

Inline filter with filter element according to DIN 24550

Type 210/250LEN0040-0400-2X/

RE 51425

Edition: 2024-09

Replaced: 2024-02



- Sizes according to DIN 24550: 0040 to 0400
- Nominal pressure 210 bar [3000 psi]; 280 bar [4061 psi]
- Connection up to G 1 1/2; SAE 1 1/2; SAE 3000 and 6000psi
- Operating temperature -20°C to 150°C [-4°F to 302°F] depending on max. operating pressure

Features

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

They distinguish themselves by the following:

- Filters for inline installation
- Filtration support by means of cyclone-shaped flow path
- Highly efficient filter materials
- High collapse rating of the filter elements
- Equipped with mechanical/optical maintenance indicator with memory function by default
- Available as an option with different electronic switching elements, modular design
- Optional bypass valve integrated in the filter housing

Contents

Features	1
Ordering code filter	2
Filter design	4
Ordering code, accessories	5
Symbols	6
Function, section	7
Technical data	8, 9
Compatibility with permitted hydraulic fluids	9
Dimensions	10, 11
Maintenance indicator	12
Ordering code, spare parts and accessories	13 ... 15
Assembly, commissioning, maintenance	16, 17
Tightening torques	18
Guidelines and standards	18, 19
Use	20
Environment and recycling	21

Ordering code
filter

01	02	03	04	05	06	07	08	09	10	10	10
	N		-	2X		-	-		-	-	

Series

01	Inline filter 280 bar [4061 PSI], for connection variant with pipe thread as well as S6/6000 psi	250LE
	Inline filter 210 bar [3000 PSI], only for NG0160-0400 in combination with connection variant S6 (3000psi)	210LE

Filter element

02	with filter element according to DIN 24550	N
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Size

03	LEN... (Filter element according to DIN 24550)	0040 0063 0100 0160 0250 0400
04	Component series 20 ... 29 (20 ... 29: unchanged installation and connection dimensions)	2X

Filter rating in µm

05	Absolute (ISO 16889)	Non-woven glass fiber media, not cleanable	PWR3 PWR6 PWR10 PWR20
	Nominal	Stainless steel wire mesh, cleanable	G10 G25 G40 G60 G100

Pressure differential

06	max. permissible pressure differential of the filter element 30 bar [435 psi], with bypass valve	A00
	max. permissible pressure differential of the filter element 330 bar [4786 psi], without bypass valve	B00
	max. permissible pressure differential of the filter element 30 bar [435 psi], with bypass valve and special adhesive	AH0
	max. permissible pressure differential of the filter element 330 bar [4786 psi], without bypass valve and special adhesive	BH0

Maintenance indicator

07	without maintenance indicator, only in connection with supplementary information: H150	0
	Maintenance indicator, mech./optical, switching pressure 5.0 bar [72.5 psi] – Bypass cracking pressure 7 bar [102 psi]	V5,0
	Maintenance indicator, mech./visual, switching pressure 8.0 bar [116 psi] - without bypass valve	V8,0

Seal

08	NBR seal	M
	FKM seal	V

Port

09	Frame size		0040	0063-0100	0160-0400	
	Port	pmax [bar] / [psi]				
	G1/2	280 bar [4061 psi]	●			R2
	G3/4	280 bar [4061 psi]	X	X		R3
	G1	280 bar [4061 psi]		●		R4
	G1 1/2	280 bar [4061 psi]	X		●	R6
	1 1/16-12 UN-2B [SAE 12]	280 bar [4061 psi]	X	X		U4
	1 7/8-12 UN-2B [SAE 24]	280 bar [4061 psi]			X	U6
	SAE 1 1/2" 3000psi	210 bar [3000 psi]			X	S6
	SAE 1 1/2" 6000psi	280 bar [4061 psi]			X	S6H
	● Standard connection					
	X alternative connection possibility					

Ordering code
filter

01	02	03	04	05	06	07	08	09	10	10	10
	N	-	2X	-	-	-	-	-	-	-	-

Supplementary information (several specifications possible)

10	additional screw couplings G 1/4, on clean and dirt side (from NG0160, only possible with SAE flange)	M
	Low temperature application down to -20°C: 210 bar [3045 psi] 75 % Temperature applications cannot be combined with each other	T20
	High temperature application up to Tmax = + 120°C 238 bar [3452 psi] 85 %, special adhesive and FKM seal required, no bypass, can only be combined with filter element BH0 Temperature applications cannot be combined with each other	H120
	High temperature application up to Tmax = + 150°C 196 bar [2842 psi] 70 %, special adhesive and FKM seal required, no bypass, can be combined with filter element AH0 or BH0 Temperature applications cannot be combined with each other	H150
	Manufacturer's inspection certificate M according to DIN 55350 T18	Z1

Order example:
250LEN0400-2X/PWR10A00-V5,0-M-R6

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 [mm²/s] +

☐ search via type of medium

full-text search medium

please select

please select

temp 1: [°C] [°F] kin viscosity 1: [mm²/s] +

☐ dyn. Viscosity 1: [cP] density 1: [kg/dm³] kin viscosity 1: [mm²/s] +

collapse pressure resistance
according to ISO 2941:

30 bar

Start search

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

Electronic switching element for maintenance indicators

01	02	03
WE	-	-

maintenance indicator		
01	electronic switching element	WE

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

Connector		
03	Round plug-in connection M12x1, 4-pole	M12x1
	Rectangular plug-in connection, 2-pole, design A according to EN-175301-803	EN175301-803

Material numbers of the electronic switching elements

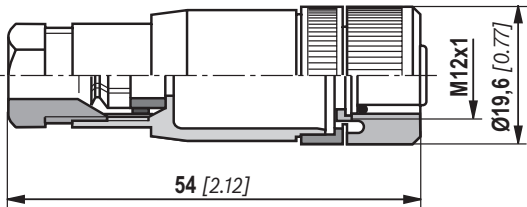
Material no.	Type	Signal	Switching points	Connector	LED
R928028409	WE-1SP-M12x1	Changeover	1	M12x1	without
R928028410	WE-2SP-M12x1	Normally open (at 75%) / normally closed contact (at 100%)	2		3 pieces
R928028411	WE-2SPSU-M12x1				
R928036318	WE-1SP-EN175301-803	Normally closed contact	1	EN 175301-803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

Connection sockets (max. permissible voltage: 50 V)

for electronic switching element with round plug-in connection M12x1

Connection socket suitable for K24 4-pole, M12x1 with screw connection, cable gland Pg9.

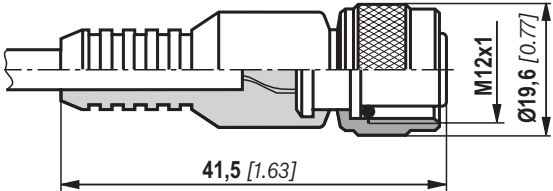
Material no. R900031155



Connection socket suitable for K24-3m 4-pole, M12x1 with integrated PVC cable, 3 m long.

Wire cross-section: 4 x 0.34 mm²
Wire identification: 1 brown 2 white
3 blue 4 black

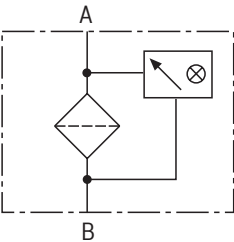
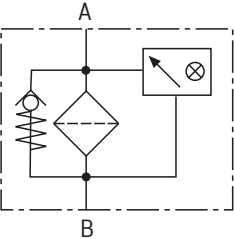
Material no. R900064381



Order example:		
Inline filter with mechanical/optical maintenance indicator for $p_{nom} = 280 \text{ bar}$ [4061 psi] with bypass valve, size 0400, with filter element 10 µm and electronic switching element M12x1 with 1 switching point.		
Filter:	250LEN0400-2X/PWR10A00-V5,0-M-R6	Material no. 1055841B
Maintenance indicator:	WE-1SP-M12x1	Material no. 1006503B

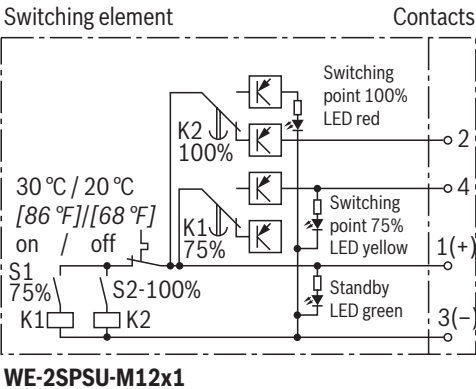
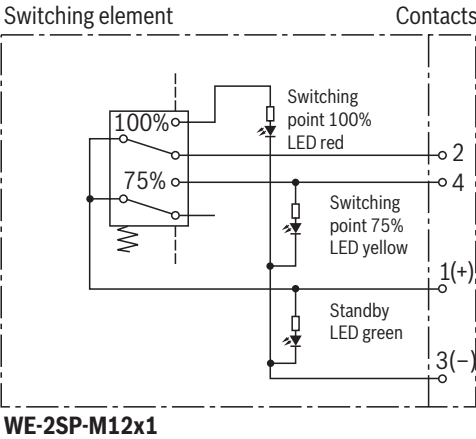
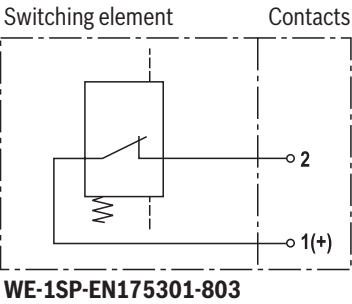
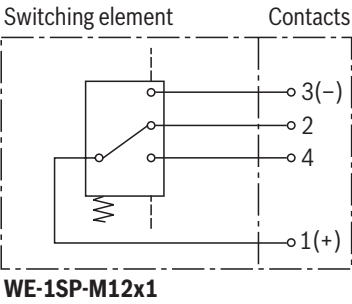
Symbols

Inline filter
with bypass valve and
mechanical indicator



Inline filter
without bypass valve and with
mechanical indicator

electronic switching element
for maintenance indicator



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

Function, section

The 210/250LEN inline filter is suitable for direct installation into pressure lines. It is installed upstream of components to be protected.

The inline filter consists of filter head (1), a removable filter bowl (2), filter element (3) as well as a mechanical/visual maintenance indicator (4). In case of filters with low-pressure-differential-stable filter elements (= code letter pressure differential A), a by-pass valve (5) is fitted as a standard.

The fluid reaches the filter element (3) through the inlet port where it is cleaned. The filtered particulate settle either in the filter bowl (2) or in the filter element (3). The fluid then exits the filter through the outlet port and enters the hydraulic circuit.

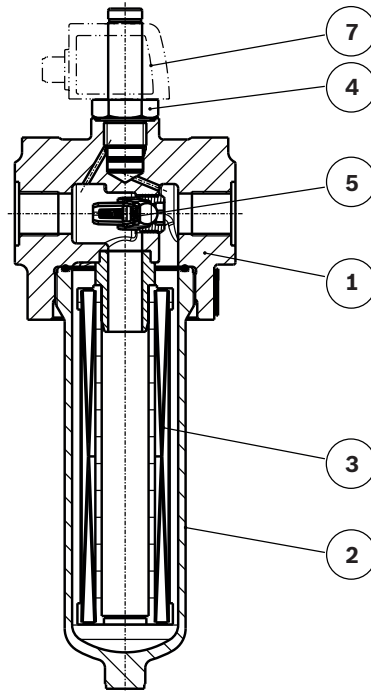
The filter housing and all connection elements are designed so that pressure peaks - which may occur in the case of the abrupt opening of large control valves due to the accelerated fluid quantity - can be securely absorbed. As of size 0160, the standard equipment comprises a drain screw (6).

As a standard, the filter is equipped with a mechanical/optical maintenance indicator (4). The electronic switching element (7) which has to be ordered separately is attached over the mechanical/optical maintenance indicator (4) and is secured in place by a circlip ring.

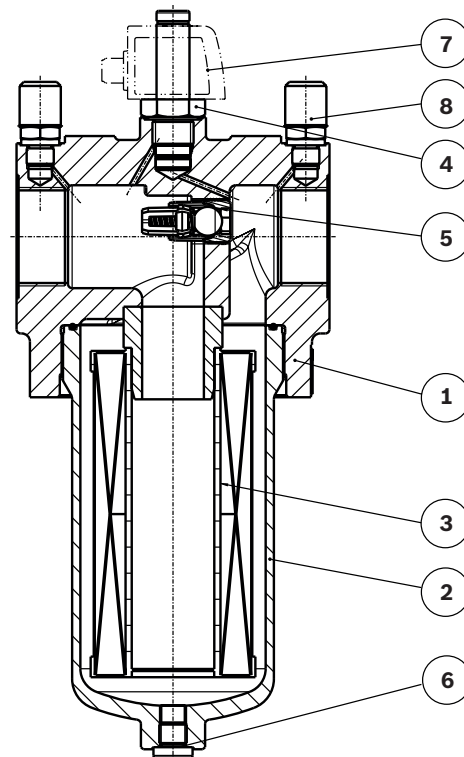
The electronic switching elements with 1 or 2 switching points are connected via a connection socket according to IEC60947-5-2 or via a cable connection according to EN17301-803.

From size 0160, it is possible to order the filters with optional mini-mess couplings (8) for individual pressure measurement and/or fluid sampling. These optional ports are only present if the filter is ordered with these measurement/sampling ports.

250LEN0040-0100



250LEN0160-0400



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 parameters, please consult us!)

General				
Installation position		vertical		
Ambient temperature range		°C [°F]	−20 ... +65 [+4 ... +149] (for short periods down to −30 [−22])	
Storage conditions	– Seal NBR	°C [°F]	−40 ... +65 [−40 ... +149]; max. relative air humidity 65 %	
	– Seal FKM	°C [°F]	−0 ... +65 [+32 ... +149]; max. relative air humidity 65 %	
Weight	NG	0040	0063	0100
	kg [lbs]	2.7 [5.95]	3.0 [6.61]	3.4 [7.5]
	NG	0160	0250	0400
	kg [lbs]	10.5 [23.1]	11.3 [24.91]	12.7 [28.0]
Mass filter bowl	NG	0040	0063	0100
	kg [lbs]	0.57 [1.26]	1.03 [2.27]	1.44 [3.17]
	NG	0160	0250	0400
	kg [lbs]	2.49 [5.49]	3.33 [7.34]	4.72 [10.41]
Volume	NG	0040	0063	0100
	l [US gal]	0.21 [0.06]	0.38 [0.1]	0.53 [0.14]
	NG	0160	0250	0400
	l [US gal]	1.13 [0.3]	1.6 [0.42]	2.4 [0.63]
Material	– Filter head		Spheroidal graphite iron	
	– Filter bowl		Carbon steel	
	– Bypass valve		PA6 / steel / POM	
	– Seals		NBR or FKM	
	– Optical maintenance indicator	V2,2, V5,0, V5,0, V8,0	Brass	
	–Electronic switching element		Plastic PA6	

Hydraulic						
Maximum operating pressure	bar [psi]	210 bar [3000 psi]; 280 bar [4061 psi]				
Hydraulic fluid temperature range	°C [°F]	Temperature range 1: -10°C to +100°C at 280 bar [4061 psi] Temperature range 2: -20°C to -11°C at 210 bar [3045 psi] 75 % Temperature range 3: +101°C to +120°C at 238 bar [3452 psi] 85 % Temperature range 4: +121°C to +150°C at 196 bar [2842 psi] 70 %				
Fatigue strength according to ISO 10771 ¹⁾	Load cycles		max. permissible load cycles [in millions]			
		Type / Operating pressure	250 bar	280 bar	320 bar	350 bar
		250LEN0040-0100-2X	5.0	5.0	4.0	2.0
		250LEN0160-0400-2X	5.0	5.0	-	-
Type of pressure measurement of the maintenance indicator		Pressure differential				
Assignment: Response pressure of the maintenance indicator / cracking pressure of the bypass valve		Response pressure of the maintenance indicator		Cracking pressure of the bypass valve		
	bar [psi]	2.2 ± 0.3 [31.9 ± 4.4]		3.5 ± 0.35 [50.8 ± 5.1]		
		5.0 ± 0.5 [72.5 ± 7.3]		7.0 ± 0.5 [101.5 ± 7.3]		
		8.0 ± 0.8 [116 ± 11.6]		Without		

¹⁾ The life cycle of the components is for example influenced by:

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

The technical data apply in compliance with the specified performance limits. Extended operational durability/load cycles upon request.

Technical data

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

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

Filter element				
Non-woven glass fiber media PWR..		Single-use element on the basis of inorganic fiber		
		Filtration ratio according to ISO 16889 up to $\Delta p = 5 \text{ bar [72.5 psi]}$		Achievable oil cleanliness according to ISO 4406 [SAE-AS 4059]
Particle separation	PWR20	$\beta_{20}(c) \geq 200$	$\beta_{21}(c) \geq 1000$	19/16/12 – 22/17/14
	PWR10	$\beta_{10}(c) \geq 200$	$\beta_{11}(c) \geq 1000$	17/14/10 – 21/16/13
	PWR6	$\beta_7(c) \geq 200$	$\beta_8(c) \geq 1000$	15/12/10 – 19/14/11
	PWR3	$\beta_5(c) \geq 200$	$\beta_6(c) \geq 1000$	13/10/8 – 17/13/10
permissible pressure differential		– A00 – B00	bar [psi]	30 [435] 330 [4786]

Compatibility with permitted hydraulic fluids

Hydraulic fluid	Classification	Suitable sealing materials	Standards
Mineral oil	HLP	NBR	DIN 51524
Bio-degradable	– insoluble in water	HETG	NBR
		HEES	FKM
	– soluble in water	HEPG	FKM
Flame-resistant	– water-free	HFDU, HFDR	FKM
	– containing water	HFAS	NBR
		HFAE	NBR
		HFC	NBR
			VDMA 24317



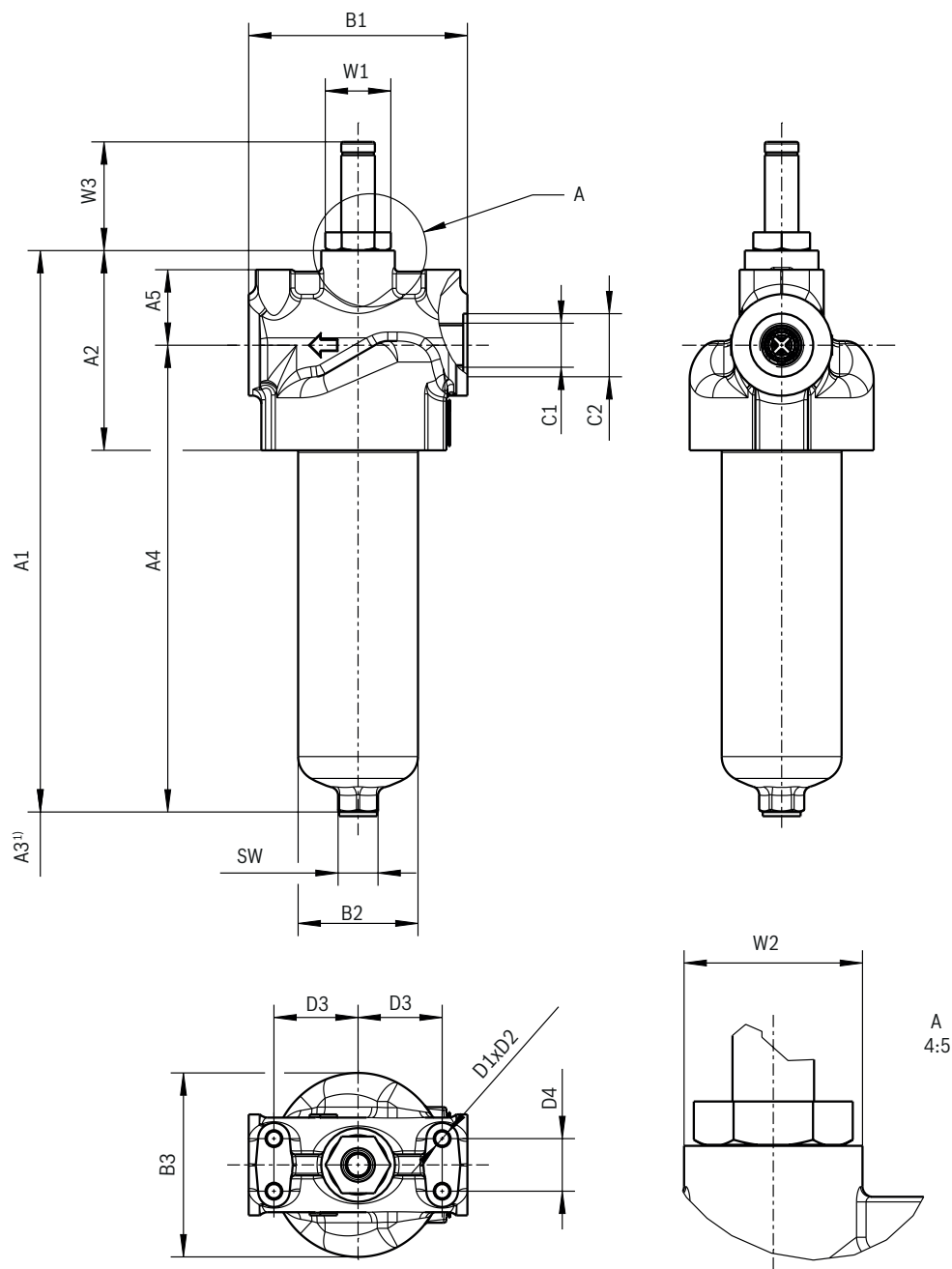
Important information on hydraulic fluids!

- For further information and data on the use of other hydraulic fluids, please 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

may not be used, filter elements with glass fiber filter material (HydroClean PWR... or wire mesh G) have to be used instead.

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

Dimensions: Size 0040 - size 0100
(dimensions in mm [inch])



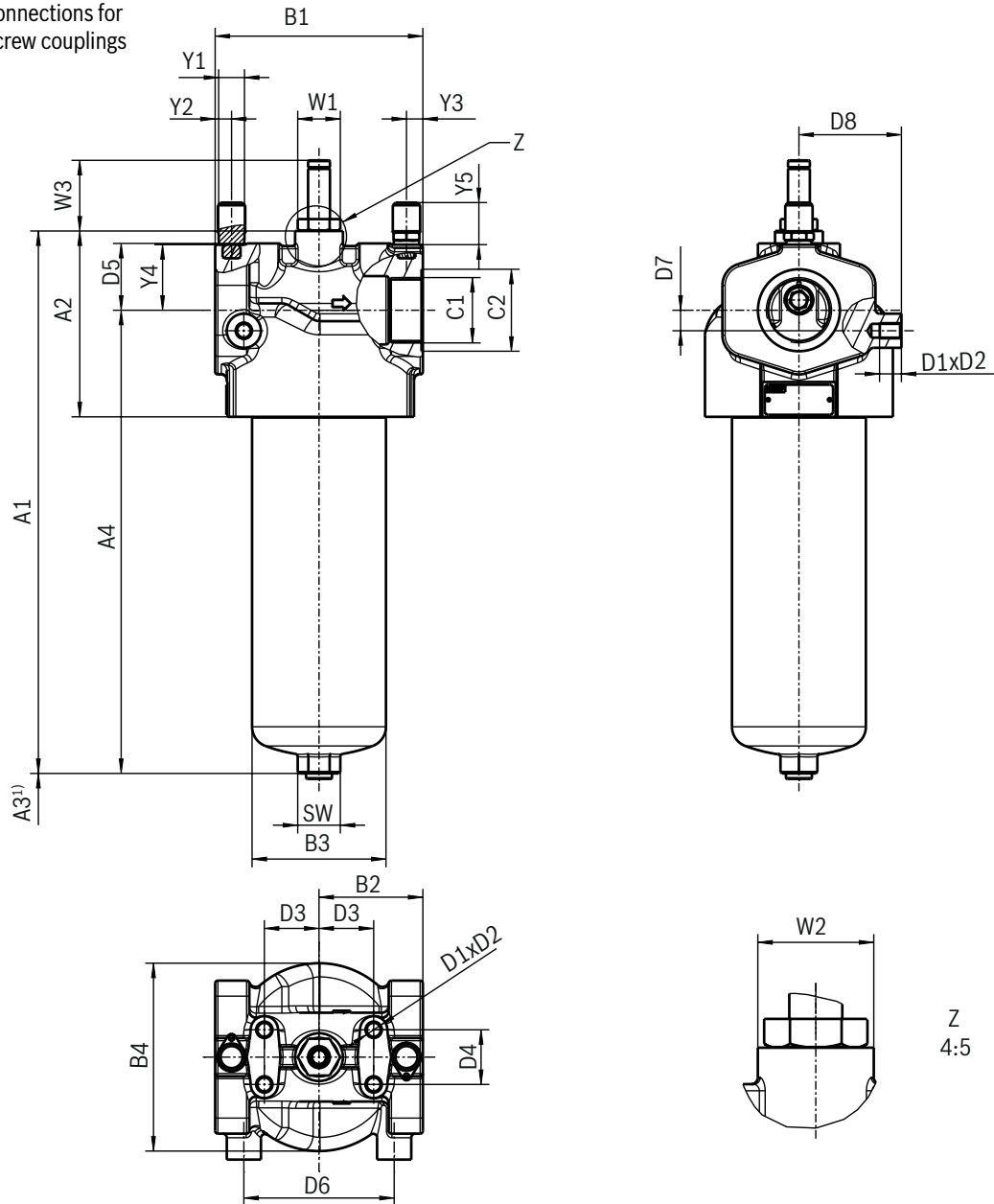
Type	Lengths / heights					Widths / depths			Connections	
	A1	A2	A3	A4	A5	B1	B2	B3	C1	C2
250LEN0040	203.5 [8.01]	95 [3.74]	120 [4.72]	159.5 [6.25]	39.5 [1.5]	104 [4.09]	Ø57 [2.24]	87.5 [3.44]	G3/4	Ø37 [1.45]
250LEN0063	266 [10.47]			220 [8.66]					G1	Ø44 [1.73]
250LEN0100	355 [13.98]			313 [12.32]					1 1/16-12 UN-2B	Ø41 [1.61]

Type	Fasteners				Maintenance indicator			
	D1	D2	D3	D4	W1	W2	W3	SW
250LEN0040	M8	12	40	25	32	Ø35	52	24
250LEN0063		[0.47]	[1.57]	[0.98]	[1.26]	[1.37]	[2.04]	[0.94]
250LEN0100								

1)Expansion dimension

Dimensions: NG0160 - NG0400

(Dimensions in mm [inch])

Optional: drilled
connections for
screw couplings

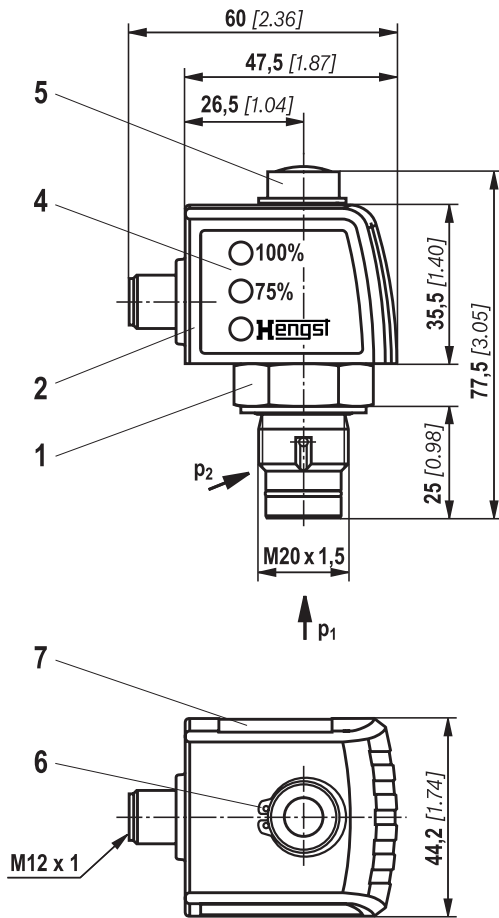
Type	Lengths / heights				Widths / depths				Connections	
	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2
250LEN0160	316 [12.44]	136 [5.35]	160 [3.29]	249 [9.80]	152 [5.98]	76 [2.99]	Ø98 [3.85]	138 [5.43]	G1 1/2 1 7/8-12 UN-2B	Ø60 [2.36] Ø65 [2.55]
250LEN0250	406 [15.98]			339 [13.34]						
250LEN0400	557 [21.93]			490 [19.29]						

Type	Fasteners								Maintenance indicator				Minimess				
	D1	D2	D3	D4	D5	D6	D7	D8	W1	W2	W3	SW	Y1	Y2	Y3	Y4	Y5
250LEN0160	M12	20	40	40	49	110	15	75	31	Ø35	52	30	G1/4	11.5	11.5	48	28
250LEN0250		[0.78]	[1.57]	[1.57]	[1.92]	[4.33]	[0.59]	[2.95]	[1.22]	[1.37]	[2.04]	[1.18]		[0.45]	[0.45]	[1.89]	[1.10]
250LEN0400																	

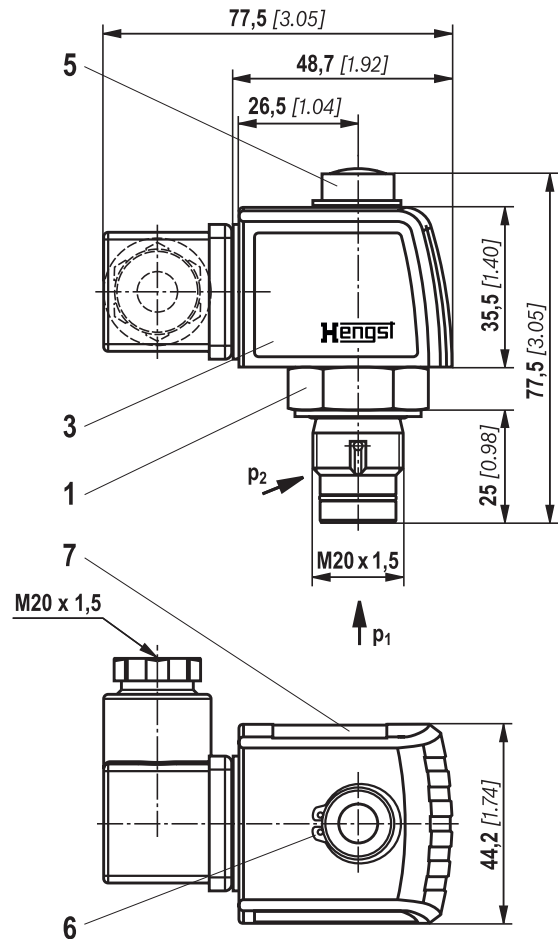
¹⁾Expansion dimension

Maintenance indicator (dimensions in mm [inch])

**Pressure differential indicator
with mounted switching element M12x1**



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



- 1 Mechanical optical maintenance indicator;
max. tightening torque $M_{A \max} = 50 \text{ Nm}$ [36.88 lb-ft]
- 2 Switching element with locking ring for
electrical maintenance indicator (rotatable by 360°);
round plug-in connection M12x1, 4-pole
- 3 Switching element with locking ring for
electrical maintenance indicator (rotatable by 360°);
rectangular plug-in connection EN175301-803
- 4 Housing with three LEDs: 24 V =
green: Stand-by
yellow: Switching point 75%
red: Switching point 100%
- 5 Visual indicator bistable
- 6 Locking ring DIN 471-16x1,
- 7 Name plate

Notes:

The drawing shows the mechanical/optical maintenance indicator (1) and the electronic switching element (2) (3).

Ordering code
Spare parts

Filter element

01	02	03	04	05	06	07
2.			-	-	0	-

Filter element

01	Design	2.
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Size

02	LEN... (Filter elements according to DIN 24550)	0040 0063 0100 0160 0250 0400
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Filter rating in µm

03	Absolute (ISO 16889; $\beta_{x(c)} \geq 200$)	Glass fiber material, not cleanable	PWR3 PWR6 PWR10 PWR20
	Nominal	Stainless steel wire mesh, cleanable	G10 G25 G40 G60 G100

Pressure differential

04	max. permissible pressure differential of the filter element 30 bar [435 psi] – filter with bypass valve	A
	max. permissible pressure differential of the filter element 330 bar [4786 psi] – filter without bypass valve	B

Element design

05	Standard adhesive	00
	Special adhesive only in connection with FKM seal and additionally for high-temperature application H120 or H150	H0

Bypass valve

06	Without bypass valve	0
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Seal

07	NBR seal	M
	FKM seal	V

Order example:
2.0100 PWR10-A00-0-M
Material no. 1002731B

For detailed information on Hengst filter elements please refer to data sheet 51517.

Preferred program replacement filter element

Replacement filter element 3 micron	Replacement filter element 6 micron	Replacement filter element 10 micron	Replacement filter element 20 micron	Replacement filter element 25 micron cloth
1002673B 2.0040 PWR3-A00-0-M	1002674B 2.0040 PWR6-A00-0-M	1002675B 2.0040 PWR10-A00-0-M	1002676B 2.0040 PWR20-A00-0-M	1002672B 2.0040 G25-A00-0-M
1002701B 2.0063 PWR3-A00-0-M	1002702B 2.0063 PWR6-A00-0-M	1002703B 2.0063 PWR10-A00-0-M	1002704B 2.0063 PWR20-A00-0-M	1002700B 2.0063 G25-A00-0-M
1002729B 2.0100 PWR3-A00-0-M	1002730B 2.0100 PWR6-A00-0-M	1002731B 2.0100 PWR10-A00-0-M	1002732B 2.0100 PWR20-A00-0-M	1002728B 2.0100 G25-A00-0-M
1002757B 2.0160 PWR3-A00-0-M	1002758B 2.0160 PWR6-A00-0-M	1002759B 2.0160 PWR10-A00-0-M	1002760B 2.0160 PWR20-A00-0-M	1002756B 2.0160 G25-A00-0-M
1002786B 2.0250 PWR3-A00-0-M	1002787B 2.0250 PWR6-A00-0-M	1002788B 2.0250 PWR10-A00-0-M	1002789B 2.0250 PWR20-A00-0-M	1002785B 2.0250 G25-A00-0-M
1002813B 2.0400 PWR3-A00-0-M	1002814B 2.0400 PWR6-A00-0-M	1002815B 2.0400 PWR10-A00-0-M	1002816B 2.0400 PWR20-A00-0-M	1002812B 2.0400 G25-A00-0-M

Ordering code
Spare parts

Mechanical optical maintenance indicator

01	02	03	04	05	06
W	O	-	D01	-	-

01	Maintenance indicator	W
02	mechanical optical indicator	O

Design

03	Design pressure differential M20x1.5	D01
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Switching pressure

04	2.2 bar [32 psi]	2.2
	5.0 bar [72.5 psi]	5.0
	8.0 bar [116 psi]	8.0

Seal

05	NBR seal	M
	FKM seal	V

max. nominal pressure

06	Switching pressure 2.2 bar [31.9 psi], 450 bar [6527 psi]	450
	Switching pressure 5.0 bar [72.5 psi], 450 bar [6527 psi]	450
	Switching pressure 8.0 bar [116 psi], 450 bar [6527 psi]	450

Mechanical optical maintenance indicator

Mechanical optical maintenance indicator	Material no.
WO-D01-2,2-M-450	1009240B
WO-D01-2,2-V-450	1009239B
WO-D01-5,0-M-450	1000526B
WO-D01-5,0-V-450	1000531B
WO-D01-8,0-M-450	1009242B
WO-D01-8,0-V-450	1009241B

Ordering code
Spare parts

Seal kit

01	02	03	04
D	250LEN		-

01	Seal kit	D
02	Series 250LEN	250LEN

Size

03	0040-0100	0040-0100-2X/
	0160-0400	0160-0400-2X/

Seal

04	NBR seal	M
	FKM seal	V

Seal kit

Material no.	Description
1056721B	D210/250LEN0040-0100-2X/M
1056722B	D210/250LEN0040-0100-2X/V
1056723B	D210/250LEN0160-0400-2X/M
1056724B	D210/250LEN0160-0400-2X/V

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).
- ▶ 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.
- ▶ Easy filter element exchange is guaranteed in the installation position filter bowl vertically downwards. 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 when the power supply is fully deactivated.
- ▶ 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.

Notice:

There is no bleeding provided at the filter. However, some sizes have optional measuring ports which may also be used for bleeding.

Caution, risk of burning!

During any work at the filter, e.g. filter element exchange and cleaning, any hot operating fluids must be observed. The safety instructions of the machine end-user must be observed.

Maintenance

- ▶ If at operating temperature, the red indicator pin extends out of the mechanical/visual 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 51548.
- ▶ 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.
- ▶ Decommission the system.
- ▶ The operating pressure is to be built up on the system side.

Notice:

There is no bleeding provided at the filter. However, some sizes have optional measuring ports which may also be used for bleeding.

Caution, risk of burning!

During any work at the filter, e.g. filter element exchange and cleaning, any hot operating fluids must be observed. The safety instructions of the machine end-user must be observed.

- ▶ Via the drain screw (from NG0160 fitted by default), the oil on the dirt side can be drained.
- ▶ Screw off the filter bowl.
- ▶ Remove the filter element from the spigot by rotating it slightly.
- ▶ Clean the filter components if necessary.
- ▶ Check the seals at the filter bowl for damage and renew them, if necessary.
For suitable seal kits refer to chapter "Spare parts".
- ▶ Filter elements made of wire mesh can be cleaned. The efficiency of the cleaning process depends on the type of dirt and the amount of the pressure differential before the filter element exchange.
If the pressure differential after the filter element exchange exceeds 150% of the value of a brand-new filter element, the filter element made of wire mesh (G...) also needs to be replaced. For detailed cleaning instructions, refer to data sheet 51548.
- ▶ 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.
- ▶ Commission the system.

Assembly, commissioning, maintenance

WARNING!

- ▶ Assembly and disassembly work may only take place when the system is depressurized!
- ▶ Filter is under pressure!
- ▶ Remove the filter bowl only if it is depressurized!
- ▶ 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.
- ▶ We recommend shielding walkways and workplaces from escaping medium by means of suitable protective devices (e.g. housing or protective glass).

Notes:

- ▶ Work on the filter may only be carried out by trained specialists.
- ▶ Functional and safety warranty only applicable when using genuine Hengst spare parts.
- ▶ Warranty becomes void if the delivered item is changed by the ordering party or third parties or improperly mounted, installed, maintained, repaired, used or exposed to environmental condition that do not comply with the installation conditions.

Tightening torques
(dimensions in mm [inch])

Mounting

Series 210/250 ...	LEN0040	LEN0063	LEN0100	LEN0160	LEN0250	LEN0400
Screw/tightening torque with $\mu_{\text{total}} = 0.14$	M8 = 12Nm [9 lbft] $\pm 10\%$			M12 = 25 Nm [18,4 lbft] $\pm 10\%$		
Quantity				4		
Recommended strength class of screw				8.8		
Screw-in depth	7.8 mm [0.31 inch]			14 mm [0.55 inch]		

Filter bowl and maintenance indicator

Series 210/250 ...	LEN0040	LEN0063	LEN0100	LEN0160	LEN0250	LEN0400
Tightening torque of the filter bowl using a 6-point nut or ring spanner	30 Nm +10 Nm [22.1 lbft + 7.4 lbft]					
Tightening torque of maintenance indicator	50 Nm [37 lb-ft]					
Tightening torque of cubic connector screw switching element EN-175301-803	M3/0.5 Nm [0.37 lb-ft]					

Guidelines and standards

Product validation

In Hengst filters and the filter elements and filter accessories installed in them are tested and quality-monitored according to various ISO test standards:

Pressure pulse test	ISO 10771:2015-08
Filtration performance test (multipass test)	ISO 16889:2022-01
Δp (pressure loss) characteristic curves	ISO 3968:2017-07
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 ISO9001:2015.

Classification according to the Pressure Equipment Directive

The inline filters for hydraulic applications according to 51482 are pressure holding equipment according to article2, section5 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 the 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

The inline filters are not equipment or components in the sense of directive 2014/34/EU and are not provided with the CE mark. It has been demonstrated in the ignition risk analysis that these inline filters do not have their own ignition sources according to DIN EN 80079-36. According to DINEN60079-11:2012, the electronic maintenance indicators with one switching point WE-1SP-M12x1 **R928028409** WE-1SP-EN175301-803 **R928036318** are simple, electronic operating equipment not having an own voltage source. According to DIN EN 60079-14:2014,

in intrinsically safe electric circuits (Ex ib), this simple, electronic operating equipment may be used in systems without marking and certification. The inline filters and the electronic maintenance indicators described here can be used for the following potentially explosive areas:

	Zone suitability	
Gas	1	2
Dust	21	22

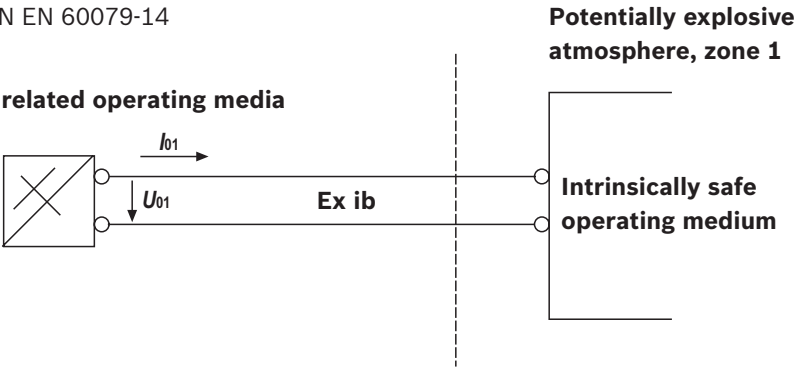
Guidelines and standards

Complete filter with mech/opt. maintenance indicator				
Use /assignment			Gas 2G	Dust 2D
Assignment ¹⁾			Ex h IIC T4...T1 Gb	Ex h IIC T100°C...T450°C Db
Conductivity of the medium	pS/m	min	300	
Dust accumulation		max	–	0.5 mm

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

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

Possible circuit according to DIN EN 60079-14



⚠ WARNING!

- ▶ Risk of explosion due to high temperature!
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 to ensure that the maximum permissible ignition temperature is not exceeded in the potentially explosive atmosphere.
- ▶ When using the inline filters according to 51425 in explosive areas, appropriate equipotential bonding has to be ensured. The filter should ideally be earthed via the mounting screws.

Here, please note that paintings and oxidic protective layers are not electrically conductive.

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

⚠ Notes:

- ▶ Maintenance by specialist staff only.
Instruction by the machine end-user according to DIRECTIVE 1999/92/EC appendix II, section 1.1
- ▶ Functional and safety warranty only applicable when using genuine Hengst spare parts.

Use

Intended use

This filter consists 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 systems with fluids of group 2, according to Pressure Equipment Directive 2014/68/EU.
- ▶ Only according to the application and environmental conditions in the section "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 areas according to the section "Directives and standardization" .
- ▶ 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 not permissible.
- ▶ The filters are intended for professional use only and are not for private use.

Improper use

Any use deviating from the intended use is improper and not therefore admissible.

Improper use of the filters includes:

- ▶ Incorrect storage
- ▶ Incorrect transport
- ▶ Lack of cleanliness during storage and assembly
- ▶ 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 a not-permissible 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.

Environment and recycling

- ▶ The used filter element must be disposed of according to the country-specific statutory environmental protection regulations.
- ▶ At the end of the service life of the filter, the filter components can be recycled according to the country-specific statutory environmental protection regulations.

Notices

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