



CHARACTERISTICS CHECK VALVE TYPE R

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DATE:11-08-98
REVISION:

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CHARACTERISTICS OF THE C.M.O. VALVE TYPE "R"

The main characteristics of the CMO check valve type R are the following:

- Reduced space
- Easy mounting
- No maintenance
- No spares needed
- Minimum pressure drop
- High liability
- Suitable for all kind of fluids
- Seat metal/metal - metal/rubber.
- Standard opening at low pressure.
- Opening at requested pressure, out from standard.
- Water hammer prevention by oil-brake and counterweight.



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APPLICATIONS

Check valve appropriate for liquids with a concentration of solids of maximum 4%.

MATERIALS

Construction materials, see catalogue.

PRESSURES

Unidirectional valve, wafer to be mounted between flanges.

In this valve the flange drilling is related to the working pressure of the valve.



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OIL-BRAKE AND COUNTERWEIGHT

The oil-brake and counterweight systems are used to control the closing speed of the disk. For that purpose there is a flow regulator to control the hydraulic flow pitch from a chamber to the other inside the damping cylinder.

The extension of the stem (opening of the valve) is free pitch.

The contraction of the stem (closing of the valve) is controlled by the regulator.

The counterweight is used to counteract the friction originated by the brake system. It can also be graduated by an screw and lock nut. It has two pin positions to be orientated either in horizontal or vertical pipe.

TO START FILL THE DAMPER DEPOSIT WITH HYDRAULIC OIL: ESSO NUTO H46 SHELL H.O. 46

The filling has to be carried out while moving the damper system, so the oil will fill both sides of the cylinder chamber.

The level is correct when the oil gets the middle of the alternative deposit, with the stem contracted, what means valve closed.

**MOUNTING INSTRUCTIONS FOLLOWING DRAWING R-9088A3
CHECK VALVES WITH DAMPING SYSTEM**

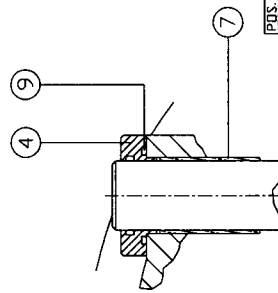
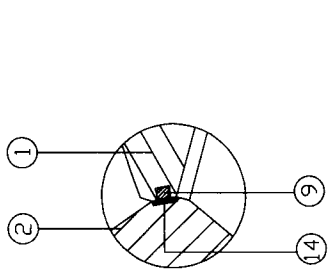
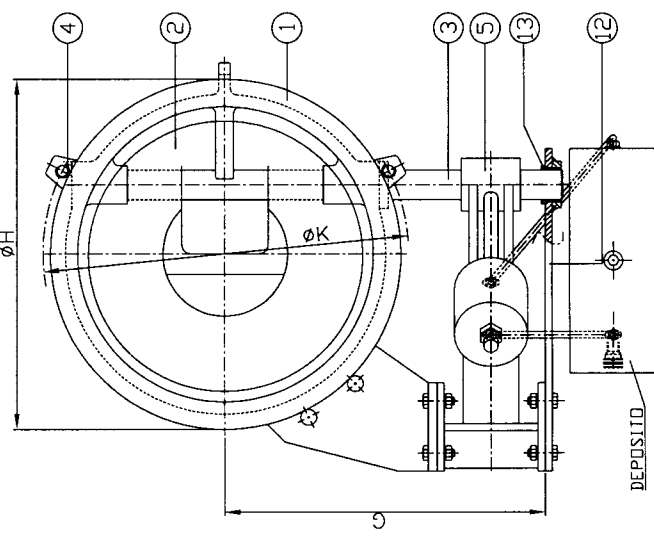
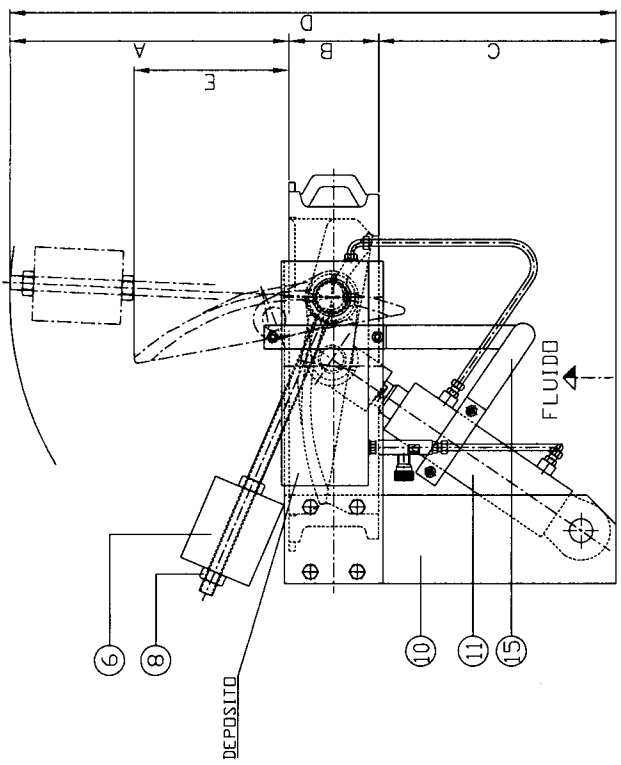
With the valve dismounted from the pipe and in the position indicated on the drawing, proceed as follows:

1. Take out the pins nr. 12 on the drawing, these are blocked with one welding point that has to be removed.
2. Untie the covers nr. 4, with care to avoid the damage of the joints nr. 7.
3. Remove the piece nr. 5.
4. Remove the damper nr. 9.
5. Remove the shaft nr. 3.

• MOUNTING

6. Mount the shaft nr.3
7. Mount covers nr. 4, with care to avoid the damage of the joints nr. 7.
8. Mount piece nr. 5
9. Mount the damper
10. Mount piece nr. 11, when necessary.
11. Make by hand the stroke of the damper.
12. Place the valve in closed position.
13. The stem of the damper must be withdrawn, inside the chamber of the cylinder, so that a stroke of 5mm must remain without reaching to the end of the stroke of the stem.
14. In the position indicated above, drill the pins nr. 12.
15. Mount the pins nr.12.
16. Check manually that the strokes are correct, what means that when the valve is in closed position 5mm of margin must remain on the stroke of the stem so the valve will close before the butt of the cylinder.
17. For security reasons, weld the pins nr.12.
18. Fill in with oil the deposit.
19. Make some maneuvers by hand.
20. Replenish with oil the deposit

Vertical reflecting



| DN | A | B | C | D | E | G |
|------|-----|-----|-----|------|-----|-----|
| 500 | 472 | 152 | 405 | 1029 | 262 | 543 |
| 600 | 456 | 178 | 392 | 1026 | 319 | 609 |
| 700 | 485 | 229 | 345 | 1059 | 380 | 659 |
| 800 | 500 | 241 | 607 | 1285 | 474 | 710 |
| 900 | 520 | 275 | 640 | 1385 | 525 | 760 |
| 1000 | 550 | 300 | 685 | 1535 | 605 | 800 |

| POS. | DE DENOMINACION | MATERIAL |
|------|--------------------|---------------|
| 1 | CUERPO | A-216/GB-304 |
| 2 | CLAPETA | CF8M |
| 3 | EJE | AISI 420 |
| 4 | PALETA | AISI 420 |
| 5 | PALETA | ATC* |
| 6 | CONTRAPESO | ATC* |
| 7 | CASQUILLO | BRONCE |
| 8 | TUERCA | 5.6 |
| 9 | JUNTA TORICA | NITRIL |
| 10 | SOPORTE | ATC* |
| 11 | AMORTE. HIDRAULICO | INDX. CROMADO |
| 12 | SOPORTE LATERAL | INDX. CROMADO |
| 13 | ASIENTO | BRONCE |
| 14 | BRIDA SUECION | AISI 304 |
| 14 | BRIDA SUECION | ATC* |

| DN | DIN PN10 | | | | DIN PN16 | | | | DIN PN25 | | | | ANSI 150 | | | |
|------|----------|----|------|------|----------|----|------|------|----------|----|------|------|----------|----|-----|-----|
| | M | N° | ØK | ØH | M | N° | ØK | ØH | M | N° | ØK | ØH | M | N° | ØK | ØH |
| 500 | M24 | 20 | 620 | 594 | M30 | 20 | 650 | 618 | M33 | 20 | 660 | 625 | 11/8" | 20 | 635 | 604 |
| 600 | M27 | 20 | 725 | 696 | M33 | 20 | 770 | 735 | M36 | 20 | 770 | 732 | 1 1/4" | 20 | 749 | 715 |
| 700 | M27 | 24 | 840 | 811 | M33 | 24 | 840 | 805 | M39 | 24 | 875 | 830 | - | - | - | - |
| 800 | M30 | 24 | 950 | 915 | M36 | 24 | 950 | 909 | M43 | 24 | 950 | 940 | - | - | - | - |
| 900 | M30 | 28 | 1050 | 1015 | M36 | 28 | 1050 | 1009 | M45 | 28 | 1050 | 1040 | - | - | - | - |
| 1000 | M33 | 28 | 1160 | 1122 | M39 | 28 | 1170 | 1126 | M52 | 28 | 1210 | 1152 | - | - | - | - |

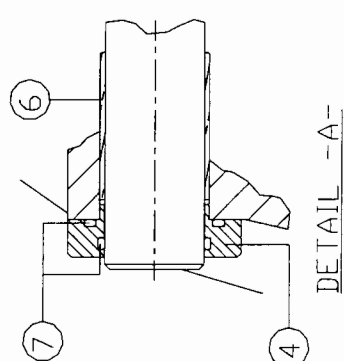
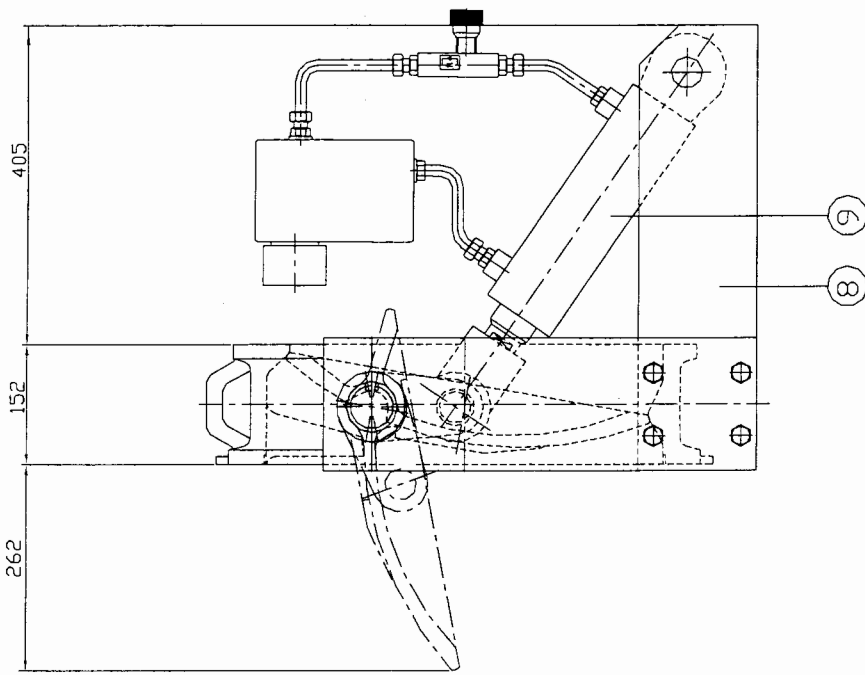
* C.M.O. Se reserva el derecho de modificar los dimensiones./C.M.O. Has o right to modify the dimensions.

Rev. Modificación Fecha

Descripción
VALVULA SERIE R (VERTICAL)
AMRTIGUADOR+CONTRAPESO

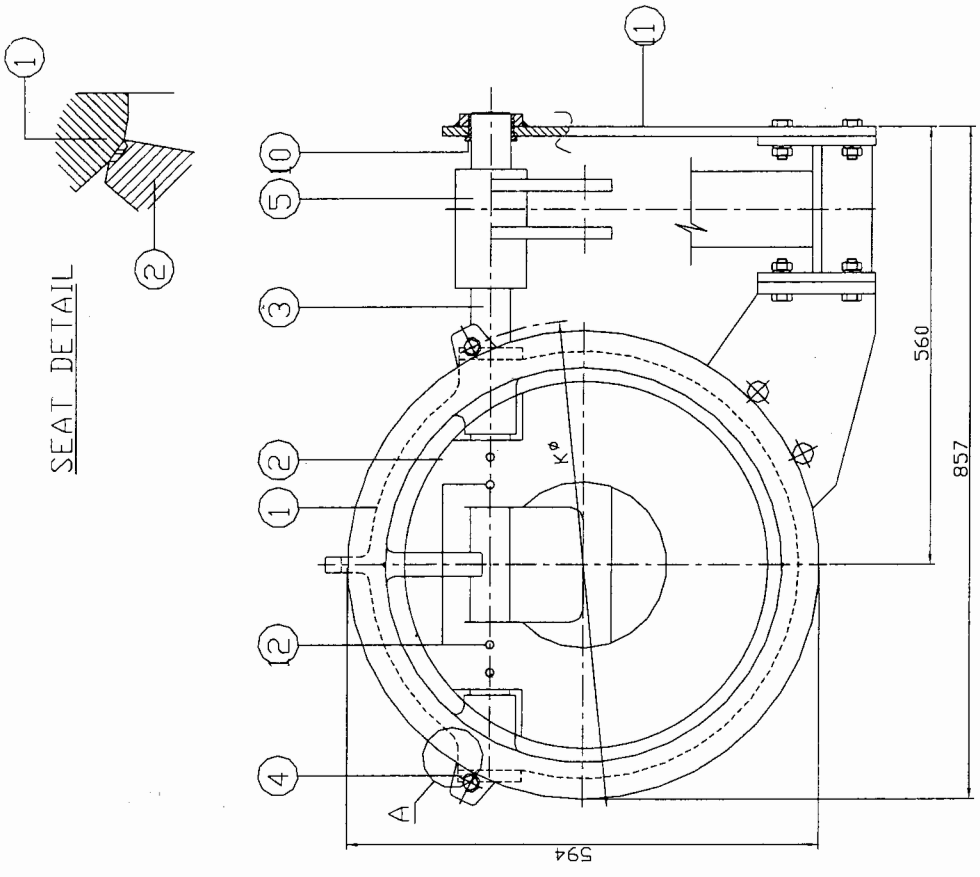
Dibuñado Bititor Comprobado
 Aprobado Olaya
 Fecha 08/09/04
 Disk Plano N° 1912
 R-9126A3

Vertical reeling



| POS. | DESCRIPTION | MATERIAL |
|------|----------------------|-----------------|
| 1 | BODY | A-216WCB+304 |
| 2 | DISK | A-216WCB+304 |
| 3 | SHAFT | ALSI 420 |
| 4 | COVER | STEEL |
| 5 | LEVEL | STEEL |
| 6 | GLAND | BRONZE |
| 7 | JOINT | NITRILE |
| 8 | SUPPORT | STEEL |
| 9 | HYDRAULIC SHOCK ABS. | STEM IN NICKRON |
| 10 | SOCKET | BRONZE |
| 11 | LATERAL SUPPORT | STEEL |
| 12 | PINS | STEEL |

SEAT DETAIL




| FLANGE DETAIL | | | |
|---------------|-----|----|---------|
| DIN PN16 | | | |
| ND | M | N° | ØK ØH |
| 500 | M30 | 20 | 650 618 |

VERTICAL PIPING

* C.M.O. Se reservo el derecho de modificar las dimensiones./C.M.O. Has o right to modify the dimensions

| Rev. | Modificación | Fecha | Descripción |
|------|--------------|-------|-------------|
| B | | | |
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| G | | | |

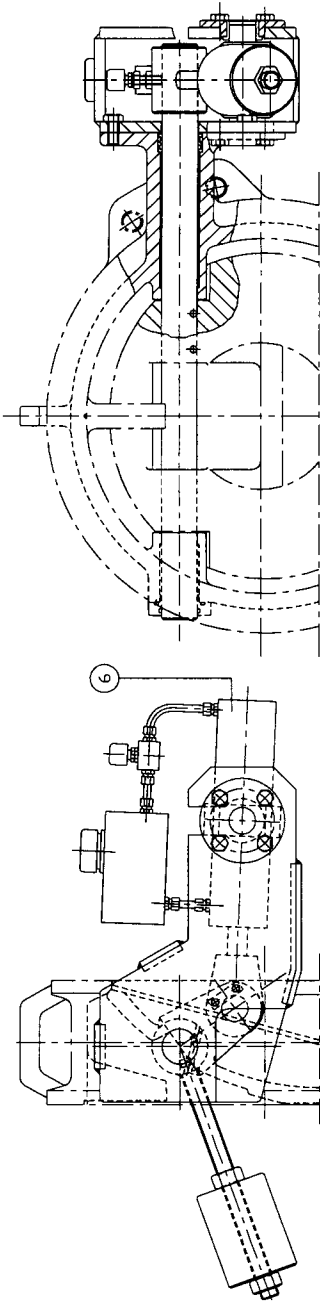


--R-- SERIE VALVE
DN500
HYDRAULIC SHOCK ABSORBER

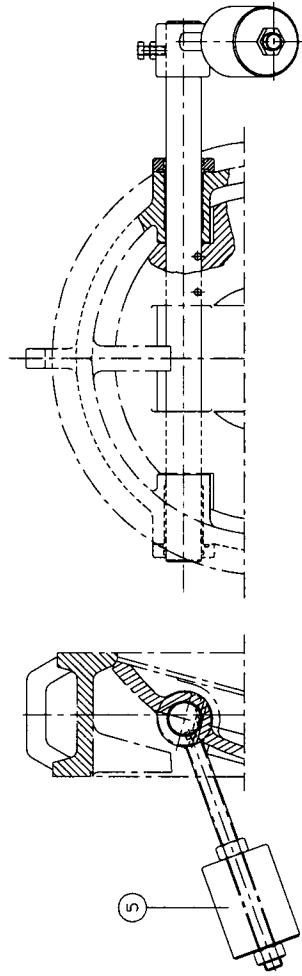
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| Dibujado | KIKE | Plano N° | 874 |
| Aprobado | | Fecha | 13/01/00 |
| Comprobado | | | |

R-9088B3

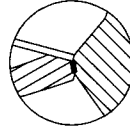
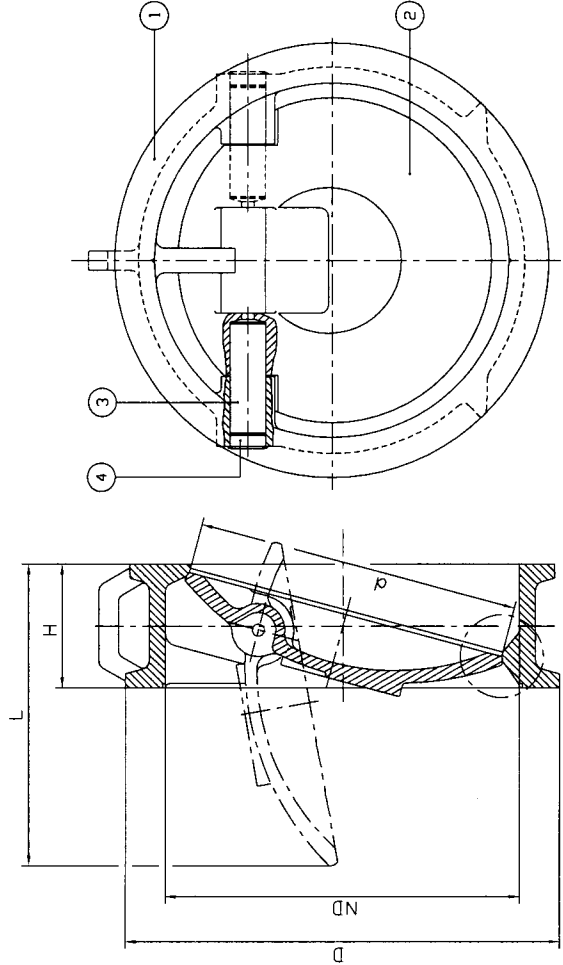
Blowin's on steel welding



WITH HYDRAULIC SHOCK ABSORBER AND COUNTERWEIGHT



WITH COUNTERWEIGHT



INDX. HARD FACING IN VALVES CARBON STEEL

| ND | D | d | H | L |
|-----|------------|-----|-----|-----|
| 50 | SEE FLANGE | 44 | 43 | 60 |
| 65 | SEE FLANGE | 58 | 46 | 70 |
| 80 | SEE FLANGE | 72 | 64 | 90 |
| 100 | SEE FLANGE | 90 | 64 | 102 |
| 125 | SEE FLANGE | 112 | 70 | 120 |
| 150 | SEE FLANGE | 135 | 76 | 140 |
| 200 | SEE FLANGE | 180 | 89 | 185 |
| 250 | SEE FLANGE | 225 | 114 | 220 |
| 300 | SEE FLANGE | 270 | 114 | 262 |
| 350 | SEE FLANGE | 315 | 127 | 310 |
| 400 | SEE FLANGE | 365 | 140 | 360 |
| 450 | SEE FLANGE | 420 | 152 | 400 |
| 500 | SEE FLANGE | 460 | 152 | 450 |
| 600 | SEE FLANGE | 555 | 178 | 535 |
| 700 | SEE FLANGE | 650 | 229 | 620 |
| 800 | SEE FLANGE | 740 | 241 | 715 |
| 900 | SEE FLANGE | 835 | 275 | 800 |

| POS. | DESCRIPTION | MATERIAL | MATERIAL |
|------|----------------------|--------------|--------------|
| 1 | BODY | A-216WCB+304 | CF8M |
| 2 | DISH | A-216WCB+304 | CF8M |
| 3 | SHAFT | AISI 420 | AISI 420 |
| 4 | COVER | F-111 | AISI 304 |
| 5 | COUNTERWEIGHT | CARBON STEEL | CARBON STEEL |
| 6 | HYDRAULIC SHOCK ABS. | | |

Dimensions and drawings without obligation. CMO S.L. reserves, at any moment, the right of their modification at its own discretion and without any previous notice.

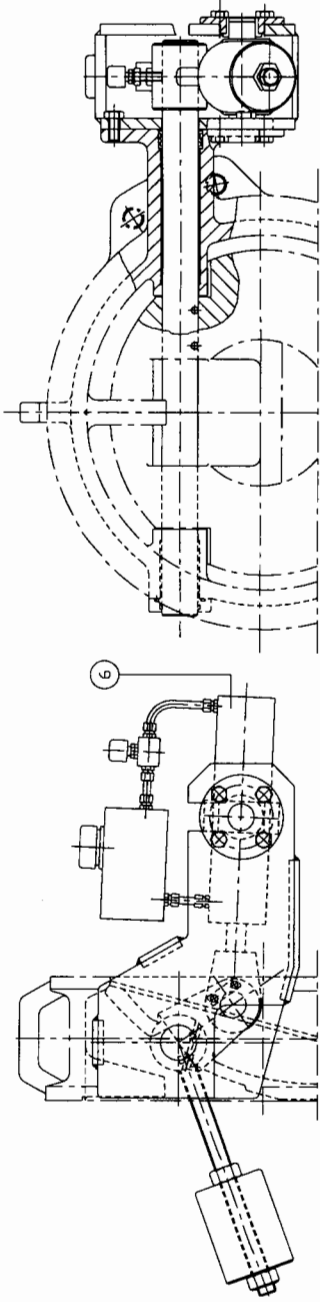


| Rev | Modification | Fecha | Description |
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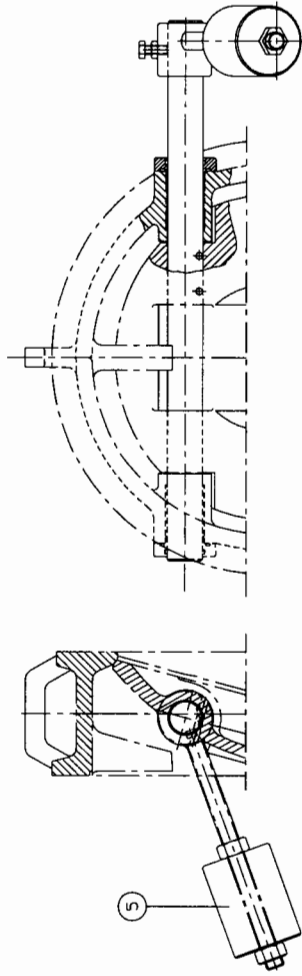
**R SERIE VALVE
DIFERENT DIMENSIONS
WITH ITS ACTUATORS**

| | | |
|--------------------|----------------|--------------|
| Disujada CARLOS | Disck Plano Nº | |
| Comprobado | Fecha | 819 R-9077A3 |
| | 15-9-99 | |

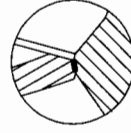
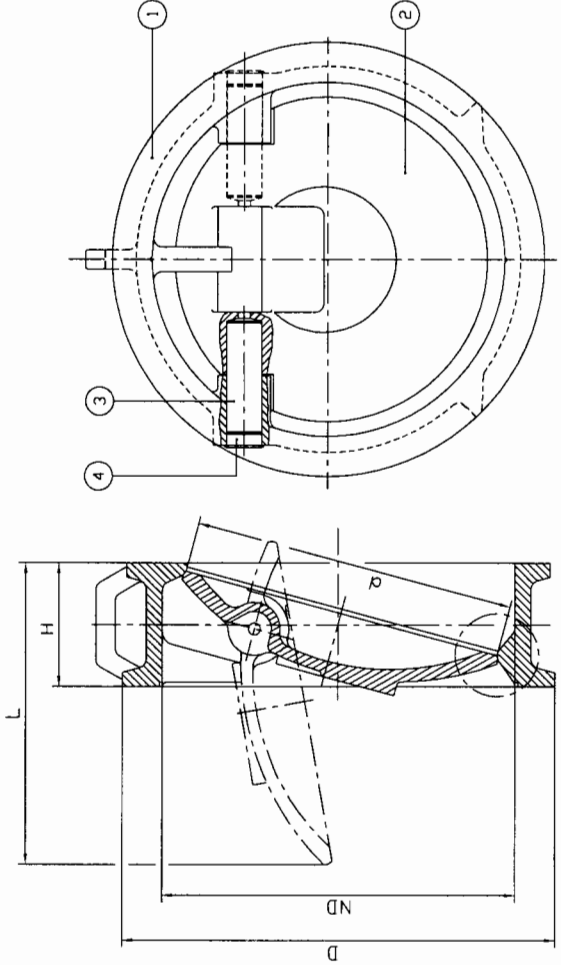
HORIZONTAL ROULEPIN



WITH HYDRAULIC SHOCK ABSORBER AND COUNTERWEIGHT



WITH COUNTERWEIGHT



INDEX HARD FACING IN VALVES CARBON STEEL

| ND | D | d | H | L |
|-----|------------|-----|-----|-----|
| 50 | SEE FLANGE | 44 | 43 | 60 |
| 65 | SEE FLANGE | 58 | 46 | 70 |
| 80 | SEE FLANGE | 72 | 64 | 90 |
| 100 | SEE FLANGE | 90 | 64 | 102 |
| 125 | SEE FLANGE | 112 | 70 | 120 |
| 150 | SEE FLANGE | 135 | 76 | 140 |
| 200 | SEE FLANGE | 180 | 89 | 185 |
| 250 | SEE FLANGE | 225 | 114 | 220 |
| 300 | SEE FLANGE | 270 | 114 | 262 |
| 350 | SEE FLANGE | 315 | 127 | 310 |
| 400 | SEE FLANGE | 365 | 140 | 360 |
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| PDS | DESCRIPTION | MATERIAL | MATERIAL |
|-----|----------------------|--------------|--------------|
| 1 | BODY | A-216WCB+304 | CF8M |
| 2 | DISH | A-216WCB+304 | CF8M |
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| 4 | COVER | F-111 | AISI 304 |
| 5 | COUNTERWEIGHT | CARBON STEEL | CARBON STEEL |
| 6 | HYDRAULIC SHOCK ABS. | | |

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| B | | |
| C | | |
| D | | |
| E | | |
| F | | |
| G | | |

| Description | | R SERIE VALVE | |
|--|--------|---------------|----------|
| DIFERENT DIMENSIONS WITH ITS ACTUATORS | | | |
| Dibujado | CARLOS | Disk Plano Nº | |
| Comprobado | | Fecha | 15-9-99 |
| | | | 819 |
| | | | R-9077A3 |