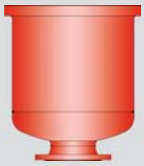
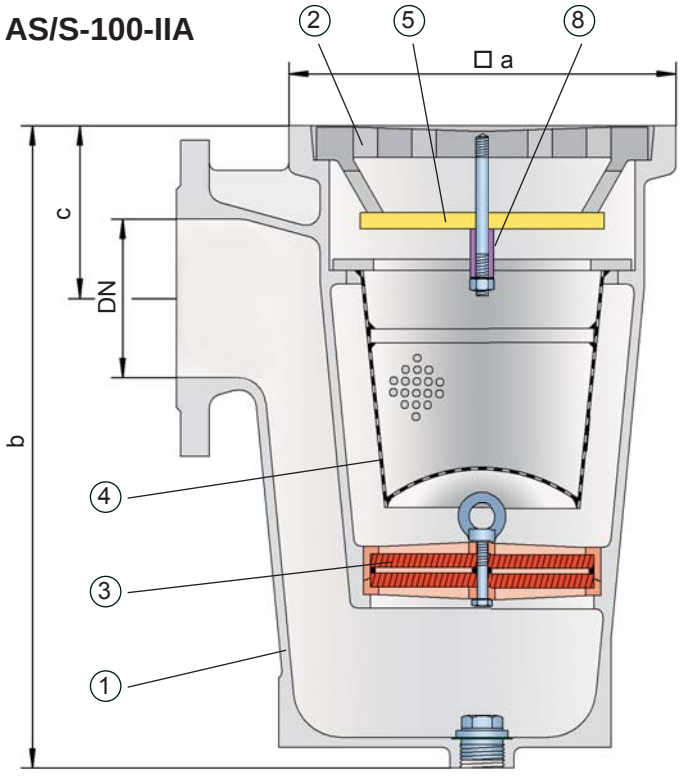


Floor Drain

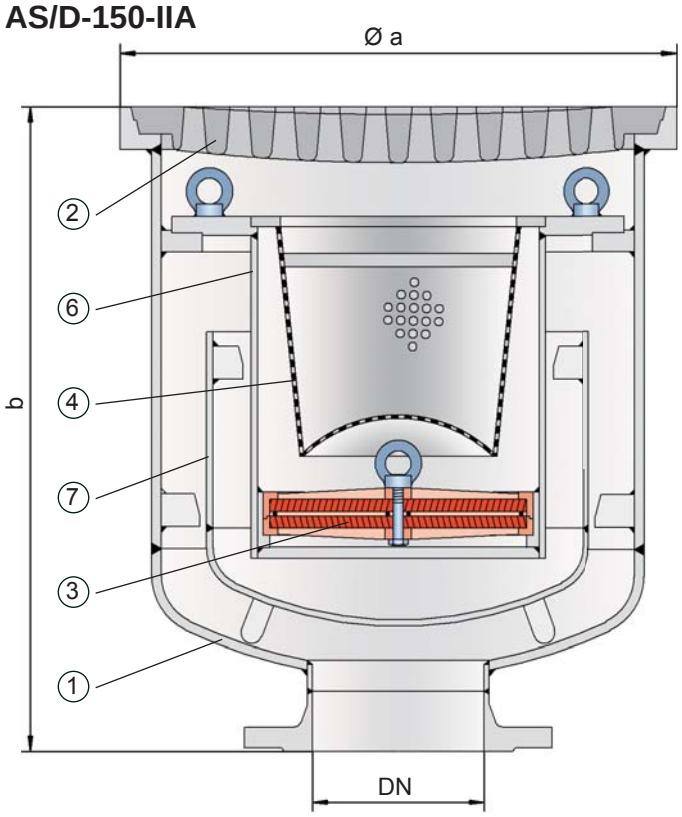
deflagration proof

PROTEGO® AS/S and AS/D

AS/S-100-IIA



AS/D-150-IIA



Function and Description

PROTEGO® deflagration proof floor drains of types PROTEGO® AS/S or PROTEGO® AS/D provide flame transmission proof protection of surface water pipelines or pipelines which lead to underground storage tanks of flammable and non-flammable liquids; they can for instance protect rainwater lines during fueling on airfields or helicopter bases. Deflagration proof floor drains of types PROTEGO® AS/S or PROTEGO® AS/D prevent gas/air mixtures or product vapour/air mixtures of flammable liquids that may ingress into the drainage system from exploding within the pipelines if there is risk of ignition by any external sources.

If an ignition occurs the flame arrester prevents flashback of atmospheric deflagrations into the drainage pipeline to be protected.

PROTEGO® floor drains of types AS/S and AS/D consist of housing (1), inlet grid (2), PROTEGO® flame arrester unit (3), strainer basket (4) and – if applicable – the self-extinguishing element (5) (only type AS/S). Type PROTEGO® AS/D is equipped with an insert (6) for the PROTEGO® flame arrester unit (3) and the immersion insert (7). The PROTEGO® flame arrester unit consists of flame arrester cage, FLAMEFILTER® and spacers. The housing has a flange connection to DIN 2501 or any other international standard. The types differ by their flange connections: PROTEGO® AS/S with lateral and PROTEGO® AS/D vertical flange connection. In type PROTEGO® AS/S the housing has an additional lock screw with gasket. The removable strainer basket protects the PROTEGO® flame arrester unit against clogging up and facilitates maintenance.

In the event of damage when critical quantities of flammable liquids or gas mixtures continue to enter the drainage system for a longer period, there is a hazard of stabilized burning on the surface of the flame arrester in addition to the deflagration hazard. Therefore the bottom drain PROTEGO® AS/S can be optionally equipped **with** a self-extinguishing element. In case of fire the self-extinguishing element closes the drain and prevents explosions in the drainage system: Stabilized burning above the FLAMEFILTER® burns down a fusible link (8) and a cover plate closes the strainer basket. The flame extinguishes and the flowing of flammable gases is stopped.

Deflagration proof floor drains of types PROTEGO® AS/S or PROTEGO® AS/D **without** self-extinguishing elements are always used when the operating conditions require drainage even in case of fire.

According to the type examination certificates the PROTEGO® AS/S-100-IIA or PROTEGO® AS/D-150-IIA **without** self-extinguishing elements are flame-transmission-proof against atmospheric deflagrations and short time burning of gas/air mixtures or product vapour/air mixtures of explosion group IIA (NEC group D) up to an operating temperature of +60°C / 140°F and an absolute operating pressure up to 1.1 bar / 15.9 psi – for limited use with flammable liquids of explosion group IIA (NEC group D) with flashpoints ≥ 35°C / 95°F and ignition temperature ≥ 220°C / 428°F.

So, floor drains with and without self-extinguishing elements may be used for typical aviation fuels such as Jet-A and Kerosene.

The deflagration proof special designs of PROTEGO® type AS/D-80-IIA without self-extinguishing element and PROTEGO® type AS/S-100-IIA including self-extinguishing element can be used for all flammable liquids of explosion group IIA (NEC group D) up to an operating temperature of +60°C / 140°F and an absolute operating pressure up to 1.1 bar / 15.9 psi.

These devices are Type Approved and tested according to the European Standard EN 12874 – Flame Arresters – as a protective system according to European Directive 94/9/EG – Equipment Intended for Use in Potentially Explosive Atmospheres. EC-Type Examination Certificates issued by an European Notified Body are available. Examination certificates from other approval authorities are available on request.

Design Types and Specifications

There are three designs available:

AS/S lateral flange connection,
without self-extinguishing element

AS/S lateral flange connection,
with self-extinguishing element

AS/D vertical flange connection,
without self-extinguishing element

Selection and Design

Regarding flow resistance the floor drain is designed for surface water contaminated with liquid hydrocarbons (gasoline, avgas – specific density max. 1.2 kg/m^3 / 0.075 lb/cu ft). Any other requirements must be specified in your order.

The devices must be sufficiently resistant to corrosion through the gas/air mixtures or product vapour/air mixtures. This applies mainly to the FLAMEFILTER®. If necessary, designs in special material quality should be selected.

The clearance has to be taken into account when dimensioning the ground excavations for vertical or horizontal pipelines

Necessary Data for Specification

Possible composition of flammable liquids

Design

Table 1: Dimensions for AS/S

DN	100 / 4“
a	285 / 11.22
b	465 / 18.31
c	125 / 4.92

Dimensions in mm / inches

Table 2: Dimensions for AS/D

DN	80 / 3“	150 / 6“
a	300 / 11.81	516 / 20.31
b (PN16)	270 / 10.63	550 / 21.65
b (ANSI 150 lbs)	290 / 11.42	

Dimensions in mm / inches

Table 3: Explosion group

MESG	Expl. Gr. (IEC/CEN)	Gas Group (NEC/NFPA)
> 0,90 mm	IIA	D

Table 4: Material

Housing	Steel
Strainer basket	Stainless Steel
Flame arrester cage	Stainless Steel
FLAMEFILTER®	Stainless Steel

Special materials upon request

Table 5: Flange connection type

AS/S: EN 1092-1, Form B1 or DIN 2501, Form C, PN 16, DN 100	EN or DIN
AS/D: EN 1092-1, Form B1 or DIN 2501, Form C, PN 16	EN or DIN

Flange connections according to other international standards on request.