Ball Valves take a leading role in the valve industry. The scope of applications is enormous, because of the quarter turn construction they are easy to operate and require almost no maintenance. Moreover full bore Ball Valves are ideal for conditions which require maximum flow capacity with minimum pressure drop.
Besides these advantages, all Econ® two-piece flanged full bore Ball Valves are fire-safe and TA-Luft certified. The standard ISO Direct Mount feature enables an easy installation of any actuator, even after initial start-up in a manual configuration. Finally, the Econ® brand ensures reliability and an excellent price quality ratio.

Construction
The Ball Valves are of a two piece construction and have a solid full bore ball. Relevant design standards are EN ISO 17292, EN 12516, ASME B16.34 and API 608.

Materials
Carbon steel (1.0619/ASTM A216 WC8) and stainless steel (1.4408/ASTM A351 CF8M) are the materials which form the standard supply. Other materials can be supplied upon request.

Fire-Safe
The Ball Valves are fire-safe certified according to API 607 6th Edition and ISO 10497. In the event of fire, a secondary metallic seat prevents leakage through the valve port. A graphoil stem seal and a Leader® graphite spiral wound body gasket with PTFE inner layer ensures tightness through the stem packing and body joints.

Gland Packing
Two Belleville spring washers ensure optimal sealing performance, also compensating for changing process conditions. Advantages of this feature are an increased operational safety and less maintenance. In accordance with fire-safe requirements, the packing material is made of Graphoil. In order to comply with the very strict emission requirements for TA-Luft certification, a Viton® O-ring has been placed.

Anti-static & ATEX
The ball-stem connection and the stem-body connection have an anti-static feature, which ensures electrical continuity between those parts. As a result the Ball Valves comply with ATEX guidance 94/9/EC (Ex II 2 G-D Ec-c II) for potentially explosive environments.

Direct Mount
A Direct Mount top-flange according to ISO 5211 is standard for these Ball Valves. This feature makes it possible to mount an actuator without the need of a mounting bracket and drive adapter. This gives a considerable cost reduction, compact automated unit and a higher level of safety for operators.

Ball
The highly polished solid ball has a pressure relief hole in the stem slot in order to avoid pressure build-up in the body cavity. This ensures a tight shut off and long service life.

Stem
The valve stem assembly has a blow-out proof construction and a square top connection. A PTFE thrust washer seal helps to achieve a low operating torque.

Seats
A flexible seat design provides tight shut-off at high and low pressures. The special seat construction limits wear to a minimum and ensures low torque values under all operating conditions. Standard seat material is a high grade PTFE TFM1600. Besides the proven mechanical and chemical properties of PTFE, this chemical reinforced version offers suitability for a wider range of applications in respect to pressure and temperature.

Testing
The Ball Valves are 100% tight and are tested in accordance with API 598 (ASME) or EN 12266 (DIN).

SIL
SIL is an international standard (IEC 61508) and is short for "Safety Integrity Level". Econ® ball valves are suitable for SIL 2 applications.

Face to face length
The DIN Ball Valves are supplied with a face to face dimension in accordance with EN 558, 27 and ASME Valves in accordance with B16.10 long pattern.

Flanges
The flanges are in accordance with EN 1092-1 (DIN version) or ASME B16.5 RF (ASME version). Flange facings have a surface finish of Ra 3.2 - 6.3.

Nace
All stainless steel Econ® Ball Valves comply with NACE MR0175 as a standard. On request also the steel version can be supplied according to NACE specifications.

Finish
Casting have a high quality finish (minimum MSS SP112, level 2). Carbon steel Ball Valves have a primer and blue top coat (RAL 5015). Total paint thickness is 60-80 μm.

Operation
The Ball Valves as standard are supplied with a SS304 handlever (DN15 - DN80) or a T-bar (DN100 - DN150). For DN200 a gearbox can be supplied. All handlevers are lockable in open and closed position. Where extra security is required a padlock should be fitted to lock the valve in the open or closed position. As an option a heavy duty lever can be supplied for the DN15-DN80 valves.

Options
- TFM4215 seats (also other materials available)
- Heavy duty lever DN15-DN80
- Gearbox for all sizes
- Extended stem to allow pipe insulation
- Extended stem for low temperature applications
- Spring return lever
- Limit switches for remote open/close notification
- Pneumatic actuator
- Electric actuator
- Hydraulic actuator
- Electro-hydraulic actuator

Material and test certificates
All Econ® flanged Ball Valves can be supplied with a EN 10204-3.1 test- and material certificate.
**Fig. 7249**
**Fig. 7289**

**DIN PN16/40 | DN15-200**

- **Econ® 2-piece full bore Ball Valves**
- Carbon steel (Fig. 7249) and Stainless steel (Fig. 7289)
- Flange connections EN 1092-1
- Pressure rating DIN PN16/40
- DN15-200
- Design EN ISO 17292, EN 12516

**Remarks:**
- DN 15 - 80 with hand lever
- DN 100 - 150 with T-bar
- Standard spare part kit consists of pos. No.: 4, 8, 9, 10, 11 and 21
- DN 200 is without operator. On request a gearbox can be supplied

**Pos** | **Name** | **Material (Carbon steel)** | **Material (Stainless steel)** | **Pos** | **Name** | **Material (Carbon steel)** | **Material (Stainless steel)**
--- | --- | --- | --- | --- | --- | --- | ---
1 | Body | 1.0619 | 1.4408 | 16 | Ring | 1.4301 | 1.4301
2 | Body end | 1.0619 | 1.4408 | 17 | Nut | 1.4301 (A194-8) | 1.4301 (A 194-8)
3 | Ball | 1.4308 b) | 1.4408 | 18 | Sleeve | Plastic | Plastic
4 | Seat ring | PTFE (TFM1600) | PTFE (TFM1600) | 19 | Hand lever | 1.4301 | 1.4301
6 | Stem | 1.4301 b) | 1.4401 | 21 | Body gasket | 1.4301 (A193-B8) | 1.4301 (A193-B8)
7 | Anti-static device | 1.4301 | 1.4401 | 22 | Socket head screw | 1.4301 (A193-B8) | 1.4301 (A193-B8)
8 | Thrust washer seal | PTFE | PTFE | 23 | Nut | 1.4301 | 1.4301
9 | O-ring | FKM (Viton®) d) | FKM (Viton®) d) | 24 | T-bar support | 1.4308 | 1.4308
11 | Bushing | 1.4301 | 1.4301 | 26 | Socket head screw | 1.4301 (A193-B8) | 1.4301 (A193-B8)
12 | Gland | 1.4401 | 1.4401 | 27 | Allen set screw | 1.4301 (A193-B8) | 1.4301 (A193-B8)
13 | Belleville washer | 1.4310 | 1.4310 | 28 | Nut | 1.0503 (A 194-2H) | 1.4301
14 | Nut | 1.4301 (A194-8) | 1.4301 (A194-8) | 29 | Name plate | 1.4301 | 1.4301
15 | Locking cap | 1.4301 | 1.4301 | 30 | | | |

b) Upon request also available with 1.4408 ball and 1.4401 stem
b) | DN125 and bigger: | 2x O-ring
d) Spiral wound
e) DN100 - 150
f) Zinc plated

- **Remarks:**
  - DN 15 - 80 with hand lever
  - DN 100 - 150 with T-bar
  - Standard spare part kit consists of pos. No.: 4, 8, 9, 10, 11 and 21
  - DN 200 is without operator. On request a gearbox can be supplied

- **Face to face length EN 558, 27 (short)**
- **ISO 5211 Direct Mount**
- **API 607 6th Edition and ISO 10497 Fire-Safe certified**
- **TA-Luft (VDI 2440, Sec. 3.3.1.3) certified**
- **Anti-static I ATEX 94/9/EC (Ex II 2 G-D EX-c II)**
- **IEC 61508, SIL 2 capable**
1) Upon request also available with 1.4408 ball and 1.4401 stem
2) DN125 and bigger: 2x O-ring
3) Spiral wound
4) DN100-150
5) Zinc plated

<table>
<thead>
<tr>
<th>Pos Name</th>
<th>Material</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locking cap</td>
<td>1.4301</td>
<td>1.4301</td>
</tr>
<tr>
<td>Nut</td>
<td>1.4301 (A 194-8)</td>
<td>1.4301 (A 194-8)</td>
</tr>
<tr>
<td>Gland</td>
<td>1.4401</td>
<td>1.4401</td>
</tr>
<tr>
<td>Bushing</td>
<td>1.4301</td>
<td>1.4301</td>
</tr>
<tr>
<td>Glandpacking</td>
<td>GRAFOIL</td>
<td>GRAFOIL</td>
</tr>
<tr>
<td>O-ring</td>
<td>FKM (Viton)</td>
<td>FKM (Viton)</td>
</tr>
<tr>
<td>Thrust washer seal</td>
<td>PTFE</td>
<td>PTFE</td>
</tr>
<tr>
<td>Anti-static device</td>
<td>1.4301</td>
<td>1.4401</td>
</tr>
<tr>
<td>Stud</td>
<td>1.7225 (A 193-B7)</td>
<td>1.4301 (A 193-B8)</td>
</tr>
<tr>
<td>Seat ring</td>
<td>PTFE (TFM1600)</td>
<td>PTFE (TFM1600)</td>
</tr>
<tr>
<td>Ball</td>
<td>1.4308</td>
<td></td>
</tr>
<tr>
<td>Body end</td>
<td>1.0619</td>
<td>1.4408</td>
</tr>
<tr>
<td>Body</td>
<td>1.0619</td>
<td>1.4408</td>
</tr>
<tr>
<td>Belleville washer</td>
<td>1.4310</td>
<td>1.4310</td>
</tr>
<tr>
<td>Name plate</td>
<td>1.4301</td>
<td>1.4301</td>
</tr>
<tr>
<td>Nut</td>
<td>1.0503 (A 194-2H)</td>
<td>1.4301 (A 194-8)</td>
</tr>
<tr>
<td>Allen set screw</td>
<td>1.4301 (A193-B8)</td>
<td>1.4301 (A 193-B8)</td>
</tr>
<tr>
<td>Socket head screw</td>
<td>1.4301 (A193-B8)</td>
<td>1.4301 (A 193-B8)</td>
</tr>
<tr>
<td>T -bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nut</td>
<td>1.4301 (A194-8)</td>
<td>1.4301 (A 194-8)</td>
</tr>
<tr>
<td>Socket head screw</td>
<td>1.4301 (A193-B8)</td>
<td>1.4301 (A 193-B8)</td>
</tr>
<tr>
<td>Body gasket</td>
<td>1.4404+Graphite+PTFE</td>
<td></td>
</tr>
<tr>
<td>Locking device</td>
<td>1.4301</td>
<td>1.4301</td>
</tr>
<tr>
<td>Hand lever</td>
<td>1.4301</td>
<td>1.4301</td>
</tr>
<tr>
<td>Sleeve</td>
<td>Plastic</td>
<td>Plastic</td>
</tr>
<tr>
<td>Nut</td>
<td>1.4301 (A194-8)</td>
<td>1.4301 (A 194-8)</td>
</tr>
<tr>
<td>Ring</td>
<td>1.4301</td>
<td>1.4301</td>
</tr>
<tr>
<td>T -bar support</td>
<td>1.4308</td>
<td>1.4308</td>
</tr>
</tbody>
</table>

2-piece Ball Valves

Seat rating-TFM1600
- DN 15 - 25
- DN 32 - 65
- DN 80 - 100
- DN 125 - 200

Body rating
- PN 40
- PN 16

Pressure/temperature rating

Carbon Steel

Stainless steel

Seat rating-TFM1600

Body rating
- PN 40
- PN 16

Pressure in bar

Temperature in °C

Pressure/temperature rating
### Econ® 2-piece Ball Valves

**Fig. 7245**  
ASME class 150 | 1/2” - 8”

- Econ® 2-piece full bore Ball Valves  
- Carbon steel (Fig. 7245) and Stainless steel (Fig. 7285)  
- Flange connections ASME B16.5 RF  
- Pressure rating ASME class 150  
- DN 1/2” - 8”  
- Design ASME B16.34, API 608

**Fig. 7285**  
ASME class 150 | 1/2” - 8”

- Face to face length ASME B16.10 long pattern  
- ISO 5211 Direct Mount  
- API 607 6th Edition Fire-Safe certified  
- TA-Luft (VDI 2440, Sec. 3.3.1.3) certified  
- Anti-static I ATEX 94/9/EC (Ex II 2 G-D EX-c II)  
- IEC 61508, SIL 2 capable

<table>
<thead>
<tr>
<th>Pos</th>
<th>Name</th>
<th>Material (Carbon steel)</th>
<th>Material (Stainless steel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>A216-WCB</td>
<td>A351-CF8M</td>
</tr>
<tr>
<td>2</td>
<td>Body end</td>
<td>A216-WCB</td>
<td>A351-CF8M</td>
</tr>
<tr>
<td>3</td>
<td>Ball</td>
<td>A351-CF8M (^1)</td>
<td>A351-CF8M</td>
</tr>
<tr>
<td>4</td>
<td>Seat ring</td>
<td>PTFE (TFM1600)</td>
<td>PTFE (TFM1600)</td>
</tr>
<tr>
<td>5</td>
<td>Stud</td>
<td>A193-B7</td>
<td>A193-B8</td>
</tr>
<tr>
<td>6</td>
<td>Stem</td>
<td>A276-316 (^2)  (^3)</td>
<td>A276-316</td>
</tr>
<tr>
<td>7</td>
<td>Anti-static device</td>
<td>AISI 304</td>
<td>AISI 316</td>
</tr>
<tr>
<td>8</td>
<td>Thrust washer</td>
<td>PTFE</td>
<td>PTFE</td>
</tr>
<tr>
<td>9</td>
<td>O-ring</td>
<td>FKM (Viton(^\circledast)) (^2)</td>
<td>FKM (Viton(^\circledast)) (^2)</td>
</tr>
<tr>
<td>10</td>
<td>Glandpacking</td>
<td>GRAFOIL</td>
<td>GRAFOIL</td>
</tr>
<tr>
<td>11</td>
<td>Bushing</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>12</td>
<td>Gland</td>
<td>AISI 316</td>
<td>AISI 316</td>
</tr>
<tr>
<td>13</td>
<td>Belleville washer</td>
<td>AISI 301</td>
<td>AISI 301</td>
</tr>
<tr>
<td>14</td>
<td>Nut</td>
<td>A194-8</td>
<td>A194-8</td>
</tr>
<tr>
<td>15</td>
<td>Locking cap</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>16</td>
<td>Ring</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>17</td>
<td>Nut</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>18</td>
<td>Sleeve</td>
<td>Plastic</td>
<td>Plastic</td>
</tr>
<tr>
<td>19</td>
<td>Hand lever</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>20</td>
<td>Locking device</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>21</td>
<td>Body gasket</td>
<td>AISI 316+Graphite+PTFE (^3)</td>
<td>AISI 316+Graphite+PTFE (^3)</td>
</tr>
<tr>
<td>22</td>
<td>Nut</td>
<td>A193-B8</td>
<td>A193-B8</td>
</tr>
<tr>
<td>23</td>
<td>Socket head screw</td>
<td>A193-B8</td>
<td>A194-8</td>
</tr>
<tr>
<td>24</td>
<td>T-bar support</td>
<td>AISI 51-CF8</td>
<td>AISI 51-CF8</td>
</tr>
<tr>
<td>25</td>
<td>T-bar</td>
<td>St. AS3 (^5)</td>
<td>St. AS3 (^5)</td>
</tr>
<tr>
<td>26</td>
<td>Allen set screw</td>
<td>1.4301(A193-B8)</td>
<td>1.4301(A193-B8)</td>
</tr>
<tr>
<td>27</td>
<td>Socket head screw</td>
<td>1.4301(A193-B8)</td>
<td>1.4301(A193-B8)</td>
</tr>
<tr>
<td>28</td>
<td>Allen set screw</td>
<td>1.4301(A193-B8)</td>
<td>1.4301(A193-B8)</td>
</tr>
<tr>
<td>29</td>
<td>Nut</td>
<td>A194-2H</td>
<td>A194-8</td>
</tr>
<tr>
<td>30</td>
<td>Name plate</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
</tbody>
</table>

\(^1\) Upon request also available with A351-CF8 ball and A276-304 stem

\(^2\) 5” and larger: 2x O-ring

\(^3\) Spiral wound

\(^4\) 4” - 6”

\(^5\) Zinc plated

**Remarks:**
- Sizes 1/2” - 3” with hand lever
- Sizes 4” - 6” with T-bar
- Standard spare part kit consists of pas. No.: 4, 8, 9, 10, 11 and 21
- Size 8” is without operator. On request a gearbox can be supplied.
Pressure/temperature rating

### ASME class 150

**2-piece Ball Valves**

4” - 6” with T-bar

<table>
<thead>
<tr>
<th>DN</th>
<th>Ød</th>
<th>ØA</th>
<th>ØN1</th>
<th>ØN2</th>
<th>T</th>
<th>m[kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>½&quot;</td>
<td>15</td>
<td>90</td>
<td>9</td>
<td>9</td>
<td>49</td>
<td>79</td>
</tr>
<tr>
<td>¼&quot;</td>
<td>20</td>
<td>100</td>
<td>9</td>
<td>11</td>
<td>53</td>
<td>84</td>
</tr>
<tr>
<td>1&quot;</td>
<td>25</td>
<td>110</td>
<td>11</td>
<td>11</td>
<td>58</td>
<td>90</td>
</tr>
<tr>
<td>1½”</td>
<td>38</td>
<td>130</td>
<td>14</td>
<td>14</td>
<td>76</td>
<td>110</td>
</tr>
<tr>
<td>2&quot;</td>
<td>50</td>
<td>150</td>
<td>14</td>
<td>17</td>
<td>82</td>
<td>115</td>
</tr>
<tr>
<td>3&quot;</td>
<td>76</td>
<td>190</td>
<td>17</td>
<td>22</td>
<td>112</td>
<td>160</td>
</tr>
<tr>
<td>4&quot;</td>
<td>100</td>
<td>230</td>
<td>22</td>
<td>22</td>
<td>140</td>
<td>211</td>
</tr>
<tr>
<td>6&quot;</td>
<td>150</td>
<td>280</td>
<td>27</td>
<td>27</td>
<td>204</td>
<td>284</td>
</tr>
<tr>
<td>8&quot;</td>
<td>200</td>
<td>345</td>
<td>27</td>
<td>27</td>
<td>253</td>
<td>-</td>
</tr>
</tbody>
</table>

**Seat rating**

- TFM1600

**Body rating**

- #150

---

### Diagram

[Diagram of 2-piece Ball Valves with T-bar]
Fig. 7257
Fig. 7297
ASME class 300 | 1/2" - 8"

- Econ® 2-piece full bore Ball Valves
- Carbon steel (Fig. 7257) and Stainless steel (Fig. 7297)
- Flange connections ASME B16.5 RF
- Pressure rating ASME class 300
- DN 1/2" - 8"
- Design ASME B16.34, API 608

Remarks:
- Sizes 1/2" - 3" with hand lever
- Sizes 4" - 6" with T-bar
- Standard spare part kit consists of pas. No.: 4, 8, 9, 10, 11 and 21
- Size 8" is without operator. On request a gearbox can be supplied

Econ® 2-piece Ball Valves
Carbon steel (Fig. 7257) and Stainless steel (Fig. 7297)
Flange connections ASME B16.5 RF
Pressure rating ASME class 300
DN 1/2" - 8"
Design ASME B16.34, API 608

- ISO 5211 Top-flange (1/2" - 4") - Direct mount (5" - 8")
- API 607 6th Edition Fire-Safe certified
- TA-Luft (VDI 2440, Sec. 3.3.1.3) certified
- Anti-static I ATEX 94/9/EC (Ex II 2 G-D EX-c II)
- IEC 61508, SIL 2 capable

<table>
<thead>
<tr>
<th>Pos</th>
<th>Name</th>
<th>Material (Carbon steel)</th>
<th>Material (Stainless steel)</th>
<th>Material (Carbon steel)</th>
<th>Material (Stainless steel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>A216-WCB</td>
<td>A351-CF8M</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>2</td>
<td>Body end</td>
<td>A216-WCB</td>
<td>A351-CF8M</td>
<td>A194-8</td>
<td>A194-8</td>
</tr>
<tr>
<td>3</td>
<td>Ball</td>
<td>A351-CF8M</td>
<td>A351-CF8M</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>4</td>
<td>Seat ring</td>
<td>PTFE (TFM1600)</td>
<td>PTFE (TFM1600)</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>5</td>
<td>Stud</td>
<td>A193-B7</td>
<td>A193-B8</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>6</td>
<td>Stem</td>
<td>A276-316 1)</td>
<td>A276-316 1)</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>7</td>
<td>Anti-static device</td>
<td>AISI 304</td>
<td>AISI 304</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>8</td>
<td>Thrust washer seal</td>
<td>PTFE</td>
<td>PTFE</td>
<td>A193-B8</td>
<td>A193-B8</td>
</tr>
<tr>
<td>9</td>
<td>O-ring</td>
<td>FKM (Viton®) 2)</td>
<td>FKM (Viton®) 2)</td>
<td>A194-8</td>
<td>A194-8</td>
</tr>
<tr>
<td>10</td>
<td>Glandpacking</td>
<td>GRAFOIL</td>
<td>GRAFOIL</td>
<td>A194-8</td>
<td>A194-8</td>
</tr>
<tr>
<td>11</td>
<td>Bushing</td>
<td>AISI 304</td>
<td>AISI 304</td>
<td>A194-8</td>
<td>A194-8</td>
</tr>
<tr>
<td>12</td>
<td>Gland</td>
<td>AISI 316</td>
<td>AISI 316</td>
<td>A194-8</td>
<td>A194-8</td>
</tr>
<tr>
<td>13</td>
<td>Belleville washer</td>
<td>AISI 301</td>
<td>AISI 301</td>
<td>A194-8</td>
<td>A194-8</td>
</tr>
<tr>
<td>14</td>
<td>Nut</td>
<td>A194-8</td>
<td>A194-8</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
<tr>
<td>15</td>
<td>Locking cap</td>
<td>AISI 304</td>
<td>AISI 304</td>
<td>AISI 304</td>
<td>AISI 304</td>
</tr>
</tbody>
</table>

1) Upon request also available with A351-CF8 ball and A276-304 stem
2) 5" and larger: 2x O-ring
3) Spiral wound
4) 4" - 6"
5) Zinc plated
Pressure/temperature rating

### Carbon Steel

<table>
<thead>
<tr>
<th>DN</th>
<th>Ød</th>
<th>ØA</th>
<th>ØN1</th>
<th>ØN2</th>
<th>ØO1</th>
<th>ØO2</th>
<th>T</th>
<th>m[kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>½&quot;</td>
<td>15</td>
<td>95</td>
<td>9</td>
<td>9</td>
<td>48,8</td>
<td>79,0</td>
<td>140</td>
<td>145</td>
</tr>
<tr>
<td>¼&quot;</td>
<td>20</td>
<td>115</td>
<td>9</td>
<td>9</td>
<td>58,5</td>
<td>89,0</td>
<td>152</td>
<td>168</td>
</tr>
<tr>
<td>1&quot;</td>
<td>25</td>
<td>125</td>
<td>11</td>
<td>11</td>
<td>63,5</td>
<td>94,5</td>
<td>165</td>
<td>175</td>
</tr>
<tr>
<td>1½&quot;</td>
<td>38</td>
<td>155</td>
<td>14</td>
<td>14</td>
<td>79,5</td>
<td>110,0</td>
<td>190</td>
<td>190</td>
</tr>
<tr>
<td>2&quot;</td>
<td>50</td>
<td>165</td>
<td>14</td>
<td>14</td>
<td>84,5</td>
<td>115,0</td>
<td>216</td>
<td>218</td>
</tr>
<tr>
<td>3&quot;</td>
<td>76</td>
<td>210</td>
<td>17</td>
<td>17</td>
<td>111,5</td>
<td>176,0</td>
<td>282</td>
<td>300</td>
</tr>
<tr>
<td>4&quot;</td>
<td>100</td>
<td>225</td>
<td>22</td>
<td>22</td>
<td>140,0</td>
<td>204,0</td>
<td>305</td>
<td>400</td>
</tr>
<tr>
<td>6&quot;</td>
<td>150</td>
<td>320</td>
<td>27</td>
<td>27</td>
<td>203,0</td>
<td>275,0</td>
<td>403</td>
<td>800</td>
</tr>
<tr>
<td>8&quot;</td>
<td>200</td>
<td>381</td>
<td>27</td>
<td>27</td>
<td>252,5</td>
<td>328,0</td>
<td>502</td>
<td>800</td>
</tr>
</tbody>
</table>

### Stainless steel

<table>
<thead>
<tr>
<th>DN</th>
<th>Ød</th>
<th>ØA</th>
<th>ØN1</th>
<th>ØN2</th>
<th>ØO1</th>
<th>ØO2</th>
<th>T</th>
<th>m[kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>½&quot;</td>
<td>15</td>
<td>95</td>
<td>9</td>
<td>9</td>
<td>36x6</td>
<td>42x6</td>
<td>147</td>
<td>2,4</td>
</tr>
<tr>
<td>¼&quot;</td>
<td>20</td>
<td>115</td>
<td>9</td>
<td>9</td>
<td>36x6</td>
<td>42x6</td>
<td>163</td>
<td>3,2</td>
</tr>
<tr>
<td>1&quot;</td>
<td>25</td>
<td>125</td>
<td>11</td>
<td>11</td>
<td>42x6</td>
<td>50x7</td>
<td>179</td>
<td>4,2</td>
</tr>
<tr>
<td>1½&quot;</td>
<td>38</td>
<td>155</td>
<td>14</td>
<td>14</td>
<td>50x7</td>
<td>70x9</td>
<td>211</td>
<td>6,9</td>
</tr>
<tr>
<td>2&quot;</td>
<td>50</td>
<td>165</td>
<td>14</td>
<td>14</td>
<td>50x7</td>
<td>70x9</td>
<td>227</td>
<td>9,5</td>
</tr>
<tr>
<td>3&quot;</td>
<td>76</td>
<td>210</td>
<td>17</td>
<td>17</td>
<td>70x9</td>
<td>102x11</td>
<td>290</td>
<td>18,5</td>
</tr>
<tr>
<td>4&quot;</td>
<td>100</td>
<td>225</td>
<td>22</td>
<td>22</td>
<td>70x9</td>
<td>102x11</td>
<td>322</td>
<td>35,0</td>
</tr>
<tr>
<td>6&quot;</td>
<td>150</td>
<td>320</td>
<td>27</td>
<td>27</td>
<td>70x9</td>
<td>125x14</td>
<td>37,0</td>
<td>74,0</td>
</tr>
<tr>
<td>8&quot;</td>
<td>200</td>
<td>381</td>
<td>27</td>
<td>27</td>
<td>70x9</td>
<td>125x14</td>
<td>41,7</td>
<td>171,0</td>
</tr>
</tbody>
</table>
2-piece Ball Valves

Torque values

<table>
<thead>
<tr>
<th>Size</th>
<th>16</th>
<th>40</th>
<th>20 (class 150)</th>
<th>51 (class 300)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN8</td>
<td>1/4”</td>
<td>4.5</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>DN10</td>
<td>3/8”</td>
<td>4.5</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>DN15</td>
<td>1/2”</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>DN20</td>
<td>3/4”</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>DN25</td>
<td>1”</td>
<td>10</td>
<td>11</td>
<td>10.5</td>
</tr>
<tr>
<td>DN32</td>
<td>1.1/4”</td>
<td>14</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>DN40</td>
<td>1.1/2”</td>
<td>21</td>
<td>23</td>
<td>22</td>
</tr>
<tr>
<td>DN50</td>
<td>2”</td>
<td>30</td>
<td>34</td>
<td>32</td>
</tr>
<tr>
<td>DN65</td>
<td>2.1/2”</td>
<td>47</td>
<td>53</td>
<td>49</td>
</tr>
<tr>
<td>DN80</td>
<td>3”</td>
<td>77</td>
<td>87</td>
<td>81</td>
</tr>
<tr>
<td>DN100</td>
<td>4”</td>
<td>117</td>
<td>131</td>
<td>122</td>
</tr>
<tr>
<td>DN125</td>
<td>5”</td>
<td>230</td>
<td>272</td>
<td>245</td>
</tr>
<tr>
<td>DN150</td>
<td>6”</td>
<td>380</td>
<td>550</td>
<td>450</td>
</tr>
<tr>
<td>DN200</td>
<td>8”</td>
<td>500</td>
<td>750</td>
<td>550</td>
</tr>
</tbody>
</table>

Basic principles
- Break to open (BTO) torques of Econ® ball valves with TFM1600 seat rings.
- For standard applications, like lubricating fluids, a safety factor of 1.3 must be applied for the selection of an actuator.
- For a gas or non-lubricating medium a safety factor of at least 1.5 must be applied.
- If a TFM4215 seat (Carbon filled PTFE) is used, the torque values from the table must be increased by 20 to 30%.
  Additionally, an appropriate safety factor must be applied for the selection of an actuator.

Consult your distributor for specific applications.

Kv and Cv values

<table>
<thead>
<tr>
<th>DN</th>
<th>Kv</th>
<th>Inch</th>
<th>Cv</th>
<th>DN</th>
<th>Kv</th>
<th>Inch</th>
<th>Cv</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>15</td>
<td>½</td>
<td>18</td>
<td>65</td>
<td>386</td>
<td>2½</td>
<td>440</td>
</tr>
<tr>
<td>20</td>
<td>31</td>
<td>¾</td>
<td>36</td>
<td>80</td>
<td>514</td>
<td>3</td>
<td>600</td>
</tr>
<tr>
<td>25</td>
<td>41</td>
<td>1</td>
<td>48</td>
<td>100</td>
<td>943</td>
<td>4</td>
<td>1100</td>
</tr>
<tr>
<td>32</td>
<td>62</td>
<td>1¼</td>
<td>72</td>
<td>125</td>
<td>1458</td>
<td>5</td>
<td>1700</td>
</tr>
<tr>
<td>40</td>
<td>103</td>
<td>1½</td>
<td>120</td>
<td>150</td>
<td>2228</td>
<td>6</td>
<td>2600</td>
</tr>
<tr>
<td>50</td>
<td>163</td>
<td>2</td>
<td>190</td>
<td>200</td>
<td>3599</td>
<td>8</td>
<td>4200</td>
</tr>
</tbody>
</table>

Remarks
- Kv is the capacity in m³/h for water 20°C at a differential pressure of 1 bar.
- Cv is the capacity in US gallon per minute for water 60°F at a differential pressure of 1 psi.
- The Kv and Cv values are valid for a fully opened position only.

Options

Gearbox
- Visual open/close indicator
- Mechanical end stops open/close
- ISO 5211 mounting flange

Extended stem
- Suitable for insulation purposes
- Standard length: 100 mm (up to size DN100/4") and 120mm (size DN150/6” and DN200/8”)
- Can be equipped with a pneumatic, electric or hydraulic actuator

Spring return lever
- For ‘fail safe’ situations

Manual operated with position feedback
- Suitable for switch boxes or Pepperl & Fuchs F31 dual sensors

10 Econ® 2-piece Ball Valves
Valve automation

Ball Valves mostly are being used for open/close purposes. For modulating purposes an Econ® V-port ball valve is available. Due to the quarter turn construction Ball Valves are perfectly suitable for automated processes. A great advantage of the Econ® two-piece flanged Ball Valves is the standard Direct Mount top-flange according to ISO 5211, which enables direct mounting of an actuator - without mounting bracket and drive adapter - on top of the valve. This results in a considerable cost saving, a compact automated unit and a higher level of safety for operators. If required, the use of a mounting bracket is still possible.

Double acting pneumatic actuator

- Compact
- Suitable for high duty cycles
- Fast opening and closing times
- Few moving parts: increases operational safety
- Modular design for easy mounting of accessories, like limit switches, (NAMUR) solenoid valves and bus communication systems
- Can be combined with emergency operation (manual gearbox)
- ISO 5211 mounting flange

Single acting pneumatic actuator

- Compact
- Fail-safe function can easily be realized in spring closing or spring opening configuration
- Suitable for high duty cycles
- Fast opening and closing times
- Few moving parts: increases operational safety
- Modular design for easy mounting of accessories, like limit switches, (NAMUR) solenoid valves and bus communication systems
- Can be combined with emergency operation (manual gearbox)
- ISO 5211 mounting flange

Electric actuator

- Compact
- Wide range of voltage options
- Slow opening and closing times prevent water hammering
- Noiseless
- Self-locking reduction gear
- Integrated limit switches for feedback signals
- Emergency handwheel operator
- ISO 5211 mounting flange
- Modulating actuator available for V-port Ball Valves
- IP68 version as an option
- EExd version as an option
- CAN-open fieldbus as an option
- Profibus fieldbus as an option

Hydraulic actuator

- Extremely compact
- Heavy duty
- High operational safety
- Modular design for easy mounting of accessories, like limit switches or visual open/close indication
- IP68 version as an option
- ISO 5211 mounting flange
- Electro-hydraulic version as an option
- CAN-open fieldbus as an option for the electric-hydraulic actuators
Econ® trunnion mounted ball valves

Trunnion Mounted ball valves complete the Econ® flanged ball valve range. These valves are being characterized by the supported (trunnion) ball and spring supported seats. This construction makes it possible to manufacture ball valves in large diameters that are suitable for both low and high pressure applications.

Econ® trunnion ball valve features:

- Available in steel, stainless steel and other steel alloys
- Sizes DN150 (6") up to DN600 (24")
- ANSI Class 150 and 300, DIN PN16 and PN40 and JIS 10K and 20K
- Full bore
- Fully bi-directional
- Provided with an anti-blow out stem
- Provided with an anti-static device
- The spring supported seats provide the valves with a reliable low pressure seal. They also provide a 100% seal on both sides of the ball, allowing the valves to be applied as a “Double Block and Bleed” valve.
- Fitted with an ISO 5211 Direct Mount Flange. (A mounting kit is therefore not required for mounting the actuator)
- Adjustable multi-sealing stem seal for a long life span
- Supplied with an EN 10204-3.1 certificate and optionally with a 3.2 certificate
- Optionally also available with injection points for injecting a sealant on the stem seal and seats, which allows temporary repair of a damaged seat or stem in a quick and effective manner
- Can optionally be supplied according to NACE MR0175
- The valves can optionally be tested in accordance to API 6D
Econ®-CR (Chemical Resistant) Ball Valve

The Econ® Ball Valve program has been extended with a special ball valve for chemical applications. In many of these applications, graphite gasket particles are not allowed to end up in the medium. The Econ® Chemical Resistant Ball Valve therefor has been equipped with a Leader® two layer PTFE/graphite spiral wound body gasket, which still makes the valve fire safe approved. This valve is also equipped with a Kalrez® 6375 O-ring on the stem, which keeps the stem construction TA-luft approved, even for chemical applications like Amines and Ketones. Finally, this valve will be supplied with a heavy duty molded hand lever up to size DN80/3”, larger sizes will have a robust T-bar lever.

1 Stainless steel 1.4401 stem
2 Primary PTFE stem seal/thrust washer
3 Secondary Kalrez® 6375 TA-Luft O-ring
4 Tertiary Fire Safe graphoil gland packing
5 Belleville spring washers for a reliable self adjustable stem seal
6 Stainless steel 1.4408 solid ball
7 TFM1600 seats
8 Spiral wound PTFE/Graphite body gasket

Kalrez® and Viton® are registered trademarks of DuPont™
Econ® 1-piece reduced bore ball valve
Fig. 7744, Fig. 7744NPT

Econ® 1-piece reduced bore ball valves have a BSP or NPT threaded connection. These ball valves have an extremely compact design and do have competitive prices.

- Pressure rating 1000 WOG (68 bar)
- Reduced bore
- Stainless steel 316 body, ball and stem
- PTFE seats and seals
- Sizes ¼" - 2"

Econ® 2-piece full bore ball valve
Fig. 7752, Fig. 7752NPT, Fig. 7752ISO, Fig. 7752ISO-NPT

These competitive priced Econ® 2-piece full bore ball valves have a BSP or NPT threaded connection and lockable lever.

- Pressure rating 1000 WOG (68 bar)
- Full bore
- Stainless steel 316 body, ball and stem
- PTFE seats and seals
- Sizes ¼" - 3"
- ISO 5211 “Direct Mount” top flange
  (Fig. 7752ISO and 7752ISO-NPT only)

Econ® 3-piece full bore ball valve
Fig. 7446 (BSP), Fig. 7546 (NPT), Fig. 7646 (BW or SW)

This economy type Econ® 3-piece full bore ball valve is available with BSP, NPT, Butt Weld orSocket Weld connections and has a lockable lever.

- Pressure rating 1000 WOG (68 bar)
- Full bore
- Stainless steel 316 body, ball and stem
- PTFE seats and seals
- Sizes ¼" - 3"

Econ® 3-piece full bore ball valve with ISO “Direct Mount” top flange
Fig. 7444, Fig. 7544 (NPT), Fig. 7644 (BW-SW)

This type Econ® 3-piece full bore ball valve is equipped with a “Direct Mount” top flange according to ISO 5211 and a lockable lever. The valve can be supplied with BSP, NPT, Butt Weld orSocket Weld connections.

- Pressure rating 1000 WOG (68 bar)
- Full bore
- Stainless steel 316 body, ball and stem
- PTFE seats and seals
- ISO 5211 “Direct Mount” top flange
- Sizes ¼" - 4"

Econ® 3-piece full bore ball valve for steam and condensate applications
Fig. 74441, Fig. 74442

This Econ® 3-piece full bore ball valve with BSP threaded connections is specially designed for steam and condensate applications up to 14 bar and is equipped with a “Direct Mount” top flange according to ISO 5211 and a lockable lever.

- Pressure rating 1000 WOG (68 bar)
- Full bore
- Stainless steel 316 or cast steel body
- PTFE (TFM4215) seats and PTFE seals
- ISO 5211 “Direct Mount” top flange
- Sizes ¼" - 2"
Econ® Quick-Weld full bore ball valve with ISO “Direct Mount” top flange
Fig. 7611, Fig. 7645, Fig. 7654

The Econ® Quick-Weld full bore ball valve has rotatable weld connections, which saves installation time up to 30%! The valve is also equipped with a “Direct Mount” top flange according to ISO 5211 and a lockable lever. The valve can be supplied with butt weld connections and orbital weld connections for DIN 11850 pipe sizes.

- Pressure rating 1000 WOG (68 bar)
- Full bore
- Stainless steel 316 body, ball and stem
- PTFE (TFM1600) and RPTFE (Fig. 7645) seats and seals
- ISO 5211 “Direct Mount” top flange
- Sizes ¼” - 3”

Econ® Premium 3-piece full or reduced bore ball valve with ISO top flange
Fig. 7422 (CS BSP), Fig. 7522 (CS NPT), Fig. 7628BW (CS), Fig. 7625SW (CS),
Fig. 7442 (SS BSP), Fig. 7542 (SS NPT), Fig. 7642BW (SS), Fig. 76425SW (SS)

The Econ® Premium ball valve is a heavy duty 3-piece ball valve with BSP, NPT, Butt Weld or Socket Weld connections and can be supplied in stainless steel or cast steel. The valve is equipped with a spring loaded lockable lever.

- Pressure rating Class 600 (102 bar)
- RPTFE seats and seals
- Full or reduced bore
- Stainless steel 316 or cast steel body
- ISO 5211 top flange
- Stainless steel 316 or cast steel body
- Sizes ¼” - 3”

Econ® wafer type full bore ball valve with ISO “Direct Mount” top flange
Fig. 7343 (CS) and Fig. 7383 (SS)

The Econ® wafer type ball valve with DIN flange connections can be supplied in stainless steel 316 or cast steel. These valves have a “Direct Mount” top flange according to ISO 5211 and a lockable lever.

- Pressure rating PN16 and PN40
- Full bore
- Stainless steel 316 or cast steel body
- PTFE (TFM1600) seats and seals
- ISO 5211 “Direct Mount” top flange
- Sizes DN15 / ½” - DN200/8”

Econ® 2-piece full bore ball valve with flange connections and ISO “Direct Mount” top flange
Fig. 7249 (DIN CS), Fig. 7289 (DIN SS), Fig. 7245 (ANSI 150 CS), Fig. 7285 (ANSI 150 SS),
Fig. 7257 (ANSI 300 CS), Fig. 7297 (ANSI 300 SS)

The Econ® 2-piece ball valve with DIN or ASME flanges can be supplied in stainless steel 316 or cast steel. These valves have a “Direct Mount” top flange according to ISO 5211 and a lockable lever up to size DN150/6”.

- Pressure rating PN16, PN40, Class 150 and Class 300
- PTFE (TFM1600) seats and seals
- ISO 5211 “Direct Mount” top flange
- Stainless steel 316 or cast steel body
- Sizes DN15 / ½” - DN200/8”

Econ® 3-way ball valve with ISO “Direct Mount” top flange
Fig. 7281 (CS flanged), Fig. 7291 (SS flanged), Fig. 7760L-BSP, fig. 7760L-NPT, Fig 7760T-BSP, Fig. 7760T-NPT

The 3-way Econ® ball valves have a “Direct Mount” top flange according to ISO 5211 and a lockable lever. The “Direct Mount” top flange makes it easy to automate the valves at a very competitive price. These valves can be supplied with a L- or T-bore and with flanged, BSP or NPT threaded connections.

### Flanged valves
- Pressure rating PN16, PN40 and Class 150
- PTFE (TFM1600) seats and seals
- Full bore
- ISO 5211 “Direct Mount” top flange
- Stainless steel 316 or cast steel body
- Sizes DN15 / ½” - DN100/4”

### Threaded valves
- Pressure rating 1000 WOG (68 bar)
- RPTFE seats and seals
- Reduced bore
- ISO 5211 “Direct Mount” top flange
- Stainless steel 316 body, ball and stem
- Sizes ½” - 2”
Valve Automation Centre

The Valve Automation Centre has a state of the art workshop in which well trained technicians mount pneumatic, hydraulic and electric actuators on valves. Valves and actuators can be modified according to customer specifications and be equipped with options such as valve positioners, limit switches, pilot valves and more. Five pressure test benches allow testing of valves up to DN1200/48". The applicable standards are API 598 and EN 12266 and any other customer specified protocols can additionally be performed.

Engineering
- Working out customer-specific requirements.
- Product development support.
- Providing 2D and 3D assembly drawings.
- Supplying 3D CAD models.

Workshops
- Modern workshops of more than 5000 m².
- Facilitating of large and complex projects.
- Automating and modifying of valves.
- Mounting, adjusting and modifying according to customer-specific requirements.

Logistics
- More than 2 million products from stock
- Automated delivery of products
- International presence in 24 countries

Testing
- Large test facilities.
- Pressure testing of valves up to DN1200/48".
- Maximum test pressure 1200 bar.

Largest stockist of valves and actuators in Europe.