OBCA & OBNO

modelo

SELF-CENTERING DISC VALVE

Licence **EINAR**

It is a float valve unlike any other, with the following advantages:

- No friction: Sensitivity and progressiveness in operation.
- No cavitation: Wear resistant.
- Pressure sensitive disc: No water hammer.
- Extensive range of characteristics: Can be used under the highest heads and for any flow.
- Perfect water-tightness at its close.

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The self-centering disc valve is an apparatus used end of a pressure pipe-line in a reservoir or basin to maintain a practically constant level in spite of any flow variations.

Outstanding features of the self-centering disc valve, are:

*Progressive smooth operation.

*Resistance to wear and cavitation at all openings and energy dissipation requirements.

*Water hammer prevention.

Your frequent application, they are:

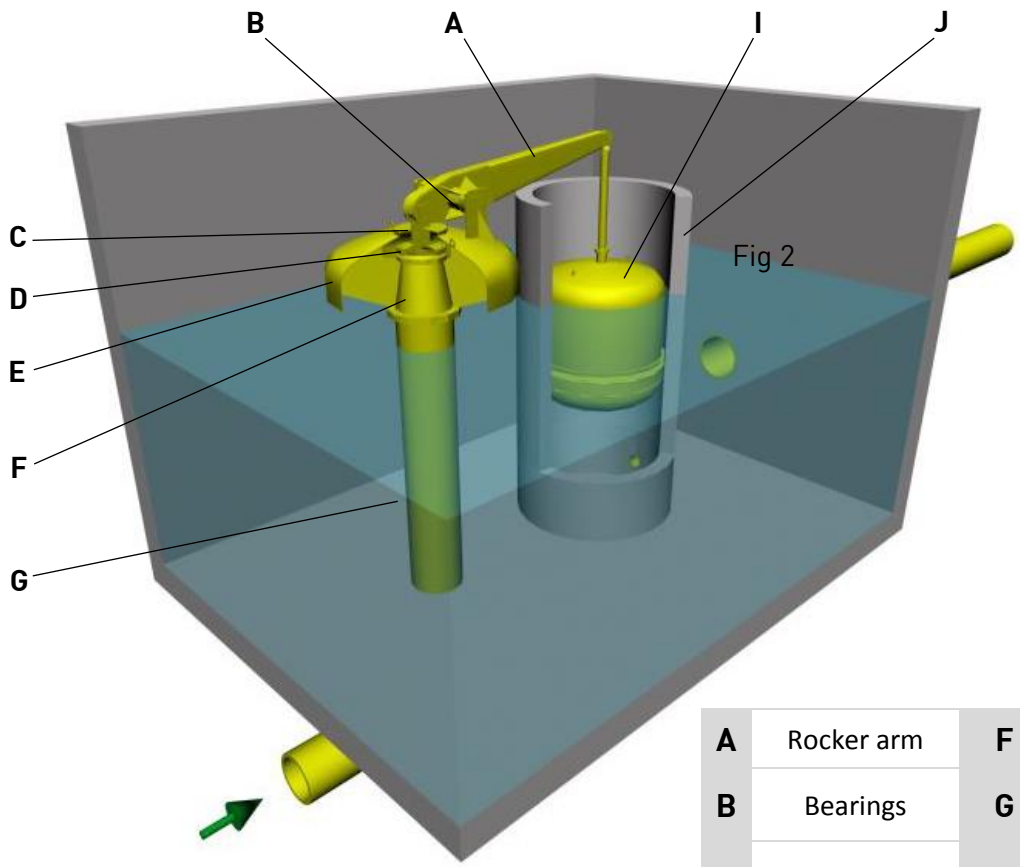
*Water supply systems.

*Water intakes at foot of dams.

*Head Works of water treatment plant.

*Controlling water surfaces at the outlet from pipes under pressure.

HOODED DISC VALVE (OBCA)



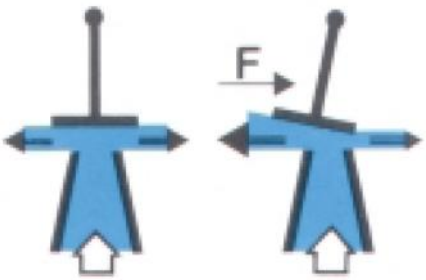
A	Rocker arm	**F**	Convergent nozzle
B	Bearings	**G**	Supply pipe
C	Swivel	**H**	Adjustable stop
D	Self-centering disc	**I**	Float
E	Deflector hood	**J**	Fitted float chamber

PRINCIPO DE FUNCIONAMIENTO

The valve is dependent upon a remarkable observed fact; if a flat disc, rigidly fixed to a rod pivoting freely about one end (fig1), is placed on a jet of water, it will be found that not only does the disc float, but it centers itself on the jet, maintaining stable equilibrium, without any external influence other tan the reaction at the upper end or the rod; at the same time the jet is spread radially. In fact When the disc is moved from its equilibrium position, its swings back again under a restoring force which increases with the radial displacement as well as with the pressure of the jet.

We thus have very simple discharge regulator which only needs lo be controlled by a float for it lo be able lo detect and cope with the least change in level.

Figura 1



- *Progressive smooth operation.*
- *Resistance to wear and cavitation at all openings and energy dissipation requirements.*
- *Water hammer prevention.*
- *Can be used under the highest heads and for any flow.*

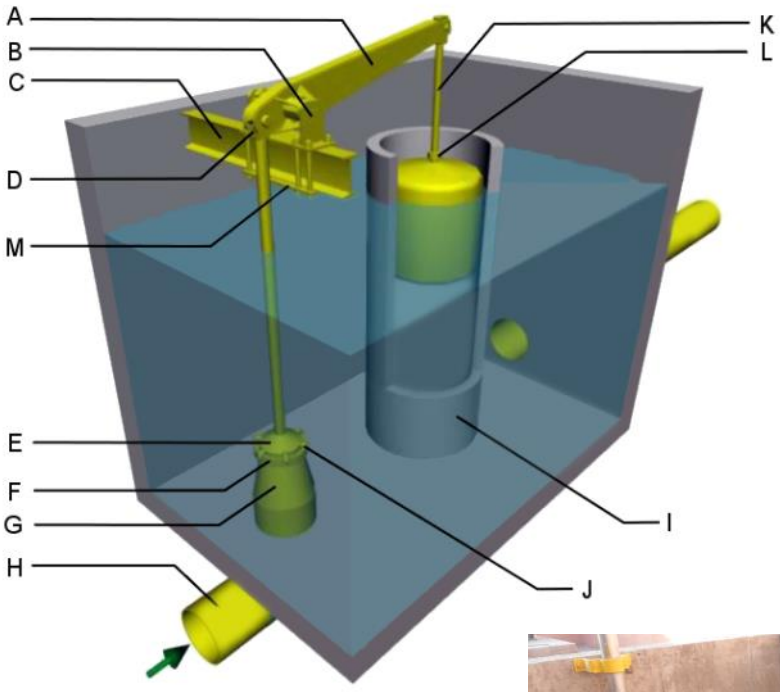
DESCRIPTION OF OPERATION:

The orifice and disc are situated above the wáter level which is to be regulated (fi.2).

The valve is closed by a flat disc to which is fixed a short rod connected at its upper end to a rocker lever through a swivel joint. The rocker lever is controlled by a float. Bellow the orifice ther is a convergent section of pipe designed to straighten out the flow from a vertically set elbow which is an almost unavoidable accessory, for the valve axis must be vertical.

A curved Hood strengthened with ribs, which is an integral part of the apparatus, defects the radical jet down towards the water Surface and makes for better energy dissipation. The valve closes when the disc comes into contact with the lip of the convergent nozzle. A completely watertight seal is afforded by a rubber lining on the underside of the disc. Because of tis Monobloc construction, the hooded valve con be fitted without any difficulty whatsoever.

SUMERGED DISC VALVE (OBNO)



A	Rocker arm
B	Bearings
C	Beam
D	Swivel joint
E	Self-centering disc
F	Adjustable seating
G	Convergent section of pipe
H	Supply pipe
I	Float
K	Fitted float chamber

Figure 3 illustrates a different orifice and disc arrangement. Here they are situated below the Surface of the water the level of which is to be regulated. The shape of the disc and suite seating bolted to the orifice are the characteristic behind both increased discharge coefficient ant the excellent stability which are characteristics of this apparatus, in spite of the long vertical rod connecting the disc to the rocker arm.

The rocker arm bearings are set on a horizontal beam which is capable of standing up to the combined thrusts of disc and float.

Because of the lower head losses, resulting from both the position of the orifice and from its higher discharge coefficient, this apparatus is more suitable tan the hooded disc valve for use where the available net head is very low.

Both types of valves are controlled by cylindrical floats having vertical axes and moving in close fitting float chambers communicating with the reservoir or basin through a narrow orifice, thus providing a damping effect which can be adjusted by fitting a valve. The float is linked to the rocker lever by a rod with a swivel joint at is upper end. The rocker arm is therefore hinged at three points.

MAIN FEATURES OF STANDARD MATERIAL

Standards disc valves are defined by nozzle diameter and information concerning the pipe upstream of the valve and about discharge, pressure conditions and the Works downstream. The normalized valves are:

- **Hooded Disc Valve (OBCA):**

Diameter Nozzle (mm):

32 – 50 – 80 – 125 – 160 – 200 – 250 – 315 – 400 - 500 (mm)

Maximum static pressure:

250 m for 32 to160 mm, diameter.

160 m for 200 to 250 mm diameter.

100 m for 315 to 500 mm diameter.

- **Submerged Disc Valve (OBNO):**

Diameter Nozzle (mm):

125 – 160 – 200 – 250 – 315 – 400 – 500 – 630 – 800 - 1000 (mm).

Maximum static pressure: 60 m.

Our equipment is made of Steel, specially protected by a sprayed-on zinc coating snoop process and a coat of paint.

The following figures are usually assumed for the power dissipated per m3 of water contained by a dissipater basin:

7,5 kW for a hooded valve

2,2 kW for a submerged valve

- **SELECTING THE APPARATUS:**

To choose a disc valve it is necessary to know the following data:

- The maximum head Hs to which the apparatus is likely to be subjected.
- The maximum discharge Q through the supply pipe to which the valve is to be fitted.
- The minimum net head Hr under which the apparatus delivers a discharge Q. Hr is equal to the static head lose in the pipe-line.

The actual static head HS should be less or at the most equal to nominal static head Hs of the apparatus selected by means of the foregoing tables. The mozzle diameter should be large enough to allow the discharge Q under the net head Hr; the actual loss of head J should be less or at the most equal to Hr.

CRITERIOS DE SELECCIÓN ENTRE OBTURADORES: BAJO CAPOTA Y SUMERGIDOS

❑ Hooded disc valve

The remarkable aptitude for the energy dissipation: so for the same power to vanish, it is necessary, regarding the Submerged disk valve, three times minor volumen dissipation. Therefore it is convenient to equip pipes with very high loads.

❑ Submerged disc valve

The flow coefficient is bigger for this one tan the hooded disk valve; for the same restored flow, it is necessary approximately twice less of minimum load, characteristic improved because the descent level at the tank, added to the increase of requested flow it is entirely recovered in net head.

The submerged disk valve is, therefore particularly suitable for important flows and/or when the available load is weak. It is convenient to mention the advantage

Décréemt

The level at which the water is held varies between two limiting cases:

- The low leves corresponding to the low position of the float, so the maximum choke opening or maximum flow under the weakest load.
- The high level corresponding to the high positon of the float, so the complete close or null flow at the satitc maximum pressure.

This variation is know as the "decrement" and si equal to the sum of the useful stroke of the float and the variation of the depth to wich it si immersed.

The decrement varies according to the models, the flow and the load. Its minimum value is 180 mm. (For example for a 200 mm choke with a 500 l/s flow and with 20 water load meters. The decrement is 700 mm.)

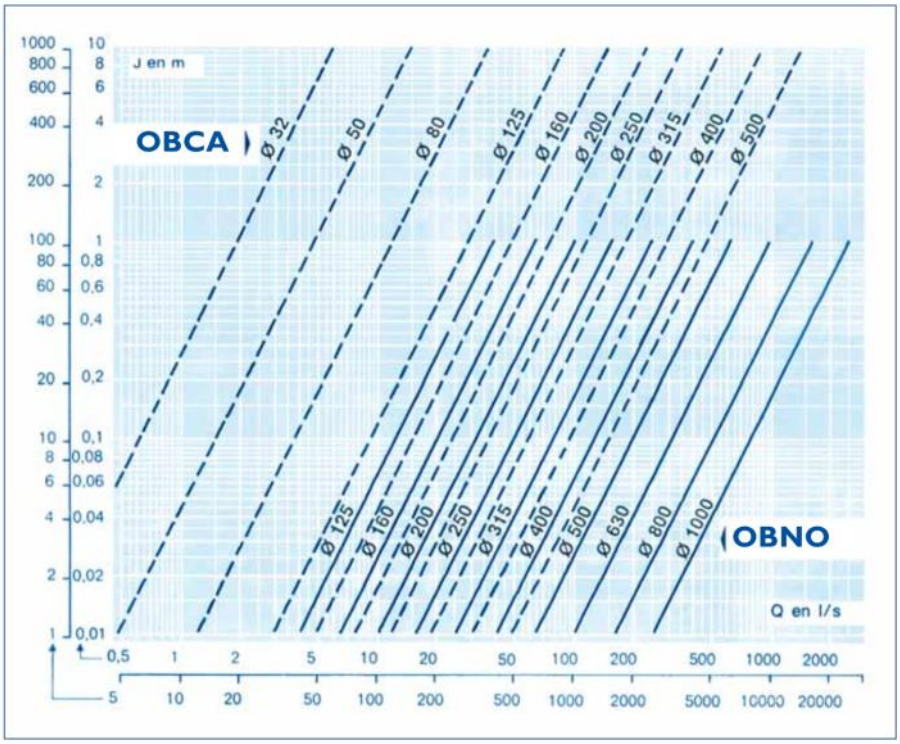
Decrease of the decrement

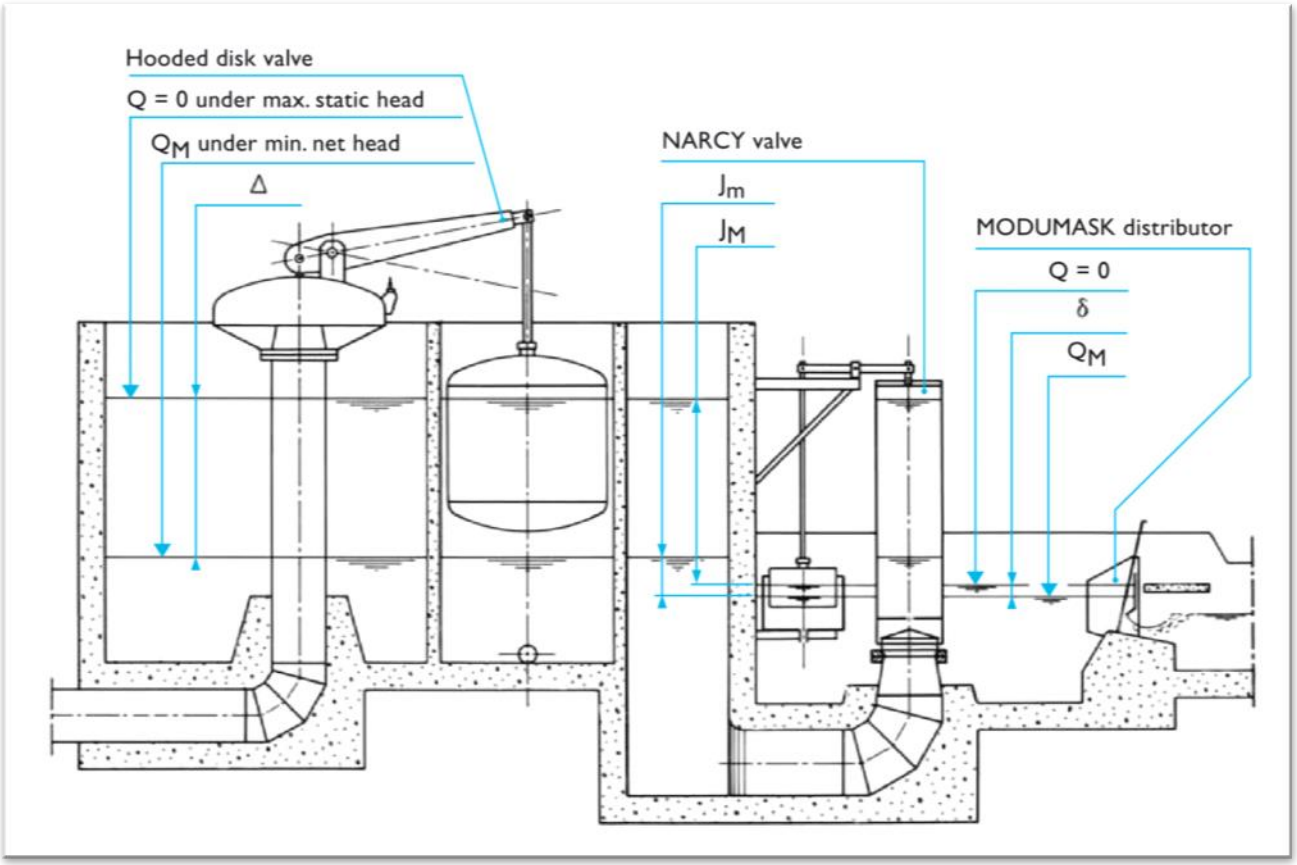
If the decrement real value is judged too important it is possible, in some cases, to decrease it using a special assembly, called "danaïdean" that specifies to admit a small flight flow (I at the 3% of the total flow).

Consult for it to our technical services.

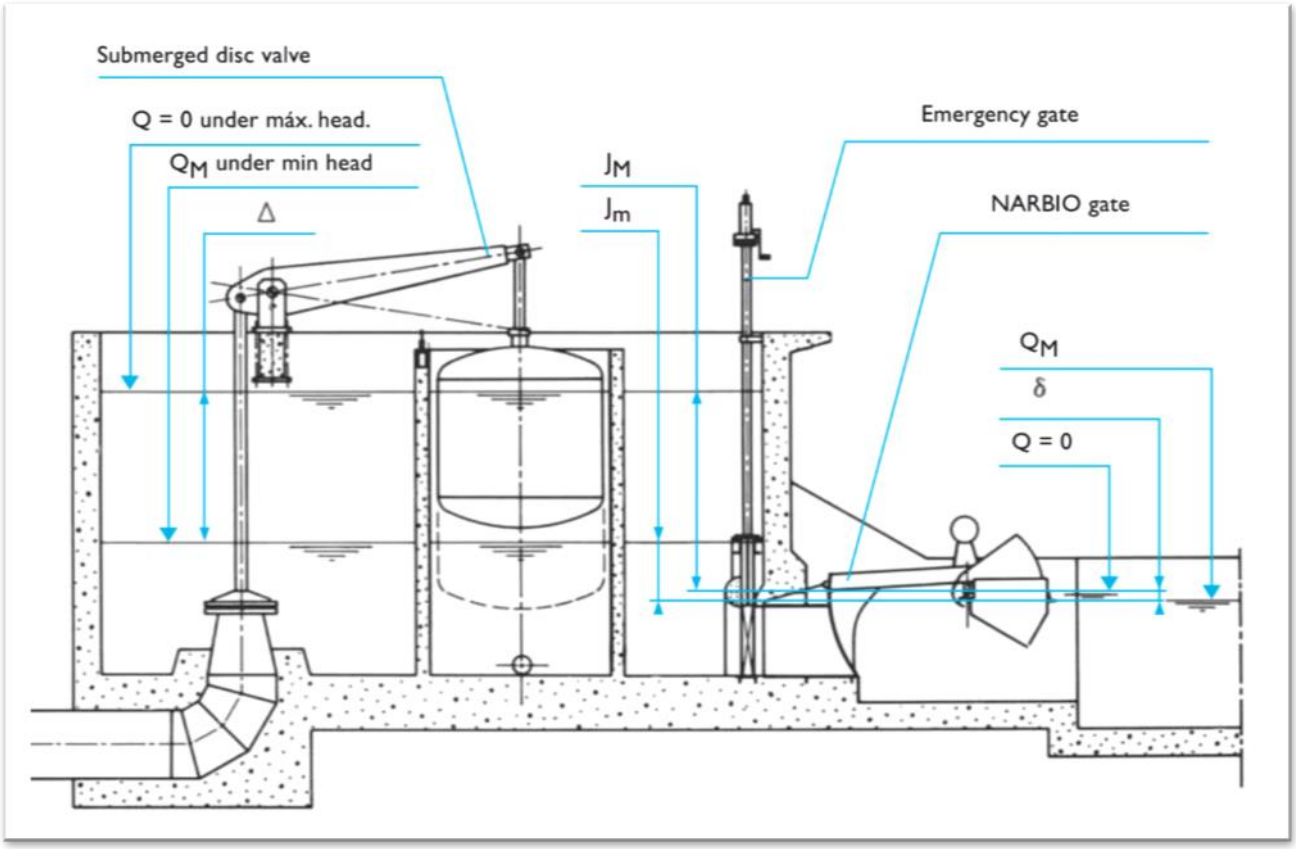
The following figures are usually assumed for the power dissipated.

CHART OF MINIMUM HEAD LOSSES (AT FULL OPENING) FOR HOODED AND SUBERGED DISC VALVE





Hooded disc valve associated with a NARCY valve and a MODUMASK, bafle distributor, for a constant flow control at the outlet of a pressure pipeline.



Submerged disc valve associated with a NARBIO gate, for constant level control in a structure supplied from a pressure pipeline.

For data and dimensions, we generally recommend that you consult us.

SELF-CENTRING DISK VALVE

- Levels control
- Levels restitution and regulation
- Head break

The self centring disk valve is a variation of the classic float shutter adapted at new hydraulic needs and centralizes management techniques of the distribution or irrigation nets.

As classic shutter, is placed at the outlet of on heading pipe, in a tank, reservoir or weir.
The system principle is also based on the self-centring disk properties on a water jet that rules out any submerged guided and where the float that activates the disk is replaced by a opening and closure mechanism consist of a driving wheel, a manual mechanical reducer, an electro-mechanical motorization or an oil-hydraulic jack.
With this system we achieve to regulate the shutter opening, with full precision, independently of the head it si subjected, so known both parameters, the flow that the equipment supplies can be regulated.
Como el obturador clásico, se
coloca a la salida de una conducción en carga en un depósito, tanque o embalse.
El principio del sistema está basado asimismo en las propiedades del disco autocentrado sobre un chorro de agua, que elimina cualquier guiado sumergido y en el que el flotador que acciona el disco es sustituido por un mecanismo de apertura y cierre consistente en un volante, un reductor mecánico de accionamiento manual, una motorización electro-mecánica o bien por un gato óleo-hidráulico.

Con este sistema se logra regular la apertura de obturador con total precisión, independientemente de la carga a la que esté sometido, con lo que conocidos ambos parámetros se puede regular el caudal que suministra el equipo.

La válvula de disco autocentrado se distingue del resto de la valvulería clásica por:

- No tener rozamiento → sensibilidad progresiva
- No producir cavitación → Resistencia al desgaste, longevidad.
- Amplia gama→ Utilización bajo fuertes cargas y cualquier caudal.
- Estanquidad→ Perfectamente estanca en posición de cierre.

Características—Dimensiones
La gama de equipos, definida por su orificio y presiones admisibles, es idéntica a la de los obturadores normalizados, tanto bajo capota como sumergidos.

Selección del Equipo:
La válvula de disco se define por los mismos crite-