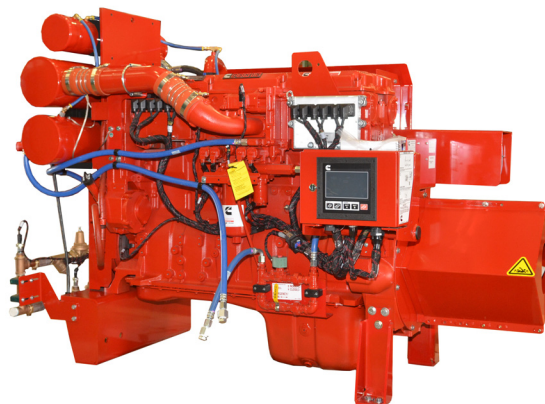




## Specification sheet

# Fire pump drive engine

**CFP15E-F20**  
**CFP15EVS-F20**



## Description

**Engine series** - Cummins QSX 15 Series

**Exhaust emissions** - EPA Tier 3

With advanced electronics, higher torque, and better speed control, the CFP15E allows for shorter service times, longer maintenance intervals, and increased fuel economy. The speed-range tested CFP15E Industrial model with the Variable Speed Pressure Limiting Control (VSPLC) option is the right choice for the heavy duty engine market.

## Features

**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 1400 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.

**Certified power** - The CFP15E-F20 complies with NFPA 20 and is UL 1247 Listed and FM 1333 Approved. The CFP15EVS-F20 complies with NFPA 20 and is FM 1333 Approved.

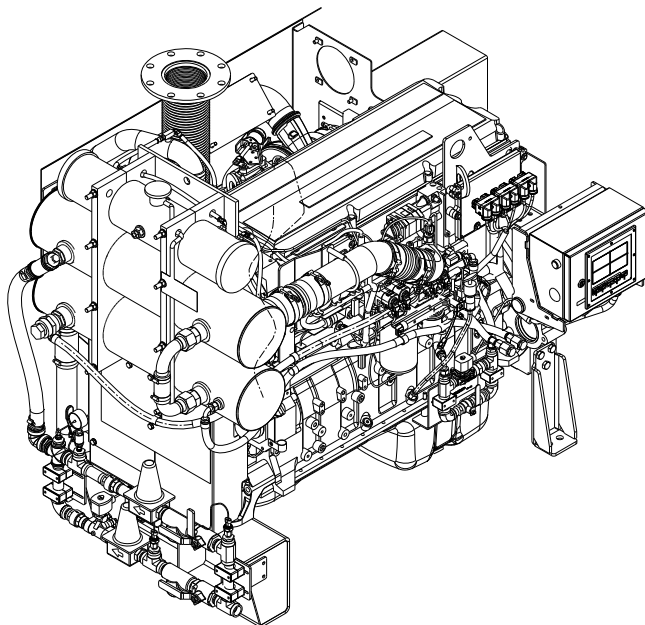
**Control system** - The industry-leading, state-of-the-art Fire Pump Digital Panel (FPDP) provides total fire pump drive engine system integration and intuitive operation, including:

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

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

Ratings in HP (kW) and certifications

| Operating speed (RPM)       | 1470 |       | 1760 |       | 1900 |       | 2100 |       | 2250 |       |
|-----------------------------|------|-------|------|-------|------|-------|------|-------|------|-------|
| CFP15E-F20<br>NFPA, UL & FM | 410  | (306) | 494  | (369) | 524  | (391) | 525  | (392) | 409  | (305) |
| CFP15EVS-F20<br>NFPA & FM   | N/A  |       | 494  | (369) | 524  | (391) | 525  | (392) | 409  | (305) |



### General engine data

|                                                       |                                    |
|-------------------------------------------------------|------------------------------------|
| Engine type                                           | 4 Cycle; In-Line, 6 Cylinder       |
| Aspiration                                            | Turbocharged and Charge-Air Cooled |
| Bore and stroke                                       | 5.39 x 6.65 in. (137 x 169 mm)     |
| Displacement                                          | 915 in <sup>3</sup> (15.0 L)       |
| Rotation                                              | Counterclockwise from flywheel end |
| Compression ratio                                     | 17.0:1                             |
| Valves per cylinder                                   | Intake - 2 Exhaust - 2             |
| Fuel system                                           | High-pressure Injection (HPI)      |
| Maximum allowable bending moment @ rear face of block | 1500 lb.-ft. (2034 N-m)            |
| Estimated wet weight*                                 | 4850 lbs. (2200 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                                 | 24V-DC, 70 amps; includes belt guard                                                | N/A                                                                                   |
| Cooling loop (maximum pressure of 300 PSI) | 1" diameter for fresh water; includes alarm sensors and FM-approval                 | Cu Ni construction available for sea water applications; approved loops up to 1 1/4"  |
| Cooling system                             | Tube and shell type, 60 PSI with NPTF connections                                   | Radiator <sup>1</sup> ; sea water tube and shell                                      |
| Engine heater                              | 120V-AC, 3000 watts                                                                 | 240V-AC, 3000 watts                                                                   |
| Exhaust protection                         | Metal guards on manifolds and turbocharger                                          | N/A                                                                                   |
| Exhaust flex connection                    | Steel, flanged                                                                      | Stainless steel flex, NPT                                                             |
| Flywheel power take-off                    | Flywheel                                                                            | Driveshaft system, stub shaft                                                         |
| Fuel connections                           | Fire-resistant flexible supply and return lines                                     | N/A                                                                                   |
| Fuel filter                                | Primary with priming pump                                                           | N/A                                                                                   |
| Governor, speed                            | Constant speed, adjustable                                                          | VSPLC <sup>2</sup>                                                                    |
| Fire pump digital panel (FPDP)             | 7" color touchscreen; enclosure rated as Type 2/Type 4X; Imperial and metric values | Optional 316SS construction; custom gauges with digital panel expansion module (DPEM) |
| Lube oil cooler                            | Engine-water-cooled, plate type                                                     | N/A                                                                                   |
| Lube oil filter                            | Full-flow with by-pass valve                                                        | N/A                                                                                   |
| Lube oil pump                              | Gear-driven                                                                         | N/A                                                                                   |
| Manual start controls                      | On FPDP and/or contactors                                                           | N/A                                                                                   |
| Overspeed controls                         | Electronic with reset and test on FPDP                                              | N/A                                                                                   |
| Starter                                    | 24V-DC                                                                              | 24V-DC/pneumatic <sup>3</sup> /hydraulic <sup>3</sup>                                 |

<sup>1</sup> Not UL Listed and not FM Approved.

<sup>2</sup> FM Approved, but not UL Listed.

<sup>3</sup> Only approved as a secondary starter

## Air induction system

|                                                                   |                                                              |
|-------------------------------------------------------------------|--------------------------------------------------------------|
| Maximum temperature rise between ambient air and engine air inlet | 30 °F (16.7 °C)                                              |
| Maximum inlet restriction with dirty filter                       | 25 in. H <sub>2</sub> O (635 mm H <sub>2</sub> O)            |
| Recommended air cleaner element - (standard)                      | K&N Serviceable/Disposable RC-3070                           |
| Recommended air cleaner element - (heavy duty)                    | Optional: primary element AF25544; secondary element AF25545 |

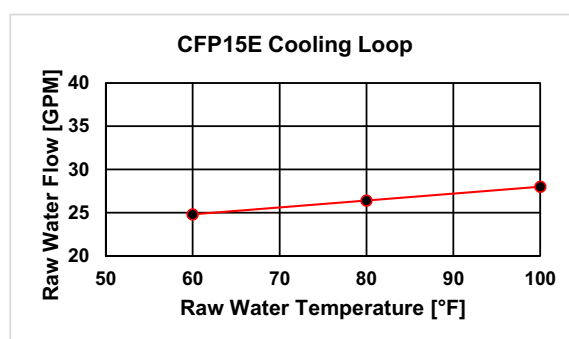
## Lubrication system

|                                  |                           |
|----------------------------------|---------------------------|
| Oil pressure range at rated      | 35-40 PSI (242-276 kPa)   |
| Oil capacity of pan (high - low) | 48-40 qt. (45-38 L)       |
| Total system capacity            | 13 gal. (49 L)            |
| Recommended lube oil filter      | Cummins Filtration LF9000 |

## Cooling system\*

|                                                                   |                           |
|-------------------------------------------------------------------|---------------------------|
| Raw water working pressure range at heat exchanger                | 60 PSI (413 kPa) MAX      |
| Recommended minimum water supply pipe size to heat exchanger      | 1 in. (25.4 mm)           |
| Recommended minimum water discharge pipe size from heat exchanger | 1.25 in. (31.75 mm)       |
| Coolant water capacity (engine only)                              | 13.9 gal. (52.6 L)        |
| Standard thermostat - type                                        | Modulating                |
| Standard thermostat - range                                       | 180-200 °F (82-93 °C)     |
| Normal operating temperature                                      | 180-212 °F (82-100 °C)    |
| Minimum raw water flow:                                           |                           |
| - with water temperatures to 60 °F (16 °C)                        | 24.8 GPM (1.56 L/sec)     |
| - with water temperatures to 80 °F (27 °C)                        | 26.4 GPM (1.67 L/sec)     |
| - with water temperatures to 100 °F (38 °C)                       | 28 GPM (1.77 L/sec)       |
| Recommended cooling water filter                                  | Cummins Filtration WF2126 |

\* A jacket water heater is mandatory on this engine. The recommended heater wattage is 3000 down to 40 °F (4 °C)



## Exhaust system

|                                                            |                                      |
|------------------------------------------------------------|--------------------------------------|
| Maximum allowable back pressure by complete exhaust system | 40.8 in. H <sub>2</sub> O (10.2 kPa) |
| Exhaust pipe size normally acceptable                      | 6 in. (152 mm)                       |

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

|            |           |
|------------|-----------|
| Top        | 97.7 dBa  |
| Right side | 98.3 dBa  |
| Left side  | 99.6 dBa  |
| Front      | 98.9 dBa  |
| Exhaust    | 120.0 dBa |

## Fuel supply/drain system

| Operating speed in RPM                                    | 1470                                            |      | 1760 |      | 1900 |      | 2100 |       | 2250 |      |
|-----------------------------------------------------------|-------------------------------------------------|------|------|------|------|------|------|-------|------|------|
| Fuel rate - gal/hr (L/hr)                                 | 21.4                                            | (81) | 24.1 | (91) | 25.4 | (96) | 26.5 | (100) | 21.1 | (80) |
| Fuel type                                                 | No. 2 diesel only                               |      |      |      |      |      |      |       |      |      |
| Minimum supply line size                                  | 0.75 in. (19.05 mm)                             |      |      |      |      |      |      |       |      |      |
| Minimum drain line size                                   | 0.75 in. (19.05 mm)                             |      |      |      |      |      |      |       |      |      |
| Maximum fuel height above C/L fuel pump                   | 105 in. (2.7 m)                                 |      |      |      |      |      |      |       |      |      |
| Recommended fuel filter - primary                         | Cummins Filtration FS1041                       |      |      |      |      |      |      |       |      |      |
| Recommended fuel filter - secondary                       | None                                            |      |      |      |      |      |      |       |      |      |
| Maximum restriction @ lift pump-inlet - with clean filter | 6.0 in. Hg (152 mm Hg)                          |      |      |      |      |      |      |       |      |      |
| Maximum restriction @ lift pump-inlet - with dirty filter | 10.0 in. Hg (254 mm Hg)                         |      |      |      |      |      |      |       |      |      |
| Maximum return line restriction - without check valves    | 9 in. Hg (229 mm Hg)                            |      |      |      |      |      |      |       |      |      |
| Minimum fuel tank vent capability                         | 70 ft <sup>3</sup> /hr (2.1 m <sup>3</sup> /hr) |      |      |      |      |      |      |       |      |      |
| Maximum fuel temperature @ lift pump inlet                | 160 °F (71 °C)                                  |      |      |      |      |      |      |       |      |      |

## Starting and electrical system

|                                                                                              |              |
|----------------------------------------------------------------------------------------------|--------------|
| Minimum recommended battery capacity - cold soak at 0 °F (-18 °C) or above                   | 24V          |
| Engine only - cold cranking amperes                                                          | 1400 CCA*    |
| Engine only - reserve capacity                                                               | 430 minutes* |
| *Based on FM requirement for a minimum of 900 CCA and 430 reserve capacity minutes           |              |
| Battery cable size - minimum of 2/0 AWG and maximum cable length not to exceed 6 ft. (1.5 m) | 24V          |
| Maximum resistance of starting circuit                                                       | 0.002 Ohms   |
| Typical cranking speed                                                                       | 100 RPM      |
| Alternator (standard), internally regulated                                                  | 70 amps      |

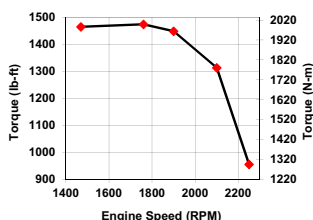
## Operating conditions

| Operating speed in RPM                     | 1470 |        | 1760 |        | 1900 |        | 2100 |        | 2250   |        |
|--------------------------------------------|------|--------|------|--------|------|--------|------|--------|--------|--------|
| Output - BHP (kW)                          | 410  | (306)  | 494  | (369)  | 524  | (391)  | 525  | (392)  | 409    | (305)  |
| Ventilation air required - CFM (litre/sec) | 1018 | (480)  | 1258 | (594)  | 1382 | (652)  | 1515 | (715)  | 1590.8 | (751)  |
| Exhaust gas flow - CFM (litre/sec)         | 2620 | (1237) | 2991 | (1412) | 3188 | (1505) | 3474 | (1640) | 3647.7 | (1722) |
| Exhaust gas temperature - °F (°C)          | 1025 | (552)  | 1025 | (552)  | 1025 | (552)  | 1025 | (552)  | 1025   | (552)  |
| Heat rejection to coolant - BTU/min. (kW)  | 6683 | (117)  | 7303 | (128)  | 7954 | (140)  | 8789 | (154)  | 8877   | (156)  |
| Heat rejection to ambient - BTU/min. (kW)  | 1495 | (26)   | 1721 | (30)   | 2124 | (37)   | 2071 | (36)   | 2050   | (36)   |

## Engine performance curve for CFP15E-F20

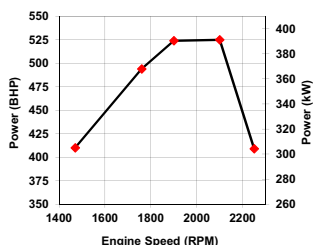
**Torque Output**

| RPM  | lb-ft | N-m  |
|------|-------|------|
| 1470 | 1465  | 1986 |
| 1760 | 1474  | 1999 |
| 1900 | 1448  | 1964 |
| 2100 | 1313  | 1780 |
| 2250 | 955   | 1294 |



**Horsepower Output**

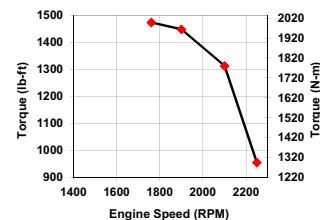
| RPM  | BHP | kW  |
|------|-----|-----|
| 1470 | 410 | 306 |
| 1760 | 494 | 368 |
| 1900 | 524 | 391 |
| 2100 | 525 | 391 |
| 2250 | 409 | 305 |



## Engine performance curve for CFP15EVS-F20

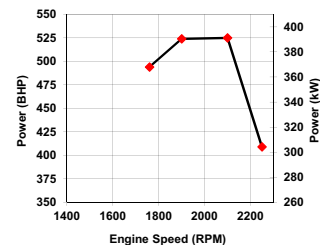
**Torque Output**

| RPM  | lb-ft | N-m  |
|------|-------|------|
| 1760 | 1474  | 1999 |
| 1900 | 1448  | 1964 |
| 2100 | 1313  | 1780 |
| 2250 | 955   | 1294 |



**Horsepower Output**

| RPM  | BHP | kW  |
|------|-----|-----|
| 1760 | 494 | 368 |
| 1900 | 524 | 391 |
| 2100 | 525 | 391 |
| 2250 | 409 | 305 |



All data is based on the engine operating with a fuel system, water pump, lubricating oil pump, air cleaner, and alternator. The fan, optional equipment, and driven components are not included. Data is based on operation at SAE standard J1349 conditions of 300 ft. (91.4 m) altitude, 29.61 in. (752 mm) Hg dry barometer, and 77 °F (25 °C) intake air temperature, using No.2 diesel fuel only.

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.

## US EPA NSPS Tier 3 Emissions Compliance

| Fuel Percentage of Sulfur | D2 Cycle Exhaust Emissions* |                 |                        |       |       |                   |                 |                        |       |       |
|---------------------------|-----------------------------|-----------------|------------------------|-------|-------|-------------------|-----------------|------------------------|-------|-------|
|                           | Grams per BHP - HR          |                 |                        |       |       | Grams per kW - HR |                 |                        |       |       |
|                           | NMHC                        | NO <sub>x</sub> | NMHC + NO <sub>x</sub> | CO    | PM    | NMHC              | NO <sub>x</sub> | NMHC + NO <sub>x</sub> | CO    | PM    |
| 15 PPM Diesel Fuel        | 0.086                       | 2.565           | 2.651                  | 0.671 | 0.078 | 0.116             | 3.439           | 3.555                  | 0.900 | 0.105 |
| 300-4000 PPM Diesel Fuel  | 0.104                       | 2.781           | 2.886                  | 0.671 | 0.089 | 0.14              | 3.730           | 3.870                  | 0.900 | 0.120 |

\*The emissions values above are based on CARB approved calculations for converting EPA (500 ppm) fuel to CARB (15 ppm) fuel.

Refer to the engine data tag for the EPA Standard Engine Family.

No special options are needed to meet current regulation emissions for all fifty states.

Tests conducted using alternate test methods, instrumentation, fuel, or reference conditions can yield different results.

### 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<sub>2</sub>O/kg (75 grains H<sub>2</sub>O/lb) of dry air; required for NO<sub>x</sub> 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 display) - color, 24-bit, 800x480 (WVGA).
- Auto, manual, start, stop, and fault reset.
- Assembly enclosure that meets NEMA 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

- VSPLC status indication.
- 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.

### 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

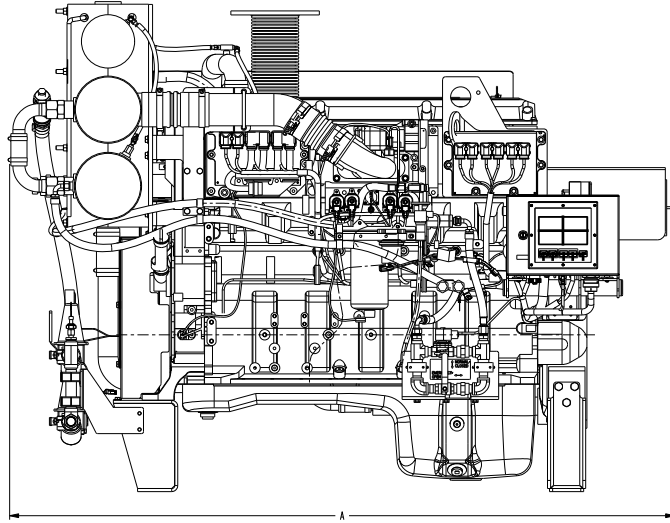
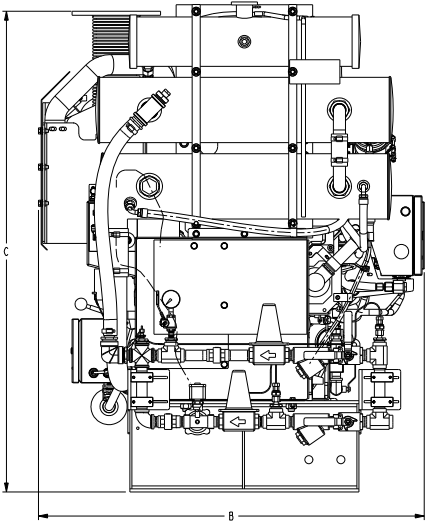
- Operating temperature: minus 4 to 140 °F (minus 20 to 60 °C).
- Storage temperature: minus 22 to 176 °F (minus 30 to 80 °C).
- Meets CISPR 11 Class B radiated emissions.

### 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.

|                       | Dim "A"<br>in. (mm) | Dim "B"<br>in. (mm) | Dim "C"<br>in. (mm) |
|-----------------------|---------------------|---------------------|---------------------|
| <b>CFP15E F10-F30</b> | 83 (2101)           | 48 (1219)           | 60 (1524)           |

NOTE: Consult drawings or contact the factory for additional information.

NOTE: Specifications are subject to change without notice. Codes or standards compliance may not be available with all model configurations - consult factory for availability.  
For more information, contact [firepumpsales@cummins.com](mailto:firepumpsales@cummins.com).



This product has been manufactured under the controls established by a Bureau Veritas Certification approved management system that conforms with ISO 9001:2015.



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Printed in U.S.A.  
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