

VD



## BIDIRECTIONAL MULTISECTOR DAMPER DIAPHRAGM VALVE

### OPERATION

The diaphragm valve works via a series of interposed slats with a fixed point at one end for easier rotation and a sliding type socket at the other for circular movement combined with concentric displacement to enable opening/closing, similar to for a camera lens, such that the flow is always through the centre of the duct.

### FUNCTIONALITY

- VD bidirectional multisector damper diaphragm valve.
- Designed for pneumatic transport of air or gases at different temperatures.
- Manufactured using drilled flanges in line with **CMO Valves** standards.
- Sealtight integrity between 98% and 99%.
- Across flats in accordance with **CMO Valves** standard.

### GENERAL APPLICATIONS

These multisector damper diaphragm valves are suitable to work with a wide range of air and gases. They are particularly suitable for controlling the flow of gas in pipelines.

Used mainly in:

- Cogeneration plants.
- Thermal power stations.
- Electrical power stations.
- Chemical plants.
- Energy sector.

### SIZES

From DN100 to DN600 (other dimensions on request). Check with **CMO Valves** for the general dimensions of multi-sector damper diaphragm valves.

### WORKING PRESSURE ( $\Delta P$ )

The standard maximum working pressure is <0.25 bar and temperature 200°C.

*\* For other pressures and temperatures, please ask **CMO Valves**.*

### SEALTIGHT INTEGRITY

All **CMO Valves** are tested at our facilities, and material and test certificates can be supplied on request.



Fig. 1

### JOINT FLANGES

These valves are attached to the pipeline by bolting in the drilled flanges fitted in the equipment.

The flange connection and their across flats are in line with **CMO Valves** standard, although other options can be produced on request.

### APPLICATION OF EUROPEAN DIRECTIVES

See the applicable directives document for **CMO Valves**.

*\* For category and zone information, contact the Technical-Commercial department at **CMO Valves**.*

### QUALITY DOSSIER

All **CMO Valves** are tested at our facilities, and material and test certificates can be supplied on request.

## ADVANTAGES

These **VD Series** valves present a new concept of opening and closing based on diaphragm systems, with a view to improving the performance of current equipment.

Current sealing systems based mainly on vertical or horizontal opening and closing produce load losses and turbulence. The flow is unevenly obstructed in vertical or horizontal sealing systems, causing distortions and disturbances in the fluid.

These effects are likely to cause unwanted results, not only in the fluid but also in elements in the circuit where the system is installed, e.g. speed, flow, pressure measuring equipment, etc.

This can have negative consequences, firstly in terms of controlling the fluid, and, secondly, with regards to the clean state of the ducts. These distortions cause small particles in the fluids to build up in certain parts of the valves.

The traditional shape of knife or butterfly valves means, firstly, the body must be specifically shaped in order to house the guillotine, which causes recesses where particles can build up.

Secondly, the butterfly seal (even in open position) impedes the flow of the fluid, leading to the build-up of particles.

The **VD Series** diaphragm valve provides a concentric seal for greater uniformity in controlling the fluid to be treated, minimising load losses and ensuring full flow through the duct in open position.

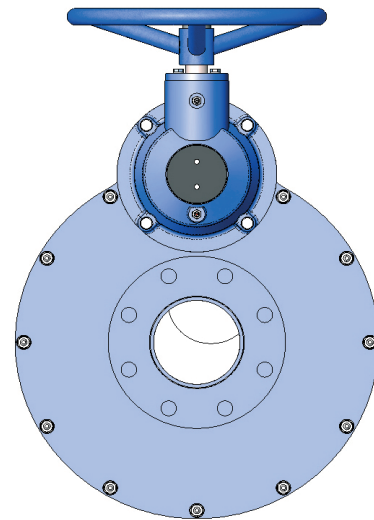


Fig. 2

**VALVE CLOSED**

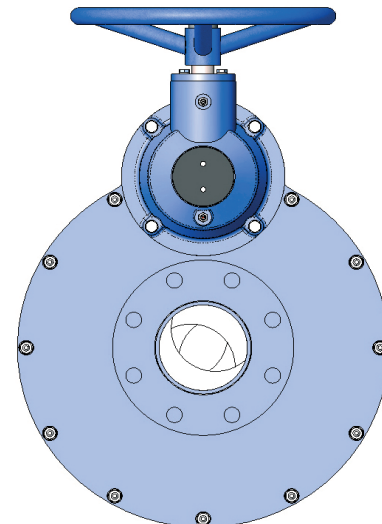


Fig. 3

**VALVE SEMI-OPEN**

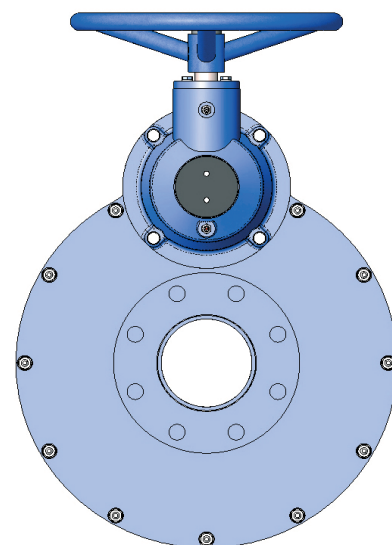


Fig. 4

**VALVE OPEN**

# GEAR

## AVAILABLE:

- DN100 up to DN600.

\* Other DN's on request.

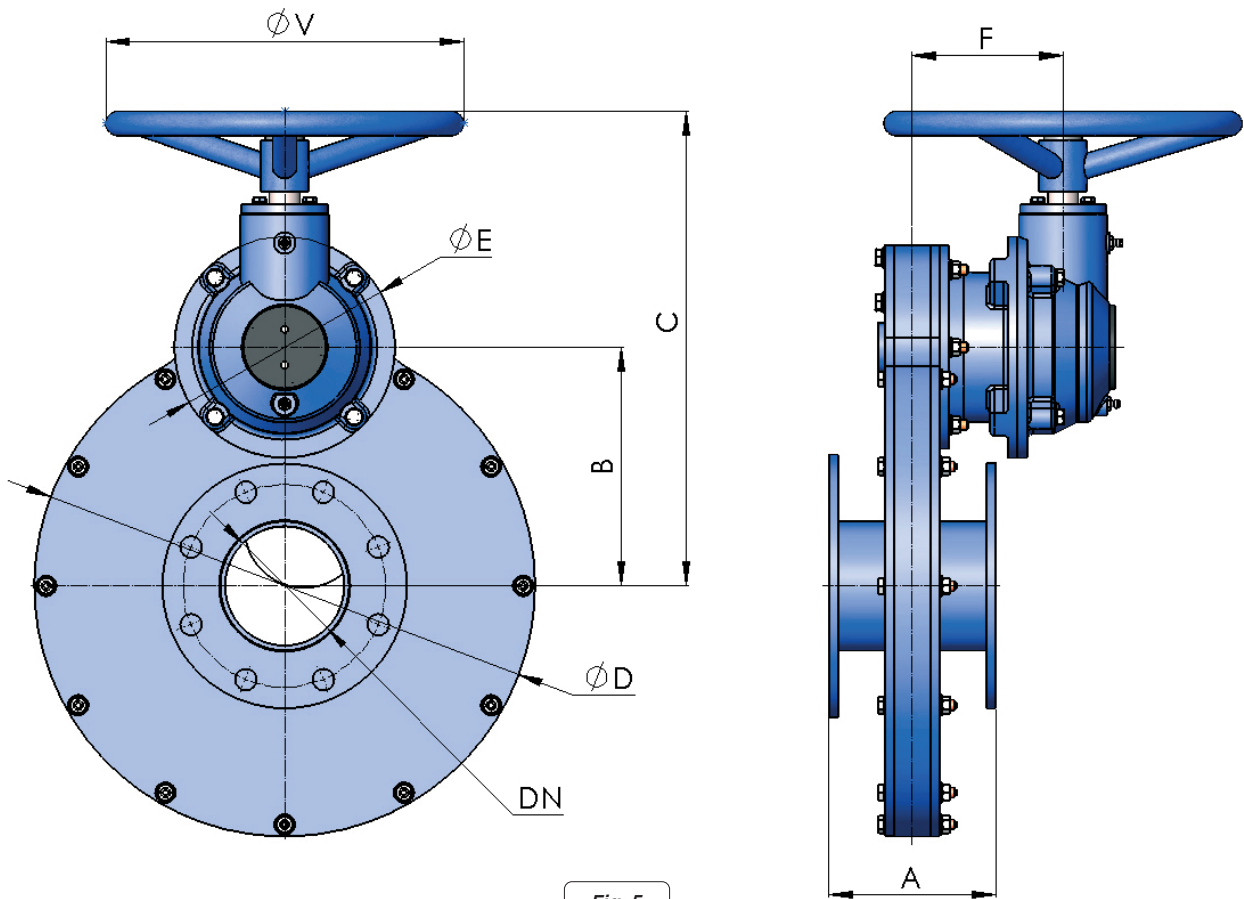


Fig. 5

## DIMENSIONS

DN	A	B	C	ØD	ØE	F	ØV
100	140	215	415	440	185	130	300
150	140	305	505	620	185	130	300
200	140	395	595	800	185	130	300
250	140	485	685	980	185	130	300
300	180	595	815	1200	185	130	450
350	180	685	905	1380	185	130	450
400	180	775	995	1560	185	130	450
500	180	955	1175	1920	185	130	450
600	180	1135	1355	2280	185	130	450

Table. 1

# MOTOR

## AVAILABLE:

- DN100 up to DN600.

\* Other DN's on request.

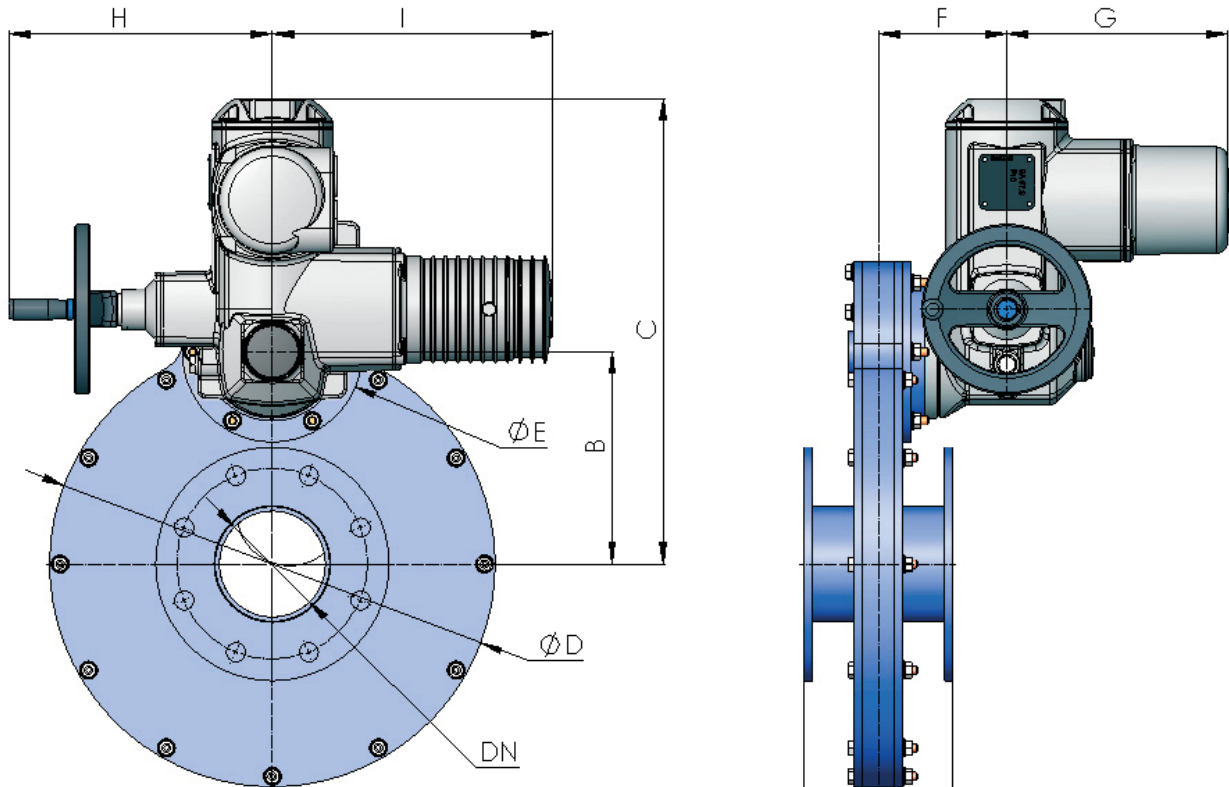


Fig. 6

## DIMENSIONS

DN	A	B	C	ØD	ØE	F	G	H	I
100	140	215	705	440	185	75	200	250	280
150	140	305	545	620	185	75	200	250	280
200	140	395	635	800	185	75	200	250	280
250	140	485	725	980	185	75	200	250	280
300	180	595	835	1200	185	95	200	250	280
350	180	685	925	1380	185	95	200	250	280
400	180	775	1015	1560	185	95	200	250	280
500	180	955	1195	1920	185	95	200	250	280
600	180	1135	1375	2280	185	95	200	250	280

Table. 2



# GEARED MOTOR

## AVAILABLE:

- DN100 up to DN600.

\* Other DN's on request.

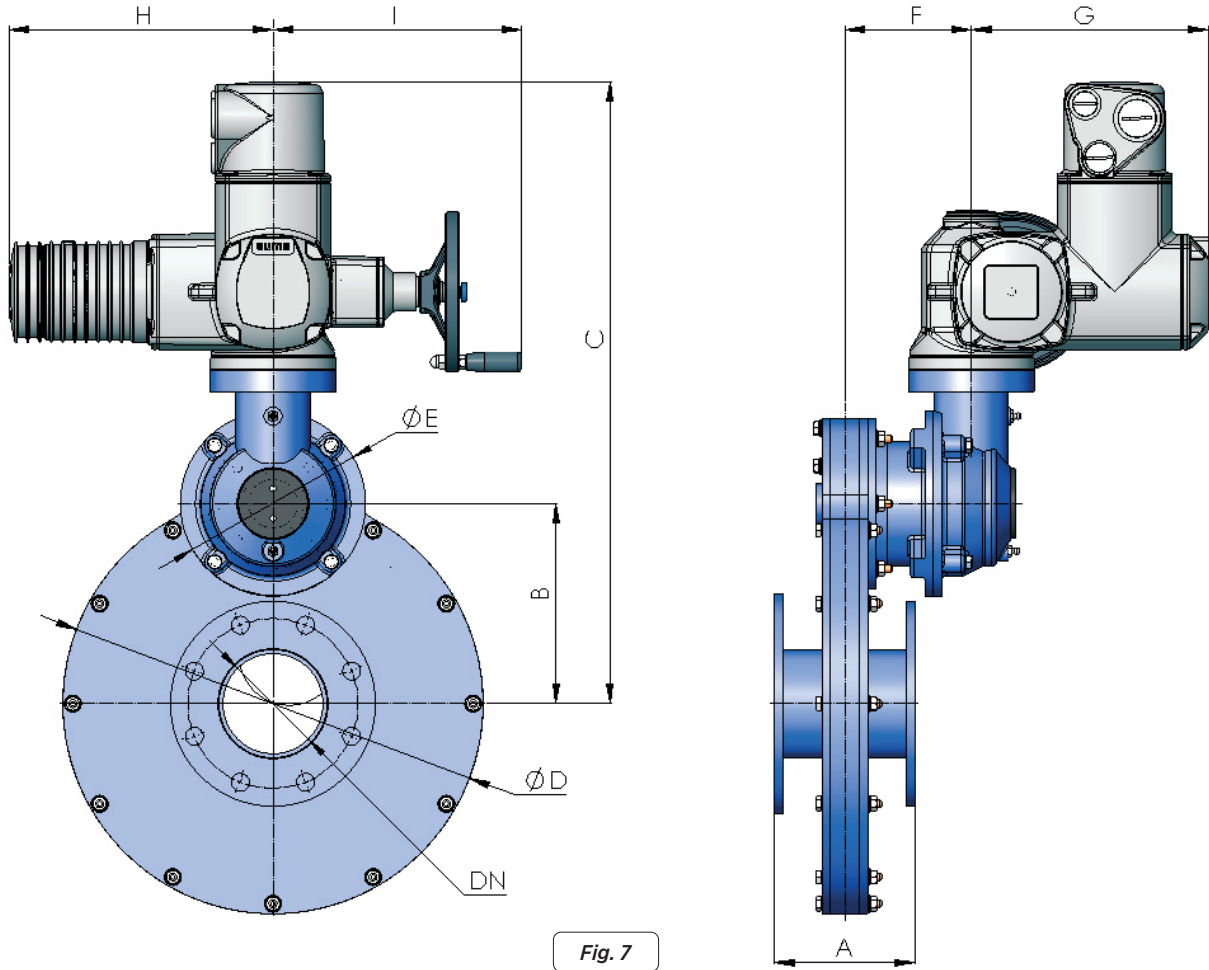


Fig. 7

## DIMENSIONS

DN	A	B	C	ØD	ØE	F	G	H	I
100	140	215	640	440	185	130	250	280	255
150	140	305	730	620	185	130	250	280	255
200	140	395	820	800	185	130	250	280	255
250	140	485	910	980	185	130	250	280	255
300	180	595	1020	1200	185	130	250	280	255
350	180	685	1110	1380	185	130	250	280	255
400	180	775	1200	1560	185	130	250	280	255
500	180	955	1380	1920	185	130	250	280	255
600	180	1135	1560	2280	185	130	250	280	255

Table. 3

## DESIGN CHARACTERISTICS

### 1. BODY

The body in this type of damper diaphragm valves is made mostly of laser-cut elements, although welding methods are used to seal certain areas in the flanged connection and in the bonnet area. The bores of the pipeline flanges can use any standard specified by the customer; both the across flats and the standard can be adapted in line with particular needs upon request. The construction materials used are highly varied, and are chosen in accordance with valve requirements, working temperature, pressure, dimensions, etc.

As a rule, carbon steel damper diaphragm valves are painted with anti-corrosive protection of 80 microns of epoxy (colour RAL 5015), although other types of anti-corrosive protections are also available.

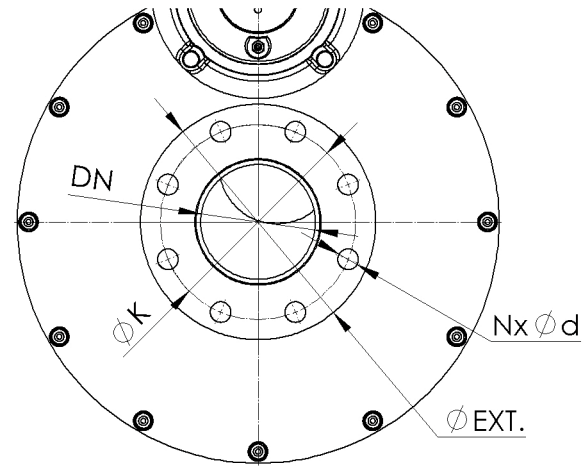


Fig. 8

### 2. SECTORS

The sealing system for these damper diaphragm valves is made up of a series of interposed sectors that converge at a central point, with a fixed point at one end to ensure rotation and a sliding housing at the other end for circular movement combined with concentric displacement; this produces the opening and closing effect, similar to the classic diaphragm system.

The sectors are designed in accordance with the dimensions of the duct and the working pressure required. The slats are normally made of AISI304 stainless steel since their interposed layout is not suitable for painting, although they can be manufactured from other materials to order, in accordance with the customer's needs.

ØDN	100	150	200	250	300	350	400	500	600
ØEXT.	220	285	340	395	445	505	565	670	780
ØK	180	240	295	350	400	460	515	620	725
N	8	8	8	12	12	16	16	20	20
Ød	18	22	22	22	22	22	26	26	30

- Other flange sizes on request.

Table. 4

### 3. SEALTIGHT INTEGRITY

The shaft area is sealed thanks to O-rings housed inside bronze bushing to ensure sealtight integrity between shaft and bonnet, thus avoiding any leakage to the atmosphere; all such seals will be made of material suitable for the temperature requirements requested.

In the event of extreme temperature conditions, this type of sealing can be replaced with graphite gaskets or ceramic material.

In any case, the sealing system is in an easily accessible area, and can be replaced without removing the valve from the line.

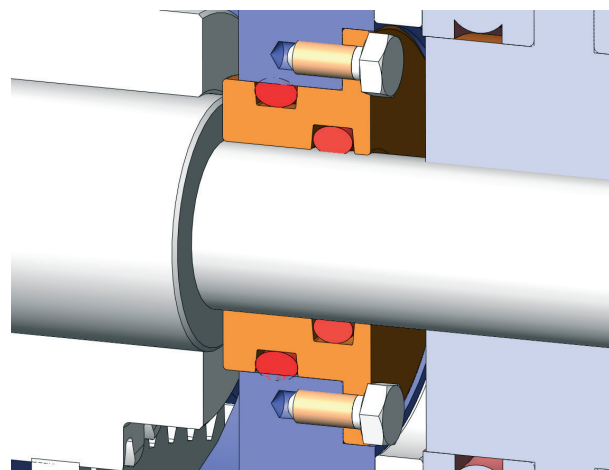


Fig. 9

## ACTUATORS

The actuator system for the damper diaphragm valves is located at the top, as shown in the figures; the actuator is bolted to the bonnet, transmitting the generated torque to the actuator shaft via the spindle and nut system; all the sectors move in sync, achieving the required opening and closing effect.



**MANUAL ACTUATOR  
GEAR SYSTEM**

*Fig. 10*



**ELECTRIC MOTOR  
ACTUATOR**

*Fig. 11*



**GEARED MOTOR  
ELECTRIC ACTUATOR**

*Fig. 12*



[www.cmovalves.com](http://www.cmovalves.com)



**CMO** VALVES

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