MITSUBISHI S6R-(Z3)MPTAW-1

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MITSUBISHI DIESEL ENGINE TECHNICAL INFORMATION	ITEM NO.	T0206-0009E Rev.2 (1/4)
	DATE	January, 2015

Specification Sheets of S6R-MPTAW Engine

Specification Sheets of S6R-MPTAW Engine that is satisfied with IMO-Tier2 certified engine are enclosed herein.

Revision				
	First Edition : July, 2009	Engine Engineering Department High Speed Engine Designing Section		
	Rev.1 : June, 2011			
	Rev.2 : January, 2015	Approved by	Checked by	Drawn by

GENERAL ENGINE DATA

Type	4-Cycle, Water Cooled	
Aspiration	Turbo-Charged, Inter Cooler (Fresh water to Cooler)	
Cylinder Arrangement	Inline	
No.of Cylinders	6	
Bore mm(in.)	170	(6.69)
Stroke mm(in.)	180	(7.09)
Displacement Liter($in.^3$)	24.51	(1496)
Compression Ratio	14.5 : 1	
Dry Weight - Engine only - kg(lb)	2830	(6240)
Wet Weight - Engine only - kg(lb)	3015	(6648)

PERFORMANCE DATA

Steady State Speed Stability Band at any Constant Load(Generator Use)		
Hydraulic (std.) or Electric Governor - %	±0.25 or better	
Idling Speed -rpm	600～650	
Maximum Overspeed Capacity - rpm	2195	
Moment of Inertia of Rotating Components J - kg・m^2($lbf・ft^2$) (Includes 18 inch Flywheel)	10.79	(1024)
Cyclic Speed Variation with Flywheel at 1800rpm	1/182	
Cyclic Speed Variation with Flywheel at 1500rpm	1/123	

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Flywheel Housing - N・m (lbf・ft)	1961	(1447)

AIR INLET SYSTEM

Maximum Intake Air Restriction (Includes piping)- kPa (in. H_2O)	3.92	(15.7)
Maximum Allowable Intake Air Temperature- °C (°F)	45	(113)

EXHAUST SYSTEM

Maximum Allowable Back Pressure - kPa (in. H_2O)	4.41	(17.7)

LUBRICATION SYSTEM

Oil Pressure at Idle - MPa (psi)	0.2～0.3	(29～43)
Oil Pressure at Rate Speed - MPa (psi)	0.5～0.64	(71～93)
Maximum Oil Temperature- °C (°F)	110	(230)
Oil Capacity of Marine Pan High - liter (U.S.gal)	140	(37.0)
Oil Capacity of Marine Pan Low - liter (U.S.gal)	110	(29.1)
Total System Capacity (Includes Oil Filter) - liter (U.S.gal)	160	(42.3)
Maximum Installation Angle Front Up	8°	
Maximum Installation Angle Front Down	8°	
Maximum Instantaneous Operating Angle (Engine Level) Front Up	25°	
Maximum Instantaneous Operating Angle (Engine Level) Front Down	15°	
Maximum Instantaneous Operating Angle (Engine Level) Side to Side	22.5°	

COOLING SYSTEM

Coolant Capacity of Jacket(Engine only) - liter (U.S.gal)	43	(11.4)
Coolant Capacity of Air cooler(Engine only) - liter (U.S.gal)	7	(1.8)
Maximum External Friction Head at Engine Outlet-MPa(psi)	0.034	(5.0)
Recommended Static Head of Coolant above Crankshaft Center - m(ft) MAX.	10	(32.8)
Recommended Static Head of Coolant above Crankshaft Center - m(ft) MIN.	7	(23.0)
Standard Thermostat (Modulating)Range- °C (°F)	71～85	(160～185)
Maximum Coolant Temperature at Engine Outlet- °C (°F)	95	(203)
Recommended Coolant Temperature at Engine outlet- °C (°F)	80	(176)
Minimum Coolant Expansion Space-% of System Capacity	10	
Maximum Coolant Temperature at Inter Cooler Inlet, PTAW type- °C (°F)	see page 4/4	

FUEL SYSTEM

Fuel Injection Pump		Mitsubishi PS6 Type x 1	
Maximum Suction Head of Feed Pump - kPa (in. Hg)		14.7	(4.3)
Maximum Level of Fuel Tank - m	Continuous Use	5.0	
	Stand-by Use	2.0	
Minimum Fuel Oil Supply Pipe Inner Diameter - mm(in.)		16	(0.63)
Minimum Fuel Oil Leak Pipe Inner Diameter - mm(in.)		16	(0.63)

STARTING SYSTEM

Battery Charging Alternator - V-Ah	24-35
Starting Motor Capacity - V -kW	24-7.5
Maximum Allowable Resistance of Cranking Circuit - m Ω	2.5
Recommended Minimum Battery Capacity	
At 5°C (41°F) and above - Ah	200
Below 5°C (41°F) through -5°C (23°F)	500
Cranking Ampere of Starter at 5°C (41°F) / -5°C (23°F)	
Static Ampere -A	370 / 500
Momentary Ampere -A	700 / 960

ACCESSORY EQUIPMENT

Air Cleaner	Silencer Type
Exhaust Manifold	Water Cooled
Turbocharger	Air cooled
Air Cooler	Fresh Water Cooled
Breather	Conduction Type
Governor	Hydraulic PSG Type
Fuel Injection Pump	
Fuel Feed Pump	
Fuel Injection Pipe	Double walled Type
Fuel Injection Nozzle	
Fuel Filter	Paper Element Type
Lubricating Oil Pump	
Lubricating Oil Cooler	
Lubricating Oil Filter(Full-Flow)	Paper Element Type
Lubricating Oil Filter(By-Pass Flow)	Paper Element Type
Oil Pan	Large Capacity,steel
Lubricating Oil Thermostat	
Cooling Water Pump (Jacket water)	
Cooling Water Thermostat(Jacket water)	
Starter	Earth Float Type
Alternator	Earth Float Type
Stop Solenoid	DC24V-15A
Engine Support	Marine Type
Accessory Drive	Front Drive Pulley

ACCESSORY EQUIPMENT(LOOSE SUPPLY)

Relay Safety	For Starter
Jack Bolt	
Companion Flange	
Standard Tools	
Standard Spare Parts	

SPECIFICATION SHEET

ENGINE RATING

All data represent net performance according to ISO3046 with standard accessories such as fuel injection pump, water pump L.O. pump and charging alternator under the condition of 100kPa(750 mm Hg),barometric pressure 298K(25°C) ambient temperature and 30% relative humidity.

LD:B-rating MD:C-rating HD:D-rating 60Hz, 50Hz:Prime

ITEM Engine Model	UNIT	Propulsion use			Generator use		
		-MPTAW-1	-MPTAW-2	-MPTAW-3	-MPTAW-4	-MPTAW-5	
		LD	MD	HD	60Hz	50Hz	
Test cycle (ISO8178)		E3/E2	E3/E2	E3/E2	D2	D2	
Engine Speed	min^{-1}	1800	1650	1600	1800	1500	
No. of Cylinders		6					
Bore	mm (in.)	170 (6.69)					
Stroke	mm (in.)	180 (7.09)					
Displacement	liter ($in.^3$)	24.51 (1496)					
Brake Horse Power	kW (HP)	605 (811)	520 (697)	470 (630)	635 (851)	545 (731)	
Brake Mean Effective Pressure	MPa (psi)	1.65 (239)	1.54 (223)	1.44 (209)	1.73 (251)	1.78 (258)	
Mean Piston Speed	m/s (ft/min)	10.8 (2126)	9.9 (1949)	9.6 (1890)	10.8 (2126)	9.0 (1772)	
Maximum Regenerative Power Absorption Capacity	kW (HP)	78 (104)	65 (87)	62 (83)	78 (104)	56 (75)	
Intake Air Flow	m3/min (CFM)	60 (2119)	48 (1695)	43 (1518)	59 (2083)	48 (1695)	
Exhaust Gas Flow	m3/min (CFM)	160 (5650)	127 (4484)	114 (4025)	157 (5544)	128 (4520)	
Coolant Flow	liter/min (U.S. GPM)	990 (261)	910 (240)	880 (232)	990 (261)	820 (217)	
Coolant(Jacket water) Pressure (water pump outlet)	MPa (psi)	0.25 (36)	0.21 (30)	0.20 (29)	0.25 (36)	0.17 (25)	
Coolant Flow to Inter Cooler (Max. Flow: 400L/min)	liter/min (U.S. GPM)	350 (92)	350 (92)	350 (92)	350 (92)	350 (92)	
Oil Flow	liter/min (U.S. GPM)	360 (95)	330 (87)	320 (85)	360 (95)	290 (77)	
Radiated Heat to Ambient	kJ/hr (BTU/min)	95089 (1502)	75888 (1199)	67786 (1071)	93473 (1477)	76093 (1202)	
Heat Rejection to Coolant (include water cooled manifold)	kJ/hr (BTU/min)	1331252 (21034)	1062430 (16786)	949005 (14994)	1308616 (20676)	1065299 (16832)	
Heat Rejection to Inter Cooler (PTAW Version)	kJ/hr (BTU/min)	760716 (12019)	607103 (9592)	542289 (8568)	747781 (11815)	608743 (9618)	
Heat Rejection to Exhaust	kJ/hr (BTU/min)	1973819 (31186)	1442296 (22788)	1268415 (20041)	1796666 (28387)	1361127 (21506)	
Cooling system: Direct Sea Water Cooling Max. sea water temp. at inter cooler inlet		N/A	N/A	N/A	N/A	N/A	
Cooling system: Intermediate Fresh Water Cooling Max. fresh water temp. at inter cooler inlet		Max. 38℃ (When sea water temp. 32℃)					
Cooling system: Radiator Cooling Max. coolant temp. at inter cooler inlet		N/A	N/A	N/A	Max. 45℃ (When Air Temp. 25℃)		
Noise Level (1 m height & distance) (excludes, Intake,Exhaust)	dB(A)	-	-	-	-	-	
Maximum No Load Governed Speed	min^{-1}	1935	1774	1720	1890	1575	

The specifications are subject to change without notice.

APPLICATION : MARINE

January, 2015 Printed in Japan

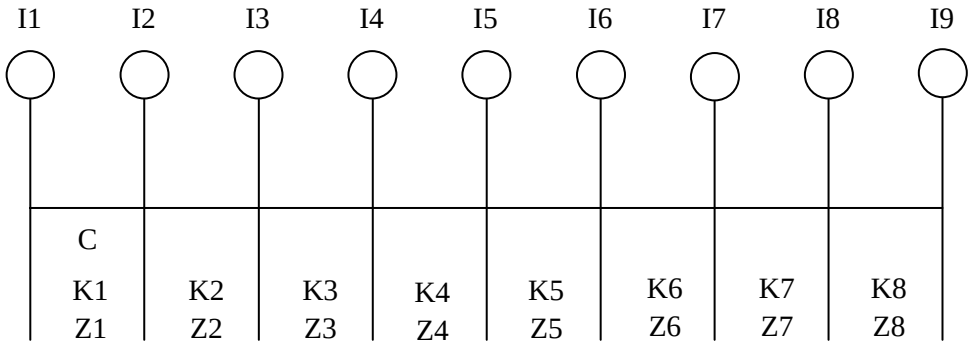
MITSUBISHI DIESEL ENGINE TECHNICAL INFORMATION	ITEM NO.	T0307-0026E Rev.2 (1/2)
	DATE	April, 2007

Elastic data of S6R-M Engine

Elastic data of S6R-M Engine are enclosed herein.

Revision				
	First Edition : April, 2007 (Refer to MTD05-0001)	Engine Engineering Department Large Engine Design Section		
	Rev.1 : April, 2007 (Refer to MTD05-0002)			
	Rev.2 : December, 2007	Approved by	Checked by	Drawn by

S6R-M ELASTIC DATA



(USE:45R89-19007 CONNECTING ROD)
(USE:45R89-20004 CRANKSHAFT)

	Moment of inertia J kg.m^2		Damping coefficient Nm/rad/s	Spring const. x10^7 Nm/rad	Tensil strength N/mm^2	Section modulus cm^3
I1	DAMPER	1.01	C=524.7	K1=0	0.0	Z1 =0.0
I2	PULLEY	1.19	——	K2=1.196	735	Z2 =373.7
I3	No.1 CRANK	0.572	——	K3=0.755	735	Z3 =373.7
I4	No.2 CRANK	0.342	——	K4=0.755	735	Z4 =373.7
I5	No.3 CRANK	0.565	——	K5=0.755	735	Z5 =373.7
I6	No.4 CRANK	0.565	——	K6=0.755	735	Z6 =373.7
I7	No.5 CRANK	0.342	——	K7=0.755	735	Z7 =373.7
I8	No.6 CRANK	0.573	——	K8=1.206	735	Z8 =373.7
I9	FLYWHEEL	5.59	——			

Hysteresis constant:123 No. of Cylinder: 6 Bore:170mm Stroke:180mm

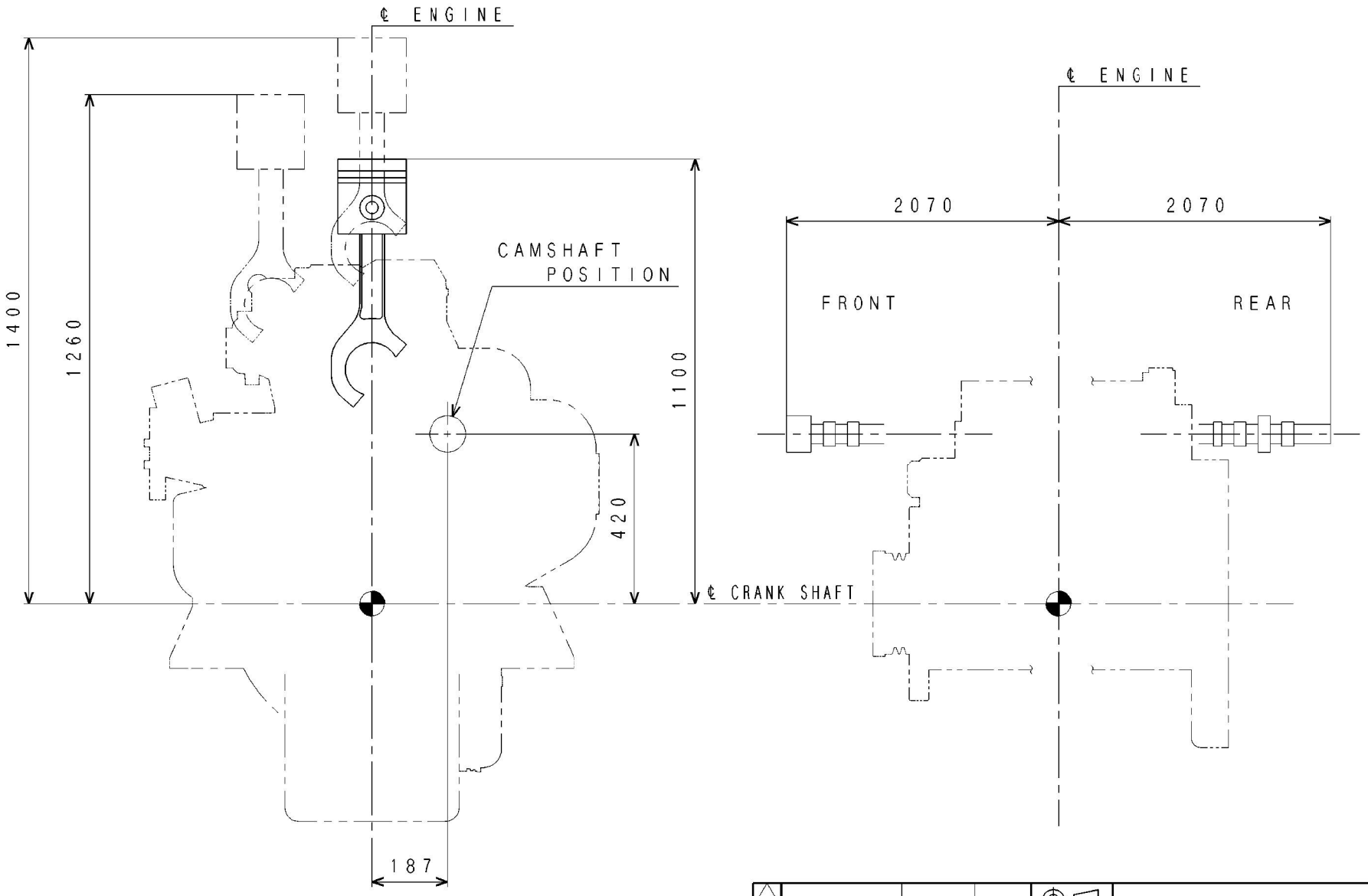
Length of Con-Rod: 340mm Mass of Reciprocating Parts: 12.630 kg

Firing order:1-5-3-6-2-4

Firing interval:0-120-240-360-480-600

APPLICATION : MARINE USE

The data is subject to change without notice.



出図
汎特
2001
10.9

FULL-CAD

CHG	EO-NO	DATE	CHK

3rd ANGLE PROJECTION

尺度 SCALE

MEASURE OF OVERHAUL FOR S6R

三菱重工業株式会社 汎用機・特車事業本部

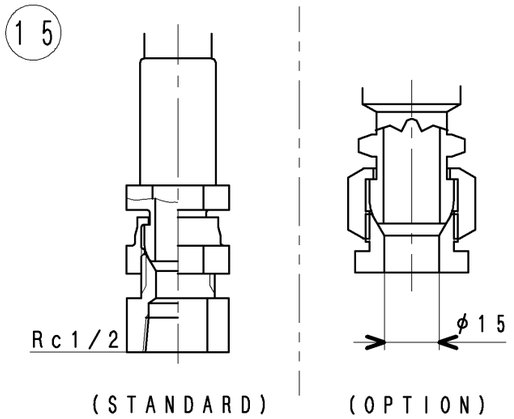
GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS, MITSUBISHI HEAVY INDUSTRIES, LTD.

図面番号 DRAWING No. 45R96-09000

S6R-090-81A

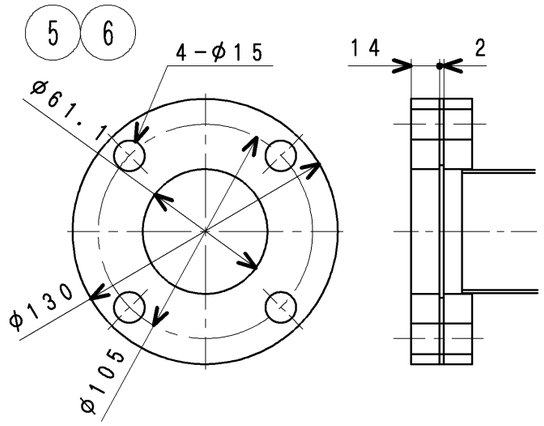
③新図 4旧引図 | サイズ A3 | ①組立図 | 2鋳鍛歯車品 3板金溶接品 4組立品 5切削品 6その他（購入品）

(15)



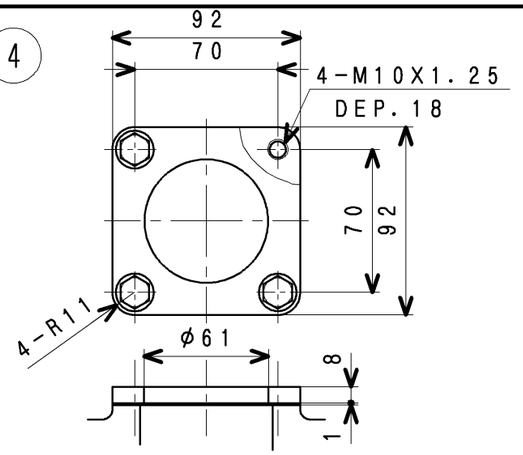
DETAIL OF FUEL PIPE JOINT

(56)



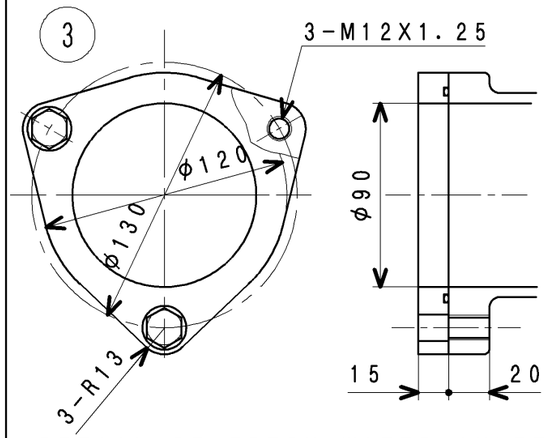
DETAIL OF FRESH WATER IN & OUTLET
(AIR COOLER)

(4)



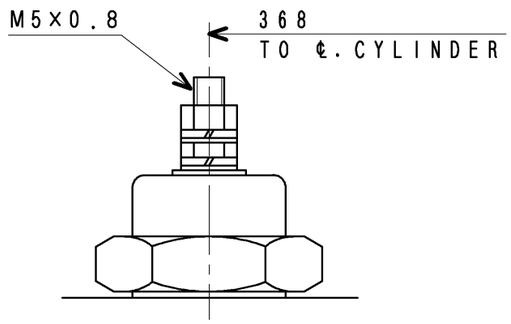
DETAIL OF FRESH WATER OUTLET

(3)



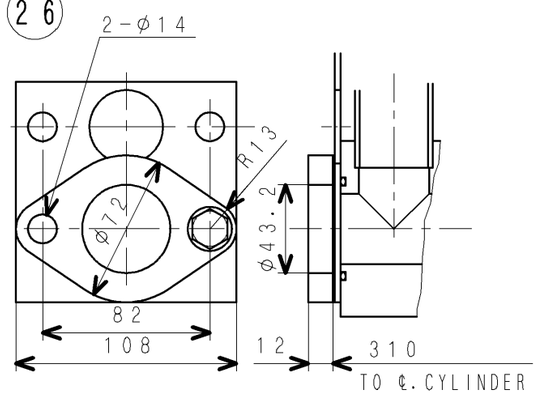
DETAIL OF FRESH WATER INLET

(27)



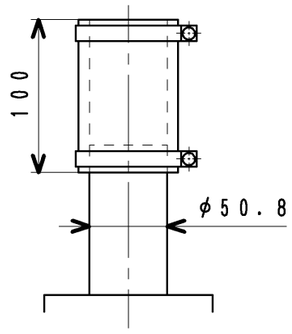
DETAIL OF FILTER ALARM

(26)



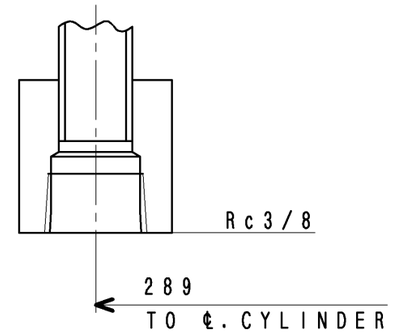
DETAIL OF OIL INLET
(FOR EMERGENCY)

(21)



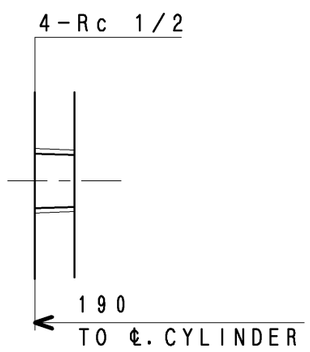
DETAIL OF MIST GAS OUTLET

(16)



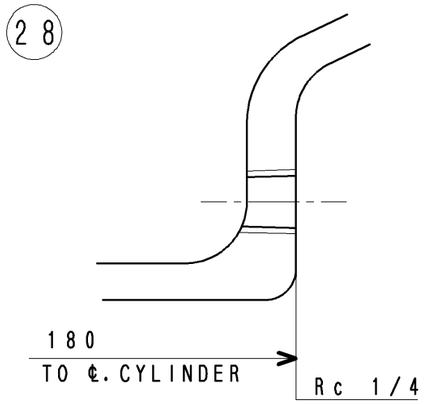
DETAIL OF
FUEL RETURN PIPE ADAPTER

(29)



DETAIL OF THERMOMETER &
THERMOSWITCH ADAPTER

(28)



DETAIL OF AIR
PRESS.GAUGE ADAPTER

MHI CONFIDENTIAL

MODEL
S6R-(Z3)MPTAW

S6R

JOINT DETAIL

三菱重工業株式会社 汎用機・特車事業本部

MITSUBISHI HEAVY INDUSTRIES,LTD. GENERAL MACHINERY & SPECIAL VEHICLES.

図面番号 DRAWING No. 45R96-01012 1/2

3 新 図 ④ 旧引図	サイズ A 3	① 組立図	2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

旧引
三菱 汎特
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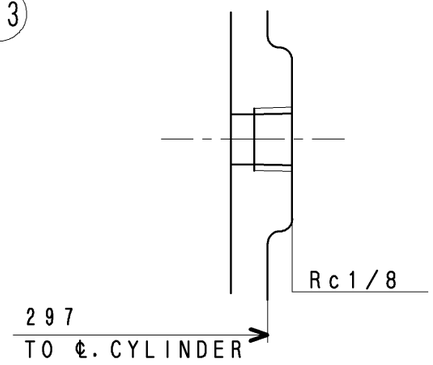
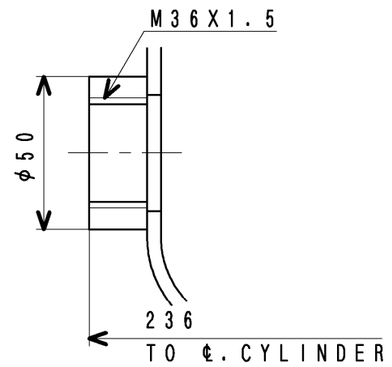
注記 （1）本図は、S6R-(Z3)MPTAW仕様である。

(33)



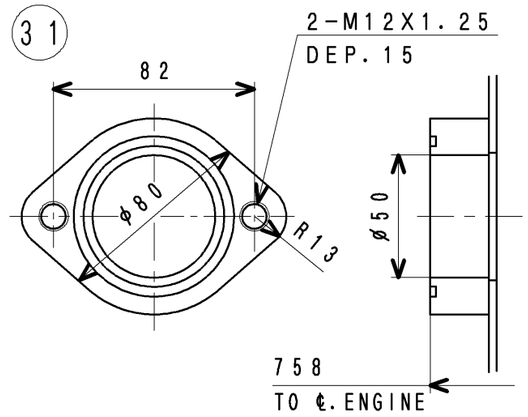
DETAIL OF OIL PRESS. GAUGE & PRESS. SWITCH ADAPTER

(32)



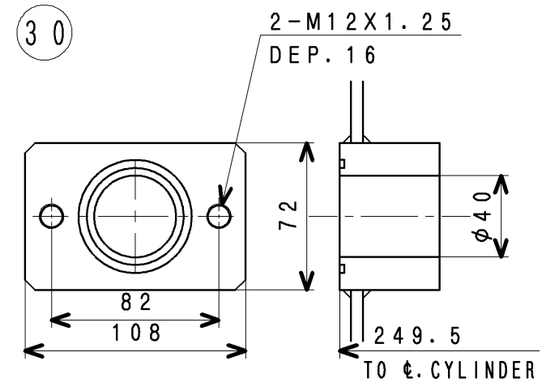
DETAIL OF OIL PAN ADAPTER (C)

(31)



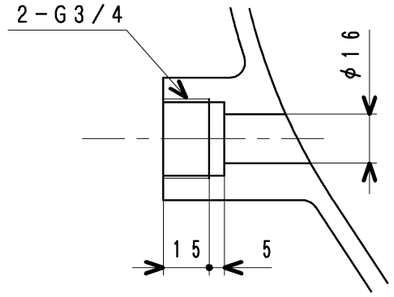
DETAIL OF OIL PAN ADAPTER (B)

(30)



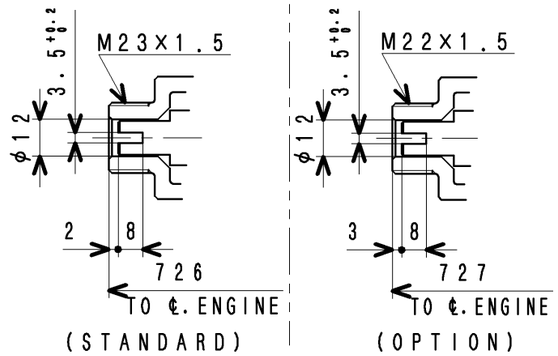
DETAIL OF OIL PAN ADAPTER (A)

(35)



DETAIL OF THERMOMETER ADAPTER

(34)



DETAIL OF TACHOMETER ADAPTER

旧引
三菱
汎特
2013
7.5

M/C

MHI CONFIDENTIAL

S6R

JOINT DETAIL

三菱重工業株式会社 汎用機・特車事業本部

MITSUBISHI HEAVY INDUSTRIES, LTD. GENERAL MACHINERY & SPECIAL VEHICLES.

図面番号 DRAWING No. 45R96-01012 1/2

3 新 図 ④ 旧引図	サイズ A 3	① 組立図	2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

MITSUBISHI DIESEL ENGINE TECHNICAL INFORMATION	ITEM NO.	T0406-0004E (1/3)
	DATE	August, 2010

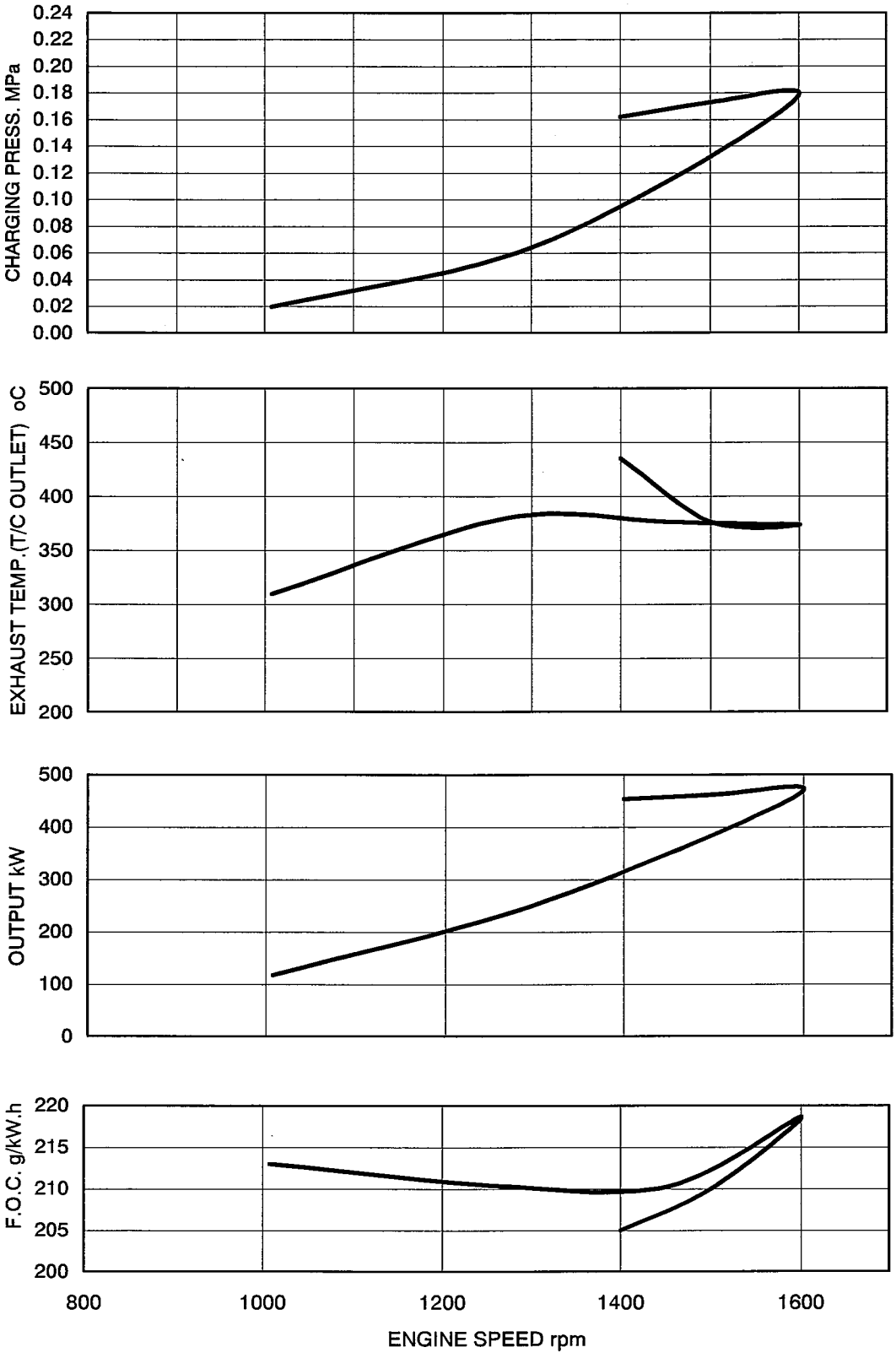
Performance Curve of S6R-(Z3)MPTAW Engine (EUstageⅢA & IMO-Ⅱ Certified Engine)

Performance Curve of S6R-(Z3)MPTAW Engine that is satisfied with EUstageⅢA & IMO-Ⅱ are enclosed herein.

Revision				
	First Edition : August, 2010	Engine Engineering Department Large Engine Design Section		
		Approved by	Checked by	Drawn by

PERFORMANCE CURVE

Rating: HEAVY DUTY-E3



Rating: MEDIUM DUTY-E3