FN1 300

In-line mounting · Operating pressure up to 10 bar / 145 psi · Nominal flow rate up to 650 l/min / 172 gpm

Off-line Filter FN1 300

Description

Application

Off-line filter in hydraulic and lubrication systems that could also be installed in the return line of the circuit.
It provides protection that extends the lifetime of machines and results in direct return on investment through extended service intervals and increased machine availability.

Performance features

The EXAPOR®MAX and EXAPOR®AQUA ultra-fine elements are the heart of the ARGO-HYTOS off-line filters. High separation efficiencies guarantee excellent cleanliness levels and thereby highest protection of components. The high dirt and water capacity of the EXAPOR®MAX and EXAPOR®AQUA elements allow economical operation of the machine.
When using modern hydraulic fluids as e.g. highly refined or biologically degradable oils with low electrostatic conductivity (less than 500 pS/m), the standard element could be equipped with EXAPOR®SPARK PROTECT technology which combines the well-known high performance characteristics with 100% protection against electrostatic discharges.

Special design features

User-friendly filter element change:
The cover of the FN1 300 can be opened without special auxiliary tools. The filter element can be removed from the housing together with the cover.

Dirt retention valve:
The element is flown through from the inside to the outside. The built-in dirt retention valve closes automatically when the element is removed, ensuring that all dirt is removed from the housing together with the element. Because of the cover design, the filter element change can be carried out almost without losing any oil.

Filter elements

Flow direction from the inside to the outside.
The star-shaped pleating of the filter material results in:

- large filter surfaces
- low pressure drop
- high dirt-holding capacities
- particularly long maintenance intervals

Operating pressure
Max. 10 bar / 145 psi

Cracking pressure of by-pass
3.5 bar / 51 psi

Nominal flow rate
up to 650 l/min / 172 gpm

The nominal flow rate depends on the type of filter element used - for details see Ordering Code, table Filter Element

The nominal flow rates indicated by ARGO-HYTOS are based on the following features:

- closed by-pass valve at $\nu \leq 200$ mm²/s / 930 SUS
- element service life > 1000 operating hours at an average fluid contamination of 0.07 g per l/min / 0.27 g per gpm flow volume
- flow velocity in the connection lines: up to 10 bar ≤ 4.5 m/s / 145 psi ≤ 14.8 ft/s

Materials

Filter housing:	Aluminum alloy powder painted RAL 5015
Filter head:	Aluminum alloy
Cover:	Aluminum alloy
Seals:	NBR (other on request)
Filter media:	EXAPOR®MAX - inorganic, multi-layer microfiber web EXAPOR®AQUA - combination of water absorbing filter layers and inorganic, multi-layer microfiber web

Filter fineness

- 3 µm(c) ... 10 µm(c) for EXAPOR®MAX separating solid particles
- 3 µm(c) ... 5 µm(c) for EXAPOR®AQUA separating water and solid particles

β-values according to ISO 16889

Dirt holding capacity
The dirt-holding capacity (DHC) values in grams from the ISO MTD test dust are in accordance with the ISO 16889. The DHC depends on the type of filter element, the volume flow, and the viscosity of the fluid. It can be read from the table below.

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: $\nu < 35$ mm²/s / 162 SUS
- as starting viscosity: $\nu_{max} = 1200$ mm²/s / 5560 SUS
- at initial operation:
  The recommended starting viscosity can be read from the diagram D (pressure drop as a function of the kinematic viscosity) as follows: Find the 70% Δp of the cracking pressure of the by-pass valve on the vertical axis. Draw a horizontal line so that it intersects the Δp curve at a point. Read this point on the horizontal axis for the viscosity.

Mounting position
Vertical, connection port at the bottom

Weight
12.4 kg / 27.34 lbs

Connection
Inlet and outlet port: SAE 2 ½
(see Dimensions Drawing)

Accessories
Electrical and / or optical clogging indicators may be ordered together with the off-line filter. For choosing the proper clogging indicator, see table Clogging Indicator in the Ordering Code. The clogging indicator can be ordered separately.
For dimensions and technical data of the clogging indicators, see catalog sheets 60.20 and 60.30.

Special versions, not shown in this catalog, are available on request.

Flow rate				45 l/min	100 l/min	250 l/min	300 l/min	650 l/min
Filter element code	Filter media type	Fineness (β=200)	Water capacity	**Dirt Holding Capacity (DHC) according to ISO 16889** Values at $\nu = 35$ mm²/s / 162 SUS				
V7.1560-103	EXAPOR®MAX	3 µm	-	1970 g	990 g	600 g	510 g	-
V7.1560-03	EXAPOR®MAX	5 µm	-	2150 g	860 g	590 g	580 g	-
V7.1560-06	EXAPOR®MAX	10 µm	-	2650 g	930 g	440 g	430 g	410 g
Z7.1560-103	EXAPOR®SPARK PROTECT	3 µm	-	1970 g	990 g	600 g	510 g	-
Y7.1560-03	EXAPOR®AQUA	5 µm	1500 ml	1150 g	520 g	370 g	350 g	-

Ordering Code

FN1 300 - -

Type of filter	Code
Off-line filter	FN1

Nominal size	300

Filter element						Code
Nominal flow rate	Pressure drop curve number	Filter media type	Fineness (β=200)	Cracking pressure of by-pass	Spare filter element	
250 l/min / 66 gpm	D1/3	EXAPOR®MAX	3 µm	3.5 bar / 51 psi	V7.1560-103	V003
300 l/min / 79 gpm	D1/2	EXAPOR®MAX	5 µm	3.5 bar / 51 psi	V7.1560-03	V005
650 l/min / 172 gpm	D2/1	EXAPOR®MAX	10 µm	3.5 bar / 51 psi	V7.1560-06	V010
300 l/min / 79 gpm	D2/1	EXAPOR®AQUA	5 µm	3.5 bar / 51 psi	Y7.1560-03	Y005
250 l/min / 79 gpm	D1/3	EXAPOR®SPARK PROTECT	3 µm	3.5 bar / 51 psi	Z7.1560-103	Z003

Clogging indicator					Code
Type		Code of indicator	Connection	Hydraulic symbol	
Differential pressure clogging indicator	optical	DG 042-01	Flange	1	OD
	electrical	DG 041-31	Flange	2	ED
	optical + electrical	DG 041-44	Flange	3	EOD
without indicator			Flange	4	XD

Customization	Code
Not required	
Special versions, not shown in this catalog, are available on request. Required modifications should be discussed individually with the supplier	C

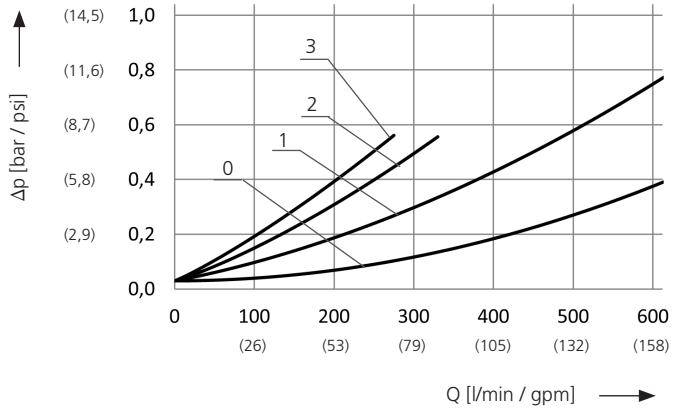
Order examples:

FN1 300-V010-XD: Off-line filter with nominal flow rate 650 l/min (172 gpm), filter element fineness 10µm, without clogging indicator. Customization not required.

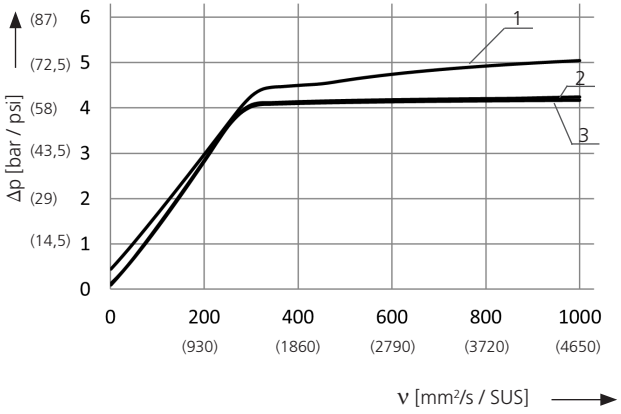
FN1 300-V003-ED C / special color of the filter housing RAL 3020: Off-line filter with nominal flow rate 250 l/min (66 gpm), filter element fineness 3µm, with electrical clogging indicator. Customization required: special color of the filter housing RAL 3020

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

D1 FN1 300 with **EXAPOR®MAX** filter element
Pressure drop as a function of the **flow volume**
at ν = 35 mm²/s / 162 SUS

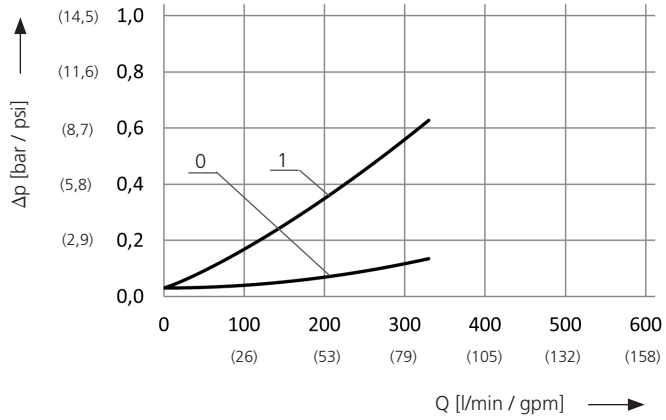


FN1 300 with **EXAPOR®MAX** filter element
Pressure drop as a function of the **kinematic viscosity**
at nominal flow

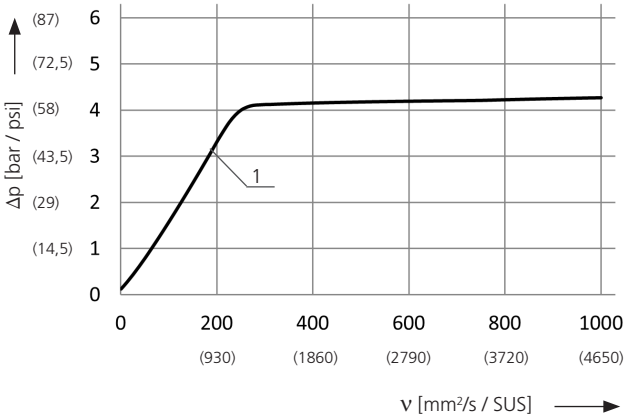


0 = housing empty
1 = with EXAPOR®MAX filter element 10 µm
2 = with EXAPOR®MAX filter element 5 µm
3 = with EXAPOR®MAX filter element 3 µm

D2 FN1 300 with **EXAPOR®AQUA** filter element
Pressure drop as a function of the **flow volume**
at ν = 35 mm²/s / 162 SUS

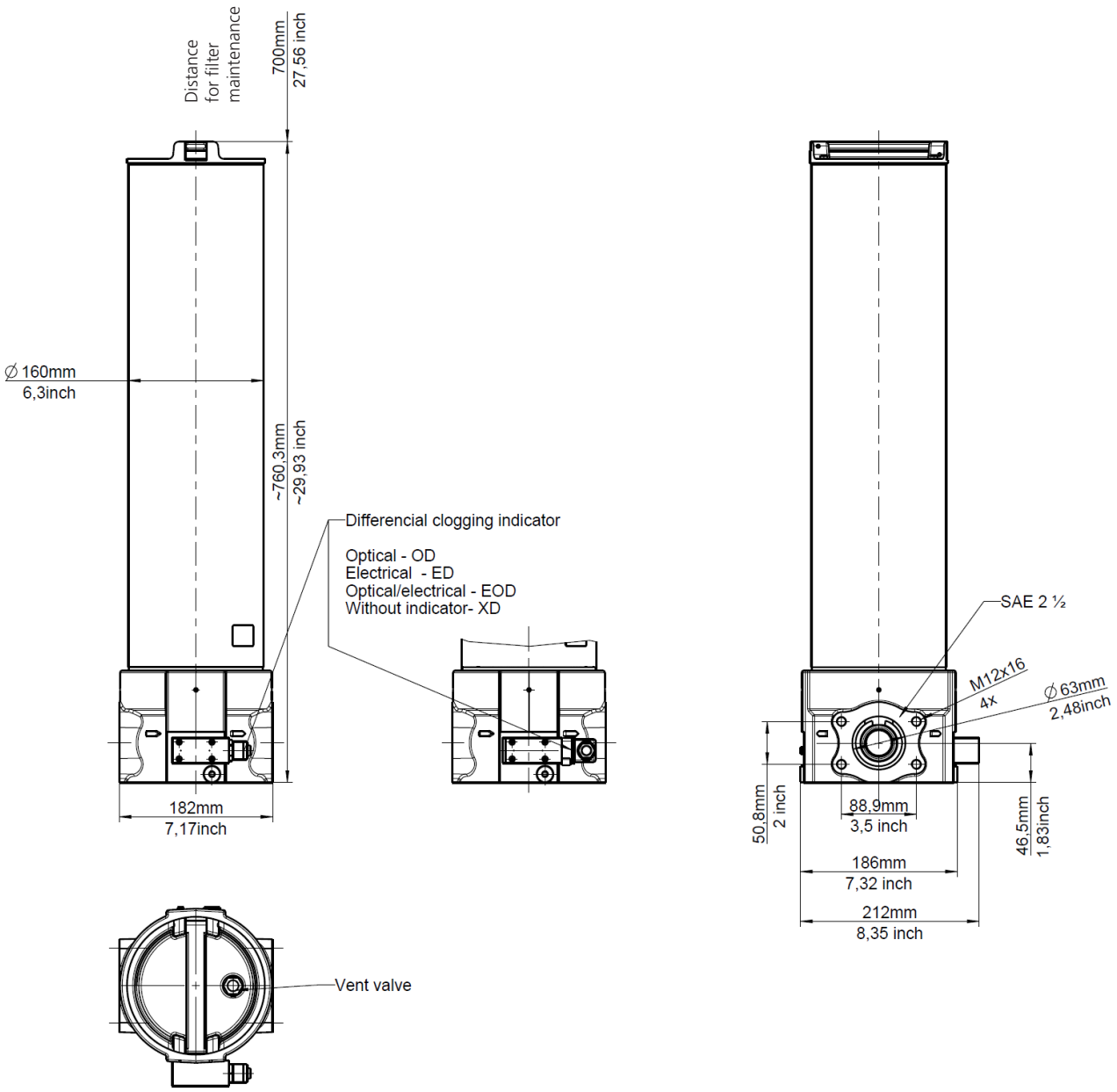


FN1 300 with **EXAPOR®AQUA** filter element
Pressure drop as a function of the **kinematic viscosity**
at nominal flow

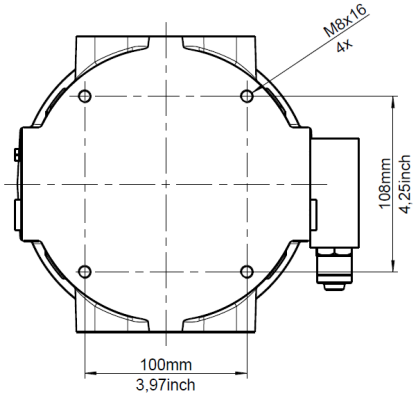


0 = housing empty
1 = with EXAPOR®AQUA filter element 5 µm

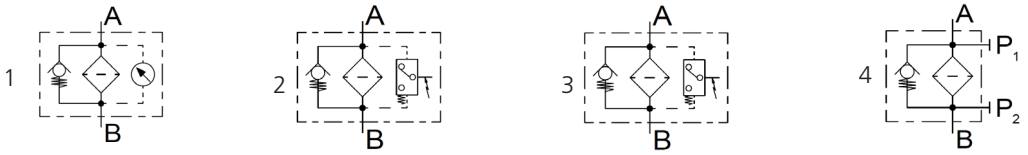
Dimensions



Mounting dimensions



Hydraulic symbols



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 leak-free function and solidity of our filters.