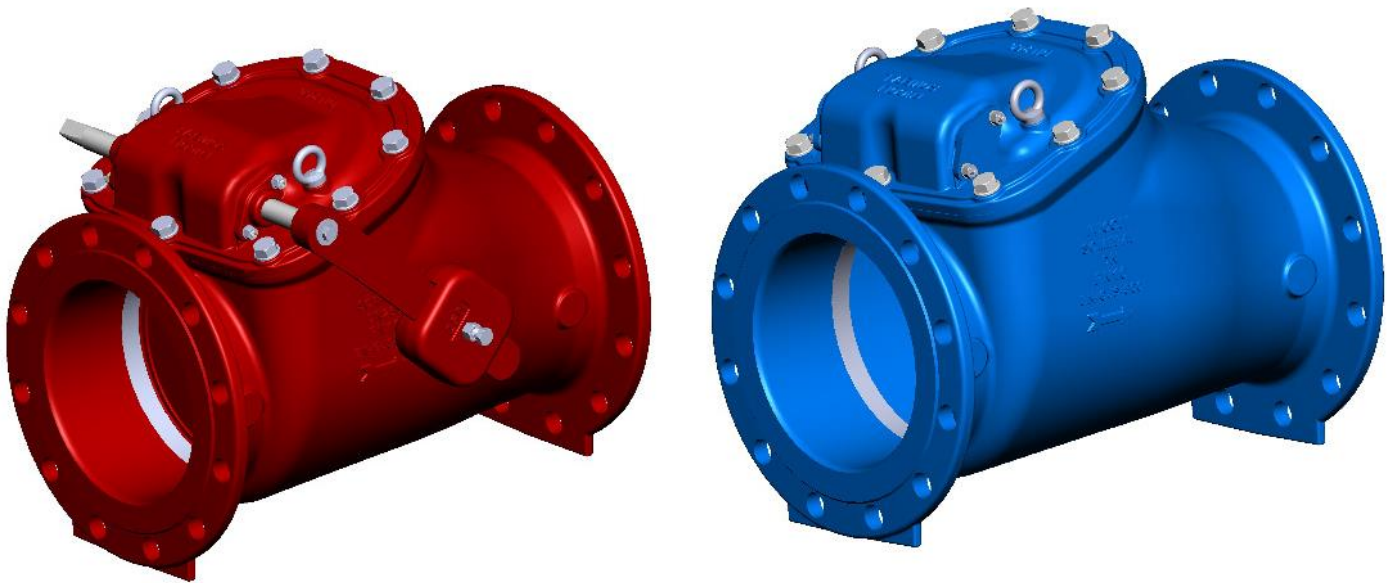




Fucoli Somepal
FUNDIÇÃO DE FERRO, S. A.

DESDE
SINCE 1946

OPERATION MANUAL



SWING CHECK VALVE SERIES SUPRA



ISO 9001
ISO 14001
OHSAS 18001

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1. DESCRIPTION

The **SWING CHECK VALVE SERIES SUPRA** is a non-return valve with free-swinging valve disc, it is suitable for potable water and sewage application.

The disc is supported on the lever and the lever in the shaft who is installed on the valve cover. The disc is opened by the flow. Against this opening torque acts a torque resulting from the weight of the valve hinge, the disc and the lever and counterweight if required. This closing torque initiates the closing movement in case of flow failure.

The closing torque of the Swing check valve Series SUPRA can be reduced if its required that with lever and counterweight, by moving the counterweight in the direction (or in the opposite direction) of the shaft. In any case, it must be ensured that the disc is closed even without back pressure.

1.1 Characteristics

The Swing check valve Series SUPRA with lever and counterweight, is available from DN 50 till DN 600 to PN10/16/25/40 for potable water, and PN10/16 for sewage application.

The passage of fluid is total, without throttling the flow avoiding headloss.

The effect of cavitation is practically null do to the geometric configuration of the valve.

The Swing check valve Series SUPRA is designed to operate in the horizontal and vertical position. As standard it is prepared to be installed in horizontal position, and can be supplied by request to be prepared to be installed vertical position. It is possible the customer changes their operation from horizontal to the vertical position. They should be followed the steps given in Figure 1.

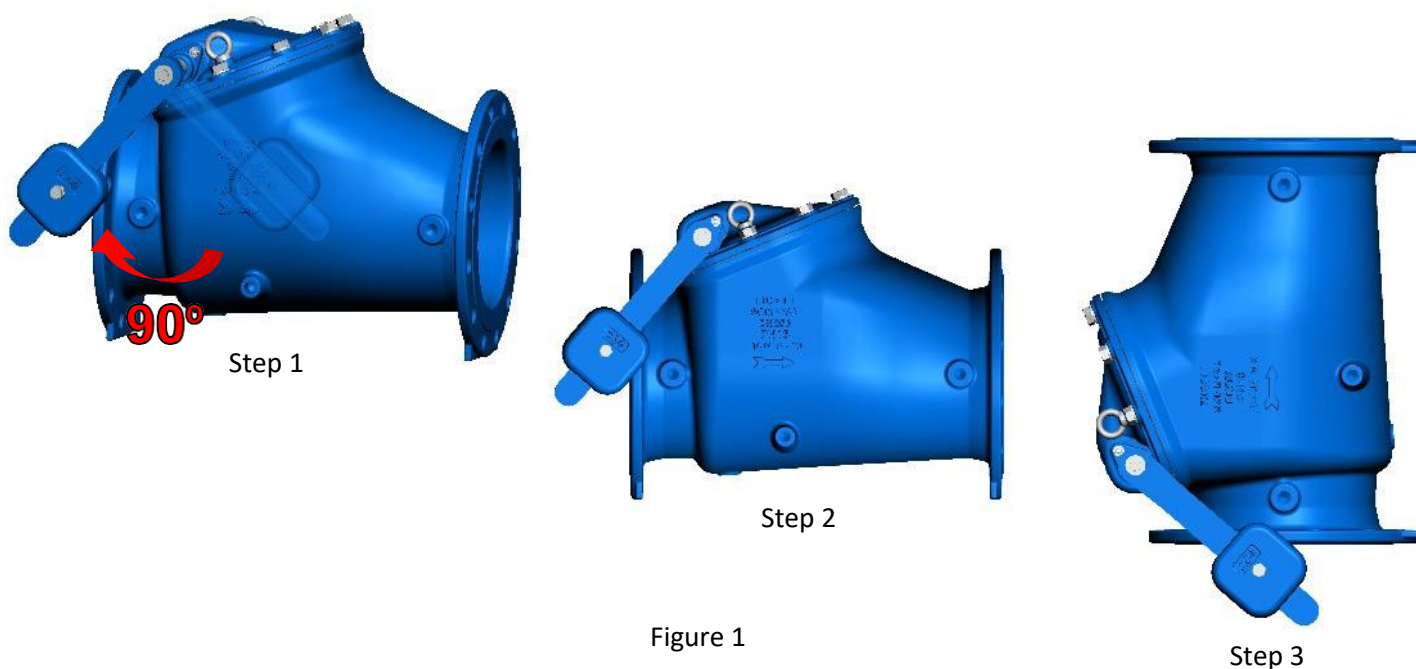


Figure 1

To easy install in areas of reduced space, the lever and counterweight can be assembled on the left or right side of the valve.

The sealing obturator has reliability and stability due to the double arm supporting - Figure 2

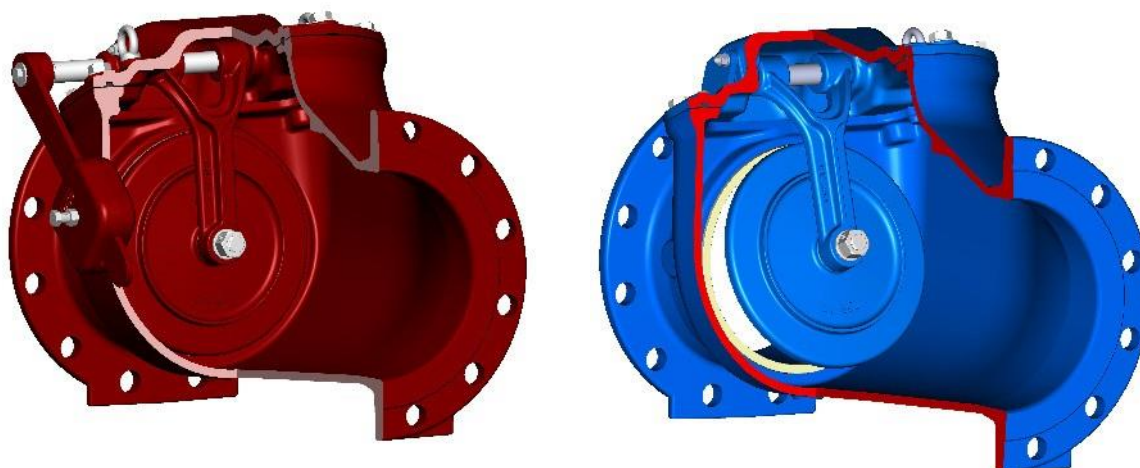


Figure 2

The closing torque of the Swing check valve Series SUPRA can be reduced if its required that with lever and counterweight, by moving the counterweight in the direction (or in the opposite direction) of the shaft (figure 3). In any case, it must be ensured that the disc is closed even without back pressure.



Figure 3

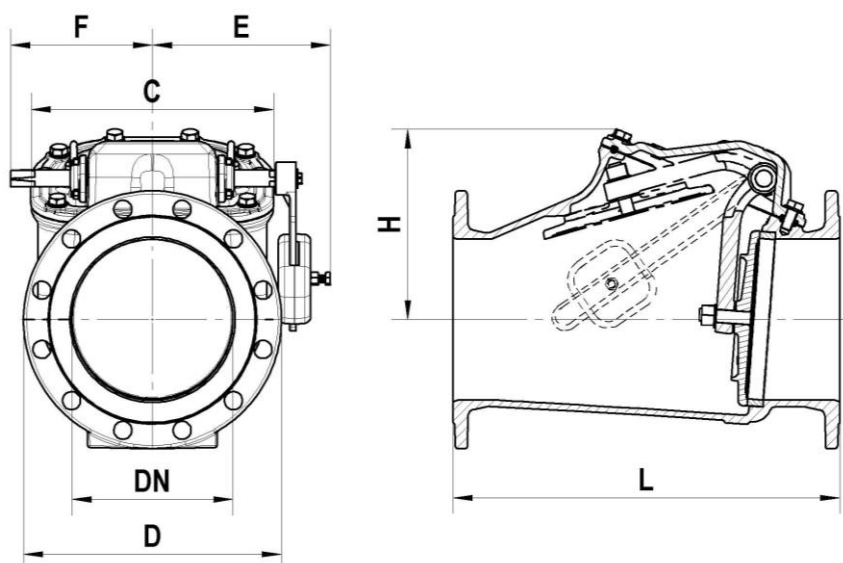
1.2 Materials (potable water)

component	material	norma	standard
body	ductile iron (EN-GJS-500-7)	EN	1563
bonnet	ductile iron (EN-GJS-500-7)	EN	1563
obturator	stainless steel AISI420 (X20 Cr13)	EN	10088-1
body seat	bronze CuSn7Zn4Pb7 (Rg7)	EN	1982
bonnet gasket	elastomer EPDM with CE marking	EN	681-1
arm	ductile iron (EN-GJS-500-7)	EN	1563
shaft	stainless steel AISI420 (X20 Cr13)	EN	10088-1
lever	ductile iron (EN-GJS-500-7)	EN	1563
counterweight	ductile iron (EN-GJS-500-7)	EN	1563
bolts and washers	stainless steel A2 (X5 CrNi 18-10)	EN	10088-1
nuts	stainless steel A4 (X5 CrNiMo 17-12-2)	EN	10088-1
coating inside and outside	epoxy paint potable RESICOAT 9000 R4 BLUE applied electrostatically with thickness $\geq 250 \mu\text{m}$	DIN	30677

1.3 Materials (residual/waste water)

component	material	norma	standard
body	ductile iron (EN-GJS-500-7)	EN	1563
bonnet	ductile iron (EN-GJS-500-7)	EN	1563
obturator	stainless steel AISI 316 L (X2 CrNiMo 17-12-2)	EN	10088-1
body seat	stainless steel AISI 316 L (X2 CrNiMo 17-12-2)	EN	10088-1
bonnet gasket	elastomer NBR with CE marking	EN	681-1
arm	ductile iron (EN-GJS-500-7)	EN	1563
shaft	stainless steel AISI 316 L (X2 CrNiMo 17-12-2)	EN	10088-1
lever	ductile iron (EN-GJS-500-7)	EN	1563
counterweight	ductile iron (EN-GJS-500-7)	EN	1563
bolts and washers	stainless steel A2 (X5 CrNi 18-10)	EN	10088-1
nuts	stainless steel A4 (X5 CrNiMo 17-12-2)	EN	10088-1
coating inside and outside	epoxy paint for residual water RESICOAT R4 – ES RED BROWN applied electrostatically with thickness $\geq 250 \mu\text{m}$	DIN	30677

1.4 Dimensions



DN	D				C	E	F	L	H	Ø / Ø and nº of holes			
	PN 10	PN 16	PN 25	PN 40						PN 10	PN 16	PN 25	PN 40
50	165	165	165	165	110	138	104	200	108	125Ø - 4 x 19Ø	125Ø - 4 x 19Ø	125Ø - 4 x 19Ø	125Ø - 4 x 19Ø
60	175	175	175	175	123	148	115	240	119	135Ø - 4 x 19Ø	135Ø - 4 x 19Ø	135Ø - 8 x 19Ø	135Ø - 8 x 19Ø
65	185	185	185	185	123	148	115	240	119	145Ø - 4 x 19Ø	145Ø - 4 x 19Ø	145Ø - 8 x 19Ø	145Ø - 8 x 19Ø
80	200	200	200	200	140	166	122	260	137	160Ø - 8 x 19Ø	160Ø - 8 x 19Ø	160Ø - 8 x 19Ø	160Ø - 8 x 19Ø
100	220	220	235	235	168	175	135	300	157	180Ø - 8 x 19Ø	180Ø - 8 x 19Ø	190Ø - 8 x 23Ø	190Ø - 8 x 23Ø
125	250	250	270	270	215	205	155	350	186	210Ø - 8 x 19Ø	210Ø - 8 x 19Ø	220Ø - 8 x 28Ø	220Ø - 8 x 28Ø
150	285	285	300	300	242	220	170	400	210	240Ø - 8 x 23Ø	240Ø - 8 x 23Ø	250Ø - 8 x 28Ø	250Ø - 8 x 28Ø
200	340	340	360	375	295	250	200	500	242	295Ø - 8 x 23Ø	295Ø - 12 x 23Ø	310Ø - 12 x 28Ø	310Ø - 12 x 28Ø
250	400	400	425	450	377	287	232	600	296	350Ø - 12 x 23Ø	355Ø - 12 x 28Ø	370Ø - 12 x 31Ø	370Ø - 12 x 31Ø
300	455	455	485	515	427	310	260	700	325	400Ø - 12 x 23Ø	410Ø - 12 x 28Ø	430Ø - 16 x 31Ø	430Ø - 16 x 31Ø
350	505	520	555	580	480	340	280	800	400	460Ø - 16 x 23Ø	470Ø - 16 x 28Ø	490Ø - 16 x 34Ø	490Ø - 16 x 34Ø
400	565	580	620	660	531	387	330	900	435	515Ø - 16 x 28Ø	525Ø - 16 x 31Ø	550Ø - 16 x 37Ø	550Ø - 16 x 37Ø
450	615	640	670	685	585	394	337	1000	460	565Ø - 20 x 28Ø	585Ø - 20 x 31Ø	600Ø - 20 x 37Ø	600Ø - 20 x 37Ø
500	670	715	730	755	640	422	365	1100	485	620Ø - 20 x 28Ø	650Ø - 20 x 34Ø	660Ø - 20 x 37Ø	660Ø - 20 x 37Ø
600	780	840	845	890	750	477	420	1300	585	725Ø - 20 x 31Ø	770Ø - 20 x 37Ø	770Ø - 20 x 41Ø	770Ø - 20 x 41Ø

1.5 Pressure Tests

Series SUPRA		Hydraulic pressure test (bar)	
Potable water	Waste water	Sealing	Body
PN 10	PN 10	11	17
PN 16	PN 16	18	25
PN 25	-	28	38
PN 40	-	44	59

1.6 Working temperatures

working temperature
0° C up to 70°C (excluding ice)

1.7 Homologations

Homologations
<p><u>Coating</u></p> <ul style="list-style-type: none">- KIWA (Netherlands)- WRAS (United Kingdom)- CARSO (France)- STÁTNÍ ZDRAVOTNÍ ÚSTAV (Czech Republic)
<p><u>Elastomers</u></p> <p>With CE marking, according to standard EN 681-1.</p>

2. POTENCIAL RISKS IDENTIFICATION

There were not identified any potential use risks during its development. However, must be handled by trained / authorized personnel only.

When applicable, the access to the area of movement of the lever and counterweight must be restricted.

3. INSTALATION AND HANDLING

Remove all packing material from the valve. Prior to the valve installation examine the pipeline for debris, impurities and foreign matter. If there the pipeline should be cleaned.

In the installation of the valve the flow direction must coincide with the arrow on the valve's body. The valves can be installed in horizontal pipelines as well as in vertical pipelines (in this case, upward flow direction).

It is important that all around the valve there is free access for maintenance.

For flanged valves installation NBR rubber gaskets are recommended, to ensure adequate sealing is important select the correct type of gasket. Two gaskets with the correct flange size must be used. It is not advisable the Swing check valve installation immediately before or after pumps, bends or pipeline components. After these components the flow is asymmetrical and cause high one-side bearing loads. The valve must be installed of at least 4xDN of distance from a pump, bend or pipeline components which cause turbulences. In case of this minimum distance can't be met, the installation position must be chosen in such a way that ensures the shaft of the pump and the shafts of the valve disc to be in alignment with each other. If this installation rules are not respected an increased wear will take place.

During installation of the valve, the distance between the pipe flanges should exceed the face-to-face dimension of the valve by at least 20mm, in order not to damage the raised faces and the gaskets can be inserted.

The pipe line counter flanges have to be plane-parallel and concentric. The connecting bolts must be tight according with Figure 4. Tightening bolts loosely in accordance with the torque from table 1. The pipeline must be mounted tension free.

Table 1 – Flange tightening torque

DN	Bolts				Torque (máx.)												
	PN 10	PN 16	PN 25	PN 40	PN 10	PN 16	PN 25	PN 40									
40	M16		M16		45Nm	60Nm	80Nm	150Nm									
50																	
60																	
65							M20			70Nm	90Nm	120Nm	200Nm				
80												M24	M24			200Nm	320Nm
100																	
125	M20		M24	M27				400Nm									
150																	
200	M20	M24	M27	M30		180Nm	260Nm	470Nm									
250																	
300																	
350	M24	M27	M33	M36	150Nm	220Nm	390Nm	750Nm									
400																	
450									M30		M39				950Nm		
500																	
600	M27	M33	M36	M45	200Nm	300Nm	520Nm	1200Nm									

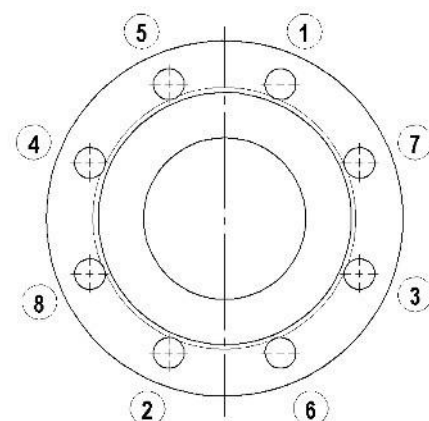
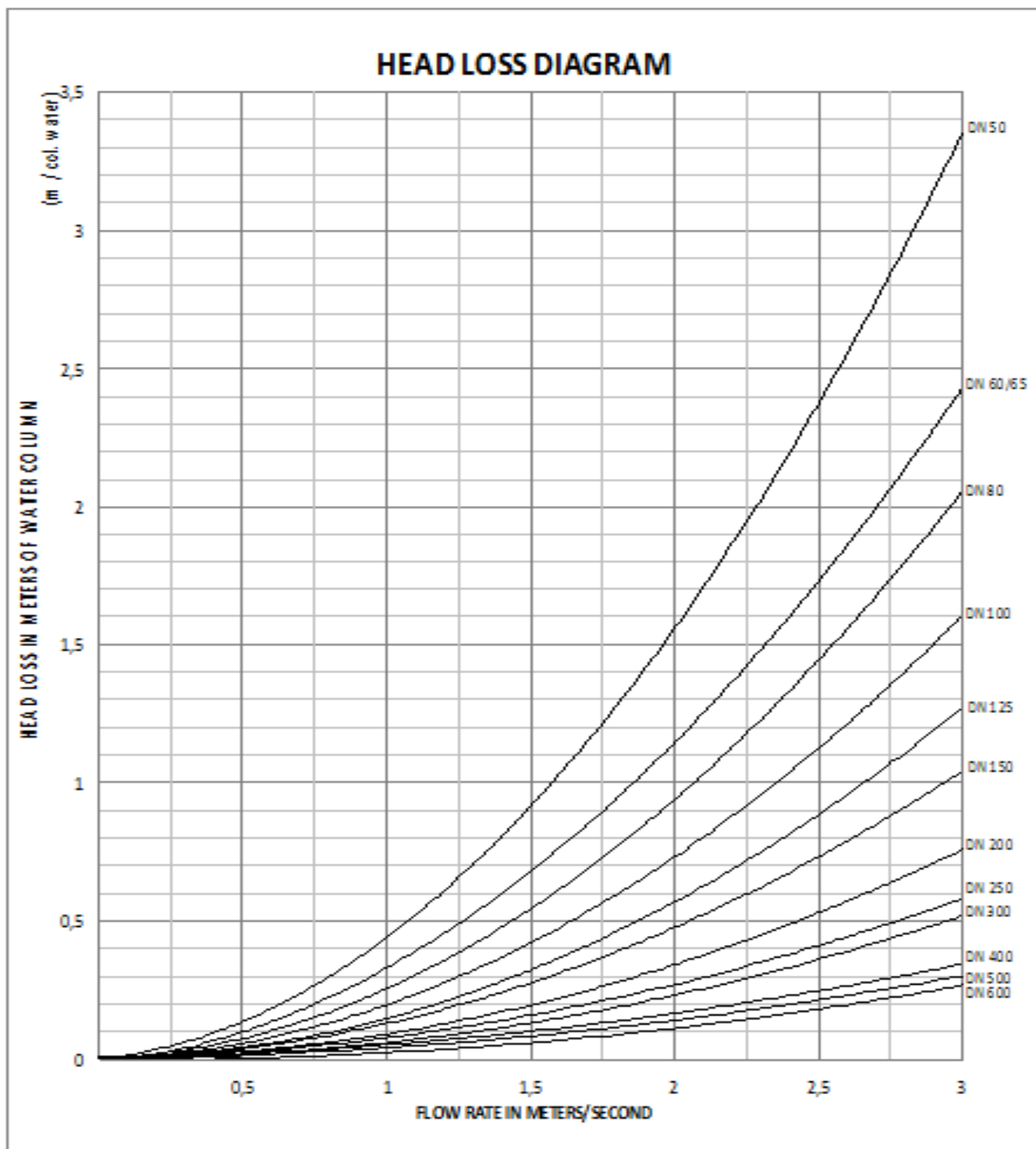


Figure 4

Head loss



4. MAINTENANCE

The SWING CHECK VALVE WITH LEVER AND COUNTERWEIGHT SERIES S SUPRA has no defined periodicity of maintenance actions.

However, these valves are equipped with lifting eyes that facilitate the disassembly and reassembly of the cover, allowing cleaning and/or in case of wear of components, to facilitate its replacement without removing the valve from the pipeline. With the removing of the cover it is possible to access to the entire sealing system – (obturator; arm, gland and shaft).

For verification and cleaning is possible a plug application. .

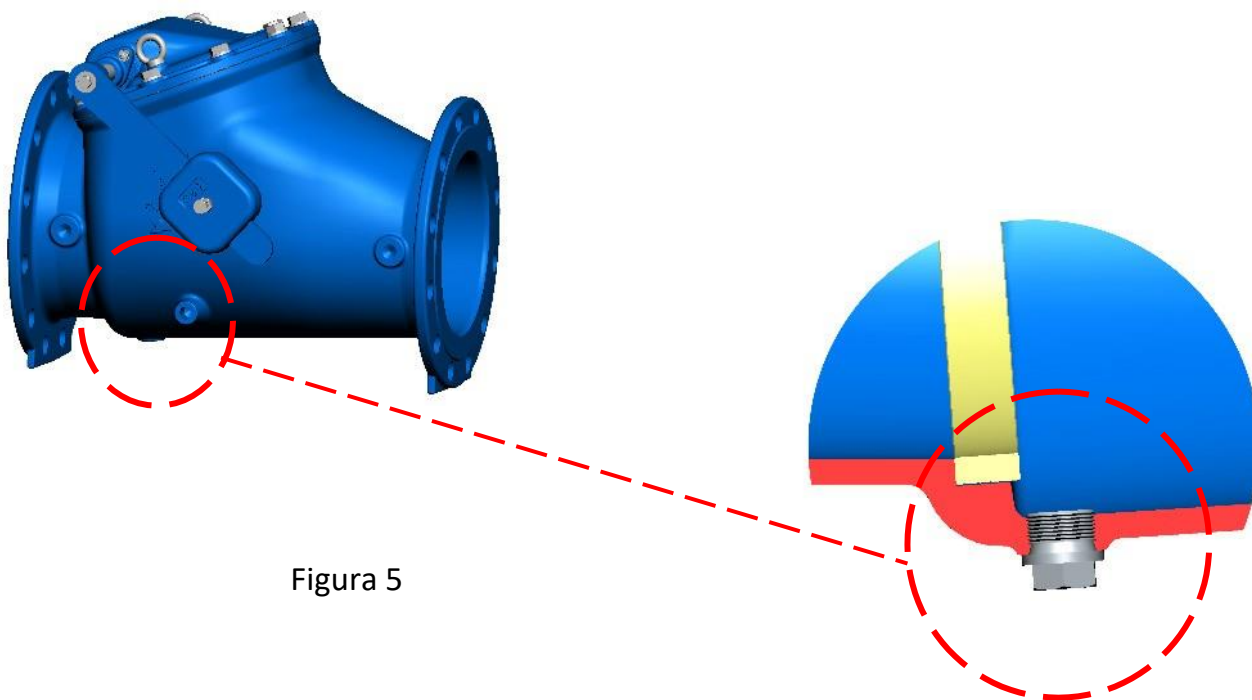


Figura 5