

PRODUCT DESCRIPTION

Flanged, unidirectional knife gate valve.

One piece fabricated (welded) body with guides to support the gate and seating wedges.

Several seat and packing materials available.

Standard manufacturing flange connection and face to face dimension according CMO standard, but also can be fully adapted according to the customer pipeline dimensions.

GENERAL APPLICATIONS

This knife gate valve is appropriate for powders and solids, without any liquid contain.

It is mainly used for dry solids in gravity feed applications and for low working pressures.

Designed for a wide range of applications such us:

- Mining.
- Chemical plants.
- Food and beverage.
- Bulk conveying.

TECHNICAL DATA

Standard manufacturing sizes:

From 125 x 125 up to 1600 x 1600 mm

- Rectangular design also available
- Bigger sizes under request

Working pressures:

Standard: 0.5 Kg/cm²

For higher pressures please contact with our sales department.

Flange connection drillings:

The standard flange connection is according to CMO standard.

Considering that it is a fabricated valve other flange connections are available under request.

The flange connection and face to face dimension of the valve can be completely adapted to the dimensions needed by the customer.

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:

Since they are valves to be working with powders and solid particles these valves are not hydrostatically tested with water. The tightness of the seating area is measured by gauges.

CMO material and test certificates can be provided.



ADVANTAGES OF CMO “MODEL C” COMPARING WITH SIMILAR PRODUCTS

The knife gate valve type C is specially designed to work with powders and solids particles. When it is in open position it provides a full flow pass without any obstruction on the products and allows a free discharge. 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.

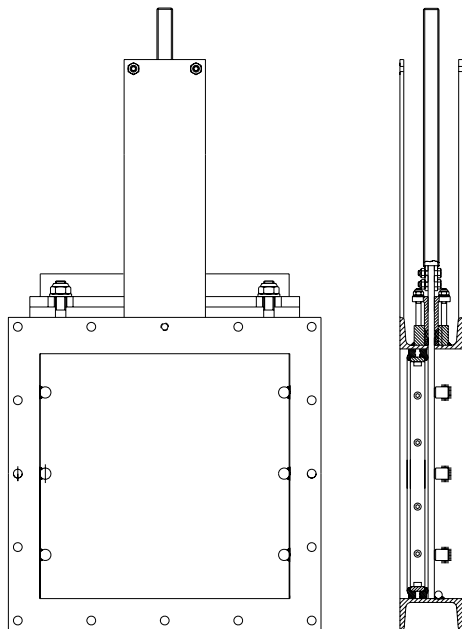
The hand wheel of the manual actuator is made of nodular iron GGG-50. Some manufacturers manufacture it on normal cast iron and they can break easily when receiving any big torque or knock.

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).

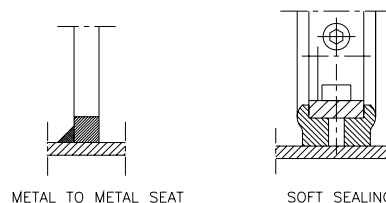
The pneumatic actuator upper and lower caps are made of nodular iron GGG-50, therefore their resistance to the knocks is very high. This characteristic is essential in this type of pneumatic cylinder. Special care must be taken with cylinders with covers in aluminium or cast iron

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	OPTION 1	OPTION 2
1	BODY	STEEL	AISI316
2	KNIFE	AISI304	AISI316
3	SUPPORT	CARBON STEEL	STAINLESS STEEL
4	SPINDLE/STEM	AISI303/AISI304	AISI303/AISI304
5	PACKING GLAND	CARBON STEEL	STAINLESS STEEL
6	PACKING	SINET+PTFE	SINET+PTFE
7	SLIDES	STEEL+TEFLON	AISI316+TEFLON
8	JOINT PLATE	STAINLESS STEEL	STAINLESS STEEL
9	JOINT	EPDM/VITON	EPDM/VITON
10	STUD	CARBON STEEL	STAINLESS STEEL
11	PROTECTION	CARBON STEEL	STAINLESS STEEL



DESIGN FEATURES IN DETAIL

1) BODY

One piece fabricated (welded) body with guides to support the gate and seating wedges.

Square or rectangular designs are available (there is an CMO standard design of flange drilling and face to face but the valve can be designed completely according to the dimensions required by the end user).

Full port designed to provide high flow rates with low pressure drops.

The internal design of the valve avoids any build up of solids on the sealing area.

The standard manufacturing materials are S275JR carbon steel and AISI316 stainless steel. Other stainless steel alloys (AISI316Ti, Duplex, 254SMO, Uranus B6) are available under request. Carbon steel valves are painted as standard with 80 microns anticorrosive protection of EPOXY (colour RAL 5015). Other anticorrosive protections available under request.

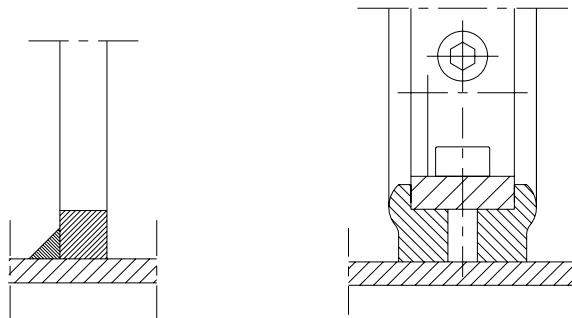
2) GATE

The standard manufacturing materials are AISI304 stainless steel for carbon steel body valve and AISI316 stainless steel for AISI316 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

Six different seat constructions are available according to the application in which the knife gate valve will work as follows:



METAL/METAL SEAT

SOFT SEAT

Metal to metal seat: This seat construction does not include any resilient sealing and the estimated leakage (considering water) is 1.5% of the flow.

Soft seat: Standard soft seated valve. This seat construction includes a resilient joint that is held on the valve body by an AISI316 stainless steel retaining flange.

Note: Both seat constructions can be supplied with a deflector. The deflector is a conical shaped square ring located on the valve inlet with two functions (protect the valve body from abrasion and guide the flow to the centre of the valve).



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.

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 picks of 210°C. It provides 100% tightness.

SYLICONE

The silicone is used mainly into the food industry and pharmaceutical products with temperatures not higher than 200°C. It provides 100% tightness.

 **Note:** In some applications other different resilient materials are used as, for example, hypalon, butile and natural rubber. Please contact with us in case of such request.

PTFE

It is used for corrosive products and PH from 2 to 12. This sealing material does not proved 100% tightness. The estimated leakage is 0.5% of the total flow.

4) PACKING

As standard the packing is composed by several 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(bar) = 10 / T = 100°C 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(bar) = 0.5 / T = 100°C PH = 6-8

COTTON + P.T.F.E.

This packing is made with cotton 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(bar) = 30 / T = 120°C 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.

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

GRAPHITE FILAMENT

It is made of graphite threads of high purity. It is braided by the diagonal system and impregnated with a small quantity of graphite and lubricant which helps to reduce the porosity and makes easier the running.

It is a packing with low friction coefficient and high heat conductivity.

It has a wide range of applications, as the graphite withstands the steam, water, oils, solvents, alkalis and most of the acids.

The chemical products that attack this packing are strong oxidizers as the oleum, the fuming nitric acids, the dichromates and the oxygen.

$$P(\text{bar}) = 40 / T = 650^\circ\text{C} \quad \text{PH} = 0-14$$

CERAMIC FIBER

It is made with ceramic threads. Its application is only for air or gas at high temperature and low pressure.

$$P(\text{bar}) = 0.3 / T = 1400^\circ\text{C} \quad \text{PH} = 0-14$$

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 dirt and, at the same time, keeps the stem lubricated.

6) PACKING GLAND

The packing gland gives the possibility to apply a uniform pressing force on the packing to ensure the tightness of the packing. As standard carbon steel body valves include carbon steel packing gland and stainless steel body valves include stainless steel packing gland.

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.

PTFE Lined Gate

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

Stellited gate

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

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.

Heating jacket

Recommended in applications in which the working fluid can get hard inside of the body casing. The heating jacket keeps the body temperature constant avoiding solidification of the working media.

Flushing holes in body

Several holes can be drilled on the body to flush air, steam or other fluid for cleaning of the valve seat.

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

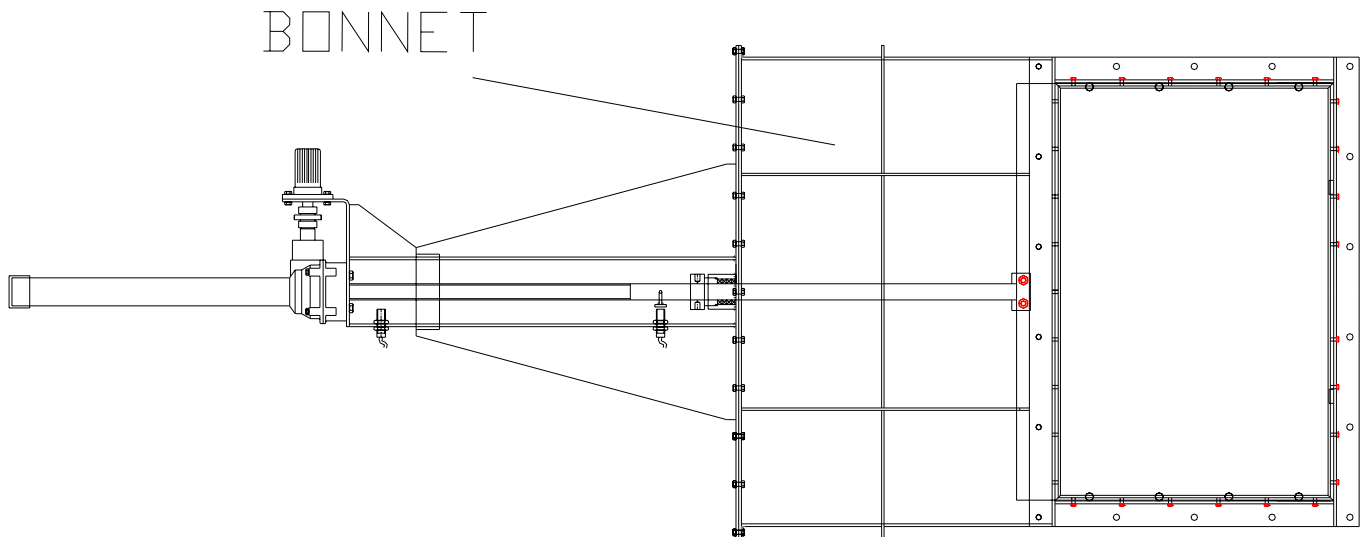
Emergency manual actuator (hand wheel /gear box)

For emergency operation of the valve in case of power failure

Bonnet

Specially recommended in applications where the media contains gases and it is very important to ensure the tightness to the atmosphere.

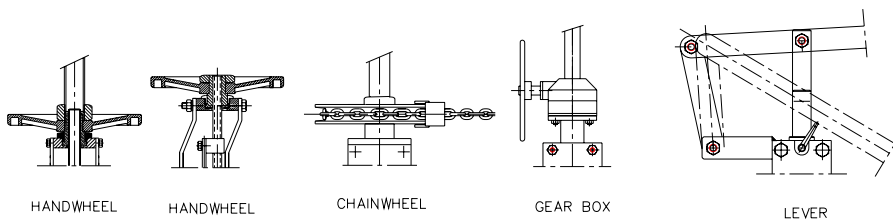
ACCESSORIES



ACTUATORS

The following actuators are available:

MANUAL ACTUATORS



HANDWHEEL

HANDWHEEL
(NON RISING SPINDLE)

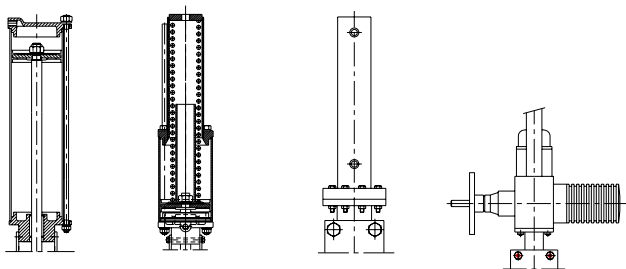
CHAINWHEEL

GEAR BOX

LEVER

(*NOTE: CHAINWHEEL AND GEAR BOX ALSO AVAILABLE
NON RISING STEM DESIGN

OTHER TYPES OF ACTUATORS



PNEUMATIC D/A

PNEUMATIC S/A

HYDRAULIC

ELECTRIC

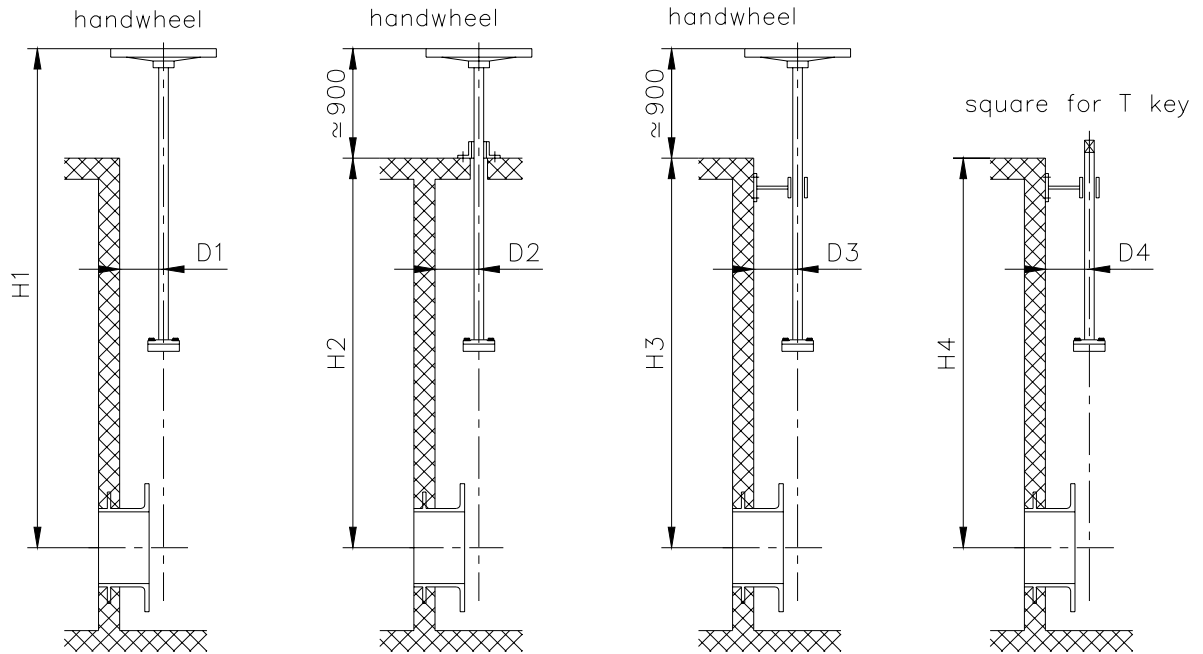
(*NOTE: SINGLE ACTING ACTUATOR AVAILABLE WITH
WITH SPRING TO CLOSE OR SPRING TO OPEN
DESIGN.

(*NOTE: ALL AUTOMATED VALVES ARE SUPPLIED WITH
SAFETY GUARDS COVERING THE GATE MOVEMENT AREA.

KNIFE GATE VALVES -- MODEL C

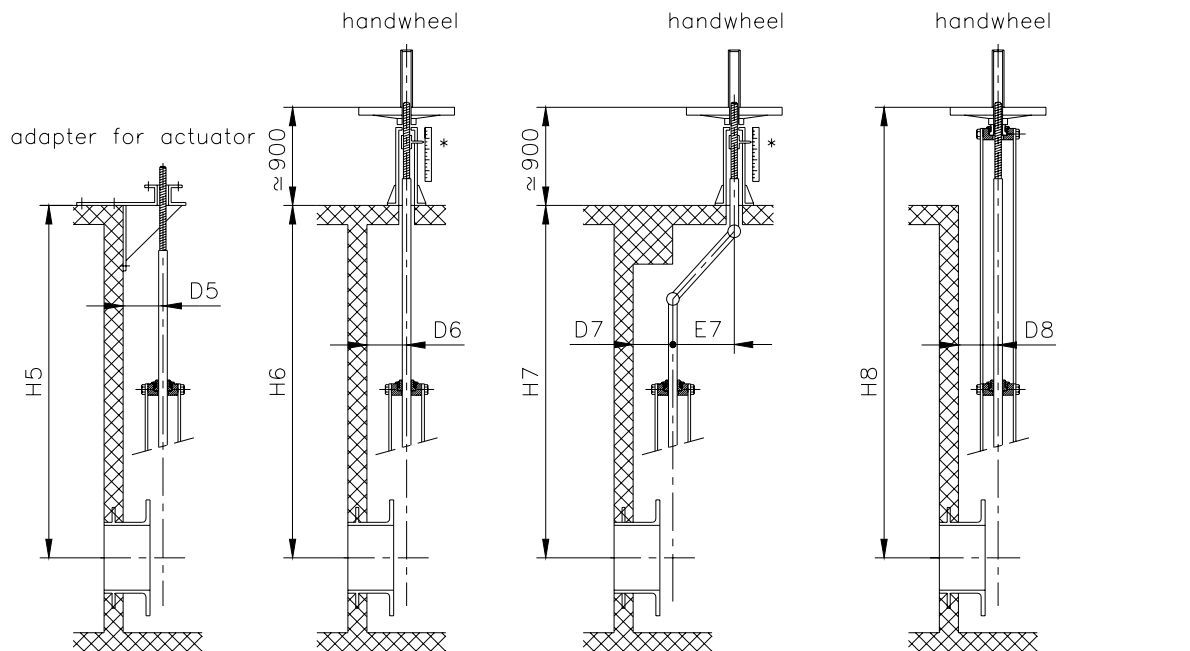
DOC. C.07/08

STEM EXTENSION TYPES



- 1) Extension tube with inside rising stem
- 2) Equal to 1) but with floor support
- 3) Equal to 1) but with wall support
- 4) Equal to 3) but with T key.

* Optional indication rule on the pedestal

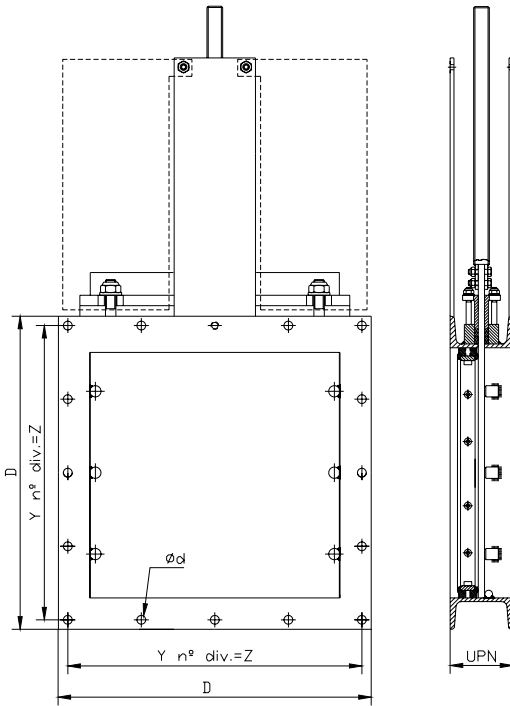


- 5) Rising stem with wall support and adapter for actuator
- 6) Rising stem with floor pedestal
- 7) Non rising stem with pedestal and two universal joints
- 8) Rising stem with extended support plates

KNIFE GATE VALVES -- MODEL C

DOC. C.07/08

GENERAL DIMENSIONS (other dimensions under request)



DIMENSION	DESIGN PLATES DIMENSIONS				FLANGE DIMENSIONS		
	BODY PROFILE	ST. STEEL BODY THICKNESS	GATE THICKNESS	PACKING DIMEN.	DXD	N° of divisions	d
125X125	UPN80	4	6	3x6	215X215	2X92.5=185	12
150X150	UPN80	4	6	3x6	240X240	2X105=210	12
200X200	UPN80	5	6	3x6	290X290	2X130=260	12
250X250	UPN80	5	6	3x6	340X340	2X155=310	12
300X300	UPN80	5	6	3x6	390X390	3X120=360	12
350X350	UPN100	5	10	3x6	450X450	3X140=420	14
400X400	UPN100	5	10	3x6	500X500	4X117.5=470	14
450X450	UPN100	5	10	3x6	550X550	4X130=520	14
500X500	UPN100	5	10	3x6	600X600	4X142.5=570	14
550X550	UPN100	5	10	3x6	650X650	4X155=620	14
600X600	UPN100	5	10	3x8	700X700	4X167.5=670	14
650X650	UPN100	5	10	3x8	750X750	4X180=720	14
700X700	UPN120	6	10	3x8	810X810	5X155=775	16
750X750	UPN120	6	10	3x8	860X860	5X166=830	16
800X800	UPN120	6	12	3x10	910X910	5X175=875	16
900X900	UPN140	6	12	3x10	1010X1010	6X162.5=975	16
1000X1000	UPN140	6	15	3x12	1120X1120	7X155=1085	16
1100X1100	UPN140	6	15	3x12	1220X1220	7X170=1190	16
1200X1200	UPN160	6	15	3x12	1320X1320	7X184.5=1289.4	16
1300X1300	UPN160	6	15	3x12	1420X1420	7X198.5=1389.5	16
1400X1400	UPN160	6	15	3x12	1520X1520	7X212.8=1489.6	16

(* Table according to CMO standard manufacturing sized. Other sizes, shapes (rectangular) and face to face dimensions are available under requested.

ACTUATORS

VALVE SIZE	ACTUATOR													
	HANDWHEEL		ELECTR. ACT.			PNEUM. D/A			FREE STEM	GEAR BOX		PNEUM. S/A		CHAINWHEEL
	STEM	HANDW.	FLANGE	TORQUE	TYPE	Ø CIL.	Ø ROD	THRUST 6 bar	STEM	TYPE	HANDW.	Ø CIL.	Ø ROD.	HANDW.
125X125	Ø20X4	Ø225	F10	30	SA07.1	Ø80	Ø20	229	Ø20X4	FLO-4	Ø450	Ø125	Ø25	Ø225
150X150	«	«	«	«	«	«	«	«	«	«	«	«	«	«
200X200	«	«	«	«	«	«	«	«	«	«	«	«	«	«
250X250	Ø25X5	Ø325	«	60	SA07.5	«	«	«	Ø25X5	«	«	«	«	Ø300
300X300	«	«	«	«	«	«	«	«	«	«	«	«	«	«
350X350	«	«	«	«	«	Ø100	Ø20	365	«	«	«	«	«	«
400X400	«	«	«	«	«	Ø125	Ø25	565	«	«	«	Ø160	Ø30	«
450X450	Ø35X6	Ø450	«	«	SA10.0	«	«	«	Ø35X6	«	«	Ø160	Ø30	Ø402
500X500	«	«	«	«	«	Ø160	Ø30	934	«	«	«	Ø200	Ø30	«
550X550	«	«	«	«	«	«	«	«	«	«	«	«	«	«
600X600	«	«	«	«	«	«	«	«	«	«	«	«	«	«
650X650	«	«	«	«	«	«	«	«	«	«	«	«	«	«
700X700	Ø40X7	Ø650	«	«	«	Ø200	Ø30	1474	Ø40X7	«	«	Ø250	Ø40	—
750X750	«	«	«	«	«	«	«	«	«	«	«	«	«	—
800X800	«	«	«	«	«	«	«	«	«	«	«	«	«	—
900X900	«	«	«	120	SA10.1	Ø250	Ø40	2296	«	«	«	Ø300	Ø45	—
1000X1000	«	«	«	«	«	«	«	«	«	«	«	«	«	—
1100X1100	«	«	«	«	«	Ø300	Ø45	3316	«	«	«	Ø400	Ø50	—
1200X1200	Ø50X8	Ø850	F14	250	SA14.1	«	«	«	Ø50X8	FL1-4	Ø650	«	«	—
1300X1300	«	«	«	«	«	Ø400	Ø50	5938	«	«	«	«	«	—
1400X1400	«	«	«	«	«	«	«	«	«	«	«	«	«	—