

ARMSTRONG



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FIRE PUMP

OPERATION & TECHNICAL DATA MANUAL



EQUIPMENT SPECIFICATION

Customer: Thermotech Fire Protection

Customer Order Number: FP1283/11324/MJP

AI SL Order Number: 421493

Site/Project Name: Hull Recycle Plant

Equipment Details:

Serial Number	Equipment Description
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421493 - 01A & 01B	8x6x13 FM 4030FD-FM Diesel Fire Pump
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421493 - 02	VMS2-16B Jockey Pump
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JU6H-UF54 INSTALLATION & OPERATION DATA (I&O Data) UK Produced

Basic Engine Description

Engine Manufacturer	John Deere Co.
Ignition Type	Compression (Diesel)
Number of Cylinders	6
Bore and Stroke - mm (in)	106 (4.19) X 127 (5)
Displacement - L (in ³)	6.8 (415)
Compression Ratio	17.0:1
Valves per cylinder	
Intake	1
Exhaust	1
Combustion System	Direct Injection
Engine Type	In-Line, 4 Stroke Cycle
Fuel Management Control	Mechanical, Rotary Pump
Firing Order (CW Rotation)	1-5-3-6-2-4
Aspiration	Turbocharged
Charge Air Cooling Type	None
Rotation, viewed from front of engine, Clockwise (CW)	Standard
Engine Crankcase Vent System	Open
Installation Drawing	D538
Weight - kg (lb)	752 (1657)

Power Rating

	2350	2600	2800	3000
Nameplate Power - HP (kW)	210 (157)	216 (161)	216 (161)	216 (161)
Nameplate Power - kW (HP)	157 (210)	161 (216)	161 (216)	161 (216)

Cooling System - [C051002]

	2350	2600	2800	3000
Engine Coolant Heat - kW (Btu/sec)	100 (95)	119 (113)	130 (123)	148 (140)
Engine Radiated Heat - kW (Btu/sec)	50.2 (47.6)	51.6 (48.9)	51.6 (48.9)	51.6 (48.9)
Heat Exchanger Minimum Flow				
15°C (60°F) Raw H ₂ O - L/min (gal/min)	30.3 (8)	34.1 (9)	41.6 (11)	49.2 (13)
37°C (100°F) Raw H ₂ O - L/min (gal/min)	53 (14)	60.6 (16)	64.3 (17)	71.9 (19)
Heat Exchanger Maximum Cooling Raw Water				
Inlet Pressure - bar (psi)	4.1 (60)			
Flow - L/min (gal/min)	98.4 (26)			
Typical Engine H ₂ O Operating Temp - °C (°F) ¹	76.7 (170) - 87.8 (190)			
Thermostat				
Start to Open - °C (°F)	76.7 (170)			
Fully Opened - °C (°F)	87.8 (190)			
Engine Coolant Capacity - L (qt)	14 (14.79)			
Coolant Pressure Cap - kPa (lb/in ²)	68.9 (10)			
Maximum Engine Coolant Temperature - °C (°F)	93.3 (200)			
Minimum Engine Coolant Temperature - °C (°F)	71.1 (160)			
High Coolant Temp Alarm Switch - °C (°F)	96.1 (205)			

Electric System - DC

	Standard		Optional	
System Voltage (Nominal)	12		24	
Battery Capacity for Ambients Above 0°C (32°F)				
Voltage (Nominal)	12	[C07633]	24	[C07633]
Qty. Per Battery Bank	1		2	
SAE size per J537	8D		8D	
CCA @ -18°C (0°F)	1400		1400	
Reserve Capacity - Minutes	430		430	
Battery Cable Circuit, Max Resistance - ohm	0.0012		0.0012	
Battery Cable Minimum Size				
0-3.1m Circuit Length ^[2]	00		00	
3.1m-4.1m Circuit Length ^[2]	000		000	
4.1m-5.1m Circuit Length ^[2]	0000		0000	
Charging Alternator Maximum Output - Amp,	40	[C071363]	55	[C071366]
Starter Cranking Amps, Rolling - @15°C (60°F)	440	[C07825/C07837]	250	[C07819/C07820]

NOTE: This engine is intended for indoor installation or in a weatherproof enclosure. ¹Engine H₂O temperature is dependent on raw water temperature and flow. ²Positive and Negative Cables Combined Length.

JU6H-UF54 INSTALLATION & OPERATION DATA (I&O Data) UK Produced

<u>Exhaust System</u>	<u>2350</u>	<u>2600</u>	<u>2800</u>	<u>3000</u>
Exhaust Flow - m ³ /min (ft. ³ /min) _ _ _ _ _	36.6 (1291)	42.3 (1493)	46.2 (1631)	50.9 (1796)
Exhaust Temperature - °C (°F) _ _ _ _ _	552 (1026)	548 (1019)	548 (1018)	569 (1057)
Maximum Allowable Back Pressure - kPa (in H ₂ O) _ _ _ _ _	7.5 (30)	7.5 (30)	7.5 (30)	7.5 (30)
Minimum Exhaust Pipe Dia. - mm (in) ^[3] _ _ _ _ _	127 (5)	127 (5)	127 (5)	127 (5)
<u>Fuel System</u>	<u>2350</u>	<u>2600</u>	<u>2800</u>	<u>3000</u>
Fuel Consumption - L/hr (gal/hr) _ _ _ _ _	37.8 (10)	43.1 (11.4)	45 (11.9)	46.9 (12.4)
Fuel Return - L/hr (gal/hr) _ _ _ _ _	25.7 (6.8)	28.4 (7.5)	31 (8.2)	32.6 (8.6)
Fuel Supply - L/hr (gal/hr) _ _ _ _ _	63.6 (16.8)	71.5 (18.9)	76.1 (20.1)	79.5 (21)
Fuel Pressure - kPa (lb/in ²) _ _ _ _ _	20.7 (3) - 41.4 (6)			
Minimum Line Size - Supply - in. _ _ _ _ _	.50 Schedule 40 Steel Pipe			
Pipe Outer Diameter - mm (in) _ _ _ _ _	21.5 (0.848)			
Minimum Line Size - Return - in. _ _ _ _ _	.375 Schedule 40 Steel Pipe			
Pipe Outer Diameter - mm (in) _ _ _ _ _	17.1 (0.675)			
Maximum Allowable Fuel Pump Suction Lift with clean Filter - mH ₂ O (in H ₂ O) _ _ _ _ _	0.8 (31)			
Maximum Allowable Fuel Head above Fuel pump, Supply or Return - m (ft) _ _ _ _ _	1.4 (4.5)			
Fuel Filter Micron Size _ _ _ _ _	2			
<u>Heater System</u>	<u>Standard</u>	<u>Optional</u>		
Engine Coolant Heater				
Wattage (Nominal) _ _ _ _ _	1360		1360	
Voltage - AC, 1 Phase _ _ _ _ _	230 (+5%, -10%)		115 (+5% -10%)	
Part Number _ _ _ _ _	[C123644]		[C123640]	
<u>Air System</u>	<u>2350</u>	<u>2600</u>	<u>2800</u>	<u>3000</u>
Combustion Air Flow - m ³ /min (ft. ³ /min) _ _ _ _ _	13.5 (476)	15.7 (555)	17.1 (605)	18.3 (648)
Air Cleaner	<u>Standard</u>		<u>Optional</u>	
Part Number _ _ _ _ _	[C03396]		[C03327]	
Type _ _ _ _ _	Indoor Service Only, with Shield		Canister,	
Cleaning method _ _ _ _ _	Washable		Single-Stage Disposable	
Air Intake Restriction Maximum Limit				
Dirty Air Cleaner - kPa (in H ₂ O) _ _ _ _ _	3.2 (13)		3.2 (13)	
Clean Air Cleaner - kPa (in H ₂ O) _ _ _ _ _	1.5 (6)		1.2 (5)	
Maximum Allowable Temperature (Air To Engine Inlet) - °C (°F) ^[4] _ _ _ _ _	54.4 (130)			
<u>Lubrication System</u>				
Oil Pressure - normal - kPa (lb/in ²) _ _ _ _ _	345 (50) - 655 (95)			
Low Oil Pressure Alarm Switch - kPa (lb/in ²) _ _ _ _ _	138 (20)			
In Pan Oil Temperature - °C (°F) _ _ _ _ _	104 (220) - 118 (245)			
Total Oil Capacity with Filter - L (qt) _ _ _ _ _	20 (21.1)			
<u>Lube Oil Heater</u>	<u>Optional</u>	<u>Optional</u>		
Wattage (Nominal) _ _ _ _ _	150		150	
Voltage _ _ _ _ _	240V (+5%, -10%)		120V (+5%, -10%)	
Part Number _ _ _ _ _	C04431		C04430	
<u>Performance</u>	<u>2350</u>	<u>2600</u>	<u>2800</u>	<u>3000</u>
BMEP - kPa (lb/in ²) _ _ _ _ _	1180 (171)	1100 (159)	1010 (147)	945 (137)
Piston Speed - m/min (ft/min) _ _ _ _ _	597 (1958)	661 (2167)	711 (2333)	762 (2500)
Mechanical Noise - dB(A) @ 1m _ _ _ _ _	C131539			
Power Curve _ _ _ _ _	C131964			

³Based on Nominal System. Back pressure flow analysis must be done to assure maximum allowable back pressure is not exceeded. (Note: minimum exhaust Pipe diameter is based on: 15 feet of pipe, one 90° elbow, and a silencer pressure drop no greater than one half of the maximum allowable back pressure.) ⁴Review for horsepower derate if ambient air entering engine exceeds 77°F (25°C). [] indicates component reference part number.