

TECHNICAL SPECIFICATION

# FLUSH VALVE



Flygt



ITT Industries

# PRODUCT DESCRIPTION

## General

The Flush Valve is primarily designed to flush and cleanse a pump sump of sewage water and sludge by mixing the sewage water automatically before discharge. At the beginning of each pumping period the valve is open and water from the pump is forced through the valve into the sump as a jet flushing stream. The water in the sump is subjected to a violent motion and the sludge is stirred into suspension.

The Flush Valve is mounted on the pump housing and its design is based on the ejector principle with a ball as closing device. The operation is automatic and induced by the pump flow and pressure, **thus eliminating the need for electrical components and cabling.**

## Applications

Sewage pumping stations equipped with Flygt pumps.

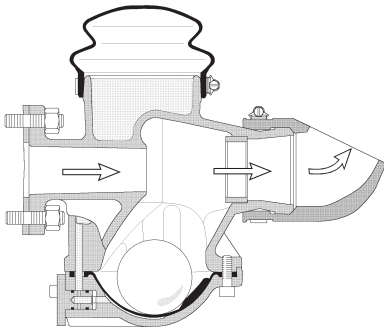
For installation on 3085 - 3300, on **standard and explosion proof pumps** in a **CP/DP** installation arrangement.

The pump housing must be pre-drilled and equipped with a cast flat for the Flush Valve connection.

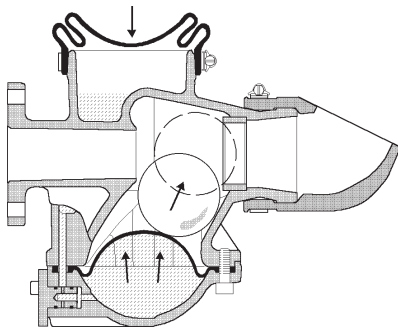
## Performance

One Flush Valve 4901 should be sufficient to handle the flushing of a pump station with a maximum diameter of 2.1 metres.

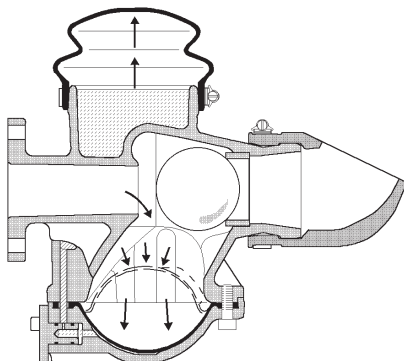
# FUNCTION



The valve is open when the pump starts. The flow from the pump is led through the valve and the pump sump is being flushed. A underpressure induced by the flow occurs in the valve body. This underpressure begins inverting the outer and inner membranes and lifts the ball.



After approximately 20 seconds, the oil flows from the oil casing to the space between the inner membrane and valve body bottom via the regulating valve, forcing the inner membrane to invert and thus pushing the ball into the jetstream. The ball then obstructs the flow through the valve and the pump begins pumping the liquid out of the sump.



When the valve is closed, the underpressure is instantaneously changed to overpressure, which forces the membranes and the oil back to their initial positions.

# TECHNICAL DATA

**Liquid temperature:** Max 40°C.

For minimum temperature, refer to the freezing point of the oil used in the valve oil casing.

**Flushing time:** The recommended flushing period for the 4901 is 20 sec. and maximum 50 sec. (Can be adjusted by the regulating valve).

The Flush Valve is open when the pump starts and closes after a chosen mixing period. The pump continues pumping until the shut-off level is reached. The Flush Valve opens again at the shut-off level.

**Standard Version** (556 51 01) Black painted valve body.

**Closing device:** Cast iron ball.

**Special Version** (556 51 02) Blue painted valve body.

**Closing device:** Polyurethane ball. (For low head applications with 3085 and 3102).

**Limitations:** As the operation of the Flush Valve depends on the pressure and flow performance of the pump, operation can be predicted by calculation\* in borderline cases. The lower limits at which the limitations should be calculated are indicated in the table.

**Maximum allowable pump head** (For Special version only).

The maximum allowable **geodetic pump head** is 3.5 metres

The maximum allowable **pump operating head** (duty head) is 5.0 metres. (Closed Flush Valve).



## Setting flushing time

The 4901 Flush Valve is always delivered to support the three possible executions;

1) with outlet bend 2) with outlet pipe 3) execution **without** outlet bend and **without** outlet pipe is called **"short outlet"**.

The flushing time is determined by the regulating valve. The delivery setting is "2".

Recommended *approximative* first setting of the regulating valve:

Execution	Geodetic Pump Head (m).		
	< 4	4-10	> 10
Outlet bend 586 68 00 	1	2	3
Short outlet	2	3	3-4
Outlet pipe 558 08 00 	2	3	4

## Minimum permitted geodetic\*\*\* pump head without calculation.

PUMPVERSION	CP 3085 3102 HT	CP/DP 3085 3102 LT **, MT	CP/DP 3127, 3140, 3152, 3170, 3201, 3300 LT/MT/HT
4901 Type of outlet	<b>STANDARD VERSION 556 51 01</b> (Black painted valve body) (Includes outlet bend 586 68 00)		
Outlet bend 586 68 00	4.0 metres	4.5 metres	4.0 metres
Short outlet	4.0 metres	3.5 metres	3.0 metres
Outlet pipe 558 08 00 (option)	4.0 metres	3.0 metres	2.5 metres
4901 Type of outlet	<b>SPECIAL VERSION 556 51 02</b> (Blue painted valve body) For CP/DP 3085/3102 only (Includes outlet bend 586 68 00 and outlet pipe 558 08 00)		
Outlet bend 586 68 00	-	3.4 metres	-
Short outlet	-	2.7 metres	-
Outlet pipe 558 08 00 (option)	-	2.3 metres	-

\* If the approved head is lower than indicated in the table, contact your nearest Flygt representative for a calculation of the limitations.

\*\*\* Difference in height between the water level in the sump and the highest point of the discharge pipe.

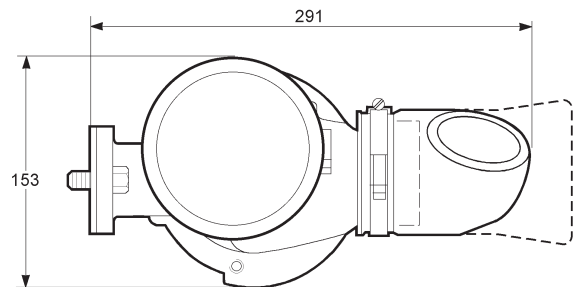
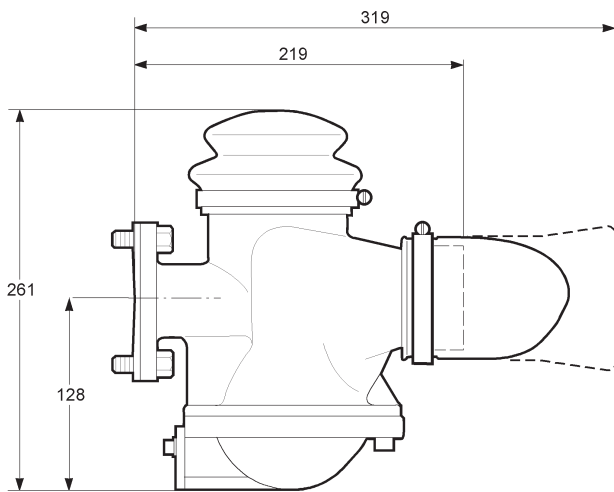
\*\* CP/DP 3085 Performance curves with a shut-off head of less than 7,0 metres should use the **Special Version**.

# MATERIAL

Description	Material	Flygt number	DIN	BS	ASTM
Major castings	Cast iron	0314.0125.00	1691 GG-25	1452 Grade 260	A48-83 No35B
Ball (Standard version)	Cast iron	0314.0125.00	1691 GG-25	1452 Grade 260	A48-83 No35B
Ball (Special version)	Poly-urethane	0556.9570.50			
Ball seat	Stainless steel	0344.2324.02	W.no 1.4460		AISI 329
Regulating valve	Brass	0456.5170.04	CuZn 39Pb3	CZ121	C36000
O-rings, inner membran, outlet pipe and outlet bend	Nitrile Rubber 70°	0516.2637.04			
Outer membrane and gasket	Nitrile rubber 40°				

Description	Material	Flygt number	DIN	BS	ASTM
Screws, studs, and nuts	Stainless steel	0344.2343.02	W.no 1.4436	316 S33	AISI 316
Oil	Rapeseed oil(0.25 l)	901762			
Oil (Alternative)	Mineral oil ISO VG 32 (0.25 l)				
Surface treatment	Coating Two component.	902933 (black) 902936 (blue)			

# DIMENSIONS



## Weight

Flush Valve (standard version)	8.0 kg
Flush Valve (special version)	7.4 kg

