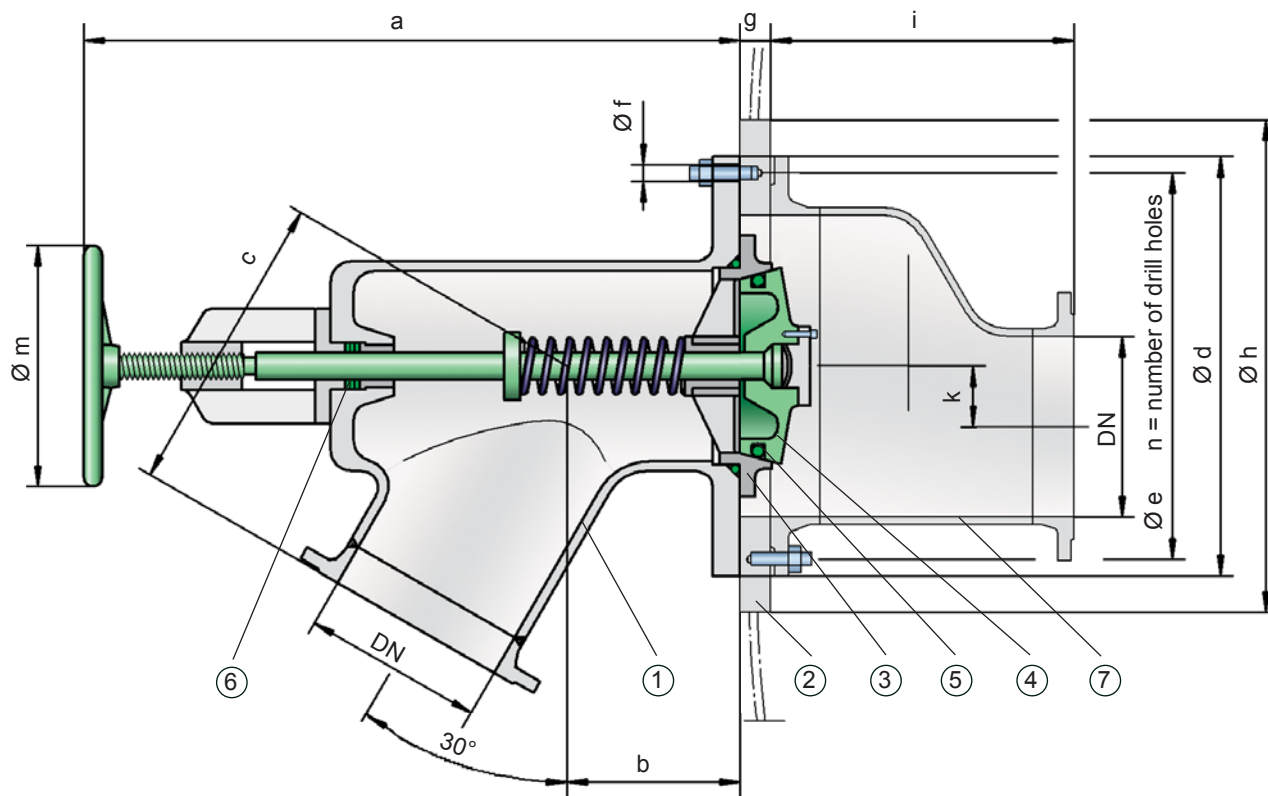


## Internal Safety Valve

PROTEGO® SI/F



### Function and Description

The PROTEGO® internal safety valve type SI/F is a shut-off valve and protects the downstream liquid lines of storage tanks and tanks in process plants of the chemical, petrochemical and pharmaceutical industries, thus increasing both safety and availability of the plants.

The internal safety valve SI/F (figure 1) consists of 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.

A gate valve that is supplied by the user and serves for normal operation is connected to the external nozzle of the housing. The internal safety valve is kept open under normal operating conditions. It is only closed for longer shut-downs, in case of emergency or for necessary repairs to the gate valve.

It is closed by an "internal sealing", e.g. the valve is closed inside of the tank. This ensures that the tank cannot leak in case of damage to external components or leakages in any connected pipelines.

The special design of PROTEGO® tank shut-off valves of type SI/F is such that only the mounting flange (2) is welded to the tank shell, and so most other parts can be replaced. Replacement of important external parts does not require the draining of the tank. This fact provides significant operation advantages.

Type SI/F by PROTEGO® is available in a range of nominal sizes and materials. Optionally, the internal safety valve can be equipped with an internal nozzle (7) to connect to 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.

Alternatively it is possible to use special versions with pneumatic control (PROTEGO® SI/DP) under specific tank design (e.g. double-shell tank).

### Design Types and Specifications

Two designs are available:

Internal safety valve, standard design

SI/F

Internal safety 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	Aluminium	Aluminium
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; 150 lbs RFSF	

### Selection and Design

Together with the customer our engineers design and specify the valve for each specific application. The relevant plant specifications are taken into account when defining the required nominal sizes and connection types. Also the operating temperature and resulting 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: If necessary we will arrange for special designs.

### Necessary Data for Specification

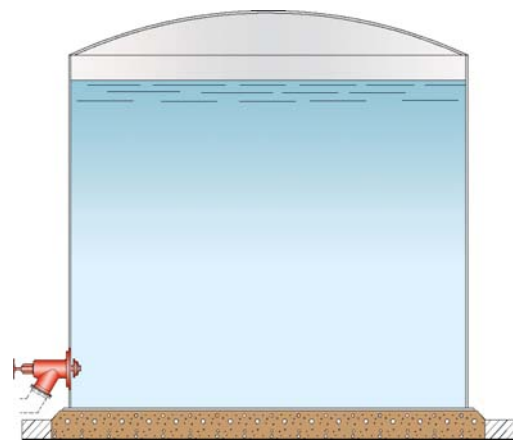
Stored medium

Tank height (m or ft)

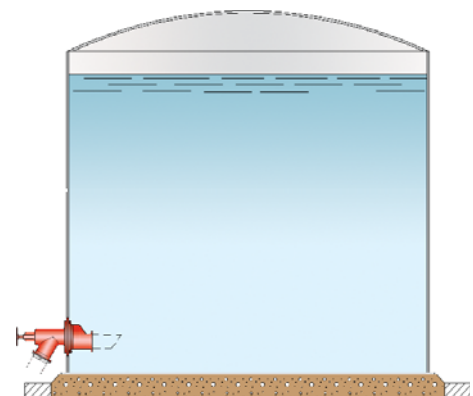
Tank material

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

### Application Examples



PROTEGO® SI/F



PROTEGO® SI/FA with internal connection nozzle