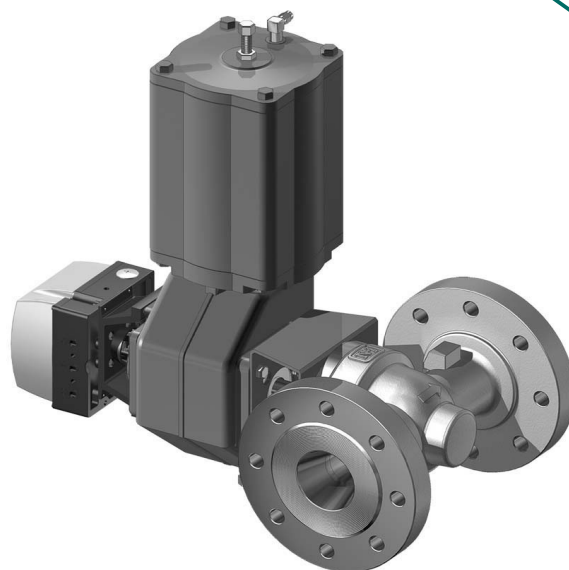


NELES TOP ENTRY, ROTARY CONTROL VALVE, SERIES Top 5

Neles series Top 5 is a heavy-duty rotary control valve designed for demanding applications such as crude oil, hot residual oil, LPG and other hydrocarbon, gases (natural gas, ethylene, synthesis gas), and hydrocarbon vapors under medium and high pressures.

Along with being suitable for steam applications, the Top 5 is easy to maintain and can increase flow capacity without piping modifications.



FEATURES

Wide control rangeability

- Turndown ratio up to 150:1.

Ideal replacement for globe control valves

- ASME globe valve face-to-face.
- Increased capacity.

Stable / accurate control

- Load caused by flow is carried by strong bearings.
- The single-piece Stemball[®] construction eliminates backlash, minimizing lost motion (deadband) in control applications.

Controls fluids with entrained solids

- Can handle fluids forming coke and crystallizing substances at high temperatures.
- Self cleaning trim design – scraping seat.

Tightness

- Long life metal to metal seats, for Class V tightness.
- Soft seated design for Class VI tightness.

Added security

- Fire-tested API 607, 4th edition, BS 6755.
- Stemball construction. – Anti-blow-out design.
- Rugged one-piece body resists pipe stresses.

Noise/cavitation abatement

- Patented Q-Trim design provides up to 18 dB(A) noise attenuation, self-flushing for impure fluids.
- Q-Trim + valve outlet attenuator plate construction extends Q-Trim performance for higher pressure drop ratios and provides extra noise attenuation.
- In severe applications – such as gas to flare or steam blow down – QX-Trim gives the best possible support to the seat by keeping spherical contacts.

Environmental design

- Rotary operation reduces emissions dramatically compared with most linear valves with standard packing.
- Packing constructions to meet German "TA-Luft" and US Clean Air Act requirements are available.
- Separate bonnet construction makes it possible to upgrade the valve to new requirements without modifying the valve body.
- Optional weld ends allow a 100% emission-free pipeline connection.

TECHNICAL SPECIFICATION

Product type: Top entry, trunnion mounted, single seated rotary control valve.

Type T5 Flanged, reduced bore 2" - 16", full bore 1" & 1 1/2", face-to-face acc. to ANSI/ISA-S75.03- 1985 = IEC 534-3 part 3, (globe valve length).

Ratings: See table below.

Sizes: See table below.

Type T4 Weld ends, reduced bore 2" - 16", full bore 1" & 1 1/2", face-to-face acc. to API 6D class 600.

Ratings: See table below.

Sizes: See table below.

Temperature range: Seat A -50 °C...+450 °C / -58°...+840 °F
 Seat E1-50 °C...+450 °C / -58°...+840 °F
 Seat F -200 °C...+400 °C / -320°...+750 °F
 Seat R -30 °C...+100 °C / -22°...+150 °F
 Graphite packing must be used above 230 °C / +450 °F or in fire safe duty.

Standard materials: See table on page 5.

Max. shut-off pressure: See table on page 6 & 7.

Max. control pressure: See table on page 3.

Flow characteristic: Top 5 modified equal percentage. Q-Top 5 modified linear. See curves on page 3.

Flow direction: Flow from the seat side.

Flow capacity: See table on page 3.

Rangeability: 150:1.

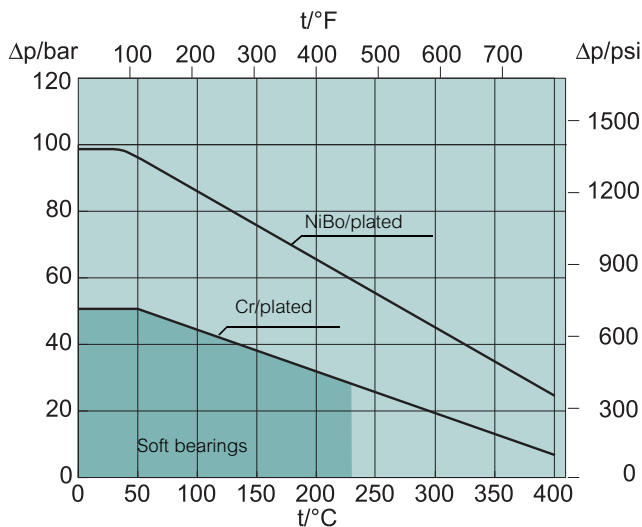
Valve ball rotation: Clockwise to close.

Fire safe: BS 6755, part 2: 1987
 API 607, 4th edition, May 1993.

Shut-off classification
 Standard tightness: Metal seated; ASME/FCI 70.2 Class V.
 Soft seated; ASME/FCI 70.2 Class VI.

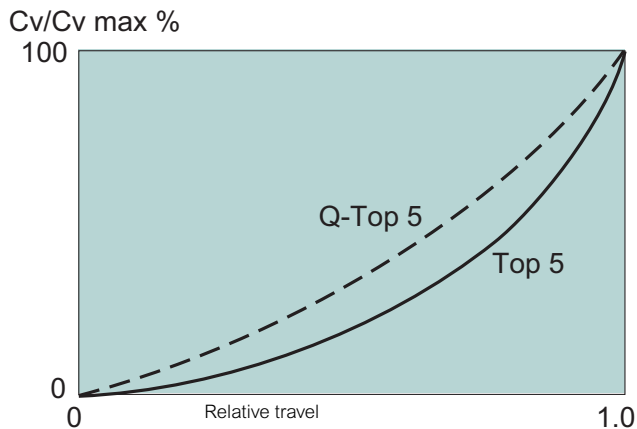
Options
 Q-trim In sizes 8" and larger, see page 3.
 QX-trim In sizes 01" - 06", see page 3.
 QXR-trim In sizes 01" - 06", see page 3.
 Q-trim + outlet attenuator In all sizes, see page 3.
 V-port low C_v trim In sizes 01" - 02", see page 3.

MAX. ALLOWABLE Δp IN CONTINUOUS THROTTLING CONTROL WITH COBALT BASED HARD FACING SEATS

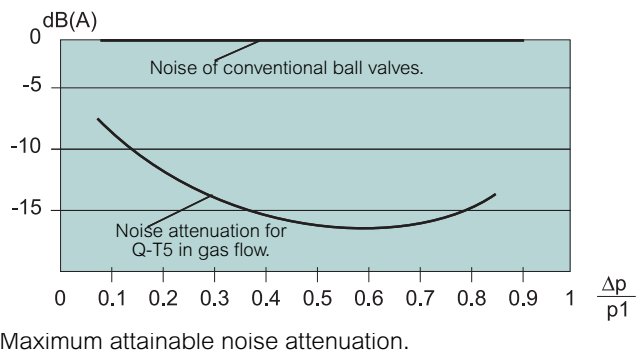


Note: Values given above are for pure fluids. For applications involving cavitation, impurities or excessive noise, contact factory for max. Δp.

INHERENT FLOW CHARACTERISTIC

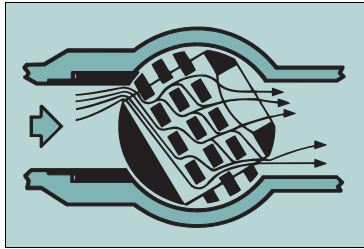


NOISE ATTENUATION



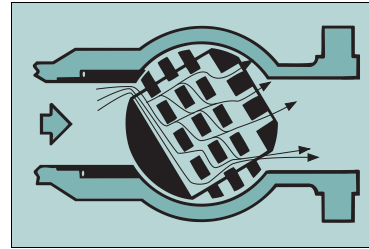
TRIM OPTIONS

Q-Trim®



For noise and cavitation abatement.

QX/QXR-Trim

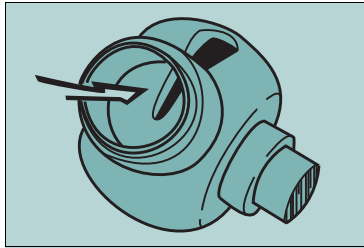


For noise and cavitation abatement. Drilled construction, no inserts.

QX = Full capacity

QXR = Reduced capacity

V-port low C_v trim

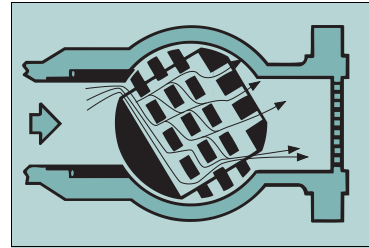


V-port for flow reduction.

For C_v values see table below (Maximum C_v values).

Reduction level is indicated after size.

Q-Trim + attenuator plate

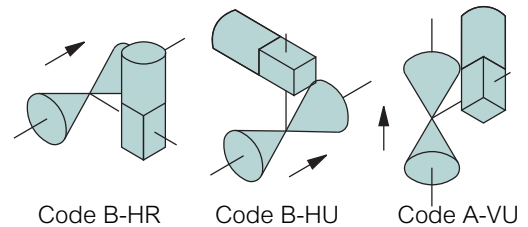


Attenuation plate construction extends Q- and QX-trim performance for higher pressure drop ratios and provides extra noise attenuation.

MAXIMUM C_v -VALUES

| SIZE DN SIZE / red | SIZE INCH SIZE / red | T5/T4 | Q/QX/QXR T5/T4 |
|-----------------------|-------------------------|-------|-------------------|
| 25 | 1 | 105 | 18 |
| 25/1 | 1/1 | 15 | 5 |
| 25/2 | 1/2 | 5 | - |
| 25/3 | 1/3 | 1.5 | - |
| 25/4 | 1/4 | 0.5 | - |
| 40 | 1.5 | 120 | 42 |
| 40/1 | 1.5/1 | 48.4 | 11 |
| 40/2 | 1.5/2 | 18.2 | - |
| 40/3 | 1.5/3 | 7.5 | - |
| 40/4 | 1.5/4 | 3.5 | - |
| 40/5 | 1.5/5 | 1.3 | - |
| 50 | 2 | 120 | 42 |
| 50/1 | 2/1 | 46.5 | 11 |
| 50/2 | 2/2 | 18 | - |
| 50/3 | 2/3 | 7.5 | - |
| 50/4 | 2/4 | 3.5 | - |
| 50/5 | 2/5 | 1.3 | - |
| 80 | 3 | 200 | 70 |
| 80/1 | 3/1 | - | 20 |
| 100 | 4 | 510 | 180 |
| 100/1 | 4/1 | - | 45 |
| 150 | 6 | 820 | 300 |
| 150/1 | 6/1 | - | 80 |
| 200 | 8 | 1150 | 470 |
| 250 | 10 | 1620 | 740 |
| 300 | 12 | 3000 | 1390 |
| 300 | 14 | 4600 | 2280 |
| 400 | 16 | 4600 | 2280 |

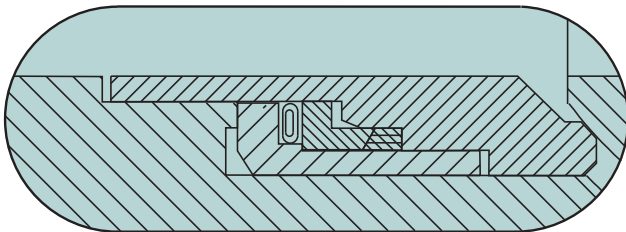
MOUNTING POSITIONS



1. The above represents common actuator mounting positions. For the code of other positions, consult your local Metso representative.
2. If the desired position is not specified, the factory will mount the actuator in position: B-HR when the valve size is \leq DN 100, and in B-HU when the valve size is \geq DN 150.

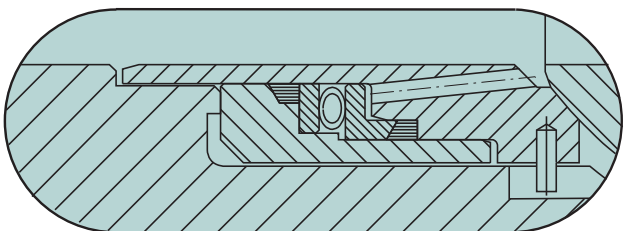
STANDARD SEAT OPTIONS

A Metal seats



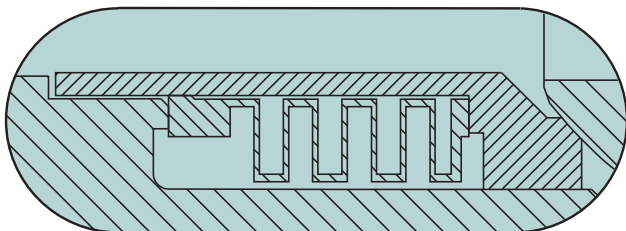
Ball seat: Stainless steel + cobalt based hard facing
 Seat seal: Graphite
 Back ring: 316 SS
 Spring: Inconel® X-750
 Temp. range: -50 °C...+450 °C / -58°...+840 °F
 Size range: 01"....16" / DN 25....400
 Service: General service and fire safe applications.

E1 Metal seat for control service



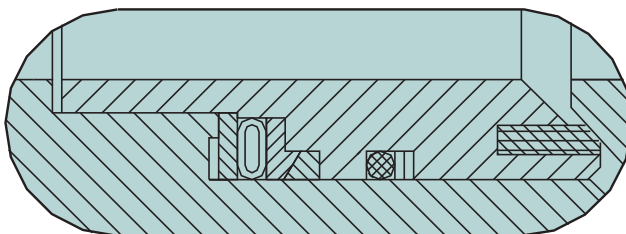
Ball seat: Stainless steel + cobalt based hard facing
 Seat seal: Graphite
 Back ring: 316 SS
 Spring: Inconel® X-750
 Temp. range: -50 °C...+450 °C / -58°...+840 °F
 Size range: T5/T4 04"....16" / DN 100.... 400
 Service: Control service, ejector style seat, lower torque in modulating control.

F Bellows seat



Ball seat: Stainless steel + cobalt based hard facing
 Bellows: W.no 1.4418 = Avesta® 248 SV
 Temp. range: -200 °C...+400 °C / -330°...+750 °F
 Size range: T5/T4 01".... 8" / DN 25.... 200
 Other sizes consult factory
 Service: Shut-off applications at low and high temperatures.

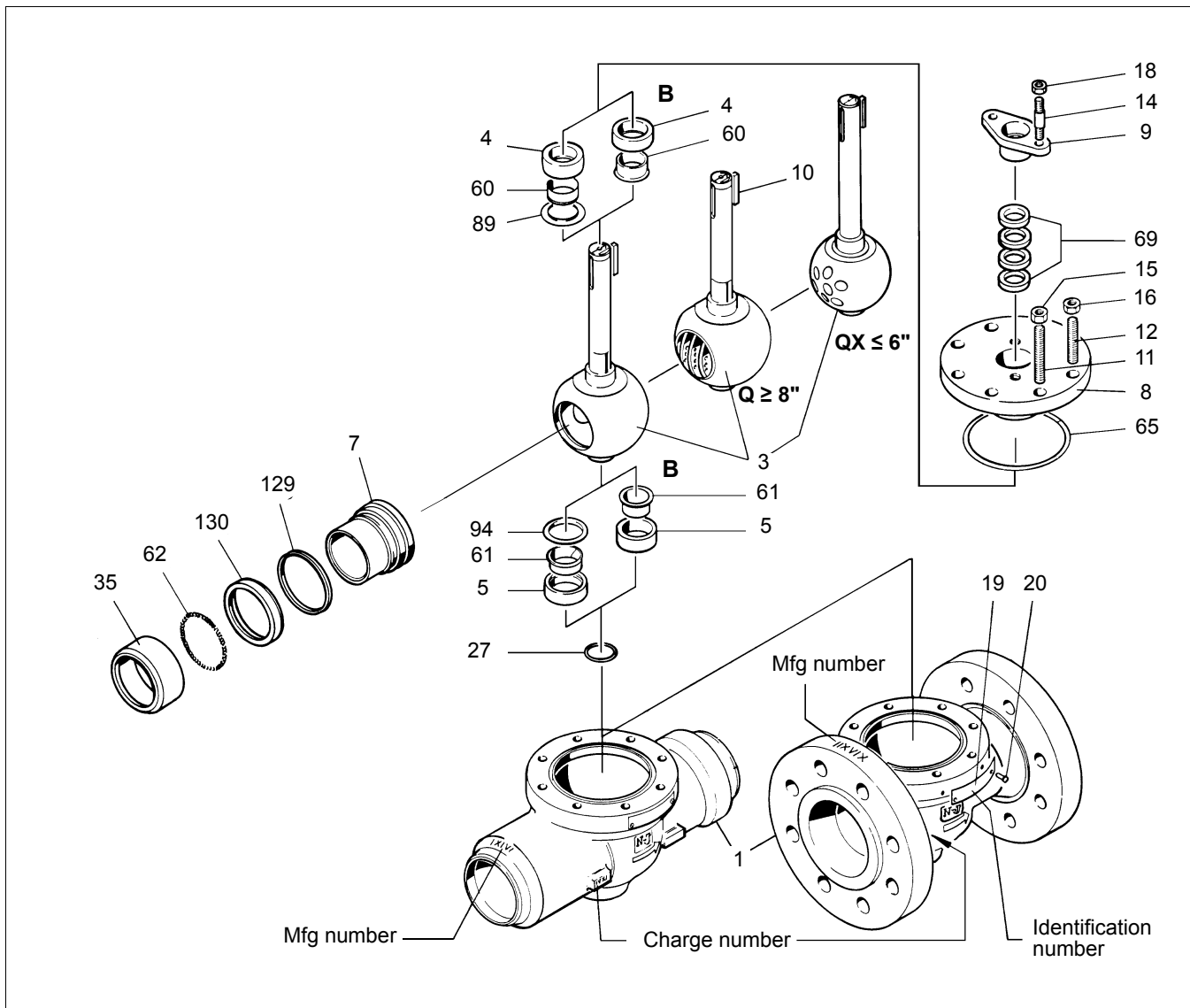
R63 Soft seat, fire safe design



Ball seat: POM (Delrin®)
 Seat seals: Viton® GF O-ring and Graphite
 Back rings: 316 SS
 Spring: Inconel® X-750
 Temp. range: -30 °C...+100 °C / -22°...+150 °F
 Size range: T5/T4 1 1/2".... 16" / DN 40.... 400
 Service: Control and shut-off applications.

Delrin and Viton are registered trademarks of E.I. DuPont Co.
 Avesta is a registered trademark of Avesta Stainless Co.
 Inconel is a registered trademark of Inco.

EXPLODED VIEW



BILL OF MATERIAL

| PART NO | DESCRIPTION | MATERIAL |
|---------|----------------------|--|
| 1 | Body | WCB / CF8M |
| 3 | Ball | CF8M with hard face |
| 4 | Thrust bearing | Stainless steel / Cobalt based alloy |
| 5 | Trunnion bearing | Stainless steel / Cobalt based alloy |
| 7 | Seat | Stainless steel + Cobalt based alloy / Stainless steel + Delrin® |
| 8 | Bonnet | WCB / CF8M |
| 9 | Gland | Stainless steel |
| 10 | Key | Stainless steel |
| 11 | Stud | Carbon steel / stainless steel |
| 12 | Stud | Carbon steel / stainless steel |
| 14 | Stud | Carbon steel / stainless steel |
| 15 | Hexagon nut | Carbon steel / stainless steel |
| 16 | Hexagon nut | Carbon steel / stainless steel |
| 18 | Hexagon nut | Carbon steel / stainless steel |
| 19 | Identification plate | Stainless steel |

| PART NO | DESCRIPTION | MATERIAL |
|---------|-----------------|---|
| 20 | Rivet | Carbon steel |
| 27 | Lock ring | Stainless steel Inconel X-750 |
| 35 | Support ring | Stainless steel |
| 60 | Bearing bushing | PTFE on Stainless steel net / Nellalloy |
| 61 | Bearing bushing | PTFE on Stainless steel net / Nellalloy |
| 62 | Spring /bellows | Stainless steel Inconel X-750 / Avesta 248 SV |
| 65 | Gasket | Graphite |
| 69 | Gland packing | Graphite+PTFE / PTFE |
| 89 | Thrust bearing | PTFE on Stainless steel net |
| 94 | Thrust bearing | PTFE on Stainless steel net |
| 129 | Back seal | Graphite |
| 130 | Ring | Stainless steel |

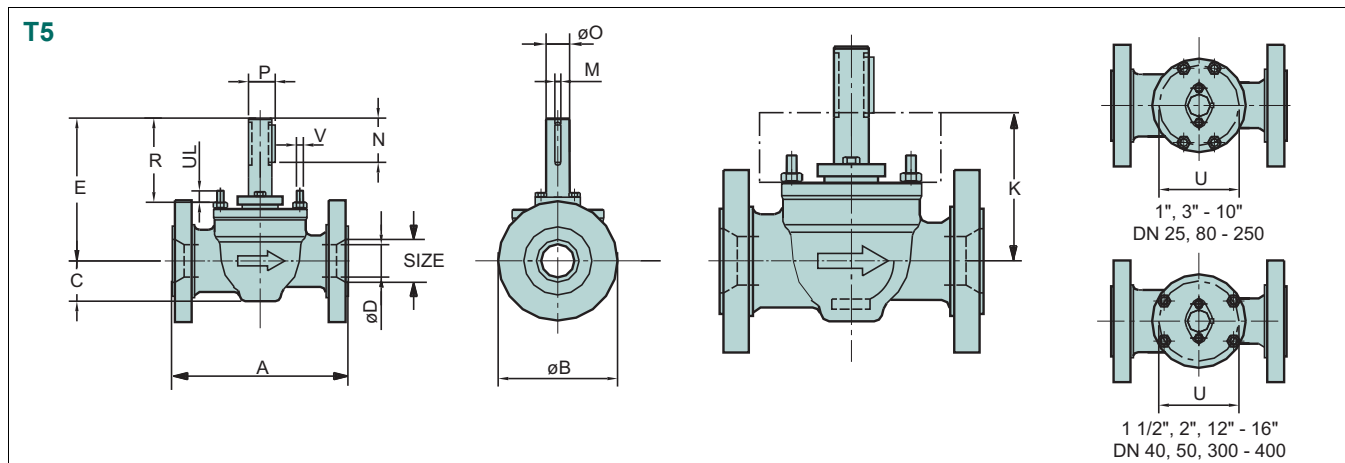
ACTUATOR SELECTION

Series T5 & T4 maximum allowed Δp (bar) at ambient temperature (metal bearings and metal seat) for on/off service. For control valve sizing and actuator selection please use Nelprof software.

| Valve size | Supply pressure | Actuator size | | | | | | | | |
|------------|-----------------|---------------|------|-------|-------|-------|-------|-------|-------|-------|
| | | B1C6 | B1C9 | B1C11 | B1C13 | B1C17 | B1C20 | B1C25 | B1C32 | B1C40 |
| 01" | 3 bar | 100 | | | | | | | | |
| | 4 bar | 100 | | | | | | | | |
| | 5 bar | 100 | | | | | | | | |
| | 6 bar | 100 | | | | | | | | |
| 1 1/2" | 3 bar | 15 | 62 | | | | | | | |
| | 4 bar | 35 | 95 | | | | | | | |
| | 5 bar | 55 | 100 | | | | | | | |
| | 6 bar | 75 | 100 | | | | | | | |
| 02" | 3 bar | 15 | 62 | 100 | | | | | | |
| | 4 bar | 35 | 95 | 100 | | | | | | |
| | 5 bar | 55 | 100 | 100 | | | | | | |
| | 6 bar | 75 | 100 | 100 | | | | | | |
| 03" | 3 bar | | 18 | 60 | | | | | | |
| | 4 bar | | 34 | 92 | | | | | | |
| | 5 bar | | 50 | 100 | | | | | | |
| | 6 bar | | 65 | 100 | | | | | | |
| 04" | 3 bar | | | 7 | 44 | 100 | | | | |
| | 4 bar | | | 19 | 68 | 100 | | | | |
| | 5 bar | | | 30 | 92 | 100 | | | | |
| | 6 bar | | | 42 | 100 | 100 | | | | |
| 06" | 3 bar | | | | | 38 | 58 | 100 | | |
| | 4 bar | | | | | 62 | 87 | 100 | | |
| | 5 bar | | | | | 85 | 100 | 100 | | |
| | 6 bar | | | | | 100 | 100 | 100 | | |
| 08" | 3 bar | | | | | | 27 | 80 | | |
| | 4 bar | | | | | | 45 | 100 | | |
| | 5 bar | | | | | | 64 | 100 | | |
| | 6 bar | | | | | | 82 | 100 | | |
| 10" | 3 bar | | | | | | | 45 | 100 | |
| | 4 bar | | | | | | | 67 | 100 | |
| | 5 bar | | | | | | | 88 | 100 | |
| | 6 bar | | | | | | | 100 | 100 | |
| 12" | 3 bar | | | | | | | | 62 | |
| | 4 bar | | | | | | | | 89 | |
| | 5 bar | | | | | | | | 100 | |
| | 6 bar | | | | | | | | 100 | |
| 14" | 3 bar | | | | | | | | | 75 |
| | 4 bar | | | | | | | | | 100 |
| | 5 bar | | | | | | | | | 100 |
| | 6 bar | | | | | | | | | 100 |
| 16" | 3 bar | | | | | | | | | 75 |
| | 4 bar | | | | | | | | | 100 |
| | 5 bar | | | | | | | | | 100 |
| | 6 bar | | | | | | | | | 100 |

| Valve size | Actuator type | Actuator size | | | | | | | | |
|------------|---------------|---------------|-----|-----|-----|-----|-----|-----|-----|--|
| | | 8 | 10 | 12 | 16 | 20 | 25 | 32 | 322 | |
| 01" | B1J | 100 | | | | | | | | |
| | B1JA | 100 | | | | | | | | |
| 1 1/2" | B1J | 44 | 100 | | | | | | | |
| | B1JA | 80 | 100 | | | | | | | |
| 02" | B1J | 44 | 100 | | | | | | | |
| | B1JA | 80 | 100 | | | | | | | |
| 03" | B1J | | 55 | 100 | | | | | | |
| | B1JA | | 80 | 100 | | | | | | |
| 04" | B1J | | | 36 | 100 | | | | | |
| | B1JA | | | 57 | 100 | | | | | |
| 06" | B1J | | | | 34 | 100 | | | | |
| | B1JA | | | | 62 | 100 | | | | |
| 08" | B1J | | | | | 53 | 100 | | | |
| | B1JA | | | | | 83 | 100 | | | |
| 10" | B1J | | | | | | 78 | 100 | | |
| | B1JA | | | | | | 100 | 100 | | |
| 12" | B1J | | | | | | | 98 | | |
| | B1JA | | | | | | | 100 | | |
| 14" | B1J | | | | | | | 49 | 100 | |
| | B1JA | | | | | | | 74 | 100 | |
| 16" | B1J | | | | | | | 49 | 100 | |
| | B1JA | | | | | | | 74 | 100 | |

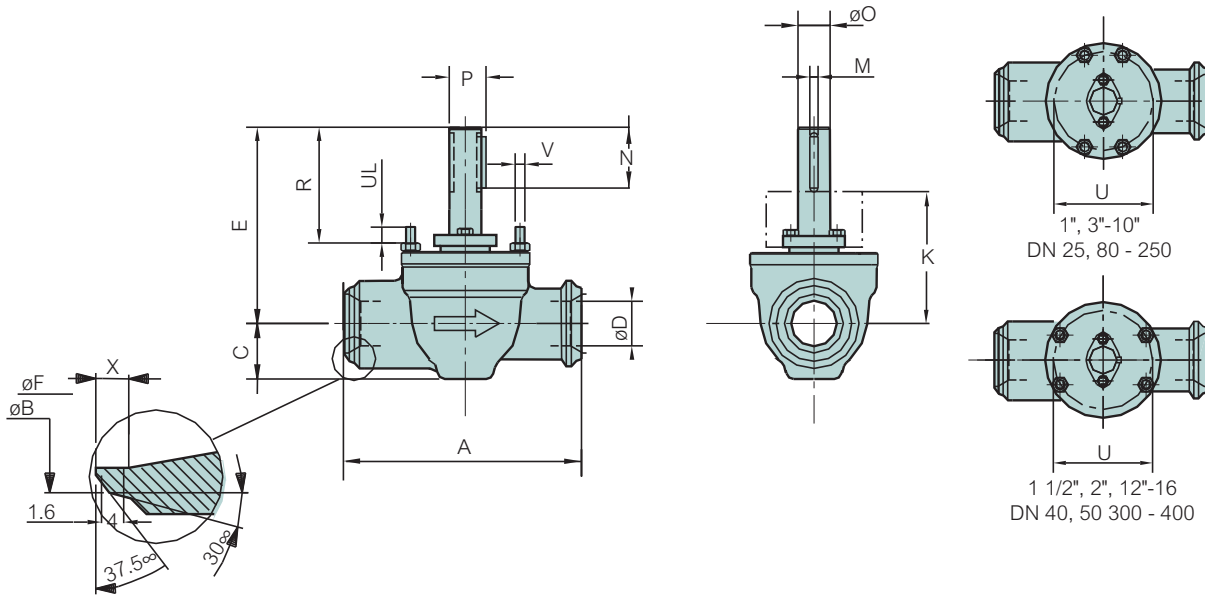
DIMENSIONS



| Type | DN | T5D/T5M | | T5F/T5N/T5P | | | | DIMENSIONS, mm | | | | | | | | | | | | | T5D/T5M | T5F/T5N/T5P |
|--------|-----|---------|----------|-------------|------|----------|------|----------------|-----|-----|-----|-----|--------|-----|----|-------|-----|-----|----|-----------|------------------|-----------------------|
| | | A | B | | A | B | | | C | øD | E | K | M | N | øO | P | R | U | UL | V | ASME 300 / PN 40 | ASME 600 / PN 63, 100 |
| | | | ASME 300 | PN40 | | ASME 600 | PN63 | PN100 | | | | | | | | | | | | | kg | kg |
| T5_01 | 25 | 197 | 124 | 115 | 210 | 124 | 140 | 140 | 38 | 25 | 158 | 133 | 4.76 | 25 | 15 | 16.96 | 89 | 84 | 22 | 3/8 UNC | 10 | 11 |
| T5_015 | 40 | 235 | 155 | 150 | 251 | 155 | 170 | 170 | 60 | 38 | 200 | 165 | 4.76 | 35 | 20 | 22.22 | 105 | 110 | 30 | 5/8 UNC | 15 | 17 |
| T5_02 | 50 | 267 | 165 | 165 | 286 | 165 | 180 | 195 | 60 | 38 | 200 | 165 | 4.76 | 35 | 20 | 22.22 | 105 | 110 | 30 | 5/8 UNC | 19 | 21 |
| T5_03 | 80 | 317 | 210 | 200 | 337 | 210 | 215 | 230 | 71 | 50 | 230 | 184 | 6.35 | 46 | 25 | 27.8 | 124 | 128 | 28 | 5/8 UNC | 32 | 36 |
| T5_04 | 100 | 368 | 254 | 235 | 394 | 273 | 250 | 265 | 90 | 76 | 280 | 222 | 9.52 | 58 | 35 | 39.1 | 138 | 173 | 43 | 3/4 UNC | 56 | 69 |
| T5_06 | 150 | 473 | 318 | 300 | 508 | 356 | 345 | 355 | 122 | 102 | 362 | 280 | 12.7 | 80 | 45 | 50.4 | 185 | 220 | 44 | 1 UNC | 115 | 147 |
| T5_08 | 200 | 568 | 381 | 375 | 610 | 419 | 415 | 430 | 140 | 125 | 415 | 325 | 12.7 | 90 | 55 | 60.6 | 208 | 272 | 44 | 1 UNC | 239 | 287 |
| T5_10 | 250 | 708 | 445 | 450 | 752 | 508 | 470 | 505 | 170 | 152 | 420 | 330 | 12.7 | 90 | 55 | 60.6 | 195 | 319 | 40 | 1 UNC | 315 | 403 |
| T5_12 | 300 | 775 | 521 | 515 | 819 | 559 | 530 | 585 | 210 | 202 | 520 | 401 | 19.05 | 119 | 70 | 78.2 | 235 | 400 | 56 | 1 1/4 UNC | 530 | 613 |
| T5_14 | 350 | 927 | 584 | 580 | 972 | 603 | 600 | 655 | 275 | 254 | 730 | 584 | 22.225 | 146 | 85 | 94.6 | 389 | 480 | 60 | 1 1/4 UNC | 1050 | 1123 |
| T5_16 | 400 | 1057 | 648 | 660 | 1108 | 686 | 670 | - | 275 | 254 | 730 | 584 | 22.225 | 146 | 85 | 94.6 | 389 | 480 | 60 | 1 1/4 UNC | 1100 | 1228 |

| Type | DN | T5D/T5M | | T5F/T5N/T5P | | | | DIMENSIONS, inch | | | | | | | | | | | | | T5D | T5F |
|--------|-----|---------|----------|-------------|-------|----------|-------|------------------|-------|-------|-------|-------|------|------|------|------|-------|-------|------|-----------|----------|----------|
| | | A | B | | A | B | | | C | øD | E | K | M | N | øO | P | R | U | UL | V | ASME 300 | ASME 600 |
| | | | ASME 300 | PN40 | | ASME 600 | PN63 | PN100 | | | | | | | | | | | | | lbs | lbs |
| T5_01 | 1 | 7.76 | 4.88 | 4.53 | 8.27 | 4.88 | 5.51 | 5.51 | 1.50 | 0.98 | 6.22 | 5.24 | 0.19 | 0.98 | 0.59 | 0.67 | 3.50 | 3.31 | 0.87 | 3/8 UNC | 22 | 24 |
| T5_015 | 1.5 | 9.25 | 6.10 | 5.91 | 9.88 | 6.10 | 6.69 | 6.69 | 2.36 | 1.50 | 7.87 | 6.50 | 0.19 | 1.38 | 0.79 | 0.87 | 4.13 | 4.33 | 1.18 | 5/8 UNC | 33 | 37 |
| T5_02 | 2 | 10.51 | 6.50 | 6.50 | 11.26 | 6.50 | 7.09 | 7.68 | 2.36 | 1.50 | 7.87 | 6.50 | 0.19 | 1.38 | 0.79 | 0.87 | 4.13 | 4.33 | 1.18 | 5/8 UNC | 42 | 46 |
| T5_03 | 3 | 12.48 | 8.27 | 7.87 | 13.27 | 8.27 | 8.46 | 9.06 | 2.80 | 1.97 | 9.06 | 7.24 | 0.25 | 1.81 | 0.98 | 1.09 | 4.88 | 5.04 | 1.10 | 5/8 UNC | 70 | 79 |
| T5_04 | 4 | 14.49 | 10.00 | 9.25 | 15.51 | 10.75 | 9.84 | 10.43 | 3.54 | 2.99 | 11.02 | 8.74 | 0.37 | 2.28 | 1.38 | 1.54 | 5.43 | 6.81 | 1.69 | 3/4 UNC | 123 | 152 |
| T5_06 | 6 | 18.62 | 12.52 | 11.81 | 20.00 | 14.02 | 13.58 | 13.98 | 4.80 | 4.02 | 14.25 | 11.02 | 0.50 | 3.15 | 1.77 | 1.98 | 7.28 | 8.66 | 1.73 | 1 UNC | 253 | 323 |
| T5_08 | 8 | 22.36 | 15.00 | 14.76 | 24.02 | 16.50 | 16.34 | 16.93 | 5.51 | 4.92 | 16.34 | 12.80 | 0.50 | 3.54 | 2.17 | 2.39 | 8.19 | 10.71 | 1.73 | 1 UNC | 526 | 631 |
| T5_10 | 10 | 27.87 | 17.52 | 17.72 | 29.61 | 20.00 | 18.50 | 19.88 | 6.69 | 5.98 | 16.54 | 12.99 | 0.50 | 3.54 | 2.17 | 2.39 | 7.68 | 12.56 | 1.57 | 1 UNC | 693 | 887 |
| T5_12 | 12 | 30.51 | 20.51 | 20.28 | 32.24 | 22.01 | 20.87 | 23.03 | 8.27 | 7.95 | 20.47 | 15.79 | 0.75 | 4.69 | 2.76 | 3.08 | 9.25 | 15.75 | 2.20 | 1 1/4 UNC | 1166 | 1349 |
| T5_14 | 14 | 36.50 | 22.99 | 22.83 | 38.27 | 23.74 | 23.62 | 25.79 | 10.83 | 10.00 | 28.74 | 22.99 | 0.88 | 5.75 | 3.35 | 3.72 | 15.31 | 18.90 | 2.36 | 1 1/4 UNC | 2310 | 2471 |
| T5_16 | 16 | 41.61 | 25.51 | 25.98 | 43.62 | 27.01 | 26.38 | - | 10.83 | 10.00 | 28.74 | 22.99 | 0.88 | 5.75 | 3.35 | 3.72 | 15.31 | 18.90 | 2.36 | 1 1/4 UNC | 2420 | 2702 |

T4D/T4F

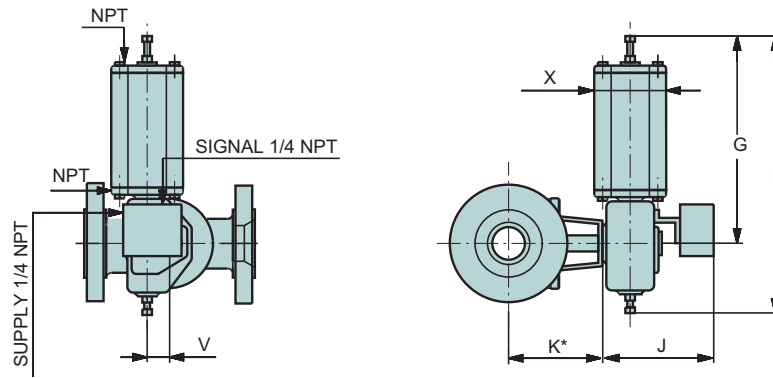


DIMENSIONS, mm

| Type | DN | A | øB | C | øD | E | T4D | T4F | K | M | N | øO | P | R | U | V | UL | T4D | T4F | kg |
|--------|-----|-----|-----|-----|-----|-----|-------|-------|-----|--------|-----|----|-------|-----|-----|------------|----|------|------|-----|
| | | | | | | | øF | øF | | | | | | | | | | Xmin | Xmin | |
| T4_01 | 25 | 210 | 36 | 38 | 25 | 158 | 26.6 | 24.4 | 133 | 4.76 | 25 | 15 | 16.95 | 89 | 84 | 3/8 UNC | 22 | - | - | 10 |
| T4_015 | 40 | 251 | 52 | 60 | 38 | 200 | 40.6 | 37.8 | 165 | 4.76 | 35 | 20 | 22.22 | 105 | 110 | 5/8 UNC | 30 | - | - | 15 |
| T4_02 | 50 | 292 | 62 | 60 | 38 | 200 | 52.5 | 49.3 | 165 | 4.76 | 35 | 20 | 22.22 | 105 | 110 | 5/8 UNC | 30 | 7 | 9.5 | 18 |
| T4_03 | 80 | 356 | 91 | 71 | 50 | 230 | 77.9 | 73.7 | 184 | 6.35 | 46 | 25 | 27.8 | 124 | 128 | 5/8 UNC | 28 | 10 | 13 | 32 |
| T4_04 | 100 | 432 | 117 | 90 | 76 | 280 | 102.3 | 97.1 | 222 | 9.52 | 58 | 35 | 39.1 | 138 | 173 | 3/4 UNC | 43 | 11 | 15 | 65 |
| T4_06 | 150 | 559 | 172 | 122 | 102 | 362 | 154.1 | 146.3 | 280 | 12.7 | 80 | 45 | 50.4 | 185 | 220 | 1 UNC | 44 | 13 | 20 | 125 |
| T4_08 | 200 | 660 | 223 | 140 | 125 | 415 | 202.7 | 188.9 | 325 | 12.7 | 90 | 55 | 60.6 | 208 | 272 | 1 UNC | 44 | 15.2 | 25.5 | 210 |
| T4_10 | 250 | 787 | 278 | 170 | 152 | 420 | 254.4 | 242.8 | 330 | 12.7 | 90 | 55 | 60.6 | 195 | 319 | 1 UNC | 40 | 17.7 | 26.5 | 275 |
| T4_12 | 300 | 838 | 329 | 210 | 202 | 520 | 303.2 | 288.8 | 401 | 19.05 | 119 | 70 | 78.2 | 235 | 400 | 1 1/4-8 UN | 56 | 19.3 | 30 | 475 |
| T4_14 | 350 | 889 | 362 | 275 | 254 | 730 | 333.4 | 317.6 | 584 | 22.225 | 146 | 85 | 94.6 | 389 | 480 | 1 1/4-8 UN | 60 | 30 | 30 | 930 |
| T4_16 | 400 | 991 | 413 | 275 | 254 | 730 | 381 | 363.6 | 584 | 22.225 | 146 | 85 | 94.6 | 389 | 480 | 1 1/4-8 UN | 60 | 35 | 30 | 960 |

DIMENSIONS, inch

| Type | DN | A | øB | C | øD | E | T4D | T4F | K | M | N | øO | P | R | U | V | UL | T4D | T4F | lbs |
|--------|-----|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|-------|-------|------------|------|------|------|------|
| | | | | | | | øF | øF | | | | | | | | | | Xmin | Xmin | |
| T4_01 | 1 | 8.27 | 1.42 | 1.50 | 0.98 | 6.22 | 1.05 | 0.96 | 5.24 | 0.19 | 0.98 | 0.59 | 0.67 | 3.50 | 3.31 | 3/8 UNC | 0.87 | - | - | 22 |
| T4_015 | 1.5 | 9.88 | 2.05 | 2.36 | 1.50 | 7.87 | 1.60 | 1.49 | 6.50 | 0.19 | 1.38 | 0.79 | 0.87 | 4.13 | 4.33 | 5/8 UNC | 1.18 | - | - | 33 |
| T4_02 | 2 | 11.50 | 2.44 | 2.36 | 1.50 | 7.87 | 2.07 | 1.94 | 6.50 | 0.19 | 1.38 | 0.79 | 0.87 | 4.13 | 4.33 | 5/8 UNC | 1.18 | 0.28 | 0.37 | 39.6 |
| T4_03 | 3 | 14.02 | 3.58 | 2.80 | 1.97 | 9.06 | 3.07 | 2.90 | 7.24 | 0.25 | 1.81 | 0.98 | 1.09 | 4.88 | 5.04 | 5/8 UNC | 1.10 | 0.39 | 0.51 | 70.4 |
| T4_04 | 4 | 17.01 | 4.61 | 3.54 | 2.99 | 11.02 | 4.03 | 3.82 | 8.74 | 0.37 | 2.28 | 1.38 | 1.54 | 5.43 | 6.81 | 3/4 UNC | 1.69 | 0.43 | 0.59 | 143 |
| T4_06 | 6 | 22.01 | 6.77 | 4.80 | 4.02 | 14.25 | 6.07 | 5.76 | 11.02 | 0.50 | 3.15 | 1.77 | 1.98 | 7.28 | 8.66 | 1 UNC | 1.73 | 0.51 | 0.79 | 275 |
| T4_08 | 8 | 25.98 | 8.78 | 5.51 | 4.92 | 16.34 | 7.98 | 7.44 | 12.80 | 0.50 | 3.54 | 2.17 | 2.39 | 8.19 | 10.71 | 1 UNC | 1.73 | 0.60 | 1.00 | 462 |
| T4_10 | 10 | 30.98 | 10.94 | 6.69 | 5.98 | 16.54 | 10.02 | 9.56 | 12.99 | 0.50 | 3.54 | 2.17 | 2.39 | 7.68 | 12.56 | 1 UNC | 1.57 | 0.70 | 1.04 | 605 |
| T4_12 | 12 | 32.99 | 12.95 | 8.27 | 7.95 | 20.47 | 11.94 | 11.37 | 15.79 | 0.75 | 4.69 | 2.76 | 3.08 | 9.25 | 15.75 | 1 1/4-8 UN | 2.20 | 0.76 | 1.18 | 1045 |
| T4_14 | 14 | 35.00 | 14.25 | 10.83 | 10.00 | 28.74 | 13.13 | 12.50 | 22.99 | 0.88 | 5.75 | 3.35 | 3.72 | 15.31 | 18.90 | 1 1/4-8 UN | 2.36 | 1.18 | 1.18 | 2046 |
| T4_16 | 16 | 39.02 | 16.26 | 10.83 | 10.00 | 28.74 | 15.00 | 14.31 | 22.99 | 0.88 | 5.75 | 3.35 | 3.72 | 15.31 | 18.90 | 1 1/4-8 UN | 2.36 | 1.38 | 1.18 | 2112 |

VALVE + ACTUATOR**VALVE + B1C ACTUATOR, DIMENSIONS, mm**

| ACTUATOR | F | G | J | V | X | NPT | kg |
|----------|------|------|-----|-----|-----|-----|-----|
| B1C6 | 400 | 260 | 283 | 36 | 90 | 1/4 | 4,2 |
| B1C9 | 455 | 315 | 279 | 43 | 110 | 1/4 | 9,6 |
| B1C11 | 540 | 375 | 290 | 51 | 135 | 3/8 | 16 |
| B1C13 | 635 | 445 | 316 | 65 | 175 | 3/8 | 31 |
| B1C17 | 770 | 545 | 351 | 78 | 215 | 1/2 | 54 |
| B1C20 | 840 | 575 | 385 | 97 | 215 | 1/2 | 73 |
| B1C25 | 1040 | 710 | 448 | 121 | 265 | 1/2 | 131 |
| B1C32 | 1330 | 910 | 525 | 153 | 395 | 3/4 | 256 |
| B1C40 | 1660 | 1150 | 595 | 194 | 505 | 3/4 | 446 |
| B1C50 | 1970 | 1350 | 690 | 242 | 610 | 1 | 830 |

VALVE + B1J/B1JA ACTUATOR, DIMENSIONS, mm

| ACTUATOR | F | G | J | V | X | NPT | kg |
|------------|------|------|-----|-----|-----|-----|-----|
| B1J/B1JA8 | 560 | 420 | 279 | 43 | 135 | 3/8 | 17 |
| B1J/B1JA10 | 650 | 490 | 290 | 51 | 175 | 3/8 | 30 |
| B1J/B1JA12 | 800 | 620 | 316 | 65 | 215 | 1/2 | 57 |
| B1J/B1JA16 | 990 | 760 | 351 | 78 | 265 | 1/2 | 100 |
| B1J/B1JA20 | 1200 | 935 | 358 | 97 | 395 | 3/4 | 175 |
| B1J/B1JA25 | 1530 | 1200 | 448 | 121 | 505 | 3/4 | 350 |
| B1J/B1JA32 | 1830 | 1410 | 525 | 153 | 540 | 1 | 671 |

VALVE + B1C ACTUATOR, DIMENSIONS, inch

| ACTUATOR | F | G | J | V | X | NPT | lbs |
|----------|-------|-------|-------|------|-------|-----|------|
| B1C6 | 15.75 | 10.24 | 11.14 | 1.42 | 3.54 | 1/4 | 9 |
| B1C9 | 17.91 | 12.40 | 10.98 | 1.69 | 4.33 | 1/4 | 21 |
| B1C11 | 21.26 | 14.76 | 11.42 | 2.01 | 5.31 | 3/8 | 35 |
| B1C13 | 25.00 | 17.52 | 12.44 | 2.56 | 6.89 | 3/8 | 68 |
| B1C17 | 30.31 | 21.46 | 13.82 | 3.07 | 8.46 | 1/2 | 119 |
| B1C20 | 33.07 | 22.64 | 15.16 | 3.82 | 8.46 | 1/2 | 161 |
| B1C25 | 40.94 | 27.95 | 17.64 | 4.76 | 10.43 | 1/2 | 288 |
| B1C32 | 52.36 | 35.83 | 20.67 | 6.02 | 15.55 | 3/4 | 563 |
| B1C40 | 65.35 | 45.28 | 23.43 | 7.64 | 19.88 | 3/4 | 981 |
| B1C50 | 77.56 | 53.15 | 27.17 | 9.53 | 24.02 | 1 | 1826 |

VALVE + B1J/B1JA ACTUATOR, DIMENSIONS, inch

| ACTUATOR | F | G | J | V | X | NPT | lbs |
|------------|-------|-------|-------|------|-------|-----|------|
| B1J/B1JA8 | 22.05 | 16.54 | 10.98 | 1.69 | 5.31 | 3/8 | 37 |
| B1J/B1JA10 | 25.59 | 19.29 | 11.42 | 2.01 | 6.89 | 3/8 | 66 |
| B1J/B1JA12 | 31.50 | 24.41 | 12.44 | 2.56 | 8.46 | 1/2 | 125 |
| B1J/B1JA16 | 38.98 | 29.92 | 13.82 | 3.07 | 10.43 | 1/2 | 220 |
| B1J/B1JA20 | 47.24 | 36.81 | 14.09 | 3.82 | 15.55 | 3/4 | 385 |
| B1J/B1JA25 | 60.24 | 47.24 | 17.64 | 4.76 | 19.88 | 3/4 | 770 |
| B1J/B1JA32 | 72.05 | 55.51 | 20.67 | 6.02 | 21.26 | 1 | 1476 |

*) See K dimension from tables on pages 7 and 8.

HOW TO ORDER

To specify a control valve, make a selection from each designation below. These codes create a complete valve model code. The valve model number expresses the standard product construction. An extensive range of unlisted options and variations are available. For options not shown, or to enter an order, contact your local Metso sales representative.

Example:

| | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|-----|---|---|
| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | | |
| Q | - | T5 | F | E | 04 | A | A | A | 03 | G | / | - |

| 1. Sign | Trim options |
|---------|--|
| Q | Low noise trim. |
| QA | Low noise trim + attenuator plate. |
| QX | Multichannel low noise trim. |
| QXA | Multichannel low noise trim + attenuator plate. |
| QXR | Reduced capacity multichannel low noise trim. |
| QRA | Reduced multichannel low noise trim + attenuator plate. |
| V_ _ | V-port (only for T5/T4 1", 1 1/2", 2"/DN 25, 40, 50). See table on page 3. |

| 2. Sign | Series |
|---------|--|
| T5 | Reduced bore 2" - 16", full bore 1" & 1 1/2", flanged. |
| T4 | Reduced bore 2" - 16", full bore 1" & 1 1/2", weld-ends. |

| 3. Sign | Pressure rating |
|---------|-----------------|
| D | ASME Class 300. |
| F | ASME Class 600. |
| M | PN 40. |
| N | PN 63. |
| P | PN 100. |

| 4. Sign | Construction |
|---------|--|
| E | PTFE bearings. Temperature range -50 °C ... +230 °C. |
| B | Metal bearings. Temperature range -50 °C... +450 °C. |
| C | Cryogenic, metal or PTFE bearings F-seat only. Temperature below -50 °C. |

| 5. Sign | Size (in inch) |
|---------|--|
| | 01, 1.5, 02, 03, 04, 06, 08, 10, 12, 14, 16. |

| 6. Sign | Body | Studs |
|---------|------|-------|
| A | CF8M | B8M |
| D | WCB | L7M |

| 7. Sign | Ball |
|---------|--------------------------------------|
| A | CF8M + hard chrome with metal seats. |
| D | CF8M + NiBo. |

| 8. Sign | Seat |
|---------|--|
| A | Metal seat General service and fire safe applications. |
| E | Metal seat for control service. Ejector style seat, lower torque in modulating control. |
| F | Bellows seat Shut-off applications at low and high temperatures. |
| R | Soft seat Control and shut-off applications for high pressure gas. |

| 9. Sign | Seat seal | Bonnet gasket | Gland packing | Seat | Construction | Bearing |
|---------|--------------|---------------|---------------|----------|--------------|---------------|
| 02 | Graphite | Graphite | Graphite | A, E1 | E, C | PTFE |
| 03 | Graphite | Graphite | Graphite | A, F, E1 | B, C | metal |
| 63 | Viton® GF | Graphite | Graphite | R | E, B | PTFE or metal |

| 10. Sign | Gland packing options |
|----------|--|
| G | Live loaded graphite packing. TA-Luft certified. |

| 11. Sign | Flange facing |
|----------|------------------------------|
| - *) | Ra 3.2 - 6.3 / RMS 125 - 250 |
| 05 | Ring joint. |

Raised face, ASME B16.5.

*) No sign

Subject to change without prior notice.

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