

1130 Actuators

Installing the actuators

The actuators use pneumatic pressure (40 to 70 psi) to switch the valves between their two positions.

1. After installing the valves and valve box as described in the *Valve Box* section, you can install the valve actuators.
2. Set each actuator to the appropriate degree of rotation. Move the grenade style pin to the hole on the actuator marked with the correct degree of rotation, as shown below:
 - Four port valves—Place the pin in the 90° hole
 - Six port valves—Place the pin in the 60° hole
 - Ten port valves—Same as six port valves, but with the tubular 36° actuator limiter on the pin.

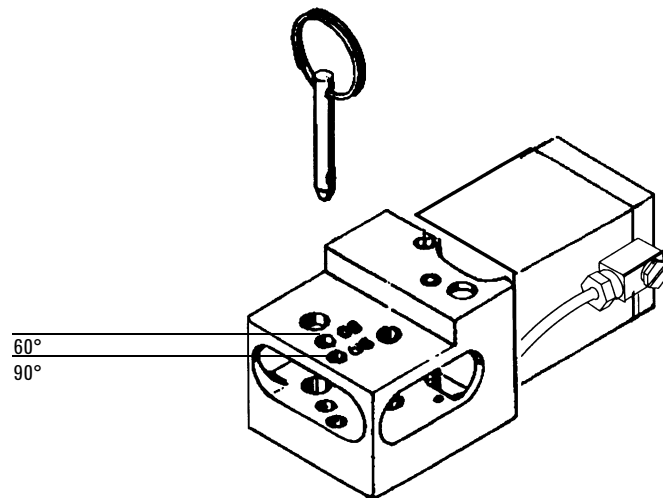


Figure 1130-1 Setting the actuator's degree of rotation

3. Mount an actuator over each valve installed using two Torx T-20 screws.

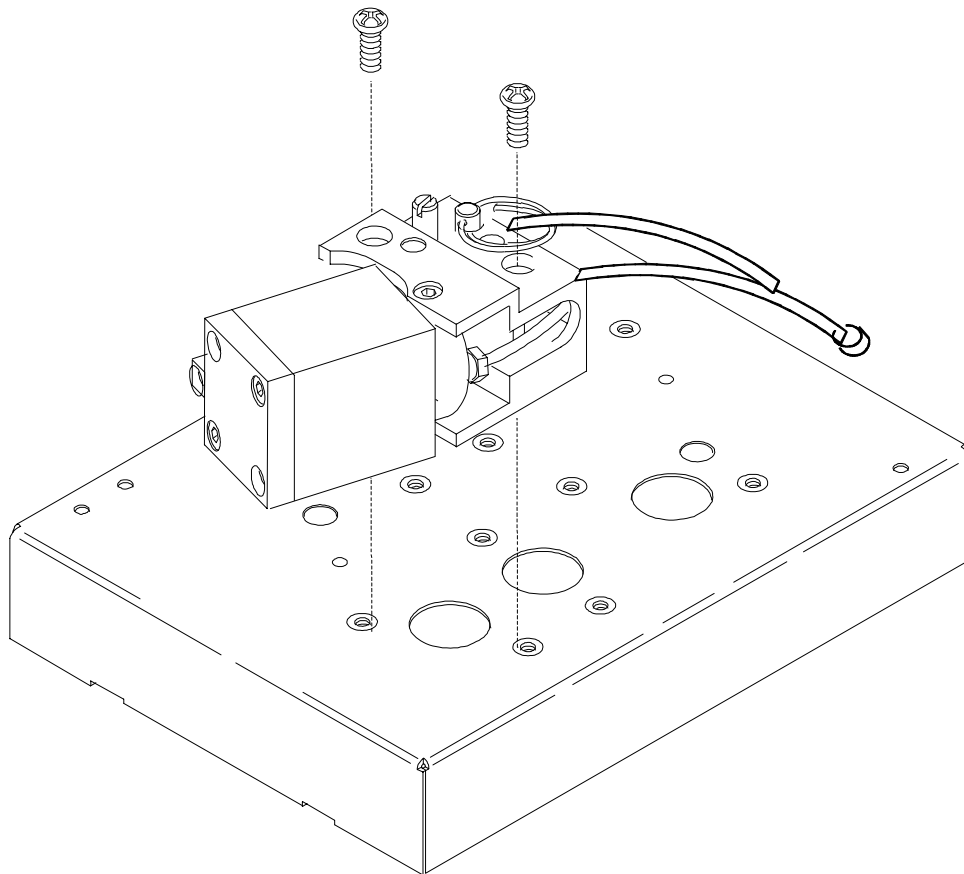


Figure 1130-2 Mounting the actuator on the valve box

4. Engage the actuator drive shaft coupler with the valve.
 - a. Loosen the hex nut on the actuator near the drive shaft.
 - b. Slide the shaft down.
 - c. Insert a flat bladed screw driver in the slot on the top of the actuator and turn the shaft back and forth until you feel the coupler engage the valve.
 - d. Tighten the set screw.

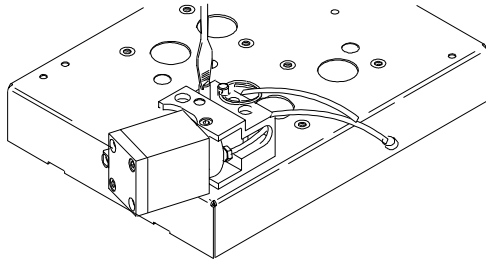


Figure 1130-3 Engaging the actuator drive shaft with the valve

5. Install the valve actuator drivers as described in the following section.

Valve drivers

The 6890 GC provides keyboard control for up to eight valve drivers which are named Valve 1 through Valve 8.

Table 1130-1 6890 GC Valve Designations

Valve	Driver	Purpose
Valves 1–4	24 volt, 13 watt	Normal valve operation
Valves 5–6	24 volt, 100 mA	Relays/low power devices
Valves 7–8	48 Vdc or 48 Vac rms	Contact closures

There is a BCD input for controlling a multiposition valve. If a valve is configured as a multiposition valve and the BCD is connected to this valve, a position can be selected directly from the keyboard.

Installing the valve actuator drivers

The valve actuators are driven by solenoid drivers which, when activated, send high pressure air to the actuator to switch the valve.

Assemble the valve driver block

The valve driver block accommodates up to four valve drivers. A valve driver must be installed for each valve/actuator installed.

Assemble the valve driver block as in Figure 1130-4. The example in this procedure shows a valve driver block parts breakdown for a two valve system.

1. Install two mounting posts on the intake/exhaust endplate (two large threaded holes). Install an O-ring in the supply/exhaust ports on the inside of the plate.
2. Slide a valve driver over the mounting posts in the orientation shown. Install two O-rings in the valve driver supply/exhaust ports as shown.

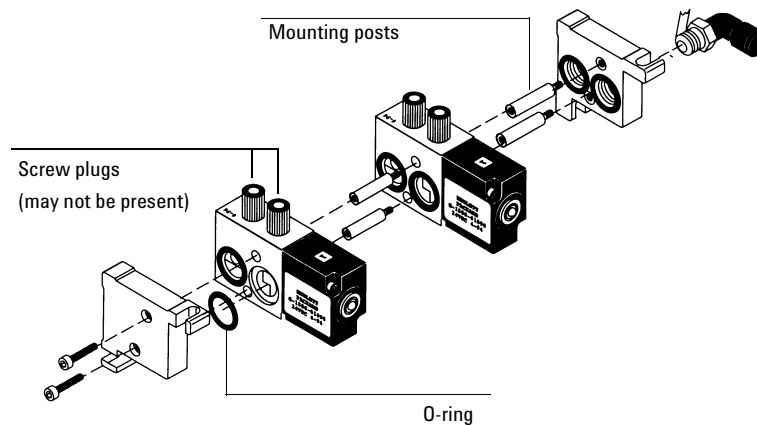


Figure 1130-4 Assembling the valve driver block

3. For each additional valve installed, install two more mounting posts and a valve driver with O-rings in the same manner as the first.
4. When all the drivers have been installed, screw on the other end plate with the two hex screws as shown.

Install the bracket and cabling

1. Install the valve actuators as described earlier in this section before installing the valve actuator drivers.
2. Screw the valve driver bracket into the right side of the GC using the two captive screws.

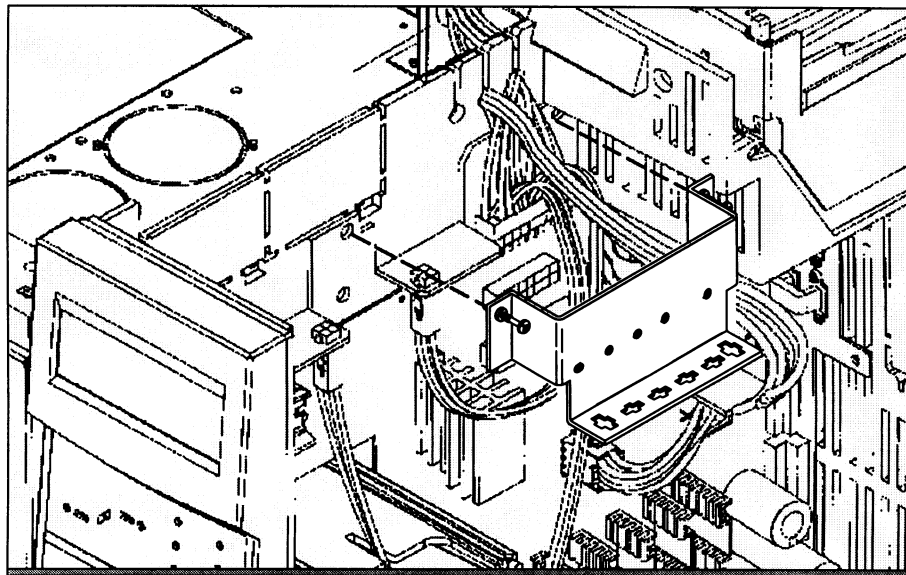


Figure 1130-5 Assembling the valve driver block

3. Plug the connectors on the valve driver cable harness up through the slots on the valve driver bracket.

Plug the larger 2×2 heater sensor connectors (P1, P2) into the outside slots and the smaller 1×2 valve driver connectors (P3 to P6) into the four middle slots.

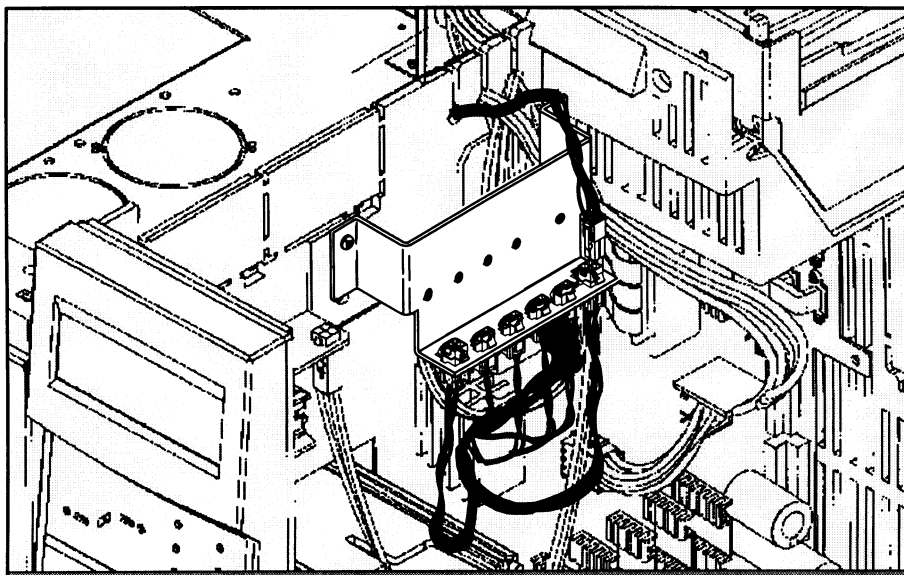


Figure 1130-6 Installing the cabling

4. Plug in the heater/sensor lead(s) from the valve heater blocks on top of the GC. Thread the heater/sensor lead(s) to the right side of the instrument, through one of the keyhole wiring slots and into the P1 or P2 detector on the actuator bracket.

Install the valve driver block

1. Slide the valve driver block down into the driver bracket until the drivers plug into the connectors.

Note

To remove drivers from the driver block, use a hex wrench to unscrew the two hex screws on the left side of the block. Remove the driver, collapse the block to the width of the remaining drivers and reinstall the hex screws.

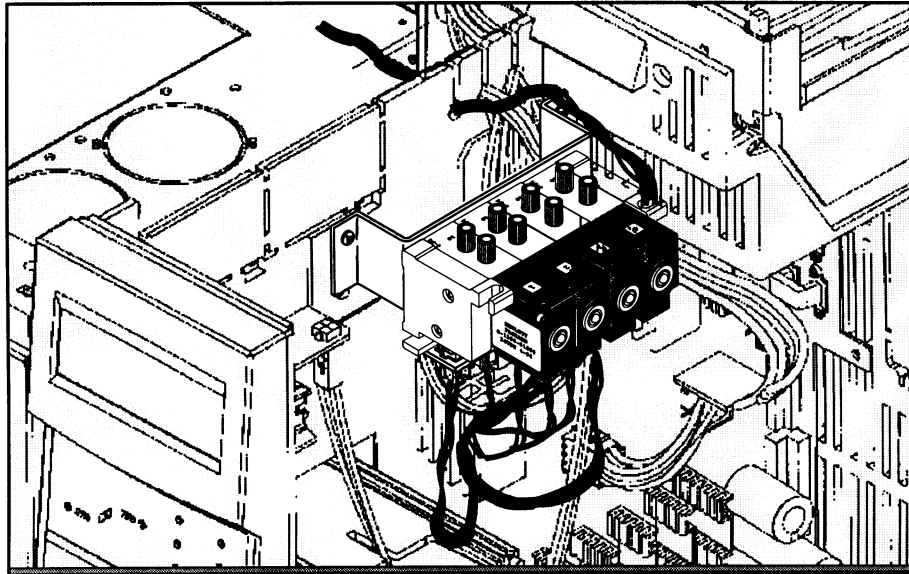


Figure 1130-7 Installing the valve driver block

2. Plug the other end of the valve driver cable harness into the P22 connector on the main board.
3. Wrap the threaded ends of the 90° elbow fitting in Teflon[®] pipe tape. Screw the fitting into the air supply intake on the side of the valve driver block facing the rear of the GC.

The supply intake is the outside threaded hole, the one farthest from the main board.

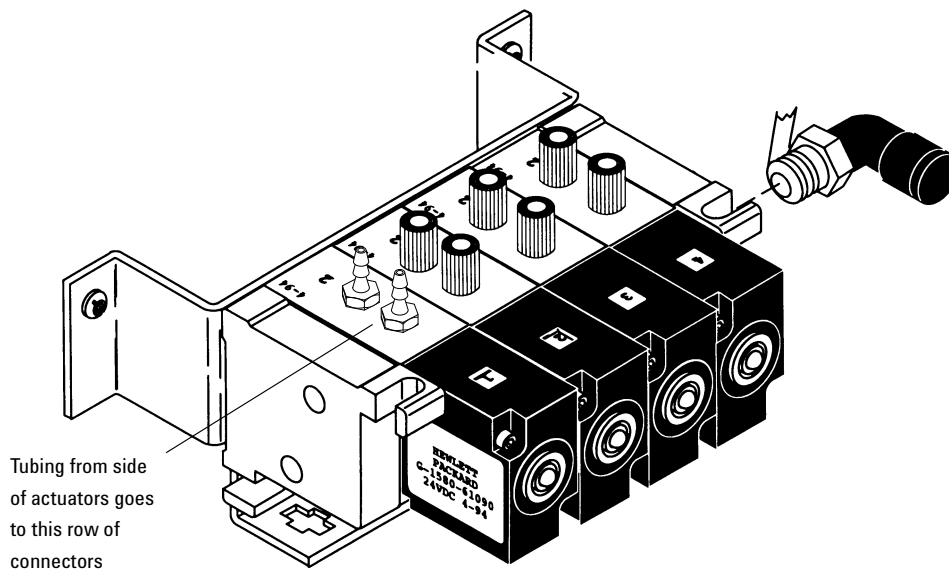


Figure 1130-8 Installing the supply fitting, tubing connectors, and actuator tubing

4. Run a length of 1/4-inch tubing out the hole on the rear of the GC in the lower left corner (when facing the rear of the instrument). Connect this tubing to your air supply.
5. Unscrew the screw plugs (if present) on the top of each driver you are using. Replace the screw plugs with tubing connectors.
6. Plumb the tubing from each installed actuator to the tubing connectors on the corresponding driver. The tubing from the side of the actuator goes to the connector farthest from the main board. Grip the tubing with a piece of sandpaper and push it onto the tubing connector.

Valve actuator alignment

1. Remove the valve box top assembly. See steps 1 through 3 of Installing the valve box in section 1120 for the procedure.

2. Loosen the actuator link arm lock screw at each actuator with a 3 mm hex key wrench so that the coupling/shaft assembly is free to rotate. Push the coupling shaft fully into the actuator.
3. Turn the valve rotor index pin of each valve counterclockwise (CCW) until it is 0.010-inch (0.25 mm) from the counterclockwise (left-hand) valve stop.
4. Reinstall the valve box top assembly.
5. Gently rotate and push the coupling/shaft assembly with a blade-type screwdriver until the slot on the coupling fully engages the valve rotor index pin. Repeat this procedure for each valve installed.

Caution

Use care in performing the following operation so as not to accidentally turn the valve rotor away from its preset (step 3) position.

6. Make sure that all solenoid valves are turned “off” by the appropriate valve controller. Turn on the air supply to the solenoid valve(s). The piston rod of each actuator will move all the way out to the extended (OFF) position. Very firmly tighten the link arm lock screw for each actuator.
7. Install the hardware for any variable restrictors present.

