RFT 103 · RFT 143

Tank top mounting · Connection up to G1 / -16 SAE · Nominal flow rate up to 175 l/min / 46 gpm

Return Filter RFT 103

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.

Special features

- Bypass valve:
  The location close to the inlet port prevents dirt particles retained by the filter element from entering into the clean oil side.
- Removable bowl:
  In case of maintenance the filter bowl is removed together with the filter element – therefore dirt particles are not flushed back into the tank.
- Extension pipe:
  A correct extension pipe length ensures oil outlet below minimum oil level and prevents foaming.

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

Ventilating filter

Ventilation of the reservoir by an integral star-shape pleated filter element:

- removable (replace annually)
- splash-proof
- fineness 2 µm

Filter maintenance

By using a clogging indicator the correct moment for maintenance is stated and thus the optimum utilization of the filter life is guaranteed.

Materials

Screw-on cap:	Polyester, GF-reinforced
Filter head:	Aluminium alloy
Filter bowl:	Polyamid, CF-reinforced
Seals:	NBR (FPM on request)
Filter media:	EXAPOR®Light - inorganic multi-layer microfibre web Paper - cellulose web, impregnated with resin

Accessories

Electrical and optical clogging indicators are available on request.

An optional oil separator (Part No. E 103.1702) is available on request.

Extension pipes on the bowl outlet are available in several lengths on request.

Characteristics

Nominal flow rate

Up to 175 l/min / 46 gpm (see Selection Chart)
The nominal flow rates indicated by ARGO-HYTOS are based on the following features:

- closed by-pass valve at $\nu \leq 150$ mm²/s / ≤ 698 SUS
- element service life > 500 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 ≤ 6 m/s / ≤ 20 ft/s

Connection

Threaded ports according to ISO 228 or DIN 13 and SAE standard J514. Sizes see Selection Chart,
(other port threads on request).

Filter fineness

10 µm(c) ... 30 µm(c)
β-values according to ISO 16889 (see diagrams)

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

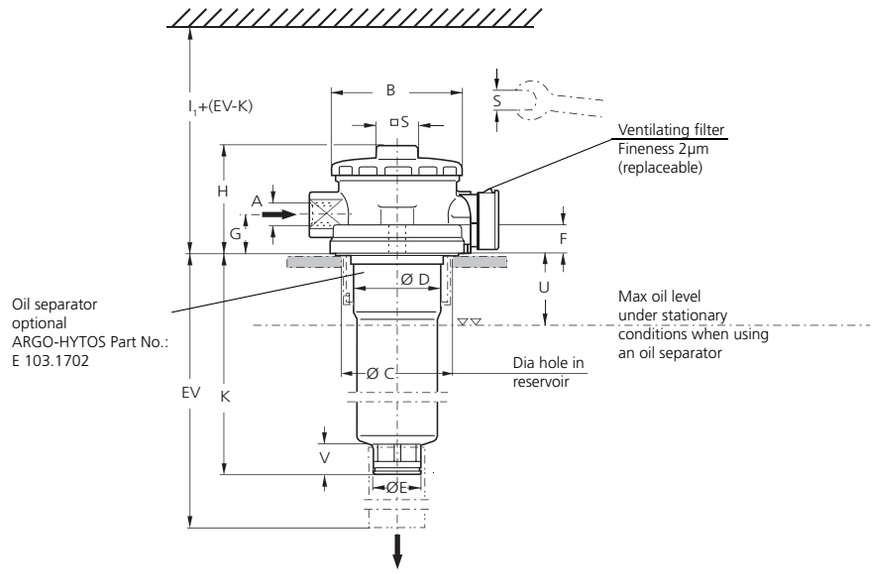
Operating pressure

Max. 10 bar / max. 145 psi

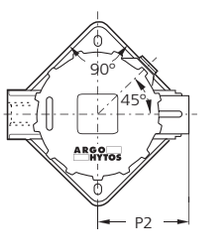
Mounting position

Preferably vertical, outlet downwards

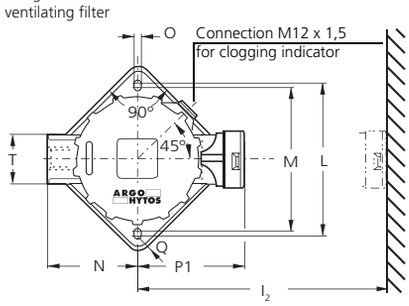
Dimensions



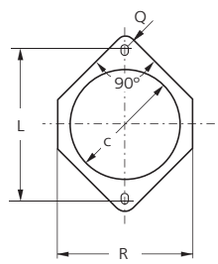
Design without ventilating filter



Design with ventilating filter



Required mounting surface



Measurements

Type [mm]	A	B	C min/max	D	E	F	G	H	l_1	l_2	K	L	M	N
RFT 103	G1	105	87/91	73.5	38	20.5	30	88.5	300	125	177	115	110	70
RFT 143	G1	105	87/91	73.5	38	20.5	30	88.5	400	125	278	115	110	70

Type [mm]	O	P_1	P_2	Q	R	S	T	U	V
RFT 103	11	82	69	13.5	107.5	AF 32	AF 41	50	23
RFT 143	11	82	69	13.5	107.5	AF 32	AF 41	50	23

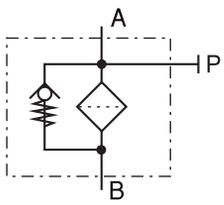
Type [inch]	A	B	C min/max	D	E	F	G	H	l_1	l_2	K	L	M	N
RFT 103	-16 SAE*	4.13	3.43 / 3.58	2.9	1.5	0.81	1.18	3.48	11.81	4.92	6.97	4.53	4.33	2.76
RFT 143	-16 SAE*	4.13	3.43 / 3.58	2.9	1.5	0.81	1.18	3.48	15.75	4.92	10.94	4.53	4.33	2.76

Type [inch]	O	P_1	P_2	Q	R	S	T	U	V
RFT 103	0.43	3.23	2.72	0.53	4.23	AF 32	AF 41	1.97	0.91
RFT 143	0.43	3.23	2.72	0.53	4.23	AF 32	AF 41	1.97	0.91

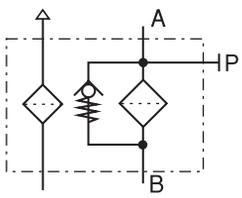
*corresponds to $1\,^{5}/_{16}$ - 12 UN - 2B

Symbols

Without air breather



With air breather



Ordering Code

Filter assembly

Order example:
RFT - 103 - GD - N3 - KM - 101

RFT - ___ - ___ - ___ - ___ - ___

Type of filter	Code
Return Filter, tank mounted	RFT

Flow rate, max.	Code
125 l/min / 33 gpm	103
175 l/min / 46 gpm	143

Connection thread	Code
G1	GD
-16 SAE	UD

Filter fineness	Code
10 µm (10EL)	G2
16 µm (16EL)	I2
30 µm (30P)	N3

Air breather	Code
Without air breather	100
With air breather	101

Bypass setting	Code
2.5 bar / 36 psi (for 10EL, 16EL)	OM
1.5 bar / 22 psi (for 30P)	KM

Filters delivered with plugged connection M12 x 1.5 for clogging indicator.

Spare filter element

Order example:
P3.0620-51

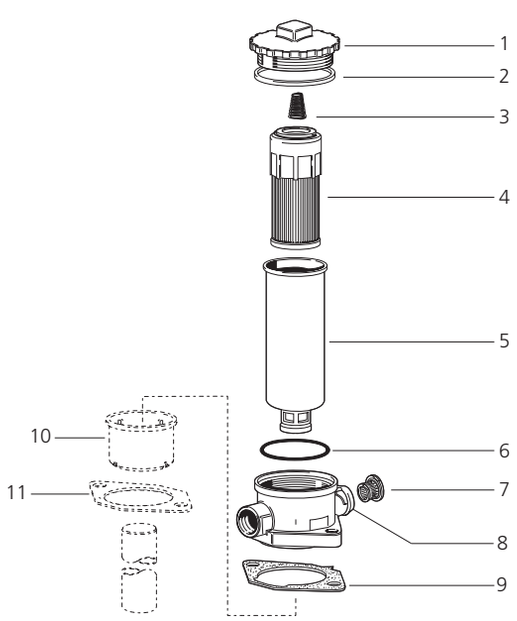
___ 3.0 ___ - 5 ___

Filter media	Code
EXAPOR®Light	F
Paper	P

Length	Code
for RFT 103	620
for RFT 143	730

Filter fineness	Code
10EL	6
16EL	8
30P	1

Spare parts



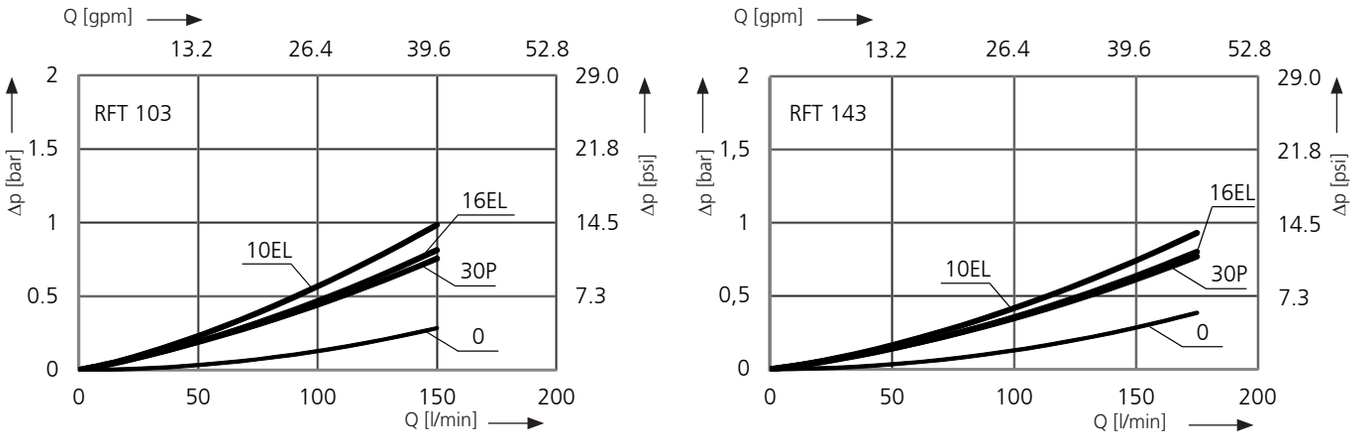
Pos.	Designation	Part No.
1	Screw-on cap	E 103.0201
2	Flat Gasket	N031.0841
3	Compression spring	N015.3703
4	Filter element	see above
5	Filter bowl RFT 103	E 103.0912
5	Filter bowl RFT 143	E 143.0903
6	O-ring 69.5 x 3.5 / 2.74 x 0.14	N007.0703
7	Air breather	L1.0503-03K
8	Housing (for Pos. 7)	L1.0503.0801
9	Flat gasket (for versions without breather)	E 103.0147
10	Oil separator	E 103.1702
11	Flat gasket (for versions with breather)	E 103.0148

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.

Diagrams

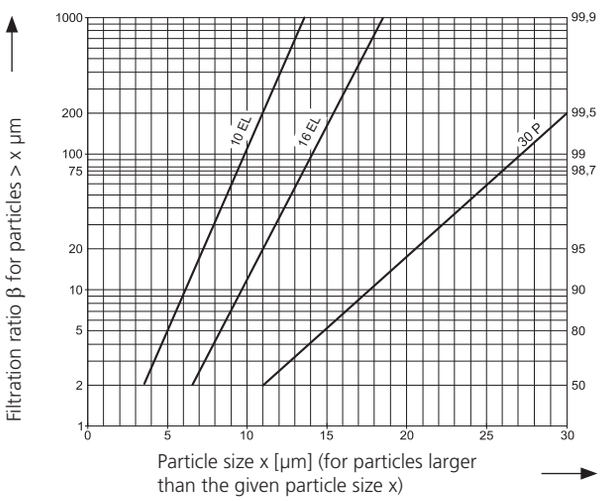
Δp-curves for complete filters

D1 Pressure drop as a function of the
flow volume at ν = 35 mm²/s / ν = 162 SUS (0 = housing empty)



Filter fineness curves

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®Light and Paper elements:

10 EL = $\underline{\beta}_{10\,(c)}$ = 200 EXAPOR®Light
16 EL = $\underline{\beta}_{16\,(c)}$ = 200 EXAPOR®Light
30 P = $\beta_{30(c)}$ = 200 Paper

Based on the structure of the filter media of the 30P paper elements, deviations from the printed curves are quite probable.

For ventilating filter elements:

2 CL = 99.5 % efficiency for particles of size 2 µm

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

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.

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