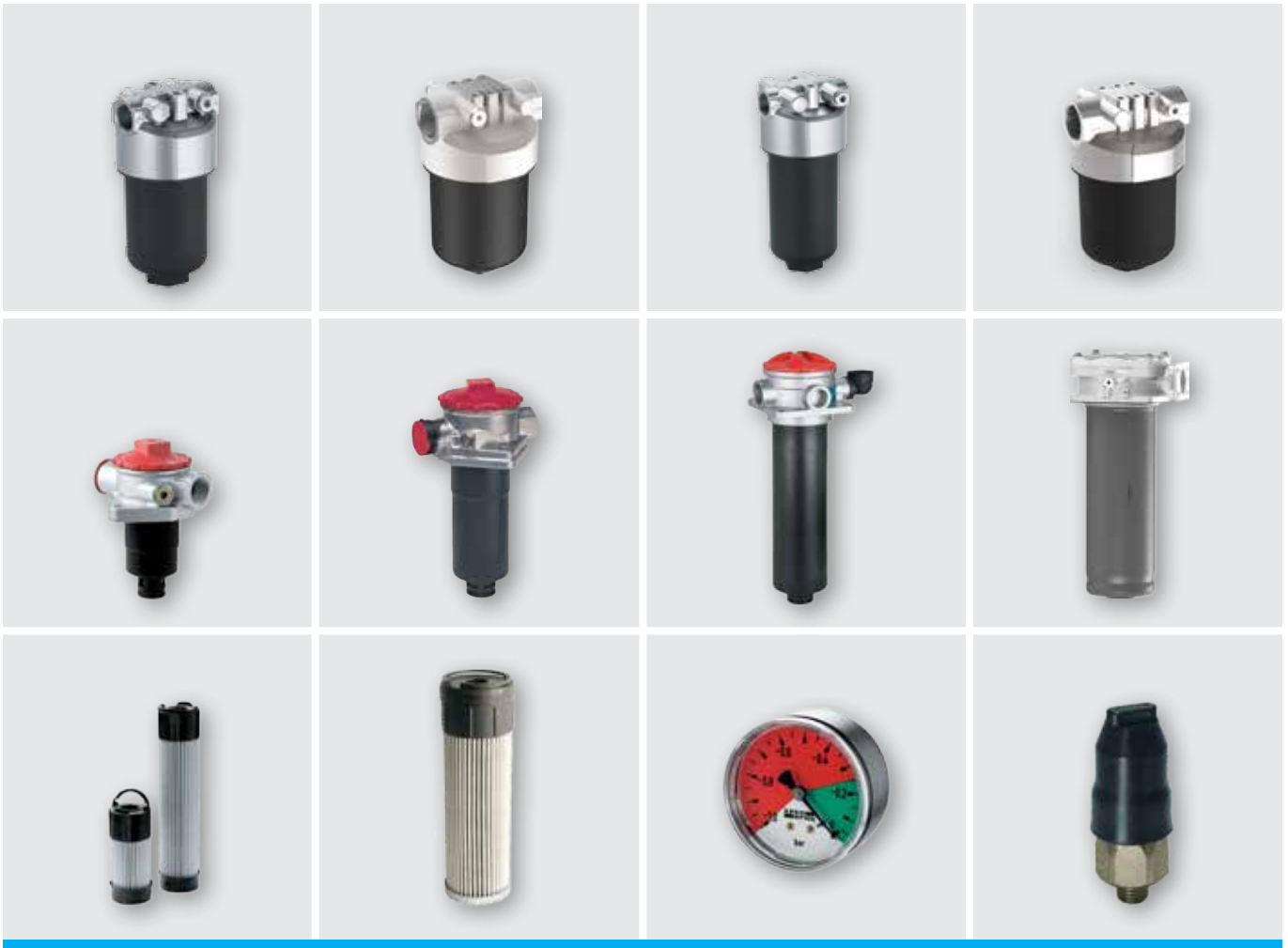
We produce fluid power **solutions**

ARGO HYTOS



Lightline

Suction Filters
Return Filters
Clogging Indicators

Lightline
It's your choice
High Performance

Content

Products with these icons are specially made for:

Industrial Applications

Mobile Applications

Selection Chart

Suction- and Return Filters

Suction Filters / In-line mounting

Type of filter	max. flow rate		Filter fineness	Bypass valve setting		Connection	Air breather (Ventilating filter)	Clogging indicator	Page
	[l/min]	[gpm]	[µm]	[bar]	[psi]				
SFL 025	30	8	50 (50P)	-0.3	-4.4	G¾ -12 SAE	not available	with* plugged connection G¼	4
SFL 035	40	11							
SFL 040	50	13				G1¼ -20 SAE			8
SFL 075	90	24							

Return Filters / In-line mounting

Type of filter	max. flow rate		Filter fineness	Bypass valve setting			Connection	Air breather (Ventilating filter)	Clogging indicator	Page
	[l/min]	[gpm]	[µm]	[bar]	[psi]					
RFL 090	100	26	10 (10EL)	2.5	36	(10EL & 16EL)	G¾ -12 SAE	not available	with* plugged connec-tion M12 x 1.5	12
RFL 100	120	32	16 (16EL)							
RFL 170	190	50	30 (30P)	1.5	22	(30P)	G1¼ -20 SAE			16
RFL 230	290	77								

Return Filters / Tank top mounting

Type of filter	max. flow rate		Filter fineness	Bypass valve setting			Connection	Air breather (Ventilating filter)	Clogging indicator	Page
	[l/min]	[gpm]	[µm]	[bar]	[psi]					
RFT 043	50	13	10 (10EL) 16 (16EL) 30 (30P)	2.5 1.5	36 22	(10EL & 16EL) (30P)	G¾ -12 SAE	available with or without breather	with* plugged connec-tion M12 x 1.5	20
RFT 072	90	24								
RFT 103	125	33					G1 -16 SAE			26
RFT 143	175	46								
RFT 222	270	71					G1¼ -20 SAE	not available		32
RFT 454	500	132					G1½ / SAE 2 -24 SAE / SAE 2			37
RFT 464	650	172								

* All filters are equipped at least with one plugged indicator port. As clogging indicators either manometers or electrical pressure switches can be used (see pages 42 to 47). The indicators are always delivered detached from the filter.

SFL 025 · SFL 035

In-line mounting · Connection up to G¾ / -12 SAE · Nominal flow rate up to 40 l/min / 11 gpm

Suction Filter SFL 025

Description

Application

To be installed in the suction line of the pumps of hydraulic systems resp. upstream of the charge pumps of hydrostatic drives.

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

Filter head:	Aluminium alloy
Filter bowl:	Polyamide, GF reinforced
Seals:	NBR (FPM on request)
Filter media:	Paper - cellulose web, impregnated with resin

Accessories

Electrical and optical clogging indicators are available.
For technical data and dimensions see pages 42 to 47.

Characteristics

Nominal flow rate

Up to 40 l/min / 11 gpm (see Selection Chart, page 3)
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 ≤ 2 m/s / ≤ 6.5 ft/s

Connection

Threaded ports according to ISO 228 or DIN 13 and SAE standard J514. Sizes see Selection Chart, page 3
(other port threads on request).

Filter fineness

50 µm(c)
ß-values according ISO 16889 (see diagrams)

Hydraulic fluids

Mineral oil and biodegradable fluids
(HEES and HETG, see info-sheet 00.20)

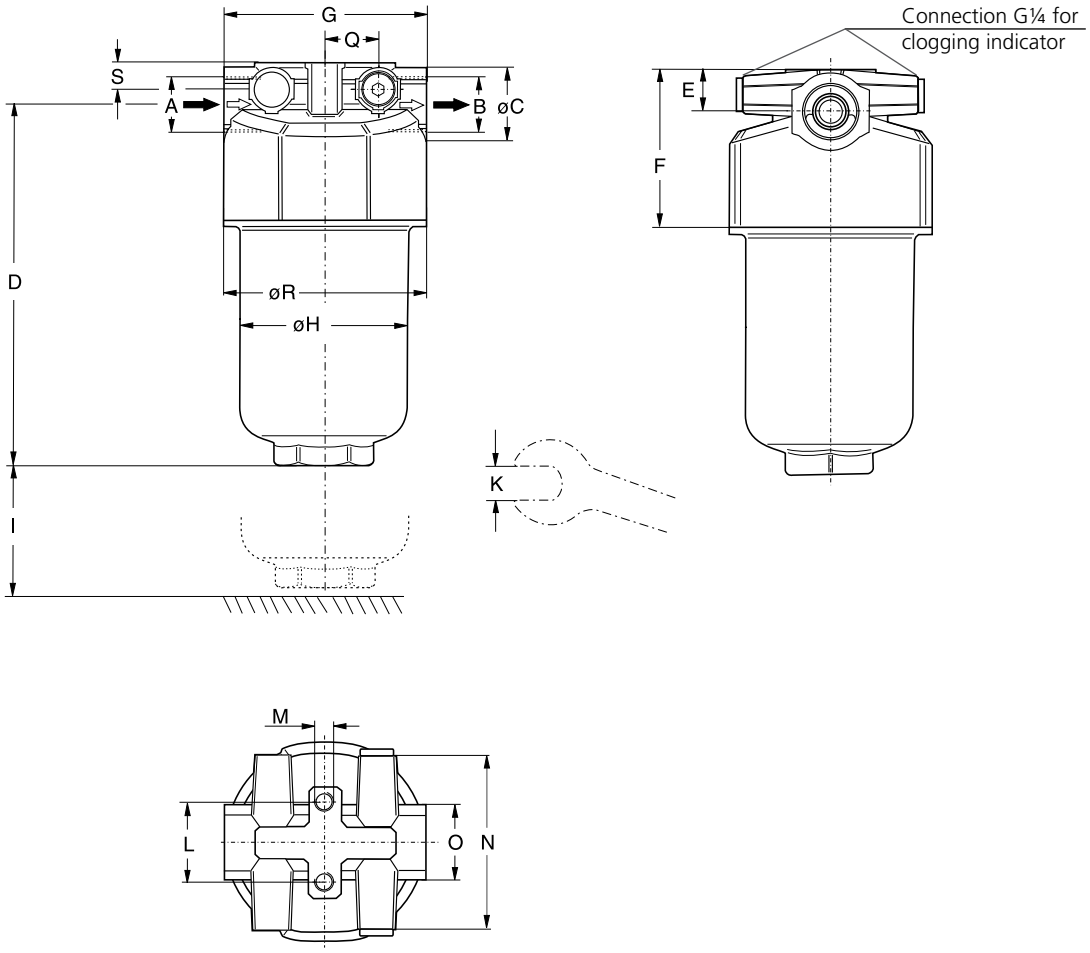
Temperature range

-30 °C ... +100 °C (temporary -40 °C ... +120 °C)
-22 °F ... +212 °F (temporary -40 °F ... +248 °F)

Mounting position

Vertical mounting to be preferred, filter head on top.

Dimensions



Measurements

Type [mm]	A	B	C	D	E	F	G	H	I	K	L	M Ø/depth	N	O	Q	R	S
SFL 025	G¾	G¾	35	178	20	74	95	80	70	AF 41	38.1	M8/15	82	AF 36	25	95	12
SFL 035	G¾	G¾	35	212	20	74	95	80	70	AF 41	38.1	M8/15	82	AF 36	25	95	12

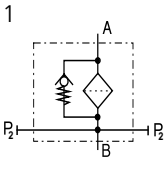
Type [inch]	A	B	C	D	E	F	G	H	I	K mm	L	M Ø/depth	N	O mm
SFL 025	-12 SAE*	-12 SAE*	1.38	7.01	0.79	2.91	3.74	3.15	1.57	AF 41	1.50	M8/15	3.23	AF 36
SFL 035	-12 SAE*	-12 SAE*	1.38	8.35	0.79	2.91	3.74	3.15	1.57	AF 41	1.50	M8/15	3.23	AF 36

Type [inch]	Q	R	S
SFL 025	0.98	3.74	0.47
SFL 035	0.98	3.74	0.47

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

Symbols

1



Ordering Code

Filter assembly

Order example:
SFL - 025 - GC - P3 - DM - 100

SFL - ___ - ___ - P3 - DM - 100

Type of filter	Code
Suction Filter, In-line	SFL

Flow rate, max.	Code
30 l/min / 8 gpm	025
40 l/min / 11 gpm	035

Connection thread	Code
G¾	GC
-12 SAE	UC

Filter fineness	Code
50 µm (50P)	P3

Air breather	Code
not available	100

Bypass setting	Code
-0.3 bar / -4.4 psi	DM

Filters delivered with plugged connection G¼ for clogging indicator.

Spare filter element

Order example:
P3.0714-02

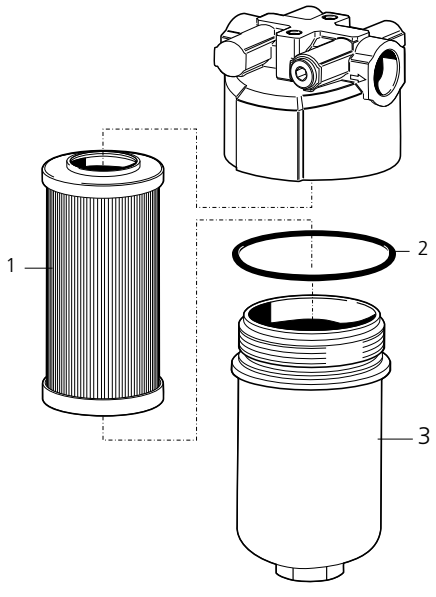
P 3 . 07 ___ - 0 2

Filter media	Code
Paper	P

Length	Code
for SFL 025	14
for SFL 035	17

Filter fineness	Code
50P	2

Spare parts



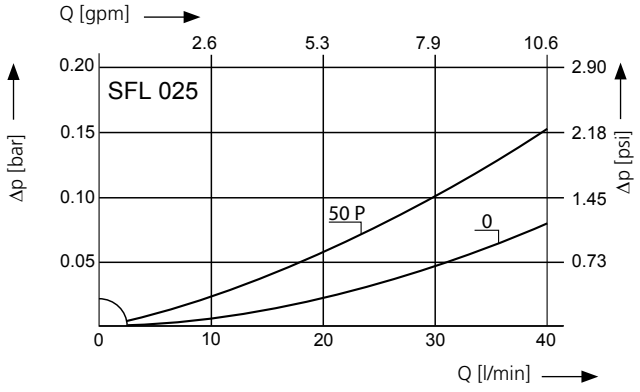
Pos.	Designation	Part No.
1	Filter element	see above
2	O-ring 82.14 x 3.53 / 3.23 x 0.14	N007.0824
3	Filter bowl SFL 025	E 068.0101
3	Filter bowl SFL 035	E 068.0102

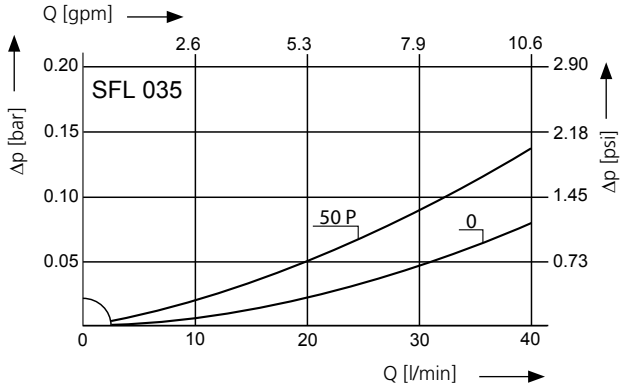
The functions of the complete filters as well as the outstanding features of the filter elements assured by ARGO-HYTOS can only be guaranteed if original ARGO-HYTOS spare parts are used.

Diagrams

Δp-curves for complete filters

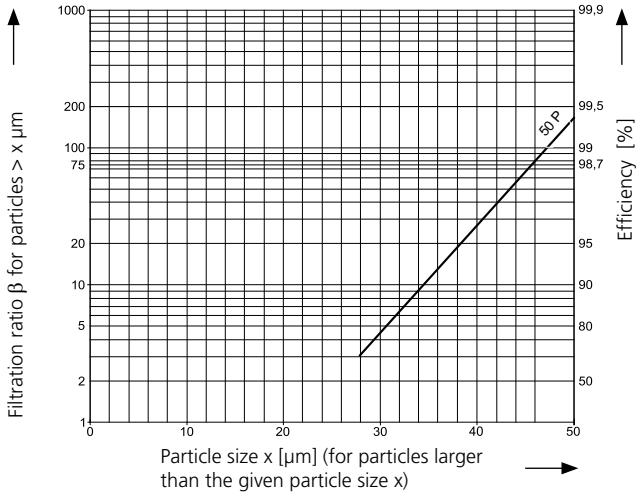
D1 Pressure drop as a function of the **flow volume** at ν = 35 mm²/s / ν = 162 SUS (0 = housing empty)





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:

50 P = $\bar{\beta}_{50(c)}$ = 200 Paper

Based on the structure of the filter media of the 50P 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 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.

SFL 040 · SFL 075

In-line mounting · Connection up to G1¼ / -20 SAE · Nominal flow rate up to 90 l/min / 24 gpm

Suction Filter SFL 075

Description

Application

To be installed in the suction line of the pumps of hydraulic systems resp. upstream of the charge pumps of hydrostatic drives.

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

Filter head:	Aluminium alloy
Filter bowl:	Polyamide, GF reinforced
Seals:	NBR (FPM on request)
Filter media:	Paper - cellulose web, impregnated with resin

Accessories

Electrical and optical clogging indicators are available.
For technical data and dimensions see pages 42 to 47.

Characteristics

Nominal flow rate

Up to 90 l/min / 24 gpm (see Selection Chart, page 3)
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 ≤ 2 m/s / ≤ 6.5 ft/s

Connection

Threaded ports according to ISO 228 or DIN 13 and SAE standard J514. Sizes see Selection Chart, page 3
(other port threads on request).

Filter fineness

50 µm(c)
ß-values according ISO 16889 (see diagrams)

Hydraulic fluids

Mineral oil and biodegradable fluids
(HEES and HETG, see info-sheet 00.20)

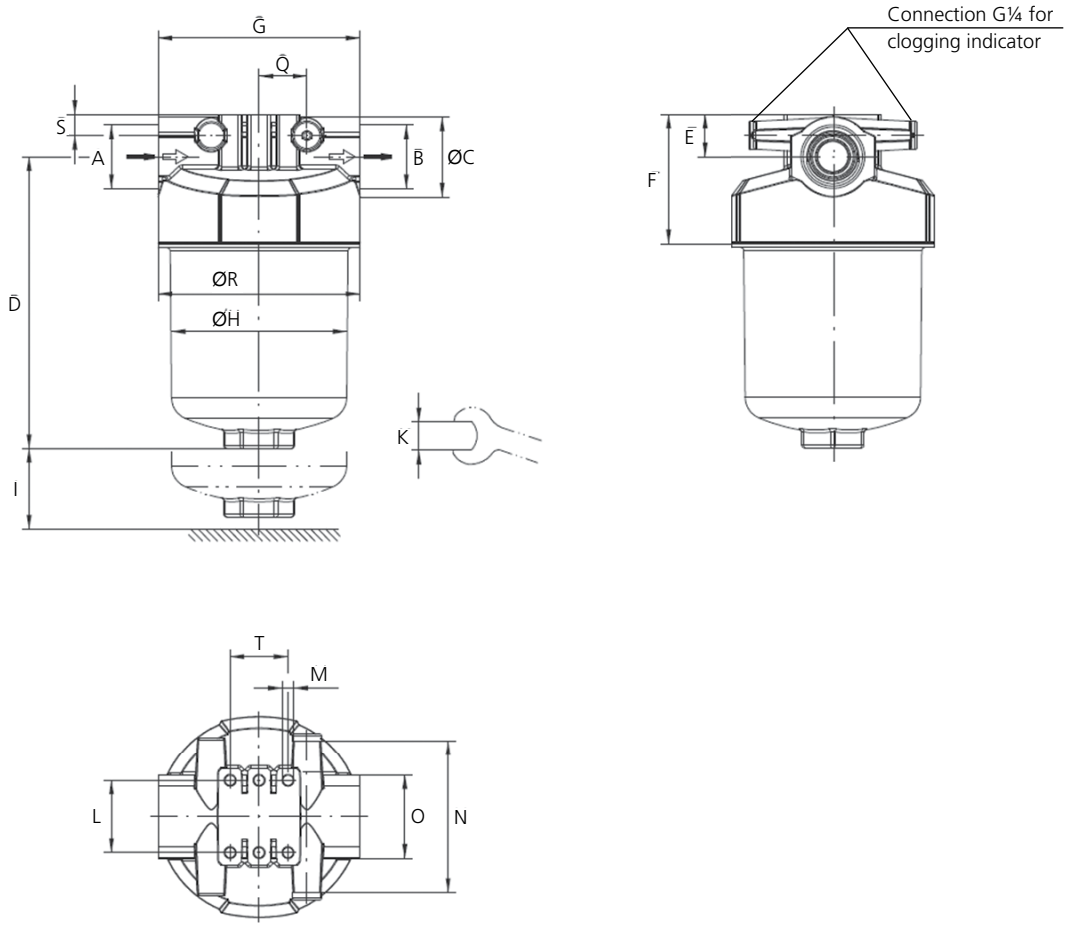
Temperature range

-30 °C ... +100 °C (temporary -40 °C ... +120 °C)
-22 °F ... +212 °F (temporary -40 °F ... +248 °F)

Mounting position

Vertical mounting to be preferred, filter head on top.

Dimensions



Measurements

Type [mm]	A	B	C	D	E	F	G	H	I	K	L	M Ø/depth	N	O	Q	R	S	T
SFL 040	G1¼	G1¼	52	192	28	85	133	117	60	AF41	47.6	M8/15	100	AF55	31.5	133	14	38.1
SFL 075	G1¼	G1¼	52	302	28	85	133	117	60	AF41	47.6	M8/15	100	AF55	31.5	133	14	38.1

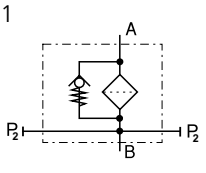
Type [inch]	A	B	C	D	E	F	G	H	I	K mm	L	M Ø/depth	N	O mm	Q
SFL 040	-20 SAE*	-20 SAE*	2.05	7.56	1.10	3.35	5.24	4.61	2.36	AF41	1.87	M8/15	3.94	AF55	1.24
SFL 075	-20 SAE*	-20 SAE*	2.05	11.89	1.10	3.35	5.24	4.61	2.36	AF41	1.87	M8/15	3.94	AF55	1.24

Type [inch]	R	S	T
SFL 040	5.24	0.55	1.50
SFL 075	5.24	0.55	1.50

*corresponds to $1^{5}/_{8}$ -12 UN-2B

Symbols

1



Ordering Code

Filter assembly

Order example:
SFL - 040 - GE - P3 - DM - 100

SFL - ___ - ___ - P3 - DM - 100

Type of filter	Code
Suction Filter, In-line	SFL

Flow rate, max.	Code
50 l/min / 13 gpm	040
90 l/min / 24 gpm	075

Connection thread	Code
G1¼	GE
- 20 SAE	UE

Filter fineness	Code
50 µm (50P)	P3

Air breather	Code
not available	100

Bypass setting	Code
-0.3 bar / -4.4 psi	DM

Filters delivered with plugged connection G¼ for clogging indicator.

Spare filter element

Order example:
P3.1014-02

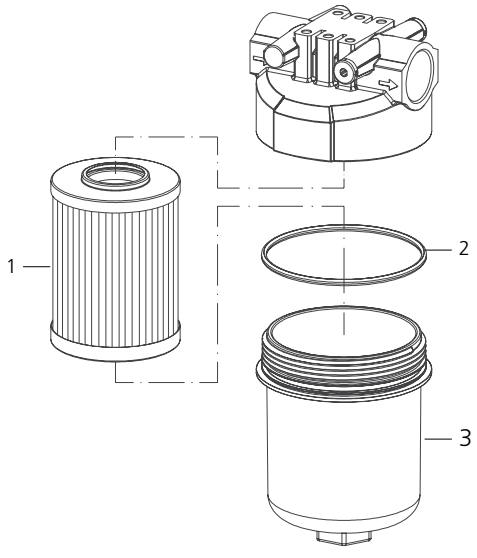
P 3 . 10 ___ - 0 2

Filter media	Code
Paper	P

Length	Code
for SFL 040	14
for SFL 075	25

Filter fineness	Code
50P	2

Spare parts



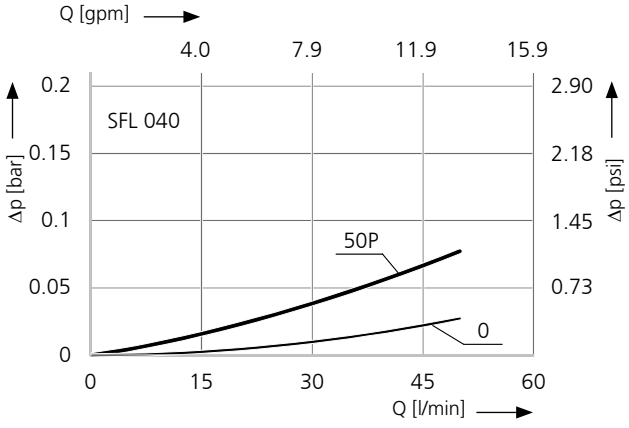
Pos.	Designation	Part No.
1	Filter element	see above
2	O-ring 115 x 4.5 / 4.53 x 0.18	N007.1155
3	Filter bowl SFL 040	D 230.0102
3	Filter bowl SFL 075	D 230.0101

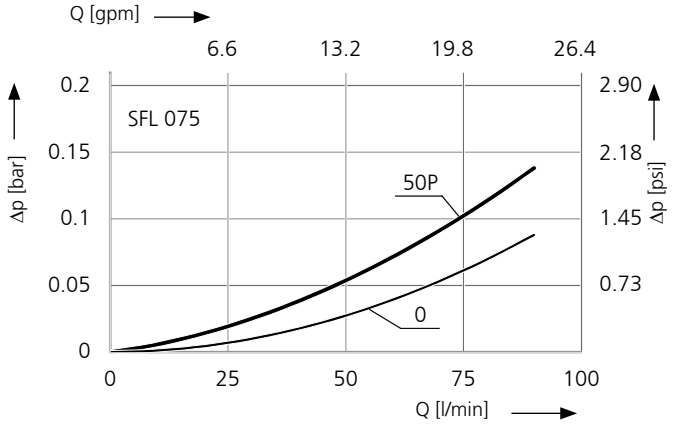
The functions of the complete filters as well as the outstanding features of the filter elements assured by ARGO-HYTOS can only be guaranteed if original ARGO-HYTOS spare parts are used.

Diagrams

Δp-curves for complete filters

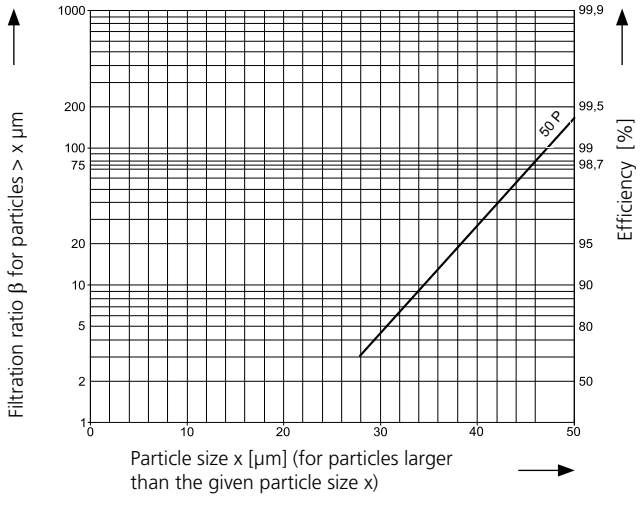
D1 Pressure drop as a function of the **flow volume** at ν = 35 mm²/s / ν = 162 SUS (0 = housing empty)





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:

50 P = $\overline{\beta}_{50(c)}$ = 200 Paper

Based on the structure of the filter media of the 50P 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 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.

RFL 090 · RFL 100

In-line mounting · Connection up to G¾ / -12 SAE · Nominal flow rate up to 120 l/min / 32 gpm

Return Filter RFL 090

Description

Application

In the return line circuits of hydraulic systems.

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

Filter head:	Aluminium alloy
Filter bowl:	Polyamide, GF 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.
For technical data and dimensions see pages 42 to 47.

Characteristics

Nominal flow rate

Up to 120 l/min / 32 gpm (see Selection Chart, page 3)
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, page 3
(other port threads on request).

Filter fineness

10 µm(c) ... 30 µm(c)
ß-values according 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)

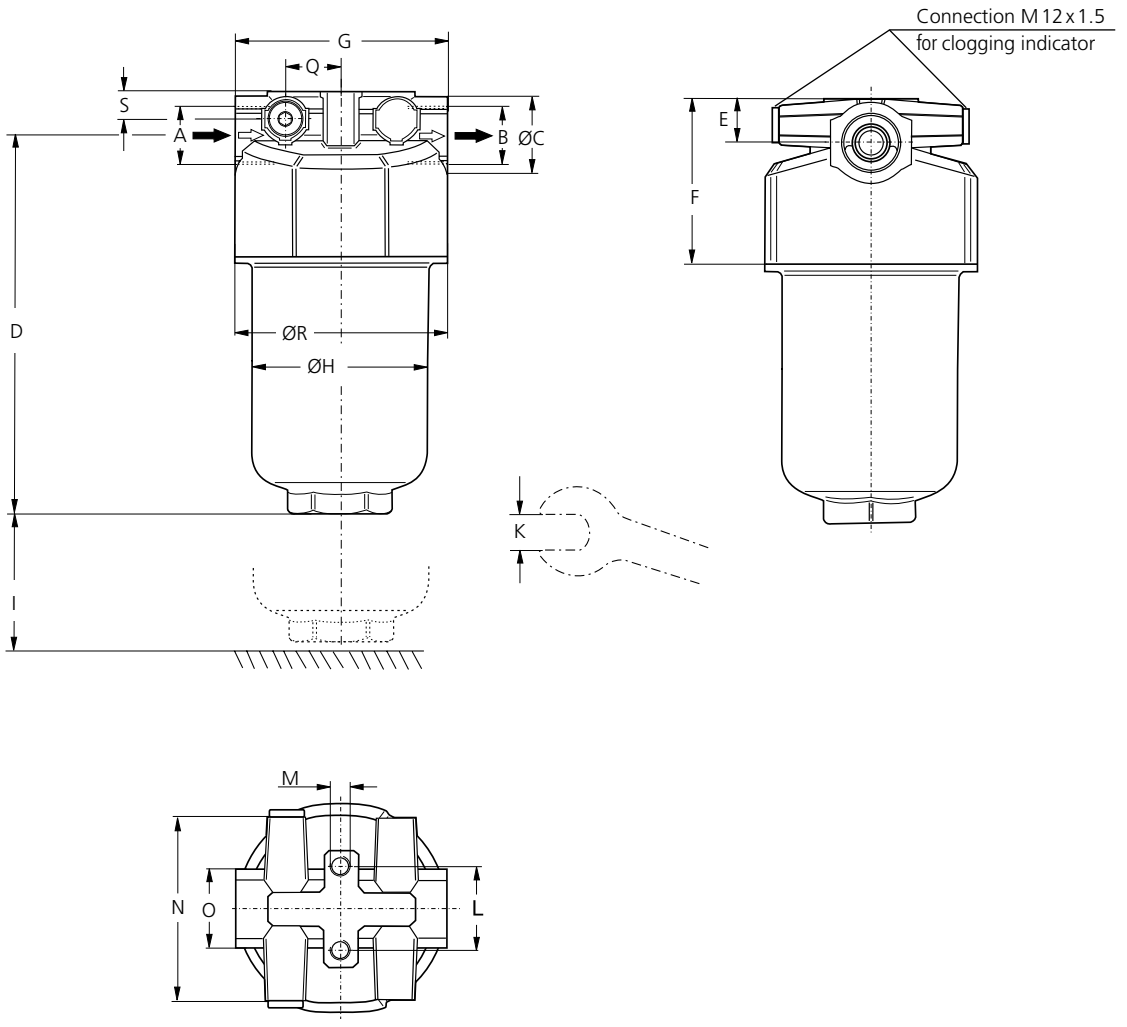
Operating pressure

Max. 10 bar / max. 145 psi

Mounting position

Vertical mounting to be preferred, filter head on top.

Dimensions



Measurements

Type [mm]	A	B	C	D	E	F	G	H	I	K	L	M Ødepth	N	O	Q	R	S
RFL 090	G¾	G¾	35	178	20	74	95	80	70	AF41	38.1	M8/15	82	AF36	25	95	12
RFL 100	G¾	G¾	35	212	20	74	95	80	70	AF41	38.1	M8/15	82	AF36	25	95	12

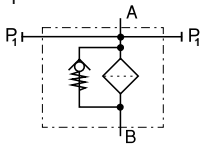
Type [inch]	A	B	C	D	E	F	G	H	I	K mm	L	M Ødepth	N	O mm	Q
RFL 090	-12 SAE*	-12 SAE*	1.38	7.01	0.79	2.91	3.74	3.15	1.57	AF41	1.50	M8/15	3.23	AF36	0.98
RFL 100	-12 SAE*	-12 SAE*	1.38	8.35	0.79	2.91	3.74	3.15	1.57	AF41	1.50	M8/15	3.23	AF36	0.98

Type [inch]	R	S
RFL 090	3.74	0.47
RFL 100	3.74	0.47

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

Symbols

1



Ordering Code

Filter assembly

Order example:
RFL - 090 - UC - I2 - OM - 100

RFL - ___ - ___ - ___ - ___ - 100

Type of filter	Code
Return Filter, In-line	RFL

Flow rate, max.	Code
100 l/min / 26 gpm	090
120 l/min / 32 gpm	100

Connection thread	Code
G¾	GC
-12 SAE	UC

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

Air breather	Code
not available	100

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:
F3.0714-08

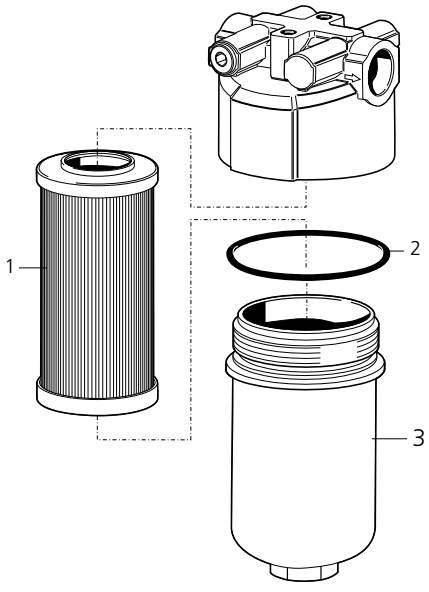
___ 3 . 07 ___ - 0 ___

Filter media	Code
EXAPOR®Light	F
Paper	P

Length	Code
for RFL 090	14
for RFL 100	17

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

Spare parts



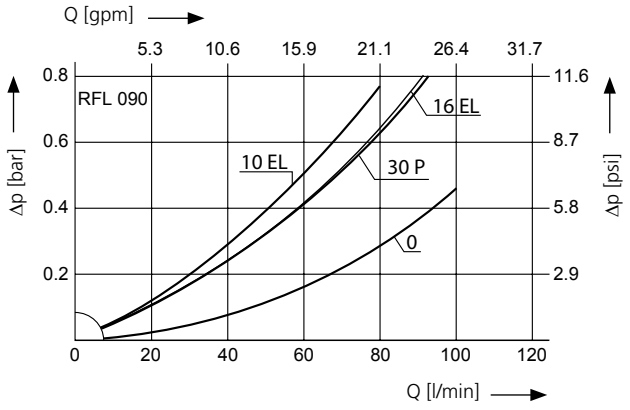
Pos.	Designation	Part No.
1	Filter element	see above
2	O-ring 82.14 x 3.53 / 3.23 x 0.14	N007.0824
3	Filter bowl RFL 090	E 068.0101
3	Filter bowl RFL 100	E 068.0102

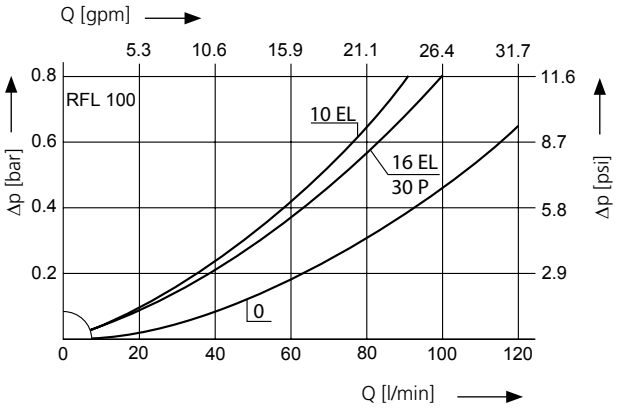
The functions of the complete filters as well as the outstanding features of the filter elements assured by ARGO-HYTOS can only be guaranteed if original ARGO-HYTOS spare parts are used.

Diagrams

Δp-curves for complete filters

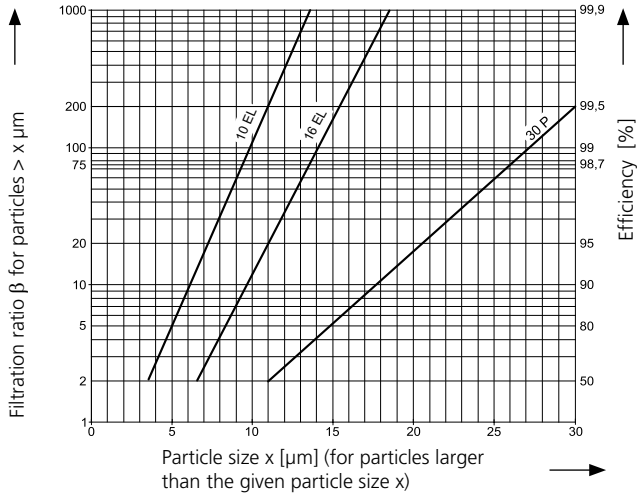
D1 Pressure drop as a function of the **flow volume** at ν = 35 mm²/s / ν = 162 SUS (0 = housing empty)





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 = $\overline{\beta}_{10\,(c)}$ = 200 EXAPOR®Light
16 EL = $\overline{\beta}_{16\,(c)}$ = 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 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.

RFL 170 · RFL 230

In-line mounting · Connection up to G1¼ / -20 SAE · Nominal flow rate up to 290 l/min / 77 gpm

Return Filter RFL 170

Description

Application

In the return line circuits of hydraulic systems.

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

Filter head:	Aluminium alloy
Filter bowl:	Polyamide, GF 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.
For technical data and dimensions see pages 42 to 47.

Characteristics

Nominal flow rate

Up to 290 l/min / 77 gpm (see Selection Chart, page 3).
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, page 3 (other port threads on request).

Filter fineness

10 µm(c) ... 30 µm(c)
ß-values according 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)

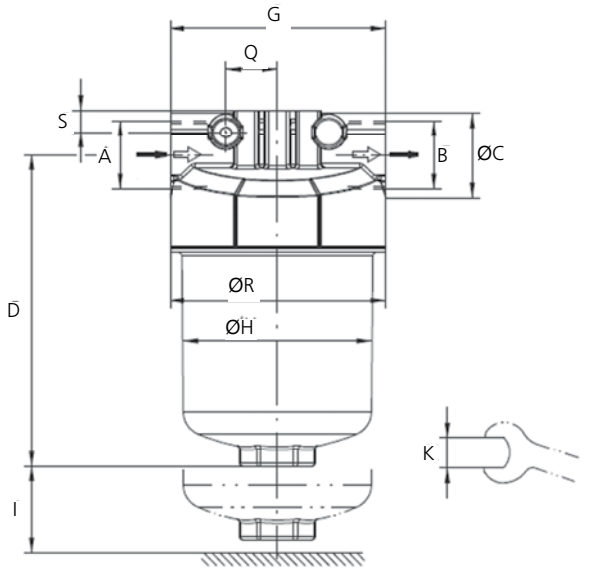
Operating pressure

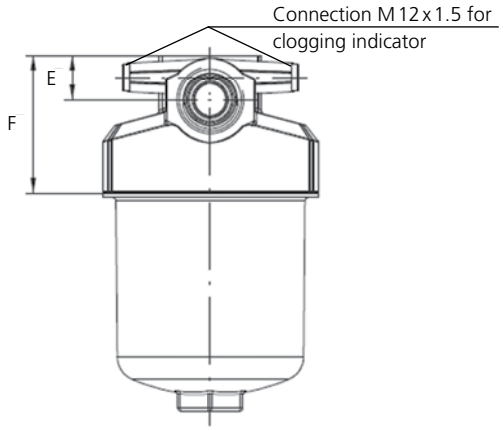
Max. 10 bar / max. 145 psi

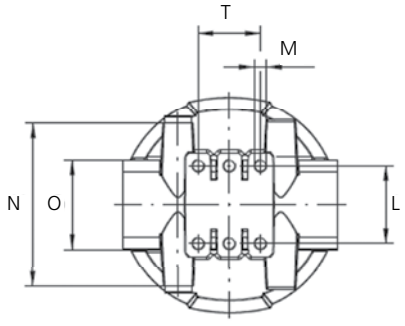
Mounting position

Vertical mounting to be preferred, filter head on top.

Dimensions







Measurements

Type [mm]	A	B	C	D	E	F	G	H	I	K	L	M Ødepth	N	O	Q	R	S	T
RFL 170	G1¼	G1¼	52	192	28	85	133	117	60	AF41	47.6	M8/15	100	AF55	31.5	133	14	38.1
RFL 230	G1¼	G1¼	52	302	28	85	133	117	60	AF41	47.6	M8/15	100	AF55	31.5	133	14	38.1

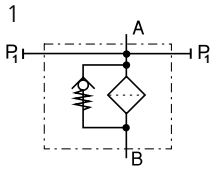
Type [inch]	A	B	C	D	E	F	G	H	I	K mm	L	M Ødepth	N	O mm	Q
RFL 170	-20 SAE*	-20 SAE*	2.05	7.56	1.12	3.35	5.23	4.60	2.36	AF41	1.87	M8/15	3.94	AF55	1.24
RFL 230	-20 SAE*	-20 SAE*	2.05	11.89	1.12	3.35	5.23	4.60	2.36	AF41	1.87	M8/15	3.94	AF55	1.24

Type [inch]	R	S	T
RFL 170	5.24	0.55	1.5
RFL 230	5.24	0.55	1.5

*corresponds to 1 5/8 - 12 UN - 2B

Symbols

1



Ordering Code

Filter assembly

Order example:
RFL - 230 - UE - N3 - KM - 100

RFL - ___ - ___ - ___ - ___ - 100

Type of filter	Code
Return Filter, In-line	RFL

Flow rate, max.	Code
190 l/min / 50 gpm	170
290 l/min / 77 gpm	230

Connection thread	Code
G1¼	GE
-20 SAE	UE

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

Air breather	Code
not available	100

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:
P3.1025-01

___ 3 . 10 ___ - ___ ___

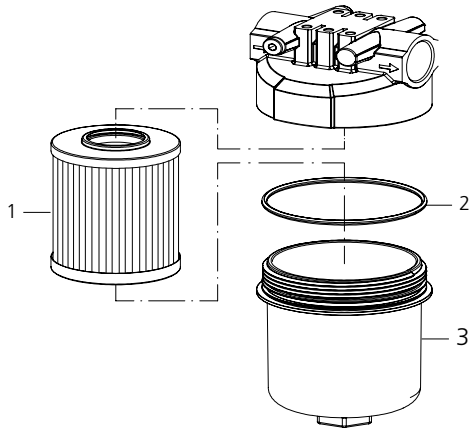
Filter media	Code
EXAPOR®Light	F
Paper	P

Length	Code
for RFL 170	14
for RFL 230	25

Filter fineness (2nd digit)	Code
10EL	6
16EL	8
30P	1

Filter fineness (1st digit)	Code
for RFL 170, 10EL & 16EL	2
for RFL 170, 30P	0
for RFL 230, 10EL & 16EL & 30P	0

Spare parts



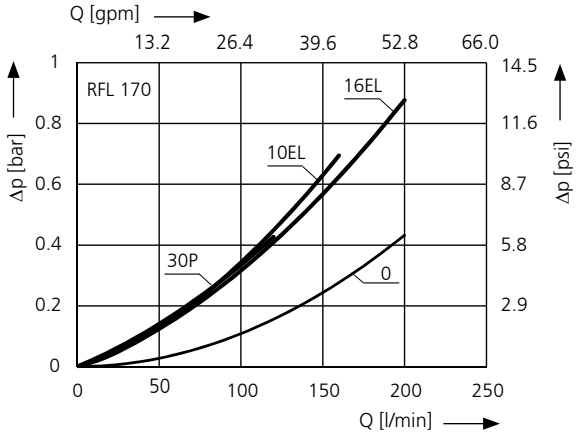
Pos.	Designation	Part No.
1	Filter element	see above
2	O-ring 115 x 4.5 / 4.53 x 0.18	N007.1155
3	Filter bowl RFL 170	D 230.0102
3	Filter bowl RFL 230	D 230.0101

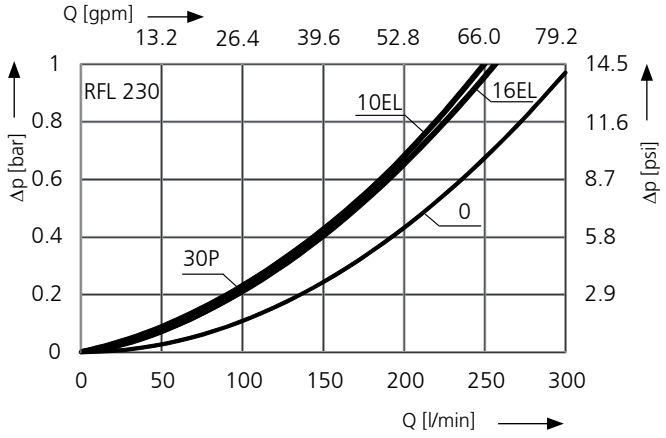
The functions of the complete filters as well as the outstanding features of the filter elements assured by ARGO-HYTOS can only be guaranteed if original ARGO-HYTOS spare parts are used.

Diagrams

Δp-curves for complete filters

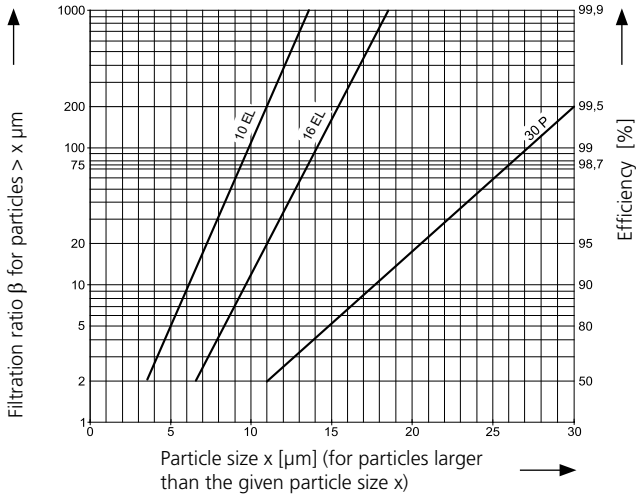
D1 Pressure drop as a function of the **flow volume** at ν = 35 mm²/s / ν = 162 SUS (0 = housing empty)





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 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.

RFT 043 · RFT 072

Tank top mounting · Connection up to G¾ / -12 SAE · Nominal flow rate up to 90 l/min / 24 gpm

Return Filter RFT 043

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. For technical data and dimensions see pages 42 to 47.

An optional oil separator (Part No. E 043.1701) is available on request.

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

Characteristics

Nominal flow rate

Up to 90 l/min / 24 gpm (see Selection Chart, page 3)
The nominal flow rates indicated by ARGO-HYTOS are based on the following features:

- closed bypass 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, page 3 (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

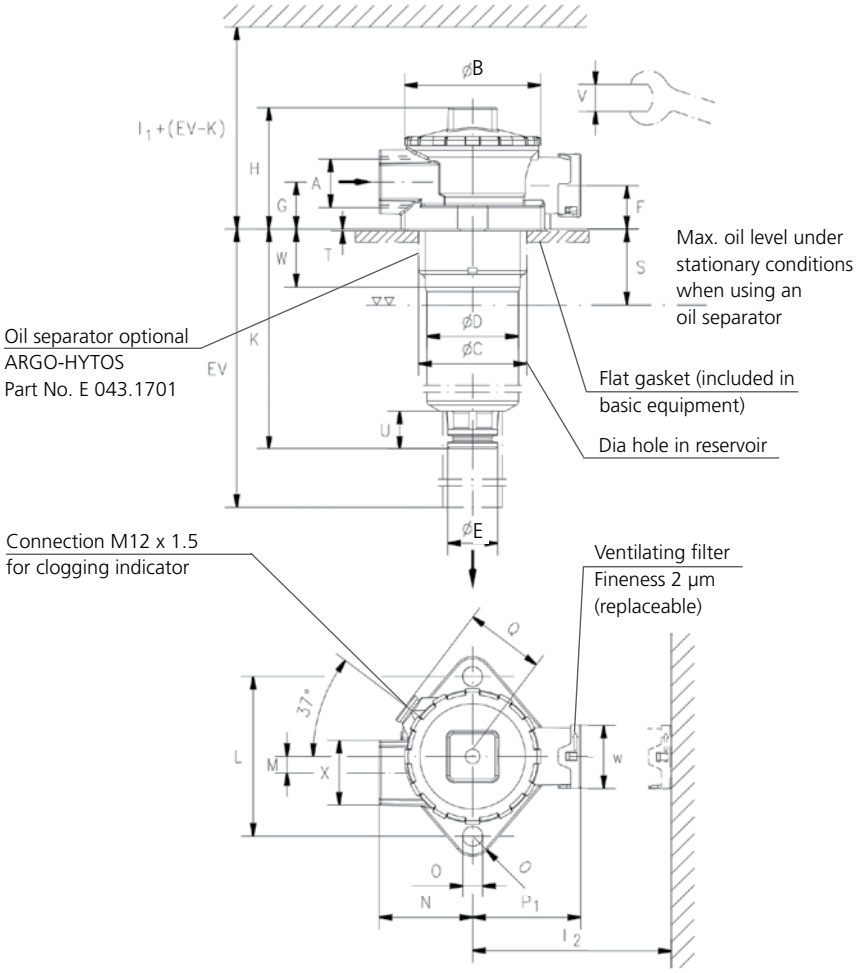
Max. 10 bar / max. 145 psi

Mounting position

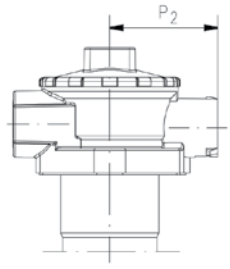
Preferably vertical, outlet downwards

Dimensions

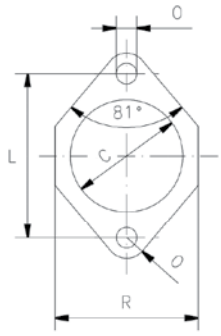
Design with ventilating filter



Design without 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	O
RFT 043	G¾	75	60/63	51	27.8	24	26	67	175	110	83	88	9	51	11
RFT 072	G¾	75	60/63	51	27.8	24	26	67	270	110	180	88	9	51	11

Type [mm]	P_1	P_2	Q	R	S	T	U	V	W	X
RFT 043	59.5	57.5	46	79	42	2	21	AF 27	35	AF 36
RFT 072	59.5	57.5	46	79	42	2	21	AF 27	35	AF 36

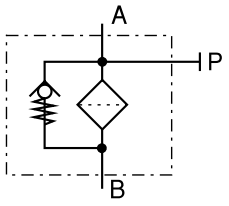
Type [inch]	A	B	C min/max	D	E	F	G	H	l_1	l_2	K	L	M	N	O
RFT 043	-12 SAE*	2.95	2.36/2.48	2.01	1.09	0.94	1.02	2.64	6.89	4.33	3.27	3.46	0.35	2.01	0.43
RFT 072	-12 SAE*	2.95	2.36/2.48	2.01	1.09	0.94	1.02	2.64	10.63	4.33	7.09	3.46	0.35	2.01	0.43

Type [inch]	P_1	P_2	Q	R	S	T	U	V mm	W	X mm
RFT 043	2.34	2.26	1.81	3.11	1.65	0.08	0.83	AF 27	1.38	AF 36
RFT 072	2.34	2.26	1.81	3.11	1.65	0.08	0.83	AF 27	1.38	AF 36

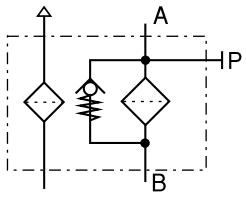
*corresponds to 1 $^{1}/_{16}$ - 12 UN - 2B

Symbols

Without air breather



With air breather



Ordering Code

Filter assembly

Order example:
RFT - 043 - GC - G2 - OM - 101

RFT - ___ - ___ - ___ - ___ - ___ - ___

Type of filter	Code
Return Filter, tank mounted	RFT

Flow rate, max.	Code
50 l/min / 13 gpm	043
90 l/min / 24 gpm	072

Connection thread	Code
G¾	GC
-12 SAE	UC

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:
F3.0510-56

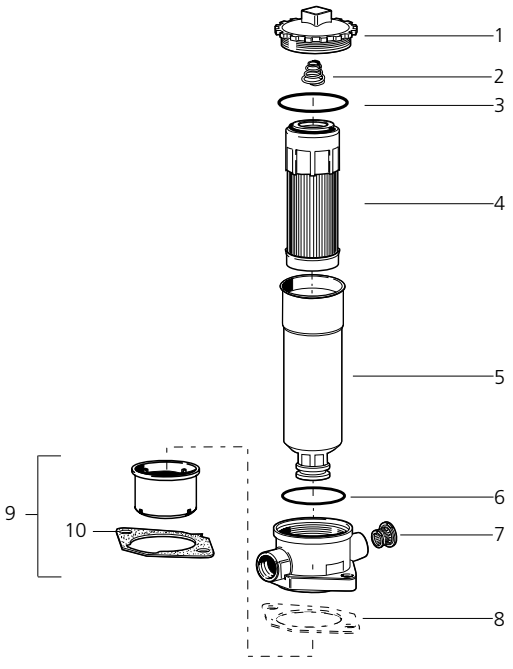
___ 3 . 05 ___ - 5 ___

Filter media	Code
EXAPOR®Light	F
Paper	P

Length	Code
for RFT 043	10
for RFT 072	20

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

Spare parts



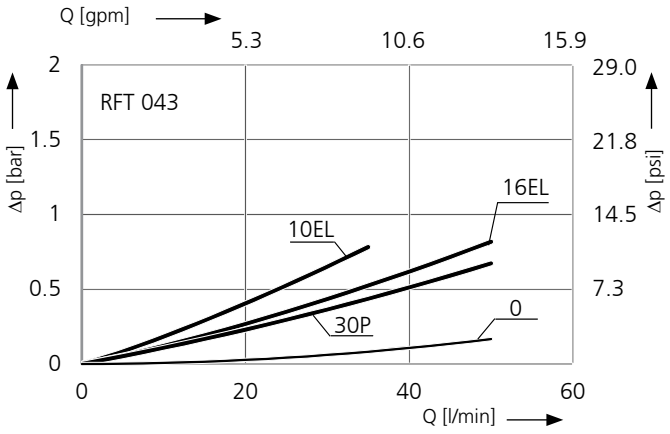
Pos.	Designation	Part No.
1	Screw-on cap	FR 043.0201
2	Compression spring	N015.1606
3	O-ring 57 x 3 / 2.24 x 0.12	N007.0573
4	Filter element	see above
5	Filter bowl RFT 043	FR 043.0107
5	Filter bowl RFT 072	FR 072.0104
6	O-ring 50 x 2 / 1.97 x 0.08	N007.0501
7	Air breather	L1.0403-01
8	Flat gasket (for versions without breather)	D 043.0113
9	Oil separator with Pos. 10	E 043.1701
10	Flat gasket (for versions with breather)	D 043.0118

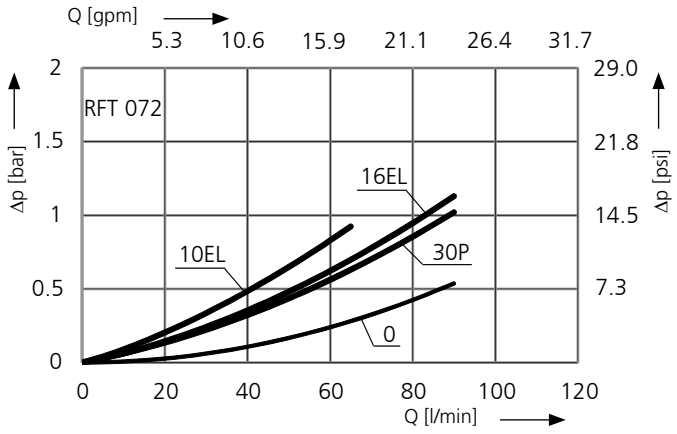
The functions of the complete filters as well as the outstanding features of the filter elements assured by ARGO-HYTOS can only be guaranteed if original ARGO-HYTOS spare parts are used.

Diagrams

Δp-curves for complete filters

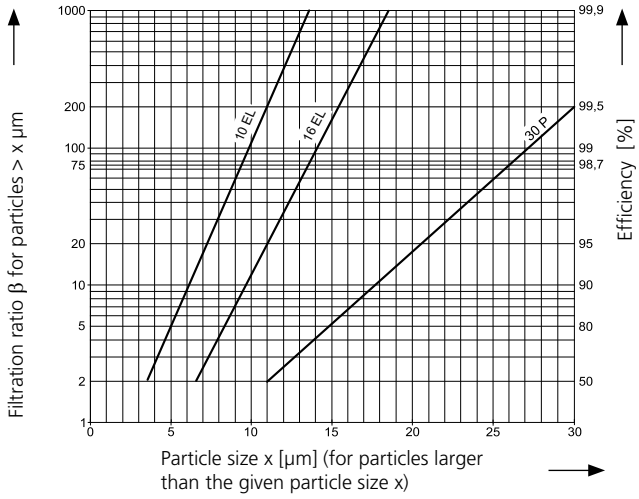
D1 Pressure drop as a function of the **flow volume** at ν = 35 mm²/s / ν = 162 SUS (0 = housing empty)





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.

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. For technical data and dimensions see pages 42 to 47.

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, page 3)
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, page 3
(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

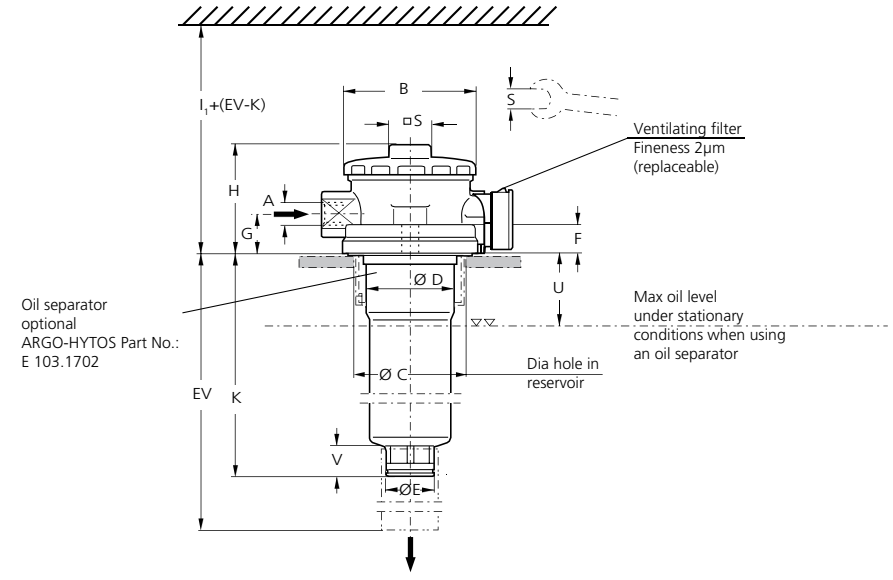
Operating pressure

Max. 10 bar / max. 145 psi

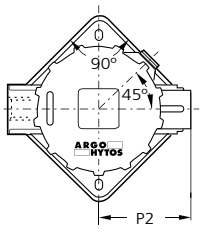
Mounting position

Preferably vertical, outlet downwards

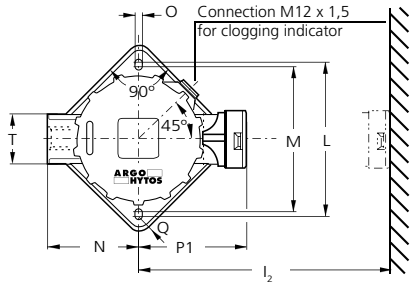
Dimensions



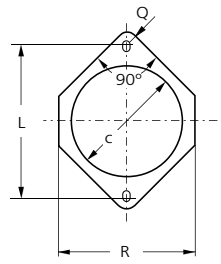
Design without ventilating filter



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

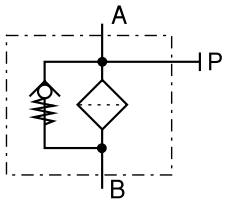
Type [inch]	A	B	C min/max	D	E	F	G	H	l_1	l_2	K	L	M	N
RFT 103	-16 SAE*	4.13	3.43 / 3.58	2.9	1.5	0.81	1.18	3.48	11.81	4.92	6.97	4.53	4.33	2.76
RFT 143	-16 SAE*	4.13	3.43 / 3.58	2.9	1.5	0.81	1.18	3.48	15.75	4.92	10.94	4.53	4.33	2.76

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

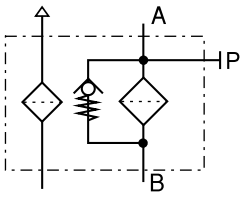
*corresponds to $1\,^{5}/_{16}$ - 12 UN - 2B

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

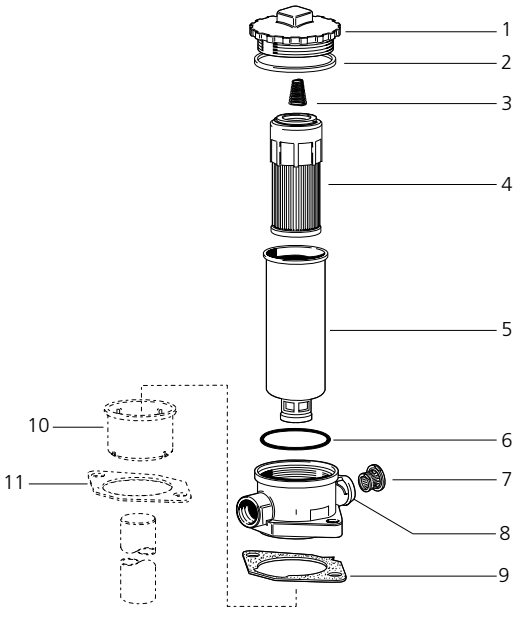
___ 3.0 ___ - 5 ___

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



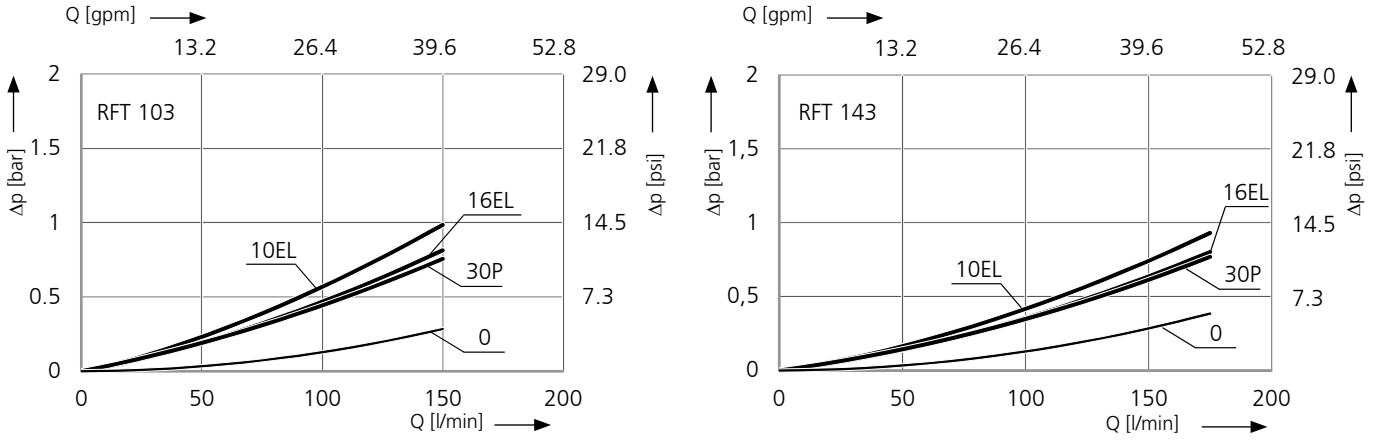
Pos.	Designation	Part No.
1	Screw-on cap	E 103.0201
2	Flat Gasket	N031.0841
3	Compression spring	N015.3703
4	Filter element	see above
5	Filter bowl RFT 103	E 103.0912
5	Filter bowl RFT 143	E 143.0903
6	O-ring 69.5 x 3.5 / 2.74 x 0.14	N007.0703
7	Air breather	L1.0503-03K
8	Housing (for Pos. 7)	L1.0503.0801
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

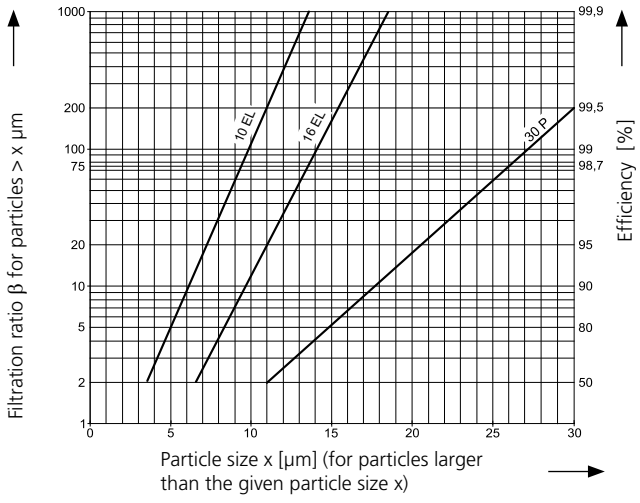
Δp-curves for complete filters

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 = $\beta_{10\,(c)} \geq 200$ EXAPOR®Light
16 EL = $\beta_{16\,(c)} \geq 200$ 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.

RFT 222

Tank top mounting · Connection up to G1¼ / -20 SAE · Nominal flow rate up to 270 l/min / 71 gpm

Return Filter RFT 222

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 proteced 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.
- Filling filter / Bypass protection strainer:
  The filling filter is integrated in the filter element and prevents coarse particles from entering during filling or refilling due to maintenance or repair reasons. Filling can be carried out at the filter. Therefore the cover must be removed. In operation, the filling filter functions as a bypass protection strainer and prevents dirt from entering into the tank when the bypass valve is open.

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 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. For technical data and dimensions see pages 42 to 47.

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

Characteristics

Nominal flow rate

Up to 270 l/min / 71 gpm (see Selection Chart, page 3)
The nominal flow rates indicated by ARGO-HYTOS are based on the following features:

- closed bypass 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, page 3
(other port threads on request).

Filter fineness

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

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

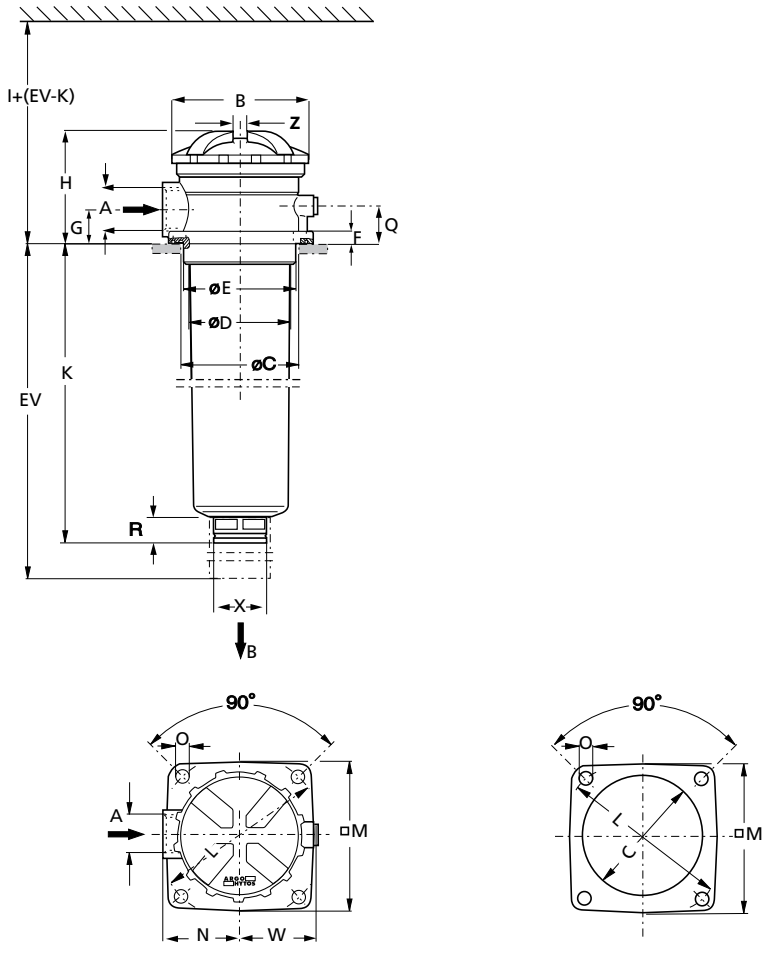
Operating pressure

Max. 10 bar / max. 145 psi

Mounting position

Preferably vertical, outlet downwards

Dimensions



Measurements

Type [mm]	A	B	C min/max	D	E	F	G	H	I	K	L	M	N	O	Q	R	W	X	Z
RFT 222	G1¼	126	118/121	95	110	11.5	32	105	455	347	165	141	76	11	35	23	74	44	13

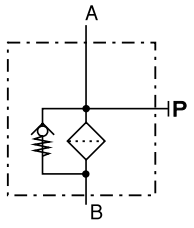
Type [inch]	A	B	C min/max	D	E	F	G	H	I	K	L	M	N	O	Q
RFT 222	-20 SAE*	4.98	4.65/4.76	3.74	4.33	0.45	1.26	4.18	17.92	13.67	6.50	5.56	2.99	0.43	1.38

Type [inch]	R	W	X	Z
RFT 222	0.91	2.92	1.74	0.51

*corresponds to 1 5/8 - 12 UN-2B

Symbol

1



Ordering Code

Filter assembly

Order example:
RFT - 222 - GE - G2 - OM - 100

RFT - 222 - ___ - ___ - ___ - 100

Type of filter	Code
Return Filter, tank mounted	RFT

Flow rate, max.	Code
270 l/min / 71 gpm	222

Connection thread	Code
G1¼	GE
-20 SAE	UE

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

Air breather	Code
Without air breather	100

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:
F7.0833-06

___ 7.08 33 - ___ ___

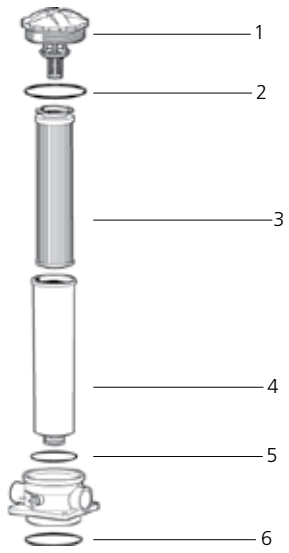
Filter media	Code
EXAPOR®Light	F
Paper	P

Length	Code
for RFT 222	33

Filter fineness (2nd digit)	Code
10EL	6
16EL	8
30P	1

Filter fineness (1st digit)	Code
for RFT 222, 10EL & 16EL	0
for RFT 222, 30P	1

Spare parts



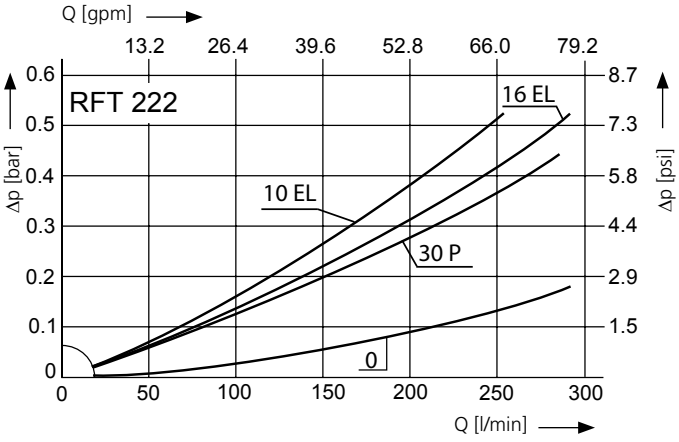
Pos.	Designation	Part No.
1	Screw-on cap with valve (2.5 bar / 36 psi) and Pos. 2	E 221.1200
1	Screw-on cap with valve (1.5 bar / 22 psi) and Pos. 2	E 221.1210
2	O-ring 100 x 4 / 3.94 x 0.16	N007.1004
3	Filter element	see above
4	Filter bowl RFT 222	E 222.0901
5	O-ring 90 x 4 / 3.54 x 0.16	N007.0904
6	O-ring 126 x 4 / 4.96 x 0.16	N007.1264

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

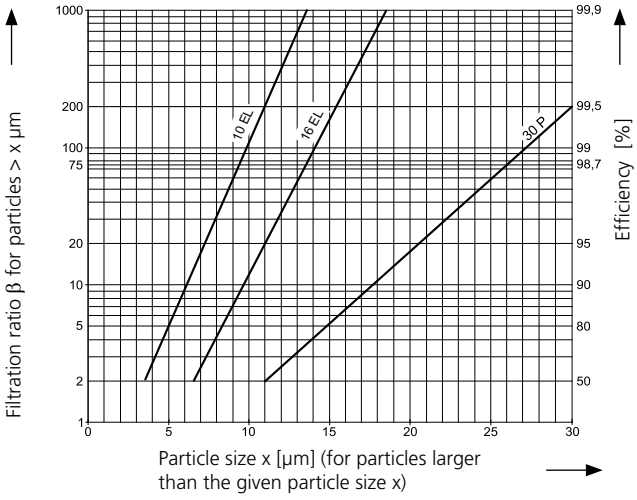
Δp-curves for complete filters

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 = $\overline{\beta}_{10\,(c)}$ = 200 EXAPOR®Light
16 EL = $\overline{\beta}_{16\,(c)}$ = 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 special applications, finenesses differing from these curves are also available by using special composed filter media.

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.

RFT 454 · RFT 464

Tank top mounting · Connection up to SAE 2 · Nominal flow rate up to 650 l/min / 172 gpm

Return Filter RFT 454

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 proteced 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.

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 thus the optimum utilization of the filter life is guaranteed.

Materials

Filter head cover:	Aluminium alloy
Filter head:	Aluminium alloy
Housing:	Steel, phosphated
Housing bottom:	Polyamide, GF 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. For technical data and dimensions see pages 42 to 47.

Extension pipes or diffusers on the bowl outlet are available in several lengths on request. Even the combination of both options is possible.

› Extension pipe:

A correct extension pipe length ensures oil outlet below minimum oil level and prevents foaming.

› Diffuser:

Diffusers reduce oil velocity and direct the oil to 90° outlet flow. This function prevents also oil foaming and whirling up of solid particles settled at the tank bottom.

Characteristics

Nominal flow rate

Up to 650 l/min / 172 gpm (see Selection Chart, page 3)
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, page 3 (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

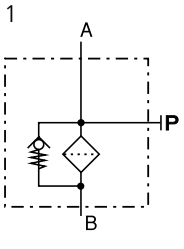
Max. 10 bar / max. 145 psi

Mounting position

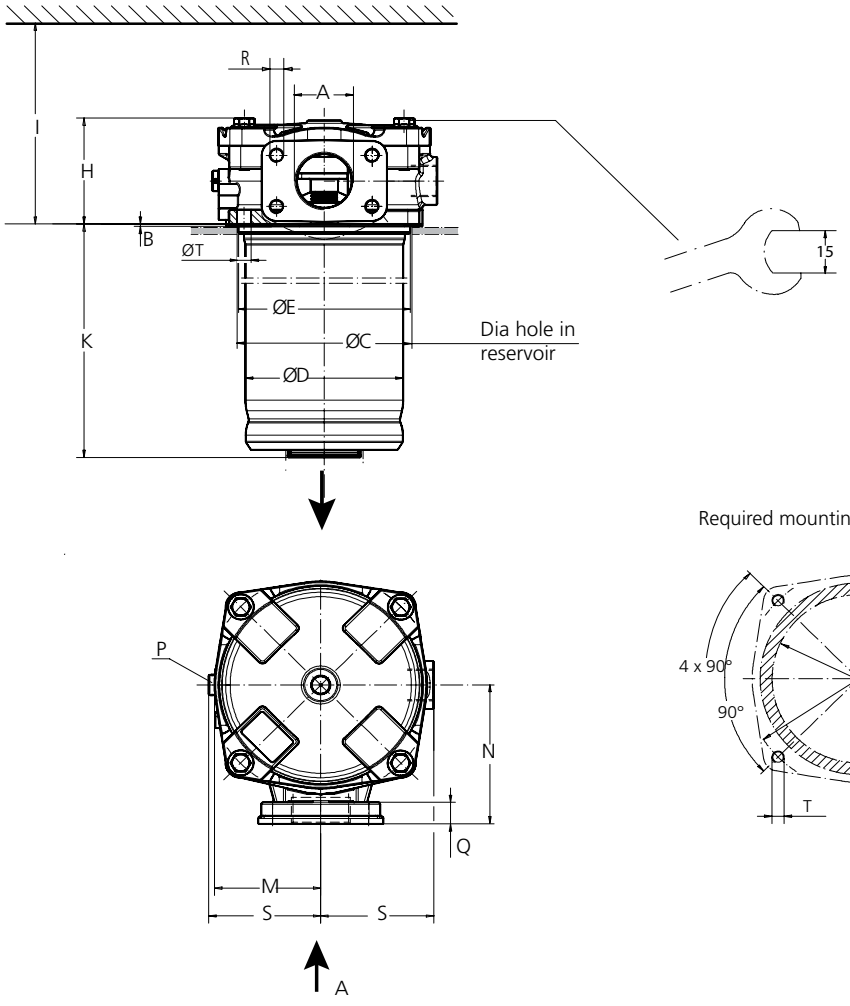
Preferably vertical, outlet downwards

Symbols

1



Dimensions



Measurements

Type [mm]	A	B	C	D	E	H	I	K	L	M	N	O	Q	R	S	T
RFT 454	G1½ / SAE 2	2	141	128.5	139.9	90	485	362	185	86.5	116	35	18	M12	92	11.5
RFT 464	G1½ / SAE 2	2	141	128.5	139.9	90	650	530	185	86.5	116	35	18	M12	92	11.5

Type [inch]	A	B	C	D	E	H	I	K	L	M	N	O	Q	R
RFT 454	-24 SAE* / SAE 2	0.08	5.55	5.06	5.51	3.54	19.09	14.25	7.29	3.41	4.57	1.38	0.71	½ -13 UNC
RFT 464	-24 SAE* / SAE 2	0.08	5.55	5.06	5.51	3.54	25.59	20.87	7.29	3.41	4.57	1.38	0.71	½ -13 UNC

Type [inch]	S	T
RFT 454	3.62	0.45
RFT 464	3.62	0.45

*corresponds to 1 $^{7}/_{8}$ - 12 UN-2B

Ordering Code

Filter assembly

RFT - ___ - ___ - ___ - ___ - 100

Type of filter	Code
Return Filter, tank mounted	RFT

Flow rate, max.	Code
500 l/min / 132 gpm	454
650 l/min / 172 gpm	464

Connection thread	Code
G 1½ / SAE 2	GF
-24 SAE / SAE 2	UF

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

Air breather	Code
not available	100

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.

Order example:
RFT - 454 - UF - I2 - OM - 100

Spare filter element

___ 2.12 ___ - ___ ___

Filter media	Code
EXAPOR®Light	F
Paper	P

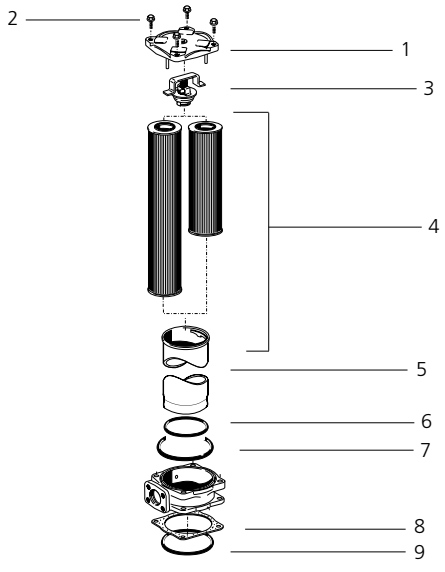
Length	Code
for RFT 454	34
for RFT 464	50

Filter fineness (2nd digit)	Code
10EL	6
16EL	8
30P	1

Filter fineness (1st digit)	Code
for RFT 454, 10EL & 16EL	2
for RFT 454, 30P	4
for RFT 464, 10EL & 16EL	0
for RFT 464, 30P	1

Order example:
F2.1234-26

Spare parts



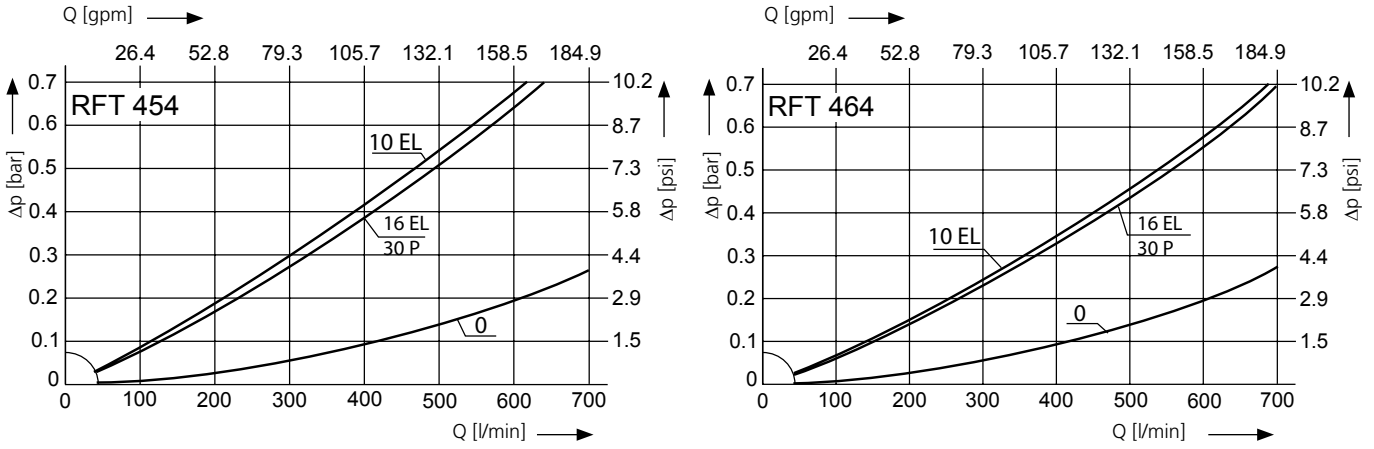
Pos.	Designation	Part No.
1	Cover	E 443.1200
2	Hexagon screw M10 x 35	28213600
3	Bypass valve (1.5 bar / 22 psi)	E 440.1500
3	Bypass valve (2.5 bar / 36 psi)	E 460.1520
4	Filter elements	see above
5	Filter bowl RFT 454	E 451.1900
5	Filter bowl RFT 464	E 461.1900
6	O-ring 125 x 6 / 4.92 x 0.24	N007.1256
7	O-ring 151.76 x 5.33 / 5.98 x 0.21	N007.1525
8	Flat gasket	E 442.0103
9	O-ring 136.5 x 5.34 / 5.37 x 0.21	N007.1375

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

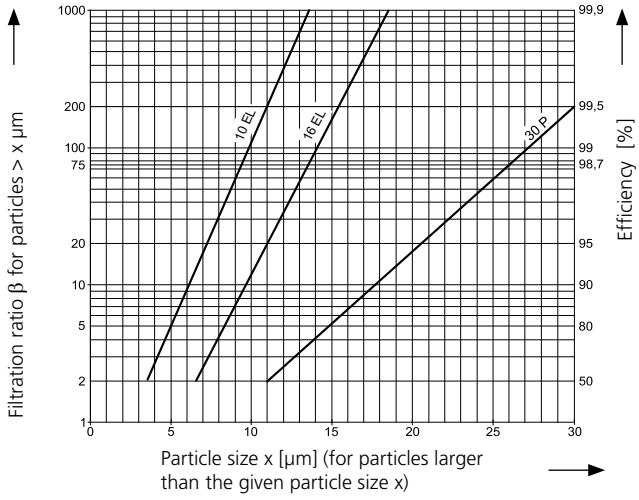
Δp-curves for complete filters

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

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.

DG 100 · DG 101 · DG 200 · DG 813 · DG 902

for Suction or Return Filters · Connection G¼ resp. M12 x 1,5

Manometer DG 100

Pressure Switch DG 813

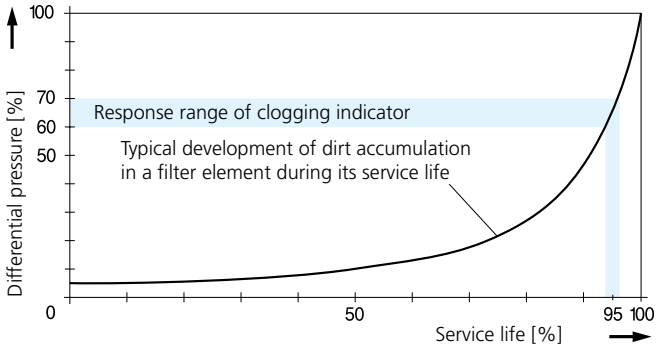
Description

Application

Monitoring the contamination of suction resp. return filters.

General

Filter elements installed in hydraulic filters remove dirt from a hydraulic system and therefore become contaminated themselves.
Free pores or spaces in the filter material are obstructed by dirt particles, which causes a continuous increase in the pressure loss.



The dirt load collected in a filter element gradually increases during service, which also leads to a higher pressure drop. The resulting vacuum or back pressure is monitored by a clogging indicator. Once a preset value is reached, an electrical and/or optical signal is generated.
The following must be observed in this context:
The pressure drop caused by the filter element increases depending on the flow rate, the dirt load, and the viscosity of the pressure fluid. Therefore, a filter element is not regarded contaminated before the clogging indicator responds at operating temperature of the hydraulic system, causing a continuous signal.

Consequences of an overdue filter element change

Filters with bypass valve:
The more dirt has collected in the filter element, the more frequently the bypass valve opens and part of the hydraulic fluid remains unfiltered. The high pressure drop causes unnecessary power consumption.

Suction filters without bypass valve:
There is a high risk of pump cavitation with increasing vacuum caused by contaminated elements.

DG 100 / DG 101 - Manometer for Suction Filters

Function:
Manometer for optical monitoring of the dirt load in suction filters.
Green reading area = filter element O.K.
Red reading area = filter element clogged

Option:
Bottom-mounted fitting (DG 101), makes it possible to turn the manometer into the direction from which it is viewed, as compared to a fitting mounted on the back (standard).

DG 902 - Vacuum Switch for Suction Filters (change-over)

Function:
When the preset vacuum is reached, the built-in diaphragm switch changes over.
The change-over (CO) switch makes it possible to indicate a broken wire by means of a suitable electronic circuit, as compared to a make contact (normally open / NO) switch.

DG 200 - Manometer for Return Filters

Function:
Manometer for optical monitoring of the dirt load in return filters.
Green reading area = filter element O.K.
Red reading area = filter element clogged
In order to protect the measuring element from pressure peaks, the unit is provided with a built-in orifice system.

Option:
Bottom-mounted fitting, makes it possible to turn the manometer into the direction from which it is viewed, as compared to a fitting mounted on the back (standard).

DG 813 - Pressure Switch for Return Filters (make/break)

Function:
The diaphragm switch closes resp. opens as soon as the pressure exceeds the preset value.

Accessories:
Suitable protection caps for DG 813 are available under
part no. DG 813.0701
(central hole for cable Ø 1,5 up to 5 mm / 0.06 up to 0.2 inch)
and DG 813.0702
(2 holes for cable Ø 1,7 up to 2,2 mm / 0.07 up to 0.09 inch).

Operating pressure

› DG 100: -1.0 ... +0.25 bar
-14.5 ... +3.6 psi

› DG 902: -0.5 ... +1.0 bar
-7.3 ... +14.5 psi

› DG 200: 0 ... +10.0 bar
0 ... +145 psi

› DG 813: 0 ... +10.0 bar
0 ... +145 psi

Temperature range of fluids

› DG 100: -30 °C ... +100 °C (short term +120 °C)
-22 °F ... +212 °F (short term +248 °F)

› DG 902: -15 °C ... +100 °C (short term +130 °C)
+5 °F ... +212 °F (short term +266 °F)

› DG 200: -20 °C ... + 90 °C
-4 °C ... +194 °F

› DG 813: -30 °C ... +100 °C (short term +120 °C)
-22 °F ... +212 °F (short term +248 °F)

Ambient temperature range

› DG 100: -30 °C ... + 80 °C
-22 °C ... +176 °F

› DG 902: -30 °C ... + 80 °C*
-22 °C ... +176 °F*

› DG 200: -20 °C ... + 90 °C
-4 °C ... +194 °F

› DG 813: -30 °C ... + 80 °C
-22 °C ... +176 °F

* Design-related the switching tolerance increases at temperatures -15 °C / +5 °F.

Materials

DG 100: Housing steel, fitting brass, seal copper
DG 902: Housing brass, protection cap polyamide, diaphragm FPM, seal NBR
DG 200: Housing polyamide, fitting brass, seal PTFE
DG 813: Housing steel galvanized, protection cap NBR, diaphragm NBR, seal copper

Electrical service life

DG 902/DG 813: min. 10^6 switching cycles

Electrical protection

› DG 902: IP 44 (with protection cap)
› DG 813: IP 65 (switch housing),
IP 54 (with protection cap)

Electrical connection

› DG 902: Flat plugs DIN 46247 - 6,3 x 1
Cable diameter approx. 6,5 mm / 0.26 inch
› DG 813: Flat plugs DIN 46244 - A 6,3 - 0,8
Cable diameter approx. 4 mm / 0.16 inch

Mounting position

No limitation

Selection Chart

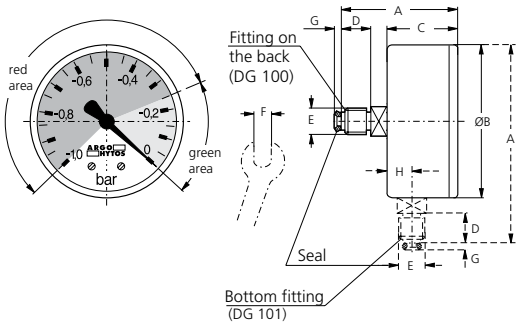
Part No.	Indicator / switch	Response / switching pressure		Type of contact	Switching voltage U	Switching current I	Switching power P	Symbol	Remarks
		bar	psi		V AC/DC	A AC/DC	VA/W AC/DC		
DG 100-00	optical	-0.25	-3.6	-	-	-	-	1	fitting on the back
DG 101-04	optical	-0.25	-3.6	-	-	-	-	1	bottom fitting
DG 902-11	electrical	-0.15	-2.2	change-over	250/24	6.0/2.0	1500/48	2	with protection cap
DG 902-12	electrical	-0.25	-3.6	change-over	250/24	6.0/2.0	1500/48	2	with protection cap
DG 200-05	optical	+1.0	+14.5	-	-	-	-	1	fitting on the back
DG 200-06	optical	+2.0	+29.0	-	-	-	-	1	fitting on the back
DG 200-10	optical	+2.0	+29.0	-	-	-	-	1	bottom fitting
DG 813-00	electrical	+1.2	+17.4	make	42/42	4.0/4.0	100/100	3	without protection cap
DG 813-03	electrical	+1.5	+21.8	make	42/42	4.0/4.0	100/100	3	without protection cap
DG 813-01	electrical	+2.0	+29.0	make	42/42	4.0/4.0	100/100	3	without protection cap
DG 813-05	electrical	+2.5	+36.3	make	42/42	4.0/4.0	100/100	3	without protection cap
DG 813-20	electrical	+1.2	+17.4	break	42/42	4.0/4.0	100/100	4	without protection cap
DG 813-21	electrical	+2.0	+29.0	break	42/42	4.0/4.0	100/100	4	without protection cap

Remarks:

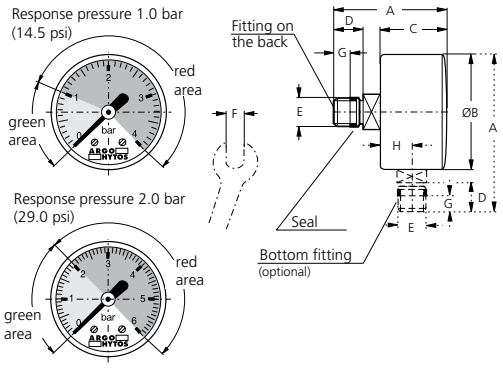
- With return filters, the response / switching pressure of the clogging indicator used must be lower than the cracking pressure of the bypass valve, with suction filters it must be higher.
- The clogging indicators listed in this chart are standard units. Other designs available on request.

Dimensions

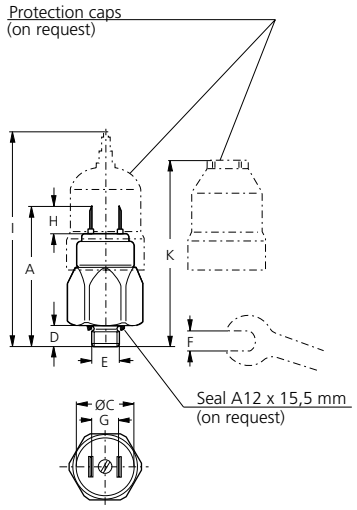
DG 100 / DG101



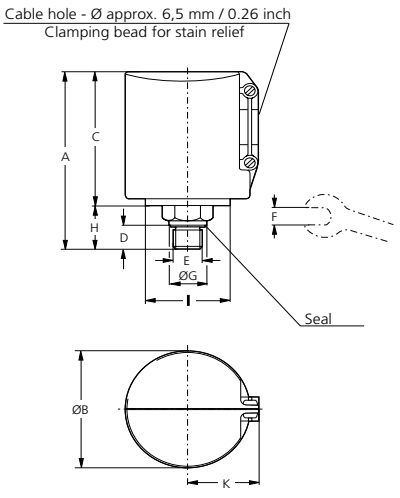
DG 200



DG 813



DG 902



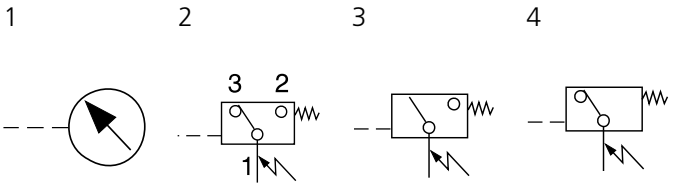
Measurements

Type [mm]	A	B	C	D	E	F	G	H	I	K
DG 100 / 101*	50 / 84*	64	30	13	G¼	14	3.2	10*	-	-
DG 902	76	50	56	10	G¼	21	18.5	20	34	30
DG 200	47 / 59*	41	26 / 24*	12	M12 x 1.5	14 / 12*	5	9*	-	-
DG 813	55	23.3	24	9	M12 x 1.5	AF 24	13	9	88	74

Type [inch]	A	B	C	D	E	F mm	G	H	I	K
DG 100 / 101*	1.97 / 3.31*	2.52	1.18	0.51	G¼	14	0.13	0.39*	-	-
DG 902	2.99	1.97	2.20	0.39	G¼	21	0.73	0.79	1.34	1.18
DG 200	1.85 / 2.32*	1.61	1.02 / 0.94*	0.47	M12 x 1.5	14 / 12*	0.20	0.35*	-	-
DG 813	2.17	0.92	0.94	0.35	M12 x 1.5	AF 24	0.51	0.35	3.46	2.91

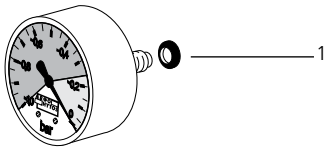
* Bottom fitting

Symbols

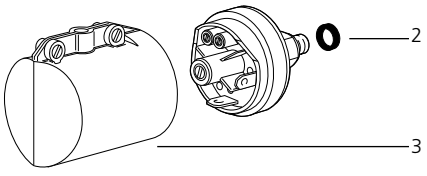


Spare Parts

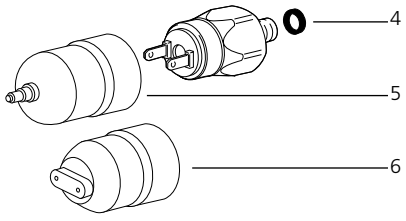
DG 100 / DG 101



DG 902



DG 813



Pos.	Designation	Part No.
1	Seal	DG 100.0101
2	Seal	DG 902.0103
3	Protection cap *	DG 902.1701
4	Seal A12 x 15.5 mm DIN 7603-Cu	11049900
5	Protection cap *	DG 813.0701
6	Protection cap *	DG 813.0702

*Not included in basic unit

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

International

ARGO-HYTOS worldwide

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