Specification Sheet

Fire Pump Drive Engine

CFP7EI-F45
CFP7EIVS F45

Description

Engine Series - Cummins QSB6.7
Exhaust Emissions - EPA Tier 3

When performance matter, we take notice. Our engines are an assurance of safety specifically designed to fit your needs. The Cummins CFP7EI fire pump drive engine features a cast-iron paren bore block structurally designed to reduce noise and increase durability.

Features

Control System - The industry-leading, state-of-the-art Fire Pump Digital Panel (FPDP) provides total fire pump drive engine system intefration and intuitive operation, including :

- Color touchscreen ;
- Dual microprocessors for critical signal redundancy ;
- Standard J1939 parameter and Cummins fault code display;
- Engine idling
- Electronic Contorl Module (ECM) self-diagnosis; and
- Optional Modbus protonode remote messaging capability

Variable Speed Pressure Limiting Control (VSPLC) - Cummins VSPLC-equipped fire pump drive engines are capable of maintaining a constant pump discharge pressure by controlling the engine speed down to 1200 RPM, while still maintaining T3

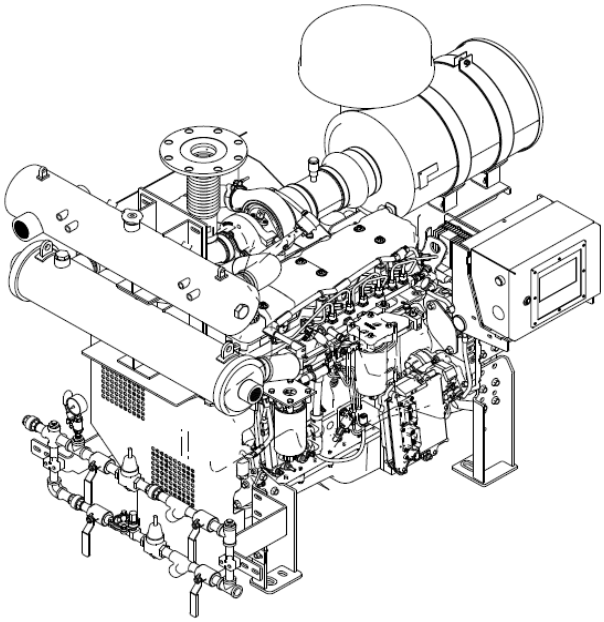
emissions certification. VSPLC fire pump drive engines provide design flexibility in the fire pump system for high-rise applications; compensate for varying discharge pressure; allow the system architect to apply a larger pump and/or a pump with a steeper curve; and significantly reduce water consumption during the weekly test.

Warranty and Service - Our models are backed by a comprehensive warranty and worldwide distributor network.

Certified Power - The CFP7EI-F45 complies with NFPA 20 and is UL 1247-listed and FM 1333-approved. The CFP7EIVS-F45 complies with NFPA 20 and is FM 1333-approved

Ratings in HP (kW)

Operating Speed (RPM)	**2800**		**3000**	
CFP7EI-F45	231	(172)	234	(174)
CFP7EIVS - F45	231	(172)	234	(174)



General Engine Data

Engine Family	Industrial
Engine Type	4 Cycle; In-Line, 6 Cylinder
Aspiration	Turbocharged and Charge-Air Cooled
Bore & Stroke - in. (mm)	4.21 x 4.88 in. (107 x 124 mm)
Diplacement - in3 (litre)	409 in^3 (6.7 L)
Rotation	Counterclockwise from flywheel end
Compression Ratio	17.2 : 1
Valves Per Cylinder	Intake - 2 Exhaust - 2
Fuel System	Bosch Electronic Common Rail
Maximum Allowable Bending Moment @ Rear Face of Block	1000 lb.-ft. (1356 N-m)
Estimated Wet Weight*	870 kg

* Weight includes engine, cooling loop, heat exchanger, dual Electronic Control Modules (ECMs), Fire Pump Digital Panel (FPDP) standard air cleaner, standard exhaust flex, and all fluids

Equipment	Standard	Optional
Air Cleaner	Disposable; treated for high humidity, indoor service, Heavy-duty, two-stage with replaceable elements	
Alternator	12V-DC, 95 amps; includes belt guard	
Cooling Loop (Max. Pressure of 300 PSI)	3/4” diameter for fresh water; includes alarm sensors and FM-approval	1” diameter for fresh water; includes alarm sensors and FM-approval
Cooling System	Tube and shell type, 60 PSI with NPTF connections	
Engine Heater	240V-AC, 1500 watts	
Exhaust Protection	Metal guards on manifolds and turbocharger	
Exhaust Flex. Connection	Steel, flanged	
Flywheel Power Take-off	Flywheel	Driveshaft system, stub shaft [1]
Fuel Connections	Fire-resistant flexible supply and return lines	
Fuel Filter	Primary and secondary	
Governor, Speed	Constant speed, adjustable	VSPLC[2]
Fire Pump Digital Panel 9FPDP)	7” color touchscreen; enclosure rated as Type 2/Type 4X; Imperial and metric values	
Lube Oil Cooler	Engine-water-cooled, plate type	
Lube Oil Filter	Full-flow with by-pass valve	
Lube Oil Pump	Gear-driven	
Manual Start Controls	On FPDP and/or contactors	
Overspeed Controls	Electronic with reset and test on FPDP	
Starter	12V-DC	

[1] Not UL-listed and not FM-approved.

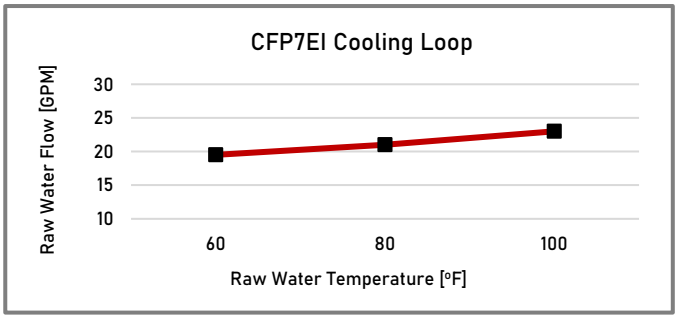
[2] FM-approved, but not UL-listed.

Air Induction System		
Max. Temperature Rise Between Ambient Air and Engine Air Inlet – delta °F(delta °C)	30°F	(16.7°C)
Maximum Inlet Restriction with Dirty Filter – in.H_2O (mm H_2O)	25	(635)
Recommended Air Cleaner Element – (Standard)	AH1196	
Recommended Air Cleaner Element – (Heavy Duty)		

Lubrication System		
Oil Pressure Range at Rated – PSI (kPa)	40 - 70	(276 - 414)
Oil Capacity of Pan (High – Low) – U.S. gal (litre)	15 - 13	(14 - 16)
Total System Capacity – U.S. Gal (litre)	4	(15)
Recommeded Lube Oil Filter (Cummins)	LF 3970	(3401544)

Cooling System		
Raw Water Working Pressure Range at Heat Exchanger (Max) – PSI (kPa)	60	(414)
Recommended Min. Water Supply Pipe Size to Heat Exchanger – in. (mm)	1	(25.4)
Coolant Water Capacity (Engine Side) – U.S.gal. (litre)	3.75	(14)
Standard Thermostat - Type	Modulating	
- Range – deg F (deg C)	180 - 199 (82 - 93)	
Minimum Raw Water Flow		
with Water Temperature to 60 °F (16 °C) – U.S. GPM (litre/s)	24	(1.5)
with Water Temperature to 80 °F (27 °C) – U.S. GPM (litre/s)	25.5	(1.6)
with Water Temperature to 100 °F (38 °C) – U.S. GPM (litre/s)	27	(1.7)
Selection of Cooling loop size, if raw water inlet pressure - in. (mm)	1	(25.4)

A jacket water heater is mandatory on this engine. The recommended heater wattage is 1500 down to 40°F (4 °C)



Exhaust System		
Max. Back Pressure Imposed by Complete Exhaust System - in. H_2O (kPa)	40.8	(10.2)
Exhaust Pipe Size Normally Acceptable – in. (mm)	4	(101.6)

Exhaust Emission

Exhaust emission complied to **EPA Tier 3**

Noise Emission

The noise emission values are estimated sound pressure levels at 3.3 ft. (1 m)

Top	100 dBa
Right Side	100 dBa
Left Side	102 dBa
Front Side	101 dBa

Fuel Supply / Drain System

Fuel Consumption

Operating Speed in RPM		2800	3000
CFP7EI-F45	Gal / hr (L/hr)	15.0 (56.8)	15.7 (59.4)

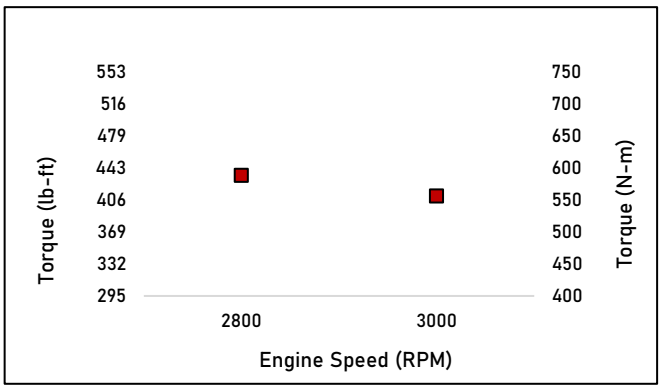
Fuel Type	No. 2 Diesel Only	
Minimum Supply Line Size – in. (mm)	0.5	(12.7)
Minimum Drain Line Size – in. (mm)	0.375	(9.5)
Maximum Fuel Height above C/L Fuel Pump in (m)	360	(9.1)
Recommended Fuel Filter Primary (Fleetguard – Cummins)	FF 5612	4989106
Secondary	FS 1212	3315843
Maximum Restriction @ Lift Pump – Inlet – With Clean Filter – in. Hg (mm Hg)	5	(127)
Maximum Restriction @ Lift Pump -Inlet – With Dirty Filter – in. Hg (mm Hg)	10	(254)
Maximum Return Line Restriction – Without Check Valve – in. Hg (mm Hg)	5.9	(149.9)
Minimum Fuel Tank Vent Capability – ft^3/hr (m^3/hr)	7.1	(0.2)
Maximum Fuel Temperature @ Lift Pump Inlet – ^oF (^oC)	158	(70)

Starting and Electrical System	**12 V**
Min. Recommended Batt. Capacity – Cold Soak at 0^{o}F (-18 ^{o}C) or Above	
Engine Only – Cold Cranking Amperes – (CCA)	1400 CCA
Engine Only - Reserve Capacity - Minutes	430
Battery Cable Size (Maximum Cable Length Not to Exceed 5 ft. [1.5m] AWG)	2/0
Maximum Resistance of Starting Circuit – Ohms	0.001
Typical Cranking Speed – RPM	120
Alternator (Standard), Internally Regulated – Ampere	95
Wiring for Automatic Starting (Negative Ground)	Standard
Reference Wiring Diagram	A042J122

Engine Performance Curve for CFP7EI-F45 and CFP7EVS-F45

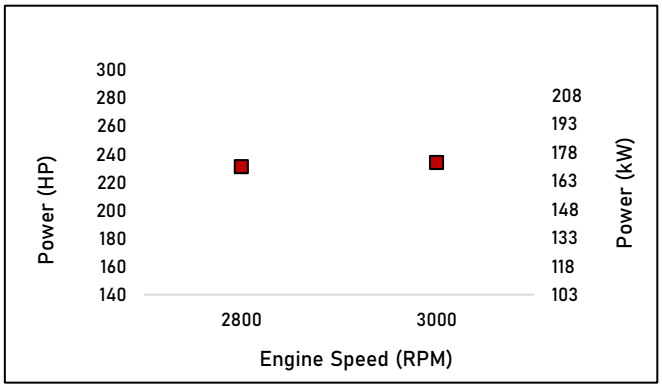
Torque Output

RPM	lb-ft	N-m
2800	433	588
3000	410	556



Horsepower Output

RPM	HP	kW
2800	231	172
3000	234	174



Performance Data

All data is based on the engine operating with fuel system, water pump, lubricating oil pump, air cleaner and alternator ; not included are compressor, fan, optional equipment, and driven components. Data is based on operation at SAE standard J1394 conditions of 300 ft. (91.4m) altitude, 29.61 in. (752 mm) Hg dry barometer, and 77 °F (25°C) intake air temperature, using No. 2 diesel or a fuel corresponding to ASTM-D2

Tolerance within 5 %

Altitude above which output should be limited*	:	300 ft. (91.4 m)
Correction factor per 1000 ft. (305 m) above altitude limit	:	3%
Temperature above which output should be limited	:	77 °F (25 °C)
Correction factor per 10 °F (11 °C) above temperature limit	:	1% (2%)

* Above 5,000 feet, contact Cummins for derate information.

Diesel Fuel Specifications:

- Cetane Number: 40-48
- Reference: ASTM D975 No. 2-D

Reference Conditions

- Air Inlet Temperature: 25 °C (77 °F)
- Fuel Inlet Temperature: 40 °C (104 °F)
- Barometric Pressure: 100 kPa (29.53 in Hg)
- Humidity: 107 g H_2O/kg (75 grains H_2O/lb) of dry air; required for NOx correction
- Intake Restriction set to a maximum allowable limit for clean filter
- Exhaust Back Pressure set to maximum allowable limit

Fire Pump Digital Panel (FPDP)

The Cummins FPDP is an integrated microprocessor-based control system that provides full digital technology with enhanced accuracy and built-in redundancy.

Reliable design - Designed and tested with isolated mounting to minimize vibration for longer life and durability, the Cummins FPDP proves reliable in harsh environments.

Advanced control methodology - The Cummins FPDP allows for Input / Output (I/O) expansion and remote monitoring capabilities, as well as automatic Electronic Control Module (ECM) switching for electronic engines

Certified Quality - The Cummins FPDP is UL 1247-listed and FM 1333-approved.

Operator Panel Features

Operator/Display Panel

- 7” TFT LCD (thin-film-transistor liquid-crystal dis- play) - color, 24-bit, 800x480 (WVGA).
- Auto, manual, start, stop, and fault reset.
- Assembly enclosure that meets Type 2 and Type 4X design requirements and is water, corrosion, fire, and impact resistant.

Electronic Engine Communications - SAE J1939 protocol.

- Comprehensive full-authority engine (FAE) data: oil pressure and temperature; coolant temperature; and intake manifold pressure and temperature.
- Cummins fault code display.
- Sensor failure indication
- Optional RS-485 serial - Modbus® RTU/Modbus® TCP/IP.

Variable Speed Pressure Limiting Control (VSPLC) Capabilities

- Display indicates when VSPLC is active.
- Pump discharge pressure display.
- Ability to run the engine at fixed speed from the FPDP at start-up for commissioning

Other Control Features

- Digital Panel Expansion Module (DPEM) for additional analog/digital inputs and configurable dry relay contact output.
- Ability to idle at start-up for commissioning of electronic engines.
- Idle cool down for electronic engines.
- DC voltage.

Functional

- Configurable display units for temperature in degrees Fahrenheit or Celsius and pressure in PSI or kPa.
- Manual ECM selector switch on electronic engines.
- Ability to crank the fire pump drive engine from Battery A, Battery B, or both.
- Fixed engine speed adjustments in +/- 10 RPM increments.
- Overspeed shutdown.

Environmental

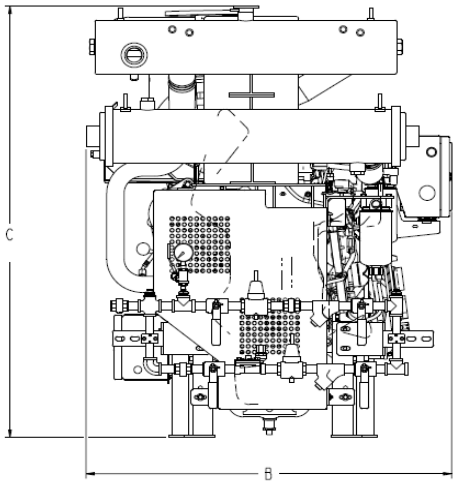
- Operating temperature - 4 to 158 °F (minus 20 to 70 °C).
- Storage temperature - minus 22 to 176 °F (minus 30 to 80 °C).
- Meets CISPR 11 Class B radiated emissions
- Vibration: 7 GPEAK; three-axis

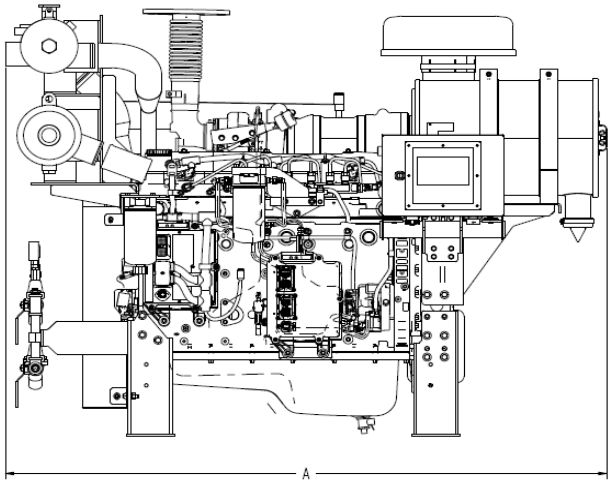
Electrical

- 8-30 VDC operating voltage
- Reverse polarity protected.
- Spring cage terminal block interface.
- Built-in dual micro controllers for increased reliability.

Mechanical

- 1 3/8” pre-cut customer conduit knockout for easy field installation.
- Simplified internal design for efficiency and ease of customer connections.
- 16GA ASTM A366 material - 316 stainless steel optional.
- RAL3001 red powder coat finish.





This outline drawing is for reference only.
Do not use for installation design

	Dimn "A" in. (mm)	Dimn "B" in. (mm)	Dimn "C" in. (mm)
CFP7EI	69 (1753)	42 (1067)	53 (1346)

NOTE: Consult drawings or contact the factory for additional information

ISO 9001 : 2015
IATF - 16949

This product has been manufactured under the controls established by an IATF Certification approved management system that conforms with ISO 9001:2015

NOTE: Codes or standards compliance may not be available with all model configurations - consult factory for availability.
Specifications are subject to change without notice

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