

“DATASPEED”* 40 KEYBOARD-DISPLAY AMPLIFIER (KDA) FEATURE

CONTENTS	PAGE
1. GENERAL	1
2. DESCRIPTION	1
TECHNICAL DATA	3
3. INSTALLATION	4
4. OPERATIONAL TEST	17
5. TROUBLE ISOLATION	17
6. DISASSEMBLY/REASSEMBLY	23
7. PARTS	23
NUMERICAL INDEX	29

1. GENERAL

1.01 This section provides general description, installation information, testing, trouble isolation procedures, disassembly/reassembly and parts identification for the 40KDA101 Keyboard-Display Amplifier (Fig. 1).

1.02 This section is reissued, to add C18 to Fig. 10 and specify TKS107 in place of 31246RM.

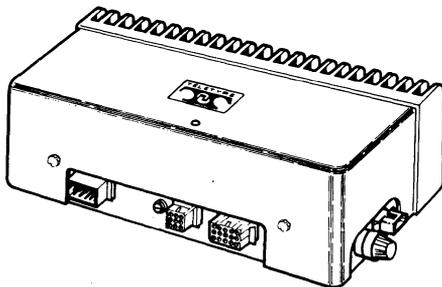


Fig. 1—40KDA101 Keyboard-Display Amplifier

Note: When ordering replaceable components, prefix each part number with the letters “TP” (ie, TP405372), unless specified otherwise.

1.03 Two types of KDA installations, (Fig. 2) are described in this section:

(a) Free-standing units requiring a 405982 modification kit.

(b) KDA units mounted in a 40CAB251/AC cabinet requiring a 405983 modification kit. Support components for use with the KDA in a DATASPEED 40/4 system are also described.

2. DESCRIPTION

2.01 The KDA allows for the extension of a KD (Keyboard Display) device in an already installed system or may be used to plan new station layouts with a greater KD location flexibility. It is only required when a KD is to be more than 100 feet away from its controller (up to 600 feet). However if desired, the KDA can also be used when a KD is less than 100 feet from a controller.

2.02 The KDA may be used in maxi-cluster station arrangements where it is desired to place the Device Cluster Controllers (DCC) adjacent to the Station Cluster Controller (SCC) to more closely resemble the station arrangement that this station is replacing and thus use similar cable runs to the devices. The use of the KDA in such a case allows the smaller diameter cable to be used. Similarly, when the station includes a Mini-Cluster Controller (MCC), the use of this smaller diameter cable may be advantageous.

2.03 The keyboard-display amplifier accepts the low video and half-intensity signals from the 40C400 type controller. These signals are driven into an Emitter Coupled Logic (ECL) line receiver by the discrete differential amplifiers. The outputs are standard ECL differential signals of 1.6 volts.

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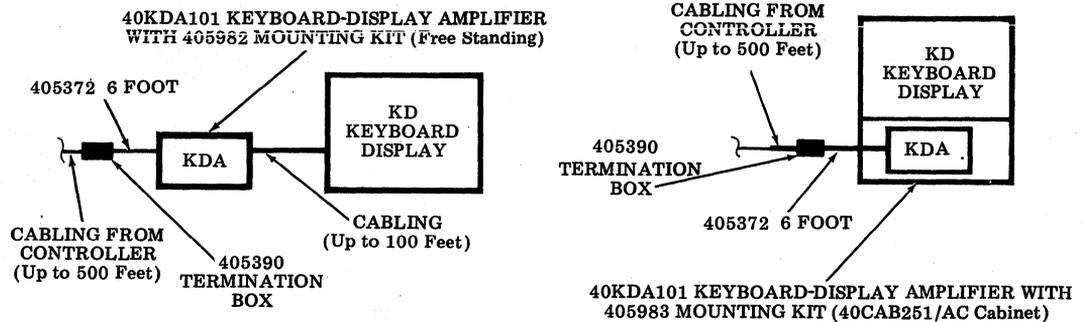


Fig. 2—KDA Installations

2.04 Both the video and the half-intensity channels are amplified in the same manner. Fig. 3 shows the video amplification circuit.

2.05 The received video line signal is developed across the R1 resistor. The speed-up networks of CR1-R2 and CR2-R3 apply voltages at the base of the Q1 and Q2 transistors. The emitter coupling of transistors Q1 and Q2 make up a differential amplifier. Transistor Q3 is biased by a constant current source of approximately 22 ma through resistors R10, R11 and R12. With Q3 coupled to Q1 and Q2, the outputs of the quiescent coupled collectors to receiver ML1 produces voltages in the ECL signal voltage range for the monitor.

2.06 The horizontal drive input signals (Fig. 4) from the controller (a 5 ma current loop) terminate at R15, a pull-up resistor coupled to a DCC or MCC +5 V supply. The input is applied to the cathode (pin 3) of the optical isolator

ML2. The anode (pin 2) of ML2 is driven by a speed-up network of R16-C10 from the DCC or MCC +5 V supply. A local +5 V supply is present at ML2 (pin 8). The output of ML2 (pin 6) is buffered by ML4 and given to the KD display monitor at connector P2 (pin 10) as Transistor Transistor Logic (TTL) signals to drive a KD display monitor.

2.07 A trouble analysis lamp (L1) is coupled to buffer ML4. This lamp is on when the +5 V local supply and the ac voltage supply are on. Absence of either the +5 V or 117 V ac supply extinguishes the lamp.

2.08 The vertical synchronization channel signals (20 ma current loop) to the cathode (pin 2) of optical isolator ML3 (Fig. 5). The controller +5 V supply is applied to the anode (pin 1) of ML3 through resistor R17. The output of isolator ML3 coupled to the base of transistor Q7 allows a TTL signal of sufficient power to drive the remote KD display monitor.

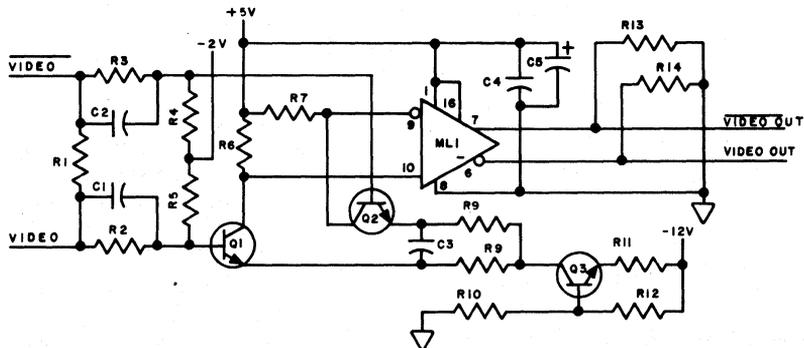


Fig. 3—Video Amplification

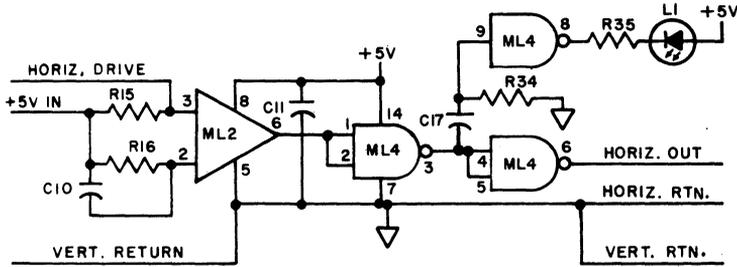


Fig. 4—Horizontal Drive Input

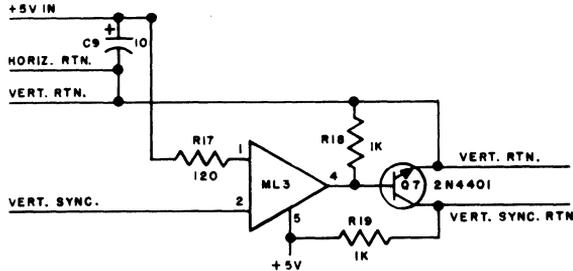


Fig. 5—Vertical Channel Signals

2.09 The keyboard-display amplifier allows the SSI (Standard Serial Interface) transmission signals (Fig. 6) to pass through untreated from connector P1 (pins 9, 12, 14 and 15) to connector P3 (pins 1, 2, 3 and 6).

2.10 The power supply (Fig. 7) consists of a center-tapped transformer (T1) feeding a full-wave bridge rectifier (D1-D4) with filtering being done by capacitors C12 and C13. The three voltage regulators ML5, ML6 and ML7 provide all required voltages. Diodes D5 and D6 are provided to prevent regulator latch-up while supplying a common lead. Connector outputs of P3 (pin 4,

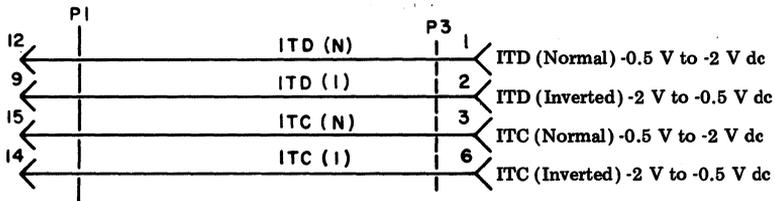
GRD), (pin 7, +12 V), (pin 8, -12 V) and (pin 9, frame ground) are used by the opcon.

2.11 Technical Data

- Height 3-1/2 inches
- Width 11-1/2 inches
- Depth 5-1/2 inches
- Weight 6-1/2 lbs
- Power Requirement 103-127 V ac
50/60 Hz at 0.4 ampere

Operating characteristics are:

- Temperature 40° to 110° F
- Humidity 2% to 95% noncondensing



Legend: ITD — Information to Device
ITC — Information to Controller

Fig. 6—SSI Transmission

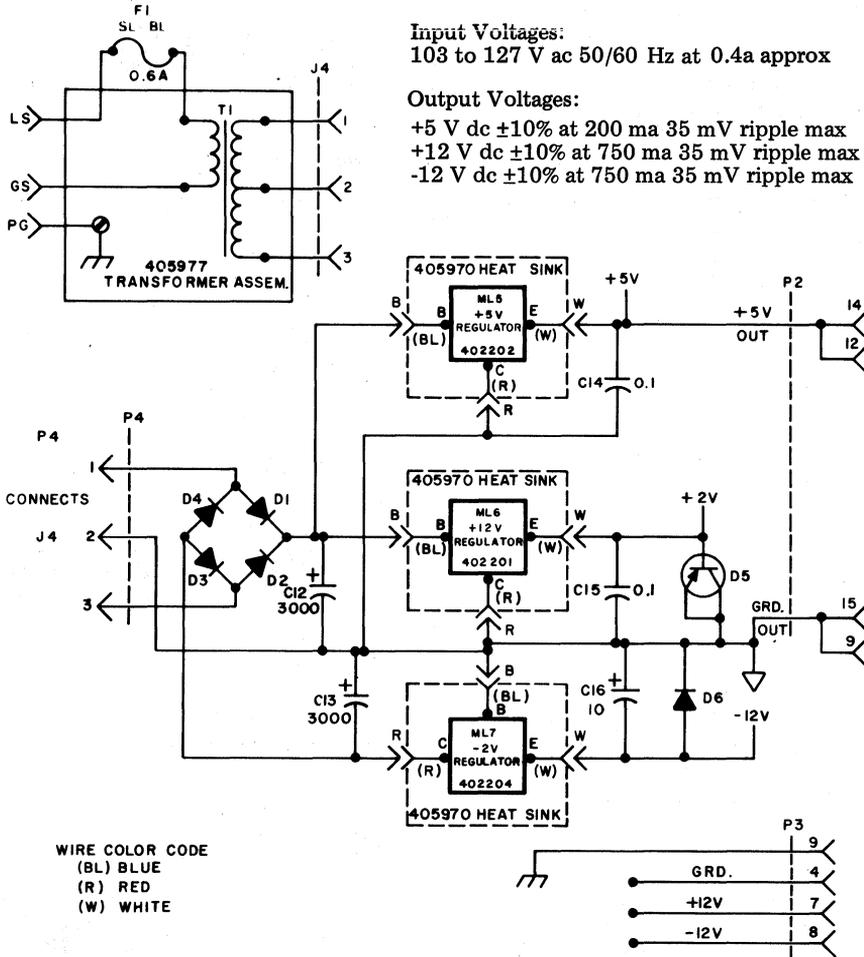


Fig. 7—Power Supply

3. INSTALLATION

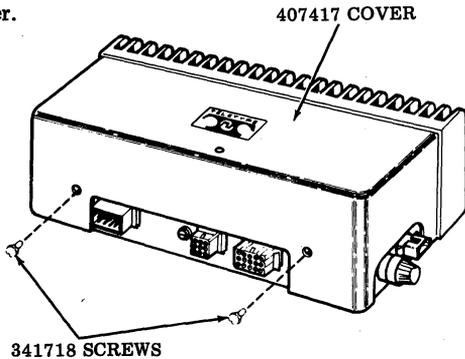
3.01 The procedures for installing the KDA on an in-line run are given as 405982 modification kit installation, see 3.03. Installing a KDA in a 40CAB251/AC cabinet is given as 405983 modification kit installation, see 3.04 through 3.07. Retain the carton and packing materials until a complete operational test has been performed, and the unit is found to be satisfactory.

3.02 The 405982 modification kit consists of the following:

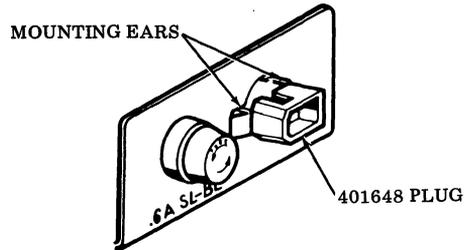
Qty	Part No.	Description
1	401628	Strain, relief bushing
1	405967	AC cable assembly

3.03 The 405982 modification kit installation on the KDA requires the following steps:

- ① Remove two 341718 screws and 407417 cover.

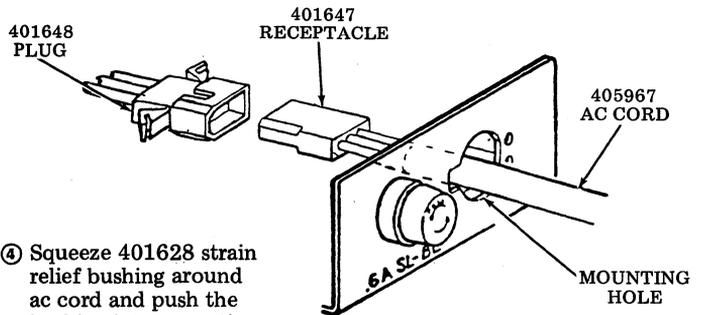


- ② Remove 401648 plug from mounting hole by compressing its mounting ears while pushing it inward.



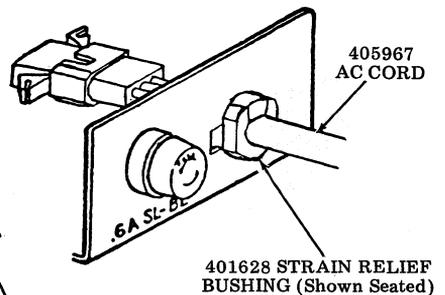
- ③ Feed 401647 receptacle of 405967 ac cord through mounting hole. Connect 401648 plug to 401647 receptacle.

Caution: Do not plug ac cord to 115 volt source until all other connections are made.

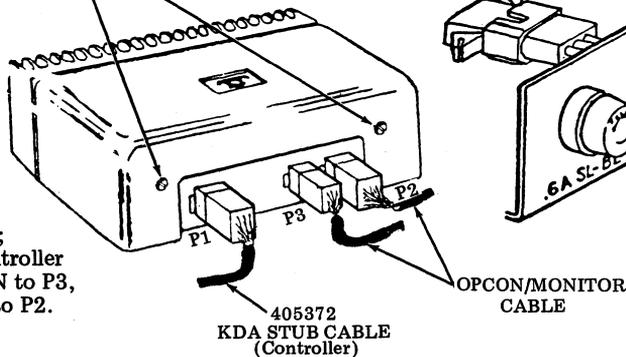


- ④ Squeeze 401628 strain relief bushing around ac cord and push the bushing into mounting hole until bushing is seated.

- ⑤ Remount 407417 cover with 341718 screws.



- ⑥ Plug in cables; video/SSI controller to P1, OPCON to P3, and monitor to P2.



- ⑦ Refer to 3.08, for connections at controller, and 3.09 or 3.10 for opcon/monitor.

3.04 The 405983 modification kit provides all the hardware and cables to mount and operate the 40KDA101 in an empty 40CAB251/AC KD cabinet. The 405983 modification kit consists of the following:

Qty	Part No.	Description
2	401582	Nut w/lockwasher
1	405961	AC cable assembly

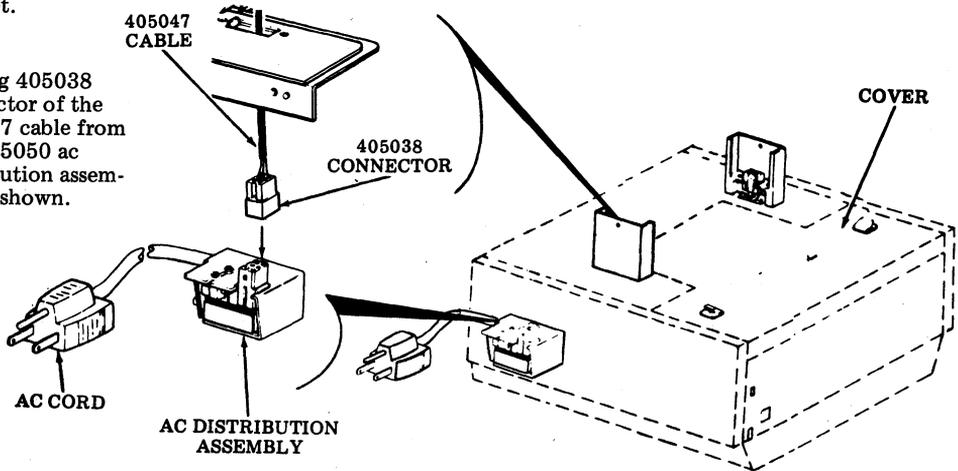
Qty	Part No.	Description
1	405969	Opcon cable assembly (12" long)
1	405975	Monitor cable assembly (25" long)
2	407418	Bracket w/stud

3.05 Installation of the 405961 ac cable assembly of the 405983 modification kit requires the following steps:

- Remove the monitor. Unlatch and open the cover of the 40CAB251/AC cabinet.

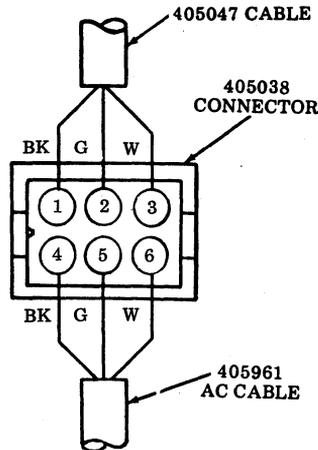
Caution: Unplug ac cord from wall receptacle.

- Unplug 405038 connector of the 405047 cable from the 405050 ac distribution assembly as shown.



- Needle-nosed pliers should be used to insert the three pins of the 405961 ac cable into the 405038 connector of the 405047 cable. Insert wires as shown; Black to 4, Green to 5, White to 6. Check that pins are fully seated.

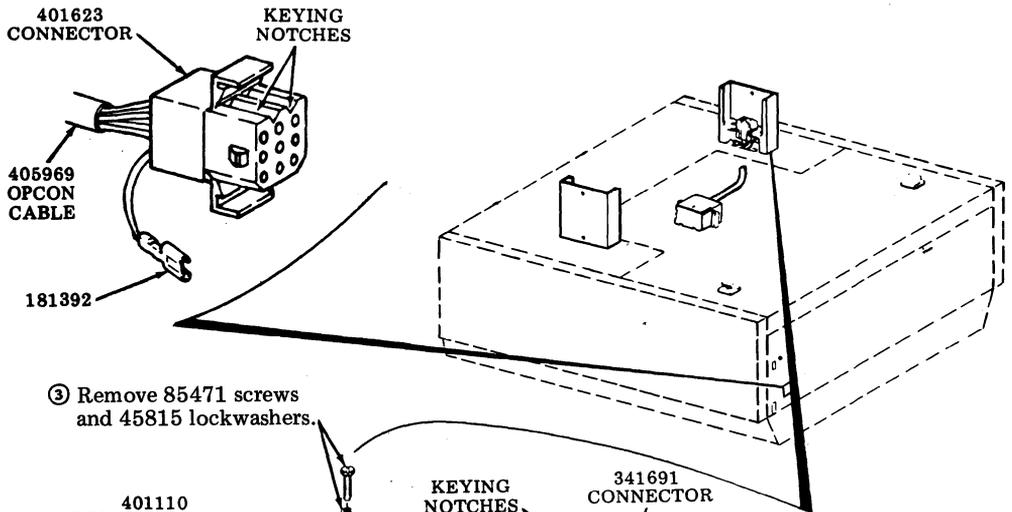
Note: The 6 hole 405038 connector is not numbered, numbers are given as references.



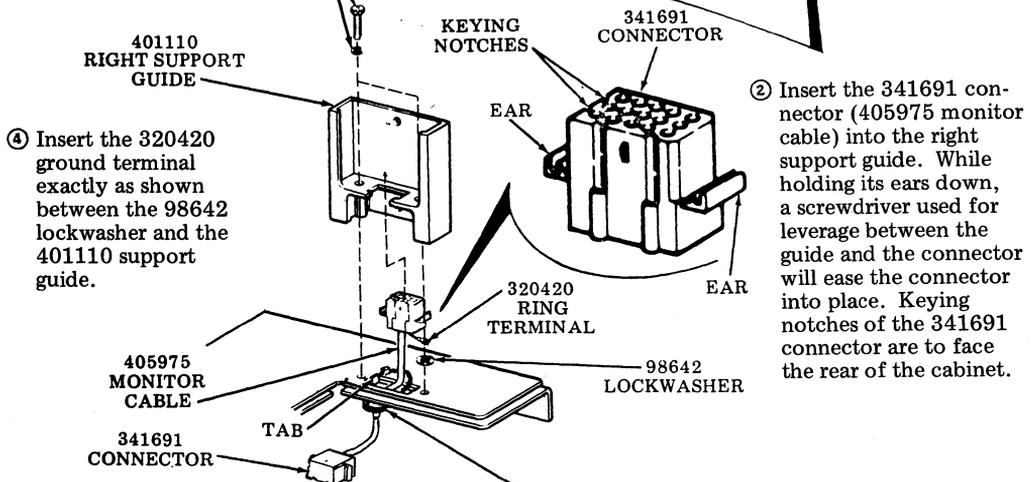
Wire Side of Plug

3.06 Installation of the 405969 (opcon) and 405975 (monitor) cable assemblies of the 405983 modification kit requires the following steps:

- ① Install 405969 opcon cable assembly in the front panel of the cabinet with the keying notches in the 401623 connector facing forward. Be sure to attach the 181392 ground strap terminal to the spade terminal in the side of the cabinet.



- ③ Remove 85471 screws and 45815 lockwashers.



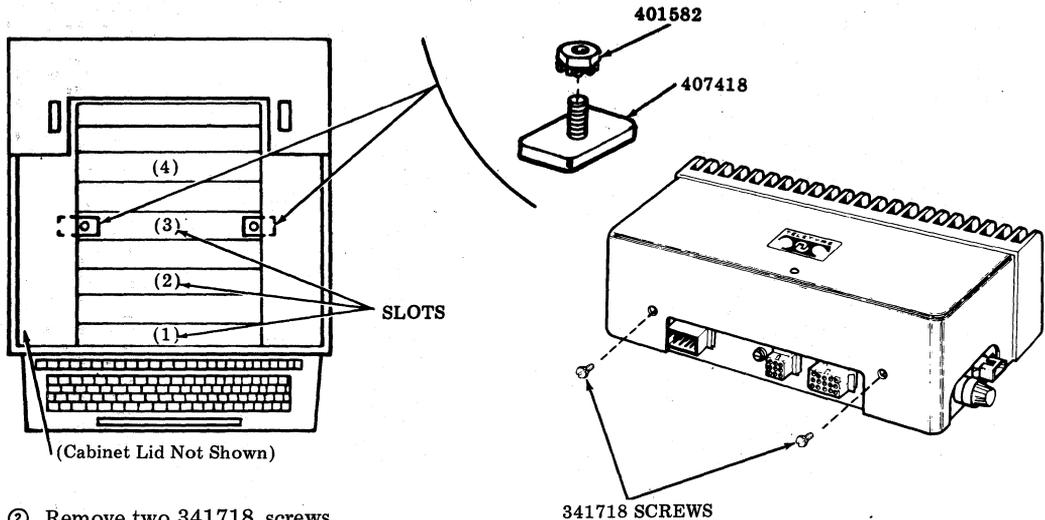
- ④ Insert the 320420 ground terminal exactly as shown between the 98642 lockwasher and the 401110 support guide.

- ⑤ Using 312918 nylon strap, (not supplied) tie monitor cable to cabinet tab.

- ⑥ Remount 401110 support guide using 45815 lockwashers and 85471 screws. Pull excess cable into cabinet.

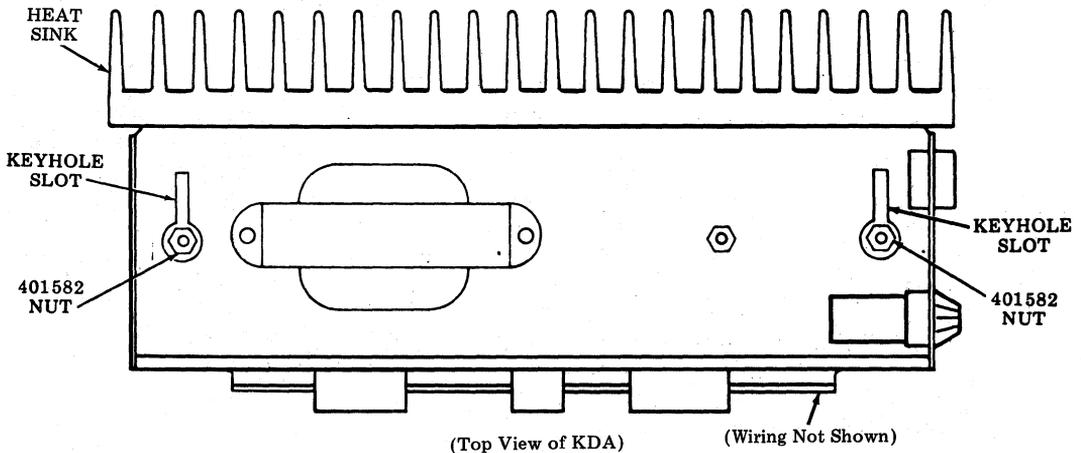
3.07 Mounting the KDA with the 405983 modification kit hardware requires the following steps:

- ① Place two 407418 brackets with the 401582 nuts loosely in place in the third or fourth slot, from the front, in the cabinet floor by sliding the brackets under the skirt.



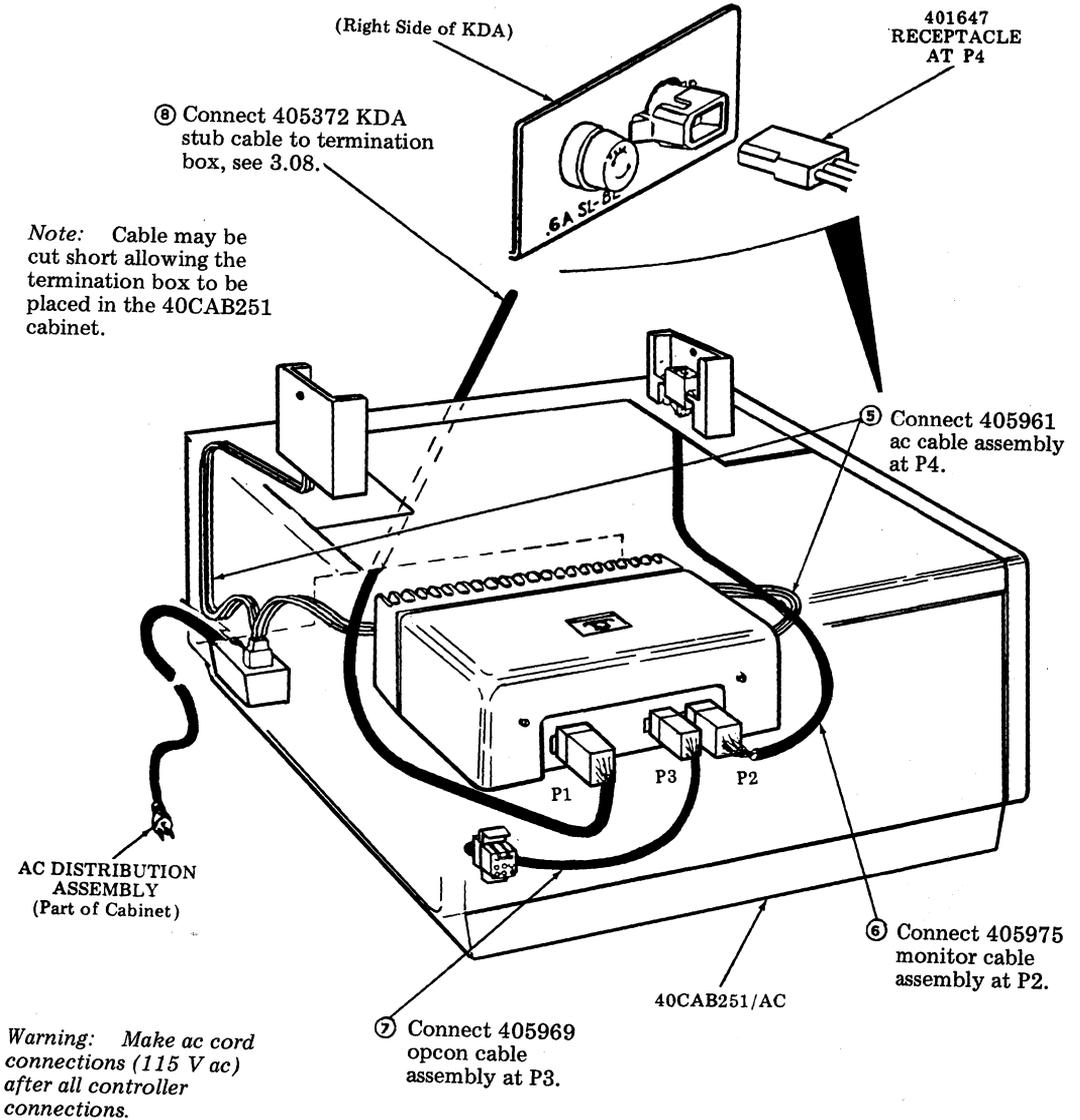
- ② Remove two 341718 screws and 407417 cover.

- ③ With the KDA heat sink facing the rear of the cabinet, lower the KDA into cabinet, position bracket studs (with 401582 nuts) either left or right until the 401582 nuts protrude from the keyhole slots. Move KDA forward until studs touch the rear of the slots. Tighten both nuts.



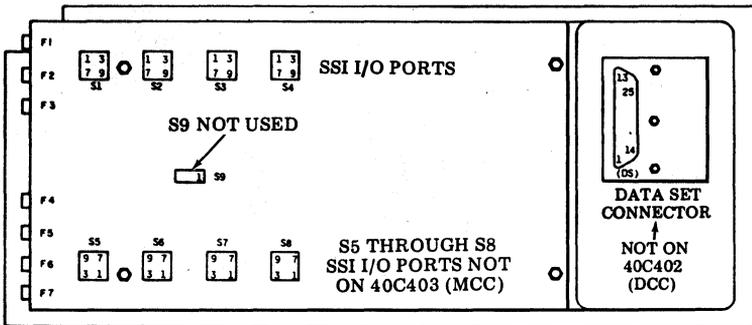
- ④ Remount 407417 cover with 341718 screws.

Steps ⑤ through ⑧ are on next page.



3.08 Interconnection of 40KDA101 to MCC or DCC Controller

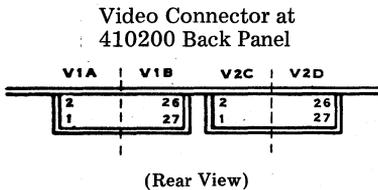
INTERCONNECTION MODULE OF DCC OR MCC



For cable connections to MCC or DCC, refer to Section 582-200-201.

(Side View)

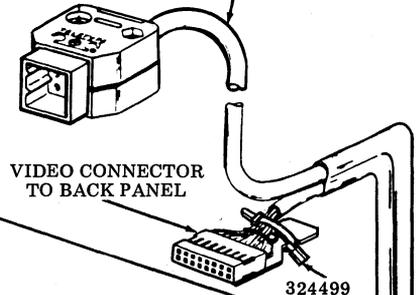
SSI CONNECTOR TO INTERCONNECTION MODULE



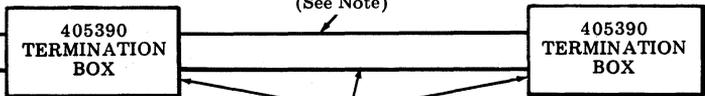
ALTERED OPCON/MONITOR

CABLES:

- 405301 6 FT
- 405302 12 FT
- 405303 25 FT
- 405304 50 FT
- 405139 75 FT
- 405140 100 FT



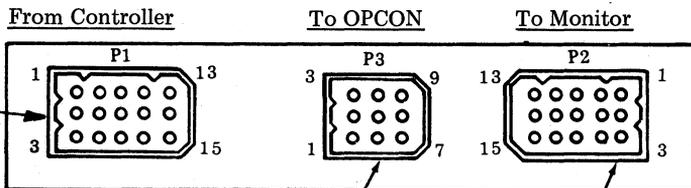
TKS107 CABLE (See Note)



For installation, refer to 3.11.

405372 40 KDA STUB CABLE (6 FT)

40KDA101 Input-Output Connections

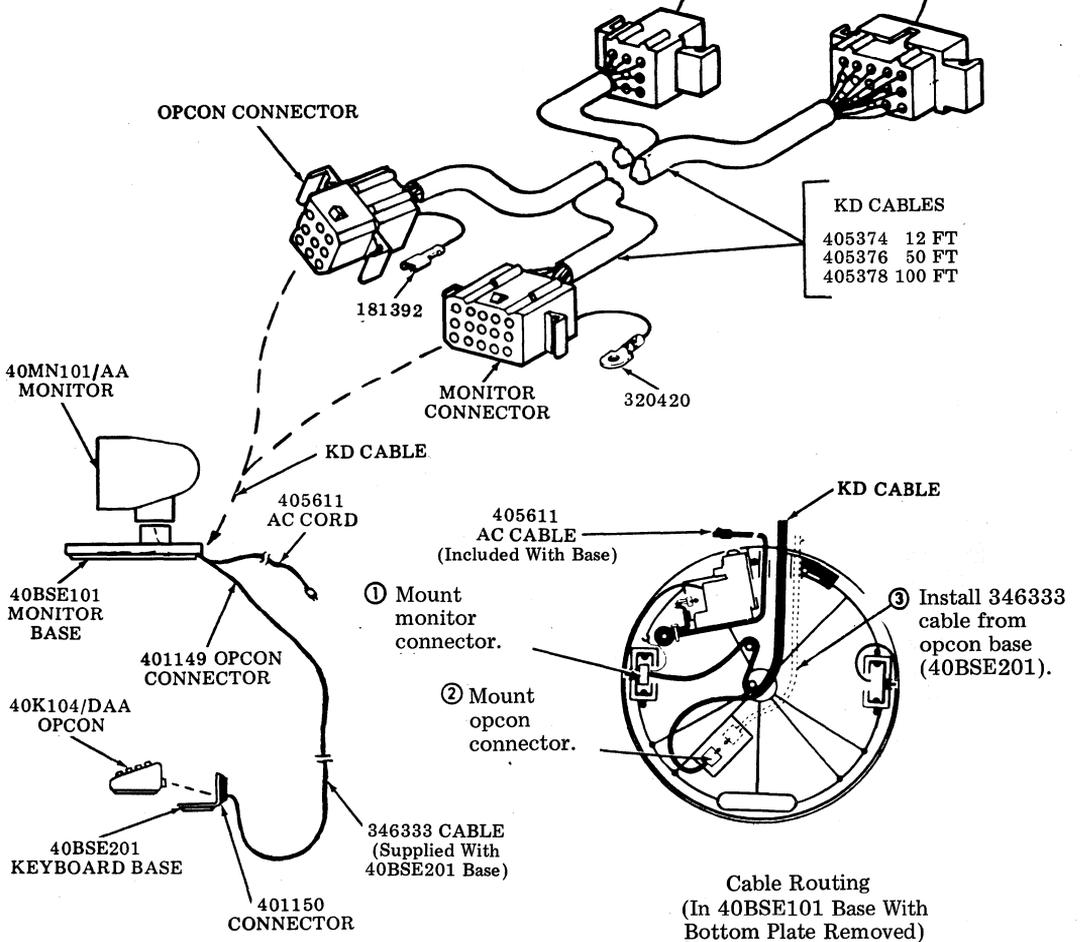
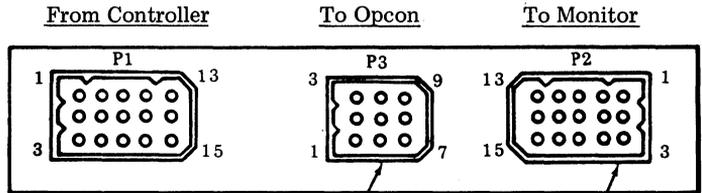


For cable connections, refer to:
 3.07 - KDA in a 40CAB251/AC
 3.09 - KDA to Free-Standing KD
 3.10 - KDA to Attached KD

Note: The length of the TKS107 cable plus the altered opcon/monitor cable and a 40KDA stub cable is not to exceed 500 feet.

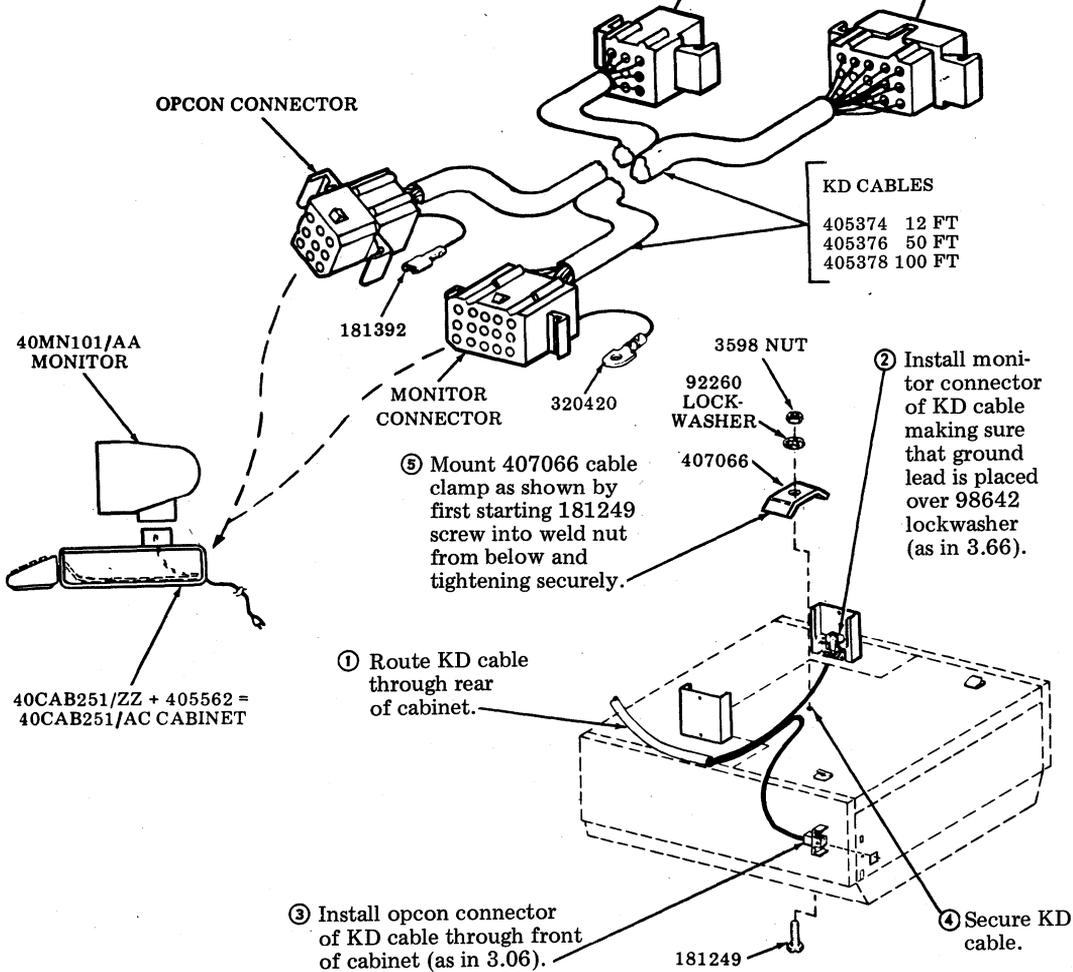
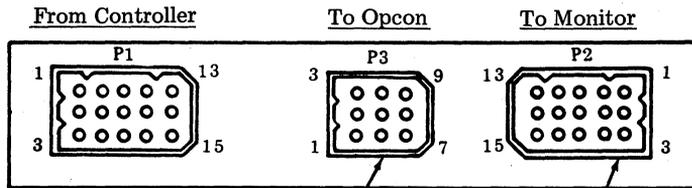
3.09 Interconnection of 40KDA101 to a Free-Standing KD (for connections 40KDA101 to controller, see 3.08).

40KDA101
Input-Output Connections



3.10 Interconnection of 40KDA101 to Attached KD (for connections 40KDA101 to controller, see 3.08).

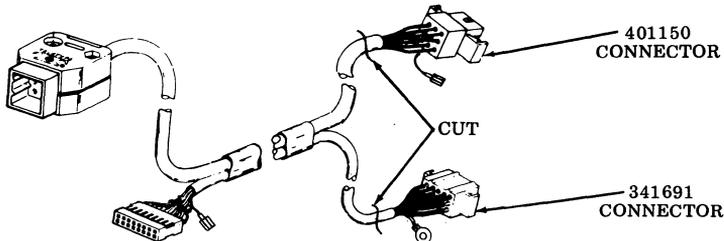
40KDA101
Input-Output Connections



3.11 Connection from the 40C400 controller to the 405390 termination box is accomplished using a standard controller to opcon/monitor cable (Fig. 17 through 20). Customer removal of the opcon and monitor connectors is required. Between termination boxes, a length of TKS107 is used. This cable is ordered by the foot. A maximum of 500 feet is allowed (600 feet where slight display degradation is permissible) between termination boxes providing that the cable between the

controller and termination box is 12 feet or less in length. Longer cables may be used, however, their length must be subtracted from the maximum allowable length of 500 feet between termination boxes. Connection from the termination box to the 40KDA101 is made using the 405372 cable stub. This 6 foot cable assembly has a connector at one end and is suitably prepared for insertion (requiring only skinning) into a termination box at the other end.

- ① Cut off the 401150 and 341691 connectors from the dual cable (opcon/monitor).

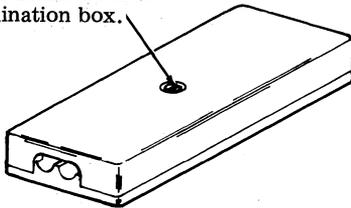


- ② Slit and remove four to five inches of both the outer jacket and shields. Also, remove the two foil shields of the video cable.

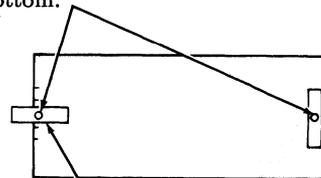
Caution: Care must be used to prevent cutting the outer shield drain wires.

- ③ Prepare one end of the TKS107 cable (up to 500 feet) in the same manner as in step ②.

- ④ Remove 195272 screw to remove the cover of the 405390 termination box.

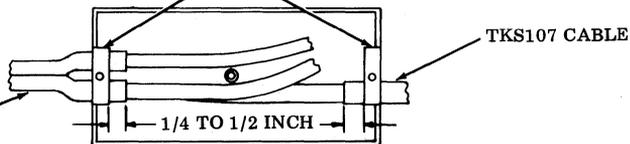


- ⑤ Loosen the two 1291 clamp screws on bottom.



- ⑥ Turn clamps 90°.

- ⑧ Draw clamps tight with 1291 screws.



- ⑦ Insert opcon/monitor cable and TKS107 cable; allow 1/4 to 1/2 inch of the outer jackets to extend past the clamps.

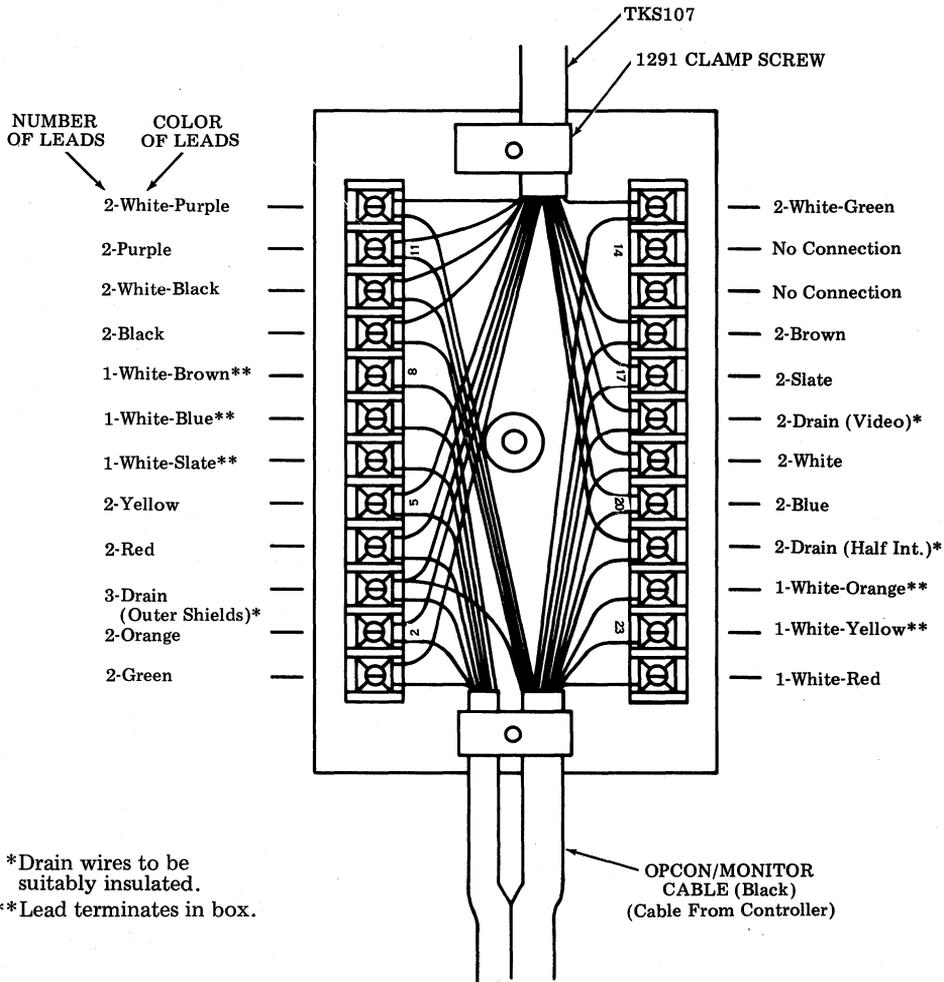
Steps ⑨ through ⑭ are on the following pages.

⑨ Each conductor lead must be cut to length and 1/4 inch of insulation skinned off.

Note: Conductors must not be solder tinned.

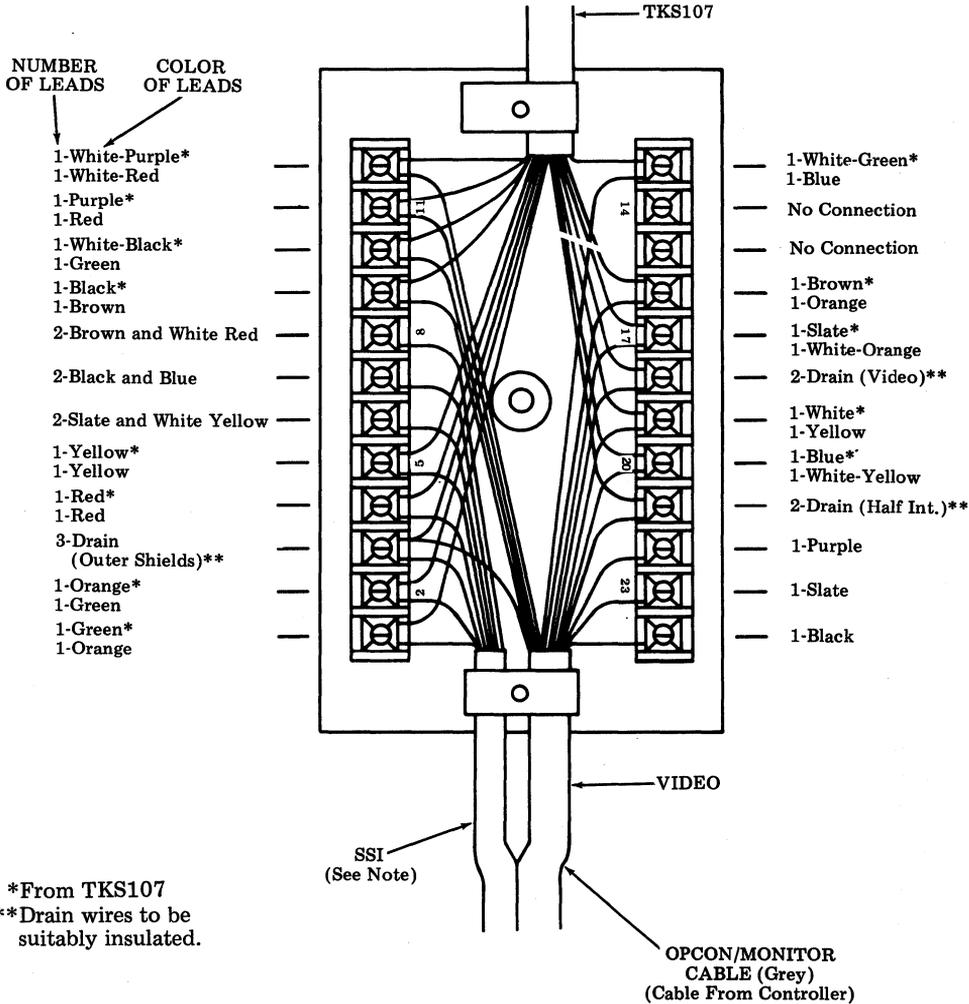
⑩ Loosen all terminal screws (keepers raise with screws). Insert proper lead(s) to terminal(s) and tighten screws.

For BLACK opcon/monitor cable (see Page 15 for grey opcon/monitor cable).



⑪ Tighten 1291 clamp screws. Remount and fasten cover.

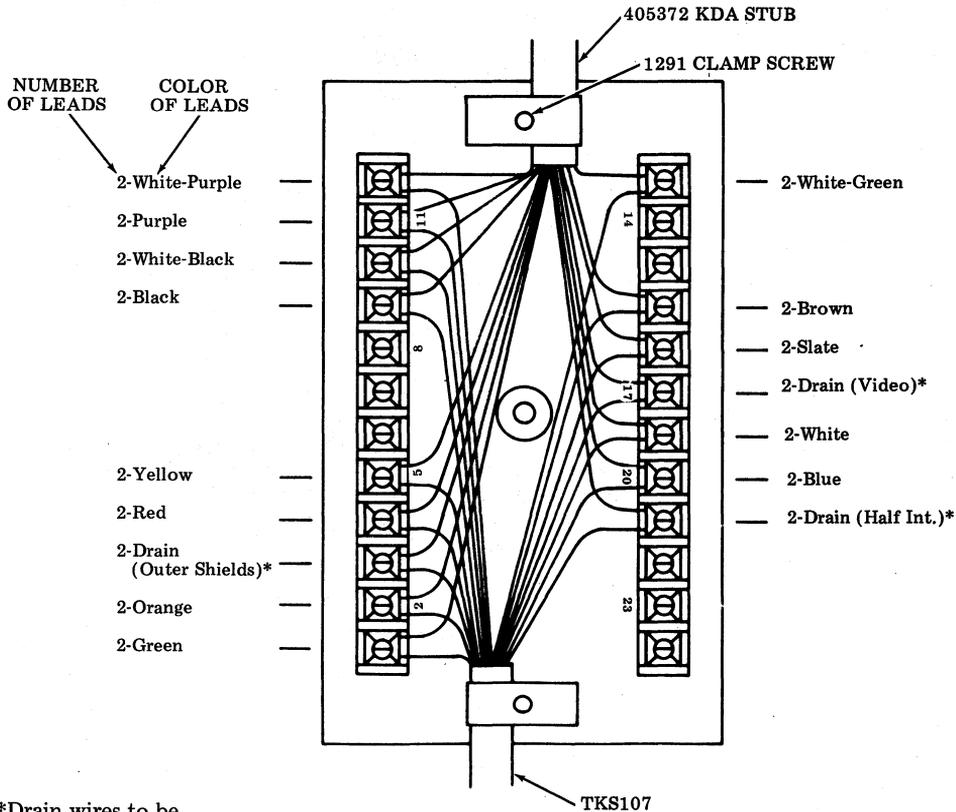
For GREY opcon/monitor cable, follow steps ⑩ and ⑪.
 (See Page 14 for black opcon/monitor cable.)



*From TKS107
 **Drain wires to be suitably insulated.

Note: Tie off W-O and P wires of SSI leg.

- ⑫ Install the TKS107 cable (long run). This cable is not intended for rigorous pulling through conduit. Due to inner shielding isolation requirements and the very fragile wire used in the video and half-intensity pairs, it is recommended that for conduit runs over 100 feet, not more than 25 percent of the conduit area should be used. In addition, if more than one 90 degree bend is encountered in the conduit run a pull box should be inserted.
- ⑬ The 405372 stub cable and the TKS107 cable are then installed in the second termination box, go back and follow steps ③ through ⑩.



*Drain wires to be suitably insulated.

- ⑭ Tighten 1291 clamp screws. Remount cover and tighten 195272 screw. (See 3.11, step ④.)

4. OPERATIONAL TEST

4.01 Before any testing is started on the KDA, inspect the unit for loose wires, badly worn connector pins, visual damage, etc.

4.02 At this time take proper action to obtain a release of the station from service. The station that has the keyboard-display amplifier must be isolated from the rest of the system before testing to avoid disrupting system operation.

Testing

4.03 Testing of the 40KDA is mainly a check of the KD performance. The testing is referenced to the Trouble Analysis (5.07) by trouble number.

4.04 The power check for the 40KDA is as follows:

- (a) Plug in KDA ac cord at proper receptacle (turn on set power, monitor power and controller power).
- (b) Check that drive lamps (red indicators — top of KDA and inside monitor) are lighted. Trouble No. 1 and (5.07).
- (c) Adjust monitor brightness control to desired level and check cursor (Fig. 8). Troubles No. 2, 3 and 4 (5.07).

4.05 Perform testing, from Section 582-200-501:

- (a) CHART 1 — Controller Self-Test Procedures — Trouble No. 5 (5.07)
- (b) CHART 2 — KD/Controller Local Test Procedures — Trouble No. 6 (5.07)
- (c) CHART 4 — KD Local Test Procedures

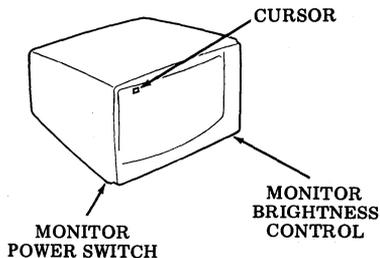


Fig. 8

5. TROUBLE ISOLATION

5.01 Before attempting to troubleshoot the Keyboard-Display Amplifier (KDA), make sure the trouble is not caused by interconnected equipment (monitor, opcon or 40C400 type controller). This can be done by making the self test of the controller or by replacing the monitor or opcon as required. If you have never observed that the system (with the KD) operates correctly (and a cable check is indicated), also check wire colors.

5.02 To isolate a trouble to a specific component in the KDA, start with the testing procedures of Part 4. If the monitor or opcon does not perform the required responses, read the list of troubles in Trouble Analysis of 5.07. If any of the trouble conditions match the units symptoms, follow the Trouble Analysis Procedures step by step until the trouble condition is eliminated.

Caution: Do not insert, remove, connect, or disconnect any cabling while ac power is applied.

5.03 Repair of the KDA on customer location should be confined to the replacement of cables, fuses or circuit cards. Troubles that are difficult to analyze may require replacement of the entire KDA with a known good unit.

5.04 If a trouble is isolated to the 410575 card of the KDA, the trouble analysis will recommend that the card be replaced.

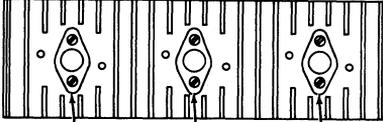
5.05 There are some volt-ohmmeter checks required in the Trouble Analysis Procedures. A volt-ohmmeter having 20,000 ohms per volt sensitivity is recommended (KS-14510 volt-ohmmeter or its equivalent). The volt-ohmmeter must be set to the appropriate scale by the user, before any measurement is attempted. Standard maintenance tools (screwdriver, needle-nose pliers and 1/4 inch or 5/16 inch nut drivers), as in Section 570-005-800, are required.

5.06 Maintenance of the KDA is aided by a red indicator lamp at the top of its cover. This lamp is lit when the KDA is in operation (producing a +5 V dc voltage and receiving a horizontal drive signal from the controller).

TROUBLE ANALYSIS CHART

NO.	TROUBLE	TROUBLE ANALYSIS PROCEDURES
1	Red indicator lamp (L1) is not on, with power applied.	<p>a. Check 143307 fuse (F1) 0.6 amp SL-BL if blown.</p> <div data-bbox="656 344 1149 673" data-label="Image"> <p>The diagram shows a rectangular KDA unit. On the top surface, there is a red indicator lamp labeled 'RED LAMP'. On the front panel, there are three connectors labeled P1, P3, and P2 from left to right. On the right side of the unit, there is a fuse labeled 'F1' and a power input labeled '115 V AC'.</p> </div> <p><i>Note:</i> If fuse blows again, disconnect J4-P4 connectors. Replace the fuse. If fuse blows again, replace 405977 transformer. If the fuse blows after the power is restored, replace the entire KDA.</p> <p>b. Check ac cord continuity:</p> <ol style="list-style-type: none"> (1) In-line installations (405967 cable), disconnect 401648 plug from 401647 receptacle (inside KDA) and remove the ac plug from the wall receptacle. (2) Cabinet installations (405961 cable), disconnect 401647 receptacle from 401648 plug (side of KDA). Remove the ac plug from the wall receptacle. Check continuity from ac plug to terminals of 401647 receptacle (see Fig. 22). After checks are complete, remount the ac cord. <p>c. Check ac voltage at 401647 connector. Pin 1 (black wire) to pin 2 (white wire) = 103-127 V ac (power on). If not present, replace ac cord or check ac wall receptacle. Restore 401647 connection.</p> <p>d. Check ac voltages at J4 connector (unplug J4 from P4, "No Load Condition Check", with power on); pin 1 to pin 2 = 21 V ac (approx), pin 2 to pin 3 = 21 V ac (approx), and pin 1 to pin 3 = 43 V ac (approx). If any voltage is not present, replace the 405977 transformer assembly.</p>

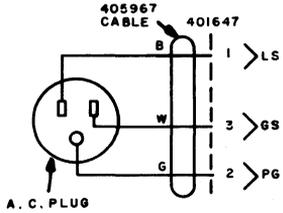
TROUBLE ANALYSIS CHART

NO.	TROUBLE	TROUBLE ANALYSIS PROCEDURES
1 (Cont)		<p>e. Remove monitor cable from P2, connect J4 to P4, (see Fig. 22). Check voltage between P2 pin 12 (or 14) and pin 9 (or 15), if +5 volts is not present; check 402202 regulator (ML5) white lead to red lead (GRD) for +5 volts.</p> <p style="text-align: center;">TOP</p>  <p style="text-align: center;"> ML7 ML5 ML6 -12 V +5 V +12 V (402204) (402202) (402201) </p> <p>If voltage is not correct, check blue to red leads for a voltage of greater than +5 volts. If the blue lead voltage is not greater than +5 volts, install a new 410575 card. If blue lead voltage is correct but the white lead voltage is not correct, replace the ML5 regulator (402202).</p>
2	Dark screen at monitor, no raster present (with monitor brightness turned on full).	<p>a. If red indicator lamp (L1) is not on, go to Trouble No. 1. If KDA passes all checks of Trouble No. 1, replace 410575 card.</p> <p>b. If red indicator lamp (L1) is lighted, but the drive lamp (I5) of the monitor is not lighted, replace 410575 card.</p> <p>c. Recheck monitor.</p> <p>d. Recheck cables.</p> <p><u>Ref:</u> Horizontal Drive, P2 pins 8 and 10 (Fig. 10).</p>
3	No cursor present and/or, no characters displayed (raster present).	<p>a. Replace 410575 card.</p> <p>b. Recheck monitor.</p> <p>c. Recheck cables.</p> <p><u>Ref:</u> Video Channel, P2 pins 3 and 6 (Fig. 10).</p>

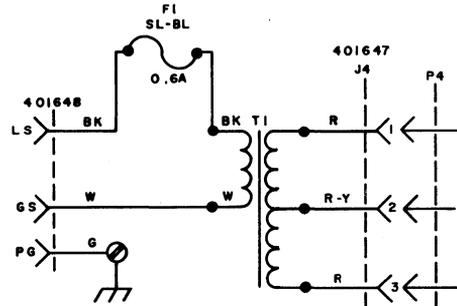
TROUBLE ANALYSIS CHART

NO.	TROUBLE	TROUBLE ANALYSIS PROCEDURES
4	Display roll over on screen, continual.	a. Replace 410575 card. b. Recheck monitor. c. Recheck cables. <u>Ref:</u> Vertical Sync Channel, P2 pins 11 and 13 (Fig. 10).
5	Half-intensity or protected data is displayed at full intensity, all the time.	a. Replace 410575 card. b. Recheck monitor. c. Recheck cables. <u>Ref:</u> Half-Intensity Channel, P2 pins 1 and 2 (Fig. 10).
6	Any problem related to opcon operation.	a. Replace opcon. b. Remove opcon cable from P3 at KDA. Check for +12 V dc between P3-7 and P3-4 (grd). Check for -12 V dc between P3-8 and P3-4 (grd). If voltages are correct, go to Trouble No. 6c. If +12 V is bad, replace ML6 regulator (402201) or the 410575 card. If -12 V is bad, replace ML7 regulator (402204) or the 410575 card. <i>Note:</i> Before making any continuity checks, observe all cables for proper wiring. c. Check SSI cable continuity between KDA and opcon. d. Check SSI cable continuity between KDA and controller. e. Remove all cables from KDA. Check for continuity between the following pins of the 410575 card: Connector P1 to Connector P3 (Fig. 23) Pin 12 Pin 1 Pin 9 Pin 2 Pin 15 Pin 3 Pin 14 Pin 6 If no continuity is found, replace 410575 card.
7	Red indicator lamp of KDA is on; but drive lamp of KD monitor is off.	a. Recheck cables. b. See Trouble No. 1d. and e. c. Recheck monitor (if convenient, replace monitor).

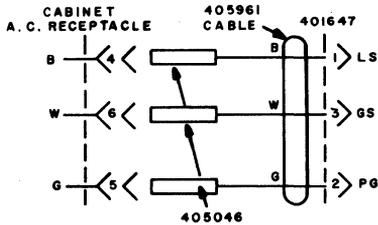
PART OF 405982 MODIFICATION KIT (IN-LINE)



405977 TRANSFORMER ASSEMBLY



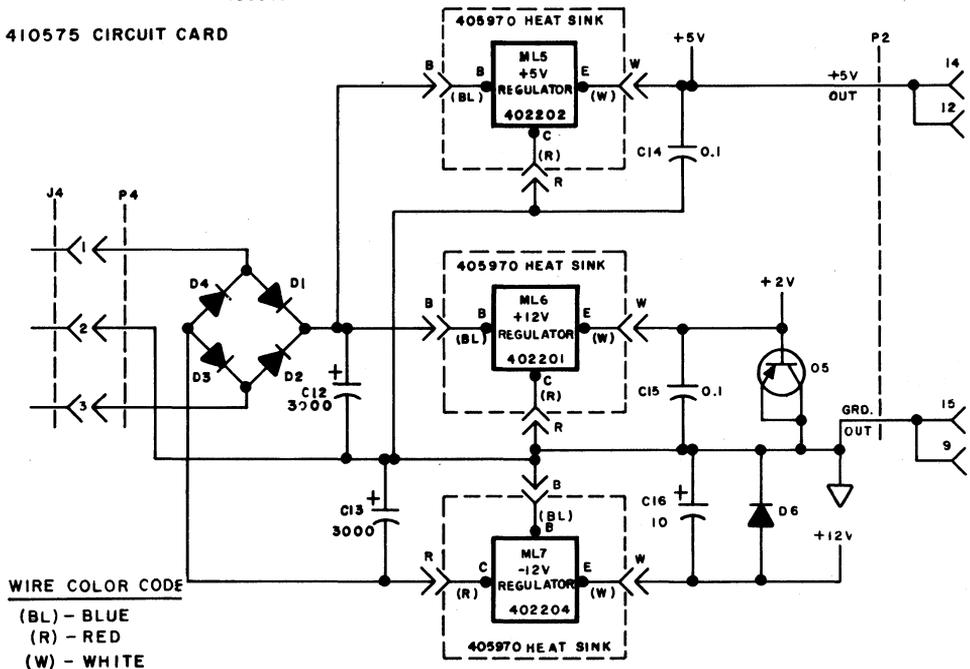
PART OF 405983 MODIFICATION KIT (CABINET)



WIRE COLOR CODE

- G - GREEN
- BK - BLACK
- R - RED
- W - WHITE
- Y - YELLOW

410575 CIRCUIT CARD



WIRE COLOR CODE

- (BL) - BLUE
- (R) - RED
- (W) - WHITE

Fig. 9—Power Diagram

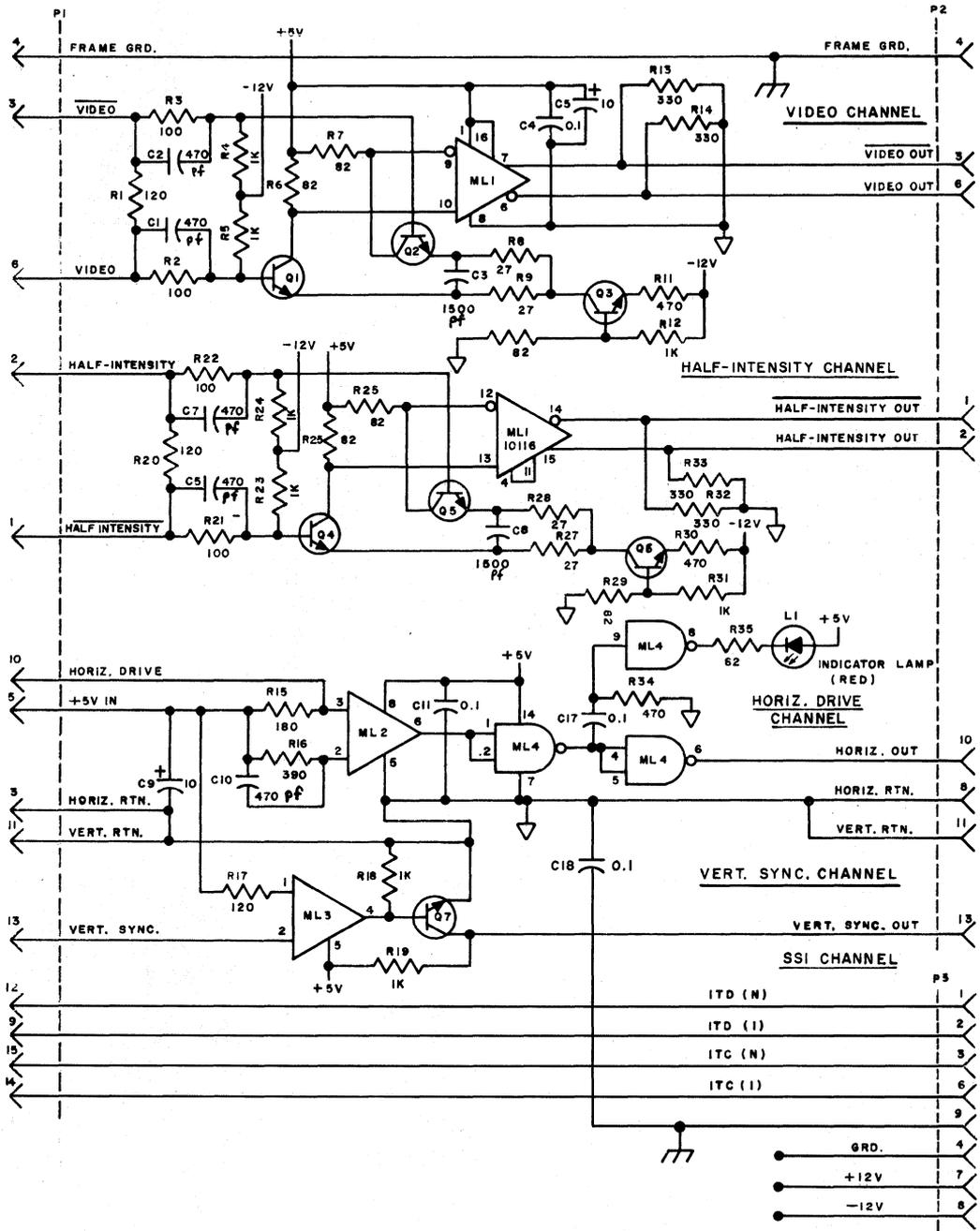
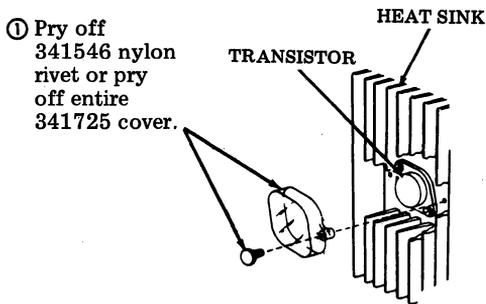


Fig. 10—KDA Receiver Circuits

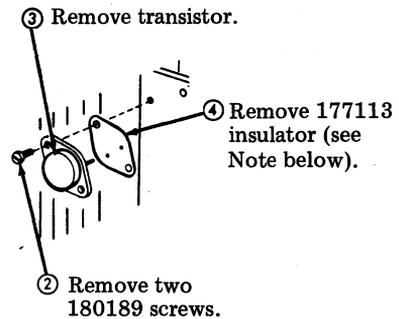
6. DISASSEMBLY/REASSEMBLY

6.01 Disassembly of the KDA is very apparent after the 407417 cover assembly has been removed. The single exception to the "apparent" procedures is in the removal of the 177113 transistor insulator, as in Fig. 11. The use of Fig. 12, 13 and 14 is advised as a means of familiarization with the unit.



6.02 The reassembly of a keyboard-display amplifier is very apparent. The exceptions to this follow:

- (a) Replacement of the 401648 plug (applies to in-line mounting), refer to 2.04.
- (b) Replacement of the 405960 heat sink; do not overtighten the 341657 self-tapping nuts used to mount the heat sink, refer to Fig. 12.



Note: Do not wipe off 402640 heat conducting paste from the 177113 insulator (orange color).

Fig. 11—Transistor Insulator

7. PARTS

7.01 Parts replacement information for the 40KDA101 Keyboard-Display Amplifier is given in the index on Page 29.

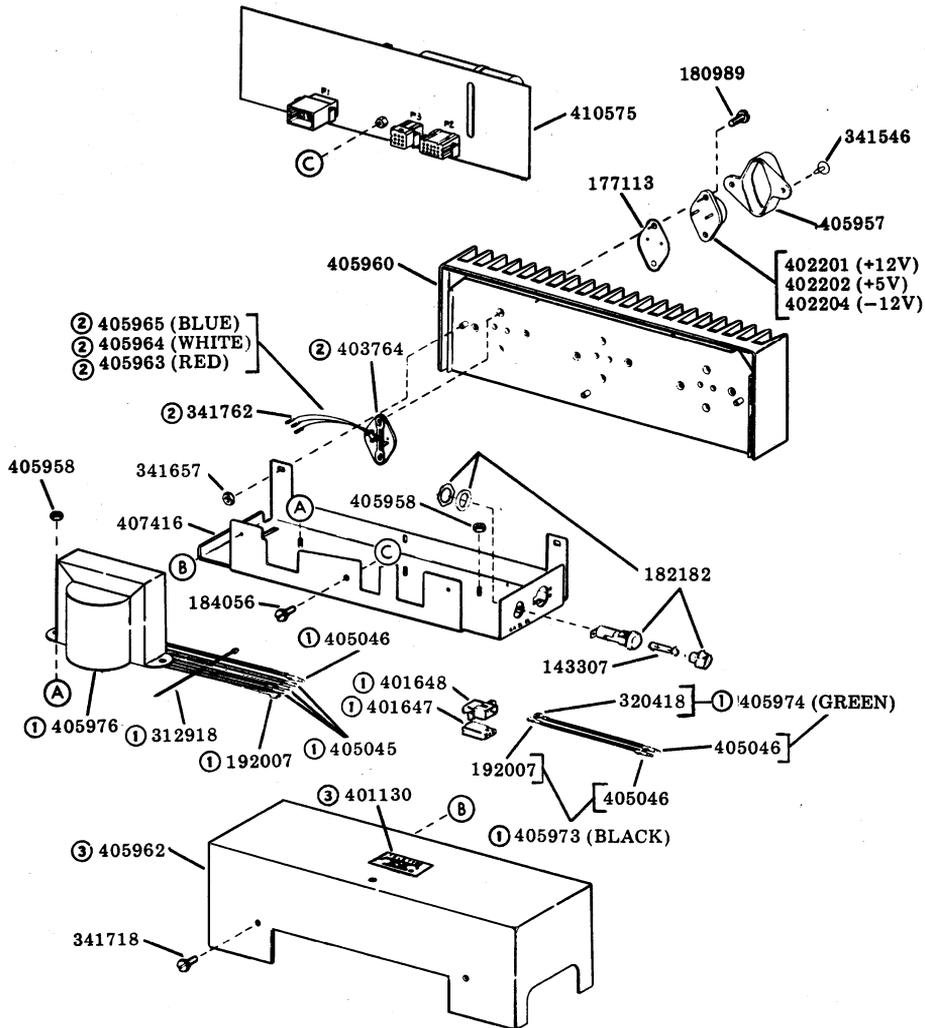
7.02 Parts for the two mounting kits used in mounting the 40KDA101 are described in Part 3. INSTALLATION and are shown in exploded view in Fig. 12 and 13.

7.03 The following list of cable assemblies are associated with the 40KDA101 installations:

Part No.	Description	Fig. No.	
405372	Cable, Stub	28	} KDA TO KD CABLE ASSEMBLIES
405374	Cable — 12 ft	29	
405376	Cable — 50 ft	29	
405378	Cable — 100 ft	29	

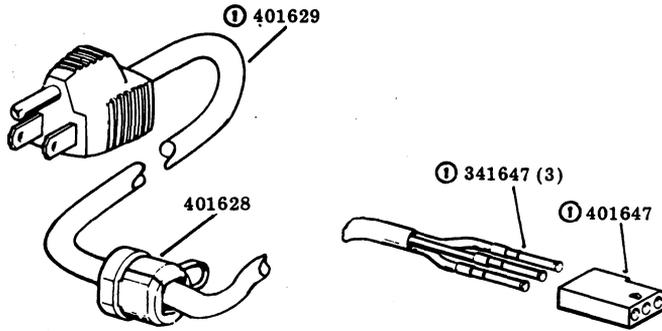
7.04 The 405390 cable termination box (24 position) is also associated with the 40KDA101 installation and is shown in Fig. 16.

7.05 The two mounting kits used in mounting the 40KDA101 are described in Part 3. INSTALLATION and are shown in exploded views in Fig. 12 and 13.



- ① 405977 TRANSFORMER ASSEMBLY
- ② 405966 SOCKET ASSEMBLY
- ③ 407417 COVER

Fig. 12—KDA Parts Information



① 405967 AC Cord Assembly

Fig. 13—405982 Modification Kit (In-Line Mounting)

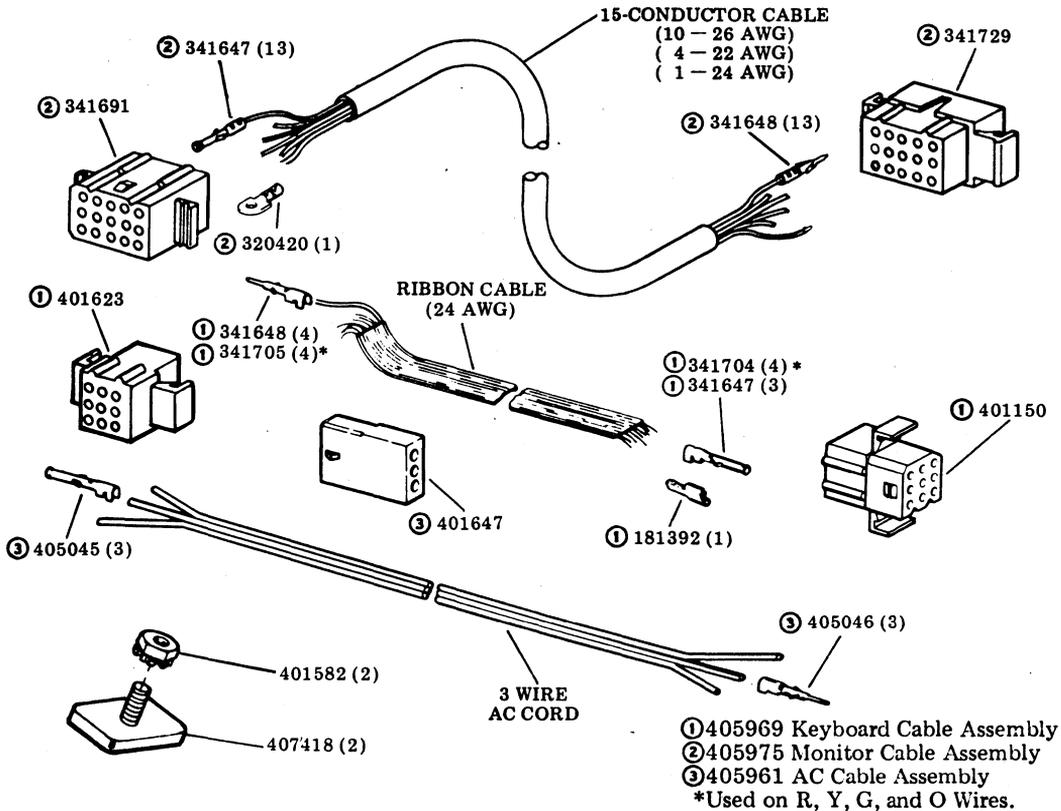


Fig. 14—405983 Modification Kit (Cabinet Mounting)

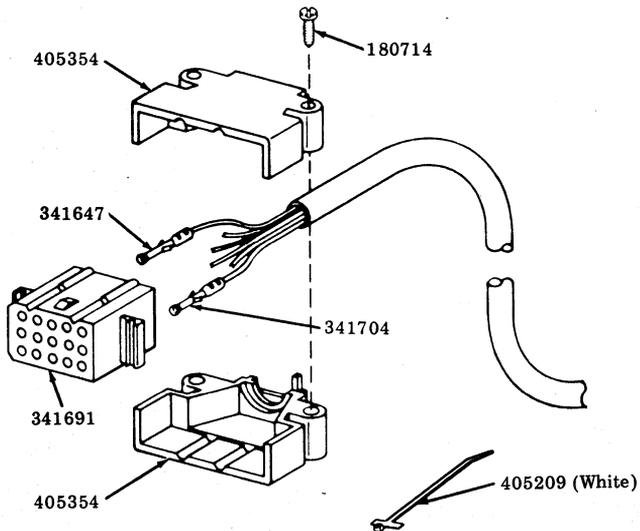
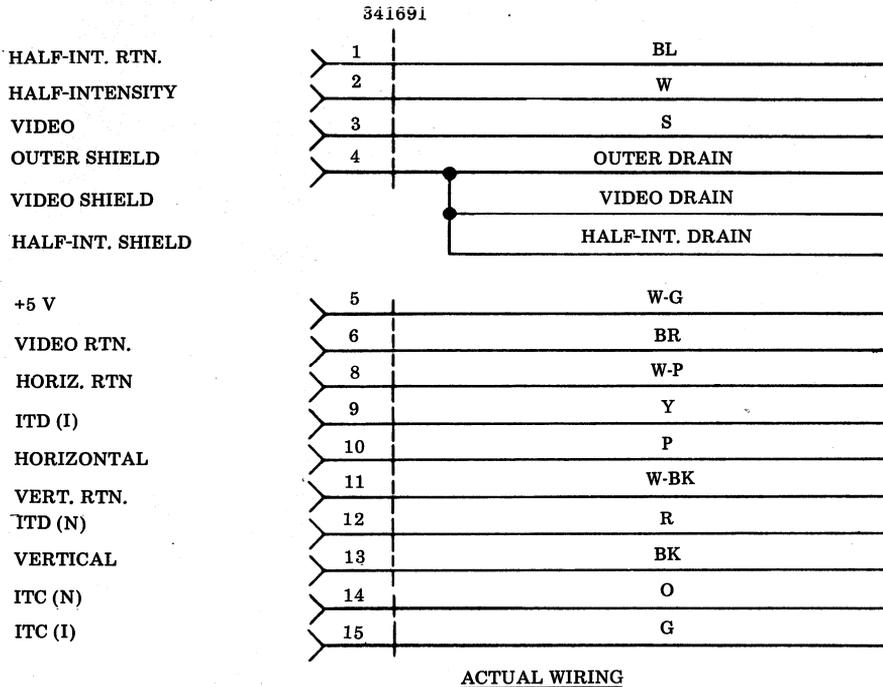


Fig. 15—405372 40KDA Stub Cable Assembly

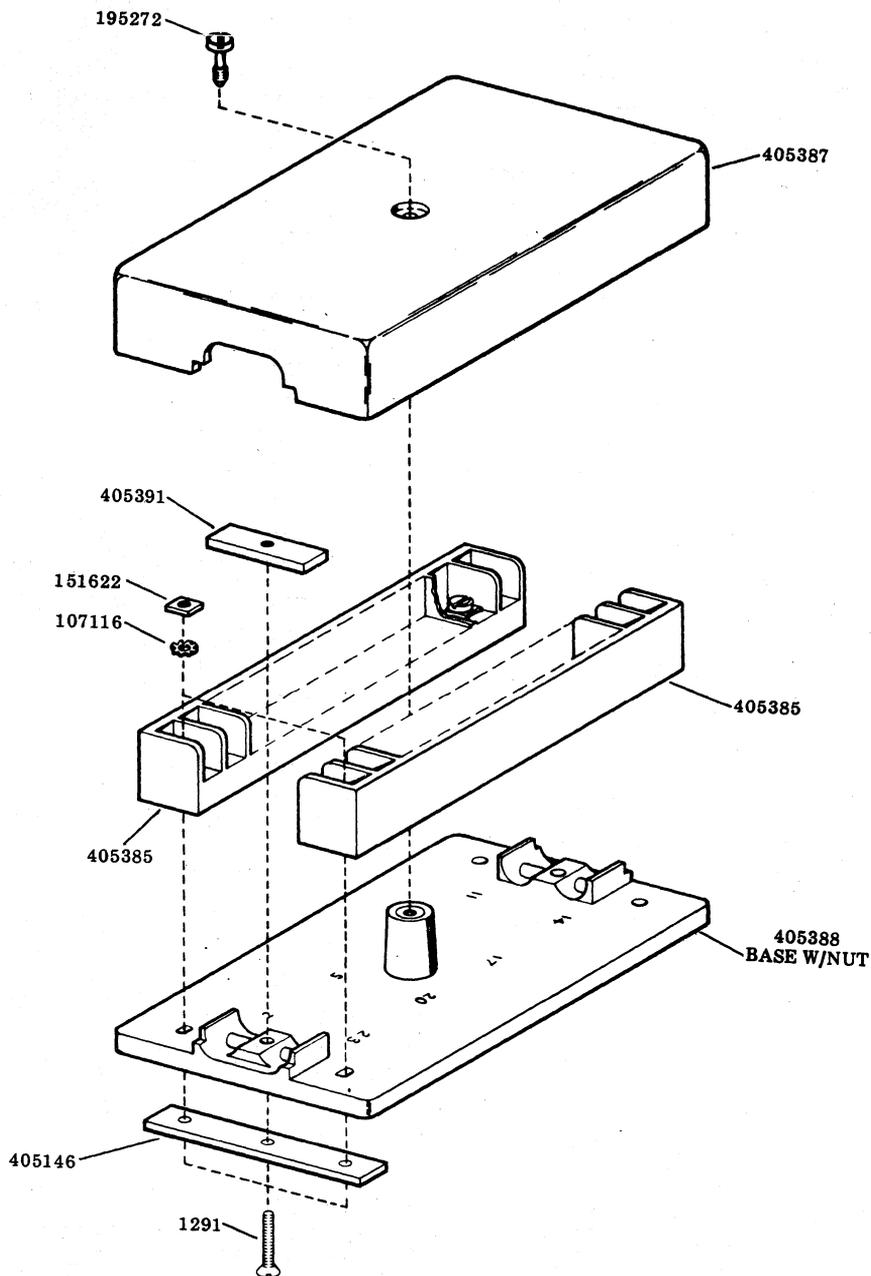


Fig. 17—405390 Cable Termination Box (24 Position)

7.06 NUMERICAL INDEX

Note: When ordering these parts, prefix each number with the letters "TP".

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>PAGE NO.</u>
1291	Screw, 6-32 x 1/4 Flat	28	402201	Regulator, +12 V	24
107116	Lockwasher	28	402202	Regulator, +5 V	24
143307	Fuse, 0.6 Amp	24	402204	Regulator, -12 V	24
151622	Nut, 6-32 Sq	28	403764	Socket, Transistor	24
177113	Insulator	24	405045	Terminal, Receptacle Type	24,25
180714	Screw, No. 6 Self-Tapping	26,27	405046	Terminal, Plug Type	24,25
180989	Screw, Self-Tapping	24	405136	Relief, Strain	27
181392	Terminal, Receptacle Type	25,27	405146	Stiffener	28
182182	Holder, Fuse	24	405209	Strap, Marker	26,27
184056	Screw w/Lockwasher, 6-40 x 1/4 Hex	24	405242	Strap, Marker	27
192007	Terminal, Tab Type	24	405354	Relief, Strain	26,27
195272	Screw, 6-40 Spl	28	405372	Cable Assembly	23
312918	Strap, Cable	24,27	405374	Cable Assembly	27
320418	Terminal, Ring Type	24	405376	Cable Assembly	27
320420	Terminal, Ring Type	25,27	405378	Cable Assembly	27
337826	Screw, 1/2" Pan Head	27	405385	Block, Terminal	28
341546	Fastener	24	405387	Cover	28
341645	Connector, 15 Pt Receptacle	27	405388	Base w/Nut	27
341647	Terminal, Receptacle Type	25,26,27	405391	Clamp	27
341648	Terminal, Receptacle Type	25,27	405957	Cover, Transistor	24
341657	Nut, Self-Tapping	24	405958	Nut w/Lockwasher, 6-32	24
341691	Connector, 15 Pt Receptacle	25,26,27	405960	Sink, Heat	24
341704	Terminal, Receptacle Type	25,26	405961	Cable Assembly	25
341705	Terminal, Plug Type	25	405962	Cover	24
341718	Screw w/Lockwasher 6-40 x 5/16 Hex	24	405963	Lead, Red	24
341729	Plug, 15 Pt	25	405964	Lead, White	24
341762	Terminal, Receptacle Type	24	405965	Lead, Blue	24
401130	Plate	24	405966	Socket Assembly	24
401150	Connector, 9 pt Receptacle	25,27	405967	Card Assembly	25
401582	Nut w/Lockwasher	25	405969	Cable Assembly	25
401623	Connector, 9 pt Plug	25,27	405973	Lead w/Terminal, Black	24
401628	Bushing	25	405974	Lead w/Terminal, Green	24
401629	Cord w/Plug	25	405975	Cable Assembly	25
401647	Connector, 3 pt Receptacle	24,25	405976	Transformer	24
401648	Connector 3 pt Plug	24	405977	Transformer Assembly	21,24
			405982	Modification Kit	21
			405983	Modification Kit	21
			407416	Frame w/Studs	24
			407417	Cover	24
			407418	Bracket w/Stud	25
			410575	Circuit Card	24