

Excess pressure regulator, straight through
DN 15 - 150

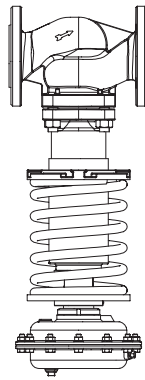
ARI-PREDEX®

Excess pressure regulator, straight through with diaphragm actuator UDA

- Actuator with rolling diaphragm

Grey cast iron
SG iron
Cast steel

Fig. 705



Page 2

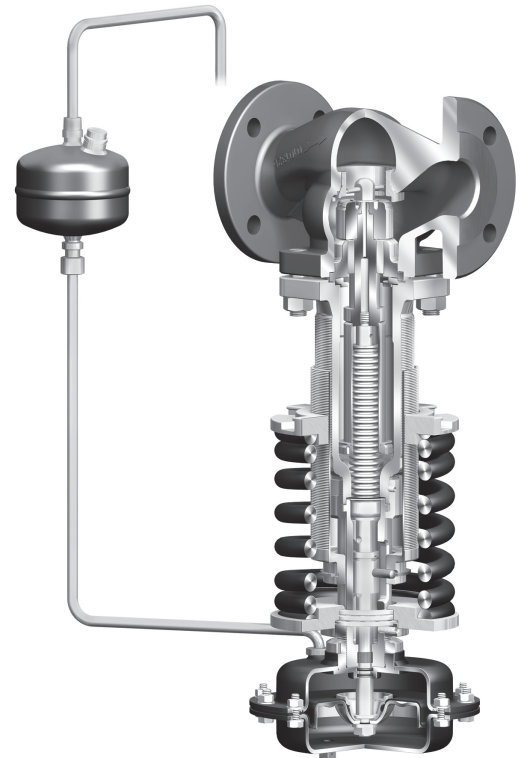
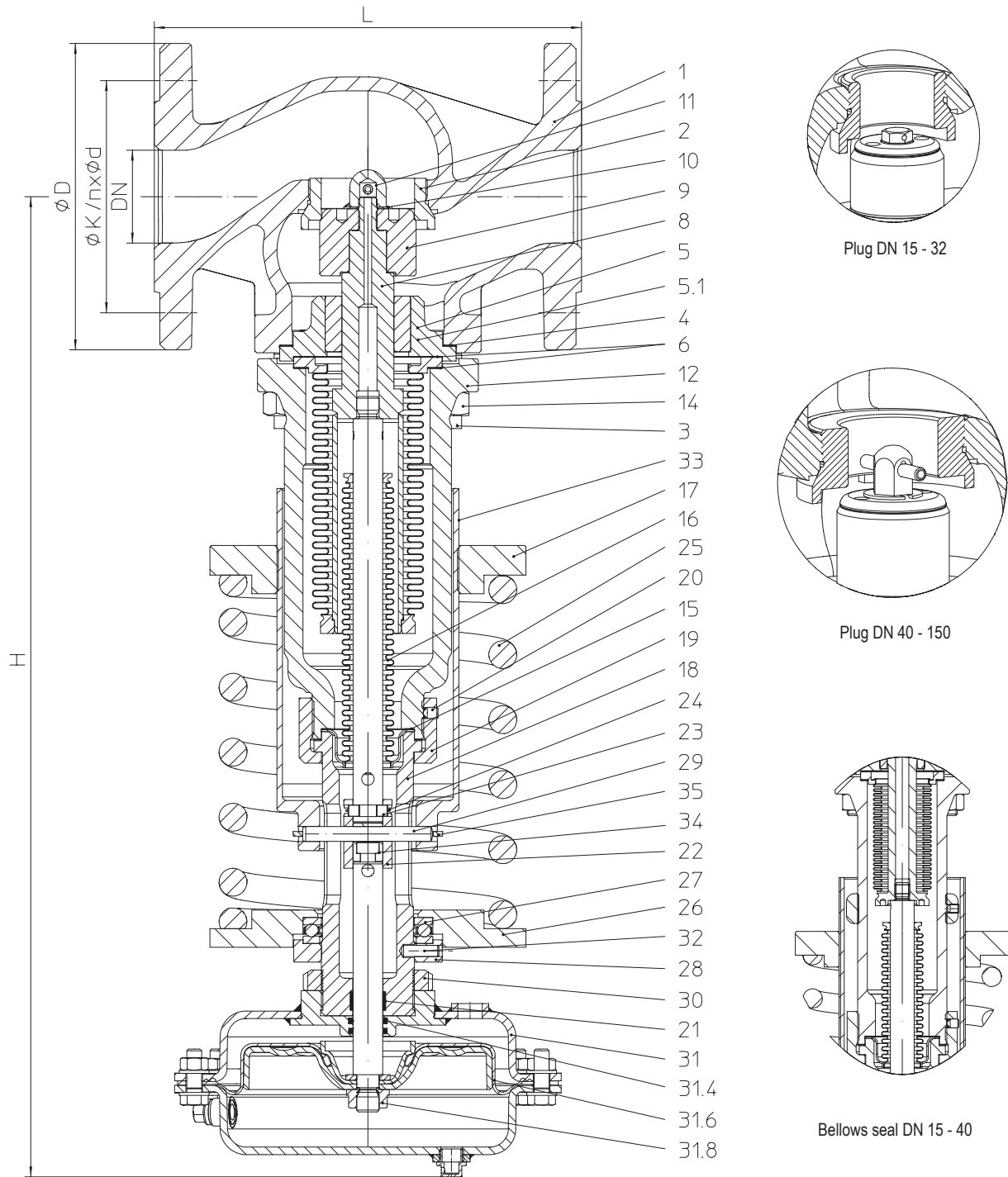


Fig. 705

Features:

- Compact design
- Construction without pillars
- Exact and easy adjustment
- Diameter independent ranges
- Simple change of spring and actuator
- 5 exchangeable actuator sizes
- 3 exchangeable spring sizes
- Pressure balanced by stainless steel bellows
- Spindle sealing via stainless steel bellows
- Secondary stem sealing (optional)
- Tapered seat ring
- Screwed seat ring
- Kvs-values reduceable
- Flow divider for noise reduction (optional)
- Plug with PTFE soft sealing (optional)

Excess pressure regulator, straight through with Diaphragm-Actuator UDA



| Figure | Nominal pressure | Material | Nominal diameter | Inlet pressure ranges | Actuator |
|--------|------------------|-----------|------------------|-----------------------|----------|
| 12.705 | PN16 | EN-JL1040 | DN15-150 | 0,2 - 16 barg | UDA 400 |
| 22.705 | PN16 | EN-JS1049 | DN15-150 | | UDA 250 |
| 23.705 | PN25 | EN-JS1049 | DN15-150 | | UDA 160 |
| 34.705 | PN25 | 1.0619+N | DN15-150 | | UDA 80 |
| 35.705 | PN40 | 1.0619+N | DN15-150 | | UDA 40 |

Technical data for the actuator refer to page 6.

| DN | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | | |
|---------------------------------|-----------|--------|---------------------|-------------------------|-------------------------------|------|----|----|-----|-----|-----|-----|-----|
| Kvs-value | | | | | | | | | | | | | |
| Kvs-value | standard | (m³/h) | 3,2 | 5 | 8 | 12,5 | 20 | 32 | 50 | 80 | 125 | 190 | 280 |
| | reduziert | (m³/h) | 0,1 / 0,4 / 1 / 2,5 | 0,1 / 0,4 / 1 / 2,5 / 4 | 0,1 / 0,4 / 1 / 2,5 / 4 / 6,3 | -- | -- | -- | -- | -- | -- | -- | -- |
| Seat-ø | (mm) | 18 | 22 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | |
| Travel | (mm) | 4 | 5 | 6 | 8 | 8 | 10 | 11 | 13 | 16 | 19 | 22 | |
| Max. differential pressure drop | (bar) | 40 | 40 | 25 | 25 | 25 | 25 | 20 | 20 | 20 | 16 | 16 | |

| Face-to-face dimension FTF series 1 according to DIN EN 558 | | | | | | | | | | | | |
|--|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L | (mm) | 130 | 150 | 160 | 180 | 200 | 230 | 290 | 310 | 350 | 400 | 480 |

| Flanges acc. to DIN EN 1092-1-2 | | | Flange holes / -thickness tolerances acc. to DIN 2533/2544/2545 | | | | | | | | | | |
|--|-----------|------|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| ØD | PN16 | (mm) | 95 | 105 | 115 | 140 | 150 | 165 | 185 | 200 | 220 | 250 | 285 |
| | PN25 / 40 | (mm) | 95 | 105 | 115 | 140 | 150 | 165 | 185 | 200 | 235 | 270 | 300 |
| ØK | PN16 | (mm) | 65 | 75 | 85 | 100 | 110 | 125 | 145 | 160 | 180 | 210 | 240 |
| | PN25 / 40 | (mm) | 65 | 75 | 85 | 100 | 110 | 125 | 145 | 160 | 190 | 220 | 250 |
| n x Ød | PN16 | (mm) | 4 x 14 | 4 x 14 | 4 x 14 | 4 x 18 | 4 x 18 | 4 x 18 | 4 x 18 | 8 x 18 | 8 x 18 | 8 x 18 | 8 x 22 |
| | PN25 / 40 | (mm) | 4 x 14 | 4 x 14 | 4 x 14 | 4 x 18 | 4 x 18 | 4 x 18 | 8 x 18 | 8 x 18 | 8 x 22 | 8 x 26 | 8 x 26 |

| Dimensions | | | | | | | | | | | | | |
|-------------------|---------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| H | UDA 400 | (mm) | 545 | 545 | 550 | 550 | 590 | 590 | 595 | 635 | 660 | 700 | 740 |
| | UDA 250 | (mm) | 505 | 505 | 510 | 510 | 550 | 550 | 555 | 595 | 635 | 660 | 700 |
| | UDA 160 | (mm) | 485 | 485 | 490 | 490 | 530 | 530 | 535 | 580 | 600 | 640 | 680 |
| | UDA 80 | (mm) | 485 | 485 | 490 | 490 | 530 | 530 | 535 | 580 | 600 | 640 | 680 |
| | UDA 40 | (mm) | 485 | 485 | 490 | 490 | 530 | 530 | 535 | 580 | 600 | 640 | 680 |

| Weights | | | | | | | | | | | | | |
|--------------------------------------|--------------|------|----|----|----|----|----|----|----|----|----|-----|-----|
| 12.705 22./23.705 / 34./35.705 | with UDA 400 | (kg) | 28 | 29 | 30 | 32 | 37 | 43 | 50 | 73 | 91 | 131 | 164 |
| | with UDA 250 | (kg) | 23 | 24 | 25 | 27 | 32 | 38 | 45 | 68 | 88 | 129 | 162 |
| | with UDA 160 | (kg) | 21 | 22 | 23 | 25 | 30 | 36 | 43 | 66 | 86 | 127 | 160 |
| | with UDA 80 | (kg) | 20 | 21 | 22 | 24 | 29 | 35 | 42 | 65 | 85 | 126 | 159 |
| | with UDA 40 | (kg) | 19 | 20 | 21 | 23 | 28 | 34 | 41 | 64 | 84 | 125 | 158 |

| Inlet pressure-ranges | | | | | | | |
|------------------------------|--------|-----------|-----------|-----------|-------|----------|--------|
| | (barg) | 0,2 - 0,6 | 0,5 - 1,2 | 0,8 - 2,5 | 2 - 5 | 4,5 - 10 | 8 - 16 |
| Actuator UDA | (cm²) | 400 | 250 | 160 | 80 | 40 | |
| Actuator PN-max. | (barg) | 1,6 | 2,5 | 6 | 10 | 20 | |
| Spring end-No. | | 04 | 04 | 07 | 07 | 07 | 10 |

| DN | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 |
|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|----|----|----|----|----|----|----|----|----|-----|-----|-----|

| Proportional ranges (Combination: actuator with valve in ± bar) | | | | | | | | | | | | | | |
|--|---------|-----------------------------|------------|------|------|------|------|------|------|------|------|------|------|------|
| Actuator (cm²) | UDA 400 | Inlet pressure range (barg) | 0,2 - 0,6 | 0,05 | 0,05 | 0,05 | 0,06 | 0,08 | 0,10 | 0,12 | 0,14 | 0,17 | 0,18 | 0,23 |
| | UDA 250 | | 0,5 - 1,2 | 0,06 | 0,07 | 0,09 | 0,11 | 0,12 | 0,15 | 0,16 | 0,20 | 0,25 | 0,25 | 0,45 |
| | UDA 160 | | 0,8 - 2,5 | 0,15 | 0,20 | 0,25 | 0,35 | 0,35 | 0,40 | 0,55 | 0,50 | 0,65 | 0,65 | 0,85 |
| | UDA 80 | | 2,0 - 5,0 | 0,30 | 0,30 | 0,45 | 0,55 | 0,50 | 0,65 | 0,75 | 0,85 | 1,05 | 1,50 | 1,65 |
| | UDA 40 | | 4,5 - 10,0 | 0,35 | 0,50 | 0,70 | 0,75 | 0,80 | 1,05 | 1,25 | 1,60 | 1,70 | 2,25 | 2,50 |
| | UDA 40 | | 8,0 - 16,0 | 0,50 | 0,65 | 1,05 | 1,15 | 1,20 | 1,50 | 1,60 | 1,80 | 1,90 | 3,30 | 3,50 |

Excess pressure regulators are proportional regulators with permanent control deviation depending from the construction.

The actual control deviation depends on the valve load.

(Kv-value / Kvs-value-max) x Proportional range = Actual control deviation

The values shown are preliminary values and may vary by the real plant.

| Pressure-temperature-ratings | Intermediate values for max. permissible operational pressures can be determined by linear interpolation of the given temperature / pressure chart. | | | | | | |
|-------------------------------------|---|--|--|--|--|--|--|
|-------------------------------------|---|--|--|--|--|--|--|

| acc. to DIN EN 1092-2 | | | -60°C to <-10°C* | -10°C to 120°C | 150°C | 200°C | 250°C | 300°C | 350°C |
|------------------------------|------|-------|------------------|----------------|-------|-------|-------|-------|-------|
| EN-JL1040 | PN16 | (bar) | -- | 16 | 14,4 | 12,8 | 11,2 | 9,6 | -- |
| EN-JS1049 | PN16 | (bar) | on request | 16 | 15,5 | 14,7 | 13,9 | 12,8 | 11,2 |
| EN-JS1049 | PN25 | (bar) | on request | 25 | 24,3 | 23 | 21,8 | 20 | 17,5 |

| acc. to manufacturers standard | | | -60°C to <-10°C* | -10°C to 120°C | 150°C | 200°C | 250°C | 300°C | 350°C |
|---------------------------------------|------|-------|------------------|----------------|-------|-------|-------|-------|-------|
| 1.0619+N | PN25 | (bar) | 18,7 | 25 | 23,9 | 22 | 20 | 17,2 | 16 |
| 1.0619+N | PN40 | (bar) | 30 | 40 | 38,1 | 35 | 32 | 28 | 25,7 |

* Studs and nuts made of A4-70 (at temperatures below -10°C)

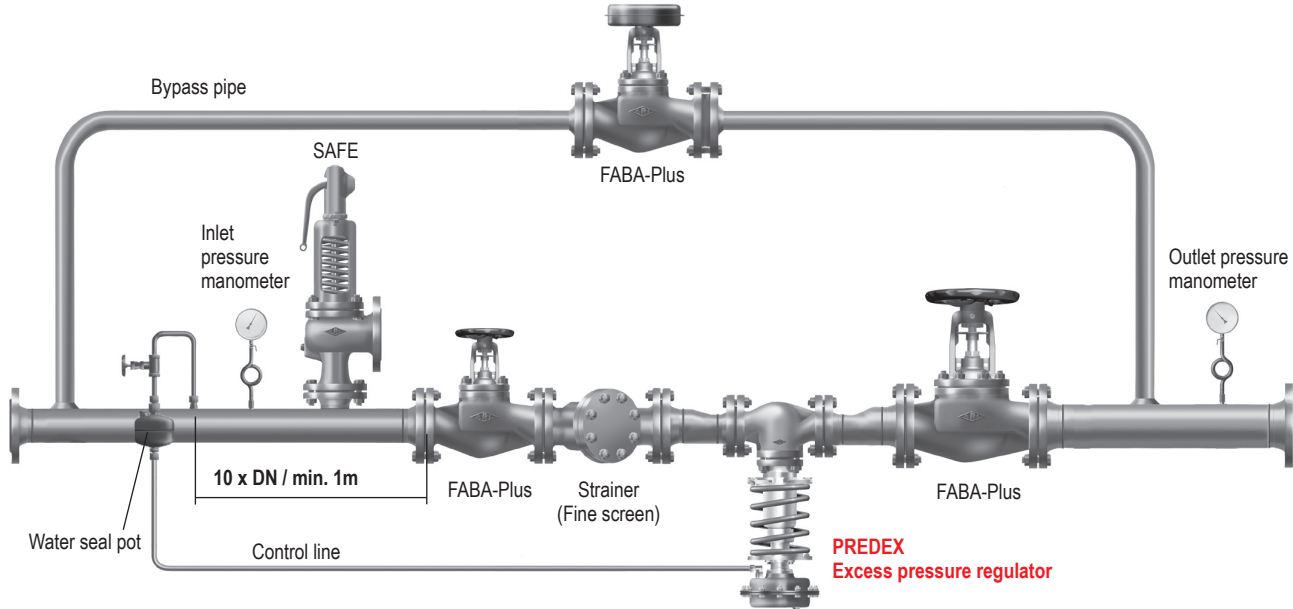
Application

The excess pressure regulator is a self operated, direct acting proportional regulator, which regulates the upstream pressure.

The upstream pressure (p_1) is regulated, this means, the valve opens when the upstream pressure rises over an adjusted set point. If the upstream pressure decreases under the adjusted set point, the valve closes automatically. Because of the stainless steel bellows, the downstream pressure (p_2) has no influence.

Operating fields are to regulate steam, neutral gases, vapours and liquids. With steam and liquids, having temperatures higher than the allowable working temperatures a water seal pot must be installed in the control line (to protect actuator diaphragm). (refer to page 6).

Installation in the control line can be seen in the system drawing:

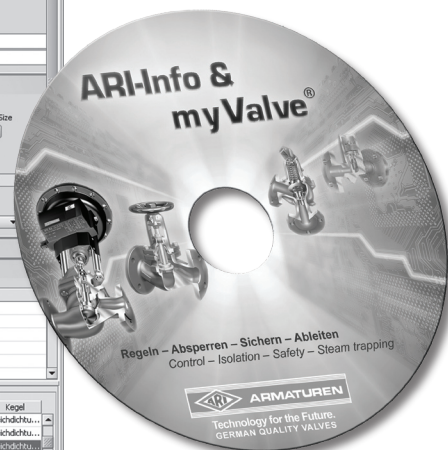
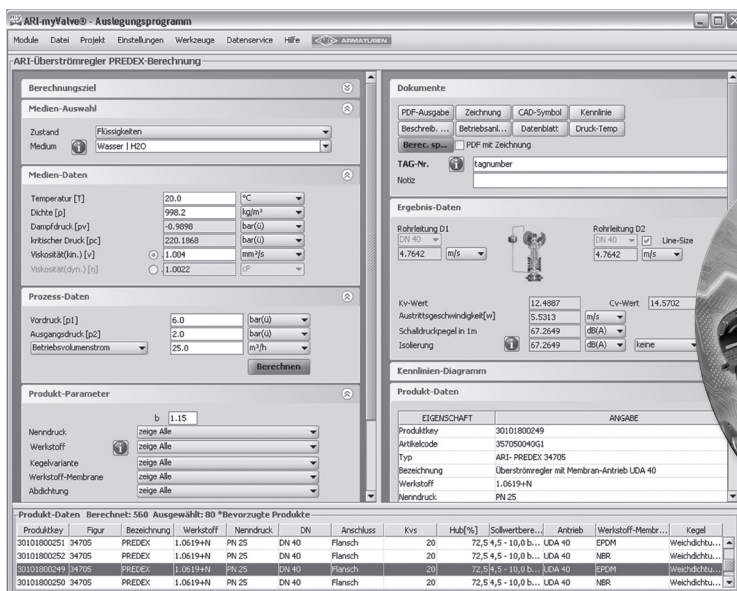


Sizing

For the calculation you have the program myValve (Program part PREDEX - Excess pressure regulator). After giving in the process data, the Fig.-No. and size is recommended out of the integrated data bank. The diameter of the piping in front and behind of the Excess pressure regulator can also be calculated with the max. allowable flow velocities with myValve.

The necessary upstream pressure gives the needed pressure range. Because the regulation tolerance at the end of the range is smaller, the smaller range must be used, in case of a range overlapping. For example: upstream pressure 2,4 bar(g), choose actuator range 0,8 - 2,5 bar(g), although 2-5 bar(g) could be used.

The safety valve used to secure the upstream pressure must have an adequate distance between set pressure and upstream pressure. The valve sizing must be done with the full capacity of the supplying generator (steam generator, compressor, pump, etc.) while the excess pressure regulator is closed. With this found capacity you can, with myValve (Program part: Safety valves), select the safety valve, and with the excess pressure regulator and other valves, administer them under a project.



| Parts | | | | | |
|-------|-------|----------------------|---|------------------------------|----------------------------|
| Pos. | Sp.p. | Description | Fig. 12.705 | Fig. 22.705 Fig. 23.705 | Fig. 34.705 Fig. 35.705 |
| 1 | | Body | EN-JL1040, EN-GJL-250 | EN-JS1049, EN-GJS-400-18U-LT | GP240GH+N, 1.0619+N |
| 2 | x | Screwed seat ring | X20Cr13+QT, 1.4021+QT | | |
| 3 | | Stud | 25CrMo4, 1.7218 - A2B | | |
| 4 | x | Gasket | Pure graphite (CrNi laminated with graphite) | | |
| 5 | | Bush housing | EN-JS1049, EN-GJS-400-18U-LT / X20Cr13+QT, 1.4021+QT | | |
| 5.1 | | Guide bush | X20Cr13+QT, 1.4021+QT | | |
| 6 | x | Gasket | Pure graphite (CrNi laminated with graphite) | | |
| 8 | x | Balanced-bellow-unit | X6CrNiMoTi17-12-2, 1.4571 / X5CrNi18-10, 1.4301 / X20Cr13+QT, 1.4021+QT | | |
| 9 | x | Plug unit | X20Cr13+QT, 1.4021+QT (hardened) | | |
| 10 | | Washer | A2 | | |
| 11 | | Head | X6CrNiTi18-10, 1.4541 / X20Cr13+QT, 1.4021+QT | | |
| 12 | | Hood, geschlossen | EN-JS1049, EN-GJS-400-18U-LT | | |
| 14 | | Hexagon nut | C35E, 1.1181 | | |
| 15 | x | Gasket | Pure graphite (CrNi laminated with graphite) | | |
| 16 | x | Sealing-bellow-unit | X6CrNiMoTi17-12-2, 1.4571 / X5CrNi18-10, 1.4301 / X20Cr13+QT, 1.4021+QT | | |
| 17 | | Adjusting plate | EN-JS1049, EN-GJS-400-18U-LT | | |
| 18 | | Head | EN-JS1030, EN-GJS-400-15 | | |
| 19 | | Screw joint | 11SMn30+C, 1.0715+C | | |
| 20 | | Thread pin | 45H - A2F | | |
| 21 | | Guide bush | PTFE-25%C | | |
| 22 | | Guide coupling | X20Cr13+QT, 1.4021+QT | | |
| 23 | | Cylindrical balls | 102Cr6, 1.2067 | | |
| 24 | | Securing wire | X12CrNi17-7, 1.4310 | | |
| 25 | x | Spring | 51CrV4, 1.8159 | | |
| 26 | | Spring plate | S235JR, 1.0037 | | |
| 27 | | Axial bearing | 102Cr6, 1.2067 | | |
| 28 | | Pressure plate | 11SMn30+C, 1.0715+C | | |
| 29 | | Parallel pin | St | | |
| 30 | | Slotted nut | 5.8 - A2F | | |
| 31 | x | P-Actuator | | | |
| 31.4 | x | Rod seal | Polyurethan | | |
| 31.6 | x | Rolling diaphragm | NBR / EPDM | | |
| 31.8 | x | Collar nut | 8-A4G | | |
| 32 | | Thread pin | 45H-A2F | | |
| 33 | | Set value bonnet | GX5CrNiMo19-11-2, 1.4408 | | |
| 34 | | Adapter | X20Cr13+QT, 1.4021+QT | | |
| 35 | | Securing wire | X39CrMo17-1+QT, 1.4122+QT | | |
| | | L Spare parts | | | |

Information / restriction of technical rules need to be observed!

Operating and installation instructions can be downloaded at www.ari-armaturen.com.

ARI-Valves of EN-JL1040 are not allowed to be operated in systems acc. to TRD 110.

A production permission acc. to TRB 801 No. 45 is available (acc. to TRB 801 No. 45 EN-JL1040 is not allowed.)

The engineer, designing a system or a plant, is responsible for the selection of the correct valve.

Resistance and fitness must be verified (or contact the manufacturer for information).

Diaphragm-Actuator UDA 40 - UDA 400

- Rolling diaphragm
- Connection through a central thread
- Spindle connection with a fast coupling
- Delivered with a flow restrictor and 90°-elbow

Material (Diaphragm):

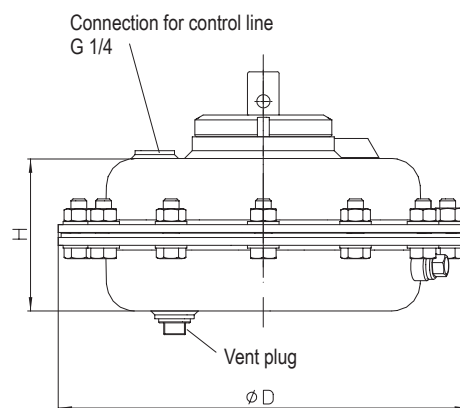
EPDM -40°C to +110°C

NBR -40°C to +100°C

Selection of possible applications:

- Neutral gases, Vapours and liquids

| Actuator | | UDA 400 | UDA 250 | UDA 160 | UDA 80 | UDA 40 |
|----------|------|---------|---------|---------|--------|--------|
| ØD | (mm) | 300 | 250 | 210 | 170 | 140 |
| H | (mm) | 135 | 90 | 80 | 75 | 75 |
| Weight | (kg) | 13,4 | 8,1 | 5,1 | 3,7 | 2,9 |


Water seal pot

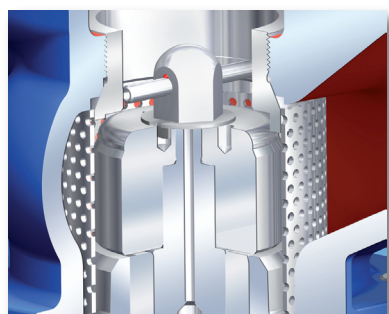
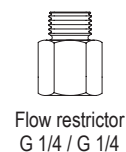
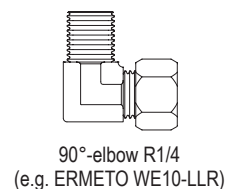
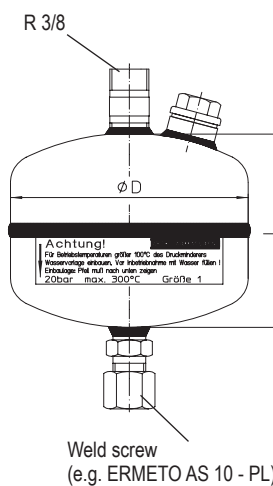
(for media temperatures higher than the allowed diaphragm temperature)

- Delivered with a funnel

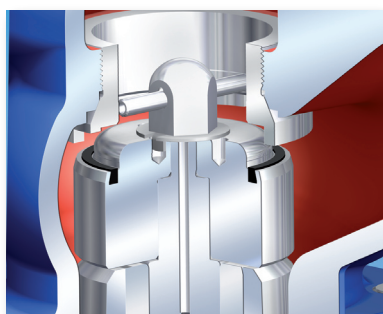
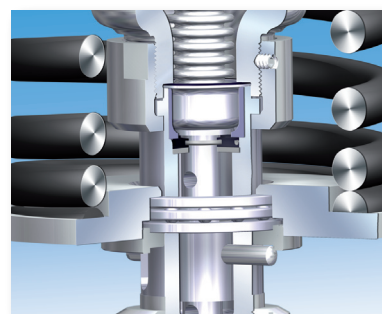
Selection of possible applications:

- Steam
- Hot water
- Neutral liquids

| Actuator | | UDA 400 | UDA 250 | UDA 160 | UDA 80 | UDA 40 |
|----------|--------------------|---------|---------|---------|--------|--------|
| Size | | 2 | | 1 | | |
| ØD | (mm) | 140 | | 102 | | |
| L | (mm) | 110 | | 83 | | |
| V | (dm ³) | 1,2 | | 0,6 | | |



Flow divider for noise reduction


 Plug with PTFE soft sealing
 (max. 200°C)


Secondary stem sealing

Please indicate when ordering:

- Figure-No.
- Nominal diameter
- Nominal pressure
- Body material
- Plug version
- Kvs-value
- Pressure range
- Actuator
- Special design / accessories

Example:

Figure 35.705, Nominal diameter DN100, Nominal pressure PN40, Body material 1.0619+N, metal seat, Kvs 125, 0,8 - 2,5 bar, ARI-UDA 160 with NBR-Membrane, Water seal pot size 1.

 Dimensions in mm
 Weights in kg
 Pressures in barg (gauge)
 1 bar $\hat{=}$ 10⁵ Pa $\hat{=}$ 0,1 MPa
 Kvs in m³/h



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