HD 314 · HD 414 · HD 614

Flangeable · Operating pressure up to 500 bar / 7250 psi · Nominal flow rate up to 400 l/min / 105.7 gpm

High Pressure Filter HD 414

Description

Application

In the high pressure circuits of hydraulic systems.

Performance features

Protection against wear:
By means of filter elements that even in full-flow filtration meet 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 ≤ 200 mm^2/s / 927 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 (FPM on request)
Filter media:	EXAPOR®MAX 2 - inorganic multi-layer microfiber web Paper - cellulose web, impregnated with resin

Accessories

Electrical and / or optical clogging indicators are available - optionally with one or two switching points resp. temperature suppression.
Dimensions and technical data see catalog sheet 60.30.

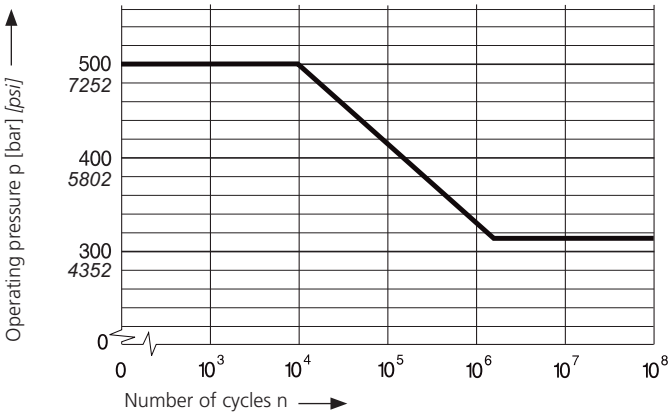
Characteristics

Operating pressure

0 ... 315 bar / 4570 psi, min. 2 x 10^6 pressure cycles
Nominal pressure according to DIN 24550

0 ... 500 bar / 7250 psi, min. 10^4 pressure cycles
Quasi-static operating pressure

Permissible pressures for other numbers of cycles



Nominal flow rate

Up to 400 l/min / 105,7 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 $\nu \leq 200$ mm²/s / 927 SUS
- element service life > 1000 operating hours at an average fluid contamination of 0.07 g per l/min / 0.27 g per gpm flow volume
- flow velocity in the connection lines:
  up to 250 bar ≤ 8 m/s / up to 3626 psi ≤ 26.3 ft/s
  > 250 bar ≤ 12 m/s / > 3626 psi ≤ 39.4 ft/s

Filter fineness

5 µm(c) ... 16 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)
-22 °F ... +212 °F (temporary -40 °F ... +248 °F)

Viscosity at nominal flow rate

- at operating temperature: $\nu < 60$ mm²/s / 280 SUS
- as starting viscosity: $\nu_{max} = 1200$ mm²/s / 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.

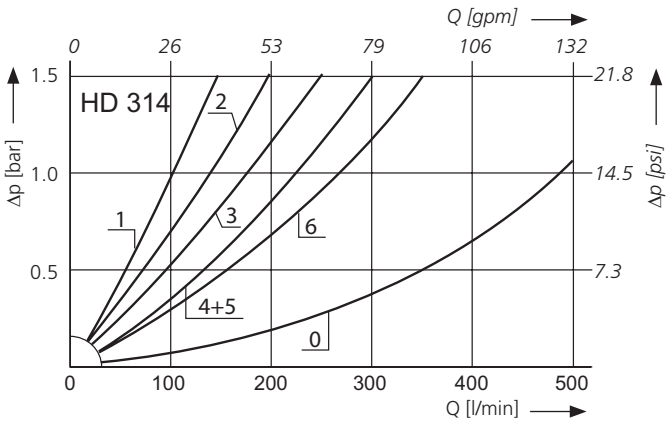
Connection

2 x Ø 31 mm / 2 x Ø 1.22 inch on plain flange.

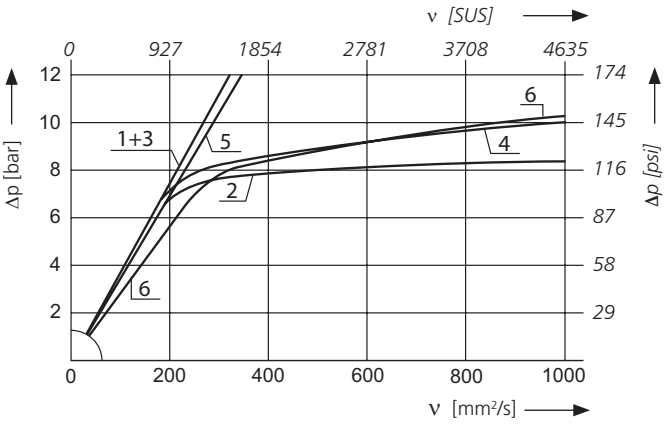
Diagrams

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 / 162 SUS (0 = casing empty)

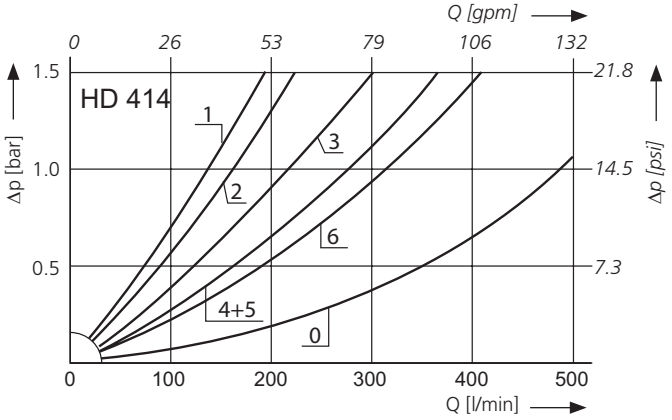


Pressure drop as a function of the **kinematic viscosity** at nominal flow

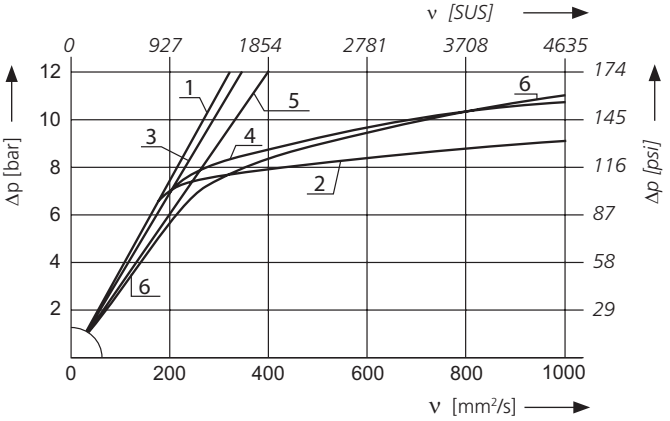


Δp-curves for complete filters in Selection Chart, column 3

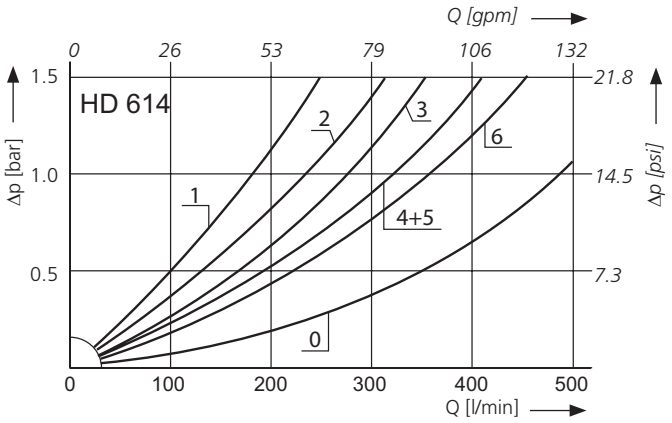
D2 Pressure drop as a function of the **flow volume** at ν = 35 mm²/s / 162 SUS (0 = casing empty)



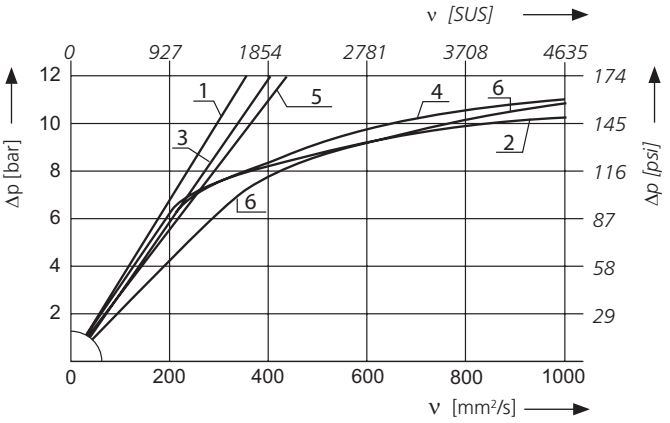
Pressure drop as a function of the **kinematic viscosity** at nominal flow



D3 Pressure drop as a function of the **flow volume** at ν = 35 mm²/s / 162 SUS (0 = casing empty)

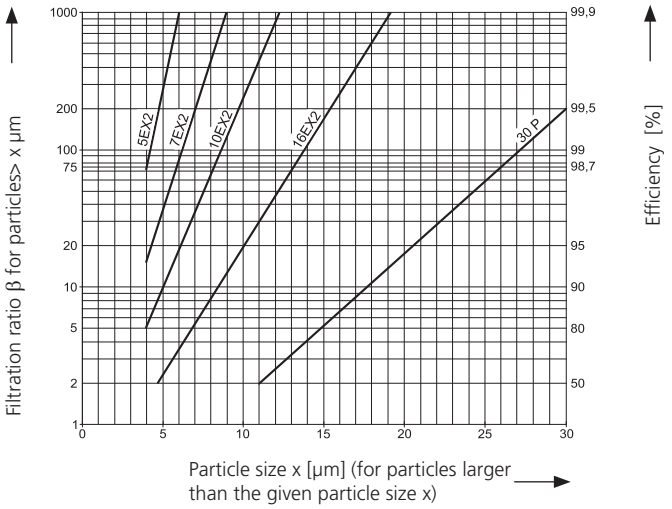


Pressure drop as a function of the **kinematic viscosity** at nominal flow



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®MAX2 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 filter element Part No.	Weight		Clogging indicator
	l/min	gpm			g	mm	inch	bar	psi			kg	lbs	
1	2		3	4	5	6		7		8	9	10		11
HD 314-279	110	29.1	**D1**/1	5EX2	20	Ø 31	Ø 1.22	-	-	2	V3.0817-13[2]	14.2	31.3	retrofittable
HD 314-259	155	40.9	**D1**/2	5EX2	24	Ø 31	Ø 1.22	7	102	1	V3.0817-03	13.8	30.4	retrofittable
HD 314-246	195	51.5	**D1**/3	10EX2	24	Ø 31	Ø 1.22	-	-	2	V3.0817-16[2]	14.2	31.3	retrofittable
HD 314-256[1]	250	66.0	**D1**/4	10EX2	33	Ø 31	Ø 1.22	7	102	1	V3.0817-06	13.8	30.4	retrofittable
HD 314-248	260	68.7	**D1**/5	16EX2	25	Ø 31	Ø 1.22	-	-	2	V3.0817-18[2]	14.2	31.3	retrofittable
HD 314-258[1]	300	79.3	**D1**/6	16EX2	33	Ø 31	Ø 1.22	7	102	1	V3.0817-08	13.8	30.4	retrofittable
HD 414-279	155	40.9	**D2**/1	5EX2	29	Ø 31	Ø 1.22	-	-	2	V3.0823-13[2]	15.7	34.6	retrofittable
HD 414-259	190	50.2	**D2**/2	5EX2	33	Ø 31	Ø 1.22	7	102	1	V3.0823-03	15.1	33.3	retrofittable
HD 414-296	250	66.0	**D2**/3	10EX2	33	Ø 31	Ø 1.22	-	-	2	V3.0823-16[2]	15.7	34.6	retrofittable
HD 414-256[1]	310	81.9	**D2**/4	10EX2	47	Ø 31	Ø 1.22	7	102	1	V3.0823-06	15.1	33.3	retrofittable
HD 414-298	310	81.9	**D2**/5	16EX2	35	Ø 31	Ø 1.22	-	-	2	V3.0823-18[2]	15.7	34.6	retrofittable
HD 414-258[1]	360	95.1	**D2**/6	16EX2	48	Ø 31	Ø 1.22	7	102	1	V3.0823-08	15.1	33.3	retrofittable
HD 614-279	210	55.5	**D3**/1	5EX2	41	Ø 31	Ø 1.22	-	-	2	V3.0833-13[2]	18.5	40.8	retrofittable
HD 614-259	270	71.3	**D3**/2	5EX2	49	Ø 31	Ø 1.22	7	102	1	V3.0833-03	17.8	39.2	retrofittable
HD 614-246	310	81.9	**D3**/3	10EX2	49	Ø 31	Ø 1.22	-	-	2	V3.0833-16[2]	18.5	40.8	retrofittable
HD 614-256[1]	360	95.1	**D3**/4	10EX2	67	Ø 31	Ø 1.22	7	102	1	V3.0833-06	17.8	39.2	retrofittable
HD 614-288	400	105.7	**D3**/5	16EX2	51	Ø 31	Ø 1.22	-	-	2	V3.0833-18[2]	18.5	40.8	retrofittable
HD 614-258[1]	400	105.7	**D3**/6	16EX2	68	Ø 31	Ø 1.22	7	102	1	V3.0833-08	17.8	39.2	retrofittable

[1] Preferred type, no minimum order quantity required

[2] Element differential pressure stable up to 160 bar / 2320 psi, clogging indicator is obligatory

Optical or electrical indicators are available to monitor the clogging condition of the element. If the indicator should be already mounted onto the filter head use the abbreviation "M" behind the part number of the indicator. The printed order acknowledgements show both items separately.

Order example: The filter HD HD 314-279 has to be supplied with optical clogging indicator - response pressure 5.0 bar / 73 psi

Order description: **HD 314-279** **/** **DG 042-02** **M**

Part No. (Basic unit)

Clogging indicator

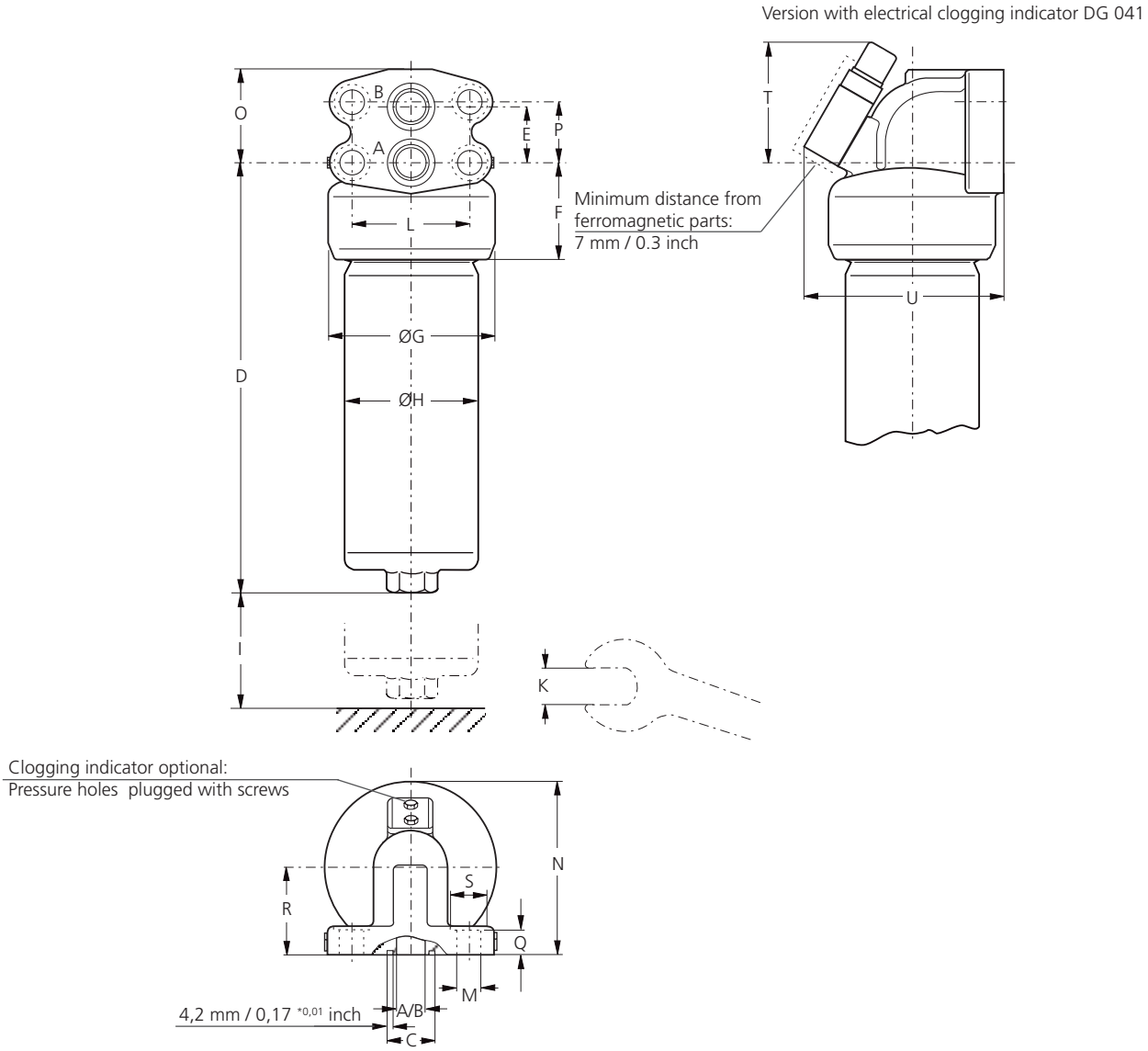
Mounted

For the appropriate clogging indicators see catalog sheet 60.30.

Remarks:

- Filter versions without by-pass valves must always be equipped with a clogging indicator.
- The filters listed in this chart are standard filters. If modifications are required, e.g. filter fineness 30P, we kindly ask for your request.

Dimensions



Measurements in mm

Type	A/B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	R	S	T	U
HD 314	Ø 31	44.4	263	52	82	138	109	80	AF 32	95	21.5	150	83	58	25	80	34	93	165
HD 414	Ø 31	44.4	325	52	82	138	109	80	AF 32	95	21.5	150	83	58	25	80	34	93	165
HD 614	Ø 31	44.4	426	52	82	138	109	80	AF 32	95	21.5	150	83	58	25	80	34	93	165

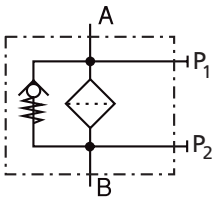
Measurements in inch

Type	A/B	C	D	E	F	G	H	I	K mm	L	M	N	O	P	Q	R
HD 314	Ø 1.22	1.75	10.35	2.05	3.23	5.43	4.29	3.15	AF 32	3.74	0.85	5.91	3.27	2.28	0.98	3.15
HD 414	Ø 1.22	1.75	12.80	2.05	3.23	5.43	4.29	3.15	AF 32	3.74	0.85	5.91	3.27	2.28	0.98	3.15
HD 614	Ø 1.22	1.75	16.77	2.05	3.23	5.43	4.29	3.15	AF 32	3.74	0.85	5.91	3.27	2.28	0.98	3.15

Type	S	T	U
HD 314	1.34	3.66	6.50
HD 414	1.34	3.66	6.50
HD 614	1.34	3.66	6.50

Symbols

1



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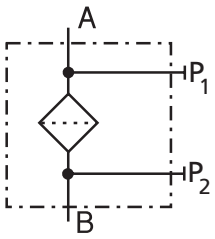
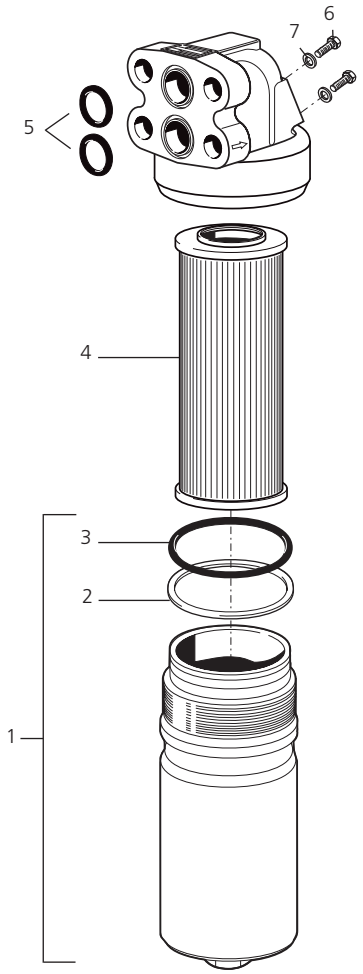


Spare Parts



Pos.	Designation	Part No.
1	Filter bowl HD 314 (with Pos. 2 und 3)	HD 250.0701
1	Filter bowl HD 414 (with Pos. 2 und 3)	HD 451.0702
1	Filter bowl HD 614 (with Pos. 2 und 3)	HD 619.0701
2	Back-ring	HD 255.0102
3	O-ring 94.84 x 3.53 mm 3.73 x 0.14 inch	N007.0953
4	Replacement filter element	s. Chart / col. 9
5	O-ring 37.69 x 3.53* mm 1.48 x 0.14* inch	N007.0384
6	Hexagonal head screw M4 x 8 DIN 933-8.8	11385800
7	Bonded Seal 4.1 x 7.2 x 1 mm 0.16 x 0.28 x 0.04 inch	12504600

* Not supplied with filter - has to be ordered separately

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.