



mitsubishi S12A2-C2MPTK

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

[Technical data](#)
[Elastic drawing](#)
[Mounting details](#)
[Connection details](#)



**MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION**

ITEM NO.

T0205-0005E (1/4)

DATE

June, 2007

Specification Sheets of S12A2-C2MPTK Engine

Specification Sheets of S12A2-C2MPTK Engine are enclosed herein.

Revision	First Edition : June, 2007	Engine Engineering Department Large Engine Design Section		
		Approved by	Checked by	Drawn by

GENERAL ENGINE DATA

Type	-----	4-Cycle, Water Cooled	
Aspiration	-----	Turbo-Charged, Inter Cooler (Fresh water to Cooler)	
Cylinder Arrangemen	-----	60°V	
No.of Cylinders	-----	12	
Bore mm(in.)	-----	150	(5.91)
Stroke mm(in.)	-----	160	(6.30)
Displacement Liter(in ³)	-----	33.93	(2071)
Compression Ratio	-----	15.3 : 1	
Dry Weight - Engine only - kg(lb)	-----	3380	(7453)
Wet Weight - Engine only - kg(lb)	-----	3606	(7951)

PERFORMANCE DATA

Idling Speed -rpr	-----	600 ~ 650	
Maximum Overspeed Capacity - rpr	-----	2400	
Moment of Inertia of Rotating Components J- k _l ·m ² (lb _f ·ft ²)	-----	10.65	(1011)

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Flywheel Housing - l _m (lb _f ·ft)	-----	1961	(1447)
--	-------	------	--------

AIR INLET SYSTEM

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

EXHAUST SYSTEM

Maximum Allowable Back Pressure - kPa (in. ₂ O)	-----	4.41	(17.7)
--	-------	------	--------

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)	-----	120	(31.7)
	Low - liter (U.S.gal)	-----	92	(24.3)
Total System Capacity (Includes Oil Filter) - liter (U.S.gal)	-----	140	(37.0)	
Maximum Installation Angle	Front Up	-----	11°	
	Front Down	-----	9.5°	
Maximum Instantaneous Operating Angle	Front Up	-----	45°	
(Engine Level)	Front Down	-----	24°	
	Side to Side	-----	22.5°	

COOLING SYSTEM

Coolant Capacity - liter (U.S.gal)	-----	100	(26.4)	
(Engine only)				
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)
	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, TK type °C (°F)	-----	38	(100)	

The specifications are subject to change without notice.

APPLICATION : MARINE

Pub. No. T0205-0005E 2/4

FUEL SYSTEM

Fuel Injection Pump	_____	Bosch P Type x 2
Maximum Suction Head of Feed Pump - kPa (in. Hg)	_____	14.7 (4.3)
Maximum Level of Fuel Tank - nr	_____	5.0
	_____	2.0
Minimum Fuel Oil Supply Pipe Inner Diameter - mm(in.)	_____	20 (0.79)
Minimum Fuel Oil Leak Pipe Inner Diameter - mm(in.)	_____	20 (0.79)

STARTING SYSTEM

Battery Charging Alternator - V-AI	_____	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	_____	300
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		380 × 2 / 480 × 2
Momentary Ampere -A		680 × 2 / 900 × 2

ACCESSORY EQUIPMENT

Air Cleaner	Silencer Type
Exhaust Manifold	Air 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
Cooling Water Pump	
Cooling Water Thermostat	
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	

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.

C:Heavy duty

ITEM Engine Model	UNIT	Propulsion use					
				-C2MPTK			
				C			
Engine Speed	rpm			1940			
No. of Cylinders		12					
Bore	mm (in.)	150 (5.91)					
Stroke	mm (in.)	160 (6.30)					
Displacement	liter (in. ³)	33.93 (2071)					
Brake Horse Power	kW (HP)			634 (850)			
Brake Mean Effective Pressure	MPa (psi)			1.16 (168)			
Mean Piston Speed	m/s (ft/min)			10.3 (2028)			
Maximum Regenerative Power Absorption Capacity	kW (HP)			109 (146)			
Intake Air Flow	m ³ /min (CFM)			62 (2189)			
Exhaust Gas Flow	m ³ /min (CFM)			164 (5791)			
Coolant Flow	liter/min (U.S. GPM)			1160 (306)			
Coolant(Jacket water) Pressure (water pump outlet)	MPa (psi)			0.19 (27)			
Coolant Flow to Inter Cooler (Max. Flow: 360L/min)	liter/min (U.S. GPM)			330 (87)			
Oil Flow	liter/min (U.S. GPM)			400 (106)			
Radiated Heat to Ambient	kJ/hr (BTU/min)			194891 (3079)			
Heat Rejection to Coolant	kJ/hr (BTU/min)			909493 (14370)			
Heat Rejection to Inter Cooler (TK Version)	kJ/hr (BTU/min)			714602 (11291)			
Heat Rejection to Exhaust	kJ/hr (BTU/min)			2395107 (37843)			
Noise Level (1 m height & distance) (excludes, Intake,Exhaust)	dB(A)			-			
Maximum No Load Governed Speed	rpm			2086			

The specifications are subject to change without notice.



**MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION**

ITEM NO.

T0307-0025E (1/2)

DATE

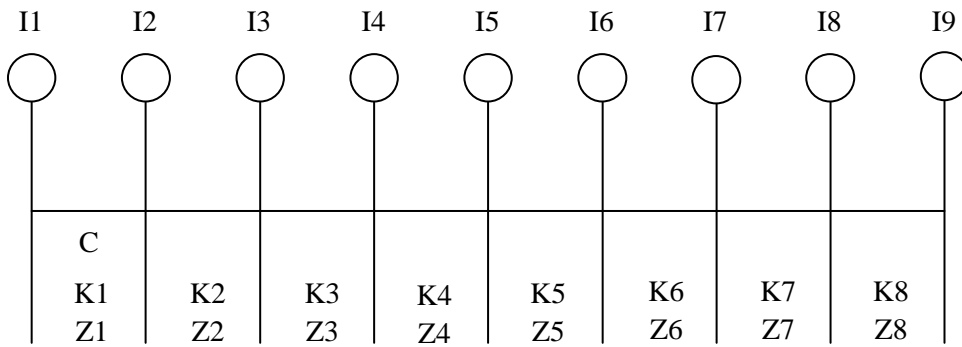
April, 2007

Elastic data of S12A2-M Engine

Elastic data of S12A2-M Engine are enclosed herein.

Revision	First Edition : April, 2007 (Refer to MTD98-0224A, S12A2.0)	Engine Engineering Department Large Engine Design Section		
		Approved by	Checked by	Drawn by



S12A2-M 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	1.11	C=587.4	0.0	Z1 =0.0	
I2	PULLEY	1.35	—	K2=0.655	785	Z2 =191.1
I3	No.1 CRANK	0.508	—	K3=0.406	785	Z3 =191.1
I4	No.2 CRANK	0.508	—	K4=0.406	785	Z4 =191.1
I5	No.3 CRANK	0.508	—	K5=0.406	785	Z5 =191.1
I6	No.4 CRANK	0.508	—	K6=0.406	785	Z6 =191.1
I7	No.5 CRANK	0.508	—	K7=0.406	785	Z7 =191.1
I8	No.6 CRANK	0.508	—	K8=0.664	785	Z8 =191.1
I9	FLYWHEEL	5.15	—			

Hysteresis constant:188 No. of Cylinder: 12 Bore:150mm Stroke:160mm

Length of Con-Rod: 290mm Mass of Reciprocating Parts: 8.586 kg

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

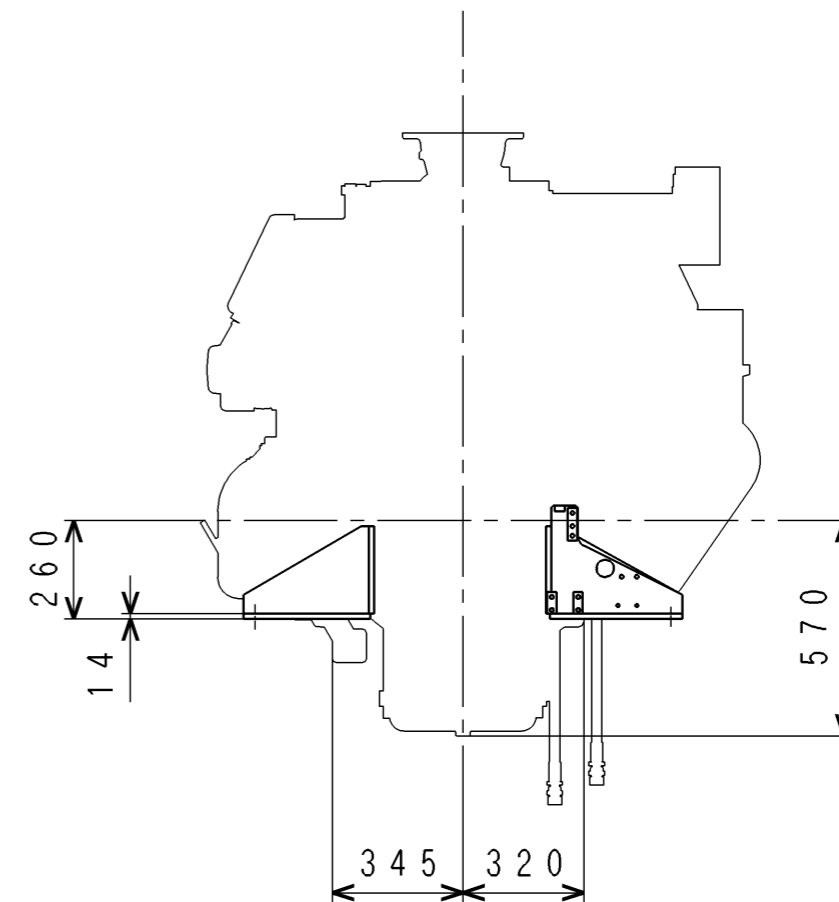
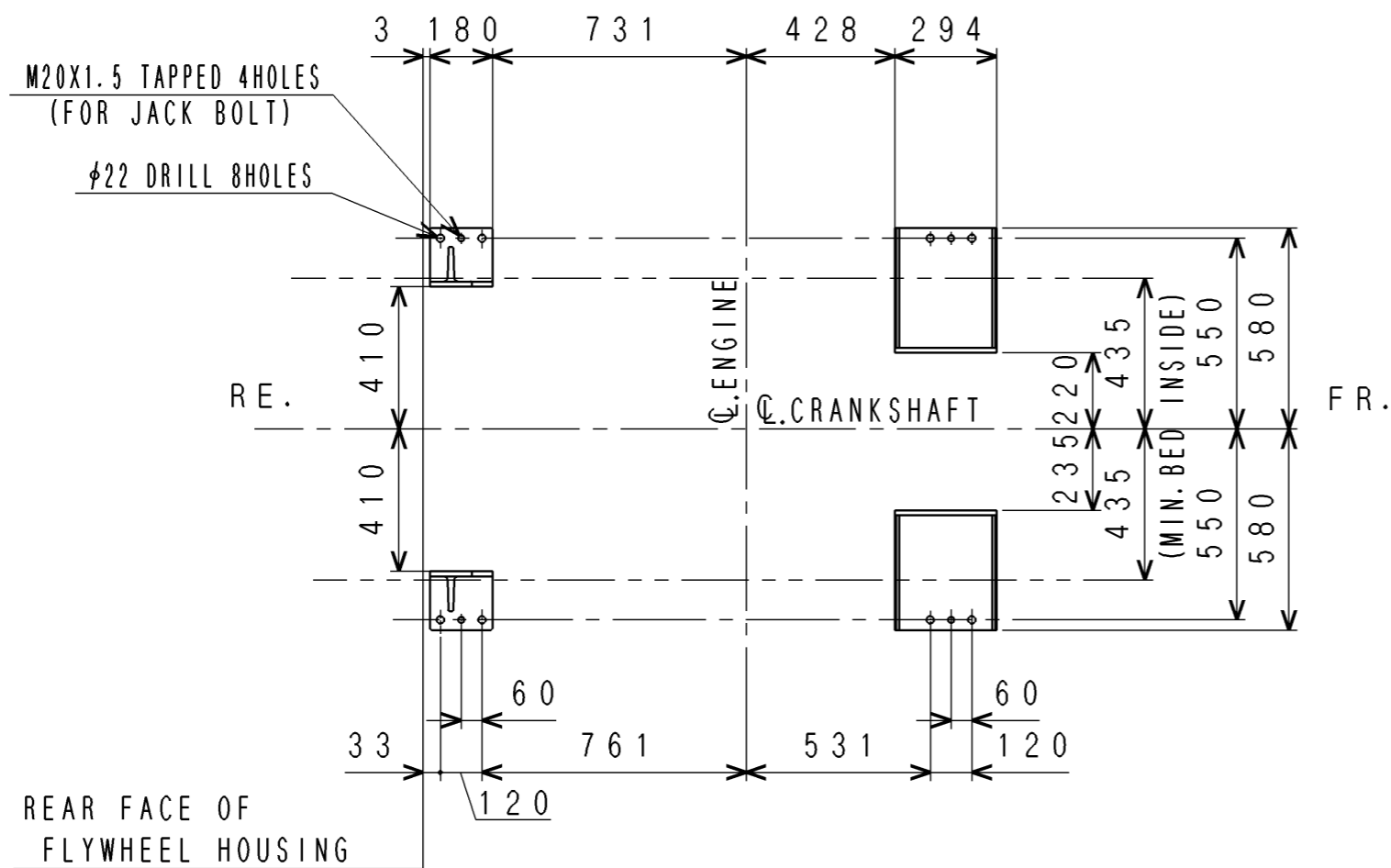
Firing interval:0-60-120-180-240-300-360-420-480-540-600-660

APPLICATION : MARINE USE

The data is subject to change without notice.



MITSUBISHI HEAVY INDUSTRIES, LTD.
GENERAL MACHINERY & SPECIAL VEHICLE




REAR FACE OF
FLYWHEEL HOUSING

FR.

出図
汎特
2000
10.30

FULL-CAD

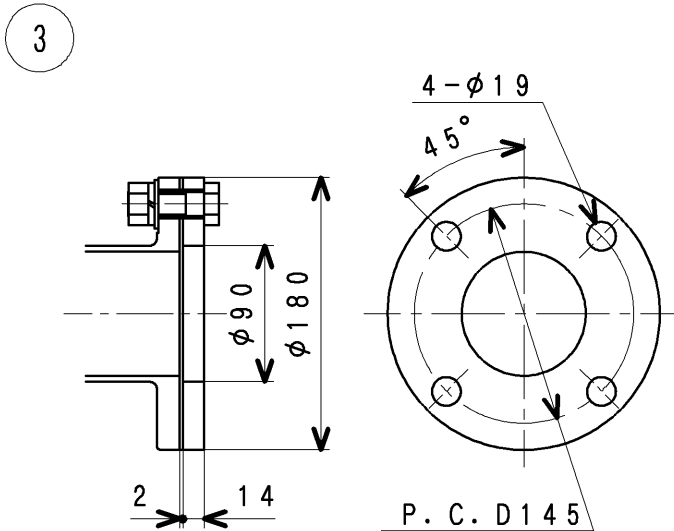
CHG	EO-NO	DATE	CHK	 3rd ANGLE PROJECTION 尺度 SCALE :

MOUNTING DETAIL S12A2

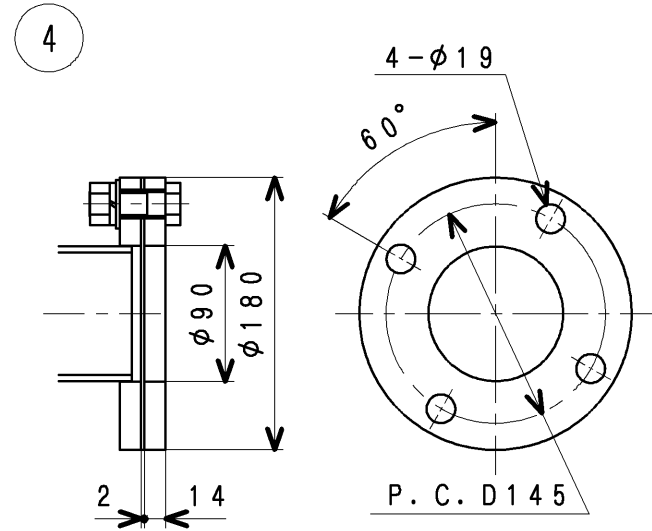
三菱重工業株式会社 汎用機・特車事業本部
GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS, MITSUBISHI HEAVY INDUSTRIES, LTD.

図面番号
DRAWING No. 45196-14003

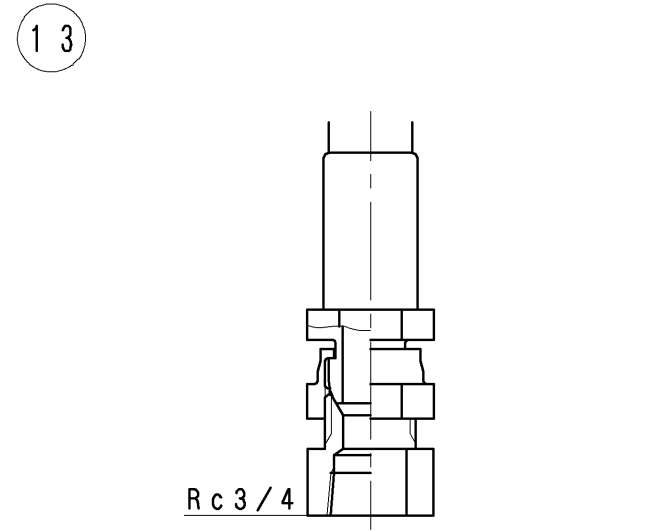
- | | | | | | |
|-------|---------|-------|---------|------------|-------|
| ③ 新図 | サイズ A 3 | ① 組立図 | 2 鋳鍛歯車品 | 3 板金溶接品 | 4 組立品 |
| 4 旧引図 | | | 5 切削品 | 6 その他(購入品) | |



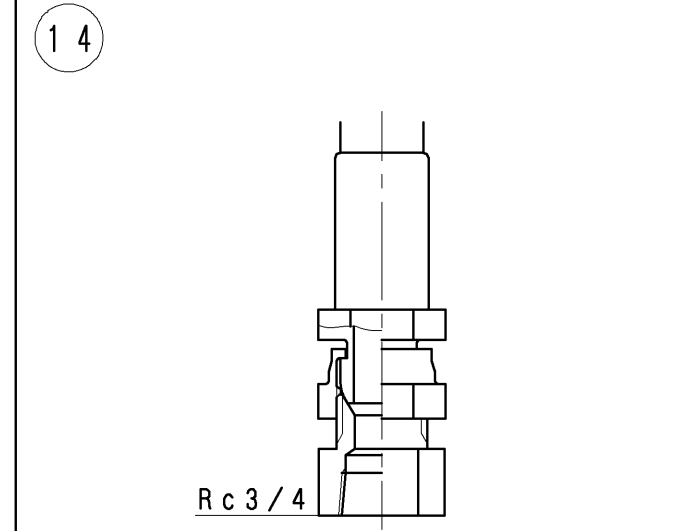
DETAIL OF FRESH WATER INLET



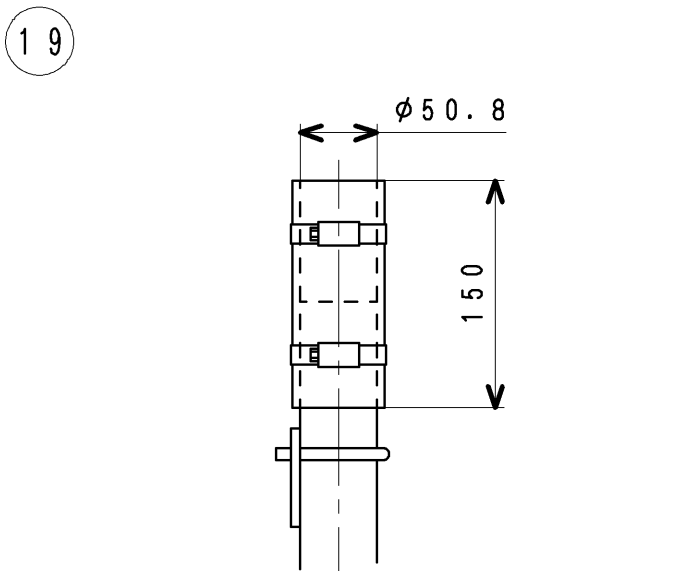
DETAIL OF FRESH WATER OUTLET



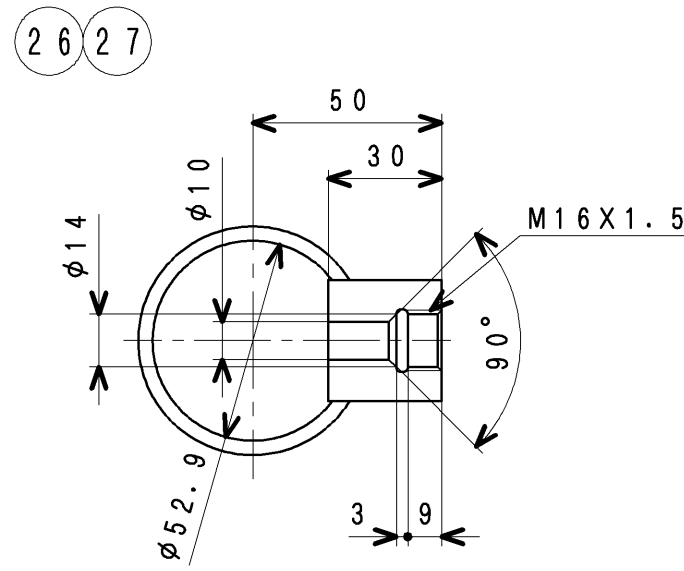
DETAIL OF FUEL PIPE ADAPTER



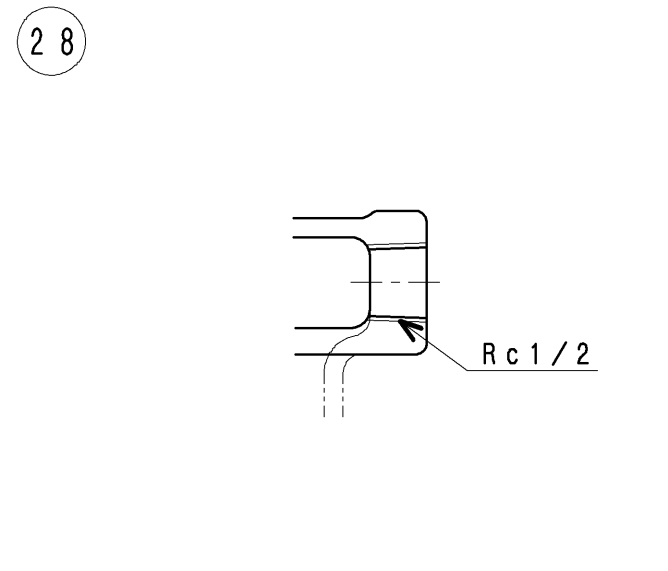
DETAIL OF FUEL LEAKOFF PIPE ADAPTER



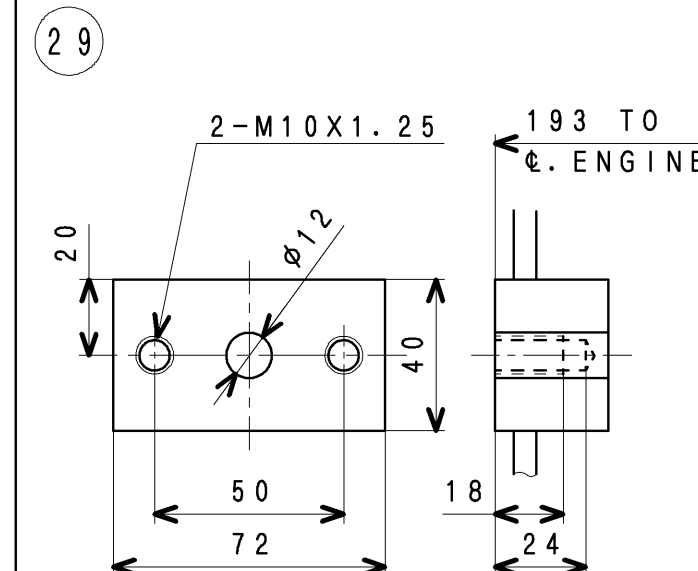
DETAIL OF MIST GAS OUTLET



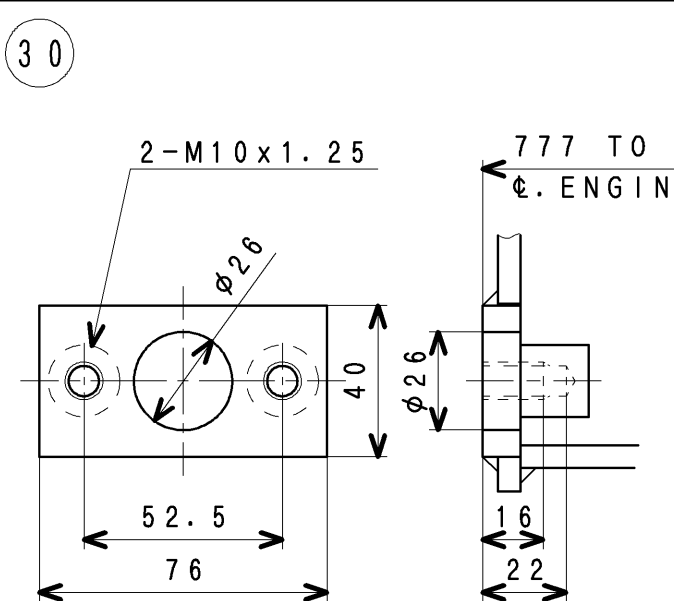
DETAIL OF THERMOMETER ADAPTER



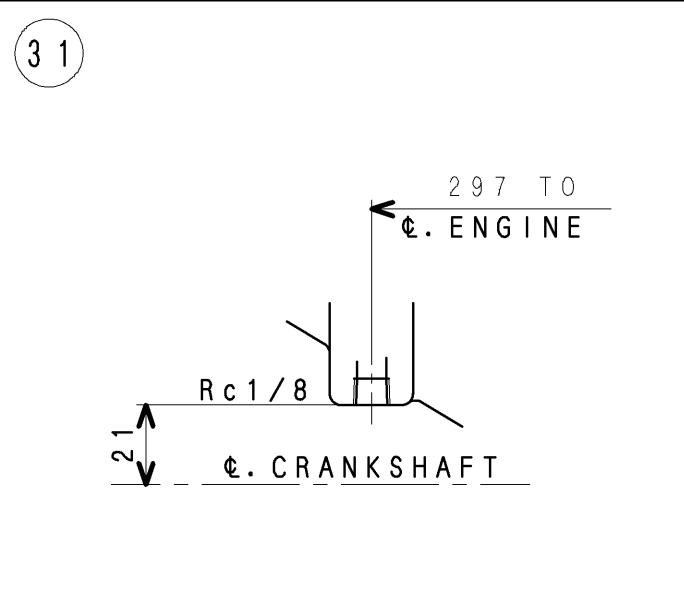
DETAIL OF THERMOSTAT ADAPTER



DETAIL OF OIL PAN ADAPTER



DETAIL OF OIL PAN ADAPTER



DETAIL OF OIL PRESS. GAGE & PRESS. SWITCHI ADAPTER

CHG	ED-NO	DATE	CHK

3rd ANGLE PROJECTION
尺度 SCALE

JOINT DETAIL
S12A2-C2MPTK

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.

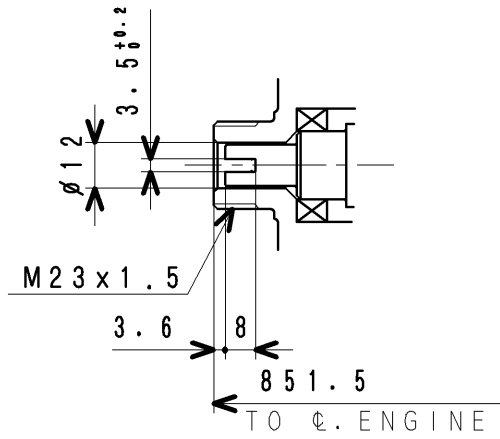
図面番号 45196-01010 1/2
DRAWING No.

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
2007
3.30

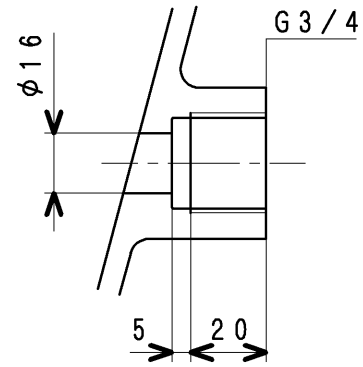
FULL-CAD

32



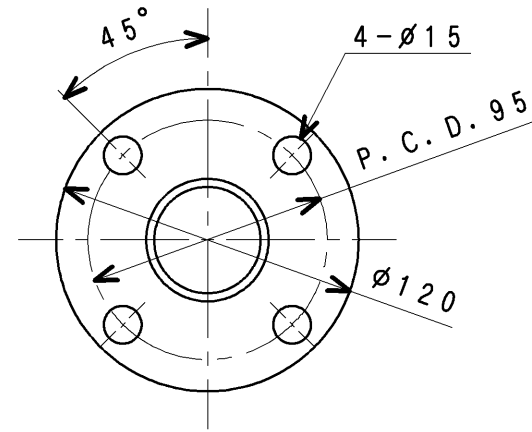
DETAIL OF TACHOMETER JOINT

33



DETAIL OF THERMOMETER ADAPTER
(EXHAUST GAS)

34 35



AIR COOLER WATER INLET
AIR COOLER WATER OUTLET

出図
 ▲
 汎特
 2007
 3.30

FULL-CAD

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

JOINT DETAIL
 S12A2-C2MPTK

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 45196-01010 2/2
 DRAWING No.

③ 新図 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
 4 旧引図 5 切削品 6 その他(購入品)