

## SPECIFICATIONS

**Four Stroke Cycle, Turbocharged,  
In-Line, 6 Cylinder Diesel Engine.**

Bore and Stroke	140x152 mm	(5½x6 in.)
Displacement	14 L	(855 cu. in.)
Lube System Oil Cap.	28.8 L	(7.6 U.S. gals.)
Engine Coolant Cap.	39.7 L	(10.5 U.S. gals.)
Net Weight, with Std. Accessories, Dry	1 474 kg	(3,250 lbs.)

## INSTALLATION CONSIDERATIONS

Maximum raw water pressure must not exceed 345 kPa (50 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 129 L/min. (34 G.P.M.) at the 2100 RPM listed rating.

Ventilation air required for engine combustion is 396 L/sec. (840 CFM) at 2100 RPM rating. This is for engine air combustion only and does not take into consideration additional air required for normal room cooling.



This symbol on the nameplate means the product is Listed by Underwriters' Laboratories Inc.



This symbol on the nameplate means the product is approved by the Factory Mutual Research Corporation.



This symbol on the nameplate means the product is Listed by Underwriters' Laboratories of Canada.

## LISTED AGENCY RATINGS

**230 H.P. @ 1760 RPM**

**250 H.P. @ 2100 RPM**

All of the above ratings are listed by the following

agencies:

**Underwriters' Laboratories**

**Factory Mutual**

**Underwriters' Laboratories of Canada**

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 752 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 5.6°C (10°F) above 25°C (77°F) in accordance with National Fire Association Pamphlet No. 20.

## DESIGN FEATURES

- Bearings:** Replaceable, precision type, steel backed inserts. Seven 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. Seven replaceable precision type bushings 64 mm (2.5 in.) diameter.
- Camshaft Followers:** Induction hardened, 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. Spin-on corrosion resistor checks rust and corrosion, controls acidity, and removes impurities.
- Crankshaft:** Fully counterweighted 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. Drilled fuel supply and return lines. 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 rebor-ing 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. Fuel lines are internal drilled passages in cylinder heads. Spin-on fuel filter.
- 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. Oil cooled for rapid heat dissipation. Three compression and one oil ring.
- Turbocharger:** Cummins exhaust gas driven turbocharger. Turbocharging provides more power, improved fuel economy, altitude compensation, and lower smoke and noise levels.
- Valves:** Dual 48 mm (1.875 in.) diameter poppet type intake and exhaust valves. Wear resistant face on exhaust valves.

## STANDARD EQUIPMENT

- Air Cleaner:** 381 mm (15 inch) diameter dry air cleaner.
- 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.
- Electrical Equipment:** 24 volt negative ground system, including: a 24 volt starting motor; a 24 volt, 35 or 45 amp alternator; manually operable contactors; and a junction box with enclosed terminal strip.
- Engine Support:** Pedestal type, front and rear.
- Exhaust Manifold:** Dry and insulated.
- Exhaust Outlet:** 127 mm (5 in.) diameter, 90° elbow.
- Filters:** Spin-on, replaceable lubricating oil filter. Dual spin-on replaceable fuel filters.
- Flywheel:** Machined for stub shaft mounting.
- Flywheel Housing:** SAE No. 1 with industrial supports.
- Governor:** Mechanical flyweight, mechanical variable speed type.
- Heat Exchanger:** Copper nickel tube bundle, mounted.
- Instrument Panel:** Mounted. Electrical instruments only. Includes charge meter, tachometer, hour meter, water temperature gauge, lubricating oil temperature gauge, and lubricating oil pressure gauge.
- Lubricating Oil Cooler:** Tubular type, jacket water cooled.
- Oil Pan:** Cast aluminum, rear sump type, 26.5 litre (7 U.S. gallon) capacity. Provision for optional oil heater.
- 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.
- Throttle Control:** Hydraulic, with no manual override.
- Vibration Damper:** Viscous type.
- Water Jacket Heater:** Mounted beside oil pan. 115 volt, 2500 watt.
- Water Temperature Switch:** Provides signal to activate alarm (not included) for high water temperature.

## OPTIONAL EQUIPMENT

- Oil Heater:** Mounted in side of oil pan.

*Cummins has always been a pioneer in product improvement. Thus specifications may change without notice. Illustrations may include optional equipment. See specific proposal bill of material for actual equipment being furnished.*



**Cummins Engine Company, Inc.**  
**Columbus, IN 47202**  
**U.S.A.**



**EXHAUST SYSTEM**

Maximum Allowable Back Pressure Imposed by Piping &amp;

Silencer - in. Hg (mm Hg) .....	3 (75)
Exhaust Pipe Size Normally Acceptable - in. (mm) dia.....	5 (125)

**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 Height Above <sup>C</sup> L Crankshaft - in. (mm) .....	80 (2030)
Part Number of Standard Fuel Filter.....	3315847
Part Number of Standard Fuel Filter Element.....	FF-105D
Maximum Allowable Restriction to Fuel Pump with Dirty Filter - in. Hg (mm Hg) .....	8 (200)
Maximum Allowable Return Line Restriction - in. Hg (mm Hg).....	4 (100)

**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.....	35 or 45	
Manually Operable Contactors .....	Standard	
Minimum Recommended Battery Capacity .....	<u>Amp-hr.</u>	<u>0°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 is based on operation at SAE standard J816b conditions of 500 feet (150 m) altitude (29.00 in. [736 mm] Hg dry barometer), 85°F (29°C) intake air temperature and 0.38 in. (9.6 mm) Hg water vapor pressure, using No. 2 diesel or a fuel corresponding to ASTM D2. All data is subject to change without notice.

Altitude Above Which Output Should be Limited - ft. (m).....	300 (90)
Correction Factor per 1000 ft. (300 m) above Altitude Limit.....	3%
Temperature Above Which Output Should be Limited -°F (°C).....	77 (25)
Correction Factor per 10°F (11°C) Above Temperature Limit.....	1% (2%)

**FM Approved and UL Listed Ratings For: NT855-F5**

Listed/ Approved Ratings BHP (kW)	Engine Speed RPM	Ventilation Air Required for Combustion CFM (litre/s)	Heat Rejection to Coolant BTU/min (kW)	Heat Rejection to Ambient Air* BTU/min (kW)	Exhaust Gas		Fuel Consumption Gal/h (litre/h)
					<u>Flow</u> CFM (litre/s)	<u>Temp.</u> °F (°C)	
250 (187)	2100	840 (396)	6850 (120)	1750 (30.7)	1960 (925)	800 (427)	13.5 (51.1)
230 (172)	1760	680 (321)	6050 (106)	1530 (26.9)	1610 (760)	820 (438)	11.8 (44.7)

\* - Does not include exhaust piping.

# Cummins Engine Company, Inc.

## Exhaust Emissions Data Sheet

Firepump  
Pg. No.

**F5**  
**25**

Data Sheet: DS-1480

Date: 08Mar95

### Engine

<b>Model:</b>	NT855-F5	<b>Application:</b>	Firepump
<b>Type:</b>	4 cycle, In-Line, 6 Cylinder Diesel	<b>Config. Number:</b>	D092399FX02
<b>Aspiration:</b>	Turbocharged	<b>Bore:</b>	5.50 in. (140 mm)
<b>Compression Ratio:</b>	14.1:1	<b>Stroke:</b>	6.00 in. (152 mm)
<b>Emissions Control Device:</b>	Turbocharger	<b>Displacement:</b>	855 cu. in. (14.0 liters)

### Performance Data

	<u>2100 RPM</u>	<u>1760 RPM</u>
<b>BHP</b>	250	230
<b>Fuel Consumption</b> (gallons/hour)	13.5	11.8
<b>Air to Fuel Ratio</b>	38.6	35.8
<b>Exhaust Gas Flow</b> (CFM)	1960	1610
<b>Exhaust Gas Temperature</b> (°F)	800	820

### Exhaust Emissions Data

(All values are grams/hp-hour)

<u>Component</u>	<u>2100 RPM</u>	<u>1760 RPM</u>
<b>HC</b> (Total Unburned Hydrocarbons)	0.17	0.09
<b>NOx</b> (Oxides of Nitrogen as NO <sub>2</sub> )	10.30	9.20
<b>CO</b> (Carbon Monoxide)	0.60	0.45
<b>PM</b> (Particulate Matter)	0.50	0.50
<b>SO<sub>2</sub></b> (Sulfur Dioxide)	0.67	0.64
<b>CO<sub>2</sub></b> (Carbon Dioxide)	560	530
<b>N<sub>2</sub></b> (Nitrogen)	5100	4500
<b>O<sub>2</sub></b> (Oxygen)	980	820
<b>H<sub>2</sub>O</b> (Water Vapor)	200	190

### Test Conditions

Data was recorded during steady-state rated engine speed ( $\pm 25$  RPM) with full load ( $\pm 2\%$ ). Pressures, temperatures, and emission rates were stabilized.

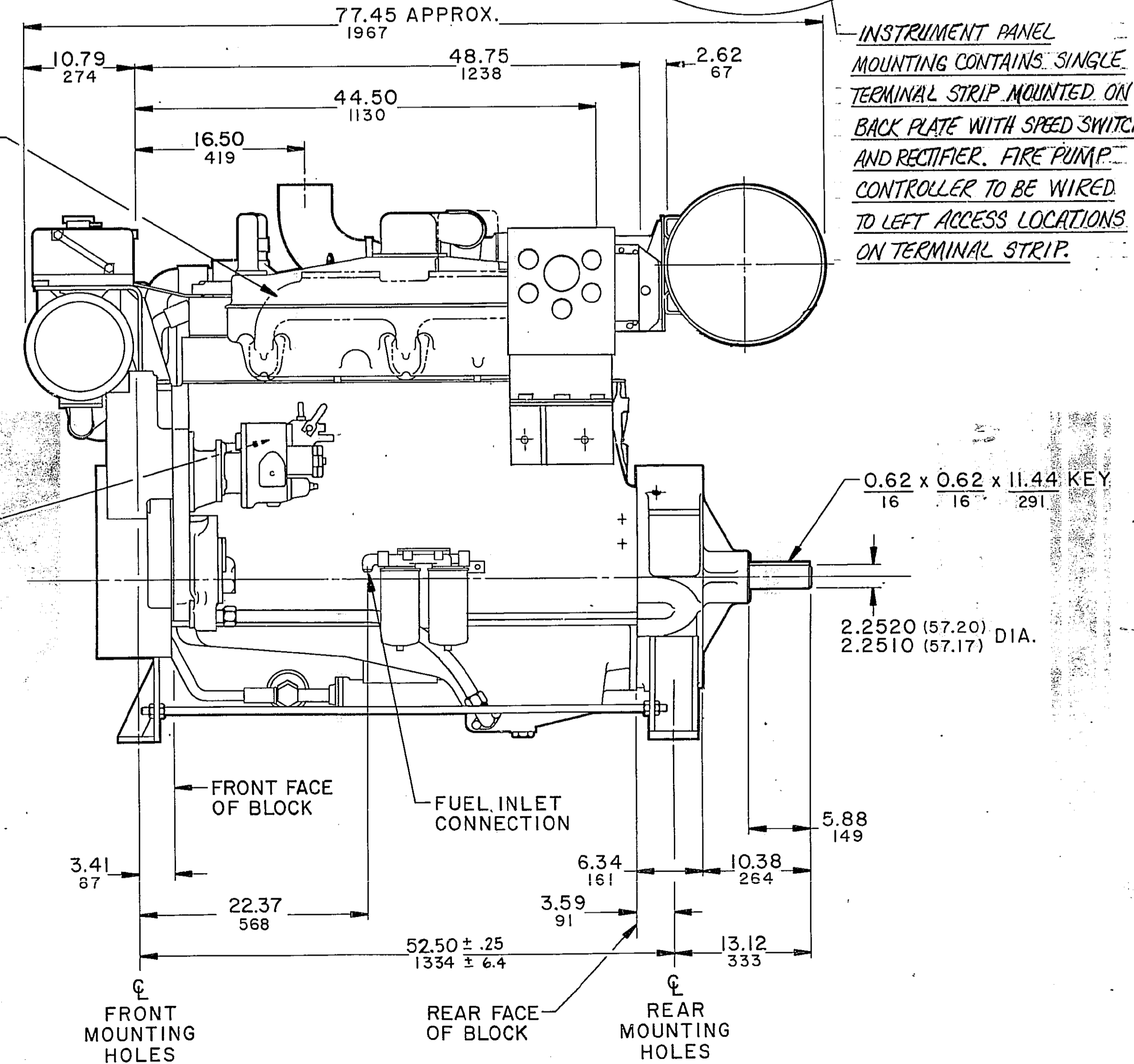
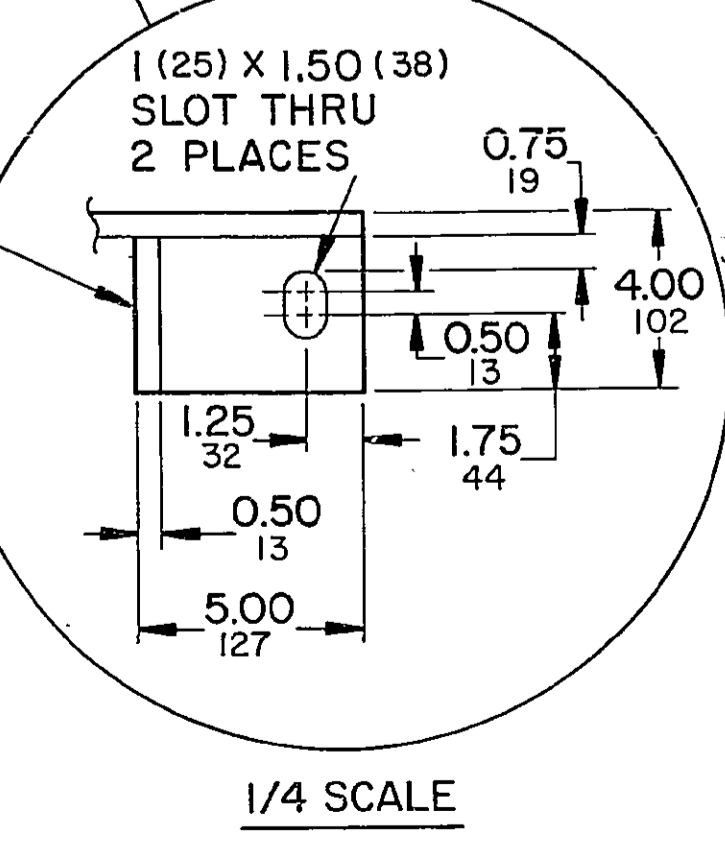
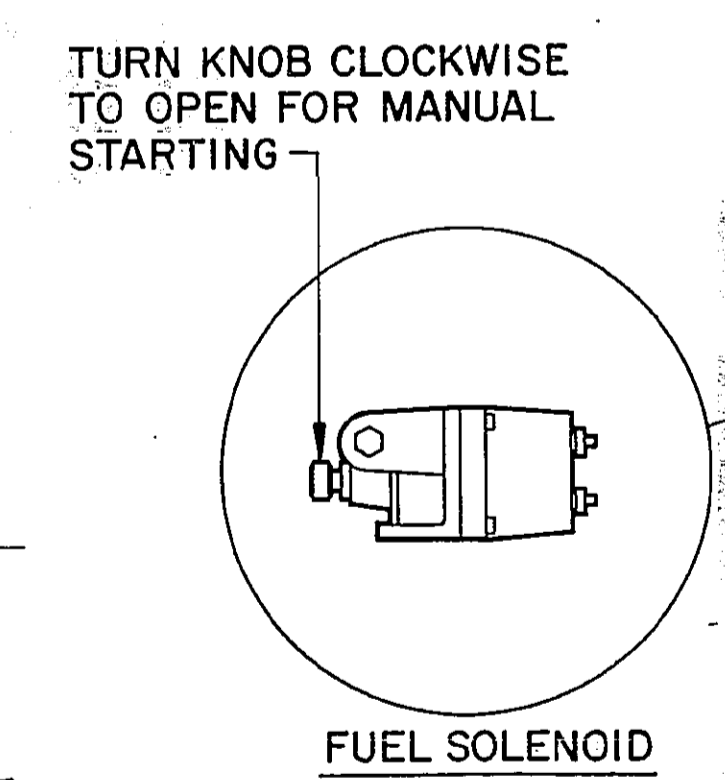
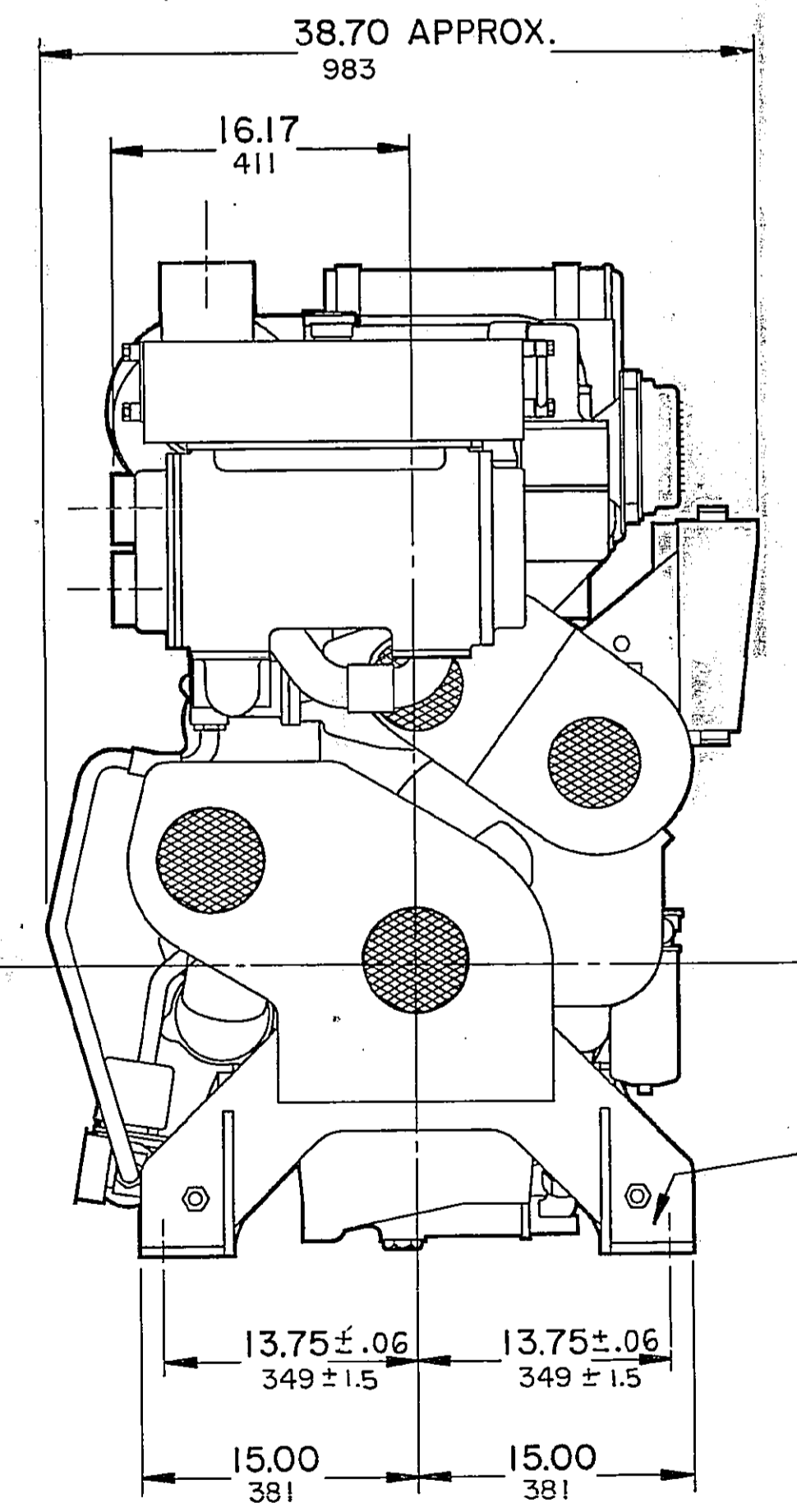
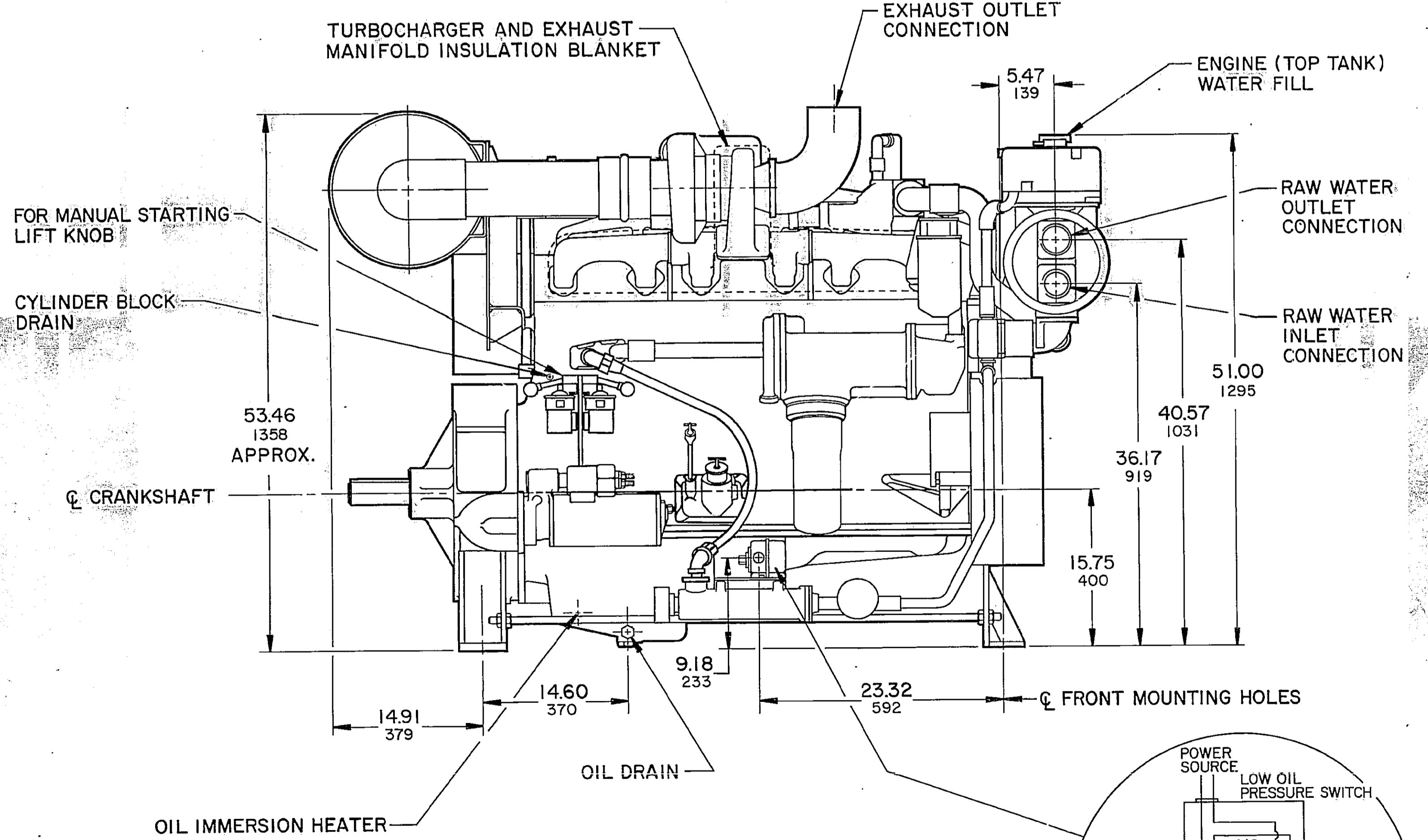
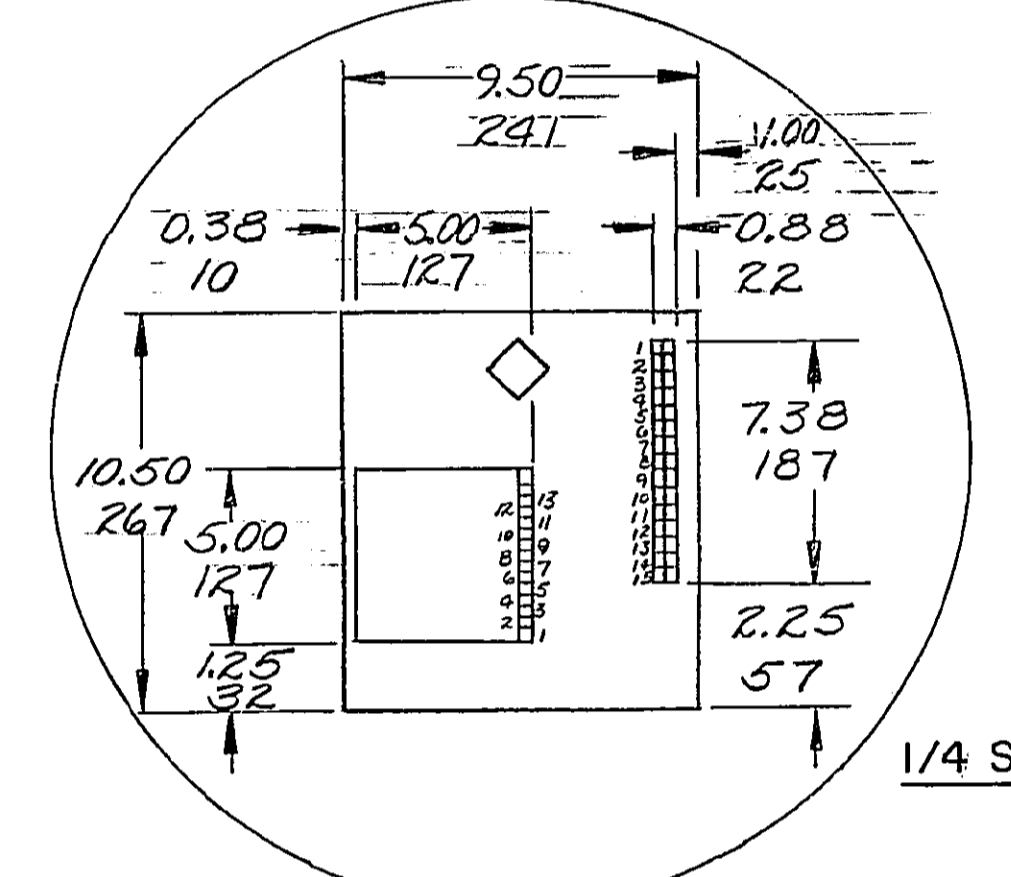
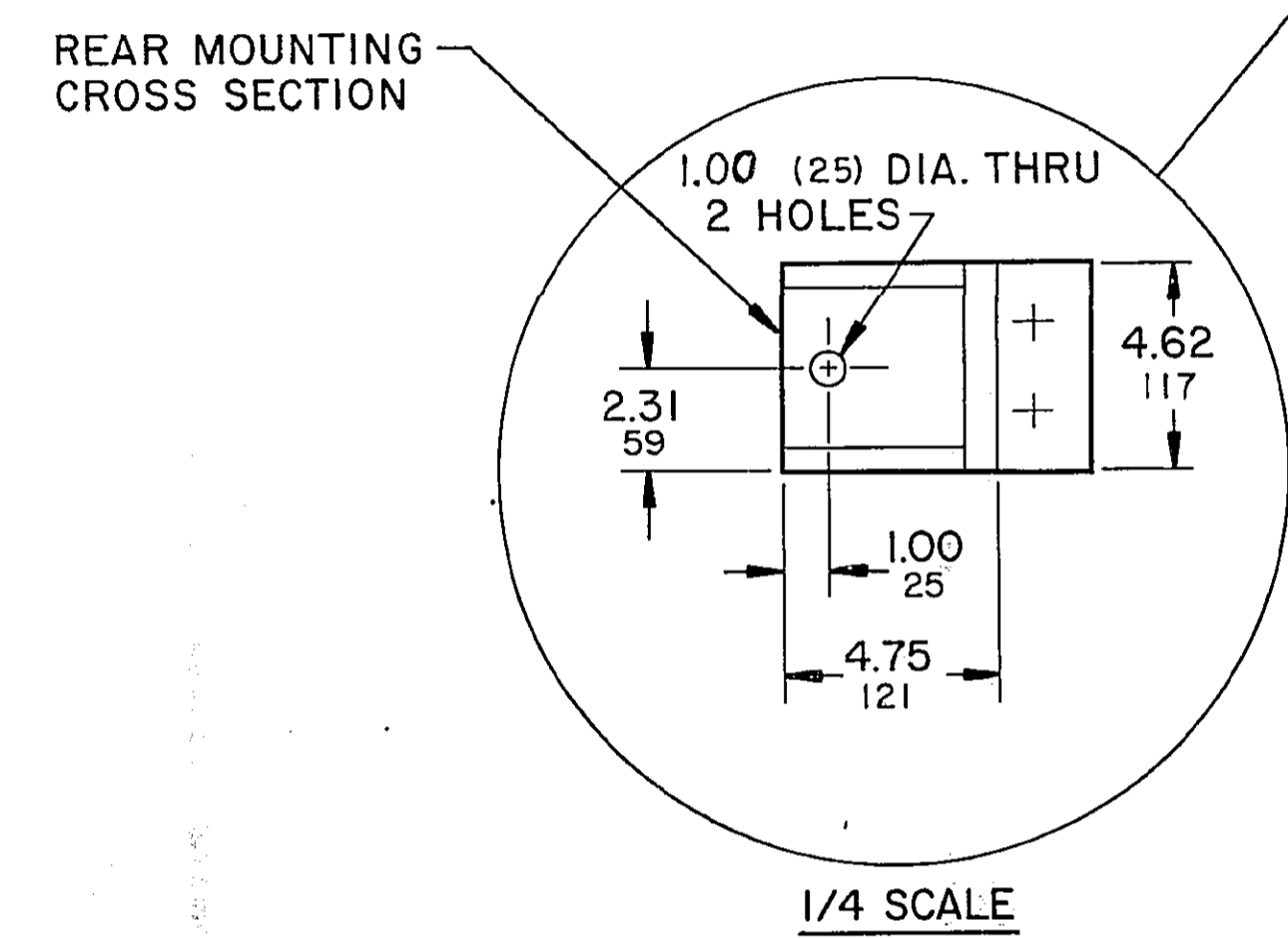
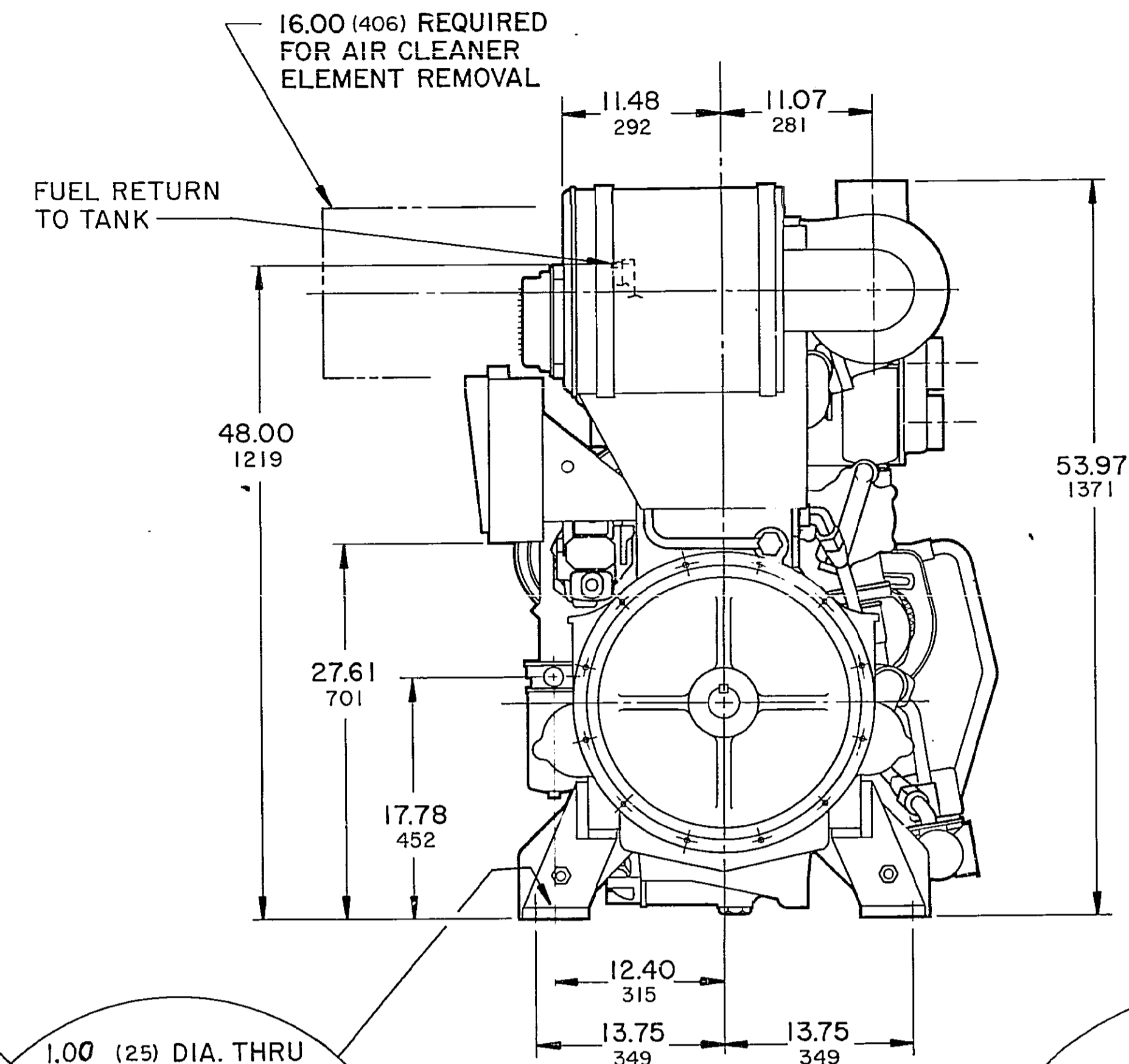
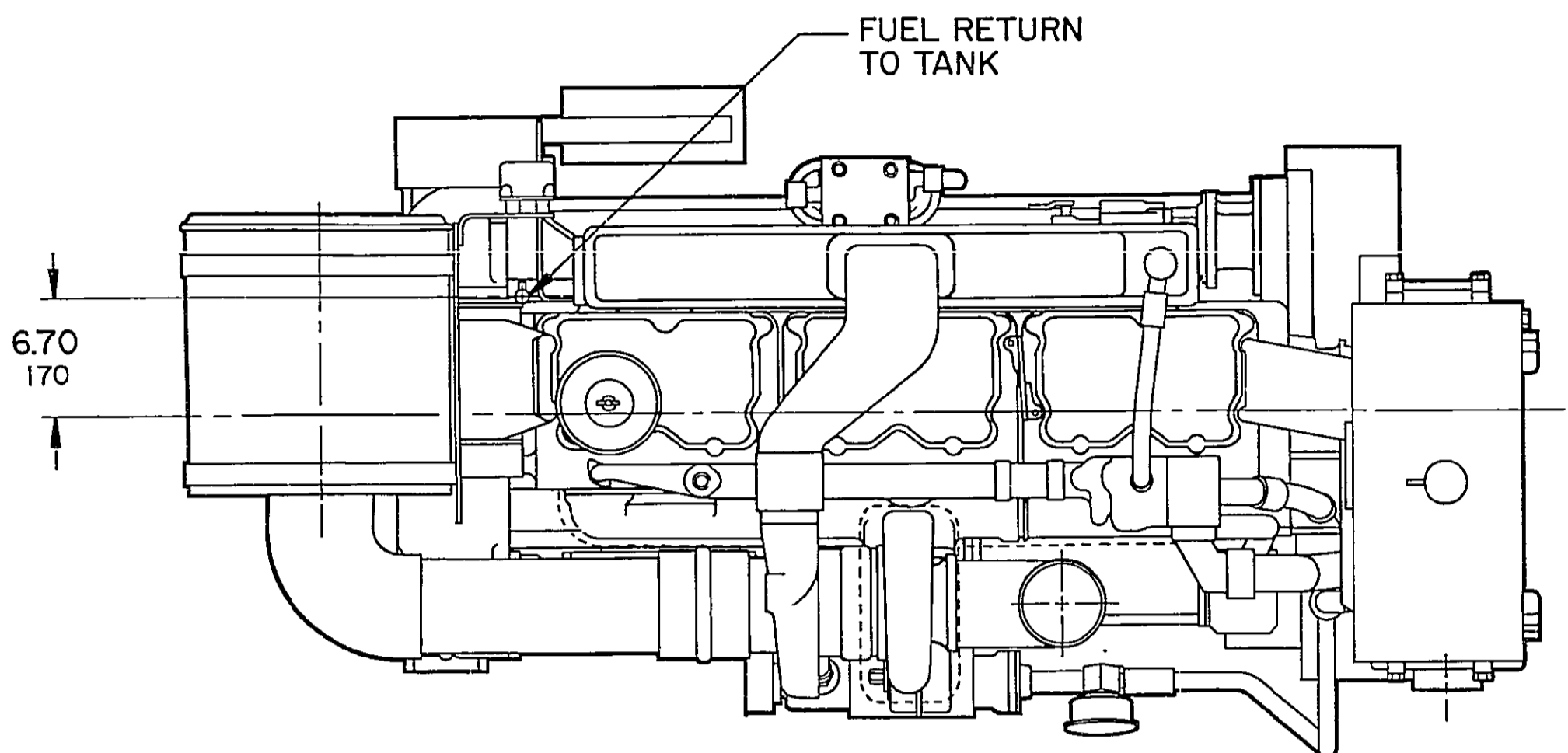
<b>Fuel Specification:</b>	ASTM D975 No. 2-D diesel fuel with 0.2% sulfur content (by weight) and 42-50 cetane number.
<b>Fuel Temperature:</b>	99° F $\pm$ 9° (at fuel pump inlet)
<b>Intake Air Temperature:</b>	77° F $\pm$ 9°
<b>Barometric Pressure:</b>	29.6 in. Hg $\pm$ 1 in. Hg
<b>Humidity:</b>	NOx measurement corrected to 75 grains H <sub>2</sub> O/lb. dry air

The HC, NOx, and CO emissions data tabulated here were taken from a single engine under the test conditions shown above. Data for the other components are estimates. This data is subject to instrumentation, measurement, and engine-to-engine variability. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

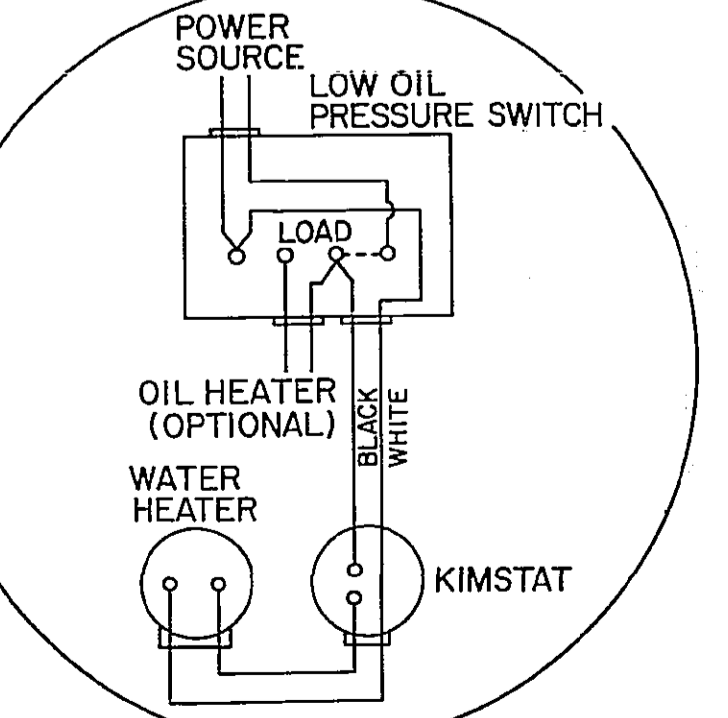
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02	REV. PER 883088	BSP	FEB 88	[Signature]	
03	REV. PER 921077	BSP	MAY 92	[Signature]	

**SERVICE CONNECTIONS**

FUEL INLET CONN: 7/8-14 UNF-2A TH'D. WITH 45° TIP  
 FUEL RETURN TO TANK: 3/4-16 UNF-2A TH'D. WITH 45° TIP  
 OIL DRAIN: 1 NPTF  
 CYLINDER BLOCK DRAIN: 1/4 NPTF  
 EXHAUST OUTLET CONN: 5.00 (127) O.D.  
 RAW WATER INLET CONN.: 2 NPTF  
 RAW WATER OUTLET CONN.: 2 1/2 NPTF  
 OIL IMMERSION HEATER: 1 NPTF  
 WIRING DIAGRAM NO. 3031644



INSTRUMENT PANEL MOUNTING CONTAINS SINGLE TERMINAL STRIP MOUNTED ON BACK PLATE WITH SPEED SWITCH AND RECTIFIER. FIRE PUMP CONTROLLER TO BE WIRED TO LEFT ACCESS LOCATIONS ON TERMINAL STRIP.



POWER SOURCE IS 115V, OIL HEATER IS 115V AND 300W, AND KIM HOT START WATER HEATER IS 115V AND 2500W. KIMSTAT OPENS AT 100°F AND CLOSSES AT 120°F.

LOW OIL PRESSURE SWITCH WIRING DIAGRAM

NOTE: ALL DIMENSIONS IN INCHES AND MILLIMETERS.

DO NOT SCALE THIS DRAWING  
 THIS DRAWING AND THE DATA SHOWN THEREON IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE USED OR REPRODUCED FOR ANY PURPOSE EXCEPT FOR QUALITY CONTROL PURPOSES BY CUMMINS ENGINE COMPANY, INC. AND/OR ITS SUBSIDIARIES WITHOUT THE WRITTEN CONSENT TO THE USE OF SUCH DRAWING AND/OR DATA.

DATE	10/16/81	<b>Cummins</b> ITEM NAME <b>NT/NTA FIRE PUMP</b> IDENTIFIER <b>INSTALLATION DIAGRAM</b>			
CHD					
REV					
TRCD					
APPD					
DATE		SIZE	CODE IDENT NO	DRAWING NO	
E		1/8		3032671	
DATE		SCALE	DRAWING CONTROL	SHEET	OF
		1/8			

