ARGO HYTOS



High Pressure Filters – Worldline 100

HD 049 · HD 069

- In-line mounting
- Operating pressure up to 9137 psi
- Nominal flow rate up to 27.7 gpm

40.45-3us

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 ≤ 930 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 head:	Spheroidal graphite cast iron (SGI)
Filter bowl:	Cold extruded steel
Coating:	Powder paint
Seals:	NBR (FKM on request)
Filter media:	EXAPOR®MAX 2 - inorganic multi-layer microfibre web Paper - cellulose web, impregnated with resin

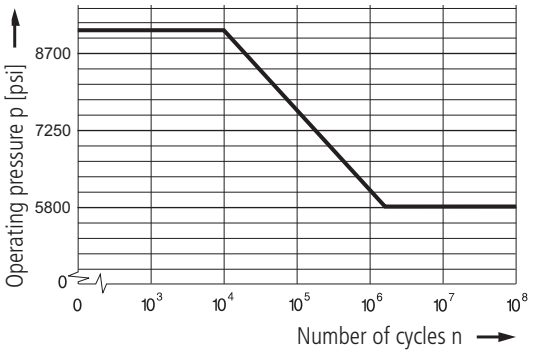
Accessories
If an electrical indicator is used a transparent socket with LED for optical indication is also available with Part No. DG 041.1200.

Characteristics

Operating pressure
0 ... 5800 psi, min. 2 x 10^6 pressure cycles
Nominal pressure according to DIN 24550

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

Permissible pressures for other numbers of cycles



Nominal flow rate
Up to 27.7 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 $\nu \leq 930$ SUS
- element service life > 1,000 operating hours at an average fluid contamination of 0.27 g per gpm flow volume
- flow velocity in the connection lines:
  up to 3626 psi ≤ 26.3 ft/s
  > 3626 psi ≤ 39.4 ft/s

Filter fineness
5 µm(c) ... 30 µm(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
- 22 °F ... + 212 °F (temporary - 40 °F ... + 248 °F)

Viscosity at nominal flow rate
- at operating temperature: $\nu < 280$ SUS
- as starting viscosity: $\nu_{max} = 5560$ 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, filter head on top

Connection
Threaded ports according to SAE standard J514. Sizes see Selection Chart, column 6 (other port threads on request).

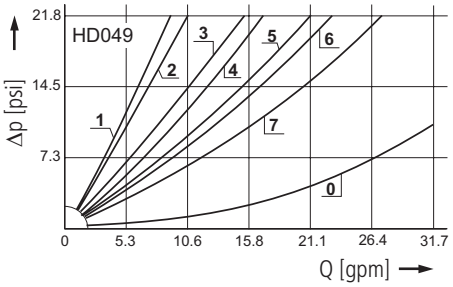
Electrical clogging indicator
- Switching voltage: max. 120 V AC / 175 V DC
- Switching current: max. 0.17 A AC / 0.25 A DC
- Switching power: max. 3.5 VA AC / 5 W DC
- Type of contact: Change-over
- Electrical protection: IP 65 (with mounted and secured socket)

Diagrams

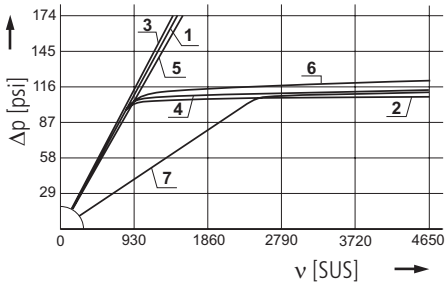
Δp-curves for complete filters in Selection Chart, column 3

D1

Pressure drop as a function of the **flow volume** at ν = 162 SUS (0 = casing empty)

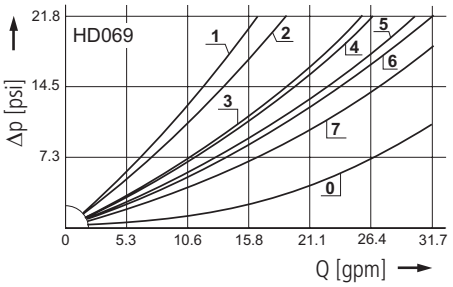


Pressure drop as a function of the **kinematic viscosity** at nominal flow

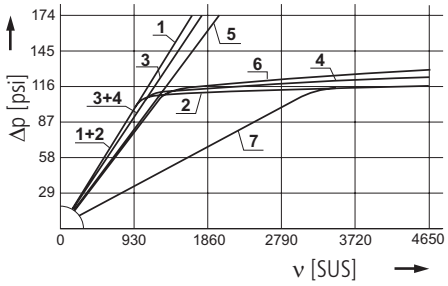


D2

Pressure drop as a function of the **flow volume** at ν = 162 SUS (0 = casing empty)



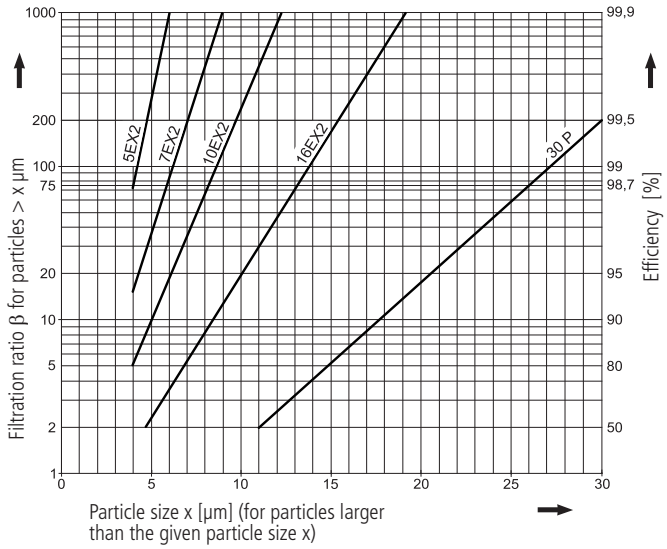
Pressure drop as a function of the **kinematic viscosity** at nominal flow



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 2 and Paper elements:

5EX2 = $\bar{\beta}_{5\,(c)}$ = 200 EXAPOR®MAX 2
7EX2 = $\bar{\beta}_{7\,(c)}$ = 200 EXAPOR®MAX 2
10EX2 = $\bar{\beta}_{10\,(c)}$ = 200 EXAPOR®MAX 2
16EX2 = $\bar{\beta}_{16\,(c)}$ = 200 EXAPOR®MAX 2
30P = $\bar{\beta}_{30\,(c)}$ = 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

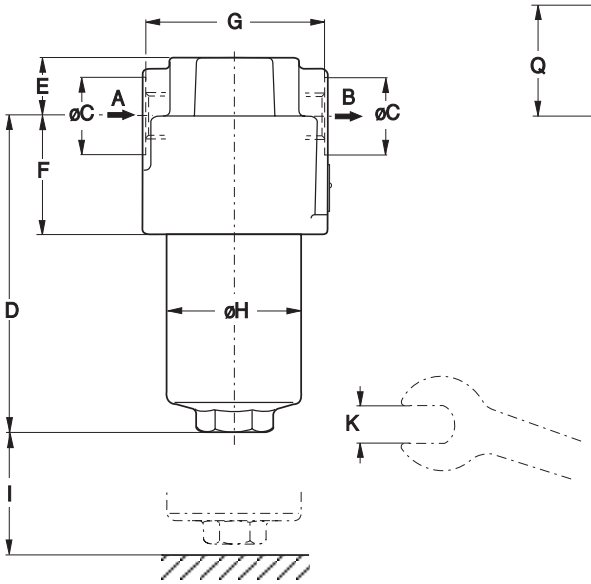
Part No.	Nominal flow rate	Pressure drop see diagram **D**/curve no.	Filter fineness see diagr. **Dx**	Dirt-holding capacity	Connection A/B	Cracking pressure of by-pass Symbol	Replacement element Part No.	Weight	Clogging indicator Cracking pressure in ( )	Remarks
	gpm			g	SAE	psi			lbs	psi	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
HD 049-789	7.1	**D1**/1	5EX2	5,2	-8[3]	-	6	V3.0510-13[1]	8.6	electrical (73)	change-over
HD 049-769	7.9	**D1**/2	5EX2	4,9	-8[3]	102	1	V3.0510-03	8.4	-	-
HD 049-779	7.9	**D1**/2	5EX2	4,9	-8[3]	102	2	V3.0510-03	8.6	optical (73)	-
HD 049-759	7.9	**D1**/2	5EX2	4,9	-8[3]	102	3	V3.0510-03	8.6	electrical (73)	change-over
HD 049-786	12.4	**D1**/3	10EX2	5,1	-8[3]	-	6	V3.0510-16[1]	8.6	electrical (73)	change-over
HD 049-766	13.2	**D1**/4	10EX2	6,8	-8[3]	102	1	V3.0510-06	8.4	-	-
HD 049-776	13.2	**D1**/4	10EX2	6,8	-8[3]	102	2	V3.0510-06	8.6	optical (73)	-
HD 049-756	13.2	**D1**/4	10EX2	6,8	-8[3]	102	3	V3.0510-06	8.6	electrical (73)	change-over
HD 049-788	17.2	**D1**/5	16EX2	5,6	-8[3]	-	6	V3.0510-18[1]	8.6	electrical (73)	change-over
HD 049-768	19.8	**D1**/6	16EX2	6,9	-8[3]	102	1	V3.0510-08	8.4	-	-
HD 049-778	19.8	**D1**/6	16EX2	6,9	-8[3]	102	2	V3.0510-08	8.6	optical (73)	-
HD 049-768	19.8	**D1**/6	16EX2	6,9	-8[3]	102	3	V3.0510-08	8.6	electrical (73)	change-over
HD 049-751	14.5	**D1**/7	30P	3,6	-8[3]	102	1	P3.0510-11[2]	8.4	-	-
HD 049-761	14.5	**D1**/7	30P	3,6	-8[3]	102	2	P3.0510-11[2]	8.6	optical (73)	-
HD 049-771	14.5	**D1**/7	30P	3,6	-8[3]	102	3	P3.0510-11[2]	8.6	electrical (73)	change-over
HD 069-789	13.2	**D2**/1	5EX2	8,7	-8[3]	-	6	V3.0520-13[1]	11.2	electrical (73)	change-over
HD 069-769	15.9	**D2**/2	5EX2	10	-8[3]	102	1	V3.0520-03	10.8	-	-
HD 069-779	15.9	**D2**/2	5EX2	10	-8[3]	102	2	V3.0520-03	11.0	optical (73)	-
HD 069-759	15.9	**D2**/2	5EX2	10	-8[3]	102	3	V3.0520-03	11.0	electrical (73)	change-over
HD 069-786	21.1	**D2**/3	10EX2	11	-12[4]	-	6	V3.0520-16[1]	11.2	electrical (73)	change-over
HD 069-766	22.5	**D2**/4	10EX2	14	-12[4]	102	1	V3.0520-06	10.8	-	-
HD 069-776	22.5	**D2**/4	10EX2	14	-12[4]	102	2	V3.0520-06	11.0	optical (73)	-
HD 069-756	22.5	**D2**/4	10EX2	14	-12[4]	102	3	V3.0520-06	11.0	electrical (73)	change-over
HD 069-788	26.4	**D2**/5	16EX2	12	-12[4]	-	6	V3.0520-18[1]	11.2	electrical (73)	change-over
HD 069-768	27.7	**D2**/6	16EX2	15	-12[4]	102	1	V3.0520-08	10.8	-	-
HD 069-778	27.7	**D2**/6	16EX2	15	-12[4]	102	2	V3.0520-08	11.0	optical (73)	-
HD 069-758	27.7	**D2**/6	16EX2	15	-12[4]	102	3	V3.0520-08	11.0	electrical (73)	change-over
HD 069-751	21.1	**D2**/7	30P	7,1	-12[4]	102	1	P3.0520-01[2]	10.8	-	-
HD 069-761	21.1	**D2**/7	30P	7,1	-12[4]	102	2	P3.0520-01[2]	11.0	optical (73)	-
HD 069-771	21.1	**D2**/7	30P	7,1	-12[4]	102	3	P3.0520-01[2]	11.0	electrical (73)	change-over

Remarks:

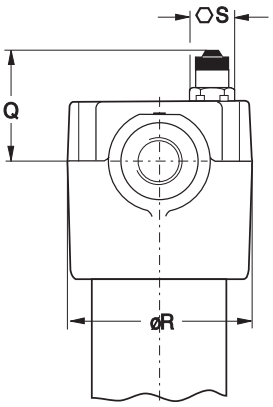
- The filters listed in this chart are standard filters. If modifications are required, e.g. bolt mounted indicators according to catalogue sheet 60.30, we kindly ask for your request.
- If an electrical indicator is used a transparent socket with LED for optical indication is also available with Part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

[1] Element differential pressure up to 2320 psi [2] Paper media supported with metal gauze [3] corresponds to $^3/_4$-16 UNF-2B [4] corresponds to $1^1/_{16}$-12 UN-2B

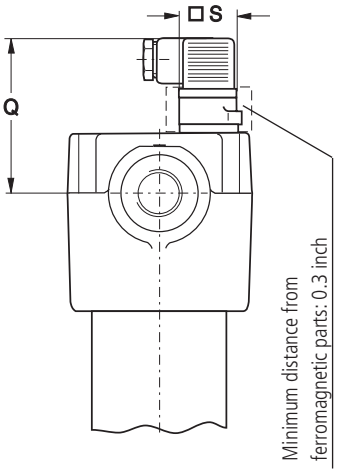
Dimensions



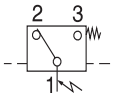
Version with integrated optical clogging indicator

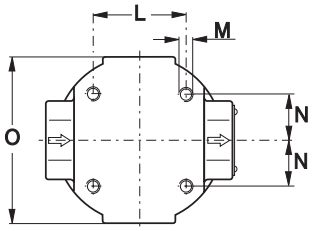


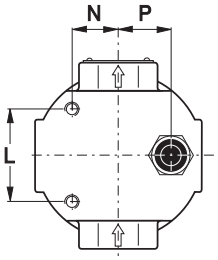
Version with integrated electrical clogging indicator



Terminal connection







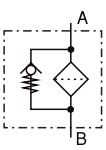
Measurements

Type	A/B	C	D	E	F	G	H	I	K A/F	L	M Ø/depth	N	O	P	Q opt./electr.	R	S opt./electr.
HD 049	-8 SAE	1.30	6.22	0.96	2.40	3.31	2.56	2.17	36*	1.57	**	0.98	3.50	1.08	2.17/2.84	3.35	24/30*
HD 069	-8 SAE, -12 SAE	1.30 / 1.42	10.00	0.96	2.40	3.31	2.56	2.17	36*	1.57	**	0.98	3.50	1.08	2.17/2.84	3.35	24/30*

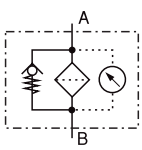
* Dimensions in mm ** $^{5}/_{16}$-18 UNC-2B/0.47

Symbols

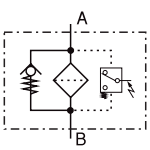
1



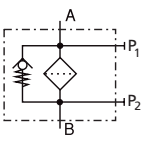
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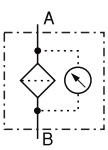
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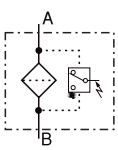
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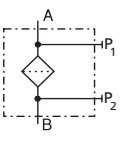
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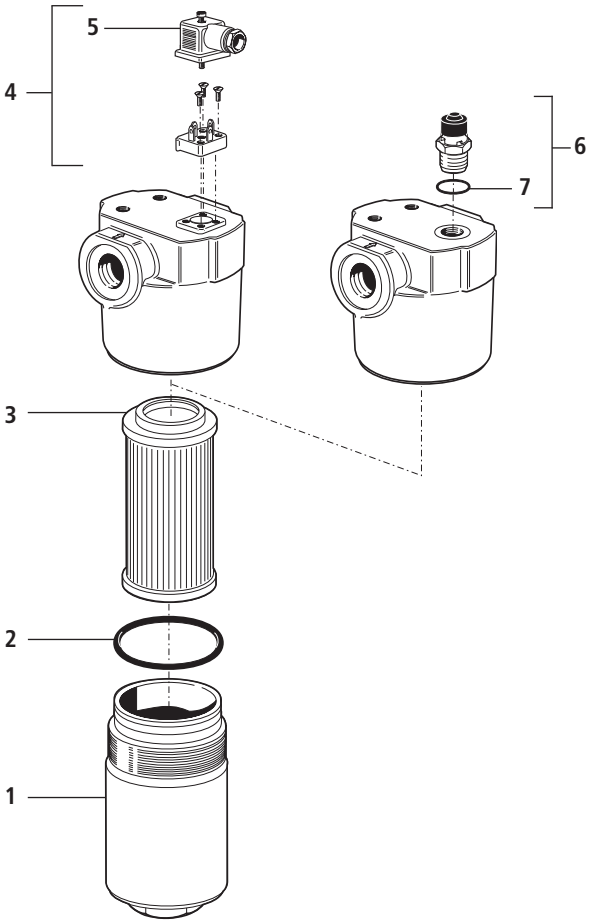
6



7



Spare Parts



Pos.	Designation	Part No.
1	Filter bowl HD 049	HD 052.0102
1	Filter bowl HD 069	HD 072.0102
2	O-ring 2.11 x 0.14	N007.0543/1
3	Filter element	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 0.67 x 0.08	N007.0172

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 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.

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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Subject to change
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