Duplex filter with filter element according to DIN 24550

Type 400LDN0040 to 1000; 400LD0130, 0150

RE 51429
Edition: 2015-05
Replaces: 07.12


H7834_d

- Size according **to DIN 24550:** 0040 ... 1000
- Additional sizes: 0130, 0150
- Nominal pressure 400 bar *[5,714 psi]*
- Connection up to SAE 2" 6,000 psi
- Operating temperature -10 °C ... +100 °C *[14 °F ... 212 °F]*

Features

Duplex filters are used in hydraulic systems for separating solid materials from fluids and enable the filter element to be changed without operational interruption.

They come with the following features:

- Filters for inline installation,
- Size 1,000 with 2 piece filter bowl
- Special highly efficient filter materials
- Filtration of very fine particles and high dirt holding capacity across a broad pressure differential range
- High collapse resistance of the filter elements
- Equipped standard with mechanical optical maintenance indicator with memory function
- Various optional electronic switching elements, modular design
- Bleeding and measuring port are standard

Contents

Ordering code
Filter

01	02	03		04	05		06		07		08		09
400LD			**–**		**B00**	**–**		**–**		**–**		**–**	

Series

01	Duplex filter 400 bar *[5714 psi]*	**400LD**

Filter element

02	**With** filter element according to **DIN 24550**	**N**

Size

03	LDN...	**0040** **0063** **0100** **0160** **0250** **0400** **0630** **1000**
	LD...	**0130** **0150**

Filtration rating in µm

04	**Absolute** **(ISO 16889; $\beta_x(c) \geq 200$)**	Glass fiber material, not cleanable	**H3XL** **H6XL** **H10XL** **H20XL**
	Nominal	Stainless steel wire mesh, cleanable	**G10** **G25** **G40** **G100**

Pressure differential

05	Max. admissible filter element pressure differential: 330 bar *[4,786 psi]*, filter has **no** bypass valve	**B00**

Maintenance indicator

06	Maintenance indicator, mechanical/optical, switching pressure 5.0 bar *[72.5 psi]*	**V5.0**
	Maintenance indicator, mechanical/optical, switching pressure 8.0 bar *[116 psi]*	**V8.0**

Seal

07	NBR seal	**M**
	FKM seal	**V**

Connection

08	**Frame size**	**0040 ... 0100**	**0130 ... 0150**	**0160 ... 0400**	**0630 ... 1000**		
	Connection						
	G1/2	●				Pipe thread according to ISO 228	**R2**
	SAE 10	X				Pipe thread according to SAE J1926	**U3**
	SAE 1"		●			SAE flange 6,000 psi	**S4**
	SAE 1 1/2"			●			**S6**
	SAE 2"				●		**S8**
		● Standard connection X additional connection possibility					

Ordering code
Filter

01	02	03		04	05	06		07		08		09
400LD			**–**		**B00**	**–**		**–**		**–**		

Supplementary information

09	Manufacturer's inspection certificate M as per DIN 55350 T18	**Z1**

Order example:
400LDN0160-H10XLB00-V5,0-M-S6

Material no.: R928039283

Further models on request.

Preferred types

400LD(N) flow specifications for 30 mm²/s *[143 SUS]*

Filter rating 3 µm

Type	Flow in l/min *[US gpm]* with Δ*p* = 1.5 bar *[21.75 psi]*[1)]	Material no. Filter				Replacement element material no.
400LDN0040-H3XLB00-V5,0-M-..	27 *[7.13]*	...R2	**R928039411**	..U3	**R928039437**	**R928006654**
400LDN0063-H3XLB00-V5,0-M-..	33 *[8.72]*	...R2	**R928039412**	..U3	**R928039438**	**R928006708**
400LDN0100-H3XLB00-V5,0-M-..	42 *[11.10]*	...R2	**R928039413**	..U3	**R928039439**	**R928006762**
400LD0130-H3XLB00-V5,0-M-..	73 *[19.28]*	..S4	**R928039415**			**R928022310**
400LD0150-H3XLB00-V5,0-M-..	92 *[24.30]*	..S4	**R928039416**			**R928022319**
400LDN0160-H3XLB00-V5,0-M-..	159 *[42.00]*	..S6	**R928039417**			**R928006816**
400LDN0250-H3XLB00-V5,0-M-..	202 *[53.36]*	..S6	**R928039418**			**R928006870**
400LDN0400-H3XLB00-V5,0-M-..	238 *[62.87]*	..S6	**R928039419**			**R928006924**
400LDN0630-H3XLB00-V5,0-M-..	300 *[79.36]*	..S8	**R928039420**			**R928006978**
400LDN1000-H3XLB00-V5,0-M-..	375 *[99.21]*	..S8	**R928039421**			**R928007032**

Filter rating 6 µm

Type	Flow in l/min *[US gpm]* with Δ*p* = 1.5 bar *[21.75 psi]*[1)]	Material no. Filter				Replacement element material no.
400LDN0040-H6XLB00-V5,0-M-..	30 *[7.93]*	...R2	**R928039422**	..U3	**R928039441**	**R928006655**
400LDN0063-H6XLB00-V5,0-M-..	40 *[10.57]*	...R2	**R928039423**	..U3	**R928039442**	**R928006709**
400LDN0100-H6XLB00-V5,0-M-..	45 *[11.89]*	...R2	**R928039424**	..U3	**R928039443**	**R928006763**
400LD0130-H6XLB00-V5,0-M-..	88 *[23.25]*	..S4	**R928039426**			**R928022311**
400LD0150-H6XLB00-V5,0-M-..	100 *[26.42]*	..S4	**R928039427**			**R928022320**
400LDN0160-H6XLB00-V5,0-M-..	188 *[49.66]*	..S6	**R928039429**			**R928006817**
400LDN0250-H6XLB00-V5,0-M-..	215 *[56.80]*	..S6	**R928039430**			**R928006871**
400LDN0400-H6XLB00-V5,0-M-..	258 *[68.16]*	..S6	**R928039431**			**R928006925**
400LDN0630-H6XLB00-V5,0-M-..	340 *[89.95]*	..S8	**R928039432**			**R928006979**
400LDN1000-H6XLB00-V5,0-M-..	525 *[138.89]*	..S8	**R928039433**			**R928007033**

Filter rating 10 µm

Type	Flow in l/min *[US gpm]* with Δ*p* = 1.5 bar *[21.75 psi]*[1)]	Material no. Filter				Replacement element material no.
400LDN0040-H10XLB00-V5,0-M-..	31 *[8.19]*	...R2	**R928038630**	..U3	**R928039444**	**R928006656**
400LDN0063-H10XLB00-V5,0-M-..	43 *[11.36]*	...R2	**R928038632**	..U3	**R928039445**	**R928006710**
400LDN0100-H10XLB00-V5,0-M-..	46 *[12.15]*	...R2	**R928038550**	..U3	**R928039446**	**R928006764**
400LD0130-H10XLB00-V5,0-M-..	99 *[26.15]*	..S4	**R928038549**			**R928022312**
400LD0150-H10XLB00-V5,0-M-..	105 *[27.74]*	..S4	**R928039285**			**R928022321**
400LDN0160-H10XLB00-V5,0-M-..	208 *[54.95]*	..S6	**R928039283**			**R928006818**
400LDN0250-H10XLB00-V5,0-M-..	223 *[58.91]*	..S6	**R928039436**			**R928006872**
400LDN0400-H10XLB00-V5,0-M-..	268 *[70.80]*	..S6	**R928038551**			**R928006926**
400LDN0630-H10XLB00-V5,0-M-..	450 *[119.95]*	..S8	**R928038848**			**R928006980**
400LDN1000-H10XLB00-V5,0-M-..	545 *[144.18]*	..S8	**R928038849**			**R928004034**

1) Measured pressure differential across filter and measuring equipment in accordance with ISO 3968. The measured pressure differential at the maintenance indicator is lower.

Ordering code accessories
(dimensions in mm *[inch]*)

Electronic switching element for maintenance indicators

01		02		03
WE	**–**		**–**	

Maintenance indicator

01	Electronic switching element	**WE**

Type of signal

02	1 switching point	**1SP**
	2 switching points, 3 LEDs	**2SP**
	2 switching points, 3 LED and signal suppression up to 30 °C *[86 °F]*	**2SPSU**

Plug

03	Round plug-in connection M12x1, 4-pole	**M12x1**
	2-pole rectangular plug-in connection, design A as per EN 175301-803	**EN 175301-803**

Material numbers for electronic switching elements

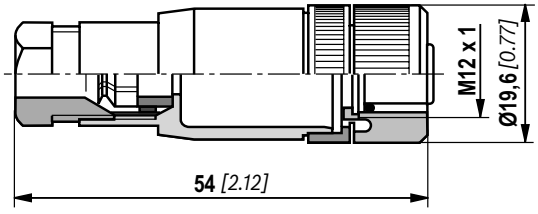
Material no.	Type	Signal	Switching points	Plug	LEDs
R928028409	WE-1SP-M12x1	Changeover	1	M12x1	0
R928028410	WE-2SP-M12x1	Normally open (at 75%) / normally closed contact (at 100%)	2		3 pieces
R928028411	WE-2SPSU-M12x1				
R928036318	WE-1SP-EN175301-803	Normally closed contact	1	EN 175301-803	0

Mating connectors (max. permissible voltage of 50 V)

For electronic switching element with M12x1 round plug-in connection

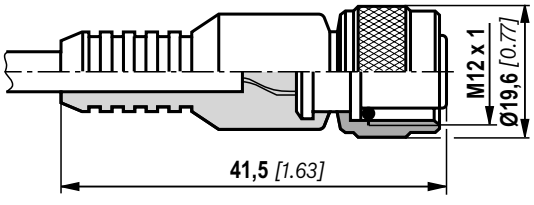
Mating connector suitable for K24 4-pole, M12x1 with screw connection, cable gland Pg9.

Material no. R900031155



Mating connector fitting M12x1, 4-pole K24-3m with potted-in PVC cable, 3 m long.
Line cross-section: 4 x 0.34 mm²
Core marking: **1** brown **2** white
3 blue **4** black

Material no. R900064381



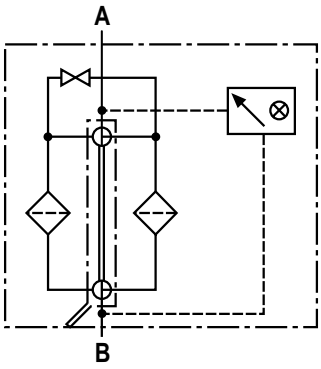
For more round plug-in connections and technical data refer to data sheet 08006.

Order example:
Duplex filter with mechanical optical maintenance indicator for $p_{Nominal}$ = 450 bar *[6527 psi]* without bypass valve, Size 0160, with filter element 10 µm and electronic switching element M12x1 with 1 switching point.

Filter with mech. optical maintenance indicator:	400LDN0160-H10XLB00-V5,0-M-S6	**Material no. R928039283**
Electr. switching element:	WE-1SP-M12x1	**Material no. R928028409**
Mating connector:	Mating connector suitable for K24 4-pole, M12x1 with screw connector, Cable gland Pg9.	**Material no. R900031155**

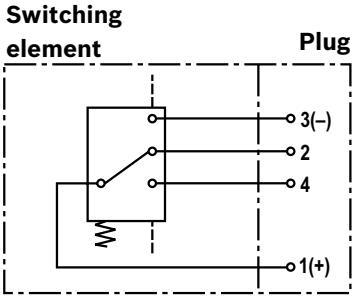
Symbols

Duplex filter
without bypass and with mechanical indicator

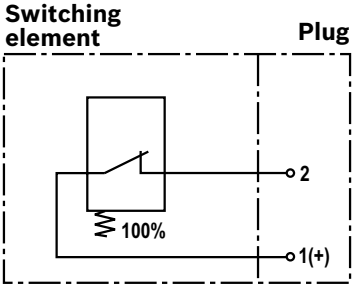


Electronic switching element

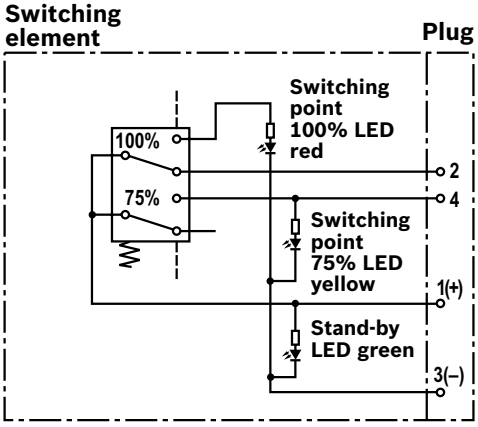
for maintenance indicator



WE-1SP-M12x1

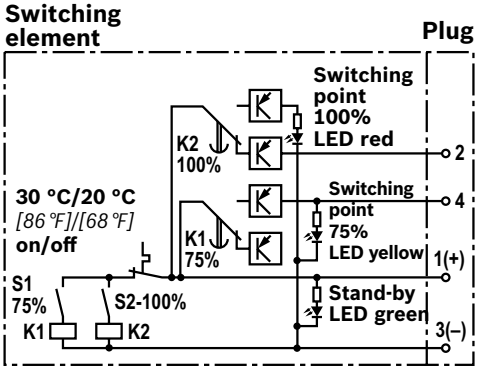


WE-1SP-EN175301-803



WE-2SP-M12x1

Circuit diagram drawn in plugged condition (operating state)



WE-2SPSU-M12x1

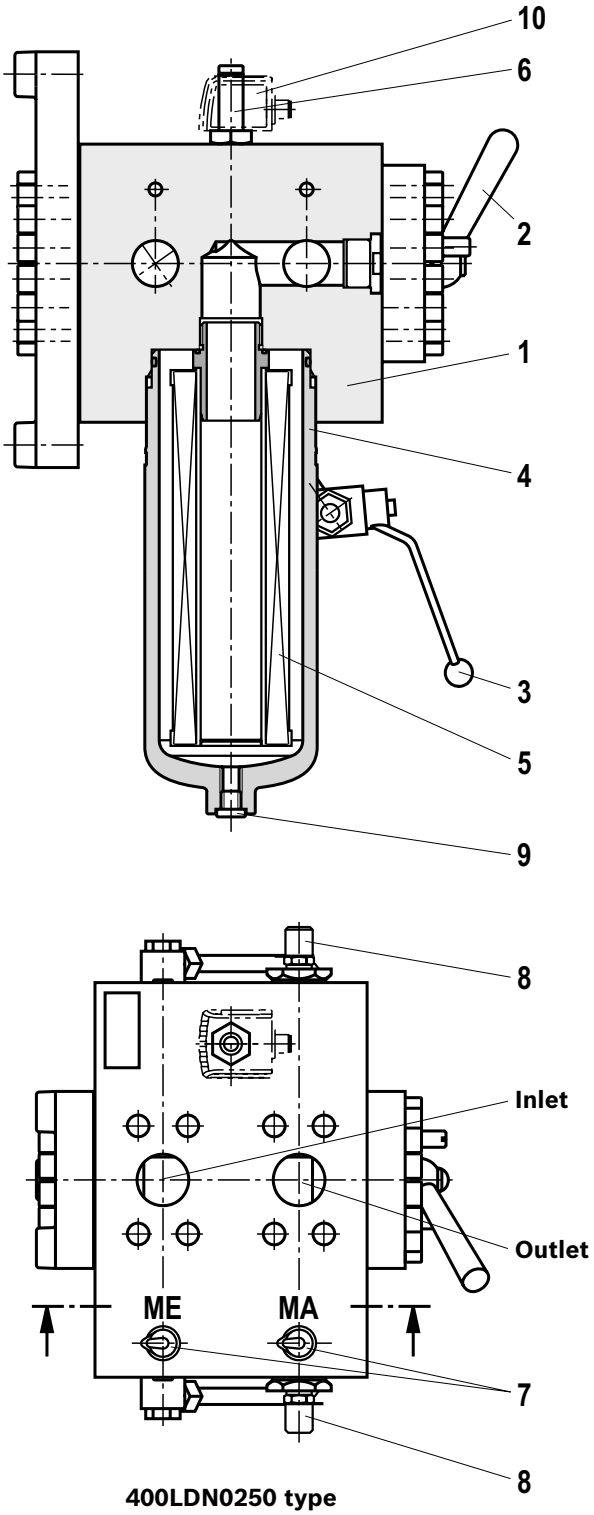
Circuit diagram drawn in plugged condition at temperature > 30 °C *[86 °F]* (operating state)

Function, cross-section

The 400LD(N) duplex filter is suitable for direct installation into pressure lines. It is installed upstream of the components to be protected.

They basically comprise of a filter head (1) with switch-over (2) with pressure equalization (3), a threaded filter bowl (4), filter element (5) as well as mechanical optical maintenance indicator with memory function (6).
Via the inlet, the hydraulic fluid reaches the filter element where it is cleaned. The dirt particles filtered out collect in the filter bowl and in the filter element. Via the outlet, the filtered hydraulic fluid enters the hydraulic circuit. By means of the switching lever, you can switch between the two filter housings without operational interruption.
The filter housing and all connection elements are designed so that pressure spikes – as they may occur, e.g., due to an accelerated fluid quantity from large control valves opening abruptly – can be safely absorbed. All filters have one threaded coupling (7) each as measuring port at the inlet and the outlet. By default, the bleeding is effected via lateral threaded couplings (8).
For sizes 0160 and larger, the filter bowl is standard equipped with a drain plug (9).
With size 1000, the filter bowl has a two-part design. The filter pipe is locked in place in the filter head to prevent unscrewing.

An electronic switching element can be added to the mechanical/optical maintenance indicator in order to integrate the maintenance indicator.
The electronic switching element (10) must be attached to the mechanical/optical maintenance indicator (6) and held by means of a locking ring. The electronic switching elements are connected with a mating connector or cable connection. The electronic switching element must be ordered separately.



400LDN0250 type

ME = Measuring port inlet
MA = Measuring port outlet

☞ **Note:**
Size 1000 is equipped with a two piece filter bowl (see chapter “Dimensions”). This increases the required service height as shown in the measurement chart.

Technical data

(For applications outside these parameters, please consult us!)

General							
Installation position			Vertical				
Ambient temperature range		°C *[°F]*	–10 ... +65 *[+14 ... +149]*				
Storage conditions	▶ NBR seal	°C *[°F]*	-40 ... +65 *[-40 ... +149]*; max. relative humidity of 65%				
	▶ FKM seal	°C *[°F]*	-20 ... +65 *[-4 ... +149]*; max. relative humidity of 65%				
Weight	▶ Filter	Size	**0040**	**0063**	**0100**	**0130**	
		kg *[lbs]*	1.3 *[2.9]*	1.3 *[2.9]*	2.1 *[4.6]*	3.8 *[8.3]*	
		Size	**0150**	**0160**	**0250**	**0400**	
		kg *[lbs]*	4.7 *[10.3]*	5.5 *[12.2]*	8.0 *[17.7]*	12.2 *[26.9]*	
		Size	**0630**	**1000** filter bowl		**1000** cover	
		kg *[lbs]*	21.4 *[47.1]*	45.3 *[99.9]*		12.1 *[26.6]*	
	▶ Filter bowl	Size	**0040**	**0063**	**0100**	**0130**	
		kg *[lbs]*	1.3 *[2.9]*	1.3 *[2.9]*	2.1 *[4.6]*	3.8 *[8.4]*	
		Size	**0150**	**0160**	**0250**	**0400**	
		kg *[lbs]*	4.7 [*10.4]*	5.5 *[12.2]*	8.0 *[17.7]*	12.2 *[26.9]*	
		Size	**0630**	**1000** Filter bowl [1]		**1000** end cap	
		kg *[lbs]*	21.4 *[47.1]*	45.3 *[99.9]*		2.2 *[4.4]*	
Flow		Size	**0040**	**0063**	**0100**	**0130**	**0150**
		l *[US gal]*	2 x 0.2 *[2 x 0.05]*	2 x 0.3 *[2 x 0.08]*	2 x 0.5 *[2 x 0.13]*	2 x 0.9 *[2 x 0.24]*	2 x 1.1 *[2 x 0.29]*
		Size	**0160**	**0250**	**0400**	**0630**	**1000**
		l *[US gal]*	2 x 1.3 *[2 x 0.34]*	2 x 1.9 *[2 x 0.50]*	2 x 3.0 *[2 x 0.79]*	2 x 4.5 *[2 x 1.19]*	2 x 6.2 *[2 x 1.64]*
Material	▶ Filter head		Ductile iron				
	▶ Filter bowl		steel/for size 1000: Ductile iron				
	▶ Visual maintenance indicator		Brass				
	▶ Electronic switching element		Nylon 6 plastic				
	▶ Seals		NBR or FKM				

Hydraulics			
Max. operating pressure	bar *[psi]*	400 *[5714]*	
Hydraulic fluid temperature range	°C *[°F]*	-10 ... +100 *[+14 ... +212]*	
Minimum conductivity of the medium	pS/m	300	
Fatigue strength as per ISO 10771	Load cycles	> 10^6 at max. operating pressure	
Maintenance indicator pressure measurement type		Pressure differential	
Assignment: Response pressure of the maintenance indicator/ release pressure of the bypass valve		Response pressure of the maintenance indicator	Release pressure of the bypass valve
	bar *[psi]*	5.0 ± 0.5 *[72.5 ±7.3]*	No bypass valve
		8.0 ± 0.8 *[116 ±11.6]*	
Filtration direction		From the outside to the inside	

[1] This weight is not relevant to changing the filter element, since only the cap has to be unscrewed.

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

electric (electronic switching element)					
Electrical connection		Round plug-in connection M12x1, 4-pole			Standard connection EN 175301-803
	Version	1SP-M12x1	2SP-M12x1	2SPSU-M12x1	1SP-EN175301-803
Contact load, DC 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		Change-over	Normally closed contact		Normally closed contact
▶ 2SPSU				Signal interconnection 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)		
IP rating as per EN 60529	IP	67			65
Ambient temperature range	°C *[°F]*	-25 ... +85 *[-13 ... +185]*			
For direct voltage above 24 V, spark extinguishing is to be provided for protecting the switching contacts.					
Weight	kg *[lbs]*	0.1 *[0.22]*			

Filter element				
H-series XL glass fiber material			Inorganic fiber-based single-use element	
			Filtration ratio as per ISO 16889 up to Δp = 5 bar *[72.5 psi]*	Achievable oil cleanliness according to ISO 4406 *[SAE-AS 4059]*
Particle separation		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
Permissible pressure differential	B00	bar *[psi]*	330 *[4785]*	

For detailed information on Rexroth filter elements please refer to data sheet 51420.

Compatibility with permitted hydraulic fluids

Hydraulic fluid		**Classification**	**Suitable sealing materials**	**Standards**
Mineral oil		HLP	NBR	DIN 51524
Bio-degradable	▶ Water insoluble	HETG	NBR	VDMA 24568
		HEES	FKM	
	▶ Water soluble	HEPG	FKM	VDMA 24568
Flame-resistant	▶ Water-free	HFDU, HFDR	FKM	VDMA 24317
	▶ Contains water	HFAS	NBR	DIN 24320
		HFAE	NBR	
		HFC	NBR	VDMA 24317

Important information on hydraulic fluids:
- For more information and data on the use of other hydraulic fluids, please refer to data sheet 90220 or contact us.
- **Flame-resistant - containing water:** due to possible chemical reactions with materials or surface coatings of machine and system components, the service life with these hydraulic fluids may be less than expected.

Filter materials made of filter paper P may not be used, filter elements with glass fiber material have to be used instead.
- **Bio-degradable:** If filter materials made of filter paper are used, the filter life may be shorter than expected due to material incompatibility and swelling.

Characteristic curves **H3XL**

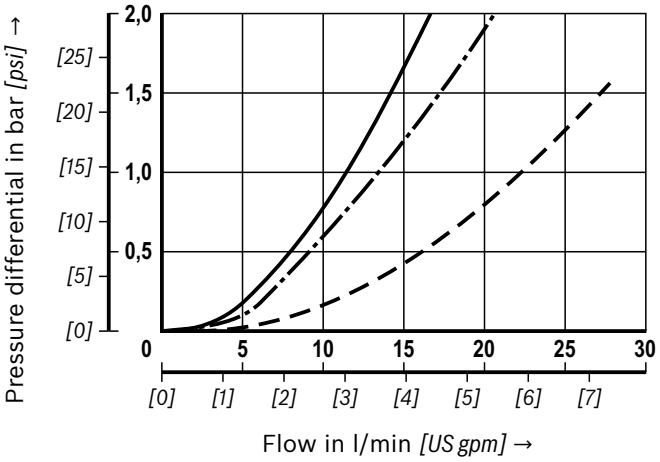
(Measured with HLP46 mineral oil as per ISO 3968)

Spec. Weight: < 0.9 kg/dm³
Δ*p*-Q characteristic curves for complete filter
recommended initial Δ*p* for design = 1.5 bar *[21.75 psi]*

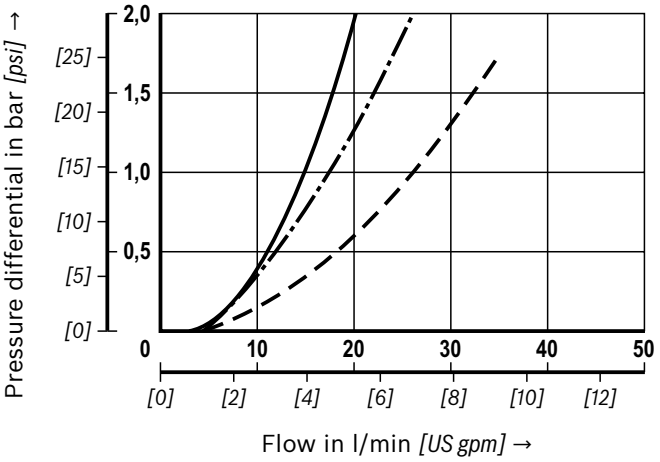
Selection of the perfect filter is made possible by our online “Bosch Rexroth FilterSelect” design software.

Oil viscosity:
- **140 mm²/s** *[649 SUS]*
- **68 mm²/s** *[315 SUS]*
- **30 mm²/s** *[142 SUS]*

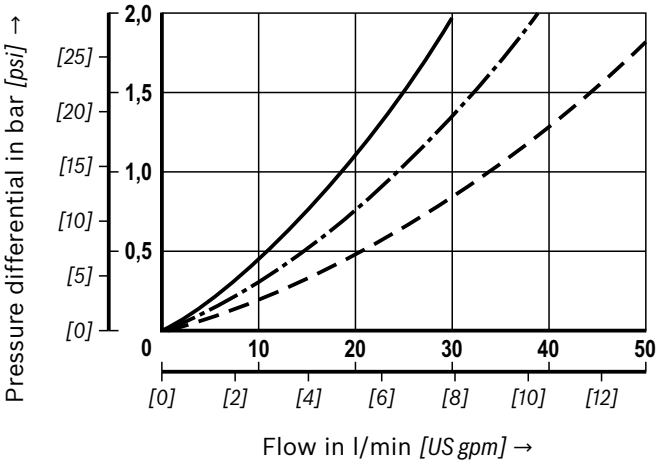
400LDN0040-H3XL



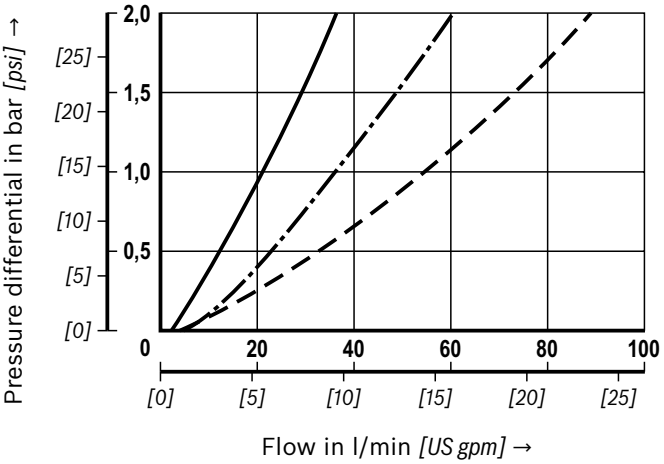
400LDN0063-H3XL



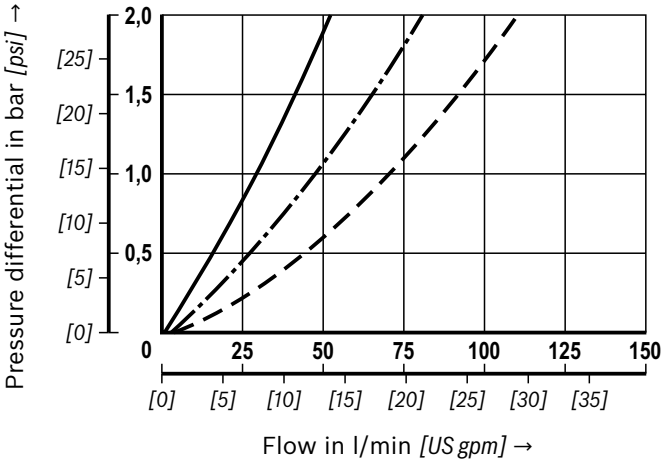
400LDN0100-H3XL



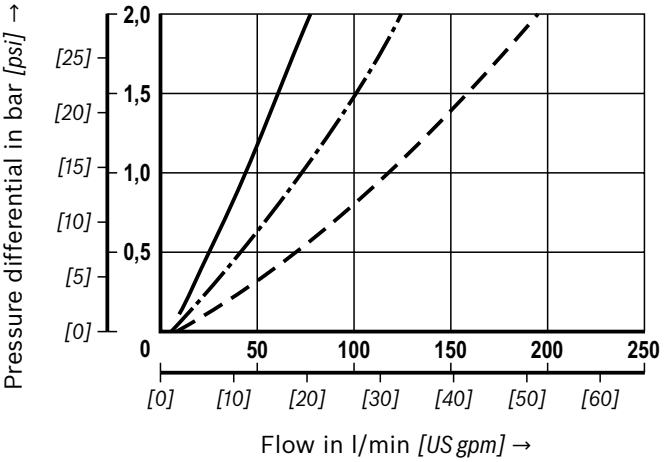
400LD0130-H3XL



400LD0150-H3XL



400LDN0160-H3XL



Characteristic curves

H3XL

(Measured with HLP46 mineral oil as per ISO 3968)

Spec. Weight: < 0.9 kg/dm³

Δ*p*-Q characteristic curves for complete filter

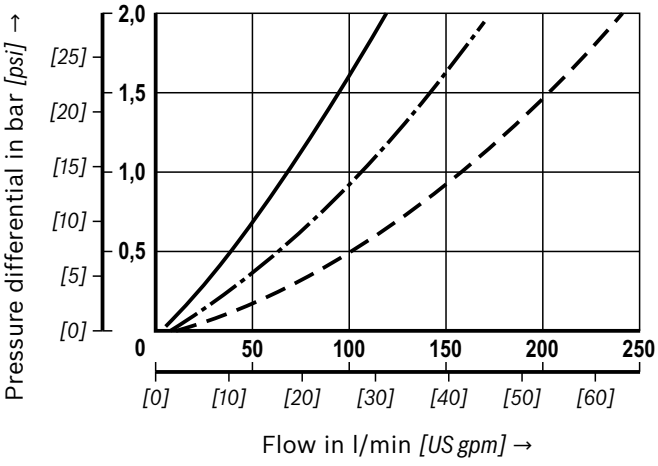
recommended initial Δ*p* for design = 1.5 bar *[21.75 psi]*

Selection of the perfect filter is made possible by our online “Bosch Rexroth FilterSelect” design software.

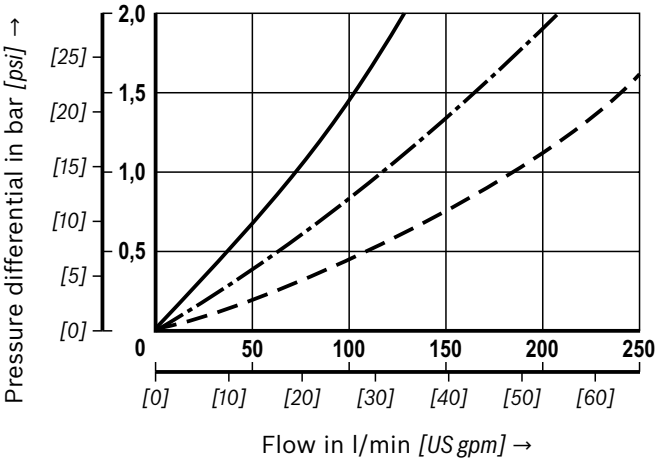
Oil viscosity:

- **140 mm²/s** *[649 SUS]*
- **68 mm²/s** *[315 SUS]*
- **30 mm²/s** *[142 SUS]*

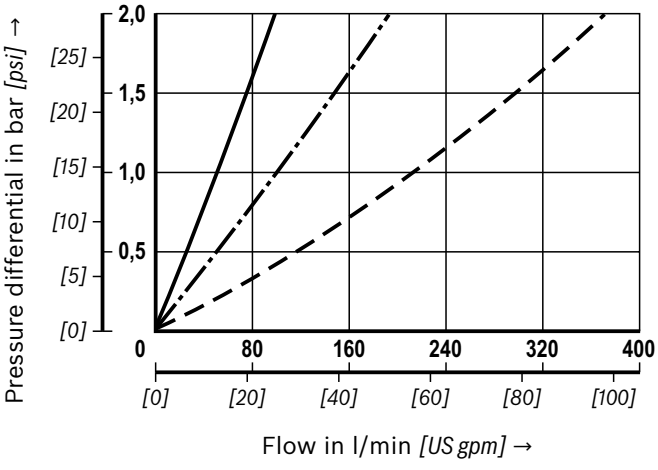
400LDN0250-H3XL



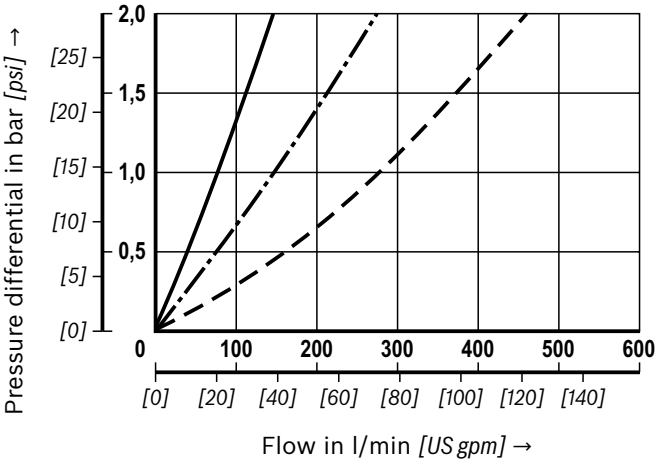
400LDN0400-H3XL



400LDN0630-H3XL



400LDN1000-H3XL



Characteristic curves **H10XL**

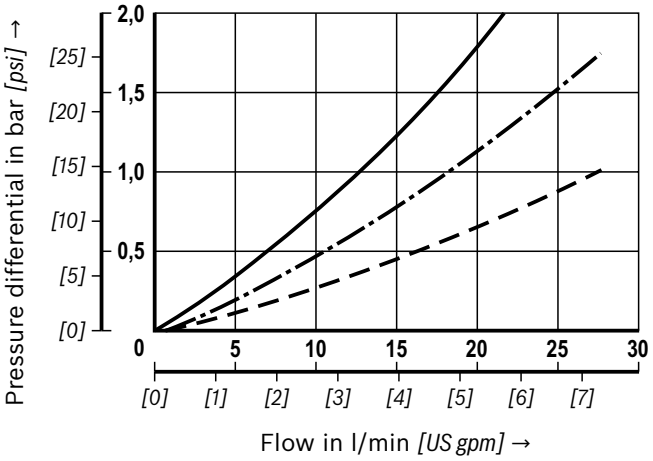
(Measured with HLP46 mineral oil as per ISO 3968)

Spec. Weight: < 0.9 kg/dm³
Δ*p*-Q characteristic curves for complete filter
recommended initial Δ*p* for design = 1.5 bar *[21.75 psi]*

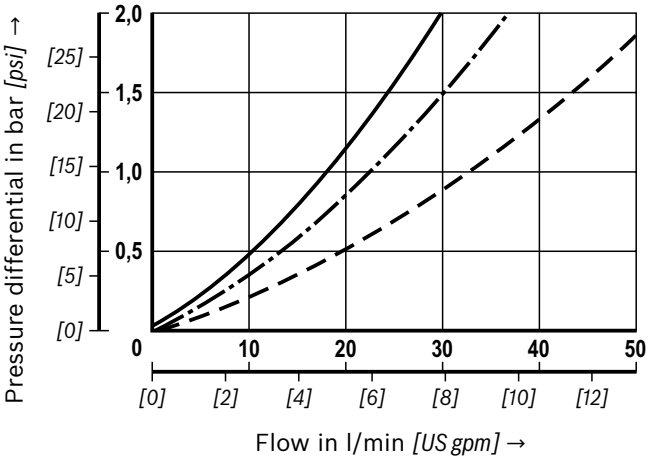
Selection of the perfect filter is made possible by our online “Bosch Rexroth FilterSelect” design software.

Oil viscosity:
- **140 mm²/s** *[649 SUS]*
- **68 mm²/s** *[315 SUS]*
- **30 mm²/s** *[142 SUS]*

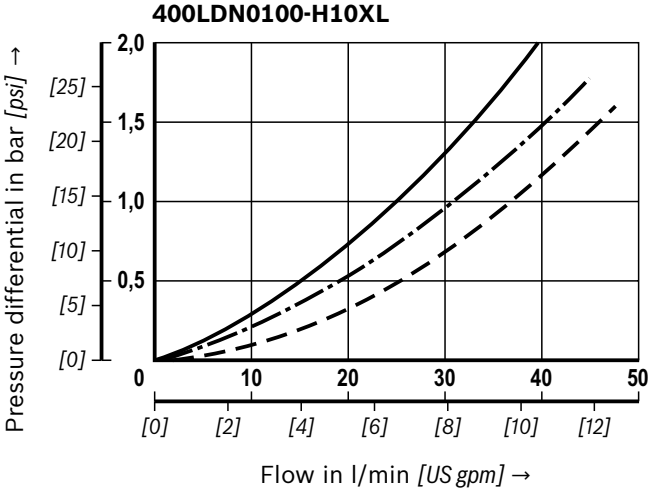
400LDN0040-H10XL



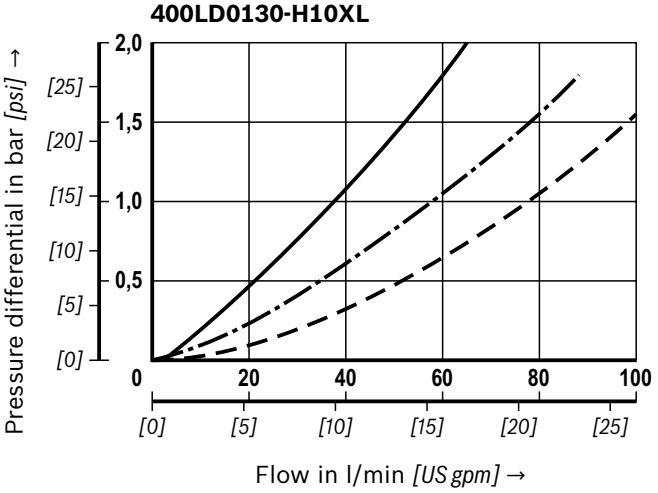
400LDN0063-H10XL



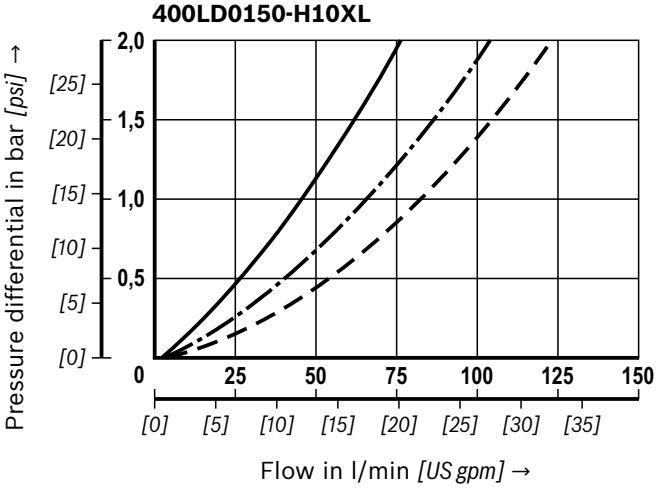
400LDN0100-H10XL



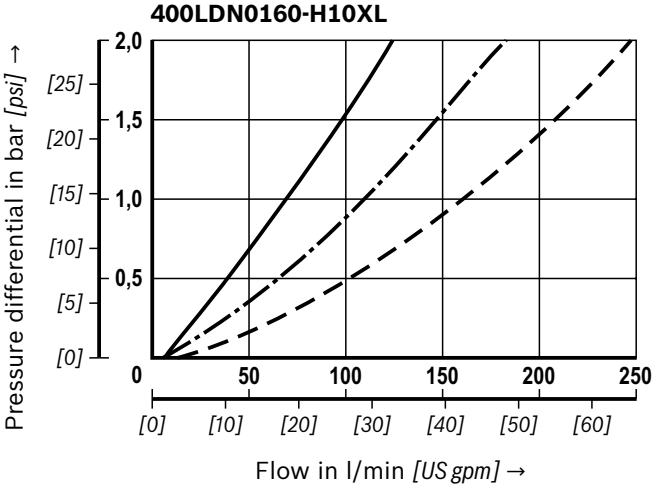
400LD0130-H10XL



400LD0150-H10XL



400LDN0160-H10XL



Characteristic curves **H10XL**

(Measured with HLP46 mineral oil as per ISO 3968)

Spec. Weight: < 0.9 kg/dm³

Δ*p*-Q characteristic curves for complete filter

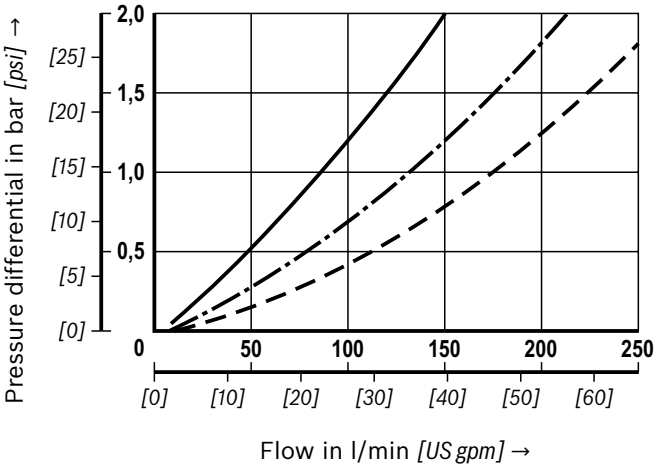
recommended initial Δ*p* for design = 1.5 bar *[21.75 psi]*

Selection of the perfect filter is made possible by our online “Bosch Rexroth FilterSelect” design software.

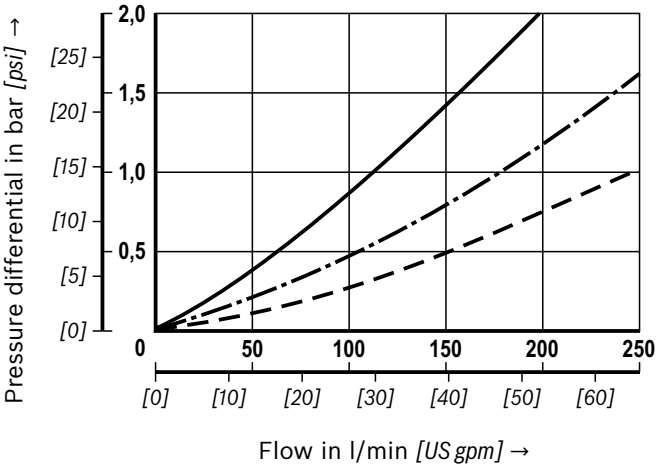
Oil viscosity:

- **140 mm²/s** *[649 SUS]*
- **68 mm²/s** *[315 SUS]*
- **30 mm²/s** *[142 SUS]*

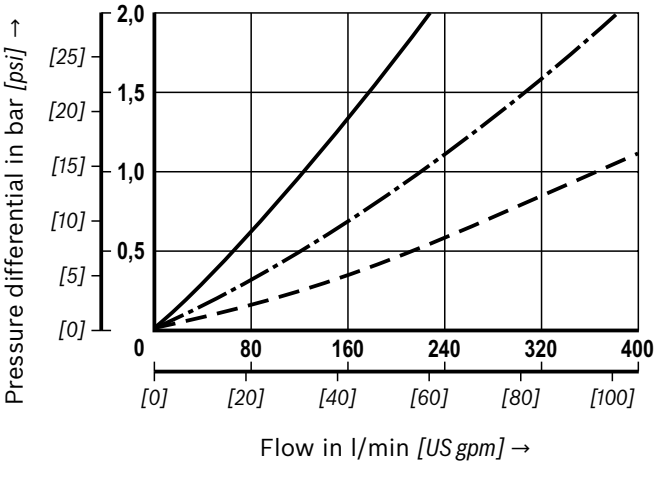
400LDN0250-H10XL



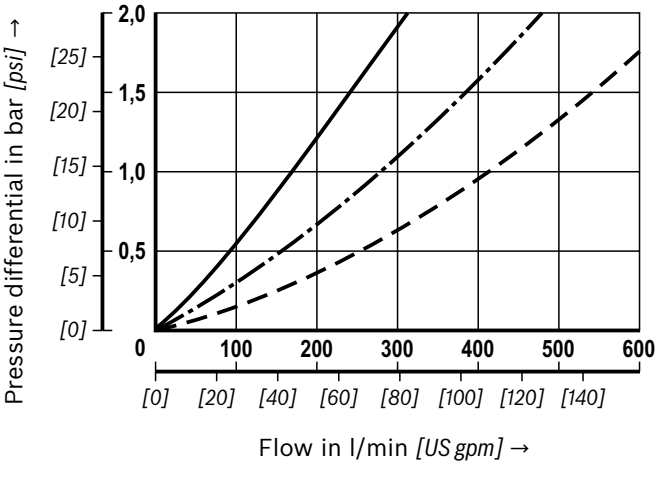
400LDN0400-H10XL



400LDN0630-H10XL

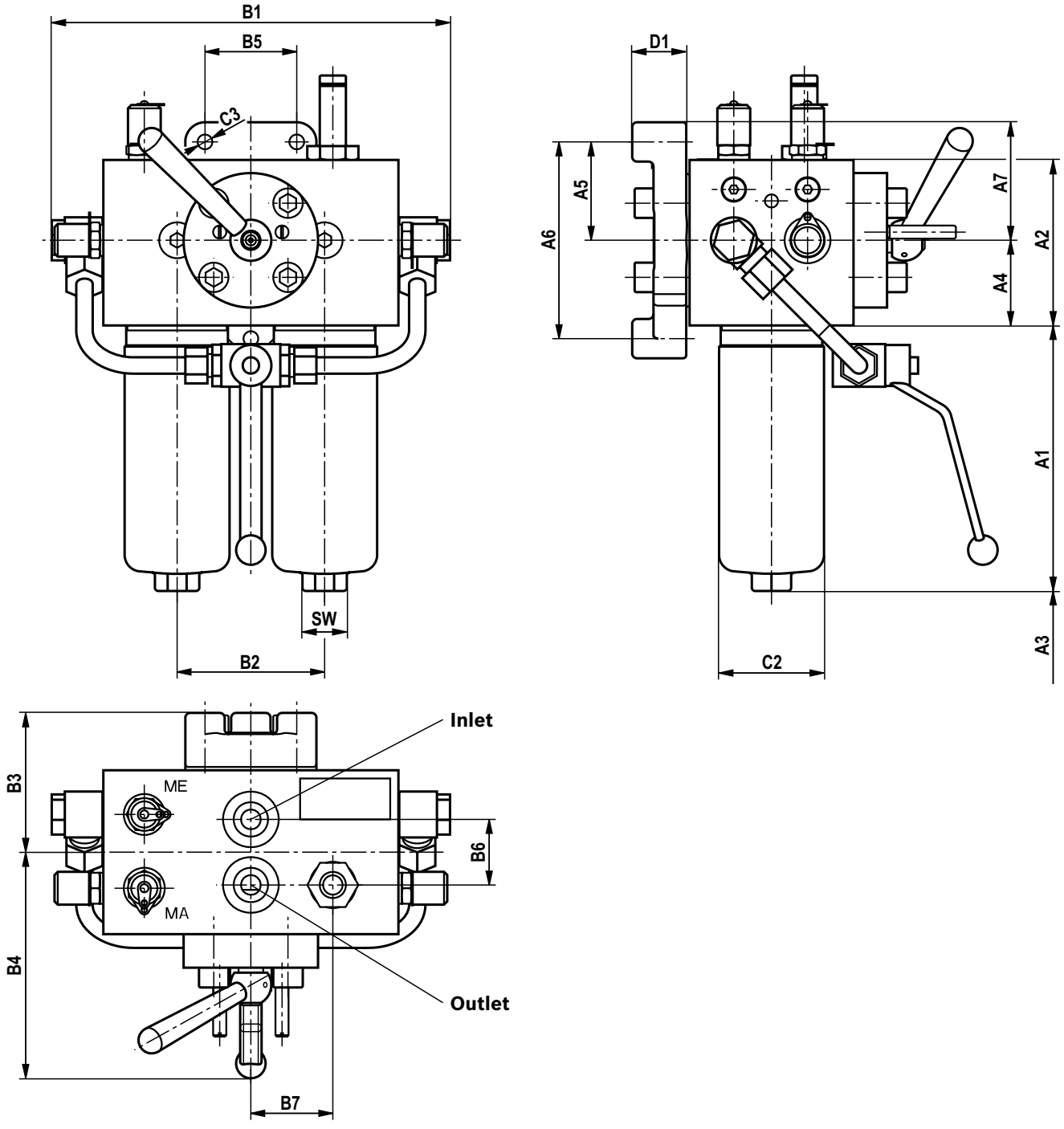


400LDN1000-H10XL



Dimensions 400LDN0040 ... 0100

(dimensions in mm *[inch]*)



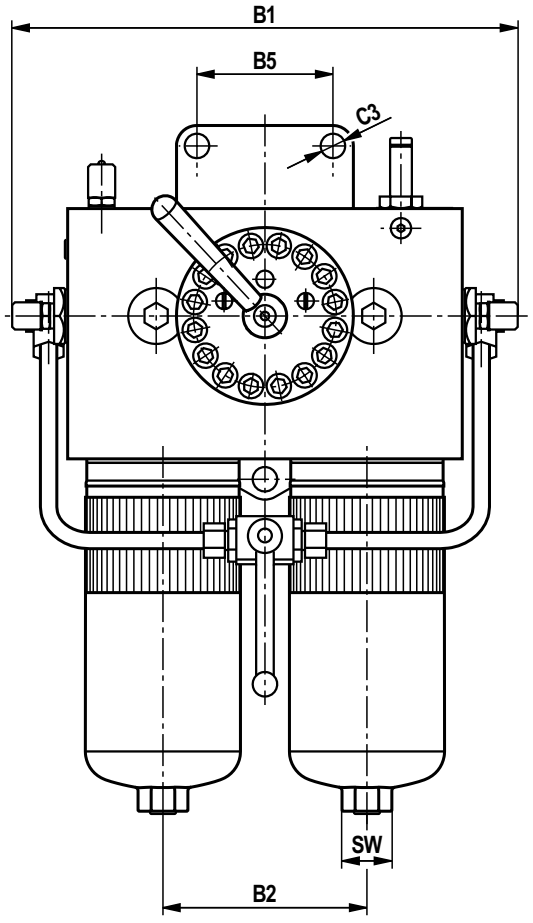
1) Servicing height for filter element exchange

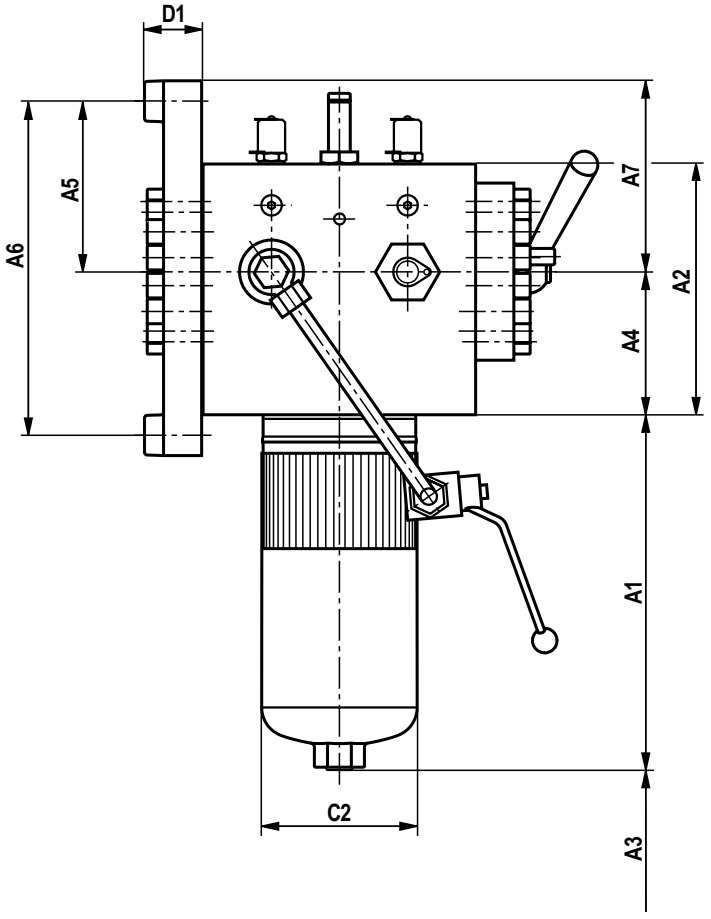
Type	A1	A2	A3 1)	A4	A5	A6	A7	B1	B2	B3
400LDN0040	100 *[3.94]*	101 *[3.98]*	110 *[4.33]*	52 *[2.05]*	60 *[2.36]*	120 *[4.72]*	72 *[2.83]*	240 *[9.45]*	90 *[3.54]*	85 *[3.35]*
400LDN0063	163 *[6.42]*									
400LDN0100	253 *[9.96]*									

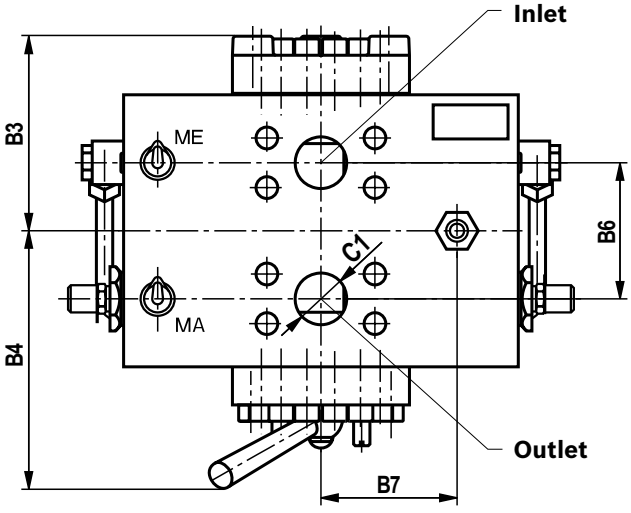
Type	B4	B5	B6	B7	C1	Ø C2	Ø C3	D1	SW
400LDN0040	118 *[4.65]*	56 *[2.20]*	40 *[1.57]*	50 *[1.97]*	G1 1/2	64 *[2.52]*	9 *[0.35]*	33 *[1.30]*	24 *[0.94]*
400LDN0063									
400LDN0100									

Dimensions 400LD0130 ... 0150; 400LDN0160 ... 0400

(dimensions in mm *[inch]*)







1) Servicing height for filter element exchange

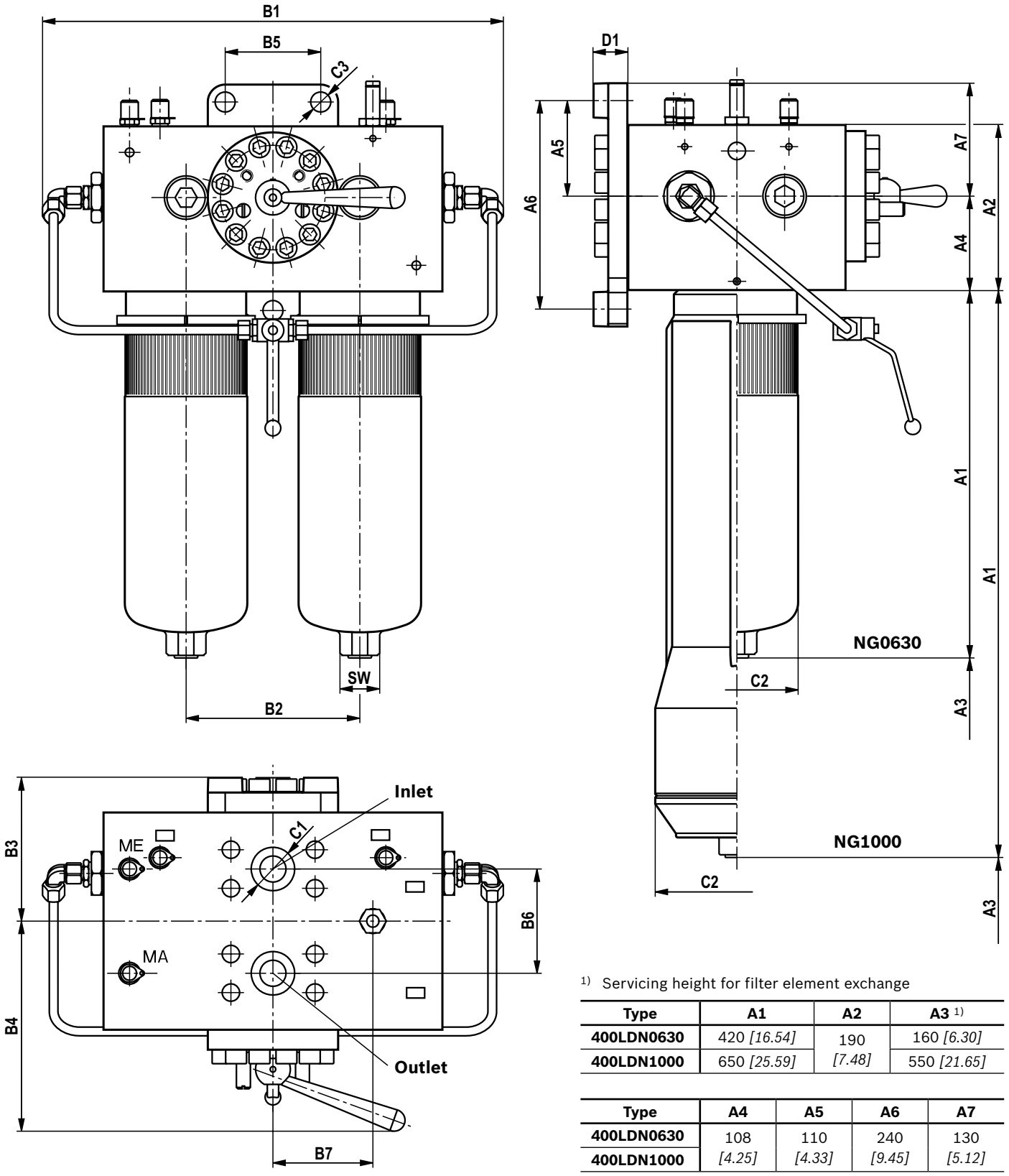
Type	A1	A2	A3 1)	A4
400LD0130	191 *[7.52]*	130 *[5.12]*	120 *[4.72]*	74 *[2.91]*
400LD0150	241 *[9.49]*			
400LDN0160	169 *[6.65]*	184 *[7.24]*	120 *[4.72]*	105 *[4.13]*
400LDN0250	259 *[10.20]*			
400LDN0400	409 *[16.10]*			

Type	A5	A6	A7	B1	B2
400LD0130	72.5 *[2.85]*	170 *[6.69]*	85 *[3.35]*	350 *[13.78]*	120 *[4.72]*
400LD0150					
400LDN0160	125 *[4.92]*	245 *[9.65]*	140 *[5.51]*	372 *[14.65]*	150 *[5.91]*
400LDN0250					
400LDN0400					

Type	B3	B4	B5	B6	B7	C1	Ø C2	Ø C3	D1	SW
400LD0130	111 *[4.37]*	160 *[6.30]*	80 *[3.15]*	75 *[2.95]*	80 *[3.15]*	SAE 1" 6000 psi	92 *[3.62]*	14 *[0.55]*	35 *[1.38]*	32 *[1.26]*
400LD0150										
400LDN0160	144 *[5.67]*	188 *[7.40]*	100 *[3.94]*	100 *[3.94]*	100 *[3.94]*	SAE 1 1/2" 6000 psi	114 *[4.49]*	18 *[0.71]*	42 *[1.65]*	32 *[1.26]*
400LDN0250										
400LDN0400										

Dimensions 400LDN0630 ... 1000

(dimensions in mm *[inch]*)



[1] Servicing height for filter element exchange

Type	A1	A2	A3 [1]
400LDN0630	420 *[16.54]*	190 *[7.48]*	160 *[6.30]*
400LDN1000	650 *[25.59]*		550 *[21.65]*

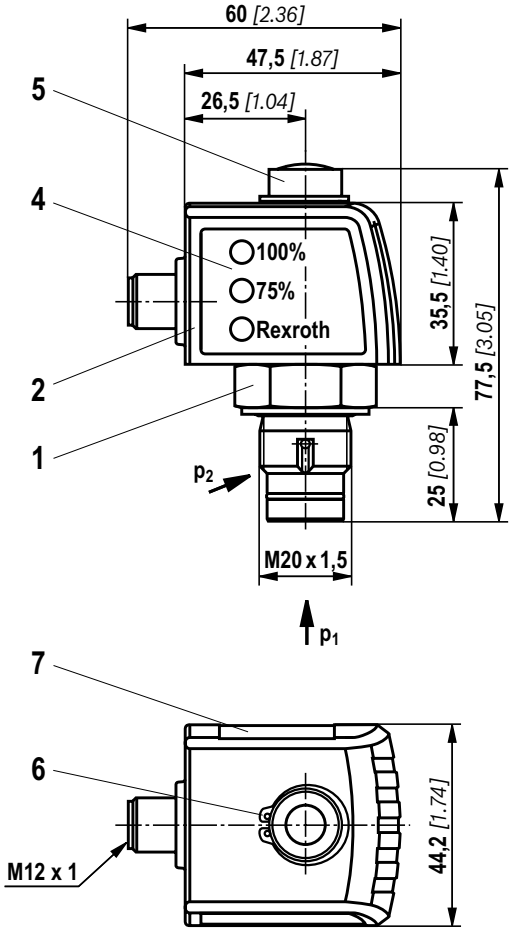
Type	A4	A5	A6	A7
400LDN0630	108 *[4.25]*	110 *[4.33]*	240 *[9.45]*	130 *[5.12]*
400LDN1000				

Type	B1	B2	B3	B4	B5	B6	B7	C1	Ø C2	Ø C3	D1	SW
400LDN0630	530 *[20.87]*	200 *[7.87]*	166 *[6.54]*	242 *[9.53]*	110 *[4.33]*	120 *[4.72]*	115 *[4.53]*	SAE 2" 6000 psi	141 *[5.55]*	23 *[0.91]*	40 *[1.57]*	41 *[1.61]*
400LDN1000									188 *[7.40]*			

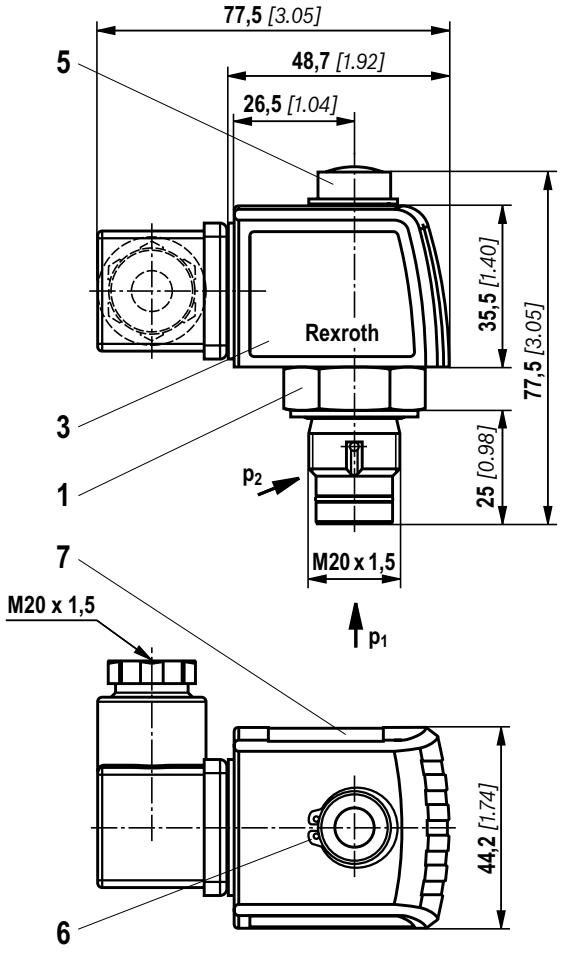
Dimensions: Maintenance indicator

(Dimensions in mm *[inch]*)

Pressure differential indicator with mounted M12x1 switching element



Pressure differential indicator with mounted EN 175301-803 switching element



1 Mechanical optical maintenance indicator;
max. tightening torque $M_{A\,max}$ = 50 Nm *[36.88 lb-ft]*

2 Switching element with locking ring for electrical maintenance indicator (rotatable 360°);
M12x1, 4-pole round plug-in connection

3 Switching element with locking ring for electrical maintenance indicator (rotatable 360°);
EN 175301-803 rectangular plug-in connection

4 Housing with three LEDs: 24 V =
green: Stand-by
yellow: Switching point 75%
red: Switching point 100%

5 Optical indicator with memory function

6 16x1 DIN 471 locking ring,
Material no. R900003923

7 Name plate

Ordering code spare parts

Filter element

01	02	03		04		05		06
2			**–**	**B00**	**–**	**0**	**–**	

Filter element

01	Design	**2**

Size

02	LDN... (with filter element according to **DIN 24550**)	**0040** **0063** **0100** **0160** **0250** **0400** **0630** **1000**
	LD... (Filter element according to **Bosch Rexroth standard**)	**0130** **0150**

Filtration rating in µm

03	**Absolute** **(ISO 16889; $\beta_x(c) \geq 200$)**	Glass fiber material, not cleanable	**H3XL** **H6XL** **H10XL** **H20XL**
	Nominal	Stainless steel wire mesh, cleanable	**G10** **G25** **G40** **G100**

Pressure differential

04	Max. admissible filter element pressure differential: 330 bar *[4,786 psi]*, filter has **no** bypass valve	**B00**

Bypass valve

05	**No** bypass valve	**0**

Seal

06	NBR seal	**M**
	FKM seal	**V**

Order example:
2.0160 H10XL-B00-0-M

Material no.: R928006818

For detailed information on Rexroth filter elements please refer to data sheet 51420.

Ordering code spare parts

Mechanical optical maintenance indicator

01	02		03		04		05	06
W	**O**	**–**	**D01**	**–**		**–**		**450**

01	**Maintenance indicator**	**W**

02	**mechanical visual indicator**	**O**

Version

03	Pressure differential, modular design	**D01**

Switching pressure

04	5.0 bar *[72.5 psi]*	**5.0**
	8.0 bar *[116 psi]*	**8.0**

Seal

05	NBR seal	**M**
	FKM seal	**V**

Max. nominal pressure

06	450 bar *[6527 psi]*	**450**

Mechanical optical maintenance indicator	Material no.
WO-D01-5,0-M-450	**R901025313**
WO-D01-5,0-V-450	**R901066235**
WO-D01-8,0-M-450	**R928038785**
WO-D01-8,0-V-450	**R928038784**

Seal kit

01	02	03	04
D	**400LD**		

01	**Seal kit**	**D**

02	**Series**	**400LD**

Size

03	0040-0100	**N0040-0100**
	0130-0150	**0130-0150**
	0160-0400	**N0160-0400**
	0630	**N0630**
	1000	**N1000**

Seal

04	NBR seal	**M**
	FKM seal	**V**

Seal kit	Material no.
D400LDN0040-0100-M	**R928039584**
D400LD0130-0150-M	**R928039585**
D400LDN0160-0400-M	**R928039586**
D400LDN0630-M	**R928039587**
D400LDN1000-M	**R928039588**

Assembly, commissioning, maintenance

Assembly

- The max. operating pressure of the system must not exceed the max. admissible operating pressure of the filter (see type plate).
- The assembly is mounted using the rear mounting plate.
- During assembly of the filter the flow direction (direction arrows) and the required servicing height of the filter element (see chapter “Dimensions”) are to be considered.
- Ensure that the system is assembled without tension stress
- Proper function is only guaranteed in the installation with the filter bowl vertically downwards.
- The maintenance indicator must be arranged so it is easily viewed in operation.
- Remove the plastic plugs in the filter inlet and outlet.
- The optional electronic maintenance indicator is connected via the electronic switching element with 1 or 2 switching points, which is attached to the mechanical optical maintenance indicator and held by means of the locking ring.

Commissioning

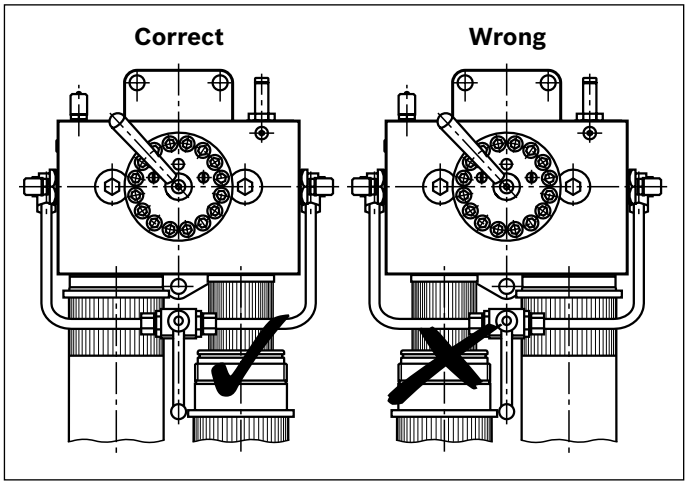
- Bring the switching lever into central position in order to fill both filter sides and open the pressure equalization valve.
- Commission the system.
- Bleed filter by opening the bleed screw, close when fluid escapes.
- Switch the filter into the operating position; to do so, switch the switching lever to one of the two end positions. The switch-over lever is on the filter side that is in operation.
- Close the pressure equalization valve.

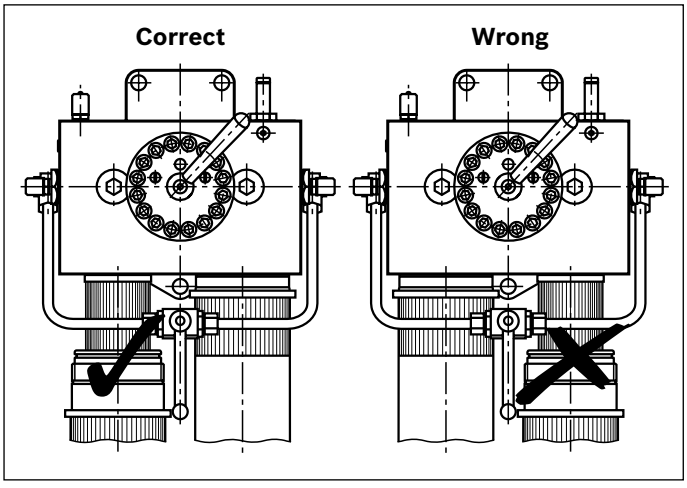
Maintenance

- If at operating temperature, the red indicator pin reaches out of the mechanical optical maintenance indicator and/or if the electronic switching element opens/closes the circuit, the filter element is contaminated and needs to be replaced or cleaned respectively.
- The material number of the correct replacement filter element is on the name plate of the complete filter. Verify that it matches the material number on the filter element. The switch-over lever is on the filter side that is in operation.
- Open the pressure equalization valve.
- Switch the filter using the switching lever
- Close the pressure equalization valve.
- Open the lateral threaded couplings at the decommissioned filter side in order to reduce the pressure.
- Via the drain screw (standard for size 0160 and larger), the fluid on the dirt side can be drained.
- Unscrew the filter bowl (or end cap if size 1,000).
- Slightly turn the filter element to remove it from the spigot.
- Clean the filter components as needed.
- Check the seals for damage and replace them, if necessary. For suitable seal kits refer to chapter “Spare parts”.
- Filter elements made of wire mesh can be cleaned. For detailed cleaning instructions, see data sheet 51420.
- Install the new or cleaned filter element on the spigot again by slightly rotating it.
- The filter is to be assembled in reverse order.
- To fill the maintained filter side, open the pressure equalization valve.
- The filter is bled via the lateral threaded coupling that is still open
- After fluid escapes, close the lateral threaded coupling again
- Ensure correct position of the switch-over lever end position.
- Close the pressure equalization valve.

Assembly, commissioning, maintenance

Correct position of the switching lever during filter element exchange





⚠ WARNING!

- Only install or remove when system is not pressurized.
- Filter is pressurized.
- Only remove filter bowl when it is not pressurized.
- Do not exchange the optical/mechanical maintenance indicator while the filter is under pressure!
- If the flow direction is not considered during assembly, the filter element will be destroyed. Particle contaminates could enter the system and damage the downstream components.

☞ **Important:**

- Only trained specialists may work on the filter.
- Proper function and safety are only guaranteed if original Bosch Rexroth filter elements and spare parts are used.
- Warranty becomes void if the delivered item is changed by the ordering party or third parties or improperly mounted, installed, maintained, repaired, used or exposed to environmental condition that do not comply with the installation conditions.

Tightening torques
(dimensions in mm *[inch]*)

Mounting

Series 400LD...		**N0040**	**N0063**	**N0100**	**0130**	**0150**	**N0160**	**N0250**	**N0400**	**N0630**	**N1000**
Screw/tightening torque with μ_{total} = 0.14	Nm *[lb-ft]*	M8 / 12 *[8.9]* ± 10%			M12 / 40 *[29.5]* ± 10%		M16 / 100 *[73.8]* ± 10%			M22 / 140 *[103.3]* ± 10%	
Quantity		3									
Recommended property class of screw		8.8									
Min. screw-in depth	mm *[in]*	10 *[0.4]*			12 *[0.5]*		20 *[0.8]*			25 *[1.0]*	

Filter bowl and maintenance indicator

Series		**N0040**	**N0063**	**N0100**	**0130**	**0150**	**N0160**	**N0250**	**N0400**	**N0630**	**N1000**
Filter bowl		Screw in filter bowl as far as it will go and unscrew 1/8 to 1/2 turn									
Maintenance indicator	Nm *[lb-ft]*	Max. 50 *[36.9]*									
EN 175301-803 switching element cubic connector screw	Nm *[lb-ft]*	M3/0.5 *[0.4]*									

Accessories

Series		**N0040**	**N0063**	**N0100**	**0130**	**0150**	**N0160**	**N0250**	**N0400**	**N0630**	**N1000**
Threaded coupling	Nm *[lb-ft]*	Max. 40 *[29.5]*									

☞ **Information on torques for fastening the SAE connection flange:**

- Only screws of quality class 8.8 must be used.
- The torques are specified in the relevant standard (ISO 6162-2:2012-12, or are as per AB22-15 for separate flanges).

Directives and standardization

Classification according to the Pressure Equipment Directive

The duplex filters for hydraulic applications according to 51429 are pressure holding equipment according to article 1, section 2.1.4 of the Pressure Equipment Directive 97/23/EC. (PED) However, based on the exception in article 1, section 3.6 of the PEG, hydraulic filters are exempt from the PED if they are not classified higher than category I (guideline 1/19).
The fluids from the chapter “Compatibility with approved pressure fluids” were considered for the classification. The intended use is only permitted with fluids in group 2 and within the specified operating limits (see “Technical data”). These filters do not receive a CE mark.

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

The duplex filters according to 51429 are not equipment or components in the sense of directive 94/9/EC and are not provided with a CE mark. The ignition risk analysis showed that these duplex filters do not have their own ignition sources as per DIN EN 13463-1:2009.

According to DIN EN 60079-11:2012, electronic maintenance indicators with a switching point:
WE-1SP-M12x1 R928028409
WE-1SP-EN175301-803 R928036318
are simple, electronic operating equipment according to DIN EN 60079-11:2012 that do not have an own voltage source. This simple electronic operating equipment may — according to DIN EN 60079-14:2012—be used in intrinsically safe electric circuits in systems without requiring marking and certification.
The duplex filters and the electronic maintenance indicators described here can be used for the following explosive areas:

	zone suitability	
Gas	1	2
Dust	21	22

☞ **Note:**
Maintenance Indicators with EC type examination certificate on request.

Complete filter with mech./opt. Maintenance indicator				
Use /assignment			**Gas 2G**	**Dust 2D**
Assignment [1]			Ex II 2G c IIC TX	Ex II 2D c IIC TX
Medium conductivity	pS/m	min.	300	
Dust accumulation		max.	–	0.5 mm

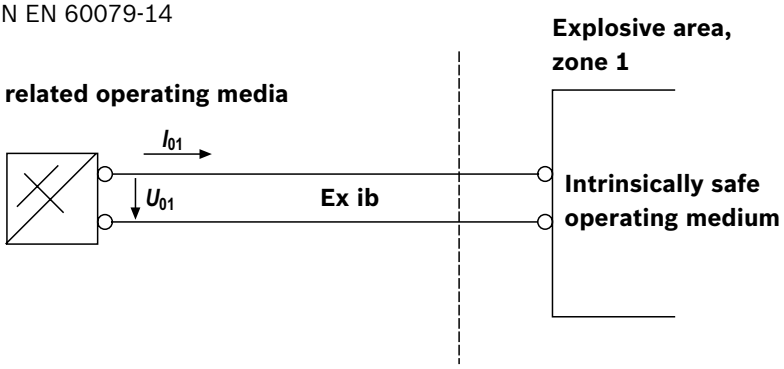
Electronic switching element in the intrinsically safe electric circuit				
Use /assignment			**Gas 2G**	**Dust 2D**
Classification			Ex II 2G Ex ib IIB T4 Gb	Ex II 2D Ex ib IIIC T100 °C Db
Admissible intrinsically safe electric circuits			Ex ib IIC, Ex ic IIC	Ex ib IIIC
Technical data			**Values only for intrinsically safe electric circuit**	
Switching voltage	Ui	max.	150 V AC/DC	
Switching current	Ii	max.	1.0 A	
Switching power	Pi	max.	1.3 W T4 T_{max} 40 °C	750 mW T_{max} 40 °C
		max.	1.0 W T4 T_{max} 80 °C	550 mW T_{max} 100 °C
Surface temperature [2]		max.	–	100 °C
inner capacity	Ci		negligible	
inner inductivity	Li		negligible	
Dust accumulation		max.	–	0.5 mm

[1] TX = max. temperature range: see chapter “Technical data”

[2] Temperature is based on the temperature of the medium in the filter and cannot exceed this value.

Directives and standardization

Possible circuit according to DIN EN 60079-14



⚠ WARNING!

- Explosion hazard due to high temperature! Temperature is based on temperature of medium in hydraulic circuit and cannot exceed this value. Take steps to make sure max. admissible ignition temperature is not exceeded in explosive area.
- When using the duplex filters according to 51429 in explosive areas, sufficient equipotential bonding has to be ensured. Grounding the filter with mounting screws is recommended. Note that paint and oxide protective coating are not electrically conductive.
- During filter element exchanges, the packaging material is to be removed from the replacement element outside the potentially explosive area

☞ **Important:**

- Maintenance only by trained specialists, instruction by the machine end-user acc. to DIRECTIVE 1999/92/EC appendix II, section 1.1
- Functional and safety warranty is only applicable when using genuine Rexroth spare parts

Environmental safety and recycling

- The used filter element should be disposed of in accordance with the respective country-specific legal regulations of environmental protection.
- After completion of the filter life, the components of the filter, in accordance with the respective country-specific legal regulations of environmental protection, are recycled.

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