

General Engine Data			
Type		In-Line 4 cycle, water cooled, 6 Cylinder	
Aspiration		Turbocharged & Intercooled	
Cylinder Type		Replaceable dry liner	
Bore x Stroke	mm (inch)	123 x 155 (4.84 x 6.1)	
Displacement	litre (inch ³)	11.051 (674.5)	
Compression Ratio		17 : 1	
Valves per Cylinder	- Intake	1	
	- Exhaust	1	
Valves lashes at cold	- Intake mm (inch)	0.30 (0.0118)	
	- Exhaust mm (inch)	0.30 (0.0118)	
Valve Timing	- Intake	Opening: 18° BTDC	Close: 34° ABDC
	- Exhaust	Opening: 46° BBDC	Close: 14° ATDC
Combustion Type		Direct Injection	
Firing Order		1-5-3-6-2-4	
Injection Timing		14° BTDC	
Rotation		Counter Clockwise, viewed from flywheel	
Dimension (L x W x H)		mm 1,390 x 890 x 1,685 (L= Built Length – Height with optional Pedestal)	
Dry Weight		Approx. kg (lb.) 1,004 (2,213)	

Engine Ratings	1,470 rpm	1,760 rpm	2,100 rpm
DF12TiH-N Output <i>kW (hp)</i>	253 (339)	280 (375)	290 (389)

*To determine the maximum allowable pump load, a deduction of 10% must be made.

Fuel System		
Injection Pump		Zexel in-line “P” type
Governor		RSV type (all speed control)
Feed Pump		Mechanical type
Injection Nozzle		Multi hole type
Opening Pressure	kPa (psi)	21,575 (3,129.2)
Fuel Filter		Full flow, cartridge type
Used Fuel		Diesel fuel type 2-D Only
Fuel consumption		See table no. 03.100.06FCEN.XX
Minimum Supply line Size	mm (inch)	10 (0.39)
Minimum Return line Size	mm (inch)	10 (0.39)

Electrical System		24 Volts (Nominal)
Starter motor	kW	1 x 6
Recommended Battery Capacity	Ah	150
Quantity per battery bank		2
Cold Cranking Amperes	@ -18°C (0°F)	950
Charging Alternator Output	Amps	45

Air Induction System		
Air Cleaner Type		Drip proof, Replaceable
Engine Air Flow	<i>m³/min.</i>	27 @ 2,100 rpm
Air Inlet Restriction Dirty	<i>kPa (mmH₂O)</i>	6.2 (635)
Air Inlet Restriction Clean	<i>kPa (mmH₂O)</i>	2.2 (220)

Lubrication System	
Lubrication Method	Fully Forced pressure feed type
Oil Pump	Gear type driven by crankshaft
Oil Filter	Full Flow, Cartridge type

Cooling system	
Heat Exchanger Minimum Raw Water Flow	1 litre/Minutes per kW installed
Engine Water Pump	Centrifugal type driven by gear
Water Pump Capacity <i>litre/min. (gal./min.)</i>	320 (85) @ 2,100 rpm
Heat Exchanger Raw water Inlet	
Maximum Pressure <i>kPa (psi)</i>	1,500 (217.6)
Flow <i>litre/min. (gal./min.)</i>	290 (63,8)
Temperature <i>°C (°F)</i>	37.8 (100)
Thermostat, Start to Open <i>°C (°F)</i>	71 (160)
Fully Opened <i>°C (°F)</i>	85 (185)
Coolant Capacity <i>litre (gal.)</i>	26 (6.87)
Coolant Pressure Cap <i>kPa (psi)</i>	95 (13.8)
Maximum Raw Water Supply pipe	
Connection to Heat Exchanger <i>inch</i>	2" BSP
Maximum Raw Water Discharge pipe	
Connection from Heat Exchanger <i>inch</i>	2½" BSP
Max. Engine Coolant Temperature <i>°C (°F)</i>	96 (204.8)
Pressure loss Engine Cooling Circuit <i>kPa (psi)</i>	70 (10.1)
Oil pressure Range, normal <i>kPa (psi)</i>	100 (14.5) at idle 300-400 (43.5-58.0) at maximum speed
Max. Oil Sump Temperature <i>°C (°F)</i>	113 (235)
Oil Sump Capacity High <i>litre (gal.)</i>	23 (6.1)
Low <i>litre (gal.)</i>	20 (5.3)
Total Engine Oil Capacity <i>litre (gal.)</i>	23 (6.1)
Minimum Oil Pressure <i>kPa (psi)</i>	75 (10.9)

Exhaust System	
Exhaust Gas Flow <i>m³/min.</i>	57 @ 2,100 rpm
Exhaust Gas Temperature <i>°C (°F)</i>	464 (867) @ 2,100 rpm
Max. Allowable Back Pressure <i>kPa (mmH₂O)</i>	9.8 (1,000)
Minimum Exhaust Pipe Diameter <i>mm (inch)*</i>	113.0 (4")

* Based on Nominal System. Flow analysis must be done to assure adherence to system limitations!

(Minimum exhaust pipe diameter is based on 15 feet of pipe, one elbow, and a silencer. Pressure drop no greater than one half the max. allowable back pressure)

Heater System	
Wattage (Nominal) <i>W</i>	3,000
Voltage – AC <i>V</i>	230

Engine Performance Data	
All data is based on the engine operating with fuel system, 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 J1394 conditions of 300ft (91,4m) altitude, 29.61 in.(752mm) Hg dry barometer, and 77°F (25°C) intake air temperature, using No.2 diesel or a fuel corresponding to ASTM-D2.	
Altitude above which output should be Limited <i>m (ft.)</i>	91.4 (300)
Correction Factor per 305m.(1000ft.) above Altitude Limit	3%
Temperature above which output should be Limited <i>°C (°F)</i>	25 (77)
Correction Factor per 11°C (10°F) above Temperature Limit	2% (1%)