

MANUAL NUMBER P-EFS-1

TRAC REGULATOR CO., INC.

MAINTENANCE MANUAL FOR THERMOSTATIC TEMPERATURE REGULATING VALVE TRAC STYLE 'P'



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FOR GENERAL DISTRIBUTION

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SAFETY PRECAUTIONS

Installing or operating personnel must, at all times, observe all safety regulations. The following warnings are general and must be given the same attention as specific precautions in the instructions.

WARNING !

FLUIDS UNDER PRESSURE MAY CAUSE INJURY TO PERSONNEL
OR DAMAGE TO EQUIPMENT WHEN RELEASED.

CLOSE ALL SHUTOFF VALVES AND CAREFULLY DECREASE ALL TRAPPED PRESSURES TO ZERO BEFORE PERFORMING ANY MAINTENANCE (see instructions concerning relieving trapped pressures). TAG THE PRESSURE SOURCE "OUT OF SERVICE" WHILE PERFORMING MAINTENANCE TASKS.

WARNING !

LIVE STEAM CAN CAUSE SEVERE BURNS.

NEVER SEARCH FOR LEAKS IN A LIVE STEAM SYSTEM BY "FEEL" OR WITH ANY PART OF THE BODY CLOSE TO WHERE LEAKAGE IS SUSPECTED. USE A MIRROR OR OTHER SUITABLE POLISHED OBJECT.

GENERAL INFORMATION

This manual covers the installation, adjustment, operation, and maintenance of the Trac Regulator Co. Inc. Style 'P' Electrically Failsafe Temperature Regulator.

The Regulator valve body is union end per MIL-F-1183. Pilot tubing connections are compression type, connections to the valve body and pilot valve housing are straight thread O-ring type per MS16142. A rulon seat is incorporated in the main valve to ensure tight shutoff.

The regulator is operated by inlet pressure applied to an internal piston which is controlled by an adjustable thermostatic temperature pilot. The temperature pilot responds to changes in regulated temperature allowing more or less flow into the piston chamber. When the pilot opens wide enough to allow more flow to the piston chamber than can be bled through the outlet side pilot orifice, the main valve will open.

The equipment covered by this manual is Electrically Fail-Safe. A solenoid valve is incorporated on the inlet side pilot tube line. The solenoid provided is normally closed. In order to operate the temperature regulator the solenoid valve must be energized. Upon failure of the thermostatic element or loss of electric current to the solenoid- the solenoid valve will close, shutting off inlet pressure to the main valve piston, and thereby closing the temperature regulating valve.

ACCESSORIES

Accessories normally required for use with the Trac Temperature Regulator are as follows: (see Figure 1):

Upstream and Downstream Shutoff Valves – mandatory

Strainer and Blow-Off Valve – mandatory

Inlet Side Pressure Gauge – recommended for adjustment and maintenance.

Outlet Side Compound Pressure Gauge – recommended for adjustment and maintenance.

Bypass Line and Valve – optional – suggested for ease in maintenance.

NOTE

The temperature regulator carries the standard Trac warranty against defective material and workmanship. However, the warranty is void if the installer or user deviates in any way from the instructions and precautions included herein.

INSTALLATION

1. See Figure 3 for dimensions. Install the Regulator in accordance with Figure 1 and following steps 2 through 10.
2. Make sure that the steam line is properly trapped to prevent accumulation of condensate ahead of the Regulator.
3. Blow out all pipe lines before installation of the Regulator to clear the lines of all dirt or scale that might get into or cause faulty operation of the Regulator.
4. Install an in-line steam strainer, as shown in Figure 1, ahead of the Regulator, and install an inlet side pressure gauge and outlet side pressure gauge as shown. The bypass valve (optional) should be a manually operated metal seated globe valve. The shut-off valves should be metal seated gate valves.
5. FOR BEST OPERATION, locate and install the Regulator as follows:
 - a. It is recommended that the Regulator be installed UPRIGHT. Installation in another position could result in erratic operation.
 - b. Locate the Regulator so that
 - The distance from the Regulator to the thermal element connection hole in the top of the Heater is short enough so that the element capillary tubing will be adequate in length when installed.
 - The Regulator is 6 to 12 inches above the lower flange of the Heater so that excessive condensate will not accumulate in front of or immediately behind the Regulator.
- c. Make sure that the sealing surfaces of the union end fittings are clean and free from defects. Use new union end O-rings and retaining rings.
6. Install the Regulator so that the arrow on the body points in the direction of flow.
7. Handle all exterior tubing carefully to prevent any damage during installation and operation.
8. Protect the thermal element from damage when it is disassembled from the Regulator and/or Heater. Do not make any sharp bends in the capillary. Any leakage of liquid from the thermal element assembly will render it inoperative.
9. Connect the lead wires of the solenoid valve to the safety temperature controller (switch) in accordance with applicable ship installation instructions. Before proceeding with any further adjustment or operation of the regulator, set the switch to operate at 15° to 20°F above the desired Heater hot water outlet temperature.
10. After the Regulator has been installed in the steam line, assemble the Thermal Element to the Regulator and Heater as indicated in Figure 1, with the bellows end in the Regulator Pilot Adjustment Wheel and the bulb in the "Thermostat" connection in the top of the Heater.

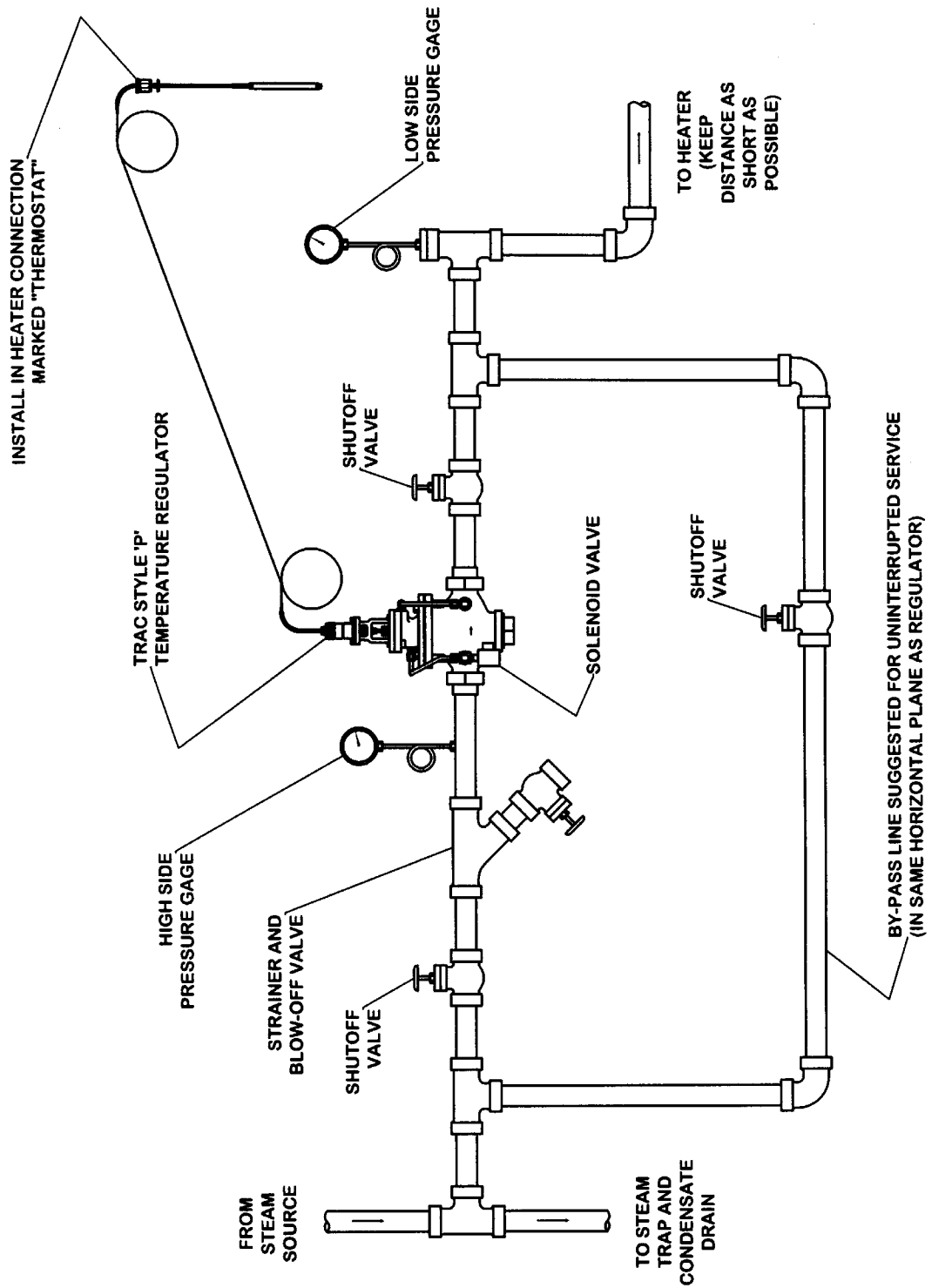


Figure 1 Installation Diagram

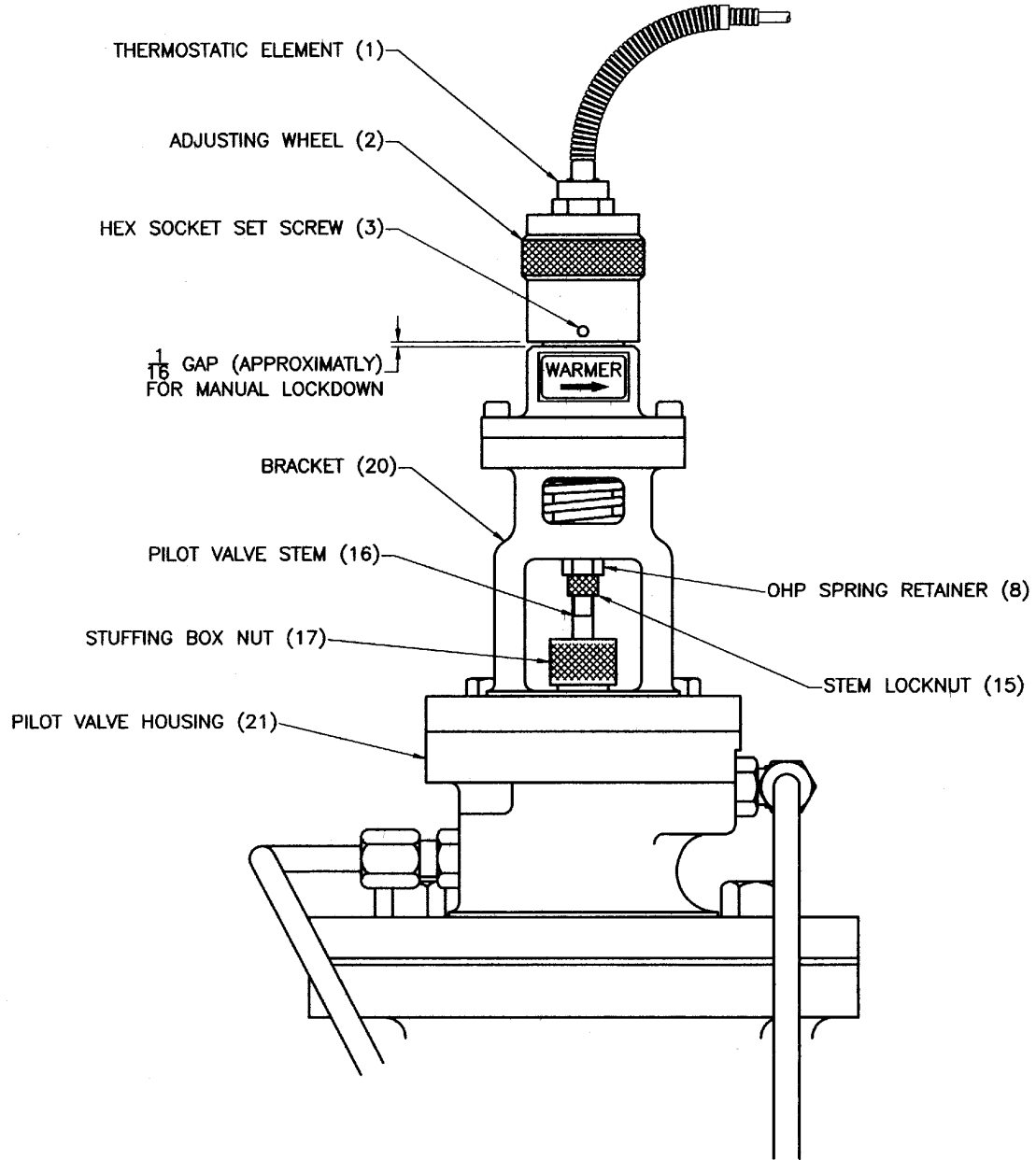


Figure 2 Pilot Assembly – Temperature Adjustment

ADJUSTMENT

11. For all adjustments, refer to Figure 2, Temperature Pilot.

Slowly close manually operated shutoff valves upstream and downstream of the regulator.

If the temperature is too low, back off (turn counterclockwise) the Adjustment Wheel (2).

If the temperature is too high, turn down (clockwise) the Adjustment Wheel (2).
12. Loosen Set Screw (3) and turn Adjustment Wheel (2) down by HAND ONLY (never use a wrench) until the Pilot Valve Stem (16) seats (when the Adjustment Wheel (2) becomes harder to turn by hand).

Wait after each adjustment until the temperature becomes steady again before making another adjustment.
13. Slowly open all steam shutoff valves (not the bypass valve), so that you have steam to the Regulator.
14. Slowly open a hot water faucet or faucets to insure a flow of water through the Heater. Ideally, a water flow of 10% to 25% of Heater rating is desirable for adjusting the Pilot.
15. Back off the Adjustment Wheel (2) until the Regulator valve opens (when you hear a flow of steam through the Regulator).
16. Wait until the temperature at the Heater hot water outlet stabilizes at one steady reading. It may be necessary to adjust the Adjustment Wheel (2) a small amount (one full turn will change the water outlet temperature approximately 20°F) to obtain the desired hot water temperature at the Heater outlet, as follows:
 17. When the Heater outlet holds steady at the desired temperature, tighten Set Screw (3) against the Pilot Valve Bonnet (7) to hold the Adjustment Wheel (2) in place.
 18. Observe the operation of the Heater under various changes in hot water flow. If the Regulator holds the Heater outlet temperature relatively steady, (as flow changes occur) no further adjustments are necessary.

OPERATION

19. For automatic operation, refer to Figure 1, Recommended Installation.
 - a. Open all valves necessary to assure that the Heater is full of water.
 - b. Slowly open the upstream and downstream shutoff valves.
 - c. Close the bypass valve tight.
20. If for any reason it is necessary to take the Regulator out of service while maintaining the Heater in operation (see Figure 1):
 - a. Close the upstream and downstream shutoff valves tight.
 - b. Slowly open the bypass valve.
 - c. Watch the hot water temperature at the Heater outlet and manually open and close the bypass valve to maintain the temperature within 10° of the desired temperature.
21. If the Regulator-Heater system is not operating properly (not holding the desired hot water temperature as it should), refer to the Troubleshooting section of Maintenance below.

MAINTENANCE

Routine Maintenance

22. Monthly
 - a. Observe the total Regulator-Heater operation during both a period of low hot water usage and a period of high hot water usage. If the control is poor and/or if the Regulator is not operating properly, check the Troubleshooting instructions below.
 - b. Check the Regulator carefully for leakage. If leaking, tighten bolts, and fittings as required. If necessary, add or replace packing, replace gaskets, and O-ring seals. For disassembly instructions, see steps 41 through 82 below.
23. Quarterly
 - a. Clean the steam strainer in the steam line (see Figure 1) in accordance with instructions furnished with the strainer.
 - b. The Regulator includes a Solenoid Valve (51) incorporated on the inlet side pilot tube line. Check its operation in accordance with the step 33(b).

Troubleshooting

24. First, when troubleshooting, always make sure that the Temperature Pilot adjustment has been done in accordance with steps 11 through 18, and that all system conditions are normal. Check the following and make corrections where necessary:

- All connections are in accordance with Figure 1 and steps 1 through 10.
- The Regulator is installed with the flow arrow on the valve body pointing in the direction of flow.
- Both the upstream and downstream shutoff valves are full open and the bypass valve is closed tight.
- The Thermal Element (1) is properly installed in the Regulator Adjustment Wheel (2) and in the "Thermostat" connection in the Heater.

After any necessary corrections noted above have been made, observe the Regulator action before proceeding further. It is possible that no further correction is needed.

If the System Overheats

(A) BYPASS VALVE MAY LEAK

25. Check by closing the upstream and downstream shutoff valves and carefully removing the low side pressure gauge. If steam flows out of the gauge connection hole, it is probable that the bypass valve leaks and must be repaired or replaced.

(B) REGULATOR VALVE DOES NOT CLOSE

26. Close the steam line shutoff valves.
27. Refer to Figure 3. Disconnect and completely remove the Pilot Outlet to Body Tubing (54). Be careful to crack each connection and allow any pressure to be relieved before completely disconnecting.
28. Loosen Set Screw (3) and turn Adjustment Wheel (2) down by HAND ONLY, (never use a wrench) until Pilot Valve Stem (16)

seats (when the Adjustment Wheel (2) becomes harder to turn by hand.

29. Slowly open all steam line shutoff valves (not the bypass valve) so that you have steam to your Regulator.
30. Check for steam escaping from the Regulator. If operating properly, there should be no steam escaping from either the outlet side port of the Pilot Valve Housing (21) or outlet side port of the Valve Body (28). A small wisp of steam from the outlet side port of Valve Body is acceptable. However:
- a. If no steam escapes from either port opening except the small wisp as noted above, the Regulator pilot and valve are operating properly, and the problem is a faulty Thermal Element (1) which must be replaced. This should solve the problem and no further checking or correction is necessary.
 - b. If steam escapes through the opening in the outlet side port of the Pilot Valve Housing (21), the problem is at the Pilot Valve Stem (16) or Pilot Valve Seat (22). Proceed to disassemble and repair the Pilot Valve Assembly as required per steps 41 through 54.
 - c. If steam escapes through the outlet side port of Valve Body (28), the problem is at the main valve Seat Disc (33) or main valve Seat (30). Proceed to disassemble and repair as required per steps 55 through 82.
 - d. If steam escapes from both port openings, first correct any problems at the Pilot Valve Stem (16) per (b) above. If after these corrections have been made, and a test check shows steam is still escaping from the valve body side opening, correct the problems at the main valve Seat Disc (33) per step 30(c) above.

31. When necessary corrections have been made and test checks show no excessive leakage exists, replace the Pilot Outlet to Body Tubing (54) and put the Regulator back into service per step 19 above. If necessary, readjust the Temperature Pilot to hold the desired Heater outlet water temperature per steps 11 through 18.

If the System Will Not Maintain the Desired (Set) Temperature

(A) STEAM PRESSURE IS LOW

32. Check the high side steam pressure to the Regulator.
- a. If it is too low (less than 25 psig), correct whatever condition causes it to be less than that for which your system is designed (at least 25 psig).
 - b. If the high side steam pressure drops as the Regulator opens, there probably is a partially closed valve in the upstream steam line or the steam strainer is clogged. Make the necessary correction.

(B) NO HIGH PRESSURE STEAM TO THE TEMPERATURE PILOT

33. Make sure that there is no restriction of steam flow to the Temperature Pilot.
- a. Refer to Figure 3. Thoroughly clean out the Pilot Inlet to Solenoid Tubing (48) and SAE Male to Male Adapter (49). Thoroughly clean out the inlet side port of the Pilot Valve Housing (21) and inlet side port of Valve Body (28).
 - b. The Regulator includes a Solenoid Valve (51) incorporated on the inlet side pilot tube line. In order to operate the temperature regulator the solenoid valve must be energized. Ensure that the safety temperature controller (switch) is operating properly and that current is being applied to the Solenoid Valve.

Check to make sure that the solenoid valve is opening fully. This may be checked by closing the upstream shutoff valve and carefully loosening the connection between the Solenoid Valve (51) and the Pilot Inlet to Solenoid Tubing (48), and re-opening the upstream shutoff valve. Steam flow through the solenoid valve should be unrestricted. If it appears that steam flow through the solenoid is restricted, close the upstream shutoff valve, remove the Solenoid Valve and blow out any dirt or scale that might cause faulty operation.

The Solenoid Valve is not considered a repairable item. If a problem with the solenoid is attributable to a malfunctioning coil, an un-resolvable obstruction of the Solenoid Valve seat, or seat leakage, replace the Solenoid Valve.

(C) TRAP IN HEATER CONDENSATE LINE IS NOT OPERATING PROPERLY

34. A broken or improperly operating trap (if included) in the Heater condensate discharge line will cause condensate to build up in the Heater and prevent free flow of steam through the Heater. If the low side pressure gauge shows pressure but the system does not heat adequately, the condensate trap is usually the cause. To check, carefully break the condensate connection ahead of the trap and allow condensate to bleed or run out into a floor drain. If the Heater outlet hot water temperature remains low, the trouble is elsewhere. But if the temperature rises to that which is desired, the problem is with the condensate trap. Repair or replace the trap.

(D) REGULATOR VALVE DOES NOT OPEN

35. If conditions described in (A), (B), and (C) above have been addressed and the temperature regulator still will not maintain the desired (set) Temperature, then the problem can be attributed to the main valve piston and/ or plunger guide area. Leave the Regulator in the steam line if it is easily accessible for disassembly and reassembly. If not, remove the Regulator from the line and clamp it in a bench vise for easy accessibility.
36. Close the inlet and outlet side shutoff valves. If it is necessary to keep your Heater in operation, proceed per step 20 before going further. Proceed as follows.
37. Refer to Figure 3. Loosen Set Screw (3) Unscrew the Temperature Adjustment Wheel (2) by HAND ONLY, (never use a wrench) to remove the Temperature Adjustment Wheel (2) and Thermostatic Element (1) from the Regulator. Do not disconnect the Element from the Adjustment Wheel.

Note: Place the Adjustment Wheel and Element in a location where they will be safe from damage. Do not twist the capillary or make any sharp bends in the capillary. Any leakage of liquid from the thermal element assembly will render it inoperative.

38. Leave the Regulator in the steam line if it is easily accessible for disassembly and reassembly. If not, remove the Regulator from the line and clamp it in a bench vise for easy accessibility. Proceed with step 57.

If the Temperature Fluctuates Widely

39. If the temperature fluctuations tend to follow load changes, these usually are symptoms of either overheating or the inability of the system to maintain the desired temperature. Overheating problems may be dealt with as described under steps 24 through 31, and problems regarding the inability of the system to maintain the desired (set) temperature may be dealt with as described under steps 32 through 34.
40. If the temperature fluctuations are rapid and do not follow load changes, they may be caused by one or more of the following:
 - a. Improper Temperature Pilot adjustment. See steps 11 through 18 above.
 - b. The Solenoid Safety Valve may not be opening fully. See step 33(b) above.
 - c. If the system includes a trap in the Heater condensate discharge line, the trap may be faulty. See step 34.
 - d. A restriction in the steam supply line; that is, a partially closed valve, a clogged steam strainer, etc., which causes the high side pressure to fluctuate or fall below the design pressure of the system. See step 32 and 33(a).
 - e. An obstruction of the outlet side pilot Orifice (53) may slow the blowdown of steam pressure from the piston cylinder. Proceed with steps 26 and 27, then step 70.

Assembly/Disassembly

PILOT VALVE ASSEMBLY

41. Refer to Figure 1. Close the steam shutoff. If it is necessary to keep your Heater in operation, proceed per step 20 above before going further. If not, proceed as follows.
42. Refer to Figure 3. Disconnect and completely remove the Pilot Outlet to Body Tubing (54) and the Pilot Inlet to Solenoid Tubing (48). Be careful to crack each connection and allow any pressure to be relieved before completely disconnecting.
43. Loosen Set Screw (3) and turn Adjustment Wheel (2) down by HAND ONLY, (never use a wrench) until Pilot Valve Stem (16) seats (when the Adjustment Wheel (2) becomes harder to turn by hand. Use a 7/16" open end wrench to hold the Over Heat Protection (OHP) Spring Retainer (8) and a pair of needle nose pliers to loosen the Pilot Valve Stem Locknut (15). At this point do not rotate the Pilot Valve Stem (16) from it's current position.
44. Unscrew the Temperature Adjustment Wheel (2) by HAND ONLY, (never use a wrench) to remove the Temperature Adjustment Wheel (2) and Thermostatic Element (1) from the Regulator. Do not disconnect the Element from the Adjustment Wheel. Place the Adjustment Wheel and Element in a location where they will be safe from damage. Do not twist the capillary or make any sharp bends in the capillary. Any leakage of liquid from the thermal element assembly will render it inoperative.
45. Remove the four Screws (10) which hold the Pilot Bracket (20) onto the Pilot Valve Housing (21). Loosen the Stuffing Box Nut (17), then lift off the entire Pilot Assembly.
46. Clean Pilot Valve Stem (16) thoroughly and inspect for wear. If worn so that it will not seat properly, it must be replaced. The Pilot Valve Stem Locknut (15) was loosened in step 43, therefore the Pilot Valve Stem (16) should be easily removed for further inspection, cleaning, or replacement (as necessary).
47. Using a 1" box end wrench, remove the Packing Chamber (9). Blow out or clean out all debris from the Seat area and inspect the Pilot Valve Seat (22) for signs of wear or accumulated dirt. If worn so that The Pilot Valve Stem (16) will not seat properly, it must be replaced. To remove the Pilot Valve Seat (22) blow it out with compressed air from the inlet side pilot valve tubing port. If the Pilot Valve Seat cannot be blown out, use a packing pick or 1/8" screw to remove it.
48. If necessary, thoroughly clean the seat area and replace the Pilot Valve Seat (22) with a new part. Apply a high temperature sealant such as Permatex Form-A Gasket 1 or other suitable sealant to the Packing Chamber (9) threads according to manufacturers instructions. Reinstall the Packing Chamber. Torque per figure 3.
49. Remove the Stuffing Box Nut (17) and Packing Gland (18). Replace the Packing set (19). Return the Packing Gland and Nut. Do not tighten the Stuffing Box Nut until the Pilot Assembly has been re-installed.
50. If the Pilot Valve Stem (16) had to be removed for cleaning or replacement, screw it into the Over Heat Protection (OHP) Spring Retainer (8).
51. Re-install the Pilot Valve Assembly with the four Screws (10) which hold the Pilot Bracket (20) onto the Pilot Valve Housing (21). If necessary, screw in the Pilot Valve Stem (16) into OHP Spring Retainer (8) enough to allow the Pilot Valve Assembly to seat properly on the Pilot Valve Housing (21). Tighten the Stuffing Box Nut (17) until it is just finger tight.

52. Refer to figure 2. Reassemble the Thermostatic Element (1) and Temperature Adjustment Wheel (2) to the Pilot Valve Bonnet (7). Loosen Set Screw (3) and turn Adjustment Wheel (2) down by HAND ONLY, (never use a wrench) until there is about 1/16" clearance from the bottom of the Adjusting Wheel (2) and the shoulder of the Pilot Valve Bonnet (7). Screw the Pilot Valve Stem (16) down until it makes positive contact with the Pilot Valve Seat (22). Use a 7/16" open end wrench to hold the OHP Spring Retainer (8) and a pair of needle nose pliers to tighten the Pilot Valve Stem Locknut (15) against the OHP Spring Retainer (without rotating the Pilot Valve Stem).

NOTE: The bulb of the Thermostatic Element (1) must be maintained at or below the lowest set temperature of the range indicated on the Nameplate (44) to properly set Pilot Valve Stem. Depending on the temperature range of the Element this can be achieved by the ambient temperature or by immersing the bulb in a temperature controlled water bath.

53. Carry out the necessary test checks to make sure that the Regulator valve is working properly, as follows:
- a. If the Regulator valve did not close, re-install the Pilot Inlet to Solenoid Tubing (48), and check per steps 26 through 30. When the test checks show that no excessive leakage exists, put the Regulator back into service per step 31.
 - b. If the Regulator valve did not open or if the temperature fluctuated widely, re-install the Pilot Outlet to Body Tubing (54) and the Pilot Inlet to Solenoid Tubing (48). Put the Regulator back into service per step 19.
54. Readjust the Temperature Pilot to hold the desired Heater outlet water temperature per steps 11 through 18.

REGULATOR VALVE (Disassembly)

55. Close the inlet and outlet side shutoff valves. If it is necessary to keep your Heater in operation, proceed per step 20 before going further. Leave the Regulator in the steam line if it is easily accessible for disassembly and reassembly. If not, remove the Regulator from the line and clamp it in a bench vise for easy accessibility. Proceed as follows:
56. If not done already, remove the Thermostatic Element (1) and the Adjusting Wheel (2) as described in step 37. Protect the Thermostatic Element from damage when it is disassembled from the Regulator and/or Heater. Do not twist the capillary or make any sharp bends in the capillary. Any leakage of liquid from the thermal element assembly will render it inoperative.
57. Refer to Figure 3. Disconnect and completely remove the Pilot Outlet to Body Tubing (54) and the Pilot Inlet to Solenoid Tubing (48). If working with the Regulator valve in the steam line, be careful to crack each connection and allow any pressure to be relieved before completely disconnecting.
58. Unscrew the six Hex Cap Screws (23) and Remove the entire Pilot Valve Assembly from the Pilot Valve Housing (21) on up.
59. Push on the Piston Assembly (25). The Piston should open (move down) readily and should come back up to the closed position when you stop pushing on the Piston. If so, the problem may be steam blowing by the Piston (25) due to worn Piston Rings (26) or Cylinder Liner (27) or both. If the Piston Assembly does not move or binds, something in the Piston Assembly or Plunger Guide Bushing is causing the valve internals to jam.

60. Remove the Piston (25) to inspect the condition of the Piston Rings (26) and Cylinder Liner (27). Screw a 5/8"-18 Hex bolt into the tapped hole in the top of the Piston and lift the Piston (25) out of the valve. Clean and inspect the Piston (25) for sign of wear, replace if necessary.
61. If the Piston Rings (26) appear worn, cracked, or corroded, replace them. Clean and inspect the Cylinder Liner (27) for signs of wear. It is generally necessary to replace the Cylinder Liner if the Piston Rings require replacement. If the Regulator valve has been in service for an extended period, it may be difficult to remove the Cylinder Liner from the top. Proceed to the next step.
62. Loosen the Bottom Plug (37), If working with the Regulator valve in the steam line, be careful to allow any pressure to be relieved before continuing. It may be necessary to tap the edge of the Bottom Plug with a hammer hard enough to break the gasket seal, and allow the Regulator to drain.
63. Unscrew the Bottom Plug (37) carefully. When the Bottom Plug is removed, the Main Valve Spring (35), Main Valve Plunger (31), Disc (33), Disc Holder (32), and Plunger Guide Bushing (36) may drop out.
64. Remove the Bottom Plug Gasket (34) and all parts noted in step 63 which did not come out with the Bottom Plug.
65. If the Cylinder Liner (27) could not be removed from the top, drive out the Cylinder Liner (27) and Piston Stop Plate (29) by inserting one end of a metal rod or wooden shaft from the bottom of the Regulator and through the inside diameter of the Seat Ring. Place the rod or shaft against the Piston Stop Plate (29), and tap the other end of the rod just hard enough to break the parts loose. Do this as carefully as possible, so as not to damage the Seat Ring (30).
66. Inspect the Seat Ring (30) for sign of wear or damage. Pay particular attention to the seat surface of the Seat Ring (30) for signs of "wire drawing" (scoring or grooves running from the outside to the inside edge of the seat surface). If it is necessary to remove Seat Ring (30) for further inspection or replacement, use Seat Tool (43) from the top to unscrew the Seat Ring.
67. Inspect the Main Valve Seat Disc (33) for sign of wear or damage. To remove the Main Valve Seat Disc (33), place a wrench on the flats on the Plunger (31) and another wrench on the flats of the Disc Holder (32) and unscrew the Disc Holder. In an emergency the Seat Disc may be turned over, but it is recommended that a worn or damaged Seat Disc be replaced.
68. Clean all parts thoroughly and inspect them carefully for signs wear or damage before reassembly. Any damaged part must be replaced.
69. Make sure that the Pilot Inlet to Solenoid Tubing (48), the SAE Male to Male Adapter (49), and Solenoid Valve (51) have been thoroughly cleaned as specified in step 33. Thoroughly clean out the inlet and outlet side ports of the Pilot Valve Housing (21) and inlet and outlet side ports of Valve Body (28).
70. Make sure that the hole in the outlet side pilot Orifice (53) is unobstructed. The Orifice (53) may be cleaned out by pushing a #62 drill through the hole.
71. Clean gasket surfaces on the Regulator Body (28) at (24) and (34). Also, clean the corresponding surfaces on the Bottom Plug (34) and Pilot Valve Housing (21). Scrape off all gasket or other material, then use either a wire brush or emery cloth. Wipe or blow the surfaces to remove small particles which may interfere with the gasket seals.

REGULATOR VALVE (reassembly)

72. Apply a small amount of Anti-Seize Compound or High Temperature Sealant to the threads of the Seat Ring (30). Use Seat Tool (43) and install the Seat Ring (30) from the top of the Regulator Body.
73. Re assemble the Main Valve Plunger assembly. Place the Main Valve Seat Disc (33) into the Disc Holder (32) and screw the Disc and Disc Holder onto the Plunger (31) hand tight. Place a wrench on the flats on the Plunger (31) and another wrench on the flats of the Disc Holder (32) and tighten until the Plunger makes a slight indentation on the Disc.
74. Insert the Main Valve Plunger assembly, (consisting the three parts assembled in the previous step), the Main Valve Spring (35), and the Plunger Guide Bushing (36) through the bottom of the Regulator Body.
75. Place a new Bottom Plug Gasket (34) on the Bottom Plug (37). Screw in the Bottom Plug until hand tight, then torque to the requirements specified in Figure 3.
76. Place the Piston Stop Plate (29) and then the Cylinder Liner (27) into the cylinder bore at the top of the Regulator Body (28).
77. Insert the two Piston Rings (26) into the grooves in the Piston (25). Make sure to stagger the gaps of the two Piston Rings. Holding the Piston Ring tightly in the Piston Ring groove in the Piston, insert the Piston into the Cylinder Liner. Push down on the Piston until positive contact with the top of the Main Valve Plunger (31) has been assured.
78. Place a new Top Cap Gasket (24) on the Regulator Body gasket surface and place the Pilot Valve Assembly on top of the Regulator Body (28). Orient the Pilot Valve Assembly with the inlet and outlet side pilot valve tubing ports are in line with the inlet and outlet ports of the Regulator Body (28).
79. Re-install the Pilot Inlet to Solenoid Tubing (48), the SAE Male to Male Adapter (49), and Solenoid Valve (51).
80. If you have removed your Regulator from the line, replace it in the line. Replace the union end O-rings and retaining rings with new parts before re-insertion into the line.
81. If necessary re-connect the lead wires of the solenoid valve to the safety temperature controller (switch) in accordance with applicable ship installation instructions.
82. Carry out the necessary test checks to make sure that the Regulator valve is working properly, as follows:
 - a. If the Regulator valve did not close, check per steps 26 through 30. When the test checks show that no excessive leakage exists, put the Regulator back into service per step 31.
 - b. If the Regulator valve did not open or if the temperature fluctuated widely, re-install the Pilot Outlet to Body Tubing (54) and the Pilot Inlet to Solenoid Tubing (48). Put the Regulator back into service to monitor performance as follows:

Shut off all steam to the Regulator, then place the Regulator back into operation per step 19. If necessary, readjust the Temperature Pilot to hold the desired Heater outlet water temperature per steps 11 through 18.

SPARE PARTS

It is recommended that the following Spare Parts be kept on hand for maintenance replacement purposes (Refer to Figure 3):

<u>Pc. No.</u>	<u>Description</u>	<u>Recommended Quantity</u>
<u>TEMPERATURE PILOT</u>		
1	Thermostatic Element	1
16	Pilot Valve Stem	1
19	Packing	1 Set
22	Pilot Valve Seat	1
46	O-ring, SAE Port	6
51	Solenoid Valve	1
<u>REGULATOR VALVE</u>		
24	Gasket - Body	1
25	Piston	1
26	Piston Rings	2
27	Cylinder Liner	1
30	Seat Ring	1
31	Main Valve Plunger	1
33	Main Valve Seat Disc	1
34	Gasket - Bottom Plug	1
43	Seat Tool	1

To order any Spare Parts per above or other replacement parts indicate on your purchase order:

Regulator Type (from nameplate or instruction title page)

Regulator Serial No. (from nameplate)

Pc. No. _____ or Part No. _____

Part Name

Quantity

and order from:

Trac Regulator Co. Inc.
160 South Terrace Avenue
Mount Vernon, New York 10550-2408

Phone: (914) 699-9352

(ALLOW 5" MINIMUM FOR DISASSEMBLY)

$13\frac{1}{32}$ (15" MAX.)

$4\frac{1}{8} \pm 3/16$

$9\frac{1}{2} \pm 1/8$

15 (MAX.)

$\phi 1/2$ (REF.)

VARI-
ABLE
ITEMS

LIST OF MATERIAL QUANTITIES FOR ONE UNIT

PC. NO.	DESCRIPTION	QTY.	MATERIAL	MATERIAL SPEC.	PART NO.	REMARKS
* 1	THERMOSTATIC ELEMENT	1	Cu/Cu ALLOY	MIL-DTL-19772	50202-01	
2	ADJUSTING WHEEL	1	BRASS	ASTM-B16	2029-00	ALLOY 360
3	SET SCREW, #8-32, 3/16 LONG	1	STEEL	COMMERCIAL	144-23	CUP POINT
4	SCREW, #8-32, BUTTON HD.	1	STEEL	COMMERCIAL	144-81	1/2 LONG
5	GUIDE- OHP SPRING	1	BRASS	ASTM-B16	2045-00	ALLOY 360
6	SCREW, #10-32, SOCKET HD.	4	CRES 18-8	COMMERCIAL	144-12	5/8 LONG
7	BONNET	1	BRASS	ASTM-B16	2042-00	ALLOY 360
8	RETAINER, OHP SPRING	1	BRASS	ASTM-B16	2046-00	ALLOY 360
9	PACKING CHAMBER	1	CRES 303	QQ-S-763	2039-00	
10	SCREW, 5/16-18 HEX CAP	4	CRES	ASTM-F593	144-44	1-1/8 LONG
11	SPRING, OVERHEAT PROTECTION	1	STEEL	ASTM-A229	1842-00	OIL TEMPERED
12	LABEL (WARMER)	1	PLASTIC	COMMERCIAL	1835-00	SELF-ADHESIVE
13	RETAINER, THRUST SPRING	1	BRASS	ASTM-B16	2044-00	ALLOY 360
14	SPRING, THRUST	1	STEEL	ASTM-A229	1844-00	OIL TEMPERED
15	LOCKNUT, STEM, 1/4-28	1	BRASS	ASTM-B16	330-00	ALLOY 360
16	STEM, PILOT VALVE	1	CRES 303	ASTM-A582	2047-00	
17	NUT, STUFFING BOX	1	BRASS	ASTM-B16	2048-00	ALLOY 360
18	GLAND, PACKING	1	BRASS	ASTM-B16	225-00	ALLOY 360
19	PACKING SET	1	TFE/GRAPHITE	COMMERCIAL	224-00	
20	BRACKET, PILOT	1	CST. BRONZE	ASTM-B61	2041-00	
21	HOUSING, PILOT VALVE	1	CST. BRONZE	ASTM-B61	2037-00	
22	SEAT, PILOT VALVE	1	PEEK (R)	COMMERCIAL	2040-00	(MIL-P46183 TY I)
23	SCREW, 1/2-13 HEX CAP	6	CRES	ASTM-F593	144-42	1-1/4 LONG
24	GASKET, BODY	1	ORG. FIBER	COMMERCIAL	2066-00	
25	PISTON	1	CRES 303	QQ-S-763	1036-01	
26	PISTON RING	2	CAST IRON	QQ-I-652	1034-00	NICKEL PLATED
27	LINER, CYLINDER	1	CRES 316	QQ-S-763	1039-01	
28	BODY	1	CST BRONZE	ASTM-B61	2060-00	
29	PLATE, PISTON STOP	1	CRES 303	ASTM-A582	1045-00	
30	SEAT RING	1	CRES 303	ASTM-A582	2073-00	
31	PLUNGER, MAIN VALVE	1	CRES 303	ASTM-A582	2067-00	
32	DISC HOLDER	1	CRES 303	ASTM-A582	2069-00	
33	DISC- MAIN VALVE SEAT	1	RULON	COMMERCIAL	2068-01	
34	GASKET- BOTTOM PLUG	1	ORG. FIBER	COMMERCIAL	1009-00	
35	SPRING- MAIN VALVE	1	INCONEL 600	QQ-W-390	999-00	
36	GUIDE BUSHING- PLUNGER	1	CRES 303	ASTM-A582	1030-00	
37	BOTTOM PLUG	1	CST. BRONZE	ASTM-B61	1014-01	
38	UNION NUT	2	CST. BRONZE	MIL-F-1183	194-00	
39	UNION TAILPIECE	2	CST. BRONZE	MIL-F-1183	188-00	
* 40	BRAZING RING	2	GRADE III	MIL-F-1183	182-00	PROVIDED ONLY WHEN SPECIFIED
* 41	RETAINING RING- U/E	2	CST. BRONZE	MIL-F-1183	265-00	IN CONTRACT OR ORDER
* 42	O-RING, U/E (ARP 129)	2	VITON	MIL-R-83248	271-02	
* 43	SEAT TOOL	1	STEEL	ASTM-A108	60539-00	
44	NAMEPLATE	1	CRES 302	COMMERCIAL	176-02	
45	DRIVE SCREW, #2 TYPE 'U'	2	CRES 302	COMMERCIAL	174-01	3/16 LONG
46	O-RING, 5/16 OD TUBE FITTING	6	VITON	MIL-R-83248	2054-03	ARP 905
47	FITTING-TUBE TO SAE MALE	1	STEEL	COMMERCIAL	2054-00	SAE-05
48	TUBE, PILOT INLET TO SOLENOID	1	COPPER	COMMERCIAL	2074-00	
49	ADAPTER- SAE MALE TO MALE	1	CRES 303	QQ-S-763	2058-00	
50	LOCKNUT- ADAPTER	2	STEEL	COMMERCIAL	2054-02	SAE-05
51	SOLENOID VALVE	1	CRES	COMMERCIAL	2049-00	
52	FITTING 90°- TUBE TO SAE MALE	3	STEEL	COMMERCIAL	2054-01	SAE-05
53	ORIFICE	1	BRASS	COMMERCIAL	2070-00	
54	TUBE, PILOT OUTLET TO BODY	1	COPPER	COMMERCIAL	2075-00	

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	REVISED NOTE 5- NSN UPDATE	10/21/04	MD

GENERAL NOTES

NOTE 1:
VALVE MANUFACTURED IN ACCORDANCE WITH MIL-DTL-19772(SH)
TYPE 3, CLASS I, SERIES 100 (ELECTRICALLY FAILSAFE)

NOTE 2:
VALVE PROVIDED WITH UNION ENDS IN ACCORDANCE WITH MIL-F-1183.
TAILPIECES ARE GROOVED FOR BUT PROVIDED WITHOUT PREINSERTED
BRAZING RINGS. UNION END O-RINGS AND RETAINING RINGS ARE
PROVIDED ONLY WHEN SPECIFIED ON CONTRACT OR ORDER.

NOTE 3:
HYDROSTATIC TEST PRESSURE IS 200 PSIG

NOTE 4:
TUBE FITTING CONNECTIONS TO BODY, PILOT VALVE HOUSING,
AND SOLENOID VALVE TO BE 5/16 OD TUBE (STRAIGHT THREAD)
IN ACCORDANCE WITH MS16142. O-RING MATERIAL TO BE VITON
PER MIL-R-83248 TYPE I, CLASS I.

NOTE 5:
VALVE IDENTIFICATION NUMBER 40609-801 IS APPLICABLE TO
NSN 4820-01-515-9492 (NSN 4820-01-087-7105 MAY NOT
REFERENCE THE TRAC VALVE ID NUMBER, BUT THE TRAC VALVE
IS A DIRECT REPLACEMENT). ADDITIONAL DESCRIPTIVE INFORMATION
AS FOLLOWS:
TEMPERATURE RANGE: 120-180 DEG. F
CAPILLARY LENGTH: 8 FT.

NOTE 6:
INLET AND OUTLET PIPING ARRANGEMENT AND FITTINGS SHOWN
ON SHEET 2.

NOTES CONTINUED ON SHEET 2

TOLERANCES UNLESS OTHERWISE SPECIFIED:
SURFACE FINISH: 125RH
FRACTION: +/- 1/64
DECIMAL: +/- .005
ANGLE: +/- 1/2

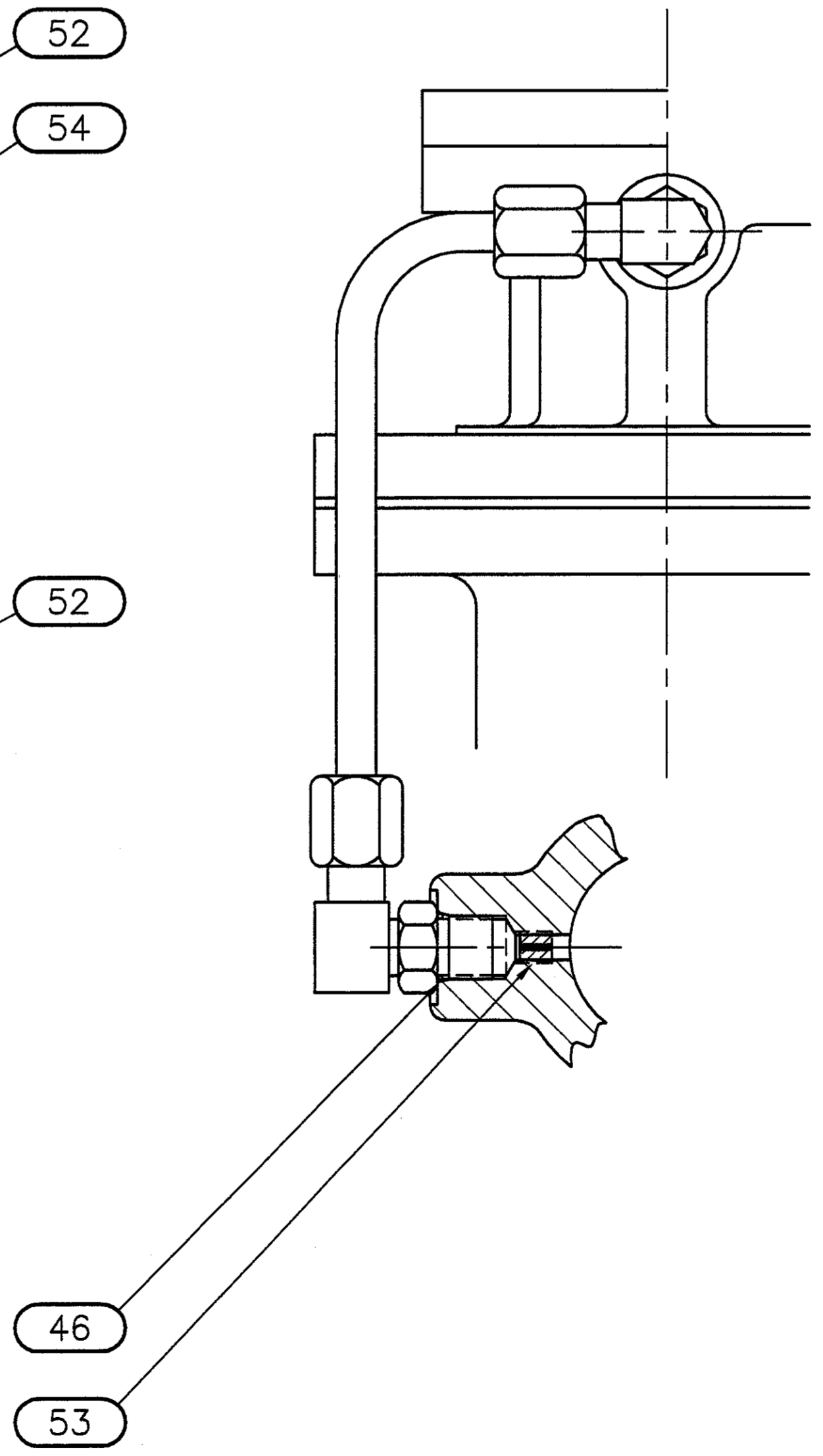
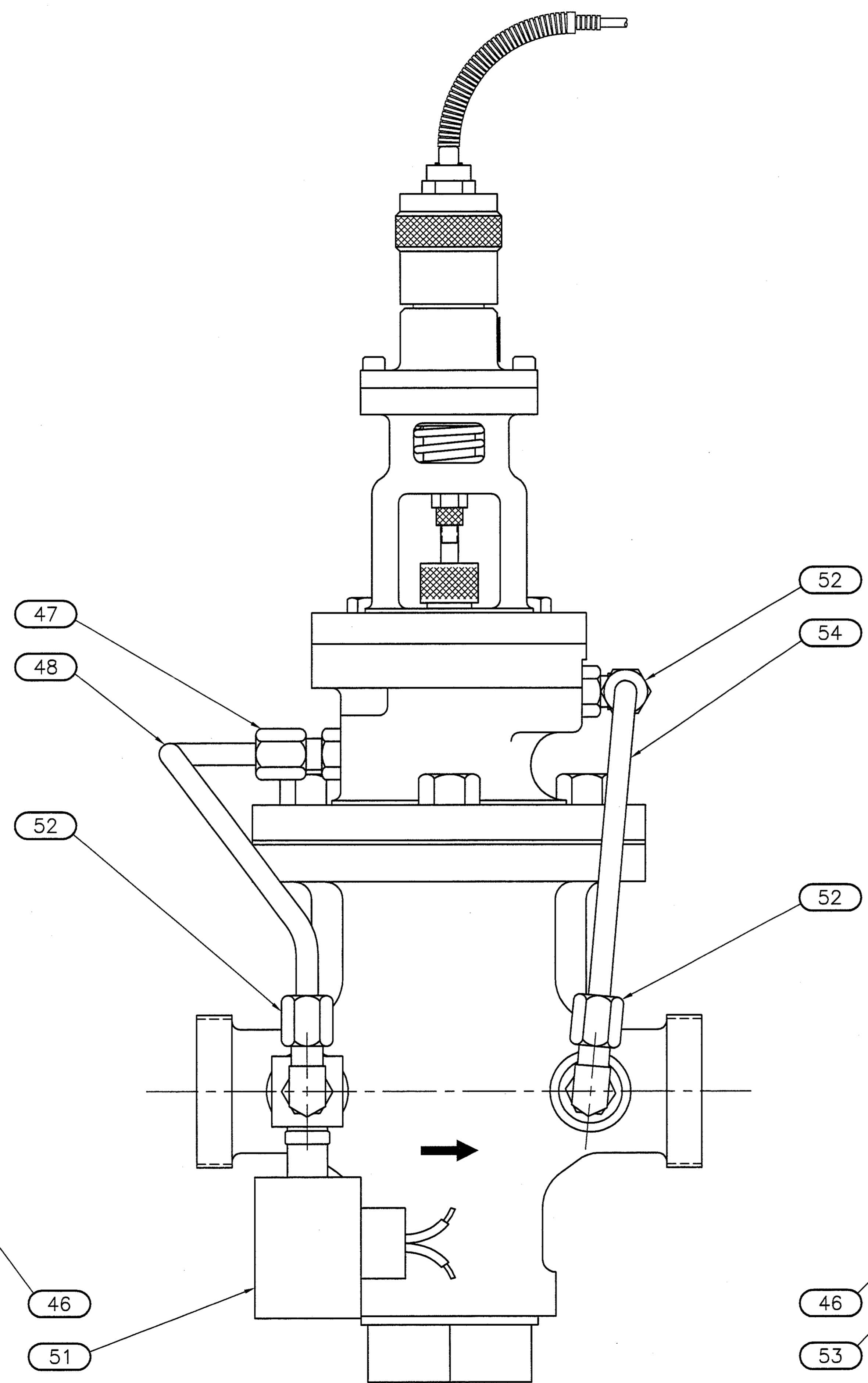
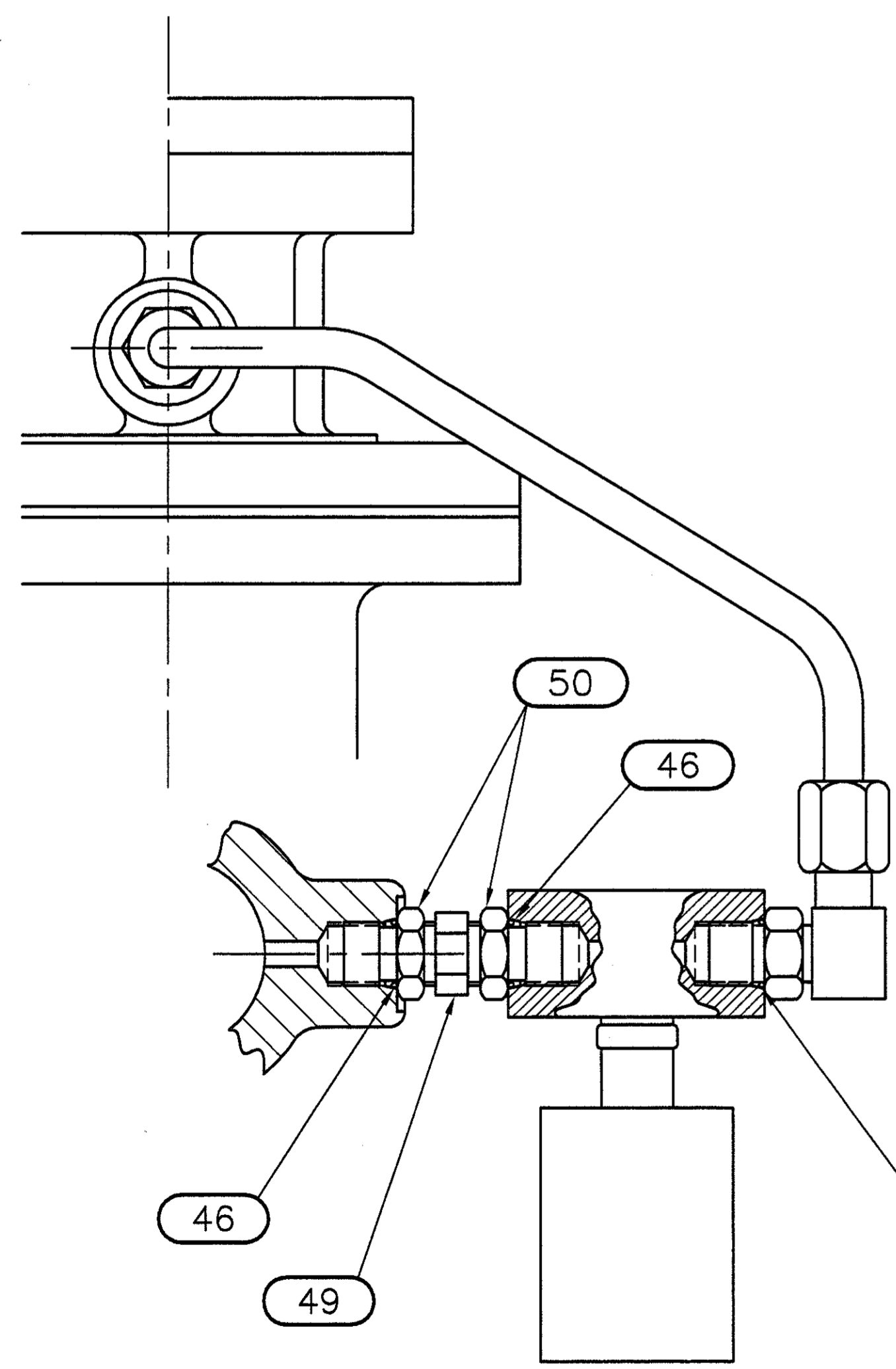
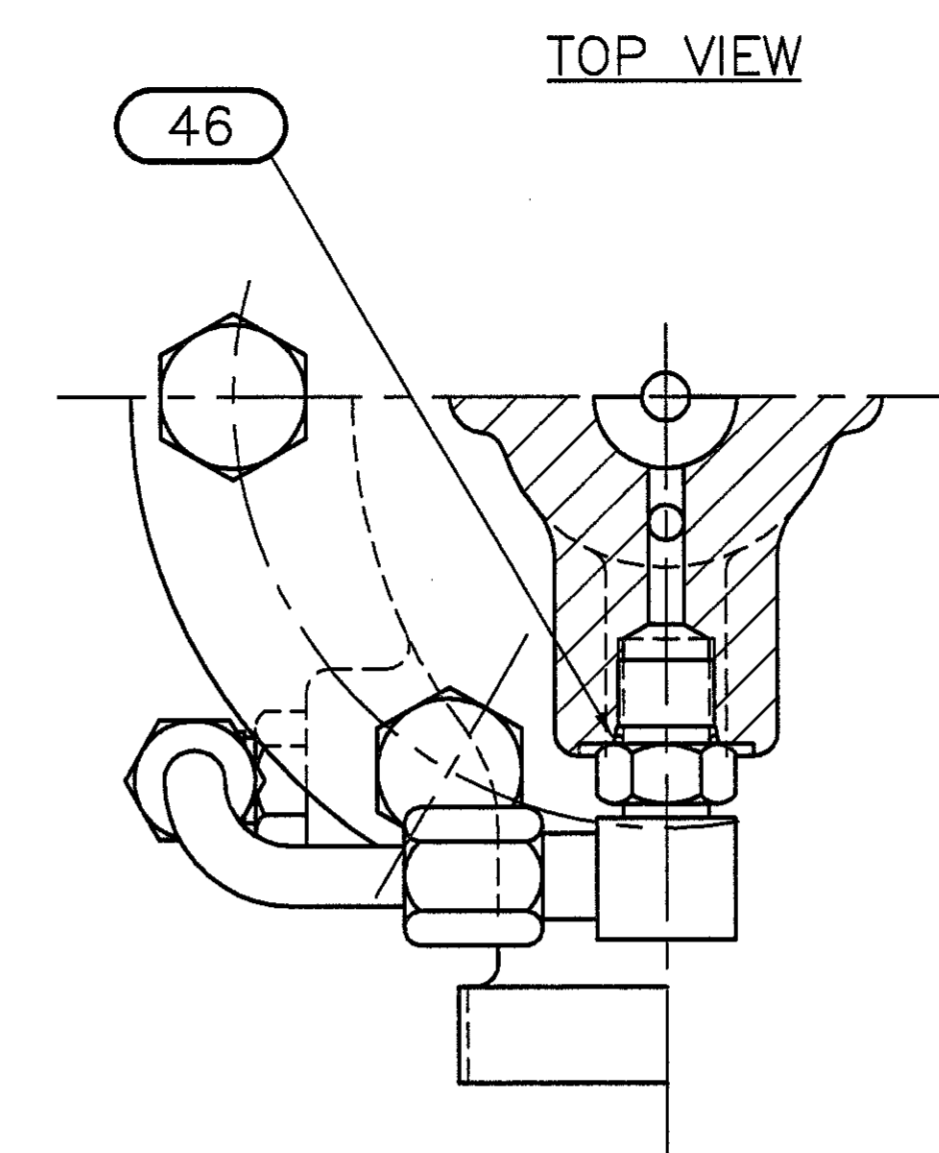
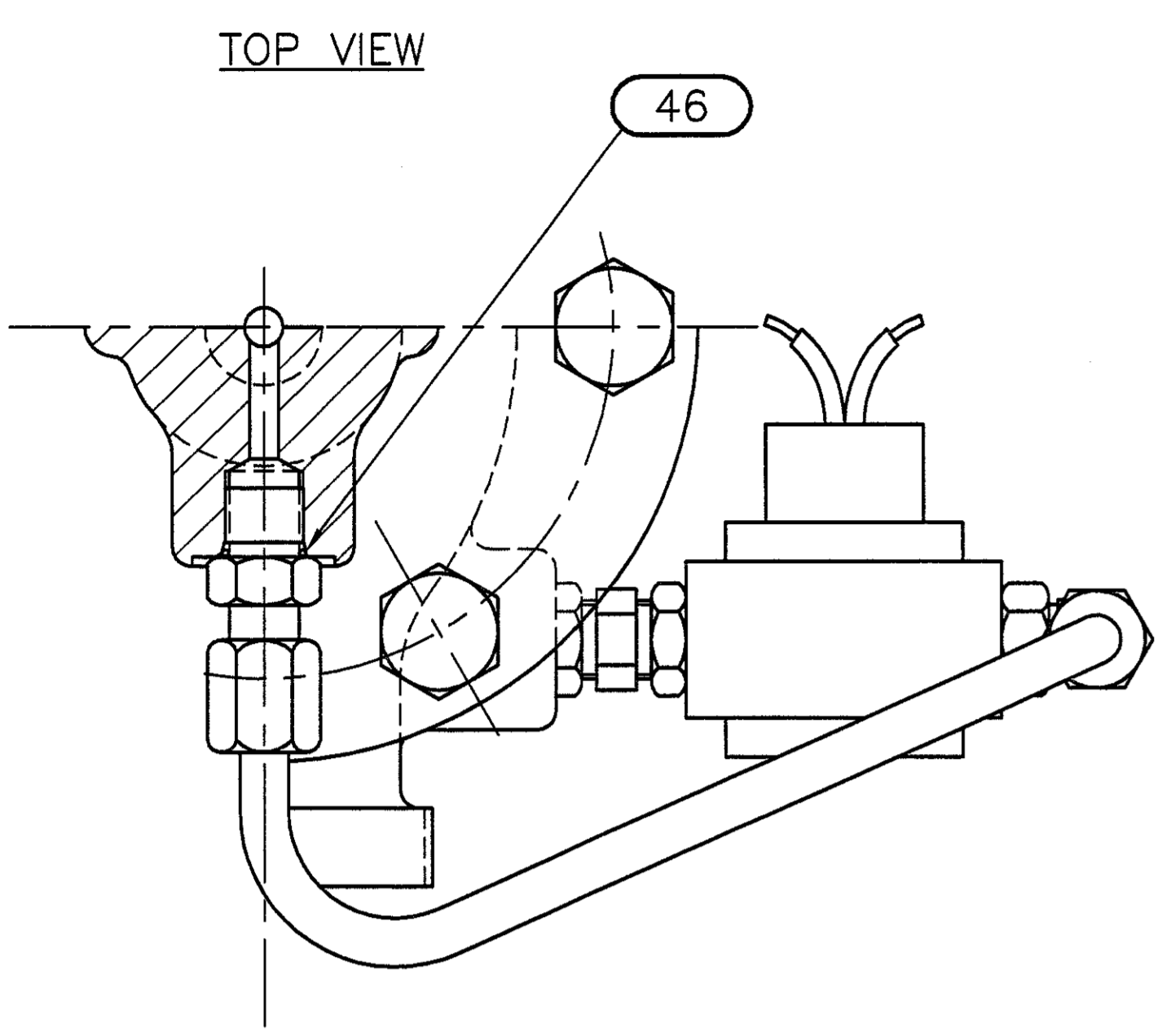
TRAC REGULATOR CO., INC.
MOUNT VERNON, NEW YORK 10550

1" STYLE 'P' THERMOSTATIC TEMPERATURE REGULATING
VALVE ASSEMBLY - UNION END

DATE: 8/16/2002
DRAWN BY: MD
APPROVED:

SIZE	PSCM NO.	DRAWING NO.	REV.
D	55378	40609-8	A
SCALE: NTS	WT. ACT.: 38 LB	SHEET 1 OF 2	

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	SEE SHEET 1		



GENERAL NOTES (CONT'D)

NOTE 7:
 THIS EQUIPMENT IS SIMILAR IN DESIGN, CONSTRUCTION, AND INTENDED SERVICE TO THE EQUIPMENT DEPICTED ON TRAC REGULATOR DRAWING 40611-8 WHICH HAS BEEN ACCEPTED AS MEETING ALL HI-SHOCK REQUIREMENTS IN ACCORDANCE WITH MIL-S-901D FOR LIGHT WEIGHT, GRADE A SHOCKPROOF EQUIPMENT AS FOLLOWS:
 EQUIPMENT CLASS: 1
 MOUNTING FIXTURE: 4C
 SHOCK TEST TYPE: A
 MOUNTING LOCATION ABOARD SHIP: HULL
 MOUNTING PLANE ABOARD SHIP: OTHER
 MOUNTING ORIENTATION ABOARD SHIP: N/A

TESTING ACTIVITY AND TEST REPORT NO.:
 AERO NAV LABORATORIES TEST REPORT 2-4421
 DATED 25 JULY 2002 AND POST SHOCK TEST
 DATED 9 AUGUST 2002

NOTE 8:
 THIS EQUIPMENT IS SIMILAR IN DESIGN, CONSTRUCTION, AND INTENDED SERVICE TO THE EQUIPMENT DEPICTED ON TRAC REGULATOR DRAWING 40611-8 WHICH HAS BEEN ACCEPTED AS MEETING ALL TYPE 1 VIBRATION REQUIREMENTS IN ACCORDANCE WITH MIL-STD-167/1 AS FOLLOWS:

TESTING ACTIVITY AND TEST REPORT NO.:
 AERO NAV LABORATORIES TEST REPORT 2-4421
 DATED 25 JULY 2002 AND POST SHOCK TEST
 DATED 9 AUGUST 2002

NOTE 9
 RECOMMENDED TORQUE VALUES

- PC.NO. 6 TO PC.NO. 20 16 IN.LB.
- PC.NO. 9 TO PC.NO. 21 90 FT.LB.
- PC.NO. 10 TO PC.NO. 21 100 IN.LB.
- PC.NO. 23 TO PC.NO. 28 400 IN.LB.
- PC.NO. 31 TO PC.NO. 32 10 IN.LB.
- PC.NO. 37 TO PC.NO. 28 105 FT.LB.

INLET SIDE VIEW

OUTLET SIDE VIEW

TOLERANCES UNLESS OTHERWISE SPECIFIED: SURFACE FINISH: 125RHR FRACTION: +/- 1/64 DECIMAL: +/- .005 ANGLE: +/- 1/2'		TRAC REGULATOR CO., INC. MOUNT VERNON, NEW YORK 10550	
DATE: 8/5/2002 DRAWN BY: MD APPROVED:		1" STYLE 'P' THERMOSTATIC TEMPERATURE REGULATING VALVE ASSEMBLY - UNION END	
SIZE D	FSCM NO. 55378	DRAWING NO. 40609-8	REV. A
SCALE: NTS	WT. ACT.: NONE	SHEET 2 OF 2	

VARIABLE ITEMS

LIST OF MATERIAL QUANTITIES FOR ONE UNIT

REVISIONS

PC. NO.	DESCRIPTION	QTY.	MATERIAL	MATERIAL SPEC.	PART NO.	REMARKS
* 1	THERMOSTATIC ELEMENT	1	Cu/Cu ALLOY	MIL-DTL-19772	50202-00	
2	ADJUSTING WHEEL	1	BRASS	ASTM-B16	2029-00	ALLOY 360
3	SET SCREW, #8-32, 3/16 LONG	1	STEEL	COMMERCIAL	144-23	CUP POINT
4	SCREW, #8-32, BUTTON HD.	1	STEEL	COMMERCIAL	144-81	1/2 LONG
5	GUIDE- OHP SPRING	1	BRASS	ASTM-B16	2045-00	ALLOY 360
6	SCREW, #10-32, SOCKET HD.	4	CRES 18-8	COMMERCIAL	144-12	5/8 LONG
7	BONNET	1	BRASS	ASTM-B16	2042-00	ALLOY 360
8	RETAINER, OHP SPRING	1	BRASS	ASTM-B16	2046-00	ALLOY 360
9	PACKING CHAMBER	1	CRES 303	QQ-S-763	2039-00	
10	SCREW, 5/16-18 HEX CAP	4	CRES	ASTM-F593	144-44	1-1/8 LONG
11	SPRING, OVERHEAT PROTECTION	1	STEEL	ASTM-A229	1842-00	OIL TEMPERED
12	LABEL (WARMER)	1	PLASTIC	COMMERCIAL	1835-00	SELF-ADHESIVE
13	RETAINER, THRUST SPRING	1	BRASS	ASTM-B16	2044-00	ALLOY 360
14	SPRING, THRUST	1	STEEL	ASTM-A229	1844-00	OIL TEMPERED
15	LOCKNUT, STEM, 1/4-28	1	BRASS	ASTM-B16	330-00	ALLOY 360
16	STEM, PILOT VALVE	1	CRES 303	ASTM-A582	2047-00	
17	NUT, STUFFING BOX	1	BRASS	ASTM-B16	2048-00	ALLOY 360
18	GLAND, PACKING	1	BRASS	ASTM-B16	225-00	ALLOY 360
19	PACKING SET	1	TFE/GRAPHITE	COMMERCIAL	224-00	
20	BRACKET, PILOT	1	CST. BRONZE	ASTM-B61	2041-00	
21	HOUSING, PILOT VALVE	1	CST. BRONZE	ASTM-B61	2043-00	
22	SEAT, PILOT VALVE	1	PEEK (R)	COMMERCIAL	2040-00	(MIL-P46183 TY I)
23	SCREW, 1/2-13 HEX CAP	6	CRES	ASTM-F593	144-42	1-1/4 LONG
24	GASKET, BODY	1	ORG. FIBER	COMMERCIAL	2062-00	
25	PISTON	1	CRES 303	QQ-S-763	1037-01	
26	PISTON RING	2	CAST IRON	QQ-I-652	1035-00	NICKEL PLATED
27	LINER, CYLINDER	1	CRES 316	QQ-S-763	1038-01	
28	BODY	1	CST BRONZE	ASTM-B61	2059-00	
29	PLATE, PISTON STOP	1	CRES 303	ASTM-A582	1046-00	
30	SEAT RING	1	CRES 303	ASTM-A582	2071-00	
31	PLUNGER, MAIN VALVE	1	CRES 303	ASTM-A582	2063-00	
32	DISC HOLDER	1	CRES 303	ASTM-A582	2065-00	
33	DISC- MAIN VALVE SEAT	1	RULON	COMMERCIAL	2064-01	
34	GASKET- BOTTOM PLUG	1	ORG. FIBER	COMMERCIAL	1009-00	
35	SPRING- MAIN VALVE	1	INCONEL 600	QQ-W-390	998-00	
36	GUIDE BUSHING- PLUNGER	1	CRES 303	ASTM-A582	1015-00	
37	BOTTOM PLUG	1	CST. BRONZE	ASTM-B61	1014-01	
38	UNION NUT	2	CST. BRONZE	MIL-F-1183	195-00	
39	UNION TAILPIECE	2	CST. BRONZE	MIL-F-1183	189-00	
* 40	BRAZING RING	2	GRADE III	MIL-F-1183	183-00	PROVIDED ONLY WHEN SPECIFIED IN CONTRACT OR ORDER
* 41	RETAINING RING- U/E	2	CST. BRONZE	MIL-F-1183	266-00	
* 42	O-RING, U/E (ARP 134)	2	VITON	MIL-R-83248	272-03	
* 43	SEAT TOOL	1	STEEL	ASTM-A108	60538-00	
44	NAMEPLATE	1	CRES 302	COMMERCIAL	176-03	
45	DRIVE SCREW, #2 TYPE 'U'	2	CRES 302	COMMERCIAL	174-01	3/16 LONG
46	O-RING, 5/16 OD TUBE FITTING	6	VITON	MIL-R-83248	2054-03	ARP 905
47	FITTING-TUBE TO SAE MALE	1	STEEL	COMMERCIAL	2054-00	SAE-05
48	TUBE, PILOT INLET TO SOLENOID	1	COPPER	COMMERCIAL	2074-00	
49	ADAPTER- SAE MALE TO MALE	1	CRES 303	QQ-S-763	2058-00	
50	LOCKNUT- ADAPTER	2	STEEL	COMMERCIAL	2054-02	SAE-05
51	SOLENOID VALVE	1	CRES	COMMERCIAL	2049-00	
52	FITTING 90°- TUBE TO SAE MALE	3	STEEL	COMMERCIAL	2054-01	SAE-05
53	ORIFICE	1	BRASS	COMMERCIAL	2070-00	
54	TUBE, PILOT OUTLET TO BODY	1	COPPER	COMMERCIAL	2075-00	

REV	DESCRIPTION	DATE	APPROVED

(ALLOW 5" MINIMUM FOR DISASSEMBLY)

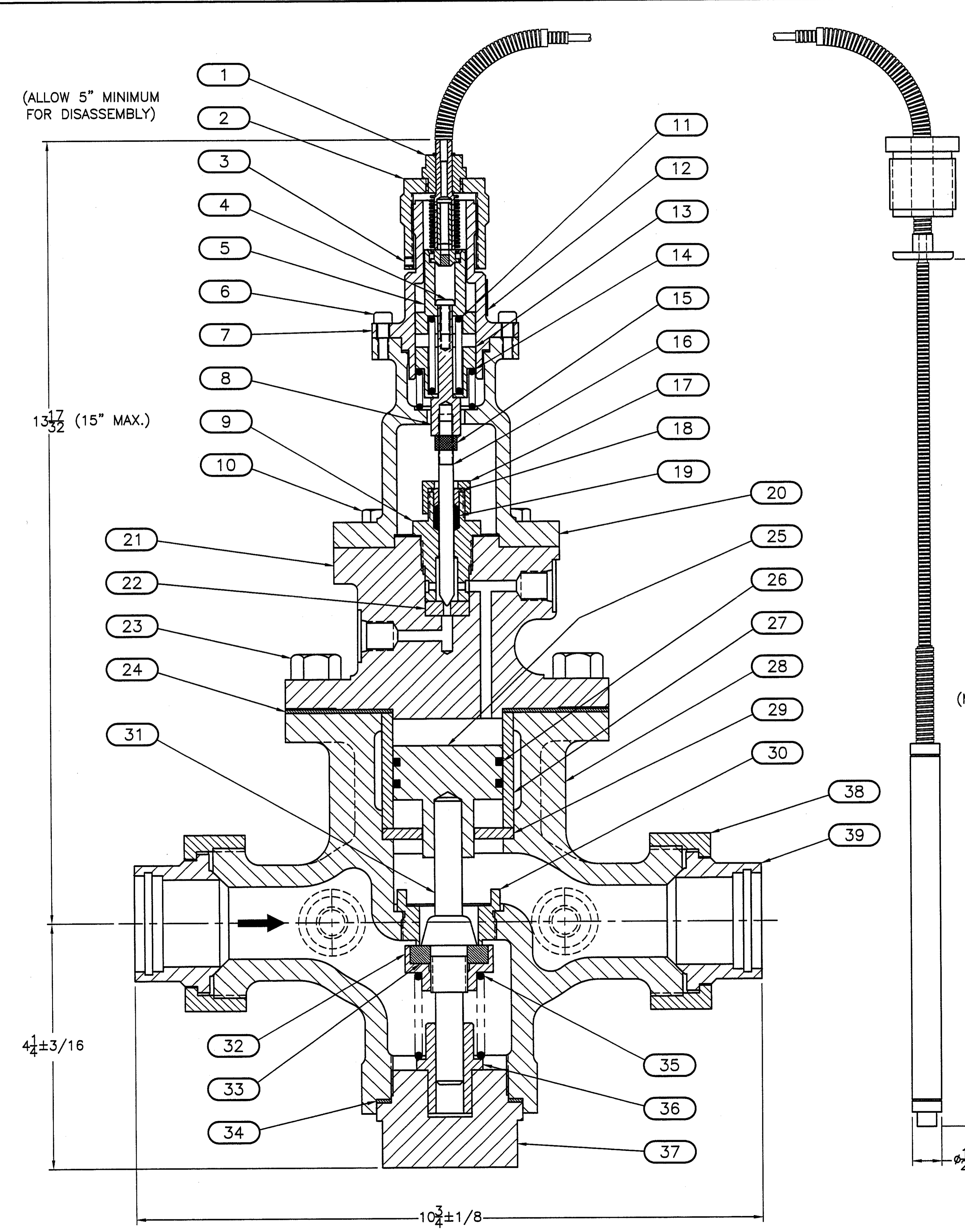
13 17/32 (15" MAX.)

4 1/4 ± 3/16

10 3/4 ± 1/8

15 (MAX.)

ø 1/2 (REF.)



GENERAL NOTES

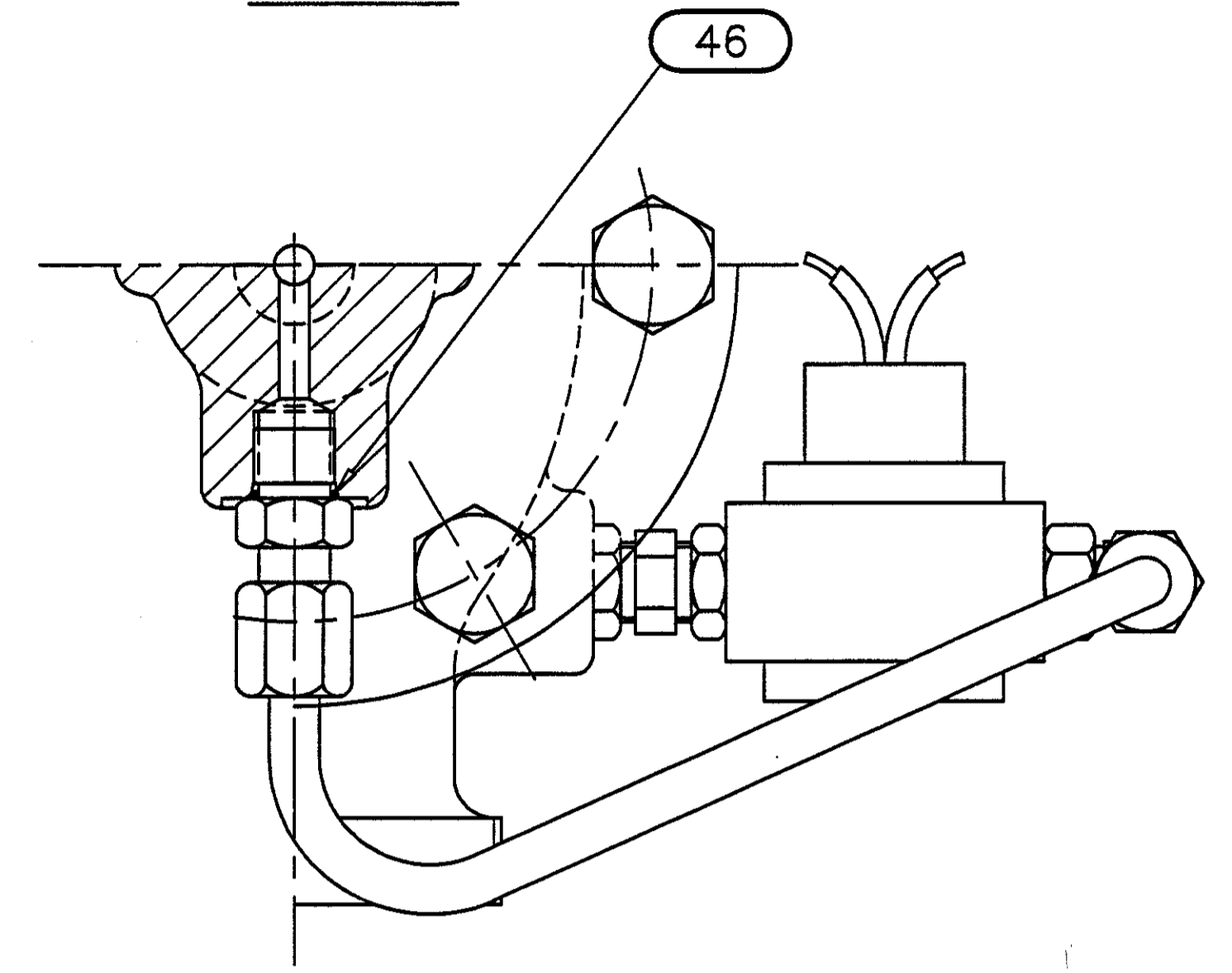
- NOTE 1:
VALVE MANUFACTURED IN ACCORDANCE WITH MIL-DTL-19772(SH) TYPE 3, CLASS I, SERIES 100 (ELECTRICALLY FAILSAFE)
- NOTE 2:
VALVE PROVIDED WITH UNION ENDS IN ACCORDANCE WITH MIL-F-1183. TAILPIECES ARE GROOVED FOR BUT PROVIDED WITHOUT PREINSISTED BRAZING RINGS. UNION END O-RINGS AND RETAINING RINGS ARE PROVIDED ONLY WHEN SPECIFIED ON CONTRACT OR ORDER.
- NOTE 3:
HYDROSTATIC TEST PRESSURE IS 200 PSIG
- NOTE 4:
TUBE FITTING CONNECTIONS TO BODY, PILOT VALVE HOUSING, AND SOLENOID VALVE TO BE 5/16 OD TUBE (STRAIGHT THREAD) IN ACCORDANCE WITH MS16142. O-RING MATERIAL TO BE VITON PER MIL-R-83248 TYPE I, CLASS I.

- NOTE 5:
VALVE IDENTIFICATION NUMBER 40610-801 IS APPLICABLE TO NSN 4820-01-143-2864. ADDITIONAL DESCRIPTIVE INFORMATION AS FOLLOWS:
TEMPERATURE RANGE: 120-180 DEG. F
CAPILLARY LENGTH: 10 FT.
- NOTE 6:
INLET AND OUTLET PIPING ARRANGEMENT AND FITTINGS SHOWN ON SHEET 2.
- NOTES CONTINUED ON SHEET 2

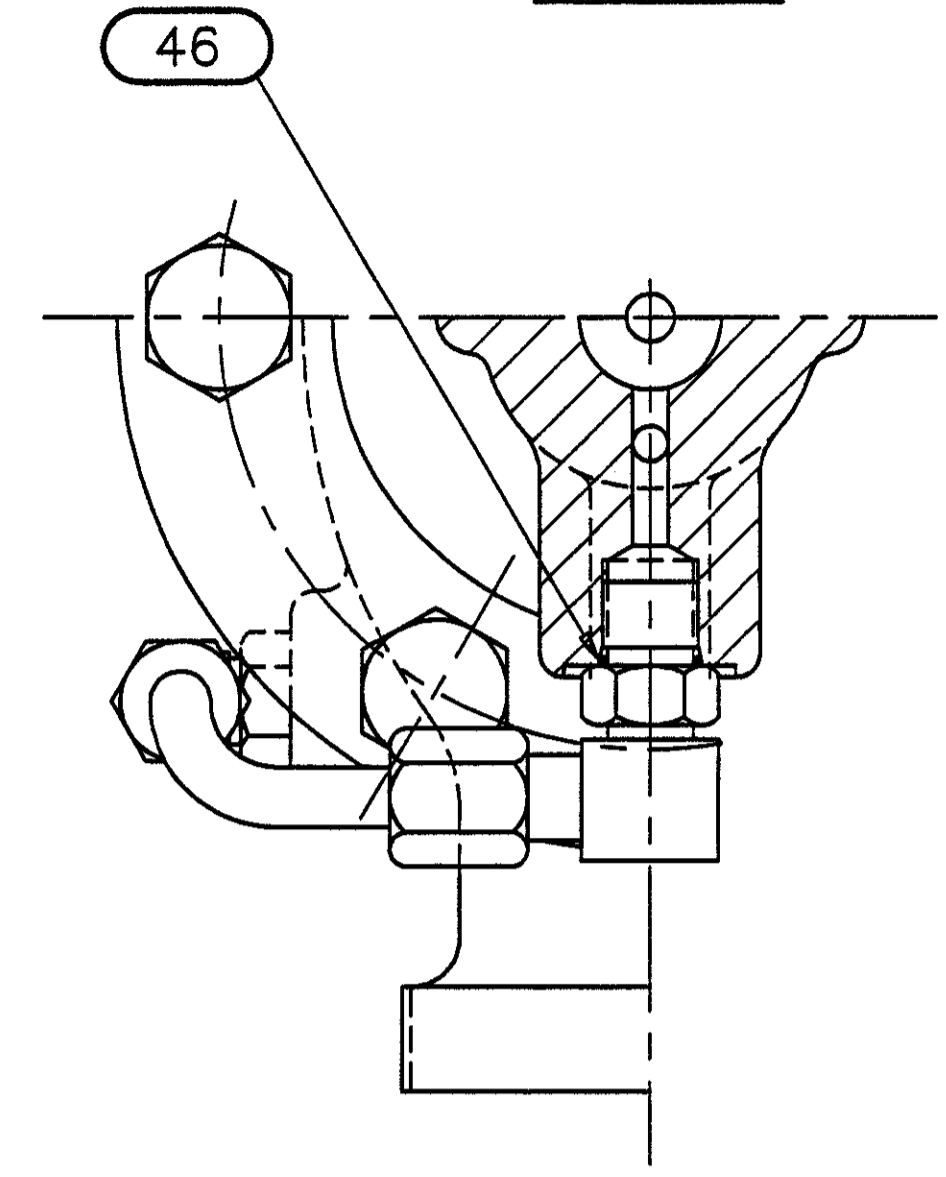
TOLERANCES UNLESS OTHERWISE SPECIFIED: SURFACE FINISH: 125RHR		TRAC REGULATOR CO., INC. MOUNT VERNON, NEW YORK 10550	
FRACTION: +/- 1/64 DECIMAL: +/- .005 ANGLE: +/- 1/2		1-1/4" STYLE 'P' THERMOSTATIC TEMPERATURE REGULATING VALVE ASSEMBLY - UNION END	
DATE: 8/1/2002	SIZE: D	FSDM NO.: 55378	DRAWING NO.: 40610-8
DRAWN BY: MD	SCALE: NTS	WT. ACT: 42 LBS	SHEET 1 OF 2
APPROVED:			

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

TOP VIEW



TOP VIEW



GENERAL NOTES (CONT'D)

NOTE 7:
 THIS EQUIPMENT IS SIMILAR IN DESIGN, CONSTRUCTION, AND INTENDED SERVICE TO THE EQUIPMENT DEPICTED ON TRAC REGULATOR DRAWING 40611-8 WHICH HAS BEEN ACCEPTED AS MEETING ALL HI-SHOCK REQUIREMENTS IN ACCORDANCE WITH MIL-S-901D FOR LIGHT WEIGHT, GRADE A SHOCKPROOF EQUIPMENT AS FOLLOWS:
 EQUIPMENT CLASS: 1
 MOUNTING FIXTURE: 4C
 SHOCK TEST TYPE: A
 MOUNTING LOCATION ABOARD SHIP: HULL
 MOUNTING PLANE ABOARD SHIP: OTHER
 MOUNTING ORIENTATION ABOARD SHIP: N/A

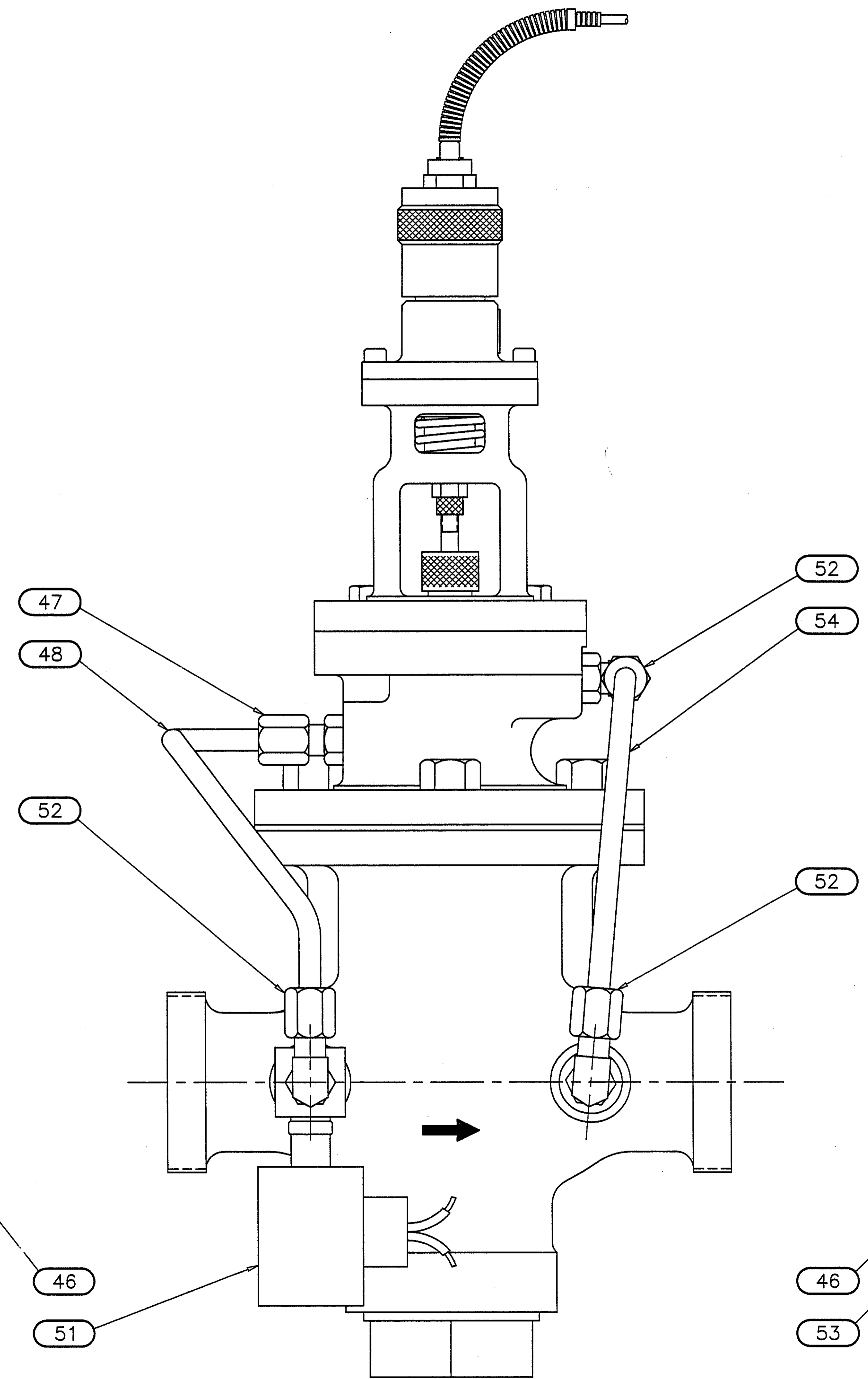
TESTING ACTIVITY AND TEST REPORT NO.:
 AERO NAV LABORATORIES TEST REPORT 2-4421
 DATED 25 JULY 2002 AND POST SHOCK TEST
 DATED 9 AUGUST 2002

NOTE 8:
 THIS EQUIPMENT IS SIMILAR IN DESIGN, CONSTRUCTION, AND INTENDED SERVICE TO THE EQUIPMENT DEPICTED ON TRAC REGULATOR DRAWING 40611-8 WHICH HAS BEEN ACCEPTED AS MEETING ALL TYPE 1 VIBRATION REQUIREMENTS IN ACCORDANCE WITH MIL-STD-167/1 AS FOLLOWS:

TESTING ACTIVITY AND TEST REPORT NO.:
 AERO NAV LABORATORIES TEST REPORT 2-4421
 DATED 25 JULY 2002 AND POST SHOCK TEST
 DATED 9 AUGUST 2002

NOTE 9
 RECOMMENDED TORQUE VALUES

- PC.NO. 6 TO PC.NO. 20 16 IN.LB.
- PC.NO. 9 TO PC.NO. 21 90 FT.LB.
- PC.NO. 10 TO PC.NO. 21 100 IN.LB.
- PC.NO. 23 TO PC.NO. 28 400 IN.LB.
- PC.NO. 31 TO PC.NO. 32 120 IN.LB.
- PC.NO. 37 TO PC.NO. 28 105 FT.LB.



INLET SIDE VIEW

OUTLET SIDE VIEW

TOLERANCES UNLESS OTHERWISE SPECIFIED: SURFACE FINISH: 125RIR FRACTION: +/- 1/64 DECIMAL: +/- .005 ANGLE: +/- 1/2'		TRAC REGULATOR CO., INC. MOUNT VERNON, NEW YORK 10550	
DATE: 8/1/2002 DRAWN BY: MD APPROVED:		1-1/4" STYLE 'P' THERMOSTATIC TEMPERATURE REGULATING VALVE ASSEMBLY - UNION END	
SIZE: D	FSCM NO.: 55378	DRAWING NO.: 40610-8	REV.
SCALE: NTS	WT. ACT.: NONE	SHEET 2 OF 2	

(ALLOW 5" MINIMUM FOR DISASSEMBLY)

13 $\frac{21}{32}$ (15" MAX.)

4 $\frac{9}{16}$ ± 3/16

11 $\frac{3}{4}$ ± 1/8

15 (MAX.)

Ø $\frac{1}{2}$ (REF.)

VARIABLE ITEMS	LIST OF MATERIAL QUANTITIES FOR ONE UNIT						REVISIONS				
	PC. NO.	DESCRIPTION	QTY.	MATERIAL	MATERIAL SPEC.	PART NO.	REMARKS	REV	DESCRIPTION	DATE	APPROVED
*	1	THERMOSTATIC ELEMENT	1	Cu/Cu ALLOY	MIL-DTL-19772	50202-00					
	2	ADJUSTING WHEEL	1	BRASS	ASTM-B16	2029-00	ALLOY 360				
	3	SET SCREW, #8-32, 3/16 LONG	1	STEEL	COMMERCIAL	144-23	CUP POINT				
	4	SCREW, #8-32, BUTTON HD.	1	STEEL	COMMERCIAL	144-81	1/2 LONG				
	5	GUIDE- OHP SPRING	1	BRASS	ASTM-B16	2045-00	ALLOY 360				
	6	SCREW, #10-32, SOCKET HD.	4	CRES 18-8	COMMERCIAL	144-12	5/8 LONG				
	7	BONNET	1	BRASS	ASTM-B16	2042-00	ALLOY 360				
	8	RETAINER, OHP SPRING	1	BRASS	ASTM-B16	2046-00	ALLOY 360				
	9	PACKING CHAMBER	1	CRES 303	QQ-S-763	2039-00					
	10	SCREW, 5/16-18 HEX CAP	4	CRES	ASTM-F593	144-44	1-1/8 LONG				
	11	SPRING, OVERHEAT PROTECTION	1	STEEL	ASTM-A229	1842-00	OIL TEMPERED				
	12	LABEL (WARMER)	1	PLASTIC	COMMERCIAL	1835-00	SELF-ADHESIVE				
	13	RETAINER, THRUST SPRING	1	BRASS	ASTM-B16	2044-00	ALLOY 360				
	14	SPRING, THRUST	1	STEEL	ASTM-A229	1844-00	OIL TEMPERED				
	15	LOCKNUT, STEM, 1/4-28	1	BRASS	ASTM-B16	330-00	ALLOY 360				
	16	STEM, PILOT VALVE	1	CRES 303	ASTM-A582	2047-00					
	17	NUT, STUFFING BOX	1	BRASS	ASTM-B16	2048-00	ALLOY 360				
	18	GLAND, PACKING	1	BRASS	ASTM-B16	225-00	ALLOY 360				
	19	PACKING SET	1	TFE/GRAPHITE	COMMERCIAL	224-00					
	20	BRACKET, PILOT	1	CST. BRONZE	ASTM-B61	2041-00					
	21	HOUSING, PILOT VALVE	1	CST. BRONZE	ASTM-B61	2038-00					
	22	SEAT, PILOT VALVE	1	PEEK (R)	COMMERCIAL	2040-00	(MIL-P46183 TY I)				
	23	SCREW, 1/2-13 HEX CAP	6	CRES	ASTM-F593	144-42	1-1/4 LONG				
	24	GASKET, BODY	1	ORG. FIBER	COMMERCIAL	2053-00					
	25	PISTON	1	CRES 303	QQ-S-763	1043-01					
	26	PISTON RING	2	CAST IRON	QQ-I-652	1044-00	NICKEL PLATED				
	27	LINER, CYLINDER	1	CRES 316	QQ-S-763	1031-01					
	28	BODY	1	CST BRONZE	ASTM-B61	2050-00					
	29	PLATE, PISTON STOP	1	CRES 303	ASTM-A582	1055-00					
	30	SEAT RING	1	CRES 303	ASTM-A582	2052-00					
	31	PLUNGER, MAIN VALVE	1	CRES 303	ASTM-A582	2051-00					
	32	DISC HOLDER	1	CRES 303	ASTM-A582	1684-00					
	33	DISC- MAIN VALVE SEAT	1	RULON	COMMERCIAL	1683-01					
	34	GASKET- BOTTOM PLUG	1	ORG. FIBER	COMMERCIAL	1680-00					
	35	SPRING- MAIN VALVE	1	INCONEL 600	QQ-W-390	998-00					
	36	GUIDE BUSHING- PLUNGER	1	CRES 303	ASTM-A582	1015-00					
	37	BOTTOM PLUG	1	CST. BRONZE	ASTM-B61	1681-00					
	38	UNION NUT	2	CST. BRONZE	MIL-F-1183	196-00					
	39	UNION TAILPIECE	2	CST. BRONZE	MIL-F-1183	190-00					
*	40	BRAZING RING	2	GRADE III	MIL-F-1183	184-00					
*	41	RETAINING RING- U/E	2	CST. BRONZE	MIL-F-1183	267-00	PROVIDED ONLY WHEN SPECIFIED IN CONTRACT OR ORDER				
*	42	O-RING, U/E (ARP 139)	2	VITON	MIL-R-83248	273-02					
*	43	SEAT TOOL	1	STEEL	ASTM-A108	60537-00					
	44	NAMEPLATE	1	CRES 302	COMMERCIAL	176-04					
	45	DRIVE SCREW, #2 TYPE 'U'	2	CRES 302	COMMERCIAL	174-01	3/16 LONG				
	46	O-RING, 5/16 OD TUBE FITTING	6	VITON	MIL-R-83248	2054-03	ARP 905				
	47	FITTING-TUBE TO SAE MALE	1	STEEL	COMMERCIAL	2054-00	SAE-05				
	48	TUBE, PILOT INLET TO SOLENOID	1	COPPER	COMMERCIAL	2056-00					
	49	ADAPTER- SAE MALE TO MALE	1	CRES 303	QQ-S-763	2058-00					
	50	LOCKNUT- ADAPTER	2	STEEL	COMMERCIAL	2054-02	SAE-05				
	51	SOLENOID VALVE	1	CRES	COMMERCIAL	2049-00					
	52	FITTING 90°- TUBE TO SAE MALE	3	STEEL	COMMERCIAL	2054-01	SAE-05				
	53	ORIFICE	1	BRASS	COMMERCIAL	2070-00					
	54	TUBE, PILOT OUTLET TO BODY	1	COPPER	COMMERCIAL	2057-00					

GENERAL NOTES

NOTE 1:
VALVE MANUFACTURED IN ACCORDANCE WITH MIL-DTL-19772(SH) TYPE 3, CLASS I, SERIES 100 (ELECTRICALLY FAILSAFE)

NOTE 2:
VALVE PROVIDED WITH UNION ENDS IN ACCORDANCE WITH MIL-F-1183. TAILPIECES ARE GROOVED FOR BUT PROVIDED WITHOUT PREINSERTED BRAZING RINGS. UNION END O-RINGS AND RETAINING RINGS ARE PROVIDED ONLY WHEN SPECIFIED ON CONTRACT OR ORDER.

NOTE 3:
HYDROSTATIC TEST PRESSURE IS 200 PSIG

NOTE 4:
TUBE FITTING CONNECTIONS TO BODY, PILOT VALVE HOUSING, AND SOLENOID VALVE TO BE 5/16 OD TUBE (STRAIGHT THREAD) IN ACCORDANCE WITH MS16142. O-RING MATERIAL TO BE VITON PER MIL-R-83248 TYPE I, CLASS I.

NOTE 5:
VALVE IDENTIFICATION NUMBER 40611-801 IS APPLICABLE TO NSN 4820-01-142-0257. ADDITIONAL DESCRIPTIVE INFORMATION AS FOLLOWS:
TEMPERATURE RANGE: 120-180 DEG. F
CAPILLARY LENGTH: 10 FT.

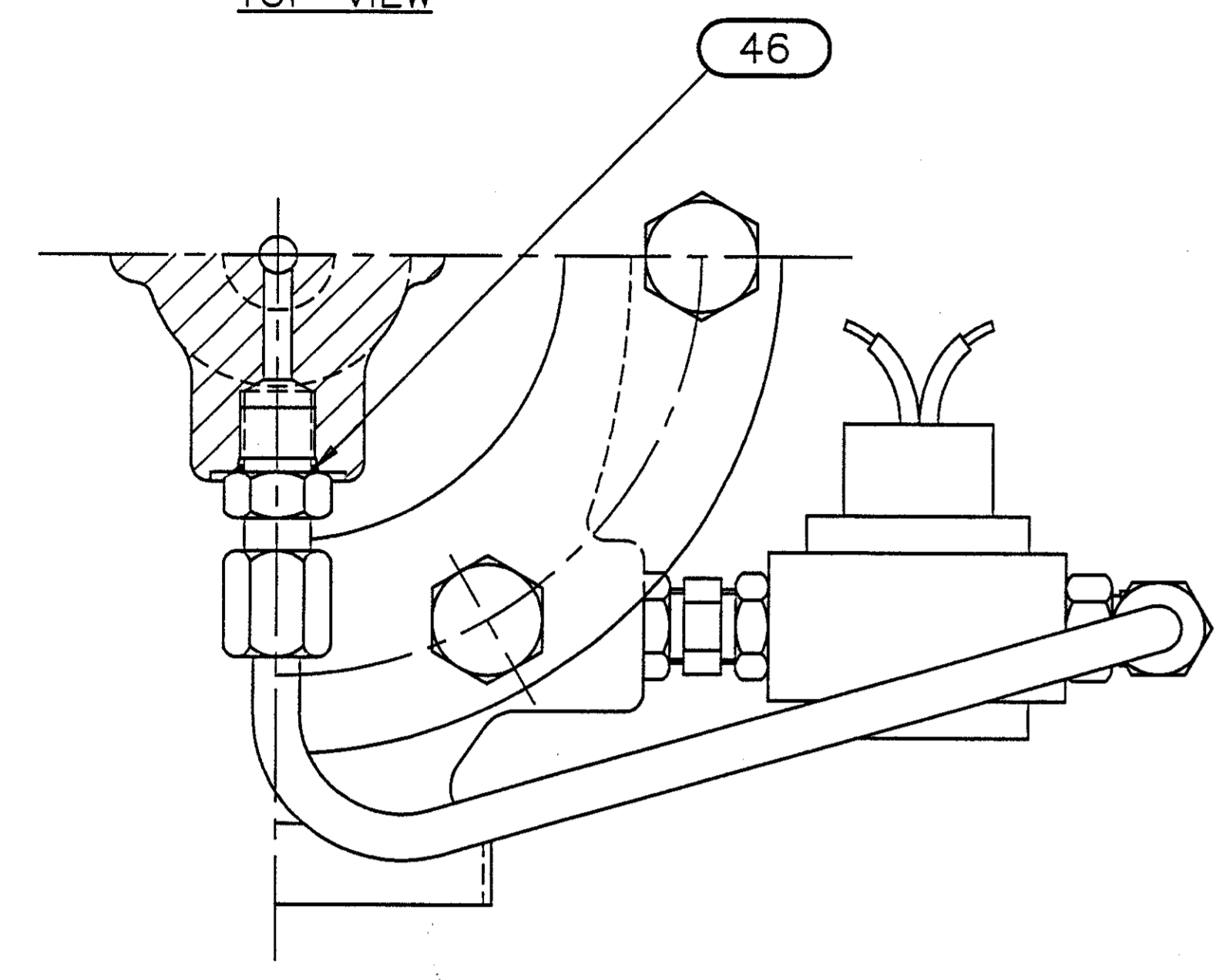
NOTE 6:
INLET AND OUTLET PIPING ARRANGEMENT AND FITTINGS SHOWN ON SHEET 2.

NOTES CONTINUED ON SHEET 2

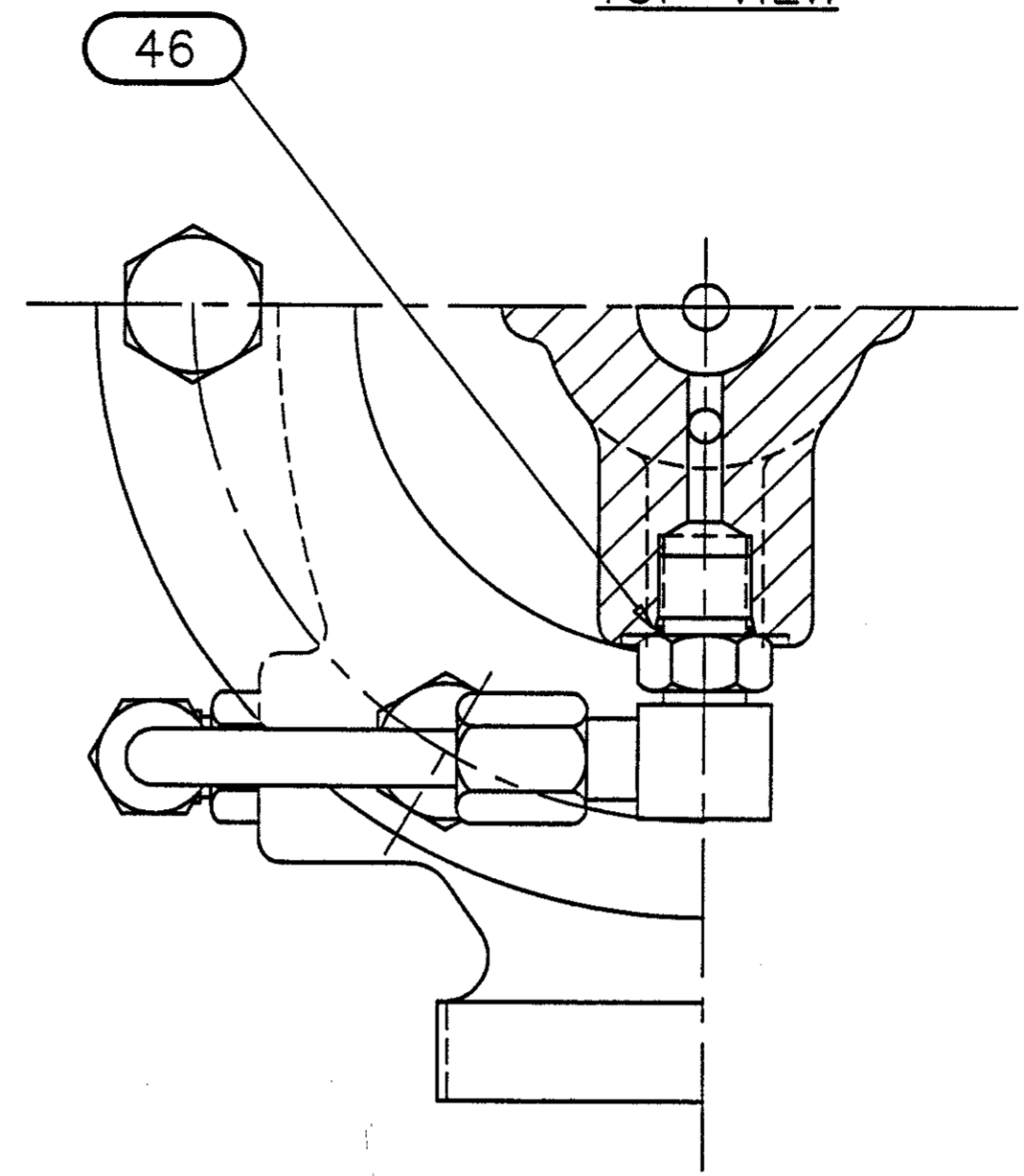
TOLERANCES UNLESS OTHERWISE SPECIFIED: SURFACE FINISH: 125RH FRACTION: +/- 1/64 DECIMAL: +/- .005 ANGLE: +/- 1/2°		TRAC REGULATOR CO., INC. MOUNT VERNON, NEW YORK 10550	
DATE: 7/21/2002 DRAWN BY: MD APPROVED:		SIZE: D FSCM NO.: 55378	DRAWING NO.: 40611-8 REV.:
		SCALE: NTS	WT. ACT.: 61 LB SHEET 1 OF 2

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

TOP VIEW



TOP VIEW



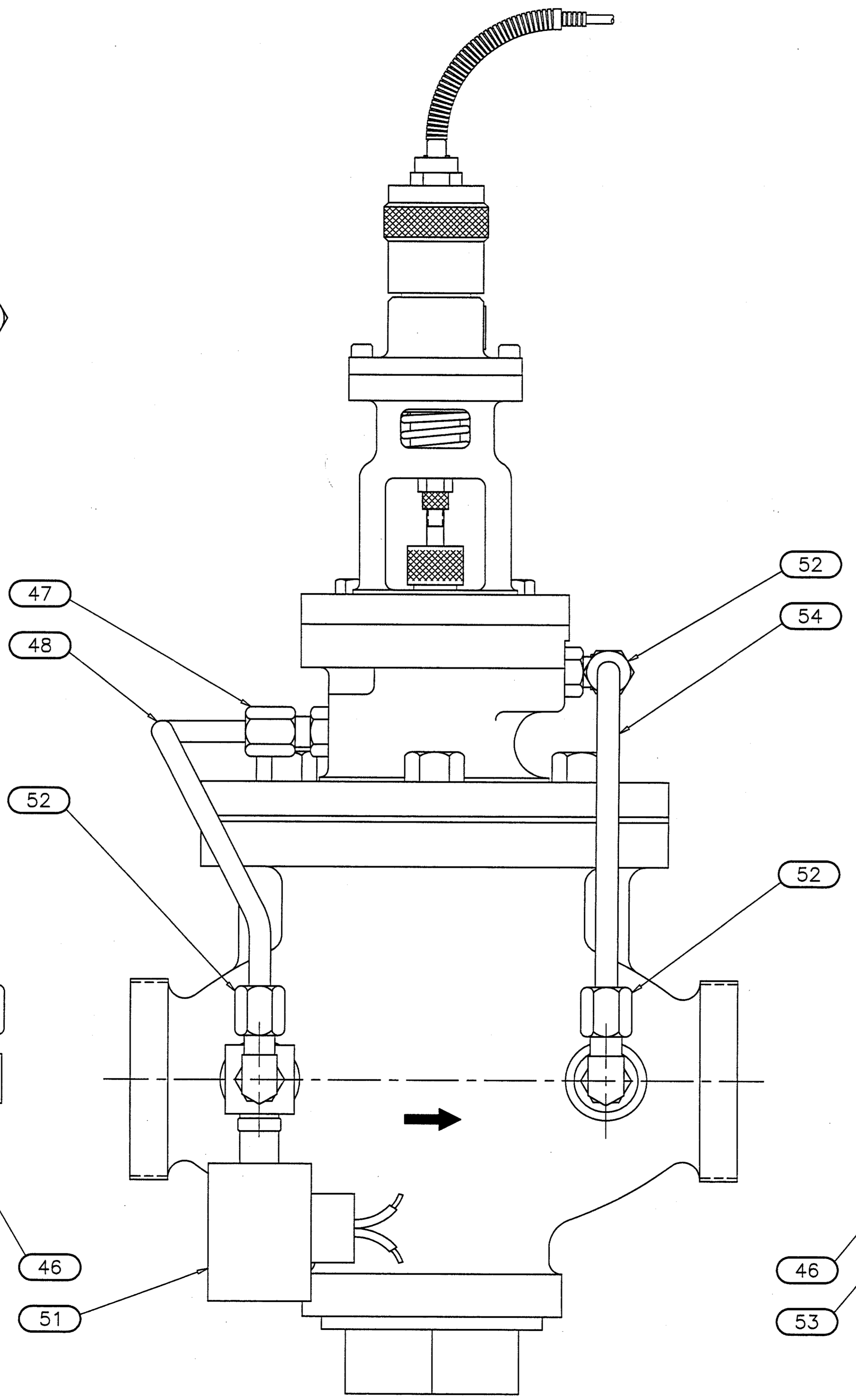
GENERAL NOTES (CONT'D)

NOTE 7:
 THIS EQUIPMENT HAS SUCCESSFULLY MET ALL HI-SHOCK REQUIREMENTS IN ACCORDANCE WITH MIL-S-901D FOR LIGHT WEIGHT, GRADE A SHOCKPROOF EQUIPMENT AS FOLLOWS:
 EQUIPMENT CLASS: 1
 MOUNTING FIXTURE: 4C
 SHOCK TEST TYPE: A
 MOUNTING LOCATION ABOARD SHIP: HULL
 MOUNTING PLANE ABOARD SHIP: OTHER
 MOUNTING ORIENTATION ABOARD SHIP: N/A
 TESTING ACTIVITY AND TEST REPORT NO.: AERO NAV LABORATORIES TEST REPORT 2-4421 DATED 25 JULY 2002 AND POST SHOCK TEST DATED 9 AUGUST 2002

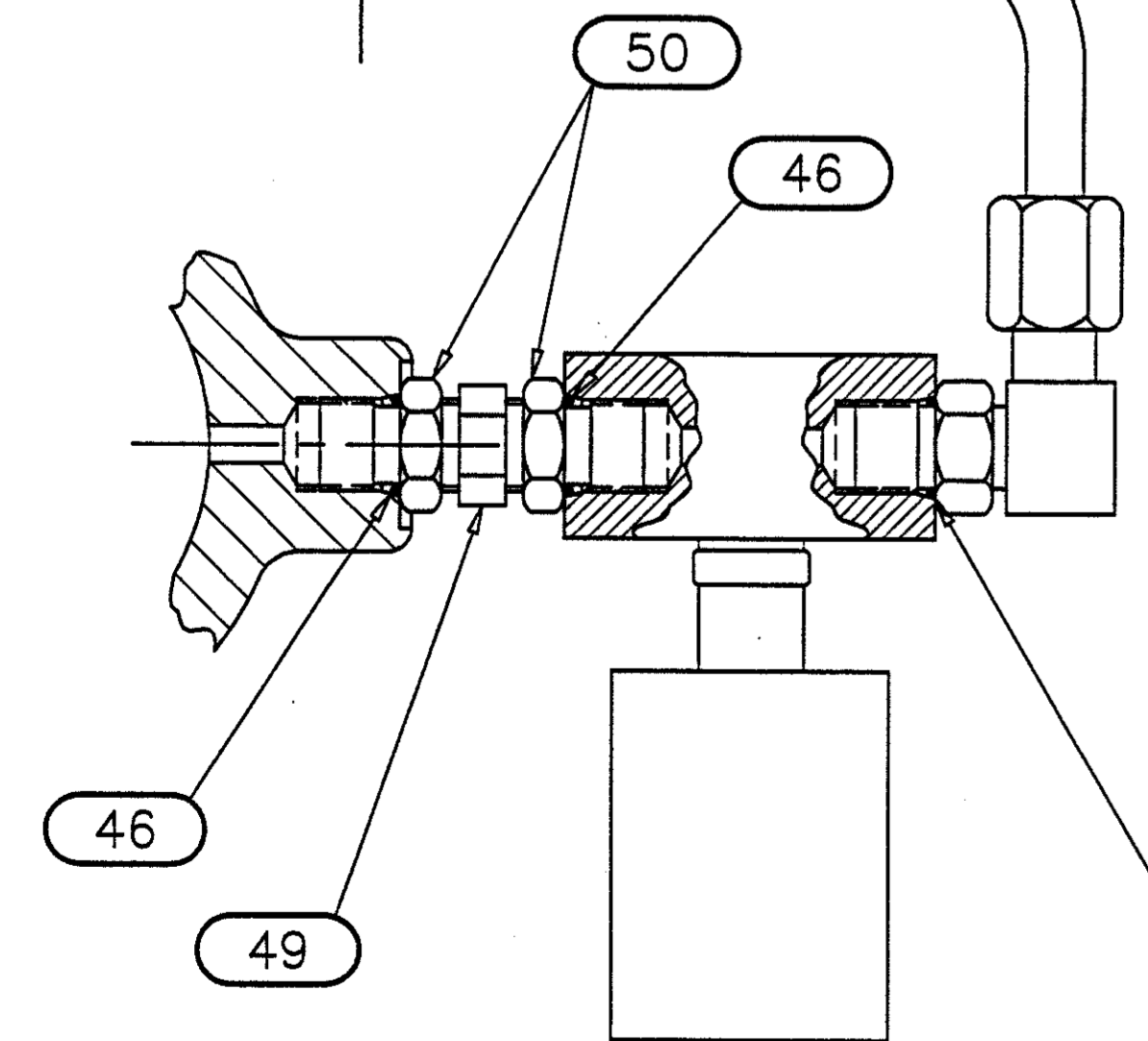
NOTE 8:
 THIS EQUIPMENT HAS SUCCESSFULLY MET ALL TYPE 1 VIBRATION REQUIREMENTS IN ACCORDANCE WITH MIL-STD-167/1 AS FOLLOWS:
 TESTING ACTIVITY AND TEST REPORT NO.: AERO NAV LABORATORIES TEST REPORT 2-4421 DATED 25 JULY 2002 AND POST SHOCK TEST DATED 9 AUGUST 2002

NOTE 9
 RECOMMENDED TORQUE VALUES

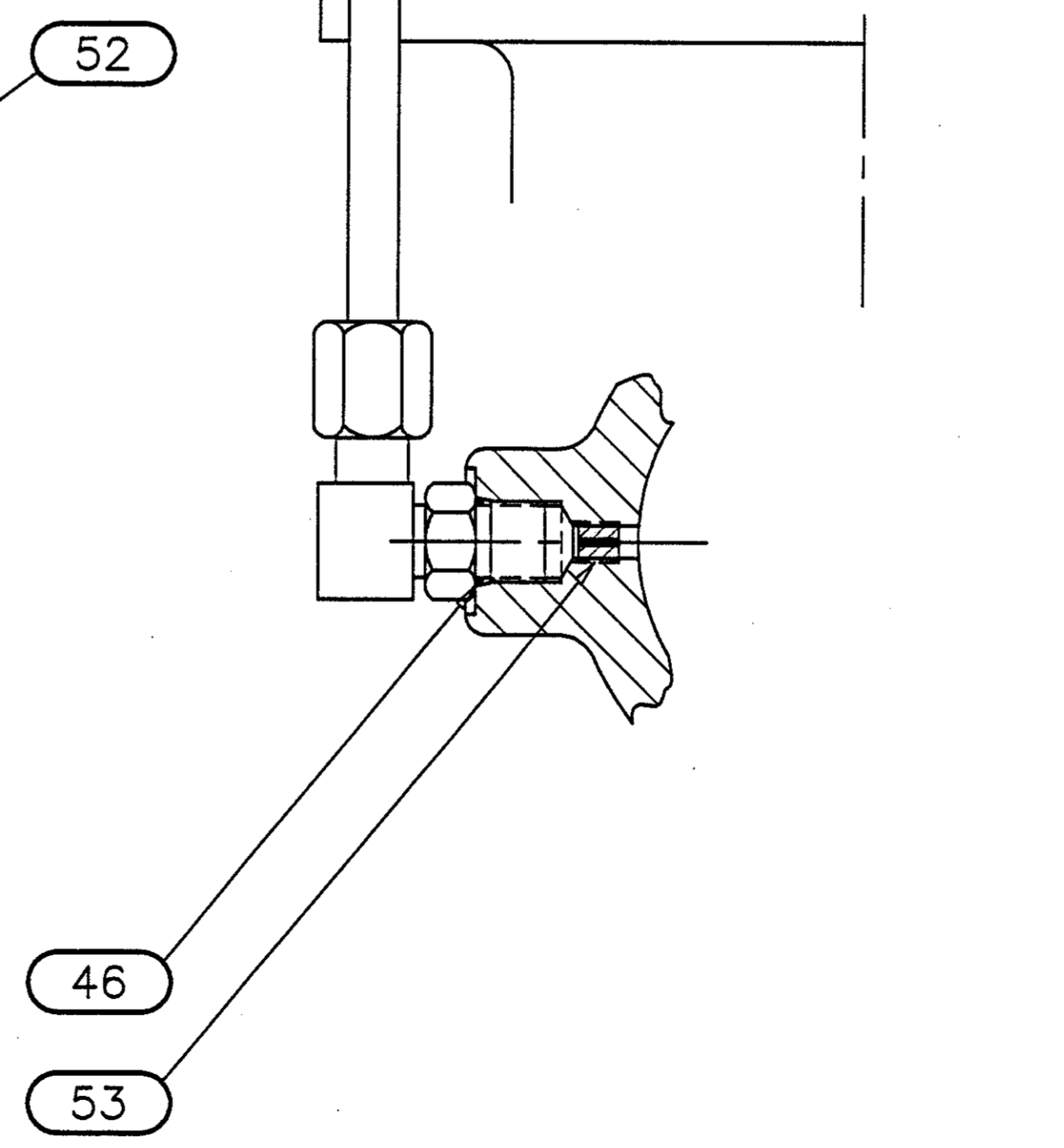
PC.NO. 6 TO PC.NO. 20 16 IN.LB.
 PC.NO. 9 TO PC.NO. 21 90 FT.LB.
 PC.NO. 10 TO PC.NO. 21 100 IN.LB.
 PC.NO. 23 TO PC.NO. 29 400 IN.LB.
 PC.NO. 31 TO PC.NO. 32 300 IN.LB.
 PC.NO. 37 TO PC.NO. 29 105 FT.LB.



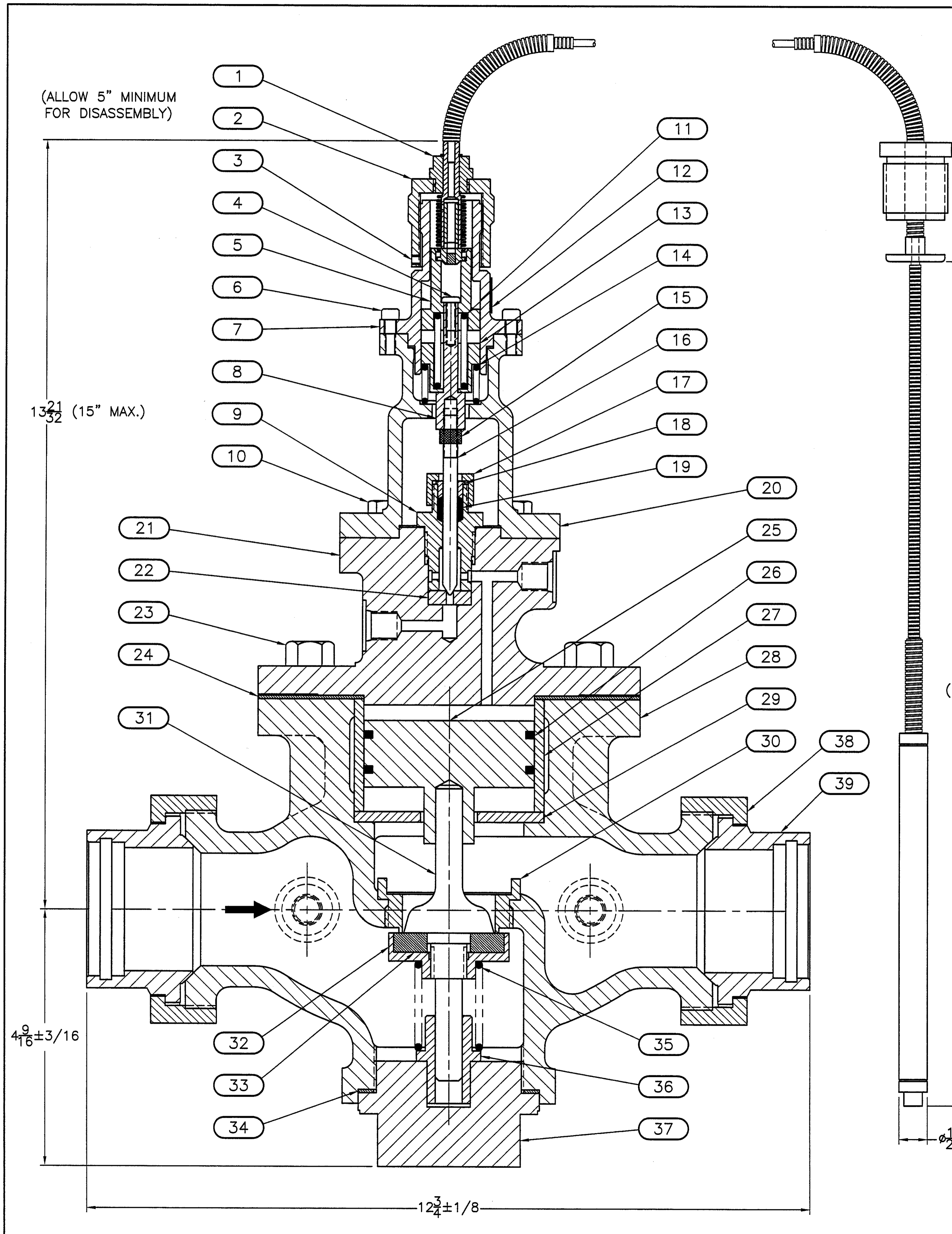
INLET SIDE VIEW



OUTLET SIDE VIEW



TOLERANCES UNLESS OTHERWISE SPECIFIED: SURFACE FINISH: 125RHR FRACTION: +/- 1/64 DECIMAL: +/- .005 ANGLE: +/- 1/2'		TRAC REGULATOR CO., INC. MOUNT VERNON, NEW YORK 10550	
DATE: 7/27/2002 DRAWN BY: MD APPROVED:		SIZE: D FSCM NO.: 55378 SCALE: NTS	DRAWING NO.: 40611-8 REV. 1 WT. ACT.: 61 LB SHEET 2 OF 2



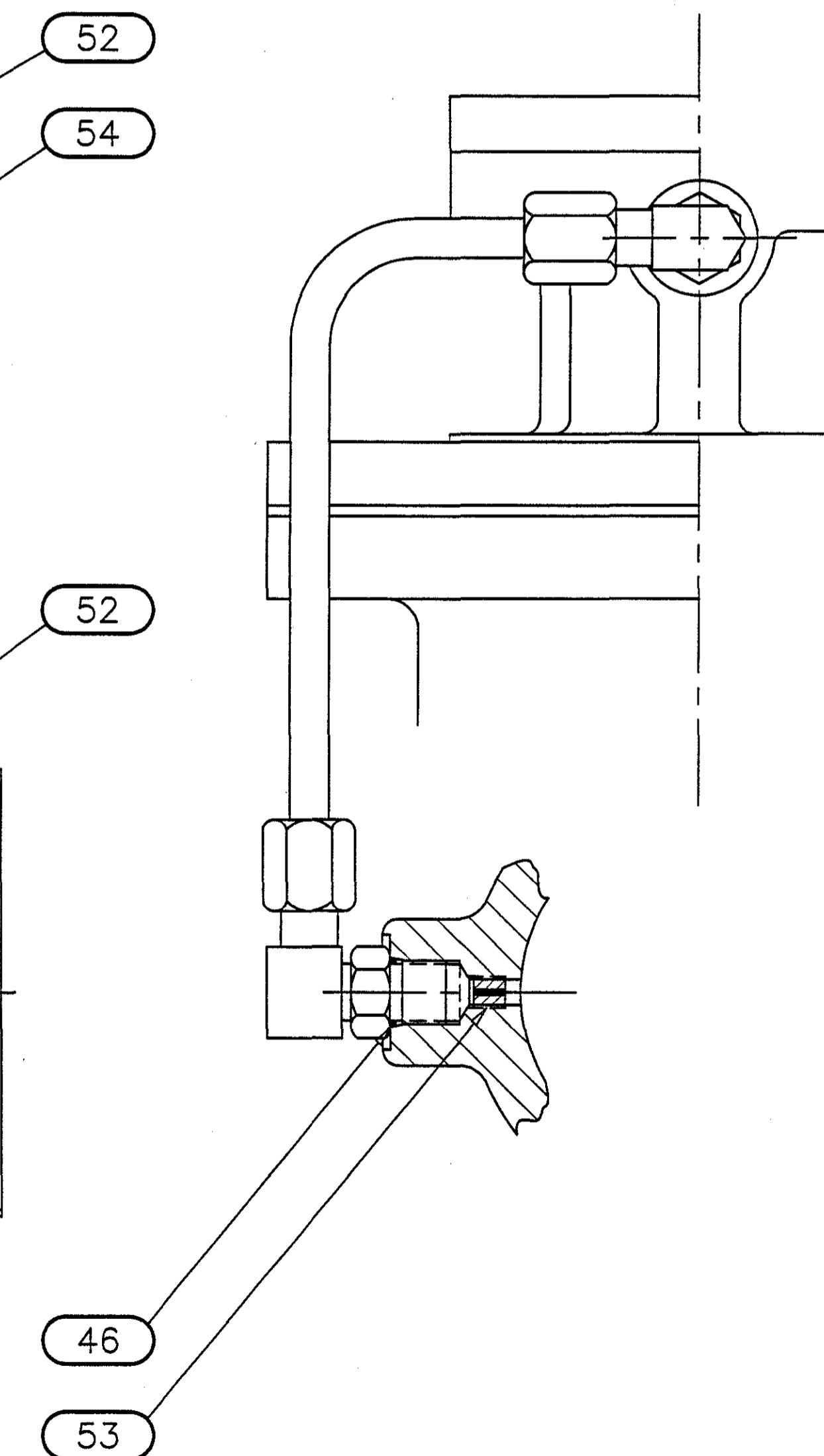
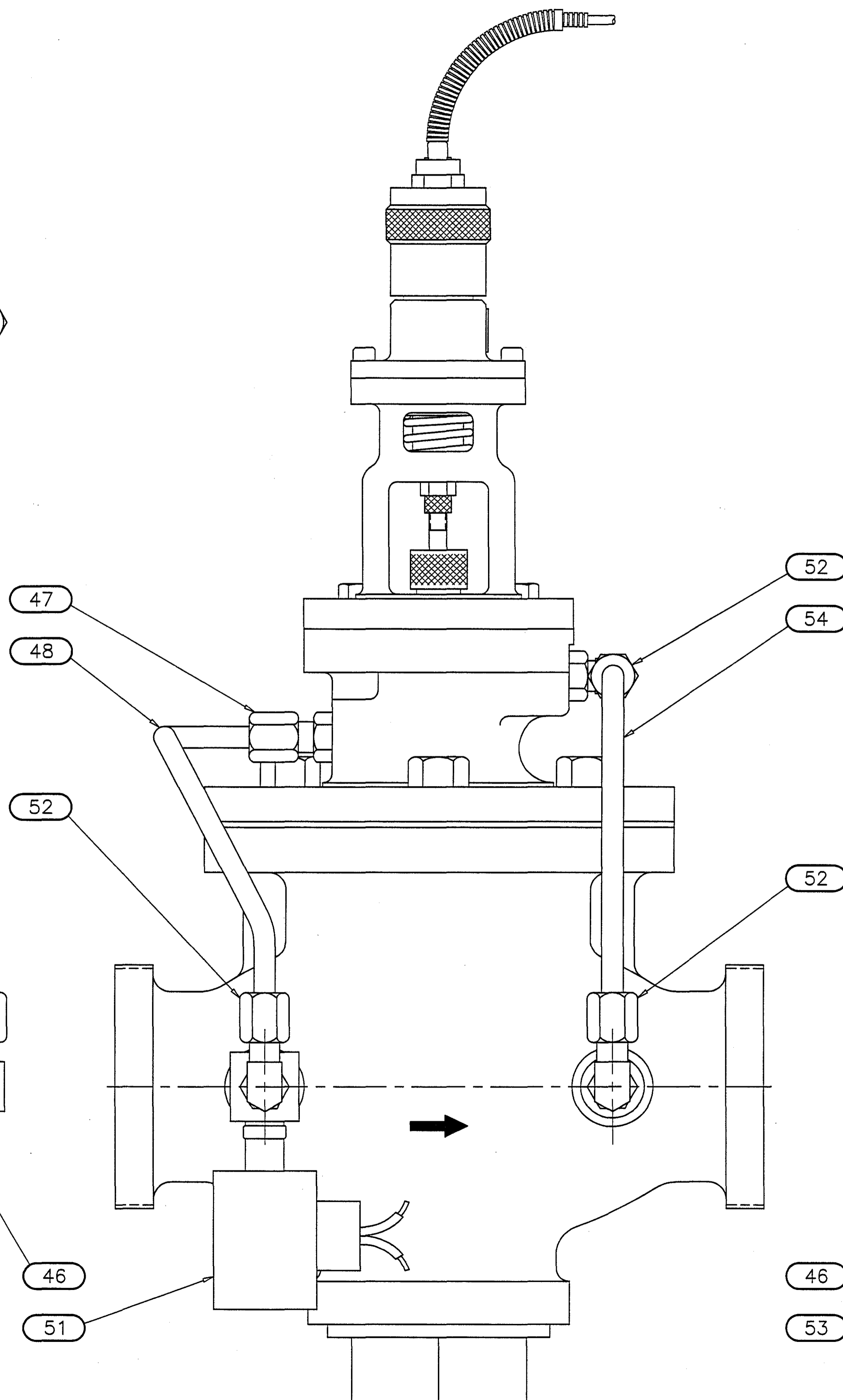
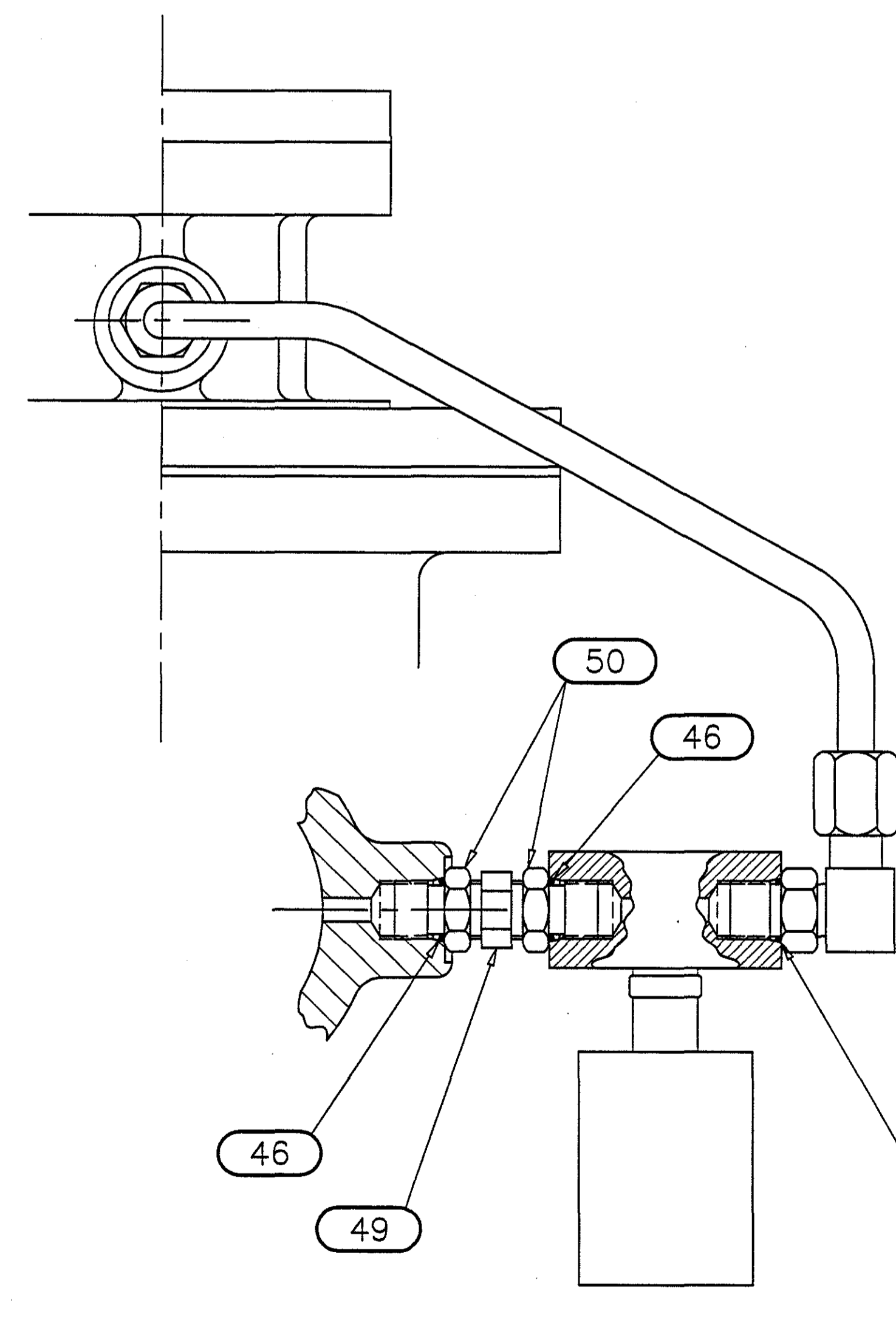
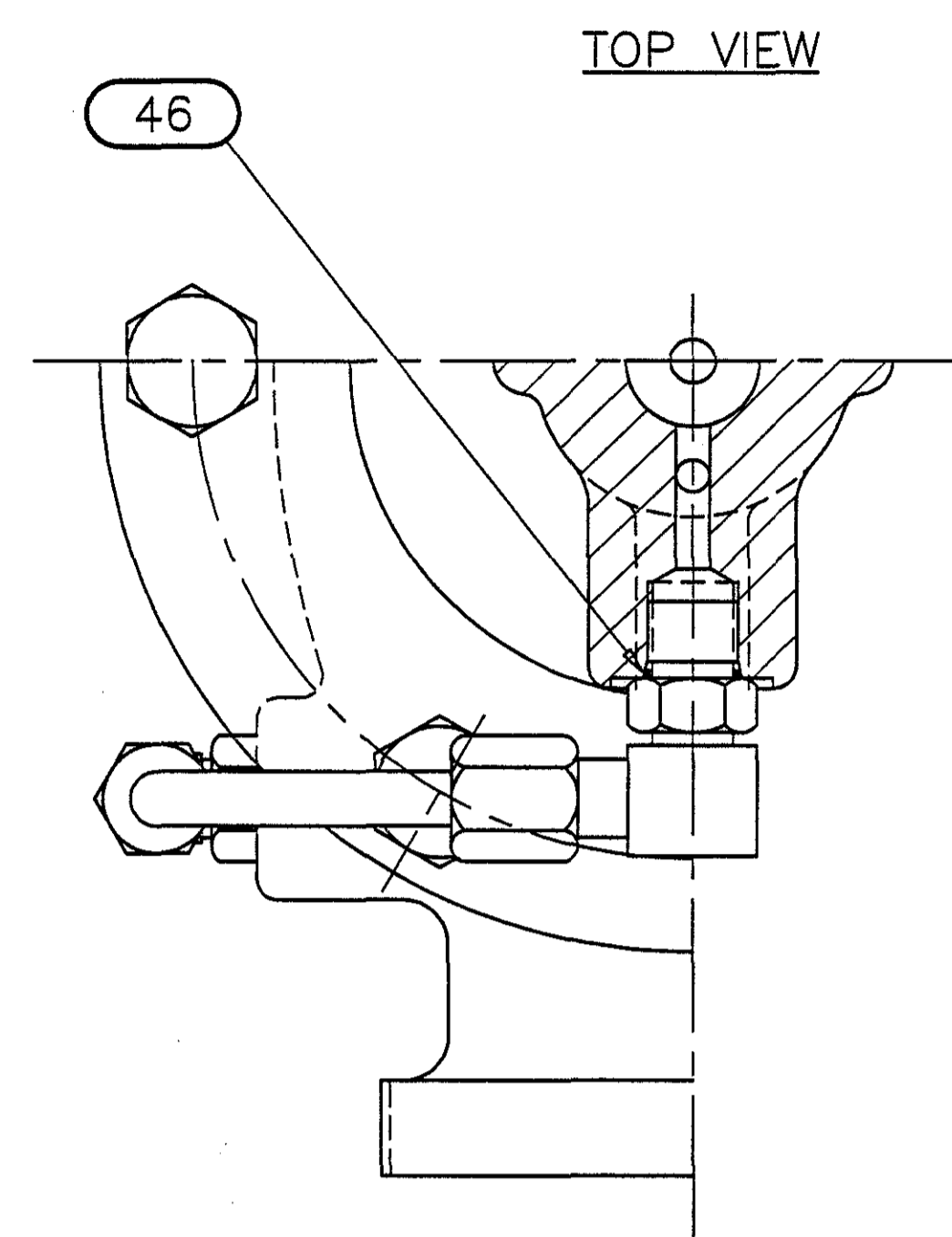
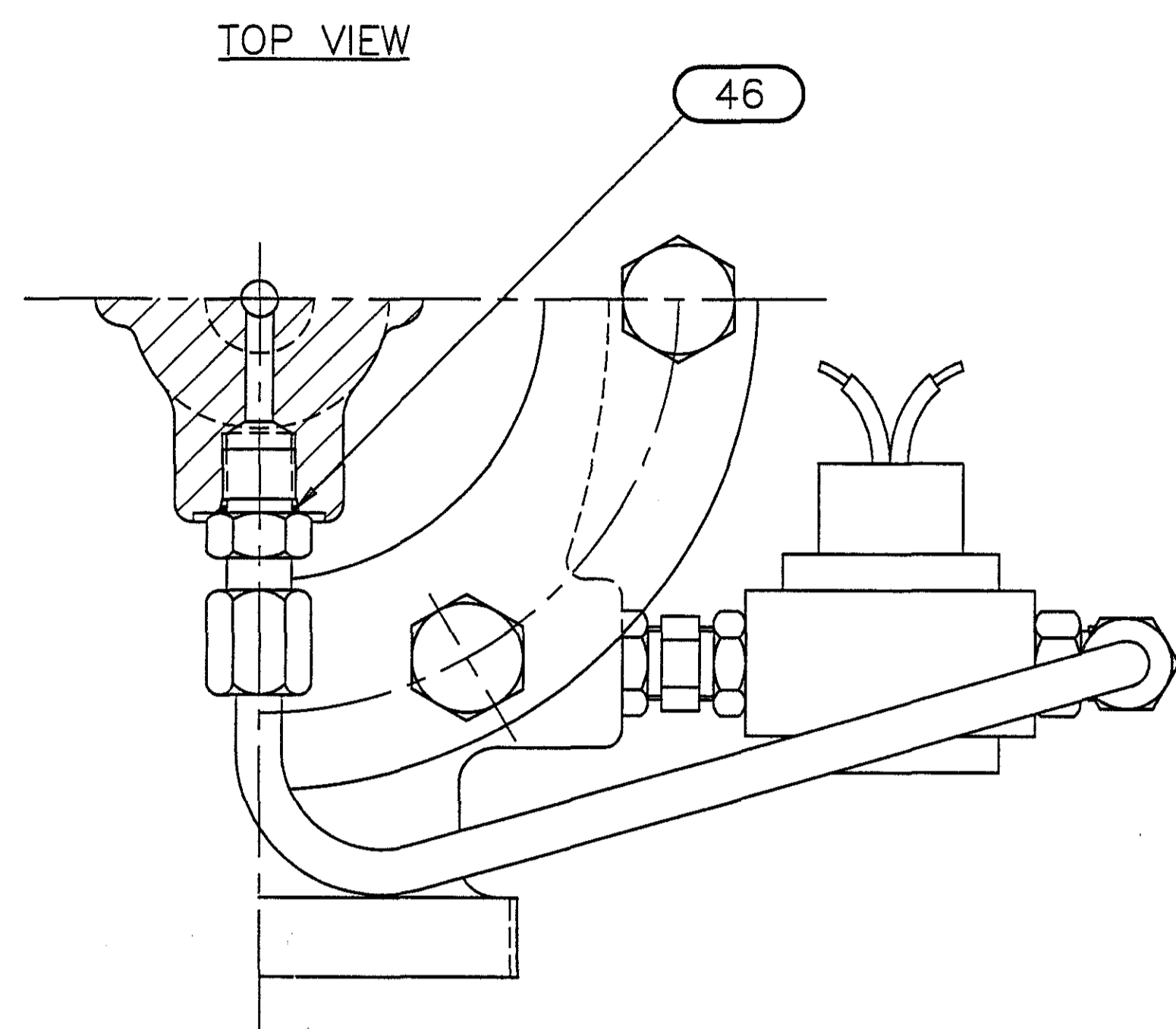
VARIABLE ITEMS	LIST OF MATERIAL QUANTITIES FOR ONE UNIT						REVISIONS				
	PC. NO.	DESCRIPTION	QTY.	MATERIAL	MATERIAL SPEC.	PART NO.	REMARKS	REV.	DESCRIPTION	DATE	APPROVED
*	1	THERMOSTATIC ELEMENT	1	Cu/Cu ALLOY	MIL-DTL-19772	50202-00					
	2	ADJUSTING WHEEL	1	BRASS	ASTM-B16	2029-00	ALLOY 360				
	3	SET SCREW, #8-32, 3/16 LONG	1	STEEL	COMMERCIAL	144-23	CUP POINT				
	4	SCREW, #8-32, BUTTON HD.	1	STEEL	COMMERCIAL	144-81	1/2 LONG				
	5	GUIDE- OHP SPRING	1	BRASS	ASTM-B16	2045-00	ALLOY 360				
	6	SCREW, #10-32, SOCKET HD.	4	CRES 18-8	COMMERCIAL	144-12	5/8 LONG				
	7	BONNET	1	BRASS	ASTM-B16	2042-00	ALLOY 360				
	8	RETAINER, OHP SPRING	1	BRASS	ASTM-B16	2046-00	ALLOY 360				
	9	PACKING CHAMBER	1	CRES 303	QQ-S-763	2039-00					
	10	SCREW, 5/16-18 HEX CAP	4	CRES	ASTM-F593	144-44	1-1/8 LONG				
	11	SPRING, OVERHEAT PROTECTION	1	STEEL	ASTM-A229	1842-00	OIL TEMPERED				
	12	LABEL (WARMER)	1	PLASTIC	COMMERCIAL	1835-00	SELF-ADHESIVE				
	13	RETAINER, THRUST SPRING	1	BRASS	ASTM-B16	2044-00	ALLOY 360				
	14	SPRING, THRUST	1	STEEL	ASTM-A229	1844-00	OIL TEMPERED				
	15	LOCKNUT, STEM, 1/4-28	1	BRASS	ASTM-B16	330-00	ALLOY 360				
	16	STEM, PILOT VALVE	1	CRES 303	ASTM-A582	2047-00					
	17	NUT, STUFFING BOX	1	BRASS	ASTM-B16	2048-00	ALLOY 360				
	18	GLAND, PACKING	1	BRASS	ASTM-B16	225-00	ALLOY 360				
	19	PACKING SET	1	TFE/GRAPHITE	COMMERCIAL	224-00					
	20	BRACKET, PILOT	1	CST. BRONZE	ASTM-B61	2041-00					
	21	HOUSING, PILOT VALVE	1	CST. BRONZE	ASTM-B61	2038-00					
	22	SEAT, PILOT VALVE	1	PEEK (R)	COMMERCIAL	2040-00	(MIL-P46183 TY I)				
	23	SCREW, 1/2-13 HEX CAP	6	CRES	ASTM-F593	144-42	1-1/4 LONG				
	24	GASKET, BODY	1	ORG. FIBER	COMMERCIAL	2053-00					
	25	PISTON	1	CRES 303	QQ-S-763	1058-01					
	26	PISTON RING	2	CAST IRON	QQ-I-652	1056-00	NICKEL PLATED				
	27	LINER, CYLINDER	1	CRES 316	QQ-S-763	1057-02					
	28	BODY	1	CST BRONZE	ASTM-B61	2061-00					
	29	PLATE, PISTON STOP	1	CRES 303	ASTM-A582	1055-00					
	30	SEAT RING	1	CRES 303	ASTM-A582	1863-00					
	31	PLUNGER, MAIN VALVE	1	CRES 303	ASTM-A582	2072-00					
	32	DISC HOLDER	1	CRES 303	ASTM-A582	1865-00					
	33	DISC- MAIN VALVE SEAT	1	RULON	COMMERCIAL	1864-01					
	34	GASKET- BOTTOM PLUG	1	ORG. FIBER	COMMERCIAL	1680-00					
	35	SPRING- MAIN VALVE	1	INCONEL 600	QQ-W-390	998-00					
	36	GUIDE BUSHING- PLUNGER	1	CRES 303	ASTM-A582	1015-00					
	37	BOTTOM PLUG	1	CST. BRONZE	ASTM-B61	1681-00					
	38	UNION NUT	2	CST. BRONZE	MIL-F-1183	197-00					
	39	UNION TAILPIECE	2	CST. BRONZE	MIL-F-1183	191-00					
*	40	BRAZING RING	2	GRADE III	MIL-F-1183	185-00					
*	41	RETAINING RING- U/E	2	CST. BRONZE	MIL-F-1183	268-00	PROVIDED ONLY WHEN SPECIFIED IN CONTRACT OR ORDER				
*	42	O-RING, U/E (ARP 232)	2	VITON	MIL-R-83248	274-02					
*	43	SEAT TOOL	1	STEEL	ASTM-A108	60540-00					
	44	NAMEPLATE	1	CRES 302	COMMERCIAL	176-05					
	45	DRIVE SCREW, #2 TYPE 'U'	2	CRES 302	COMMERCIAL	174-01	3/16 LONG				
	46	O-RING, 5/16 OD TUBE FITTING	6	VITON	MIL-R-83248	2054-03	ARP 905				
	47	FITTING-TUBE TO SAE MALE	1	STEEL	COMMERCIAL	2054-00	SAE-05				
	48	TUBE, PILOT INLET TO SOLENOID	1	COPPER	COMMERCIAL	2056-00					
	49	ADAPTER- SAE MALE TO MALE	1	CRES 303	QQ-S-763	2058-00					
	50	LOCKNUT- ADAPTER	2	STEEL	COMMERCIAL	2054-02	SAE-05				
	51	SOLENOID VALVE	1	CRES	COMMERCIAL	2049-00					
	52	FITTING 90°- TUBE TO SAE MALE	3	STEEL	COMMERCIAL	2054-01	SAE-05				
	53	ORIFICE	1	BRASS	COMMERCIAL	2070-00					
	54	TUBE, PILOT OUTLET TO BODY	1	COPPER	COMMERCIAL	2057-00					

GENERAL NOTES

- NOTE 1: VALVE MANUFACTURED IN ACCORDANCE WITH MIL-DTL-19772(SH) TYPE 3, CLASS I, SERIES 100 (ELECTRICALLY FAILSAFE)
- NOTE 2: VALVE PROVIDED WITH UNION ENDS IN ACCORDANCE WITH MIL-F-1183. TAILPIECES ARE GROOVED FOR BUT PROVIDED WITHOUT PREINSERTED BRAZING RINGS. UNION END O-RINGS AND RETAINING RINGS ARE PROVIDED ONLY WHEN SPECIFIED ON CONTRACT OR ORDER.
- NOTE 3: HYDROSTATIC TEST PRESSURE IS 200 PSIG
- NOTE 4: TUBE FITTING CONNECTIONS TO BODY, PILOT VALVE HOUSING, AND SOLENOID VALVE TO BE 5/16 OD TUBE (STRAIGHT THREAD) IN ACCORDANCE WITH MS16142. O-RING MATERIAL TO BE VITON PER MIL-R-83248 TYPE I, CLASS I.
- NOTE 5: VALVE IDENTIFICATION NUMBER 40612-801 IS APPLICABLE TO NSN 4820-01-183-2336. ADDITIONAL DESCRIPTIVE INFORMATION AS FOLLOWS:
TEMPERATURE RANGE: 120-180 DEG. F
CAPILLARY LENGTH: 10 FT.
- NOTE 6: INLET AND OUTLET PIPING ARRANGEMENT AND FITTINGS SHOWN ON SHEET 2.
- NOTES CONTINUED ON SHEET 2

TOLERANCES UNLESS OTHERWISE SPECIFIED: SURFACE FINISH: 125RHR FRACTION: +/- 1/64 DECIMAL: +/- .005 ANGLE: +/- 1/2		TRAC REGULATOR CO., INC. MOUNT VERNON, NEW YORK 10550	
DATE: 7/30/2002 DRAWN BY: MD APPROVED:	SIZE: D FRSM NO: 55378 SCALE: NTS	DRAWING NO: 40612-8 WT. ACT.: NONE	REV. SHEET 1 OF 2

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



GENERAL NOTES (CONT'D)

NOTE 7:
 THIS EQUIPMENT IS SIMILAR IN DESIGN, CONSTRUCTION, AND INTENDED SERVICE TO THE EQUIPMENT DEPICTED ON TRAC REGULATOR DRAWING 40611-8 WHICH HAS BEEN ACCEPTED AS MEETING ALL HI-SHOCK REQUIREMENTS IN ACCORDANCE WITH MIL-S-901D FOR LIGHT WEIGHT, GRADE A SHOCKPROOF EQUIPMENT AS FOLLOWS:
 EQUIPMENT CLASS: 1
 MOUNTING FIXTURE: 4C
 SHOCK TEST TYPE: A
 MOUNTING LOCATION ABOARD SHIP: HULL
 MOUNTING PLANE ABOARD SHIP: OTHER
 MOUNTING ORIENTATION ABOARD SHIP: N/A

TESTING ACTIVITY AND TEST REPORT NO.:
 AERO NAV LABORATORIES TEST REPORT 2-4421
 DATED 25 JULY 2002 AND POST SHOCK TEST
 DATED 9 AUGUST 2002

NOTE 8:
 THIS EQUIPMENT IS SIMILAR IN DESIGN, CONSTRUCTION, AND INTENDED SERVICE TO THE EQUIPMENT DEPICTED ON TRAC REGULATOR DRAWING 40611-8 WHICH HAS BEEN ACCEPTED AS MEETING ALL TYPE 1 VIBRATION REQUIREMENTS IN ACCORDANCE WITH MIL-STD-167/1 AS FOLLOWS:

TESTING ACTIVITY AND TEST REPORT NO.:
 AERO NAV LABORATORIES TEST REPORT 2-4421
 DATED 25 JULY 2002 AND POST SHOCK TEST
 DATED 9 AUGUST 2002

NOTE 9
 RECOMMENDED TORQUE VALUES

PC.NO. 6 TO PC.NO. 20 16 IN.LB.
 PC.NO. 9 TO PC.NO. 21 90 FT.LB.
 PC.NO. 10 TO PC.NO. 21 100 IN.LB.
 PC.NO. 23 TO PC.NO. 28 400 IN.LB.
 PC.NO. 31 TO PC.NO. 32 600 IN.LB.
 PC.NO. 37 TO PC.NO. 28 105 FT.LB.

INLET SIDE VIEW

OUTLET SIDE VIEW

TOLERANCES UNLESS OTHERWISE SPECIFIED: SURFACE FINISH: 125RHR		TRAC REGULATOR CO., INC. MOUNT VERNON, NEW YORK 10550	
FRACTION: +/- 1/64 DECIMAL: +/- .005 ANGLE: +/- 1/2°		2" STYLE 1P THERMOSTATIC TEMPERATURE REGULATING VALVE ASSEMBLY - UNION END	
DATE: 7/29/2002	SIZE: D	FSCM NO.: 55378	DRAWING NO.: 40612-8
DRAWN BY: MD	SCALE: NTS	WT. ACT.: NONE	REV. SHEET 2 OF 2
APPROVED:			

