Duplex tank mounted return line filter, with filter element according to DIN 24550

Type 10TDN0040 to 1000; 10TD2000 and 2500

RE 51454
Edition: 2014-06
Replaces: 04.14

- Size according to **DIN 24550**: 0040 to 1000
- Additional sizes: 2000, 2500
- Component series 1X
- Nominal pressure 10 bar *[145 psi]*
- Connection up to 3”
- Operating temperature –10 °C to +100 °C *[14 °F to 212 °F]*

Features

The tank mounted return line filters are designed for installation on fluid tanks. Their function is to separate solid materials from fluids.

They distinguish themselves by the following:

- Filter for tank mounting, switchable
- 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
- Optionally equipped with mechanical optical maintenance indicator with memory function
- Various, optional electronic switching elements, modular design
- Filters are equipped as standard with a bypass valve integrated in the filter housing
- Optional measuring port

Contents

Ordering code filter

01	02	03		04		05	06		07		08		09		10		10		10		10		10		10		10
10TD			**–**	**1X**	**/**		**A00**	**–**		**–**		**–**		**–**		**–**		**–**		**–**		**–**		**–**		**–**	

Series

01	Duplex tank mounted return line filter 10 bar *[145 psi]*	**10TD**

Filter element

02	with filter element according to **DIN 24550** (only with frame size 0040-1000)	**N**

Size

03	TDN... (Filter element according to **DIN 24550**)	**0040** **0063** **0100** **0160** **0250** **0400** **0630** **1000**
	TD... (Filter elements according to **Bosch Rexroth standard**)	**2000** **2500**

04	**Component series** 10 ... 19 (10 ... 19: unchanged installation and connection dimensions)	**1X**

Filter rating in µm

05	**Nominal**	Paper, not cleanable	**P10** **P25**
	Nominal	Stainless steel wire mesh, cleanable	**G10** **G25** **G40** **G60** **G100**
	Absolute **(ISO 16889; $\beta_{x(c)} \geq 200$)**	Glass fiber material, not cleanable	**H3XL** **H6XL** **H10XL** **H20XL**
	Absolute **(ISO 16889; $\beta_{x(c)} \geq 200$)**	Water-absorbing, not cleanable	**AS3** **AS6** **AS10** **AS20**

Pressure differential

06	max. admissible pressure differential of the filter element 30 bar *[435 psi]* (**with** bypass valve	**A00**

Maintenance indicator (1 unit per filter side)

07	Without maintenance indicator - bypass cracking pressure 3.5 bar *[51 psi]*	**0**
	Pressure gauge [1] 0...6 bar *[0...87 psi]* opposite of connection - bypass cracking pressure 3.5 bar *[51 psi]*	**MB**
	Maintenance indicator, cover mounted, aluminum, mech./optical, switching pressure 2.2 bar *[32 psi]*, with additional pressure gauge [1] 0...0.6 bar *[0...0.87 psi]* opposite of connection - bypass cracking pressure 3.5 bar *[51 psi]*	**MBV2.2**
	Maintenance indicator, polyamide, mech./optical, switching pressure 2.2 bar *[32psi]* – bypass cracking pressure 3.5 bar *[51 psi]*	**P2.2**
	Maintenance indicator, aluminum, mech./optical, switching pressure 0.8 bar *[11.6 psi]* – bypass cracking pressure 3.5 bar *[51 psi]*	**V0.8**
	Maintenance indicator, aluminum, mech./optical, switching pressure 1.5 bar *[21.8 psi]* – bypass cracking pressure 3.5 bar *[51 psi]*	**V1.5**
	Maintenance indicator, aluminum, mech./optical, switching pressure 2.2 bar *[32psi]* – bypass cracking pressure 3.5 bar *[51 psi]*	**V2.2**

[1] When using a pressure gauge, the maximum permissible operating pressure is reduced to 6 bar *[87 psi]*.

Ordering code filter

01	02	03	04	05	06	07	08	09	10	10	10	10	10	10	10
10TD			**– 1X /**		**A00**	**–**		**–**		**–**		**–**		**–**	

Seal

08	NBR seal	**M**
	FKM seal	**V**

Connection

09	**Frame size** / **Connection**	**0040-0100**	**0160-0250**	**0400**	**0630**	**1000**	**2000-2500**	
	G 1	●						**R4**
	G 1 1/4		X					**R5**
	G 1 1/2		●					**R6**
	SAE 2 1/2“ - 3000 psi			●	●			**S9**
	SAE 3“ - 3000 psi					●	●	**S10**
	SAE 16“	X						**U9**
	SAE 20“		X					**U5**
		● Standard connection X optional connection						

Supplementary information (Multiple specifications possible)

10	Breathing filter with oil mist separator (only size 0040-0100)	**FN**
	additional threaded couplings, G 1/4, lateral	**M**
	Installation plate (only NG0400-2500)	**MP**
	without bypass valve	**NB**
	Outlet pipe L110 mm *[4.33 inch]* (only NG0040-0100, from NG0160 see chapter “Accessories”)	**R110**
	Outlet pipe L150 mm *[5.91 inch]* (only NG0040-0100, from NG0160 see chapter “Accessories”)	**R150**
	Outlet pipe L250 mm *[9.84 in]* (only NG0040-0100, from NG0160 see chapter “Accessories”)	**R250**

Order example:
10TDN0100-1X/H10XLA00-P2,2-M-R4

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

Preferred types

Filter rating 3 µm, 6 µm, 10 µm and 20 µm

Filter type	Flow in l/min *[gpm]* with ν = 30 mm²/s *[142 SUS]* and Δp = 0.5 bar *[7.25 psi]* [1)]	Connection	Material no.	Connection	Material no.
10TDN0040-1X/H3XLA00-P2,2-M-...	23 *[6.1]*	..R4	**R928051464**	..U9	**R928051605**
10TDN0063-1X/H3XLA00-P2,2-M-...	35 *[9.2]*	..R4	**R928051465**	..U9	**R928051606**
10TDN0100-1X/H3XLA00-P2,2-M-...	52 *[13.7]*	..R4	**R928051466**	..U9	**R928051607**
10TDN0160-1X/H3XLA00-P2,2-M-...	105 *[27.7]*	..R6	**R928051467**	..U5	**R928051608**
10TDN0250-1X/H3XLA00-P2,2-M-...	160 *[42.3]*	..R6	**R928051468**	..U5	**R928051609**
10TDN0400-1X/H3XLA00-P2,2-M-...-MP	290 *[76.6]*	..S9	**R928051469**		
10TDN0630-1X/H3XLA00-P2,2-M-...-MP	410 *[108.3]*	..S9	**R928051470**		
10TDN1000-1X/H3XLA00-P2,2-M-...-MP	560 *[147.9]*	..S10	**R928051471**		
10TD2000-1X/H3XLA00-P2,2-M-...-MP	*900 [237.7]*	..S10	**R928051472**		
10TD2500-1X/H3XLA00-P2,2-M-...-MP	1100 *[290.6]*	..S10	**R928051473**		
10TDN0040-1X/H6XLA00-P2,2-M-...	37 *[9.8]*	..R4	**R928051395**	..U9	**R928051600**
10TDN0063-1X/H6XLA00-P2,2-M-...	49 *[12.9]*	..R4	**R928051396**	..U9	**R928051601**
10TDN0100-1X/H6XLA00-P2,2-M-...	70 *[18.5]*	..R4	**R928051397**	..U9	**R928051602**
10TDN0160-1X/H6XLA00-P2,2-M-...	150 *[39.6]*	..R6	**R928051398**	..U5	**R928051603**
10TDN0250-1X/H6XLA00-P2,2-M-...	200 *[52.8]*	..R6	**R928049477**	..U5	**R928051604**
10TDN0400-1X/H6XLA00-P2,2-M-...-MP	410 *[108.3]*	..S9	**R928051399**		
10TDN0630-1X/H6XLA00-P2,2-M-...-MP	510 *[134.7]*	..S9	**R928051458**		
10TDN1000-1X/H6XLA00-P2,2-M-...-MP	870 *[229.8]*	..S10	**R928049321**		
10TD2000-1X/H6XLA00-P2,2-M-...-MP	1250 *[330.1]*	..S10	**R928051461**		
10TD2500-1X/H6XLA00-P2,2-M-...-MP	1350 *[356.5]*	..S10	**R928051463**		
10TDN0040-1X/H10XLA00-P2,2-M-...	43 *[11.3]*	..R4	**R928048600**	..U9	**R928051613**
10TDN0063-1X/H10XLA00-P2,2-M-...	62 *[16.4]*	..R4	**R928048601**	..U9	**R928051614**
10TDN0100-1X/H10XLA00-P2,2-M-...	80 *[21.1]*	..R4	**R928048602**	..U9	**R928051615**
10TDN0160-1X/H10XLA00-P2,2-M-...	190 *[50.2]*	..R6	**R928051508**	..U5	**R928051616**
10TDN0250-1X/H10XLA00-P2,2-M-...	260 *[68.7]*	..R6	**R928048604**	..U5	**R928051617**
10TDN0400-1X/H10XLA00-P2,2-M-...-MP	460 *[121.5]*	..S9	**R928048991**		
10TDN0630-1X/H10XLA00-P2,2-M-...-MP	560 *[147.9]*	..S9	**R928051424**		
10TDN1000-1X/H10XLA00-P2,2-M-...-MP	970 *[256.2]*	..S10	**R928048992**		
10TD2000-1X/H10XLA00-P2,2-M-...-MP	1350 *[356.6]*	..S10	**R928048993**		
10TD2500-1X/H10XLA00-P2,2-M-...-MP	1450 *[383.0]*	..S10	**R928048994**		
10TDN0040-1X/H20XLA00-P2,2-M-...	62 *[16.4]*	..R4	**R928051386**	..U9	**R928051595**
10TDN0063-1X/H20XLA00-P2,2-M-...	80 *[21.1]*	..R4	**R928051387**	..U9	**R928051596**
10TDN0100-1X/H20XLA00-P2,2-M-...	95 *[25.1]*	..R4	**R928048958**	..U9	**R928051597**
10TDN0160-1X/H20XLA00-P2,2-M-...	260 *[68.7]*	..R6	**R928051388**	..U5	**R928051598**
10TDN0250-1X/H20XLA00-P2,2-M-...	320 *[84.5]*	..R6	**R928051389**	..U5	**R928051599**
10TDN0400-1X/H20XLA00-P2,2-M-...-MP	*560 [147.9]*	..S9	**R928051390**		
10TDN0630-1X/H20XLA00-P2,2-M-...-MP	630 *[166.4]*	..S9	**R928051391**		
10TDN1000-1X/H20XLA00-P2,2-M-...-MP	1270 *[335.5]*	..S10	**R928051392**		
10TD2000-1X/H20XLA00-P2,2-M-...-MP	1600 *[422.7]*	..S10	**R928051393**		
10TD2500-1X/H20XLA00-P2,2-M-...-MP	1680 *[443.8]*	..S10	**R928051394**		

1) An appropriate differential pressure via the filter and measuring device according to ISO 3968. The differential pressure measured on the maintenance indicator is lower.

Ordering code accessories

Electronic switching element for maintenance indicators

If an electronic switching element with signal suppression up to 30 °C *[86 °F]* is used (WE-2SPSU-M12X1, **R928028411**), it has to be ensured that the aluminum version of the mechanical-optical maintenance indicator **must** be used. These maintenance indicators are referred to in the filter type key as “V0.8”, “V1.5” or “V2.2”.

In this connection, also refer to the chapter “Maintenance indicator”.
The temperature-controlled signal processing does not work with mechanical-optical maintenance indicators made of polyamide, “P2.2”.

01		02		03
WE	**–**		**–**	

Maintenance indicator

01	electronic switching element	**WE**

Type of signal

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

Connector

03	Round plug-in connection M12 x 1, 4-pole	**M12x1**
	Rectangular connector, 2-pole, design A according to EN-175301-803, only possible with “1SP” type of signal.	**EN175301-803**

Material numbers of the electronic switching elements
With the “mechanical-optical maintenance indicator” option (V..., P...), two mechanical optical maintenance indicators are installed at the factory. So you must always order two electric switching elements as optional accessories.

Material no.	Type	Signal	Switching points	Connector	LED
R928028409	WE-1SP-M12x1	Changeover	1	M12x1	without
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	without

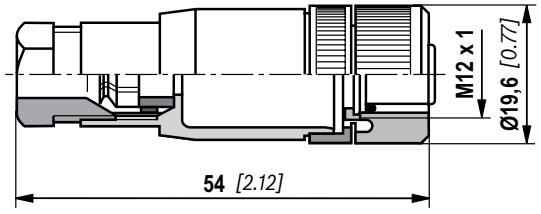
Ordering code accessories
(dimensions in mm *[inch]*)

Mating connectors according to IEC 60947-5-2

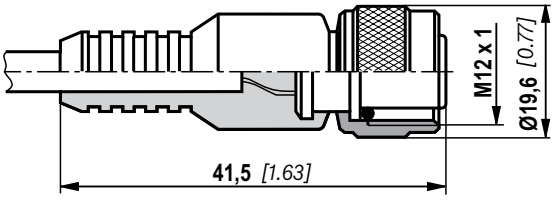
for electronic switching element with round plug-in connection M12x1

Mating connector suitable for K24 4-pole, M12x1with screw connection, cable gland Pg9.

Material no. R900031155



Mating connector suitable for K24-3m 4-pole, M12x1with 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:
Tank mounted return line filter with mechanical-optical maintenance indicator for $p_{nom.}$ = 10 bar *[145 psi]*, size 0040, with filter element 10 µm and electronic switching element M12x1 with 1 switching point for hydraulic fluid mineral oil HLP according to DIN 51524.

Filter with mech. optical maintenance indicator:	**10TDN0040-1X/H10XLA00-P2.2-M-R4**	**Material no.: R928048600**
Switching element:	**WE-1SP-M12x1**	**Material no.: R928028409**
Mating connector:	**Mating connector suitable for K24 4-pole, M12x1 with screw connection, cable gland Pg9.**	**Material no. R900031155**

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

Outlet pipe

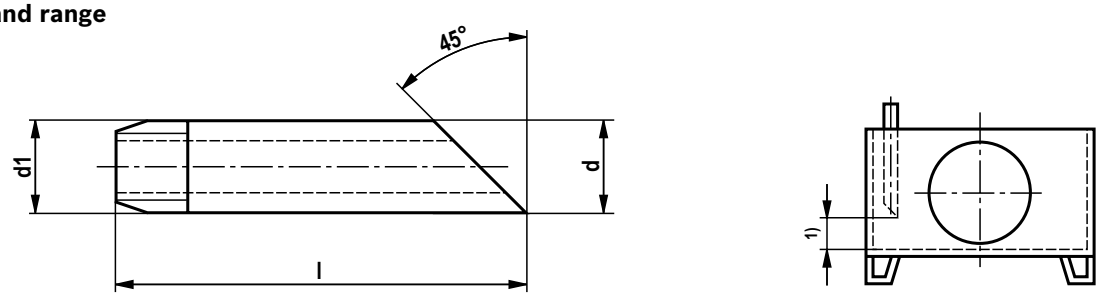
The outlet pipe is push connected onto the filter bowl outlet piece. Correct seat is confirmed by an audible click. After the connection is made, the outlet pipe can no longer be removed.

Outlet pipe with push connection size 0040-0100

Material no.	Description
R928038744	ACC-R-10TEN0040-0100-R110
R928038745	ACC-R-10TEN0040-0100-R150
R928038746	ACC-R-10TEN0040-0100-R250

Outlet pipe with threaded connection from size 0160

Dimensions and range



1) Recommended distance to tank bottom (unless otherwise specified): 60...160 mm *[2.4...6.3 inch]*
From a pipe length of 400 mm *[15.75 inch]*, we strongly recommend fixing the outlet pipe with an internal tank pipe bracket.

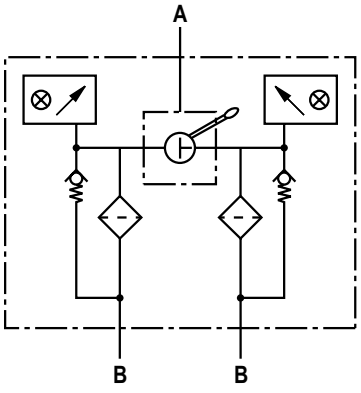
DN	Dimensions				galvanized	ES (stainless)
					Denomination: **PIPE AB23-03/R...**	Denomination: **PIPE AB23-03/R... -ES**
	d	d1	l		Material no.	Material no.
40 *[1.57]*	48.3 *[1.90]*	R 1 1/2	250 *[9.84]*	1 1/2 L = 250	**R900109501**	**R900062066**
			400 *[15.75]*	1 1/2 L = 400	**R900083146**	**R900074878**
			800 *[31.50]*	1 1/2 L = 800	**R900029854**	**–**
			1300 *[51.18]*	1 1/2 L = 1300	**R900302230**	**–**
			2000 *[78.74]*	1 1/2 L = 2000	**R900229461**	**–**
50 *[1.97]*	60.3 *[2.37]*	R 2	400 *[15.75]*	2 L = 400	**R900727174**	**R900987657**
			800 *[31.50]*	2 L = 800	**R900029856**	**R900226706**
80 *[3.15]*	88.9 *[3.50]*	R 3	160 *[6.30]*	3 L = 160	**R900062845**	**–**
			200 *[7.87]*	3 L = 200	**R900061785**	**R900062067**
			350 *[13.78]*	3 L = 350	**R900084137**	**–**
			650 *[25.59]*	3 L = 650	**R900076923**	**R900757513**
			800 *[31.50]*	3 L = 800	**R900029838**	**R900987653**

Thread: Whitworth pipe thread according to DIN 2999 part 1, poppet 1:16
Material/surface treatment: St 33-1 according to DIN 17100/galvanized (B) according to DIN 2444
1.4541

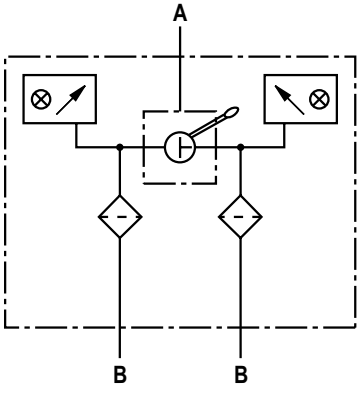
Order example/search term
Pipe according to DIN 2440 (ISO 65) with thread R 1 1/2 and L = 250 mm *[9.84 inch]*, galvanized:
PIPE AB23-03/R 1 1/2 L = 250 material no. R900109501

Symbols

Tank mounted return line filter with bypass and mechanical indicator



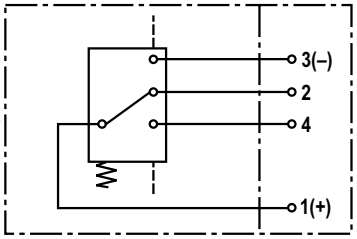
Tank mounted return line filter without bypass and with mechanical indicator



electronic switching element

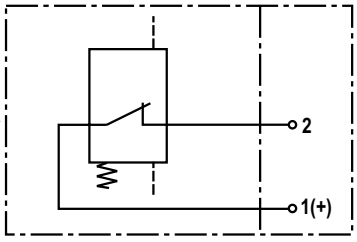
for maintenance indicator

Switching element Connector



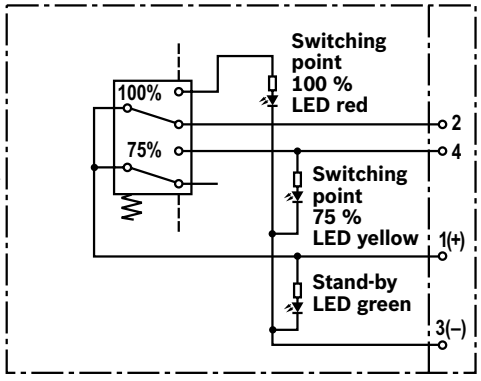
WE-1SP-M12x1

Switching element Connector



WE-1SP-EN175301-803

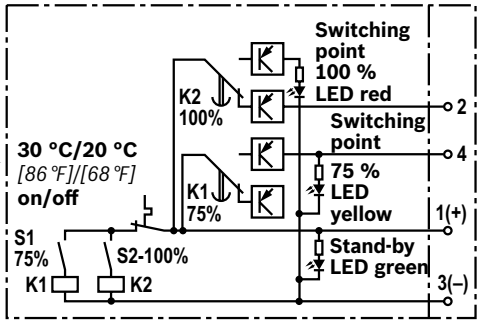
Switching element Connector



WE-2SP-M12x1

Circuit diagram drawn in plugged condition (operating state)

Switching element Connector



WE-2SPSU-M12x1

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

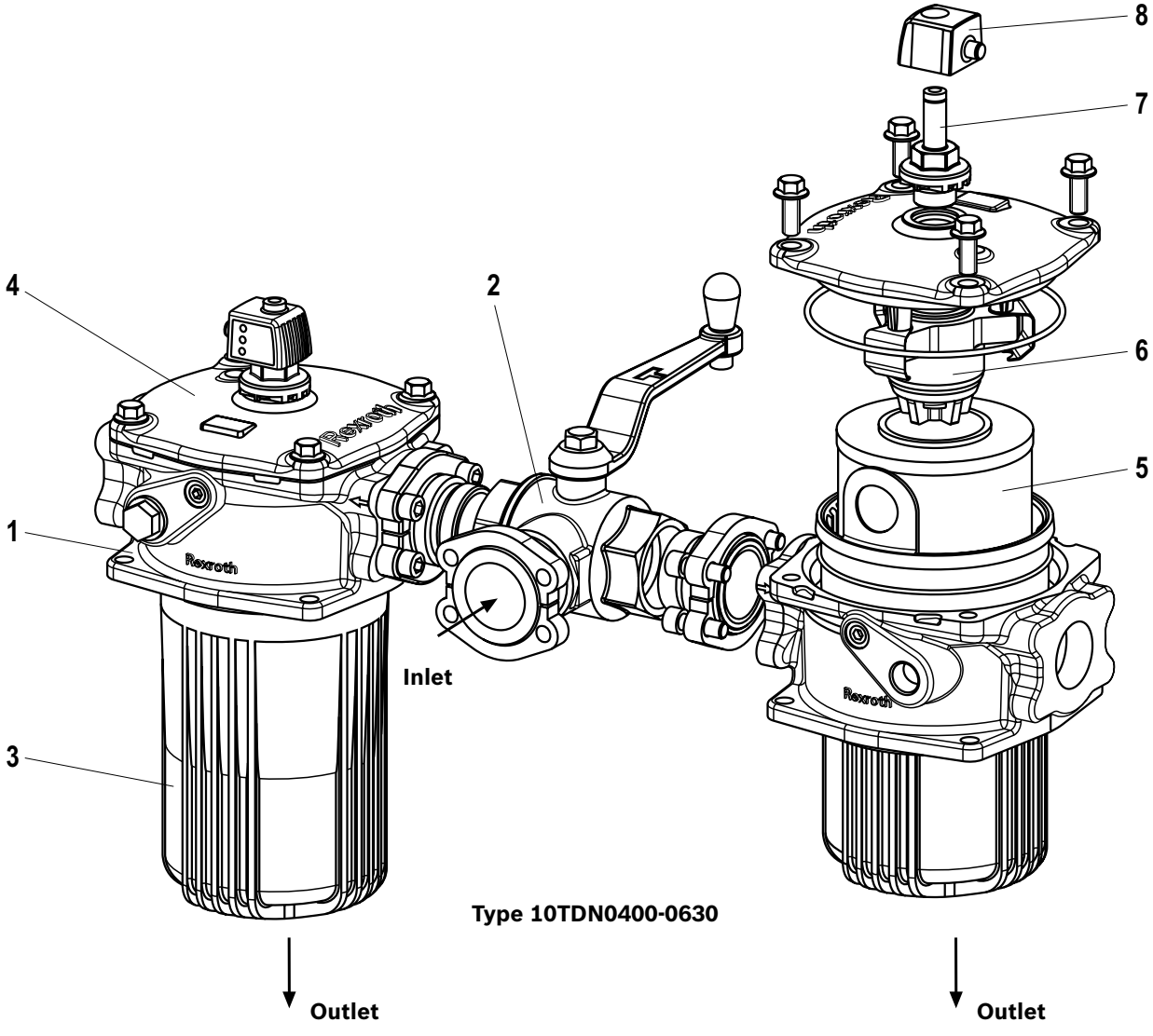
Function, section

The switchable tank mounted return line filter is located in the return line for direct attachment onto the tank of a hydraulic or lubrication system. It can also be used as filling or bypass filter. The filter basically consists of filter head (1) and switch-over fitting (2), filter bowl (3), cover (4), filter element (5) as well as a bypass valve (6), by default

Optionally, the filter is equipped with mechanical optical maintenance indicator (7). The electronic maintenance indicator is connected via the electronic switching elements (8) with 1 or 2 switching points (see p. 5), which have to be ordered separately. For every filter housing, a switching element is required. The electronic switching element (8) is attached to the mechanical optical maintenance indicator (7) and held by means of a locking ring.

Depending on the filter size, more additional functions are available - e.g. a breathing filter, surge protection (only for size 0040 - 0100) or outlet pipes in different lengths – in this connection, also refer to the chapter “Accessories”.

During operation, the hydraulic fluid reaches the filter housing via the inlet; here, it flows through the filter element (5) from the outside to the inside and is cleaned according to the filter rating. The dirt particles filtered out collect in the filter element (5). Via the outlet, the filtered hydraulic fluid enters the tank. In case of contamination, the necessary filter element exchange is displayed by the relevant maintenance indicator (7). Within the course of this exchange, you should also exchange the breathing filter element if equipped (only with size 0040-0100).
The system is manually switched to the clean filter element by means of the switch-over fitting (2). Continuous flow is guaranteed during the switching process.



Technical data

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

General								
Weight			Size	0040	0063	0100	0160	0250
			kg *[lbs]*	4.46 *[9.81]*	4.86 *[10.7]*	5.26 *[11.6]*	14 *[30.8]*	15 *[33]*
			Size	0400	0630	1000	2000	2500
			kg *[lbs]*	23 *[50.6]*	27 *[59.4]*	61 *[134.2]*	68 *[149.9]*	79 *[174.1]*
Installation position				vertical				
Ambient temperature range			°C *[°F]*	–10...+65 *[14...+149]* (short periods down to –30 *[–22]*)				
Storage conditions	– NBR seal		°C *[°F]*	–40 ... +65 *[–40 ... +149]*; max. relative air humidity 65 %				
	– FKM seal		°C *[°F]*	–20 ... +65 *[–4 ... +149]*; max. relative air humidity 65 %				
Material	– Filter cover			Carbon fiber reinforced plastic (sizes 0040...0100) Aluminum (sizes 0160...2500)				
	– Filter head			Aluminum				
	– Filter bowl			Carbon fiber reinforced plastic (sizes 0040...0630) Aluminized steel (sizes 1000...2500)				
	– Visual maintenance indicator	(P2.2)		Plastic PA6				
		(V...)		Aluminum				
	– Bypass valve			Plastic				
	– Electronic switching element			Plastic PA6				
	– Pressure gauge			Plastic				
	– Seals			NBR / FKM				
Surface requirement Tank opening	– roughness depth	$R_{z\ max.}$	µm	25 (10TDN0040-0100) and 6.3 ... 16 (from 10TDN0160)				
	– Flatness	$t_{E\ max.}$	µm	0.3 ... 0.5 (10TDN0040-0100) and 0.2 (from 10TDN0160)				

Hydraulic			
Maximum operating pressure	bar *[psi]*	10 *[145]* When using a pressure gauge, the maximum permissible operating pressure is reduced to 6 bar *[87 psi]*.	
Hydraulic fluid temperature range	°C *[°F]*	–10...+100 *[+14...+212]*	
Minimum conductivity of the medium	pS/m	300	
Fatigue strength according to ISO 10771	Load cycles	> 10^5 with max. operating pressure	
Type of pressure measurement of the maintenance indicator		Back pressure	
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]*	without maintenance indicator	3.5 ± 0.35 *[50.8 ±5.1]*
		with pressure gauge	
		V0.8 ± 0.15 *[11.6 ± 2.2]*	
		V1.5 ± 0.2 *[21.8 ± 2.9]*	
		V2.2 ± 0.3 *[31.9 ± 4.4]*	
		P2.2 +0.45/-0.25 *[31.9(+6.4/-3.6)]*	
Filtration direction		From the outside to the inside	

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, 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 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)		
Protection class according to EN 60529 IP 65		IP 67			IP 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 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 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
admissible pressure differential “A”	bar *[psi]*	30 *[435]*		

Compatibility with permitted hydraulic fluids

Hydraulic fluid		**Classification**	**Suitable sealing materials**	**Standards**
Mineral oil		HLP	NBR	DIN 51524
Biodegradable	– insoluble in water	HETG	NBR	VDMA 24568
		HEES	FKM	
	– soluble in water	HEPG	FKM	VDMA 24568
Flame-resistant	– water-free	HFDU, HFDR	FKM	VDMA 24317
	– containing 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 (cellulose) may not be used, filter elements with glass fiber material have to be used instead.
- **Biodegradable:** If filter materials made of filter paper are used, the filter life may be shorter than expected due to material incompatibility and swelling.

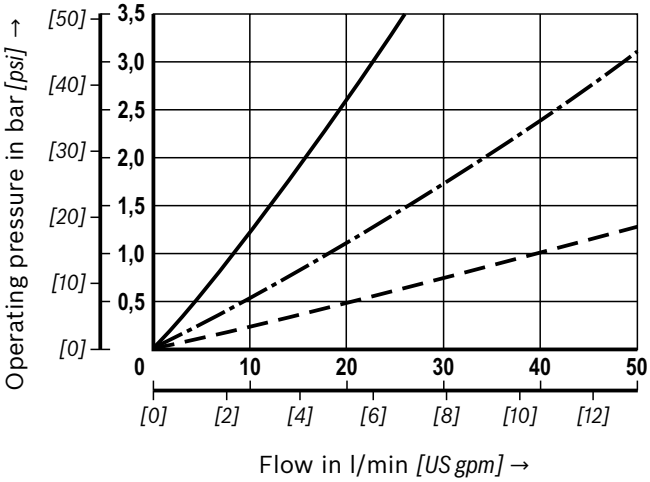
Characteristic curves: H3XL
(measured with mineral oil HLP46 according to DIN 51524)

Spec. weight: < 0.9 kg/dm³
Δ*p*-Q characteristic curves for complete filter
recommended initial Δ*p* for design = 0.5 bar *[7.25 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]*

Size 0040



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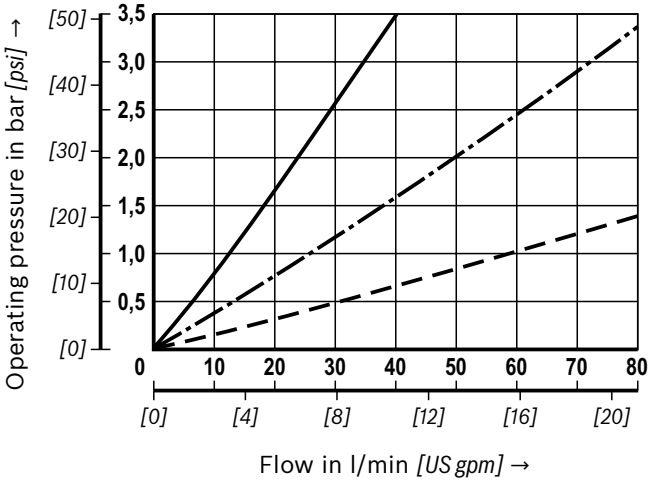

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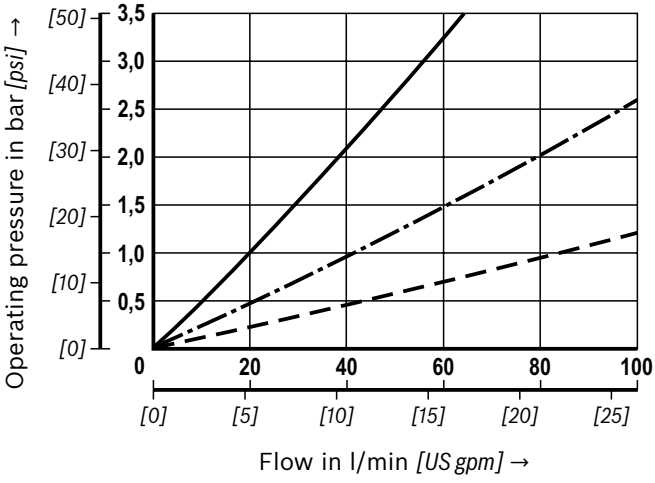

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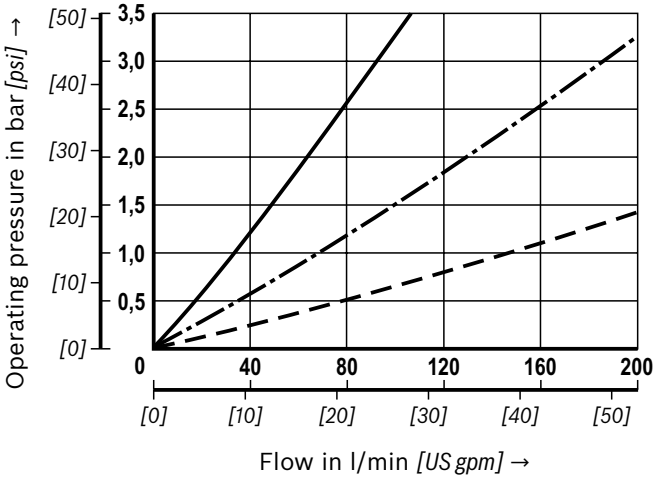

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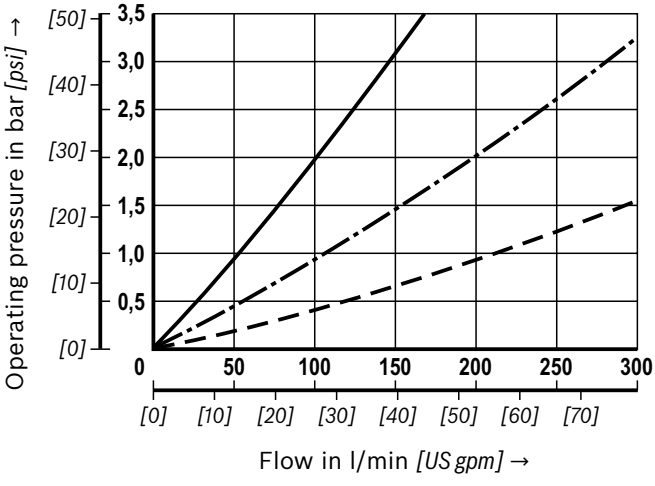

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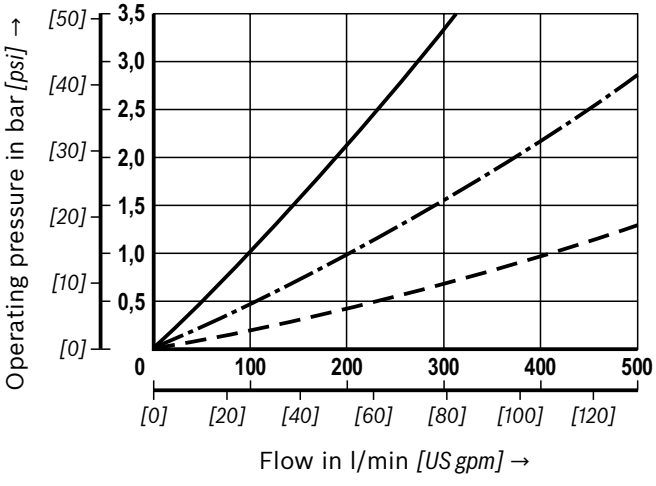


Characteristic curves: H3XL

(measured with mineral oil HLP46 according to DIN 51524)

Spec. weight: < 0.9 kg/dm³

Δ*p*-Q characteristic curves for complete filter

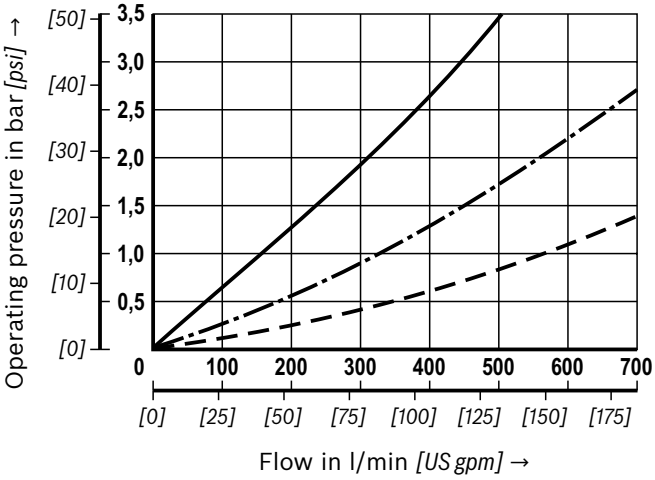
recommended initial Δ*p* for design = 0.5 bar *[7.25 psi]*

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]*

Size 0630



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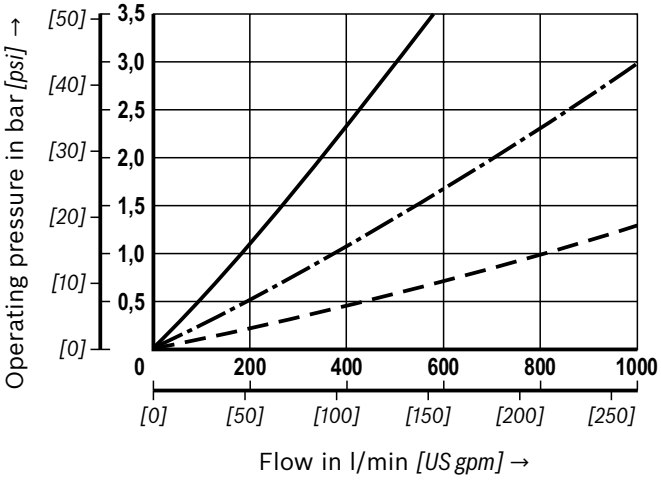

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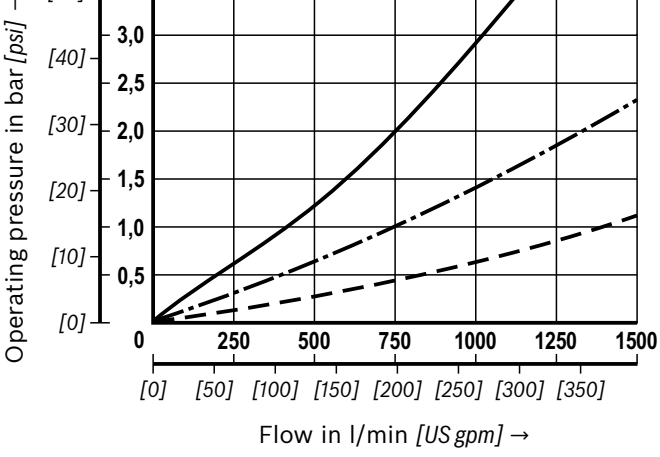

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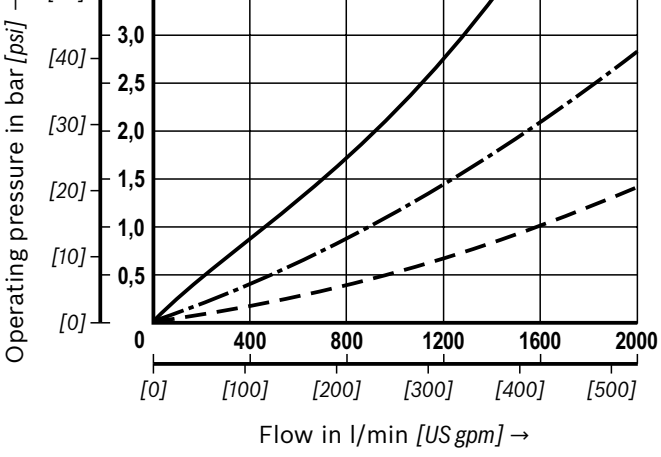


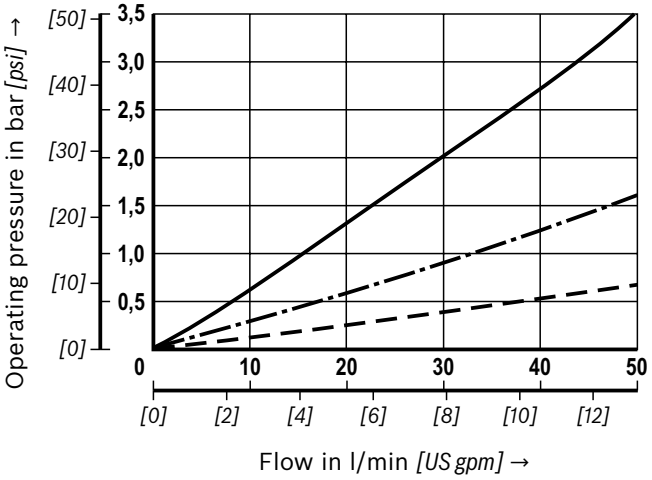
Characteristic curves: H6XL
(measured with mineral oil HLP46 according to DIN 51524)

Spec. weight: < 0.9 kg/dm³
Δ*p*-Q characteristic curves for complete filter
recommended initial Δ*p* for design = 0.5 bar *[7.25 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]*

Size 0040



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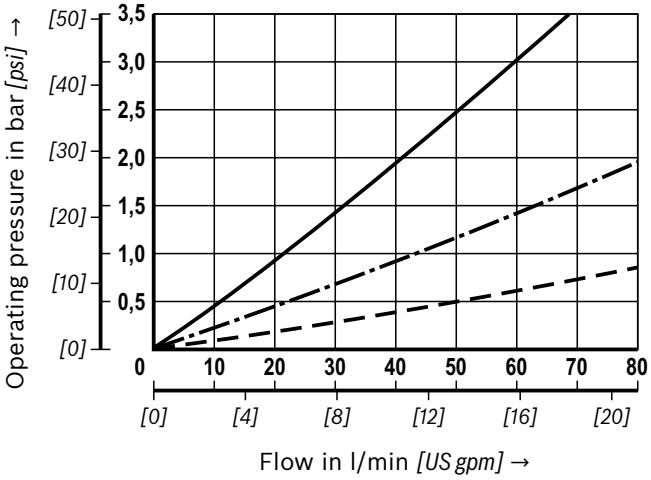

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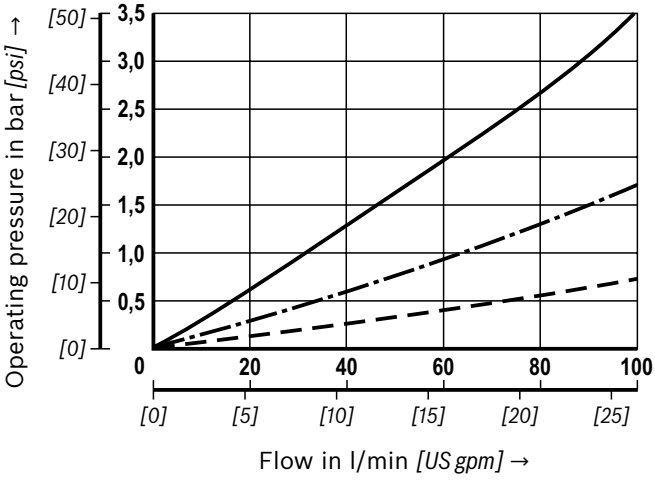

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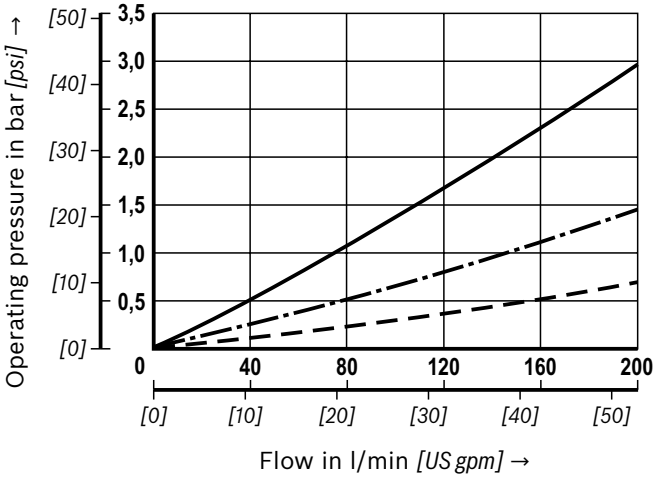

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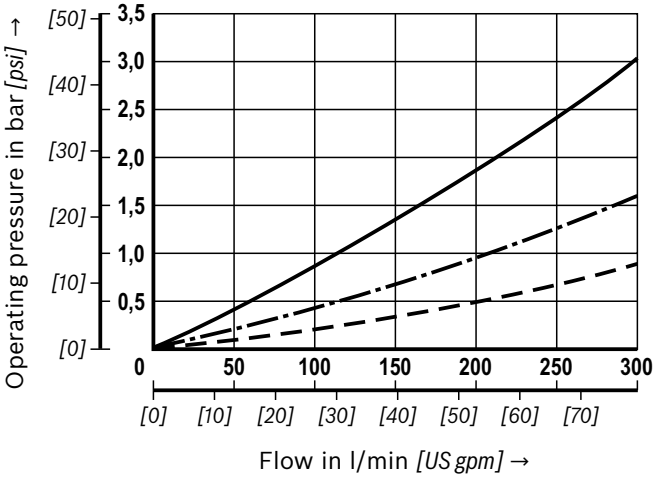

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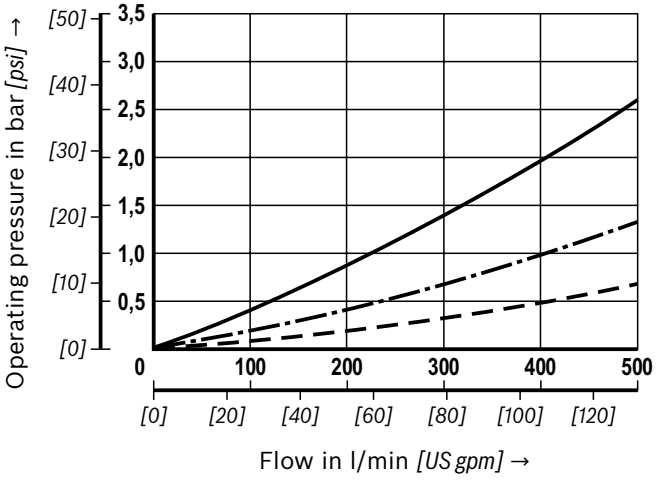


Characteristic curves: H6XL

(measured with mineral oil HLP46 according to DIN 51524)

Spec. weight: < 0.9 kg/dm³

Δ*p*-Q characteristic curves for complete filter

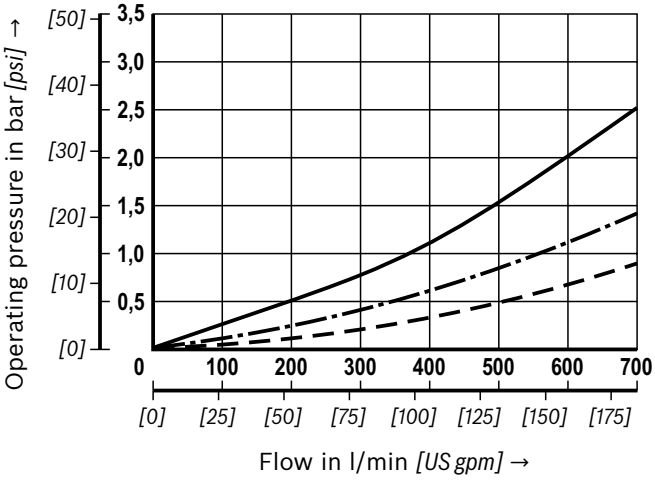
recommended initial Δ*p* for design = 0.5 bar *[7.25 psi]*

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]*

Size 0630



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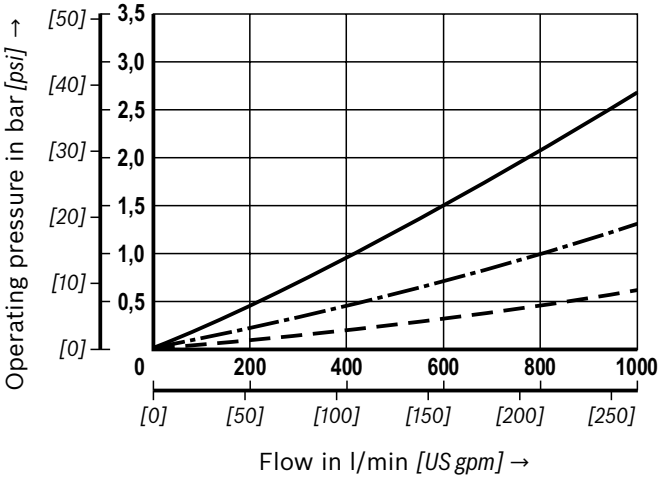

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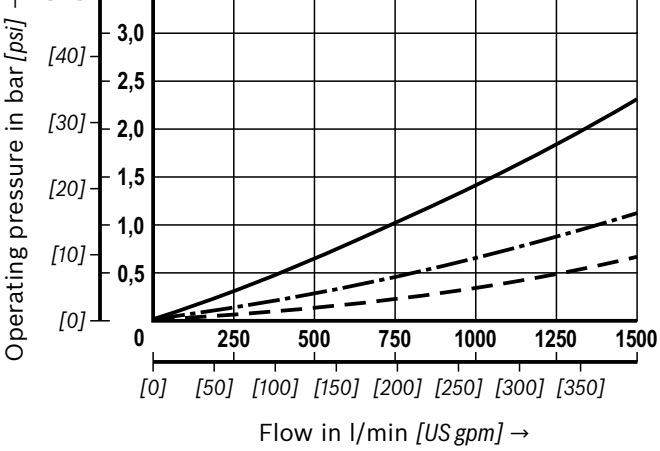

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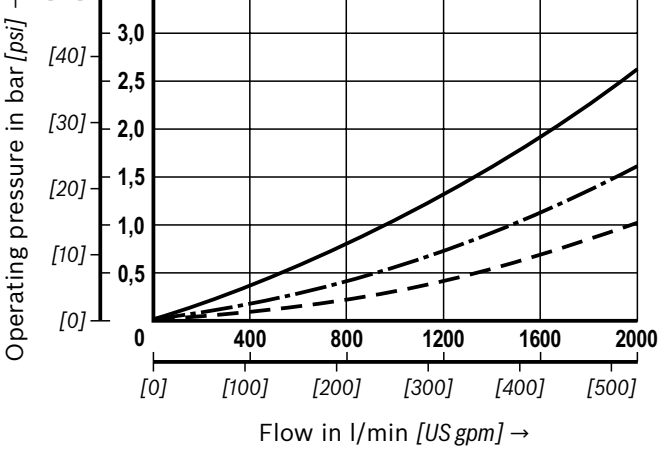


Characteristic curves: H10XL

(measured with mineral oil HLP46 according to DIN 51524)

Spec. weight: < 0.9 kg/dm³

Δ*p*-Q characteristic curves for complete filter

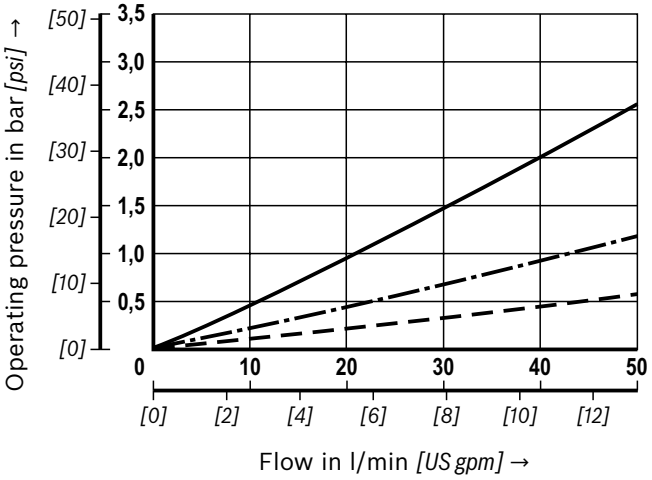
recommended initial Δ*p* for design = 0.5 bar *[7.25 psi]*

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]*

Size 0040



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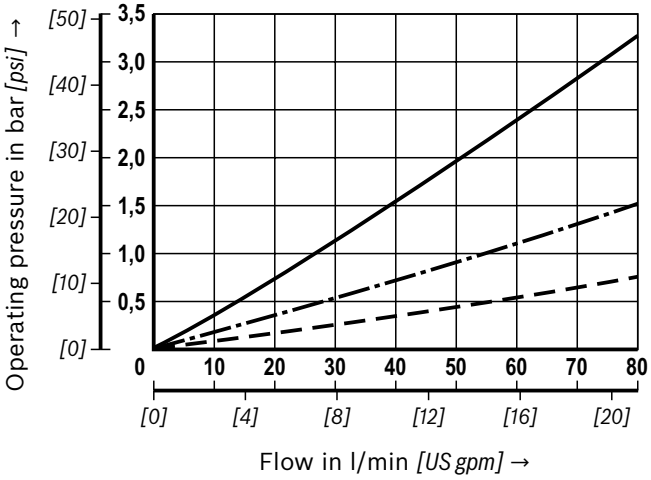

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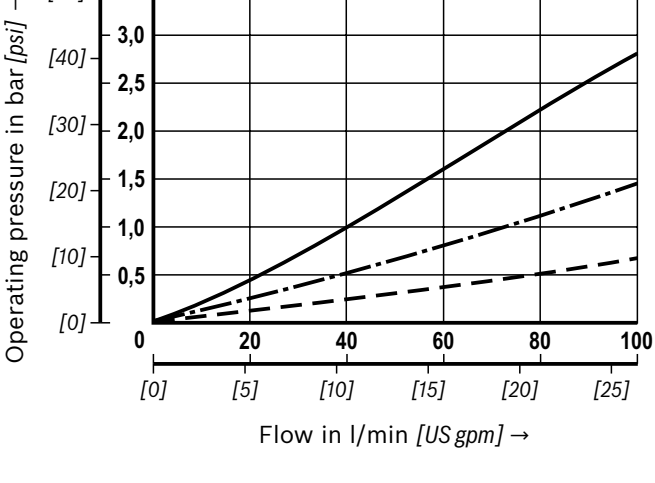

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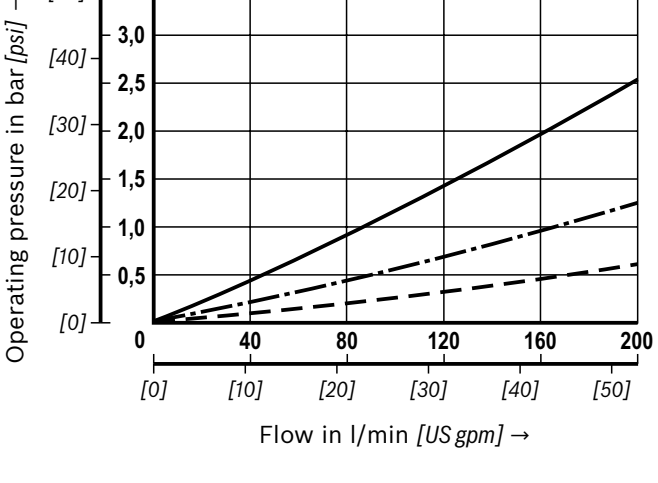

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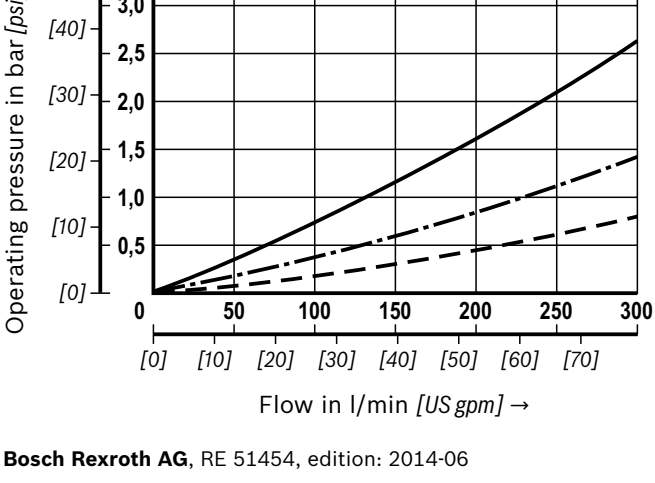

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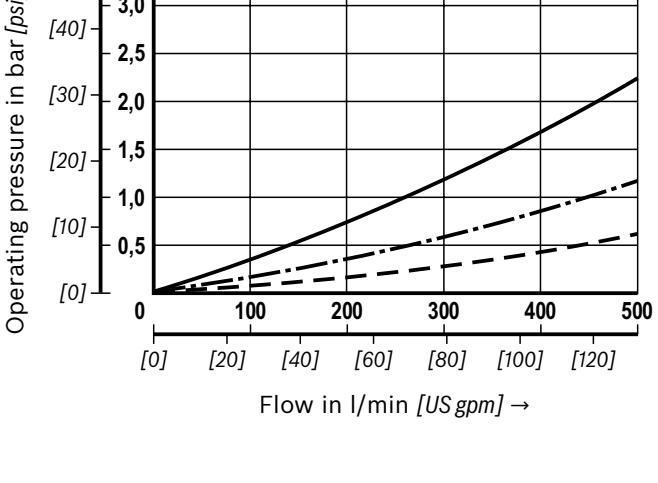


Characteristic curves: H10XL

(measured with mineral oil HLP46 according to DIN 51524)

Spec. weight: < 0.9 kg/dm³

Δ*p*-Q characteristic curves for complete filter

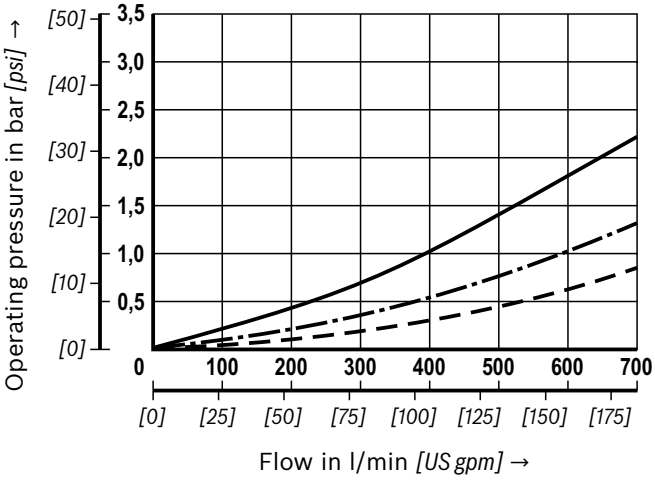
recommended initial Δ*p* for design = 0.5 bar *[7.25 psi]*

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

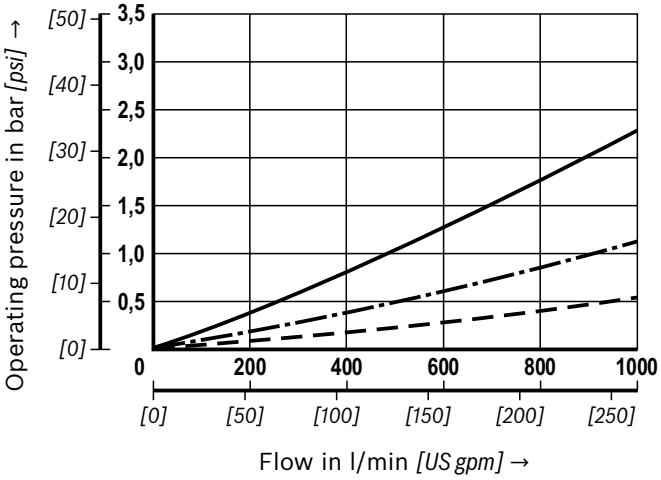
Oil viscosity:

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

Size 0630



Size 1000



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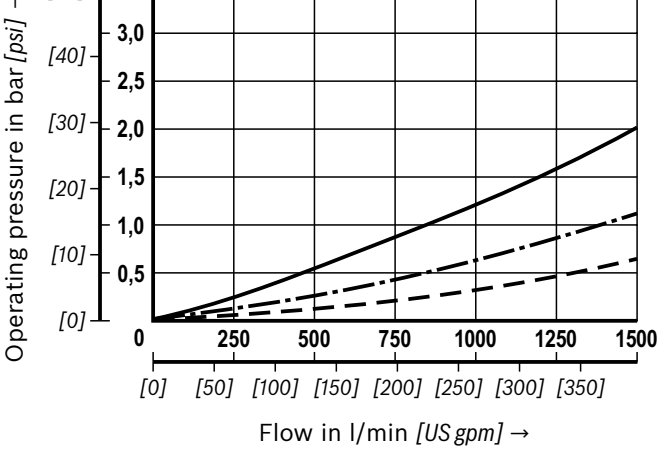

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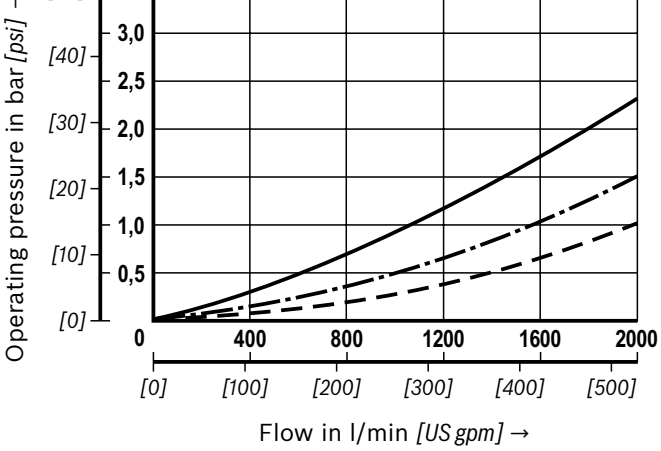


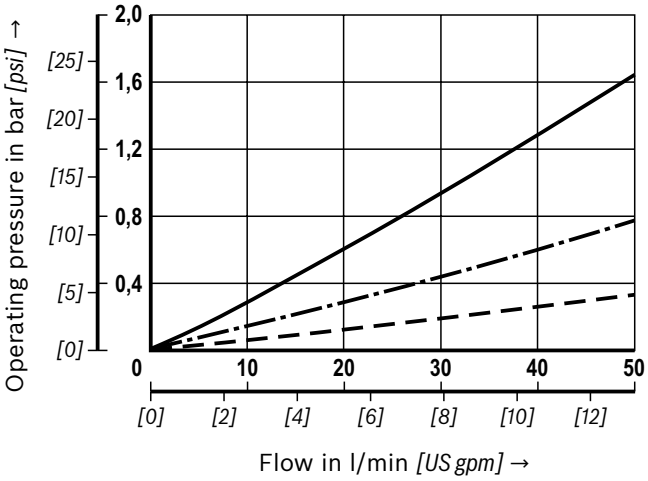
Characteristic curves: H20XL
(measured with mineral oil HLP46 according to DIN 51524)

Spec. weight: < 0.9 kg/dm³
Δ*p*-Q characteristic curves for complete filter
recommended initial Δ*p* for design = 0.5 bar *[7.25 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]*

Size 0040



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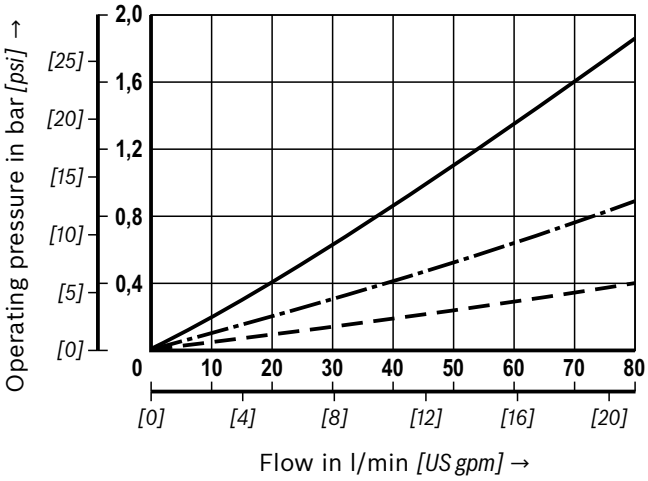

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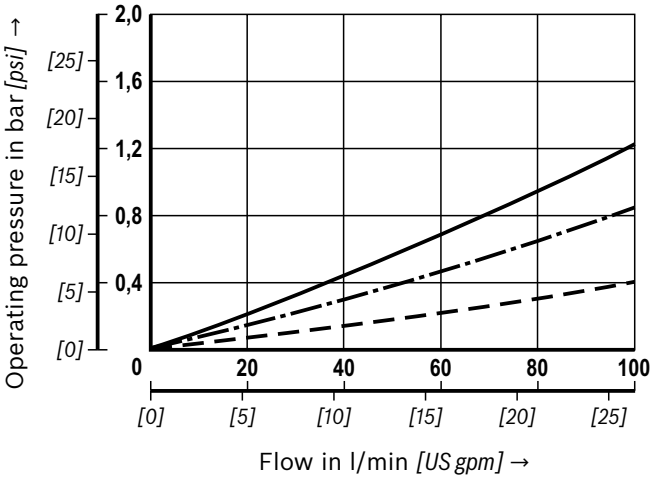

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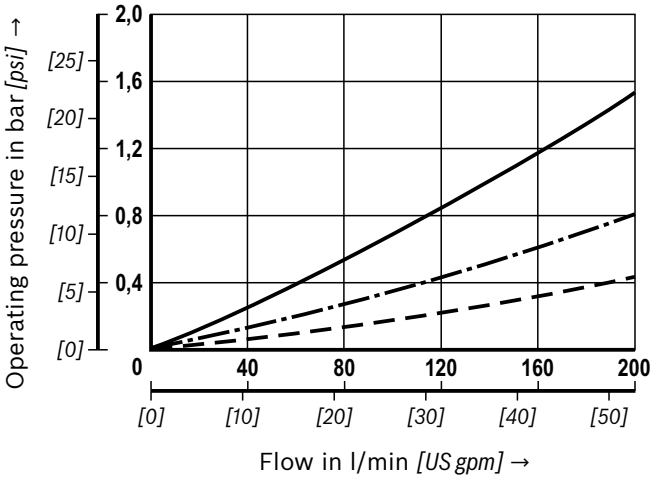

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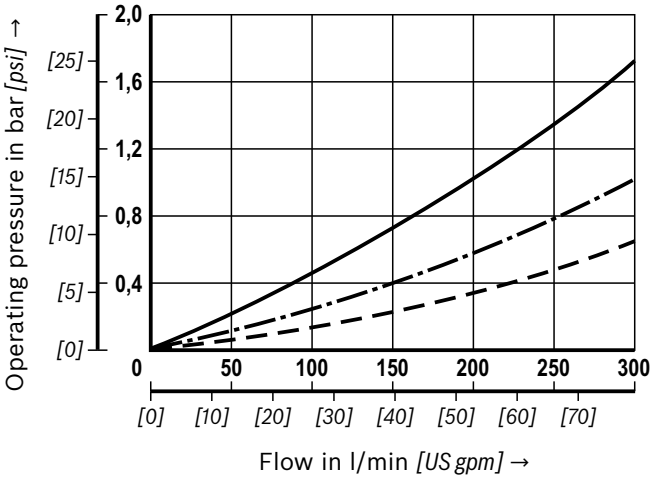

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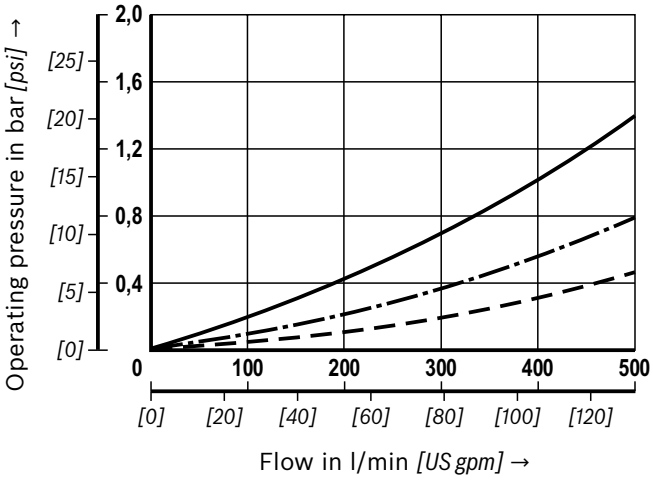


Characteristic curves: H20XL

(measured with mineral oil HLP46 according to DIN 51524)

Spec. weight: < 0.9 kg/dm³

Δ*p*-Q characteristic curves for complete filter

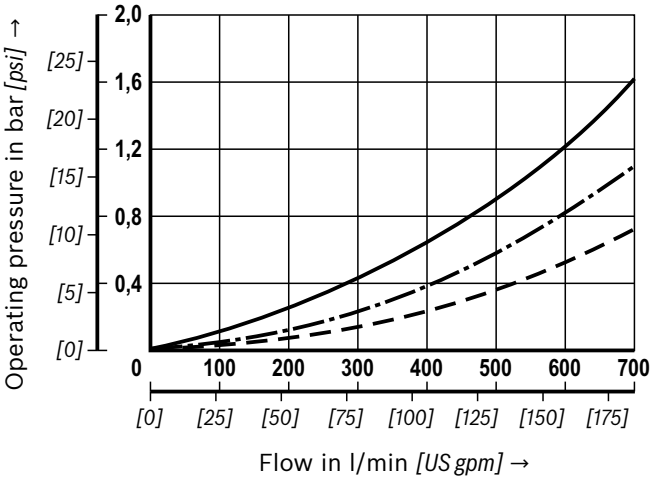
recommended initial Δ*p* for design = 0.5 bar *[7.25 psi]*

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]*

Size 0630



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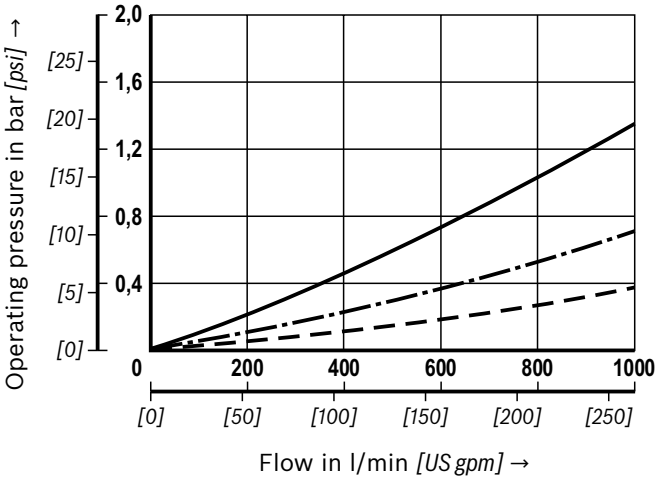

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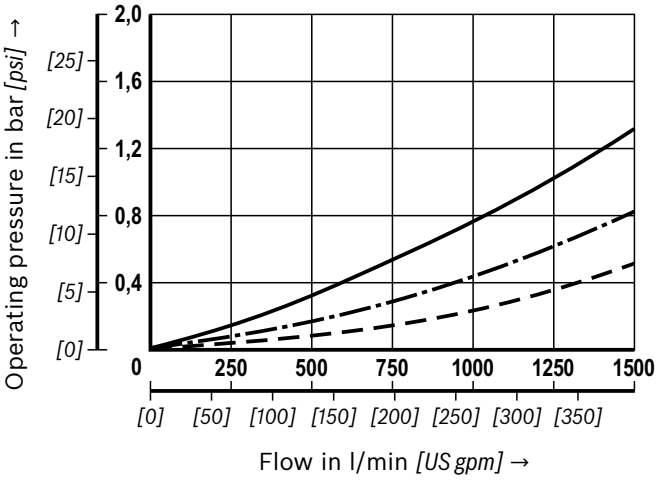

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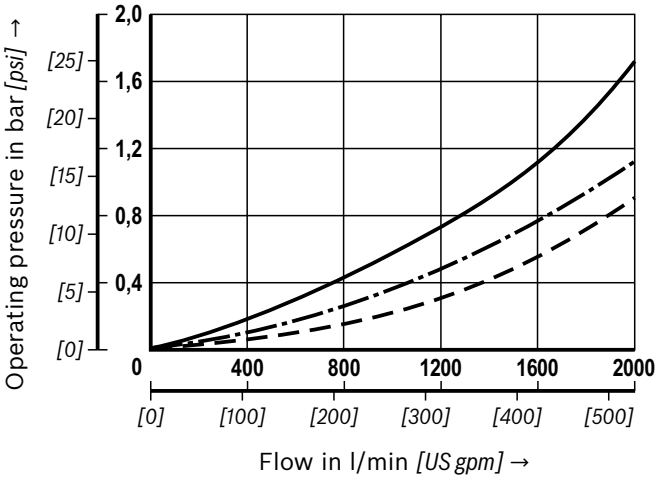
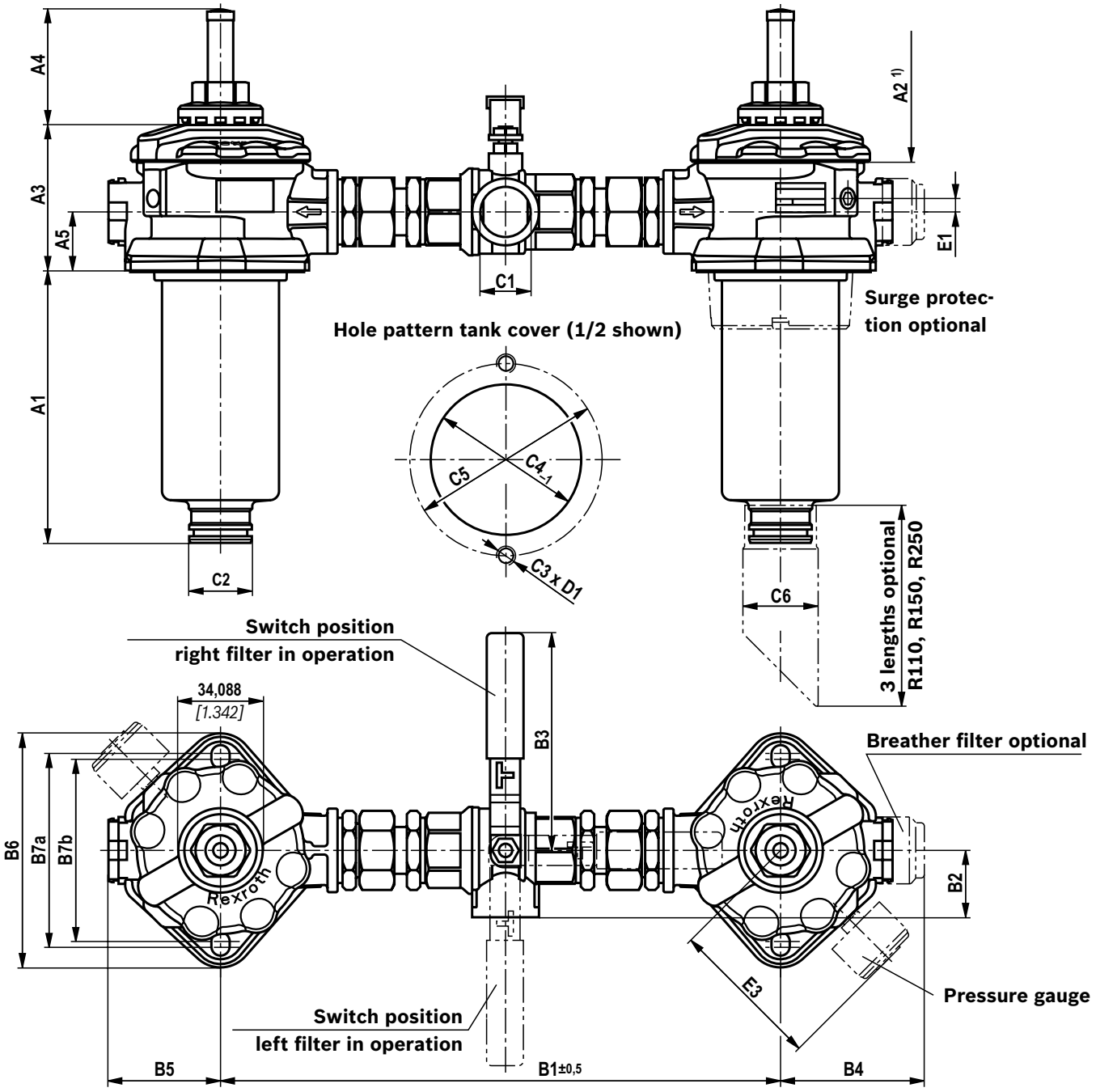


Dimensions: 10TDN0040, 0063, 0100

(dimensions in mm *[inch]*)



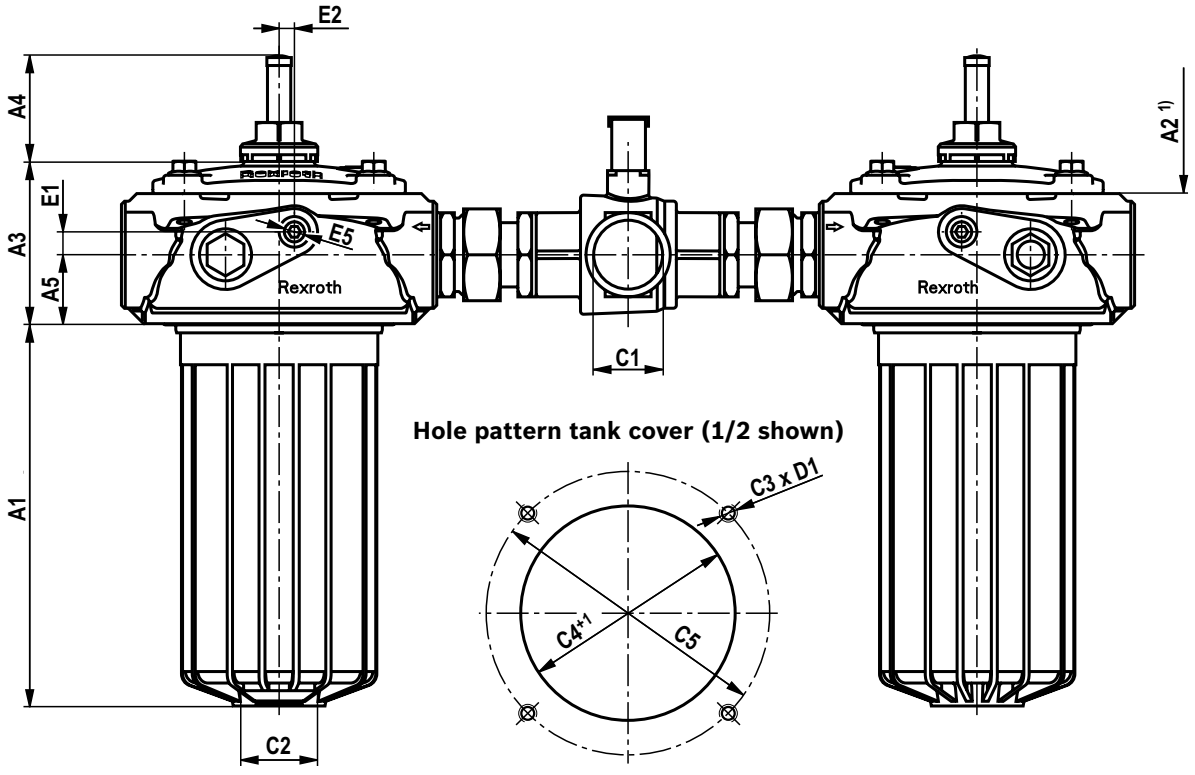
1) Observe the servicing height plus the length of the outlet pipe, if applicable

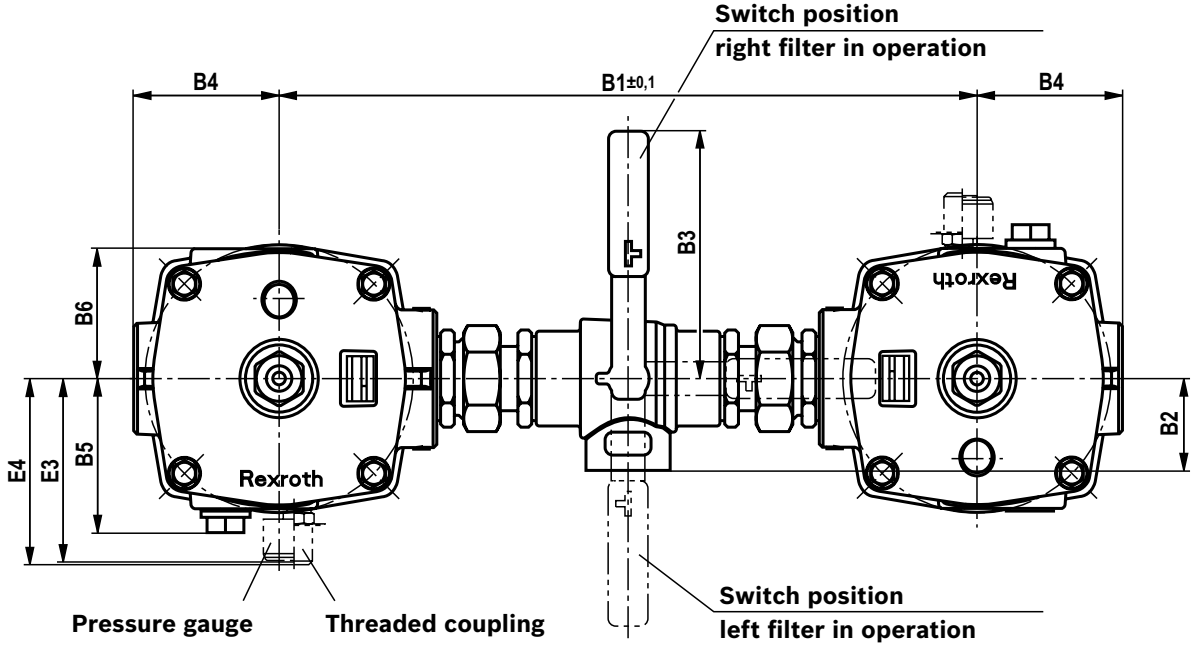
Type	Height					Depths							
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7a	B7b
10TDN0040	103 *[4.06]*	100 *[3.94]*	87 *[3.43]*	69 *[2.72]*	35 *[1.38]*	335 *[13.19]*	40 *[1.57]*	129.5 *[5.10]*	86 *[3.39]*	67 *[2.64]*	140 *[5.51]*	116 *[4.57]*	109 *[4.29]*
10TDN0063	163 *[6.42]*	160 *[6.30]*											
10TDN0100	253 *[9.96]*	250 *[9.84]*											

Type	Connections							Depths	Measuring port	
	C1 connection		C2	C3	ØC4	ØC5	C6	D1	E1	E3
	Standard	U... (SAE J1926)								
10TDN0040	G1	SAE 16 1 5/16–12 UN–2B	25,31 *[1,00]*	M10	90 *[3.54]*	115 *[4.53]*	45 *[1.77]*	12^{+2} *[0.47 $^{+0.08}$]*	8 *[0.31]*	90 *[3.54]*
10TDN0063										
10TDN0100										

Dimensions: 10TDN0160, 0250

(dimensions in mm *[inch]*)





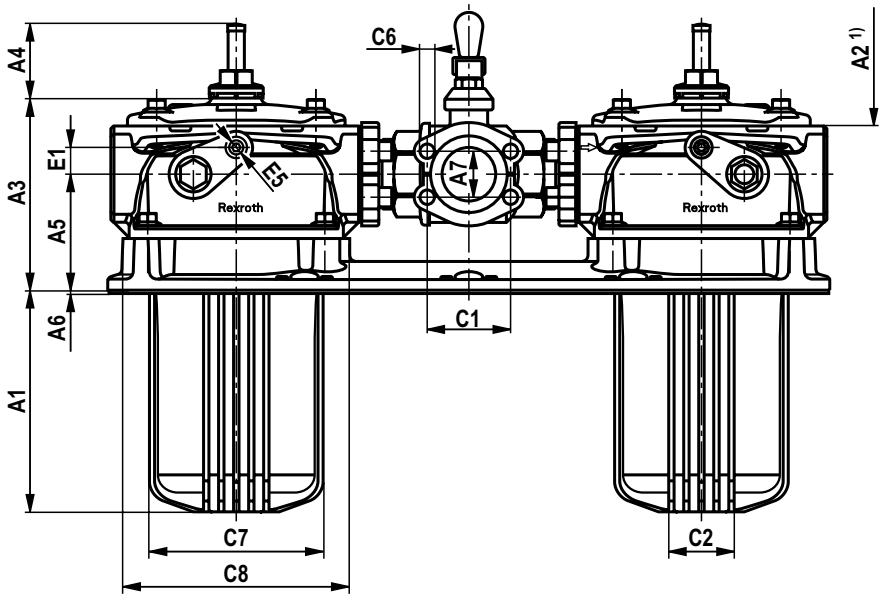
1) Observe the servicing height plus the length of the outlet pipe, if applicable

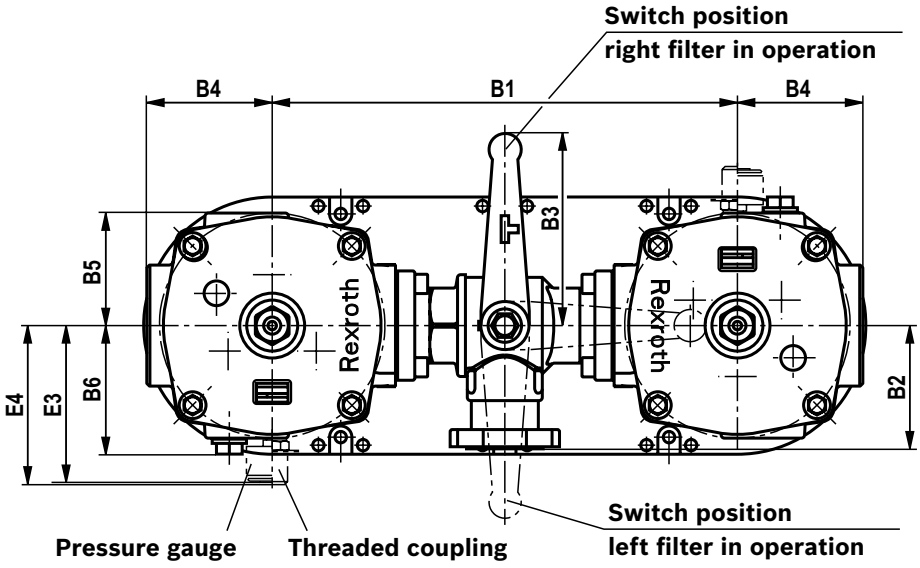
Type	Height					Depths					
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6
10TDN0160	160 *[6.30]*	160 *[6.30]*	106 *[4.17]*	69 *[2.72]*	45 *[1.77]*	435 *[17.13]*	54 *[2.13]*	161.5 *[6.36]*	95 *[3.74]*	100.5 *[3.96]*	85 *[3.35]*
10TDN0250	250 *[9.84]*	250 *[9.84]*				456 *[17.95]*	60 *[2.36]*	159 *[6.26]*			

Type	Connections						Depths	Measuring port				
	C1 connection		C2	C3	ØC4	ØC5	D1	E1	E2	E3	E4	E5
	Standard	U... (SAE J1926)										
10TDN0160	G1 1/2	SAE 20 1 5/8–12 UN–2B	25 *[0.98]*	M10	140 *[5.51]*	185 *[7.28]*	12^{+2} *[0.47 $^{+0.08}$]*	15 *[0.59]*	10 *[0.39]*	120 *[4.72]*	116 *[4.57]*	G1/4
10TDN0250												

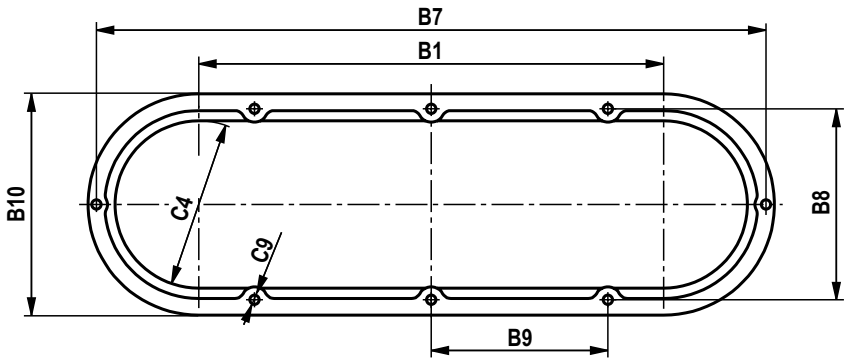
Dimensions: 10TDN0400, 0630

(dimensions in mm *[inch]*)

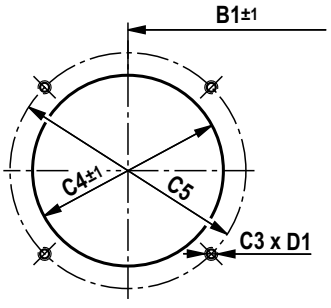




Hole pattern tank cover with installation plate



Hole pattern tank cover (1/2 shown) without installation plate



Dimensions: 10TDN0400, 0630

(dimensions in mm *[inch]*)

Type	Height						
	A1	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**
TDN0400	210 *[8.27]*	335 *[13.19]*	176 *[6.93]*	69 *[2.72]*	105 *[4.13]*	3 *[0.12]*	49.8 *[1.96]*
TDN0630	360 *[14.17]*	485 *[19.09]*					

Type	Depths									
	B1	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**
TDN0400	500 *[19.69]*	143 *[5.63]*	173 *[6.81]*	117 *[4.61]*	105 *[4.13]*	120 *[4.72]*	720 *[28.35]*	205 *[8.07]*	190 *[7.48]*	238 *[9.37]*
TDN0630										

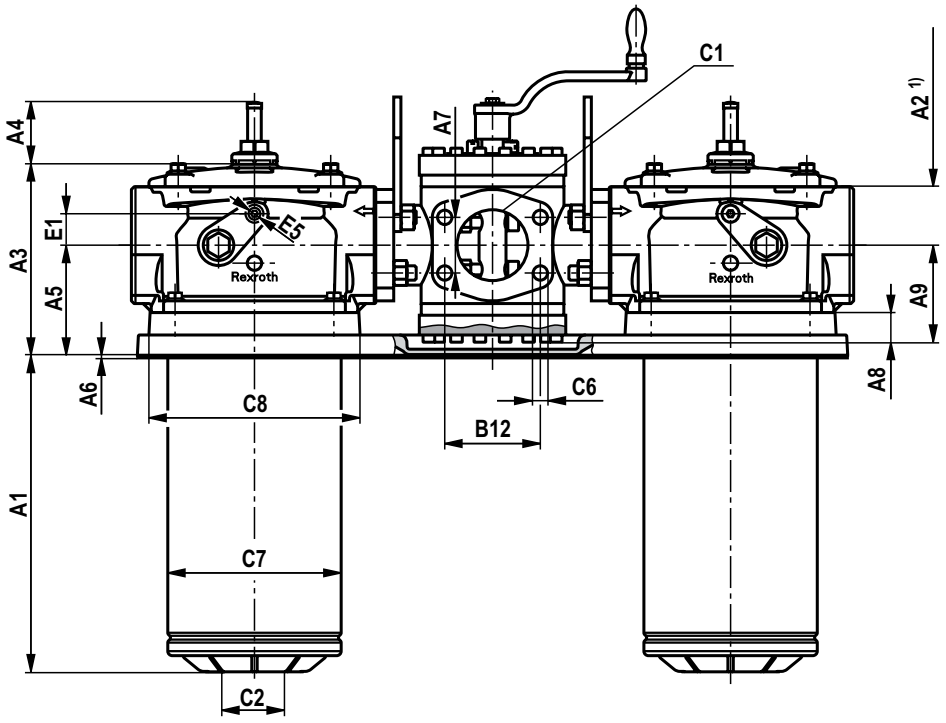
Type	Connections									
	C1 connection		**C2**	**C3**	**ØC4**	**ØC5**	**C6**	**ØC7**	**ØC8**	**C9**
	Standard	**U... (SAE J1926)**								
10TDN0400	SAE 2 1/2“ 3000 psi	–	G2	M10	178 *[70.1]*	220 *[8.66]*	M12	162 *[6.38]*	202 *[7.95]*	M10
10TDN0630										

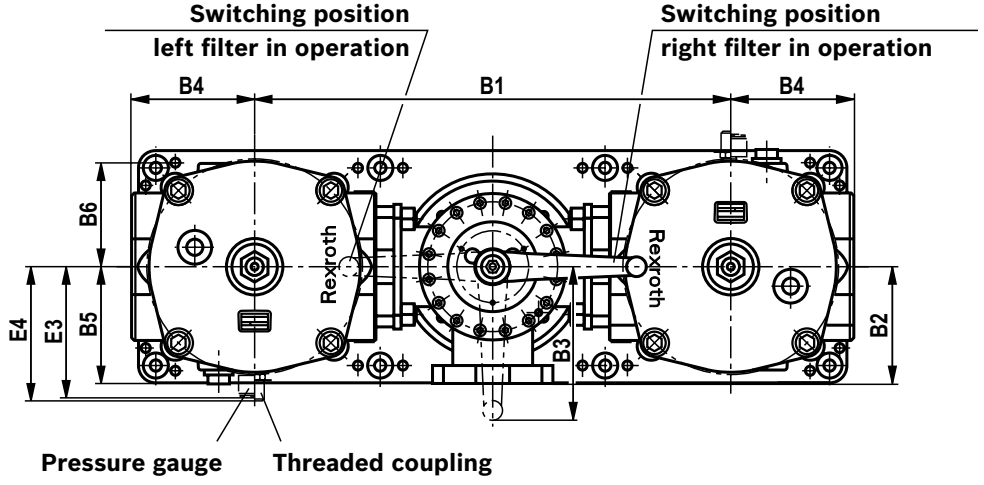
Type	Depths	Measuring port			
	D1	**E1**	**E3**	**E4**	**E5**
10TDN0400	12^{+2} *[0.47 $^{+0.08}$]*	25 *[0.98]*	138 *[5.43]*	134 *[5.28]*	G1/4
10TDN0630					

[1] Observe the servicing height plus the length of the outlet pipe, if applicable

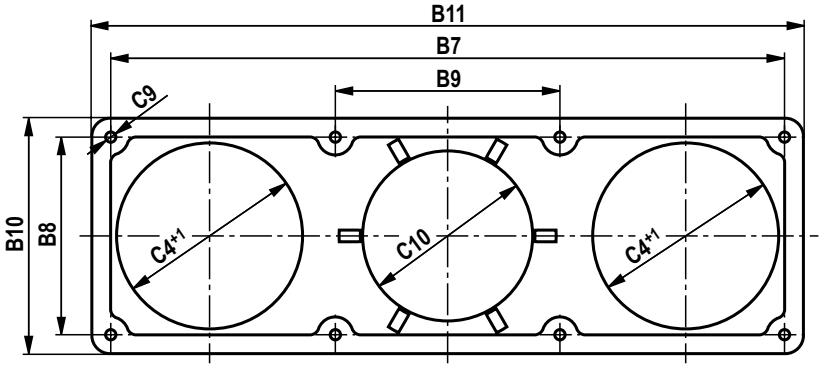
Dimensions: 10TDN1000, 10TD2000, 10TD2500

(dimensions in mm *[inch]*)

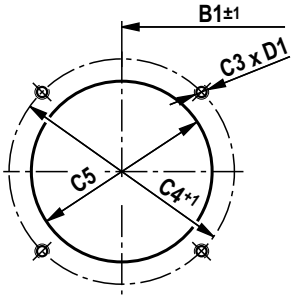




Hole pattern tank cover with installation plate



Hole pattern tank cover (1/2 shown) without installation plate



Dimensions: 10TDN1000, 10TD2000, 10TD2500

(dimensions in mm *[inch]*)

Type	Height								
	A1	A2	A3	A4	A5	A6	A7	A8	A9
10TDN1000	352.5 *[13.87]*	530 *[20.87]*	165 *[6.50]*	69 *[2.72]*	122.5 *[4.81]*	3 *[0.12]*	61.9 *[2.44]*	10 *[0.39]*	32.5 *[1.27]*
10TD2000	749 *[29.49]*	880 *[34.65]*							
10TD2500	983 *[38.70]*	1130 *[44.49]*							

Type	Depths											
	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
10TDN1000	530 *[20.87]*	130 *[5.12]*	160 *[6.30]*	137 *[5.39]*	130.5 *[5.14]*	115 *[4.53]*	750 *[29.53]*	220 *[8.66]*	250 *[9.84]*	262 *[10.31]*	792 *[31.18]*	106.4 *[4.19]*
10TD2000												
10TD2500												

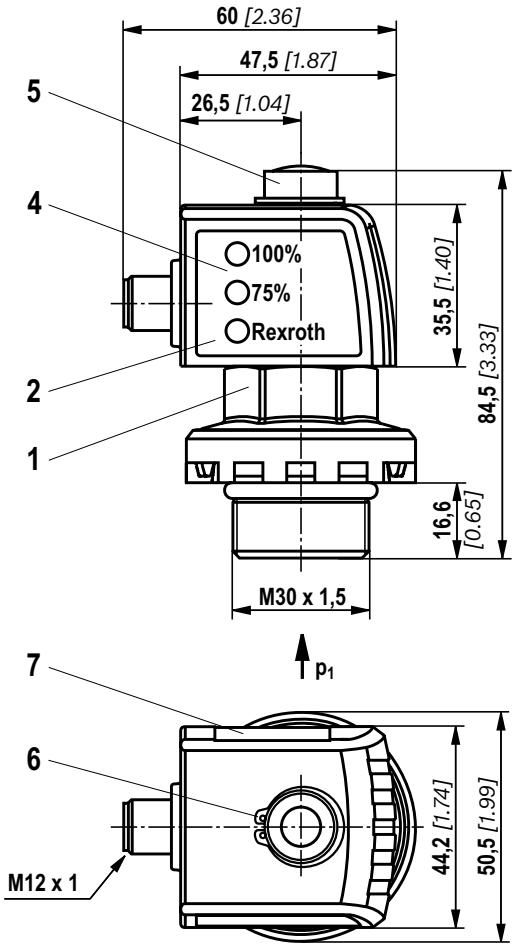
Type	Connections										
	C1 connection		C2	C3	ØC4	ØC5	C6	ØC7	ØC8	C9	ØC10
	Standard	U... (SAE J1926)									
10TDN1000	SAE 3“ 3000 psi	–	G3	M10	202 *[7.95]*	250 *[9.84]*	M16	193 *[7.60]*	235 *[9.25]*	M10	195 *[7.68]*
10TD2000											
10TD2500											

Type	Depths	Measuring port			
	D1	E1	E3	E4	E5
10TDN1000	12^{+2} *[0.47 $^{+0.08}$]*	35 *[1.38]*	149 *[5.87]*	145 *[5.71]*	G1/4
10TD2000					
10TD2500					

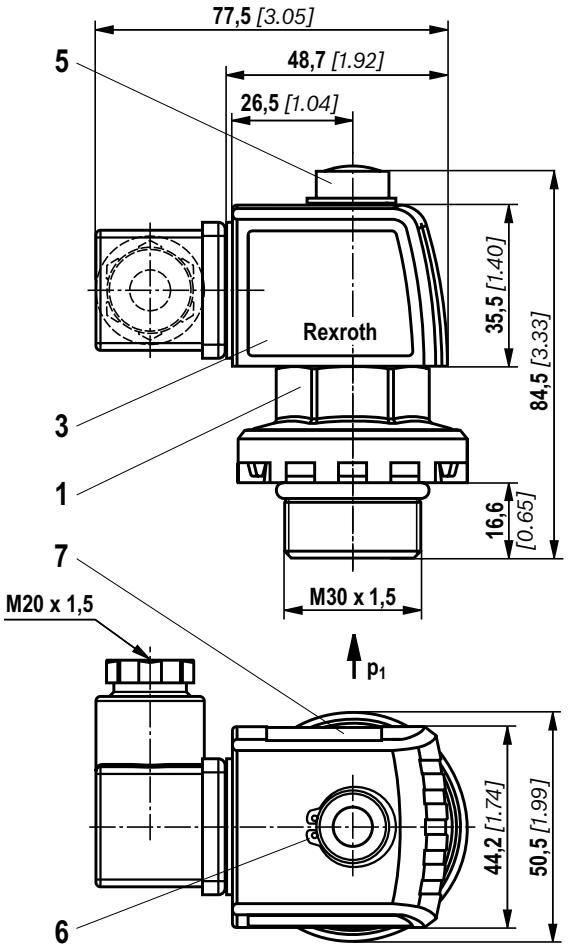
1) Observe the servicing height plus the length of the outlet pipe, if applicable

Maintenance indicator
(dimensions in mm *[inch]*)

Electronic switching element with round plug-in connection M12x1, 4-pole



Electronic switching element with rectangular plug-in connection EN 175301-803



1 Mechanical optical maintenance indicator;
max. tightening torque $M_{A\,max}$ = 50 Nm *[36.88 lb-ft]*
Tightening torque for back pressure indicator in PA6.6
$M_{A\,max}$ = 35 Nm *[25.82 lb-ft]*

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

3 Switching element with locking ring for electrical maintenance indicator (rotatable by 360°); plug-in connection EN175301-803

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

5 Optical display with memory function

6 Locking ring DIN 471-16x1, material no. **R900003923**

7 Name plate

☞ **Notices:**
Representation contains mechanical optical maintenance indicator (1) and electronic switching element (2) (3).
If an electronic switching element with signal suppression up to 30 °C *[86 °F]* is used (WE-2SPSU-M12X1, **R928028411**), it has to be ensured that the aluminum version of the mechanical-optical maintenance indicat'or **must** be used. These maintenance indicators are referred to in the filter type key as "V2.2", "V1.5" or "V0.8".
Also refer to the chapter "Spare parts and accessories".
The temperature-controlled signal processing does not work with mechanical-optical maintenance indicators made of polyamide.

Ordering code spare parts

Filter element

01	02	03		04		05		06
1.			**–**	**A00**	**–**	**0**	**–**	

01	Design	**1.**

Size

02	TDN... (Filter elements according to **DIN 24550**)	**0040** **0063** **0100** **0160** **0250** **0400** **0630** **1000**
	TD... (Filter elements according to **Bosch Rexroth standard**)	**2000** **2500**

Filter rating in µm

03	**Nominal**	Paper, not cleanable	**P10** **P25**
	Nominal	Stainless steel wire mesh, cleanable	**G10** **G25** **G40** **G60** **G100**
	Absolute **(ISO 16889); $\beta_{x(c)} \geq 200$)**	Glass fiber material, not cleanable	**H3XL** **H6XL** **H10XL** **H20XL**
	Absolute **(ISO 16889; $\beta_{x(c)} \geq 200$)**	Water-absorbing, not cleanable	**AS3** **AS6** **AS10** **AS20**

Pressure differential

04	max. admissible pressure differential of the filter element 30 bar *[435 psi]*	**A00**

Bypass valve

05	**without** bypass valve	**0**

Seal

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

Order example:
1.0100 H3XL-A00-0-M

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

Ordering code spare parts

Filter element

Preferred program replacement elements

Filter element type	Filter material/material no.			
	H3XL	H6XL	H10XL	H20XL
1.0040 ...A00-0-M	**R928005835**	**R928005836**	**R928005837**	**R928005838**
1.0063 ...A00-0-M	**R928005853**	**R928005854**	**R928005855**	**R928005856**
1.0100 ...A00-0-M	**R928005871**	**R928005872**	**R928005873**	**R928005874**
1.0160 ...A00-0-M	**R928005889**	**R928005890**	**R928005891**	**R928005892**
1.0250 ...A00-0-M	**R928005925**	**R928005926**	**R928005927**	**R928005928**
1.0400 ...A00-0-M	**R928005961**	**R928005962**	**R928005963**	**R928005964**
1.0630 ...A00-0-M	**R928005997**	**R928005998**	**R928005999**	**R928006000**
1.1000 ...A00-0-M	**R928006033**	**R928006034**	**R928006035**	**R928006036**
1.2000 ...A00-0-M	**R928041312**	**R928048158**	**R928040797**	**R928041313**
1,2500 ...A00-0-M	**R928041314**	**R928046806**	**R928040800**	**R928041315**

Ordering code spare parts

Mechanical optical maintenance indicator

01	02		03		04		05		06	07
W	**O**	**-**	**S01**	**-**		**-**		**-**	**10**	

01	**Maintenance indicator**	**W**
02	**mechanical optical indicator**	**O**

Design

03	Back pressure M30x1.5	**S01**

Switching pressure

04	0.8 bar *[12 psi]* (not possible with plastic version)	**0.8**
	1.5 bar *[22 psi]* (not possible with plastic version)	**1.5**
	2.2 bar *[32 psi]*	**2.2**

Seal

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

Max. nominal pressure

06	10 bar *[145 psi]*	**10**

Housing material

07	Plastic only 2.2 bar *[32 psi]* possible	**PA**
	Aluminum	**No code**

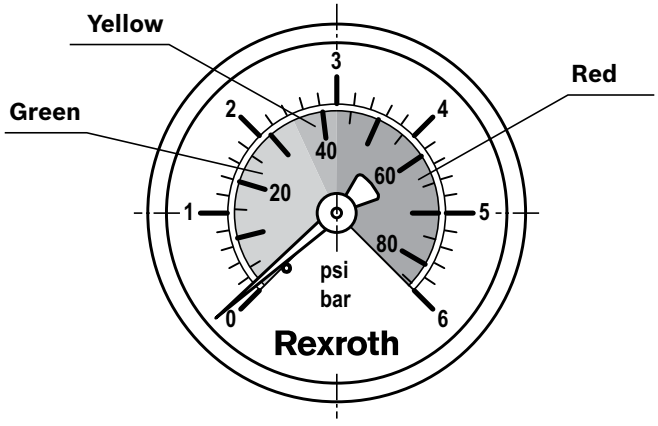
Mechanical optical maintenance indicator

Material no.	Description
R928038773	WO-S01-0.8-M-10
R928038772	WO-S01-0.8-V-10
R928038776	WO-S01-1.5-M-10
R928038774	WO-S01-1.5-V-10
R901025310	WO-S01-2.2-M-10
R901066232	WO-S01-2.2-V-10
R928038771	WO-S01-2.2-M-10-PA
R928038769	WO-S01-2.2-V-10-PA

Pressure gauge [1)]

Material no.	Description
R928019224	M010 0-6 bar *[0-87 psi]*, Fluid connection R 1/4, Ø 50 mm

1) When using a pressure gauge, the maximum permissible operating pressure is reduced to 6 bar *[87 psi]*.



Breathing filter element

(only for 10TDN0040-0100) incl. plastic cap

Material no.	Description
R928019705	71.001 P5-S00-0-0

Ordering code spare parts

Seal kit

01	02	03		04		05		06
D	**10TD**		**-**	**1X**	**/**	**-**		**-**	

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

02	**Series**	**10TD**

Size

03	0040-0100	**N0040-0100**
	0160-0250	**N0160-0250**
	0400-0630	**N0400-0630**
	1000	**N1000**
	2000-2500	**2000-2500**

04	**Component series** 10 ... 19 (10 ... 19: unchanged installation and connection dimensions)	**1X**

Seal

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

Amending information

06	Breathing filter with oil mist separator (only size 0040-0100)	**FN**

Seal kit

Material no.	Description
R928051474	D10TDN0040-0100-1X/-M
R928051475	D10TDN0160-0250-1X/-M
R928051476	D10TDN0400-0630-1X/-M
R928051478	D10TDN1000-1X/-M
R928051479	D10TD2000-2500-1X/-M
R928051993	D10TDN0040-0100-1X/-V
R928051994	D10TDN0160-0250-1X/-V
R928051995	D10TDN0400-0630-1X/-V
R928051996	D10TDN1000-1X/-V
R928051997	D10TD2000-2500-1X/-V
R928053141	D10TDN0040-0100-1X/-M-FN
R928053142	D10TDN0040-0100-1X/-V-FN

Assembly, commissioning, maintenance

Installation

The max. operating pressure of the system must not exceed the max. admissible operating pressure of the filter (see type plate).
When using a pressure gauge, the maximum permissible operating pressure is reduced to 6 bar *[87 psi]*.
Before the assembly, the hole pattern of the tank must be compared to the dimensions from the “Dimensions” chapter.

It is strongly recommended to secure drain pipes longer than 400 mm with an inside tank mount bracket in order to avoid vibrations due to fluid flow in the tank. Additionally, it is necessary for maintenance work to ensure the filter bowl and the outlet pipe are pulled out of the filter head together.
During assembly of the filter (see also chapter “Tightening torque”), the flow direction (direction arrows) and the required servicing height of the filter element (see chapter “Dimensions”) are to be considered. With frame sizes 1000 - 2500, the lifting eyes can be used as assembly aid.
Perfect functioning is only guaranteed in the installation position filter bowl vertically downwards and ON the tank.
The maintenance indicator must be arranged so it is easily viewed in operation.

Remove the plastic plugs in the filter inlet and outlet.
Ensure that the system is assembled without tension stress.
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

Commission the system.
Switch the filter into the operating position; to do so, switch the switching lever to one of the two end positions. The filter in use is identified by the flow symbol on the changeover handle.

☞ **Notice:**
There is no bleed function provided at the filter.

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 corresponding replacement filter element is indicated on the name plate of the complete filter. It must comply with the material number on the filter element.
- Move the switching lever to the opposite end position in order to switch to the clean filter side. Observe the switching symbol on the switching lever and/or the switch-over.
- Unscrew the filter cover and/or loosen the screws and remove the filter over upwards.

☞ **Notice:**
Note that elements with lower filtration ratings may take slightly longer to discharge the residual oil. If there is still residual oil in the filter bowl, the fluid has to be collected in a separate tank.

- Remove the filter element together with the filter bowl. From frame size 0160, the filter bowls are equipped with removal brackets.
- Remove the filter element from the spigot in the filter bowl by rotating it slightly.
- Clean the filter components, if necessary.
- Check the seals at filter cover and filter bowl 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. The efficiency of the cleaning depends on the type of dirt and the amount of the pressure differential before the filter element exchange.
  If the pressure differential after the filter element exchange exceeds 150 % of the value of a brand-new filter element, the filter element made of wire mesh (G...) also needs to be replaced.
  For detailed cleaning instructions refer to 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.
- The torque specifications (“Tightening torques” chapter) are to be observed.
- During the filter element exchange, the breathing filter element should be exchanged manually if equipped. (only with NG 0040-0100)

Assembly, commissioning, maintenance

⚠ WARNING!

- Assemble and disassemble only with depressurized system! For the filter element exchange refer to “Maintenance”.
- Tank is pressurized!
- Do not operate the switching lever during the filter element exchange.
- 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.

☞ **Notices:**

- All maintenance of the filter should be performed by trained specialists.
- 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]*)

Tank mounting without installation plate

Series 10TD...	N0040	N0063	N0100	N0160	N0250	N0400	N0630	N1000	2000	2500
Tank mounting screw	M10 x 30			M10 x 25				M12 x 25		
Quantity	4			8						
Recommended property class of screw	8.8									
Tightening torque with μ_{total} = 0.14	21 Nm ± 10 % *[16 lb-ft ± 10 %]*							37 Nm ± 10 % *[27 lb-ft ± 10 %]*		

Tank mounting with installation plate

Series 10TD...	N0040	N0063	N0100	N0160	N0250	N0400	N0630	N1000	2000	2500
Installation plate screw (hexagon socket head cap screw)	–					M10 x 20		M10 x 25		
Quantity	–					8				
Recommended property class of screw	–					8.8				
Tightening torque with μ_{total} = 0.14	–					21 Nm ± 10 % *[16 lb-ft ± 10 %]*				

Filter cover

Series 10TD...	N0040	N0063	N0100	N0160	N0250	N0400	N0630	N1000	2000	2500
Filter cover screw	–			M10		M12				
Quantity	–			4						
Recommended property class of screw	–			8.8						
Tightening torque with μ_{total} = 0.14	manually to the stop 20 Nm ± 10 % [1] *[15 lb-ft ± 10 %]*			21 Nm ± 10 % *[16 lb-ft ± 10 %]*		37 Nm ± 10 % *[27 lb-ft ± 10 %]*				

Maintenance indicator

Series 10TD...	N0040	N0063	N0100	N0160	N0250	N0400	N0630	N1000	2000	2500
Maintenance indicator, mechanical optical, aluminum, V...	max. 50 Nm *[37 lb-ft]*									
Maintenance indicator, mechanical optical, PA, P2.2	35 Nm ± 3 Nm *[26 lb-ft ± 3 %]*									
Cubic connector screw switching element EN–175301–803	M3/0.5 Nm *[0.4 lb-ft]*									

[1] Re-tighten using an open-end wrench (SW19), if necessary

Directives and standardization

Classification according to the Pressure Equipment Directive

The return line filters for hydraulic applications according to 51454 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.
They do not receive a CE mark.

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

The tank mounted return line filters according to 51454 are not equipment or components in the sense of directive 94/9/EC and are not provided with a CE mark. It has been proven with the ignition risk analysis that these return line filters do not have own ignition sources acc. to 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 that do not have an own voltage source. This simple, electronic operating equipment may - according to DIN EN 60079-14:2012 - in intrinsically safe electric circuits (Ex ib) be used in systems without marking and certification.
The tank mounted return line filters and the electronic maintenance indicators described here can be used for the following explosive areas:

	zone suitability	
Gas	1	2
Dust	21	22

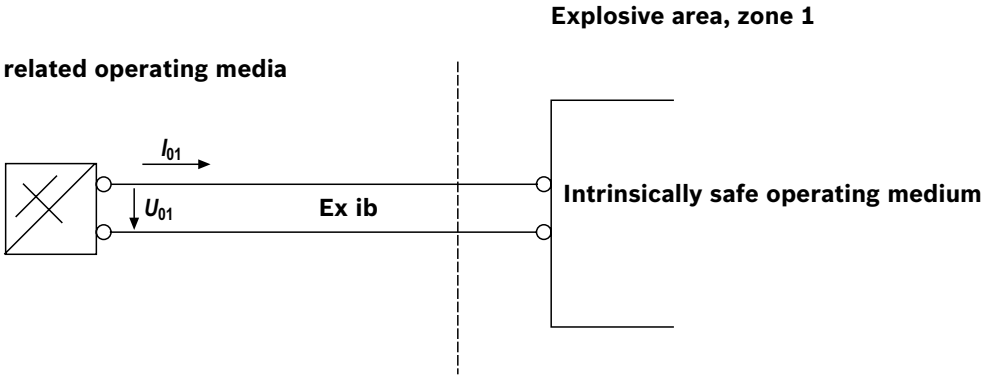
Complete filter with mech./opt. Maintenance indicator				
Use /assignment			**Gas 2G**	**Dust 2D**
Assignment			Ex II 2G c IIC T6	Ex II 2D c IIC T6
Conductivity of the medium	pS/m	min	300	
Dust accumulation		max	–	0.5 mm

electronic switching element in the intrinsically safe electric circuit				
Use /assignment			**Gas 2G**	**Dust 2D**
Assignment			Ex II 2G Ex ib IIB T4 Gb	Ex II 2D Ex ib IIIC T100 °C Db
adm. 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 [1)]		max	–	100 °C
inner capacity	Ci		neglectable	
inner inductivity	Li		neglectable	
Dust accumulation		max	–	0.5 mm

[1)] The temperature depends on the temperature of the medium in the filter and must not exceed the value specified here.

Directives and standardization

Possible circuit according to DIN EN 60079-14



⚠ WARNING!

- Explosion hazard due to high temperature!
  The surface temperature of the filter depends on the temperature of the medium in the hydraulic circuit and must not exceed the value specified here.
  Measures are to be taken so that in the explosive area, the max. admissible ignition temperature is not exceeded.
- When using the tank mounted return line filters according to 51454 in explosive areas, appropriate potential equalization has to be ensured. The filter is preferably to be grounded via the mounting screws.
  It has to be noted in this connection that paintings and oxidic protective layers are not electrically conductive.
- During filter element exchanges, the packaging material is to be removed from the replacement element outside the explosive area

☞ **Notices:**

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

Notes

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