

Ventilating Filters

**L1.0406 · L1.0506 · L1.0706 · L1.0807**

Connection up to M60 x 2 / 1<sup>5</sup>/<sub>8</sub>-12 UN-2A · Nominal flow rate up to 850 l/min / 225 gpm



Ventilating Filter L1.0807

Description

**Application**

Ventilation of tanks for hydraulic and lubrication systems and gearboxes.

**General**

The oil levels in the tanks of hydraulic systems are subject to continuous variation due to temperature changes and the operation of cylinders and pressure vessels. In order to prevent over pressure in the tanks, an exchange of air with the external atmosphere is necessary. By the use of a ventilating filter, the outside air that is drawn in is filtered and the ingress of dust is therefore prevented.

**Special features**

The ventilation openings are designed that dust on the surface of the tank is not drawn in, and that the ingress of spray and rainwater is largely prevented. The use in marine applications presents no problem due to the use of synthetic materials and stainless steel.

**Design**

Flow direction bi-directional (air IN/OUT).  
The star-shaped pleating of the filter material results in:

- › large filter surfaces
- › low pressure drop
- › high dirt-holding capacities
- › long service life

**Ordering options / versions**

*Integrated oil-level dipstick (for all types):*

A dipstick can be integrated in the ventilating filter for checking the oil level. Therefore, a separate dipstick or an additional opening in the tank is not required.

*Oil separator (L1.0406, L1.0706, L1.0807):*

An effective protection against splashing oil in mobile operation.

*Double check valves (L1.0506, L1.0807):*

By the use of double check valves, the exchange of air between the tank and the environment can considerably be reduced, whereby the ingress of dust is minimized and the lifetime of the ventilating filter can be increased.

With the double check valve, an over-pressure can be created in the tank in order to improve the suction conditions for the pumps. A further advantage is the reduction of spray water entry and the loss of oil through the ventilating filter.

*Roll-over protection (L1.0506):*

Ventilating filter with safety valve to prevent the hydraulic oil spilling out should the machinery roll or tip over.

*Vandalism proof types (L1.0807):*

Ventilating filters in patented vandalism proof version, please see catalog sheet 50.20.

Filling and ventilating filters in standard or patented vandalism proof version, see catalog sheet 50.30.

For lockable ventilating filters for high volume flows, see catalog sheet 50.50.

**Maintenance**

Ventilating filters should be changed at least every 1000 operating hours, or at minimum once a year.

**Characteristics**

**Nominal flow rate**

Up to 850 l/min / 225 gpm (see Selection Chart, column 2).  
The nominal flow rates indicated by ARGO-HYTOS are based on the following criteria:

- › Ventilating filters without double check valve:  
Δp < 0.03 bar / Δp ≤ 0.44 psi
- › Ventilating filters with double check valve:  
Δp < 0.1 bar / Δp ≤ 1.45 psi for air IN

**Connection**

Threaded ports according to

- › ISO 228, DIN 13 or DIN 20400

Sizes see Selection Chart, column 6  
(other port threads on request).

For installation recommendations, see info sheet 00.325.

**Filter fineness**

2 μm

Tested in a single pass test with ISO MTD.

**Hydraulic fluids**

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

**Temperature range hydraulic fluid**

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

**Temperature range environment**

-30 °C ... +100 °C  
-22 °F ... +212 °F

**Materials**

- Cap: Polyamide, GF reinforced  
(L1.0506 Polyester, GK reinforced)
- Base: Polyamide, GF reinforced
- Dipstick: Stainless steel (1.4301)
- Gaskets: NBR (FPM on request)
- Filter media: Composite, multi-layer

**Mounting position**

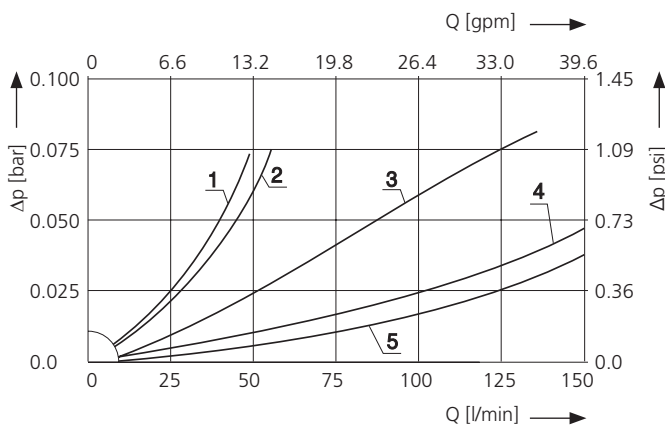
No limitation, position on the tank see section Layout.

Ventilating filters with roll-over protection must be installed vertically.

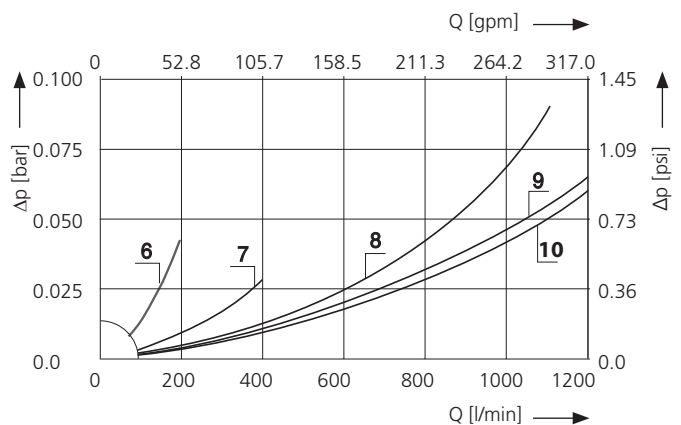
**Diagrams**

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

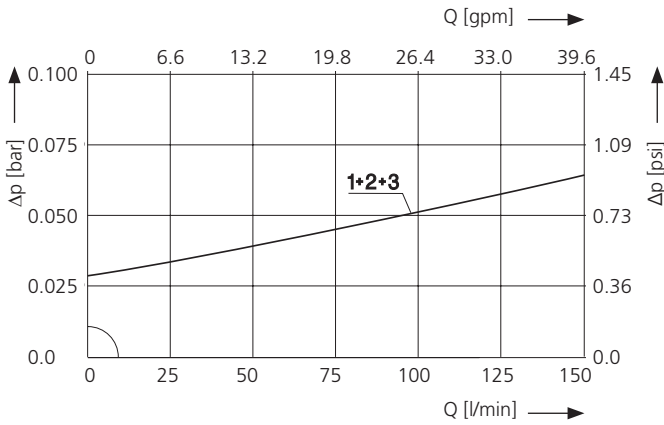
**D1** Pressure drop as a function of the flow volume  
Air IN/OUT



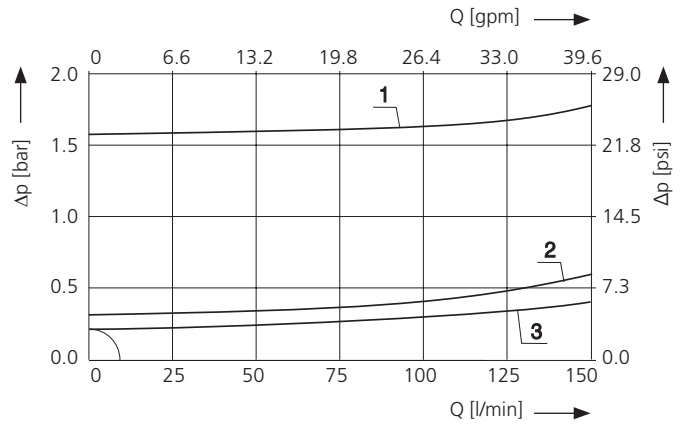
Pressure drop as a function of the flow volume  
Air IN/OUT



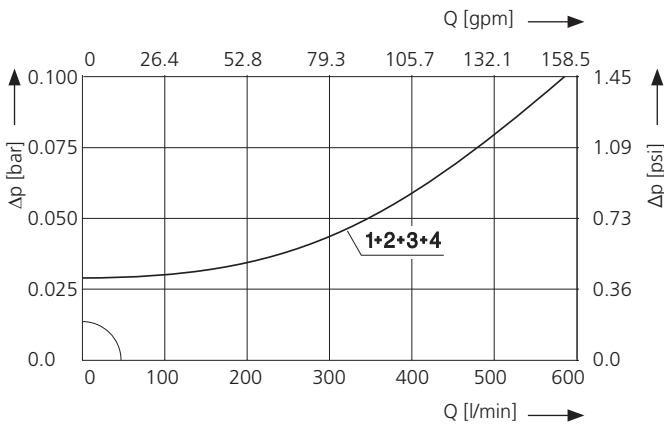
**D2** Pressure drop as a function of the **flow volume**  
**Air IN**



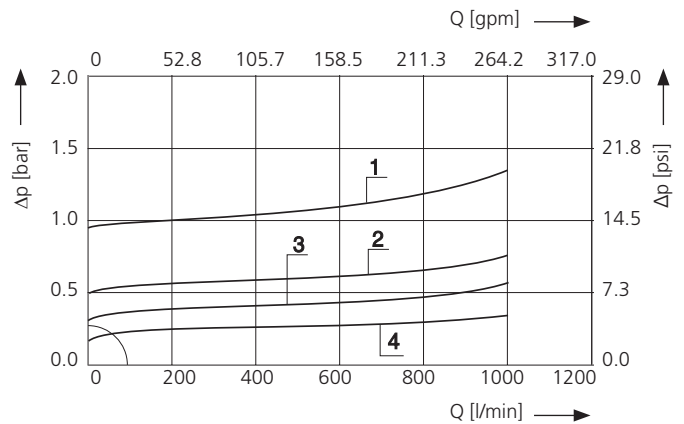
Pressure drop as a function of the **flow volume**  
**Air OUT**



**D3** Pressure drop as a function of the **flow volume**  
**Air IN**

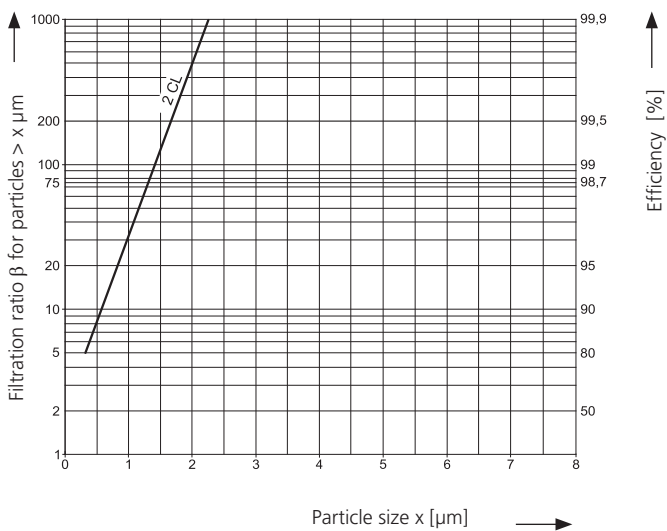


Pressure drop as a function of the **flow volume**  
**Air OUT**



**Filter fineness curves in Selection Chart, column 4**

**Dx** Filtration ratio  $\beta$  as a function of particle size  $x$  tested in a single pass test with ISO MTD



The abbreviation represents the following  $\beta$ -values resp. finenesses:

**2CL**

- › 2  $\mu$ m Composite  
99.5% efficiency for particles of size 2  $\mu$ m tested in a single pass test with ISO MTD

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 <b>D</b> /curve no.	Filter fineness see no.	Filter surface see diagr. <b>Dx</b>	Connection A	DCV <sup>3</sup> cracking pressure air IN	DCV <sup>3</sup> cracking pressure air OUT	Dipstick measurement	Dipstick measurement L1	Dipstick measurement L2	Symbol	Weight	Remarks
1	l/min		cm <sup>2</sup>		bar	bar	mm	mm	mm		g		14
<b>L1.0406-12<sup>1</sup></b>	120	<b>D1/4</b>	2CL	35	M18 x 1.5	-	-	-	-	-	1	25	-
L1.0406-21	25	<b>D1/1</b>	2CL	35	M18 x 1.5	-	-	-	-	-	1	25	with labyrinth oil separator
L1.0406-73	25	<b>D1/1</b>	2CL	35	M18 x 1.5	-	-	75	70	55	1	30	with labyrinth oil separator
L1.0406-76	25	<b>D1/1</b>	2CL	35	M18 x 1.5	-	-	80	75	60	1	30	with labyrinth oil separator
L1.0406-45	25	<b>D1/1</b>	2CL	35	M18 x 1.5	-	-	95	90	45	1	35	with labyrinth oil separator
L1.0406-69	25	<b>D1/1</b>	2CL	35	M18 x 1.5	-	-	100	95	80	1	35	with labyrinth oil separator
L1.0406-56	25	<b>D1/1</b>	2CL	35	M18 x 1.5	-	-	130	125	100	1	35	with labyrinth oil separator
<b>L1.0406-03<sup>1</sup></b>	135	<b>D1/5</b>	2CL	35	M22 x 1.5	-	-	-	-	-	1	25	-
L1.0406-87	30	<b>D1/2</b>	2CL	35	M22 x 1.5	-	-	-	-	-	1	25	with labyrinth oil separator
L1.0406-60	30	<b>D1/2</b>	2CL	35	M22 x 1.5	-	-	85	80	55	1	30	with labyrinth oil separator
L1.0406-79	135	<b>D1/5</b>	2CL	35	M22 x 1.5	-	-	120	115	90	1	35	-
L1.0406-51	30	<b>D1/2</b>	2CL	35	M22 x 1.5	-	-	130	125	-	1	35	with labyrinth oil separator
L1.0406-59	30	<b>D1/2</b>	2CL	35	M22 x 1.5	-	-	130	125	100	1	35	with labyrinth oil separator
L1.0406-98	30	<b>D1/2</b>	2CL	35	M22 x 1.5	-	-	180	175	150	1	40	with labyrinth oil separator
L1.0406-33	30	<b>D1/2</b>	2CL	35	M22 x 1.5	-	-	250	235	215	1	40	with labyrinth oil separator
L1.0406-101	16	<b>D1/3</b>	2CL	6	M22 x 1.5	-	-	-	-	-	1	25	-
<b>L1.0406-102<sup>1</sup></b>	16	<b>D1/3</b>	2CL	6	M22 x 1.5	-	-	-	-	-	1	25	with labyrinth oil separator
L1.0506-73	150 <sup>2</sup>	<b>D2/3</b>	2CL	35	M22 x 1.5	-0.03	0.20	-	-	-	2	55	-
<b>L1.0506-91<sup>1</sup></b>	150 <sup>2</sup>	<b>D2/2</b>	2CL	35	M22 x 1.5	-0.03	0.35	-	-	-	2	55	-
L1.0506-43	150 <sup>2</sup>	<b>D2/1</b>	2CL	35	M22 x 1.5	-0.03	1.60	-	-	-	2	55	-
L1.0506-185	10	<b>D2/4</b>	2CL	35	M22 x 1.5	-	-	-	-	-	3	60	with roll-over-protection
L1.0506-195	15	<b>D2/4</b>	2CL	35	Rd42 x 5.0	-	-	-	-	-	3	75	with roll-over-protection
L1.0706-03	250	<b>D1/7</b>	2CL	50	M30 x 1.5	-	-	-	-	-	1	50	-
<b>L1.0706-02<sup>1</sup></b>	250	<b>D1/7</b>	2CL	50	M42 x 2.0	-	-	-	-	-	1	50	-
L1.0706-07	160	<b>D1/6</b>	2CL	50	Rd42 x 5.0	-	-	-	-	-	1	60	with labyrinth oil separator

<sup>1</sup> Preferred type, no minimum order quantity required

<sup>2</sup>  $\Delta p \leq 0.1$  bar / 1.45 psi for air IN

<sup>3</sup> Double check valve

## Selection Chart

Part No.	Nominal flow rate	Pressure drop see diagram <b>D</b>	Filter fineness: see diagr. <b>Dx</b>	Filter surface	Connection A	DCV <sup>3</sup> cracking pressure air IN	DCV <sup>3</sup> cracking pressure air OUT	Dipstick measurement	Dipstick measurement L1	Dipstick measurement L2	Dipstick measurement L3	Symbol	Weight	Remarks
1	l/min	3	4	cm <sup>2</sup>	6	bar	bar	mm	mm	mm	12	13	14	
L1.0807-04	800	<b>D1</b> /9	2CL	203	M30 x 1.5	-	-	-	-	-	1	145	with labyrinth oil separator	
<b>L1.0807-11</b> <sup>1</sup>	800	<b>D1</b> /9	2CL	203	M30 x 1.5	-	-	-	-	-	1	140	with flat gasket	
<b>L1.0807-61</b> <sup>1</sup>	550 <sup>2</sup>	<b>D3</b> /3	2CL	203	M30 x 1.5	-0.03	0.35	-	-	-	2	160	-	
L1.0807-07	650	<b>D1</b> /8	2CL	203	G <sup>3</sup> / <sub>4</sub>	-	-	-	-	-	1	145	with labyrinth oil separator	
<b>L1.0807-21</b> <sup>1</sup>	650	<b>D1</b> /8	2CL	203	G <sup>3</sup> / <sub>4</sub>	-	-	-	-	-	1	140	-	
L1.0807-81	550 <sup>2</sup>	<b>D3</b> /4	2CL	203	G <sup>3</sup> / <sub>4</sub>	-0.03	0.20	-	-	-	2	160	with flat gasket	
<b>L1.0807-71</b> <sup>1</sup>	550 <sup>2</sup>	<b>D3</b> /3	2CL	203	G <sup>3</sup> / <sub>4</sub>	-0.03	0.35	-	-	-	2	160	with flat gasket	
L1.0807-93	550 <sup>2</sup>	<b>D3</b> /2	2CL	203	G <sup>3</sup> / <sub>4</sub>	-0.03	0.50	-	-	-	2	160	-	
L1.0807-63	550 <sup>2</sup>	<b>D3</b> /1	2CL	203	G <sup>3</sup> / <sub>4</sub>	-0.03	1.00	-	-	-	2	160	-	
L1.0807-05	850	<b>D1</b> /10	2CL	203	M42 x 2.0	-	-	-	-	-	1	145	with labyrinth oil separator	
<b>L1.0807-31</b> <sup>1</sup>	850	<b>D1</b> /10	2CL	203	M42 x 2.0	-	-	-	-	-	1	140	-	
L1.0807-91	550 <sup>2</sup>	<b>D3</b> /4	2CL	203	M42 x 2.0	-0.03	0.20	-	-	-	2	160	-	
<b>L1.0807-51</b> <sup>1</sup>	550 <sup>2</sup>	<b>D3</b> /3	2CL	203	M42 x 2.0	-0.03	0.35	-	-	-	2	160	-	
L1.0807-06	850	<b>D1</b> /10	2CL	203	M60 x 2.0	-	-	-	-	-	1	150	with labyrinth oil separator	
L1.0807-14	850	<b>D1</b> /10	2CL	203	M60 x 2.0	-	-	-	-	-	1	140	-	

<sup>1</sup> Preferred type, no minimum order quantity required

<sup>2</sup>  $\Delta p \leq 0.1$  bar / 1.45 psi for air IN

<sup>3</sup> Double check valve

1	gpm	3	4	inch <sup>2</sup>	6	7	8	9	10	11	12	13	14
L1.0406-43	32	<b>D1</b> /1	2CL	5.4	1/4-18 NPTF	-	-	-	-	-	1	0.06	-
L1.0506-47	40*	<b>D2</b> /1	2CL	5.4	1 1/16-12 UN-2A	-0.44	5.08	-	-	-	2	0.12	-
L1.0706-04	66	<b>D1</b> /2	2CL	7.8	1 1/2-UNF-12 2A	-	-	-	-	-	1	0.11	-
L1.0807-16	170	<b>D1</b> /3	2CL	31.5	3/4-14 NPT	-	-	-	-	-	1	0.31	use gasket strips
L1.0807-57	145*	<b>D3</b> /1	2CL	31.5	3/4-14 NPT	-0.44	5.08	-	-	-	2	0.35	use gasket strips
L1.0807-08	225	<b>D1</b> /4	2CL	31.5	1 5/8-12 UN-2A	-	-	-	-	-	1	0.32	with labyrinth oil separator
L1.0807-15	225	<b>D1</b> /4	2CL	31.5	1 5/8-12 UN-2A	-	-	-	-	-	1	0.31	-
L1.0807-56	145*	<b>D3</b> /1	2CL	31.5	1 5/8-12 UN-2A	-0.44	5.08	-	-	-	2	0.35	-

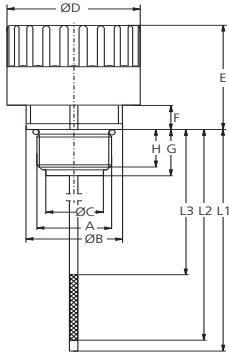
\*  $\Delta p \leq 0.1$  bar / 1.45 psi for air IN

### Remarks:

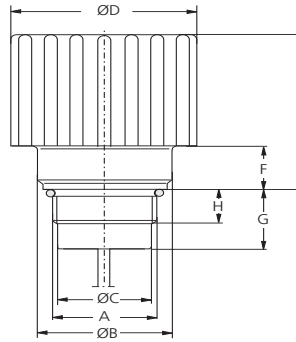
- › The ventilating filters listed in this chart are standard filters. If modifications are required, we kindly ask for your request.
- › Ventilating filters in Vandalism Proof design see catalog sheet 50.20.
- › Ventilating filters with filling filters see catalog sheet 50.30.
- › Ventilating filters for water adsorption see catalog sheet 50.40.
- › For lockable ventilating filters for high volume flows, see catalog sheet 50.50.

## Dimensions

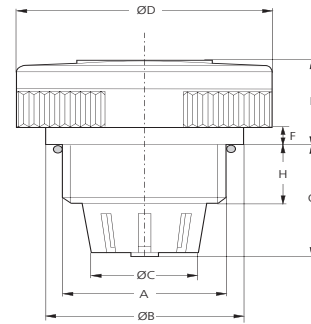
L1.0406



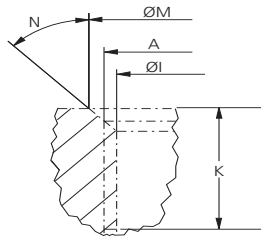
L1.0506



L1.0706



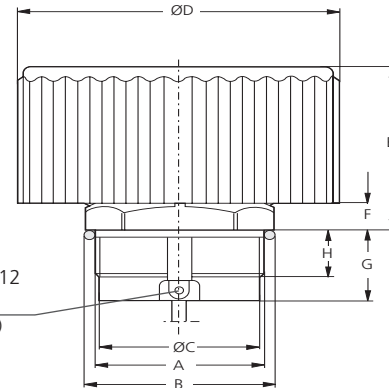
Recommended port sizes



Spanner size: L1.0807



L1.0807



Version with thread M42 x 2 and 1<sup>5</sup>/<sub>8</sub>-12 eye R2.5 / hole Ø 2 mm / 0.08 inch  
Fixing chain (length 17 cm / 6.69 inch) on request  
ARGO-HYTOS Part No. S0.0512.1302

## Measurements in mm

Type	A <sup>1</sup>	B	C	D	E	F	G	H	I	K	M	N
L1.0406	M18 x 1.5, M22 x 1.5	31.5	16	37	33.5	7.5	16.5	13.5	-	-	as A	45°
L1.0506	M22 x 1.5	29	19.5	46	47	13.0	17.5	10.5	-	-	as A	45°
	Rd42 x 5.0 <sup>2</sup>	50	35.0	46	44	10.5	28.0	28.0	35.5	min. 28	45	45°
L1.0706	M30 x 1.5	51	20.5	66	26.5	6	35	18	-	-	as A	45°
	M42 x 2.0	51	28	66	26.5	6	35	18	-	-	as A	45°
	Rd42 x 5.0 <sup>2</sup>	51	28	66	26.5	6	35	28	35.5	min. 28	45	45°
L1.0807	M30 x 1.5	AF 47	27	80	50	7.5	17.5	13.5	-	-	as A	45°
	G <sup>3</sup> / <sub>4</sub>	AF 33	24	80	50	7.5	17.5	13.5	-	-	as A	45°
	M42 x 2.0	AF 47	40	80	50	8	21	14	-	-	48	45°
	M60 x 2.0	AF 47	56.4	80	52	11	18	15	-	-	as A	45°

<sup>1</sup> The thread dimensions do not exactly conform to the DIN ISO standard thread (functioning with the DIN ISO standard thread is guaranteed)

<sup>2</sup> Round thread according to DIN 20400, not conforming to thread depth standards (functioning with the DIN standard thread is guaranteed)

## Measurements in inch

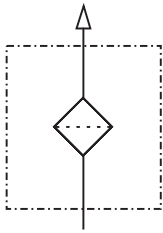
Type	A <sup>3</sup>	B	C	D	E	F	G	H	I	K	M	N
L1.0406	1/4-18 NPTF <sup>4</sup>	1.24	0.63	1.46	1.32	0.30	0.65	0.53	-	-	as A	45°
L1.0506	1 <sup>1</sup> / <sub>16</sub> -12 UN-2A	1.42	0.95	1.81	1.52	0.32	0.98	0.70	-	-	1.08	45°
	Rd42 x 5.0	1.97	1.38	1.77	1.73	0.41	1.10	1.10	-	-	1.77	45°
L1.0706	1 <sup>1</sup> / <sub>2</sub> -UNF-12 2A	2.01	0.81	2.60	1.04	0.24	1.34	0.71	-	-	1.5	45°
	Rd42 x 5.0	2.01	1.10	2.60	1.04	0.24	1.38	1.10	1.40	min. 1.10	1.77	45°
L1.0807	1 <sup>5</sup> / <sub>8</sub> -12 UN-2A	47 mm	1.50	3.15	1.97	0.31	0.83	0.55	-	-	1.71	45°
	3/4-14 NPT <sup>4</sup>	33 mm	n.a.	3.15	1.97	0.30	-	0.87	-	-	-	45°

<sup>3</sup> The thread dimensions do not exactly conform to the ANSI standard thread (functioning with the ANSI standard thread is guaranteed)

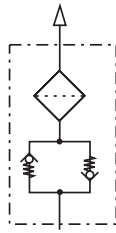
<sup>4</sup> For NPT threads we recommend the use of gasket strips

## Symbols

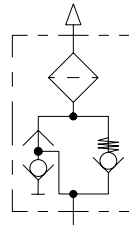
1



2



3



## Layout

### Sizes

The determining factor for selecting the size is the maximum over / under pressure allowed in the container.  
For versions without double check valves, the initial pressure drop with a clean air filter should not exceed 0.03 bar / 0.44 psi.  
For versions with double check valves, the initial pressure drop for air IN with a clean air filter should not exceed 0.1 bar / 1.45 psi.

### Filter fineness

In the ideal case, the fineness of the ventilating filter matches the fineness of the system filter (see also CETOP RP 98 H).  
By the use of filter fineness 2 CL the ingress of dust into the tank is effectively reduced.

### Mounting

The ventilating filter should be mounted in a low-dust area of the machine and not in depressions in which water can collect.  
For mobile use, the ventilating filter is to be mounted on the tank such that neither splashing oil from the inside nor spray water from the outside can reach the area of the ventilation opening.

### Double check valves

By the use of double check valves, the exchange of air between the tank and the environment can considerably be reduced, whereby the ingress of dust is minimized and the lifetime of the ventilating filter is increased.  
With the double check valve, a predefined level of pressure can be created in the tank in order to improve the suction conditions for the pumps.  
The valve opening pressure required for the ventilating filter can be approximately determined with the ideal gas equation depending on the following system characteristics:

- › differential volume
- › volume of oil in the system
- › volume of air in the tank
- › operating temperatures

Calculation tool available.

## 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.