

PCS, CRS Series

Automatic Changeover Systems with Primary and Secondary Regulation

Changeover Systems are designed to provide a continuous supply of gas from two or more cylinders containing compressed or liquefied gases with vapor pressures above 300 psig. Advanced changeovers allow the user to deplete gas in a cylinder without the concerns of gas outages and of wasting unused gas as a result of premature change-outs.

Advanced Changeover Systems incorporate two diffusion-resistant regulators with diaphragm seal inlet valves allowing for cylinder isolation when a change of cylinders is required. Available in either brass or stainless steel construction, they are supplied entirely installed on a stainless steel panel providing for convenient, wall-mounted installation. The overall compact design allows for installation in areas where space is at a premium.



PCS Regulator

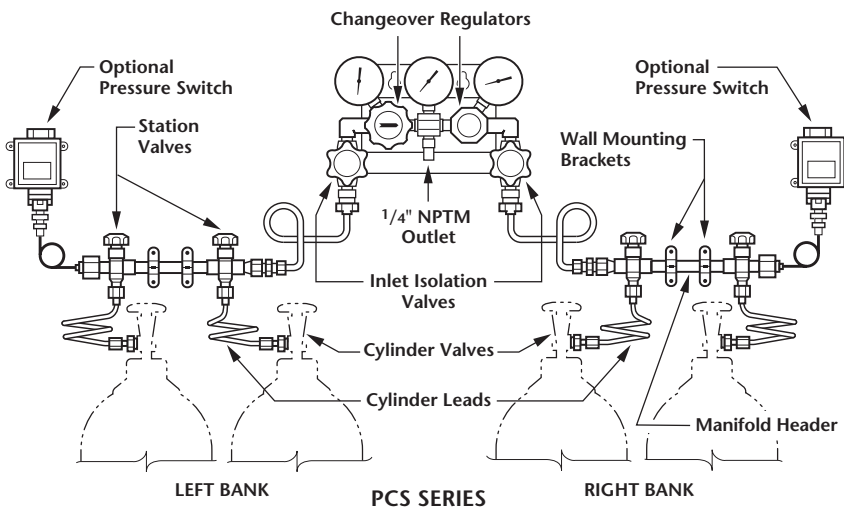
PCS Series

Primary Changeover Systems are designed for use in processes incorporating downstream line or station regulators located at the point of use. The PCS Series incorporates two regulators set at slightly different delivery pressures. Gas discharges from the side with the higher setting first (primary side) which is indicated by the "In Service" arrow located on the hand knob. The side with the lower delivery pressure setting will remain closed until the primary side has been exhausted (approximately 150 psi residual pressure). The changeover will automatically switch to the reserve bank (secondary side). A fluctuation in pressure will occur at this point at the outlet of the changeover. Downstream line regulator(s) (not included) will eliminate pressure variations to the process.

Note: See page 92 for additional PCS Alarm Changeover Systems with prewired switches and annunciators.



PCS Series with Optional Vent Valves

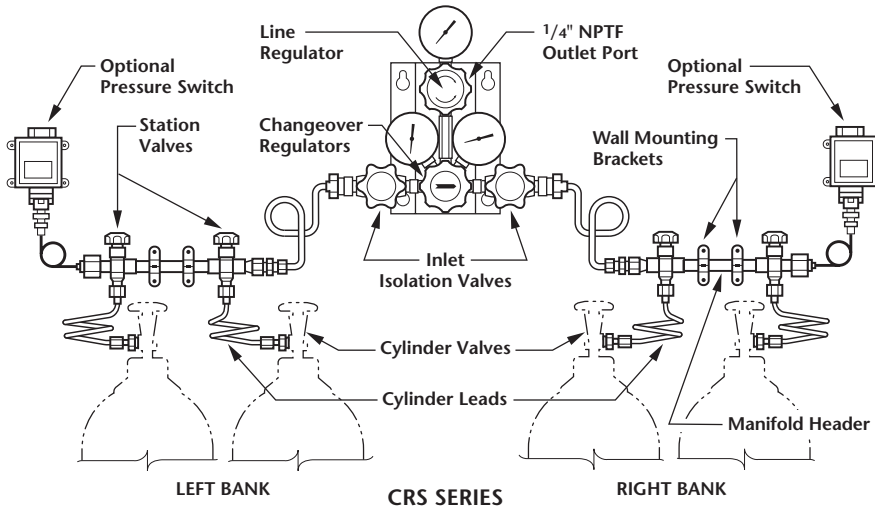


Laser Gas Equipment for Industrial Lasers – See pages 68–69 for additional information

CRS Series

Changeover Regulator Systems provide constant delivery pressure control to instrumentation by incorporating a secondary outlet line regulator. Downstream line or station regulation is not necessary unless various distribution point pressures are required. The CRS Series utilizes a compact design, housing two changeover regulators in a single body. Operation is the same as described for the PCS Series with approximately 200 psi residual cylinder pressure maintained.

Note: See page 92 for additional CRS Alarm Changeover Systems with prewired switches and annunciators.



CRS Regulator

Standard Features

- Modular Construction allows field installation of additional stations without the need for welding or soldering.
- Diaphragm Seal Isolation Valves allow for complete isolation of the gas source when making a changeout.
- Diffusion-Resistant, Diaphragm Seal Station Valves (on four cylinder or larger systems) ensure that gas purity is maintained and allow for isolation of individual cylinders on the manifold without interrupting gas flow.
- High Purity Diffusion-Resistant Regulators minimize the diffusion of air into the system, maintaining the purity of the gas.

Optional Features

- Double-Braided (All Metal) 3' Stainless Steel Flexible Cylinder Hose Pigtailed with stainless steel CGA connections extend service life and provide ease of connecting cylinders.
- Check Valves prevent discharge of gas from manifold and pigtailed when changing cylinders (required for flammable gases).
- Alarmed Changeover Systems with pre-wired switches and annunciators allows for convenient and easy installation. (see page 92)

- Purge/Vent Valves allow for complete removal of entrapped air and moisture from the system upon start-up, or after a cylinder changeout thus maintaining the high purity nature of the system.

Specifications

Manifolds:

Maximum Inlet Pressure: 3000 psig
Flow Coefficient (each station valve):
Brass Manifolds: Cv = 0.25
Stn. Stl. Manifolds: Cv = 0.30

Inlet Connections:

CGA connection as specified

Changeover Regulators:

Maximum Inlet Pressure: 3000 psig
Inlet Pressure Gauge: 0–4000 psig
Minimum Inlet Pressure: 300 psig
Delivery Pressure Gauge
(PCS Series only): 0–200 psig
Delivery Pressure Range (PCS Series only): 150–180 non adjustable
Gauge Size: 2" Dial
Operating Temperature Range:
–40°F to 140°F
Flow Coefficient: Cv = 0.06

Line Regulators (CRS Series only):

Maximum Inlet Pressure: 3000 psig
Delivery Pressure Range*: 10–150 psig
Delivery Pressure Gauge: 0–200 psig
Gauge Size: 2" Dial
Operating Temp. Range: –40°F to 140°F
Flow Coefficient: Cv = 0.15
Outlet Connection: 1/4" NPT female

Materials of Construction

Manifolds:

Metal Parts: Brass or Type 316 Stn. Stl.
as specified when ordering

Seals: Teflon®

Seats:

Check Valves:

Brass Rigid Pigtailed: EPDM;

SS Flexible & Rigid Pigtailed: Viton®

Station Valves: PCTFE

Regulators:

Body:

Brass Systems: Brass Bar Stock

Stainless Steel Systems:

Type 316 Stn. Stl. Bar Stock

Gauges:

Brass Systems: Brass

Stn. Stl. Systems: Type 316 Stn. Stl.

Bonnets:

Brass Systems: Brass Bar Stock

Stn. Stl. Systems: 300 Series SS

Internal Metal Parts Exposed to Gas:

Brass Systems: Brass and Stn. Stl.

Stn. Stl. Systems: Type 316 Stn. Stl.

Seats: Teflon®

Diaphragms: Type 316 Stainless Steel

Friction Sleeve: Teflon®

* Optional delivery pressure ranges are available. Contact your Advanced Representative for more information.

Ordering Information

To order a changeover system, complete the part number using the "Part Number Key" shown at right. For example, to order a 4 cylinder, CRS Series brass changeover regulator system, with flexible pigtails, with check valves, and with CGA 580 connections, the part number would be CRSB-4F-4-580. Order by complete part number.

Note: A two cylinder changeover system does not include manifold headers. The cylinders are connected directly to the regulator inlet pigtails (cylinder leads).

Warning: Advanced does not recommend the use of stainless steel manifold headers for Oxygen service and will not provide such manifolds with CGA 540 connections.

Operation

When both sides of the changeover are connected to a gas supply, gas will flow only from the primary side (bank no. 1), which will be indicated by the "In Service" arrow located on the hand knob. The secondary side (bank no. 2) will remain closed.

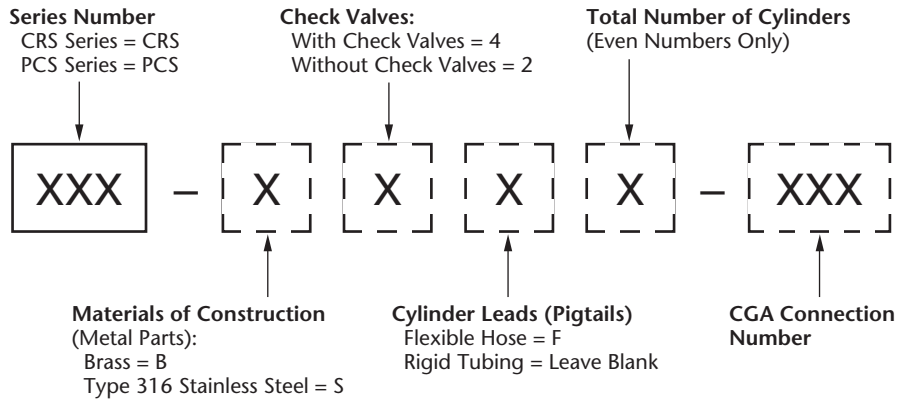
When the gas in the primary bank has been exhausted, the regulator will automatically switch to the secondary, or reserve bank. A fluctuation in outlet pressure will occur at this point. The CRS Series changeover incorporates a built-in line regulator which eliminates this fluctuation and insures a constant delivery pressure to the use point. The PCS Series changeover, supplied without a line regulator, should be utilized for applications incorporating downstream line or station regulation.

Once a changeover has occurred, the hand knob on the changeover regulator should be turned 180° to indicate that bank no. 2 is now in service. This also resets the changeover regulator with bank no. 2 becoming the primary bank.

To replenish the gas supply in bank no. 1, the isolation valve is closed and the empty cylinder(s) is replaced with a full cylinder(s). The isolation valve is then reopened, with bank no. 1 now functioning as the secondary, or reserve side.

Note: The CRS is factory preset to changeover at approximately 200 psig. Liquefied gases or Cryogenic Liquids with vapor pressures less than 300 psig should not be used with the standard changeover systems. See the LCS Series Cryogenic Liquid Container Changeover (page 90) or contact your Advanced distributor if lower factory settings are required.

Part Number Key for Automatic Changeover Systems



Optional Equipment and Replacement Parts

Equipment and Replacement Parts	Part No.
Annunciators	See page 103
Pressure Switches	See page 100
Purge/Vent Valves (set of 2 installed prior to isolation valves)	
For Brass CRS Series	SG6680
For Brass PCS Series	SG6680PCS
For Stainless Steel CRS Series	SG6681
For Stainless Steel PCS Series	SG6681PCS
Teflon® O-Ring Kits (package of 25 ea.)	
For connection between pigtail and station valve	SG6081
For header connection on:	
Brass Manifolds	SG6082B
Stainless Steel Manifolds	SG6082S
Replacement Pigtails, Rigid Type	
Brass without Check Valves	SG6640-(CGA)
Brass with Check Valves	SG6641-(CGA)
Stainless Steel without Check Valves	SG6642-(CGA)
Stainless Steel with Check Valves	SG6643-(CGA)
Replacement Pigtails, Flexible Type	
Without Check Valves	SG6638-(CGA)
With Check Valves	SG6639-(CGA)
Replacement Station Valves	
Brass	0202-5083A
Stainless Steel	Not Available
Repair Kit for Station Valves	
For Brass Valves	0202-3079A
For Stainless Steel Valves	0202-3076A
Additional Stations—For adding stations to the following existing manifolds (specify left or right bank when ordering)	
Brass System with Rigid Pigtails without Check Valves	SG6660-(CGA)
Brass System with Rigid Pigtails with Check Valves	SG6661-(CGA)
Brass System with Flexible Pigtails without Check Valves	SG6662-(CGA)
Brass System with Flexible Pigtails with Check Valves	SG6663-(CGA)
Stn. Stl. System with Rigid Pigtails without Check Valves	SG6664-(CGA)
Stn. Stl. System with Rigid Pigtails with Check Valves	SG6665-(CGA)
Stn. Stl. System with Flexible Pigtails without Check Valves	SG6666-(CGA)
Stn. Stl. System with Flexible Pigtails with Check Valves	SG6667-(CGA)

Where "(CGA)" is indicated above, insert proper Compressed Gas Association connection number to complete the part number. Example: SG6667-580. Order by complete part number.