| MITSUBISHI DIESEL ENGINE TECHNICAL INFORMATION | ITEM No. | T0215-0005E Rev.3 (1/4) |
|---|---|---|
| | DATE | March, 2017 |

# Specification Sheets of S12R-PTAA2 Engine

Specification Sheets of S12R-PTAA2 Engine are enclosed herein.

The specifications are subject to change without notice.

| Revision | | Engine Engineering Department High Speed Engine Designing | | |
|---|---|---|---|---|
| | First Edition : September, 2007 (T13-0352-E Jul.'04) | | | |
| | Rev.1 : February, 2012 | | | |
| | Rev.2 : February, 2014 | Approved by | Checked by | Drawn by |
| | Rev.3 : March, 2017 | M.NAKAMURA | S.MADAAN | S.M |

## GENERAL ENGINE DATA

| | | |
|---|---|---|
| Type | 4-Cycle, Water Cooled | |
| Aspiration | Turbo-Charged, Air to Air Cooler | |
| Cylinder Arragement | 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 (S.I.) $kg \cdot m^2$($lb \cdot ft^2$) | 20.61 | (489) |
| (Includes Std.Flywheel) ($GD^2$) $kgf \cdot m^2$($lbf \cdot ft^2$) | 82.42 | (1956) |
| Cyclic Speed Variation with Flywheel at 1800rpm | 1/541 | |
| 1500rpm | 1/355 | |

## ENGINE MOUNTING

| | | |
|---|---|---|
| Maximum Bending Moment at Rear Face of Flywheel Housing - $kgf \cdot m$($lbf \cdot ft$) | 450 | (3256) |

## AIR INLET SYSTEM

| | | |
|---|---|---|
| Maximum Intake Air Restriction (Includes piping) | | |
| With Clean Filter Element - mm $H_2O$ (in.$H_2O$) | 400 | (15.7) |
| With Dirty Filter Element - mm $H_2O$ (in.$H_2O$) | 635 | (25.0) |

## EXHAUST SYSTEM

| | | |
|---|---|---|
| Maximum Allowable Back Pressure - mm $H_2O$ (in.$H_2O$) | 600 | (23.6) |

## LUBRICATION SYSTEM

| | | |
|---|---|---|
| Oil Pressure at ldle - $kgf/cm^2$(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 (lncludes Oil Filter) - liter (U.S.gal) | 180 | (47.6) |
| Maximum Angle of lnstallation (Std. Pan) Front Down | 6.5° | |
| (Engine Only) Front Up | 6.5° | |
| Side to Side | 22.5° | |

## COOLING SYSTEM

| | | |
|---|---|---|
| Coolant Capactiy - 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 lnlet, TAA type-°C(°F) | 40 | (104) |
| Maximum Air Restriction on Discharge Side of Radiator and Fan-mm $H_2O$(in.$H_2O$) | 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 | 400 |
| Below 5°C(41°F) through - 5°C(23°F) | 500 |

## 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 | 170 | | | | | |
| | (in.) | (6.69) | | | | | |
| Stroke | mm | 180 | | | | | |
| | (in.) | (7.09) | | | | | |
| Displacement | liter | 49.03 | | | | | |
| | ($in.^3$) | (2992) | | | | | |
| Brake Horse power without Fan | HP | 2189 | 1932 | | 1989 | 1761 | |
| | (kW) | (1633) | (1441) | | (1484) | (1314) | |
| Brake Mean Effective Pressure | $kgf/cm^2$ | 22.6 | 24.0 | | 20.6 | 21.9 | |
| with Fan | (MPa) | (2.22) | (2.35) | | (2.02) | (2.15) | |
| | (psi) | (321) | (341) | | (293) | (311) | |
| Mean Piston Speed | m/s | 10.8 | 9.0 | | 10.8 | 9.0 | |
| | (ft/min) | (2126) | (1772) | | (2126) | (1772) | |
| Maximum Regenerative Power | HP | 193 | 141 | | 193 | 141 | |
| Absorption Capacity without Fan | (kW) | (144) | (105) | | (144) | (105) | |
| Intake Air flow | $m^3$/min | 148 | 129 | | 134 | 118 | |
| | (CFM) | (5226) | (4555) | | (4732) | (4167) | |
| Maximum Air Temperature at | °C | 230 | 220 | | 230 | 220 | |
| Charge Air Cooler Inlet, TAA type | | | | | | | |
| Maximum Air Temperature at | °C | 70 | 70 | | 70 | 70 | |
| Charge Air Cooler Outlet, TAA type | | | | | | | |
| Allowable Pressure Drop at | $kgf/cm^2$ | 0.27 | 0.16 | | 0.27 | 0.16 | |
| Charge Air Cooler | (kPa) | (26) | (16) | | (26) | (16) | |
| | (psi) | (4) | (2) | | (4) | (2) | |
| Charge Air Cooler Working Pressure | $kgf/cm^2$ | 3.5 | 3.5 | | 3.5 | 3.5 | |
| (Absolute pressure) | (MPa) | (0.345) | (0.345) | | (0.345) | (0.345) | |
| | (psi) | (50) | (50) | | (50) | (50) | |
| Exhaust Gas Flow | $m^3$/min | 391 | 343 | | 355 | 312 | |
| | (CFM) | (13806) | (12111) | | (12535) | (11017) | |
| Coolant Flow | liter/min | 1850 | 1650 | | 1850 | 1650 | |
| | (U.S. GPM) | (489) | (436) | | (489) | (436) | |
| Cooling Air Flow | $m^3$/min | 1800 | 1800 | | 1800 | 1800 | |
| | (CFM) | (63558) | (63558) | | (63558) | (63558) | |
| Allowable Fan Loss Horse Power | HP | 50 | 50 | | 50 | 50 | |
| | (kW) | (37) | (37) | | (37) | (37) | |
| Radiated Heat to Ambient | kcal/hr | 111193 | 97528 | | 101047 | 88933 | |
| | (BTU/min) | (7354) | (6450) | | (6683) | (5882) | |
| Heat Rejection to Coolant | kcal/hr | 518900 | 455132 | | 471554 | 415020 | |
| | (BTU/min) | (34319) | (30102) | | (31188) | (27449) | |
| Heat Rejection to Air to Air Cooler | kcal/hr | 481836 | 422623 | | 437872 | 385375 | |
| | (BTU/min) | (31868) | (27952) | | (28960) | (25488) | |
| Heat Rejection to Exhaust | kcal/hr | 1190396 | 1036643 | | 1081781 | 945281 | |
| | (BTU/min) | (78731) | (68562) | | (71548) | (62520) | |
| Noise Level | dB(A) | TBD | TBD | | TBD | TBD | |

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APPLICATION : GENERATOR



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