09/06/2026
**VPPCV21RSP350**

# Needle valve E508 NGL

## Fields of application

The main characteristic of needle valve is the capacity to modulate water flow rate and elevated differential pressure. The needle valve NGL is able to do a linear manoeuvre also in a presence of relevant partialization degree although high inlet pressure and big exercise difference of pressure. The possibility to be actuated by electrical devices permit to use this valve in combination with control system to realize multiple function.

The needle valve controls the water flow rate through the axial movement of a shutter operated by a connecting-rod and crank mechanism. The inlet flow rate is channeled into a round section passage which gradually decreasing and then increasing from the intake to the sealing seat.

The internal profile of the valve is designed to optimize the hydrodynamic profile in order to have:
- low head losses whit valve completely open
- minimize cavitation phenomena in case of big differences between inlet and outlet pressures of valve. In this case the valve can be equipped with a special stainless steel cylinder for hydraulic loads dissipation

## Range

The needle valve E508 NGL is proposed in standard versions:
- Manual or motorized (with handwheel)
- DN100 to 1000
- Without anti-cavitation cylinder



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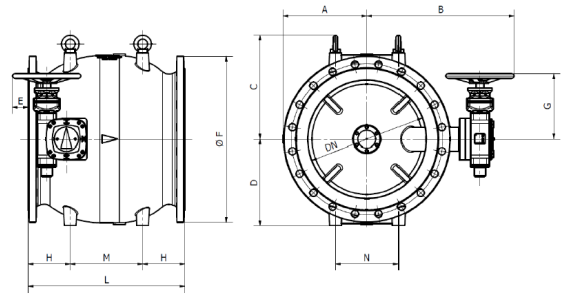
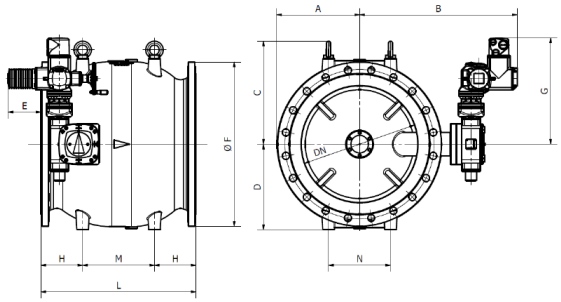
Manual/motorizable Version




Motorized Version




## Dimensions

Manual/motorizable Version

PN10

| DN | A | B | G | D | E | F | L | M | N | H | C | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | kg |
| 100 | 117,5 | 300 | 134 | 122 | 50 | 235 | 300 | 140 | 90 | 80 | 167 | 44 |
| 150 | 150 | 335 | 134 | 155 | 40 | 300 | 350 | 160 | 110 | 95 | 200 | 71 |
| 200 | 170 | 405 | 169 | 185 | 58 | 340 | 400 | 170 | 150 | 115 | 230 | 103 |
| 250 | 198 | 440 | 169 | 218,5 | 53 | 395 | 450 | 200 | 170 | 125 | 263.5 | 150 |
| 300 | 226 | 470 | 169 | 250 | 53 | 445 | 500 | 230 | 200 | 135 | 295 | 198 |
| 400 | 299 | 557 | 174 | 320 | 50 | 565 | 600 | 280 | 240 | 160 | 382 | 344 |
| 500 | 363 | 690 | 303 | 376 | 100 | 670 | 700 | 330 | 316 | 185 | 438 | 582 |
| 600 | 428 | 750 | 303 | 440 | 80 | 780 | 800 | 370 | 320 | 215 | 530 | 808 |
| 700 | 492 | 845 | 308 | 510 | 85 | 895 | 900 | 440 | 440 | 230 | 600 | 1153 |
| 800 | 555 | 910 | 308 | 570 | 80 | 1015 | 1000 | 500 | 500 | 250 | 660 | 1486 |
| 900 | 622 | 1010 | 384 | 640 | 95 | 1115 | 1100 | 550 | 550 | 275 | 730 | 2142 |
| 1000 | 689 | 1075 | 384 | 710 | 75 | 1230 | 1200 | 600 | 600 | 300 | 800 | 2742 |
| 1200 | 833 | 1240 | 384 | 860 | 35 | 1485 | 1400 | 700 | 700 | 350 | 988 | 4126 |
| 1400 | 960 | 1390 | 609 | 1000 | 145 | 1685 | 1600 | 800 | 800 | 400 | 1128 | 5677 |
| 1600 | 1085 | 1575 | 514 | 1100 | 75 | 1930 | 1800 | 900 | 900 | 450 | 1233 | 7550 |



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## PN16

| DN | A | B | G | D | E | F | L | M | N | H | C | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | kg |
| 100 | 117,5 | 300 | 134 | 122 | 50 | 235 | 300 | 140 | 90 | 80 | 167 | 44 |
| 150 | 150 | 335 | 134 | 155 | 40 | 300 | 350 | 160 | 110 | 95 | 200 | 71 |
| 200 | 170 | 405 | 169 | 185 | 58 | 340 | 400 | 170 | 150 | 115 | 230 | 102 |
| 250 | 203 | 440 | 169 | 218,5 | 53 | 405 | 450 | 200 | 170 | 125 | 263.5 | 151 |
| 300 | 230 | 472 | 173 | 250 | 70 | 460 | 500 | 230 | 200 | 135 | 295 | 202 |
| 400 | 299 | 625 | 303 | 320 | 120 | 580 | 600 | 280 | 240 | 160 | 382 | 372 |
| 500 | 363 | 690 | 303 | 376 | 100 | 715 | 700 | 330 | 316 | 185 | 438 | 604 |
| 600 | 428 | 750 | 303 | 440 | 80 | 845 | 800 | 370 | 320 | 215 | 530 | 855 |
| 700 | 492 | 845 | 308 | 510 | 85 | 910 | 900 | 440 | 440 | 230 | 600 | 1161 |
| 800 | 555 | 910 | 308 | 570 | 80 | 1025 | 1000 | 500 | 500 | 250 | 660 | 1490 |
| 900 | 622 | 1010 | 384 | 640 | 95 | 1125 | 1100 | 550 | 550 | 275 | 730 | 2146 |
| 1000 | 689 | 1075 | 384 | 710 | 75 | 1255 | 1200 | 600 | 600 | 300 | 800 | 2769 |
| 1200 | 833 | 1240 | 514 | 860 | 75 | 1485 | 1400 | 700 | 700 | 350 | 988 | 4290 |
| 1400 | 960 | 1390 | 514 | 1000 | 75 | 1685 | 1600 | 800 | 800 | 400 | 1128 | 5665 |
| 1600 | 1085 | 1575 | 514 | 1100 | 75 | 1930 | 1800 | 900 | 900 | 450 | 1233 | 7550 |

## PN25

| DN | A | B | G | D | E | F | L | M | N | H | C | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | kg |
| 100 | 117,5 | 300 | 134 | 122 | 50 | 235 | 300 | 140 | 90 | 80 | 167 | 44 |
| 150 | 150 | 365 | 169 | 155 | 78 | 300 | 350 | 160 | 110 | 95 | 200 | 77 |
| 200 | 180 | 405 | 169 | 185 | 58 | 360 | 400 | 170 | 150 | 115 | 230 | 104 |
| 250 | 213 | 442 | 174 | 218,5 | 70 | 425 | 450 | 200 | 170 | 125 | 263.5 | 158 |
| 300 | 243 | 472 | 174 | 250 | 70 | 485 | 500 | 230 | 200 | 135 | 295 | 207 |
| 400 | 310 | 625 | 303 | 320 | 120 | 620 | 600 | 280 | 240 | 160 | 382 | 385 |
| 500 | 365 | 690 | 308 | 376 | 125 | 730 | 700 | 330 | 316 | 185 | 438 | 616 |
| 600 | 428 | 750 | 308 | 440 | 105 | 845 | 800 | 370 | 320 | 215 | 530 | 859 |
| 700 | 492 | 845 | 308 | 510 | 85 | 960 | 900 | 440 | 440 | 230 | 600 | 1201 |
| 800 | 555 | 910 | 384 | 570 | 115 | 1085 | 1000 | 500 | 500 | 250 | 660 | 1589 |
| 900 | 622 | 1010 | 514 | 640 | 135 | 1185 | 1100 | 550 | 550 | 275 | 730 | 2289 |



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| DN | A | B | G | D | E | F | L | M | N | H | C | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | kg |
| 1000 | 689 | 1075 | 514 | 710 | 115 | 1320 | 1200 | 600 | 600 | 300 | 800 | 3027 |

## Motorized Version

### PN10

| DN | A | B | G | D | E | F | L | M | N | H | C | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | kg |
| 100 | 117,5 | 398 | 388 | 122 | 215 | 235 | 300 | 140 | 90 | 80 | 167 | 63 |
| 150 | 150 | 433 | 388 | 155 | 205 | 300 | 350 | 160 | 110 | 95 | 200 | 90 |
| 200 | 170 | 478 | 413 | 185 | 198 | 340 | 400 | 170 | 150 | 115 | 230 | 121 |
| 250 | 198 | 513 | 413 | 218,5 | 193 | 395 | 450 | 200 | 170 | 125 | 263.5 | 168 |
| 300 | 226 | 543 | 413 | 250 | 193 | 445 | 500 | 230 | 200 | 135 | 295 | 216 |
| 400 | 299 | 630 | 420 | 320 | 208 | 565 | 600 | 280 | 240 | 160 | 382 | 364 |
| 500 | 363 | 713 | 547 | 376 | 190 | 670 | 700 | 330 | 316 | 185 | 438 | 598 |
| 600 | 428 | 773 | 547 | 440 | 170 | 780 | 800 | 370 | 320 | 215 | 530 | 825 |
| 700 | 492 | 868 | 552 | 510 | 175 | 895 | 900 | 440 | 440 | 230 | 600 | 1170 |
| 800 | 555 | 933 | 552 | 570 | 170 | 1015 | 1000 | 500 | 500 | 250 | 660 | 1502 |
| 900 | 622 | 1033 | 628 | 640 | 185 | 1115 | 1100 | 550 | 550 | 275 | 730 | 2158 |
| 1000 | 689 | 1098 | 630 | 710 | 183 | 1230 | 1200 | 600 | 600 | 300 | 800 | 2761 |
| 1200 | 833 | 1263 | 630 | 860 | 143 | 1485 | 1400 | 700 | 700 | 350 | 988 | 4145 |
| 1400 | 960 | 1413 | 760 | 1000 | 183 | 1685 | 1600 | 800 | 800 | 400 | 1128 | 5698 |

### PN16

| DN | A | B | G | D | E | F | L | M | N | H | C | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | kg |
| 100 | 117,5 | 398 | 388 | 122 | 215 | 235 | 300 | 140 | 90 | 80 | 167 | 63 |
| 150 | 150 | 433 | 388 | 155 | 205 | 300 | 350 | 160 | 110 | 95 | 200 | 90 |
| 200 | 170 | 478 | 413 | 185 | 198 | 340 | 400 | 170 | 150 | 115 | 230 | 120 |
| 250 | 203 | 513 | 413 | 218,5 | 193 | 405 | 450 | 200 | 170 | 125 | 263.5 | 169 |
| 300 | 230 | 543 | 413 | 250 | 193 | 460 | 500 | 230 | 200 | 135 | 295 | 220 |



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| DN | A | B | G | D | E | F | L | M | N | H | C | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | kg |
| 400 | 299 | 630 | 420 | 320 | 208 | 580 | 600 | 280 | 240 | 160 | 382 | 390 |
| 500 | 363 | 713 | 547 | 376 | 190 | 715 | 700 | 330 | 316 | 185 | 438 | 620 |
| 600 | 428 | 773 | 547 | 440 | 170 | 845 | 800 | 370 | 320 | 215 | 530 | 872 |
| 700 | 492 | 868 | 552 | 510 | 175 | 910 | 900 | 440 | 440 | 230 | 600 | 1180 |
| 800 | 555 | 933 | 552 | 570 | 170 | 1025 | 1000 | 500 | 500 | 250 | 660 | 1508 |
| 900 | 622 | 1033 | 628 | 640 | 185 | 1125 | 1100 | 550 | 550 | 275 | 730 | 2164 |
| 1000 | 689 | 1098 | 630 | 710 | 183 | 1255 | 1200 | 600 | 600 | 300 | 800 | 2788 |
| 1200 | 833 | 1263 | 630 | 860 | 143 | 1485 | 1400 | 700 | 700 | 350 | 988 | 4312 |
| 1400 | 960 | 1413 | 760 | 1000 | 183 | 1685 | 1600 | 800 | 800 | 400 | 1128 | 5686 |

PN25

| DN | A | B | G | D | E | F | L | M | N | H | C | Mass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | kg |
| 100 | 117,5 | 398 | 388 | 122 | 215 | 235 | 300 | 140 | 90 | 80 | 167 | 62 |
| 150 | 150 | 438 | 413 | 155 | 218 | 300 | 350 | 160 | 110 | 95 | 200 | 95 |
| 200 | 180 | 478 | 413 | 185 | 198 | 360 | 400 | 170 | 150 | 115 | 230 | 122 |
| 250 | 213 | 515 | 418 | 218,5 | 210 | 425 | 450 | 200 | 170 | 125 | 263.5 | 176 |
| 300 | 243 | 545 | 420 | 250 | 228 | 485 | 500 | 230 | 200 | 135 | 295 | 227 |
| 400 | 310 | 648 | 547 | 320 | 210 | 620 | 600 | 280 | 240 | 160 | 382 | 403 |
| 500 | 365 | 713 | 554 | 376 | 233 | 730 | 700 | 330 | 316 | 185 | 438 | 635 |
| 600 | 428 | 773 | 552 | 440 | 195 | 845 | 800 | 370 | 320 | 215 | 530 | 876 |
| 700 | 492 | 868 | 554 | 510 | 193 | 960 | 900 | 440 | 440 | 230 | 600 | 1220 |
| 800 | 555 | 933 | 630 | 570 | 223 | 1085 | 1000 | 500 | 500 | 250 | 660 | 1611 |
| 900 | 622 | 1033 | 760 | 640 | 243 | 1185 | 1100 | 550 | 550 | 275 | 730 | 2311 |
| 1000 | 689 | 1098 | 760 | 710 | 223 | 1320 | 1200 | 600 | 600 | 300 | 800 | 3049 |



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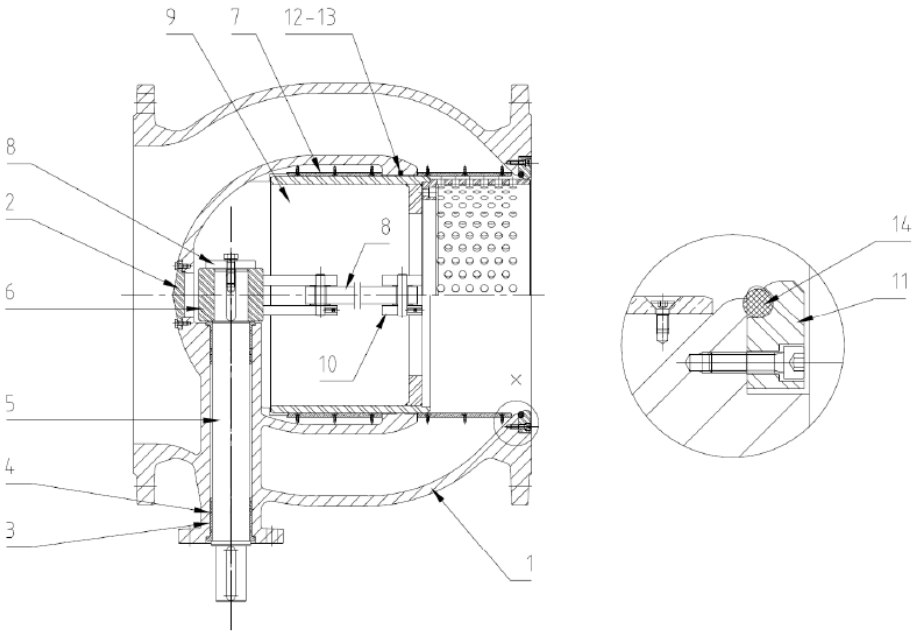
## Material and coating




| Item | Description | Material | Coating |
|---|---|---|---|
| 1 | Body | Ductile Iron GS 500-7 | Epoxy powder 250µ mini – RAL 5005 |
| 2 | Cover | AISI 304 | |
| 3 | Bush | Bronze CuSn12 | |
| 4 | O-ring | Elastomer EPDM | |
| 5 | Shaft | AISI 420 | |
| 6 | Link Block | AISI 304 | |
| 7 | Shutter guides | Bronze CuSn8 | |
| 8 | Rod | AISI 420 | |
| 9 | Shutter | AISI 304 | |
| 10 | Fork | AISI 304 | |
| 11 | Retaining Ring | AISI 304 | |
| 12 | O-ring | NBR | |
| 13 | Sealing Ring | PTFE - Carbographite | |
| 14 | Gasket | NBR | |
| | Anti-cavitation cylinder | AISI 304 | |
| | Internal Screws | AISI 304 | |



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| Item | Description | Material | Coating |
|---|---|---|---|
| | External Screws | AISI 304 | |

## Gearbox and actuator characteristics

Main features gearbox:

- Non-reversible worm gearbox
- Manufacturer: AUMA / Germany
- Material: Cast iron GG25 according to DIN 1693
- External grey coating: 60 microns thickness, primer and spray coating
- Open-close shutter position indicator
- Enclosure IP68.3 according to EN60529
- Actuation flange ready for optional further fitting of an electric actuator
- Handwheel (for manual version): steel - epoxy coated with 150 microns DFT - direction arrows and words OPEN/SHUT stamped

Main features actuator:

- 3 phases/ 400 V/ 50 Hz squirrel cage AC motor
- Manufacturer: AUMA / Germany
- Modulating service S4 -25% according to CEI / IEC standards
- 2 end-stops switches tandem type
- 2 torque limit switches
- Heater in switch compartment (5-20 W)
- Engageable emergency handwheel
- Electronic position transmitter 4-20 mA
- Enclosure IP67 according to EN60529

On request, it is also possible to configure differently the actuator (f.e. limit switches tandem type, enclosure IP68, etc..) and/or install an integral control unit. The gearbox of manual version valve is equipped with flange for electrical actuator mounting. Below the summary table showing the dimensional and operating features of gearing and electric actuators installed on the valves.

Table: Gearbox & actuator characteristics

| DN | PN | Gearbox AUMA type | Number of turns | Operating torque | AUMA actuator | Speed | Closing time |
|---|---|---|---|---|---|---|---|
| mm | | | | Nm | | rpm | s |
| 100 | 16 | GS 50.3 - F10 | 6.5 | 9 | SAR 07.6 | 22 | 18 |
| 100 | 25 | GS 50.3 - F10 | 6.5 | 14 | SAR 07.6 | 22 | 18 |
| 100 | 40 | GS 63.3 - F10 | 6.5 | 23 | SAR 07.6 | 22 | 18 |
| 150 | 16 | GS 50.3 - F10 | 7.5 | 16 | SAR 07.6 | 16 | 28 |



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| DN | PN | Gearbox AUMA type | Number of turns | Operating torque | AUMA actuator | Speed | Closing time |
|---|---|---|---|---|---|---|---|
| 150 | 25 | GS 63.3 - F12 | 7.5 | 24 | SAR 07.6 | 16 | 28 |
| 150 | 40 | GS 63.3 - F12 | 7.5 | 38 | SAR 07.6 | 16 | 28 |
| 200 | 10 | GS 63.3 - F12 | 9.5 | 14 | SAR 07.6 | 16 | 36 |
| 200 | 16 | GS 63.3 - F12 | 9.5 | 22 | SAR 07.6 | 16 | 36 |
| 200 | 25 | GS 63.3 - F12 | 9.5 | 33 | SAR 07.6 | 16 | 36 |
| 250 | 10 | GS 63.3 - F12 | 10.0 | 22 | SAR 07.6 | 11 | 54 |
| 250 | 16 | GS 63.3 - F12 | 10.0 | 33 | SAR 07.6 | 11 | 54 |
| 250 | 25 | GS 80.3 - F12 | 10.4 | 47 | SAR 07.6 | 11 | 56 |
| 300 | 10 | GS 63.3 - F12 | 9.1 | 31 | SAR 07.6 | 11 | 50 |
| 300 | 16 | GS 80.3 - F12 | 9.5 | 44 | SAR 07.6 | 11 | 52 |
| 300 | 25 | GS 80.3 - F12 | 9.5 | 67 | SAR 10.2 | 11 | 52 |
| 400 | 10 | GS 80.3 - F14 | 9.0 | 53 | SAR 10.2 | 8 | 67 |
| 400 | 16 | GS 100.3/VZ4.3 - F14 | 35.3 | 21 | SAR 07.6 | 32 | 66 |
| 400 | 25 | GS 100.3/VZ4.3 - F14 | 35.3 | 33 | SAR 07.6 | 32 | 66 |
| 500 | 10 | GS 100.3/VZ4.3 - F16 | 34.9 | 21 | SAR 07.6 | 22 | 95 |
| 500 | 16 | GS 100.3/VZ4.3 - F16 | 34.9 | 33 | SAR 07.6 | 22 | 95 |
| 500 | 25 | GS 125.3/VZ4.3 - F16 | 34.9 | 50 | SAR 10.2 | 22 | 95 |
| 600 | 10 | GS 100.3/VZ4.3 - F16 | 38.4 | 19 | SAR 07.6 | 22 | 105 |
| 600 | 16 | GS 100.3/VZ4.3 - F16 | 38.4 | 30 | SAR 07.6 | 22 | 105 |
| 600 | 25 | GS 125.3/VZ4.3 - F16 | 38.4 | 44 | SAR 07.6 | 22 | 105 |
| 700 | 10 | GS 125.3/VZ4.3 - F25 | 36.0 | 33 | SAR 07.6 | 16 | 135 |
| 700 | 16 | GS 125.3/VZ4.3 - F25 | 36.0 | 50 | SAR 10.2 | 16 | 135 |
| 700 | 25 | GS 125.3/VZ4.3 - F25 | 36.0 | 77 | SAR 10.2 | 16 | 135 |
| 800 | 10 | GS 125.3/VZ4.3 - F25 | 35.2 | 60 | SAR 07.6 | 16 | 132 |
| 800 | 16 | GS 125.3/VZ4.3 - F25 | 35.2 | 120 | SAR 10.2 | 16 | 132 |
| 800 | 25 | GS 160.3/GZ 8:1 - F25 | 74.8 | 120 | SAR 10.2 | 32 | 140 |
| 900 | 10 | GS 160.3/GZ 8:1 - F30 | 72.9 | 60 | SAR 07.6 | 22 | 199 |
| 900 | 16 | GS 160.3/GZ 8:1 - F30 | 72.9 | 120 | SAR 10.2 | 22 | 199 |
| 900 | 25 | GS 200.3/GZ 16:1 - F30 | 142.5 | 120 | SAR 10.2 | 45 | 190 |
| 1000 | 10 | GS 160.3/GZ 8:1 - F30 | 73.9 | 47 | SAR 10.2 | 22 | 201 |
| 1000 | 16 | GS 160.3/GZ 8:1 - F30 | 73.9 | 73 | SAR 10.2 | 22 | 201 |
| 1000 | 25 | GS 200.3/GZ 16:1 - F30 | 144.4 | 64 | SAR 10.2 | 45 | 193 |
| 1200 | 10 | GS 160.3/GZ 8:1 - F30 | 76.7 | 58 | SAR 10.2 | 16 | 288 |
| 1200 | 16 | GS 200.3/GZ 16:1 - F30 | 149.0 | 52 | SAR 10.2 | 32 | 281 |



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| DN | PN | Gearbox AUMA type | Number of turns | Operating torque | AUMA actuator | Speed | Closing time |
|---|---|---|---|---|---|---|---|
| 1400 | 10 | GS 200.3/GZ 16:1 - F35 | 149.0 | 51 | SAR 10.2 | 32 | 279 |
| 1400 | 16 | GS 200.3/GZ 16:1 - F35 | 149.0 | 78 | SAR 10.2 | 32 | 279 |
| 1600 | 10 | GS 200.3/GZ 16:1 - F35 | 149.0 | 78 | SAR 10.2 | 32 | 279 |
| 1600 | 16 | GS 250.3/GZ 16:1 - F35 | 146.2 | 104 | SAR 14.2 | 32 | 274 |

## Performances and Standards

### Hydraulic test

Every single needle valve is subjected to hydraulic final test in according to EN12266 and EN1074:

- Body test at Ptest = max (1,5·PN ; PEA) (opened valve)
- Seat test at Ptest = max (1,1·PN ; PEA) (closed valve)

### Product test

Control of coating: thickness control, holiday test, impact test, MIBK test.

### Conformity to Standards

Plan test:

- EN 12266
- EN 1074

Flange drilling:

- EN 1092-2
- ISO 7005-2
- Face to face EN-558-1 Serie 15

Control devices connection:

- ISO 5211 for valve-gearbox
- ISO 5210 for gearbox-actuator

Suitability for potable water:

- D.M. 174/04 for applicable parts (ex C.M. 102 of 02/12/1978)
- Foreign conformity: KTW (Germany), WRC (U.K.), ACS (France)

### Valve selection

For the right dimensioning and functioning and it is necessary to know the followings hydraulic parameters:

- Hydrostatic downstream pressure (that is the upstream pressure with closed valve)
- Upstream pressure Pin and downstream pressure Pout with maximum flow rate Qmax
- Upstream pressure Pin and downstream pressure Poutwith minimum flow rate Qmin

Moreover it’s necessary to verify that the maximum speed in the valve have to be equal or inferior to 5m/s and the temperature have to stay between 0°C and 40 °C.



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With this parameters is possible to size correctly the valve and evaluate if is necessary to use the anticavitation cylinder, consulting the Technical-Commercial SG PAM department.

## Hydraulic features

Diagram 1

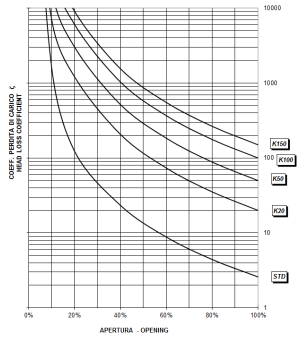
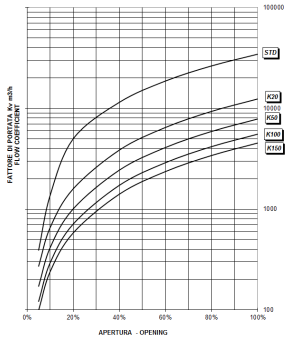



Diagram 2
DN1400 NGL




For the calculation of head loss is possible to use the following expression:

$$\Delta H = \frac{\zeta . v^2}{2.g}$$

in which: Δh = head loss (m.c.a.), ζ = head loss coefficient (adimensional – from diagram 1), v = nominal speed (m/s), g = gravity acceleration 9,81 (m/s2)

After it's possible determinate the flow rate Q (m3/h) in this way:

$$Q = {}^{Kv}\sqrt{\frac{\Delta h}{10.2}}$$



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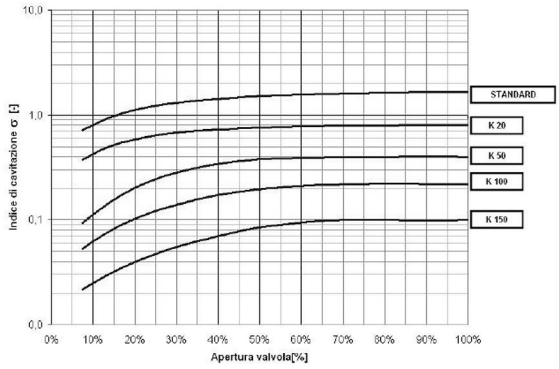
with Kv = flow rate coefficient (from diagram 2). It correspond to the flow rate in m3/h at 20°C that will cause a pressure drop of 1 m of column of water (10,2 corrective factor in meters).

## Cavitation




To estimate the risk of cavitation it's possible to use the following diagram. In order to verify if the valve are working in cavitation condition it is necessary to determinate the cavitation index σ by means the following formula:
with: Pout = dynamic outlet pressure (m.c.a.), Pin = dynamic intlet pressure (m.c.a.) , Pa = absolute pressure (~ 10m)
The following diagram shows the critical cavitation index in relation to grade of opening for each typology (standard, anti-cavitation cylinder K20, K50, K100, K150). The value of cavitazione index σ should be about 25% above to the critical ones. The opening degree is calculated as showed in Par.4.1.

### Marking

On the body according to EN19:

- Nominal diameter in mm (DN)
- Nominal pressure in bar (PN)
- Type of ductile iron
- Manufacturer's logo
- Flow direction
- Model code
- Fusion date.

On the label according to EN19:

- Nominal diameter in mm (DN)
- Nominal pressure in bar (PN)
- Maximum allowable pressure (PFA)
- Closing diraction
- Product code
- Ordination number and confirmation
- Manufacturer's logo.



SAINT-GOBAIN
Saint-Gobain PAM Canalisation
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### Instruction for use

**Storage**
The needle valve will have to be held (if possible) in covered places, the most possible protected from the sun (maximum temperature 70°C) and from the rain and generally from the atmospheric agents. Moreover it will have to be avoided that the seal of the same air valves come to contact with powder or earth.

**Installation**
Had to be respected the direction of flow rate marked in fusion on the body of valve. Reverse flow can be accepted only with complete open valve without any necessity of regulation. It's better to insert a dismounting joint to facilitate all the operation of installation and maintenance. For detailed information see Operation and Maintenance Manual.

**Maintenance**
Any maintenance operation requested had to be made only when the system has been emptied completely, in order to avoid any accident for the responsible operator. In order to keep this particularity, it is however necessary to operate the valve at least once a year, for a total cycle (opening/closing). For detailed information see Operation and Maintenance Manual.

**Note**
Saint-Gobain PAM reserves the right to modify the products anyway fully respecting the laws in force. Always use products fully complying with the European Directives to which the products themselves have to comply with.
FOR ANY FURTHER POSSIBLE TECHNICAL INFORMATION, PLEASE CONSULT SAINT-GOBAIN PAM.

## Linked products

Operation and maintenance instructions for needle valve



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*The information on this sketch is, to the best of our knowledge correct at the time of printing. However Saint-Gobain are constantly looking at ways of improving their products and services therefore reserve the right to change without prior notice, any of the data shown. Any orders placed will be subject to our Standard Conditions of Sale, available on request.*



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