

W451 In-Line Cartridge Filters

Working Pressures to: 4,500 *psi*
31,027 *kPa*
310 *bar*

Rated Static Burst to: 13,500 *psi*
93,100 *kPa*
931 *bar*

Fatigue Pressure Rating: 3000 *psi*
20,700 *kPa*
207 *bar*

Flow Range to: 150 *gpm*
568 *lpm*

Applications

- High Pressure Circuits
- In-Plant Systems
- Meets HF4 Specification
- Mobile Equipment



Features

The W451 base-mounted filter series provides for easy servicing featuring top cover access for filter changeout. The ductile iron filter head design provides for SAE ports along with optional space saving manifold mounting. This product features the popular HF4 automotive filter. DT 4-layer media is offered in a variety of designs. Four different media grades are offered. Filter core collapse options range from 150 to 3,000 psi. The differential pressure indicator line is designed to work with the wide assortment of bypass valves. Thermal lockout and surge control are two key features available in many of the differential pressure indicators.

- Conforms to HF4 specifications
- High collapse filter available for use with non-bypass applications
- Wide range of indicator options
- Three housing length options for design flexibility
- Base & cover material: cast iron
- Cylinder material: steel
- Drain plug in base
- Bleed/fill plug in cover

Beta Rating (per ISO 16889)

- Performance to $\beta_{5(c)}=1000$

Porting Size Options

- SAE-20 O-ring
- 1½" SAE 4-Bolt Flange Code 61 or 62
- Manifold Mounting

Assembly Weight

- 9": 56 lbs / 25.4 kg
- 18": 82 lbs / 37.5 kg
- 27": 109 lbs / 49.5 kg

Replacement Filter Lengths

- 9.12" / 231.8mm
- 18.20" / 462.3mm
- 27.66" / 702.5mm

Standard Bypass Ratings

- No Bypass
- 50 psi / 345 kPa / 3.5 bar
- 90 psi / 621 kPa / 6.2 bar

Operating Temperatures

- -45° to 250°F (-43° to 121°C)

Filter Collapse Ratings

- 150 psi / 1034 kPa / 10.3 bar (standard)
- 3000 psi / 20,700 kPa / 206.8 bar (high collapse)



W451
Max Flow: 150 gpm (568 lpm)

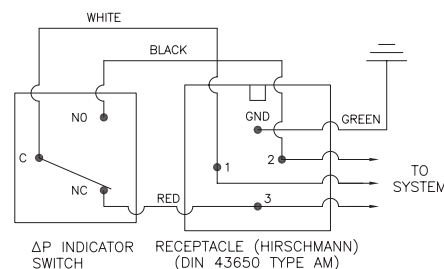
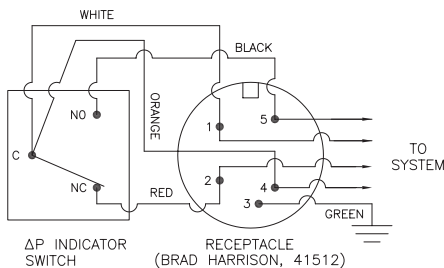


W451 Specification Illustrations

All dimensions are shown in millimeters [inches].

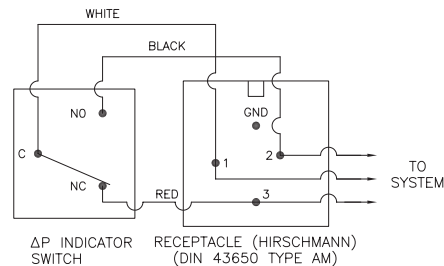
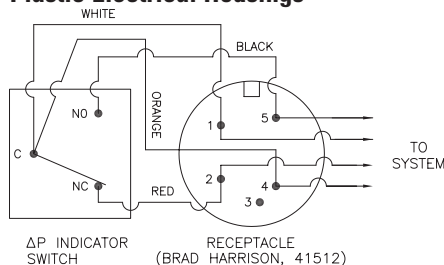
Indicator Switch Schematic Wiring Diagram

Aluminum Electrical Housings



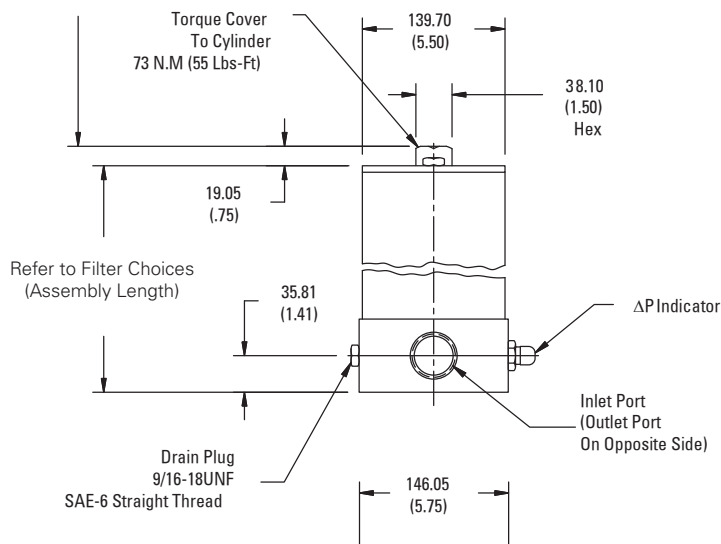
Note: The female plug (connector) is to be furnished by customer.

Plastic Electrical Housings

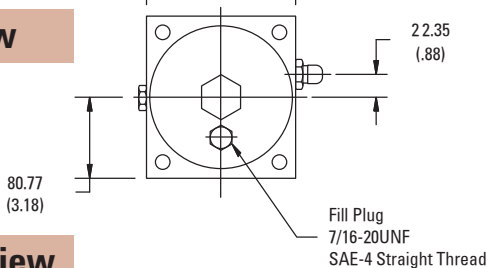


Note: The female plug (connector) is to be furnished by customer.

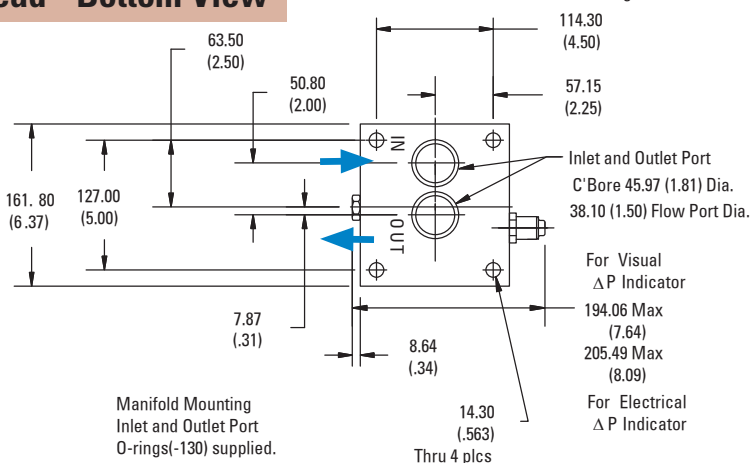
Assembly - Side View



Head - Side View



Head - Bottom View



Differential Indicators:

Indicators are designed to actuate at approximately 80% of bypass valve cracking pressure. It is recommended that an indicator with a bypass setting of 100 psid is used with a non-bypass housing.

Surge Control:

This optional feature is used to dampen pressure surges or spikes to avoid premature actuation of the indicator. Surge control delays the indicator response.

Thermal Lockout:

The Thermal Lockout prevents premature signaling of a bypass condition created by viscous fluid during cold start-ups. Normal indicator actuation capability is resumed once the operating temperature of the fluid reaches approximately 80°F / 27°C.



W451 Components High-Performance DT Filter Choices

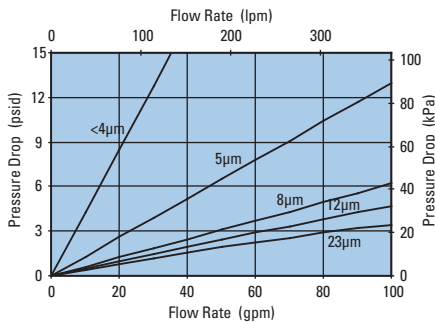
Media Type	$\beta_{x(c)} = 2$ <small>Rating based on ISO 16889</small>	$\beta_{x(c)} = 1000$	Length in mm	Donaldson Part No.	Comments
DT Synteq Synthetic	5 μ m	9	231.8	P566270	DT-HF4-9-5UM
	8 μ m	9	231.8	P566271	DT-HF4-9-8UM
	12 μ m	9	231.8	P566272	DT-HF4-9-14UM
	23 μ m	9	231.8	P566273	DT-HF4-9-25UM
	5 μ m	18	462.3	P566274	DT-HF4-18-5UM
	8 μ m	18	462.3	P566275	DT-HF4-18-8UM
	12 μ m	18	462.3	P566276	DT-HF4-18-14UM
	23 μ m	18	462.3	P566277	DT-HF4-18-25UM
	5 μ m	27	702.5	P566278	DT-HF4-27-5UM
	8 μ m	27	702.5	P566279	DT-HF4-27-8UM
	12 μ m	27	702.5	P566280	DT-HF4-27-14UM
	23 μ m	27	702.5	P566281	DT-HF4-27-25UM
	5 μ m	9	233.5	P566412	DT-HF4HC-9-5UM, High collapse
	12 μ m	9	233.5	P566413	DT-HF4HC-9-14UM, High collapse
Water Absorbing	10 μ m	9	233.5	P569527	Absorbs 250 ml water @ 25 psid

Filter Notes

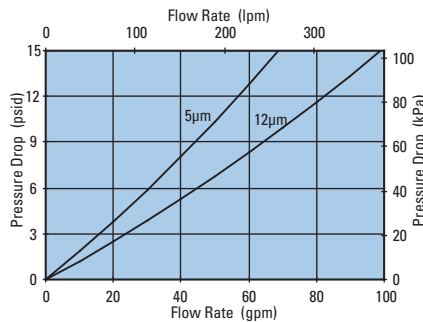
- All Donaldson DT filters utilize glass fiber media with an epoxy-based resin system for the ultimate in chemical compatibility.
- All Donaldson DT filters are potted with epoxy-based adhesives.
- Standard collapse DT designs are double wire-backed using epoxy-coated steel mesh for maximum pleat support and dirt capacity.
- High collapse designs are double wire-backed using stainless steel mesh.
- High collapse designs are also potted into machined aluminum end caps for greater filter integrity in critical applications.
- Viton® seals are standard on all Donaldson DT filters. Viton® is a registered trademark of E. I. DuPont de Nemours and Company.

Performance Data

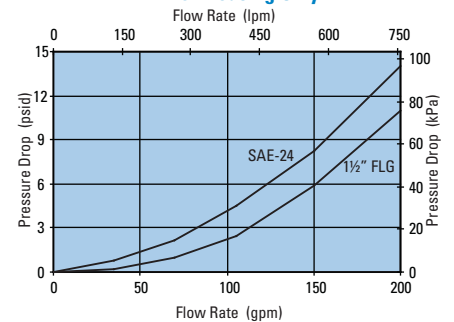
W451 9" DT Filter Only
DT-HF-9, 9.13"/231.8mm



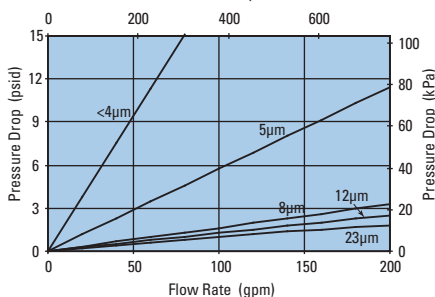
W451 9" DT High Collapse Filter Only
DT-HF4HC-9, 9.19"/233.5mm



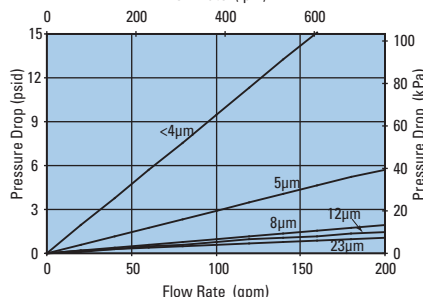
W451 Housing Only



W451 18" DT Filter Only
DT-HF4-18, 18.20"/462.3mm



W451 27" DT Filter Only
DT-HF4-27, 27.66"/702.5mm





W451

Max Flow: 150 gpm (568 lpm)



Housing Ordering Guide

Filter Assembly	W451 TABLE 1	1 TABLE 2	D TABLE 3	4 TABLE 4	J N TABLE 5	B TABLE 6	3 TABLE 7
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Service Filter
Filters ordered separately. See previous page for filter options.

LEAD TIME NOTE:

This product is configured with the specifications and features of your choice. Please contact your Donaldson sales representative for lead time details.

Table 1

Filter Assembly	
CODE	DESCRIPTION
W451	Assembly

Table 2

Filter Collapse Options	
CODE	DESCRIPTION
1	150 psid for housing w/bypass valve
4	3000 psi for housing w/o bypass valve

Table 3

Port Size Options	
CODE	PORT SIZE
D	SAE-24 O-ring
E	1½" 4-Bolt Flange Code 61
R	1½" 4-Bolt Flange Code 62
S	Manifold Mounting

Table 4

Bypass Setting Options	
CODE	BYPASS SETTING
1	Non-bypass
4	50 psid
6	90 psid

Note: Use option 1 code only with 3000 psid collapse filter.

Table 5 (Primary)

Indicator Style and Setting	
CODE	ΔP INDICATOR STYLE & SETTING
A	Visual indicator 70 psid w/TL and surge
B	Electrical/visual 70 psid w/TL and surge
D	Electrical/visual 35 psid
E	Electrical/visual 100 psid
G	Electrical/visual 35 psid w/TL
I	Visual indicator 70 psid
J	ΔP indicator plug
L	Visual indicator 35 psid
M	Visual indicator 35 psid w/ TL and surge
N	Electrical/visual 35 psid w/12" 3-wire flying lead
O	Visual indicator 100 psid
P	Visual indicator 100 psid w/TL and surge
R	Electrical switch 35 psid
S	Electrical/visual 100 psid w/12" 3-wire flying lead
T	Electrical switch 100 psid
U	Electrical switch 70 psid
W	Electrical/visual 100 psid w/TL
Y	Electrical/visual 35 psid w/TL and surge
Z	Electrical/visual 100 psid w/TL and surge

TL (thermal lockout)

METRIC PORTING AVAILABLE

Change W451 to G451
Porting code D becomes 1-1/2" ISO 228 BSPP
Porting code E becomes 1-1/2" SAE 4 bolt flange with M12 mounting threads
Porting code R becomes 1-1/2" SAE 4 bolt flange with M16 mounting threads

Table 5 (Secondary)

Receptacle Options	
CODE	ELECTRICAL STYLE
B	Brad Harrison® (5-pin)
H	Hirschmann® (4-pin)
N	None, for visual ΔP indicator

Table 6

Seal Options*	
CODE	MATERIAL
B	Buna-N®
V	Viton®

*For certain application requirements, E.P.R. seals may be available. Contact your Donaldson representative for more details.

Table 7

Assembly & Filter Length	
CODE (LGTH)	FILTER LENGTH
3 (15.31")	9.0"
6 (24.70")	18.0"*
7 (34.00")	27.0"

Note: Code lengths 6, 7 & 8 media filters may be stacked using connector part # P167324.

Media Ratings

Western Filter elements have been replaced by Donaldson DT high-performance cartridges.

WESTERN MEDIA CODE	DONALDSON DT MEDIA
03	5μm DT Synteq Synthetic
05	8μm DT Synteq Synthetic
10	12μm DT Synteq Synthetic
20	23μm DT Synteq Synthetic

For a complete filter interchange, visit crossreference.donaldson.com.

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