Gas Cylinder Changeover Regulator (KCM Series)

The KCM series is a two-stage gas delivery system that ensures continuous flow of gases in critical applications. When one supply drops below the changeover pressure, the selector regulator automatically switches the gas feed from the depleted supply to an alternate supply. The automatic operation of the KCM series eliminates costly system downtime and maintenance expense of continuously monitoring the gas supply.

Features
- Convoluted, nonperforated diaphragm for strength and improved pressure response
- Metal-to-metal diaphragm seals on all stages
- Supply-pressure effect of approximately 0.01 %
- Bracket mount

Technical Data

Maximum Inlet Pressure
- 3600 psig (248 bar)
- 3000 psig (206 bar) with hose and cylinder connection option

Pressure Control Ranges
- 0 to 10 psig (0.68 bar) through 0 to 500 psig (34.4 bar)

Nominal Changeover Pressures
- 100, 250, and 500 psig (6.8, 17.2, and 34.4 bar)

Flow Coefficient ($C_v$)
- 0.06

Maximum Operating Temperature
- 176°F (80°C) with PCTFE seat
- 392°F (200°C) with PEEK seat

Weight
- 7.25 lb (3.3 kg)

Ports
- 1/4 in. female NPT inlet, outlet, and gauge ports

Operation

The KCM series can be ordered to switch from one supply to another at one of three different inlet pressures—100, 250, and 500 psig (6.8, 17.2, and 34.4 bar)—called changeover pressures.

The selector regulator (first stage) is factory-set to reduce the supply pressure to the nominal changeover pressure ordered. The line regulator (second stage) can be adjusted with the handle to achieve the required system pressure. This two-stage arrangement minimizes the supply-pressure effect caused by depleting gas supplies (cylinders, tank farm, etc.).

When one supply drops below the changeover pressure, the selector regulator automatically switches the gas feed from the depleted supply to an alternate supply. If both supplies drop below the changeover pressure, the assembly functions as a single-stage regulator, depleting both supplies at the same time. See the Approximate Supply Depletion Pressures table at right for pressures at which this occurs.

Materials of Construction

The KCM series gas changeover uses Swagelok KPR series pressure-reducing regulators. For more information, see General-Purpose Diaphragm Sensing, Pressure-Reducing Regulators (KPR Series), page 6.

The table below lists additional components not shown in the KPR series section.

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
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<tbody>
<tr>
<td>Interstage fitting</td>
<td>316 SS with PTFE tape</td>
</tr>
<tr>
<td>Line-regulator mounting block</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Line-regulators mounting screws, mounting bracket</td>
<td>316 SS</td>
</tr>
</tbody>
</table>

Wetted components listed in italics.

Approximate Supply Depletion Pressures

<table>
<thead>
<tr>
<th>Nominal Changeover Pressure (psig)</th>
<th>Supply 1 Depletion Pressure (psig)</th>
<th>Supply 2 Depletion Pressure (psig)</th>
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<tbody>
<tr>
<td>100 (6.8)</td>
<td>150 (10.3)</td>
<td>90 (6.2)</td>
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<tr>
<td>250 (17.2)</td>
<td>300 (20.6)</td>
<td>230 (15.8)</td>
</tr>
<tr>
<td>500 (34.4)</td>
<td>500 (34.4)</td>
<td>450 (31.0)</td>
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</table>

Supply 2 can deplete below some of the available pressure control range limits. Setting the line regulator near the nominal changeover pressure will cause flow to the system to decrease or stop as the supply nears depletion.
**Dimensions**

Dimensions, in inches (millimeters), are for reference only and are subject to change.

**Ordering Information**

Build a KCM series regulator ordering number by combining the designators in the sequence shown below.

```
KCM 1 F F B 4 1 2 A D 0 0 1 0
```

1. **Body Material**
   - 1 = 316 SS

2. **Pressure Control Range**
   - C = 0 to 10 psig (0 to 0.68 bar)
   - D = 0 to 25 psig (0 to 1.7 bar)
   - E = 0 to 50 psig (0 to 3.4 bar)
   - F = 0 to 100 psig (0 to 6.8 bar)
   - G = 0 to 250 psig (0 to 17.2 bar)
   - J = 0 to 500 psig (0 to 34.4 bar)
   - Not available with 100 psig (6.8 bar) changeover pressure.
   - Only available with 500 psig (34.4 bar) changeover pressure.

3. **Nominal Changeover Pressure**
   - F = 100 psig (6.8 bar)
   - G = 250 psig (17.2 bar)
   - J = 500 psig (34.4 bar)
   - Inlet pressure must exceed changeover pressure for automatic switching to occur.

4. **Port Configuration**
   - B, C, L
   - See Port Configurations, below.

5. **Ports**
   - 4 = 1/4 in. female NPT

6. **Seat Material**
   - 1 = PCTFE
   - 2 = PEEK

7. **Flow Coefficient ($C_v$)**
   - 2 = 0.06

8. **Sensing Mechanism, Vent**
   - A = Alloy X-750 diaphragm, no vent
   - C = Alloy X-750 diaphragm, self vent
   - Self vent through line regulator only.

9. **Line Regulator Handle**
   - D = Knob
   - E = 316 SS antitamper nut
   - Selector regulator has knob handle.

10. **Isolation and Relief Valves**
    - 0 = No valves
    - For isolation and relief valve options, see page 54.

11. **Gauge Scale**
    - 1 = psig (bar) (North America only)
    - 2 = bar (psig)
    - 3 = psig (bar)
    - 4 = MPa
    - 5 = psig (kPa)

12. **Cylinder Connections**
    - 0 = No connections
    - Cylinder connections available only with hose option. For CGA cylinder connection options, see page 53.

13. **Options**
    - 0 = No options
    - 3 = 3 ft, 1/4 in. FM series metal flexible hose, 1/4 in. female NPT inlet
    - 4 = 3 ft, 1/4 in. TH series PTFE-lined, stainless steel braided hose, 1/4 in. female NPT inlet

**Port Configurations**

<table>
<thead>
<tr>
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$G_o$ = Outlet gauge.
$G_o/R$ = Outlet gauge or relief valve.
$R$ = Relief valve.
$I$ = Isolation valve.