



High Pressure Filters – Worldline 100

HD 049 • HD 069

- In-line mounting
- Operating pressure up to 450 bar
- Nominal flow rate up to 80 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 $\leq 200 \text{ mm}^2/\text{s}$ (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 head:	Spheroidal graphite cast iron (SGI)
Filter bowl:	Cold extruded steel
Coating:	Powder paint resp. phosphate coating
Seals:	NBR (Viton on request)
Filter media:	EXAPOR®MAX -inorganic multi-layer microfibre web Paper - cellulose web, impregnated with resin

Accessories

If an electrical indicator is used a transparent socket with LED for optical indication is also available with Part No. DG 041.1200.

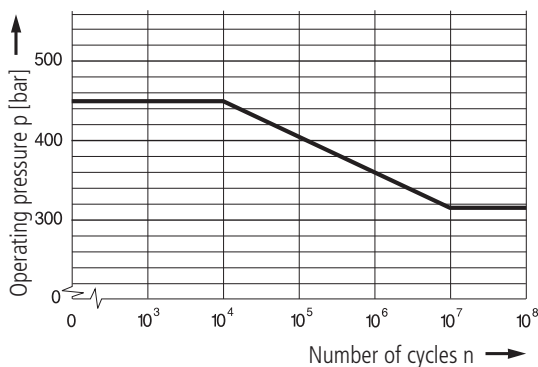
Characteristics

Operating pressure

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

Permissible pressures for other numbers of cycles



Nominal flow rate

Up to 80 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 $\mu\text{m(c)}$... 30 $\mu\text{m(c)}$
 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, filter head on top

Connection

Threaded ports according to ISO 228 or DIN 13. Sizes see Selection Chart, column 6 (other port threads on request)

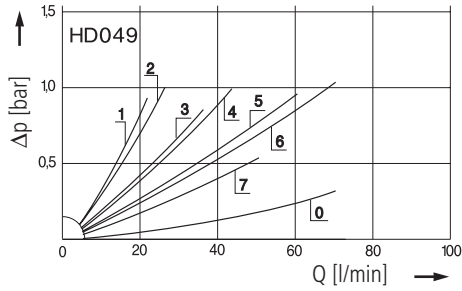
Electrical clogging indicator

- 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)

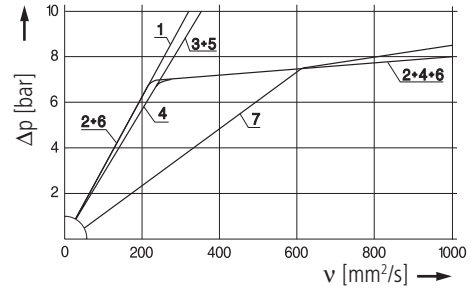
Diagrams

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

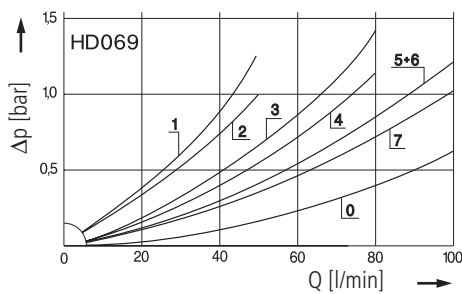
D1 Pressure drop as a function of the **flow volume** at $v = 35 \text{ mm}^2/\text{s}$ (0 = casing empty)



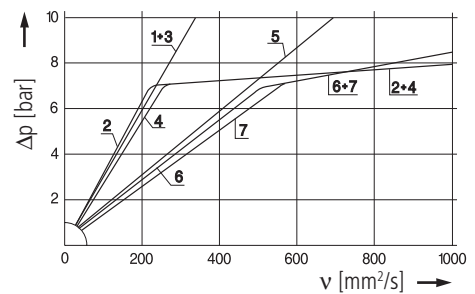
Pressure drop as a function of the **kinematic viscosity** at nominal flow



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

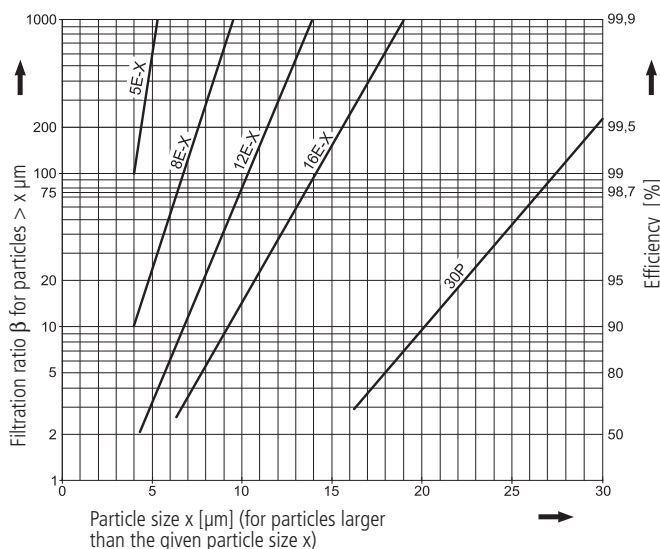


Pressure drop as a function of the **kinematic viscosity** at nominal flow



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- and Paper elements:

- 5 E-X** = $\bar{\beta}_{5(c)}$ = 200 EXAPOR[®]MAX
- 8 E-X** = $\bar{\beta}_{8(c)}$ = 200 EXAPOR[®]MAX
- 12 E-X** = $\bar{\beta}_{12(c)}$ = 200 EXAPOR[®]MAX
- 16 E-X** = $\bar{\beta}_{16(c)}$ = 200 EXAPOR[®]MAX
- 30 P** = $\bar{\beta}_{30(c)}$ = 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	Connection A/B	Cracking pressure of by-pass	Symbol	Replacement element Part No.	Weight	Clogging indicator	Cracking pressure in ()	Remarks
1	l/min	3	4	g	6	7	8	9	10	11	12	
HD 049-189	20	D1/1	5 E-X	3,4	G½	-	6	V3.0510-13 ¹	3,9	electrical (5)	change-over	
HD 049-169	25	D1/2	5 E-X	3,8	G½	7	1	V3.0510-03	3,8	-	-	
HD 049-179	25	D1/2	5 E-X	3,8	G½	7	2	V3.0510-03	3,9	optical (5)	-	
HD 049-159	25	D1/2	5 E-X	3,8	G½	7	3	V3.0510-03	3,9	electrical (5)	change-over	
HD 049-186	30	D1/3	12 E-X	5	G½	-	6	V3.0510-16 ¹	3,9	electrical (5)	change-over	
HD 049-166	35	D1/4	12 E-X	6,1	G½	7	1	V3.0510-06	3,8	-	-	
HD 049-176	35	D1/4	12 E-X	6,1	G½	7	2	V3.0510-06	3,9	optical (5)	-	
HD 049-156	35	D1/4	12 E-X	6,1	G½	7	3	V3.0510-06	3,9	electrical (5)	change-over	
HD 049-188	55	D1/5	16 E-X	5,5	G½	-	6	V3.0510-18 ¹	3,9	electrical (5)	change-over	
HD 049-268	63	D1/6	16 E-X	6,6	M18 x 1,5	7	1	V3.0510-08	3,8	-	casing phosphated	
HD 049-168	63	D1/6	16 E-X	6,6	G½	7	1	V3.0510-08	3,8	-	-	
HD 049-178	63	D1/6	16 E-X	6,6	G½	7	2	V3.0510-08	3,9	optical (5)	-	
HD 049-158	63	D1/6	16 E-X	6,6	G½	7	3	V3.0510-08	3,9	electrical (5)	change-over	
HD 049-151	55	D1/7	30 P	3,6	G½	7	1	P3.0510-11 ²	3,8	-	-	
HD 049-161	55	D1/7	30 P	3,6	G½	7	2	P3.0510-11 ²	3,9	optical (5)	-	
HD 049-171	55	D1/7	30 P	3,6	G½	7	3	P3.0510-11 ²	3,9	electrical (5)	change-over	
HD 069-189	43	D2/1	5 E-X	6,9	G½	-	6	V3.0520-13 ¹	5,1	electrical (5)	change-over	
HD 069-169	50	D2/2	5 E-X	7,6	G½	7	1	V3.0520-03	4,9	-	-	
HD 069-179	50	D2/2	5 E-X	7,6	G½	7	2	V3.0520-03	5,0	optical (5)	-	
HD 069-159	50	D2/2	5 E-X	7,6	G½	7	3	V3.0520-03	5,0	electrical (5)	change-over	
HD 069-186	63	D2/3	12 E-X	11	G¾	-	6	V3.0520-16 ¹	5,1	electrical (5)	change-over	
HD 069-166	70	D2/4	12 E-X	13	G¾	7	1	V3.0520-06	4,9	-	-	
HD 069-176	70	D2/4	12 E-X	13	G¾	7	2	V3.0520-06	5,0	optical (5)	-	
HD 069-156	70	D2/4	12 E-X	13	G¾	7	3	V3.0520-06	5,0	electrical (5)	change-over	
HD 069-188	80	D2/5	16 E-X	12	G¾	-	6	V3.0520-18 ¹	5,1	electrical (5)	change-over	
HD 069-268	80	D2/6	16 E-X	14	G¾	7	1	V3.0520-08	4,9	-	casing phosphated	
HD 069-168	80	D2/6	16 E-X	14	G¾	7	1	V3.0520-08	4,9	-	-	
HD 069-178	80	D2/6	16 E-X	14	G¾	7	2	V3.0520-08	5,0	optical (5)	-	
HD 069-158	80	D2/6	16 E-X	14	G¾	7	3	V3.0520-08	5,0	electrical (5)	change-over	
HD 069-151	80	D2/7	30 P	7,1	G¾	7	1	P3.0520-01 ²	4,9	-	-	
HD 069-161	80	D2/7	30 P	7,1	G¾	7	2	P3.0520-01 ²	5,0	optical (5)	-	
HD 069-171	80	D2/7	30 P	7,1	G¾	7	3	P3.0520-01 ²	5,0	electrical (5)	change-over	

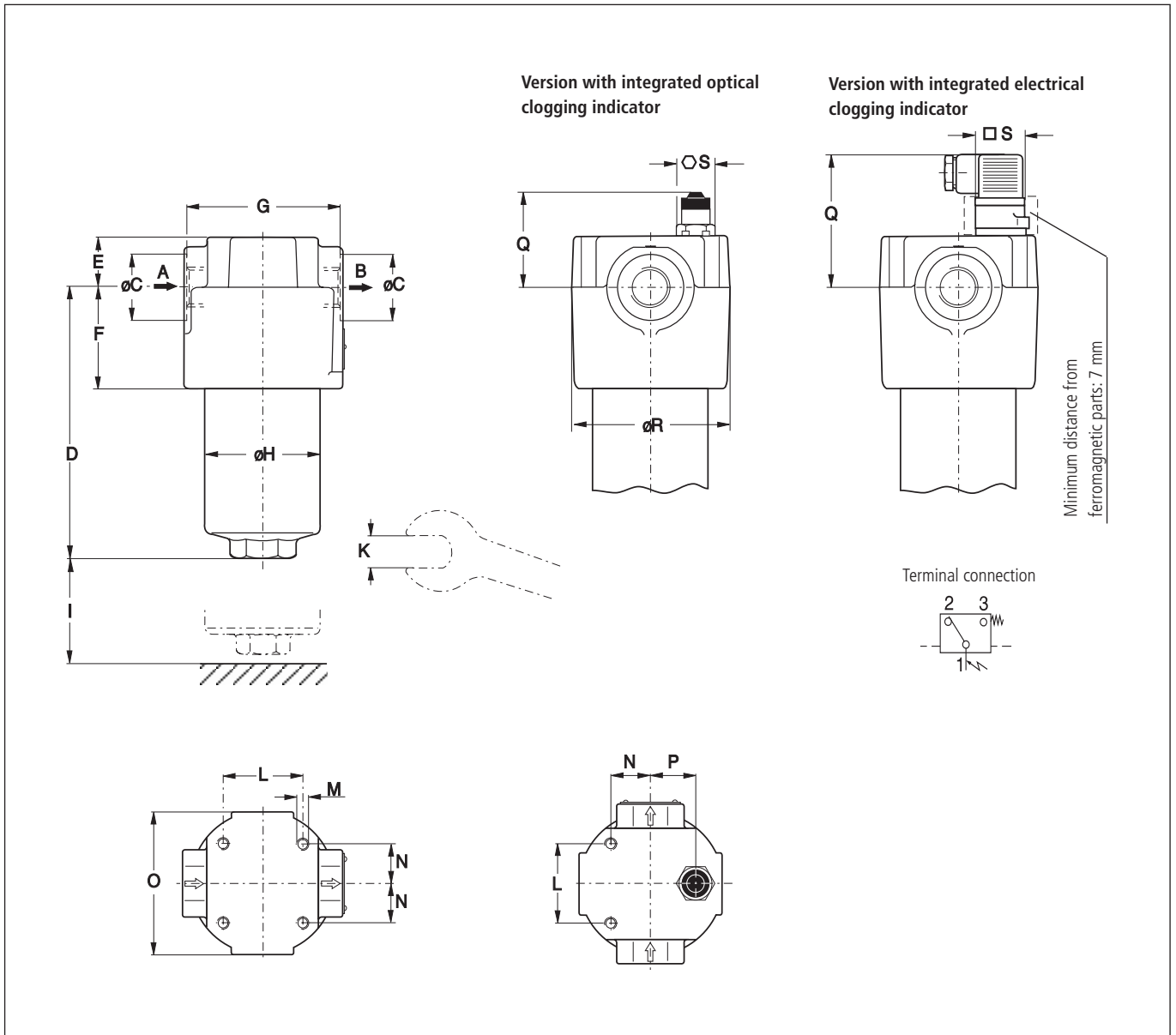
Remarks:

- The filters listed in this chart are standard filters. If modifications are required, e.g. bolt mounted indicators according to catalogue sheet 60.30, we kindly ask for your request.
- If an electrical indicator is used a transparent socket with LED for optical indication is also available with Part No. DG 041.1200.

¹ Element differential pressure up to 160 bar

² Paper media supported with metal gauze

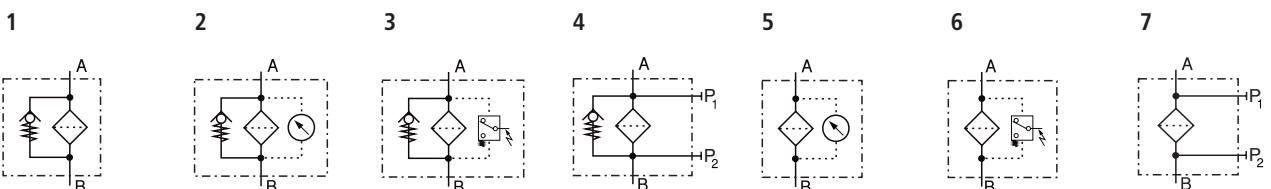
Dimensions



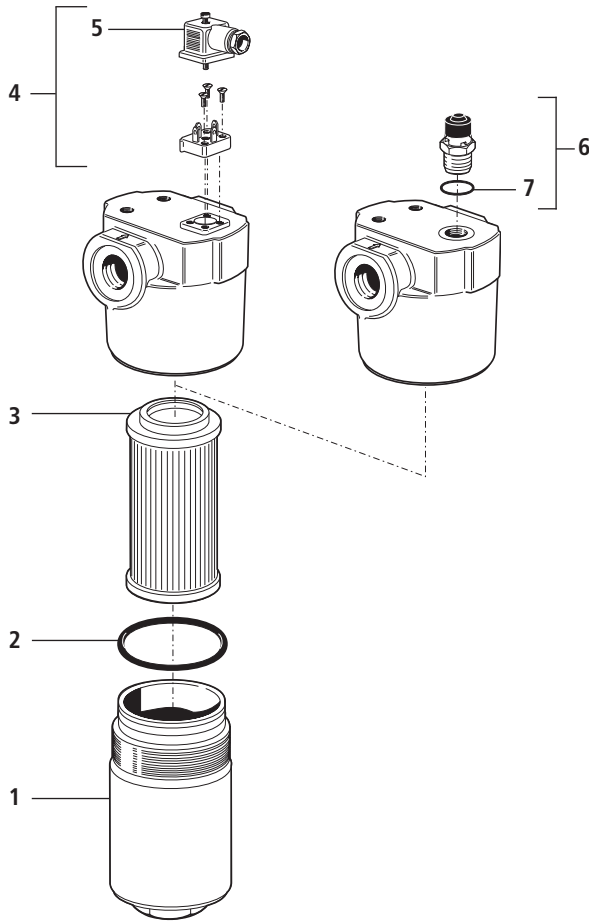
Measurements

Type	A/B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S
											ø/depth				opt./electr.		opt./electr.
HD 049	M18 x 1,5, G $\frac{1}{2}$	24, 33	158	24,5	61	84	65	55	36	40	M8/12	25	89	27,5	55/72	85	24/30
HD 069	G $\frac{1}{2}$, G $\frac{3}{4}$	33, 36	254	24,5	61	84	65	55	36	40	M8/12	25	89	27,5	55/72	85	24/30

Symbols



Spare Parts



Pos.	Designation	Part No.
1	Filter bowl HD 049	HD 052.0101
1	Filter bowl HD 069	HD 072.0101
2	O-ring 53,57 x 3,53	N 007.0543/1
3	Filter element (with seal)	s. Chart / col. 9
4	Reed switch with screws and socket (Pos. 5)	HD 049.1410
5	Socket DIN 43650 - AF3	DG 041.1220
6	Optical indicator (with Pos. 7)	HD 049.1400
7	O-ring 17 x 2	N 007.0172

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 advise 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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