Resilient Seated Butterfly Valves
Crane
Resilient Seated
Butterfly Valves
Product Features

- Qualified for both gaseous and liquid service
- Positive shut-off bi-directionally
- Phenolic backed cartridge seat
- PTFE bushing standard
- Locking handle standard (2”-12”)
- End of line service on lug style standard
- Ease of automation
- Field repairable (2”-24”)
- Complete size range: 2 through 48 inches

Typical Applications

- HVAC
- Chemical/ Petrochemical Processing
- Food and Beverage
- Power and Utilities

Our complete line of resilient seated butterfly valves provides you with the reliability you need, backed by the guarantee that comes with using valves designed and produced in company-owned manufacturing facilities.
Crane Series 52 / 54 and 62 / 64 valves utilize the same proven design features as our Series 21 and 23 valves but are supplied with either a carbon steel (52 / 54) or 316 stainless steel (62 / 64) body. Both are rated to 285 psi. These design features include a phenolic-backed cartridge seat, precision profile disc, one-piece shaft, and four shaft support bearings. Series 52 / 54 and 62 / 64 heavy-duty butterfly valves are designed for the harsh operating conditions and high pressures encountered in many piping systems today.

**Actuator Flange:**
Accommodates all types of actuators: handles, gear operators, electric actuators, and pneumatic actuators. (per ISO 5211)

**Bushings (4):**
Stem bushing reduces torque and isolates the stem from the valve body, preventing seizure of the stem due to corrosion in the stem journal baring.

**Smooth Finished Disc Flats:**
These “mate” with seat flats to give a highly efficient seal; prevents leakage into shaft areas.

**Precision Profile Disc:**
Provides bubble-tight shut-off and assures minimum torque and longer seat life.

**Supported Shaft Seal:**
Bonding of elastomer to phenolic backing ring protects against distortion, a common cause of shaft leakage.

**Stem Configuration:**
Gives positive attachment for handles or actuators. (Double “D”)

**Shaft Weather Seal:**
(Below bushing on some models.)

**One-Piece Thru Shaft:**
Ensures dependability and positive disc positioning.

**O-Ring:**
Helps prevent stem leakage.

**Seat Face:**
Eliminates need for flange gaskets.

**Precision Taper Pin**
Ensure positive, vibration proof, shaft to disc connection. Field replaceable.

**Phenolic Backed Seat:**
Non-collapsible, stretch resistant, blow out proof, field replaceable.

“Representative Cutaway”
**Valve Seating Torques (In-Lbs.)**

<table>
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<th>Valve Size</th>
<th>Standard Disc Differential Pressure</th>
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<tr>
<td></td>
<td>50 PSI</td>
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<tr>
<td>2”</td>
<td>136</td>
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<td>2 1/2”</td>
<td>152</td>
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<tr>
<td>3”</td>
<td>224</td>
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<td>4”</td>
<td>380</td>
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<td>5”</td>
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<td>14”</td>
<td>5189</td>
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<td>29,738</td>
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</table>

All torques shown on the chart were derived from test data using water at 60°F. For torques using dry gas, multiply these numbers by 2.0. For torques involving other media, please consult the factory.

There is no safety factor included in the numbers shown on this chart. For actuator sizing, Crane recommends that these values be multiplied by 1.5 for single valve applications, or 2.0 for 3-way (“tee”) applications.

For PTFE seats multiply the numbers shown on this chart by 2.0.

Under certain conditions, hydrodynamic torque can meet or exceed seating and unseating torques. When designing valve systems, hydrodynamic torque must be considered to help assure correct selection for the application.

**Seat Temperature Ratings**

<table>
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<th>Material</th>
<th>Temperature Rating °F</th>
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<tr>
<td>Buna-N</td>
<td>+10 to 180</td>
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<tr>
<td>EPDM (2”-16”)</td>
<td>-30 to 275</td>
</tr>
<tr>
<td>EPDM (18”-24”)</td>
<td>-30 to 225</td>
</tr>
<tr>
<td>Abrasive Resistant Buna-N</td>
<td>+10 to 180</td>
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<tr>
<td>Neoprene</td>
<td>+20 to 200</td>
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<tr>
<td>Hypalon</td>
<td>0 to 275</td>
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<tr>
<td>Viton</td>
<td>+10 to 275</td>
</tr>
<tr>
<td>High Temperature Viton</td>
<td>+10 to 400</td>
</tr>
<tr>
<td>PTFE (Series 52 / 54 &amp; 62 / 64 only)</td>
<td>+40 to 250</td>
</tr>
</tbody>
</table>

Although elastomers have an effective operating temperature range, when used in valves, these ranges may have to be modified. The temperature ranges shown in the table have been adjusted accordingly.

**For Low Temperature:** While the seat materials selected for use in Crane butterfly valves are capable of withstanding lower temperatures without damage, the durometer of the elastomer is changed. This “hardening” of the seat may increase the operating torque beyond the structural limits of the stem and/or the disc to stem configuration.

**For High Temperature:** When using High Temperature Viton, the operating pressure of the valve is reduced above 275°F.

**Field Replacement:** Replacing seats in sizes 12” - 20” is difficult and requires factory service. Sizes 24” and above cannot be field replaced.

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**C_v Values – Valve Sizing Coefficients (US-GPM @ 1△P)**

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<th>Size</th>
<th>10°</th>
<th>20°</th>
<th>30°</th>
<th>40°</th>
<th>50°</th>
<th>60°</th>
<th>70°</th>
<th>80°</th>
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T: 256-775-3800 • F: 256-775-3860 • www.cranevalves.com
**For installation and maintenance instructions, please refer to the IOM manual available at www.cranevalvelit.com**

### Dimensions and Weights

For installation and maintenance instructions, please refer to the IOM manual available at www.cranevalvelit.com.

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<th>B</th>
<th>C</th>
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<th>F</th>
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**NOTE:** 20" Wafer: L\(_D\) dia. Hole is Tapped w/1/1-8-7 on Each Side

24" Wafer: L\(_D\) dia. Hole is Tapped w/1-1/4-7 on Each Side
## Bill of Materials (52 / 54 & 62 / 64)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Materials</th>
<th>Optional Materials</th>
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<tr>
<td>1</td>
<td>Body</td>
<td>Carbon Steel A216 GR.WCB</td>
<td>316SS A351 GR.CF8M Carbon Steel A-216 GR.WCB Impact Tested*</td>
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<tr>
<td>2</td>
<td>Disc</td>
<td>316 Stainless</td>
<td>Aluminum Bronze, Monel</td>
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<td>3</td>
<td>Seat</td>
<td>Buna-N or EPDM Neoprene, Hypalon, Abrasion Resistant Buna-N, Low Temperature Viton, High Temperature Viton, PTFE</td>
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<td>4</td>
<td>Shaft</td>
<td>316 Stainless Steel</td>
<td>17-4 PH, Monel</td>
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<td>5</td>
<td>Taper Pin</td>
<td>300 Series Stainless</td>
<td>Monel</td>
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<tr>
<td>8, 9, 10</td>
<td>Bushing</td>
<td>PTFE</td>
<td>No Option Available</td>
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*Crane Series 52/54 Carbon Steel valves with CE marking are good to 0°F for non-impact tested bodies and -20°F for impact tested carbon steel bodies. Please consult factory for the correct ordering code.*
Handles are available for on/off and throttling control of Crane resilient seated butterfly valves. These handles can be used for manual actuation of 2” to 12” valves at 200 psi and for 2” to 6” valves at 285 psi. For valves larger than 8”, excessive operator effort and extreme handle reaction to internal valve forces are possible. In these cases, a gear operator is recommended for safe operation.

**Features**
The rugged construction of Crane handles makes them ideally suited for manually actuating smaller valves. The latchplate permits the valve to be locked in any of the 10 positions on DIT handles or in any position on IOL handles.

**Specifications**
- **DIT**: Mechanically locks the valve in any of the 10 positions from 0° to 90° in 10° increments
- **DIT/IOL**: Can hold the valve in intermediate positions (32°, 68°, etc.) and can also be locked in 0° and 90° positions

### Dimensions and Weights

<table>
<thead>
<tr>
<th>Valve Size</th>
<th>A</th>
<th>B</th>
<th>DIT Weight</th>
<th>DIT/IOL Weight</th>
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<td>10.5</td>
<td>1.8</td>
<td>2.0</td>
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<tr>
<td>50–150 mm</td>
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<td>0.9</td>
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<tr>
<td>8–12 in.</td>
<td>3.34</td>
<td>14.0</td>
<td>4.0</td>
<td>-</td>
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<tr>
<td>200–300 mm</td>
<td>84.84</td>
<td>355.6</td>
<td>1.8</td>
<td>-</td>
</tr>
</tbody>
</table>

Plates are adaptable for ISO or standard mounting flange.
Gear Operators

Gear operators can be used for on/off and throttling control of Crane resilient seated butterfly valves. All models are weatherproof and usable for above ground or buried service. For manual operation of valves, gear operators are required for valves 14” and larger and are recommended for valves 8” and larger.

Features
Gear operators from Crane are 90° manual actuators, and they come with a handwheel, chainwheel, or square nut input device. The durable housing completely encloses the worm gear (on the input shaft) and the segment gear (on the output). Adjustable stops are standard and factory set when installed at the factory. Fully adjustable memory stops are available as an option. A position indicator is standard on all models for above ground service. An optional version is available for buried service applications. Contact customer service for more information.

Specifications
Operation Handwheel or chainwheel (12” standard, others available) or 2” square nut. Input shaft extension available.

Mounting Available with bolt patterns and bore/keyway for direct mount to all 2” through 30” Crane resilient seated butterfly valves. Gears are drilled for ISO pattern through 24”.

Dimensions and Weights

<table>
<thead>
<tr>
<th>Valve Size</th>
<th>Oper.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>M</th>
<th>D</th>
<th>P</th>
<th>Q</th>
<th>Wt. (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2–6 in.</td>
<td>XJ30</td>
<td>12.56</td>
<td>314.00</td>
<td>238.00</td>
<td>268.00</td>
<td>2.52</td>
<td>14.80</td>
<td>3.97</td>
<td>14.00</td>
<td>2.24</td>
<td>1.66</td>
<td>4.15</td>
<td>92.00</td>
<td>84.00</td>
<td>176.50</td>
<td>6.08</td>
</tr>
<tr>
<td>8–14 in.</td>
<td>XJ50</td>
<td>12.28</td>
<td>307.00</td>
<td>229.00</td>
<td>265.00</td>
<td>3.12</td>
<td>15.40</td>
<td>3.85</td>
<td>2.90</td>
<td>1.53</td>
<td>3.60</td>
<td>84.00</td>
<td>190.00</td>
<td>179.50</td>
<td>300.00</td>
<td>6.48</td>
</tr>
<tr>
<td>16–18 in.</td>
<td>XJ80</td>
<td>16.28</td>
<td>407.00</td>
<td>277.00</td>
<td>344.00</td>
<td>4.80</td>
<td>16.60</td>
<td>4.08</td>
<td>5.60</td>
<td>1.00</td>
<td>3.60</td>
<td>18.00</td>
<td>25.00</td>
<td>34.00</td>
<td>8.00</td>
<td></td>
</tr>
</tbody>
</table>

Some sizes require different operators, please consult factory.
Gear Operators

XJ30–50–80

XJ300–BA800–3D-60–3D-120
### Gear Operator Drilling Patterns

#### Dimensions

<table>
<thead>
<tr>
<th>Valve Size</th>
<th>Operator Model</th>
<th>CA</th>
<th>CB</th>
<th>SA</th>
<th>SB</th>
<th>D</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
<th>A</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 in. 50 mm</td>
<td>XJ30</td>
<td>2.25</td>
<td>57.15</td>
<td>M6-1</td>
<td>70.00</td>
<td>M8-1.25</td>
<td>0.50</td>
<td>11.81</td>
<td>0.75</td>
<td>0.24</td>
<td>1.50</td>
<td>9.37</td>
<td>0.13</td>
</tr>
<tr>
<td>3 in. 75 mm</td>
<td>XJ30</td>
<td>2.25</td>
<td>57.15</td>
<td>M6-1</td>
<td>70.00</td>
<td>M8-1.25</td>
<td>0.50</td>
<td>11.81</td>
<td>0.75</td>
<td>0.24</td>
<td>1.50</td>
<td>9.37</td>
<td>0.13</td>
</tr>
<tr>
<td>4 in. 100 mm</td>
<td>XJ30</td>
<td>2.75</td>
<td>69.85</td>
<td>M8-1.25</td>
<td>70.00</td>
<td>M8-1.25</td>
<td>0.63</td>
<td>11.81</td>
<td>0.75</td>
<td>0.24</td>
<td>1.50</td>
<td>9.37</td>
<td>0.13</td>
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<tr>
<td>5 in. 125 mm</td>
<td>XJ30</td>
<td>2.75</td>
<td>69.85</td>
<td>M8-1.25</td>
<td>70.00</td>
<td>M8-1.25</td>
<td>0.75</td>
<td>11.81</td>
<td>0.75</td>
<td>0.24</td>
<td>1.50</td>
<td>9.37</td>
<td>0.13</td>
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<tr>
<td>6 in. 150 mm</td>
<td>XJ30</td>
<td>2.75</td>
<td>69.85</td>
<td>M8-1.25</td>
<td>70.00</td>
<td>M8-1.25</td>
<td>0.75</td>
<td>11.81</td>
<td>0.75</td>
<td>0.24</td>
<td>1.50</td>
<td>9.37</td>
<td>0.13</td>
</tr>
<tr>
<td>8 in. 200 mm</td>
<td>XJ50</td>
<td>3.50</td>
<td>88.90</td>
<td>M12-1.75</td>
<td>102.00</td>
<td>M10-1.5</td>
<td>0.87</td>
<td>11.81</td>
<td>0.75</td>
<td>0.24</td>
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<td>8.89</td>
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<td>10 in. 250 mm</td>
<td>XJ50</td>
<td>3.50</td>
<td>88.90</td>
<td>M12-1.75</td>
<td>102.00</td>
<td>M10-1.5</td>
<td>1.13</td>
<td>11.81</td>
<td>0.75</td>
<td>0.24</td>
<td>1.50</td>
<td>8.89</td>
<td>0.25</td>
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<tr>
<td>12 in. 300 mm</td>
<td>XJ50</td>
<td>4.25</td>
<td>107.95</td>
<td>M12-1.75</td>
<td>102.00</td>
<td>M10-1.5</td>
<td>1.25</td>
<td>11.81</td>
<td>0.75</td>
<td>0.24</td>
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<td>0.25</td>
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<tr>
<td>14 in. 350 mm</td>
<td>XJ50</td>
<td>4.25</td>
<td>107.95</td>
<td>M12-1.75</td>
<td>102.00</td>
<td>M10-1.5</td>
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<td>11.81</td>
<td>0.75</td>
<td>0.24</td>
<td>1.50</td>
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<td>0.25</td>
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<tr>
<td>16 in. 400 mm</td>
<td>XJ80</td>
<td>6.25</td>
<td>158.75</td>
<td>M18-2.5</td>
<td>165.00</td>
<td>M20-2.5</td>
<td>1.31</td>
<td>18.00</td>
<td>0.98</td>
<td>0.32</td>
<td>1.99</td>
<td>10.90</td>
<td>0.31</td>
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<tr>
<td>18 in. 450 mm</td>
<td>XJ80</td>
<td>6.25</td>
<td>158.75</td>
<td>M18-2.5</td>
<td>165.00</td>
<td>M20-2.5</td>
<td>1.50</td>
<td>18.00</td>
<td>0.98</td>
<td>0.32</td>
<td>1.99</td>
<td>10.90</td>
<td>0.38</td>
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<tr>
<td>20 in. 500 mm</td>
<td>XJ300</td>
<td>6.25</td>
<td>158.75</td>
<td>M18-2.5</td>
<td>165.00</td>
<td>M20-2.5</td>
<td>1.63</td>
<td>18.00</td>
<td>0.98</td>
<td>0.32</td>
<td>1.99</td>
<td>12.64</td>
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<tr>
<td>24 in. 600 mm</td>
<td>XJ300</td>
<td>8.50</td>
<td>215.90</td>
<td>M20-2.5</td>
<td>165.00</td>
<td>M20-2.5</td>
<td>2.00</td>
<td>18.00</td>
<td>0.98</td>
<td>0.32</td>
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<tr>
<td>24 in. 600 mm</td>
<td>XJ300</td>
<td>8.50</td>
<td>215.90</td>
<td>M20-2.5</td>
<td>165.00</td>
<td>M20-2.5</td>
<td>2.00</td>
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<td>0.98</td>
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<td>to 48&quot;</td>
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<table>
<thead>
<tr>
<th>2. Body Style</th>
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<tbody>
<tr>
<td>Wafer 200 CWP (2&quot;-12&quot;)</td>
<td>42</td>
</tr>
<tr>
<td>Epoxy Coated CI</td>
<td>42</td>
</tr>
<tr>
<td>Wafer 150 CWP (14&quot;-30&quot;)</td>
<td>42</td>
</tr>
<tr>
<td>Ductile Iron</td>
<td>44</td>
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<tr>
<td>Lug 200 CWP (2&quot;-12&quot;)</td>
<td>44</td>
</tr>
<tr>
<td>Epoxy Coated CI</td>
<td>44</td>
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<tr>
<td>Lug 150 CWP (14&quot;-30&quot;)</td>
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<tr>
<td>Ductile Iron</td>
<td>44</td>
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<tr>
<td>Double Flange 150 CWP (36&quot;-48&quot;)</td>
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<tr>
<td>Ductile Iron</td>
<td>44</td>
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<tr>
<td>Wafer 285 CWP (2&quot;-12&quot;)</td>
<td>21</td>
</tr>
<tr>
<td>Epoxy Coated DI</td>
<td>21</td>
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<tr>
<td>Wafer 285 CWP (14&quot;-24&quot;)</td>
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<tr>
<td>Ductile Iron</td>
<td>21</td>
</tr>
<tr>
<td>Lug 285 CWP (2&quot;-12&quot;)</td>
<td>23</td>
</tr>
<tr>
<td>Epoxy Coated DI</td>
<td>23</td>
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<tr>
<td>Lug 285 CWP (14&quot;-24&quot;)</td>
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<td>Ductile Iron</td>
<td>23</td>
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<tr>
<td>Wafer 285 CWP (2&quot;-24&quot;)</td>
<td>52</td>
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<tr>
<td>Carbon Steel</td>
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<td>Lug 285 CWP (2&quot;-24&quot;)</td>
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<tr>
<td>Carbon Steel</td>
<td>54</td>
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<tr>
<td>Wafer 285 CWP (2&quot;-24&quot;)</td>
<td>62</td>
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<tr>
<td>Stainless Steel</td>
<td>62</td>
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<tr>
<td>Lug 285 CWP (2&quot;-24&quot;)</td>
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<td>Stainless Steel</td>
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<table>
<thead>
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<th>3. Disc Material</th>
<th>Code</th>
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<tbody>
<tr>
<td>Ductile Iron</td>
<td>F</td>
</tr>
<tr>
<td>316 SS</td>
<td>S</td>
</tr>
<tr>
<td>Aluminum Bronze</td>
<td>B</td>
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<tr>
<td>Monel*</td>
<td>M</td>
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<th>4. Stem Material</th>
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<tr>
<td>416 SS</td>
<td>X</td>
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<tr>
<td>316 SS</td>
<td>S</td>
</tr>
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<td>Monel*</td>
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<table>
<thead>
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<th>5. Sleeve Material</th>
<th>Code</th>
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<tr>
<td>Buna-N</td>
<td>B</td>
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<td>Buna-N Abr. Res.*</td>
<td>B1</td>
</tr>
<tr>
<td>EPDM</td>
<td>Z</td>
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<tr>
<td>Black Neoprene*</td>
<td>FB</td>
</tr>
<tr>
<td>Low Temp Viton*</td>
<td>V</td>
</tr>
<tr>
<td>High Temp Viton*</td>
<td>V1</td>
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<tr>
<td>Hypalon*</td>
<td>H</td>
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<tr>
<td>Teflon/Buna* (125 PSIG)</td>
<td>TB</td>
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</table>

<table>
<thead>
<tr>
<th>6. Operation Style / Body Material</th>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>No Operator</td>
<td>3W</td>
</tr>
<tr>
<td>Bare Stem</td>
<td>3W</td>
</tr>
<tr>
<td>Bare Stem - Ductile Iron</td>
<td>3NW</td>
</tr>
<tr>
<td>Lever Operated</td>
<td>3</td>
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<tr>
<td>Lever Operated - Ductile Iron</td>
<td>3N</td>
</tr>
<tr>
<td>Infinite Position Lever</td>
<td>3L</td>
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<tr>
<td>Infinite Position Lever - Ductile Iron</td>
<td>3NL</td>
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<tr>
<td>Gear Operator</td>
<td>3G</td>
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<tr>
<td>Gear Operated</td>
<td>3G</td>
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<tr>
<td>Gear Operated - Ductile Iron</td>
<td>3NG</td>
</tr>
<tr>
<td>Gear Operated w/Memory Stop</td>
<td>3GL</td>
</tr>
<tr>
<td>Gear Operated w/Memory Stop-DI</td>
<td>3NGL</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>7. Special Features</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE Marked - Non Impact Tested</td>
<td>P</td>
</tr>
</tbody>
</table>

**NOTE:** Not all combinations of materials are available. Please consult factory.

*Optional Materials available upon request.*
ELECTRIC – ON-OFF

Standard Features:
- Torque Range – 347 lb ins to 17,359 lb ins
- Housing – NEMA 4 & 4X
- Electric Motor – 120 VAC, 1 PHASE, 60 Hz
- Thermal Overload – Auto re-set
- Limit Switches – Adjustable cam operated
- Position Indicator – Mechanical Dial Type
- Space Heater – Located in the control compartment
- Terminal Strip – Pre-wired for motor & limit switches
- Manual Override – Directing acting
- Brake – “Lock-cut” gear arrangement
- Adjustable Mechanical Travel Stops
- Temperature Range – -13°F to 131°F
- Mounting – Direct mount to Crane valves
- Certification/Approvals – CSA-NRTL/C

Optional Features:
- AC Voltages – 220 VAC, 1 PHASE, 60 Hz
- AC Voltages – 24 VAC 44005 - 44400
- DC Voltages – 12/24 VDC 4005 - 44300
- Additional Limit Switches – 2 SPDT
- Torque Switches – Adjustable open and close
- Feedback Potentiometer – 500 ohm
- Feedback Transmitter – 4-20 mA
- De-clutchable Handwheel Override

ELECTRIC – MODULATING

Standard Features:
- Process Control Signal – 4-20 mA, 0-10 VDC
- Torque Range – 347 lb ins to 17,359 lb ins
- Housing – NEMA 4 & 4X
- Electric Motor – 120 VAC, 1 PHASE, 60 Hz
- Thermal Overload – Auto re-set
- Resolution – 400 increments through 90 degrees
- Position Indicator – Mechanical Dial Type
- Space Heater – Located in the control compartment
- Terminal Strip – Pre-wired for motor & limit switches
- Manual Override – Directing acting
- Brake – “Lock-cut” gear arrangement
- Adjustable Mechanical Travel Stops
- Temperature Range – -13°F to 131°F
- Mounting – Direct mount to Crane valves
- Certification/Approvals – CSA-NRTL/C

Optional Features:
- AC Voltages – 220 VAC, 1 PHASE, 60 Hz
- AC Voltages – 24 VAC 44010M - 44200M
- Torque Switches – Adjustable open and close
- De-clutchable Handwheel Override
PNEUMATIC – DOUBLE ACTING

Standard Features:
- Torque Range – 30 in-lbs to 107,531 in-lbs
- Housing – Anodized aluminum
- Mounting – DIN ISO 5211, direct mounting to Crane valves
- Position Indicator – NAMUR standard
- Operating Pressure – 40 to 120 PSIG
- Temperature Range – -4°F (-20°C) to 176°F (80°C)
- Size Range – 14 models to choose from
- Adjustable Travel Stops – Both directions
- Accessory Interfaces – VDI/VDE 3845 (NAMUR) standard

Optional Features:
- Temperature Range – 4°F to 250°F, -40°F to 175°F
- Solenoid Valves – 3 or 4 way
- Limit Switches – Adjustable cam operated
- Positioners – Pneumatic or Electro-pneumatic
- DC-1 Dribble Control – Two-stage shutoff
- 180° Actuation – 2 or 3 position
- Manual Override – De-clutchable gear type
- Speed Controls – Adjust cycle time
- Special Applications – Offshore, nuclear, hygienic, and gas or oil operation

PNEUMATIC – SPRING RETURN

Standard Features:
- Torque Range – 42 in-lbs to 77,211 in-lbs
- Housing – Anodized aluminum
- Mounting – DIN ISO 5211, direct mounting to Crane valves
- Position Indicator – NAMUR standard
- Operating Pressure – 40 to 120 PSIG
- Temperature Range – -4°F (-20°C) to 176°F (80°C)
- Size Range – 14 models to choose from
- Adjustable Travel Stops – Both directions
- Accessory Interfaces – VDI/VDE 3845 (NAMUR) standard

Optional Features:
- Temperature Range – 4°F to 250°F, -40°F to 175°F
- Solenoid Valves – 3 or 4 way
- Limit Switches – Adjustable cam operated
- Positioners – Pneumatic or Electro-pneumatic
- DC-1 Dribble Control – Two-stage shutoff
- 180° Actuation – 2 or 3 position
- Manual Override – De-clutchable gear type
- Speed Controls – Adjust cycle time
- Special Applications – Offshore, nuclear, hygienic, and gas or oil operation
VANE

Standard Features:
- Double acting and fail safe versions available
- Housing – Die-cast aluminum
- Operating Pressure – 40 to 120 PSIG
- Temperature Range – 0°F to 225°F
- Powerful actuation in a compact and lightweight package
- Only one moving part
- Dual external travel stops allow rotation adjustment of up to ±10° at each end of the stroke
- Fail safe models use a pneumatic accumulator to assure valve closure upon loss of supply pressure
- Stacking two vane actuators enables 180° movement (2 or 3 position)

Optional Features:
- Limit switch
- Locking device
- Breather block
- Dribble control
- Sandwich de-clutchable manual gear override
- Solenoid valve
- Positioners
- PTFE interior coatings
- High or low temperature trim
The nomograph on the following page gives the relationships of valve size, flow, velocity, and pressure drop for various disc positions.

**Sample Calculation, Liquid** (see dark blue line on chart)

**Given:**
Water (1.0 specific gravity) at 60°F is flowing through a 6-inch valve at a rate of 1000 gpm.

**Find:**
Line velocity (ft./sec.) and pressure drop when valve is in full-open (disc at 90°) position.

**Solution:**
From the 6-inch valve size at lower left of nomograph, go diagonally up to the intersecting horizontal line for 1000 gpm. From that point, proceed directly down to determine line velocity as 11 ft./sec.

For pressure drop, return to the 1000 gpm intersection and continue up vertically to “90° disc open” intersecting diagonal line. From this point, go horizontally to the left to determine pressure drop as 0.5 psi.

**Sample Calculation, Gas** (see light blue line on chart)

**Given:**
Gas (0.8 lb/cu. ft. density) is flowing through an 8-inch valve at a rate of 1500 cu. ft./min.

**Find:**
Line velocity (ft./min.) and pressure drop when valve is in full-open (disc at 90°) position.

**Solution:**
From 8-inch valve size at lower left of nomograph, go diagonally up to the intersecting horizontal line for 1500 cu. ft./min. From that point, proceed directly down to the bottom line of the nomograph to determine line velocity as 4000 ft./min.

For pressure drop, return to the 1500 cu. ft./min. intersection and continue up vertically to “90° disc open” intersecting diagonal line. From this point, go horizontally to the left to determine pressure drop as 17 psi. Now, convert pressure drop to gas by dividing gas density by liquid density and multiplying by 17.

\[
\frac{0.8}{62.34} \times 17.0 = 0.22 \text{ psi}
\]

**General Notes**

1. Liquid flow data is based on pressure drop and flow rate with viscosity similar to water at 60° F using flow coefficient.
2. Velocities for liquids with densities similar to water should be less than 16 ft./sec.
3. Nomograph flow rate for gases is in cubic feet per minute (CFM) at flowing conditions. To convert flow rate from standard cubic feet per minute to CFM, use the following formula:

\[
\text{CFM} = \left(\frac{\text{SCFM} \times 14.7 \times (460 + ^{\circ}\text{F})}{\text{line pressure, psia}}\right) \times 520
\]

4. Gas density in lbs./cu. ft. equals:

\[
\left(\frac{270 \times \text{specific gravity of gas (relative to air)}}{460 + ^{\circ}\text{F}}\right)
\]

**Definitions**

\[
C_v = \text{Flow coefficient for valves; expresses flow rate in gallons per minute of 60°F water with 1.0 psi pressure drop across valve.}
\]

\[
C_v = \frac{Q \sqrt{P}}{62.4 \Delta P}
\]

\[
K = \text{resistance coefficient.}
\]

\[
K = \sqrt{\frac{29.9}{C_v}}
\]

\[
P = \text{weight density of fluid, in pounds per cubic foot.}
\]

\[
d = \text{internal diameter of Schedule 40 pipe, in inches.}
\]

\[
Q = \text{rate of flow, in gallons per minute.}
\]

\[
\Delta P = \text{differential pressure, in pounds per square inch gauge.}
\]
Crane Butterfly Valves

Global Headquarters
9200 New Trails Drive, Suite 200
The Woodlands, Texas 77381-5219
Tel: 281-298-5463
Fax: 281-292-1749

Crane Supply Executive Office
615 Dixon Road
Toronto, Ontario M9W 1H9
Tel: 416-244-5351
Fax: 416-244-4621
www.cranesupply.com

Conroe, TX Operations
9860 Johnson Road
Montgomery, TX 77316
Tel: 936-588-8380
Fax: 936-588-8381

Cullman, AL Operations
2129 3rd Avenue
Cullman, AL 35055
Tel: 800-786-2542
Fax: 256-775-3860

Ningjin Operations
No. 8 Youyi Street Ningjin County
Hebei Province, China 055550
Tel: +86-319-580-6651
Fax: +86-319-580-8661

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