

High Pressure Filters – Worldline 200

HD 152 · HD 172

In-line mounting · Operating pressure up to 630 bar · Nominal flow rate up to 190 l/min



High Pressure Filter HD 172

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

Accessories

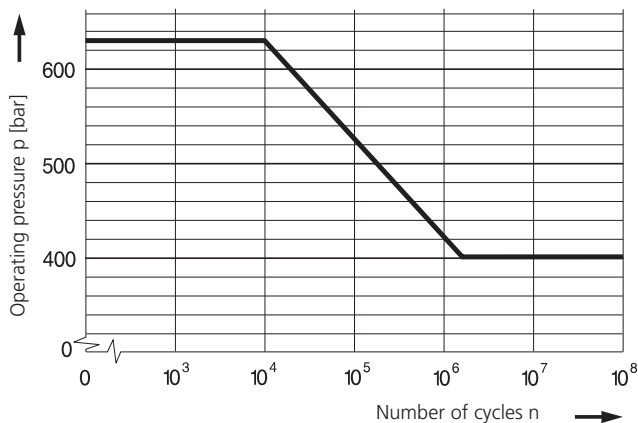
If an electrical indicator is used a transparent socket with LED for optical indication is also available with Part No. DG 041.1200.

Operating pressure

0 ... 400 bar, min. 2×10^6 pressure cycles
Nominal pressure according 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 190 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 $\leq 8 \text{ m/s}$
 - > 250 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

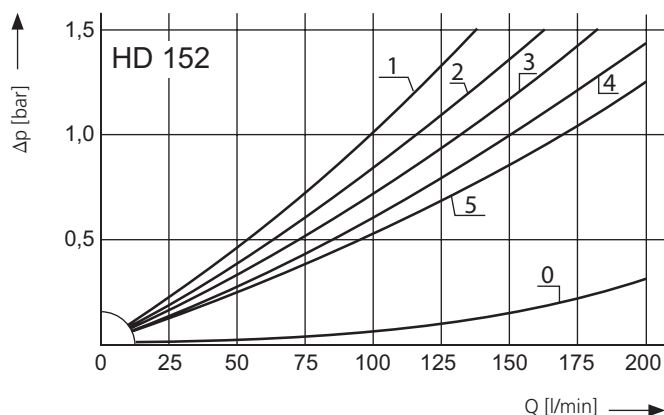
Threaded ports according to ISO 228 or DIN 13. Sizes see Selection Chart, column 6 (other port threads on request).

Electrical clogging indicator

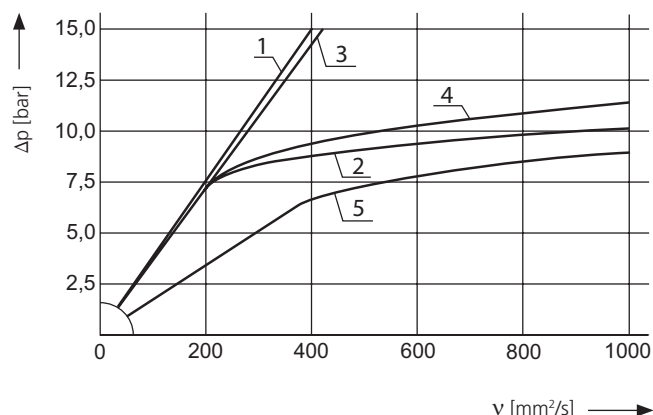
- › Switching voltage: max. 120 V AC / 175 V DC
- › Switching current: max. 0,17 A AC / 0,25 A DC
- › Switching power: max. 3,5 VA AC / 5 W DC
- › Type of contact: Change-over
- › Electrical protection: IP 65 (with mounted and secured socket)

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

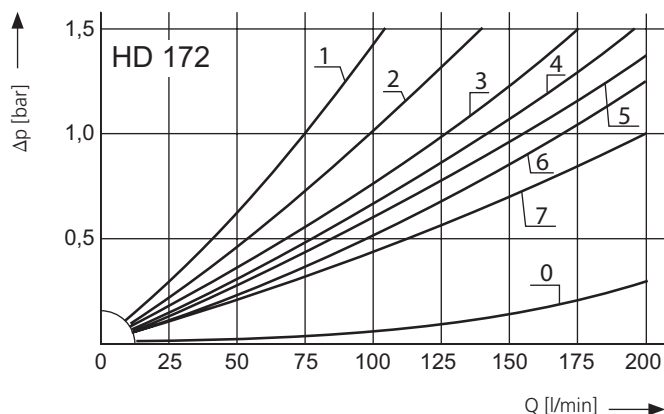
D1 Pressure drop as a function of the **flow volume** at $v = 35 \text{ mm}^2/\text{s}$ (0 = casing empty)



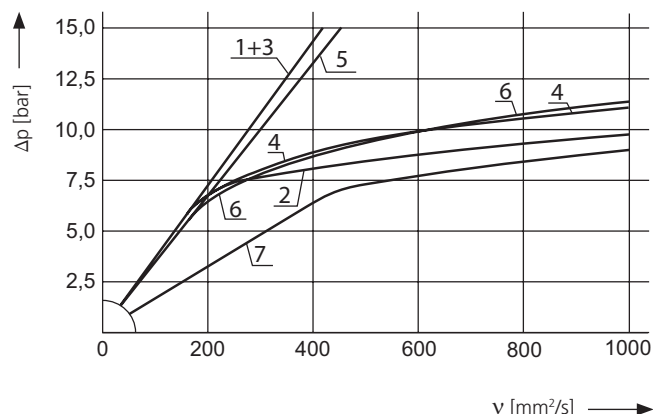
Pressure drop as a function of the **kinematic viscosity** at nominal flow



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

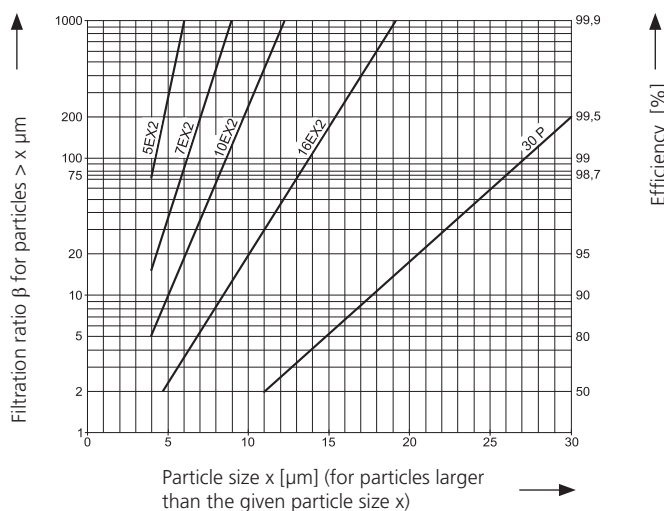


Pressure drop as a function of the **kinematic viscosity** at nominal flow



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®MAX2 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 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 D1 /curve no.	Filter fineness see diagr. Dx	Dirt-holding capacity	Connection A/B	Cracking pressure of by-pass	Symbol	Replacement filter element Part No.	Weight	Clogging indicator Cracking pressure in ()	Remarks
	l/min			g	bar				kg	bar	
1	2	3	4	5	6	7	8	9	10	11	12
HD 152-186	110	D1/1	10EX2	13	G $\frac{3}{4}$	-	6	V3.0617-26 ¹	7,1	electrical (5)	change-over
HD 152-166	125	D1/2	10EX2	17	G $\frac{3}{4}$	7	1	V3.0617-06	6,9	-	-
HD 152-276	125	D1/2	10EX2	17	G $\frac{3}{4}$	7	2	V3.0617-06	7,0	optical (5)	-
HD 152-156	125	D1/2	10EX2	17	G $\frac{3}{4}$	7	3	V3.0617-06	7,0	electrical (5)	change-over
HD 152-188	150	D1/3	16EX2	14	G1	-	6	V3.0617-18 ¹	7,1	electrical (5)	change-over
HD 152-168	175	D1/4	16EX2	17	G1	7	1	V3.0617-08	6,9	-	-
HD 152-278	175	D1/4	16EX2	17	G1	7	2	V3.0617-08	7,0	optical (5)	-
HD 152-158	175	D1/4	16EX2	17	G1	7	3	V3.0617-08	7,0	electrical (5)	change-over
HD 152-151	130	D1/5	30P	8,7	G1	7	1	P3.0617-01 ²	6,9	-	-
HD 152-261	130	D1/5	30P	8,7	G1	7	2	P3.0617-01 ²	7,0	optical (5)	-
HD 172-189	80	D2/1	5EX2	16	G1	-	6	V3.0623-13 ¹	8,4	electrical (5)	change-over
HD 172-163	110	D2/2	5EX2	17	G1	7	1	V3.0623-03	8,0	-	-
HD 172-273	110	D2/2	5EX2	17	G1	7	2	V3.0623-03	8,1	optical (5)	-
HD 172-153	110	D2/2	5EX2	17	G1	7	3	V3.0623-03	8,1	electrical (5)	change-over
HD 172-186	140	D2/3	10EX2	18	G1	-	6	V3.0623-26 ¹	8,4	electrical (5)	change-over
HD 172-166	160	D2/4	10EX2	23	G1	7	1	V3.0623-06	8,0	-	-
HD 172-276	160	D2/4	10EX2	23	G1	7	2	V3.0623-06	8,1	optical (5)	-
HD 172-156	160	D2/4	10EX2	23	G1	7	3	V3.0623-06	8,1	electrical (5)	change-over
HD 172-188	180	D2/5	16EX2	19	G1	-	6	V3.0623-18 ¹	8,4	electrical (5)	change-over
HD 172-168	190	D2/6	16EX2	25	G1	7	1	V3.0623-08	8,0	-	-
HD 172-278	190	D2/6	16EX2	25	G1	7	2	V3.0623-08	8,1	optical (5)	-
HD 172-158	190	D2/6	16EX2	25	G1	7	3	V3.0623-08	8,1	electrical (5)	change-over
HD 172-151	150	D2/7	30P	14	G1	7	1	P3.0623-11 ²	8,0	-	-
HD 172-261	150	D2/7	30P	14	G1	7	2	P3.0623-11 ²	8,1	optical (5)	-

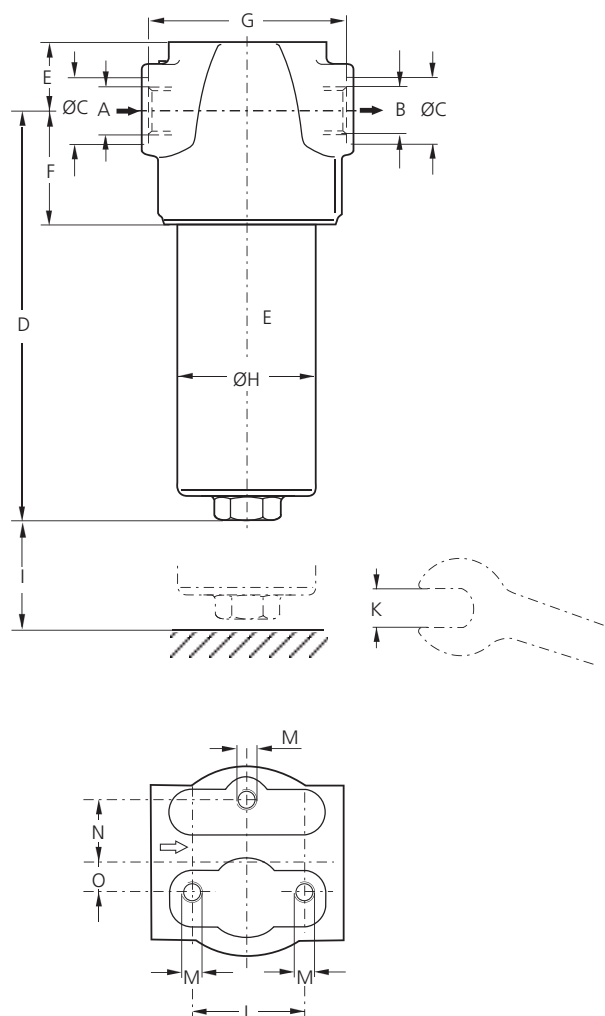
¹ Filter element differential pressure stable up to 160 bar

² Paper media supported with metal gauze

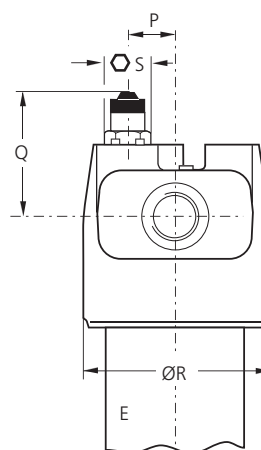
Remarks:

- › The filters listed in this chart are standard filters. If modifications are required, e.g. connections SAE $\frac{3}{4}$ resp. SAE 1 (6000 psi), 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.

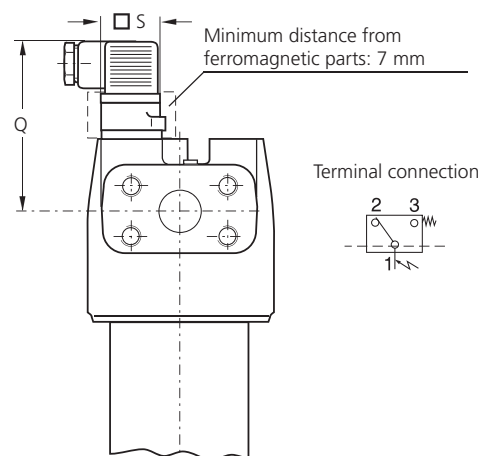
Dimensions



Version with integrated optical clogging indicator



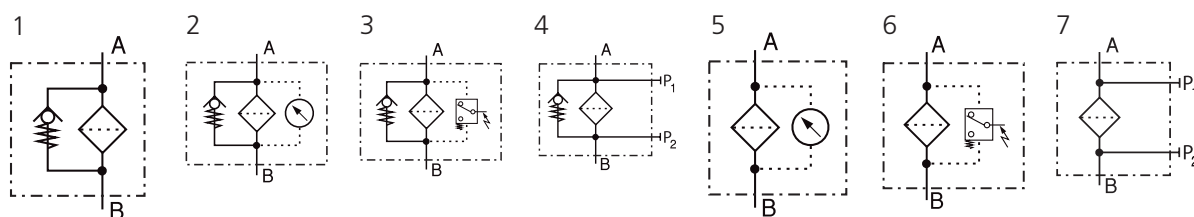
Version with integrated electrical clogging indicator SAE-flange (6000 psi)



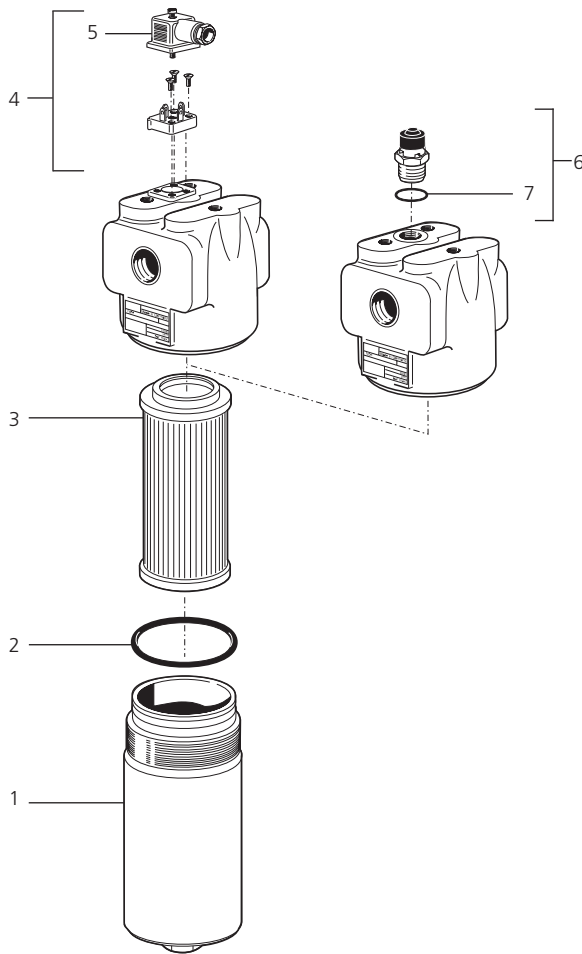
Measurements

Type	A/B	C	D	E	F	G	H	I	K	L	M Ø/depth	N	O	P	Q opt./electr.	R	S opt./electr.
HD 152	G¾, G1	36, 45	224	39	66	104	75	70	AF27	60	M10/12	35	17,5	30	69/86	102	24/30
HD 172	G1	45	285	39	66	104	75	70	AF27	60	M10/12	35	17,5	30	69/86	102	24/30

Symbols



Spare Parts



Pos.	Designation	Part No.
1	Filter bowl HD 152	HD 152.0102
1	Filter bowl HD 172	HD 171.0102
2	O-ring 63 x 3,5	N007.0634
3	Filter element	see 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	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.

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