Fucoli Somepal
FUNDIÇÃO DE FERRO, S.A.

DESDE SINCE 1946

OPERATION MANUAL

SOFT SEALING GATE VALVE
"SERIES 3000"

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CONTENTS:

1. DESCRIPTION

1.1 Description of function

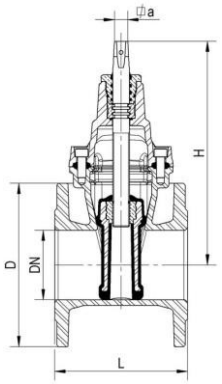
The SOFT SEALING GATE VALVES SERIES 3000 are gate valve for OPEN-CLOSE operation, with full and straight bore corresponding to the nominal diameter. They may be used in any flow direction and allows the stem sealing replacing under pressure. Construction according to EN 1171, flanges according to DIN EN 1092-2 and distance between flanges according to EN 558. The SOFT SEALING GATE VALVES Series 3000 are available for PN10, PN16 and for PN25, in the Series S14 and S15.

1.2 Materials

component	material	standard
body	ductile iron (EN-GJS-500-7)	EN 1563
bonnet	ductile iron (EN-GJS-500-7)	EN 1563
gland	brass / ductile iron (EN-GJS-500-7)	EN 12164 EN 1563
gate	ductile iron (EN-GJS-500-7)	EN 1563
gate covering	completely covered internally and externally with elastomer with CE marking	EN 681-1
bonnet gasket	elastomer with CE marking	EN 681-1
orings	elastomer with CE marking	EN 681-1
stem	stainless steel	EN 10088-1
stem nut	brass	EN 12164
bolts	stainless steel A2, sealed with hot melt	EN 10088-1
coating inside and outside	epoxy paint applied electrostatically with thickness ≥ 250 µm	DIN 30677

1.3 Dimensional – Series S14

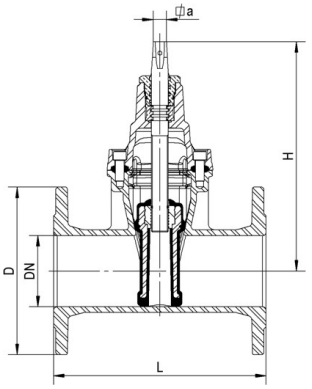
Check the datasheet flanged soft sealing gate valve S14 series 3000 [ref.01.101] for the product references and dimensions.



DN	D PN 10	D PN 16	L	H	hole Ø / Ø and nº of holes PN 10	hole Ø / Ø and nº of holes PN 16	⌀ a
40	150	150	140	235	110ø - 4 x 19ø	110ø - 4 x 19ø	14.1
50	165	165	150	235	125ø - 4 x 19ø	125ø - 4 x 19ø	14.1
60	175	175	170	250	135ø - 4 x 19ø	135ø - 4 x 19ø	17.1
65	185	185	170	250	145ø - 4 x 19ø	145ø - 4 x 19ø	17.1
80	200	200	180	290	160ø - 8 x 19ø	160ø - 8 x 19ø	17.1
100	220	220	190	325	180ø - 8 x 19ø	180ø - 8 x 19ø	19.1
125	250	250	200	362	210ø - 8 x 19ø	210ø - 8 x 19ø	19.1
150	285	285	210	425	240ø - 8 x 23ø	240ø - 8 x 23ø	19.1
200	340	340	230	505	295ø - 8 x 23ø	295ø - 12 x 23ø	24.1
250	400	400	250	595	350ø - 12 x 23ø	355ø - 12 x 28ø	27.1
300	455	455	270	670	400ø - 12 x 23ø	410ø - 12 x 28ø	27.1
350	505	520	290	940	460ø - 16 x 23ø	470ø - 16 x 28ø	32.1
400	565	580	310	940	515ø - 16 x 28ø	525ø - 16 x 31ø	32.1
450	615	640	330	1120	565ø - 20 x 28ø	585ø - 20 x 31ø	32.1
500	670	715	350	1120	620ø - 20 x 28ø	650ø - 20 x 34ø	32.1

1.4 Dimensional – Series S15

Check the datasheet flanged soft sealing gate valve S15 series 3000 [ref.01.201] for the product references and dimensions.



DN	D PN 10	D PN 16	L	H	hole Ø / Ø and nº of holes PN 10	hole Ø / Ø and nº of holes PN 16	⌀ a
40	150	150	240	203	110ø - 4 x 19ø	110ø - 4 x 19ø	14.1
50	165	165	250	235	125ø - 4 x 19ø	125ø - 4 x 19ø	14.1
60	175	175	270	250	135ø - 4 x 19ø	135ø - 4 x 19ø	17.1
65	185	185	270	250	145ø - 4 x 19ø	145ø - 4 x 19ø	17.1
80	200	200	280	290	160ø - 8 x 19ø	160ø - 8 x 19ø	17.1
100	220	220	300	325	180ø - 8 x 19ø	180ø - 8 x 19ø	19.1
125	250	250	325	362	210ø - 8 x 19ø	210ø - 8 x 19ø	19.1
150	285	285	350	425	240ø - 8 x 23ø	240ø - 8 x 23ø	19.1
200	340	340	400	505	295ø - 8 x 23ø	295ø - 12 x 23ø	24.1
250	400	400	450	595	350ø - 12 x 23ø	355ø - 12 x 28ø	27.1
300	455	455	500	670	400ø - 12 x 23ø	410ø - 12 x 28ø	27.1
350	505	520	550	940	460ø - 16 x 23ø	470ø - 16 x 28ø	32.1
400	565	580	600	940	515ø - 16 x 28ø	525ø - 16 x 31ø	32.1
450	615	640	650	1120	565ø - 20 x 28ø	585ø - 20 x 31ø	32.1
500	670	715	700	1120	620ø - 20 x 28ø	650ø - 20 x 34ø	32.1
600	780	840	800	1290	725ø - 20 x 31ø	770ø - 20 x 37ø	41.1

1.5 Tightness tests

All the valves, without exception, are individually tested at factory, according to standard EN 1074-2 and EN 12266-1.

hydraulic pressure test (bar)		
PN	**sealing**	**body**
10	11	17
16	18	25
25	28	38
Class of leakage – degree A according to standard EN12266-1		

1.6 Working temperature

maximum working temperature
up to 70ºC

2. POTENTIAL RISK IDENTIFICATION

There were not identified any potential use risks during its development. Its commercialization and after-sales service is not associated or realize any assembly or operational risks.

3. APPROVAL OF MATERIALS

Homologation
Gate valve **According to EN 1074** - **AENOR** (Spain) - **KIWA** (Netherlands) **Coating (RAL 5005)** - **CARSO** (Germany) - **WRAS** (United Kingdom) - **HYGIENE Institut Ruhrgebiets** (Germany) - **KIWA** (Netherlands) - **AGES** (Germany) - **STAZIONE SPERIMENTALE PER L'INDUSTRIA DELLE CONSERVE ALIMENTARI** (Italy) - **NATIONAL INSTITUTE OF PUBLIC HEALTH** (Czech Republic) - **REGIONAL INSTITUTE OF PUBLIC HEALTH** (Czech Republic) **EPDM Elastomers** With CE marking, according to standard BS EN 681-1. - **INETI** (Portugal) - **IPL** (France)

CERTIFICATIONS ACCORDING EN 1074

Valves for Water supply

	KIWA Netherlands	AENOR Spain
Flanged	PN 10/16	PN 10/16/25
Socket ends		PN 10/16
With PE – spigot ends		PN 10/16

CERTIFICATIONS SYMBOLS ON THE VALVE BODY

POTABILITY CERTIFICATIONS

All range of soft sealing gate valves have the ACS certification (Attestation of Sanitary Conformity), this certification ensures that the materials used are approved for contact with potable water.

CERTIFICATIONS SYMBOL ON THE VALVE BODY

ACS

COATING CERTIFICATIONS

All range of soft sealing gate valves have the GSK certification, that ensure an excellent corrosion protection with epoxy powder coating resin.

GSK CERTIFICATION SYMBOL ON THE VALVE BODY

4. STORAGE

Under no circumstances must any packed valve be stored outside. This is to prevent damage by environmental conditions.

The valve should not come into contact with any contaminative substances prior to installation.

Protection against weather should be provided. Ideally, valves should be kept indoors, with the actual valve temperature always higher than the dew point, particularly for valves fitted with actuators.

If outdoor storage is unavoidable the valves should then be not in contact to the ground and protected by a weatherproof cover, from dust-laden damp, saline conditions and at ambient temperature.

If long term storage is expected, then it may be considered prudent to have inspect the valve prior to installation.

5. HANDLING

A basic consideration in handling protected valves should be to avoid damaging the coating protection and valves should never be thrown or dropped. Valves whose size requires handling by crane or lift truck should be slung or rigged carefully to avoid damage to exposed valve parts.

Handwheels, bypasses, actuators and gearboxes, in particular, should not be used as lifting or rigging points for valves.

6. INSTALATION INSTRUCTIONS

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.

The valve is operated, in its various models and diameters, by means of square cap, handwheel or extension spindle, its handling should be performed by qualified persons for the purpose.

Handwheel

Square cap

Extension Spindle

The valve is bidirectional flow direction, may be used in any flow direction. From series the valve is provided with clockwise closing direction. By Costumer request can be supplied with counter clockwise closing direction.

The opening and closing torque are listed in Table 1 and are according with EN 1074 -2 and EN 12570.

The valve must be installed of at least 5xDN of distance from a pump, bend or pipeline components which cause turbulences.
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 1. Tightening bolts loosely in accordance with the torque from table 2. The pipeline must be mounted tension free.

Table 1 Maximum operating torque (MOT)

Gate Valve series 3000			
DN	Closing torque (Nm)		
	PN10	PN16	PN25
40	35	35	35
50	40	40	
60	50	50	45
65	50	50	
80	60	60	60
100	75	75	80
125	90	90	100
150	90	90	130
200	120	120	170
250	190	190	200
300	225	225	250
350	350	350	-
400	350	350	-
450	450	450	-
500	450	450	-
600	-	600	-

For the soft sealing gate valves DN 350 and upper, installed in pipelines with a maximum flow according the standard EN1074-1 Table-2 (Maximum water velocity), and a differential operating/ test pressure exceeding 10 bars, the opening torque needed to release the wedge from the valve seat may exceed the closing torques by around 30%. This should be taken in to account when installing and sizing the actuation of the valve.

NB: All values are theoretical, small variations may be found due to tolerances

Table 2 – Flange tightening torque

DN	Bolts			Torque(máx.)		
	PN 10	PN 16	PN 25	PN 10	PN 16	PN 25
40	M16		M16	45Nm	60Nm	80Nm
50						
60						
65						
80						
100			M20			120Nm
125			M24			200Nm
150	M20			70Nm	90Nm	
200						
250	M20	M24	M27		180Nm	260Nm
300						
350			M30			290Nm
400	M24	M27	M33	150Nm	220Nm	390Nm
450						
500		M30			250Nm	
600	M27	M33	M36	200Nm	300Nm	520Nm

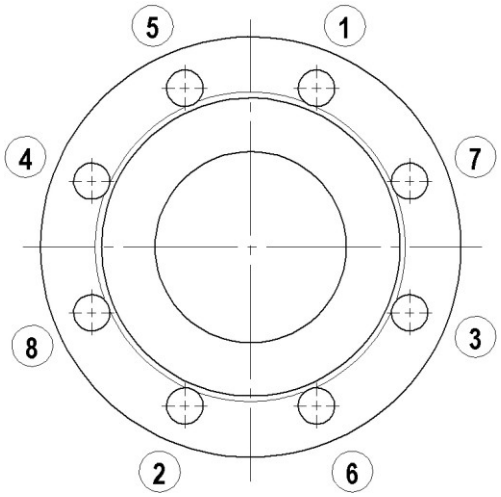


Figure 1

On buried installation, shall when possible, be located in a easily accessible area.

During installation there is the possibility of foreign materials inadvertently enter on the valve. This foreign material can damage internal parts after the operation of the valve. For this reason, the valve should be installed in the closed position. Each valve should be placed on a firm footing base on the trench to prevent the valve depression and excessive strain on the connection to the pipe.
Pipe systems should be supported and aligned to avoid damage to the valve.

For a buried installation, a surface box should be installed for each valve. The surface box should be installed and designed to not transmit shock loads or stress to the valve. The surface box should be centered over the operating nut of the valve and with the box cover levelled with the surface of the finished area.

Valves buried in unusually deep trenches should have special provisions for operating the valve, either an extension spindle to permit use of a manoeuvre key or a long key.

When valves have exposed gearing or operation mechanisms and are buried, is required a manhole box protection. The operating nut should be accessible from the top of manhole box opening to be operated with a valve key. The size of the manhole box should be provided for a easy removal of the valve bonnet and internal parts of the valve for repair procedures. Should be considered the possibility of appearing groundwater and/or surface water and to the need to provide the disposal of the installation of such water.

7. MAINTENANCE

Due to its robust design and materials used, the SOFT SEALING GATE VALVES "SERIES 3000" are maintenance free. However, whenever there is need to perform any action that involves the loosening of the gland, to retighten it must be followed the procedure described below:

a. In all valves after tightening of the gland, this should be rectified using a torque wrench in accordance with the torque from table 3;

b. In the gate valves DN200, DN250 and DN300 should be applied blocking threads – LOOCKTITE 222 and tightening the gland with recourse a torque wrench in accordance with table 3.

Table 3 - Gland tightening torque

DN	TIGHTENING TORQUE
40/50	220 Nm
65/80	280 Nm
100/125	320 Nm
150	360 Nm
200/250/300	400 Nm