

# Diaval<sup>®</sup>



Diaphragm Valves  
[www.diaval.com](http://www.diaval.com)



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## Introduction

Diaphragm Valves proved to be the answer to many process engineers' greatest desire of reliability at an acceptable cost of ownership. Of simple and reliable design, diaphragm valves offer secure operation with full leaktight at the plant. The maintenance, when required, is limited to the replacement of the diaphragm, the bolted bonnet design permits to dismantle the valve without removing the valve body from the pipe work.

The body seatless design eases the internal lining, which opens a broad range to inexpensive options to process engineers when selecting materials resistant to corrosion and abrasion duties. Conventional isolating valves would demand expensive exotic materials to resist the effects of severe corrosion whereas a duly lined iron based material can do the job.



**DIAVAL** portfolio clearly meets the requirements of modern industrial processes and the needs of all engineers. Through constant product development and own polymer research technology, **DIAVAL®** Diaphragm Valves are a reliable alternative to existing costly and expensive to maintain conventional valves.

**DIAVAL INTERNATIONAL** manufacture one of the largest Diaphragm Valves portfolio comprehensive of body linings, diaphragm grades and actuation currently available in the international market. Your **DIAVAL®** Team is available to guide you along a great cost saving experience.



**DIAVAL®** range of superior design and major cost saving benefits, for secure and full leaktight operation under the most severe circumstances.

The **DIAVAL®** range is totally interchangeable with other diaphragm valves in the market thus easing the plant choice.

# **Valve stroke Indicator**; a yellow position indicator gives clear and positive valve position from any angle.

# **Greased for life valve spindle**; spindle chamber incorporates a grease reservoir that lubricates the spindle along operations thus avoiding valve spindle jamming. Sealed bonnet arrangements available for toxic and hazardous fluids.

# **Valve stroke stopper**; the bonnet design prevents over closure of the valve thus avoiding early diaphragm rupture.

# **Ergonomically Design Hand wheel**; great comfort and ease of operation. Other operation options such as actuators, padlocks, interlocking, extended spindle and others are available from **DIAVAL®**.

# **Self draining**; Weir valves are self draining when installed at an angle of 20° above horizontal. ST and Full Flow valves are self cleaning with an unobstructed bore.

# **Diaphragms**; wide range of diaphragm materials to meet the needs of today's industrial processes and standards. Resilient diaphragms provides 100% leak-tight shut off and isolates all bonnet parts from the line fluid.

# **Safety**; Optional Sealed bonnet arrangements available for toxic and hazardous fluids, Interlocking arrangement, padlocking and flange sealing coating.

# **Linings**; porous free chemically resistant linings designed to eliminate the need of expensive metals. Wide range of polymers and fluoropolymers available to match all industrial needs. Full face rubber lining removes the need for gaskets unlike spigot face lining.

# **Body end connections**; flanged and screwed ends to meet all European, Imperial and American standards. Other end styles available for the aseptic range.

## Industry Applications

The DIAVAL range of Valves is encountered in many market sectors and process media applications. The process engineer should observe the material of valve bodies, Diaphragm grades, seals and other selection criteria to ensure that and matches to the actual plant duties.

When deciding to use any valve of the wide DIAVAL portfolio in a process plant, the following parameters should be observed: \*Fluid Temperature \*Fluid properties and Concentration \*Line pressure ; if checked parameters allow for the use of Diaphragm Valves, Plug Valves or Butterfly Valves, then a second check list should be considered to select the most appropriate Valve: \*Clean or dirty media, pressure drop and intended valve purpose to define the Valve style \*Corrosion or abrasion duties will lead to the proper choice of materials, linings and diaphragms or gaskets \*Finally process end connections will define the body end style.

DIAVAL products are encountered in many applications of today's industry, this catalogue section describes the main fields where our products have been largely sold.





## Valves for Desalination Plants

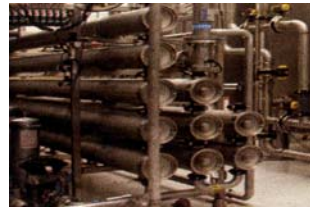
### What is desalination?

Desalination is the process of removing dissolved salts from water to make it drinkable or for human use.

The two leading desalination technologies are thermal and membrane technologies. A major advantage of desalination of ocean water is that water is always available even in the most severe droughts.

A thermal process or distillation involves the heating of saline water to produce water vapour that is, in turn, condensed to form fresh water or low salt water concentration.

Membrane processes rely on permeable membranes to separate salts from water. Membrane processes can either be pressure-driven (reverse osmosis) which is now the most common method, or it could be voltage-driven (electro-dialysis).



**Reverse Osmosis (RO).** A process of desalination where pressure is applied continuously to the feed water, forcing water molecules through a semi permeable membrane. Water that passes through the membrane leaves the unit as product water; most of the dissolved impurities remain behind and are discharged in a waste stream.

**Electro-dialysis.** Most of the impurities in water are present in an ionized (electrically-charged) state. When an electric current is applied, the impurities migrate towards the positive and negative electrodes. The intermediate area becomes depleted of impurities and discharges a purified stream of product water. This technology is used for brackish waters but is not currently available for desalting seawater on a commercial scale.

### Corrosion Control

The major problem in the efficient functioning of a Multi Stage Flash Desalination Plant is the lost downtime due to the ravages of corrosion. Whereas pipes and fittings are relatively inexpensive to repair or replace, the cost of a pump or valve can be very high. It is for this reason that the valves and pumps used must fall under the following criteria:

- 1.The valve must be corrosion resistant to the aggressive media and chemicals found on a Multi Stage Desalination Plant.
- 2.The Valve must be easy to maintain.
- 3.The valve must be highly reliable under the most arduous conditions.
- 4.The valve must be cost effective.

DIAVAL® valves offer a wide portfolio capable to meet all the above requirements in the desalination industry either with Diaphragm, Plug, Butterfly and Check Valves. Corrosion is effectively managed with alloy materials such as Super Duplex Stainless Steel for unlined valves and in requirement of working pressures beyond the reach of elastomer lined valves. Should working parameters allow so, the use of Diaphragm Valves would reduce the ownership cost tremendously as can be observed from the following table:

Service	Valve Type	Body Material	Body Lining	Diaphragm	Size Range
Sea Water	Diaval Diaphragm Valve	Ductile Iron	Natural Rubber	Natural Rubber	150 mm to 350 mm
Condensate	Diaval Diaphragm Valve	Ductile Iron	Butyl Rubber	Butyl Rubber	100mm to 250mm
Brine Discharge	Diaval Diaphragm Valve	Ductile Iron	Unlined	Butyl Rubber	200mm to 300mm
Caustic Addition	Diaval Diaphragm Valve	Ductile Iron	Butyl Lined	Butyl Lined	25mm to 50mm
Chlorine Injection	Diaval Diaphragm Valve	Ductile Iron	ETFE or PFA Lined	PTFE/Viton	25mm to 50mm

Valves must be reliable and not to be affected by the water impurities and suspended solids, hence the choice of plug valves or Straight Through Diaphragm Valves takes an important role for the proper plant functioning.

The DIAVAL portfolio offers the right product for each process conditions at Desalination Plants over the World.

## Valves for Hydrochloric Acid

Although not manufactured in as greater quantities as sulphuric acid, Hydrochloric acid is nevertheless an important raw material used in the chemical, petroleum and metal industries.

Hydrogen Chloride is a gas at room temperature and normal pressure and when dissolved in water is known as hydrochloric acid.

One of the major uses of hydrochloric is in the metal preparation industry where it is used to pickle steel plate to remove scale. In order to handle and control hydrochloric acid the choice of materials must be carefully chosen.

In the valve and pump applications, the use of rubber linings and 'plastic' materials are widely used. Should all metal valves or pumps be required then the cost rises dramatically due to need to use expensive nickel alloys.

The use of Diaval Diaphragm Valves has become widely accepted as the most economic way of handling Hydrochloric acid due to the fact that the body can easily be lined with suitable 'rubbers' which resist the attack of the acid.

The diaphragm isolates the acid from the operating mechanism thus reducing the need, and cost of employing an expensive all metal bonnet assembly.

On the surface the choice of lining seems a simple choice, however consideration must be given to the impurities in the acid which are 'picked up' by virtue of its method of manufacture. It is these impurities that can attack and destroy linings that theoretically should be resistant to the acid.

Hydrochloric acid can be manufactured in a number of ways each method containing different impurities:

\* In the production of organic chemicals hydrochloric acid can be produced as a by-product containing aromatics. The choice of Fluorocarbon linings and TFM (PTFE) diaphragms are required in this application.

\* The Process of reacting sulphuric acid with sodium sulphate to produce hydrogen chloride gas and subsequently hydrochloric acid can introduce fluorides as the impurity which are best controlled by the use of EPDM or butyl materials. The fluorides attack glass linings.

\* The manufacture of chlorinated hydrocarbons can produce hydrochloric acid containing chlorine gas. The use of natural rubber (because of the formation of the resistance layer of 'rubber hydrochloride on the natural rubber) and fluorocarbon materials are required.

Should the use of Plug Valves was the choice, it would be strongly recommended to look for Fluoropolymer coated valves in combination with the PTFE Sleeve plug.





## Valves for Sulphuric Acid

Sulphuric acid is perhaps the most widely used and most important technical products. Sulphuric acid is used in numerous industrial processes including fertiliser manufacture, metal plate, the dye stuffs industry, pharmaceuticals and countless others.

First discovered in 1831 by an Englishman whose patent for its manufacture has little changed over the years and is called the Contact Process. The Contact Process features the passing of a mixture of sulphur dioxide over a catalyst and passing the resultant sulphur trioxide into concentrated sulphuric acid. Sulphuric acid is a strong dibasic acid, with properties of an oxidising and dehydrating agent. Its dehydrating properties are important in absorbing water formed in such chemical processes as in nitration, etherification processes and saponification in the soap and detergent manufacture.

Sulphuric acid is sold in varying strengths or percentage of SO<sub>3</sub> (sulphur trioxide) in H<sub>2</sub>SO<sub>4</sub>. The latter known as Oleums.

The commercially available strengths of sulphuric acid are as follows:

Strengths of Sulphuric Acid	Specific Gravity	% Sulphuric Acid
Battery Acid	1.250	33.3%
Fertiliser acid	1.525	62.2%
Oil of Vitriol	1.835	93.0%
Concentrated Oil Of Vitriol	1.841	98.0%
100% Sulphuric acid	1.835	100.0%
20% Oleum	1.915	105.0%
60% Oleum	1.992	114.7%

With its wide range of chemical properties the controlling of the various forms of sulphuric acid makes it extremely important that the correct material of construction for valve / pump is used.

In higher concentrations valves and pumps are often manufactured in plain cast iron or ductile iron, the chemical resistance of these materials is basically due to the fact that they contain a high content of combined carbon and a low content of free graphite. The acceptable corrosion rates must be determined by the Corrosion Engineer since these vary with increase velocity of the acid.

Temperature	% H <sub>2</sub> S <sub>04</sub>	mm per year
Ambient	65-98	<0.2
80 deg C	70-98	0.2 - 1.5
100 deg C	96-98	0.5 - 1.5

Temperature	% H <sub>2</sub> S <sub>04</sub>	mm per year
Ambient	85%	0.40
50 deg C	85%	1.03
100 deg C	98%	0.28

It can clearly be seen that above a percentage of approximately 85% the corrosion rates start to fall which allows the use of cast irons as a favourable material for the construction of valves and pumps.

The one factor NOT taken into account in the above example is the effect of velocity which is considerable when considering the choice of materials to handle sulphuric acid.

This adverse effect is known as erosion - corrosion .

In its more dilute forms there are many polymers and inert linings that will offer the engineer a economical choice in the controlling of sulphuric acid.

Diaval Diaphragm valves, with its many linings and smooth flow characteristics has been the Corrosion Engineers and Plant Managers first choice for handling and controlling sulphuric acid on the grounds of economics, safety, easy of maintenance and availability.

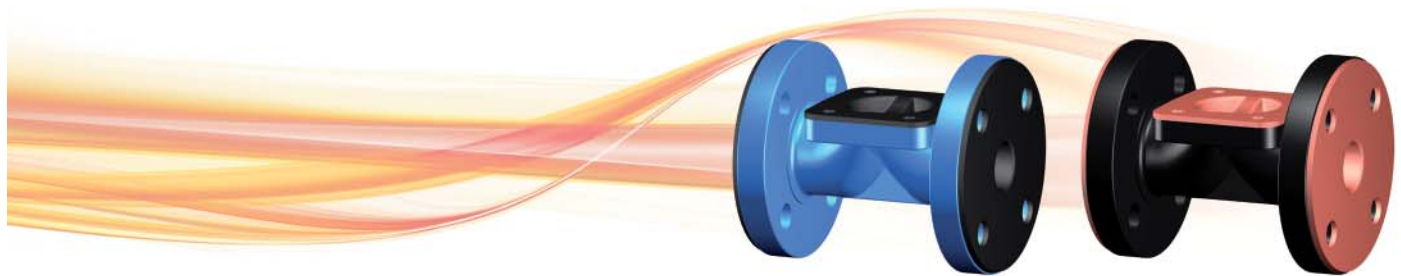


## Application Guide - Diaphragms

GRADE	POLYMER TYPE	GENERAL APPLICATION
<b>D10</b> Natural Rubber	<b><u>Natural Rubber Polyisoprene/SBR</u></b> Sulphur cured and carbon black reinforced	Inorganic salt solutions, dilute mineral acids, alkalis and salts. Abrasive services Not resistant to Oxidizing media, oils or most organic solvents will attack it.
<b>D15</b> White Natural Rubber	<b><u>Natural Rubber Polyisoprene/SBR</u></b> Sulphur cured and white reinforced	Food and pharmaceuticals, toothpaste, brewing, dairy
<b>D20</b> EPDM	<b><u>Ethylene Propylene Diene (EPDM)</u></b> Organic peroxide cured, carbon black reinforced	Salts in water, acids and alkalis, ozone, intermitten steam. Sterilisation
<b>D30</b> Butyl Rubber	<b><u>Isobutylene Isoprene (IIR)</u></b> Sulphur cured and carbon black reinforced	Dilute mineral acids and alkalis, gases, acidic slurries, chlorine free hydrochloric acid, resistance to concentrated acids is good with some important exceptions as nitric or sulphuric acids
<b>D40</b> Nitrile	<b><u>Butadiene Acrylonitrile</u></b>	Oily air, lubricating oil, cutting oils, fuel oils, animal and vegetable oils, aviation kerosen, LPG Generally resistant to oils and solvents.
<b>D50</b> Neoprene®	<b><u>Polychloroprene</u></b> Non sulphur cured carbon black reinforced	Abrasive slurries containing hydrocarbons, oily air, natural gas Resistant to attack by ozone, sunlight, oils, gasoline, and aromatic or halogenated solvents but easily permeated by water
<b>D60</b> Hypalon®	<b><u>Chlorosuphonated polyethylene</u></b> Non sulphur cured carbon black reinforced	Outstanding resistance to ozone and oxidizing agents except fuming nitric and sulfuric acids. Oil resistance is good. Dilute / Medium acids, sodium hypochlorite, chlorine gas
<b>D70</b> Viton®	<b><u>Vinylidene fluoride-hexafluoro propyleneco-polymer</u></b> Carbon black reinforced	Strong sulphuric acid, chlorine gas, oils, certain aromatic solvents
<b>D92</b> PTFE/EPDM	<b><u>Virgin PTFE + Ethylene Propylene Diene</u></b> Two piece Bayonet fitting	Strong acids, alkalis and salts in water at high temperature, Biopharmaceuticals
<b>D93</b> PTFE/BUTYL	<b><u>Virgin PTFE + IIR</u></b> Two piece Bayonet fitting	Strong acids at low-medium temperature
<b>D97</b> PTFE/Viton®	<b><u>Virgin PTFE + Vinylidene fluoride-hexafluoro propylene copolymer</u></b> Two piece Bayonet fitting	Strong acids, solvents, chlorine, bromine at higher temperature

Vacuum reinforced diaphragms are available and will contain a steel stud and be designated by additional code letter (V) e.. D10V Because of the steel stud these diaphragms can be used on services where conventional bronze studs are prohibited e.g. use of D40V on acetylene.

\*Other speciality customised diaphragm material available to suit individual requirement made out of various polymers



### Application Guide - Lining

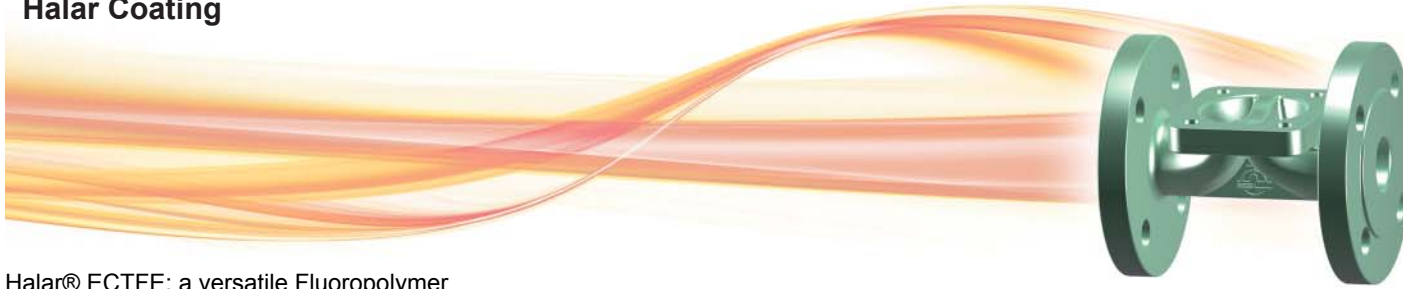
Lining Material	Applications
<b>Hard Rubber - HR</b> (Ebonite), sulphur cured, carbon black reinforced. Designated by a 'Sky Blue Spot' on end flange.	Used for inorganic salt solutions, dilute mineral acids, chlorine water, deionised and potable water.
<b>Soft Natural Rubber-SR</b> Polyisoprene, sulphur cured, carbon black reinforced. Designated by a 'white spot' on end flange.	Excellent abrasion resistance for powders, slurries such as clays, fly ash and cement products.
<b>Soft Butyl Rubber-BR</b> Isobutylene isoprene (IIR), sulphur cured carbon black reinforced. Designated by a 'Dark Blue Spot' on end flange.	Good for corrosive and abrasive slurries, dilute mineral acids and acidic slurries. Avoid chlorine and chorine solutions.
<b>Soft Polychloroprene (Neoprene) Rubber</b> Non-Sulphur cured carbon black reinforced. Designated by a 'Red Spot' on end flange. Hardness 65- +/- 5° Shore 'A'	Used on abrasives and minerals processing where small percentages of hydrocarbons are present.
<b>Soft Hypalon® Rubber - (Chloro sulphonated polyethylene)</b> Non-Sulphur cured carbon black reinforced. Designated by a 'Green Spot' on the end flange.	Chemical resistance to dilute / medium strength acids and chlorinated brine solutions and sodium hypochlorite
<b>Linatex®</b> Specially compounded "RED" coloured soft lining Hardness 45 +/- 5° Shore 'A'	Used for "WET" slurry applications

#### Speciality lining material for specific service

<b>Halar®</b> Co-polymer of ethylene and chlorotrifluoroethylene. Electrostatically applied coating.	Used for concentrated acids and salts containing hydrocarbons. Not suitable for dilute acids and inorganic salt solutions near to their boiling point. Minimal resistance to abrasive services.
<b>Polytetrafluoro alkoxy-PFA®</b> . Natural colour.	Most suitable for concentrated mineral acids at high temperature, aromatic and aliphatic and chlorinated solvents.
<b>Ethylene tetrafluoroethylene-ET-FE®</b> . Natural colour.	Most suitable for concentrated mineral acids at high temperature, aromatic and aliphatic and chlorinated solvents
<b>FEP &amp; PVDF</b>	Consult Diaval@ (DN 350 under special manufacture)



## Halar Coating



Halar® ECTFE; a versatile Fluoropolymer

Manufactured from ECTFE, is a melt processable Fluoropolymer. Halar® ECTFE is a partially fluorinated semi-crystalline polymer offering a unique combination of mechanical properties, thermal and chemical resistance with an outstanding ease of processability. It is a copolymer of ethylene and chlorotrifluoroethylene that brings advantages to valve application when compared to other Fluoropolymers. It is a very versatile polymer, available in all forms to meet processing needs. It offers excellent resistance to abrasion, harsh chemicals, and permeation. These characteristics have made of Halar® ECTFE a material of choice for several applications in the field of corrosion protection in the chemical industry. Halar® ECTFE is a high purity Fluoropolymer with a very smooth surface, which accounts for its extensive use in the semiconductor industry. Halar® meets the demands for fire-safe, non-fire propagating plastics. Halar® ECTFE powder coatings offer the greatest ease of processing, with the ability to be applied in high thickness when required.

### Properties of Halar® ECTFE

Halar® offers a unique combination of properties especially as a coating and a liner. Halar Fluoropolymer coatings provide outstanding chemical resistance, good electrical properties, a broad-use temperature range from cryogenic to 150 ° C, and meet the requirements of UL-94 V-O vertical flame test in thicknesses as low as .007 (7mils). Halar® is resistant to strong mineral and oxidizing acids, alkalis, metal etchants, liquid oxygen, and essentially all organic solvents except hot amines.

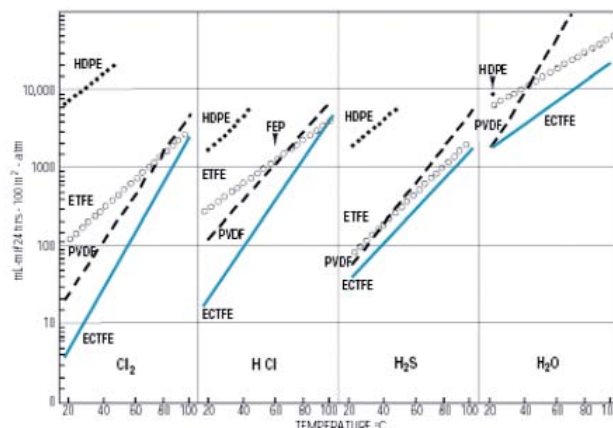
### Halar® ECTFE the DIAVAL® choice of Fluoropolymers

It is the preferable DIAVAL® choice over other Fluoropolymers such as PVDF, PFA or PTFE in example. For those applications exceeding the capabilities of other Fluoropolymers, Halar® can be evaluated before resorting to a fully fluorinated polymer, offering a compromise between the mechanical properties of a partially fluorinated plastic (like PVDF in example) and the chemical and thermal resistance which is typical of totally fluorinated polymers.

Halar® presents many other advantages over other Fluoropolymers as in example:

- Much better permeability properties.
- Smoother surface that precludes shedding of particles whilst avoid trapping.
- Environmental resistance properties.
- Thermal Properties and Chemical resistance properties.
- Electrical properties
- Mechanical Properties.

The graph shows how Halar® is rated in comparison to other Fluoropolymers in terms of permeation resistance to corrosive media at different temperatures.



The electrostatic powder coated Halar® shows superior performance than conventional Fluoropolymers that can be shown with more information available in our Data Base on request.

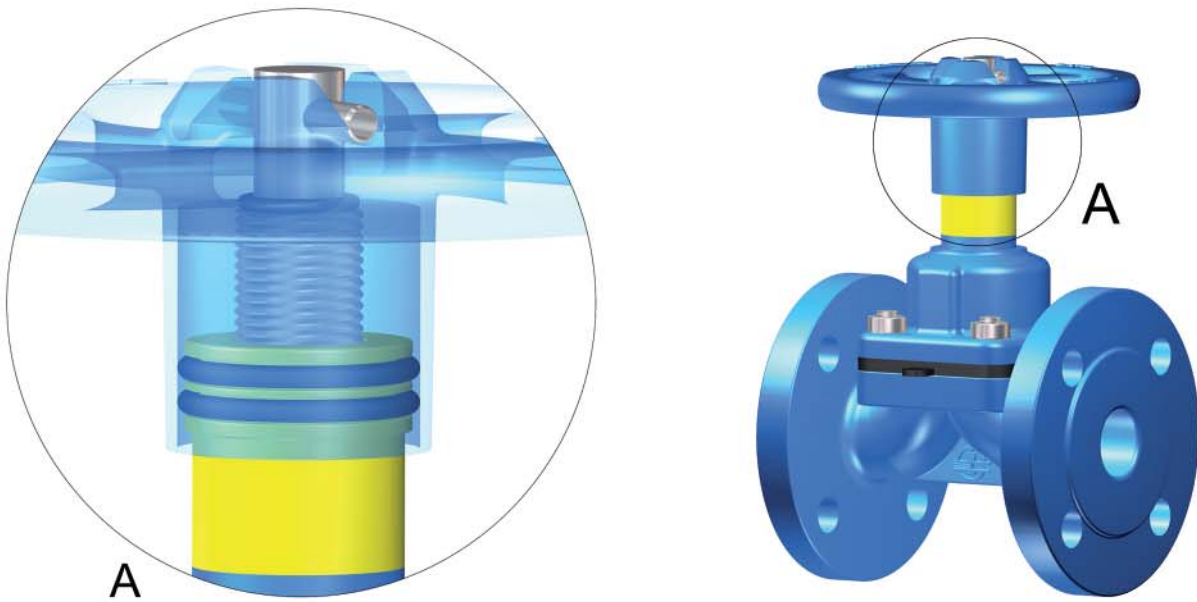
## Special Arrangements

### Sealed bonnet

Sealed bonnets mean an essential safety requirement when handling toxic or hazardous fluids. This design prevents fluid emissions in case of diaphragm rupture and, consequently, avoiding harmful risks to plant personnel.

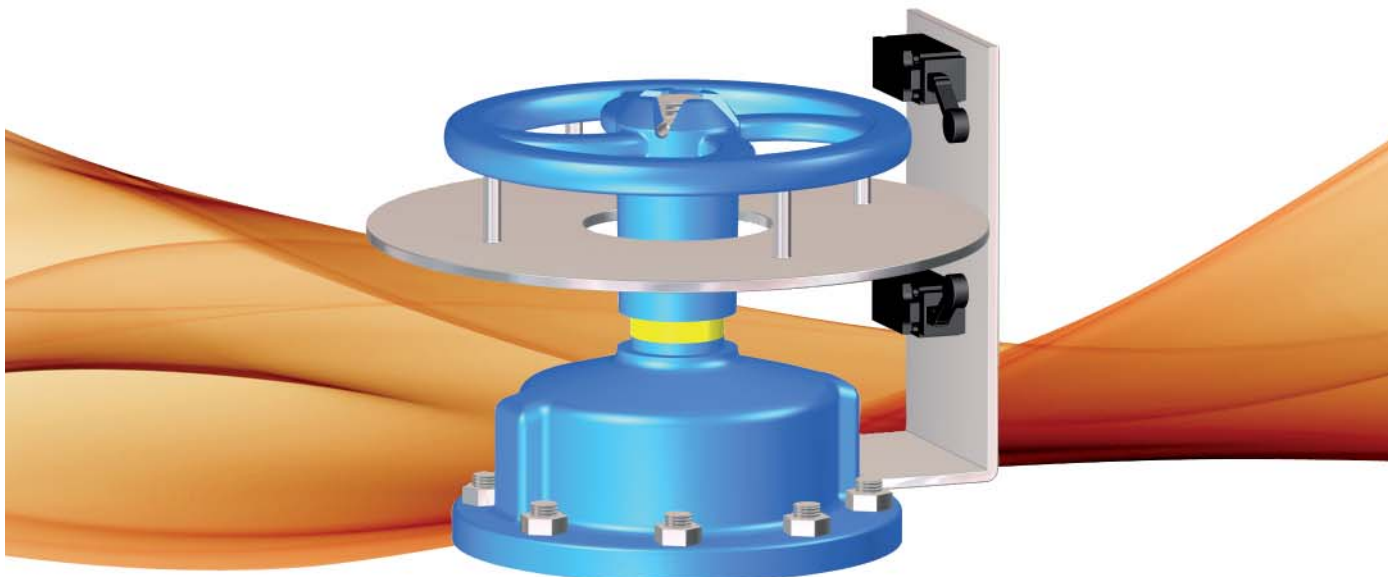
The bonnet is sealed off by two VITON O-rings across the bonnet neck.

These rings are retaining the eventual leakage until a new diaphragm is mounted and thus service integrity restored.



### Limit switches

Limit switches are often used to provide remote signal on the valve status. Electro mechanical limit switches or proximity switches can be provided on a special assembly consisting of a protruding rod angle plate (fix unit) where the switches are bolted and a round plate (moving unit) which moves up and down along with the hand wheel to activate the switches for open and closed position. If just a single signal is required, a single switch for open or closed signal should be mounted.



Bonnet options apply for manual operation. DIAVAL® can engineer and provide further tailor made options on request.

## Special Arrangements

### Padlocking device

Conventional padlocking device that prevents unauthorized valve operation; the complete set consists in two empty steel rolls interconnected by a rod where the padlock is held.

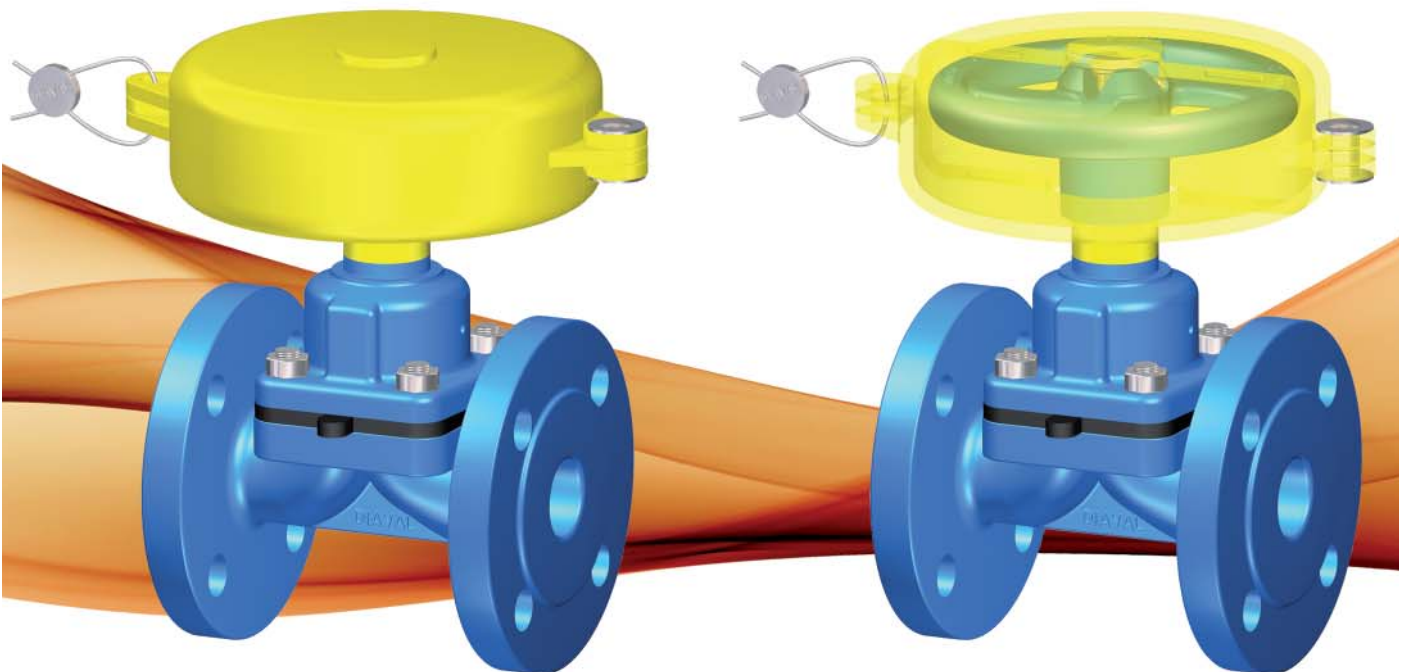
The lower roll is fitted onto one of the bonnet union bolts whilst the upper one blocks the hand wheel free turn. A chain links both rolls thus making the integral set.

The device is provided with padlock and keys which are replaceable by the plant operator. No duplicate of padlock keys are kept at DIAVAL, therefore is plant owner responsibility to create their own set of keys and keeping procedure.

This system maybe provided as an option with new valves or, alternatively, can also be assembled in field on existing DIAVAL® valves.



### Hand wheel protecting hood



Two halves plastic hood conveniently sealed to avoid valve operation by unauthorized personnel.

There are several hoods in accordance with the hand wheel diameter. This hoods can be provided as an option with new valves or, alternatively, can also be assembled in field on existing DIAVAL® valves.

Bonnet options apply for manual operation. DIAVAL® can engineer and provide further tailor made options on request..



## Weir Type Diaphragm Valves

### Codification

W D 0 0 D I 1 0 D 1 0 0 5 0

#### BODY DESIGN

<b>W</b>	Weir
<b>S</b>	Stright Through
<b>F</b>	Full Flow

#### FACE TO FACE/DRILLING

<b>DI10</b>	DIN3202F1 PN10
<b>AS15</b>	BS5156 ASA 150
<b>BS10</b>	BS5156 PN10
<b>SPTH</b>	Threaded BSPP

**0B**

#### BODY/BONNET MATERIAL

<b>C</b>	Cast iron
<b>D</b>	Ductile iron
<b>A</b>	Carbon steel
<b>S</b>	St. steel 316
<b>I</b>	Chr. iron 24%
<b>J</b>	Chr. iron 30%
<b>B</b>	Bronze
<b>K</b>	St. steel 316L
<b>E</b>	St. steel 304
<b>M</b>	Monel
<b>H</b>	Hastelloy
<b>X</b>	St. steel 1.4435
<b>Y</b>	St. steel 1.4435 BN2

#### DIAPHRAGM/SEALING

<b>D10</b>	Natural rubber
<b>D15</b>	White natural rubber
<b>D20</b>	EPDM
<b>D2V</b>	EPDM vacuum service
<b>D30</b>	Butyl
<b>D40</b>	NBR
<b>D4V</b>	NBR vacuum service
<b>D50</b>	Neoprene
<b>D60</b>	Hypalon
<b>D70</b>	Viton
<b>D92</b>	PTFE/EPDM
<b>D93</b>	PTFE/Butyl
<b>D97</b>	PTFE/Viton
<b>DLN</b>	Linatex

#### BODY BASE MATERIAL

<b>00</b>	Unlined
<b>HR</b>	Hard rubber
<b>SR</b>	Soft rubber
<b>BR</b>	Butyl rubber
<b>ER</b>	EPDM rubber
<b>NL</b>	Neoprene rubber
<b>HY</b>	Hypalon® rubber
<b>PF</b>	PFA
<b>FE</b>	FEP
<b>ET</b>	ETFE
<b>HL</b>	Halar®
<b>LN</b>	Linatex

#### SIZE

<b>015</b>	DN15
<b>050</b>	DN50
<b>100</b>	DN100

## Design Attributes

Weir Type Diaphragm Valves are linear motion valves, bidirectional, for stopping or regulating the flow of the service fluid when necessary. Valves close by turning the handwheel clockwise. Valves are bolted bonnet, seatless design, with a diaphragm as closure element, with rising handwheel. Valves are offered with a broad range of diaphragms and linings materials to resist to abrasion and corrosion duties. The valves are inexpensive and easy to maintain, being the optimal solution for a large number of applications.

Yellow position indicator, for clear and positive valve position from any angle

Nameplate incl. batch no. for full traceability

Closure Diaphragms; manufactured from elastomeric and fluorocarbon materials; provide 100% seating tightness in both directions while isolating the valve trim from fluid. Wide choice of polymers to satisfy any industrial application

Ergonomic and rugged rising handwheel

Grease reservoir integrated in the spindle chamber that lubricates the spindle along operations thus avoiding valve spindle jamming

Witness hole to detect leakage at diaphragm failure

Full rubber flange face in all rubber lined valves as standard

Porousless linings; provides the application engineer with a wide choice of linings of high chemical and abrasion resistance without need of expensive basic metal valve materials

Precise compressor plate; guide and operates the diaphragm up and down



**Threaded version**

## Main Features

Valve design: EN 13397, EN 12516

Face to face length: EN 558 Series 1 (DIN 3202F1) or EN 558 Series 7 (BS 5156)

Valve end connections: - Flanged to EN 1092-2 type 21/B, PN10/16 (DN15-150)\*; PN10 (DN200-300)

\*(valves DN65 with 4 holes as accepted variant in standard)

option drilling to ASA150#

- Female threaded ends to ISO 228-1 (DIN 259-BSPP)

Marking: EN 19

Pressure Tests: EN 12266-1

Seat leakage rate: Rate A (full seat tightness in both directions)

Inside and outside primer paint layer black color for protection during storage and transport

Product compliant with Directive 2014/68/EU on Pressure Equipment (PED) and Machinery Directive 2006/42/EC

## Options

Other materials, other ratings and connexions, pneumatic or electric actuator, limit switches, sealed bonnet, interlocking arrangement, padlocking or handwheel hood to avoid non-authorized operation. Please consult us

### Main Duties / Limits of use

Liquids compatible with materials of construction, acc. to Directive 2014/68/EU Annex II tables 8 (group 1\*) & 9 (group 2\*) up to category I

#### Rubber Diaph.

- PS:16 bar DN10-50 (Art.4-Parr.3)
- PS:10 bar DN65-150 (Art.4-Parr.3)
- PS:6 bar DN200 (Art.4-Parr.3)
- PS:5 bar DN250 (Art.4-Parr.3)
- PS:4 bar DN300 (Art.4-Parr.3)

#### PTFE Diaph.

- PS:10 bar DN10-125 (Art.4-Parr.3)
- PS:6 bar DN150 (Art.4-Parr.3)

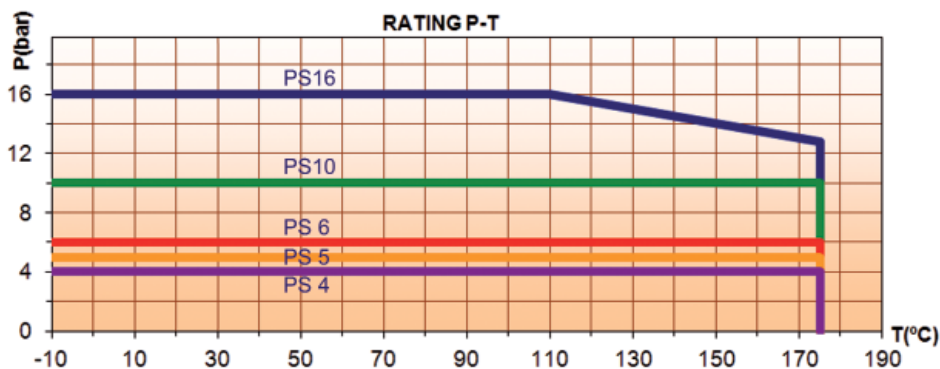
Combination of Body + Lining + Diaphragm determines the P-T limit of use of the valve

Questions referring to chemical resistance, please consult us

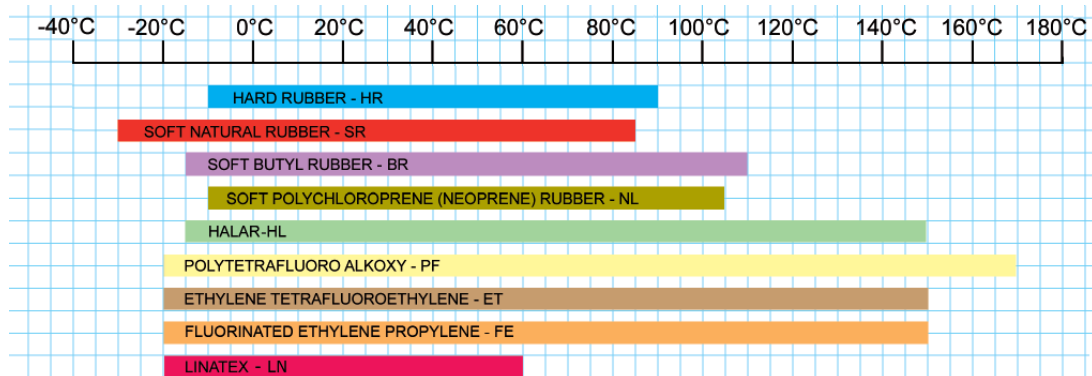
Observe also pressure/temperature limits on diagrams under

\*Classification of fluids (group 1 or 2) acc. to Directive 2014/68/EU, Article 13

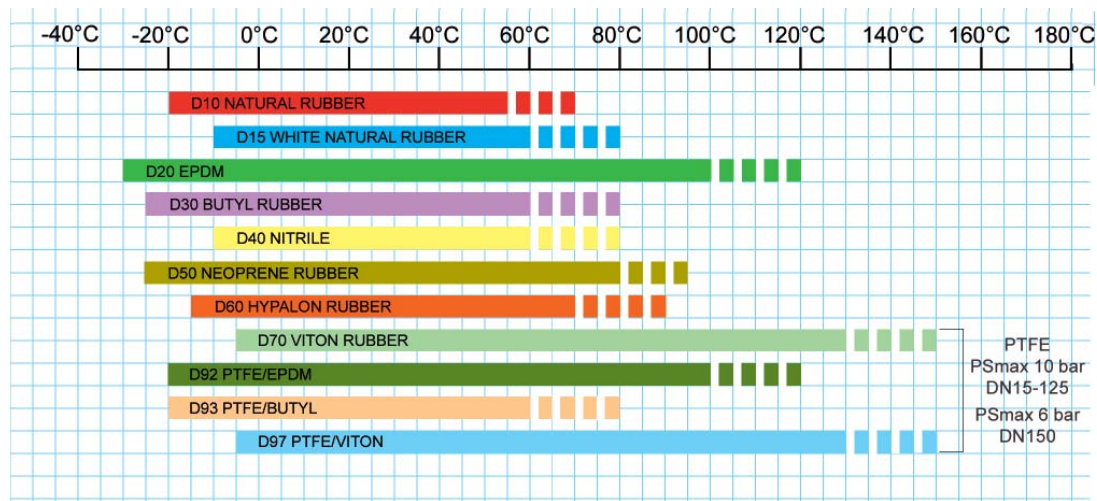
#### Bodies (Ductile iron)



#### Linings



#### Diaphragms



■ ■ ■ ■ Brief Peak Temperature (less than one hour)

Temperature Values are for neutral fluids and not plotted against any pressure parameter, the application engineer should consider that working limits are affected by the actual pressure / temperature relationship. Temperature values also depends on medium through the valve.



## Valves Flow Data

A valve flow coefficient represents the standard flow rate which flows through the valve at a given opening, referred to pre-established conditions:

\* Kv value is the volume of water at 20°C, in cubic meters per hour (m<sup>3</sup>/h), that will flow through the valve at a static pressure drop of 1 bar across the valve

\* Cv value is the volume of water at 60°F, in gallons per minute (gpm), that will flow through the valve at a static pressure drop of 1 psi across the valve

Conversion from Kv to Cv can be roughly calculated by means of the following expression:

$$Cv = Kv \times 1,17$$

Flow rate through the valve with other liquids can be calculated with the following expressions

$$Kv = q (SG / dp)^{1/2}$$

where

q = water flow (cubic meter per hour)

SG = specific gravity (1 for water)

dp = pressure drop (bar)

$$Cv = q (SG / dp)^{1/2}$$

where

q = water flow (US gallons per minute)

SG = specific gravity (1 for water)

dp = pressure drop (psi)

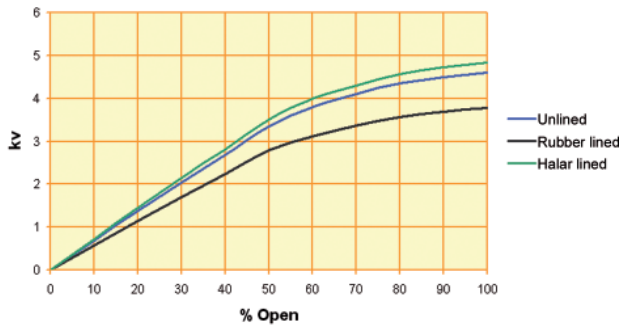
## How to use the graphs:

The flow graphs in the following sheets provide the valve flow rate across the valve body at a determine opening degree.

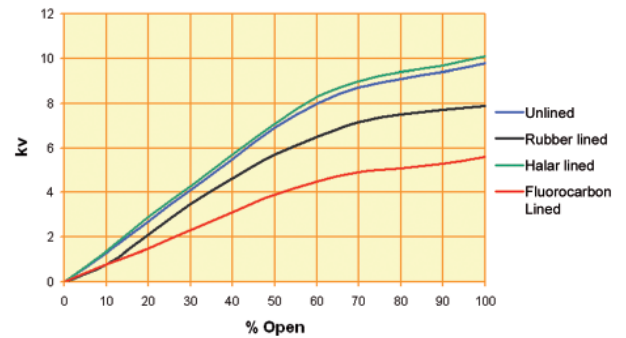
Choose the graph heading the valve Nominal Diameter which is being looked for; consider the valve inner lining features from a choice of unlined, rubber lined, ECTFE (Halar) lined or Fluoropolymer coated valve bodies and plot an intersection line upwards from the opening degree (in case of throttling) or full open to the colour representing the lining. The vertical axis will give the Kv value expressed in M<sup>3</sup>/h.

Flow Coefficients Kv (m³/h)

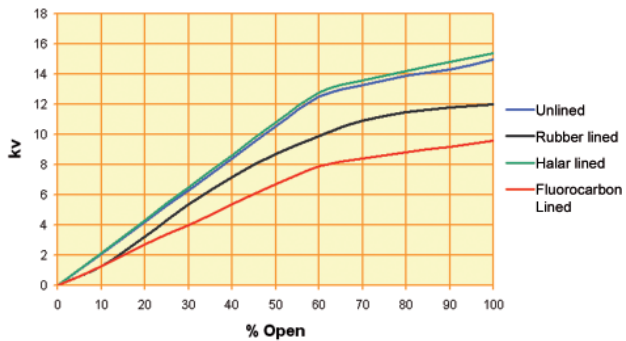
Weir Type DN15



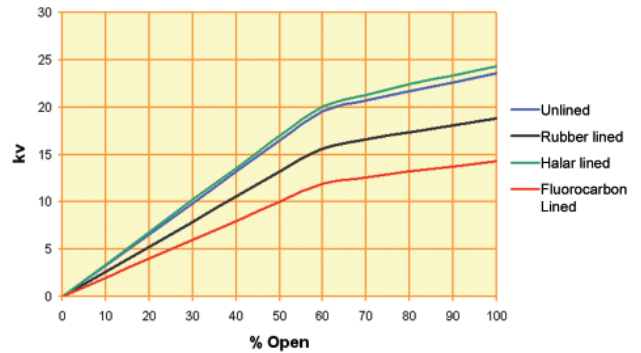
Weir Type DN20



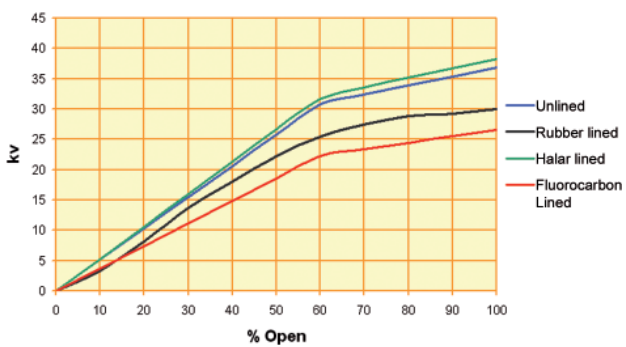
Weir Type DN25



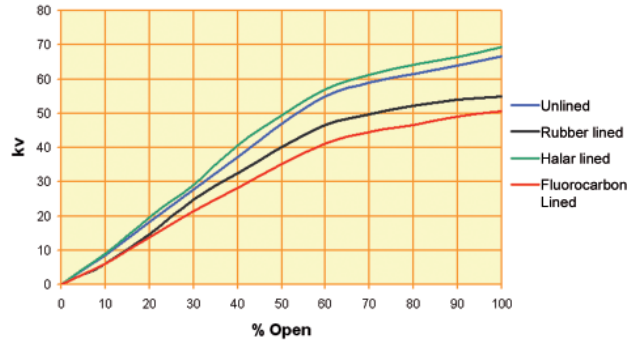
Weir Type DN32



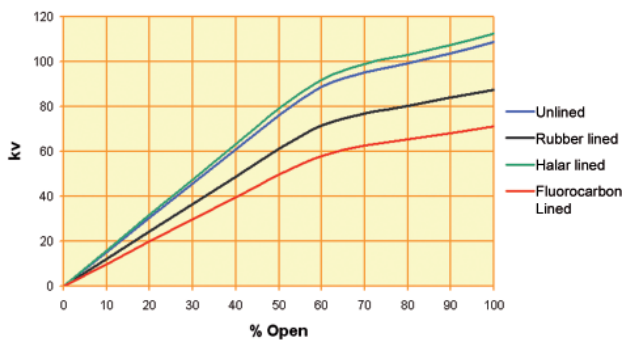
Weir Type DN40



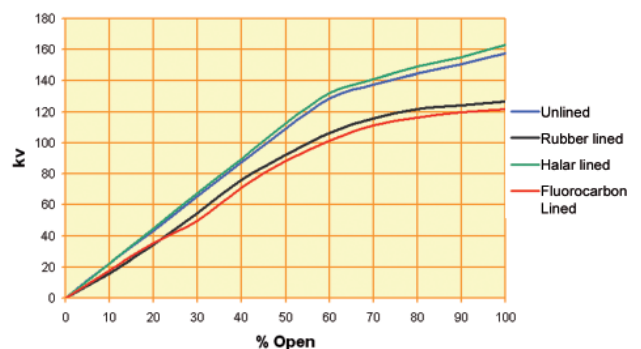
Weir Type DN50



Weir Type DN65

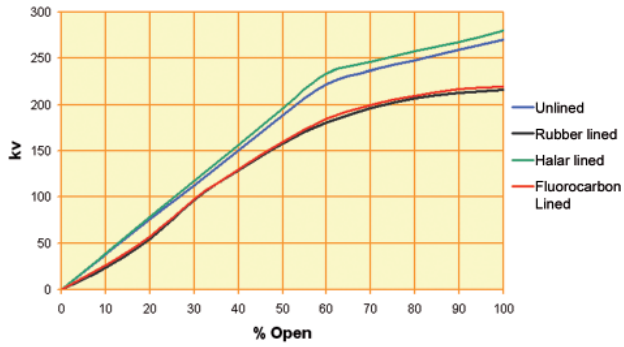


Weir Type DN80

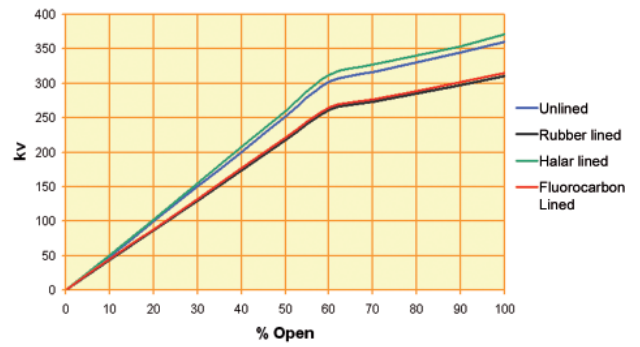


Flow Coefficients Kv (m³/h)

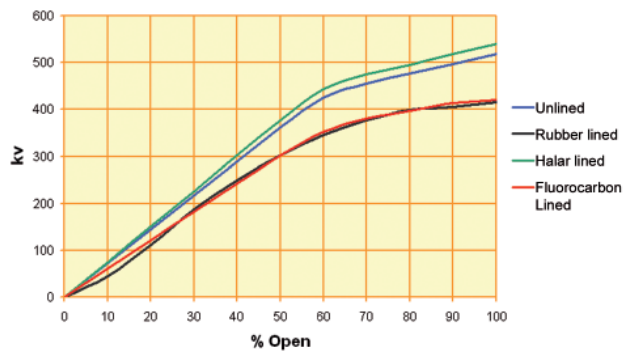
Weir Type DN100



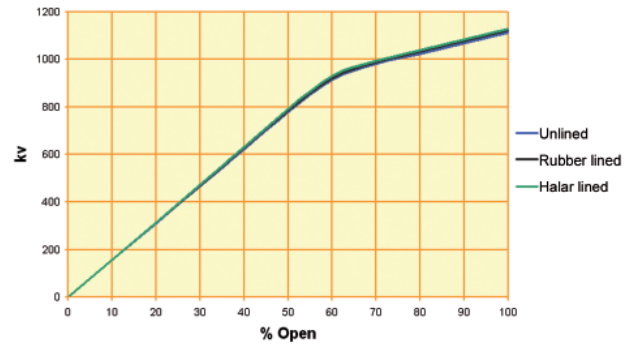
Weir Type DN125



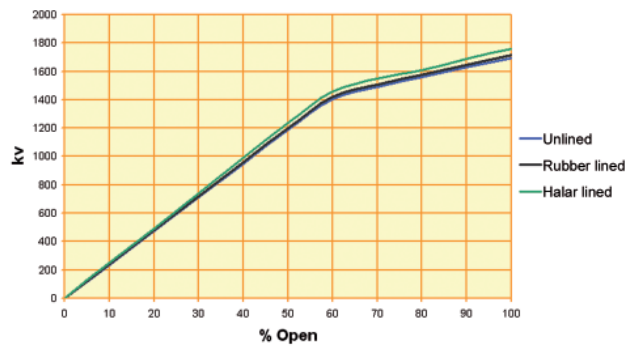
Weir Type DN150



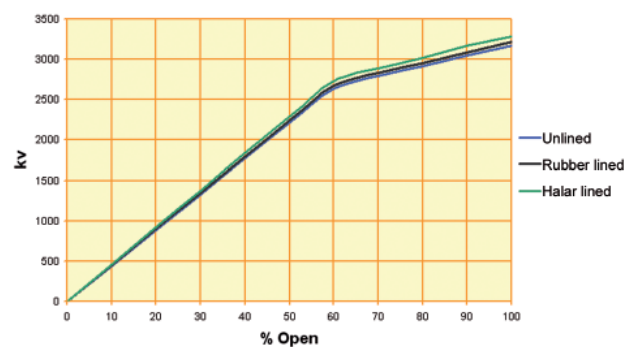
Weir Type DN200



Weir Type DN250



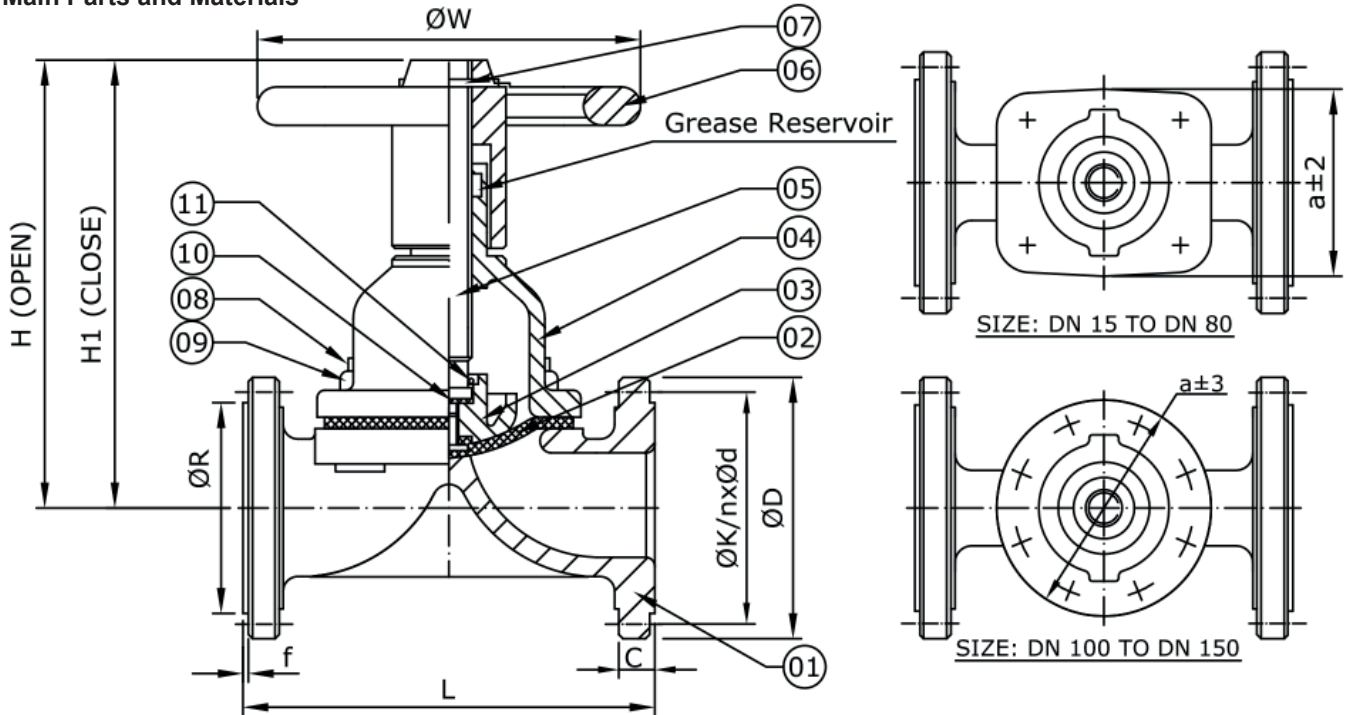
Weir Type DN300





Unlined valves with flanged ends

Main Parts and Materials



NO.	PART	MATERIAL
1	BODY	WC_ Cast iron EN-JL1040 (GG25)
		WD_ Ductile iron EN-JS1030 (GGG40)
2	DIAPHRAGM	RUBBER Natural (D10) / EPDM (D20) / Butyl (D30) / Nitrile (D40) / Neoprene (D50) / Hypalon (D60) / Viton (D70)
		PTFE + EPDM (D92) / PTFE + Butyl (D93) / PTFE + Viton (D97)
3	COMPRESSOR	Cast iron EN-JL1040 (GG25)
4	BONNET	WC_ Cast iron EN-JL1040 (GG25)
		WD_ Ductile iron EN-JS1030 (GGG40)

NO.	PART	MATERIAL
5	SPINDLE	Steel
6	HANDWHEEL	Cast iron EN-JL1040 (GG25)
7	H/W DOWEL PIN	Steel (EN42)
8	BODY STUDS	Steel
9	BODY NUTS	Steel
10	THRUST WASHER	Nylon
11	COMP. PIN	Steel (EN42)

Main Valve Parameters

	DN	15	20	25	32	40	50	65
L	EN 558 S7 (BS 5156)	108	114	127	146	159	190	216
	EN 558 S1 (DIN 3202 F1)	130	150	160	180	200	230	290
	H (open)	109	117	140	143	172	190	230
	H1 (close)	103	109	130	131	152	166	195
	a	52	67	75	88	110	127	146
	ØW	100	100	120	120	120	164	220
FLANGED ENDS TO EN PN10	ØD	95	105	115	140	150	165	185
	C	14	16	16	18	18	20	20
	ØR	45	58	68	78	88	102	122
	f	2	2	2	2	3	3	3
	nxØd	4x14	4x14	4x14	4x18	4x18	4x18	4x18
	ØK	65	75	85	100	110	125	145
FLANGED ENDS TO ASA150#*	ØD	89	98	108	117	127	152	178
	C	11,5	11,5	11,5	13	14,5	16	17,5
	ØR	35	43	51	64	73	92	105
	f	1,6	1,6	1,6	1,6	1,6	1,6	1,6
	nxØd	4x16	4x16	4x16	4x16	4x16	4x19	4x19
	ØK	60,3	69,8	79,4	88,9	98,4	120,6	139,7
Approx. Weight	EN 558 S7 (BS 5156)	2,3	3,2	4,2	6,4	7,5	12	18
	EN 558 S1 (DIN 3202 F1)	2,7	3,5	4,4	6,6	8,5	12,5	19

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

Information / restriction of technical rules need to be observed!  
Installation, Operating and Maintenance Manual can be downloaded at [www.comeval.es](http://www.comeval.es)

The engineer, designing a system or a plant, is responsible for the selection of the correct valve  
Product suitability must be verified, contact manufacturer for information

Unlined valves with flanged ends

Main Valve Parameters

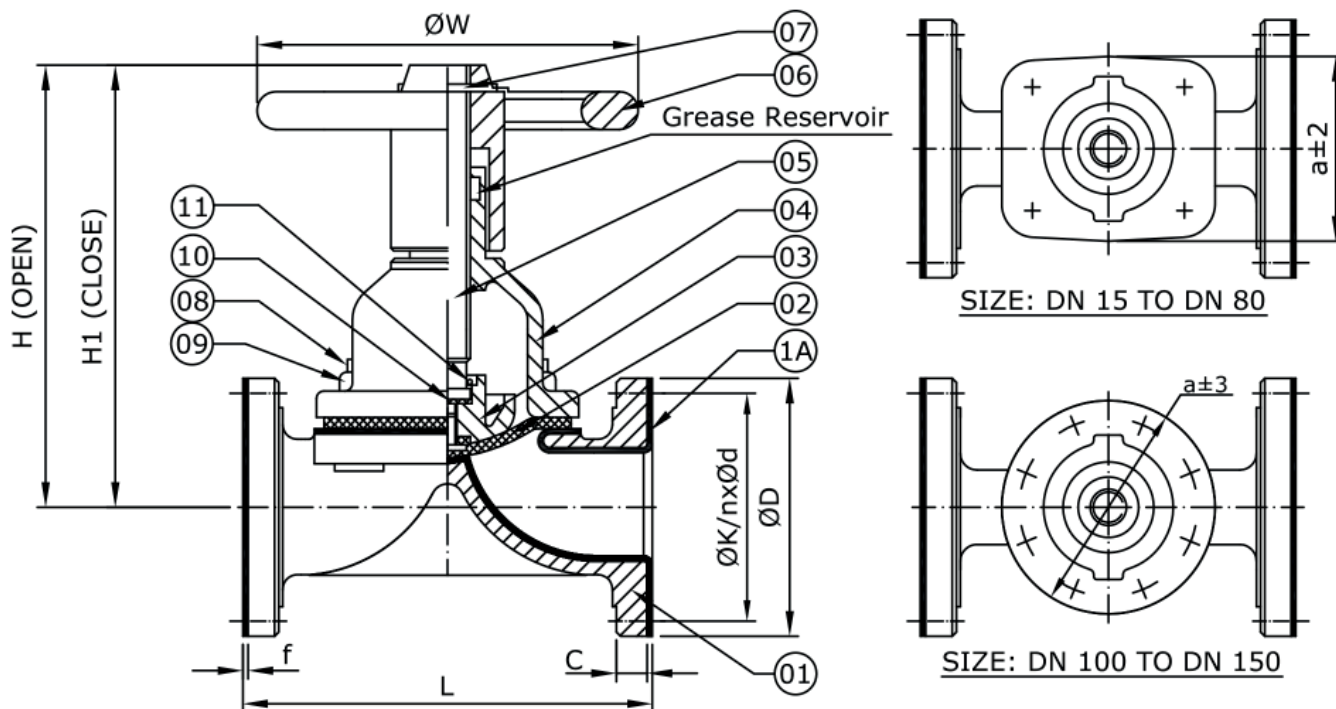
DN		80	100	125	150	200	250	300
L	EN 558 S7 (BS 5156)	254	305	356	406	521	635	749
	EN 558 S1 (DIN 3202 F1)	310	350	400	480	600	730	850
H (open)		242	326	391	468	680	802	971
H1 (close)		202	275	326	390	560	657	796
a		190	Ø230	Ø265	Ø320	Ø420	Ø502	Ø569
ØW		240	270	270	360	460	600	700
FLANGED ENDS TO EN PN10	ØD	200	220	250	285	340	395	445
	C	22	24	26	26	26	28	28
	ØR	138	158	188	212	268	320	370
	f	3	3	3	3	3	3	4
	nxØd	8x18	8x18	8x18	8x22	8x22	12x22	12x22
FLANGED ENDS TO ASA150#*	ØK	160	180	210	240	295	350	400
	ØD	191	229	254	279	343	406	483
	C	19,5	24	24	25,5	29	30,5	32
	ØR	127	157	186	216	270	324	381
	f	1,6	1,6	1,6	1,6	1,6	1,6	1,6
	nxØd	4x19	8x19	8x22	8x22	8x22	12x22	12x22
ØK	152,4	190,5	215,9	241,3	298,4	361,9	431,8	
Approx. Weight	EN 558 S7 (BS 5156)	23	34	50	69	150	220	300
	EN 558 S1 (DIN 3202 F1)	25	36	52	75	160	235	315

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

## Rubber lined valves with flanged ends

### Main Parts and Materials



NO.	PART	MATERIAL	NO.	PART	MATERIAL		
1	BODY	WC_ Cast iron EN-JL1040 (GG25)	3	COMPRESSOR	Cast iron EN-JL1040 (GG25)		
		WD_ Ductile iron EN-JS1030 (GGG40)			4	BONNET	WC_ Cast iron EN-JL1040 (GG25)
	_HR_ Hard rubber	WD_ Ductile iron EN-JS1030 (GGG40)					
	1A	LINING		_SR_ Soft rubber	5	SPINDLE	Steel
				_BR_ Butyl rubber	6	HANDWHEEL	Cast iron EN-JL1040 (GG25)
_ER_ EPDM rubber			7	H/W DOWEL PIN	Steel (EN42)		
_NL_ Neoprene rubber			8	BODY STUDS	Steel		
2	DIAPHRAGM + BACKING	RUBBER Natural (D10) / EPDM (D20) / Butyl (D30) / Nitrile (D40) / Neoprene (D50) / Hypalon (D60) / Viton (D70)	9	BODY NUTS	Steel		
		PTFE + EPDM (D92) / PTFE + Butyl (D93) / PTFE + Viton (D97)	10	THRUST WASHER	Nylon		
			11	COMP. PIN	Steel (EN42)		

### Main Valve Parameters

	DN	15	20	25	32	40	50	65
L	EN 558 S7 (BS 5156)	114	123	133	152	165	196	222
	EN 558 S1 (DIN 3202 F1)	130	150	160	180	200	230	290
	H (open)	112	120	143	145	175	193	233
	H1 (close)	106	112	133	134	155	169	198
	f	3	3	3	3	3	3	3
	a	52	67	75	88	110	127	146
	ØW	100	100	120	120	120	164	220
FLANGED ENDS TO EN PN10	ØD	95	105	115	140	150	165	185
	C	14	16	16	18	18	20	20
	nxØd	4x14	4x14	4x14	4x18	4x18	4x18	4x18
	ØK	65	75	85	100	110	125	145
FLANGED ENDS TO ASA150**	ØD	89	98	108	117	127	152	178
	C	11,5	11,5	11,5	13	14,5	16	17,5
	nxØd	4x16	4x16	4x16	4x16	4x16	4x19	4x19
	ØK	60,3	69,8	79,4	88,9	98,4	120,6	139,7
Approx. Weight	EN 558 S7 (BS 5156)	3,2	3,4	4,7	7	8,5	12	22
	EN 558 S1 (DIN 3202 F1)	3,5	3,7	5	8,2	9,5	13,3	22,5

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

Information / restriction of technical rules need to be observed!  
Installation, Operating and Maintenance Manual can be downloaded at [www.comeval.es](http://www.comeval.es)

The engineer, designing a system or a plant, is responsible for the selection of the correct valve  
Product suitability must be verified, contact manufacturer for information



## Rubber lined valves with flanged ends

### Main Valve Parameters

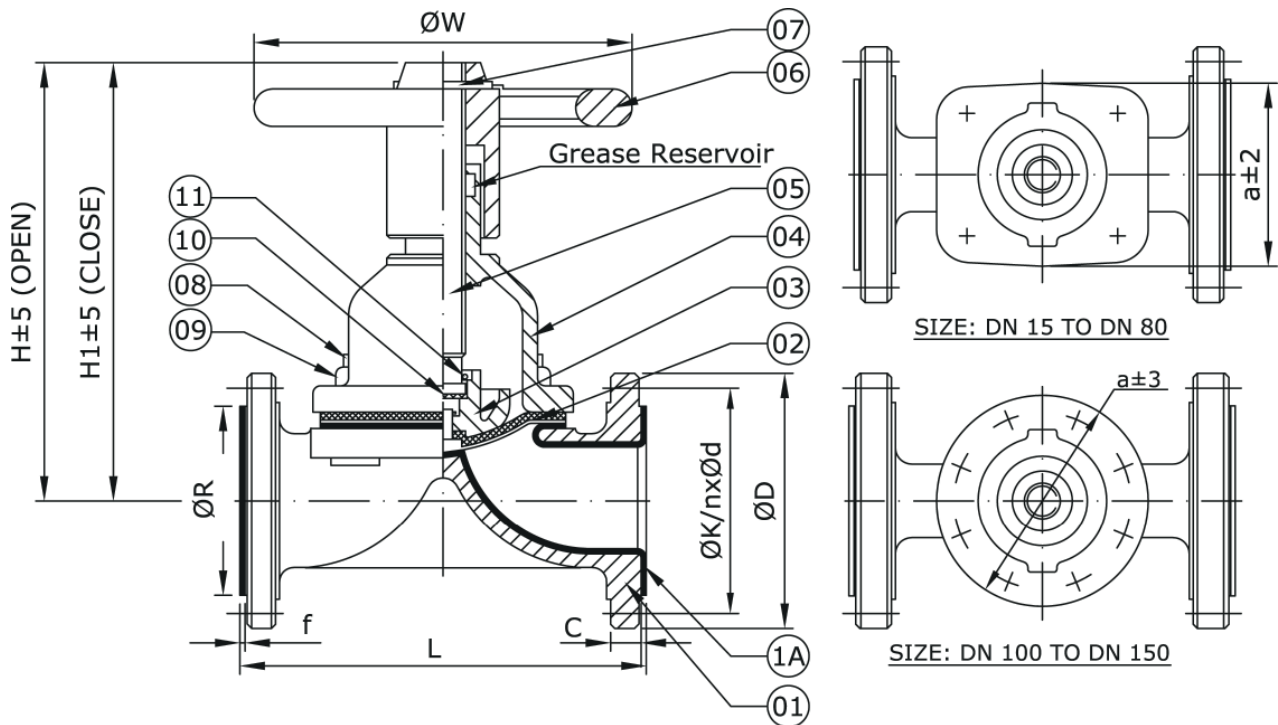
DN		80	100	125	150	200	250	300
L	EN 558 S7 (BS 5156)	260	313	364	414	529	643	757
	EN 558 S1 (DIN 3202 F1)	310	350	400	480	600	730	850
	H (open)	245	330	395	472	684	806	975
	H1 (close)	205	279	330	394	564	661	800
f		3	4	4	4	4	4	4
a		190	Ø230	Ø265	Ø320	Ø420	Ø502	Ø569
ØW		240	270	270	360	460	600	700
FLANGED ENDS TO EN PN10	ØD	200	220	250	285	340	395	445
	C	22	24	26	26	26	28	28
	nxØd	8x18	8x18	8x18	8x22	8x22	12x22	12x22
	ØK	160	180	210	240	295	350	400
FLANGED ENDS TO ASA150#*	ØD	191	229	254	279	343	406	483
	C	19,5	24	24	25,5	29	30,5	32
	nxØd	4x19	8x19	8x22	8x22	8x22	12x26	12x26
	ØK	152,4	190,5	215,9	241,3	298,4	361,9	431,8
Approx. Weight	EN 558 S7 (BS 5156)	26	38	54	76	155	227	307
	EN 558 S1 (DIN 3202 F1)	28,5	40	57	81	165	242	322

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

## Fluoropolymer lined valves with flanged ends

### Main Parts and Materials



NO.	PART	MATERIAL
1	BODY	Ductile iron EN-JS1030 (GGG40)
1A	LINING	PF PFA
		FE FEP
		ET ETFE
2	DIAPHRAGM + BACKING	RUBBER Natural (D10) / EPDM (D20) / Butyl (D30) / Nitrile (D40) / Neoprene (D50) / Hypalon (D60) / Viton (D70)
		PTFE + EPDM (D92) / PTFE + Butyl (D93) / PTFE + Viton (D97)
3	COMPRESSOR	Cast iron EN-JL1040 (GG25)

NO.	PART	MATERIAL
4	BONNET	Ductile iron EN-JS1030 (GGG40)
5	SPINDLE	Steel
6	HANDWHEEL	Cast iron EN-JL1040 (GG25)
7	H/W DOWEL PIN	Steel (EN42)
8	BODY STUDS	Stainless steel SS304
9	BODY NUTS	Stainless steel SS304
10	THRUST WASHER	Nylon
11	COMP. PIN	Steel (EN42)

### Main Valve Parameters

	DN	15	20	25	32	40
L	EN 558 S7 (BS 5156)	114	123	133	152	165
	EN 558 S1 (DIN 3202 F1)	130	150	160	180	200
	H (open)	109	120	149	162	175
	H1 (close)	103	112	139	151	155
	f	3	3	3	3	3
	a	52	67	75	88	110
	ØW	100	100	120	120	120
FLANGED ENDS TO EN PN10	ØD	95	105	115	140	150
	C	14	16	16	18	18
	ØR	45	58	68	78	88
	nxØd	4x14	4x14	4x14	4x18	4x18
	ØK	65	75	85	100	110
FLANGED ENDS TO ASA150#	ØD	89	98	108	117	127
	C	11,5	11,5	11,5	13	14,5
	ØR	35	43	51	64	73
	nxØd	4x16	4x16	4x16	4x16	4x16
	ØK	60,3	69,8	79,4	88,9	98,4
Approx. Weight	EN 558 S7 (BS 5156)	3,2	3,4	4,7	7	8,5
	EN 558 S1 (DIN 3202 F1)	3,5	3,7	5	8,2	9,5

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN Information / restriction of technical rules need to be observed! Installation, Operating and Maintenance Manual can be downloaded at [www.comeval.es](http://www.comeval.es)

Dimensions in mm subject to manufacturing tolerance / Weights in kg

The engineer, designing a system or a plant, is responsible for the selection of the correct valve Product suitability must be verified, contact manufacturer for information

## Fluoropolymer lined valves with flanged ends

### Main Valve Parameters

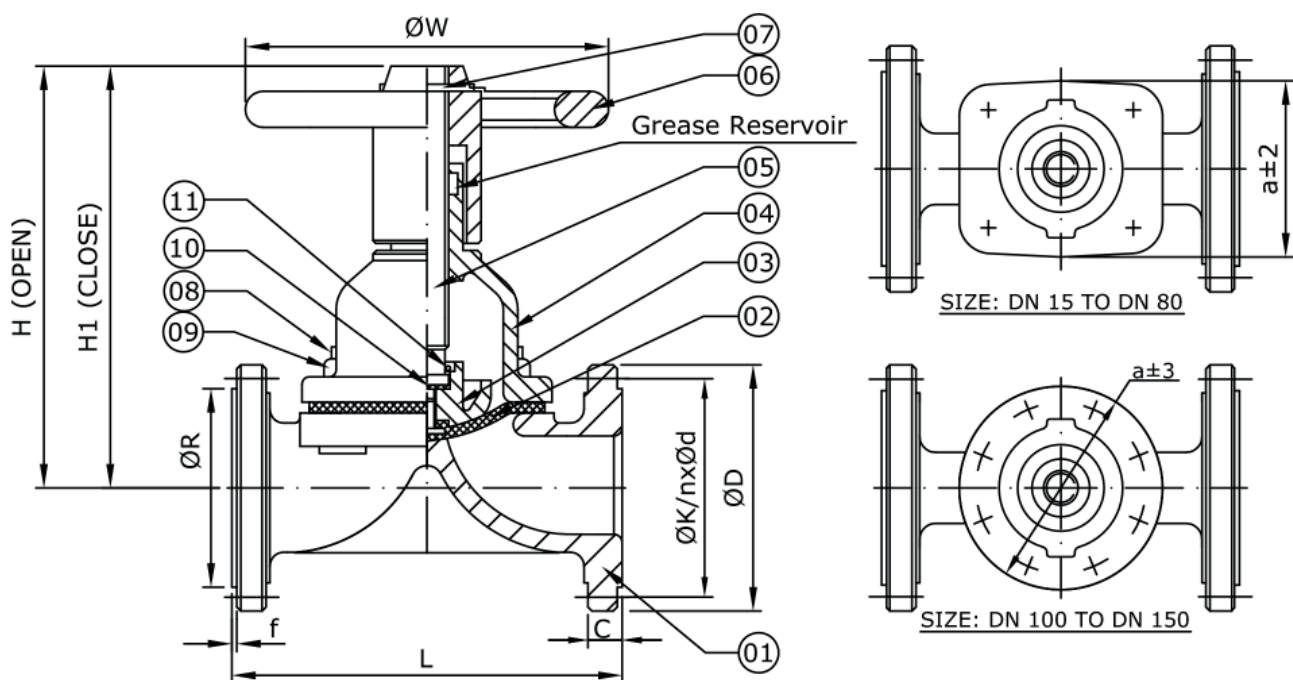
DN		50	65	80	100	125	150
L	EN 558 S7 (BS 5156)	196	222	260	313	364	414
	EN 558 S1 (DIN 3202 F1)	230	290	310	350	400	480
	H (open)	190	253	243	327	392	462
	H1 (close)	166	218	203	276	328	384
f		3	3	3	4	4	4
a		127	146	190	Ø230	Ø265	Ø320
ØW		164	220	240	270	270	360
FLANGED ENDS TO EN PN10	ØD	165	185	200	220	250	285
	C	20	20	22	24	26	26
	ØR	102	122	138	158	188	212
	nxØd	4x18	4x18	8x18	8x18	8x18	8x22
	ØK	125	145	160	180	210	240
FLANGED ENDS TO ASA150#*	ØD	152	178	191	229	254	279
	C	16	17,5	19,5	24	24	25,5
	ØR	92	105	127	157	186	216
	nxØd	4x19	4x19	4x19	8x19	8x22	8x22
	ØK	120,6	139,7	152,4	190,5	215,9	241,3
Approx. Weight	EN 558 S7 (BS 5156)	12	22	26	38	54	76
	EN 558 S1 (DIN 3202 F1)	13,3	22,5	28,5	40	57	81

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

Halar® coated valves with flanged ends

Main Parts and Materials



NO.	PART	MATERIAL
1	BODY	WCHL_ Cast iron EN-JL1040 (GG25) Halar® lined
		WDHL_ Ductile iron EN-JS1030 (GGG40)
2	DIAPHRAGM	RUBBER Natural (D10) / EPDM (D20) / Butyl (D30) / Nitrile (D40) / Neoprene (D50) / Hypalon (D60) / Viton (D70)
		PTFE + EPDM (D92) / PTFE + Butyl (D93) / PTFE + Viton (D97)
3	COMPRESSOR	Cast iron EN-JL1040 (GG25)
4	BONNET	WCHL_ Cast iron EN-JL1040 (GG25)
		WDHL_ Ductile iron EN-JS1030 (GGG40)

NO.	PART	MATERIAL
5	SPINDLE	Steel
6	HANDWHEEL	Cast iron EN-JL1040 (GG25)
7	H/W DOWEL PIN	Steel (EN42)
8	BODY STUDS	St. steel SS304
9	BODY NUTS	St. steel SS304
10	THRUST WASHER	Nylon
11	COMP. PIN	Steel (EN42)

Main Valve Parameters

	DN	15	20	25	32	40
L	EN 558 S7 (BS 5156)	108	114	127	146	159
	EN 558 S1 (DIN 3202 F1)	130	150	160	180	200
	H (open)	109	117	140	143	172
	H1 (close)	103	109	130	131	152
	a	52	67	75	88	110
	ØW	100	100	120	120	120
FLANGED ENDS TO EN PN10	ØD	95	105	115	140	150
	C	14	16	16	18	18
	ØR	45	58	68	78	88
	f	2	2	2	2	3
	nxØd	4x14	4x14	4x14	4x18	4x18
	ØK	65	75	85	100	110
FLANGED ENDS TO ASA150#*	ØD	89	98	108	117	127
	C	11,5	11,5	11,5	13	14,5
	ØR	35	43	51	64	73
	f	1,6	1,6	1,6	1,6	1,6
	nxØd	4x16	4x16	4x16	4x16	4x16
	ØK	60,3	69,8	79,4	88,9	98,4
Approx. Weight	EN 558 S7 (BS 5156)	2,3	3,2	4,2	6,4	7,5
	EN 558 S1 (DIN 3202 F1)	2,7	3,5	4,4	6,6	8,5

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN Information / restriction of technical rules need to be observed! Installation, Operating and Maintenance Manual can be downloaded at [www.comeval.es](http://www.comeval.es)

Dimensions in mm subject to manufacturing tolerance / Weights in kg

The engineer, designing a system or a plant, is responsible for the selection of the correct valve Product suitability must be verified, contact manufacturer for information



## Halar® coated valves with flanged ends

### Main Valve Parameters

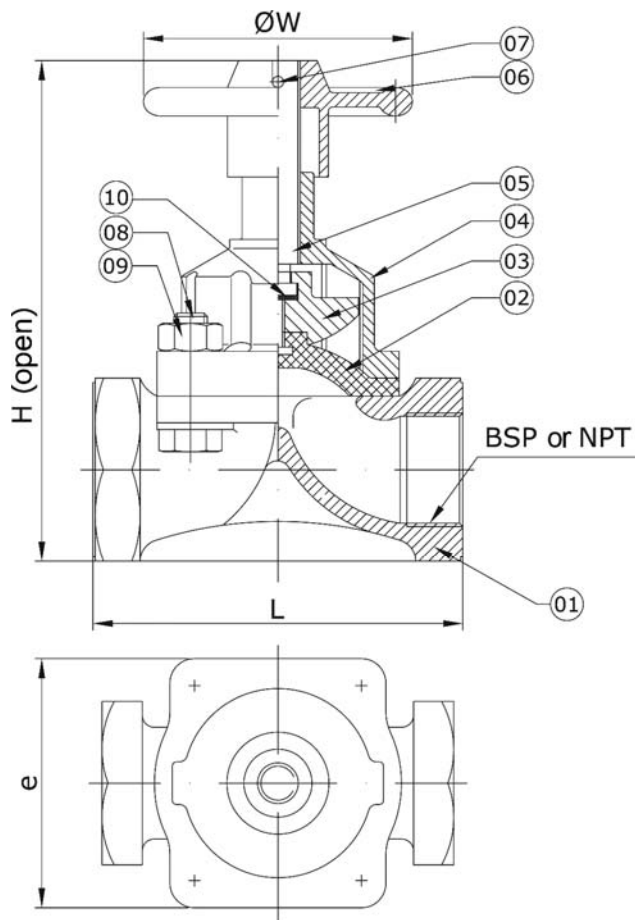
	DN	50	65	80	100	125	150
L	EN 558 S7 (BS 5156)	190	216	254	305	356	406
	EN 558 S1 (DIN 3202 F1)	230	290	310	350	400	480
	H (open)	190	230	242	326	391	468
	H1 (close)	166	195	202	275	326	390
	a	127	146	190	Ø230	Ø265	Ø320
	ØW	164	220	240	270	270	360
FLANGED ENDS TO EN PN10	ØD	165	185	200	220	250	285
	C	20	20	22	24	26	26
	ØR	102	122	138	158	188	212
	f	3	3	3	3	3	3
	nxØd	4x18	4x18	8x18	8x18	8x18	8x22
FLANGED ENDS TO ASA150#*	ØK	125	145	160	180	210	240
	ØD	152	178	191	229	254	279
	C	16	17,5	19,5	24	24	25,5
	ØR	92	105	127	157	186	216
	f	1,6	1,6	1,6	1,6	1,6	1,6
	nxØd	4x19	4x19	4x19	8x19	8x22	8x22
	ØK	120,6	139,7	152,4	190,5	215,9	241,3
Approx. Weight	EN 558 S7 (BS 5156)	12	18	23	34	50	69
	EN 558 S1 (DIN 3202 F1)	12,5	19	25	36	52	75

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

## Unlined threaded valves

### Main Parts and Materials



NO.	PART	MATERIAL
1	BODY	WC_ Cast iron EN-JL1040 (GG25)
		WD_ Ductile iron EN-JS1030 (GGG40)
		WS_ St. steel
2	DIAPHRAGM	Natural (D10) / EPDM (D20) / Butyl (D30) / Nitrile (D40) / Neoprene (D50) / Hypalon (D60) / Viton (D70)
		PTFE + EPDM (D92) / PTFE + Butyl (D93) / PTFE + Viton (D97)
3	COMPRESSOR	Cast iron EN-JL1040 (GG25)
4	BONNET	WC_ Cast iron EN-JL1040 (GG25)
		WD_ Ductile iron EN-JS1030 (GGG40)
		WS_ St. steel
5	SPINDLE	Steel
6	HANDWHEEL	Cast iron EN-JL1040 (GG25)
7	H/W DOWEL PIN	Steel (EN42)
8	BODY STUDS	Steel
9	BODY NUTS	Steel
10	THRUST WASHER	Nylon

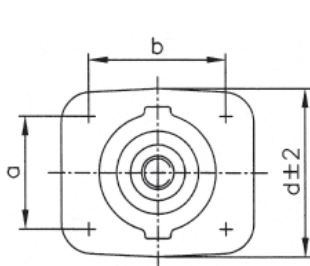
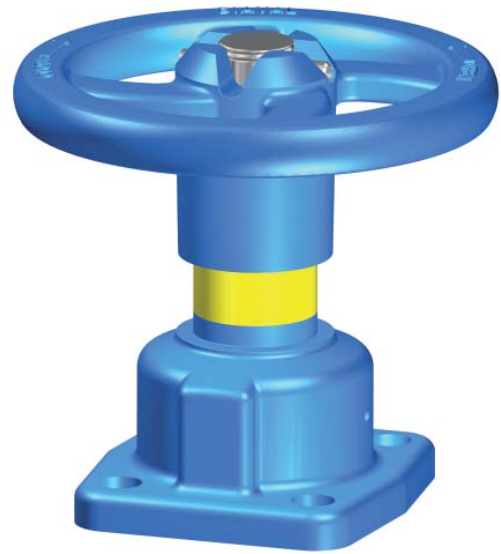
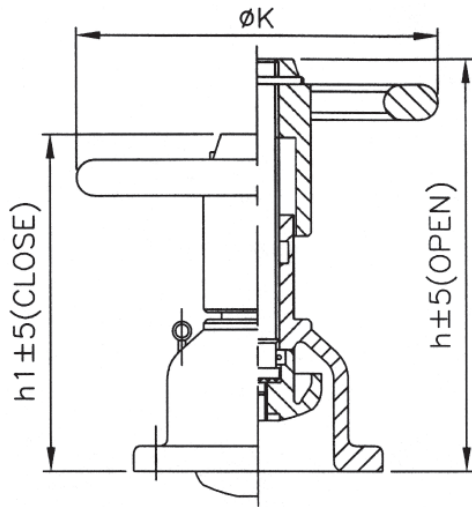
### Main Valve Parameters

DN		10	15	20	25	32	40	50	65	80
L	(1)	50	66	85	110	124	140	165	203	254
	(2)	-	108	117	127	146	159	190	-	-
H (open)	(1)	70	70	105	122	148	155	183	212	256
	(2)	-	106	117	141	152	176	196	-	-
ØW	(1)	45	75	75	85	120	120	120	165	230
	(2)	-	100	100	120	120	120	164	-	-
e		42	52	67	75	88	110	127	146	190
Approx. Weight		1,2	1,5	2	3,2	4	6	8	11	18

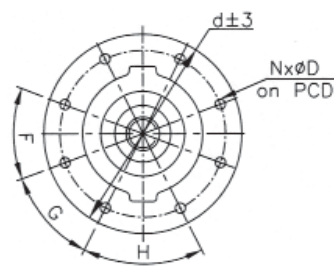
(1) Standard dimensions for cast and ductile iron valves  
 (2) Standard dimensions for st. steel valves

Dimensions in mm subject to manufacturing tolerance / Weights in kg

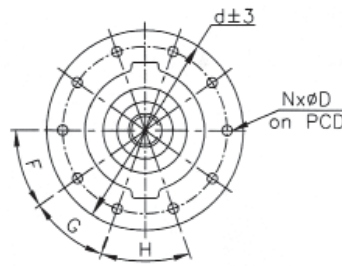
Main Bonnet Dimensions



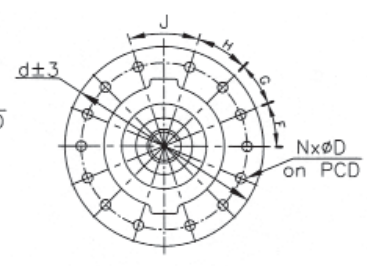
SIZE: DN 15 TO DN 80



SIZE: DN 100&125



SIZE: DN 150

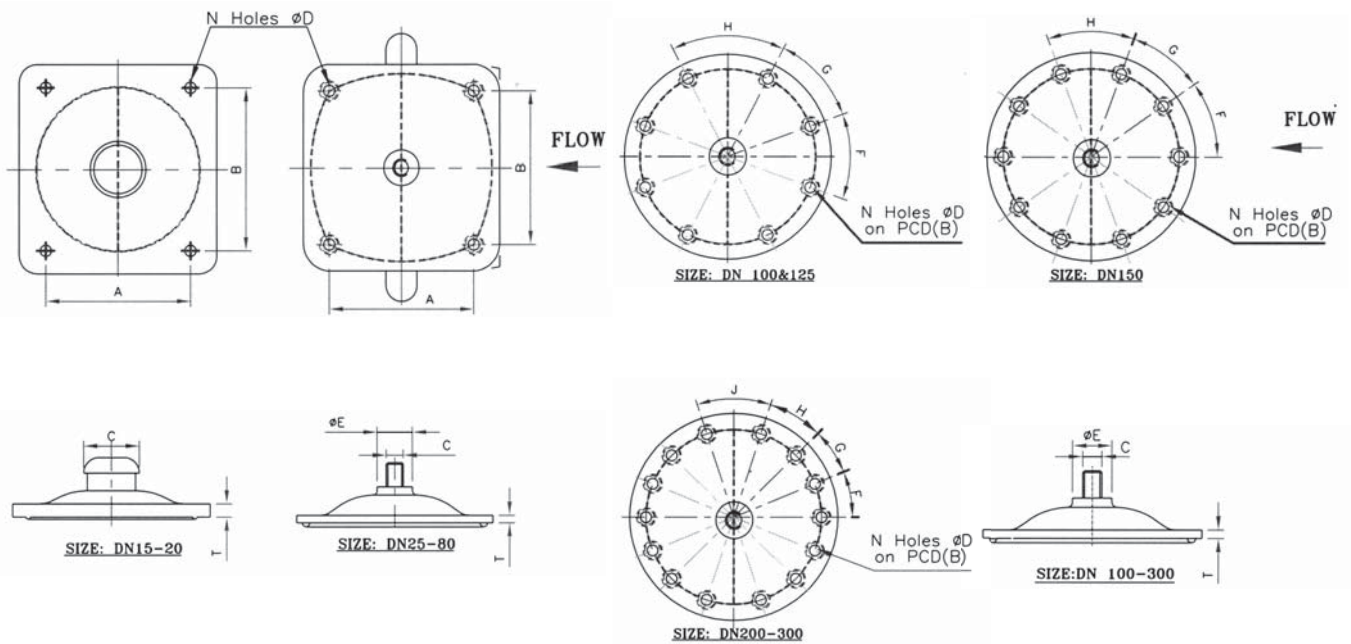


SIZE: DN 200 TO DN 300

DN	a	b ØPCD	d	h	h1	ØK	NxØD	Weight	ANGLES BETWEEN THE HOLES			
									F	G	H	J
15	33	37	52	84	78	100	4x6,5	0,9	---	---	---	---
20	40	44	67	90	82	100	4x7	1,1	---	---	---	---
25	46	54	75	115	105	120	4x9	2,0	---	---	---	---
32	60	67	88	117	106	120	4x9	2,0	---	---	---	---
40	65	70	110	133	113	120	4x11	2,5	---	---	---	---
50	78	83	127	155	131	164	4x11	4,5	---	---	---	---
65	95	102	146	194	159	220	4x13	8,5	---	---	---	---
80	114	127	190	201	161	240	4x16,5	9,5	---	---	---	---
100		Ø194	Ø230	258	207	270	8x13	14,5	40°	42°	56°	---
125		Ø222	Ø265	307	243	270	8x16,5	18,5	43°20'	43°20'	50°	---
150		Ø273	Ø320	358	280	360	10x16	27,0	35°	35°	40°	---
200		Ø381	Ø420	549	429	460	14x16	63,0	22°30'	22°30'	27°	36°
250		Ø438	Ø502	697	552	600	14x21	90,0	22°30'	22°30'	22°30'	45°
300		Ø508	Ø569	804	629	700	14x21	147,0	24°	24°	24°	36°

Dimensions in mm subject to manufacturing tolerance / Weights in kg

Main Spare Diaphragms Dimensions

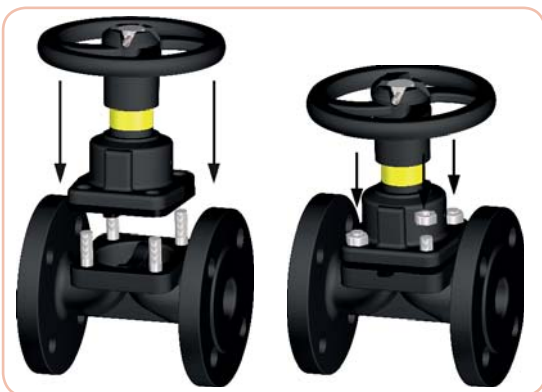


DN	DIMENSIONS OF DIAPHRAGM						ANGLES BETWEEN THE HOLES				
	A	B	C	ØE	ØD	N° HOLES	T	F	G	H	J
15	33	37	Ø12.7	---	7.0	4	6.0	---	---	---	---
20	40	44	Ø12.7	---	8.5	4	6.5	---	---	---	---
25	46	54	1/4" BSW	18.0	9.5	4	6.15	---	---	---	---
32	60	67	1/4" BSW	18.0	10.0	4	7.5	---	---	---	---
40	65	70	1/4" BSW	22.2	11.5	4	7.5	---	---	---	---
50	78	83	1/4" BSW	25.6	11.5	4	7.5	---	---	---	---
65	95	102	5/16" BSW	29.0	14.0	4	7.5	---	---	---	---
80	114	127	5/16" BSW	32.0	18.0	4	8.0	---	---	---	---
100		Ø194	5/16" BSW	37.0	16.0	8	10.0	40°	42°	56°	---
125		Ø222	3/8" BSW	44.5	17.3	8	11.5	43°20'	43°20'	50°	---
150		Ø273	3/8" BSW	50.0	18.5	10	11.5	35°	35°	40°	---
200		Ø381	7/8" BSW	63.0	20.0	14	10.0	22°30'	22°30'	27°	36°
250		Ø438	7/8" BSW	76.0	22.0	14	14.0	22°30'	22°30'	22°30'	45°
300		Ø508	7/8" BSW	89.0	25.0	14	15.5	24°	24°	24°	36°

Dimensions in mm subject to manufacturing tolerance



Brief Guide of Instructions: Replacing an old diaphragm



## Weir Type Diaphragm Valves with Pneumatic Actuator

### Main Features

- For DIAVAL manufactured valves in weir and straight through type, with rubber diaphragms and PTFE / rubber backed diaphragms.
- Rugged & compact design, long life span at the plant. Favourable size / performance ratio.
- Rolling diaphragm design, allowing long cycle operations.
- Single acting (Direct and reverse actions).
- High quality spring, large thrust.
- Visual position indicator for open / close.
- Burnished stem protected by bellow.
- Maintenance-free O-ring sealing with flexible guiding.
- Possibility of assembly of additional devices / accessories.
- Operating ambient temperatures -40°C to +100°C.
- Fully traceable at the manufacture facility, identified by aluminum riveted plates.
- Optional top mounted emergency hand wheels for manual operation.
- Compliant with Machinery Directive 2006/42/EC



### Working Principle

Direct Acting actuator is designed to operate from a normally open position. Air pressure on the top side of actuator diaphragm closes the valve and the spring opens the valve when the air is released from the actuator.

Reverse Acting actuator is designed to operate from a normally closed position. Air pressure on the bottom side of the actuator diaphragm opens the valve. When air is released spring closes the valve.

### Control Accesories

There is a number of control accessories available to be assembled on to the ARI actuators. These accessories are comprehensive of limit switches (mechanical or inductive type), proximity sensors, solenoid valves, air speed regulators, positioners, air gauge sets... and many other customized solutions.

Control accessories may be specified and provided by the customer or by DIAVAL, however, only those accessories installed and tested at any DIAVAL facilities are covered by a performance guarantee.

### Tests - After Market

All actuators are tested after assembly and before dispatch. Tests are comprehensive of visual and functional tests as per EN-12266-1/DIN 3230 P.3 - EN.10.204/2.2

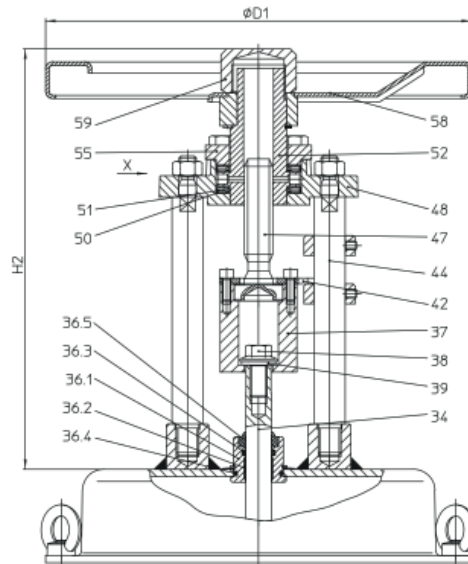
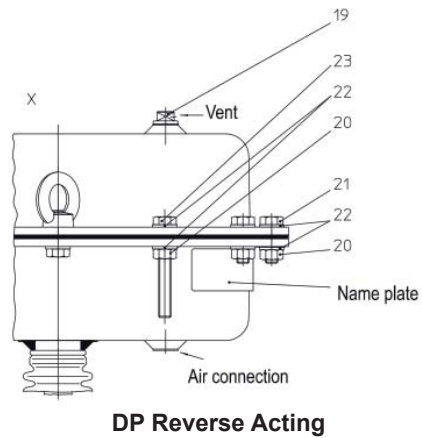
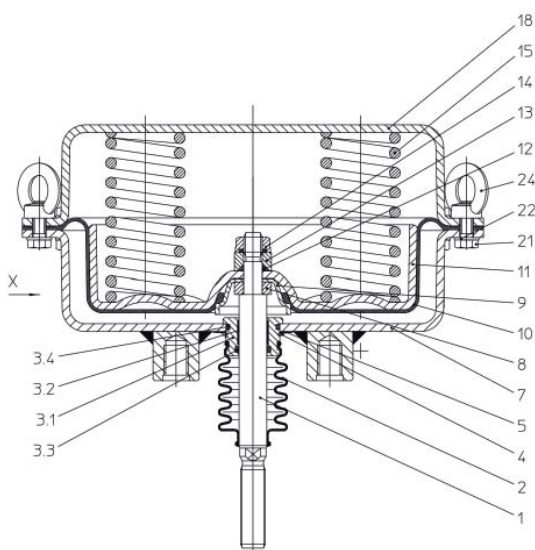
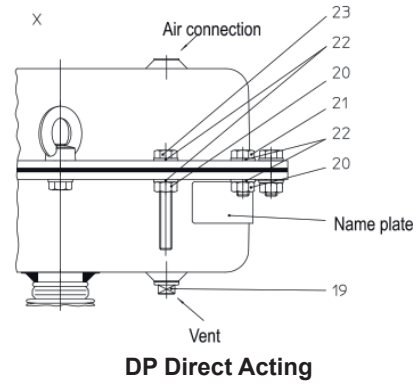
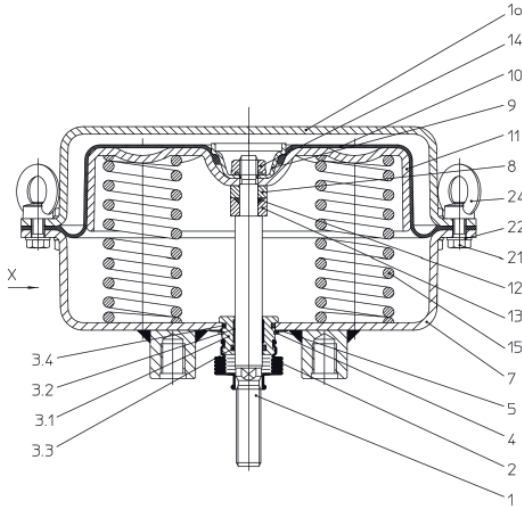
Actuators can be serviced at DIAVAL facilities where a stock of common spares is permanently available. Off site service engineers are available on demand and against usual service rates.

### Operating and Maintenance Instructions

Please ensure that the DIAVAL Operating and Maintenance Instructions are provided by your supplier along with the valves. Do not try to start maintenance without having read and understood the Essential Safety Guidelines. Please consult us for further information.

### Standard Materials

Only the best quality materials are incorporated to the DIAVAL manufacturing process and are subject to a strict quality control by our DIAVAL engineers at the assembly plant.



**Top Handwheel (Optional)**

### Standard Materials

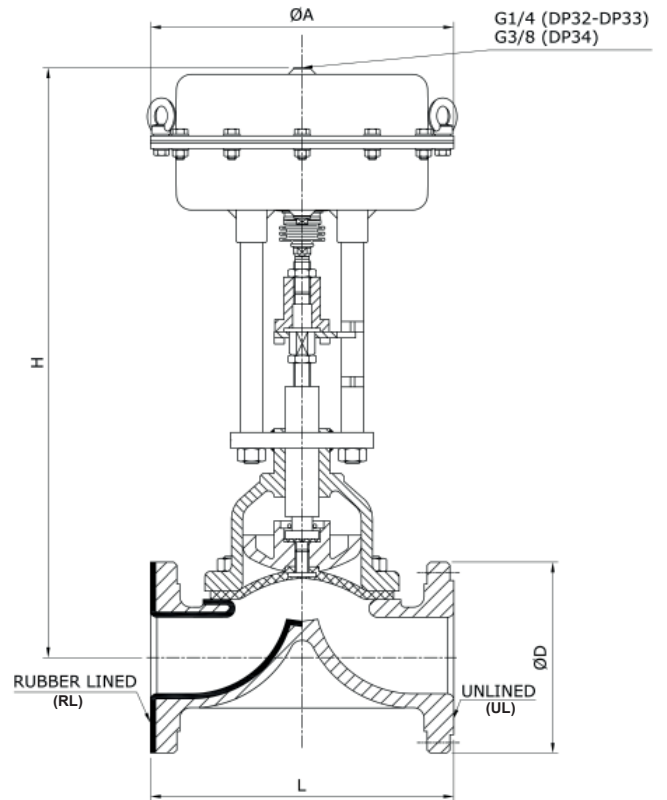
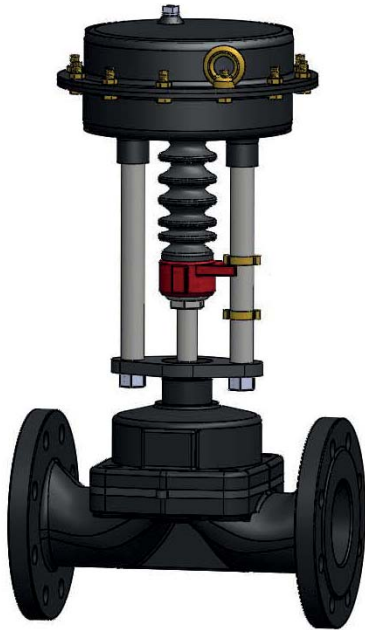
Pos.	Description	Material
1	Stem	X20Cr13+QT, 1.4021+QT
2	Bellow seal	EPDM50 or 42CR
3	Stem guiding *	X20Cr13+QT, 1.4021+QT
3.1	Stem guiding *	X20Cr13+QT, 1.4021+QT
3.2	Guiding band *	PTFE + 25%C
3.3	O-ring (stem) *	NBR
3.4	O-ring (guiding) *	NBR
3.5	Scraper *	NBR
4	Retaining ring	FSt - A3B
5	Spring plate	FSt (Fe/Zn12B)
6 / 7	Lower diaphragm casing (DP32-34Tri)	DD13+QT, 1.0335+QT (powder coated)
7	Lower diaphragm casing (DP35)	P265GH, 1.0425 / S235JR, 1.0037
8	Bushing	X20Cr13+QT, 1.4021+QT
9	Diaphragm lange	DD13+QT, 1.0335+QT (Fe/Zn12B) or X20Cr13+QT,
10	Rolling diaphragm *	1.4021+QT
11	Diaphragm plate (DP32-34Tri)	NBR + webbing
11	Diaphragm plate (DP35) *	DD13+QT, 1.0335+QT (Fe/Zn12B)
12	O-ring	St 52-3 G 03 g, 1.0570 G 03 g
13	Bushing	NBR
14	Flange nut	X20Cr13+QT, 1.4021+QT
15	Compression spring *	8 - A4G
16	Spring centring	FDSiCr
17	Spring centring	DC01, 1.0330 (Fe/Zn12B)
18	Upper diaphragm casing (DP32-34Tri)	St 52-3 G 03 g, 1.0570 G 03 g
18	Upper diaphragm casing (DP35)	DD13+QT, 1.0335+QT (powder coated)
19	Screwed cap	P265GH, 1.0425 / S235JR, 1.0037
20	Hexagon nut (DP32-34Tri) 1)	Polyäthylen
20	Hexagon nut (DP35) 1)	8 - A4G

Pos.	Description	Material
21	Hexagon screw (DP32-34Tri) 1)	C35E, 1.1181
21	Hexagon screw (DP35) 1)	8.8 - A4G
22	Washer	8.8 - A4G
23	Hexagon screw (DP32-34Tri) 1)	St - A4G
23	Hexagon screw (DP35) 1)	8.8 - A4G
24	Eye nut 1)	10.9 - A2G
34	Stem extension	8-A4G
36.1	Bellow seal *	X20Cr13+QT, 1.4021+QT
36.2	Guiding band *	X14CrMoS17+QT, 1.4104+QT
36.3	O-ring *	PTFE +25%C
36.4	O-ring *	NBR
36.5	Scraper *	NBR
37	Bushing	NBR
38	Hexagon screw	X20Cr13+QT, 1.4021+QT
39	Washer	8.8 - A4G
42	Torsion lock	X20Cr13+QT, 1.4021+QT
44 1	Distance column	8.8 - A4G
47	Stem	1SMn30+C, 1.0715+C (Fe/Zn12B)
48	Traverse	X20Cr13+QT, 1.4021+QT
50	Axial-washer	EN-JS1049, EN-GJS-400-18U-LT (Fe/Zn12B)
51	Axial-dial ring	St
52	Threaded bush	St
53	Catch pin	CuZn35Ni3Mn2Al-Pb-R490, CW710RR490
54	Lubricating nipple	St, Cu
55	Covering for traverse	5.8 - A4G
58	Handwheel	S235JR, 1.0037 (Fe/Zn12B)
59	Safety cap	Fe P01, 1.0330 (epoxy coating)



Weir Type Diaphragm Valves with Direct Acting Pneumatic Actuator- Rubber Diaphragm

Main Dimensions



DN	L			H	ØD	ØA
	EN 558 S1 (DIN 3202 F1)		EN 558 S7 (BS 5156)			
	UL/RL	UL	RL			
15	130	108	114	415	95	250
20	150	117	123	427	105	250
25	160	127	133	434	115	250
32	180	146	152	444	140	250
40	200	159	165	476	150	250
50	230	190	196	471	165	250
65	290	216	222	503	185	250
80	310	254	260	520	200	250
100	350	305	313	736	220	405
125	400	356	364	786	250	405
150	480	406	414	856	285	405

Dimensions in mm subject to manufacturing tolerance.

Dimensions are based on the serialized manufacture and should be taken as preliminary.

Please, bear in mind the service clearance area when planning a skid or when installation happens in a very tight area.

Actuation Selection Chart

Direct Acting (actuator opens at air failure, springs to open/air to close).

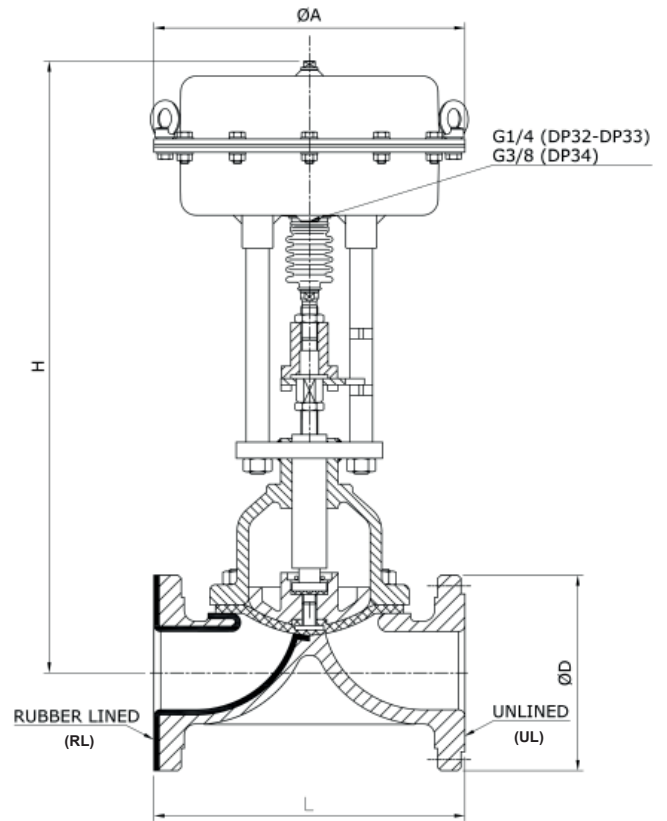
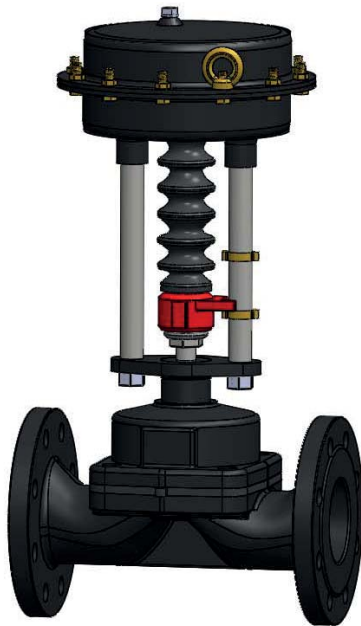
Valve Size	Actuator Type	Max. Closing Pressure 100% ΔP (bar)	Max. Closing Pressure 0% ΔP (bar)	Air Supply to Close (bar)
DN15	DP32021020NA	10	10	1,5-2,0
DN20	DP32021020NA	10	10	1,5-2,0
DN25	DP32021020NA	10	10	2,0-2,5
DN32	DP32021020NA	10	10	2,0-2,5
DN40	DP32021020NA	10	10	2,0-2,5
DN50	DP32021020NA	10	10	2,0-2,5
DN65	DP32021020NA	8	8	3,0-3,5
DN80	DP32021030NA	8	8	3,5-4,0
DN100	DP34021050NA	8	8	2,5-3,5
DN125	DP34021050NA	8	8	3,5-4,5
DN150	DP34021065NA	6	6	4,0-5,0

Information / restriction of technical rules need to be observed! Installation, Operating and Maintenance Manual can be downloaded at [www.comeval.es](http://www.comeval.es)

The engineer, designing a system or a plant, is responsible for the selection of the correct valve Product suitability must be verified, contact manufacturer for information

Weir Type Diaphragm Valves with Reverse Acting Pneumatic Actuator- Rubber Diaphragm

Main Dimensions



DN	L			H	ØD	ØA
	EN 558 S1 (DIN 3202 F1)		EN 558 S7 (BS 5156)			
	UL/RL	UL	RL			
15	130	108	114	415	95	250
20	150	117	123	427	105	250
25	160	127	133	434	115	250
32	180	146	152	444	140	250
40	200	159	165	476	150	250
50	230	190	196	471	165	250
65	290	216	222	503	185	250
80	310	254	260	520	200	250
100	350	305	313	736	220	405
125	400	356	364	786	250	405
150	480	406	414	856	285	405

Dimensions in mm subject to manufacturing tolerance.

Dimensions are based on the serialized manufacture and should be taken as preliminary.

Please, bear in mind the service clearance area when planning a skid or when installation happens in a very tight area.

Actuation Selection Chart

Reverse Acting (actuator closes at air failure, air to open/spring to close).

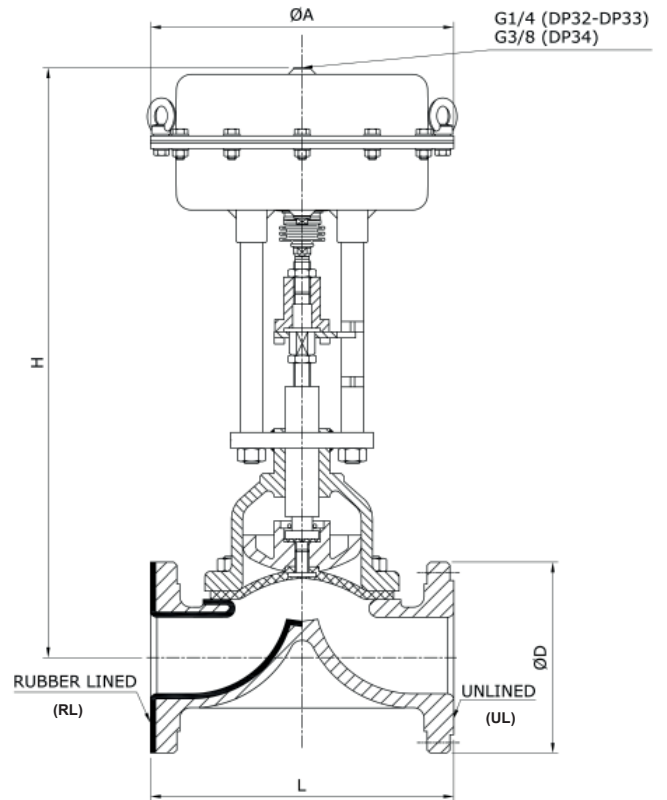
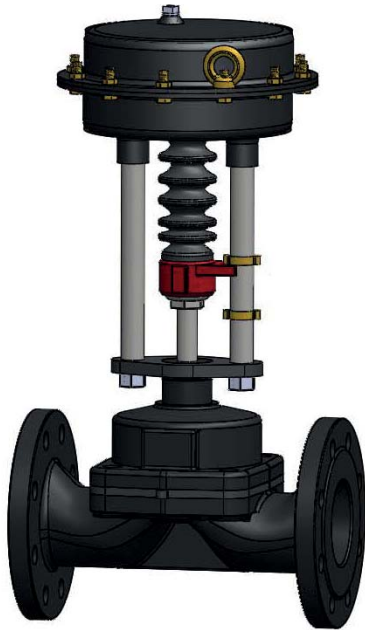
Valve Size	Actuator Type	Max. Closing Pressure 100% ΔP (bar)	Max. Closing Pressure 0% ΔP (bar)	Air Supply to Open (bar)
DN15	DP32041220NC	10	9	2,0-2,5
DN20	DP32041220NC	10	9	2,0-2,5
DN25	DP32082420NC	10	9	3,0-3,5
DN32	DP32082420NC	10	9	3,0-3,5
DN40	DP32082420NC	9	7	3,0-3,5
DN50	DP32082420NC	8	6	3,0-3,5
DN65	DP32152520NC	8	6	3,0-3,5
DN80	DP33153030NC	8	6	4,0-4,5
DN100	DP34153050NC	8	6	4,0-4,5
DN125	DP34204050NC	7	4	5,0-5,5
DN150	DP34204065NC	6	3	5,0-5,5

Information / restriction of technical rules need to be observed! Installation, Operating and Maintenance Manual can be downloaded at [www.comeval.es](http://www.comeval.es)

The engineer, designing a system or a plant, is responsible for the selection of the correct valve Product suitability must be verified, contact manufacturer for information

Weir Type Diaphragm Valves with Direct Acting Pneumatic Actuator- PTFE Diaphragm

Main Dimensions



DN	L			H	ØD	ØA
	EN 558 S1 (DIN 3202 F1)		EN 558 S7 (BS 5156)			
	UL/RL	UL	RL			
15	130	108	114	415	95	250
20	150	117	123	427	105	250
25	160	127	133	434	115	250
32	180	146	152	444	140	250
40	200	159	165	476	150	250
50	230	190	196	471	165	250
65	290	216	222	503	185	250
80	310	254	260	520	200	250
100	350	305	313	736	220	405
125	400	356	364	786	250	405
150	480	406	414	856	285	405

Dimensions in mm subject to manufacturing tolerance.

Dimensions are based on the serialized manufacture and should be taken as preliminary.

Please, bear in mind the service clearance area when planning a skid or when installation happens in a very tight area.

Actuation Selection Chart

Direct Acting (actuator opens at air failure, springs to open/air to close).

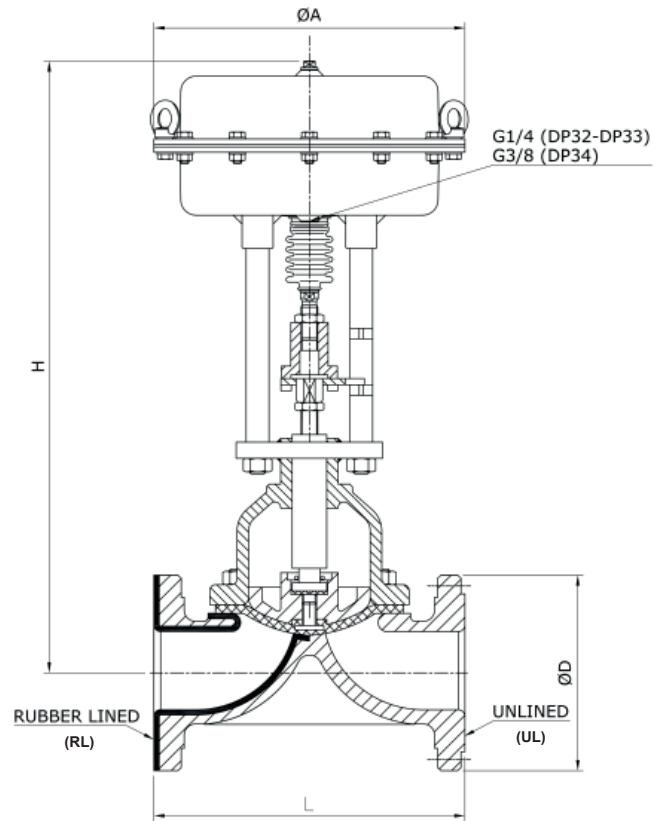
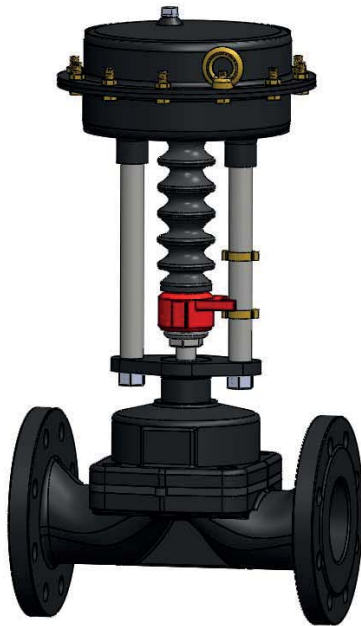
Valve Size	Actuator Type	Max. Closing Pressure 100% ΔP (bar)	Max. Closing Pressure 0% ΔP (bar)	Air Supply to Close (bar)
DN15	DP32021020NA	6	6	2,0-2,5
DN20	DP32021020NA	6	6	2,0-2,5
DN25	DP32021020NA	6	6	2,5-3,0
DN32	DP32021020NA	6	6	2,5-3,0
DN40	DP32021020NA	6	6	3,0-3,5
DN50	DP32021020NA	6	6	3,5-4,0
DN65	DP32021020NA	6	5	4,5-5,0
DN80	DP32021030NA	6	4	5,0-5,5
DN100	DP34021050NA	6	4	4,5-5,0
DN125	DP34021065NA	6	4	4,5-5,0
DN150	DP34021065NA	5	3	5,0-5,5

Information / restriction of technical rules need to be observed! Installation, Operating and Maintenance Manual can be downloaded at [www.comeval.es](http://www.comeval.es)

The engineer, designing a system or a plant, is responsible for the selection of the correct valve Product suitability must be verified, contact manufacturer for information

Weir Type Diaphragm Valves with Reverse Acting Pneumatic Actuator- PTFE Diaphragm

Main Dimensions



DN	L			H	ØD	ØA
	EN 558 S1 (DIN 3202 F1)		EN 558 S7 (BS 5156)			
	UL/RL	UL	RL			
15	130	108	114	415	95	250
20	150	117	123	427	105	250
25	160	127	133	434	115	250
32	180	146	152	444	140	250
40	200	159	165	476	150	250
50	230	190	196	471	165	250
65	290	216	222	503	185	250
80	310	254	260	520	200	250
100	350	305	313	736	220	405
125	400	356	364	786	250	405
150	480	406	414	856	285	405

Dimensions in mm subject to manufacturing tolerance.

Dimensions are based on the serialized manufacture and should be taken as preliminary.

Please, bear in mind the service clearance area when planning a skid or when installation happens in a very tight area.

Actuation Selection Chart

Reverse Acting (actuator closes at air failure, air to open/spring to close).

Valve Size	Actuator Type	Max. Closing Pressure 100% ΔP (bar)	Max. Closing Pressure 0% ΔP (bar)	Air Supply to Open (bar)
DN15	DP32041220NC	6	6	2,0-2,5
DN20	DP32041220NC	6	6	2,0-2,5
DN25	DP32082420NC	6	6	3,0-3,5
DN32	DP32082420NC	6	6	3,0-3,5
DN40	DP32082420NC	6	4	3,0-3,5
DN50	DP32082420NC	6	4	3,5-4,0
DN65	DP32152520NC	6	4	4,0-4,5
DN80	DP33153030NC	6	4	4,5-5,0
DN100	DP34153050NC	6	4	5,0-5,5
DN125	DP34204050NC	6	4	5,0-5,5
DN150	DP34204065NC	5	3	5,0-5,5

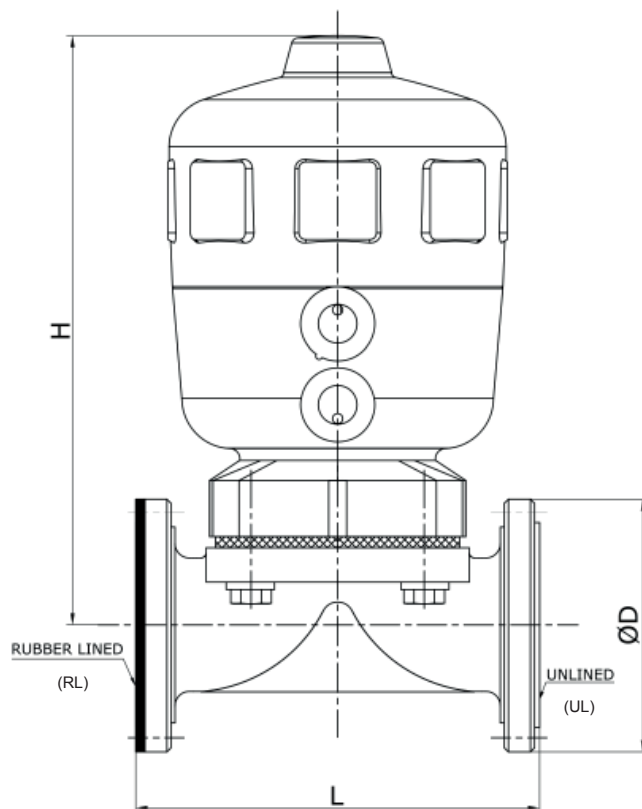
Information / restriction of technical rules need to be observed! Installation, Operating and Maintenance Manual can be downloaded at [www.comeval.es](http://www.comeval.es)

The engineer, designing a system or a plant, is responsible for the selection of the correct valve Product suitability must be verified, contact manufacturer for information



## Piston Pneumatic Actuator

### Main Dimensions



Actuator shell material:  
PA Polyamide (PPS Polyphenylene sulfide on request)

DN	L		H	ØD
	EN 558 S1 (DIN 3202 F1) UL/RL	EN 558 S7 (BS 5156) UL RL		
15	130	108 114	155	95
20	150	117 123	175	105
25	160	127 133	250	115
32	180	146 152	250	140
40	200	159 165	250	150
50	230	190 196	250	165
65	290	216 222	265	185

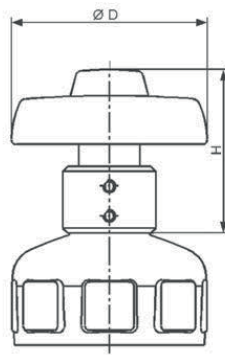
Dimensions in mm subject to manufacturing tolerance.

Dimensions are based on the serialized manufacture and should be taken as preliminary.

Please, bear in mind the service clearance area when planning a skid or when installation happens in a very tight area.

## Accessories

### Manual Override



VALVE SIZE	ØD	H
DN 15-25	108	114
DN 32-50	117	123

Other accessories: position indicator, positioner, proximity switches, stroke limitation, NAMUR-adapter for solenoid valves.



**Actuation Selection Chart - Single Acting - Rubber Diaphragm**

Reverse Acting (actuator closes at air failure, air to open/spring to close).

Valve Size	Actuator Type	Max. Closing Pressure 100% ΔP (bar)	Max. Closing Pressure 0% ΔP (bar)	Air Supply to Open (bar)
DN15	BNC142492N015	8	7	5
DN20	BNC142494Q020	10	8	5.5
DN25	BNC142497K025	10	8.5	5.5
DN32	BNC142499V032	10	9	5.5
DN40	BNC142500A040	6	5	5.5
DN50	BNC142502Y050	4	3.5	5.5
DN65	BNC142730F065	7	4.5	5.5

Direct Acting (actuator opens at air failure, springs to open/air to close).

Valve Size	Actuator Type	Max. Closing Pressure (bar)	Air Supply to Close (bar)
DN15	BNA1692680015	10	4,5
DN20	BNA1437710020	10	4,5
DN25	BNA1437740025	10	5,5
DN32	BNA1437750032	10	5
DN40	BNA1437760040	10	6,5
DN50	BNA1437780050	5,5 8	6 8
DN65	BNA1650240065	8 10	6 7

**Actuation Selection Chart - Double Acting - Rubber Diaphragm**

Valve Size	Actuator Type	Max. Closing Pressure (bar)	Air Supply to Close (bar)
DN15	BDE1414350015	10	3,5
DN20	BDE1414370020	10	2,5
DN25	BDE1414390025	10	2,5
DN40	BDE1465920040	10	4,5
DN50	BDE1414460050	6 8	6 8
DN65	BDE1618540065	8 10	6 7

## Material Selection

Information contained in the Material Selection Chart is a combination of theoretical and application data, and should be taken as a guide only. Pressure-temperature rating, material compatibility and other parameters also to be considered for rubber selection. Please consult our Technical Department for a particular application. With constant material / process changes, Diaval® cannot accept responsibility for diaphragm and/or body material performance resulting from such changes.

Fluid	Body Material		Diaphragm		Recommendations
Abrasive slurry - non acidic	Soft rubber lined	Ductile iron	D10		
Abrasive slurry - acidic	Butyl lined		D20 or D30		
Acetic acid up to 50%	Halar® lined	FEP lined	D20 or D30		
Acetic acid over 50%	Halar® lined	FEP lined	D20 or D30		
Acetic acid (glacial)	Halar® lined	FEP lined	D20 or D30		Sealed bonnet
Acetoacetic ester	Halar® lined	Stainless steel	D90		
Acetone	Ductile iron		D20 or D30		
Acetylene	Ductile iron	Cast steel	D20 or D30		No copper
Alum	Hard rubber lined	Soft rubber lined	D10	D20 or D30	
Alumina	Ductile iron	Soft rubber lined	D20 or D30	D10	
Aluminium sulphate	Hard rubber lined	Butyl rubber lined	D10	D20 or D30	
Ammonia, aqueous	Ductile iron	Stainless steel	D10	D20 or D30	Sealed bonnet
Ammonia gaseous	Ductile iron	Stainless steel	D10	D20 or D30	Sealed bonnet
Ammonium nitrate	Butyl rubber lined	FEP lined	D20 or D30	D50	
Ammonium phosphate	Butyl rubber lined		D10	D20 or D30	
Ammonium sulphate	Butyl rubber lined		D20 or D30		
Aniline	FEP lined	Stainless steel	D92		
Antifreeze	Ductile iron	Butyl rubber lined	D20 or D30		
Apple juice	Stainless steel		D15		
Asbestos cement	Soft rubber lined	Ductile iron	D10		
Ash handling	Soft rubber lined	Ductile iron	D10		
Asphalt	Ductile iron	Cast steel	D20 or D30		
Avcat	Stainless steel	Cast steel	D70	D20 or D30	
Avgas	Stainless steel	Cast steel	D70		
Avtag	Stainless steel	Cast steel	D70	D20 or D30	
Avtur	Stainless steel	Cast steel	D70	Butyl	
Barium carbonate	Hard rubber lined	Stainless steel	D20 or D30	D50	
Barium sulphate	Soft rubber lined	Hard rubber lined	D20 or D30		
Barytes	Soft rubber lined	Hard rubber lined	D10		
Basic slag	Soft rubber lined	Ductile iron	D10		
Battery acid	Hard rubber lined	Butyl rubber lined	D20 or D30		
Bauxite	Soft rubber lined		D10		
Beet juice	Ductile iron	Hard rubber lined	D20 or D30		
Benzene	Butyl rubber lined	Halar® lined	D92		
Benzyl alcohol	FEP lined	Halar® lined	D92		Sealed bonnet
Bilge (ships)	Ductile iron	Cast steel	D40		
Blast furnace gas	Ductile iron	Ductile iron	D20 or D30		
Bleaching powder	Hard rubber lined	Hypalon lined	D60		
Borax	Hard rubber lined		D10		
Brine	Hard rubber lined	Stainless steel	D10	D92	
Brine, chlorinated	Hard rubber lined	Hypalon lined	D60		
Bromine	FEP lined		D92		Sealed bonnet
Bcf	Ductile iron		D92		
Butane	Ductile iron	Cast steel	D40	D50	Sealed bonnet
Butanol	Ductile iron	Cast steel	D20 or D30		
Calcium carbonate	Ductile iron	Soft rubber lined	D10	D20 or D30	
Calcium chloride	Hard rubber lined		D10	D20 or D30	
Calcium hydroxide	Ductile iron	Soft rubber lined	D10	D20 or D30	

**Material Selection**

Fluid	Body Material		Diaphragm		Recomendations
Calcium hypochlorie	Hard rubber lined	Ductile iron	D60	D10	
Calcium phosphate	Butyl rubber lined	Hard rubber lined	D10	D20 or D30	
Calcium sulphate	Soft rubber lined	Ductile iron	D10	D20 or D30	
Calor gas	Ductile iron		D40		
Cane juice	Ductile iron	Soft rubber lined	D20 or D30		
Carbon black	Soft rubber lined	Ductile iron	D10		
Carbon dioxide	Ductile iron	Fductile iron	D20 or D30		
Carbon monoxide	Ductile iron		D20 or D30		Sealed bonnet
Carbon tetrachloride	Ductile iron	Ductile iron	D92		
Castor oil	Ductile iron		D20 or D30		
Caustic potash	Ductile iron	Butyl rubber lined	D10	D20 or D30	Sealed bonnet
Caustic soda	Ductile iron	Butyl rubber lined	D10	D20 or D30	Sealed bonnet
Cement (dry and slurry)	Soft rubber lined	Ductile iron	D10		
Chalk	Ductile iron	Soft rubber lined	D10		
China clay	Ductile iron	Soft rubber lined	D10		
Chlorinated brine	FEP lined	Hard rubber lined	D60	D10	
Chlorine gas dry	Ductile iron	Halar® lined	D97		
Chlorine gas moist	FEP lined	Halar® lined	D97		
Chlorine gas wet	FEP lined	Halar® lined	D97		
Chlorine water	Hard rubber lined	Halar® lined	D10		
Chloroform	FEP lined	Stainless steel	D92		
Chrome alum	Butyl rubber lined	Halar® lined	D20 or D30		
Chrome plating solns	Butyl rubber lined	Halar® lined	D20 or D30		
Chrome tanning solns	Butyl rubber lined	Halar® lined	D20 or D30	D92	
Clays and slips	Soft rubber lined	Ductile iron	D10		
Coal dust	Soft rubber lined	Ductile iron	D10		
Coal gas	Ductile iron	Ductile iron	D20 or D30	D40	
Coal slurry	Soft rubber lined	Ductile iron	D10		
Coke oven gas	Ductile iron	Ductile iron	D20 or D30	D40	
Compressed air (oil free)	Ductile iron	Cast steel	D40	D20 or D30	
Compressed air (oily)	Ductile iron	Cast steel	D40	D70	
Concrete	Soft rubber lined	Ductile iron	D10		
Copper plating solutions	Butyl rubber lined	Halar® lined	D20 or D30		
Copper sulphate	Butyl rubber lined	Halar® lined	D20 or D30		
Creosote	Hard rubber lined	Halar® lined	D70		
Creosote	Ductile iron	Halar® lined	D70		
Crude oil	Cast steel	Ductile iron	D70	D92	
Cutting oil	Hard rubber lined		D40		
Demineralised water	Hard rubber lined	Stainless steel	D20 or D30	D92	
Detergents	Hard rubber lined	Halar® lined	D20 or D30	D10	
Dibutyl phthalate	Halar® lined	Ductile iron	D92		
Dichlorodiluoromethane	Ductile iron	Cast steel	D92		
Diesel oil	Ductile iron	Cast steel	D70		
Diethyl ether	Stainless steel	Ductile iron	D92		Sealed bonnet
Diethylene glycol	Ductile iron	Stainless steel	D20 or D30		
Disinfectant (general)	Ductile iron	Halar® lined	D50		
Dye liquors	FEP lined	Butyl rubber lined	EPDM	D20 or D30	
Electrolytic tinplating solutions	Butyl rubber lined	FEP lined	D20 or D30		
Ethane	Ductile iron	Cast steel	D40	D50	
Ethanol	Ductile iron	Stainless steel	D20 or D30	D20 or D30	
Ether	Ductile iron	Stainless steel	D92		Sealed bonnet
Ethyl acetate	Stainless steel	Halar® lined	D20 or D30		
Ethyl alcohol	Ductile iron	Stainless steel	D20 or D30		
Ethylene	Ductile iron	Stainless stee	D20 or D30		

**Material Selection**

Fluid	Body Material		Diaphragm		Recomendations
Ethylene glycol	Ductile iron	Stainless steel	D20 or D30		
Ferric sulphate	Butyl rubber lined	Halar® lined	D10		
Fertilizers (dry powders)	Soft rubber lined	Ductile iron	D10		
Fertilizer slurries (wet process)	Butyl rubber lined	Ductile iron	D20 or D30	D20 or D30	
Fire foam	Ductile iron	Cast steel	D40		
Flue gas	Ductile iron	Cast steel	D40	D20 or D30	
Fly ash	Ductile iron	Soft rubber lined	D10	Butyl	
Freon	Ductile iron	Ductile iron	D92	D50	
Fuel oil	Ductile iron	Cast steel	D40		
Gas (coal)	Ductile iron	Cast steel	D40		
Gas (natural)	Ductile iron	Cast steel	D40		
Gasoline	Cast steel	Ductile iron	D70		
Glucose	Stainless steel	Stainless steel	D20 or D30		
Glycerine	Stainless steel	Hard rubber lined	D20 or D30		
Gravel	Soft rubber lined	Ductile iron	D10		
Grease	Ductile iron	Cast steel	D40		
Gypsum	Soft rubber lined	Ductile iron	D10		
Hydraulic oils (vegetable based)	Ductile iron	Ductile iron	D20 or D30		
Hydraulic oils (mineral based)	Ductile iron	Ductile iron	D40		
Hydrobromic acid	FEP lined	Halar® lined	D92		
Hydrochloric acid	Hard rubber lined	Halar® lined	D10	D92	
Hydrofluoric acid	Butyl rubber lined	Halar® lined	D20 or D30		
Hydrogen	Ductile iron	Cast steel	D20 or D30	D10	Sealed bonnet
Hydrogen peroxide	Hard rubber lined	Stainless steel	PTFE/D70	D20 or D30	
Hypo	Hard rubber lined	Halar® lined	D10	D60	
Inert gases	Ductile iron	Ductile iron	D20 or D30		
Inks	Stainless steel	Halar® lined	D92	D20 or D30	
Insecticide solutions	Ductile iron	Ductile iron	D40	D20 or D30	
Instrument air	Ductile iron	Stainless steel	D20 or D30	D40	
Iron oxide slurry	Soft rubber lined	Ductile iron	D20 or D30		
Isopropanol	Ductile iron	Hard rubber lined	D10	D20 or D30	
Kaolin	Soft rubber lined	Ductile iron	D10		
Kerosene	Ductile iron	Stainless steel	D70	D92	
Laundry bleach	Hard rubber lined	Halar® lined	D60	D10	
Lime	Ductile iron	Soft rubber line	D10		
Liquid parafin	Ductile iron	Ductile iron	D40	D70	
Liquid petroleum gases (I.P.G.)	Ductile iron	Cast steel	D40	D20 or D30	Sealed bonnet
Lubricating oils	Hard rubber lined	Cast steel	D40	D70	
Magnesium chloride	Ductile iron	Butyl rubber lined	D10	D20 or D30	
Magnesium oxide	Butyl rubber lined	Hard rubber line	D10	D20 or D30	
Magnesium sulphate	Soft rubber lined	Ductile iron	D10	D20 or D30	
Magnetite	Hard rubber lined	Ductile iron	D10		
Methane	Ductile iron	Ductile iron	D20 or D30	D40	
Methanol	Ductile iron	Stainless steel	D20 or D30		
Methanol/water mixture	Ductile iron	Hard rubber lined	D20 or D30	D10	
Methylated spirits	Ductile iron	Stainless steel	D20 or D30		
Methyl ethyl ketone (mek)	Stainless steel	FEP lined	D92		
Methyl isobutyl ketone	Stainless steel	FEP lined	D92	D20 or D30	
Milk	Stainless steel		D15		
Mineral oil	Ductile iron	Cast steel	D70	D40	
Molasses	Ductile iron	Stainless steel	D20 or D30		
Monosodium glutamate	Hard rubber lined	Stainless steel	D10		



**Material Selection**

Fluid	Body Material		Diaphragm		Recomendations
Mortar and cement	Soft rubber lined	Ductile iron	D10	D20 or D30	
Naphtha	Ductile iron	Cast steel	D70		
Napthalene	Ductile iron	Cast steel	D70		
Natural gas	Ductile iron	Stainless steel	D40	D50	
Nickel plating solutions	Butyl rubber lined	Halar® lined	D20 or D30	D60	
Nickel plating sludge	Butyl rubber lined	Halar® lined	D20 or D30	D60	
Nitric acid	FEP lined	Stainless steel	D92	D70	Check grade of S.S.
Nitric acid / hydrofluoric acid mix	FEP lined	Halar® lined	D92		
Nitrogen	Ductile iron	Stainless steel	D20 or D30		
Nitrous oxide (dry)	Stainless steel	FEP lined	D20 or D30		
Oils, animal	Ductile iron	Stainless steel	D40	D92	
Oils, cutting	Ductile iron	Stainless steel	D70	D40	
Oil fuel	Ductile iron	Stainless steel	D70	D40	
Oils, lubricating	Ductile iron	Stainless steel	D70	D40	
Oils, mineral	Ductile iron	Cast steel	D70	D40	
Oil, rolling	Ductile iron	Cast steel	D70	D40	
Oil, transformer	Ductile iron	Stainless steel	D70	D40	
Oils, vegetable	Stainless steel	Ductile iron	D40	D70	
Oleum	FEP lined	Halar® lined	D92		
Olive oil	Stainless steel	Ductile iron	D40	D92	
Oxygen	Ductile iron	Stainless steel	D50	D20 or D30	Degreased for oxygen
Paint (oil based)	Ductile iron	Stainless steel	D40	D20 or D30	
Paint (water based)	Ductile iron	Stainless steel	D20 or D30	D92	
Paper pulp	Hard rubber lined	Butyl rubber lined	D10	D20 or D30	
Paper stock	Hard rubber lined	Butyl rubber lined	D10	D20 or D30	
Parafin	Ductile iron	Stainless steel	D70	D40	
Parafin wax	Ductile iron	Cast steel	D40	D70	
Paraquet	Ductile iron	Halar® lined	D40		Sealed bonnet
Pentane	Ductile iron	Cast steel	D70	D92	
Perchloroethylene	Ductile iron	Cast steel	D70	D92	
Petrol	Ductile iron	Cast steel	D70		Sealed bonnet
Petroleum jelly	Ductile iron	Halar® lined	D70	D40	
Phosphoric acid	Butyl rubber lined	Halar® lined	D20 or D30		
Photographic developers	Halar® lined	FEP lined	D20 or D30	D92	
Plating solutions	Butyl rubber lined	Halar® lined	D20 or D30		
Polyethylene glycol	Ductile iron	Stainless steel	D10	D20 or D30	
Potassium chloride	Hard rubber lined	Halar® lined	D10	D20 or D30	
Potassium cyanide	Hard rubber lined	Halar® lined	D10	D20 or D30	Sealed bonnet
Potassium ferricyanide	Hard rubber lined	Halar® lined	D20 or D30	D10	
Potassium hydroxide	Ductile iron	Hard rubber lined	D20 or D30	D10	Sealed bonnet
Potassium hypochlorite	Hard rubber lined	Halar® lined	D60	D10	
Potassium phosphate	Hard rubber lined	Butyl rubber lined	D20 or D30	D10	
Pottery slip	Soft rubber lined	Ductile iron	D10		
Producer gas	Ductile iron	Cast steel	D20 or D30	D40	
Propane (gas or liquid)	Ductile iron	Cast steel	D40	D50	
Radioactive effluents	Butyl rubber lined	Stainless steel	D20 or D30		No copper parts.
Rock salt	Soft rubber lined	Hard rubber lined	D10	D20 or D30	
Rolling oil	Ductile iron	Cast steel	D70	D10	
Salt	Soft rubber lined	Hard rubber lined	D10	D20 or D30	
Sand	Soft rubber lined	Ductile iron	D10	D20 or D30	
Sea water	Stainless steel	Hard rubber lined	D10	D20 or D30	
Sewage	Ductile iron	Hard rubber lined	D10	D50	
Silver plating solutions	Butyl rubber lined	Halar® lined	D20 or D30		

## Material Selection

Fluid	Body Material		Diaphragm		Recomendations
Slaked lime	Ductile iron	Soft rubber lined	D10	D20 or D30	
Slip (pottery)	Soft rubber lined	Ductile iron	D10		
Soap lye	Ductile iron	Butyl rubber lined	D10	D20 or D30	
Soap solutions	Ductile iron	Butyl rubber lined	D10	D20 or D30	
Sodium bicarbonate	Ductile iron	Halar® lined	D20 or D30	D92	
Sodium chloride	Soft rubber lined	Hard rubber lined	D10	D20 or D30	
Sodium hydroxide	Ductile iron	Hard rubber lined	D20 or D30	D10	Sealed bonnet
Sodium hydroxide (oily)	Ductile iron	Stainless steel	D50	D40	
Sodium hypochlorite	Hard rubber lined	Halar® lined	D10	D70	
Solvent naphtha	Ductile iron	Cast steel	D70	D40	
Stannic chloride	Halar® lined	FEP lined	D20 or D30	D92	
Starch solutions	Ductile iron	Halar® lined	D20 or D30	D60	
Stearic acid	Stainless steel	Halar® lined	D92		
Sugar	Ductile iron	Stainless steel	D20 or D30	D15	
Sulphur dioxide	Butyl rubber lined	Hard rubber lined	D20 or D30		
Sulphuric acid below 75%	Butyl rubber lined	Halar® lined	D20 or D30	D70	
Sulphuric acid 75-95%	Halar® lined	FEP lined	D92	D70	
Sulphuric acid 95-99%	Ductile iron	Halar® lined	D92	D70	Sealed bonnet
Sulphuric acid over 99%	FEP lined	Halar® lined	D92		
Syrups (sugar)	Ductile iron	Stainless steel	D20 or D30	D15	
Tetrachloroethane	Ductile iron	Stainless steel	D92	D70	Sealed bonnet
Textile dyes	Halar® lined	Butyl rubber lined	D20 or D30	D92	
Tin plating solutions	Halar® lined	Butyl rubber lined	D92	D20 or D30	
Titanium dioxide	Butyl rubber lined	Hard rubber lined	D20 or D30	D10	
Toluene	Ductile iron	Cast steel	D92		
Transformer oil	Stainless steel	Ductile iron	D70		
Trichloroethylene	Ductile iron	Stainless steel	D92	D70	Sealed bonnet
Turpentine	Ductile iron	FEP lined	D40	D70	Sealed bonnet
Vegetable oils	Ductile iron	Stainless steel	D70	D92	
Vinegar	Stainless steel		D92		
Water cold	Ductile iron	Stainless steel	D10	D20 or D30	
Water de-mineralised	Hard rubber lined	FEP lined	D10	D92	
Water drinking	Stainless steel	Stainless steel	D20 or D30		
Water oily	Ductile iron	Gunmetal	D40	D50	
Water (salt and brackish)	Stainless steel	Hard rubber lined	D10	D20 or D30	
Wood pulp	Ductile iron	Soft rubber lined	D10	D20 or D30	
Wort	Ductile iron	Stainless steel	D20 or D30		
Xylene	Ductile iron	Cast steel	D92	D70	
Zinc chloride	Soft rubber lined	Stainless steel	D10	D20 or D30	
Zinc oxide	Stainless steel	Butyl rubber lined	D20 or D30	D92	
Zinc plating solutions	Butyl rubber lined	Hard rubber lined	D20 or D30		

## Straight Through Type Diaphragm Valves

### Codification

S D 0 0 D I 1 0 D 1 0 0 5 0

#### BODY DESIGN

<b>W</b>	Weir
<b>S</b>	Straight Through
<b>F</b>	Full Flow

#### FACE TO FACE/DRILLING

<b>DI10</b>	DIN3202F1 PN10
<b>AS15</b>	BS5156 ASA 150
<b>BS10</b>	BS5156 PN10
<b>SPTH</b>	Threaded BSPP

**0B**

#### BODY/BONNET MATERIAL

<b>C</b>	Cast iron
<b>D</b>	Ductile iron
<b>A</b>	Carbon steel
<b>S</b>	St. steel 316
<b>I</b>	Chr. iron 24%
<b>J</b>	Chr. iron 30%
<b>B</b>	Bronze
<b>K</b>	St. steel 316L
<b>E</b>	St. steel 304
<b>M</b>	Monel
<b>H</b>	Hastelloy
<b>X</b>	St. steel 1.4435
<b>Y</b>	St. steel 1.4435 BN2

#### DIAPHRAGM/SEALING

<b>D10</b>	Natural rubber
<b>D15</b>	White natural rubber
<b>D20</b>	EPDM
<b>D2V</b>	EPDM vacuum service
<b>D30</b>	Butyl
<b>D40</b>	NBR
<b>D4V</b>	NBR vacuum service
<b>D50</b>	Neoprene
<b>D60</b>	Hypalon
<b>D70</b>	Viton
<b>D92</b>	PTFE/EPDM
<b>D93</b>	PTFE/Butyl
<b>D97</b>	PTFE/Viton
<b>DLN</b>	Linatex

#### BODY BASE MATERIAL

<b>00</b>	Unlined
<b>HR</b>	Hard rubber
<b>SR</b>	Soft rubber
<b>BR</b>	Butyl rubber
<b>ER</b>	EPDM rubber
<b>NL</b>	Neoprene rubber
<b>HY</b>	Hypalon® rubber
<b>PF</b>	PFA
<b>FE</b>	FEP
<b>ET</b>	ETFE
<b>HL</b>	Halar®
<b>LN</b>	Linatex

#### SIZE

<b>015</b>	DN15
<b>050</b>	DN50
<b>100</b>	DN100

## Design Attributes

Straight Through Type Diaphragm Valves are linear motion valves, bidirectional, for stopping the flow of the service fluid when necessary, not being suitable for regulation purposes. Valves close by turning the handwheel clockwise. Valves are bolted bonnet, seatless design, with a diaphragm as closure element, with rising handwheel. Valves are offered with a broad range of diaphragms and linings materials to resist to abrasion and corrosion duties. Their straight passage makes them more suitable for on/off applications in comparison to Weir Type, when low pressure drop is required or in case of abrasive media. The valves are inexpensive and easy to maintain, being the optimal solution for a large number of applications.

Yellow position indicator, for clear and positive valve position from any angle

Ergonomic and rugged rising handwheel

Grease reservoir integrated in the spindle chamber that lubricates the spindle along operations thus avoiding valve spindle jamming

Nameplate incl. batch no. for full traceability

Witness hole to detect leakage at diaphragm failure

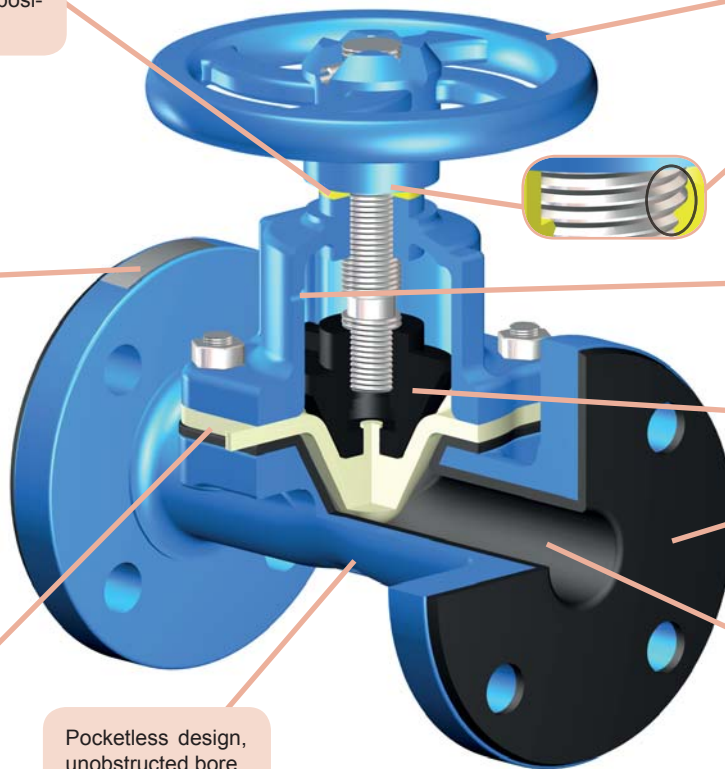
Precise compressor plate; guides and operates the diaphragm up and down

Closure Diaphragms; manufactured from elastomeric materials; provide 100% seating tightness in both directions while isolating the valve trim from fluid. Wide choice of polymers to satisfy any industrial application

Full rubber flange face in all rubber lined valves as standard

Porousless linings; provides the application engineer with a wide choice of linings of high chemical and abrasion resistance without need of expensive basic metal valve materials

Pocketless design, unobstructed bore



## Main Features

Valve design: EN 13397, EN 12516

Face to face length: EN 558 Series 1 (DIN 3202F1) or EN 558 Series 7 (BS 5156)

Valve end connections: Flanged to EN 1092-2 type 21/B, PN10/16 (DN15-150); PN10 (DN200-300)

(valves DN65 with 4 holes as accepted variant in standard)

option drilling to ASA150#

Female thread to ISO 228-1 (DIN 259-BSPP)

Marking: EN 19

Pressure Tests: EN 12266-1

Seat leakage rate: Rate A (full seat tightness in both directions)

Inside and outside primer paint layer black color for protection during storage and transport

Product compliant with Directive 2014/68/EU on Pressure Equipment (PED) and Machinery Directive 2006/42/EC

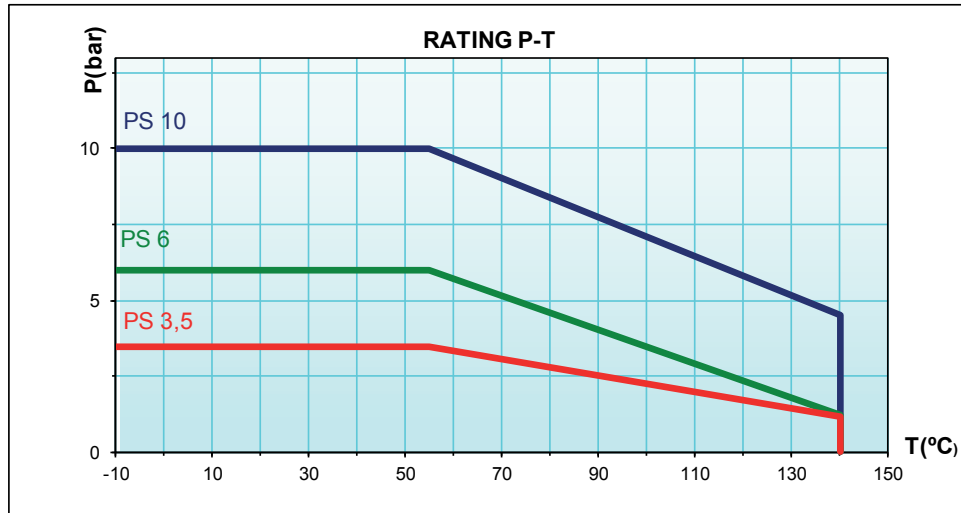
## Options

Other materials, other ratings and connections, pneumatic or electric actuator, limit switches, sealed bonnet, interlocking arrangement, padlocking or handwheel hood to avoid non-authorized operation. Please consult us

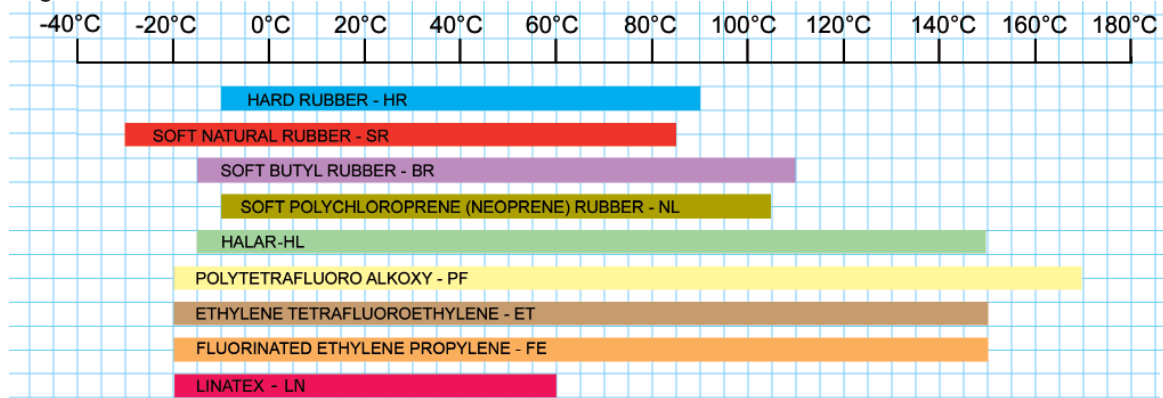
**Main Duties / Limits of use**

Liquids compatible with materials of construction, acc. to Directive 2014/68/EU, Annex II tables 8 (group 1\*) & 9 (group 2\*) up to category I  
 PS 10 bar DN15-100 (Art.4-Parr.3)  
 PS 6 bar DN125-150 (Art.4-Parr.3)  
 PS 3,5 bar DN200-300 (Art.4-Parr.3)  
 Combination of Body + Lining + Diaphragm determines the P-T limit of use of the valve  
 Questions referring to chemical resistance, please consult us  
 Observe also pressure/temperature limits on diagrams under  
 \*Classification of fluids (group 1 or 2) acc. to Directive 2014/68/EU, Article 13

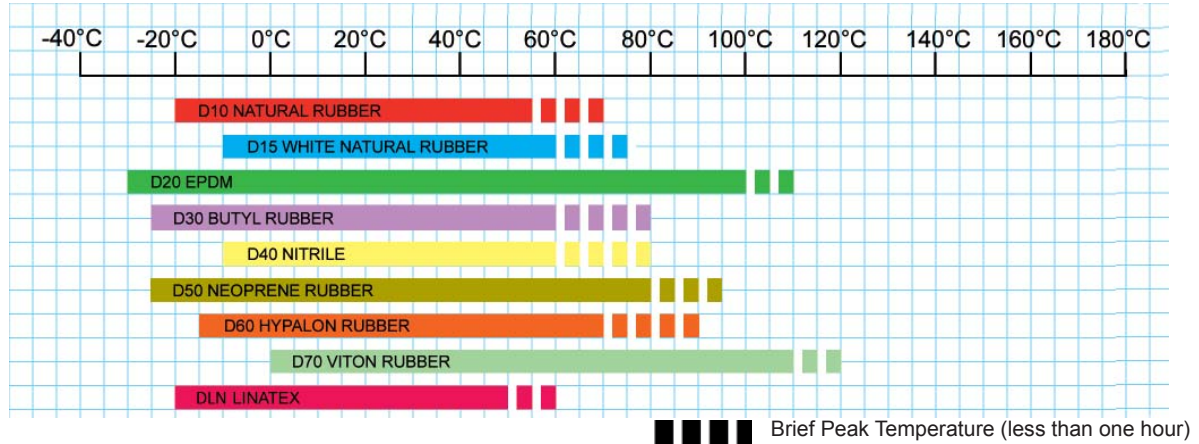
**Bodies (Ductile iron)**



**Linings**



**Diaphragms**



Temperature values are for neutral fluids and not plotted against any pressure parameter, the application engineer should consider that working limits are affected by the actual pressure / temperature relationship. Temperature values also depends on medium through the valve.



### Valves Flow Data

A valve flow coefficient represents the standard flow rate which flows through the valve at a given opening, referred to pre-established conditions:

\* Kv value is the volume of water at 20°C, in cubic meters per hour (m<sup>3</sup>/h), that will flow through the valve at a static pressure drop of 1 bar across the valve

\* Cv value is the volume of water at 60°F, in gallons per minute (gpm), that will flow through the valve at a static pressure drop of 1 psi across the valve

Conversion from Kv to Cv can be roughly calculated by means of the following expression:

$$Cv = Kv \times 1,17$$

Flow rate through the valve with other liquids can be calculated with the following expressions

$$Kv = q (SG / dp)^{1/2}$$

where

q = water flow (cubic meter per hour)

SG = specific gravity (1 for water)

dp = pressure drop (bar)

$$Cv = q (SG / dp)^{1/2}$$

where

q = water flow (US gallons per minute)

SG = specific gravity (1 for water)

dp = pressure drop (psi)

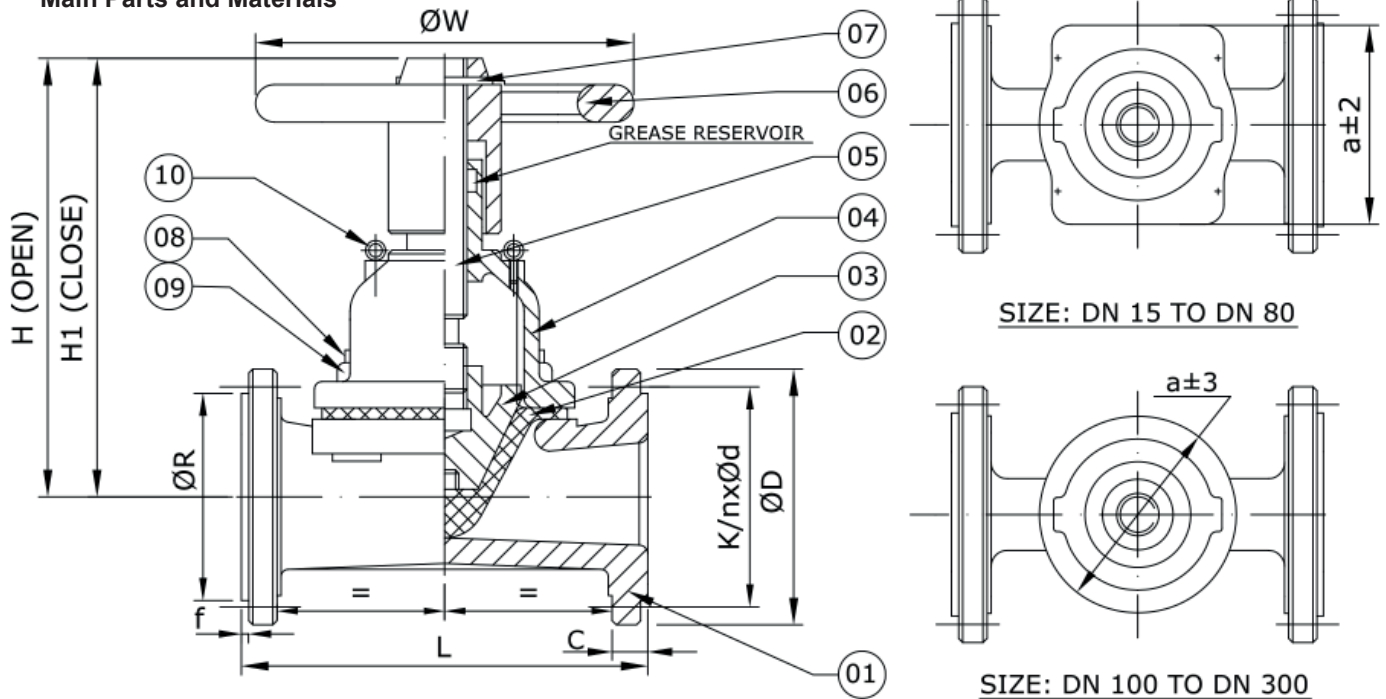
### Straight Through Kv (m<sup>3</sup>/h) values with valve fully open \*

DN mm	Ductile iron	Rubber Lined	Halar® Lined
15	7,5	5,5	7,6
20	18	13,5	18,5
25	32	26	33
32	47	39	48
40	64	56	67
50	110	90	116
65	204	165	214
80	293	222	302
100	504	406	524
125	792	618	813
150	1440	1105	1510
200	2211	1895	2290
250	3446	2960	3596
300	5168	4250	5314

\*Since Straight Through Diaphragm Valves are only suitable for on/off service we only provide Kv values for valves fully open.

Unlined valves with flanged ends

Main Parts and Materials



NO.	PART	MATERIAL
1	BODY	SC_ Cast iron EN-JL1040 (GG25)
		SD_ Ductile iron EN-JS1030 (GGG40)
2	DIAPHRAGM	Rubber Natural (D10) / EPDM (D20) / Butyl (D30) / Nitrile (D40) / Neoprene (D50) / Hypalon (D60) / Viton (D70)
3	COMPRESSOR	Cast iron EN-JL1040 (GG25)
4	BONNET	SC_ Cast iron EN-JL1040 (GG25)
		SD_ Ductile iron EN-JS1030 (GGG40)

NO.	PART	MATERIAL
5	SPINDLE	Steel
6	HANDWHEEL	Cast iron EN-JL1040 (GG25)
7	H/W DOWEL PIN	Steel (EN42)
8	BODY STUDS	Steel
9	BODY NUTS	Steel
10	EYE BOLT*	Steel

\* Only for some sizes

Main Valve Parameters

	DN	15	20	25	32	40	50	65
L	EN 558 S7 (BS 5156)	108	114	127	146	159	190	216
	EN 558 S1 (DIN 3202 F1)	130	150	160	180	200	230	290
	H (open)	110	108	132,5	130,5	131,5	194,5	220
	H1 (close)	102	100	120	118	119	177	196
	a	71	71	85	85	85	115	130
	ØW	100	100	120	120	120	164	220
FLANGED ENDS TO EN PN10	ØD	95	105	115	140	150	165	185
	C	14	16	16	18	18	20	20
	ØR	45	58	68	78	88	102	122
	f	2	2	2	2	3	3	3
	nxØd	4x14	4x14	4x14	4x18	4x18	4x18	4x18
	ØK	65	75	85	100	110	125	145
FLANGED ENDS TO ASA150#	ØD	89	98	108	117	127	152	178
	C	11,5	11,5	11,5	13	14,5	16	17,5
	ØR	35	43	51	64	73	92	105
	f	1,6	1,6	1,6	1,6	1,6	1,6	1,6
	nxØd	4x16	4x16	4x16	4x16	4x16	4x19	4x19
	ØK	60,3	69,8	79,4	88,9	98,4	120,6	139,7
Approx. Weight	EN 558 S7 (BS 5156)	3,3	3,6	4,3	6,5	7	10,5	15,5
	EN 558 S1 (DIN 3202 F1)	3,8	4	4,8	7,5	8	11,5	16,5

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

Information / restriction of technical rules need to be observed!  
Installation, Operating and Maintenance Manual can be downloaded at [www.comeval.es](http://www.comeval.es)

The engineer, designing a system or a plant, is responsible for the selection of the correct valve  
Product suitability must be verified, contact manufacturer for information

**Unlined valves with flanged ends**

**Main Valve Parameters**

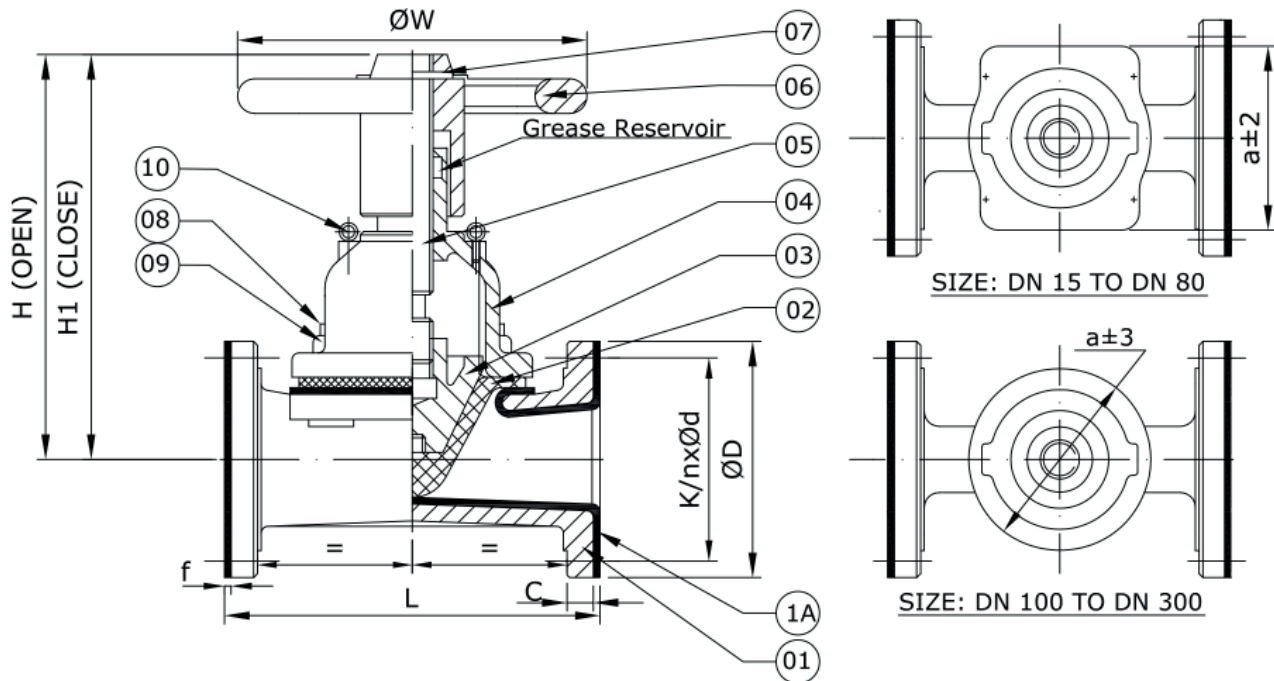
		<b>80</b>	<b>100</b>	<b>125</b>	<b>150</b>	<b>200</b>	<b>250</b>	<b>300</b>
<b>L</b>	<b>DN</b>	<b>80</b>	<b>100</b>	<b>125</b>	<b>150</b>	<b>200</b>	<b>250</b>	<b>300</b>
	<b>EN 558 S7 (BS 5156)</b>	254	305	356	406	521	635	749
	<b>EN 558 S1 (DIN 3202 F1)</b>	310	350	400	480	600	730	850
	<b>H (open)</b>	279	293	310	413	475,5	595,5	748
	<b>H1 (close)</b>	249	261	272	362	413	523	653
	<b>a</b>	171	Ø200	Ø234	Ø290	Ø350	Ø430	Ø512
	<b>ØW</b>	240	270	270	360	460	525	600
<b>FLANGED ENDS TO EN PN10</b>	<b>ØD</b>	200	220	250	285	340	395	445
	<b>C</b>	22	24	26	26	26	28	28
	<b>ØR</b>	138	158	188	212	268	320	370
	<b>f</b>	3	3	3	3	3	3	4
	<b>nxØd</b>	8x18	8x18	8x18	8x22	8x22	12x22	12x22
<b>FLANGED ENDS TO ASA150#</b>	<b>ØK</b>	160	180	210	240	295	350	400
	<b>ØD</b>	191	229	254	279	343	406	483
	<b>C</b>	19,5	24	24	25,5	29	30,5	32
	<b>ØR</b>	127	157	186	216	270	324	381
	<b>f</b>	1,6	1,6	1,6	1,6	1,6	1,6	1,6
<b>Approx. Weight</b>	<b>EN 558 S7 (BS 5156)</b>	22,5	30	44	63	112	170	258
	<b>EN 558 S1 (DIN 3202 F1)</b>	25,5	32	46	69	126	185	273

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

## Rubber lined valves with flanged ends

### Main Parts and Materials



NO.	PART	MATERIAL	
1	BODY	SC_ Cast iron EN-JL1040 (GG25)	
		SD_ Ductile iron EN-JS1030 (GGG40)	
	1A	LINING	_HR_ Hard rubber
			_SR_ Soft rubber
_BR_ Butyl rubber			
_ER_ EPDM rubber			
2	DIAPHRAGM	Rubber	
		Natural (D10) / EPDM (D20) / Butyl (D30) / Nitrile (D40) / Neoprene (D50) / Hypalon (D60) / Viton (D70)	

NO.	PART	MATERIAL
3	COMPRESSOR	Cast iron EN-JL1040 (GG25)
4	BONNET	SC_ Cast iron EN-JL1040 (GG25)
		SD_ Ductile iron EN-JS1030 (GGG40)
5	SPINDLE	Steel
6	HANDWHEEL	Cast iron EN-JL1040 (GG25)
7	H/W DOWEL PIN	Steel (EN42)
8	BODY STUDS	Steel
9	BODY NUTS	Steel
10	EYE BOLT*	Steel

\* Only for some sizes

### Main Valve Parameters

	DN	15	20	25	32	40	50	65
L	EN 558 S7 (BS 5156)	114	123	133	152	165	196	222
	EN 558 S1 (DIN 3202 F1)	130	150	160	180	200	230	290
	H (open)	113	111	135,5	133,5	134,5	197,5	223
	H1 (close)	105	103	123	121	122	180	199
	f	3	3	3	3	3	3	3
	a	71	71	85	85	85	115	130
FLANGED ENDS TO EN PN10	ØW	100	100	120	120	120	164	220
	ØD	95	105	115	140	150	165	185
	C	14	16	16	18	18	20	20
	nxØd	4x14	4x14	4x14	4x18	4x18	4x18	4x18
	ØK	65	75	85	100	110	125	145
FLANGED ENDS TO ASA150#	ØD	89	98	108	117	127	152	178
	C	11,5	11,5	11,5	13,0	14,5	16,0	17,5
	nxØd	4x16	4x16	4x16	4x16	4x16	4x19	4x19
	ØK	60,3	69,8	79,4	88,9	98,4	120,6	139,7
Approx. Weight	EN 558 S7 (BS 5156)	3,6	4	4,5	7	8	12	17
	EN 558 S1 (DIN 3202 F1)	4,1	4,5	5,0	8	9	13,5	18

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

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## Rubber lined valves with flanged ends

### Main Valve Parameters

DN		80	100	125	150	200	250	300
L	EN 558 S7 (BS 5156)	260	313	364	414	529	643	757
	EN 558 S1 (DIN 3202 F1)	310	350	400	480	600	730	850
	H (open)	282	297,5	313,5	417	479,5	598,5	752
	H1 (close)	252	265	276	366	417	527	657
f		3	4	4	4	4	4	4
a		171	Ø200	Ø234	Ø290	Ø350	Ø430	Ø512
ØW		240	270	270	360	460	525	600
FLANGED ENDS TO EN PN10	ØD	200	220	250	285	340	395	445
	C	22	24	26	26	26	28	28
	nxØd	8x18	8x18	8x18	8x22	8x22	12x22	12x22
	ØK	160	180	210	240	295	350	400
FLANGED ENDS TO ASA150#*	ØD	191	229	254	279	343	406	483
	C	19,5	24,0	24,0	25,5	29,0	30,5	32,0
	nxØd	4x19	8x19	8x22	8x22	8x22	12x26	12x26
	ØK	152,4	190,5	215,9	241,3	298,4	361,9	431,8
Approx. Weight	EN 558 S7 (BS 5156)	24	32	46	65	115	175	263
	EN 558 S1 (DIN 3202 F1)	27	34	48	71	121	190	278

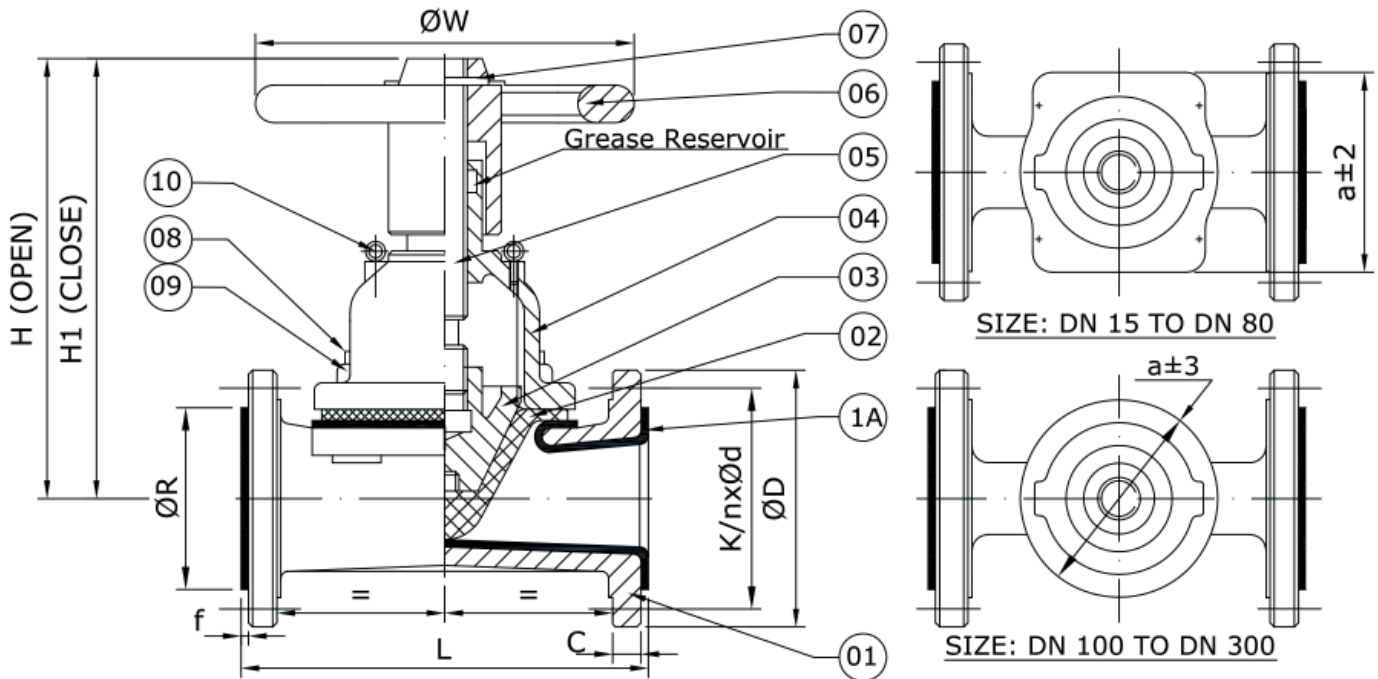
\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg



## Fluoropolymer lined valves with flanged ends

### Main Parts and Materials



NO.	PART	MATERIAL
1	BODY	Ductile iron EN-JS1030 (GGG40)
1A	LINING	_PF_ PFA
		_FE_ FEP
		_ET_ ETFE
2	DIAPHRAGM	Rubber Natural (D10) / EPDM (D20) / Butyl (D30) / Nitrile (D40) / Neoprene (D50) / Hypalon (D60) / Viton (D70)
3	COMPRESSOR	Cast iron EN-JL1040 (GG25)

NO.	PART	MATERIAL
4	BONNET	Ductile iron EN-JS1030 (GGG40)
5	SPINDLE	Steel
6	HANDWHEEL	Cast iron EN-JL1040 (GG25)
7	H/W DOWEL PIN	Steel (EN42)
8	BODY STUDS	St. steel SS304
9	BODY NUTS	St. steel SS304
10	EYE BOLT*	Steel

\* Only for some sizes

### Main Valve Parameters

	DN	15	20	25	32	40	50	65
L	EN 558 S7 (BS 5156)	114	123	133	152	165	196	222
	EN 558 S1 (DIN 3202 F1)	130	150	160	180	200	230	290
	H (open)	113	111	135,5	133,5	134,5	197,5	223
	H1 (close)	105	103	123	121	122	180	199
	f*	3	3	3	3	3	3	3
	a	71	71	85	85	85	115	130
	ØW	100	100	120	120	120	164	220
FLANGED ENDS TO EN PN10	ØD	95	105	115	140	150	165	185
	C	14	16	16	18	18	20	20
	nxØd	4x14	4x14	4x14	4x18	4x18	4x18	4x18
	ØK	65	75	85	100	110	125	145
FLANGED ENDS TO ASA150#**	ØD	89	98	108	117	127	152	178
	C	11,5	11,5	11,5	13,0	14,5	16,0	17,5
	nxØd	4x16	4x16	4x16	4x16	4x16	4x19	4x19
	ØK	60,3	69,8	79,4	88,9	98,4	120,6	139,7
Approx. Weight	EN 558 S7 (BS 5156)	3,6	4	4,5	7	8	12	17
	EN 558 S1 (DIN 3202 F1)	4,1	4,5	5	8	9	13,5	18

\* Consult f for PFA

\*\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

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Product suitability must be verified, contact manufacturer for information

## Fluoropolymer lined valves with flanged ends

### Main Valve Parameters

DN		80	100	125	150	200	250	300
L	EN 558 S7 (BS 5156)	260	313	364	414	529	643	757
	EN 558 S1 (DIN 3202 F1)	310	350	400	480	600	730	850
	H (open)	282	297,5	313,5	417	479,5	598,5	752
	H1 (close)	252	265	276	366	417	527	657
f*		3	4	4	4	4	4	4
a		171	Ø200	Ø234	Ø290	Ø350	Ø430	Ø512
ØW		240	270	270	360	460	525	600
FLANGED ENDS TO EN PN10	ØD	200	220	250	285	340	395	445
	C	22	24	26	26	26	28	28
	nxØd	8x18	8x18	8x18	8x22	8x22	12x22	12x22
	ØK	160	180	210	240	295	350	400
FLANGED ENDS TO ASA150#**	ØD	191	229	254	279	343	406	483
	C	19,5	24,0	24,0	25,5	29,0	30,5	32,0
	nxØd	4x19	8x19	8x22	8x22	8x22	12x26	12x26
	ØK	152,4	190,5	215,9	241,3	298,4	361,9	431,8
Approx. Weight	EN 558 S7 (BS 5156)	24	32	46	65	115	175	263
	EN 558 S1 (DIN 3202 F1)	27	34	48	71	121	190	278

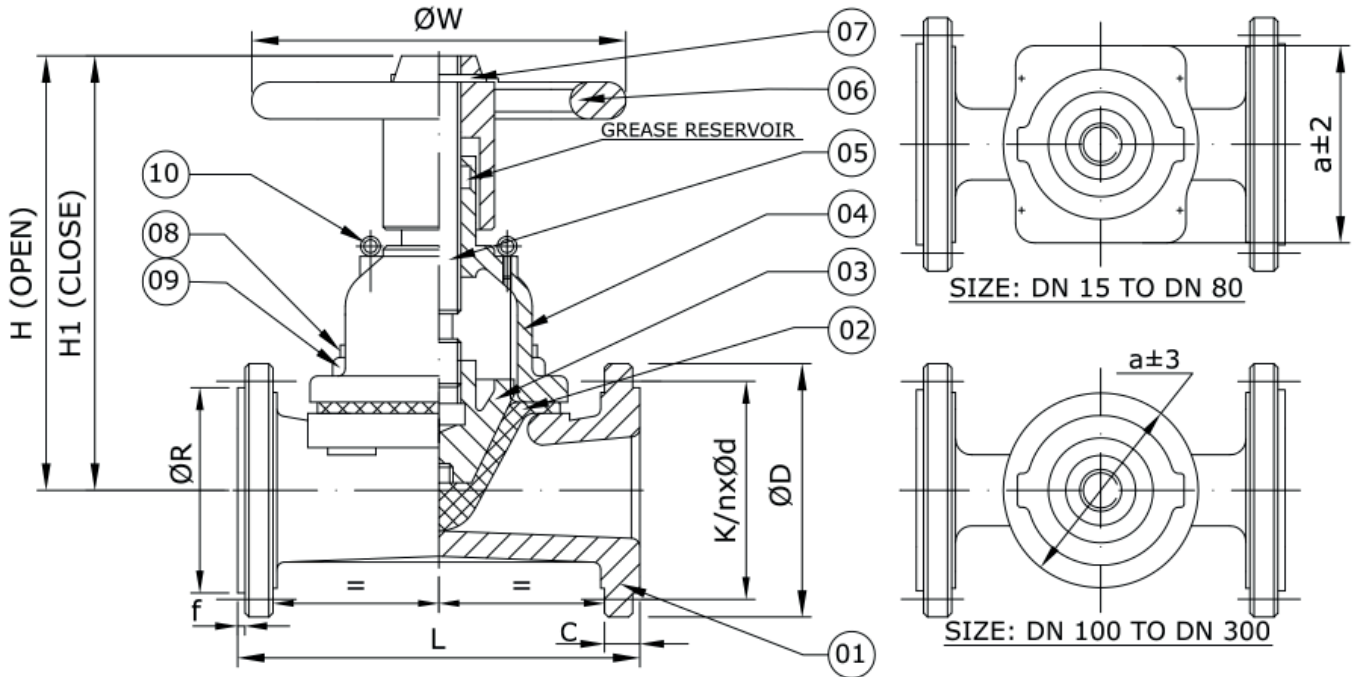
\* Consult f for PFA

\*\* Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

**Halar® coated valves with flanged ends**

**Main Parts and Materials**



NO.	PART	MATERIAL
1	BODY	SCHL_ Cast iron EN-JL1040 (GG25)
		SDHL_ Ductile iron EN-JS1030 (GGG40)
2	DIAPHRAGM	Natural (D10) / EPDM (D20) / Butyl (D30) / Nitrile (D40) / Neoprene (D50) / Hypalon (D60) / Viton (D70)
		Rubber
		Cast iron EN-JL1040 (GG25)
		SCHL_ Cast iron EN-JL1040 (GG25)
		SDHL_ Ductile iron EN-JS1030 (GGG40)
3	COMPRESSOR	Cast iron EN-JL1040 (GG25)
4	BONNET	SCHL_ Cast iron EN-JL1040 (GG25)
		SDHL_ Ductile iron EN-JS1030 (GGG40)

NO.	PART	MATERIAL
5	SPINDLE	Steel
6	HANDWHEEL	Cast iron EN-JL1040 (GG25)
7	H/W DOWEL PIN	Steel (EN42)
8	BODY STUDS	St. steel SS304
9	BODY NUTS	St. steel SS304
10	EYE BOLT*	Steel

\* Only for some sizes

**Main Valve Parameters**

	DN	15	20	25	32	40	50	65
L	EN 558 S7 (BS 5156)	108	114	127	146	159	190	216
	EN 558 S1 (DIN 3202 F1)	130	150	160	180	200	230	290
	H (open)	110	108	132,5	130,5	131,5	194,5	220
	H1 (close)	102	100	120	118	119	177	196
	a	71	71	85	85	85	115	130
	ØW	100	100	120	120	120	164	220
FLANGED ENDS TO EN PN10	ØD	95	105	115	140	150	165	185
	C	14	16	16	18	18	20	20
	ØR	45	58	68	78	88	102	122
	f	2	2	2	2	3	3	3
	nxØd	4x14	4x14	4x14	4x18	4x18	4x18	4x18
	ØK	65	75	85	100	110	125	145
FLANGED ENDS TO ASA150#	ØD	89	98	108	117	127	152	178
	C	11,5	11,5	11,5	13,0	14,5	16,0	17,5
	ØR	35	43	51	64	73	92	105
	f	1,6	1,6	1,6	1,6	1,6	1,6	1,6
	nxØd	4x16	4x16	4x16	4x16	4x16	4x19	4x19
	ØK	60,3	69,8	79,4	88,9	98,4	120,6	139,7
Approx. Weight	EN 558 S7 (BS 5156)	3,3	3,6	4,3	6,5	7	10,5	15,5
	EN 558 S1 (DIN 3202 F1)	3,8	4	4,8	7,5	8	11,5	16,5

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

Information / restriction of technical rules need to be observed!  
Installation, Operating and Maintenance Manual can be downloaded at [www.comeval.es](http://www.comeval.es)

The engineer, designing a system or a plant, is responsible for the selection of the correct valve  
Product suitability must be verified, contact manufacturer for information

**Halar® coated valves with flanged ends**
**Main Valve Parameters**

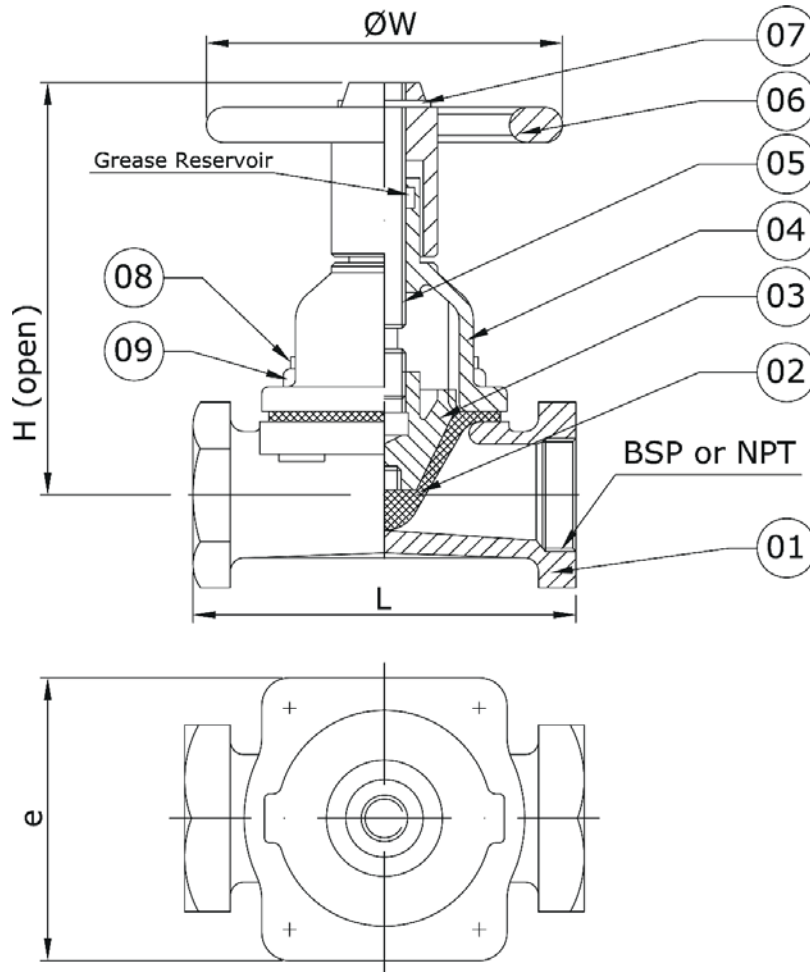
DN		80	100	125	150	200	250	300
L	EN 558 S7 (BS 5156)	254	305	356	406	521	635	749
	EN 558 S1 (DIN 3202 F1)	310	350	400	480	600	730	850
	H (open)	279	293	309,5	413	475,5	595,5	748
	H1 (close)	249	261	272	362	413	523	653
a		171	Ø200	Ø234	Ø290	Ø350	Ø430	Ø512
ØW		240	270	270	360	460	525	600
FLANGED ENDS TO EN PN10	ØD	200	220	250	285	340	395	445
	C	22	24	26	26	26	28	28
	ØR	138	158	188	212	268	320	370
	f	3	3	3	3	3	3	4
	nxØd	8x18	8x18	8x18	8x22	8x22	12x22	12x22
FLANGED ENDS TO ASA150#*	ØK	160	180	210	240	295	350	400
	ØD	191	229	254	279	343	406	483
	C	19,5	24,0	24,0	25,5	29,0	30,5	32,0
	ØR	127	157	186	216	270	324	381
	f	1,6	1,6	1,6	1,6	1,6	1,6	1,6
	nxØd	4x19	8x19	8x22	8x22	8x22	12x26	12x26
ØK	152,4	190,5	215,9	241,3	298,4	361,9	431,8	
Approx. Weight	EN 558 S7 (BS 5156)	22,5	30	44	63	112	170	258
	EN 558 S1 (DIN 3202 F1)	25,5	32	46	69	126	185	273

\*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

Unlined threaded valves

Main Parts and Materials



NO.	PART	MATERIAL
1	BODY	SC_ Cast iron EN-JL1040 (GG25)
		SD_ Ductile iron EN-JS1030 (GGG40)
2	DIAPHRAGM	Rubber Natural (D10) / EPDM (D20) / Butyl (D30) / Nitrile (D40) / Neoprene (D50) / Hypalon (D60) / Viton (D70)
3	COMPRESSOR	Cast iron EN-JL1040 (GG25)
4	BONNET	SC_ Cast iron EN-JL1040 (GG25)
		SD_ Ductile iron EN-JS1030 (GGG40)
5	SPINDLE	Steel
6	HANDWHEEL	Cast iron EN-JL1040 (GG25)
7	H/W DOWEL PIN	Steel (EN42)
8	BODY STUDS	Steel
9	BODY NUTS	Steel

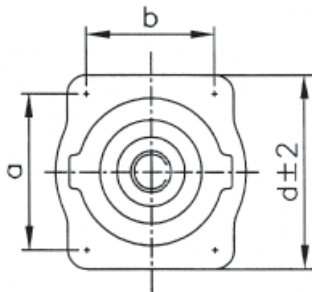
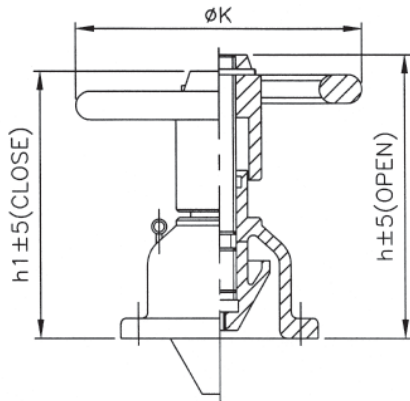
Main Valve Parameters

DN	15	20	25	32	40	50	65	80
L	64	83	108	121	140	165	203	254
H (open)	112	117	142	142	140	206	236	284
ØW	100	100	120	120	120	164	220	240
e	71	71	85	85	85	115	130	171
Approx. Weight	1,8	2,2	3	4	4	7,25	12,5	19,5

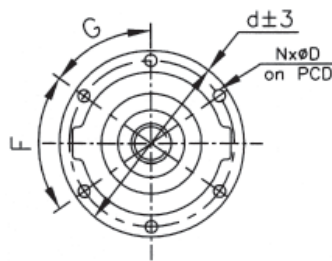
Dimensions in mm subject to manufacturing tolerance / Weights in kg



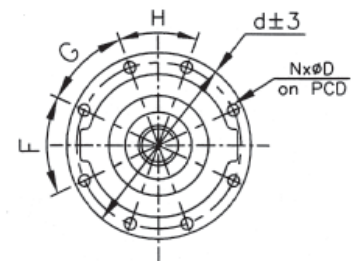
Main Bonnet Dimensions



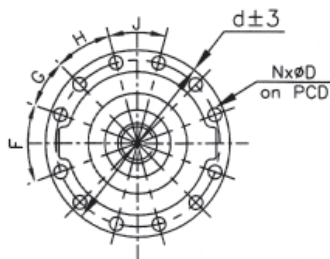
SIZE: DN 15 TO DN 80



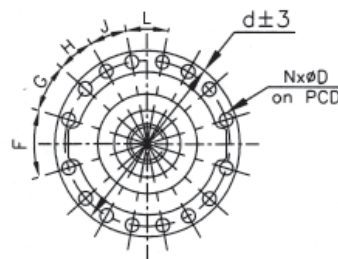
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SIZE: DN 125 TO DN 200



SIZE: DN 250

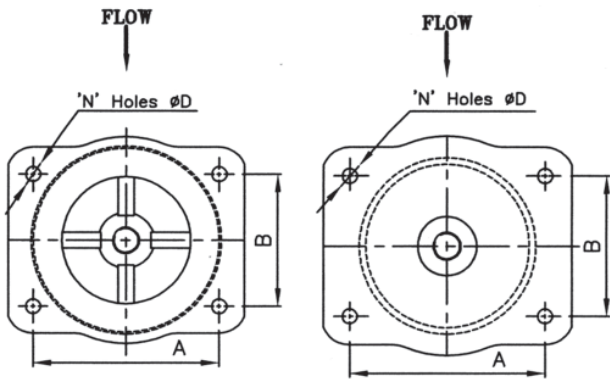


SIZE: DN 300

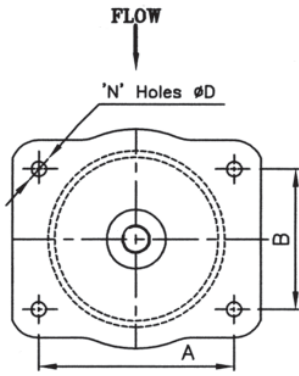
DN	a	b ØPCD	d	h	h1	ØK	NxØD	Weight	ANGLES BETWEEN THE HOLES				
									F	G	H	J	L
15	54	30	71	93,5	86,0	100	4x7	1,2	---	---	---	---	---
20	54	30	71	93,5	86,0	100	4x7	1,2	---	---	---	---	---
25	64	51	85	105,0	93,0	120	4x9	2,0	---	---	---	---	---
32	64	51	85	105,0	93,0	120	4x9	2,0	---	---	---	---	---
40	64	51	85	105,0	93,0	120	4x9	2,0	---	---	---	---	---
50	89	64	115	165,0	147,5	164	4x11	4,5	---	---	---	---	---
65	102	83	130	185,0	161,0	220	4x13	7,0	---	---	---	---	---
80	137	102	171	231,0	201,0	240	4x17	11,0	---	---	---	---	---
100	---	Ø171	Ø200	243,0	210,5	270	6x13	14,5	70°	55°	---	---	---
125	---	Ø205	Ø234	264,0	226,5	270	8x13	18,0	50°	45°	40°	---	---
150	---	Ø254	Ø290	346,0	295,0	360	8x13	31,0	60°	40°	40°	---	---
200	---	Ø305	Ø350	395,0	333,0	460	8x17	50,0	60°	40°	40°	---	---
250	---	Ø381	Ø430	507,0	434,5	525	12x21	79,0	40°	25°	30°	30°	---
300	---	Ø451	Ø512	641,0	546,0	600	16x21	115,0	34°	24°20'	19°	19°	21°20'

Dimensions in mm subject to manufacturing tolerance / Weights in kg

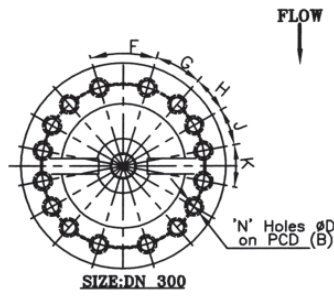
Main Spare Diaphragms Dimensions



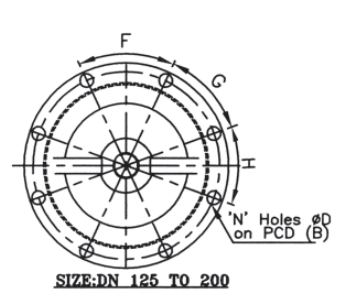
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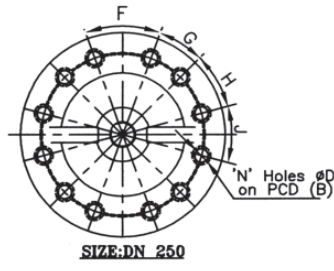
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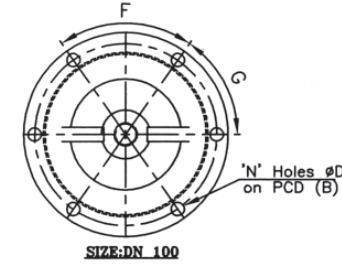
SIZE:DN 300



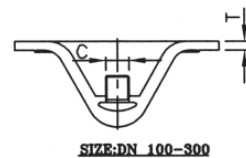
SIZE:DN 125 TO 200



SIZE:DN 250



SIZE:DN 100

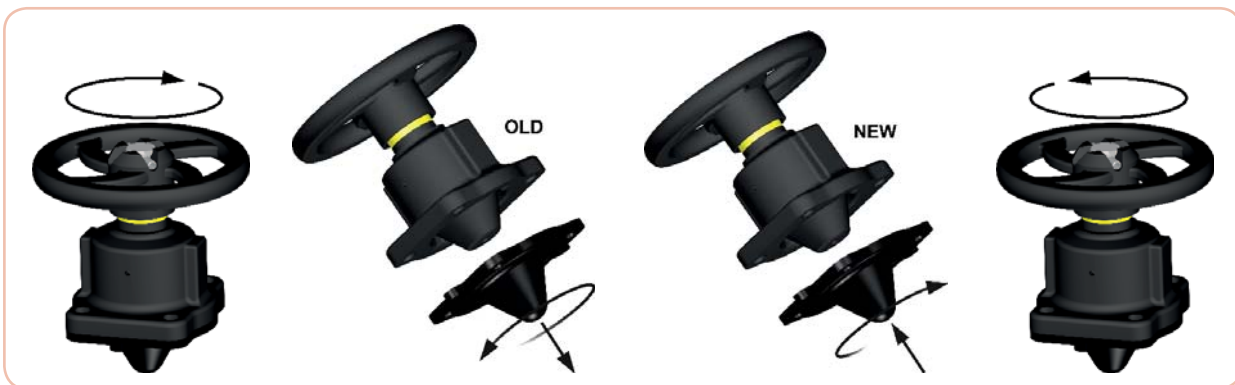


SIZE:DN 100-300

DN	DIMENSIONS OF DIAPHRAGM					ANGLES BETWEEN THE HOLES					
	A	B	C	ØD	Nº HOLES	T	F	G	H	J	K
15	54	30	3/16" BSW	7.0	4	2.5	---	---	---	---	---
20	54	30	3/16" BSW	7.0	4	2.5	---	---	---	---	---
25	64	51	1/4" BSW	9.5	4	6.0	---	---	---	---	---
32	64	51	1/4" BSW	9.5	4	6.0	---	---	---	---	---
40	64	51	1/4" BSW	9.5	4	6.0	---	---	---	---	---
50	89	64	1/4" BSW	12.0	4	5.0	---	---	---	---	---
65	102	83	5/16" BSW	14.0	4	5.5	---	---	---	---	---
80	137	102	3/8" BSW	18.0	4	5.5	---	---	---	---	---
100	---	Ø171	3/8" BSW	13.0	6	7.0	70°	55°	---	---	---
125	---	Ø205	3/8" BSW	14.0	8	7.5	50°	45°	40°	---	---
150	---	Ø254	5/8" BSW	14.0	8	8.0	60°	40°	40°	---	---
200	---	Ø305	5/8" BSW	20.0	8	8.5	60°	40°	40°	---	---
250	---	Ø381	5/8" BSW	20.0	12	10.0	40°	25°	30°	30°	---
300	---	Ø451	1" BSW	20.0	16	10.0	34°	24°20'	19°	19°	21°20'

Dimensions in mm subject to manufacturing tolerance / Weights in kg

Brief Guide of Instructions: Replacing an old diaphragm



## Straight Through Type Diaphragm Valves with Pneumatic Actuator

### Main Features

- For DIAVAL manufactured valves in weir and straight through type, with rubber diaphragms and PTFE / rubber backed diaphragms.
- Rugged & compact design, long life span at the plant. Favourable size / performance ratio.
- Rolling diaphragm design, allowing long cycle operations.
- Single acting (Direct and reverse actions).
- High quality spring, large thrust.
- Visual position indicator for open / close.
- Burnished stem protected by bellow.
- Maintenance-free O-ring sealing with flexible guiding.
- Possibility of assembly of additional devices / accessories.
- Operating ambient temperatures -40°C to +100°C.
- Fully traceable at the manufacture facility, identified by aluminum riveted plates.
- Optional top mounted emergency hand wheels for manual operation.
- Compliant with Machinery Directive 2006/42/EC



### Working Principle

Direct Acting actuator is designed to operate from a normally open position. Air pressure on the top side of actuator diaphragm closes the valve and the spring opens the valve when the air is released from the actuator.

Reverse Acting actuator is designed to operate from a normally closed position. Air pressure on the bottom side of the actuator diaphragm opens the valve. When air is released spring closes the valve.

### Control Accesories

There is a number of control accessories available to be assembled on to the ARI actuators. These accessories are comprehensive of limit switches (mechanical or inductive type), proximity sensors, solenoid valves, air speed regulators, positioners, air gauge sets... and many other customized solutions.

Control accessories may be specified and provided by the customer or by DIAVAL, however, only those accessories installed and tested at any DIAVAL facilities are covered by a performance guarantee.

### Tests - After Market

All actuators are tested after assembly and before dispatch. Tests are comprehensive of visual and functional tests as per EN-12266-1/DIN 3230 P.3 - EN.10.204/2.2

Actuators can be serviced at DIAVAL facilities where a stock of common spares is permanently available. Off site service engineers are available on demand and against usual service rates.

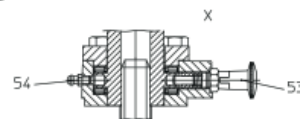
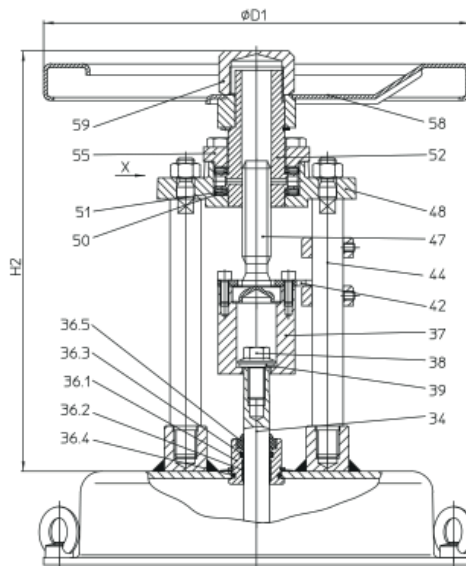
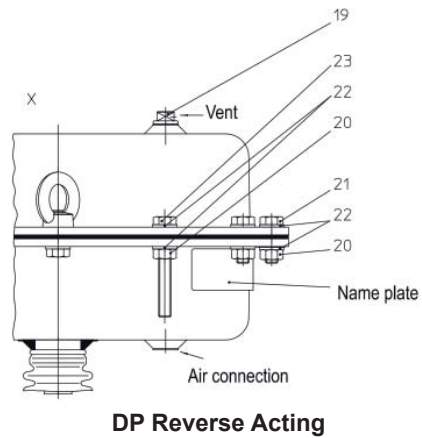
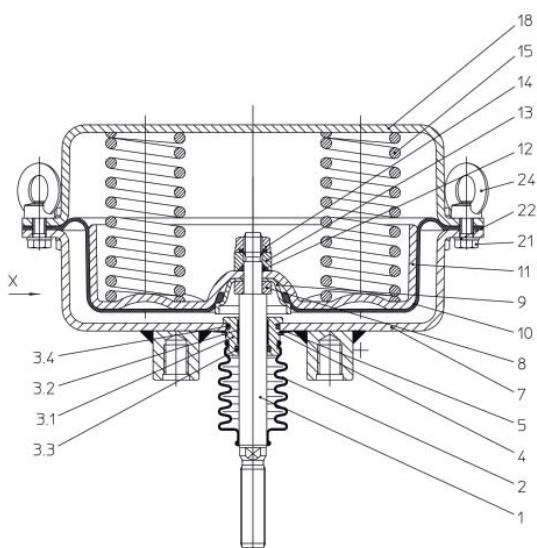
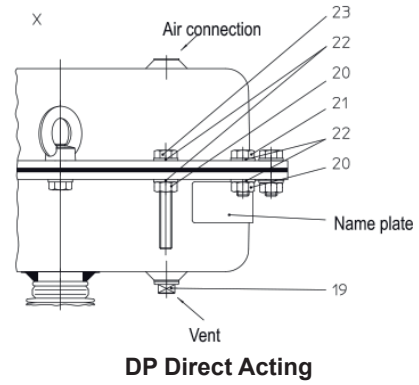
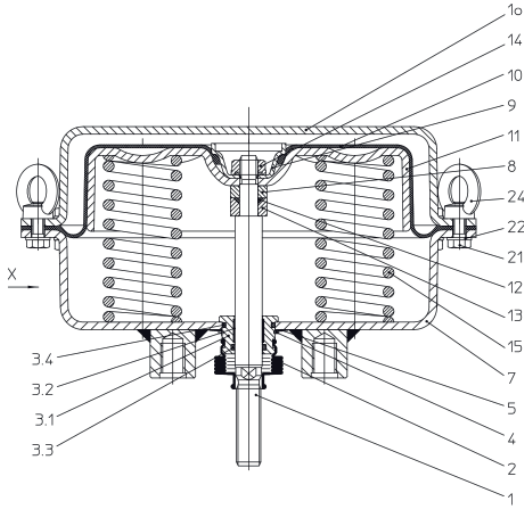
### Operating and Maintenance Instructions

Please ensure that the DIAVAL Operating and Maintenance Instructions are provided by your supplier along with the valves. Do not try to start maintenance without having read and understood the Essential Safety Guidelines. Please consult us for further information.



### Standard Materials

Only the best quality materials are incorporated to the DIAVAL manufacturing process and are subject to a strict quality control by our DIAVAL engineers at the assembly plant.



Top Handwheel (Optional)



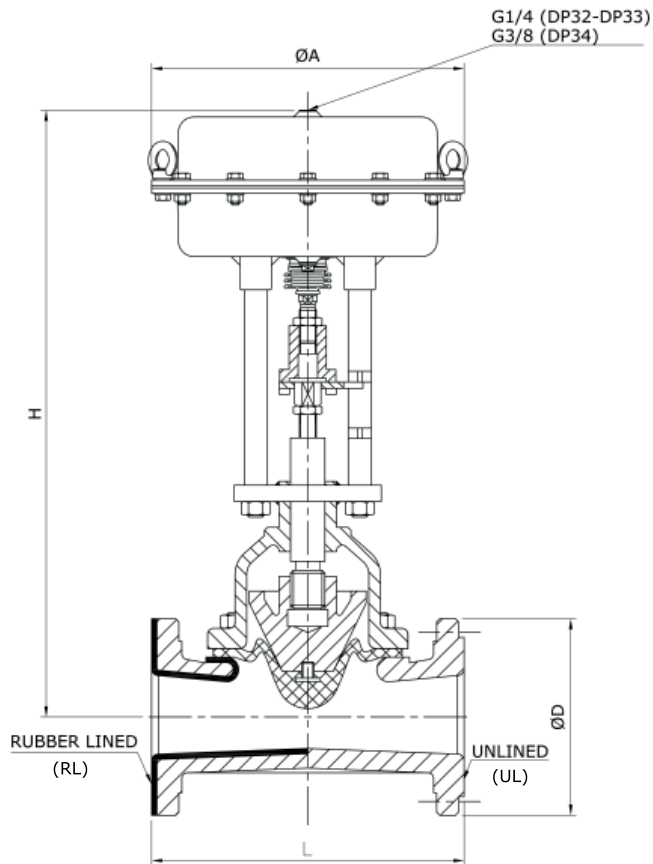
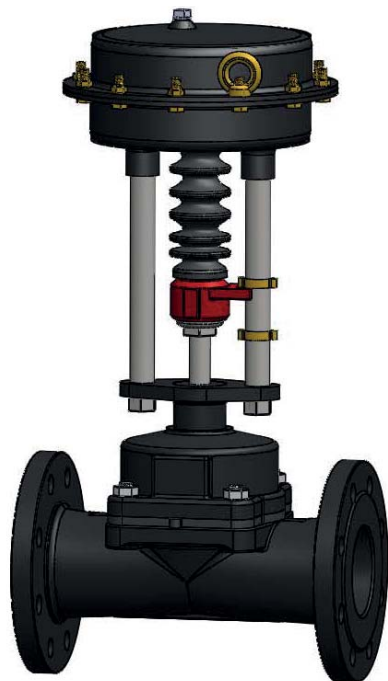
### Standard Materials

Pos.	Description	Material
1	Stem	X20Cr13+QT, 1.4021+QT
2	Bellow seal	EPDM50 or 42CR
3	Stem guiding *	X20Cr13+QT, 1.4021+QT
3.1	Stem guiding *	X20Cr13+QT, 1.4021+QT
3.2	Guiding band *	PTFE + 25%C
3.3	O-ring (stem) *	NBR
3.4	O-ring (guiding) *	NBR
3.5	Scraper *	NBR
4	Retaining ring	FSt - A3B
5	Spring plate	FSt (Fe/Zn12B)
6 / 7	Lower diaphragm casing (DP32-34Tri)	DD13+QT, 1.0335+QT (powder coated)
7	Lower diaphragm casing (DP35)	P265GH, 1.0425 / S235JR, 1.0037
8	Bushing	X20Cr13+QT, 1.4021+QT
9	Diaphragm lange	DD13+QT, 1.0335+QT (Fe/Zn12B) or X20Cr13+QT,
10	Rolling diaphragm *	1.4021+QT
11	Diaphragm plate (DP32-34Tri)	NBR + webbing
11	Diaphragm plate (DP35) *	DD13+QT, 1.0335+QT (Fe/Zn12B)
12	O-ring	St 52-3 G 03 g, 1.0570 G 03 g
13	Bushing	NBR
14	Flange nut	X20Cr13+QT, 1.4021+QT
15	Compression spring *	8 - A4G
16	Spring centring	FDSiCr
17	Spring centring	DC01, 1.0330 (Fe/Zn12B)
18	Upper diaphragm casing (DP32-34Tri)	St 52-3 G 03 g, 1.0570 G 03 g
18	Upper diaphragm casing (DP35)	DD13+QT, 1.0335+QT (powder coated)
19	Screwed cap	P265GH, 1.0425 / S235JR, 1.0037
20	Hexagon nut (DP32-34Tri) 1)	Polyäthylen
20	Hexagon nut (DP35) 1)	8 - A4G

Pos.	Description	Material
21	Hexagon screw (DP32-34Tri) 1)	C35E, 1.1181
21	Hexagon screw (DP35) 1)	8.8 - A4G
22	Washer	8.8 - A4G
23	Hexagon screw (DP32-34Tri) 1)	St - A4G
23	Hexagon screw (DP35) 1)	8.8 - A4G
24	Eye nut 1)	10.9 - A2G
34	Stem extension	8-A4G
36.1	Bellow seal *	X20Cr13+QT, 1.4021+QT
36.2	Guiding band *	X14CrMoS17+QT, 1.4104+QT
36.3	O-ring *	PTFE +25%C
36.4	O-ring *	NBR
36.5	Scraper *	NBR
37	Bushing	NBR
38	Hexagon screw	X20Cr13+QT, 1.4021+QT
39	Washer	8.8 - A4G
42	Torsion lock	X20Cr13+QT, 1.4021+QT
44 1	Distance column	8.8 - A4G
47	Stem	1SMn30+C, 1.0715+C (Fe/Zn12B)
48	Traverse	X20Cr13+QT, 1.4021+QT
50	Axial-washer	EN-JS1049, EN-GJS-400-18U-LT (Fe/Zn12B)
51	Axial-dial ring	St
52	Threaded bush	St
53	Catch pin	CuZn35Ni3Mn2Al-Pb-R490, CW710RR490
54	Lubricating nipple	St, Cu
55	Covering for traverse	5.8 - A4G
58	Handwheel	S235JR, 1.0037 (Fe/Zn12B)
59	Safety cap	Fe P01, 1.0330 (epoxy coating)

## Straight Through Type Diaphragm Valves with Direct Acting Pneumatic Actuator- Rubber Diaphragm

### Main Dimensions



DN	L			H	ØD	ØA
	EN 558 S1 (DIN 3202 F1)		EN 558 S7 (BS 5156)			
	UL/RL	UL	RL			
15	130	108	114	420	95	250
20	150	117	123	423	105	250
25	160	127	133	453	115	250
32	180	146	152	455	140	250
40	200	159	165	463	150	250
50	230	190	196	493	165	250
65	290	216	222	685	185	250
80	310	254	260	716	200	250
100	350	305	313	754	220	405
125	400	356	364	780	250	405

Dimensions in mm subject to manufacturing tolerance.

Dimensions are based on the serialized manufacture and should be taken as preliminary.

Please, bear in mind the service clearance area when planning a skid or when installation happens in a very tight area.

### Actuation Selection Chart

Direct Acting (actuator opens at air failure, springs to open/air to close).

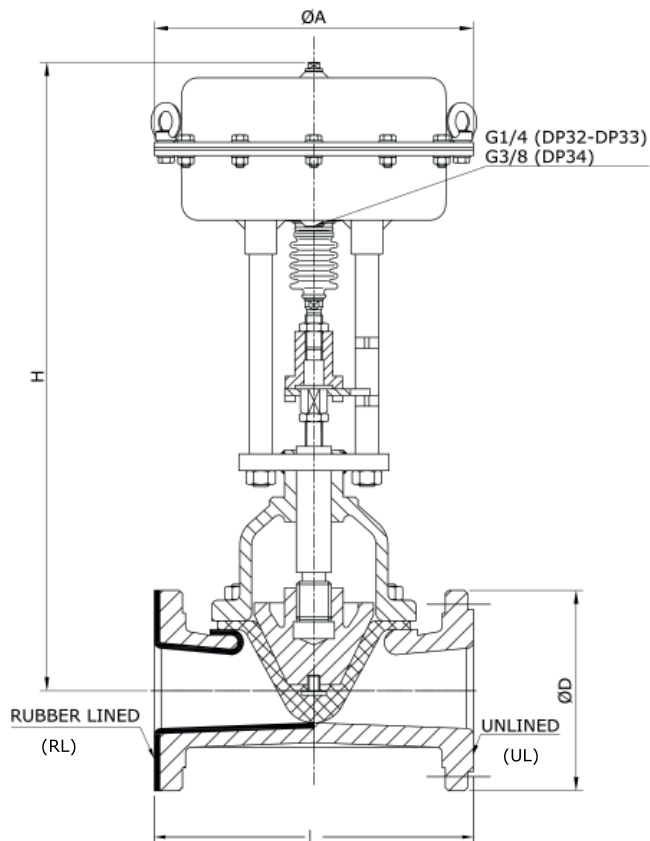
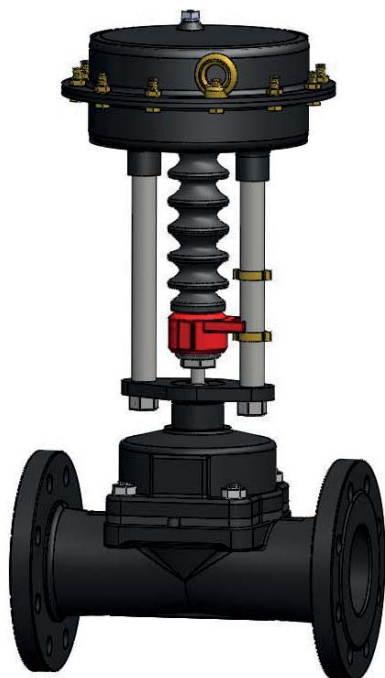
Valve Size	Actuator Type	Max. Closing Pressure 100% ΔP (bar)	Max. Closing Pressure 0% ΔP (bar)	Air Supply to Close (bar)
DN15	DP32021020NA	8	8	2,0-2,5
DN20	DP32021020NA	8	8	2,5-3,0
DN25	DP32021030NA	8	8	2,5-3,0
DN32	DP32021030NA	8	8	2,5-3,0
DN40	DP32021030NA	8	7	2,5-3,0
DN50	DP32021030NA	8	6	4,0-4,5
DN65	DP34021050NA	8	6	2,5-3,0
DN80	DP34021065NA	8	6	3,0-3,5
DN100	DP34021065NA	8	6	3,5-4,0
DN125	DP34021065NA	6	4	4,0-4,5

Information / restriction of technical rules need to be observed!  
Installation, Operating and Maintenance Manual can be downloaded at [www.comeval.es](http://www.comeval.es)

The engineer, designing a system or a plant, is responsible for the selection of the correct valve  
Product suitability must be verified, contact manufacturer for information

Straight Through Type Diaphragm Valves with Reverse Acting Pneumatic Actuator- Rubber Diaphragm

Main Dimensions



DN	L			H	ØD	ØA
	EN 558 S1 (DIN 3202 F1)		EN 558 S7 (BS 5156)			
	UL/RL	UL	RL			
15	130	108	114	420	95	250
20	150	117	123	423	105	250
25	160	127	133	453	115	250
32	180	146	152	455	140	250
40	200	159	165	463	150	250
50	230	190	196	493	165	250
65	290	216	222	685	185	250
80	310	254	260	716	200	250
100	350	305	313	754	220	405
125	400	356	364	780	250	405

Dimensions in mm subject to manufacturing tolerance.

Dimensions are based on the serialized manufacture and should be taken as preliminary.

Please, bear in mind the service clearance area when planning a skid or when installation happens in a very tight area.

Actuation Selection Chart

Reverse Acting (actuator closes at air failure, air to open/spring to close).

Valve Size	Actuator Type	Max. Closing Pressure 100% ΔP (bar)	Max. Closing Pressure 0% ΔP (bar)	Air Supply to Open (bar)
DN15	DP32041220NC	8	8	2,0-2,5
DN20	DP32082420NC	8	8	3,0-3,5
DN25	DP32082430NC	8	8	3,0-3,5
DN32	DP32082430NC	8	7	3,5-4,0
DN40	DP32082430NC	8	6	3,5-4,0
DN50	DP33153030NC	8	6	4,0-4,5
DN65	DP34082450NC	8	6	3,5-4,0
DN80	DP34102065NC	8	6	3,5-4,0
DN100	DP34204065NC	8	6	5,0-5,5
DN125	DP34204065NC	6	4	5,0-5,5

Information / restriction of technical rules need to be observed! Installation, Operating and Maintenance Manual can be downloaded at [www.comeval.es](http://www.comeval.es)

The engineer, designing a system or a plant, is responsible for the selection of the correct valve Product suitability must be verified, contact manufacturer for information

## Material Selection

Information contained in the Material Selection Chart is a combination of theoretical and application data, and should be taken as a guide only. Pressure-temperature rating, material compatibility and other parameters also to be considered for rubber selection. Please consult our Technical Department for a particular application. With constant material / process changes, Diaval® cannot accept responsibility for diaphragm and/or body material performance resulting from such changes.

Fluid	Body Material		Diaphragm		Recommendations
Abrasive slurry - non acidic	Soft rubber lined	Ductile iron	D10		
Abrasive slurry - acidic	Butyl lined		D20 or D30		
Acetic acid up to 50%	Halar® lined	FEP lined	D20 or D30		
Acetic acid over 50%	Halar® lined	FEP lined	D20 or D30		
Acetic acid (glacial)	Halar® lined	FEP lined	D20 or D30		Sealed bonnet
Acetoacetic ester	Halar® lined	Stainless steel	D90		
Acetone	Ductile iron		D20 or D30		
Acetylene	Ductile iron	Cast steel	D20 or D30		No copper
Alum	Hard rubber lined	Soft rubber lined	D10	D20 or D30	
Alumina	Ductile iron	Soft rubber lined	D20 or D30	D10	
Aluminium sulphate	Hard rubber lined	Butyl rubber lined	D10	D20 or D30	
Ammonia, aqueous	Ductile iron	Stainless steel	D10	D20 or D30	Sealed bonnet
Ammonia gaseous	Ductile iron	Stainless steel	D10	D20 or D30	Sealed bonnet
Ammonium nitrate	Butyl rubber lined	FEP lined	D20 or D30	D50	
Ammonium phosphate	Butyl rubber lined		D10	D20 or D30	
Ammonium sulphate	Butyl rubber lined		D20 or D30		
Aniline	FEP lined	Stainless steel	D92		
Antifreeze	Ductile iron	Butyl rubber lined	D20 or D30		
Apple juice	Stainless steel		D15		
Asbestos cement	Soft rubber lined	Ductile iron	D10		
Ash handling	Soft rubber lined	Ductile iron	D10		
Asphalt	Ductile iron	Cast steel	D20 or D30		
Avcat	Stainless steel	Cast steel	D70	D20 or D30	
Avgas	Stainless steel	Cast steel	D70		
Avtag	Stainless steel	Cast steel	D70	D20 or D30	
Avtur	Stainless steel	Cast steel	D70	Butyl	
Barium carbonate	Hard rubber lined	Stainless steel	D20 or D30	D50	
Barium sulphate	Soft rubber lined	Hard rubber lined	D20 or D30		
Barytes	Soft rubber lined	Hard rubber lined	D10		
Basic slag	Soft rubber lined	Ductile iron	D10		
Battery acid	Hard rubber lined	Butyl rubber lined	D20 or D30		
Bauxite	Soft rubber lined		D10		
Beet juice	Ductile iron	Hard rubber lined	D20 or D30		
Benzene	Butyl rubber lined	Halar® lined	D92		
Benzyl alcohol	FEP lined	Halar® lined	D92		Sealed bonnet
Bilge (ships)	Ductile iron	Cast steel	D40		
Blast furnace gas	Ductile iron	Ductile iron	D20 or D30		
Bleaching powder	Hard rubber lined	Hypalon lined	D60		
Borax	Hard rubber lined		D10		
Brine	Hard rubber lined	Stainless steel	D10	D92	
Brine, chlorinated	Hard rubber lined	Hypalon lined	D60		
Bromine	FEP lined		D92		Sealed bonnet
Bcf	Ductile iron		D92		
Butane	Ductile iron	Cast steel	D40	D50	Sealed bonnet
Butanol	Ductile iron	Cast steel	D20 or D30		
Calcium carbonate	Ductile iron	Soft rubber lined	D10	D20 or D30	
Calcium chloride	Hard rubber lined		D10	D20 or D30	
Calcium hydroxide	Ductile iron	Soft rubber lined	D10	D20 or D30	

**Material Selection**

Fluid	Body Material		Diaphragm		Recomendations
Calcium hypochlorie	Hard rubber lined	Ductile iron	D60	D10	
Calcium phosphate	Butyl rubber lined	Hard rubber lined	D10	D20 or D30	
Calcium sulphate	Soft rubber lined	Ductile iron	D10	D20 or D30	
Calor gas	Ductile iron		D40		
Cane juice	Ductile iron	Soft rubber lined	D20 or D30		
Carbon black	Soft rubber lined	Ductile iron	D10		
Carbon dioxide	Ductile iron	Ductile iron	D20 or D30		
Carbon monoxide	Ductile iron		D20 or D30		Sealed bonnet
Carbon tetrachloride	Ductile iron	Ductile iron	D92		
Castor oil	Ductile iron		D20 or D30		
Caustic potash	Ductile iron	Butyl rubber lined	D10	D20 or D30	Sealed bonnet
Caustic soda	Ductile iron	Butyl rubber lined	D10	D20 or D30	Sealed bonnet
Cement (dry and slurry)	Soft rubber lined	Ductile iron	D10		
Chalk	Ductile iron	Soft rubber lined	D10		
China clay	Ductile iron	Soft rubber lined	D10		
Chlorinated brine	FEP lined	Hard rubber lined	D60	D10	
Chlorine gas dry	Ductile iron	Halar® lined	D97		
Chlorine gas moist	FEP lined	Halar® lined	D97		
Chlorine gas wet	FEP lined	Halar® lined	D97		
Chlorine water	Hard rubber lined	Halar® lined	D10		
Chloroform	FEP lined	Stainless steel	D92		
Chrome alum	Butyl rubber lined	Halar® lined	D20 or D30		
Chrome plating solns	Butyl rubber lined	Halar® lined	D20 or D30		
Chrome tanning solns	Butyl rubber lined	Halar® lined	D20 or D30	D92	
Clays and slips	Soft rubber lined	Ductile iron	D10		
Coal dust	Soft rubber lined	Ductile iron	D10		
Coal gas	Ductile iron	Ductile iron	D20 or D30	D40	
Coal slurry	Soft rubber lined	Ductile iron	D10		
Coke oven gas	Ductile iron	Ductile iron	D20 or D30	D40	
Compressed air (oil free)	Ductile iron	Cast steel	D40	D20 or D30	
Compressed air (oily)	Ductile iron	Cast steel	D40	D70	
Concrete	Soft rubber lined	Ductile iron	D10		
Copper plating solutions	Butyl rubber lined	Halar® lined	D20 or D30		
Copper sulphate	Butyl rubber lined	Halar® lined	D20 or D30		
Creosote	Hard rubber lined	Halar® lined	D70		
Creosote	Ductile iron	Halar® lined	D70		
Crude oil	Cast steel	Ductile iron	D70	D92	
Cutting oil	Hard rubber lined		D40		
Demineralised water	Hard rubber lined	Stainless steel	D20 or D30	D92	
Detergents	Hard rubber lined	Halar® lined	D20 or D30	D10	
Dibutyl phthalate	Halar® lined	Ductile iron	D92		
Dichlorodiluoromethane	Ductile iron	Cast steel	D92		
Diesel oil	Ductile iron	Cast steel	D70		
Diethyl ether	Stainless steel	Ductile iron	D92		Sealed bonnet
Diethylene glycol	Ductile iron	Stainless steel	D20 or D30		
Disinfectant (general)	Ductile iron	Halar® lined	D50		
Dye liquors	FEP lined	Butyl rubber lined	EPDM	D20 or D30	
Electrolytic tinplating solutions	Butyl rubber lined	FEP lined	D20 or D30		
Ethane	Ductile iron	Cast steel	D40	D50	
Ethanol	Ductile iron	Stainless steel	D20 or D30	D20 or D30	
Ether	Ductile iron	Stainless steel	D92		Sealed bonnet
Ethyl acetate	Stainless steel	Halar® lined	D20 or D30		
Ethyl alcohol	Ductile iron	Stainless steel	D20 or D30		
Ethylene	Ductile iron	Stainless stee	D20 or D30		



**Material Selection**

Fluid	Body Material		Diaphragm	Recomendations	
Ethylene glycol	Ductile iron	Stainless steel	D20 or D30		
Ferric sulphate	Butyl rubber lined	Halar® lined	D10		
Fertilizers (dry powders)	Soft rubber lined	Ductile iron	D10		
Fertilizer slurries (wet process)	Butyl rubber lined	Ductile iron	D20 or D30	D20 or D30	
Fire foam	Ductile iron	Cast steel	D40		
Flue gas	Ductile iron	Cast steel	D40	D20 or D30	
Fly ash	Ductile iron	Soft rubber lined	D10	Butyl	
Freon	Ductile iron	Ductile iron	D92	D50	
Fuel oil	Ductile iron	Cast steel	D40		
Gas (coal)	Ductile iron	Cast steel	D40		
Gas (natural)	Ductile iron	Cast steel	D40		
Gasoline	Cast steel	Ductile iron	D70		
Glucose	Stainless steel	Stainless steel	D20 or D30		
Glycerine	Stainless steel	Hard rubber lined	D20 or D30		
Gravel	Soft rubber lined	Ductile iron	D10		
Grease	Ductile iron	Cast steel	D40		
Gypsum	Soft rubber lined	Ductile iron	D10		
Hydraulic oils (vegetable based)	Ductile iron	Ductile iron	D20 or D30		
Hydraulic oils (mineral based)	Ductile iron	Ductile iron	D40		
Hydrobromic acid	FEP lined	Halar® lined	D92		
Hydrochloric acid	Hard rubber lined	Halar® lined	D10	D92	
Hydrofluoric acid	Butyl rubber lined	Halar® lined	D20 or D30		
Hydrogen	Ductile iron	Cast steel	D20 or D30	D10	Sealed bonnet
Hydrogen peroxide	Hard rubber lined	Stainless steel	PTFE/D70	D20 or D30	
Hypo	Hard rubber lined	Halar® lined	D10	D60	
Inert gases	Ductile iron	Ductile iron	D20 or D30		
Inks	Stainless steel	Halar® lined	D92	D20 or D30	
Insecticide solutions	Ductile iron	Ductile iron	D40	D20 or D30	
Instrument air	Ductile iron	Stainless steel	D20 or D30	D40	
Iron oxide slurry	Soft rubber lined	Ductile iron	D20 or D30		
Isopropanol	Ductile iron	Hard rubber lined	D10	D20 or D30	
Kaolin	Soft rubber lined	Ductile iron	D10		
Kerosene	Ductile iron	Stainless steel	D70	D92	
Laundry bleach	Hard rubber lined	Halar® lined	D60	D10	
Lime	Ductile iron	Soft rubber lined	D10		
Liquid parafin	Ductile iron	Ductile iron	D40	D70	
Liquid petroleum gases (I.P.G.)	Ductile iron	Cast steel	D40	D20 or D30	Sealed bonnet
Lubricating oils	Hard rubber lined	Cast steel	D40	D70	
Magnesium chloride	Ductile iron	Butyl rubber lined	D10	D20 or D30	
Magnesium oxide	Butyl rubber lined	Hard rubber lined	D10	D20 or D30	
Magnesium sulphate	Soft rubber lined	Ductile iron	D10	D20 or D30	
Magnetite	Hard rubber lined	Ductile iron	D10		
Methane	Ductile iron	Ductile iron	D20 or D30	D40	
Methanol	Ductile iron	Stainless steel	D20 or D30		
Methanol/water mixture	Ductile iron	Hard rubber lined	D20 or D30	D10	
Methylated spirits	Ductile iron	Stainless steel	D20 or D30		
Methyl ethyl ketone (mek)	Stainless steel	FEP lined	D92		
Methyl isobutyl ketone	Stainless steel	FEP lined	D92	D20 or D30	
Milk	Stainless steel		D15		
Mineral oil	Ductile iron	Cast steel	D70	D40	
Molasses	Ductile iron	Stainless steel	D20 or D30		
Monosodium glutamate	Hard rubber lined	Stainless steel	D10		

**Material Selection**

Fluid	Body Material		Diaphragm		Recomendations
Mortar and cement	Soft rubber lined	Ductile iron	D10	D20 or D30	
Naphtha	Ductile iron	Cast steel	D70		
Napthalene	Ductile iron	Cast steel	D70		
Natural gas	Ductile iron	Stainless steel	D40	D50	
Nickel plating solutions	Butyl rubber lined	Halar® lined	D20 or D30	D60	
Nickel plating sludge	Butyl rubber lined	Halar® lined	D20 or D30	D60	
Nitric acid	FEP lined	Stainless steel	D92	D70	Check grade of S.S.
Nitric acid / hydrofluoric acid mix	FEP lined	Halar® lined	D92		
Nitrogen	Ductile iron	Stainless steel	D20 or D30		
Nitrous oxide (dry)	Stainless steel	FEP lined	D20 or D30		
Oils, animal	Ductile iron	Stainless steel	D40	D92	
Oils, cutting	Ductile iron	Stainless steel	D70	D40	
Oil fuel	Ductile iron	Stainless steel	D70	D40	
Oils, lubricating	Ductile iron	Stainless steel	D70	D40	
Oils, mineral	Ductile iron	Cast steel	D70	D40	
Oil, rolling	Ductile iron	Cast steel	D70	D40	
Oil, transformer	Ductile iron	Stainless steel	D70	D40	
Oils, vegetable	Stainless steel	Ductile iron	D40	D70	
Oleum	FEP lined	Halar® lined	D92		
Olive oil	Stainless steel	Ductile iron	D40	D92	
Oxygen	Ductile iron	Stainless steel	D50	D20 or D30	Degreased for oxygen
Paint (oil based)	Ductile iron	Stainless steel	D40	D20 or D30	
Paint (water based)	Ductile iron	Stainless steel	D20 or D30	D92	
Paper pulp	Hard rubber lined	Butyl rubber lined	D10	D20 or D30	
Paper stock	Hard rubber lined	Butyl rubber lined	D10	D20 or D30	
Parafin	Ductile iron	Stainless steel	D70	D40	
Parafin wax	Ductile iron	Cast steel	D40	D70	
Paraquet	Ductile iron	Halar® lined	D40		Sealed bonnet
Pentane	Ductile iron	Cast steel	D70	D92	
Perchloroethylene	Ductile iron	Cast steel	D70	D92	
Petrol	Ductile iron	Cast steel	D70		Sealed bonnet
Petroleum jelly	Ductile iron	Halar® lined	D70	D40	
Phosphoric acid	Butyl rubber lined	Halar® lined	D20 or D30		
Photographic developers	Halar® lined	FEP lined	D20 or D30	D92	
Plating solutions	Butyl rubber lined	Halar® lined	D20 or D30		
Polyethylene glycol	Ductile iron	Stainless steel	D10	D20 or D30	
Potassium chloride	Hard rubber lined	Halar® lined	D10	D20 or D30	
Potassium cyanide	Hard rubber lined	Halar® lined	D10	D20 or D30	Sealed bonnet
Potassium ferricyanide	Hard rubber lined	Halar® lined	D20 or D30	D10	
Potassium hydroxide	Ductile iron	Hard rubber lined	D20 or D30	D10	Sealed bonnet
Potassium hypochlorite	Hard rubber lined	Halar® lined	D60	D10	
Potassium phosphate	Hard rubber lined	Butyl rubber lined	D20 or D30	D10	
Pottery slip	Soft rubber lined	Ductile iron	D10		
Producer gas	Ductile iron	Cast steel	D20 or D30	D40	
Propane (gas or liquid)	Ductile iron	Cast steel	D40	D50	
Radioactive effluents	Butyl rubber lined	Stainless steel	D20 or D30		No copper parts.
Rock salt	Soft rubber lined	Hard rubber lined	D10	D20 or D30	
Rolling oil	Ductile iron	Cast steel	D70	D10	
Salt	Soft rubber lined	Hard rubber lined	D10	D20 or D30	
Sand	Soft rubber lined	Ductile iron	D10	D20 or D30	
Sea water	Stainless steel	Hard rubber lined	D10	D20 or D30	
Sewage	Ductile iron	Hard rubber lined	D10	D50	
Silver plating solutions	Butyl rubber lined	Halar® lined	D20 or D30		

**Material Selection**

Fluid	Body Material		Diaphragm		Recomendations
Slaked lime	Ductile iron	Soft rubber lined	D10	D20 or D30	
Slip (pottery)	Soft rubber lined	Ductile iron	D10		
Soap lye	Ductile iron	Butyl rubber lined	D10	D20 or D30	
Soap solutions	Ductile iron	Butyl rubber lined	D10	D20 or D30	
Sodium bicarbonate	Ductile iron	Halar® lined	D20 or D30	D92	
Sodium chloride	Soft rubber lined	Hard rubber lined	D10	D20 or D30	
Sodium hydroxide	Ductile iron	Hard rubber lined	D20 or D30	D10	Sealed bonnet
Sodium hydroxide (oily)	Ductile iron	Stainless steel	D50	D40	
Sodium hypochlorite	Hard rubber lined	Halar® lined	D10	D70	
Solvent naphtha	Ductile iron	Cast steel	D70	D40	
Stannic chloride	Halar® lined	FEP lined	D20 or D30	D92	
Starch solutions	Ductile iron	Halar® lined	D20 or D30	D60	
Stearic acid	Stainless steel	Halar® lined	D92		
Sugar	Ductile iron	Stainless steel	D20 or D30	D15	
Sulphur dioxide	Butyl rubber lined	Hard rubber lined	D20 or D30		
Sulphuric acid below 75%	Butyl rubber lined	Halar® lined	D20 or D30	D70	
Sulphuric acid 75-95%	Halar® lined	FEP lined	D92	D70	
Sulphuric acid 95-99%	Ductile iron	Halar® lined	D92	D70	Sealed bonnet
Sulphuric acid over 99%	FEP lined	Halar® lined	D92		
Syrups (sugar)	Ductile iron	Stainless steel	D20 or D30	D15	
Tetrachloroethane	Ductile iron	Stainless steel	D92	D70	Sealed bonnet
Textile dyes	Halar® lined	Butyl rubber lined	D20 or D30	D92	
Tin plating solutions	Halar® lined	Butyl rubber lined	D92	D20 or D30	
Titanium dioxide	Butyl rubber lined	Hard rubber lined	D20 or D30	D10	
Toluene	Ductile iron	Cast steel	D92		
Transformer oil	Stainless steel	Ductile iron	D70		
Trichloroethylene	Ductile iron	Stainless steel	D92	D70	Sealed bonnet
Turpentine	Ductile iron	FEP lined	D40	D70	Sealed bonnet
Vegetable oils	Ductile iron	Stainless steel	D70	D92	
Vinegar	Stainless steel		D92		
Water cold	Ductile iron	Stainless steel	D10	D20 or D30	
Water de-mineralised	Hard rubber lined	FEP lined	D10	D92	
Water drinking	Stainless steel	Stainless steel	D20 or D30		
Water oily	Ductile iron	Gunmetal	D40	D50	
Water (salt and brackish)	Stainless steel	Hard rubber lined	D10	D20 or D30	
Wood pulp	Ductile iron	Soft rubber lined	D10	D20 or D30	
Wort	Ductile iron	Stainless steel	D20 or D30		
Xylene	Ductile iron	Cast steel	D92	D70	
Zinc chloride	Soft rubber lined	Stainless steel	D10	D20 or D30	
Zinc oxide	Stainless steel	Butyl rubber lined	D20 or D30	D92	
Zinc plating solutions	Butyl rubber lined	Hard rubber lined	D20 or D30		

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