

Angle Seat Control Valve 7020

with integrated positioner

DN 8 up to DN 80 - PN 40

Type 7020
with digital positioner Type 8049

Control valve with integrated microprocessor-positioner for the control of neutral through to aggressive media in process engineering, chemical industry and for plant equipment.



- Space saving design and low weight
- No steady-state air consumption
- Operation independent of mounting position and supply pressure variations
- Not sensitive to vibration
- Instrument grade air not essential
- Software configurable flow characteristics
- Protection Class IP65
- For temperatures from -100°C up to +220°C

Type 7020
with i/p-positioner Type 8047

Pneumatically operated control valves for neutral through to highly aggressive media.



- Integrated positioner
- Compact design
- All parts contacting the fluid made from stainless steel
- Temperatures up to 200°C
- Working pressure up to 40 bar
- For temperatures from -100°C up to +220°C

Technical Information

| | | |
|----------------------------|---|-------------------|
| Body material | Stainless steel 1.4408 | Bronze CC491K |
| Nominal sizes | DN 8 up to DN 80 | DN 15 up to DN 50 |
| Connections | | |
| Pipe thread acc. ISO 228-1 | DN 8 up to DN 80 | DN 15 up to DN 50 |
| NPT thread | DN 8 up to DN 80 | DN 15 up to DN 50 |
| Welding ends | DN15 up to DN 80 | - |
| Nominal pressure | PN 40 | PN 16 |
| Fluid temperature* | -30°C up to +200°C | |
| Ambient temperature** | digital positioner -10°C up to +75°C analog positioner -15°C up to +60°C | |
| Packing leakage | tested according to TA-Luft as defined in DIN EN ISO 15848-1 and VDI 2440 | |

*: Please consider further temperature versions and limits in technical bulletin 32

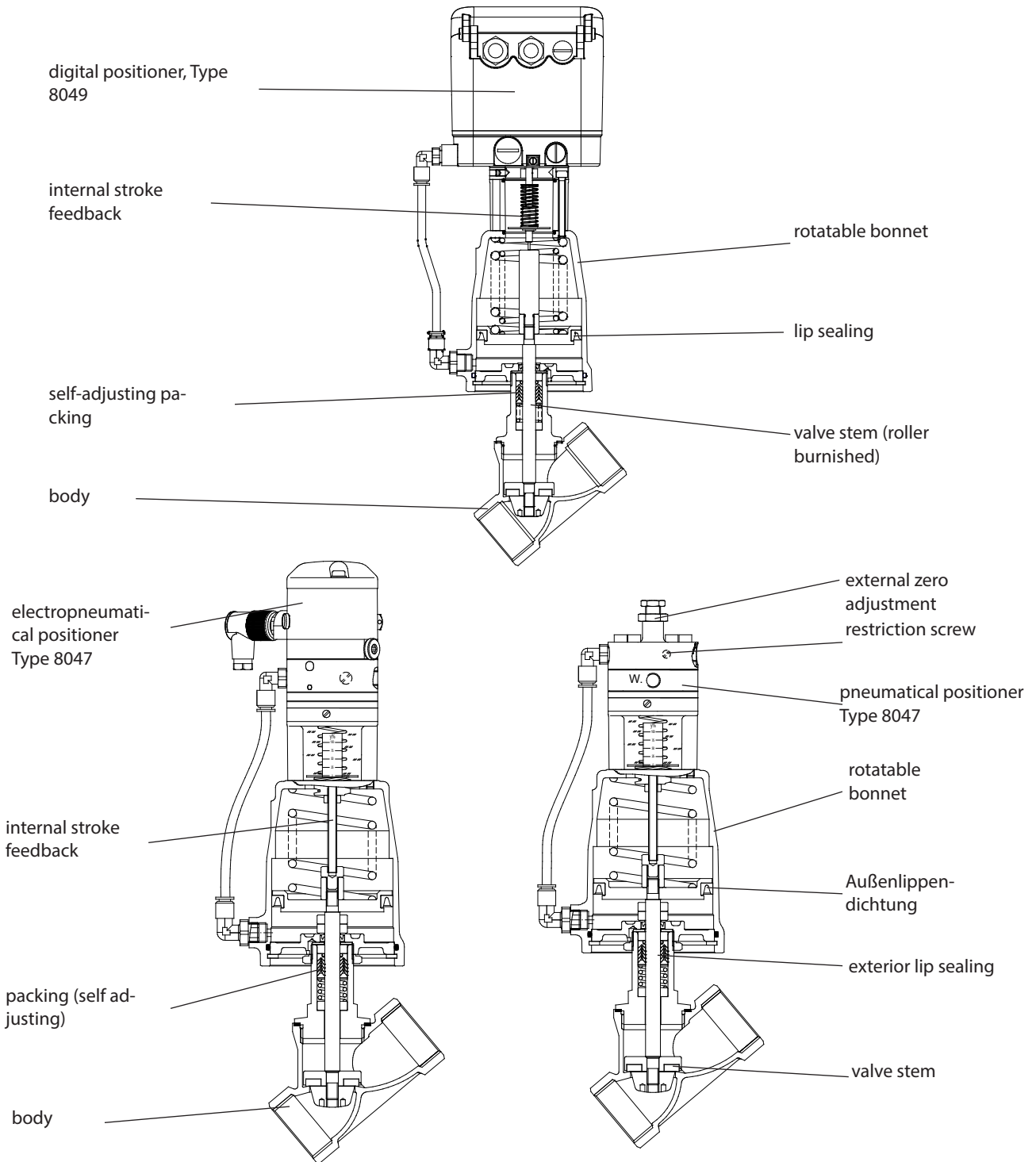
** : Please consider the limitation of use of the positioner

Options:

- e.g.
- Optical position indicator
 - External I/P-converter Type 8045
 - Ex-electropneumatic positioner (Ex I 2 G EEx ib IIC T6)

Angle Seat Control Valve 7020

standard design with integrated positioner



Materials

| | |
|--------------------|---|
| Body | Stainless steel 1.4408 / Bronze CC491K |
| Seating seal | PTFE |
| Bonnet | Brass chrome plated (actuator Ø 50 mm, 80 mm) Aluminium corrosion protected (actuator Ø 125 mm) |
| Diaphragm actuator | Stainless steel 1.4301/1.4305 |
| Actuator springs | Stainless steel 1.4310 (actuator Ø 50 mm, 80 mm, diaphr.act.) Spring steel wire C, zinc coated (actuator Ø 125 mm) |
| Packing | PTFE (carbon filled), spring 1.4310 |
| Valve stem | Stainless steel 1.4571, roller burnished |
| Position indicator | PA Trogamid (clear) |

Angle Seat Control Valve 7020



standard design with integrated positioner

Positioner

For technical information of our positioners please refer to the corresponding data sheets.

Admissible Differential Pressures

digital positioner

| DN | Differential pressure (bar) 1) | Supply pressure range bar | Piston Ø mm | Springs |
|----|--------------------------------|---------------------------|-------------|---------|
| | bar | | | Number |
| 8 | 17 | 4 - 6 | 80 | 2 * |
| 15 | 17 | 4 - 6 | 80 | 2 |
| 20 | 17 | 4 - 6 | 80 | 2 |
| 25 | 17 | 4 - 6 | 80 | 1 |
| 25 | 17 | 3 - 6 | 125 | 2 |
| 25 | 17 | 3 - 6 | 250 | 4 |
| 32 | 10 | 4 - 6 | 80 | 1 |
| 32 | 17 | 3 - 6 | 125 | 2 |
| 32 | 17 | 3 - 6 | 250 | 4 |
| 40 | 6 | 4 - 6 | 80 | 1 |
| 40 | 17 | 4 - 6 | 125 | 3 |
| 40 | 17 | 3 - 6 | 250 | 6 |

1) Maximum 16 bar for bronze case

* special springs

p/p- and i/p-positioner

| DN | Differential pressure 1) | Supply pressure range bar | Piston Ø mm | Springs |
|----|--------------------------|---------------------------|-------------|---------|
| | bar | | | Number |
| 8 | 17 | 4 - 6 | 80 | 2 * |
| 15 | 17 | 4 - 6 | 80 | 2 |
| 20 | 17 | 4 - 6 | 80 | 2 |
| 25 | 12 | 4 - 6 | 80 | 1 |
| 25 | 11 | 2,8 - 6 | 250 | 4 |
| 32 | 7 | 4 - 6 | 80 | 1 |
| 32 | 13 | 3 - 6 | 125 | 2 |
| 32 | 17 | 2,8 - 6 | 250 | 6 |
| 40 | 4 | 4 - 6 | 80 | 1 |
| 40 | 11 | 4 - 6 | 125 | 3 |
| 40 | 15 | 3,4 - 6 | 250 | 8 |

1) Maximum 16 bar for bronze case

* special springs

diaphragm actuator, direct pressure range

| DN | Differential pressure (bar) 1) | | Max. pressure NO (bar) 1) | | Supply air (bar) | | Diaphragm area mm |
|----|--------------------------------|-------------|---------------------------|-------------|------------------|-------------|-------------------|
| | spring range | | spring range | | spring range | | |
| | 0,2 - 1 bar | 0,4 - 2 bar | 0,2 - 1 bar | 0,4 - 2 bar | 0,2 - 1 bar | 0,4 - 2 bar | |
| 15 | 17 | 17 | 17 | 17 | 1,2 | 2,4 | 250 |
| 20 | 16 | 17 | 17 | 17 | 1,2 | 2,4 | 250 |
| 25 | 9 | 17 | 12 | 15 | 1,2 | 2,4 | 250 |
| 32 | 5 | 15 | 6 | 13 | 1,2 | 2,4 | 250 |
| 40 | 3 | 10 | 2 | 5 | 1,2 | 2,4 | 250 |
| 50 | 2 | 6 | 1 | 2 | 1,2 | 2,4 | 250 |

1) Maximum 16 bar for bronze case

Kvs-Values

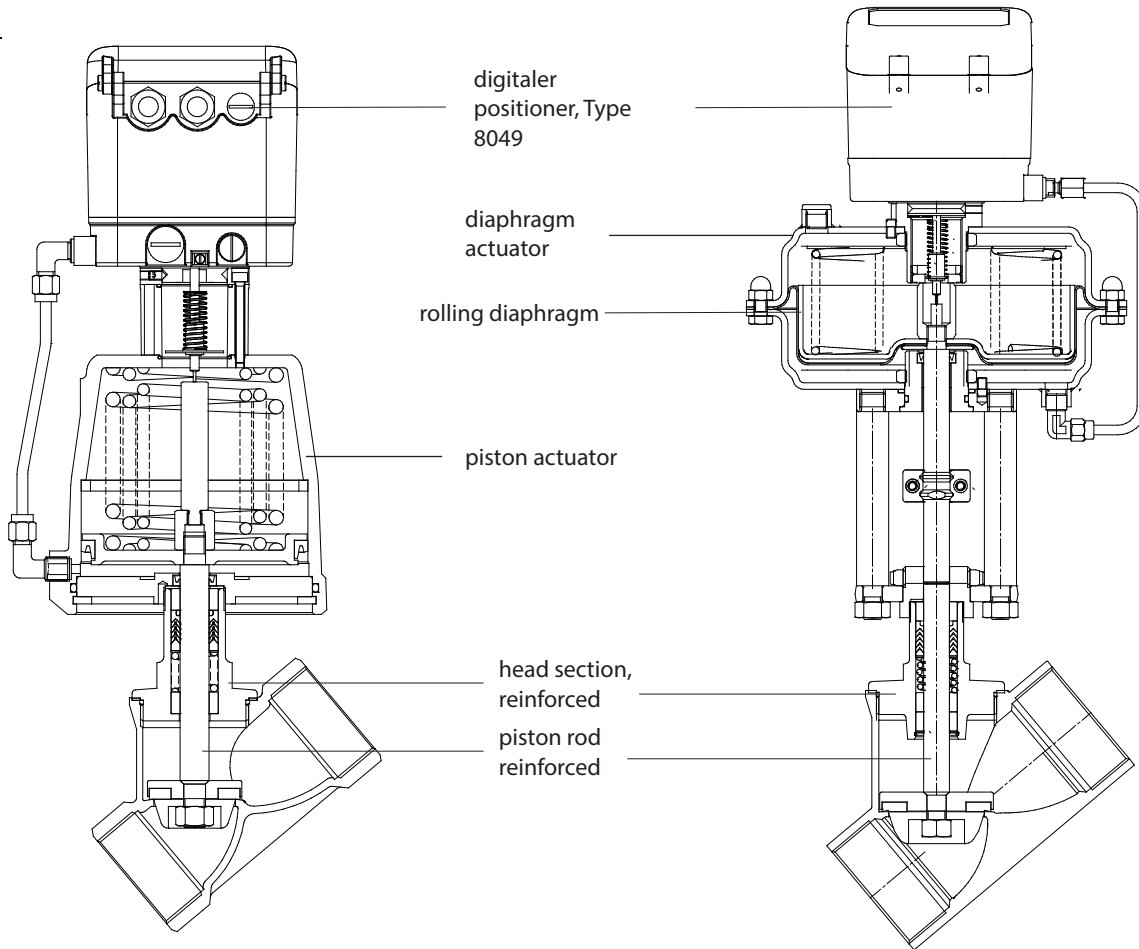
| DN | linear | | | | | | equal percentage | | | | | |
|------|--------|-------|-----|-----|----|----|------------------|-------|-----|-----|----|----|
| | 8 | 15 | 20 | 25 | 32 | 40 | 8 | 15 | 20 | 25 | 32 | 40 |
| 100% | 0,6 | 3,8 | 8,8 | 14 | 20 | 27 | 0,6 | 3 | 6 | 10 | 16 | 25 |
| 40% | 0,24 | 1,5 | 3,5 | 5,8 | 8 | 11 | - | 1,2 | 2,4 | 4 | 6 | 10 |
| 25% | 0,15 | 0,93* | 2,2 | 3,6 | - | - | - | 0,8* | 1,5 | 2,6 | - | - |
| 15% | - | - | - | - | - | - | - | 0,46* | - | - | - | - |
| 10% | - | 0,4* | - | - | - | - | - | - | - | - | - | - |
| 7,5% | - | - | - | - | - | - | - | 0,23* | - | - | - | - |

*Kvs-values not possible with bronze housing

Angle Seat Control Valve 7020

reinforced design with integrated positioner

DN50 up to DN80, PN40



Admissible Differential Pressures

digital positioner

| DN | differential pressure (bar) 1) | | Supply pressure range (bar) | Piston-Ø (mm) | Springs configuration (number) |
|----|--------------------------------|------|-----------------------------|---------------|--------------------------------|
| | PTFE | PEEK | | | |
| 50 | 3 | - | 4 - 6 | 80 | 1 |
| 50 | 11 | 3 | 4 - 6 | 125 | 3 |
| 50 | 12 | 5 | 3 - 6 | 250 | 6 * |
| 50 | 17 | 10 | 4 - 6 | 250 | 8 |
| 50 | 17 | 17 | 4 - 6 | 250 | 12 * |
| 65 | 6 | - | 4 - 6 | 125 | 3 |
| 65 | 13 | 8 | 4 - 6 | 250 | 12 |
| 80 | 3 | - | 4 - 6 | 125 | 3 |
| 80 | 9 | 5 | 4 - 6 | 250 | 12 |

1) Maximum 16 bar for bronze case

* special spring configuration

p/p- and i/p-positioner

| DN | differential pressure (bar) 1) | Supply pressure range (bar) | Piston-Ø (mm) | Springs (number) |
|----|--------------------------------|-----------------------------|---------------|------------------|
| | PTFE | | | |
| 50 | 2 | 4 - 6 | 80 | 1 |
| 50 | 6 | 4 - 6 | 125 | 3 |
| 50 | 13 | 4 - 6 | 250 | 10* |
| 50 | 16,9 | 4 - 6 | 250 | 12 |
| 65 | 9,3 | 4 - 6 | 250 | 12 |
| 80 | 6,3 | 4 - 6 | 250 | 12 |

Kvs-Values

| DN | linear | | | equal percentage | | |
|------|--------|----|----|------------------|----|----|
| | 50 | 65 | 80 | 50 | 65 | 80 |
| 100% | 43 | 52 | 69 | 34 | 44 | 59 |
| 63% | 26 | 32 | - | 23 | 29 | - |

Angle Seat Control Valve 7020

Pressure balanced design with integrated positioner

DN50 up to DN80, PN40, with stainless steel case

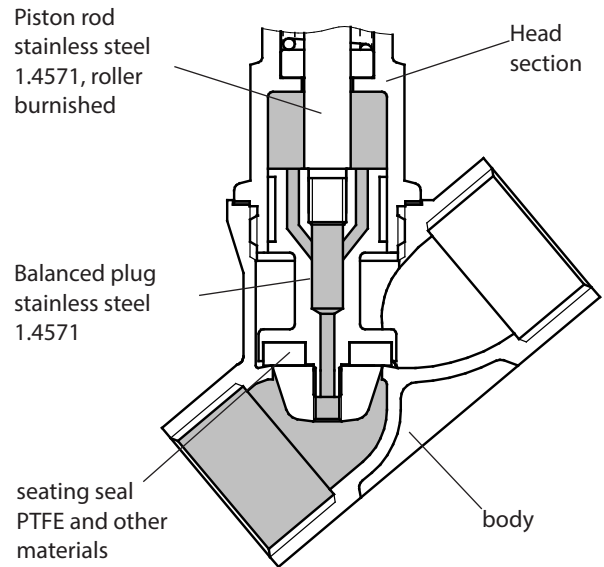
Admissible Differential Pressures

digital positioner

| DN | Differential pressure (PTFE) | Supply pressure range | Piston Ø | Springs |
|----|------------------------------|-----------------------|----------|---------|
| | bar | bar | | Number |
| 50 | 17 | 4 - 6 | 125 | 3 |
| 65 | 17 | 4 - 6 | 125 | 3 |
| 80 | 17 | 4 - 6 | 125 | 3 |

p/p- and i/p-positioner

| DN | Differential pressure (PTFE) | Supply pressure range | Piston Ø | Springs |
|----|------------------------------|-----------------------|----------|---------|
| | bar | bar | | number |
| 50 | 17 | 4 - 6 | 125 | 3 |
| 65 | 17 | 4 - 6 | 125 | 3 |
| 80 | 17 | 4 - 6 | 125 | 3 |



Angle Seat Control Valve 7020

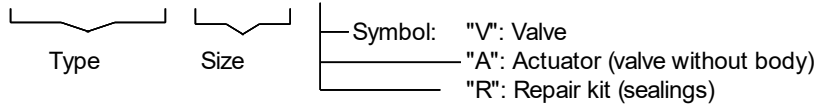


with integrated positioner

Ordering Number System

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|---|--|--|
| 7 | 0 | 2 | 0 | / | | | | V | | | | | | | | | | | | S | | |
|---|---|---|---|---|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|---|--|--|

1 - 6 : Please quote all 6 sections.
7 - 14: Quote only if required.



| 1. | Body type | 2. | Connection | 3. | Body materials | 4. | Seat material | 5. | Positioner | 6. | Actuator | 7. | Springs |
|----|------------------------------------|-----------------------|--|--------|--------------------------------------|----|---------------|--|---|-------------|--|----------------------------|--|
| 1 | angle body control valve type 7020 | 0 5 6 D H | pipe thread ISO 228-1 NPT thread without thread welding ends acc. DIN11850 welding ends acc. ISO | 1 2 | bronze CC491K stainless steel 1.4408 | 0 | PTFE | 6 7 8 9 C R W K N Y | p/p positioner, Type 8047 i/p positioner, Type 8047 i/p positioner with plug connection M12x1, Type 8047 i/p positioner ex-proof (II 2 G Eex ib IIC T6), plug connection M12x1, Type 8047 digital positioner, Type 8049 4 wire digital positioner Type 8049 2 wire digital positioner Type 8049-ExPro, ATEX, IECEx digital positioner type 8049 ExPro-FM with base plate in stainless steel; Ta = -10°C to +75°C; IS Class I Division 1, Groups A, B, C, D; T4 Entity; Class I Zone 0 AEx ia IIC T4 Entity, IP65 digital positioner Type 8049 IO-Link version digital positioner type 8049 ExPro-FM with base plate in stainless steel; Ta = -10°C to +75°C; NI Class I Division 2, Groups A, B, C, D; T4 NIFW, IP65 | 1 2 C | piston 80 mm piston 125 mm diaphragm D 250mm | - 1 P T W Y | without significance spring to open (only with digital positioner) spring set 0,2-1bar (D 250mm) 6 springs (D 250mm) 8 springs (D 250mm) 12 springs (D 250mm) |

| 8. | Characteristic | 9. | Packing | 10. | Kvs-value | 11. | Accessories | 12. | Special versions | 13. | Seal | 14. | Position indicator |
|--------|-------------------------|--------|-----------------------------|---------------------------------|---|-------------|---|-----|---------------------------------------|-----|----------|-----|--------------------|
| - 1 | linear equal percentage | - 2 | standard packing underneath | - 1 2 3 4 5 6 | full Kvs-value red. to 40% red. to 25% red. to 15% red. to 7,5% red. to 22,5% red. to 10% | - 6 7 | without pilot-valve DN2 230V AC pilot-valve DN2 24V DC | S | To state if some stations are quoted! | - | standard | - | standard |

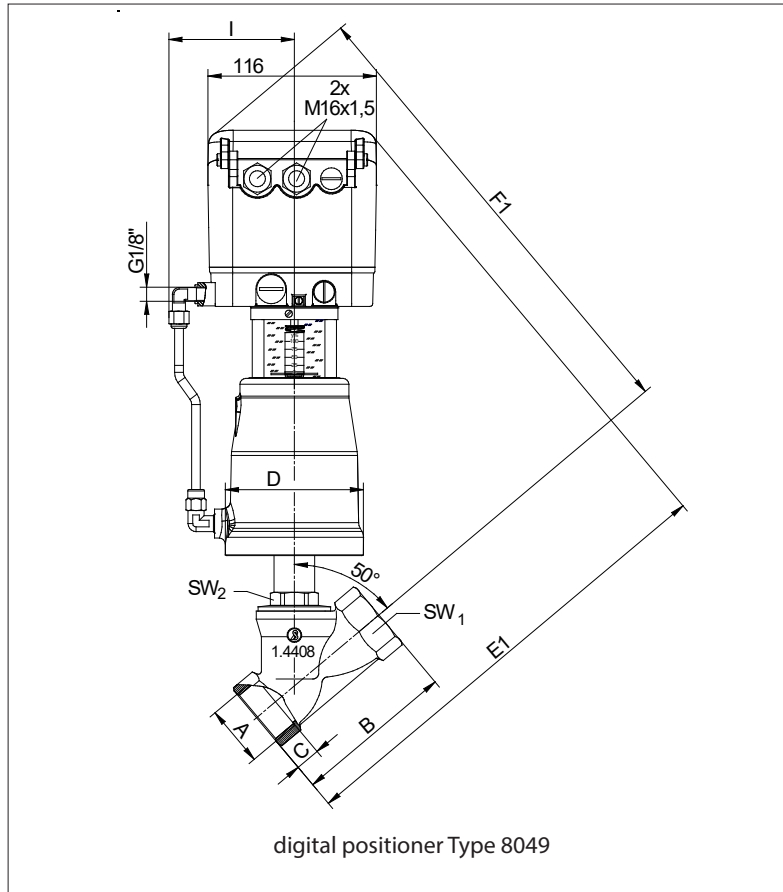
Ordering Example: 7020/020V1620C1
Angle Seat Control Valve, nominal size DN 20, without thread, stainless steel, PTFE seat material, N.C., digital positioner Typ 8049, 4-wire, with position indicator, piston
Ø 80 mm, linear characteristic, Kvs-value = 8,8

reinforced design (from DN50):
Ordering Example: 7020/050V1620C1-----S-----K
Angle Seat Control Valve, nominal size DN 50, without thread, stainless steel, PTFE seat material, N.C., digital positioner Typ 8049, 4-wire, with position indicator, piston Ø 80mm, linear characteristic, Kvs-value = 43, reinforced design
„K“ reinforced design

Angle Seat Control Valve 7020

piston actuator with integrated positioner

Dimensions and Weight



| DN | Actuator | A G/NPT | B | C | D | E | F | I | SW1 | SW2 | Weight (kg) |
|----|----------|------------|-----|----|-----|-----|-----|-----|-----|-----|----------------|
| 8 | 80 | 3/8" | 60 | 12 | 96 | 287 | 304 | 80 | 20 | 30 | 4,2 |
| 15 | 80 | 1/2" | 65 | 12 | 96 | 309 | 301 | 80 | 25 | 30 | 4,4 |
| 20 | 80 | 3/4" | 75 | 13 | 96 | 314 | 306 | 80 | 31 | 30 | 4,5 |
| 25 | 80 | 1" | 90 | 15 | 96 | 324 | 311 | 80 | 39 | 30 | 4,7 |
| 32 | 80 | 1 1/4" | 110 | 17 | 96 | 339 | 326 | 80 | 48 | 30 | 5,0 |
| 32 | 125 | 1 1/4" | 110 | 17 | 146 | 369 | 356 | 105 | 48 | 30 | 7,6 |
| 40 | 80 | 1 1/2" | 120 | 19 | 96 | 344 | 331 | 80 | 55 | 30 | 5,3 |
| 40 | 125 | 1 1/2" | 120 | 19 | 146 | 374 | 361 | 105 | 55 | 30 | 7,9 |

reinforced design:

| | | | | | | | | | | | |
|----|-----|--------|-----|------|-----|-----|-----|-----|-----|----|------|
| 50 | 80 | 2" | 150 | 25,7 | 96 | 350 | 350 | 80 | 68 | 32 | 5,9 |
| 50 | 125 | 2" | 150 | 26 | 146 | 365 | 365 | 105 | 68 | 32 | 8,5 |
| 65 | 125 | 2 1/2" | 180 | 30 | 146 | 385 | 380 | 105 | 85 | 36 | 8,9 |
| 80 | 125 | 3" | 214 | 34 | 146 | 435 | 380 | 105 | 100 | 41 | 11,4 |

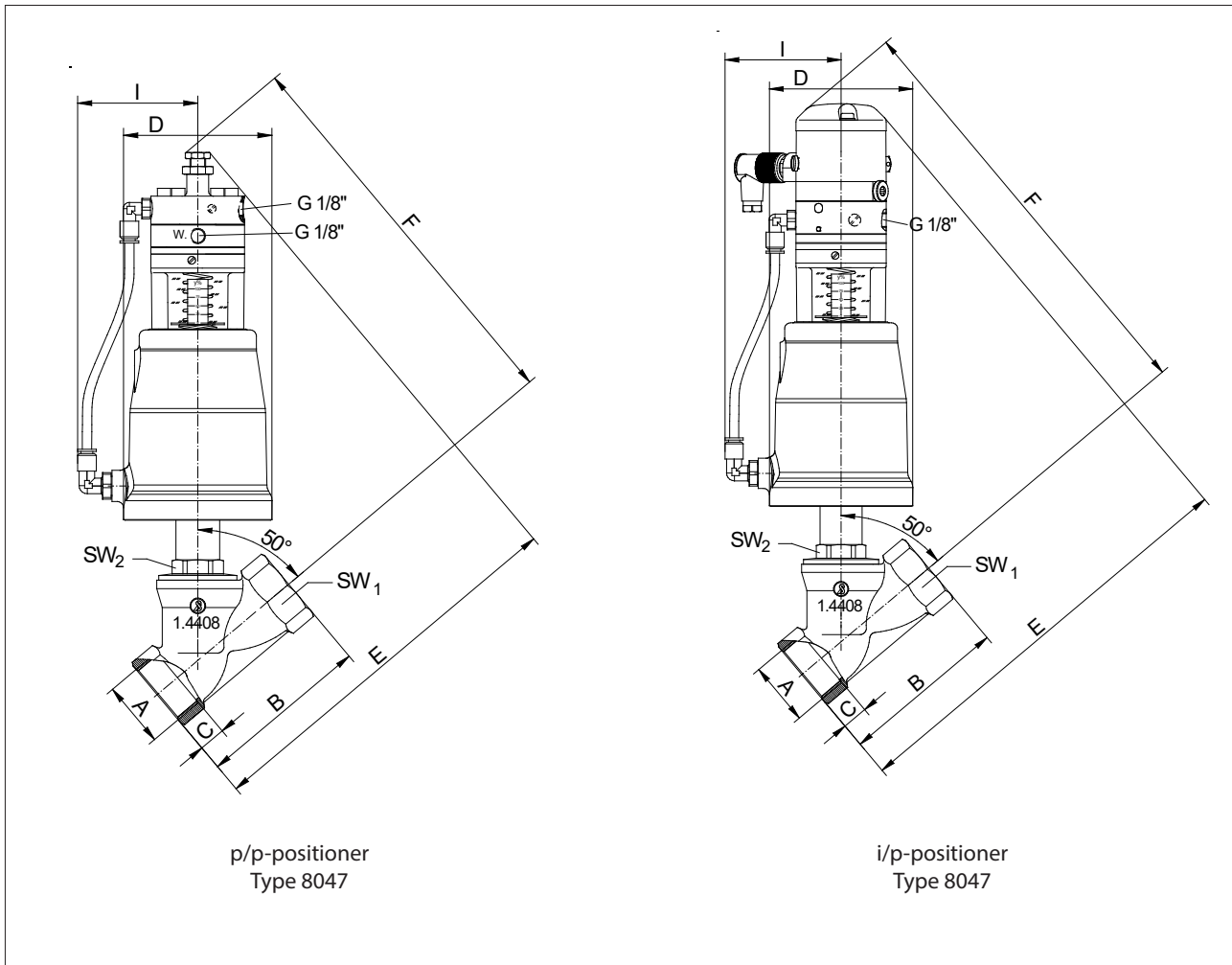
Dimensions in mm

Angle Seat Control Valve 7020

piston actuator with integrated positioner



Dimensions and Weights



| DN | Actuator | A G/NPT | B | C | D | E | | F | | I | SW1 | SW2 | Weight (kg) | |
|----|----------|------------|-----|------|-----|------------|-----|------------|-----|-----|-----|-----|-------------|-----|
| | | | | | | Positioner | | Positioner | | | | | p/p | i/p |
| | | | | | | p/p | i/p | p/p | i/p | | | | | |
| 8 | 80 | 1/4" | 60 | 12 | 96 | 220 | 250 | 230 | 260 | 80 | 20 | 30 | 3,7 | 4,0 |
| 15 | 80 | 1/2" | 65 | 15 | 96 | 220 | 250 | 230 | 260 | 80 | 25 | 30 | 3,7 | 4,0 |
| 20 | 80 | 3/4" | 75 | 16,3 | 96 | 225 | 255 | 235 | 265 | 80 | 31 | 30 | 3,8 | 4,1 |
| 25 | 80 | 1" | 90 | 19,1 | 96 | 235 | 265 | 240 | 270 | 80 | 39 | 30 | 4,0 | 4,3 |
| 32 | 80 | 1 1/4" | 110 | 21,4 | 96 | 250 | 280 | 255 | 285 | 80 | 48 | 30 | 4,3 | 4,6 |
| 32 | 125 | 1 1/4" | 110 | 21,4 | 146 | 265 | 295 | 275 | 305 | 105 | 48 | 30 | 6,9 | 7,2 |
| 40 | 80 | 1 1/2" | 120 | 21,4 | 96 | 255 | 285 | 260 | 290 | 80 | 55 | 30 | 4,6 | 4,9 |
| 40 | 125 | 1 1/2" | 120 | 21,4 | 146 | 270 | 300 | 280 | 310 | 105 | 55 | 30 | 7,2 | 7,5 |

reinforced design:

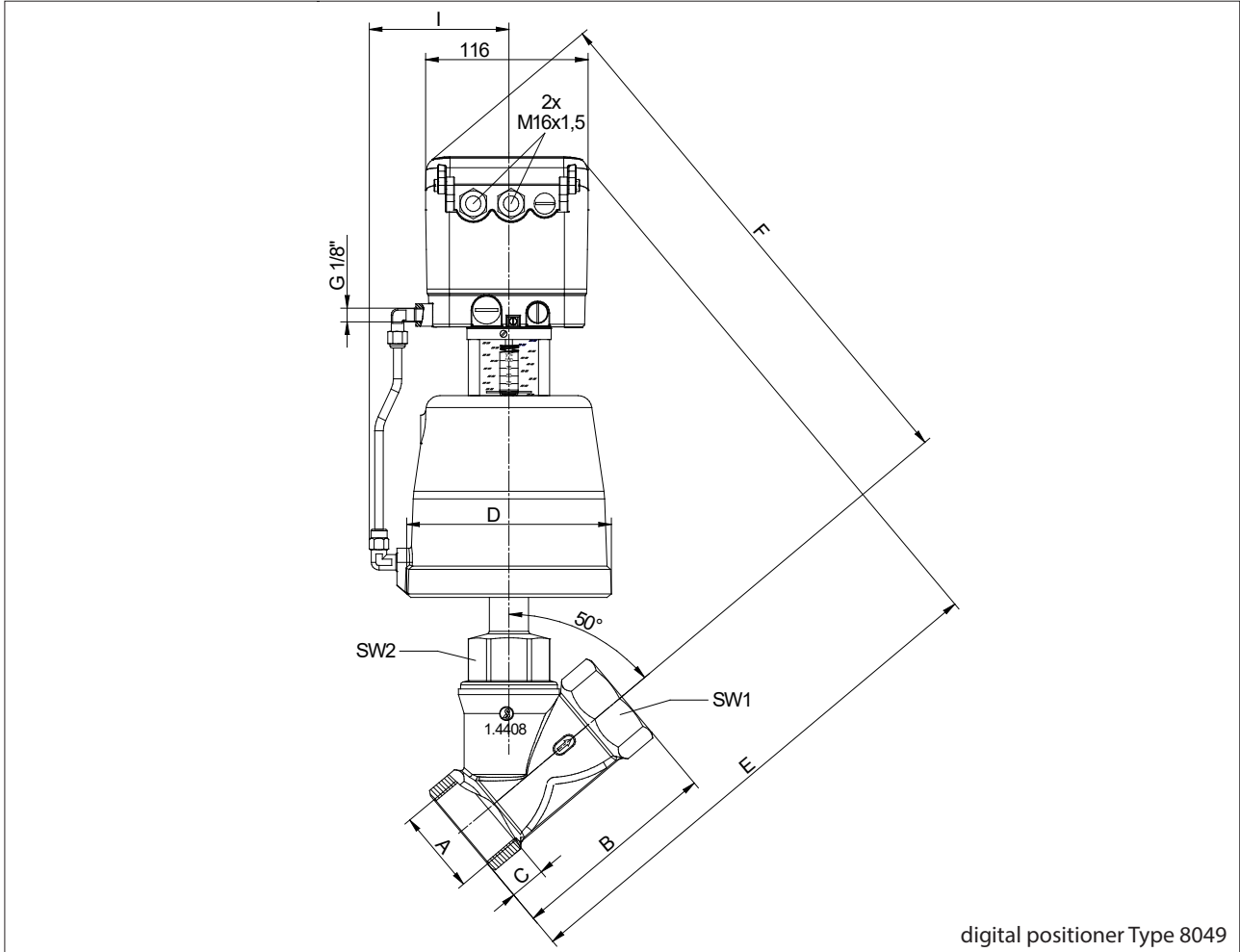
| | | | | | | | | | | | | | | |
|----|-----|----|-----|------|-----|-----|-----|-----|-----|-----|----|----|-----|-----|
| 50 | 80 | 2" | 150 | 21 | 96 | 275 | 305 | 270 | 300 | 80 | 68 | 32 | 5,3 | 5,5 |
| 50 | 125 | 2" | 150 | 25,7 | 146 | 285 | 315 | 285 | 315 | 105 | 68 | 32 | 7,8 | 8,1 |

Dimensions in mm

Angle Seat Control Valve 7020

Pressure balanced design with integrated positioner

Dimensions and Weights

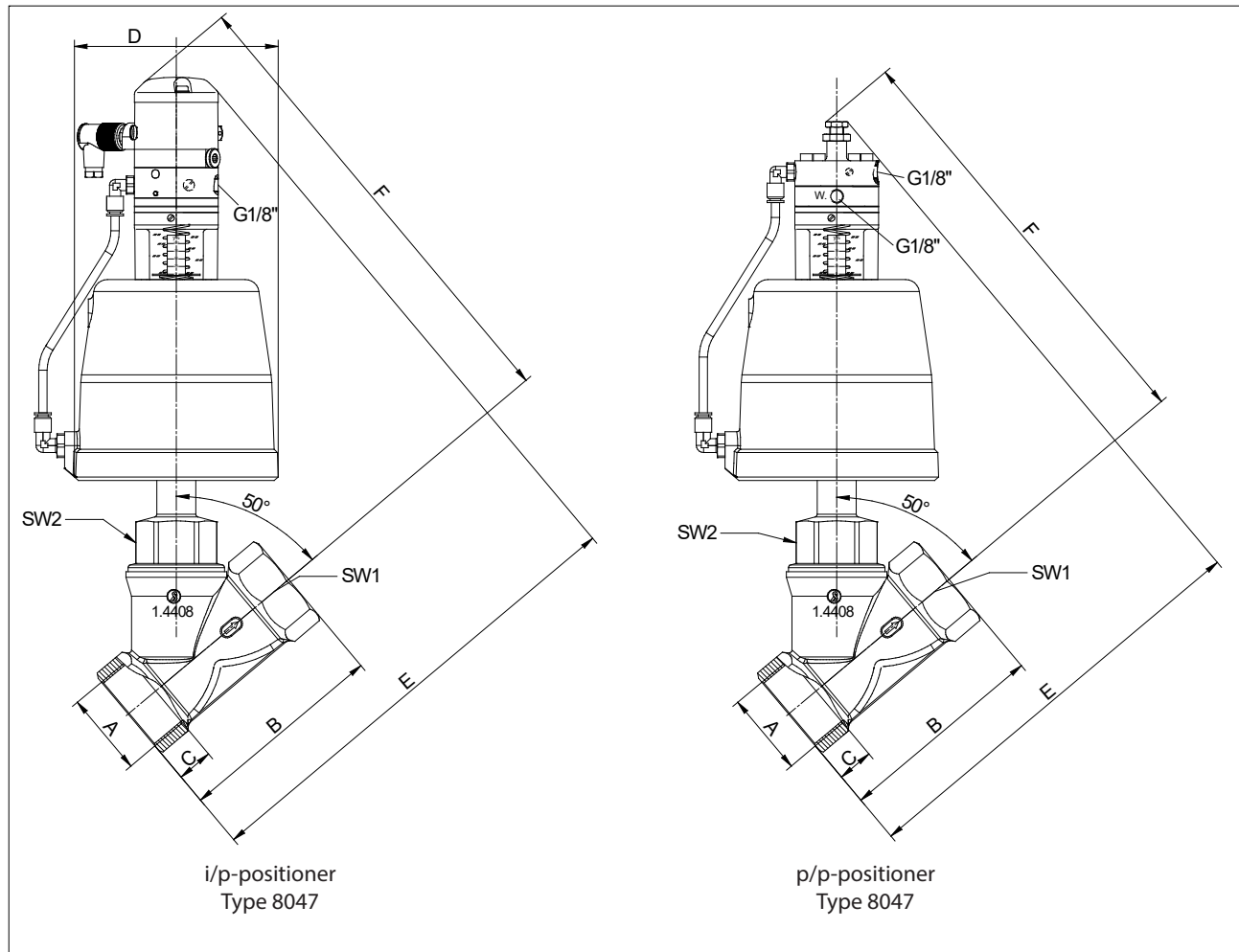


| DN | Actuator | A | B | C | D | E | F | I | SW1 | SW2 | Weight (kg) |
|----|----------|--------|-----|----|-----|-----|-----|-----|-----|-----|-------------|
| | | G/NPT | | | | | | | | | |
| 50 | 125 | 2" | 150 | 26 | 146 | 375 | 381 | 105 | 68 | 52 | 6,6 |
| 65 | 125 | 2 1/2" | 180 | 30 | 146 | 400 | 400 | 105 | 85 | 36 | 8,8 |
| 80 | 125 | 3" | 214 | 33 | 146 | 465 | 435 | 105 | 100 | 46 | 12,8 |

Schrägsitz-Stellventil 7020

Pressure balanced design with integrated positioner

Dimensions and Weights

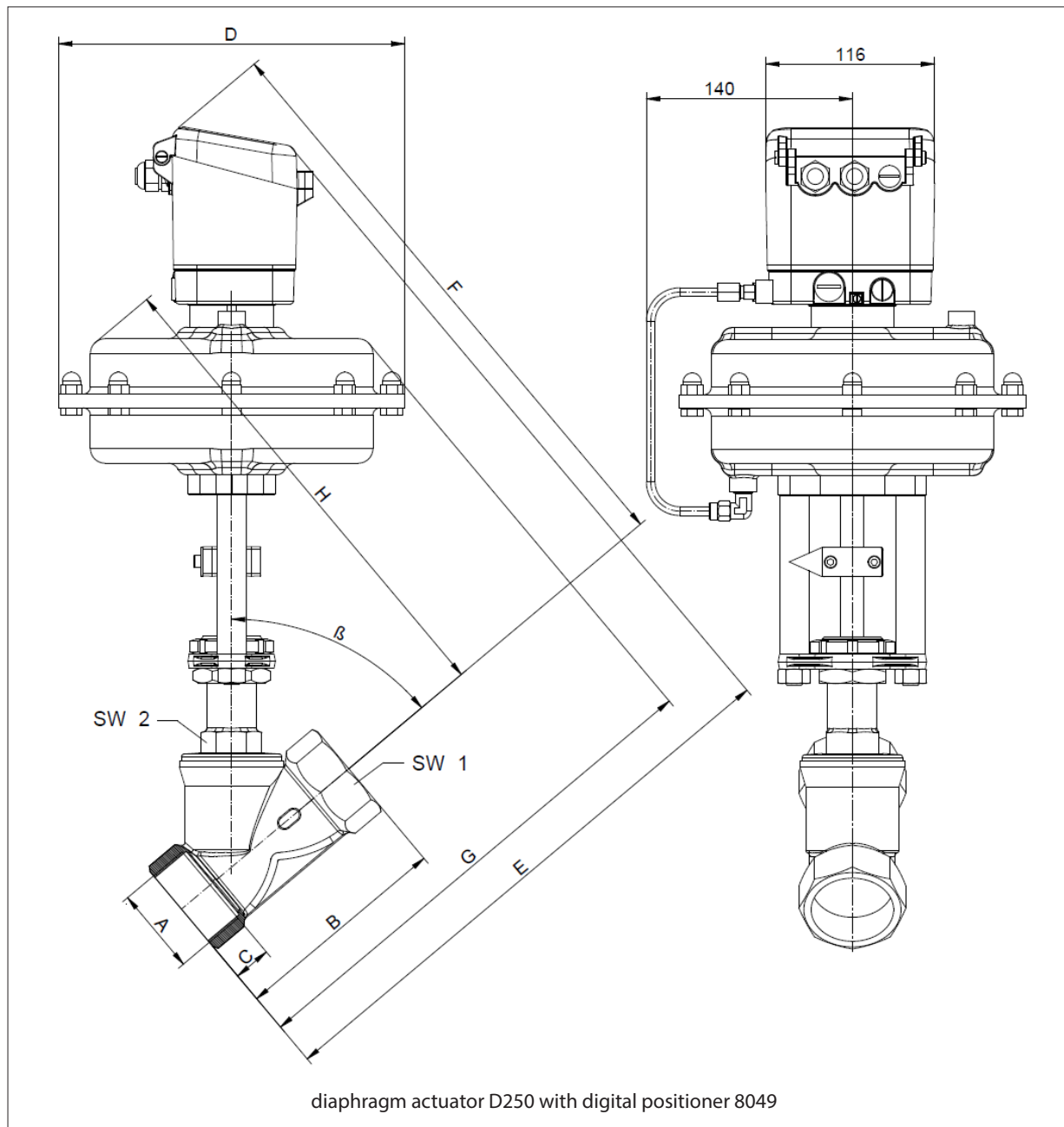


| DN | Actuator | A G/ NPT | B | C | D | E | | F | | I | SW1 | SW2 | Weight (kg) | |
|----|----------|----------------|-----|------|-----|------------|-----|------------|-----|-----|-----|-----|-------------|------|
| | | | | | | Positioner | | Positioner | | | | | p/p | i/p |
| | | | | | | p/p | i/p | p/p | i/p | | | | | |
| 50 | 125 | 2" | 150 | 25,7 | 146 | 305 | 336 | 308 | 340 | 105 | 68 | 52 | 5,9 | 6,2 |
| 65 | 125 | 2 1/2" | 180 | 30,2 | 146 | 327 | 357 | 322 | 354 | 105 | 85 | 36 | 8,1 | 8,4 |
| 80 | 125 | 3" | 214 | 33,3 | 146 | 403 | 435 | 347 | 378 | 105 | 100 | 46 | 12,1 | 12,4 |

Angle Seat Control Valve 7020

diaphragm actuator with integrated positioner

Dimensions and Weights



| DN | A | B | C | D | E | F | G | H | SW1 | SW2 | Angle β | Weight kg |
|----|----------|-----|------|-----|-----|-----|-----|-----|-----|-----|---------------|-----------|
| 15 | G 1/2" | 65 | 15 | 238 | 340 | 350 | 285 | 280 | 25 | 30 | 50° | 15,6 |
| 20 | G 3/4" | 75 | 16,3 | 238 | 350 | 360 | 295 | 290 | 31 | 30 | 50° | 15,7 |
| 25 | G 1" | 90 | 19,1 | 238 | 360 | 370 | 305 | 300 | 39 | 30 | 50° | 15,9 |
| 32 | G 1 1/4" | 110 | 21,4 | 238 | 370 | 385 | 315 | 310 | 48 | 30 | 50° | 16 |
| 40 | G 1/2" | 120 | 21,4 | 238 | 380 | 395 | 325 | 320 | 55 | 30 | 50° | 16,2 |
| 50 | G 2" | 150 | 25,7 | 238 | 410 | 410 | 350 | 335 | 68 | 36 | 50° | 16,5 |
| 65 | G 2 1/2" | 180 | 30,2 | 238 | 425 | 420 | 370 | 350 | 85 | 36 | 50° | 16,9 |
| 80 | G 3" | 214 | 33,5 | 238 | 475 | 410 | 410 | 355 | 100 | 41 | 45° | 19,4 |

Dimensions in mm