



**MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION**

ITEM NO.

T0215-0005E Rev.2 (1/4)

DATE

February, 2014

Specification Sheets of S12R-PTAA2 Engine

Specification Sheets of S12R-PTAA2 Engine are enclosed herein.

| | | | | |
|----------|------------------------------------------------------|----------------------------------------------------------------------|------------|----------|
| Revision | First Edition : September, 2007 (T13-0352-E Jul.'04) | Engine Engineering Department High Speed Engine Designing Section | | |
| | Rev.1 : February, 2012 | | | |
| | Rev.2 : February, 2014 | Approved by | Checked by | Drawn by |
| | | T.HASHIGUCHI ✓ | K.YATO | K.Y. |
| | | | | |

GENERAL ENGINE DATA

| | | |
|--------------------------------------------|----------------------------------|---------|
| Type | 4-Cycle, Water Cooled | |
| Aspiration | Turbo-Charged, Air to Air Cooler | |
| Cylinder Arrangement | 60°V | |
| No. of Cylinders | 12 | |
| Bore mm(in.) | 170 | (6.69) |
| Stroke mm(in.) | 180 | (7.09) |
| Displacement liter(in ³) | 49.03 | (2992) |
| Compression Ratio | 13.5:1 | |
| Dry Weight - Engine only - kg(lb) | 5520 | (12172) |
| - Radiator & Piping - kg(lb) | 1562 | (3444) |
| Wet Weight - Engine only - kg(lb) | 5830 | (12855) |
| - Radiator & Piping - kg(lb) | 1764 | (3890) |

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 ² (lbf·ft ²) | 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) |
|-------------------------------------------------------------------------------|-----|--------|

AIR INLET SYSTEM

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

EXHAUST SYSTEM

| | | |
|------------------------------------------------------------------------------------|-----|--------|
| Maximum Allowable Back Pressure - mm H ₂ O (in. H ₂ O) | 600 | (23.6) |
|------------------------------------------------------------------------------------|-----|--------|

LUBRICATION SYSTEM

| | | |
|----------------------------------------------------------------------|-------|---------|
| Oil Pressure at Idle - kgf/cm ² (psi) | 2~3 | (29~43) |
| at Rate Speed - kgf/cm ² (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 - liter (U.S. gal) | 125 | (33.0) |
| - Radiator & Piping - liter (U.S. gal) | 202 | (53.4) |
| Maximum External Friction Head at Engine Outlet - kgf/cm ² (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 ² (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 Cooling Air Temperature at Air to Air Cooler Inlet, TAA type-°C(°F) | 40 | (104) |
| Maximum Air Restriction on Discharge Side of Radiator and Fan-mm H ₂ O(in. H ₂ O) | 40 | (1.6) |

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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 |

The specifications are subject to change without notice.

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. ³) | 49.03 (2992) | | | | | |
| Brake Horse power without Fan | HP (kW) | 2189 (1633) | 1932 (1441) | | 1989 (1484) | 1761 (1314) | |
| Brake Mean Effective Pressure with Fan | kgf/cm ² (MPa) (psi) | 22.6 (2.22) (321) | 24.0 (2.35) (341) | | 20.6 (2.02) (293) | 21.9 (2.15) (311) | |
| 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 ³ /min (CFM) | 148 (5226) | 129 (4555) | | 134 (4732) | 118 (4167) | |
| Maximum Air Temperature at Charge Air Cooler Inlet, TAA type | °C | 230 | 220 | | 230 | 220 | |
| Maximum Air Temperature at Charge Air Cooler Outlet, TAA type | °C | 70 | 70 | | 70 | 70 | |
| Allowable Pressure Drop at Charge Air Cooler | kgf/cm ² (kPa) (psi) | 0.27 (26) (4) | 0.16 (16) (2) | | 0.27 (26) (4) | 0.16 (16) (2) | |
| Charge Air Cooler Working Pressure | kgf/cm ² (MPa) (psi) | 3.5 (0.345) (50) | 3.5 (0.345) (50) | | 3.5 (0.345) (50) | 3.5 (0.345) (50) | |
| Exhaust Gas Flow | m ³ /min (CFM) | 391 (13806) | 343 (12111) | | 355 (12535) | 312 (11017) | |
| Coolant Flow | liter/min (U.S. GPM) | 1850 (489) | 1650 (436) | | 1850 (489) | 1650 (436) | |
| Cooling Air Flow | m ³ /min (CFM) | 1800 (63558) | 1800 (63558) | | 1800 (63558) | 1800 (63558) | |
| Allowable Fan Loss Horse Power | HP (kW) | 50 (37) | 50 (37) | | 50 (37) | 50 (37) | |
| Radiated Heat to Ambient | kcal/hr (BTU/min) | 111193 (7354) | 97528 (6450) | | 101047 (6683) | 88933 (5882) | |
| Heat Rejection to Coolant | kcal/hr (BTU/min) | 518900 (34319) | 455132 (30102) | | 471554 (31188) | 415020 (27449) | |
| Heat Rejection to Air to Air Cooler | kcal/hr (BTU/min) | 481836 (31868) | 422623 (27952) | | 437872 (28960) | 385375 (25488) | |
| Heat Rejection to Exhaust | kcal/hr (BTU/min) | 1190396 (78731) | 1036643 (68562) | | 1081781 (71548) | 945281 (62520) | |
| Noise Level (1 m height & distance) (excludes, Intake,Exhaust & Fan) | dB(A) | TBD | TBD | | TBD | TBD | |

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