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INSTRUCTIONS FOR INSTALLING THE 402315 OR 402316 MODIFICATION KIT TO
CONVERT A 410001 OR 410009 CIRCUIT CARD TO A 410018 CIRCUIT CARD

INSTRUCTIONS FOR INSTALLING THE 406328 MODIFICATION KIT TO CONVERT A
410001 OR 410018 CIRCUIT CARD TO A 410009 CIRCUIT CARD

1. GENERAL

1.01 The 402315 and 402316 Modification Kits convert a 410001 or 410009 Display
      Logic Edit Control Card Assembly to a 410018 Display Logic Edit Control Card
Assembly. The 406328 Modification Kit converts a 410001 or 410018 Display Logic
Edit Control Card Assembly. For a comparison of features, see Part 4 of this
specification.

1.02 The 402315, 402316 and 406328 Modification Kits consist of:

Qty				
402315	402316	406328	Part No.	Description
-	-	1	341738	ROM (Read Only Memory)
-	-	1	341749	Label, identification
1	1	-	341750	Label, identification
-	-	1	343763	ROM (Read Only Memory)
-	-	1	343764	ROM (Read Only Memory)
1	-	1	343765	ROM (Read Only Memory)
1	1	-	343766	ROM (Read Only Memory)
1	1	-	343767	ROM (Read Only Memory)
1	1	-	343768	ROM (Read Only Memory)
4	3	-	405476	Socket, 24 pin

1.03 To prevent damage to the ROMs they should be left in their individual
      containers until they are ready to be installed on the circuit card assembly.

CAUTION: TO AVOID POSSIBLE INTERNAL DAMAGE TO CIRCUITRY, WEAR A 346392 STATIC
DISCHARGE STRAP OR START BY TOUCHING FRAME GROUND TO ALLOW A STATIC DISCHARGE
BEFORE HANDLING COMPONENTS OR CIRCUIT CARD ASSEMBLIES. TOOLS SUCH AS SOLDERING
IRONS, ETC, SHOULD ALSO BE GROUNDED. AVOID TOUCHING CIRCUIT LANDS AND COMPONENTS
AS MUCH AS POSSIBLE. CONTINUITY CHECKERS, OHMMETERS, ETC, SHOULD NOT BE USED TO
"LAMP" OUT CIRCUIT LANDS ON THE CIRCUIT CARDS, BECAUSE OF THE POTENTIAL HAZARD TO
THE MOS CIRCUITRY.

1.04 The 402315 Modification Kit replaces four ROMs on the 410001 Display Logic
      Edit Control Card Assembly, changing it to a 410018 Display Logic Edit
Control Card Assembly.

1.05 The 402316 Modification Kit replaces three ROMs on the 410009 Display Logic
      Edit Control Card Assembly changing it to a 410018 Display Logic Edit
Control Card Assembly.

1.06 The 406328 Modification Kit replaces three of the ROMs on the 410001 or
      410018 Display Logic Edit Control Card Assembly, changing it to a 410009
Display Logic Edit Control Card Assembly.

2. INSTALLATION

2.01 Follow the step-by-step procedures for removal of circuit card from display logic module, then the procedures for card component removal and replacement. Read all procedures before starting installation.

CAUTION 1: TURN OFF ALL POWER OR SIGNAL SOURCES BEFORE REMOVING OR REPLACING ANY COMPONENT.

CAUTION 2: TO AVOID POSSIBLE INTERNAL DAMAGE TO CIRCUITRY, WEAR A 346392 STATIC DISCHARGE STRAP CONNECTED TO GROUND TO ALLOW STATIC DISCHARGE WHILE HANDLING CIRCUIT CARDS. AVOID TOUCHING CIRCUIT LANDS OR COMPONENTS AS MUCH AS POSSIBLE.
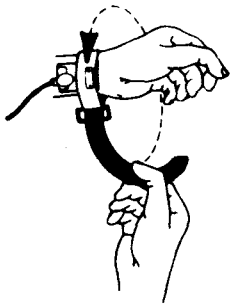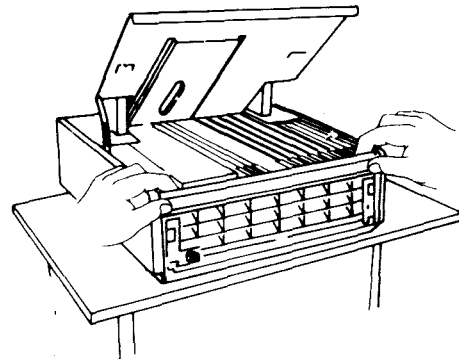
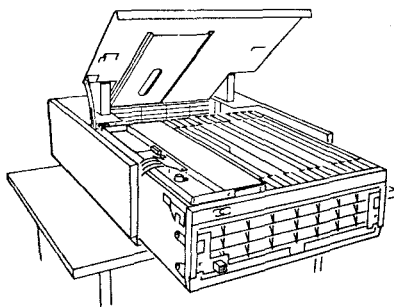Attach clip end of static discharge strap to frame ground.

Attach static ground strap tightly to wrist as shown.

2.02 CARD REMOVAL: ①Open lid.

②Insert fingers as shown and lift while pulling logic package forward.

Note: Do not attempt to lift by the opcon (if present).
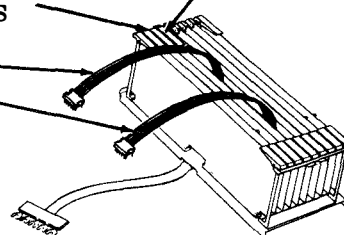
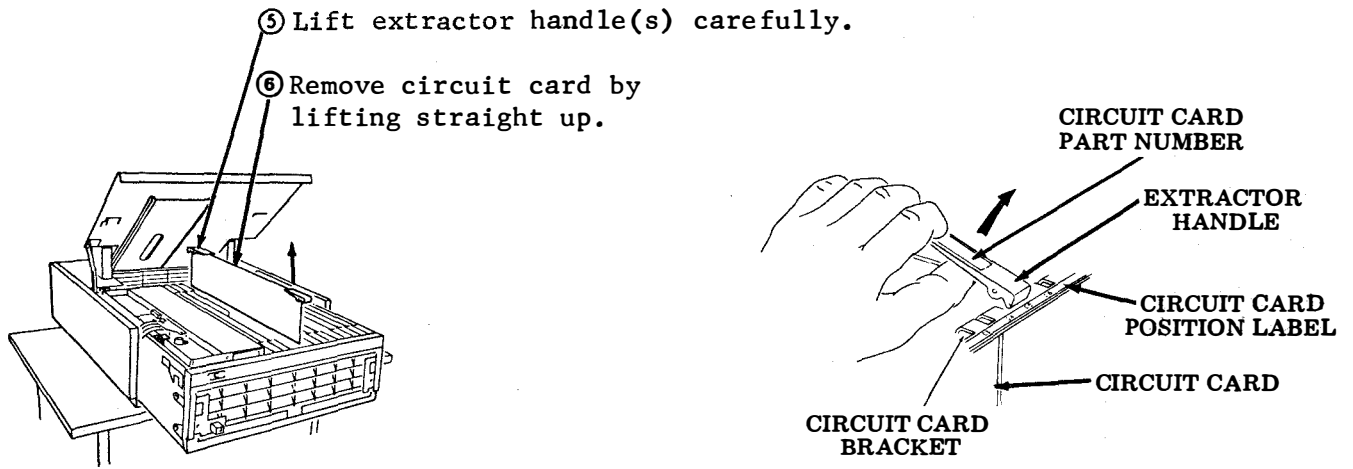③Move logic package forward until blocked by latch to provide sufficient clearance for card removal.

④Locate the 410001, 410009 or 410018 circuit card assembly in 40DL291 Display Logic Module

410001 EDIT OR 410009 OR 410018 CONTINUOUS SCROLLING

410680 CARD (See Note)

Note: If these straps are present, remove the 410680 before removing the 410001, 410009 or 410018 card. The 410680 card must be reinstalled after the 410009 or 410018 card is installed.

⑤ Lift extractor handle(s) carefully.

⑥ Remove circuit card by
lifting straight up.

CIRCUIT CARD
PART NUMBER

EXTRACTOR
HANDLE

CIRCUIT CARD
POSITION LABEL

CIRCUIT CARD

CIRCUIT CARD
BRACKET

2.03   Use a 20 watt or less soldering iron, and a desoldering tool to remove the
ROMs from the pack locations (Fig. 1) indicated below:

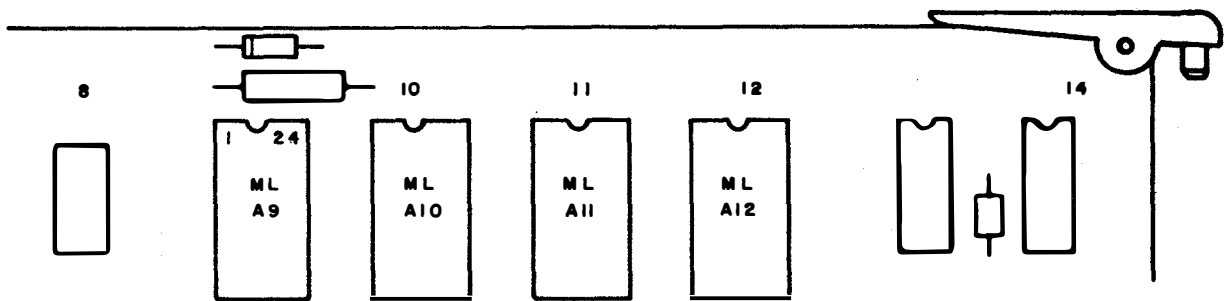|	
410001 Card Assembly Remove packs from positions: MLA9, MLA10 and MLA12. (For the 402315 Modification Kit, also remove MLA11.)	410009 or 410018 Card Assemblies Remove packs from positions: MLA9, MLA10 and MLA11.

Fig. 1 -- Logic Card Positions

Note 1:   Great care is required to remove a ROM pack. Do not apply heat to circuit
card lands for a long period of time. Excessive heat destroys the bonding and
causes the lands (plating) to separate from the board.

Note 2:   Before trying to remove the pack from the board, make sure all solder is
removed from the plated thru holes. All ROM pack pins must be free in their holes.
Failure to remove all solder from a hole may result in the plating (circuit land)
ripping off when the ROM pack is extracted from the board.

Note 3:   It is sometimes easier, and safer for the circuit board, if a small pair
of side cutters is used to clip off each pack lead on the component side of the
circuit board. After cutting out the pack, desolder and remove each pack pin
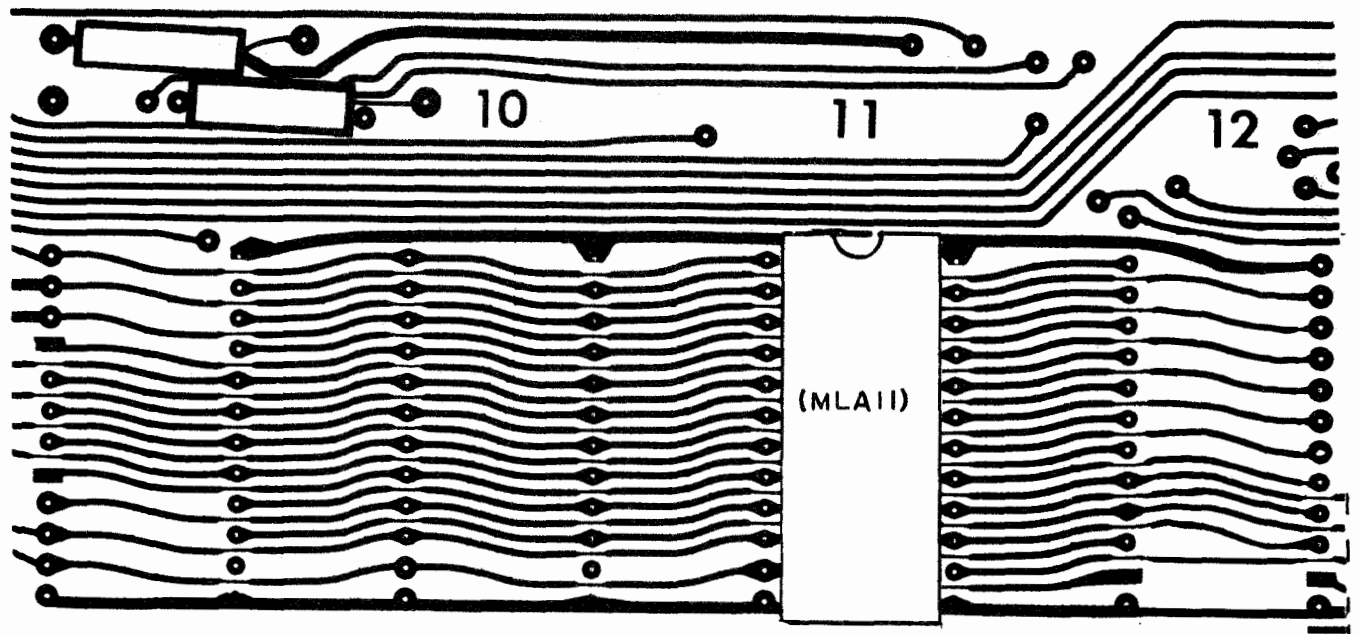individually from the circuit board.

2.04 After extracting the packs from the circuit board visually examine the board
      for any solder splashes and/or damaged lands. Repair if necessary.
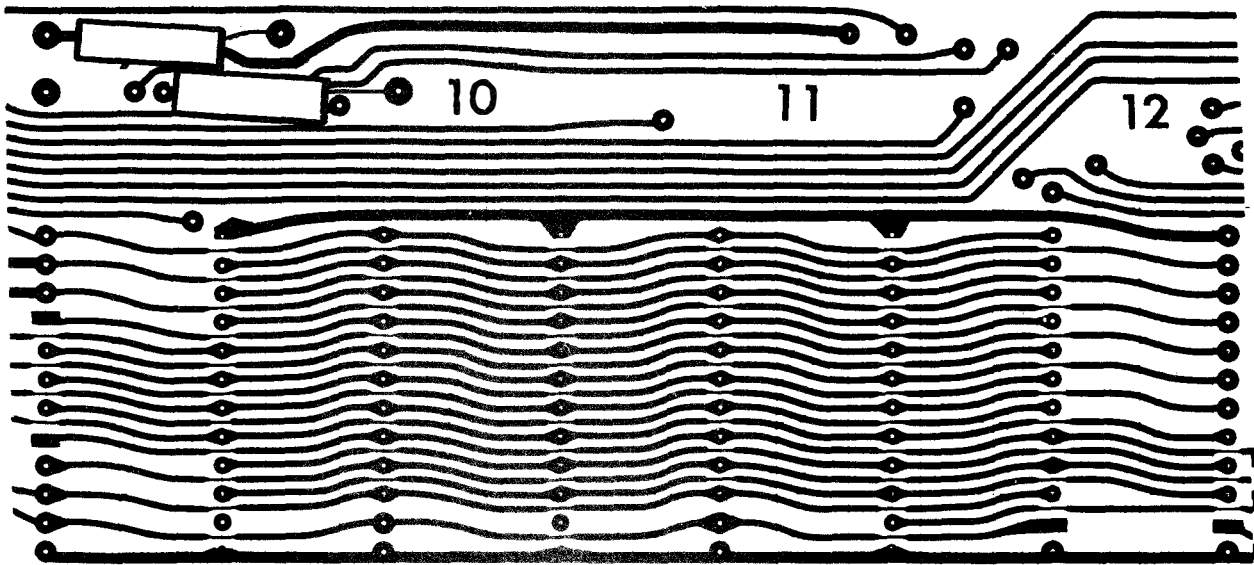
Part of TP410001 Circuit Card Shown Without MLA9, 10, 11 and 12
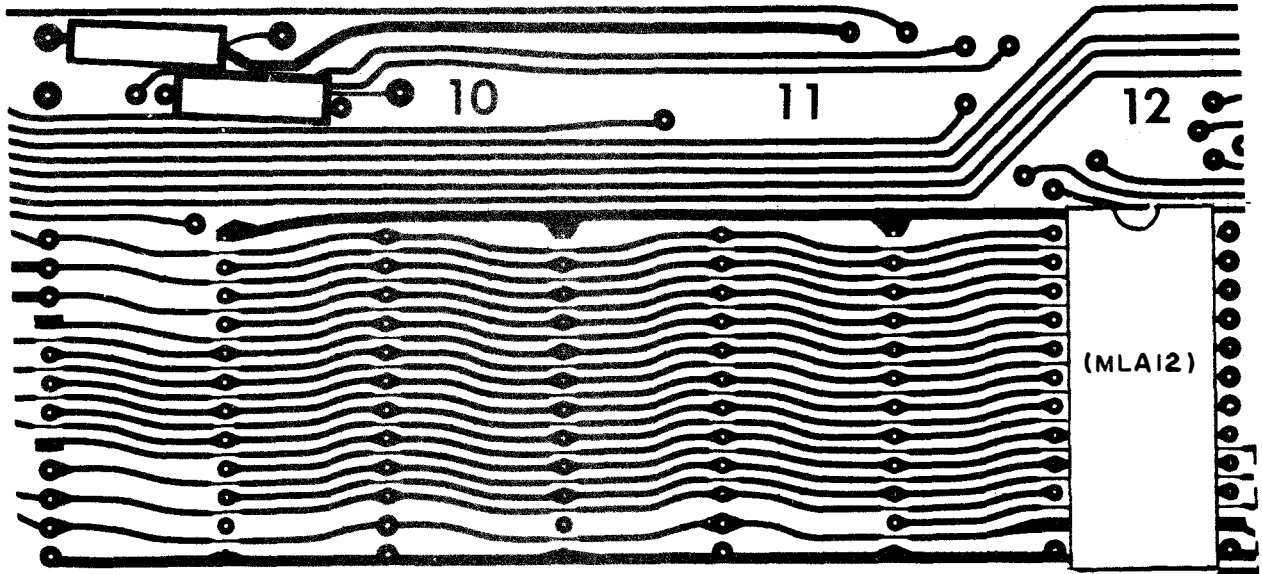
Part of TP410009 or TP410018 Circuit Card Shown Without MLA9, 10, and 11

Part of TP410001 Circuit Card Shown Without MLA9, 10 and 12

2.05 Component installation for the 402315 and 402316 Modification Kits:

① Install one 405096 socket (Fig. 2) in
each of the positions vacated in 2.03.
Before carefully soldering socket pins
to the board plating, make sure the
indexing mark of the socket points to
the top of the circuit board. (Pin 1
is in upper left hand corner.)
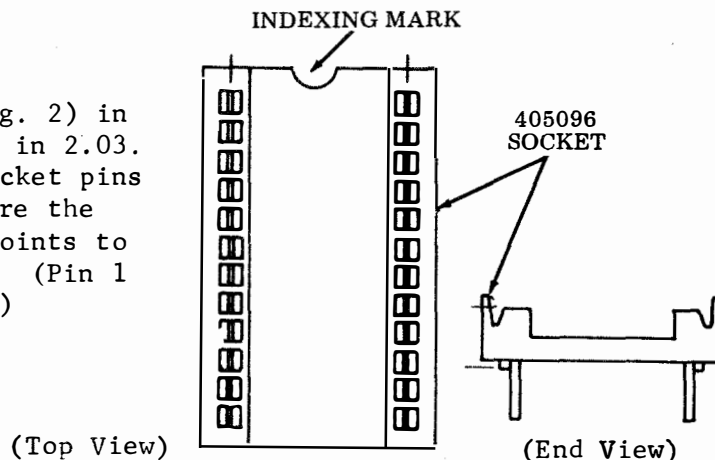
Fig. 2 -- 405096 Socket

② After installation of the 405096 sockets, visually examine the circuit board for
solder splashes and/or damaged circuit lands. Repair if necessary.

③ Install the ROM packs (Fig. 3) in the respective sockets. Make sure all of the
pack pins are inserted into the sockets and are not bent under. Use caution
when inserting the packs, because undue force could fracture the case, and/or
break off the pack pins. Make sure the index mark on the packs are toward the
top of the card. (Pin 1 is in upper left hand corner).

CAUTION: WHEN INSTALLLING THE ROMs, MAKE SURE THEY ARE IN THE RIGHT SOCKETS, AND ARE ORIENTED PROPERLY. ROMs IN THE WRONG SOCKETS AND/OR ORIENTED IMPROPERLY WILL RESULT IN IMPROPER TERMINAL ACTION AND CAN RESULT IN DAMAGE TO THE ROMs.

402315 Modification Kit --
Add the following ROMs
in the positions indicated:
MLA9 - 343766 ROM
MLA10 - 343767 ROM
MLA11 - 343768 ROM
MLA12 - 343765 ROM
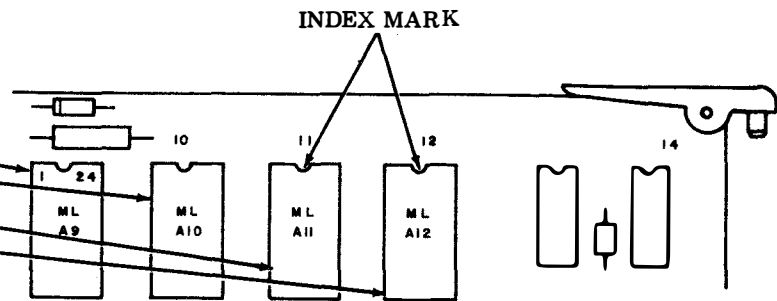
402316 Modification Kit --
Add the following ROMs
in the positions indicated:
MLA9 - 343766 ROM
MLA10 - 343767 ROM
MLA11 - 343768 ROM
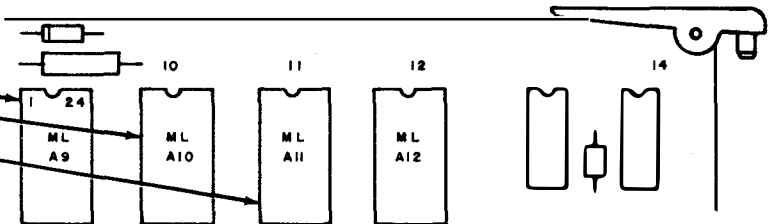
Fig. 3 -- ROM Pack Installation for the 402315 or 402316 Modification Kit

④ Remove old part number label (Fig. 4) from the extractor handle.
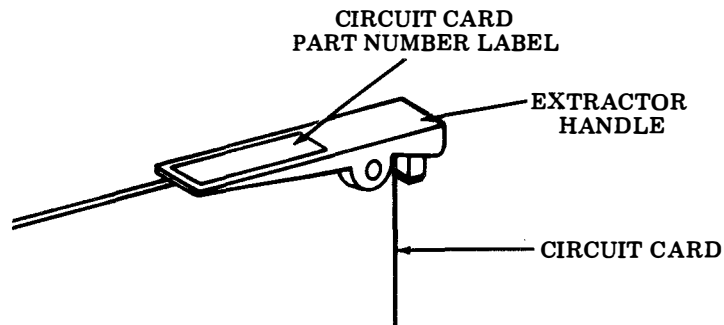
Fig. 4 -- Label Location

⑤ Replace with 341750 - "410018" Identification Label.

2.06 Insert the 410018 Card Assembly into the 40DL291 Display Logic Module in the slot previously occupied by the 410001 or 410009 Card Assembly. Return module to original position in cabinet, close lid and restore power.

2.07 Component installation for the 406328 modification kit:

①Install the ROM packs (Fig. 5) in the respective plated through holes. **Make** sure all of the pack pins are inserted into the plated through holes **and are not** bent under. Use caution when inserting the packs because undue force could fracture the case and/or break off the pack pins. Make sure the index **mark on** the packs are toward the top of the card. (Pin 1 is in the upper **left** hand corner.)

406328 Modification Kit --
For conversion from a
410001 to a 410009 add the
following ROMs in the
positions indicated:

MLA9   - 343763 ROM
MLA10 - 343764 ROM
MLA12 - 343765 ROM
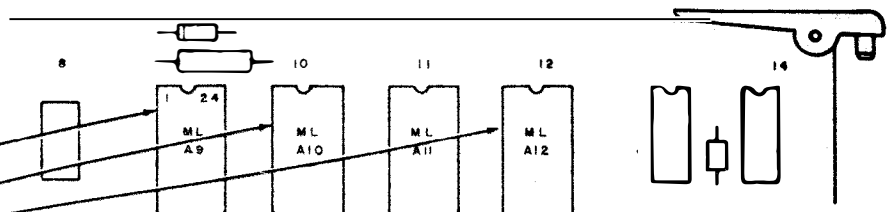
For conversion from a
410018 to a 410009 add
the following ROMs in
the positions indicated:

MLA9   - 343763 ROM
MLA10 - 343764 ROM
MLA11 - 341738 ROM
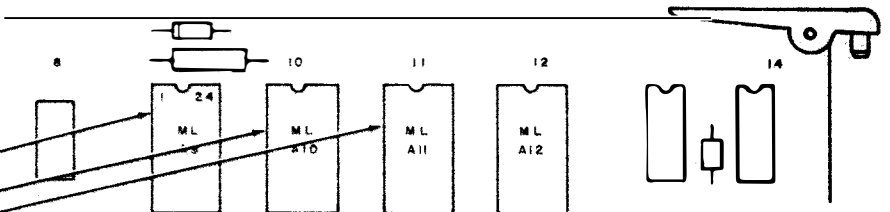
Fig. 5 -- ROM Pack Installation for the 406328 Modification Kit

②Using the 20 watt soldering iron, solder the integrated circuit pins to the plated through holes. Use caution when soldering to avoid excessive overheating of any one area of the ROM.

Note: Only three of the four ROMs provided in the kit will be used.

After installation of the ROMs, again visually examine the circuit board for solder splashes and/or damaged circuit lands. Repair if necessary.

④Remove old part number label from the extractor handle. (See Fig. 4 on page 6.)

⑤Replace with 341749 - "410009" Identification Label.

2.08 Insert the 410009 Card Assembly into the 40DL291 Display Logic Module in the slot previously occupied by the 410001 or 410018 Card Assembly. Return module to original position in cabinet, close lid and restore power.

3. CHECKOUT

3.01 Checkout for the 402315 or 402316 Modification Kit

3.02 Perform complete off-line and on-line checkouts of the set to make sure all functions are operating properly.

3.03 To check for the added features (requires two Model 40 Sets) perform the following:

●C - denotes station with 018 card (modified 001 or 009).
●T - denotes station giving test.

Step 1.   On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 2.   On C - depress HOME key, then CLEAR key.

Step 3.   On C - depress SEND key.
            - Station should send ETX then go to LOCAL or RECEIVE (Option 11).*

●If when SEND key is depressed nothing happens, 018 is defective.

Step 4.   On T - receives ETX then goes to LOCAL (Option 8).*

Step 5.   On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 6.   On C - type one line of RYs ending in CONTROL-H (GS).

Step 7.   On C - depress HOME key, then SEND key.

Step 8.   On C - station sends line and stops on Gs (Option 8).*

Step 9.   On T - line is received.†

Step 10.   On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 11.   On C - change CONTROL-H to CONTROL-L (FF).

Step 12.   On C - depress HOME key, then SEND key.

Step 13.   On C - line of RYs is sent and stops on FF (Option 8).*

Step 14.   On T - line is received †

Step 15.   On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 16.   On C - change CONTROL-L to CONTROL-C (ETX).

Step 17.   On C - depress HOME key, then SEND key.

Step 18.   On C - line is sent ending on ETX (Option 8).*

Step 19.   On T - line is received.

Step 20.   On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 21.   On C - change CONTROL-C to CONTROL-D (EOT).

Step 22. On C - depress HOME key, then SEND key.

Step 23. On C - line is sent ending in EOT.

Step 24. On T - line is received.*

Step 25. On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 26. On C - change CONTROL-D to CR (depress RETURN key).

Step 27. On C - depress HOME key, then SEND key.

Step 28. On C - line will be sent and cursor will not stop, depress LOCAL key
          after line is sent.

Step 29. On T - line is received and cursor will not stop until "C" stops.†

Step 30. On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 31. On C - change RETURN(←——)to CONTROL-S (DC3).

Step 32. On C - depress CURSOR RETURN key, then ↓ (cursor down) once.

Step 33. On C - depress SEND key.
          - Should send all three segments and lastly send line of message
            stopping on DC3.

Note 1: When tested with Model 40/1 (40C102 or 40C202 controller), "C" will not
stop sending. After line of message and DC3 is sent by "C", depress LOCAL key on
"C".

Step 34. On T - should receive all sent data ending on DC3.†

Note 2: When testing with Model 40/1 (40C102 or 40C202 controller), "T" will stop
only after LOCAL key is depressed on "C" and should display line of message and
DC3.

Step 35. On C - depress TS3 test button on 018 card.
          - This should fill all segments with "*".

Step 36. On C - depress HOME key, then SEGMT ADV (segment advance) key once.

Step 37. On C - depress RECEIVE key.

Step 38. On T - depress TS3 test button on the 001, 009 or 018 card (whichever is
            present).

Step 39. On T - segments should be filled with "*" characters.

Step 40. On T - move cursor to last position of the last line of the last segment.

Step 41. On T - depress CONTROL-C keys (ETX).

Step 42. On T - depress CURSOR RETURN key.

Step 43. On T - type "RYRYRYRY" to indicate last line.

Step 44. On T - depress HOME key, then SEND key.

Step 45. On C - check each "new" line of data as it appears at the bottom of the
          screen, it should be cleared of all "*" characters.

Step 46. On C - "*" should be received and should cause wraparound until last line
          ("RYRYRYRY *---* ETX) is received, where it will stop on ETX.

*Modes or operations preceding depend on option selected.
†Should a single ETX be received by "T" during reception of any test line, it
 should be noted that 018 is defective.

Note 3: If a Model 40 Set is the source of the signals, a line feed will appear in
the second line and at the end of each received line thereafter. These are auto-
matic line feeds generated at the end of line by the transmitting set.

3.04 Checkout for the 406328 modification kit.

3.05 Perform complete off-line and on-line checkouts of the set to make sure all
      functions are operating properly.

3.06 To check for the added features (requires two Model 40 Sets) perform the
      following:

  ●C - denotes station with 009 card (modified 001 or 018).
  ●T - denotes station giving test.

Step 1.   On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 2.   On C - depress HOME key, then CLEAR key.

Step 3.   On C - type one line of RYs ending in CONTROL-H (GS).

Step 4.   On C - depress HOME key, then SEND key.

  ●If when SEND key is depressed nothing happens, 009 is defective.

Step 5.   On C - station sends line and stops on GS (Option 8).*

Step 6.   On T - line is received.

Step 7.   On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 8.   On C - change CONTROL-H to CONTROL-L (FF).

Step 9.   On C - depress HOME key, then SEND key.

Step 10. On C - line of RYs is sent and stops on FF (Option 8).*

Step 11. On T - line is received.

Step 12. On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 13. On C - change CONTROL-L to CONTROL-C (ETX).

Step 14. On C - depress HOME key, then SEND key.

Step 15. On C - line is sent ending on ETX (Option 8).*

Step 16. On T - line is received.

Step 17. On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 18. On C - change CONTROL-C to CONTROL-D (EOT).

Step 19. On C - depress HOME key, then SEND key.

Step 20. On C - line is sent ending in EOT.

Step 21. On T - line is received.*

Step 22. On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 23. On C - change CONTROL-D to CR (depress RETURN key).

Step 24. On C - depress HOME key, then SEND key.

Step 25. On C - line will be sent and cursor will not stop, depress LOCAL key
               after line is sent.

Step 26. On T - line is received and cursor will not stop until "C" stops.

Step 27. On T - depress HOME key, then CLEAR key, then RECEIVE key.

Step 28. On C - change RETURN(←——)to CONTROL-S (DC3).

Step 29. On C - depress CURSOR RETURN key, then ↓ (cursor down) once.

Step 30. On C - depress SEND key.
               - Cursor continuously moves until it reaches last line of last
               segment where it will stop. Station will send ETX, then go to
               LOCAL or RECEIVE (Option 11).*

Step 31. On T - line of RYs is not received. Cursor continuously moves until "C"
               reaches last line (last segment), then receives ETX and station
               goes to LOCAL.

Step 32. On C - depress TS3 test button on 009 card.
               - This should fill all segments with "*".

Step 33. On C - depress HOME key, then SEGMT ADV (segment advance) key once.

Step 34. On C - depress RECEIVE key.

Step 35. On T - depress TS3 test button on the 001, 009 or 018 card (whichever is
               present).

Step 36. On T - segments should be filled with "*" characters.

Step 37. On T - move cursor to last position of the last line of the last segment.

Step 38. On T - depress CONTROL-C keys (ETX).

Step 39. On T - depress CURSOR RETURN key.

Step 40. On T - type "RYRYRYRY" to indicate last line.

Step 41. On T - depress HOME key, then SEND key.

Step 42. On C - check each "new" line of data as it appears at the botton of the
          screen, it should not be cleared of all "*" characters.

Step 43. On C - "*" should be received and should cause wraparound until last line
          ("RYRYRYRY *---* ETX) is received, where it will stop on ETX
          (Option 8).

*Modes or operations preceding depend on option selected.

Note: If a Model 40 Set is the source of the signals, a line feed will appear in
the second line and at the end of each received line thereafter. These are auto-
matic line feeds generated at the end of line by the transmitting set.

4. COMPARISON

4.01 Comparison of features of 410001, 410009, and 410018 circuit cards used in
      40DL291 display logic.

MODE	410001	410009	410018
REC (Action at end of line)	If no new lines are received, data over-writes on last char-acter in first line.	New line function is automatically performed for data received with-out new lines. Note 1: New and old data can appear on the same line.	(As for 410009) Note 2: A line will be all new or all old data.
REC (Action at end of display)	Data overwrites on last character of last segment.	Scroll from last line of last segment to first line of first segment, and overwrit-ing character at a time, continue receiv-ing. Overwritten data is destroyed (except protected data and horizontal tabs).	Scroll from last line of last segment to first line of first segment and erasing a line at a time from "top" of memory, continue receiving. Over-written data is destroyed (except protected data and horizontal tabs).

MODE	410001	410009	410018
SEND (Action if no message end character* on display) *EOT, ETX, FF, GS, DC3, CR	Message will be sent. Automatically send ETX and revert to LOCAL (Option 11A) or REC (Option 11B) at end of last segment, provided Option 8C is installed. Otherwise, will send ETX characters until manually removed from send mode. Note 3: Print local operation does not depend on message end character being present. End of print local mode as given for end of send mode, except if automatic end of mode will revert to REC.	(As for 410001)	Message will not be sent. Automatically send ETX and revert to LOCAL or REC (Option 11), if Option 8C is installed. If Option 8D is installed, will then send EOT and revert to REC if Option 8E is installed. If Option 8F is installed, will send EOT characters until manually removed from send mode. Note 4: Print local operation will not occur if end character is not on display. End of print local mode as given for send mode except if automatic end of mode will revert to REC.
SEND (Action if message end character is on display)	Message will be sent. If controller optioned to recognize message end character then will revert to REC or LOCAL (Option 11) or to REC if character is EOT. If controller is not optioned to recognize message end character, see SEND (Action if no message end character on display).	(As for 410001)	Message will be sent. If controller is optioned to recognize message end character, then acts as 410001. If controller is not optioned to recognize message end character, then entire display will be sent repeatedly until manually removed from the send mode.

MODE	410001	410009	410018
SEND (Action if message end character is on display) (Cont)	Note 5: Entire message cannot be sent if cursor is to go from last segment (message end character above start of message).		Note 6: Entire message will be sent even if cursor is to go from last segment to first segment (message end character above start of message).

Note: When the 410018 edit circuit card is used in 40/1 applications in the S/R mode, a message ending character (ETX, EOT, FF, GS, DC3 or CR) must be entered into the display prior to entry of the DC2, which is required for a multiple line message. Failure to enter the message ending character prior to DC2 will cause the KD or KDP set to send ETX, revert to local, and disconnect when an attempt is made to send the DC2.

5. OPERATOR INFORMATION

Use this sheet for the 402315 or 402316 modification kit only.

CUT ON DASHED LINES
PLACE IN ATTENDANT'S HOW TO OPERATE MANUAL

DESTRUCTIVE SCROLL AND LINE WRAP AROUND FEATURE - 410018

RECEIVING DATA

● Data being received need not have a new line character at the end of a line to avoid losing characters. On the 81st character of a line, cursor automatically drops to the next line and continues writing.

● While receiving data on the last line of the last segment, the set scrolls to the first line of the first segment, automatically.

● New received lines will be added to the bottom of the displayed message and lines at the "top" of the memory will be lost; except for protected data and horizontal tabs.

PRINT LOCAL

● Print local operation requires that a valid end character be contained in the message.

SENDING DATA

Send operation requires a valid message ending character on the display.

● If no valid end character is on the display the transmission of the displayed message can not occur. Automatic transmission of the character ETX will occur when the SEND key lights.

● If the set has not been optioned to recognize ETX as an end character, then the sequence ETX-EOT will be sent and the REC LOCAL lamp lights.

● If the operator enters a invalid end character, the set will send ETX and then send EOT characters until the operator depresses the LOCAL key.

● If a valid end character is on the display, your set will send the entire message until the end character is sent, then the LOCAL or REC key lights (depending on set options)

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5. OPERATOR INFORMATION

Use this sheet for the 406328 modification kit only.

CUT ON DASHED LINES
PLACE IN ATTENDANT'S HOW TO OPERATE MANUAL

- -

DESTRUCTIVE SCROLL AND LINE WRAP AROUND FEATURE - 410009

RECEIVING DATA

- Data being received need not have a new line character at the end of a line to avoid losing characters. On the 81st character of a line, cursor automatically drops to the next line and continues writing.

- While receiving data on the last line of the last segment, the set scrolls to the first line of the first segment, automatically.

- New received characters will be added to the botton of the displayed message and characters at the "top" of the memory will be lost; except for protected data and horizontal tabs.

SENDING DATA

Send operation does not require a valid message ending character on the display.

- If no valid end character is on the display the transmission of the displayed message can not occur. Automatic transmission of the character ETX will occur after the last character of the last line of the last segment is sent.

- If the set has not been optioned to recognize ETX as an end character, the set will send ETX characters until the operator depresses the LOCAL key.

- If a valid end character is on the display, your set will send the entire message until the end character is sent, then the LOCAL or REC key lights (depending on set options).

- -