Edwards
Pentair Water

Engine Specification Data • EMI4JB1R
Fire Pump Diesel Engine

Issue Date: April 30, 2004

General Data

Speed	UL/FM HP (kw)
1760	41 (31)
2100	51 (38)
2350	55 (41)
2600	59 (44)
3000	63 (47)

Model EMI4JB1R
Number of Cylinders 4
Bore and Stroke-in (mm) 3.7x4.0 (93x102)
Displacement-in^3 (L) 169 (2.8)
Compression Ratio 18.2:1
Valves per Cylinder-Intake/Exhaust 2
Firing Order 1-3-4-2
Combustion System ..... Direct Injection
Engine Type ..... In-Line, 4 cycle
Aspiration ..... Natural
Engine Crankcase Vent System ..... Open Breather
Maximum Crankcase Pressure-in H_20 (kPa) ..... 1 (.249)

Physical Data

Length-in (mm) 31.9 (809)
Width--in (mm) 23.6 (600)
Height-in (mm) 28 (711)
Weight, dry (power unit)-lb (kg) 552 (250)
(Includes flywheel & electrics)
Center of Gravity Location
From Rear Face of Block (X-axis--in. (mm) ..... 9" (230)
Right of Crankshaft (Y-axis)--in (mm) ..... 0.4" (10)
Above Crankshaft (Z-axis)--in (mm) ..... 4.2" (107)
Maximum Allowable Static Bending Moment at
Rear Face of Flywhi Hsg. w/5-G Load-lb-ft (N-m) ... 290(393)
Thrust Bearing Cont Load Limit (Forward)-lb (N) ..... 0(0)

Fuel System

Fuel Injection Pump (Dubuque) ..... Bosch
Governor Regulation 8%
Governor Type ..... Mechanical
Fuel Consumption lb/hp-hr (kg/kw-hr) approx ..... 0.36 (0.22)*
Maximum Allowable Fuel Pump Inlet Pressure
Clean System--psi (kPa) ..... 5 (.71)
Fuel Filter Micron Size @ 98% Efficiency 30

Lubrication System

Oil Pressure at Rated Speed-psi (kPa) 55-65 (7.8-9.2)
Oil Pressure at Low Idle-psi 21-28
In Pan Oil Temperature-°F (°C) 230-240 (110-115)
Oil Pan Capacity, High-qt (L) 10.1 (9.6)
Oil Pan Capacity, Low--qt (L) 8.0 (7.6)
Total Engine Oil Capacity with Filters--qt (L) 7.0 (6.62)
Engine Angularity Limits (Continuous)
Any Direction-degrees 30

Air System

Maximum Air Intake Restriction
Dirty Air Cleaner--in H_20 (kPa) 25 (6.23)
Clean Air Cleaner-in H_20 (kPa) 10 (2.49)
Combustion Air Flow-ft^3/min (m^3/min) 127 (3.5)
Recommended Intake Pipe Diameter--in (mm) ..... 2" (51)

Cooling System

Engine Heat Rejection--BTU/min (kW) 2248 (39.5)
Coolant Flow--gal/min (L/min) 23.2 (88)
Thermostat Start to Open-°F (°C) 180 (82)
Thermostat Fully Open-°F (°C) 203 (95)
Max. Water Pump Inlet Restriction-in H_20 (kPa) .... 20" (5.07)
Engine Coolant Capacity--qt (L) 15.8 (15)
Recommended Pressure Cap--psi (kPa) 7 (1.74)
Maximum Top Tank Temp-°F (°C) 205 (96)

Exhaust System

Exhaust Flow--ft^3/Min (M3/Min) 370 (10.5)
Exhaust Temperature--°F (°C) 1150 (620)
Max. Allowable Back Pressure-in H_20 (kPa) 41 (10.21)

Electrical System

Recommended Battery Capacity (CCA)
12 Volt System--amp 930
Maximum Allowable Starting Circuit Resistance
12 Volt System--Ohm 0.00022/Ft
Starter Rolling Current--12 Volt System
At 32°F (0°C)--amp 250-260
Jacket Water Heater ..... 1000W, 120VAC, 1 Phase, 50/60HZ

Performance Data

Rated Speed—max rpm. 3000
Noise--dB(A) @ 1m 94

Note-The following NFPA 20, 1999 paragraphs prescribe horsepower deductions for altitude and temperature:

8-2.2.4 A deduction of 3 percent from engine horsepower rating at standard UL/FM condition shall be made for diesel engines for each 1000 ft (305 m) altitude above 300 ft (91.4 m).

8-2.2.5 A deduction of 1 percent from engine horsepower rating as corrected to standard UL//FM conditions shall be made for diesel engines for every 10°F (5.6°C) above 77°F (25°C) ambient temperature.

*To convert lb/hp-hr into gallons/hp-hr multiply lb/hp-hr by 0.141.
To convert gallons/hp-hr into liters/kw-hr multiply gallons/hp-hr by 5.07.