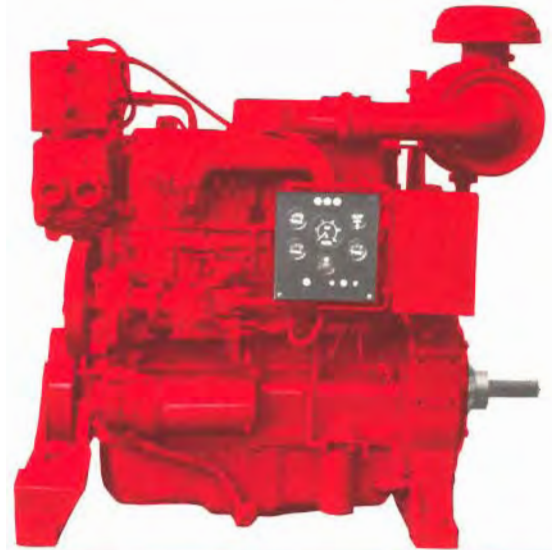




# N-495-F FIRE PUMP ENGINE



## SPECIFICATIONS

Four Stroke Cycle, Naturally Aspirated, In-Line,  
4 Cylinder Diesel Engine.

Bore and Stroke	130x152 mm	(5 <sup>1</sup> / <sub>8</sub> x6 in.)
Displacement	8.1 L	(495 cu. in.)
Lube System Oil Cap.	17 L	(4.5 U.S. gals.)
Engine Coolant Cap.	33 L	(8.75 U.S. gals.)
Net Weight with Std. Accessories, Dry	1 065 kg	(2345 lbs.)

## LISTED AGENCY RATINGS

96 H.P. @ 1460 R.P.M.

107 H.P. @ 1750 R.P.M.

111 H.P. @ 1900 R.P.M.

113 H.P. @ 2000 R.P.M.

All of the above ratings are listed by the following agencies:

Underwriter's Laboratories

Factory Mutual

## INSTALLATION CONSIDERATIONS

Maximum raw water pressure must not exceed 448 kPa (65 PSI). Minimum acceptable raw water flow at 32°C (90°F) raw water temperature and 38°C (100°F) ambient air temperature should be at least 132 L/min. (35 G.P.M.) at the 2000 RPM listed rating.

Ventilation air required for engine combustion is 113 L/sec. (240 CFM) at 2000 RPM rating. This is for engine air combustion only and does not take into consideration additional air required for normal room cooling.

The agency-approved horsepower ratings published are already derated for fire pump service. The ratings show horsepower available for driving the fire pump at standard SAE J1349 conditions of 7 521 mm (29.61 in.) Hg barometer and 25°C (77°F) inlet air temperature (approximate 91.4 m [300 ft.] above sea level). The only additional deration necessary is for higher ambient temperatures and elevations as follows: 3% for each 305 m (1000 ft.) above 91.4 m (300 ft.) and 1% for each 10 degrees above 25°C (77°F) in accordance with National Fire Association Pamphlet No. 20.



Listed under Underwriters' Laboratories, Inc., reexamination service for fire protection applications.



Listed by Associated Factory Mutual Fire Insurance Companies for fire protection applications.

## DESIGN FEATURES

**Bearings:** Replaceable, precision type, steel backed inserts.

Five main bearings, 114 mm (4.5 in.) diameter. Connecting rod bearings 79 mm (3.125 in.) diameter.

**Camshaft:** Single large diameter camshaft precisely controls valve and injector timing. Lobes are induction hardened for long life. Five replaceable precision type bushings 51 mm (2.0 in.) diameter.

**Camshaft Followers:** Roller type for long cam and follower life.

**Connecting Rods:** Drop forged, I-beam section 305 mm (12 in.) center to center length. Rifle drilled for pressure lubrication of piston pin. Rod is tapered on piston pin end to reduce unit pressures.

**Cooling System:** Belt driven centrifugal water pump. Large volume water passages provide even flow of coolant around cylinder liners, valves, and injectors. Modulating by-pass thermostat regulates coolant temperature. Corrosion resistor checks rust and corrosion, controls acidity, and removes impurities.

**Crankshaft:** High tensile steel forging with induction hardened fillets and journals.

**Cylinder Block:** Alloy cast iron with removable wet liners.

**Cylinder Heads:** Alloy cast iron. Each head serves two cylinders. Valve seats are replaceable corrosion resistant inserts. Valve guides and cross head guides are replaceable inserts.

**Cylinder Liners:** Replaceable wet liners dissipate heat faster than dry liners and are easily replaced without reboring the block.

**Fuel System:** Cummins exclusive low pressure PT™ system with wear compensating pump and integral dual flyweight governor. Camshaft actuated fuel injectors give accurate metering and timing.

**Gear Train:** Timing gears and accessory drive gears are induction hardened helical gears driven from crankshaft and located at front of block.

**Lubrication:** Large capacity gear pump provides pressure lubrication to all bearings. All pressure lines are internal drilled passages in block and heads.

**Pistons:** Aluminum alloy, cam ground and barrel shaped to compensate for thermal expansion assures precise fit at operating temperatures. CeCorr™ grooved skirt finish provides superior lubrication. Three compression and one oil ring.

**Valves:** 44 mm (1.75 in.) diameter poppet type intake and exhaust valves. Wear resistant face on exhaust valves.

**Counterbalancer:** Crankshaft driven, located in oil pan.

## STANDARD EQUIPMENT

**Air Cleaner:** Dry type, mounted.

**Belt and Damper Shield Guard:** Protection from alternator, accessory drive, and water pump belts and vibration damper.

**Coolant Pump:** Belt driven, centrifugal type.

**Corrosion Resistor:** Mounted, checks rust and corrosion, controls acidity, and removes impurities from coolant.

**Crankcase Breather:** Dry type element.

**Electrical Equipment:** 24 volt negative ground system. 24 volt starting motor; 24 volt, 18 ampere alternator; voltage regulator; manually operable contactors; junction box with enclosed terminal strip.

**Engine Support:** Pedestal type, front and rear.

**Exhaust Manifold:** Water cooled.

**Exhaust Outlet:** 102 mm (4 in.).

**Filters:** Lubricating oil, full flow, replaceable paper element, mounted. Fuel, paper element, throwaway type, mounted.

**Flywheel:** Machined for stub shaft mounting.

**Flywheel Housing:** SAE No. 1.

**Governor:** Mechanical flyweight, variable speed type.

**Heat Exchanger:** Tubular type, mounted.

**Instrument Panel:** Mounted. Includes ammeter, combination tachometer and hourmeter, water temperature gauge, lubricating oil pressure gauge.

**Oil Pressure Switch:** Provides signal to activate alarm (not included) for low oil pressure.

**Overspeed Switch:** Mounted, overspeed shutdown with manual reset, stop crank contacts.

**Stubshaft:** Mounted on flywheel.

**Water Jacket Heater:** Mounts on right side of engine.

**Water Temperature Switch:** Provides signal to activate alarm (not included) for high water temperature.



**Cummins Engine Company, Inc.**  
**Columbus, Indiana**  
**47202**

*Cummins has always been a pioneer in product improvement. Thus specifications may change without notice. Illustrations may include optional equipment.*



## Exhaust System

Maximum Allowable Back Pressure Imposed by Piping & Silencer — in. Hg (mm Hg) .....	3 (76)
Exhaust Pipe Size Normally Acceptable — in. (mm) dia. ....	4 (102)

## Fuel System

Supply Line Size — in. (mm) .....	0.625 (16) O.D. Tube
Drain Line Size — in. (mm) .....	0.625 (16) O.D. Tube
Maximum Fuel Line Length Between Supply Tank & Fuel Pump — ft. (m) .....	40 (12)
Maximum Fuel Height Above Crankshaft — in. (mm) .....	80 (2032)
Part Number of Standard Fuel Filter .....	151940
Part Number of Standard Fuel Filter Element .....	256834
Maximum Allowable Restriction to Fuel Pump With Dirty Filter — in. Hg (mm Hg) .....	8 (200)
Maximum Allowable Return Line Restriction — in. Hg (mmHg) .....	4 (400)

## Electrical System

Battery Voltage .....	24	
Battery Cable Size (Maximum Cable Length Not to Exceed 10 ft. (3.0 m) AWG) ...	00	
Wiring for Automatic Starting (Negative Ground) .....	Standard	
Alternator (Standard) 24 Volt, Internally Regulated — Ampere .....	30	
Manually Operable Contactors .....	Standard	
Minimum Recommended Battery Capacity —	<u>Amp-hr.</u>	<u>°F CCA</u>
70 °F (21 °C) Minimum Temperature .....	100	450
32 °F (0 °C) Minimum Temperature .....	150	640
Reference Wiring Diagram Number .....	3382636	

## 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 represents gross engine performance capabilities obtained and corrected in accordance with SAE J1349 conditions of 29.61 in Hg (100 kPa) barometric pressure [300 ft. (90 m) altitude], 77°F (25°C) inlet air temperature, and 0.30 in Hg (1 kPa) water vapor pressure with No. 2 diesel fuel or a fuel corresponding to ASTM D2. All data is subject to change without notice.

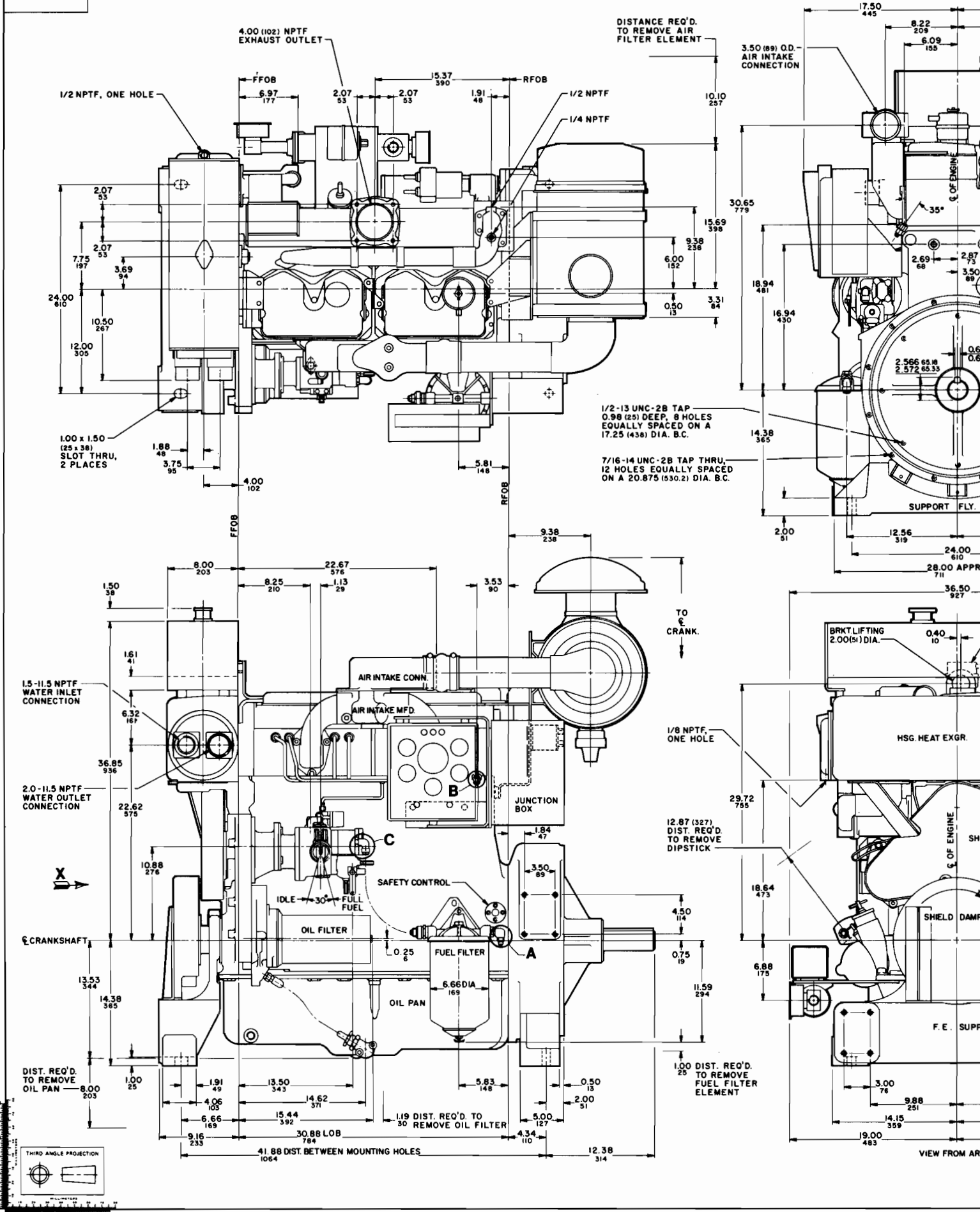
Altitude Above Which Output Should be Limited — ft. (m) .....	500' (150m)
Correction Factor per 1000 ft. (300 m) above Altitude Limit .....	3%
Temperature Above Which Output Should be Limited — °F (°C) .....	85 (29)
Correction Factor per 10 °F (11 °C) Above Temperature Limit .....	1% (2%)

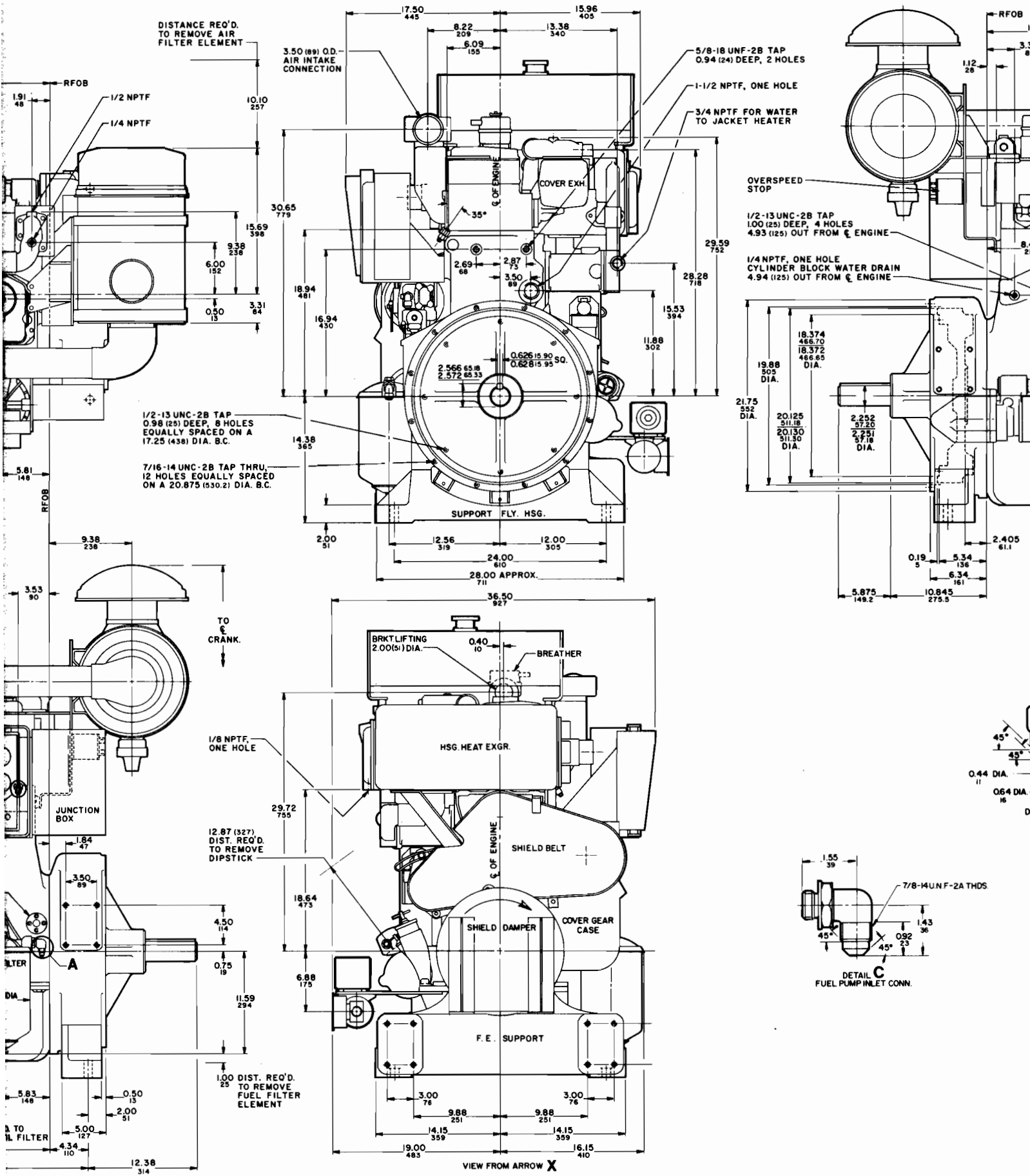
Listed/Approved Ratings BHP (kW)	Speed RPM	Ventilation Air Req'd. For Combustion CFM (litre/s)	Heat Rejection to Cooling Water BTU/min. (kW)	Heat Rejection to Ambient Air* BTU/min. (kW)	Exhaust Gas Flow CFM (litre/s)	Temp. °F (°C)	Fuel Consumption gal./hr. (litre/h)
<b>FM &amp; UL LISTED RATINGS</b>							
113 (84)	2000	240 (113)	4500 (79)	450 (7.9)	710 (335)	1130 (610)	6.8 (25.7)
111 (83)	1900	230 (109)	4440 (78)	430 (7.6)	670 (316)	1100 (593)	6.5 (24.6)
107 (80)	1750	215 (101)	4280 (75)	385 (6.8)	610 (288)	1065 (574)	6.2 (23.5)
96 (72)	1460	180 (85)	3840 (68)	315 (5.5)	485 (229)	975 (524)	5.4 (20.4)

\*Does not include exhaust piping.

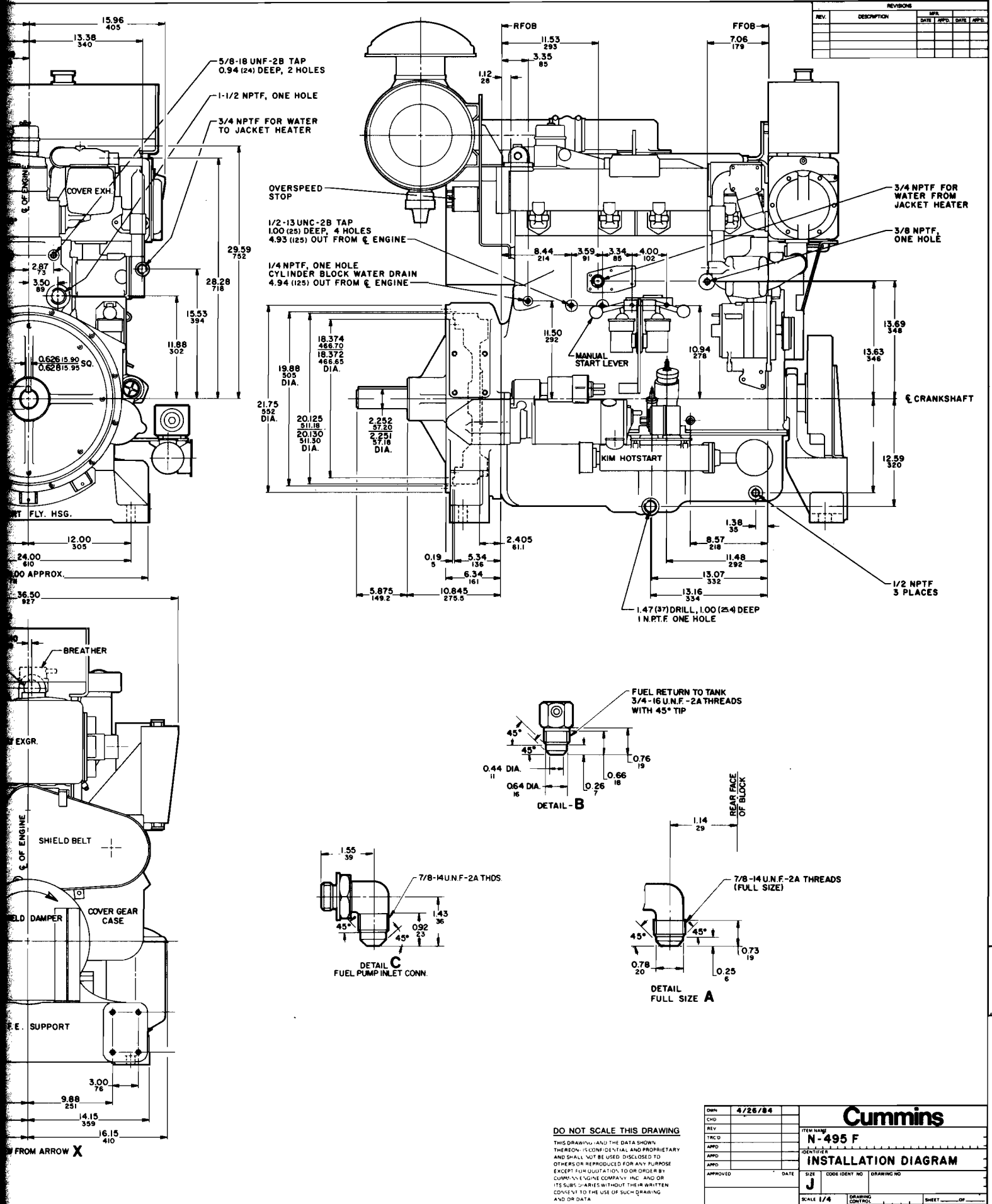
Fire Pump Engine Model: N-495-FP  
 Data Sheet No.: DS-4270-A  
 Date: December, 1983  
 Bulletin No.: 3383507  
 Rev.: 12/83







REVISIONS					
REV.	DESCRIPTION	DATE	APPD.	DATE	APPD.



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OWN	4/26/84	
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APPROVED	DATE	ITEM NAME <b>N-495 F</b>
		IDENTIFIER <b>INSTALLATION DIAGRAM</b>
		CODE IDENT NO DRAWING NO
		SCALE 1/4 DRAWING CONTROL SHEET _____ OF _____