Honeywell

V5055
Industrial
Gas
Valves’

1-3 Inch Valves
4 Inch Valves

Gas Flow
vs.
Valve
Opening
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>VALVE CURVES</td>
<td>1</td>
</tr>
<tr>
<td>V5055A,D</td>
<td>1</td>
</tr>
<tr>
<td>V5055B</td>
<td>5</td>
</tr>
<tr>
<td>V5055C,E</td>
<td>9</td>
</tr>
<tr>
<td>CAPACITY CURVES</td>
<td>13</td>
</tr>
<tr>
<td>VALVE SIZING CHART</td>
<td>14</td>
</tr>
</tbody>
</table>
The V5055 Gas Valves are used with the V4055, V4062, and V9055 Fluid Power Actuators to control gas flow to commercial and industrial burners.

- Used with natural or liquefied petroleum (LP) gases.
- V5055 normally closed valves are rated for final shutoff service (safety shutoff).
- V5055A,C,D,E Valves are for On-Off service.
- V5055B Valve has a characterized guide and in combination with the V4055, V4062, and V9055 Fluid Power Actuators, provides slow-opening, hi-lo-off, and modulating functions respectively.
- V5055C,E Valves have a double seal and are used with V4055D,E Actuators to provide proof-of-closure switch and valve seal overtravel interlock.
- V5055D,E Valves are for high pressure applications (see Table 1).

- Seven valve sizes from 3/4 to 3 inches have NPT threaded connections. Models are available with BSP-PL threads. V5055A,B,C Valves are available in a 4 inch size and have flange connections.
- Most models have 1/4 inch upstream and downstream top and plug. BSP-PL thread models have 1/4 inch upstream tap and plug.
- Valve body rating of 75 psi (517.1 kPa).
- Yellow SHUT indicator attached to the valve stem provides an indication of the valve closed position.
- Unpainted, die-cast aluminum body.

CONTENTS
Specifications ................................................. 2
Ordering Information ........................................ 2
Installation ..................................................... 6
Operation and Checkout ..................................... 8
Service Information ......................................... 9

F. P. • Rev. 11-94 • ©Honeywell Inc. 1994 • Form Number 60-2307—10
Specifications

MODELS:
V5055A Industrial Gas Valve for On-Off service.
V5055B Industrial Gas Valve with characterized guide for slow opening, HI-LO-OFF, or modulating service.
V5055C: Same as V5055A but incorporates a double seal. Used with the V4055D Actuator to provide proof-of-closure switch and a valve seal overtravel interlock.
V5055D: Same as V5055A but for high pressure applications.
V5055E: Same as V5055C but for high pressure applications.

TYPE OF GAS: Natural or liquefied petroleum (LP) only.

PIPE SIZE: 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, and 4 in. (only V5055A,B,C available in 4 in. size).

PIPE THREADS: NPT or BSP-PL Threads (equivalent to ISO R7 and DIN 2999). Available on inlet and outlet of 3/4 to 3 inch valves. Four inch valves have flange connections.

PRESSURE RATINGS: See Table 1.

VALVE BODY RATING: 75 psi (517.1 kPa).

VALVE CAPACITIES: A.G.A. ratings at 1 in. (0.25 kPa) pressure drop; based on gas with specific gravity of 0.64.

TABLE 1—PRESSURE RATINGS OF VALVE-ACTUATOR COMBINATIONS.

<table>
<thead>
<tr>
<th>Valve</th>
<th>Actuator</th>
<th>V4055A,D&lt;sup&gt;c&lt;/sup&gt;</th>
<th>V4055B,E&lt;sup&gt;c&lt;/sup&gt;</th>
<th>V4062,V9055&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>psi</td>
<td>psi</td>
<td>psi</td>
<td>psi</td>
</tr>
<tr>
<td>V5055A,C</td>
<td></td>
<td>34.5</td>
<td>15</td>
<td>103.4</td>
</tr>
<tr>
<td>3/4 to 3 in.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V5055A,C</td>
<td></td>
<td>20.7</td>
<td>15</td>
<td>103.4</td>
</tr>
<tr>
<td>4 in.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V4055B</td>
<td></td>
<td>34.5</td>
<td>15</td>
<td>103.4</td>
</tr>
<tr>
<td>3/4 to 3 in.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V5055B</td>
<td></td>
<td>20.7</td>
<td>15</td>
<td>103.4</td>
</tr>
<tr>
<td>4 in.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V5055D,E</td>
<td></td>
<td>34.5</td>
<td>75</td>
<td>517.1</td>
</tr>
<tr>
<td>3/4, 1, 1-1/4, 1-1/2 in.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V5055D,E</td>
<td></td>
<td>34.5</td>
<td>45</td>
<td>310.3</td>
</tr>
<tr>
<td>2, 2-1/2, 3 in.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Maximum operating pressure differential.
<sup>b</sup> Maximum close-off pressure without seal leakage. This is the maximum allowable pressure drop to which a valve may be subjected while fully closed, and is independent of the valve body rating.
<sup>c</sup> Use a V4055D, V4055E, V4062D, or V9055D (with proof-of-closure switch) with a V5055C or E (with double seal) for valve seal overtravel interlock.

Ordering Information

When purchasing replacement and modernization products from your TRADELINE<sup>®</sup> wholesaler or distributor, refer to the TRADELINE<sup>®</sup> Catalog or price sheets for complete ordering number, or specify—
1. Order number
2. Pipe size.
3. NPT or parallel BSP threads (except for 4 in. models with flanges).
4. Optional additional tapping and plug—1/8 in downstream and/or 1/2 in. upstream.
5. Replacement parts, if desired.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:
1. Your local Home and Building Control Sales Office (please check the white pages of your phone directory).
2. Home and Building Control Customer Logistics
   Honeywell Inc.
   1885 Douglas Drive North
   Minneapolis, Minnesota 55422-4386 (612) 951-1000
In Canada—Honeywell Limited/Honeywell Limitée, 740 Ellesmere Road, Scarborough, Ontario M1P2V9. International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.
UPSTREAM TAPPING AND PLUG: 1/4 in. NPT or BSP-PL is standard.
DOWNSTREAM TAPPING AND PLUG: 1/4 in. NPT on most domestic models.
1/8 in. NPT on V5055C1182.
AMBIENT OPERATING TEMPERATURE RATING:
-40°F to 150°F (-40°C to 66°C); -40°F to 125°F (-40°C to 52°C) when used with V9055.
MATERIAL: Die-cast aluminum.
MOUNTING: Mounts directly in the gas supply line.
DIMENSIONS: See Fig. 2 and 3.
WEIGHT:
3/4, 1, 1-1/4, 1-1/2, in. valve: 4 lb. (1.8 kg).
2 in. valve: 8 lb. (3.6 kg).
2-1/2, 3 in. valve: 11 lb. (5.0 kg).
4 in. valve: 28 lb. (12.7 kg).

### CAPACITY, IN CUBIC FEET PER HOUR (cf/h) FOR GAS WITH SPECIFIC GRAVITY OF 0.64

<table>
<thead>
<tr>
<th>Valve Size (in.)</th>
<th>L.A.S. a Rated Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4</td>
<td>665 cf/h, 18.8 cu m/hr</td>
</tr>
<tr>
<td>1</td>
<td>960 cf/h, 27.2 cu m/hr</td>
</tr>
<tr>
<td>1-1/4</td>
<td>1406 cf/h, 39.8 cu m/hr</td>
</tr>
<tr>
<td>1-1/2</td>
<td>1717 cf/h, 48.6 cu m/hr</td>
</tr>
<tr>
<td>2</td>
<td>3620 cf/h, 102.5 cu m/hr</td>
</tr>
<tr>
<td>2-1/2</td>
<td>4250 cf/h, 120.3 cu m/hr</td>
</tr>
<tr>
<td>3</td>
<td>5230 cf/h, 148.1 cu m/hr</td>
</tr>
<tr>
<td>4 (V5055A)</td>
<td>10200 cf/h, 288.8 cu m/hr</td>
</tr>
<tr>
<td>4 (V5055B,C)</td>
<td>9180 cf/h, 259.9 cu m/hr</td>
</tr>
</tbody>
</table>

Fig. 1—Flow curves for V5055 Valves.
REPLACEMENT PARTS:
Replacement Seal Assembly: Includes valve seal, bonnet seal, and tube of lubricant.
133393A: for 3/4, 1, 1-1/4, and 1-1/2 in. valves
133392A: for 2, 2-1/2, and 3 in. valves.
137253A: for 4 in. valves.
Replacement Bonnet Assembly: Includes complete bonnet assembly, plus the required replacement seal assembly.

APPROVALS: The following combinations of V5055 Valves (3/4 through 4 in.) and V4055, V4062 and V9055 Fluid Power Actuators are approved by these agencies:
Underwriters Laboratories Inc. Listed: (File No. MH1639, Guide No. YIOZ):
V4055A,B,D,E/V5055A,B,C,D,E
V4062/V5055A,B,C,E
V9055/V5055A,B,C,E

![Fig. 2—Approximate dimensions of the 3/4 through 3 in. V5055 Valves with valve actuator in in. (mm).](image)

⚠️ ALLOW 2 IN. (51 mm) CLEARANCE FOR ACTUATOR REMOVAL.

<table>
<thead>
<tr>
<th>Valve Model</th>
<th>Valve Size (in.)</th>
<th>Replacement Bonnet Assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>V5055A (On-Off)</td>
<td>3/4, 1, 1-1/4, 1-1/2</td>
<td>133398AA</td>
</tr>
<tr>
<td></td>
<td>2, 2-1/2, 3</td>
<td>133417AA</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>136911AA</td>
</tr>
<tr>
<td>V5055B (Characterized guide)</td>
<td>3/4, 1, 1-1/4, 1-1/2</td>
<td>133398BA</td>
</tr>
<tr>
<td></td>
<td>2, 2-1/2, 3</td>
<td>133417BA</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>136911BA</td>
</tr>
<tr>
<td>V5055C (Valve-closed indicator)</td>
<td>4</td>
<td>136911CA</td>
</tr>
<tr>
<td>V5055D (High pressure On-Off)</td>
<td>3/4, 1, 1-1/4, 1-1/2</td>
<td>136308AA</td>
</tr>
<tr>
<td></td>
<td>2, 2-1/2, 3</td>
<td>136307AA</td>
</tr>
</tbody>
</table>

**Valve Model**

**DIM A**

**DIM B**

**DIM C**

**DIM D**

**DIM E**

**DIM F**

**OCTAGON**

<table>
<thead>
<tr>
<th>VALVE SIZE INCH</th>
<th>DIM A IN.</th>
<th>DIM A MM</th>
<th>DIM B IN.</th>
<th>DIM B MM</th>
<th>DIM C IN.</th>
<th>DIM C MM</th>
<th>DIM D IN.</th>
<th>DIM D MM</th>
<th>DIM E IN.</th>
<th>DIM E MM</th>
<th>DIM F IN.</th>
<th>DIM F MM</th>
<th>OCTAGON IN.</th>
<th>OCTAGON MM</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4</td>
<td>11-1/8</td>
<td>282.6</td>
<td>2-3/4</td>
<td>69.9</td>
<td>8-3/16</td>
<td>208.0</td>
<td>5-3/4</td>
<td>146.1</td>
<td>2-1/4</td>
<td>57.2</td>
<td>4-13/16</td>
<td>122.2</td>
<td>2-13/16</td>
<td>71.4</td>
</tr>
<tr>
<td>1</td>
<td>11-1/8</td>
<td>282.6</td>
<td>2-3/4</td>
<td>69.9</td>
<td>8-3/16</td>
<td>208.0</td>
<td>5-3/4</td>
<td>146.1</td>
<td>2-1/4</td>
<td>57.2</td>
<td>4-13/16</td>
<td>122.2</td>
<td>2-13/16</td>
<td>71.4</td>
</tr>
<tr>
<td>1-1/4</td>
<td>11-1/8</td>
<td>282.6</td>
<td>2-3/4</td>
<td>69.9</td>
<td>8-3/16</td>
<td>208.0</td>
<td>5-3/4</td>
<td>146.1</td>
<td>2-1/4</td>
<td>57.2</td>
<td>4-13/16</td>
<td>122.2</td>
<td>2-13/16</td>
<td>71.4</td>
</tr>
<tr>
<td>2</td>
<td>11-1/4</td>
<td>285.8</td>
<td>2-7/8</td>
<td>73.0</td>
<td>8-5/16</td>
<td>211.1</td>
<td>8-3/8</td>
<td>212.7</td>
<td>2-3/4</td>
<td>69.9</td>
<td>7-19/32</td>
<td>192.9</td>
<td>3-1/2</td>
<td>88.9</td>
</tr>
<tr>
<td>2-1/2</td>
<td>11-3/4</td>
<td>298.5</td>
<td>3-3/8</td>
<td>85.7</td>
<td>8-13/16</td>
<td>223.8</td>
<td>9-1/4</td>
<td>235.0</td>
<td>2-3/4</td>
<td>69.9</td>
<td>7-19/32</td>
<td>192.9</td>
<td>4-1/2</td>
<td>114.3</td>
</tr>
<tr>
<td>3</td>
<td>11-3/4</td>
<td>298.5</td>
<td>3-3/8</td>
<td>85.7</td>
<td>8-13/16</td>
<td>223.8</td>
<td>9-1/4</td>
<td>235.0</td>
<td>2-3/4</td>
<td>69.9</td>
<td>7-19/32</td>
<td>192.9</td>
<td>4-1/2</td>
<td>114.3</td>
</tr>
</tbody>
</table>
Industrial Risk Insurers (Formerly F.L.A.) Acceptable:
V4055A,B,D,E/V5055A,B,C,D,E
V4062/V5055A,B,C,E
V9055/V5055A,B,C,E
Factory Mutual Approved (Report No. 20698, 20835, 21172, and 24061).
American Gas Association (IAS) Design Certified (Report No. 21-1C):
V4055A/V4055A,B V4055E/V5055E
V4055B/V5055D V4062/V5055B,C
V4055D/V5055C V9055/V5055B,C

NOTE: The IAS does not certify models equipped with BSP threads.

Canadian Gas Approvals Inc. (IAS) Certified (Report No. 1029-SSV-4098, 60 Hz actuator models only):
V4055A,B,D,E/V5055A,B,C,D,E
V4062/V5055B
V9055/V5055B

British Gas Corporation and Dutch Gas Institute Approved:
V4055 or V4062 with V5055; A1145, -A1152, A1160, -A1178, -B1168, -B1184, B1192, -B1200, -B1218.
Australian Gas Association Approved: V5055; -B1267, -B1275, and -B1291.

GAS VALVE SIZING
1. Check the burner nameplate for (a) the type of gas used, and (b) the gas flow capacity. The capacity will be listed in Btu/h (Btus per hour) or in cf/h (cubic foot per hour).
2. Call the gas utility for information on (a) the specific gravity (sp gr) and (b) Btu per cubic foot (Btu/cu ft) for type of gas used.
3. Find the capacity in cf/h. If the capacity is listed in Btu/h, convert to cf/h by the following formula:

\[
\text{Capacity in cf/h} = \frac{\text{Btu/h (from burner nameplate)}}{\text{Btu/cu ft (from gas utility)}}
\]

Fig. 3—Approximate dimensions of the 4 in. V5055 Valves with valve actuator in in. (mm).

ALLOW 2 IN. (51 mm) CLEARANCE ABOVE V4055 SO IT MAY BE REMOVED FROM VALVE.
DIMENSIONS ON DIN-APPROVED VALVES: 1/4 - 19 BSP PL UPSTREAM PLUG (2), .71 IN (18 mm) DIAMETER BOLT HOLE (16), 7.087 IN (180 mm) DIAMETER BOLT CIRCLE.
4. For gases with specific gravities other than 0.64, multiply the burner cfh by the proper conversion factor:

<table>
<thead>
<tr>
<th>Type of Gas</th>
<th>sp gr (average)</th>
<th>Multiply cf/h by</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP—Propane</td>
<td>1.53</td>
<td>0.647</td>
</tr>
<tr>
<td>LP—Butane</td>
<td>1.98</td>
<td>0.569</td>
</tr>
</tbody>
</table>

5. Use the corrected capacity in cf/h when determining the gas valve size in Fig. 1.

6. Determine the maximum pressure drop across the valve and draw a horizontal line at this pressure in Fig. 1.

7. Draw a vertical line in Fig. 1 at the capacity (cf/h) previously determined. Use the corrected capacity for a gas with a specific gravity other than 0.64.

8. Use the valve size at the intersection of the horizontal and vertical lines. If the intersection is between valve sizes, use the next higher size to the right.

TO SIZE TWO IDENTICAL VALVES PIPED IN SERIES
1. Find the cf/h for the type of gas used.
2. Consider both valves as one unit. Determine the total maximum pressure drop across the unit.
3. Find the pressure drop across the first valve by assuming it to be 45 percent of the total pressure drop.
4. Find the valve size from Fig. 1.
5. The second valve will be the same size as the first valve.

**Installation**

**IMPORTANT:** The V5055 Valve is designed to provide control of gaseous fuel (natural and LP gas) flow in applications in which there is minimal exposure to water. V5055 Valves used in maritime, beverage, food processing, outdoor and other installations in which occasional exposure to water is experienced may be subject to valve stem and spring corrosion. The presence of corrosion decreases the operating life of the valve. V5055 Valves used in such installations should be inspected at least annually and should have the valve bonnets replaced if corrosion is noted.

A V4055 Valve Actuator with a NEMA 4 rating is also recommended for such installations. The water-tight design of the NEMA 4 rated V4055 Actuator prevents water from entering the V4055 valve stem and spring chamber through the actuator. Under certain conditions, some water may be retained by the external upper portion of the valve body. The retained water is effectively excluded from the valve stem and spring chamber by a functional seal that is incorporated into the NEMA 4 rated actuator.

**WHEN INSTALLING THIS PRODUCT...**
1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced, flame safeguard control technician.
4. After installation is complete, check out product operations as provided in these instructions.

**CAUTION**
1. Turn off gas supply before starting installation.
2. Disconnect power supply for valve actuator before beginning installation to prevent electrical shock and equipment damage.
3. Be sure the valve is installed so the arrow on the valve points in the direction of gas flow. (Gas pressure helps to close the valve.)

**LOCATION**
Install the valve in the gas supply line downstream from the pressure regulator. The valve and actuator may be mounted in any position that allows sufficient clearance for installation and for repair or replacement.

1. The valve position indicators should be easily visible with the valve and actuator in the final position.
2. The final position of the valve and actuator must allow for damper linkage, if used.

**IMPORTANT:** Allow room for turning the valve body (actuator not attached) onto the gas piping. Swing dimensions, measured from the center of the pipe are:
- 3/4 through 1-1/2 in. valves: 4 in. (101.6 mm).
- 2 through 3 in. valves: 5 in. (127.0 mm).
- 4 in. valves: 7 in. (177.8 mm).

**MOUNTING (Figs. 4 through 6)**

**WARNING**
If flow is not in the direction of the arrow on the valve body, the valve may not shut off.
1. Use new, properly reamed, pipe, free from chips.
2. Do not thread pipe too far (Fig. 4). Valve distortion or malfunction may result from excess pipe in the valve.

3. Remove the protective caps from the ends of the valve. Do not attach the valve actuator until the valve body installation is complete.
4. Apply good quality pipe dope resistant to action of LP gas, putting a moderate amount on the male threads only. Use dope sparingly; if pipe dope lodges on the valve seat, it will prevent proper closure.
5. Install valve with the gas flow in the direction indicated by the arrow on the casting.
6. Apply a parallel jaw wrench only to the flat next to the pipe being inserted (Fig. 5). A wrench applied to the valve body itself, or to the end farthest from the pipe being inserted, may distort the casting, causing a malfunction. Do not use the valve for a lever.
7. Be sure the gas flow is in the same direction as the arrow on the bottom of the valve body.

8. Use two threaded companion flanges, two gaskets (included with valve), and 16 bolts (with washers and nuts) for mounting a 4 in.-V5055 Valve. Mount a threaded flange and gasket on each end of the valve as shown in Fig. 6. Then screw the pipes into the threaded flanges. Apply dope sparingly, and use wrenches and vises properly as shown in Fig. 4 and 5.
9. Make sure the power supply is disconnected from the valve actuator. Then mount the actuator on the valve body and complete the electrical and linkage connections following the instructions packed with the actuator.
Fig. 6—Installing a 4 in. V5055 Valve.

OPERATION
A V5055 Industrial Gas Valve is operated by a V4055, V4062, or V9055 Fluid Power Gas Valve Actuator. The valve opens when the actuator is energized, and closes when power is removed. When closed, the valve seals off against the rated close-off pressure with no power applied. For further information, refer to the Instructions for the actuator.

CHECKOUT

WARNING
Do not allow fuel to accumulate in the combustion chamber. If fuel is allowed to enter the chamber for longer than a few seconds without igniting, an explosive mixture could result.

CAUTION
1. Do not put the system into service until you have satisfactorily completed the following Valve Leak Test, all applicable tests described in the Checkout section of the Instructions for the flame safeguard control, and any other tests required by the burner manufacturer.
2. All tests must be performed by a trained, experienced flame safeguard control technician.
3. Close all manual fuel shutoff valves as soon as trouble occurs.

After the installation is complete, cycle the valve several times with the manual fuel shutoff cock closed. Make sure the valve and actuator function properly. Also perform the Valve Leak Test that follows before putting the valve into service.
VALVE LEAK TEST (Fig. 7)

This is a test for checking the closure tightness of a gas safety shutoff valve. It should be performed by qualified personnel during the initial startup of a burner system, or whenever the valve or valve bonnet is replaced (see Service Information section). It is recommended that this test also be included in the scheduled inspection and maintenance procedures. For a periodic inspection test, follow steps 1, 3, 4, 5, 8, 9, 10, 12, 13, 16, and 17.

1. De-energize the control system to assure that there is no power to the safety shutoff valve (C) shown in Fig. 7.
2. Close the upstream manual gas cock (A).
3. Make sure the manual test petcock (F) is closed in the leak test tap assembly (D).
4. Remove the leak test tap plug and connect the test apparatus to the Leak Tap (D).
5. Close the downstream manual gas cock (E).
6. Open the upstream manual gas cock (A).
7. Run the safety shutoff valve (C) to its fully open position (through the safety system); then immediately de-energize the system to close the valve.
8. Immerse a 1/4 in. tube vertically 1/2 in. (12.7 mm) into a jar of water.
9. Slowly open the test petcock (F).
10. When the rate of bubbles coming through the water stabilizes, count the number of bubbles appearing during a ten-second period. Each bubble appearing during a ten-second period represents a flow rate of approximately 0.001 cfh.

To meet U.S. requirements, leakage must not exceed the following values:

<table>
<thead>
<tr>
<th>V5055 Pipe Size (in.)</th>
<th>Allowable Leakage (cc/hr)a</th>
<th>Number of bubbles per 10 sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4, 1, 1-1/4, 1-1/2</td>
<td>458</td>
<td>16</td>
</tr>
<tr>
<td>2, 2-1/2, 3</td>
<td>752</td>
<td>26</td>
</tr>
<tr>
<td>4</td>
<td>1003</td>
<td>35</td>
</tr>
</tbody>
</table>

a Based on air at standard conditions, test pressures provided by ANSI Z21.21, Section 2.4.2 and a maximum of 235 cc/hr per inch of seal-off diameter. Seal-off diameter is not to be confused with pipe size.

NOTE: For international leak test requirements, contact the office of the appropriate approval agency.

AFTER THE TEST:
12. Close the test petcock (F), remove the test apparatus, and replace the leak test tap plug (D).
13. Open the upstream manual gas cock (A) and energize the safety shutoff valve (C).
14. Test with soap bubbles to assure that there is no leak at the test tap (D).
15. De-energize the safety shutoff valve (C).
16. Open the downstream manual gas cock (E).
17. Restore the system to normal operation. If two safety shutoff valves are utilized, each 550V valve is to be checked for tightness of closure.

Fig. 7—Valve Leak Test.

Service Information

SCHEDULED INSPECTION AND MAINTENANCE

Setup and follow a schedule for periodic inspection and maintenance, including the burner, all other controls, and the valve(s). It is recommended that the Valve Leak Test in the Checkout section be included in this schedule. Refer to the Instructions for the primary safety control for more information.

VALVE BONNET REPLACEMENT

The entire valve bonnet may be replaced without removing the valve body from the gas line. Do not disassemble the valve bonnet assembly; the valve seat is not replaceable.
For part numbers, refer to Replacement Parts in the Specifications section. Complete instructions for replacing the bonnet assembly are included with the replacement part.

**REPLACEMENT OF SEALS (Fig. 8 or 9)**

When removing the bonnet to inspect and clean the valve, install new seals (see Replacement Parts in Specifications section). Coat the new seals with the grease provided, and position them in the valve body as shown in Fig. 8 or 9.

Failure to properly position and seat the seals in the valve body may result in a hazardous gas leak.

After the new bonnet assembly is installed, or the bonnet is removed for any reason, check for gas leakage around the bonnet seal. Turn on the gas at the manual valve. Paint the seal area with a rich soap and water solution. Bubbles indicate a gas leak. If a leak is detected, check to see that the bonnet screws are tight. If necessary, turn off the gas again and remove the bonnet to be sure the seals are properly seated.

![Fig. 8—Proper positions of valve and bonnet seals in 3/4 through 3 in. valves.](image1)

![Fig. 9—Proper positions of valve and bonnet seals in 4 in. valve.](image2)
Introduction

The following curves relate gas flow through the V5055 Industrial Gas Valve to stem travel. These curves show valve performance under American Gas Association standard conditions:

- Specific gravity of gas: 0.64
- Temperature (Fahrenheit): 60.00 [16°C]
- Inlet pressure (inches water): 2.00 [0.5 kPa]
- Pressure drop across valve (inches water): 1.00 [0.25 kPa]

The flow is given in both cubic feet per hour (left side of graphs) [cubic metres per hour] and percent of rated flow (right side of graphs). Maximum stem travel is 1.05 inches [26.6 mm].

The V5055A Gas Valve is designed for ON-OFF service.

The V5055B Gas Valve has a characterized guide for use with LOW-HIGH or MODULATING actuators, or with ON-OFF actuators to aid in smooth light off.

The V5055C Gas Valve is designed for ON-OFF service. When used with the proper actuator, it meets Factory Mutual requirements for valve closed indication and Underwriters Laboratories Inc. requirements for valve seal overtravel interlock.

The V5055D Gas Valve is designed for ON-OFF service in high pressure applications.

The V5055E Gas Valve is designed for ON-OFF service in high pressure applications. When used with the proper actuator, it meets Factory Mutual requirements for valve closed indication and Underwriters Laboratories inc. requirements for valve seal overtravel interlock.
V5055C,E (1 INCH NPT)

GAS FLOW, CFH (m³/hr)

PERCENT FLOW

[44.8] [39.2] [33.6] [28] [22.4] [16.8] [11.2] [5.6]

0 .10 .20 .30 .40 .50 .60 .70 .80 .90 1.00 1.10 0

[2.5] [5.1] [7.6] [10.2] [12.7] [15.6] [17.8] [20.3] [22.9] [25.4] [27.9]

VALVE STEM TRAVEL (OPENING) IN INCHES [mm IN BRACKETS]

V5055C,E (1-1/4 INCHES NPT)

GAS FLOW, CFH (m³/hr)

PERCENT FLOW

[44.8] [39.2] [33.6] [28] [22.4] [16.8] [11.2] [5.6]

0 .10 .20 .30 .40 .50 .60 .70 .80 .90 1.00 1.10 0

[2.5] [5.1] [7.6] [10.2] [12.7] [15.6] [17.8] [20.3] [22.9] [25.4] [27.9]

VALVE STEM TRAVEL (OPENING) IN INCHES [mm IN BRACKETS]
Capacity Vs. Pressure Drop
(for all V5055 Valves)
required Information

1. Draw line 1 from "Pressure Drop". Convert pressure from inch wc to psi, if necessary.
2. Draw line 2 from "Specific Gravity" of gas used through intersection of line 0 and M2 to get "Burner Cfh."
3. Draw line 3 from "Outlet Pressure" to "Pressure Drop."
4. Draw line 4 from "Burner Cfh," through intersection of M1 and line 3, to "Valve Size." When point falls between two valve sizes, select the larger one.

NOTE: If natural gas (specific gravity 0.64) is used, skip steps one and two, and start with step three.
The V51E Butterfly Valve is a firing rate valve used to provide variable flow control of natural, liquefied petroleum (LP), and manufactured gases. It is also applicable to controlling airflow. The V51E Valve is actuated by a firing rate motor mounted directly on the valve. The V51E is not applicable as a safety shutoff valve.

The V51E Valve provides high capacity with a relatively constant relationship between flow rate and opening plate angle. The V51E firing rate motor assembly is especially adaptable to commercial and industrial installations that require close control of large gas capacities.

- Variety of valve sizes, firing rate motors and linkages. For most modulating applications that do not require final shutoff service of firing rate valve.
- Rugged cast aluminum body provides durability and maintenance-free operation.
- Compatible with Modutrol Motor and Q100A or B Linkage, Actionator Motor and Q100C Linkage, and Type 03 Air-O-Motor Pneumatic Actuator and Q524A Linkage.
- The valve mechanism is equipped with strain release springs.
- Suitable for electric or pneumatic operators with the appropriate linkage.
- May be used with manufacturers own linkage and drive motor.

CONTENTS

Specifications ................................................. 2
Ordering Information ..................................... 2
Installation ..................................................... 5
Adjustments and Checkout ............................. 8
Maintenance ................................................... 8
**Specifications**

**IMPORTANT:** The specifications in this publication do not include normal manufacturing tolerances. Therefore, units may not exactly match the listed specifications. Also, products are tested and calibrated under closely controlled conditions, and some minor differences in performance can be expected if those conditions are changed.

MODEL: V51E Butterfly Valve.

TYPES OF GASES: Natural, liquefied petroleum (LP), manufactured, and air.

FLOW CAPACITIES: See Fig. 1.

SIZES: 1-1/2, 2, 2-1/2, 3, and 4 inches.

PATTERN: Straight-through.

BODY MATERIAL: Aluminum.

MAXIMUM INLET PRESSURE: 5 psig. See Fig. 3.

AMBIENT TEMPERATURE RANGE: 32° F to 140° F [0° C to 60° C].

MAXIMUM FLUID TEMPERATURE: 140° F.

DIMENSIONS: See Fig. 2.

ACCESSORIES:
- 16350 Actuating Lever Pin.
- 16351 Operating Arm Relief Pin.
- 22355 Stop Screw Locking Nuts (two required).
- 49084 Adjusting Arm.
- 49085B Strain Release Assembly for Q100A.
- 49087 Spring.
- 49090 Yoke Pin for mounting actuating arm to linkage.
- 80897BC Stop Screws for stop bracket (two required).
- 104266 Q100 Actuator Arm.
- 127411 Bracket for 1-1/2 in. V51E.
- 127413 Bracket for 2 in. V51E.

APPROVALS:
Underwriters Laboratories Inc.: File No. MH5968, Vol. I, Section 1, Guide No. MHKZ.

**Fig. 1—V51E Valves Flow Capacities.**

When purchasing replacement and modernization products from your TRADELINEx® wholesaler or your distributor, refer to the TRADELINEx® catalog or price sheets for complete ordering number, or specify:

1. Valve model.
2. Valve size (1-1/2, 2, 2-1/2, 3, 4 inches)
3. Accessories.
4. Order motor and linkage separately. Refer to applicable Specifications.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Home and Building Control Sales Office (check white pages of phone directory).
2. Home and Building Control Customer Logistics
   Honeywell Inc.
   1885 Douglas Drive North
   Minneapolis, Minnesota 55422 (612) 951-1000

In Canada—Honeywell Limited/ Honeywell Limitée, 740 Ellesmere Road, Scarborough, Ontario M1P 2V9. International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.
Fig. 2—V51E Assembly dimensions in in. [mm].

<table>
<thead>
<tr>
<th>VALVE SIZE (in.)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in.</td>
<td>mm</td>
<td>in.</td>
<td>mm</td>
</tr>
<tr>
<td>1 1/2</td>
<td>2 21/32</td>
<td>67.5</td>
<td>1 9/16</td>
<td>39.7</td>
</tr>
<tr>
<td>2</td>
<td>3 5/32</td>
<td>80.2</td>
<td>1 13/16</td>
<td>46.0</td>
</tr>
<tr>
<td>2 1/2</td>
<td>3 27/32</td>
<td>97.6</td>
<td>2 5/16</td>
<td>58.7</td>
</tr>
<tr>
<td>3</td>
<td>4 1/32</td>
<td>102.4</td>
<td>2 25/64</td>
<td>60.7</td>
</tr>
<tr>
<td>4</td>
<td>5 21/64</td>
<td>135.3</td>
<td>3 5/32</td>
<td>80.2</td>
</tr>
</tbody>
</table>

▲ MAXIMUM DIMENSIONS.
▲ NOMINAL DIMENSIONS.
Fig. 3—Pressure drop versus capacity. Maximum opening angles shown are used as trial settings when adjusting valves for high fire.
Installation

WHEN INSTALLING THIS PRODUCT…

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced, flame safeguard control technician.
4. After installation is complete, check out product operation as provided in these instructions.

CAUTION

1. Turn off gas supply before starting installation.
2. Disconnect power supply before beginning installation to prevent electrical shock and equipment damage.

MOUNTING

Electric motorized valves of this type should not be installed in poorly ventilated pits or confined spaces for control of combustible gas flow. The valve body may be installed in any position provided the motor shaft is horizontal. Allow sufficient clearance for assembling the motor and linkage, and for general servicing. See Fig. 2 for installation dimensions.

PIPING

The valve body may be piped either by screwing directly to the pipe or by using close nipples and companion flanges. The pipes must be in exact alignment to avoid distorting the valve body. Ream and clean pipes carefully, and apply pipe dope to the male threads only. Leave the first two threads free of dope.

INSTALLING ELECTRIC MOTOR AND Q100A LINKAGE ON V51E (FIG. 4)

Any special parts, nuts, or screws needed are furnished in bag assemblies. Install the motor and linkages as follows:

1. Mount plate on stop bracket with three No. 10 screws and lock washers.
2. Mount motor on plate with four 1/4 in. screws, lock washers, and nuts.
3. Remove motor crank arm assembly from motor and discard it.
4. Install the special crank arm in position shown. With crank arm tight against shoulder of shaft, tighten clamp screw securely.
5. One end of the link measures 1-1/4 in. [31.8 mm] from end to bend. Slip this end over the drive pin. Place washer on drive pin. Insert cotter pin in the drive pin and spread cotter pin ends.
6. Slip the other end of the link into the forked end of the actuating arm and insert the linkage pin moving the arm as necessary. Insert cotter pin into the linkage pin and spread cotter pin ends.

INSTALLING MODUTROL MOTOR AND Q100B LINKAGE ON V51E (FIG. 5)

Special parts needed for the basic assembly are furnished in bag assemblies. Special linkages for the valve arm to operate dampers, auxiliary valves, or other equipment can be
provided by the burner manufacturer or installer. Install the motor and linkage on the valve as follows:

1. Mount plate on stop bracket with three No. 10 screws and lock washers.
2. Mount motor on plate with 1/4 in. screws, lock washers, and nuts.
3. Make sure the motor is in the closed position (the position assumed when red and white terminals on motor are shorted together). Install motor crank arm and tighten clamp screw securely.
4. Install valve actuating arm as shown in Fig. 5, and adjust as desired.

5. Insert the drive pin into the other end of the link and place a washer on the drive pin. Insert the drive pin into the crank arm and secure the pin with a nut and locking washer.

**WIRING**

![CAUTION](image)

Disconnect power supply before beginning installation to prevent electrical shock and equipment damage.

Wiring diagrams are packed with the motors. All wiring must comply with applicable codes and ordinances.

---

**INSTALLING ACTIONATOR MOTOR AND Q100C LINKAGE ON V51E (FIG. 6)**

1. Mount plate on stop bracket with three No. 10 screws and lock washers.
2. Mount motor on plate with 4-1/4 in. [108.0 mm] hex head screws and lock washers.
3. Install the crank arm in the position shown. With the crank arm tight against the shoulder of the shaft, tighten the clamp screw securely.
4. One end of the link measures 1-3/4 in. [44.5 mm] from the end to the bend. Slip this end of the link into the forked end of the arm and insert the linkage pin, moving the arm as necessary. Insert cotter pin in linkage pin and spread the cotter pin ends.

---

**INSTALLING TYPE 03 AIR-O-MOTOR PNEUMATIC ACTUATOR AND Q524A LINKAGE ON V51E (FIGS. 7, 8, 9)**

The V51E valve is intended to provide normally open, direct operation (valve open when pneumatic pressure off), the actuating arm points to the right as in Fig. 7. For a normally closed system, the arm projects to the left as in Fig. 8. If it is necessary to field-convert the valve, remove only the cotter pin, washer and arm. Reverse the arm and reinstall.
1. Remove the four round-head machine screws and washers holding the stop bracket to the valve hex at each end. Do not remove the stop bracket.
2. Position the adapter plate over the stop bracket so that the adapter plate holes match the stop bracket holes.
3. Insert the flat head screws supplied with the linkage assembly through plate, spacers, and stop bracket and into each hex. Tighten securely. The spacers prevent contact of adapter plate and stop bracket. See Fig. 9.
4. Mount the lever arm (13-3/4 in. [349.3 mm]) supplied with the motor so the load takeoff holes will be at the same end of the valve as the valve actuating arm.

NOTE: Both motor lever and valve arm could be installed 180 degrees from the positions shown in Figs. 7 and 8, if more convenient. Use bushing hole at the clevis.

5. Use the four large cap screws supplied with the linkage assembly to secure the motor to the adapter plate.
6. Add the ball joint assembly and push rod as shown in Fig. 10.
Adjustments and Checkout

MODUTROL MOTOR WITH Q100A LINKAGE AND V51E (FIG. 4)
Minimum Flow Adjustment
Using the motor, drive the valve to the closed position. Loosen the lock nut on the stop screw. Turn this screw in against the operating lever until the desired minimum flow position is obtained. If fully closed is the minimum position desired, back the screw out until its threaded end is flush with the stop bracket. Tighten the lock nut.

Maximum Flow Adjustment
With motor in closed position, loosen the lock nut on the stop screw. Turn this screw in against the operating lever until desired minimum flow adjustment is obtained. If fully closed is the minimum position desired, back the screw out until it ends flush with the stop bracket. Tighten the lock nut.

NOTE: When the lower ball joint is moved, the upper ball joint usually must be readjusted if the valve is to keep the same low-fire position.

ACTIONATOR MOTOR WITH Q100C LINKAGE AND V51E (FIG. 5)
Minimum Flow Adjustments
Using the motor, drive valve to the open position. Loosen the lock nut on the stop screw. Turn this screw in against the operating lever until desired minimum flow adjustment is obtained. If fully open is the maximum position desired, back out the screw until its threaded end is flush with the stop bracket. Tighten lock nut.

Maximum Flow Adjustment
Using the motor, drive valve to the open position. Loosen the lock nut on the stop screw. Turn this screw in against the operating lever until the desired maximum flow adjustment is obtained. If fully open is the maximum position desired, back out the screw until its threaded end is flush with the stop bracket. Tighten lock nut.

CHECKOUT
Cycle the burner twice through high-fire and low-fire while observing the actuating arm for smooth operation and watching the burner flame level for proper regulation of gas or air. Make certain the actuator arm does not hang up while the drive motor is in operation.

For detailed operation of drive motor and linkage, refer to applicable instructions furnished with the device.

MODUTROL MOTOR WITH Q100B LINKAGE AND V51E (FIG. 5)
1. Loosen setscrews in upper ball joint to allow linkage rod to slide freely. Loosen lower ball joint so it slides freely in the actuating arm slot
2. Short the motor terminals red to white to drive the motor closed.
3. Hold valve butterfly open at the desired low-fire position and tighten the lower ball joint hand tight against the outer end of the actuating arm slot. Tighten screw in the upper ball joint enough to provide some friction on the rod, but not enough to prevent it from sliding if the valve reaches its stop
4. Short the motor terminals red to blue. As motor drives open, note the valve travel. Reset the lower ball joint to the proper high-fire valve position.

CHECKOUT
Cycle the burner twice through high-fire and low-fire while observing the actuating arm for smooth operation and watching the burner flame level for proper regulation of gas or air. Make certain the actuator arm does not hang up while the drive motor is in operation.

For detailed operation of drive motor and linkage, refer to applicable instructions furnished with the device.

PACKING THE VALVE
No field maintenance is required.

LUBRICATION
Place a few drops of SAE20 or heavier oil on linkage bearings whenever required. The motor needs no lubrication in the field.

MECHANICAL LINKAGES
Mechanical linkages may be devised to operate dampers or other valves in unison or sequence with this assembly. In no application should the combined load of the valve, damper, and linkage exceed the rated load limit of the motor for its timing. See applicable motor instructions.
Integrated Valve Train

APPLICATION

These Integrated Gas Valve Train component installation instructions are for small valves (3/4 in. to 2 in.) and large valves (2 in. to 3 in.) are identical except where noted.

INSTALLATION

When Installing this product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check ratings given in these instructions and on the product to make sure the product is suitable for your application.
3. Make sure the installer is a trained, experienced service technician.
4. Use these instructions to check out product operation after installation.

⚠️ WARNING

Fire or Explosion Hazard. Can cause property damage, serious injury or death. Perform the safety shutdown test any time work is done on a gas system. Make sure gas is turned off before starting installation.

Bolt Torque Specifications
Torque specifications for the two bolt sizes are:
• 3/8 in. 16 bolts: 13 lb-ft.
• 1/2 in.-13 bolts: 25 lb-ft.

Valve Assembly Precautions (Fig. 1)
1. Use new, properly reamed, pipe, free from chips.
2. Do not thread pipe too far into pipe adapter. Valve distortion or malfunction can result from excess pipe in the valve.
3. Do not attach valve actuator until valve body installation is complete.
4. Make sure O-ring sealing surfaces are clean.
5. Apply moderate amount of good quality pipe dope, resistant to the action of liquid propane (LP) gas only on the pipe threads.
6. Make sure the gas flow is in the direction of the arrow on the gas valve casting.

NOTE: Gas flow in the V4297S Normally Open Vent Valve can be in either direction.

Connecting Upstream or Downstream Pipe Adapter to Valve (Fig. 2)
1. Using the grease packet provided (or equivalent, general purpose, lithium grease), grease the O-ring. Make sure the grease is applied evenly around the entire O-ring.
2. Insert the O-ring into the O-ring groove.
3. Assemble the pipe adapter to the valve using the three bolts, nuts and lock washers as shown in Fig. 2.
Connecting V4297S Normally Open Vent Valve (NOVV) Between Two Valves (Fig. 3)

1. Using the grease packet provided (or equivalent, general purpose, lithium grease), grease the O-ring of the first valve. Make sure the grease is applied evenly around the entire O-ring.
2. Insert the O-ring into the O-ring groove.
3. Assemble the NOVV to the first valve using the three bolts, nuts and lock washers as shown in Fig. 3.
4. Using the grease packet provided (or equivalent, general purpose lithium grease), grease the O-ring of the second valve. Make sure the grease is applied evenly around the entire O-ring.
5. Insert the O-ring into the O-ring groove.
6. Assemble the NOVV to the second valve using the three bolts, nuts and lock washers as shown in Fig. 3.

**IMPORTANT**
All bolts should be pointing out of the NOVV.

Connecting Normally Open Vent Valve Adapter Between Two Valves (Fig. 4)

1. Using the grease packet provided (or equivalent, general purpose, lithium grease), grease the O-ring of the first valve. Make sure the grease is applied evenly around the entire O-ring.
2. Insert the O-ring into the O-ring groove.
3. Assemble the NOVV adapter to the first valve using the three bolts, nuts and lock washers as shown in Fig. 4.
4. Using the grease packet provided (or equivalent, general purpose lithium grease), grease the O-ring of the second valve. Make sure the grease is applied evenly around the entire O-ring.
5. Insert the O-ring into the greased O-ring groove.
6. Assemble the NOVV adapter to the second valve using the three bolts, nuts and lock washers as shown in Fig. 4.

**NOTE:** Use the three smaller bolts provided with the large NOVV Adapter to connect the downstream side of the NOVV adapter with the second valve.

**IMPORTANT**
Be sure that all bolts point out of the NOVV adapter.

Connecting Two Valves in Series (Fig. 5)

1. Using the grease packet provided (or equivalent, general purpose lithium grease), grease the O-ring of the first valve. Make sure the grease is applied evenly around the entire O-ring.
2. Insert the first O-ring into the O-ring groove.
3. Using the grease packet provided (or equivalent, general purpose lithium grease), grease the O-ring of the second valve. Make sure the grease is applied evenly around the entire O-ring.
4. Insert the second O-ring into the O-ring groove.
5. Assemble the first valve to the second valve using the three bolts, nuts and lock washers as shown in Fig. 5.
**IMPORTANT**
Point the top two bolts upstream and the third bolt downstream when connecting two valves in series.

**Connecting a C6097 Pressure Switch to a Valve (Fig. 6)**

1. Remove the 1/4 in. (6 mm) NPT plug from the side of the valve.
2. Remove the label holding the O-ring in place on the C6097 and make sure the O-ring seal is in place.
3. Remove the C6097 Cover by removing the cover screws.
4. Mount the C6097 Pressure Switch on the valve using the two screws provided.
5. Replace the C6097 Cover.

**Completing the Assembly (Fig. 7):**

1. Assemble the upstream and downstream pipes to the valve train.
2. Apply a parallel jaw wrench only to the pipe adapter flat next to the pipe being inserted (Fig. 7). A wrench applied to the valve body itself, or to the end farthest from the pipe being inserted, can distort the casting, causing a malfunction. Do not use the valve as a lever.
3. Make sure the gas flow is in the same direction as the arrow on the valve body.
4. Paint the pipe adapters and valve train components with a rich soap and water solution to check for bubbles that indicate a gas leak at the pipe adapter and valve mating surfaces.
5. Make sure the power supply is disconnected from the powered components. Mount the actuators on the valve bodies and complete the electrical and linkage connections by following the instructions packed with the actuators and solenoid valves.

---

**Fig. 5. Connecting two valves in series.**

**Fig. 6. Connecting C6097 Pressure Switch to Valve.**

**Fig. 7. Completing the valve train.**