

## TILTING CHECK VALVE WITH HYDRAULIC DAMPER



It is a type of check valve which consists of a cylindrical body, a disc inside it, a shaft that holds the disc, a counter lever, weight and a damper which controls closure. It is a type which needs less installation space.

Even it is fully open, disc is located on flow path. This is the reason why it cannot be used in sewage media, but can be used only in clean water.

Hydraulic damped tilting check valves are used at outlet side of pumps.

When flow begins, disc is pushed forward by effect of flow. Flow continues its travel in direction of pumping.

When there is an unexpected power cut and pump begins to slow down to stop, disc begins to close. Check valve closes automatically by assistance of back flow and counter weight which is connected to shaft by counter lever. Its closure prevents the water in the pipe line to flow reversely.

By the effect of hydraulic damper, closure is slow. Vibration, noise or shock is not created.

Opening angle of disc must not exceed 80 degrees. If it exceeds, in case of a mechanical tightness, flow moves under the disc and required forces for closure cannot occur. Reverse flow begins; pump starts to turn reverse direction. Serious damage may take place.

Hydraulic Damper, That unit prevents shock waves to occur in the pipe-line when check valve is closing. It prevents water hammer and its effects to occur which is due to flapping action of disc as a result of waves.

Hydraulic Damper Unit, It consists of a lever connected to shaft of valve, a counter weight on it and a cylinder-piston assembly connected to that lever.

There are two flow control valves fixed on hydraulic cylinder, as a standard. First valve is used to adjust closure time for 70% portion of entire travel. And second valve is used for remaining 30% portion. By means of this system, closure of hydraulic damped tilting check valves is controlled.

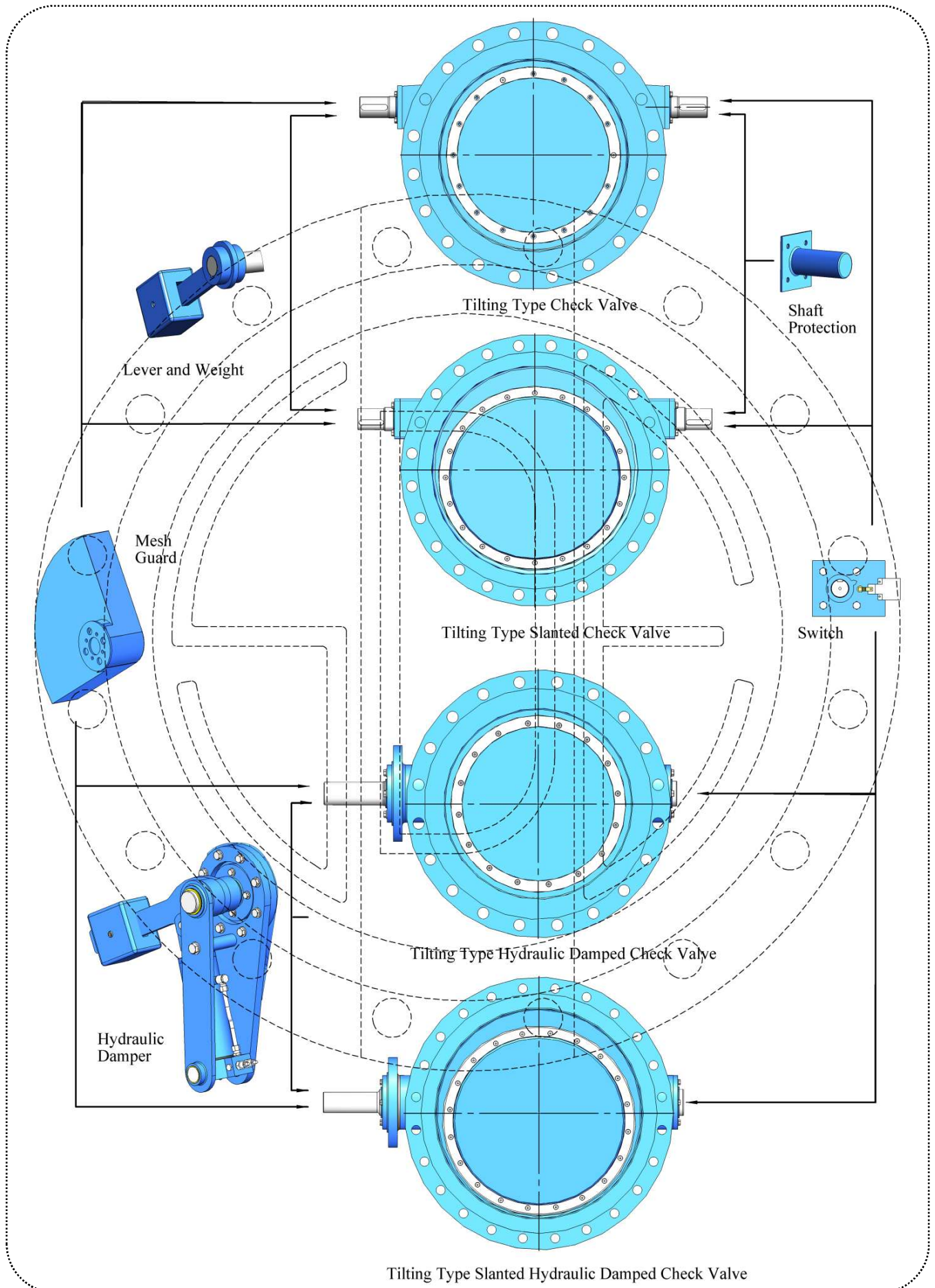
### Installation Position,

Valve should be installed as shaft axis parallel to ground and flow direction in horizontal axis.

### Maintenance,

There is no need for maintenance for these valves that are installed especially in clean water pipe-line. If valve is uninstalled, it is recommended to check disc ring (rubber ring), o-rings and change if necessary.

## ACCESSORIES OF TILTING and SLANTED TYPE CHECK VALVES

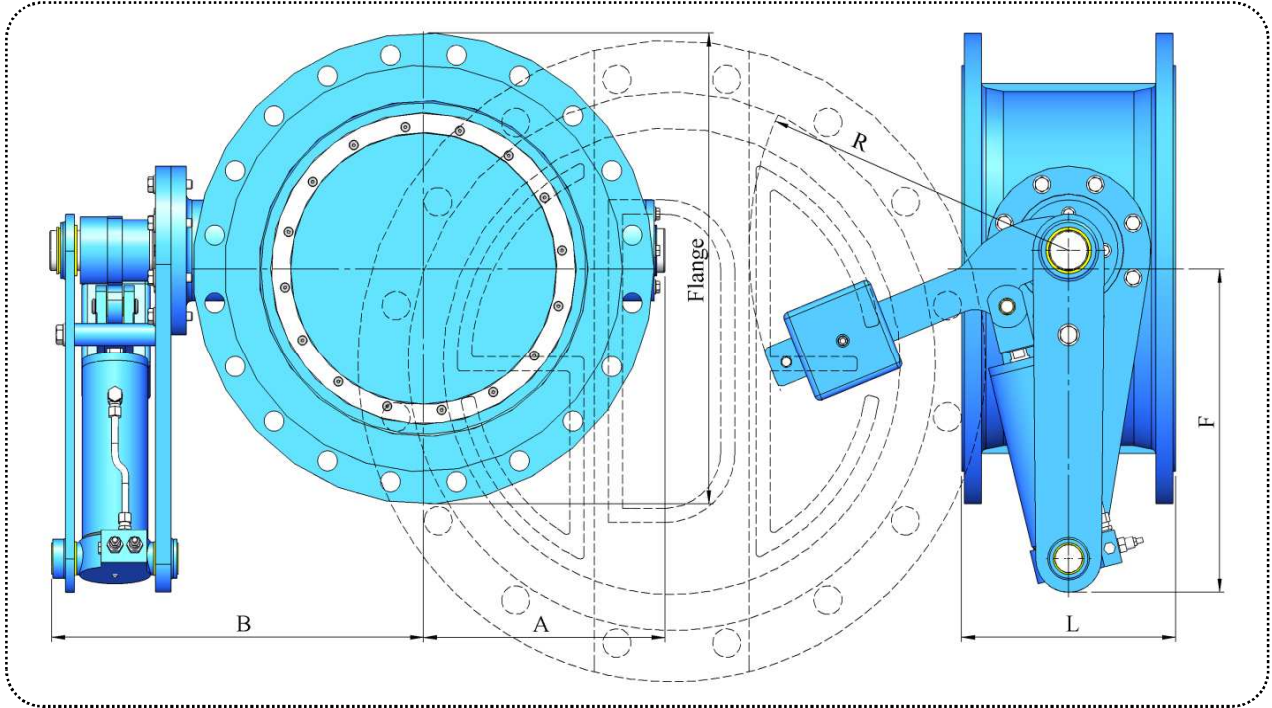


## TILTING TYPE CHECK VALVE WITH HYDRAULIC DAMPER

Body Length Standard : EN 558-1,S 14

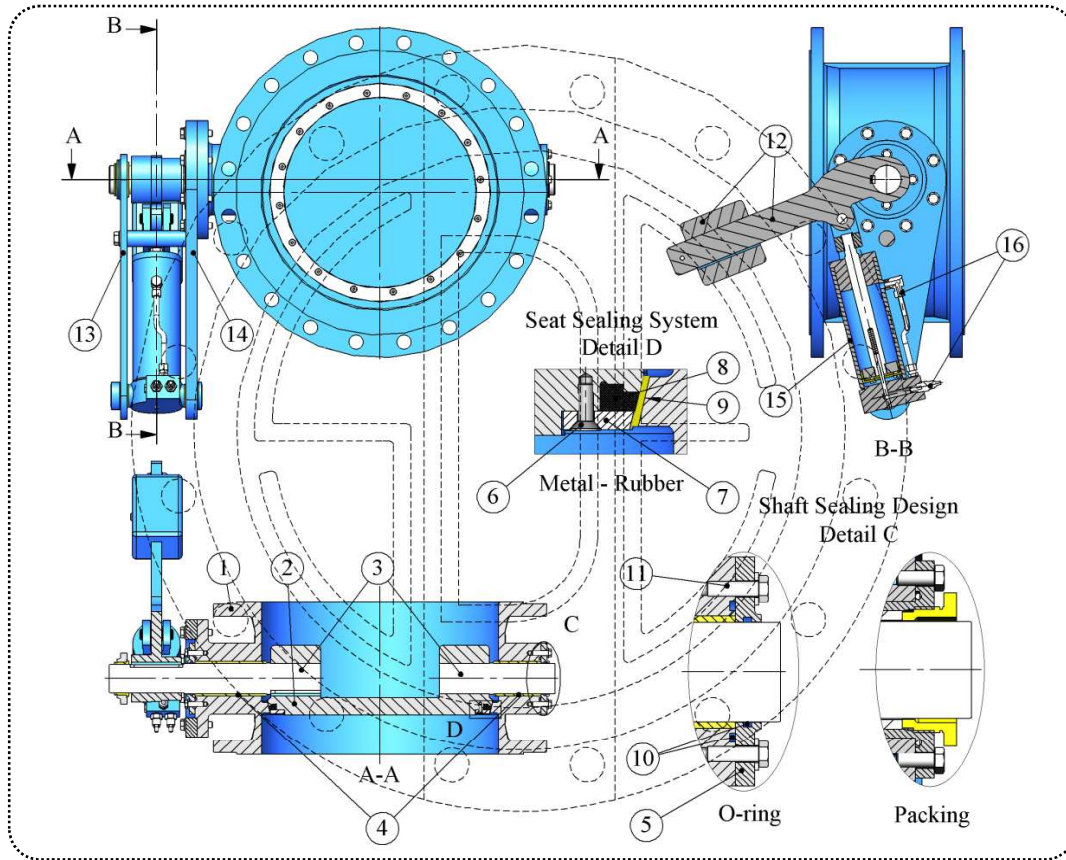
Valve Standard : -

Maximum allowable working temperature for all types of our valves is 80 degrees Celcius.



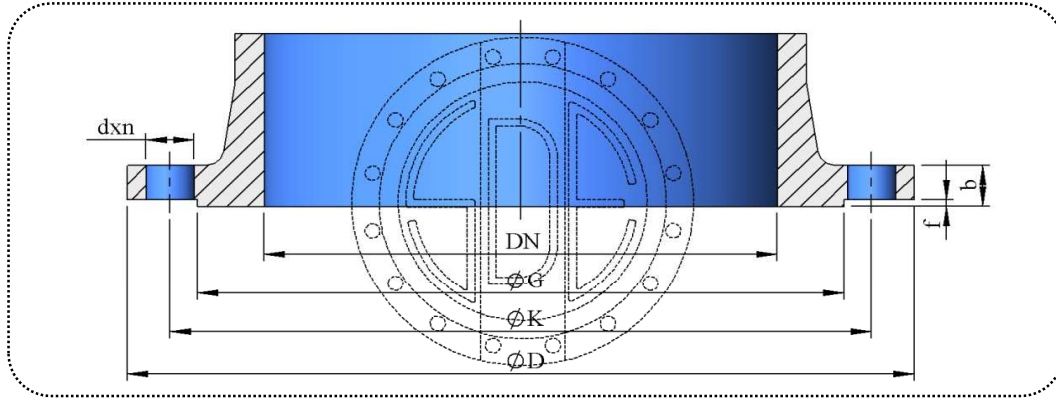
### DIMENSIONS

| DN    | L     | PN 10 |       |       |       |        | PN 16 |       |       |     |       |
|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-----|-------|
|       |       | A     | B     | F     | R     | Kg     | A     | B     | F     | R   | Kg    |
| 200   | 230   | 184   | 343   | 239   | 280   | 77     | 184   | 343   | 239   | 280 | 78    |
| 250   | 250   | 213   | 400   | 277   | 280   | 107    | 219   | 400   | 284   | 280 | 110   |
| 300   | 270   | 240   | 458   | 312   | 280   | 136    | 248   | 465   | 323   | 280 | 142   |
| 350   | 290   | 273   | 508   | 355   | 335   | 174    | 281   | 515   | 365   | 335 | 181   |
| 400   | 310   | 305   | 573   | 397   | 335   | 227    | 313   | 580   | 407   | 335 | 238   |
| 450   | 330   | 332   | 645   | 432   | 400   | 304    | 346   | 645   | 449   | 400 | 317   |
| 500   | 350   | 362   | 695   | 470   | 400   | 338    | 386   | 695   | 502   | 400 | 366   |
| 550   | 370   | 392   | 760   | 509   | 400   | 386    | 420   | 760   | 546   | 500 | 474   |
| 600   | 390   | 421   | 810   | 548   | 400   | 420    | 454   | 810   | 590   | 500 | 523   |
| 650   | 410   | 452   | 875   | 588   | 500   | 536    | 473   | 890   | 614   | 500 | 625   |
| 700   | 430   | 483   | 925   | 628   | 500   | 597    | 491   | 940   | 639   | 600 | 755   |
| 750   | 450   | 521   | 990   | 677   | 500   | 701    | 524   | 1.035 | 681   | 600 | 902   |
| 800   | 470   | 548   | 1.040 | 713   | 600   | 866    | 554   | 1.085 | 720   | 600 | 1.006 |
| 900   | 510   | 602   | 1.170 | 783   | 600   | 1.128  | 608   | 1.185 | 790   | 700 | 1.350 |
| 1.000 | 550   | 664   | 1.270 | 863   | 700   | 1.462  | 678   | 1.285 | 881   | 700 | 1.685 |
| 1.050 | 570   | 695   | 1.350 | 903   | 700   | 1.668  | 705   | 1.365 | 916   | 700 | 1.896 |
| 1.100 | 590   | 725   | 1.400 | 942   | 700   | 1.858  | 732   | 1.415 | 951   | 800 | 2.293 |
| 1.200 | 630   | 786   | 1.500 | 1.021 | 700   | 2.041  | 802   | 1.515 | 1.042 | 800 | 2.508 |
| 1.300 | 670   | 851   | 1.645 | 1.106 | 800   | 2.726  | 856   | 1.660 | 1.113 | 800 | 3.084 |
| 1.400 | 710   | 905   | 1.745 | 1.176 | 800   | 3.124  | 910   | 1.790 | 1.183 | 800 | 3.642 |
| 1.500 | 750   | 964   | 1.860 | 1.253 | 800   | 3.700  | 983   | 1.890 | 1.278 | 900 | 4.572 |
| 1.600 | 790   | 1.034 | 1.990 | 1.344 | 800   | 4.454  | 1.042 | 2.020 | 1.355 | 900 | 5.439 |
| 1.700 | 830   | 1.088 | 2.135 | 1.415 | 900   | 5.720  |       |       |       |     |       |
| 1.800 | 870   | 1.142 | 2.235 | 1.485 | 900   | 6.664  |       |       |       |     |       |
| 1.900 | 910   | 1.199 | 2.395 | 1.558 | 900   | 8.137  |       |       |       |     |       |
| 2.000 | 950   | 1.256 | 2.495 | 1.632 | 900   | 9.540  |       |       |       |     |       |
| 2.100 | 990   | 1.316 | 2.655 | 1.711 | 1.000 | 10.931 |       |       |       |     |       |
| 2.200 | 1.030 | 1.377 | 2.755 | 1.790 | 1.000 | 13.021 |       |       |       |     |       |

**TILTING TYPE CHECK VALVE with HYDRAULIC DAMPER**

| No                                                                                       | Item Name                    | Material                                                        | Description              | EN Standard        | Material No |
|------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------|--------------------------|--------------------|-------------|
| 1-5                                                                                      | Body and Shaft Covers        | GGG 40                                                          | Ductile Iron             | EN-GJS-450-15      | 0.7040      |
|                                                                                          |                              | GGG 50                                                          |                          | EN-GJS-500-7       | 0.7050      |
|                                                                                          |                              | ST 37-2                                                         | Steel Construction       | EN 10025           | 1.0037      |
| 2                                                                                        | Disc                         | GGG 40                                                          | Ductile Iron             | EN-GJS-450-15      | 0.7040      |
|                                                                                          |                              | GGG 50                                                          |                          | EN-GJS-500-7       | 0.7050      |
|                                                                                          |                              | 304                                                             | Stainless Steel Casting  | G - X6CrNi 18-9    | 1.4308      |
|                                                                                          |                              | 316                                                             |                          | G - X6CrNiMo 18-10 | 1.4408      |
|                                                                                          |                              | CC 331G-GS                                                      | Aluminium Bronze         | CuAl10Fe2-C        | 2.0940.01   |
| 3                                                                                        | Shaft                        | 420                                                             | Stainless Steel          | X20Cr13            | 1.4021      |
|                                                                                          |                              | 304                                                             |                          | X5CrNi 18-10       | 1.4301      |
|                                                                                          |                              | 316                                                             |                          | X5CrNiMo17-12-2    | 1.4401      |
|                                                                                          |                              | 431                                                             |                          | X17CrNi16-2        | 1.4057      |
| 4                                                                                        | Bushes                       | CC 331G-GS                                                      | Aluminium Bronze         | CuAl10Fe2-C        | 2.0940.01   |
| 6                                                                                        | Bolts of Retainer Ring       | A2 - A4                                                         | Stainless Steel          | -                  | -           |
| 7                                                                                        | Retainer Ring                | 304                                                             | Stainless Steel          | X5CrNi 18-10       | 1.4301      |
|                                                                                          |                              | 316                                                             |                          | X5CrNiMo17-12-2    | 1.4401      |
|                                                                                          |                              | CC 331G-GS                                                      | Aluminium Bronze         | CuAl10Fe2-C        | 2.0940.01   |
| 8                                                                                        | Disc Ring                    | NBR - EPDM                                                      | Rubber                   | -                  | -           |
| 9                                                                                        | Body Seat                    | 316 L                                                           | Stainless Steel Welding  | 12072              | 1.4430      |
|                                                                                          |                              | CuAl8                                                           | Aluminium Bronze Welding | 14640 S Cu 6100    | 2.0921      |
| 10                                                                                       | Shaft Sealing                | NBR - EPDM                                                      | Rubber                   | -                  | -           |
|                                                                                          |                              | Packing                                                         | Non Asbestos             | -                  | -           |
| 11                                                                                       | Bolt of Covers               | Galvanized                                                      | Steel                    | -                  | -           |
|                                                                                          |                              | A2 - A4                                                         | Stainless Steel          | -                  | -           |
| 12                                                                                       | Lever and Weight             | GGG 50                                                          | Ductile Iron             | EN-GJS-500-7       | 0.7050      |
| 13-14                                                                                    | Cylinder box                 | GGG 50                                                          | Ductile Iron             | EN-GJS-500-7       | 0.7050      |
| 15-16                                                                                    | Hydraulic Cylinder and Parts | Steel                                                           | Special                  |                    |             |
| Coating                                                                                  |                              | WRAS approved fusion bonded epoxy. 300 microns dft as standard. |                          |                    |             |
| Maximum allowable working temperature for all types of our valves is 80 degrees Celcius. |                              |                                                                 |                          |                    |             |

## FLANGE DIMENSIONS



| Nominal Dia | Outside Dia | Raised Face |        | Flange Holes |     |         | Flange Thickness | Outside Dia | Raised Face |        | Flange Holes |     |         | Flange Thickness |
|-------------|-------------|-------------|--------|--------------|-----|---------|------------------|-------------|-------------|--------|--------------|-----|---------|------------------|
|             |             | Dia         | Height | Circle Dia.  | Dia | Num ber |                  |             | Dia         | Height | Circle Dia.  | Dia | Num ber |                  |
| DN          | D           | G           | f      | K            | d   | n       | b                | D           | G           | f      | K            | d   | n       | b                |
| PN 10       |             |             |        |              |     |         |                  | PN 16       |             |        |              |     |         |                  |
| 100         | 220         | 158         | 3      | 180          | 19  | 8       | 19               | 220         | 158         | 3      | 180          | 19  | 8       | 19               |
| 125         | 250         | 188         | 3      | 210          | 19  | 8       | 19               | 250         | 188         | 3      | 210          | 19  | 8       | 19               |
| 150         | 285         | 212         | 3      | 240          | 23  | 8       | 19               | 285         | 212         | 3      | 240          | 23  | 8       | 19               |
| 200         | 340         | 268         | 3      | 295          | 23  | 8       | 20               | 340         | 268         | 3      | 295          | 23  | 12      | 20               |
| 250         | 395         | 320         | 3      | 350          | 23  | 12      | 22               | 405         | 320         | 3      | 355          | 28  | 12      | 22               |
| 300         | 445         | 370         | 4      | 400          | 23  | 12      | 25               | 460         | 378         | 4      | 410          | 28  | 12      | 25               |
| 350         | 505         | 430         | 4      | 460          | 23  | 16      | 25               | 520         | 438         | 4      | 470          | 28  | 16      | 27               |
| 400         | 565         | 482         | 4      | 515          | 28  | 16      | 25               | 580         | 490         | 4      | 525          | 31  | 16      | 28               |
| 450         | 615         | 532         | 4      | 565          | 28  | 20      | 26               | 640         | 550         | 4      | 585          | 31  | 20      | 30               |
| 500         | 670         | 585         | 4      | 620          | 28  | 20      | 27               | 715         | 610         | 4      | 650          | 34  | 20      | 32               |
| 600         | 780         | 685         | 5      | 725          | 31  | 20      | 30               | 840         | 725         | 5      | 770          | 37  | 20      | 36               |
| 700         | 895         | 800         | 5      | 840          | 31  | 24      | 33               | 910         | 795         | 5      | 840          | 37  | 24      | 40               |
| 800         | 1.015       | 905         | 5      | 950          | 34  | 24      | 35               | 1.025       | 900         | 5      | 950          | 41  | 24      | 43               |
| 900         | 1.115       | 1.005       | 5      | 1.050        | 34  | 28      | 38               | 1.125       | 1.000       | 5      | 1.050        | 41  | 28      | 47               |
| 1.000       | 1.230       | 1.110       | 5      | 1.160        | 37  | 28      | 40               | 1.255       | 1.115       | 5      | 1.170        | 44  | 28      | 50               |
| 1.200       | 1.455       | 1.330       | 5      | 1.380        | 41  | 32      | 45               | 1.485       | 1.330       | 5      | 1.390        | 50  | 32      | 57               |
| 1.400       | 1.675       | 1.535       | 5      | 1.590        | 44  | 36      | 46               | 1.685       | 1.530       | 5      | 1.590        | 50  | 36      | 59               |
| 1.500       | 1.785       | 1.640       | 5      | 1.700        | 44  | 36      | 48               | 1.820       | 1.640       | 5      | 1.710        | 57  | 36      | 63               |
| 1.600       | 1.915       | 1.760       | 5      | 1.820        | 50  | 40      | 49               | 1.930       | 1.750       | 5      | 1.820        | 57  | 40      | 65               |
| 1.800       | 2.115       | 1.950       | 5      | 2.020        | 50  | 44      | 52               | 2.130       | 1.950       | 5      | 2.020        | 57  | 44      | 69               |
| 2.000       | 2.325       | 2.150       | 5      | 2.230        | 50  | 48      | 55               | 2.345       | 2.150       | 5      | 2.230        | 62  | 48      | 73               |
| 2.200       | 2.550       | 2.370       | 5      | 2.440        | 57  | 52      | 59               | 2.555       | 2.360       | 5      | 2.440        | 62  | 52      | 80               |
| PN 25       |             |             |        |              |     |         |                  | PN 40       |             |        |              |     |         |                  |
| 100         | 235         | 162         | 3      | 190          | 23  | 8       | 19               | 235         | 162         | 3      | 190          | 23  | 8       | 19               |
| 125         | 270         | 188         | 3      | 220          | 28  | 8       | 19               | 270         | 188         | 3      | 220          | 28  | 8       | 24               |
| 150         | 300         | 218         | 3      | 250          | 28  | 8       | 20               | 300         | 218         | 3      | 250          | 28  | 8       | 26               |
| 200         | 360         | 278         | 3      | 310          | 28  | 12      | 22               | 375         | 285         | 3      | 320          | 31  | 12      | 30               |
| 250         | 425         | 335         | 3      | 370          | 31  | 12      | 25               | 450         | 345         | 3      | 385          | 34  | 12      | 35               |
| 300         | 485         | 395         | 4      | 430          | 31  | 16      | 28               | 515         | 410         | 4      | 450          | 34  | 16      | 40               |
| 350         | 555         | 450         | 4      | 490          | 34  | 16      | 30               | 580         | 465         | 4      | 510          | 37  | 16      | 44               |
| 400         | 620         | 505         | 4      | 550          | 37  | 16      | 32               | 660         | 535         | 4      | 585          | 41  | 16      | 48               |
| 450         | 670         | 548         | 4      | 600          | 37  | 20      | 34               | 685         | 560         | 4      | 610          | 41  | 20      | 50               |
| 500         | 730         | 615         | 4      | 660          | 37  | 20      | 37               | 755         | 615         | 4      | 670          | 44  | 20      | 52               |
| 600         | 845         | 720         | 5      | 770          | 41  | 20      | 42               | 890         | 735         | 5      | 795          | 50  | 20      | 58               |
| 700         | 960         | 820         | 5      | 875          | 44  | 24      | 47               | 995         | 840         | 5      | 900          | 50  | 24      | 63               |
| 800         | 1.085       | 930         | 5      | 990          | 50  | 24      | 51               | 1.140       | 960         | 5      | 1.030        | 57  | 24      | 68               |
| 900         | 1.185       | 1.030       | 5      | 1.090        | 50  | 28      | 56               | 1.250       | 1.070       | 5      | 1.140        | 57  | 28      | 73               |
| 1.000       | 1.320       | 1.140       | 5      | 1.210        | 57  | 28      | 60               | 1.360       | 1.180       | 5      | 1.250        | 57  | 28      | 80               |
| 1.200       | 1.530       | 1.360       | 5      | 1.420        | 57  | 32      | 69               | 1.575       | 1.385       | 5      | 1.460        | 62  | 32      | 88               |
| 1.400       | 1.755       | 1.570       | 5      | 1.640        | 62  | 36      | 74               | 1.795       | 1.600       | 5      | 1.680        | 62  | 36      | 98               |
| 1.500       | 1.865       | 1.680       | 5      | 1.750        | 62  | 40      | 75               | 1.910       | 1.700       | 5      | 1.790        | 70  | 40      | 102              |
| 1.600       | 1.975       | 1.790       | 5      | 1.860        | 62  | 40      | 81               | 2.025       | 1.815       | 5      | 1.900        | 70  | 40      | 108              |
| 1.800       | 2.195       | 2.000       | 5      | 2.070        | 70  | 44      | 88               |             |             |        |              |     |         |                  |
| 2.000       | 2.425       | 2.230       | 5      | 2.300        | 70  | 48      | 95               |             |             |        |              |     |         |                  |