

High Pressure Filter Kits

HD 049 · HD 069 · HD 172 · HD 319 · HD 419 · HD 619

Operating pressure up to 630 bar / 9137 psi · Nominal flow rate up to 450 l/min / 118.9 gpm



High Pressure Filter Kit HD 049

Description

Application

In the high pressure circuits of hydraulic systems.

Performance features

Protection against wear:

By means of filter elements that even in full-flow filtration meet the highest demands regarding cleanliness classes.

Protection against malfunction:

Through installation near to the control valves or other expensive components. The specific determined flow rate guarantees a closed by-pass valve even at $v \leq 200 \text{ mm}^2/\text{s}$ / 927 SUS (cold start condition).

Filter elements

Flow direction from outside to center.

The star-shaped pleating of the filter material results in:

- › large filter surfaces
- › low pressure drop
- › high dirt-holding capacities
- › long service life

Filter maintenance

By using a clogging indicator the correct moment for maintenance is stated and guarantees the optimum utilization of the filter life.

Materials

Filter bowl:	Cold extruded steel
Coating:	Powder paint
Seals:	NBR (FPM on request)
Filter media:	EXAPOR®MAX3 - inorganic multi-layer microfiber web

Accessories

To monitor the clogging, screw-in (see section Dimensions) or flange-mounted differential pressure switches are available. For dimensions and technical data of integrable clogging indicators, see catalog sheet 60.40.

Flange-mounted clogging indicators optionally with one or two switching points resp. temperature suppression – Dimensions and technical data see catalog sheet 60.30.

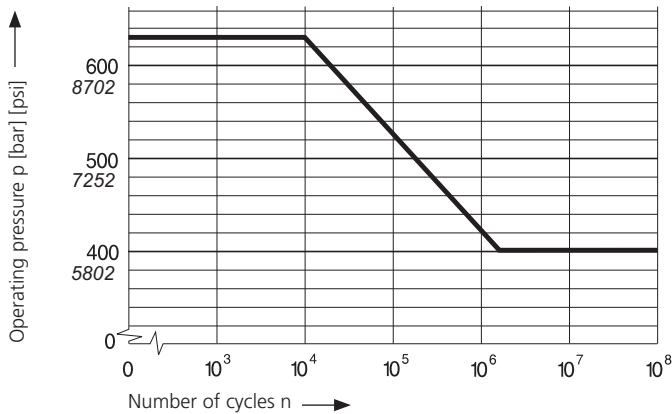
Characteristics

Operating Pressure

0 ... 400 bar / 5800 psi, min. 2×10^6 pressure cycles
Nominal pressure according to DIN 24550

0 ... 630 bar / 9137 psi, min. 10^4 pressure cycles
Quasi-static operating pressure

Permissible pressures for other numbers of cycles



Nominal flow rate

Up to 450 l/min / 118.9 gpm (see Selection Chart, column 2)
The nominal flow rates indicated by ARGO-HYTOS are based on the following features:

- closed by-pass valve at $v \leq 200 \text{ mm}^2/\text{s}$ / 927 SUS
- element service life > 1000 operating hours at an average fluid contamination of 0.07 g per l/min / 0.27 g per gpm flow volume
- flow velocity in the connection lines:
up to 250 bar $\leq 8 \text{ m/s}$ / up to 3626 psi $\leq 26.3 \text{ ft/s}$
> 250 bar $\leq 12 \text{ m/s}$ / > 3626 psi $\leq 39.4 \text{ ft/s}$

Filter fineness

$5 \mu\text{m(c)}$... $16 \mu\text{m(c)}$
 β -values according to ISO 16889
(see Selection Chart, column 4 and diagram Dx).

Dirt-holding capacity

Values in g test dust ISO MTD according to ISO 16889
(see Selection Chart, column 5).

Hydraulic fluids

Mineral oil and biodegradable fluids
(HEES and HETG, see info-sheet 00.20).

Temperature range

-30 °C ... +100 °C (temporary -40 °C ... +120 °C)
-22 °F ... +212 °F (temporary -40 °F ... +248 °F)

Viscosity at nominal flow rate

- at operating temperature: $v < 60 \text{ mm}^2/\text{s}$ / 280 SUS
- as starting viscosity $v_{\text{max}} = 1200 \text{ mm}^2/\text{s}$ / 5560 SUS
- at initial operation:
The recommended starting viscosity can be read from the diagram D (pressure drop as a function of the kinematic viscosity) as follows: Find the 70% Δp of the cracking pressure of the by-pass valve on the vertical axis. Draw a horizontal line so that it intersects the Δp curve at a point. Read this point on the horizontal axis for the viscosity.

Mounting position

Preferably vertical.

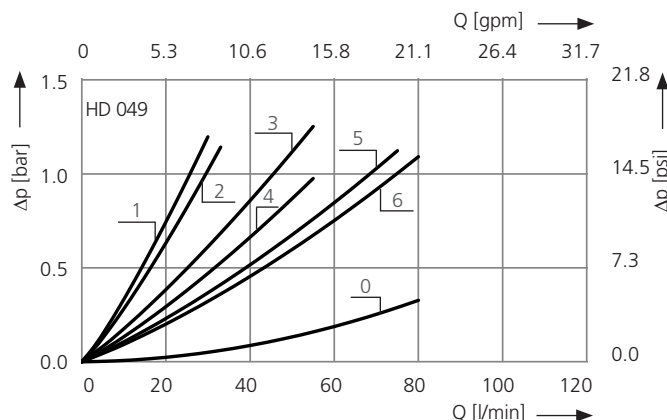
Connection

For installation recommendations, see info sheet 00.325.

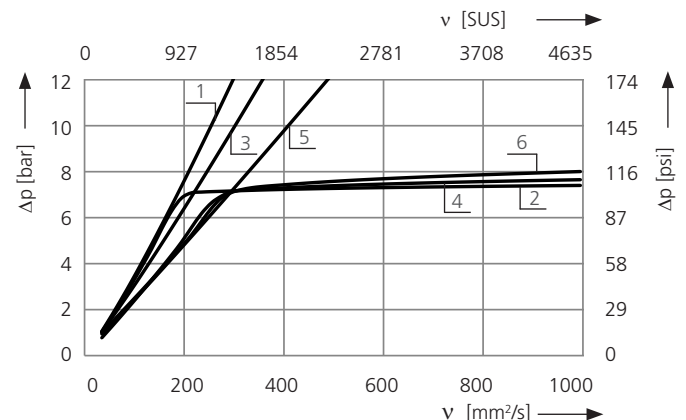
Diagrams

Δp -curves for complete filters in Selection Chart, column 3

D1 Pressure drop as a function of the **flow volume**
at $v = 35 \text{ mm}^2/\text{s}$ / 162 SUS

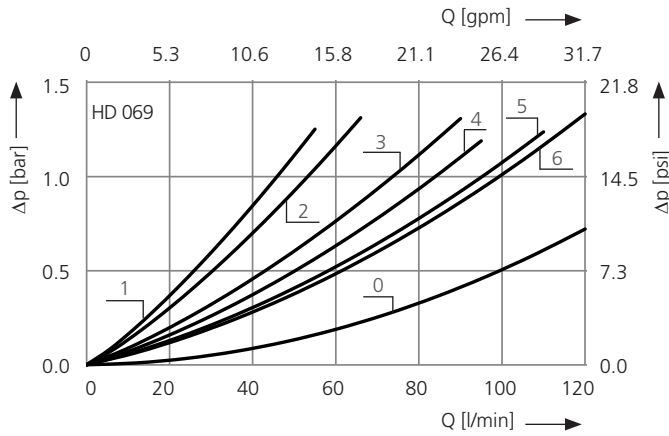


Pressure drop as a function of the **kinematic viscosity** at nominal flow

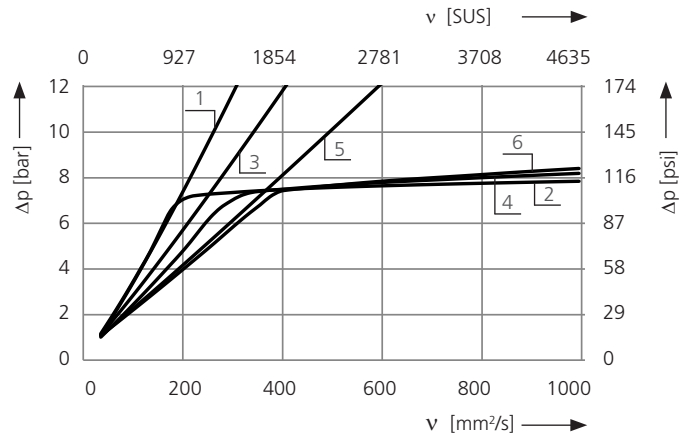


Δp -curves for complete filters in Selection Chart, column 3

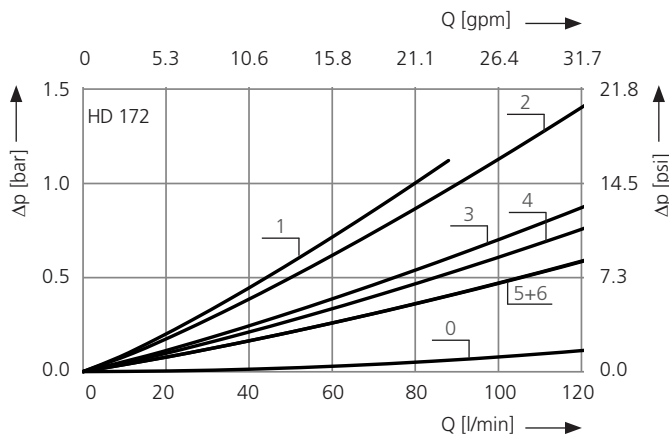
D2 Pressure drop as a function of the **flow volume**
at $v = 35 \text{ mm}^2/\text{s}$ / 162 SUS (0 = casing empty)



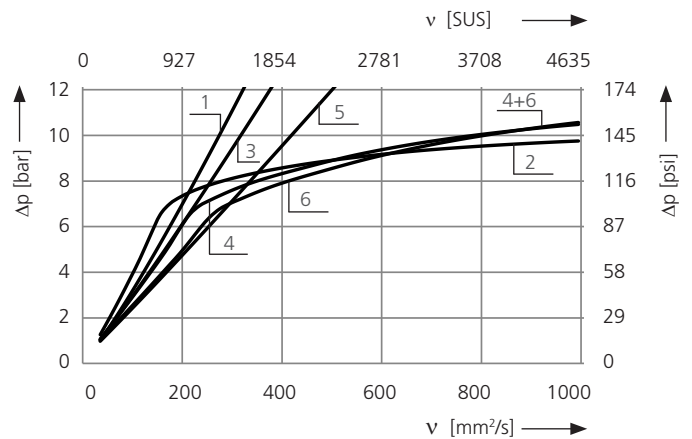
Pressure drop as a function of the
kinematic viscosity at nominal flow



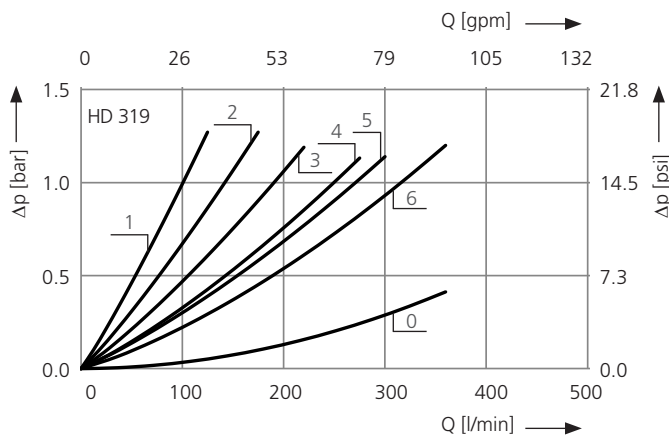
D3 Pressure drop as a function of the **flow volume**
at $v = 35 \text{ mm}^2/\text{s}$ / 162 SUS (0 = casing empty)



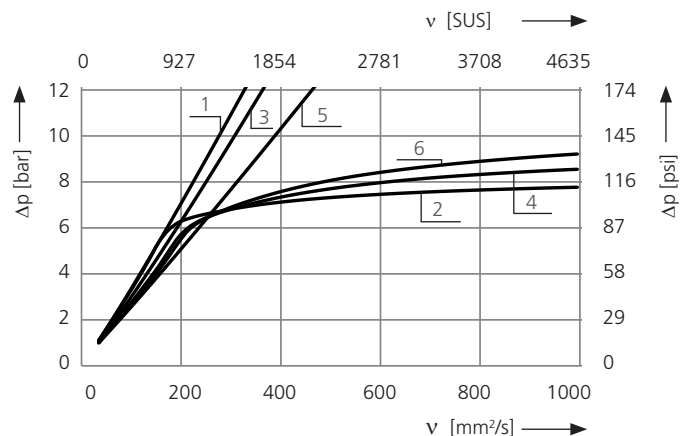
Pressure drop as a function of the
kinematic viscosity at nominal flow



D4 Pressure drop as a function of the **flow volume**
at $v = 35 \text{ mm}^2/\text{s}$ / 162 SUS (0 = casing empty)

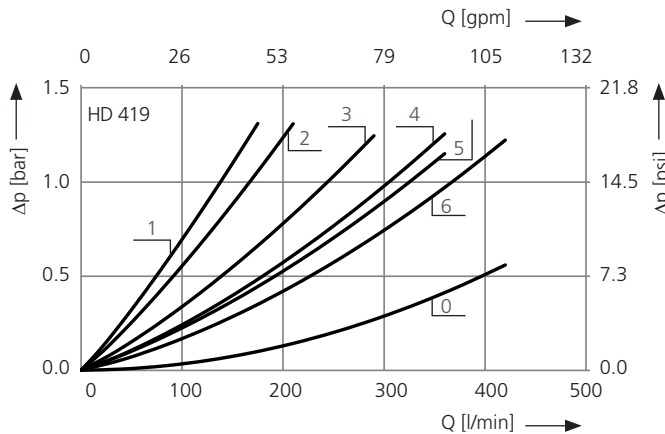


Pressure drop as a function of the
kinematic viscosity at nominal flow

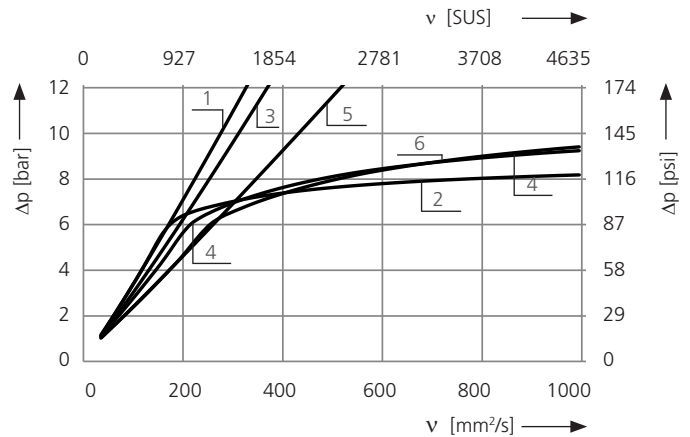


Δp-curves for complete filters in Selection Chart, column 3

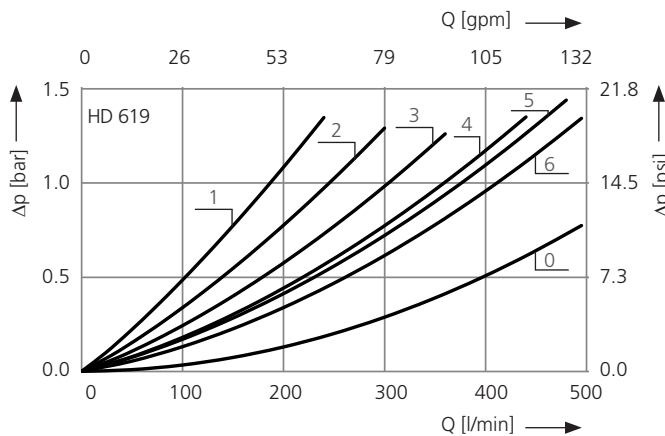
D5 Pressure drop as a function of the **flow volume**
at $v = 35 \text{ mm}^2/\text{s}$ / 162 SUS (0 = casing empty)



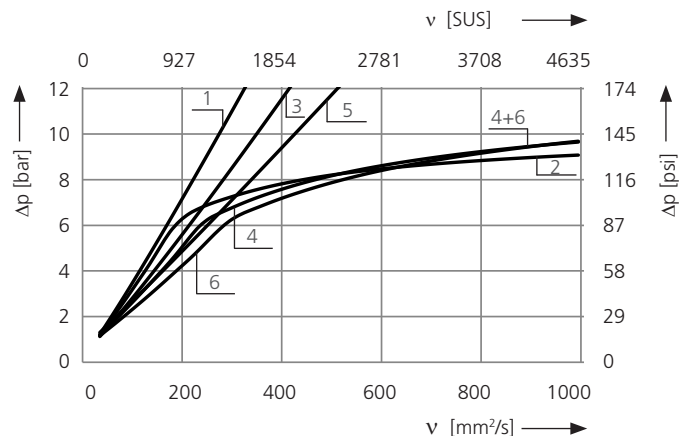
Pressure drop as a function of the
kinematic viscosity at nominal flow



D6 Pressure drop as a function of the **flow volume**
at $v = 35 \text{ mm}^2/\text{s}$ / 162 SUS (0 = casing empty)

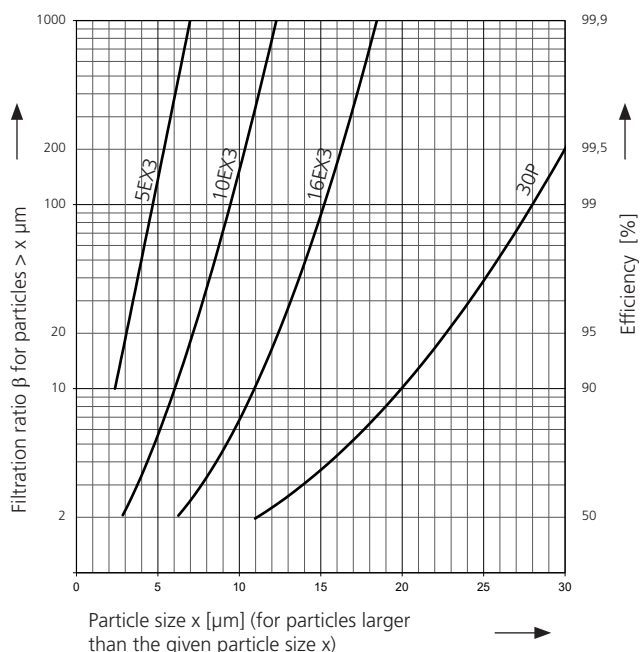


Pressure drop as a function of the
kinematic viscosity at nominal flow



Filter fineness curves in Selection Chart, column 4

Dx Filtration ratio β as a function of particle size x obtained
by the Multi-Pass-Test according to ISO 16889



The abbreviations represent the following β -values resp.
finenesses:

For EXAPOR®MAX 3 and Paper elements:

5EX3	$\beta_{5(c)} = 200$	EXAPOR®MAX 3
10EX3	$\beta_{10(c)} = 200$	EXAPOR®MAX 3
16EX3	$\beta_{16(c)} = 200$	EXAPOR®MAX 3
30P	$\beta_{30(c)} = 200$	Paper

Based on the structure of the filter media of the 30P paper
elements, deviations from the printed curves are quite probable.

For screen elements:

40S	= screen material with mesh size	40 μm
60S	= screen material with mesh size	60 μm
100S	= screen material with mesh size	100 μm

Tolerances for mesh size according to DIN 4189

For special applications, finenesses differing from these curves
are also available by using special composed filter media.

Selection Chart

Part No.	Nominal flow rate		Pressure drop see diagram D /curve no.	Filter fineness see diagr. Dx	Dirt-holding capacity	Cracking pressure of by-pass	Symbol	Replacement filter element Part No.	Weight	Remarks		
	l/min	gpm									g	bar
1	2		3	4	5	6		7	8	9		10
HD 049-0213	27	7.1	D1/1	5EX3	4.8	-	-	5	V3.0510-13 ²	1.6	3.5	with screw-in bushing
HD 049-1503	30	7.9	D1/2	5EX3	5.6	7	102	1	V3.0510-03	1.5	3.3	-
HD 049-0216	47	12.4	D1/3	10EX3	5.1	-	-	5	V3.0510-16 ²	1.6	3.5	with screw-in bushing
HD 049-1506¹	50	13.2	D1/4	10EX3	6.8	7	102	1	V3.0510-06	1.5	3.3	-
HD 049-0218	65	17.2	D1/5	16EX3	5.8	-	-	5	V3.0510-18 ²	1.6	3.5	with screw-in bushing
HD 049-1508¹	75	19.8	D1/6	16EX3	6.9	7	102	1	V3.0510-08	1.5	3.3	-
HD 069-0213	50	13.2	D2/1	5EX3	8.7	-	-	5	V3.0520-13 ²	2.7	6.0	with screw-in bushing
HD 069-1503	60	15.9	D2/2	5EX3	12	7	102	1	V3.0520-03	2.6	5.7	-
HD 069-0216	80	21.1	D2/3	10EX3	11	-	-	5	V3.0520-16 ²	2.7	6.0	with screw-in bushing
HD 069-1506¹	85	22.5	D2/4	10EX3	14	7	102	1	V3.0520-06	2.6	5.7	-
HD 069-0218	100	26.4	D2/5	16EX3	12	-	-	5	V3.0520-18 ²	2.7	6.0	with screw-in bushing
HD 069-1508¹	105	27.7	D2/6	16EX3	15	7	102	1	V3.0520-08	2.6	5.7	-
HD 172-0213	80	21.1	D3/1	5EX3	16	-	-	5	V3.0623-13 ²	4.2	9.3	with screw-in bushing
HD 172-1503	105	27.7	D3/2	5EX3	20	7	102	1	V3.0623-03	3.9	8.6	-
HD 172-0226	130	34.3	D3/3	10EX3	18	-	-	5	V3.0623-26 ²	4.2	9.3	with screw-in bushing
HD 172-1506¹	150	39.6	D3/4	10EX3	23	7	102	1	V3.0623-06	3.9	8.6	-
HD 172-0218	165	43.6	D3/5	16EX3	19	-	-	5	V3.0623-18 ²	4.2	9.3	with screw-in bushing
HD 172-1508¹	180	47.6	D3/6	16EX3	25	7	102	1	V3.0623-08	3.9	8.6	-
HD 319-0213	110	29.1	D4/1	5EX3	22	-	-	5	V3.0817-13 ²	6.5	14.3	with screw-in bushing
HD 319-1503	115	30.4	D4/2	5EX3	36	7	102	1	V3.0817-03	6	13.2	-
HD 319-0216	195	51.5	D4/3	10EX3	24	-	-	5	V3.0817-16 ²	6.5	14.3	with screw-in bushing
HD 319-1506¹	250	66.0	D4/4	10EX3	37	7	102	1	V3.0817-06	6	13.2	-
HD 319-0218	270	71.3	D4/5	16EX3	25	-	-	5	V3.0817-18 ²	6,5	14.3	with screw-in bushing
HD 319-1508¹	330	87.2	D4/6	16EX3	38	7	102	1	V3.0817-08	6	13.2	-
HD 419-0213	155	40.9	D5/1	5EX3	31	-	-	5	V3.0823-13 ²	8.8	19.4	with screw-in bushing
HD 419-1503	190	50.2	D5/2	5EX3	50	7	102	1	V3.0823-03	8.2	18.1	-
HD 419-0216	265	70.0	D5/3	10EX3	34	-	-	5	V3.0823-16 ²	8.8	19.4	with screw-in bushing
HD 419-1506¹	330	87.2	D5/4	10EX3	52	7	102	1	V3.0823-06	8.2	18.1	-
HD 419-0218	330	87.2	D5/5	16EX3	35	-	-	5	V3.0823-18 ²	8.8	19.4	with screw-in bushing
HD 419-1508¹	380	100.4	D5/6	16EX3	53	7	102	1	V3.0823-08	8.2	18.1	-

¹ Preferred type, no minimum order quantity required

² Element differential pressure stable up to 160 bar / 2320 psi, clogging indicator obligatory

Selection Chart

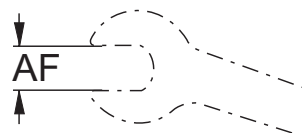
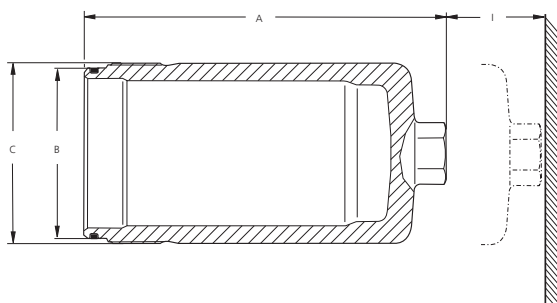
Part No.	Nominal flow rate		Pressure drop see diagram D /curve no.	Filter fineness see diag. Dx	Dirt holding capacity			Cracking pressure of by-pass	Symbol	Replacement filter element Part No.	Weight		Remarks
	l/min	gpm			g	bar	psi				kg	lbs	
1	2		3	4	5	6			7	8	9		10
HD 619-0213	220	58.1	D6/1	5EX3	45	-	-	5	V3.0833-13 ²		11.9	26.2	with screw-in bushing
HD 619-1503	280	74.0	D6/2	5EX3	74	7	102	1	V3.0833-03		11.1	24.5	-
HD 619-0216	330	87.2	D6/3	10EX3	59	-	-	5	V3.0833-16 ²		11.9	26.2	with screw-in bushing
HD 619-1506¹	400	105.7	D6/4	10EX3	75	7	102	1	V3.0833-06		11.1	24.5	-
HD 619-0218	450	118.9	D6/5	16EX3	51	-	-	5	V3.0833-18 ²		11.9	26.2	with screw-in bushing
HD 619-1508¹	450	118.9	D6/6	16EX3	76	7	102	1	V3.0833-08		11.1	24.5	-

¹ Preferred type, no minimum order quantity required

² Element differential pressure stable up to 160 bar / 2320 psi, clogging indicator obligatory

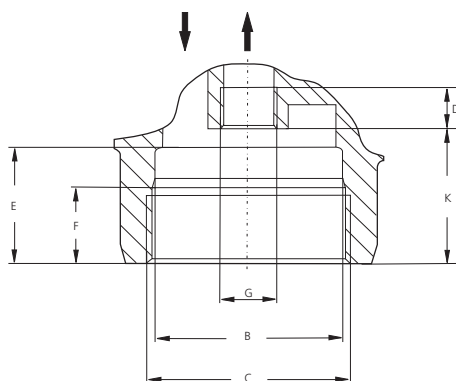
Remarks:

- › Filter versions without by-pass valves must be equipped with a clogging indicator.
- › Optional integrable clogging indicators for screwing into the hydraulic block can be found under section Dimensions and in the catalog sheet 60.40.
- › For the appropriate, flange-mounted clogging indicators see catalog sheet 60.30.
- › The filter sets listed in this chart are standard filters. If modifications are required, we kindly ask for your request.

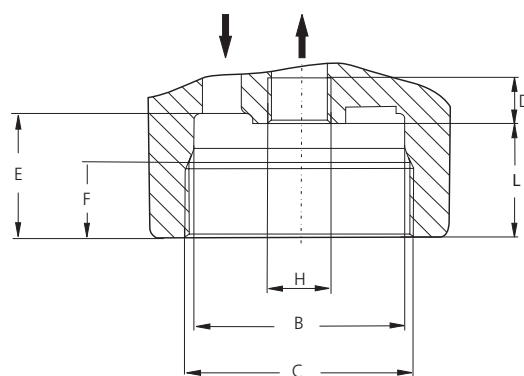


Version with by-pass valve

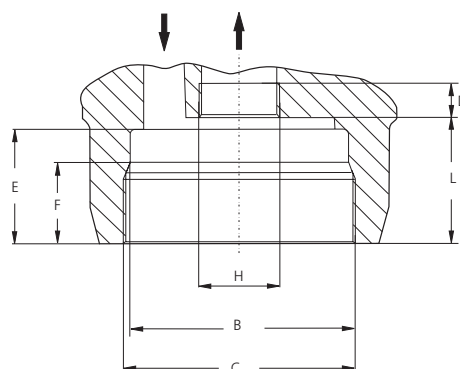
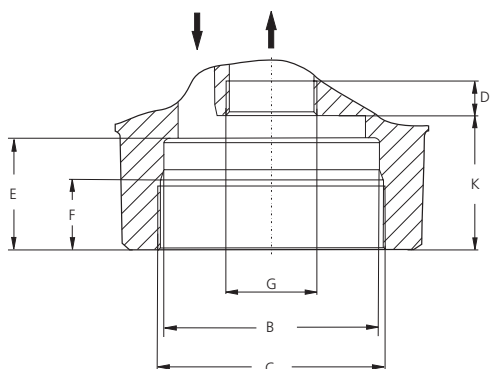
HD 049 / 069



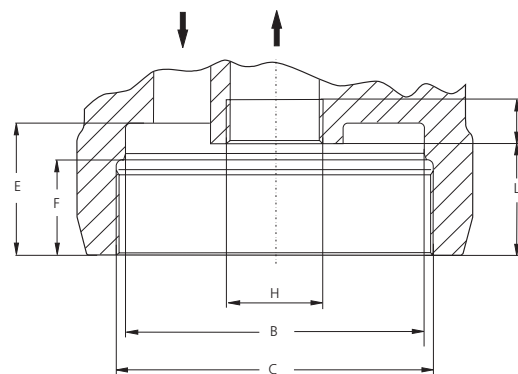
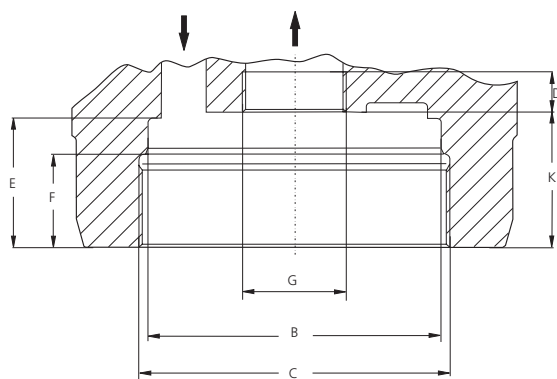
Version with screw-in bushing



HD 172



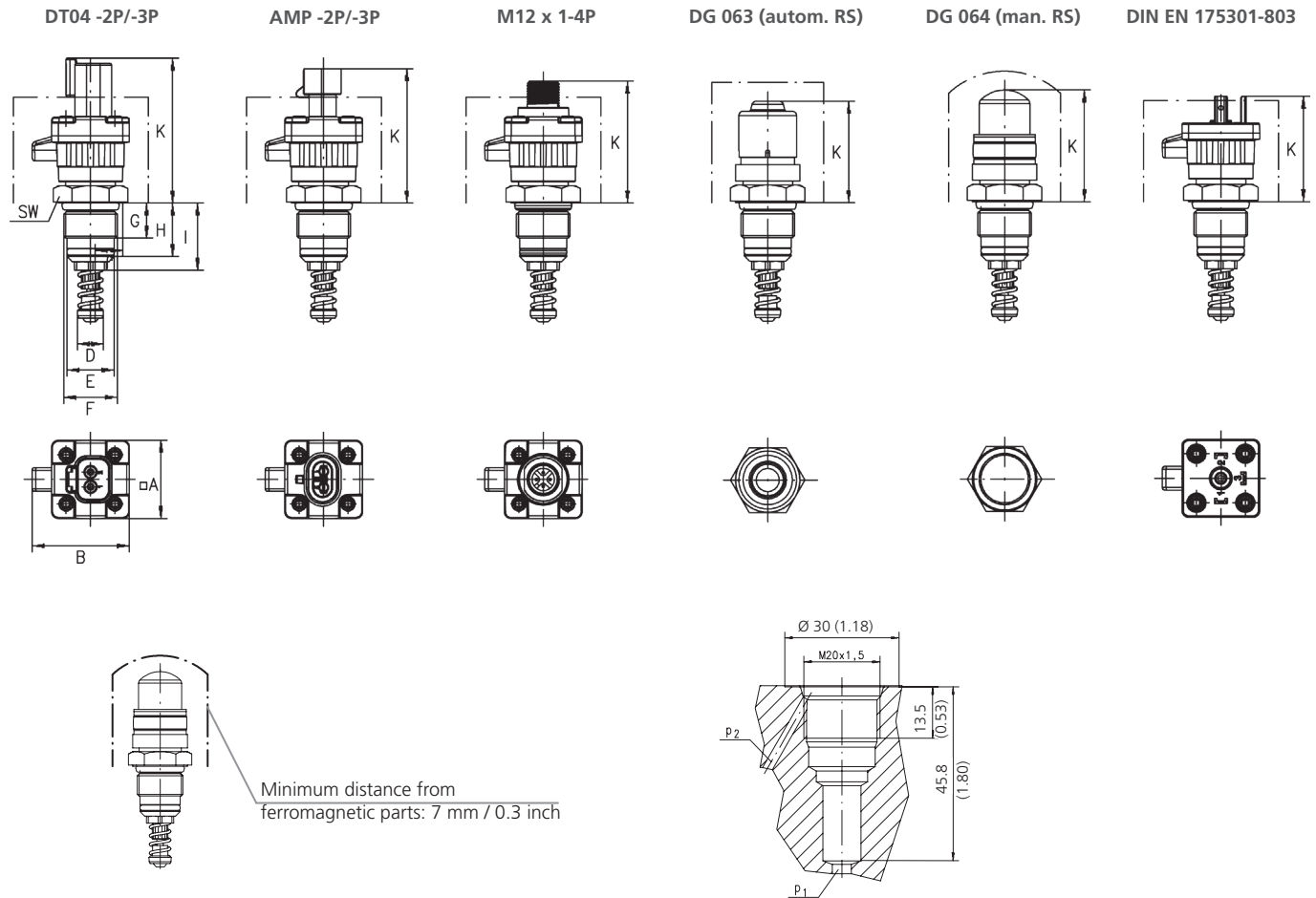
HD 319 / 419 / 619



All measurements and tolerances required for machining are available on request.

Dimensions

Extract from catalog sheet 60.40



All measurements and tolerances required for machining are available on request.

Measurements in mm

Type	A	B	C	D	E	F	G	H	I	K	L	M
HD 049/069	133/227.5	60	M65 x 1.5	min. 13	35.5	22.5	M18 x 1.5	M18 x 1.5	55	42	32.5	AF 36
HD 172	256.5	71	M75 x 1.5	min. 13	37	22.5	M30 x 1	M26 x 1.5	70	47.5	41	AF 27
HD 319/419/619	218/282/383	102	M108 x 1.5	min. 14	45	32.5	M36 x 1	M36 x 1.5	80	47	38	AF 32

Type	A	B	D	E	F	G	H	I	K	AF
DT04 -2P/-3P	□ 29	36.5	9.7	17.5	M20 x 1.5	13	20	25	55	24
AMP -2P/-3P	□ 29	36.5	9.7	17.5	M20 x 1.5	13	20	25	50	24
M12 x 1-4P	□ 29	36.5	9.7	17.5	M20 x 1.5	13	20	25	46	24
DG 063	-	-	9.7	17.5	M20 x 1.5	13	20	25	37.5	24
DG 064	-	-	9.7	17.5	M20 x 1.5	13	20	25	41.5	24
DIN EN 175301-803	□ 29	36.5	9.7	17.5	M20 x 1.5	13	20	25	39	24

Measurements in inch

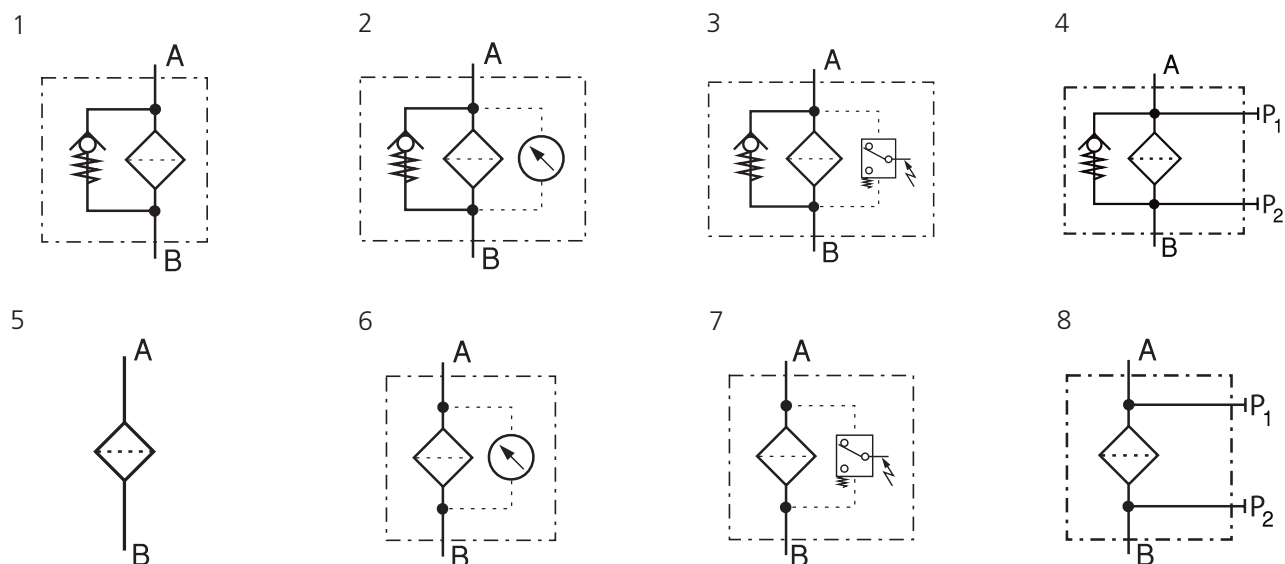
Type	A	B	C	D	E	F	G	H	I
HD 049/069	5.24/8.96	2.36	M65 x 1.5*	min. 0.51	1.40	0.89	M18 x 1.5*	M18 x 1.5*	2.17
HD 172	10.10	2.80	M75 x 1.5*	min. 0.51	1.46	0.89	M30 x 1*	M26 x 1.5*	2.76
HD 319/419/619	8.58/11.10/15.08	4.02	M108 x 1.5*	min. 0.55	1.77	1.28	M36 x 1*	M36 x 1.5*	3.15

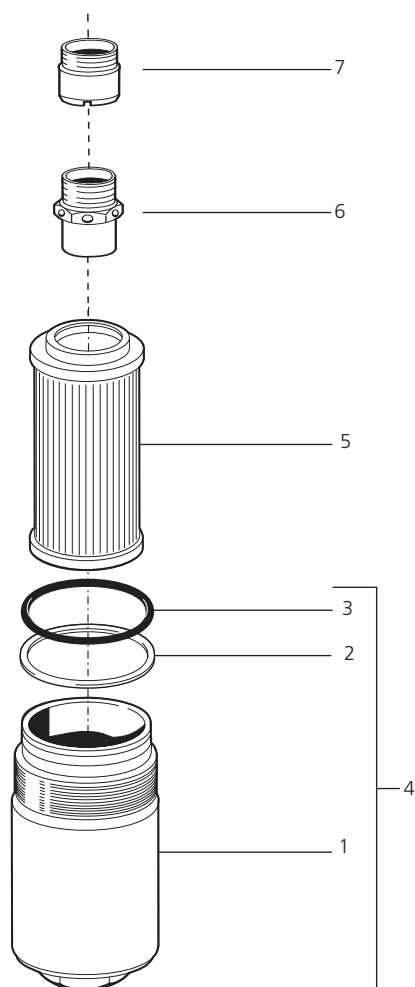
Type	K	L	M mm						
HD 049/069	1.65	1.28	AF 36						
HD 172	1.87	1.61	AF 27						
HD 319/419/619	1.85	1.50	AF 32						

Type	A	B	D	E	F mm	G	H	I	K	AF mm
DT04 -2P/-3P	□ 1.1	1.44	0.38	0.69	M20 x 1.5	0.51	0.79	0.98	2.17	24
AMP -2P/-3P	□ 1.1	1.44	0.38	0.69	M20 x 1.5	0.51	0.79	0.98	1.97	24
M12 x 1-4P	□ 1.1	1.44	0.38	0.69	M20 x 1.5	0.51	0.79	0.98	1.81	24
DG 063	-	-	0.38	0.69	M20 x 1.5	0.51	0.79	0.98	1.48	24
DG 064	-	-	0.38	0.69	M20 x 1.5	0.51	0.79	0.98	1.63	24
DIN EN 175301-803	□ 1.1	1.44	0.38	0.69	M20 x 1.5	0.51	0.79	0.98	2.54	24

* Dimensions in mm

Symbols



**HD 049 / HD 069**

Pos.	Designation	Part No.
1	Filter bowl HD 049	HD 052.0102
1	Filter bowl HD 069	HD 072.0102
3	O-ring 53.57 x 3.53 mm 2.11 x 0.14 inch	N007.0543/1
5	Replacement filter element	see Chart / col. 8
6	By-pass valve	HD 045.1510
7	Screw-in bushing	HD 049.0503

HD 172

Pos.	Designation	Part No.
1	Filter bowl HD 172	HD 171.0102
3	O-ring 63 x 3.5 mm 2.48 x 0.14 inch	N007.0634
5	Replacement filter element	see Chart / col. 8
6	By-pass valve	HD 172.1500
7	Screw-in bushing	HD 171.0205

HD 319 / HD 419 / HD 619

Pos.	Designation	Part No.
2	Back-ring	HD 255.0102
3	O-ring 94.84 x 3.53 mm 3.73 x 0.14 inch	N007.0953
4	Filter bowl HD 319 (with Pos. 2 and 3)	HD 250.0701
4	Filter bowl HD 419 (with Pos. 2 and 3)	HD 451.0702
4	Filter bowl HD 619 (with Pos. 2 and 3)	HD 619.0701
5	Replacement filter element	see Chart / col. 8
6	By-pass valve	HD 319.1510
7	Screw-in bushing	HD 319.0212

The functions of the complete filters as well as the outstanding features of the filter elements assured by ARGO-HYTOS can only be guaranteed if original ARGO-HYTOS spare parts are used.

Quality Assurance**Quality management according to DIN EN ISO 9001**

To ensure constant quality in production and operation, ARGO-HYTOS filter elements undergo strict controls and tests according to the following ISO standards:

ISO 2941	Verification of collapse / burst pressure rating
ISO 2942	Verification of fabrication integrity (Bubble Point Test)
ISO 2943	Verification of material compatibility with fluids
ISO 3968	Evaluation of pressure drop versus flow characteristics
ISO 16889	Multi-Pass-Test (evaluation of filter fineness and dirt-holding capacity)
ISO 23181	Determination of resistance to flow fatigue using high viscosity fluid

Before release into the series production the filter casing is tested for fatigue strength in our pressure pulse test rig. Various quality controls during the production process guarantee the leakfree function and solidity of our filters.

Illustrations may sometimes differ from the original. ARGO-HYTOS is not responsible for any unintentional mistake in this specification sheet.