

VLF Trendsetter AL

Production Upgrade Procedure (el./mech.) - TSV to VAL

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Creo Inc.
3700 Gilmore Way
Burnaby, BC
Canada V5G 4M1
(604) 451-2700

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Revision History

Revision	Date	Author	Comments
A	2001:JUN:15	P.Lagodzki/M.Zgrych/ P.Yuen	
B	2002:NOV:22	P.Lagodzki/M.Zgrych/ P.Yuen	Hose configuration change.
C	2003:09:18	M. Louie	Added slipsheet sensor adapter cable.

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1. SCOPE

This document describes the installation of all electrical and mechanical upgrade components specific for the new and retrofit VLF Trendsetter Autoloader machines in production and is intended for the production circle T11.

2. TOOLS

Use standard tools for assembly.

3. INSTALLATION OF ELECTRICAL COMPONENTS

CAUTION: An antistatic strap should be worn at all times.

- Turn OFF all power and unplug the TS from the power supply.
- The electrical upgrade kit includes 1 board (GENNE 0), several cables, and the mounting brackets required to attach everything to the TS.
- Divide the cables and related parts into five groups:
  - Cables that will always be routed on the right side of the TS: **10-5033A** (cable bundle assembly for right side of TSV), **10-4906A** (table solenoid to ESE board), cable **10-4983A** and mounting hardware **52-3101** plus 2 relays **15-3359** with hardware **52-3024**, plate **57-7614A** and hardware **52-3263** (all for external alarm)
  - Cable that will always be routed at the rear of the TS frame: **10-5034A** (cable bundle assembly for rear of TSV).
  - Cables that will always be routed on the left side of the TS: **10-4346C** (GENINE 0 to left bulkhead) and **10-4921B** (left side e-stop circuit)
  - Cables that depend on the configuration of the TS, so they can be routed on the right or left side: **10-5032A** (cable bundle assembly for bulkhead on MCU/SCU side), **16-4344/16-4345** (serial cables), **10-4873B** (bulkhead extension for conveyor canbus), **10-4993A** (e-stop loop jumper on conveyor side), **10-4943A** (TSV e-stop jumper for umbilical cable module #6 when MCU/SCU disconnected).
  - Cables and parts that go in or near the Power Box: **10-4449B** (table safety), **10-4453B** (autoloader power on) , the extra relay **15-3359**, extra contact block **15-3238** (for single-cycle mode), **10-4914B** (for drop leaf switches), **10-4468C** (to guard rail).
- Many cables will be routed into the TS power box. Open the cable trays and loosen the cable clamps at both exits.

- Access the front cable tray, behind the center panel, and remove the cap from the tray (retrofit TS only).
- The cable clamps on the right side cable tray (retrofit TS only) starts behind the power box and goes below the counterweight.
- Working inside the power box, attach the mounting bracket, for GENINE 0, to the outside of the card cage. Remove the 3 screws that are already installed, position the bracket and install the 3 screws.
- Attach the GENINE board 10-4227C to the bracket 57-7721A. The vacuum sensor must be at the top, use the 4 flat washers and nylock nuts to secure the board.

  Note: Installer **must** be wearing an antistatic strap before removing the board from the protective bag.

1. First, place the bundled cable assemblies 10-5032A, 10-5033A, and 10-5034A into the TS. See Fig.3.1-1, Fig.3.1-2, Fig.3.1-3 and Appendix

   - Assembly 10-5032A comprises a bulkhead connector and six cables which mount at the MCU/SCU bulkhead. Attach the bulkhead connector to the TS frame on the side which will be adjacent to the MCU/SCU.
   - Place assembly 10-5033A into the cable tray at the right side of the TS. Some of the cables attach to the Engine Satellite Electronics (ESE) board, and others enter the power box and attach to the GENINE board that was just installed (GENINE 0, or GNE 0). The end of the bundle that has fork terminals should be toward the power box.
   - Place assembly 10-5034A into the rear cable tray of the TS. Look at the individual cable labels to determine proper orientation. ("right" refers to the power-box side of the TS)
   - For the rest of this procedure, we will refer to the individual cable assembly part numbers instead of the bundled assembly numbers above.

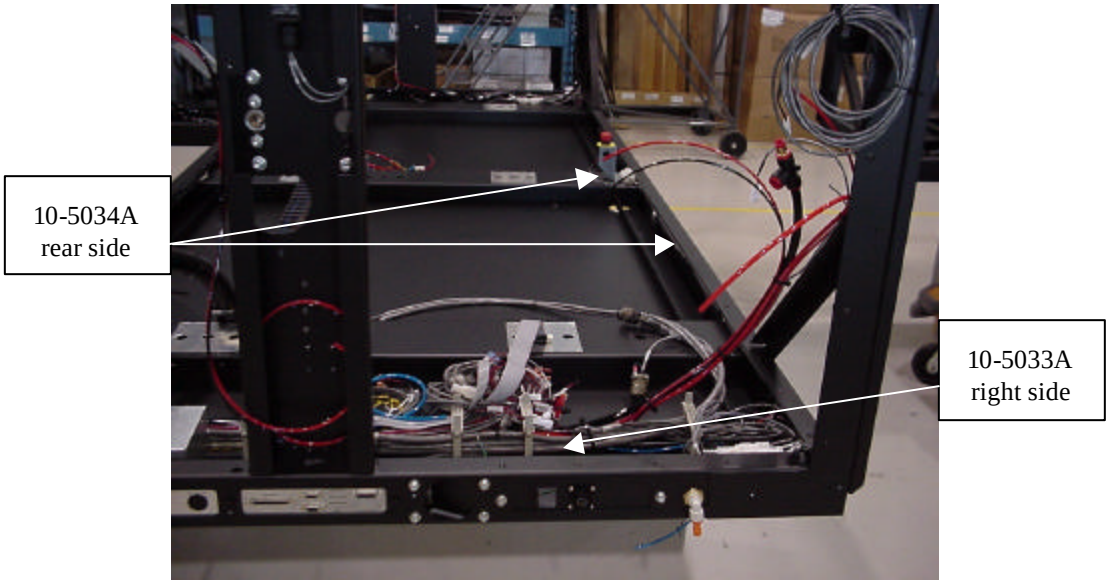


Fig.3.1-1



Fig.3.1-2

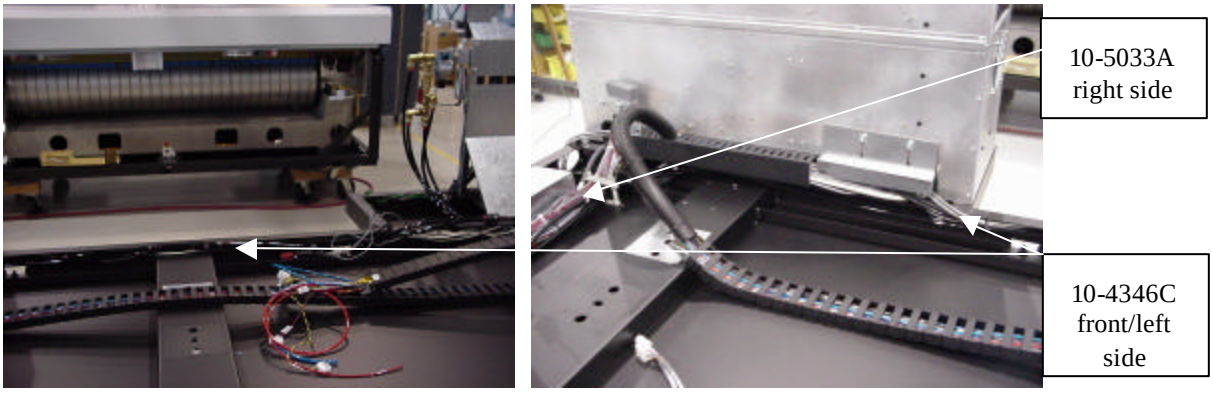


Fig.3.1-3

2. Install cable 10-4346C from the left frame bulkhead (encoder side) to the power box. See Fig.3.2-1, Fig.3.2-2 and Fig.3.2-3.

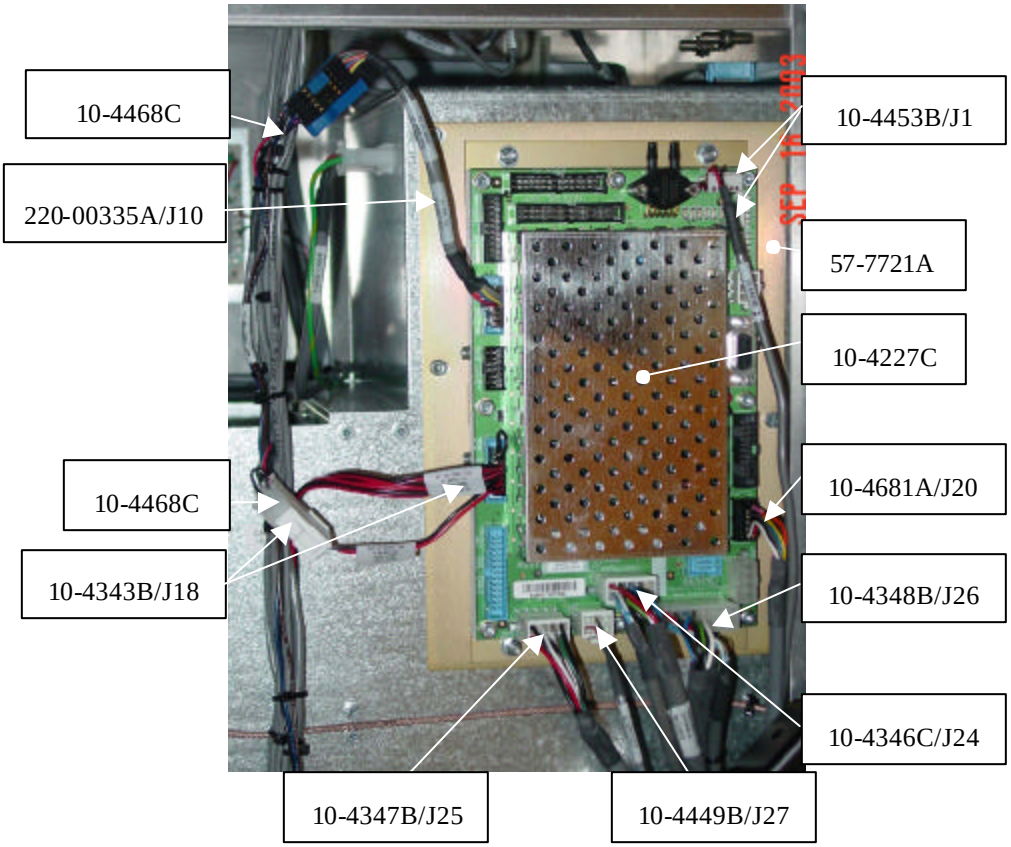


Fig. 3.2-1

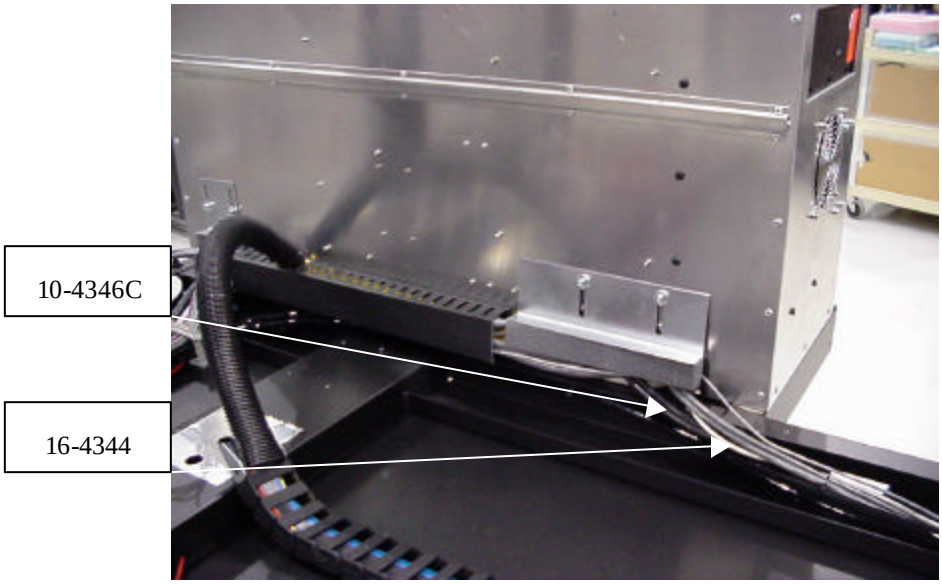


Fig. 3.2-2

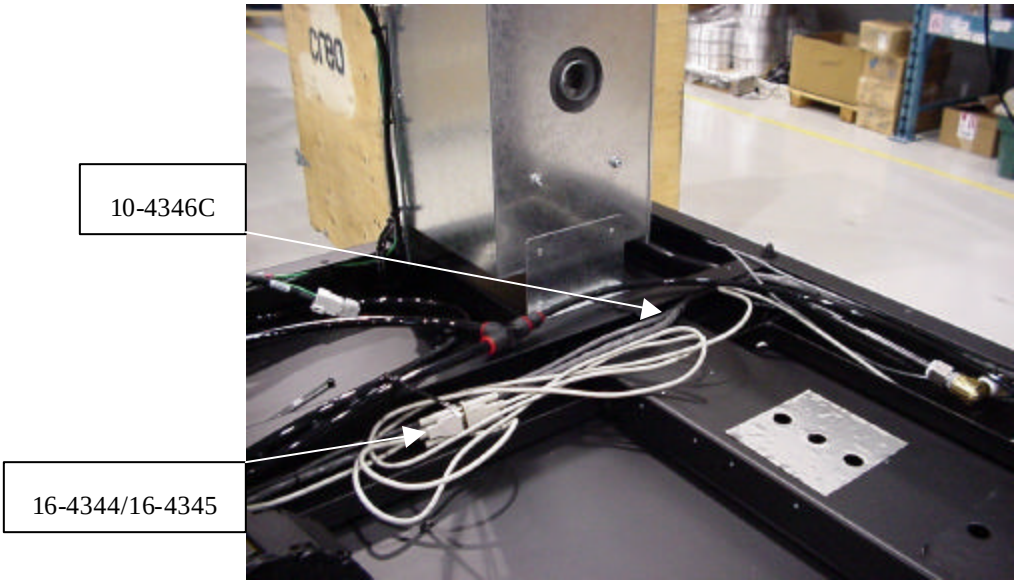


Fig. 3.2-3

- Insert the cable into the power box, through the hole in the lower left corner behind the power supply. Route it along the bottom cable tray, under the card cage and up to Genine 0.
- Attach the connector (TO GNE0 J24) to the J24 connector on Genine 0.
- The connector (TO AL SFTY CCT) will connect to connector (TO BKHD-L ADPT) on cable 10-4900A after it is installed.
- Route the other end of the cable along the front TS cable tray to the left frame bulkhead.
- Leave the connector (TO BKHD-L) loose for now. It will be connected to either 10-4873A or 10-4874A later.
- Do not tie wrap the cable until ALL cables have been installed.

3. Install cable 10-4348B from the right frame bulkhead (motor side) to the power box. See Fig.3.2-1, Fig.3.3-1, Fig.3.3-2.

- Insert the cable into the power box, through the opening in the lower right corner. Route it under the card cage and up to Genine 0.
- Attach the connector (TO GNE0 J26) to the J26 connector on Genine 0.
- Attach the connector (AL SFTY CCT) to connector (TO BKHD-R ADPT) on cable 10-4900A.
- Route the other end of the cable along the cable track to the right-side frame bulkhead. See Fig.3.3-1 and Fig.3.3-2.

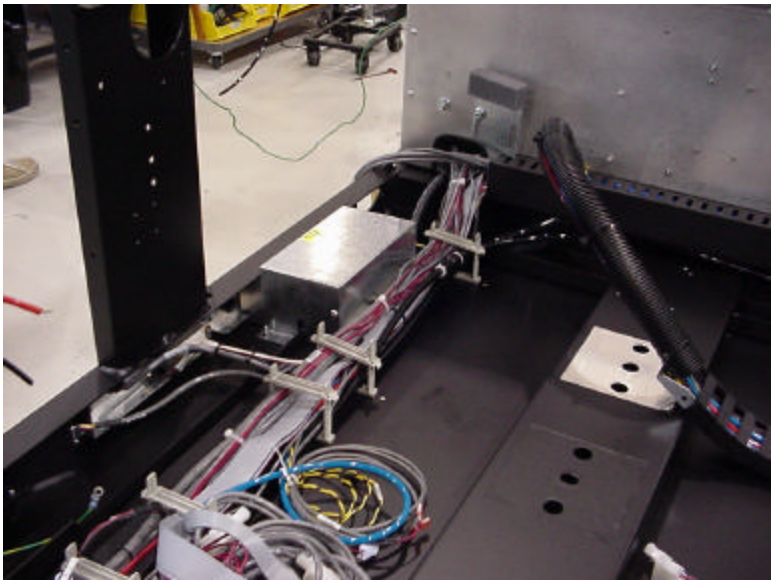


Fig. 3.3-1

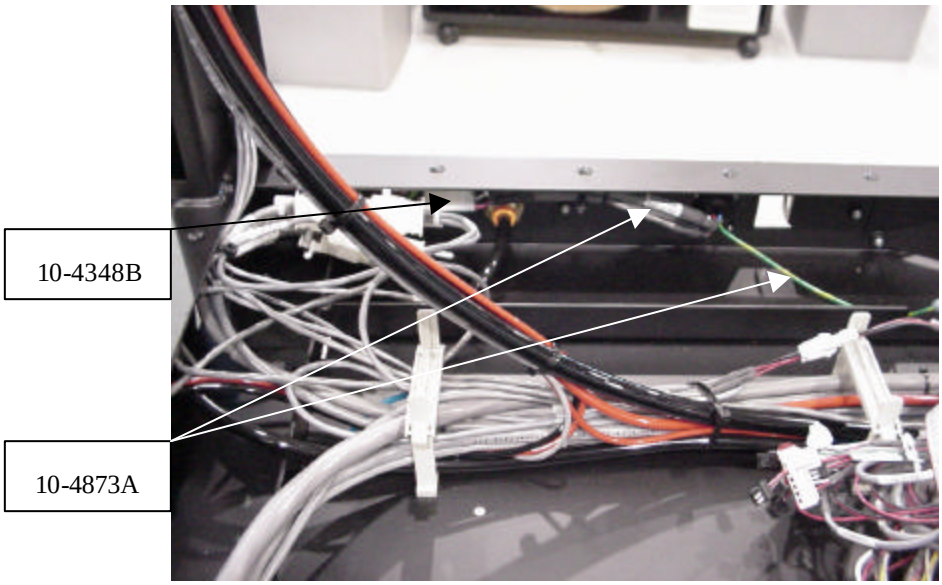


Fig. 3.3-2

- Leave the connector (TO BKHD-R) loose for now. It will be connected to either 10-4873A or 10-4874A later.
- Do not tie wrap the cable until ALL cables have been installed.

4. Install cable 10-4900A into the rear cable tray of the TS. See Fig.3.4-1.

- Locate the unused ends of cables 10-4346C at the left bulkhead and 10-4348B at the right bulkhead. Attach the connector (TO BKHD-R ADPT) to 10-4348B, and attach the connector (TO BKHD-L ADPT) to 10-4346C.
- Route the rest of cable 10-4900A into the lower right corner of the power box.

- The connector (CONV/DPLEAF) will be attached to cable 10-4914A later.
- The connector (AL SFTY GDRL) will be attached to cable 10-4468C later.

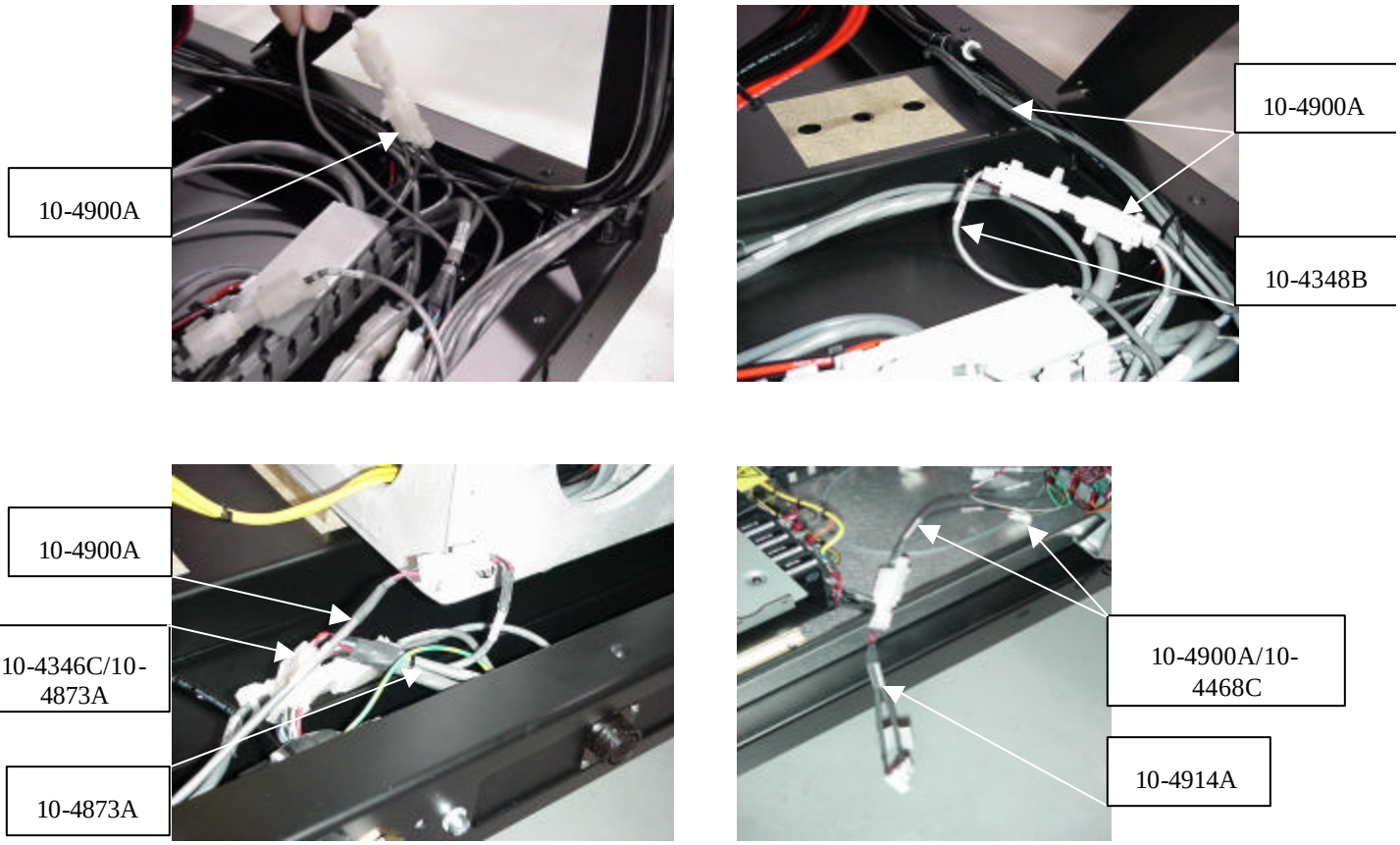


Fig. 3.4-1

5. Install cable 10-4914A into the power box of the TS. See Fig.3.4-1.
   - Attach the connector (CONV/DPLEAF) to connector (CONV/DPLEAF) on cable 10-4900A.
   - Route the other two connectors up to the table drop leaf, and attach them to cable 10-4355A that was installed with the new table assembly.

6. Install cable 10-4681A from the p-door to the power box. See Fig.3.2-1 and Fig.3.6-1
   - Insert the cable into the power box, through the opening in the lower right corner. Route it under the card cage and up to Genine 0.
   - Attach the connector (TO GNE0 J20) to the J20 connector on Genine 0.

- Route the other end of the cable along the cable track, for a short distance, and then up the frame/strut to the p-door. The connectors will attach to the y-axis home and away sensors after the new hood is installed.
- Do not tie wrap the cable until ALL cables have been installed.

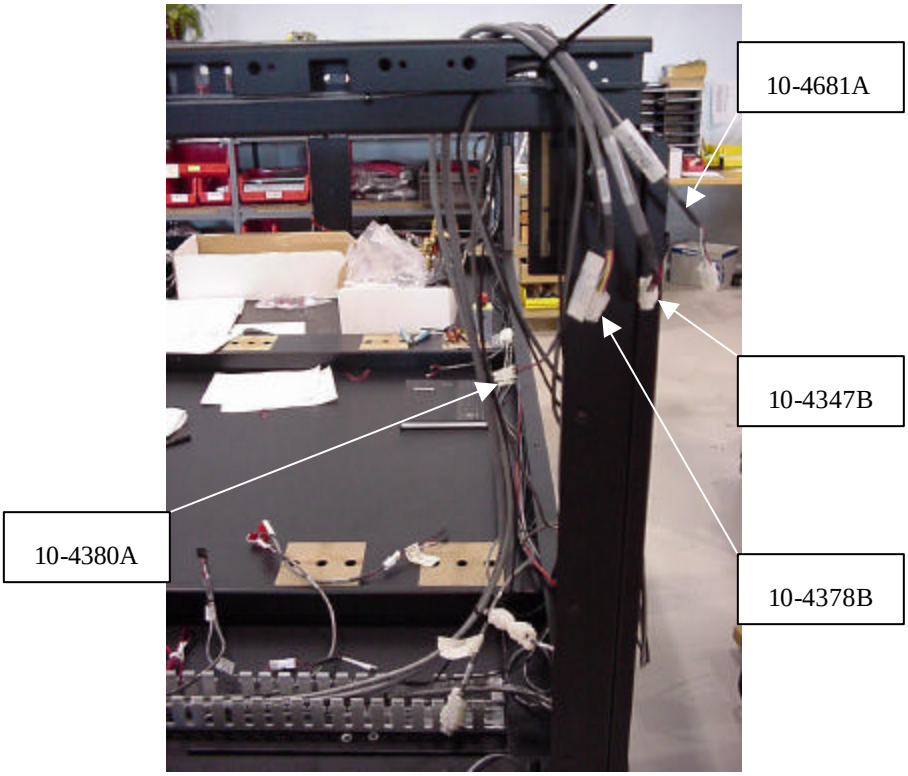


Fig. 3.6-1

7. Install cable 10-4347B from the p-door to the power box. See Fig.3.2-1 and Fig.3.6-1.
   - Insert the cable into the power box, through the opening in the lower right corner. Route it under the card cage and up to Genine 0.
   - Attach the connector (TO GNE0 J25) to the J25 connector on Genine 0.
   - Route the other end of the cable along the cable track, for a short distance, and then up the frame and hood strut to the p-door.
   - The connector will attach to the y-axis drive motor after the new hood is installed.
   - Do not tie wrap the cable until ALL cables have been installed.

8. Install cable 10-4343B from the actuator manifold to the power box. See Fig.3.2-1 and Fig.3.7-1.

   - Insert the cable into the power box, through the opening in the lower right corner. Route it under the card cage and up to Genine 0.
   - Attach the connector (TO GNE0 J18) to the J18 connector on Genine 0.
   - The connector (GATE LOCK) will be attached to cable 10-4468C later.
   - Route the other ends of the cable along the cable track, for a short distance, and then up the frame to the air manifold behind the counterweight.
   - Attach the connectors (Y-AXIS GRIPPER, TABLE CUP VAC, and TABLE CUP BLOW) to the appropriate manifold actuators. Note: there is a 4th connector that is not labeled and is not used.
   - Do not tie wrap the cable until ALL cables have been installed

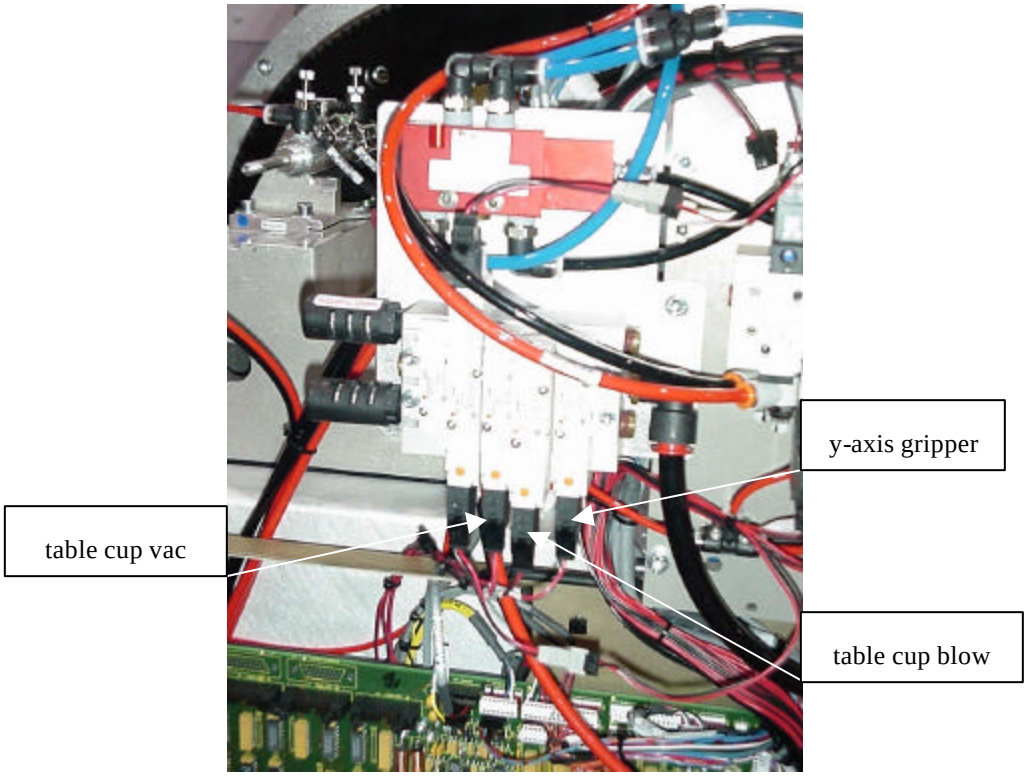


Fig. 3.8-1

9. Install cable 10-4453B and relay 15-3359 into the power box. See Fig.3.2-1, Fig.3.9-1 and Fig.3.9-2.

   - Relay 15-3359 must be mounted to the Safety Interlock Override keyswitch panel, just to the left of the Relay Delay Control board 10-4827A that is mounted on the back of the panel.

- There may be two studs on the back of the SIO panel for mounting this relay, but if not, drill two holes for mounting the relay.
- Attach the connector (TO GNE0 J1) on cable 10-4453B to the J1 connector on Genine 0.
- Attach the quick-connect terminals (TO RELAY 1,6) to terminals 1 (red) and 6 (black) on the relay.
- Do not tie wrap the cable until ALL cables have been installed.

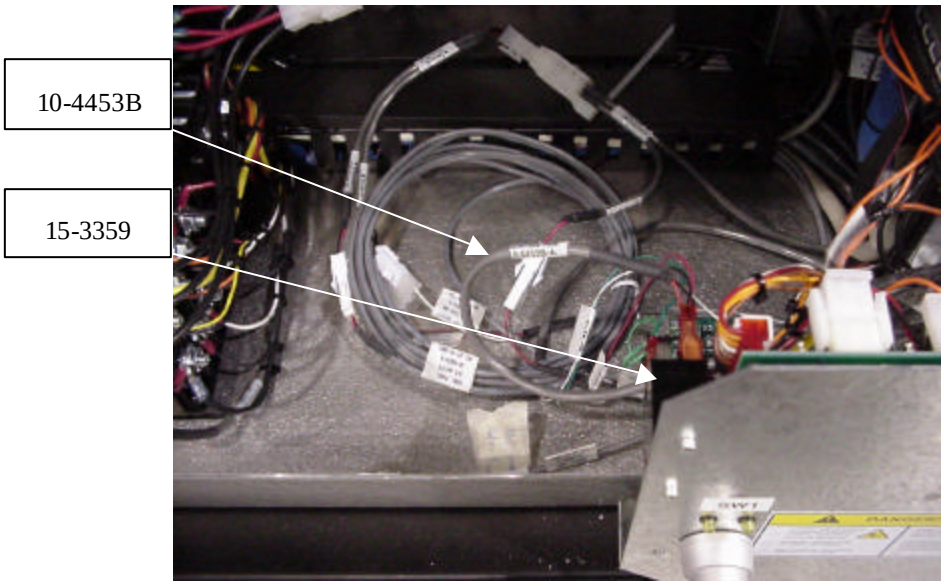


Fig. 3.9-1

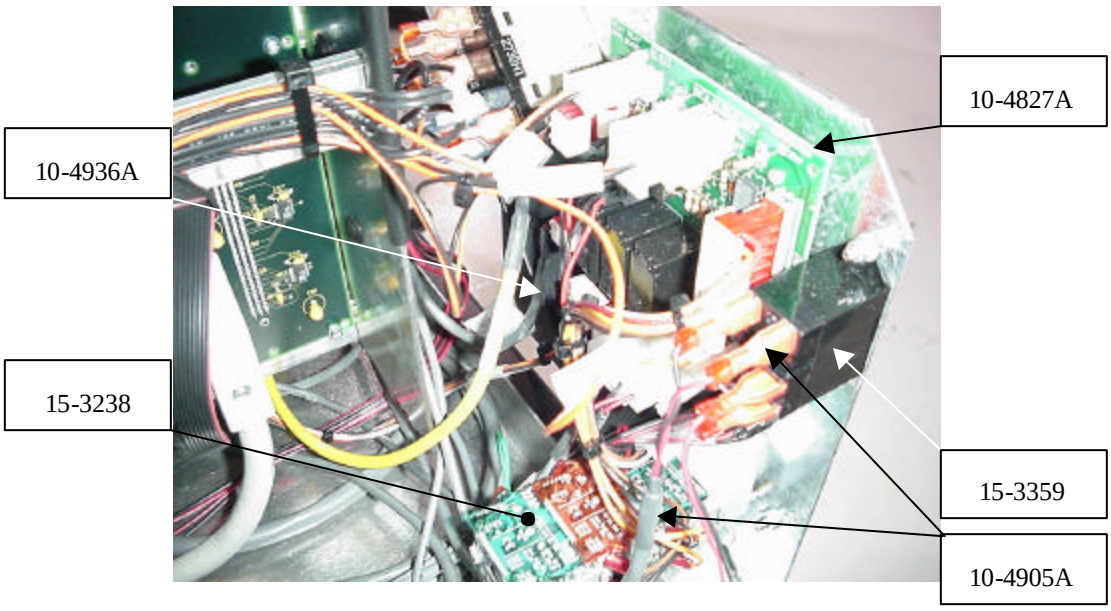


Fig. 3.9-2

10. Install cable 10-4451A from the Engine Satellite Electronics (ESE) board to the power box. See Fig.3.10-1, Fig.3.10-2 and Fig.3.3-1.

- Insert the cable into the power box, through the opening in the lower right corner. Route it under the card cage and up to the guard-rail bulkhead plate (where the user interface panel used to be).
- Attach the connector (TO GRDRAIL) to the guard-rail bulkhead plate. A cable from the guard rail assembly will be connected after the guard rail is installed.
- Route the other end of the cable along the cable track to the ESE board, behind the counterweight.
- Attach the connector (TO ESE J1) to the J1 connector on the ESE board. Remove the blue ribbon cable 10-3537A from the J1 connector first.
- The third connector (TO TRACK_ LTS) will attach to cable 10-4380A after it is installed.
- Do not tie wrap the cable until ALL cables have been installed.

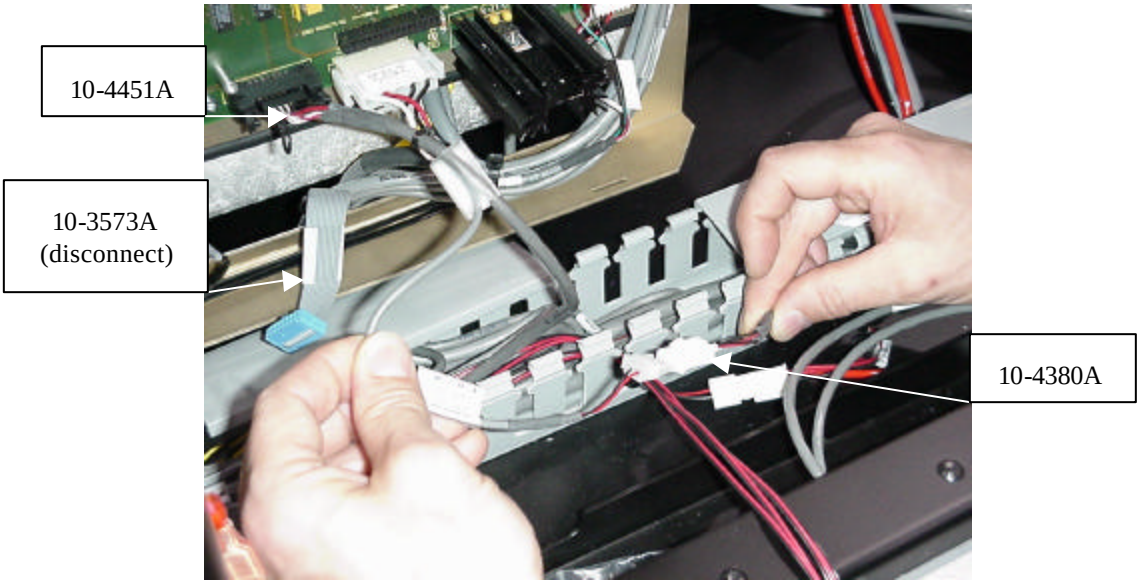


Fig. 3.10-1

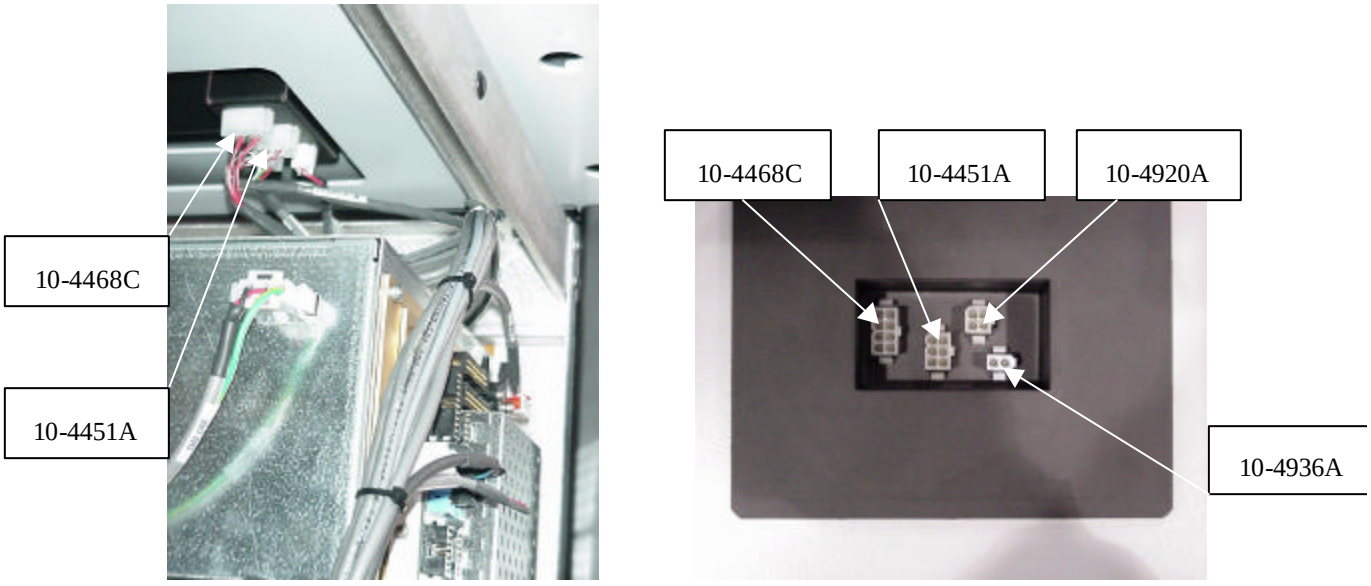


Fig. 3.10-2

11. Install cable 10-4468C inside the power box. See Fig.3.2-1, Fig.3.4-1, Fig.3.10-2, Fig.3.11-1 and Fig.3.11-2.

    - Attach the connector (TO BKHD) to the guard-rail bulkhead plate (where the user interface panel used to be). A cable from the guard rail assembly will be attached after the guard rail is installed.
    - Route the other end of the cable down to Genine 0.
    - Attach the 8 pin connector (TO GNE0 MANF) to cable 10-4343B.
    - Attach the 14 pin connector (TO GNE0 J10) to one end (TO 10-4468C) of the 220-00335A (10-4468C-GNE0) slipsheet sensor adapter cable. Attach the other end of the 220-00335A (TO PDE_J10) to the J10 connector on Genine 0.
    - Route the connector (TO AL SAFETY) down to the power box floor and attach it to connector (AL SFTY GDRL) on cable 10-4900A.
    - The connector (PLATE SSSENS) attaches to cable 10-4886A from the new table assembly.
    - Do not tie wrap the cable until ALL cables have been installed.

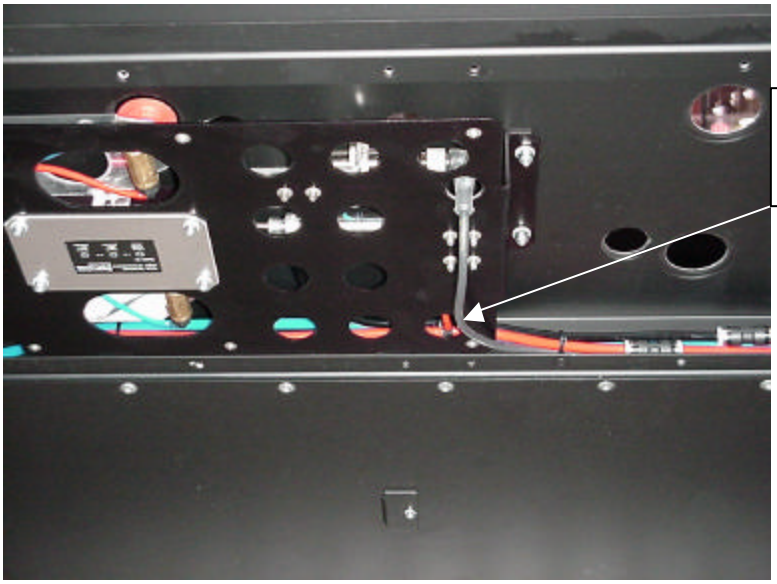


Fig. 3.11-1

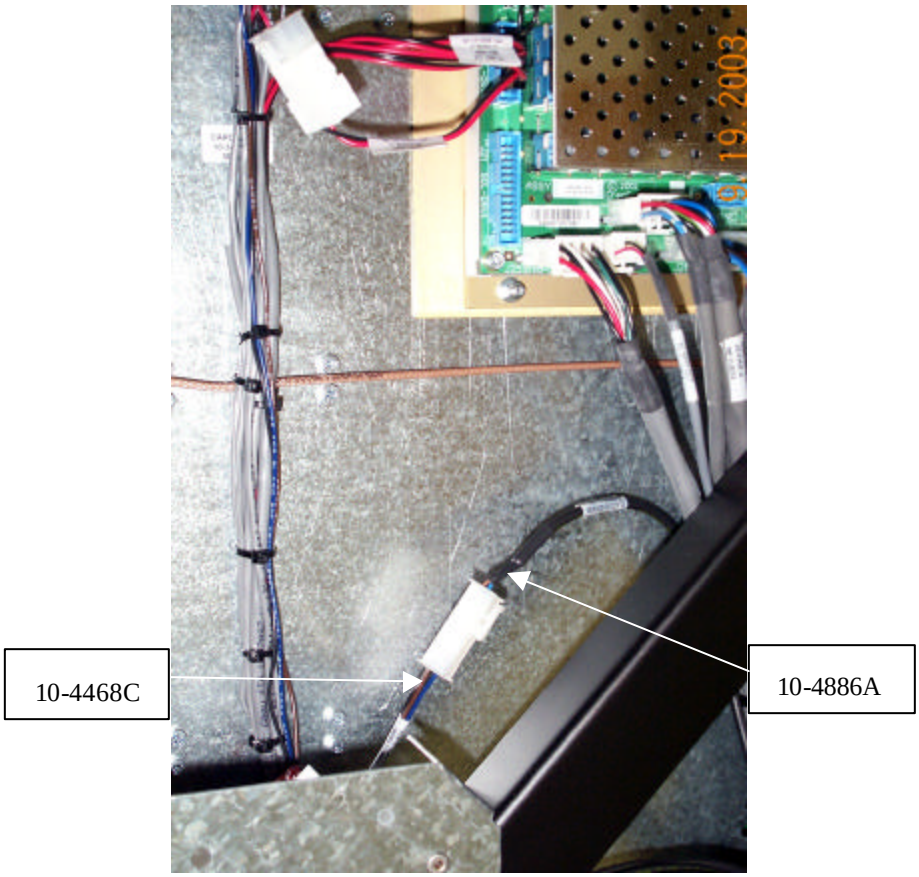


Fig. 3.11-2

12. Install cable 10-4449B inside the power box. See Fig.3.2-1 and Fig.3.12-1.

- Attach the connector (TO RTSBRD J4) to the J4 connector on the Registration Table Safety Electronics board that is mounted at the back of the power box.
- Attach the connector (TO GNE0 J27) to the J27 connector on Genine 0.
- Do not tie wrap the cable until ALL cables have been installed.

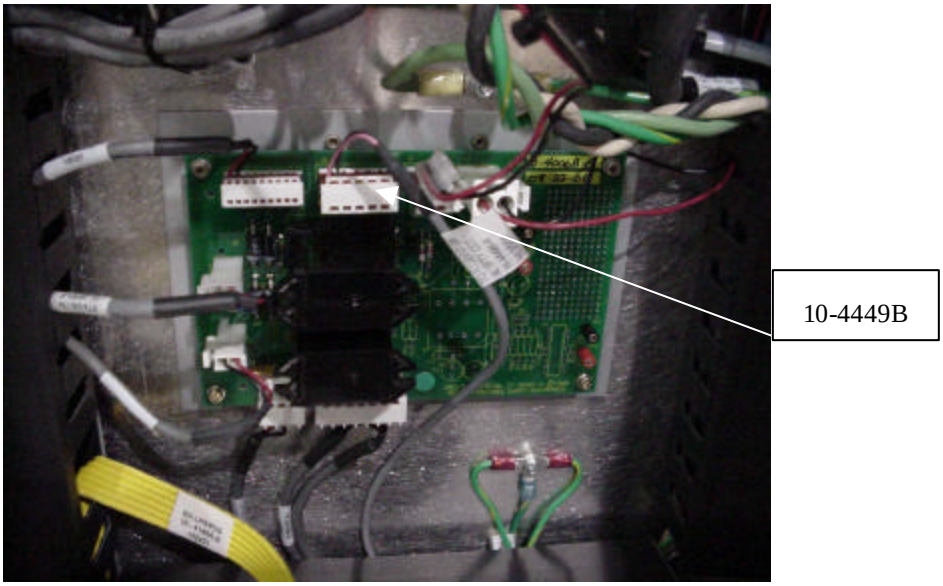


Fig. 3.12-1

13. Install serial cable 16-4344 from the frame bulkhead to the power box. See Fig.3.13-1, Fig.3.13-2, Fig.3.2-2 and Fig.3.2-3.

- Attach one of the connectors to the serial port (LASER CH2) on the Backplane board inside the power box.
- When the MCU/SCU is going to be on the right hand side of the TS, route the other end of the cable out of the lower right corner of the power box, under the card cage and along the cable tray to the 50mm hole in the lower frame rail.
- When the MCU/SCU is going to be on the left hand side of the TS, route the cable out of the lower left corner of the power box and along the front cable tray.
- Attach cable 16-4344 to cable **16-4345** (only for L-R machine) and continue routing the cable along the front cable tray and along the left frame rail to the 50mm hole. See Fig.3.1-2 and Fig.3.1-3.
- Leave the end of the serial cable loose for now. It will be connected to 10-4891A later.
- Do not tie wrap the cable until ALL cables have been installed.

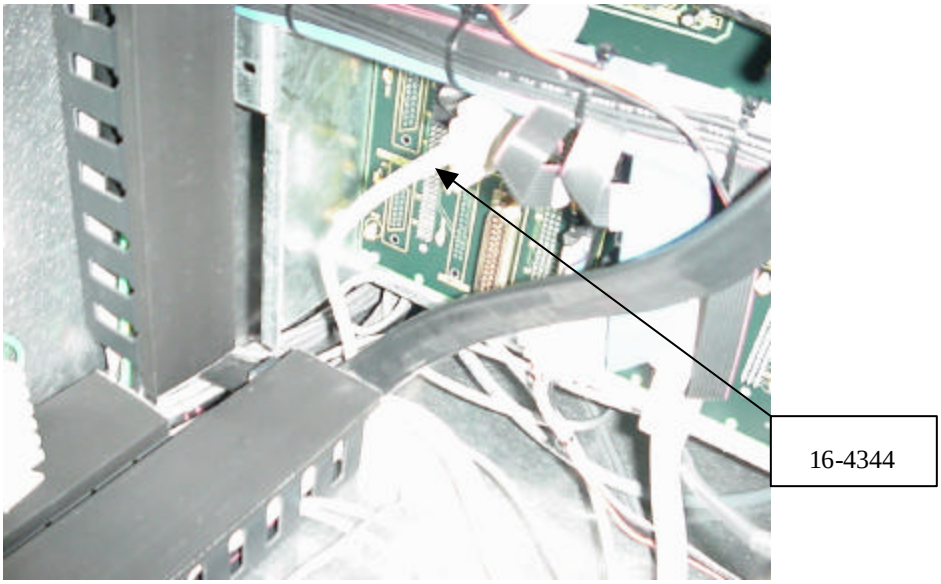


Fig. 3.13-1

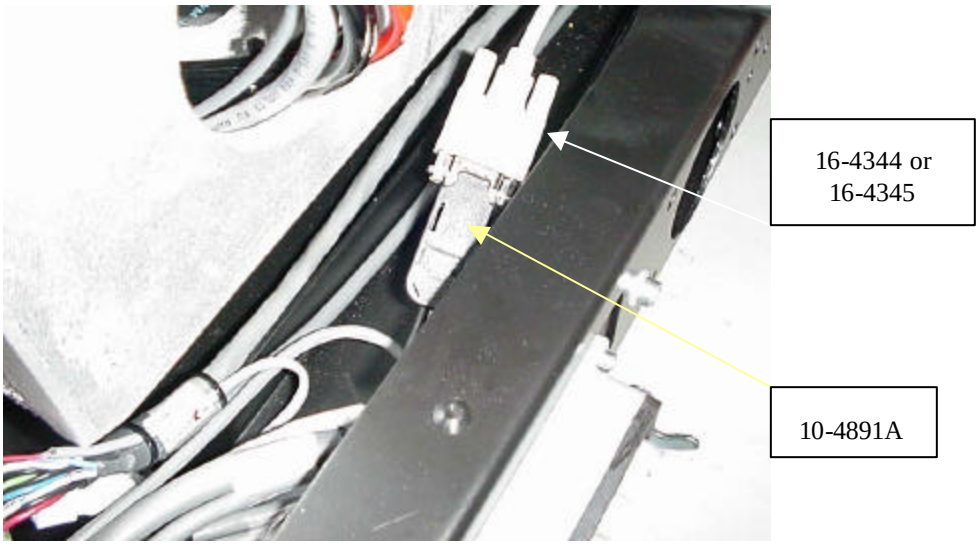


Fig. 3.13-2

14. Install cable 10-4380A from the Engine Satellite Electronics (ESE) board to both track support arms. See Fig.3.10-1 and Fig.3.6-1.

    - Attach the connector (TRK LIGHTS) to connector (TO TRACK_ LTS) on cable 10-4451A near the ESE board.
    - Route the cable along the inside rear frame rail and up both rear frame uprights.
    - **The cable will route inside each track support arm, along the track to the lights in the track skins** after they are installed.

15. Install cable 10-4378B from the lower frame bulkhead to both track support arms. See Fig.3.15-1, Fig.3.15-2 and Fig.3.6-1.

- The connector (TO BKHD) goes to the heavy-duty modular connector at either the left or right frame bulkhead, depending on machine direction. Let the bulkhead connector extend from the frame 100-150mm.
- Route the cable along the inside rear frame rail and up both rear frame uprights.
- The cable will route inside each track support arm and attach to the **x-axis home and away sensors after they are installed.**

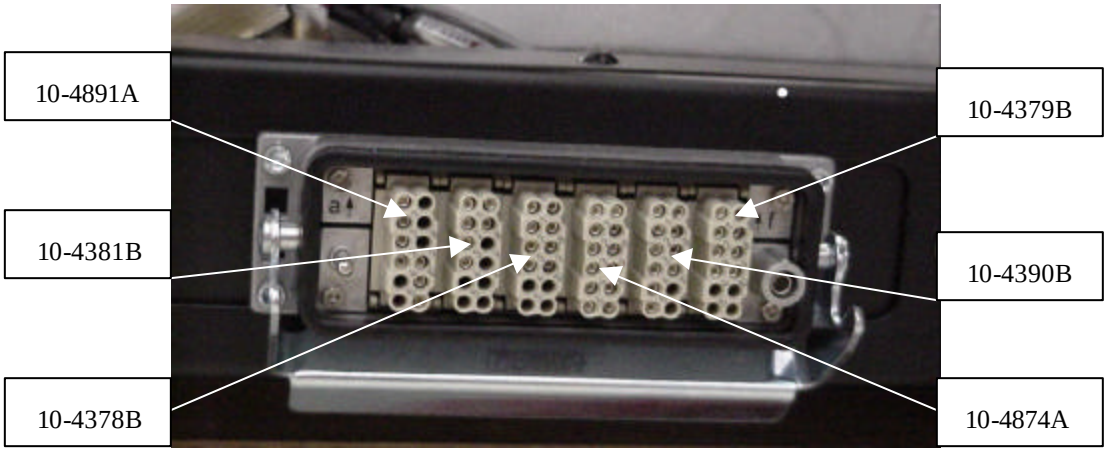


Fig. 3.15-1

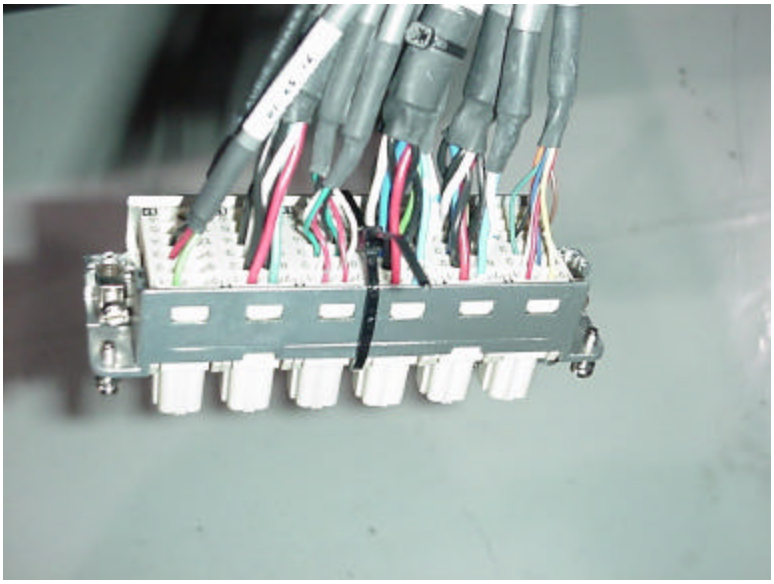


Fig. 3.15-2

16. Install cable 10-4381B from the lower frame bulkhead to the nearest track support arm. See Fig.3.15-1 and Fig.3.15-2.

    - The connector (TO BKHD) goes to the heavy-duty modular connector at either the left or right frame bulkhead, depending on machine direction. Let the bulkhead connector extend from the frame 100-150mm.
    - Route the cable along the inside frame rail and up the rear frame upright.
    - **The cable will route inside the track support arm and attach to the x-axis motor** after they are installed.

17. Install cable 10-4390B from the lower frame bulkhead to the nearest track support arm. See Fig.3.15-1 and Fig.3.15-2.

- The connector (TO BKHD) goes to the heavy-duty modular connector at either the left or right frame bulkhead, depending on machine direction. Let the bulkhead connector extend from the frame 100-150mm.
- Route the cable along the inside frame rail and up the rear frame upright.
- **The cable will route inside the track support arm and attach to the track cable** after they are installed.

18. Install cable 10-4379B from the lower frame bulkhead to the nearest track support arm. See Fig.3.15-1 and Fig.3.15-2.

    - The connector (TO BKHD) goes to the heavy-duty modular connector at either the left or right frame bulkhead, depending on machine direction. Let the bulkhead connector extend from the frame 100-150mm.
    - Route the cable along the inside frame rail and up the rear frame upright.
    - **The cable will route inside the track support arm and attach to the x-axis safe home and safe away sensors** after they are installed.

19. Attach the two bulkhead brackets 57-7409C (MCU/SCU side) and 57-8757A (conveyor side) to the lower frame rails as shown in Fig.3.19-1 and Fig.3.19-2.

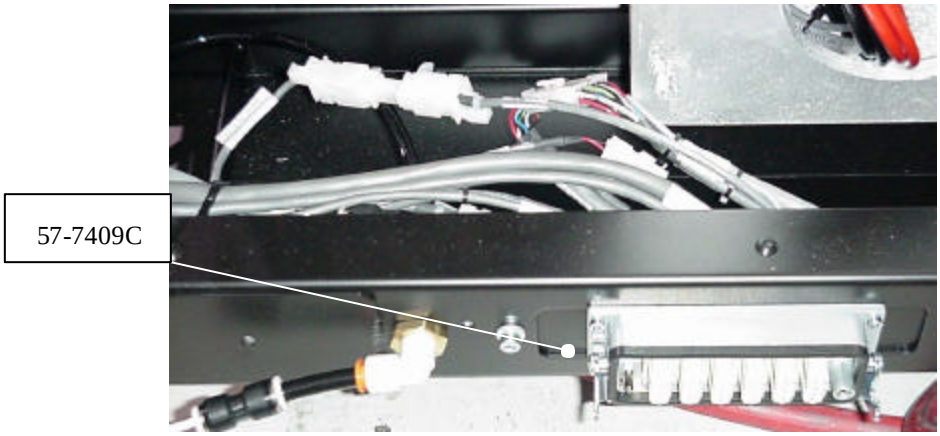


Fig. 3.19-1

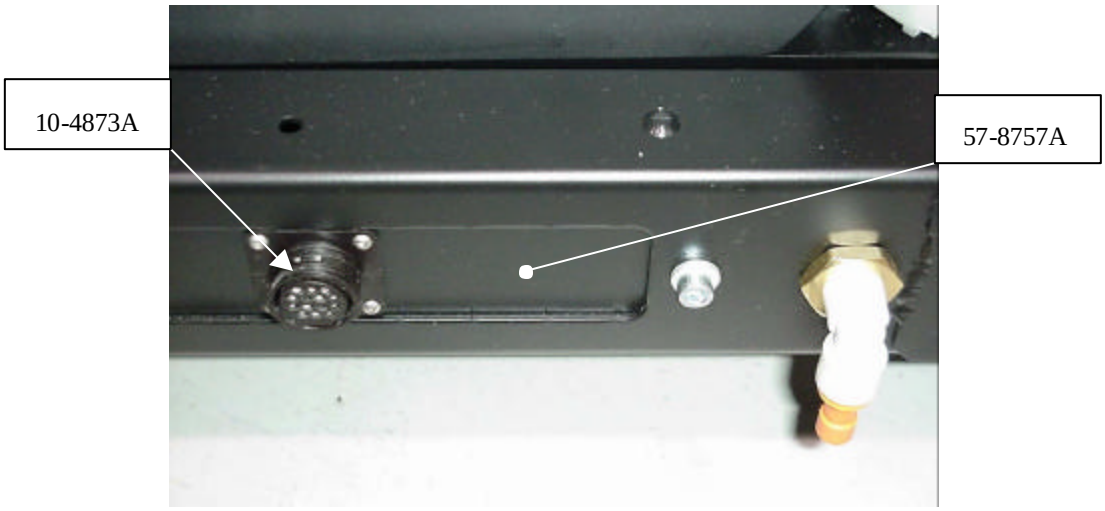


Fig. 3.19-2

20. Install cable 10-4873A to the lower frame bulkhead. See Fig.3.19-2 and Fig.3.3-2.

- Attach the connector (TO BULKHEAD RIGHT OR LEFT) to the bulkhead bracket 57-8757A.
- Attach the connector (TO CANBUS) to either connector (TO BKHD-L) on cable 10-4346C or to connector (TO BKHD-R) on cable 10-4348B, whichever is present on that side of the TS. See Fig.3.3-2 and Fig.3.4-1
- Attach the ground lug to the TS frame on the conveyor side or to the engine casting on the MCU/SCU side.

21. Install cable 10-4874A to the lower frame bulkhead. See Fig.3.15-1 and Fig.3.15-2.

- The connector (TO BKHD MCU SIDE) goes to the heavy-duty modular connector at either the left or right frame bulkhead, depending on machine direction.
- Attach the connector (TO CANBUS) to either connector (TO BKHD-L) on cable 10-4346C or to connector (TO BKHD-R) on cable 10-4348B, whichever is present on that side of the TS.

22. Install cable 10-4905A and contact block 15-3238. See Fig.3.9-2 and Fig.3.22-1.

- Snap the contact block 15-3238 onto the back of the existing pair of contact blocks on the SIO keyswitch.
- Attach the connectors (TO J29) and (TO J30) to J29 and J30 on the ESE board.
- Route the cable 10-4905A into the lower-right corner of the power box, under the card cage.
- Attach the two quick-connect terminals to the relay on the back of the SIO panel, on terminals 2 and 3.
- Attach the four fork terminals to the new contact block: the two white wires go to terminals 13 and 23; and the two green wires go to terminals 14 and 24.
- The remaining 2-pin connector (TABL SOL) connects to cable 10-4906A later.

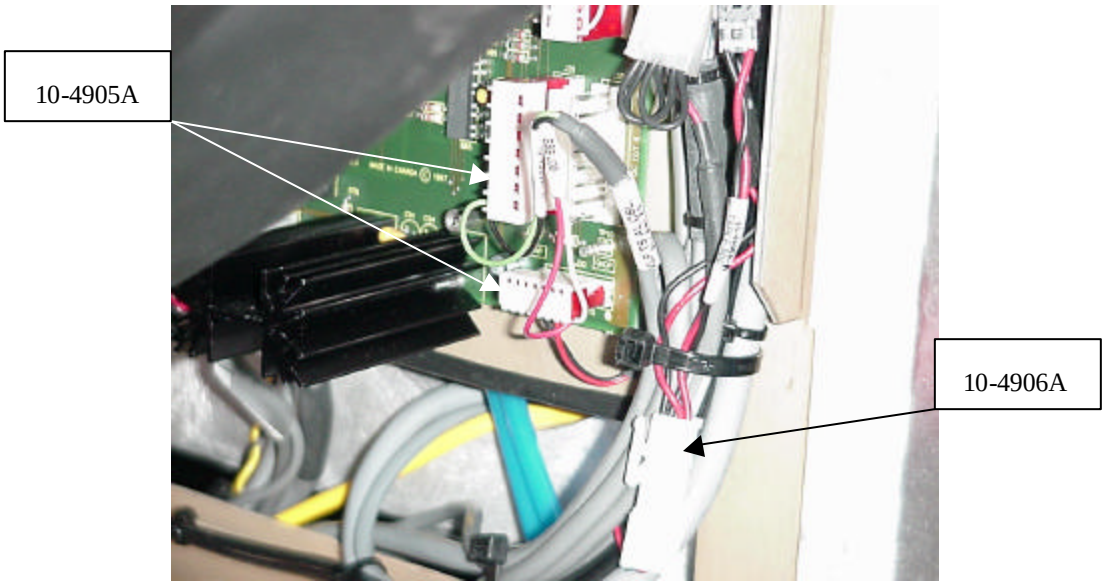


Fig. 3.22-1

23. Install cable 10-4906A. See Fig.3.22-1.

- Disconnect cable 10-4010A from cable 10-4319A (the pair of 3-pin black connectors near the right side of the ESE board). Attach cable 10-4906A to 10-4010A and 10-4319A
- Attach the 2-pin connector to connector (TABL SOL) on cable 10-4905A.

24. If not already present in the power box, install cable 10-4936A into the power box. See Fig.3.9-2 and Fig.3.10-2.

- Attach the connector (TO RDC(J4)) to connector J4 on the Relay Delay Control board 10-4827A mounted on the back of the SIO keyswitch panel.
- Route the cable up to the guard-rail bulkhead plate.
- Attach the connector (TO UI/ESTOP SW) to the guard-rail bulkhead plate. A cable from the guard rail assembly will be connected after the guard rail is installed.

25. Install cable 10-4897A into the rear cable tray of the TSV. See Fig.3.25-1.

- First, if not already done, snap the two segments of this cable together.
- Route the connector (BACK L/SIDE) to the left side of the TSV and route the connector (BACK R/SIDE) to the right side of the TSV.
- Attach the two fork terminals to terminals 21 and 22 on the emergency-stop switch at the back of the TSV.

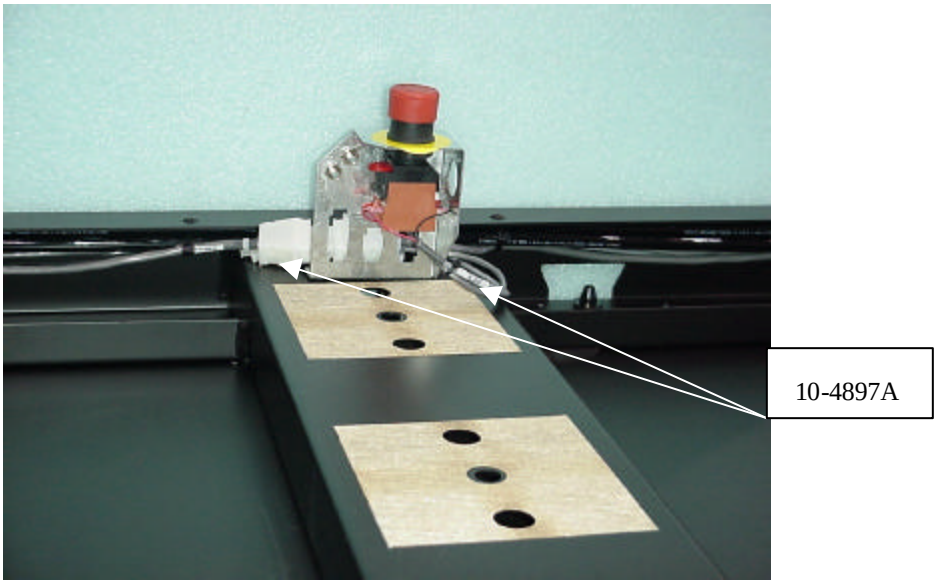


Fig. 3.25-1

26. Install cable 10-4920A to the right side of the TSV. See Fig.3.10-2 and Fig.3.26-1.

- Attach the connector (TO BACK RIGHT) to connector (BACK R/SIDE) on cable 10-4897A.
- Route the connector (TO GDRL BLKHD) to the guard-rail bulkhead plate.
- Attach the connector (TO GDRL BLKHD) to the guard-rail bulkhead plate. A cable from the guard rail assembly will be connected after the guard rail is installed.

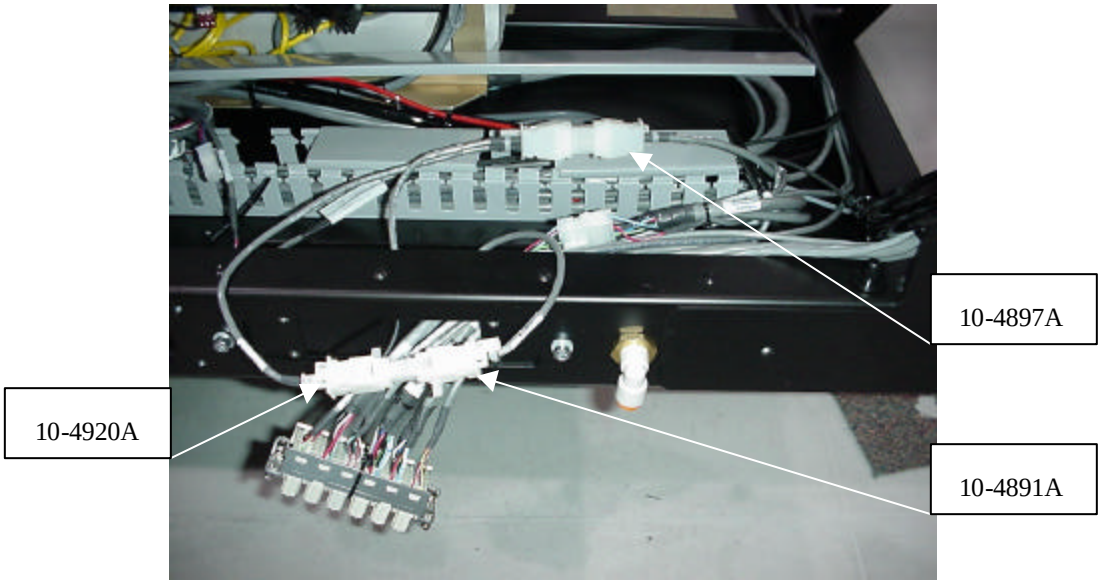


Fig. 3.26-1

27. Install cable 10-4921B to the left side of the TSV. See Fig.3.27-1.

- Attach the connector (TO BACK LEFT) to connector (BACK L/SIDE) on cable 10-4897A.
- Route the connector (TO ABORT SW) to the top left front corner of the TS.

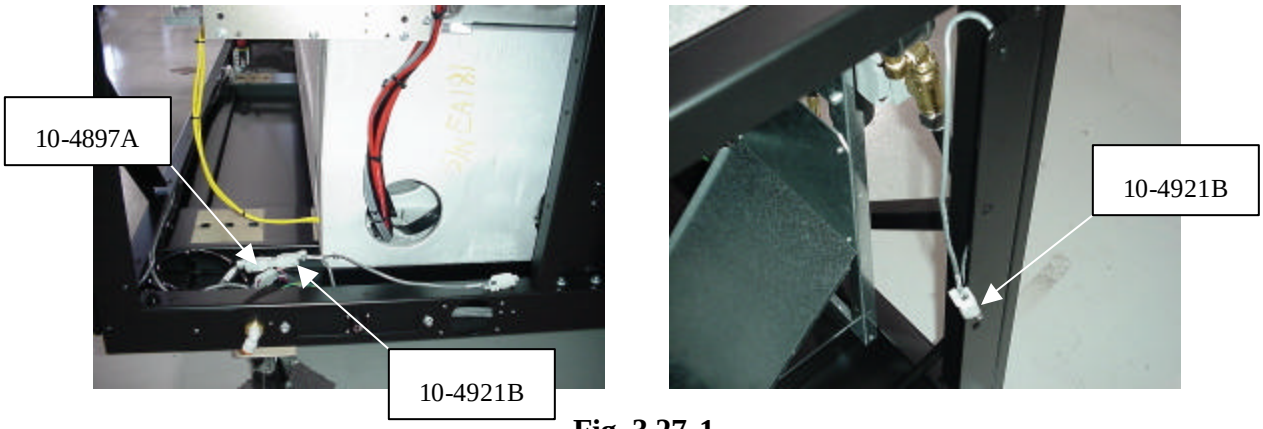


Fig. 3.27-1

28. Install cable 10-4891A at the MCU/SCU side of the TSV. See Fig.3.13-2 and Fig.3.15-1.

- The connector (TO BULKHEAD) goes to the heavy-duty modular connector at the bulkhead.
- Attach the connector (TO L/R SIDE) to connector (TO BKHD ATMNT) on either cable 10-4920A or 10-4921B, whichever is present on that side of the TS.
- Attach the remaining connector to the serial cable 16-4345.

29. Install the e-stop loop jumper 10-4993A. See Fig.3.29-1

- The jumper always goes on the conveyor side, so for a R-L machine, the jumper will connect to cable 10-4921B on the left side of the TS, and for a L-R machine, the jumper will connect to cable 10-4920A on the right side of the TS.

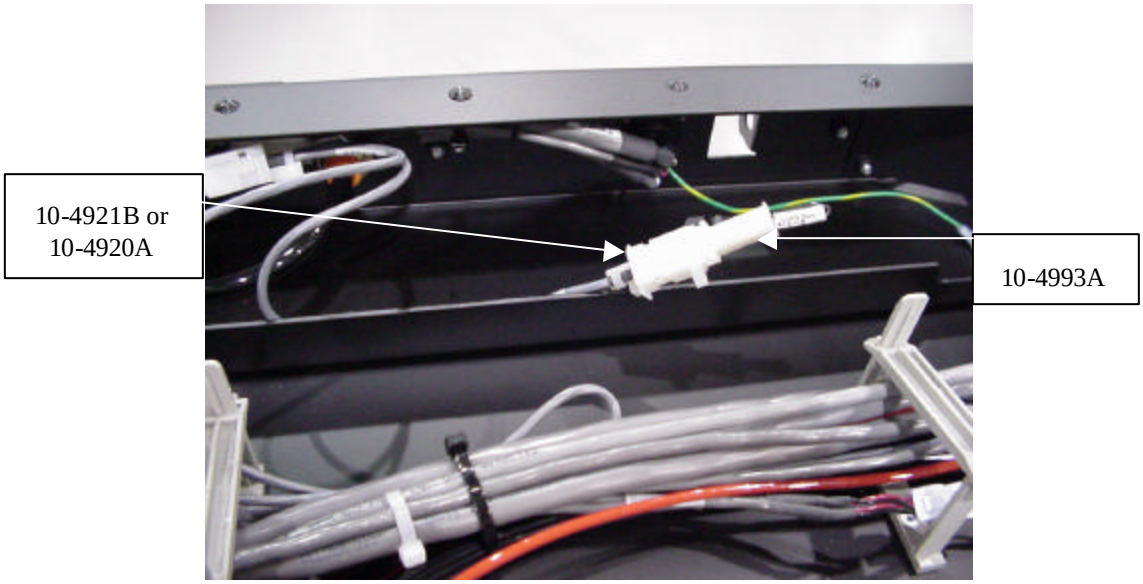


Fig.3.29-1

30. Install the External Alarm cables and hardware. See Fig.3.30-1 and Fig.3.22-1

- Locate cable 10-4905A-B at the bottom-right corner of the ESE board.
- Check the connector bulkhead on the TS below the ESE board. There will be a large round hole, about 66mm in diameter. If there is a cable mounted in this hole, the external alarm assembly will be mounted in the bulkhead on the opposite side (left side) of the TS. If there is no cable mounted in this hole, the external alarm assembly will be mounted here.
- Mount the two relays 15-3359 at the holes at the bottom-right corner of the ESE board mounting plate using screws 52-3024.
- Attach all 12 terminals on the External Alarm cable 10-4983A-A to the two relays. The terminals labeled with an “A” all connect to one relay, and the

terminals labeled with a "B" all connect to the other relay. The terminal numbers are marked on the relay body. Ensure that the terminals are pushed all the way onto the relays or they may come off.

- Mount the d-sub (9-pin) connector onto the bracket 57-7614A using the spacers/screwlocks 52-3101.
- **USE LOCTITE 222 TO SECURE THE NUTS.**
- If the ext. alarm will be mounted on the ESE board side, External Alarm Extension cable 10-4984A-A is not used. If the ext. alarm will be mounted on the opposite side, attach cable 10-4984A-A to the connector labeled "Ext Alarm" on cable 10-4905A-B and run it along the rear cable tray of the TS to the left-side bulkhead.
- Mount the d-sub connector bracket inside the large round hole in the TS bulkhead, using the screws 52-3263.
- Connect cable 10-4983A-A to the connector labeled "Ext Alarm" on cable 10-4905A-B or to the External Alarm Extension cable.

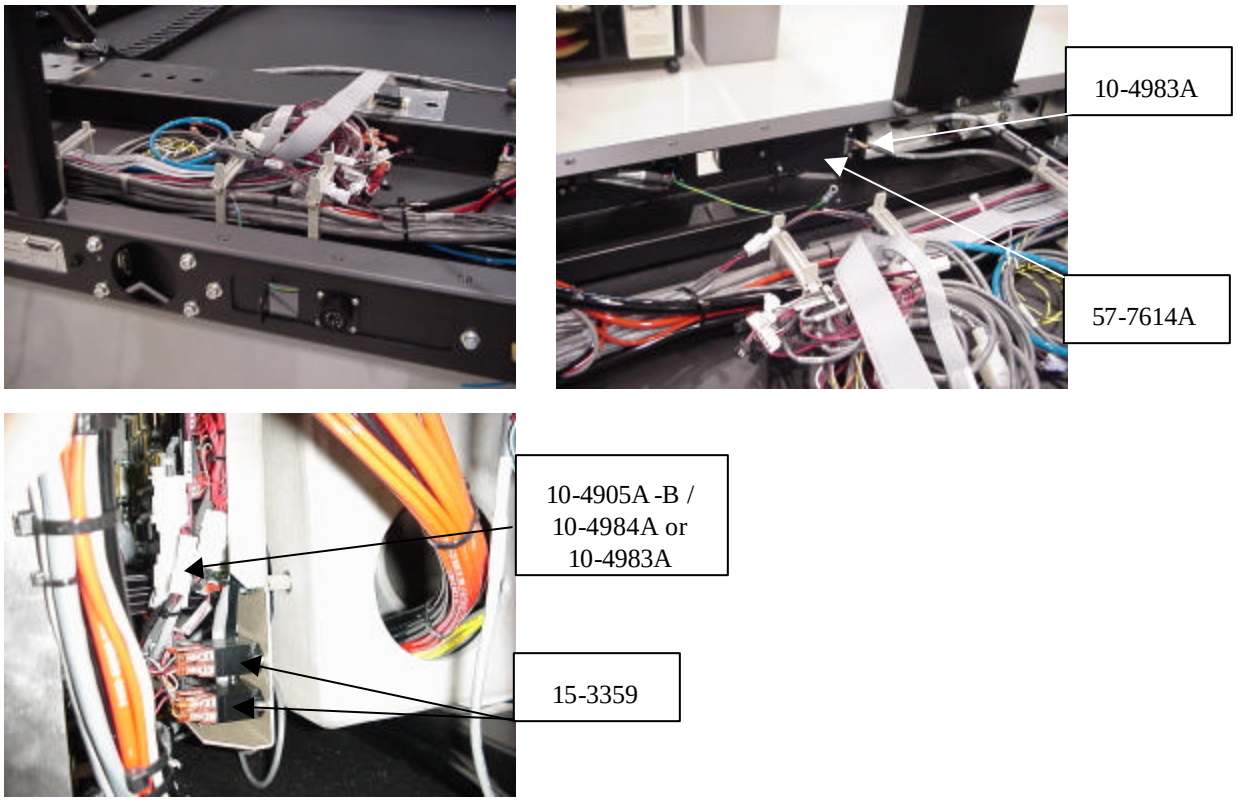
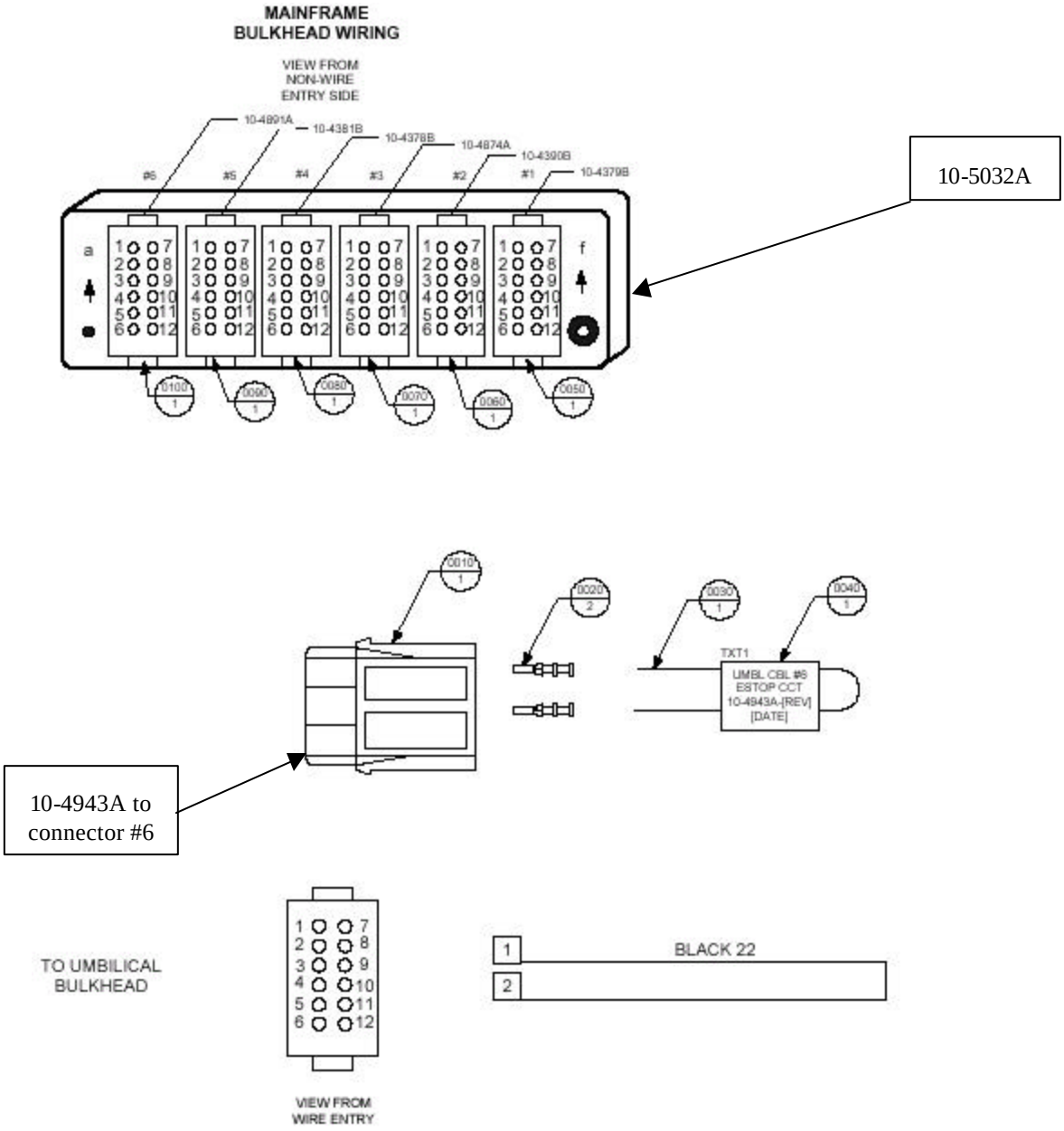


Fig.3.30-1

31. Place cable 10-4943A into the TS (<u>for start up and integration only</u>).

- 10-4943A is a jumper used to complete the TS e-stop loop when the MCU or SCU is disconnected from the TS. It will be plugged to connector #6 of the TSV,BULKHEAD,ASSY.10-5032A. In normal autoloader or manual operation, the jumper is not used. Place it inside the TS, on the MCU/SCU side, somewhere where it will be easily seen when the MCU/SCU side panel is removed.



32. Tie wrap the extended cables to the bulkhead brackets, then neatly tuck the cables away. Close all of the cable trays and tie wrap all the cables.

4. INSTALLATION OF MECHANICAL COMPONENTS

Before installing engine into mainframe:

Note: Refer to hose configuration kit 50-2042C for air tubes and fittings.

1. Assemble air pressure regulator 55-2367A and install it into filter box as shown in Fig.4.3-1.
2. Assemble air supply gauge 50-2369A and install it upstream of regulator as shown in Fig.4.3-1.
3. Connect air tubes to regulator 50-2367A as shown in dwg. 50-2042C and Fig.4.3-1.

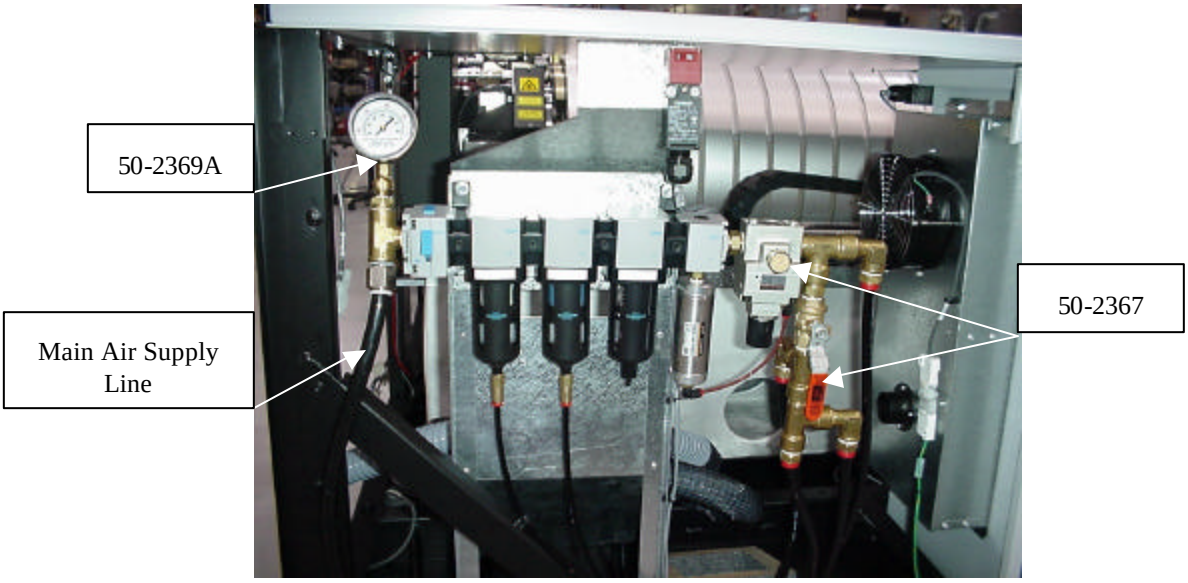


Fig. 4.3-1

4. Route air tubes towards left, front and right side of frame as shown in Fig.4.4-1, Fig.4.4-2, Fig.4.4-3 and Fig.4.4-4.

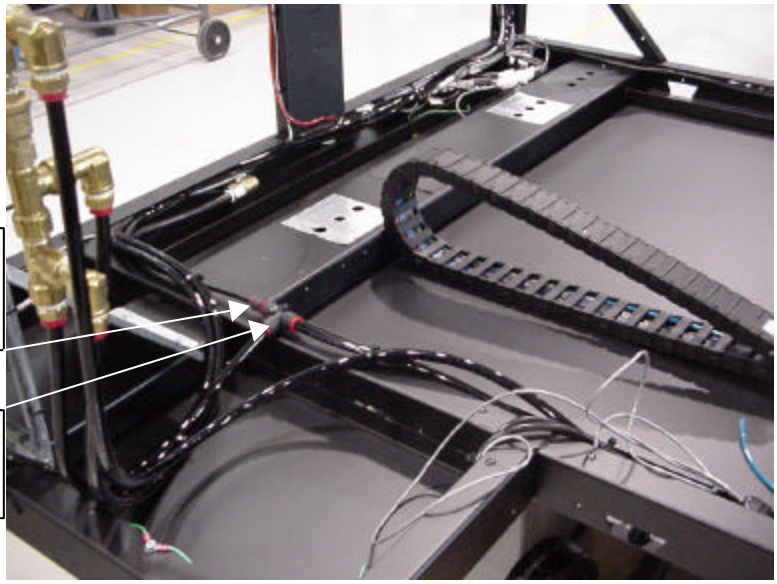


Fig. 4.4-1

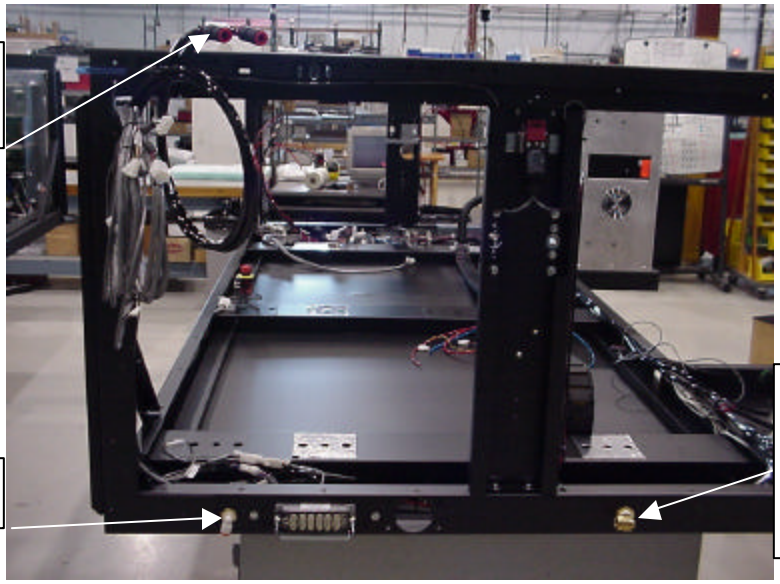


Fig. 4.4-2

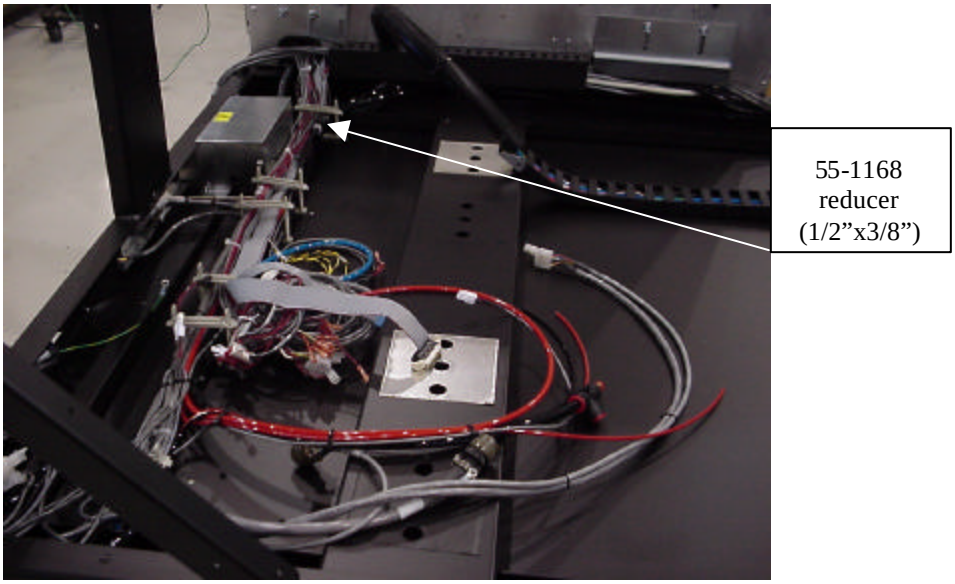


Fig. 4.4-3

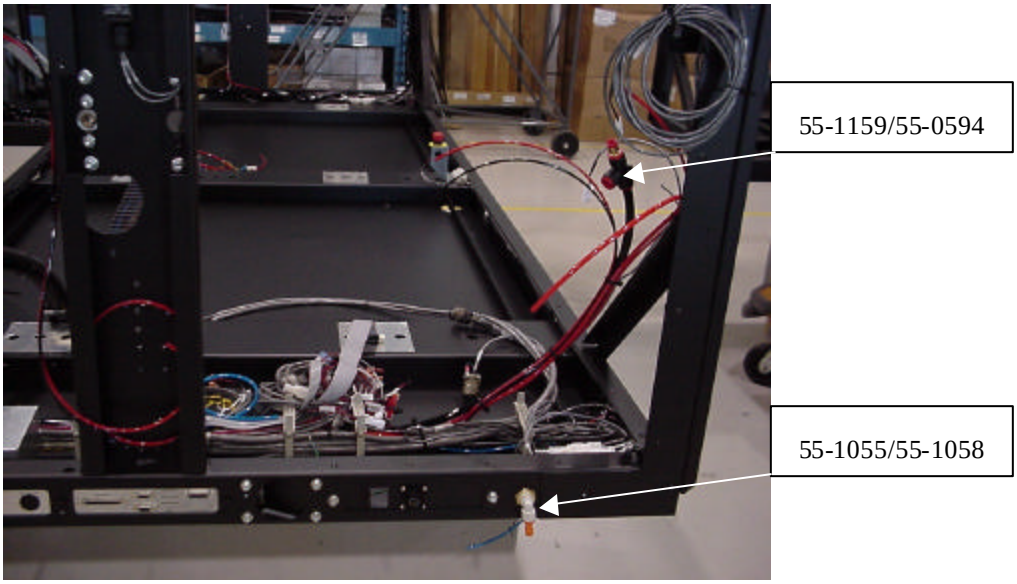


Fig. 4.4-4

After installing engine into mainframe:

Note: Refer to table valve assembly 50-1961B for air tubes and fittings.

5. Install the VAL feet (3 plcs). Refer to BOM 50-2065A for components. See Fig.4.5-1.

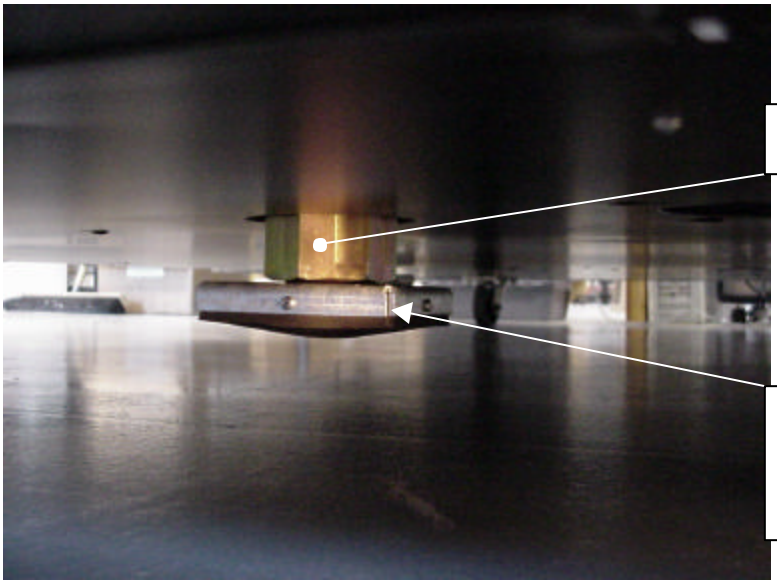


Fig. 4.5-1

6. Install table valve subassembly 50-1961B. Fasten mounting bracket to pulley side plate as shown in Fig.4.6-1 and Fig.4.6-2. Use two existing middle screws.

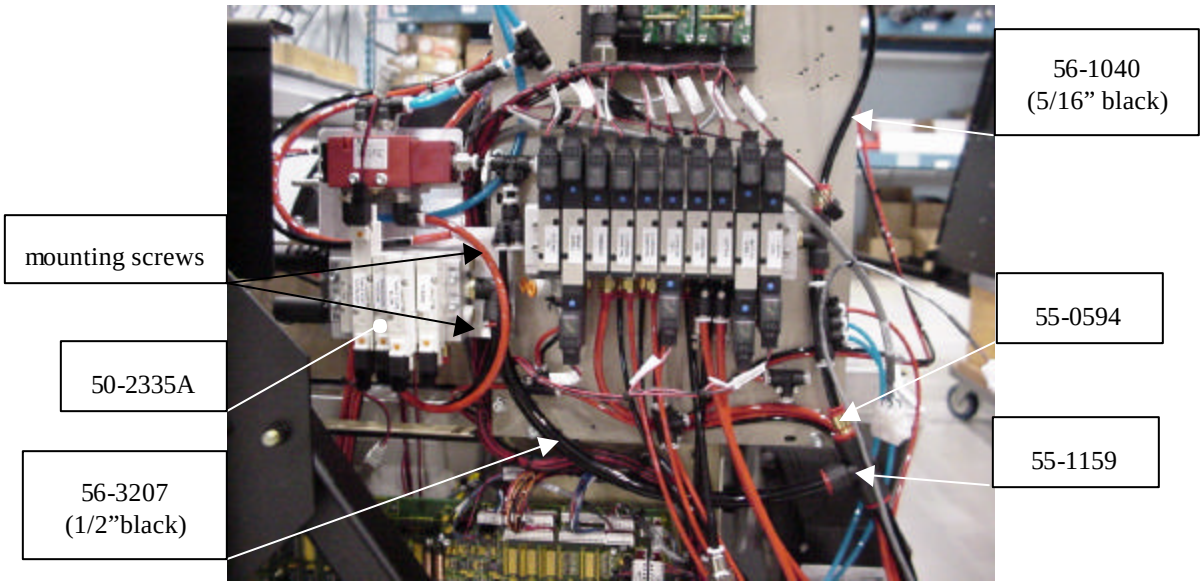


Fig. 4.6-1

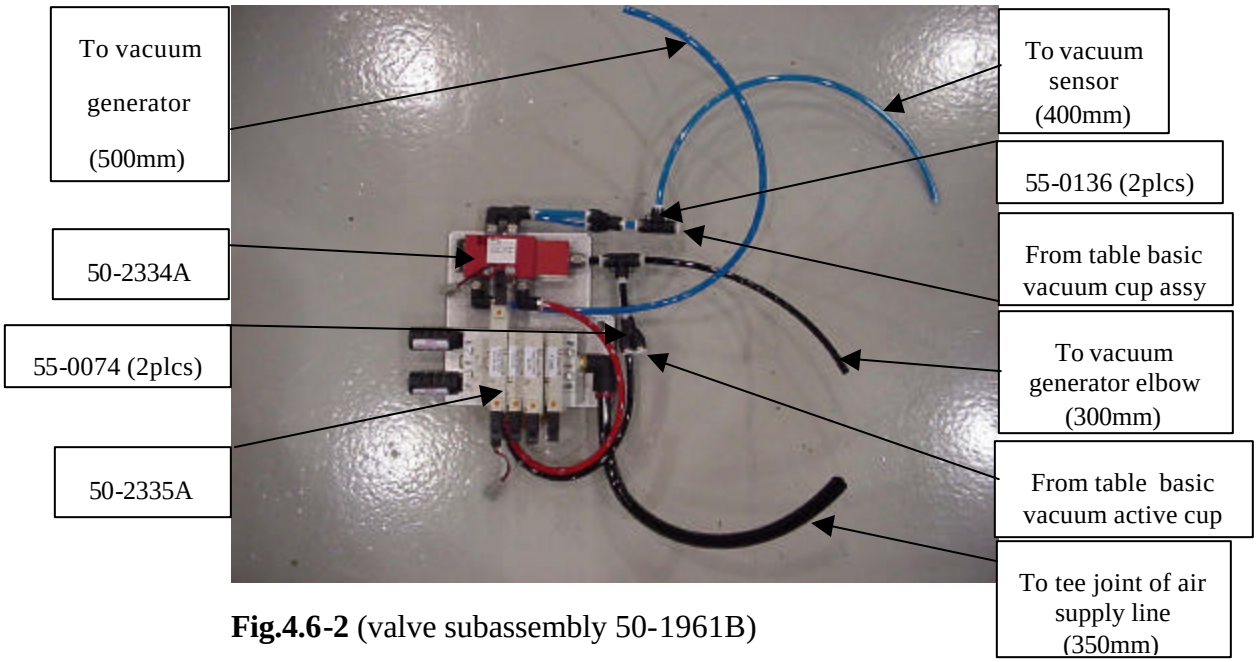


Fig.4.6-2 (valve subassembly 50-1961B)

7. Connect one outlet of Tee union 55-1159 to table manifold 50-2335A with a piece of ½"black tube 56-3207 (350mm long) and the other outlet (with adaptor 55-0594) with 5/16" black tube 56-1040 to Tee union of engine air manifold as shown in Fig.4.6-1.

8. Connect ¼" black tube 56-1048 (300mm long) from Tee union 55-0136 of the valve subassy. 50-1961 to elbow of the vacuum generator as shown in Fig.4.8-1, Fig.4.8-2 and Fig.4.6-2.

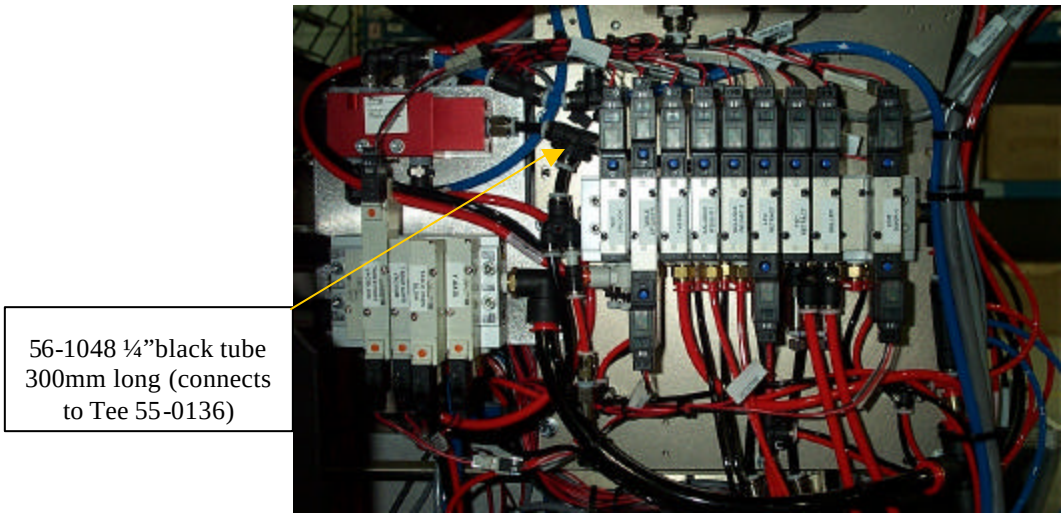


Fig. 4.8-1

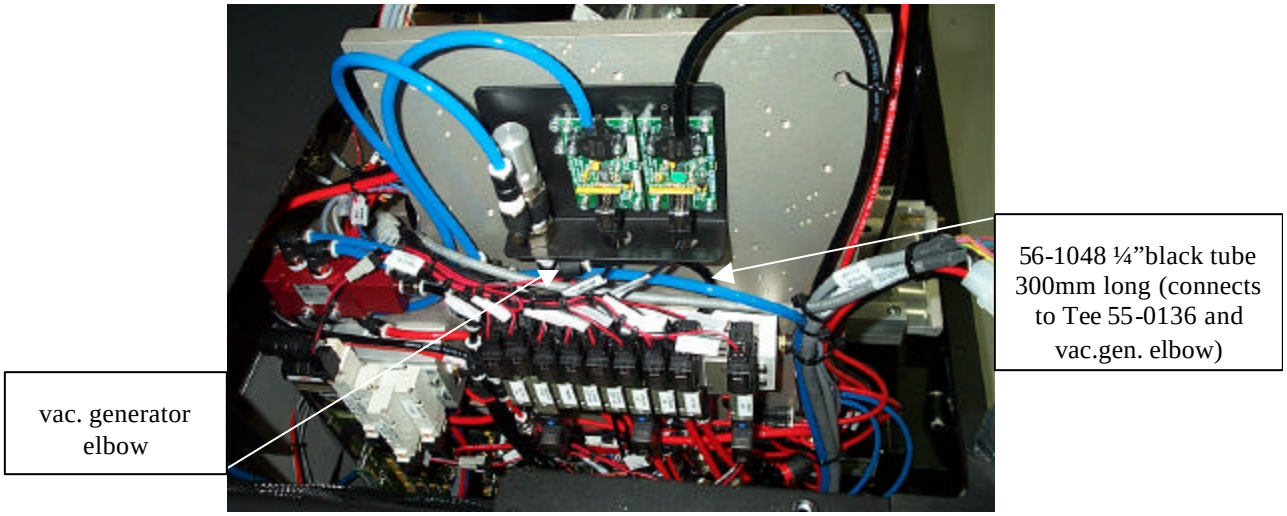


Fig. 4.8-2

9. Connect ¼" blue tube 56-1039 (500mm) between EB port elbow of pilot valve 55-0892 and table vacuum generator as shown in Fig.4.9-1.

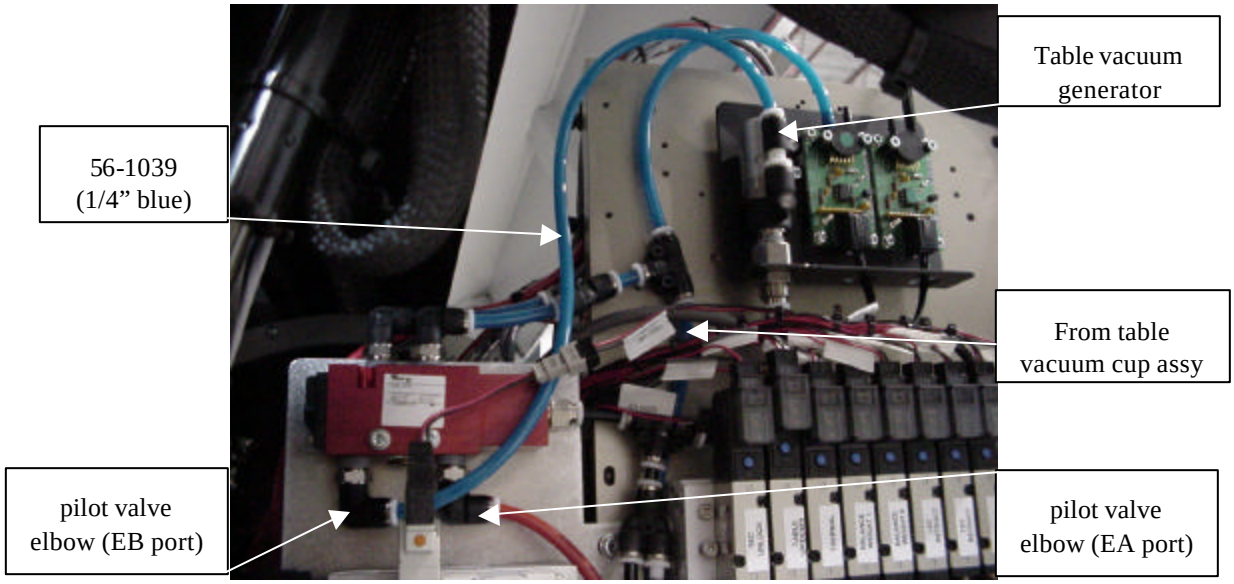


Fig. 4.9-1

10. Connect ports A and B of pilot operated valve 55-0892 through y-joint fitting 55-0074 and Tee union 55-0136 to vacuum sensor board as shown in Fig.4.10-1. Use four pieces of ¼" blue tube 56-1039 (90mm, 75mm, 40mm, 400mm).

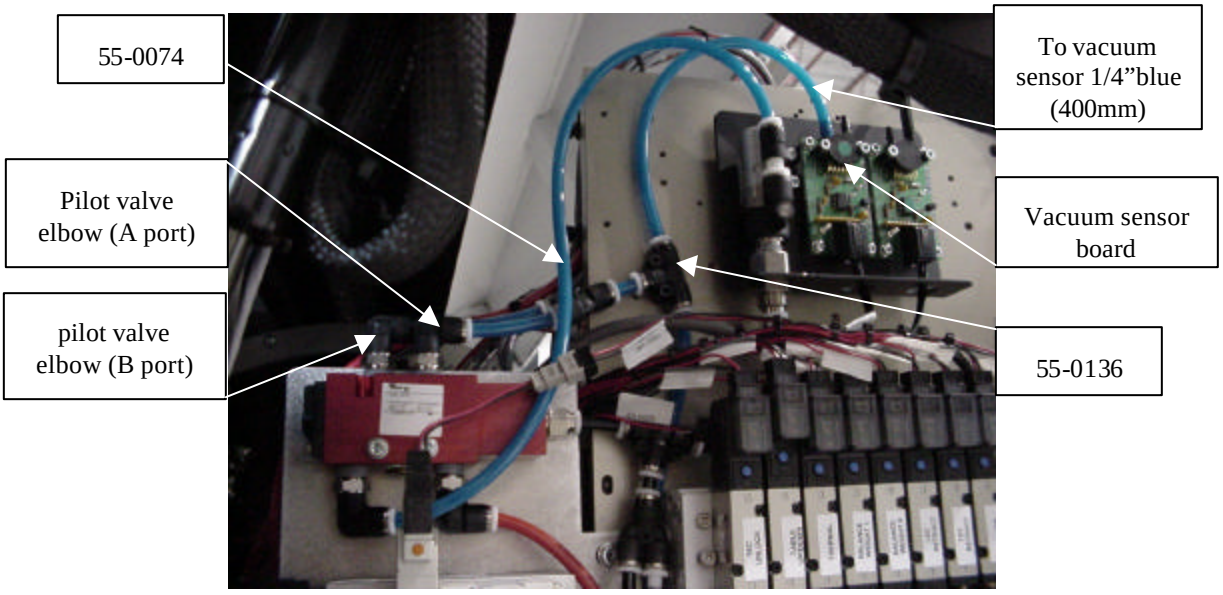


Fig. 4.10-1

11. Connect ¼" red tube 56-1043 (300mm long) between EA port elbow of pilot valve 55-0892 and A port of table manifold 50-2335A as shown in Fig.4.11-1 and Fig.411-2.

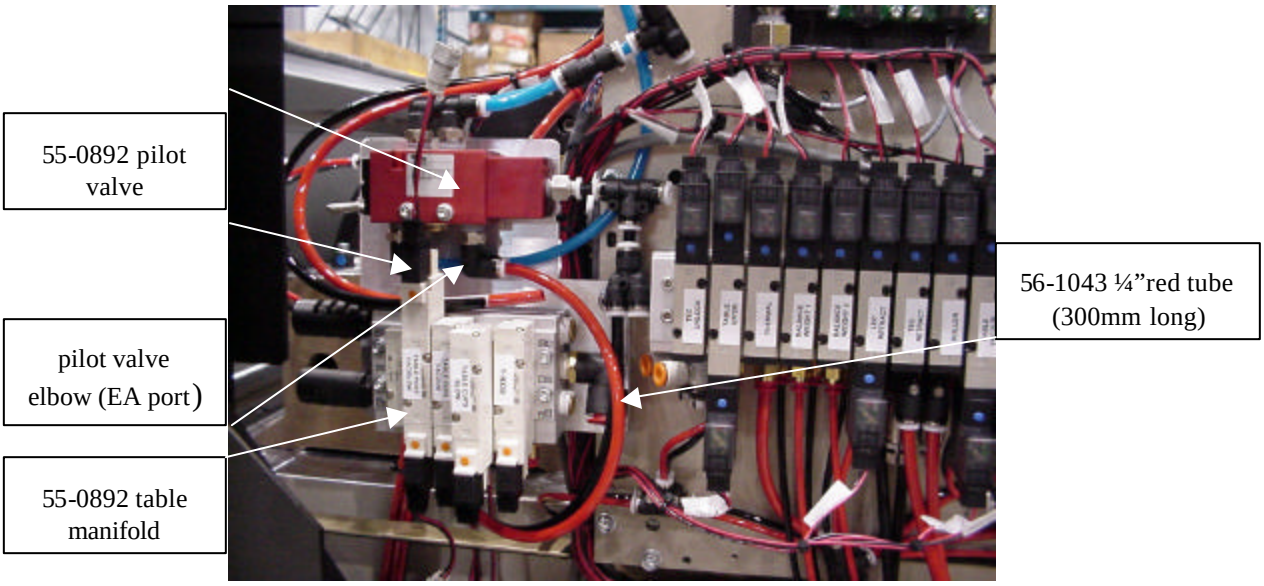


Fig. 4.11-1

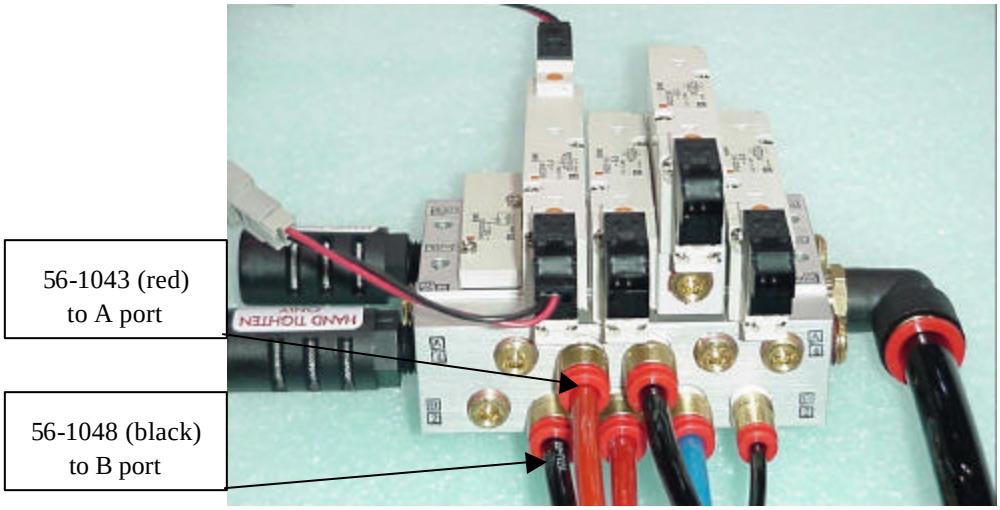


Fig.4.11-2

12. Connect ¼" black tube 56-1048 (250mm long) between y-joint fitting 55-0713 and B port of table manifold 50-2335A as shown in Fig.4.12-1 and Fig.4.11-2.

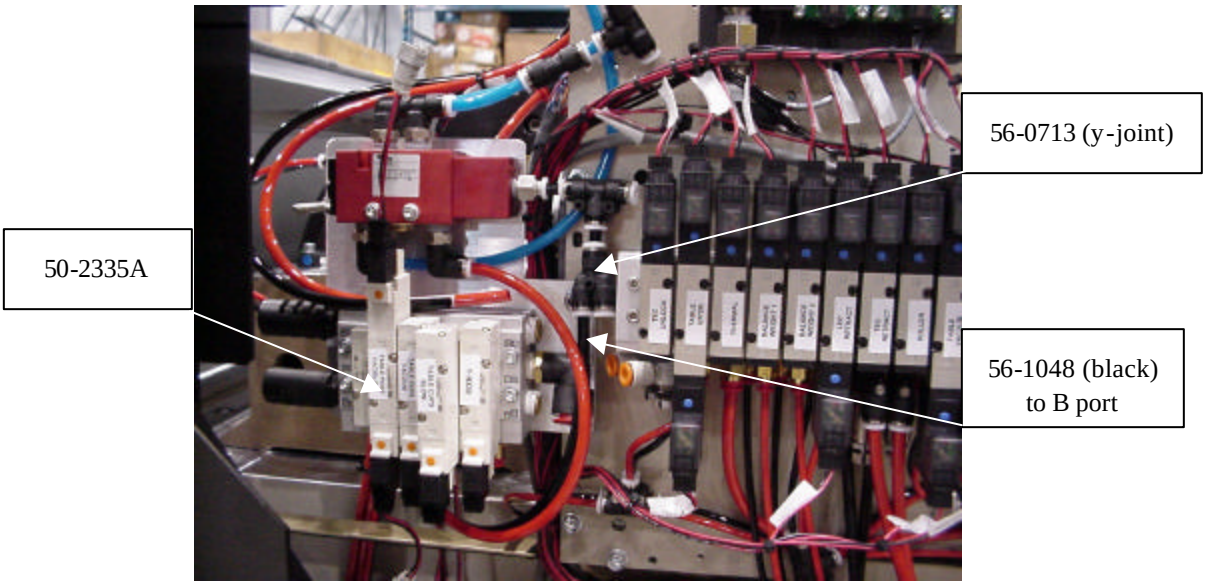


Fig.4.12-1

13. Remove table vacuum solenoid from engine manifold 50-1412C and replace it with blanking kit 55-0143 as shown in Fig.4.13-1.

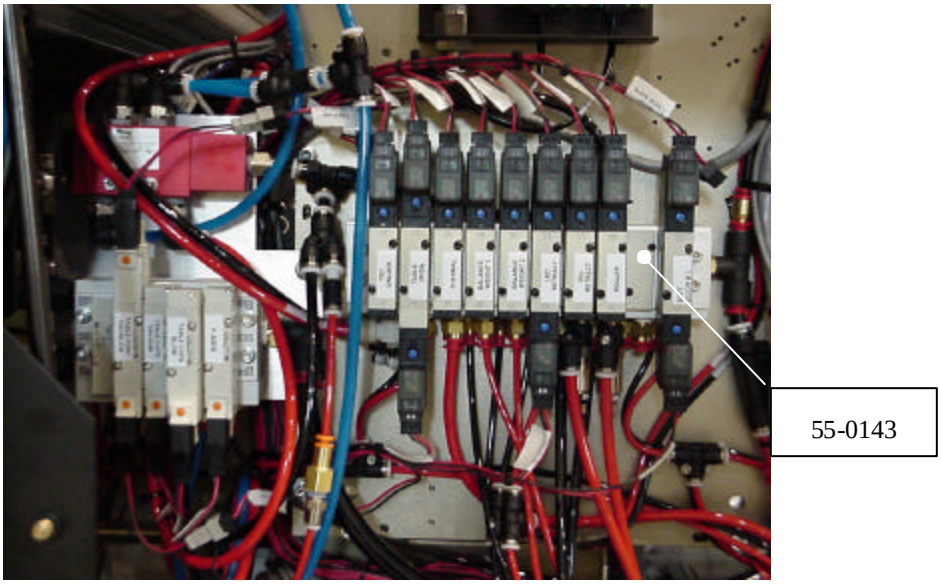


Fig.4.13-1

14. After installing VAL table, connect its table cup 1/4" tubes (red, black and blue 50-2283C assy.) to table manifold 50-2335A as shown in Fig.4.14-1 and Fig.4.14-2.

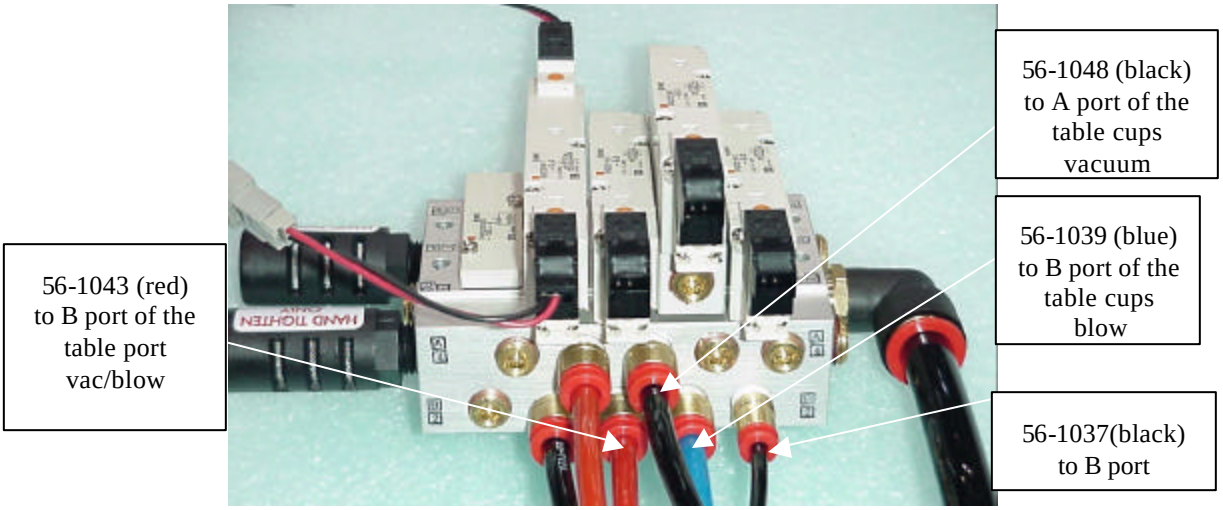


Fig. 4.14-1

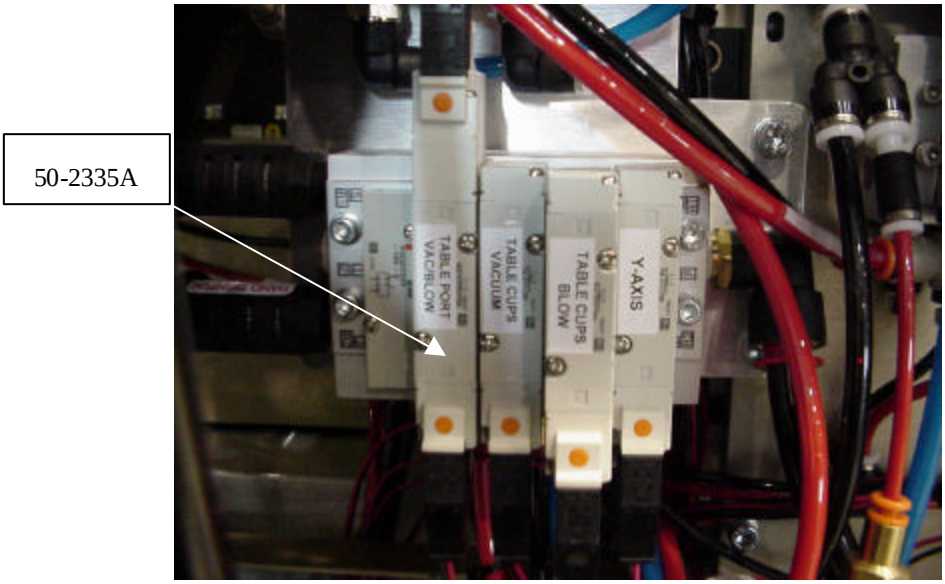


Fig. 4.14-2

15. After installing VAL table, connect ¼ " blue tube from 50-2135B table basic unit assy. to Tee union 55-0136 as shown in Fig.4.15-1

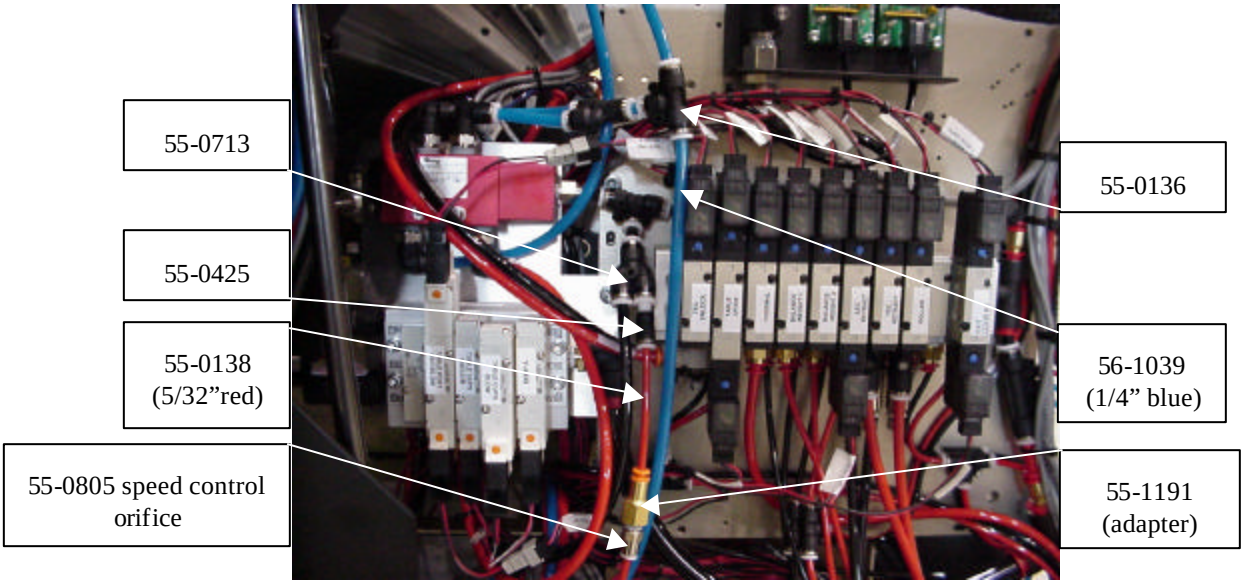


Fig.4.15-1

16. After installing VAL table, connect 5/32 " red tube 56-1038 from 50-2135B table basic unit assy. through 55-0425 reducer to y-joint fitting 55-0713 as shown in Fig.4.15-1 and Fig.4.16-1

Note: There are two types of the speed control orifices:

FIG.4.16-1 below shows the proper orientation of type A and type B orifices in the assembly. The orifice controls speed of the basic table active cups. If the orifice is installed in reverse direction, table active cups will move up too fast because of the full blow of the air to the table cylinder.

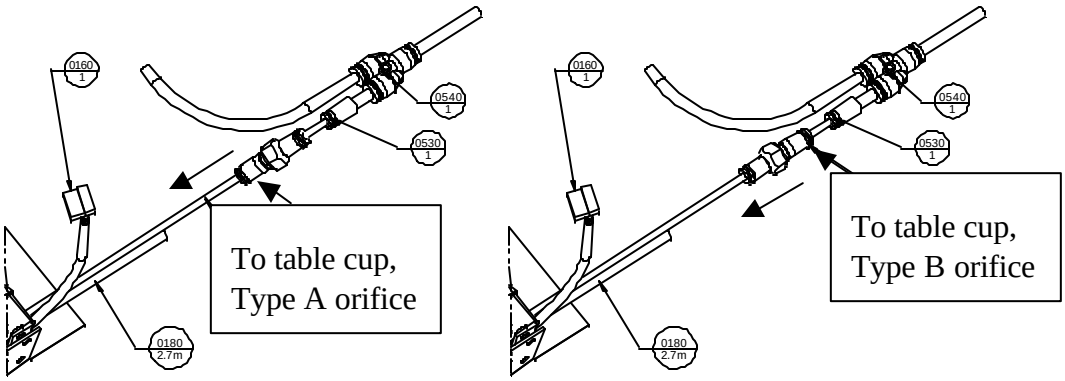


Fig.4.16-1 Table, Basic Unit, VAL, Assy. 50-2135B

17. After installing VAL hood, connect 5/32" black tube 56-1037 (from Y-axis gripper) to B port of table manifold as shown in Fig.4.17-1.

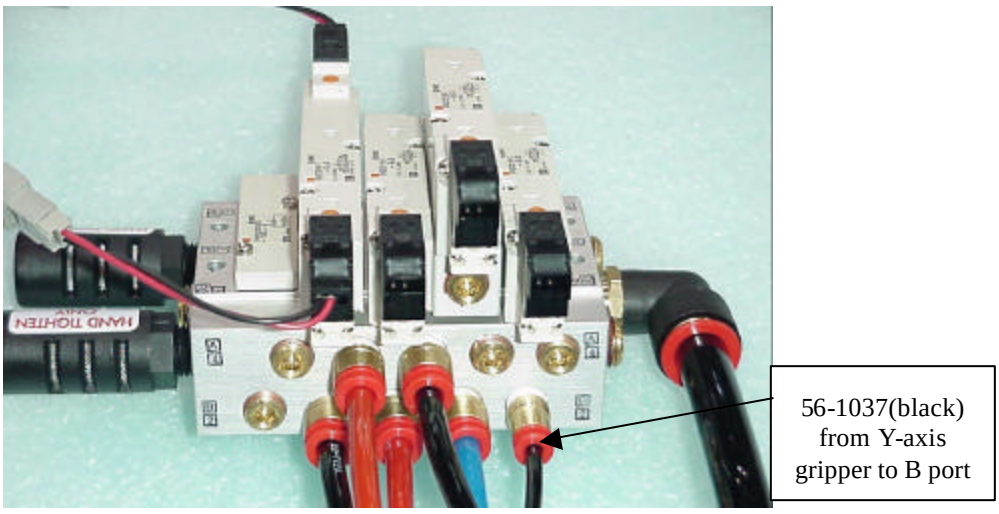


Fig.4.17-1

18. Connect solenoid cables 10-4343B as shown in Fig.4.18-1.

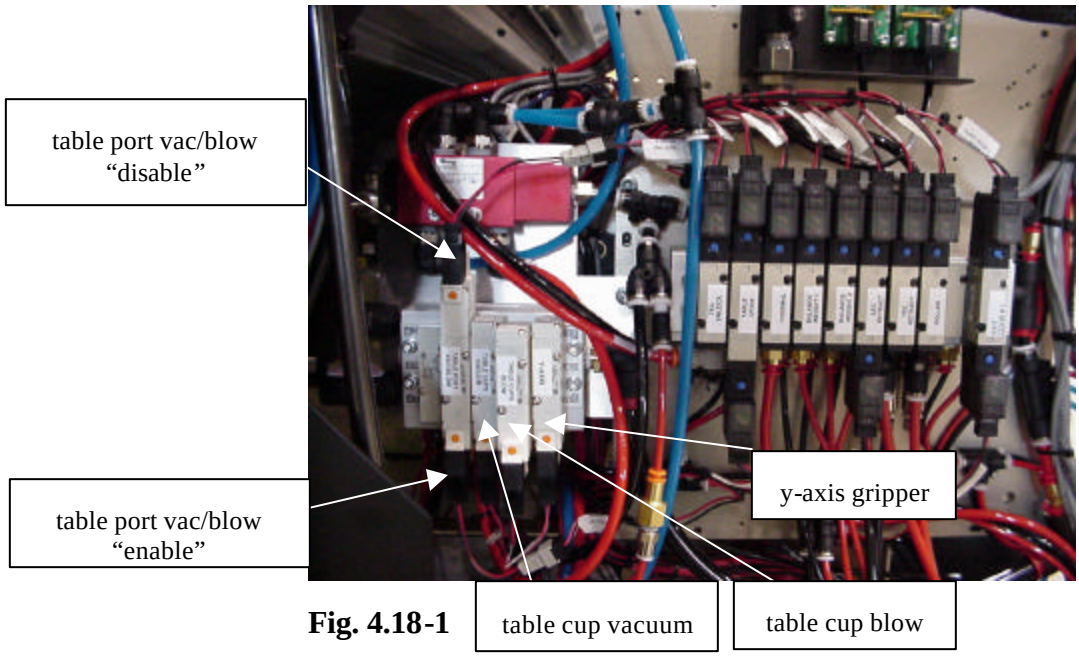


Fig. 4.18-1

19. After installing the VAL table, attach counterweight kit 50-1968A (5080) or 50-2012A (5880).
See Fig.4.19-1, Fig.4.19-2, Fig.4.19-3 and Fig.4.19-4.

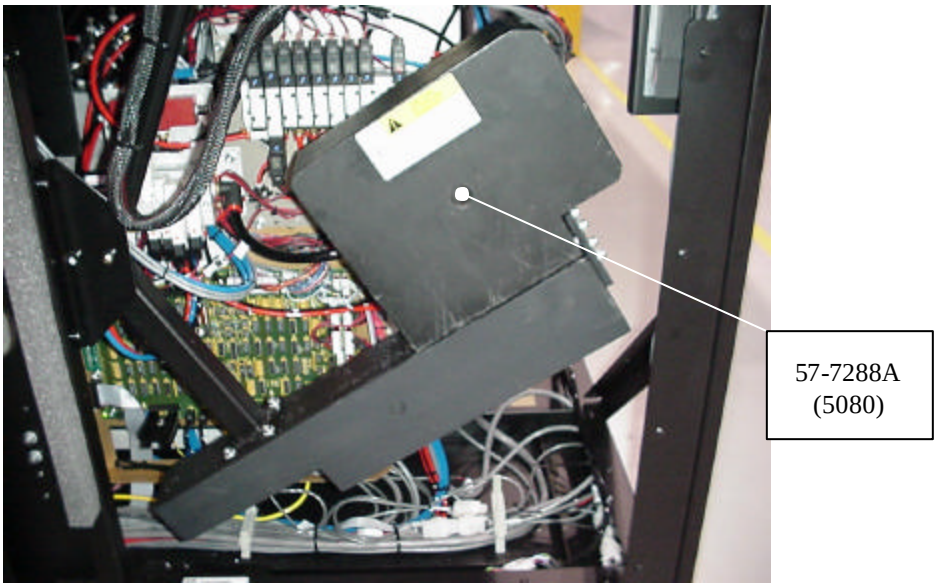


Fig. 4.19-1

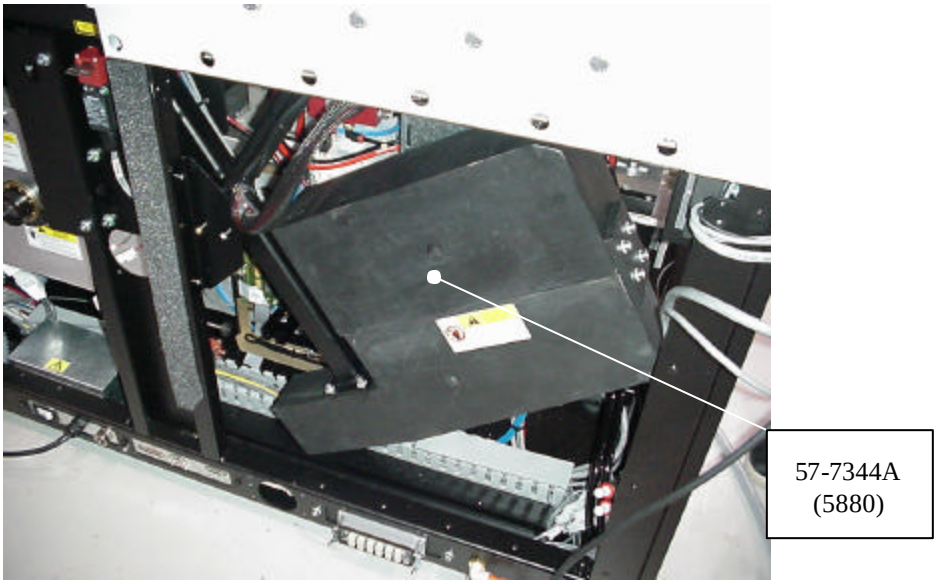


Fig. 4.19-2

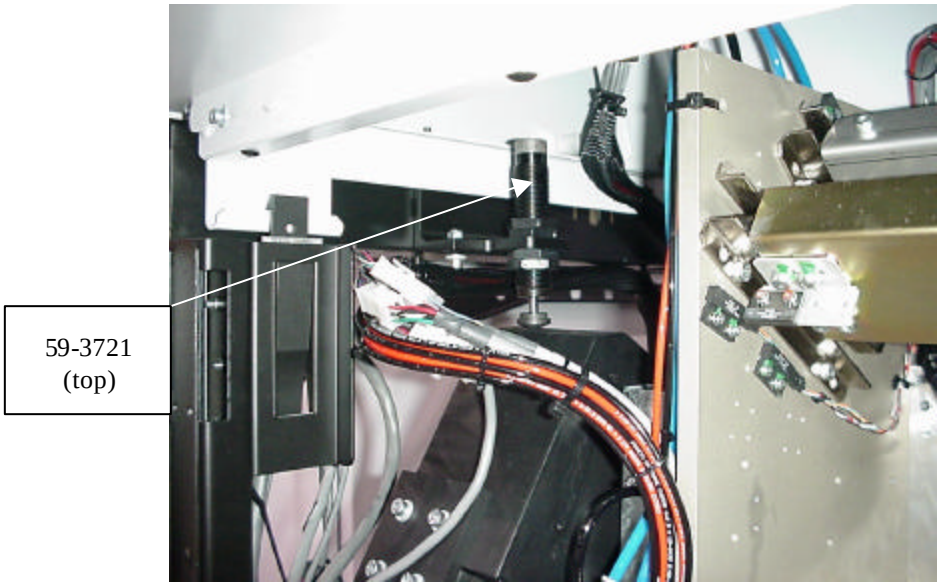


Fig.4.19-3

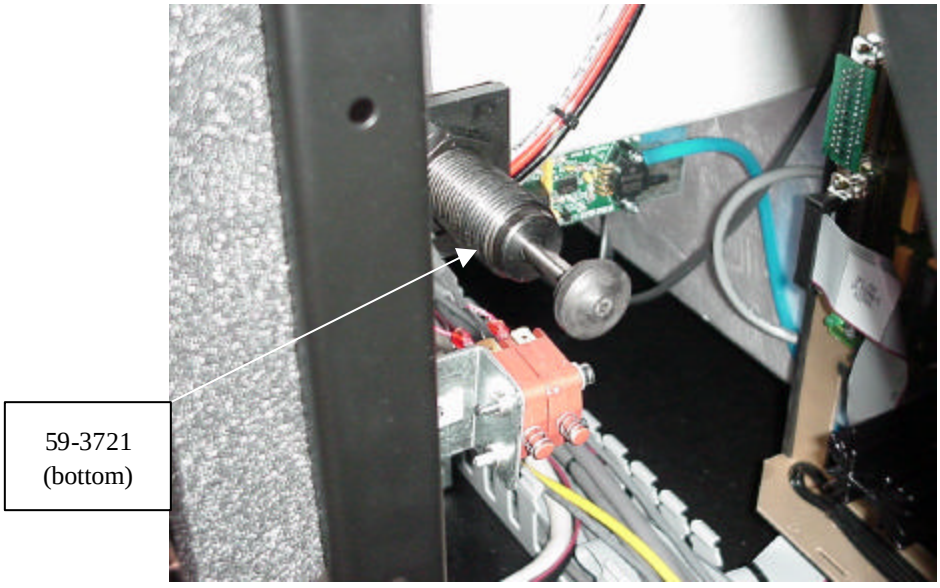


Fig. 4.19-4