



## 1. General

IGA cartridge filters have been particularly developed as a successful approach to the challenging demand of advanced filtering technology for gases, removing dust, rust and other solid contaminants from dry gas and air stream.

## 2. Construction and Operation

IGA cartridge filters are fabricated from high quality steel, making special allowance in design and construction for the requirements of international codes and standards covering pressure vessels. Constructions to other standards are available on customer's request and specification. The gas flows through the inlet connection into the filter chamber, known as the quiet zone, where the larger particles are retained, due to a decrease in gas velocity. Particles removed from the gas stream this way collect in the bottom section of the filter housing. The gas then flows through the filter cartridge from outside where any remaining contamination in the gas is retained. The clean gas now leaves the filter chamber through the outlet connection.

## 3. Filter Cartridges

### 3.1. Filtering Medium (Needle Felt)

The filtering medium is needle felt, being pleated and radially arranged in a star. The needle structure gives the felt a particular resistance to tear and moisture, ensuring a nominal grade of filtration of  $3\mu\text{m}$  with an efficiency of 98% and  $5\mu\text{m}$  with an efficiency of 99%.

### 3.2. Construction of the Cartridge

The needle felt is protected inside and outside by a supporting galvanized metal mesh giving a low surface area and being more permable to the gas than this is given by any other material, e.g. perforated plates.

The two cartridge ends are permanently and securely fixed by two components of mixed adhesive being resistant to the natural gas.

The two cartridge end faces are sealed by a felt gasket of 5 mm thickness which, to a certain extent, compensates for variation in dimension imposed by work tolerances, and ensures tight seal.

### 3.3. Pressure Drop

The pressure drop allowed, over and above the clean pressure drop of the cartridge, is max. 500 mbar. The cartridges shall be replaced as soon as a pressure drop of 200 to 300 mbar is reached.

Purging of the dry contaminated cartridge by a jet of compressed air to make it re-usable is nothing more than an expedient to overcome the shortcoming of an emergency. Even though the filter surface appears to be clean after this purging operation, one may rest assured that dust particles are jammed tight in the depths of the filter pores. The service life of a filter being apparently recovered for operation this way is no more than 5% as compared to a new cartridge.

#### 4. Different aspects with regard to the construction of the cartridge filters.

##### 4.1. Temperature

The stress calculation of the filter housing is based on a temperature of  $-10 / +50^{\circ}\text{C}$ . It is possible to expose the filter for operation to higher temperatures, in which case, however, the stress calculation shall be revised. The filtering medium is designed to withstand continuous operating temperatures up to  $120^{\circ}\text{C}$ . Short time service temperatures (i.e. for some hours) can be tolerated up to  $+150^{\circ}\text{C}$ . The filter cartridge can be employed for low temperature service down to  $-50^{\circ}\text{C}$ .

##### 4.2. Dust-Condensate Removal Connection

IGA cartridge filters are equipped with a dust removal connection (socket) being normally blanked off by plug. Special constructions are available on request. As an optional extra, a drain valve can be made available at extra cost.

##### 4.3. Replacement of Filter Cartridges.

Observe rules and regulations of the safety code. Close valves up stream and down stream of filter. It is most important to depressurize the unit.

Where there are no extra vent connections available, use differential pressure tappings for this purpose.

Remove filter cover or swivel aside quick closing plate. Disengage cartridge retainer and withdraw the cartridge. Replace filter cartridges.

To minimise interruptions of operation, it is recommended to hold a set of spare cartridges in store. When replacing cartridges, make sure a clean sealing edge and support area of cartridge closing plate, so that all impurities are removed.

##### 4.4. Differential Pressure Tapping

The filter housings are equipped with 2 differential pressure tapping connections, size DNR 1/4".

In units with the direction of flow passing from left to right, such connections are arranged at the front of the filter housing.

##### 4.5. Installation

It is most important to take into account the direction of flow when installing the unit.

The cartridge filter shall be installed into the pipeline without applying mechanical strain.

##### Closing of the Filter

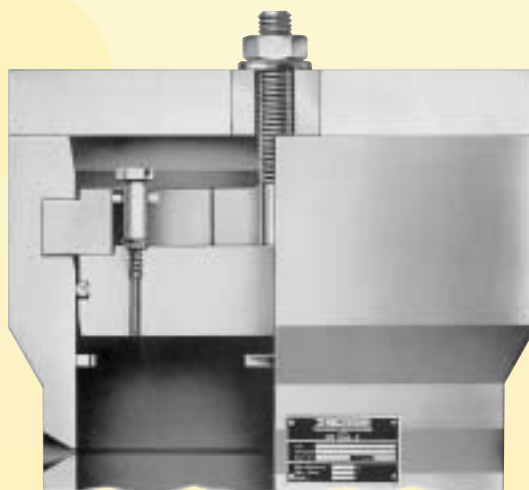
###### 1. With bolted cover plate

Clean gasket and faces; lay cover on support area; insert bolts by way of diametrical sequence, screw on finger tight only, thereafter tighten up screw diametrical sequence to avoid tilting of cover.

Optional: Davit hoisting device. Or:

###### 2. With quick closing device

Optional: Davit hoisting device.

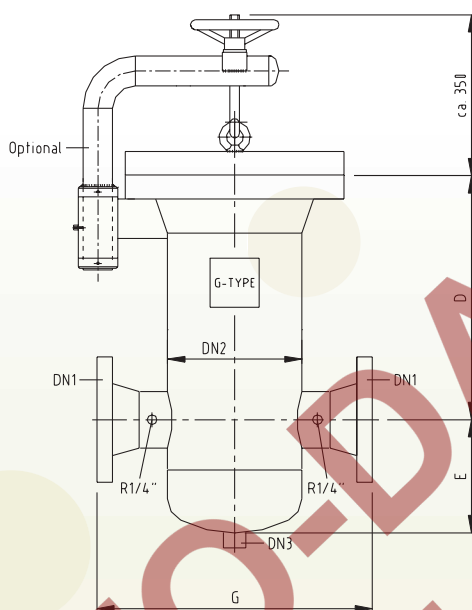


Quick closing cover

## 5. Cartridge Filter

with Needle Felt Cartridges (Series G)

Construction



| Basic Filter Type | Filter Cartridge Range | DN1 | DN2   | G PN16 | G 150# | G 300# | G 600# | D   | E   | DN3   | Rate of flow m <sup>3</sup> /h |
|-------------------|------------------------|-----|-------|--------|--------|--------|--------|-----|-----|-------|--------------------------------|
| RSH               | G1                     | 50  | 139.3 | 340    | 380    | 400    | 400    | 275 | 125 | R3/4" | 120                            |
| RSH               | G1.5                   | 50  | 168.3 | 360    | 400    | 450    | 450    | 325 | 130 | R3/4" | 230                            |
| RSH               | G2                     | 80  | 219.1 | 420    | 460    | 500    | 500    | 400 | 160 | R3/4" | 550                            |
| RSH               | G2.5                   | 100 | 273.0 | 500    | 540    | 550    | 600    | 440 | 185 | R3/4" | 960                            |
| RSH               | G3                     | 150 | 355.6 | 560    | 620    | 650    | 700    | 480 | 245 | R1"   | 1170                           |
| RSH               | G4                     | 150 | 406.4 | 650    | 720    | 750    | 800    | 650 | 300 | R1"   | 1800                           |
| RSH               | G5                     | 200 | 508.0 | 750    | 850    | 850    | 900    | 775 | 420 | R1"   | 2840                           |
| RSH               | G6                     | 250 | 609.6 | 990    | 1070   | 950    | 1000   | 970 | 480 | R1"   | 5140                           |

Dimensions in mm.

Weights on request

## 6. Data to be Stated

With Order and Special Constructions, please state when ordering a cartridge filter:

- Version: flanges (DN, PN, DIN, ANSI)
- Rate of flow Qn (m<sup>3</sup>/h) (standard cubic meters)
- Upstream pressure range p<sub>i min</sub> and p<sub>i max</sub> (bar)
- Design pressure
- Operating temperatures °C
- Medium to be treated (possible gas analysis)
- Cover swivelling device (in case of quick closing device with extractor)
- Quick closing device
- Type of connections for condensate drain
- Special options (against extra charge)  
Acceptance: Lloyds, TÜV or others to be specified
- Special instrumentation for filter, differential pressure gauge:  
differential pressure gauge indicator with drag pointer, electric contact transmission
- Name plate (standard design) - Orientation (to be visible with direction of gas flow from left to right) or with two filter units in one skid: 1 x normal and 1 x mirror-inverted.
- Plastic protective cap for quick closing device
- Connection sizes differing from those indicated in table
- Filter with cellulose or needle felt cartridges
- Construction for particular occurrence of dust, gas velocity in chamber appr. 2 m/s
- Other types of connections (e.g. angle filters)