



## Tank mounted return line filter with filter element according to DIN 24550

Type 10TEN0040 to 1000;  
10TE2000 and 2500



- ▶ Size according to **DIN 24550**: 0040 to 1000
- ▶ additional sizes: 2000, 2500
- ▶ Nominal pressure 10 bar [145 psi]
- ▶ Connection up to 4"
- ▶ 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
- ▶ 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
- ▶ Available as an option with different electrical switching elements, modular design
- ▶ By default, the filters are equipped with a bypass valve integrated in the filter housing
- ▶ Optional measuring port

## Ordering code filter

### Sizes 0040 to 0100

01	02	03		04	05		06		07		08		09		09		09		09
10TE	N		-		A00	-		-		-		-		-		-		-	

### Series

01	Return line filter, simple 10 bar [145 psi]	10TE
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### Filter element

02	With filter element according to <b>DIN 24550</b>	N
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### Size

03	TEN... Filter element according to <b>DIN 24550</b>	0040 0063 0100
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### Filter rating in $\mu\text{m}$

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

### Pressure differential

05	Max. admissible pressure differential of the filter element 30 bar [435 psi] – Filter <b>with</b> bypass valve	A00
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### Maintenance indicator

06	<b>Without</b> maintenance indicator – bypass cracking pressure 3.5 bar [51 psi]	0
	Pressure gauge <sup>1)</sup> 0...6 bar [0...87 psi] right – bypass cracking pressure 3.5 bar [51 psi]	MR
	Maintenance indicator, aluminum, mech.-optical, switching pressure 2.2 bar [32 psi], <b>with</b> additional pressure gauge <sup>1)</sup> 0...6 bar [0...87 psi] right – bypass cracking pressure 3.5 bar [51 psi]	MRV2,2
	Maintenance indicator, polyamide, mech./optical, switching pressure 2.2 bar [32 psi] – 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 [32 psi] – bypass cracking pressure 3.5 bar [51 psi]	V2.2

### Seal

07	NBR seal	M
	FKM seal	V

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

## Ordering code filter

### Sizes 0040 to 0100

01	02	03	04	05	06	07	08	09	09	09	09
10TE	N		-	A00	-	-	-	-	-	-	-

#### Main inlet

08	Frame size	0040	0063-0100	
	Connection			
	G 3/4	●	X	R3
	G 1	X	●	R4
	1 1/16-12 UN -2B [SAE 12]	X	X	U4
	1 5/16-12 UN -2B [SAE 16]	X	X	U9
	<input checked="" type="checkbox"/> Standard connection <input type="checkbox"/> Alternative connection			

#### Supplementary information (Multiple specifications possible)

09	Breathing filter	F
	Ventilation filter with surge protection	FN
	Threaded coupling right (not possible with pressure gauge right)	MR
	without bypass valve	NB
	Outlet pipe L110 mm [10.92 cm]	R110
	Outlet pipe L150 mm [5,9 in]	R150
	Outlet pipe L250 mm [9.8 inch]	R250

#### Order example:

10TEN0040-H10XLA00-P2,2-M-R3

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

## Ordering code filter

### sizes 0160 to 2500

01	02	03	04	05	06	07	08	09
10TE				- A00 -				

### Series

01	Return line filter, simple 10 bar [145 psi]	10TE
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### Filter element

02	With filter element according to <b>DIN 24550</b> (only with frame size 0160 - 1000)	N
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### Size

03	TEN... Filter element according to <b>DIN 24550</b>	0160 0250 0400 0630 1000
	TE... (Filter elements according to <b>standard</b> )	2000 2500

### Filter rating in $\mu\text{m}$

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

### Pressure differential

05	Max. admissible pressure differential of the filter element 30 bar [435 psi] – Filter <b>with</b> bypass valve	A00
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### Maintenance indicator

06	<b>Without</b> maintenance indicator – bypass cracking pressure 3.5 bar [51 psi]	0
	Pressure gauge <sup>1)</sup> 0...6 bar [0...87 psi] right – bypass cracking pressure 3.5 bar [51 psi]	ML
	Maintenance indicator, aluminum, mech.-optical, switching pressure 2.2 bar [32 psi], <b>with</b> additional pressure gauge <sup>1)</sup> 0...6 bar [0...87 psi] right – bypass cracking pressure 3.5 bar [51 psi]	MLV2.2
	Maintenance indicator, polyamide, mech./optical, switching pressure 2.2 bar [32 psi] – 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 [32 psi] – bypass cracking pressure 3.5 bar [51 psi]	V2.2

### Seal

07	NBR seal	M
	FKM seal	V

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

## Ordering code filter

### sizes 0160 to 2500

01	02	03	04	05	06	07	08	09	09
10TE				- A00	-	-	-	-	-

### Main inlet

08	Frame size	0160	0250	0400	0630	1000	2000	2500		
	Connection									
	G 1 1/4	●	X	-					R5	
	G 1 1/2	X	●						R6	
	SAE 1 1/4" - 3000 psi	X	X						S5	
	SAE 1 1/2" - 3000 psi	X	X						S6	
	1 7/8-12 UN 2B [SAE 24]	X	X						U6	
	SAE 2" - 3000 psi	-	●	X	-			S8		
	SAE 2 1/2" - 3000 psi		X	●				S9		
	SAE 3" - 3000 psi	-				●	X	X	S10	
	SAE 4" - 3000 psi					X	●	●	S12	
	<div><div>●</div> Standard connection</div> <div><div>X</div> Alternative connection</div>									

### Supplementary information (Multiple specifications possible)

09	Threaded coupling left (not possible <b>with</b> pressure gauge left)	ML
	<b>without</b> bypass valve	NB

### Order example:

10TEN0630-H10XLA00-P2,2-M-S9

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 $v = 30 \text{ mm}^2/\text{s}$ [142 SUS] and $\Delta p = 0.5 \text{ bar}$ [7.25 psi] <sup>1)</sup>	Connection	Connection
10TEN0040-H3XLA00-P2,2-M-...	23 [6.1]	..R3	..U4
10TEN0063-H3XLA00-P2,2-M-...	35 [9.2]	..R4	..U9
10TEN0100-H3XLA00-P2,2-M-...	52 [13.7]	..R4	..U9
10TEN0160-H3XLA00-P2,2-M-...	105 [27.7]	..R5	..S5
10TEN0250-H3XLA00-P2,2-M-...	160 [42.3]	..R6	..S6
10TEN0400-H3XLA00-P2,2-M-...	290 [76.6]	..S8	..S9
10TEN0630-H3XLA00-P2,2-M-...	410 [108.3]	..S9	..S8
10TEN1000-H3XLA00-P2,2-M-...	560 [147.9]	..S10	..S12
10TE2000-H3XLA00-P2,2-M-...	900 [237.7]	..S12	..S10
10TE2500-H3XLA00-P2,2-M-...	1100 [290.6]	..S12	..S10
10TEN0040-H6XLA00-P2,2-M-...	40 [10.6]	...R3	...U4
10TEN0063-H6XLA00-P2,2-M-...	58 [15.3]	...R4	...U9
10TEN0100-H6XLA00-P2,2-M-...	76 [20.1]	...R4	...U9
10TEN0160-H6XLA00-P2,2-M-...	179 [47.3]	...R5	...S5
10TEN0250-H6XLA00-P2,2-M-...	248 [65.5]	...R6	...S6
10TEN0400-H6XLA00-P2,2-M-...	442 [116.8]	...S8	...S9
10TEN0630-H6XLA00-P2,2-M-...	545 [144.0]	...S9	...S8
10TEN1000-H6XLA00-P2,2-M-...	910 [240.4]	...S10	...S12
10TEN2000-H6XLA00-P2,2-M-...	1310 [346.1]	...S12	...S10
10TEN2500-H6XLA00-P2,2-M-...	1440 [380.4]	...S12	...S10
10TEN0040-H10XLA00-P2,2-M-...	43 [11.3]	..R3	..U4
10TEN0063-H10XLA00-P2,2-M-...	62 [16.4]	..R4	..U9
10TEN0100-H10XLA00-P2,2-M-...	80 [21.1]	..R4	..U9
10TEN0160-H10XLA00-P2,2-M-...	190 [50.2]	..R5	..S5
10TEN0250-H10XLA00-P2,2-M-...	260 [68.7]	..R6	..S6
10TEN0400-H10XLA00-P2,2-M-...	460 [121.5]	..S8	..S9
10TEN0630-H10XLA00-P2,2-M-...	560 [147.9]	..S9	..S8
10TEN1000-H10XLA00-P2,2-M-...	970 [256.2]	..S10	..S12
10TE2000-H10XLA00-P2,2-M-...	1350 [356.6]	..S12	..S10
10TE2500-H10XLA00-P2,2-M-...	1450 [383.0]	..S12	..S10
10TEN0040-H20XLA00-P2,2-M-...	62 [16.4]	..R3	..U4
10TEN0063-H20XLA00-P2,2-M-...	80 [21.1]	..R4	..U9
10TEN0100-H20XLA00-P2,2-M-...	95 [25.1]	..R4	..U9
10TEN0160-H20XLA00-P2,2-M-...	260 [68.7]	..R5	..S5
10TEN0250-H20XLA00-P2,2-M-...	320 [84.5]	..R6	..S6
10TEN0400-H20XLA00-P2,2-M-...	560 [147.9]	..S8	..S9
10TEN0630-H20XLA00-P2,2-M-...	630 [166.4]	..S9	..S8
10TEN1000-H20XLA00-P2,2-M-...	1270 [335.5]	..S10	..S12
10TE2000-H20XLA00-P2,2-M-...	1600 [422.7]	..S12	..S10
10TE2500-H20XLA00-P2,2-M-...	1680 [443.8]	..S12	..S10

<sup>1)</sup> 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-M12 X 1), 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”. 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.

01	02	03
WE	-	-

#### Maintenance indicator

01	electronic switching element	WE
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#### 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.

Type	Signal	Switching points	Connector	LED
WE-1SP-M12 x 1	Changeover	1	M12 x 1	No
WE-2SP-M12 x 1	Normally open (at 75%) / normally closed contact (at 100%)	2		3 pieces
WE-2SPSU-M12 x 1				
WE-1SP-EN175301-803	Normally closed contact	1	EN 175301-803	No

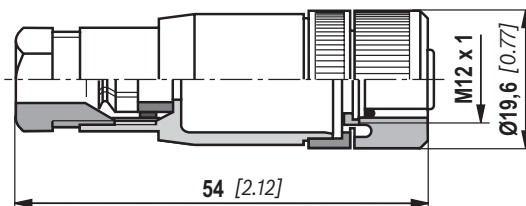
## Ordering code accessories

(dimensions in mm [inch])

### Mating connectors according to IEC 60947-5-2

for electronic switching element with round plug-in connection M12 x 1

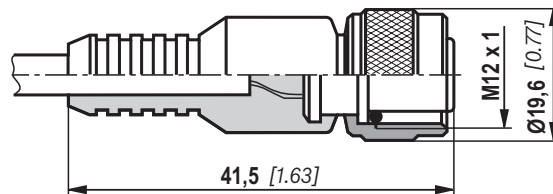
Mating connector suitable for K24 4-pole, M12 x 1 with screw connection, cable gland Pg9.



Mating connector suitable for K24-3m 4-pole, M12 x 1 with potted-in PVC cable, 3 m long.

Line cross-section: 4 x 0.34 mm<sup>2</sup>

Core marking:     **1** brown               **2** white  
                          **3** blue               **4** black



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

#### Order example:

Tank mounted return line filter with mechanical-optical maintenance indicator for  $p_{nom.} = 10 \text{ bar [145 psi]}$ , size 0100, with filter element 10  $\mu\text{m}$  and electronic switching element M12 x 1 with 1 switching point for hydraulic fluid mineral oil HLP according to DIN 51524.

**Filter with mech. optical maintenance indicator:** 10TEN0100-H10XLA00-P2,2-M-R4

**Switching element:** WE-1SP-M12 x 1

**Mating connector:** Mating connector suitable for K24 4-pin,  
M12 x 1 with screw connection,  
Cable gland Pg9



## Ordering code accessories

(dimensions in mm [inch])

### Outlet pipes

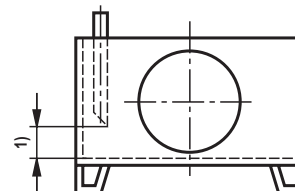
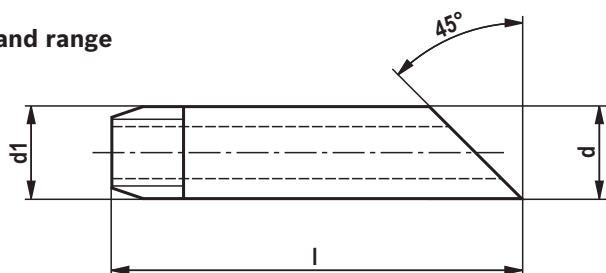
#### Outlet pipe, pluggable, size 0040-0100

The outlet pipes are plugged onto the filter bowl outlet piece. Correct seat is confirmed by an audible click. After plug-on, the outlet pipe can no longer be removed.

Description
ACC-R-10TEN0040-0100-R110
ACC-R-10TEN0040-0100-R150
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 by means of a tank-internal pipe bracket.

DN	d	Dimensions d1	l	galvanized	ES (stainless)
				Description: PIPE AB23-03/R...	Description: PIPE AB23-03/R... -ES
40 [1.57]	48.3 [1.90]	R 1 1/2	250 [9.84]	1 1/2 L = 250	
			400 [15.75]	1 1/2 L = 400	
			800 [31.50]	1 1/2 L = 800	
			1300 [51.18]	1 1/2 L = 1300	
			2000 [78.74]	1 1/2 L = 2000	
50 [1.97]	60.3 [2.37]	R 2	400 [15.75]	2 L = 400	
			800 [31.50]	2 L = 800	
80 [3.15]	88.9 [3.50]	R 3	160 [6.30]	3 L = 160	
			200 [7.87]	3 L = 200	
			350 [13.78]	3 L = 350	
			650 [25.59]	3 L = 650	
			800 [31.50]	3 L = 800	

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

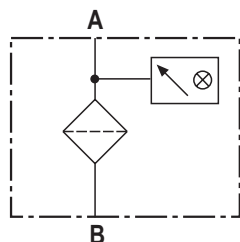
#### Order example/search term

Pipe according to DIN 2440 (ISO 65) with thread R 1 1/2 and L = 250 mm [9.84 inch], galvanized:

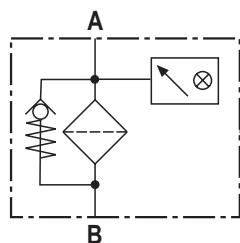
**PIPE AB23-03/R 1 1/2 L = 250**

## Symbols

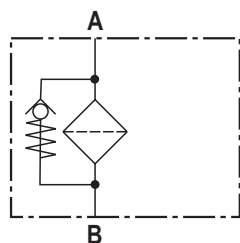
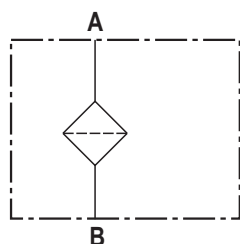
Tank mounted return line filter without bypass and with mechanical indicator



Tank mounted return line filter with bypass and mechanical indicator



Tank mounted return line filters without bypass

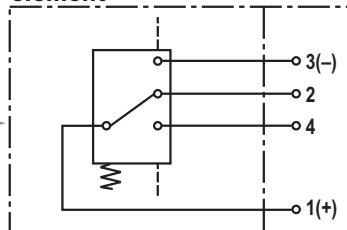


Tank mounted return line filters with bypass

Electronic switching element for maintenance indicator

Switching element

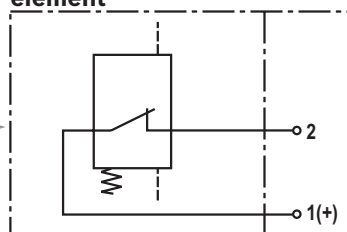
Connector



WE-1SP-M12 x 1

Switching element

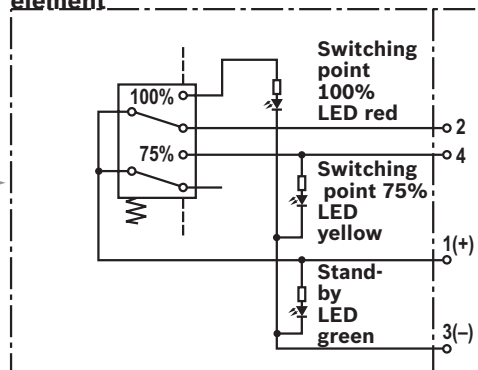
Connector



WE-1SP-EN175301-803

Switching element

Connector

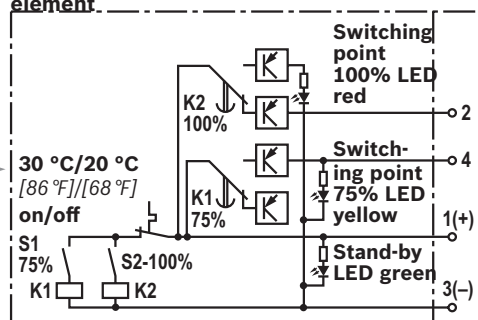


WE-2SP-M12 x 1

Circuit diagram drawn in plugged condition (operating state)

Switching element

Connector



WE-2SPSU-M12 x 1

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

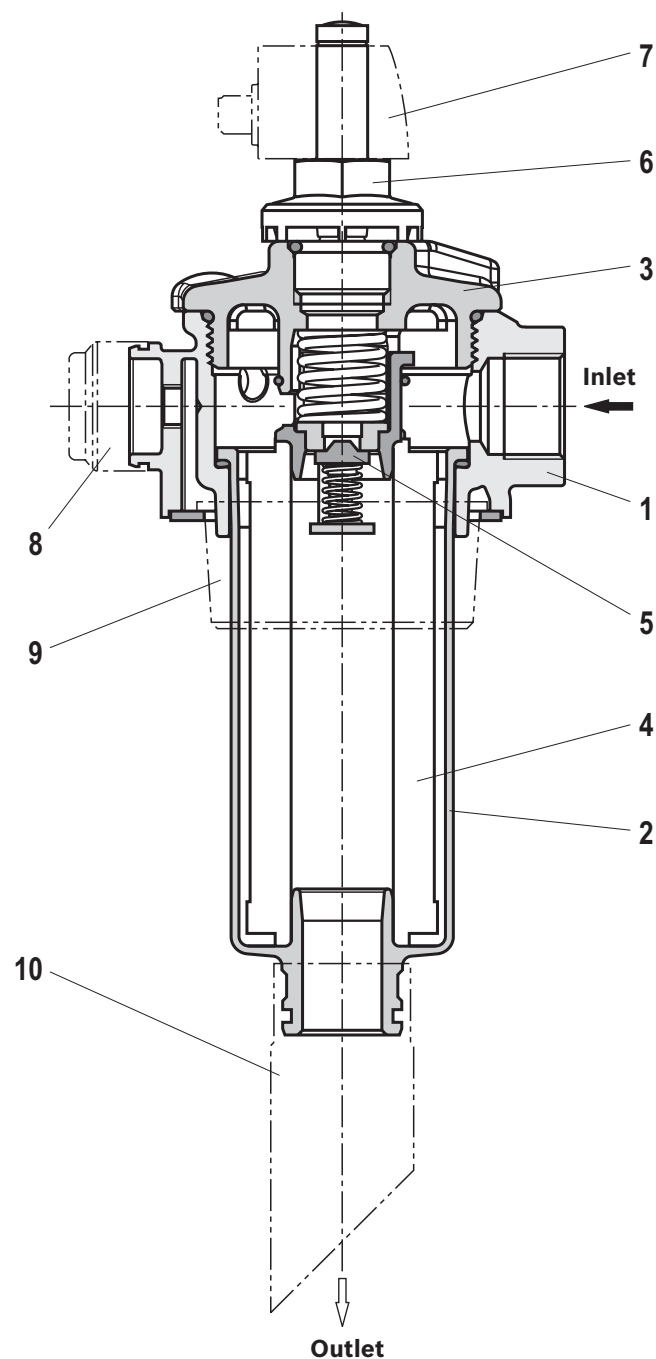
## Function, section

The tank mounted return line filter is provided 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) filter head (2), cover (3), filter element (4), as well as a bypass valve (5).

Optionally, the filter is equipped with mechanical optical maintenance indicator (6). The electronic maintenance indicator is connected via the electronic switching element (7) with 1 or 2 switching points (see p. 7), which has to be ordered separately.

During operation, the hydraulic fluid reaches the filter housing via the inlet; here, it flows through the filter element (4) from the outside to the inside and is cleaned according to the filter rating. The dirt particles filtered out settle in the filter head (2) and in the filter element (4). Via the outlet, the filtered hydraulic fluid enters the tank. In case of contamination, the necessary filter element exchange is displayed by the maintenance indicator (6). The electronic switching element (7) is attached to the mechanical optical maintenance indicator (6) and held by means of a locking ring.

Depending on the filter size, more additional functions are available (only for size 0040 - 0100) - e.g. a breathing filter (8), surge protection (9) or return pipes (10) in different lengths – also refer to the chapter “Ordering Codes Accessories”.



**Type 10TEN0063**

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

General							
Size		Size	0040	0063	0100	0160	0250
Weight		kg [lbs]	1.4 [3.09]	1.6 [3.53]	1.8 [3.97]	4.5 [9.92]	5.0 [11.03]
Size		Size	0400	0630	1000	2000	2500
Weight		kg [lbs]	8.0 [17.64]	10.0 [22.05]	18 [39.7]	21.5 [47.42]	27 [59.55]
Installation position			vertical				
Ambient temperature range			°C [°F] −10 ... +65[+14...+149] (shortly 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) Steel aluminized (sizes 1000...2500)				
	− Bypass valve		Plastic				
	− Visual Maintenance indicator	(P2.2) (V...)	Plastic PA6				
	− Electronic switching element		Aluminum				
	− Pressure gauge		Plastic PA6				
	− Seals		Plastic				
			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]			
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 <sup>5</sup> 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	bar [psi]	Response pressure of the maintenance indicator			Cracking pressure of the bypass valve		
		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 M12 x 1, 4-pole		Standard connection EN 175301-803
Version		1SP-M12 x 1	2SP-M12 x 1	2SPSU-M12 x 1
Contact load, direct voltage	A <sub>max.</sub>	1		
Voltage range	V <sub>max.</sub>	150 (AC/DC)	10-30 (DC)	
max. switching power with resistive load	W	20		70
Switching type	– 75% signal	–	Normally open contact	
	– 100% signal	Changeover	Normally closed contact	
	– 2SPSU			Signal interconnec- tion 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 material H.XL		Single-use element on the basis of inorganic fiber		
		Filtration ratio according to ISO 16889 up to $\Delta p = 5$ 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	
Flame-resistant	– soluble in water	HEPG	FKM	VDMA 24568
	– 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 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.

- **Biodegradable:** If filter materials made of filter paper are used, the filter life may be shorter than expected due to material incompatibility and swelling.

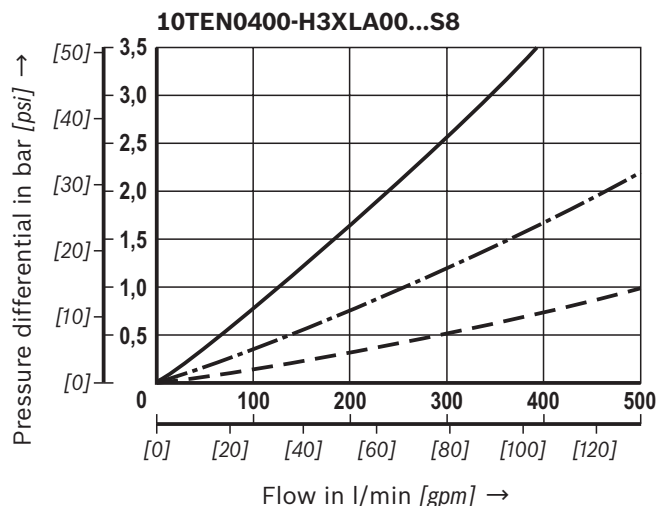
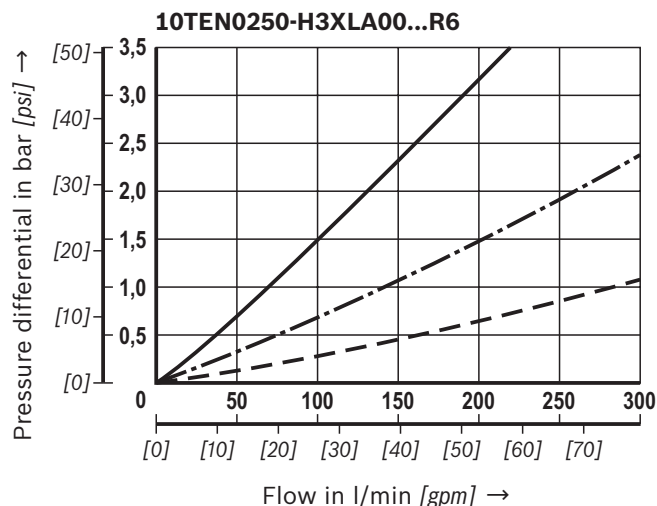
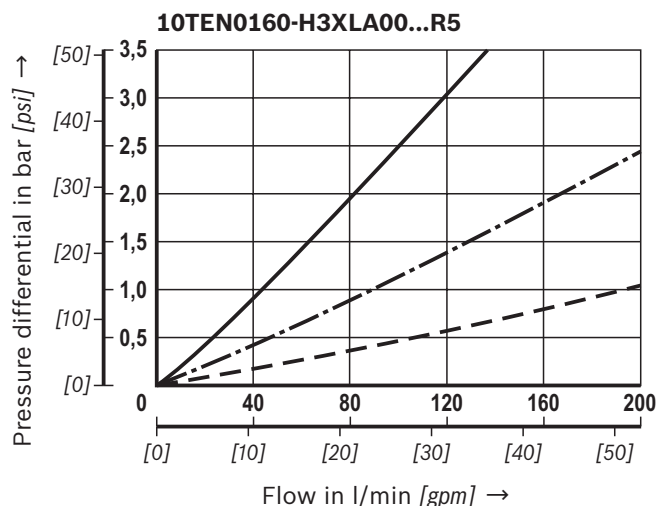
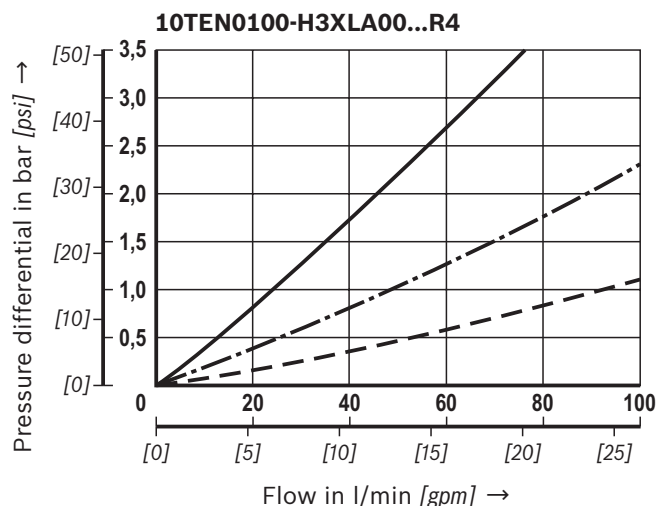
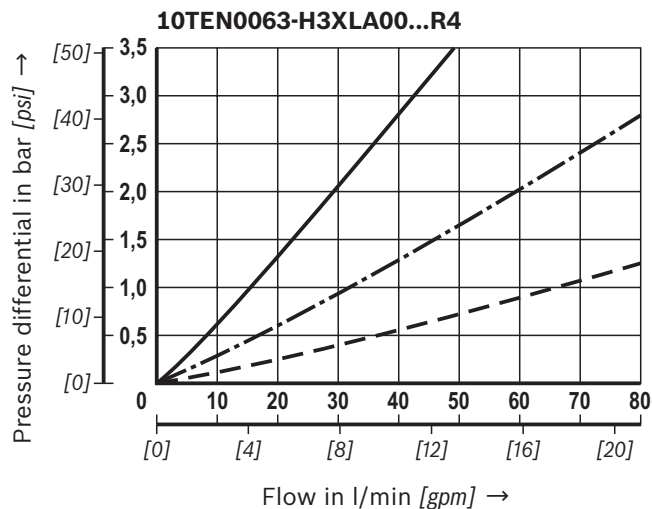
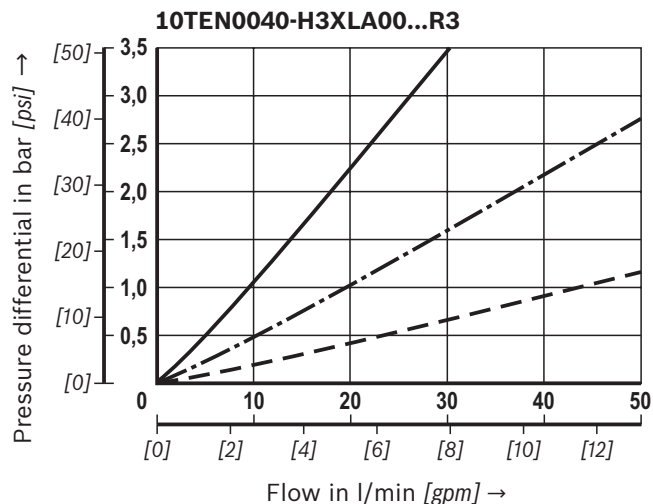
**Characteristic curves: H3XL**

(measured with mineral oil HLP46 according to DIN 51524)

 Spec. weight: < 0.9 kg/dm<sup>3</sup>
 $\Delta p$ -Q characteristic curves for complete filter

 recommended initial  $\Delta p$  for design = 0.5 bar [7.25 psi]

Oil viscosity:

 — 140 mm<sup>2</sup>/s [649 SUS]  
 - · - 68 mm<sup>2</sup>/s [315 SUS]  
 - - - 30 mm<sup>2</sup>/s [142 SUS]


### Characteristic curves: H3XL

(measured with mineral oil HLP46 according to DIN 51524)

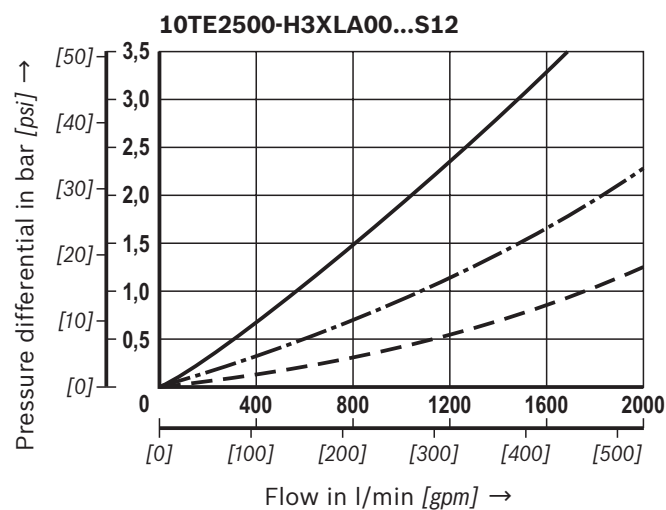
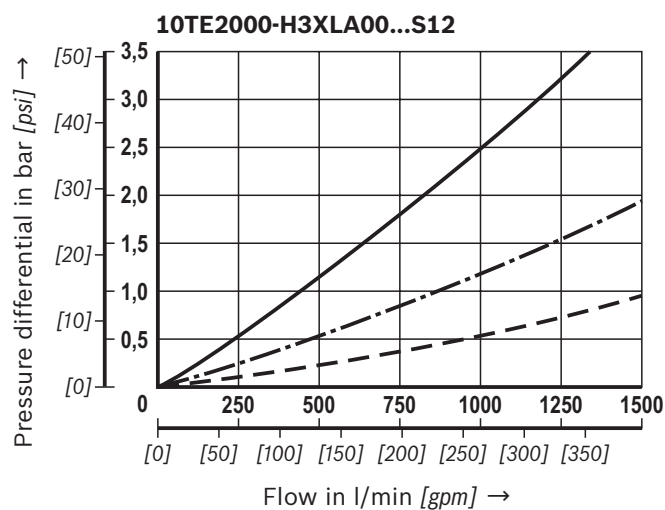
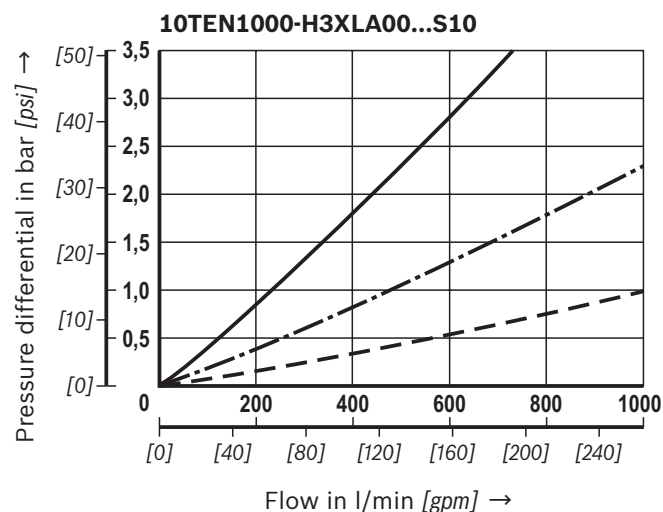
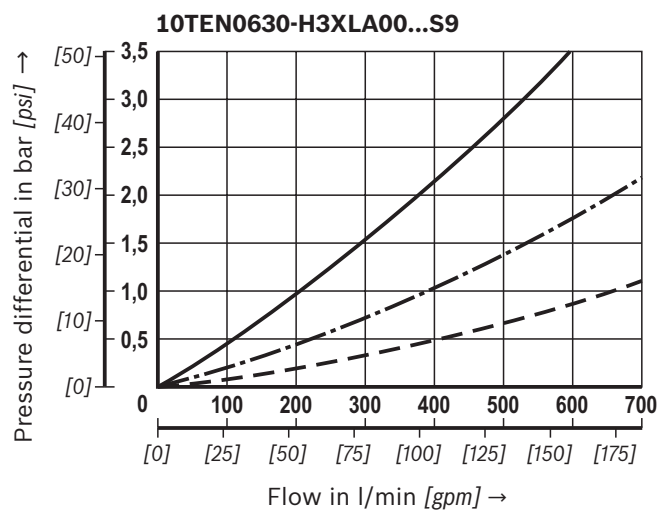
Spec. weight: < 0.9 kg/dm<sup>3</sup>

$\Delta p$ -Q characteristic curves for complete filter

recommended initial  $\Delta p$  for design = 0.5 bar [7.25 psi]

Oil viscosity:

— 140 mm<sup>2</sup>/s [649 SUS]  
 - - 68 mm<sup>2</sup>/s [315 SUS]  
 --- 30 mm<sup>2</sup>/s [142 SUS]





## Characteristic curves: H10XL

(measured with mineral oil HLP46 according to DIN 51524)

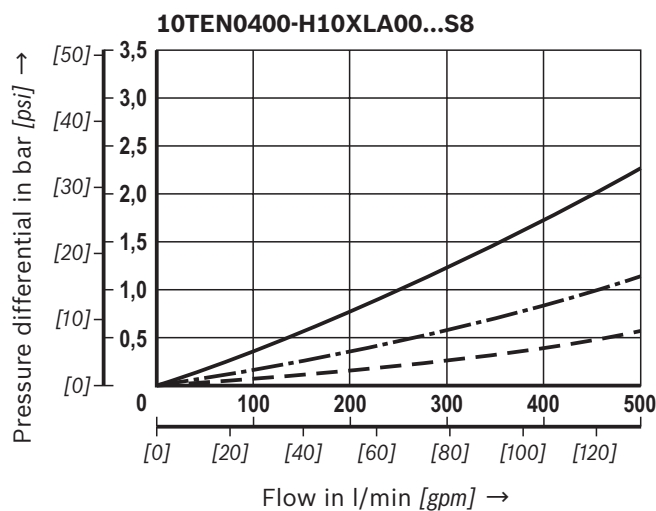
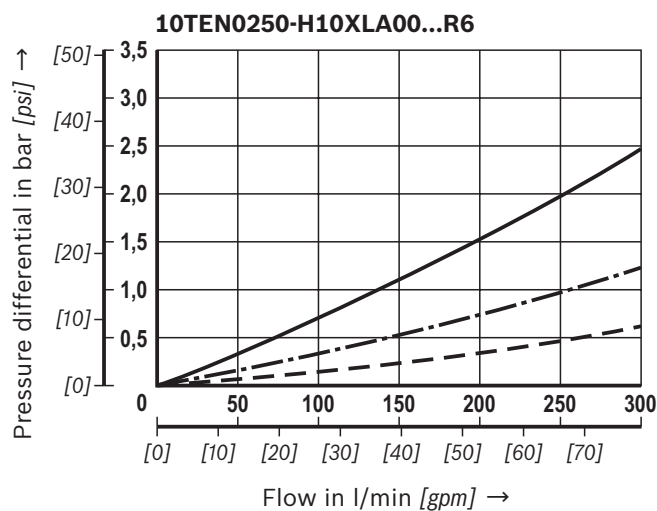
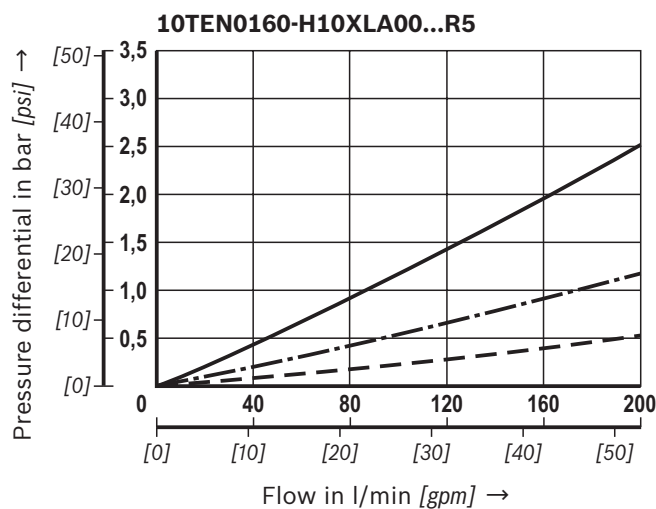
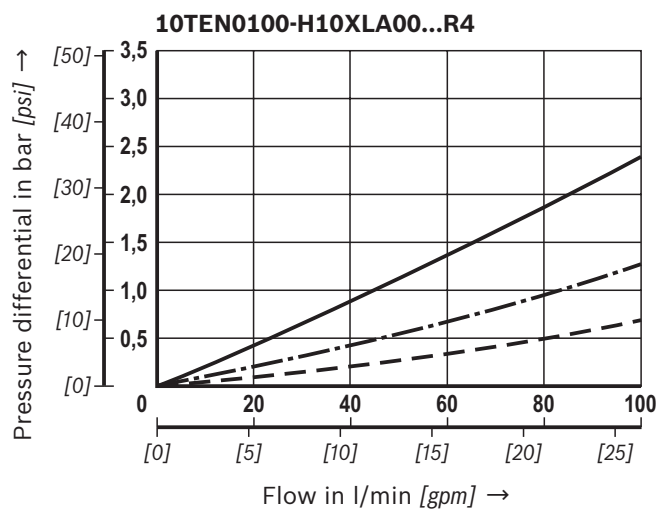
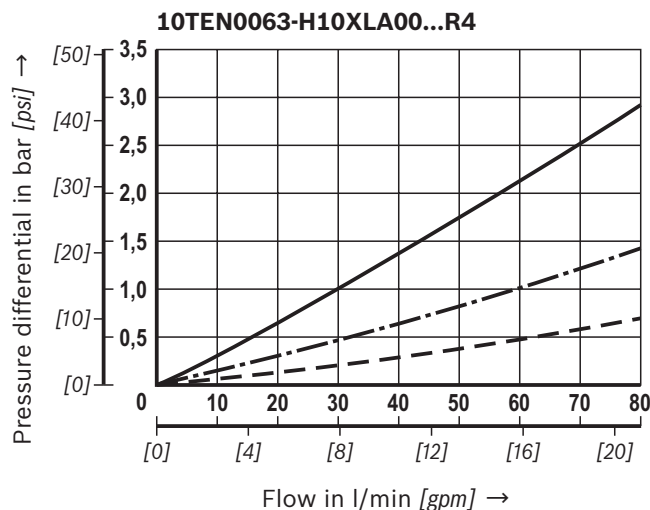
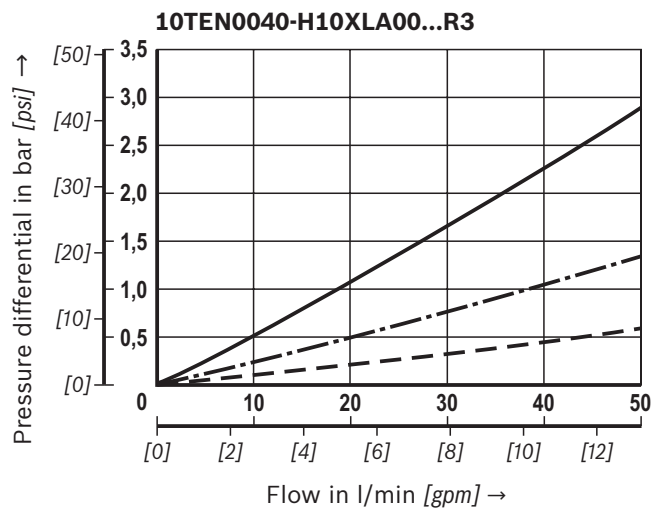
Spec. weight: < 0.9 kg/dm<sup>3</sup>

$\Delta p$ -Q characteristic curves for complete filter

recommended initial  $\Delta p$  for design = 0.5 bar [7.25 psi]

Oil viscosity:

— 140 mm<sup>2</sup>/s [649 SUS]  
 - - - 68 mm<sup>2</sup>/s [315 SUS]  
 - - - 30 mm<sup>2</sup>/s [142 SUS]



### Characteristic curves: H10XL

(measured with mineral oil HLP46 according to DIN 51524)

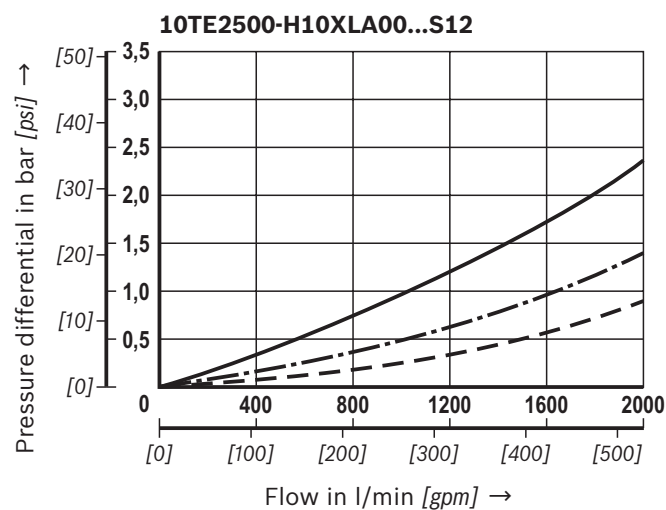
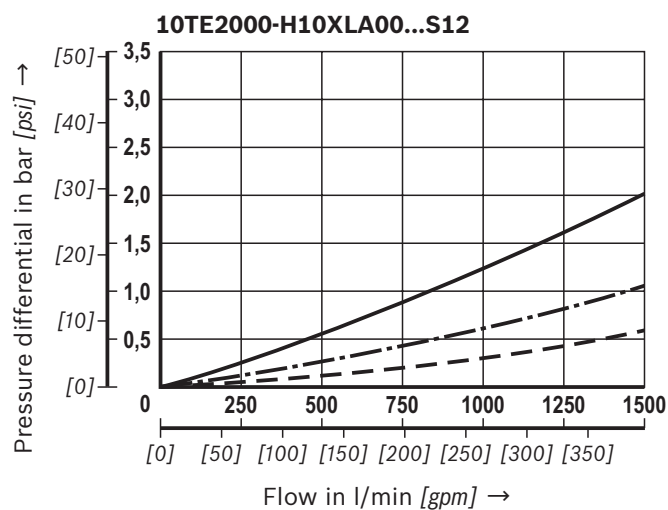
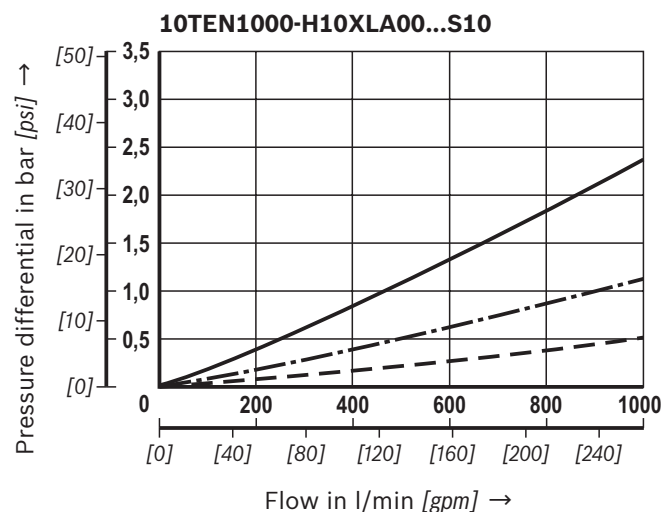
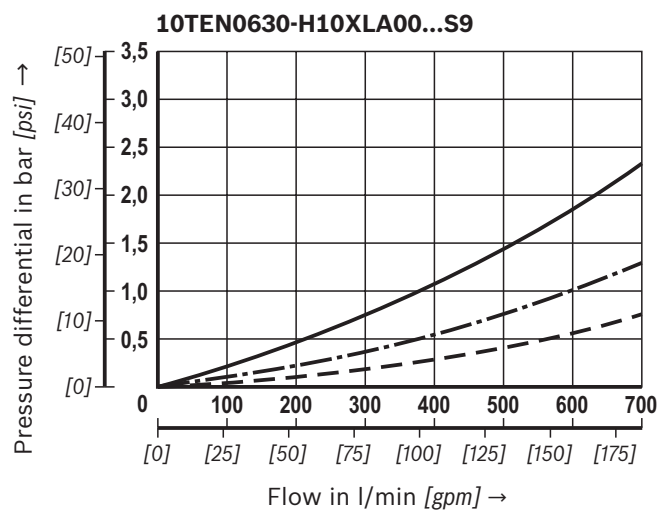
Spec. weight: < 0.9 kg/dm<sup>3</sup>

$\Delta p$ -Q characteristic curves for complete filter

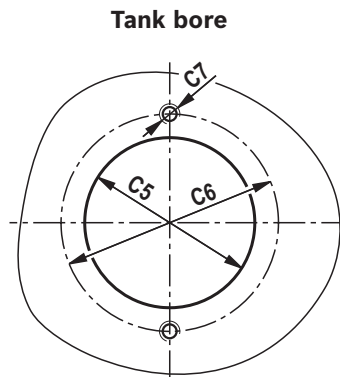
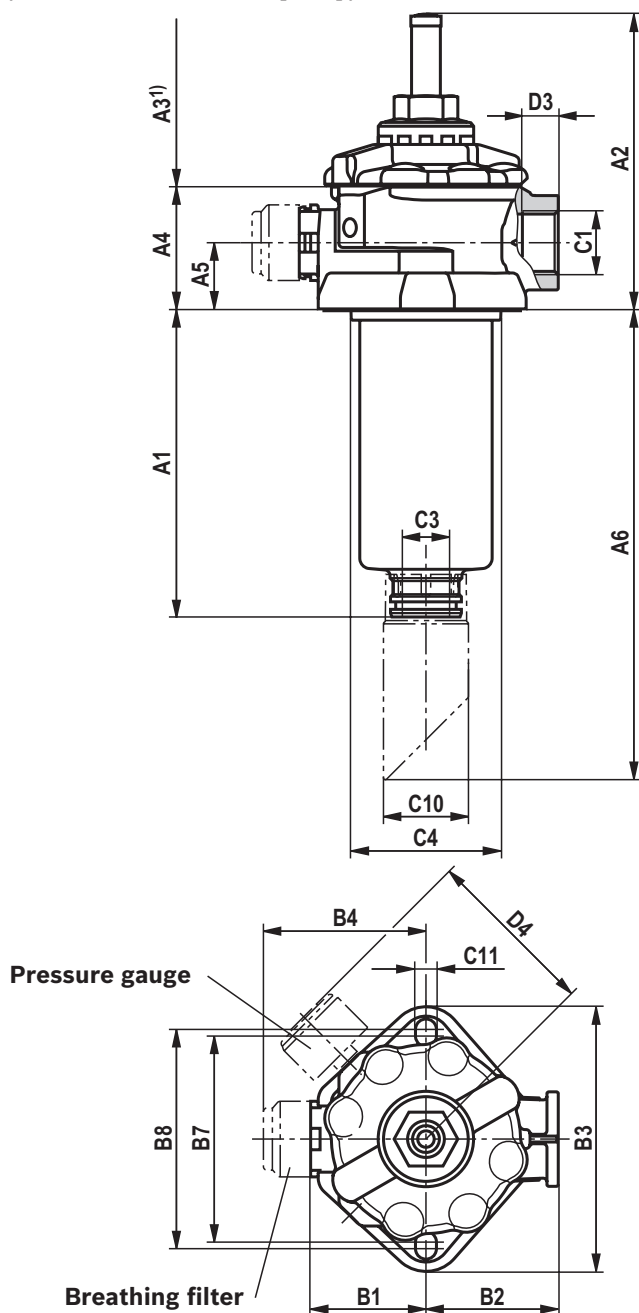
recommended initial  $\Delta p$  for design = 0.5 bar [7.25 psi]

Oil viscosity:

— 140 mm<sup>2</sup>/s [649 SUS]  
 - - 68 mm<sup>2</sup>/s [315 SUS]  
 --- 30 mm<sup>2</sup>/s [142 SUS]



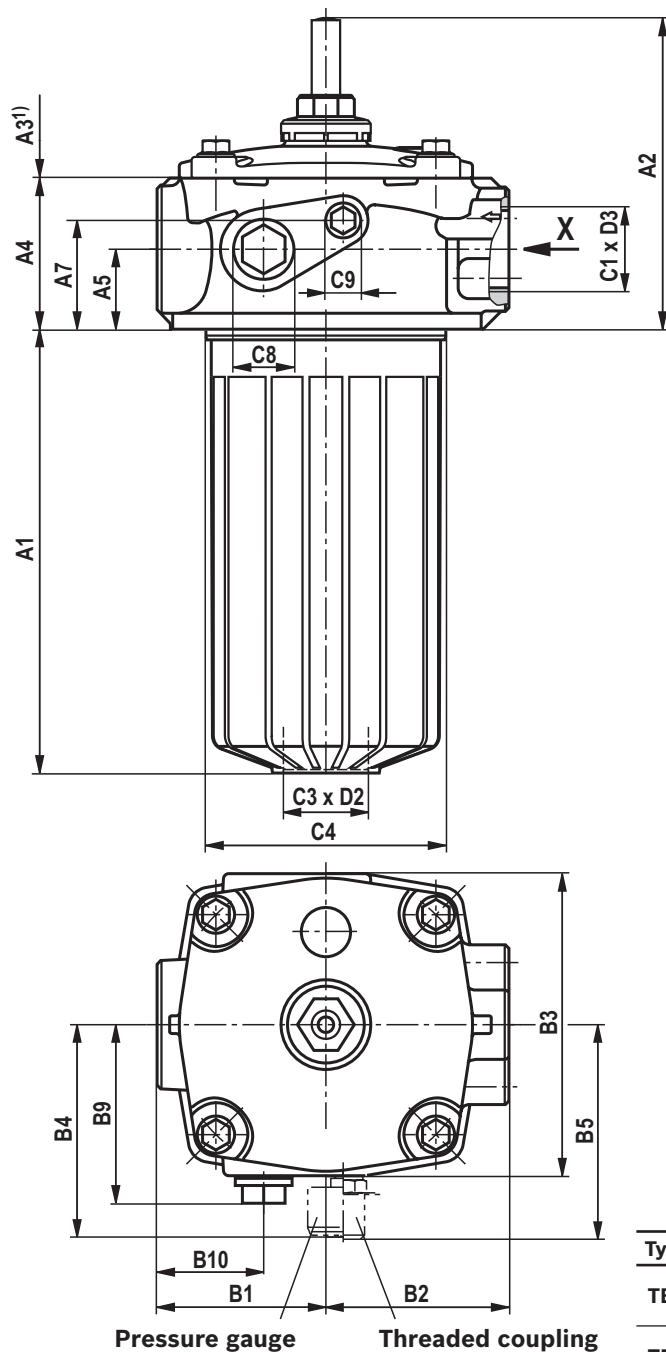
**Dimensions: 10TEN0040, 0063, 0100**  
(dimensions in mm [inch])



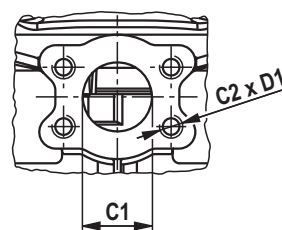
Type 10...	A1	A2	A3 <sup>1)</sup>	A4	A5	A6	
<b>TEN0040</b>	103 [4.06]		100 [3.94]			R110	190 [7.38]
						R150	230 [9.06]
						R250	330 [12.99]
<b>TEN0063</b>	163 [6.42]	155 [6.10]	160 [6.30]	65 [2.56]	35 [1.38]	R110	250 [9.84]
						R150	290 [11.42]
						R250	390 [15.35]
<b>TEN0100</b>	253 [9.96]		250 [9.84]			R110	340 [13.39]
						R150	380 [14.96]
						R250	480 [18.90]

<sup>1)</sup> Servicing height for filter element exchange

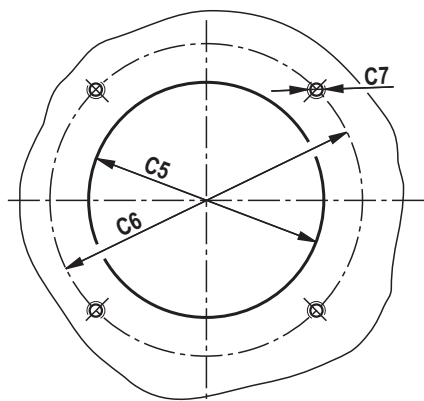
Type 10...	B1	B2	B3	B4	B7	B8	C1 connection		C3	ØC4	ØC5	ØC6	C7	ØC10	C11	D3	D4
							Standard	Optional									
<b>TEN0040</b>							G 3/4	G 1 1 1/16-12 UN-2B 1 5/16-12 UN-2B	NW 25	80 [3.15]	90 [3.54]	115 [4.53]	M10	45 [1.77]	11 [0.43]	19 [0.75]	90 [3.54]
<b>TEN0063</b>	61 [2.40]	70 [2.76]	140 [5.51]	86 [3.39]	109 [4.29]	116 [4.57]	G 1	G 3/4 1 1/16-12 UN-2B 1 5/16-12 UN-2B									
<b>TEN0100</b>							G 1	G 3/4 1 1/16-12 UN-2B 1 5/16-12 UN-2B									

**Dimensions: 10TEN0160, 0250**  
 (dimensions in mm [inch])


View X



Tank bore



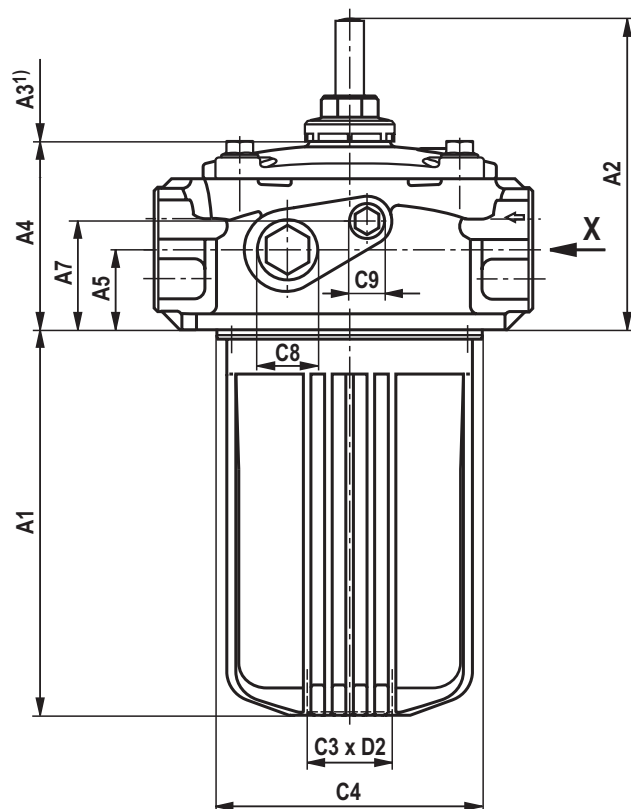
Type 10...	A1	A2	A3 <sup>1)</sup>	A4	A5	A7
TEN0160	160 [6.30]	174 [6.85]	160 [6.30]	85 [3.35]	45 [1.77]	60 [2.36]
TEN0250	250 [9.84]		260 [10.24]			

<sup>1)</sup> Servicing height for filter element exchange

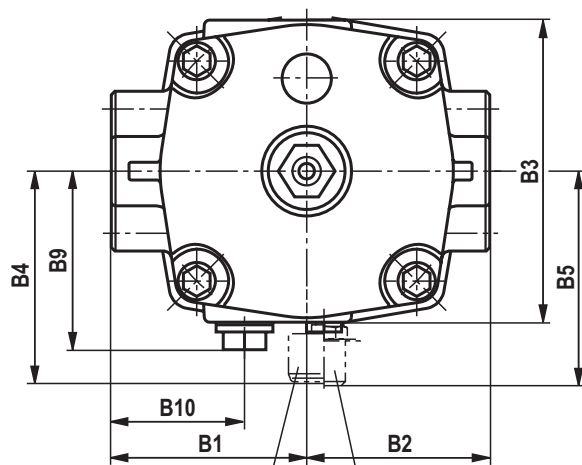
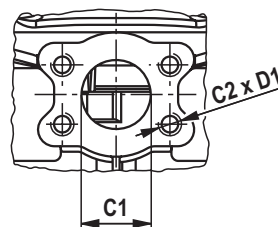
Type 10...	B1	B2	B3	B4	B5	B6	B9	B10	C1 connection	
									Standard	Optional
TEN0160	95 [3.74]	103 [4.06]	170 [6.69]	120 [4.72]	116 [4.57]	153 [6.02]	100,5 [3.96]	60 [2.36]	G 1 1/4	G 1 1/2 SAE 1 1/2" 3000 psi SAE 1 1/4" 3000 psi 1 7/8-12 UN-2B
TEN0250									G 1 1/2	G 1 1/4 SAE 1 1/2" 3000 psi SAE 1 1/4" 3000 psi 1 7/8-12 UN-2B

Type 10...	C2	C3	ØC4	ØC5	ØC6	C7	C8	C9	D1	D2	D3
TEN0160	M12 M10	G 1 1/2	135 [5.31]	140 [5.51]	185 [7.28]	M10	G 3/4	G 1/4	20 (24) [0.79 (0.94)] 26 (30) [1.02 (1.18)]	26 [1.02]	22,5 [0.89]
TEN0250	M12 M10								20 (24) [0.79 (0.94)] 26 (30) [1.02 (1.18)]		

**Dimensions: 10TEN0400, 0630**  
(dimensions in mm [inch])

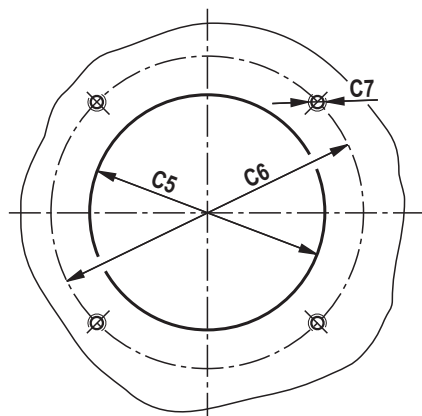


**View X**



**Pressure gauge      Threaded coupling**

**Tank bore**



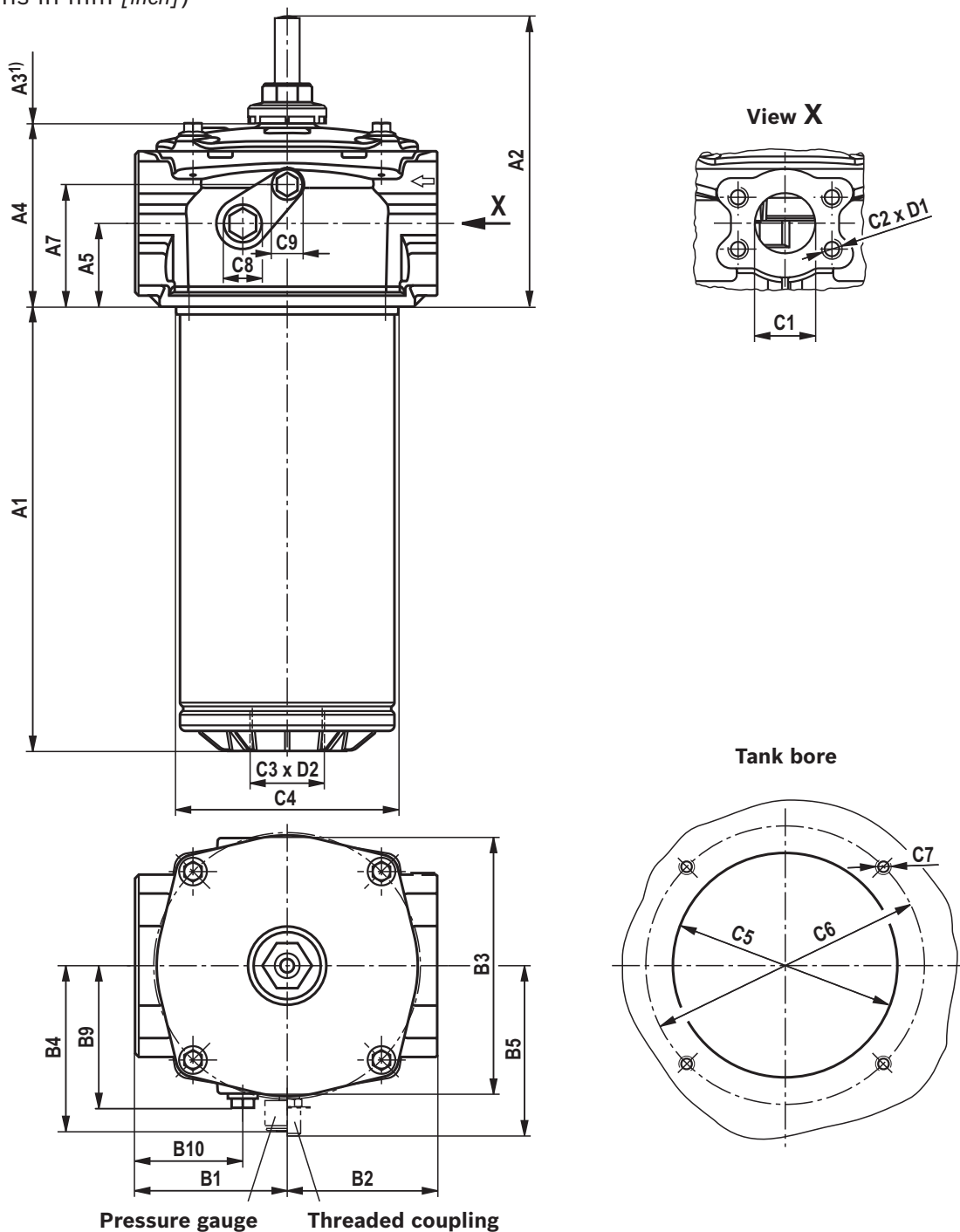
<sup>1)</sup> Servicing height for filter element exchange

Type 10...	A1	A2	A3 <sup>1)</sup>	A4	A5	A7	B1	B2	B3	B4	B5	B6	B9	B10
TEN0400	255 [10.04]	199 [7.83]	250 [9.84]	131 [5.16]	60 [2.36]	85 [3.35]	117 [4.61]	115 [4.53]	210 [8.27]	138 [5.43]	134 [5.28]	171 [6.73]	120 [4.72]	77 [3.03]
TEN0630	405 [15.94]		400 [15.75]											

Type 10...	C1 connection		C2	C3	ØC4	ØC5	ØC6	C7	C8	C9	D1	D2
	Standard	Optional										
TEN0400	SAE 2" 3000 psi	SAE 2 1/2" - 3000 psi	M12	G 2	175 [6.89]	178 [7.01]	220 [8.66]	M10	G 3/4	G 1/4	20 (24) [0.79 (0.94)]	25,5 [1.00]
TEN0630	SAE 2 1/2" - 3000 psi	SAE 2" 3000 psi										

**Dimensions: 10TEN1000, 10TE2000, 10TE2500**

(dimensions in mm [inch])

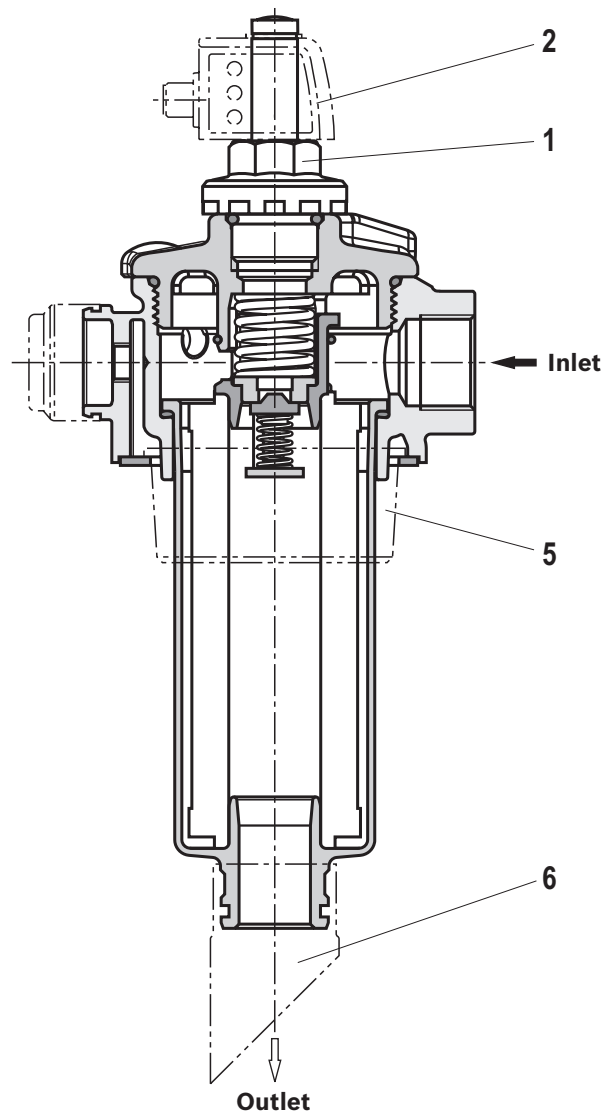
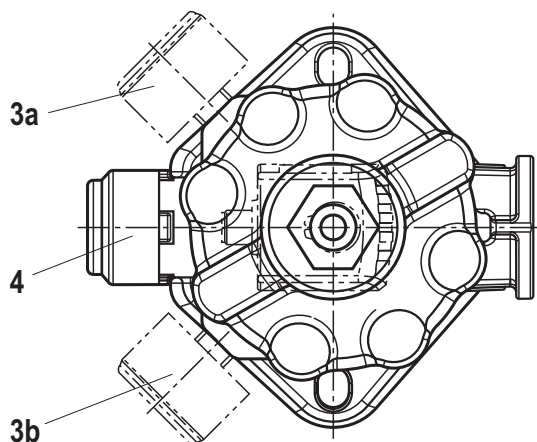


1) Servicing height for filter element exchange

Type 10...	A1	A2	A3 <sup>1)</sup>	A4	A5	A7	B1	B2	B3	B4	B5	B6	B9	B10
<b>TEN1000</b>	400 [15.75]	158 [6.22]	530 [20.87]	165 [6.50]	75 [2.95]	110 [4.33]	137 [5.39]	135 [5.31]	235 [9.25]	149 [5.87]	146 [5.75]	183 [7.20]	130,5 [5.14]	97 [3.82]
<b>TE2000</b>	758 [29.84]		880 [34.65]											
<b>TE2500</b>	993 [39.09]		1130 [44.49]											

Type 10...	C1 connection		C2	C3	ØC4	ØC5	ØC6	C7	C8	C9	D1	D2
	Standard	Optional										
TEN1000	SAE 3" 3000 psi	SAE 4" 3000 psi	M16	G 3	200 [7.87]	202 [7.95]	250 [9.84]	M10	G 3/4	G 1/4	26 (30) [1.02 (1.18)]	35 [1.38]
TE2000	SAE 4" 3000 psi	SAE 3" 3000 psi										
TE2500												

## Options



Exemplary representation based on a filter 10TEN0063.

- ☒ Optional  
☐ not possible

Ordering code	Maintenance indicator options	Item	Frame size	
			0040-0100	0160-2500
P2,2; V0,8; V1,5; V2,2	Mechanical optical maintenance indicator	<b>1</b>	●	●
MR	Pressure gauge right	<b>3a</b>	●	—
ML	Pressure gauge left	<b>3b</b>	—	●
V2,2MR	Mechanical optical maintenance indicator + pressure gauge right	<b>1 + 3a</b>	●	—
V2,2ML	Mechanical optical maintenance indicator + pressure gauge left	<b>1 + 3b</b>	—	●
plus R928...	Electronic switching element	See chapter "Accessories"		

Ordering code	Supplementary information options	Item	Frame size	
			0040-0100	0160-2500
F	Breathing filter	<b>4</b>	●	—
FN	Ventilation filter with surge protection	<b>4 + 5</b>	●	—
MR	Threaded coupling right (not possible with pressure gauge right)	<b>3a</b>	●	—
ML	Threaded coupling left (not possible with pressure gauge left)	<b>3b</b>	—	●
NB	Without bypass valve		●	●
R110	Outlet pipe 110 cm	<b>6</b>	● <sup>1)</sup>	—
R150	Outlet pipe 150 cm	<b>6</b>	● <sup>1)</sup>	—
R250	Outlet pipe 250 cm	<b>6</b>	● <sup>1)</sup>	—

<sup>1)</sup> Outlet pipes for sizes 0040...0100 are to be ordered preferably pre-assembled over the complete filter.

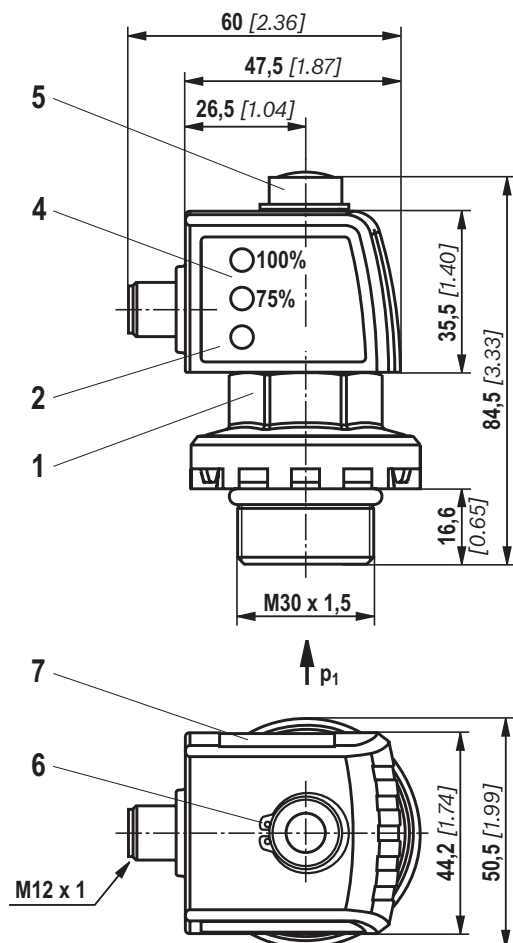
Outlet pipes for other sizes must be ordered separately and are not pre-assembled. See chapter "Order Code Accessories".



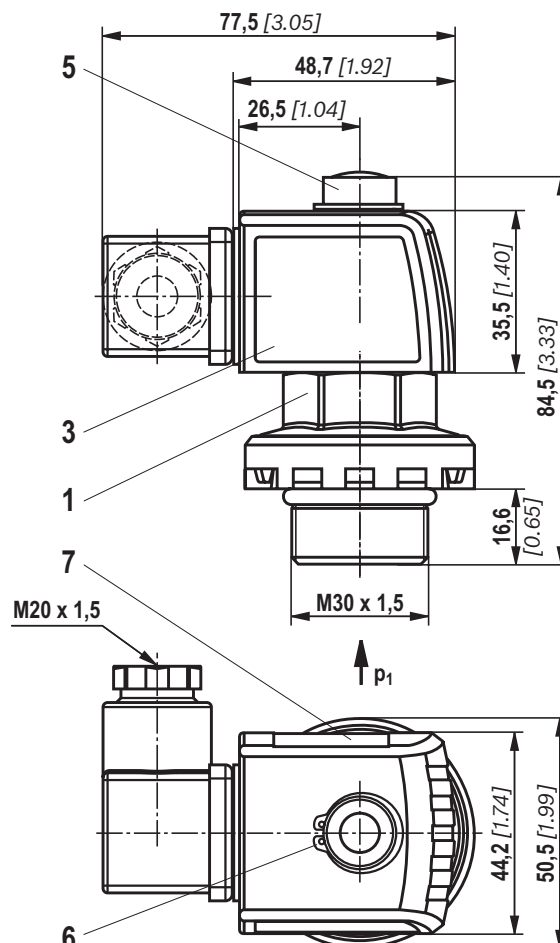
## Maintenance indicator

(dimensions in mm [inch])

### Electronic switching element with round plug-in connection M12 x 1, 4-pole



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



- 1 Mechanical optical maintenance indicator; max. tightening torque  $M_{A \max} = 50 \text{ Nm}$  [36.88 lb-ft]  
Tightening torque for back pressure indicator in PA6.6  $M_{A \max} = 35 \text{ Nm}$  [25.82 lb-ft]
  - 2 Switching element with locking ring for electrical maintenance indicator (rotatable by 360°); plug-in connection M12 x 1, 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 indicator bistable 6
- Locking ring DIN 471-16 x 1,  
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-M12 X 1), 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".

See chapter "Order Code Spare Parts".

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	TEN... (Filter elements according to <b>DIN 24550</b> )	0040 0063 0100 0160 0250 0400 0630 1000
	TE... (Filter elements according to <b>standard</b> )	2000 2500

### Filter rating in $\mu\text{m}$

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

### Pressure differential

04	Maximum 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 filter elements please refer to data sheet.

## Ordering code spare parts

### Preferred program Replacement elements

Filter element type
1.0040 ...A00-O-M
1.0063 ...A00-O-M
1.0100 ...A00-O-M
1.0160 ...A00-O-M
1.0250 ...A00-O-M
1.0400 ...A00-O-M
1.0630 ...A00-O-M
1.1000 ...A00-O-M
1.2000 ...A00-O-M
1,2500 ...A00-O-M

### 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, modular design	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	without information

### Mechanical optical maintenance indicator

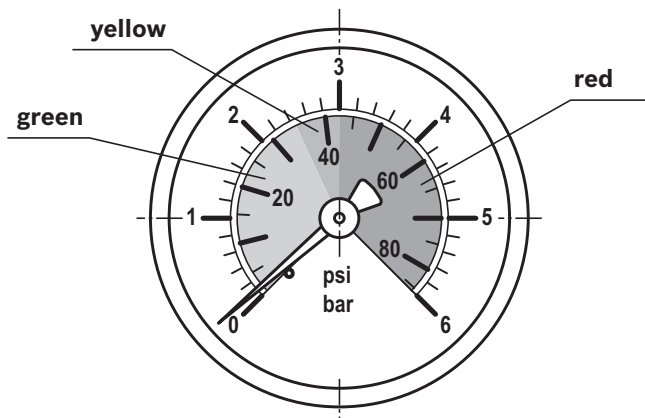
Description
WO-S01-0.8-M-10
WO-S01-0.8-V-10
WO-S01-1.5-M-10
WO-S01-1.5-V-10
WO-S01-2.2-M-10
WO-S01-2.2-V-10
WO-S01-2.2-M-10-PA
WO-S01-2.2-V-10-PA

## Ordering code spare parts

### Pressure gauge <sup>1)</sup>

Description
M010 0-6 bar [0-87 psi], fluid connection R1/4, Ø 50 mm

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



### Breathing filter element

(only for 10TEN0040-0100) incl. plastic cap

Description
71.001 P5-S00-0-0

### Seal kit

01	02	03	04	05
<b>D</b>	<b>10TE</b>		-	-

01	Seal kit	<b>D</b>
02	Series	<b>10TE</b>

### Size

03	0040-0100	<b>N0040-0100</b>
	0160-0250	<b>N0160-0250</b>
	0400-0630	<b>N0400-0630</b>
	1000	<b>N1000</b>
	2000-2500	<b>2000-2500</b>

### Seal

04	NBR seal	<b>M</b>
	FKM seal	<b>V</b>

### Supplementary information

05	Breathing filter with oil mist separator (only for size 0040-0100)	<b>FN</b>
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### Seal kit

Description	Description
D10TEN0040-0100-M	D10TEN0160-0250-V
D10TEN0160-0250-M	D10TEN0400-0630-V
D10TEN0400-0630-M	D10TEN1000-V
D10TEN1000-M	D10TE2000-2500-V
D10TE2000-2500-M	D10TEN0040-0100-M-FN
D10TEN0040-0100-V	D10TEN0040-0100-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).
- ▶ Before the assembly, the hole pattern of the tank must be compared to the dimensions from the “Dimensions” chapter.
- ▶ Drain pipes as of a length of approx. 500 mm must be carried in a bracket in order to avoid oscillations caused by the fluid flow in the tank. It is moreover to be ensured that in case of maintenance works, 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.
- ▶ Perfect functioning is only guaranteed in the installation position filter bowl vertically downwards and **on** the tank.
- ▶ The maintenance indicator must be arranged in a well visible way.
- ▶ 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.

#### **Notice:**

There is no bleeding 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 switching process in the electronic switching element is triggered, the filter element is contaminated and needs to be replaced and cleaned respectively. More details see data sheet.
- ▶ 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.
- ▶ Switch off the system, discharge the filter on the pressure side.
- ▶ Screw off the filter cover (NG0040-0100) and/or loosen the screws (from NG0160) and remove the filter over upwards.

#### **Notice:**

Note that with lower ratings, it may take slightly longer to discharge the residual oil. If the filter element is removed before running off residue oil, dirty oil can occur on the clean side.

- ▶ Remove the filter element including 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 renew them, if necessary.  
For suitable seal kits refer to chapter “Order Codes Spare Parts”.
- ▶ Filter elements made of wire mesh can be cleaned. For detailed cleaning instructions refer to data sheet.
- ▶ 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.

## Assembly, commissioning, maintenance

### WARNING!

- ▶ Assembly and disassembly only with depressurized system! For the filter element exchange refer to “Maintenance”.
- ▶ Tank is under pressure!
- ▶ Do not exchange the optical/mechanical maintenance indicator while the filter is under pressure!

### Notices:

- ▶ All works at the filter only be trained specialists.
- ▶ Functioning and safety are only guaranteed if original 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

Series 10...	TEN0040	TEN0063	TEN0100	TEN0160	TEN0250	TEN0400	TEN0630	TEN1000	TE2000	TE2500			
Screw	M10 x 30			M10 x 25				M12 x 25					
Tank mounting													
Quantity	2			4									
Recommended property class of screw	8.8												
Tightening torque with $\mu_{total} = 0.14$	21 Nm $\pm$ 10%							37 Nm $\pm$ 10%					

### Connection flange SAE 3000 psi

Series 10...	TEN0040	TEN0063	TEN0100	TEN0160	TEN0250	TEN0400	TEN0630	TEN1000	TE2000	TE2500
Connection variant	Thread			SAE 1 1/4" / SAE 1 1/2"		SAE 2" / SAE 2 1/2"		SAE 3" / SAE 4"		
Tank mounting screw	–			M10 / M12		M12		M16		
Quantity				4						
Recommended property class of screw				8.8						
Tightening torque with $\mu_{\text{total}} = 0.14$				33 Nm ± 10 % / 60 Nm ± 10 %		60 Nm ± 10%		137 Nm ± 10%		

### Filter cover

Series 10...	TEN0040	TEN0063	TEN0100	TEN0160	TEN0250	TEN0400	TEN0630	TEN1000	TE2000	TE2500
Screw Filter cover	Re-tighten by hand until stop, if necessary using an open-end wrench (SW19).			M10		M12				
Quantity	–			4						
Recommended property class of screw	–			8.8						
Tightening torque with $\mu_{total} = 0.14$	–			21 Nm ± 10%		37 Nm ± 10%				

### Maintenance indicator

Series	10TEN0040...10TEN1000, 10TE2000, 10TE2500
Tightening torque maintenance indicator, mechanical optical, aluminum, V...	50 Nm $\pm$ 5 Nm
Tightening torque maintenance indicator, mechanical optical, PA, P2,2	35 Nm $\pm$ 3 Nm
Tightening torque cubic connector screw switching element EN-175301-803	M3/0.5 Nm

## Directives and standardization

### classification according to Pressure Equipment Directive 97/23/EC

The return line filters for hydraulic applications according to 51424 are pressure holding equipment according to article 1, section 2.1.4 of the Pressure Equipment Directive 97/23/EC (PED). However, on the basis of the exception in article 1, section 3.6 of the 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 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 inline 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-M12 x 1

WE-1SP-EN175301-803

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

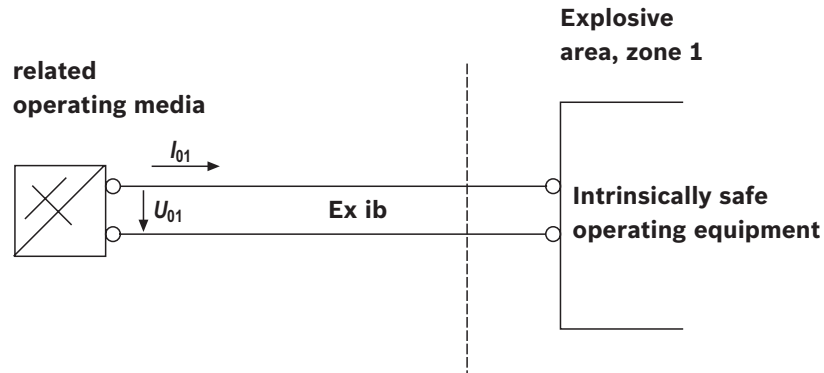
Complete filter with mech./opt. Maintenance indicator				
Use /assignment			Gas 2G	Dust 2D
Assignment			Ex II 2G c IIC T6	Ex II 2D c IIC T6
Conductivity of the medium	pS/m	min	300	
Dust accumulation		max	–	0.5 mm
electronic switching element in the intrinsically safe electric circuit				
Use /assignment			Gas 2G	Dust 2D
Assignment			Ex II 2G Ex ib IIB T4 Gb	Ex II 2D Ex ib IIIC T100°C Db
perm. 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 <sub>max</sub> 40 °C	750 mW T <sub>max</sub> 40 °C
		max	1.0 W T4 T <sub>max</sub> 80 °C	550 mW T <sub>max</sub> 100 °C
Surface temperature <sup>1)</sup>		max	–	100 °C
inner capacity		Ci	negligible	
inner inductivity		Li	negligible	
Dust accumulation		max	–	0.5 mm

<sup>1)</sup> 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!

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>▶ Explosion hazard due to high temperature!<br/>The temperature 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.</li> <li>▶ When using the tank mounted return line filters according to in explosive areas, appropriate</li> </ul> | <p>equipotential bonding has to be ensured. The filter is preferably to be earthed via the mounting screws. It has to be noted in this connection that paintings and oxidic protective layers are not electrically conductive.</p> <ul style="list-style-type: none"> <li>▶ During filter element exchanges, the packaging material is to be removed from the replacement element outside the explosive area</li> </ul> |
|---|---|

### 👉 Notices:

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