SYNCHRONOUS "DATASPEED*" 40/4

MAXI-CLUSTER AND MINI-CLUSTER STATION ARRANGEMENTS

DISASSEMBLY/REASSEMBLY AND PARTS
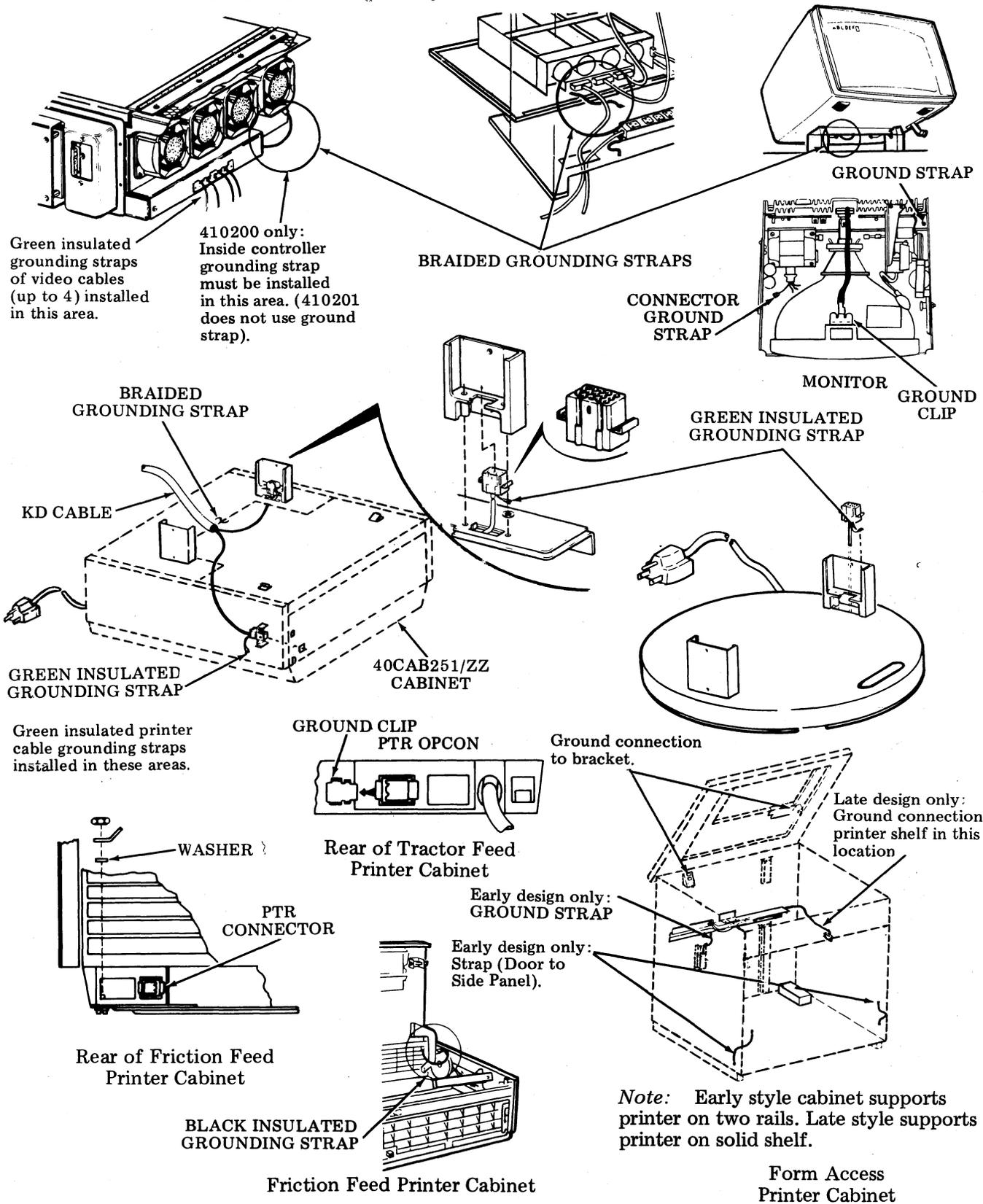
1. GENERAL

1.01 This section contains all necessary information on the removal and replacement of various components of DATASPEED 40/4 Stations. This section also includes locations of test switches and indicators used in trouble analysis and testing of the station.

1.02 This section is reissued to add coverage for the removal and replacement of the monitor and late design support latch. This issue also adds coverage for the new forms access printer cabinet.

1.03 Information on the 40KDA101 keyboard display amplifier is given in Section 582-200-212.

1.04 Abbreviations used in this section are defined in Section 582-200-101.

1.05 To disassemble or reassemble parts (or units) of this section, the following tools (or equivalents) are required:

Screwdriver, 1/8" blade
Screwdriver, 1/4" blade
Socket wrench, 1/4"
Socket wrench, 5/16"
Open-end wrench, 1/4"
Static ground strap, 346392 (required only if circuit cards are handled)
Terminal extractor, 402840

Note: When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

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1.06   Grounding Strap Locations

Note: Remove strapping only when necessary.

Green insulated
grounding straps
of video cables
(up to 4) installed
in this area.

410200 only:
Inside controller
grounding strap
must be installed
in this area. (410201
does not use ground
strap).

BRAIDED GROUNDING STRAPS

GROUND STRAP

CONNECTOR
GROUND
STRAP

MONITOR
GROUND
CLIP

BRAIDED
GROUNDING STRAP

GREEN INSULATED
GROUNDING STRAP

KD CABLE

GREEN INSULATED
GROUNDING STRAP

40CAB251/ZZ
CABINET

Green insulated printer
cable grounding straps
installed in these areas.

GROUND CLIP
PTR OPCON

Ground connection
to bracket.

Rear of Tractor Feed
Printer Cabinet

WASHER

PTR
CONNECTOR

Late design only:
Ground connection
printer shelf in this
location

Early design only:
GROUND STRAP

Early design only:
Strap (Door to
Side Panel).

Rear of Friction Feed
Printer Cabinet

BLACK INSULATED
GROUNDING STRAP

Friction Feed Printer Cabinet

Note: Early style cabinet supports
printer on two rails. Late style supports
printer on solid shelf.

Form Access
Printer Cabinet

2.   DISASSEMBLY/REASSEMBLY

Caution: Remove all power from the set before performing any component replacement or conversions. This does not apply to cover removal for access to test switches, or to power on adjustments of the monitor.

MONITOR

2.01   To remove the monitor, see ①.
To remove only the monitor housing, see ②.

① Removal of entire monitor unit from set: Grasp monitor by sides near supports (late design — on rear of left support press latch release) and simply lift up. Electrical cable connectors are part of support assembly.

② Removal of monitor housing: Tilt monitor back and disengage latch. Early design — release by hand. Late design — insert a thin blade screw driver into cutout in latch and push to the right to release. Slide housing back partially. Position monitor to its normal position making sure it locks in that position. Remove housing completely.

LATE STYLE LATCH RELEASE
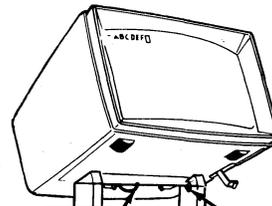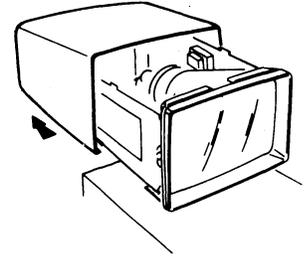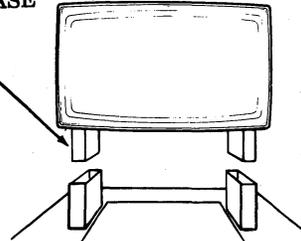
WEAR SAFETY GLASSES

TILT RELEASE (When Housing is Removed)

LATCH RELEASE

Warning: A latch on the rear of the left leg of monitors manufactured after May 1979, must be released to be able to lift off monitor.

Danger: When replacing (installing) the monitor keep your hands clear of the bottom of the monitor posts to avoid injury.

2.02   To replace the monitor, (see Danger and Warning) reverse the removal procedures of 2.01. For further disassembly of the monitor, refer to Section 582-213-701.

OPCON

2.03   To remove the opcon use the appropriate steps given below or on following page.

Attached KD

① Place thumb on inward tab of opcon (both sides).

② Press downward into unlatch position (each side).

③ Remove opcon by pulling straight away from the cabinet.

LATCHLEVER

40K104/DAB, 40K105/CAA, or 40K203/GAB OPCON

ALIGN LOCATING PINS (Each Side)

Free-Standing KD

40K104 OR 40K105:
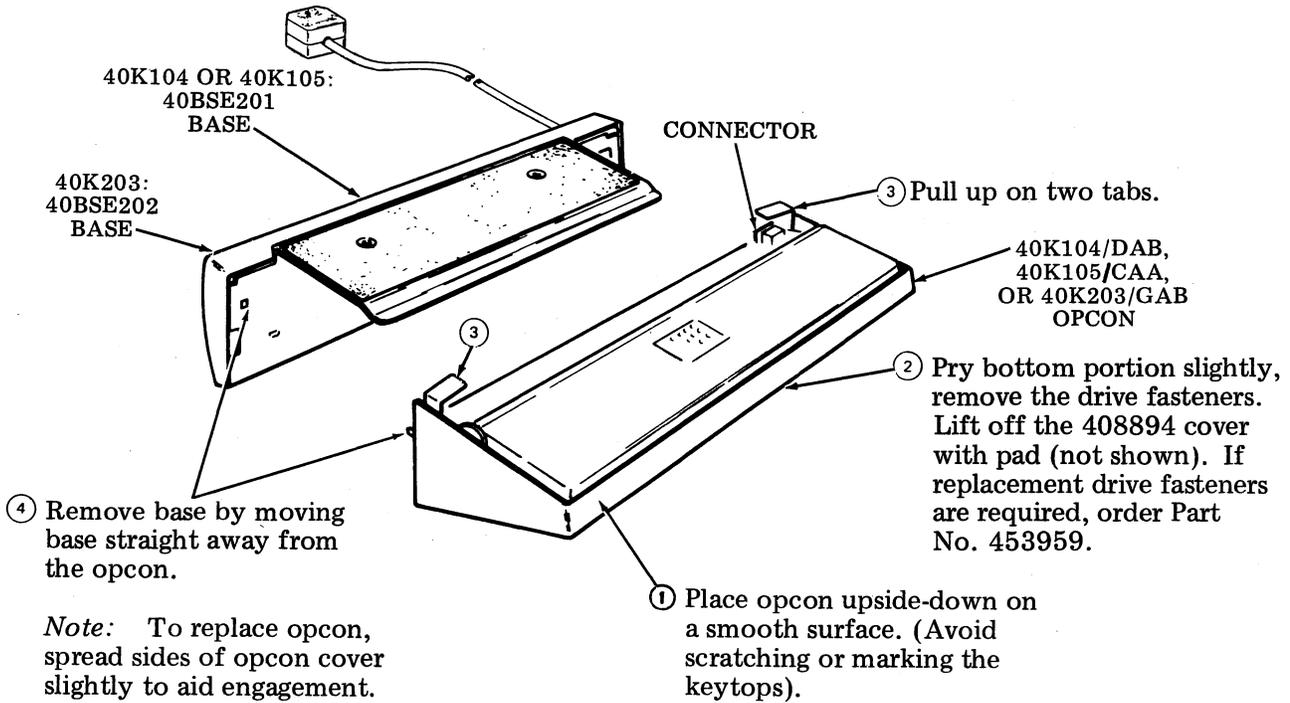40BSE201
BASE

40K203:
40BSE202
BASE

CONNECTOR

③ Pull up on two tabs.

40K104/DAB,
40K105/CAA,
OR 40K203/GAB
OPCON

③

② Pry bottom portion slightly, remove the drive fasteners. Lift off the 408894 cover with pad (not shown). If replacement drive fasteners are required, order Part No. 453959.

④ Remove base by moving base straight away from the opcon.

Note: To replace opcon, spread sides of opcon cover slightly to aid engagement.

① Place opcon upside-down on a smooth surface. (Avoid scratching or marking the keytops).
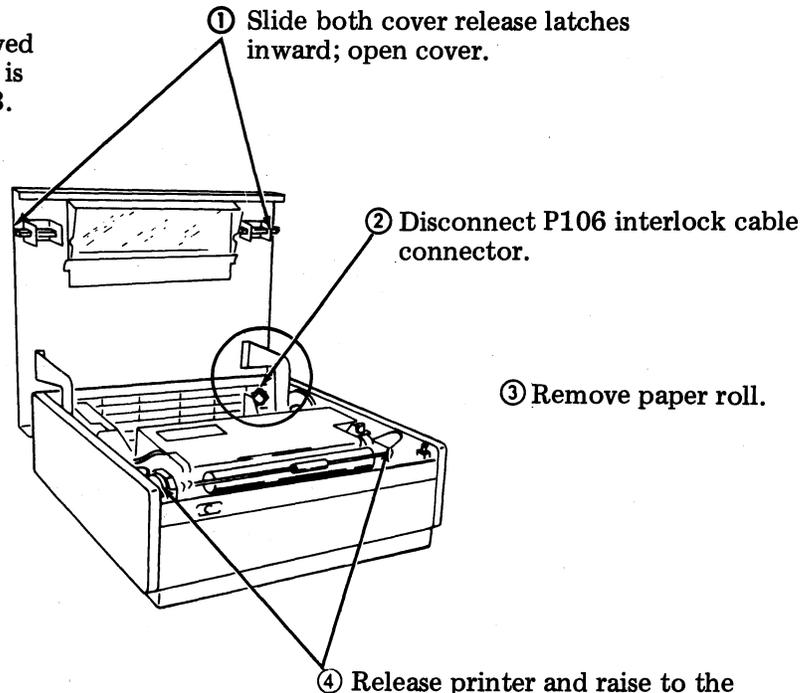
2.04   To replace the opcon, reverse the removal procedures of 2.03. When replacing opcon, make sure locating pins are fully engaged before pushing latchlevers into locked position. For further disassembly of opcon, refer to Section 582-213-701 .
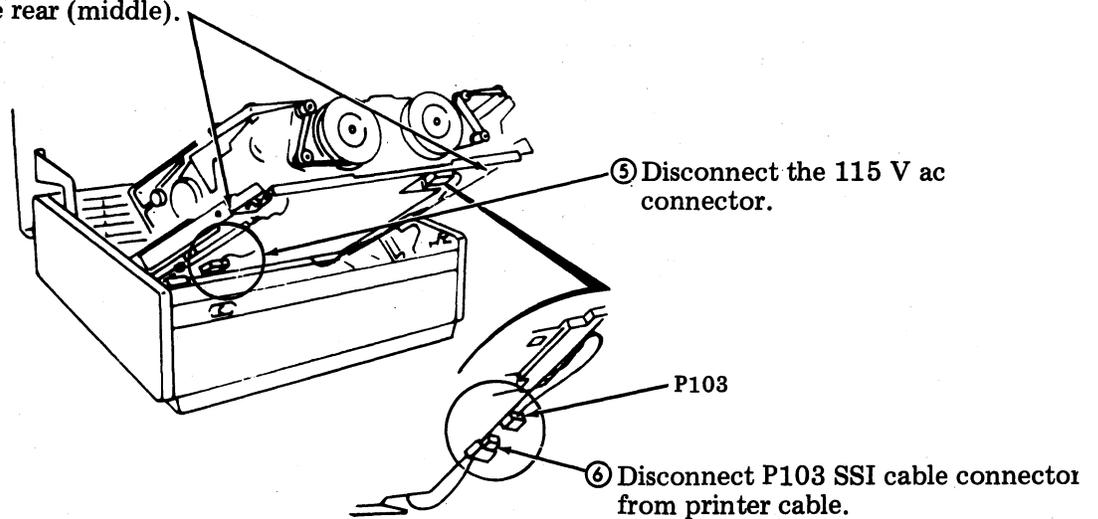
PRINTERS

A.   Friction Feed Printer

2.05   To remove the entire printer assembly:

Note: The circuit card can be removed after Step 4 of disassembly. If printer is not being removed omit Steps 2 and 3.

① Slide both cover release latches inward; open cover.

② Disconnect P106 interlock cable connector.

③ Remove paper roll.

④ Release printer and raise to the tilt position by depressing the left and right release levers and lifting printer.

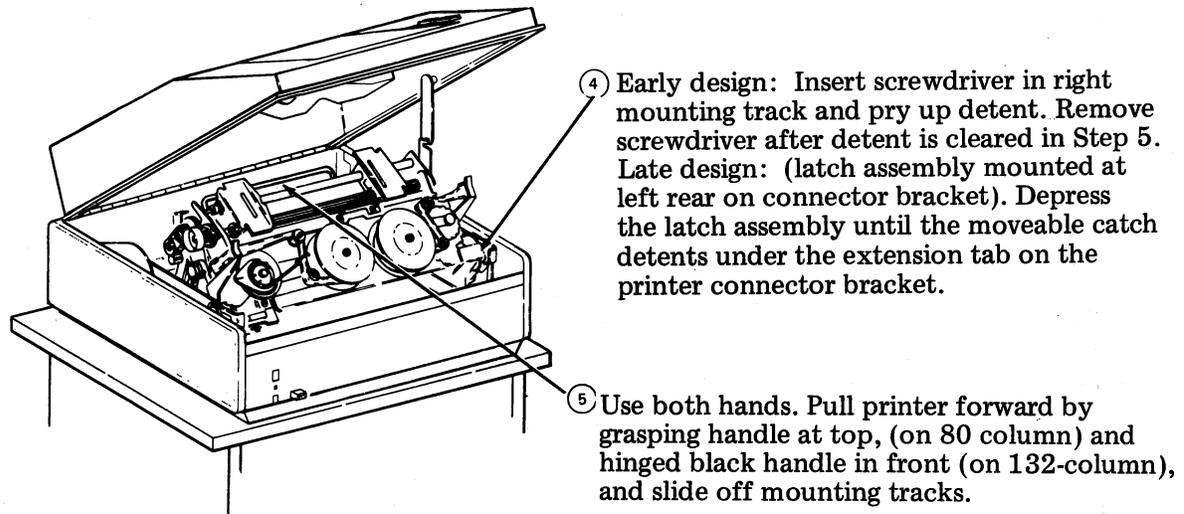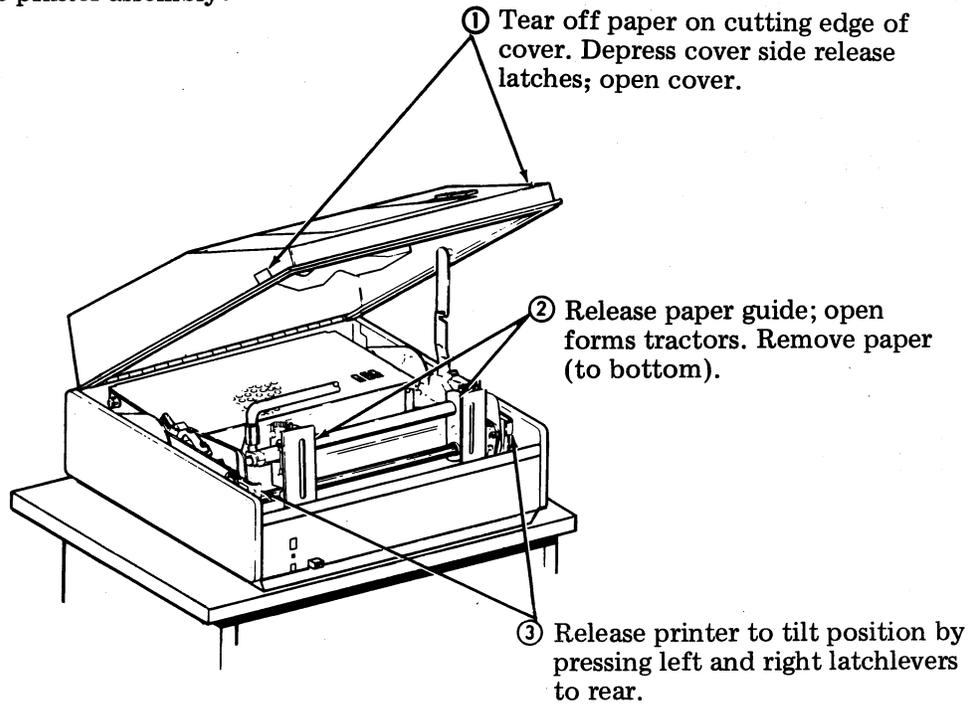⑦ Use both hands. Release (push in) the printer slide detents and pull the printer out by grasping it by the frame (front bottom) then also by the rear (middle).

⑤ Disconnect the 115 V ac connector.

P103

⑥ Disconnect P103 SSI cable connector from printer cable.

2.06   To replace the printer, reverse the removal procedures of 2.05. For further disassembly of printer and printer cabinet, refer to Section 582-210-702.
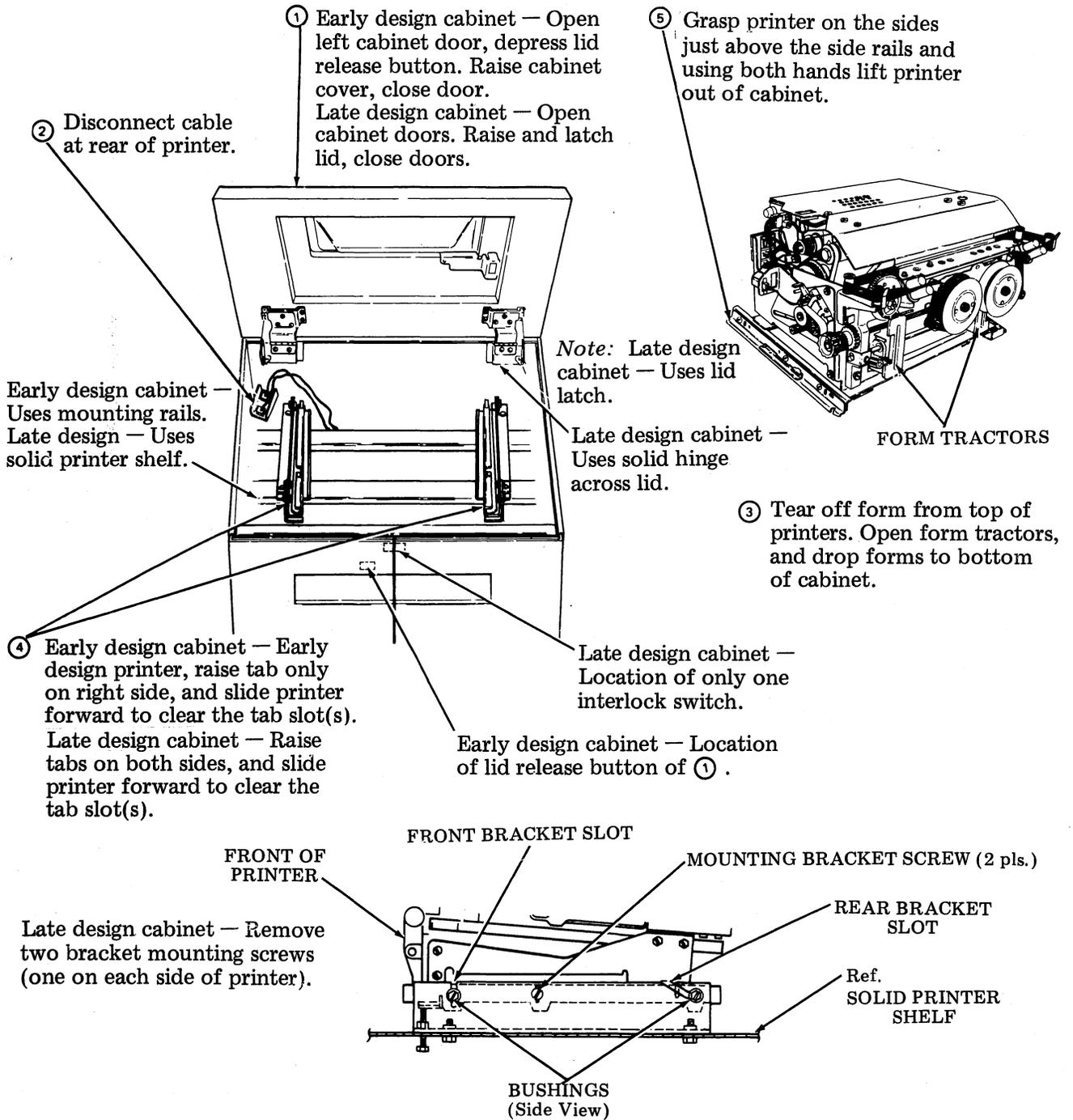
B.   Tractor Feed Printer (80 or 132 Column)

2.07   To remove the entire printer assembly:

① Tear off paper on cutting edge of cover. Depress cover side release latches; open cover.

② Release paper guide; open forms tractors. Remove paper (to bottom).

③ Release printer to tilt position by pressing left and right latchlevers to rear.

④ Early design: Insert screwdriver in right mounting track and pry up detent. Remove screwdriver after detent is cleared in Step 5. Late design: (latch assembly mounted at left rear on connector bracket). Depress the latch assembly until the moveable catch detents under the extension tab on the printer connector bracket.

⑤ Use both hands. Pull printer forward by grasping handle at top, (on 80 column) and hinged black handle in front (on 132-column), and slide off mounting tracks.

2.08   To replace the printer, reverse the removal procedures of 2.07. For further disassembly, refer to Section 582-210-702 for printers and Section 582-212-700 for cabinets.

C.   Forms Access Printer

2.09   To remove the entire printer assembly.

① Early design cabinet — Open left cabinet door, depress lid release button. Raise cabinet cover, close door.
Late design cabinet — Open cabinet doors. Raise and latch lid, close doors.

⑤ Grasp printer on the sides just above the side rails and using both hands lift printer out of cabinet.

② Disconnect cable at rear of printer.

Early design cabinet — Uses mounting rails. Late design — Uses solid printer shelf.

Note: Late design cabinet — Uses lid latch.

Late design cabinet — Uses solid hinge across lid.

FORM TRACTORS

③ Tear off form from top of printers. Open form tractors, and drop forms to bottom of cabinet.

④ Early design cabinet — Early design printer, raise tab only on right side, and slide printer forward to clear the tab slot(s).
Late design cabinet — Raise tabs on both sides, and slide printer forward to clear the tab slot(s).

Late design cabinet — Location of only one interlock switch.

Early design cabinet — Location of lid release button of ① .

FRONT BRACKET SLOT

FRONT OF PRINTER

MOUNTING BRACKET SCREW (2 pls.)

REAR BRACKET SLOT

Late design cabinet — Remove two bracket mounting screws (one on each side of printer).

Ref. SOLID PRINTER SHELF

BUSHINGS (Side View)

FORMS ACCESS PRINTER CABINET

2.10   To replace the printer, reverse the procedures in 2.09. Late design cabinet and printer with modified frame — grasp printer as in Step 5, lower printer into cabinet mounting shelf and seat bushings in bracket slots. Install the two mounting bracket screws (one on each side). For further disassembly refer to Section 582-210-702 for printer and Section 582-212-700 for cabinet.

PEDESTALS AND CABINETS

2.11   Refer to Section 582-212-700 for assembly or disassembly of a pedestal or cabinet.
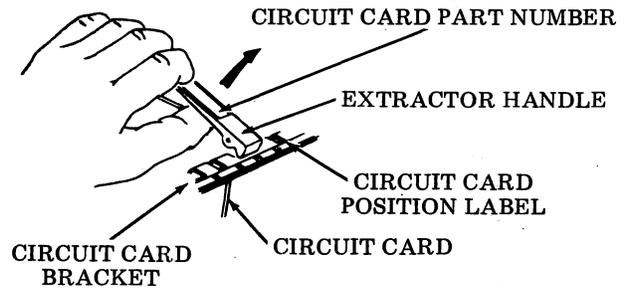
CIRCUIT CARDS

Note: The required circuit cards and their options and locations are given in Section 582-200-201.

2.12   To remove the controller circuit card:

Lift up on extractor handles
and lift straight up.

Caution: Wear 346392 static discharge strap when removing circuit cards. See Section 582-200-201, 1.04 Warnings 1, 2 and 3.

CIRCUIT CARD PART NUMBER

EXTRACTOR HANDLE

CIRCUIT CARD POSITION LABEL

CIRCUIT CARD

CIRCUIT CARD BRACKET
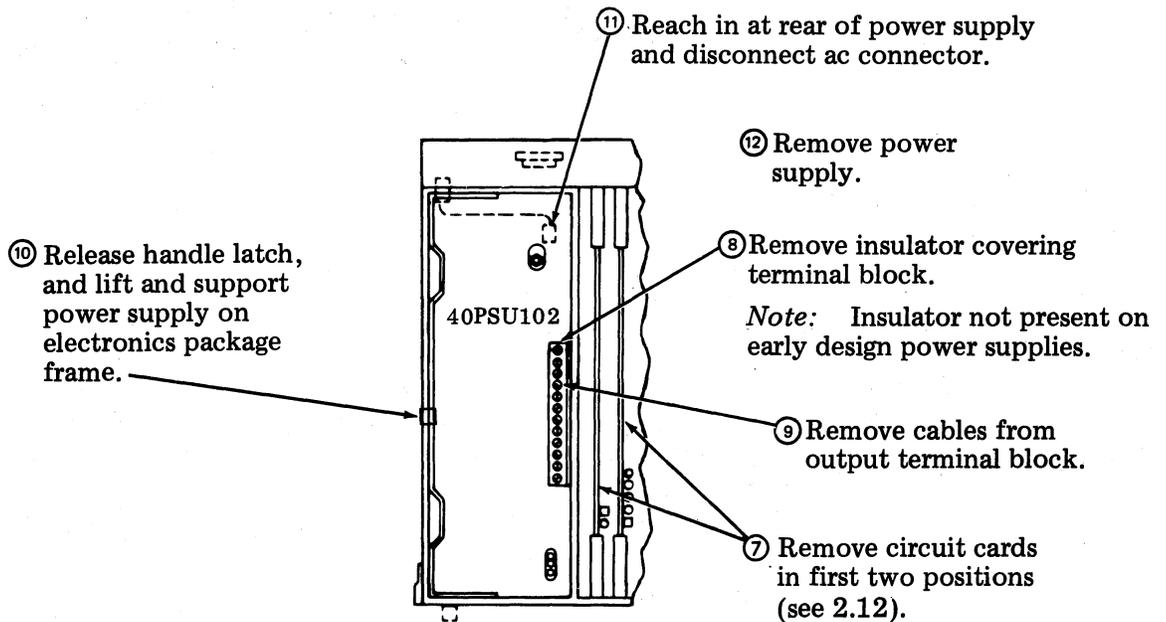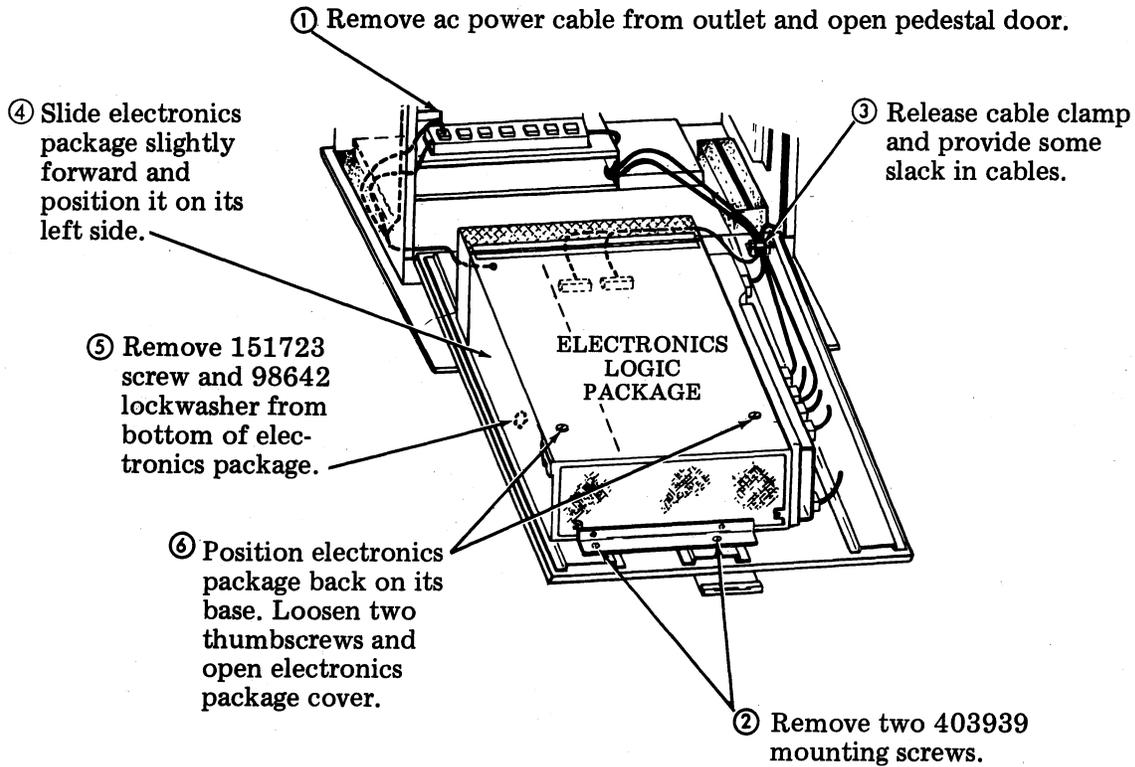
2.13   To replace the controller circuit card:

①Check that card is proper for location (see Note above).

②Check that pins on card are straight (not bent) by sighting down the two rows of pins.

Warning: Attempting to insert a card with bent pins into the 410200 or 410201 back panel may result in damaging the back panel or the card.

③Check that the option switches are set to the correct setting (refer to the Controller Arrangement Form on the underside of the controller cover — should be present before installation). Refer to the above Note.

④ Place card in slot, then depress until card is fully seated.

40PSU102 POWER SUPPLY

2.14   To remove the power supply:

① Remove ac power cable from outlet and open pedestal door.

④ Slide electronics package slightly forward and position it on its left side.

③ Release cable clamp and provide some slack in cables.

⑤ Remove 151723 screw and 98642 lockwasher from bottom of electronics package.

ELECTRONICS LOGIC PACKAGE

⑥ Position electronics package back on its base. Loosen two thumbscrews and open electronics package cover.

② Remove two 403939 mounting screws.

⑪ Reach in at rear of power supply and disconnect ac connector.

⑫ Remove power supply.

⑩ Release handle latch, and lift and support power supply on electronics package frame.

⑧ Remove insulator covering terminal block.

Note: Insulator not present on early design power supplies.

40PSU102

⑨ Remove cables from output terminal block.

⑦ Remove circuit cards in first two positions (see 2.12).

2.15   To replace the power supply, reverse the removal procedures of 2.14.

CONTROLLER

2.16   To remove the controller (see Note 1):

① Turn off pedestal power switch, open pedestal door, and unplug controller
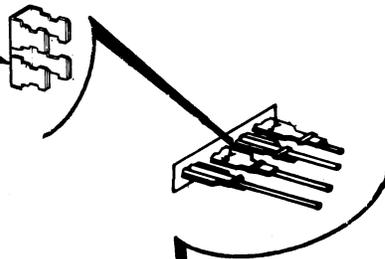   ac power cord from ac outlet.
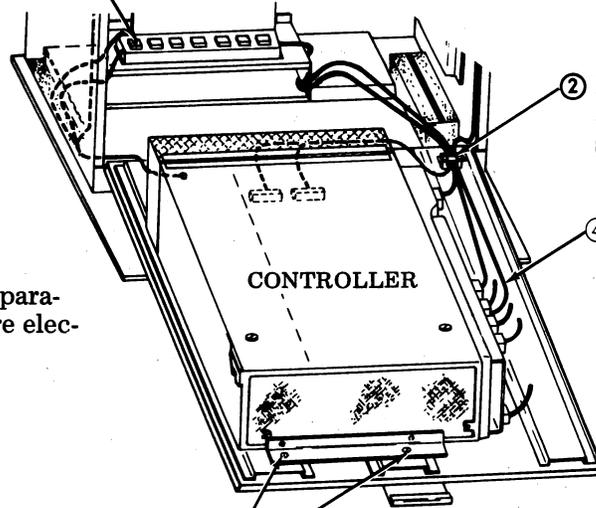
② Release cable clamp
   and provide some
   slack in cables.

④ Insure that all cables are
   properly marked then
   disconnect SSI cable(s)
   and data set or data
   auxiliary set cable if
   present.

Note 1:   "Controller" in this para-
graph is used to mean the entire elec-
tronics package.

CONTROLLER

③ Remove two 403939
   mounting screws from
   door.

⑤ Slide controller slightly
   forward to disengage rear
   mounting tabs and turn
   controller (90°) for
   access to rear.

192009
GROUND
LUG

Note 2:   During reassembly, strain reliefs
of video connectors to A and C must be
facing up and reliefs to B and D must be
facing down. Connectors of green wires
must be connected to a terminal on the
ground lugs. (See Section 582-200-201
to select which controller connector(s)
to use.)
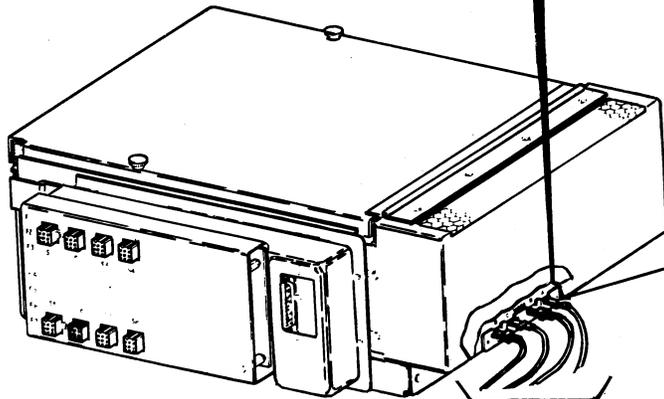
⑥ DCC, MCC: Remove connectors of green wires
   from ground lugs. Remove two 198670 screws.
   Remove 405210 plate and D I/O cable(s).

⑦ Remove controller from pedestal.

Note 3:   A green wire is
part of each D I/O cable.

2.17   To replace the controller, reverse the removal procedures of 2.16. See Note 1.
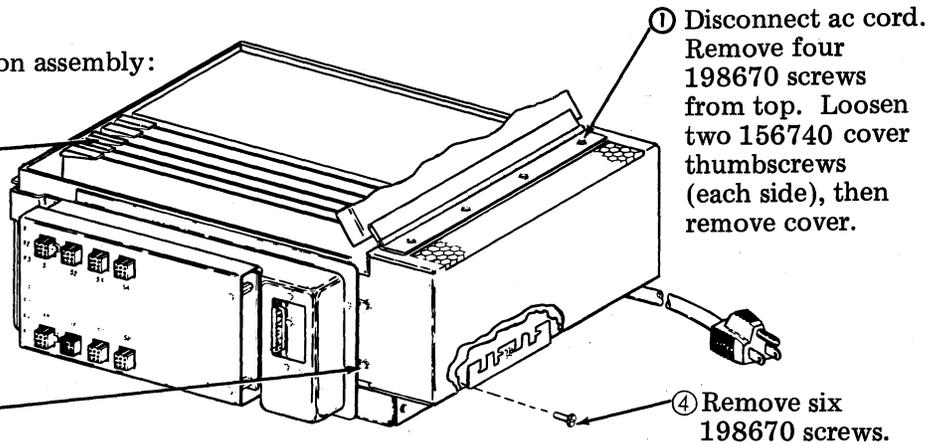
A.   Ventilation Assembly

2.18   To remove the ventilation assembly:

② Remove circuit cards
   from electronics package
   (see 2.12).

① Disconnect ac cord.
   Remove four
   198670 screws
   from top. Loosen
   two 156740 cover
   thumbscrews
   (each side), then
   remove cover.

③ Loosen four 156720
   screws. Remove 408007
   shroud from controller.

④ Remove six
   198670 screws.

⑤ Disconnect ground strap from
   back panel (circuit card).

⑥ Disconnect ac power
   connector from power
   supply.

40PSU102

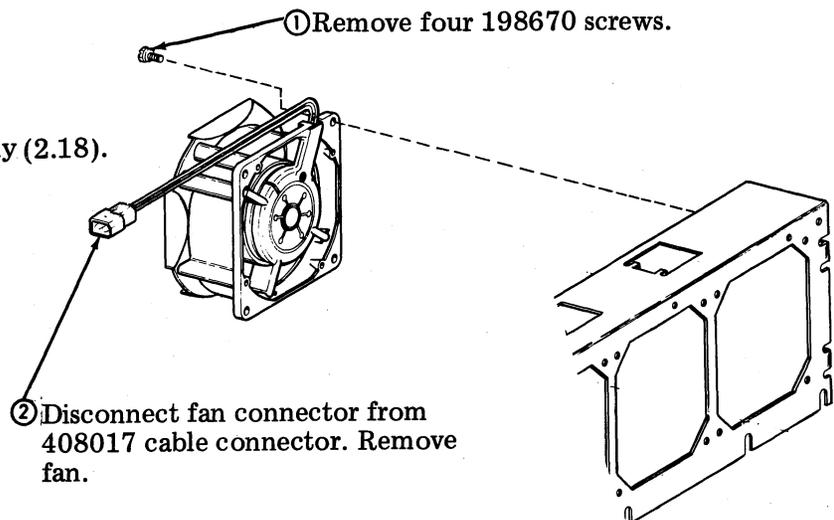⑦ Remove ventilation
   assembly from
   controller.
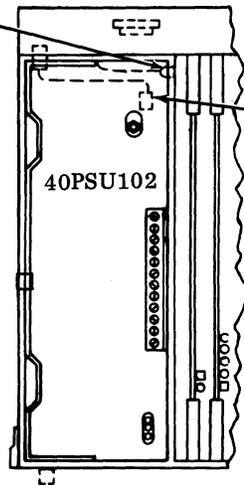
2.19   To replace the ventilation assembly, reverse the removal procedures of 2.18.
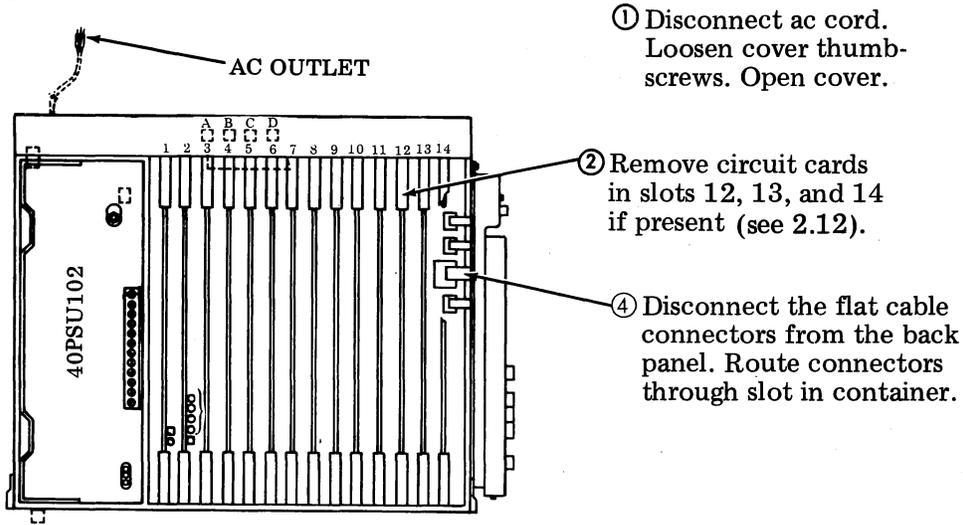
408015 Fan

2.20   To remove a fan:

• Remove ventilation assembly (2.18).

① Remove four 198670 screws.

② Disconnect fan connector from
   408017 cable connector. Remove
   fan.

2.21   To install a fan, reverse the removal procedures of 2.20.

B.   Interconnection Module

2.22   To remove the interconnection module:

① Disconnect ac cord.
   Loosen cover thumb-
   screws. Open cover.

AC OUTLET

② Remove circuit cards
   in slots 12, 13, and 14
   if present (see 2.12).

④ Disconnect the flat cable
   connectors from the back
   panel. Route connectors
   through slot in container.

40PSU102

COVER

⑤ Remove the interconnection
   module from controller.

③ Remove four
   198670 screws.
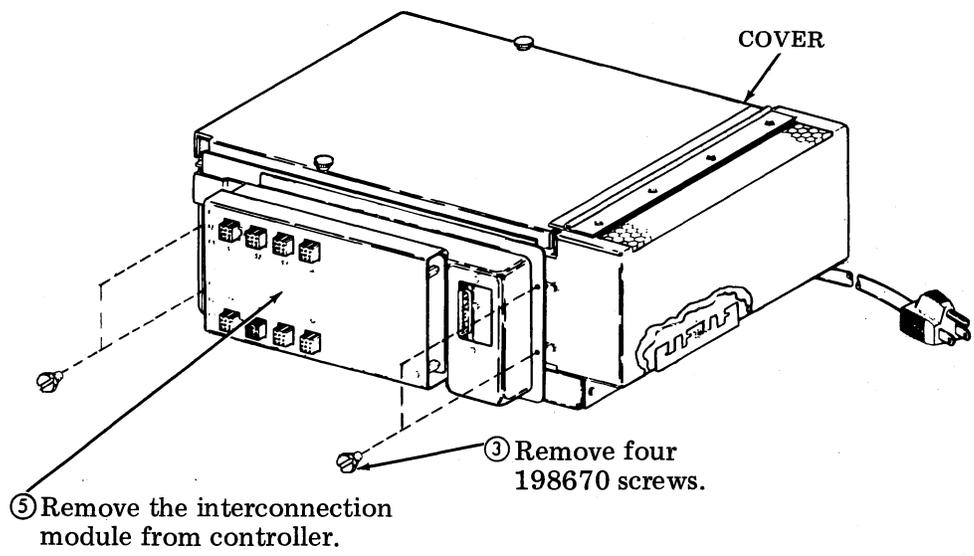
APPLICATION	INTERCONNECTION MODULE
SCC	405150
DCC	405151
MCC	405152

2.23   To replace the interconnection module, reverse the removal procedures of 2.22.

C.   Back Panel

2.24   To remove the back panel:

• Remove all circuit cards (2.12).
• Remove ventilation assembly (2.18).
• Remove power supply(2.14).

BACK PANEL

① Disconnect the flat cable connectors from the back panel.

② Slide back panel rearward so that the two locating pins on the front panel are clear of the front of the container.

③ Lift back panel out of controller container. Leave the insulator on the container floor in place.
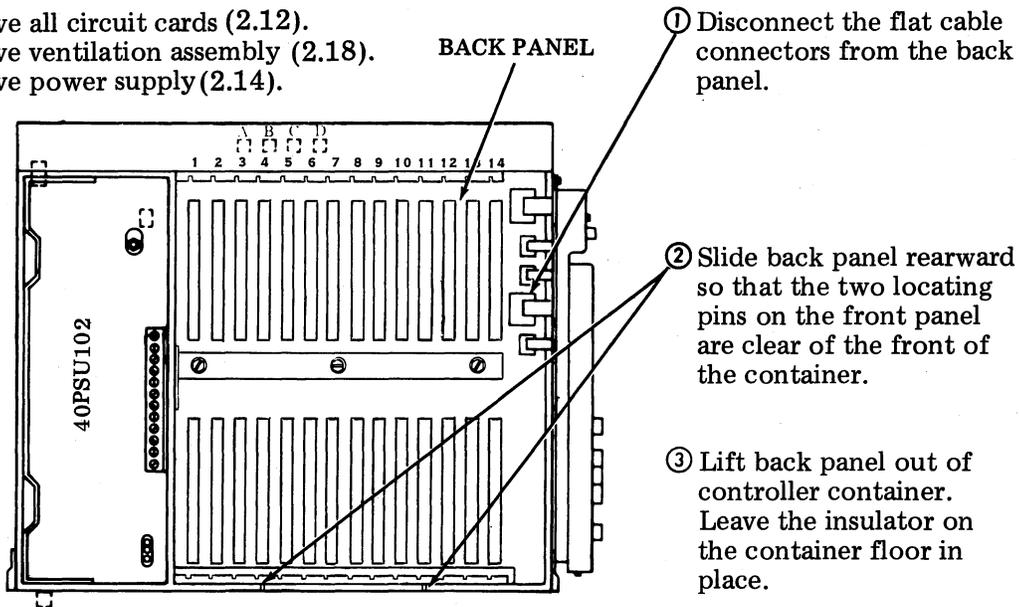
2.25   To replace the back panel, reverse the removal procedures of 2.24.

D.   Cables

DCC, MCC — Opcon/Monitor (Controller-KD) Cables:

|			
405301	6 ft	405304	50 ft
405302	12 ft	405139	75 ft
405303	25 ft	405140	100 ft

2.26   To remove opcon/monitor cable from attached KD:

① Remove monitor. Use flat blade of screwdriver against 341691 monitor connector front ear and use screwdriver shank against right support guide to hold ear in. With your other hand push down on front of connector to drop ear below mounting slot. Hold rear ear in and push down on connector.

② Remove two 180798 screws and 45815 lockwashers from right support guide.

③ Raise lid. Push connector down through hole in cover. Notice that the connector keying notches face the rear of the unit and that a 98642 lockwasher is positioned under the 320420 connector ground terminal on the front panel.
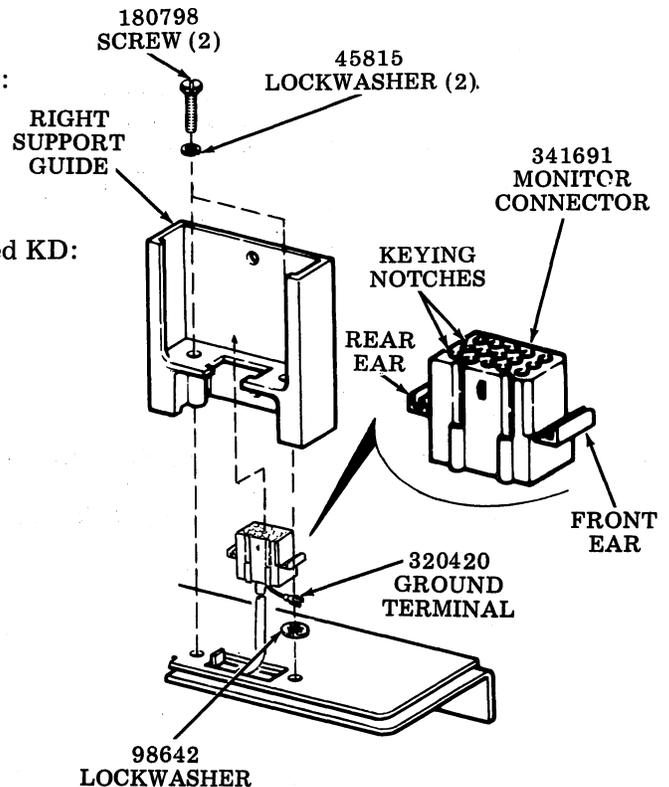
Proceed to Step 4 on following page.

180798
SCREW (2)

45815
LOCKWASHER (2).

RIGHT
SUPPORT
GUIDE

341691
MONITOR
CONNECTOR

KEYING
NOTCHES

REAR
EAR

FRONT
EAR

320420
GROUND
TERMINAL

98642
LOCKWASHER

④ Remove opcon. Use flat blade of screwdriver against upper ear of 401623 opcon connector. With your other hand rock connector toward inside of cabinet. Push up on lower ear of connector and remove connector from front panel toward inside of cabinet.
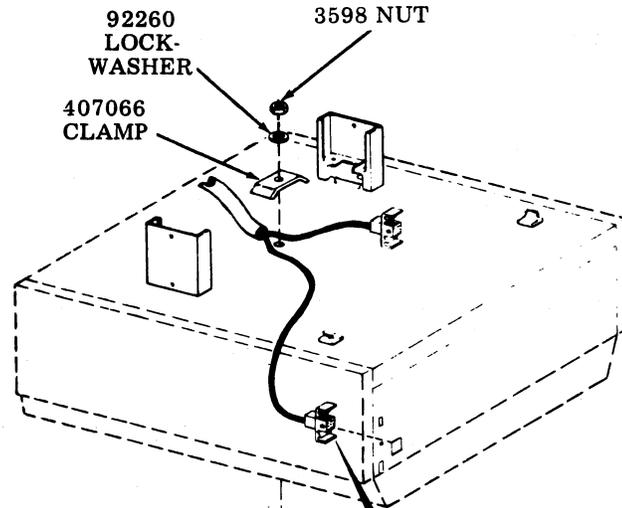
⑤ Disconnect 181392 ground terminal of the cable from cabinet ground lug.

⑥ Remove 3598 nut, 92260 lockwasher, 407066 clamp and 181249 screw.

⑦ Remove cable from cabinet through opening at rear.
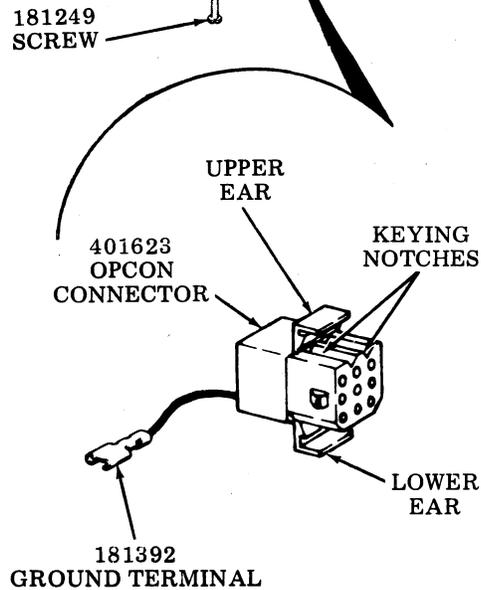
2.27   To install opcon/monitor cable to attached KD, either reverse the removal procedures of 2.26 or use Section 582-200-201. Observe an orange identification tag is on the KD end of the cable.

92260 LOCK-WASHER

3598 NUT

407066 CLAMP

181249 SCREW

UPPER EAR

KEYING NOTCHES

401623 OPCON CONNECTOR

LOWER EAR

181392 GROUND TERMINAL

2.28   To remove opcon/monitor cable from free-standing KD:

① Remove monitor base bottom plate (see Section 582-200-201).

② Perform Steps 1, 2, and 3 of 2.26.

③ Remove opcon from opcon base assembly (see Section 582-200-201).

④ Remove cable including ground terminal from opcon base assembly (see 2.26, Steps 4 and 5).

2.29   To install opcon/monitor cable to free-standing KD, either reverse the removal procedures of 2.28 or use Section 582-200-201. Observe an orange identification tag is on the KD end of cable.
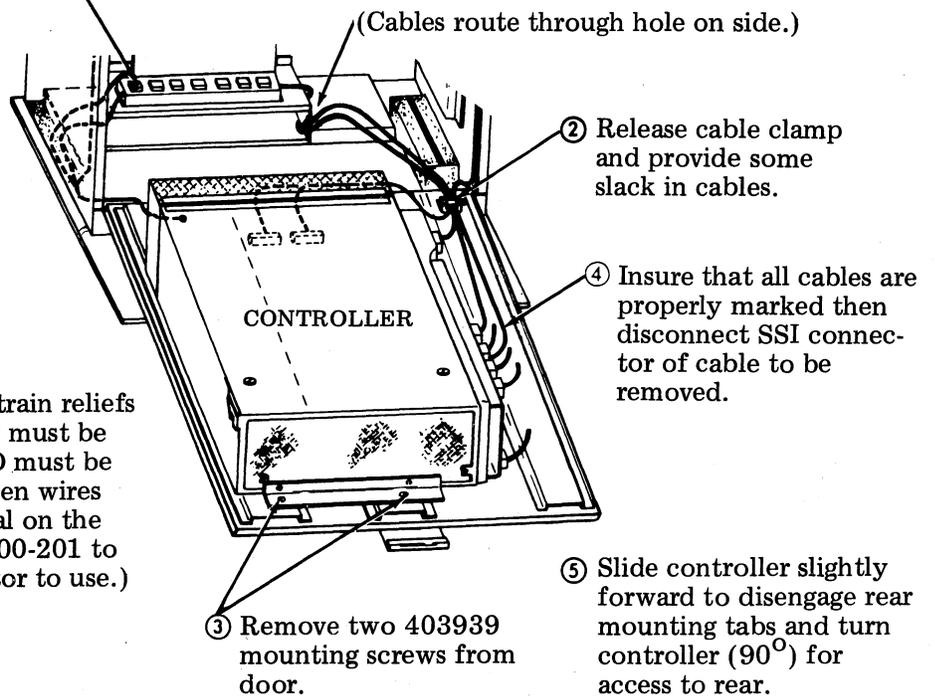
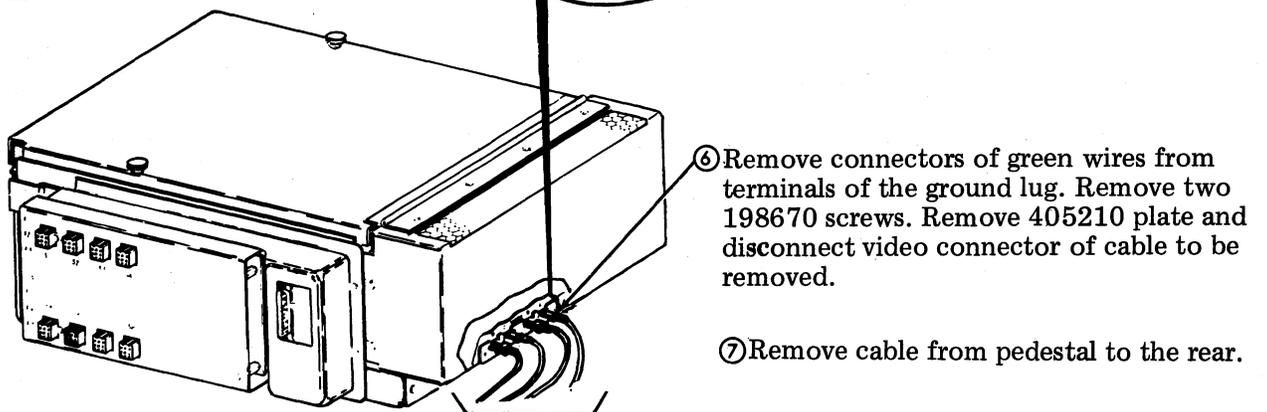2.30   To remove opcon/monitor cable from controller:

① Turn off pedestal power switch, open pedestal door, and unplug controller ac power cord from ac outlet.

(Cables route through hole on side.)

② Release cable clamp and provide some slack in cables.

④ Insure that all cables are properly marked then disconnect SSI connector of cable to be removed.

CONTROLLER

Note 2:   During reassembly, strain reliefs of video connectors to A and C must be facing up and reliefs to B and D must be facing down. Connectors of green wires must be connected to a terminal on the ground lug. (See Section 582-200-201 to select which controller connector to use.)

⑤ Slide controller slightly forward to disengage rear mounting tabs and turn controller (90°) for access to rear.

③ Remove two 403939 mounting screws from door.

192009
GROUND
LUG

Note 1:   The 192009 ground lug is assembled to 405210 plate clamp with two 1164 screws and two 405052 star washers.

⑥Remove connectors of green wires from terminals of the ground lug. Remove two 198670 screws. Remove 405210 plate and disconnect video connector of cable to be removed.

⑦Remove cable from pedestal to the rear.

Note 3:   A green ground wire is part of each cable.

2.31   To install opcon/monitor cable to controller, reverse the removal procedures of 2.30.

SCC, MCC — Data Set Cables:

341896	5 ft	408067	25 ft
408065	7 ft	408068	50 ft
408066	12 ft		

2.32   To remove data set cable:

① Turn off pedestal power switch, open pedestal door, release cable clamp. See **2.30** for part locations.

② Disconnect cable connector from controller. Remove cable from pedestal to the rear.

③ Disconnect cable connector from data set.

2.33   To install data set cable, reverse removal procedures of **2.32.**

DCC, MCC — Controller/Printer Cables:

405306	6 ft	405309	50 ft
405307	12 ft	405237	(10 ft stub to MCC or DCC)
405308	25 ft	405239	(10 ft stub to printer)

2.34   To remove controller/printer cable:

① Turn off pedestal power switch, open pedestal door, release cable clamp. See **2.30** for part locations.

② Disconnect cable connector from controller.

③ Disconnect cable connector from printer. Disconnect ground terminal of cable from rear of printer (see 1.06 for part location).

2.35   To install controller/printer cable, reverse the removal procedures of **2.34.**

3.   PARTS

3.01   For parts information on interconnect cables of the DATASPEED 40/4, refer to Section 582-200-401.

3.02   Parts information for individual components (printer, monitor, etc) are not illustrated in this section. Refer to appropriate BSP section.

3.03   Field replaceable components of controllers are listed in the index which follows the parts illustrations, see 3.04.

408030

341718

401687

405360

401662

341718

B

C

A

E

7002

156740

2191

341718

Card guide not present
on current manufactured
back panel.

410200 (Early Design)
410201 (Late Design)

405205

341718

405150 (SCC)
405151 (DCC)
405152 (MCC)

PSU102

C

D

198670

405210
(See Fig. 5.)

405158

198670

A

403939

405097

98642

151723

401680

401225
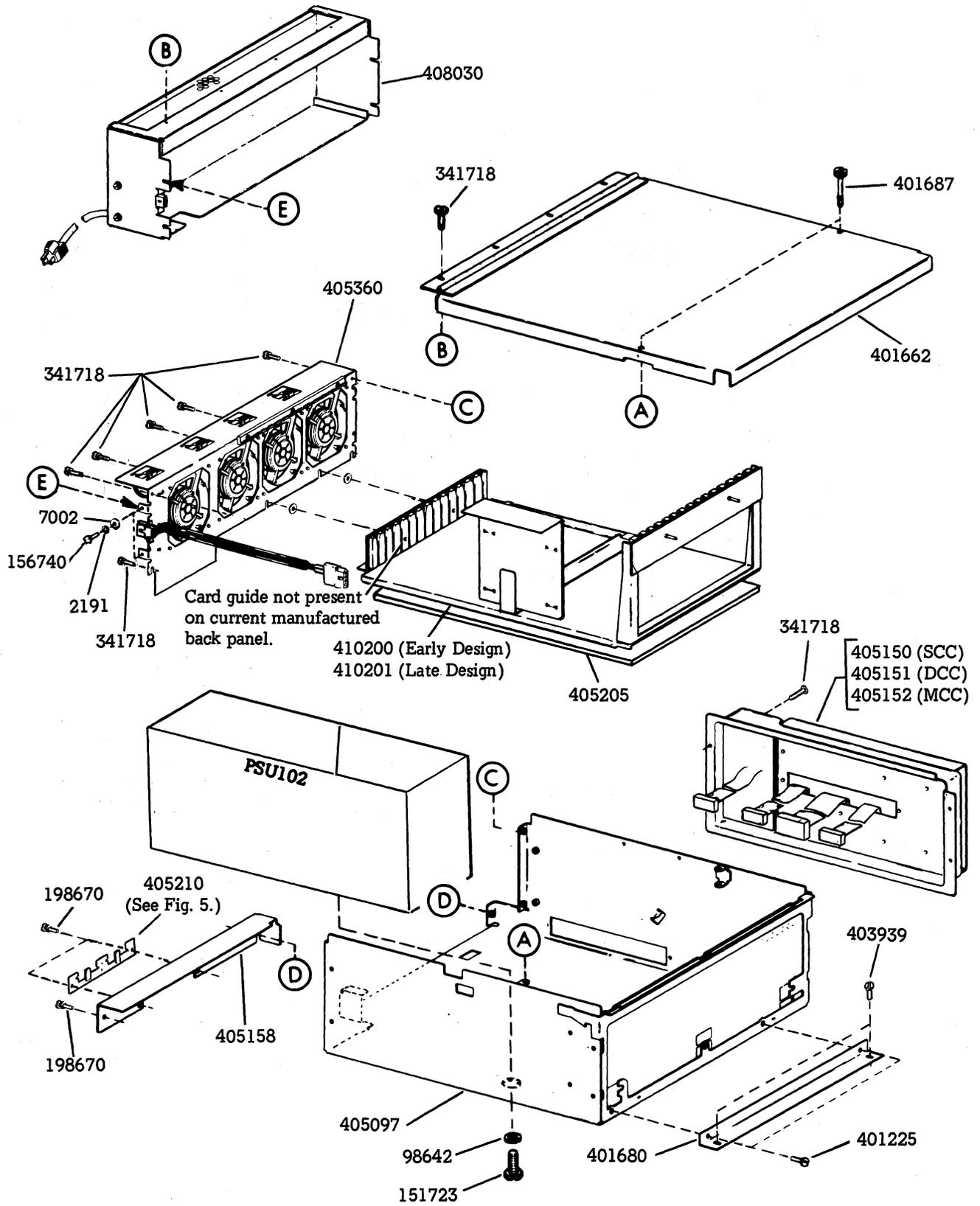
Fig. 1—Overview of Controller Components

198670

405357

408015

405359

125011

110743   326023

312918

WHITE LEAD
BLACK LEAD

Ⓐ

181240   Ⓐ   405358
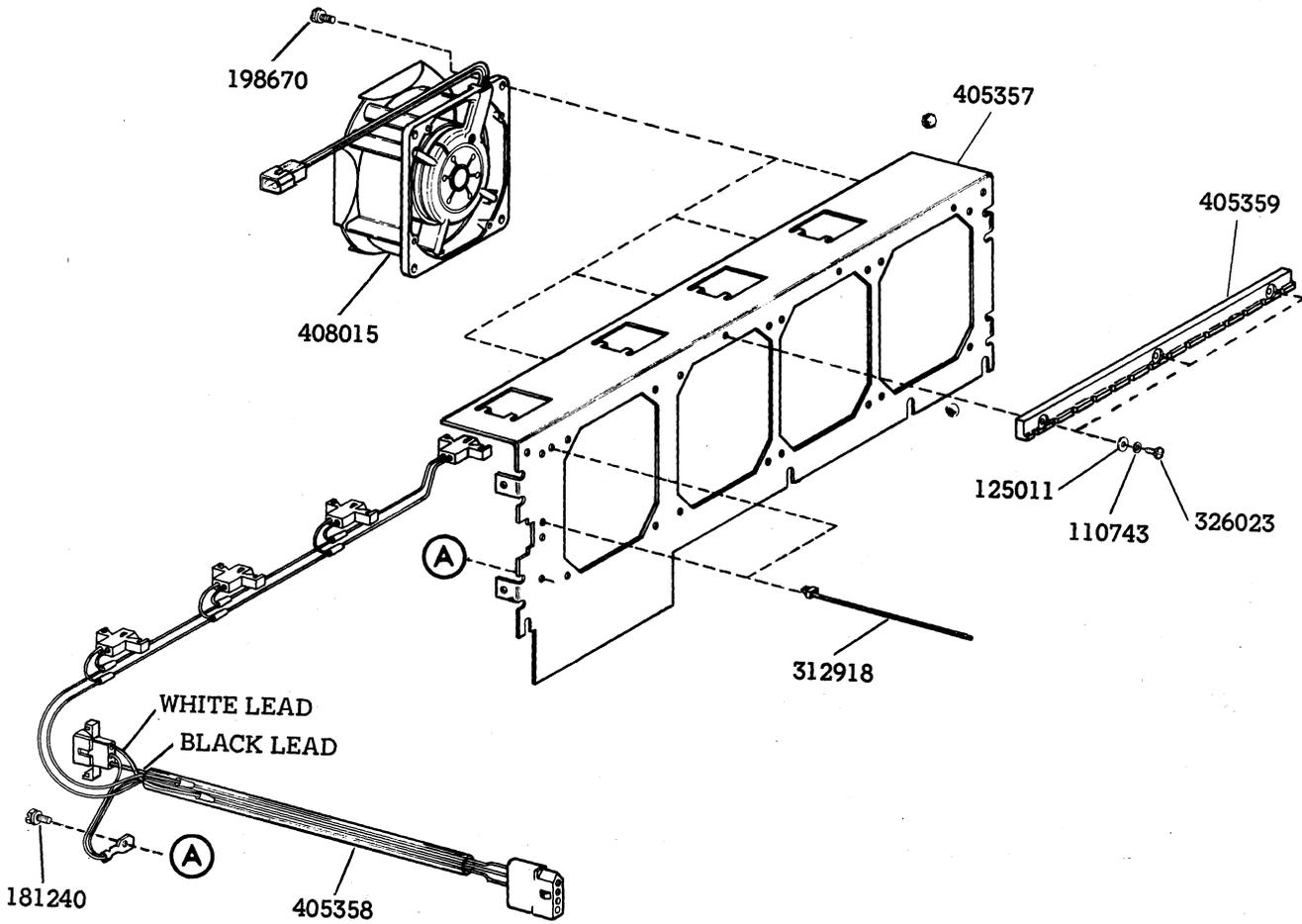
Fig. 2 — 405360 Ventilation Assembly Components

198670

401662

401687

198670

405158

Ⓐ

198670

156740

2191

7002

2481

Ⓐ

408030

VENTILATION
ASSEMBLY

AC POWER
CONNECTOR

405097
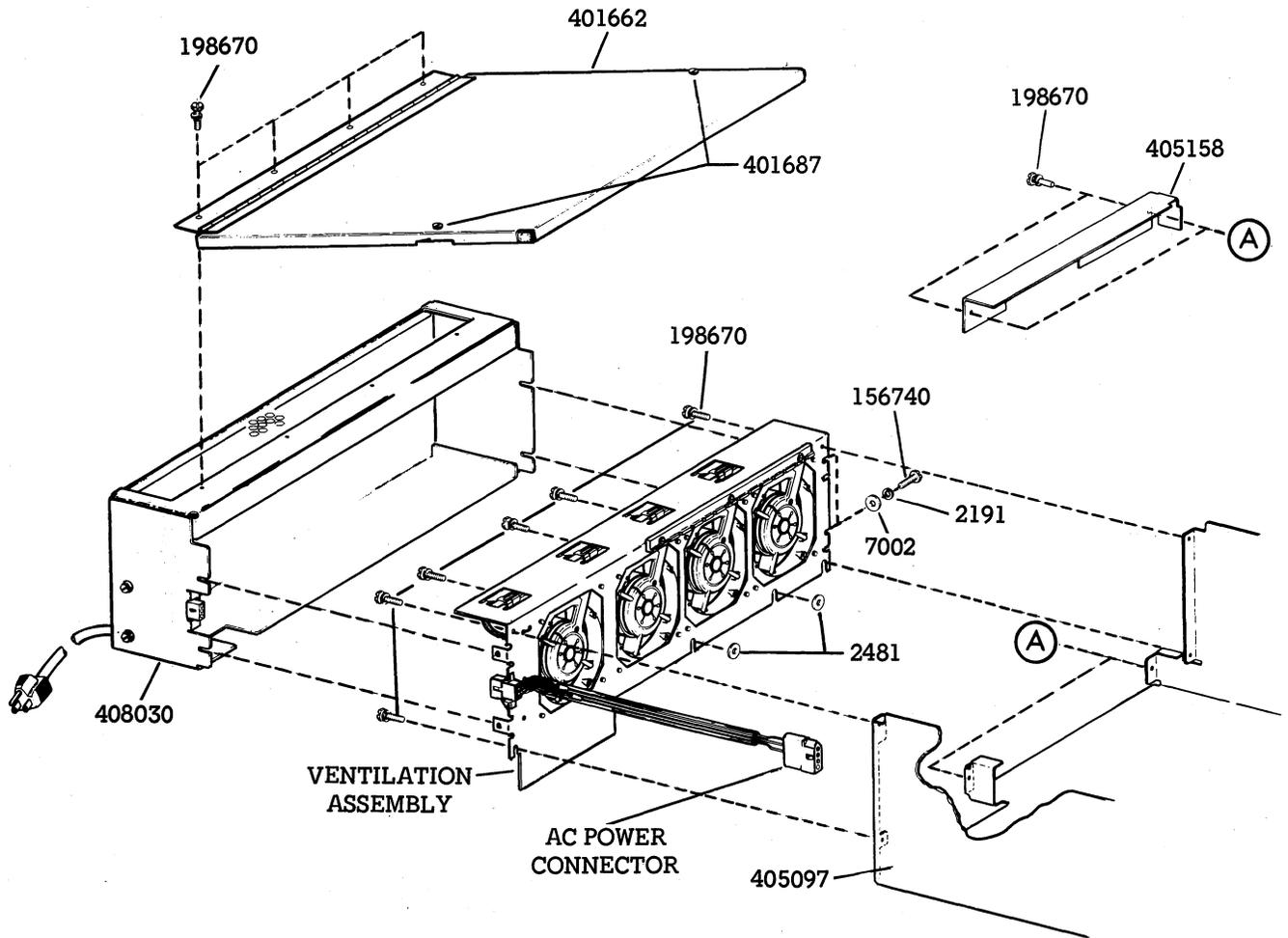
Fig. 3—Mounting Hardware for Fan Guard, Ventilation Assembly, and Cover

406313
(SCC only
late design)

405210
(DCC, MCC,
early design SCC)

405052

192009   1164
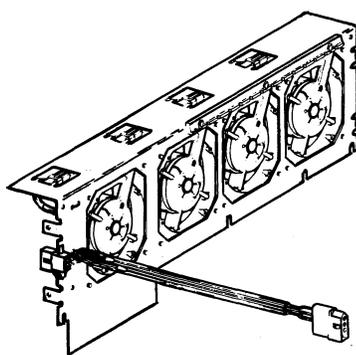
Fig. 4—Ventilation Assembly Detail
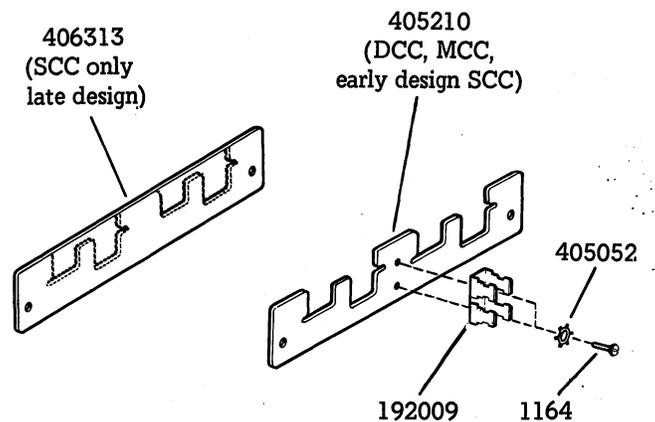
Fig. 5 — Clamp Plate Components (At Rear of Controller)

405179
AND
90951

336810

405331

337871

405179
AND
90951

G

405192
OR
405171
(See
Note 1)

405177 (MCC)
405178 (SCC
or DCC)

A

B

C

405197 ‡

90951

76167

405174

90951

76167

405192 is illustrated. 405171
has no panel connector (DCC only).

D

E

90951

76167

F

Note 1:

Note 2:   Early design interconnection modules
use 405181 fuses 3A (illustrated), late design
use three 321955 fuses, 2.5A, which are not
shown.

405181
(4) ON 410481
(7) ON 410480

90951

405180

405180   121018

A

B

D

E

C

F

90951

121018

405180

90951

121018

405180

90951

410480 (SCC or DCC)
410481 (MCC)

90951

76167

90951

76167

90951

76167

405163 OR
405164

121018

90951

G

410485 (SCC or DCC)
410487 (MCC)

‡ (Not present on late design
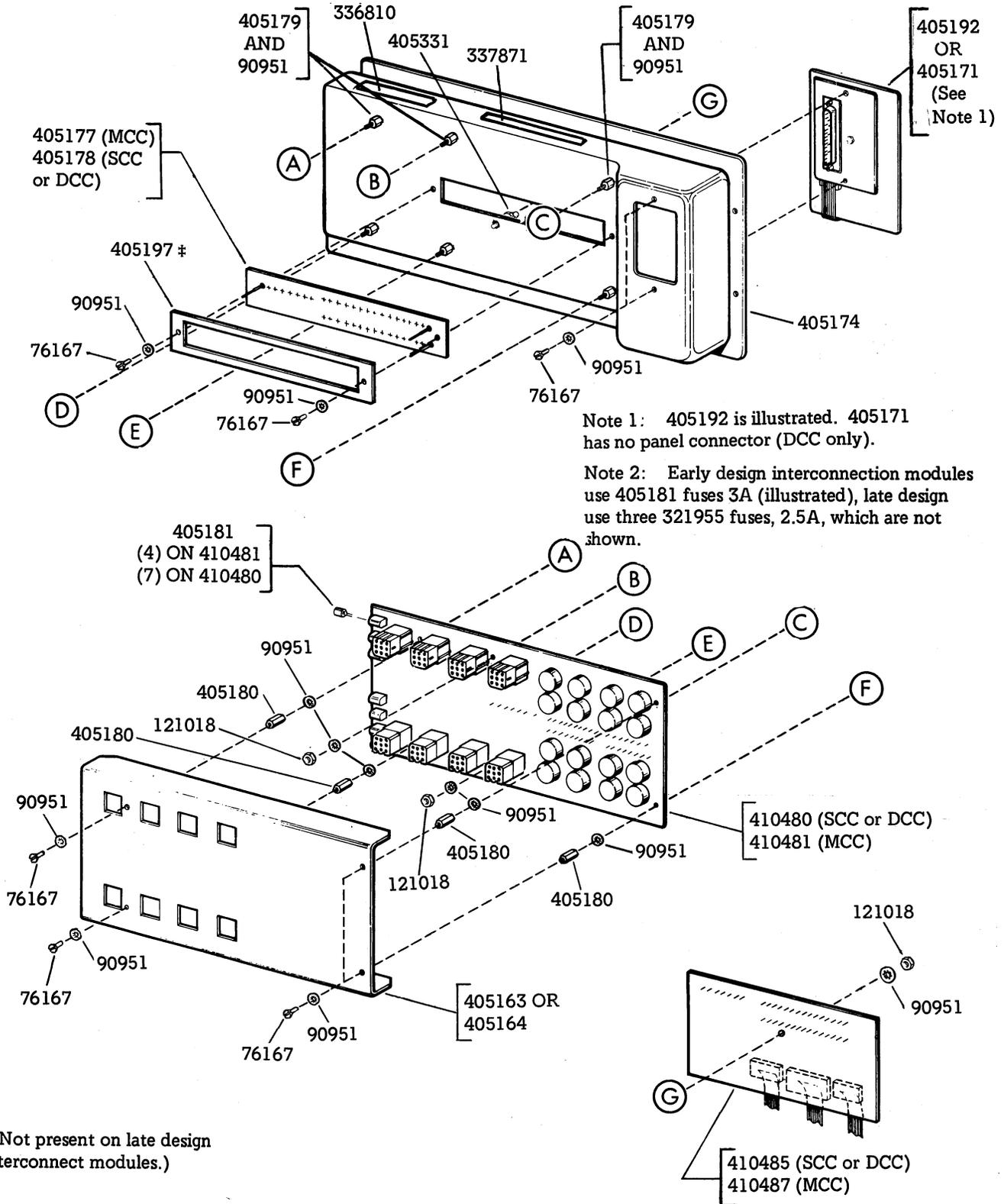interconnect modules.)

Fig. 6—405150, 405151, and 405152 Interconnection Modules

INDEX OF REPLACEABLE PARTS

3.04   This index below contains field replaceable parts. The index shows the section, manual or page number of this section on which access is provided.

Note: When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

APPLICATION	PART NO.	DESCRIPTION	SECTION OR PAGE NO.
Monitor	40MN101/AA 341578 341686	Monitor Fuse, 1.4 Amp Fuse, 1.5 Amp (SL-BL) Glass	3 582-213-701 582-213-701
Opcon	40K104/DAB 40K105/CAA 40K203/GAB	Opcon (EBCDIC, (Typewriter Style) Opcon (Internal Numeric Style) Opcon (External Numeric Cluster Style)	3, 4 3, 4 3, 4
Free-Standing KD	40BSE101 40BSE201 40BSE202 346333	Base (Monitor) Base (Opcon, 40K104 or 40K105) Base (Opcon, 40K203) Opcon Base Cable	582-211-700
Printer	40P101/ZZ, 40P102/ZZ 40P151/ZZ, 40P154/ZZ 40P201/ZZ, 40P202/ZZ, 40P204/ZZ 40P253/ZZ 129919 143306	Printer, Friction Feed Printer, Tractor Feed — 80 Column Printer, Tractor Feed — 132 Column 80 Column Forms Access Fuse, 4 Amp SL-BL Fuse, 1 Amp SL-BL MDL-1	5 6 6 7 582-210-702 582-210-702
Printer Type Carrier (Std is Standard) (Block is OCR-B)	400645 400785 400629 400784 408392 408524 400629 408525	80 Column, Mono ASCII Std (AA) 80 Column, Mono EBCDIC Std (AQ) 80 Column, Up-Low ASCII Std (AB) 80 Column, Up-Low EBCDIC Std (AN) 80 Column, Mono ASCII Block (BD) 80 Column, Mono EBCDIC Block (BM) 80 Column, Up-Low ASCII Block (BB) 80 Column Up-Low EBCDIC Block (BN)	582-210-702

APPLICATION	PART NO.	DESCRIPTION	SECTION OR PAGE NO.
Printer Type Carrier (Cont)	400780	132 Column, Mono ASCII Std (AL)	
	400887	132 Column, Mono EBCDIC Std (AS)	
	400777	132 Column, Up-Low ASCII Std (AG)	
	400783	132 Column, Up-Low EBCDIC Std (AM)	
	408393	132 Column, Mono ASCII Block (BE)	
	408522	132 Column, Mono EBCDIC Block (BK)	
	408391	132 Column, Up-Low ASCII Block (BC)	
	408523	132 Column, Up-Low EBCDIC Block (BL)	
Controller	321955	Fuse, 2.5 Amp	20
	40C401/type	Controller (SCC)	10
	40C402/type	Controller (DCC)	10
	40C403/type	Controller (MCC)	10
	40PSU102	Power Supply	9
	405150	Interconnect Module (SCC)	12, 17, 20
	405151	Interconnect Module (DCC)	12, 17, 20
	405152	Interconnect Module (MCC)	12, 17, 20
	405181	Fuse, 3 Amp	582-200-751
	405360	Ventilation Assembly	11, 17
	408015	Fan	18
	410200	Back Panel (Early Design)	13
	410201	Back Panel (Late Design)	13
	Various Numbers	Circuit Cards	8 (Locations Given in 582-200-201)
	Various Codes and Numbers	Cabinets and Pedestals	582-212-700
Cable	405301 - 405304, 405139, 405140	Opcon/Monitor Cable	13
	341896, 408065 - 408068	Data Set Cable	16
	405306 - 405309, 405237, 405239	Controller/Printer Cable	16
	405311, 405312, 405237, 405238	Controller/Controller Cable	582-200-201