

Primary characteristics

NAF-Duball is a full-bore ball valve which, due to its design and combination of materials, is equally suitable for use as control valve, on/off control valve or shut-off valve. The NAF-Duball is supplied as standard in stainless steel. Also available in other materials e.g. Hastelloy C.

The valve has:

- an easy-to-service arrangement, due to the off-center joint face of the valve body, which allows for easy replacement of the ball and seals, without the need for removing the stem and actuator.
- a floating ball that seals in both directions of flow and at low differential pressures. For tight valve at differential pressures below 0,5 bar consult NAF.
- sturdy, blowout-proof rigidly journalled stem and a drive arrangement between the ball and stem that transmits torque evenly
- stem seal with maintenance-free O-ring seals or stuffing box
- metal-to-metal Alloy 6 seat rings or soft, enclosed carbon reinforced PTFE seat rings.
- a range of materials available for the ball
- a wide range of optional versions, over and above those described in the catalogue sheet
- the NAF standard for mounting the actuator, which simplifies installation and results in a compact valve/actuator unit.

CE-marked according to Pressure Equipment Directive (PED 97/23/EG) module H, category III. For module H1, category IV contact NAF

Applications

NAF-Duball can be used both as a control valve and as a shut-off valve, in a wide variety of applications and in different operating modes. The valve represents a concrete result of our product philosophy which is focused on functionality, high quality and low life cycle costs, and is based on concentrating our range to a limited number of valve types, but all of them suitable for a wide variety of applications.

The excellent characteristics of NAF-Duball are particularly beneficial under the most arduous operating conditions in the process industry, where difficult media and demanding pressure conditions make severe demands on the design, materials and performance.

NAF-Duball is recommended for applications in the following branches:

- Pulp and Paper
- Chemical and Petro Chemical
- Oil and gas
- Power stations
- Steel works



Technical specification for standard design

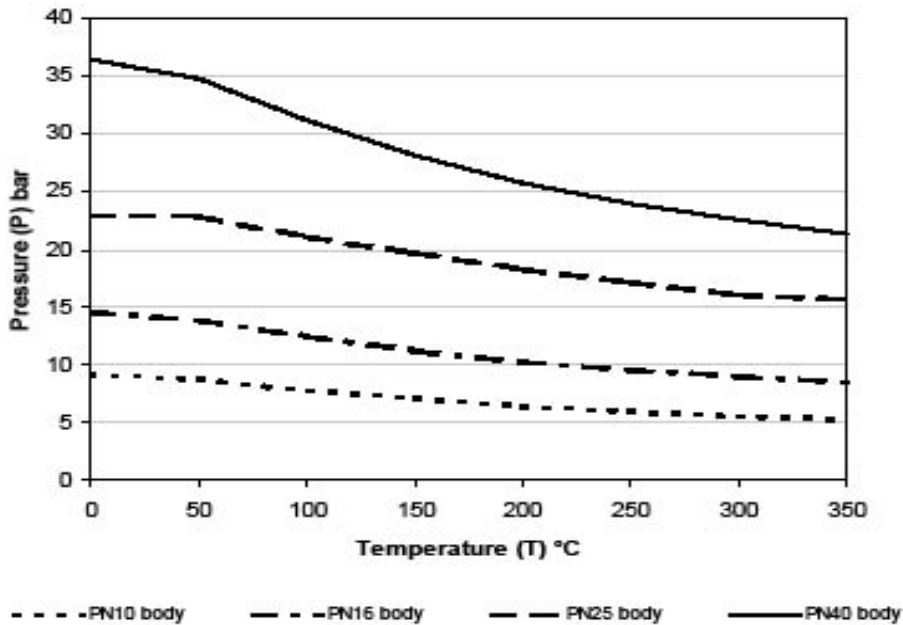
| | |
|-----------------------|--|
| Material: | EN 1.4408 |
| Size range: | DN 25—400 (1"—16") |
| Pressure ratings: | PN 10—40 ANSI Class 150—300 |
| Face-to face lengths: | PN 10: EN 558-1 series 12 (SSG 1042) ANSI 150: ANSI B 16.10 Class 150 long PN 25—40: EN 558-1 series 4 (SSG 1043) ANSI 300: ANSI B 16.10 Class 300 short Size 1"—12" Class 300 long Size 14"—16" |
| Valve design: | ANSI B16.34 och EN 12 516 |
| Installation method: | Flanges to DIN or ANSI B 16.5 |
| Temperature range: | -30 - 350°C, see graph on page 2 |
| Test pressure: | 1,5xPN with valve open 1,1xPN with valve closed |
| Sealing class: | Testing medium is water. PTFE seats EN 12266-1 Rate A Metal seats IEC 534-4 Class V ANSI / FCI70-2 |

At request for test fluid air contact NAF for more information

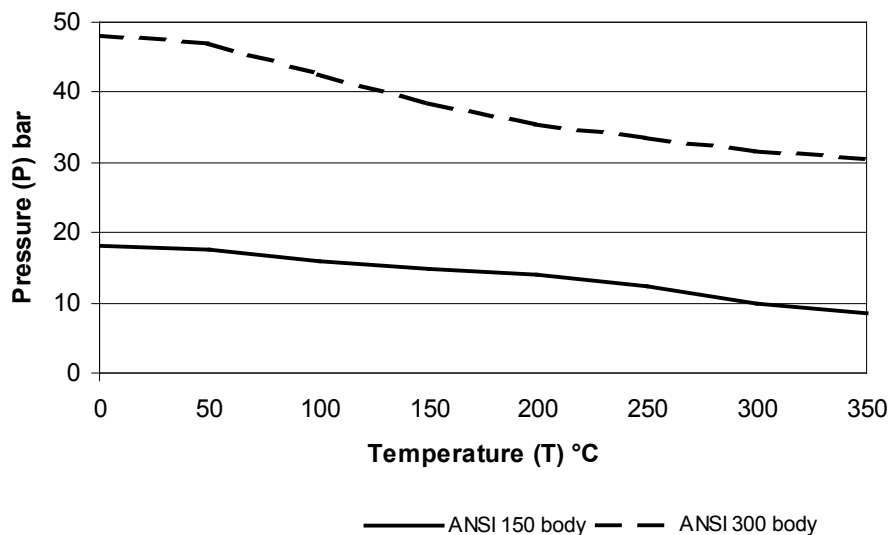
Working pressure, differential pressure and temperature

The maximum working pressure and temperature in the body depends on pressure class according to respectively flange standards. For EN1092-1:2001 see the diagram. The differential pressure when the valve is closed is 25 bar, and the temperature dependence is shown in the diagram on page 3. The stem gland with EPDM O-ring can be used for temperatures up to 200°C. The standard design of stem gland with stuffing box and graphite packing and stem bushings in Stellite can be used for temperatures up to 350°C. For higher temperatures, consult NAF.

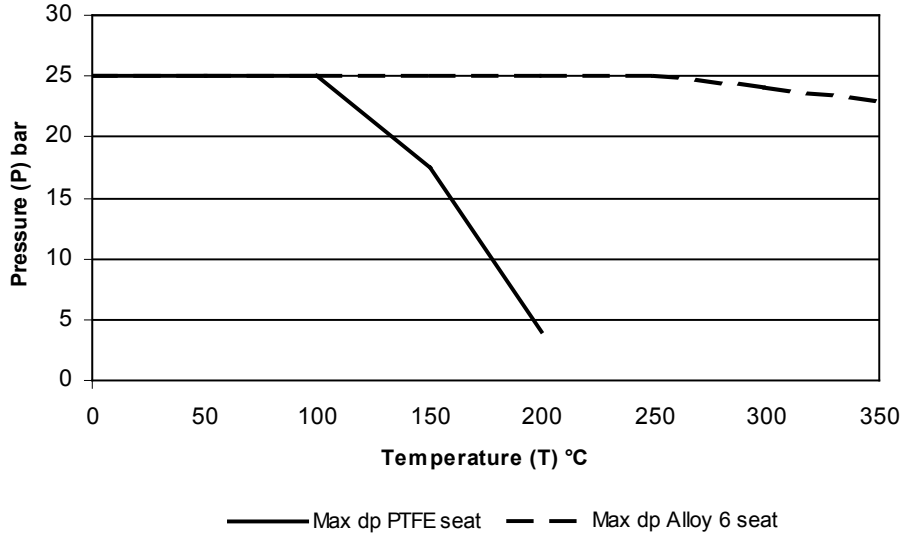
Max. Working Pressure PN Valves



Max. Working Pressure ANSI valves



Max. dp



Flow capacities and characteristics (Table 1)

| DN | Size | K _v at an opening angle of | | | | | | | | | | | | | | | |
|-----|------|---------------------------------------|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|-------|-------|
| | | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° | 55° | 60° | 65° | 70° | 75° | 80° | 85° | 90° |
| 25 | 1 | 0 | 1 | 1 | 2 | 2 | 3 | 4 | 5 | 7 | 9 | 12 | 16 | 22 | 31 | 45 | 63 |
| 40 | 1.5 | 0 | 2 | 3 | 4 | 6 | 8 | 11 | 14 | 18 | 24 | 31 | 40 | 55 | 79 | 116 | 160 |
| 50 | 2 | 1 | 3 | 4 | 6 | 9 | 13 | 17 | 21 | 28 | 37 | 48 | 63 | 86 | 123 | 182 | 250 |
| 65 | - | 1 | 5 | 7 | 11 | 16 | 21 | 28 | 36 | 48 | 63 | 81 | 106 | 145 | 209 | 307 | 423 |
| 80 | 3 | 2 | 7 | 11 | 16 | 24 | 32 | 42 | 55 | 72 | 95 | 122 | 161 | 220 | 316 | 466 | 640 |
| 100 | 4 | 3 | 11 | 17 | 26 | 37 | 50 | 66 | 86 | 113 | 149 | 191 | 251 | 344 | 494 | 728 | 1000 |
| 125 | - | 5 | 17 | 26 | 40 | 58 | 78 | 103 | 134 | 176 | 232 | 199 | 393 | 538 | 771 | 1137 | 1563 |
| 150 | 6 | 7 | 24 | 38 | 58 | 84 | 113 | 149 | 193 | 254 | 334 | 430 | 565 | 775 | 1111 | 1637 | 2250 |
| 200 | 8 | 12 | 43 | 67 | 103 | 149 | 200 | 265 | 343 | 451 | 594 | 765 | 1005 | 1377 | 1975 | 2910 | 4000 |
| 250 | 10 | 19 | 67 | 105 | 160 | 233 | 313 | 441 | 535 | 705 | 929 | 1195 | 1570 | 2150 | 3086 | 4547 | 6250 |
| 300 | 12 | 27 | 97 | 151 | 231 | 335 | 450 | 596 | 771 | 1015 | 1337 | 1721 | 2261 | 3098 | 4444 | 6548 | 9000 |
| 350 | 14 | 37 | 132 | 205 | 315 | 456 | 613 | 811 | 1049 | 1381 | 1820 | 2343 | 3078 | 4217 | 6048 | 8912 | 12250 |
| 400 | 16 | 48 | 172 | 268 | 411 | 596 | 800 | 1059 | 1370 | 1804 | 2377 | 3060 | 4020 | 5508 | 7900 | 11640 | 16000 |

Note: For sizes > DN400 see NAF-Trunnball Fk 41.66
 $C_v = 1,16 \times K_v$

Materials (Table 2)

| Item | Qty | Part | Material |
|------|-----|----------------------|-----------------------------------|
| 1 | 1 | Body | EN 1.4408/CF8M |
| 2 | 1 | Body | EN 1.4408/CF8M |
| 3 | 1 | Ball | EN 1.4408/CF8M |
| 4* | 2 | Seat ring | PTFE carbon reinforced 10% |
| 5 | 1 | Stem assembly | EN 1.4460 |
| 6 | 1 | Circlip | Spring steel |
| 7 | 1 | Backing ring | PTFE |
| 8 | 1 | Washer | A4 |
| 9 | ** | Screw | A4 |
| 10* | 1 | Backing ring | PTFE |
| 11* | 2 | O-ring | EPDM |
| 12* | 2 | Bushing | PTFE carbon reinforced |
| 13* | 1 | Anti-friction washer | PTFE carbon reinforced |
| 14* | 1 | Seal ring | PTFE |
| 15 | 1 | Bolt | A4 |
| 16 | 1 | Nut | A4 |
| 17 | 1 | Stud | A4 |
| 18 | 2 | Key | A4 |
| 19 | 1 | Ball | EN 1.4408/CF8M hard chrome plated |
| 20 | 1 | Ball | Alloy 6 |
| 21 | 2 | Seat ring | SS/Alloy 6 |
| 22* | 2 | Seat seal | PTFE carbon reinforced |
| 23 | 1 | Gland cover | EN 1.4408/CF8M |
| 24* | 1 | Boxpacking | Graphite |
| 25 | 2 | Bolt | A4 |
| 26 | 2 | Nut | A4 |
| 27 | 1 | Split ring | EN 1.4436 |
| 28 | 1 | Ring | Alloy 6 |
| 29 | 2 | Bushing | Alloy 6 |
| 30* | 1 | Seal ring | Graphite |
| 31* | 2 | Seal ring | Graphite |
| 32 | 1 | Stem extension | EN 1.4460 |
| 33 | 2 | Actuator yoke | Zink plated steel |
| 34 | 1 | Stop screw | A4 |

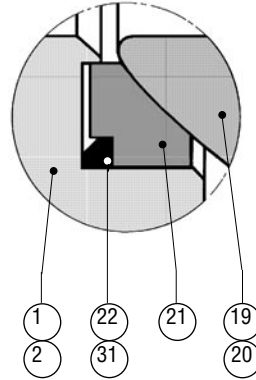
* Recommended spare parts

** Qty depends on the DN.

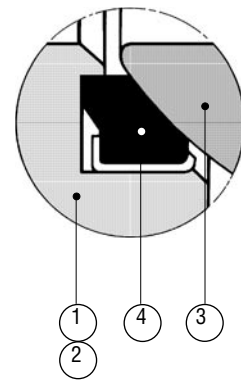
Items 23—34 are for the stuffing box version for 350°C. Material combinations others than those specified are available to order - consult your NAF representative.

Seat ring

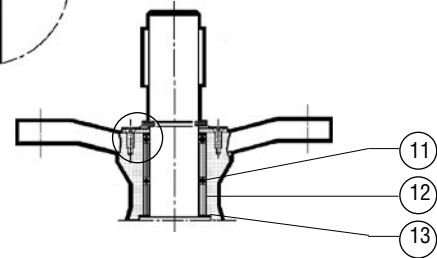
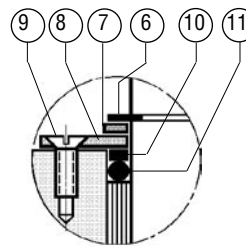
Alloy 6 seat



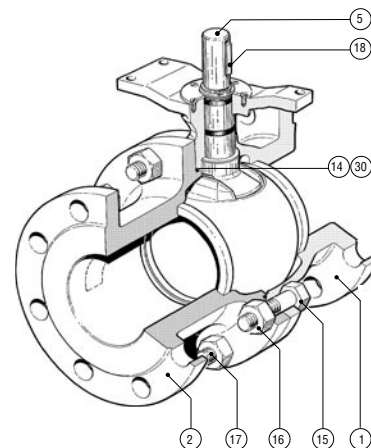
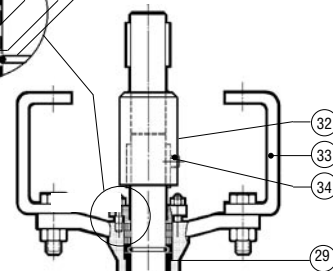
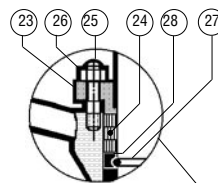
PTFE-seat



O-ring version



Packing box version



Operating torque, Nm (Table 3)

| DN | Differential pressure in bar | | | | | | | | | |
|-----|------------------------------|---------|------|---------|-------|---------|-------|---------|-------|---------|
| | 5 | | 10 | | 16 | | 20 | | 25 | |
| | PTFE | Alloy 6 | PTFE | Alloy 6 | PTFE | Alloy 6 | PTFE | Alloy 6 | PTFE | Alloy 6 |
| 25 | 12 | 15 | 16 | 20 | 19 | 23 | 22 | 30 | 25 | 35 |
| 40 | 16 | 20 | 23 | 28 | 30 | 36 | 35 | 42 | 40 | 50 |
| 50 | 20 | 25 | 30 | 36 | 40 | 48 | 48 | 60 | 60 | 70 |
| 65 | 30 | 36 | 50 | 60 | 75 | 85 | 85 | 105 | 110 | 130 |
| 80 | 55 | 65 | 90 | 110 | 130 | 160 | 160 | 200 | 200 | 240 |
| 100 | 95 | 115 | 160 | 190 | 250 | 280 | 300 | 350 | 350 | 450 |
| 125 | 180 | 210 | 320 | 390 | 480 | 550 | 530 | 690 | 680 | 850 |
| 150 | 300 | 350 | 530 | 620 | 750 | 950 | 920 | 1150 | 1100 | 1400 |
| 200 | 750 | 930 | 1350 | 1600 | 1900 | 2400 | 2380 | 2900 | 2900 | 3500 |
| 250 | 1500 | 1750 | 2500 | 3000 | 3600 | 4500 | 4400 | 5400 | 5200 | 6500 |
| 300 | 2400 | 3200 | 4000 | 5100 | 6000 | 7500 | 7200 | 9000 | 9000 | 11000 |
| 350 | 3800 | 4500 | 6400 | 8000 | 10000 | 12000 | 11500 | 14500 | 14500 | 18000 |
| 400 | 5500 | 7000 | 9700 | 12000 | 15000 | 18000 | 18000 | 22000 | 22000 | 26000 |

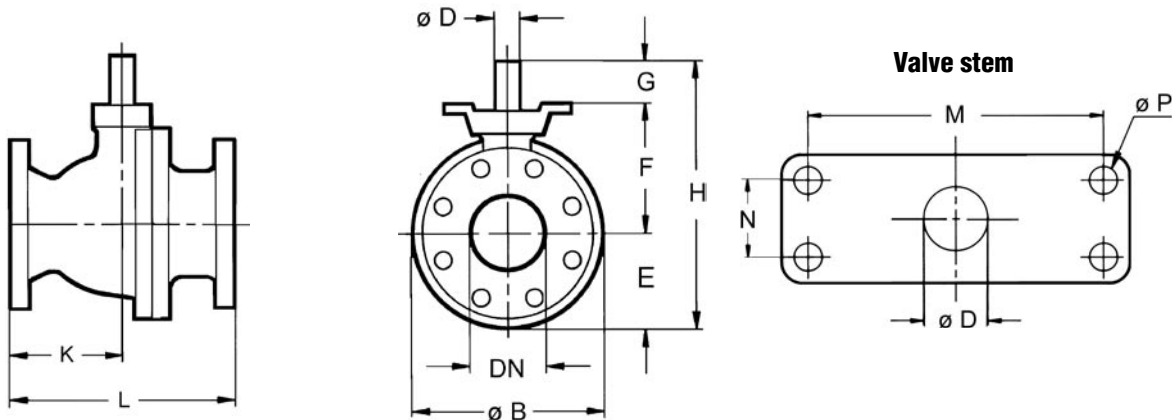
Operating torque

The minimum design differential pressure for selecting the actuator is 5 bar. The specified torques in the table above are for clean media. For steam and with Stellite seat rings increases the required torque with factor 1.5. If the media contains solids, if it is a suspension, etc., consult NAF.

Sizing of control valves

We have a user friendly valve calculation program which can be ordered through your NAF representative. The program is based on calculating formula according to the standards IEC 60534 and ISA S75.01.

Dimensions and mass



(Table 4)

| Size DN | B | D | E | F | G | H | K PN10 | L PN10 | K PN25 | L PN25 | K PN40 | L PN40 |
|---------|-----|-----|-----|-----|-----|------|--------|--------|--------|--------|--------|--------|
| 25 1" | 124 | 16 | 62 | 83 | 38 | 183 | 1) | 1) | 2) | 2) | 66 | 165 |
| 40 1,5" | 150 | 16 | 75 | 91 | 38 | 204 | 1) | 1) | 2) | 2) | 95 | 190 |
| 50 2" | 165 | 20 | 83 | 106 | 43 | 232 | 1) | 1) | 2) | 2) | 108 | 216 |
| 65 - | 185 | 25 | 93 | 113 | 50 | 256 | 111 | 222 | 2) | 2) | 121 | 241 |
| 80 3" | 214 | 25 | 107 | 137 | 50 | 284 | 121 | 241 | 2) | 2) | 142 | 283 |
| 100 4" | 244 | 25 | 122 | 152 | 50 | 324 | 153 | 305 | 2) | 2) | 153 | 305 |
| 125 - | 290 | 35 | 145 | 179 | 65 | 389 | 178 | 356 | 2) | 2) | 191 | 381 |
| 150 6" | 336 | 40 | 168 | 218 | 80 | 466 | 197 | 394 | 2) | 2) | 202 | 403 |
| 200 8" | 452 | 50 | 226 | 268 | 93 | 587 | 229 | 457 | 251 | 502 | 251 | 502 |
| 250 10" | 528 | 60 | 264 | 321 | 111 | 696 | 267 | 533 | 284 | 568 | 284 | 568 |
| 300 12" | 622 | 70 | 311 | 379 | 131 | 821 | 305 | 610 | 324 | 648 | 324 | 648 |
| 350 14" | 688 | 90 | 344 | 467 | 172 | 983 | 343 | 686 | 381 | 762 | 381 | 762 |
| 400 16" | 767 | 100 | 384 | 518 | 190 | 1092 | 381 | 762 | 419 | 838 | 419 | 838 |

(Table 5)

| Size DN | K | L | K | L | M | N | P | Mass, kg | | | | |
|---------|-----|-----|-----|-----|-----|-----|----|----------|-----|----------|-----|-------|
| | | | | | | | | ANSI 150 | | ANSI 300 | | PN 10 |
| 25 1" | 52 | 127 | 66 | 165 | 115 | 30 | 11 | 1) | 2) | 9 | 9 | 10 |
| 40 1,5" | 60 | 165 | 95 | 190 | 115 | 30 | 11 | 1) | 2) | 11 | 11 | 12 |
| 50 2" | 74 | 178 | 108 | 216 | 115 | 30 | 11 | 1) | 2) | 14 | 13 | 14 |
| 65 - | - | - | - | - | 115 | 30 | 11 | 17 | 2) | 19 | - | - |
| 80 3" | 102 | 203 | 142 | 283 | 115 | 30 | 11 | 23 | 2) | 27 | 23 | 30 |
| 100 4" | 107 | 229 | 153 | 305 | 115 | 30 | 11 | 33 | 2) | 36 | 36 | 43 |
| 125 - | - | - | - | - | 160 | 40 | 14 | 53 | 2) | 61 | - | - |
| 150 6" | 197 | 394 | 202 | 403 | 214 | 60 | 18 | 74 | 2) | 81 | 75 | 91 |
| 200 8" | 229 | 457 | 210 | 419 | 214 | 60 | 18 | 124 | 144 | 154 | 127 | 148 |
| 250 10" | 267 | 533 | 229 | 457 | 214 | 60 | 18 | 197 | 222 | 241 | 203 | 232 |
| 300 12" | 305 | 610 | 251 | 502 | 277 | 115 | 33 | 298 | 334 | 364 | 316 | 340 |
| 350 14" | 343 | 686 | 381 | 762 | 277 | 115 | 33 | 422 | 504 | 539 | 437 | 542 |
| 400 16" | 381 | 762 | 419 | 838 | 277 | 115 | 33 | 570 | 668 | 728 | 591 | 716 |

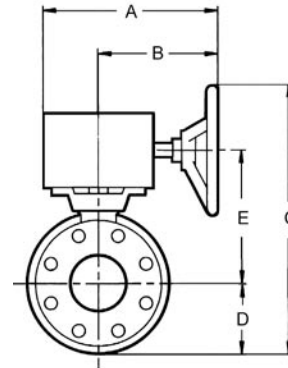
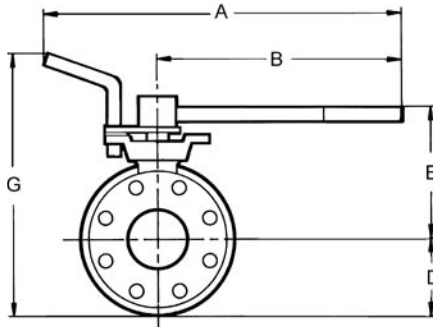
1) For PN 10 in sizes DN 25-50 see PN40
 2) For PN 25 in sizes DN 25-150 see PN 40

Actuators

NAF-Duball is available with hand levers or with pneumatic or electric actuators and accessories.

Use the following tables for selecting the hand levers and standard pneumatic actuators. For clean media type water 20 °C.

If other pneumatic or electric actuators are required, consult your NAF representative.

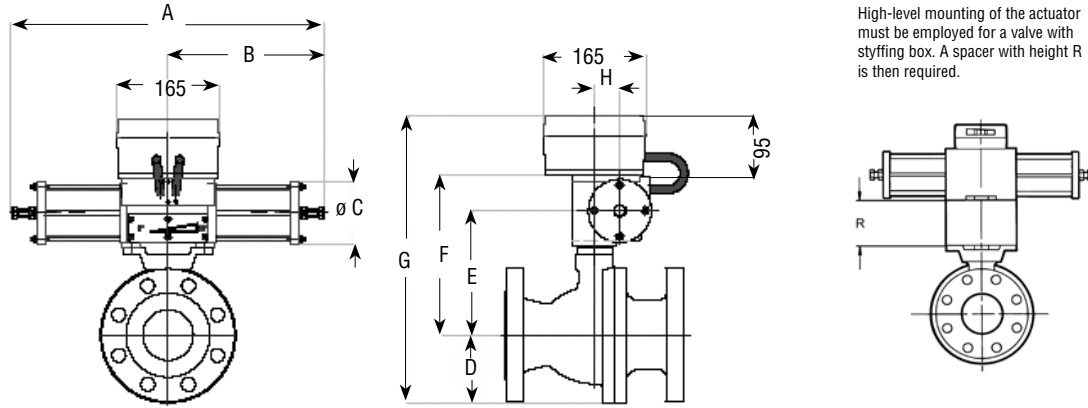


NAF-Duball valves with hand levers (Table 6)

| Size DN | Max. dp bar Seat of | | NAF No. | Dimensions, mm | | | | | Mass kg ¹⁾ |
|---|---------------------|---------|--------------|----------------|-----|-----|-----|------|-----------------------|
| | PTFE | Alloy 6 | | A | B | D | E | G | |
| Hand lever as per Fk 70.51 | | | | | | | | | |
| 25 | 25 | 25 | 791020-1 | 500 | 350 | 62 | 121 | 265 | 11 |
| 40 | 25 | 25 | -1 | 500 | 350 | 75 | 129 | 286 | 13 |
| 50 | 25 | 25 | -2 | 500 | 350 | 83 | 144 | 309 | 16 |
| 65 | 25 | 25 | -3 | 500 | 350 | 93 | 161 | 335 | 21 |
| 80 | 15 | 13 | -3 | 500 | 350 | 107 | 185 | 374 | 29 |
| 100 | 10 | 8 | -3 | 615 | 450 | 122 | 200 | 404 | 38 |
| Worm gear actuator as per Fk 70.76 ²⁾ | | | | | | | | | |
| 25 | 25 | 25 | 791051-11016 | 249 | 174 | 62 | 117 | 279 | 13 |
| 40 | 25 | 25 | 791051-11016 | 249 | 174 | 75 | 125 | 300 | 15 |
| 50 | 25 | 25 | 791051-11020 | 249 | 174 | 83 | 140 | 323 | 18 |
| 65 | 25 | 25 | 791051-11025 | 249 | 174 | 93 | 147 | 340 | 23 |
| 80 | 25 | 25 | 791051-11025 | 249 | 174 | 107 | 171 | 378 | 31 |
| 100 | 25 | 25 | 791051-11025 | 249 | 174 | 122 | 186 | 408 | 40 |
| 125 | 25 | 25 | 791051-22035 | 328 | 243 | 145 | 222 | 517 | 70 |
| 150 | 25 | 25 | 791051-33040 | 416 | 291 | 168 | 268 | 636 | 98 |
| 200 | 16 | 12 | 791051-33050 | 416 | 291 | 226 | 333 | 759 | 161 |
| 200 | 25 | 25 | 791051-43050 | 507 | 337 | 226 | 323 | 799 | 176 |
| 250 | 18 | 14 | 791051-43060 | 507 | 337 | 264 | 376 | 890 | 254 |
| 250 | 25 | 25 | 791051-53060 | 591 | 421 | 264 | 376 | 840 | 260 |
| 300 | 17 | 12 | 791051-55070 | 591 | 421 | 311 | 459 | 970 | 372 |
| 300 | 25 | 25 | 791051-65070 | 697 | 487 | 311 | 468 | 1079 | 401 |
| 350 | 20 | 16 | 791051-65090 | 697 | 487 | 344 | 591 | 1235 | 571 |
| 350 | 25 | 23 | 791051-75090 | 747 | 537 | 344 | 591 | 1235 | 585 |
| 350 | 25 | 25 | 791051-85090 | 848 | 593 | 344 | 552 | 1246 | 696 |
| 400 | 13 | 10 | 791051-65100 | 697 | 487 | 384 | 657 | 1341 | 735 |
| 400 | 17 | 14 | 791051-75100 | 747 | 537 | 384 | 657 | 1341 | 749 |
| 400 | 25 | 25 | 791051-85100 | 848 | 593 | 384 | 628 | 1362 | 860 |

1) Applies to actuator + PN 25 valve

2) Available with locking device - please contact NAF



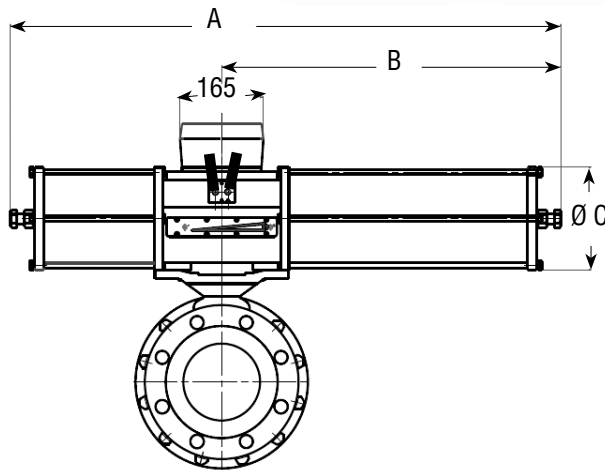
NAF 791290/791390

NAF-Duball valves with pneumatic actuators (Table 7)

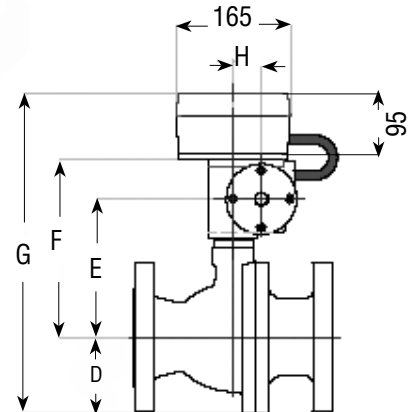
The below stated dP apply for clean media type water 20 °C. For other media contact NAF, see also page 5.

| Size DN | Max. dP bar at supply of | | | | | | NAF No. | Dimensions, mm | | | | | | | | Mass kg ¹⁾ | |
|-------------------------------------|--------------------------|---------|-------|---------|-------|---------|-------------|----------------|-----|-----|-----|-----|-----|-----------------|-----|-----------------------|-----|
| | 4 bar | | 5 bar | | 6 bar | | | A | B | C | D | E | F | G ²⁾ | H | | R |
| | PTFE | Alloy 6 | PTFE | Alloy 6 | PTFE | Alloy 6 | | | | | | | | | | | |
| Double-acting as per Fk74.59 | | | | | | | | | | | | | | | | | |
| 25 | 25 | 25 | 25 | 25 | 25 | 25 | 791390-0216 | 370 | 185 | 80 | 62 | 134 | 185 | 342 | 31 | 70 | 15 |
| 40 | 25 | 25 | 25 | 25 | 25 | 25 | -0216 | 370 | 185 | 80 | 75 | 142 | 193 | 363 | 31 | 70 | 17 |
| 50 | 25 | 25 | 25 | 25 | 25 | 25 | -0220 | 370 | 185 | 80 | 83 | 157 | 208 | 386 | 31 | 70 | 18 |
| 65 | 18 | 15 | 25 | 19 | 25 | 25 | -0225 | 370 | 185 | 80 | 93 | 164 | 215 | 403 | 31 | 70 | 23 |
| 65 | 25 | 25 | 25 | 25 | 25 | 25 | 791290-1225 | 490 | 245 | 100 | 93 | 169 | 225 | 413 | 40 | 70 | 25 |
| 80 | 9 | 7 | 11 | 9 | 19 | 12 | 791390-0225 | 370 | 185 | 80 | 107 | 188 | 239 | 441 | 31 | 70 | 31 |
| 80 | 20 | 16 | 25 | 21 | 25 | 25 | 791290-1225 | 490 | 245 | 100 | 107 | 193 | 249 | 451 | 40 | 70 | 33 |
| 80 | 25 | 25 | 25 | 25 | 25 | 25 | -2125 | 700 | 350 | 145 | 107 | 212 | 285 | 487 | 63 | 70 | 44 |
| 100 | - | - | 5 | - | 7 | 5 | 791390-0225 | 370 | 185 | 80 | 122 | 203 | 254 | 471 | 31 | 70 | 40 |
| 100 | 10 | 8 | 13 | 11 | 17 | 13 | -1225 | 490 | 245 | 100 | 122 | 208 | 264 | 481 | 40 | 70 | 42 |
| 100 | 22 | 17 | 25 | 24 | 25 | 25 | -2125 | 700 | 350 | 145 | 122 | 227 | 300 | 517 | 63 | 70 | 53 |
| 125 | 10 | 8 | 13 | 11 | 17 | 13 | -2135 | 700 | 350 | 145 | 145 | 254 | 327 | 567 | 63 | 80 | 78 |
| 125 | 23 | 19 | 25 | 25 | 25 | 25 | -2235 | 700 | 350 | 145 | 145 | 254 | 327 | 567 | 63 | 80 | 78 |
| 150 | 5 | - | 7 | 6 | 9 | 8 | -2140 | 700 | 350 | 145 | 168 | 293 | 366 | 629 | 63 | 120 | 98 |
| 150 | 13 | 10 | 17 | 13 | 21 | 16 | -2240 | 700 | 350 | 145 | 168 | 293 | 366 | 629 | 63 | 120 | 98 |
| 150 | 25 | 22 | 25 | 25 | 25 | 25 | -3240 | 820 | 410 | 200 | 168 | 318 | 410 | 673 | 75 | 120 | 110 |
| 200 | 8 | 6 | 10 | 8 | 13 | 10 | -3150 | 820 | 410 | 200 | 226 | 368 | 460 | 781 | 75 | 120 | 173 |
| 200 | 17 | 13 | 21 | 17 | 25 | 21 | -3250 | 820 | 410 | 200 | 226 | 368 | 460 | 781 | 75 | 120 | 173 |
| 200 | 25 | 25 | 25 | 25 | 25 | 25 | 791390-4250 | 1110 | 555 | 260 | 226 | 396 | 499 | 820 | 100 | 120 | 189 |
| 250 | 8 | 6 | 10 | 8 | 12 | 10 | -4160 | 1110 | 555 | 260 | 264 | 449 | 552 | 911 | 100 | 120 | 267 |
| 250 | 18 | 14 | 23 | 18 | 25 | 22 | -4260 | 1110 | 555 | 260 | 264 | 449 | 552 | 911 | 100 | 120 | 267 |
| 250 | 25 | 25 | 25 | 25 | 25 | 25 | -5160 | 1600 | 800 | 395 | 264 | 503 | 651 | 1010 | 150 | 120 | 442 |
| 300 | - | - | 5 | - | 7 | 5 | -4170 | 1110 | 555 | 260 | 311 | 543 | 646 | 1052 | 100 | 150 | 379 |
| 300 | 10 | 7 | 13 | 10 | 16 | 12 | -4270 | 1110 | 555 | 260 | 311 | 543 | 646 | 1052 | 100 | 150 | 379 |
| 300 | 22 | 17 | 25 | 23 | 25 | 25 | -5170 | 1600 | 800 | 395 | 311 | 561 | 709 | 1115 | 150 | 150 | 554 |
| 300 | 25 | 25 | 25 | 25 | 25 | 25 | -5270 | 1600 | 800 | 395 | 311 | 561 | 709 | 1115 | 150 | 150 | 554 |
| 350 | 13 | 10 | 16 | 13 | 21 | 17 | -5190 | 1600 | 800 | 395 | 344 | 649 | 797 | 1236 | 150 | 150 | 724 |
| 350 | 25 | 22 | 25 | 21 | 25 | 25 | -5290 | 1600 | 800 | 395 | 344 | 649 | 797 | 1236 | 150 | 150 | 724 |
| 400 | 8 | 5 | 10 | 8 | 13 | 10 | -5100 | 1600 | 800 | 395 | 384 | 700 | 848 | 1327 | 150 | 150 | 888 |
| 400 | 18 | 14 | 22 | 18 | 24 | 23 | -5200 | 1600 | 800 | 395 | 384 | 700 | 848 | 1327 | 150 | 150 | 888 |

1) Applies to actuator + PN 25 valve
2) Including NAF valve positioner



NAF791292/791392



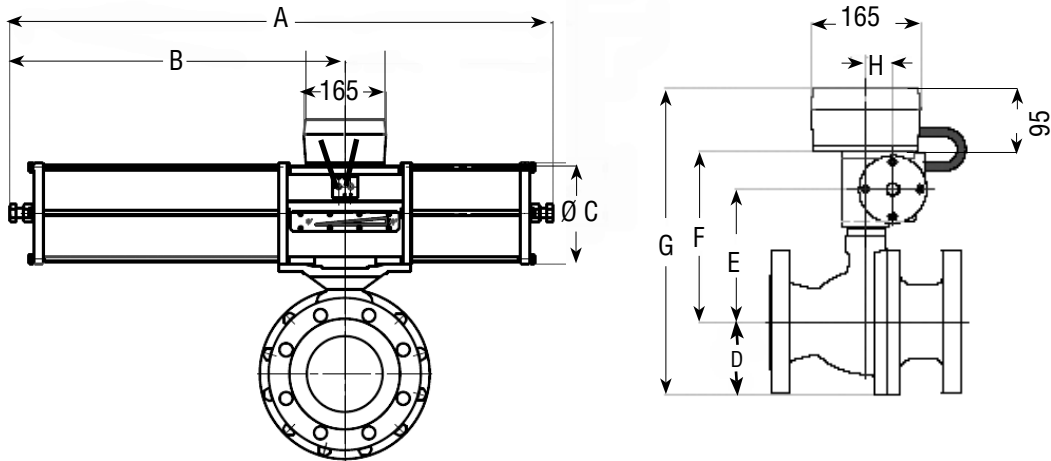
(Table 8a)

The below stated dP apply for clean media type water 20 °C.
For other media contact NAF, see also page 5.

| Size DN | Max dP bar at supply of | | | | | | NAF No. | Dimensions, mm | | | | | | | | | Mass kg ¹⁾ |
|---|-------------------------|---------|-------|---------|-------|---------|-------------|----------------|------|-----|-----|-----|-----|-----------------|-----|-----|-----------------------|
| | 4 bar | | 5 bar | | 6 bar | | | A | B | C | D | E | F | G ²⁾ | H | R | |
| | PTFE | Alloy 6 | PTFE | Alloy 6 | PTFE | Alloy 6 | | | | | | | | | | | |
| Single-acting, spring to close as per Fk 74.59 | | | | | | | | | | | | | | | | | |
| 25 | 25 | 20 | 25 | 25 | 25 | 25 | 791392-0216 | 455 | 270 | 80 | 62 | 134 | 185 | 342 | 31 | 70 | 14 |
| 40 | 16 | 12 | 25 | 22 | 25 | 25 | -0216 | 455 | 270 | 80 | 75 | 142 | 193 | 363 | 31 | 70 | 16 |
| 40 | 25 | 25 | 25 | 25 | 25 | 25 | 791292-1216 | 635 | 390 | 100 | 75 | 147 | 203 | 373 | 40 | 70 | 20 |
| 50 | 10 | 8 | 18 | 15 | 25 | 20 | 791392-0220 | 455 | 270 | 80 | 83 | 157 | 208 | 386 | 31 | 70 | 19 |
| 50 | 25 | 25 | 25 | 25 | 25 | 25 | 791292-1220 | 635 | 390 | 100 | 83 | 162 | 218 | 396 | 40 | 70 | 23 |
| 65 | 16 | 13 | 25 | 25 | 25 | 25 | -1225 | 635 | 390 | 100 | 93 | 169 | 225 | 413 | 40 | 70 | 28 |
| 80 | 8 | 6 | 15 | 12 | 19 | 12 | -1225 | 635 | 390 | 100 | 107 | 193 | 249 | 451 | 40 | 70 | 36 |
| 80 | 25 | 25 | 25 | 25 | 25 | 25 | -2225 | 890 | 540 | 145 | 107 | 212 | 285 | 487 | 63 | 70 | 50 |
| 100 | - | - | 8 | 6 | 10 | 6 | -1225 | 635 | 390 | 100 | 122 | 208 | 264 | 481 | 40 | 70 | 45 |
| 100 | 20 | 16 | 25 | 25 | 25 | 25 | -2225 | 890 | 540 | 145 | 122 | 227 | 300 | 517 | 63 | 70 | 59 |
| 125 | 9 | 7 | 17 | 14 | 22 | 14 | -2235 | 890 | 540 | 145 | 145 | 254 | 327 | 567 | 63 | 80 | 84 |
| 125 | 25 | 25 | 25 | 25 | 25 | 25 | -3235 | 1050 | 640 | 200 | 145 | 285 | 377 | 617 | 75 | 80 | 104 |
| 150 | 5 | - | 10 | 8 | 12 | 8 | -2240 | 890 | 540 | 145 | 168 | 293 | 366 | 629 | 63 | 120 | 104 |
| 150 | 25 | 20 | 25 | 25 | 25 | 25 | -3240 | 1050 | 640 | 200 | 168 | 318 | 410 | 673 | 75 | 120 | 124 |
| 150 | 25 | 25 | 25 | 25 | 25 | 25 | 791392-4240 | 1520 | 965 | 260 | 168 | 346 | 449 | 712 | 100 | 120 | 181 |
| 200 | 8 | 6 | 13 | 8 | 17 | 8 | 791292-3250 | 1050 | 640 | 200 | 226 | 368 | 460 | 781 | 75 | 120 | 187 |
| 200 | 14 | 11 | 25 | 22 | 25 | 22 | 791392-4250 | 1520 | 965 | 260 | 226 | 396 | 499 | 820 | 100 | 120 | 244 |
| 250 | 6 | 5 | 14 | 10 | 17 | 10 | -4260 | 1520 | 965 | 260 | 264 | 449 | 552 | 911 | 100 | 120 | 322 |
| 250 | 25 | 25 | 25 | 25 | 25 | 25 | -5260 | 2210 | 1370 | 395 | 264 | 503 | 651 | 1010 | 150 | 120 | 687 |
| 300 | - | - | 7 | 5 | 9 | 5 | -4270 | 1520 | 965 | 260 | 311 | 543 | 646 | 1052 | 100 | 150 | 434 |
| 300 | 25 | 19 | 25 | 25 | 25 | 25 | -5270 | 2210 | 1370 | 395 | 311 | 561 | 709 | 1115 | 150 | 150 | 800 |
| 350 | 14 | 11 | 22 | 18 | 25 | 18 | -5290 | 2210 | 1370 | 395 | 344 | 649 | 797 | 1236 | 150 | 150 | 969 |
| 400 | 9 | 6 | 14 | 11 | 17 | 11 | -5200 | 2210 | 1370 | 395 | 384 | 700 | 848 | 1327 | 150 | 150 | 1133 |

1) Applies to actuator + PN 25 valve

2) Including NAF valve positioner



NAF791294/791394

(Table 8b)

The below stated dP apply for clean media type water 20 °C.
For other media contact NAF, see also page 5.

| Size DN | Max dP bar at supply of | | | | | | NAF No. | Dimensions, mm | | | | | | | | | | Mass kg ¹⁾ |
|--|-------------------------|---------|-------|---------|-------|---------|-------------|----------------|------|-----|-----|-----|-----|-----------------|-----|-----|------|-----------------------|
| | 4 bar | | 5 bar | | 6 bar | | | A | B | C | D | E | F | G ²⁾ | H | R | | |
| | PTFE | Alloy 6 | PTFE | Alloy 6 | PTFE | Alloy 6 | | | | | | | | | | | | |
| Single-acting, spring to open as per Fk 74.59 | | | | | | | | | | | | | | | | | | |
| 25 | 6 | - | 25 | 25 | 25 | 25 | 791394-0216 | 455 | 270 | 80 | 62 | 134 | 185 | 342 | 31 | 70 | 14 | |
| 40 | - | - | 20 | 15 | 25 | 25 | -0216 | 455 | 270 | 80 | 75 | 142 | 193 | 363 | 31 | 70 | 16 | |
| 40 | 25 | 17 | 25 | 25 | 25 | 25 | 791294-1216 | 635 | 390 | 100 | 75 | 147 | 203 | 373 | 40 | 70 | 20 | |
| 50 | - | - | 12 | 9 | 22 | 18 | 791394-0220 | 455 | 270 | 80 | 83 | 157 | 208 | 386 | 31 | 70 | 19 | |
| 50 | 25 | 12 | 25 | 25 | 25 | 25 | 791294-1220 | 635 | 390 | 100 | 83 | 162 | 218 | 396 | 40 | 70 | 23 | |
| 65 | 10 | 5 | 25 | 19 | 25 | 22 | -1225 | 635 | 390 | 100 | 93 | 169 | 225 | 413 | 40 | 70 | 28 | |
| 65 | 25 | 25 | 25 | 25 | 25 | 25 | -2225 | 890 | 540 | 145 | 93 | 188 | 261 | 449 | 63 | 70 | 42 | |
| 80 | 5 | - | 16 | 9 | 16 | 13 | -1225 | 635 | 390 | 100 | 107 | 193 | 249 | 451 | 40 | 70 | 36 | |
| 80 | 25 | 14 | 25 | 25 | 25 | 25 | -2225 | 890 | 540 | 145 | 107 | 212 | 285 | 487 | 63 | 70 | 50 | |
| 100 | - | - | 8 | - | 8 | 7 | -1225 | 635 | 390 | 100 | 122 | 208 | 264 | 481 | 40 | 70 | 45 | |
| 100 | 8 | 7 | 25 | 22 | 25 | 25 | -2225 | 890 | 540 | 145 | 122 | 227 | 300 | 517 | 63 | 70 | 59 | |
| 100 | 25 | 14 | 25 | 25 | 25 | 25 | -3225 | 1050 | 640 | 200 | 122 | 252 | 344 | 561 | 75 | 70 | 79 | |
| 125 | 6 | - | 19 | 11 | 19 | 16 | -2235 | 890 | 540 | 145 | 145 | 254 | 327 | 567 | 63 | 80 | 84 | |
| 125 | 23 | 14 | 25 | 25 | 25 | 25 | -3235 | 1050 | 640 | 200 | 145 | 285 | 377 | 617 | 75 | 80 | 104 | |
| 150 | - | - | 10 | 6 | 10 | 9 | -2240 | 890 | 540 | 145 | 168 | 293 | 366 | 629 | 63 | 120 | 104 | |
| 150 | 13 | 8 | 25 | 23 | 25 | 25 | -3240 | 1050 | 640 | 200 | 168 | 318 | 410 | 673 | 75 | 120 | 124 | |
| 150 | 22 | 12 | 25 | 25 | 25 | 25 | 791394-4240 | 1520 | 965 | 260 | 168 | 346 | 449 | 712 | 100 | 120 | 181 | |
| 200 | - | - | 14 | 8 | 14 | 11 | 791294-3250 | 1050 | 640 | 200 | 226 | 368 | 460 | 781 | 75 | 120 | 187 | |
| 200 | 7 | - | 25 | 16 | 25 | 25 | 791394-4250 | 1520 | 965 | 260 | 226 | 396 | 499 | 820 | 100 | 120 | 242 | |
| 200 | 25 | 25 | 25 | 25 | 25 | 25 | -5250 | 2210 | 1370 | 395 | 226 | 450 | 598 | 919 | 150 | 120 | 609 | |
| 250 | - | - | 16 | 8 | 16 | 12 | -4260 | 1520 | 965 | 260 | 264 | 449 | 552 | 911 | 100 | 120 | 322 | |
| 250 | 21 | 12 | 25 | 25 | 25 | 25 | -5260 | 2210 | 1370 | 395 | 264 | 503 | 651 | 1010 | 150 | 120 | 687 | |
| 300 | - | - | 8 | - | 8 | 6 | -4270 | 1520 | 965 | 260 | 311 | 543 | 646 | 1052 | 100 | 150 | 433 | |
| 300 | 11 | 6 | 25 | 22 | 25 | 25 | -5270 | 2210 | 1370 | 395 | 311 | 561 | 709 | 1115 | 150 | 150 | 800 | |
| 350 | 6 | - | 24 | 13 | 24 | 19 | -5290 | 2210 | 1370 | 395 | 344 | 649 | 797 | 1236 | 150 | 150 | 969 | |
| 400 | - | - | 15 | 8 | 15 | 12 | -5200 | 2210 | 1370 | 395 | 384 | 700 | 848 | 1327 | 150 | 150 | 1133 | |

1) Applies to actuator + PN 25 valve

2) Including NAF valve positioner

Accessories

NAF's pneumatic actuators, see data sheet Fk74.59 can be equipped with a large number of accessories. The following are included in NAF's standard programme and are suitable for direct mounting to NAF pneumatic actuators.

Valve positioner

Pneumatic and electro-pneumatic valve positioner, see data sheet Fk41.82. Intelligent valve positioner, see data sheet Fk41.85.

Solenoid valves

See data sheet Fk79.17.

Filter regulator

Can be delivered (part no. 79-SMC-AW20K-F02CE-C).

Electrical position indication

See data sheet Fk79.10.

Terminal box

The actuator can be equipped with a junction box (part No. 349 20930) of cast aluminium containing terminal blocks for connecting the solenoid valve and position sensors.

Other versions

- **Locked seat rings**, all valves manufactured after 980101 are prepared for locking of the seat rings in the form of peening-over as shown in fig. 1.

Product code: L

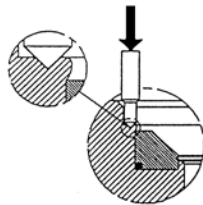


Fig. 1

- **Degreased for oxygen**, all components of the valve are degreased before assembly. A special grease which is approved for oxygen is used in assembly.

Product code: D

- **Sealed seat rings**, seat rings with two EPDM O-rings to prevent media to penetrate behind seat ring shown in fig. 2. Used with media that crystallize. Max. temp 130°C.

At higher temperature, contact NAF.

Product code: T

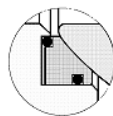


Fig. 2

- **Explosive atmosphere according to Directive 94/9/EC ATEX**

NAF-Duball is certified according to ATEX 94/9/EC 

II 2 G/D c
Product code: XA

- **Straight cylindrical flow path**

DN 25-150 in design -25, -95 and -96 and DN 25-65 in design -27 and 97 have a straight cylindrical flow path. DN up to 300 can be designed with a cylindrical flow path, whereas DN 350-400 are provided with a reinforced ball, since an entirely cylindrical flow path in these sizes would be too heavy. Used for applications such as blow-down and discharge valves.

Product code: C

- **O-ring or springs behind the seat rings**

If the differential pressure is low (below 0,5 bar) and a specified tightness must be maintained, O-rings or springs must be fitted behind the seat rings.

Product code: E (O-ring in EPDM or FPM if the stem sealing M (FPM) is selected) max 130°C

W (Wave spring) max 165°C

- O-rings or springs behind the seat rings
- Tappings for flushing or drainage
- Seat ring with scraper edge
- Stem seal of FPM or PFM (Isolast)
- Flanges to DIN 2512, Form N or DIN 2513, Form R
- Alloy 6-lined inlet and outlet
- Fire-Safe
- Anti-static
- Other material

| | |
|------------------|-------------|
| CG8M | code 88E... |
| CF3M | code 88G... |
| CG3M | code 88F... |
| Duplex EN 1.4470 | code 88D... |
| Hastelloy C | code 88H... |
| Monel | code 88M... |
| 254 SMO | code 88S... |
| Carbon steel | code 886... |

Contact NAF for further information

Product code NAF-Duball valves

Example:

| | | | | | | | |
|-------------|-----------|----------|----------|----------|----------|---|-------------|
| | 88 | 8 | 6 | 9 | 7 | - | 0150 |
| Code | 1 | 2 | 3 | 4 | 5 | | 6 |

1. Valve type

88 Ball valve

2. Material (Body) ¹⁾

8 1.4408 / CF8M

3. Pressure rating

| | |
|-------------------------|------------------------------|
| 2 PN 10 | (DN 65 — 400) ²⁾ |
| 4 ANSI Class 150 | (Size 1" — 16") |
| 5 PN 25 | (DN 200 — 400) ²⁾ |
| 6 PN 40 | (DN 25 — 400) |
| 7 ANSI Class 300 | (Size 1" — 16") |

4. Stem seal

2 Graphite stuffing box, up to 350°C³⁾
9 EPDM O-ring, up to 200°C

5. Seals

| | Ball | Seat ring |
|----------|---|----------------------------|
| 5 | EN1.4408 / CF8M hard chromium-plated | Alloy 6 |
| 6 | EN1.4408 / CF8M | PTFE, carbon reinforced |
| 7 | Alloy 6 | Alloy 6 |

6. Size

| | EN version | ANSI version |
|--------------------------|------------|------------------|
| | DN | Size |
| 0025 | 25 | 0001 1" |
| 0040 | 40 | 01.5 1.5" |
| 0050 | 50 | 0002 2" |
| 0065⁴⁾ | 65 | - |
| 0080 | 80 | 0003 3" |
| 0100 | 100 | 0004 4" |
| 0125⁴⁾ | 125 | - |
| 0150 | 150 | 0006 6" |
| 0200 | 200 | 0008 8" |
| 0250 | 250 | 0010 10" |
| 0300 | 300 | 0012 12" |
| 0350 | 350 | 0014 14" |
| 0400 | 400 | 0016 16" |

¹⁾ Other materials see page 11.

²⁾ Size 25—50 has the same flange dimensions in PN 10, 16, 25 and 40. Choose PN 40 for these sizes.
 Size 65—150 has the same flange dimensions in PN 25 and 40. Choose PN 40 for these sizes.

³⁾ Stuffing box version includes stem extension and actuator yoke.

⁴⁾ DN 65 and 125 contact NAF