

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

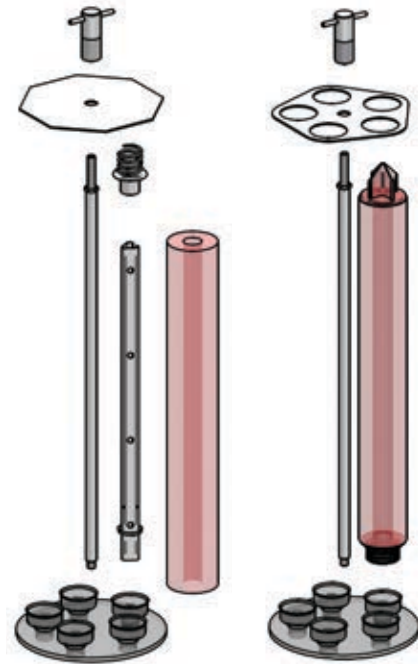


Figure 2
DOE-version
(standard)

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 SPSP 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 SPSD 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 DIN 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

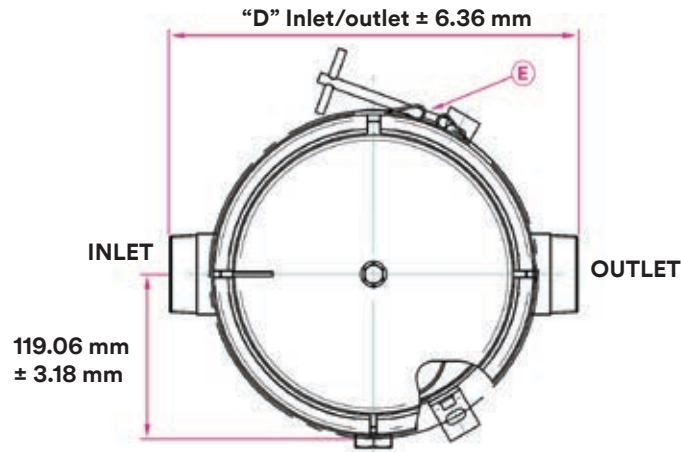
Housing type	A*	B*	C*	D	Height needed for cartridge loading / unloading	Weight (empty)	Volume
	Overall height	Inlet to floor	Outlet to floor	Inlet to outlet			
05 DS 1	558 mm	171.5 mm	73 mm	305 mm	842 mm	12 kg	15.5 litres
05 DS 2	812 mm				1340 mm	14 kg	22.5 litres
05 DS 3	1066 mm				1842 mm	16 kg	31.5 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.

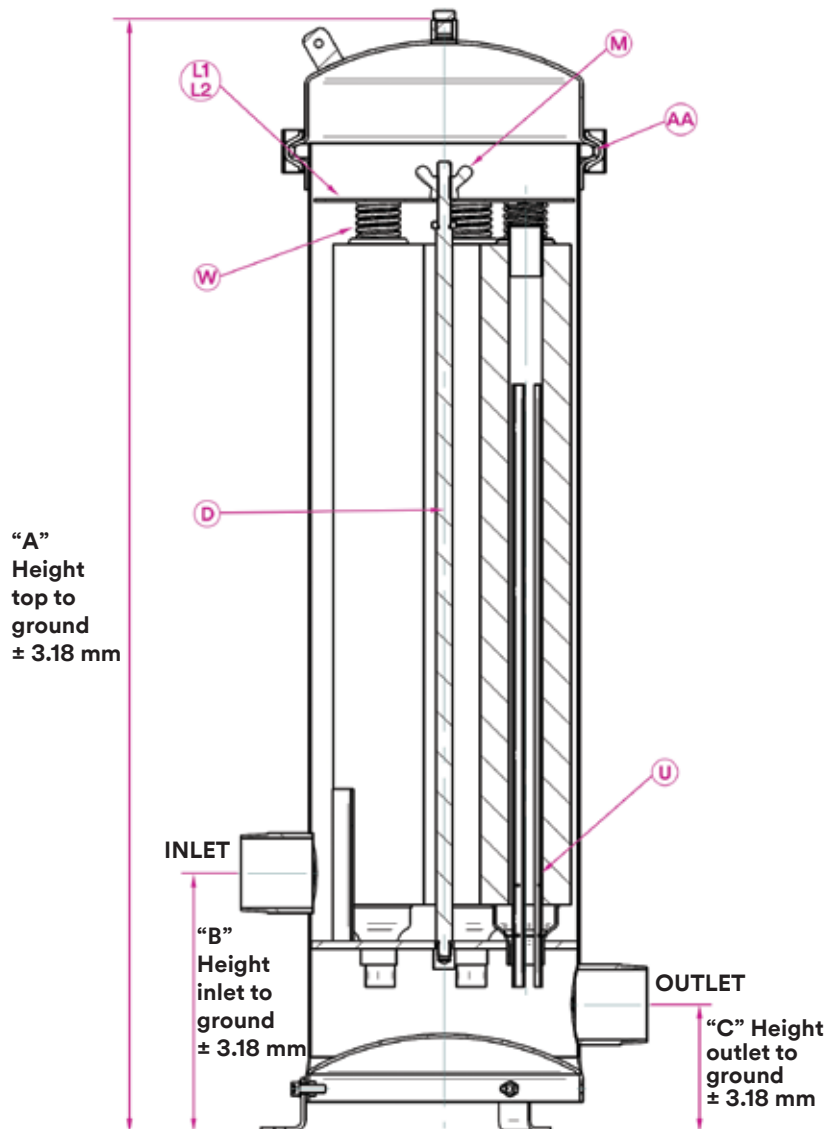
All dimensions are subject to normal manufacturing tolerances.

05 DS housing drawings

Lid



Housing



12 DS housing drawings

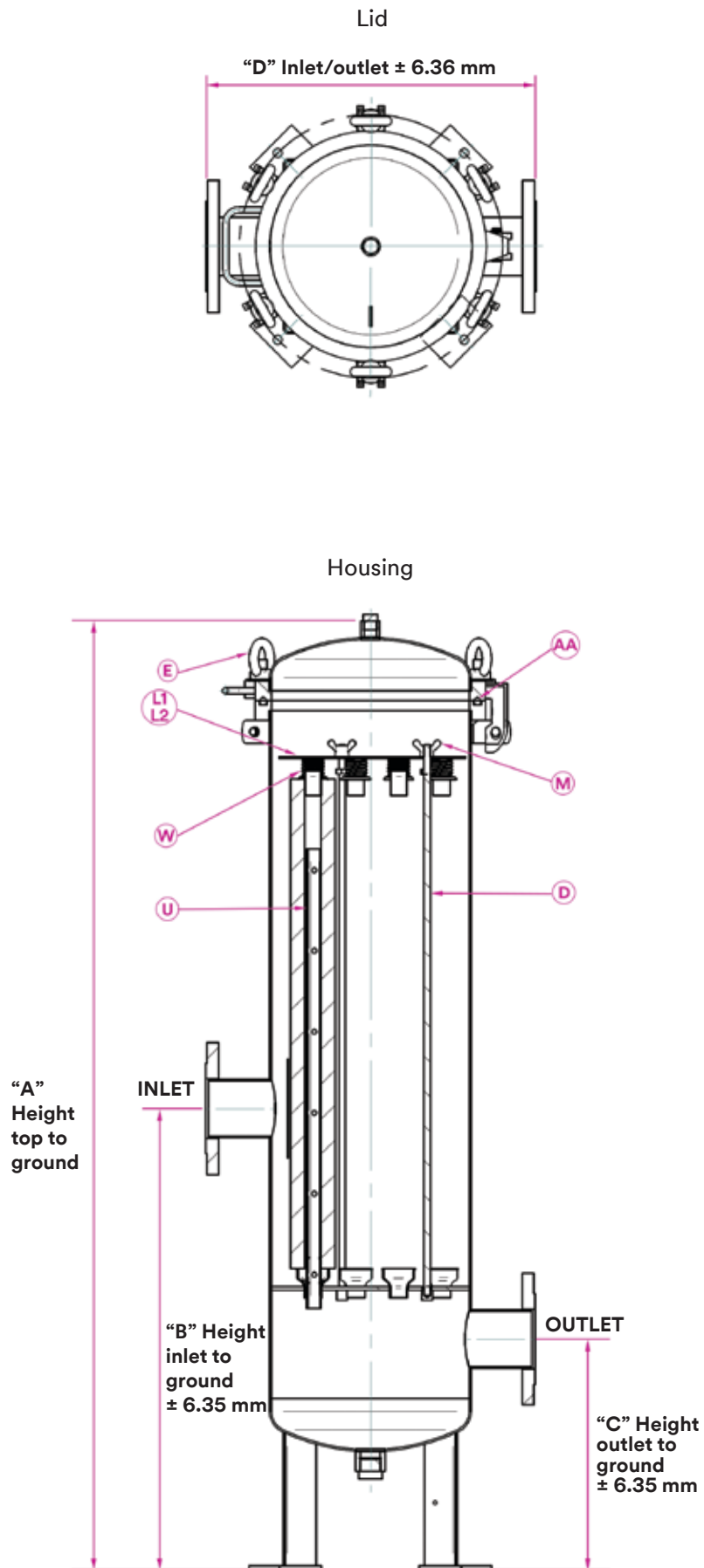


Table 4: Housing spare parts

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 SPSP 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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3M Purification Separation and Purification Sciences Division

41 boulevard du Parc
62231 Coquelles
France

Tel +33 (0)3 21 19 19 80
Fax +33 (0)3 21 46 44 96

Web www.3M.eu/purification

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