



**MITSUBISHI DIESEL ENGINE  
TECHNICAL INFORMATION**

ITEM NO.

T0215-0004E Rev.2 (1/4)

DATE

February, 2014

Specification Sheets of S12R-PTA2 Engine

Specification Sheets of S12R-PTA2 Engine are enclosed herein.

Revision	First Edition : September, 2007 (T13-0310-E Mar.'99)	Engine Engineering Department High Speed Engine Designing Section		
	Rev.1 : Mar., 2013			
	Rev.2 : Feb., 2014	Approved by	Checked by	Drawn by
		T.HASHIGUCHI	K.YATO	K.Y

## GENERAL ENGINE DATA

Type .....	4-Cycle, Water Cooled	
Aspiration .....	Turbo-Charged, After Cooler (Jacket water to Cooler)	
Cylinder Arrangement .....	60°V	
No.of Cylinders .....	12	
Bore mm(in.) .....	170	(6.69)
Stroke mm(in.) .....	180	(7.09)
Displacement liter(in <sup>3</sup> ) .....	49.03	(2992)
Compression Ratio .....	13.5:1	
Dry Weight - Engine only - kg(lb) .....	5400	(11907)
Wet Weight - Engine only - kg(lb) .....	5680	(12524)

## PERFORMANCE DATA

## Steady State Speed Stability Band at any Constant Load

Hydraulic (std.) or 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> ) .....	75.3	(1787)
(Includes Std.Flywheel)		
Cyclic Speed Variation with Flywheel at 1800rpm .....	1/507	
1500rpm .....	1/294	

## ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Flywheel Housing - kgf·m(lbf·ft) .....	450	(3256)
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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) .....	150	(39.6)
Low - liter (U.S.gal) .....	110	(29.1)
Total System Capacity (Includes Oil Filter) - liter (U.S.gal) .....	180	(47.6)
Maximum Angle of Installation (Std. Pan) Front Down .....	6.5°	
(Engine Only) Front Up .....	6.5°	
Side to Side .....	22.5°	

## COOLING SYSTEM

Coolant Capacity (Engine only) - liter (U.S.gal) .....	125	(33.0)
Maximum External Friction Head at Engine Outlet - kgf/cm <sup>2</sup> (psi) .....	0.35	(5.0)
Maximum Static Head of Coolant above Crankshaft Center - m(ft) .....	10	(32.8)
Maximum Outlet Pressure of Engine Water Pump - kgf/cm <sup>2</sup> (psi) .....	2	(28.6)
Standard Thermostat (modulating)Range- °C(°F) .....	71~85	(160~185)
Maximum Coolant Temperature at Engine Outlet- °C(°F) .....	98	(208)
Minimum Coolant Expansion Space - % of System Capacity .....	10	
Maximum Coolant Temperature at Intercooler Inlet, TK type- °C(°F) .....	-	
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 PS6 Type × 2
Maximum Suction Head of Feed Pump - mm Hg (in. Hg) .....	75 (3.0)
Maximum Static Head of Return & Leak 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

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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		
		60Hz	50Hz		60Hz	50Hz	
Engine Speed	rpm	1800	1500		1800	1500	
No. of Cylinders		12					
Bore	mm (in.)	170 (6.69)					
Stroke	mm (in.)	180 (7.09)					
Displacement	liter (in. <sup>3</sup> )	49.03 (2992)					
Brake Horse power without Fan	HP (kW)	1971 (1470)	1763 (1315)		1796 (1340)	1602 (1195)	
Brake Mean Effective Pressure without Fan	kgf/cm <sup>2</sup> (psi)	20.4 (290)	21.9 (311)		18.6 (264)	19.9 (283)	
Mean Piston Speed	m/s (ft/min)	10.8 (2126)	9.0 (1772)		10.8 (2126)	9.0 (1772)	
Maximum Regenerative Power Absorption Capacity without Fan	HP (kW)	193 (144)	141 (105)		193 (144)	141 (105)	
Intake Air flow	m <sup>3</sup> /min (CFM)	121 (4273)	105 (3708)		109 (3849)	96 (3390)	
Exhaust Gas Flow	m <sup>3</sup> /min (CFM)	320 (11299)	279 (9851)		290 (10240)	253 (8933)	
Coolant Flow	liter/min (U.S. GPM)	1850 (489)	1650 (436)		1850 (489)	1650 (436)	
Coolant Flow to Intercooler (TK only)	liter/min (U.S. GPM)						
Cooling Air Flow (Std. Fan)	m <sup>3</sup> /min (CFM)	1800 (63558)	1800 (63558)		1800 (63558)	1800 (63558)	
Fan Loss Horse Power (Std. Fan)	HP (kW)	67 (50)	40 (30)		67 (50)	40 (30)	
Radiated Heat to Ambient	kcal/hr (BTU/min)	91072 (6023)	79303 (5245)		82436 (5452)	72061 (4766)	
Heat Rejection to Coolant	kcal/hr (BTU/min)	758934 (50195)	660861 (43708)		686970 (45435)	600510 (39717)	
Heat Rejection to Inter Cooler (TK Version)	kcal/hr (BTU/min)						
Heat Rejection to Exhaust	kcal/hr (BTU/min)	921463 (60944)	772431 (51088)		826458 (54661)	701891 (46422)	
Noise Level (1 m height & distance) (excludes, Intake, Exhaust & Fan)	dB(A)	TBD	TBD		TBD	TBD	

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