



High Pressure Filter Kits

HD 049 • HD 069

HD 172 • HD 319

HD 419 • HD 619

- Operating pressure up to 600 bar
- Nominal flow rate up to 450 l/min

Description

Application

In the high pressure circuits of hydraulic systems.

Performance features

Protection

against wear: By means of filter elements that, in full-flow filtration, meet even 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 $v \leq 200 \text{ mm}^2/\text{s}$ (cold start condition).

Filter elements

Flow direction from outside to centre. 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 (Viton on request)
 Filter media: EXAPOR®MAX - inorganic multi-layer microfibre web

Accessories

To monitor the clogging, screw-in (see section Dimensions) or flange-mounted differential pressure switches are available. Flange-mounted clogging indicators optionally with one or two switching points resp. temperature suppression – Dimensions and technical data see catalogue sheet 60.30.

Characteristics

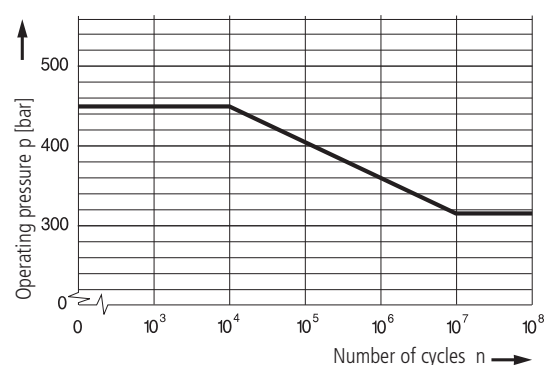
Operating pressure

HD 049 / 069 / 172: 0 ... 315 bar, min. 10^7 pressure cycles
 Nominal pressure according to DIN 24550
 0 ... 450 bar, min. 10^4 pressure cycles
 Quasi-static operating pressure

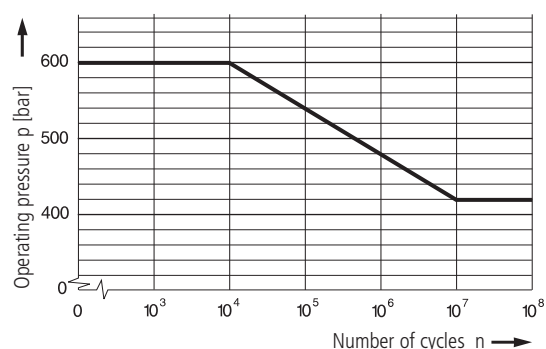
HD 319 / 419 / 619: 0 ... 420 bar, min. 10^7 pressure cycles
 Nominal pressure according to DIN 24550
 0 ... 600 bar, min. 10^4 pressure cycles
 Quasi-static operating pressure

Permissible pressures for other numbers of cycles

HD 049 / 069 / 172



HD 319 / 419 / 619



Nominal flow rate

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

- closed by-pass valve at $v \leq 200 \text{ mm}^2/\text{s}$
- element service life > 1000 operating hours at an average fluid contamination of 0,07 g per l/min flow volume
- flow velocity in the connection lines:
 up to 250 bar $\leq 8 \text{ m/s}$
 up to 450 bar $\leq 12 \text{ m/s}$

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)

Viscosity at nominal flow rate

- at operating temperature: $v < 60 \text{ mm}^2/\text{s}$
- as starting viscosity $v_{\text{max}} = 1200 \text{ mm}^2/\text{s}$
- 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.

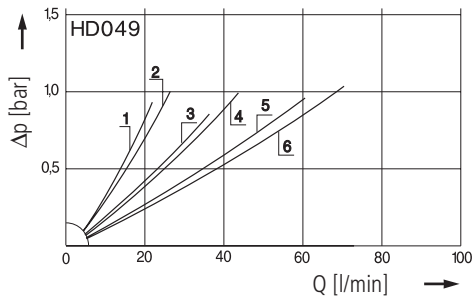
Mounting position

Preferably vertical

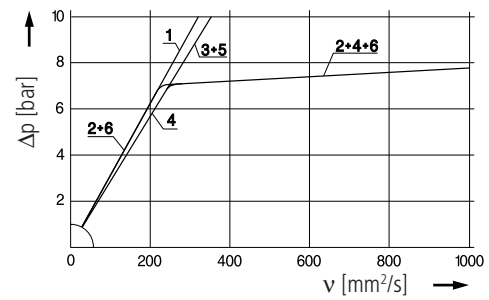
Diagrams

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

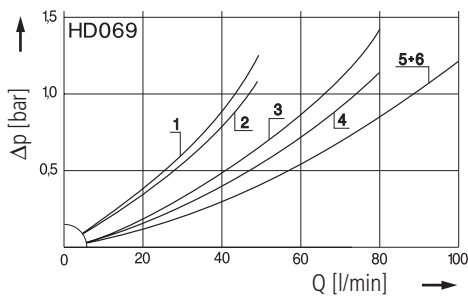
D1 Pressure drop as a function of the **flow volume** at $v = 35 \text{ mm}^2/\text{s}$



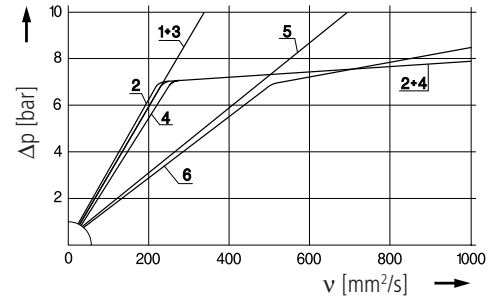
Pressure drop as a function of the **kinematic viscosity** at nominal flow



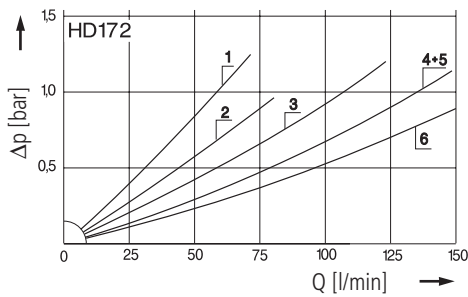
D2 Pressure drop as a function of the **flow volume** at $v = 35 \text{ mm}^2/\text{s}$



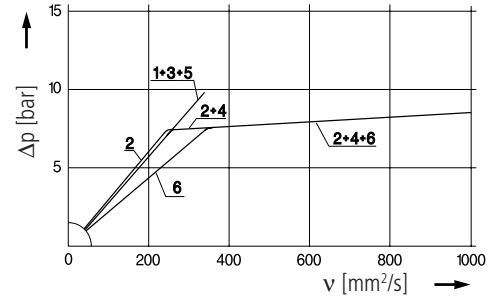
Pressure drop as a function of the **kinematic viscosity** at nominal flow



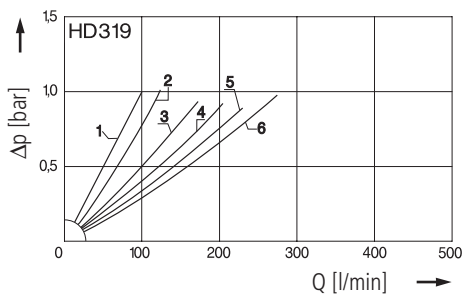
D3 Pressure drop as a function of the **flow volume** at $v = 35 \text{ mm}^2/\text{s}$



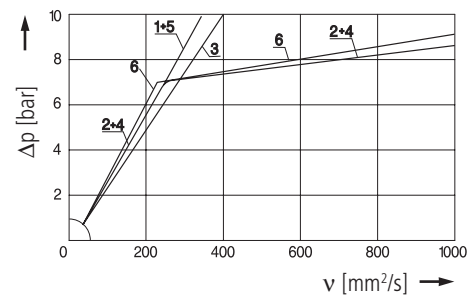
Pressure drop as a function of the **kinematic viscosity** at nominal flow



D4 Pressure drop as a function of the **flow volume** at $v = 35 \text{ mm}^2/\text{s}$



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

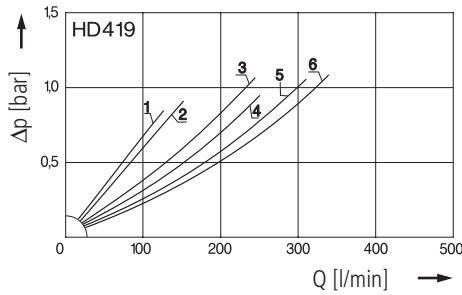


Diagrams

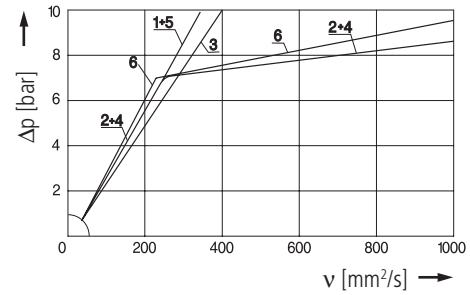
Δp -curves for complete filters in Selection Chart, column 3

D5

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

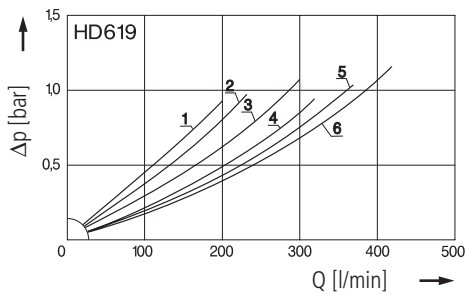


Pressure drop as a function of the **kinematic viscosity**
at nominal flow

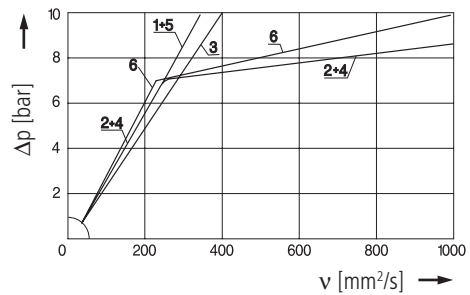


D6

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



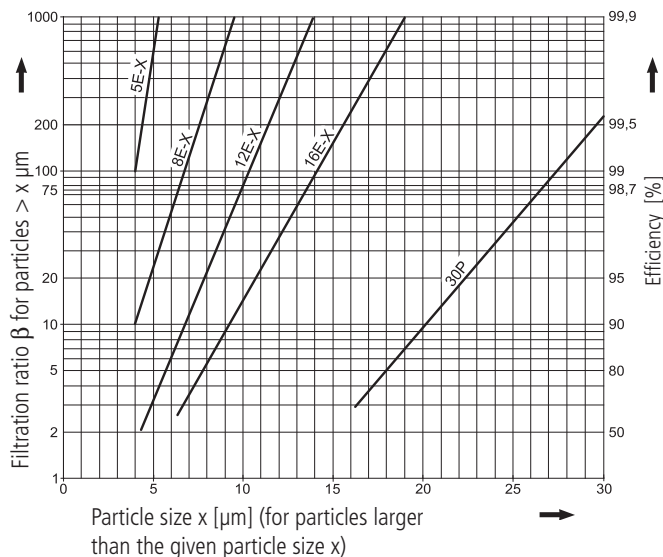
Pressure drop as a function of the **kinematic viscosity**
at nominal flow



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 and paper elements:

- 5 E-X** = $\beta_{5(c)} = 200$ EXAPOR[®]MAX
- 8 E-X** = $\beta_{8(c)} = 200$ EXAPOR[®]MAX
- 12 E-X** = $\beta_{12(c)} = 200$ EXAPOR[®]MAX
- 16 E-X** = $\beta_{16(c)} = 200$ EXAPOR[®]MAX
- 30 P** = $\beta_{30(c)} = 200$ Paper

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

For screen elements:

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

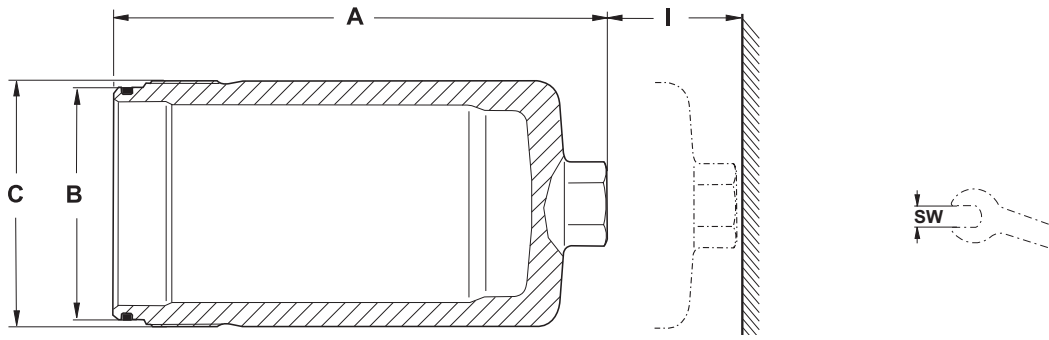
Part No.	Nominal flow	Pressure drop see diagram D /curve no.	Filter fineness see diagram Dx	Dirt-holding capacity	Cracking pressure of by-pass	Symbol	Replacement filter element Part No.	Weight	Remarks
1	l/min	3	4	g	bar	7	8	kg	10
HD 049-0213	20	D1/1	5 E-X	3,4	-	5	V3.0510-13*	1,6	with screw-in bushing
HD 049-1503	25	D1/2	5 E-X	3,8	7	1	V3.0510-03	1,5	-
HD 049-0216	30	D1/3	12 E-X	5	-	5	V3.0510-16*	1,6	with screw-in bushing
HD 049-1506	35	D1/4	12 E-X	6,1	7	1	V3.0510-06	1,5	-
HD 049-0218	55	D1/5	16 E-X	5,5	-	5	V3.0510-18*	1,6	with screw-in bushing
HD 049-1508	63	D1/6	16 E-X	6,6	7	1	V3.0510-08	1,5	-
HD 069-0213	43	D2/1	5 E-X	6,9	-	5	V3.0520-13*	2,7	with screw-in bushing
HD 069-1503	50	D2/2	5 E-X	7,6	7	1	V3.0520-03	2,6	-
HD 069-0216	63	D2/3	12 E-X	11	-	5	V3.0520-16*	2,7	with screw-in bushing
HD 069-1506	70	D2/4	12 E-X	13	7	1	V3.0520-06	2,6	-
HD 069-0218	80	D2/5	16 E-X	12	-	5	V3.0520-18*	2,7	with screw-in bushing
HD 069-1508	80	D2/6	16 E-X	14	7	1	V3.0520-08	2,6	-
HD 172-0213	55	D3/1	5 E-X	11	-	5	V3.0623-13*	4,2	with screw-in bushing
HD 172-1503	80	D3/2	5 E-X	14	7	1	V3.0623-03	3,9	-
HD 172-0226	100	D3/3	12 E-X	17	-	5	V3.0623-26*	4,2	with screw-in bushing
HD 172-1506	150	D3/4	12 E-X	22	7	1	V3.0623-06	3,9	-
HD 172-0218	150	D3/5	16 E-X	18	-	5	V3.0623-18*	4,2	with screw-in bushing
HD 172-1508	150	D3/6	16 E-X	24	7	1	V3.0623-08	3,9	-
HD 319-0213	85	D4/1	5 E-X	14	-	5	V3.0817-13*	6,5	with screw-in bushing
HD 319-1503	95	D4/2	5 E-X	18	7	1	V3.0817-03	6	-
HD 319-0216	135	D4/3	12 E-X	22	-	5	V3.0817-16*	6,5	with screw-in bushing
HD 319-1506	160	D4/4	12 E-X	28	7	1	V3.0817-06	6	-
HD 319-0218	240	D4/5	16 E-X	24	-	5	V3.0817-18*	6,5	with screw-in bushing
HD 319-1508	270	D4/6	16 E-X	30	7	1	V3.0817-08	6	-
HD 419-0213	115	D5/1	5 E-X	20	-	5	V3.0823-13*	8,8	with screw-in bushing
HD 419-1503	130	D5/2	5 E-X	26	7	1	V3.0823-03	8,2	-
HD 419-0216	180	D5/3	12 E-X	32	-	5	V3.0823-16*	8,8	with screw-in bushing
HD 419-1506	210	D5/4	12 E-X	41	7	1	V3.0823-06	8,2	-
HD 419-0218	300	D5/5	16 E-X	34	-	5	V3.0823-18*	8,8	with screw-in bushing
HD 419-1508	340	D5/6	16 E-X	46	7	1	V3.0823-08	8,2	-
HD 619-0213	170	D6/1	5 E-X	29	-	5	V3.0833-13*	11,9	with screw-in bushing
HD 619-1503	190	D6/2	5 E-X	36	7	1	V3.0833-03	11,1	-
HD 619-0216	270	D6/3	12 E-X	46	-	5	V3.0833-16*	11,9	with screw-in bushing
HD 619-1506	300	D6/4	12 E-X	58	7	1	V3.0833-06	11,1	-
HD 619-0218	450	D6/5	16 E-X	50	-	5	V3.0833-18*	11,9	with screw-in bushing
HD 619-1508	450	D6/6	16 E-X	67	7	1	V3.0833-08	11,1	-

Remarks:

- Filter versions without by-pass valves must be equipped with a clogging indicator.
- The filter sets listed in this chart are standard filters. If modifications are required, we kindly ask for your request.
- Clogging indicators to screw into the hydraulic block see section Dimensions.
- For the appropriate, flange-mounted clogging indicators see catalogue sheet 60.30.

* Element differential pressure stable up to 160 bar, clogging indicator obligatory

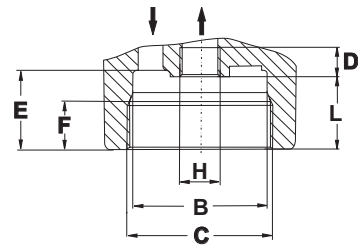
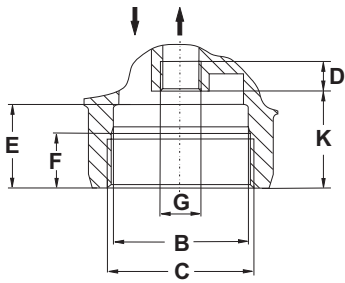
Dimensions



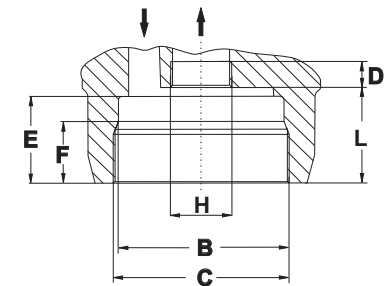
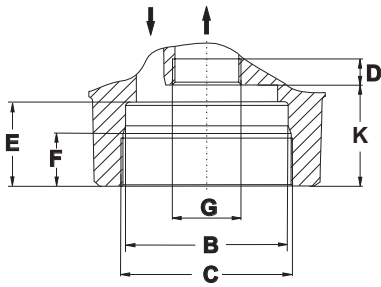
Version with by-pass valve

Version with screw-in bushing

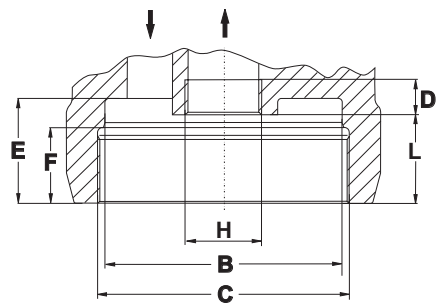
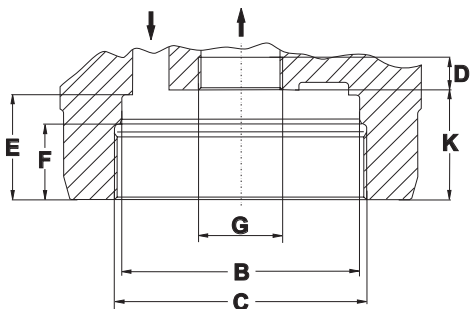
HD 049 / 069



HD 172



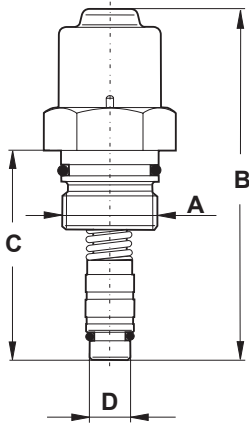
HD 319 / 419 / 619



Dimensions

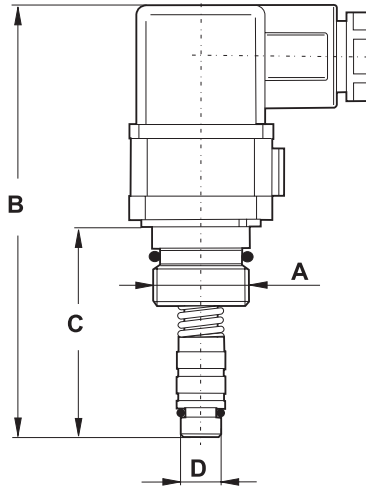
Optical differential pressure indicator

DG 032.1700



Electrical differential pressure switch (change over)

DG 031.1700

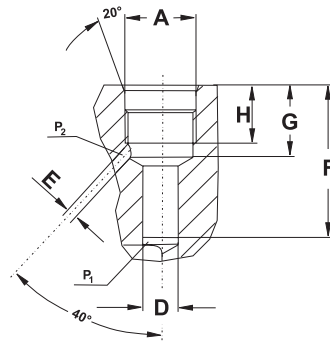
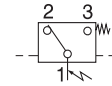


Response/Switching pressure of the clogging indicators
5 bar

Electrical clogging indicator

- Switching voltage: max. 120 V AC / 175 V DC
- Switching current: max. 0,17 A AC / 0,25 A DC
- Switching power: max. 3,5 VA AC / 5 W DC
- Type of contact: change over
- Electrical protection: IP 65 (with mounted and secured socket)

Terminal connection

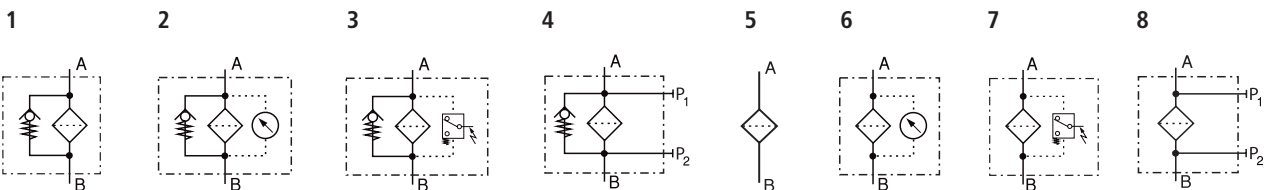


Measurements

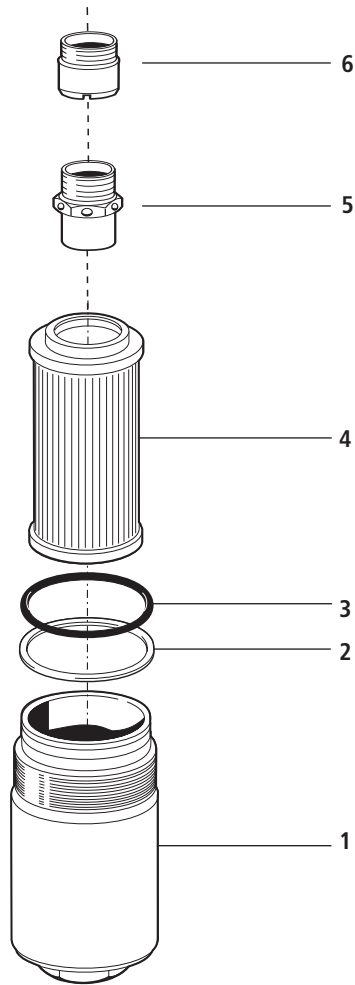
Type	A	B	C	D	E	F	G	H	I	K	L	SW
HD 049/069	133/227,5	60	M65 x 1,5	min. 13	35,5	22,5	M18 x 1,5	M18 x 1,5	55	42	32,5	36
HD 172	256,5	71	M75 x 1,5	min. 13	37	22,5	M30 x 1	M26 x 1,5	70	44,5	41	27
HD 319/419/619	218/282/383	102	M108 x 1,5	min. 14	45	32,5	M36 x 1	M36 x 1,5	80	47	38	32
DG 031.1700	M20 x 1,5	93	44	Ø10	Ø2,5	43,8	20,5	16,5	-	-	-	-
DG 032.1700	M20 x 1,5	74	44	Ø10	Ø2,5	43,8	20,5	16,5	-	-	-	-

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

Symbols



Spare Parts



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	N 007.0543/1
4	Filter element (with seal)	see Chart / col. 7
5	By-pass valve	HD 045.1510
6	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	N 007.0634
4	Filter element (with seal)	see Chart / col. 7
5	By-pass valve	HD 172.1500
6	Screw-in bushing	HD 171.0205

HD 319 / HD 419 / HD 619

Pos.	Designation	Part No.
1	Filter bowl HD 319	HD 250.0105
1	Filter bowl HD 419	HD 411.0102
1	Filter bowl HD 619	HD 611.0102
2	Back-ring	HD 255.0102
3	O-ring 94,84 x 3,53	N 007.0953
4	Filter element (with seal)	see Chart / col. 7
5	By-pass valve	HD 319.1510
6	Screw-in bushing	HD 411.0209

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 DIN and ISO standards:

DIN ISO 2941	Verification of collapse/burst resistance
DIN ISO 2943	Verification of material compatibility with fluids
DIN ISO 3724	Verification of flow fatigue characteristics

ISO 2942 ISO 3968 ISO 16889

Verification of fabrication integrity (Bubble Point Test)
Evaluation of pressure drop versus flow characteristics
Multi-Pass-Test (evaluation of filter fineness and dirt-holding capacity)

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.

Our engineers will be glad to advice you in questions concerning filter application, selection as well as the cleanliness class of the filtered medium attainable under practical operating conditions.

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



We produce fluid power solutions

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