

**2 PIECES FLANGES BALL VALVE PN 16/40 FIRE SAFE
ADLER TYPE FM2**



**FIRE SAFE
ISO 10497**



Size : DN 15 to 300 mm
Ends : Flanges PN16/40 R.F.
Min Temperature : - 28°C
Max Temperature : + 200°C
Max Pressure : 40 Bars up to DN80, 16 bars over
Specifications : With ISO 5211 mounting pad
Fire safe ISO 10497
Double tightness body / End
Atex

Materials : Forged carbon steel or stainless steel

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SPECIFICATIONS :

- Full bore
- Anti blow-out stem
- With ISO 5211 mounting pad
- 2 pieces type (Split body)
- Flanges R.F. PN40 up to DN 80 excepted for DN65 PN16, PN16 over
- Double antistatic device
- Fire safe ISO 10497 (ISO-FT marking)
- Fugitive emissions according to ISO 15848-1 : 2003 Class A
- Double tightness body / end
- With exhaust hole in the ball from DN50 to DN300 (located in the top of the ball to avoid overpressure in it)
- Machining of the seat for pressure relief DN65 to DN300 (respect the flow direction indicated by the arrow)
- 3 PTFE filled with 15% graphite chevrons rings on stem
- Packing with elastic rings
- Forged carbon or stainless steel body
- Polyamid epoxy painting blue color RAL5012, 35 µ thickness for carbon steel types

USE :

- Chemical and pharmaceutical industries, petrochemical industries, hydraulic installation, compressed air
- Min and max Temperature Ts : - 28°C to + 200°C
- Max Pressure Ps : 40 bars up to DN80 , 16 bars over
- Vacuum : 10⁻⁵ torr
- Compressed air (ambient temperature) : 10 bars up to DN50, 8 bars from DN65 to 100
- Steam : 8 bars up to DN50, 6 bars from DN65 to 100

RANGE :

- Carbon steel body PN40 up to DN80 excepted for DN65 PN16 and PN16 over **Ref. 750** from DN 15 to DN 300 (*)
- Stainless steel body PN40 up to DN80 excepted for DN65 PN16 and PN16 over **Ref. 751** from DN 15 to DN 300 (*)
- Possible with gear box IP67 **Ref. 9830260 to 265** from DN 15 to DN 300

(*) : PN40 on request

ACCESSORIES AND OPTIONS :

- Locking device **Ref. 9830140 to 9830148** from DN 15 to DN 200
- Stainless steel handle **Ref. 9830170 to 9830178** from DN 15 to DN 200
- Steel oval handwheel **Ref. 9830271 to 9830272** from DN 15 to DN 32
- Stainless steel oval handwheel
- Stainless steel bolting
- Carbon steel stem extension 100 mm **Ref. 9830273 to 9830280** from DN 15 to DN 200
- Stainless steel stem extension 100 mm **Ref. 9830193 to 9830200** from DN 15 to DN 200
- Deadman **Ref. 9830160 to 9830165** from DN 15 to DN 50
- Dry cleaned oxygen **Ref. 9830150 to 9830155** from DN 15 to DN 200
- Standard dry cleaned
- Seat PTFE filled with glass, graphite, stainless steel or metal
- Pocket less seat PTFE or PTFE filled with glass
- Heating jacket carbon or stainless steel
- Specials coated
- Hole in the ball for overpressure device
- Double o ring on stem

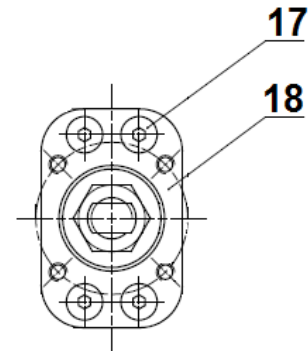
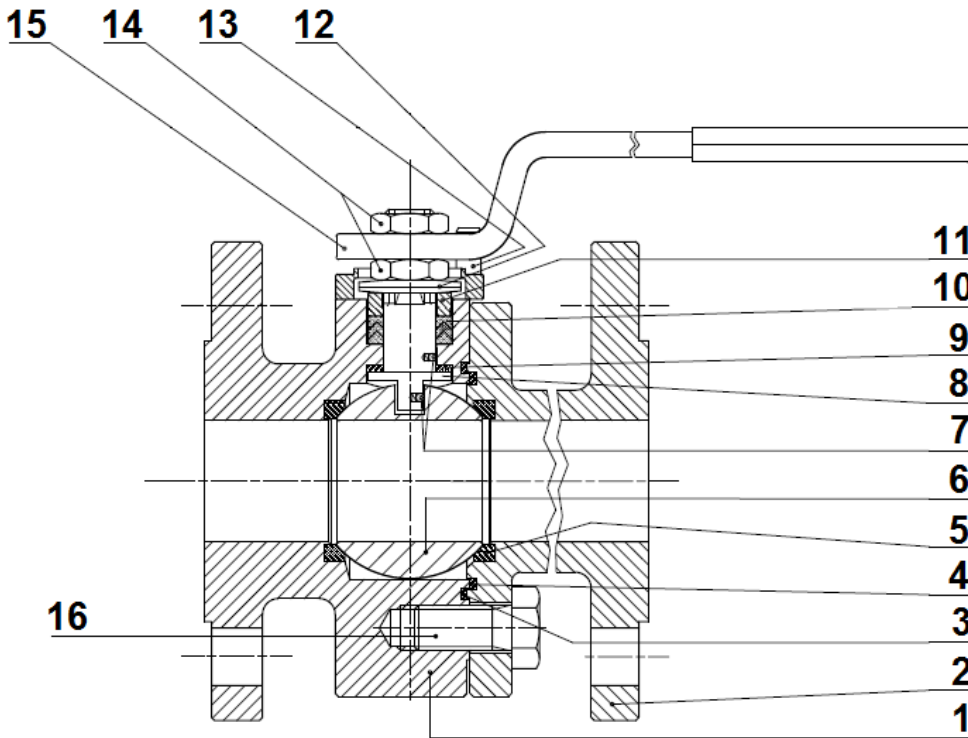
ENDS:

- Flanges R.F. PN40 up to DN80 excepted for DN65 PN16 , PN16 over

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MATERIALS :

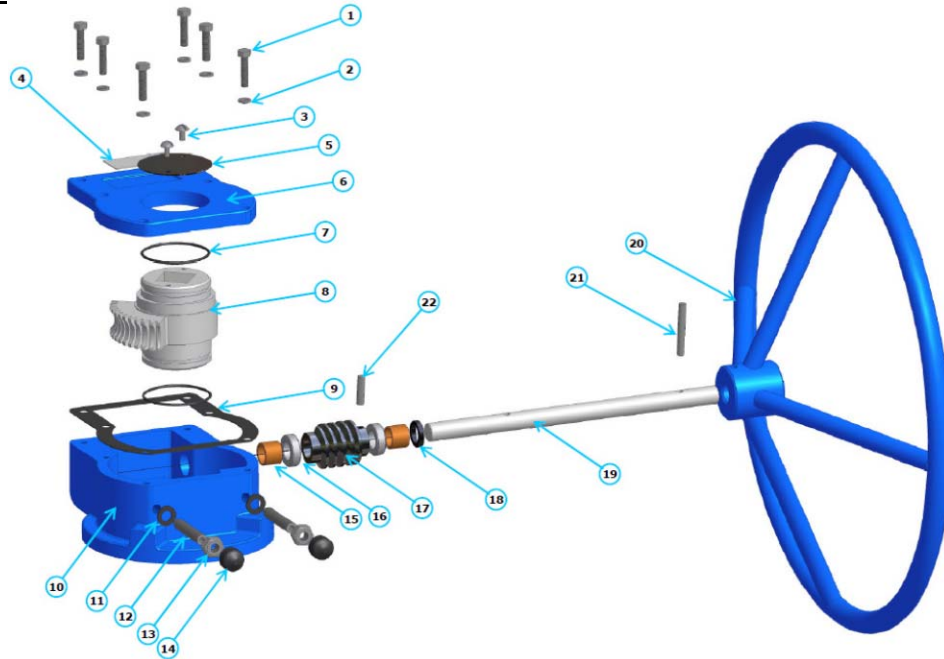
PACKING GASKETS :



(* : Included in gaskets kit)

| Item | Designation | Materials Ref. 750 | Materials Ref. 751 |
|------|-----------------------------------|-------------------------------|--------------------|
| 1 | Body | ASTM A105 | ASTM A479 316L |
| 2 | Nipple | ASTM A105 | ASTM A479 316L |
| 3* | O ring | FKM | |
| 4* | Body gasket | PTFE | |
| 5* | Seat | PTFE | |
| 6 | Ball | ASTM A351 CF3 | ASTM A351 CF3M |
| 7 | Double antistatic device | ASTM A479 S31600 | |
| 8 | Stem DN 15 - 32 | ASTM A182 F 316 L | |
| 8 | Stem DN 40 - 300 | ASTM A182 F 304 L | ASTM A182 F 316 L |
| 9* | Stem gasket | PTFE | |
| 10* | Chevron packing | PTFE filled with 15% graphite | |
| 11 | Gland follower | ASTM A479 S31603 | |
| 12 | Elastic rings | C72 / 50 Cr V4 | |
| 13 | Pin | UNI A2-70 | |
| 14 | Nut | UNI 3740-6S galvanized | |
| 15 | Handle | UNI 5946 Fe 37 galvanized | |
| 16 | Screw | UNI 3740-8.8 galvanized | |
| 17 | ISO 5211 screw (DN 15-80) | UNI 3740-10.9 galvanized | |
| 18 | ISO 5211 mounting pad (DN15-80) | ASTM A351 CF8M | |

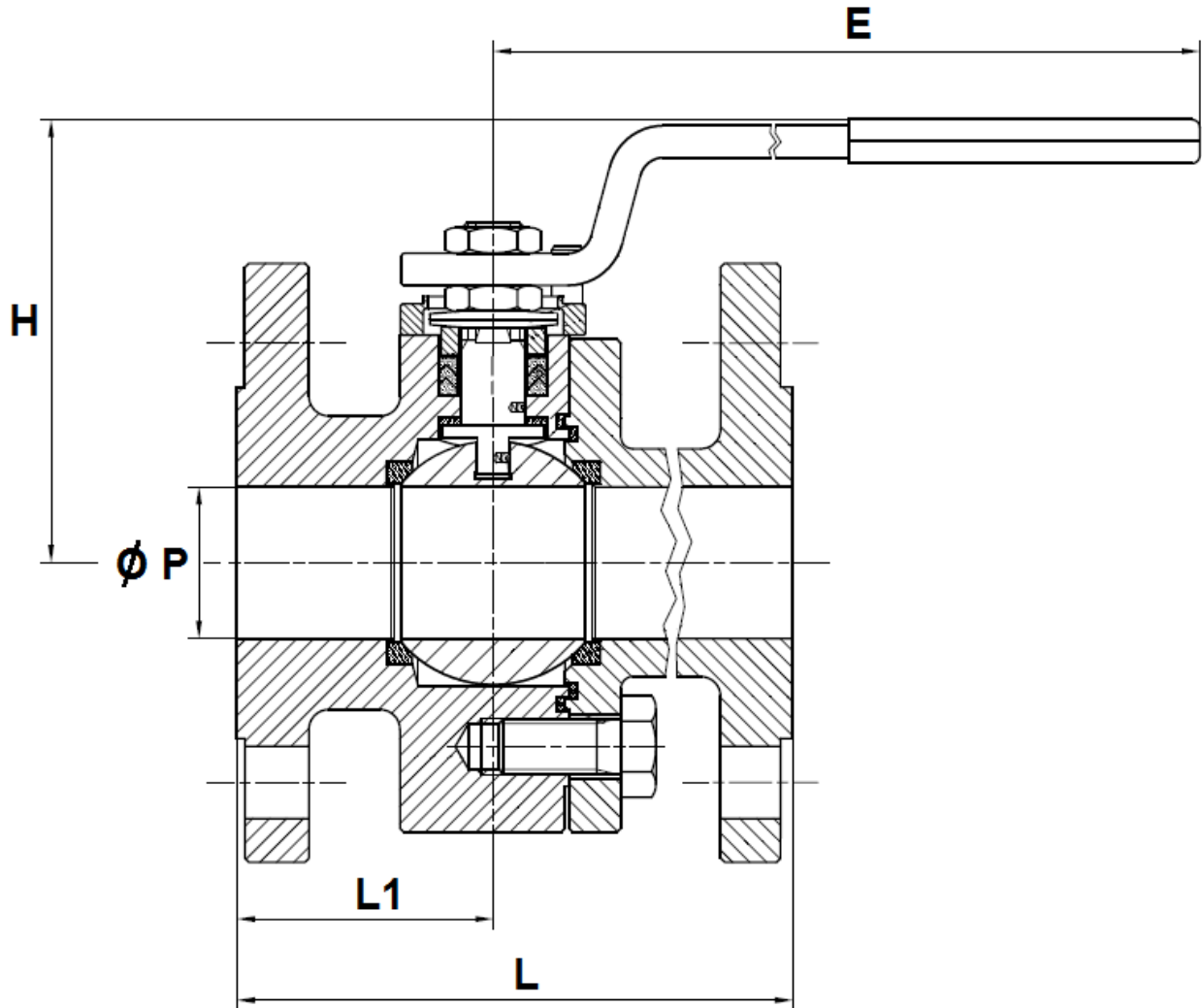
2 PIECES FLANGES BALL VALVE PN 16/40 FIRE SAFE ADLER TYPE FM2

MATERIALS GEAR BOX :


| Item | Designation | Materials Ref. 9830260 to 9830265 |
|------|--------------------|-----------------------------------|
| 1 | Box screw | DIN 933 class 8.8 |
| 2 | Washer | C72 |
| 3 | Indicator screw | DIN 86 class A2 |
| 4 | ID plate | Steel S235 JR |
| 5 | Indicator | Steel S235 JR |
| 6 | Cover | Ductile iron EN GJS-400-15 |
| 7 | O ring | NBR 70 Shore A |
| 8 | Wheel | Ductile iron EN GJS-500-7 |
| 9 | Cover gasket | SL509AT |
| 10 | Box | Ductile iron EN GJS-400-15 |
| 11 | Gasket | NBR 70 Shore A |
| 12 | Adjusting bolt | DIN 915 class 12.9 |
| 13 | Nut | DIN 934 class 8G |
| 14 | Bolt cap | NBR 70 Shore A |
| 15 | Bushing | G Cu Sn10 |
| 16 | Axial ball bearing | - |
| 17 | Worm | C45 + NiP |
| 18 | Gasket | NBR 70 Shore A |
| 19 | Input shaft | C45 + NiP |
| 20 | Handwheel | Steel S235 JR |
| 21 | Dowell pin | DIN 7 Class A2 |
| 22 | Dowell pin | DIN 7 Class A2 |

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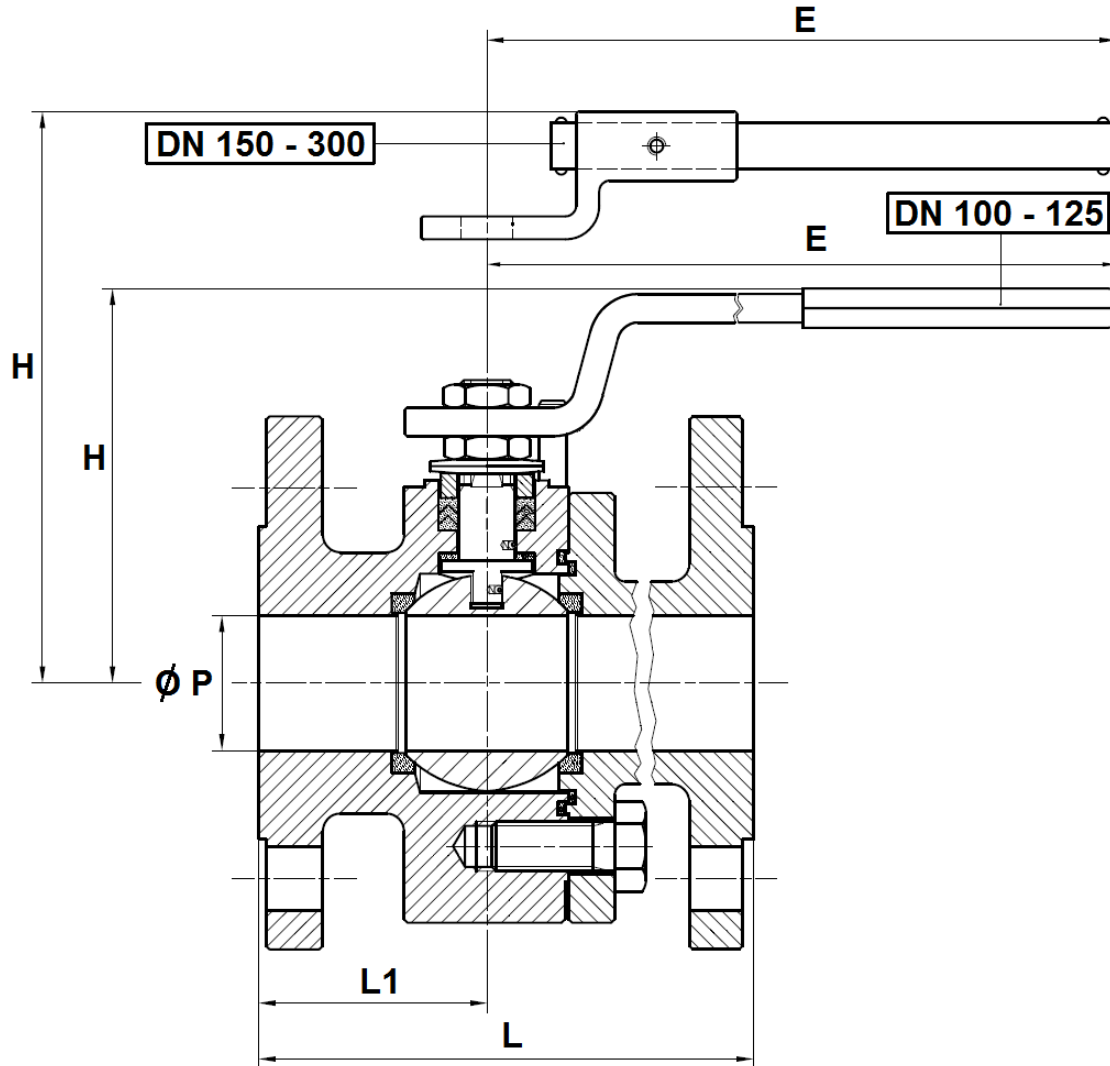
VALVES SIZE DN 15 - 80 (in mm) :



| Ref. | DN | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 |
|-----------|---------------|-----|------|-----|------|-----|------|------|-----|
| 750 / 751 | Ø P | 15 | 19 | 25 | 30 | 38 | 51 | 64 | 76 |
| | L | 115 | 120 | 125 | 130 | 140 | 150 | 170 | 180 |
| | L1 | 49 | 51.5 | 50 | 51.5 | 59 | 61.5 | 70.5 | 73 |
| | E | 145 | 145 | 185 | 185 | 280 | 280 | 370 | 370 |
| | H | 86 | 88 | 113 | 119 | 110 | 120 | 144 | 152 |
| | Weight (Kg) | 3 | 4 | 5.2 | 7 | 10 | 13.5 | 21.5 | 26 |

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VALVES SIZE DN 100 - 300 (in mm) :

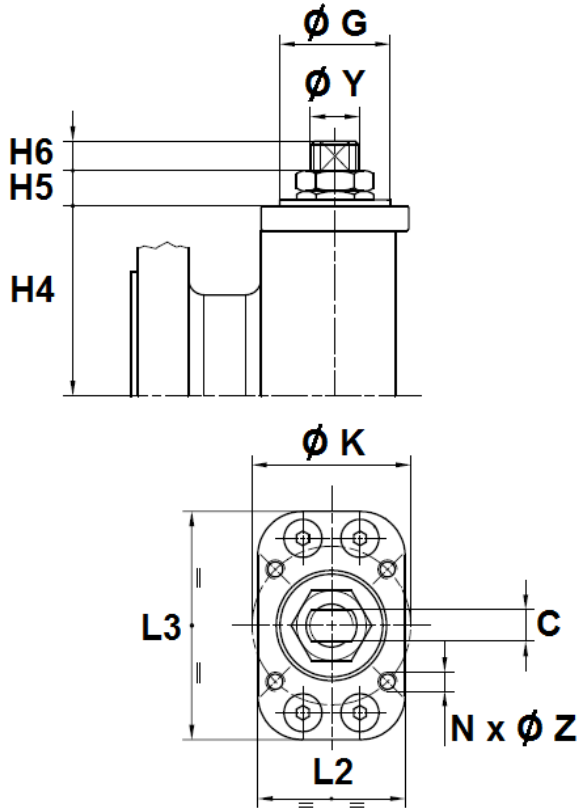


| Ref. | DN | 100 | 125 | 150 | 200 | 250 | 300 |
|-----------|---------------|------|-----|-----|-----|------|------|
| 750 / 751 | Ø P | 101 | 118 | 152 | 203 | 254 | 305 |
| | L | 190 | 325 | 350 | 400 | 450 | 500 |
| | L1 | 85 | 100 | 144 | 180 | 196 | 237 |
| | E | 470 | 650 | 750 | 900 | 1000 | 1000 |
| | H | 174 | 188 | 256 | 294 | 343 | 381 |
| | Weight (Kg) | 30.5 | 61 | 96 | 157 | 215 | 255 |

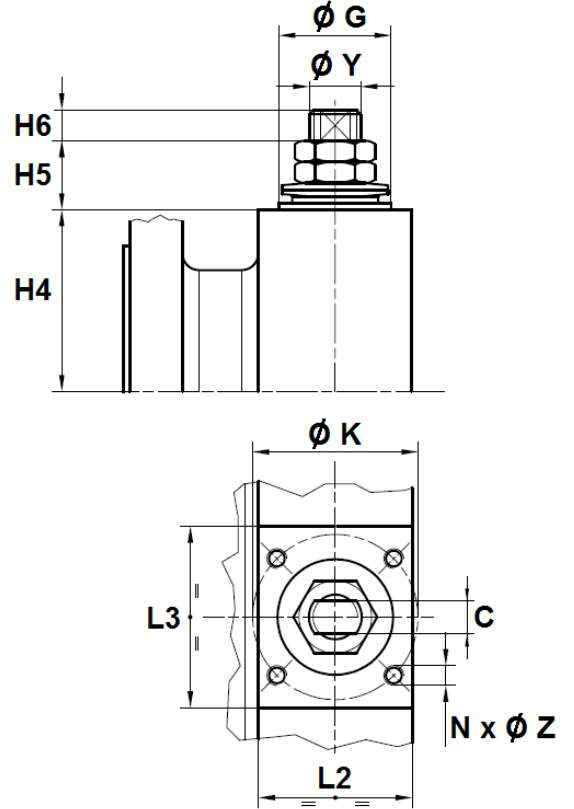
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ISO 5211 MOUNTING PAD AND STEM SIZE (in mm) :

DN 15 – 80



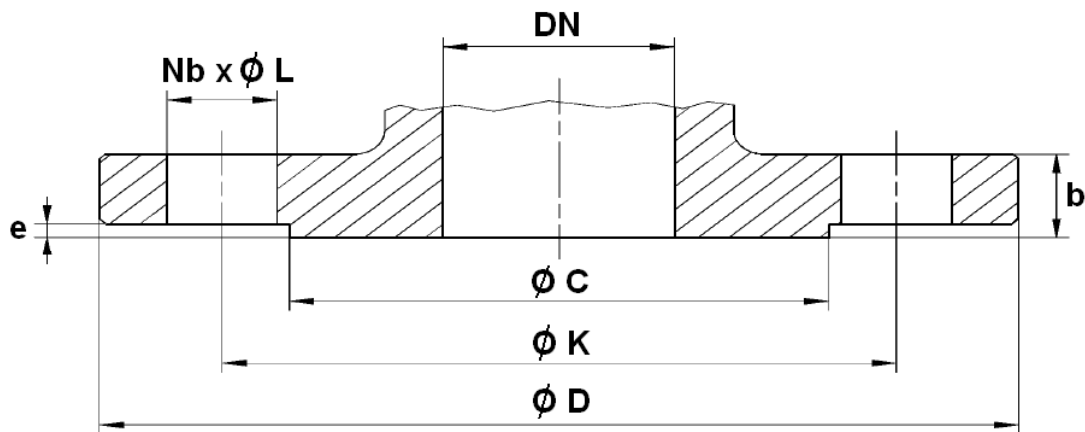
DN 100 - 300



| DN | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| H4 | 33.1 | 35.4 | 49.3 | 54.8 | 64.8 | 74.8 | 93.5 | 102 | 99.5 | 113 | 144 | 183 | 220 | 258.5 |
| H5 | 6.6 | 6.6 | 8.2 | 8.2 | 9.7 | 9.7 | 11 | 11 | 26.5 | 26.5 | 34 | 36 | 44 | 44 |
| H6 | 7 | 7 | 9.5 | 9.5 | 10 | 10 | 12 | 12 | 16.5 | 16.5 | 19 | 20 | 20 | 20 |
| C | 6 | 6 | 8 | 8 | 10 | 10 | 14 | 14 | 18 | 18 | 28 | 32 | 36 | 36 |
| Ø Y | 10 | 10 | 12 | 12 | 16 | 16 | 22 | 22 | 30 | 30 | 42 | 48 | 56 | 56 |
| Ø K | 36 | 36 | 36 | 36 | 50 | 50 | 70 | 70 | 70 | 102 | 125 | 140 | 165 | 165 |
| ISO | F03 | F03 | F03 | F03 | F05 | F05 | F07 | F07 | F07 | F10 | F12 | F14 | F16 | F16 |
| N x Ø Z | 4 x M5 | 4 x M5 | 4 x M5 | 4 x M5 | 4 x M6 | 4 x M6 | 4 x M8 | 4 x M8 | 4 x M8 | 4 x M10 | 4 x M12 | 4 x M16 | 4 x M20 | 4 x M20 |
| Ø G | 25 | 25 | 25 | 25 | 35 | 35 | 55 | 55 | 55 | 70 | 85 | 100 | 130 | 130 |
| L2 | 35 | 35 | 35 | 35 | 46.5 | 46.5 | 64.5 | 64.5 | 65 | 93 | 113 | 130 | 153 | 153 |
| L3 | 58 | 58 | 58 | 58 | 72.5 | 72.5 | 90 | 90 | 70 | 97 | 112 | 130 | 153 | 153 |

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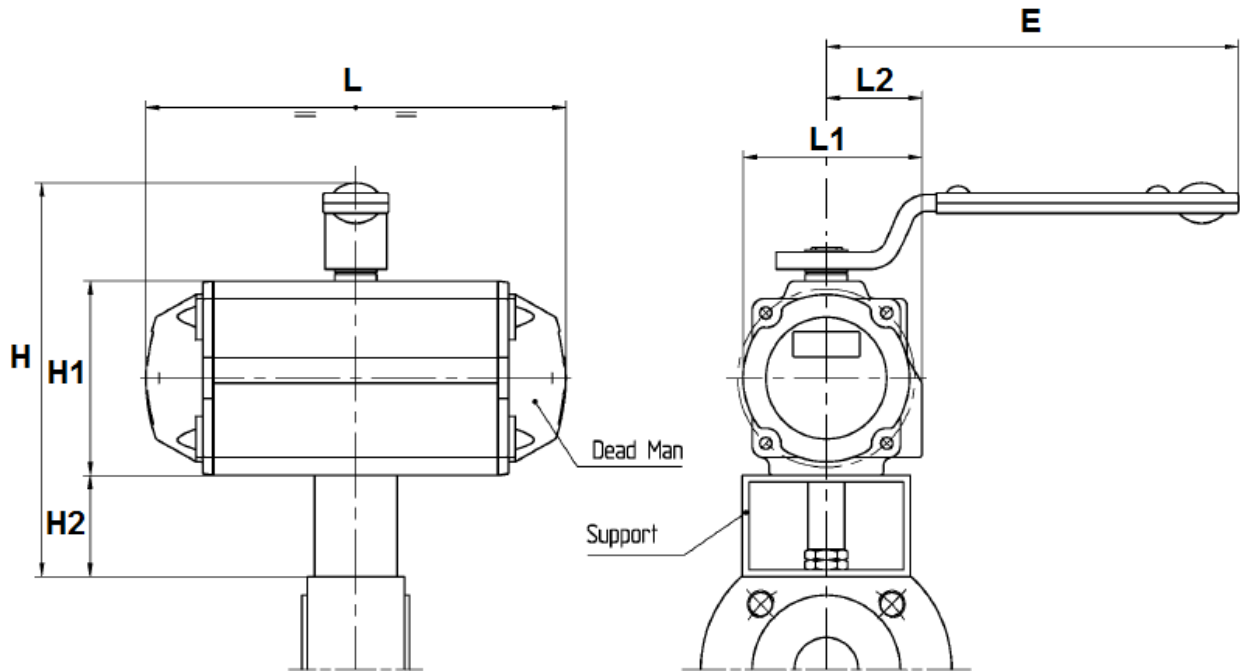
FLANGES SIZE (in mm) :



| DN | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| Ø C | 45 | 58 | 68 | 78 | 88 | 102 | 122 | 138 | 158 | 188 | 212 | 268 | 320 | 378 |
| Ø D | 95 | 105 | 115 | 140 | 150 | 165 | 185 | 200 | 220 | 250 | 285 | 340 | 405 | 460 |
| Ø K | 65 | 75 | 85 | 100 | 110 | 125 | 145 | 160 | 180 | 210 | 240 | 295 | 355 | 410 |
| Nb x Ø L | 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 | 12 x 22 | 12 x 26 | 12 x 26 |
| b | 16 | 18 | 18 | 18 | 18 | 20 | 18 | 24 | 20 | 22 | 22 | 24 | 26 | 28 |
| e | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 |

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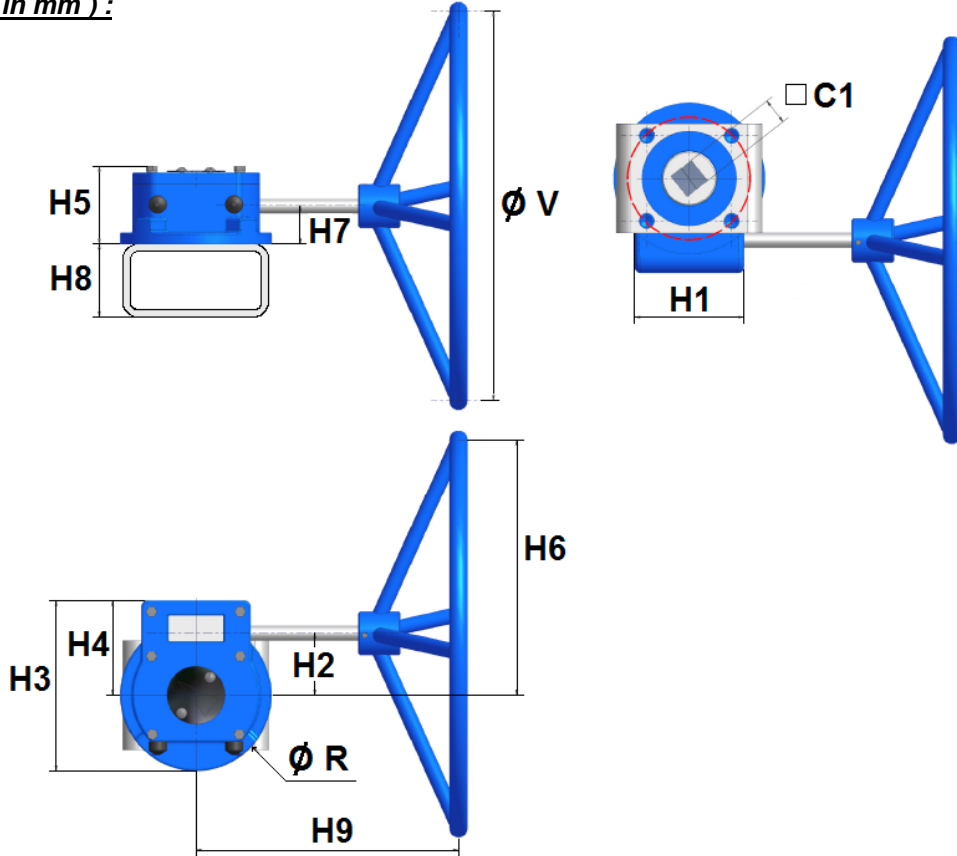
DEADMAN SIZE (in mm) :



| DN | 15 | 20 | 25 | 32 | 40 | 50 |
|------|---------|---------|---------|---------|---------|---------|
| Ref. | 9830160 | 9830161 | 9830162 | 9830163 | 9830164 | 9830165 |
| L | 142 | 142 | 161 | 161 | 214 | 252 |
| L1 | 70.5 | 70.5 | 83.5 | 83.5 | 94 | 105 |
| L2 | 41.5 | 41.5 | 47.5 | 47.5 | 51 | 55.5 |
| E | 185 | 185 | 185 | 185 | 280 | 370 |
| H | 157 | 157 | 169 | 169 | 215 | 233 |
| H1 | 69 | 69 | 85 | 85 | 102 | 115 |
| H2 | 40 | 40 | 40 | 40 | 60 | 60 |

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GEAR BOX SIZE (in mm) :



| DN | 15-50 | 65-80 | 100-150 | 200 | 250 | 300 |
|---------------|---------|---------|---------|---------|---------|---------|
| C1 | 22 | 22 | 22 | 27 | 36 | 36 |
| H1 | 57 | 57 | 100 | 120 | 150 | 186 |
| H2 | 46 | 46 | 55 | 74 | 96 | 105 |
| H3 | 98 | 98 | 143 | 188 | 237 | 260 |
| H4 | 50.5 | 50.5 | 79.5 | 99 | 129.5 | 148.5 |
| H5 | 56 | 56 | 73 | 97 | 106 | 100 |
| H6 | 106 | 146 | 205 | 274 | 396 | 455 |
| H7 | 34 | 34 | 35 | 48 | 55 | 48 |
| H8 | 60 | 60 | 80 | 80 | 100 | 100 |
| H9 | 117 | 131 | 250 | 274 | 365 | 411 |
| Ø R | 98 | 98 | 143 | 188 | 237 | 260 |
| Ø V | 120 | 200 | 300 | 400 | 600 | 700 |
| Weight (Kg) | 2.2 | 2.3 | 4.5 | 9.1 | 18.2 | 23.2 |
| Ref. | 9830260 | 9830261 | 9830262 | 9830263 | 9830264 | 9830265 |

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GEAR BOX SPECIFICATIONS :

| DN | 15-50 | 65-80 | 100-150 | 200 | 250 | 300 |
|----------------------|---------|---------|---------|---------|---------|---------|
| Ref. | 9830260 | 9830261 | 9830262 | 9830263 | 9830264 | 9830265 |
| Ratio factor | 40 :1 | 40 :1 | 37 :1 | 34 :1 | 38 :1 | 55 :1 |
| Input torque (Nm) | 35 | 34 | 43 | 83 | 152 | 171 |
| Output torque (Nm) | 100 | 150 | 500 | 1000 | 2000 | 3250 |

BOLT TIGHTENING TABLE (FOR FLANGES) (in Nm) :

| DN | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|---|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| THREADED | M12 | M12 | M12 | M16 | M16 | M16 | M16 | M16 | M16 | M16 | M20 | M20 | M24 | M24 |
| Torque (Nm) for carbon steel bolting | 84.8 | 84.8 | 84.8 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 400 | 400 | 691 | 691 |
| Torque (Nm) for stainless steel bolting | 53 | 53 | 53 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 250 | 250 | 432 | 432 |

TORQUE VALUES (in Nm without safety coefficient) :

| DN | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 |
|--------------------|-----|------|------|----|----|----|----|----|-----|-----|-----|-----|------|
| Torque (Nm) PN16 | 5.4 | 10.8 | 13.5 | 16 | 31 | 40 | 66 | 78 | 140 | 158 | 340 | 510 | 800 |
| Torque (Nm) PN40 | 6.5 | 12.5 | 14.5 | 18 | 33 | 44 | 72 | 88 | 156 | 230 | 520 | 610 | 1060 |

We recommend a safety coefficient of 2 to choose the actuator

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ADLER TYPE FM2****STANDARDS :**

- Fabrication according to ISO 9001:2008
- DIRECTIVE 97/23/CE : CE N° 0038
Risk category III module H
- Designing according to BS EN 12516-2
- Construction according to ISO 14313
- Materials according to NACE MR 01-75
- Pressure tests according to EN 12266-1, range A
- Marking according to EN 19
- Fire safe according to ISO 10497
- Fugitive emissions according to ISO 15848-1 : 2003 Range A
- SIL3 according to IEC/EN 61508 (on request)
- Flanges R.F. according to EN 1092-1 PN16/40
- ISO 5211 mounting pad
- Length according to EN 558 series 27 (DIN 3202 F4/F5)
- ATEX Group II Category 2 GDc TX Zone 1 & 21 Zone 2 & 22 (optional marking)
- On request, ATEX Group II Category 1G/Dc TX Zone 0 & 20

ADVICE : Our opinion and our advice are not guaranteed and SFERACO shall not be liable for the consequences of damages.
The customer must check the right choice of the products with the real service conditions.

**2 PIECES FLANGES BALL VALVE PN 16/40 FIRE SAFE
ADLER TYPE FM2****INSTALLATION INSTRUCTIONS****GENERAL GUIDELINES :**

- Ensure that the valves to be used are appropriate for the conditions of the installation (type of fluid, pressure and temperature).
- Be sure to have enough valves to be able to isolate the sections of piping as well as the appropriate equipment for maintenance and repair.
- Ensure that the valves to be installed are of correct strength to be able to support the capacity of their usage.
- **Installation of all circuits should ensure that their function can be automatically tested on a regular basis (at least two times a year).**

INSTALLATION INSTRUCTIONS :

- **Before installing the valves, clean and remove any objects from the pipes** (in particular bits of sealing and metal) which could obstruct and block the valves.
- **Ensure that both connecting pipes either side of the valve (upstream and downstream) are aligned (if they're not, the valves may not work correctly).**
- **Make sure that the two sections of the pipe (upstream and downstream) match, the valve unit will not absorb any gaps. Any distortions in the pipes may affect the tightness of the connection, the working of the valve and can even cause a rupture.** To be sure, place the kit in position to ensure the assembling will work.
- **If sections of piping do not have their final support in place, they should be temporarily fixed. This is to avoid unnecessary strain on the valve.**
- Tighten the bolts in cross.
- It's recommended to operate the valve (open and close) 1 to 2 times per year