

Inline filter with filter element according to DIN 24550

RE 51447/10.11
Replaces: RE 51400

1/16

Type 50LEN0040 to 0400; 50LE0130, 0150

Size **according to DIN 24550**: 0040 to 0400
Additional sizes: 0130, 0150
Nominal pressure 50 bar [725 psi]
Port up to G 1 1/2; SAE 24
Operating temperature -10 °C to 100 °C [14 °F to 212 °F]



H7819_d

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Features

Inline filters are used in hydraulic systems for separating solid materials from the hydraulic fluids and lubricating oils. They are intended for attachment in pipelines.

They distinguish themselves by the following:

- Adsorption of very fine particles across a broad pressure differential range
- Good chemical resistance of the filter elements
- High collapse resistance of the filter elements (e.g. in case of cold start)
- Filter ratings of 3 µm to 100 µm
- By default equipped with mechanical optical maintenance indicator with memory function
- Flow-optimized design due to 3D computer-supported design.

Ordering code

of the filter

50	LE			—	A00	—	—	—	
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Pressure up to 50 bar [725 psi]	= 50
Inline filter Single	= LE
Filter element not according to DIN 24550 according to DIN 24550	= no code = N
Size LEN... LE...	= 0040 0063 0100 0160 0250 0400 = 0130 0150
Filter rating in µm nominal Stainless steel wire mesh, cleanable G10, G25, G40, G100 absolute (ISO 16889) Micro glass, not cleanable H3XL, H6XL, H10XL, H20XL	= G... = H...XL
Pressure differential max. admissible pressure differential of the filter element 30 bar [435 psi], with bypass valve	= A00
Maintenance indicator Maintenance indicator, mechanical optical Switching pressure 5.0 bar [72.5 psi] Switching pressure 2.2 bar [31.9 psi] Switching pressure 1.5 bar [21.8 psi]	= V5,0 = V2,2 = V1,5

Supplementary information
No code = without supplementary information
– NB = without bypass valve

Port				
	Frame size	0040-0100	0130-0150	0160-0400
	Port			
R3 =	G 3/4	•		
R4 =	G 1		•	
R6 =	G 1 1/2			•
U4 =	SAE 12	x		
U9 =	SAE 16		x	
U6 =	SAE 24			x
• = Standard port x = Additional connection possibility				

Seal	
M =	NBR seal
V =	FKM seal

Order example:
50LEN0100-H3XLA00-V5,0-M-R4

Further versions (filter materials, connections,...) are available at request.

of the filter element

2.			—	A00	—	0	—
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Filter element Design	= 2.
Size LEN... LE...	= 0040 0063 0100 0160 0250 0400 = 0130 0150
Filter rating in µm nominal Stainless steel wire mesh, cleanable G10, G25, G40, G100 absolute (ISO 16889) Micro glass, not cleanable H3XL, H6XL, H10XL, H20XL	= G... = H...XL

Seal M = V =	NBR seal FKM seal
Bypass valve 0 =	with filter element always 0
Pressure differential max. admissible pressure differential of the filter element A00 =	30 bar [435 psi]

Order example:
2.0100 H3XL-A00-0-M

More information on Rexroth filter elements is available in the data sheet 51420

Preferred types

NBR seal, with bypass, flow specifications for 30 mm²/s [143 SUS]

Inline filter 50 LE(N), filter rating **3 µm**

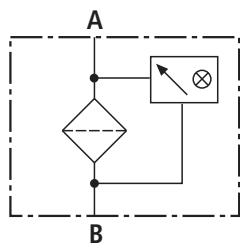
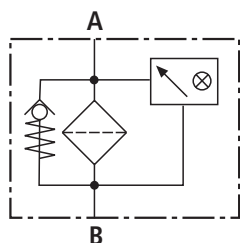
Type	Flow in l/min [gpm] with $\Delta p = 1 \text{ bar}$ [14.5 psi]	Material no. Filter				Material no. Replacement element
50LEN0040-H3XLA00-V2,2-M-..	23 [6.08]	..R3	R928048449	..U4	R928048452	R928006645
50LEN0063-H3XLA00-V2,2-M-..	30 [7.93]	..R3	R928050995	..U4	R928048453	R928006699
50LEN0100-H3XLA00-V2,2-M-..	44 [11.62]	..R3	R928051075	..U4	R928048454	R928006753
50LE0130-H3XLA00-V2,2-M-..	74 [19.55]	..R4	R928050770	..U9	R928048455	R928022274
50LE0150-H3XLA00-V2,2-M-..	89 [23.51]	..R4	R928050850	..U9	R928048456	R928022283
50LEN0160-H3XLA00-V2,2-M-..	132 [34.87]	..R6	R928051152	..U6	R928048457	R928006807
50LEN0250-H3XLA00-V2,2-M-..	190 [50.19]	..R6	R928051232	..U6	R928048458	R928006861
50LEN0400-H3XLA00-V2,2-M-..	250 [66.04]	..R6	R928051312	..U6	R928048459	R928006915

Inline filter 50 LE(N), filter rating **10 µm**

Type	Flow in l/min [gpm] with $\Delta p = 1 \text{ bar}$ [14.5 psi]	Material no. Filter				Material no. Replacement element
50LEN0040-H10XLA00-V2,2-M-..	36 [9.51]	..R3	R928047959	..U4	R928048460	R928006647
50LEN0063-H10XLA00-V2,2-M-..	69 [18.23]	..R3	R928050967	..U4	R928048461	R928006701
50LEN0100-H10XLA00-V2,2-M-..	75 [19.81]	..R3	R928051047	..U4	R928048462	R928006755
50LE0130-H10XLA00-V2,2-M-..	127 [33.55]	..R4	R928050743	..U9	R928048463	R928022276
50LE0150-H10XLA00-V2,2-M-..	150 [39.63]	..R4	R928050822	..U9	R928048464	R928022285
50LEN0160-H10XLA00-V2,2-M-..	210 [55.48]	..R6	R928051125	..U6	R928048465	R928006809
50LEN0250-H10XLA00-V2,2-M-..	260 [68.68]	..R6	R928051204	..U6	R928048466	R928006863
50LEN0400-H10XLA00-V2,2-M-..	300 [79.25]	..R6	R928051284	..U6	R928048467	R928006917

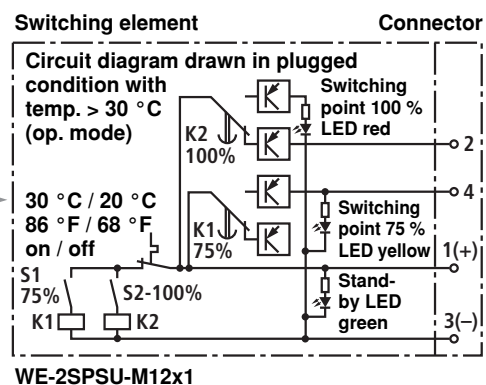
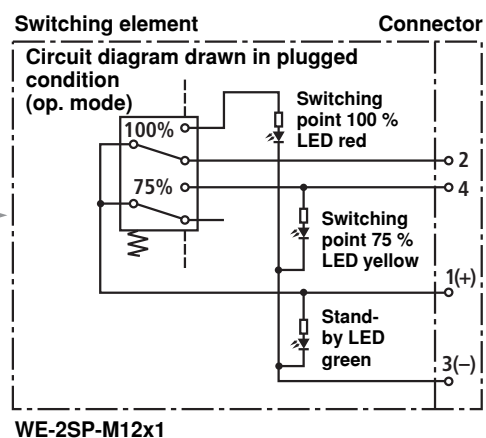
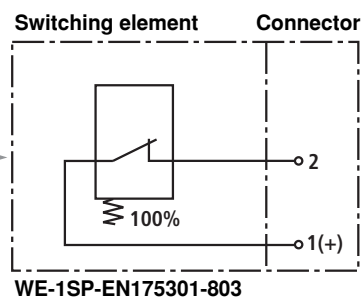
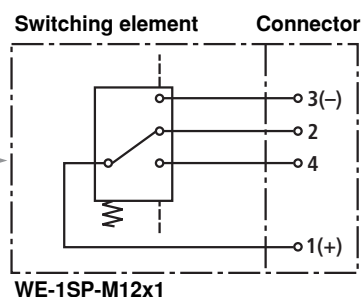
Symbols

Inline filter
with bypass and
mechanical indicator



Inline filter
without bypass and
mechanical indicator

Electronic switching element
for maintenance indicator



Function, section

The 50LE(N) inline filters are suitable for direct installation into pressure lines. They are mostly installed upstream open-loop or closed-loop control units to be protected.

They basically consist of filter head (1), a screwable filter bowl (2), filter element (3) as well as mechanical optical maintenance indicator (4). In case of filters with low-pressure-differential-stable filter elements (= code letter pressure differential A), there is also an assembled bypass valve (5).

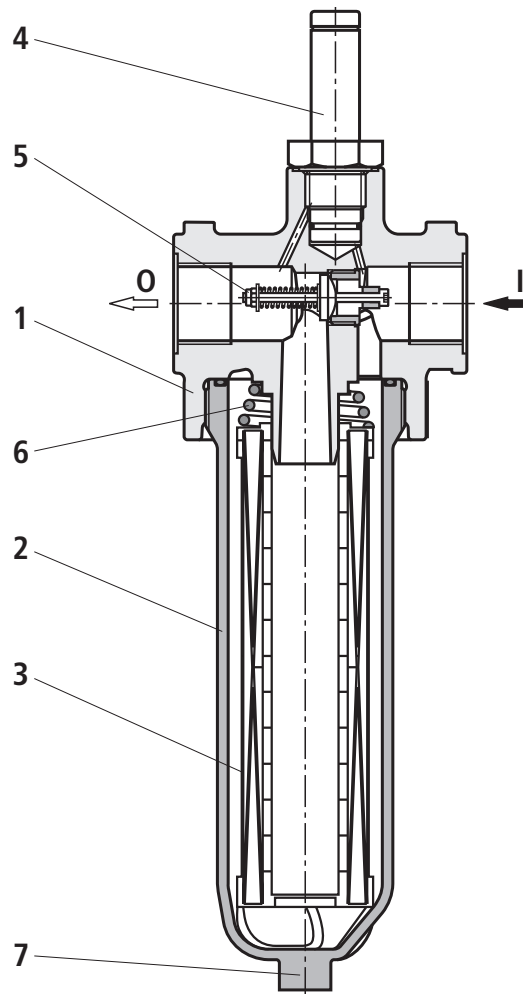
The installed spring (6) prevents possible vibrations of the filter element (3). During disassembly, the contact pressure of the spring (6) holds the filter element in the filter bowl (2).

Via port I, the hydraulic fluid reaches the filter element (3) where it is cleaned. The dirt particles filtered out settle in the filter bowl (2) and in the filter element (3). Via port O, the filtered hydraulic fluid enters the hydraulic circuit.

The filter housing and all connection elements are designed so that pressure peaks - as they may e.g. occur in case of abrupt opening of large control valves due to the accelerated fluid weight - can be securely absorbed. As of size 0160, the standard equipment comprises an oil drain plug (7).

Basically, the filter is equipped with mechanical optical maintenance indicator (4). The electronic maintenance indicator is connected via the electronic switching element with 1 or 2 switching points (see p. 4), which has to be ordered separately.

The electronic switching element is attached to the mechanical optical maintenance indicator and held by means of a locking ring.



Technical data (For applications outside these parameters, please consult us!)**general**

Installation position		Vertical				
Ambient temperature range		°C [°F]	-30 to +100 [-22 to +212]			
Weight	Size	0040	0063	0100	0130	
	kg [lbs]	1.05 [2.3]	1.1 [2.4]	1.2 [2.6]	1.91 [4.2]	
	Size	0150	0160	0250	0400	
	kg [lbs]	2.06 [4.5]	3.1 [6.8]	3.3 [7.3]	3.8 [8.4]	
Volume	Size	0040	0063	0100	0130	
	l [US gal]	0.27 [0.07]	0.39 [0.1]	0.58 [0.15]	0.89 [0.23]	
	Size	0150	0160	0250	0400	
	l [US gal]	1.1 [0.29]	1.31 [0.35]	1.89 [0.50]	2.84 [0.75]	
Material	Filter head	Aluminum				
	Filter bowl	Aluminum				
	Optical maintenance indicator	V1.5; V2.2	Aluminum			
		V5.0	Brass			
	Electronic switching element	Plastic PA6				

hydraulic

Maximum operating pressure		bar [psi]	50 [725]
Hydraulic fluid temperature range		°C [°F]	-10 to +100 [+14 to +212]
Minimum conductivity of the medium		pS/m	300
Fatigue strength according to ISO 10771		Load cycles	> 10 ⁶ with max. operating pressure
Type of pressure measurement of the maintenance indicator		Pressure differential	
Assignment: Response pressure of the maintenance indicator / cracking pressure of the bypass valve		Response pressure of the maintenance indicator	Cracking pressure of the bypass valve
		bar [psi]	
		1.5 ± 0.2 [21.8 ± 2.9]	2.5 ± 0.25 [36.3 ± 3.6]
		2.2 ± 0.3 [31.9 ± 4.4]	3.5 ± 0.35 [50.8 ± 5.1]
		5.0 ± 0.5 [72.5 ± 7.3]	7.0 ± 0.5 [101.5 ± 7.3]

Technical data (For applications outside these parameters, please consult us!)**electric** (electronic switching element)

Electrical connection		Round plug-in connection M12x1, 4-pin			Standard connection EN 175301-803
Version		1SP-M12x1	2SP-M12x1	2SP-M12x1	1SP-EN175301-803
Contact load, direct voltage	A _{max.}	1			
Voltage range	V _{max.}	150 (AC/DC)	10-30 (DC)		250 (AC) / 200 (DC)
Max. Switching power with resistive load	W	20			70
Switching type	75 % signal	–	Normally open contact		–
	100 % signal	Changeover	Normally closed contact		Normally closed contact
	2SPSU			Signal inter-connection at 30 °C [86 °F], return switching at 20 °C [68 °F]	
Display via LEDs in the electronic switching element 2SP...			Stand-by (LED green); 75 % switching point (LED yellow) 100 % switching point (LED red)		
Protection class according to EN 60529		IP 67			IP 65
Ambient temperature range		°C [°F] –25 to +85 [–13 to +185]			
For direct voltage above 24 V, spark extinguishing is to be provided for protecting the switching contacts.					
Weight	Electronic switching element: – with round plug-in connection M12x1	kg [lbs]	0.1 [0.22]		

Filter element

Glass fiber paper H..XL			Single-use element on the basis of inorganic fiber	
			Filtration ratio according to ISO 16889 to $\Delta p = 5 \text{ bar [72.5 psi]}$	Achievable oil cleanliness according to ISO 4406 [SAE-AS 4059]
	H20XL		$\beta_{20}(c) \geq 200$	19/16/12 – 22/17/14
	H10XL		$\beta_{10}(c) \geq 200$	17/14/10 – 21/16/13
	H6XL		$\beta_6(c) \geq 200$	15/12/10 – 19/14/11
	H3XL		$\beta_5(c) \geq 200$	13/10/8 – 17/13/10
Admissible pressure differential	A	bar [psi]	30 [435]	
	B	bar [psi]	330 [4785]	

Seal material for hydraulic fluids

Mineral oil			Ordering code
Mineral oil	HLP	according to DIN 51524	M
Flame-resistant hydraulic fluids			Ordering code
Emulsions	HFA-E	according to DIN 24320	M
Synthetic water solutions	HFA-S	according to DIN 24320	M
Water solutions	HFC	according to VDMA 24317	M
Phosphoric acid esters	HFD-R	according to VDMA 24317	V
Organic esters	HFD-U	according to VDMA 24317	V
Fast biodegradable hydraulic fluids			Ordering code
Triglycerides (rape seed oil)	HETG	according to VDMA 24568	M
Synthetic esters	HEES	according to VDMA 24568	V
Polyglycols	HEPG	according to VDMA 24568	V

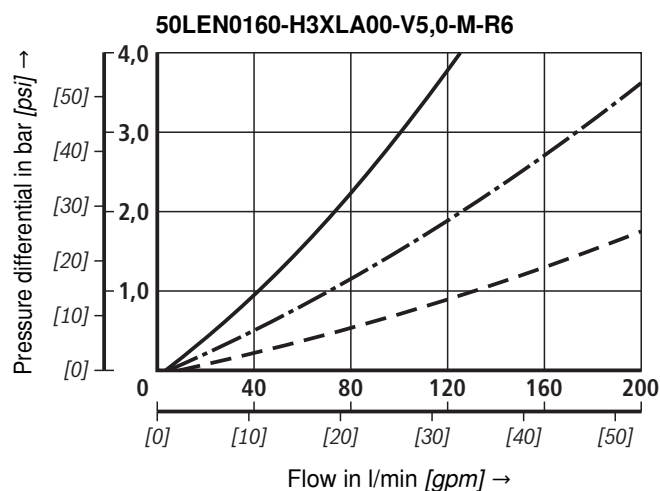
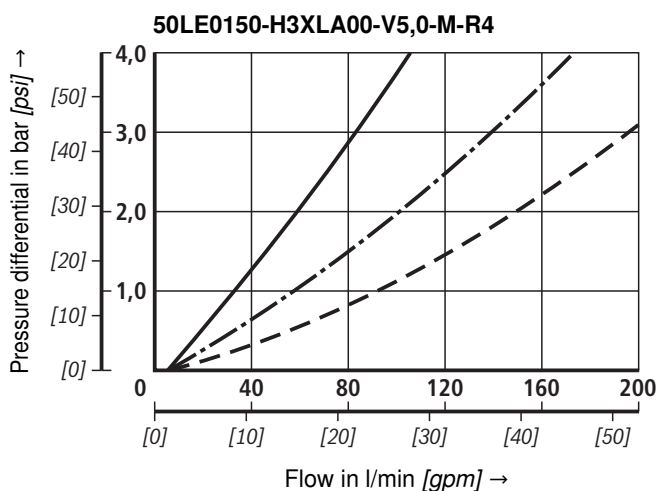
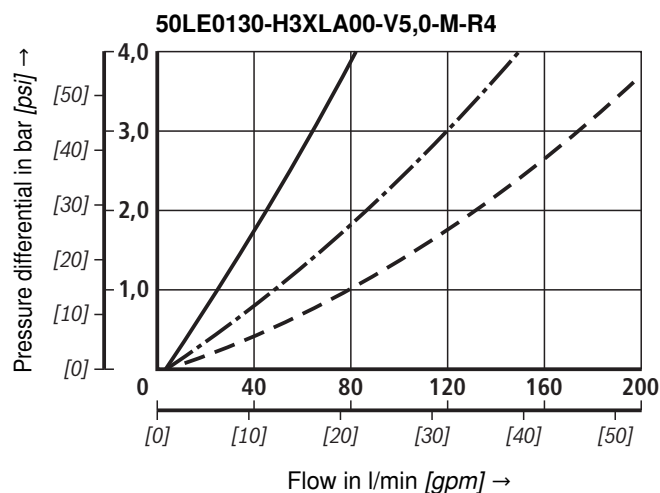
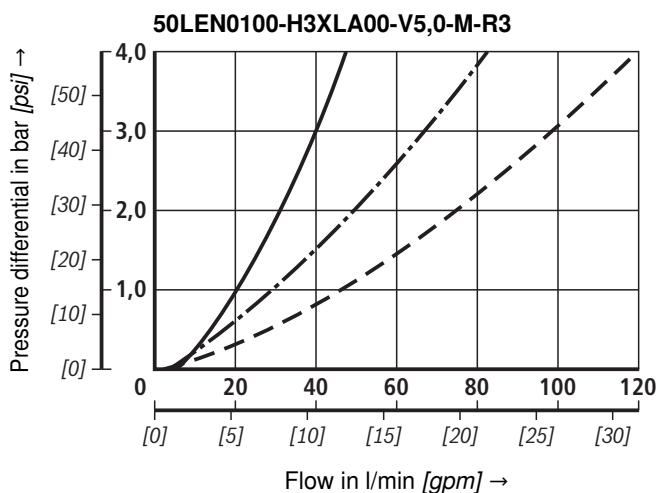
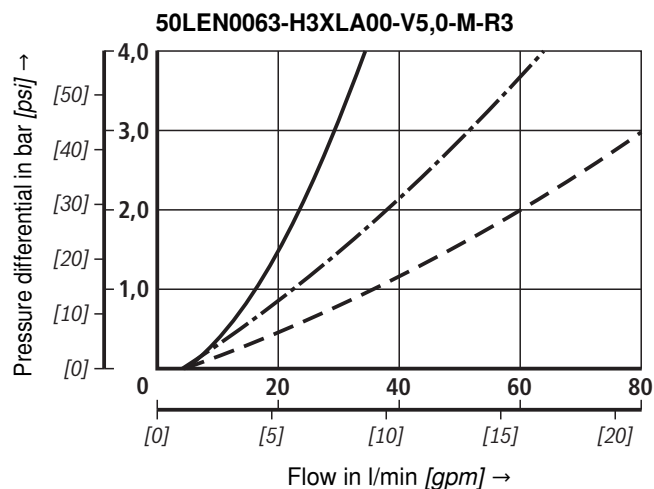
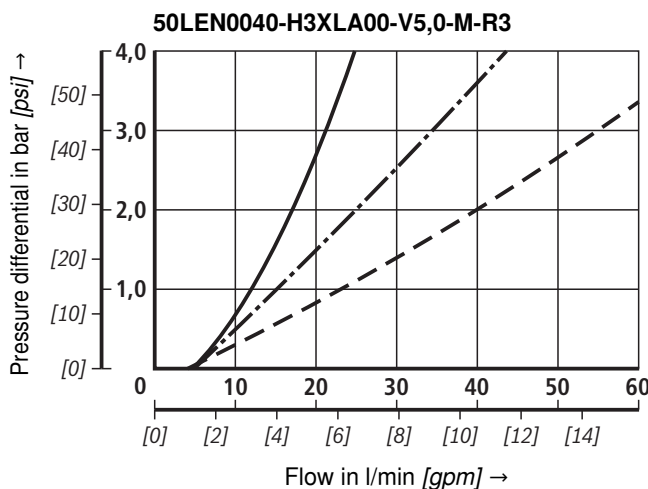
Characteristic curves

H3XL

Spec. weight: < 0.9 kg/dm³ Δp -Q characteristic curves for complete filterrecommended initial Δp for design = 1 bar [14.5 psi]A proper filter design is enabled by our computer program
"BRFilterSelect".

Oil viscosity:

- 140 mm²/s [649 SUS]
- · - 68 mm²/s [315 SUS]
- - - 30 mm²/s [143 SUS]



Characteristic curves

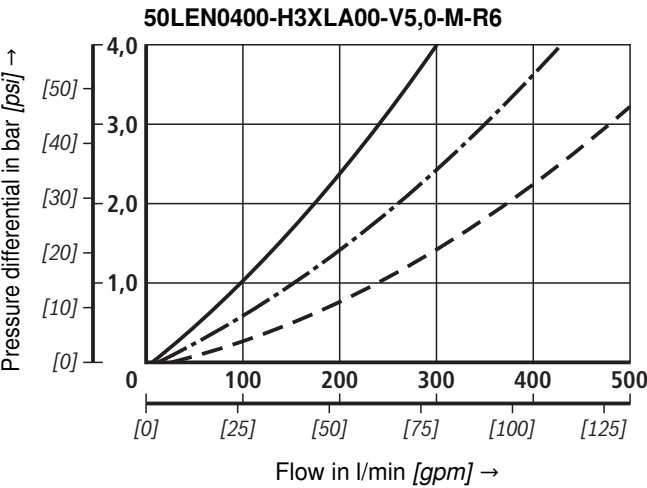
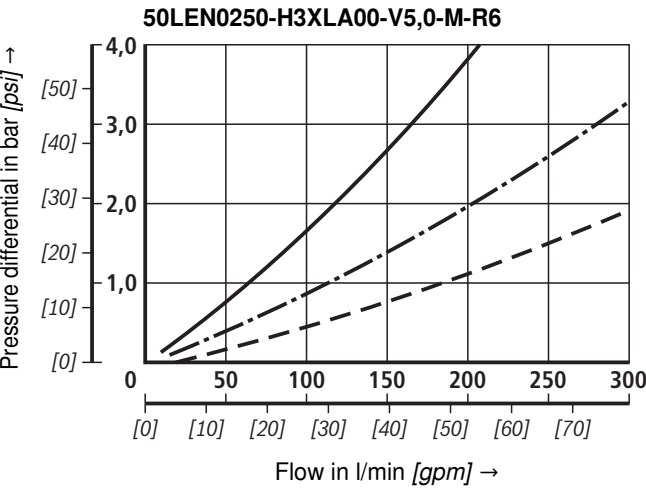
H3XL, H10XL

Spec. weight: < 0.9 kg/dm³
Δp-Q characteristic curves for complete filter
recommended initial Δp for design = 1 bar [14.5 psi]

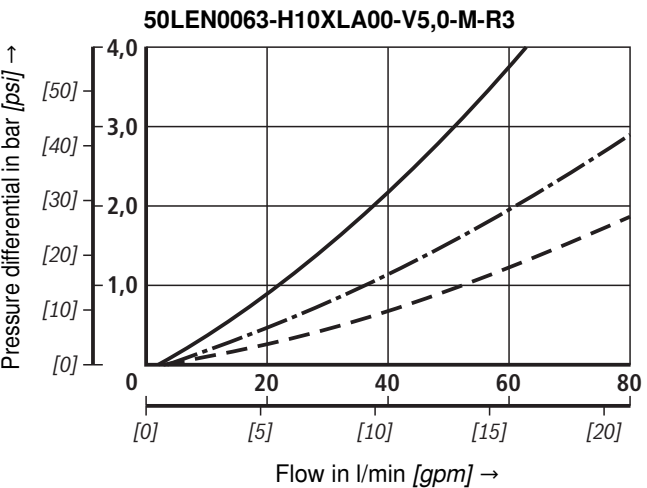
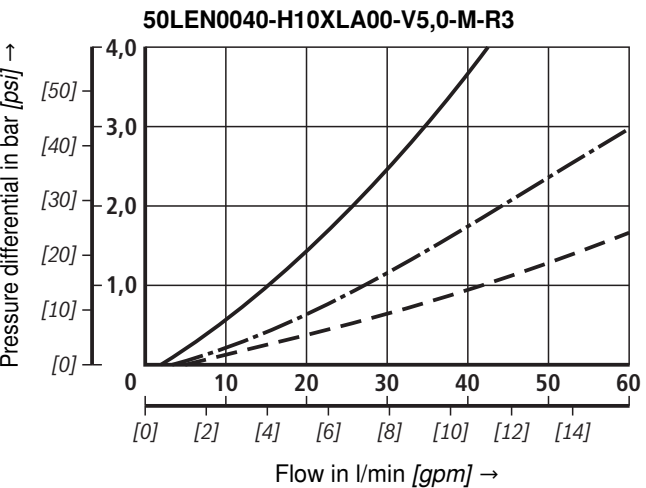
A proper filter design is enabled by our computer program
"BRFilterSelect".

Oil viscosity: — 140 mm²/s [649 SUS]
 - - - 68 mm²/s [315 SUS]
 - - - 30 mm²/s [143 SUS]

H3XL



H10XL



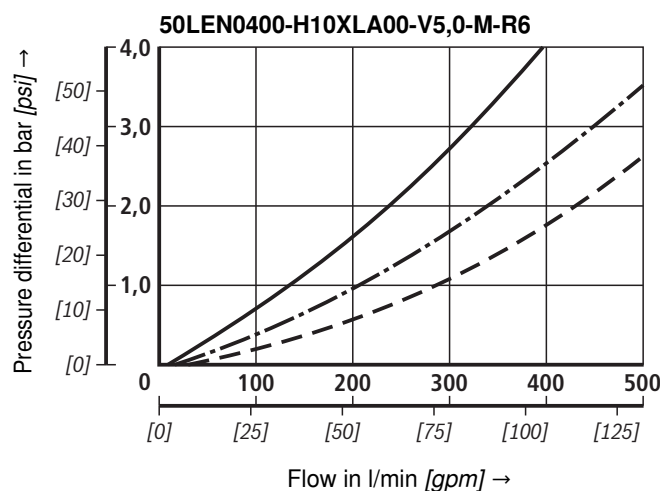
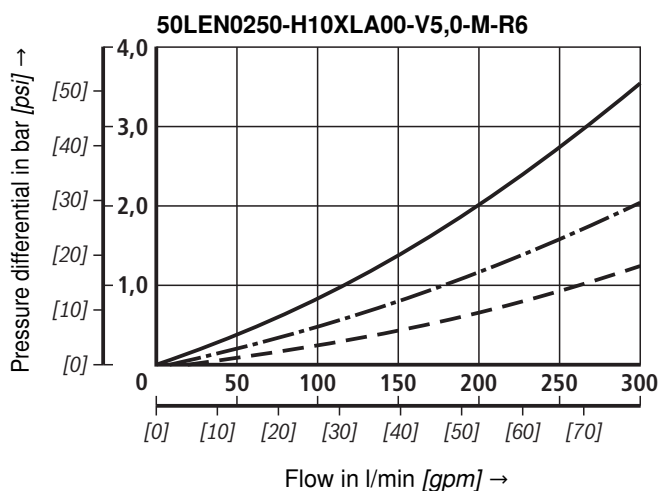
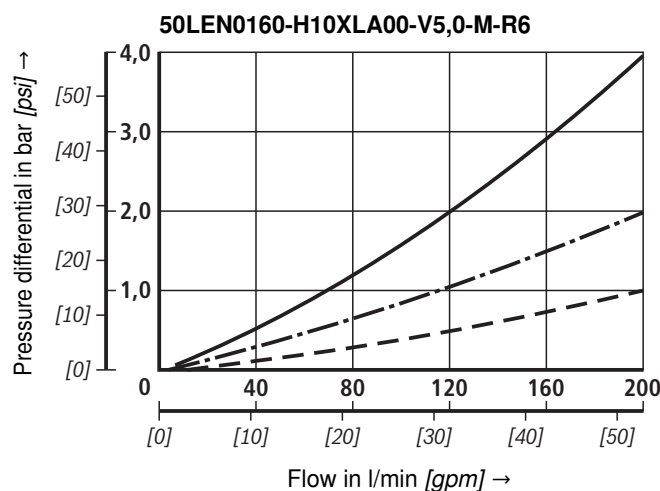
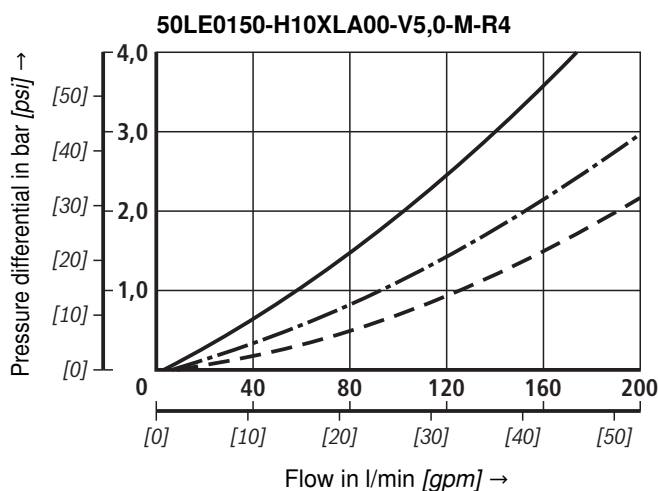
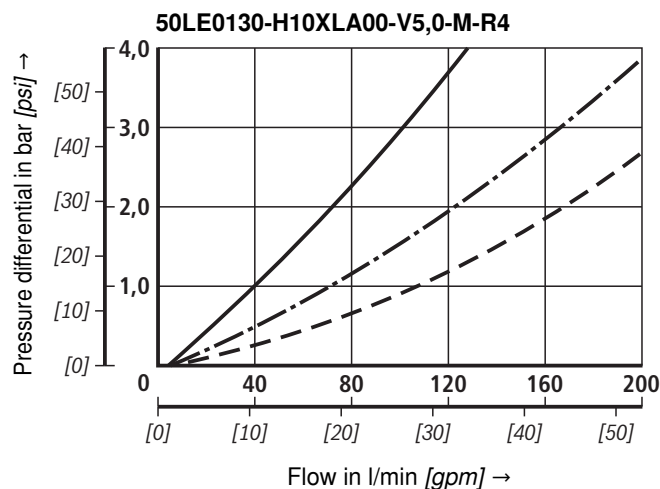
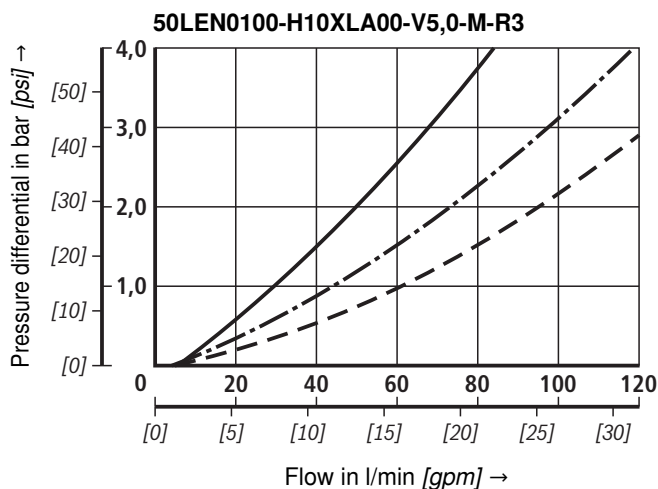
Characteristic curves

H10XL

Spec. weight: $< 0.9 \text{ kg/dm}^3$ Δp -Q characteristic curves for complete filterrecommended initial Δp for design = 1 bar [14.5 psi]A proper filter design is enabled by our computer program
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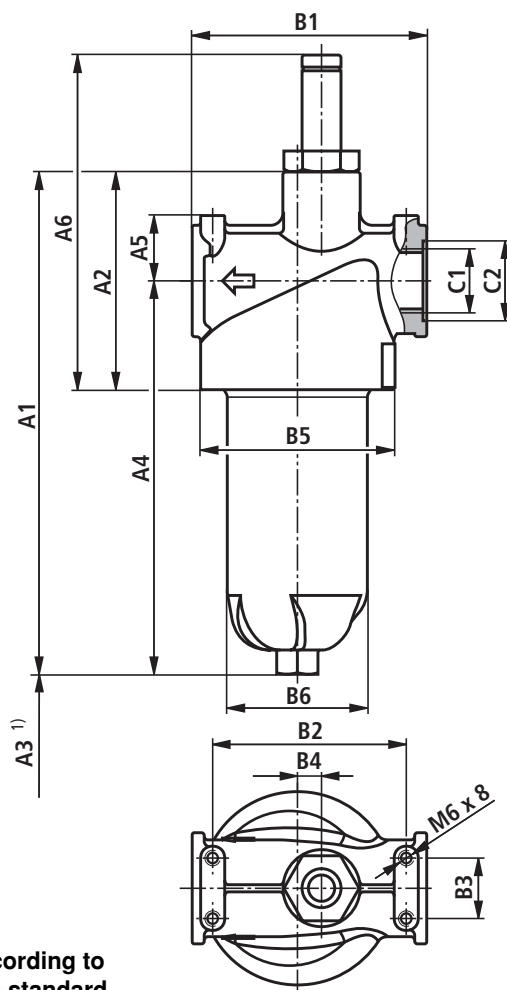
Oil viscosity:

— 140 mm²/s [649 SUS]
 - - - 68 mm²/s [315 SUS]
 - - - 30 mm²/s [143 SUS]



Unit dimensions size 0040 - 0400 (dimensions in mm [inch])

50 LEN 0040-0400



Filter housing for filter elements according to
DIN 24550 and according to Rexroth standard

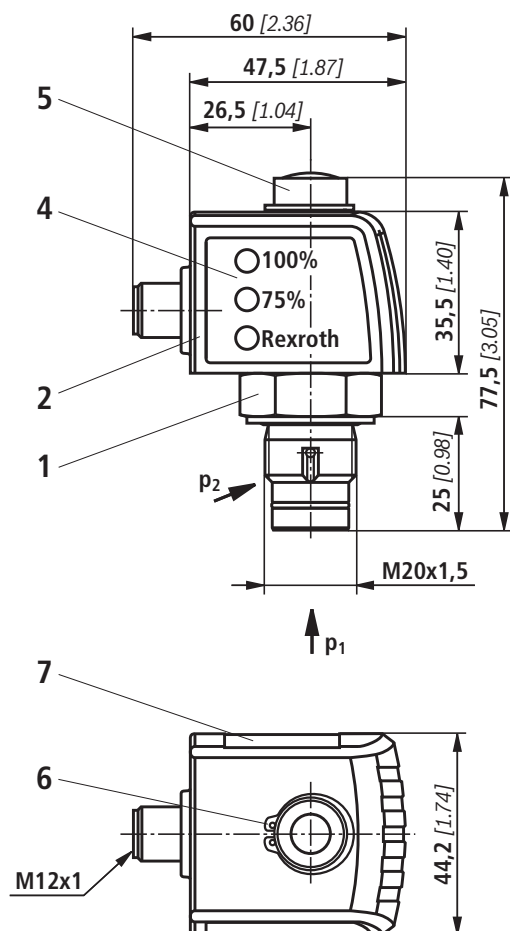
Type 50 LE(N)	A1	A2	A3	A4	A5	A6	B1	B2	B3
0040	209 [8.23]	87 [3.43]	80 [3.15]	164 [6.46]	24 [0.94]	139 [5.47]	92 [3.62]	65 [2.56]	20 [0.79]
0063	269 [10.59]			224 [8.82]					
0100	359 [14.13]			314 [12.36]					
0130	299 [11.77]			251 [9.88]					
0150	350 [13.78]	98 [3.86]	140 [5.51]	302 [11.89]	30 [1.18]	150 [5.91]	122 [4.80]	90 [3.54]	20 [0.79]
0160	310 [12.20]			255 [10.04]					
0250	400 [15.75]			345 [13.58]	35 [1.38]	174 [6.85]	142 [5.59]	110 [4.33]	30 [1.18]
0400	550 [21.65]			495 [19.49]					

Type 50 LE(N)	B4	Ø B5	ØB6	C1 connection		ØC2	
				Standard	U...(SAE J1926)	Standard	U...(SAE J1926)
0040	10 [0.39]	75 [2.95]	58 [2.28]	G 3/4	SAE 12 1 1/16-12 UN-2B	33 [1.30]	41 [1.61]
0063							
0100							
0130	14 [0.55]	105 [4.13]	82 [3.23]	G 1	SAE 16 1 5/16-12 UN-2B	41 [1.61]	49 [1.93]
0150							
0160	20 [0.79]	125 [4.92]	102 [4.02]	G 1 1/2	SAE 24 1 7/8-12 UN-2B	56 [2.20]	65 [2.56]
0250							
0400							

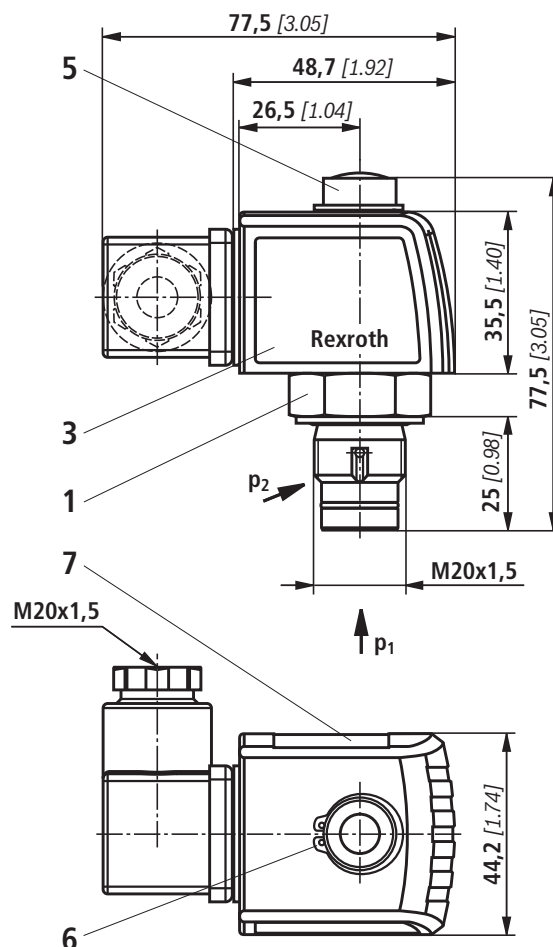
¹⁾ Servicing height for filter element replacement

Maintenance indicator (dimensions in mm [inch])

Pressure differential indicator
with mounted switching element M12x1



Pressure differential indicator
with mounted switching element EN-175301-803



- 1 Mechanical optical maintenance indicator;
max. tightening torque $M_{A \max} = 50 \text{ Nm}$ [36.88 lb-ft]
- 2 Switching element with locking ring for
electric maintenance indicator (rotatable by 360°);
round plug-in connection M12x1, 4-pin
- 3 Switching element with locking ring for
electric maintenance indicator (rotatable by 360°);
rectangular plug-in connection EN175301-803
- 4 Housing with three LEDs: 24 V =
Green: Stand-by
Yellow: Switching point 75 %
Red: Switching point 100 %
- 5 Optical indicator bistable
- 6 Locking ring DIN 471-16x1,
Material no. R900003923
- 7 Name plate

Notice:

Presentation contains mechanical optical maintenance indicator (1) and electronic switching element (2) (3).

Switching elements with increased switching power at request.

Spare parts

Mechanical optical maintenance indicator

Maintenance indicator = W

Mechanical optical indicator = O

Design

Pressure differential, design 01 = D01

Switching pressure

5.0 bar = 5,0

2.2 bar = 2,2

1.5 bar = 1,5

W

O

D01

160

Max. operating pressure

D01-1.5; D01-2.2

160 bar [2321 psi]

D01-5.0

450 bar [6527 psi]

Seal

NBR seal

FKM seal

Mechanical optical maintenance indicator	Material no.
WO-D01-5,0-M-450	R901025312
WO-D01-2.2-M-160	R901025312
WO-D01-1.5-M-160	R928038781

Seal kit

Seal kit

Series 50LE and 110LE

Size

Size 0040-0100 = N0040-0100

Size 0130-0150 = 0130-0150

Size 0160-0400 = N0160-0400

D

50/110LE

Seal

NBR seal

FKM seal

Seal kit	Material no.
D50/110LEN0040-0100-M	R928046935
D50/110LE0130-0150-M	R928046936
D50/110LEN0160-0400-M	R928046937

Installation, operating and maintenance notes

Installation of the filter

Verify operating overpressure with name plate information. Remove the blanking plugs in the filter inlet and outlet. Screw the filter head (1) to the fastening device, considering flow direction (direction arrows) and servicing height of the element. Make sure that the components are assembled without tension stress. The housing must be grounded.

The filter must preferably be installed with the filter bowl (2) downward. The maintenance indicator must be arranged in a well visible way.

Connection of the electronic maintenance indicator

Basically, the filter is equipped with mechanical optical maintenance indicator (4). The electronic maintenance indicator is connected via the switching element (6) with 1 or 2 switching points, which is attached to the mechanical optical maintenance indicator and held by means of the locking ring.

When must the filter element be exchanged or cleaned respectively?

- The filter element is to be exchanged after initial start-up of the system.
- Upon start-up in cold condition, the red pushbutton of the optical maintenance indicator (4) may jump out and an electrical signal is output via the switching element. Only push the red pushbutton in again after the operating temperature has been reached. If it jumps out again immediately or if the electrical signal has not gone out at operating temperature, the filter element must be exchanged or cleaned respectively after the end of the shift.
- The filter element should be replaced or cleaned after max. 6 months at the latest.

Element exchange

- Switch off the system and discharge the filter on the pressure side.
- Screw off the filter bowl (2) by anticlockwise rotation. Clean the filter housing in a suitable medium.
- Remove the filter element (3) from the spigot in the filter head by turning it slightly
- Check the seal ring in the filter bowl for position and damage. If necessary, these parts are to be renewed.
- Replace filter elements H...XL, clean filter elements G.....
- The efficiency of the cleaning process depends on the type of dirt and the amount of the pressure differential before the filter element exchange. If the differential pressure after the filter element exchange exceeds 150 % of the value of a brand-new filter element, the G... element also needs to be replaced.
- Check whether the type designation or material number on the replacement element corresponds to the type designation/material number on the name plate of the filter.
- Install replaced or cleaned filter element on the spigot again by slightly turning it.
- Now screw in the filter bowl to stop (torque 50 Nm ^{+10 Nm}).

Quality and standardization

The inline filters for hydraulic applications according to 51447 are pressure holding equipment according to article 1, section 2.1.4 of the Pressure Equipment Directive 97/23/EC (PED). However, on the basis of the exception in article 1, section 3.6 of the PED, hydraulic filters are exempt from the PED if they are not classified higher than category I (guideline 1/19). They do not receive a CE mark.

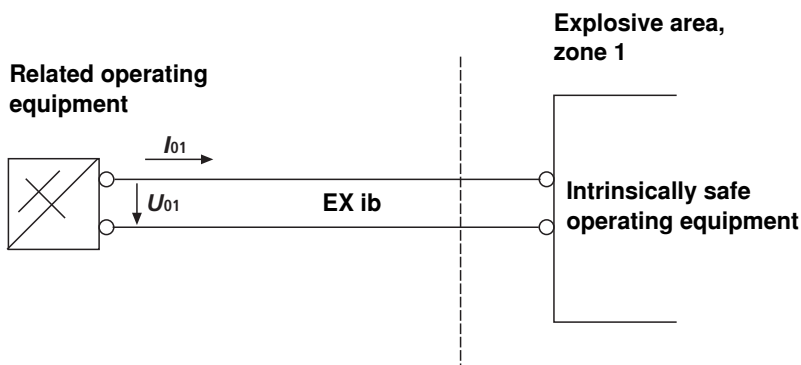
Use in explosive areas according to directive 94/9/EC (ATEX)

The inline filters according to 51447 are no equipment or components in the sense of directive 94/9/EC and are not provided with a CE mark.

When using the inline filters according to 51447 in explosive areas, potential equalization has to be ensured.

According to DIN EN 60079-11, the electronic maintenance indicators WE-1SP-M12x1 are simple, electronic operating equipment not having an own voltage source. This simple, electronic operating equipment may - according to DIN EN 60079-14 - in intrinsically safe electrical circuits (EEx ib) be used in systems for device group II, category 2G (zone 1) and category 3G (zone 2) without marking and certification. The operating equipment is assigned to explosion group II B and temperature class T5.

Possible circuit according to DIN EN 60079-14



The manufacturer's declaration according to DIN EN 13463 is available for this filter separately, with Material no. R928028899.