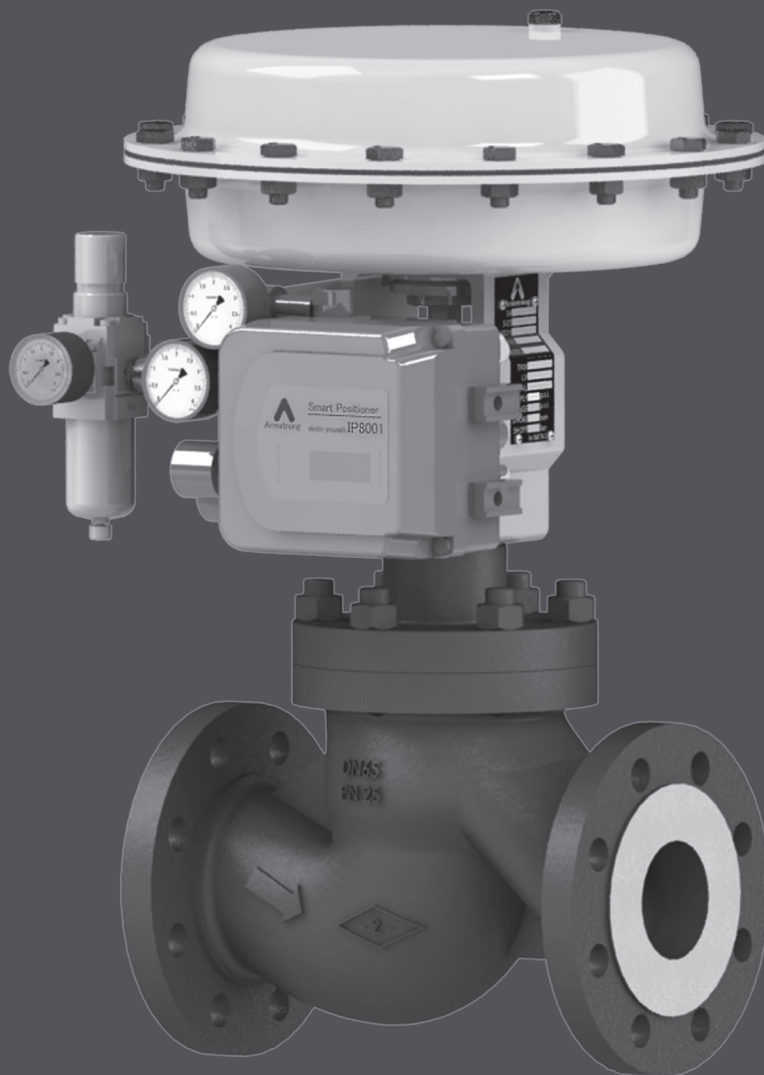




FLY SERIES

2-WAY CONTROL VALVES





Armstrong® Fly Series - Control Valves

Product Features

Armstrong Delta2 - Fly Series is a single seat globe control valve with a robust construction designed for a wide range of process applications and easy maintenance.

- Size from DN15 to DN200 and from 1/2" to 8".
- DIN pressure rating from PN10 to PN100.
- ANSI pressure rating from 150 Lbs to 600 Lbs.

Materials

Full range of materials and special alloys are available for valve body and trim including hardening treatment. Special NACE design and material construction for sour service with a compliance declaration in accordance to NACE regulations.

Guiding

Valve guiding is top for standard parabolic plug. DN15 (1/2") to DN50 (2") is stem guided, DN65 (2-1/2") and bigger is shaft guided.

Trim

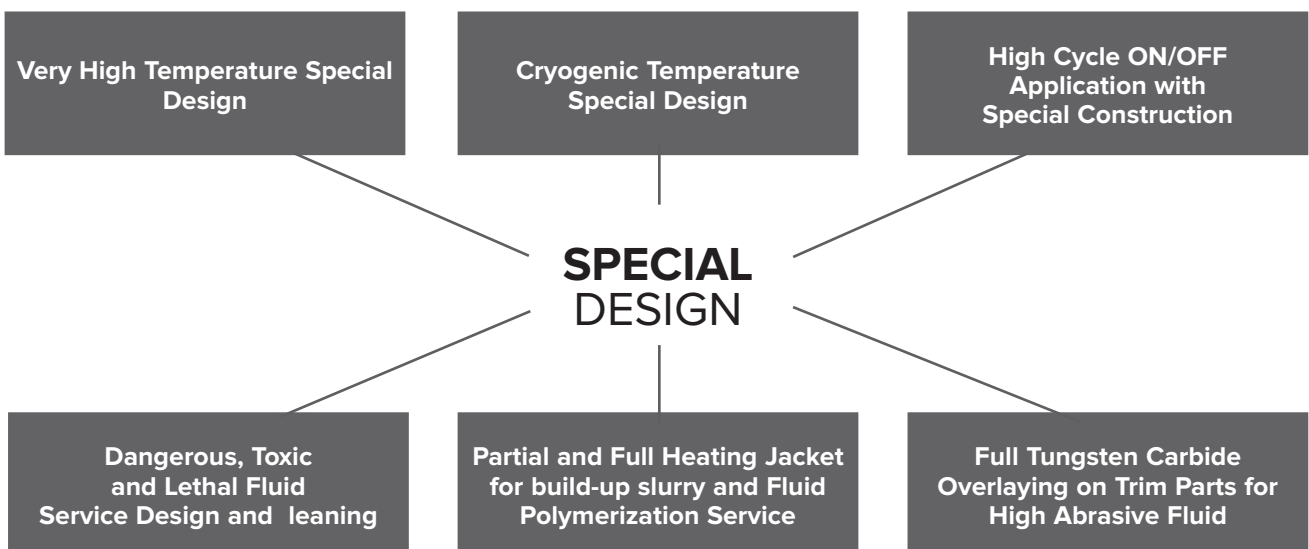
Standard construction includes parabolic plug and threaded replaceable seat.

Packing

Standard packing offers an internal self-adjusting spring system that provides low emissions according to the latest environmental regulations (TA-Luft and ISO-15848). In case of emission free request a bellow seal bonnet with different pressure ratings and materials are available.

Severe Service

Single and double stage low-noise cage trim is available for most valve/trim sizes and designs. Single and double stage cavitation control trim is also available.

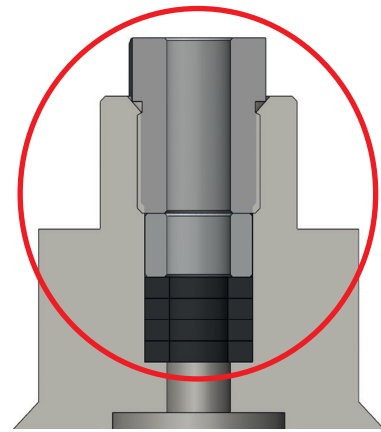
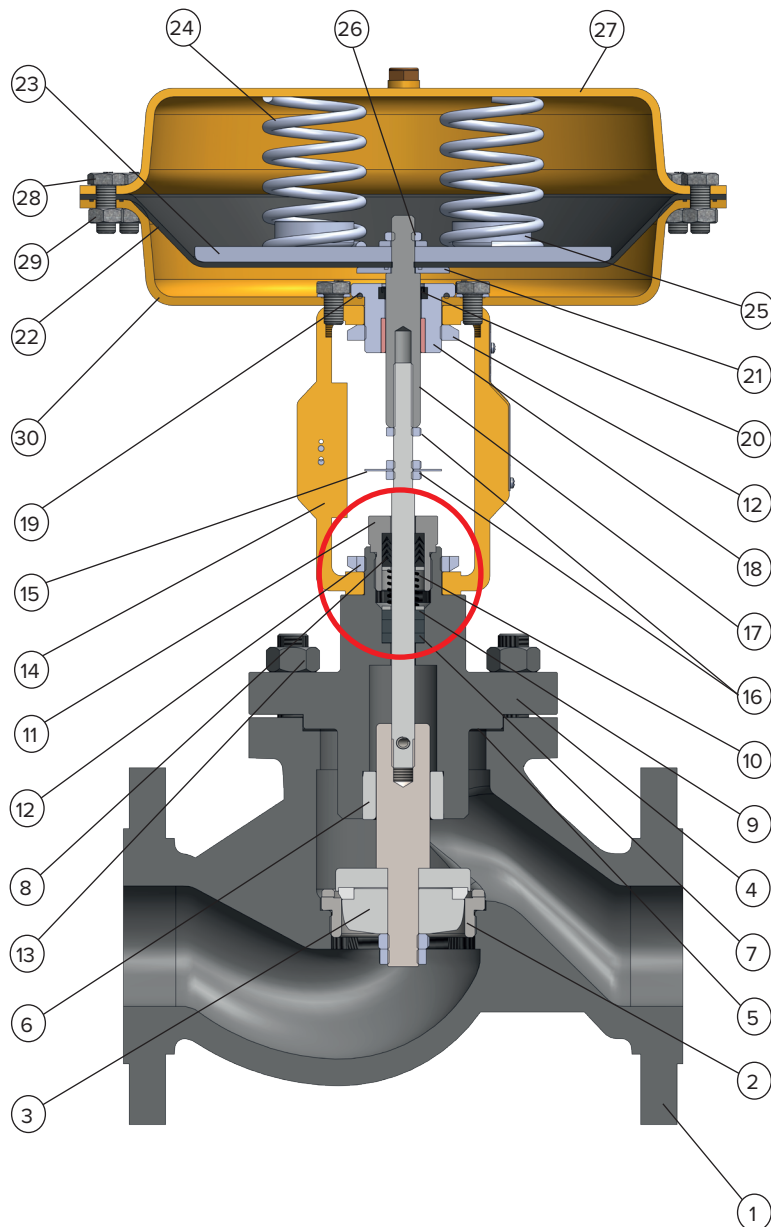


Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit armstronginternational.com for up-to-date information.

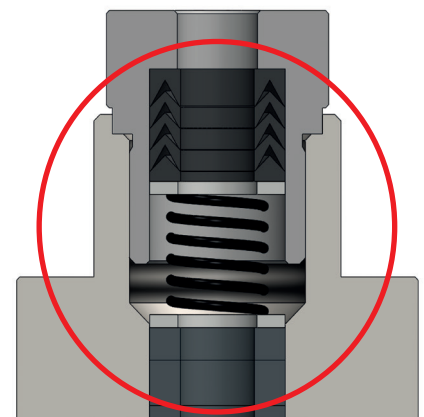
Fly Series - Control Valves

Standard Part List

| | | | | | |
|----|---------------------|----|----------------------|----|-------------------------|
| 1 | Body | 11 | Packing Gland Nut | 21 | Diaphragm Closing Plate |
| 2 | Seat | 12 | Locking Nut Ring | 22 | Diaphragm |
| 3 | Plug | 13 | Valve Bolts | 23 | Diaphragm Plate |
| 4 | Bonnet | 14 | Yoke | 24 | Spring |
| 5 | Body Gasket | 15 | Stroke Index | 25 | Spring Guide |
| 6 | Stem Bush Guide | 16 | Stem Plug Nut | 26 | Actuator Stem Nuts |
| 7 | Graphite Ring | 17 | Actuator Stem | 27 | Actuator Upper Housing |
| 8 | V-Rings | 18 | Actuator Shaft Guide | 28 | Actuator Bolts |
| 9 | Anti-Extrusion Ring | 19 | Actuator Seal O-Ring | 29 | Actuator Nuts |
| 10 | Packing Spring | 20 | Shaft Bushing | 30 | Actuator Lower Housing |



Pure Graphite



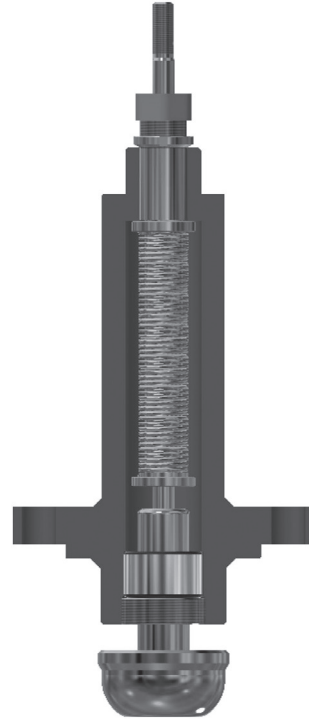
Euro

Designs, materials, weights and performance ratings are approximate and subject to change without notice.
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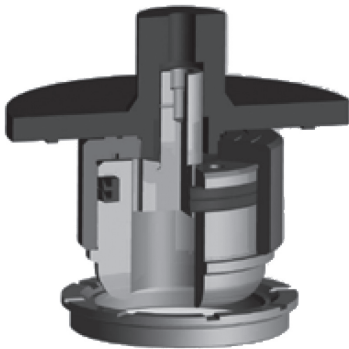
Single Stage Perforated Plug



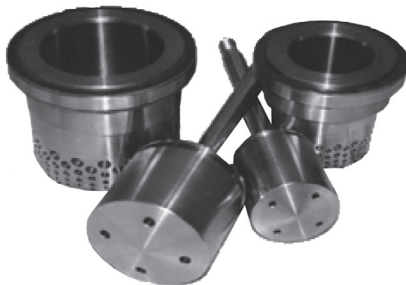
Bellow Seal Bonnet



Standard Balanced Plug



Plug Guide



Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit armstronginternational.com for up-to-date information.

Valve Specification

| Specifications | EN / DIN | ASME |
|---|---|--|
| Valve Construction | EN 12516 | ANSI B 1634 |
| Valve Body Size | DN15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200 (1) | NPS 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8 (1) |
| Pressure Rating | From PN10 to PN100 as per EN1092-1 | From CL150 to CL600 as per ASME B16.34 |
| End Connections (See table on page 6 for detail) | Flanged raised face per EN1092-1 (Standard) Flanged Ring Joint / Threaded Ends / Welded Ends (Optional) | Flanges raised face per ASME B16.5 (Standard) Flanged Ring Joint / Threaded Ends / Welded Ends (Optional) |
| Face-to-Face Standard | EN558-1 / DIN 3202 | ANSI / ISA 75.08.01 (2) |
| Shutoff per IEC 60534-4 and ANSI/FCI 70-2 | Metal seat - Class IV (standard) Metal seat - Class V (optional) - PTFE seat - Class VI (optional) (For 4.8 to 14 mm ports, Class VI shutoff is achieved without PTFE seat) | |
| Flow Direction | Flow-up (Cavitation Control trim, Flow down) | |
| Flow Control Characteristics | Modified Equal Percentage, Equal Percentage, Linear and Quick Open | |

(1) Other valve body connection sizes available on request.

(2) ISA S75.03 or special standard on request.

| Trim Style | Port Diameters | Trim Style Description |
|------------------------------|----------------------------------|--|
| Microflow | From 3 to 6 mm (3) | Low-Flow and Micro-Flow trim (unbalanced) Top Shaft Guided |
| Standard Parabolic Plug | From 8 to 250 mm (1) (2) | Parabolic Plug with Stem Guided ≤ DN50 Shaft Guided > DN50 |
| Severe Service Trim (Option) | From 25 to 250 mm (1) (2) | Low-Noise Trim and Cavitation Control Trim with Top and cage Guided |
| Balance Plug (Option) | From 50 to 250 mm (1) | Parabolic, Low-Noise and Cavitation Control trim with Top Balancing Design |

(1) Special high capacity trim are available on request.

(2) Standard rangeability 50:1. Optional higher rangeabilities can be provided.

(3) Standard rangeability for Microflow trim 30:1.

| Standard EN / DIN | PN10-16 | | | | | DIN PN25-40 | | | | | PN63-100 | | | | |
|-------------------|---------|---|----|----|-----|-------------|---|----|----|-----|----------|---|----|----|-----|
| | B | D | SW | BW | THD | B | D | SW | BW | THD | B | D | SW | BW | THD |
| 15 | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | | | | |
| 125 | | | | | | | | | | | | | | | |
| 150 | | | | | | | | | | | | | | | |
| 200 | | | | | | | | | | | | | | | |

Standard Facing according to EN 1092-1 Form B1 up to PN40 and Form B2 above.

| Standard ASME | Cl. 150 | | | | | Cl. 300 | | | | | Cl. 600 | | | | |
|---------------|---------|-----|----|----|-----|---------|-----|----|----|-----|---------|-----|----|----|-----|
| | RF | RTJ | SW | BW | THD | RF | RTJ | SW | BW | THD | RF | RTJ | SW | BW | THD |
| 1/2" | | | | | | | | | | | | | | | |
| 3/4" | | | | | | | | | | | | | | | |
| 1" | | | | | | | | | | | | | | | |
| 1-1/4" | | | | | | | | | | | | | | | |
| 1-1/2" | | | | | | | | | | | | | | | |
| 2" | | | | | | | | | | | | | | | |
| 2-1/2" | | | | | | | | | | | | | | | |
| 3" | | | | | | | | | | | | | | | |
| 4" | | | | | | | | | | | | | | | |
| 5" | | | | | | | | | | | | | | | |
| 6" | | | | | | | | | | | | | | | |
| 8" | | | | | | | | | | | | | | | |

Standard Facing according to ASME B16.5 Form RF (Ra 125-250 AARH Smooth Finish).

| | |
|--|---------------|
| | Available |
| | Not available |

Materials of Construction

| | | Basic Materials according to ASME | Basic Materials according to DIN | Special Material |
|----------------------|---|--|---|--|
| Valve Body | Ductile Iron | ASTM A395 / EN-GJS-400-18-LT / 0.7043 | EN-GJS-400-18-LT / 0.7043 | High Temp Alloy Steel ASTM A217 WC6 / W-No. 1.7357 |
| | Carbon Steel | ASTM A216 WCB / EN_GP-240-GH / 1.0619 | EN_GP-240-GH / 1.0619 | Low Temp Alloy Steel ASTM A352 LCB / W-No. 1.6220 |
| | Stainless Steel | ASTM A351 CF8M / 1.4408 | G-X -6CrNiMo 18-10 / 1.4408 | - |
| Plug | Stainless Steel | 316L SS / W-No. 1.4404 | X2CrNiMo 17-13-2 / 1.4404 | Special materials available on request |
| | Stainless Steel | 316L SS / W-No. 1.4404 + Partial / Full Stellite 6 Overlaying | X2CrNiMo 17-13-2 / 1.4404 + Partial / Full Alloy 6 Overlaying | Special materials available on request |
| | Stainless Steel | 316L SS / W-No. 1.4404 + PTFE/RPTFE Soft Insert | X2CrNiMo 17-13-2 / 1.4404 + PTFE/RPTFE Soft Insert | Special materials available on request |
| | Stainless Steel | 440C SS / W-No. 1.4125 + temper hardening , 17-4PH SS / W-No. 1.4548 | X105CrMo17 / 1.4125 Hardened, X 5 CrNiCuNb 16-4-4 / 1.4548 | Special materials available on request |
| Balancing Seal Rings | Carbon-Filled PTFE Seal V-Rings | Carbon-Filled PTFE Seal V-Rings | Carbon-Filled PTFE Seal V-Rings | Special materials available on request |
| | Reinforced-Graphite Seal rings for high temperatures | Reinforced-Graphite Seal rings for high temperatures | Reinforced-Graphite Seal rings for high temperatures | Special materials available on request |
| | Spring energized Rings or Steel rings for special application | Spring energized Rings or Steel rings for special application | Spring energized Rings or Steel rings for special application | Special materials available on request |
| Seat | Stainless Steel | 316L SS / W-No. 1.4404 | X2CrNiMo 17-13-2 / 1.4404 | Special materials available on request |
| | Stainless Steel | 316L SS / W-No. 1.4404 + Partial/Full Stellite 6 Overlaying | X2CrNiMo 17-13-2 / 1.4404 | Special materials available on request |
| | Stainless Steel | 440C SS / W-No. 1.4125 + temper hardening, 17-4PH SS / W-No. 1.4548 | X105CrMo17 / 1.4125 Hardened, X 5 CrNiCuNb 16-4-4 / 1.4548 | Special materials available on request |
| Stem | Stainless Steel | 316L SS / W-No. 1.4404 Strain hardened | X2CrNiMo 17-13-2 / 1.4404 Strain hardened | Special materials available on request |
| | Stainless Steel | 316L SS / W-No. 1.4404 + Alloy 6 overlaying | X2CrNiMo 17-13-2 / 1.4404 + Alloy 6 Overlaying | Special materials available on request |
| | Stainless Steel | 440C SS / W-No. 1.4125 Treated, 17-4PH SS / W-No. 1.4548 Treated | X105CrMo17 / 1.4125 Hardened, X 5 CrNiCuNb 16-4-4 / 1.4548 | Special materials available on request |

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| | Basic Materials according to ASME | Basic Materials according to DIN | Special Material |
|---------------|--|----------------------------------|------------------|
| Packing Gland | Chrome plated Brass Special version with 316 SS available | | |
| Bolts | ASTM A193-B7 | 42CrMo4 | W-No. 1.7225 |
| Nuts | ASTM A194-2H | | W-No. 1.1191 |
| Bolts | ASTM A193-B8 | X5CrNi18-09 | W-No. 1.4301 |
| Nuts | ASTM A194-8 | | W-No. 1.4301 |
| Packing | Internal Fix-loaded RPTFE V-rings + Graphite Ring with 316 SS spring. (1) (2) Internal Live-loaded RPTFE V-rings + Graphite Ring with 316 SS spring. (1) (2) “EURO” packing Internal Fix-loaded RPTFE V-rings + Triple Reinforced Graphite Rings with 316 SS spring. (1) (2) “EURO” packing Internal Live-loaded RPTFE V-rings + Triple Reinforced Graphite Rings with 316 SS spring. (1) (2) Internal Live-loaded Triple Reinforced Graphite Rings with 316 SS spring. (2) Special packing set available on request. | | |
| Bonnet Gasket | Laminated Graphite or Virgin PTFE Spyrometallic SS/graphite or Inconel/graphite Special gaskets set on request. | | |

(1) = 15% Glass or 25% Graphite PTFE reinforced rings.

(2) = Low Emission packing are standard.

Metal Bellow seal with backup PTFE or Graphite rings to guarantee zero leakage.

Extra leak-off connection with secondary packing can be provided on request



Materials of Construction

| Multi-Spring Diaphragm Actuator Materials | | | | |
|---|----------------------------------|---|---|--------------------------------------|
| Actuator Housing | Carbon Steel (Standard) | Stainless Steel - rough finish | Stainless Steel - satinated finish | Stainless Steel - polished finish |
| Yoke Type | Cast Iron (Standard) | Low Temperature Carbon Steel | Carbon Steel Pillar Yoke | Stainless Steel Pillar Yoke |
| Diaphragm | Reinforced NBR (Standard) | | Reinforced Silicon or FKM as Special on request | |
| Bolting | Carbon Steel B7/2H (Standard) | Stainless Steel B8/8 | Carbon Steel NACE B7M/2HM | Stainless Steel NACE B8M/8M |
| Exhaust Screw Cap | Synterized Brass (Standard) | | Stainless Steel | |
| Coating | Epoxy powder RAL 1028 (Standard) | Surface preparation with sandblasting and Inorganic zinc primer | | Several Corrosion resistant coatings |

(1) = Special materials available on request

| Multi-Spring Piston Actuator Materials | | | | |
|--|----------------------------------|---|---|--------------------------------------|
| Actuator Housing | Carbon Steel (Standard) | | Stainless Steel - rough finish | |
| Yoke Type | Carbon Steel Pillar Yoke | | Stainless Steel Pillar Yoke | |
| Piston Seal Rings | Reinforced NBR (Standard) | | Energized Fluoro-silicon or FKM as Special on request | |
| Bolting | Carbon Steel B7/2H (Standard) | Stainless Steel B8/8 | Carbon Steel NACE B7M/2HM | Stainless Steel NACE B8M/8M |
| Exhaust Screw Cap | Synterized Brass (Standard) | | Stainless Steel | |
| Coating | Epoxy powder RAL 1028 (Standard) | Surface preparation with sandblasting and Inorganic zinc primer | | Several Corrosion resistant coatings |

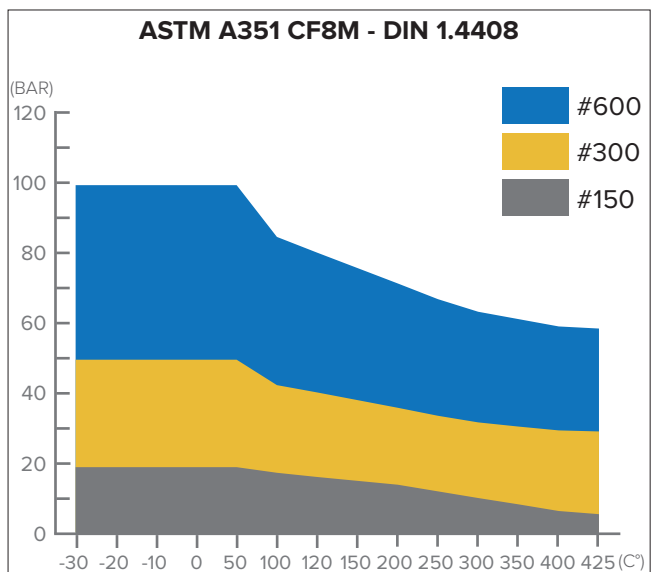
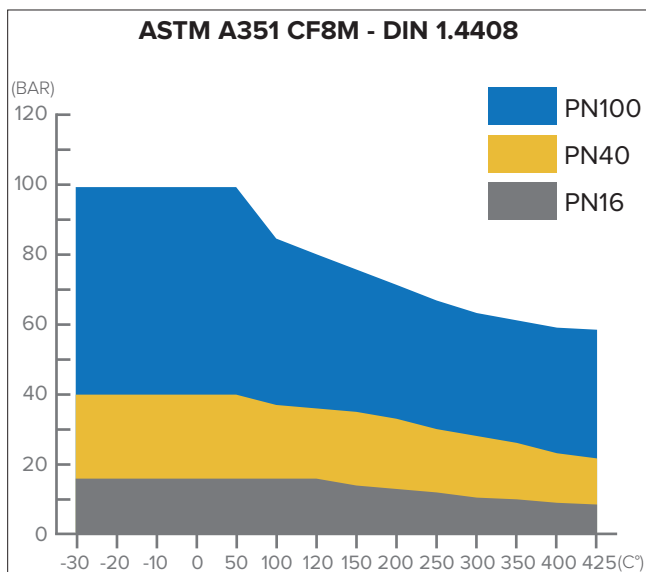
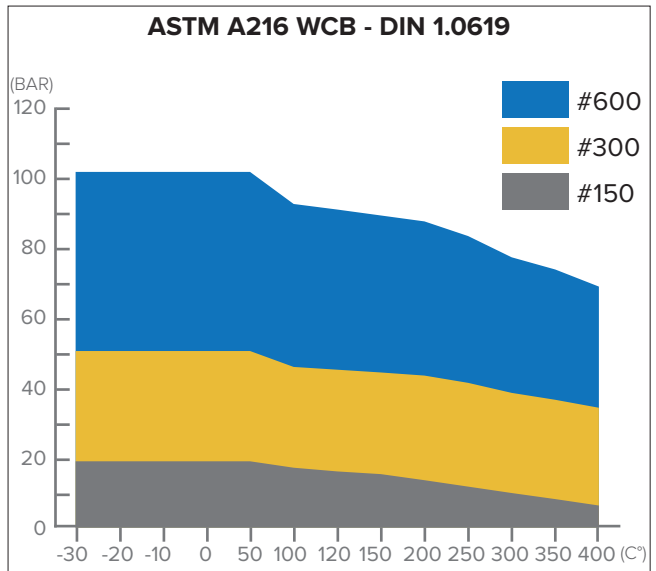
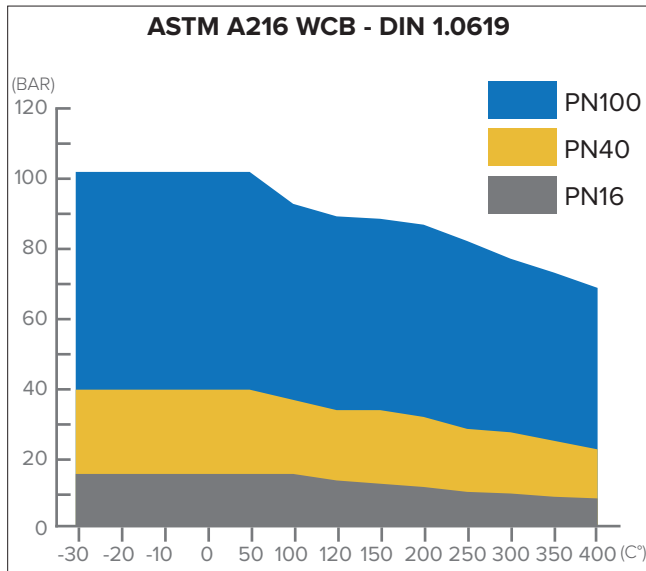
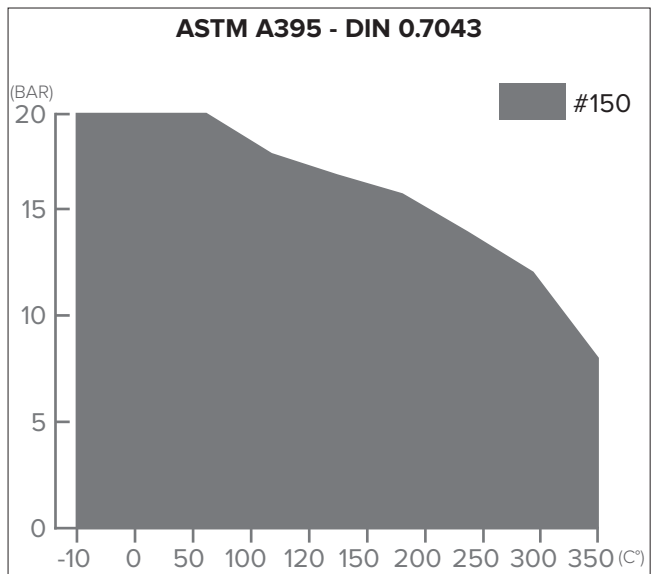
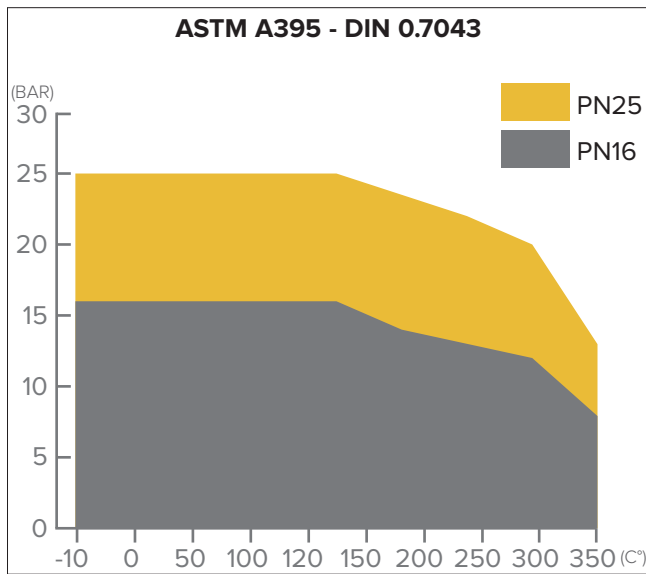


Armstrong® Pressure and Temperature Ratings

| Body & Bonnet Material | Bonnet Style | Packing | Body Gasket | Trim Style | Temperature Unit °C | |
|--|--------------|--------------------------------------|--|-----------------------------------|---------------------|------|
| | | | | | Min | Max |
| DIN 0.7043 ASTM A395 (GJS400-18) Ductile Iron | Standard | RPTFE Graphite | Graphite laminate or PTFE | Soft (All Severe Service Trim) | -10 | 210 |
| | HT Extension | Graphite | Graphite laminated | Metal (All Severe Service Trim) | -10 | 350 |
| | Bellow Seal | RPTFE | Graphite laminate or PTFE | Soft (All Severe Service Trim) | -10 | 210 |
| | | Graphite | Graphite laminated | Metal (All Severe Service Trim) | -10 | 350 |
| DIN 1.0619 ASTM A216 WCB Carbon Steel | Standard | RPTFE Graphite | Graphite laminate or PTFE (Spyrometallic) | Soft (All Severe Service Trim) | -29 | 210 |
| | HT Extension | Graphite | Graphite laminate (Spyrometallic) | Metal (All Severe Service Trim) | -29 | 427 |
| | Bellow Seal | RPTFE | Graphite laminate or PTFE (Spyrometallic) | Soft (All Severe Service Trim) | -29 | 210 |
| | | Graphite | Graphite laminate (Spyrometallic) | Metal (All Severe Service Trim) | -29 | 427 |
| DIN 1.4408 ASTM A351 CF8M Stainless Steel | Standard | RPTFE Graphite | Graphite laminate or PTFE (Spyrometallic) | Soft (All Severe Service Trim) | -60 | 210 |
| | HT Extension | Graphite | Graphite laminate or PTFE (Spyrometallic) | Metal (All Severe Service Trim) | -60 | 600+ |
| | Cryo Design | RPTFE Graphite | Graphite laminate (Spyrometallic) | Metal (All Severe Service Trim) | -196 | 210 |
| | Bellow Seal | RPTFE | Graphite laminate or PTFE (Spyrometallic) | Soft (All Severe Service Trim) | -60 | 210 |
| Graphite | | Graphite laminate (Spyrometallic) | Metal (All Severe Service Trim) | -60 | 600+ | |
| DIN 1.6220 ASTM A352 LCB Low Temp Alloy Steel | Standard | RPTFE Graphite | Graphite laminate or PTFE (Spyrometallic) | Soft (All Severe Service Trim) | -46 | 210 |
| | HT Extension | Graphite | Graphite laminate (Spyrometallic) | Metal (All Severe Service Trim) | -46 | 250 |
| | Bellow Seal | RPTFE | Graphite laminate or PTFE (Spyrometallic) | Soft (All Severe Service Trim) | -46 | 210 |
| | | Graphite | Graphite laminate (Spyrometallic) | Metal (All Severe Service Trim) | -46 | 250 |
| DIN 1.5419 ASTM A217 WC6 High Temp Alloy Steel | Standard | RPTFE Graphite | Graphite laminate or PTFE (Spyrometallic) | Soft (All Severe Service Trim) | -29 | 210 |
| | HT Extension | Graphite | Graphite laminate (Spyrometallic) | Metal (All Severe Service Trim) | -29 | 538+ |
| | Bellow Seal | RPTFE | Graphite laminate or PTFE (Spyrometallic) | Soft (All Severe Service Trim) | -29 | 210 |
| | | Graphite | Graphite laminate (Spyrometallic) | Metal (All Severe Service Trim) | -29 | 538+ |

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Pressure and Temperature Curves



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Armstrong® Flow Coefficient Table

| KV (CV) | Seat Diameter mm (inch) | Stroke mm (inch) | Nominal Diameter | | | | | | | | | | | |
|-------------------------|-------------------------------|------------------------|------------------|------------|----------|--------------|--------------|----------|--------------|----------|-----------|-----------|-----------|-----------|
| | | | 15 1/2" | 20 3/4" | 25 1" | 32 1.1/4" | 40 1.1/2" | 50 2" | 65 2.1/2" | 80 3" | 100 4" | 125 5" | 150 6" | 200 8" |
| ≤ 0.05 (≤ 0.059) (1) | 3 (1/8) | 16 (5/8) | | | | | | | | | | | | |
| 0.13 (0.15) | 6 (1/4) | 16 (5/8) | | | | | | | | | | | | |
| 0.26 (0.3) | 6 (1/4) | 16 (5/8) | | | | | | | | | | | | |
| 0.43 (0.5) | 6 (1/4) | 16 (5/8) | | | | | | | | | | | | |
| 0.65 (0.75) | 6 (1/4) | 16 (5/8) | | | | | | | | | | | | |
| 0.9 (1.0) | 6 (1/4) | 16 (5/8) | | | | | | | | | | | | |
| 1.1 (1.3) | 9 (1/3) | 16 (5/8) | | | | | | | | | | | | |
| 1.3 (1.5) | 10 (2/5) | 16 (5/8) | | | | | | | | | | | | |
| 1.7 (2.0) | 12 (1/2) | 16 (5/8) | | | | | | | | | | | | |
| 2.0 (2.3) | 12 (1/2) | 16 (5/8) | | | | | | | | | | | | |
| 2.6 (3.0) | 12 (1/2) | 16 (5/8) | | | | | | | | | | | | |
| 4.20 (5.0) | 15 (3/5) | 16 (5/8) | | | | | | | | | | | | |
| 5.9 (6.9) | 19 (3/4) | 16 (5/8) | | | | | | | | | | | | |
| 10.5 (12.1) | 25 (1.0) | 16 (5/8) | | | | | | | | | | | | |
| 17 (19.8) | 32 (1.1/4) | 19 (3/4) | | | | | | | | | | | | |
| 28 (33) | 40 (1.1/2) | 19 (3/4) | | | | | | | | | | | | |
| 44 (51) | 50 (2.0) | 19 (3/4) | | | | | | | | | | | | |
| 68 (80) | 64 (2.1/2) | 25 (1.0) | | | | | | | | | | | | |
| 99 (116) | 76 (3.0) | 28 (1.0) | | | | | | | | | | | | |
| 151 (176) | 100 (4.0) | 28 (1.1/9) | | | | | | | | | | | | |
| 253 (294) | 126 (5.0) | 45 (1.7/9) | | | | | | | | | | | | |
| 347 (405) | 151 (6.0) | 50 (2.0) | | | | | | | | | | | | |
| 610 (712) | 201 (8.0) | 50 (2.0) | | | | | | | | | | | | |

Available
 Standard

| |
|---|
| KV = flowrate in m ³ /h with 1 bar of differential Pressure |
| CV = flowrate in USGPM with 1 psi of differential Pressure |

Options:

- Special High Flow Coefficient available on request.
- Partial Hard Facing available starting from Seat Diameter 10mm and higher.
- Full Hard Facing through Overlaying or Treatments available for all Port Size.
- Special Soft Seating for Port Size < 10mm available on request.
- Special microflow CV trim are available on request.

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Pneumatic Actuators Specifications



| Actuator type | Ambient Temperature Limits with Standard Materials | Ambient Temperature Limits with Special Materials | Rating | Maximum Allowable Stem Thrust (1) | | | |
|---------------|--|---|--------|-----------------------------------|--------------------------|--------------------------|--------------------------|
| | | | | Stem size 12 mm | Stem size 16 mm | Stem size 20 mm | Stem size 24 mm |
| S.200 | -20°C to +70°C | -40°C to +70°C or -20°C to +100°C | PN6 | 10.8 KN (Max port 32mm) | 18.4 KN (Max port 32mm) | | |
| S.275 | -20°C to +70°C | -50°C to +70°C or -20°C to +120°C | PN6 | 10.8 KN (Max port 50mm) | 18.4 KN (Max port 50mm) | 31.2 KN (Max port 50mm) | |
| S.335 | -20°C to +70°C | -50°C to +70°C or -20°C to +120°C | PN6 | 10.8 KN (Max port 80mm) | 18.4 KN (Max port 100mm) | 31.2 KN (Max port 100mm) | 44.8 KN (Max port 100mm) |
| S.430 | -20°C to +70°C | -50°C to +70°C or -20°C to +120°C | PN6 | 10.8 KN (Max port 80mm) | 18.4 KN (Max port 100mm) | 31.2 KN (Max port 100mm) | 44.8 KN (Max port 100mm) |
| S.430s | -20°C to +70°C | -50°C to +70°C or -20°C to +120°C | PN6 | | 18.4 KN (Max port 200mm) | 31.2 KN (Max port 200mm) | 44.8 KN (Max port 200mm) |
| S.500 | -20°C to +70°C | -50°C to +70°C or -20°C to +120°C | PN6 | | 18.4 KN (Max port 200mm) | 31.2 KN (Max port 300mm) | 44.8 KN (Max port 300mm) |
| P.250 | -30°C to +80°C | -50°C to +80°C or -30°C to +150°C | PN16 | | | 31.2 KN (Max port 300mm) | 44.8 KN (Max port 300mm) |
| P.390 | -30°C to +80°C | -50°C to +80°C or -30°C to +150°C | PN16 | | | 31.2 KN (Max port 300mm) | 44.8 KN (Max port 300mm) |

(1) = Data calculated with standard construction and 316L SS Stem material.

Special Materials will be considered where the application requires.

Notes:

Minimum air supply pressure necessary depends on spring range case by case.

Delta2 suggests to consider minimum 0.2 Bar of over-pressure as safety factor to ensure the full stroke of the valve.

Top mounted handwheel and fixed or adjustable stroke limit stop devices are available for all actuators sizes as an optional extra.

Heavy duty side handwheel available on request.



Pneumatic Actuators Maximum Shutoff Pressure Table

Pressure Drop Table According to ANSI FCI 70.2 Class IV
Flow to Open - Metal to Metal - Air to Open - Unbalanced Trim

| Type | Eff. Area cm ² (in ²) | Spring Range Barg (PSIG) | Valve Nominal Size | | | | | | | | | | | | | |
|--------|---|-----------------------------|--------------------|-----|-----|----|----|----|----|----|-----|-----|-----|-----|--|--|
| | | | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | | |
| S.200 | 130 (20) | 0.2 - 1.0 (3 - 15) | 12 | 10 | 9 | 3 | | | | | | | | | | |
| | | 0.4 - 2.0 (6 - 30) | 24 | 20 | 16 | 4 | | | | | | | | | | |
| S.275 | 300 (47) | 0.2 - 1.0 (3 - 15) | 28 | 25 | 16 | 8 | 6 | 4 | | | | | | | | |
| | | 0.4 - 2.0 (6 - 30) | 52 | 47 | 25 | 16 | 12 | 6 | | | | | | | | |
| S.335 | 470 (73) | 0.2 - 1.0 (3 - 15) | 58 | 58 | 49 | 19 | 16 | 10 | 4 | 3 | 1 | | | | | |
| | | 0.4 - 2.0 (6 - 30) | 101 | 101 | 82 | 38 | 26 | 18 | 6 | 4 | 2 | | | | | |
| S.430 | 740 (115) | 0.2 - 1.0 (3 - 15) | 91 | 89 | 57 | 48 | 37 | 26 | 8 | 5 | 4 | 1 | | | | |
| | | 0.4 - 2.0 (6 - 30) | 101 | 101 | 101 | 63 | 48 | 37 | 15 | 9 | 6 | 2 | | | | |
| S.430s | 740 (115) | 0.4 - 1.4 (6 - 20) | | | | | | 52 | 13 | 8 | 4 | 2 | | | | |
| | | 0.8 - 2.0 (12 - 30) | | | | | | 68 | 21 | 14 | 10 | 5 | 3 | 1 | | |
| S.500 | 740 (115) | 0.4 - 1.4 (6 - 20) | | | | | | | 26 | 12 | 9 | 5 | 2 | 1 | | |
| | | 0.8 - 2.0 (12 - 30) | | | | | | | 36 | 21 | 18 | 11 | 5 | 3 | | |

Pressure Drop Table According to ANSI FCI 70.2 Class IV
Flow to Open - Metal to Metal - Air to Close - Unbalanced Trim

| Type | Eff. Area cm ² (in ²) | Air Supplied Pressure Barg | Valve Nominal Size | | | | | | | | | | | | | |
|--------|---|-------------------------------|--------------------|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|--|
| | | | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | | |
| S.200 | 130 (20) | 3 | 101 | 95 | 60 | 37 | 23 | 15 | | | | | | | | |
| | | 3.5 | 101 | 101 | 75 | 45 | 28 | 18 | | | | | | | | |
| S.275 | 300 (47) | 3 | | 101 | 101 | 85 | 55 | 35 | 20 | 13 | | | | | | |
| | | 3.5 | | 101 | 101 | 101 | 68 | 43 | 26 | 17 | | | | | | |
| S.335 | 470 (75) | 3 | | | 101 | 101 | 86 | 55 | 32 | 21 | 13 | | | | | |
| | | 3.5 | | | 101 | 101 | 101 | 69 | 41 | 27 | 17 | | | | | |
| S.430 | 740 (115) | 3 | | | | 101 | 101 | 89 | 53 | 35 | 22 | 14 | 9 | 5.5 | | |
| | | 3.5 | | | | 101 | 101 | 101 | 66 | 43 | 28 | 17 | 12 | 7 | | |
| S.430s | 740 (115) | 3 | | | | 101 | 101 | 101 | 66 | 43 | 28 | 17 | 12 | 7 | | |
| | | 3.5 | | | | 101 | 101 | 101 | 101 | 66 | 35 | 22 | 14 | 9 | | |
| S.500 | 740 (115) | 3 | | | | | 101 | 101 | 65 | 43 | 27 | 17 | 12 | 6.5 | | |
| | | 3.5 | | | | | | 101 | 101 | 81 | 53 | 34 | 22 | 15 | 8.5 | |

Notes:

Values indicated in the above tables are calculated and tested with valve standard construction.

Pressure drop shall be always verified with Armstrong Delta 2.

Maximum shutoff pressure indicated is limited to 101 barg to cover PN100/600 at full rating.

Designs, materials, weights and performance ratings are approximate and subject to change without notice.
Visit armstronginternational.com for up-to-date information.

Pneumatic Actuators

Maximum Shutoff Pressure Table



Pressure Drop Table According to ANSI FCI 70.2 Class VI
Flow to Open - Soft Seat- Air to Open - Unbalanced Trim

| Type | Eff. Area cm ² (in ²) | Spring Range Barg (PSIG) | Valve Nominal Size | | | | | | | | | | | | | |
|--------|---|-----------------------------|--------------------|-----|-----|----|----|----|----|----|-----|-----|-----|-----|--|--|
| | | | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | | |
| S.200 | 130 (20) | 0.2 - 1.0 (3 - 15) | 12 | 10 | 9 | 3 | | | | | | | | | | |
| | | 0.4 - 2.0 (6 - 30) | 24 | 20 | 16 | 4 | | | | | | | | | | |
| S.275 | 300 (47) | 0.2 - 1.0 (3 - 15) | 28 | 25 | 16 | 8 | 6 | 4 | | | | | | | | |
| | | 0.4 - 2.0 (6 - 30) | 52 | 47 | 25 | 16 | 12 | 6 | | | | | | | | |
| S.355 | 470 (73) | 0.2 - 1.0 (3 - 15) | 58 | 58 | 49 | 19 | 16 | 10 | 4 | 3 | 1 | | | | | |
| | | 0.4 - 2.0 (6 - 30) | 101 | 101 | 82 | 38 | 26 | 18 | 6 | 4 | 2 | | | | | |
| S.430 | 740 (115) | 0.2 - 1.0 (3 - 15) | 91 | 89 | 57 | 48 | 37 | 26 | 8 | 5 | 4 | 1 | | | | |
| | | 0.4 - 2.0 (6 - 30) | 101 | 101 | 101 | 63 | 48 | 37 | 15 | 9 | 6 | 2 | | | | |
| S.430s | 740 (115) | 0.4 - 1.4 (6 - 20) | | | | | | 52 | 13 | 8 | 4 | 2 | | | | |
| | | 0.8 - 2.0 (12 - 30) | | | | | | 68 | 21 | 14 | 10 | 5 | 3 | 1 | | |
| S.500 | 740 (115) | 0.4 - 1.4 (6 - 20) | | | | | | | 26 | 12 | 9 | 5 | 2 | 1 | | |
| | | 0.8 - 2.0 (12 - 30) | | | | | | | 36 | 21 | 18 | 11 | 5 | 3 | | |

Pressure Drop Table According to ANSI FCI 70.2 Class VI
Flow to Open - Soft Seat- Air to Close - Unbalanced Trim

| Type | Eff. Area cm ² (in ²) | Air Supplied Pressure Barg | Valve Nominal Size | | | | | | | | | | | | | |
|--------|---|-------------------------------|--------------------|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|--|--|
| | | | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | | |
| S.200 | 130 (20) | 3 | 101 | 95 | 60 | 37 | 23 | 15 | | | | | | | | |
| | | 3.5 | 101 | 101 | 75 | 45 | 28 | 18 | | | | | | | | |
| S.275 | 300 (47) | 3 | | 101 | 101 | 85 | 55 | 35 | 20 | 13 | | | | | | |
| | | 3.5 | | 101 | 101 | 101 | 68 | 43 | 26 | 17 | | | | | | |
| S.355 | 470 (73) | 3 | | | 101 | 101 | 86 | 55 | 32 | 21 | 13 | | | | | |
| | | 3.5 | | | 101 | 101 | 101 | 69 | 1 | 27 | 17 | | | | | |
| S.430 | 740 (115) | 3 | | | | 101 | 101 | 89 | 53 | 35 | 22 | 14 | 9 | 5.5 | | |
| | | 3.5 | | | | 101 | 101 | 101 | 66 | 43 | 28 | 17 | 12 | 7 | | |
| S.430s | 740 (115) | 3 | | | | 101 | 101 | 101 | 66 | 43 | 28 | 17 | 12 | 7 | | |
| | | 3.5 | | | | 101 | 101 | 101 | 101 | 66 | 35 | 22 | 14 | 9 | | |
| S.500 | 740 (115) | 3 | | | | | 101 | 101 | 65 | 43 | 27 | 17 | 12 | 6.5 | | |
| | | 3.5 | | | | | 101 | 101 | 81 | 53 | 34 | 22 | 15 | 8.5 | | |

Notes:

Values indicated in the above tables are calculated and tested with valve standard construction.

Pressure Drop shall be always verified with Armstrong Delta 2.

Maximum shutoff pressure indicated is limited to 101 Barg to cover PN100/600# at full rating.

Designs, materials, weights and performance ratings are approximate and subject to change without notice.
 Visit armstronginternational.com for up-to-date information.



Electrical Actuators Maximum Shutoff Pressure Table

Pressure Drop Table According to ANSI FCI 70.2 Class IV
Flow to Open - Metal to Metal - Fall in Position - Unbalanced Trim

| Type | Action | Thrust kN | Data Sheet | Valve Nominal Size | | | | | | | | | | | |
|--------|----------------|--------------|---------------|--------------------|----|----|----|----|----|-----|------|-----|------|-----|-----|
| | | | | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
| AVM234 | On/Off Control | 2.5 | 51.377 | 40 | 40 | 35 | 24 | 15 | 10 | 6 | 3.5 | 2.4 | 1.5 | 1.1 | 0.5 |
| AVF234 | On/Off Control | 2.0 | 51.378 | 40 | 40 | 30 | 18 | 12 | 8 | 4.5 | 3.2 | 1.8 | 1.1 | | |
| ST0PA | Control | 1.0 | STR0PA | 40 | 26 | 16 | 10 | 6 | 4 | 2.3 | 1.5 | 1 | | | |
| ST01PA | Control | 5.0 | STR01PA | 40 | 40 | 40 | 40 | 30 | 20 | 12 | 8 | 5 | 3 | 2.2 | 1.6 |
| ST1PA | Control | 7.5 | STR1PA | 40 | 40 | 40 | 40 | 40 | 29 | 18 | 12 | 7.3 | 4.5 | 3 | 2.3 |
| ST2PA | Control | 17.0 | STR2PA | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 26.5 | 17 | 10.5 | 7.3 | 5.3 |
| STMINI | On/Off | 1.0 | ST MINI | 40 | 26 | 16 | 10 | 6 | 4 | 2.3 | 1.5 | 1 | | | |
| ST01 | On/Off | 5.0 | ST.01 | 40 | 40 | 40 | 40 | 30 | 20 | 12 | 8 | 5 | 3 | 2.2 | 1.6 |
| ST1 | On/Off | 7.5 | ST1 | 40 | 40 | 40 | 40 | 40 | 29 | 18 | 12 | 7.3 | 4.5 | 3 | 2.3 |
| ST2 | On/Off | 17.0 | ST2 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 26.5 | 17 | 10.5 | 7.3 | 5.3 |

Pressure Drop Table According to ANSI FCI 70.2 Class VI
Flow to Open - Soft Seat - Fall in Position - Unbalanced Trim

| Type | Action | Thrust kN | Data Sheet | Valve Nominal Size | | | | | | | | | | | |
|--------|----------------|--------------|---------------|--------------------|----|----|----|----|----|-----|------|-----|------|-----|-----|
| | | | | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
| AVM234 | On/Off Control | 2.5 | 51.377 | 40 | 40 | 35 | 24 | 15 | 10 | 6 | 3.5 | 2.4 | 1.5 | 1.1 | 0.5 |
| AVF234 | On/Off Control | 2.0 | 51.378 | 40 | 40 | 30 | 18 | 12 | 8 | 4.5 | 3.2 | 1.8 | 1.1 | | |
| ST0PA | Control | 1.0 | STR0PA | 40 | 26 | 16 | 10 | 6 | 4 | 2.3 | 1.5 | 1 | | | |
| ST01PA | Control | 5.0 | STR01PA | 40 | 40 | 40 | 40 | 30 | 20 | 12 | 8 | 5 | 3 | 2.2 | 1.6 |
| ST1PA | Control | 7.5 | STR1PA | 40 | 40 | 40 | 40 | 40 | 29 | 18 | 12 | 7.3 | 4.5 | 3 | 2.3 |
| ST2PA | Control | 17.0 | STR2PA | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 26.5 | 17 | 10.5 | 7.3 | 5.3 |
| STMINI | On/Off | 1.0 | ST MINI | 40 | 26 | 16 | 10 | 6 | 4 | 2.3 | 1.5 | 1 | | | |
| ST01 | On/Off | 5.0 | ST.01 | 40 | 40 | 40 | 40 | 30 | 20 | 12 | 8 | 5 | 3 | 2.2 | 1.6 |
| ST1 | On/Off | 7.5 | ST1 | 40 | 40 | 40 | 40 | 40 | 29 | 18 | 12 | 7.3 | 4.5 | 3 | 2.3 |
| ST2 | On/Off | 17.0 | ST2 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 26.5 | 17 | 10.5 | 7.3 | 5.3 |

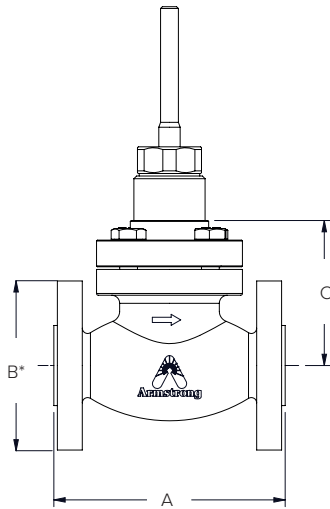
Designs, materials, weights and performance ratings are approximate and subject to change without notice.
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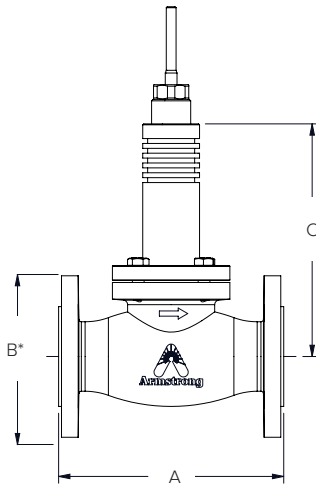
Notes

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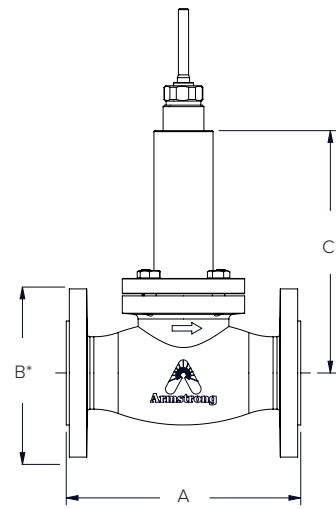
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Standard Bonnet



High Temperature Bonnet



Bellow Seal - Cryogenic - LeakOff** Bonnet**

| Valve DN (inch) | A = Face to Face length (mm) According to EN 558-1 / DIN 3202 | | C = Bonnet height (mm) | | | |
|--------------------|--|---------------|------------------------|-------------------------------|-----------------------|-----------------------|
| | PN16 PN25 PN40 | PN63 PN100 | Standard Bonnet | High Temperature Bonnet | Bellow Seal Bonnet | Cryo Design Bonnet |
| | | | Up to PN100 | Up to PN100 | Up to PN100 | Up to PN100 |
| 15 (1/2") | 130 | 210 | 80 | 165 | 225 | 580 |
| 20 (3/4") | 150 | 230 | 80 | 165 | 225 | 580 |
| 25 (1") | 160 | 230 | 85 | 155 | 220 | 585 |
| 32 (1-1/4") | 180 | 260 | 85 | 160 | 225 | 590 |
| 40 (1-1/2") | 200 | 260 | 105 | 180 | 235 | 605 |
| 50 (2") | 230 | 300 | 110 | 185 | 240 | 610 |
| 65 (2-1/2") | 290 | 340 | 160 | 240 | 260 | 660 |
| 80 (3") | 310 | 380 | 170 | 250 | 270 | 670 |
| 100 (4") | 350 | 430 | 185 | 275 | 285 | 690 |
| 125 (5") | 400 | 500 | 230 | 335 | 415 | 730 |
| 150 (6") | 480 | 550 | 250 | 370 | 450 | 750 |
| 200 (8") | 600 | 650 | 280 | 410 | 490 | 780 |

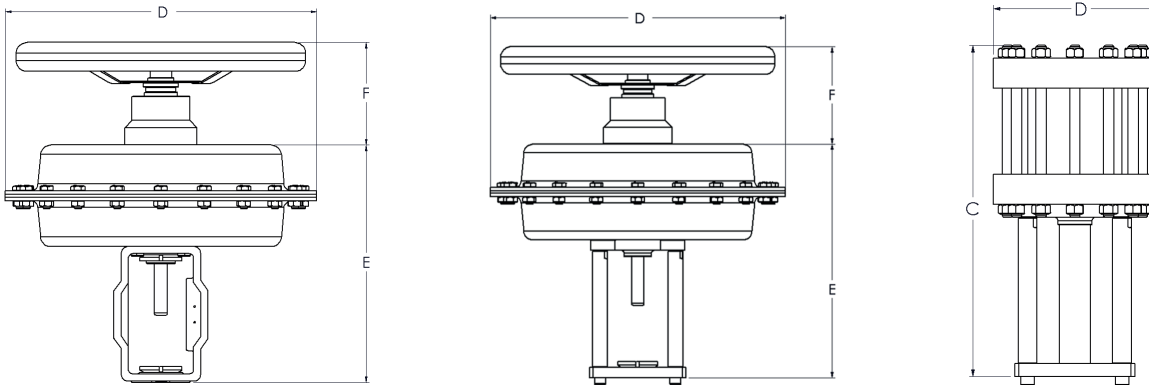
| Valve DN (inch) | A = Face to Face length (mm) According to ANSI/ISA 75.08.01 | | | | C = Bonnet height (mm) | | | | | | | | | |
|--------------------|--|-------|---------------------------|-------|------------------------|-------|----------------------|-------|-----------------------|-------|-----------------------|-------|--------------------|-------|
| | PN20 (Cl. 125 and 150) | | PN50 (Cl. 250 and 300) | | Standard Bonnet | | High Temp. Bonnet | | Bellow Seal Bonnet | | Cryo Design Bonnet | | Leak Off Bonnet | |
| | mm | inch. | mm | inch. | mm | inch. | mm | inch. | mm | inch. | mm | inch. | mm | inch. |
| 15 (1/2") | 184 | 7.25 | 190 | 7.50 | 80 | 3.15 | 165 | 6.49 | 225 | 8.86 | 580 | 22.83 | 305 | 12.00 |
| 20 (3/4") | 184 | 7.25 | 194 | 7.62 | 80 | 3.15 | 165 | 6.49 | 225 | 8.86 | 580 | 22.83 | 305 | 12.00 |
| 25 (1") | 184 | 7.25 | 197 | 7.75 | 85 | 3.35 | 155 | 6.10 | 220 | 8.66 | 585 | 23.03 | 300 | 11.81 |
| 40 (1-1/2") | 222 | 8.75 | 235 | 9.25 | 105 | 4.13 | 180 | 7.08 | 235 | 9.25 | 605 | 23.82 | 320 | 15.60 |
| 50 (2") | 254 | 10.00 | 267 | 10.50 | 110 | 4.33 | 185 | 7.28 | 240 | 9.45 | 610 | 24.01 | 325 | 12.79 |
| 65 (2-1/2") | 276 | 10.88 | 292 | 11.50 | 160 | 6.30 | 240 | 9.45 | 260 | 10.24 | 660 | 25.98 | 360 | 14.17 |
| 80 (3") | 298 | 11.75 | 318 | 12.50 | 170 | 6.69 | 250 | 9.84 | 270 | 10.63 | 670 | 26.38 | 370 | 14.56 |
| 100 (4") | 352 | 13.88 | 368 | 14.50 | 185 | 7.28 | 275 | 10.83 | 285 | 11.22 | 690 | 27.16 | 385 | 15.16 |
| 150 (6") | 451 | 17.75 | 473 | 18.62 | 250 | 9.84 | 370 | 14.56 | 450 | 17.72 | 750 | 29.53 | 570 | 22.44 |
| 200 (8") | 543 | 21.38 | 568 | 22.38 | 280 | 11.02 | 410 | 16.14 | 490 | 19.29 | 780 | 30.71 | 610 | 24.00 |

* Dimensions B according to DIN EN1092-1 and ASME B16.5 (see page "Valve Connections" on page 6)

** For Cryogenic Bonnet, designed according to BS 6364 and Special Leak Off Bonnet, designed for toxic and lethal service, height could not be modified according to specific process requirement (Consult Armstrong Delta 2)

Designs, materials, weights and performance ratings are approximate and subject to change without notice.
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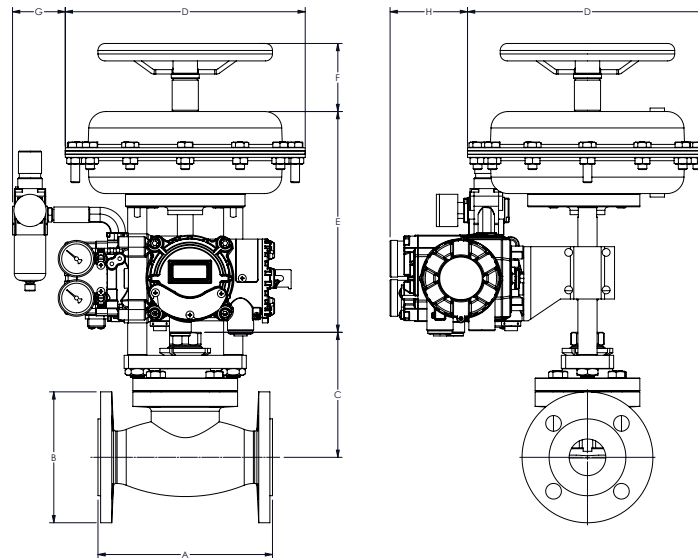
Pneumatic Actuators Dimensions



Diaphragm Actuator Cast Yoke

Diaphragm Actuator Pillar Yoke

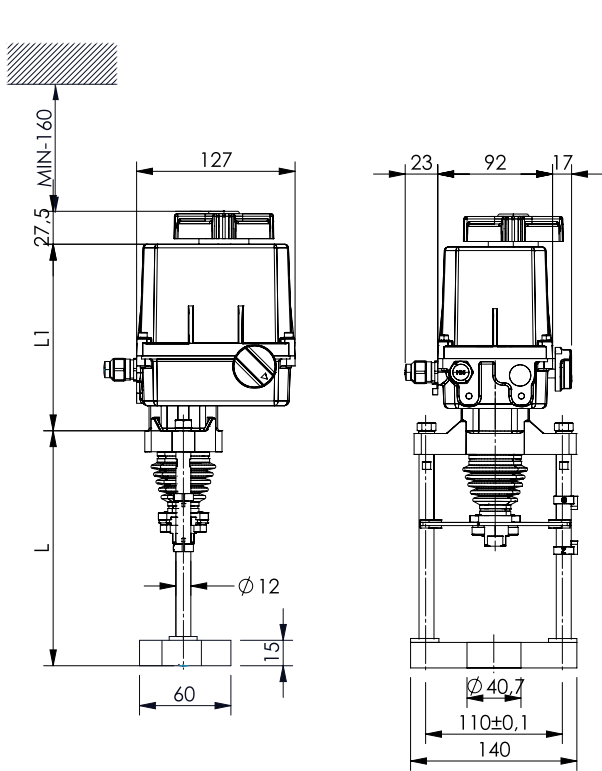
Piston Actuator Pillar Yoke



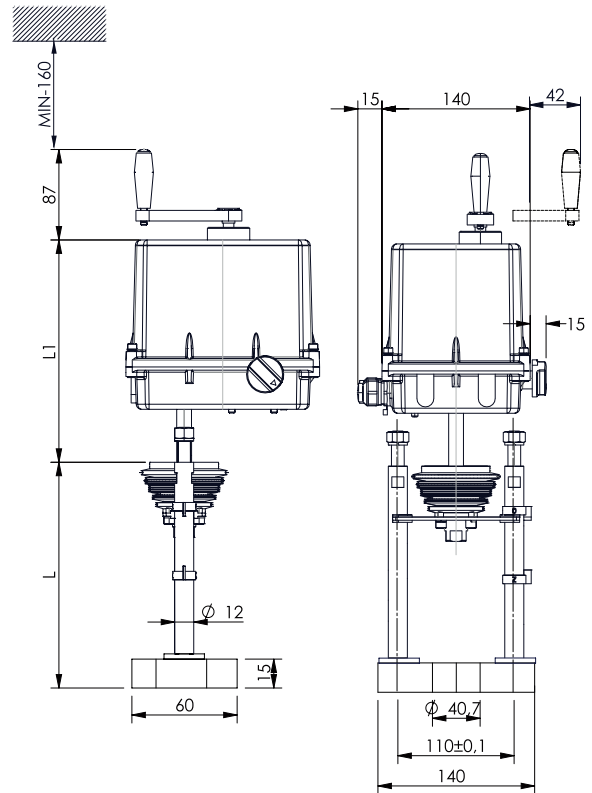
| Actuator Type | D = Actuator Diameter (mm) | E = Actuator Height (standard) | | F = Top Handwheel | | G Filter Regulator (mm) | H Linear Positioner (mm) |
|---------------|----------------------------|--------------------------------|------------------|------------------------------------|-----------------------------------|-------------------------|--------------------------|
| | | Cast Yoke (mm) | Pillar Yoke (mm) | Maximum Height Reverse Action (mm) | Maximum Height Direct Action (mm) | | |
| S.200 | 205 | 235 | 285 | 120 | 150 | 80 | 75 |
| S.275 | 280 | 265 | 315 | 120 | 150 | 80 | 75 |
| S.335 | 340 | 275 | 325 | 150 | 180 | 80 | 75 |
| S.430 | 435 | 355 | 405 | 150 | 180 | 80 | 75 |
| S.430s | 435 | 380 | 465 | 200 | 240 | 80 | 75 |
| S.500 | 510 | 390 | 430 | 200 | 240 | 80 | 75 |
| P.250 | 310 | - | 557 | 300 | 350 | 80 | 75 |
| P.390 | 450 | - | 557 | 300 | 350 | 80 | 75 |

The table above represent the overall dimensions of the valve including the most common accessories (G and H measurements are purely indicative and may change based on the specific models of accessories required).

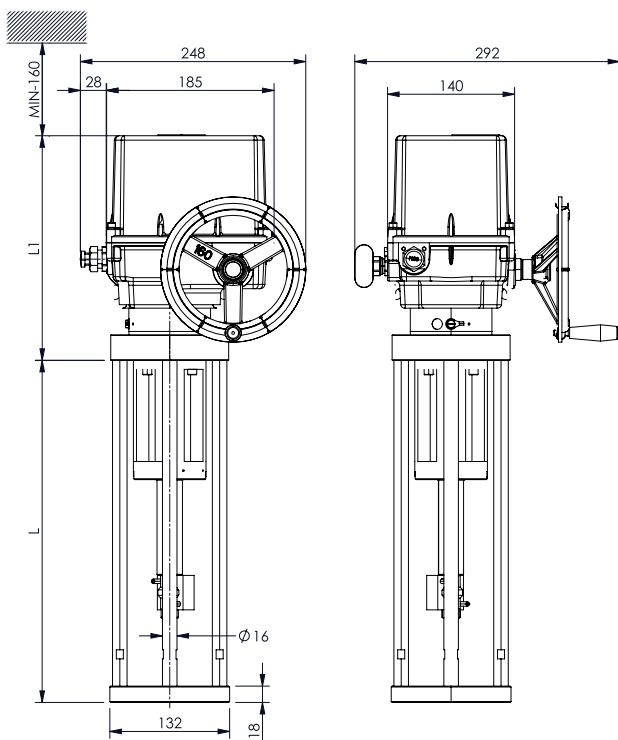
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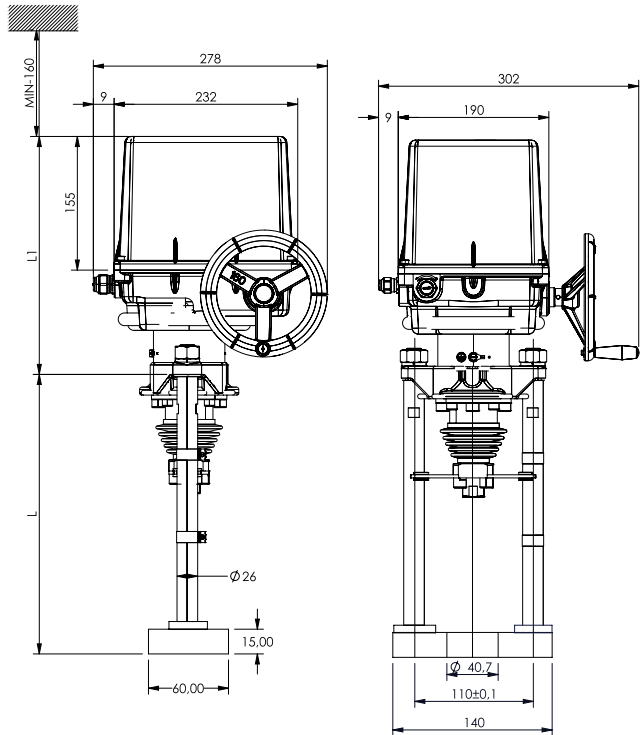
STROPA



STRO1PA / ST01



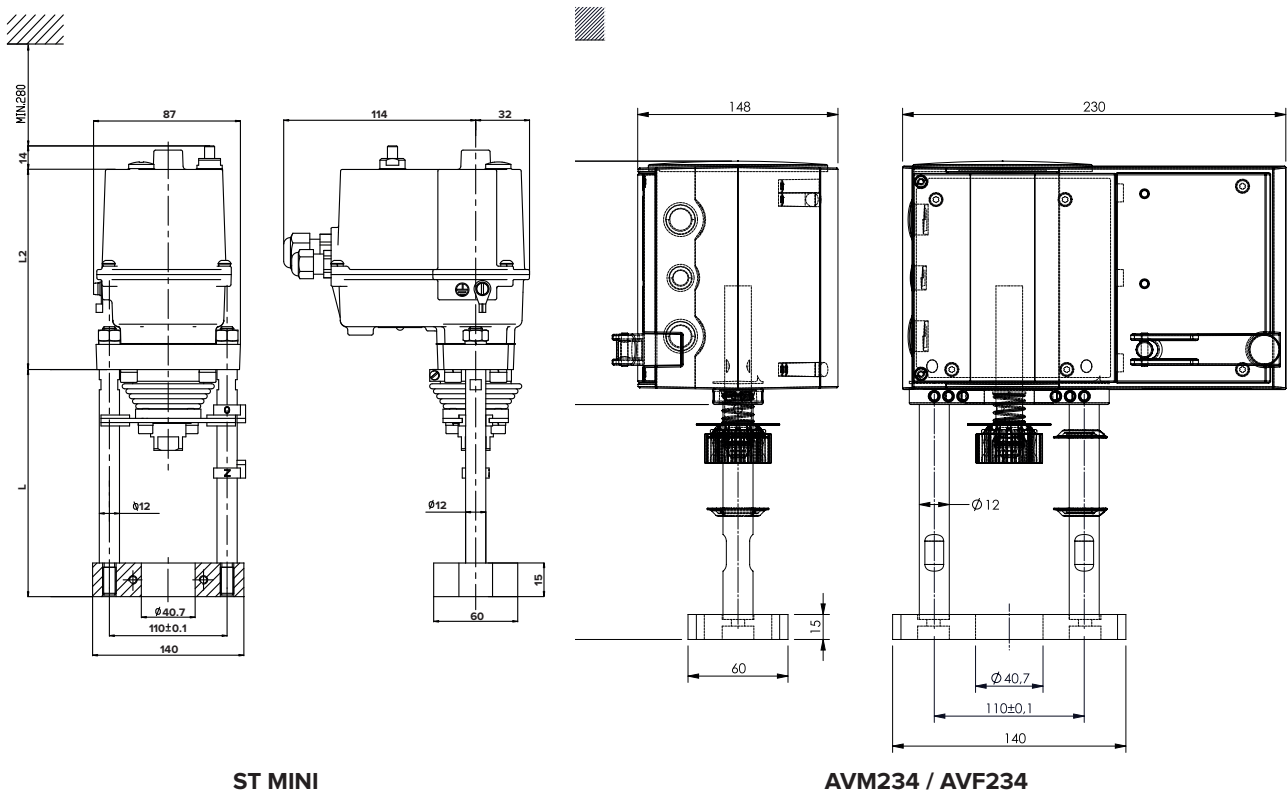
STR1PA / ST1



STR2A / ST2

Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit armstronginternational.com for up-to-date information.

Electrical Actuators Dimensions



ST MINI

AVM234 / AVF234

| Model | mm | Valve Nominal Size | | | | | | | | | | | |
|------------------|------|--------------------|----|----|----|----|----|-----|----|-----|-----|-----|-----|
| | | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
| AVM234 AVF234 | L/L1 | 142 | | | | | | | | | | | |
| | | 148 | | | | | | | | | | | |
| STMini | L/L1 | 210 | | | | | | | | | | | |
| | | 119 | | | | | | | | | | | |
| STR OPA | L L | 210 | | | | | | 245 | | | | | |
| | | 165 | | | | | | 165 | | | | | |
| STR 01PA ST01 | L L | 210 | | | | | | 245 | | | | | |
| | | 210 | | | | | | 210 | | | | | |
| STR 1PA ST1 | L L | 210 | | | | | | 245 | | | | | |
| | | 248 | | | | | | 248 | | | | | |
| STR 2PA ST2 | L L | 210 | | | | | | 245 | | | | | |
| | | 302 | | | | | | 302 | | | | | |

Notes:

The table above represent the overall dimensions of the valve using standard Electrical Actuators, measurements are purely indicative and may change base on the specific models or accessory required.

Model Number

FLY 15 1 CS ST EU P 275A NO PTFE PPB EQ

| Connection Size | |
|-----------------|-----|
| in | mm |
| 1/2 | 15 |
| 3/4 | 20 |
| 1 | 25 |
| 1-1/4 | 32 |
| 1-1/2 | 40 |
| 2 | 50 |
| 2-1/2 | 65 |
| 3 | 80 |
| 4 | 100 |

| Connection Type | |
|-----------------|----|
| EN 1092.1 PN16 | 1 |
| EN 1092.1 PN25 | 2 |
| EN 1092.1 PN40 | 3 |
| EN 1092.1 PN63 | 4 |
| EN 1092.1 PN100 | 5 |
| ASME B16.5 #150 | 6 |
| ASME B16.5 #300 | 7 |
| ASME B16.5 #600 | 8 |
| EN 10226 BSPT | 9 |
| ASME NPT | 10 |
| SW ASME B16.11 | 11 |
| BW ASME B16.25 | 12 |

| Valve Material | |
|----------------|----|
| ASTM A395 | CI |
| ASTM A216 | CS |
| ASTM A351 | SS |

| Bonnet Style | |
|------------------|----|
| STANDARD | ST |
| BELLOW | BE |
| HIGH TEMPERATURE | HT |
| CRYOGENIC DESIGN | SR |

| Packing | |
|-------------------------|----|
| STANDARD | ST |
| EURO (up to 250 °C) | EU |
| GRAPHITE (up to 600 °C) | GR |
| RPTFE (Dangerous Liq.) | RP |

| Actuator Type | |
|---------------|---|
| ELECTRICAL | E |
| PNEUMATIC | P |

| Pneumatic Type | |
|----------------|-------|
| 200A | 430A |
| 200B | 430B |
| 275A | 430sA |
| 275B | 430sB |
| 335A | 500A |
| 335B | 500B |
| NO | |

| Electric Type | |
|---------------|-------|
| AVM | STRO |
| AVF | STR01 |
| STM | STR1 |
| ST01 | STR2 |
| ST1 | NO |
| ST2 | |

| Plug Material | |
|---------------|----------|
| PTFE | (CL. VI) |
| PEEK | (CL. VI) |
| MET | (CL. IV) |

| Trim Type | |
|----------------------------|-----|
| PARABOLIC UNBALANCED | PU |
| PARABOLIC PRESSURE BALANCE | PPB |

| Trim Characteristic | |
|---------------------|-----|
| EQUAL PERCENTAGE | EQ |
| LINEAR | LIN |

Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit armstronginternational.com for up-to-date information.



Notes

A series of horizontal dotted lines providing space for handwritten notes.

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