

# Bulk Diesel Multi-Skid

\*Coalescing Elements Patent-Pending

# BDS2

## 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

70-140 gpm <sup>ICF</sup>

248-530 L/min <sup>BDF</sup>

100 psi <sup>B DFA</sup>

7 bar

BDA

QCF

BDS

**BDS2**

BDS3

BDS4

LVH-F

LVH-C

BDFC

BDC

HDP

HDPD

EPM

EPTT

EWU

BCC

## Features and Benefits

- Designed with integrated particulate removal pre-filtration for maximum coalescing filter element life in the downstream housing
- Sized for higher flows or highly contaminated fluid applications
- Routine element change is only needed on pre-filter (the particulate filter) which saves time and money
- 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
- In applications >32°F (0°C) complete automation is achievable with a water in fuel sensor fail-safe auto-drain feature using a remote 5 gallon (18L) or 20 gallon (75L) sump with alarm and auto shutdown
- Schroeder Anti-Static Pleat Media (ASP®) is standard for all coalescing elements



Model no. of filter in photograph is:  
BDS239QPMLZ3VVM

## Markets



INDUSTRIAL



MOBILE  
VEHICLES



MARINE



MINING  
TECHNOLOGY



AGRICULTURE



POWER  
GENERATION



COMMON RAIL  
INJECTOR SYSTEMS



FLEET



RAILROAD



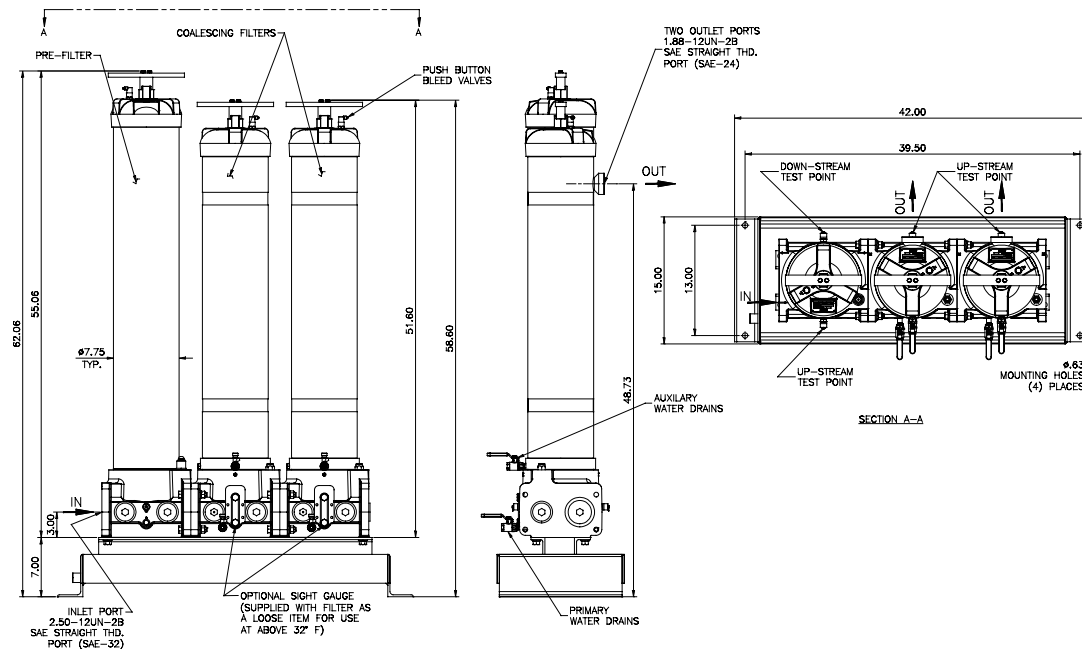
BULK FUEL  
FILTRATION

## Filter Housing Specifications

Flow Rating:	Up to 140 gpm (530 L/min) for ULSD15	
Inlet/Outlet Connection:	-32 (ORB) SAE J1926	
Drain Connection Upper:	1/4" NPT Ball Valve	
Drain Connection Lower:	1/4" NPT Ball Valve	
Max. Operating Pressure:	100 psi (7 bar)	
Min. Yield Pressure:	400 psi (27.6 bar) without sight gauge Contact factory for yield pressure rating with sight gauge	
Rated Fatigue Pressure:	Contact Factory	
Temperature range:	-20°F to 165°F (-29°C to 74°C) sump heater option 32°F to 165°F (0°C to 74°C) standard or AWD option	
Bypass Indication:	<u>Particulate Filter</u> (Lower indication options available) Particulate: 15 psi (1.03 bar)	<u>Coalescing Filter</u> Coalescing: 25 psi (1.7 bar)
Bypass Valve Cracking:	<u>Particulate Filter</u> Particulate: 20 psi ( 1.37 bar)	<u>Coalescing Filter</u> Coalescing: 30 psi ( 2 bar)
Materials of Construction:	<u>Particulate Filter</u> Porting Base: Anodized Aluminum  Element Bowl: Epoxy Paint w/ High-phos Electroless Nickel Plating (Standard)  Cap: Plated Steel	<u>Coalescing Filter</u> Porting Base: Anodized Aluminum  Element Bowl: Epoxy Paint w/ High-phos Electroless Nickel Plating (Standard)  Cap: Plated Steel
Weight:	596 Lbs. (270 kg)	
Element Change Clearance:	33.8" (858 mm)	

### NOTES:

Element are sold with the housing



Metric dimensions in ( ).

Filtration Ratio per ISO 16889  
Using APC calibrated per ISO 11171

Particulate Elements	DHC	$\beta_x (c) \geq 200$	$\beta_x (c) \geq 1000$
39QPMLZ1V	1485 grams	<4.0	4.2
39QPMLZ3V	1525 grams	<4.0	4.8

Coalescing Element	Pressure Side Coalescing	
	Max Flow	Single Pass Water Removal Efficiency
C396Z5V	70 gpm	$\geq 99.5\%$

Note:  
Based on ULSD15 with 27 Dynes/cm surface tension and 0.25% (2500 ppm) water injection

### Particulate Element

Flow Direction: Outside In  
Element Nominal Dimensions: 6.0" (150 mm) O.D. x 37.80" (960 mm) long

### Coalescing Element

Flow Direction: Inside Out  
Element Nominal Dimensions: 6.4" (163 mm) O.D. x 39.4" (1001 mm) long

Element  
Particulate  
Performance  
Information

Element  
Coalescing  
Performance  
Information  
Elements Sold  
with Housing

Highlighted  
product eligible for  
**QuickDelivery**

ICF

BDF

BDFA

BDA

QCF

BDS

BDS2

BDS3

BDS4

LVH-F

LVH-C

BDFC

BDC

HDP

HDPD

EPM

EPTT

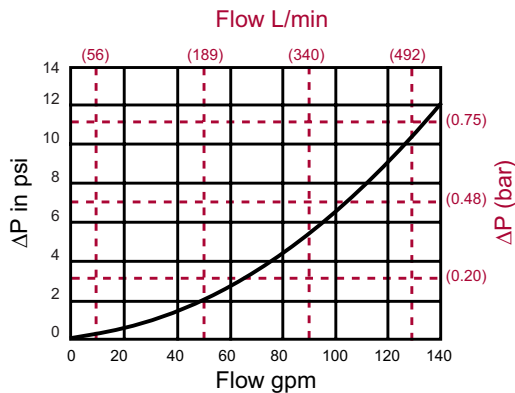
EWU

BCC

Pressure  
Drop  
Information  
Based on  
Flow Rate  
and  
Viscosity

$\Delta P_{\text{housing}}$

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



sp gr = specific gravity

### Notes

$\Delta P_{\text{element}}$

$\Delta P_{\text{element}} = \text{flow} \times \text{element } \Delta P \text{ factor} \times \text{viscosity factor}$

El.  $\Delta P$  factors @ 37 SUS (3 cSt).

C396Z5V = .17

39QPMLZ1V = .01

39QPMLZ3V = .01

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

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

$$\Delta P_{\text{filter}} = \Delta P_{\text{housing}} + \Delta P_{\text{element}}$$

**Exercise:** Determine  $\Delta P$  at 70 gpm (265 L/min) for BDS239QPMLZ3VVM

### Solution:

$$\Delta P_{\text{housing}} = 3.0 \text{ psi} = [0.21 \text{ bar}]$$

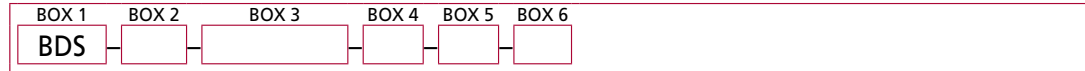
$$\Delta P_{\text{element (39QPML)}} = 70 \times 0.01 = 0.7 \text{ psi} [0.05 \text{ bar}]$$

$$\Delta P_{\text{element (C396)}} = 70 \times 0.17 = 11.9 \text{ psi} [0.82 \text{ bar}]$$

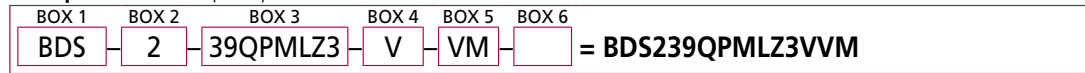
$$\Delta P_{\text{total}} = 3.0 + 0.7 + 11.9 = 15.6 \text{ psi} [1.07 \text{ bar}]$$

## Filter Model Number Selection

### How to Build a Valid Model Number for a Schroeder BDS Housing Supplied with Element:



**Example:** NOTE: One option per box



BOX 1	BOX 2	BOX 3	BOX 4
<b>Filter Series</b>	<b>No. of Coalescing Filters</b>	<b>Particulate Filter Micron Rating</b>	<b>Housing Seal Material</b>
BDS	2 = 140gpm	39QFMLZ1 = 1µm 39QFMLZ3 = 3µm	V = Viton®
BOX 5	BOX 6		
<b>Dirt Alarm®</b>	<b>Sump Options</b>		
VM = Visual Pop-Up w/ Manual Reset	Omit = None (standard) H = Sump Heater S = Sight Gauge AWD5 = Auto water drain 5 gal tank w/ failsafe AWD20 = Auto water drain 20 gal tank w/ failsafe C = Cla-Val® Flow Control Valve (2" ANSI 150# flange)		

#### NOTES:

Optional AWD for use only >32° F (0°C)

Box 4. Viton® is a registered trademark of DuPont Dow Elastomers

## 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