

Agilent 4890, 5890, 6890 **Gas Chromatograph Rotary Valves**

Installation Guide



Notices

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Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.



Installing Rotary Valves

These instructions describe how to use the hardware kits to install a new valve in your Agilent Technologies' 4890, 5890, or 6890 series Gas Chromatograph (GC).

Table 1Parts supplied

	Kit G2739A	Kit G2740A
Description	(Liquid sample)	(Gas sample)
Metering valve 1/16-inch	1	
Screw, M3 x 8 mm	2	1
Screw, M3 x 30 mm, chrome-plated	2	1
Label	1	1
Screw, thread-cutting	4	
Screw, M4 x 12 mm, Torx™ T-20	4	
Fitting, column bulkhead	1	4
Nut, 5/16-inch	1	4
Restrictor bracket	1	
1/16-inch SS tube, 102 mm long	1	1
1/16-inch SS tube, 203 mm long		1
1/16-inch SS tube, 360 mm long	1	2
1/16-inch SS tube, 400 mm long	1	1
1/16-inch SS tube, 560 mm long	1	5
1/8-inch nut and ferrule set	1	1
Filter union, reducing		1
Reducer/restrictor, SS		1
Actuator limiter, 36 degrees	0	1
Installation sheet (this document)	1	1



Installing Rotary Valves

Part Identification





Kit G2739A, Liquid Sample Valve





Kit G2740A, Gas Sample Valve

If you purchased a heated valve box (19238A/B, G1580A, or G1581A), or a side mount kit (G2748A or G2749A), install it before installing your valve.

To install a valve in a heated valve box, see page 3.

To install a valve on a side mount bracket, see page 8.

Tools needed

Torx T-10 and T-20 drivers Flat blade screwdriver Needle-nose pliers 3 mm hex key wrench

Installing a valve in a heated valve box

WARNING	Do not install a liquid sampling valve (LSV) in the valve box if you
	a leak and subsequent explosion. Liquid sampling valves should be
	mounted in the side location to avoid potential explosions.

The oven, inlet, detector, and valve box may be very hot. Before proceeding, turn off the oven and all other heated zones and let them cool down.

Harmful gases may be present. Hydrogen (if used) can present an explosion hazard. Before proceeding, turn off all supply gases at their sources.

Shock hazard. Before proceeding, turn off the GC and disconnect the power cord.

- **1** If the detector top cover is installed, remove it.
- **2** Remove the upper valve box. Remove the two mounting screws using a T–20 Torx screwdriver and lift off the upper valve box. Set it aside.

Installing Rotary Valves





3 Remove the heater block mounting screw in the lower valve box.



Figure 4 Removing the heater block screw

4 Place the valve in the desired position in the valve box. The valve rotor index pin of a 6–port valve points toward the

back of the GC if installed correctly. This is the ON position. Tighten the two screws with a Torx T-10 screwdriver. If this is the last valve to be installed in the heated zone, make sure the screws that secure the heater block to the lower valve box are tight.





5 Use needle-nosed pliers to move the valve rotor index pin of the valve counterclockwise until the pin touches the valve stop (OFF position).





6 Use the tubing and fittings in the hardware installation kit to plumb the valves. See "Common valve configurations" on page 11.

Reinstall the upper valve box

- **1** Verify that all valve rotors are in the full counterclockwise position.
- **2** For each actuator, loosen the link arm lockscrew in the barrel of the shaft that links the valve and actuator about 1/4 turn. You may have to apply significant pressure.





3 For each actuator, use a flat blade screwdriver to turn the actuator coupling/shaft assembly counterclockwise until snug.





- **4** Locate the two half-moon cutouts at the bottom back of the upper valve box. Place the upper box on top of the lower valve assembly, routing the heater/sensor wires through the cutouts. Secure with two T-20 Torx screws.
- 5 For each actuator, push the coupling/shaft assembly downward with a flat blade screwdriver until the slot on the coupling engages the valve rotor index pin.

If the coupling and valve do not engage, check that both are fully counterclockwise and try again. If necessary, turn the shaft slightly to engage the coupling.

6 Continue to turn the shaft counterclockwise until snug, to ensure that the valve and actuator are both in the OFF position.





7 Tighten the link arm lockscrew firmly.

Installing a valve on a side mount bracket

WARNING

The oven, inlet, and detector may be very hot. Before proceeding, turn off the oven and all other heated zones and let them cool down.

Harmful gases may be present. Hydrogen (if used) can present an explosion hazard. Before proceeding, turn off all supply gases at their sources.

Shock hazard. Before proceeding, turn off the GC and disconnect the power cord.

1 Secure the clamp ring to the side mount bracket with two Torx T-20 screws.





2 With a flat blade screwdriver, turn the actuator coupling/shaft assembly counterclockwise until snug.





3 Use needle–nosed pliers to move the valve rotor index pin of the valve counterclockwise until the pin touches the valve stop (Off position).



Figure 12 Index pin and stops

- **4** Use the tubing and fittings in the hardware installation kit to plumb the valves. See "Common valve configurations" on page 11.
- **5** Loosen the clamp ring set screw and insert the valve through the clamp ring and the bracket. Orient the valve so that the valve rotor index pin mates with the actuator. Tighten the clamp ring set screw.

Restoring the GC to operating condition

- **1** If the electronics side or top cover was removed to install an actuator and solenoid, reinstall it now.
- **2** Plug in the power cord and turn on the GC.
- **3** Configure the valves. See your GC Operating Manual if you need help.
- **4** Connect the solenoid air line to a source of clean, dry air at 55 psi.

If your detector also uses air, pulses in a shared air line may affect it. The solenoid air supply should be separate from the detector air supply.

- **5** Turn on the air supply to the solenoid valves.
- **6** Use a flat blade screwdriver to turn each installed valve ON and OFF. Ensure that each valve is physically in the OFF position as described on page 5.
- 7 Use the 3 mm hex key wrench to tighten the link arm lockscrew by rotating it clockwise until very tight.





8 If it was removed, reinstall the detector cover.

Common valve configurations

1 The next several pages show some commonly used valve configurations.



Figure 14 Legend

Valve plumbing tips

- Use bulkhead fittings with attached tubing for column connections. Mount the fitting, pointing down, on the left or right nut plate and secure with a retaining nut. Connect the free end of the tubing to the valve.
- The best way to cut narrow tubing is with a tubing cutter designed for this task. If some other cutter is used, check:
 - The tubing bore is not restricted at the cut end
 - The cut is at right angles to the tubing
 - There are no burrs that might interfere with connections.
- Avoid kinks in the tubing.









Two stream selection (requires gas sampling)



Backflush to detector



Backflush a precolumn to vent



Column selection (unused column isolated)



Sequence reverse



Sequence reverse with backflush of column 1



Gas sampling with backflush of precolumn to vent



Gas sampling with backflush to detector



Gas sampling of alternate streams







Gas sampling with sequence reverse and backflush of column 1















Gas sample/backflush and column isolation







This product is recyclable.

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