Bulk Diesel Filter

**Coalescing Elements Patent-Pending*

BDF

16-32 gpm
60-120 L/min

150 psi
10 bar

Applications


POINT OF USE FUEL DISPENSING


FLEET FILL / BULK FUEL TRANSFER


BULK FUEL UNLOADING


PROTECTION FOR HIGH-FLOW FUEL INJECTION SYSTEMS


BULK TANK KIDNEY LOOP / RECIRCULATION

Features and Benefits

- Designed with integrated particulate removal pre-filtration for maximum coalescing filter element life in the down stream housing
- Routine element change is only needed on KL3 particulate filter which saves time and money
- Particulate filtration at 1 or 3 microns utilizing Excel-ZPlus® synthetic Z-Media® element for contamination control
- Optional electrical Dirt Alarm® with, amber colored, particulate element change indicator light
- Patent-pending, three-phase, particulate and fuel/water separation media technology
- A revolutionary element designed for the highest single-pass water and particulate removal efficiencies in today's ultra-low sulfur diesel (ULSD) fluids
- Protects expensive Tier 3 and Tier 4 engine components against failures caused by particulate and water transferred from the bulk fuel tank to the vehicle
- Allows users to achieve or exceed the particulate and water removal specifications of the injection system OEMs
- Previously acceptable industry standard products no longer provide the high-efficiency separation needed in today's ULSD fluids
- Housing design allows for field upgrade of any available option
- Schroeder Anti-Static Pleat Media (ASP®) is standard for all coalescing elements
- Bypass indication for the coalescing ICF filter at 36 psi, with bypass cracking at 40 psi, and for the KL3 particulate filter bypass indication at 25 psi with bypass cracking at 30 psi, allows for early indication before by-pass of filter for advanced time for maintenance
- Complete automation is achievable with a water and fuel sensor and fail-safe auto-drain feature using a remote 5 gallons (18L) or 20 gallons (75L) sump with alarm and auto shutdown in application >32°F (0°C)
- Easy mounting and element service


Model no. of filter in photograph is: BDF1VS16LEEP


Model no. of filter in photograph is: BDF2VS16LEEP

Markets


INDUSTRIAL


MOBILE VEHICLES


MARINE


MINING TECHNOLOGY


AGRICULTURE


POWER GENERATION


COMMON RAIL INJECTOR SYSTEMS


FLEET


RAILROAD

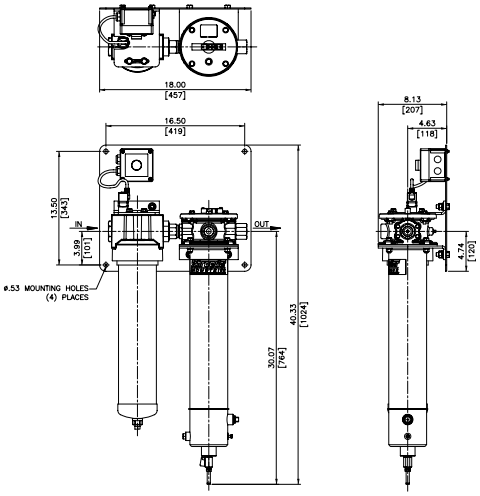

BULK FUEL FILTRATION

BDF Bulk Diesel Filter

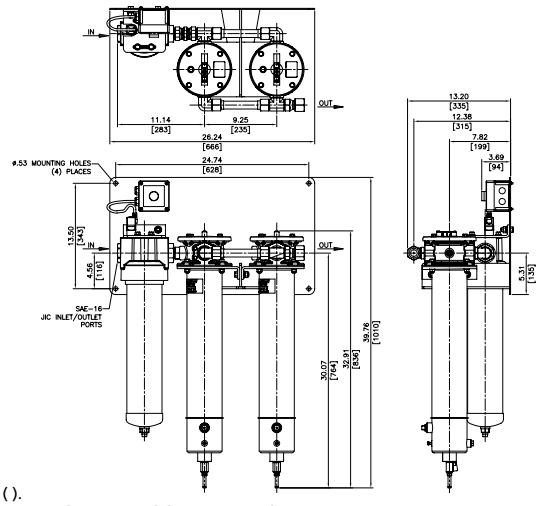
Filter Housing Specifications

Flow Rating:	BDF1: up to 16 gpm (60 L/min) BDF2: up to 32 gpm (120 L/min)	
Inlet/Outlet Connection:	-16 (ORB) SAE J1926	
Max. Operating Pressure:	150 psi (10 bar)	
Min. Yield Pressure:	450 psi (31 bar)	
Temp. Range:	-20°F to 165°F (-29°C to 74°C) w/ optional water sump heater 32°F to 165°F (0°C to 74°C) standard with AWD options	
Bypass Indication:	Particulate Filter 25 psi (1.7 bar)	Coalescing Filter 36 psi (2.5 bar)
Bypass Valve Cracking:	Particulate Filter 30 psi (2.1 bar)	Coalescing Filter 40 psi (2.8 bar)
Materials of Construction:	Particulate Filter Porting Head/Cap: Cast Aluminum Element Bowl: Steel	Coalescing Filter Aluminum - Coating Option see Box 8 Element Bowl: Epoxy Paint w/ High-phos Electroless Nickel Plating (Standard)
Weight:	BDF1: 46 lbs	BDF2: 78 lbs
Element Change Clearance:	Particulate Filter 2.50" (64 mm)	Coalescing Filter With mounting bracket - 18" (457.2 mm) - Access from top (remove cap) Without mounting bracket - Access from below 2.5" (63.5 mm) (remove bowl)
Housing Sump:	32 oz (95 L)	
Optional Water Sump Heater:	120VAC, 1 x 235W (BDF1) / 2 x 235W (BDF2)	
Optional Remote Mount Visual Electrical Indicator:	120VAC	

BDF1



BDF2



Metric dimensions in ( ).
Dimensions shown are inches [millimeters] for general information and overall envelope size only.
For complete dimensions please contact Schroeder Industries to request a certified print.

Filtration Ratio per ISO 16889
Using APC calibrated per ISO 11171

Particulate Elements	DHC	β_x (c) ≥ 200	β_x (c) ≥ 1000
KKZ1V	224 grams	<4.0	4.2
KKZ3V	230 grams	<4.0	4.8

Coalescing Elements	Pressure Side Coalescing	
	Max Flow	Single Pass Water Removal Efficiency
C184Z5V	16 gpm	≥ 99.5%
C184Z3V	16 gpm	≥ 99.5%

Particulate Element
Flow Direction: Outside In
Element Nominal Dimensions: 4.0" (102 mm) O.D. x 18.5" (470 mm) long

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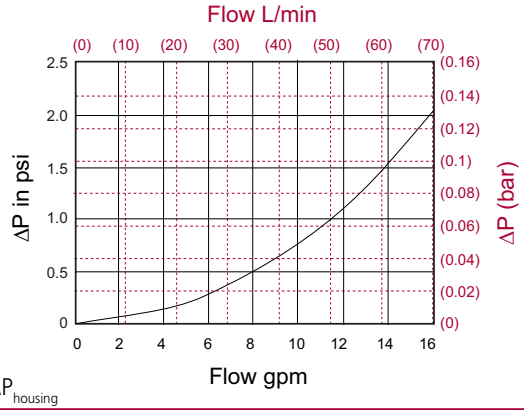
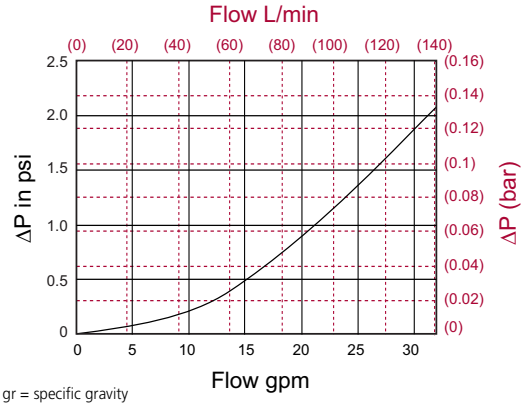
$\Delta P_{housing}$

BDF1 $\Delta P_{housing}$ for fluids with sp gr= 0.86



$\Delta P_{housing}$

BDF2 $\Delta P_{housing}$ for fluids with sp gr= 0.86



sp gr = specific gravity

Notes

$\Delta P_{element}$

$\Delta P_{element}$ = flow x element ΔP factor x viscosity factor

El. ΔP factors @ 37 SUS (3 cSt).

C184Z3V = 0.2 C184Z5V = 0.2

KKZ1V = 0.02

KKZ3V = 0.01

If working in units of bars & L/min, divide above factor by 54.9.

Viscosity factor: Divide viscosity by 37 SUS (3 cSt).

$\Delta P_{filter} = \Delta P_{housing} + \Delta P_{KKZ} + \Delta P_{C18}$

Exercise: Determine ΔP at 12 gpm (45 L/min) for BDF1VS16LVMEP Using (KKZ1)

Solution:

$\Delta P_{housing}$ = 1.1 psi = [0.08 bar]

$\Delta P_{element\ (KKZ1)}$ = 12 x 0.02 = .24 psi [.02 bar]

$\Delta P_{element\ (C184Z5V)}$ = 12 x 0.2 = 2.4 psi [.17 bar]

ΔP_{total}= 1.1 + 2.4 +.24 = 3.74 psi [.26 bar]

$\Delta P_{filter} = \Delta P_{housing} + \Delta P_{KKZ} + \Delta P_{C18}$

Exercise: Determine ΔP at 30 gpm (114 L/min) for BDF2VS16LVMEP Using (KKZ3)

Solution:

$\Delta P_{housing}$ = 1.8psi = [0.12 bar]

$\Delta P_{element\ (KKZ3)}$ = 30 x 0.01 = 0.3 psi [.02 bar]

$\Delta P_{element\ (C184Z5V)}$ = (30/2) x 0.2 = 15 x 0.2 = 3 psi [.21 bar]

ΔP_{total}= 1.8 + 0.3 + 3 = 5.1 psi [.35 bar]

Note:
Based on ULSD15 with 17 Dynes/cm surface tension and 0.25% (2500 ppm) water injection. Discharge water concentration of <100 ppm free and emulsified water.

BDF Bulk Diesel Filter

Filter Model Number Selection

How to Build a Valid Model Number for a Schroeder BDF housing without element:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	BOX 10	BOX 11
BDF										

Example: *NOTE:*

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	BOX 10	BOX 11	
BDF	1	V	S16	L	VM		EP				= BDF1VS16LVMEP

BOX 1 — Filter Series

BDF

BOX 2 — Flow rate & number of Coalescing Housings

1 = 16 gpm

2 = 32 gpm

BOX 3 — Housing Seal Material

V = Viton®

BOX 4 — Porting

S16 = -16 (ORB) SAE J1926

BOX 5 — Coalescing Element Change Indicator

L = In cap bar indicator

BOX 6 — KL3 Dirt Alarm® Option

VM = Visual Pop-up w/. Manual Reset (standard)

E = MS5 Electrical Indicator with Amber Light in NEMA4X box (option)

BOX 7 — Filter Housing Sump Level Indicator Option

S = Sight Glass

I = Water In Fuel probe w/ light indicator

Omit = None

BOX 8 — ICF Coating Options

EP = Epoxy Coated Bowl (standard)

A = Anodized Cap & Head (optional)

BOX 9 — Heating Option

H = Filter Sump Heater

Omit = None

BOX10 — Automatic Drain & Remote Sump Option

AWD5 = Auto water drain 5 gal tank w/ failsafe (only offered for applications above 32°F (0°C) and units ordered without heater

AWD20 = Auto water drain 20 gal tank w/ failsafe (only offered for applications above 32°F (0°C) and units ordered without heater

Omit = None

BOX 11 — Optional Sump for Manual Drain

S5 = 5gal sump tank

S20 = 20gal sump tank

Omit = None

NOTES:

Unless automatic drain option is specified, ICF unit will come standard with manual drain

Particulate and Coalescing element sold separately and selected below

Box 3. Viton® is a registered trademark of DuPont Dow Elastomers

Box 6. If MS5 electrical indicator is selected, heater (in Box 9) must be selected as well.

Box 7 and 8. Only two boxes that allow combination of options (S + I or EP + A)

Box 9. Filter sump heater option only available when ordered w/out automatic water drain (AWD5 or AWD20)

Box 10. AWD fail safe is shown on page 25 (ICF)

Element Part Number Selection

Highlighted product eligible for QuickDelivery

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Fluid Compatibility

Fuel Oils

- ULSD15, low sulfur diesel and high sulfur diesel
- Biodiesel blends
- Synthetic diesel and blends
- No. 2 fuel oil and heating oil