SECURITY SIPHONS

Overflow control devices

- Maximum flow under control
- Minimal over-elevation
- Simple
- Robust
- Automatic
- Gradual

FUNCTION

Located on the banks of canals or on the edges of reservoirs, siphons evacuate the excess flow above the nominal level by means of a progressive discharge.

They play the same role as a spillway, but require forty to fifty times less length for the same rise in level and the same evacuated flow.

APLICATIONS

- Hydroelectric power plant head works. Forebays.
- In irrigation canals to evacuate surpluses. Changes of section in telescopic channels.
- In spillways that require a length reduction of up to 50 times.
- Entrances to inverted siphons for the crossing of watercourses, prior to screens.

OPERATING PRINCIPLE

As the upstream level rises above the discharge level, the discharge in the siphon passes through the three stages represented in Figures N° 1, 2 and 3. When the priming level is reached, the siphon is hydraulically closed, passing from Figure 2 to Figure 3. The progressive flow rate is due to the fact that the air absorption device allows the water to be more or less emulsified. It does not work by pulses.

Once the siphon is fully primed, it has a flow rate that is roughly equivalent to that of an orifice of the same cross-section, located at the height of the downstream weir basin. The flow rate is much higher than that of a weir of equal length.
They can be designed with a lifting mechanism that allow bottom discharge when space is limited.

Figure N° 1. Spillway

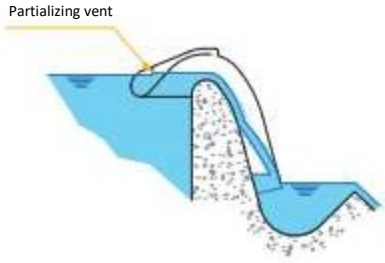


Figure N° 2. Partialized

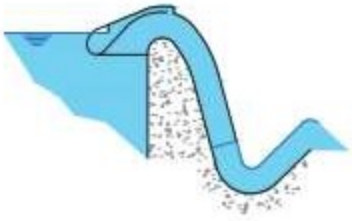
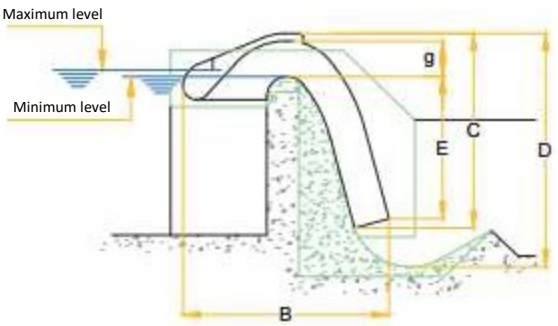


Figure N° 3. Maximun flow

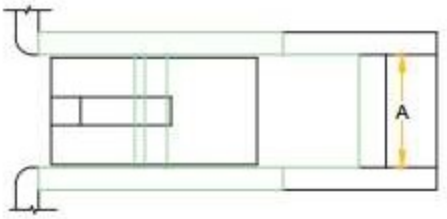
CONSTRUCTION AN DIMENSIONS

These equipment are made of carbon steel sheets joined by treated welding. They can also be manufactured in stainless steel.
On request, the length of the discharge piece can be increased to adapt to greater available heights, increasing the evacuation capacity with the same width of civil works.



Standard range

Designation Flow (l/s)	Dimensions				Working head	Throat height	Maximum elevation over control level
	A	B	C	D	H	g	
SFS 60	43	84	133	-	40	9	2
SFS 125	28	141	133	162	100	20	4
SFS 180	36	141	133	162	100	20	4
SFS 250	46	141	133	162	100	20	4
SFS 350	61	141	133	162	100	20	4
SFS 500	43	220	204	257	150	35	6
SFS 700	58	220	204	257	150	35	6
SFS 1000	78	220	204	257	150	35	6
SFS 1400	108	220	204	257	150	35	6
SFS 2000	145	220	204	257	150	35	6



Dimensions in cm.

CONCLUSION

Inspired by a simple hydraulic design, this equipment is totally robust and free of any mechanical complication. This makes them adaptable to the most severe working conditions.
They are a useful, efficient and precise solution for the automatic evacuation of excess flows, providing safety in the event of overflows.

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