Return Filters

D 090 · D 100

In-line mounting · Connection up to G¾ · Nominal flow rate up to 110 l/min

Return Filter D 090

Description

Application

In the return line 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:
By means of full-flow filtration in the system return, the pumps above all are protected from dirt particles remaining in the system after assembly, repairs, or which are generated by wear or enter the system from outside.

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:	Aluminium alloy
Filter bowl:	Polyamide, GF reinforced
Seals:	NBR (FPM on request)
Filter media:	EXAPOR®MAX 2 - inorganic multi-layer microfibre web Paper - cellulose web, impregnated with resin

Accessories

Electrical and optical clogging indicators are available. Dimensions and technical data see cataologue sheet 60.20.

Characteristics

Nominal flow rate

Up to 110 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 $\nu \leq 200$ mm²/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 ≤ 4,5 m/s

Connection

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

Filter fineness

10 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

-30 °C ... +100 °C (temporary -40 °C ... +120 °C)

Viscosity at nominal flow rate

- at operating temperature: $\nu < 60$ mm²/s
- as starting viscosity: $\nu_{max} = 1200$ mm²/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.

Operating pressure

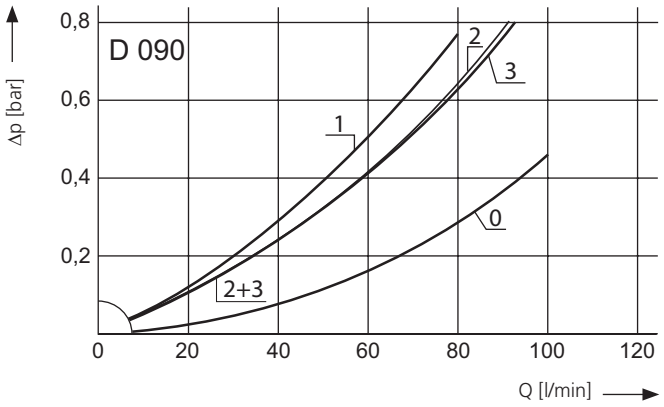
Max. 10 bar

Mounting position

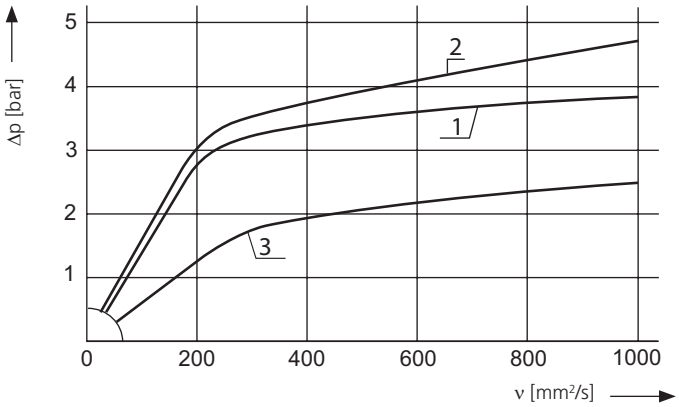
Preferably vertical, filter head on top.

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

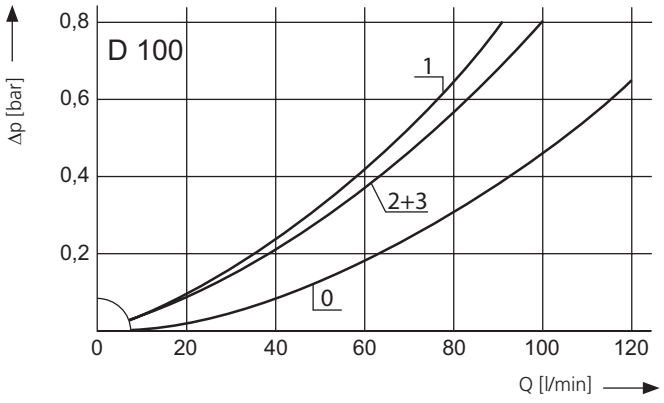
D1 Pressure drop as a function of the **flow volume** at ν = 35 mm²/s (0 = casing empty)



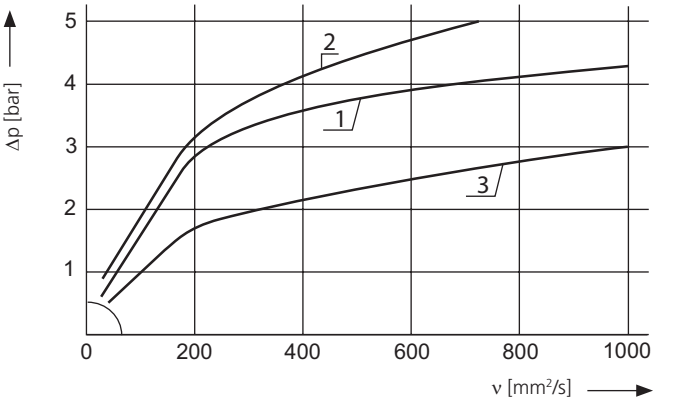
Pressure drop as a function of the **kinematic viscosity** at nominal flow



D2 Pressure drop as a function of the **flow volume** at ν = 35 mm²/s (0 = casing empty)

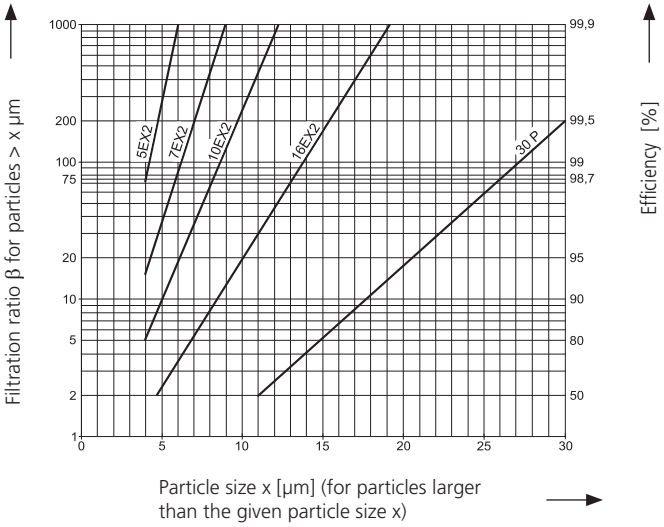


Pressure drop as a function of the **kinematic viscosity** at nominal flow



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 2 and Paper elements:

5EX2	=	$\overline{\beta}_{5\,(c)}$	= 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

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 accordung to DIN 4189

For special applications, finenesses differing from these curves are also available by using special composed filter material.

Selection Chart

Part No.	Nominal flow rate	Pressure drop see diagramm **D**/K curve no.	Filter fineness see Diagr. **Dx**	Dirt-holding capacity	Connection A/B	Cracking pressure of by-pass	Symbol	Replacement element Part No.	Weight	Remarks
	l/min			g		bar			kg	
1	2	3	4	5	6	7	8	9	10	11
D 090-156	60	**D1**/1	10EX2	17	G¾	2,5	2	V3.0714-06	0,9	-
D 090-158	85	**D1**/2	16EX2	17	G¾	2,5	2	V3.0714-08	0,9	-
D 090-151	50	**D1**/3	30P	7,3	G¾	1,5	2	P3.0714-01	0,9	-
D 100-156	75	**D2**/1	10EX2	22	G¾	2,5	2	V3.0717-06	1,0	-
D 100-158	110	**D2**/2	16EX2	22	G¾	2,5	2	V3.0717-08	1,0	-
D 100-151	70	**D2**/3	30P	9,4	G¾	1,5	2	P3.0717-01	1,0	-

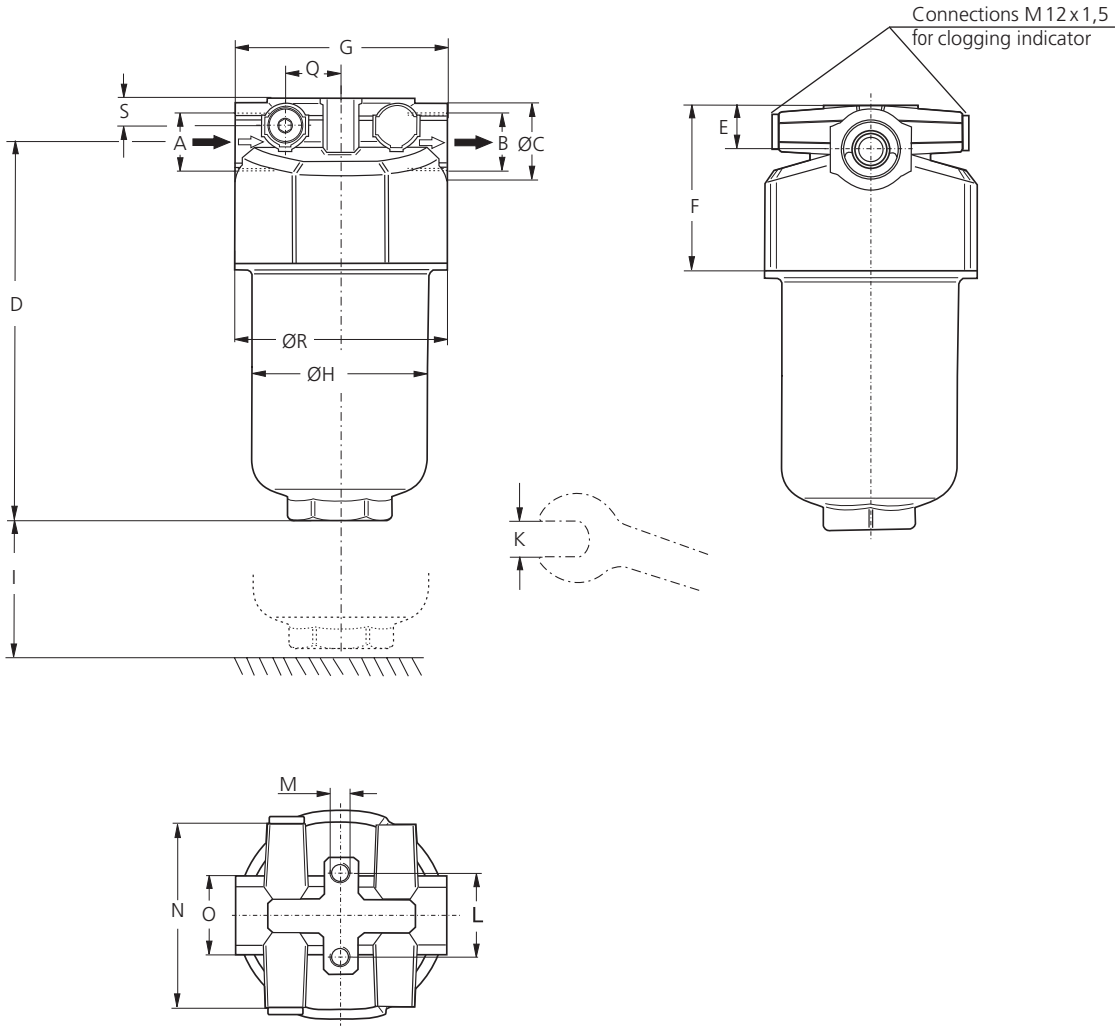
All filters are delivered with a plugged clogging indicator connection M12 x 1,5.
As clogging indicators either manometers or electrical pressure switches can be used.

For the appropriate clogging indicator please see catalogue sheet 60.20.

Remarks:

- The switching pressure of the electrical pressure switch has always to be lower than the cracking pressure of the by-pass valve (see Selection Chart, column 7).
- Clogging indicators are optional and always delivered detached from the filter.
- The filters listed in this chart are standard filters. Other designs available on request.

Dimensions

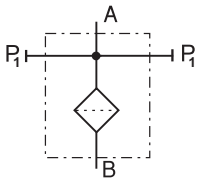


Measurements

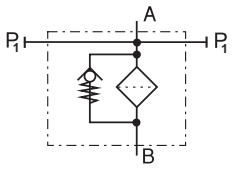
Type	A	B	C	D	E	F	G	H	I	K	L	M Ødepth	N	O	Q	R	S
D 090	G¾	G¾	35	178	20	74	95	80	70	AF 41	38,1	M8/15	82	AF 36	25	95	12
D 100	G¾	G¾	35	212	20	74	95	80	70	AF 41	38,1	M8/15	82	AF 36	25	95	12

Symbols

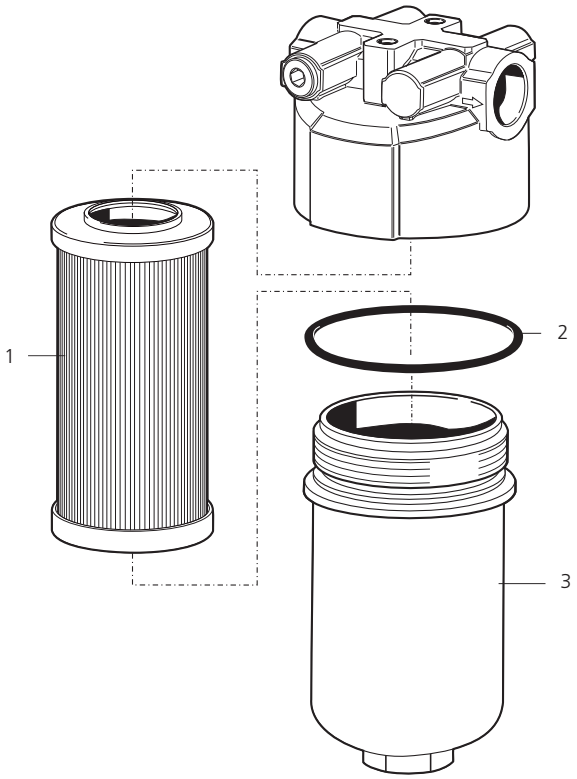
1



2



Spare Parts



Pos.	Designation	Part No.
1	Filter element	see Chart / col. 9
2	O-ring 82,14 x 3,53	N007.0824
3	Filter bowl D 090	E 068.0101
3	Filter bowl D 100	E 068.0102

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

Various quality controls during the production process guarantee the leakfree function and solidity of our filters.