

PRODUCT DESCRIPTION

Wafer style, bidirectional knife gate valve.
 Cast body monoblock type, with inside sliding guides to provide a smooth operation.
 High flow rates with low pressure drops.
 Several seat and packing materials available.
 Face to face dimension according CMO standard.

GENERAL APPLICATIONS

This knife gate valve is specially recommended for mining industry in slurry transportation pipe lines (water with stones, mud etc) but it also can be used in other industries when working with abrasive slurries such as:

- Mining
- Chemical plants
- Fertilizer plants
- Sewage & Waste Water applications
- Pulp & Paper
- Power Generation

TECHNICAL DATA

Standard manufacturing sizes:

From DN50 up to DN600 (bigger sizes under request)

Working pressures:

From DN 50 to DN 600: 10 (kg/cm²)

Higher working pressures under request

 **Note:** These pressures can be applied either in one side or the other side of the valve because of its bidirectional design.

Flange connection drillings:

The standard flange connection is according to DIN PN10 & ANSI 150
 Other flange connections are available under request.

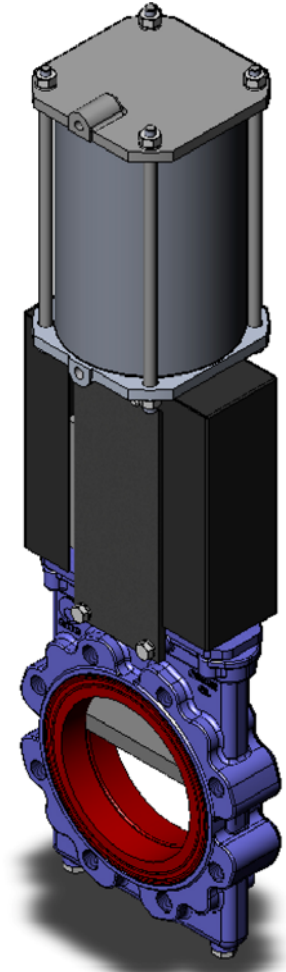
Applied Directives:

Directive 98/37/CE (machinery), **Directive 97/23/CE (PED: Group 2)**, Directive 94/9/CE (ATEX: Group II, Cat. 3 / Zones 2 and 22)

Quality Dossier: All valves are hydrostatically tested at CMO with water and CMO material and test certificates can be provided.

Body test pressure = Maximum rated pressure x 1.5

Seat test pressure = Maximum rated pressure x 1.1



ADVANTAGES OF CMO “MODEL GL” COMPARING WITH SIMILAR PRODUCTS

The main characteristic of this knife gate valve is that it has full and continuous bore. This means that in open position it has no cavity, therefore there are no turbulences in the fluid.

The type GL is monoblock body design.

The stem protection hood is independent from the hand wheel fixing system, so the hood can be removed without removing the hand wheel. This point allows normal maintenance operations like greasing of the spindle, etc.

The spindle (stem) of the CMO valve is made of stainless steel 18/8. This point is very important because there are manufacturers that manufacture it with 13% CR and it gets rusty in a very short time.

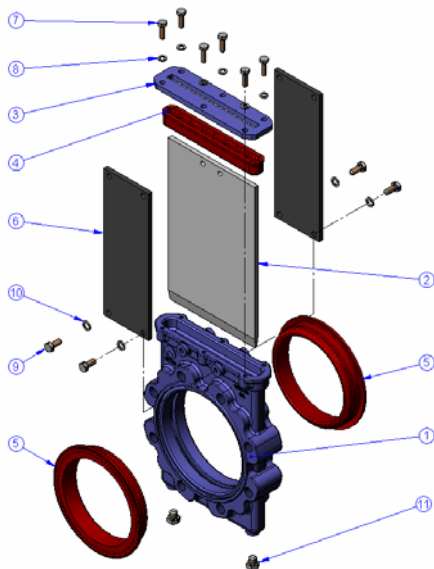
The hand wheel of the manual actuator is made of nodular iron GGG-50. Some manufacturers manufacture it on normal cast iron and they can break easily when receiving any big torque or knock.

The bridge of the CMO manual actuator is manufactured in a compact way, with the bronze nut protected in a greased and closed box. This point gives the possibility to move it with a key even without the hand wheel (in other manufacturer valves this is not possible).

The pneumatic actuator upper and lower caps are made of nodular iron GGG-50, therefore their resistance to the knocks is very high. This characteristic is essential in this type of pneumatic cylinder. Special care must be taken with cylinders with covers in aluminium or cast iron

The sealing o-rings of the pneumatic cylinders are commercial and they can be bought all over the world, it is not needed, therefore, to contact CMO every time that these spares are needed.

STANDARD MANUFACTURING MATERIALS (OPTIONS 1 AND 2)



POS.	DESCRIPTION	GGG50 (OPTION 1)	CF8M (OPTION 2)
1	BODY	GGG50	CF8M
2	KNIFE	AISI-304 / (AISI-316)*	AISI-316
3	PACKING GLAND	GGG50	CF8M
4	JOINT	EPDM	EPDM
5	SLEEVE	NATURAL RUBBER + F-1	NATURAL RUBBER + F-1
6	SUPPORT	S275JR	S275JR
7	SCREW	5.6 ZINC	A-4
8	WASHER	5.6 ZINC	A-4
9	SCREW	5.6 ZINC	A-2
10	WASHER	5.6 ZINC	A-2
11*	SCREW PLUG	A-2	A-4

* →	
	These elements are optional

DESIGN FEATURES IN DETAIL

1) BODY

Wafer style cast body with reinforcing ribs, monoblock type.

It has full and continuous bore and in open position it has no cavity, therefore there are no turbulences in the fluid, it provides high flow rates and the pressure drop is minimal.

The standard manufacturing materials are GGG50 nodular iron and CF8M stainless steel. Other materials like stainless steel alloys (AISI316Ti, Duplex, 254SMO, Uranus B6) under request. Ductile Iron valves are painted as standard with 80 microns anticorrosive protection of EPOXY (colour RAL 5015). Other anticorrosive protections available under request.

2) GATE

The standard manufacturing materials are AISI304 stainless steel for ductile iron body valve and AISI316 stainless steel for CF8M stainless steel body valve. Other materials or combinations can be supplied under request.

The gate is polished in both sides to provide a smooth contact surface with the sealing joint. At the same time the gate wedge is rounded to avoid cutting of the sealing. Several polishing grades, anti abrasion treatments and modifications are available to adapt the valve to the customer requirements.

3) SEAT

The seat of the GM type knife gate valve is composed by two rubber sleeves, each one located on the opposite side of the valve.

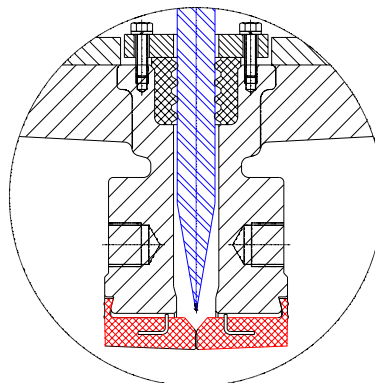
The rubber sleeves are manufactured in rubber and they have an inside metal reinforcements that helps to the sleeve to keep constantly its shape and avoid deformations.

At the same time, the elasticity of the rubber sleeves keeps them in continuous contact while the valve is fully open and avoids the build up of solids between the two body parts of the valve.

Considering that the type GM is specially designed to work with abrasive slurries this design of sealing provides a constant protection to the body because the working media is not in direct contact with the body.

Also, and in order to help during the maintenance, the sleeves can be fully replaced from the outside of the valve as a complete unit and there is no need of flange rubber gaskets to make the tightness between the valve and the mating flanges.

Following we are showing the seat detail:



Resilient Seat Materials**EPDM**

This is the standard resilient seat installed on CMO valves. It can be used in many applications, but generally it is used for water and products diluted in water at temperatures not higher than 90°C. The EPDM rubber can also be used for abrasive products. It provides 100% tightness.

NATURAL RUBBER

Recommended for general use at temperatures not higher than 75 °C. It provides 100% tightness.

NITRILE

It is used for greasy fluids or oils at temperatures not higher than 90 °C. It provides 100% tightness.

VITON

Appropriate for corrosive products and high temperatures up to 190°C in continuous and peaks of 210°C. It provides 100% tightness.

4) PACKING

As standard the packing is composed by three lines with an EPDM o-ring in the middle. It provides the tightness between the body and the gate and avoids any kind of leakage to the atmosphere.

The packing is located in an easily accessible place and can be changed without dismantling the valve from the pipeline.

Several types of packing can be supplied according to the different applications in which the valve can be located as follows:

GREASED COTTON (Recommended for hydraulic services)

This packing is made with cotton threads and has impregnated both the inside and the outside with tallow. It is manufactured by the solid system. It is a packing for general use in hydraulic services for pumps as well as for valves.

$P(\text{bar}) = 10 / T = 100^{\circ}\text{C} \text{ PH} = 6-8$

DRY COTTON

This packing is made with cotton threads. It is manufactured by the solid system. This is a packing only for solid products.

$P(\text{bar}) = 0.5 / T = 100^{\circ}\text{C} \quad \text{PH} = 6-8$

SYNTHETIC + P.T.F.E.

This packing is made with synthetic threads and has the inside and outside impregnated with P.T.F.E. It is manufactured by the solid system. It is a packing for general use in hydraulic services for pumps as well as for valves.

$P(\text{bar}) = 30 / T = 120^{\circ}\text{C} \text{ PH} = 6-8$

P.T.F.E. LUBRICATED

It is made of PTFE filament threads which are impregnated using vacuum with a dispersion of PTFE and a special lubricant which helps the work at high speed.

It is braided by the diagonal system. Suitable for valves and pumps working with nearly all the fluids, specially the more corrosives, including concentrated oils and oxidants. It is also suitable for fluids with solid contents.

$P(\text{bar}) = 100 / T = -200+270^{\circ}\text{C} \quad \text{PH} = 0-14$

5) SPINDLE (STEM)

The spindle (stem) of the CMO valve is made of stainless steel 18/8. This provides a high resistance and long corrosion resistant life.

The valve design can be with rising or non rising stem construction. When rising stem construction is manufactured a stem protection hood is supplied that protects the stem from dust and dirty and, at the same time, keeps the stem lubricated.

6) PACKING GLANDS

The packing glands give the possibility to apply a uniform pressing force on the packing to ensure the tightness of the packing. As standard ductile iron body valves include GGG50 packing glands and stainless steel body valves include CF8M stainless steel packing glands.

7) ACTUATORS

All kind of actuators can be supplied with the advantage that CMO design is completely interchangeable.

The design gives the possibility to the customer to change the actuators by their own. Normally there is no need of any extra mounting kit and in the cases that it is necessary CMO provides it.

ACCESSORIES

Several types of accessories are available to adapt the valve to specific working conditions, such as:

Mirror Polished Gate

The mirror polished gate is specially recommended for food industry and applications where the solids can stick on the gate. The mirror polished gate is an alternative to solve such kind issues.

Stellite gate

Addition of stellite material on the gate wedge to protect it from abrasion.

PTFE Lined Gate

As the mirror polished gate, it improves the performance of the valve against the adherence.

Scraper in the packing

It cleans the gate during the opening movement to avoid the damage of the packing.

Air injection in the packing gland

Injecting air inside of the packing (stuffing box) an air chamber is created that improves the tightness of it.

Mechanical Limit Switches, Inductive Switches and Positioners

Limit switches for punctual valve position indication and positioners for continuous valve position indication.

Solenoid valves

For air distribution into pneumatic actuators

Connection electrical boxes, electrical wiring and pneumatic piping

Completely assembled units with all accessories can be supplied.

Stroke limiting mechanical stops

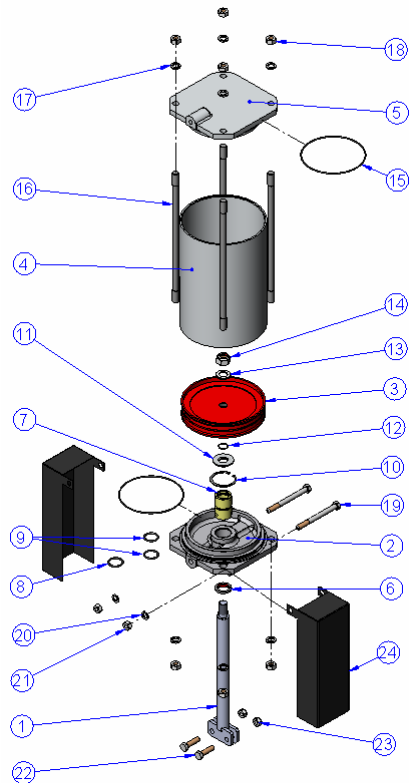
Mechanical locking device

Allows the locking of the valve in a fixed position during long periods

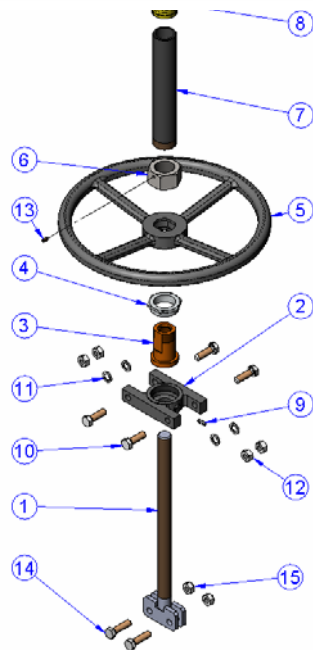
Emergency manual actuator (hand wheel /gear box)

For emergency operation of the valve in case of power failure

ACTUATORS

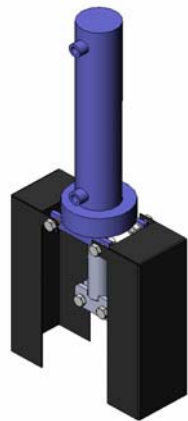


PNEUMATIC		
POS.	DESCRIPTION	MATERIAL
1	STEM	AISI-304
2	CYLINDER HEAD	ALUMINIUM
2	ØCYLINDER > Ø200 →	GGG 40
3	PISTON	S275JR + EPDM
4	CYLINDER TUBE	ALUMINIUM
5	CYLINDER CAP	ALUMINIUM
5	ØCYLINDER > Ø200 →	GGG 40
6	SCRAPER	NITRILE
7	SOCKET	NYLON
8	OUTSIDE O-RING	
9	INSIDE O-RING	NITRILE
10	CIR-CLIP	STEEL
11	WASHER	ST ZINC
12	O-RING	NITRILE
13	WASHER	ST ZINC
14	SELF-LOCKING NUT	5.6 ZINC
15	O-RING	NITRILE
16	TIE ROD	F-114 ZINC
17	WASHER	ST ZINC
18	NUT	5.6 ZINC
19	SCREW	5.6 ZINC
20	WASHER	ST ZINC
21	NUT	5.6 ZINC
22	SCREW	A-2
23	SELF-LOCKING NUT	A-2
24	PROTECTION	S275JR

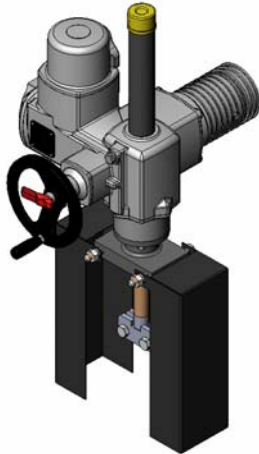


HANDWHEEL		
POS.	DESCRIPTION	MATERIAL
1	SPINDLE	AISI-303
2	YOKE	GG25
3	SPINDLE NUT	BRONZE
4	BUTT NUT	F-111
5	HANDWHEEL	GGG 40
6	HOOD NUT	5.6 ZINC
7	HOOD	ST-37
8	PLUG PROTECTION	HD-500
9	GREASER	STEEL
10	SCREW	5.6 ZINC
11	WASHER	ST ZINC
12	NUT	5.6 ZINC
13	SETSCREW	STEEL
14	SCREW	A-2
15	SELF-LOCKING NUT	A-2

HYDRAULIC



MOTOR



SPUR GEAR

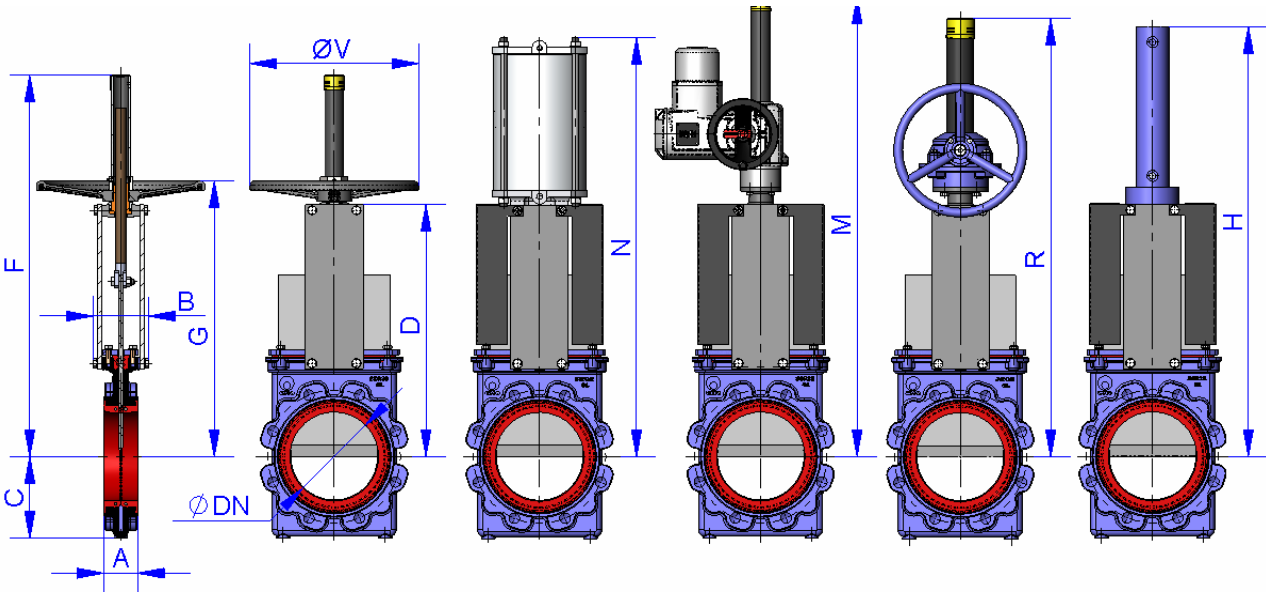


DIMENSIONS

DN	ND	A	B	C	D	F	G	ØV	N	M	R	H
50	2"	54	109	95	280	449	319	225	466	631	577	527
80	3"	57	109	111	332	551	372	225	550	683	630	610
100	4"	57	109	125	368	587	407	225	620	719	665	692
150	6"	64	126	155	466	757	519	325	770	819	883	847
200	8"	76	126	184	565	957	618	380	939	1028	983	1022
250	10"	76	197	217	626	---	---	---	1140	1116	1059	1162
300	12"	83	197	255	739	---	---	---	1296	1274	1207	1352
350	14"	83	350	280	842	---	---	---	1478	1377	1379	1505
400	16"	96	350	310	933	---	---	---	1651	1570	1624	1686
450	18"	96	350	335	1019	---	---	---	1798	1661	1716	1866
500	20"	121	380	370	1156	---	---	---	1999	1903	---	2066
600	24"	121	400	440	1338	---	---	---	2291	2185	---	2430

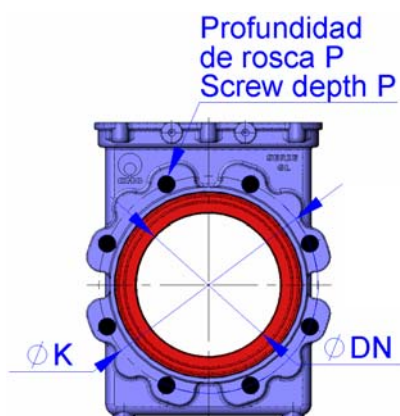
NOTE: Bigger sizes under request.

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.



FLANGES DRILLING													
DIN PN-10							ANSI-150						
DN	ΔP Kg/Cm ²	●	○	M Metric	P	ØK	ND	ΔP psi	●	○	R UNC	P	ØK
50	10	4	-	M 16	10	125	2"	150	4	-	5/8"	10	120,6
80	10	8	-	M 16	10	160	3"	150	4	-	5/8"	10	152,4
100	10	8	-	M 16	10	180	4"	150	8	-	5/8"	10	190,5
150	10	8	-	M 20	12	240	6"	150	8	-	3/4"	12	241,3
200	10	8	-	M 20	13	295	8"	150	8	-	3/4"	13	298,4
250	10	12	-	M 20	13	350	10"	150	12	-	7/8"	13	361,9
300	10	12	-	M 20	13	400	12"	150	12	-	7/8"	13	431,8
350	10	12	4	M 20	18	460	14"	150	8	4	1"	18	476,2
400	10	12	4	M 24	19	515	16"	150	12	4	1"	19	539,7
450	10	16	4	M 24	21	565	18"	150	12	4	1 1/8"	21	577,8
500	10	16	4	M 24	21	620	20"	150	16	4	1 1/8"	21	635
600	10	16	4	M 27	23	725	24"	150	16	4	1 1/4"	23	749,3

NOTE: Bigger sizes and other standards under request.



- → Tapped holes
- → Through holes

GL SERIES INFORMATION -- SERIES GL

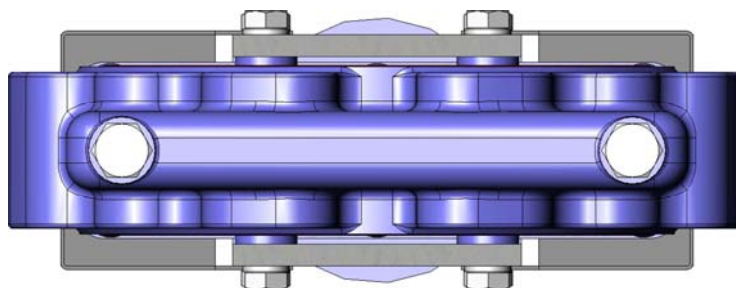
GATE THICKNESS	
DN 50	5 mm
DN 80	5 mm
DN 100	5 mm
DN 150	8 mm
DN 200	10 mm
DN 250	12 mm
DN 300	15 mm
DN 350	15 mm
DN 400	18 mm
DN 450	20 mm
DN 500	22 mm
DN 600	30 mm



SLEEVES ARE MADE OF NATURAL RUBBER OR EPDM

SHORE HARDNESS NORMALLY USED IS 60 BUT IF NECESSARY HIGHER UNDER REQUEST

AT THE BASE OF THE VALVE THERE ARE 2 HOLES ONE ON EACH SIDE (SEE BOTTOM DRAWING WHERE THE BOTTOM BOLTS ARE), THAT ARE SUPPLIED NORMALLY UNPLUGGED AND CUSTOMER MUST INSTALL PLUGS ON THEM OR CLEANING SYSTEM. THESE ARE A KIND OF FLUSHING HOLES FOR CLEANING THE BOTTOM OF THE VALVE.



GL SERIES INFORMATION -- SERIES GL

PASS RESTRICTION		
DIAMETER	PASS	%
DN 50	46mm	-8,00%
DN 80	75,5mm	-5,63%
DN 100	95,5mm	-4,50%
DN 150	145mm	-3,33%
DN 200	195mm	-2,50%
DN 250	245mm	-2,00%
DN 300	290mm	-3,33%
DN 350	340mm	-2,86%
DN 400	390mm	-2,50%
DN 450	440mm	-2,22%
DN 500	490mm	-2,00%
DN 600	590mm	-1,67%

