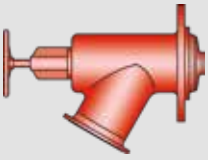
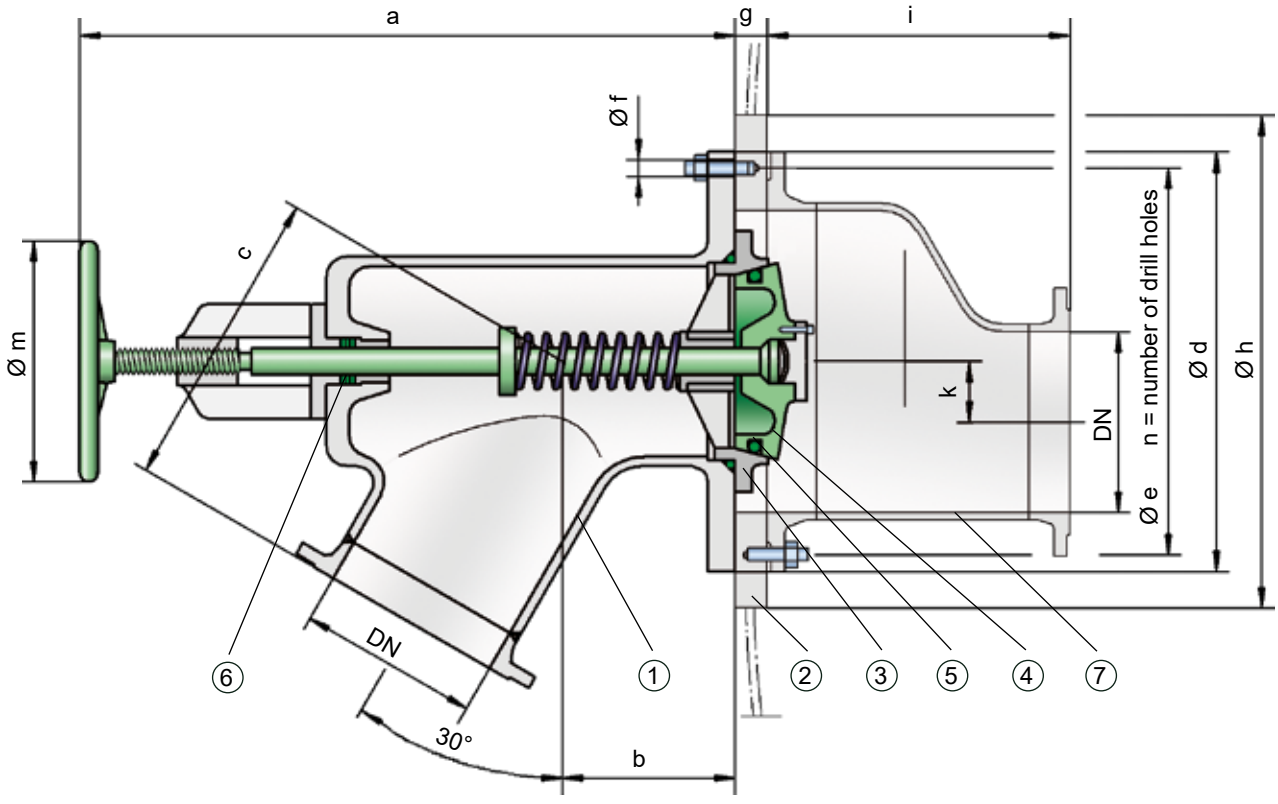


In-tank Valve

Internal Safety Valve

PROTEGO® SI/F



Function and Description

The PROTEGO® SI/F in-tank valve is a shut-off valve and protects the downstream liquid lines of storage tanks and containers in process plants in the chemical, petrochemical, and pharmaceutical industries. This valve also increases safety and operation of the equipment. These valves are also known as in-tank valves.

The in-tank valve SI/F (figure 1) consists of the housing (1), mounting flange (2), valve seat (3), valve disc (4), and sealing (5). The mounting flange is welded into the tank shell. The valve seat is replaceable. The valve seat and valve disc are lapped metallic surfaces and an additional O-ring is installed to ensure the required tightness. The spindle sealing (6) can be adjusted or replaced and is designed for a test pressure of 25 bar / 363 psi.

The external connection piece of the housing is fitted with an operating valve, which is supplied by the customer, and is used for normal operation. The internal safety valve is kept open during normal operation. It is only closed in the event of a longer operation interruption, in an emergency, or for necessary repairs.

It is closed by an “internal sealing“, i.e., the valve is closed inside of the tank. This prevents the tank from leaking even if external components or leaks in any connected pipelines are destroyed.

Due to the special design of PROTEGO® in-tank valves SI/F, in which only the mounting flange (2) is welded to the tank shell, almost all other parts can be replaced. Replacement of important external parts does not require draining the tank. This results in significant operational advantages.

The PROTEGO® SI/F is available in various nominal sizes and materials. As an option, the in-tank valve can be equipped with an internal nozzle (7) for mounting a suction and filling pipe or a swing pipe system (SI/FA).

Tank shut-off valves of this type are usually operated manually. Versions with an explosion-proof electric actuator for direct or remote control are also available.

For special tank designs (e.g., full containment tank system), special versions with pneumatic control (PROTEGO® SI/DP) can also be supplied.

Design Types and Specifications

Two designs are available:

In-tank valve, standard design	**SI/F**
In-tank valve with internal connection nozzle (7)	**SI/FA**

Table 1: Dimensions Dimensions in mm / inches

DN	a	b	c	d	e	f	g	h	i	k	m	n
50 / 2"	371/14.61	75/2.95	170/6.69	240/9.45	205/8.07	14/0.55	30/1.18	305/12.01	250/9.84	54/2.13	200/7.87	8
65 / 2 ½"	400/15.75	85/3.35	190/7.48	305/12.01	205/8.07	14/0.55	30/1.18	305/12.01	240/9.45	45/1.77	200/7.87	8
80 / 3"	416/16.38	90/3.54	200/7.87	330/12.99	230/9.06	14/0.55	30/1.18	330/12.99	290/11.42	53/2.09	200/7.87	8
100 / 4"	434/17.09	100/3.94	225/8.86	270/10.63	230/9.06	14/0.55	30/1.18	330/12.99	270/10.63	40/1.57	200/7.87	8
150 / 6"	658/25.91	130/5.12	320/2.60	410/16.14	370/14.57	18/0.71	40/1.57	505/19.88	440/17.32	78/3.07	400/15.75	12
200 / 8"	725/28.54	145/5.71	365/14.37	540/21.26	405/15.94	18/0.71	45/1.77	540/21.26	450/17.72	68/2.68	400/15.75	12

Table 2: Material selection

Design	A	B
Housing	Steel	Stainless Steel
Valve seat	Stainless Steel	Stainless Steel
Valve disc	Stainless Steel	Stainless Steel
Spring	Stainless Steel	Stainless Steel
Bushing	PTFE	PTFE
Hand wheel	Aluminum	Aluminum
Spindle sealing	PTFE	PTFE
Mounting flange	Steel	Stainless Steel

Table 3: Flange connection type DN

EN 1092-1, Form B1	Other types upon request.
ASME B16.5 CL 150 R.F.	

Selection and Design

Together with our engineers, the valve is designed for each specific application. The relevant plant specifications are considered when defining the required nominal sizes and connection types. Regarding temperature, special operating conditions may require special materials. The mounting flange material must be compatible with the tank material. If there are special requirements for the valve or operating parameters, please contact us. Special designs may also be necessary.

Necessary Data for Specification

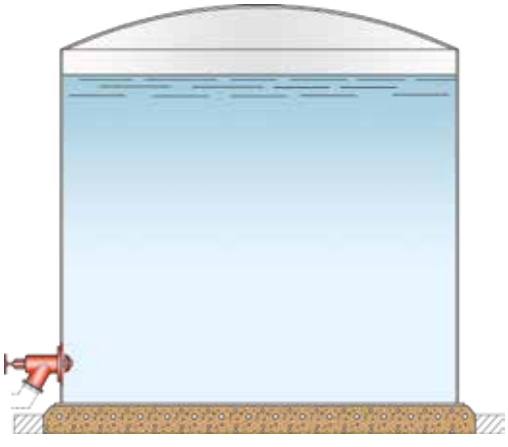
Stored medium

Tank height (m or ft)

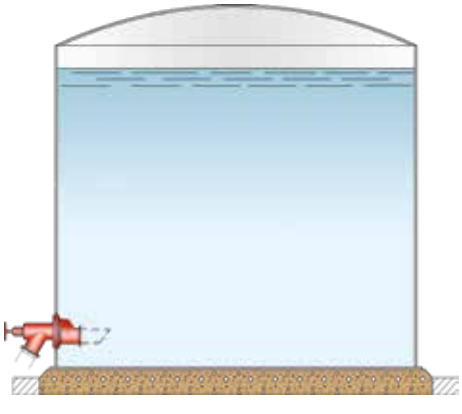
Tank material

Connection diameter of drain pipe, DN (mm or inch)

Application Examples



PROTEGO® SI/F



PROTEGO® SI/FA with internal connection nozzle