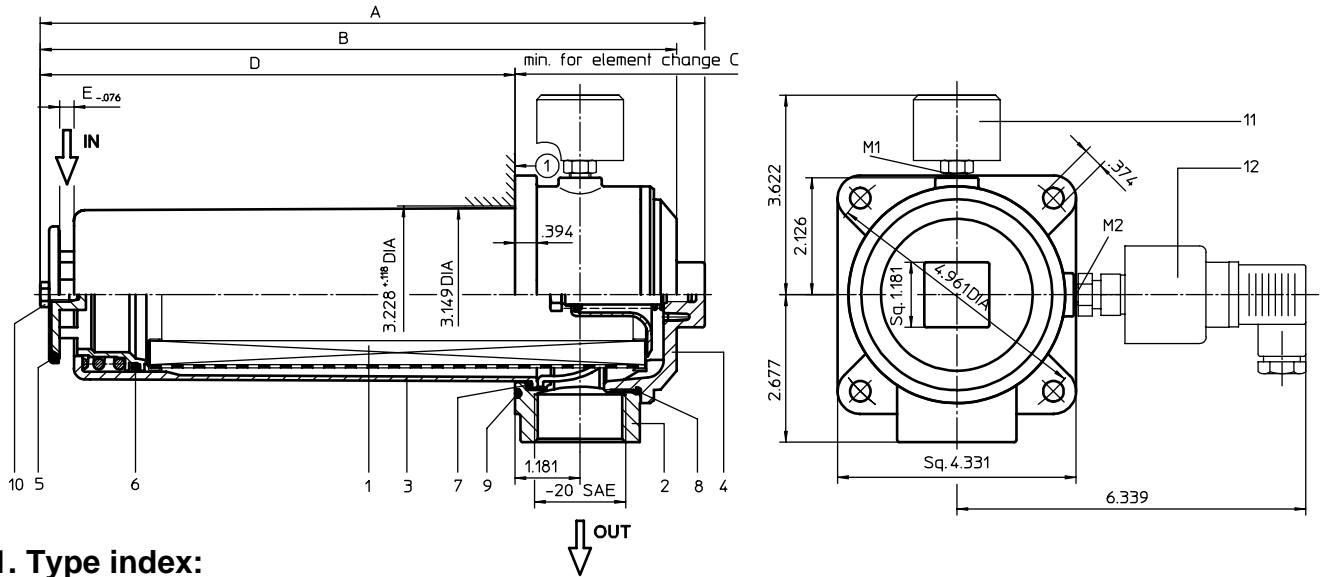


SUCTION FILTER, for horizontal tank-mounting

Series TSW 210 - 310

Sheet No.
1905 G



1. Type index:

1.1. Complete filter: (ordering example)

TSW. 210. 10VG. -. B. P. -. UG. 6. -. -. O1. E4

1	2	3	4	5	6	7	8	9	10	11	12	13
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- 1 **series:**
TS = suction filter for horizontal tank-mounting
W
- 2 **nominal size:** 210, 310
- 3 **filter-material and filter-finness:**
80 G = 80 μm , 40 G = 40 μm ,
25 G = 25 μm stainless steel wire mesh
25 VG = 20 $\mu\text{m}_{(c)}$, 16 VG = 15 $\mu\text{m}_{(c)}$, 10 VG = 10 $\mu\text{m}_{(c)}$,
6 VG = 7 $\mu\text{m}_{(c)}$, 3 VG = 5 $\mu\text{m}_{(c)}$ Interpor fleece (glass fiber)
25 P = 25 μm , 10 P = 10 μm paper
- 4 **resistance of pressure difference for filter element:**
- not specified
- 5 **filter element design:**
B = both sides open
- 6 **sealing material:**
P = Nitrile (NBR) V = Viton (FPM)
- 7 **filter element specification:**
- = standard VA = stainless steel
- 8 **connection:**
UG = thread connection
- 9 **connection size:**
6 = -20 SAE
- 10 **filter housing specification:**
- = standard
- 11 **internal valve:**
- = without
S = with by-pass valve Δp 4.1 PSI
- 12 **clogging indicator at M1:**
- = without
O1 = visual, see sheet-no. 1616
E4 = pressure switch, see sheet-no. 1616
- 13 **clogging indicator at M2:**
possible indicators see position 12 of the type index

1.2. Filter element: (ordering example)

01TS. 210. 10VG. -. B. -. -

1	2	3	4	5	6	7
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- 1 **series:**
01TS. = suction filter element according to
INTERNORMEN factory specification
- 2 **nominal size:** 210, 310
- 3 - 5, 7 see type index complete filter
- 6 **sealing material:**
- = without

2. Dimensions: inch

type	connection	A	B	C	D	E	weight lbs.
TSW 210	-20 SAE	12.09	11.57	11.42	8.62	.26	5.10
TSW 310	-20 SAE	15.47	14.96	14.76	12.00	.30	6.60

- mounting surface $\textcircled{1}$
- surface quality $.12 \mu\text{in}$
- flatness tolerance $\square .01''$

weight: approx. 6.00 lbs.

Changes of measures and design are subject to alteration!

EDV 08/03

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3. Spare parts:

item	qty.	designation	dimension		article-no.
			TSW 210	TSW 310	
1	1	filter element	01TS. 210	01TS. 310	
2	1	filter head			304423
3	1	filter bowl			304518.1
4	1	filter cover	M 90 x 2		
5	1	O-ring	53 x 4		309143 (NBR) - (FPM)
6	1	O-ring	62 x 4		308045 (NBR) 311472 (FPM)
7	1	O-ring	75 x 3		302215 (NBR) 304729 (FPM)
8	1	O-ring	82 x 3		305191 (NBR) 305298 (FPM)
9	1	O-ring	88 x 3		304417 (NBR) 310266 (FPM)
10	1	sheet metal screw	B 6,3 x 13		316641
11	1	clogging indicator, visual	O1		301722
12	1	pressure switch, electrical	E4		311016

4. Description:

The TSW-filters are directly mounted to the reservoir and connected to the suction-line. The suction-area „IN“ must be below the oil level. The filter element consists of a star-shaped, pleated filter material which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow is from inside to outside. Filters finer than 40 µm should use throw-away elements made of paper or Interpor fleece (VG). Filter elements as fine as 5 µm_(c) are available; finer filter elements on request.

INTERNORMEN-Filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.

INTERNORMEN-Filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils. Due to its practical design, the return-line filter is easy to service. When releasing the filter cover a plate-shaped valve closes the suction-inlet of the filter bowl and prevents leakage of fluid out of the tank. Filter element can removed from filter pot for cleaning purposes.

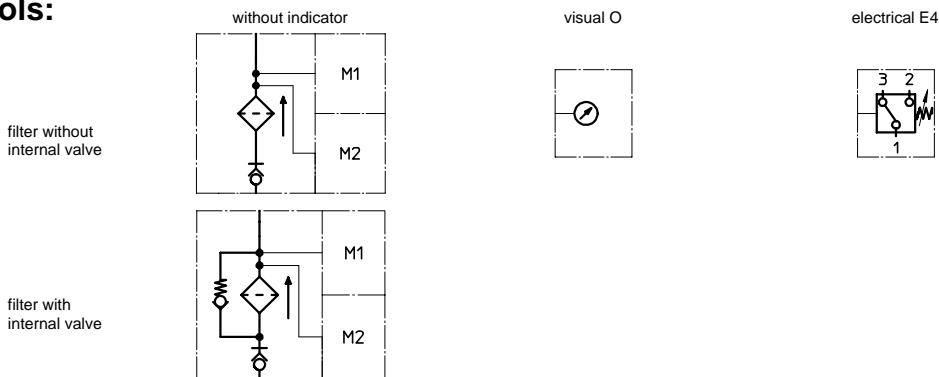
5. Technical data:

temperature range:	+14°F to + 176°F (for a short time + 212°F)
operating medium:	mineral oil, other media on request
connection system:	thread connection
housing material:	Al-casting; glass fiber reinforced polyamide
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	horizontal
volume tank TSW 210:	.30 Gal.
TSW 310:	.40 Gal.

Classified under the Pressure Vessel Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.

Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4).

6. Symbols:



7. Pressure drop flow curves:

Precise flow rates see 'INF-Expert-System Filter', respectively Δp -curves; depending on filter fineness and viscosity.

8. Test methods:

Filter elements are tested according to the following ISO standards:

- ISO 2941 Verification of collapse/burst resistance
- ISO 2942 Verification of fabrication integrity
- ISO 2943 Verification of material compatibility with fluids
- ISO 3723 Method for end load test
- ISO 3724 Verification of flow fatigue characteristics
- ISO 3968 Evaluation of pressure drop versus flow characteristics
- ISO 16889 Multi-pass method for evaluating filtration performance