



mitsubishi S16R2-PTAW

Click on the headlines below to get redirected to the respective sections in this document.

[Technical data](#)
[Elastic drawing](#)
[Exhaust gas emission](#)
[Mechanical noise data](#)



**MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION**

ITEM NO.

T0221-0002E Rev.3 (1/4)

DATE

March, 2013

Specification Sheets of S16R2-PTAW Engine

Specification Sheets of S16R2-PTAW Engine are enclosed herein.

Revision	First Edition : January, 2011	Engine Engineering Department Engine System Designing Section		
	Rev.1 : February, 2012			
	Rev.2 : May, 2012	Approved by	Checked by	Drawn by
	Rev.3 : March, 2013			

GENERAL ENGINE DATA

Type	4-Cycle, Water Cooled	
Aspiration	Turbo-Charged, Aircooler (Fresh Water)	
Cylinder Arrangement	60°V	
No.of Cylinders	16	
Bore mm(in.)	170	(6.69)
Stroke mm(in.)	220	(8.66)
Displacement liter(in ³)	79.90	(4876)
Compression Ratio	14.0:1	
Dry Weight - Engine only - kg(lb)	7750	(17089)
Wet Weight - Engine only - kg(lb)	8200	(18081)

PERFORMANCE DATA

Steady State Speed Stability Band at any Constant Load

Electric Governor - %	±0.25 or better	
Maximum Overspeed Capacity - rpm	1750	
Moment of inertia of Rotating Components - kgf·m ² (lbf·ft ²)	32.92	(781)
(Includes Std.Flywheel)		
Cyclic Speed Variation with Flywheel at 1500rpm	1/210	

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 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)
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LUBRICATION SYSTEM

Oil Pressure at Idle - kgf/cm ² (psi)	2~3	(29~43)
at Rate Speed - kgf/cm ² (psi)	4~6	(57~86)
Maximum Oil Temperature - °C(°F)	110	(230)
Oil Capacity of Standard Pan High - liter (U.S.gal)	260	(68.7)
Low - liter (U.S.gal)	200	(52.8)
Total System Capacity (Includes Oil Filter) - liter (U.S.gal)	290	(76.6)
Maximum External Friction Head at External Oil Cooler - kgf/cm ² (psi)	0.82	(11.7)
Maximum Angle of Installation (Std. Pan) Front Down	6°	
(Engine Only) Front Up	6°	
Side to Side	25°	

COOLING SYSTEM

Coolant Capacity of Jacket (Engine Only) - liter (U.S.gal)	157	(41.5)
Coolant Capacity of Air Cooler (Engine Only) - liter (U.S.gal)	33	(8.7)
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)
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- °C(°F)	98	(208)
Minimum Coolant Expansion Space - % of System Capacity	10	
Maximum Coolant Temperature at Air cooler Inlet, PTAW type- °C(°F) (at ambient 40°C)	65	(149)

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 & Leak Pipe - mm Hg (in.Hg)	150 (5.9)

STARTING SYSTEM

Battery Charging Alternator - V-Ah	24-35
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)	600

The specifications are subject to change without notice.

APPLICATION : GENERATOR

Pub. No. T0221-0002E Rev.3 3/4

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	CONTINUOUS C	CONTINUOUS D
		50Hz	50Hz	50Hz	50Hz
Engine Speed	rpm	1500	1500	1500	1500
No. of Cylinders		16			
Bore	mm (in.)	170 (6.69)			
Stroke	mm (in.)	220 (8.66)			
Displacement	liter (in. ³)	79.9 (4876)			
Brake Horse power without Fan	HP (kW)	2905 (2167)	2627 (1960)	2252 (1680)	2001 (1493)
Brake Mean Effective Pressure without Fan	kgf/cm ² (MPa) (psi)	22.1 (2.17) (314)	20.0 (1.96) (284)	17.1 (1.68) (243)	15.2 (1.49) (216)
Mean Piston Speed	m/s (ft/min)	11.0 (2165)	11.0 (2165)	11.0 (2165)	11.0 (2165)
Maximum Regenerative Power Absorption Capacity without Fan	HP (kW)	204 (152)	204 (152)	204 (152)	204 (152)
Intake Air flow	m ³ /min (CFM)	188 (6638)	168 (5932)	141 (4979)	125 (4414)
Exhaust Gas Flow	m ³ /min (CFM)	498 (17584)	445 (15713)	372 (13135)	331 (11688)
Coolant Flow	liter/min (U.S. GPM)	1650 (436)	1650 (436)	1650 (436)	1650 (436)
Coolant Flow to Aircooler (PTAW only)	liter/min (U.S. GPM)	920 (243)	920 (243)	920 (243)	920 (243)
Oil Flow to External Oil Cooler	liter/min (U.S. GPM)	70 (18)	70 (18)	70 (18)	70 (18)
Allowable Fan Loss Horse Power	HP (kW)	82 (61)	82 (61)	82 (61)	82 (61)
Radiated Heat to Ambient	kcal/hr (kJ/hr) (BTU/min)	142702 (597357) (9438)	127286 (532825) (8419)	106554 (446040) (7047)	94693 (396389) (6263)
Heat Rejection to Coolant	kcal/hr (kJ/hr) (BTU/min)	647619 (2710962) (42833)	575086 (2407334) (38035)	479491 (2007171) (31713)	426119 (1783753) (28183)
Heat Rejection to Air Cooler	kcal/hr (kJ/hr) (BTU/min)	479718 (2008121) (31728)	425990 (1783211) (28174)	355179 (1486795) (23491)	315644 (1321300) (20876)
Heat Rejection to External Oil Cooler (external oil cooler, mounted on radiator)	kcal/hr (kJ/hr) (BTU/min)	71957 (301215) (4759)	63898 (267479) (4226)	53277 (223020) (3524)	47347 (198197) (3131)
Heat Rejection to Exhaust	kcal/hr (kJ/hr) (BTU/min)	1561603 (6536940) (103282)	1369607 (5733236) (90584)	1112770 (4658105) (73597)	988908 (4139613) (65405)
Noise Level (1 m height & distance) (excludes, Intake, Exhaust & Fan)	dB(A)	TBD	TBD	TBD	TBD

The specifications are subject to change without notice.

APPLICATION : GENERATOR

Pub. No. T0221-0002E Rev.3 4/4



**MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION**

ITEM NO.

T0307-0030E Rev.1 (1/2)

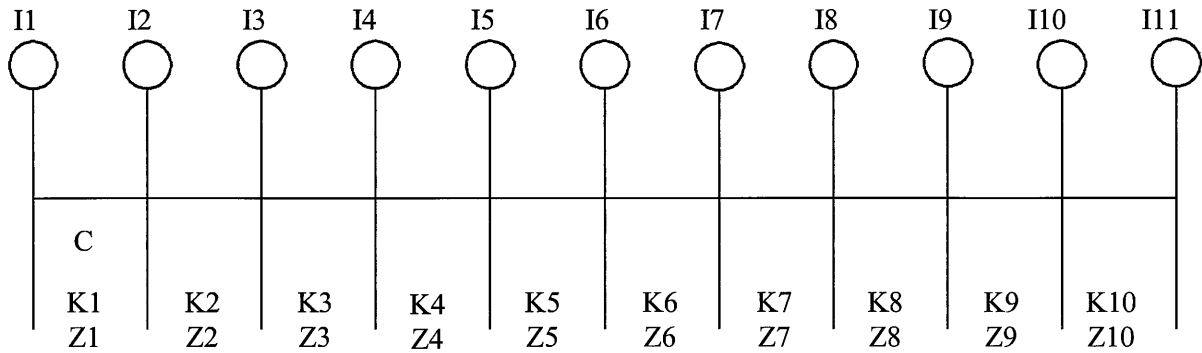
DATE

May, 2013

Elastic data of S16R2 Engine

Elastic data of S16R2 Engine are enclosed herein.

Revision	First Edition : March, 2013	Engine Engineering Department Engine System Designing Section		
	Rev.1 : May, 2013			
		Approved by	Checked by	Drawn by

S16R2-PTAW ELASTIC DATA

	Moment of inertia, J [kg.m ²]	Damping coefficient [Nm/rad/s]	Spring const. x10 ⁷ [Nm/rad]	Tensile strength [N/mm ²]	Section modulus [cm ³]	
I1	DAMPER ×3pcs	3.030	C=1617	K1=0.0	0.0	Z1 =0.0
I2	PULLEY	2.861	—	K2=1.206	834	Z2 =360.9
I3	No.1 CRANK	1.803	—	K3=0.814	834	Z3 =360.9
I4	No.2 CRANK	1.803	—	K4=0.814	834	Z4 =360.9
I5	No.3 CRANK	1.803	—	K5=0.814	834	Z5 =360.9
I6	No.4 CRANK	1.803	—	K6=0.814	834	Z6 =360.9
I7	No.5 CRANK	1.803	—	K7=0.814	834	Z7 =360.9
I8	No.6 CRANK	1.803	—	K8=0.814	834	Z8 =360.9
I9	No.7 CRANK	1.803	—	K9=0.814	834	Z9 =360.9
I10	No.8 CRANK	1.803	—	K10=1.432	834	Z10=360.9
I11	FLYWHEEL 21in	12.66	—			

Hysteresis constant:173 No. of Cylinder: 16 Bore:170mm Stroke:220mm

Length of Con-Rod: 400mm Weight of Reciprocating Parts: 12.71 kg

Firing order:1-9-6-14-2-10-4-12-8-16-3-11-7-15-5-13

Firing interval:0-60-90-150-180-240-270-330-360-420-450-510-540-600-630-690

APPLICATION : LAND USE

The data is subject to change without notice.



**MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION**

ITEM NO.

T0402-0001E Rev.1 (1/2)

DATE

May, 2008

Exhaust Gas Emission Data

Exhaust Gas Emission Data is enclosed herein.

These data are subject to change without notice.

Revision	First Edition : May, 2008	Engine Engineering Department Engine System Designing Section		
	Rev.1: February, 2013			
		Approved by	Checked by	Drawn by

EXHAUST GAS EMISSION DATA OF DIESEL ENGINE FOR GENERATOR
For Reference

MODEL	S6A3-P TA		S12A2-P TA		S12H-P TA		S6R-P TA		S12R-P TA		S12R-P TA2		S12R-PTAA2 (W/FAN)		S16R-P TA		S16R-P TA2		S16R-PTAA2 (W/FAN)		S16R2-PTAW
	400/ 1500	890	679/ 1500	825	935/ 1500	930/ 1500	1020/ 1800	515/ 1500	1110/ 1500	1190/ 1800	1195/ 1500	1340/ 1800	1277/ 1500	1387/ 1800	1480/ 1500	1590/ 1800	1630/ 1500	1775/ 1800	1684/ 1500	1895/ 1800	
Prime Rating kW/min ⁻¹ (without fan)																					
NOx	900	890	852	825	935	877	901	940	852	940	950	852	940	779	925	852	950	852	828	754	659
g/Nm ³	3.7	3.7	3.5	3.4	3.8	3.6	3.7	3.5	3.7	3.5	3.9	3.7	3.5	3.2	3.8	3.7	3.9	3.4	3.1	3.6	
g/AW·h	8.6	8.6	7.7	7.7	8.8	8.2	8.4	8.4	7.7	8.4	8.8	7.7	8.4	7.3	8.7	7.7	8.8	7.7	7.1	5.8	
CO	(220)	(210)	(220)	(210)	(310)	(210)	310	210	(310)	(210)	(310)	(210)	(320)	(200)	(310)	(210)	(310)	(320)	(200)	119	
g/Nm ³	(0.44)	(0.45)	(0.44)	(0.45)	(0.59)	(0.43)	0.52	0.39	(0.59)	(0.43)	(0.59)	(0.43)	(0.55)	(0.42)	(0.56)	(0.43)	(0.59)	(0.55)	(0.42)	0.4	
g/AW·h	(1.2)	1.4	(1.2)	1.4	(1.8)	(1.4)	1.5	1.2	(1.8)	(1.4)	(1.8)	(1.2)	(1.5)	(1.2)	(1.6)	(1.4)	(1.8)	(1.5)	(1.2)	0.5	
HC	(50)	(50)	(50)	(50)	(110)	(120)	110	120	(110)	(120)	(110)	(120)	(110)	(120)	(110)	(120)	(110)	(120)	(120)	35	
g/Nm ³	(0.05)	(0.06)	(0.05)	(0.06)	(0.11)	(0.13)	0.09	0.11	(0.11)	(0.13)	(0.11)	(0.13)	(0.10)	(0.13)	(0.10)	(0.13)	(0.11)	(0.13)	(0.13)	0.19	
g/AW·h	(0.15)	(0.18)	(0.15)	(0.18)	(0.31)	(0.38)	0.27	0.34	(0.31)	(0.38)	(0.31)	(0.35)	(0.29)	(0.38)	(0.29)	(0.38)	(0.31)	(0.35)	(0.29)	0.10	
CO ₂	6.7	6.2	6.7	6.2	6.9	6.5	8.0	7.1	6.9	6.5	6.7	6.5	6.7	6.5	6.7	6.5	6.7	6.5	6.5	8.0	
g/AW·h	619	646	619	646	619	625	598	619	619	625	620	613	619	612	619	612	620	613	619	612	
PM	0.12	0.12	0.12	0.11	0.12	0.11	0.10	0.12	0.12	0.11	0.10	0.09	0.09	0.08	0.11	0.12	0.11	0.12	0.09	0.07	
g/AW·h	0.37	0.37	0.38	0.37	0.38	0.37	0.34	0.35	0.35	0.37	0.34	0.33	0.33	0.31	0.33	0.39	0.33	0.39	0.33	0.31	

Notes

- Allowance: +25%
- Condition: 100kPa(750mmHg) barometric pressure, 298K(25°C) ambient temperature and 30% relative humidity.
- NOx, CO, HC[PPM]: with 13% O₂ Level.
NOx, CO, HC, Particulates[$\mu\text{g}/\text{Nm}^3$]: with 5% O₂ Level.
NOx, CO, HC, Particulates[$\mu\text{g}/\text{PS}\cdot\text{h}$]: with 13% O₂ Level.
CO₂[%]: Calculated Data.
(): Estimated Data.
- *1: Standby Rating
- These data are subject to change without notice.





**MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION**

ITEM NO.

T0404-0011E (1/2)

DATE

Oct., 2012

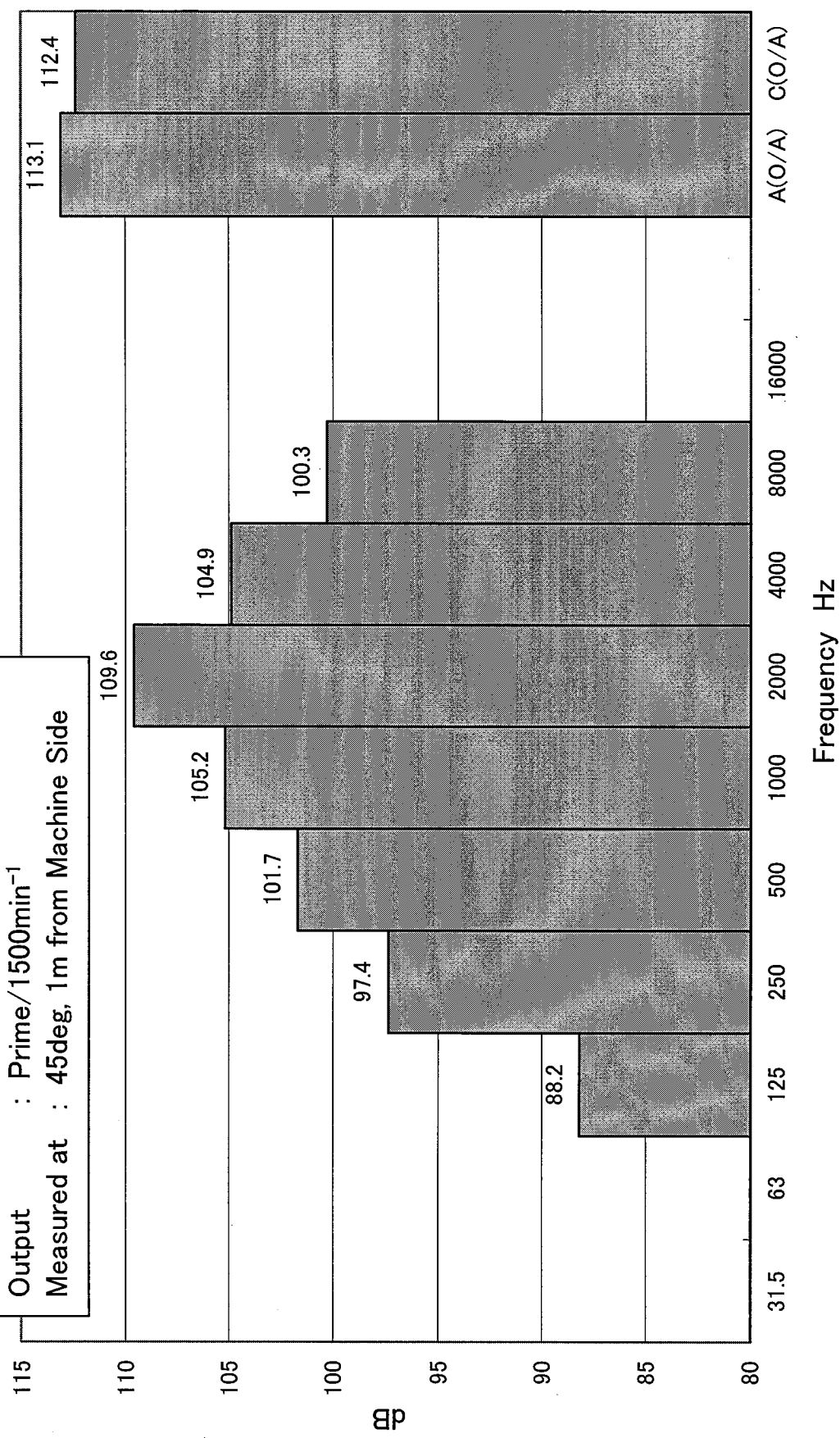
Mechanical Noize Data of S16R2

Mechanical Noize Data of S16R2 is enclosed herein.

Revision	First Edition : Oct.,2012	Engine Engineering Department Engine System Designing Section		
		Approved by	Checked by	Drawn by

Mechanical Noise Analysis

Engine Model : S16R2
 Output : Prime/1500min⁻¹
 Measured at : 45deg, 1m from Machine Side



(2)The specifications are subject to change without notice.

(1)The data are test bench data and not a guaranteed performance.