	RH GATE R-W STATUS 3 REAR ---	008
Z28 +	RH GATE R-W STATUS 3 REAR ---	009
Y07 +	RH GATE R-W STATUS 4 REAR ---	010
Z07 +	RH GATE R-W STATUS 4 REAR ---	011
Y04 +	RH GATE HEAD ADDR REG REAR --	012
Z04 +	RH GATE HEAD ADDR REG REAR --	013
Y12 +	RH SEL A1/A2 REAR ----------	014
Z12 +	RH SEL A1/A2 REAR ----------	015
Y23 -	RESET CHECK 1 REAR ----------	016
Z23 -	RESET CHECK 1 REAR ----------	017
W23 -	RH READY LED REAR ----------	018
W03 +	RH READY LED TERM REAR -------	019
W12 +	5V RH COMMON LED REAR --------	020
W06 +	5/24V RH LED REAR ----------	021
W09 +	5V RH LED REAR ----------	022
H04 +	RH SENSE SOFT START LT REAR --	023
M07 +	RH 5V COMMON POR REAR --------	024
U13 +	READY LED DEVICE 3 ----------	025
B03 +	RH PARM TRANSFER EN REAR -----	026
W11 +	RH DRIVE OWE INTERRUPT REAR --	027

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- CONTINUED FROM PAGE BQ200		
	Q2	BQ210-L003
	(Q2)	BQ210-R003
L004		
- RH R-W 1-2-3-4/HAR BIT REAR 6		
	Q2Y27	BQ210-L004
	(P2Y27)	BP200-R066
	Q2Z27	BQ210-L005
L005		
- RH R-W 1-2-3-4/HAR BIT REAR 6		
	Q2Z27	BQ210-L005
	(P2Y27)	BP200-R066
	Q2Y27	BQ210-L004
L006		
- RH R-W 1-2-3-4/HAR BIT REAR 7		
	Q2Y32	BQ210-L006
	(P2Y32)	BP200-R067
	Q2Z32	BQ210-L007
L007		
- RH R-W 1-2-3-4/HAR BIT REAR 7		
	Q2Z32	BQ210-L007
	(P2Y32)	BP200-R067
	Q2Y32	BQ210-L006
L008		
- RH R-W 1-2-3-4/HAR BIT REAR P		
	Q2Y13	BQ210-L008
	(P2Y13)	BP200-R068
	Q2Z13	BQ210-L009
L009		
- RH R-W 1-2-3-4/HAR BIT REAR P		
	Q2Z13	BQ210-L009
	(P2Y13)	BP200-R068
	Q2Y13	BQ210-L008
L010		
- LH PIP SYNC REAR		
	Q2Y24	BQ210-L010
	(P2Y24)	BP210-R018
	(P2Z05)	BP210-R019
	N2Y05	BN210-L012
	N2Z05	BN210-L013
	Q2Z24	BQ210-L011
L011		
- LH PIP SYNC REAR		
	Q2Z24	BQ210-L011
	(P2Y24)	BP210-R018
	(P2Z05)	BP210-R019
	N2Y05	BN210-L012
	N2Z05	BN210-L013
	Q2Y24	BQ210-L010
L012		
- RH PIP SYNC REAR		
	Q2Y05	BQ210-L012
	(P2Y05)	BP210-R004
	(P2Z24)	BP210-R005
	N2Y24	BN210-L010
	N2Z24	BN210-L011
	Q2Z05	BQ210-L013

LINE/SIGNAL	PIN	SHEET/LINE
L013		
- RH PIP SYNC REAR		
	Q2Z05	BQ210-L013
	(P2Y05)	BP210-R004
	(P2Z24)	BP210-R005
	N2Y24	BN210-L010
	N2Z24	BN210-L011
	Q2Y05	BQ210-L012
L014		
- RH INDEX REAR		
	Q2Y25	BQ210-L014
	(P2Y25)	BP210-R008
	Q2Z25	BQ210-L015
L015		
- RH INDEX REAR		
	Q2Z25	BQ210-L015
	(P2Y25)	BP210-R008
	Q2Y25	BQ210-L014
L016		
- RH SEGMENT BOUNDARY REAR		
	Q2Y06	BQ210-L016
	(P2Y06)	BP210-R007
	Q2Z06	BQ210-L017
L017		
- RH SEGMENT BOUNDARY REAR		
	Q2Z06	BQ210-L017
	(P2Y06)	BP210-R007
	Q2Y06	BQ210-L016
L018		
- RH PADDING MODE REAR		
	Q2Y26	BQ210-L018
	(P2Y26)	BP210-R006
	Q2Z26	BQ210-L019
L019		
- RH PADDING MODE REAR		
	Q2Z26	BQ210-L019
	(P2Y26)	BP210-R006
	Q2Y26	BQ210-L018
L020		
- RH CHK POINT/TAR/DIF REAR 0		
	Q2X06	BQ210-L020
	(R2D05)	BR200-R012
	(R2X06)	BR210-R013
L021		
- RH CHK POINT/TAR/DIF REAR 1		
	Q2X07	BQ210-L021
	(R2G13)	BR200-R013
	(R2X07)	BR210-R014
L022		
- RH CHK POINT/TAR/DIF REAR 2		
	Q2X26	BQ210-L022
	(R2B05)	BR200-R014
	(R2X26)	BR210-R015

LINE/SIGNAL	PIN	SHEET/LINE
L023		
- RH CHK POINT/TAR/DIF REAR 3		
	Q2X13	BQ210-L023
	(R2B04)	BR200-R015
	(R2X13)	BR210-R016
L024		
- RH CHK POINT/TAR/DIF REAR 4		
	Q2X02	BQ210-L024
	(R2B07)	BR200-R016
	(R2X02)	BR210-R017
L025		
- RH CHK POINT/TAR/DIF REAR 5		
	Q2X25	BQ210-L025
	(R2H12)	BR200-R017
	(R2X25)	BR210-R018
L026		
- RH CHK POINT/TAR/DIF REAR 6		
	Q2X05	BQ210-L026
	(R2J12)	BR200-R018
	(R2X05)	BR210-R019
L027		
- RH CHK POINT/TAR/DIF REAR 7		
	Q2X11	BQ210-L027
	(R2H13)	BR200-R019
	(R2X11)	BR210-R020
L028		
- RH CHK POINT/TAR/DIF REAR P		
	Q2X22	BQ210-L028
	(R2G12)	BR200-R020
	(R2X22)	BR210-R021
L029		
+ RH SEQ WRITE BUS BIT REAR 0		
	Q2X30	BQ210-L029
	(R2U02)	BR200-R003
	(R2X30)	BR210-R004
L030		
+ RH SEQ WRITE BUS BIT REAR 1		
	Q2X28	BQ210-L030
	(R2U11)	BR200-R004
	(R2X28)	BR210-R005
L031		
+ RH SEQ WRITE BUS BIT REAR 2		
	Q2X32	BQ210-L031
	(R2T02)	BR200-R005
	(R2X32)	BR210-R006
	N2J04	BN210-L039
L032		
+ RH SEQ WRITE BUS BIT REAR 3		
	Q2X24	BQ210-L032
	(R2U12)	BR200-R006
	(R2X24)	BR210-R007
L033		
+ RH SEQ WRITE BUS BIT REAR 4		
	Q2X33	BQ210-L033
	(R2T03)	BR200-R007
	(R2X33)	BR210-R008

LINE/SIGNAL	PIN	SHEET/LINE
L034		
+ RH SEQ WRITE BUS BIT REAR 5		
	Q2X03	BQ210-L034
	(R2S05)	BR200-R008
	(R2X03)	BR210-R009
L035		
+ RH SEQ WRITE BUS BIT REAR 6		
	Q2X10	BQ210-L035
	(R2S03)	BR200-R009
	(R2X10)	BR210-R010
L036		
+ RH SEQ WRITE BUS BIT REAR 7		
	Q2X09	BQ210-L036
	(R2U05)	BR200-R010
	(R2X09)	BR210-R011
L037		
+ RH SEQ WRITE BUS BIT REAR P		
	Q2X29	BQ210-L037
	(R2U07)	BR200-R011
	(R2X29)	BR210-R012
L038		
+ LH LOAD POWER CTRL REG REAR		
	Q2M08	BQ210-L038
	(M2N10)	BM200-R022
	N2D06	BN200-L024
L039		
+ LH SEQ WRITE BUS BIT REAR 2		
	Q2J05	BQ210-L039
	(M2T02)	BM200-R005
	(M2X32)	BM210-R006
	N2X32	BN210-L031
L040		
+ 5V RH SERVO, PORT, & SEQ REAR		
	Q2S08	BQ210-L040
	W3A14	
YA420	*-R099*	
	W4E01	
YA420	*-R100*	
J682-	*PIN15*	
	W4A14	
YA420	*-R092*	
	W5E01	
YA420	*-R091*	
J682-	*PIN09*	
L041		
+ 5V R-W CTRL, PT2 REAR		
	Q2G13	BQ210-L041
	N2G13	BN210-L041
	Q6E02	
YA420	*-R009*	
J681-	*PIN03*	
	R6A02	
YA420	*-R083*	
J682-	*PIN03*	
	R6B02	
YA420	*-R021*	
J681-	*PIN11*	
	R6C02	
YA420	*-R095*	
J682-	*PIN11*	

LINE/SIGNAL	PIN	SHEET/LINE
L042		
+ 5/24V RH PORT REAR		
	Q2S04	BQ210-L042
	N6E02	
	T6A02	
YA420	*-R097*	
J682-	*PIN13*	
L043		
+ RH EVERGREEN ID BIT REAR		
	Q2H08	BQ210-L043
	(U2U13)	BU200-R044
L044		
- RH WRITE INHIBIT REAR		
	Q2G04	BQ210-L044
	(U2B10)	BU200-R006
	(U2G10)	BU200-R007
	R2G04	BR200-L044
	V3B10	
L045		
- RH SPINDLE ID ON BOARD REAR		
	Q2D05	BQ210-L045
	Q2D08	
R003		
- CONTINUED FROM PAGE BQ200		
	(Q2)	BQ210-R003
	Q2	BQ210-L003
R004		
+ RH GATE R-W STATUS 1 REAR		
	(Q2Y22)	BQ210-R004
	(Q2Z22)	BQ210-R005
	P2Y22	BP210-L013
R005		
+ RH GATE R-W STATUS 1 REAR		
	(Q2Z22)	BQ210-R005
	(Q2Y22)	BQ210-R004
	P2Y22	BP210-L013
R006		
+ RH GATE R-W STATUS 2 REAR		
	(Q2Y03)	BQ210-R006
	(Q2Z03)	BQ210-R007
	P2Y03	BP210-L014
R007		
+ RH GATE R-W STATUS 2 REAR		
	(Q2Z03)	BQ210-R007
	(Q2Y03)	BQ210-R006
	P2Y03	BP210-L014
R008		
+ RH GATE R-W STATUS 3 REAR		
	(Q2Y28)	BQ210-R008
	(Q2Z28)	BQ210-R009
	P2Y28	BP210-L015
R009		
+ RH GATE R-W STATUS 3 REAR		
	(Q2Z28)	BQ210-R009
	(Q2Y28)	BQ210-R008
	P2Y28	BP210-L015

LINE/SIGNAL	PIN	SHEET/LINE
R010		
+ RH GATE R-W STATUS 4 REAR		
	(Q2Y07)	BQ210-R010
	(Q2Z07)	BQ210-R011
	P2Y07	BP210-L016
R011		
+ RH GATE R-W STATUS 4 REAR		
	(Q2Z07)	BQ210-R011
	(Q2Y07)	BQ210-R010
	P2Y07	BP210-L016
R012		
+ RH GATE HEAD ADDR REG REAR		
	(Q2Y04)	BQ210-R012
	(Q2Z04)	BQ210-R013
	P2Y04	BP210-L017
R013		
+ RH GATE HEAD ADDR REG REAR		
	(Q2Z04)	BQ210-R013
	(Q2Y04)	BQ210-R012
	P2Y04	BP210-L017
R014		
+ RH SEL A1/A2 REAR		
	(Q2Y12)	BQ210-R014
	(Q2Z12)	BQ210-R015
	P2Y12	BP210-L018
R015		
+ RH SEL A1/A2 REAR		
	(Q2Z12)	BQ210-R015
	(Q2Y12)	BQ210-R014
	P2Y12	BP210-L018
R016		
- RESET CHECK 1 REAR		
	(Q2Y23)	BQ210-R016
	(N2Y23)	BN210-R016
	(N2Z23)	BN210-R017
	(Q2Z23)	BQ210-R017
	P2Y23	BP210-L019
	P2Z23	BP210-L020
R017		
- RESET CHECK 1 REAR		
	(Q2Z23)	BQ210-R017
	(N2Y23)	BN210-R016
	(N2Z23)	BN210-R017
	(Q2Y23)	BQ210-R016
	P2Y23	BP210-L019
	P2Z23	BP210-L020
R018		
- RH READY LED REAR		
	(Q2W23)	BQ210-R018
R019		
+ RH READY LED TERM REAR		
	(Q2W03)	BQ210-R019
R020		
+ 5V RH COMMON LED REAR		
	(Q2W12)	BQ210-R020

RH PORT/POWER CONTROL XRL BQ210

LINE/SIGNAL	PIN	SHEET/LINE
R021		
+ 5/24V RH LED REAR		
	(Q2W06)	BQ210-R021
R022		
+ 5V RH LED REAR		
	(Q2W09)	BQ210-R022
R023		
+ RH SENSE SOFT START LT REAR		
	(Q2H04)	BQ210-R023
	R2N11	BR200-L055
R024		
+ RH 5V COMMON POR REAR		
	(Q2M07)	BQ210-R024
	N2N05	BN200-L041
R025		
+ READY LED DEVICE 3		
	(Q2U13)	BQ210-R025
YA120	*-L012*	
	A1C11	
R026		
+ RH PARM TRANSFER EN REAR		
	(Q2B03)	BQ210-R026
	R2S08	BR200-L060
R027		
+ RH DRIVE OWE INTERRUPT REAR		
	(Q2W11)	BQ210-R027

```
003 + RH CDP DATA BUS PWR BIT REAR 0 S02
004 + RH CDP DATA BUS PWR BIT REAR 1 P13
005 + RH CDP DATA BUS PWR BIT REAR 2 P11
006 + RH CDP DATA BUS PWR BIT REAR 3 D02
007 + RH CDP DATA BUS PWR BIT REAR 4 S10
008 + RH CDP DATA BUS PWR BIT REAR 5 T07
009 + RH CDP DATA BUS PWR BIT REAR 6 T11
010 + RH CDP DATA BUS PWR BIT REAR 7 N13
011 + RH CDP DATA BUS PWR BIT REAR P S09
012 + RH COMMAND REAR -------------- T08
013 - RH DEV SELECTED REAR --------- T10
014 + RH PARM TRANSFER REAR -------- T09
015 - RH POWER ON RESET POWER REAR   P06
016 - RH DEVICE CHECK 2 RESET REAR   T06
017 + RH AGC ACTIVE REAR ----------- N04
018 + LH AGC ACTIVE REAR ----------- P05
019 + RH BUSY W/O PIP REAR  -------- N05
020 - RH PORT FENCED REAR  --------- M05
021 - RH DRIVE PWR SWITCH OFF REAR   P04
022 + LH PULSE RATE REAR  ---------- P07
023 + RH MOTOR CONTROL REAR  ------- P10
024 - DISABLE SWITCH DEVICE 3 ------ M09
025 + A CLOCK REAR  ---------------- M02
026 + B CLOCK REAR  ---------------- N07
027 + B CLOCK REAR  ---------------- U09
028 + C CLOCK REAR  ---------------- C03
029 + D CLOCK REAR  ---------------- M03
030 + E CLOCK REAR  ---------------- N12
031 + E CLOCK REAR  ---------------- U10
032 + F CLOCK REAR  ---------------- M08
033 + G CLOCK REAR  ---------------- C02
034 + G CLOCK REAR  ---------------- S07
035 + H CLOCK REAR  ---------------- T12
036 + AB CLOCK REAR  --------------- B03
037 + CD CLOCK REAR  --------------- C05
038 + EF CLOCK REAR  --------------- M13
039 + GH CLOCK REAR  --------------- B02
040 - CLOCK CHECK HOLD REAR  ------- T04
041 - LH POWER ON RESET POWER REAR   S04
042 + RH POSITION ERROR SIG A REAR - H03
043 + RH POSITION ERROR SIG B REAR - H02
044 - RH WRITE INHIBIT REAR  ------- G04
045 + RH SEEK INCOMPLETE REAR ------ G08
046 + RH GATE CHK POINT REG REAR  -- N03
047 - RH RPS CLOCK 1 REAR  --------- C06
048 + RH RPS CLOCK 3 REAR  --------- C04
049 + RH RPS CLOCK 4 REAR  --------- C11
050 - RH GAP REAR  ----------------- B08
051 + RH R-W ACTIVE REAR  ---------- D12
052 + RH GATE TARGET REG REAR  ----- C09
053 + RH GATE DIF LOW REG REAR  ---- C07
054 - RH POR SYNC TO CLOCK REAR  --- S13
055 + RH SENSE SOFT START LT REAR -- N11
056 + RH DISABLE MEMORY OUTPUT REAR  Y12
057 + RH CHIP DISABLE REAR --------- Y23
058 + RH PROGRAM MEMORY REAR ------- Y27
059 - RH MOD D REAR ---------------- M12
060 + RH PARM TRANSFER EN REAR ----- S08
061 - 5V RH RIGHT REAR ------------- U04
```

DEVICE SEQUENCER/SERVO/RPS CARD

INTRODUCTION

The device sequencer/servo/RPS card communicates with the controller, controls actuator motion, performs power sequencing and performs rotational position sensing. There is one device sequencer/servo/RPS card for each actuator.

DESCRIPTION

Communication with the Controller

The device sequencer receives commands, performs the requested functions and generates the response to the controller.

Control of Actuator Motion

The device sequencer and servo control logic have the responsibility of placing the heads over a specific track on the disk surface for the purpose of transferring data. This logic also ensures that the head remains at the specified location until told to move to another location on the disk surface.

Power Sequencing

The device sequencer controls the purge, warm-up cycle, and sweep operation during power on. It controls the park, coast, and brake cycles during power off.

Rotational Position Sensing (RPS)

The RPS function provides 'index' and 'cell boundary' signals during a read/write function.

A record ready interrupt of RPS allows the disconnection from the channel while searching for a record. This disconnection allows the channel to be available for other activities during the rotational delay of the disk.

PRIMARY PARTS

- Parts related to device sequencer functions:
  - EPROMS
  - Two memory data registers
  - Incremental storage address register
  - Sequencer control register
- Parts related to servo control functions:
  - Difference high and difference low counters
  - Checkpoint log register
  - Servo control registers 4 and 6
  - Cylinder pulse generation
  - Crash stop protection
  - Ramp select decode
- Parts related to RPS functions:
  - Index and guard band detection
  - Target register
  - Interrupt counter
  - Clock counters
  - Sector counters
  - RPS clock generation

See next page for more.

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U02 + RH SEQ WRITE BUS BIT REAR 0 -- 003
U11 + RH SEQ WRITE BUS BIT REAR 1 -- 004
T02 + RH SEQ WRITE BUS BIT REAR 2 -- 005
U12 + RH SEQ WRITE BUS BIT REAR 3 -- 006
T03 + RH SEQ WRITE BUS BIT REAR 4 -- 007
S05 + RH SEQ WRITE BUS BIT REAR 5 -- 008
S03 + RH SEQ WRITE BUS BIT REAR 6 -- 009
U05 + RH SEQ WRITE BUS BIT REAR 7 -- 010
U07 + RH SEQ WRITE BUS BIT REAR P -- 011
D05 - RH CHK POINT/TAR/DIF REAR 0 -- 012
G13 - RH CHK POINT/TAR/DIF REAR 1 -- 013
B05 - RH CHK POINT/TAR/DIF REAR 2 -- 014
B04 - RH CHK POINT/TAR/DIF REAR 3 -- 015
B07 - RH CHK POINT/TAR/DIF REAR 4 -- 016
H12 - RH CHK POINT/TAR/DIF REAR 5 -- 017
J12 - RH CHK POINT/TAR/DIF REAR 6 -- 018
H13 - RH CHK POINT/TAR/DIF REAR 7 -- 019
G12 - RH CHK POINT/TAR/DIF REAR P -- 020
N02 + RH SEQ STATUS STROBE REAR  --- 021
N10 + RH LOAD POWER CTRL REG REAR  - 022
N09 + RH LOAD SEQ STATUS REG REAR  - 023
M04 + RH SEQ MOVE FORMAT REAR  ----- 024
U06 + RH SEQ CHECK REAR  ----------- 025
G02 + RH CHK POINT LOG CHECK REAR  - 026
H11 + RH SERVO CTRL CHECK REAR  ---- 027
D04 + RH RECORD READY IRPT REAR  --- 028
B10 + RH RPS CHECK REAR  ----------- 029
N06 - RH LOAD REG 3 REAR  ---------- 030
B13 - RH RAMP SELECT 0 REAR -------- 031
C08 - RH RAMP SELECT 1 REAR -------- 032
C12 - RH RAMP SELECT 2 REAR -------- 033
D09 - RH RAMP SELECT 3 REAR -------- 034
M10 + RH DIF COUNT 256 REAR  ------- 035
J07 + RH DIF COUNT 128 REAR  ------- 036
G07 + RH DIF COUNT 64 REAR  -------- 037
G10 + RH DIF COUNT 32 REAR  -------- 038
H09 + RH DIF COUNT 16 REAR  -------- 039
J10 + RH DIF COUNT 8 REAR  --------- 040
H07 + RH DIF COUNT 4 REAR  --------- 041
H08 + RH DIF COUNT 2 REAR  --------- 042
G09 + RH DIF COUNT 1 REAR  --------- 043
H06 - RH INHIBIT REAR  ------------- 044
H05 - RH PARK REAR  ---------------- 045
G05 + RH COMPRESS REAR  ------------ 046
J13 - RH REVERSE REAR  ------------- 047
J05 - RH FORWARD REAR  ------------- 048
J06 - RH REZERO REAR  -------------- 049
H10 - RH RESET FILTER REAR  -------- 050
P02 - RH OFFSET ACTIVE REAR  ------- 051
J11 - RH GATE DIFFERENCE TP REAR  -- 052
J09 + RH PES INTEGRATE REAR -------- 053
D10 - RH CYLINDER PULSE REAR  ------ 054
C10 + RH CYLINDER PULSE REAR  ------ 055
B12 - RH TRACK FOLLOW REAR  -------- 056
D11 + RH TRACK FOLLOW REAR  -------- 057
D06 - RH COARSE TRACK REAR  -------- 058
D07 - RH WRITE READY REAR  --------- 059
B09 + RH PULSE RATE REAR  ---------- 060
G03 + RH INDEX 1 REAR  ------------- 061
C13 + RH INDEX 2 REAR  ------------- 062
D13 + RH SEGMENT BOUNDARY REAR ----- 063
J02 + RH INNER GUARD BAND REAR  ---- 064
H04 + RH OUTER GUARD BAND REAR  ---- 065
M07 + RH RPS CLOCK T-0 (L1) REAR --- 066
S12 - RH POR SYNC TO CLOCK REAR  --- 067
---- - CONTINUED ON PAGE BR210 ------ 068
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LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ RH CDP DATA BUS PWR BIT REAR 0		
	R2S02	BR200-L003
	(Q2C02)	BQ200-R045
	P2N05	BP200-L003
L004		
+ RH CDP DATA BUS PWR BIT REAR 1		
	R2P13	BR200-L004
	(Q2C07)	BQ200-R046
	P2M05	BP200-L004
L005		
+ RH CDP DATA BUS PWR BIT REAR 2		
	R2P11	BR200-L005
	(Q2C10)	BQ200-R047
	P2M04	BP200-L005
L006		
+ RH CDP DATA BUS PWR BIT REAR 3		
	R2D02	BR200-L006
	(Q2B09)	BQ200-R048
	P2N03	BP200-L006
L007		
+ RH CDP DATA BUS PWR BIT REAR 4		
	R2S10	BR200-L007
	(Q2B10)	BQ200-R049
	P2M03	BP200-L007
L008		
+ RH CDP DATA BUS PWR BIT REAR 5		
	R2T07	BR200-L008
	(Q2C09)	BQ200-R050
	P2M02	BP200-L008
L009		
+ RH CDP DATA BUS PWR BIT REAR 6		
	R2T11	BR200-L009
	(Q2B04)	BQ200-R051
	P2H13	BP200-L009
L010		
+ RH CDP DATA BUS PWR BIT REAR 7		
	R2N13	BR200-L010
	(Q2C08)	BQ200-R052
	P2G13	BP200-L010
L011		
+ RH CDP DATA BUS PWR BIT REAR P		
	R2S09	BR200-L011
	(Q2C04)	BQ200-R053
	P2G12	BP200-L011
L012		
+ RH COMMAND REAR		
	R2T08	BR200-L012
	(Q2T06)	BQ200-R034
L013		
- RH DEV SELECTED REAR		
	R2T10	BR200-L013
	(Q2N04)	BQ200-R033
	N2M04	BN200-L017
	P2S10	BP200-L015
L014		
+ RH PARM TRANSFER REAR		
	R2T09	BR200-L014
	(Q2N08)	BQ200-R036
L015		
- RH POWER ON RESET POWER REAR		
	R2P06	BR200-L015
	(Q2N06)	BQ200-R062
	M2S04	BM200-L041
	N2B07	BN200-L018
	P2B10	BP200-L038
	U2S07	BU200-L039
1C-C3	B2AB2	HC4A1-L070
	X4D02	
L016		
- RH DEVICE CHECK 2 RESET REAR		
	R2T06	BR200-L016
	(Q2J11)	BQ200-R035
	P2G09	BP200-L013
L017		
+ RH AGC ACTIVE REAR		
	R2N04	BR200-L017
	(U2S13)	BU200-R012
	M2P05	BM200-L018
L018		
+ LH AGC ACTIVE REAR		
	R2P05	BR200-L018
	(T2S13)	BT200-R012
	M2N04	BM200-L017
L019		
+ RH BUSY W/O PIP REAR		
	R2N05	BR200-L019
	(Q2G12)	BQ200-R037
L020		
- RH PORT FENCED REAR		
	R2M05	BR200-L020
	(Q2G10)	BQ200-R039
L021		
- RH DRIVE PWR SWITCH OFF REAR		
	R2P04	BR200-L021
	(Q2M03)	BQ200-R041
L022		
+ LH PULSE RATE REAR		
	R2P07	BR200-L022
	(M2B09)	BM200-R060
L023		
+ RH MOTOR CONTROL REAR		
	R2P10	BR200-L023
	(Q2B02)	BQ200-R040
L024		
- DISABLE SWITCH DEVICE 3		
	R2M09	BR200-L024
YA120	*-R066*	
	B1B13	
L025		
+ A CLOCK REAR		
	R2M02	BR200-L025
	(P2S07)	BP200-R029
	M2M02	BM200-L025
	N2T09	BN200-L028
	Q2T09	BQ200-L028
L026		
+ B CLOCK REAR		
	R2N07	BR200-L026
	(P2U05)	BP200-R030
	M2N07	BM200-L026
	M2U09	BM200-L027
	N2T05	BN200-L029
	Q2T05	BQ200-L029
	R2U09	BR200-L027
L027		
+ B CLOCK REAR		
	R2U09	BR200-L027
	(P2U05)	BP200-R030
	M2N07	BM200-L026
	M2U09	BM200-L027
	N2T05	BN200-L029
	Q2T05	BQ200-L029
	R2N07	BR200-L026
L028		
+ C CLOCK REAR		
	R2C03	BR200-L028
	(P2T03)	BP200-R031
	M2C03	BM200-L028
	N2T08	BN200-L030
	Q2T08	BQ200-L030
L029		
+ D CLOCK REAR		
	R2M03	BR200-L029
	(P2S08)	BP200-R032
	M2M03	BM200-L029
	N2T07	BN200-L031
	Q2T07	BQ200-L031
L030		
+ E CLOCK REAR		
	R2N12	BR200-L030
	(P2U10)	BP200-R033
	M2N12	BM200-L030
	M2U10	BM200-L031
	N2U06	BN200-L032
	Q2U06	BQ200-L032
	R2U10	BR200-L031
L031		
+ E CLOCK REAR		
	R2U10	BR200-L031
	(P2U10)	BP200-R033
	M2N12	BM200-L030
	M2U10	BM200-L031
	N2U06	BN200-L032
	Q2U06	BQ200-L032
	R2N12	BR200-L030
L032		
+ F CLOCK REAR		
	R2M08	BR200-L032
	(P2U11)	BP200-R034
	M2M08	BM200-L032
	N2S03	BN200-L033
	Q2S03	BQ200-L033
L033		
+ G CLOCK REAR		
	R2C02	BR200-L033
	(P2T11)	BP200-R035
	M2C02	BM200-L033
	M2S07	BM200-L034
	N2T03	BN200-L034
	Q2T03	BQ200-L034
	R2S07	BR200-L034
L034		
+ G CLOCK REAR		
	R2S07	BR200-L034
	(P2T11)	BP200-R035
	M2C02	BM200-L033
	M2S07	BM200-L034
	N2T03	BN200-L034
	Q2T03	BQ200-L034
	R2C02	BR200-L033
L035		
+ H CLOCK REAR		
	R2T12	BR200-L035
	(P2U04)	BP200-R036
	M2T12	BM200-L035
	N2U05	BN200-L035
	N2D13	BN200-L053
	Q2U05	BQ200-L035
	Q2D13	BQ200-L053
L036		
+ AB CLOCK REAR		
	R2B03	BR200-L036
	(P2T10)	BP200-R025
	M2B03	BM200-L036
L037		
+ CD CLOCK REAR		
	R2C05	BR200-L037
	(P2U09)	BP200-R026
	M2C05	BM200-L037
L038		
+ EF CLOCK REAR		
	R2M13	BR200-L038
	(P2U07)	BP200-R027
	M2M13	BM200-L038
L039		
+ GH CLOCK REAR		
	R2B02	BR200-L039
	(P2T06)	BP200-R028
	M2B02	BM200-L039
L040		
- CLOCK CHECK HOLD REAR		
	R2T04	BR200-L040
	(P2U02)	BP200-R037
	M2T04	BM200-L040
	N2G03	BN200-L036
	Q2G03	BQ200-L036
L041		
- LH POWER ON RESET POWER REAR		
	R2S04	BR200-L041
	(N2N06)	BN200-R062
	M2P06	BM200-L015
	P2N11	BP200-L039
	T2S07	BT200-L039
1C-C2	B2AB2	HC3A1-L070
	X2D02	
L042		
+ RH POSITION ERROR SIG A REAR		
	R2H03	BR200-L042
	(U2G07)	BU200-R005
L043		
+ RH POSITION ERROR SIG B REAR		
	R2H02	BR200-L043
	(U2M12)	BU200-R003
L044		
- RH WRITE INHIBIT REAR		
	R2G04	BR200-L044
	(U2B10)	BU200-R006
	(U2G10)	BU200-R007
	Q2G04	BQ210-L044
	V3B10	
L045		
+ RH SEEK INCOMPLETE REAR		
	R2G08	BR200-L045
	(Q2H10)	BQ200-R038
L046		
+ RH GATE CHK POINT REG REAR		
	R2N03	BR200-L046
	(Q2B08)	BQ200-R031
L047		
- RH RPS CLOCK 1 REAR		
	R2C06	BR200-L047
	(U2U10)	BU200-R019
L048		
+ RH RPS CLOCK 3 REAR		
	R2C04	BR200-L048
	(U2U04)	BU200-R017
L049		
+ RH RPS CLOCK 4 REAR		
	R2C11	BR200-L049
	(U2S09)	BU200-R020
L050		
- RH GAP REAR		
	R2B08	BR200-L050
	(U2U09)	BU200-R018
L051		
+ RH R-W ACTIVE REAR		
	R2D12	BR200-L051
	(P2B08)	BP200-R005
L052		
+ RH GATE TARGET REG REAR		
	R2C09	BR200-L052
	(Q2D07)	BQ200-R030
L053		
+ RH GATE DIF LOW REG REAR		
	R2C07	BR200-L053
	(Q2C05)	BQ200-R029
L054		
- RH POR SYNC TO CLOCK REAR		
	R2S13	BR200-L054
	(R2S12)	BR200-R067
L055		
+ RH SENSE SOFT START LT REAR		
	R2N11	BR200-L055
	(Q2H04)	BQ210-R023
L056		
+ RH DISABLE MEMORY OUTPUT REAR		
	R2Y12	BR200-L056
L057		
+ RH CHIP DISABLE REAR		
	R2Y23	BR200-L057
L058		
+ RH PROGRAM MEMORY REAR		
	R2Y27	BR200-L058
L059		
- RH MOD D REAR		
	R2M12	BR200-L059
1C-C4	P4D12	HPA40-L012
J180-	*PIN22*	
YA500	*-L096*	
	W3D12	
L060		
+ RH PARM TRANSFER EN REAR		
	R2S08	BR200-L060
	(Q2B03)	BQ210-R026
L061		
- 5V RH RIGHT REAR		
	R2U04	BR200-L061
	P2M09	BP210-L022
	U2B06	BU200-L045
	U2G06	BU200-L046
-TP--	*M6B04*	
YA420	*-R090*	
	X6B02	
YA420	*-R098*	
-TP--	*M6B04*	
YA420	*-R090*	
J682-	*PIN07*	
	X6B02	
YA420	*-R098*	
J682-	*PIN14*	
	X6A02	

LINE/SIGNAL	PIN	SHEET/LINE
R003		
+ RH SEQ WRITE BUS BIT REAR 0	(R2U02)	BR200-R003
	(R2X30)	BR210-R004
	Q2X30	BQ210-L029
R004		
+ RH SEQ WRITE BUS BIT REAR 1	(R2U11)	BR200-R004
	(R2X28)	BR210-R005
	Q2X28	BQ210-L030
R005		
+ RH SEQ WRITE BUS BIT REAR 2	(R2T02)	BR200-R005
	(R2X32)	BR210-R006
	N2J04	BN210-L039
	Q2X32	BQ210-L031
R006		
+ RH SEQ WRITE BUS BIT REAR 3	(R2U12)	BR200-R006
	(R2X24)	BR210-R007
	Q2X24	BQ210-L032
R007		
+ RH SEQ WRITE BUS BIT REAR 4	(R2T03)	BR200-R007
	(R2X33)	BR210-R008
	Q2X33	BQ210-L033
R008		
+ RH SEQ WRITE BUS BIT REAR 5	(R2S05)	BR200-R008
	(R2X03)	BR210-R009
	Q2X03	BQ210-L034
R009		
+ RH SEQ WRITE BUS BIT REAR 6	(R2S03)	BR200-R009
	(R2X10)	BR210-R010
	Q2X10	BQ210-L035
R010		
+ RH SEQ WRITE BUS BIT REAR 7	(R2U05)	BR200-R010
	(R2X09)	BR210-R011
	Q2X09	BQ210-L036
R011		
+ RH SEQ WRITE BUS BIT REAR P	(R2U07)	BR200-R011
	(R2X29)	BR210-R012
	Q2X29	BQ210-L037
R012		
- RH CHK POINT/TAR/DIF REAR 0	(R2D05)	BR200-R012
	(R2X06)	BR210-R013
	Q2X06	BQ210-L020
R013		
- RH CHK POINT/TAR/DIF REAR 1	(R2G13)	BR200-R013
	(R2X07)	BR210-R014
	Q2X07	BQ210-L021

LINE/SIGNAL	PIN	SHEET/LINE
R014		
- RH CHK POINT/TAR/DIF REAR 2	(R2B05)	BR200-R014
	(R2X26)	BR210-R015
	Q2X26	BQ210-L022
R015		
- RH CHK POINT/TAR/DIF REAR 3	(R2B04)	BR200-R015
	(R2X13)	BR210-R016
	Q2X13	BQ210-L023
R016		
- RH CHK POINT/TAR/DIF REAR 4	(R2B07)	BR200-R016
	(R2X02)	BR210-R017
	Q2X02	BQ210-L024
R017		
- RH CHK POINT/TAR/DIF REAR 5	(R2H12)	BR200-R017
	(R2X25)	BR210-R018
	Q2X25	BQ210-L025
R018		
- RH CHK POINT/TAR/DIF REAR 6	(R2J12)	BR200-R018
	(R2X05)	BR210-R019
	Q2X05	BQ210-L026
R019		
- RH CHK POINT/TAR/DIF REAR 7	(R2H13)	BR200-R019
	(R2X11)	BR210-R020
	Q2X11	BQ210-L027
R020		
- RH CHK POINT/TAR/DIF REAR P	(R2G12)	BR200-R020
	(R2X22)	BR210-R021
	Q2X22	BQ210-L028
R021		
+ RH SEQ STATUS STROBE REAR	(R2N02)	BR200-R021
	Q2C03	BQ200-L026
R022		
+ RH LOAD POWER CTRL REG REAR	(R2N10)	BR200-R022
	N2M08	BN210-L038
	Q2D06	BQ200-L024
R023		
+ RH LOAD SEQ STATUS REG REAR	(R2N09)	BR200-R023
	Q2P02	BQ200-L027
R024		
+ RH SEQ MOVE FORMAT REAR	(R2M04)	BR200-R024
	Q2D04	BQ200-L025

LINE/SIGNAL	PIN	SHEET/LINE
R025		
+ RH SEQ CHECK REAR	(R2U06)	BR200-R025
	Q2G09	BQ200-L020
R026		
+ RH CHK POINT LOG CHECK REAR	(R2G02)	BR200-R026
	Q2P05	BQ200-L019
R027		
+ RH SERVO CTRL CHECK REAR	(R2H11)	BR200-R027
	Q2C13	BQ200-L021
R028		
+ RH RECORD READY IRPT REAR	(R2D04)	BR200-R028
	Q2J12	BQ200-L040
R029		
+ RH RPS CHECK REAR	(R2B10)	BR200-R029
	Q2J05	BQ200-L022
R030		
- RH LOAD REG 3 REAR	(R2N06)	BR200-R030
R031		
- RH RAMP SELECT 0 REAR	(R2B13)	BR200-R031
	U2M11	BU200-L005
R032		
- RH RAMP SELECT 1 REAR	(R2C08)	BR200-R032
	U2J02	BU200-L006
R033		
- RH RAMP SELECT 2 REAR	(R2C12)	BR200-R033
	U2G03	BU200-L007
R034		
- RH RAMP SELECT 3 REAR	(R2D09)	BR200-R034
	U2G04	BU200-L008
R035		
+ RH DIF COUNT 256 REAR	(R2M10)	BR200-R035
	U2J10	BU200-L017
R036		
+ RH DIF COUNT 128 REAR	(R2J07)	BR200-R036
	U2P02	BU200-L016
R037		
+ RH DIF COUNT 64 REAR	(R2G07)	BR200-R037
	U2M02	BU200-L015

LINE/SIGNAL	PIN	SHEET/LINE
R038		
+ RH DIF COUNT 32 REAR	(R2G10)	BR200-R038
	U2G11	BU200-L014
R039		
+ RH DIF COUNT 16 REAR	(R2H09)	BR200-R039
	U2G13	BU200-L013
R040		
+ RH DIF COUNT 8 REAR	(R2J10)	BR200-R040
	U2G12	BU200-L012
R041		
+ RH DIF COUNT 4 REAR	(R2H07)	BR200-R041
	U2J12	BU200-L011
R042		
+ RH DIF COUNT 2 REAR	(R2H08)	BR200-R042
	U2J13	BU200-L010
R043		
+ RH DIF COUNT 1 REAR	(R2G09)	BR200-R043
	U2J11	BU200-L009
R044		
- RH INHIBIT REAR	(R2H06)	BR200-R044
	Q2N02	BQ200-L039
	U2P13	BU200-L024
R045		
- RH PARK REAR	(R2H05)	BR200-R045
	U2B04	BU200-L028
R046		
+ RH COMPRESS REAR	(R2G05)	BR200-R046
	U2D04	BU200-L036
R047		
- RH REVERSE REAR	(R2J13)	BR200-R047
	U2M13	BU200-L021
R048		
- RH FORWARD REAR	(R2J05)	BR200-R048
	V3B11	
R049		
- RH REZERO REAR	(R2J06)	BR200-R049
	U2B03	BU200-L023
R050		
- RH RESET FILTER REAR	(R2H10)	BR200-R050
	U2D05	BU200-L037

LINE/SIGNAL	PIN	SHEET/LINE
R051		
- RH OFFSET ACTIVE REAR	(R2P02)	BR200-R051
	Q2H12	BQ200-L038
	U2P06	BU200-L020
R052		
- RH GATE DIFFERENCE TP REAR	(R2J11)	BR200-R052
	V3D11	
R053		
+ RH PES INTEGRATE REAR	(R2J09)	BR200-R053
	U2P07	BU200-L019
R054		
- RH CYLINDER PULSE REAR	(R2D10)	BR200-R054
	U2M07	BU200-L025
	V3D09	
R055		
+ RH CYLINDER PULSE REAR	(R2C10)	BR200-R055
R056		
- RH TRACK FOLLOW REAR	(R2B12)	BR200-R056
	U2B02	BU200-L018
R057		
+ RH TRACK FOLLOW REAR	(R2D11)	BR200-R057
	U2D02	BU200-L022
R058		
- RH COARSE TRACK REAR	(R2D06)	BR200-R058
	P2B12	BP200-L030
	V3B03	
R059		
- RH WRITE READY REAR	(R2D07)	BR200-R059
	P2C11	BP200-L031
R060		
+ RH PULSE RATE REAR	(R2B09)	BR200-R060
	M2P07	BM200-L022
R061		
+ RH INDEX 1 REAR	(R2G03)	BR200-R061
	P2G08	BP200-L017
	X4B03	
	V3B05	
R062		
+ RH INDEX 2 REAR	(R2C13)	BR200-R062
	P2G07	BP200-L018

LINE/SIGNAL	PIN	SHEET/LINE
R063		
+ RH SEGMENT BOUNDARY REAR	(R2D13)	BR200-R063
	P2H10	BP200-L019
	X5D12	
R064		
+ RH INNER GUARD BAND REAR	(R2J02)	BR200-R064
	V3D12	
R065		
+ RH OUTER GUARD BAND REAR	(R2H04)	BR200-R065
	V3B12	
R066		
+ RH RPS CLOCK T-0 (L1) REAR	(R2M07)	BR200-R066
	(R2M07)	BR210-R053
	P2H07	BP200-L033
R067		
- RH POR SYNC TO CLOCK REAR	(R2S12)	BR200-R067
	R2S13	BR200-L054
R068		
- CONTINUED ON PAGE BR210		
	(R2)	BR200-R068

See previous page for more.

ERROR CHECKING

The following checks cause a device sequencer/servo/RPS check:

- Sequencer Check
- RPS Check

A servo error is caused by one of the following:

- A difference high and low counter register parity error. The difference high and low counters are checked for correct parity while the registers are loaded.
- A servo control register 4 or 6 parity error.
- A checkpoint log register error.

A servo-inhibited error is caused by one of the following:

- Crash stop inhibit - Crash stop protection logic monitors the access mechanism for abnormal movement.
- Overshoot inhibit - When the actuator motion exceeds +1-1/2 tracks while attempting to settle on the target track at the end of a seek operation.
- Unexpected GBOD signal - If the guard band outer diameter (GBOD) signal is detected under conditions other than park, rezero, or seek to -3 track operations.
- Loss of AGC - Loss of automatic gain control (AGC) indicates that the disk is rotating below a threshold speed.


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---- - CONTINUED FROM PAGE BR200 ---- 003
 X30 + RH SEQ WRITE BUS BIT REAR 0 -- 004
 X28 + RH SEQ WRITE BUS BIT REAR 1 -- 005
 X32 + RH SEQ WRITE BUS BIT REAR 2 -- 006
 X24 + RH SEQ WRITE BUS BIT REAR 3 -- 007
 X33 + RH SEQ WRITE BUS BIT REAR 4 -- 008
 X03 + RH SEQ WRITE BUS BIT REAR 5 -- 009
 X10 + RH SEQ WRITE BUS BIT REAR 6 -- 010
 X09 + RH SEQ WRITE BUS BIT REAR 7 -- 011
 X29 + RH SEQ WRITE BUS BIT REAR P -- 012
 X06 - RH CHK POINT/TAR/DIF REAR 0 -- 013
 X07 - RH CHK POINT/TAR/DIF REAR 1 -- 014
 X26 - RH CHK POINT/TAR/DIF REAR 2 -- 015
 X13 - RH CHK POINT/TAR/DIF REAR 3 -- 016
 X02 - RH CHK POINT/TAR/DIF REAR 4 -- 017
 X25 - RH CHK POINT/TAR/DIF REAR 5 -- 018
 X05 - RH CHK POINT/TAR/DIF REAR 6 -- 019
 X11 - RH CHK POINT/TAR/DIF REAR 7 -- 020
 X22 - RH CHK POINT/TAR/DIF REAR P -- 021
 Z02 + RH MEMORY BIT 0 REAR --------- 022
 Z22 + RH MEMORY BIT 1 REAR --------- 023
 Z03 + RH MEMORY BIT 2 REAR --------- 024
 Z23 + RH MEMORY BIT 3 REAR --------- 025
 Z04 + RH MEMORY BIT 4 REAR --------- 026
 Z24 + RH MEMORY BIT 5 REAR --------- 027
 Z05 + RH MEMORY BIT 6 REAR --------- 028
 Z25 + RH MEMORY BIT 7 REAR --------- 029
 Z06 + RH MEMORY BIT 8 REAR --------- 030
 Z26 + RH MEMORY BIT 9 REAR --------- 031
 Z07 + RH MEMORY BIT 10 REAR -------- 032
 Z27 + RH MEMORY BIT 11 REAR -------- 033
 Z08 + RH MEMORY BIT 12 REAR -------- 034
 Z28 + RH MEMORY BIT 13 REAR -------- 035
 Z09 + RH MEMORY BIT 14 REAR -------- 036
 Z29 + RH MEMORY BIT 15 REAR -------- 037
 Z10 + RH MEMORY BIT 16 REAR -------- 038
 Z30 + RH MEMORY BIT 17 REAR -------- 039
 Y11 + RH ISAR 1024 TP REAR  -------- 040
 Y13 + RH ISAR 512 TP REAR ---------- 041
 Y33 + RH ISAR 256 TP REAR ---------- 042
 Y32 + RH ISAR 128 TP REAR ---------- 043
 Y30 + RH ISAR 64 TP REAR ----------- 044
 Y29 + RH ISAR 32 TP REAR ----------- 045
 Y28 + RH ISAR 16 TP REAR ----------- 046
 Y26 + RH ISAR 8 TP REAR ------------ 047
 Y25 + RH ISAR 4 TP REAR ------------ 048
 Y24 + RH ISAR 2 TP REAR ------------ 049
 Y22 + RH ISAR 1 TP REAR ------------ 050
 Y02 + RH D CLOCK POWERED REAR  ----- 051
 N08 + RH SET HEAD ARM ADR REG REAR - 052
 M07 + RH RPS CLOCK T-0 (L1) REAR --- 053
 Y10 + RH ISAR 2K REAR -------------- 054
 Y04 + RH ISAR 4K REAR -------------- 055
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SEQ, SERVO, RPS RH XRL BR210

LINE/SIGNAL	PIN	SHEET/LINE
R003		
- CONTINUED FROM PAGE BR200		
	(R2)	BR210-R003
R004		
+ RH SEQ WRITE BUS BIT REAR 0		
	(R2X30)	BR210-R004
	(R2U02)	BR200-R003
	Q2X30	BQ210-L029
R005		
+ RH SEQ WRITE BUS BIT REAR 1		
	(R2X28)	BR210-R005
	(R2U11)	BR200-R004
	Q2X28	BQ210-L030
R006		
+ RH SEQ WRITE BUS BIT REAR 2		
	(R2X32)	BR210-R006
	(R2T02)	BR200-R005
	N2J04	BN210-L039
	Q2X32	BQ210-L031
R007		
+ RH SEQ WRITE BUS BIT REAR 3		
	(R2X24)	BR210-R007
	(R2U12)	BR200-R006
	Q2X24	BQ210-L032
R008		
+ RH SEQ WRITE BUS BIT REAR 4		
	(R2X33)	BR210-R008
	(R2T03)	BR200-R007
	Q2X33	BQ210-L033
R009		
+ RH SEQ WRITE BUS BIT REAR 5		
	(R2X03)	BR210-R009
	(R2S05)	BR200-R008
	Q2X03	BQ210-L034
R010		
+ RH SEQ WRITE BUS BIT REAR 6		
	(R2X10)	BR210-R010
	(R2S03)	BR200-R009
	Q2X10	BQ210-L035
R011		
+ RH SEQ WRITE BUS BIT REAR 7		
	(R2X09)	BR210-R011
	(R2U05)	BR200-R010
	Q2X09	BQ210-L036
R012		
+ RH SEQ WRITE BUS BIT REAR P		
	(R2X29)	BR210-R012
	(R2U07)	BR200-R011
	Q2X29	BQ210-L037
R013		
- RH CHK POINT/TAR/DIF REAR 0		
	(R2X06)	BR210-R013
	(R2D05)	BR200-R012
	Q2X06	BQ210-L020
R014		
- RH CHK POINT/TAR/DIF REAR 1		
	(R2X07)	BR210-R014
	(R2G13)	BR200-R013
	Q2X07	BQ210-L021
R015		
- RH CHK POINT/TAR/DIF REAR 2		
	(R2X26)	BR210-R015
	(R2B05)	BR200-R014
	Q2X26	BQ210-L022
R016		
- RH CHK POINT/TAR/DIF REAR 3		
	(R2X13)	BR210-R016
	(R2B04)	BR200-R015
	Q2X13	BQ210-L023
R017		
- RH CHK POINT/TAR/DIF REAR 4		
	(R2X02)	BR210-R017
	(R2B07)	BR200-R016
	Q2X02	BQ210-L024
R018		
- RH CHK POINT/TAR/DIF REAR 5		
	(R2X25)	BR210-R018
	(R2H12)	BR200-R017
	Q2X25	BQ210-L025
R019		
- RH CHK POINT/TAR/DIF REAR 6		
	(R2X05)	BR210-R019
	(R2J12)	BR200-R018
	Q2X05	BQ210-L026
R020		
- RH CHK POINT/TAR/DIF REAR 7		
	(R2X11)	BR210-R020
	(R2H13)	BR200-R019
	Q2X11	BQ210-L027
R021		
- RH CHK POINT/TAR/DIF REAR P		
	(R2X22)	BR210-R021
	(R2G12)	BR200-R020
	Q2X22	BQ210-L028
R022		
+ RH MEMORY BIT 0 REAR		
	(R2Z02)	BR210-R022
R023		
+ RH MEMORY BIT 1 REAR		
	(R2Z22)	BR210-R023
R024		
+ RH MEMORY BIT 2 REAR		
	(R2Z03)	BR210-R024
R025		
+ RH MEMORY BIT 3 REAR		
	(R2Z23)	BR210-R025
R026		
+ RH MEMORY BIT 4 REAR		
	(R2Z04)	BR210-R026
R027		
+ RH MEMORY BIT 5 REAR		
	(R2Z24)	BR210-R027
R028		
+ RH MEMORY BIT 6 REAR		
	(R2Z05)	BR210-R028
R029		
+ RH MEMORY BIT 7 REAR		
	(R2Z25)	BR210-R029
R030		
+ RH MEMORY BIT 8 REAR		
	(R2Z06)	BR210-R030
R031		
+ RH MEMORY BIT 9 REAR		
	(R2Z26)	BR210-R031
R032		
+ RH MEMORY BIT 10 REAR		
	(R2Z07)	BR210-R032
R033		
+ RH MEMORY BIT 11 REAR		
	(R2Z27)	BR210-R033
R034		
+ RH MEMORY BIT 12 REAR		
	(R2Z08)	BR210-R034
R035		
+ RH MEMORY BIT 13 REAR		
	(R2Z28)	BR210-R035
R036		
+ RH MEMORY BIT 14 REAR		
	(R2Z09)	BR210-R036
R037		
+ RH MEMORY BIT 15 REAR		
	(R2Z29)	BR210-R037
R038		
+ RH MEMORY BIT 16 REAR		
	(R2Z10)	BR210-R038
R039		
+ RH MEMORY BIT 17 REAR		
	(R2Z30)	BR210-R039
R040		
+ RH ISAR 1024 TP REAR		
	(R2Y11)	BR210-R040
R041		
+ RH ISAR 512 TP REAR		
	(R2Y13)	BR210-R041
R042		
+ RH ISAR 256 TP REAR		
	(R2Y33)	BR210-R042
R043		
+ RH ISAR 128 TP REAR		
	(R2Y32)	BR210-R043
R044		
+ RH ISAR 64 TP REAR		
	(R2Y30)	BR210-R044
R045		
+ RH ISAR 32 TP REAR		
	(R2Y29)	BR210-R045
R046		
+ RH ISAR 16 TP REAR		
	(R2Y28)	BR210-R046
R047		
+ RH ISAR 8 TP REAR		
	(R2Y26)	BR210-R047
R048		
+ RH ISAR 4 TP REAR		
	(R2Y25)	BR210-R048
R049		
+ RH ISAR 2 TP REAR		
	(R2Y24)	BR210-R049
R050		
+ RH ISAR 1 TP REAR		
	(R2Y22)	BR210-R050
R051		
+ RH D CLOCK POWERED REAR		
	(R2Y02)	BR210-R051
R052		
+ RH SET HEAD ARM ADR REG REAR		
	(R2N08)	BR210-R052
	P2G10	BP200-L016
R053		
+ RH RPS CLOCK T-0 (L1) REAR		
	(R2M07)	BR210-R053
	(R2M07)	BR200-R066
	P2H07	BP200-L033
R054		
+ RH ISAR 2K REAR		
	(R2Y10)	BR210-R054
R055		
+ RH ISAR 4K REAR		
	(R2Y04)	BR210-R055

```
003 + LH PES P REAR ----------------- M05
004 + LH PES Q REAR ----------------- M04
005 - LH RAMP SELECT 0 REAR --------- M11
006 - LH RAMP SELECT 1 REAR --------- J02
007 - LH RAMP SELECT 2 REAR --------- G03
008 - LH RAMP SELECT 3 REAR --------- G04
009 + LH DIF COUNT 1 REAR ----------- J11
010 + LH DIF COUNT 2 REAR ----------- J13
011 + LH DIF COUNT 4 REAR ----------- J12
012 + LH DIF COUNT 8 REAR ----------- G12
013 + LH DIF COUNT 16 REAR ---------- G13
014 + LH DIF COUNT 32 REAR ---------- G11
015 + LH DIF COUNT 64 REAR ---------- M02
016 + LH DIF COUNT 128 REAR --------- P02
017 + LH DIF COUNT 256 REAR --------- J10
018 - LH TRACK FOLLOW REAR ---------- B02
019 + LH PES INTEGRATE REAR --------- P07
020 - LH OFFSET ACTIVE REAR --------- P06
021 - LH REVERSE REAR --------------- M13
022 + LH TRACK FOLLOW REAR ---------- D02
023 - LH REZERO REAR ---------------- B03
024 - LH INHIBIT REAR --------------- P13
025 - LH CYLINDER PULSE REAR -------- M07
026 LH POWER AMP COMMON REAR -------- B13
027 + LH VCM CURRENT SIG REAR ------- D13
028 - LH PARK REAR ------------------ B04
029 LH TFDRSIG TP REAR -------------- P05
030 + LH LOW LEVEL SERVO REAR ------- U06
031 - LH LOW LEVEL SERVO REAR ------- S06
032 + LH SERVO GUARD 1 REAR --------- U07
033 - LH GATE SERVO PAD CLOCK REAR - M03
034 - LH GATE SERVO A1 CLK ON REAR - S05
035 - LH GATE SERVO A2 CLK ON REAR - P04
036 + LH COMPRESS REAR -------------- D04
037 - LH RESET FILTER REAR ---------- D05
038 LH VCM VOLTAGE SIG REAR --------- U02
039 - LH POWER ON RESET POWER REAR - S07
040 + 15V LH SVO ANALOG REAR -------- J05
041 + 15V LH SVO ANALOG REAR -------- U05
042 - 15V LH SVO ANALOG REAR -------- G02
043 - 15V LH SVO ANALOG REAR -------- S02
044 - 36V LH REAR ------------------- S08
045 - 5V RH LEFT REAR --------------- B06
046 - 5V RH LEFT REAR --------------- G06
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SERVO ANALOG CARD

INTRODUCTION

The servo analog card is the interface between the servo head preamplifier and the voice coil power amplifier. It is a major part of the servo control loop that provides accurate head-to-disk positioning and optimum track-to-track seek movements.

DESCRIPTION

The servo analog card provides the following functions:

- Phase locks a local oscillator to the 3 megahertz servo signal and provides clock signals for the data channel.
- Provides signals from which index, inner, and outer guard bands can be detected.
- Amplifies and demodulates the low-level servo signal into primary and four position error signals.
- Inhibits the power amplifier when either the '-POR' or the '-INHIBIT' line is active or when the -15 volt, -5 volt or +5 volt supply is off.
- Posts a Cable Error when the Servo VCO A1 or the Servo VCO A2 cable is improperly terminated, or when two Servo VCO outputs are active on the same cable.
- Automatically sets the position error signal's (PES) gain at the end of a rezero function.
- Sends a 'write inhibit' signal when the offtrack error and the voice coil current and voltage exceed specified limits.
- Provides a logic signal that indicates that the automatic gain control (AGC) circuit is functioning.
- Receives analog signals from the power amplifier proportional to voice coil current and voltage.
- Receives digital control signals from the servo control card, for servo mode control and operation sequences.
- Provides the servo control card with digital position signals.
- In the park mode, upon command, the servo loop is bypassed, and the servo card drives the power amplifier to effect a 200 milliamp voice coil current to hold the actuator assembly at the outer guard band.
- In the compress mode, upon command, the servo loop is bypassed, and the servo card drives the power amplifier to effect a 3 amp coil current to pull the actuator assembly against the outer crash stop.
- In the rezero mode, the servo loop moves the head assembly to track zero at a specified constant velocity.
- In the track follow mode, the servo holds the heads over the center of a track.
- In the offset mode, the servo holds the heads off the center of a track by a distance proportional to the difference count input.
- In the seek mode, the servo moves the heads from one track to another.

See next page for more.


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M12 + LH POSITION ERROR SIG B REAR - 003
P11 + LH INHIBIT POWER AMP REAR ---- 004
G07 + LH POSITION ERROR SIG A REAR - 005
B10 - LH WRITE INHIBIT REAR -------- 006
G10 - LH WRITE INHIBIT REAR -------- 007
B05 LH POWER AMP DRIVE REAR -------- 008
M08 + LH HL SERVO TP REAR ---------- 009
P09 - LH HL SERVO TP REAR ---------- 010
M09 + LH VGA GAIN INCREASE TP REAR - 011
S13 + LH AGC ACTIVE REAR ----------- 012
M10 - LH PES REF CORRECTION REAR --- 013
P12 - LH SYNC TP REAR -------------- 014
P10 LH VCM W.I. SIG TP REAR -------- 015
S03 LH |PESP| LESS THAN .44V REAR -- 016
U04 + LH RPS CLOCK 3 REAR ---------- 017
U09 - LH GAP REAR ------------------ 018
U10 - LH RPS CLOCK 1 REAR ---------- 019
S09 + LH RPS CLOCK 4 REAR ---------- 020
S12 + LH PES P REAR ---------------- 021
U12 + LH PES Q REAR ---------------- 022
J09 LH BURST W.I. SIG TP REAR ------ 023
B12 - A1 SERVO VCO REAR ------------ 024
J07 LH POWER AMP DRIVE TWIST REAR -- 025
G09 LH INTEGRATOR TP REAR ---------- 026
G08 LH CURVE TP REAR --------------- 027
G05 LH PSPESR TP REAR -------------- 028
J04 LH CURRENT TP REAR ------------- 029
J06 + LH 3.17V PES GAIN TP REAR ---- 030
D12 LH TAC 2ND STAGE REAR ---------- 031
D11 LH TACH SIGNAL TP REAR --------- 032
D10 + LH VCO CONTROL TP REAR ------- 033
D09 - LH VCO CONTROL TP REAR ------- 034
D07 + LH SERVO PAD CLOCK REAR ------ 035
D06 + LH PES LOW TP REAR ----------- 036
B07 + A2 SERVO VCO REAR ------------ 037
B09 - A2 SERVO VCO REAR ------------ 038
B08 + LH SVO CLOCK CABLE ERR REAR -- 039
S10 + LH AGC MULT TP REAR ---------- 040
S11 - LH AGC MULT TP REAR ---------- 041
B11 + A1 SERVO VCO REAR ------------ 042
S04 - LH PES GAIN ERROR REAR ------- 043
U13 + LH EVERGREEN ID BIT REAR ----- 044
M06 LH PES W.I. SIG TP REAR -------- 045
U11 LH PARK SIG TP REAR ------------ 046
```

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ LH PES P REAR	T2M05	BT200-L003
	(T2S12)	BT200-R021
	V2D06	
L004		
+ LH PES Q REAR	T2M04	BT200-L004
	(T2U12)	BT200-R022
	V2B07	
L005		
- LH RAMP SELECT 0 REAR	T2M11	BT200-L005
	(M2B13)	BM200-R031
L006		
- LH RAMP SELECT 1 REAR	T2J02	BT200-L006
	(M2C08)	BM200-R032
L007		
- LH RAMP SELECT 2 REAR	T2G03	BT200-L007
	(M2C12)	BM200-R033
L008		
- LH RAMP SELECT 3 REAR	T2G04	BT200-L008
	(M2D09)	BM200-R034
L009		
+ LH DIF COUNT 1 REAR	T2J11	BT200-L009
	(M2G09)	BM200-R043
L010		
+ LH DIF COUNT 2 REAR	T2J13	BT200-L010
	(M2H08)	BM200-R042
L011		
+ LH DIF COUNT 4 REAR	T2J12	BT200-L011
	(M2H07)	BM200-R041
L012		
+ LH DIF COUNT 8 REAR	T2G12	BT200-L012
	(M2J10)	BM200-R040
L013		
+ LH DIF COUNT 16 REAR	T2G13	BT200-L013
	(M2H09)	BM200-R039
L014		
+ LH DIF COUNT 32 REAR	T2G11	BT200-L014
	(M2G10)	BM200-R038
L015		
+ LH DIF COUNT 64 REAR	T2M02	BT200-L015
	(M2G07)	BM200-R037

LINE/SIGNAL	PIN	SHEET/LINE
L016		
+ LH DIF COUNT 128 REAR	T2P02	BT200-L016
	(M2J07)	BM200-R036
L017		
+ LH DIF COUNT 256 REAR	T2J10	BT200-L017
	(M2M10)	BM200-R035
L018		
- LH TRACK FOLLOW REAR	T2B02	BT200-L018
	(M2B12)	BM200-R056
L019		
+ LH PES INTEGRATE REAR	T2P07	BT200-L019
	(M2J09)	BM200-R053
L020		
- LH OFFSET ACTIVE REAR	T2P06	BT200-L020
	(M2P02)	BM200-R051
	N2H12	BN200-L038
L021		
- LH REVERSE REAR	T2M13	BT200-L021
	(M2J13)	BM200-R047
L022		
+ LH TRACK FOLLOW REAR	T2D02	BT200-L022
	(M2D11)	BM200-R057
L023		
- LH REZERO REAR	T2B03	BT200-L023
	(M2J06)	BM200-R049
L024		
- LH INHIBIT REAR	T2P13	BT200-L024
	(M2H06)	BM200-R044
	N2N02	BN200-L039
L025		
- LH CYLINDER PULSE REAR	T2M07	BT200-L025
	(M2D10)	BM200-R054
	V2D09	
L026		
LH POWER AMP COMMON REAR	T2B13	BT200-L026
	1C-C4 (P3D05)	HPA30-R006
	1C-C4 (P3B10)	HPA30-R007
	J672- *PIN08*	
	J672- *PIN17*	
	W2B13	
	V2D07	

LINE/SIGNAL	PIN	SHEET/LINE
L027		
+ LH VCM CURRENT SIG REAR	T2D13	BT200-L027
	1C-C4 (P3B08)	HPA30-R004
	J672- *PIN13*	
	W2D13	
	V2B06	
L028		
- LH PARK REAR	T2B04	BT200-L028
	(M2H05)	BM200-R045
L029		
LH TFDRSIG TP REAR	T2P05	BT200-L029
	V2B09	
L030		
+ LH LOW LEVEL SERVO REAR	T2U06	BT200-L030
	1C-C2 B2CA7	HC3A1-L026
	W4B04	
L031		
- LH LOW LEVEL SERVO REAR	T2S06	BT200-L031
	1C-C2 B2CB7	HC3A1-L027
	W4B03	
L032		
+ LH SERVO GUARD 1 REAR	T2U07	BT200-L032
	1C-C2 B2CA6	HC3A1-L024
	1C-C2 B2CB6	HC3A1-L025
	W4B02	
	W4B05	
L033		
- LH GATE SERVO PAD CLOCK REAR	T2M03	BT200-L033
	(P2S03)	BP200-R045
L034		
- LH GATE SERVO A1 CLK ON REAR	T2S05	BT200-L034
	(P2U13)	BP200-R056
L035		
- LH GATE SERVO A2 CLK ON REAR	T2P04	BT200-L035
	(P2T12)	BP200-R057
L036		
+ LH COMPRESS REAR	T2D04	BT200-L036
	(M2G05)	BM200-R046
L037		
- LH RESET FILTER REAR	T2D05	BT200-L037
	(M2H10)	BM200-R050

LINE/SIGNAL	PIN	SHEET/LINE
L038		
LH VCM VOLTAGE SIG REAR	T2U02	BT200-L038
	1C-C4 (P3D04)	HPA30-R003
	J672- *PIN06*	
	W2D10	
L039		
- LH POWER ON RESET POWER REAR	T2S07	BT200-L039
	(N2N06)	BN200-R062
	M2P06	BM200-L015
	P2N11	BP200-L039
	R2S04	BR200-L041
	1C-C2 B2AB2	HC3A1-L070
	X2D02	
L040		
+ 15V LH SVO ANALOG REAR	T2J05	BT200-L040
	T2U05	BT200-L041
	M6B02	
	V2D05	
	T6C02	
	YA420 *-R012*	
	T6D02	
	YA420 *-R013*	
	J681- *PIN05*	
L041		
+ 15V LH SVO ANALOG REAR	T2U05	BT200-L041
	T2J05	BT200-L040
	M6B02	
	V2D05	
	T6C02	
	YA420 *-R012*	
	T6D02	
	YA420 *-R013*	
	J681- *PIN05*	
L042		
- 15V LH SVO ANALOG REAR	T2G02	BT200-L042
	T2S02	BT200-L043
	V2B02	
	-TP-- *N6D04*	
	U6A02	
	YA420 *-R014*	
	U6B02	
	YA420 *-R015*	
	J681- *PIN06*	
L043		
- 15V LH SVO ANALOG REAR	T2S02	BT200-L043
	T2G02	BT200-L042
	V2B02	
	-TP-- *N6D04*	
	U6A02	
	YA420 *-R014*	
	U6B02	
	YA420 *-R015*	
	J681- *PIN06*	

LINE/SIGNAL	PIN	SHEET/LINE
L044		
- 36V LH REAR	T2S08	BT200-L044
	-TP-- *N6B04*	
	U6E02	
	YA420 *-R020*	
	J681- *PIN10*	
L045		
- 5V RH LEFT REAR	T2B06	BT200-L045
	M2U04	BM200-L061
	P2J06	BP210-L021
	T2G06	BT200-L046
	-TP-- *M6E02*	
	YA420 *-R016*	
	J681- *PIN07*	
	W6A02	
	YA420 *-R024*	
	J681- *PIN14*	
	V6E02	
L046		
- 5V RH LEFT REAR	T2G06	BT200-L046
	M2U04	BM200-L061
	P2J06	BP210-L021
	T2B06	BT200-L045
	-TP-- *M6E02*	
	YA420 *-R016*	
	J681- *PIN07*	
	W6A02	
	YA420 *-R024*	
	J681- *PIN14*	
	V6E02	
R003		
+ LH POSITION ERROR SIG B REAR	(T2M12)	BT200-R003
	M2H02	BM200-L043
R004		
+ LH INHIBIT POWER AMP REAR	(T2P11)	BT200-R004
	1C-C4 P3B02	HPA30-L003
	J672- *PIN01*	
	W2B10	
R005		
+ LH POSITION ERROR SIG A REAR	(T2G07)	BT200-R005
	M2H03	BM200-L042
R006		
- LH WRITE INHIBIT REAR	(T2B10)	BT200-R006
	(T2G10)	BT200-R007
	M2G04	BM200-L044
	N2G04	BN210-L044
	V2B10	

LINE/SIGNAL	PIN	SHEET/LINE
R007		
- LH WRITE INHIBIT REAR	(T2G10)	BT200-R007
	(T2B10)	BT200-R006
	M2G04	BM200-L044
	N2G04	BN210-L044
	V2B10	
R008		
LH POWER AMP DRIVE REAR	(T2B05)	BT200-R008
	1C-C4 P3B04	HPA30-L004
	J672- *PIN05*	
	W2D11	
R009		
+ LH HL SERVO TP REAR	(T2M08)	BT200-R009
R010		
- LH HL SERVO TP REAR	(T2P09)	BT200-R010
R011		
+ LH VGA GAIN INCREASE TP REAR	(T2M09)	BT200-R011
R012		
+ LH AGC ACTIVE REAR	(T2S13)	BT200-R012
	M2N04	BM200-L017
	R2P05	BR200-L018
R013		
- LH PES REF CORRECTION REAR	(T2M10)	BT200-R013
R014		
- LH SYNC TP REAR	(T2P12)	BT200-R014
R015		
LH VCM W.I. SIG TP REAR	(T2P10)	BT200-R015
R016		
LH |PESP| LESS THAN .44V REAR	(T2S03)	BT200-R016
R017		
+ LH RPS CLOCK 3 REAR	(T2U04)	BT200-R017
	M2C04	BM200-L048
R018		
- LH GAP REAR	(T2U09)	BT200-R018
	M2B08	BM200-L050
R019		
- LH RPS CLOCK 1 REAR	(T2U10)	BT200-R019
	M2C06	BM200-L047

3380 LRM

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NA MODELS	NA FEATURES	NA VERSION	1B-B1T2 CARD LOC

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LH PES/SERVO ANALOG XRL BT200

LINE/SIGNAL	PIN	SHEET/LINE
R020		
+ LH RPS CLOCK 4 REAR	(T2S09)	BT200-R020
	M2C11	BM200-L049
R021		
+ LH PES P REAR	(T2S12)	BT200-R021
	T2M05	BT200-L003
	V2D06	
R022		
+ LH PES Q REAR	(T2U12)	BT200-R022
	T2M04	BT200-L004
	V2B07	
R023		
LH BURST W.I. SIG TP REAR	(T2J09)	BT200-R023
R024		
- A1 SERVO VCO REAR	(T2B12)	BT200-R024
	(U2B12)	BU200-R024
	W4B07	
	W4D07	
R025		
LH POWER AMP DRIVE TWIST REAR	(T2J07)	BT200-R025
	W2B11	
	V2D10	
R026		
LH INTEGRATOR TP REAR	(T2G09)	BT200-R026
	V2B04	
R027		
LH CURVE TP REAR	(T2G08)	BT200-R027
R028		
LH PSPESR TP REAR	(T2G05)	BT200-R028
	V2B13	
R029		
LH CURRENT TP REAR	(T2J04)	BT200-R029
	V2D04	
R030		
+ LH 3.17V PES GAIN TP REAR	(T2J06)	BT200-R030
	V2D02	
R031		
LH TAC 2ND STAGE REAR	(T2D12)	BT200-R031
R032		
LH TACH SIGNAL TP REAR	(T2D11)	BT200-R032
R033		
+ LH VCO CONTROL TP REAR	(T2D10)	BT200-R033
R034		
- LH VCO CONTROL TP REAR	(T2D09)	BT200-R034
R035		
+ LH SERVO PAD CLOCK REAR	(T2D07)	BT200-R035
1C-C2	B2AAC	HC3A1-L008
	X2D13	
R036		
+ LH PES LOW TP REAR	(T2D06)	BT200-R036
R037		
+ A2 SERVO VCO REAR	(T2B07)	BT200-R037
	(U2B07)	BU200-R037
	W4B08	
	W4D09	
R038		
- A2 SERVO VCO REAR	(T2B09)	BT200-R038
	(U2B09)	BU200-R038
	W4B09	
	W4D10	
R039		
+ LH SVO CLOCK CABLE ERR REAR	(T2B08)	BT200-R039
	P2N07	BP200-L035
R040		
+ LH AGC MULT TP REAR	(T2S10)	BT200-R040
R041		
- LH AGC MULT TP REAR	(T2S11)	BT200-R041
R042		
+ A1 SERVO VCO REAR	(T2B11)	BT200-R042
	(U2B11)	BU200-R042
	W4B06	
	W4D06	
R043		
- LH PES GAIN ERROR REAR	(T2S04)	BT200-R043
R044		
+ LH EVERGREEN ID BIT REAR	(T2U13)	BT200-R044
	N2H08	BN210-L043
R045		
LH PES W.I. SIG TP REAR	(T2M06)	BT200-R045
R046		
LH PARK SIG TP REAR	(T2U11)	BT200-R046

LH PES/SERVO ANALOG XRL BT200

See previous page for more.

PRIMARY PARTS

The servo analog card contains the following parts:

- Automatic gain control circuits
  - Variable gain amplifier
  - Four pole active filter
  - Demodulator
  - VGA driver
- Phase-locked loop circuit
  - Voltage controlled oscillator
  - Phase detector
- Primary and four position error demodulation
  - PES decode logic module
  - Synchronous demodulators
  - Three pole active low-pass filter
  - Differential input to single output amplifier
- Sync detector
- Gates clock and driver circuits
- Automatic PES gain circuit
- Burst write inhibit circuit
- PES ramp circuits
  - Ramp selection
  - Fine track comparators (PES A/B)
  - Offset
  - Integrator
- Difference count D/A converter
- Velocity trajector curve/generator
- Electronic tachometer
- System compensator
- Auxiliary function circuits
  - Rezero
  - Inhibit
  - Park/compress
  - Reference voltage circuits

003 + RH PES P REAR ---------- M05
004 + RH PES Q REAR ---------- M04
005 - RH RAMP SELECT 0 REAR -------- M11
006 - RH RAMP SELECT 1 REAR -------- J02
007 - RH RAMP SELECT 2 REAR -------- G03
008 - RH RAMP SELECT 3 REAR -------- G04
009 + RH DIF COUNT 1 REAR ---------- J11
010 + RH DIF COUNT 2 REAR ---------- J13
011 + RH DIF COUNT 4 REAR ---------- J12
012 + RH DIF COUNT 8 REAR ---------- G12
013 + RH DIF COUNT 16 REAR --------- G13
014 + RH DIF COUNT 32 REAR --------- G11
015 + RH DIF COUNT 64 REAR --------- M02
016 + RH DIF COUNT 128 REAR -------- P02
017 + RH DIF COUNT 256 REAR -------- J10
018 - RH TRACK FOLLOW REAR --------- B02
019 + RH PES INTEGRATE REAR -------- P07
020 - RH OFFSET ACTIVE REAR -------- P06
021 - RH REVERSE REAR -------------- M13
022 + RH TRACK FOLLOW REAR --------- D02
023 - RH REZERO REAR --------------- B03
024 - RH INHIBIT REAR -------------- P13
025 - RH CYLINDER PULSE REAR ------- M07
026 RH POWER AMP COMMON REAR ------- B13
027 RH VCM CURRENT SIG REAR -------- D13
028 - RH PARK REAR ----------------- B04
029 RH TRANSFER FUNT IN REAR ------- P05
030 + RH LOW LEVEL SERVO REAR ------ U06
031 - RH LOW LEVEL SERVO REAR ------ S06
032 + RH SERVO GUARD 1 REAR -------- U07
033 - RH GATE SERVO PAD CLOCK REAR - M03
034 - RH GATE SERVO A1 CLK ON REAR - S05
035 - RH GATE SERVO A2 CLK ON REAR - P04
036 + RH COMPRESS REAR ------------- D04
037 - RH RESET FILTER REAR --------- D05
038 RH VCM VOLTAGE SIG REAR -------- U02
039 - RH POWER ON RESET POWER REAR - S07
040 + 15V RH SVO ANALOG REAR ------- J05
041 + 15V RH SVO ANALOG REAR ------- U05
042 - 15V RH SVO ANALOG REAR ------- G02
043 - 15V RH SVO ANALOG REAR ------- S02
044 - 36V RH REAR ----------------- S08
045 - 5V RH RIGHT REAR ------------- B06
046 - 5V RH RIGHT REAR ------------- G06

SERVO ANALOG CARD

INTRODUCTION

The servo analog card is the interface between the servo head preamplifier and the voice coil power amplifier. It is a major part of the servo control loop that provides accurate head-to-disk positioning and optimum track-to-track seek movements.

DESCRIPTION

The servo analog card provides the following functions:

- Phase locks a local oscillator to the 3 megahertz servo signal and provides clock signals for the data channel.
- Provides signals from which index, inner, and outer guard bands can be detected.
- Amplifies and demodulates the low-level servo signal into primary and four position error signals.
- Inhibits the power amplifier when either the '-POR' or the '-INHIBIT' line is active or when the -15 volt, -5 volt or +5 volt supply is off.
- Posts a Cable Error when the the Servo VCO A1 or the Servo VCO A2 cable is improperly terminated, or when two Servo VCO outputs are active on the same cable.
- Automatically sets the position error signal's (PES) gain at the end of a rezero function.
- Sends a 'write inhibit' signal when the offtrack error and the voice coil current and voltage exceed specified limits.
- Provides a logic signal that indicates that the automatic gain control (AGC) circuit is functioning.
- Receives analog signals from the power amplifier proportional to voice coil current and voltage.
- Receives digital control signals from the servo control card, for servo mode control and operation sequences.
- Provides the servo control card with digital position signals.
- In the park mode, upon command, the servo loop is bypassed, and the servo card drives the power amplifier to effect a 200 milliamp voice coil current to hold the actuator assembly at the outer guard band.
- In the compress mode, upon command, the servo loop is bypassed, and the servo card drives the power amplifier to effect a 3 amp coil current to pull the actuator assembly against the outer crash stop.
- In the rezero mode, the servo loop moves the head assembly to track zero at a specified constant velocity.
- In the track follow mode, the servo holds the heads over the center of a track.
- In the offset mode, the servo holds the heads off the center of a track by a distance proportional to the difference count input.
- In the seek mode, the servo moves the heads from one track to another.

See next page for more.

M12 + RH POSITION ERROR SIG B REAR - 003
P11 + RH INHIBIT POWER AMP REAR ---- 004
G07 + RH POSITION ERROR SIG A REAR - 005
B10 - RH WRITE INHIBIT REAR -------- 006
G10 - RH WRITE INHIBIT REAR -------- 007
B05 RH POWER AMP DRIVE REAR -------- 008
M08 + RH HL SERVO TP REAR ---------- 009
P09 - RH HL SERVO TP REAR ---------- 010
M09 + RH VGA GAIN INCREASE TP REAR - 011
S13 + RH AGC ACTIVE REAR ---------- 012
M10 - RH PES REF CORRECTION REAR --- 013
P12 - RH SYNC TP REAR -------------- 014
P10 RH VCM W.I. SIG TP REAR -------- 015
S03 + RH |PESP| LESS THAN .44V REAR 016
U04 + RH RPS CLOCK 3 REAR ---------- 017
U09 - RH GAP REAR ------------------ 018
U10 - RH RPS CLOCK 1 REAR ---------- 019
S09 + RH RPS CLOCK 4 REAR ---------- 020
S12 + RH PES P REAR ---------------- 021
U12 + RH PES Q REAR ---------------- 022
J09 RH BURST W.I. SIG TP REAR ------ 023
B12 - A1 SERVO VCO REAR ------------ 024
J07 RH POWER AMP DRIVE TWIST REAR -- 025
G09 RH INTEGRATOR TP REAR ---------- 026
G08 RH CURVE TP REAR --------------- 027
G05 RH PSPESR TP REAR -------------- 028
J04 RH CURRENT TP REAR ------------- 029
J06 + RH 3.17V PES GAIN REF REAR --- 030
D12 RH TACH 2ND STAGE TP REAR ------ 031
D11 RH TACH SIGNAL TP REAR --------- 032
D10 + RH VCO CONTROL TP REAR ------- 033
D09 - RH VCO CONTROL TP REAR ------- 034
D07 + RH SERVO PAD CLOCK REAR ------ 035
D06 + RH PES LOW TP REAR ----------- 036
B07 + A2 SERVO VCO REAR ------------ 037
B09 - A2 SERVO VCO REAR ------------ 038
B08 + RH SVO CLOCK CABLE ERR REAR -- 039
S10 + RH AGC MULT TP REAR ---------- 040
S11 - RH AGC MULT TP REAR ---------- 041
B11 + A1 SERVO VCO REAR ------------ 042
S04 - RH PES GAIN ERROR REAR ------- 043
U13 + RH EVERGREEN ID BIT REAR ----- 044
M06 RH PES W.I. SIG TP REAR -------- 045
U11 - RH PARK SIG TP REAR ---------- 046

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ RH PES P REAR		
	U2M05	BU200-L003
	(U2S12)	BU200-R021
	V3D06	
L004		
+ RH PES Q REAR		
	U2M04	BU200-L004
	(U2U12)	BU200-R022
	V3B07	
L005		
- RH RAMP SELECT 0 REAR		
	U2M11	BU200-L005
	(R2B13)	BR200-R031
L006		
- RH RAMP SELECT 1 REAR		
	U2J02	BU200-L006
	(R2C08)	BR200-R032
L007		
- RH RAMP SELECT 2 REAR		
	U2G03	BU200-L007
	(R2C12)	BR200-R033
L008		
- RH RAMP SELECT 3 REAR		
	U2G04	BU200-L008
	(R2D09)	BR200-R034
L009		
+ RH DIF COUNT 1 REAR		
	U2J11	BU200-L009
	(R2G09)	BR200-R043
L010		
+ RH DIF COUNT 2 REAR		
	U2J13	BU200-L010
	(R2H08)	BR200-R042
L011		
+ RH DIF COUNT 4 REAR		
	U2J12	BU200-L011
	(R2H07)	BR200-R041
L012		
+ RH DIF COUNT 8 REAR		
	U2G12	BU200-L012
	(R2J10)	BR200-R040
L013		
+ RH DIF COUNT 16 REAR		
	U2G13	BU200-L013
	(R2H09)	BR200-R039
L014		
+ RH DIF COUNT 32 REAR		
	U2G11	BU200-L014
	(R2G10)	BR200-R038
L015		
+ RH DIF COUNT 64 REAR		
	U2M02	BU200-L015
	(R2G07)	BR200-R037

LINE/SIGNAL	PIN	SHEET/LINE
L016		
+ RH DIF COUNT 128 REAR		
	U2P02	BU200-L016
	(R2J07)	BR200-R036
L017		
+ RH DIF COUNT 256 REAR		
	U2J10	BU200-L017
	(R2M10)	BR200-R035
L018		
- RH TRACK FOLLOW REAR		
	U2B02	BU200-L018
	(R2B12)	BR200-R056
L019		
+ RH PES INTEGRATE REAR		
	U2P07	BU200-L019
	(R2J09)	BR200-R053
L020		
- RH OFFSET ACTIVE REAR		
	U2P06	BU200-L020
	(R2P02)	BR200-R051
	Q2H12	BQ200-L038
L021		
- RH REVERSE REAR		
	U2M13	BU200-L021
	(R2J13)	BR200-R047
L022		
+ RH TRACK FOLLOW REAR		
	U2D02	BU200-L022
	(R2D11)	BR200-R057
L023		
- RH REZERO REAR		
	U2B03	BU200-L023
	(R2J06)	BR200-R049
L024		
- RH INHIBIT REAR		
	U2P13	BU200-L024
	(R2H06)	BR200-R044
	Q2N02	BQ200-L039
L025		
- RH CYLINDER PULSE REAR		
	U2M07	BU200-L025
	(R2D10)	BR200-R054
	V3D09	
L026		
RH POWER AMP COMMON REAR		
	U2B13	BU200-L026
1C-C4	(P4D05)	HPA40-R006
1C-C4	(P4B10)	HPA40-R007
J672-	*PIN08*	
J672-	*PIN17*	
	W3B13	
	V3D07	

LINE/SIGNAL	PIN	SHEET/LINE
L027		
RH VCM CURRENT SIG REAR		
	U2D13	BU200-L027
1C-C4	(P4B08)	HPA40-R004
J672-	*PIN13*	
	W3D13	
	V3B06	
L028		
- RH PARK REAR		
	U2B04	BU200-L028
	(R2H05)	BR200-R045
L029		
RH TRANSFER FUNT IN REAR		
	U2P05	BU200-L029
	V3B09	
L030		
+ RH LOW LEVEL SERVO REAR		
	U2U06	BU200-L030
1C-C3	B2CA7	HC4A1-L026
	W4B12	
L031		
- RH LOW LEVEL SERVO REAR		
	U2S06	BU200-L031
1C-C3	B2CB7	HC4A1-L027
	W4B11	
L032		
+ RH SERVO GUARD 1 REAR		
	U2U07	BU200-L032
1C-C3	B2CA6	HC4A1-L024
1C-C3	B2CB6	HC4A1-L025
	W4B10	
	W4B13	
L033		
- RH GATE SERVO PAD CLOCK REAR		
	U2M03	BU200-L033
	(P2C08)	BP200-R004
L034		
- RH GATE SERVO A1 CLK ON REAR		
	U2S05	BU200-L034
	(P2T05)	BP200-R021
L035		
- RH GATE SERVO A2 CLK ON REAR		
	U2P04	BU200-L035
	(P2T08)	BP200-R022
L036		
+ RH COMPRESS REAR		
	U2D04	BU200-L036
	(R2G05)	BR200-R046
L037		
- RH RESET FILTER REAR		
	U2D05	BU200-L037
	(R2H10)	BR200-R050

LINE/SIGNAL	PIN	SHEET/LINE
L038		
RH VCM VOLTAGE SIG REAR		
	U2U02	BU200-L038
1C-C4	(P4D04)	HPA40-R003
J672-	*PIN06*	
	W3D10	
L039		
- RH POWER ON RESET POWER REAR		
	U2S07	BU200-L039
	(Q2N06)	BQ200-R062
	M2S04	BM200-L041
	N2B07	BN200-L018
	P2B10	BP200-L038
	R2P06	BR200-L015
1C-C3	B2AB2	HC4A1-L070
	X4D02	
L040		
+ 15V RH SVO ANALOG REAR		
	U2J05	BU200-L040
	U2U05	BU200-L041
	V3D05	
-TP--	*M6A02*	
	U6C02	
YA420	*-R086*	
	U6D02	
YA420	*-R087*	
J682-	*PIN05*	
L041		
+ 15V RH SVO ANALOG REAR		
	U2U05	BU200-L041
	U2J05	BU200-L040
	V3D05	
-TP--	*M6A02*	
	U6C02	
YA420	*-R086*	
	U6D02	
YA420	*-R087*	
J682-	*PIN05*	
L042		
- 15V RH SVO ANALOG REAR		
	U2G02	BU200-L042
	U2S02	BU200-L043
-TP--	*P6A04*	
	V3B02	
	X6D02	
YA420	*-R088*	
	X6E02	
YA420	*-R089*	
J682-	*PIN06*	
L043		
- 15V RH SVO ANALOG REAR		
	U2S02	BU200-L043
	U2G02	BU200-L042
-TP--	*P6A04*	
	V3B02	
	X6D02	
YA420	*-R088*	
	X6E02	
YA420	*-R089*	
J682-	*PIN06*	

LINE/SIGNAL	PIN	SHEET/LINE
L044		
- 36V RH REAR		
	U2S08	BU200-L044
-TP--	*P6C04*	
	V6A02	
YA420	*-R094*	
J682-	*PIN10*	
L045		
- 5V RH RIGHT REAR		
	U2B06	BU200-L045
	P2M09	BP210-L022
	R2U04	BR200-L061
	U2G06	BU200-L046
-TP--	*M6B04*	
YA420	*-R090*	
	X6B02	
YA420	*-R098*	
-TP--	*M6B04*	
YA420	*-R090*	
J682-	*PIN07*	
	X6B02	
YA420	*-R098*	
J682-	*PIN14*	
	X6A02	
L046		
- 5V RH RIGHT REAR		
	U2G06	BU200-L046
	P2M09	BP210-L022
	R2U04	BR200-L061
	U2B06	BU200-L045
-TP--	*M6B04*	
YA420	*-R090*	
	X6B02	
YA420	*-R098*	
-TP--	*M6B04*	
YA420	*-R090*	
J682-	*PIN07*	
	X6B02	
YA420	*-R098*	
J682-	*PIN14*	
	X6A02	
R003		
+ RH POSITION ERROR SIG B REAR		
	(U2M12)	BU200-R003
	R2H02	BR200-L043
R004		
+ RH INHIBIT POWER AMP REAR		
	(U2P11)	BU200-R004
1C-C4	P4B02	HPA40-L003
J672-	*PIN01*	
	W3B10	
R005		
+ RH POSITION ERROR SIG A REAR		
	(U2G07)	BU200-R005
	R2H03	BR200-L042

LINE/SIGNAL	PIN	SHEET/LINE
R006		
- RH WRITE INHIBIT REAR		
	(U2B10)	BU200-R006
	(U2G10)	BU200-R007
	Q2G04	BQ210-L044
	R2G04	BR200-L044
	V3B10	
R007		
- RH WRITE INHIBIT REAR		
	(U2G10)	BU200-R007
	(U2B10)	BU200-R006
	Q2G04	BQ210-L044
	R2G04	BR200-L044
	V3B10	
R008		
RH POWER AMP DRIVE REAR		
	(U2B05)	BU200-R008
1C-C4	P4B04	HPA40-L004
J672-	*PIN05*	
	W3D11	
R009		
+ RH HL SERVO TP REAR		
	(U2M08)	BU200-R009
R010		
- RH HL SERVO TP REAR		
	(U2P09)	BU200-R010
R011		
+ RH VGA GAIN INCREASE TP REAR		
	(U2M09)	BU200-R011
R012		
+ RH AGC ACTIVE REAR		
	(U2S13)	BU200-R012
	M2P05	BM200-L018
	R2N04	BR200-L017
R013		
- RH PES REF CORRECTION REAR		
	(U2M10)	BU200-R013
R014		
- RH SYNC TP REAR		
	(U2P12)	BU200-R014
R015		
RH VCM W.I. SIG TP REAR		
	(U2P10)	BU200-R015
R016		
+ RH |PESP| LESS THAN .44V REAR		
	(U2S03)	BU200-R016
R017		
+ RH RPS CLOCK 3 REAR		
	(U2U04)	BU200-R017
	R2C04	BR200-L048
R018		
- RH GAP REAR		
	(U2U09)	BU200-R018
	R2B08	BR200-L050

LINE/SIGNAL	PIN	SHEET/LINE
R019		
- RH RPS CLOCK 1 REAR	(U2U10)	BU200-R019
	R2C06	BR200-L047
R020		
+ RH RPS CLOCK 4 REAR	(U2S09)	BU200-R020
	R2C11	BR200-L049
R021		
+ RH PES P REAR	(U2S12)	BU200-R021
	U2M05	BU200-L003
	V3D06	
R022		
+ RH PES Q REAR	(U2U12)	BU200-R022
	U2M04	BU200-L004
	V3B07	
R023		
RH BURST W.I. SIG TP REAR	(U2J09)	BU200-R023
R024		
- A1 SERVO VCO REAR	(U2B12)	BU200-R024
	(T2B12)	BT200-R024
	W4B07	
	W4D07	
R025		
RH POWER AMP DRIVE TWIST REAR	(U2J07)	BU200-R025
	W3B11	
	V3D10	
R026		
RH INTEGRATOR TP REAR	(U2G09)	BU200-R026
	V3B04	
R027		
RH CURVE TP REAR	(U2G08)	BU200-R027
R028		
RH PSPESR TP REAR	(U2G05)	BU200-R028
	V3B13	
R029		
RH CURRENT TP REAR	(U2J04)	BU200-R029
	V3D04	
R030		
+ RH 3.17V PES GAIN REF REAR	(U2J06)	BU200-R030
	V3D02	
R031		
RH TACH 2ND STAGE TP REAR	(U2D12)	BU200-R031
R032		
RH TACH SIGNAL TP REAR	(U2D11)	BU200-R032
R033		
+ RH VCO CONTROL TP REAR	(U2D10)	BU200-R033
R034		
- RH VCO CONTROL TP REAR	(U2D09)	BU200-R034
R035		
+ RH SERVO PAD CLOCK REAR	(U2D07)	BU200-R035
	1C-C3 B2AAC	HC4A1-L008
	X4D13	
R036		
+ RH PES LOW TP REAR	(U2D06)	BU200-R036
R037		
+ A2 SERVO VCO REAR	(U2B07)	BU200-R037
	(T2B07)	BT200-R037
	W4B08	
	W4D09	
R038		
- A2 SERVO VCO REAR	(U2B09)	BU200-R038
	(T2B09)	BT200-R038
	W4B09	
	W4D10	
R039		
+ RH SVO CLOCK CABLE ERR REAR	(U2B08)	BU200-R039
	P2G02	BP200-L028
R040		
+ RH AGC MULT TP REAR	(U2S10)	BU200-R040
R041		
- RH AGC MULT TP REAR	(U2S11)	BU200-R041
R042		
+ A1 SERVO VCO REAR	(U2B11)	BU200-R042
	(T2B11)	BT200-R042
	W4B06	
	W4D06	
R043		
- RH PES GAIN ERROR REAR	(U2S04)	BU200-R043
R044		
+ RH EVERGREEN ID BIT REAR	(U2U13)	BU200-R044
	Q2H08	BQ210-L043
R045		
RH PES W.I. SIG TP REAR	(U2M06)	BU200-R045
R046		
- RH PARK SIG TP REAR	(U2U11)	BU200-R046

RH PES/SERVO ANAL CRD BU200

See previous page for more.

PRIMARY PARTS

The servo analog card contains the following parts:

- Automatic gain control circuits
  - Variable gain amplifier
  - Four pole active filter
  - Demodulator
  - VGA driver
- Phase-locked loop circuit
  - Voltage controlled oscillator
  - Phase detector
- Primary and four position error demodulation
  - PES decode logic module
  - Synchronous demodulators
  - Three pole active low-pass filter
  - Differential input to single output amplifier
- Sync detector
- Gates clock and driver circuits
- Automatic PES gain circuit
- Burst write inhibit circuit
- PES ramp circuits
  - Ramp selection
  - Fine track comparators (PES A/B)
  - Offset
  - Integrator
- Difference count D/A converter
- Velocity trajector curve/generator
- Electronic tachometer
- System compensator
- Auxiliary function circuits
  - Rezero
  - Inhibit
  - Park/compress
  - Reference voltage circuits

RH PES/SERVO ANAL CRD BU200

SEQNO	PGE OF	FICHE CD	FRM	PAGEID	TYP	CARD NAME	MODEL	FEATURE	VERSION	CARD LOC
EG000	1	1	A01	N/A	BLI	N/A	N/A	N/A	N/A	N/A
EG000	2	1	A03	HC1A1	CRD	RWCBC0	NA	NA	NA	1C-C0B2
EG000	3	1	A05	HC1A1	XRL	RWCBC0	NA	NA	NA	1C-C0B2
EG000	5	1	A09	HC1A1	CRD	RWCBC0	NA	NA	NA	1C-C0B2
EG000	6	1	A11	HC2A1	CRD	RWCBC1	NA	NA	NA	1C-C1B2
EG000	7	1	A13	HC2A1	XRL	RWCBC1	NA	NA	NA	1C-C1B2
EG000	9	1	A17	HC2A1	CRD	RWCBC1	NA	NA	NA	1C-C1B2
EG000	10	1	B01	HC3A1	CRD	RWCBC2	NA	NA	NA	1C-C2B2
EG000	11	1	B03	HC3A1	XRL	RWCBC2	NA	NA	NA	1C-C2B2
EG000	13	1	B07	HC3A1	CRD	RWCBC2	NA	NA	NA	1C-C2B2
EG000	14	1	B09	HC4A1	CRD	RWCBC3	NA	NA	NA	1C-C3B2
EG000	15	1	B11	HC4A1	XRL	RWCBC3	NA	NA	NA	1C-C3B2
EG000	17	1	B15	HC4A1	CRD	RWCBC3	NA	NA	NA	1C-C3B2
EG000	18	1	B17	HPA10	CRD	PWAMP1	NA	NA	NA	1C-C4P1
EG000	19	1	C01	HPA10	XRL	PWAMP1	NA	NA	NA	1C-C4P1
EG000	20	1	C03	HPA20	CRD	PWAMP2	NA	NA	NA	1C-C4P2
EG000	21	1	C05	HPA20	XRL	PWAMP2	NA	NA	NA	1C-C4P2
EG000	22	1	C07	HPA30	CRD	PWAMP3	NA	NA	NA	1C-C4P3
EG000	23	1	C09	HPA30	XRL	PWAMP3	NA	NA	NA	1C-C4P3
EG000	24	1	C11	HPA40	CRD	PWAMP4	NA	NA	NA	1C-C4P4
EG000	25	1	C13	HPA40	XRL	PWAMP4	NA	NA	NA	1C-C4P4

BOARD LOGIC INDEX PAGE BLI N/A

GLOSSARY OF ABBREVIATIONS USED

ABBR.	EXPLANATION
BLI	BOARD LOGIC INDEX
CD	CARD (MICROFICHE)
CRD	CARD REFERENCE DIAGRAM
FRM	FRAME (MICROFICHE)
MDM	MAINTENANCE DIAGRAM MANUAL - VOLUME R30
XRL	CROSS REFERENCE LIST

NOTES USED ON CROSS REFERENCE PAGES

THE LEGEND ON THE CROSS REFERENCE PAGES
SHOW ( ) AS THE SOURCE(S) OF THE SIGNAL
AND * * AS THE CABLE SOCKET PINS

NOTE: THE SIGNAL NAME IN THE MDM MANUAL FOR A GIVEN NET WILL IN GENERAL MATCH THE SIGNAL NAME IN THE LRM EXACTLY.

003 - LH HAR BIT 4 FRONT ---------- AB6
004 - LH HAR BIT 5 FRONT ---------- BA5
005 - LH HAR BIT 6 FRONT ---------- BB6
006 - LH HAR BIT 7 FRONT ---------- AA5
007 - LH HAR BIT P FRONT ---------- BB5
008 + LH SERVO PAD CLOCK FRONT ----- AAC
009 - LH WRITE GATE 1 FRONT -------- AA6
010 - LH MULTIPLEXER GATE FRONT ---- AA7
011 - LH DRIVE CHECK INHIBIT FRONT - AB8
012 + LH FLAT CABLE CHECK FRONT ---- AB9
013 - LH PAD DATA SELECT FRONT ----- BB3
014 - LH SEL A1/ + SEL A2 FRONT ---- BA4
015 - LH SET R-W FRONT ------------- BA7
016 - LH SET R-W SAFE FRONT -------- BB8
017 - LH READ TRANSMIT FRONT ------- BB4
018 - LH WRITE GATE 2 FRONT -------- BB7
019 - LH DRIVE CHECK RESET FRONT --- BB9
020 - A1 R-W DATA FROM/TO 0 FRONT -- CA1
021 + A1 R-W DATA FROM/TO 0 FRONT -- CB1
022 - A2 R-W DATA FROM/TO 0 FRONT -- CA3
023 + A2 R-W DATA FROM/TO 0 FRONT -- CB3
024 + LH SERVO GUARD 1 FRONT ------- CA6
025 + LH SERVO GUARD 1 FRONT ------- CB6
026 + LH LOW LEVEL SERVO FRONT ----- CA7
027 - LH LOW LEVEL SERVO FRONT ----- CB7
028 + 5V LEFT R-W CHANNEL BD FRONT - DA1
029 + 5V LEFT R-W CHANNEL BD FRONT - DB1
030 + 5V LEFT R-W CHANNEL BD FRONT - DB2
031 GND LEFT R-W CHANNEL BD FRONT -- DA3
032 GND LEFT R-W CHANNEL BD FRONT -- DB3
033 GND LEFT R-W CHANNEL BD FRONT -- DA4
034 - 5V LEFT R-W CHANNEL BD FRONT - DB4
035 - 5V LEFT R-W CHANNEL BD FRONT - DA5
036 - 5V LEFT R-W CHANNEL BD FRONT - DB5
037 + HEAD SELECT 0 ARM 1 LF ------- HA3
038 + HEAD SELECT 1 ARM 1 LF ------- HA6
039 - WRITE SELECT ARM 1 LF -------- HA7
040 - WRITE DATA ARM 1 LF ---------- HA9
041 + WRITE DATA ARM 1 LF ---------- HAA
042 IMF ARM 1 LF -------------------- HB8
043 - AE SELECT 1 ARM 1 LF --------- HCA
044 GND SERVO SHIELD LF ------------ GA1
045 GND SERVO SHIELD LF ------------ GB1
046 + HEAD SELECT 0 ARM 2 LF ------- GA3
047 + HEAD SELECT 1 ARM 2 LF ------- GA6
048 - WRITE SELECT ARM 2 LF -------- GA7
049 - WRITE DATA ARM 2 LF ---------- GA9
050 + WRITE DATA ARM 2 LF ---------- GAA
051 - 5V SERVO (POWER CONN) LF ----- GB3
052 GND SERVO (POWER CONN) LF ------ GB4
053 IMF ARM 2 LF -------------------- GB8
054 - AE SELECT 2 ARM 2 LF --------- GCA
055 + HEAD SELECT 0 ARM 3 LF ------- FA3
056 + HEAD SELECT 1 ARM 3 LF ------- FA6
057 - WRITE SELECT ARM 3 LF -------- FA7
058 - WRITE DATA ARM 3 LF ---------- FA9
059 + WRITE DATA ARM 3 LF ---------- FAA
060 IMF ARM 3 LF -------------------- FB8
061 - AE SELECT 3 ARM 3 LF --------- FCA
062 + HEAD SELECT 0 ARM 4 LF ------- EA3
063 + HEAD SELECT 1 ARM 4 LF ------- EA6
064 - WRITE SELECT ARM 4 LF -------- EA7
065 - WRITE DATA ARM 4 LF ---------- EA9
066 + WRITE DATA ARM 4 LF ---------- EAA
067 IMF ARM 4 LF -------------------- EB8
068 - AE SEL 4 ARM 4 LF ------------ ECA
069 + 15V LEFT R-W CHANNEL BD FRONT DA2
070 - LH POWER ON RESET POWER FRONT AB2
071 + LH AM SEARCH FRONT ----------- AAB

READ/WRITE CHANNEL BOARD

See page AD200 (lower left corner) for special socket/pin numbering for this board(This page is located in the plug chart section). Page AF200(plug chart section) may be helpful for general cabling.

INTRODUCTION

The read/write channel board passes the data between the HDA and variable frequency oscillator(DHPLO card). Each device has its own read/write channel board.

The read/write channel board contains the following parts:

- Select amplifier module
- Automatic gain control amplifier module
- Data detection module
- Decode module
- Power-on reset circuit

DESCRIPTION

- Receives the linear read-back signal from the arm electronics module. The data signal passes through a select amplifier, filter, and automatic gain control. The constant amplitude linear signal then goes through the detection process which converts the analog signal to a digital signal. Finally, this digitized output signal is transmitted to the VFO module.
- Receives the pulse data transmitted from the VFO card, divides the frequency of the data by two, and sends it to the arm electronics module during write operations.
- Decodes the head address register (HAR) bits for arm and head selection.
- Translates the channel status lines into a status word.
- Interrupts operations when the status word indicates there is a data integrity exposure.
- Parity checks the incoming HAR bits and the status word.
- Interrupts operations to protect data integrity, when the +5 volt power supplies fall below a safe level.

ERROR CHECKING

The 'drive status bit (0-7 + P)' lines present the read/write channel status word for each device. If an error occurs, the status of each line is saved in a latch in the decode module. The latches must be reset with the '- drive check reset' line before normal operations can begin.

The status of the 'multiplexer gate' line determines which set of device status conditions is presented. Bits 0 and 1, the FRU bits, have the same meaning in both conditions. Bits 0 and 1 indicate the general area of the error as shown in the FRU list below. The other twelve bits determine the specific error condition. When the '-multiplexer gate' line is active, bits 2 through 7 indicate the status of the arm electronics. When the '-multiplexer gate' line is inactive, bits 2 through 7 indicate error checks.

Active Multiplexer Gate

Bit 2 (multi-function bit) indicates the status of the arm electronics. If bit 2 is active, then more than one function or module has been selected.

Bit 3 (no-function bit) indicates the status of the arm electronics. If bit 3 is active, then no arm electronics module has been selected.

Bit 4 is generated in the decode module. If bit 4 is active, an arm electronics module is being selected. This is verified when the no-function arm electronics status bit becomes inactive.

Bit 5 (write mode verify bit) indicates the status of the arm electronics. If bit 5 is active, an arm electronics module is actually in a write mode.

Bit 6 and bit 7 are arm electronics status, designated the arm electronics status 2 and arm electronics status 1 bits. These bits change status as the operational modes change between standby, read, write, and back to standby.

See next page for more.

R-W CHANNEL BOARD LEFT FRONT CRD HC1A1

ABB - LH DRIVE STATUS BIT 0 FRONT -- 003
BA9 - LH DRIVE STATUS BIT 1 FRONT -- 004
BBA - LH DRIVE STATUS BIT 2 FRONT -- 005
BAC - LH DRIVE STATUS BIT 3 FRONT -- 006
BAA - LH DRIVE STATUS BIT 4 FRONT -- 007
AAA - LH DRIVE STATUS BIT 5 FRONT -- 008
AA9 - LH DRIVE STATUS BIT 6 FRONT -- 009
AA8 - LH DRIVE STATUS BIT 7 FRONT -- 010
ABA - LH DRIVE STATUS BIT P FRONT -- 011
AAC - LH SERVO IMF TP FRONT -------- 012
AB5 - LH ENABLE NON AGC OUTPUT FRONT 013
BBB + LH FLAT CABLE CHK RETURN FRONT 014
BB2 + LH DATA HEAD SIGNAL TP FRONT - 015
BA2 - LH DATA HEAD SIGNAL TP FRONT - 016
HA4 + READ DATA ARM 1 LF ---------- 017
HA5 - READ DATA ARM 1 LF ---------- 018
HA8 - ERROR 1 ARM 1 LF ------------ 019
HAB - WRITE MODE VERIFY ARM 1 LF --- 020
HBB - ERROR 2 ARM 1 LF ------------ 021
GB1 GND SERVO SHIELD LF ----------- 022
GA1 GND SERVO SHIELD LF ----------- 023
GA2 + SERVO DATA ARM 2 LF --------- 024
GA4 + READ DATA ARM 2 LF ---------- 025
GA5 - READ DATA ARM 2 LF ---------- 026
GA8 - ERROR 1 ARM 2 LF ------------ 027
GAB - WRITE MODE VERIFY ARM 2 LF --- 028
GB2 - SERVO DATA ARM 2 LF --------- 029
GBB - ERROR 2 ARM 2 LF ------------ 030
GC2 SERVO IMF ARM 2 LF ------------ 031
FA4 + READ DATA ARM 3 LF ---------- 032
FA5 - READ DATA ARM 3 LF ---------- 033
FA8 - ERROR 1 ARM 3 LF ------------ 034
FAB - WRITE MODE VERIFY ARM 3 LF --- 035
FBB - ERROR 2 ARM 3 LF ------------ 036
EA4 + READ DATA ARM 4 LF ---------- 037
EA5 - READ DATA ARM 4 LF ---------- 038
EA8 - ERROR 1 ARM 4 LF ------------ 039
EAB - WRITE MODE VERIFY ARM 4 LF --- 040
EBB - ERROR 2 ARM 4 LF ------------ 041
AA2 - LH R-W POWER GOOD FRONT ------ 042

R-W CHANNEL BOARD LEFT FRONT CRD HC1A1

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- LH HAR BIT 4 FRONT		
	B2AB6	HC1A1-L003
	1B-B1 (J2B02)	BJ200-R046
	1B-B1 *A2B07*	
L004		
- LH HAR BIT 5 FRONT		
	B2BA5	HC1A1-L004
	1B-B1 (J2B03)	BJ200-R047
	1B-B1 *A3D05*	
L005		
- LH HAR BIT 6 FRONT		
	B2BB6	HC1A1-L005
	1B-B1 (J2B04)	BJ200-R048
	1B-B1 *A3B07*	
L006		
- LH HAR BIT 7 FRONT		
	B2AA5	HC1A1-L006
	1B-B1 (J2D02)	BJ200-R049
	1B-B1 *A2D05*	
L007		
- LH HAR BIT P FRONT		
	B2BB5	HC1A1-L007
	1B-B1 (J2C02)	BJ200-R050
	1B-B1 *A3B05*	
L008		
+ LH SERVO PAD CLOCK FRONT		
	B2AAC	HC1A1-L008
	1B-B1 (D2D07)	BD200-R035
	1B-B1 *A2D13*	
L009		
- LH WRITE GATE 1 FRONT		
	B2AA6	HC1A1-L009
	1B-B1 (J2S12)	BJ200-R051
	1B-B1 *A2D06*	
L010		
- LH MULTIPLEXER GATE FRONT		
	B2AA7	HC1A1-L010
	1B-B1 (J2N09)	BJ200-R054
	1B-B1 *A2D07*	
L011		
- LH DRIVE CHECK INHIBIT FRONT		
	B2AB8	HC1A1-L011
	1B-B1 (J2M12)	BJ200-R042
	1B-B1 *A2B09*	
L012		
+ LH FLAT CABLE CHECK FRONT		
	B2AB9	HC1A1-L012
	1B-B1 (J2N13)	BJ200-R058
	1B-B1 *A2B10*	
L013		
- LH PAD DATA SELECT FRONT		
	B2BB3	HC1A1-L013
	1B-B1 (J2S02)	BJ200-R044
	1B-B1 *A3B03*	
L014		
- LH SEL A1/ + SEL A2 FRONT		
	B2BA4	HC1A1-L014
	1B-B1 (J2U12)	BJ200-R055
	1B-B1 *A3D04*	
L015		
- LH SET R-W FRONT		
	B2BA7	HC1A1-L015
	1B-B1 (J2N12)	BJ200-R039
	1B-B1 *A3D07*	
L016		
- LH SET R-W SAFE FRONT		
	B2BB8	HC1A1-L016
	1B-B1 (J2P11)	BJ200-R038
	1B-B1 *A3B09*	
L017		
- LH READ TRANSMIT FRONT		
	B2BB4	HC1A1-L017
	1B-B1 (J2T02)	BJ200-R059
	1B-B1 *A3B04*	
L018		
- LH WRITE GATE 2 FRONT		
	B2BB7	HC1A1-L018
	1B-B1 (J2S13)	BJ200-R052
	1B-B1 *A3B08*	
L019		
- LH DRIVE CHECK RESET FRONT		
	B2BB9	HC1A1-L019
	1B-B1 (J2M13)	BJ200-R043
	1B-B1 *A3B10*	
L020		
- A1 R-W DATA FROM/TO 0 FRONT		
	B2CA1	HC1A1-L020
	1A-A1 M2B02	CM200-L004
	1C-C1 B2CA1	HC2A1-L020
	1A-A1 *Q1E08*	
L021		
+ A1 R-W DATA FROM/TO 0 FRONT		
	B2CB1	HC1A1-L021
	1A-A1 M2B03	CM200-L003
	1C-C1 B2CB1	HC2A1-L021
	1A-A1 *R1A08*	
L022		
- A2 R-W DATA FROM/TO 0 FRONT		
	B2CA3	HC1A1-L022
	1A-A1 L2B02	CL200-L004
	1C-C1 B2CA3	HC2A1-L022
	1A-A1 *Q1E06*	
L023		
+ A2 R-W DATA FROM/TO 0 FRONT		
	B2CB3	HC1A1-L023
	1A-A1 L2B03	CL200-L003
	1C-C1 B2CB3	HC2A1-L023
	1A-A1 *R1A06*	
L024		
+ LH SERVO GUARD 1 FRONT		
	B2CA6	HC1A1-L024
	1B-B1 D2U07	BD200-L032
	B2CB6	HC1A1-L025
	1B-B1 *B4B02*	
	1B-B1 *B4B05*	
L025		
+ LH SERVO GUARD 1 FRONT		
	B2CB6	HC1A1-L025
	1B-B1 D2U07	BD200-L032
	B2CA6	HC1A1-L024
	1B-B1 *B4B02*	
	1B-B1 *B4B05*	
L026		
+ LH LOW LEVEL SERVO FRONT		
	B2CA7	HC1A1-L026
	1B-B1 D2U06	BD200-L030
	1B-B1 *B4B04*	
L027		
- LH LOW LEVEL SERVO FRONT		
	B2CB7	HC1A1-L027
	1B-B1 D2S06	BD200-L031
	1B-B1 *B4B03*	
L028		
+ 5V LEFT R-W CHANNEL BD FRONT		
	B2DA1	HC1A1-L028
	B2DB1	HC1A1-L029
	B2DB2	HC1A1-L030
	YA410 *-R045*	
	YA410 *-R046*	
	YA410 *-R047*	
L029		
+ 5V LEFT R-W CHANNEL BD FRONT		
	B2DB1	HC1A1-L029
	B2DA1	HC1A1-L028
	B2DB2	HC1A1-L030
	YA410 *-R045*	
	YA410 *-R046*	
	YA410 *-R047*	
L030		
+ 5V LEFT R-W CHANNEL BD FRONT		
	B2DB2	HC1A1-L030
	B2DA1	HC1A1-L028
	B2DB1	HC1A1-L029
	YA410 *-R045*	
	YA410 *-R046*	
	YA410 *-R047*	
L031		
GND LEFT R-W CHANNEL BD FRONT		
	B2DA3	HC1A1-L031
	B2DB3	HC1A1-L032
	B2DA4	HC1A1-L033
	YA450 *-R043*	
	YA450 *-R036*	
	YA450 *-R046*	
L032		
GND LEFT R-W CHANNEL BD FRONT		
	B2DB3	HC1A1-L032
	B2DA3	HC1A1-L031
	B2DA4	HC1A1-L033
	YA450 *-R043*	
	YA450 *-R036*	
	YA450 *-R046*	
L033		
GND LEFT R-W CHANNEL BD FRONT		
	B2DA4	HC1A1-L033
	B2DA3	HC1A1-L031
	B2DB3	HC1A1-L032
	YA450 *-R043*	
	YA450 *-R036*	
	YA450 *-R046*	
L034		
- 5V LEFT R-W CHANNEL BD FRONT		
	B2DB4	HC1A1-L034
	B2DA5	HC1A1-L035
	B2DB5	HC1A1-L036
	YA410 *-R037*	
	YA410 *-R036*	
	YA410 *-R040*	
L035		
- 5V LEFT R-W CHANNEL BD FRONT		
	B2DA5	HC1A1-L035
	B2DB4	HC1A1-L034
	B2DB5	HC1A1-L036
	YA410 *-R037*	
	YA410 *-R036*	
	YA410 *-R040*	
L036		
- 5V LEFT R-W CHANNEL BD FRONT		
	B2DB5	HC1A1-L036
	B2DB4	HC1A1-L034
	B2DA5	HC1A1-L035
	YA410 *-R037*	
	YA410 *-R036*	
	YA410 *-R040*	
L037		
+ HEAD SELECT 0 ARM 1 LF		
	B2HA3	HC1A1-L037
L038		
+ HEAD SELECT 1 ARM 1 LF		
	B2HA6	HC1A1-L038
L039		
- WRITE SELECT ARM 1 LF		
	B2HA7	HC1A1-L039
L040		
- WRITE DATA ARM 1 LF		
	B2HA9	HC1A1-L040
L041		
+ WRITE DATA ARM 1 LF		
	B2HAA	HC1A1-L041
L042		
IMF ARM 1 LF		
	B2HB8	HC1A1-L042
L043		
- AE SELECT 1 ARM 1 LF		
	B2HCA	HC1A1-L043
L044		
GND SERVO SHIELD LF		
	B2GA1	HC1A1-L044
	(B2GB1)	HC1A1-R022
	(B2GA1)	HC1A1-R023
	B2GB1	HC1A1-L045
L045		
GND SERVO SHIELD LF		
	B2GB1	HC1A1-L045
	(B2GB1)	HC1A1-R022
	(B2GA1)	HC1A1-R023
	B2GA1	HC1A1-L044
L046		
+ HEAD SELECT 0 ARM 2 LF		
	B2GA3	HC1A1-L046
L047		
+ HEAD SELECT 1 ARM 2 LF		
	B2GA6	HC1A1-L047
L048		
- WRITE SELECT ARM 2 LF		
	B2GA7	HC1A1-L048
L049		
- WRITE DATA ARM 2 LF		
	B2GA9	HC1A1-L049
L050		
+ WRITE DATA ARM 2 LF		
	B2GAA	HC1A1-L050
L051		
- 5V SERVO (POWER CONN) LF		
	B2GB3	HC1A1-L051
L052		
GND SERVO (POWER CONN) LF		
	B2GB4	HC1A1-L052
L053		
IMF ARM 2 LF		
	B2GB8	HC1A1-L053
L054		
- AE SELECT 2 ARM 2 LF		
	B2GCA	HC1A1-L054
L055		
+ HEAD SELECT 0 ARM 3 LF		
	B2FA3	HC1A1-L055
L056		
+ HEAD SELECT 1 ARM 3 LF		
	B2FA6	HC1A1-L056
L057		
- WRITE SELECT ARM 3 LF		
	B2FA7	HC1A1-L057
L058		
- WRITE DATA ARM 3 LF		
	B2FA9	HC1A1-L058
L059		
+ WRITE DATA ARM 3 LF		
	B2FAA	HC1A1-L059
L060		
IMF ARM 3 LF		
	B2FB8	HC1A1-L060
L061		
- AE SELECT 3 ARM 3 LF		
	B2FCA	HC1A1-L061
L062		
+ HEAD SELECT 0 ARM 4 LF		
	B2EA3	HC1A1-L062
L063		
+ HEAD SELECT 1 ARM 4 LF		
	B2EA6	HC1A1-L063
L064		
- WRITE SELECT ARM 4 LF		
	B2EA7	HC1A1-L064
L065		
- WRITE DATA ARM 4 LF		
	B2EA9	HC1A1-L065
L066		
+ WRITE DATA ARM 4 LF		
	B2EAA	HC1A1-L066
L067		
IMF ARM 4 LF		
	B2EB8	HC1A1-L067
L068		
- AE SEL 4 ARM 4 LF		
	B2ECA	HC1A1-L068
L069		
+ 15V LEFT R-W CHANNEL BD FRONT		
	B2DA2	HC1A1-L069
	YA410 *-R038*	
L070		
- LH POWER ON RESET POWER FRONT		
	B2AB2	HC1A1-L070
	1B-B1 (H2N06)	BH200-R062
	1B-B1 D2S07	BD200-L039
	1B-B1 G2P06	BG200-L015
	1B-B1 J2N11	BJ200-L037
	1B-B1 K2B07	BK200-L018
	1B-B1 L2S04	BL200-L041
	1B-B1 *A2D02*	

R-W CHANNEL BOARD LEFT FRONT XRL HC1A1

LINE/SIGNAL	PIN	SHEET/LINE
L071		
+ LH AM SEARCH FRONT	B2AAB	HC1A1-L071
	1B-B1 (J2M07)	BJ210-R026
	1B-B1 *A2D12*	
R003		
- LH DRIVE STATUS BIT 0 FRONT	(B2ABB)	HC1A1-R003
	1B-B1 J2J02	BJ200-L047
	1B-B1 *A2B13*	
R004		
- LH DRIVE STATUS BIT 1 FRONT	(B2BA9)	HC1A1-R004
	1B-B1 J2H02	BJ200-L048
	1B-B1 *A3D10*	
R005		
- LH DRIVE STATUS BIT 2 FRONT	(B2BBA)	HC1A1-R005
	1B-B1 J2D13	BJ200-L049
	1B-B1 *A3B12*	
R006		
- LH DRIVE STATUS BIT 3 FRONT	(B2BAC)	HC1A1-R006
	1B-B1 J2C13	BJ200-L050
	1B-B1 *A3D13*	
R007		
- LH DRIVE STATUS BIT 4 FRONT	(B2BAA)	HC1A1-R007
	1B-B1 J2D12	BJ200-L051
	1B-B1 *A3D11*	
R008		
- LH DRIVE STATUS BIT 5 FRONT	(B2AAA)	HC1A1-R008
	1B-B1 J2C12	BJ200-L052
	1B-B1 *A2D11*	
R009		
- LH DRIVE STATUS BIT 6 FRONT	(B2AA9)	HC1A1-R009
	1B-B1 J2B13	BJ200-L053
	1B-B1 *A2D10*	
R010		
- LH DRIVE STATUS BIT 7 FRONT	(B2AA8)	HC1A1-R010
	1B-B1 J2D11	BJ200-L054
	1B-B1 *A2D09*	
R011		
- LH DRIVE STATUS BIT P FRONT	(B2ABA)	HC1A1-R011
	1B-B1 J2D10	BJ200-L055
	1B-B1 *A2B12*	
R012		
- LH SERVO IMF TP FRONT	(B2AAC)	HC1A1-R012
R013		
- LH ENABLE NON AGC OUTPUT FRONT	(B2AB5)	HC1A1-R013
	1B-B1 *A2B05*	
R014		
+ LH FLAT CABLE CHK RETURN FRONT	(B2BBB)	HC1A1-R014
	1B-B1 J2C10	BJ200-L056
	1B-B1 *A3B13*	
R015		
+ LH DATA HEAD SIGNAL TP FRONT	(B2BB2)	HC1A1-R015
	1B-B1 *A3B02*	
R016		
- LH DATA HEAD SIGNAL TP FRONT	(B2BA2)	HC1A1-R016
	1B-B1 *A3D02*	
R017		
+ READ DATA ARM 1 LF	(B2HA4)	HC1A1-R017
R018		
- READ DATA ARM 1 LF	(B2HA5)	HC1A1-R018
R019		
- ERROR 1 ARM 1 LF	(B2HA8)	HC1A1-R019
R020		
- WRITE MODE VERIFY ARM 1 LF	(B2HAB)	HC1A1-R020
R021		
- ERROR 2 ARM 1 LF	(B2HBB)	HC1A1-R021
R022		
GND SERVO SHIELD LF	(B2GB1)	HC1A1-R022
	(B2GA1)	HC1A1-R023
	B2GA1	HC1A1-L044
	B2GB1	HC1A1-L045
R023		
GND SERVO SHIELD LF	(B2GA1)	HC1A1-R023
	(B2GB1)	HC1A1-R022
	B2GA1	HC1A1-L044
	B2GB1	HC1A1-L045
R024		
+ SERVO DATA ARM 2 LF	(B2GA2)	HC1A1-R024
R025		
+ READ DATA ARM 2 LF	(B2GA4)	HC1A1-R025
R026		
- READ DATA ARM 2 LF	(B2GA5)	HC1A1-R026
R027		
- ERROR 1 ARM 2 LF	(B2GA8)	HC1A1-R027
R028		
- WRITE MODE VERIFY ARM 2 LF	(B2GAB)	HC1A1-R028
R029		
- SERVO DATA ARM 2 LF	(B2GB2)	HC1A1-R029
R030		
- ERROR 2 ARM 2 LF	(B2GBB)	HC1A1-R030
R031		
SERVO IMF ARM 2 LF	(B2GC2)	HC1A1-R031
R032		
+ READ DATA ARM 3 LF	(B2FA4)	HC1A1-R032
R033		
- READ DATA ARM 3 LF	(B2FA5)	HC1A1-R033
R034		
- ERROR 1 ARM 3 LF	(B2FA8)	HC1A1-R034
R035		
- WRITE MODE VERIFY ARM 3 LF	(B2FAB)	HC1A1-R035
R036		
- ERROR 2 ARM 3 LF	(B2FBB)	HC1A1-R036
R037		
+ READ DATA ARM 4 LF	(B2EA4)	HC1A1-R037
R038		
- READ DATA ARM 4 LF	(B2EA5)	HC1A1-R038
R039		
- ERROR 1 ARM 4 LF	(B2EA8)	HC1A1-R039
R040		
- WRITE MODE VERIFY ARM 4 LF	(B2EAB)	HC1A1-R040
R041		
- ERROR 2 ARM 4 LF	(B2EBB)	HC1A1-R041
R042		
- LH R-W POWER GOOD FRONT	(B2AA2)	HC1A1-R042
	1B-B1 *A2B02*	

See previous page for more.

Inactive Multiplexer Gate

Bit 2 (redundancy line check bit) identifies that the error is associated with the device logic. It indicates that either one of the 'set read/write' lines or the 'write gate' lines is open.

Bit 3 (no R/W recovery bit) is active whenever one of the five decoders detects the presence of a no read or a no write status condition from either the arm electronics modules or data detector circuitry.

Bit 4 (inhibit or reset bit) is active if either the 'drive check inhibit' or 'drive check reset' line is active. This permits the detection by the gate logic if either line input is open or shorted.

Bit 5 (read and write check bit) is active whenever an attempt is made to perform a read while writing, or a write while reading. This can also indicate that the 'read xmit' line is shorted.

Bit 6 (head arm parity check bit) is active if the HAR bits do not pass the parity check.

Bit 7 (cable and data detector check bit) is active if any of the following conditions exist:

1. Read cable error (problem with cable to the variable frequency oscillator).

A cable error is detected when the 'read xmit' line is active.

2. Write cable error (problem with lines to arm electronics modules).

A cable error is detected when the 'read xmit' line is inactive.

3. Data detector read status error

This error condition occurs if the data detector finds the 'data detect read verify' line active but the 'set read/write' lines are inactive. (Read detector is in read mode but arm electronics modules do not have an input to select one of them).

4. Data detector select status error

This error condition occurs when the 'select A1 verify' line is active but the 'set read/write' lines are not active, or if the 'select A1/A2' and the 'select A1 verify' lines do not agree.

FRU LIST

Following is a description of the status of FRU bits 0 and 1:

Status Bits 0	1	Error conditions	FRU
0	0	Normal (no error)	-
0	1	R/W channel error	1
1	0	Device logic error	2
1	1	Read data cable error	3

003 - RH HAR BIT 4 FRONT ---------- AB6
004 - RH HAR BIT 5 FRONT ---------- BA5
005 - RH HAR BIT 6 FRONT ---------- BB6
006 - RH HAR BIT 7 FRONT ---------- AA5
007 - RH HAR BIT P FRONT ---------- BB5
008 + RH SERVO PAD CLOCK FRONT ----- AAC
009 - RH WRITE GATE 1 FRONT -------- AA6
010 - RH MULTIPLEXER GATE FRONT ---- AA7
011 - RH DRIVE CHECK INHIBIT FRONT - AB8
012 + RH FLAT CABLE CHECK FRONT ---- AB9
013 - RH PAD DATA SELECT FRONT ----- BB3
014 - RH SEL A1/ + SEL A2 FRONT ---- BA4
015 - RH SET R-W FRONT ------------- BA7
016 - RH SET R-W SAFE FRONT -------- BB8
017 - RH READ TRANSMIT FRONT ------- BB4
018 - RH WRITE GATE 2 FRONT -------- BB7
019 - RH DRIVE CHECK RESET FRONT --- BB9
020 - A1 R-W DATA FROM/TO 0 FRONT -- CA1
021 + A1 R-W DATA FROM/TO 0 FRONT -- CB1
022 - A2 R-W DATA FROM/TO 0 FRONT -- CA3
023 + A2 R-W DATA FROM/TO 0 FRONT -- CB3
024 + RH SERVO GUARD 1 FRONT ------- CA6
025 + RH SERVO GUARD 1 FRONT ------- CB6
026 + RH LOW LEVEL SERVO FRONT ----- CA7
027 - RH LOW LEVEL SERVO FRONT ----- CB7
028 + 5V RIGHT R-W CHANNEL BD FRONT DA1
029 + 5V RIGHT R-W CHANNEL BD FRONT DB1
030 + 5V RIGHT R-W CHANNEL BD FRONT DB2
031 GND RIGHT R-W CHANNEL BD FRONT - DA3
032 GND RIGHT R-W CHANNEL BD FRONT - DB3
033 GND RIGHT R-W CHANNEL BD FRONT - DA4
034 - 5V RIGHT R-W CHANNEL BD FRONT DB4
035 - 5V RIGHT R-W CHANNEL BD FRONT DA5
036 - 5V RIGHT R-W CHANNEL BD FRONT DB5
037 + HEAD SELECT 0 ARM 1 RF ------- HA3
038 + HEAD SELECT 1 ARM 1 RF ------- HA6
039 - WRITE SELECT ARM 1 RF -------- HA7
040 - WRITE DATA ARM 1 RF ---------- HA9
041 + WRITE DATA ARM 1 RF ---------- HAA
042 IMF ARM 1 RF -------------------- HB8
043 - AE SELECT 1 ARM 1 RF --------- HCA
044 GND SERVO SHIELD RF ------------ GA1
045 GND SERVO SHIELD RF ------------ GB1
046 + HEAD SELECT 0 ARM 2 RF ------- GA3
047 + HEAD SELECT 1 ARM 2 RF ------- GA6
048 - WRITE SELECT ARM 2 RF -------- GA7
049 - WRITE DATA ARM 2 RF ---------- GA9
050 + WRITE DATA ARM 2 RF ---------- GAA
051 - 5V SERVO (POWER CONN) RF ----- GB3
052 GND SERVO (POWER CONN) RF ------ GB4
053 IMF ARM 2 RF -------------------- GB8
054 - AE SELECT 2 ARM 2 RF --------- GCA
055 + HEAD SELECT 0 ARM 3 RF ------- FA3
056 + HEAD SELECT 1 ARM 3 RF ------- FA6
057 - WRITE SELECT ARM 3 RF -------- FA7
058 - WRITE DATA ARM 3 RF ---------- FA9
059 + WRITE DATA ARM 3 RF ---------- FAA
060 IMF ARM 3 RF -------------------- FB8
061 - AE SELECT 3 ARM 3 RF --------- FCA
062 + HEAD SELECT 0 ARM 4 RF ------- EA3
063 + HEAD SELECT 1 ARM 4 RF ------- EA6
064 - WRITE SELECT ARM 4 RF -------- EA7
065 - WRITE DATA ARM 4 RF ---------- EA9
066 + WRITE DATA ARM 4 RF ---------- EAA
067 IMF ARM 4 RF -------------------- EB8
068 - AE SEL 4 ARM 4 RF ------------ ECA
069 + 15V RIGHT R-W CHANNEL BD FRONT DA2
070 - RH POWER ON RESET POWER FRONT AB2
071 + RH AM SEARCH FRONT ---------- AAB

READ/WRITE CHANNEL BOARD

See page AD200 (lower left corner) for special socket/pin numbering for this board(This page is located in the plug chart section). Page AF200(plug chart section) may be useful for general cabling.

INTRODUCTION

The read/write channel board passes the data between the HDA and variable frequency oscillator(DHPLO card). Each device has its own read/write channel board.

The read/write channel board contains the following parts:

- Select amplifier module
- Automatic gain control amplifier module
- Data detection module
- Decode module
- Power-on reset circuit

DESCRIPTION

- Receives the linear read-back signal from the arm electronics module. The data signal passes through a select amplifier, filter, and automatic gain control. The constant amplitude linear signal then goes through the detection process which converts the analog signal to a digital signal. Finally, this digitized output signal is transmitted to the VFO module.
- Receives the pulse data transmitted from the VFO card, divides the frequency of the data by two, and sends it to the arm electronics module during write operations.
- Decodes the head address register (HAR) bits for arm and head selection.
- Translates the channel status lines into a status word.
- Interrupts operations when the status word indicates there is a data integrity exposure.
- Parity checks the incoming HAR bits and the status word.
- Interrupts operations to protect data integrity, when the +5 volt power supplies fall below a safe level.

ERROR CHECKING

The 'drive status bit (0-7 + P)' lines present the read/write channel status word for each device. If an error occurs, the status of each line is saved in a latch in the decode module. The latches must be reset with the '- drive check reset' line before normal operations can begin.

The status of the 'multiplexer gate' line determines which set of device status conditions is presented. Bits 0 and 1, the FRU bits, have the same meaning in both conditions. Bits 0 and 1 indicate the general area of the error as shown in the FRU list below. The other twelve bits determine the specific error condition. When the '-multiplexer gate' line is active, bits 2 through 7 indicate the status of the arm electronics. When the '-multiplexer gate' line is inactive, bits 2 through 7 indicate error checks.

Active Multiplexer Gate

Bit 2 (multi-function bit) indicates the status of the arm electronics. If bit 2 is active, then more than one function or module has been selected.

Bit 3 (no-function bit) indicates the status of the arm electronics. If bit 3 is active, then no arm electronics module has been selected.

Bit 4 is generated in the decode module. If bit 4 is active, an arm electronics module is being selected. This is verified when the no-function arm electronics status bit becomes inactive.

Bit 5 (write mode verify bit) indicates the status of the arm electronics. If bit 5 is active, an arm electronics module is actually in a write mode.

Bit 6 and bit 7 are arm electronics status, designated the arm electronics status 2 and arm electronics status 1 bits. These bits change status as the operational modes change between standby, read, write, and back to standby.

See next page for more.

R-W CHANNEL BOARD RIGHT FRONT CRD HC2A1

ABB - RH DRIVE STATUS BIT 0 FRONT -- 003
BA9 - RH DRIVE STATUS BIT 1 FRONT -- 004
BBA - RH DRIVE STATUS BIT 2 FRONT -- 005
BAC - RH DRIVE STATUS BIT 3 FRONT -- 006
BAA - RH DRIVE STATUS BIT 4 FRONT -- 007
AAA - RH DRIVE STATUS BIT 5 FRONT -- 008
AA9 - RH DRIVE STATUS BIT 6 FRONT -- 009
AA8 - RH DRIVE STATUS BIT 7 FRONT -- 010
ABA - RH DRIVE STATUS BIT P FRONT -- 011
AAC - RH SERVO IMF TP FRONT -------- 012
AB5 - RH ENABLE NON AGC OUTPUT FRONT 013
BBB + RH FLAT CABLE CHK RETURN FRONT 014
BB2 + RH DATA HEAD SIGNAL TP FRONT - 015
BA2 - RH DATA HEAD SIGNAL TP FRONT - 016
HA4 + READ DATA ARM 1 RF ---------- 017
HA5 - READ DATA ARM 1 RF ---------- 018
HA8 - ERROR 1 ARM 1 RF ------------ 019
HAB - WRITE MODE VERIFY ARM 1 RF --- 020
HBB - ERROR 2 ARM 1 RF ------------ 021
GB1 GND SERVO SHIELD RF ----------- 022
GA1 GND SERVO SHIELD RF ----------- 023
GA2 + SERVO DATA ARM 2 RF --------- 024
GA4 + READ DATA ARM 2 RF ---------- 025
GA5 - READ DATA ARM 2 RF ---------- 026
GA8 - ERROR 1 ARM 2 RF ------------ 027
GAB - WRITE MODE VERIFY ARM 2 RF --- 028
GB2 - SERVO DATA ARM 2 RF --------- 029
GBB - ERROR 2 ARM 2 RF ------------ 030
GC2 SERVO IMF ARM 2 RF ------------ 031
FA4 + READ DATA ARM 3 RF ---------- 032
FA5 - READ DATA ARM 3 RF ---------- 033
FA8 - ERROR 1 ARM 3 RF ------------ 034
FAB - WRITE MODE VERIFY ARM 3 RF --- 035
FBB - ERROR 2 ARM 3 RF ------------ 036
EA4 + READ DATA ARM 4 RF ---------- 037
EA5 - READ DATA ARM 4 RF ---------- 038
EA8 - ERROR 1 ARM 4 RF ------------ 039
EAB - WRITE MODE VERIFY ARM 4 RF --- 040
EBB - ERROR 2 ARM 4 RF ------------ 041
AA2 - RH R-W POWER GOOD FRONT ------ 042

R-W CHANNEL BOARD RIGHT FRONT CRD HC2A1

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- RH HAR BIT 4 FRONT		
	B2AB6	HC2A1-L003
1B-B1 (J2D06)		BJ200-R010
1B-B1 *A4B07*		
L004		
- RH HAR BIT 5 FRONT		
	B2BA5	HC2A1-L004
1B-B1 (J2D05)		BJ200-R011
1B-B1 *A5D05*		
L005		
- RH HAR BIT 6 FRONT		
	B2BB6	HC2A1-L005
1B-B1 (J2C06)		BJ200-R013
1B-B1 *A5B07*		
L006		
- RH HAR BIT 7 FRONT		
	B2AA5	HC2A1-L006
1B-B1 (J2D04)		BJ200-R012
1B-B1 *A4D05*		
L007		
- RH HAR BIT P FRONT		
	B2BB5	HC2A1-L007
1B-B1 (J2C05)		BJ200-R014
1B-B1 *A5B05*		
L008		
+ RH SERVO PAD CLOCK FRONT		
	B2AAC	HC2A1-L008
1B-B1 (E2D07)		BE200-R035
1B-B1 *A4D13*		
L009		
- RH WRITE GATE 1 FRONT		
	B2AA6	HC2A1-L009
1B-B1 (J2T09)		BJ200-R017
1B-B1 *A4D06*		
L010		
- RH MULTIPLEXER GATE FRONT		
	B2AA7	HC2A1-L010
1B-B1 (J2M10)		BJ200-R018
1B-B1 *A4D07*		
L011		
- RH DRIVE CHECK INHIBIT FRONT		
	B2AB8	HC2A1-L011
1B-B1 (J2P10)		BJ200-R023
1B-B1 *A4B09*		
L012		
+ RH FLAT CABLE CHECK FRONT		
	B2AB9	HC2A1-L012
1B-B1 (J2C04)		BJ200-R015
1B-B1 *A4B10*		
L013		
- RH PAD DATA SELECT FRONT		
	B2BB3	HC2A1-L013
1B-B1 (J2B09)		BJ200-R003
1B-B1 *A5B03*		

LINE/SIGNAL	PIN	SHEET/LINE
L014		
- RH SEL A1/ + SEL A2 FRONT		
	B2BA4	HC2A1-L014
1B-B1 (J2T04)		BJ200-R020
1B-B1 *A5D04*		
L015		
- RH SET R-W FRONT		
	B2BA7	HC2A1-L015
1B-B1 (J2B07)		BJ200-R006
1B-B1 *A5D07*		
L016		
- RH SET R-W SAFE FRONT		
	B2BB8	HC2A1-L016
1B-B1 (J2B05)		BJ200-R007
1B-B1 *A5B09*		
L017		
- RH READ TRANSMIT FRONT		
	B2BB4	HC2A1-L017
1B-B1 (J2C07)		BJ200-R009
1B-B1 *A5B04*		
L018		
- RH WRITE GATE 2 FRONT		
	B2BB7	HC2A1-L018
1B-B1 (J2T07)		BJ200-R016
1B-B1 *A5B08*		
L019		
- RH DRIVE CHECK RESET FRONT		
	B2BB9	HC2A1-L019
1B-B1 (J2S09)		BJ200-R024
1B-B1 *A5B10*		
L020		
- A1 R-W DATA FROM/TO 0 FRONT		
	B2CA1	HC2A1-L020
1A-A1	M2B02	CM200-L004
1C-C0	B2CA1	HC1A1-L020
1A-A1 *Q1E08*		
L021		
+ A1 R-W DATA FROM/TO 0 FRONT		
	B2CB1	HC2A1-L021
1A-A1	M2B03	CM200-L003
1C-C0	B2CB1	HC1A1-L021
1A-A1 *R1A08*		
L022		
- A2 R-W DATA FROM/TO 0 FRONT		
	B2CA3	HC2A1-L022
1A-A1	L2B02	CL200-L004
1C-C0	B2CA3	HC1A1-L022
1A-A1 *Q1E06*		
L023		
+ A2 R-W DATA FROM/TO 0 FRONT		
	B2CB3	HC2A1-L023
1A-A1	L2B03	CL200-L003
1C-C0	B2CB3	HC1A1-L023
1A-A1 *R1A06*		

LINE/SIGNAL	PIN	SHEET/LINE
L024		
+ RH SERVO GUARD 1 FRONT		
	B2CA6	HC2A1-L024
1B-B1	E2U07	BE200-L032
	B2CB6	HC2A1-L025
1B-B1 *B4B10*		
1B-B1 *B4B13*		
L025		
+ RH SERVO GUARD 1 FRONT		
	B2CB6	HC2A1-L025
1B-B1	E2U07	BE200-L032
	B2CA6	HC2A1-L024
1B-B1 *B4B10*		
1B-B1 *B4B13*		
L026		
+ RH LOW LEVEL SERVO FRONT		
	B2CA7	HC2A1-L026
1B-B1	E2U06	BE200-L030
1B-B1 *B4B12*		
L027		
- RH LOW LEVEL SERVO FRONT		
	B2CB7	HC2A1-L027
1B-B1	E2S06	BE200-L031
1B-B1 *B4B11*		
L028		
+ 5V RIGHT R-W CHANNEL BD FRONT		
	B2DA1	HC2A1-L028
	B2DB1	HC2A1-L029
	B2DB2	HC2A1-L030
YA410 *-R067*		
YA410 *-R069*		
YA410 *-R071*		
L029		
+ 5V RIGHT R-W CHANNEL BD FRONT		
	B2DB1	HC2A1-L029
	B2DA1	HC2A1-L028
	B2DB2	HC2A1-L030
YA410 *-R067*		
YA410 *-R069*		
YA410 *-R071*		
L030		
+ 5V RIGHT R-W CHANNEL BD FRONT		
	B2DB2	HC2A1-L030
	B2DA1	HC2A1-L028
	B2DB1	HC2A1-L029
YA410 *-R067*		
YA410 *-R069*		
YA410 *-R071*		
L031		
GND RIGHT R-W CHANNEL BD FRONT		
	B2DA3	HC2A1-L031
	B2DB3	HC2A1-L032
	B2DA4	HC2A1-L033
YA450 *-R039*		
YA450 *-R042*		
YA450 *-R047*		

LINE/SIGNAL	PIN	SHEET/LINE
L032		
GND RIGHT R-W CHANNEL BD FRONT		
	B2DB3	HC2A1-L032
	B2DA3	HC2A1-L031
	B2DA4	HC2A1-L033
YA450 *-R039*		
YA450 *-R042*		
YA450 *-R047*		
L033		
GND RIGHT R-W CHANNEL BD FRONT		
	B2DA4	HC2A1-L033
	B2DA3	HC2A1-L031
	B2DB3	HC2A1-L032
YA450 *-R039*		
YA450 *-R042*		
YA450 *-R047*		
L034		
- 5V RIGHT R-W CHANNEL BD FRONT		
	B2DB4	HC2A1-L034
	B2DA5	HC2A1-L035
	B2DB5	HC2A1-L036
YA410 *-R059*		
YA410 *-R057*		
YA410 *-R063*		
YA410 *-R060*		
L035		
- 5V RIGHT R-W CHANNEL BD FRONT		
	B2DA5	HC2A1-L035
	B2DB4	HC2A1-L034
	B2DB5	HC2A1-L036
YA410 *-R059*		
YA410 *-R057*		
YA410 *-R063*		
YA410 *-R060*		
L036		
- 5V RIGHT R-W CHANNEL BD FRONT		
	B2DB5	HC2A1-L036
	B2DB4	HC2A1-L034
	B2DA5	HC2A1-L035
YA410 *-R059*		
YA410 *-R057*		
YA410 *-R063*		
YA410 *-R060*		
L037		
+ HEAD SELECT 0 ARM 1 RF		
	B2HA3	HC2A1-L037
L038		
+ HEAD SELECT 1 ARM 1 RF		
	B2HA6	HC2A1-L038
L039		
- WRITE SELECT ARM 1 RF		
	B2HA7	HC2A1-L039
L040		
- WRITE DATA ARM 1 RF		
	B2HA9	HC2A1-L040

LINE/SIGNAL	PIN	SHEET/LINE
L041		
+ WRITE DATA ARM 1 RF		
	B2HAA	HC2A1-L041
L042		
IMF ARM 1 RF		
	B2HB8	HC2A1-L042
L043		
- AE SELECT 1 ARM 1 RF		
	B2HCA	HC2A1-L043
L044		
GND SERVO SHIELD RF		
	B2GA1	HC2A1-L044
	(B2GB1)	HC2A1-R022
	(B2GA1)	HC2A1-R023
	B2GB1	HC2A1-L045
L045		
GND SERVO SHIELD RF		
	B2GB1	HC2A1-L045
	(B2GB1)	HC2A1-R022
	(B2GA1)	HC2A1-R023
	B2GA1	HC2A1-L044
L046		
+ HEAD SELECT 0 ARM 2 RF		
	B2GA3	HC2A1-L046
L047		
+ HEAD SELECT 1 ARM 2 RF		
	B2GA6	HC2A1-L047
L048		
- WRITE SELECT ARM 2 RF		
	B2GA7	HC2A1-L048
L049		
- WRITE DATA ARM 2 RF		
	B2GA9	HC2A1-L049
L050		
+ WRITE DATA ARM 2 RF		
	B2GAA	HC2A1-L050
L051		
- 5V SERVO (POWER CONN) RF		
	B2GB3	HC2A1-L051
L052		
GND SERVO (POWER CONN) RF		
	B2GB4	HC2A1-L052
L053		
IMF ARM 2 RF		
	B2GB8	HC2A1-L053
L054		
- AE SELECT 2 ARM 2 RF		
	B2GCA	HC2A1-L054
L055		
+ HEAD SELECT 0 ARM 3 RF		
	B2FA3	HC2A1-L055

LINE/SIGNAL	PIN	SHEET/LINE
L056		
+ HEAD SELECT 1 ARM 3 RF		
	B2FA6	HC2A1-L056
L057		
- WRITE SELECT ARM 3 RF		
	B2FA7	HC2A1-L057
L058		
- WRITE DATA ARM 3 RF		
	B2FA9	HC2A1-L058
L059		
+ WRITE DATA ARM 3 RF		
	B2FAA	HC2A1-L059
L060		
IMF ARM 3 RF		
	B2FB8	HC2A1-L060
L061		
- AE SELECT 3 ARM 3 RF		
	B2FCA	HC2A1-L061
L062		
+ HEAD SELECT 0 ARM 4 RF		
	B2EA3	HC2A1-L062
L063		
+ HEAD SELECT 1 ARM 4 RF		
	B2EA6	HC2A1-L063
L064		
- WRITE SELECT ARM 4 RF		
	B2EA7	HC2A1-L064
L065		
- WRITE DATA ARM 4 RF		
	B2EA9	HC2A1-L065
L066		
+ WRITE DATA ARM 4 RF		
	B2EAA	HC2A1-L066
L067		
IMF ARM 4 RF		
	B2EB8	HC2A1-L067
L068		
- AE SEL 4 ARM 4 RF		
	B2ECA	HC2A1-L068
L069		
+ 15V RIGHT R-W CHANNEL BD FRONT		
	B2DA2	HC2A1-L069
L070		
- RH POWER ON RESET POWER FRONT		
	B2AB2	HC2A1-L070
1B-B1 (K2N06)		BK200-R062
1B-B1	E2S07	BE200-L039
1B-B1	G2S04	BG200-L041
1B-B1	H2B07	BH200-L018
1B-B1	J2B10	BJ200-L036
1B-B1	L2P06	BL200-L015
1B-B1 *A4D02*		

R-W CHANNEL BOARD RIGHT FRONT XRL HC2A1

LINE/SIGNAL	PIN	SHEET/LINE
L071		
+ RH AM SEARCH FRONT	B2AAB	HC2A1-L071
	1B-B1 (J2S04)	BJ210-R025
	1B-B1 *B3D08*	
	1B-B1 *A4D12*	
R003		
- RH DRIVE STATUS BIT 0 FRONT	(B2ABB)	HC2A1-R003
	1B-B1 J2N02	BJ200-L022
	1B-B1 *A4B13*	
R004		
- RH DRIVE STATUS BIT 1 FRONT	(B2BA9)	HC2A1-R004
	1B-B1 J2J13	BJ200-L023
	1B-B1 *A5D10*	
R005		
- RH DRIVE STATUS BIT 2 FRONT	(B2BBA)	HC2A1-R005
	1B-B1 J2J12	BJ200-L024
	1B-B1 *A5B12*	
R006		
- RH DRIVE STATUS BIT 3 FRONT	(B2BAC)	HC2A1-R006
	1B-B1 J2H12	BJ200-L025
	1B-B1 *A5D13*	
R007		
- RH DRIVE STATUS BIT 4 FRONT	(B2BAA)	HC2A1-R007
	1B-B1 J2J11	BJ200-L026
	1B-B1 *A5D11*	
R008		
- RH DRIVE STATUS BIT 5 FRONT	(B2AAA)	HC2A1-R008
	1B-B1 J2J09	BJ200-L027
	1B-B1 *A4D11*	
R009		
- RH DRIVE STATUS BIT 6 FRONT	(B2AA9)	HC2A1-R009
	1B-B1 J2J07	BJ200-L034
	1B-B1 *A4D10*	
R010		
- RH DRIVE STATUS BIT 7 FRONT	(B2AA8)	HC2A1-R010
	1B-B1 J2J10	BJ200-L020
	1B-B1 *A4D09*	
R011		
- RH DRIVE STATUS BIT P FRONT	(B2ABA)	HC2A1-R011
	1B-B1 J2H08	BJ200-L029
	1B-B1 *A4B12*	
R012		
- RH SERVO IMF TP FRONT	(B2AAC)	HC2A1-R012
R013		
- RH ENABLE NON AGC OUTPUT FRONT	(B2AB5)	HC2A1-R013
	1B-B1 *A4B05*	
R014		
+ RH FLAT CABLE CHK RETURN FRONT	(B2BBB)	HC2A1-R014
	1B-B1 J2P02	BJ200-L021
	1B-B1 *A5B13*	
R015		
+ RH DATA HEAD SIGNAL TP FRONT	(B2BB2)	HC2A1-R015
	1B-B1 *A5B02*	
R016		
- RH DATA HEAD SIGNAL TP FRONT	(B2BA2)	HC2A1-R016
	1B-B1 *A5D02*	
R017		
+ READ DATA ARM 1 RF	(B2HA4)	HC2A1-R017
R018		
- READ DATA ARM 1 RF	(B2HA5)	HC2A1-R018
R019		
- ERROR 1 ARM 1 RF	(B2HA8)	HC2A1-R019
R020		
- WRITE MODE VERIFY ARM 1 RF	(B2HAB)	HC2A1-R020
R021		
- ERROR 2 ARM 1 RF	(B2HBB)	HC2A1-R021
R022		
GND SERVO SHIELD RF	(B2GB1)	HC2A1-R022
	(B2GA1)	HC2A1-R023
	B2GA1	HC2A1-L044
	B2GB1	HC2A1-L045
R023		
GND SERVO SHIELD RF	(B2GA1)	HC2A1-R023
	(B2GB1)	HC2A1-R022
	B2GA1	HC2A1-L044
	B2GB1	HC2A1-L045
R024		
+ SERVO DATA ARM 2 RF	(B2GA2)	HC2A1-R024
R025		
+ READ DATA ARM 2 RF	(B2GA4)	HC2A1-R025
R026		
- READ DATA ARM 2 RF	(B2GA5)	HC2A1-R026
R027		
- ERROR 1 ARM 2 RF	(B2GA8)	HC2A1-R027
R028		
- WRITE MODE VERIFY ARM 2 RF	(B2GAB)	HC2A1-R028
R029		
- SERVO DATA ARM 2 RF	(B2GB2)	HC2A1-R029
R030		
- ERROR 2 ARM 2 RF	(B2GBB)	HC2A1-R030
R031		
SERVO IMF ARM 2 RF	(B2GC2)	HC2A1-R031
R032		
+ READ DATA ARM 3 RF	(B2FA4)	HC2A1-R032
R033		
- READ DATA ARM 3 RF	(B2FA5)	HC2A1-R033
R034		
- ERROR 1 ARM 3 RF	(B2FA8)	HC2A1-R034
R035		
- WRITE MODE VERIFY ARM 3 RF	(B2FAB)	HC2A1-R035
R036		
- ERROR 2 ARM 3 RF	(B2FBB)	HC2A1-R036
R037		
+ READ DATA ARM 4 RF	(B2EA4)	HC2A1-R037
R038		
- READ DATA ARM 4 RF	(B2EA5)	HC2A1-R038
R039		
- ERROR 1 ARM 4 RF	(B2EA8)	HC2A1-R039
R040		
- WRITE MODE VERIFY ARM 4 RF	(B2EAB)	HC2A1-R040
R041		
- ERROR 2 ARM 4 RF	(B2EBB)	HC2A1-R041
R042		
- RH R-W POWER GOOD FRONT	(B2AA2)	HC2A1-R042
	1B-B1 *A4B02*	

See previous page for more.

Inactive Multiplexer Gate

Bit 2 (redundancy line check bit) identifies that the error is associated with the device logic. It indicates that either one of the 'set read/write' lines or the 'write gate' lines is open.

Bit 3 (no R/W recovery bit) is active whenever one of the five decoders detects the presence of a no read or a no write status condition from either the arm electronics modules or data detector circuitry.

Bit 4 (inhibit or reset bit) is active if either the 'drive check inhibit' or 'drive check reset' line is active. This permits the detection by the gate logic if either line input is open or shorted.

Bit 5 (read and write check bit) is active whenever an attempt is made to perform a read while writing, or a write while reading. This can also indicate that the 'read xmit' line is shorted.

Bit 6 (head arm parity check bit) is active if the HAR bits do not pass the parity check.

Bit 7 (cable and data detector check bit) is active if any of the following conditions exist:

1. Read cable error (problem with cable to the variable frequency oscillator).

A cable error is detected when the 'read xmit' line is active.

2. Write cable error (problem with lines to arm electronics modules).

A cable error is detected when the 'read xmit' line is inactive.

3. Data detector read status error

This error condition occurs if the data detector finds the 'data detect read verify' line active but the 'set read/write' lines are inactive. (Read detector is in read mode but arm electronics modules do not have an input to select one of them).

4. Data detector select status error

This error condition occurs when the 'select A1 verify' line is active but the 'set read/write' lines are not active, or if the 'select A1/A2' and the 'select A1 verify' lines do not agree.

FRU LIST

Following is a description of the status of FRU bits 0 and 1:

Status Bits 0	1	Error conditions	FRU
0	0	Normal (no error)	-
0	1	R/W channel error	1
1	0	Device logic error	2
1	1	Read data cable error	3

003 - LH HAR BIT 4 REAR ---------- AB6
004 - LH HAR BIT 5 REAR ---------- BA5
005 - LH HAR BIT 6 REAR ---------- BB6
006 - LH HAR BIT 7 REAR ---------- AA5
007 - LH HAR BIT P REAR ---------- BB5
008 + LH SERVO PAD CLOCK REAR ------ AAC
009 - LH WRITE GATE 1 REAR --------- AA6
010 - LH MULTIPLEXER GATE REAR ----- AA7
011 - LH DRIVE CHECK INHIBIT REAR -- AB8
012 + LH FLAT CABLE CHECK REAR ----- AB9
013 - LH PAD DATA SELECT REAR ------ BB3
014 - LH SEL A1/ + SEL A2 REAR ----- BA4
015 - LH SET R-W REAR -------------- BA7
016 - LH SET R-W SAFE REAR --------- BB8
017 - LH READ TRANSMIT REAR -------- BB4
018 - LH WRITE GATE 2 REAR --------- BB7
019 - LH DRIVE CHECK RESET REAR ---- BB9
020 - A1 R-W DATA FROM/TO 0 REAR --- CA1
021 + A1 R-W DATA FROM/TO 0 REAR --- CB1
022 - A2 R-W DATA FROM/TO 0 REAR --- CA3
023 + A2 R-W DATA FROM/TO 0 REAR --- CB3
024 + LH SERVO GUARD 1 REAR -------- CA6
025 + LH SERVO GUARD 1 REAR -------- CB6
026 + LH LOW LEVEL SERVO REAR ------ CA7
027 - LH LOW LEVEL SERVO REAR ------ CB7
028 + 5V LEFT R-W CHANNEL BD REAR -- DA1
029 + 5V LEFT R-W CHANNEL BD REAR -- DB1
030 + 5V LEFT R-W CHANNEL BD REAR -- DB2
031 GND LEFT R-W CHANNEL BD REAR --- DA3
032 GND LEFT R-W CHANNEL BD REAR --- DB3
033 GND LEFT R-W CHANNEL BD REAR --- DA4
034 - 5V LEFT R-W CHANNEL BD REAR -- DB4
035 - 5V LEFT R-W CHANNEL BD REAR -- DA5
036 - 5V LEFT R-W CHANNEL BD REAR -- DB5
037 + HEAD SELECT 0 ARM 1 LR ------- HA3
038 + HEAD SELECT 1 ARM 1 LR ------- HA6
039 - WRITE SELECT ARM 1 LR -------- HA7
040 - WRITE DATA ARM 1 LR ---------- HA9
041 + WRITE DATA ARM 1 LR ---------- HAA
042 IMF ARM 1 LR ------------------- HB8
043 - AE SELECT 1 ARM 1 LR --------- HCA
044 GND SERVO SHIELD LR ------------ GA1
045 GND SERVO SHIELD LR ------------ GB1
046 + HEAD SELECT 0 ARM 2 LR ------- GA3
047 + HEAD SELECT 1 ARM 2 LR ------- GA6
048 - WRITE SELECT ARM 2 LR -------- GA7
049 - WRITE DATA ARM 2 LR ---------- GA9
050 + WRITE DATA ARM 2 LR ---------- GAA
051 - 5V SERVO (POWER CONN) LR ----- GB3
052 GND SERVO (POWER CONN) LR ------ GB4
053 IMF ARM 2 LR ------------------- GB8
054 - AE SELECT 2 ARM 2 LR --------- GCA
055 + HEAD SELECT 0 ARM 3 LR ------- FA3
056 + HEAD SELECT 1 ARM 3 LR ------- FA6
057 - WRITE SELECT ARM 3 LR -------- FA7
058 - WRITE DATA ARM 3 LR ---------- FA9
059 + WRITE DATA ARM 3 LR ---------- FAA
060 IMF ARM 3 LR ------------------- FB8
061 - AE SELECT 3 ARM 3 LR --------- FCA
062 + HEAD SELECT 0 ARM 4 LR ------- EA3
063 + HEAD SELECT 1 ARM 4 LR ------- EA6
064 - WRITE SELECT ARM 4 LR -------- EA7
065 - WRITE DATA ARM 4 LR ---------- EA9
066 + WRITE DATA ARM 4 LR ---------- EAA
067 IMF ARM 4 LR ------------------- EB8
068 - AE SEL 4 ARM 4 LR ------------ ECA
069 + 15V LEFT R-W CHANNEL BD REAR - DA2
070 - LH POWER ON RESET POWER REAR - AB2
071 + LH AM SEARCH REAR ------------ AAB

READ/WRITE CHANNEL BOARD

See page AD200 (lower left corner) for special socket/pin numbering for this board(This page is located in the plug chart section). Page AF200(plug chart section) may be useful for gerneral cabling.

INTRODUCTION

The read/write channel board passes the data between the HDA and variable frequency oscillator(DHPLO card). Each device has its own read/write channel board.

The read/write channel board contains the following parts:

- Select amplifier module
- Automatic gain control amplifier module
- Data detection module
- Decode module
- Power-on reset circuit

DESCRIPTION

- Receives the linear read-back signal from the arm electronics module. The data signal passes through a select amplifier, filter, and automatic gain control. The constant amplitude linear signal then goes through the detection process which converts the analog signal to a digital signal. Finally, this digitized output signal is transmitted to the VFO module.
- Receives the pulse data transmitted from the VFO card, divides the frequency of the data by two, and sends it to the arm electronics module during write operations.
- Decodes the head address register (HAR) bits for arm and head selection.
- Translates the channel status lines into a status word.
- Interrupts operations when the status word indicates there is a data integrity exposure.
- Parity checks the incoming HAR bits and the status word.
- Interrupts operations to protect data integrity, when the +5 volt power supplies fall below a safe level.

ERROR CHECKING

The 'drive status bit (0-7 + P)' lines present the read/write channel status word for each device. If an error occurs, the status of each line is saved in a latch in the decode module. The latches must be reset with the '- drive check reset' line before normal operations can begin.

The status of the 'multiplexer gate' line determines which set of device status conditions is presented. Bits 0 and 1, the FRU bits, have the same meaning in both conditions. Bits 0 and 1 indicate the general area of the error as shown in the FRU list below. The other twelve bits determine the specific error condition. When the '-multiplexer gate' line is active, bits 2 through 7 indicate the status of the arm electronics. When the '-multiplexer gate' line is inactive, bits 2 through 7 indicate error checks.

Active Multiplexer Gate

Bit 2 (multi-function bit) indicates the status of the arm electronics. If bit 2 is active, then more than one function or module has been selected.

Bit 3 (no-function bit) indicates the status of the arm electronics. If bit 3 is active, then no arm electronics module has been selected.

Bit 4 is generated in the decode module. If bit 4 is active, an arm electronics module is being selected. This is verified when the no-function arm electronics status bit becomes inactive.

Bit 5 (write mode verify bit) indicates the status of the arm electronics. If bit 5 is active, an arm electronics module is actually in a write mode.

Bit 6 and bit 7 are arm electronics status, designated the arm electronics status 2 and arm electronics status 1 bits. These bits change status as the operational modes change between standby, read, write, and back to standby.

See next page for more.

R-W CHANNEL BOARD LEFT REAR CRD HC3A1

ABB - LH DRIVE STATUS BIT 0 REAR --- 003
BA9 - LH DRIVE STATUS BIT 1 REAR --- 004
BBA - LH DRIVE STATUS BIT 2 REAR --- 005
BAC - LH DRIVE STATUS BIT 3 REAR --- 006
BAA - LH DRIVE STATUS BIT 4 REAR --- 007
AAA - LH DRIVE STATUS BIT 5 REAR --- 008
AA9 - LH DRIVE STATUS BIT 6 REAR --- 009
AA8 - LH DRIVE STATUS BIT 7 REAR --- 010
ABA - LH DRIVE STATUS BIT P REAR --- 011
AAC - LH SERVO IMF TP REAR --------- 012
AB5 - LH ENABLE NON AGC OUTPUT REAR 013
BBB + LH FLAT CABLE CHK RETURN REAR 014
BB2 + LH DATA HEAD SIGNAL TP REAR -- 015
BA2 - LH DATA HEAD SIGNAL TP REAR -- 016
HA4 + READ DATA ARM 1 LR ---------- 017
HA5 - READ DATA ARM 1 LR ---------- 018
HA8 - ERROR 1 ARM 1 LR ------------ 019
HAB - WRITE MODE VERIFY ARM 1 LR --- 020
HBB - ERROR 2 ARM 1 LR ------------ 021
GB1 GND SERVO SHIELD LR ----------- 022
GA1 GND SERVO SHIELD LR ----------- 023
GA2 + SERVO DATA ARM 2 LR --------- 024
GA4 + READ DATA ARM 2 LR ---------- 025
GA5 - READ DATA ARM 2 LR ---------- 026
GA8 - ERROR 1 ARM 2 LR ------------ 027
GAB - WRITE MODE VERIFY ARM 2 LR --- 028
GB2 - SERVO DATA ARM 2 LR --------- 029
GBB - ERROR 2 ARM 2 LR ------------ 030
GC2 SERVO IMF ARM 2 LR ------------ 031
FA4 + READ DATA ARM 3 LR ---------- 032
FA5 - READ DATA ARM 3 LR ---------- 033
FA8 - ERROR 1 ARM 3 LR ------------ 034
FAB - WRITE MODE VERIFY ARM 3 LR --- 035
FBB - ERROR 2 ARM 3 LR ------------ 036
EA4 + READ DATA ARM 4 LR ---------- 037
EA5 - READ DATA ARM 4 LR ---------- 038
EA8 - ERROR 1 ARM 4 LR ------------ 039
EAB - WRITE MODE VERIFY ARM 4 LR --- 040
EBB - ERROR 2 ARM 4 LR ------------ 041
AA2 - LH R-W POWER GOOD REAR ------- 042

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- LH HAR BIT 4 REAR		
	B2AB6	HC3A1-L003
	1B-B1 (P2B02)	BP200-R046
	1B-B1 *X2B07*	
L004		
- LH HAR BIT 5 REAR		
	B2BA5	HC3A1-L004
	1B-B1 (P2B03)	BP200-R047
	1B-B1 *X3D05*	
L005		
- LH HAR BIT 6 REAR		
	B2BB6	HC3A1-L005
	1B-B1 (P2B04)	BP200-R048
	1B-B1 *X3B07*	
L006		
- LH HAR BIT 7 REAR		
	B2AA5	HC3A1-L006
	1B-B1 (P2D02)	BP200-R049
	1B-B1 *X2D05*	
L007		
- LH HAR BIT P REAR		
	B2BB5	HC3A1-L007
	1B-B1 (P2C02)	BP200-R050
	1B-B1 *X3B05*	
L008		
+ LH SERVO PAD CLOCK REAR		
	B2AAC	HC3A1-L008
	1B-B1 (T2D07)	BT200-R035
	1B-B1 *X2D13*	
L009		
- LH WRITE GATE 1 REAR		
	B2AA6	HC3A1-L009
	1B-B1 (P2S12)	BP200-R051
	1B-B1 *X2D06*	
L010		
- LH MULTIPLEXER GATE REAR		
	B2AA7	HC3A1-L010
	1B-B1 (P2N09)	BP200-R054
	1B-B1 *X2D07*	
L011		
- LH DRIVE CHECK INHIBIT REAR		
	B2AB8	HC3A1-L011
	1B-B1 (P2M12)	BP200-R042
	1B-B1 *X2B09*	
L012		
+ LH FLAT CABLE CHECK REAR		
	B2AB9	HC3A1-L012
	1B-B1 (P2N13)	BP200-R058
	1B-B1 *X2B10*	
L013		
- LH PAD DATA SELECT REAR		
	B2BB3	HC3A1-L013
	1B-B1 (P2S02)	BP200-R044
	1B-B1 *X3B03*	
L014		
- LH SEL A1/ + SEL A2 REAR		
	B2BA4	HC3A1-L014
	1B-B1 (P2U12)	BP200-R055
	1B-B1 *X3D04*	
L015		
- LH SET R-W REAR		
	B2BA7	HC3A1-L015
	1B-B1 (P2N12)	BP200-R039
	1B-B1 *X3D07*	
L016		
- LH SET R-W SAFE REAR		
	B2BB8	HC3A1-L016
	1B-B1 (P2P11)	BP200-R038
	1B-B1 *X3B09*	
L017		
- LH READ TRANSMIT REAR		
	B2BB4	HC3A1-L017
	1B-B1 (P2T02)	BP200-R059
	1B-B1 *X3B04*	
L018		
- LH WRITE GATE 2 REAR		
	B2BB7	HC3A1-L018
	1B-B1 (P2S13)	BP200-R052
	1B-B1 *X3B08*	
L019		
- LH DRIVE CHECK RESET REAR		
	B2BB9	HC3A1-L019
	1B-B1 (P2M13)	BP200-R043
	1B-B1 *X3B10*	
L020		
- A1 R-W DATA FROM/TO 0 REAR		
	B2CA1	HC3A1-L020
	1A-A1 M2G02	CM200-L006
	1C-C3 B2CA1	HC4A1-L020
	1A-A1 *S1A08*	
L021		
+ A1 R-W DATA FROM/TO 0 REAR		
	B2CB1	HC3A1-L021
	1A-A1 M2G03	CM200-L005
	1C-C3 B2CB1	HC4A1-L021
	1A-A1 *S1B08*	
L022		
- A2 R-W DATA FROM/TO 0 REAR		
	B2CA3	HC3A1-L022
	1A-A1 L2G02	CL200-L006
	1C-C3 B2CA3	HC4A1-L022
	1A-A1 *S1A06*	
L023		
+ A2 R-W DATA FROM/TO 0 REAR		
	B2CB3	HC3A1-L023
	1A-A1 L2G03	CL200-L005
	1C-C3 B2CB3	HC4A1-L023
	1A-A1 *S1B06*	
L024		
+ LH SERVO GUARD 1 REAR		
	B2CA6	HC3A1-L024
	1B-B1 T2U07	BT200-L032
	B2CB6	HC3A1-L025
	1B-B1 *W4B02*	
	1B-B1 *W4B05*	
L025		
+ LH SERVO GUARD 1 REAR		
	B2CB6	HC3A1-L025
	1B-B1 T2U07	BT200-L032
	B2CA6	HC3A1-L024
	1B-B1 *W4B02*	
	1B-B1 *W4B05*	
L026		
+ LH LOW LEVEL SERVO REAR		
	B2CA7	HC3A1-L026
	1B-B1 T2U06	BT200-L030
	1B-B1 *W4B04*	
L027		
- LH LOW LEVEL SERVO REAR		
	B2CB7	HC3A1-L027
	1B-B1 T2S06	BT200-L031
	1B-B1 *W4B03*	
L028		
+ 5V LEFT R-W CHANNEL BD REAR		
	B2DA1	HC3A1-L028
	B2DB1	HC3A1-L029
	B2DB2	HC3A1-L030
	YA420 *-R045*	
	YA420 *-R046*	
	YA420 *-R047*	
L029		
+ 5V LEFT R-W CHANNEL BD REAR		
	B2DB1	HC3A1-L029
	B2DA1	HC3A1-L028
	B2DB2	HC3A1-L030
	YA420 *-R045*	
	YA420 *-R046*	
	YA420 *-R047*	
L030		
+ 5V LEFT R-W CHANNEL BD REAR		
	B2DB2	HC3A1-L030
	B2DA1	HC3A1-L028
	B2DB1	HC3A1-L029
	YA420 *-R045*	
	YA420 *-R046*	
	YA420 *-R047*	
L031		
GND LEFT R-W CHANNEL BD REAR		
	B2DA3	HC3A1-L031
	B2DB3	HC3A1-L032
	B2DA4	HC3A1-L033
	YA460 *-R043*	
	YA460 *-R036*	
	YA460 *-R046*	
L032		
GND LEFT R-W CHANNEL BD REAR		
	B2DB3	HC3A1-L032
	B2DA3	HC3A1-L031
	B2DA4	HC3A1-L033
	YA460 *-R043*	
	YA460 *-R036*	
	YA460 *-R046*	
L033		
GND LEFT R-W CHANNEL BD REAR		
	B2DA4	HC3A1-L033
	B2DA3	HC3A1-L031
	B2DB3	HC3A1-L032
	YA460 *-R043*	
	YA460 *-R036*	
	YA460 *-R046*	
L034		
- 5V LEFT R-W CHANNEL BD REAR		
	B2DB4	HC3A1-L034
	B2DA5	HC3A1-L035
	B2DB5	HC3A1-L036
	YA420 *-R037*	
	YA420 *-R036*	
	YA420 *-R040*	
L035		
- 5V LEFT R-W CHANNEL BD REAR		
	B2DA5	HC3A1-L035
	B2DB4	HC3A1-L034
	B2DB5	HC3A1-L036
	YA420 *-R037*	
	YA420 *-R036*	
	YA420 *-R040*	
L036		
- 5V LEFT R-W CHANNEL BD REAR		
	B2DB5	HC3A1-L036
	B2DB4	HC3A1-L034
	B2DA5	HC3A1-L035
	YA420 *-R037*	
	YA420 *-R036*	
	YA420 *-R040*	
L037		
+ HEAD SELECT 0 ARM 1 LR		
	B2HA3	HC3A1-L037
L038		
+ HEAD SELECT 1 ARM 1 LR		
	B2HA6	HC3A1-L038
L039		
- WRITE SELECT ARM 1 LR		
	B2HA7	HC3A1-L039
L040		
- WRITE DATA ARM 1 LR		
	B2HA9	HC3A1-L040
L041		
+ WRITE DATA ARM 1 LR		
	B2HAA	HC3A1-L041
L042		
IMF ARM 1 LR		
	B2HB8	HC3A1-L042
L043		
- AE SELECT 1 ARM 1 LR		
	B2HCA	HC3A1-L043
L044		
GND SERVO SHIELD LR		
	B2GA1	HC3A1-L044
	(B2GB1)	HC3A1-R022
	(B2GA1)	HC3A1-R023
	B2GB1	HC3A1-L045
L045		
GND SERVO SHIELD LR		
	B2GB1	HC3A1-L045
	(B2GB1)	HC3A1-R022
	(B2GA1)	HC3A1-R023
	B2GA1	HC3A1-L044
L046		
+ HEAD SELECT 0 ARM 2 LR		
	B2GA3	HC3A1-L046
L047		
+ HEAD SELECT 1 ARM 2 LR		
	B2GA6	HC3A1-L047
L048		
- WRITE SELECT ARM 2 LR		
	B2GA7	HC3A1-L048
L049		
- WRITE DATA ARM 2 LR		
	B2GA9	HC3A1-L049
L050		
+ WRITE DATA ARM 2 LR		
	B2GAA	HC3A1-L050
L051		
- 5V SERVO (POWER CONN) LR		
	B2GB3	HC3A1-L051
L052		
GND SERVO (POWER CONN) LR		
	B2GB4	HC3A1-L052
L053		
IMF ARM 2 LR		
	B2GB8	HC3A1-L053
L054		
- AE SELECT 2 ARM 2 LR		
	B2GCA	HC3A1-L054
L055		
+ HEAD SELECT 0 ARM 3 LR		
	B2FA3	HC3A1-L055
L056		
+ HEAD SELECT 1 ARM 3 LR		
	B2FA6	HC3A1-L056
L057		
- WRITE SELECT ARM 3 LR		
	B2FA7	HC3A1-L057
L058		
- WRITE DATA ARM 3 LR		
	B2FA9	HC3A1-L058
L059		
+ WRITE DATA ARM 3 LR		
	B2FAA	HC3A1-L059
L060		
IMF ARM 3 LR		
	B2FB8	HC3A1-L060
L061		
- AE SELECT 3 ARM 3 LR		
	B2FCA	HC3A1-L061
L062		
+ HEAD SELECT 0 ARM 4 LR		
	B2EA3	HC3A1-L062
L063		
+ HEAD SELECT 1 ARM 4 LR		
	B2EA6	HC3A1-L063
L064		
- WRITE SELECT ARM 4 LR		
	B2EA7	HC3A1-L064
L065		
- WRITE DATA ARM 4 LR		
	B2EA9	HC3A1-L065
L066		
+ WRITE DATA ARM 4 LR		
	B2EAA	HC3A1-L066
L067		
IMF ARM 4 LR		
	B2EB8	HC3A1-L067
L068		
- AE SEL 4 ARM 4 LR		
	B2ECA	HC3A1-L068
L069		
+ 15V LEFT R-W CHANNEL BD REAR		
	B2DA2	HC3A1-L069
	YA420 *-R038*	
L070		
- LH POWER ON RESET POWER REAR		
	B2AB2	HC3A1-L070
	1B-B1 (N2N06)	BN200-R062
	1B-B1 M2P06	BM200-L015
	1B-B1 P2N11	BP200-L039
	1B-B1 R2S04	BR200-L041
	1B-B1 T2S07	BT200-L039
	1B-B1 *X2D02*	

R-W CHANNEL BOARD LEFT REAR XRL HC3A1

LINE/SIGNAL	PIN	SHEET/LINE
L071		
+ LH AM SEARCH REAR	B2AAB	HC3A1-L071
	1B-B1 (P2M07)	BP210-R026
	1B-B1 *X2D12*	
R003		
- LH DRIVE STATUS BIT 0 REAR	(B2ABB)	HC3A1-R003
	1B-B1 P2J02	BP200-L049
	1B-B1 *X2B13*	
R004		
- LH DRIVE STATUS BIT 1 REAR	(B2BA9)	HC3A1-R004
	1B-B1 P2H02	BP200-L050
	1B-B1 *X3D10*	
R005		
- LH DRIVE STATUS BIT 2 REAR	(B2BBA)	HC3A1-R005
	1B-B1 P2D13	BP200-L051
	1B-B1 *X3B12*	
R006		
- LH DRIVE STATUS BIT 3 REAR	(B2BAC)	HC3A1-R006
	1B-B1 P2C13	BP200-L052
	1B-B1 *X3D13*	
R007		
- LH DRIVE STATUS BIT 4 REAR	(B2BAA)	HC3A1-R007
	1B-B1 P2D12	BP200-L053
	1B-B1 *X3D11*	
R008		
- LH DRIVE STATUS BIT 5 REAR	(B2AAA)	HC3A1-R008
	1B-B1 P2C12	BP200-L054
	1B-B1 *X2D11*	
R009		
- LH DRIVE STATUS BIT 6 REAR	(B2AA9)	HC3A1-R009
	1B-B1 P2B13	BP200-L055
	1B-B1 *X2D10*	
R010		
- LH DRIVE STATUS BIT 7 REAR	(B2AA8)	HC3A1-R010
	1B-B1 P2D11	BP200-L056
	1B-B1 *X2D09*	
R011		
- LH DRIVE STATUS BIT P REAR	(B2ABA)	HC3A1-R011
	1B-B1 P2D10	BP200-L057
	1B-B1 *X2B12*	
R012		
- LH SERVO IMF TP REAR	(B2AAC)	HC3A1-R012
R013		
- LH ENABLE NON AGC OUTPUT REAR	(B2AB5)	HC3A1-R013
	1B-B1 *X2B05*	
R014		
+ LH FLAT CABLE CHK RETURN REAR	(B2BBB)	HC3A1-R014
	1B-B1 P2C10	BP200-L058
	1B-B1 *X3B13*	
R015		
+ LH DATA HEAD SIGNAL TP REAR	(B2BB2)	HC3A1-R015
	1B-B1 *X3B02*	
R016		
- LH DATA HEAD SIGNAL TP REAR	(B2BA2)	HC3A1-R016
	1B-B1 *X3D02*	
R017		
+ READ DATA ARM 1 LR	(B2HA4)	HC3A1-R017
R018		
- READ DATA ARM 1 LR	(B2HA5)	HC3A1-R018
R019		
- ERROR 1 ARM 1 LR	(B2HA8)	HC3A1-R019
R020		
- WRITE MODE VERIFY ARM 1 LR	(B2HAB)	HC3A1-R020
R021		
- ERROR 2 ARM 1 LR	(B2HBB)	HC3A1-R021
R022		
GND SERVO SHIELD LR	(B2GB1)	HC3A1-R022
	(B2GA1)	HC3A1-R023
	B2GA1	HC3A1-L044
	B2GB1	HC3A1-L045
R023		
GND SERVO SHIELD LR	(B2GA1)	HC3A1-R023
	(B2GB1)	HC3A1-R022
	B2GA1	HC3A1-L044
	B2GB1	HC3A1-L045
R024		
+ SERVO DATA ARM 2 LR	(B2GA2)	HC3A1-R024
R025		
+ READ DATA ARM 2 LR	(B2GA4)	HC3A1-R025
R026		
- READ DATA ARM 2 LR	(B2GA5)	HC3A1-R026
R027		
- ERROR 1 ARM 2 LR	(B2GA8)	HC3A1-R027
R028		
- WRITE MODE VERIFY ARM 2 LR	(B2GAB)	HC3A1-R028
R029		
- SERVO DATA ARM 2 LR	(B2GB2)	HC3A1-R029
R030		
- ERROR 2 ARM 2 LR	(B2GBB)	HC3A1-R030
R031		
SERVO IMF ARM 2 LR	(B2GC2)	HC3A1-R031
R032		
+ READ DATA ARM 3 LR	(B2FA4)	HC3A1-R032
R033		
- READ DATA ARM 3 LR	(B2FA5)	HC3A1-R033
R034		
- ERROR 1 ARM 3 LR	(B2FA8)	HC3A1-R034
R035		
- WRITE MODE VERIFY ARM 3 LR	(B2FAB)	HC3A1-R035
R036		
- ERROR 2 ARM 3 LR	(B2FBB)	HC3A1-R036
R037		
+ READ DATA ARM 4 LR	(B2EA4)	HC3A1-R037
R038		
- READ DATA ARM 4 LR	(B2EA5)	HC3A1-R038
R039		
- ERROR 1 ARM 4 LR	(B2EA8)	HC3A1-R039
R040		
- WRITE MODE VERIFY ARM 4 LR	(B2EAB)	HC3A1-R040
R041		
- ERROR 2 ARM 4 LR	(B2EBB)	HC3A1-R041
R042		
- LH R-W POWER GOOD REAR	(B2AA2)	HC3A1-R042
	1B-B1 *X2B02*	

See previous page for more.

Inactive Multiplexer Gate

Bit 2 (redundancy line check bit) identifies that the error is associated with the device logic. It indicates that either one of the 'set read/write' lines or the 'write gate' lines is open.

Bit 3 (no R/W recovery bit) is active whenever one of the five decoders detects the presence of a no read or a no write status condition from either the arm electronics modules or data detector circuitry.

Bit 4 (inhibit or reset bit) is active if either the 'drive check inhibit' or 'drive check reset' line is active. This permits the detection by the gate logic if either line input is open or shorted.

Bit 5 (read and write check bit) is active whenever an attempt is made to perform a read while writing, or a write while reading. This can also indicate that the 'read xmit' line is shorted.

Bit 6 (head arm parity check bit) is active if the HAR bits do not pass the parity check.

Bit 7 (cable and data detector check bit) is active if any of the following conditions exist:

1. Read cable error (problem with cable to the variable frequency oscillator).

A cable error is detected when the 'read xmit' line is active.

2. Write cable error (problem with lines to arm electronics modules).

A cable error is detected when the 'read xmit' line is inactive.

3. Data detector read status error

This error condition occurs if the data detector finds the 'data detect read verify' line active but the 'set read/write' lines are inactive. (Read detector is in read mode but arm electronics modules do not have an input to select one of them).

4. Data detector select status error

This error condition occurs when the 'select A1 verify' line is active but the 'set read/write' lines are not active, or if the 'select A1/A2' and the 'select A1 verify' lines do not agree.

FRU LIST

Following is a description of the status of FRU bits 0 and 1:

Status Bits 0	1	Error conditions	FRU
0	0	Normal (no error)	-
0	1	R/W channel error	1
1	0	Device logic error	2
1	1	Read data cable error	3

003 - RH HAR BIT 4 REAR ---------- AB6
004 - RH HAR BIT 5 REAR ---------- BA5
005 - RH HAR BIT 6 REAR ---------- BB6
006 - RH HAR BIT 7 REAR ---------- AA5
007 - RH HAR BIT P REAR ---------- BB5
008 + RH SERVO PAD CLOCK REAR ------ AAC
009 - RH WRITE GATE 1 REAR --------- AA6
010 - RH MULTIPLEXER GATE REAR ----- AA7
011 - RH DRIVE CHECK INHIBIT REAR -- AB8
012 + RH FLAT CABLE CHECK REAR ----- AB9
013 - RH PAD DATA SELECT REAR ------ BB3
014 - RH SEL A1/ + SEL A2 REAR ----- BA4
015 - RH SET R-W REAR -------------- BA7
016 - RH SET R-W SAFE REAR --------- BB8
017 - RH READ TRANSMIT REAR -------- BB4
018 - RH WRITE GATE 2 REAR --------- BB7
019 - RH DRIVE CHECK RESET REAR ---- BB9
020 - A1 R-W DATA FROM/TO 0 REAR --- CA1
021 + A1 R-W DATA FROM/TO 0 REAR --- CB1
022 - A2 R-W DATA FROM/TO 0 REAR --- CA3
023 + A2 R-W DATA FROM/TO 0 REAR --- CB3
024 + RH SERVO GUARD 1 REAR -------- CA6
025 + RH SERVO GUARD 1 REAR -------- CB6
026 + RH LOW LEVEL SERVO REAR ------ CA7
027 - RH LOW LEVEL SERVO REAR ------ CB7
028 + 5V RIGHT R-W CHANNEL BD REAR - DA1
029 + 5V RIGHT R-W CHANNEL BD REAR - DB1
030 + 5V RIGHT R-W CHANNEL BD REAR - DB2
031 GND RIGHT R-W CHANNEL BD REAR -- DA3
032 GND RIGHT R-W CHANNEL BD REAR -- DB3
033 GND RIGHT R-W CHANNEL BD REAR -- DA4
034 - 5V RIGHT R-W CHANNEL BD REAR - DB4
035 - 5V RIGHT R-W CHANNEL BD REAR - DA5
036 - 5V RIGHT R-W CHANNEL BD REAR - DB5
037 + HEAD SELECT 0 ARM 1 RR ------- HA3
038 + HEAD SELECT 1 ARM 1 RR ------- HA6
039 - WRITE SELECT ARM 1 RR -------- HA7
040 - WRITE DATA ARM 1 RR ---------- HA9
041 + WRITE DATA ARM 1 RR ---------- HAA
042 IMF ARM 1 RR -------------------- HB8
043 - AE SELECT 1 ARM 1 RR --------- HCA
044 GND SERVO SHIELD RR ------------ GA1
045 GND SERVO SHIELD RR ------------ GB1
046 + HEAD SELECT 0 ARM 2 RR ------- GA3
047 + HEAD SELECT 1 ARM 2 RR ------- GA6
048 - WRITE SELECT ARM 2 RR -------- GA7
049 - WRITE DATA ARM 2 RR ---------- GA9
050 + WRITE DATA ARM 2 RR ---------- GAA
051 - 5V SERVO (POWER CONN) RR ----- GB3
052 GND SERVO (POWER CONN) RR ------ GB4
053 IMF ARM 2 RR -------------------- GB8
054 - AE SELECT 2 ARM 2 RR --------- GCA
055 + HEAD SELECT 0 ARM 3 RR ------- FA3
056 + HEAD SELECT 1 ARM 3 RR ------- FA6
057 - WRITE SELECT ARM 3 RR -------- FA7
058 - WRITE DATA ARM 3 RR ---------- FA9
059 + WRITE DATA ARM 3 RR ---------- FAA
060 IMF ARM 3 RR -------------------- FB8
061 - AE SELECT 3 ARM 3 RR --------- FCA
062 + HEAD SELECT 0 ARM 4 RR ------- EA3
063 + HEAD SELECT 1 ARM 4 RR ------- EA6
064 - WRITE SELECT ARM 4 RR -------- EA7
065 - WRITE DATA ARM 4 RR ---------- EA9
066 + WRITE DATA ARM 4 RR ---------- EAA
067 IMF ARM 4 RR -------------------- EB8
068 - AE SEL 4 ARM 4 RR ------------ ECA
069 + 15V RIGHT R-W CHANNEL BD REAR DA2
070 - RH POWER ON RESET POWER REAR - AB2
071 + RH AM SEARCH REAR ------------ AAB

READ/WRITE CHANNEL BOARD

See page AD200 (lower left corner) for special socket/pin numbering for this board(Plug chart section). Page AF200 (Plug chart section) may be useful for general cabling.

INTRODUCTION

The read/write channel board passes the data between the HDA and variable frequency oscillator(DHPLO card). Each device has its own read/write channel board.

The read/write channel board contains the following parts:

- Select amplifier module
- Automatic gain control amplifier module
- Data detection module
- Decode module
- Power-on reset circuit

DESCRIPTION

- Receives the linear read-back signal from the arm electronics module. The data signal passes through a select amplifier, filter, and automatic gain control. The constant amplitude linear signal then goes through the detection process which converts the analog signal to a digital signal. Finally, this digitized output signal is transmitted to the VFO module.
- Receives the pulse data transmitted from the VFO card, divides the frequency of the data by two, and sends it to the arm electronics module during write operations.
- Decodes the head address register (HAR) bits for arm and head selection.
- Translates the channel status lines into a status word.
- Interrupts operations when the status word indicates there is a data integrity exposure.
- Parity checks the incoming HAR bits and the status word.
- Interrupts operations to protect data integrity, when the +5 volt power supplies fall below a safe level.

ERROR CHECKING

The 'drive status bit (0-7 + P)' lines present the read/write channel status word for each device. If an error occurs, the status of each line is saved in a latch in the decode module. The latches must be reset with the '- drive check reset' line before normal operations can begin.

The status of the 'multiplexer gate' line determines which set of device status conditions is presented. Bits 0 and 1, the FRU bits, have the same meaning in both conditions. Bits 0 and 1 indicate the general area of the error as shown in the FRU list below. The other twelve bits determine the specific error condition. When the '-multiplexer gate' line is active, bits 2 through 7 indicate the status of the arm electronics. When the '-multiplexer gate' line is inactive, bits 2 through 7 indicate error checks.

Active Multiplexer Gate

Bit 2 (multi-function bit) indicates the status of the arm electronics. If bit 2 is active, then more than one function or module has been selected.

Bit 3 (no-function bit) indicates the status of the arm electronics. If bit 3 is active, then no arm electronics module has been selected.

Bit 4 is generated in the decode module. If bit 4 is active, an arm electronics module is being selected. This is verified when the no-function arm electronics status bit becomes inactive.

Bit 5 (write mode verify bit) indicates the status of the arm electronics. If bit 5 is active, an arm electronics module is actually in a write mode.

Bit 6 and bit 7 are arm electronics status, designated the arm electronics status 2 and arm electronics status 1 bits. These bits change status as the operational modes change between standby, read, write, and back to standby.

See next page for more.

R-W CHANNEL BOARD RIGHT REAR CRD HC4A1

ABB - RH DRIVE STATUS BIT 0 REAR --- 003
BA9 - RH DRIVE STATUS BIT 1 REAR --- 004
BBA - RH DRIVE STATUS BIT 2 REAR --- 005
BAC - RH DRIVE STATUS BIT 3 REAR --- 006
BAA - RH DRIVE STATUS BIT 4 REAR --- 007
AAA - RH DRIVE STATUS BIT 5 REAR --- 008
AA9 - RH DRIVE STATUS BIT 6 REAR --- 009
AA8 - RH DRIVE STATUS BIT 7 REAR --- 010
ABA - RH DRIVE STATUS BIT P REAR --- 011
AAC - RH SERVO IMF TP REAR ---------- 012
AB5 - RH ENABLE NON AGC OUTPUT REAR 013
BBB + RH FLAT CABLE CHK RETURN REAR 014
BB2 + RH DATA HEAD SIGNAL TP REAR -- 015
BA2 - RH DATA HEAD SIGNAL TP REAR -- 016
HA4 + READ DATA ARM 1 RR ----------- 017
HA5 - READ DATA ARM 1 RR ----------- 018
HA8 - ERROR 1 ARM 1 RR ------------- 019
HAB - WRITE MODE VERIFY ARM 1 RR --- 020
HBB - ERROR 2 ARM 1 RR ------------- 021
GB1 GND SERVO SHIELD RR ------------ 022
GA1 GND SERVO SHIELD RR ------------ 023
GA2 + SERVO DATA ARM 2 RR ---------- 024
GA4 + READ DATA ARM 2 RR ----------- 025
GA5 - READ DATA ARM 2 RR ----------- 026
GA8 - ERROR 1 ARM 2 RR ------------- 027
GAB - WRITE MODE VERIFY ARM 2 RR --- 028
GB2 - SERVO DATA ARM 2 RR ---------- 029
GBB - ERROR 2 ARM 2 RR ------------- 030
GC2 SERVO IMF ARM 2 RR ------------- 031
FA4 + READ DATA ARM 3 RR ----------- 032
FA5 - READ DATA ARM 3 RR ----------- 033
FA8 - ERROR 1 ARM 3 RR ------------- 034
FAB - WRITE MODE VERIFY ARM 3 RR --- 035
FBB - ERROR 2 ARM 3 RR ------------- 036
EA4 + READ DATA ARM 4 RR ----------- 037
EA5 - READ DATA ARM 4 RR ----------- 038
EA8 - ERROR 1 ARM 4 RR ------------- 039
EAB - WRITE MODE VERIFY ARM 4 RR --- 040
EBB - ERROR 2 ARM 4 RR ------------- 041
AA2 - RH R-W POWER GOOD REAR ------- 042

R-W CHANNEL BOARD RIGHT REAR XRL HC4A1

LINE/SIGNAL	PIN	SHEET/LINE
L003		
- RH HAR BIT 4 REAR	B2AB6	HC4A1-L003
	1B-B1 (P2D06)	BP200-R010
	1B-B1 *X4B07*	
L004		
- RH HAR BIT 5 REAR	B2BA5	HC4A1-L004
	1B-B1 (P2D05)	BP200-R011
	1B-B1 *X5D05*	
L005		
- RH HAR BIT 6 REAR	B2BB6	HC4A1-L005
	1B-B1 (P2C06)	BP200-R013
	1B-B1 *X5B07*	
L006		
- RH HAR BIT 7 REAR	B2AA5	HC4A1-L006
	1B-B1 (P2D04)	BP200-R012
	1B-B1 *X4D05*	
L007		
- RH HAR BIT P REAR	B2BB5	HC4A1-L007
	1B-B1 (P2C05)	BP200-R014
	1B-B1 *X5B05*	
L008		
+ RH SERVO PAD CLOCK REAR	B2AAC	HC4A1-L008
	1B-B1 (U2D07)	BU200-R035
	1B-B1 *X4D13*	
L009		
- RH WRITE GATE 1 REAR	B2AA6	HC4A1-L009
	1B-B1 (P2T09)	BP200-R017
	1B-B1 *X4D06*	
L010		
- RH MULTIPLEXER GATE REAR	B2AA7	HC4A1-L010
	1B-B1 (P2M10)	BP200-R018
	1B-B1 *X4D07*	
L011		
- RH DRIVE CHECK INHIBIT REAR	B2AB8	HC4A1-L011
	1B-B1 (P2P10)	BP200-R023
	1B-B1 *X4B09*	
L012		
+ RH FLAT CABLE CHECK REAR	B2AB9	HC4A1-L012
	1B-B1 (P2C04)	BP200-R015
	1B-B1 *X4B10*	
L013		
- RH PAD DATA SELECT REAR	B2BB3	HC4A1-L013
	1B-B1 (P2B09)	BP200-R003
	1B-B1 *W2D08*	
L014		
- RH SEL A1/ + SEL A2 REAR	B2BA4	HC4A1-L014
	1B-B1 (P2T04)	BP200-R020
	1B-B1 *X5D04*	
L015		
- RH SET R-W REAR	B2BA7	HC4A1-L015
	1B-B1 (P2B07)	BP200-R006
	1B-B1 *X5D07*	
L016		
- RH SET R-W SAFE REAR	B2BB8	HC4A1-L016
	1B-B1 (P2B05)	BP200-R007
	1B-B1 *X5B09*	
L017		
- RH READ TRANSMIT REAR	B2BB4	HC4A1-L017
	1B-B1 (P2C07)	BP200-R009
	1B-B1 *X5B04*	
L018		
- RH WRITE GATE 2 REAR	B2BB7	HC4A1-L018
	1B-B1 (P2T07)	BP200-R016
	1B-B1 *X5B08*	
L019		
- RH DRIVE CHECK RESET REAR	B2BB9	HC4A1-L019
	1B-B1 (P2S09)	BP200-R024
	1B-B1 *X5B10*	
L020		
- A1 R-W DATA FROM/TO 0 REAR	B2CA1	HC4A1-L020
	1A-A1 M2G02	CM200-L006
	1C-C2 B2CA1	HC3A1-L020
	1A-A1 *S1A08*	
L021		
+ A1 R-W DATA FROM/TO 0 REAR	B2CB1	HC4A1-L021
	1A-A1 M2G03	CM200-L005
	1C-C2 B2CB1	HC3A1-L021
	1A-A1 *S1B08*	
L022		
- A2 R-W DATA FROM/TO 0 REAR	B2CA3	HC4A1-L022
	1A-A1 L2G02	CL200-L006
	1C-C2 B2CA3	HC3A1-L022
	1A-A1 *S1A06*	
L023		
+ A2 R-W DATA FROM/TO 0 REAR	B2CB3	HC4A1-L023
	1A-A1 L2G03	CL200-L005
	1C-C2 B2CB3	HC3A1-L023
	1A-A1 *S1B06*	
L024		
+ RH SERVO GUARD 1 REAR	B2CA6	HC4A1-L024
	1B-B1 U2U07	BU200-L032
	B2CB6	HC4A1-L025
	1B-B1 *W4B10*	
	1B-B1 *W4B13*	
L025		
+ RH SERVO GUARD 1 REAR	B2CB6	HC4A1-L025
	1B-B1 U2U07	BU200-L032
	B2CA6	HC4A1-L024
	1B-B1 *W4B10*	
	1B-B1 *W4B13*	
L026		
+ RH LOW LEVEL SERVO REAR	B2CA7	HC4A1-L026
	1B-B1 U2U06	BU200-L030
	1B-B1 *W4B12*	
L027		
- RH LOW LEVEL SERVO REAR	B2CB7	HC4A1-L027
	1B-B1 U2S06	BU200-L031
	1B-B1 *W4B11*	
L028		
+ 5V RIGHT R-W CHANNEL BD REAR	B2DA1	HC4A1-L028
	B2DB1	HC4A1-L029
	B2DB2	HC4A1-L030
	YA420 *-R067*	
	YA420 *-R069*	
	YA420 *-R071*	
L029		
+ 5V RIGHT R-W CHANNEL BD REAR	B2DB1	HC4A1-L029
	B2DA1	HC4A1-L028
	B2DB2	HC4A1-L030
	YA420 *-R067*	
	YA420 *-R069*	
	YA420 *-R071*	
L030		
+ 5V RIGHT R-W CHANNEL BD REAR	B2DB2	HC4A1-L030
	B2DA1	HC4A1-L028
	B2DB1	HC4A1-L029
	YA420 *-R067*	
	YA420 *-R069*	
	YA420 *-R071*	
L031		
GND RIGHT R-W CHANNEL BD REAR	B2DA3	HC4A1-L031
	B2DB3	HC4A1-L032
	B2DA4	HC4A1-L033
	YA460 *-R039*	
	YA460 *-R042*	
	YA460 *-R047*	
L032		
GND RIGHT R-W CHANNEL BD REAR	B2DB3	HC4A1-L032
	B2DA3	HC4A1-L031
	B2DA4	HC4A1-L033
	YA460 *-R039*	
	YA460 *-R042*	
	YA460 *-R047*	
L033		
GND RIGHT R-W CHANNEL BD REAR	B2DA4	HC4A1-L033
	B2DA3	HC4A1-L031
	B2DB3	HC4A1-L032
	YA460 *-R039*	
	YA460 *-R042*	
	YA460 *-R047*	
L034		
- 5V RIGHT R-W CHANNEL BD REAR	B2DB4	HC4A1-L034
	B2DA5	HC4A1-L035
	B2DB5	HC4A1-L036
	YA420 *-R059*	
	YA420 *-R057*	
	YA420 *-R063*	
L035		
- 5V RIGHT R-W CHANNEL BD REAR	B2DA5	HC4A1-L035
	B2DB4	HC4A1-L034
	B2DB5	HC4A1-L036
	YA420 *-R059*	
	YA420 *-R057*	
	YA420 *-R063*	
L036		
- 5V RIGHT R-W CHANNEL BD REAR	B2DB5	HC4A1-L036
	B2DB4	HC4A1-L034
	B2DA5	HC4A1-L035
	YA420 *-R059*	
	YA420 *-R057*	
	YA420 *-R063*	
L037		
+ HEAD SELECT 0 ARM 1 RR	B2HA3	HC4A1-L037
L038		
+ HEAD SELECT 1 ARM 1 RR	B2HA6	HC4A1-L038
L039		
- WRITE SELECT ARM 1 RR	B2HA7	HC4A1-L039
L040		
- WRITE DATA ARM 1 RR	B2HA9	HC4A1-L040
L041		
+ WRITE DATA ARM 1 RR	B2HAA	HC4A1-L041
L042		
IMF ARM 1 RR	B2HB8	HC4A1-L042
L043		
- AE SELECT 1 ARM 1 RR	B2HCA	HC4A1-L043
L044		
GND SERVO SHIELD RR	B2GA1	HC4A1-L044
	(B2GB1)	HC4A1-R022
	(B2GA1)	HC4A1-R023
	B2GB1	HC4A1-L045
L045		
GND SERVO SHIELD RR	B2GB1	HC4A1-L045
	(B2GB1)	HC4A1-R022
	(B2GA1)	HC4A1-R023
	B2GA1	HC4A1-L044
L046		
+ HEAD SELECT 0 ARM 2 RR	B2GA3	HC4A1-L046
L047		
+ HEAD SELECT 1 ARM 2 RR	B2GA6	HC4A1-L047
L048		
- WRITE SELECT ARM 2 RR	B2GA7	HC4A1-L048
L049		
- WRITE DATA ARM 2 RR	B2GA9	HC4A1-L049
L050		
+ WRITE DATA ARM 2 RR	B2GAA	HC4A1-L050
L051		
- 5V SERVO (POWER CONN) RR	B2GB3	HC4A1-L051
L052		
GND SERVO (POWER CONN) RR	B2GB4	HC4A1-L052
L053		
IMF ARM 2 RR	B2GB8	HC4A1-L053
L054		
- AE SELECT 2 ARM 2 RR	B2GCA	HC4A1-L054
L055		
+ HEAD SELECT 0 ARM 3 RR	B2FA3	HC4A1-L055
L056		
+ HEAD SELECT 1 ARM 3 RR	B2FA6	HC4A1-L056
L057		
- WRITE SELECT ARM 3 RR	B2FA7	HC4A1-L057
L058		
- WRITE DATA ARM 3 RR	B2FA9	HC4A1-L058
L059		
+ WRITE DATA ARM 3 RR	B2FAA	HC4A1-L059
L060		
IMF ARM 3 RR	B2FB8	HC4A1-L060
L061		
- AE SELECT 3 ARM 3 RR	B2FCA	HC4A1-L061
L062		
+ HEAD SELECT 0 ARM 4 RR	B2EA3	HC4A1-L062
L063		
+ HEAD SELECT 1 ARM 4 RR	B2EA6	HC4A1-L063
L064		
- WRITE SELECT ARM 4 RR	B2EA7	HC4A1-L064
L065		
- WRITE DATA ARM 4 RR	B2EA9	HC4A1-L065
L066		
+ WRITE DATA ARM 4 RR	B2EAA	HC4A1-L066
L067		
IMF ARM 4 RR	B2EB8	HC4A1-L067
L068		
- AE SEL 4 ARM 4 RR	B2ECA	HC4A1-L068
L069		
+ 15V RIGHT R-W CHANNEL BD REAR	B2DA2	HC4A1-L069
	YA420 *-R060*	
L070		
- RH POWER ON RESET POWER REAR	B2AB2	HC4A1-L070
	1B-B1 (Q2N06)	BQ200-R062
	1B-B1 M2S04	BM200-L041
	1B-B1 N2B07	BN200-L018
	1B-B1 P2B10	BP200-L038
	1B-B1 R2P06	BR200-L015
	1B-B1 U2S07	BU200-L039
	1B-B1 *X4D02*	

R-W CHANNEL BOARD RIGHT REAR XRL HC4A1

LINE/SIGNAL	PIN	SHEET/LINE
L071		
+ RH AM SEARCH REAR		
	B2AAB	HC4A1-L071
1B-B1 (P2S04)		BP210-R025
1B-B1 *X4D12*		
R003		
- RH DRIVE STATUS BIT 0 REAR		
	(B2ABB)	HC4A1-R003
1B-B1	P2N02	BP200-L022
1B-B1 *X4B13*		
R004		
- RH DRIVE STATUS BIT 1 REAR		
	(B2BA9)	HC4A1-R004
1B-B1	P2J13	BP200-L023
1B-B1 *X5D10*		
R005		
- RH DRIVE STATUS BIT 2 REAR		
	(B2BBA)	HC4A1-R005
1B-B1	P2J12	BP200-L024
1B-B1 *X5B12*		
R006		
- RH DRIVE STATUS BIT 3 REAR		
	(B2BAC)	HC4A1-R006
1B-B1	P2H12	BP200-L025
1B-B1 *X5D13*		
R007		
- RH DRIVE STATUS BIT 4 REAR		
	(B2BAA)	HC4A1-R007
1B-B1	P2J11	BP200-L026
1B-B1 *X5D11*		
R008		
- RH DRIVE STATUS BIT 5 REAR		
	(B2AAA)	HC4A1-R008
1B-B1	P2J09	BP200-L027
1B-B1 *X4D11*		
R009		
- RH DRIVE STATUS BIT 6 REAR		
	(B2AA9)	HC4A1-R009
1B-B1	P2J07	BP200-L034
1B-B1 *X4D10*		
R010		
- RH DRIVE STATUS BIT 7 REAR		
	(B2AA8)	HC4A1-R010
1B-B1	P2J10	BP200-L020
1B-B1 *X4D09*		
R011		
- RH DRIVE STATUS BIT P REAR		
	(B2ABA)	HC4A1-R011
1B-B1	P2H08	BP200-L029
1B-B1 *X4B12*		
R012		
- RH SERVO IMF TP REAR		
	(B2AAC)	HC4A1-R012
R013		
- RH ENABLE NON AGC OUTPUT REAR		
	(B2AB5)	HC4A1-R013
1B-B1 *X4B05*		
R014		
+ RH FLAT CABLE CHK RETURN REAR		
	(B2BBB)	HC4A1-R014
1B-B1	P2P02	BP200-L021
1B-B1 *X5B13*		
R015		
+ RH DATA HEAD SIGNAL TP REAR		
	(B2BB2)	HC4A1-R015
1B-B1 *X5B02*		
R016		
- RH DATA HEAD SIGNAL TP REAR		
	(B2BA2)	HC4A1-R016
1B-B1 *X5D02*		
R017		
+ READ DATA ARM 1 RR		
	(B2HA4)	HC4A1-R017
R018		
- READ DATA ARM 1 RR		
	(B2HA5)	HC4A1-R018
R019		
- ERROR 1 ARM 1 RR		
	(B2HA8)	HC4A1-R019
R020		
- WRITE MODE VERIFY ARM 1 RR		
	(B2HAB)	HC4A1-R020
R021		
- ERROR 2 ARM 1 RR		
	(B2HBB)	HC4A1-R021
R022		
GND SERVO SHIELD RR		
	(B2GB1)	HC4A1-R022
	(B2GA1)	HC4A1-R023
	B2GA1	HC4A1-L044
	B2GB1	HC4A1-L045
R023		
GND SERVO SHIELD RR		
	(B2GA1)	HC4A1-R023
	(B2GB1)	HC4A1-R022
	B2GA1	HC4A1-L044
	B2GB1	HC4A1-L045
R024		
+ SERVO DATA ARM 2 RR		
	(B2GA2)	HC4A1-R024
R025		
+ READ DATA ARM 2 RR		
	(B2GA4)	HC4A1-R025
R026		
- READ DATA ARM 2 RR		
	(B2GA5)	HC4A1-R026
R027		
- ERROR 1 ARM 2 RR		
	(B2GA8)	HC4A1-R027
R028		
- WRITE MODE VERIFY ARM 2 RR		
	(B2GAB)	HC4A1-R028
R029		
- SERVO DATA ARM 2 RR		
	(B2GB2)	HC4A1-R029
R030		
- ERROR 2 ARM 2 RR		
	(B2GBB)	HC4A1-R030
R031		
SERVO IMF ARM 2 RR		
	(B2GC2)	HC4A1-R031
R032		
+ READ DATA ARM 3 RR		
	(B2FA4)	HC4A1-R032
R033		
- READ DATA ARM 3 RR		
	(B2FA5)	HC4A1-R033
R034		
- ERROR 1 ARM 3 RR		
	(B2FA8)	HC4A1-R034
R035		
- WRITE MODE VERIFY ARM 3 RR		
	(B2FAB)	HC4A1-R035
R036		
- ERROR 2 ARM 3 RR		
	(B2FBB)	HC4A1-R036
R037		
+ READ DATA ARM 4 RR		
	(B2EA4)	HC4A1-R037
R038		
- READ DATA ARM 4 RR		
	(B2EA5)	HC4A1-R038
R039		
- ERROR 1 ARM 4 RR		
	(B2EA8)	HC4A1-R039
R040		
- WRITE MODE VERIFY ARM 4 RR		
	(B2EAB)	HC4A1-R040
R041		
- ERROR 2 ARM 4 RR		
	(B2EBB)	HC4A1-R041
R042		
- RH R-W POWER GOOD REAR		
	(B2AA2)	HC4A1-R042
1B-B1 *X4B02*		

See previous page for more.

Inactive Multiplexer Gate

Bit 2 (redundancy line check bit) identifies that the error is associated with the device logic. It indicates that either one of the 'set read/write' lines or the 'write gate' lines is open.

Bit 3 (no R/W recovery bit) is active whenever one of the five decoders detects the presence of a no read or a no write status condition from either the arm electronics modules or data detector circuitry.

Bit 4 (inhibit or reset bit) is active if either the 'drive check inhibit' or 'drive check reset' line is active. This permits the detection by the gate logic if either line input is open or shorted.

Bit 5 (read and write check bit) is active whenever an attempt is made to perform a read while writing, or a write while reading. This can also indicate that the 'read xmit' line is shorted.

Bit 6 (head arm parity check bit) is active if the HAR bits do not pass the parity check.

Bit 7 (cable and data detector check bit) is active if any of the following conditions exist:

1. Read cable error (problem with cable to the variable frequency oscillator).

A cable error is detected when the 'read xmit' line is active.

2. Write cable error (problem with lines to arm electronics modules).

A cable error is detected when the 'read xmit' line is inactive.

3. Data detector read status error

This error condition occurs if the data detector finds the 'data detect read verify' line active but the 'set read/write' lines are inactive. (Read detector is in read mode but arm electronics modules do not have an input to select one of them).

4. Data detector select status error

This error condition occurs when the 'select A1 verify' line is active but the 'set read/write' lines are not active, or if the 'select A1/A2' and the 'select A1 verify' lines do not agree.

FRU LIST

Following is a description of the status of FRU bits 0 and 1:

Status Bits 0	1	Error conditions	FRU
0	0	Normal (no error)	-
0	1	R/W channel error	1
1	0	Device logic error	2
1	1	Read data cable error	3

003 + LH INHIBIT POWER AMP FRONT --- B02
004 LH POWER AMP DRIVE FRONT ------- B04
005 - LH POWER AMP DRIVE FRONT ----- B06
006 + 36V LH POWER AMP FRONT ------- B12
007 + 36V LH RETURN POWER AMP FRONT B11
008 - 36V LH POWER AMP FRONT ------- D10
009 - 36V LH RETURN POWER AMP FRONT D11
010 GND CABLE (A) ------------------ D08
011 + LH CABLE SWITCHED FRONT ------ B02
012 - LH MOD D FRONT --------------- D12

SERVO POWER AMP.

See page AE200 in the plug chart section for more information regarding the socket connections. Page AF200 may be helpful for the general cabling for the Power Amp, the 'B' Board and the 'R/W Channel Boards'.

SERVO POWER AMPLIFIER LEFT FRONT CRD HPA10

D04 LH VCM VOLTAGE SIG FRONT ------- 003
B08 LH VCM CURRENT SIG FRONT ------- 004
D02 LH LIMITED SIG TP FRONT -------- 005
D05 LH POWER AMP COMMON FRONT ------ 006
B10 LH POWER AMP COMMON FRONT ------ 007
B09 LH VOICE COIL MOTOR 1 FRONT ---- 008
D09 LH VOICE COIL MOTOR 1 FRONT ---- 009
B07 LH VOICE COIL MOTOR 2 FRONT ---- 010
D07 LH VOICE COIL MOTOR 2 FRONT ---- 011

SERVO POWER AMPLIFIER LEFT FRONT XRL HPA10

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ LH INHIBIT POWER AMP FRONT	P1B02	HPA10-L003
1B-B1 (D2P11)		BD200-R004
AE200 *TABLE*		
J672- *PIN01*		
1B-B1 *B2B10*		
L004		
LH POWER AMP DRIVE FRONT	P1B04	HPA10-L004
1B-B1 (D2B05)		BD200-R008
AE200 *TABLE*		
J672- *PIN05*		
1B-B1 *B2D11*		
L005		
- LH POWER AMP DRIVE FRONT	P1B06	HPA10-L005
J672- *PIN09*		
L006		
+ 36V LH POWER AMP FRONT	P1B12	HPA10-L006
YA500 *-L047*		
J672- *PIN21*		
L007		
+ 36V LH RETURN POWER AMP FRONT	P1B11	HPA10-L007
YA500 *-L049*		
J672- *PIN19*		
L008		
- 36V LH POWER AMP FRONT	P1D10	HPA10-L008
YA500 *-L053*		
J672- *PIN18*		
L009		
- 36V LH RETURN POWER AMP FRONT	P1D11	HPA10-L009
YA500 *-L051*		
J672- *PIN20*		
L010		
GND CABLE (A)	P1D08	HPA10-L010
L011		
+ LH CABLE SWITCHED FRONT	P1B02	HPA10-L011
1B-B1 H2T02		BH200-L054
1B-B1 K2T02		BK200-L054
YA500 *-L062*		
YA500 *-L060*		
J180- *PIN04*		
1B-B1 *B2B02*		
1B-B1 *B3B02*		

LINE/SIGNAL	PIN	SHEET/LINE
L012		
- LH MOD D FRONT	P1D12	HPA10-L012
1B-B1 G2M12		BG200-L059
YA500 *-L066*		
J180- *PIN05*		
J672- *PIN22*		
1B-B1 *B2D12*		
R003		
LH VCM VOLTAGE SIG FRONT	(P1D04)	HPA10-R003
1B-B1 D2U02		BD200-L038
AE200 *TABLE*		
J672- *PIN06*		
1B-B1 *B2D10*		
R004		
LH VCM CURRENT SIG FRONT	(P1B08)	HPA10-R004
1B-B1 D2D13		BD200-L027
AE200 *TABLE*		
J672- *PIN13*		
1B-B1 *B2D13*		
1B-B1 *C2B06*		
R005		
LH LIMITED SIG TP FRONT	(P1D02)	HPA10-R005
J672- *PIN02*		
1B-B1 *B2B08*		
R006		
LH POWER AMP COMMON FRONT	(P1D05)	HPA10-R006
	(P1B10)	HPA10-R007
1B-B1 D2B13		BD200-L026
AE200 *TABLE*		
J672- *PIN08*		
J672- *PIN17*		
1B-B1 *B2B13*		
1B-B1 *C2D07*		
R007		
LH POWER AMP COMMON FRONT	(P1B10)	HPA10-R007
	(P1D05)	HPA10-R006
1B-B1 D2B13		BD200-L026
AE200 *TABLE*		
J672- *PIN08*		
J672- *PIN17*		
1B-B1 *B2B13*		
1B-B1 *C2D07*		
R008		
LH VOICE COIL MOTOR 1 FRONT	(P1B09)	HPA10-R008
	(P1D09)	HPA10-R009
YA500 *J180 *		
J180- *PIN03*		
J672- *PIN15*		
J672- *PIN16*		

LINE/SIGNAL	PIN	SHEET/LINE
R009		
LH VOICE COIL MOTOR 1 FRONT	(P1D09)	HPA10-R009
	(P1B09)	HPA10-R008
YA500 *J180 *		
J180- *PIN03*		
J672- *PIN15*		
J672- *PIN16*		
R010		
LH VOICE COIL MOTOR 2 FRONT	(P1B07)	HPA10-R010
	(P1D07)	HPA10-R011
YA500 *J180 *		
J180- *PIN01*		
J672- *PIN11*		
J672- *PIN12*		
R011		
LH VOICE COIL MOTOR 2 FRONT	(P1D07)	HPA10-R011
	(P1B07)	HPA10-R010
YA500 *J180 *		
J180- *PIN01*		
J672- *PIN11*		
J672- *PIN12*		

SERVO PWR AMPLIFIER RIGHT FRONT CRD HPA20

003 + RH INHIBIT POWER AMP FRONT --- B02
004 RH POWER AMP DRIVE FRONT ------- B04
005 - RH POWER AMP DRIVE FRONT ----- B06
006 + 36V RH POWER AMP FRONT ------- B12
007 + 36V RH RETURN POWER AMP FRONT B11
008 - 36V RH POWER AMP FRONT ------- D10
009 - 36V RH RETURN POWER AMP FRONT D11
010 GND CABLE (B) ------------------ D08
011 - RH CABLE SWITCHED FRONT ------ B02
012 - RH MOD D FRONT --------------- D12-

SERVO POWER AMP.

See page AE200 in the plug chart section for more information regarding the socket connections. Page AF200 may be helpful for the general cabling for the Power Amp, the 'B' Board and the 'R/W Channel Boards'.

D04 RH VCM VOLTAGE SIG FRONT ------- 003
B08 RH VCM CURRENT SIG FRONT ------- 004
D02 RH LIMITED SIG TP FRONT -------- 005
D05 RH POWER AMP COMMON FRONT ------ 006
B10 RH POWER AMP COMMON FRONT ------ 007
B09 RH VOICE COIL MOTOR 1 FRONT ---- 008
D09 RH VOICE COIL MOTOR 1 FRONT ---- 009
B07 RH VOICE COIL MOTOR 2 FRONT ---- 010
D07 RH VOICE COIL MOTOR 2 FRONT ---- 011

SERVO PWR AMPLIFIER RIGHT FRONT XRL HPA20

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ RH INHIBIT POWER AMP FRONT	P2B02	HPA20-L003
1B-B1 (E2P11)		BE200-R004
J672- *PIN01*		
1B-B1 *B3B10*		
L004		
RH POWER AMP DRIVE FRONT	P2B04	HPA20-L004
1B-B1 (E2B05)		BE200-R008
J672- *PIN05*		
1B-B1 *B3D11*		
L005		
- RH POWER AMP DRIVE FRONT	P2B06	HPA20-L005
J672- *PIN09*		
L006		
+ 36V RH POWER AMP FRONT	P2B12	HPA20-L006
YA500 *-L017*		
J672- *PIN21*		
L007		
+ 36V RH RETURN POWER AMP FRONT	P2B11	HPA20-L007
YA500 *-L019*		
J672- *PIN19*		
L008		
- 36V RH POWER AMP FRONT	P2D10	HPA20-L008
YA500 *-L023*		
J672- *PIN18*		
L009		
- 36V RH RETURN POWER AMP FRONT	P2D11	HPA20-L009
YA500 *-L021*		
J672- *PIN20*		
L010		
GND CABLE (B)	P2D08	HPA20-L010
L011		
- RH CABLE SWITCHED FRONT	P2B02	HPA20-L011
1B-B1 H2M02		BH200-L037
1B-B1 K2M02		BK200-L037
J180- *PIN04*		
YA500 *-L030*		
YA500 *-L032*		
1B-B1 *B2B03*		
1B-B1 *B3B03*		

LINE/SIGNAL	PIN	SHEET/LINE
L012		
- RH MOD D FRONT	P2D12	HPA20-L012
1B-B1 L2M12		BL200-L059
YA500 *-L036*		
AE200 *TABLE*		
J180- *PIN05*		
J672- *PIN22*		
1B-B1 *B3D12*		
R003		
RH VCM VOLTAGE SIG FRONT	(P2D04)	HPA20-R003
1B-B1 E2U02		BE200-L038
AE200 *TABLE*		
J672- *PIN06*		
1B-B1 *B3D10*		
R004		
RH VCM CURRENT SIG FRONT	(P2B08)	HPA20-R004
1B-B1 E2D13		BE200-L027
AE200 *TABLE*		
J672- *PIN13*		
1B-B1 *B3D13*		
1B-B1 *C3B06*		
R005		
RH LIMITED SIG TP FRONT	(P2D02)	HPA20-R005
J672- *PIN02*		
1B-B1 *B3D12*		
R006		
RH POWER AMP COMMON FRONT	(P2D05)	HPA20-R006
	(P2B10)	HPA20-R007
1B-B1 E2B13		BE200-L026
AE200 *TABLE*		
J672- *PIN08*		
J672- *PIN17*		
1B-B1 *B3B13*		
1B-B1 *C3D07*		
R007		
RH POWER AMP COMMON FRONT	(P2B10)	HPA20-R007
	(P2D05)	HPA20-R006
1B-B1 E2B13		BE200-L026
AE200 *TABLE*		
J672- *PIN08*		
J672- *PIN17*		
1B-B1 *B3B13*		
1B-B1 *C3D07*		
R008		
RH VOICE COIL MOTOR 1 FRONT	(P2B09)	HPA20-R008
	(P2D09)	HPA20-R009
YA500 *J180 *		
J180- *PIN03*		
J672- *PIN15*		
J672- *PIN16*		

LINE/SIGNAL	PIN	SHEET/LINE
R009		
RH VOICE COIL MOTOR 1 FRONT	(P2D09)	HPA20-R009
	(P2B09)	HPA20-R008
YA500 *J180 *		
J180- *PIN03*		
J672- *PIN15*		
J672- *PIN16*		
R010		
RH VOICE COIL MOTOR 2 FRONT	(P2B07)	HPA20-R010
	(P2D07)	HPA20-R011
YA500 *J180 *		
J180- *PIN01*		
J672- *PIN11*		
J672- *PIN12*		
R011		
RH VOICE COIL MOTOR 2 FRONT	(P2D07)	HPA20-R011
	(P2B07)	HPA20-R010
YA500 *J180 *		
J180- *PIN01*		
J672- *PIN11*		
J672- *PIN12*		

003 + LH INHIBIT POWER AMP REAR ---- B02
004 LH POWER AMP DRIVE REAR -------- B04
005 - LH POWER AMP DRIVE REAR ------ B06
006 + 36V LH POWER AMP REAR -------- B12
007 + 36V LH RETURN POWER AMP REAR - B11
008 - 36V LH POWER AMP REAR -------- D10
009 - 36V LH RETURN POWER AMP REAR - D11
010 GND CABLE (C) ------------------ D08
011 + LH CABLE SWITCHED REAR ------- B02
012 - LH MOD D REAR ---------------- D12

SERVO POWER AMP.

See page AE200 in the plug chart section for more information regarding the socket connections. Page AF200 may be helpful for the general cabling for the Power Amp, the 'B' Board and the 'R/W Channel Boards'.

SERVO POWER AMPLIFIER LEFT REAR CRD HPA30

D04 LH VCM VOLTAGE SIG REAR -------- 003
B08 + LH VCM CURRENT SIG REAR ------ 004
D02 LH LIMITED SIG TP REAR --------- 005
D05 LH POWER AMP COMMON REAR ------- 006
B10 LH POWER AMP COMMON REAR ------- 007
B09 LH VOICE COIL MOTOR 1 REAR ----- 008
D09 LH VOICE COIL MOTOR 1 REAR ----- 009
B07 LH VOICE COIL MOTOR 2 REAR ----- 010
D07 LH VOICE COIL MOTOR 2 REAR ----- 011

SERVO POWER AMPLIFIER LEFT REAR XRL HPA30

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ LH INHIBIT POWER AMP REAR		
	P3B02	HPA30-L003
1B-B1 (T2P11)		BT200-R004
J672- *PIN01*		
1B-B1 *W2B10*		
L004		
LH POWER AMP DRIVE REAR		
	P3B04	HPA30-L004
1B-B1 (T2B05)		BT200-R008
J672- *PIN05*		
1B-B1 *W2D11*		
L005		
- LH POWER AMP DRIVE REAR		
	P3B06	HPA30-L005
J672- *PIN09*		
L006		
+ 36V LH POWER AMP REAR		
	P3B12	HPA30-L006
YA500 *-L107*		
J672- *PIN21*		
L007		
+ 36V LH RETURN POWER AMP REAR		
	P3B11	HPA30-L007
YA500 *-L109*		
J672- *PIN19*		
L008		
- 36V LH POWER AMP REAR		
	P3D10	HPA30-L008
YA500 *-L113*		
J672- *PIN18*		
L009		
- 36V LH RETURN POWER AMP REAR		
	P3D11	HPA30-L009
YA500 *-L111*		
J672- *PIN20*		
L010		
GND CABLE (C)		
	P3D08	HPA30-L010
L011		
+ LH CABLE SWITCHED REAR		
	P3B02	HPA30-L011
1B-B1	N2T02	BN200-L054
1B-B1	Q2T02	BQ200-L054
J180- *PIN04*		
YA500 *-L119*		
YA500 *-L118*		
1B-B1 *W2B02*		
1B-B1 *W3B02*		

LINE/SIGNAL	PIN	SHEET/LINE
L012		
- LH MOD D REAR		
	P3D12	HPA30-L012
1B-B1	M2M12	BM200-L059
J180- *PIN05*		
YA500 *-L121*		
AE200 *TABLE*		
J672- *PIN22*		
J180- *PIN05*		
1B-B1 *W2D12*		
R003		
LH VCM VOLTAGE SIG REAR		
	(P3D04)	HPA30-R003
1B-B1	T2U02	BT200-L038
J672- *PIN06*		
1B-B1 *W2D10*		
R004		
+ LH VCM CURRENT SIG REAR		
	(P3B08)	HPA30-R004
1B-B1	T2D13	BT200-L027
J672- *PIN13*		
1B-B1 *W2D13*		
1B-B1 *V2B06*		
R005		
LH LIMITED SIG TP REAR		
	(P3D02)	HPA30-R005
R006		
LH POWER AMP COMMON REAR		
	(P3D05)	HPA30-R006
	(P3B10)	HPA30-R007
1B-B1	T2B13	BT200-L026
J672- *PIN08*		
J672- *PIN17*		
1B-B1 *W2B13*		
1B-B1 *V2D07*		
R007		
LH POWER AMP COMMON REAR		
	(P3B10)	HPA30-R007
	(P3D05)	HPA30-R006
1B-B1	T2B13	BT200-L026
J672- *PIN08*		
J672- *PIN17*		
1B-B1 *W2B13*		
1B-B1 *V2D07*		
R008		
LH VOICE COIL MOTOR 1 REAR		
	(P3B09)	HPA30-R008
	(P3D09)	HPA30-R009
YA500 *J180 *		
J180- *PIN03*		
J672- *PIN15*		
J672- *PIN16*		

LINE/SIGNAL	PIN	SHEET/LINE
R009		
LH VOICE COIL MOTOR 1 REAR		
	(P3D09)	HPA30-R009
	(P3B09)	HPA30-R008
YA500 *J180 *		
J180- *PIN03*		
J672- *PIN15*		
J672- *PIN16*		
R010		
LH VOICE COIL MOTOR 2 REAR		
	(P3B07)	HPA30-R010
	(P3D07)	HPA30-R011
YA500 *J180 *		
J180- *PIN01*		
J672- *PIN11*		
J672- *PIN12*		
R011		
LH VOICE COIL MOTOR 2 REAR		
	(P3D07)	HPA30-R011
	(P3B07)	HPA30-R010
YA500 *J180 *		
J180- *PIN01*		
J672- *PIN11*		
J672- *PIN12*		

SERVO POWER AMPLIFIER RIGHT REAR CRD HPA40

003 + RH INHIBIT POWER AMP REAR ---- B02
004 RH POWER AMP DRIVE REAR -------- B04
005 - RH POWER AMP DRIVE REAR ------ B06
006 + 36V RH POWER AMP REAR -------- B12
007 + 36V RH RETURN POWER AMP REAR - B11
008 - 36V RH POWER AMP REAR -------- D10
009 - 36V RH RETURN POWER AMP REAR - D11
010 GND CABLE (D) ------------------ D08
011 + RH CABLE SWITCHED REAR ------- B03
012 - RH MOD D REAR ---------------- D12

SERVO POWER AMP.

See page AE200 in the plug chart section for more information regarding the socket connections. Page AF200 may be helpful for the general cabling for the Power Amp, the 'B' Board and the 'R/W Channel Boards'.

D04 RH VCM VOLTAGE SIG REAR -------- 003
B08 RH VCM CURRENT SIG REAR -------- 004
D02 RH LIMITED SIG TP REAR --------- 005
D05 RH POWER AMP COMMON REAR ------- 006
B10 RH POWER AMP COMMON REAR ------- 007
B09 RH VOICE COIL MOTOR 1 REAR ----- 008
D09 RH VOICE COIL MOTOR 1 REAR ----- 009
B07 RH VOICE COIL MOTOR 2 REAR ----- 010
D07 RH VOICE COIL MOTOR 2 REAR ----- 011

SERVO POWER AMPLIFIER RIGHT REAR XRL HPA40

LINE/SIGNAL	PIN	SHEET/LINE
L003		
+ RH INHIBIT POWER AMP REAR		
	P4B02	HPA40-L003
1B-B1	(U2P11)	BU200-R004
J672-	*PIN01*	
1B-B1	*W3B10*	
L004		
RH POWER AMP DRIVE REAR		
	P4B04	HPA40-L004
1B-B1	(U2B05)	BU200-R008
J672-	*PIN05*	
1B-B1	*W3D11*	
L005		
- RH POWER AMP DRIVE REAR		
	P4B06	HPA40-L005
J672-	*PIN09*	
L006		
+ 36V RH POWER AMP REAR		
	P4B12	HPA40-L006
YA500	*-L077*	
J672-	*PIN21*	
L007		
+ 36V RH RETURN POWER AMP REAR		
	P4B11	HPA40-L007
YA500	*-L079*	
J672-	*PIN19*	
L008		
- 36V RH POWER AMP REAR		
	P4D10	HPA40-L008
YA500	*-L083*	
J672-	*PIN18*	
L009		
- 36V RH RETURN POWER AMP REAR		
	P4D11	HPA40-L009
YA500	*-L081*	
J672-	*PIN20*	
L010		
GND CABLE (D)		
	P4D08	HPA40-L010
L011		
+ RH CABLE SWITCHED REAR		
	P4B03	HPA40-L011
L012		
- RH MOD D REAR		
	P4D12	HPA40-L012
1B-B1	R2M12	BR200-L059
J180-	*PIN22*	
YA500	*-L096*	
1B-B1	*W3D12*	
R003		
RH VCM VOLTAGE SIG REAR		
	(P4D04)	HPA40-R003
1B-B1	U2U02	BU200-L038
J672-	*PIN06*	
1B-B1	*W3D10*	

LINE/SIGNAL	PIN	SHEET/LINE
R004		
RH VCM CURRENT SIG REAR		
	(P4B08)	HPA40-R004
1B-B1	U2D13	BU200-L027
J672-	*PIN13*	
1B-B1	*W3D13*	
1B-B1	*V3B06*	
R005		
RH LIMITED SIG TP REAR		
	(P4D02)	HPA40-R005
J672-	*PIN02*	
1B-B1	*W3B08*	
R006		
RH POWER AMP COMMON REAR		
	(P4D05)	HPA40-R006
	(P4B10)	HPA40-R007
1B-B1	U2B13	BU200-L026
J672-	*PIN08*	
J672-	*PIN17*	
1B-B1	*W3B13*	
1B-B1	*V3D07*	
R007		
RH POWER AMP COMMON REAR		
	(P4B10)	HPA40-R007
	(P4D05)	HPA40-R006
1B-B1	U2B13	BU200-L026
J672-	*PIN08*	
J672-	*PIN17*	
1B-B1	*W3B13*	
1B-B1	*V3D07*	
R008		
RH VOICE COIL MOTOR 1 REAR		
	(P4B09)	HPA40-R008
	(P4D09)	HPA40-R009
YA500	*J180 *	
J180-	*PIN03*	
J672-	*PIN15*	
J672-	*PIN16*	
R009		
RH VOICE COIL MOTOR 1 REAR		
	(P4D09)	HPA40-R009
	(P4B09)	HPA40-R008
YA500	*J180 *	
J180-	*PIN03*	
J672-	*PIN15*	
J672-	*PIN16*	
R010		
RH VOICE COIL MOTOR 2 REAR		
	(P4B07)	HPA40-R010
	(P4D07)	HPA40-R011
YA500	*J180 *	
J180-	*PIN01*	
J672-	*PIN11*	
J672-	*PIN12*	

LINE/SIGNAL	PIN	SHEET/LINE
R011		
RH VOICE COIL MOTOR 2 REAR		
	(P4D07)	HPA40-R011
	(P4B07)	HPA40-R010
YA500	*J180 *	
J180-	*PIN01*	
J672-	*PIN11*	
J672-	*PIN12*	

SERVO POWER AMPLIFIER RIGHT REAR XRL HPA40

```
3333   3333    888    000      DDDD      000   RRRR      EEEEE
   3      3   8   8  0   0     D   D    0   0  R   R     E
3333   3333    888   0   0     D   D    0   0  RRRR      EEE
   3      3   8   8  0   0     D   D    0   0  R R       E
3333   3333    888    000      DDDD      000   R  R      EEEEE

PPPP   00000  W   W  EEEEE  RRRR
P   P  0   0  W   W  E      R   R
PPPP   0   0  W W W  EEE    RRRR
P      0   0  WW WW  E      R R
P      00000  W   W  EEEEE  R  R

L      00000  GGGGG  IIIII  CCCCC
L      0   0  G      I      C
L      0   0  G  GG   I      C
L      0   0  G   G   I      C
LLLLL  00000  GGGGG  IIIII  CCCCC
```


EC HISTORY

30MAY83 464814
20MAR84 464827
30NOV84 464876
30JAN85 464891

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MACH 3380 D OR E HPN
PNAME HEC
LOC 0001

YB010

IBM CORP

SLIP ON CONNECTOR

009 + SLIP ON CONNECTOR — YA100-001 — >> 1
010

SCREW TYPE TERMINAL

019 + SCREW TYPE TERMINAL — YA100-002 — ■ 2
020

RESISTOR

029 + RESISTOR — YA100-003 — VV
030
032 + RESISTOR — YA100-004 — VV
035 − RESISTOR — YA100-005 — VV

040

CAPACITOR

044 + CAPACITOR — YA100-006 — + ⊣⊢
047 + CAPACITOR — YA100-007 — + ⊥
050 − CAPACITOR — YA100-008 — ⊥

DIODE

058 + DIODE ANODE — YA100-009 — >▮
060

RECTIFIER

068 + RECTIFIER DIODE 1 — YA100-010 — >▮
070 + RECTIFIER DIODE 2 — YA100-011 — >▮
075 − RECTIFIER DIODE 1 — YA100-012 — ▮<
077 − RECTIFIER DIODE 2 — YA100-013 — ▮<
080

DIODE

▮>

090

INCANDESCENT LIGHT

097 + VOLTAGE TO LIGHT — YA100-016 — >V
099 − VOLTAGE TO LIGHT — YA100-017 — >V
100

LIGHT EMITTING DIODE

110 + VOLTAGE TO ANODE — YA110-018 — >V
112 − VOLTAGE TO CATHODE — YA100-019 — >V

FUSE

120
121 + VOLTAGE TO FUSE — YA100-020 — ⌐

CONTACTOR

1 — 0 0 — 3

RELAY POINTS NORMALLY OPEN

9 — 1 6
4 — 3 7

NORMALLY CLOSED

3 — 1 9
7 — 3 1

TRANSFER

3 — 1 6
9

9 — 1 3
6

6 AMP CIRCUIT BREAKER

L1 — C B 0< T1 — 6A

3 AMP CIRCUIT PROTECTOR

L1 — C P 0< T1 — 3A

THERMAL

T H 0<

TRANSFORMER

230V
208V
200V
COM

SOLENOID, CONTACTOR COIL, OR RELAY COIL

A — K — B

CONVENIENCE OUTLET

NEUTRAL OR PHASE
PHASE — P N
GROUND — G
FRONT

SWITCHES

PUSH BUTTON N/O — PUSH BUTTON N/C

SINGLE POLE TOGGLES

ROTARY

LOCAL
REMOTE

MOMENTARY

+ — 0 ->0 0 — ON — + WHEN ON
OFF — + WHEN OFF

DC REGULATOR

+ INPUT — REG — + REGULATOR OUTPUT
− INPUT — + REGULATOR OUTPUT RETURN
+ REGULATOR OVER CURRENT SENSE
+ BIAS — + REGULATOR OVER VOLTAGE SENSE
− TURN ON — + REG INPUT UNDER VOLT SENSE

BLOWER

LINE A
LINE B — BLWR
GND

MOTOR

LINE A
LINE B — MTR
GND

SCREW TYPE CAPACITOR WITH SLIP ON CONNECTORS

RESISTOR − CAPACITOR

LATCHING CIRCUIT PROTECTOR

C P ->0

REMOTE SHUNT CP TRIPS AT GREATER THAN 8 VOLTS OR 100 MA.

+ SIGN NEAR A CAPACITOR INDICATES POLARITY

NUMBERS NEXT TO SLIP ON CONNECTORS, SCREW TYPE TERMINALS, AND RELAY POINTS INDICATE POSITION

ALPHA/NUMERIC CHARACTERS IN THE LINE INDICATE ACTUAL PIN DESIGNATIONS ON RELAYS, CONTACTORS, CIRCUIT PROTECTORS, SWITCHES, ETC.

STANDARD COMPONENT LETTER DESIGNATION

XX XXX X

A COMPONENT ASSOC WITH DRIVE A
B COMPONENT ASSOC WITH DRIVE B

00–03 CIRCUIT BREAKER
04–14 CIRCUIT PROTECTOR
15–24 CONTACTOR OR RELAY
25–39 RECTIFIER
40–49 RESISTOR
50–69 CAPACITOR
70–74 TRANSFORMER
75–84 CONNECTOR
85–99 MISC

ZONE

1 FRAME (MISC)
2 SUBSYS AC BOX
3 CTLR POWER SUPPLY
4 DRIVE AC BOX
5
6 LOC/ACT POWER SUPPLY
7 BASEPLATE
8 GATES

EC HISTORY

30MAY83 464814
20MAR84 464827
30NOV84 464876
30JAN85 464891

SYMBOLS USED IN POWER DIAGRAMS

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MACH 3380 D OR E HPN
PNAME HEC
LOC 0001

YB020

IBM CORP

COMPONENT DESIGNATION	PAGE
C450	YB100
C451	YB600
C452	YB600
C453	YB110
C454	YB600
C455	YB100
C650	YB400
C651	YB400
C652	YB400
C653	YB400
C654	YB400
C655	YB400
C656	YB400
C661	YB400
C800	YB450
CB201	YB100
CP206	YB100
CP404	YB600
CP405	YB100
CP407	YB600
CP408	YB600
CP412	YB200
CP602	YB400
CP603	YB400
CP604	YB400
CP605	YB400
CP606	YB400
CP613	YB400
CP614	YB400
CP615	YB400
CP616	YB400
CP622	YB400
CP623	YB400
CP624	YB400
CP625	YB400
CP626	YB400
CP633	YB400
CP634	YB400
CP635	YB400
CP636	YB400

COMPONENT DESIGNATION	PAGE	PAGE
CR425	YB100	
CR426	YB600	
CR427	YB600	
CR429	YB600	
CR430	YB600	
CR625	YB400	
CR626	YB400	
CR627	YB400	
CR628	YB400	
CR629	YB400	
CR632	YB400	
CR633	YB400	
CR634	YB400	
CR635	YB400	
CR636	YB400	
CR637	YB400	
CR638	YB400	
CR639	YB400	
CR725A	YB600	
CR725B	YB600	
CR726A	YB200	
CR726B	YB200	
EC488	YB600	
GB287	YB100	
GB487	YB200	
J179	YB200	YB600
J180	YB500	
J181	YB500	
J270	YB100	
J275 50HZ	YB100	DELTA
J276 50HZ	YB100	WYE
J475 50HZ	YB200	DELTA
J476 50HZ	YB200	WYE
J477 50HZ	YB200	DELTA
J478 50HZ	YB200	WYE
J482	YB600	
J672	YB500	
J675	YB410	
J676	YB410	
J677	YB410	
J678	YB410	
J679	YB410	
J680	YB420	
J681	YB420	
J682	YB420	
J683	YB420	
J684	YB420	
J685	YB450	
J686	YB450	
J687	YB450	
J689	YB460	
J690	YB460	
J691	YB460	
J694	YB400	
J695	YB410	
J785A	YB200	
J785B	YB200	
J786A	YB200	
J786B	YB200	
J787A	YB600	
J787B	YB600	
J793A	YB200	
J793B	YB200	
J794A	YB600	
J794B	YB600	
J795A	YB600	
J795B	YB600	
J875	YB600	
J880	YB200	
J881	YB200	

COMPONENT DESIGNATION		PAGE		PAGE
K416	COIL	YB600	POINTS	YB600
K417	COIL	YB600	POINTS	YB600
K418	COIL	YB600	POINTS	YB200
K419	COIL	YB600	POINTS	YB200
K420	COIL	YB600	POINTS	YB200
K715A	COIL	YB600		
K715B	COIL	YB600		
K718A	COIL	YB200	POINTS	YB200
K718B	COIL	YB200	POINTS	YB200
Q490		YB600		
R440		YB100		
R442		YB100		
R443		YB600		
R444		YB100		
R447		YB600		
R448		YB600		
R449		YB600		
R450		YB600		
R640		YB400		
R641		YB400		
R643		YB400		
R644		YB400		
R646		YB400		
R647		YB400		
R649		YB400		
R743A		YB200		
R743B		YB200		
R744A		YB200		
R744B		YB200		
R745A		YB200		
R745B		YB200		
R790A		YB200		
R790B		YB200		
RC445		YB200		
RC446		YB200		
RC447		YB200		
S796A		YB600		
S796B		YB600		
S887		YB600		
S888		YB600		
SW192		YB500		
SW493A		YB600		
SW493B		YB600		
SW691		YB410		
SW692		YB420		
SW693		YB410		
SW694		YB410		
SW695		YB420		
SW696		YB420		
T270		YB100		
T670		YB400		

COMPONENT DESIGNATION		PAGE	PAGE
TB270		YB100	
TB286	50HZ	YB100	
TB485		YB100	
TB486		YB100	YB600
TB487		YB200	
TB686		YB400	
W194		YB200	

COMPONENT DESIGNATION INDEX

C CAPACITOR
CB CIRCUIT BREAKER
CP CIRCUIT PROTECTOR
CR DIODE
EC EDGE CONNECTOR
GB GROUND BUSS CONNECTOR
J CABLE PLUG CONNECTOR
K CONTACTOR, RELAY, SOLENOID
Q DC REGULATOR
R RESISTOR
RC RESISTOR – CAPACITOR
S THERMAL SWITCH
SW SWITCH
T TRANSFORMER
TB TERMINAL BLOCK
W FRAME GROUND

EC HISTORY

30MAY83 464814
20MAR84 464827
03JUL84 464863
30NOV84 464876
21JAN85 464879
30JAN85 464891

COMPONENT DESIGNATIONS

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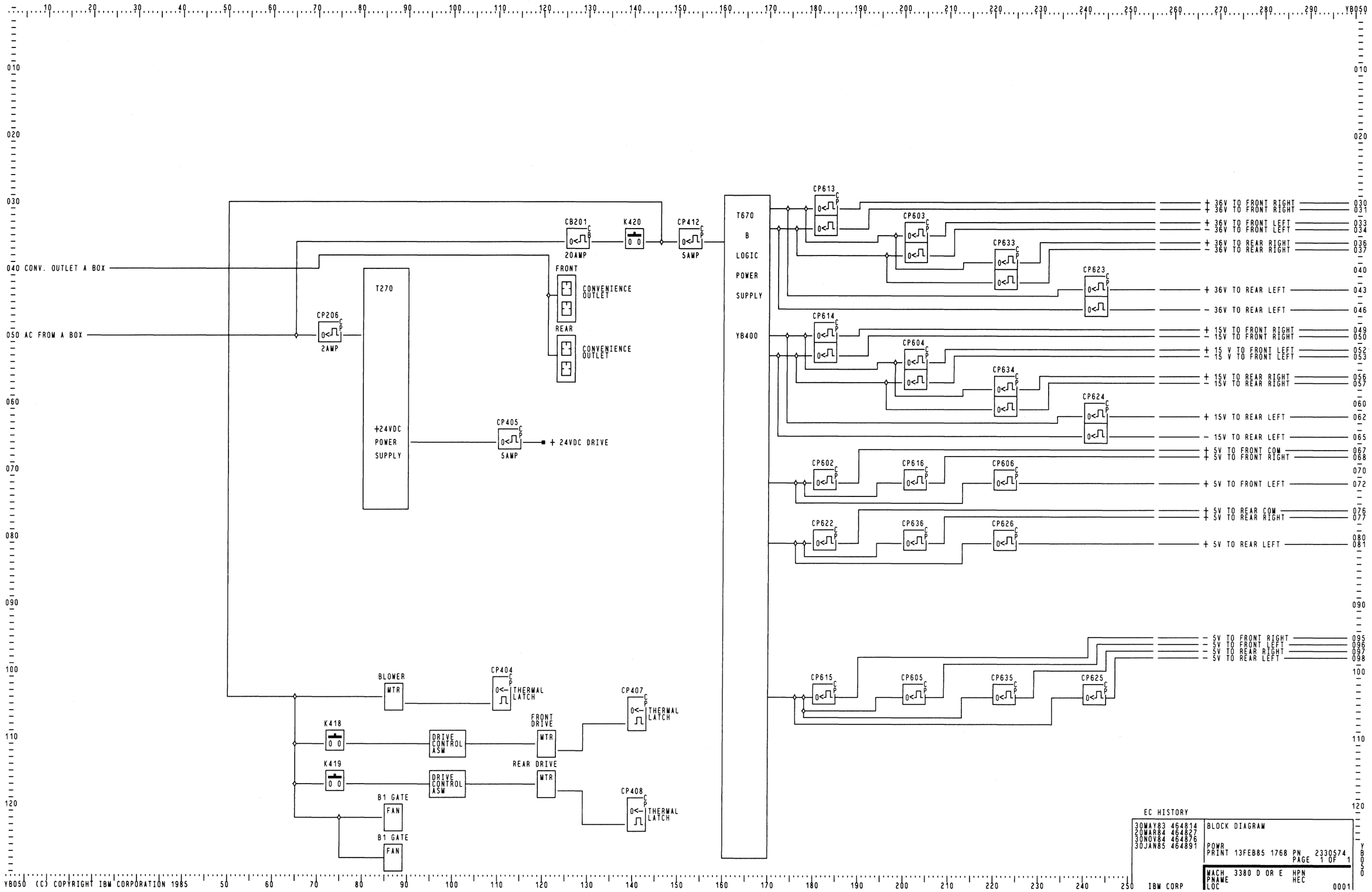
MACH 3380 D OR E HPN
PNAME HEC
LOC 0001

YB030 (C) COPYRIGHT IBM CORPORATION 1985 IBM CORP YB030


CONV. OUTLET A BOX
AC FROM A BOX
CB201
20AMP
K420
CP412
5AMP
CP206
2AMP
FRONT
CONVENIENCE OUTLET
REAR
CONVENIENCE OUTLET
T270
+24VDC POWER SUPPLY
CP405
5AMP
+ 24VDC DRIVE
BLOWER
MTR
CP404
THERMAL LATCH
CP407
THERMAL LATCH
K418
DRIVE CONTROL ASM
FRONT DRIVE
MTR
K419
DRIVE CONTROL ASM
REAR DRIVE
MTR
CP408
THERMAL LATCH
B1 GATE
FAN
B1 GATE
FAN
T670
B
LOGIC
POWER
SUPPLY
YB400
CP613
CP603
CP633
CP623
+ 36V TO FRONT RIGHT
+ 36V TO FRONT RIGHT
+ 36V TO FRONT LEFT
- 36V TO FRONT LEFT
+ 36V TO REAR RIGHT
- 36V TO REAR RIGHT
+ 36V TO REAR LEFT
- 36V TO REAR LEFT
CP614
CP604
CP634
CP624
+ 15V TO FRONT RIGHT
- 15V TO FRONT RIGHT
+ 15 V TO FRONT LEFT
- 15 V TO FRONT LEFT
+ 15V TO REAR RIGHT
- 15V TO REAR RIGHT
+ 15V TO REAR LEFT
- 15V TO REAR LEFT
CP602
CP616
CP606
+ 5V TO FRONT COM
+ 5V TO FRONT RIGHT
+ 5V TO FRONT LEFT
CP622
CP636
CP626
+ 5V TO REAR COM
+ 5V TO REAR RIGHT
+ 5V TO REAR LEFT
CP615
CP605
CP635
CP625
- 5V TO FRONT RIGHT
- 5V TO FRONT LEFT
- 5V TO REAR RIGHT
- 5V TO REAR LEFT
EC HISTORY
30MAY83 464814
20MAR84 464827
30NOV84 464876
30JAN85 464891
BLOCK DIAGRAM
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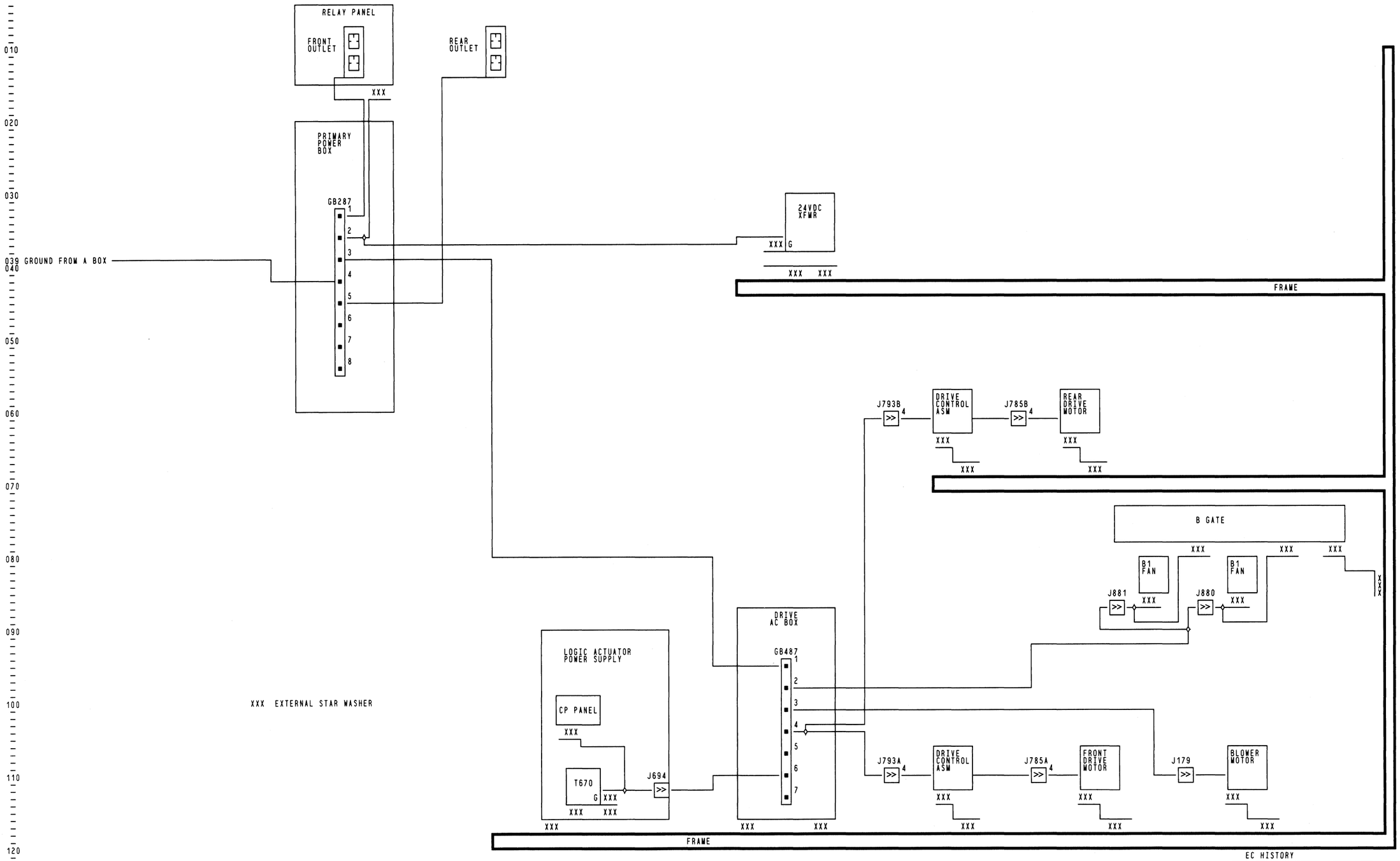
MACH 3380 D OR E HPN
PNAME HEC
LOC 0001
IBM CORP
YB050 (C) COPYRIGHT IBM CORPORATION 1985



XXX EXTERNAL STAR WASHER

EC HISTORY

30MAY83 464814
20MAR84 464827
30NOV84 464876
30JAN85 464891

BLOCK DIAGRAM

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MACH 3380 D OR E HPN
PNAME HEC
LOC 0001

YB090

IBM CORP

040 PHASE A FROM A BOX — YA100-049 — L1 — CB201 — T1 — YB200-060 + PHASE A — 040

043 PHASE B FROM A BOX — YA100-051 — L2 — CB201 — T2 — YB200-063 + PHASE B — 043

046 PHASE C FROM A BOX — YA100-053 — L3 — CB201 — T3 — YB200-066 + PHASE C — 046

055 CONV OUTLET A FROM A BOX — YA100-055

057 CONV OUTLET B FROM A BOX — YA100-057

060 GND FROM A BOX — YA100-059 — GB287 4

GB287 7 — YB200-080 + GND — 060

CP206 2AMP — TB270 COM — T270

GB287 1 — FRONT CONVENIENCE OUTLET (P, N, G)

SHIELD — FRAME — GB287 5 — REAR CONVENIENCE OUTLET (P, N, G)

GB287 2 — T270 2 3 4 5 — 5 6 7 — J270 1 2 3

AC4 CR425 AC2 C455 C450 R442 +24VDC +24VDC RTN

CP405 5AMP — +24VDC

TB485

- 1 — YB600-115 + 24VDC TO TB486-2 — 085
- 2 — YB600-073 + 24VDC TO CP407 — 086
- 2 — YB600-050 + 24VDC TO CP404 — 087
- 3 — YB600-089 + 24VDC TO CP408 — 089
- 4 — R440
- 5 — (BH200 L043) — + 24VDC + NO AIR B1-C5D10 — 097
- 5 — YB500-126 + 24VDC TO NO AIR SWITCH — 098
- 5 — (BN200 L043) — + 24VDC + NO AIR B1-V5D10 — 099
- 6 — R444 — 100

TB486

- 1 — YB600-125 + 24VDC RTN TO TB486-5 — 109
- 1 — YB200-128 + 24VDC RTN TO W194 — 110
- 4 — YB500-124 + 24VDC RTN TO NO AIR SWITCH — 115
- 4 — * + 24VDC RTN NO AIR B1-C5B07 FRNT — 116
- 4 — * + 24VDC RTN NO AIR B1-V5B07 REAR — 117
- 4 — YB600-078 + 24VDC RTN TO J794A-5 — 118
- 4 — YB600-095 + 24VDC RTN TO J794B-5 — 119

* NOT IN BOARD LOGICS

CAUTION:
DO NOT POWER ON WITHOUT THIS STATIC ELIMINATOR

BASE CASTING — VV 10K — FRAME

TRANSFORMER CONNECTIONS					
50HZ	COM	200	220/380	230/400	240/415
TB270	1	2	3	4	5
60HZ	COM	200/208	220	240	–
TB270	1	2	3	4	–

DANGER
LETHAL VOLTAGES ARE PRESENT IN THE POWER SERVICING AREA. SAFETY IS MOST IMPORTANT. TREAT ALL CIRCUITS AS LIVE UNTIL MEASURED. CAPACITORS ARE POSSIBLE EXPLODING DEVICES. WEAR SAFETY GLASSES WHEN WORKING IN THE POWER AREA.

ALWAYS REINSTALL ALL GREEN/YELLOW GROUND WIRES AND SAFETY COVERS BEFORE POWERING ON THE MACHINE.

EC HISTORY

30MAY83 464814 20MAR84 464827 30NOV84 464876 30JAN85 464891	PRIMARY POWER BOX AND 24VDC 60 HZ AND 50 HZ JAPAN

POWR
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MACH 3380 D OR E HPN
PNAME HEC
LOC 0001

IBM CORP

YB100

010 + READY LED DEVICE 4, 8, C —— B1-B1D13 — (BH210 R025) —— YA130-010, YA130-046, YA130-082 + READY LED DEVICE 4, 8, C —— 010
012 + READY LED DEVICE 5, 9, D —— B1-C1A13 — (BK210 R025) —— YA130-012, YA130-048, YA130-084 + READY LED DEVICE 5, 9, D —— 012
014 + READY LED DEVICE 6, A, E —— B1-A1A11 — (BN210 R025) —— YA130-014, YA130-050, YA130-086 + READY LED DEVICE 6, A, E —— 014
016 + READY LED DEVICE 7, B, F —— B1-A1C11 — (BQ210 R025) —— YA130-016, YA130-052, YA130-088 + READY LED DEVICE 7, B, F —— 016

020 + READY LED DEVICE 4, 8, C RTN - YA130-018, YA130-054, YA130-090 —— B1-B1B11 + READY LED DEVICE 4, 8, C RTN - 020
022 + READY LED DEVICE 5, 9, D RTN - YA130-020, YA130-056, YA130-092 —— B1-B1B11 + READY LED DEVICE 5, 9, D RTN - 022
024 + READY LED DEVICE 6, A, E RTN - YA130-022, YA130-058, YA130-094 —— B1-B1B11 + READY LED DEVICE 6, A, E RTN - 024
026 + READY LED DEVICE 7, B, F RTN - YA130-024, YA130-060, YA130-096 —— B1-B1B11 + READY LED DEVICE 7, B, F RTN - 026

034 - DISABLE SW DEVICE 4, 8, C —— B1-B1B11 —— YA130-026, YA130-062, YA130-098 - DISABLE SW DEVICE 4, 8, C —— 034
036 - DISABLE SW DEVICE 5, 9, D —— B1-B1B11 —— YA130-028, YA130-064, YA130-100 - DISABLE SW DEVICE 5, 9, D —— 036
038 - DISABLE SW DEVICE 6, A, E —— B1-B1B11 —— YA130-030, YA130-066, YA130-102 - DISABLE SW DEVICE 6, A, E —— 038
040 - DISABLE SW DEVICE 7, B, F —— B1-B1B11 —— YA130-032, YA130-068, YA130-104 - DISABLE SW DEVICE 7, B, F —— 040

044 - DISABLE DEVICE 4, 8, C —— YA130-034, YA130-070, YA130-106 —— (BG200 L024) — B1-A1A13 - DISABLE DEVICE 4, 8, C —— 044
046 - DISABLE DEVICE 5, 9, D —— YA130-036, YA130-072, YA130-108 —— (BL200 L024) — B1-A1C13 - DISABLE DEVICE 5, 9, D —— 046
048 - DISABLE DEVICE 6, A, E —— YA130-038, YA130-074, YA130-110 —— (BM200 L024) — B1-A1E13 - DISABLE DEVICE 6, A, E —— 048
050 - DISABLE DEVICE 7, B, F —— YA130-040, YA130-076, YA130-112 —— (BR200 L024) — B1-B1B13 - DISABLE DEVICE 7, B, F —— 050

EC HISTORY

20MAR84 464827	INTERFACE TO PWR
30NOV84 464876	INTERFRAME CONNECTIONS
30JAN85 464891	

PRINT 13FEB85 0017 PN 2330771
PAGE 1 OF 1

MACH 3380 D OR E HPN
PNAME HEC
LOC 0001

YB120

IBM CORP

006 + 24VDC TO K718B — YB600-080
008 - DRIVE CONTROL RELAY REAR — B1-V5D05 — (BN200 R063)
010 + 24VDC TO K718A — YB600-059
012 - DRIVE CONTROL RELAY FRONT — B1-C5D05 — (BH200 R063)

J880 B1 GATE FAN
J881 B1 GATE FAN
SHIELD
FRAME EMC GND
CP412 SAMP
GB487
FRAME
SHIELD
GB487
RC466
K420
K419
TB487
J793B
J794B
CR726B
K718B
R790B
(BN200 L045) — B1-V5D06 + SENSE DCA RELAY OFF REAR
J794A
CR726A
K718A
R790A
(BH200 L045) — B1-C5D06 + SENSE DCA RELAY OFF FRONT
YB400-050 + PHASE B TO LOGIC PS
YB400-070 + PHASE C TO LOGIC PS
YB400-052 + LOGIC PS GND
YB400-045 + LOGIC PS SHIELD

060 + PHASE A — YB100-040 — L1 T1
063 + PHASE B — YB100-043 — L2 T2
066 + PHASE C — YB100-046 — L3 T3
L4 T4
RC447
GB487
GB487
080 + GND — YB100-060 — GB487
K418
J793A
RC445
FRAME EMC GND
SHIELD
K718B
R743B
R744B
R745B
J785B REAR DRIVE 3 PHASE MOTOR
G701B
K718A
R743A
R744A
R745A
J785A FRONT DRIVE 3 PHASE MOTOR
G701A
J179 BLOWER 3 PHASE MOTOR
SHIELD
FRAME W194
YB400-004 - FRAME GROUND FROM W194
YB400-005 - FRAME GROUND FROM W194

DANGER
LETHAL VOLTAGES ARE PRESENT IN THE POWER SERVICING AREA. SAFETY IS MOST IMPORTANT. TREAT ALL CIRCUITS AS LIVE UNTIL MEASURED. CAPACITORS ARE POSSIBLE EXPLODING DEVICES. WEAR SAFETY GLASSES WHEN WORKING IN THE POWER AREA.

ALWAYS REINSTALL ALL GREEN/YELLOW GROUND WIRES AND SAFETY COVERS BEFORE POWERING ON THE MACHINE.

128 + 24VDC RTN TO W194 — YB100-110

EC HISTORY
30MAY83 464814
20MAR84 464827
30NOV84 464876
30JAN85 464891

DRIVE AC
60 HZ
HZ60
PRINT 14FEB85 2078 PN 2330579
PAGE 1 OF 1
YB200

MACH 3380 D OR E HPN
PNAME HEC
LOC 0001

IBM CORP

004 FRAME GND FROM W194 — YB200-108
005 FRAME GND FROM W194 — YB200-110

NOTE 1 APPLIES ONLY TO EARLY MACHINES WITH TRANSFORMER PN 2330638 OR 2330639 INSTALLED.

NOTE 2 THESE (- - -) LINES MAY NOT BE IN EARLY MACHINES.

NOTE 3 APPLIES ONLY TO MACHINES WITH TRANSFORMER PN 2179862 OR 2179864 INSTALLED. IF (- - -) LINES 9,9A,13,13A ARE USED THEY WILL REPLACE SOLID LINES 9,9A, 13,13A AND (- - -) LINES IN NOTE 2 WILL NOT BE USED. IF (- - -) LINES 9,9A,13, 13A ARE NOT USED (- - -) LINES IN NOTE 2 AND SOLID LINES 9,9A,13,13A WILL BE USED.

NOTE 4 LINE 38A,51A,68A,81A MAY NOT BE IN ALL MACHINES.

045 + LOGIC PS SHIELD — YB200-046

050 + PHASE B/N TO LOGIC PS — YB200-040

052 + LOGIC PS GND — YB200-044

070 + PHASE C TO LOGIC PS — YB200-043

TRANSFORMER CONNECTIONS					
50HZ	COM	200	220/380	230/400	240/415
TB686	1	2	3	4	5
60HZ	COM	200/208	220	240	—
TB686	1	2	3	4	—

T670 TB686 J694 COM 50HZ

CR627 CR629 CR628 CR625 CR626

R641 R644 R640 R643 R646 R647 R649

C651 C652 C654 C650 C653 C655 C656 C661

+15V -15V (-5.0V) +5V +36V -36V

NOTE 1 NOTE 2 NOTE 3

CP603 CP606 CP605 CP604 CP602 CP613 CP616 CP615 CP614

CR632 CR633 CR635 CR634

CP623 CP626 CP625 CP624 CP622 CP633 CP636 CP635 CP638 CP634 CP639

CR636 CR637

FRONT COM GND PNL

YB410-093 COMMON GROUND RTN BUS FRONT
YB450-103 COMMON GROUND RTN BUS FRONT

YB500-049 + 36V RTN TO PWR AMP LEFT FRONT
YB500-019 + 36V RTN TO PWR AMP RIGHT FRT
YB500-109 + 36V RTN TO PWR AMP LEFT REAR
YB500-079 + 36V RTN TO PWR AMP RIGHT REAR
YB500-051 - 36V RTN TO PWR AMP LEFT FRONT
YB500-021 - 36V RTN TO PWR AMP RIGHT FRT
YB500-111 - 36V RTN TO PWR AMP LEFT REAR
YB500-081 - 36V RTN TO PWR AMP RIGHT REAR

REAR COM GND PNL

YB420-093 COMMON GROUND RTN BUS REAR
YB460-103 COMMON GROUND RTN BUS REAR

YB420-007 LEFT REAR COMM VOLTAGE
YB500-107 + 36V TO PWR AMP LEFT REAR
YB500-113 - 36V TO PWR AMP LEFT REAR

YB420-102 RIGHT REAR COMM VOLTAGE
YB500-077 + 36V TO PWR AMP RIGHT REAR
YB500-083 - 36V TO PWR AMP RIGHT REAR

YB410-007 LEFT FRONT COMM VOLTAGE
YB500-047 + 36V TO PWR AMP LEFT FRONT
YB500-053 - 36V TO PWR AMP LEFT FRONT

YB410-102 RIGHT FRONT COMM VOLTAGE
YB500-017 + 36V TO PWR AMP RIGHT FRONT
YB500-023 - 36V TO PWR AMP RIGHT FRONT

DANGER
LETHAL VOLTAGES ARE PRESENT IN THE POWER SERVICING AREA. SAFETY IS MOST IMPORTANT. TREAT ALL CIRCUITS AS LIVE UNTIL MEASURED. CAPACITORS ARE POSSIBLE EXPLODING DEVICES. WEAR SAFETY GLASSES WHEN WORKING IN THE POWER AREA.

ALWAYS REINSTALL ALL GREEN/YELLOW GROUND WIRES AND SAFETY COVERS BEFORE POWERING ON THE MACHINE.

EC HISTORY

30MAY83 464814	LOGIC ACTUATOR
30NOV84 464876	PWR SUP.
30JAN85 464891	
24APR85 464851	

PRINT 24APR85 2116 PN 2330582 PAGE 1 OF 1

MACH 3380 D OR E HPN
PNAME HEC
LOC 0001

IBM CORP

007 LEFT FRONT COMM VOLTAGES — YB400-103

102 RIGHT FRONT COMM VOLTAGES — YB400-113

093 COMMON GND RTN BUS FRONT — YB400-004

106 + 5/24V — YB600-107

110 + 5/24V RTN — YB600-108

112 + 5/24V — YB600-109

114 + 5/24V RTN — YB600-110

116 + 5/24V — YB600-111

118 + 5/24V — YB600-112

120 + 5/24V RTN — YB600-113

122 + 5/24V RTN — YB600-114

FRONT LEFT SW693 — ENABLE / DISABLE

FRONT RIGHT SW694 — ENABLE / DISABLE

SW691 — ON / OFF

NOTE 1

J675

J676

J677

J678

J679

J695

1		+ 5V LEFT	B1-B2A14 — 006
2		+ 5V LEFT	B1-B3E01 — 007
4	B1-ZCD07	+ 5 V COMMON	B1-G6D02 — 009
7	B1-ZAD04	+ 15V LEFT	B1-A6C02 — 012
8	B1-ZAD05	+ 15V LEFT	B1-A6D02 — 013
9	B1-ZAD02	- 15V LEFT	B1-A6A02 — 014
10	B1-ZAD03	- 15V LEFT	B1-A6B02 — 015
11	B1-ZAD12	- 5.0V LEFT	B1-C6A02 — 016
12	(BH200 L048) — B1-ZCD06	- LH POR SW FRONT	B1-G6C02 — 017
13		+ 5V LEFT	B1-B4A14 — 018
14		+ 5V LEFT	B1-B5E01 — 019
15	B1-ZBD07	- 36V LEFT	B1-D6E02 — 020
16	B1-ZCD09	+ 5V COMMON	B1-H6A02 — 021
18	B1-ZBD02	+ 5/24V LEFT	B1-C6E02 — 023
19	B1-ZAD13	- 5.0V LEFT	B1-C6B02 — 024
20		+ 5V LEFT	B1-B3A14 — 025
21		+ 5V LEFT	B1-B4E01 — 026

24	(HC1A1 L035) — C0-B2DA5	- 5V LEFT R/W CHNL BD	036
25	(HC1A1 L034) — C0-B2DB4	- 5V LEFT R/W CHNL BD	037
26	(HC1A1 L069) — C0-B2DA2	+ 15V LEFT R/W CHNL BD	038
28	(HC1A1 L036) — C0-B2DB5	- 5V LEFT R/W CHNL BD	040
32	(HC1A1 L028) — C0-B2DA1	+ 5V LEFT R/W CHNL BD	045
33	(HC1A1 L029) — C0-B2DB1	+ 5V LEFT R/W CHNL BD	046
34	(HC1A1 L030) — C0-B2DB2	+ 5V LEFT R/W CHNL BD	047

41	(HC2A1 L035) — C1-B2DA5	- 5V RIGHT R/W CHNL BD	057
42	(HC2A1 L034) — C1-B2DB4	- 5V RIGHT R/W CHNL BD	059
43	(HC2A1 L069) — C1-B2DA2	+ 15V RIGHT R/W CHNL BD	060
44	(HC2A1 L036) — C1-B2DB5	- 5V RIGHT R/W CHNL BD	063
46	(HC2A1 L028) — C1-B2DA1	+ 5V RIGHT R/W CHNL BD	067
47	(HC2A1 L029) — C1-B2DB1	+ 5V RIGHT R/W CHNL BD	069
48	(HC2A1 L030) — C1-B2DB2	+ 5V RIGHT R/W CHNL BD	071

52	B1-ZCD02	+ 5V RIGHT	B1-F6D02 — 080
53	B1-ZCD04	+ 5V RIGHT	B1-G6A02 — 081
55	B1-ZCD08	+ 5 V COMMON	B1-G6E02 — 083
58	B1-ZBD04	+ 15V RIGHT	B1-D6B02 — 086
59	B1-ZBD05	+ 15V RIGHT	B1-D6C02 — 087
60	B1-ZAD06	- 15V RIGHT	B1-A6E02 — 088
61	B1-ZAD07	- 15V RIGHT	B1-B6A02 — 089
62	B1-ZBD12	- 5.0V RIGHT	B1-E6E02 — 090
63	(BK200 L048) — B1-ZCD11	- RH POR SW FRONT	B1-H6C02 — 091
64	B1-ZCD05	+ 5V RIGHT	B1-G6B02 — 092
65	B1-ZCD03	+ 5V RIGHT	B1-F6E02 — 093
66	B1-ZBD08	- 36V RIGHT	B1-E6A02 — 094
67	B1-ZCD10	+ 5V COMMON	B1-H6B02 — 095
69	B1-ZBD03	+ 5/24V RIGHT	B1-D6A02 — 097
70	B1-ZBD13	- 5.0V RIGHT	B1-F6A02 — 098
71	B1-ZCD02	+ 5V RIGHT	B1-F6D02 — 099
72	B1-ZCD03	+ 5V RIGHT	B1-F6D03 — 100

NOTE 1

YB450-103 J685-13 — 104

YB450-103 J686-13 — 106

YB420-106 J681-13 — 108

YB460-103 J689-13 — 110

YB420-112 J682-13 — 112

YB460-103 J690-13 — 114

(BH200 L047) — DRIVE SW ON B1-C5D02 — 116

(BH200 L046) — DRIVE SW OFF B1-C5B02 — 118

NOTE 1 LINE 38A,51A,71,72 AND (- - -) LINES MAY NOT BE IN ALL MACHINES.

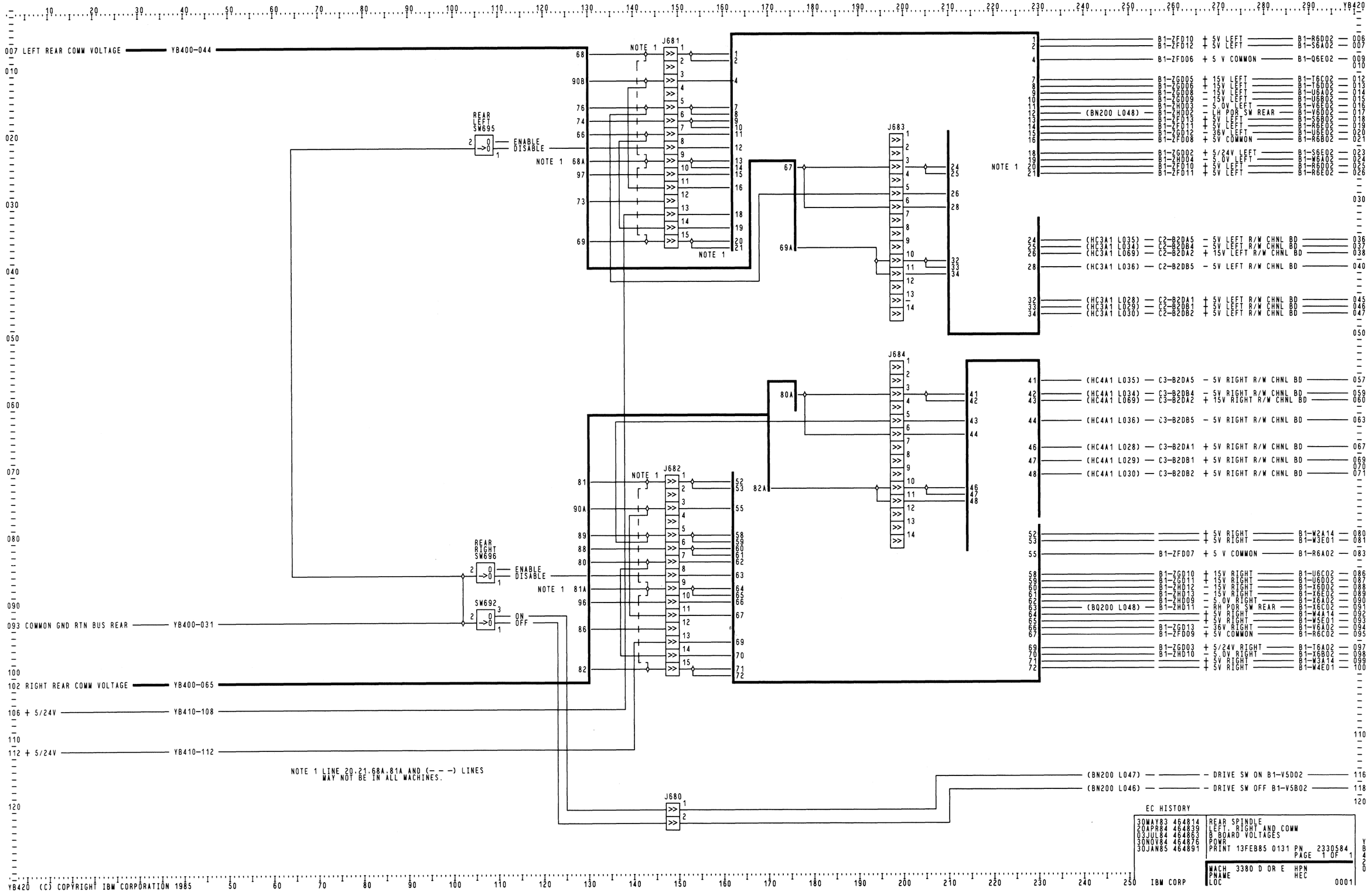
EC HISTORY

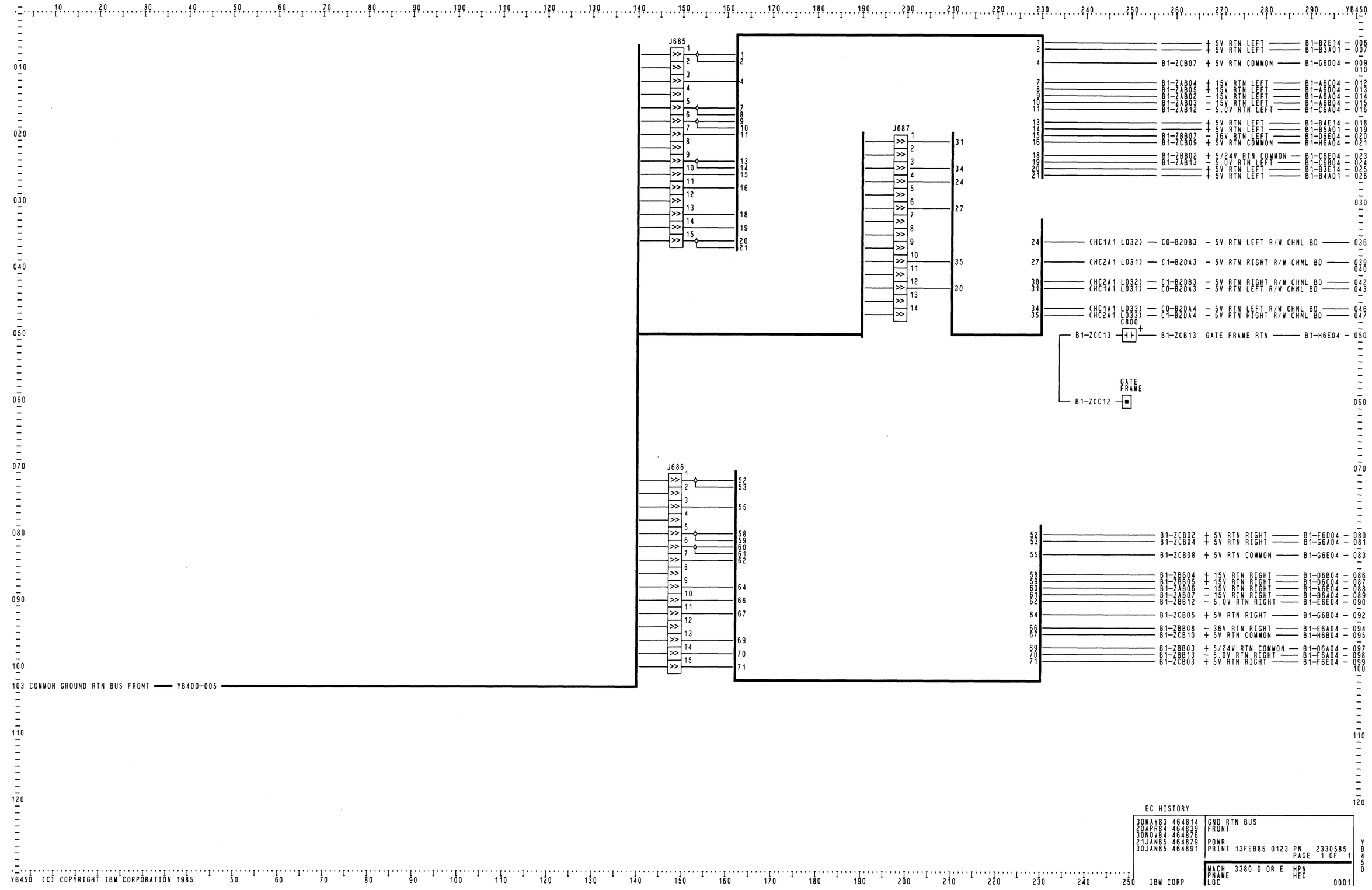
30MAY83 464814	FRONT SPINDLE
20APR84 464839	LEFT, RIGHT AND COMM
03JUL84 464863	B BOARD VOLTAGES
30NOV84 464876	POWR
30JAN85 464891	PRINT 13FEB85 0128 PN 2330583 PAGE 1 OF 1

MACH 3380 D OR E HPN
PNAME HEC
LOC 0001

YB410 (C) COPYRIGHT IBM CORPORATION 1985 IBM CORP

YB410


007 LEFT REAR COMM VOLTAGE — YB400-044
REAR LEFT SW695
ENABLE
DISABLE
REAR RIGHT SW696
ENABLE
DISABLE
SW692
ON
OFF
093 COMMON GND RTN BUS REAR — YB400-031
102 RIGHT REAR COMM VOLTAGE — YB400-065
106 + 5/24V — YB410-108
112 + 5/24V — YB410-112
NOTE 1 LINE 20,21,68A,81A AND (- - -) LINES MAY NOT BE IN ALL MACHINES.
J681
J682
J683
J684
J680
NOTE 1
(BN200 L048) — B1-ZHD02 — LH POR SW REAR — B1-V6D02
(BQ200 L048) — B1-ZHD11 — RH POR SW REAR — B1-X6C02
(BN200 L047) — DRIVE SW ON B1-V5D02
(BN200 L046) — DRIVE SW OFF B1-V5B02
B1-ZFD10 + 5V LEFT — B1-R6D02
B1-ZFD12 + 5V LEFT — B1-S6A02
B1-ZFD06 + 5 V COMMON — B1-Q6E02
B1-ZGD05 + 15V LEFT — B1-T6C02
B1-ZGD06 + 15V LEFT — B1-T6D02
B1-ZGD08 - 15V LEFT — B1-U6A02
B1-ZGD09 - 15V LEFT — B1-U6B02
B1-ZHD03 - 5.0V LEFT — B1-V6E02
B1-ZFD13 + 5V LEFT — B1-S6B02
B1-ZFD11 + 5V LEFT — B1-R6E02
B1-ZGD12 + 36V LEFT — B1-U6E02
B1-ZFD08 + 5V COMMON — B1-R6B02
B1-ZGD02 + 5/24V LEFT — B1-S6E02
B1-ZHD04 - 5.0V LEFT — B1-W6A02
B1-ZFD10 + 5V LEFT — B1-R6D02
B1-ZFD11 + 5V LEFT — B1-R6E02
(HC3A1 L035) — C2-B2DA5 - 5V LEFT R/W CHNL BD
(HC3A1 L034) — C2-B2DB4 - 5V LEFT R/W CHNL BD
(HC3A1 L069) — C2-B2DA2 + 15V LEFT R/W CHNL BD
(HC3A1 L036) — C2-B2DB5 - 5V LEFT R/W CHNL BD
(HC3A1 L028) — C2-B2DA1 + 5V LEFT R/W CHNL BD
(HC3A1 L029) — C2-B2DB1 + 5V LEFT R/W CHNL BD
(HC3A1 L030) — C2-B2DB2 + 5V LEFT R/W CHNL BD
(HC4A1 L035) — C3-B2DA5 - 5V RIGHT R/W CHNL BD
(HC4A1 L034) — C3-B2DB4 - 5V RIGHT R/W CHNL BD
(HC4A1 L069) — C3-B2DA2 + 15V RIGHT R/W CHNL BD
(HC4A1 L036) — C3-B2DB5 - 5V RIGHT R/W CHNL BD
(HC4A1 L028) — C3-B2DA1 + 5V RIGHT R/W CHNL BD
(HC4A1 L029) — C3-B2DB1 + 5V RIGHT R/W CHNL BD
(HC4A1 L030) — C3-B2DB2 + 5V RIGHT R/W CHNL BD
+ 5V RIGHT — B1-W2A14
+ 5V RIGHT — B1-W3E01
B1-ZFD07 + 5 V COMMON — B1-R6A02
B1-ZGD10 + 15V RIGHT — B1-U6C02
B1-ZGD11 + 15V RIGHT — B1-U6D02
B1-ZHD12 - 15V RIGHT — B1-X6D02
B1-ZHD13 - 15V RIGHT — B1-X6E02
B1-ZHD09 - 5.0V RIGHT — B1-X6A02
+ 5V RIGHT — B1-W4A14
+ 5V RIGHT — B1-W5E01
B1-ZGD13 + 36V RIGHT — B1-V6A02
B1-ZFD09 + 5V COMMON — B1-R6C02
B1-ZGD03 + 5/24V RIGHT — B1-T6A02
B1-ZHD10 - 5.0V RIGHT — B1-X6B02
+ 5V RIGHT — B1-W3A14
+ 5V RIGHT — B1-W4E01
EC HISTORY
30MAY83 464814 REAR SPINDLE
20APR84 464839 LEFT, RIGHT AND COMM
03JUL84 464863 B BOARD VOLTAGES
30NOV84 464876 POWER
30JAN85 464891 PRINT 13FEB85 0131 PN 2330584 PAGE 1 OF 1
MACH 3380 D OR E HPN
PNAME HEC
LOC 0001
YB420
YB420 (C) COPYRIGHT IBM CORPORATION 1985
IBM CORP

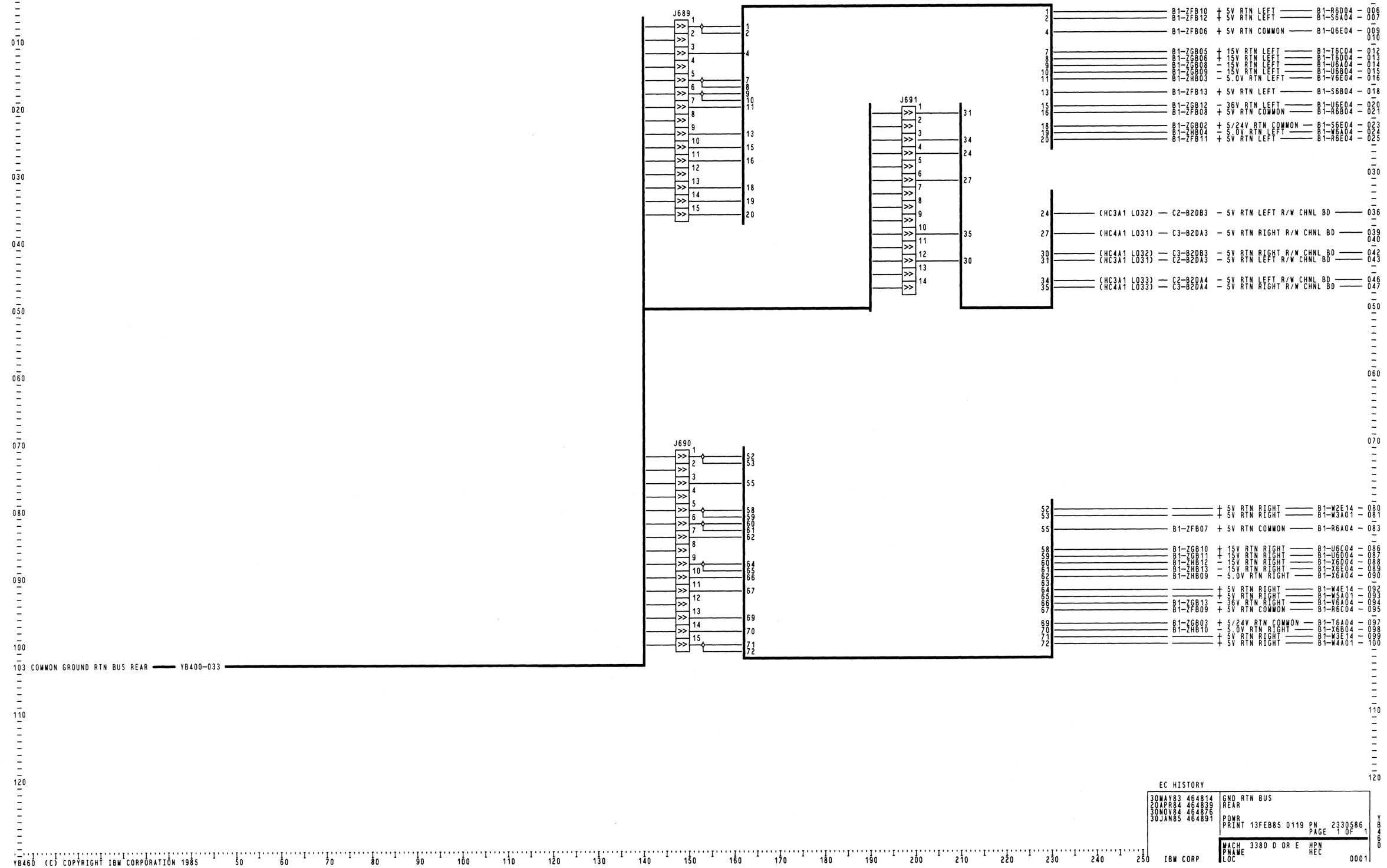


EC HISTORY

30MAY83 464814	GND RTN BUS
20APR84 464839	FRONT
30NOV84 464876	
21JAN85 464879	POWR
30JAN85 464891	PRINT 13FEB85 0123 PN 2330585
	PAGE 1 OF 1

MACH 3380 D OR E HPN
PNAME HEC
LOC 0001

YB450



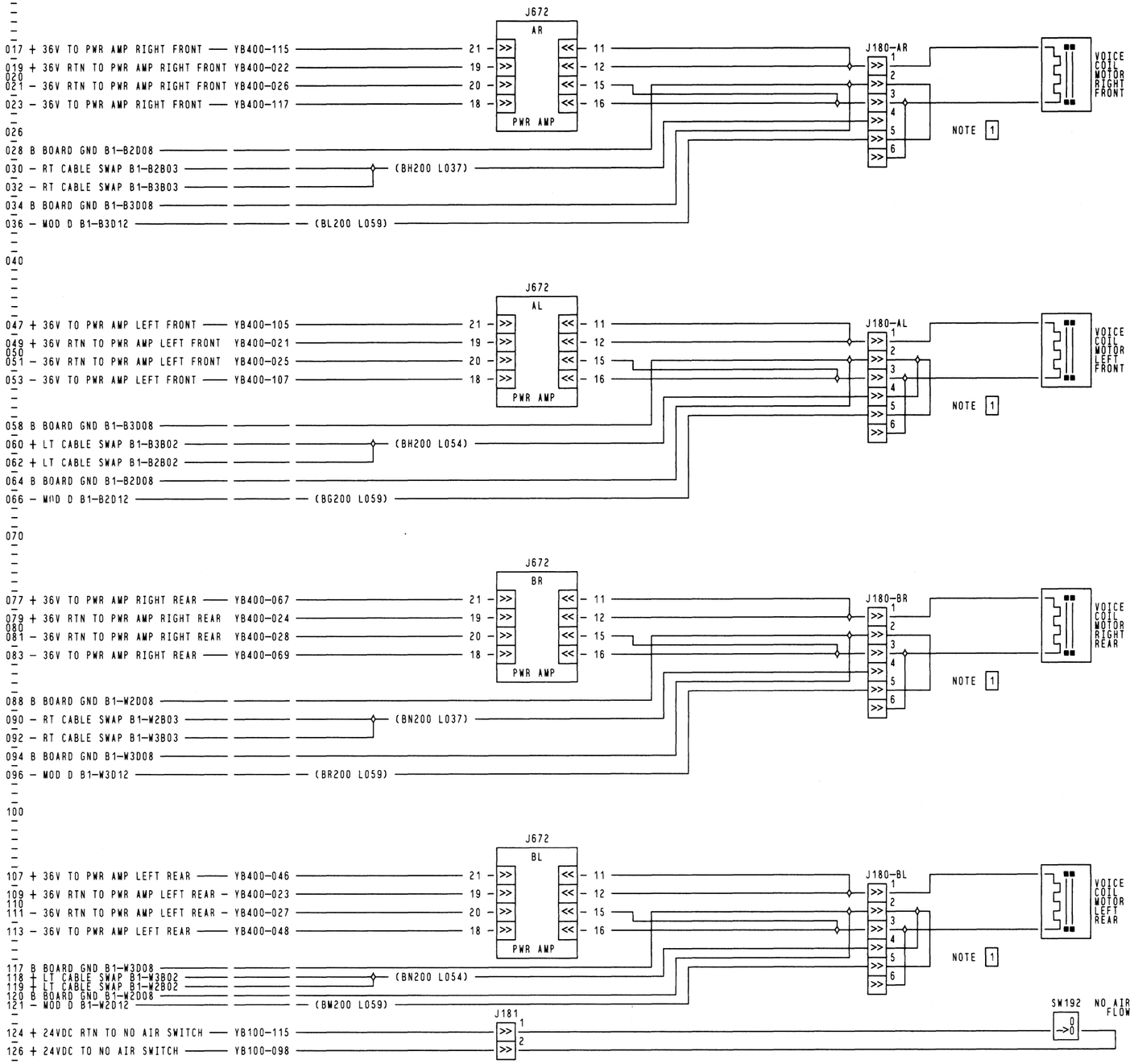
EC HISTORY

30MAY83 464814 20APR84 464839 30NOV84 464876 30JAN85 464891	GND RTN BUS REAR POWR PRINT 13FEB85 0119 PN 2330586 PAGE 1 OF 1

MACH 3380 D OR E HPN
PNAME HEC
LOC 0001

YB460

IBM CORP



EC HISTORY

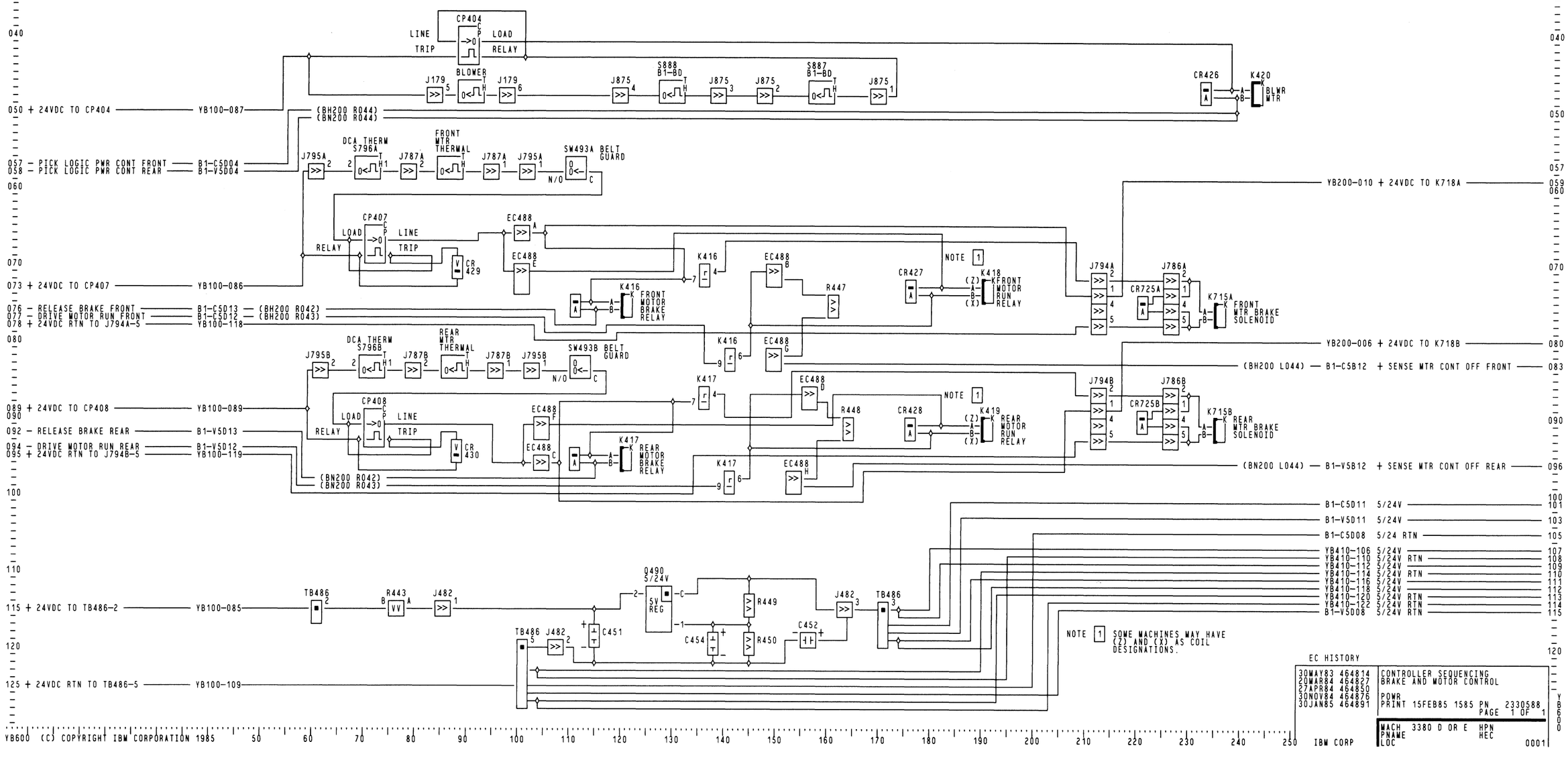
30MAY83 464814	POWER AMPLIFIERS AND
20MAR84 464827	VOICE COIL MOTORS
30NOV84 464876	
30JAN85 464891	

POWR
PRINT 13FEB85 2040 PN 2330587
PAGE 1 OF 1

MACH 3380 D OR E HPN
PNAME HEC
LOC 0001

YB500

IBM CORP


CP404
LINE
TRIP
LOAD
RELAY
BLOWER
J179 5
J179 6
J875 4
S888 B1-BD
J875 3
J875 2
S887 B1-BD
J875 1
CR426
K420 BLWR MTR
050 + 24VDC TO CP404
YB100-087
(BH200 R044)
(BN200 R044)
057 - PICK LOGIC PWR CONT FRONT
058 - PICK LOGIC PWR CONT REAR
B1-C5D04
B1-V5D04
J795A 2
DCA THERM S796A
J787A 2
FRONT MTR THERMAL
J787A 1
J795A 1
SW493A BELT GUARD
N/O
CP407
LOAD
LINE
TRIP
RELAY
CR 429
EC488 A
EC488 E
K416 4
7
K416 K FRONT MOTOR BRAKE RELAY
EC488 B
R447
CR427
NOTE 1
K418 K FRONT MOTOR RUN RELAY
(Z)
(X)
J794A 2
1
4
5
J786A 2
1
4
5
CR725A
K715A K FRONT MTR BRAKE SOLENOID
YB200-010 + 24VDC TO K718A
073 + 24VDC TO CP407
YB100-086
076 - RELEASE BRAKE FRONT
077 - DRIVE MOTOR RUN FRONT
078 + 24VDC RTN TO J794A-5
B1-C5D13 (BH200 R042)
B1-C5D12 (BH200 R043)
YB100-118
J795B 2
DCA THERM S796B
J787B 2
REAR MTR THERMAL
J787B 1
J795B 1
SW493B BELT GUARD
N/O
CP408
LOAD
LINE
TRIP
RELAY
CR 430
EC488 F
EC488 C
K417 7
K417 K REAR MOTOR BRAKE RELAY
K416 9
6
EC488 G
EC488 D
R448
CR428
NOTE 1
K419 K REAR MOTOR RUN RELAY
(Z)
(X)
J794B 2
1
4
5
J786B 2
1
4
5
CR725B
K715B K REAR MTR BRAKE SOLENOID
YB200-006 + 24VDC TO K718B
(BH200 L044) B1-C5B12 + SENSE MTR CONT OFF FRONT
089 + 24VDC TO CP408
YB100-089
092 - RELEASE BRAKE REAR
094 - DRIVE MOTOR RUN REAR
095 + 24VDC RTN TO J794B-5
B1-V5D13
B1-V5D12
YB100-119
(BN200 R042)
(BN200 R043)
EC488 H
(BN200 L044) B1-V5B12 + SENSE MTR CONT OFF REAR
B1-C5D11 5/24V
B1-V5D11 5/24V
B1-C5D08 5/24 RTN
YB410-106 5/24V
YB410-110 5/24V RTN
YB410-112 5/24V
YB410-114 5/24V RTN
YB410-116 5/24V
YB410-118 5/24V
YB410-120 5/24V RTN
YB410-122 5/24V RTN
B1-V5D08 5/24V RTN
115 + 24VDC TO TB486-2
YB100-085
TB486 2
R443 B A
J482 1
Q490 5/24V
5V REG
C451
C454
R449
R450
C452
J482 3
TB486 3
TB486 5
J482 2
125 + 24VDC RTN TO TB486-5
YB100-109
NOTE 1 SOME MACHINES MAY HAVE (Z) AND (X) AS COIL DESIGNATIONS.
EC HISTORY
30MAY83 464814 CONTROLLER SEQUENCING
20MAR84 464827 BRAKE AND MOTOR CONTROL
27APR84 464850
30NOV84 464876 POWR
30JAN85 464891 PRINT 15FEB85 1585 PN 2330588
PAGE 1 OF 1
MACH 3380 D OR E HPN
PNAME HEC
LOC 0001
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3380

Models D and E
Installation Procedure

CONTENTS OF THIS SECTION

CONTENTS OF THIS SECTION

ABBREVIATIONS USED IN THIS SECTION

B/M	bill of material
CARR	checks, adjustments, removals, and replacements
CDP	controller-to-device port
CTLR	controller
CTLI	control interface
DDC	director-to-device controller
DPS	dynamic path selection
EC	engineering change
EPO	Emergency power off
EREP	environmental recording, editing, and printing
FE/MIS	Field Engineering/Management Information system
FRU	field-replaceable unit
HDA	head and disk assembly
IC	isolation code
IML	initial microcode load
INST	installation procedures
MD	IBM Maintenance Device
PF	program function (MD key)
PSG	Product Service Guide
PWR	power
RDY	ready
R/W PLO	read/write phase-locked oscillator

INSTALLATION PROCEDURE ENTRIES

Note: *Use the entries on this page only when directed to do so. This page is not part of the usual installation procedures.*

1. Find the entry specified in the table below.
2. Go to the referenced INST page and step for that entry.
3. Use the information on the referenced INST page to continue the maintenance procedure.

Entry	Description	Go To INST Page	Step
A	Baseplate ground check	65	5.1
B	Port/power control card switches (B1N2, B1Q2, B1H2, B1K2 cards)	125	9.0
C	Phase rotation rework procedure	215	19.0
D	String addressing switch (A1X2, A1A2 cards)	135	10.1
E	Controller physical identifier switches (A1V2, A1C2 cards)	145	11.0
F	String configuration switch (A1V2, A1C2 cards)	155	12.0
G	Transformer connections	185	16.1
H	HDA pulley unlock	205	18.1
J	Access mechanism unlock procedure	225	20.0
K	Maintenance Device (MD) attachment	225	20.1
L	A1-board power supply LEDs (controller A1)	245	Figure 1
M	Power sequence control cable installation	255	23.0
N	A1-board power supply LEDs (controller A2)	245	Figure 1
P	B1-board power supply LEDs	300	Figure 1
Q	Power cables (B units)	115	8.0
R	AC line phase check	205	18.0.2
S	Cable Installation	90	7.1

Before Installation

1.1 INTRODUCTION

This procedure is written to make the installation of the 3380 Models D and E as easy and quick as possible.

An asterisk next to the text is used to indicate major changes from the 3380 Stage 2 installation procedures. All text changes are not indicated, only those where installation difficulties can occur if the wrong actions are performed.

All necessary actions to install a 3380-DE are described in this procedure; no other references are needed unless a machine failure occurs. If a failure prevents continuing with the installation procedure, instructions are given to start the analysis and repair the failure. After making the repair, return to the installation procedures and continue installing the 3380-DE.

The procedure is written to be performed by one CE. Two CEs may work together, if desired. This results in a slightly shorter installation time, but increases the number of CE hours needed.

1.2 INSTALLATION INSTRUCTION USE

These right-side pages are the complete, step-by-step instructions to install a 3380-DE. The left-side pages are checklists without the details.

It is recommended that these right-side page instructions be used at least once before using the left-side checklists.

It is suggested that if you start the installation with these complete instructions that you do not attempt to switch to the checklists.

Each installation instruction step that requires action has a line in front of the step number. **Read each step completely,** perform the step, and then mark the step. Use this procedure of completely reading each step to save time and to ensure fewer errors during the installation.

1.3 STRING CONFIGURATION

Figure 1 shows a complete string of four IBM 3380-DE Direct Access Storage units. On the right end of the string is the A unit containing the controller, with one A and one B logic gate. The other three units are B units with only a B logic gate. See the right-to-left numbering.

In this installation procedure, the B units are identified as B1, B2, and B3 to indicate their position in the string, as shown in this figure. The IBM Maintenance Device (MD) display makes reference to machine frame 01, 02, 03, and 04 when displaying FRU lists.

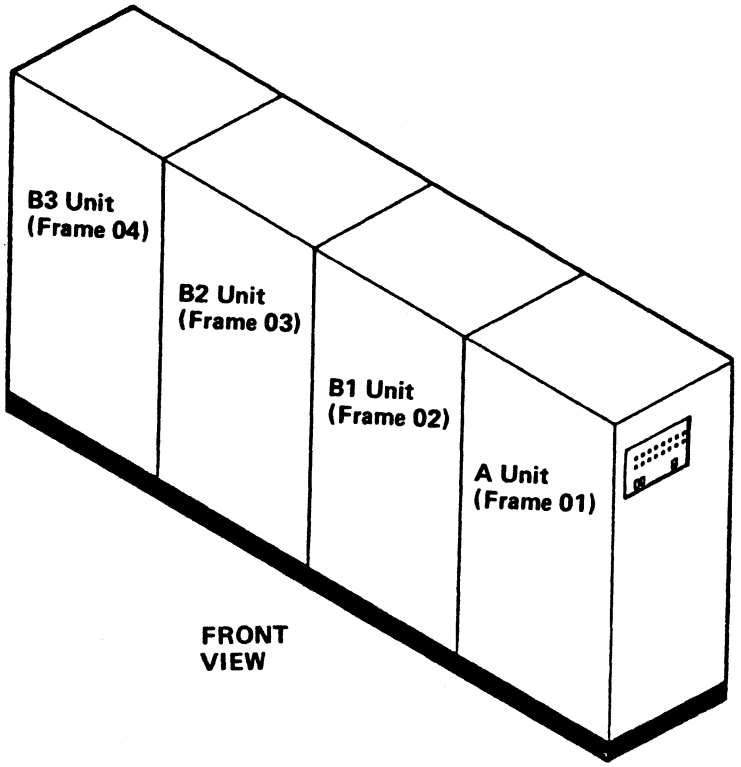
1.4 DEFINITIONS

Device = One access mechanism and its associated logic.

Drive = Two access mechanisms.
One HDA assembly and the common logic for two devices.

Continue the Installation Procedures on INST-20.

Figure 1



2.1 PRE-INSTALLATION CHECK

__ 1. Check with the IBM branch office or area physical planning representative to ensure that installation planning specifications are met (service outlet voltage, clockwise phase rotation, grounding, cable lengths, and so on).

__ 2. Check that the CTLI cables are on site.

__ 3. If power control cables are to be installed, check to see if they are on site.

Note: *The 3380 Models D and E differ from the other 3380 models in that they do not require a power sequence control cable to attach to the storage control. Power of a 3380-DE string is under the control of either controller A1 or A2 when its Local/Remote switch is set to Local. Each controller is powered off and on from the 3380-DE operator panel with its own switch.*

Some maintenance procedures require that the cable routing between the storage director and string 0 and string 1 be known.

To avoid future confusion with cable routing, it is recommended that string 0 be connected to the storage director and string 1 be connected to string 0. However, either string 0 or string 1 can be the first string attached to the storage director.

2.2 ADDRESSING

__ 1. Obtain the string address range of this new string from the customer.

_____ - _____

__ 2. With the chart in Figure 1, determine if the string is assigned a 3380-DE string address of 0 or 1.

_____ 0 or _____ 1

Note: *The addressing of the two controllers of the string must be set the SAME. Either both controllers are set for 0 or both for 1. Each device must have the same controller-device address regardless of the selection path to the device.*

2.3 CONTROLLER IDENTIFICATION

Each 3380-DE controller must have a physical identifier (ID) assigned to ensure positive identification of the controller and path in use when an error occurs. Each two-character hexadecimal identifier is assigned by the CE and the customer. The controller physical identifier must be used only once in each customer location and should never be changed. This will ensure accurate EREP history records.

In 3380 Models D and E, two physical identifier numbers are needed. These two numbers must be consecutive and the smaller number must be an even number. (For example, 02 and 03, 30 and 31 are valid numbers; 05 and 06, 23 and 24 are not valid because the smaller number is an odd number.) The even number must be assigned to controller A1.

Figure 1. String Addresses

String Address Range	3380-DE String Address
00-0F	0
10-1F	1
20-2F	0
30-3F	1
40-4F	0
50-5F	1
60-6F	0
70-7F	1
80-8F	0
90-9F	1
A0-AF	0
B0-BF	1
C0-CF	0
D0-DF	1
E0-EF	0
F0-FF	1

__ 1. Physical identifiers for controllers in string 0 must be between 02 and 7F; those for controllers in string 1 must be between 80 and FD.

The high-order bit of the physical identifier is the address of the string and is used by the MD to identify the correct string address when running diagnostics in support mode from the storage director.

Note: *Do not use 00, 01, FE, or FF for physical identifiers.*

__ 2. Assign the physical ID to the new string.

Controller A1_____
Controller A2_____

When assigning controller physical identifier numbers, ensure that they are not the same as numbers already assigned to other 3380 controllers in the customer location. The Account Management Plan should be updated each time a number is assigned, and used as the master physical identifier reference.

__ 3. Continue the Installation Procedures on INST-25.

2.4 PREPARATION

__ 1. Only a single control interface (CTLI) cable between the 3380-DE and 3880 is needed for each controller. **Do not connect two short cables to make a long cable;** this causes open cable ground shields which can result in machine failures. Check that correct CTLI cables from the 3880 Storage Control and the 3380-DE are on site. The string cannot be correctly powered on without the control interface cables installed.

__ 2. Notify the customer that the 3880 Storage Control (both storage directors) should be taken offline and powered off for a short time during the installation of a 3380-DE A unit to install and test the power control cable between each controller and its associated 3880.

This test can be delayed to a later date if customer operations do not allow for the interruptions.

__ 3. Notify the customer that the storage director must be taken offline for a short time during the installation of a 3380-DE A unit to install and test the control interface cable between each controller and its associated 3880.

__ 4. Before reaching the CTLI cable installation on INST-230, the 3880s to be attached to this 3380-DE must be completely installed with Feature Code 8173 and 9208. The 3880 diagnostics, except device diagnostics, must have been run successfully.

__ 5. Verify that the 3880 functional diskette with a 3380-DE MD microcode load is available.

__ 6. If two separate 3880s are to be attached to the string, they both must have the same EC level diskette.

__ 7. INST-165 and INST-170 describe the label installation for both device addressing and the physical identifier. These labels should be installed out of sequence if a delay in the installation procedures occurs. It may be helpful to have the labels installed before connecting the CTLI (control interface) cables and starting checkout diagnostics. (Physical identifiers are discussed on INST-20.)

2.5 PROGRAMMING

__ 1. **Warning: Failure to accomplish this step causes 3880 status pending errors. This causes all systems attached to the storage director to come to a complete stop.**

Ensure that the customer has included the device addresses about to be installed in the system generation (SYS GENed) procedure before the devices are connected to the system.

__ 2. Have the customer check with the IBM programming systems representative to ensure that the necessary programs are installed and tested in the customer's system before starting system operation with the 3380-DE.

__ 3. Go to INST-30.

2.6 SUBSYSTEM INTEGRATION TEST

__ 1. Plan to perform an integration test (online OLTs) at the end of the physical installation procedures unless this machine is to be installed on a non-IBM processor system. In that case, skip this section and go to INST-35, 2.7, Special Tools and Test Equipment.

__ 2. **Procedure outline:**

a. Plan to run the T3880A OLT (online test) to verify the correct system cabling and addressing.

b. Plan to run T3380PSB on each newly installed device to verify the disk surface.

c. Ask the customer to plan to run ICKDSF at the MINIMAL level. In addition, inform him that you may request some tracks be inspected if necessary after the OLT tests.

d. The procedures for testing with OLTs are detailed on INST-375.

Note: *For additional information, see the following:*

- START section in the Product Service Guide for general T3380PSA and T3380PSB OLT information.
- *IBM 3380 Online Test User's Guide,* D99-3380A
- *Device Support Facilities User's Guide and Reference manual,* GC35-0033
- *Disk Storage Management Guide, Background Reference,* GA26-1675
- *Disk Storage Management Guide, Error Handling,* GA26-1672
- IBM 3880 MSM, Program section, for details on 3880 OLTs.

__ 3. Go to INST-35.

2.7 SPECIAL TOOLS AND TEST EQUIPMENT

__ 1. Site tool kit P/N 2759150
(World Trade - located in the branch office)

Needed for various replacement procedures. Not needed for installation.

The following tools are included in the site tool kit:

Name	Quantity	P/N
Duct cover	4	2759075
Coil Cover	4	2759076
Air Pressure Gauge	1	2760742
Tubing	2	2760746
6 mm Allen Extension Socket	1	2760793
Spring Height Gauge	1	2760883

__ 2. The following special tools and test equipment will be needed for the installation:

Digital multimeter P/N 1749233
Branch office tool

CE digital voltmeter P/N 8496278

When checking resistance from a baseplate to ground, the meter probes must not apply more than 12 volts to the parts being measured. Most old style CE meters use 22.5 volts on the X1,000 and X10,000 ranges, which **can damage internal HDA parts.** The branch office digital multimeter (P/N 1749233) and the CE digital voltmeter (P/N 8496278) are suitable for this test.

When performing safety checks at low resistance values, digital meters can give incorrect readings.

__ 3. IBM Maintenance Device (MD)

Needed to run diagnostics.

__ 4. Electrostatic discharge (ESD) kit P/N 6428316
Grounding wrist strap
Small P/N 6428167
Large P/N 6428169

Note: *The electrostatic discharge (ESD) grounding wrist strap must be worn while handling any ESD sensitive parts such as logic cards. See CARR-5 in the MIM for additional information.*

__ 5. High-voltage test probes (2)
Red P/N 1749249
Black P/N 1749250

__ 6. Two 17 mm wrenches are needed for installation.

Use an adjustable wrench and a 16 x 17 mm wrench supplied in the 3380-DE site tool kit (see step 7).

__ 7. 3380-DE site tool kit P/N 2179657

The following tools and supplies are included in the kit:

Name	Quantity	P/N
ESD cover	4	2317384

Needed for various replacement procedures. Not needed for installation.

16 x 17 mm wrench	1	2135145

Needed to remove the baseplate shipping bolts.

__ 8. Electrical safety analyzer P/N 1650792
(Model 1020)

(Not required, but useful in performing electrical safety tests - branch office tool)

__ 9. Go to INST-45.

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Installation

3.1 INSTALLATION TIME

Physical installation duration goals for the 3380 Models D and E are:

2.5 hours for an A unit with or without B units.

2.5 hours for a B unit only with or without additional B units.

1.7 hours for each additional B unit.

When will you be finished?_____

3.2 UNPACK AND LOCATE

__ 1. Covers have been initially aligned at the factory. Some CEs have found that they can perform the installation faster with the covers removed.

__ 2. Remove the packing and check for shipping damage. (See the unpacking instructions taped to the cover.)

__ 3. Open the front and rear covers using a 4 mm hex socket key.

__ 4. Temporary labels on the A and B logic gate covers indicate the controller address, physical ID, device address, and the string configuration switch settings used by the factory to test the 3380-DE. If the labels are intact, the switch settings have not been changed.

Locate the units of the string in their approximate locations. Keep them separated by approximately 60 cm. Reduce the changing of the B-unit switch settings by positioning the B units according to the label addresses, if possible.

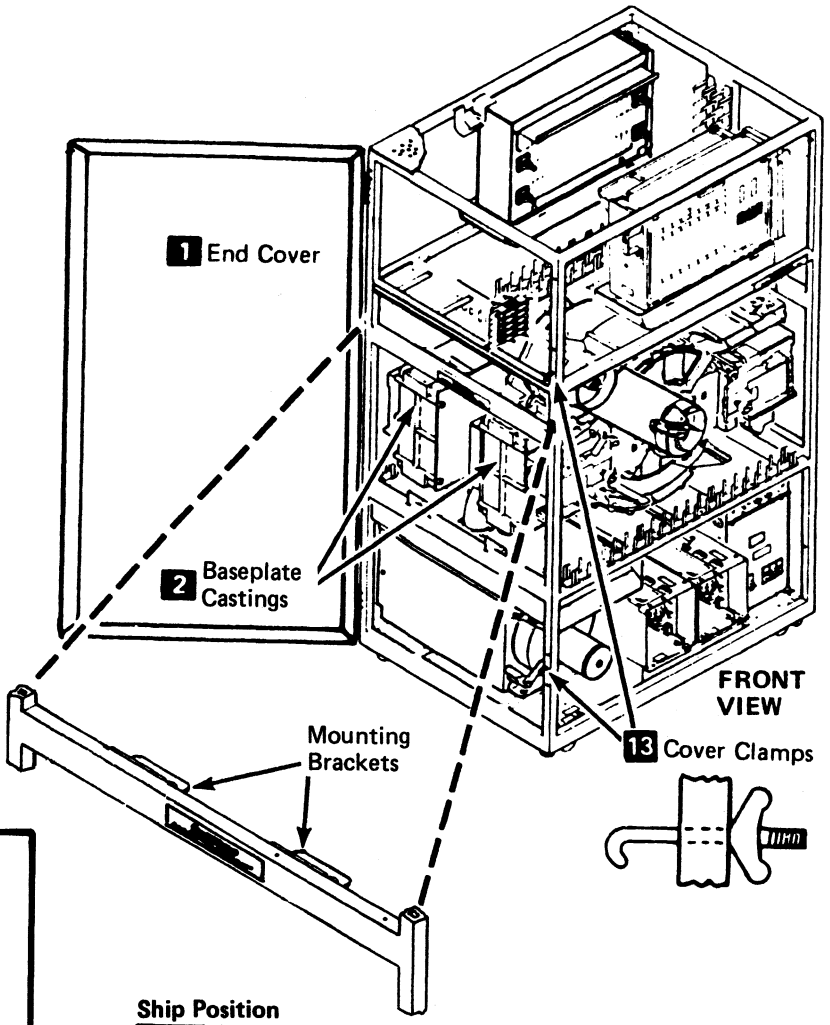
Ensure that the front of the B units are on the same side of the string as the front of the A unit. (Open the covers and see the Front and Rear labels on the gate covers.)

__ 5. Check that the needed ship groups have been received as shown below:

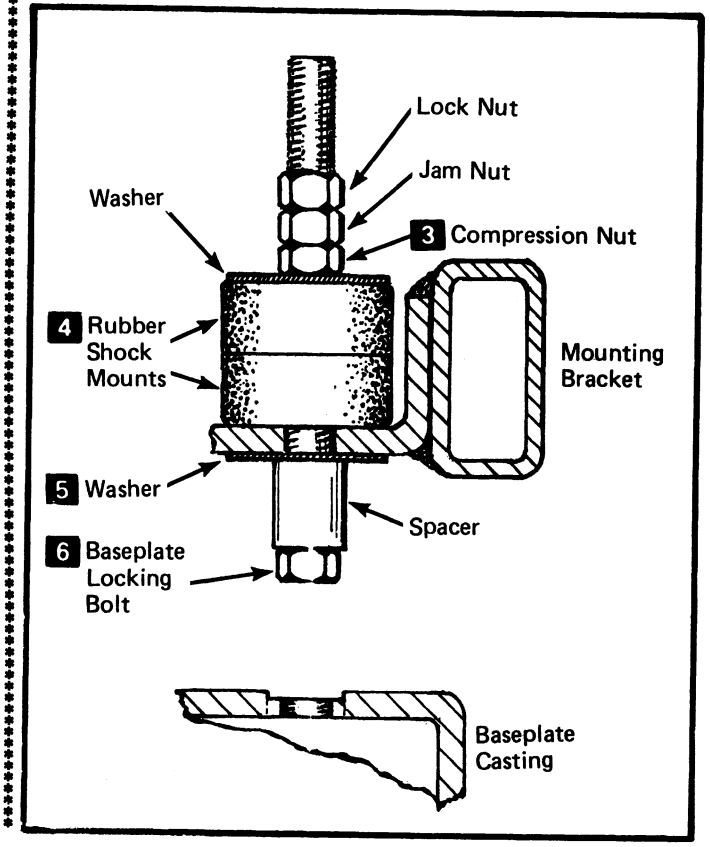
Model	Ship Group B/M Number
AD4 and AE4	2317603
BD4 and BE4	2317604

__ 6. Remove all tape and packing material used to fasten parts during shipment.

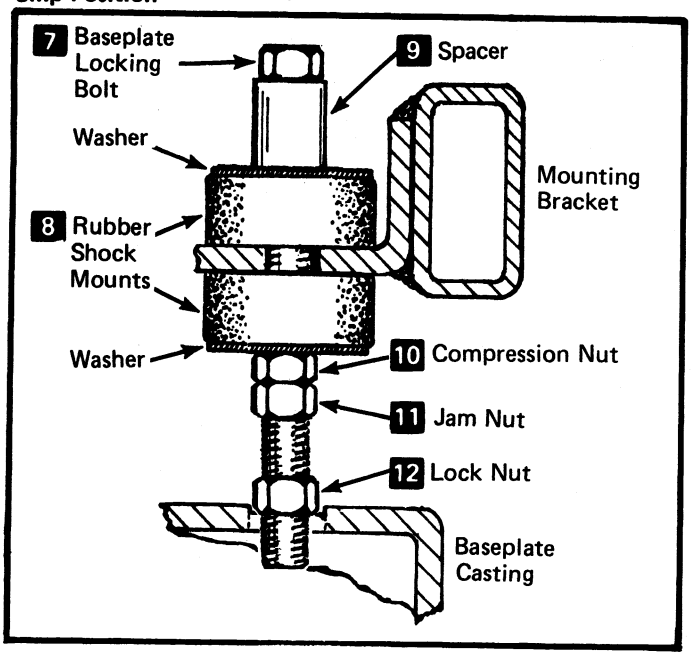
__ 7. Continue the Installation Procedures on INST-55.



Stored Position



Ship Position



4.1 END COVER REMOVAL

__ 1. If you are not installing a B unit, proceed to 4.2 on this page.

__ 2. If installing a B unit, remove the left end cover 1 .

- __ a. Open the front cover.
- __ b. Loosen the two cover clamps 13 .
- __ c. Remove the left end cover 1 .
- __ d. Remove the left end cover mounting hardware from the A unit or an existing B unit. Set the hardware aside for later installation on the last B unit in the string.

Do not try to reinstall the cover now. With the cover removed, the following steps will be much easier.

4.2 BASEPLATE SHIPPING LOCK RELEASE

Note: *The baseplate shipping lock bolts must be reinstalled whenever the machine is to be moved out of the room and vibration or impact could occur.*

__ 1. To perform this procedure both an adjustable wrench and the 16 x 17 mm wrench from the HDA ESD cover kit P/N 2179657 are needed.

__ 2. Locate one of the four baseplate shipping lock assembly bolts 7 .

__ 3. Loosen the jam nut 11 from the compression nut 10 .

__ 4. Loosen the lock nut 12 from the baseplate casting.

__ 5. Turn both the jam nut 11 and the compression nut 10 down toward the locknut 12 .

__ 6. While holding the three nuts separated with one hand, unscrew the baseplate locking bolt 7 from the baseplate casting.

__ 7. Slide the complete assembly out of the mounting bracket.

__ 8. Invert and store the assembly as shown by placing the washer 5 below the mounting bracket and both rubber shock mounts 4 above the bracket.

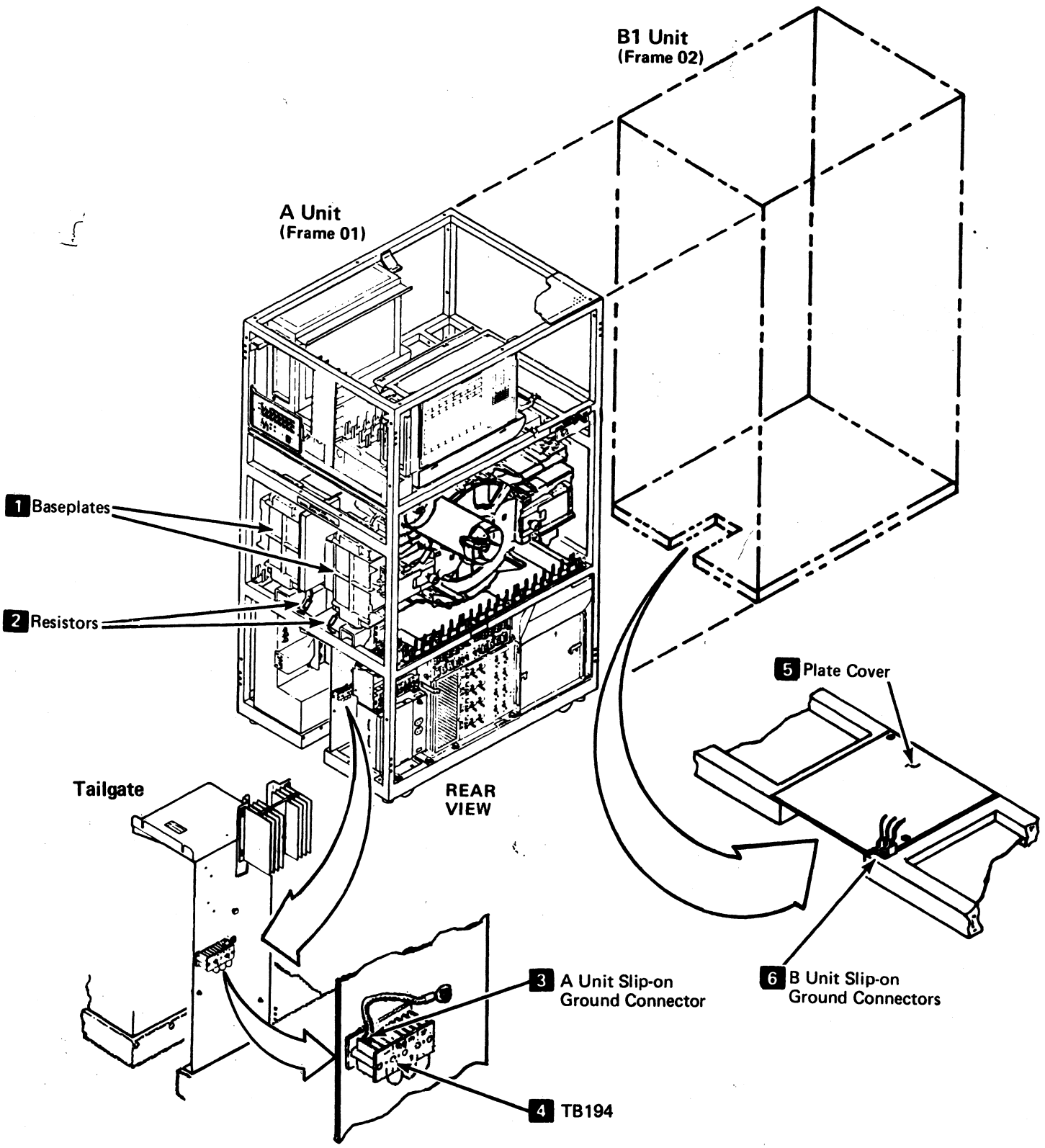
__ 9. Hold the locking bolt 6 up against the mounting bracket and turn the compression nut 3 until it touches the washer. Then tighten the compression nut an additional one to one and one-quarter turn. Do NOT over-compress the rubber shock mounts.

__ 10. Tighten both remaining nuts against the compression nut. This prevents the assembly from vibrating loose.

__ 11. Ensure that the locking bolt 6 does not touch the baseplate.

__ 12. Repeat steps 2 through 11 at each upper frame shock mount on all units being installed, four baseplate locking bolts on each unit.

__ 13. Continue the installation procedure on INST-65.



5.1 BASEPLATE GROUND CHECK

Each baseplate 1 is grounded to the frame through a resistor 2 located near a lower shock mount and at other specified points. Any unspecified ground points generate circulating currents which cause read and write errors. This check ensures that there are no grounds at points other than those specified in the machine design.

__ 1. On the A unit, at TB194 4, disconnect the slip-on connector end of the jumper 3 that is attached to the tailgate sheet metal (frame ground).

__ 2. On B units, on the plate cover 5, disconnect all of the slip-on connectors 6 that are attached to the plate cover (frame ground).

Warning: The resistance test in step 3 must be made with a digital multimeter such as P/N 1749233 or the CE digital voltmeter, P/N 8496278. Do NOT use a non-digital CE meter.

When checking resistance from a baseplate to ground, the meter probes must not apply more than 12 volts to the parts being measured. The older moving coil CE meter and/or similar moving coil meters use 22-1/2 volts on the high ranges and could possibly damage head and disk assembly (HDA) parts.

__ 3. Test for more than 2,000 ohms and less than 10,000 ohms* between each baseplate and frame ground.

__ 4. If the resistance measurement to ground is not between 2,000 and 10,000 ohms*, isolate and repair the problem before continuing with the installation. See 5.2 Baseplate Ground Isolation on this page.

__ 5. **Warning: Before power is applied to the HDA drive motors, all slip-on connectors that have been disconnected MUST be reconnected to prevent damage to the read/write heads.**

Reconnect the jumpers and slip-on connectors 3 6 at the main frame grounds. Ensure that all grounds on all units are reconnected.

__ 6. If the last B unit of the string is to be installed against a wall or other permanent fixture, go to INST-80, 6.5 B Unit Locate First.

__ 7. If the A unit is to be installed first, go to INST-75, 6.1 A Unit Locate First.

__ 8. For B units only, go to INST-75, 6.2 B Unit Attaching to an Existing String.

* The tolerance of the 10,000 ohm resistor could bring the resistance measurement slightly over 10,000 ohms; this is usual.

5.2 BASEPLATE GROUND ISOLATION

If the resistance between a baseplate and ground is less than 2,000 ohms, a partial or complete unspecified ground exists and must be removed. If the resistance is greater than 10,000 ohms, either a high resistance ground or no ground path exists and must be corrected. The following information may be helpful in locating the problem.

The specified ground paths for each baseplate are:

- The ground connectors on the frame 3, 6
- A 10,000 ohm resistor 2 located near a lower shock mount
- A conductive HDA drive belt

Isolation procedure for less than 2,000 ohms (short)

__ 1. **Warning: Use the ESD grounding wrist strap while performing this step.**

Unplug the read/write channel boards from the affected HDA. See CARR-5, Entry U, for the procedure.

__ 2. Remove the J180 plug.

Now the HDA is isolated from the logic and power.

If the short still exists, suspect one of the following:

- The 10,000 ohm resistor (if still connected) 2
- The metal drive belt shield
- The HDA mounting brackets
- One of the baseplate locking bolts. These must not touch the baseplate
- Some object physically in contact with the baseplate
- Drive belt (conductive)

If the short is gone, suspect one of the following:

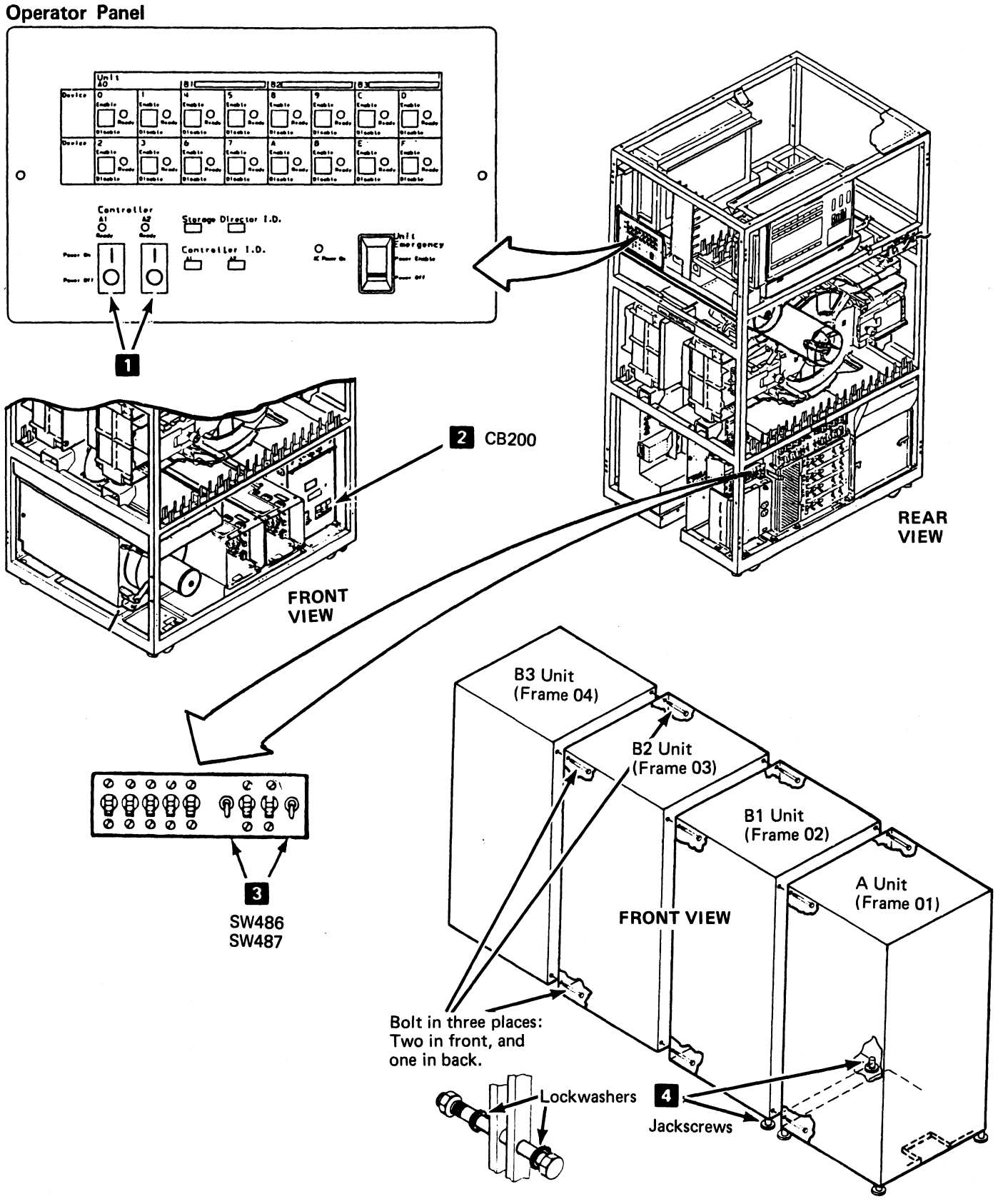
- Drive access power supply cables. Look for sharp corners where the cable wire insulation could have been damaged causing a short. Also check the cable clamp areas. A cable clamp could have worn through the insulation.

Use the YA090 or YB090 page along with the cable plug charts to help find the ground short.

Isolation procedure for greater than 10,000 ohms

__ 1. Disconnect the 10,000 ohm resistor and check it for 10,000 ohms. If it is much more, replace it.

__ 2. Continue with step 5.1.5 on this page.



6.1 A UNIT LOCATE FIRST

For an installation that includes an A unit (frame 01), perform the following steps:

__ 1. **CAUTION**
Do not connect the power cable until instructed to do so.

Place the A unit (frame 01) in its permanent location. As the A unit is being located, place the ac line cord into the hole in the floor.

__ 2. The 3380-DE jackscrews have slotted ends. Use a large screwdriver to lower them to the floor. Raise the machine with a wrench. Adjust the jackscrews 4 so that the casters are 3 mm from the floor.

__ 3. If an A unit only (only frame 01) installation is being performed, go to INST-135 and continue with the installation procedures.

6.2 B UNIT ATTACHING TO AN EXISTING STRING

__ 1. When a B unit is being attached to an existing string, power off the string as follows:

- __ a. Ensure that all devices in the string are varied offline.
- __ b. Set the Local/Remote switches (SW486, SW487) 3 in the 3380-DE A unit to Local.
- __ c. At the operator panel, set the Controller A1 and A2 Power On/Off switches 1 to Off.
- __ d. When all drives have stopped, set the mainline circuit breaker (CB200) 2 to Off.
- __ e. Verify the ac Power-On LED on the operator panel is off.

6.3 ALIGN AND BOLT FRAMES (B Units)

Perform the following procedure carefully to prevent twisting the 3380-DE frames and to prevent placing the weight of one frame on the next frame.

__ 1. Move the B units (frames 02, 03, and 04) to their approximate positions. Take care not to pinch or damage the cables attached to the ends of the baseplates. Because the jackscrew bases do not slide on some floor surfaces, ensure that the frames are not more than 2 mm apart before raising any unit.

__ 2. Verify all unit 'FRONT' labels are on the same side of the string. Do not accidentally install a unit backwards.

__ 3. Adjust the two jackscrews 4 nearest to the first raised unit until the bottom frames on both units are even.

__ 4. Adjust the two remaining jackscrews until the frames of the two units are parallel and square with each other.

__ 5. Bolt the frames together using the three bolts, P/N 1621554, lockwashers, P/N 1622349, and nuts, P/N 1622406, supplied in the B-unit ship group. Place the lockwashers as shown in the above figure. They supply additional grounding between frames. Ensure that no wires are pinched between the end frames. There is no need to remove all of the machine covers to bolt the frames together.

__ 6. Repeat steps 3 through 5 for each of the other units being installed.

6.4 LEFT END COVER

__ 1. Attach the removed end cover to the left end of the last B unit in the string using the saved mounting hardware and new screws, P/N 1621818, supplied in the B-unit ship group.

__ 2. If installing:

- __ a. B1 unit first, go to 7.2 on INST-90.
- __ b. B2 unit first, go to 7.3 on INST-100.
- __ c. B3 unit first, go to 7.4 on INST-105.

6.5 B UNIT LOCATE FIRST

Perform the following steps only if the last frame of the string is to be installed against a wall or other permanent fixture.

6.6 LEFT END COVER

__ 1. Attach the removed end cover (see 1 on INST-50) to the left end of the last B unit in the string using the saved mounting hardware and new screws, P/N 1621818, supplied in the B-unit ship group.

6.7 LOCATE THE STRING

__ 1. Place the last B unit of the string in its permanent location.

__ 2. Adjust the jackscrews (see 4 on INST-70) so that the casters are 3 mm from the floor. The 3380-DE jackscrews have slotted ends. Use a large screwdriver to lower them to the floor. Raise the machine with a wrench.

6.8 ALIGN AND BOLT FRAMES

Perform the following procedure carefully to prevent twisting the 3380-DE frames and to prevent placing the weight of one frame on the next frame.

__ 1. Move all units together.

Take care not to pinch or damage the cables attached to the ends of the baseplates. Because the jackscrew bases do not slide on some floor surfaces, ensure that the frames are not more than 2 mm apart before raising any unit.

__ 2. Verify that all unit 'FRONT' labels are on the same side of the string. Do not accidentally install a unit backwards.

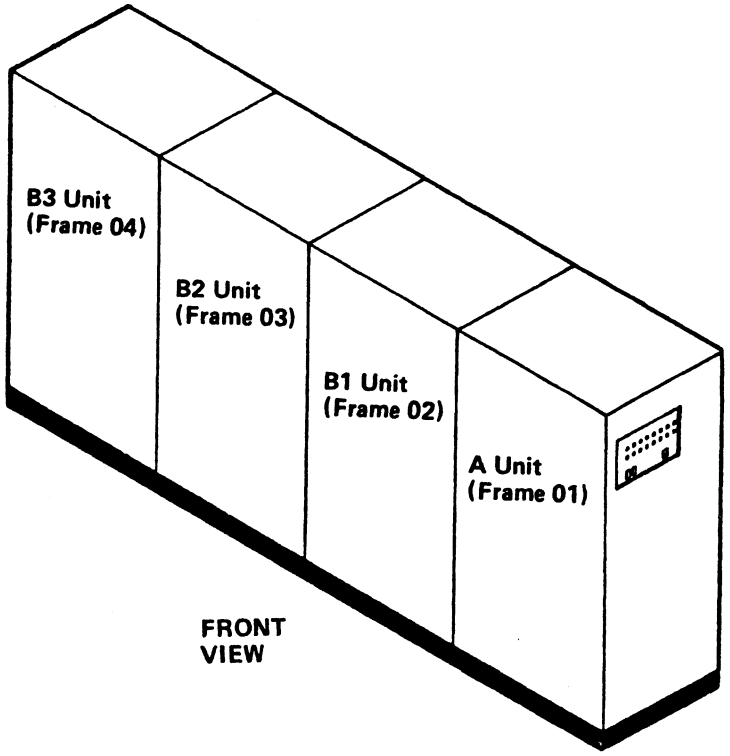
__ 3. Adjust the two jackscrews (see 4 on INST-70) nearest to the first raised unit until the bottom frames on both units are even.

__ 4. Adjust the two remaining jackscrews until the frames of the two units are parallel and square with each other.

__ 5. Bolt the frames together using the three bolts, P/N 1621554, lockwashers, P/N 1622349, and nuts, P/N 1622406, supplied in the B-unit ship group. Place the lockwashers as shown on INST-70. They supply additional grounding between frames. Ensure that no wires are pinched between the end frames. There is no need to remove all of the machine covers to bolt the frames together.

__ 6. Repeat steps 3 through 5 for each of the other units being installed.

__ 7. Continue with the Installation Procedures on INST-90.



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7.1 CABLE INSTALLATION (B Units)

While performing the following steps, see this page and INST-95 for cable layouts.

All cables that connect the B units to the A unit are factory connected to the B-unit end. The cables are then coiled and shipped in the B units. Similar cables in all B units are the same length.

__ 1. If installing a B2 unit or a B2 and B3 unit only, go to 7.3 on INST-100.

__ 2. If installing a B3 unit only, go to 7.4 on INST-105.

7.2 B1 UNIT CABLE INSTALLATION

__ 1. In the B1 unit (frame 02), locate the two controller-to-device port (CDP) flat cables, marked B-XX and B-YY; the R/W PLO cable, marked B-ZZ, and the actuator switch cable marked with either INTERCON or B-SW.

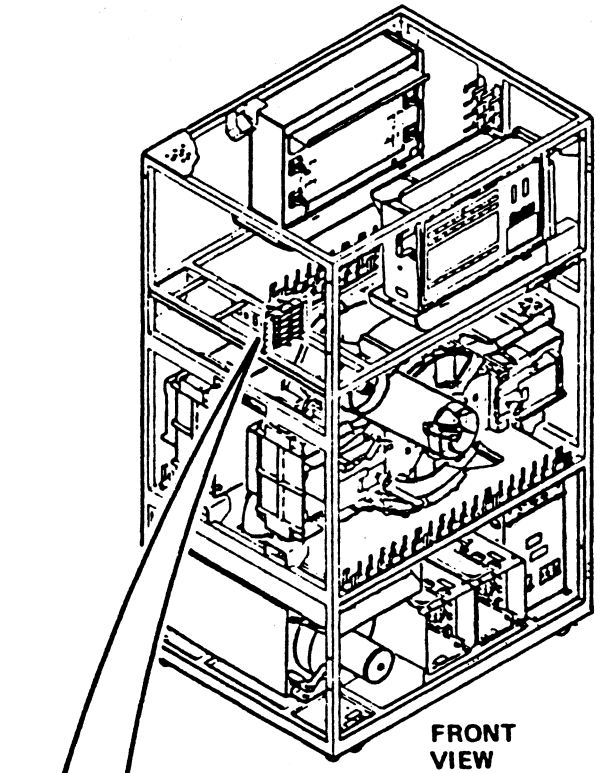
Mark each cable label with the B unit number, for example B1, B2, and B3. Spare labels are located in the back of this manual.

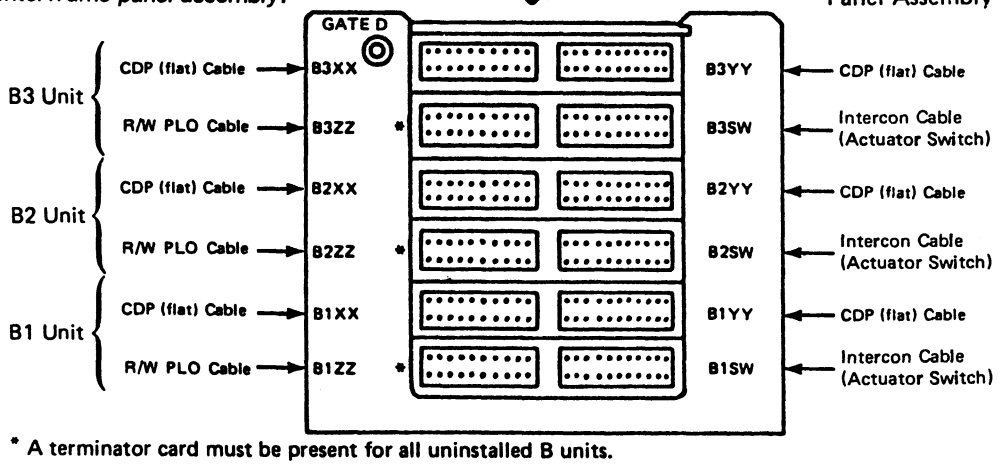
__ 2. Route the R/W PLO cable 4 into the center area 1 between the front and rear cable channels, as shown and pull it to the D gate (interframe panel assembly) 5, in the A unit. Loosely fanfold the excess cable length in the center area as shown in Figure 1. Do not bend the cable too tightly; this causes excessive strain in the cable and early cable failure.

__ 3. Remove the B1ZZ terminator, then plug the R/W PLO cable marked B-ZZ into the B1ZZ socket on the interframe panel assembly. Temporarily set the terminator aside.

Note: *If the B1 unit is discontinued at a later date, remember to install a terminator in the R/W PLO position (B1ZZ) of the interframe panel assembly.*

Continued on INST-100.





* A terminator card must be present for all uninstalled B units.

CABLE LAYOUT

Figure 1. R/W PLO Cable and Intercon (Actuator Switch) Cable Layouts (Top View)

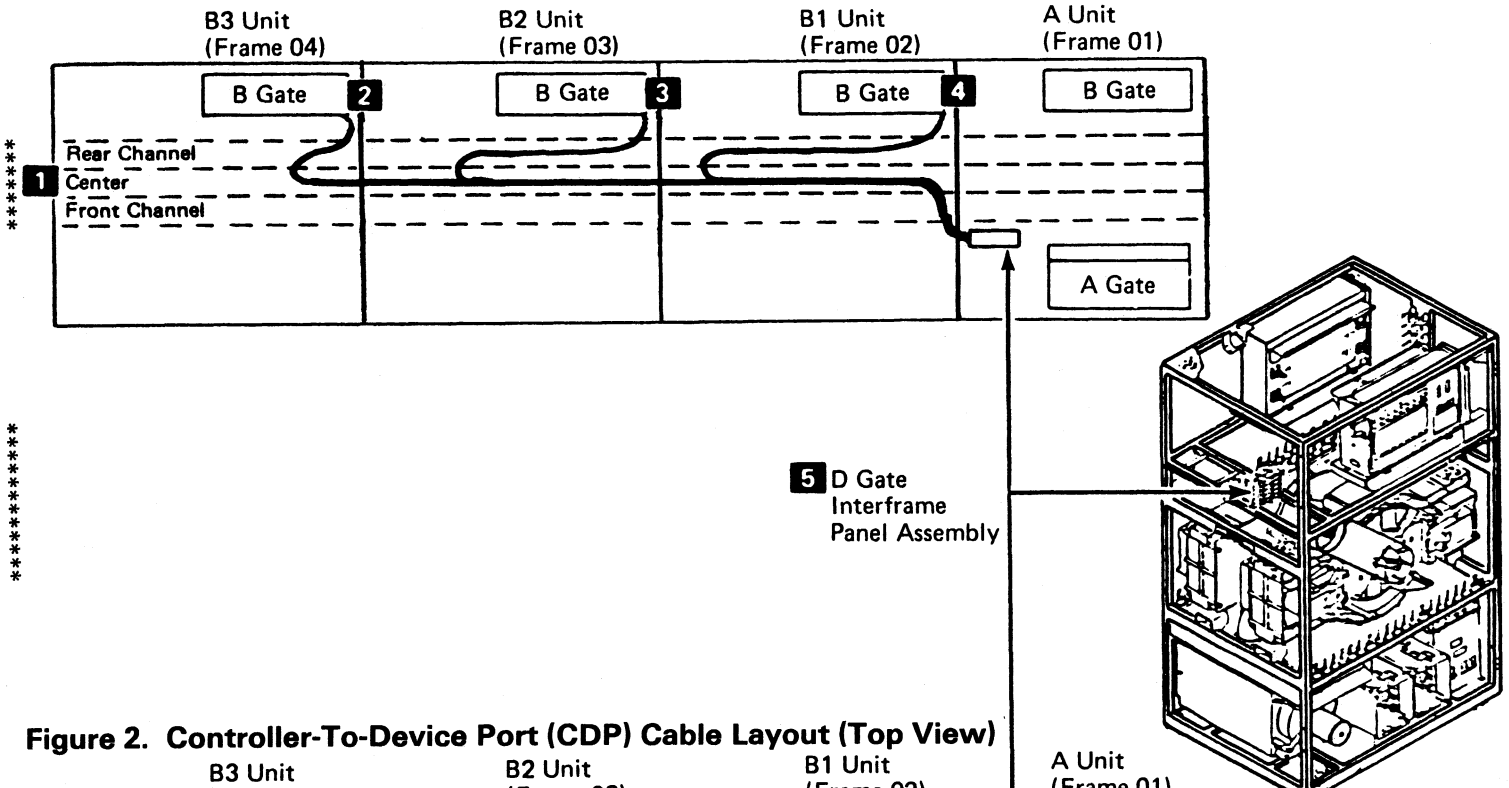
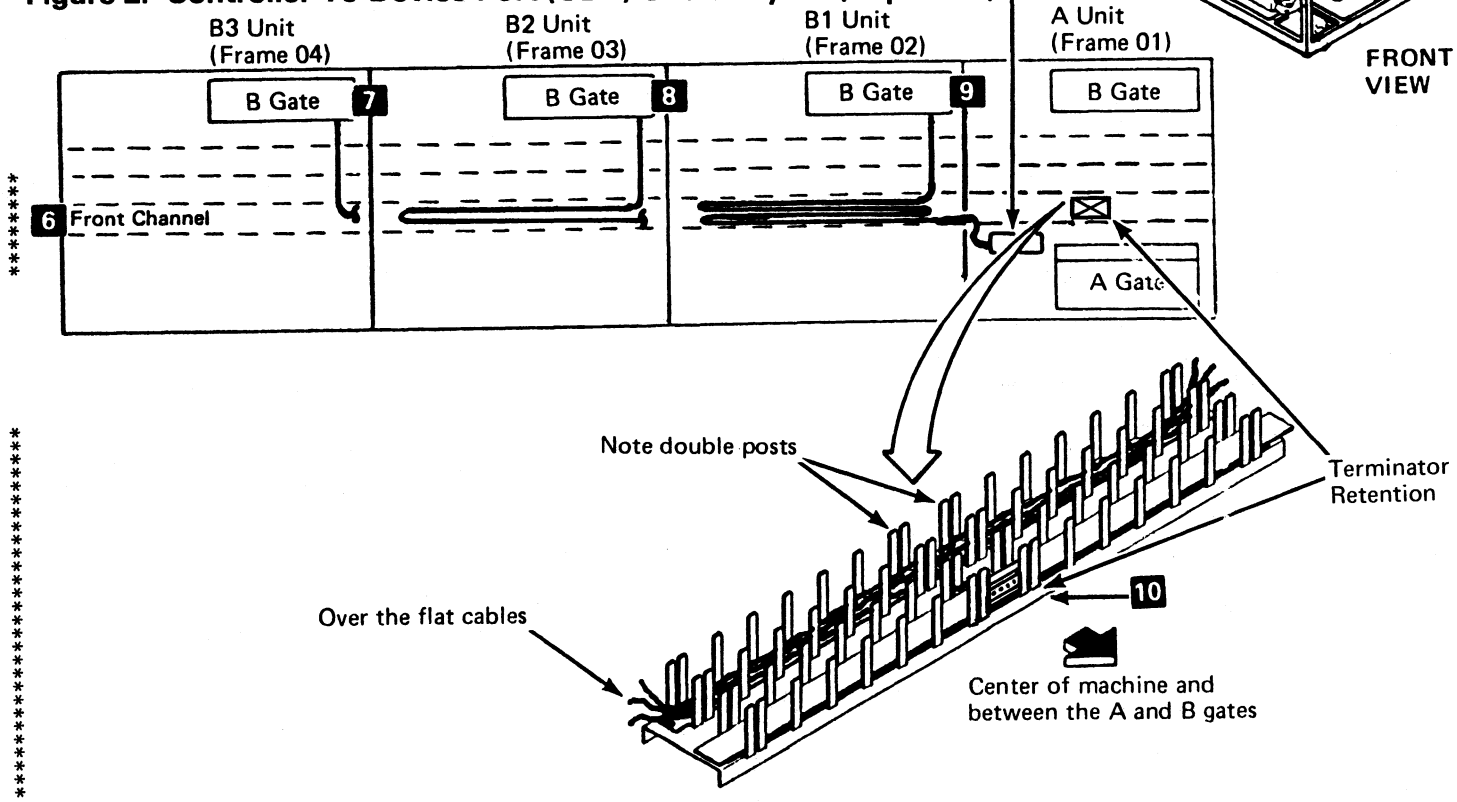


Figure 2. Controller-To-Device Port (CDP) Cable Layout (Top View)



7.2 B1 UNIT CABLE INSTALLATION (Continued)

__ 4. Route the actuator switch cable marked INTERCON or B-SW 4 up to the interframe panel assembly in the same way as the R/W PLO cable shown in Figure 1 on INST-95 and plug it into the B1SW socket.

__ 5. Pull the CDP cables 9 which are fanfolded in the front channel 6 to the interframe panel assembly as shown in Figure 2 on INST-95.

__ 6. Plug the CDP cable marked B-XX into the B1XX socket on the interframe panel assembly.

__ 7. Plug the CDP cable marked B-YY into the B1YY socket on the interframe panel assembly.

__ 8. If installing a B2 unit, go to 7.3 B2 Unit Cable Installation; otherwise continue with the next step.

__ 9. Keep the removed terminator 10 within the A unit by placing it between the plastic cable holders that make up the front channel, where the post spacing is the largest at the center of the horizontal cable channel. This location is not the center area between the front and rear channels. Hold the terminator in place inside the channel with the X flat cable retainer, P/N 813519 from the B-unit ship group.

__ 10. Locate the cable ties (P/N 1145574) in the B-unit ship group. Use them to fasten the cables in the cable channels in the A and B units as needed.

__ 11. Continue with the Installation Procedures on INST-115.

7.3 B2 UNIT CABLE INSTALLATION

While performing the following steps, see INST-90 and INST-95 for keys and cable layouts.

__ 1. In the B2 unit (frame 03), locate the two controller-to-device port (CDP) flat cables, marked B-XX and B-YY; the R/W PLO cable, marked B-ZZ and the actuator switch cable marked with either INTERCON or B-SW. Mark each cable label with the B unit number. Spare labels are located in the back of this manual.

__ 2. Route the R/W PLO cable 3 into the center area 1 between the front and rear cable channels, as shown and pull it to the interframe panel assembly 5 in the A unit. Loosely fanfold the excess cable length in the center area as shown in Figure 1. Do not bend the cables too tightly; this causes excessive strain in the cable and early cable failure.

__ 3. Remove the B2ZZ terminator, then plug the R/W PLO cable marked B-ZZ into the B2ZZ socket on the interframe panel assembly. Temporarily set the terminator aside.

Note: *If the B2 unit is discontinued at a later date, remember to install a terminator in the R/W PLO position (B2ZZ) of the interframe panel assembly.*

__ 4. Route the actuator switch cable, marked INTERCON or B-SW 3, up to the interframe panel assembly in the same way as the R/W PLO cable shown in Figure 1 on INST-95 and plug it into the B2SW socket.

__ 5. Pull the CDP cables 8 which are fanfolded in the front channel 6 to the interframe panel assembly as shown in Figure 2 on INST-95.

__ 6. Plug the CDP cable marked B-XX into the B2XX socket on the interframe panel assembly.

__ 7. Plug the CDP cable marked B-YY into the B2YY socket on the interframe panel assembly.

__ 8. If installing a B3 unit, go to 7.4 B3 Unit Cable Installation procedure on INST-105; otherwise continue with the next step.

__ 9. Keep the removed terminators 10 within the A unit by placing them between the plastic cable holders that make up the front channel, where the post spacing is the largest at the center of the horizontal cable channel. This location is not the center area between the front and rear channels (see INST-95). Hold the terminators in place perpendicular to the channel with the X flat cable retainer, P/N 813519 from the B-unit ship group.

__ 10. Locate the cable ties (P/N 1145574) in the B-unit ship group. Use them to fasten the cables in the cable channels in the A and B units as needed.

__ 11. Continue with the Installation Procedures on INST-115.

While performing the following steps, see INST-90 and INST-95 for keys and cable layouts.

7.4 B3 UNIT CABLE INSTALLATION

__ 1. In the B3 unit (frame 04), locate the two controller-to-device port (CDP) flat cables, marked B-XX and B-YY, the R/W PLO cable, marked B-ZZ, and the actuator switch cable, marked with either INTERCON or B-SW. Mark each cable label with the B unit number. Spare labels are located in the back of this manual.

__ 2. Route the R/W PLO cable 2 into the center area 1 between the front and rear cable channels, as shown, and pull it to the interframe panel assembly 5 in the A unit.

__ 3. Remove the B3ZZ terminator, then plug the R/W PLO cable marked B-ZZ into the B3ZZ socket on the interframe panel assembly. Temporarily set the terminator aside.

Note: *If the B3 unit is discontinued at a later date, remember to install a terminator in the R/W PLO position (B3ZZ) of the interframe panel assembly.*

__ 4. Route the actuator switch cable marked INTERCON or B-SW 2 up to the interframe panel assembly in the same way as the R/W PLO cable shown in Figure 1 on INST-95 and plug it into the B3SW socket.

__ 5. Pull the CDP cables 7 which are fanfolded in the front channel 6 to the interframe panel assembly as shown in Figure 2 on INST-95.

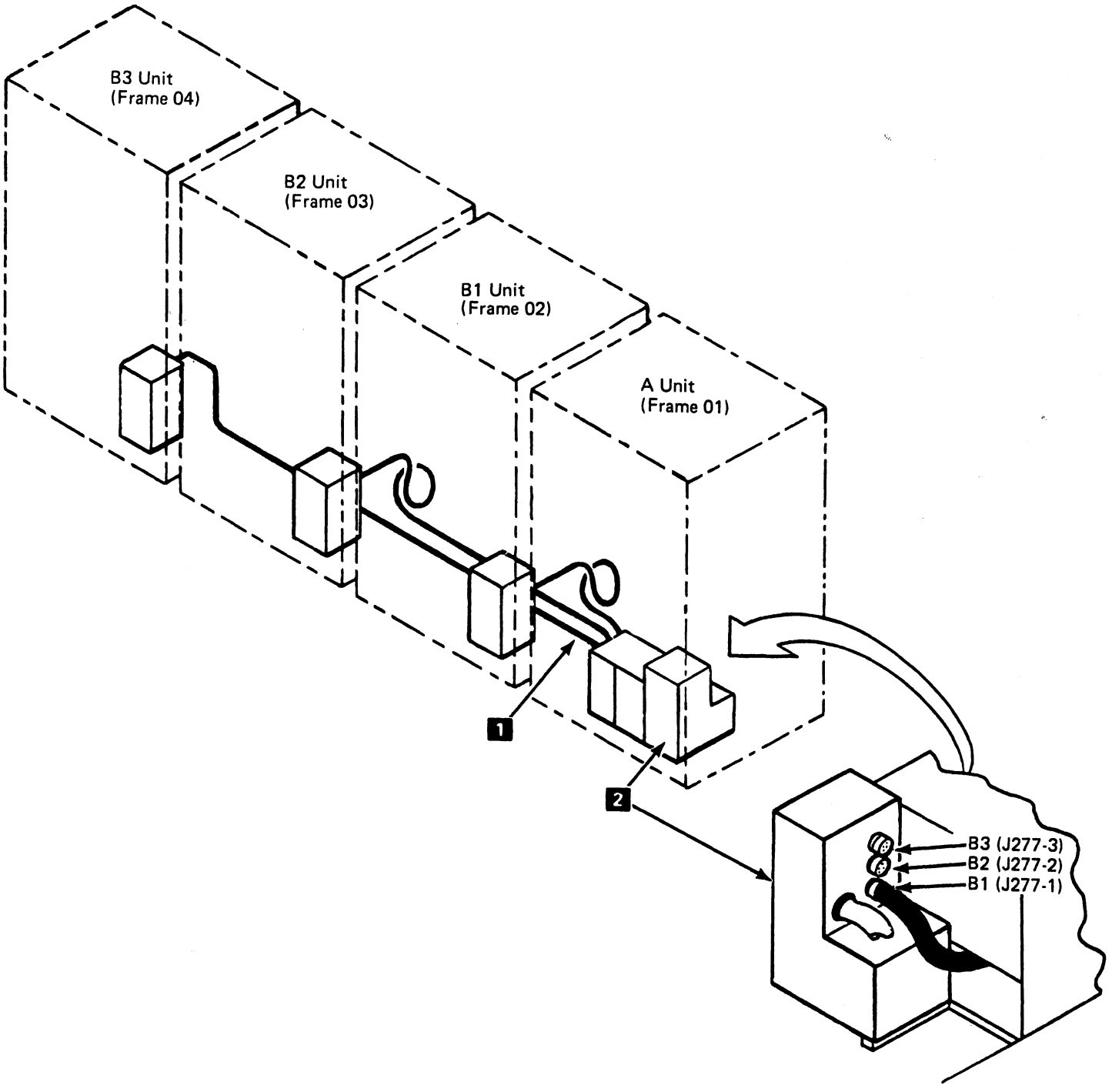
__ 6. Plug the CDP cable marked B-XX into the B3XX socket on the interframe panel assembly.

__ 7. Plug the CDP cable marked B-YY into the B3YY socket on the interframe panel assembly.

__ 8. Keep the removed terminators 10 within the A unit by placing them between the plastic cable holders that make up the front channel, where the post spacing is the largest at the center of the horizontal cable channel (see INST-95). This location is not the center area between the front and rear channels. Hold the terminators in place perpendicular to the raceways with the X flat cable retainer, P/N 813519 from the B-unit ship group.

__ 9. Locate the cable ties (P/N 1145574) in the B-unit ship group. Use them to fasten the cables in the cable channels in the A and B units as needed.

__ 10. Continue with the Installation Procedures on INST-115.



8.0 POWER CABLES (B Units)

__ 1. Write the B-unit position number (B1, B2, or B3) on the label 3 on the power cable near the connector. Mark the cables so that the number can be seen with the cables installed.

Frame 02 = B1 unit	J277-1
Frame 03 = B2 unit	J277-2
Frame 04 = B3 unit	J277-3

__ 2. Pull the power cables 1 from each B unit to the power box in the A unit. Place them on the floor of the B units, under the blower motor and under the A-unit controller power supplies. Coil the extra cable in the B1 and B2 units.

__ 3. Ensure CB200 is off before performing the next step.

__ 4. Connect the power cables to the associated plugs on the power box 2 on the A unit.

__ 5. Go to INST-125.

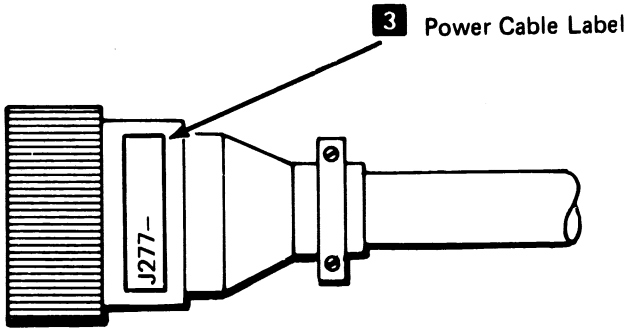
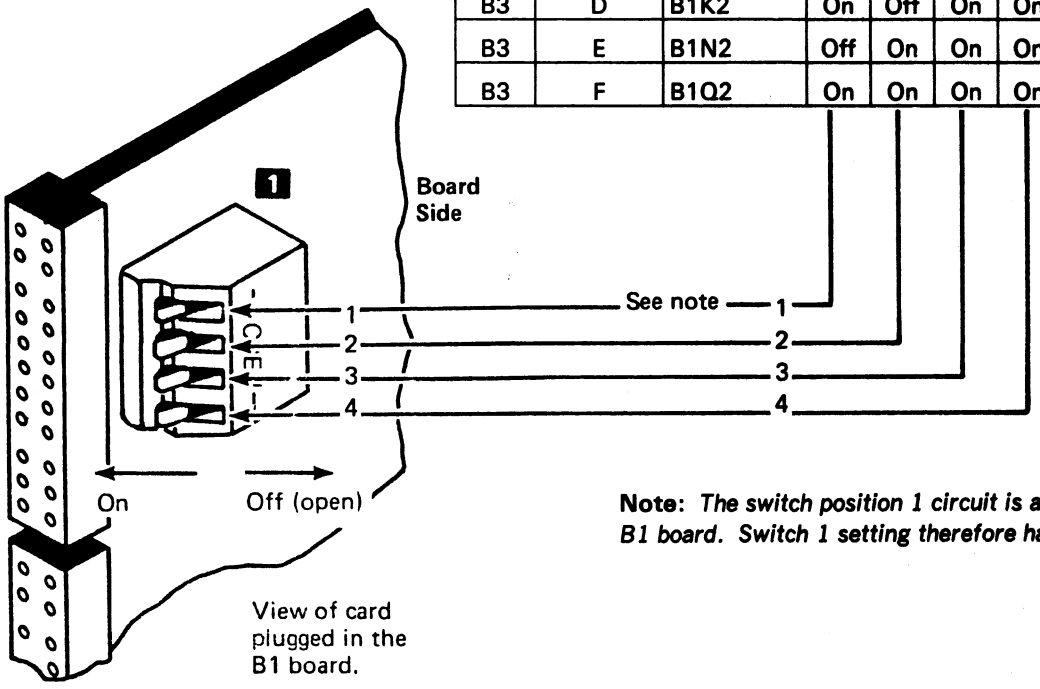


Figure 1. Port/Power Control Card Switch Settings

	Unit	Device	Card Location	Binary Value 1	2	4	8
				Switch Settings 1	2	3	4
A-unit switches are preset	A	0	B1H2	Off	Off	Off	Off
	A	1	B1K2	On	Off	Off	Off
	A	2	B1N2	Off	On	Off	Off
	A	3	B1Q2	On	On	Off	Off
	B1	4	B1H2	Off	Off	On	Off
	B1	5	B1K2	On	Off	On	Off
	B1	6	B1N2	Off	On	On	Off
	B1	7	B1Q2	On	On	On	Off
	B2	8	B1H2	Off	Off	Off	On
	B2	9	B1K2	On	Off	Off	On
	B2	A	B1N2	Off	On	Off	On
	B2	B	B1Q2	On	On	Off	On
	B3	C	B1H2	Off	Off	On	On
	B3	D	B1K2	On	Off	On	On
	B3	E	B1N2	Off	On	On	On
	B3	F	B1Q2	On	On	On	On

Port/Power Control Card



Note: *The switch position 1 circuit is actually hard wired in the B1 board. Switch 1 setting therefore has no effect.*

9.0 ADDRESS SETTING

Warning: Always use the electrostatic discharge (ESD) grounding wrist strap before touching any ESD sensitive parts such as logic cards. Failure to use the grounding wrist strap while setting switches can cause logic card failures. See CARR-5 in the MIM for additional information.

Temporary labels on the A and B logic gate covers indicate the controller address, physical ID device address, and the string configuration switch settings used by the factory to test the 3380-DE. If the labels are intact, the switch settings have not been changed.

Note: *There is no need to verify the addressing switch settings from their stated values if the labels are intact when the machine is delivered. The diagnostic checkout will also verify correct addressing.*

9.1 Drive Addressing

__ **1.** If installing an A unit only (frame 01), go to INST-135.

__ **2.** In the B units (frame 2, 3, and 4):

- __ a. For each B unit, if the B gate address label agrees with the required device addresses, go to step 3.
- __ b. On those units without a label, or with a broken label, or those units with a label not displaying the needed device addresses, the device address switches must be set. Without removing the cards, set the switches on the four port/power control cards in each B unit as shown in Figure 1.

Note: *Switch position 1 is not used; the circuit is hard wired into the B1 board.*

__ **3.** If installing B units only (frames 02, 03, or 04), go to INST-155.

__ **4.** If installing an A unit (frame 01) with or without B units, go to INST-135.

Figure 1. DDC/DTB Card (Locations A1X2 and A1A2)

Switch Position	String 0	String 1
1	On	Off
2	Off	Off
3	Off	Off
4	Off	Off
5	On	Off
6	Off	On
7	On	Off
8	Off	On

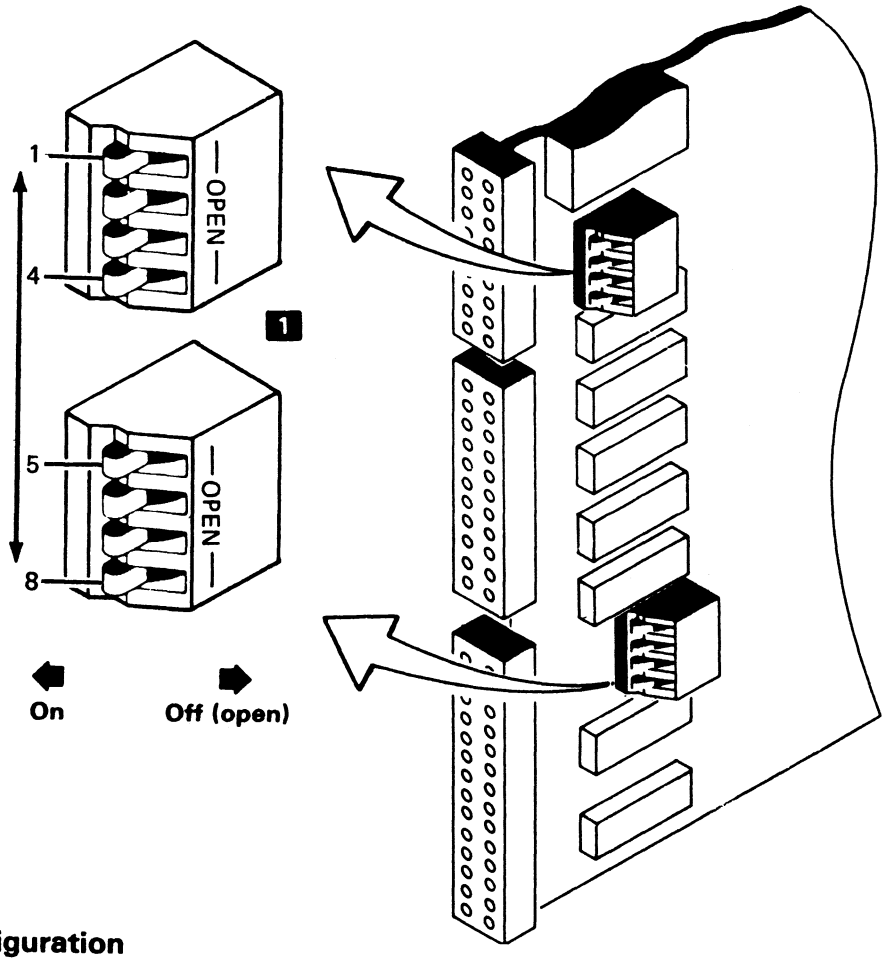
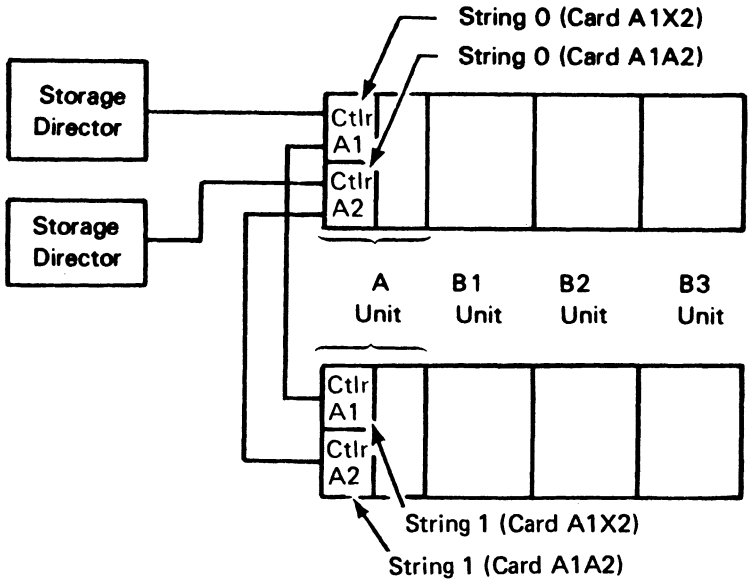


Figure 2. Subsystem Configuration



10.0 ADDRESS SETTING (Continued)

10.1 String Addressing

__ 1. Use the string address as determined in step 2.2.1 on INST-20.

__ 2. If the A gate address label is intact and agrees with the desired string address, go to INST-145.

__ 3. On those units without a label, or with a broken label, or those units with a label not displaying the needed string address, the string address switches must be set.

__ a. Remove top-card connector W from the A1A2 card position.

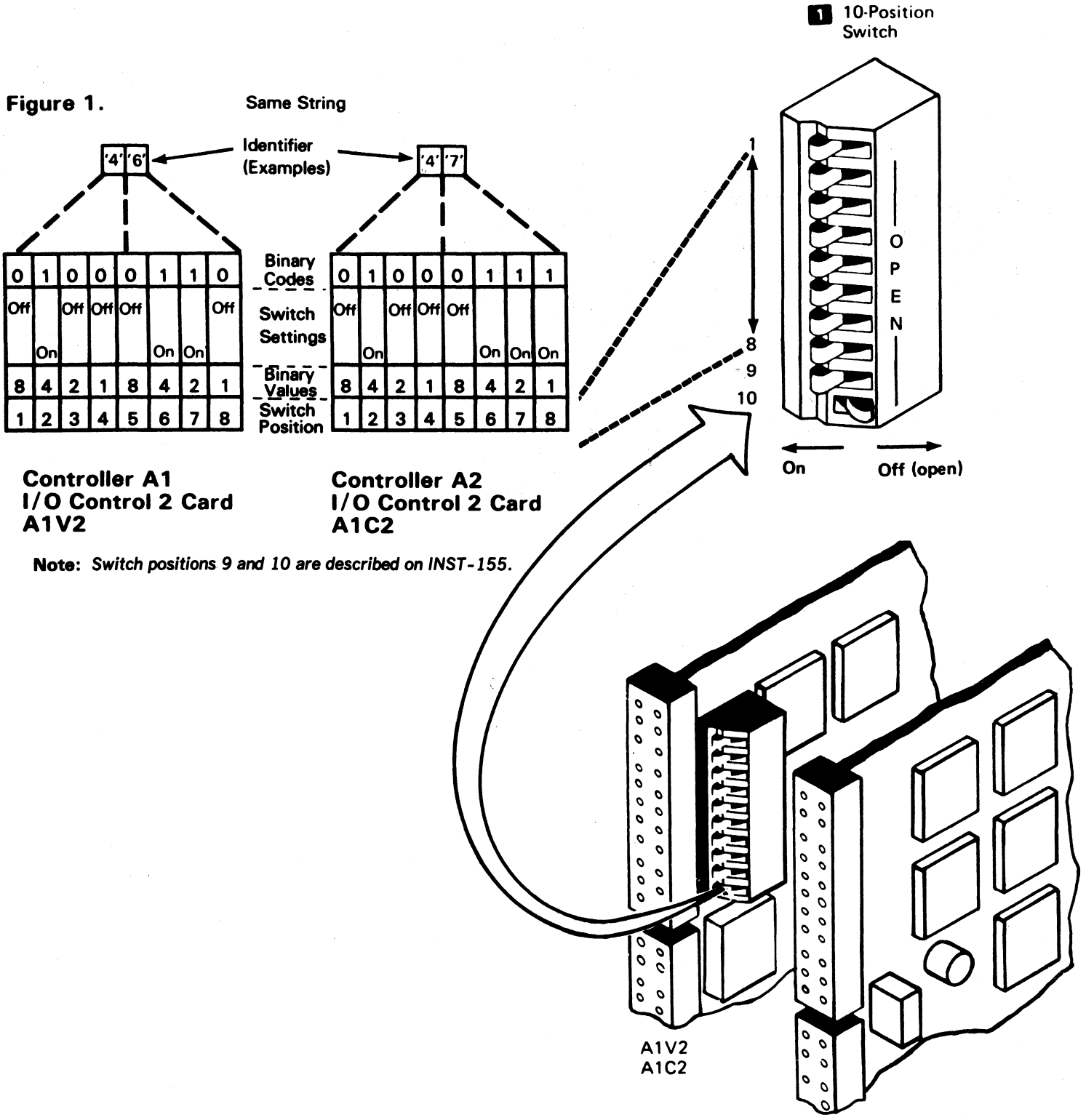
__ b. **Without removing the cards,** set the switches 1 on the A1X2 card and the A1A2 card as previously determined in step 1 to designate either string zero (0), or string one (1). Verify that switch positions 1 through 8 are set correctly. (If additional information is needed, see the 3880 MIM, INST section.)

Note: ***The addressing on the A1X2 and A1A2 cards for the string must be set the SAME. Either both controllers are set for 0 or both for 1. Each device must have the same controller-device address regardless of the selection path to the device.***

__ 4. Reinstall the top-card connectors W and X on the A1A2 card. If necessary, see INST-145, Figure 2 for the exact locations.

__ 5. Go to INST-145.

Figure 1.



Note: *Switch positions 9 and 10 are described on INST-155.*

11.0 CONTROLLER PHYSICAL IDENTIFIER

Perform the procedures on this page only when installing an A unit. When installing B units only, go to String Configuration Switch on INST-155.

Physical identifiers (IDs) for controllers in string 0 must be between 02 and 7F; those for controllers in string 1 must be between 80 and FD. The selected ID must be an even pair. Controller A1 must have an even ID and controller A2 must have an odd ID.

Note: *Do not use 00, 01, FE, or FF for physical identifiers.*

See INST-20, (2.3 Controller Identification) for additional information about the controller physical identifier.

A temporary physical ID is set into the switches at the factory during final test. If the physical ID on the A gate label agrees with your configuration and the label is intact, then the ID switches are correct.

__ **1.** To set the controller physical identifiers in the 3380-DE:

- __ a. Get the physical IDs from INST-20, step 2.3.2.
- __ b. Convert the hexadecimal numbers to their binary equivalents. See Figure 1 for an example.
- __ c. Remove top-card connector W from the A1C2 card.
- __ d. Without removing the cards, set the physical ID switch positions 1 through 8 **1** on the I/O control 2 cards (A1V2 and A1C2).

__ **2.** Do not reinstall crossovers until after the String Configuration Switch procedure on INST-155 is completed.

__ **3.** Valid MD responses and accurate EREP and console error reports require correct physical IDs, therefore the above assignment is important and should be done with the full understanding of the physical identifier.

__ **4.** Go to INST-155.

Figure 2. Crossover Locations (A1 Board)

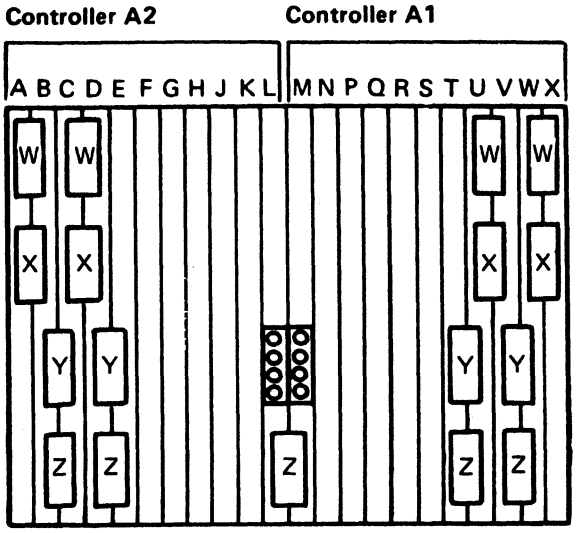
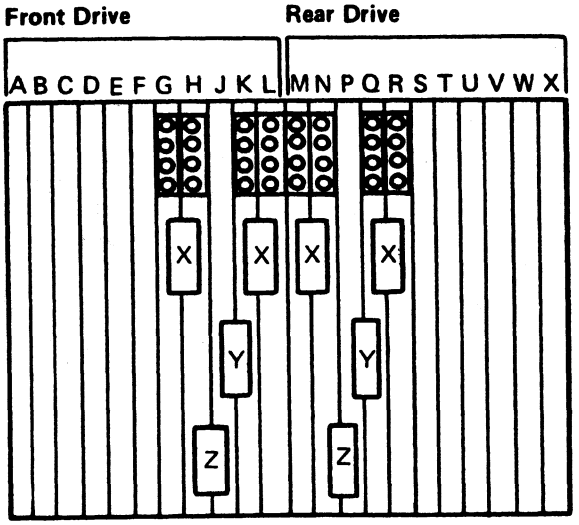


Figure 3. Crossover Locations (B1 Board)



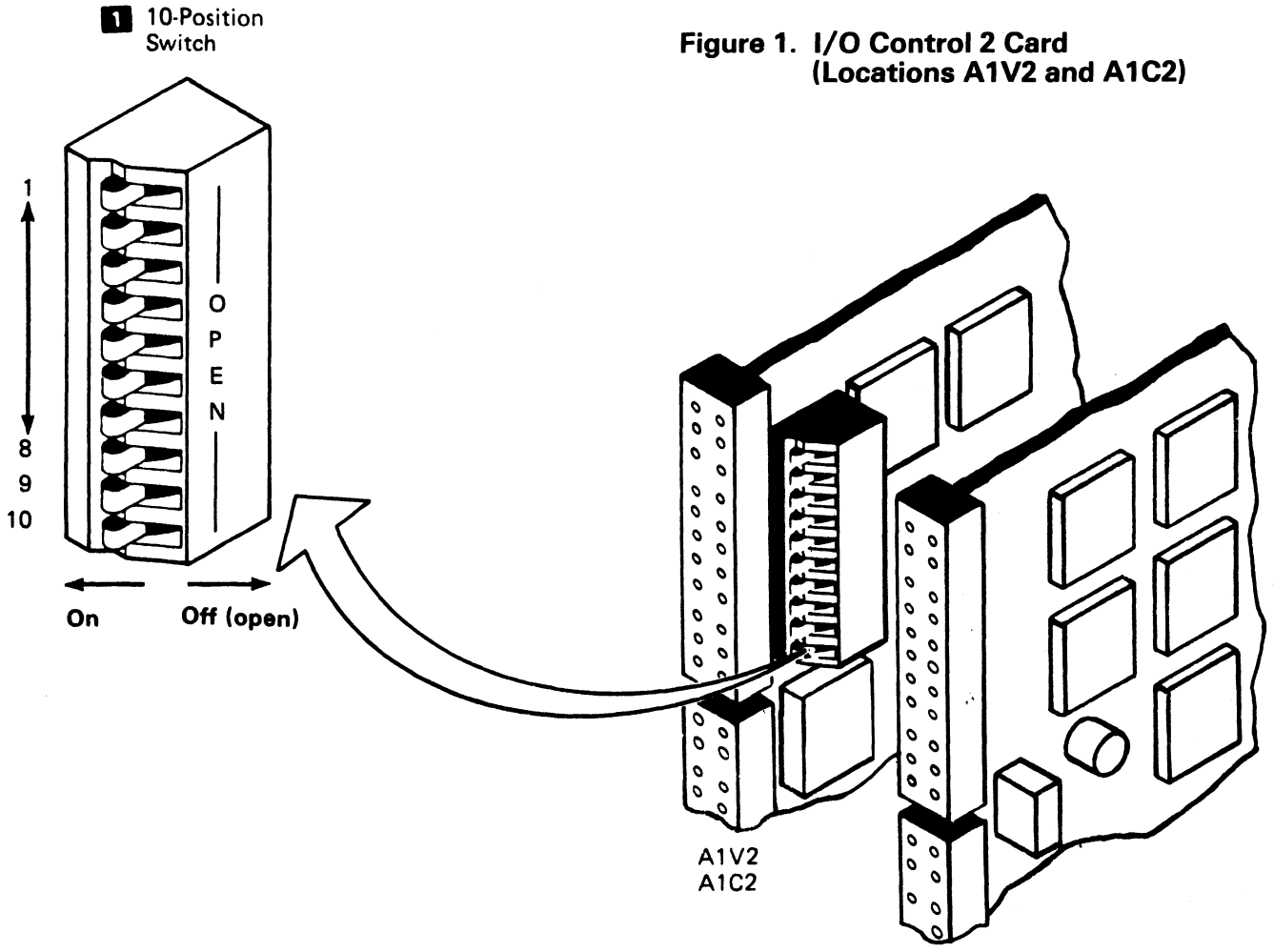


Figure 1. I/O Control 2 Card (Locations A1V2 and A1C2)

12.0 STRING CONFIGURATION SWITCH

The two string-configuration switches describe the configuration of the string to the 3880 microcode so that the code can generate the correct error message when a device fails to respond. Therefore, on the 3380-DE, an equipment check is reported for an installed device or an intervention required for an uninstalled device.

In addition, the string configuration data is used to identify fault boundaries within symptom codes.

It is therefore very important that the correct configuration be set into the switches.

The string configuration is set into the switches at the factory during final test. If the string configuration on the A gate label agrees with your string configuration and the label is intact, then the string configuration switch settings are correct. If not, perform the following steps.

__ **1.** Without removing the cards, set positions 9 and 10 of the 10-position switch on the I/O control 2 cards (A1V2 and A1C2) to represent the number of units in the string. See the following table.

String Configuration	Switch Settings	
	9	10
A unit only	On	On
A unit and one B unit	On	Off
A unit and two B units	Off	On
A unit and three B units	Off	Off

__ **2.** If the string configuration is changed any time after installation, remember that these switch settings must also be changed.

__ **3.** Reinstall any removed top-card connectors or indicator blocks carefully. Make sure the pins align with the top connector holes on the cards. Use Figure 2 and Figure 3 on INST-145 to ensure correct locations.

__ **4.** Continue with the Installation Procedures on INST-165.

Figure 1. Front Device Addresses

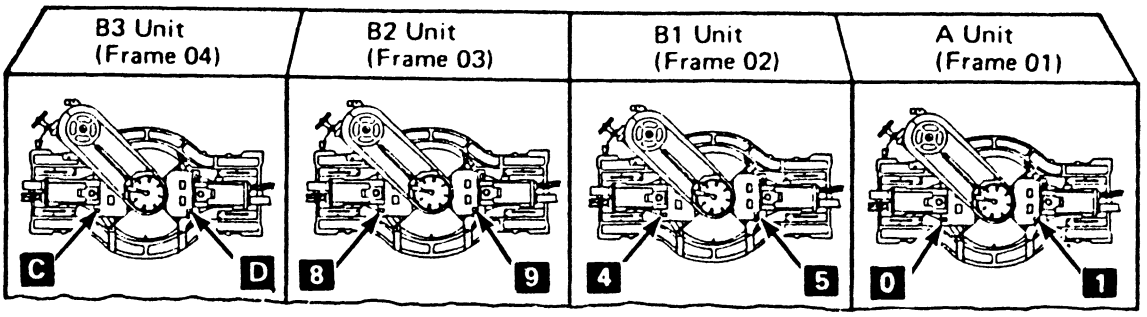
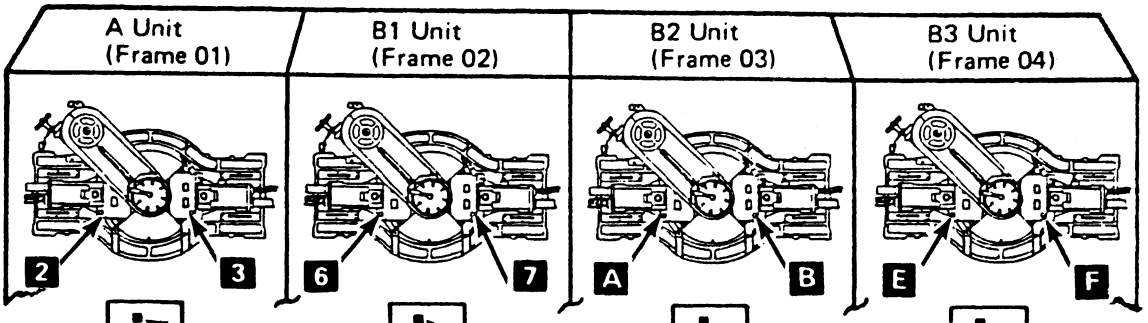


Figure 2. Rear Device Addresses



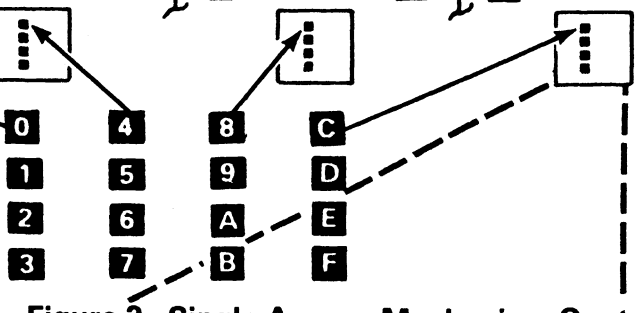
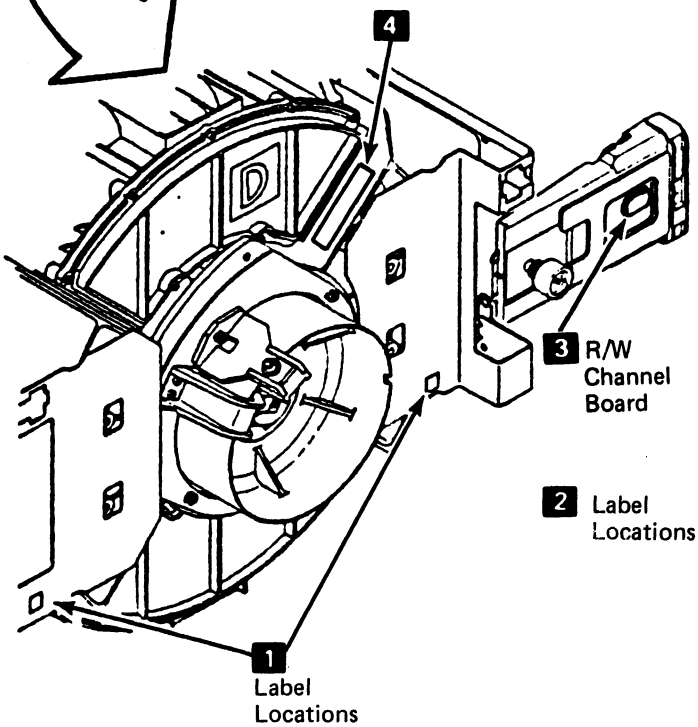
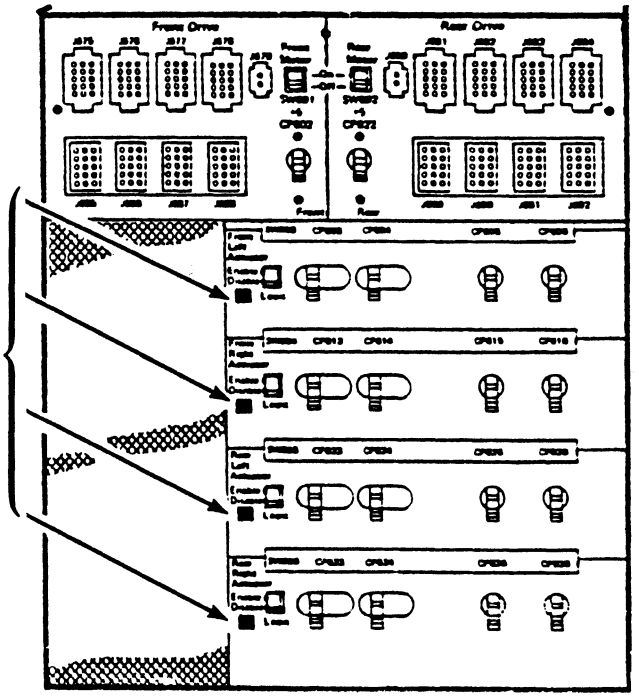


Figure 3. Single Access Mechanism Control Panel



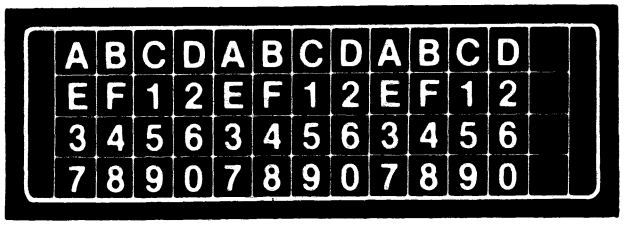


13.0 DEVICE ADDRESS LABELS

Note: *The installation of the device physical identifier labels can be delayed until the running of the diagnostics if the installation of the labels is completed before any repairs are started.*

__ 1. Locate the sheet of large hexadecimal labels 5 (P/N 5412746, in the 3380-DE A-unit ship group).

5 Large Labels P/N 5412746



Select the correct characters to represent the addresses of all the devices in the string and attach them to the left/right R/W channel board cover 3 and on the lower edge of the sheet metal 1 (the sheet metal to the right and left of the HDA pulley).

Note: *When an HDA cable swap occurs, the numbers on the covers will be inverted and will not agree with the numbers on the sheet metal.*

__ 2. Select another set of large labels from the sheet and attach them to the single access mechanism control panel, at the locations shown 2. Device label location for all units in the string are shown in Figure 3.

__ 3. Keep spare labels for possible future use.

__ 4. Remove the Unit Not Installed label 6 from the operator panel for each B unit being installed.

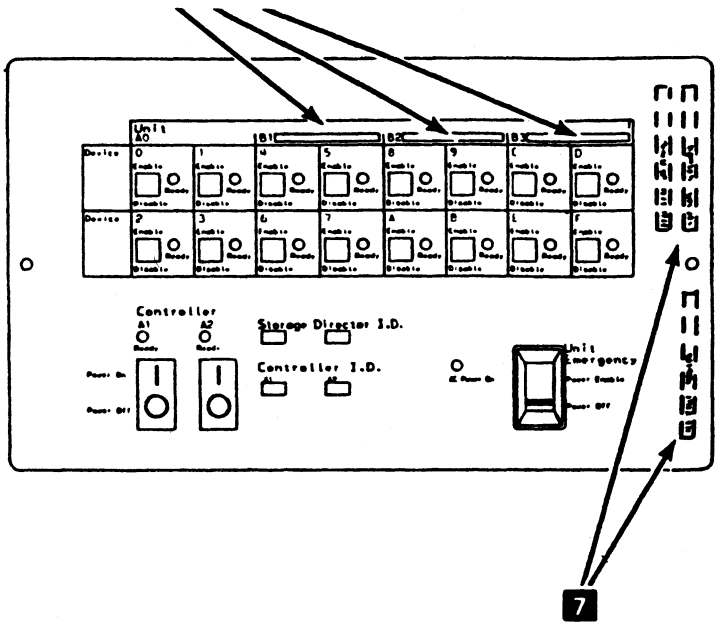
With the end cover open, keep the removed label for possible future use by applying it vertically along the right edge of the panel as shown 7. The saved labels are not visible with the end cover closed.

If any B units are removed at a later date, remember to install a label for each B unit not installed.

__ 5. If adding only B units (frames 02, 03, or 04), continue with 16.0 Power Checks procedure on INST-185.

__ 6. If installing an A unit, continue with 14.0 Physical Identifier Labels procedure on INST-170.

6 Unit Not Installed



7

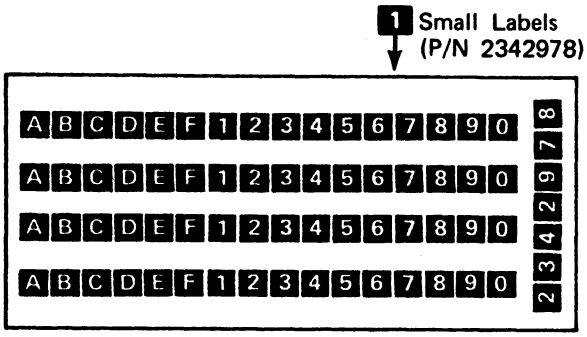
13.1 Temperature Strip Installation

__ 1. Examine an HDA and determine if a temperature strip 4 is attached to the casting at the 2 o'clock position from the pulley center.

__ 2. If the temperature strip is not on the HDA, obtain one from the Pack/Unpack Instruction envelope and install as shown 4.

14.0 CONTROLLER PHYSICAL IDENTIFIER LABELS

__ 1. Locate the sheet of small hexadecimal labels 1 (P/N 2342978, in the 3380-DE A-unit ship group).



Select the characters to represent the physical identifiers of the 3380-DE controllers. (The physical identifiers are assigned on INST-20.) Attach these labels to the operator panel in the locations shown by 3 .

__ 2. From the same sheet of labels, select the characters to represent the physical identifiers of the storage directors to which the 3380-DE is attached. Attach these labels to the operator panel in the location shown by 2 .

__ 3. Save the spare labels for possible future use.

__ 4. Go to INST-180.

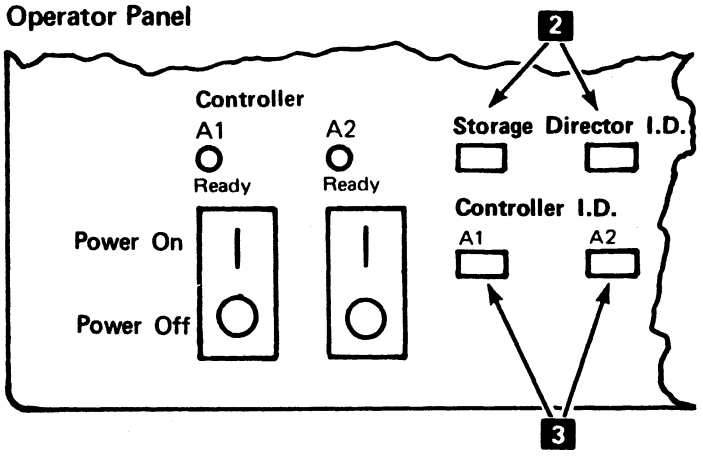
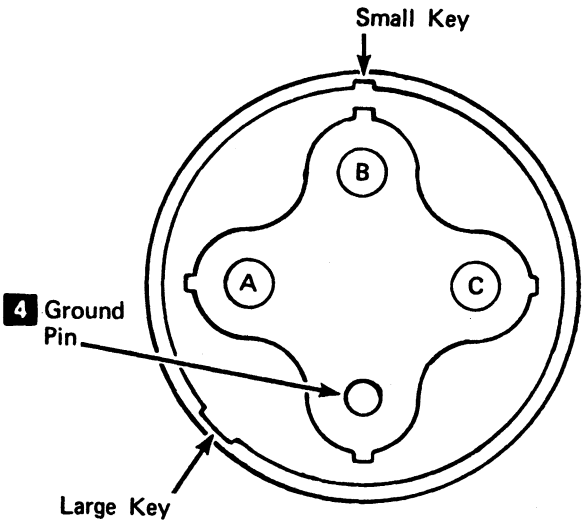


Figure 1. 60-Amp AC Outlet Receptacle



15.0 SAFETY CHECKS (A Units Only)

Perform the procedures on this page only when installing an A unit. When installing B units only, go to 16.0 Power Checks on INST-185.

15.1 Branch Circuit CB Switched Off Check

This procedure safety checks the customer outlet receptacle for grounding and ensures no voltage is present at the switched off outlet.

__ 1. Request that the customer locate and switch off the branch circuit CB.

DANGER
Use the high-voltage test probes only to touch the outlet receptacle until step 3 is completed.

__ 2. Check the voltage from the customer outlet receptacle to the building ground (building steel or grounded raised floor supports) for less than 1.0 Vac. (Set the meter to the correct range scale for line voltage checks.) If the voltage is other than expected, have the customer determine the cause and correct it before continuing.

__ 3. Check the voltage from the ground pin 4 to the building ground for less than 1.0 Vac. The outlet is now safe to touch. If the voltage is other than expected, have the customer determine the cause and correct it before continuing.

__ 4. Using an ohm meter on the X1 scale, check the resistance from the ground pin 4 to the outlet receptacle and from the ground pin to the building ground. Readings of less than 1.0 ohm indicate the presence of a safe, continuous grounding conductor. Any digital meter, including CE digital meters can give an incorrect reading because of stray currents. Therefore, use only a non-digital meter when performing the following steps. If the resistance is other than expected, have the customer determine the cause and correct it before continuing.

__ 5. ***DANGER***

Do not touch internal parts (pins and sockets) of the outlet until step 5 is completed.

__ a. Measure all phase-to-phase voltages and the phase-to-ground voltages.

__ b. Measure all phase-to-neutral voltages (if present) and the neutral-to-ground voltage (if present).

__ c. All voltage values are to be less than 1.0 Vac.

__ d. If the voltage is other than expected, have the customer determine the cause and correct it before continuing.

15.2 Branch Circuit CB Switched On Check

This procedure safety checks the customer outlet receptacle for grounding and ensures correct voltage at each of the outlet pins with the outlet switched on.

DANGER
Do not touch the outlet receptacle until step 2 is completed.

__ 1. Request that the customer switch on the branch circuit CB that supplies voltage to the ac outlet.

__ 2. Measure the voltages from the outlet receptacle to the building ground, the receptacle to the ground pin, and the building ground to neutral (if present). Voltage values are to be less than 1.0 Vac. If the voltage is other than expected, have the customer determine the cause and correct it before continuing.

DANGER
If measured voltage values are less than 1.0 Vac, the outlet receptacle can be touched. Do not touch the internal parts (pins and sockets) of the outlet.

__ 3. Use the CE meter and the high-voltage test probes to measure the phase-to-phase voltages. Record them here for later use.

Phases	Voltage
A to B	_____
A to C	_____
B to C	_____

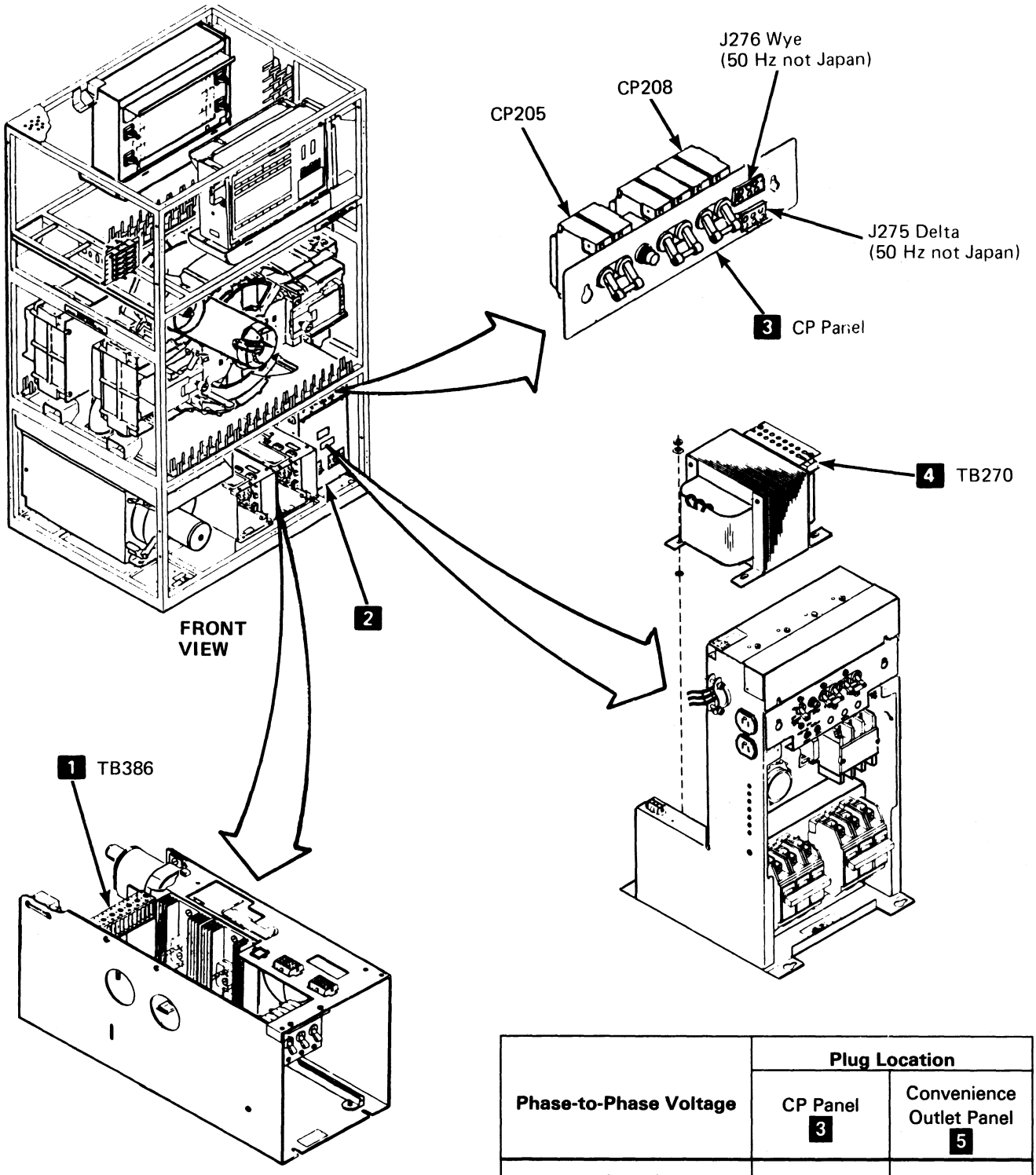
__ 4. Switch off the customer branch circuit CB before continuing.

15.3 Machine Ground Wire Check

__ 1. Using the CE meter on the X1 scale, ensure that the resistance between the unpainted machine frame and the small pin on the power cable connector is zero. If the resistance is more than zero, determine the cause and correct it before continuing with the installation.

__ 2. Do NOT connect the 3380-DE power cable to the ac outlet.

__ 3. Continue with the Installation Procedures on INST-185.



Phase-to-Phase Voltage	Plug Location	
	CP Panel 3	Convenience Outlet Panel 5
200 to 240 (Delta)	J275	J475, J477
380 to 415 (Wye)	J276	J476, J478

16.0 POWER CHECKS

16.1 Transformer Connections

__ 1. Compare the nominal voltage (208 V, 220 V, 230 V, 380 V, 415 V) at the customer outlet with the voltage tags 2 on all 3380-DE units being installed. If they are not the same, go to step 2.

If they are the same, continue as follows:

- For 60 Hz 3380-DE, go to INST-195.
- For 50 Hz 3380-DE in Japan, go to INST-195.
- For 50 Hz 3380-DE (except in Japan), go to step 4, this page.

__ 2. ***DANGER***

Before rewiring the transformers, ensure that the 3380-DE power cable is not connected to the ac outlet.

If the customer voltage does not match the voltage tag, rewire the transformer terminal boards as shown in the following table.

Unit	Transformer	Terminal Board	Location	Logic Page	Notes
A	Convenience outlet and 24 Vdc T270	TB270	6	YA100	
A	Controller T370	TB386	1	YA300	1,4
A	Access Mechanism and B logic T670	TB686	7	YA400	
B		TB686	7	YB400	2,3
B	24 Vdc T270	TB270	4	YB100	2,3

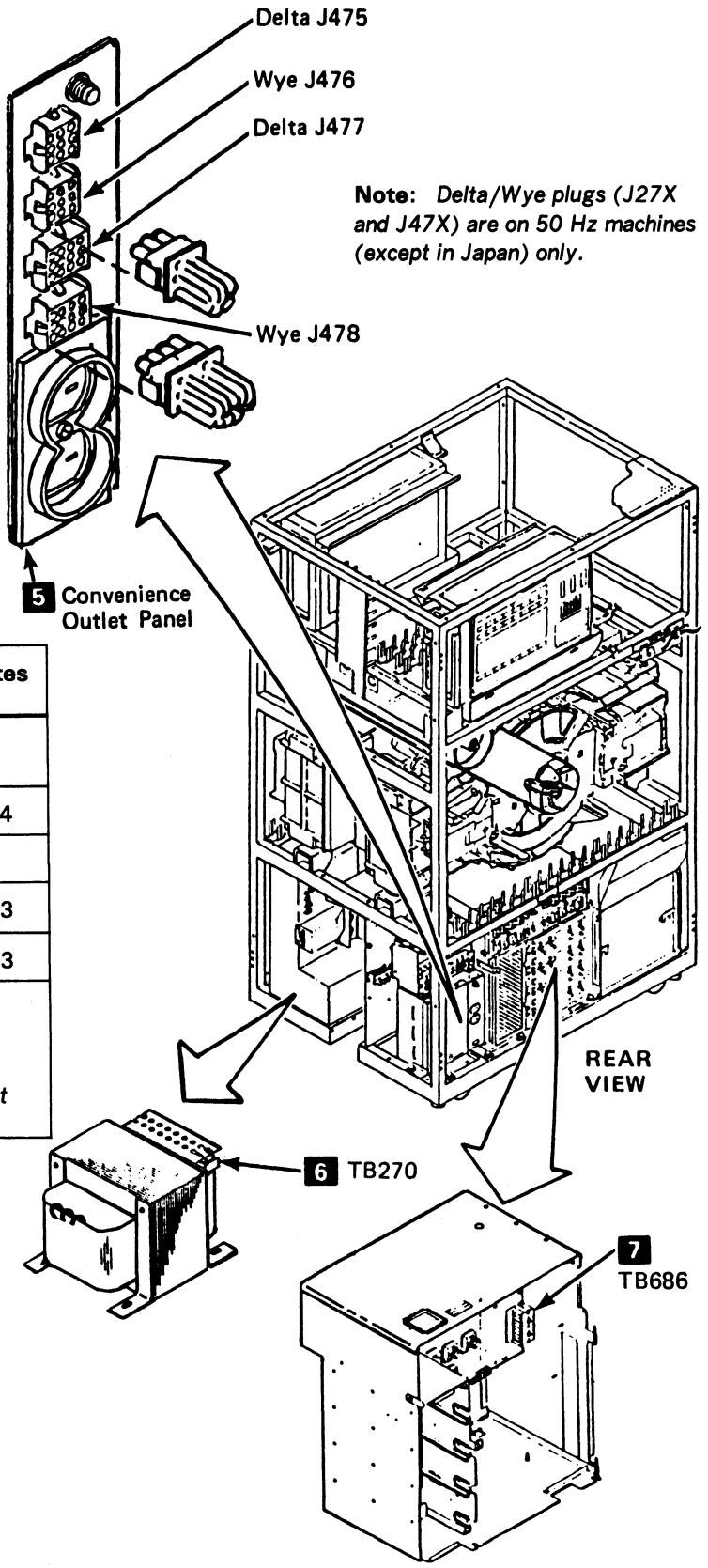
Notes:
1. *Two transformers in the A unit.*
2. *One transformer in each B unit in the string.*
3. *The TB is in the same location for both A and B units.*
4. *Move RC345 wire to the same TB position as the input wire when changing the voltage connection.*

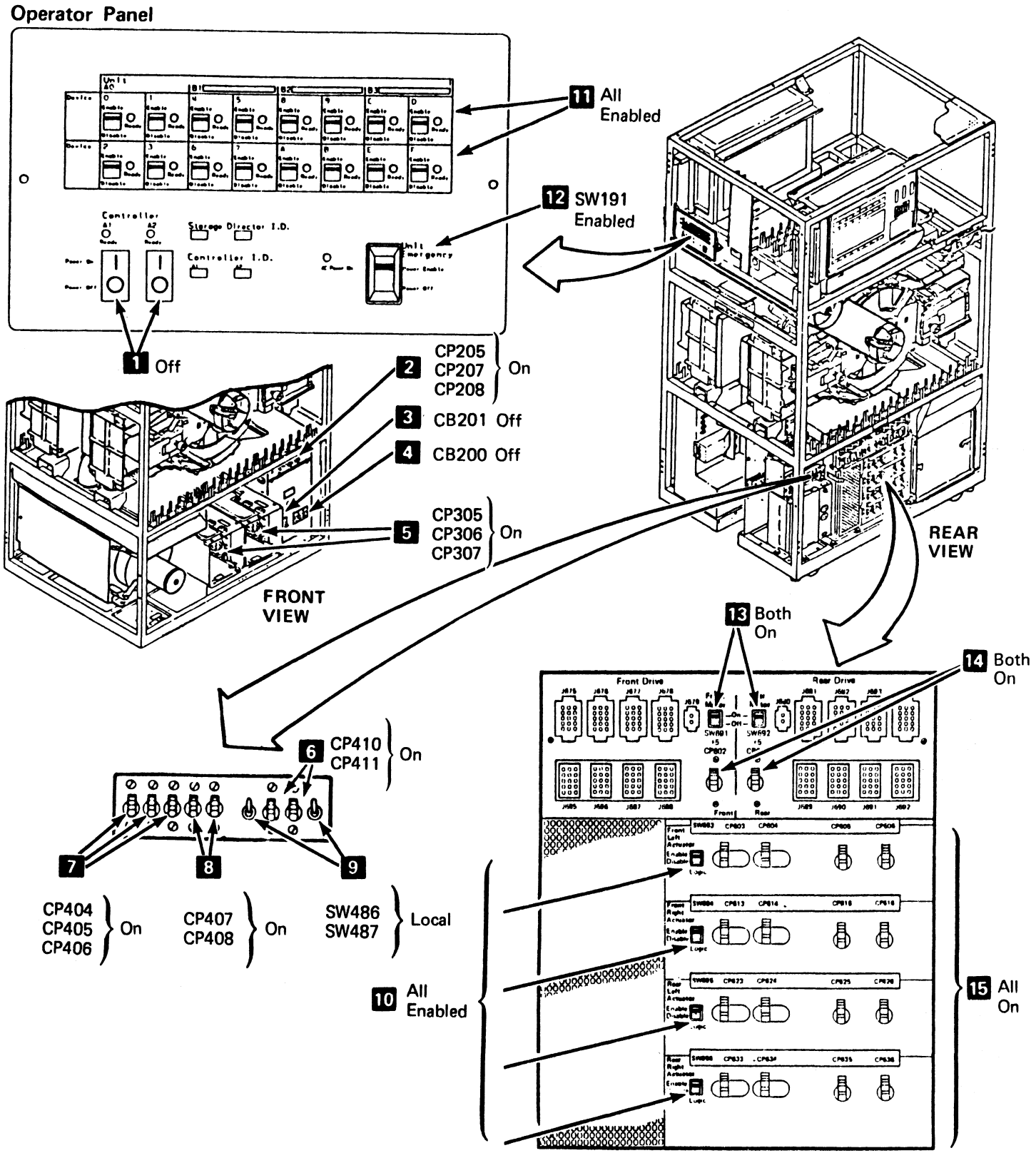
__ 3. Change the voltage tag 2 to indicate the wiring of the transformers.

__ 4. For 50 Hz machines (except in Japan) only:

With the phase-to-phase voltage readings taken on page INST-175, ensure that the plugs are in the correct sockets on the circuit protector (CP) panel 3 (A unit) and on the rear convenience outlet panel 5 (all units). See the Phase-to-Phase Voltage chart on INST-180.

__ 5. Continue with 17.0 Primary Power procedure on INST-195.





17.0 PRIMARY POWER

Warning: Before turning on the power, set the switches on all units as shown in steps 1 and 2.

__ 1. Set the switches in all the B units as indicated.

B-Unit Switches

Name	Number	Position	Location
Drive (Frame) Disconnect	CB201	Off	3
Circuit protectors	All	On	7 8 14 15
Front and Rear Motor switches	SW691 SW692	On	13
(Enable/Disable) Logic switches	SW693 SW694 SW695 SW696	Enable	10

__ 2. If an A unit (frame 01) is being installed, go to step 4.

__ 3. Perform this step only if B units (frames 02, 03, or 04) are being added to an existing string.

- __ a. Switch on the A-unit mainline circuit breaker (CB200) 4 .
- __ b. Set the Local/Remote switches for controllers A1 and A2 (SW486 and SW487 9) to the Local position.
- __ c. At the operator panel, set the Device Enable/Disable switches 11 to Enable for all newly installed units.
- __ d. Go to 18.1 HDA Pulley Unlock procedure on INST-205.

__ 4. Set the switches in the A unit as indicated in the following charts:

A-Unit Switches

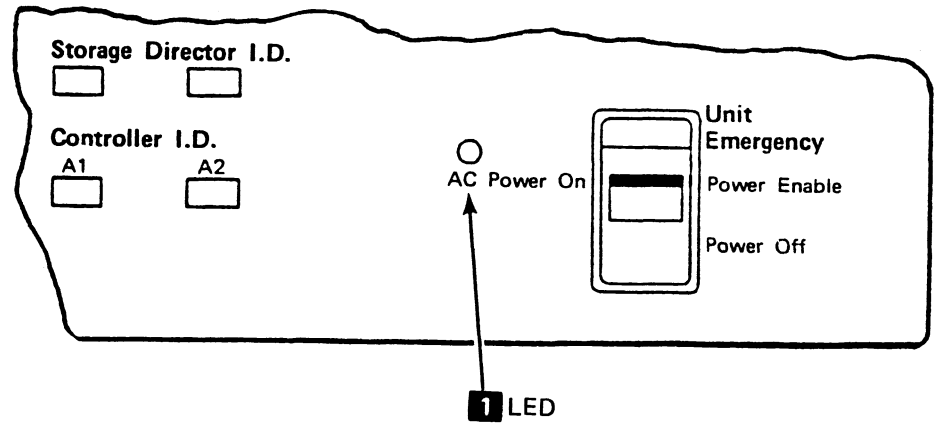
Name	Number	Position	Location
Mainline circuit breaker	CB200	Off	4
Drive Disconnect	CB201	Off	3
Circuit protectors, Front side	All	On	2 5
Circuit protectors, Rear side	All	On	6 7 8 14 15
Front and Rear Motor switches	SW691 SW692	On	13
(Enable/Disable) Logic switches	SW693 SW694 SW695 SW696	Enable	10
Local/Remote switches (2)	SW486 SW487	Local	9

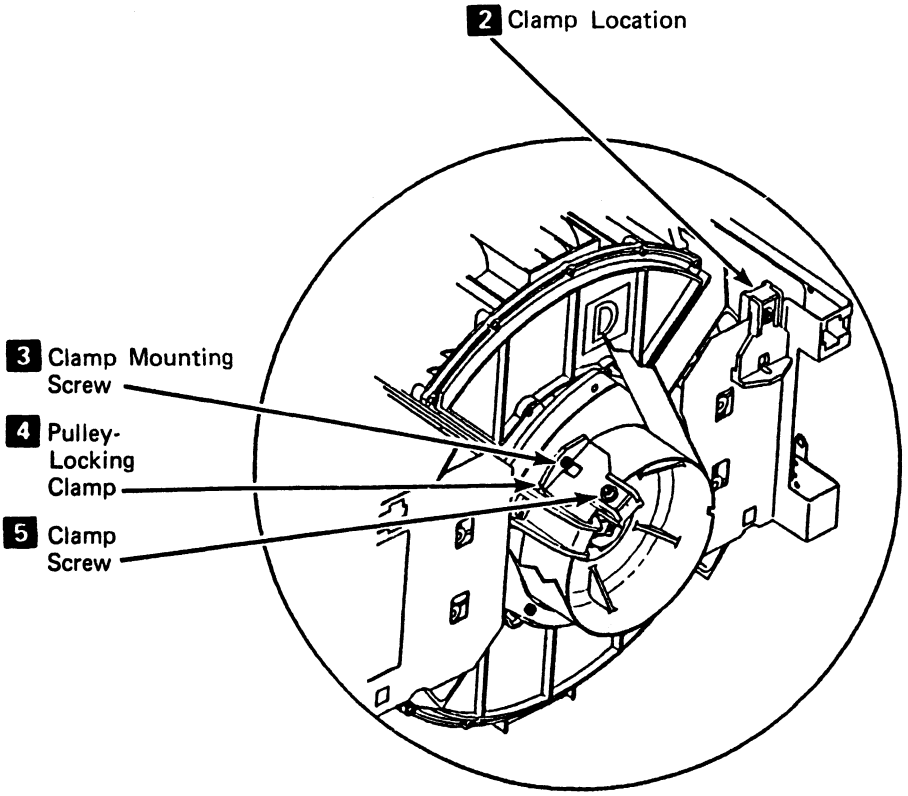
Operator Panel

Name	Number	Position	Location
Controller A1 and Controller A2 switches	SW150 SW151	Power Off	1
Device Enable/Disable switches	For all installed units (SW125 - 140)	Enable	11
Unit Emergency switch	SW191	Power Enable	12

__ 5. Continue with 18.0 Primary Power On on INST-205.

Figure 1. Operator Panel





18.0 PRIMARY POWER ON

__ 1. Perform the following:

__ a. Connect the A-unit power cable to the ac outlet.

__ b. Switch on the customer's outlet circuit breaker.

__ c. Switch on CB200 (mainline circuit breaker) 7 .

__ d. Leave CB201 off.

DANGER
Power is now present throughout the A unit. Use caution in touching electrical parts with hands or tools.

__ 2. Locate the red and green phase LEDs 6 on the primary power supply.

__ a. If the green phase LED is on, the ac line phasing is correct, so continue with step 3.

Note: *On 50 Hertz machines with a (Y) wye configuration, a missing phase B to the ac transformer T270 could still permit the green phase LED to come on but the drive motors may not start.*

__ b. If the red phase LED is on, either the ac line phasing is not correct or one phase is missing. If all ac phases were present when step 15.1.5 on INST-175 was performed, then do the Phase Rotation Rework Procedure on INST-215. When completed, return here and repeat step 2a. If the red LED is still on, go to PWR-10, Entry AM, to diagnose and correct the missing phase problem. Swap the Phase Correction plugs back to their original positions, if needed.

__ c. If both phase LEDs are off, go to PWR-10, Entry AM, to diagnose and correct the problem of why neither the red nor green LED is not on. When the problem is corrected, return here and repeat step 2a.

__ 3. Verify that the AC Power-On LED 1 on the operator panel (Figure 1) is on. If the LED is not on, go to PWR-10, Entry AM, to diagnose and correct the problem of why the AC Power-On LED is Off. When the problem is corrected, return here and continue with step 4.

__ 4. All switches and CPs should be set as shown in steps 1 and 4 on INST-195, except CB200 which should be On.

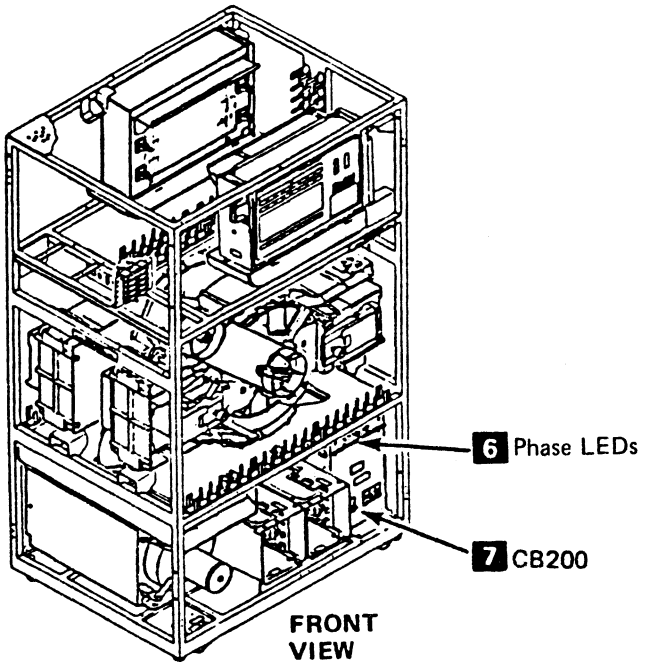
18.1 HDA PULLEY UNLOCK

__ 1. Remove the pulley-locking clamps 4 on all HDAs by performing the following steps:

__ a. Loosen the clamp screw 5 .

__ b. Loosen the clamp mounting screw 3 and remove the clamp 4 .

__ c. Tighten the clamp mounting screw 3 .

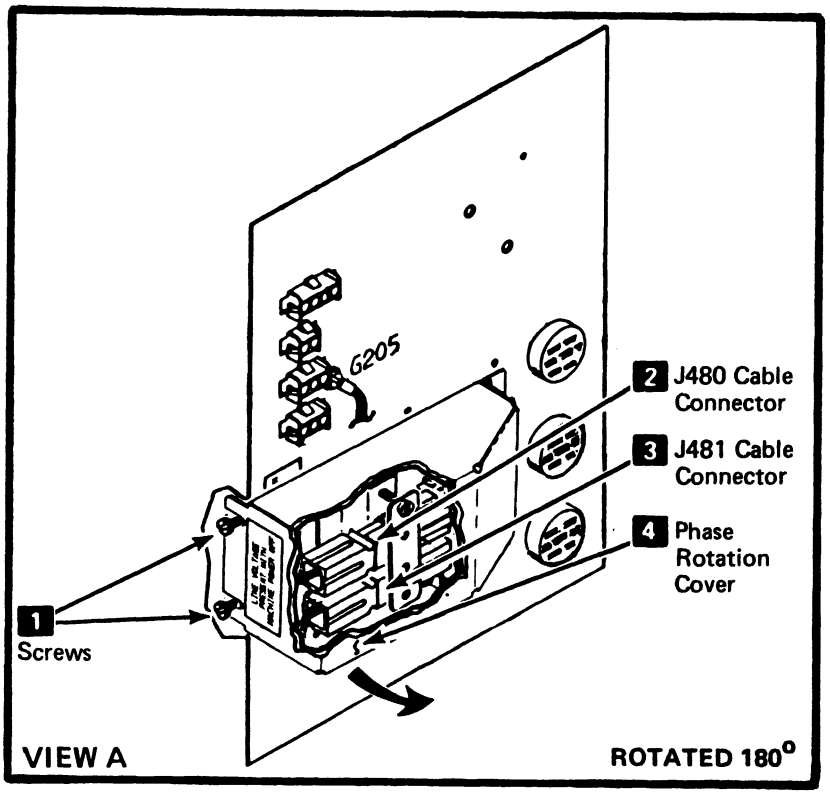


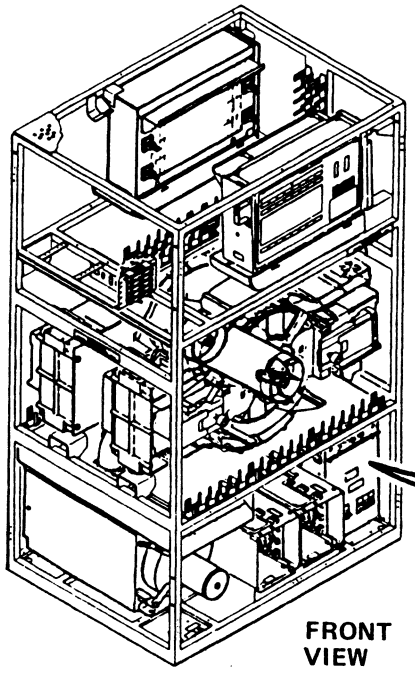
__ d. Attach the pulley-locking clamp 4 to the sheet metal to the right of the pulley with its clamp screw as shown 2 . Ensure that the clamp does not cover any labels that are present. It must be reinstalled when the 3380-DE is moved. It is also used for various replacement procedures.

18.2 BELT GUARD INSTALLATION

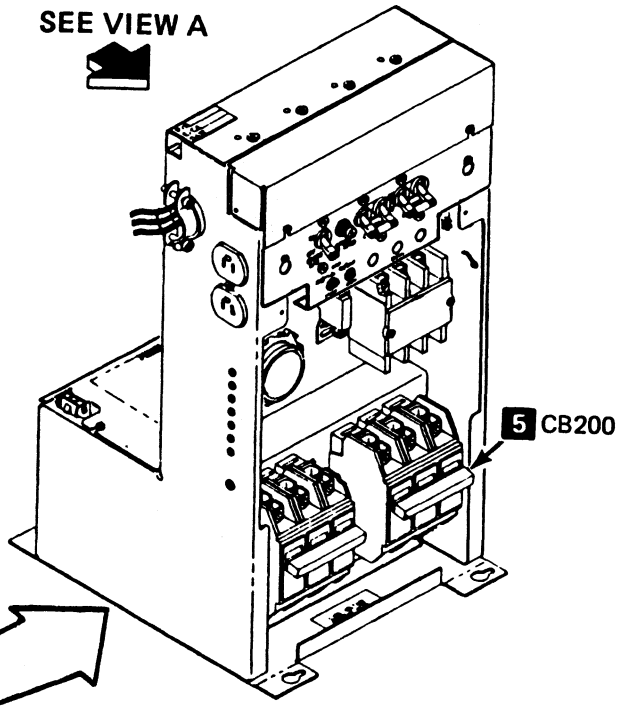
__ 1. On each HDA install the plastic belt guard P/N 2760317) with the two thumb nuts (P/N 2760421) to hold it in place. Ensure that the interlock switch closes when the cover is installed.

__ 2. Go to INST-225.





SEE VIEW A



19.0 PHASE ROTATION REWORK PROCEDURE

Note: *Perform the procedure on this page only when directed to do so. It is not part of the usual installation procedures.*

__ **1.** Set CB200 5 to Off, then disconnect the ac power cable connector 7 .

__ **2.** Loosen the two phase-cover mounting screws 1.

__ **3.** Open the phase rotation cover 4 as far as it will go.

__ **4.** Unplug and swap the J480 2 and J481 3 cable connectors.

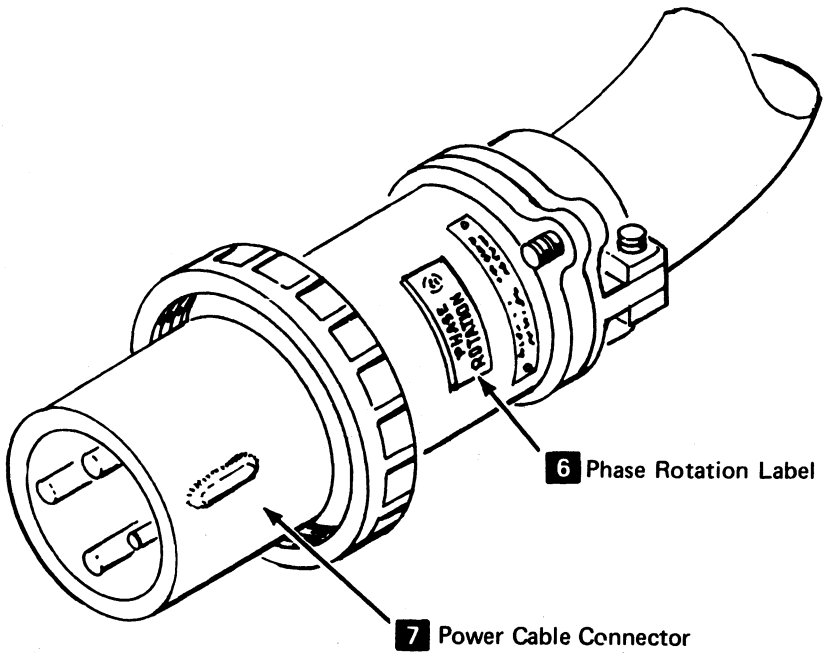
__ **5.** Close the phase rotation cover 4 and secure with screws 1 .

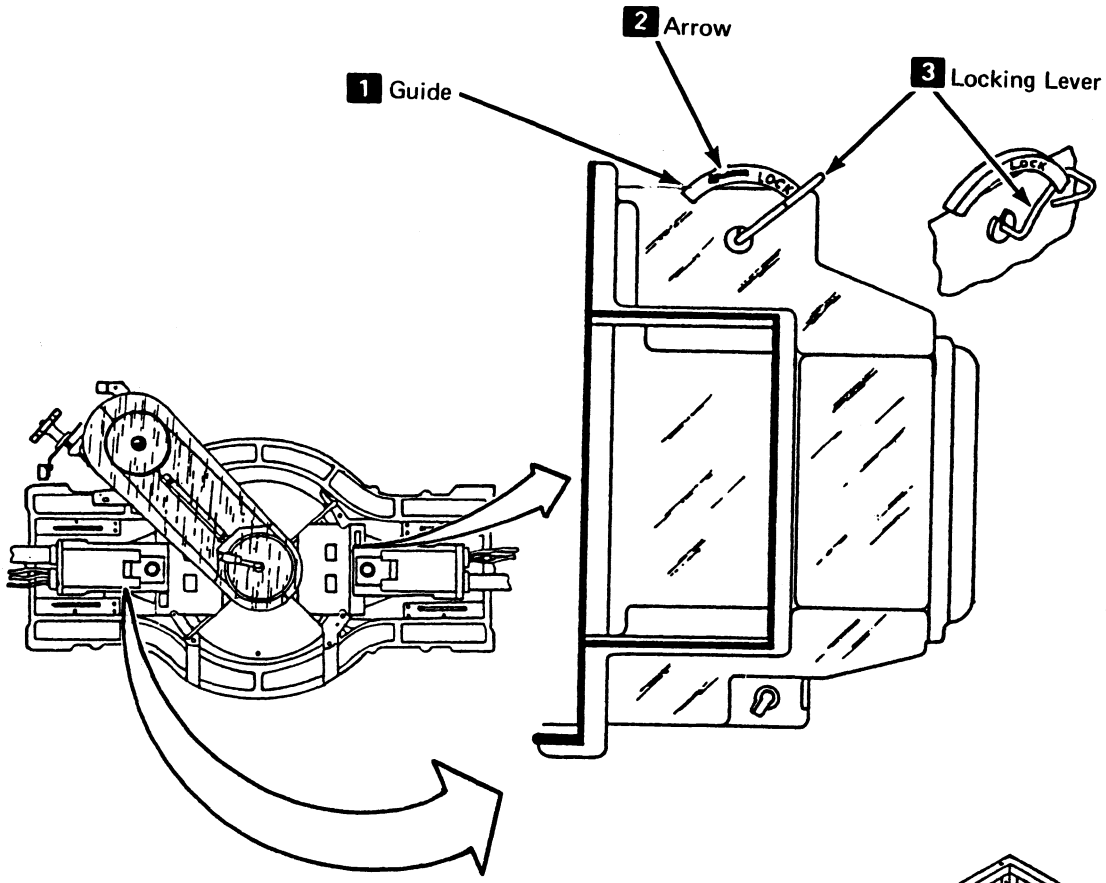
__ **6.** If a phase rotation label 6 is present on the power cable connector 7 and the phasing has been changed, remove the label to indicate the phasing is counterclockwise.

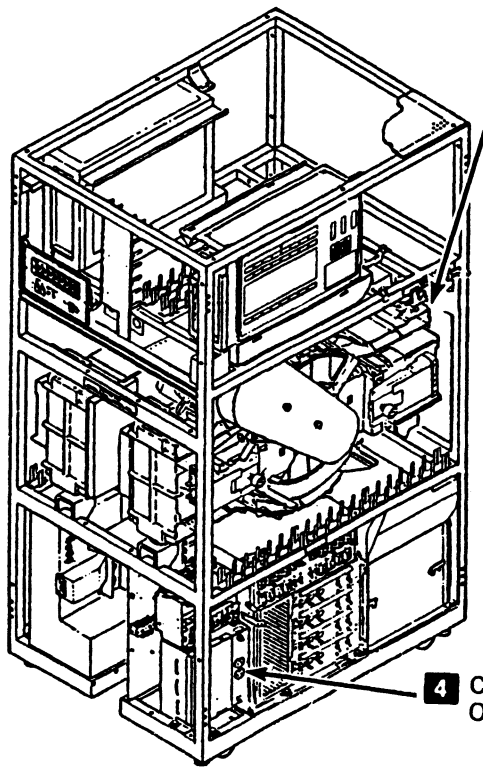
__ **7.** Reconnect the ac power cable and set CB200 5 to On.

__ **8.** Verify that the green phase LED is on.

__ **9.** Return to the procedure that sent you here.







REAR VIEW

20.0 ACCESS MECHANISM UNLOCK

Warning: If any access locking levers 3 are not in the locked position, do NOT continue installing or testing that HDA. A new HDA must be ordered and installed. See CARR-5, Entry A, in the MIM for HDA Removal and Replacement procedures.

__ 1. **Warning: Excessive force will bend the wire causing a failure to detent correctly and require replacement of the HDA.**

With your fingers or a spring hook, move the locking lever 3 toward the locked position enough to clear the detent. Pull out to the height of the detent and slide the locking lever in the opposite direction of the lock arrow 2. The locking lever 3 must ride against the guide 1 while being moved. Ensure that the locking lever detents at the end of the guide (the unlocked position).

__ 2. Repeat step 1 for the **left** access locking lever. See the direction of the lock arrow.

__ 3. Repeat the procedure for each HDA of each unit being installed.

20.1 MAINTENANCE DEVICE (MD) ATTACHMENT

The IBM Maintenance Device is being attached at this time to verify voltage at the convenience outlet.

__ 1. Plug the IBM Maintenance Device (MD) into the 3380-DE convenience outlet 4 at the rear of the A unit (frame 01).

__ 2. Set the MD power switch on.

__ 3. If the MD fails to power on, go to PWR-10, Entry AM.

__ 4. **Warning: Do not allow the MD cover to close down on top of the diskette. Damage to the diskette will occur, making it not usable.**

Insert the MD diskette.

__ 5. Press the IPL Reset pushbutton on the MD case. (The IPL process takes approximately 1 minute.)

__ 6. Press the ENTER key until the following message is displayed.

```
*** MAIN MENU ***
SEE PSG MD-1 010
0 - SET/RESET CE MODE
1 - RUN DIAGNOSTICS
```

The MD is now ready to be used with a diagnostic procedure.

Notes:

1. *To quickly return to the displayed menu when you have a problem using the MD, press the PF key.*
2. *Press the ENTER key on the keyboard to advance the display each time the display ends with '...'.*
3. *If the MD calls out a cable or card on the FRU list, first verify that the cable or card is correctly seated before continuing.*

For more details on MD usage, see the inside cover of the MD and START-1, Entry C, of the Product Service Guide (PSG).

__ 7. Leave the MD connected with power on and continue with the installation.

__ a. If only B units (frames 02, 03, 04) are being installed, leave the MD connected with power on and continue with the installation on INST-335.

__ b. If an A unit is being installed, continue with 21.0 CTLI Cable Connection procedure on INST-230.

21.0 CTLI CABLE CONNECTION

This procedure installs the control interface (CTLI) cables.

Be aware that the 3380-DE uses a single CTLI cable per controller.

Both the CTLI and the power sequence control cables (if used) can be laid from the 3880 (storage control) to the 3380-DE at the same time. A separate procedure installs the power sequence control cables.

Note: *The 3380 Models D and E differ from the other 3380 models in that they do not require a power sequence control cable to attach to the storage control. Power of a 3380-DE string is under the control of either controllers A1 or A2 when its Local/Remote switch is set to Local. Each controller is powered off and on from the 3380-DE operator panel with its own switch.*

If this installation is not going to use the power sequence control cables, disregard comments about the power sequence control cables in the following CTLI cable installation steps.

The controller A1 power sequence control cable must be connected to the same 3880 as the controller A1 CTLI cables. Controller A2 must connect its power sequence control cable to the same 3880 as the controller A2 CTLI cables.

Note: *Some maintenance procedures require that the cable routing between the storage director and string 0 and string 1 be known.*

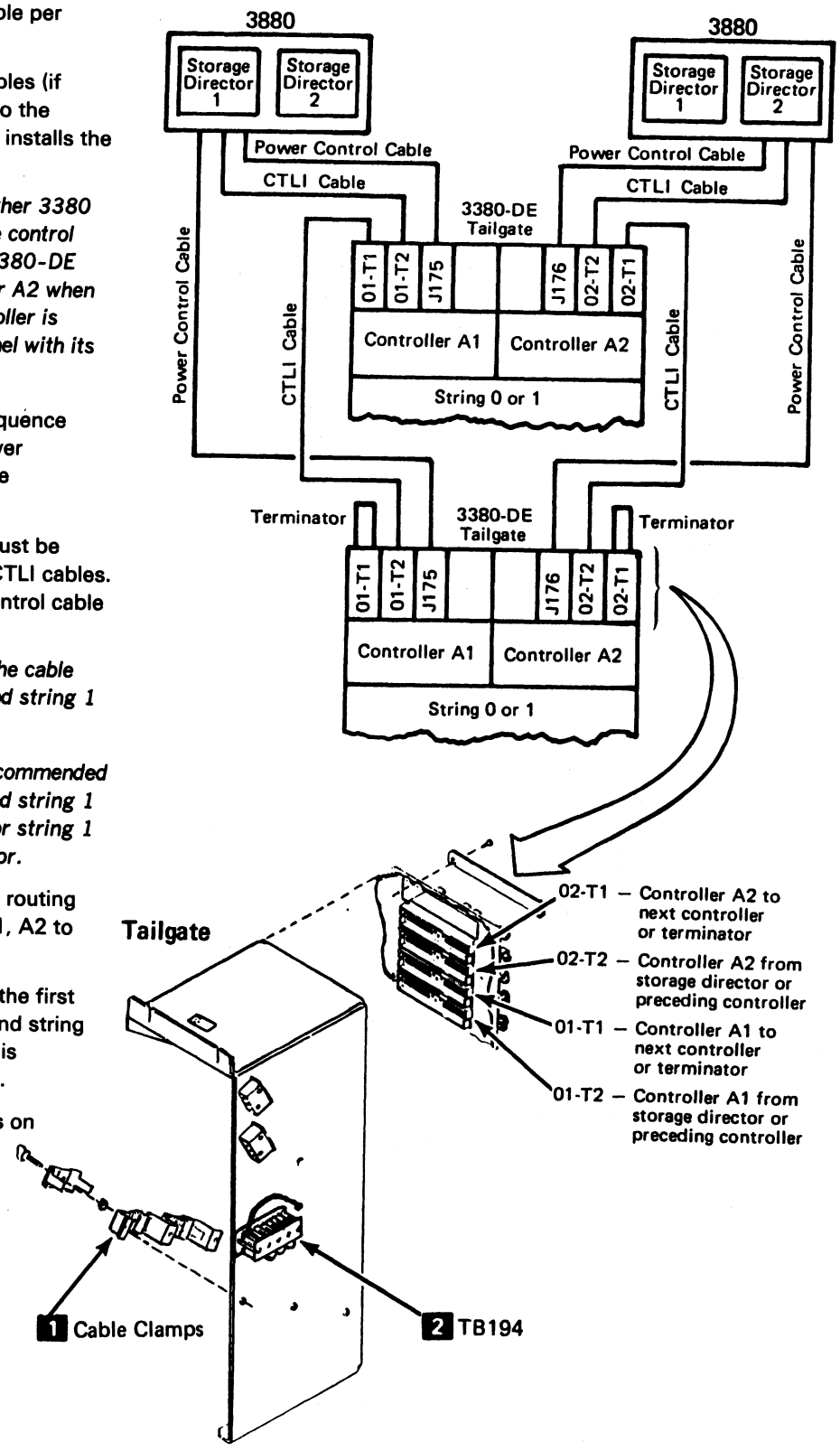
To avoid future confusion with cable routing, it is recommended that string 0 be connected to the storage director and string 1 be connected to string 0. However, either string 0 or string 1 can be the first string attached to the storage director.

__ 1. For a two-string configuration, the cable routing MUST be as shown in Figure 1, A1 to A1, A2 to A2.

Note that the cable in position 01-T1 of the first string is connected to 01-T2 of the second string and the cable in 02-T1 of the first string is connected to 02-T2 of the second string.

__ 2. Continue with the Installation Procedures on INST-235.

Figure 1. Cable Layout



21.0 CTLI CABLE CONNECTION

__ 3. Do not connect the power sequence control cable to the 3380-DE until instructed to do so.

__ 4. Before continuing, ensure that all devices associated with the storage director to which this 3380-DE string is being connected have been varied offline and are not available to the operating systems.

__ 5. Disable the channel interface switches of the powered-off storage directors.

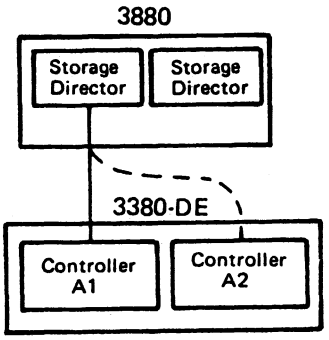
__ 6. At the 3880 power switch panel, power off the storage directors to which this 3380 string is being connected.

Note: *Do not power off the complete 3880 if the customer is using the other storage director. Just power off the storage director you are attaching the CTLI cable to.*

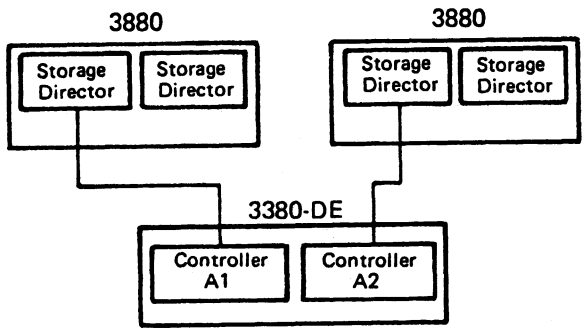
Warning: Do not connect any two short cables to make a long cable; this causes open cable ground shields which can result in machine failures.

__ 7. Determine which configuration is to exist on the machine.

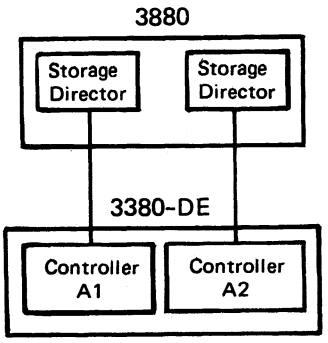
__ a. Figure 1: A 3380-DE connected to a single 3880 storage director because the second storage director is not available, go to INST-270



__ b. Figure 2: A 3380-DE connected to two storage directors in different 3880s, go to step 8 on this page.



__ c. Figure 3: A 3380-DE connected to two storage directors on the same 3880, go to step 8 on this page.



__ 8. To comply with radio frequency interference specifications, the CTLI cables must be clamped at both the 3380 and 3880 ends. The grounding wires on the ends of the CTLI cables do not provide the needed grounding.

See INST-238 and verify two things:

__ a. That a cable clamp 1 is present on the 3880 as shown. If not, continue with the installation, and order 3880 cable clamp EC released in July 1985.

__ b. That the CTLI cable insulation is removed in the areas shown by 2 and 5 and the metal cable shield exposed. If not, perform the CTLI Cable Rework procedure on INST-238, then return here and continue with the next step.

Note: *If the CTLI cables are not installed, expect string power-on problems because the power-on sequence is microcode controlled. The unconnected interface causes controller microcode errors which may stop the power-on process of the string. The unconnected interface can also cause controller connection diagnostic errors.*

__ 9. See Figure 1 on INST-230 and connect the CTLI cable from a storage director to Controller A1 as shown.

__ 10. Connect the CTLI cable from another storage director to controller A2 as shown in Figure 1 on INST-230.

__ 11. Continue on INST-237.

21.0 CTLI CABLE CONNECTION

__ 12. **Warning: The cable clamps at both ends ground the cable shield. They must be installed with the clamp screws and tightened to comply with radio frequency interference specifications.**

Place the CTLI cables into the cable clamps in both the 3380 and 3880 ends and securely tighten the clamping screws.

__ 13. Insert terminators (P/N 2759398, shipped with the storage control) into the 01-T1 and 02-T1 connectors on the last string.

__ 14. Connect the terminator ground wires to the ground terminal block TB194 2 .

__ 15. Power on the 3880 storage director to which this 3380-DE is being connected.

__ 16. Go to INST-240.

21.1 CTLI Cable Rework Procedure

Note: *Perform the procedure on this page only when directed to do so. It is not part of the usual installation procedure.*

__ **1.** Select one of the following tools to remove the insulation from the 3880 end of the CTLI cable.

- An X-acto[1] knife, P/N 452561, (this is the preferred tool)
- A pen knife or a pocket knife
- A pair of diagonal cutters (CE tool kit)

__ **2.** If you are using the diagonal cutters from the CE tool kit, perform step 3, then go to step 7.

__ **3.** Measure 940 mm from the 3880 connector and mark the cable as shown in Figure 2.

__ **4.** Form the cable into a loop as shown in Figure 3.

__ **5.** Use an X-acto knife, a pen knife, or a pocket knife to make a cut in the insulation around the cable. Use care to ensure that the cable shield is not damaged.

__ **6.** Slide the insulation toward the connector end of the cable. This can be accomplished by pushing and/or pulling on the section of the insulation shown as 4 (see Figure 2). Go to step 9.

__ **7.** Use the diagonal cutters and start at 3 to cut the insulation to the mark previously made on the cable 6 (see Figure 2). Use care to ensure that the cable shield is not damaged.

__ **8.** Cut the insulation from around the cable and remove it. This removes 635 mm of insulation from the cable.

__ **9.** Return to either INST-235 or INST-270 and continue with the CTLI cable installation.

Figure 1. 3880 Tailgate

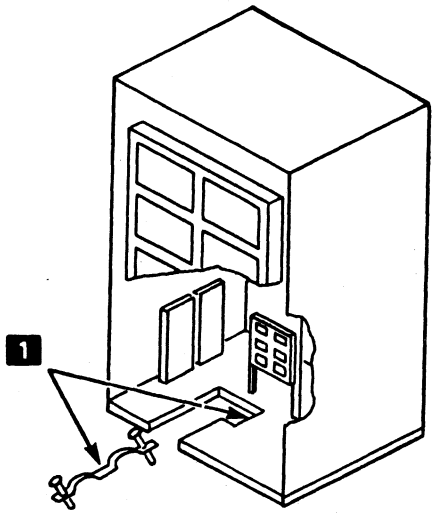


Figure 2. 3380 CTLI Cable

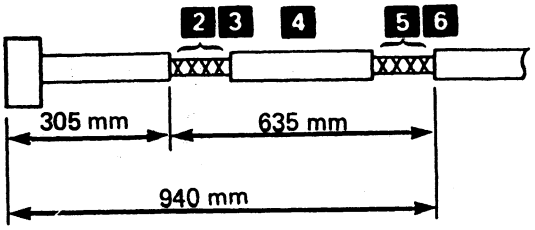
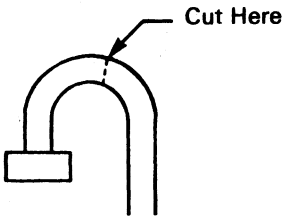


Figure 3. Bending The Cable



[1] Trademark of X-acto Inc.

22.0 CONTROLLER DC POWER

Either controller can control the string on/off power sequencing operation, so they must be tested separately.

The Unit Emergency switch on the operator panel is a safety switch. It switches off all power immediately, causing the HDAs to slow to a stop, with the heads landing on data areas, and not the park areas of the disk surface. A controlled power-off sequence which is started with the controller operator panel switches moves the heads to the park areas, switches the drive motors off, and applies the brake when the disk speed is at a minimum flying speed. This causes the heads to drag a minimum amount. During the stop sequence, the blower motor continues running to ensure positive air pressure in the HDA until the disks have stopped turning. The device microcode switches off the power to the B1 board when all of the above actions have been completed.

Therefore:

- **Do not** use the EPO switches to power the string off and on, use the controller switches. Both controllers must be off to power off the string.

22.1 Storage Director Verification

__ 1. Verify that the storage director attached to controller A1:

- __ a. Is powered on and has no error indicators on.
- __ b. Has a microcode diskette at the correct level for this 3380-DE.
- __ c. Is completely installed.
- __ d. Has run diagnostics without errors.

__ 2. Verify that the storage director attached to controller A2:

- __ a. Is powered on and has no error indicators on.
- __ b. Has a microcode diskette at the same level as the storage director attached to controller A1.
- __ c. Is completely installed.
- __ d. Has run diagnostics without errors.

22.2 Controller A1 DC Power Checkout

__ 1. With the operator panel Controller A1 Power On/Off switch set to Off, look within the A1 power supply (left) and verify the +5 Vsp and the +1.7 V LEDs are on.

__ 2. Set the operator panel Controller A1 Power On/Off switch to On and verify:

- __ a. The A1 fan in the A gate is running. Each A gate fan runs only when its associated logic power is active.
- __ b. The power supply LEDs on the A1M4 card are on (see Figure 1).
- __ c. Look within the A1 power supply (left) and verify the +5 Vsp and the +1.7 V LEDs are off.
- __ d. Look at the controller A1 Ready LED. If the controller is working correctly at power on, the controller microcode goes through a string power-on routine. The operator panel controller A1 Ready LED will indicate progress through the string power-on routine by:
  - Staying off for approximately two seconds.
  - Blinking off and on brightly for approximately 30 seconds.
  - Goes to a dim condition until the microcode leaves the unselected idle loop and turning bright while a device is selected.

__ 3.
- __ a. If all conditions in step 2 exist, power is on. Go to step 4.
- __ b. If the power LEDs on the A1M4 card are on and the fan is not running, check for mainline voltage at the fan connector J878 (see YA100).
- __ c. If the A1M4 card power LEDs are off or the A1 power supply LEDs are on, go to PWR-10, Entry AI.
- __ d. If the controller A1 operator panel Ready LED does not come on, verify the CTLI installation by performing the following steps using the MD.
- __ e. Select option 1 from the main menu.
- __ f. Next select the controller diagnostics and then select controller A1.
- __ g. Run the diagnostics.

After the problem is corrected, leave the MD connected with power on. Use the PF key to return to the main option menu. Then return here and continue with the next step.

Note: *If the A1M4 card power LEDs are on and the A1 power supply LEDs are off, assume that all the power supplies are operating correctly.*

__ 4. Go to INST-245.

22.0 CONTROLLER DC POWER (Continued)

22.3 Controller A2 DC Power Checkout

__ 1. With the operator panel Controller A2 Power On/Off switch set to Off, look within the A2 power supply (right) and verify the +5 Vsp and the +1.7 V LEDs are on.

__ 2. Set the operator panel Controller A2 Power On/Off switch to On and verify:

__ a. The A2 fan in the A gate is running. Each A gate fan runs only when its associated logic power is active.

__ b. The power supply LEDs on the A1L4 card are on (see Figure 1).

__ c. Look within the A2 power supply (left) and verify the +5 Vsp and the +1.7 V LEDs are off.

__ d. The operator panel Controller A2 Ready LED should become dim within 15 seconds of setting the Power On/Off switch to On.

Note: *The controller A2 Ready LED went to the dim condition much sooner because the active A1 controller has its 'power sequence complete' line active. The A2 routine ends as soon as its microcode recognizes the active line.*

__ 3. a. If all conditions in step 2 exist, power is on. Go to step 4.

__ b. If the power LEDs on the A1L4 card are on and the fan is not running, check for mainline voltage at the fan connector J879 (see YA100).

__ c. If the A1L4 card power LEDs are off or the A2 power supply LEDs are on, go to PWR-10, Entry AI.

__ d. If the controller A2 operator panel Ready LED does not come on, verify the CTLI installation by performing the following steps using the MD.

__ e. Verify controller A1 is powered on.

__ f. Select option 1 from the main menu.

__ g. Next select the controller diagnostics and then select controller A2.

__ h. Run the diagnostics.

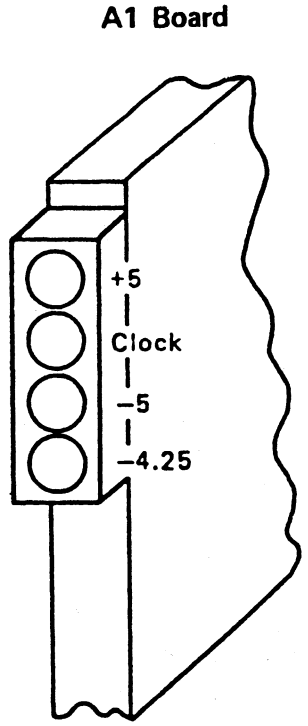
After the problem is corrected, leave the MD connected with power on. Use the PF key to return to the main menu. Then return here and continue with the next step.

Note: *If the A1L4 card power LEDs are on and the A2 power supply LEDs are off, assume that all the power supplies are operating correctly.*

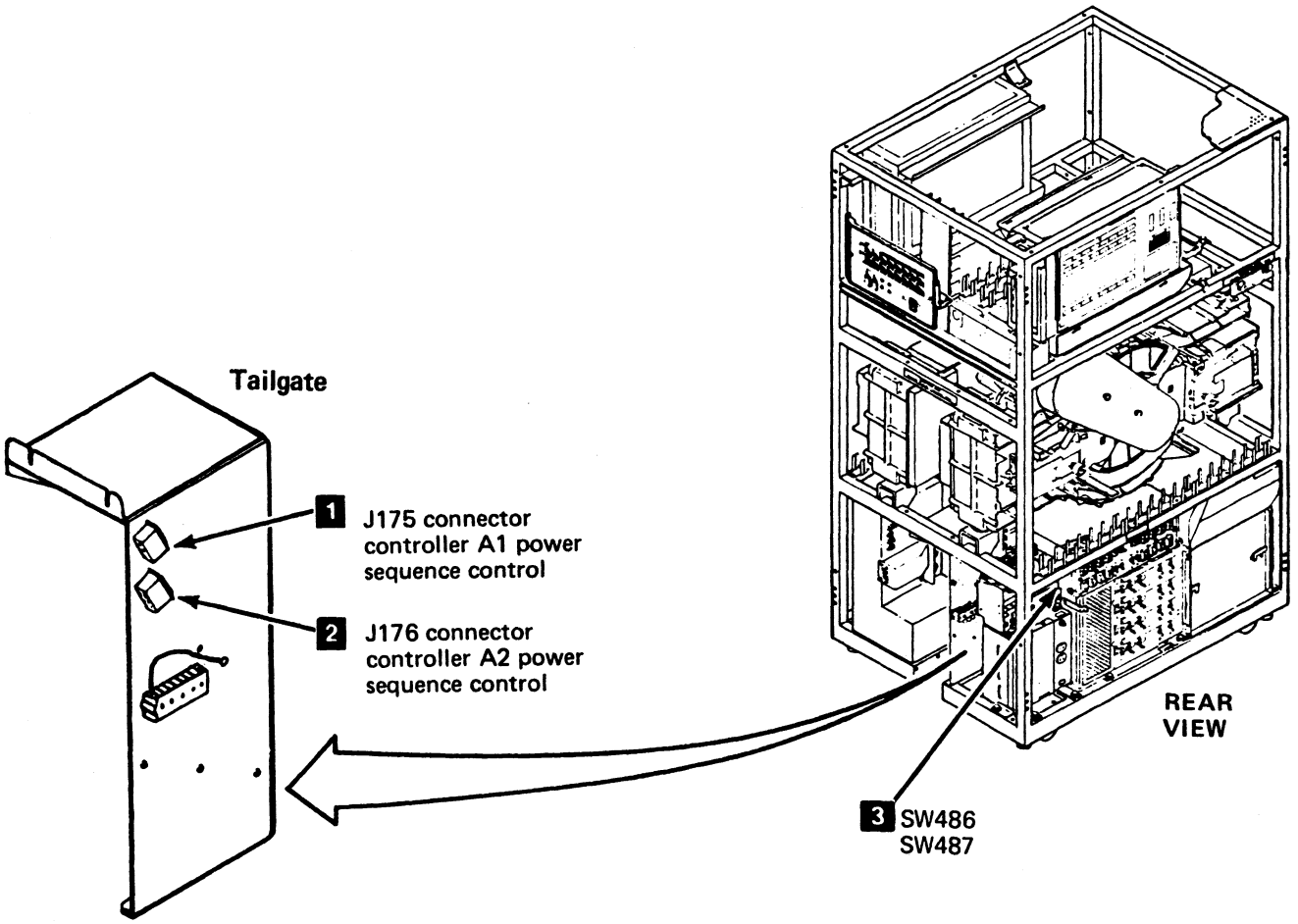
__ 4. If you are not using power sequence control cables, continue with 24.3 Diagnostic Check procedures on INST-265.

__ 5. If you are using power sequence control cables, continue with the installation procedures on INST-255.

Figure 1. Power Supply LEDs



A1L4 for Controller A2
A1M4 for Controller A1



23.0 POWER SEQUENCE CONTROL CABLE INSTALLATION

This procedure:

- Connects the power sequence control cables between the 3880 and 3380-DE.
- Verifies the power-on sequence of controller A1 and A2 by the 3880 Storage Control.

Note: *If the 3380-DE controller has its power sequence control cable installed and an attached 3880 powers off and then immediately back on, the 3380-DE controller also powers off and on with the 3880. In the meantime, if the other controller is powered off, in each device of the string the associated loss of the power-on signal from the controller to the device starts a device microcode power-off routine. Then, while in the power-off routine, the device receives the power-on signal from the controller, the device microcode then branches to the beginning of the 3-minute warm-up routine to power on to a ready condition.*

__ 1. At the operator panel, power off controller A1 and A2.

__ 2. Set the Local/Remote switches (SW486 and SW487 3) to Remote.

__ 3. For controller A1, connect the power sequence control cable between any 3880 device power cable D connector and the 3380-DE tailgate connector J175 1 .

Note: *The controller A1 power sequence control cable must be connected to the same 3880 as the controller A1 CTLI cable.*

__ 4. For controller A2, connect the power sequence control cable between any 3880 device power cable D connector and the 3380-DE tailgate connector J176 2 .

Note: *The controller A2 power sequence control cable must be connected to the same 3880 as the controller A2 CTLI cable.*

__ 5. For controller A1, verify that the 3880 power switch panel has its Device Power Sequencing Enable/Disable switch set to Enable.

__ 6. At the operator panel, set the Controller A1 Power On/Off switch to On.

__ 7. Verify that controller A1 powers on. (The power supply LEDs on the A1M4 card are on.)

If controller A1 fails to power on, go to PWR-10, Entry AI, to diagnose the problem of why controller A1 will not power on when in the Remote position. After the problem has been repaired, return here and continue with the next step.

__ 8. For controller A2, verify that the attached 3880 power switch panel has its Device Power Sequencing Enable/Disable switch set to Enable.

__ 9. At the operator panel, power on controller A2.

__ 10. Verify that controller A2 powers on. (The power supply LEDs on the A1L4 card are on.)

If controller A2 fails to power on, go to PWR-10, Entry AI, to diagnose the problem of why controller A1 will not power on when in the Remote position. After the problem has been repaired, return here and continue with the next step.

__ 11. **Warning: Powering off a 3880 will make both of its storage directors unavailable to the customer. Verify that all storage director paths are varied offline.**

If the customer will permit the 3880 attached to either controller A1 or controller A2 to be powered off, go to INST-260.

__ 12. If the customer will **not** permit the 3880s attached to both controller A1 and A2 to be powered off, go to 24.3 Diagnostic Check on INST-265.

Note *Be aware that the remote power on/off circuits have not been checked and should be checked at a later time when the other storage control can be powered off.*

24.0 REMOTE POWER SEQUENCE CHECKOUT WITH TWO STORAGE DIRECTORS

3380-DE checkout with two 3880 storage directors.

In this procedure, each 3880 storage director will now be powered off to check the remote power on/off circuits between the 3880 and 3380-DE.

24.1 Remote Power Sequencing Check For Controller A1

__ 1. If the customer will not permit powering off of the 3880 attached to controller A1 because the 3880 has the other storage director in use, continue with the Remote Power Sequencing Check for Controller A2 on this page.

Note: *If you skip the following check, be aware that the remote power on/off circuits have not been checked and should be checked at a later time when the other storage control can be powered off.*

__ 2. If there are other strings attached to the 3880, set each of their Local/Remote switches to Local to speed the following test.

__ 3. At the operator panel in the 3880 attached to controller A1, power off the 3880 using the Subsystem Power switch.

__ 4. Wait until the 3380-DE A1M4 card LEDs go off. If controller A1 fails to power off, go to PWR-10, Entry AR, to diagnose the problem. Then return here and continue with the next step.

__ 5. At the 3880 operator panel, power on the 3880.

__ 6. Wait 25 seconds to see if the Power Seq Complete LED on the 3880 operator panel is on or off. It should be on.

Note: *If other devices are attached to the 3880 and were not set to Local, the time for the LED to come on will be longer.*

If the 3880 Power Seq Complete LED is off, suspect the EPO circuit. Go to PWR-10, Entry AK, to solve the problem. Then return here and continue with the next step.

__ 7. Verify that controller A1 is powered on. The LEDs on the A1M4 card should be on. If controller A1 fails to power on, go to PWR-10, Entry AI, to diagnose the problem. Then return here and continue with the next step.

__ 8. Return any Local/Remote switches which were previously set to Local back to Remote.

24.2 Remote Power Sequencing Check For Controller A2

This procedure checks the remote power sequencing between the 3880 and the 3380-DE controller A2.

__ 1. If the customer will not permit powering off of the 3880 attached to controller A2, continue with the Diagnostic Check on INST-265. Remember to check the remote power on/off circuits at a later time.

Note: *If you skip the following check, be aware that the remote power on/off circuits have not been checked and should be checked at a later time when the other storage control can be powered off.*

__ 2. If there are other strings attached to the 3880, set each of their Local/Remote switches to Local to speed the following test.

__ 3. At the operator panel in the 3880 attached to the 3380-DE controller A2, power off the 3880 using the Subsystem Power switch.

__ 4. Wait until the 3380-DE A1L4 card LEDs go off. If controller A2 fails to power off, go to PWR-10, Entry AR, to diagnose the problem. Then return here and continue with the next step.

__ 5. At the 3880 operator panel, power on the 3880.

__ 6. Wait 25 seconds to see if the Power Seq Complete LED on the 3880 operator panel is on or off.

Note: *If other devices are attached to the 3880 and were not set to Local, the time for the LED to come on will be longer.*

If the 3880 Power Seq Complete LED is off, suspect the EPO circuit is failing. Go to PWR-10, Entry AK, to solve the problem. Then return here and continue with the next step.

__ 7. Verify that controller A2 is powered on. The LEDs on the A1L4 card should be on. If controller A2 fails to power on, go to PWR-10, Entry AI, to diagnose the problem. Then return here and continue with the next step.

__ 8. Return any Local/Remote switches which were previously set to Local back to Remote.

__ 9. Continue with the Installation procedure on INST-265.

24.3 Diagnostic Check

This procedure tests communications between both controllers and their attached 3880 storage directors.

__ 1. At the 3380-DE operator panel, verify that the Controller A1 Power On/Off switch is on. Wait until the controller A1 Ready LED comes dim or for 15 seconds.

__ 2. If you have just performed either the remote power sequencing check or if the storage director attached to controller A1 is currently in use by the customer, go to step 3; otherwise, use the Storage Director Power switch in the 3880 and momentarily power the attached storage director off and then on. This is done to generate a storage director microcode IML to get the code into the idle loop and to prevent the MD attached to the 3380-DE from seeing diagnostic errors.

__ 3. If you have not already done so, plug the MD cable into the MD socket.

__ 4. If the MD is not at the main menu, press the PF key.

__ 5. Select option 1 from the main menu. Next select controller diagnostics, then select controller A1.

__ 6. The MD then checks out controller A1.

Observe that the operator panel controller A1 Ready LED is blinking while the diagnostic is running and the LED stays on at the end of the test.

If an error occurs, perform the actions requested by the MD. Then return here and continue with the next step.

__ 7. Verify the operator panel controller A1 Ready LED is on. If it is not on, go to PWR-10, Entry BT.

__ 8. Verify that controller A1 is powered on.

Note: *Controller A1 must be powered on whenever the MD is communicating with controller A2.*

__ 9. If the MD is not at the main menu, press the PF key.

__ 10. At the 3380-DE operator panel, verify that the Controller A2 Power On/Off switch is on. Wait until the controller A2 Ready LED is on or for 15 seconds.

__ 11. If you have just performed either the remote power sequencing check or if the storage director attached to controller A2 is currently in use by the customer, go to step 12; otherwise use the Storage Director Power switch in the 3880 and momentarily power the attached storage director off and then on. This is done to generate a storage director microcode IML to get the code into the idle loop and to prevent the MD attached to the 3380-DE from seeing diagnostic errors.

__ 12. Select option 1 from the main menu. Next select controller diagnostics, then select controller A2.

__ 13. The MD then checks out controller A2.

Observe that the operator panel controller A2 Ready LED is blinking while the diagnostic is running and the LED stays on at the end of the test.

If an error occurs, perform the actions requested by the MD. Then return here and continue with the next step.

__ 14. Verify the operator panel controller A2 Ready LED is on. If it is not on, go to PWR-10, Entry BT.

__ 15. Return to the main menu. Press the PF key.

__ 16. Select option 1 from the main menu. Next select the extended DPS test, then test both controllers.

__ 17. The MD checks out the DPS function of both controllers. If an error occurs, perform the actions requested by the MD. Then return here and continue with the next step.

__ 18. Press the PF key to return to the main menu, and continue with the Installation Procedures on INST-335.

25.1 Controller Cable Connections With One Storage Director

This procedure checks out the 3380-DE string with the use of only one storage director. A number of CTLI cable swaps will be performed but each is needed for a successful checkout of the complete 3380-DE.

__ 1. To comply with radio frequency interference specifications, the CTLI cable must be clamped at both the 3380 and 3880 ends. The grounding wires on the ends of the CTLI cable do not provide the needed grounding.

See INST-238 and verify two things:

__ a. That a cable clamp 1 is present on the 3880 as shown. If not, call your support center for instructions.

__ b. That the CTLI cable insulation is removed in the areas shown by 2 and 5 and the metal cable shield exposed. If not, perform the CTLI Cable Rework procedure on INST-238, then return here and continue with the next step.

Note: *If the CTLI cables are not installed, expect string power-on problems because the power-on sequence is microcode controlled. The unconnected interface causes controller microcode errors which may stop the power-on process of the string. The unconnected interface can also cause connection diagnostic errors.*

__ 2. See Figure 1 on INST-230 and connect the CTLI cable to the 3880 storage director as shown.

__ 3. Connect the CTLI cable to controller A1 regardless of your final configuration to successfully perform the following checkout. Use the 01-T2 connector for the cable.

__ 4. **Warning: The cable clamps at both ends ground the cable shield. They must be installed with the clamp screws and tightened to comply with radio frequency interference specifications.**

Place the CTLI cable into the cable clamps in both the 3380 and 3880 ends and securely tighten the clamping screws.

__ 5. Install the terminator (P/N 2759398), shipped with the storage control, into the 01-T1 connector.

25.2 Controller Power On/Off Warning

Either controller can control the string on/off power sequencing operation, so they must be tested separately.

The Unit Emergency switch on the operator panel is a safety switch. It switches off all power immediately, causing the HDAs to slow to a stop, with the heads landing on data areas, and not the park areas of the disk surface. A controlled power-off sequence which is started with the controller operator panel switches moves the heads to the park areas, switches the drive motors off, and applies the brake when the disk speed is at a minimum flying speed. This causes the heads to drag a minimum amount. During the stop sequence, the blower motor continues running to ensure positive air pressure in the HDA until the disks have stopped turning. The device microcode switches off the power to the B1 board when all of the above actions have been completed.

Therefore:

- **Do not** use the EPO switches to power the string off and on, use the controller switches. Both controllers must be off to power off the string.

25.3 Storage Director Verification

__ 1. Verify that the storage director attached to controller A1:

__ a. Is powered on and has no error indicators on.

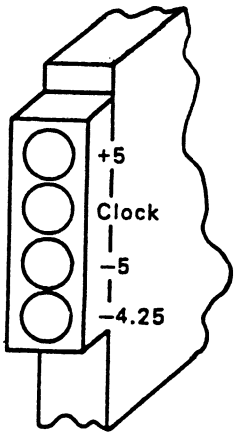
__ b. Has a microcode diskette at the correct level for this 3380-DE.

__ c. Is completely installed.

__ d. Has run diagnostics without errors.

__ 2. Go to INST-275.

Figure 1. Power Supply LEDs



A1L4 for Controller A2
A1M4 for Controller A1

25.4 Controller A1 DC Power Checkout with One Storage Director

__ 1. With the operator panel Controller A1 Power On/Off switch set to Off, look in the A1 power supply (left) and verify the +5 Vsp and the +1.7 V LEDs are on.

__ 2. Set the operator panel Controller A1 Power On/Off switch to On and verify:

__ a. The A1 fan in the A gate is running. Each A gate fan runs only when its associated logic power is active.

__ b. The power supply LEDs on the A1M4 card are on (see Figure 1).

__ c. Look in the A1 power supply (left) and verify the +5 Vsp and the +1.7 V LEDs are off.

__ d. Look at the Controller A1 Ready LED.

If the controller is working correctly, at power on the controller microcode goes through a string power-on routine. The operator panel Controller A1 Ready LED indicates progress through the routine by:

- Staying off for approximately two seconds.
- Blinking off and on brightly for approximately 30 seconds.
- Goes to a dim condition until the microcode leaves the unselected idle loop and turning bright while a device is selected.

__ 3. a. If all conditions in step 2 exist, power is on. Go to 25.5 Diagnostic Check Controller A1 Tested With One Storage Director on this page.

__ b. If the power LEDs on the A1M4 card are on and the fan is not running, check for mainline voltage at the fan connector J878 (see YA100).

__ c. If the A1M4 card power LEDs are off or the A1 power supply LEDs are on, go to PWR-10, Entry AI.

__ d. If the controller A1 operator panel ready LED does not come on, verify the CTLI installation by performing the following steps using the MD.

__ e. Select option 1 from the main menu.

__ f. Next select the controller diagnostics and then select controller A1.

__ g. Run the diagnostics.

After the problem is corrected, leave the MD connected with power on. Use the PF key to return to the main option menu. Then return here and continue with the next step.

Note: *If the A1M4 card power LEDs are on and the A1 power supply LEDs are off, assume that all power supplies are operating correctly.*

25.5 Diagnostic Check Controller A1 Tested With One Storage Director

This procedure tests communications between controller A1 and the attached 3880 storage director.

__ 1. If you have just performed either the remote power sequencing check or if the storage director attached to controller A1 is currently in use by the customer, go to step 2; otherwise use the Storage Director Power switch in the 3880 and momentarily power the attached storage director off and then on. This is done to generate a storage director micrccode IML to get the code into the idle loop and to prevent the MD attached to the 3380-DE from seeing diagnostic errors.

__ 2. If you have not already done so, plug the MD cable into the MD socket.

__ 3. If the MD is not at the main menu, press the PF key.

__ 4. Select option 1 from the main menu. Next select controller diagnostics, then select controller A1.

__ 5. The MD then checks out controller A1.

Observe that the operator panel controller A1 Ready LED is blinking while the diagnostic is running and remains at the dim condition at the end of the test.

If an error occurs, perform the actions requested by the MD. Then return here and continue with the next step.

__ 6. Verify that the operator panel controller A1 Ready LED is on. If off, go to PWR-10, Entry BT.

__ 7. Go to INST-280.

25.6 Controller A2 DC Power Checkout With One Storage Director

This procedure checks out the A2 board logic power when only one storage director is available during the installation.

__ 1. Power off controller A1 at the operator panel.

__ 2. Move the CTLI cable and terminator from the 01-T2 and 01-T1 positions into the 02-T2 and 02-T1 positions.

__ 3. With the operator panel Controller A2 Power On/Off switch (see 1 on INST-190) set to Off, look in the A2 power supply (right) and verify the +5 Vsp and the +1.7 V LEDs are on.

__ 4. Set the operator panel A2 controller Power On/Off switch to On and verify:

__ a. The A2 fan in the A gate is running. Each A gate fan runs only when its associated logic power is active.

__ b. The power supply LEDs on the A1L4 card are on (see Figure 1).

__ c. Look in the A2 power supply (right) and verify the +5 Vsp and the +1.7 V LEDs are off.

__ d. Look at the Controller A2 Ready LED.

If the controller is working correctly, at power on the controller microcode goes through a string power-on routine. The operator panel Controller A2 Ready LED indicates progress through the routine by:

- Staying off for approximately two seconds.
- Blinking off and on brightly for approximately 30 seconds.
- Goes to a dim condition until the microcode leaves the unselected idle loop and turning bright while a device is selected.

__ 5. a. If all conditions exist, power is on. Go to step 6.

__ b. If the power LEDs on the A1L4 card are on and the fan is not running, check for mainline voltage at the fan connector J879 (see YA100).

__ c. If the A1L4 card power LEDs are off or the A2 power supply LEDs are on, go to PWR-10, Entry AI.

__ d. If the operator panel Controller A2 Ready LED does not come on, verify the CTLI installation by performing steps e, f, g, and h using the MD.

__ e. Power on controller A1 at the operator panel to provide power to the MD adapter card in controller A1. Do not be concerned if the controller A1 LED on the operator panel does not come on.

__ f. Select option 1 from the main menu.

__ g. Next, select the controller diagnostics and then select controller A2.

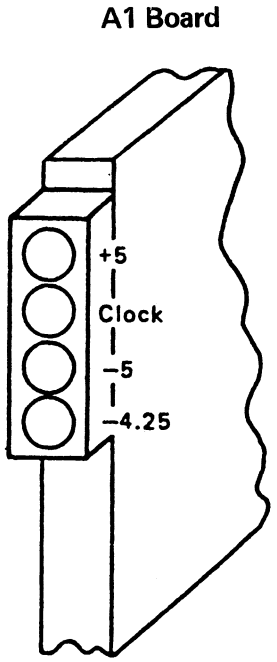
__ h. Run the diagnostics.

After the problem is corrected, leave the MD connected with power on. Use the PF key to return to the option menu. Then return here and continue with the next step.

Note: *If the A1L4 card power LEDs are on and the A2 power supply LEDs are off, assume that the power supplies are operating correctly.*

__ 6. Go to INST-285.

Figure 1. Power Supply LEDs



A1L4 for Controller A2
A1M4 for Controller A1

25.7 Diagnostic Check Controller A2 Tested With One Storage Director

This procedure tests communications between controller A2 and the attached 3880 storage director.

__ 1. At the 3380-DE operator panel, power on controller A1. Verify controller A1 powers on with the A1M4 LED.

__ 2. If the storage director is currently in use by the customer, go to step 3; otherwise, use the Storage Director Power switch on the 3880 and momentarily power the attached storage director off and then on. This is done to generate a storage director microcode IML to get the code into the idle loop and to prevent the MD attached to the 3380-DE from seeing diagnostic errors.

__ 3. If the MD is not at the main menu, press the PF key.

__ 4. Select option 1 from the main menu. Next select controller diagnostics, then select controller A2.

__ 5. The MD then checks out controller A2.

Observe that the operator panel controller A2 Ready LED is blinking while the diagnostic is running and remains at the dim condition at the end of the test.

If an error occurs, perform the actions requested by the MD. Then return here and continue with the next step.

__ 6. Verify that the operator panel controller A2 Ready LED is on. If off, go to PWR-10, Entry BT.

__ 7. If you are not using power sequence control cables, go to INST-305.

__ 8. Go to INST-290.

26.0 POWER SEQUENCE CONTROL CABLE INSTALLATION WITH ONE STORAGE DIRECTOR

This procedure:

- Connects a power sequence control cable between the 3880 and 3380-DE.
- Verifies the power-on sequence of controller A2 by the 3880.

Note: *With one storage director, if the 3380-DE controller has its power sequence control cable installed and the attached 3880 powers off and then immediately back on, the 3380-DE controller also powers off and on with the 3880. In the meantime, if the other controller is powered off, in each device of the string the associated loss of the power-on signal from the controller to the device starts a device microcode power-off routine. Then, while in the power-off routine, the device receives the power-on signal from the controller, the device microcode then branches to the beginning of the 3-minute warm-up routine to power on to a ready condition.*

__ 1. Power off controller A2 at the operator panel.

__ 2. Set the Local/Remote switch, SW487 (9 on INST-190) to Remote.

__ 3. Connect the power sequence control cable between any 3880 device power cable D connector and the 3380-DE tailgate connector J176 (2 on INST-250).

__ 4. Verify that the 3880 power switch panel has its Device Power Sequencing Enable/Disable switch set to Enable.

Note: *The controller A2 power sequence control cable must be connected to the same 3880 as the controller A2 CTLI cable.*

__ 5. At the operator panel, set the controller A2 Power On/Off switch to On.

__ 6. Verify that controller A2 powers on. The power supply LEDs on the A1L4 card are on. (Do not be concerned with the 3380-DE Operator Panel Controller A2 Ready LED.)

If controller A2 fails to power on, go to PWR-10, Entry AI, to diagnose the problem of why controller A2 will not power on when in Remote. After the problem has been repaired, return here and continue with the installation on INST-295.

26.1 REMOTE POWER SEQUENCE CHECKOUT FOR CONTROLLER A2 WITH ONE STORAGE DIRECTOR

3380-DE checkout with one 3880 storage director.

In this procedure, the 3880 Storage Control will now be powered off to check the remote power on/off circuits between the 3880 and 3380-DE.

Warning: Powering off a 3880 will make both of its storage directors unavailable to the customer. Verify that all storage director paths are varied offline.

__ 1. If the customer will not permit powering off of the 3880 attached to the 3380-DE because the 3880 has one of its storage directors in use, continue with the installation on INST-305.

Note: *Be aware that the remote power on/off circuits have not been checked and should be checked at a later time when the storage control can be powered off.*

__ 2. If there are other strings attached to the 3880, set each of their Local/Remote switches to Local to speed the following test.

__ 3. At the operator panel on the 3880, power off the 3880 using the Subsystem Power switch.

__ 4. Wait until the 3380-DE A1L4 card LEDs go off. If controller A2 fails to power off, go to PWR-10, Entry AR, to diagnose the problem. Then return here and continue with the next step.

__ 5. At the 3880 operator panel, power on the 3880.

__ 6. Wait 25 seconds to see if the Power Seq Complete LED on the 3880 operator panel is on or off. It should be on.

Note: *If other devices are attached to the 3880 and were not set to Local, the time for the LED to come on will be longer.*

If the 3880 Power Seq Complete LED is off, suspect the EPO circuit. Go to PWR-10, Entry AK, to solve the problem. Then return here and continue with the next step.

__ 7. Verify that controller A2 is powered on. The LEDs on the A1L4 card should be on. If controller A2 fails to power on, go to PWR-10, Entry AI, to diagnose the problem. Then return here and continue with the installation on INST-305.

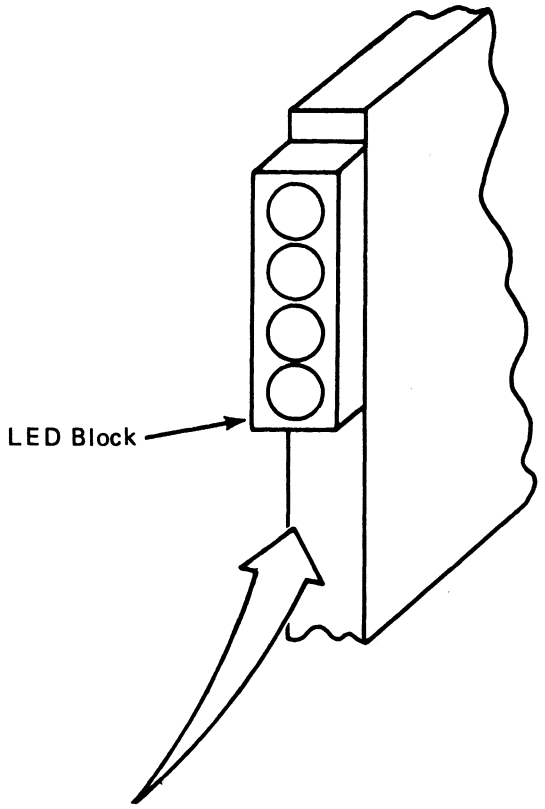
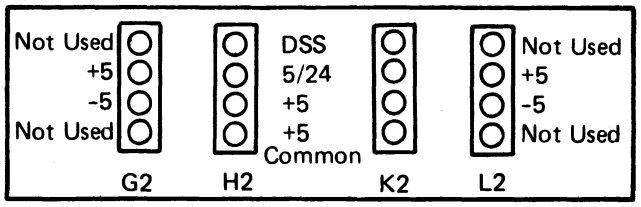
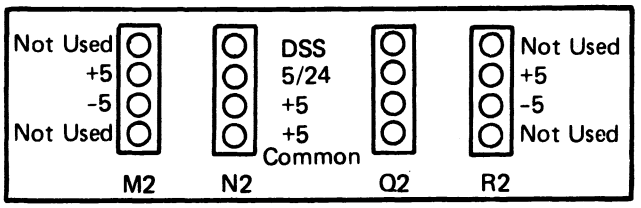


Figure 1. Power Supply LEDs (B1 Board)

Front Drive



Rear Drive



26.2 B-LOGIC DC POWER CHECKOUT WITH ONE STORAGE DIRECTOR USING CONTROLLER A2

__ 1. Determine the temperature of the HDAs. A temperature strip should be attached to the HDA casting at the two o'clock position from pulley center. If the strip is not present, see INST-165 13.1.1 Temperature Strip Installation.

CAUTION
Do not power on the B logic (set CB 201 On) until the temperature of the HDA's casting exceeds 15°C.

A machine will take approximately 13 hours to reach 15°C from an initial -5°C in a machine room environment.

__ 2. At the operator panel, power off controllers A1 and A2.

__ 3. Set CB201 2 (the frame disconnect circuit breaker) in the A (frame 01), B1 (frame 02), B2 (frame 03), and B3 (frame 04) units, to On.

__ 4. Verify the 5/24 LEDs are on in each B gate. Go to PWR-10, Entry AJ, if they are not on. Return here at the completion of repairs and continue with the next step.

__ 5. Power on controller A2 at the operator panel.

CAUTION
Do not bypass the sweep operation that occurs during initial power on of a drive. The sweep operation moves the heads slowly across the disk to clean the disk surfaces before performing any fast seeks. Unless both devices in a drive get to a ready condition, there is no visual indication that sweep has occurred for each device. During installation, do not bypass the sweep operation by setting the Logic Enable/Disable switch to Disable and then Enable at the SAM panel prior to an initial drive ready condition.

Note: *The Controller Ready LED will not stop blinking brightly for approximately 30 seconds plus 14 additional seconds for each drive in the string.*

__ 6. Verify the following conditions in each frame.

__ a. The power supply LEDs on the following cards are on. See Figure 1.

Front Drive

B1G2
B1H2 except Device Sequencer Status (DSS)
B1K2 except Device Sequencer Status (DSS)
B1L2

Rear Drive

B1M2
B1N2 except Device Sequencer Status (DSS)
B1Q2 except Device Sequencer Status (DSS)
B1R2

__ b. The main blower motor 1 in each frame is running.

__ c. The fans in the B gates in each frame are running.

__ d. HDA drive motors are running. After approximately three and one half minutes, all of the HDA drive motors in a full string should be running.

Note: *During the warm-up period, device sequencer logic causes the logic board DSS LED to flash at varying rates, depending on the sequencer's status. This causes the brightness to change.*

__ 7. If one or more of the power conditions are not found in each frame, perform the procedure on INST-400 to diagnose the problem. After the problem is corrected, return here and continue with the next step.

__ 8. Power off controller A2 at the operator panel without waiting for the drives to come to a ready condition.

__ 9. After all the drive motors stop, approximately one minute, verify that all B-logic board LEDs, except the 5/24 LED, are off.

If a drive fails to power off, suspect a faulty port/power control card in the B logic:

Front Drive

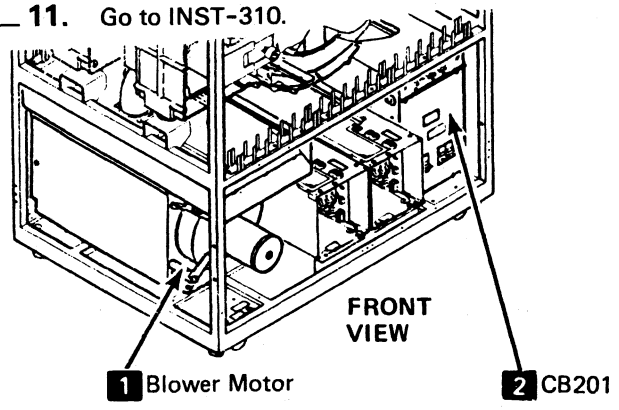
B1H2
B1K2

Rear Drive

B1N2
B1Q2

__ 10. Wait 10 seconds, then power on controller A2 at the operator panel.

__ 11. Go to INST-310.



27.1 CONTROLLER ID AND DEVICE STATUS CHECKOUT FROM CONTROLLER A2 WITH ONE STORAGE DIRECTOR

After three minutes from the motor start, each device should be ready to be tested by device diagnostics.

__ 1. Wait the required time before running DEVICE diagnostics so that the access mechanisms sweep the disk and the device microcode performs all the power-on steps. The wait prevents false diagnostic errors from occurring.

Usually, each device operator panel Ready LED comes on when the device is ready. Continue, after the warm-up period, even if an LED does not come on.

__ 2. While waiting, consider installing the covers (see INST-370).

__ 3. Verify that the controller A1 Local/Remote switch is set to Local.

__ 4. At the operator panel, power on controller A1. Do not be concerned with the controller A1 Ready LED.

__ 5. Completely read the following note before running routine 96, Device Status, for the first time.

Note: *Device Status selects the controller, examines the switch settings, and passes the information to the MD for display. In addition, it selects each device and, without performing a seek operation, reads the current head address. Usual device selection includes a device status presentation to the storage director by the device. That information, along with the results of the read operation, is collected for each device and is sent to the MD for display.*

Controller diagnostic routine 80 and routine 96 do not need the device to be placed in an offline status or in CE mode because the routines are designed to operate concurrently with customer operations.

__ 6. Verify that the controller A2 Ready LED is on.

__ 7. At the operator panel, verify that all Device Enable/Disable switches are set to Enable. Do not be concerned with the device Ready LEDs at this time.

__ 8. With the MD, select Controller A2 to set CE mode. Enter the IDs of the devices installed.

Note: *CE mode is set into the DPS array in the controllers. If both controllers are powered off, CE mode settings will be lost.*

__ 9. Run the Device Status routine for Controller A2.

Select option 1 (DIAGNOSTICS) from the main menu. Next select option 7 (DEVICE STATUS), then select controller A2.

__ 10. The MD first checks out controller A2 again with routine 80, Controller Tests, and then runs routine 96, Device Status.

If an error occurs in routine 80, perform the actions requested by the MD. Then return here and continue with the next step.

__ 11. The Device Status routine will display the following:

```
DEVICE STATUS TEST
IS NOW RUNNING ON
CONTROLLER A2.
PLEASE WAIT.
```

__ 12. When you see the following display, do not press the ENTER key until you have confirmed the display.

```
CONFIGURATION:
STRING=x CTLR ID=xx
STOR. DIRECTOR ID=xx
A- AND x B-UNITs ...
```

__ 13. Continue with the Installation Procedure on INST-315.

27.1 CONTROLLER ID AND DEVICE STATUS CHECKOUT FROM CONTROLLER A2 WITH ONE STORAGE DIRECTOR

__ 14. This step checks controller A2 addressing.

__ a. If the string address is correct, go to step b. Power off controller A2 at the operator panel before removing the 'X' top-card connector to inspect the switches on the A1A2 card.

__ b. If the Physical ID (CTLR=) is the same as the label on the operator panel for controller A2, go to step c. If not, go to INST-140 for instructions. Power off controller A2 at the operator panel before removing the 'W' top-card connector to inspect the switches on the A1C2 card.

__ c. If the low-order character of the CTLR ID is an odd hex value, go to step d. If not, see INST-20 for instructions. Power off controller A2 at the operator panel before removing the 'W' top-card connector to inspect the switches on the A1C2 card.

__ d. If bit 0 of the CTLR ID is the same as the string number, go to step e. They must be the same. Power off controller A2 at the operator panel before removing the 'W' top-card connector to inspect the switches on the A1C2 card.

__ e. If the Storage Director Physical ID is the same as the operator panel ID for controller A2, go to step f. If not, the CTLI cables may be reversed from the desired configuration or the Storage Director Physical ID may be incorrectly set.

__ f. The string configuration displayed on the bottom line is determined by the configuration switch settings. See INST-155 for switch settings.

__ 15. Press the ENTER key for the following display.

```
DO YOU WANT AN
ANALYSIS OF THIS
CONFIGURATION DATA?
(SEE PSG MD-1, 460)
```

The MD has within it an analysis procedure for post installation switch setting problems. Use the MD procedure to resolve hardware faults that block correct switch setting functions.

Respond to the display with Yes or No.

__ 16. Press the ENTER key for the device status display.

```
DEVICE STATUS:
0123 4567 89AB CDEF
xxxx xxxx xxxx xxxx
                  ...
```

The next display is:

```
DO YOU WANT A
DESCRIPTION OF THE
STATUS CODES?
(SEE PSG MD-1, 465)
```

Device status codes are as follows:

B = Busy

D = Data Check

E = Equipment Check

I = Intervention Required (Not On-Line)

N = Not Installed

O = Operational

S = Servo Busy

__ 17. Copy the display if necessary, so that:

__ a. At a later time you can quickly answer any MD question referring to the display.

__ b. Compare the results with the controller A1 response.

Do not start any repairs based on the results of this routine at this time.

__ 18. The last display of the Device Status routine will show the unit types of the frames.

```
DEVICE TYPE
A = AE4
B1 = BD4
```

__ 19. Go to INST-320.

28.0 DEVICE CHECKOUT

28.1 Device Checkout From Controller A2 With One Storage Director

This procedure checks that all device Ready LEDs on the operator panel come on when using controller A2.

__ 1. With the MD at the main menu, select option 0 to set CE mode. See the Product Service Guide as recommended on the display.

Note: *On 3380-DE machines, CE mode permits diagnostics to be run against a device that has its operator panel Enable/Disable switch set to Enable. In addition, if the system attempts to select a device that is in CE mode, it receives an intervention required status response from the storage director. If a device switch at the operator panel is set to Disable, the customer system, by way of the storage director, attempts to select the device, and the device responds with a not online status. Notice that the device was involved in the response, while with CE mode, only the storage director was involved.*

__ 2. Return to the main menu and select option 1. Run the diagnostics. Next, select the device tests, option 3. You will want to test from controller A2.

__ 3. Do not analyze any errors until all devices have been tested using controller A2.

__ 4. As each device is tested, write down the 15 error bytes that occur for any failing device so that any pattern of errors can be determined.

Device	IC	Error Bytes			
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
A					
B					
C					
D					
E					
F					

__ 5. If an error is detected, use the review option to return and analyze the error stop. With the MD at the main menu, select option R, then option 1 to review diagnostic error stops. See START-10, Entry C, in the Product Service Guide for additional information.

When a FRU group is displayed use the FRU replacement procedure in the REPAIR pages. To exchange the indicated FRUs, go to PSG, REPAIR-1, Entry A.

Note: *It is recommended that all card FRU callouts be reseated and the diagnostics be rerun before any cards are swapped or exchanged.*

__ 6. If you are not using power sequence cables, go to INST-330.

__ 7. Go to INST-325.

28.2 Remote Power Sequencing Check for Controller A1 with one Storage Director

Note: *The next seven steps ensure that the drive motors do not stop while controller A1 is performing power sequence checks. If the following steps are performed correctly, you can get around the 3-minute delay waiting for the drives to come to a ready condition again.*

__ 1. Power off controller A1, but leave controller A2 powered on.

__ 2. Set the controller A2 Local/Remote switch (SW487) to Local.

__ 3. Set the controller A1 Local/Remote switch (SW486) to Remote.

__ 4. Without powering off controller A2, move the CTLI cable and terminator from 02-T2 and 02-T1 into the 01-T2 and 01-T1 positions.

__ 5. Move the power sequence control cable from the J176 socket to the J175 socket.

__ 6. At the operator panel, power on controller A1.

__ 7. Verify that controller A1 powers on. (The power supply LEDs on the A1M4 card are on.) Do not be concerned with the 3380-DE operator panel Controller A1 Ready LED.

If controller A1 fails to power on, go to PWR-10, Entry AI, to diagnose the problem of why controller A1 will not power on when in the Remote position.

__ 8. If the customer will not permit powering off of the 3880 attached to the 3380-DE because the 3880 has one of its storage directors in use, continue with 28.3 Controller ID and Device Status Checkout From Controller A1 with One Storage Director procedure on INST-330.

Note: *Be aware that the remote power on/off circuits have not been checked and should be checked at a later time when the storage control can be powered off.*

__ 9. At the operator panel in the 3880, power off the 3880 using the Subsystem Power switch.

__ 10. Wait until the 3380-DE A1M4 card LEDs are off. If controller A1 fails to power off, go to PWR-10, Entry AR, to diagnose the problem. Then return here and continue with the next step.

__ 11. At the 3880 operator panel, power on the 3880.

__ 12. Wait 25 seconds to see if the Power Seq Complete LED on the 3880 operator panel is on or off. It should be on.

Note: *If other devices are attached to the 3880 and were not set to Local, the time for the LED to come on will be longer.*

__ 13. If the 3880 Power Seq Complete LED is off, suspect the EPO circuit. Go to PWR-10, Entry AK, to solve the problem. Then return here and continue with the next step.

__ 14. Verify that controller A1 is powered on. The LEDs on the A1M4 card should be on. If controller A1 fails to power on, go to PWR-10, Entry AI, to diagnose the problem. Then return here and continue with the next step.

__ 15. Return any Local/Remote switches, on devices other than this string, which were previously set to Local, back to Remote.

__ 16. Continue with the Installation Instructions on INST-330.

28.3 Controller ID and Device Status Checkout from Controller A1 with One Storage Director

— **1.** Power off controller A2. If a drive motor fails to continue running, perform the procedure on INST-400 to diagnose the problem. After the problem is corrected, return here and continue with the next step.

— **2.** If you have just performed either the remote power sequencing check or if the storage director is currently in use by the customer, go to step 3; otherwise, use the Storage Director Power switch on the 3880 and momentarily power the attached storage director off and then on. This is done to generate a storage director microcode IML to get the code into the idle loop and to prevent the MD attached to the 3380-DE from seeing diagnostic errors.

— **3.** Verify that the controller A1 Ready LED is on.

— **4.** Run routine 96, Device Status, for controller A1 by first entering PF to return to the main menu.

— **5.** Select option 1 (DIAGNOSTICS) from the main menu. Next select option 7 (DEVICE STATUS), and then select controller A1.

— **6.** This step checks controller A1 addressing.

— a. If the string address is the same as for controller A2, go to step b. The string address must be set the same in both controller A1 and A2. If not, go to INST-130 and carefully inspect the switches on the A1X2 card.

— b. If the Physical ID (CTLR=) bits 0-6 are the same as controller A2, go to step c. If not go to INST-140 and carefully inspect the switches on the A1V2 card.

— c. If the low-order character of the CTLR ID is an even hex value, go to step d. If not, see INST-20 and then INST-145 for instructions.

— d. If the Storage Director Physical ID is the same as the operator panel ID for controller A1, go to step f. If not, the Storage Director Physical ID may be incorrectly set (see 11.0 on INST-145).

— e. Does the units display agree with your configuration for controller A2? It must. See INST-155 for instructions before altering the switches on the A1V2 card.

— f. Advance the display with the ENTER key to the device status display.

— g. Does the display agree with the controller A2 display? If not, write the differences down for future reference.

Do not start any repairs based on the results of this routine at this time.

— **7.** Press the PF key to return to the main menu.

— **8.** Verify that the controller A1 Ready LED is on.

— **9.** With the MD at the main menu, select option 0 to set CE mode. See the Product Service Guide as recommended on the display.

— **10.** Select controller A1. Enter the device numbers of the devices installed.

— **11.** Return to the main menu and select option 1. Run the diagnostics. Next, select the device tests, option 3. You will want to test from controller A1.

— **12.** If an error is detected, use the review option to return and analyze the error stop. With the MD at the main menu, select option R, then option 1 to review diagnostic error stops. See the Product Service Guide as recommended by the display for additional information.

— **13.** For your final 3380-DE configuration:

— a. If necessary for your final configuration, move the CTLI cable and terminator from controller A1 to controller A2.

— b. Power on controller A2 if you have moved the cables.

— c. Power off controller A1 if you have moved the cables.

— d. **Note:** *This step, and the next, is performed to ensure that the operator panel cannot falsely indicate a ready condition when the string is in fact not ready. If your configuration is controller A2 only, it is very important, at the end of all service calls, to remember to return the A1 Local/Remote switch to Remote and CP410 to Off. The MD prompts you to turn them on if you fail to set them on at the beginning of the service call.*

If you are using a power sequence control cable, set both Local/Remote switches to Remote.

— e. Set the appropriate CP410 (for controller A1), CP411 (for controller A2) to Off.

— f. If you have moved the CTLI cables to controller A2, move the power sequence control cable to the J176 socket.

— g. Run diagnostics for controller A2 to verify that the cables were swapped correctly.

— **14.** Verify that the CTLI cable is tightly clamped at both ends to properly ground the shield.

Warning: Shield clamping must be performed to comply to radio frequency interference specifications. The 3380 end grounding wire does not provide enough grounding.

— **15.** Go to 31.2 Test of the Operator Panel Switches on INST-365.

28.4 B-Logic DC Power Checkout With Two Storage Directors

__ 1. Determine the temperature of the HDAs. A temperature strip should be attached to the HDA casting at the two o'clock position from pulley center. If the strip is not present, see INST-165 13.1.1 Temperature Strip Installation.

CAUTION
Do not power on the B logic (set CB201 On) until the temperature of the HDA's casting exceeds 15°C.

A machine will take approximately 13 hours to reach 15°C from an initial -5°C in a machine room environment.

__ 2. At the operator panel, power off controllers A1 and A2.

__ 3. Set CB201 2 (the frame disconnect circuit breaker) in the A (frame 01), B1 (frame 02), B2 (frame 03), and B3 (frame 04) units, to On.

__ 4. Verify the 5/24 LEDs are on in each B gate. Go to PWR-10, Entry AJ, if they are not on. Return here at the completion of repairs and continue with the next step.

__ 5. Power on controller A2 at the operator panel.

CAUTION
Do not bypass the sweep operation that occurs during initial power on of a drive. The sweep operation moves the heads slowly across the disk to clean the disk surfaces before performing any fast seeks. Unless both devices in a drive get to a ready condition, there is no visual indication that sweep has occurred for each device. During installation, do not bypass the sweep operation by setting the Logic Enable/Disable switch to Disable and then Enable at the single access mechanism switch panel prior to an initial drive ready condition.

Note: *The Controller Ready LED will not stop blinking brightly for approximately 30 seconds plus 14 additional seconds for each drive in the string.*

__ 6. Verify the following conditions in each frame.

__ a. The power supply LEDs on the following cards are on. See Figure 1 on INST-300.

Front Drive

B1G2
B1H2 except Device Sequencer Status (DSS)
B1K2 except Device Sequencer Status (DSS)
B1L2

Rear Drive

B1M2
B1N2 except Device Sequencer Status (DSS)
B1Q2 except Device Sequencer Status (DSS)
B1R2

__ b. The main blower motor 1 in each frame is running.

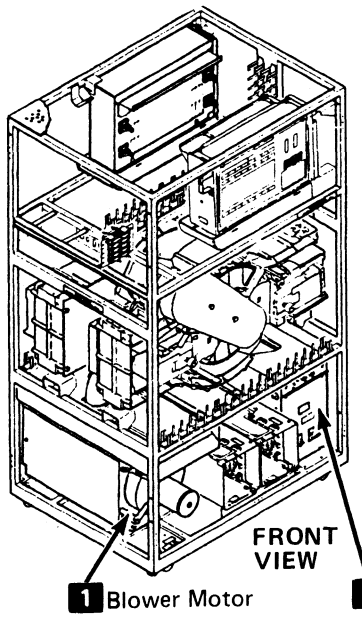
__ c. The fans in the B gates in each frame are running.

__ d. HDA drive motors are running. After approximately three and one half minutes, all of the HDA drive motors in a full string should be running.

Note: *During the warm-up period, device sequencer logic causes the logic board DSS LED to flash at varying rates, depending on the sequencer's status. This causes the brightness to change.*

__ 7. If one or more of the power conditions are not found in each frame, perform the procedure on INST-400 to diagnose the problem. After the problem is corrected, return here and continue with this step.

__ 8. If all of the power conditions in step 6 are present in each frame, continue with the B-Logic DC Power Checkout procedure, step 9, on INST-340.



28.4 B-Logic DC Power Checkout with Two Storage Directors

— **9.** Power off controller A2 at the operator panel without waiting for the drives to come to a ready condition.

— **10.** After all the drive motors stop, approximately one minute, verify that all B board power LEDs, except the 5/24 Vdc LED, are off.

If a drive fails to power off, suspect a faulty port/power control card in the B logic:

Front Drive

B1H2
B1K2

Rear Drive

B1N2
B1Q2

— **11.** Wait 10 seconds, then power on controller A1 at the operator panel.

Note: *The Controller Ready LED will not stop blinking brightly for approximately 30 seconds plus 12 additional seconds for each drive in the string.*

— **12.** Verify the following conditions in each frame.

— a. The power supply LEDs on the following cards are on. See Figure 1 on INST-300.

Front Drive

B1G2
B1H2 except Device Sequencer Status (DSS)
B1K2 except Device Sequencer Status (DSS)
B1L2

Rear Drive

B1M2
B1N2 except Device Sequencer Status (DSS)
B1Q2 except Device Sequencer Status (DSS)
B1R2

— b. The main blower motor (see 1 on INST-335) in each frame is running.

— c. The fans in the B gates in each frame are running.

— d. HDA drive motors are running. After approximately three and one half minutes, all of the HDA drive motors in a full string should be running.

— **13.** If all the power conditions in step 12 are present in each unit being installed, continue with 29.1 Controller ID and Device Status Checkout from Controller A1 on INST-345.

— **14.** If one or more of the power conditions are not found in each frame, perform the procedure on INST-400 to diagnose the problem. After the problem is corrected, return here and continue with the next step.

— **15.** Continue with the Installation Procedure on INST-345.

29.1 CONTROLLER ID AND DEVICE STATUS CHECKOUT FROM CONTROLLER A1

After three minutes from the motor start, each device is ready to be tested by device diagnostics.

__ 1. Wait the required time before running DEVICE diagnostics so that the access mechanisms sweep the disk and the device microcode performs all the power-on steps. The wait prevents false diagnostic errors from occurring.

Usually, each device operator panel Ready LED comes on when the device is ready. Continue, after the warm-up period, even if an LED does not come on.

__ 2. While waiting, consider installing the covers (see INST-370).

__ 3. Verify that the controller A1 Ready LED is on.

__ 4. Completely read the following note before running routine 96, Device Status for the first time.

Note: *The Device Status test selects the controller, examines the switch settings, and passes this information to the MD for display. In addition, it selects each device and, without performing a seek operation, reads the current head address. Usual device selection includes a device status presentation to the storage director by the device. That information, along with the results of the read operation, is collected for each device and is sent to the MD for display.*

Controller diagnostic routine 80, Controller Tests, and routine 96, Device Status, do not require the devices to be placed in an offline status or in CE mode because the routines are designed to operate concurrently with customer operations.

__ 5. At the operator panel, verify that all Device Enable/Disable switches are set to Enable. Do not be concerned with the device Ready LEDs at this time.

__ 6. With the MD select controller A1 to set CE mode. Enter the IDs of the devices installed.

Note: *CE mode is set into the DPS array in the controllers. If both controllers are powered off, CE mode settings are lost.*

__ 7. Run the Device Status routine for controller A1.

Select option 1 (DIAGNOSTICS) from the main menu. Next select option 7 (DEVICE STATUS), then select controller A1.

__ 8. The MD first checks out controller A1 again with routine 80, Controller Tests, and then runs routine 96, Device Status.

If an error occurs in routine 80, perform the actions requested by the MD. Then return here and continue with the next step.

__ 9. The Device Status routine will display the following:

```
DEVICE STATUS TEST
IS NOW RUNNING ON
CONTROLLER A1.
PLEASE WAIT.
```

__ 10. When you see the following display, do not press the ENTER key until you have confirmed the display.

```
CONFIGURATION:
STRING=x CTLR ID=xx
STOR. DIRECTOR ID=xx
A- AND x B-UNITs ...
```

__ 11. Continue with the Installation Procedures on INST-350.

29.1 CONTROLLER ID AND DEVICE STATUS CHECKOUT FROM CONTROLLER A1

— **12.** This step checks controller A1 addressing.

— a. If the string address is correct, go to step b. If not, go to INST-130 and carefully inspect the switches on the A1X2 card.

— b. If the Physical ID (CTLR=) is the same as the label on the operator panel for controller A1, go to step c. If not, go to INST-140 and carefully inspect the switches on the A1V2 card.

— c. If the low-order character of the CTLR ID is an even hex value, go to step d. If not, see INST-20 and then INST-145 for instructions.

— d. If bit 0 of the CTLR ID is the same as the string number, go to step e. They must be the same. If not, see INST-20 and then see INST-145.

— e. If the Storage Director Physical ID is the same as the operator panel ID for controller A1, go to step f. If not, the CTLI cables may be reversed from the desired configuration or the Storage Director Physical ID may be incorrectly set.

— f. The string configuration displayed on the bottom line is determined by the configuration switch settings. See INST-155 for switch settings.

— **13.** Press the ENTER key for the following display.

```
DO YOU WANT AN
ANALYSIS OF THIS
CONFIGURATION DATA?
(SEE PSG MD-1, 460)
```

The MD has within it an analysis procedure for post installation switch setting problems. Use the MD procedure to resolve hardware faults that block correct switch setting functions.

Respond to the display with Yes or No.

— **14.** Press the ENTER key for the device status display.

```
DEVICE STATUS:
0123 4567 89AB CDEF
xxxx xxxx xxxx xxxx
                  ...
```

The next display is:

```
DO YOU WANT A
DESCRIPTION OF THE
STATUS CODES?
(SEE PSG MD-1, 465)
```

Device status codes are as follows:

B = Busy

D = Data Check

E = Equipment Check (See Note:)

I = Intervention Required (Not On-Line)

N = Not Installed

O = Operational

S = Servo Busy

Note: *For all devices that indicate an E, Equipment Check, verify the Port/Power Control card switch settings. See INST-120 for the correct switch settings.*

— **15.** Copy the display if necessary, so that:

— a. At a later time you can quickly answer any MD question referring to the display.

— b. You can compare the results with the controller A2 response.

Do not start any repairs based on the results of this routine at this time.

— **16.** The last display of the Device Status routine will show the unit types of the frames.

```
DEVICE TYPE
A = AE4
B1 = BD4
.
```

— **17.** At the operator panel, power on controller A2.

— **18.** Wait a few seconds and then verify that the Controller A2 Ready LED is on.

— **19.** Run the Device Status routine for controller A2 by entering PF to return to the main menu. Select option 1 (DIAGNOSTICS) from the main menu. Next select option 7 (DEVICE STATUS), and select controller A2.

Continued on INST-355.

29.1 CONTROLLER ID AND DEVICE STATUS CHECKOUT FROM CONTROLLER A1

__ **20.** This step checks controller A2 addressing.

__ a. If the string address is the same as for controller A1, go to step b. The string address must be the same in both controller A1 and A2 (see INST-130). Power off controller A2 at the operator panel before removing the 'X' top-card connector to inspect the switches on the A1A2 card.

__ b. If the Physical ID (CTLR=) is the same as the label on the operator panel for controller A2, go to step c. If not go to INST-145 for instructions. Power off controller A2 at the operator panel before removing the 'W' top-card connector to inspect the switches on the A1C2 card.

__ c. If the low-order character of the CTLR ID is an odd hex value, go to step d. If not, see INST-20 for instructions. Power off controller A2 at the operator panel before removing the 'W' top-card connector to inspect the switches on the A1C2 card.

__ d. If the high-order character of the CTLR ID is the same character as the high-order character of controller A1, go to step e. They must be the same. Power off controller A2 at the operator panel before removing the 'W' top-card connector to inspect the switches on the A1C2 card (see INST-20 and INST-145).

__ e. If the Storage Director Physical ID is the same as the operator panel ID for controller A2, go to step f. If not, the CTLI cables may be reversed from the desired configuration or the Storage Director Physical ID may be incorrectly set.

__ f. Does the units display agree with your configuration and with the display for controller A1? It must. Power off controller A2 at the operator panel before removing the 'W' top-card connector to inspect the switches on the A1C2 card (see INST-155).

__ g. Advance the display with the ENTER key to the device status display.

```
DEVICE STATUS:
0123 4567 89AB CDEF
xxxx xxxx xxxx xxxx
                 ...
```

The next display is:

```
DO YOU WANT A
DESCRIPTION OF THE
STATUS CODES?
(SEE PSG MD-1, 465)
```

__ h. Does the display agree with the controller A1 display? If not, write the differences down for future reference.

Do not start any repairs based on the results of this routine at this time.

__ **21.** Press the PF key to return to the main menu.

__ **22.** Power off controller A2 at the operator panel.

__ **23.** Go to INST-360.

31.0 DEVICE CHECKOUT

— **1.** With the MD at the main menu, select option 0 to set CE mode. See the Product Service Guide (PSG) as recommended on the display.

Note: *On 3380-DE machines, CE mode permits diagnostics to be run against a device that has its operator panel Enable/Disable switch set to Enable. In addition, if the system attempts to select a device that is in CE mode, it receives an intervention required status response from the storage director. If a device switch at the operator panel is set to Disable, the customer system, by way of the storage director, attempts to select the device, and the device responds with a not online status. Notice that the device was involved in the response, while with CE mode, only the storage director was involved.*

— **2.** Return to the main menu and select option 1. Run diagnostics. Next select the device tests, option 3. You will want to test from controller A1 first.

— **3.** Do not analyze any errors until all devices have been tested using controller A1.

— **4.** As each device is tested, write down the 15 error bytes that occur for any failing device so that any pattern of errors can be determined.

Device	IC	Error Bytes			
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
A					
B					
C					
D					
E					
F					

— **5.** If an error is detected, use the review option to return and analyze the error stop. With the MD at the main menu, select option R, then option 1, to review diagnostic error stops. If necessary, see START-1, Entry C, in the PSG for procedure information.

When a FRU group is displayed, use the FRU replacement procedures in the REPAIR pages. To exchange the indicated FRUs, go to PSG, REPAIR-1, Entry A.

Note: *It is recommended that all card FRU callouts be reseated and the diagnostics be rerun before any cards are swapped or exchanged.*

— **6.** *Go to INST-365.*

31.1 Device Checkout From Controller A2

This procedure checks that all devices will operate from controller A2.

__ 1. At the operator panel, power on controller A2.

__ 2. Verify that the green controller A2 Ready LED on the operator panel comes on in about 10 seconds.

__ 3. Press the PF key on the MD keyboard to return to the main menu.

__ 4. Enter option 1, then again select device test, and select controller A2. CE mode should still be set. Run the diagnostics again for all installed devices. Copy down and analyze any errors that occurred when running controller diagnostics through controller A2.

31.2 Test of the Operator Panel Switches

__ 1. Test each Device Enable/Disable switch on the operator panel by setting it to Off. The associated operator panel Device Ready LED should go out. Then set each switch to On. Each Ready LED should come on again.

If the LED is not on when it should be, go to PWR-10, Entry BS.

Note:

1. *The setting of the switch to Disable sets an Intervention Required status to the operating system.*
2. *On some early models of the 3380-DE the Operator Panel Device Ready LED may go off during extended periods of device inactivity. This condition does not affect the system operation or the machines performance.*

31.3 MD Disconnect

__ 1. Press the PF key on the MD keyboard display to return to the main menu.

__ 2. Select option 0 to return the devices from CE mode.

__ 3. Follow the MD instructions displayed.

__ 4. Remove the diskette from the MD and return it to the wire storage rack inside the rear cover of the A unit.

__ 5. Disconnect the MD.

31.4 System Attachment

__ 1. **Warning: Failure to accomplish this step causes 3880 Status Pending errors. This causes all systems attached to the storage director to come to a complete stop.**

Ensure that the customer has system generated (SYSGENed) these new device addresses before enabling the 3880 channel Enable/Disable switches.

__ 2. Verify the address switches on the 3880 channel interface cards.

__ 3. Ensure that the storage director data streaming switches are set to On. Go to 3880, INST-9, in the 3880 MIM and verify that the data streaming switches are set correctly.

__ 4. If your processor is one in which you cannot set the UCW (unit control word) data streaming function, remind the customer to have the correct system operating configuration in his software UCWs and IOCDS (Input Output Configuration Data Set).

__ 5. Set the 3880 channel Enable/Disable switches to Enable.

__ 6. Go to INST-370.

31.5 Cover Alignment

__ 1. Reinstall and close all covers 1 . Louvered covers go on the rear side of the 3380-DE to cool the power supplies.

__ 2. Check that the outside covers of the A and B units are aligned with each other.

__ 3. If they align correctly, the machine is ready for customer use; go to 32.1 Subsystem Integration Test Procedures on INST-375.

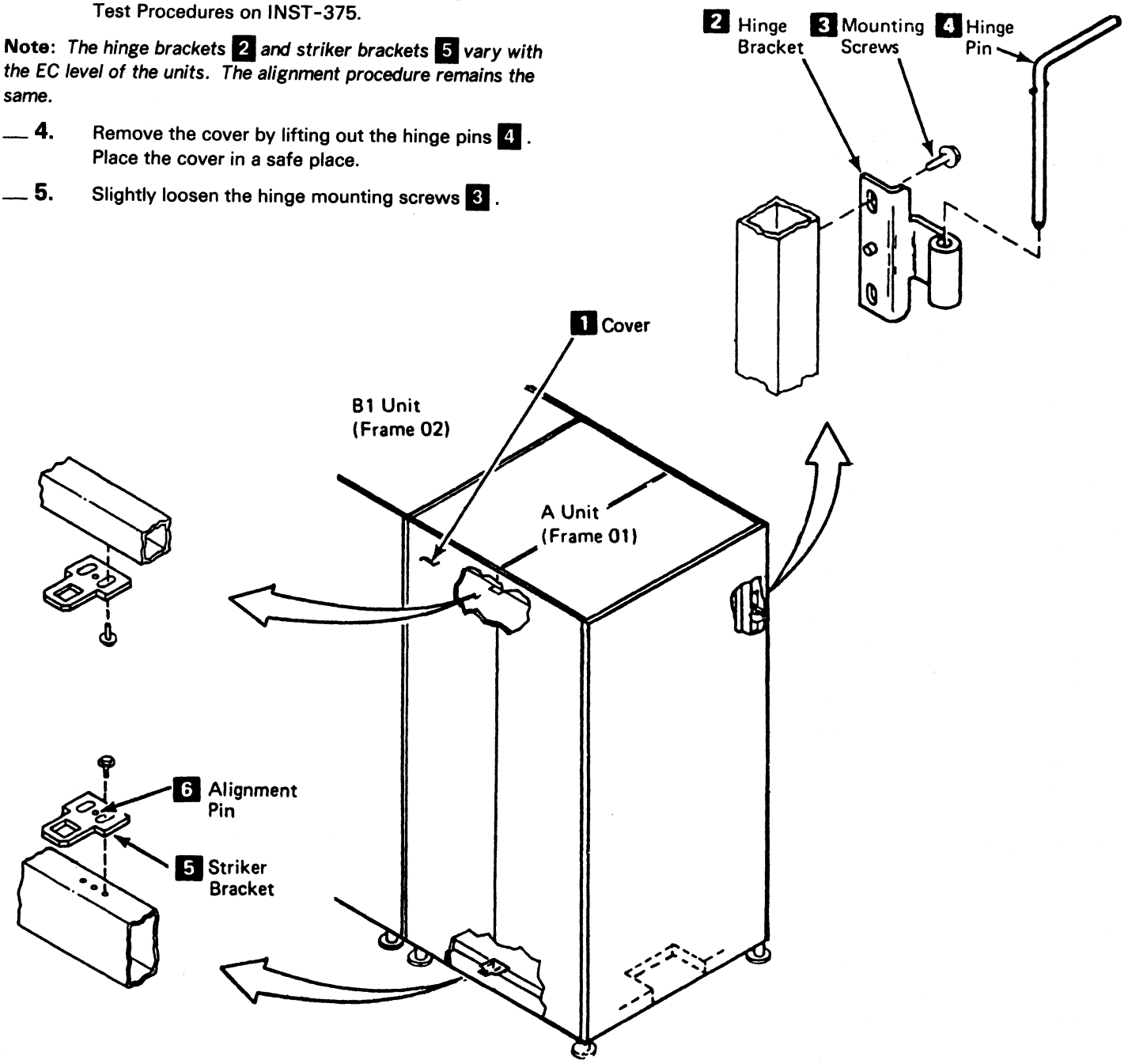
Note: *The hinge brackets 2 and striker brackets 5 vary with the EC level of the units. The alignment procedure remains the same.*

__ 4. Remove the cover by lifting out the hinge pins 4 . Place the cover in a safe place.

__ 5. Slightly loosen the hinge mounting screws 3 .

__ 6. Reinstall the covers and hinge pins 4 . Align the doors and tighten the mounting screws 3 .

__ 7. When all the previous steps have been completed, the machine is ready for customer use; continue with 32.1 Subsystem Integration Test Procedures on INST-375.



32.0 SUBSYSTEM INTEGRATION TEST

32.1 SUBSYSTEM INTEGRATION TEST PROCEDURES

__ 1. If the processing unit is not an IBM processor, go to 33.1 Record Updating on INST-385.

__ 2. Definitions for this discussion.

Correctable Data Check

A data check that the storage director and the system error recovery procedure can correct with the aid of the error correction code of the record, without rereading the record. Sense data for a correctable data check indicates format 5 in sense byte 7.

Uncorrectable Data Check

A data check that the storage director cannot correct with the aid of the error correction code of the record. Rereading or rereading with offset may allow the record to be read. Sense data for an uncorrectable data check indicates format 4 in sense byte 7.

Note: *While this test is part of the installation procedure, should this test procedure need rescheduling to a later date or time, then record a SC 20 complete on your IPAR at this time.*

__ 3. Test for the following on all available channel paths:

a. System cabling

b. Correct setting of UCWs

c. Correct setting of Storage Director Device Address Range Switches

d. No duplicate 3380-DE device address

By running either:

a. NST
b. ST4300
c. ST370
d. OLT T3880A, test 1, on all available channel paths

__ 4. The objective of this step is to verify that the disk surfaces can be read within product specifications at the completion of the physical installation. Plan to run the test against all newly installed devices before analyzing the results of any one device.

The read operation must test each controller path with at least one device. For example, one way to do this, using OLTEP under MVS, would be to:

a. Run T3380PSB (Pack Scan B) OLT through one controller to one new device.

1) Vary all new devices offline.

2) Vary this path online.

3) Vary the alternate path offline.

b. Run T3380PSB (Pack Scan B) OLT through the other controller to the remaining devices.

1) Vary the first path offline.

2) Vary this alternate path online.

3) Ensure that you have completely finished the OLT on the first run before varying the first path offline. The OLT will use the first path on this run if you have not finished the OLT.

__ 5. Analysis of collected OLT output data.

Call the next level of support for aid if needed.

a. Examine the 3380 HDA Burst Test Error Messages and Error Statistics Tables. Then:

1) If any temporary or permanent equipment checks were detected while running the OLTs, go to 32.1 step 5b on INST-380.

2) Count the number of data checks for each device and if any single head on the device has seven or more data checks, go to 32.1 step 5b on INST-380.

3) If one device had an uncorrectable and/or repeatable data check, go to 32.1 step 5c on INST-380.

Go to 32.1 Subsystem Integration Test Procedures (Continued) on INST-380.

32.1 SUBSYSTEM INTEGRATION TEST PROCEDURES (continued)

4) If no single head on a device had more than seven data checks, or a device did not have an uncorrectable data check, or the device did not have an equipment check, go to step 6.

b. A repair action is needed.

Go to the Product Service Guide (PSG), START-1, Entry M, and perform the recommended repair actions. After the repair, return here and rerun the OLTs to verify correct operation. Then return to step 5a on INST-375 and repeat the step.

c. A track must be inspected.

Give the customer systems programmer the cylinder and head address of any uncorrectable and/or repeatable data checks, so that he can correct them with ICKDSF INSPECT at level 7 with PTFs.

Turn the machine over to the customer. Ensure that the customer knows that the machine must be thermally stabilized (running for at least two and one-half hours at average room temperature) before running ICKDSF to ensure maximum benefit of the ICKDSF routines.

****

__ **6.** If any of this test or analysis procedure occurs after the code 20 complete IR, write a code 20 CIA = 4 (Post Install). If this procedure is done at the end of the physical installation, use SC 20 on your IPAR for the time.

__ **7.** Go to 33.1 Record Updating on INST-385.

32.2 DASD DATA ERRORS

The IBM 3380-DE Direct Access Storage devices are shipped with no assigned alternate (flagged) tracks. They are factory tested to ensure that the devices can correctly complete any system operation or job when shipped (the disks are free of any permanent errors).

However, this does not mean that the disks are free of defects. There may be defects that can cause some temporary data checks. Some defects are very small, smaller than one-half bit in size. Reading over that small defect may or may not cause a temporary data check. Detection relies on the location of the written data pattern in relation to the defect.

It is not possible with high-density recording to write the same data pattern consistently on exactly the same spot. Therefore, because of the size or nature of a defect, the 3380 OLT or ICKDSF may not always see a defect. It is possible that a later run will detect these small defects. Most of these detected defects almost never impact the user with repeatable correctable errors.

The ICKDSF INSPECT bit patterns have been designed to place the head and disk assembly in stress conditions well beyond the expected customer applications. All repeatable data checks, correctable or uncorrectable, found with INSPECT tests have a skip assigned. Future runs of INSPECT RECLAIM, if the track is flagged, reclaim some of these detected defects because that run may not be able to again detect the defect.

Therefore, IBM does not recommend the use of the INSPECT function on tracks that are not producing repeatable data checks. Some confusion may occur with the number of skips assigned with each run of INSPECT ALL which do not seem to diminish on later reruns. The user should not be concerned because the defects detected do not impact his data integrity.

Note: *Future data checks are not prevented with the use of the OLT or ICKDSF programs. Regular review of the EREP Subsystem Exception – DASD Report can identify when action is required. Error frequency, repeatability, and impact can be assessed and the corrective action can be selected from the Error Handling volume of the IBM Disk Storage Management Guide, GA26-1672.*

33.1 RECORD UPDATING

__ 1. Write the machine serial number on the spine tab of all received manuals.

__ 2. Complete all installation records and report to the branch office dispatcher that the installation is completed.

__ 3. Keep these installation procedures in the Maintenance Diagrams Manual for future reference.

__ 4. Update the Account Management Plan to include the physical IDs assigned so that serial numbers and IDs can easily be matched with one another.

33.2 DISPOSITION OF SHIPPING MATERIAL

__ 1. Dispose of the material locally.

__ 2. The 3380-DE installation (service code 20) is now complete.

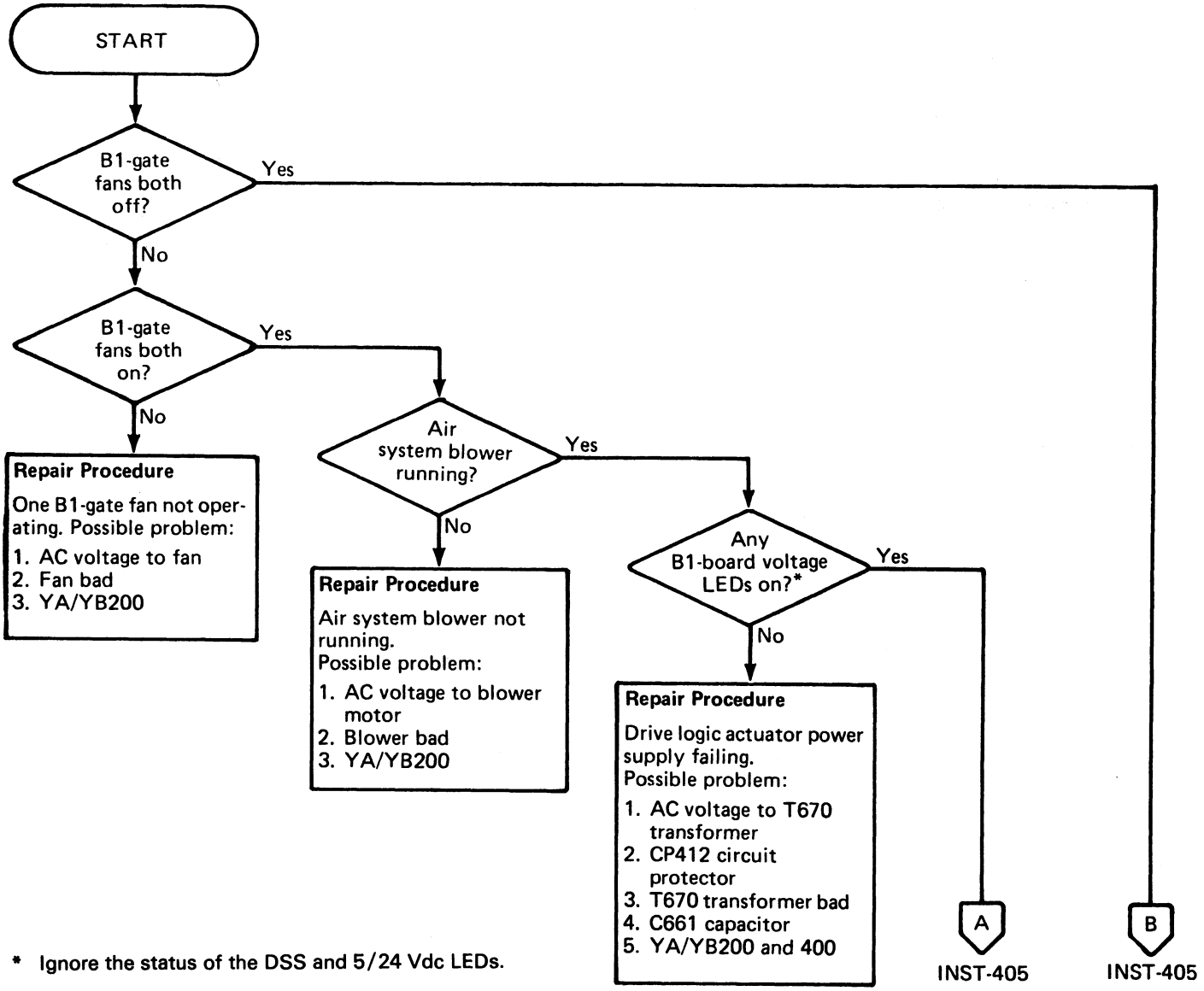
AFTER INSTALLATION

33.3 SYSTEM OPERATION

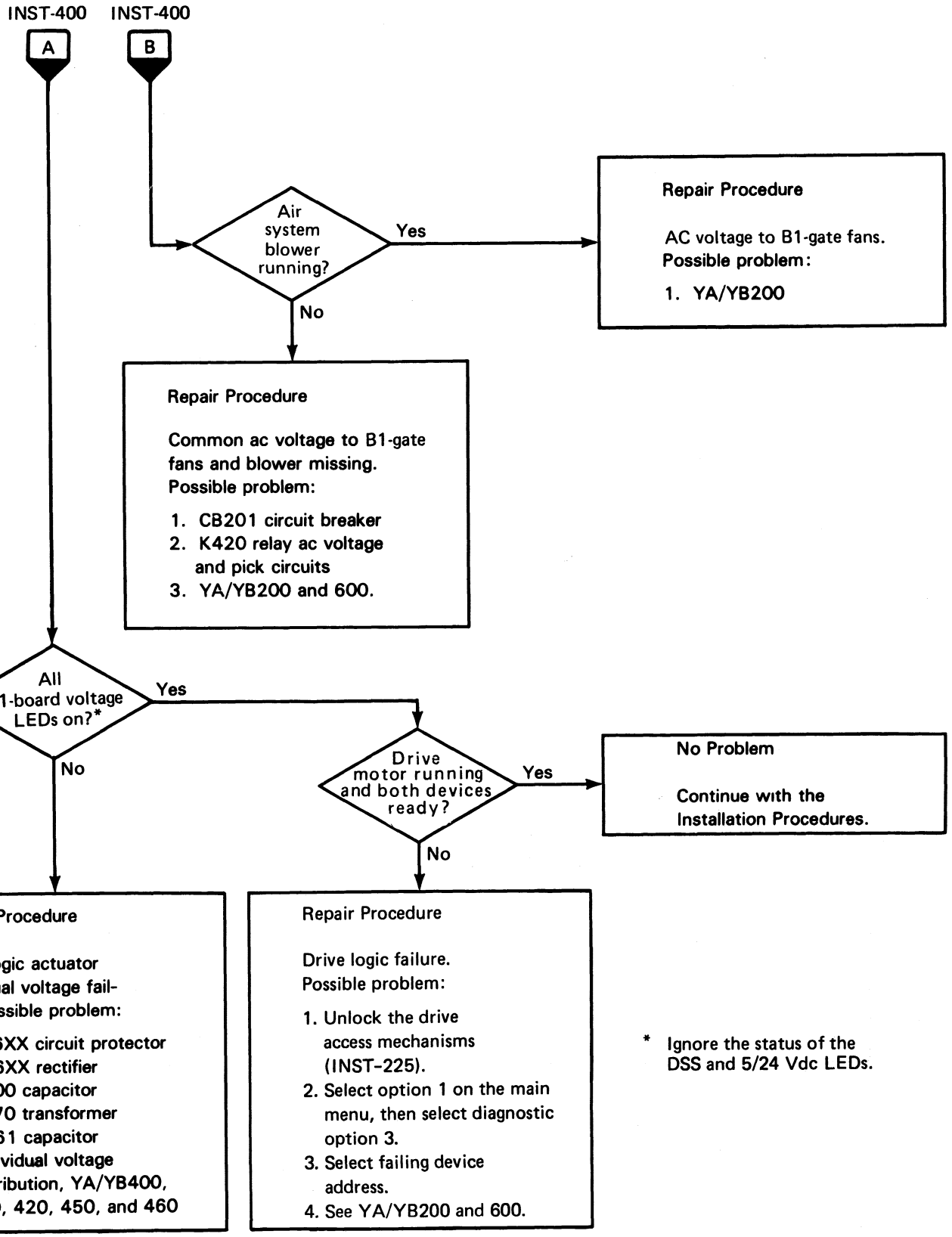
__ 1. Initialization of a device is a customer responsibility, and does not require CE participation.

Volume labels are now required for 3380-DE systems operation. Recommend to the customer that the newly installed devices be initialized with ICKDSF using the Minimal Level Procedure (see the *Device Support Facilities User's Guide and Reference* manual, Order No. GC35-0033-9 or later for instructions). The Device Support Facilities program must be at level 7.0 with PTFs. The latest levels of both the program and documentation are recommended. Request additional aid from your program support representative.

35.0 INSTALLATION POWER PROBLEM



* Ignore the status of the DSS and 5/24 Vdc LEDs.



* Ignore the status of the DSS and 5/24 Vdc LEDs.

36.0 RELOCATION OR REMOVAL PROCEDURES

This is a guide to be used for the removal of 3380-DE Direct Access Storage units from the operating system and includes the preparation of the machine for shipment to another location. A 3380-DE to be moved to another location in the same room needs less preparation than one to be moved to a different floor or a different building. Steps that are not needed for a same-room move are identified.

It is the CE's job to remove the 3380-DE from the system and to ensure the system is back in working condition. The CE must also install any necessary tape and packing material inside the machine.

The customer does the external packing and moves the machine.

36.1 Packing Materials

Before removing or changing the location of a 3380-DE, contact the IBM DP Orders and Movements department to ensure that the packing materials and instructions are ordered. To permit immediate 3380-DE shipping after it has been removed from the system, the packing materials should already be available.

Choose the correct packing instruction Bill of Material (B/M) listed below:

Model	Instruction B/M Number
AD4 and AE4	2317603
BD4 and BE4	2317604

36.2 Preparation

The CE should understand the system configuration after the 3380-DE is relocated or removed. The new configuration determines what is to be done with the cables that are disconnected from the 3380-DE. Before starting any relocation or removal, do the following:

__ 1. Determine which device addresses are to be removed from the system. Verify that the customer personnel are informed that these unit addresses are to be removed from the system.

__ 2. Ensure that any needed customer data has been moved to another device.

__ 3. Ensure that any customer requested security procedures to erase data from the 3380-DE HDAs are completed.

36.3 Access Mechanism Lock

Note: *The HDA must be running while performing the HDA Access Mechanism Lock procedure.*

The procedure described below is used to lock both the left and right access mechanisms.

__ 1. Set the four Logic switches, SW693, SW694, SW695, and SW696, to Disable and then back to Enable. This starts a rezero operation. For switch location, see 10 on INST-190.

__ 2. Wait five seconds for a complete rezero operation before continuing with step 3.

__ 3. Switch off the ± 36 volt circuit protectors, CP603, CP613, CP623, and CP633. This removes power from the voice coils. (These CPs are next to the switches in step 1.)

__ 4. **Warning: Excessive force will bend the wire causing a failure to detent correctly and require replacement of the HDA.**

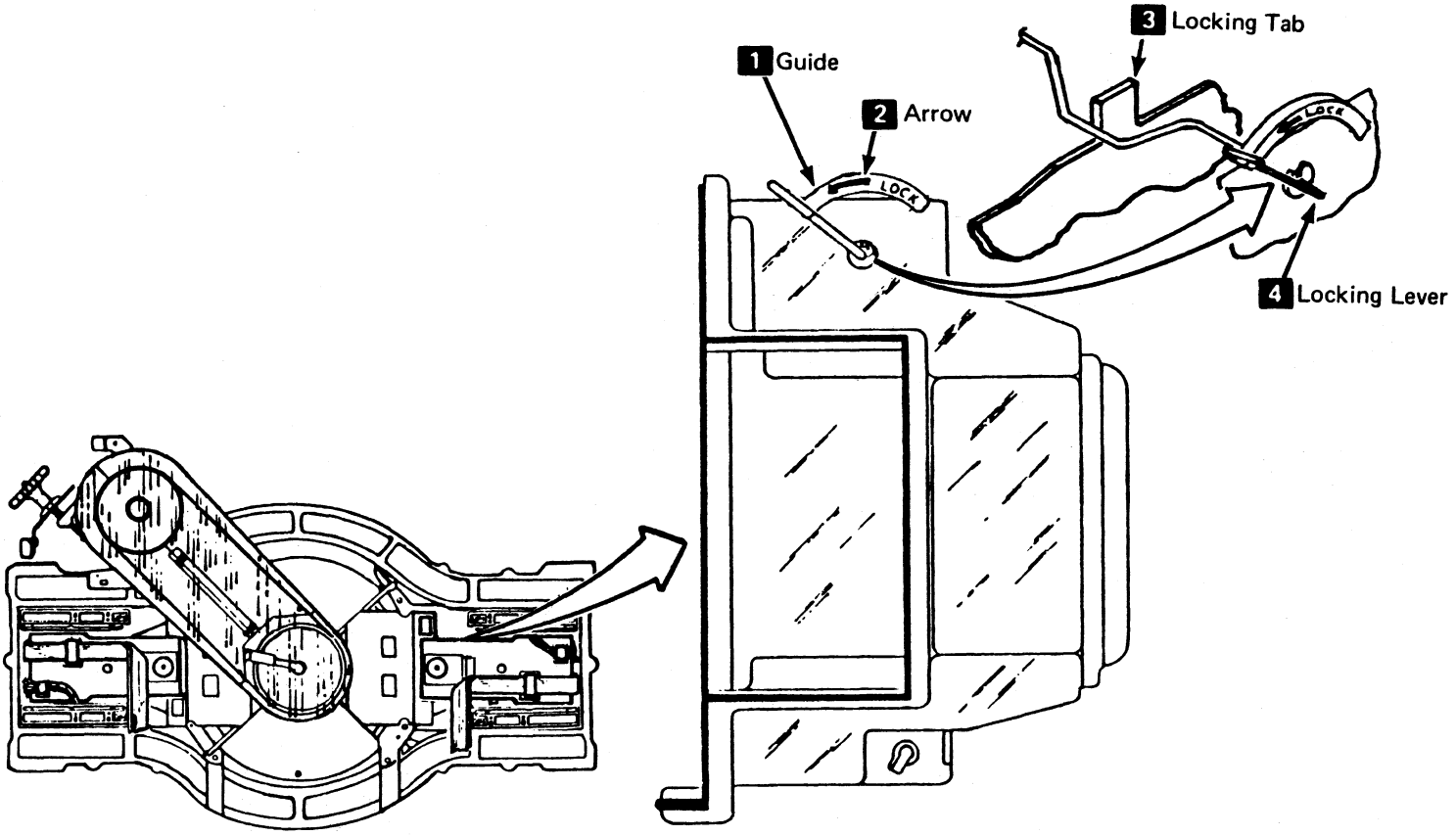
With your fingers or a spring hook, pull out, release, and then slide the **right** access locking lever 4 in the direction of the lock arrow 2. The locking lever 4 must ride against the guide 1 while being moved. Ensure that the locking lever detents at the end of the guide 1 (the locked position).

__ 5. Look to see that the actuator is locked in place by the locking lever as shown. The actuator locking tab 3 can be seen through the transparent plastic area directly behind the locking lever 4. If the locking lever is not positioned behind the locking tab as shown, power the drive back on and start again at step 1.

__ 6. Repeat steps 4 and 5 for the **left** access locking lever. See the direction of the lock arrow.

__ 7. Repeat for all HDAs in all units to be moved.

__ 8. Continue on INST-415.



36.4 Cable Removal

__ 1. Power off the 3380-DE string by setting the operator panel controller A1 and A2 Power On/Off switches to Off.

__ 2. Wait approximately 2 minutes for all of the drives to stop.

__ 3. Set the mainline circuit breaker (CB200) to Off (see 4 on INST-190).

__ 4. Set the customer circuit breaker to Off.

__ 5. Disconnect the power cable from the ac outlet.

__ 6. Perform steps a through e on A units only:

__ a. Disconnect the power control cables from tailgate connectors, J175 and J176 (see 1 and 2 on INST-250).

__ b. Disconnect the control interface (CTLI) cables from the CTLI tailgate connectors.

__ c. Remove the terminators (if present).

__ d. Connect the terminators to the end of the control interface cables if the cables are not to be immediately reconnected to another storage device.

__ e. Insert a dummy plug (P/N 4794247) in the 3880 device power cable connectors. This step allows the 3880 to be restarted.

__ 7. Disconnect the CDP flat cables, the R/W PLO cable, and the actuator switch cable, as required, from the interframe panel assembly (5 on INST-90).

__ 8. Install a R/W PLO terminator into all unused R/W PLO positions (ZZ) in the interframe panel assembly (see INST-90).

__ 9. Continue the Relocation or Removal procedure on INST-420.

36.4 Cable Removal

__ 10. Remove all cables from the cable channels, and coil them in the B units.

__ 11. Disconnect the B-unit power cables from the A-unit power box, as required, and put safety caps, if present, on all plugs not used (see the figure on INST-110).

36.5 HDA Pulley Lock

__ 1. Remove the plastic belt guard from the HDAs in each 3380-DE to be removed.

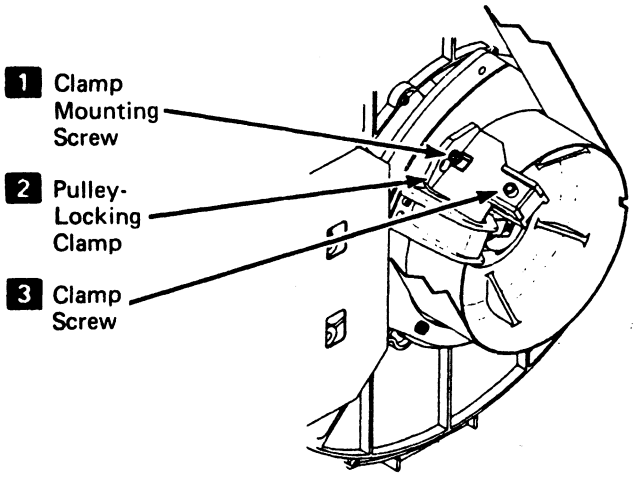
__ 2. Install the HDA pulley-locking clamp (P/N 2759423) 2 by performing the following steps.

Note: *Clamps were shipped with the 3380-DE from the factory, and were either placed in the site tool kit for storage or are attached to the HDA (see 2 on INST-200 for clamp location).*

__ a. Loosen the clamp mounting screw 1.

__ b. Install the pulley locking clamp as shown. Press the clamp against the outer surface of the HDA pulley. Tighten the clamp mounting screw 1 until the clamp is seated against the mounting surface. Then turn the screw 1 an additional one-quarter to one-half turn.

__ c. Tighten the clamp screw 3 until a change is felt in the force needed to turn the wrench. At this point, the pulley locking clamp should be seated so that there is no gap between the pulley clamp contact surfaces and the pulley. Then tighten the screw an additional one and one-half turn.



36.6 Disassemble

__ 1. Remove the frame bolts from the B units to be removed.

__ 2. Screw the jackscrews upward as far as possible so the 3380-DE is supported by the casters.

__ 3. Perform the following steps 4 through 12 only if the machine is to be moved out of the room and vibration or impact could occur.

__ 4. Return the baseplate shipping lock to the locked position as follows:

Note: *See the diagrams on INST-50 while performing the following steps.*

__ 5. To perform this procedure both an adjustable wrench and the 16 x 17 mm wrench from the HDA ESD cover kit P/N 2179657 are needed.

__ 6. Loosen the three nuts and remove the assembly from the stored position.

__ 7. Invert and install the assembly as shown with the mounting bracket between the two rubber shock mounts 8.

__ 8. Screw the baseplate locking bolt 7 into the baseplate casting until it touches the spacer 9. Then tighten the bolt an additional one to one and one-quarter turn. This pre-loads the upper shock mount.

Warning: Do not overtighten any of the nuts; damage to the bolt threads and the baseplate casting threads can occur.

__ 9. Tighten the lock nut 12 against the baseplate casting.

__ 10. Turn the compression nut 10 up until the washer and the lower rubber shock mount are against the mounting bracket. Then tighten the compression nut an additional one to one and one-quarter turn. This pre-loads the lower shock mount.

__ 11. While preventing the compression nut 10 from turning, tighten the jam nut 11 against the compression nut.

__ 12. Repeat this procedure at both locking bolts on both baseplates in each machine to be removed.

__ 13. Continue the Relocation or Removal procedure on INST-425.

36.6 Disassemble

__ 5. Perform the following for removing B units:

__ a. If the last B unit is to be removed from an existing string, remove the left-end cover with its mounting hardware and attach it to the left end of the last unit in the remaining string.

__ b. If a B unit is removed from the center of a string, follow the procedure on INST-80 to bolt the remaining frames together.

36.7 Relocation Addressing

__ 1. Perform any necessary addressing and label changes with the procedures on INST-125 through 170.

36.8 Termination

Upon completion of the removal of one or more B units from an existing string, perform the following steps.

__ 1. Power on the 3380-DE by performing the following steps:

__ a. Connect the A-unit power cable to the ac outlet.

__ b. Set the customer circuit breaker to On.

__ c. Set the mainline circuit breaker (CB200) to On.

__ d. Set the operator panel controller A1 and A2 Power On/Off switches to On.

__ 2. With the MD, perform device diagnostics on the remaining devices to ensure correct operation.

__ 3. Change any device address labels if required.

__ 4. Reinstall the Unit Not Installed labels as needed on the operator panel. If the label is missing or defective, replace with a new label. See the parts catalog for the correct label part number for your machine.

36.9 Field Packing

The CE is responsible for taping and packing the inside of the machine. The customer does the external packing and moves the machine.

__ 1. Perform the internal packing as directed by the packing instruction.

__ 2. Include the ship group items and the manuals.

Assemble the following items and ensure that they are packed within the machine.

Part	Part No.	Quantity	
Frame bolting hardware			
Bolt	1621554	3	each B unit
Lockwasher	1622349	6	each B unit
Nut	1622406	3	each B unit
MD diskette	–	1	each A-unit only
Belt guard	2760317	2	each unit
Knob	2760421	4	each unit
Manuals			

__ 3. Close the covers.

__ 4. Instruct the customer to finish the external packing and prepare the machine for shipment according to the packing instruction.

36.10 Record Updating

__ 1. Complete all necessary removal records and report to the branch office dispatcher that the removal is complete.

__ 2. Update the Account Management Plan to include this removal.

36.11 Storage Requirements

Before storing a 3380-DE:

__ 1. Notify the branch office IPR (Installation Planning Representative) that the customer is planning to store the removed 3380-DEs. The IPR needs to review with the customer the 3380-DE storage specifications which have already been sent to the IPR.

__ 2. Notify the DP marketing representative.

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INSTALLATION CHECKLIST (MODELS AD4, AE4, BD4, AND BE4 ONLY) INST-901

INTRODUCTION

These checklists are only for those who have previously used checklists for 3380 installations or who have used the right-side procedures at least one time.

HOW TO USE THESE CHECKLISTS

1. Read each step completely before performing it.
2. Check off each step as you perform it.
3. If you cannot complete a step successfully, immediately go to the reference text for instructions.

   The text referenced is the point where you are to start reading for additional information

4. An asterisk next to the text is used to indicate major changes from the 3380 Stage 2 installation procedures. Take the time to read and use the referenced right side complete instructions because they provide additional needed material.

Physical installation duration goals for the 3380-DE, without installation problems, are:

2.5 hours for an A unit with or without B units.

2.5 hours for a B unit only with or without additional B units.

1.7 hours for each additional B unit.

_____ Continued on INST-902.

_____ Read the text on INST-901 if you have not already done so.

Are you installing an A unit?
Y N
| |
| |
| Go to INST-903 (Installing B units only.)
|
|
Is the A unit being installed with B units?
Y N
| |
| |
| Go to INST-907 (Installing an A unit only.)
|
|
Is the A unit to be located first? (with the last B unit **NOT** against a wall or obstruction.)
Y N
| |
| |
| Go to INST-905 (Installing a B unit first.)
|
|
Go to INST-909 (Installing an A unit with B units.)

From	INST-902	Page INST	Paragraph
_____	Physical planning for the installation of 3380-DE B units only is completed.	20	2.1
_____	Ask the customer to prepare for the subsystem integration test.	30	2.6
*** _____	Special tools and test equipment are available.	35	2.7
_____	Unpack and place the units in their approximate locations.	45	3.2
_____	Remove the left end cover and mounting hardware of the last unit in the string.	55	4.1.2
*** _____	Release the baseplate shipping locks.	55	4.2
_____	Do the baseplate ground check with a digital meter.	65	5.1
_____	Power off the string.	75	6.2
	____1. Verify that the string is varied offline. ____2. Set the Local/Remote switches, SW486 and SW487, to Local. ____3. At the operator panel, power off controller A1 and A2. ____4. When the drives have stopped, set CB200 to Off. ____5. Verify the AC Power-On LED on the operator panel is off.		
_____	Align, raise, and bolt the frames together.	75	6.3
_____	Attach the removed end cover on the last B unit.	75	6.4
***** _____	Mark and install the CDP flat cables, the R/W PLO cables and the actuator switch cables into the D gate.	90	7.1
_____	Go to INST-904.		

From	INST-903	Page INST	Paragraph
_____	Secure the R/W D gate terminators on the A unit front channel.		
	_____ B1 Unit	100	7.2.9
	_____ B2 Unit	100	7.3.9
	_____ B3 Unit	105	7.4.8
_____	Mark and install the B unit power cables.	115	8.0
_____	In each B unit, set the B gate address switches for drive addressing.	125	9.0
_____	In each A unit controller, set switch positions 9 and 10 for the correct string configuration.	155	12.0
_____	Install the device address labels.	165	13.0
_____	Relocate the Unit Not Installed labels.	165	13.0.4
_____	Change the transformer taps if the supply ac voltage does not match the machine label.	185	16.0
_____	Verify the B unit CPs, CBs and switches are set as shown on INST-195.	195	17.0.1
_____	Set CB200 On.	205	18.0.1
_____	Verify the AC Power-On LED is on.	205	18.0.3
_____	Remove all HDA pulley-locking clamps.	205	18.1
_____	Install the belt guards.	205	18.2
_____	Unlock each access mechanism.	225	20.0
_____	Plug in the MD and perform the IPL procedure.	225	20.1
_____	Go to INST-918.		

From	INST-902	Page INST	Paragraph
_____	Physical planning for the 3380-DE installation is completed.	20	2.1
_____	Check that the CTLI cables are on site.	20	2.1.2
_____	If the power sequence control cables are to be used, check to see that they are on site.	20	2.1.3
_____	Ask the customer for the string address range.	20	2.2.1
	_____-_____		
_____	Determine if the new string will have an address of:	20	2.2.2
	_____ 0 or _____ 1		
_____	Determine the Physical ID on the new string.	20	2.3
	Controller A1 _____ Controller A2 _____		
_____	The 3880s are installed and are ready for 3380-DE attachment.	25 240	2.4.4 22.1
_____	Both 3880 functional diskettes must be at the same EC level.	25	2.4.6
_____	Customer knows the programming needs of the 3380-DE.	25	2.5
_____	Ask the customer to prepare for the subsystem integration test.	30	2.6
_____	Special tools and test equipment are available.	35	2.7
_____	Go to INST-906.		

From	INST-905	Page INST	Paragraph
	Begin Physical Installation		
_____	Unpack and place the units in their approximate locations. Removal of all the covers is optional.	45	3.2
_____	Remove the left end cover and mounting hardware from the A unit.	55	4.1.2
**** _____	Release the baseplate shipping locks.	55	4.2
_____	Do the baseplate ground check with a digital meter.	65	5.1
_____	Attach the removed end cover on the last B unit.	80	6.6
_____	Locate the last B unit and raise it.	80	6.7
_____	Locate the remainder of the units. Align, raise, and bolt the frames together.	80	6.8
_____	Go to INST-911.		

From	INST-902	Page INST	Paragraph
	Pre-Installation Checks		
_____	Physical planning for the 3380-DE installation is completed.	20	2.1
_____	Check that the CTLI cables are on site.	20	2.1.2
_____	If the power sequence control cables are to be used, check to see that they are on site.	20	2.1.3
_____	Ask the customer for the string address range.	20	2.2.1
	_____-_____		
_____	Determine if the new string will have an address of:	20	2.2.2
	_____ 0 or _____ 1		
_____	Determine the Physical ID on the new string.	20	2.3
	Controller A1 _____ Controller A2 _____		
_____	The 3880s are installed and are ready for 3380-DE attachment.	25 240	2.4.4 22.1
_____	Both 3880 functional diskettes must be at the same EC level.	25	2.4.6
_____	Customer knows the programming needs of the 3380-DE.	25	2.5
_____	Ask the customer to prepare for the subsystem integration test.	30	2.6
_____	Special tools and test equipment are available.	35	2.7
_____	Go to INST-908.		

	From		Page INST	Paragraph
		Begin Physical Installation		
	_____	Unpack and place the units in their approximate locations.	45	3.2
****	_____	Release the baseplate shipping locks.	55	4.2
	_____	Do the baseplate ground check with a digital meter.	65	5.1
	_____	Locate the A unit and raise it.	75	6.1
	_____	In the A unit, set the string address on the A1X2 and A1A2 cards.	135	10.1
	_____	In the A unit, set the controller physical ID of each controller on the A1V2 and A1C2 cards.	145	11.0
*********	_____	Install the device address labels.	165	13.0
	_____	Verify that an HDA Temperature strip is installed.	165	13.1
	_____	Install the Controller Physical ID labels.	170	14.0
****	_____	Verify the A unit CPs, CBs and switches are set as shown on INST-195.	195	17.0
	_____	**Do each of the Safety Check steps on INST-175.**	175	15.0
	_____	Connect the AC power cable. Leave CB200 off.	205	18.0
	_____	Change the transformer taps if the supply ac voltage does not match the machine label.	185	16.0
	_____	Go to INST-912.		

From	INST-902	Page INST	Paragraph
	Pre-Installation Checks		
_____	Physical planning for the 3380-DE installation is completed.	20	2.1
_____	Check that the CTLI cables are on site.	20	2.1.2
_____	If the power sequence control cables are to be used, check to see that they are on site.	20	2.1.3
_____	Ask the customer for the string address range.	20	2.2.1
	_____-_____		
_____	Determine if the new string will have an address of:	20	2.2.2
	_____ 0 or _____ 1		
_____	Determine the Physical ID on the new string.	20	2.3
	Controller A1 _____ Controller A2 _____		
_____	The 3880s are installed and are ready for 3380-DE attachment.	25 240	2.4.4 22.1
_____	Both 3880 functional diskettes must be at the same EC level.	25	2.4.6
_____	Customer knows the programming needs of the 3380-DE.	25	2.5
_____	Ask the customer to prepare for the subsystem integration test.	30	2.6
_____	Special tools and test equipment are available.	35	2.7
_____	Go to INST-910.		

From	INST-909	Page INST	Paragraph
	Begin Physical Installation		
_____	Unpack and place the units in their approximate locations. Removal of all the covers is optional.	45	3.2
_____	Remove the left end cover and mounting hardware from the A unit.	55	4.1.2
**** _____	Release the baseplate shipping locks.	55	4.2
_____	Do the baseplate ground check with a digital meter.	65	5.1
_____	Locate the A unit and raise it.	75	6.1
_____	Locate the remainder of the units. Align, raise, and bolt the frames together.	75	6.3
_____	Attach the removed end cover on the last B unit.	75	6.4
_____	Go to INST-911.		

From	INST-906, 910	Page INST	Paragraph
_____	Mark and install the CDP flat cables, the R/W PLO cables and the actuator switch cables into the D gate.	90	7.1
_____	Secure the R/W D gate terminators on the A unit front channel.		
	_____ B1 Unit	100	7.2.9
	_____ B2 Unit	100	7.3.9
	_____ B3 Unit	105	7.4.8
_____	Mark and install the B unit power cables.	115	8.0
_____	In each B unit, set the B gate address switches for drive addressing.	125	9.1
	Note: The A unit drive addressing is preset to 0 through 3.		
_____	In the A unit, set the string address on the A1X2 and A1A2 cards.	135	10.1
_____	In the A unit, set the Controller Physical ID of each controller on the A1V2 and A1C2 cards.	145	11.0
_____	In each A unit controller, set switch positions 9 and 10 for the correct string configuration.	155	12.0
_____	Install the device address labels.	165	13.0
_____	Verify that an HDA Temperature strip is installed.	165	13.1
_____	Relocate the Unit Not Installed labels.	165	13.0.4
_____	Install the Controller Physical ID labels.	170	14.0
_____	Verify the A and B unit CPs, CBs and switches are set as shown on INST-195.	195	17.0
_____	**Do each of the Safety Check steps on INST-175.**	175	15.0
_____	Connect the AC power cable. Leave CB200 off.	205	18.0
_____	Go to INST-912.		

From	INST-908, 911	Page INST	Paragraph
_____	Change the transformer taps if the supply ac voltage does not match the machine label.	185	16.0
_____	Set CB200 On.	205	18.0.1
_____	Verify the correct phasing with the green phase LED.	205	18.0.2
_____	Verify the AC Power-On LED is on.	205	18.0.3
_____	Remove all HDA pulley-locking clamps.	205	18.1
_____	Install the belt guards.	205	18.2
_____	Unlock each access mechanism.	225	20.0
_____	Plug in the MD and perform the IPL procedure to verify convenience outlet operation.	225	20.1
	Are two storage directors available to attach the CTLI cables to? (Are both storage directors available for cable installation?) Y N | | | | | Go to INST-920 (Only one storage director available. CTLI cable installation.) | |	235	21.0.7
_____	Before attaching the CTLI cables to the storage directors:		
	____1. Verify all devices attached to the storage directors are varied offline.	235	21.0.4
	____2. Disable the storage director channel interface switches.	235	21.0.5
	____3. Power off the storage directors.	235	21.0.6
_____	Install the CTLI cables and terminators. Use the cable clamps to comply with radio frequency interference specifications. Lay, but do not attach, the power sequence control cables, if they are to be used.	235	21.0.8
_____	Power on the storage directors.	240	22.1.1
_____	Verify controller A1 and A2 power supply LEDs are on.	240	22.2.1
_____	Go to INST-913.		

From	INST-912	Page INST	Paragraph
_____	At the operator panel, power on controller A1.	240	22.2.2
_____	Verify that the:	240	22.2.2
	____1. A1 fan in the A gate is running. ____2. A1M4 card power supply LEDs are on. ____3. Controller A1 power supply LEDs are off. ____4. Operator panel controller A1 Ready LED is on.		
_____	At the operator panel, power on controller A2.	245	22.3.2
_____	Verify that the:	245	22.3.2
	____1. A2 fan in the A gate is running. ____2. A1L4 card power supply LEDs are on. ____3. Controller A2 power supply LEDs are off. ____4. Operator panel controller A2 Ready LED is on.		
	Are you using power sequence control cables? Y N | | | | | Go to INST-917 (Not using power sequence control cables.) | |		
_____	At the operator panel, power off controller A1 and A2.	255	23.0.1
	Note: The following instructions expect all further powering on and off of the controllers to occur at the operator panel.		
_____	Set the controller A1 and A2 Local/Remote switches to Remote.	255	23.0.2
_____	Connect the controller A1 (J175) power sequence control cable to the same 3880 as the CTLI cable. Use any 3880 D connector.	255	23.0.3
_____	Go to INST-914.		

From	INST-913	Page INST	Paragraph
_____	Connect the controller A2 (J176) power sequence control cable to the same 3880 as the CTLI cable. Use any 3880 D connector.	255	23.0.4
_____	For controller A1, verify the 3880 Device Power Sequencing Enable/Disable switch is set to Enable.	255	23.0.5
_____	Power on controller A1.	255	23.0.6
_____	Verify the A1M4 card power supply LEDs are on.	255	23.0.7
_____	For controller A2, verify the 3880 Device Power Sequencing Enable/Disable switch is set to Enable.	255	23.0.8
_____	Power on controller A2.	255	23.0.9
*** _____	Verify the A1L4 card power supply LEDs are on.	255	23.0.10

Will the customer permit powering off of the attached 3880s?

Y N

| |
| |
| Go to INST-917 (Skip controllers A1 and A2 power sequence tests.)
|
|

_____ Can you power off the 3880 attached to controller A1?

Warning: The other storage director in the 3880, the one not attached to controller A1, must not be in use by the customer.

Y N

| |
| |
| _____Momentarily power the storage director attached to controller A1 off then on.
| |
| Go to INST-916 (Skip controller A1 power sequence tests.)
|
|

_____	If there are other strings attached to the 3880 that is to be attached to controller A1, set their Local/Remote switches to Local.	260	24.1.2
_____	Go to INST-915.		

From	INST-914	Page INST	Paragraph
_____	Power off the 3880 attached to controller A1 using the Subsystem Power switch.	260	24.1.3
_____	Wait until the A1M4 card LEDs go off.	260	24.1.4
_____	Power on the 3880.	260	24.1.5
_____	Verify that the 3880 Power Seq Complete LED is on.	260	24.1.6
_____	Verify that the A1M4 card LEDs are on.	260	24.1.7
	Return all Local/Remote switches that were previously set to Local back to Remote.	260	24.1.8
_____	Go to INST-916.		

From	INST-914, 915	Page INST	Paragraph

Can you power off the 3880 attached to controller A2?

Warning: The other storage director in the 3880, the one not attached to controller A2, must not be in use by the customer.

Y N
| |
| |
| _____ Momentarily power the storage director attached to controller A2 off then on.
| |
| Go to INST-917 (Skip controller A2 power sequence tests.)
|
|

_____	If there are other strings attached to the 3880 that is to be attached to controller A2, set their Local/Remote switches to Local.	260	24.2.2
_____	Power off the 3880 attached to controller A2.	260	24.2.3
_____	Wait until the A1L4 card LEDs go off.	260	24.2.4
_____	Power on the 3880.	260	24.2.5
_____	Verify that the 3880 Power Seq Complete LED is on.	260	24.2.6
_____	Verify that the A1L4 card LEDs are on.	260	24.2.7
_____	Return all Local/Remote switches that were previously set to Local back to Remote.	260	24.2.8
_____	Go to INST-917.		

From	INST-913, 914, 916	Page INST	Paragraph
_____	Verify storage director IML.	265	24.3.2
_____	Run controller diagnostics on controller A1.	265	24.3.5
	While the test is running, verify that the controller A1 Ready LED blinks and remains on at the end of the test.	265	24.3.6
_____	Verify a storage director IML for controller A2.	265	24.3.11
_____	Run controller diagnostics on controller A2.	265	24.3.12
	While the test is running, verify that the controller A2 Ready LED blinks and remains on at the end of the test.	265	24.3.13
_____	Run Extended DPS test (Diagnostics, option 2).	265	24.3.16
_____	Go to INST-918.		

From	INST-904, 917	Page INST	Paragraph
_____	Determine the temperature of the HDAs.	335	28.4.1
_____	Power off controllers A1 and A2.	335	28.4.2
_____	Set CB201 On in all units.	335	28.4.3
_____	Verify that the power supply 5/24 LEDs are on in each B gate.	335	28.4.4
_____	Power on controller A2. See Caution statement.	335	28.4.5
_____	Verify in each unit that the: ____1. B board power supply LEDs are on. ____2. Blower motor is running. ____3. B gate fans are running. ____4. Drive motors are running.	335	28.4.6
_____	Power off controller A2 without waiting for the drives to become ready.	340	28.4.9
_____	After the drive motors have stopped, verify all B board power LEDs are off except for the 5/24 LED.	340	28.4.10
_____	Wait 10 seconds, then power on controller A1.	340	28.4.11
_____	Verify in each unit that the: ____1. B board power supply LEDs are on, ____2. Blower motor is running. ____3. B gate fans are running. ____4. Drive motors are running.	340	28.4.12
_____	Wait 3 minutes for the devices to become ready. Consider installing the covers.	345	29.1.1
_____	Verify that all Device Enable/Disable switches are set to Enable.	345	29.1.5
_____	Set all newly installed devices to CE mode.	345	29.1.6
_____	Run Device Status routine, main menu, Option 1, then Option 7 for controller A1.	345	29.1.7
_____	Verify the: ____1. String Address ____2. Controller ID ____3. String Configuration switch settings ____4. Storage Director ID switch settings	350	29.1.12
_____	Write the device status down for all devices.	350	29.1.15
_____	Go to INST-919.		

From	INST-918	Page INST	Paragraph
_____	Power on controller A2.	350	29.1.17
_____	Verify the controller A2 Ready LED is on.	350	29.1.18
_____	Run Device Status routine, main menu, Option 1, then Option 7 for controller A2.	350	29.1.19
_____	Verify the :	355	29.1.20
	____1. String Address ____2. Controller ID ____3. String Configuration switch settings ____4. Storage Director ID		
_____	Write the device status down for all devices.	355	29.1.20
_____	Power off controller A2.	355	29.1.22
_____	Run device diagnostics on all newly installed devices with controller A1.	360	31.0.2
_____	Power on controller A2.	365	31.1.1
_____	Run device diagnostics on all newly installed devices with controller A2.	365	31.1.4
_____	Go to INST-926.		

From	INST-912	Page INST	Paragraph
_____	Before attaching the CTLI cable to the storage director:		
	____1. Verify all devices attached to the storage director are varied offline.	235	21.0.4
	____2. Disable the storage director channel interface switches.	235	21.0.5
	____3. Power off the storage director.	235	21.0.6
_____	Install the CTLI cable and terminator to controller A1. Use cable clamps at both ends. Lay, but do not attach, the power control cables, if they are to be used.	270	25.1.3
_____	Power on the storage director	270	25.3.1
_____	Verify that controller A1 and A2 power supply +5 Vsp and +1.7 V LEDs are on.	275	25.4.1
_____	At the operator panel, power on controller A1.	275	25.4.2
_____	Verify that the: ____1. A1 fan in the A gate is running. ____2. A1M4 card power supply LEDs are on. ____3. Controller A1 power supply LEDs are off. ____4. Operator panel controller A1 Ready LED is on.	275	25.4.2
_____	Verify storage director IML.	275	25.5.1
_____	Run controller diagnostics on controller A1.	275	25.5.4
	While the test is running, verify that the controller A1 Ready LED blinks and remains at the dim condition at the end of the test.	275	25.5.5
_____	Power off controller A1.	280	25.6.1
_____	Go to INST-921.		

From	INST-920	Page INST	Paragraph
_____	Move the CTLI cable and terminator from 01-T2 and 01-T1 into the 02-T2 and 02-T1 positions.	280	25.6.2
_____	At the operator panel, power on controller A2.	280	25.6.4
_____	Verify that the:	280	25.6.4
	____1. A2 fan in the A gate is running. ____2. A1L4 card power supply LEDs are on. ____3. Controller A2 power supply LEDs are off. ____4. Operator panel controller A2 Ready LED is on.		
_____	Power on controller A1.	285	25.7.1
_____	Perform the storage director IML.	285	25.7.2
_____	Run controller diagnostics on controller A2.	285	25.7.4
	While the test is running, verify that the controller A2 Ready LED blinks and remains at the dim condition at the end of the test.	285	25.7.5
_____	Are you going to use power sequence control cables? Y N | | | | | Go to INST-923 (Skip the power sequence tests.) | |		
_____	Power off controller A2.	290	26.0.1
_____	Set the Local/Remote switch, SW487, to Remote.	290	26.0.2
_____	Connect the power sequence control cable between any 3880 D connector and J176.	290	26.0.3
_____	Verify that the 3880 Device Power Sequencing Enable/Disable switch is set to Enable.	290	26.0.4
_____	Power on controller A2.	290	26.0.5
_____	Verify that the controller A2 A1L4 card LEDs are on.	290	26.0.6
_____	Go to INST-922.		

From	INST-921	Page INST	Paragraph
_____	Will the customer permit powering off of the attached 3880? Y N | | | | | Go to INST-923 (Skip the power sequence tests.) | |		
_____	If there are other strings attached to the 3880 that is to be attached to controller A1, set their Local/Remote switches to Local.	295	26.1.2
_____	Power off the 3880 using the Subsystem Power switch.	295	26.1.3
_____	Wait until the A1L4 card LEDs go off.	295	26.1.4
_____	Power on the 3880.	295	26.1.5
_____	Verify that the 3880 Power Seq Complete LED is on.	295	26.1.6
_____	Verify that the A1L4 card LEDs are on.	295	26.1.7
_____	Go to INST-923.		

From	INST-921, 922	Page INST	Paragraph
_____	Determine the temperature of the HDAs.	305	26.2.1
_____	Power off controllers A1 and A2.	305	26.2.2
_____	Set CB201 On in all units.	305	26.2.3
_____	Verify the power supply 5/24 LEDs are on in each B gate.	305	26.2.4
_____	Power on controller A2. See Caution statement.	305	26.2.5
_____	Verify in each unit that the:	305	26.2.6
	____1. B board power supply LEDs are on. ____2. Blower motor is running. ____3. B gate fans are running. ____4. Drive motors are running.		
_____	Power off controller A2 without waiting for the drives to become ready.	305	26.2.8
_____	After the drive motors stop, verify that all B board power LEDs are off except for the 5/24 LED.	305	26.2.9
_____	Wait 10 seconds, then power on controller A2.	305	26.2.10
_____	Wait 3 minutes before continuing. Consider installing the covers.	310	27.1.1
_____	Power on controller A1, do not be concerned with the controller A1 Ready LED.	310	27.1.4
_____	Verify that the controller A2 Ready LED is on.	310	27.1.6
_____	Verify that all Device Enable/Disable switches are set to Enable.	310	27.1.7
_____	Set all newly installed devices to CE mode.	310	27.1.8
_____	Run Device Status routine, main menu, Option 1, then Option 7 for controller A2.	310	27.1.9
_____	Verify the:	315	27.1.14
	____1. String Address ____2. Controller ID ____3. String Configuration switch settings ____4. Storage Director ID		
_____	Write the device status down for all devices.	315	27.1.17
_____	Go to INST-924.		

From	INST-923	Page INST	Paragraph
_____	Run device diagnostics on all newly installed devices with controller A2.	320	28.1.2
_____	Power off controller A1. Leave controller A2 powered on.	325	28.2.1
_____	Set the controller A2 Local/Remote switch (SW487) to Local.	325	28.2.2
_____	Set the controller A1 Local/Remote switch (SW486) to Remote.	325	28.2.3
_____	Move the CTLI cable and terminator from 02-T2 and 02-T1 into the 01-T2 and 01-T1 positions.	325	28.2.4
_____	Move the power sequence control cable from the J176 to the J175 socket.	325	28.2.5
_____	Power on controller A1.	325	28.2.6
_____	Verify that the A1M4 card LEDs are on.	325	28.2.7
	Will the customer permit powering off of the attached 3880? Y N | | | | | Go to INST-925 (Skip the power sequence tests.) | |		
_____	Power off the 3880 using the Subsystem Power switch.	325	28.2.9
_____	Wait until the A1M4 card LEDs go off.	325	28.2.10
_____	Power on the 3880.	325	28.2.11
_____	Verify the 3880 Power Seq Complete LED is on.	325	28.2.12
_____	Verify that the A1M4 card LEDs are on.	325	28.2.14
_____	Except on this string, return any Local/Remote switches which were previously set to Local, back to Remote.	325	28.2.15
_____	Go to INST-925.		

TESTING WITH ONE STORAGE DIRECTOR

From	INST-924	Page INST	Paragraph
_____	Power off controller A2.	330	28.3.1
_____	Verify that the drive motors continue to run.	330	28.3.1
_____	Verify controller A1 Ready LED is on.	330	28.3.3
_____	Run Device Status routine, main menu, Option 1, then Option 7 for controller A1.	330	28.3.5
_____	Verify the: ____1. String Address ____2. String Configuration switch settings ____3. Controller ID ____4. Storage Director ID	330	28.3.6
_____	Write the device status down for all devices.	330	28.3.6
_____	Verify controller A1 Ready LED is on.	330	28.3.8
_____	Set all newly installed devices to CE mode.	330	28.3.9
_____	Run device diagnostics on all newly installed devices with controller A1.	330	28.3.11
_____	Move the CTLI and power sequence control cables if your configuration needs controller A2. Test the cable swap with the controller diagnostic. Correctly set the Local/Remote switches and power off controller A2 by setting CP411 to Off.	330	28.3.13
_____	Verify a cable clamp at both ends of the CTLI cable.	330	28.3.14
_____	Go to INST-926.		

	From	INST-919, 925	Page INST	Paragraph
***	_____	Test each Device Enable/Disable switch on the installed devices.	365	31.2.1
	_____	Reset CE mode in all devices and disconnect the MD.	365	31.3
	_____	Ensure the customer has SYSGENed these new device addresses.	365	31.4.1
	_____	Verify the address switches on the 3880 channel interface cards.	365	31.4.2
	_____	Verify the 3880 data streaming switch is set to On.	365	31.4.3
	_____	Ensure a correct system operating configuration (UCWs, IOCDS).	365	31.4.4
	_____	Enable the 3880 channel Enable/Disable switches.	365	31.4.5
		Are you attached to an IBM processor?		
		Y N		
		| |		
		| |		
		| INSTALLATION COMPLETE		
		|		
*****		| _____ Write the machine serial numbers on all spine tabs.	385	33.1.1
		|		
		| _____ Complete all installation records.	385	33.1.2
		|		
		| _____ Update the Account Management Plan.	385	33.1.4
		|		
		| _____ Dispose of the shipping material locally.	385	33.2
		|		
		| _____ 3380-DE installation is now complete.	385	33.3
		|		
		| Request the customer to run ICKDSF MINIMAL.		
		|		
	_____	Run the T3880A OLT on all available channel paths.	375	32.1.3
	_____	Run the T3380PSB OLT on all new devices on all paths.	375	32.1.4
***	_____	Examine the results from the T3380PSB OLT.	375	32.1.5

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