



# HYDRAULIC MEGASTORE

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**High Pressure Filters – Worldline 100**

## HD 049 - HD 069

- In-line mounting
- Operating pressure up to 630 bar
- Nominal flow rate up to 105 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 / primed  
Seals: NBR (FPM 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

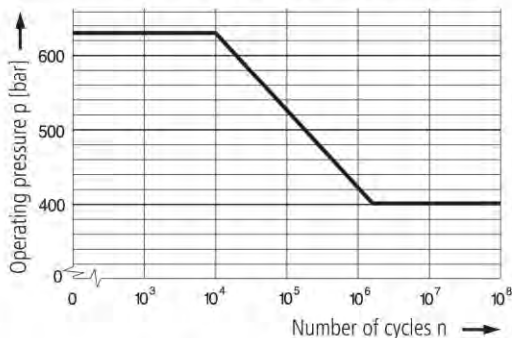
0 ... 400 bar, min.  $2 \times 10^6$  pressure cycles

Nominal pressure according to DIN 24550

0 ... 630 bar, min.  $10^4$  pressure cycles

Quasi-static operating pressure

### Permissible pressures for other numbers of cycles



### Nominal flow rate

Up to 105 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 > 1.000 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  $\leq 8 \text{ m/s}$
  - > 250 bar  $\leq 12 \text{ m/s}$

### Filter fineness

5  $\mu\text{m(c)}$  ... 30  $\mu\text{m(c)}$

$\beta$ -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:  $v_{\text{max}} = 1.200 \text{ mm}^2/\text{s}$
- 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 %  $\Delta p$  of the cracking pressure of the by-pass valve on the vertical axis. Draw a horizontal line so that it intersects the  $\Delta p$  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)

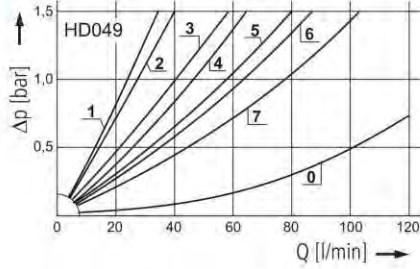
### Electrical clogging indicator

- 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)

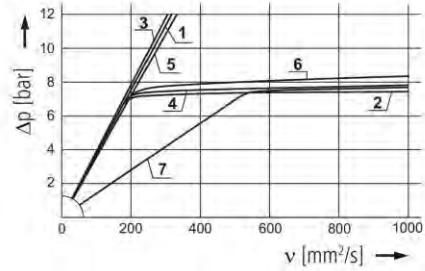
# Diagrams

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

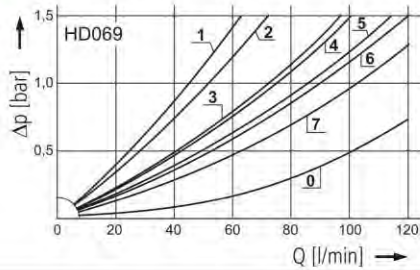
**D1** Pressure drop as a function of the **flow volume** at  $v = 35 \text{ mm}^2/\text{s}$  (0 = casing empty)



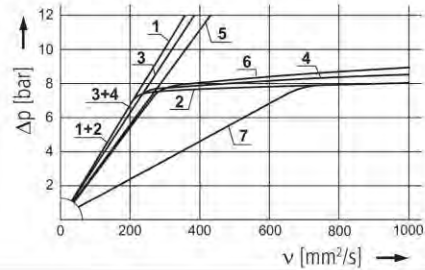
Pressure drop as a function of the **kinematic viscosity** at nominal flow



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

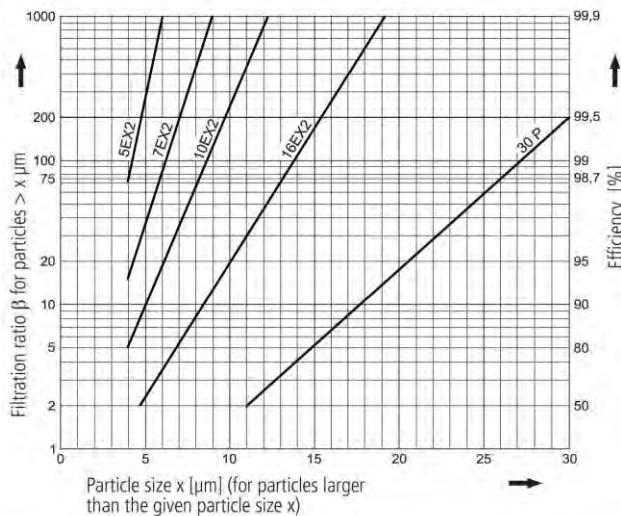


Pressure drop as a function of the **kinematic viscosity** at nominal flow



## Filter fineness curves in Selection Chart, column 4

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



The abbreviations represent the following  $\beta$ -values resp. finenesses:

**For EXAPOR®MAX 2- and Paper elements:**

**5EX2** =  $\beta_{5(c)} = 200$  EXAPOR®MAX 2

**7EX2** =  $\beta_{7(c)} = 200$  EXAPOR®MAX 2

**10EX2** =  $\beta_{10(c)} = 200$  EXAPOR®MAX 2

**16EX2** =  $\beta_{16(c)} = 200$  EXAPOR®MAX 2

**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  $\mu\text{m}$

**60S** = screen material with mesh size 60  $\mu\text{m}$

**100S** = screen material with mesh size 100  $\mu\text{m}$

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

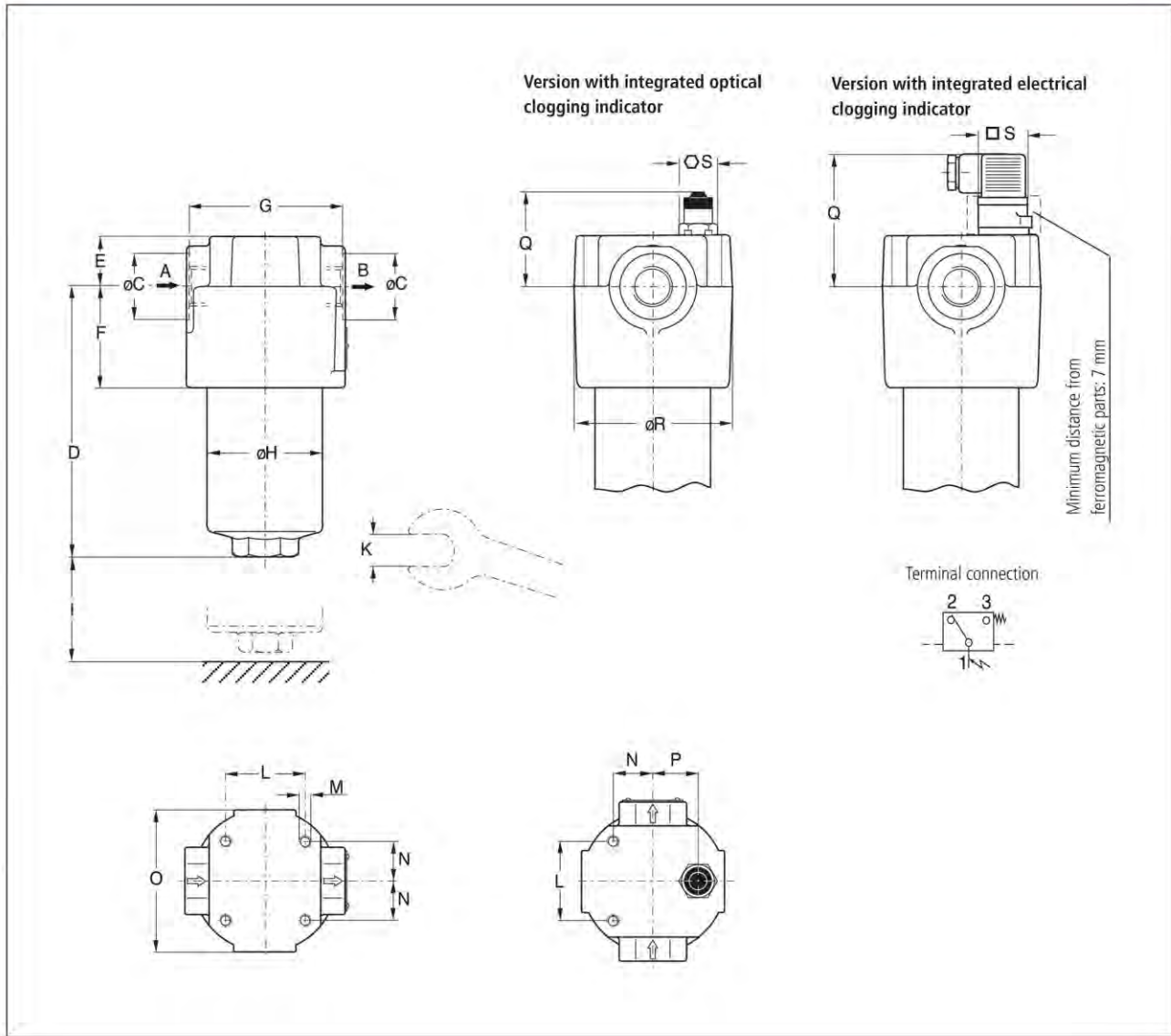
Part No.	Nominal flow rate	Pressure drop see diagram D1/curve no.	Filter fineness see diagr. Dx	Dirt-holding capacity	Connection A/B	Cracking pressure of by-pass	Symbol	Replacement element Part No.	Weight	Clogging indicator	Cracking pressure in ( )	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	
	l/min			g		bar			kg		bar	
HD 049-189	27	D1/1	5EX2	5,2	G½	-	6	V3.0510-13 <sup>1</sup>	3,9	electrical (5)		change-over
HD 049-169	30	D1/2	5EX2	4,9	G½	7	1	V3.0510-03	3,8	-		-
HD 049-179	30	D1/2	5EX2	4,9	G½	7	2	V3.0510-03	3,9	optical (5)		-
HD 049-159	30	D1/2	5EX2	4,9	G½	7	3	V3.0510-03	3,9	electrical (5)		change-over
HD 049-186	47	D1/3	10EX2	5,1	G½	-	6	V3.0510-16 <sup>1</sup>	3,9	electrical (5)		change-over
HD 049-166	50	D1/4	10EX2	6,8	G½	7	1	V3.0510-06	3,8	-		-
HD 049-176	50	D1/4	10EX2	6,8	G½	7	2	V3.0510-06	3,9	optical (5)		-
HD 049-156	50	D1/4	10EX2	6,8	G½	7	3	V3.0510-06	3,9	electrical (5)		change-over
HD 049-188	65	D1/5	16EX2	5,6	G½	-	6	V3.0510-18 <sup>1</sup>	3,9	electrical (5)		change-over
HD 049-268	75	D1/6	16EX2	6,9	M 18 x 1,5	7	1	V3.0510-08	3,8	-		3
HD 049-168	75	D1/6	16EX2	6,9	G½	7	1	V3.0510-08	3,8	-		-
HD 049-178	75	D1/6	16EX2	6,9	G½	7	2	V3.0510-08	3,9	optical (5)		-
HD 049-158	75	D1/6	16EX2	6,9	G½	7	3	V3.0510-08	3,9	electrical (5)		change-over
HD 049-151	55	D1/7	30P	3,6	G½	7	1	P3.0510-11 <sup>2</sup>	3,8	-		-
HD 049-161	55	D1/7	30P	3,6	G½	7	2	P3.0510-11 <sup>2</sup>	3,9	optical (5)		-
HD 049-171	55	D1/7	30P	3,6	G½	7	3	P3.0510-11 <sup>2</sup>	3,9	electrical (5)		change-over
HD 069-189	50	D2/1	5EX2	8,7	G½	-	6	V3.0520-13 <sup>1</sup>	5,1	electrical (5)		change-over
HD 069-169	60	D2/2	5EX2	10	G½	7	1	V3.0520-03	4,9	-		-
HD 069-179	60	D2/2	5EX2	10	G½	7	2	V3.0520-03	5,0	optical (5)		-
HD 069-159	60	D2/2	5EX2	10	G½	7	3	V3.0520-03	5,0	electrical (5)		change-over
HD 069-186	80	D2/3	10EX2	11	G¾	-	6	V3.0520-16 <sup>1</sup>	5,1	electrical (5)		change-over
HD 069-166	85	D2/4	10EX2	14	G¾	7	1	V3.0520-06	4,9	-		-
HD 069-176	85	D2/4	10EX2	14	G¾	7	2	V3.0520-06	5,0	optical (5)		-
HD 069-156	85	D2/4	10EX2	14	G¾	7	3	V3.0520-06	5,0	electrical (5)		change-over
HD 069-188	100	D2/5	16EX2	12	G¾	-	6	V3.0520-18 <sup>1</sup>	5,1	electrical (5)		change-over
HD 069-268	105	D2/6	16EX2	15	G¾	7	1	V3.0520-08	4,9	-		3
HD 069-168	105	D2/6	16EX2	15	G¾	7	1	V3.0520-08	4,9	-		-
HD 069-178	105	D2/6	16EX2	15	G¾	7	2	V3.0520-08	5,0	optical (5)		-
HD 069-158	105	D2/6	16EX2	15	G¾	7	3	V3.0520-08	5,0	electrical (5)		change-over
HD 069-151	80	D2/7	30P	7,1	G¾	7	1	P3.0520-01 <sup>2</sup>	4,9	-		-
HD 069-161	80	D2/7	30P	7,1	G¾	7	2	P3.0520-01 <sup>2</sup>	5,0	optical (5)		-
HD 069-171	80	D2/7	30P	7,1	G¾	7	3	P3.0520-01 <sup>2</sup>	5,0	electrical (5)		change-over

**Remarks:**

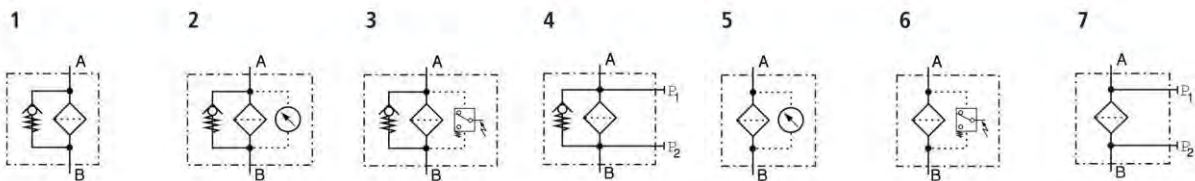
- The filters listed in this chart are standard filters. If modifications are required, e.g. bolt mounted indicators according to catalogue sheet 60.30, we kindly ask for your request.
- If an electrical indicator is used a transparent socket with LED for optical indication is also available with Part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

<sup>1</sup> Element differential pressure up to 160 bar    <sup>2</sup> Paper media supported with metal gauze    <sup>3</sup> Housing primed/phosphated

## Dimensions



## Symbols



## Measurements

Type	A/B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S
HD 049	M 18 x 1,5 or G $\frac{1}{2}$	28 or 33	158	24,5	61	84	65	55	36	40	$\emptyset$ /depth M 8/12	25	89	27,5	opt./electr. 55/72	85	opt./electr. 24/30
HD 069	G $\frac{1}{2}$ or G $\frac{3}{4}$	33 or 36	254	24,5	61	84	65	55	36	40	M 8/12	25	89	27,5	55/72	85	24/30



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