



# **mitsubishi S16R-C2MPTK**

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**MITSUBISHI DIESEL ENGINE  
TECHNICAL INFORMATION**

ITEM NO.

T0208-0005E (1/4)

DATE

Aug., 2007

Specification Sheets of S16R-C2MPTK Engine

Specification Sheets of S16R-C2MPTK Engine are enclosed herein.

First Edition : Aug., 2007

Engine Engineering Department  
Large Engine Design Section

Revision

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	-----	16	
Bore mm(in.)	-----	170	(6.69)
Stroke mm(in.)	-----	180	(7.09)
Displacement Liter(in <sup>3</sup> )	-----	65.37	(3989)
Compression Ratio	-----	14.5 : 1	
Dry Weight - Engine only - kg(lb)	-----	6780	(14950)
Wet Weight - Engine only - kg(lb)	-----	7195	(15865)

## PERFORMANCE DATA

Idling Speed -rpr	-----	600 ~ 650	
Maximum Overspeed Capacity - rpr	-----	2100	
Moment of Inertia of Rotating Components J- k <sub>l</sub> ·m <sup>2</sup> (lb <sub>f</sub> ·ft <sup>2</sup> )	-----	24.5	(2326)

## ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Flywheel Housing - l <sub>m</sub> (lb <sub>f</sub> ·ft)	-----	4413	(3256)
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## AIR INLET SYSTEM

Maximum Intake Air Restriction (Includes piping)- kPa (in. <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. <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)	-----	260	(68.7)
	Low - liter (U.S.gal)	-----	194	(51.2)
Total System Capacity (Includes Oil Filter) - liter (U.S.gal)	-----	290	(76.6)	
Maximum Installation Angle	Front Up	-----	9.5°	
	Front Down	-----	10.5°	
Maximum Instantaneous Operating Angle	Front Up	-----	30°	
(Engine Level)	Front Down	-----	30°	
	Side to Side	-----	22.5°	

## COOLING SYSTEM

Coolant Capacity - liter (U.S.gal)	-----	170	(44.9)	
(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. T0208-0005E

2/4

## FUEL SYSTEM

Fuel Injection Pump	_____	Mitsubishi PS8 Type x 2
Maximum Suction Head of Feed Pump - kPa (in. Hg)	_____	14.7 (4.3)
Maximum Level of Fuel Tank - nr	_____	5.0
	Continuous Use	_____
	Stand-by Use	_____
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)	_____	600
Cranking Ampere of Starter at 5°C (41°F) / -5°C (23°F)		
Static Ampere -A		410 × 2 / 540 × 2
Momentary Ampere -A		780 × 2 / 1040 × 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			1600			
No. of Cylinders		16					
Bore	mm (in.)	170 (6.69)					
Stroke	mm (in.)	180 (7.09)					
Displacement	liter (in. <sup>3</sup> )	65.37 (3989)					
Brake Horse Power	kW (HP)			1250 (1676)			
Brake Mean Effective Pressure	MPa (psi)			1.43 (207)			
Mean Piston Speed	m/s (ft/min)			9.6 (1890)			
Maximum Regenerative Power Absorption Capacity	kW (HP)			161 (216)			
Intake Air Flow	m <sup>3</sup> /min (CFM)			117 (4131)			
Exhaust Gas Flow	m <sup>3</sup> /min (CFM)			310 (10946)			
Coolant Flow	liter/min (U.S. GPM)			1720 (454)			
Coolant(Jacket water) Pressure (water pump outlet)	MPa (psi)			0.15 (22)			
Coolant Flow to Inter Cooler (Max. Flow: 320L/min)	liter/min (U.S. GPM)			300 (79)			
Oil Flow	liter/min (U.S. GPM)			510 (135)			
Radiated Heat to Ambient	kJ/hr (BTU/min)			369252 (5834)			
Heat Rejection to Coolant	kJ/hr (BTU/min)			1600093 (25281)			
Heat Rejection to Inter Cooler (TK Version)	kJ/hr (BTU/min)			1600093 (25281)			
Heat Rejection to Exhaust	kJ/hr (BTU/min)			4238839 (66974)			
Noise Level (1 m height & distance) (excludes, Intake,Exhaust)	dB(A)			-			
Maximum No Load Governed Speed	rpm			1720			

The specifications are subject to change without notice.



**MITSUBISHI DIESEL ENGINE  
TECHNICAL INFORMATION**

ITEM NO.

T0307-0029E Rev.1 (1/2)

DATE

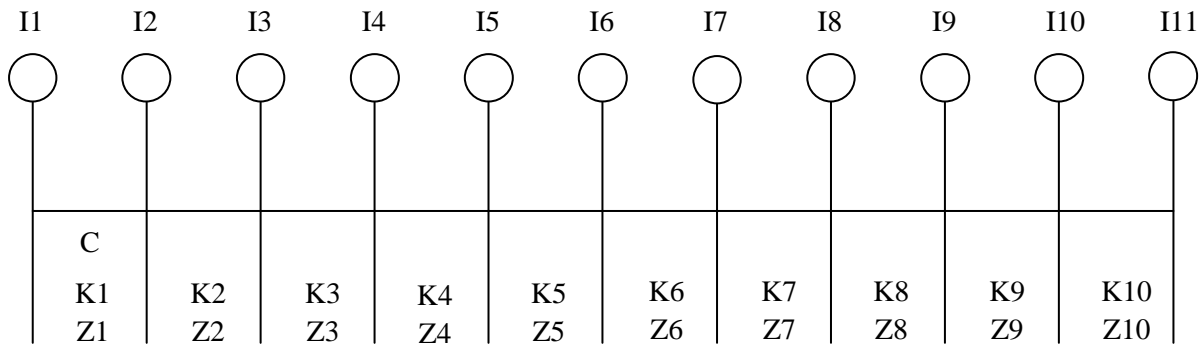
April, 2007

Elastic data of S16R-M Engine

Elastic data of S16R-M Engine are enclosed herein.

Revision	First Edition : April, 2007 (Refer to MTD98-0228B)	Engine Engineering Department Large Engine Design Section		
	Rev.1 : April, 2007 (Refer to MTD04-0106)			
		Approved by	Checked by	Drawn by



**S16R-M ELASTIC DATA**

(USE:45R89-19502 CONNECTING ROD)

	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	2.02	C=1049.3	K1=0.0	Z1 =0.0
I2	PULLEY	2.924	—	K2=1.089	Z2 =373.7
I3	No.1 CRANK	1.045	—	K3=0.735	Z3 =373.7
I4	No.2 CRANK	1.045	—	K4=0.735	Z4 =373.7
I5	No.3 CRANK	1.045	—	K5=0.735	Z5 =373.7
I6	No.4 CRANK	1.045	—	K6=0.735	Z6 =373.7
I7	No.5 CRANK	1.045	—	K7=0.735	Z7 =373.7
I8	No.6 CRANK	1.045	—	K8=0.735	Z8 =373.7
I9	No.7 CRANK	1.045	—	K9=0.735	Z9 =373.7
I10	No.8 CRANK	1.044	—	K10=1.304	Z10=373.7
I11	FLYWHEEL	11.21	—		

Hysteresis constant:130 No. of Cylinder: 16 Bore:170mm Stroke:180mm

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

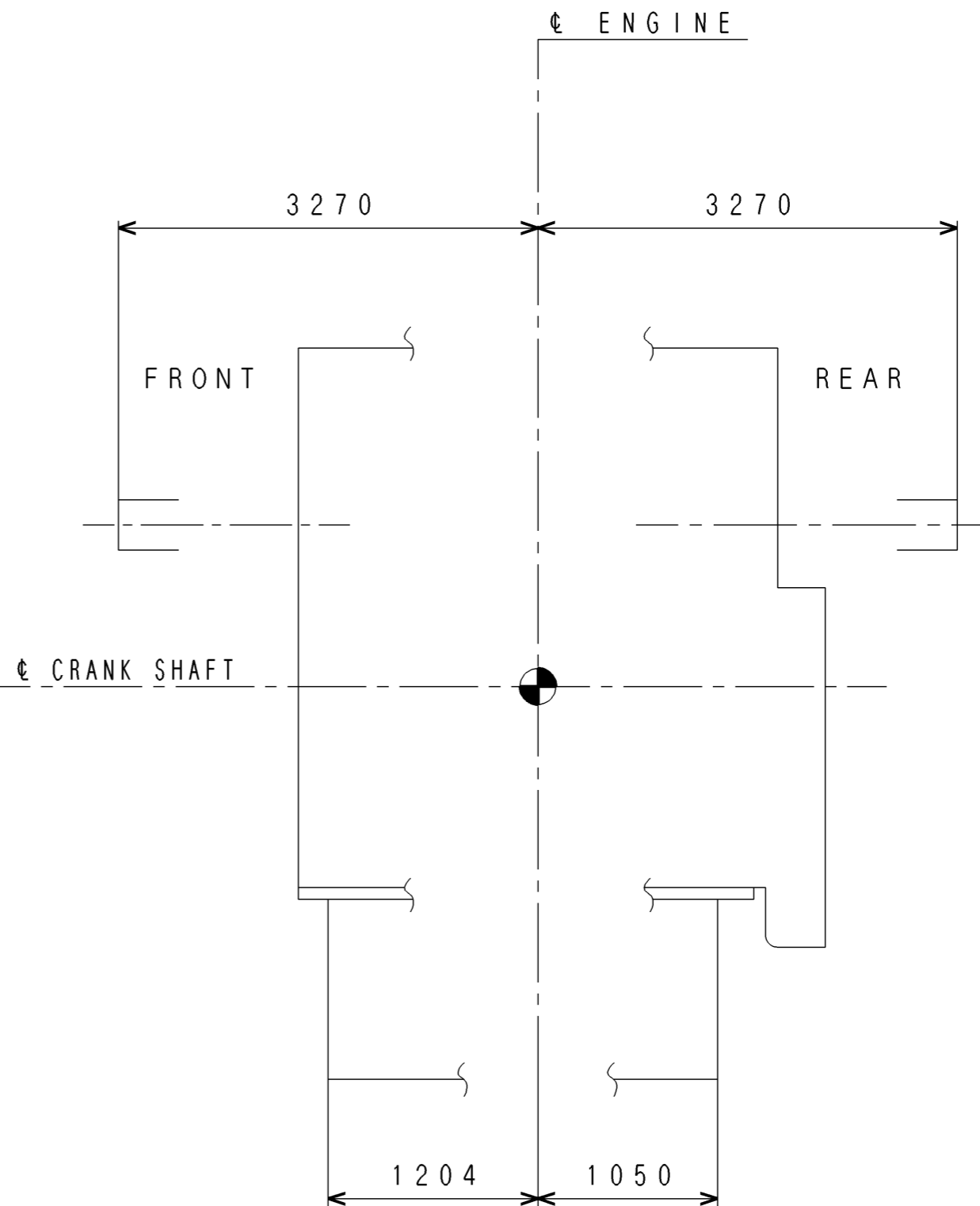
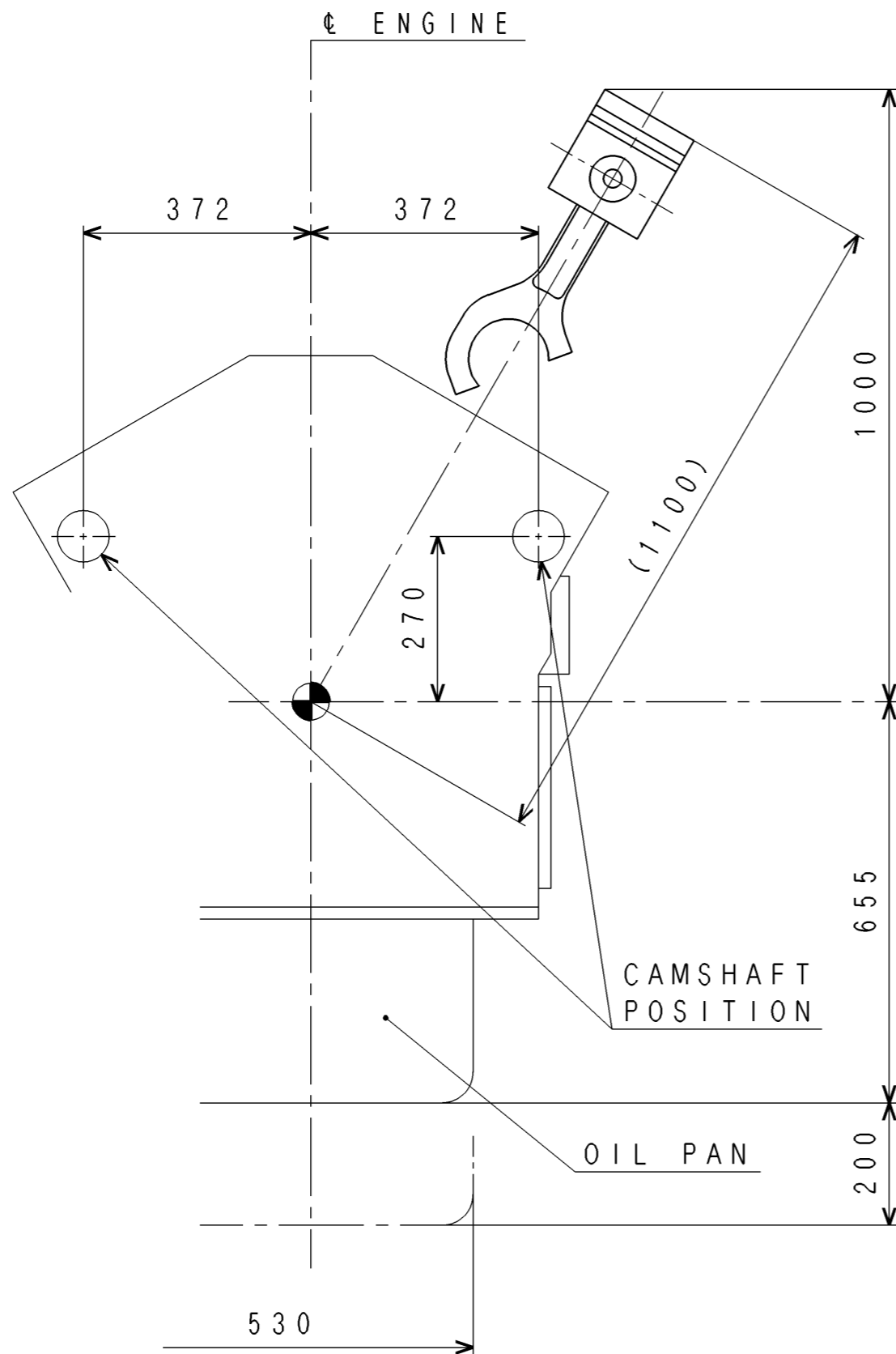
Firing order:1-9-6-14-2-10-4-12-8-16-3-11-7-15-5-13

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

APPLICATION : MARINE USE

The data is subject to change without notice.





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

MEASURE OF OVERHAUL  
FOR S16R

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. 45R96-09051

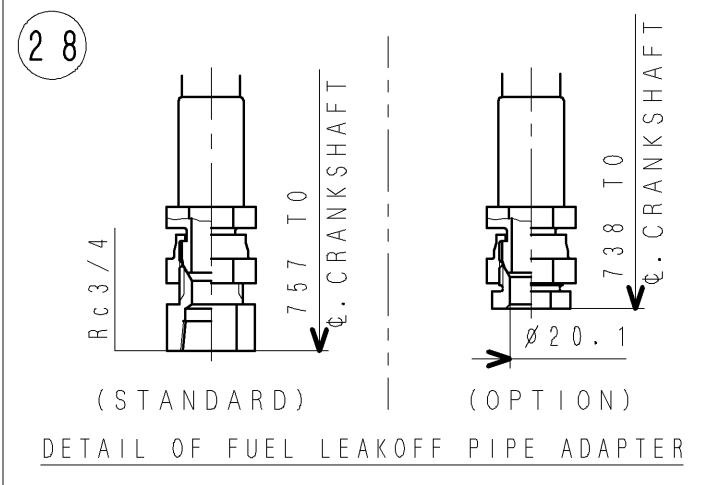
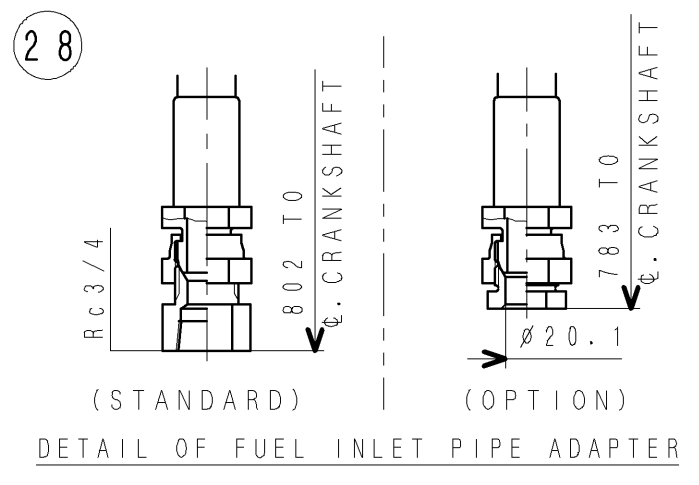
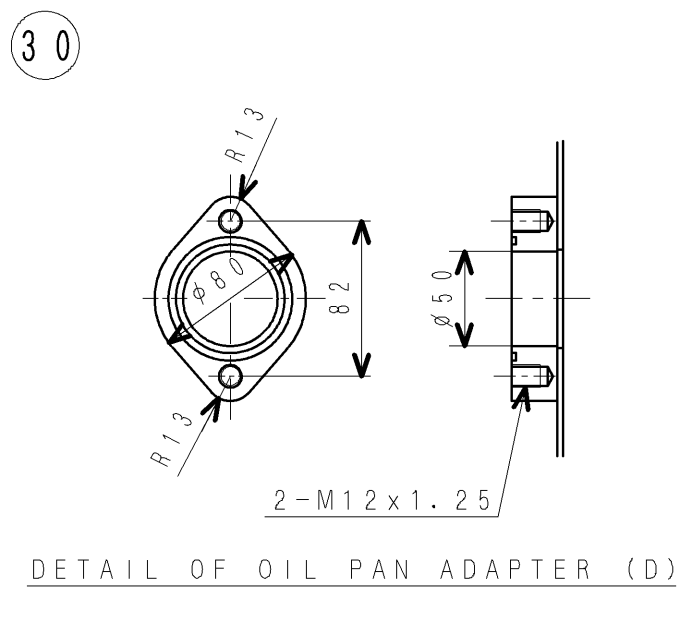
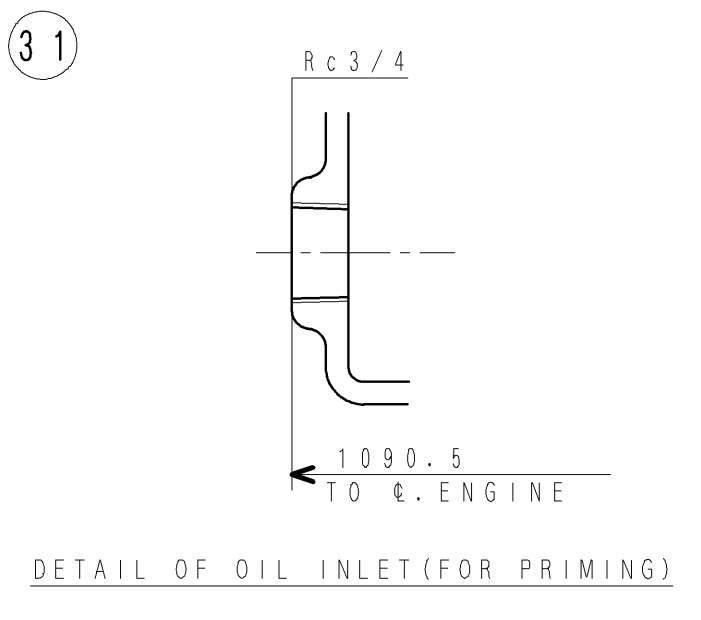
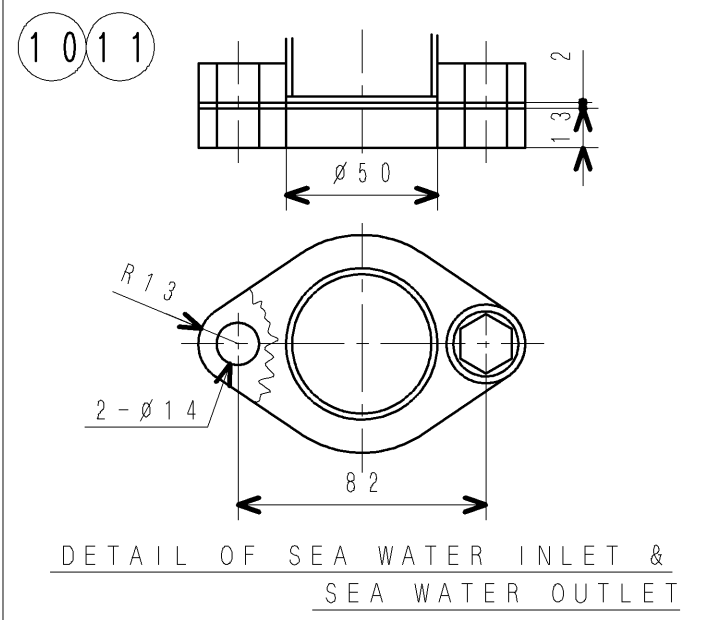
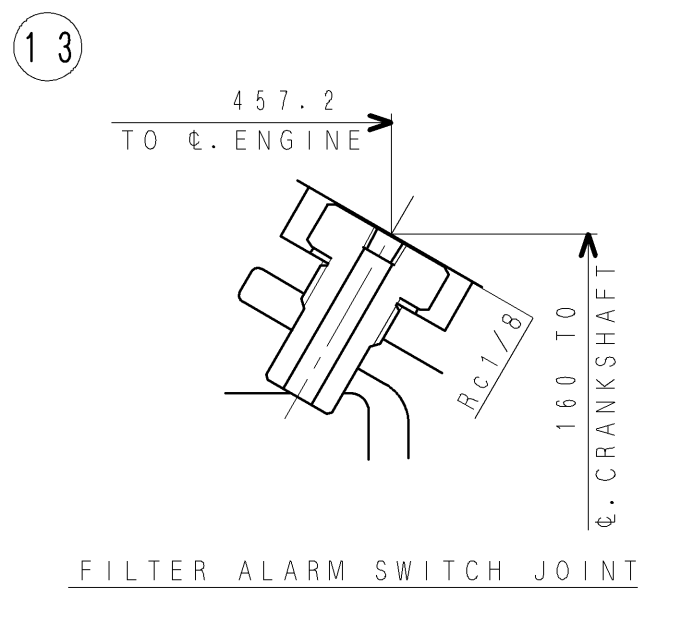
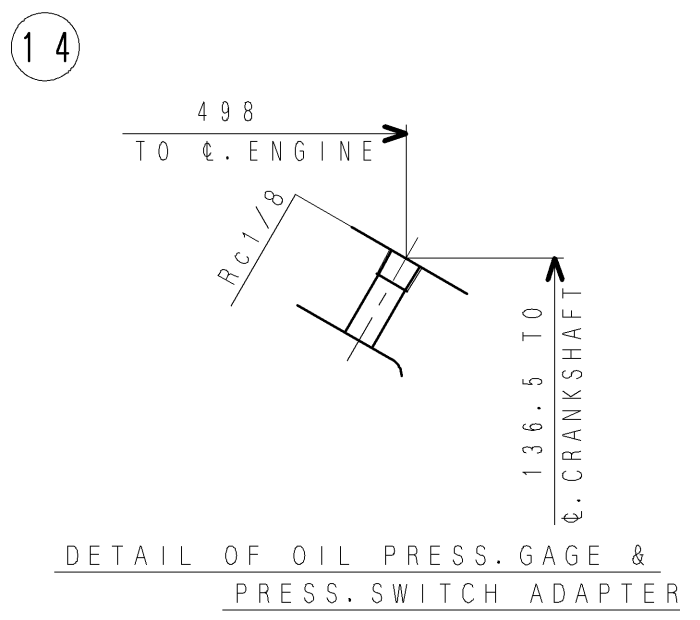
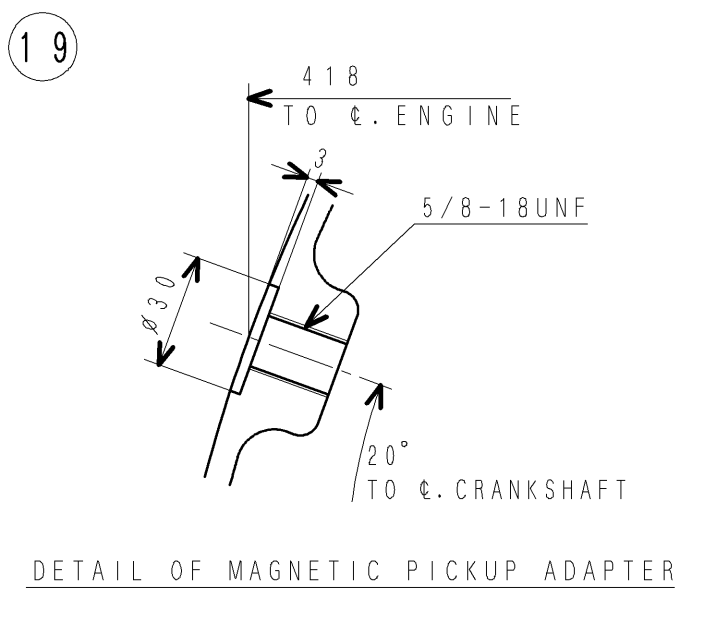
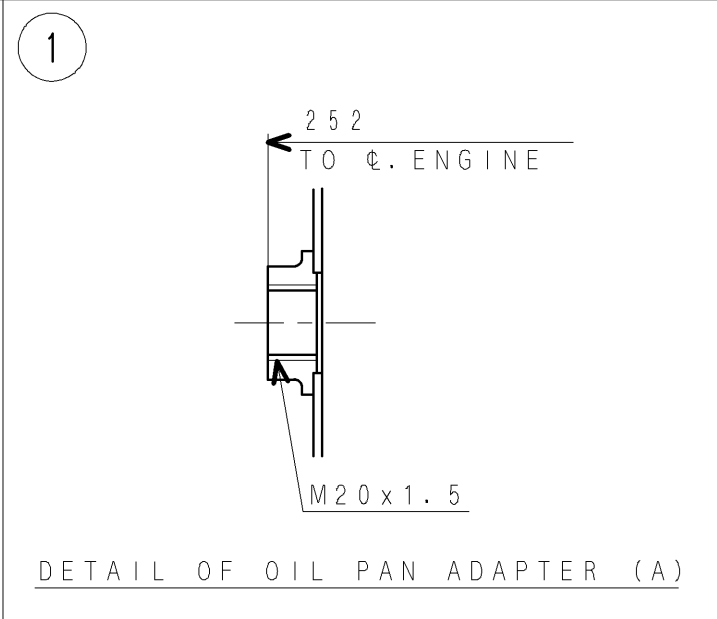
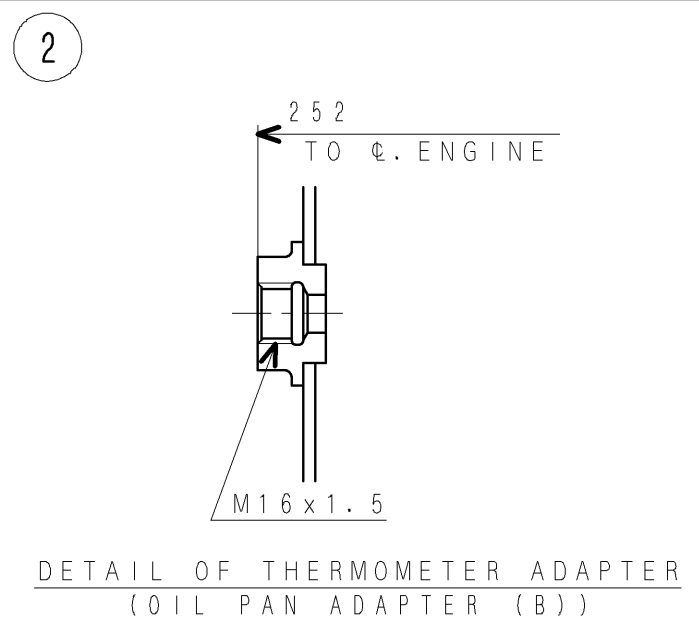
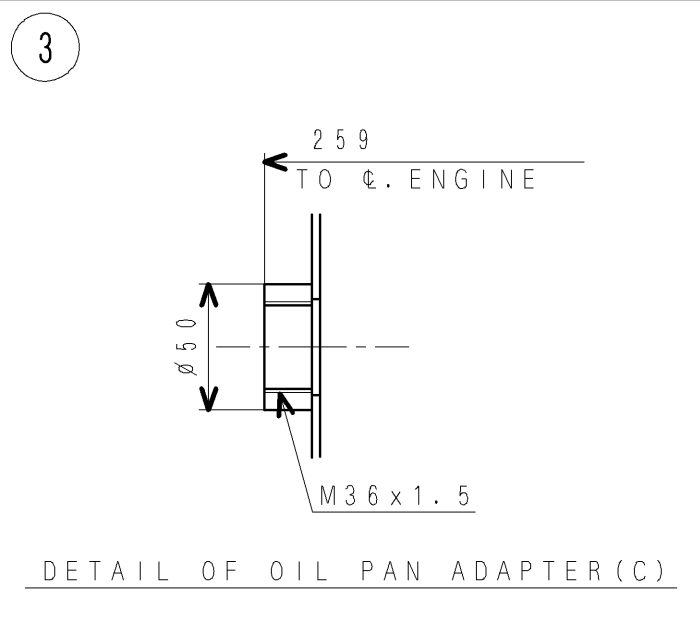
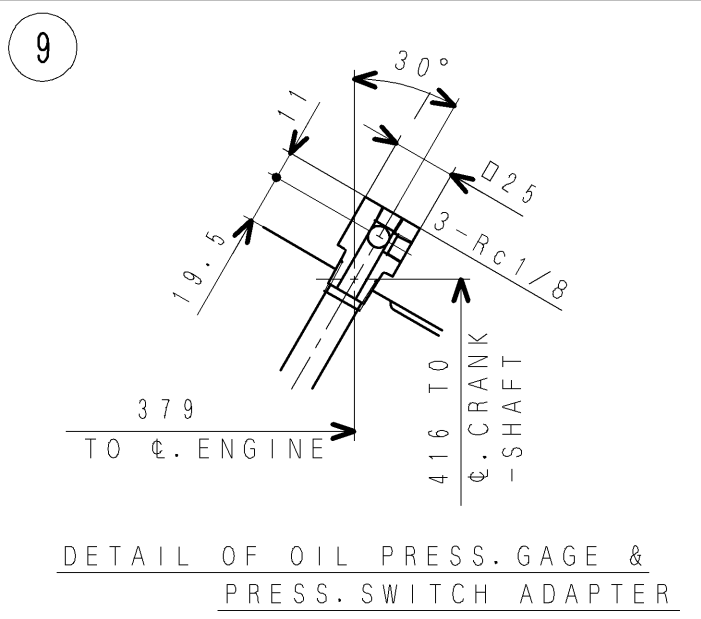
S16R-090-81A

- |       |         |       |         |            |       |
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| 4 旧引図 |         |       | 5 切削品   | 6 その他(購入品) |       |

出図  
汎特  
2001  
10.9

FULL-CAD





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

**S16R-C2MPTK**  
**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.

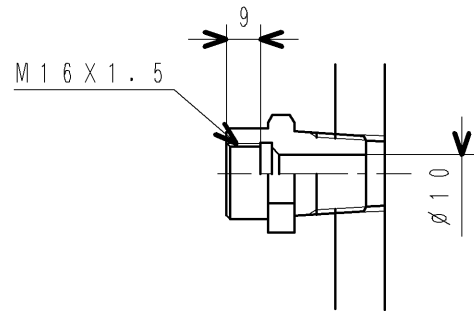
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**出図**  
汎特  
2007  
7.31

FULL-CAD

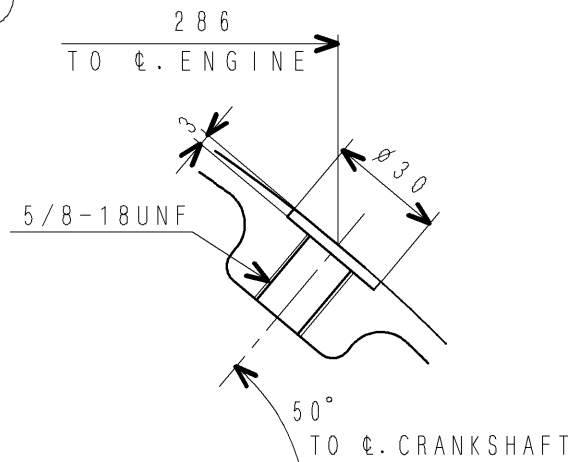
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4 旧引図    5 切削品    6 その他(購入品)

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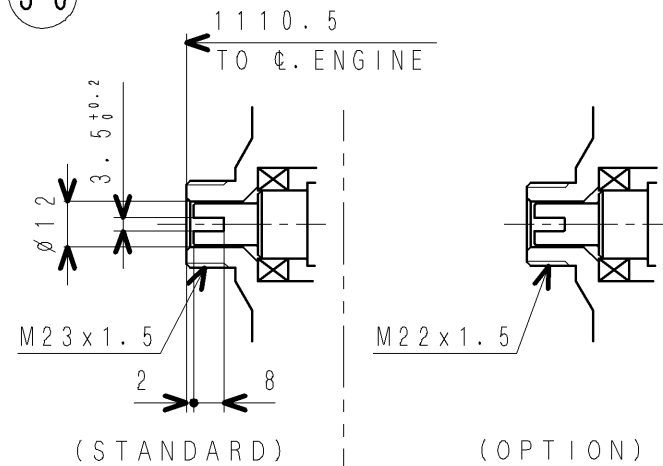
DETAIL OF THERMOMETER & THERMOSWITCH ADAPTER

37



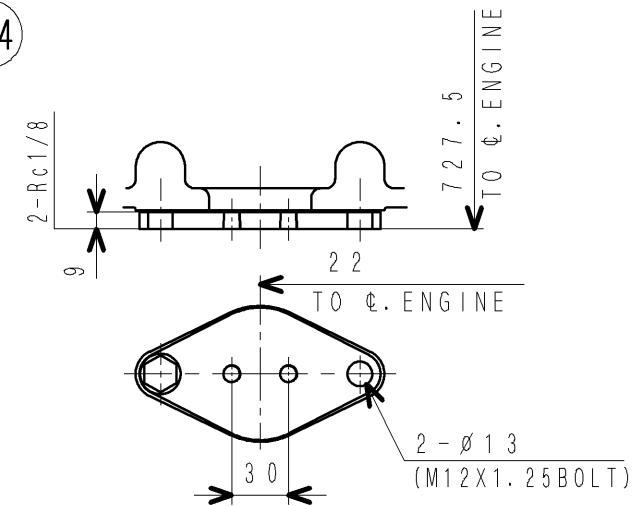
DETAIL OF MAGNETIC PICKUP ADAPTER

36



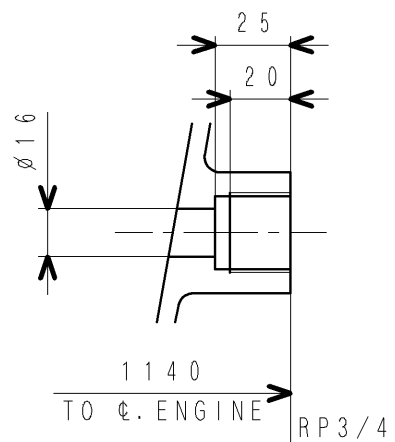
DETAIL OF TACHOMETER ADAPTER

34



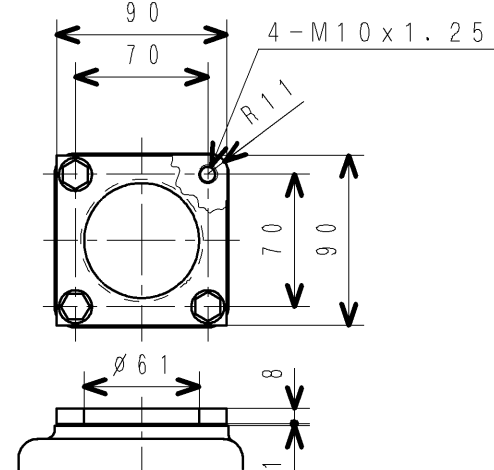
DETAIL OF AIR PRESS. GAGE ADAPTER

48



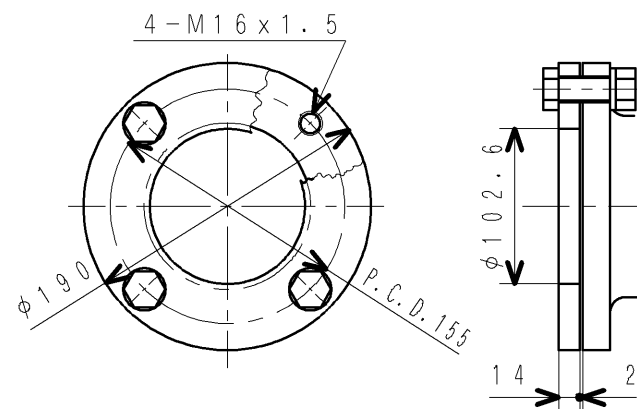
DETAIL OF THERMOMETER, ex. ADAPTER

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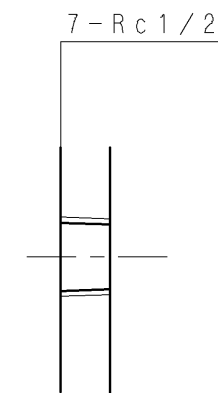
DETAIL OF FRESH WATER OUTLET

42



DETAIL OF FRESH WATER INLET

40



DETAIL OF THERMOMETER & THERMOSWITCH ADAPTER

出図  
 ▲  
 汎特  
 2007  
 7.31

FULL-CAD

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

S16R-C2MPTK  
 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 45R96-01063 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  
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