



**MITSUBISHI DIESEL ENGINE  
TECHNICAL INFORMATION**

ITEM NO.

T0217-0009E Rev.3 (1/4)

DATE

March, 2013

Specification Sheets of S16R-F1PTAW2 Engine

Specification Sheets of S16R-F1PTAW2 Engine are enclosed herein.

Revision	First Edition : April, 2010	Engine Engineering Department Engine System Designing Section		
	Rev.1 : August, 2010			
	Rev.2 : Nov., 2010	Approved by	Checked by	Drawn by
	Rev.3 : Mar., 2013	T.HASHIGUCHI	T.OGURA	K.NAKAMURA

## GENERAL ENGINE DATA

Type	4-Cycle, Water Cooled	
Aspiration	Turbo-Charged, Inter Cooler (Fresh water to Cooler)	
Cylinder Arrangement	60°V	
No. of Cylinders	16	
Bore mm(in.)	170	(6.69)
Stroke mm(in.)	180	(7.09)
Displacement liter(in <sup>3</sup> )	65.37	(3989)
Compression Ratio	14.0:1	
Dry Weight - Engine only - kg(lb)	6680	(14729)
Wet Weight - Engine only - kg(lb)	6830	(15060)

## PERFORMANCE DATA

Steady State Speed Stability Band at any Constant Load		
Electric Governor - %	±0.25 or better	
Maximum Overspeed Capacity - rpm	2100	
Moment of inertia of Rotating Components - kgf·m <sup>2</sup> (lbf·ft <sup>2</sup> )	80.83	(1918.5)
(Includes Std. Flywheel)		
Cyclic Speed Variation with Flywheel at 1500rpm	1/138	

## ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Flywheel Housing - kgf·m(lbf·ft)	450	(3255.6)
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## AIR INLET SYSTEM

Maximum Intake Air Restriction (Includes piping)		
With Clean Filter Element - mm H <sub>2</sub> O (in. H <sub>2</sub> O)	400	(15.7)
With Dirty Filter Element - mm H <sub>2</sub> O (in. H <sub>2</sub> O)	635	(25.0)

## EXHAUST SYSTEM

Maximum Allowable Back Pressure - mm H <sub>2</sub> O (in. H <sub>2</sub> O)	600	(23.6)
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## LUBRICATION SYSTEM

Oil Pressure at Idle - kgf/cm <sup>2</sup> (psi)	2~3 (29~43)	
at Rate Speed - kgf/cm <sup>2</sup> (psi)	5~6.5 (71~93)	
Maximum Oil Temperature - °C(°F)	110	230
Oil Capacity of Standard Pan	High - liter (U.S. gal)	200 (53)
	Low - liter (U.S. gal)	140 (37.0)
Total System Capacity (Includes Oil Filter) - liter (U.S. gal)	230 (60.8)	
Maximum Angle of Installation (Std. Pan)	Front Down	5°
(Engine Only)	Front Up	5°
	Side to Side	22.5°

## COOLING SYSTEM

Coolant Capacity of Jacket (Engine only) - liter (U.S. gal)	140	(37.0)
Coolant Capacity of Air cooler (Engine only) - liter (U.S. gal)	30	(7.9)
Maximum External Friction Head at Engine Outlet - kgf/cm <sup>2</sup> (psi)		
(For Jacket and Air Cooler)	0.35	(5.0)
Maximum Static Head of Coolant above Crankshaft Center - m(ft)	10	(32.8)
Standard Thermostat (modulating) Range of Jacket - °C(°F)	71~85 (160~185)	
Standard Thermostat (modulating) Range of Air Cooler - °C(°F)	42~55 (108~131)	
Maximum Coolant Temperature at Engine Outlet of Jacket - °C(°F)	98	(208)
Minimum Coolant Expansion Space - % of System Capacity		
(For Jacket and Air Cooler)	10	(0.4)
Maximum Coolant Temperature at Intercooler Inlet, PTAW type - °C(°F)	45	(113)
Maximum Air Restriction on Discharge Side of Radiator and Fan - mm H <sub>2</sub> O(in. H <sub>2</sub> O)	10	(0.4)

The specifications are subject to change without notice.

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## FUEL SYSTEM

Fuel Injector	_____	Mitsubishi PS8 Type × 2
Maximum Suction Head of Feed Pump - mm Hg (in. Hg)	_____	75 (3.0)
Maximum Static Head of Return Pipe - mm Hg (in.Hg)	_____	150 (5.9)

## STARTING SYSTEM

Battery Charging Alternator - V- Ah	_____	24-30
Starting Motor Capacity - V - kW	_____	24-7.5 × 2
Maximum Allowable Resistance of Cranking Circuit - m Ω	_____	1.5
Recommended Minimum Battery Capacity		
At 5°C (41°F) and above - Ah	_____	300
Below 5°C (41°F) through - 5°C (23°F)	_____	600

## Emission Level 100% Load (at STAND-BY POWER)

Values in mg/Nm<sup>3</sup>, O<sub>2</sub> content 5%

Nox : 2000mg/Nm<sup>3</sup>

CO : 650mg/Nm<sup>3</sup>

HC : 150mg/Nm<sup>3</sup>

PM : 50mg/Nm<sup>3</sup>

Control method of emission level shall be compliant with EPA regulation.

## Test Condition

fa                                     $0.96 \leq fa \leq 1.06$     fa: Engine specific parameter considering atmospheric condition which determined according to the following provisions.  
( See EUROMOT 2004 - EC 1997 68 Consolidated - Annex III)

$$f_a = (99/P_s)^{0.7} (T_a/298)^{1.5}$$

Ps: Dry Atmospheric pressure(kPa)

Ta: Absolute temperature of the intake air(k)

Fuel                                    JIS K-2204 Type2

Tfi                                     $33^\circ\text{C} \leq Tfi \leq 43^\circ\text{C}$     Tfi: The fuel temperature at the injection pump inlet.

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## ENGINE RATING

All data represent net performance with standard accessories such as air cleaner, inlet /exhaust manifolds, fuel oil system, L.O. pump, etc. under the condition of 100kPa(29.6inHg) barometric pressure, 77°F(25°C) ambient temperature and 30% relative humidity.

ITEM	UNIT	STAND-BY POWER	PRIME POWER		
		50Hz	50Hz		
Engine Speed	rpm	1500	1500		
No. of Cylinders		16			
Bore	mm (in.)	170 (6.69)			
Stroke	mm (in.)	180 (7.09)			
Displacement	liter (in. <sup>3</sup> )	65.37 (3989)			
Brake Horse power without Fan	HP (kW)	2610 (1947)	2382 (1777)		
Brake Mean Effective Pressure without Fan	kgf/cm <sup>2</sup> (psi)	24.3 (346)	22.2 (316)		
Mean Piston Speed	m/s (ft/min)	9.0 (1772)	9.0 (1772)		
Maximum Regenerative Power Absorption Capacity without Fan	HP (kW)	188 (140)	188 (140)		
Intake Air flow	m <sup>3</sup> /min (CFM)	178 (6285)	160 (5650)		
Exhaust Gas Flow	m <sup>3</sup> /min (CFM)	471 (16631)	424 (14971)		
Coolant Flow	liter/min (U.S. GPM)	1650 (436)	1650 (436)		
Coolant Flow to Intercooler (PTAW only)	liter/min (U.S. GPM)	750 (198)	750 (198)		
Cooling Air Flow (Std. Fan)	m <sup>3</sup> /min (CFM)	—	—		
Allowable Fan Loss Horse Power	HP (kW)	40 (30)	40 (30)		
Radiated Heat to Ambient	kcal/hr (BTU/min)	134051 (8866)	120715 (7984)		
Heat Rejection to Coolant	kcal/hr (BTU/min)	580887 (38419)	523099 (34597)		
Heat Rejection to Air Cooler (PTAW Version)	kcal/hr (BTU/min)	491520 (32508)	442622 (29274)		
Heat Rejection to Exhaust	kcal/hr (BTU/min)	1587816 (105016)	1409483 (93221)		
Noise Level (1 m height & distance) (excludes, Intake, Exhaust & Fan)	dB(A)	TBD	TBD		

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