



## **mitsubishi S6B3-T2MPTAW-13**

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[Elastic drawing](#)  
[Flywheel & housing drawing](#)  
[Measure of overhaul](#)  
[Connection details](#)  
[Performance curves](#)



**MITSUBISHI**  
D I E S E L E N G I N E

Item no.	M0203-0007E
Date	April 2013

Specification sheet of S6B3-T2MPTAW marine diesel engine

Specification sheet of:

- S6B3-T2MPTAW (in compliance with IMO MARPOL 73/78, Annex VI, Regulation 13, Tier 2)

Revision	0	First edition: April 2012	Technology Department Engine Division		
	1	April 2013			
			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.)	-----	135	(5.31)
Stroke mm(in.)	-----	170	(6.69)
Displacement Liter(in. <sup>3</sup> )	-----	14.60	(891)
Compression Ratio	-----	14.2 : 1	
Dry Weight - Engine only - kg(lb)	-----	1310	(2889)
Wet Weight - Engine only - kg(lb)	-----	1407	(3102)

## 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	-----	2315	
Moment of Inertia of Rotating Components J - kg · m <sup>2</sup> (lbf · ft <sup>2</sup> )	-----	16.8	(1595)
(Includes 14 inch Flywheel)			
Cyclic Speed Variation with Flywheel at	1800rpm	-----	1/120
	1500rpm	-----	1/78

## ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Flywheel Housing - N · m (lbf · ft)	-----	1373	(1013)
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## AIR INLET SYSTEM

Maximum Intake Air Restriction (Includes piping)- kPa (in. H <sub>2</sub> O)	-----	3.92	(15.7)
Maximum Allowable Intake Air Temperature- °C (°F)	-----	45	(113)

## EXHAUST SYSTEM

Maximum Allowable Back Pressure - kPa (in. H <sub>2</sub> O)	-----	4.41	(17.7)
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## LUBRICATION SYSTEM

Oil Pressure at Idle - MPa (psi)	-----	0.2~0.3	(29~43)
at Rate Speed - MPa (psi)	-----	0.5~0.6	(71~86)
Maximum Oil Temperature- °C (°F)	-----	110	(230)
Oil Capacity of Marine Pan	High - liter (U.S.gal)	-----	70 (18.5)
	Low - liter (U.S.gal)	-----	52 (13.7)
Total System Capacity (Includes Oil Filter) - liter (U.S.gal)	-----	80	(21.1)
Maximum Installation Angle	Front Up	-----	22°
	Front Down	-----	12.5°
Maximum Instantaneous Operating Angle	Front Up	-----	35°
(Engine Level)	Front Down	-----	22.5°
	Side to Side	-----	22.5°

## COOLING SYSTEM

## Jacket water system

Cooling system: Closed fresh water type High Temperature (HT) system with treated water/glycol mixture			
Coolant Capacity of Jacket Water System (Engine only) - liter (U.S.gal)	-----	30	(7.9)
Maximum External Friction Head at Engine Outlet-MPa(psi)	-----	0.034	(5.0)
Jacket Water Standard Thermostat (Modulating) Range- oC (oF)	-----	71~85	(160~185)
Maximum Allowable Coolant Temperature at Engine Outlet- oC (oF)	-----	95	(203)
Recommended Coolant Temperature at Engine outlet- oC (oF)	-----	80	(176)

## Charge air cooler cooling system

Cooling system: Closed fresh water type Low Temperature (LT) system with treated water/glycol mixture			
Coolant Capacity of Charge Air Cooler (Engine only) - liter (U.S.gal)	-----	3	(0.8)
Maximum External Friction Head at Intercooler Outlet-MPa(psi)	-----	0.035	(5.1)
Maximum Coolant Temperature at Intercooler Inlet	-----	see page 4/4	
Recommended Charge Air Cooler Thermostat Modulating Range- oC (oF)	-----	35~50	(95~122)
Minimum Coolant Expansion Space -% of System Capacity	-----	10	
Maximum Static Head of Coolant above Crankshaft Center - m(ft)	MAX.	-----	10 (32.8)

The specifications are subject to change without prior notice.

## FUEL SYSTEM

Fuel Injection Pump	-----	Bosch S7S Type x 1
Maximum Suction Head of Feed Pump - kPa (in. Hg)	-----	14.7 (4.3)
Maximum Level of Fuel Tank - m	Continuous Use ----- Stand-by Use	5.0 ----- 2.0
Minimum Fuel Oil Supply Pipe Inner Diameter - mm(in.)	-----	16 (0.63)
Minimum Fuel Oil Leak Pipe Inner Diameter - mm(in.)	-----	12 (0.47)

## STARTING SYSTEM

Battery Charging Alternator - V-Ah	-----	24-35
Starting Motor Capacity - V -kW	-----	24-6.0
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)	-----	400
Cranking Ampere of Starter at 5°C (41°F) / -5°C (23°F)		
Static Ampere -A		300 / 330
Momentary Ampere -A		525 / 585

## 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 or electronic
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,aluminum
Lubricating Oil Thermostat	
Cooling Water Pump (HT)	
Cooling Water Thermostat (HT)	
Starter	Earth Floated Type
Alternator	Earth Floated Type
Stop Solenoid	DC24V-15A
Engine Support	Marine Type
Accessory Drive	Front Drive Pulley

The specifications are subject to change without prior notice.

ENGINE RATING<sup>1</sup>

All data represent net performance according to ISO 3046 with standard accessories such as fuel injection pump, water pump, L.O. pump and charging alternator under the condition of 100 kPa (750 mm Hg) barometric pressure, 298 K (25 °C) ambient temperature and 30% relative humidity

ITEM Engine Model	UNIT	propulsion use		auxiliary generator	
		-T2MPTAW-13	-T2MPTAW-15	-T2MPTAW-14	-T2MPTAW-14
Rating		Heavy Duty		50 Hz	60 Hz
Rated engine speed	rpm	1940		1500	1800
Emission Regulation (Test cycle)	IMO Tier 2	E2 (CPP) or E3 (FPP)		D2	D2
No. of Cylinders		6			
Bore	mm (in.)	135 (5.31)			
Stroke	mm (in.)	170 (6.69)			
Displacement	liter (in. <sup>3</sup> )	14.60 (891)			
Rated output <sup>1</sup>	kW (HP)	320 (429)	335 (449)	375 (503)	375 (503)
Brake Mean Effective Pressure	MPa (psi)	1.35 (196)	1.83 (266)	1.71 (248)	1.71 (248)
Mean Piston Speed	m/s (ft/min)	11.0 (2165)	8.5 (1673)	10.2 (2008)	10.2 (2008)
Maximum Regenerative Power	kW	36	28	33	33
Absorption Capacity	(HP)	(48)	(38)	(44)	(44)
Intake Air Flow	m <sup>3</sup> /min (CFM)	30 (1059)	30 (1059)	35 (1236)	35 (1236)
Exhaust Gas Flow	m <sup>3</sup> /min (CFM)	79 (2789)	79 (2789)	92 (3249)	92 (3249)
Coolant Flow	liter/min (U.S. GPM)	540 (143)	435 (115)	500 (132)	500 (132)
Coolant(Jacket water) Pressure (water pump outlet)	MPa (psi)	0.14 (21)	0.12 (18)	0.09 (13)	0.09 (13)
Recommended Coolant Flow to Inter Cooler (Max. Flow: 200 l/min)	liter/min (U.S. GPM)	150 (40)	150 (40)	150 (40)	150 (40)
Oil Flow	liter/min (U.S. GPM)	242 (64)	188 (50)	225 (60)	225 (60)
Radiated Heat to Ambient	kJ/hr (BTU/min)	63205 (998)	63452 (1002)	73394 (1159)	73394 (1159)
Heat Rejection to Coolant (include water cooled manifold)	kJ/hr (BTU/min)	821691 (12981)	824856 (13031)	954125 (15073)	954125 (15073)
Heat Rejection to Inter Cooler	kJ/hr (BTU/min)	284429 (4493)	285526 (4511)	330275 (5218)	330275 (5218)
Heat Rejection to Exhaust	kJ/hr (BTU/min)	839243 (13258)	792925 (12526)	962183 (15200)	962183 (15200)
Cooling system	Direct Sea Water Cooling Max. sea water temp. at intercooler inlet	°C	N/A		
	Intermediate Fresh Water Cooling Max. fresh water temp. at intercooler inlet	°C	Max. 38°C (When sea water temp. 32°C)		
	Radiator Cooling Max. coolant temp. at intercooler inlet	°C	N/A	Max. 45°C (When Air Temp. 25°C)	
Noise Level (1 m height & distance) (excludes, Intake,Exhaust)	dB(A)	-	-	-	-
Maximum No Load Governed Speed	rpm	2086	1575	1890	1890

<sup>1</sup> the rated output is available up to IACS ambient reference conditions without derating

These specifications are subject to change without prior notice.

APPLICATION: MARINE

#

Pub. No. M0203-0007E Rev 1

4/4



**MITSUBISHI DIESEL ENGINE  
TECHNICAL INFORMATION**

ITEM NO.

T0307-0023E (1/2)

DATE

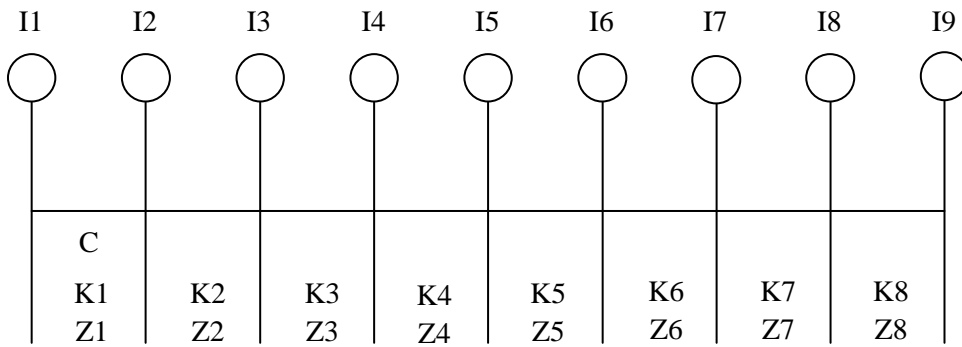
April, 2007

Elastic data of S6B3-M Engine

Elastic data of S6B3-M Engine are enclosed herein.

Revision	First Edition : April, 2007 (Refer to MTD00-0017)	Engine Engineering Department Large Engine Design Section		
		Approved by	Checked by	Drawn by



**S6B3-M ELASTIC DATA**

	Moment of inertia J kg.m <sup>2</sup>	Damping coefficient Nm/rad/s	Spring const. x10 <sup>7</sup> Nm/rad	Tensile strength N/mm <sup>2</sup>	Section modulus cm <sup>3</sup>
I1	DAMPER	0.415	C=392.3	0.0	Z1 =0.0
I2	PULLEY	0.439	—	834	Z2 =135.0
I3	No.1 CRANK	0.211	—	834	Z3 =135.0
I4	No.2 CRANK	0.137	—	834	Z4 =135.0
I5	No.3 CRANK	0.211	—	834	Z5 =135.0
I6	No.4 CRANK	0.211	—	834	Z6 =135.0
I7	No.5 CRANK	0.137	—	834	Z7 =135.0
I8	No.6 CRANK	0.211	—	834	Z8 =135.0
I9	FLYWHEEL	2.23	—	(SAE#14")	
I9	FLYWHEEL	5.41	—	(SAE#18")	

Hysteresis constant:194 No. of Cylinder: 6 Bore:135mm Stroke:170mm

Length of Con-Rod: 270mm Mass of Reciprocating Parts: 5.59 kg

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

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

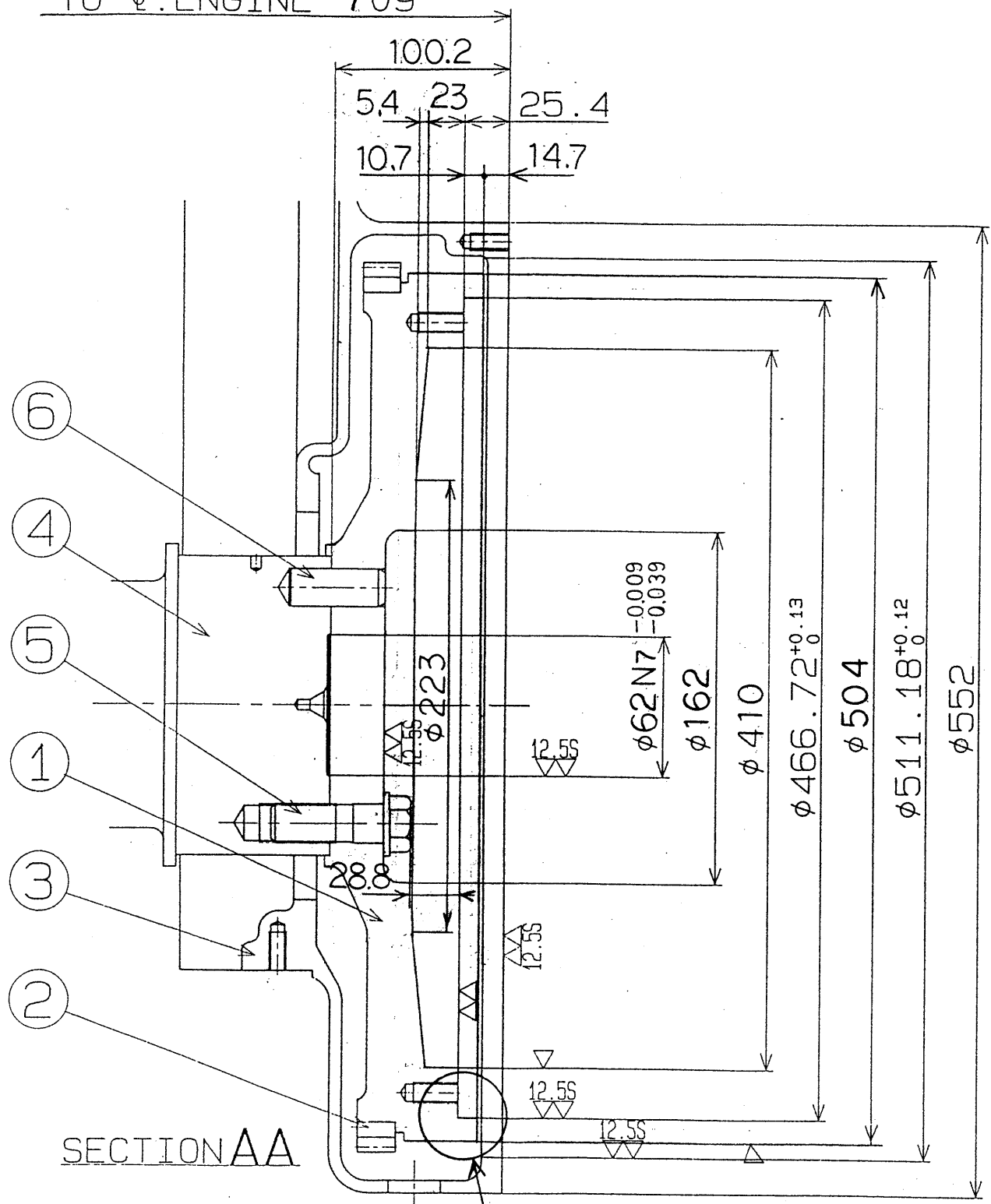
APPLICATION : MARINE USE

The data is subject to change without notice.



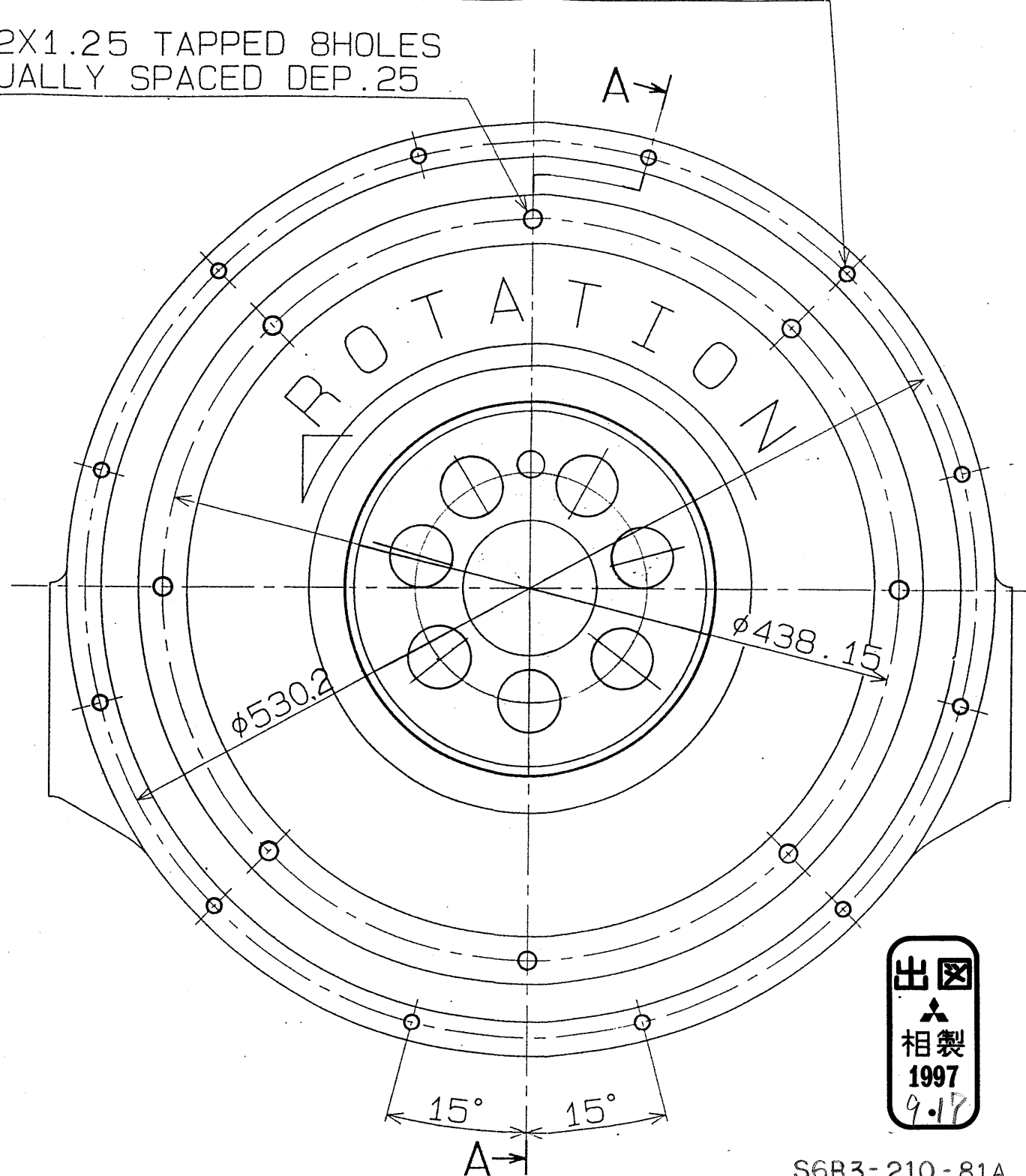
**MITSUBISHI HEAVY INDUSTRIES, LTD.**  
GENERAL MACHINERY & SPECIAL VEHICLE

TO  $\phi$ .ENGINE 709

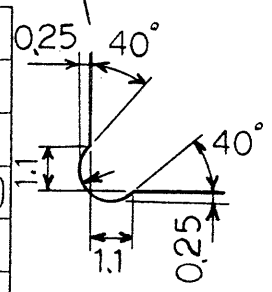


M10X1.25 TAPPED 12HOLES  
EQUALLY SPACED DEP.17

M12X1.25 TAPPED 8HOLES  
EQUALLY SPACED DEP.25



6	DOWEL PIN	
5	FLYWHEEL BOLT	
4	CRANK SHAFT	
3	FLYWHEEL HOUSING	SAENO.1D
2	RING GEAR	
1	FLYWHEEL	SAE14in
NO	PARTS NAME	SIZE



△				3rd ANGLE PROJECTION 尺度 SCALE
△				
△				
△				
CHG	EO-NO	DATE	CHK	

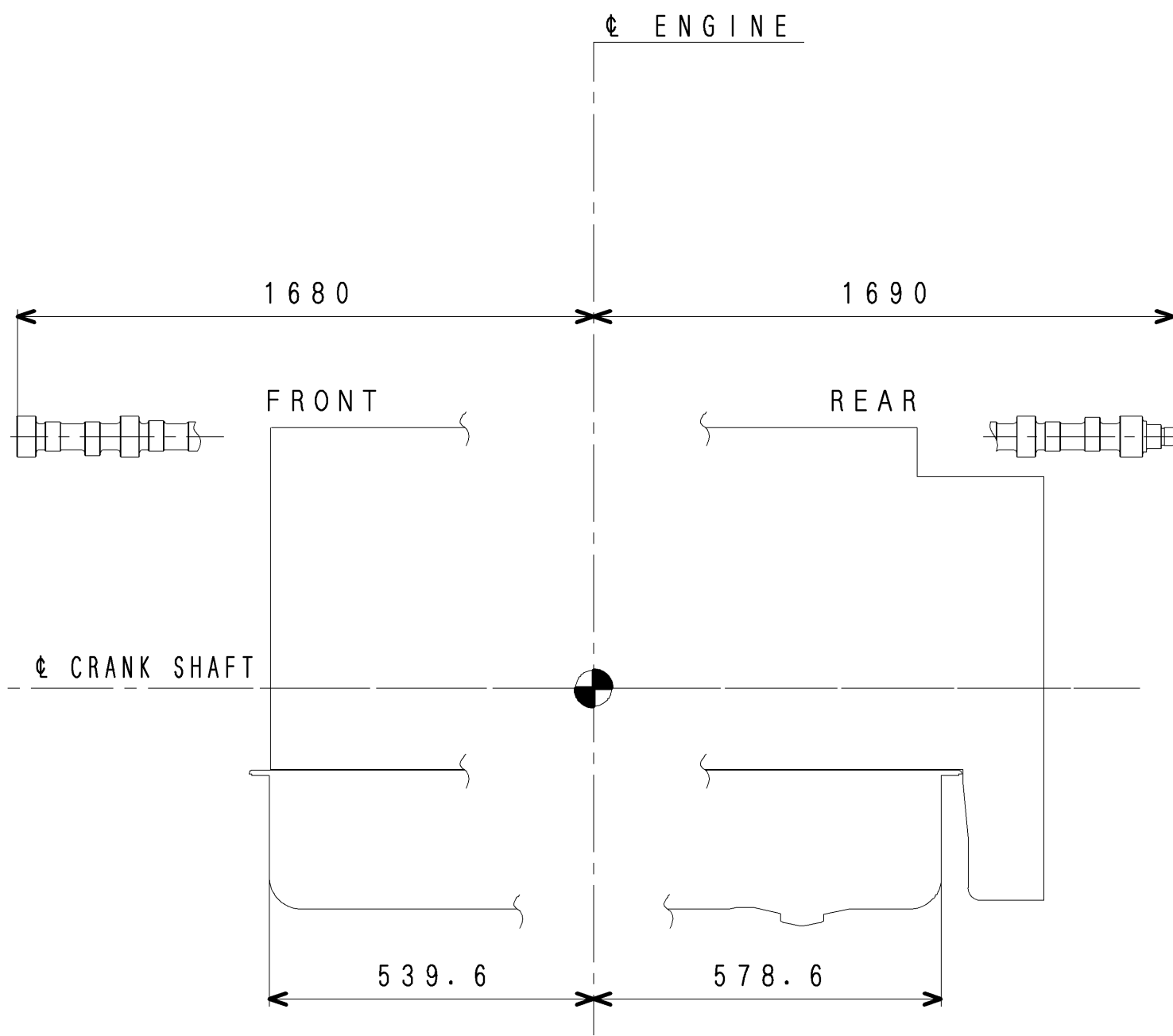
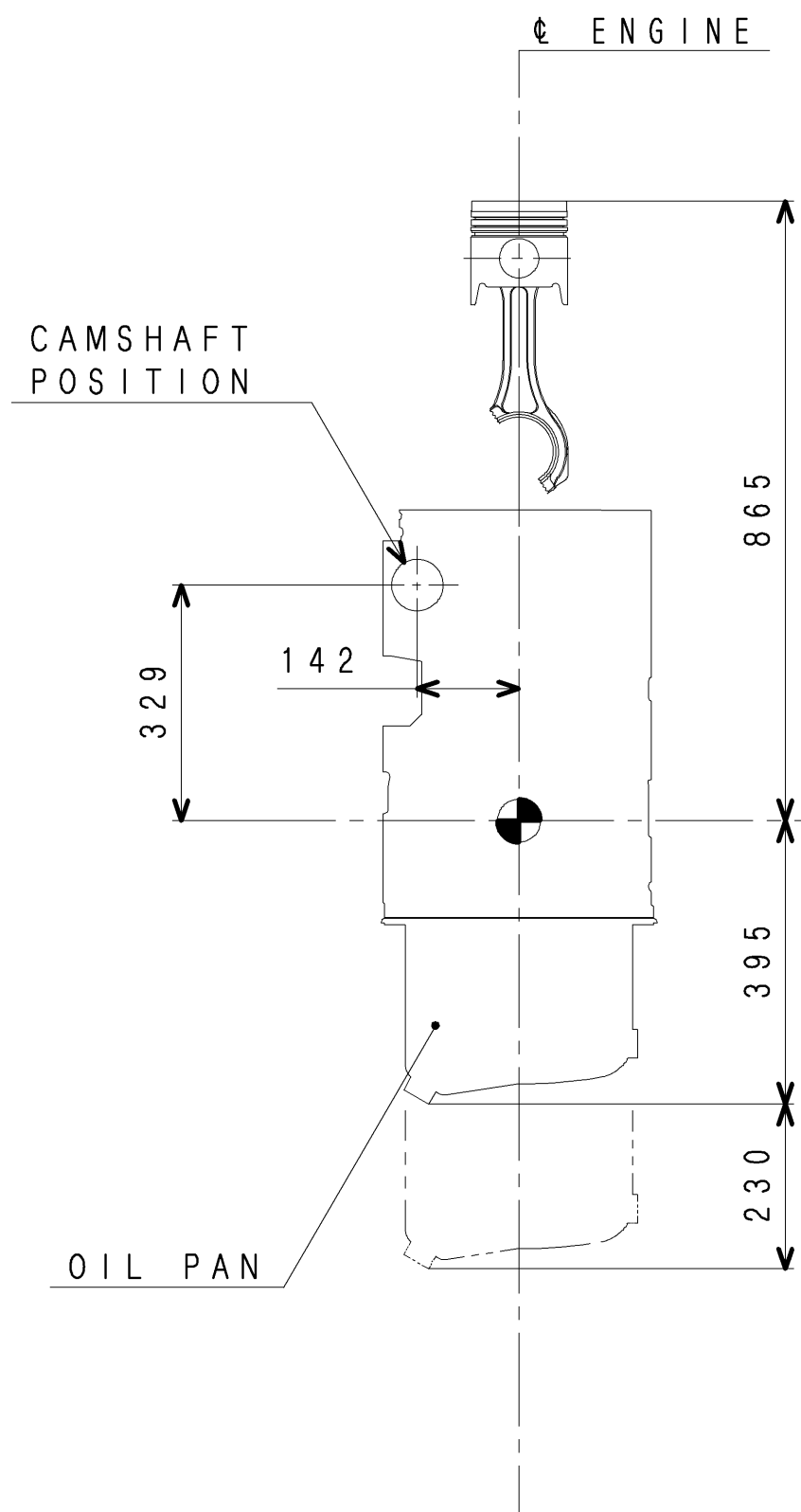
S6B3-210-81A  
S6B3 FLYWHEEL & HOUSING DETAIL

三菱重工業株式会社相模原製作所  
SAGAMIHARA MACHINERY WORKS. MITSUBISHI HEAVY INDUSTRIES, LTD.

図面番号  
DRAWING No. 45B96-21001

③ 新図 ④ 旧引図 ① 組立図 ② 鋳造曲車品 ⑤ 切削品 ③ 板金溶接品 ④ 組立品 ⑥ その他(購入品)





MHI CONFIDENTIAL

△				 3rd ANGLE PROJECTION 尺度 SCALE
△				
△				
CHG	ED-NO	DATE	CHK	

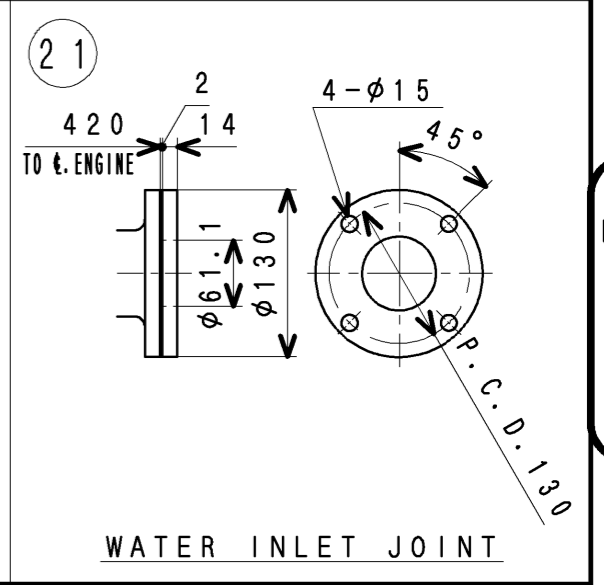
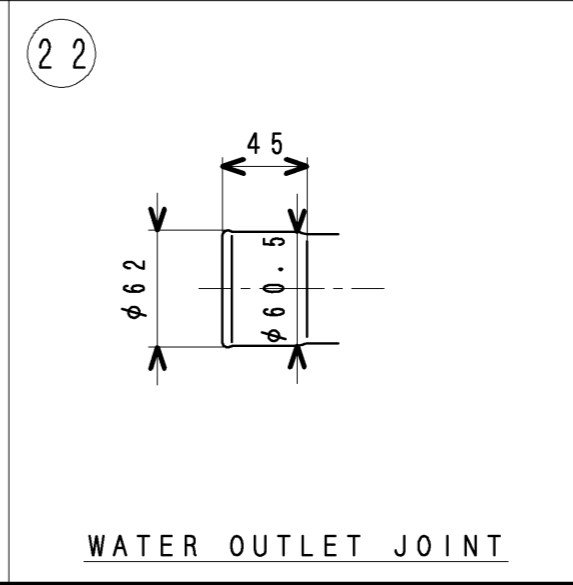
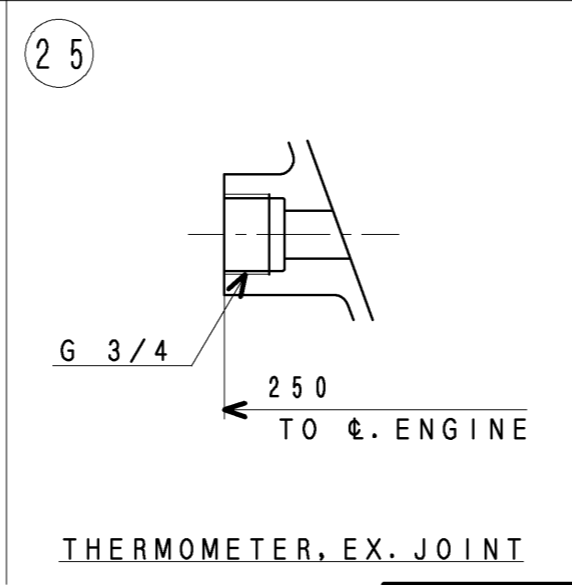
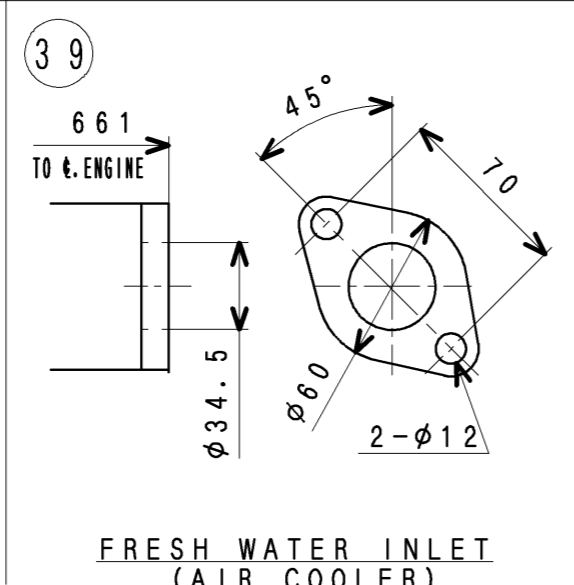
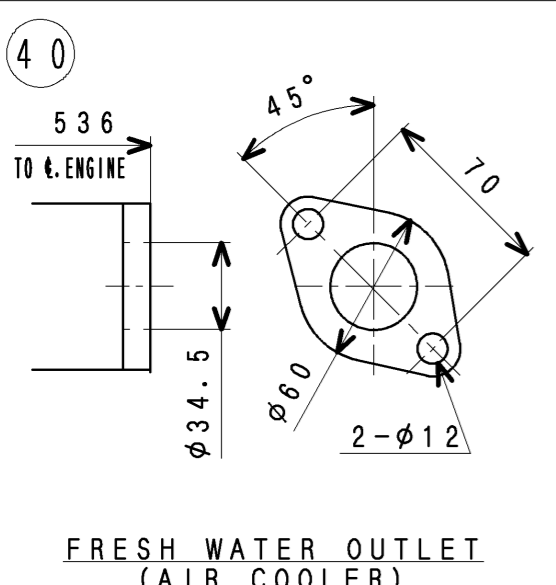
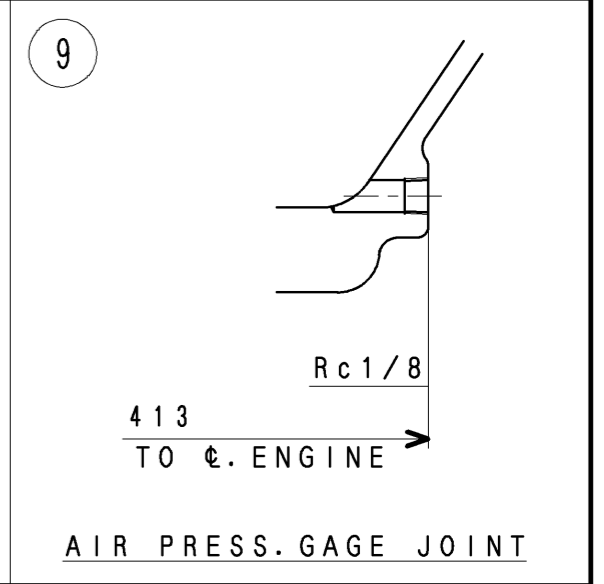
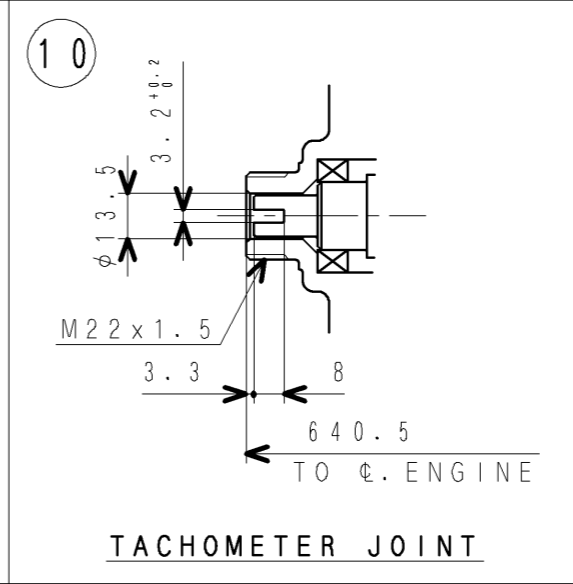
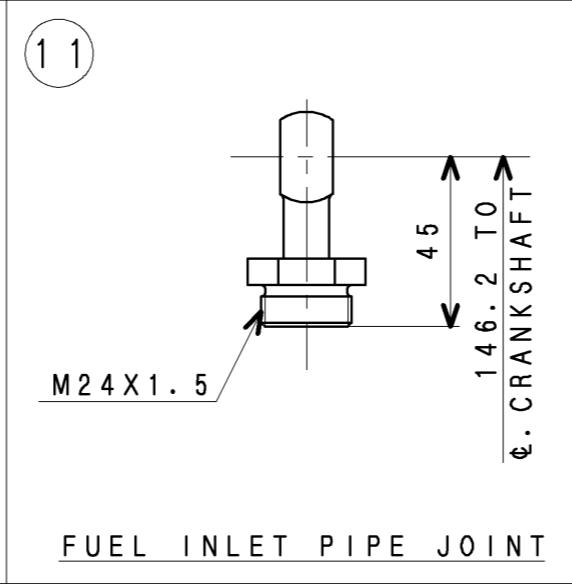
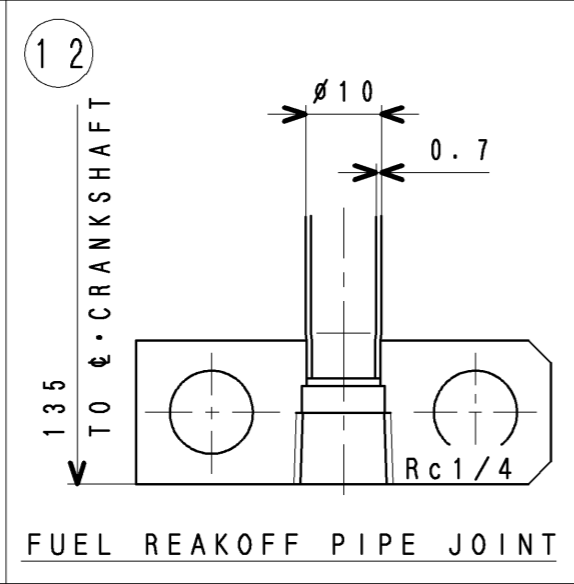
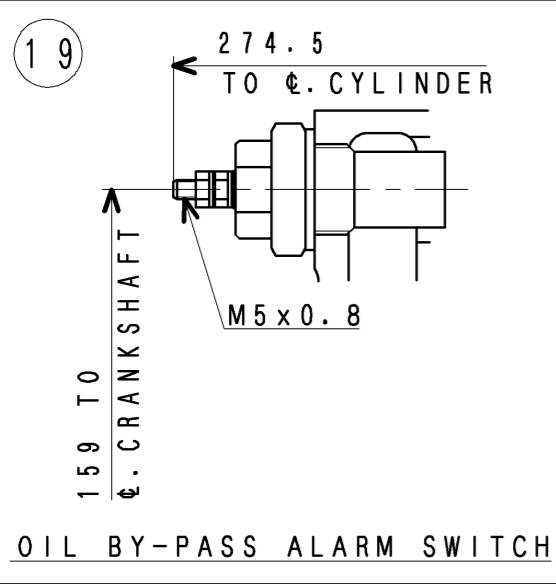
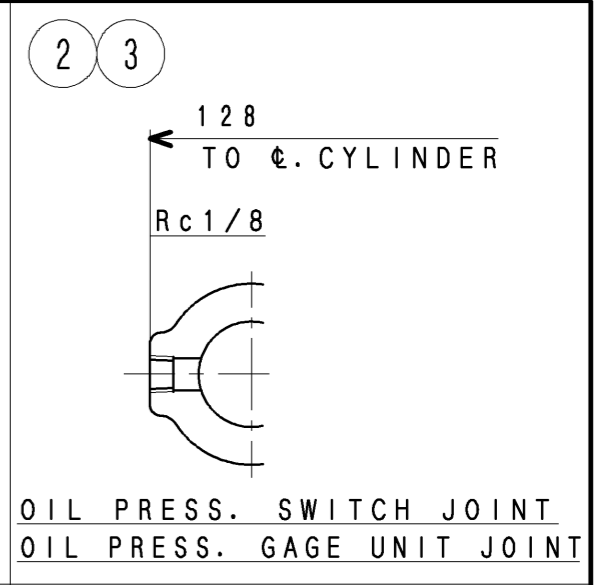
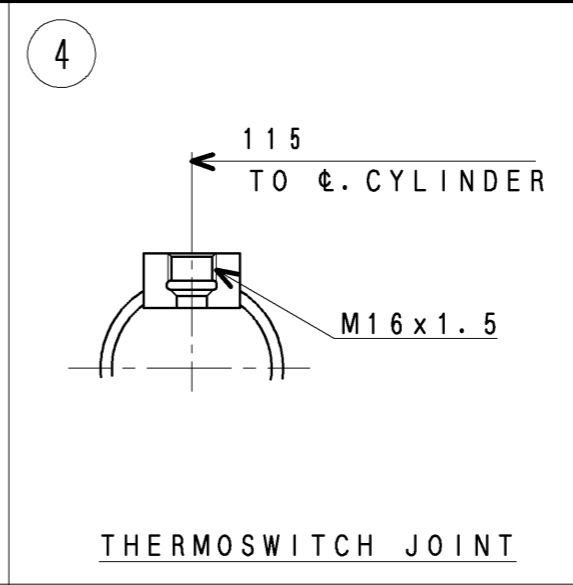
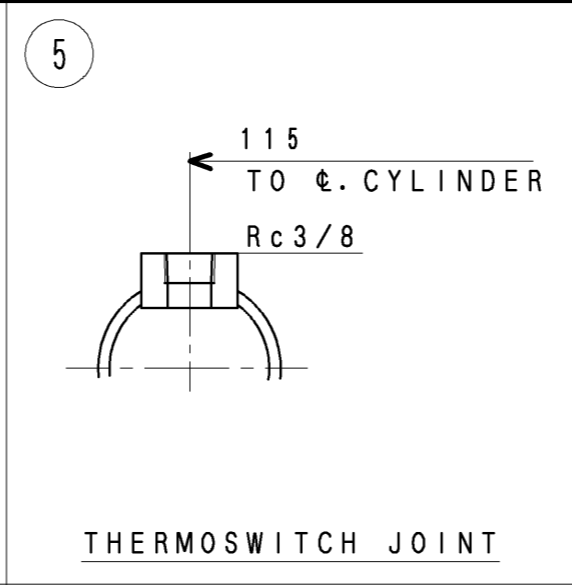
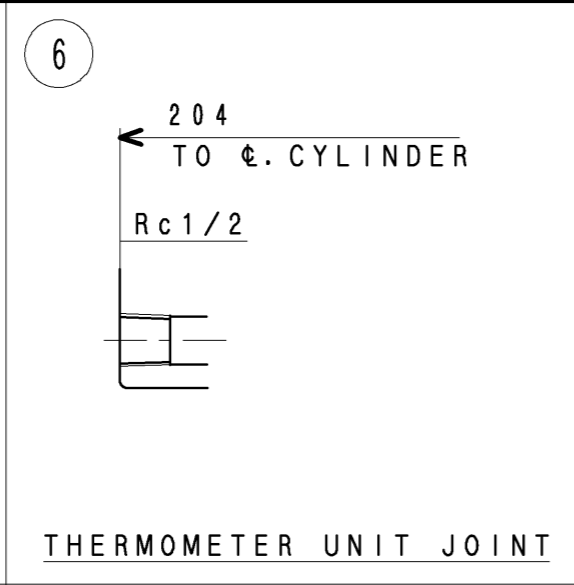
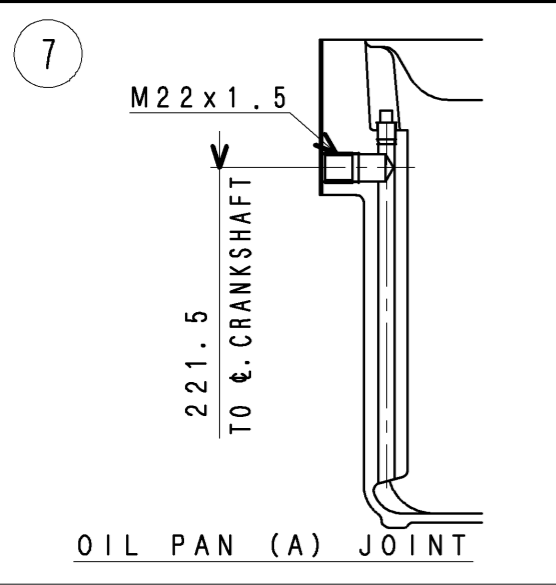
MEASURE OF OVERHAUL FOR S6B3

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 45B96-09000  
DRAWING No.

出図  
汎特  
2013  
8.1

M/C



注記 (1) 本図は、S6B3-T2MPTAW仕様(MEE向)ジョイント詳細図である。

CHG	ED-NO	DATE	CHK	3rd ANGLE PROJECTION 尺度 SCALE

**S6B3**  
**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 VEHICLE HEADQUARTERS.  
 図面番号 45B96-01001  
 DRAWING No.

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)

出図  
 汎特  
 2012  
 2.22

M/C



**MITSUBISHI DIESEL ENGINE  
TECHNICAL INFORMATION**

ITEM NO.

T0407-0034E (1/5)

DATE

Sep., 2012

Performance Curves of S6B3-T2MPTAW

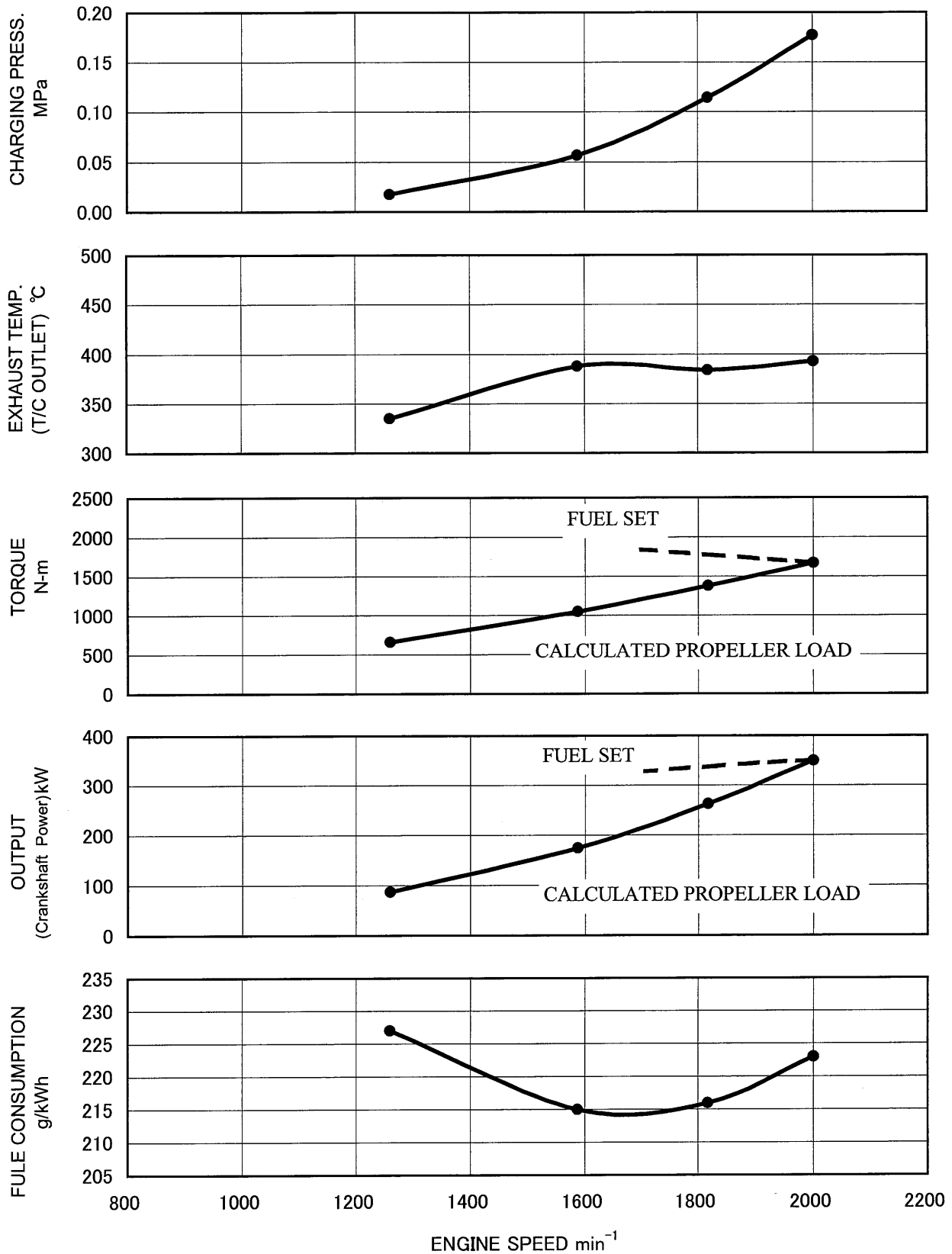
Performance Curves of S6B3-T2MPTAW Engine that is satisfied with IMO-Tier 2 are enclosed herein. The data are test bench data and not a guaranteed performance.

THE INFORMATION HEREON IS THE PROPERTY OF MITSUBISHI HEAVY INDUSTRIES, LTD. WITHOUT WRITTEN PERMISSION, ANY COPYING, TRANSMITTAL TO OTHERS, AND ANY USE EXCEPT THAT FOR WHICH IT IS LOANED, IS PROHIBITED.

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

Rating: Medium Duty

RATED OUTPUT : 350kW/2000min<sup>-1</sup> (at FLYWHEEL)



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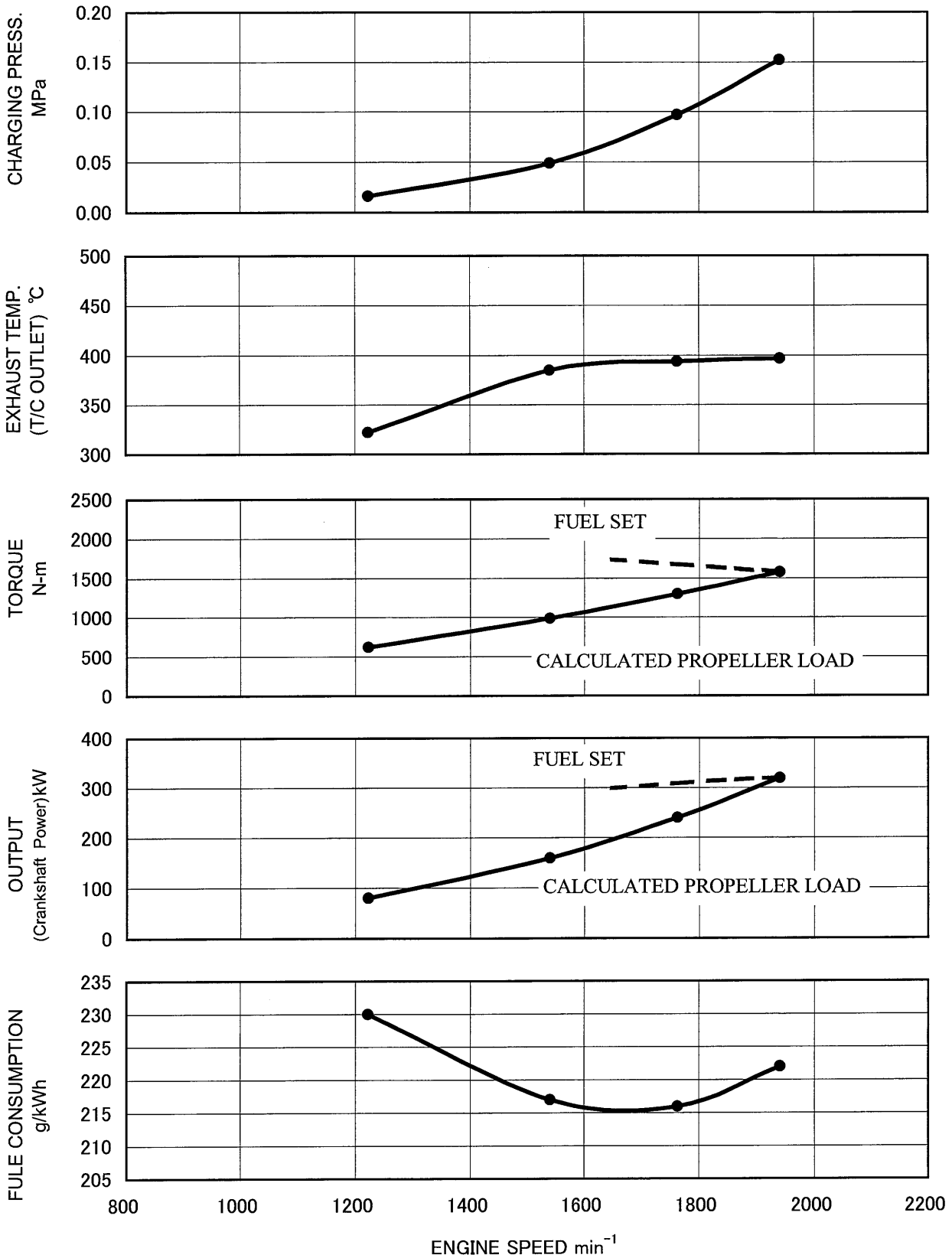
Fuel Consumption is based on ISO3046/1 with +5% tolerance at rated power.  
The specifications are subject to change without notice.

APPLICATION : MARINE PROPULSION

Pub. No.T0407-0034E 2/5

Rating: Heavy Duty

RATED OUTPUT : 320kW/1940min<sup>-1</sup> (at FLYWHEEL)



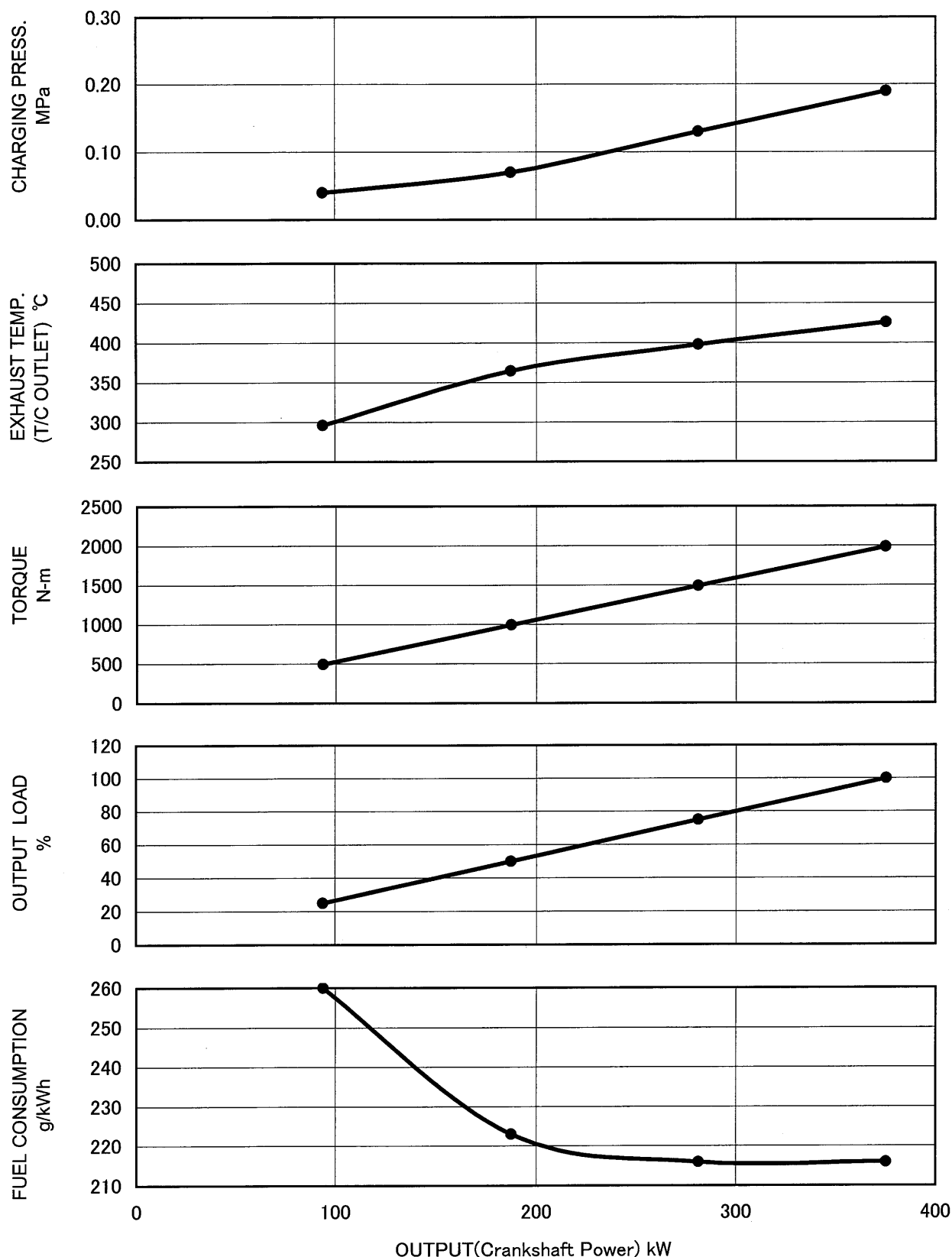
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Fuel Consumption is based on ISO3046/1 with +5% tolerance at rated power.  
The specifications are subject to change without notice.

APPLICATION : MARINE PROPULSION

Pub. No.T0407-0034E 3/5

Engine speed: 1800min<sup>-1</sup>



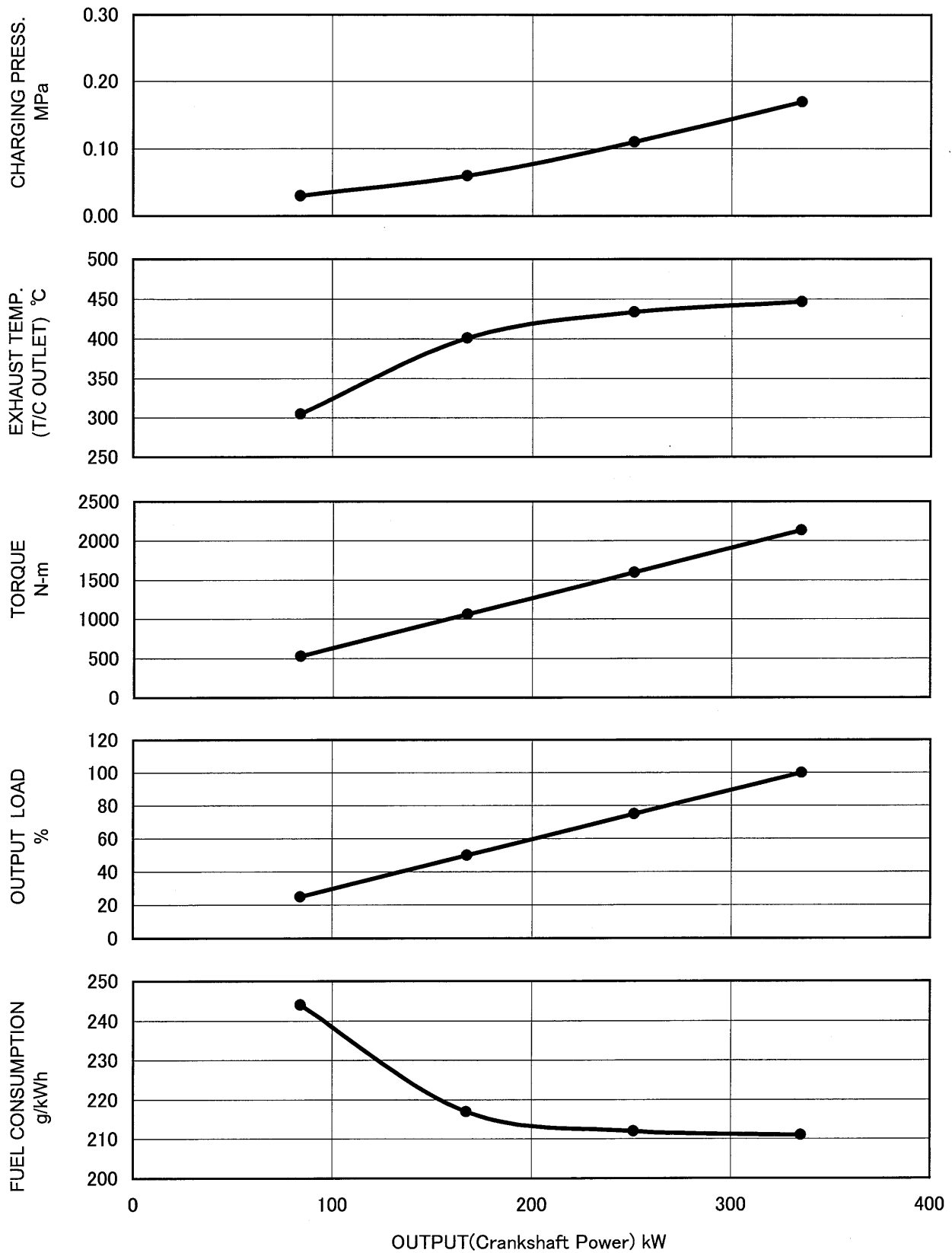
MHI CONFIDENTIAL

Fuel Consumption is based on ISO3046/1 with +5% tolerance at rated power.  
The specifications are subject to change without notice.

APPLICATION : GENERATOR

Pub. No.T0407-0034E 4/5

Engine speed: 1500min<sup>-1</sup>



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Fuel Consumption is based on ISO3046/1 with +5% tolerance at rated power.  
The specifications are subject to change without notice.

APPLICATION : GENERATOR

Pub. No.T0407-0034E 5/5