catalog numbers for flow control valves

245-216049 VALVE BODY W/MINICUS FLGS
245-216038 VALVE BODY W/CAJON VCR (not included)
Replacement motor/gear drive assembly only (valve body

NOTE: See Appendix A of the Instruction Manual for information specific to units with
flow control valve.

245001 for information specific to units with the

245-13278** VALVE, MOTOR/DRIVE, NW16CF, BEND
Complete Assemblies with 8-inch extension between

245-216049 VALVE BODY W/MINICUS FLGS
245-216038 VALVE BODY W/CAJON VCR (not included)
Replacement motor/gear drive assembly only (valve body

NOTE: See Appendix A of the Instruction Manual for information specific to units with the
flow control valve.

245001 for information specific to units with the

245-13278** VALVE, MOTOR/DRIVE, NW16CF, BEND
Complete Assemblies with 8-inch extension between

245-216049 VALVE BODY W/MINICUS FLGS
245-216038 VALVE BODY W/CAJON VCR (not included)
Replacement motor/gear drive assembly only (valve body

NOTE: See Appendix A of the Instruction Manual for information specific to units with the
flow control valve.

245001 for information specific to units with the

245-13278** VALVE, MOTOR/DRIVE, NW16CF, BEND
Complete Assemblies with 8-inch extension between

245-216049 VALVE BODY W/MINICUS FLGS
245-216038 VALVE BODY W/CAJON VCR (not included)
Replacement motor/gear drive assembly only (valve body

NOTE: See Appendix A of the Instruction Manual for information specific to units with the
flow control valve.

245001 for information specific to units with the

245-13278** VALVE, MOTOR/DRIVE, NW16CF, BEND
Complete Assemblies with 8-inch extension between

245-216049 VALVE BODY W/MINICUS FLGS
245-216038 VALVE BODY W/CAJON VCR (not included)
Replacement motor/gear drive assembly only (valve body

NOTE: See Appendix A of the Instruction Manual for information specific to units with the
flow control valve.

245001 for information specific to units with the

245-13278** VALVE, MOTOR/DRIVE, NW16CF, BEND
Complete Assemblies with 8-inch extension between

245-216049 VALVE BODY W/MINICUS FLGS
245-216038 VALVE BODY W/CAJON VCR (not included)
Replacement motor/gear drive assembly only (valve body

NOTE: See Appendix A of the Instruction Manual for information specific to units with the
flow control valve.

245001 for information specific to units with the

245-13278** VALVE, MOTOR/DRIVE, NW16CF, BEND
Complete Assemblies with 8-inch extension between
Temperature
The 245 valve is designed to be operated at ambient temperatures not exceeding 50 °C. It is not necessary to control the temperature of this unit during automatic operation as any change of leak rate due to temperature changes will automatically be compensated.

When the valve assembly is to be sealed during long periods, it may be desirable to control the ambient temperature of the valve. If the automatic control has been turned off, a drop of more than 10 °C may cause the valve to open slightly, permitting gas to leak into the system. If the valve has opened slightly due to an extreme decrease in temperature, it may be closed manually by turning the compensating screw clockwise 1/10 turn at a time.

Maximum Throughput
Maximum throughput is greater than 50 Torr liters/minute with atmospheric pressure on the inlet. Note that exhaust is to atmosphere.

Troubleshooting

General Symptoms, Possible Causes and Corrections

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause/Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve does not operate properly in either automatic or manual mode.</td>
<td>1. The motor-in-controller cable is not connected. Contact the controller to the motor control. 2. The motor-in-controller cable is not connected. 3. The replace the cable. 4. The valve should be at least 10% open. Contact Granville-Phillips Customer Support for factory repair.</td>
</tr>
<tr>
<td>The system fails to stabilize at the set pressure.</td>
<td>1. No source gas pressure. Turn on source gas and set it to the proper pressure. 2. The controller is not properly set. Contact Granville-Phillips Customer Support for factory repair.</td>
</tr>
<tr>
<td>The valve does not close tightly.</td>
<td>1. Insufficient hydraulic fluid in the valve. Turn OFF the source gas and engage the screw-off from the compensating screw. Replace the compensating screw and fill hole to bottom of the threads with hydraulic fluid. 2. Insufficient hydraulic fluid in the valve. Turn OFF the source gas and engage the screw-off from the compensating screw. Replace the compensating screw and fill hole to bottom of the threads with hydraulic fluid. 3. The valve should be at least 10% open. Contact Granville-Phillips Customer Support for factory repair.</td>
</tr>
<tr>
<td>The valve does not operate.</td>
<td>1. The valve mounting screws are loose. Tighten the screws as required. 2. The compensating screw is loose. Turn the compensating screw clockwise 1/10 turn at a time and observe a decrease in pressure in the vacuum system. If no change is observed, check the hydraulic fluid level. 3. Insufficient hydraulic fluid in the valve. Turn OFF the source gas and engage the screw-off from the compensating screw. Replace the compensating screw and fill hole to bottom of the threads with hydraulic fluid.</td>
</tr>
</tbody>
</table>

Product Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure control range</td>
<td>200 Torr (1.3 x 10^-3) to 1200 Torr (10^-1) peq (10^-1)</td>
</tr>
<tr>
<td>Maximum throughput</td>
<td>2500 Torr Baratron, (400 scfh) with 125 °F (52 °C) cool, exhausting to 760 Torr (14.7 psia). Greater than 50 torr Baratron, (17 psig) with one atmosphere (14.7 psia) leak on inlet, exhausting to reroutes.</td>
</tr>
<tr>
<td>Leakage conductance</td>
<td>To vacuum: 10^-7 Torr, (3.3 x 10^-14 psia) maximum when less than 1 x 10^-8 Torr (1 x 10^-13 psia) to 10^-11 Torr (3 x 10^-14 psia) at 158 °F (25 psig) to 10^-11 Torr (2 x 10^-13 psia) at 158 °F.</td>
</tr>
<tr>
<td>Valve inlet maximum pressure</td>
<td>Port A  25 psig, Port B 200 psig.</td>
</tr>
<tr>
<td>Valve operating temperatures</td>
<td>0 °C Min to 55 °C Max (32 °F to 131 °F).</td>
</tr>
<tr>
<td>Motor operating temperatures</td>
<td>Typically 50 °C (122 °F).</td>
</tr>
<tr>
<td>Operation humidity</td>
<td>90% typical accuracy may be affected below 65 °F (18 °C).</td>
</tr>
<tr>
<td>Non-operating temperatures</td>
<td>0 °C as +50 °C (32 °F to 158 °F).</td>
</tr>
<tr>
<td>Valve baleak maximum temperature</td>
<td>Up to 450 °C with the servo motor removed and the bakeout package installed. The pressure inside the valve during bakeout should be less than 10^-7 Torr (2 x 10^-13 psia) so oxidation is kept to a minimum. See the bakeout procedure in the instruction manual.</td>
</tr>
<tr>
<td>Valve body materials</td>
<td>Type 304 Stainless steel and 316L stainless steel.</td>
</tr>
<tr>
<td>Valve weight</td>
<td>9 lbs (4 kg).</td>
</tr>
</tbody>
</table>

Customer Service / Technical Support
MKS Pressure and Vacuum Measurement Instruments, Inc., Granville-Phillips Division 640 Dry Creek Parkway Longmont, Colorado 80503 USA Tel: 303-652-2844 Fax: 303-652-5500 Email: mks@mksinst.com MKS Corporate Headquarters MAG Instruments, Inc. 2 Tech Drive, Suite 201 Andover, MA 01810 USA Tel: 978-645-5500 Fax: 978-557-9100 Email: mks@mksinst.com

Service / Maintenance
If the product requires service, contact the MKS Granville-Phillips Technical Support Department at 1-833-652-4430 for troubleshooting help. If the product must be returned to the factory for service, return a Return Material Authorization (RMA) from Granville-Phillips. Do not return products without first obtaining an RMA. In some cases a hazardous-materials document may be required. The MKS/Granville-Phillips Customer Service Representatives will advise you if the hazardous materials document is required. When returning a product to Granville-Phillips, be sure to package the product to prevent shipping damage. Circuit boards and modules separated from the gauge assembly must be handled using proper anti-static protection methods and must be packaged in anti-static packaging. Shipping damage on returned products as a result of inadequate packaging is the Buyer's responsibility.

Service / Maintenance Procedures
Bakeout and maintenance instructions are given in the Instruction Manual, p/n 245001, which can be downloaded at: www.mksinst.com.