

# Double tank mounted return line filter with filter element according to DIN 24550

Type 10TDN0040 ... 1000; 10TD2000; 2500

**RE 51454**

Edition: 2023-06

Replaced: 2021-04



- ▶ 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:

- ▶ Filters 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
- ▶ Optional equipment with various electrical switching elements, modular design
- ▶ By default, the filters are equipped with a bypass valve integrated in the filter housing
- ▶ Optional measuring port

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## Ordering code

### Filter

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

#### Series

01	Double tank mounted return line filter 10 bar [145 psi]	10TD
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#### Filter element

02	With filter element according to <b>DIN 24550</b> (only with frame size 0040-1000)	N
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#### Size

03	TDN... (filter element according to <b>DIN 24550</b> )	0040 0063 0100 0160 0250 0400 0630 1000
	TD... (filter element according to <b>Hengst standard</b> )	2000 2500

04	<b>Component series</b> 10 ... 19 (10 ... 19: unchanged installation and connection dimensions)	1X
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#### Filter rating in $\mu\text{m}$

05	<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	PWR3 PWR6 PWR10 PWR20
	<b>Absolute</b> (ISO 16889; $\beta_{x(c)} \geq 200$ )	Water absorbing, not cleanable	AS6 AS10 AS20

#### Differential pressure

06	Max. permissible differential pressure of the filter element 30 bar [435 psi] (filter <b>with</b> bypass valve)	A00
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#### Maintenance indicator (1 unit per filter side)

07	<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] vis-à-vis inlet - bypass cracking pressure 3.5 bar [51 psi]	MB
	Maintenance indicator, cover-mounted, mechanical optical, switching pressure 2.2 bar [32 psi], <b>with</b> additional pressure gauge <sup>1)</sup> 0...6 bar [0...87 psi] vis-à-vis inlet - bypass cracking pressure 3.5 bar [51 psi]	MBV2,2
	Maintenance indicator, mech. optical, switching pressure 2.2 bar [32psi] - bypass cracking pressure 3.5 bar [51 psi]	P2,2
	Maintenance indicator, mech. optical, switching pressure 0.8 bar [11.6 psi] - bypass cracking pressure 3.5 bar [51 psi]	V0,8
	Maintenance indicator, mech. optical, switching pressure 1.5 bar [21.8 psi] - bypass cracking pressure 3.5 bar [51 psi]	V1,5
	Maintenance indicator, mech. optical, switching pressure 2.2 bar [32psi] - bypass cracking pressure 3.5 bar [51 psi]	V2,2

<sup>1)</sup> If a pressure gauge is used, 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	10
10TD			- 1X /		A00	-	-	-	-	-	-	-	-	-	-	-

### Seal

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

### Connection

09	<b>Frame size</b>	<b>0040-0100</b>	<b>0160-0250</b>	<b>0400-0630</b>	<b>1000-2500</b>	
	<b>Connection</b>					
	G1	●				<b>R4</b>
	G1 1/4		X			<b>R5</b>
	G1 1/2		●			<b>R6</b>
	SAE 2 1/2" - 3000 psi			●		<b>S9</b>
	SAE 3" - 3000 psi				●	<b>S10</b>
	SAE 16"	X				<b>U9</b>
	SAE 20"		X			<b>U5</b>
<input checked="" type="checkbox"/> standard connection <input type="checkbox"/> optional connection possibility						

### Supplementary information (multiple specifications possible)

10	Breathing filter <b>with</b> oil mist separator (only NG0040-0100)	<b>FN</b>
	Additional threaded couplings, G1/4, vis-à-vis inlet (not in connection with pressure gauge)	<b>M</b>
	Installation plate (only NG0400-2500)	<b>MP</b>
	<b>Without</b> bypass valve	<b>NB</b>
	Outlet pipe L110 mm [4.33 inch] (only NG0040-0100, from NG0160 see chapter "Accessories")	<b>R110</b>
	Outlet pipe L150 mm [5.91 inch] (only NG0040-0100, from NG0160 see chapter "Accessories")	<b>R150</b>
	Outlet pipe L250 mm [9.84 inch] (only NG0040-0100, from NG0160 see chapter "Accessories")	<b>R250</b>

### Order example:

10TDN0040-1X/PWR10A00-P2,2-M-R4

Further versions are available upon request.

**Preferred types****Filter rating 3 µm, 6 µm, 10 µm and 20 µm**

Filter Type	Flow in l/min [gpm] for $v = 30 \text{ mm}^2/\text{s}$ [142 SUS] and $\Delta p = 0,5 \text{ bar}$ [7.25 psi] <sup>1)</sup>	Connection	Material no.	Connection	Material no.
10TDN0040-1X/PWR3A00-P2,2-M-...	23 [6.1]	..R4	<b>R928051464</b>	..U9	<b>R928051605</b>
10TDN0063-1X/PWR3A00-P2,2-M-...	35 [9.2]	..R4	<b>R928051465</b>	..U9	<b>R928051606</b>
10TDN0100-1X/PWR3A00-P2,2-M-...	52 [13.7]	..R4	<b>R928051466</b>	..U9	<b>R928051607</b>
10TDN0160-1X/PWR3A00-P2,2-M-...	105 [27.7]	..R6	<b>R928051467</b>	..U5	<b>R928051608</b>
10TDN0250-1X/PWR3A00-P2,2-M-...	160 [42.3]	..R6	<b>R928051468</b>	..U5	<b>R928051609</b>
10TDN0400-1X/PWR3A00-P2,2-M-...-MP	290 [76.6]	..S9	<b>R928051469</b>		
10TDN0630-1X/PWR3A00-P2,2-M-...-MP	410 [108.3]	..S9	<b>R928051470</b>		
10TDN1000-1X/PWR3A00-P2,2-M-...-MP	560 [147.9]	..S10	<b>R928051471</b>		
10TD2000-1X/PWR3A00-P2,2-M-...-MP	900 [237.7]	..S10	<b>R928051472</b>		
10TD2500-1X/PWR3A00-P2,2-M-...-MP	1100 [290.6]	..S10	<b>R928051473</b>		
10TDN0040-1X/PWR6A00-P2,2-M-...	37 [9.8]	..R4	<b>R928051395</b>	..U9	<b>R928051600</b>
10TDN0063-1X/PWR6A00-P2,2-M-...	49 [12.9]	..R4	<b>R928051396</b>	..U9	<b>R928051601</b>
10TDN0100-1X/PWR6A00-P2,2-M-...	70 [18.5]	..R4	<b>R928051397</b>	..U9	<b>R928051602</b>
10TDN0160-1X/PWR6A00-P2,2-M-...	150 [39.6]	..R6	<b>R928051398</b>	..U5	<b>R928051603</b>
10TDN0250-1X/PWR6A00-P2,2-M-...	200 [52.8]	..R6	<b>R928049477</b>	..U5	<b>R928051604</b>
10TDN0400-1X/PWR6A00-P2,2-M-...-MP	410 [108.3]	..S9	<b>R928051399</b>		
10TDN0630-1X/PWR6A00-P2,2-M-...-MP	510 [134.7]	..S9	<b>R928051458</b>		
10TDN1000-1X/PWR6A00-P2,2-M-...-MP	870 [229.8]	..S10	<b>R928049321</b>		
10TD2000-1X/PWR6A00-P2,2-M-...-MP	1250 [330.1]	..S10	<b>R928051461</b>		
10TD2500-1X/PWR6A00-P2,2-M-...-MP	1350 [356.5]	..S10	<b>R928051463</b>		
10TDN0040-1X/PWR10A00-P2,2-M-...	43 [11.3]	..R4	<b>R928048600</b>	..U9	<b>R928051613</b>
10TDN0063-1X/PWR10A00-P2,2-M-...	62 [16.4]	..R4	<b>R928048601</b>	..U9	<b>R928051614</b>
10TDN0100-1X/PWR10A00-P2,2-M-...	80 [21.1]	..R4	<b>R928048602</b>	..U9	<b>R928051615</b>
10TDN0160-1X/PWR10A00-P2,2-M-...	190 [50.2]	..R6	<b>R928051508</b>	..U5	<b>R928051616</b>
10TDN0250-1X/PWR10A00-P2,2-M-...	260 [68.7]	..R6	<b>R928048604</b>	..U5	<b>R928051617</b>
10TDN0400-1X/PWR10A00-P2,2-M-...-MP	460 [121.5]	..S9	<b>R928048991</b>		
10TDN0630-1X/PWR10A00-P2,2-M-...-MP	560 [147.9]	..S9	<b>R928051424</b>		
10TDN1000-1X/PWR10A00-P2,2-M-...-MP	970 [256.2]	..S10	<b>R928048992</b>		
10TD2000-1X/PWR10A00-P2,2-M-...-MP	1350 [356.6]	..S10	<b>R928048993</b>		
10TD2500-1X/PWR10A00-P2,2-M-...-MP	1450 [383.0]	..S10	<b>R928048994</b>		
10TDN0040-1X/PWR20A00-P2,2-M-...	62 [16.4]	..R4	<b>R928051386</b>	..U9	<b>R928051595</b>
10TDN0063-1X/PWR20A00-P2,2-M-...	80 [21.1]	..R4	<b>R928051387</b>	..U9	<b>R928051596</b>
10TDN0100-1X/PWR20A00-P2,2-M-...	95 [25.1]	..R4	<b>R928048958</b>	..U9	<b>R928051597</b>
10TDN0160-1X/PWR20A00-P2,2-M-...	260 [68.7]	..R6	<b>R928051388</b>	..U5	<b>R928051598</b>
10TDN0250-1X/PWR20A00-P2,2-M-...	320 [84.5]	..R6	<b>R928051389</b>	..U5	<b>R928051599</b>
10TDN0400-1X/PWR20A00-P2,2-M-...-MP	560 [147.9]	..S9	<b>R928051390</b>		
10TDN0630-1X/PWR20A00-P2,2-M-...-MP	630 [166.4]	..S9	<b>R928051391</b>		
10TDN1000-1X/PWR20A00-P2,2-M-...-MP	1270 [335.5]	..S10	<b>R928051392</b>		
10TD2000-1X/PWR20A00-P2,2-M-...-MP	1600 [422.7]	..S10	<b>R928051393</b>		
10TD2500-1X/PWR20A00-P2,2-M-...-MP	1680 [443.8]	..S10	<b>R928051394</b>		

<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**

(dimensions in mm [inch])

**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 must be ensured that the aluminum version of the mechanical-optical maintenance indicator is used. In the filter type key, these maintenance indicators are referred to 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
<b>WE</b>	-	-

**Maintenance indicator**

01	Electronic switching element	<b>WE</b>
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**Type of signal**

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

**Connector**

03	Round plug-in connection M12x1, 4-pole	<b>M12x1</b>
	Rectangular connector, 2-pole, design A according to EN-175301-803, only possible with signal type „1SP“	<b>EN175301-803</b>

**Material numbers of the electronic switching elements**

With the option „mechanical-optical maintenance indicator“ (V..., P...), two mechanical-optical maintenance indicators are provided at the factory. Two electrical switching elements must therefore always be ordered as optional accessories.

Material no.	Type	Signal	Switching points	Connector	LED
<b>R928028409</b>	WE-1SP-M12x1	Changeover	1	M12x1	Without
<b>R928028410</b>	WE-2SP-M12x1	Normally open (at 75 %)/ normally closed contact (at 100 %)	2		3 pieces
<b>R928028411</b>	WE-2SPSU-M12x1				
<b>R928036318</b>	WE-1SP-EN175301-803	Normally closed contact	1	EN 175301-803	Without



## Filter design

Filter size selection is made easy by using our online FilterSelect tool. The filter can be selected using basic parameters like, flow rates, system pressure, viscosities, etc.. The filter fineness is dependant on the required cleanliness level, application, type of contamination and environmental conditions.

The online tool is very user friendly with step-by-step guidelines.

A PDF file can be created of the selected filter, which contains all the stipulated parameters, including relevant part numbers of the selected filter and its spare parts.

Link FilterSelect:

<http://www.filterselect.de>

Other languages can be selected using the page navigation.

### standard search

application: hydraulics for industrial use and applications with lubricating oil

Product category: please select

type: please select

pressure range: please select

filter material: please select

fineness: please select

volume flow rate: [ ] [l/min]

viscosity:  
\* = working point

kin viscosity 1: 32 [mm<sup>2</sup>/s]

search via type of medium full-text search medium

please select

please select

temp 1: [ ] [°C] [ ] [°F] kin viscosity 1: [ ] [mm<sup>2</sup>/s]

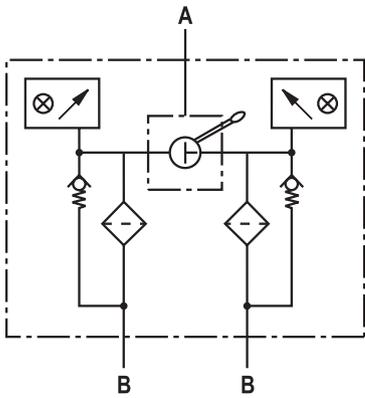
dyn. Viscosity 1: [ ] [cP] density 1: [ ] [kg/dm<sup>3</sup>] kin viscosity 1: [ ] [mm<sup>2</sup>/s]

collapse pressure resistance according to ISO 2941: 30 bar

Start search

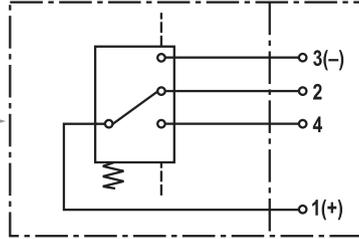
**Symbols**

**Tank mounted return line filter**  
with bypass and  
mechanical indicator and/or pressure gauge



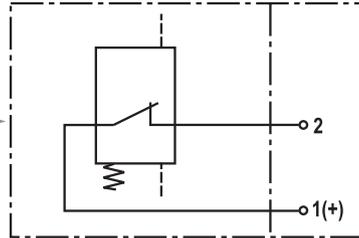
**Electronic switching element**  
for maintenance indicator

**Switching element    Contacts**



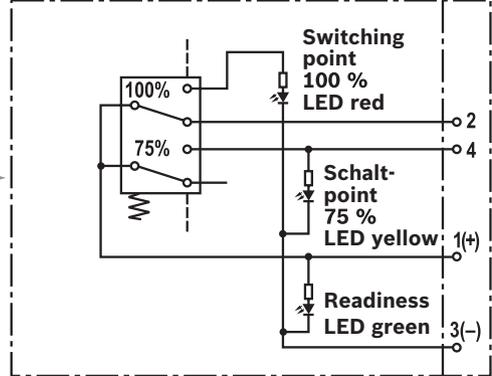
**WE-1SP-M12x1**

**Switching element    Contacts**



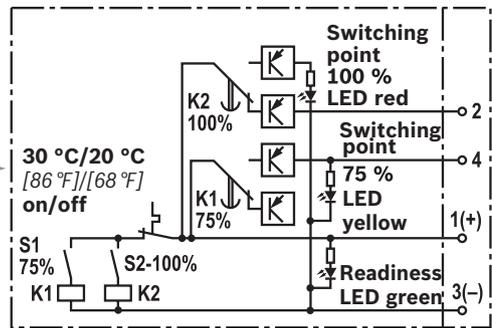
**WE-1SP-EN175301-803**

**Switching element    Contacts**



**WE-2SP-M12x1**

**Switching element    Contacts**



**WE-2SPSU-M12x1**

## Function, section

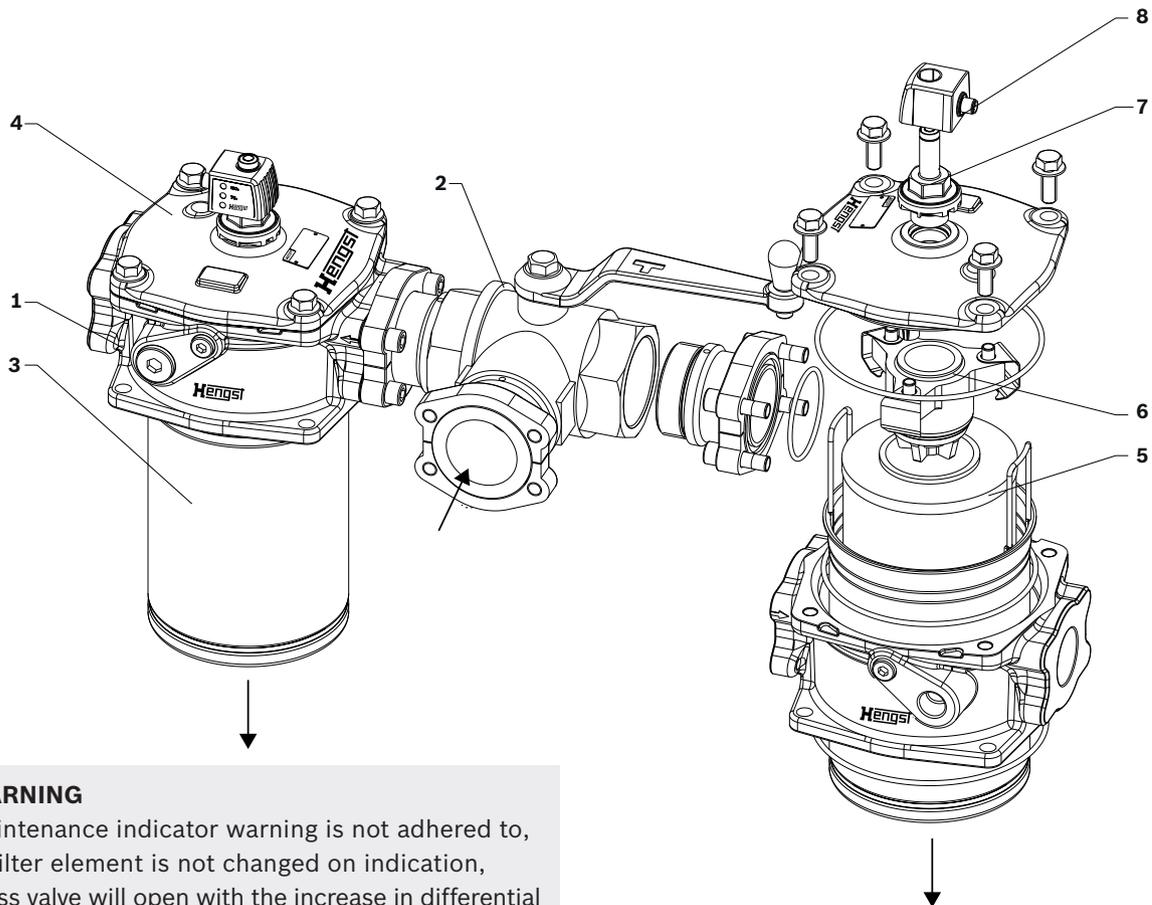
The switchable tank mounted return line filter is provided in the return line for direct attachment onto the tank of a hydraulic or lubrication system. It can also be used as filling or bypass filter. The filter basically consists of filter head (1) and switch-over fitting (2), filter bowl (3), cover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

Optionally, the filter is equipped with mechanical optical maintenance indicator with memory function (7). For integration of the maintenance indicator into an electric circuit, the mechanical optical maintenance indicator may be amended by an electronic switching element. To this end, the electronic switching element (8) must be attached to the mechanical optical maintenance indicator (7) and held by means of a locking ring. The electronic switching elements are connected via a mating connector or a cable connection. The electronic switching element must be ordered separately. For every filter housing, a switching element is required.

Depending on the filter size, further additional functions are available – e.g. a breathing filter, surge protection (only for NG0040 - 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 from the outside to the inside and is cleaned according to the filter rating. The dirt particles filtered out settle in the filter element. Via the outlet, the filtered hydraulic fluid enters the tank. In case of contamination, the necessary filter element change-out is displayed by the relevant maintenance indicator. Within the course of this exchange, you should also exchange the breathing filter element (only with NG NG0040-0100). To this end, the system is manually switched to the clean filter element by means of the switch-over fitting. Permanent flow is guaranteed during the switching process.

### Type 10TDN0400-0630



#### WARNING

If the maintenance indicator warning is not adhered to, and the filter element is not changed on indication, the by-pass valve will open with the increase in differential pressure and part of the flow will be diverted passed the filter element, to the clean side without being filtered. Thus, effective filtration is no longer guaranteed.

**Technical data**

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

<b>general</b>				
Installation position			vertical	
Ambient temperature range	°C [°F]		-10...+65 [14...+149]	
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 %	
Weight	<b>size</b>	<b>0040</b>	<b>0063</b>	
	kg [lbs]	4.46 [9.81]	4.86 [10.7]	
	<b>size</b>	<b>0400</b>	<b>0630</b>	
	kg [lbs]	23 [50.6]	27 [59.4]	
	<b>size</b>	<b>1000</b>	<b>2000</b>	
	kg [lbs]	61 [134.2]	68 [149.9]	
Material	▶ Filter cover		Carbon fiber reinforced plastic (size 0040...0100) Aluminum (size 0160...2500)	
	▶ Filter head		Aluminum	
	▶ Filter bowl		Carbon fiber reinforced plastic (size 0040...0250) Steel aluminized (size 0400...2500)	
	▶ Optical maintenance indicator	(P2,2)		Plastic PA6
		(V...)		Aluminum
	▶ Bypass valve		Plastic, Aluminum (size 1000 ... 2500)	
	▶ Electronic switching element		Plastic PA6	
	▶ Pressure gauge		Plastic	
▶ Seals		NBR / FKM		
Surface requirement for tank opening	▶ Roughness depth $R_z$ max.	µm	25 (10TDN0040-0100) and 6.3 ... 16 (from 10TDN0160)	
	▶ Flatness $t_E$ max.	mm [inch]	0.3 ... 0.5 [0.012... 0.020] (10TDN0040 and 10TDN0100) and 0.2 [0.008] (from 10TDN0160)	

<b>hydraulic</b>			
Max. operating pressure	bar [psi]		10 [145] If a pressure gauge is used, the maximum permissible operating pressure is reduced to 6 bar [87 psi].
Hydraulic fluid temperature range	°C [°F]		-10...+100 [+14...+212]
Fatigue strength according to ISO 10771 <sup>1)</sup>	Load cycles		> 10 <sup>5</sup> at rated 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
			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)]	3.5 ± 0.35 [50.8 ± 5.1]	
Filtration direction			From the outside to the inside

<sup>1)</sup> The service life of the components is e.g. influenced by:

- ▶ The individual load frequency of the application
- ▶ The actually occurring pressure increase rate

The technical specifications apply complying with the specified performance limits. Extended operational resistance/load change upon request.

**Technical data**

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

<b>electric</b> (electronic switching element)				
Electrical connection	Round plug-in connection M12x1, 4-pole			Standard connection EN 175301-803
Version	WE1SP- M12x1	WE2SP- M12x1	WE2SPSU- M12x1	WE1SP- 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 in order to protect the switching contacts.				
Weight	kg [lbs]	0.1 [0.22]		

<b>Filter element</b>				
Glass fiber paper PWR	Single-use element on the basis of inorganic fiber			
Particle separation	PWR3 PWR6 PWR10 PWR20	Filtration ratio according to ISO 16889 up to $\Delta p = 5 \text{ bar}$ [72.5 psi]		Achievable oil cleanliness class according to ISO 4406 (SAE-AS 4059)
		$\beta_{5(c)} \geq 200$	$\beta_{6(c)} \geq 1000$	13/10/8 ... 17/13/10
		$\beta_{7(c)} \geq 200$	$\beta_{8(c)} \geq 1000$	15/12/10 ... 19/14/11
		$\beta_{10(c)} \geq 200$	$\beta_{11(c)} \geq 1000$	17/14/10 ... 21/16/13
		$\beta_{20(c)} \geq 200$	$\beta_{21(c)} \geq 1000$	19/16/12 ... 22/17/14
Permissible pressure differential E00	▶ A00	bar [psi]	30 [435]	

**Further information on the characteristic values and filter media is available in data sheet 51548.****Compatibility with permitted hydraulic fluids**

Hydraulic fluid	Classification	Suitable sealing materials	Standards	
Mineral oil	HLP	NBR	DIN 51524	
Bio-degradable	▶ Insoluble in water	HETG	VDMA 24568	
		HEES		
	▶ Soluble in water	HEPG	VDMA 24568	
Flame-resistant	▶ Water-free	HFDU, HFDR	VDMA 24317	
		▶ Containing water	HFAS	DIN 24320
			HFAE	
		HFC	VDMA 24317	

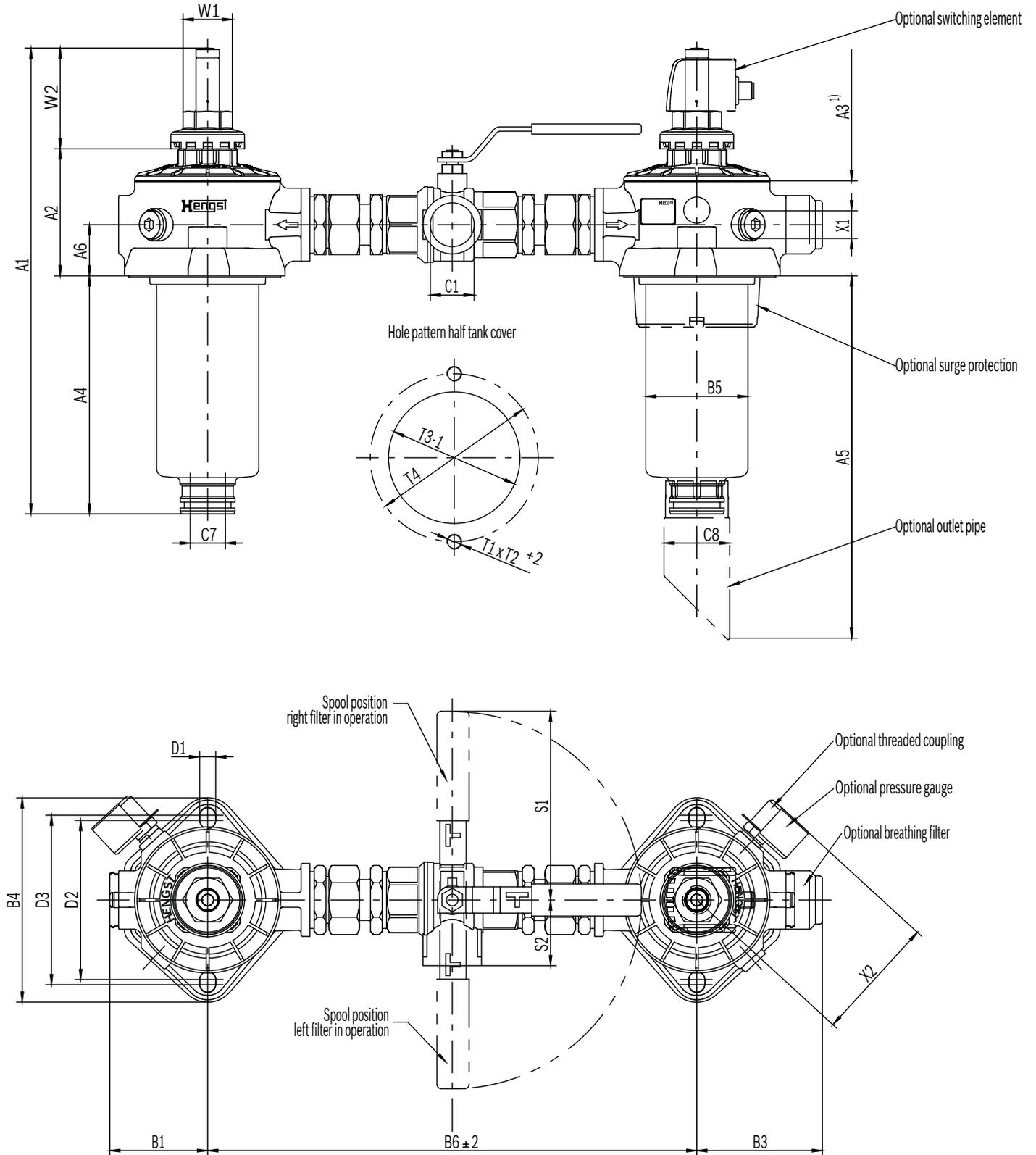
**Important information on hydraulic fluids:**

- ▶ For further 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) must not be used, filter elements with glass fiber material (Pure Power PWR... or wire mesh G) must be used instead.

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

**Dimensions: 10TDN0040, 0063, 0100**  
(dimensions in mm [inch])



**Dimensions: 10TDN0040, 0063, 0100**  
 (dimensions in mm [inch])

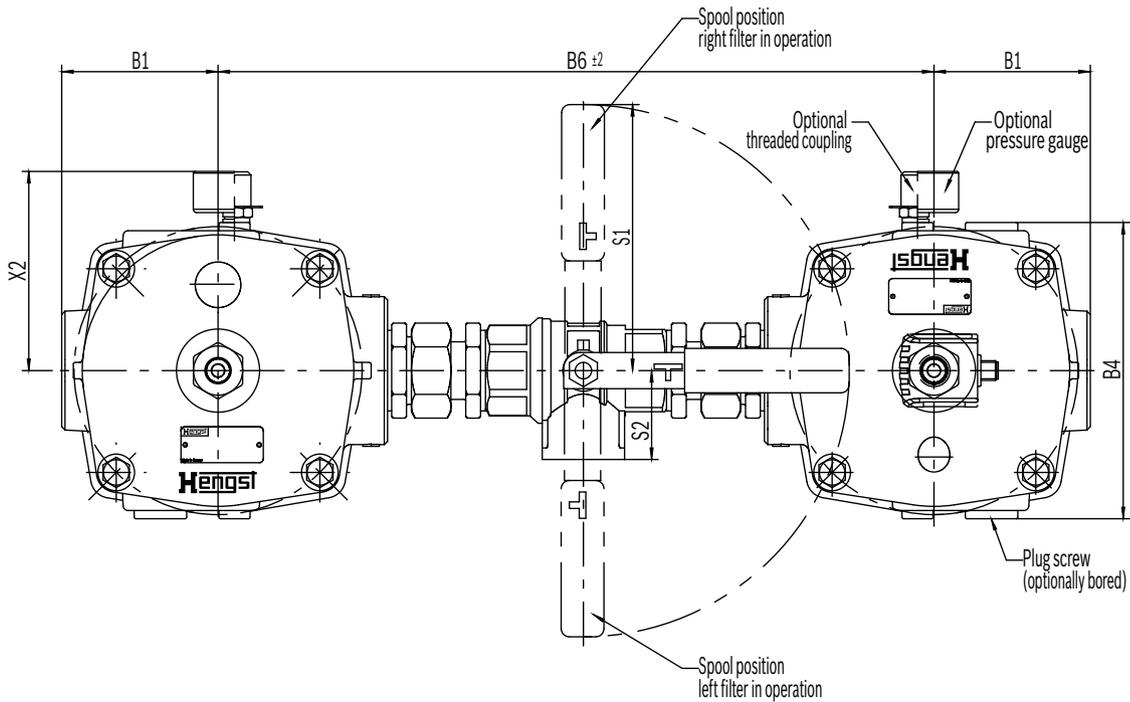
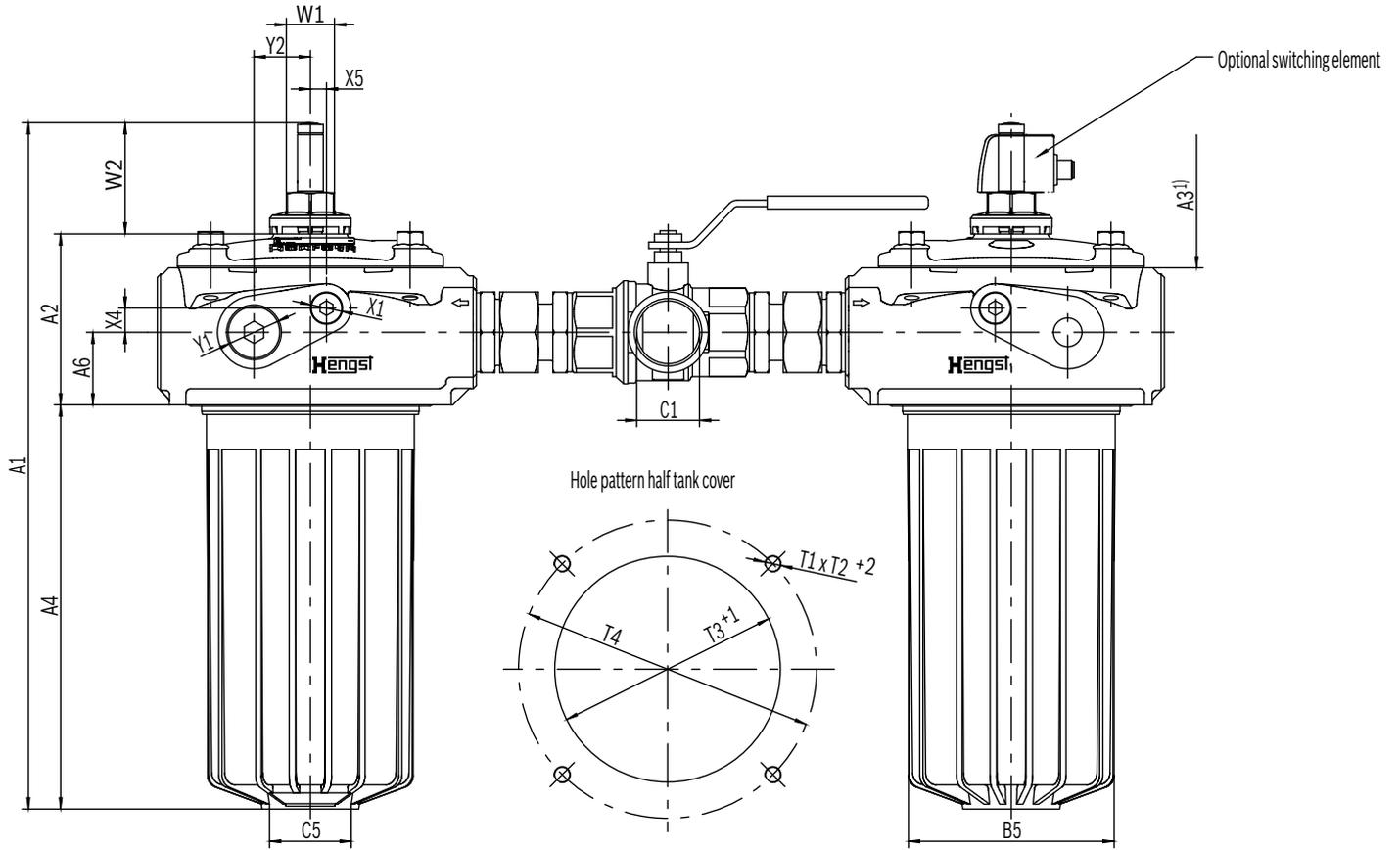
Type	A1	A2	A3 <sup>1)</sup>	A4	A5		A6	B1	B3	B4	Ø B5	B6 ±2 [±0.079]		
												Standard	U... (SAE J1926)	
10TDN0040	259 [10.2]		100 [3.94]	103 [4.06]	R110	190 [7.48]								
					R150	230 [9.06]								
					R250	330 [13]								
10TDN0063	319 [12.6]	87 [3.43]	160 [6.3]	163 [6.42]	R110	250 [9.84]	35 [1.38]	67 [2.64]	86 [3.39]	140 [5.51]	70 [2.76]	335 [13.2]	351 [13.8]	
					R150	290 [11.4]								
					R250	390 [15.4]								
10TDN0100	409 [16.1]		250 [9.84]	253 [9.96]	R110	340 [13.4]								
					R150	380 [15]								
					R250	480 [18.9]								

Type	C1		C7	Ø C8	D1	D2	D3	S1	S2	
	Standard	U... (SAE J1926)							Standard	U... (SAE J1926)
10TDN0040	G1	SAE 16 1 5/16-12 UN-2B	NW 25	45 [1.77]	11 [0.43]	109 [4.29]	116 [4.57]	129.5 [5.1]	45 [1.77]	47.5 [1.87]
10TDN0063										
10TDN0100										

Type	T1	T2 +2 [±0.079]	Ø T3 -1 [-0.039]	Ø T4	W1	W2	X1	X2	X3
10TDN0040	M10	12 [0.47]	90 [3.54]	115 [4.53]	SW30	69 [2.72]	G 1/4	85 [3.35]	85 [3.35]
10TDN0063									
10TDN0100									

<sup>1)</sup> Observe the servicing height plus the length of the outlet pipe, if applicable

**Dimensions: 10TDN0160, 0250**  
(dimensions in mm [inch])



**Dimensions: 10TDN0160, 0250**  
(dimensions in mm [inch])

Type	A1	A2	A3 <sup>1)</sup>	A4	A6	B1	B4	B5
10TDN0160	336 [13.2]	106 [4.17]	160 [6.3]	161 [6.34]	45 [1.77]	95 [3.74]	180 [7.09]	129 [5.08]
10TDN0250	426 [16.8]		250 [9.84]	251 [9.88]				

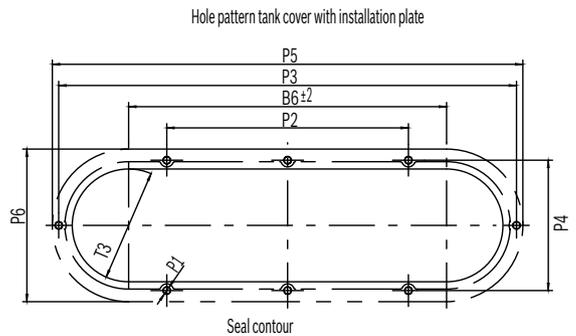
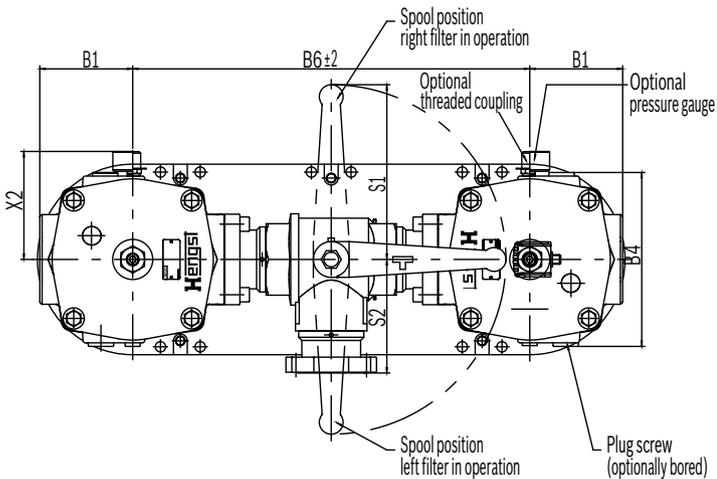
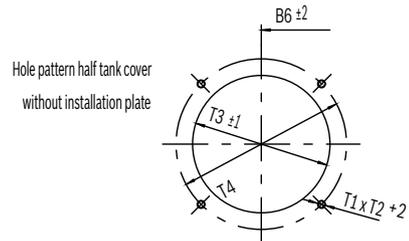
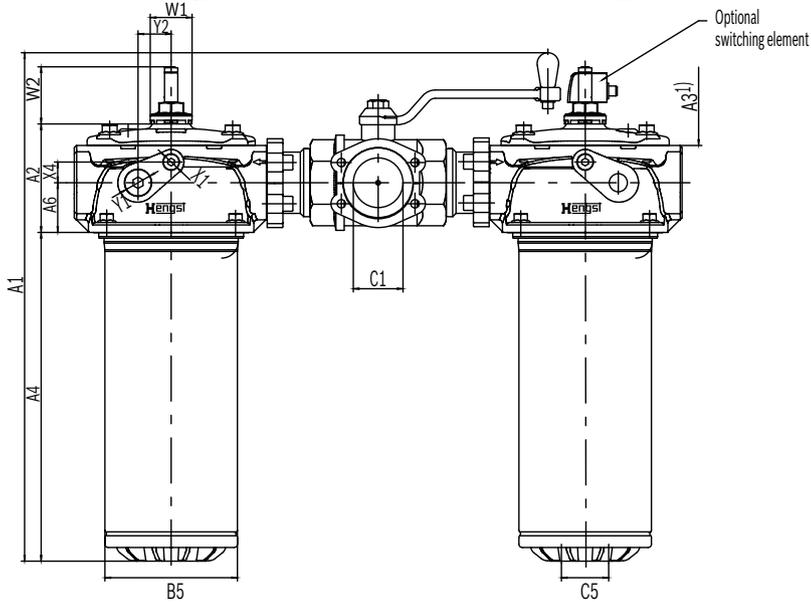
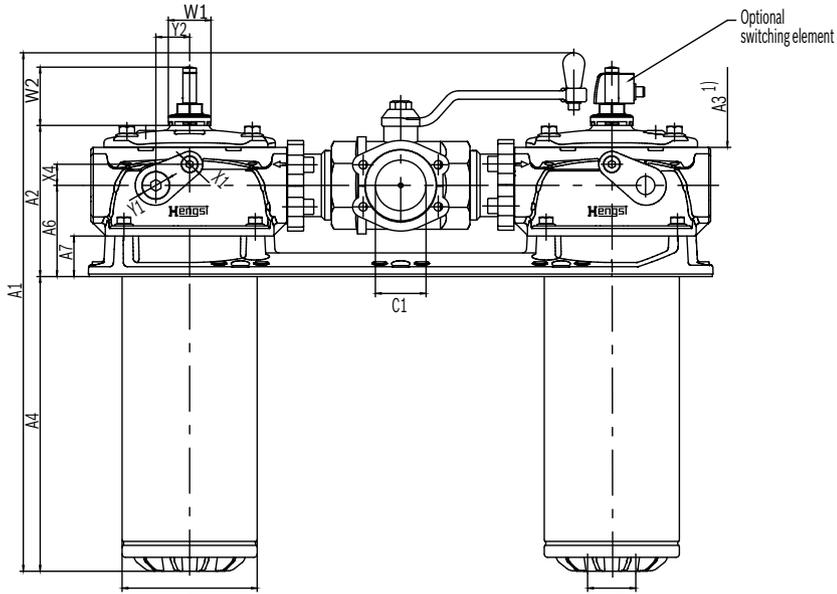
Type	B6 ±2 [±0.079]			C1			C5
	Standard G1 1/2	Optional G1 1/4 U... (SAE J1926)		Standard	Optional U... (SAE J1926)		
10TDN0160	456 [18]	435 [17.1]	445 [17.5]	G1 1/2	G1 1/4	1 5/8-12 UN-2B	G 1 1/2
10TDN0250							

Type	S1			S2		
	Standard G1 1/2	Optional G1 1/4 U... (SAE J1926)		Standard G1 1/2	Optional G1 1/4 U... (SAE J1926)	
10TDN0160	159 [6.26]	162 [6.38]	173 [6.81]	60 [2.36]	54 [2.13]	56 [2.2]
10TDN0250						

Type	T1	T2 +2 [+0.079]	Ø T3 -1 [-0.039]	Ø T4	W1	W2	X1	X2	X3	X4	X5	Y1	Y2	Y3
10TDN0160	M10	12	140	185	SW30	69	G 1/4	117	115	15	10	G 3/4	35	90
10TDN0250		[0.47]	[5.51]	[7.28]		[2.72]		[4.61]	[4.53]	[0.59]	[0.39]		[1.38]	[3.54]

<sup>1)</sup> Observe the servicing height plus the length of the outlet pipe, if applicable

**Dimensions: 10TDN0400, 0630**  
(dimensions in mm [inch])



## Dimensions: 10TDN0400, 0630

(dimensions in mm [inch])

Type	A1	A2		A3 <sup>1)</sup>	A4		A6		A7
		with MP	without MP		with MP	without MP	with MP	without MP	
10TDN0400	464 [18.3]	179 [7.05]	131 [5.16]	335 [13.2]	199 [7.83]	247 [9.72]	108 [4.25]	60 [2.36]	48 [1.89]
10TDN0630	614 [24.2]			485 [19.1]	349 [13.7]				

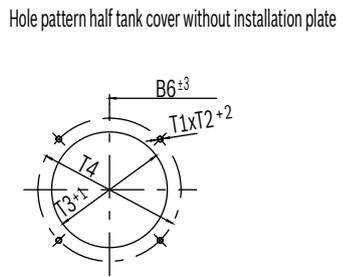
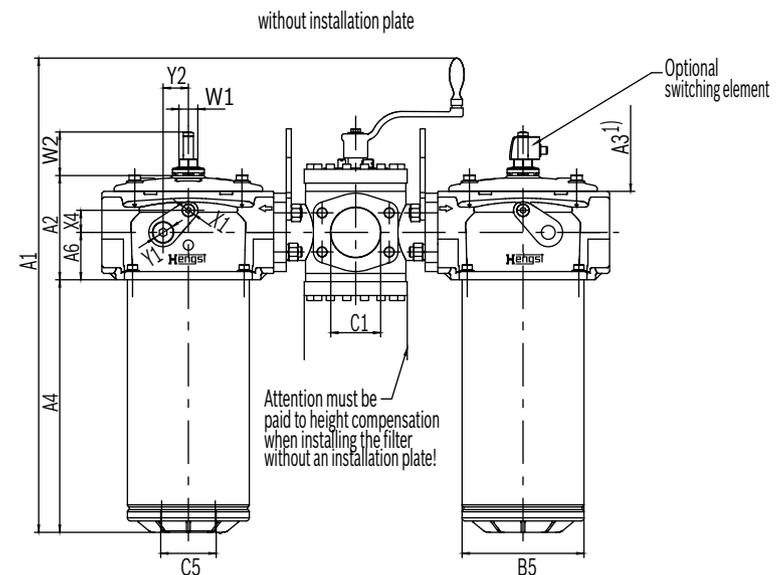
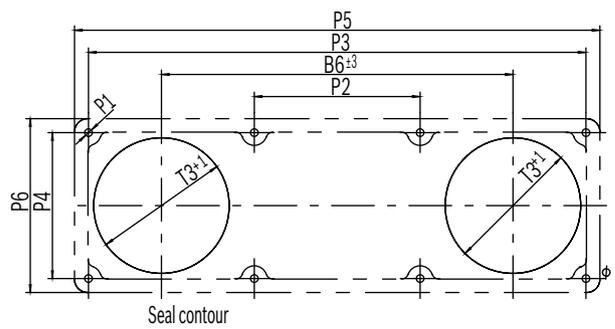
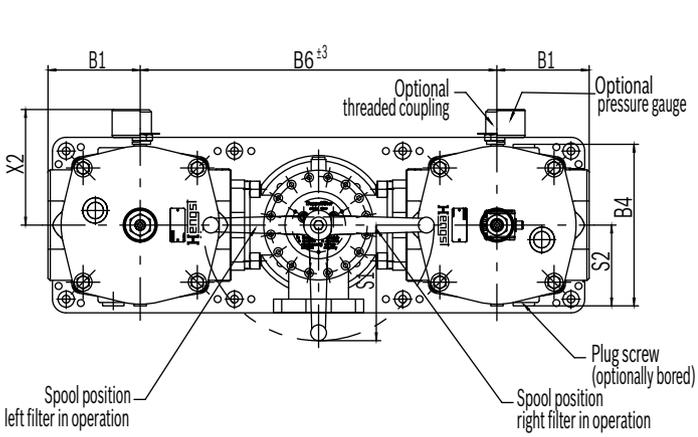
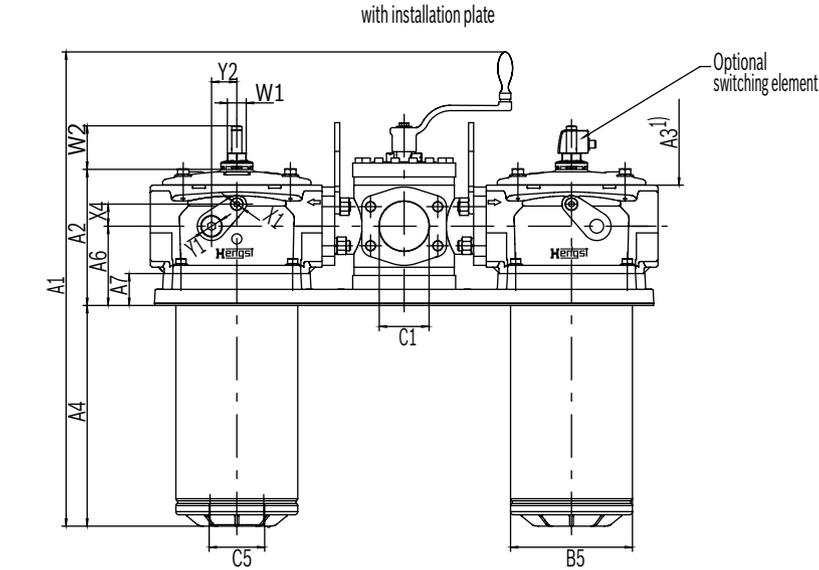
Type	B1	B4	Ø B5	B6 ±2 [±0.079]	C1	C5
10TDN0400	117 [4.61]	215 [8.46]	160 [6.3]	500 [19.7]	SAE 2 1/2"	G 2
10TDN0630						

Type	P1	P2	P3	P4	P5	P6	S1	S2
10TDN0400	M10	380 [15]	720 [28.3]	205 [8.07]	720 [28.3]	238 [9.37]	220 [8.66]	143 [5.63]
10TDN0630								

Type	T1	T2 +2 [+0.079]	Ø T3 -1 [-0.039]	Ø T4	W1	W2	X1	X2	X3	X4	Y1	Y2	Y3
10TDN0400	M10	12	178	220	SW30	69	G 1/4	135	134	25	G 3/4	40	109.5
10TDN0630		[0.47]	[7.01]	[8.66]		[2.72]		[5.31]	[5.28]	[0.98]		[1.57]	[4.31]

<sup>1)</sup> Observe the servicing height plus the length of the outlet pipe, if applicable

**Dimensions: 10TDN1000, 10TD2000, 10TD2500**  
(dimensions in mm [inch])



**Dimensions: 10TDN1000, 10TD2000, 10TD2500**  
(dimensions in mm [inch])

Type	A1	A2		A3 <sup>1)</sup>	A4		A6		A7
		with MP	without MP		with MP	without MP	with MP	without MP	
<b>10TDN1000</b>	751 [29.6]	215.5 [8.48]	165 [6.5]	530 [20.9]	349,5 [13.8]	400 [15.7]	125.5 [4.94]	75 [2.95]	50.5 [1.99]
<b>10TD2000</b>	1109 [43.7]			880 [34.6]	707,5 [27.9]	758 [29.8]			
<b>10TD2500</b>	1344 [52.9]			1130 [44.5]	942,5 [37.1]	993 [39.1]			

Type 10TDN	B1	B4	Ø B5	B6 $\pm 3$ [ $\pm 0.118$ ]	C1	C5
<b>10TDN1000</b>	137 [5.39]	260 [10.2]	193 [7.6]	530 [20.9]	SAE 3" 3000psi	G 3
<b>10TD2000</b>						
<b>10TD2500</b>						

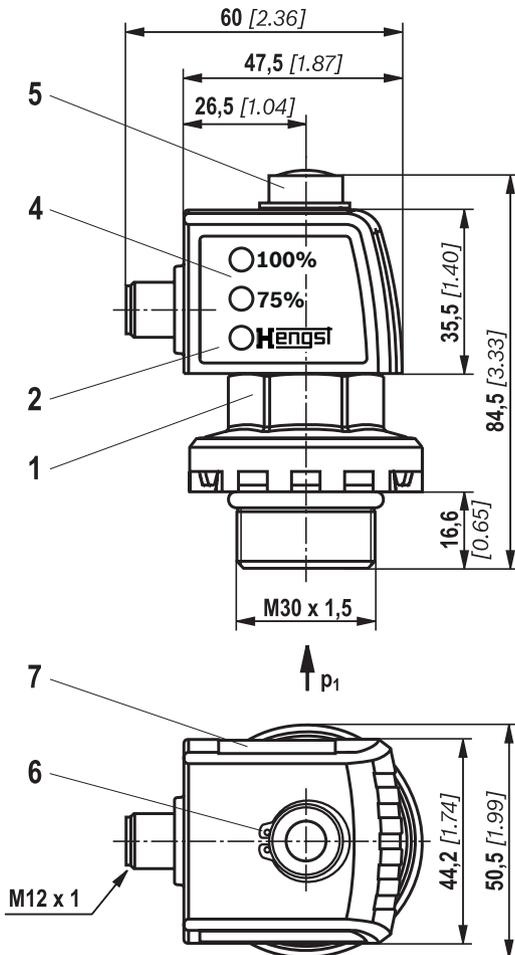
Type 10TDN	ØP1	P2	P3	P4	P5	P6	S1	S2
<b>10TDN1000</b>	11.5 [0.45]	250 [9.84]	750 [29.5]	220 [8.66]	792 [31.2]	262 [10.3]	168 [6.61]	130 [5.12]
<b>10TD2000</b>								
<b>10TD2500</b>								

Type 10TDN	T1	T2 <sup>+2</sup> [ <sup>+0.079</sup> ]	Ø T3 <sup>-1</sup> [ <sup>-0.039</sup> ]	Ø T4	W1	W2	X1	X3	X4	Y1	Y2
<b>10TDN1000</b>	M10	12 [0.47]	202 [7.95]	250 [9.84]	SW 30	69 [2.72]	G 1/4	145,8 [5.74]	35 [1.38]	G 3/4	40 [1.57]
<b>10TD2000</b>											
<b>10TD2500</b>											

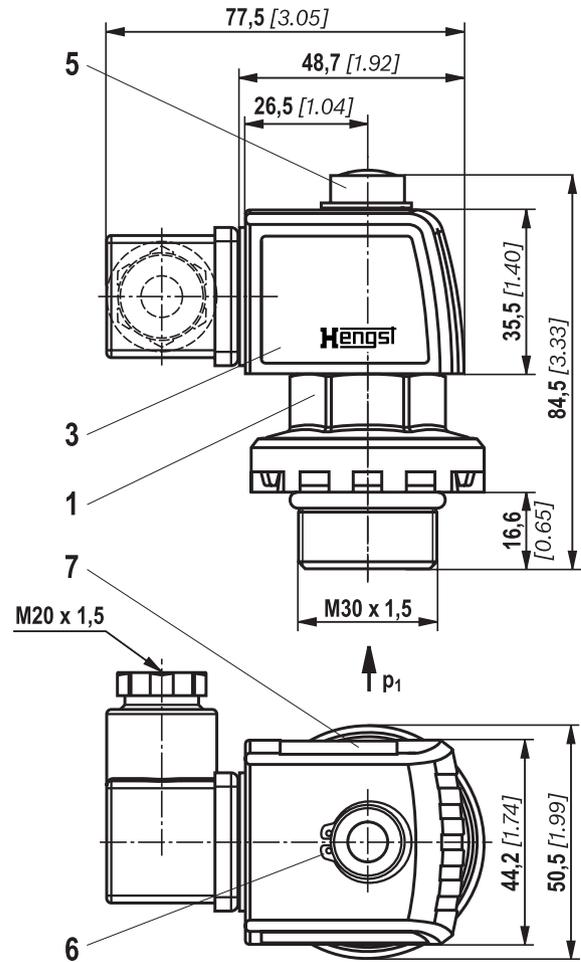
<sup>1)</sup> Observe the servicing height plus the length of the outlet pipe, if applicable

**Dimensions: maintenance indicator**  
(dimensions in mm [inch])

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



**Electronic switching element  
with rectangular connector 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 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: 24 V =  
green: stand-by  
yellow: switching point 75 %  
red: switching point 100 %
- 5 Optical indicator, self-holding - receiptable
- 6 Locking ring DIN 471-16x1, material no. **R900003923**
- 7 Name plate

**Notices:**

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

In this connection, 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 element according to <b>DIN 24550</b> )	0040 0063 0100 0160 0250 0400 0630 1000
	TD... (filter element according to <b>Hengst 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	PWR3 PWR6 PWR10 PWR20
	<b>Absolute</b> (ISO 16889); $\beta_{x(c)} \geq 200$	Water absorbing, not cleanable	AS6 AS10 AS20

#### Differential pressure

04	Max. permissible differential pressure of the filter element 30 bar [435 psi] (filter <b>with</b> bypass valve)	A00
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#### Bypass valve

05	<b>Without</b> bypass valve	0
----	-----------------------------	---

#### Seal

06	NBR seal	M
	FKM seal	V

#### Order example:

**1.0040 PWR10-A00-0-M**

Other versions available upon request.

For further information on Hengst filter elements, please refer to data sheet 51515.

**Ordering code****Spare parts****Filter element****Preferred program****Replacement elements**

Filter element Type	Filter material/material no.			
	PWR3	PWR6	PWR10	PWR20
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
<b>W</b>	<b>O</b>	<b>-</b>	<b>S01</b>	<b>-</b>	<b>-</b>	<b>10</b>

01	Maintenance indicator	<b>W</b>
----	-----------------------	----------

02	Mechanical optical indicator	<b>O</b>
----	------------------------------	----------

**Version**

03	Back pressure M30x1,5	<b>S01</b>
----	-----------------------	------------

**Switching pressure**

04	0.8 bar [12 psi] (not possible for plastic variant)	<b>0,8</b>
	1.5 bar [22 psi] (not possible for plastic variant)	<b>1,5</b>
	2.2 bar [32 psi]	<b>2,2</b>

**Seal**

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

**Max. operating pressure**

06	10 bar [145 psi]	<b>10</b>
----	------------------	-----------

**Housing material**

07	Plastic 2.2 bar [32 psi] only possible	<b>PA</b>
	Aluminum	<b>without information</b>

**Mechanical optical maintenance indicator**

Material no.	Description
<b>R928038773</b>	WO-S01-0,8-M-10
<b>R928038772</b>	WO-S01-0,8-V-10
<b>R928038776</b>	WO-S01-1,5-M-10
<b>R928038774</b>	WO-S01-1,5-V-10
<b>R901025310</b>	WO-S01-2,2-M-10
<b>R901066232</b>	WO-S01-2,2-V-10
<b>R928038771</b>	WO-S01-2,2-M-10-PA
<b>R928038769</b>	WO-S01-2,2-V-10-PA

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

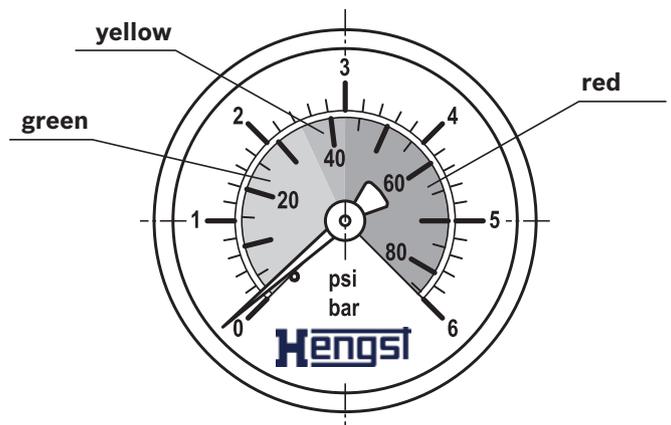
Material no.	Description
<b>R928019224</b>	M010 0-6 bar [0-87psi], fluid connection R 1/4, Ø50 mm

<sup>1)</sup> If a pressure gauge is used, 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
<b>R928019705</b>	71.001 P5-S00-0-0



**Ordering code****Spare parts****Seal kit**

01	02	03	04	05	06
<b>D</b>	<b>10TD</b>		-	<b>1X</b>	/ - -

01	<b>Seal kit</b>	<b>D</b>
----	-----------------	----------

02	<b>Series</b>	<b>10TD</b>
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**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>

04	<b>Component series</b> 10 ... 19 (10 ... 19: unchanged installation and connection dimensions)	<b>1X</b>
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**Seal**

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

**Supplementary information**

06	Breathing filter with oil mist separator (only NG0040-0100)	<b>FN</b>
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**Seal kit**

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

**Threaded coupling**

Material no.	Description	Seal
<b>R900009090</b>	MCS20-SDS-E-G1/4-ST3N00Z-M	NBR
<b>R900001264</b>	MCS20-SDS-E-G1/4-ST3F00Z-M	FKM

## Assembly, commissioning, maintenance

### Assembly

The max. operating pressure of the system must not exceed the max. adm. operating pressure of the filter (see name plate).

#### Notice:

If a pressure gauge is used, the maximum permissible operating pressure is reduced to 6 bar [87 psi].  
For frame sizes 1000 - 2500 without adapter plate, a height compensation of 50 mm must be taken into account.

Before the assembly, the hole pattern of the tank must be compared to the dimensions from the chapter „Dimensions“.

We urgently recommend leading drain pipes as of a length of approx. 400 mm 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 torques“), 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 should be arranged in a visible manner.

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 in place 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 side that is currently flown-through can be seen from the switching symbol at the switch-over.

#### Notice:

There is no bleeding provided at the filter.  
Caution: Risk of burning!  
When working on the filter, e.g. when replacing filter elements and cleaning, pay attention to possibly hot operating fluid. The safety instructions of the machine end-user are to be observed.

### Maintenance

- ▶ If at operating temperature, the red indicator pin extends 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 and cleaned respectively.
- ▶ The material number of the corresponding replacement filter element is indicated on the name plate of the complete filter assembly. It must comply with the material number on the filter element.
- ▶ Switch 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.
- ▶ Screw off the filter cover and/or loosen the screws and remove the filter over upwards.

#### Notice:

Note that with lower ratings, it 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. For detailed cleaning instructions refer to data sheet „Filter elements“
- ▶ 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 change-out, the breathing filter element should be exchanged manually (only with NG 0040-0100)

## Assembly, commissioning, maintenance

### WARNING!

- ▶ Assembly and disassembly only with depressurized system! For the filter element change-out refer to „Maintenance“.
- ▶ Filter is under pressure!
- ▶ Only remove the filter cover when it is depressurized!
- ▶ Do not operate the switching lever during the filter element change-out.
- ▶ Do not exchange the maintenance indicator while the filter is under pressure!
- ▶ If the flow direction is not considered during the assembly, the filter element will be destroyed. Particles will get into the system and damage downstream components.
- ▶ When disassembling the filter, it must be ensured that the system is depressurized.

### Notices:

- ▶ Work on the filter may only be carried out by trained specialists.
- ▶ Functioning and safety are only guaranteed if original Hengst filter elements and spare parts are used.
- ▶ Warranty expires in the event that the delivered item

is changed by the ordering party or third parties or improperly mounted, installed, maintained, repaired, used or exposed to environmental conditions that do not comply with the installation conditions.

## Tightening torques

### 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 $\mu_{\text{total}} = 0.14$	Nm [lb-ft]	21 ± 10 % [16 ± 10 %]						37 ± 10 % [27 ± 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 $\mu_{\text{total}} = 0.14$	Nm [lb-ft]	-					21 ± 10 % [16 ± 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 $\mu_{\text{total}} = 0.14$	Nm [lb-ft]	manually to the stop 30 ± 10 % <sup>1)</sup> [22 ± 10 %]		21 ± 10 % [16 ± 10 %]		37 ± 10 % [27 ± 10 %]				

### Maintenance indicator

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

<sup>1)</sup> Re-tighten using an open-end wrench (SW41), if necessary

## Directives and standardization

### Product validation

Hengst filters, the filter elements built into them and filter accessories are tested and quality-monitored according to different ISO test standards:

Pressure pulse test	ISO 10771:2015-08
Filtration performance test (multipass test)	ISO 16889:2008-06
$\Delta p$ (pressure loss) characteristic curves	ISO 3968:2001-12
Compatibility with hydraulic fluid	ISO 2943:1998-11
Collapse pressure test	ISO 2941:2009-04

The development, manufacture and assembly of Hengst industrial filters and Hengst filter elements is carried out within the framework of a certified quality management system in accordance with ISO 9001:2015.

### Classification according to the Pressure Equipment

#### Directive

The return flow filters for hydraulic applications according to 51454 are pressure holding equipment according to article 2, section 5 of the Pressure Equipment Directive 2014/68/EU (PED).

However, due to the safety requirements fulfilled in article 4, section 3, hydraulic filters are exempt from the PED if they are not classified higher than category I.

For classification, fluids from the chapter „Compatibility with permitted hydraulic fluids“ have been taken into consideration. The intended use is only permissible with fluids of group 2 and within the specified limitations of use (see chapter „Technical data“). Therefore, these filters are not provided with the CE mark.

### Use in potentially explosive areas according to directive 2014/34/EU (ATEX)

The tank mounted return line filters according to 51454 are not equipment or components in the sense of directive 2014/34/EU and are not provided with the CE mark.

It has been proven with the ignition risk analysis that these return line filters do not have own ignition sources according to DIN EN ISO 80079-36:2016.

The electronic maintenance indicators with one switching point:

WE-1SP-M12x1 R928028409

WE-1SP-EN175301-803 R928036318

are, according to DIN EN 60079-11:2012, simple, electronic operating equipment without their own voltage source.

#### Notice:

According to DIN EN 60079-14:2014, this simple, electronic operating equipment may be used in intrinsically safe electric circuits (Ex ib) in systems without marking and certification.

Maintenance indicators with EC type examination certificate upon request.

The tank mounted return line filters and the electronic maintenance indicators described here can be used for the following potentially explosive areas:

	Zone suitability	
	1	2
Gas	1	2
Dust	21	22

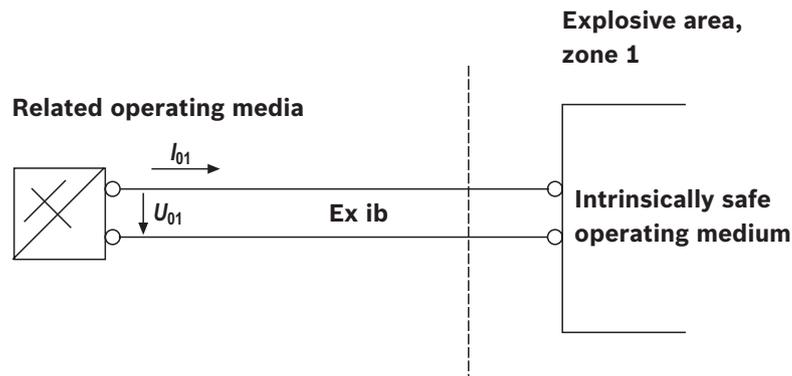
Complete filter with mech./opt. maintenance indicator			
Use/assignment		Gas 2G	Dust 2D
Assignment		Ex h II c T6...T1 Gb	Ex h II C T70°C...T450°C Db
Minimum conductivity of the medium	pS/m	min	300
Dust accumulation		max	0.5 mm [0.019 inch]

## Guidelines and standards

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 circuit		Ex ib IIC, Ex ic IIC	Ex ib IIIC
Technical data		Values only for intrinsically safe electric circuit	
Switching voltage	U <sub>i</sub>	max	150 V AC/DC
Switching current	I <sub>i</sub>	max	1.0 A
Switching power	P <sub>i</sub>	max	1.3 W T4 T <sub>max</sub> 40°C
		max	1.0 W T4 T <sub>max</sub> 80 °C
Maximum surface temperature <sup>1)</sup>		max	100 °C
Inner capacity	C <sub>i</sub>	neglectable	
Inner inductivity	L <sub>i</sub>	neglectable	
Dust accumulation		max	0.5 mm [0.019 inch]

<sup>1)</sup> The temperature depends on the temperature of the medium in the filter and must not exceed the value specified here.

Possible circuit according to DIN EN 60079-14



### ⚠ WARNING!

- ▶ Explosion hazard due to high temperature! The filter surface 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 potentially explosive area, the max. permissible ignition temperature is not exceeded.
- ▶ When using the tank mounted return line filters according to 51454 in potentially explosive areas,

appropriate 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.

- ▶ During filter element change-out, the packaging material is to be removed from the replacement element outside the potentially explosive area

### 👉 Notices:

- ▶ Maintenance to be conducted only by specialists, as per the instruction by the machine end-user according to DIRECTIVE 1999/92/EG Annex II, section 1.1
- ▶ Functional and safety warranty only applicable when using genuine Hengst spare parts

## Environment and recycling

- ▶ The used filter element has to be disposed of according to the country-specific legal regulations for environmental protection.
- ▶ After the service life of the filter, the filter components can be recycled according to the applicable country-specific legal regulations for environmental protection.

## Intended use

The filters according to RE 51454 consist of a filter housing, filter element and maintenance indicator, which serve as components in the sense of the EC Machinery Directive 2006/42/EC in hydraulic machinery for the separation of dirt particles.

The filters are used under the following boundary conditions and limits:

- ▶ Only in hydraulic systems with fluids of group 2, according to Pressure Equipment Directive 2014/68/EU
- ▶ Only according to the application and environmental conditions in the chapter „Technical data“
- ▶ Only in compliance with the specified performance limits in the section „Technical data“; extended operational durability/load cycles on request
- ▶ Only with hydraulic fluids and the intended seals according to the section „Compatibility with hydraulic fluids“
- ▶ Use in potentially explosive atmospheres according to the chapter „Guidelines and standards“
- ▶ The notes regarding the operating modes according to the section „Assembly, commissioning, maintenance“ must be observed
- ▶ Compliance with application and environmental conditions according to the technical data
- ▶ Compliance with the specified performance limits
- ▶ Use in the original condition, without damage
- ▶ Maintenance work, such as the replacement of seals, filter elements and optical indicators with original Hengst spare parts, is permissible. Repair by the customer, particularly at pressurized components, is impermissible.
- ▶ The filters are intended exclusively for professional use and not for private use.

## Improper use

Any use deviating from the intended use is improper and thus not permissible.

Improper use of the filters includes:

- ▶ Incorrect storage
- ▶ Incorrect transport
- ▶ Lack of cleanliness during storage, assembly and operation
- ▶ Incorrect installation
- ▶ Use of inappropriate/non-permissible hydraulic fluids
- ▶ Exceedance of the specified maximum pressures and load cycles
- ▶ Operation outside the approved temperature range
- ▶ Installation and operation in an impermissible device group or category
- ▶ Operation outside the specified limits for the operating voltage, see the section „Technical data“

Hengst Filtration GmbH does not assume any liability for damage caused by improper use. The user assumes all risks involved with improper use.

## Notes

## Notes

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