



## **MITSUBISHI S6A3-MPTAW-3**

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**MITSUBISHI DIESEL ENGINE  
TECHNICAL INFORMATION**

ITEM NO.

T0204-0009E (1/4)

DATE

July, 2013

Specification Sheets of S6A3-MPTAW Engine

Specification Sheets of S6A3-MPTAW Engine are enclosed herein.

Revision	First Edition : July, 2013	Engine Engineering Department Engine System Designing Section		
		Approved by	Checked by	Drawn by

## GENERAL ENGINE DATA

Type .....	4-Cycle, Water Cooled	
Aspiration .....	Turbo-Charged, Air Cooler (Fresh Water)	
Cylinder Arrangement .....	Inline	
No. of Cylinders .....	6	
Bore mm(in.) .....	150	(5.91)
Stroke mm(in.) .....	175	(6.89)
Displacement liter(in <sup>3</sup> ) .....	18.56	(1133)
Compression Ratio .....	14.5:1	
Dry Weight - Engine only - kg(lb) .....	1900	(4190)
Wet Weight - Engine only - kg(lb) .....	2030	(4476)

## PERFORMANCE DATA

Idling Speed -rpm .....	600~650	
Maximum Overspeed Capacity - rpm .....	2195	
Moment of inertia of Rotating Components - kgf·m <sup>2</sup> (lbf·ft <sup>2</sup> ) .....	18.9	(449)
(Includes 14 inch Flywheel)		

## 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) .....	100	(26.4)
Low - liter (U.S.gal) .....	70	(18.5)
Total System Capacity (Includes Oil Filter) - liter (U.S.gal) .....	110	(29.1)
Maximum Installation Angle   Front Up .....	16°	
Front Down .....	11.5°	
Maximum Instantaneous Operating Angle   Front Up .....	25°	
(Engine Level)   Front Down .....	14°	
Side to Side .....	22.5°	

## COOLING SYSTEM

Coolant Capacity of Jacket (Engine Only) - liter (U.S.gal) .....	36	(9.5)
Coolant Capacity of Air Cooler (Engine Only) - liter (U.S.gal) .....	4	(1.1)
Maximum External Friction Head at Engine Outlet - MPa(psi) .....	0.034	(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)
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 Air cooler Inlet, PTAW type- °C(°F) .....	38	

The specifications are subject to change without 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	-----	5.0
	Continuous Use	-----
	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.)	-----	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	Mechanical RSUV 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,aluminium
Cooling Water Pump	
Cooling Water Thermostat	
Starter	Earth Float Type
Alternator	Earth Float Type
Stop Solenoid	DC24V-25A-0.5A
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	

The specifications are subject to change without notice.

## 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.

HD: Heavy duty

ITEM	UNIT	Propulsion use			Generator use		
				-MPTAW			
Engine Model				HD			
Engine Speed	rpm			1840			
No. of Cylinders		6					
Bore	mm (in.)	150 (5.91)					
Stroke	mm (in.)	175 (6.89)					
Displacement	liter (in. <sup>3</sup> )	18.56 (1133)					
Brake Horse Power	kW (HP)			360 (483)			
Brake Mean Effective Pressure	MPa (psi)			1.27 (184)			
Mean Piston Speed	m/s (ft/min)			10.7 (2106)			
Maximum Regenerative Power Absorption Capacity	kW (HP)			56 (75)			
Intake Air Flow	m <sup>3</sup> /min (CFM)			34 (1201)			
Exhaust Gas Flow	m <sup>3</sup> /min (CFM)			91 (3213)			
Coolant Flow	liter/min (U.S. GPM)			590 (156)			
Coolant(Jacket water) Pressure (water pump outlet)	MPa (psi)			0.14 (21)			
Minimum Coolant Flow to Air Cooler (Max. Flow: 180 liter/min)	liter/min (U.S. GPM)			150 (40)			
Oil Flow	liter/min (U.S. GPM)			255 (67)			
Radiated Heat to Ambient	kJ/hr (BTU/min)			54135 (855)			
Heat Rejection to Coolant (include water cooled manifold)	kJ/hr (BTU/min)			757886 (11975)			
Heat Rejection to Air Cooler	kJ/hr (BTU/min)			396988 (6272)			
Heat Rejection to Exhaust	kJ/hr (BTU/min)			1103097 (17429)			
Noise Level (1 m height & distance) (excludes, Intake,Exhaust)	dB(A)			TBD			
Maximum No Load Governed Speed	rpm			1978			

The specifications are subject to change without notice.

APPLICATION : MARINE

Pub. No. T0204-0009E

4/4



**MITSUBISHI DIESEL ENGINE  
TECHNICAL INFORMATION**

ITEM NO.

T0307-0024E (1/2)

DATE

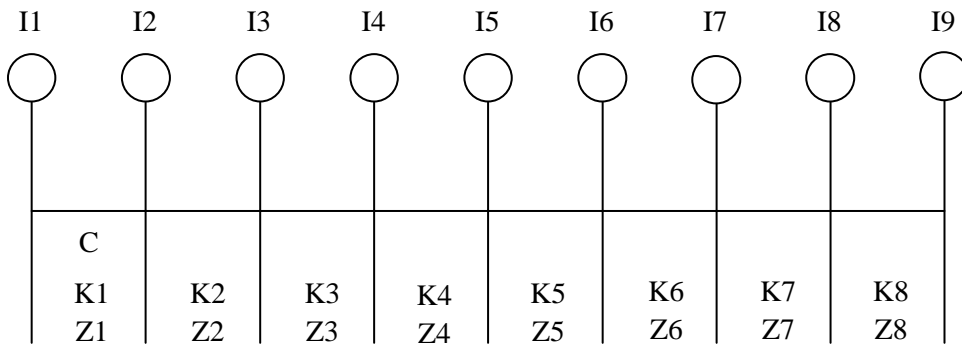
April, 2007

Elastic data of S6A3-M Engine

Elastic data of S6A3-M Engine are enclosed herein.

Revision	First Edition : April, 2007 (Refer to MTD98-0223A)	Engine Engineering Department Large Engine Design Section		
		Approved by	Checked by	Drawn by



**S6A3-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	K1=0	Z1 =0.0
I2	PULLEY	0.574	—	K2=0.907	Z2 =209.5
I3	No.1 CRANK	0.331	—	K3=0.505	Z3 =209.5
I4	No.2 CRANK	0.217	—	K4=0.505	Z4 =209.5
I5	No.3 CRANK	0.331	—	K5=0.505	Z5 =209.5
I6	No.4 CRANK	0.331	—	K6=0.505	Z6 =209.5
I7	No.5 CRANK	0.217	—	K7=0.505	Z7 =209.5
I8	No.6 CRANK	0.331	—	K8=0.876	Z8 =209.5
I9	FLYWHEEL	1.99	—	(SAE#14")	
I9	FLYWHEEL	5.93	—	(SAE#18")	

Hysteresis constant:170 No. of Cylinder: 6 Bore:150mm Stroke:175mm

Length of Con-Rod: 290mm Mass of Reciprocating Parts: 8.183 kg

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

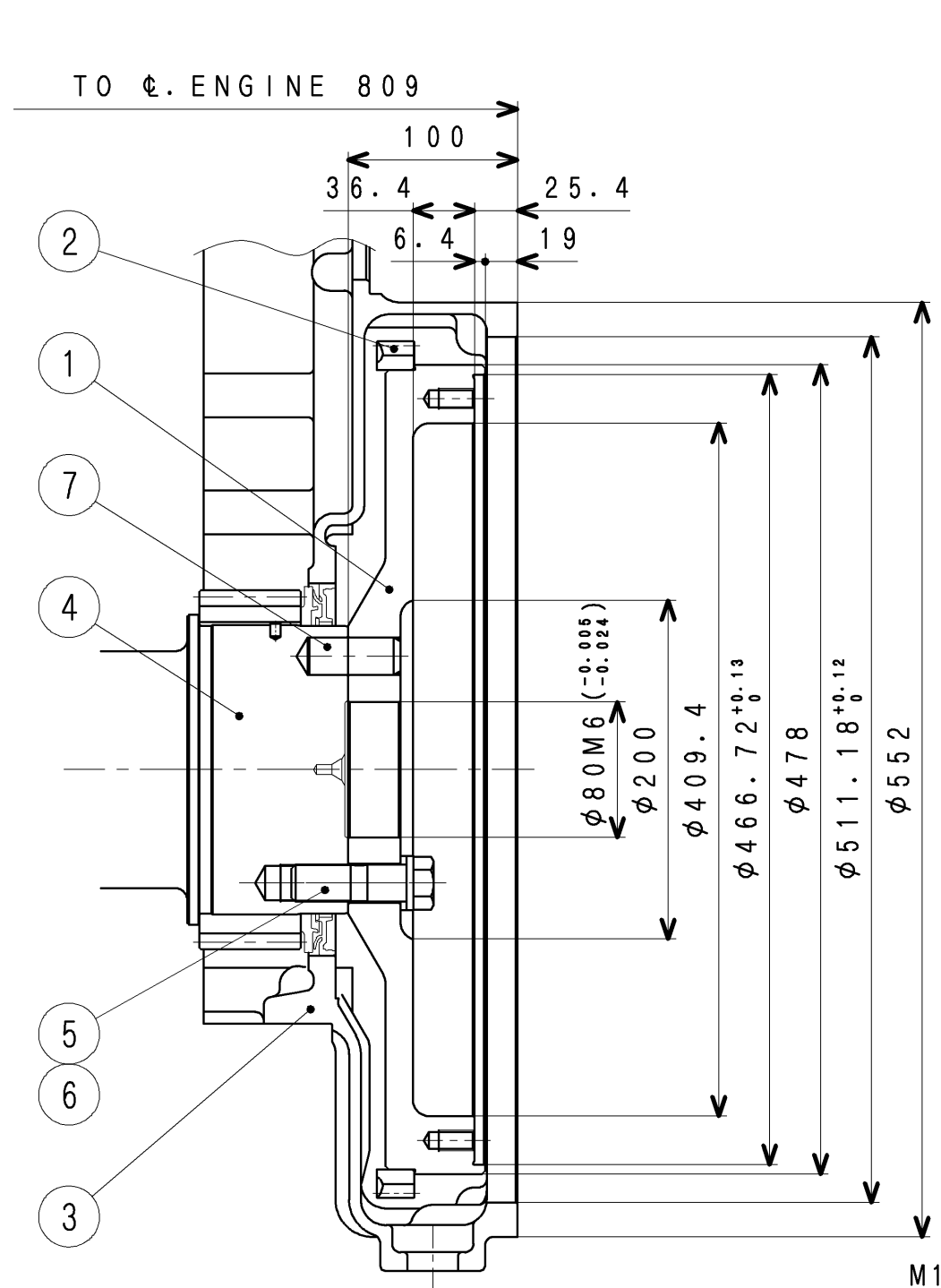
Firing interval:0-120-240-360-480-600

APPLICATION : MARINE USE

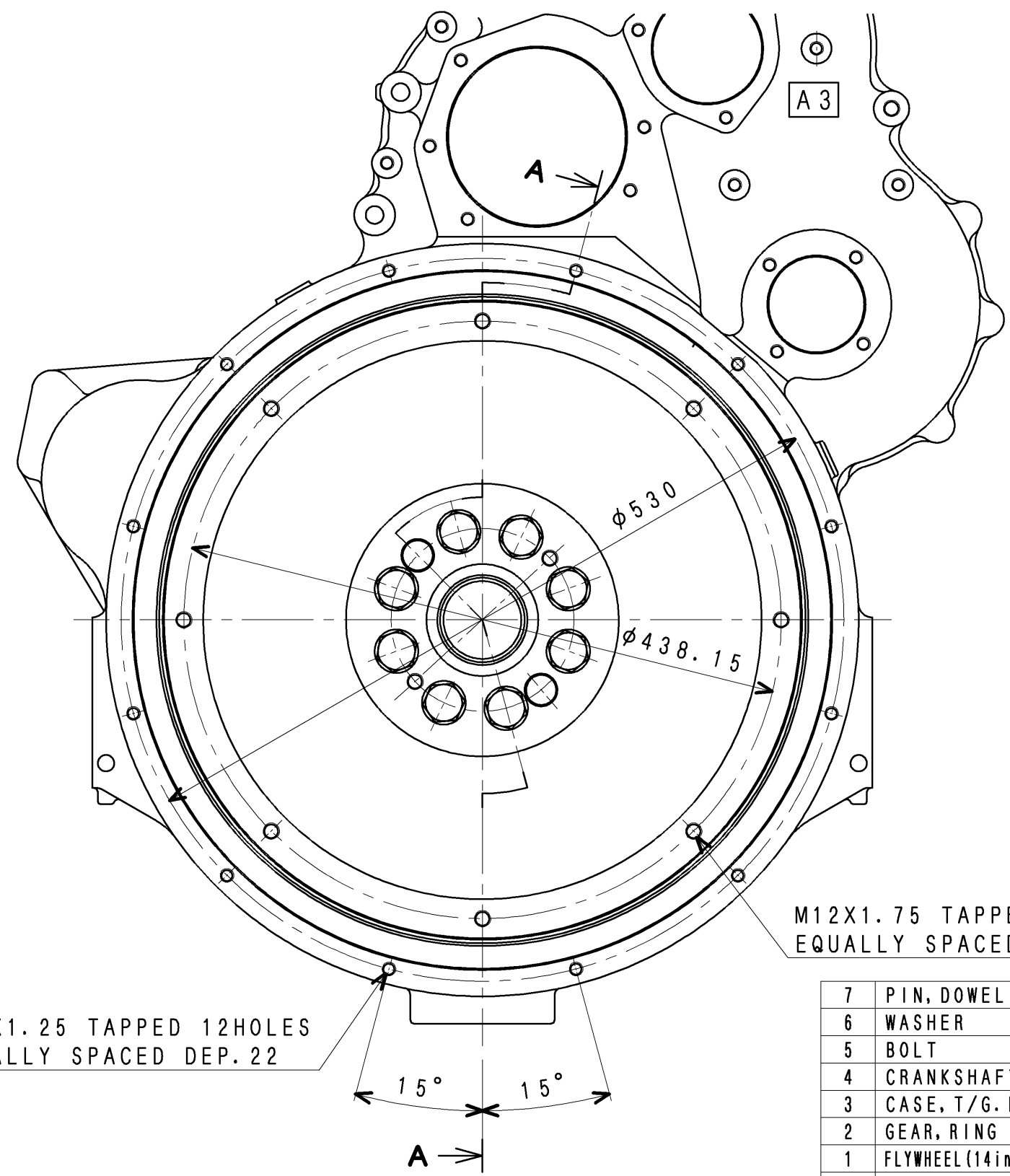
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**MITSUBISHI HEAVY INDUSTRIES, LTD.**  
GENERAL MACHINERY & SPECIAL VEHICLE



SECTION A-A



M10X1.25 TAPPED 12HOLES  
EQUALLY SPACED DEP. 22

M12X1.75 TAPPED 8HOLES  
EQUALLY SPACED DEP. 25.5

7	PIN, DOWEL	2
6	WASHER	8
5	BOLT	8
4	CRANKSHAFT ASSY.	1
3	CASE, T/G. N01-M	1
2	GEAR, RING	1
1	FLYWHEEL (14in)	F/W ASSY. 1
No.	PARTS NAME	Q' TY

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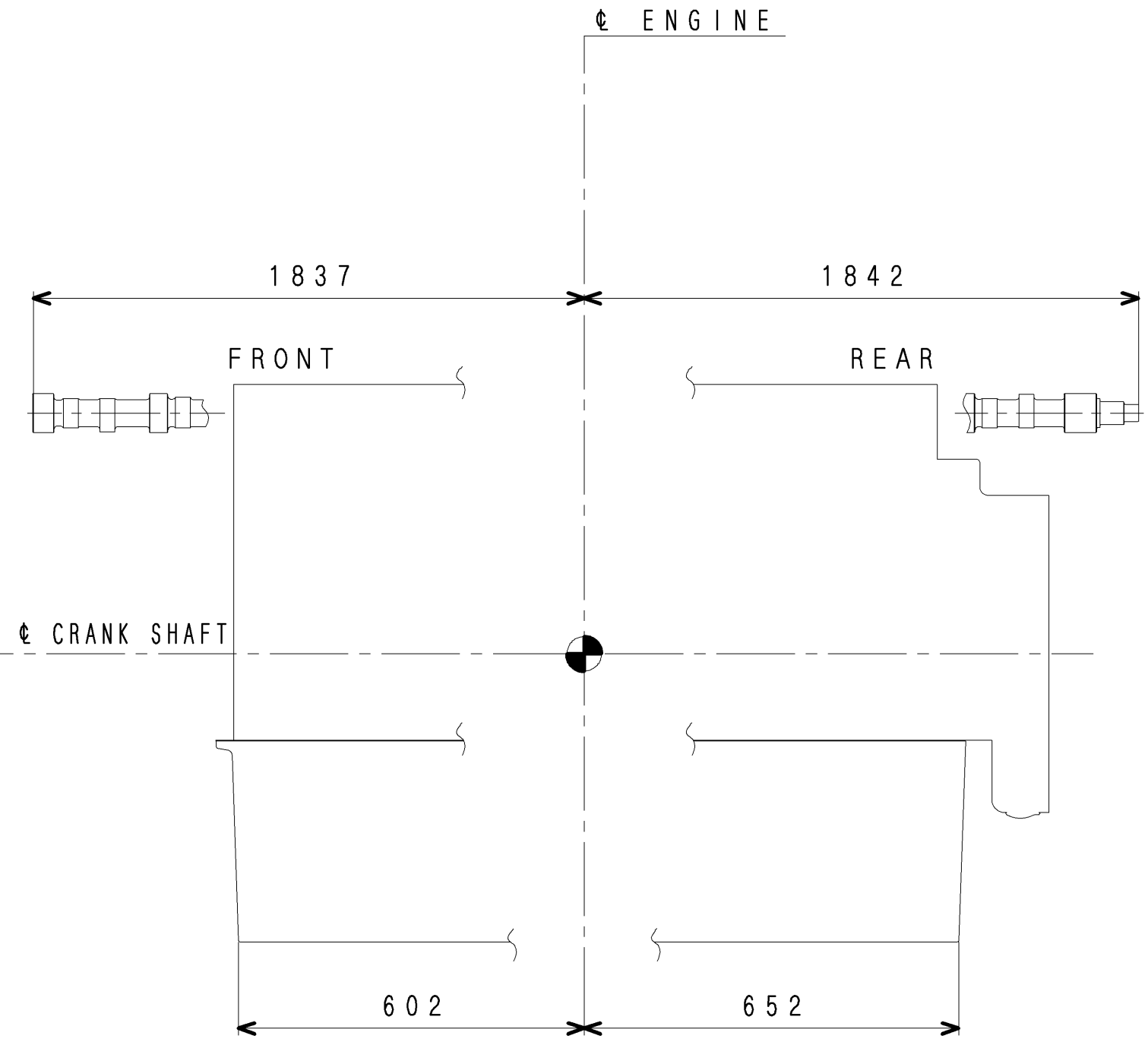
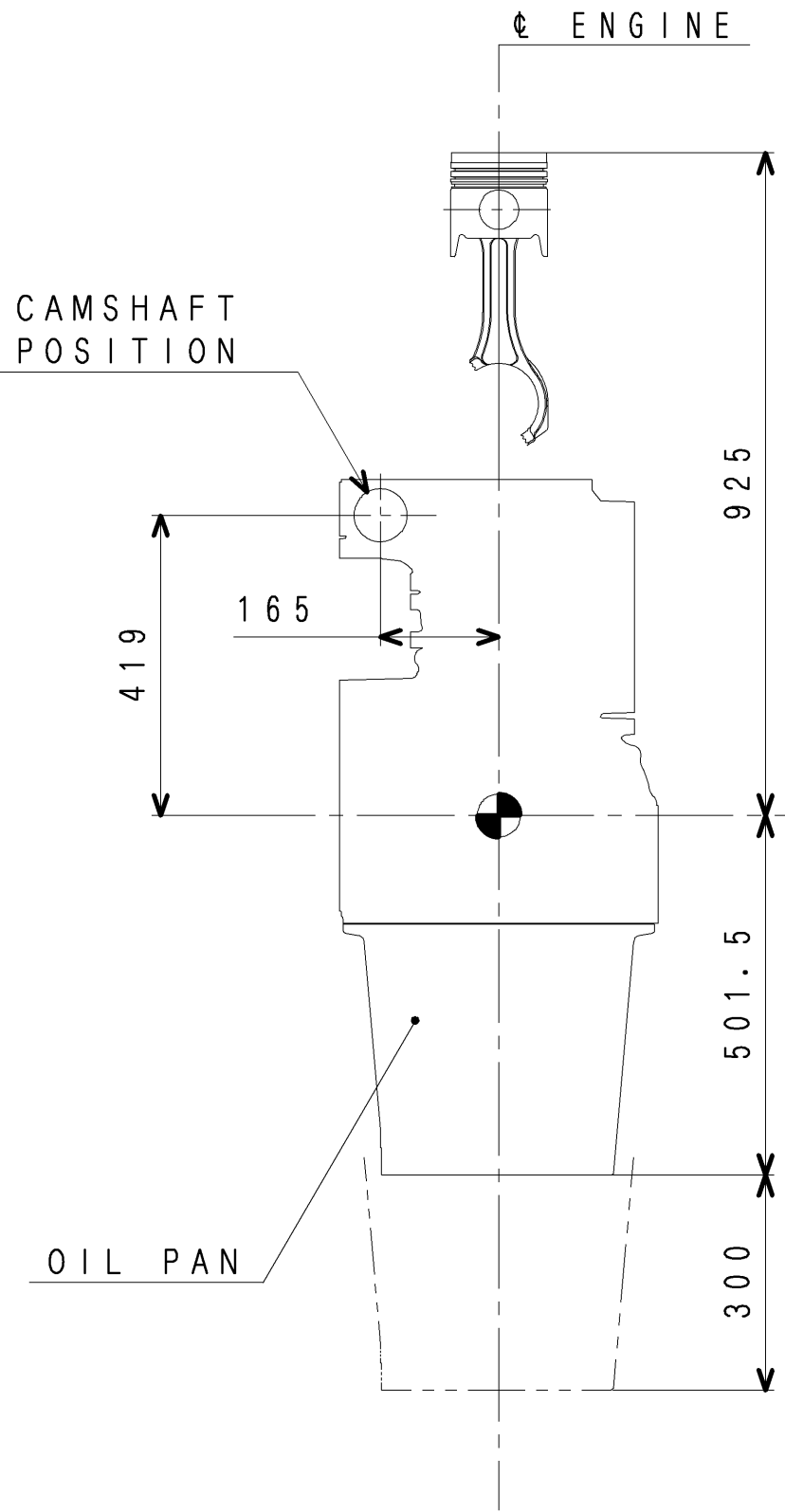
S6A3  
**FLYWHEEL & HOUSING**  
 三菱重工業株式会社 汎用機・特車事業本部  
 MITSUBISHI HEAVY INDUSTRIES, LTD. GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS.  
 図面番号 45A96-21000 <sup>2</sup>  
 DRAWING No.

旧引  
 汎特  
 2013  
 7.30

M/C

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





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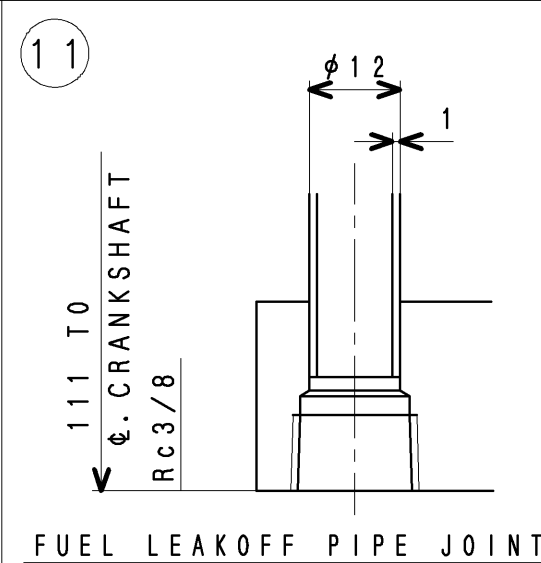
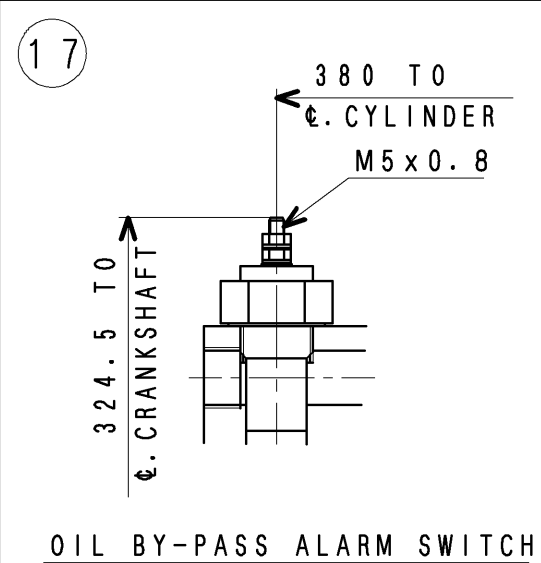
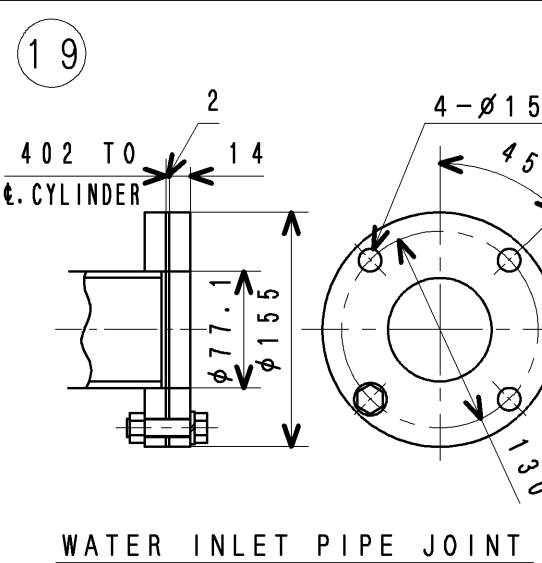
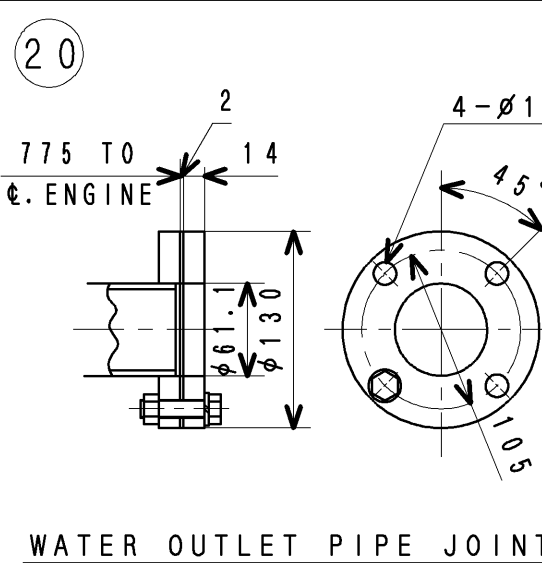
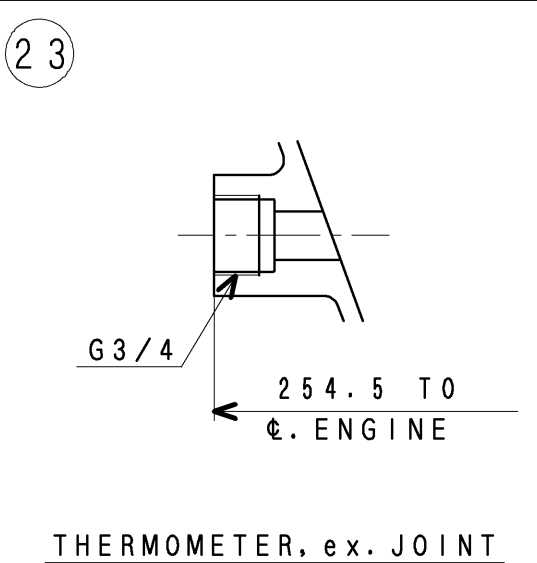
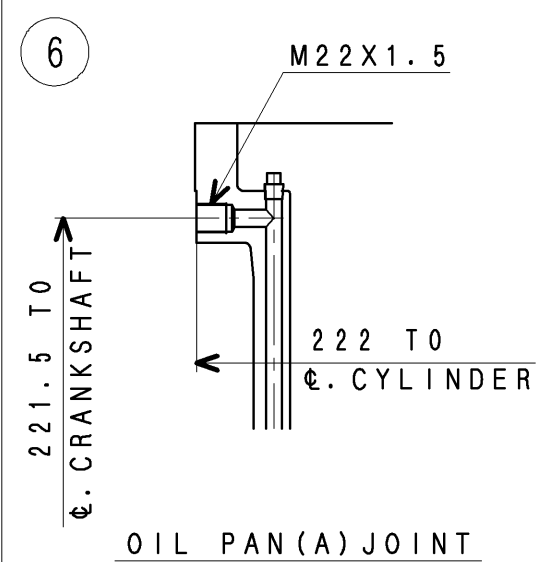
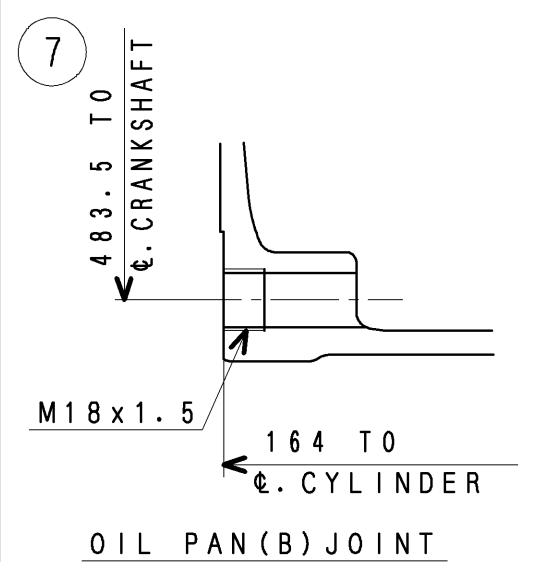
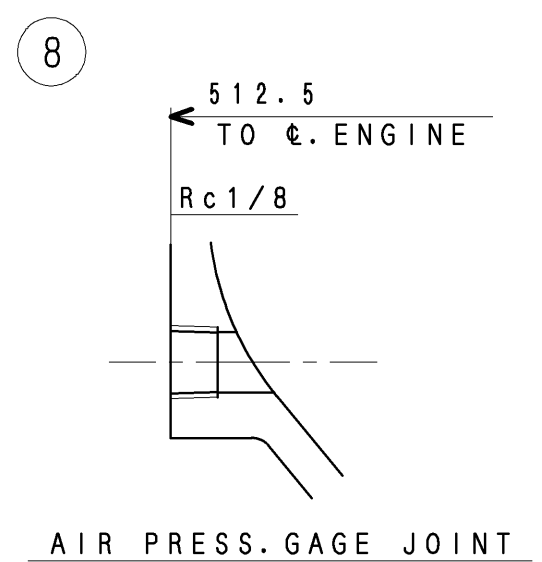
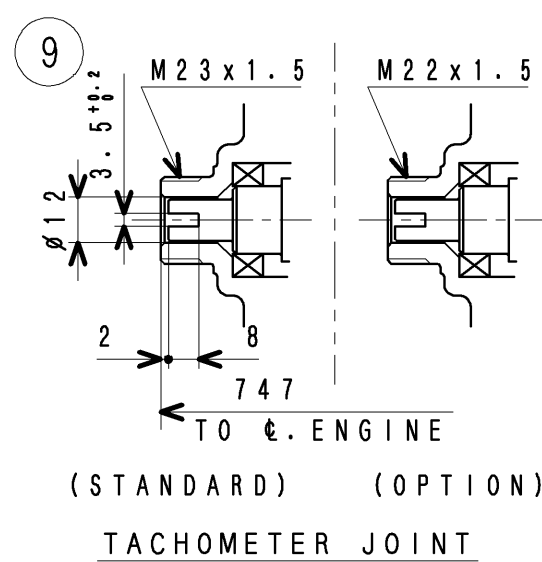
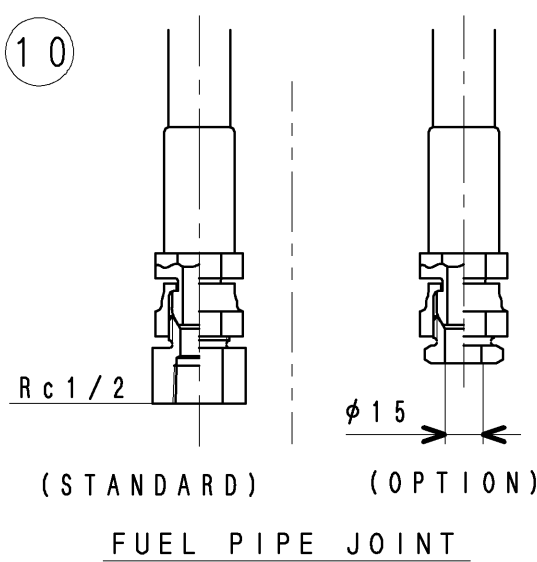
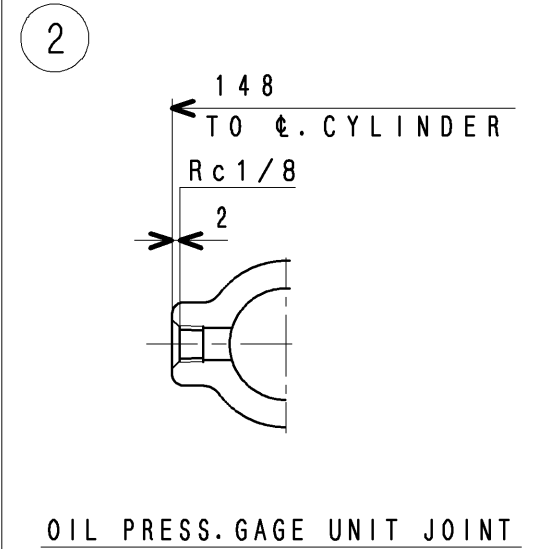
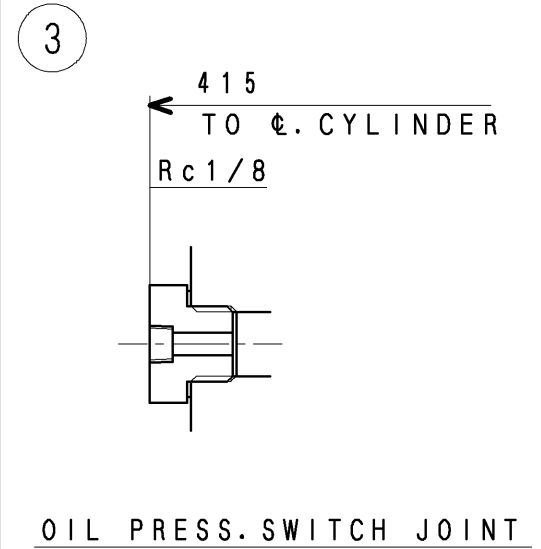
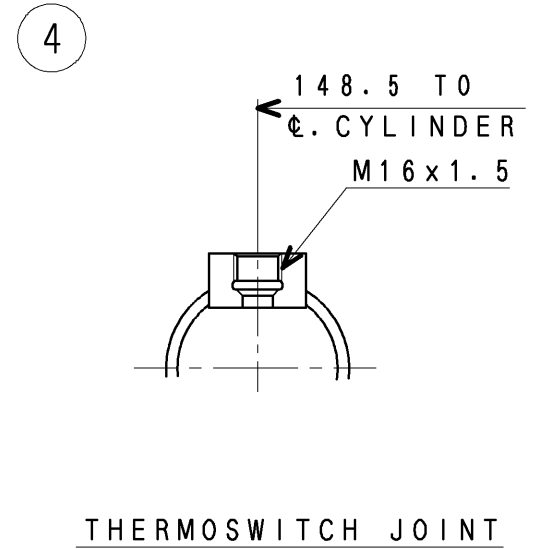
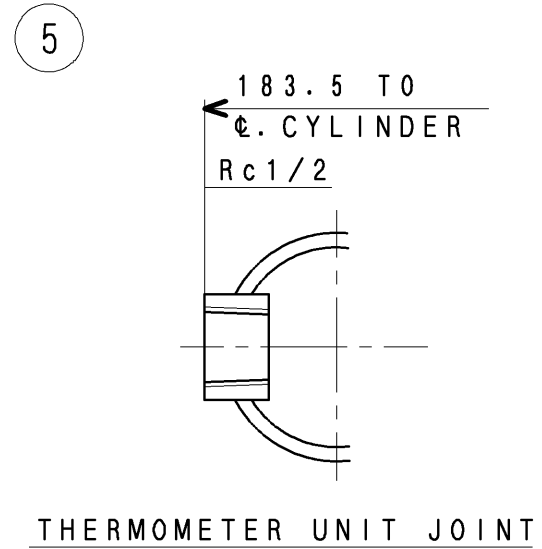
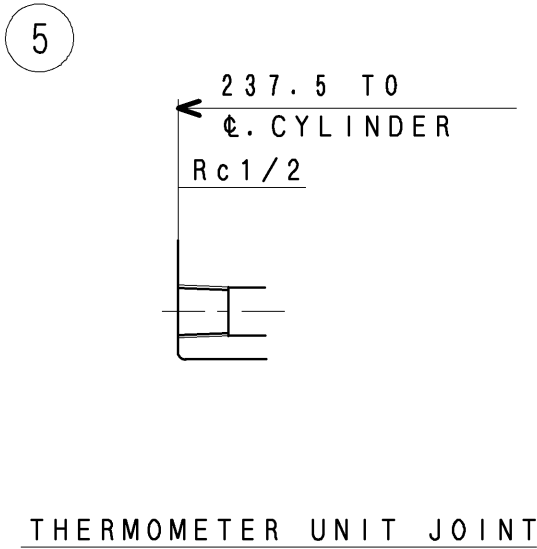
MEASURE OF OVERHAUL  
FOR S6A3

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 45A96-09000  
DRAWING No. 45A96-09000

出図  
汎特  
2013  
8.1

M/C



S6A3-Y2MPTK  
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.

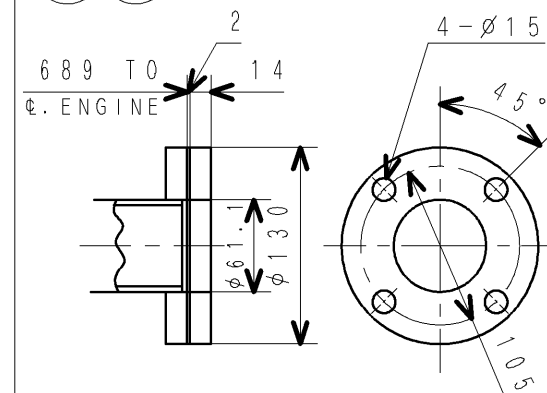
図面番号  
DRAWING No. 45A96-01001 1/2

③ 新図 ④ 組立図 ⑤ 2 鋳鍛歯車品 ③ 板金溶接品 ④ 組立品  
④ 旧引図 A 3 ⑤ 1 切削品 ⑥ 其他(購入品)

出図  
汎特  
2006  
12.6

FULL-CAD

3637




FRESH WATER INLET & OUTLET  
(AIR COOLER)

出図  
  
 汎特  
 2006  
 12.6

FULL-CAD

S6A3-Y2MPTK  
 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  
 DRAWING No. 45A96-01001  2/2

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



**MITSUBISHI DIESEL ENGINE  
TECHNICAL INFORMATION**

ITEM NO.

T0407-0035E (1/2)

DATE

Oct., 2012

Performance Curves of S6A3-MPTAW

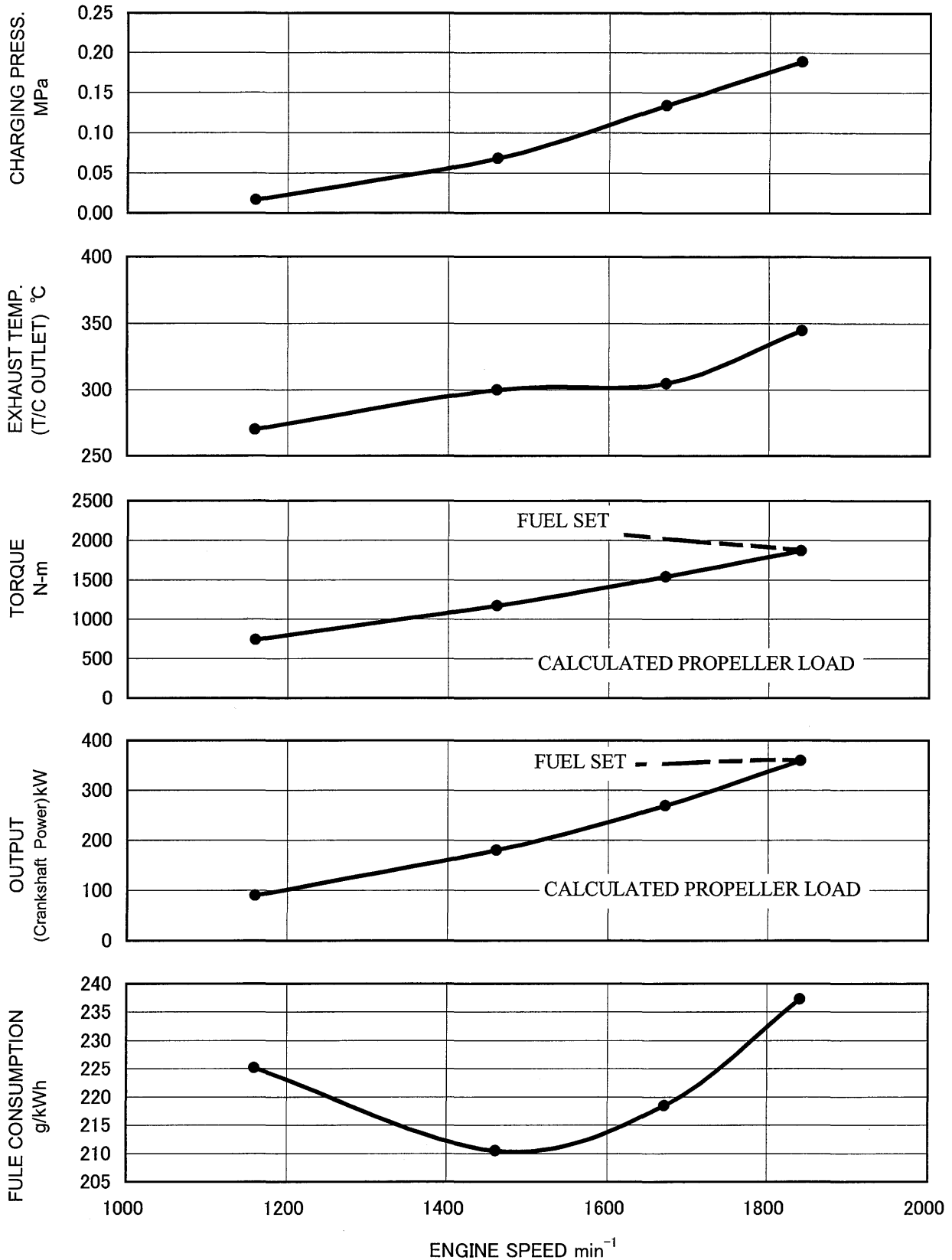
Performance Curves of S6A3-MPTAW Engine are enclosed herein. The data are test bench data and not a guaranteed performance.

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

Rating: Heavy Duty

RATED OUTPUT : 360kW/1840min<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.T0407-0035E 2/2