

3M™ DS Series

Stainless steel housings for cartridge filters

The 3M™ DS Series filter cartridge housings have a simple and robust construction and are fitted with a V-band clamp or swing bolt closure system for rapid opening and cartridge change-out.



Features and benefits

| | |
|---|--|
| 316L stainless steel construction | Provides excellent corrosion protection for rugged, long-lasting service. |
| Accepts varying length cartridges | Allows use of 9 ¾ to 10 inch modular cartridges for greater flexibility. |
| Shouldered seal plates | Solid fit into cartridge core ensures positive seal and prevents bypass. |
| V-band clamp and swing bolt designs | Optimises cartridge change-out. |
| Removable cartridge posts | Easy cleaning reduces maintenance. |
| Housing drains located on dirty and clean chambers | Allows full drainage of chambers for optimised filter change-out. |
| Air vent | Allows venting before start-up and draining for safe filter operation. |
| Pedestal cup fitting | <ul style="list-style-type: none"> Allows for use of both DOE (as delivered) or SOE cartridges (with use of accessory parts that are available to be purchased as standard). There are BSP female-threaded ports on the lid and above and below the diaphragm plate for venting, draining and/or the fitting of manometers or other accessories. |



| Housing type | Single-length (9 ¾" to 10") cartridge capacity |
|--------------|--|
| 05 DS 1 | 5 |
| 05 DS 2 | 10 |
| 05 DS 3 | 15 |
| 05 DS 4 | 20 |
| 12 DS 3 | 36 |
| 12 DS 4 | 48 |

Stainless steel filters to meet general-purpose industrial, chemical and commercial filtration needs.

Cartridge requirements.

The DS Series filter housings are available in a variety of sizes to accommodate 5 or 12 filter cartridges with lengths from 9 ¾ to 40 inches (or 5 to 48 EQSLs). Table 1 on page 1 lists the number of filter cartridges for each model housing.

Cartridge types and seal arrangements.

Standard housings are configured to accept double open end style (DOE) cartridges. These DS DOE housings use pressure plate assemblies including top cup and spring seal assemblies (see figure 1a) that permit the use of filter cartridges with single-length equivalents of 9 ¾ to 10 inches.

To adapt the housing to accept single open end (SOE), double O-ring cartridges with locating spear, the standard pressure plate is replaced with the SOE pressure plate (to be ordered separately).



Figure 1a
Top seal cup and
spring assembly



Figure 1b
Double open end
(DOE) cartridge



Figure 1c
Single open end
(SOE) cartridge with
locating spear

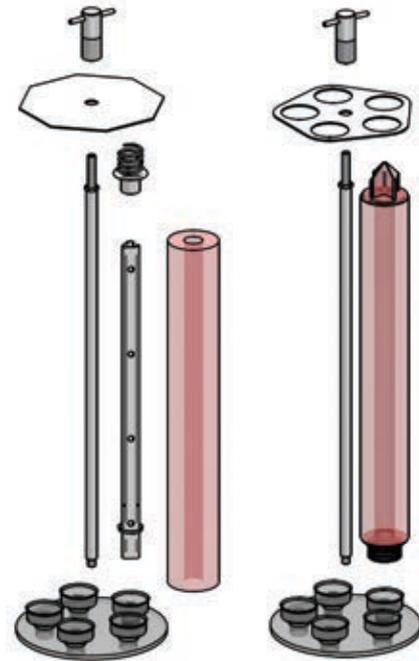


Figure 2
DOE-version
(standard)

Figure 3
SOE-version
(optional)

Figures 2 and 3 are for information only
and the actual design may vary from that
shown here.

QA documentation standards.

DS housings are delivered with an EN10204 2.2 Certificate of Conformity. Every housing is individually tested to one and a half times the maximum operating pressure.

Spares and accessories.

A comprehensive range of spares and accessories is available. Please refer to table 4 on page 7. For all other enquiries, please contact your local 3M representative or distributor.

Pressure Equipment Directive 2014/68/EU.

DS single housings are in compliance with PED Article 4§3 “Sound Engineering Practice” as standard.

In addition, the DS housings can be used for the filtration of Group 2 Liquids - and Group 1 Liquids at reduced operating pressures. Group 2 non hazardous gasses can be used at reduced pressures for purging and draining.

DS housings are not to be used for Group 1 hazardous gas or vapour applications.

ATEX Directive 2014/34/EU.

The DS housings are approved for use in ATEX condition II 2 GD c IIC / IIIC.

The user of these housings must ensure that they are used in accordance with the requirements of these PED and ATEX directives at all times.

Please consult your local 3M representative for any other classification or further information.

The 3M™ DS Series filter housings are food contact compliant.

Food Contact Directive (EC) 1935/2004.

The housings are constructed from 316 and 316L stainless steel (wetted parts in contact) and delivered with O-rings that are compliant to FDA (there are no other non-316 parts in contact).

In addition to the standard Coreline housing range described here, the 3M™ DS housing can be built upon request to a wide range of specifications and design and construction standards. These routinely include PED Category IV and for use with Hazardous (Group 1) liquids and Gas/Vapour. Design and constructions codes can include (but are not limited to) EN13445, AD Merkblätter, ASME Div VIII & U Stamp and CODAP. Materials can include in addition to 316 (but not limited to) 304 and Uranus B6 Super Duplex steels.

Specifications.

The housing handles liquids at pressures up to 10 bar g and temperatures of up to 110 °C. All wetted surfaces are in 316L stainless steel. Other parts (V-band clamp, feet mountings, etc.) are supplied in 304 stainless steel or similar. DS filter housings are electropolished for a consistent, easy-care finish.

Nitrile gaskets are supplied as standard. Other gasket materials are available as standard items and can be readily swapped with those supplied.

The 5 cartridge round housings are available with male-threaded BSPT connections. The 12 round housings are fitted with PN16 DN80 flanges. All vents and drains are female BSP.

Table 2 on the next page gives an overview of the standard model specifications for the DS Series cartridge filter housings.

Flow rates.

Table 2 also lists the maximum water flow rates in liters per minute (l/min) for each model filter housing. Use the data in table 2 only as a guide for establishing the maximum housing flow capacity. Do not use it for filter sizing.

Once a flow rate for a selected cartridge is known, use table 2 to check whether the housing’s flow rate falls within the recommended guidelines.

When sizing a filter, the amount of contaminant load needs to be considered in addition to the flow rate and desired pressure drop. Low initial pressure drop enhances filter cartridge life.

Multiple specifications and dimensions to choose from.

Table 2: Standard model specifications

| Housing type specifications | 05 DS | | 12 DS |
|-------------------------------|--------------------------|---------------------|--------------------------|
| Connection sizes | Model | Connection | Flanged PN16 DN80 |
| | 05DS1 | GM (BSPT male) 1.5" | |
| | 05DS2 05DS3 05DS4 | GM (BSPT male) 2" | |
| Vent connections | ¼" BSP female (parallel) | | ½" BSP female (parallel) |
| Drain connections | ¾" BSP female (parallel) | | 1" BSP female (parallel) |
| Cartridge sizes (9 ¾" to 10") | 1, 2, 3 and 4 high | | 3 and 4 high |
| Housing material | 316 L stainless steel | | 316 L stainless steel |
| Standard gasket material | Nitrile | | Nitrile |
| Max. operating pressure | 10 bar g | | 10 bar g |
| Max. operating temperature | 110 °C | | 110 °C |
| Max. housing flow rate | 397 l/min | | 871 l/min |

Table 2 is intended as a guide. Flow rates are indicative only. Actual flow rates will depend on various parameters, including process fluid viscosity, temperature, contaminant loading and the cartridge type being used. Grade selection and performance should be confirmed with a small-scale pilot trial. Maximum operating pressure used in service needs to be in conformity with PED Directive 2014/68/EU - see page 3.

Dimensions.

Refer to drawings on the next pages and the dimensions as shown in table 3 below to find a selected dimension for the standard models.

Table 3: Standard model dimensions

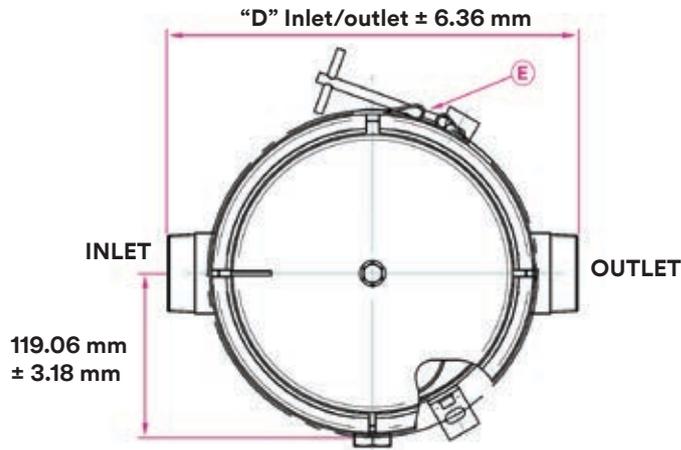
| Housing type | A* | B* | C* | D | Height needed for cartridge loading / unloading | Weight (empty) | Volume |
|--------------|----------------|----------------|-----------------|-----------------|---|----------------|-------------|
| | Overall height | Inlet to floor | Outlet to floor | Inlet to outlet | | | |
| 05 DS 1 | 558 mm | 171.5 mm | 73 mm | 305 mm | 842 mm | 12 kg | 15.5 litres |
| 05 DS 2 | 812 mm | | | | 1340 mm | 14 kg | 22.5 litres |
| 05 DS 3 | 1066 mm | | | | 1842 mm | 16 kg | 31.5 litres |
| 05 DS 4 | 1320 mm | | | | 2342 mm | 18 kg | 39.5 litres |
| 12 DS 3 | 1441 mm | 700 mm | 350 mm | 500 mm | 2160 mm | 69 kg | 84 litres |
| 12 DS 4 | 1691 mm | | | | 2670 mm | 75 kg | 102 litres |

* Add 22.3 mm for leg installation on 5DS housings.

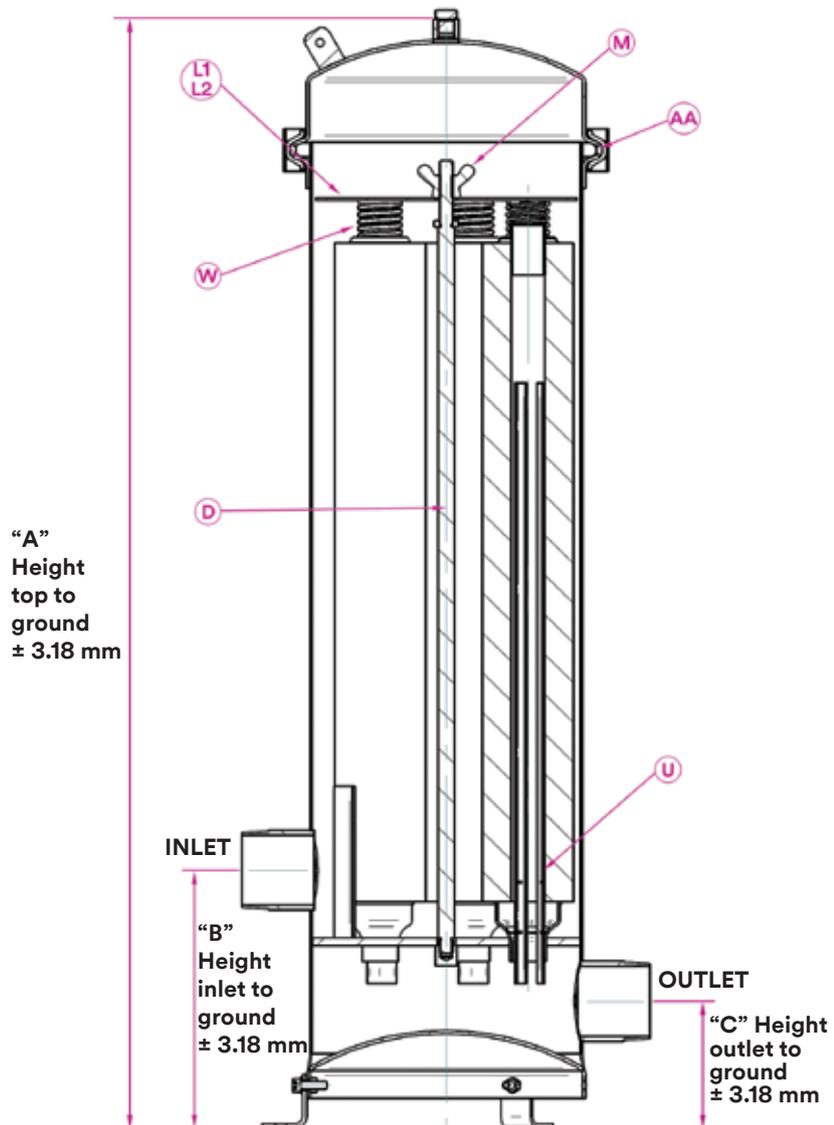
All dimensions are subject to normal manufacturing tolerances.

05 DS housing drawings

Lid



Housing



12 DS housing drawings

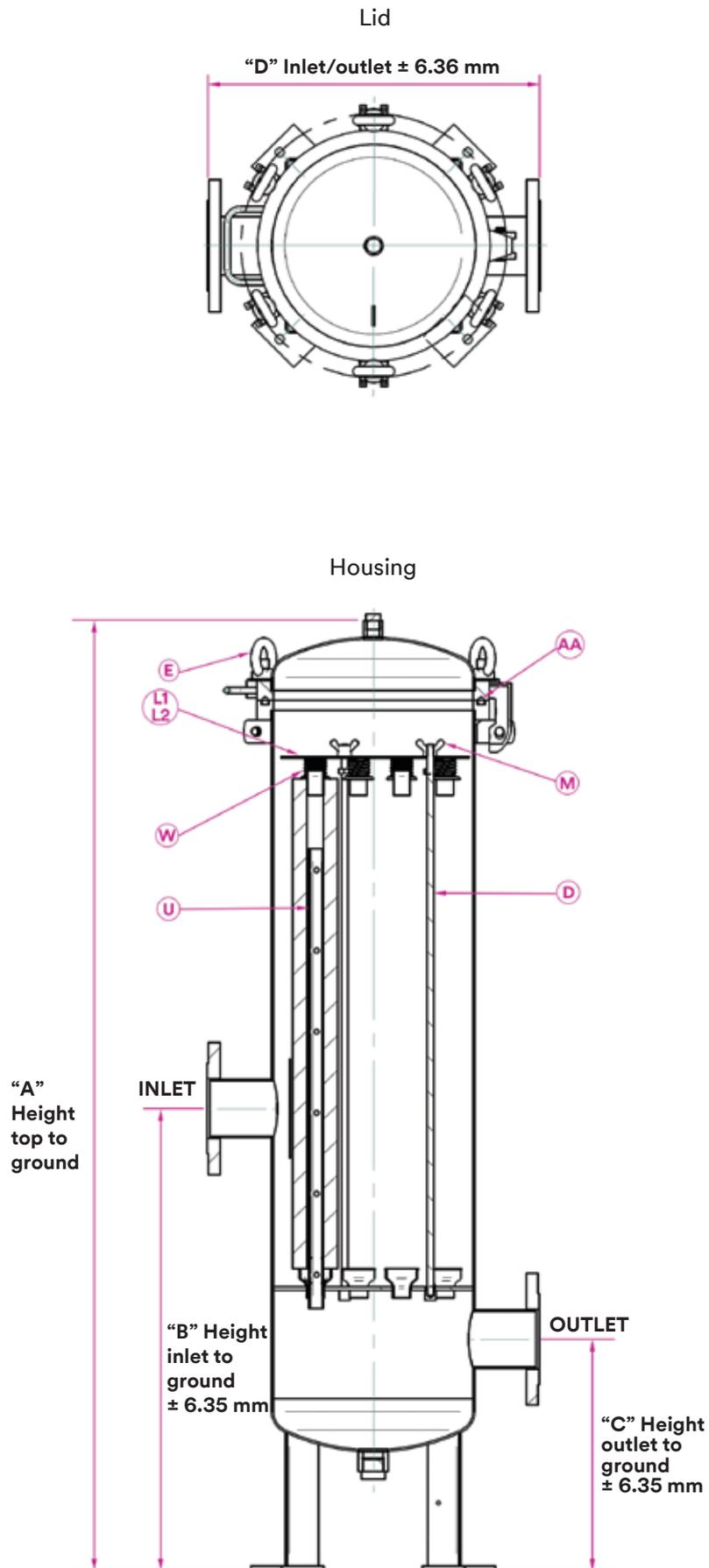


Table 4: Housing spare parts

| Kit | Letter code | Quantity/kit | | Description of item | Part number | Cartridge type | Surface finish | Cartridge height | Part number | | Ex. stock | |
|--|-------------|--------------|-----------------------|----------------------------------|-------------|-------------------------|----------------|-----------------------------------|-------------|------------|------------|-----|
| | | 05DS | 12DS | | | | | | 05DS | 12DS | | |
| (1) DOE - Internals Double open ended | M | 1 | 3 | Compression nut | 316L | DOE/SOE | N/A | 10" (9 ¾") | 7000075912 | 7100158086 | Yes | |
| | D | 1 | 3 | Tie rod | 316L | DOE = Double open ended | E0 | 20" (19 ¾") | 7100055455 | 7100158087 | Yes | |
| | | | | | | | | 30" (29 ¾") | 7000075913 | 7000075914 | Yes | |
| L1 | 1 | 1 | DOE compression plate | | | | 40" (39 ¾") | 7100066275 | 7100048271 | Yes | | |
| (2) SOE - Internals Single open ended | M | 1 | 3 | Compression nut | 316L | DOE/SOE | N/A | 10" (9 ¾") | 7100036247 | 7010179888 | Yes | |
| | D | 1 | 3 | Tie rod | 316L | SOE = Single open ended | E0 | 20" (19 ¾") | 7100036233 | 7010154921 | Yes | |
| | | | | | | | | 30" (29 ¾") | 7000075911 | 7100085689 | Yes | |
| L2 | 1 | 1 | SOE locator plate | | | | 40" (39 ¾") | 7100158065 | 7010179889 | Yes | | |
| (3) Lid clamp closure | E | 1 | - | 8" nominal V-band clamp | 304L | DOE/SOE | E0 | N/A | 7000075735 | - | Yes | |
| | | - | 1 | Swing bolt kit | 304 (L) | DOE/SOE | N/A | N/A | - | 7100086804 | Yes | |
| (4) SOE - Cartridge locator plate | L2 | 1 | | SOE locator plate | 316L | SOE = Single open ended | E0 | N/A | 7000075916 | 7100112477 | Yes | |
| (5) DOE - Cartridge guide posts | U | 5 | 5 | Cartridge guide and seal cup | 316L | DOE | E0 | Height 1 | 7000075442 | 7000075442 | Yes | |
| | | 5 | 5 | | | | | Height 2 | 7000033290 | 7000033290 | Yes | |
| | | 5 | 5 | | | | | Height 3 | 7000075443 | 7000075443 | Yes | |
| | | 5 | 5 | | | | | Height 4 | 7000033291 | 7000033291 | Yes | |
| (6) DOE - Top seal cup and spring assembly | W | 5 | 5 | Top seal cup and spring assembly | 316L | DOE | E0 | N/A | 7000033217 | 7000033217 | Yes | |
| (7) Gaskets | AA | 3 | 5 | Lid O-ring seal | | | | NBR (nitrile) | N/A | 7000075507 | 7010179729 | Yes |
| | | 5 | 5 | | | | | EPDM (ethylene propylene) | N/A | 7000075508 | 7100141426 | Yes |
| | | 1 | 1 | | | | | FPM (fluorocarbon) | N/A | 7000033300 | 7100041285 | Yes |
| | | 1 | - | | | | | MVQ (silicone) | N/A | 7000033301 | - | Yes |
| | | 3 | - | | | | | MVQ/FEP (silicone coated FEP) | N/A | 7000075371 | - | Yes |
| | | 2 | 2 | | | | | FPM/FEP (fluorocarbon coated FEP) | N/A | 7000033299 | 7000033331 | Yes |

3M™ DS Series ordering guide.

| Number of cartridges | Housing type | Cartridge height | Cartridge type ** | Construction material (in contact) | Gasket material * | Surface finish | Inlet / Outlet connection type |
|----------------------|--------------|------------------|-------------------|------------------------------------|-------------------|-------------------------|---------------------------------------|
| 05 | DS | 1 | N = DOE | 6 = 316L | NB = Nitrile | E0 = Electropolished | GM 40 = 1 ½" BSPT Male BP40 |
| 05 | DS | 2 3 4 | N = DOE | 6 = 316L | NB = Nitrile | E0 = Electropolished | GM 50 = 2" BSPT Male BP50 |
| 12 | DS | 3 4 | N = DOE | 6 = 316L | NB = Nitrile | E0 = Electropolished | BP 80 = DIN PN16 DN80 01A |

Example: 12 DS 2 N 6 NB E0 BP80

* Other gasket materials and spare parts are available to order on request.

** SOE is available as option on request.

For more information, please contact your local 3M SPSPD representative or distributor.

| 3M Part no. DS Standard housings | Description |
|----------------------------------|-----------------|
| 7100184242 | 05DS1N6NBE0GM40 |
| 7100183807 | 05DS2N6NBE0GM50 |
| 7100184011 | 05DS3N6NBE0GM50 |
| 7100185150 | 05DS4N6NBE0GM50 |
| 7100184033 | 12DS3N6NBE0BP80 |
| 7100184012 | 12DS4N6NBE0BP80 |

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