



mitsubishi S16U-MPTK

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

[Technical data](#)
[Flywheel & housing drawing](#)
[Measure of overhaul](#)
[Starting air system](#)
[Cooling system](#)
[Performance curves](#)



MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION

IFM NO.

JN03411-027(1/6)

DATE

Aug. 1, 2003

TITLE

Specification Sheets of S16U-MPTK Engine (IMO Certified Engine)

Specification Sheets of S16U-MPTK Engine that is satisfied with IMO certified engine are enclosed herein.

These specifications are subject to change without notification.

No.	DATE	SIGNATURE	CAUSE
△			
△			
△			
△			
△			

S16U-MPTK**SPECIFICATION
SHEET****mitsubishi
DIESEL ENGINES****GENERAL ENGINE DATA**

Type	4-Cycle, Water Cooled
Aspiration	Turbo-Charged, Inter Cooler (Raw Water to Cooler)
Cylinder Arrangement	60°V
No. of Cylinders	16
Bore mm (in.)	240 (9.45)
Stroke mm (in.)	260 (10.24)
Displacement liter (in ³)	188.194 (11484)
Compression Ratio	12.7 : 1
Dry Weight - Engine only - kg (lb)	20500 (45194)
Wet Weight - Engine only - kg (lb)	21900 (48280)

PERFORMANCE DATA

Steady State Speed Stability Band at any Constant Load - %	±0.5
Idling Speed -rpm	370-420
Maximum Overspeed Capacity - rpm	1400
Moment of Inertia of Rotating Components GD ² - kgf@cm ² (lbf@ft ²)	392.2 (9309)
(Includes Std. Flywheel)	
Cyclic Speed Variation with Flywheel at 1200 rpm	1/231
1000 rpm	1/156

AIR INLET SYSTEM

Maximum Allowable Intake Air Restriction	
With Clean Filter Element - mm H ₂ O (in. H ₂ O)	300 (11.8)
With Dirty Filter Element - mm H ₂ O (in. H ₂ O)	760 (29.9)
Maximum Allowable Intake Air Temperature-°C (°F)	45 (113)

EXHAUST SYSTEM

Maximum Allowable Back Pressure - mm H ₂ O (in. H ₂ O)	450 (17.7)
--	------------

LUBRICATION SYSTEM

Oil Pressure at Idle -MPa (psi)	0.15-0.2 (21.3)
at Rate Speed - MPa (psi)	0.45-0.7
	(64 - 100)
Standard Thermostat (modulating) Range - °C (°F)	55 - 75 (131 -167)
Maximum Oil Temperature - °C (°F)	95 (203)
Oil Capacity of Standard Pan High - liter (U.S. gal.)	610 (161.1)
Low - liter (U.S. gal.)	440 (116.3)
Total System Capacity (Includes Oil Filter) - liter (U.S. gal.)	680 (179.6)
Maximum Installation Angle (Std. Pan) Front Up - °	10
(Includes Trim Angle) Front Down - °	10
Maximum Instantaneous Operating Angle	Front Up - ° 14
(Engine Level) Front Down - °	14
Side to Side - °	25

APPLICATION: MARINE-USE

S16U-MPTK**SPECIFICATION
SHEET****mitsubishi
DIESEL ENGINES****COOLING SYSTEM**

MPTK (FW) Maximum Coolant (Fresh Water) Temperature at Air Cooler Inlet - °C (°F)	40(104)
Coolant Capacity (Engine only) - liter (U.S. gal.)	700 (184.9)
Maximum External Friction Head at Engine Outlet - MPa (psi)	0.1 (14.2)
Maximum Static Head of Coolant above Crankshaft Center - m (ft)	12.5 (41.0)
Maximum Outlet Pressure of Engine Water Pump - MPa (psi)	0.25 (35.6)
Standard Thermostat (modulating) Range - °C (°F)	65 -75 (149 - 167)
Maximum Allowable Coolant Temperature at Engine Outlet -°C (°F)	95 (203)
Maximum Recommended Coolant Temperature at Engine Outlet -°C (°F)	80 (176)
Maximum Allowable Pressure of Expansion Tank- MPa (psi)	0.07(10)
Minimum Coolant Expansion Space - % of System Capacity	10

FUEL SYSTEM

Fuel Injection Pump Type	Bosch Type × 16
Maximum Suction Head of Feed Pump - mmHg (in. Hg)	110 (4.3)
Maximum Static Head of Leak Pipe - mmHg (in. Hg)	370 (14.6)
Minimum Fuel Oil Supply Pipe Inner Diameter - mm(in)	25(1.0)
Minimum Fuel Oil Return Pipe Inner Diameter - mm(in)	25(1.0)
Minimum Fuel Oil Leak Pipe Inner Diameter - mm(in)	25(1.0)
Fuel Oil Tank Height from Inlet Port of Fuel Injection Pump - m (ft)	0 - 2 (0 - 6.56)

STARTING AIR SYSTEM

Air Reservoir Capacity - liter (U.S. gal)	400 (79.2)
No. of Air Reservoir	2
Air Pressure - MPa (psi)	2.94 (427)

STOP SYSTEM

Air Pressure - MPa (psi)	0.6 (85.4)
--------------------------	------------

S16U-MPTK**SPECIFICATION
SHEET****mitsubishi
DIESEL ENGINES****ACCESSORY EQUIPMENT**

Air Cleaner.....	Silencer Type
Exhaust Manifold.....	Lagging and Heat Insulated Plate
Turbocharger.....	Air Cooled (Turbine Case)
Inter cooler.....	Fresh Water Cooled
Breather.....	Conduction Type
Governor.....	Hydraulic UG8 or Electric EG10P Type
Fuel Injection Pump.....	Individual Unit Pump
Fuel Feed Pump.....	Trochoid Type
Fuel Injection Pipe.....	Double Walled Tube Type
Fuel Injection Nozzle.....	Whole Nozzle Type
Fuel Filter.....	Paper Element Type
Lubricating Oil Pump.....	Gear Pump
Lubricating Oil Filter (By Pass Flow).....	Paper Element
Oil Pan.....	Large Capacity, Steel
Cooling Water Pump.....	Centrifugal Type
Cooling Water Thermostat.....	Wax Pellet Type
Air Starter.....	Air Direct Type
Stop device.....	Air Cylinder Type

ACCESSORY EQUIPMENT (LOOSE SUPPLY)

Lubricating Oil Cooler (Shell and Tube Type)
 Lubricating Oil Filter (Full Flow) (Paper Element Type)
 Lubricating Oil Thermostat (Wax Pellet Type)
 Jack Bolt
 Companion Flange
 Standard Tools
 Standard Spare Parts

The specifications are subject to change without notification.

APPLICATION: MARINE-USE

S16U-MPTK**SPECIFICATION
SHEET****mitsubishi
DIESEL ENGINES****ENGINE RATING**

All data represent net performance with standard accessories such as fuel injection pump, water pump, L.O. pump under the following conditions;

Barometric pressure ; 100 kPa (750 mmHg)

Ambient temperature ; 298 K (25 °C)

Relative humidity ; 60%

Calorific value of fuel ; 42,700kJ/kg

S:Limited Light Duty, A:Light Duty, B:Medium Duty, C:Heavy Duty

ITEM	UNIT	Propulsion use				Remarks
		S	A	B	C	
Engine Speed	rpm	1200	1200	1100	1060	
Brake Horse Power	kW	3581	3282	2984	2686	Fuel Set Power Flywheel End
	HP	4800	4400	4000	3600	
Specific Fuel Consumption	g/kWh	217	215	210	210	Allowance +5%
	g/HPh	160	158	154	154	
Break Mean Effective Press.	MPa	1.90	1.74	1.73	1.62	
	psi	276	253	251	234	
Mean Piston Speed	m/s	10.4	10.4	9.5	9.2	
	ft/min	2047	2047	1877	1808	
Maximum Regenerative Power Absorption Capacity	kW	313	313	259	238	
	HP	420	420	348	319	
Intake Air Flow	m ³ /min	335	303	268	240	
	CFM	11832	10703	9475	8471	
Exhaust Gas Flow	m ³ /min	804	727	644	576	
	CFM	28394	25685	22738	20329	
Coolant (Jacket Water) Flow	l/min	1870	1870	1720	1650	
	US GPM	495	495	455	437	
Coolant(Jacket Water) Pressure (Water Pump Outlet)	MPa	0.155	0.155	0.14	0.13	
	psi	22	22	20	18	
Cooling water (A/C & O/C) Flow	l/min	1870	1870	1720	1650	FW temp<40°C
	US GPM	495	495	455	437	
Oil Flow	l/min	1300	1300	1190	1130	
	US GPM	344	344	315	299	
Radiated Heat to Ambient	×10 ⁴ kcal/h	23.78	21.59	19.18	17.26	
	BTU/min	15728	14279	12685	11415	
Heat Rejection to Coolant (Jacket Water)	×10 ⁴ kcal/h	71.34	64.78	57.53	51.78	
	BTU/min	47180	42844	38049	34246	
Heat Rejection to Air & Oil Cooler	×10 ⁴ kcal/h	107.0	97.17	86.29	77.67	
	BTU/min	70768	64267	57071	51370	

APPLICATION:MARINE-USE

ITEM	UNIT	Propulsion use				Remarks
		S	A	B	C	
Heat Rejection to Exhaust	×10 ⁴ kcal/h BTU/min	282.60 186907	253.98 167978	219.60 145240	197.70 130756	
Noise Level (Excludes exhaust gas)	dB(A)					Mechanical 1 m Dis. 1.5m H.
Max. No Load Governored Speed	Rpm	1290	1290	1183	1140	

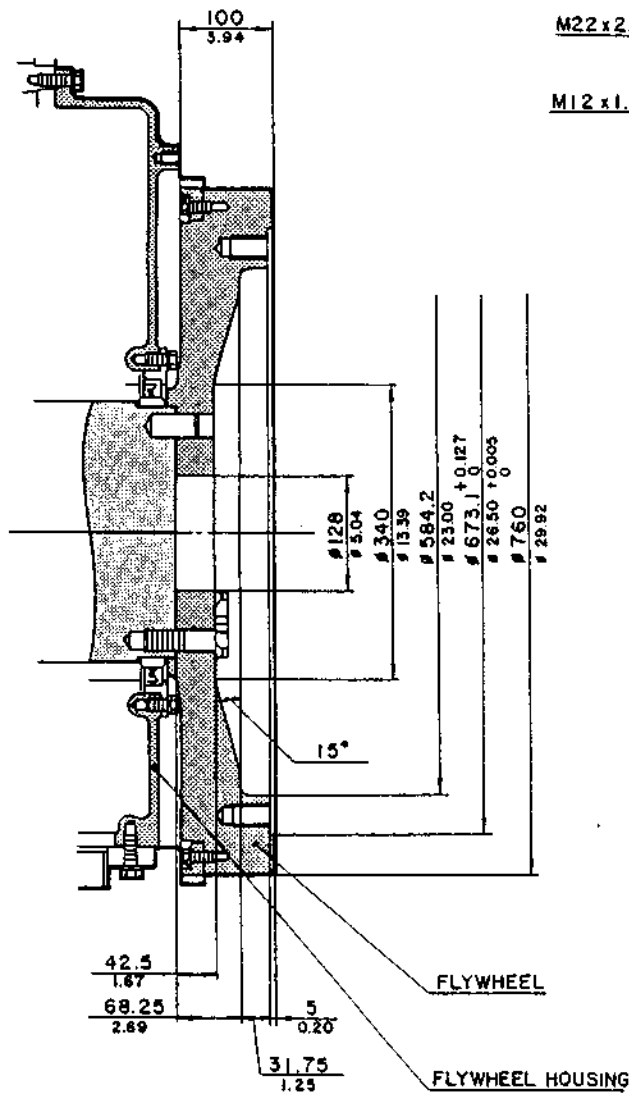
Note: Brake Horse Power at flywheel end.

The specifications are subject to change without notification.

APPLICATION: MARINE-USE

S16U JOINT DETAIL (1/2)

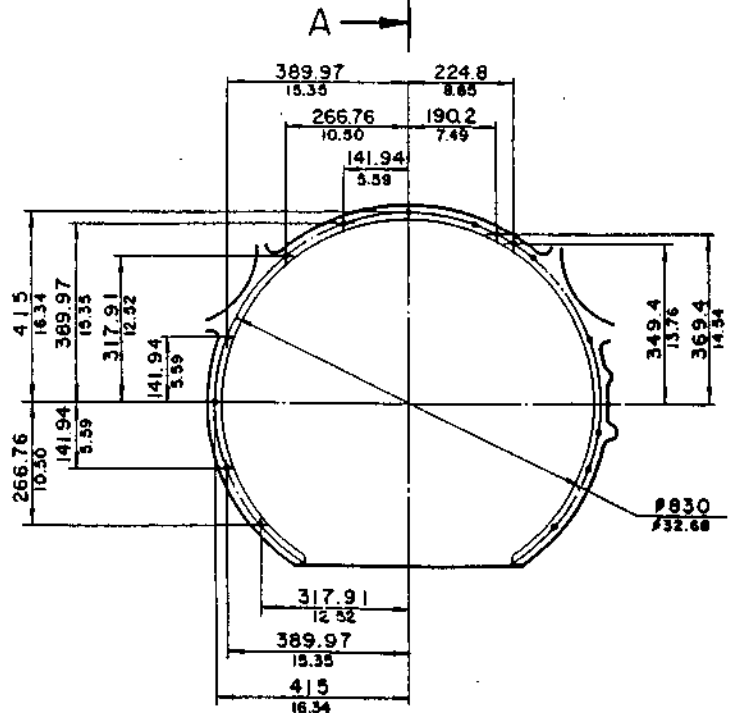
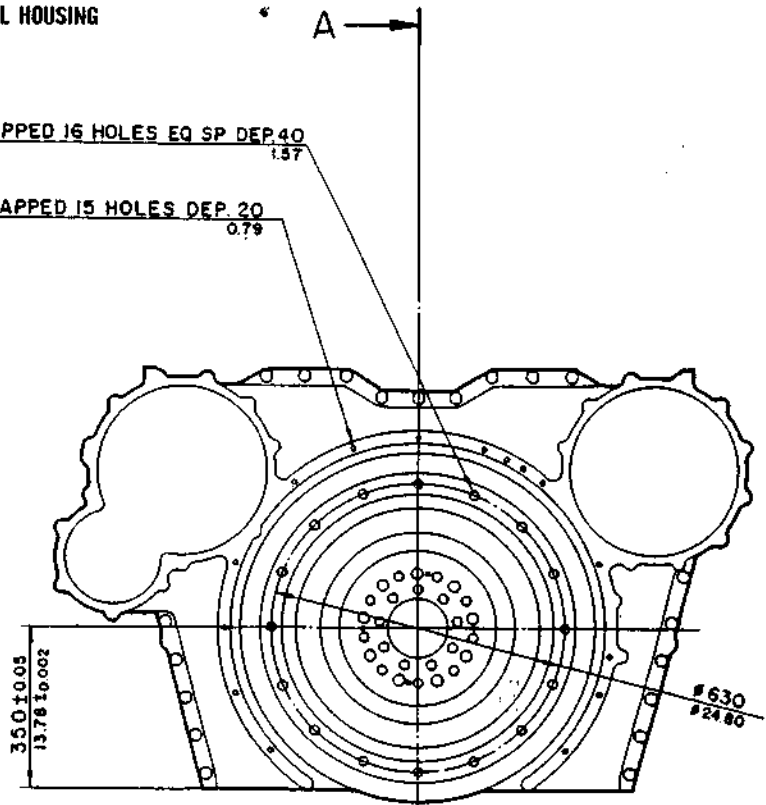
- ① FLYWHEEL
- ② FLYWHEEL HOUSING



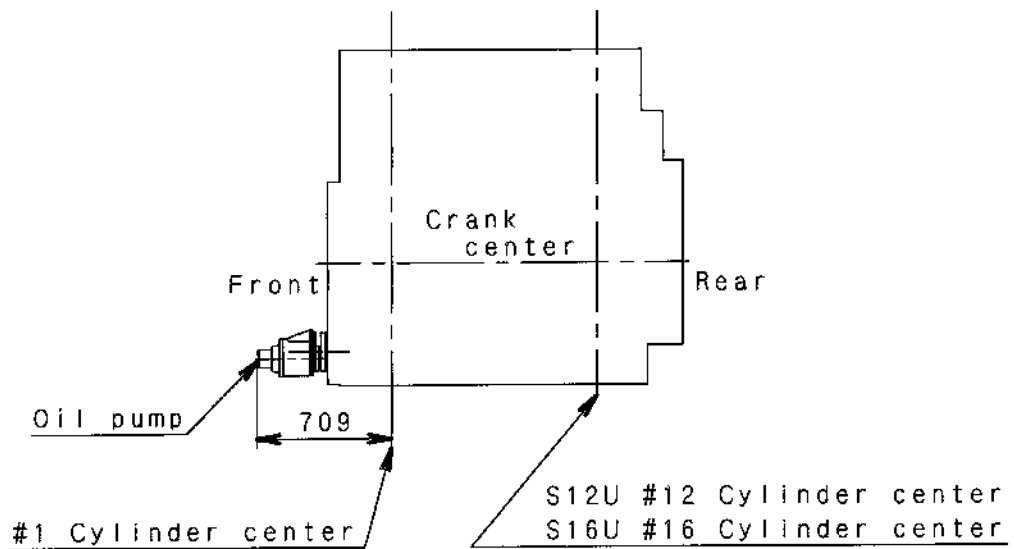
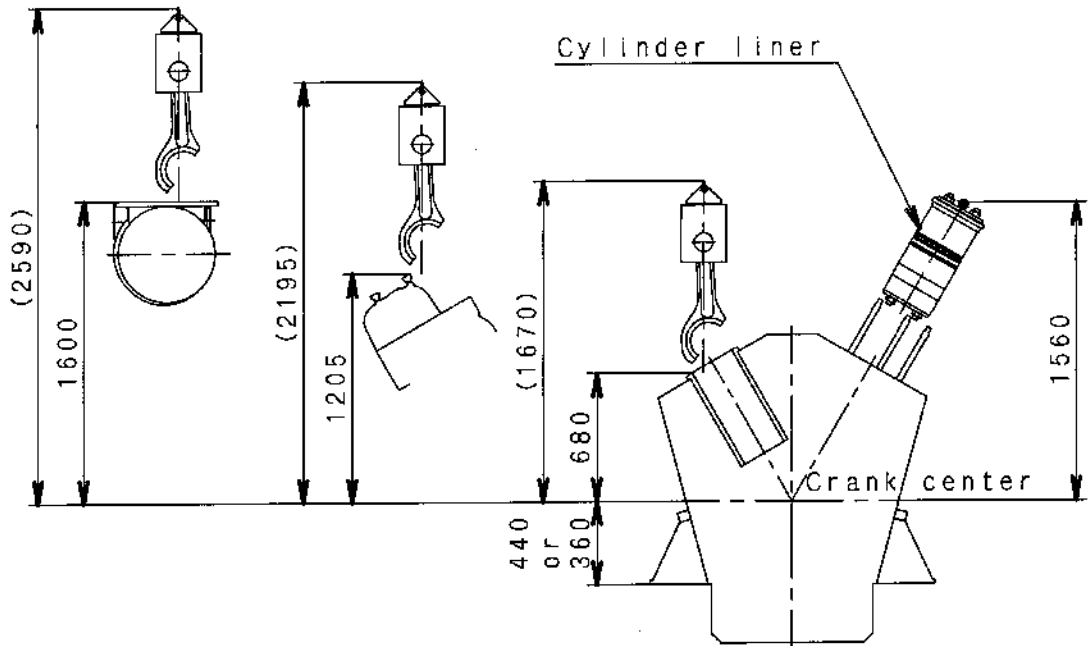
SECTION A-A

M22 x 2.5 TAPPED 16 HOLES EQ SP DEP. 40
1.57

M12 x 1.75 TAPPED 15 HOLES DEP. 20
0.79

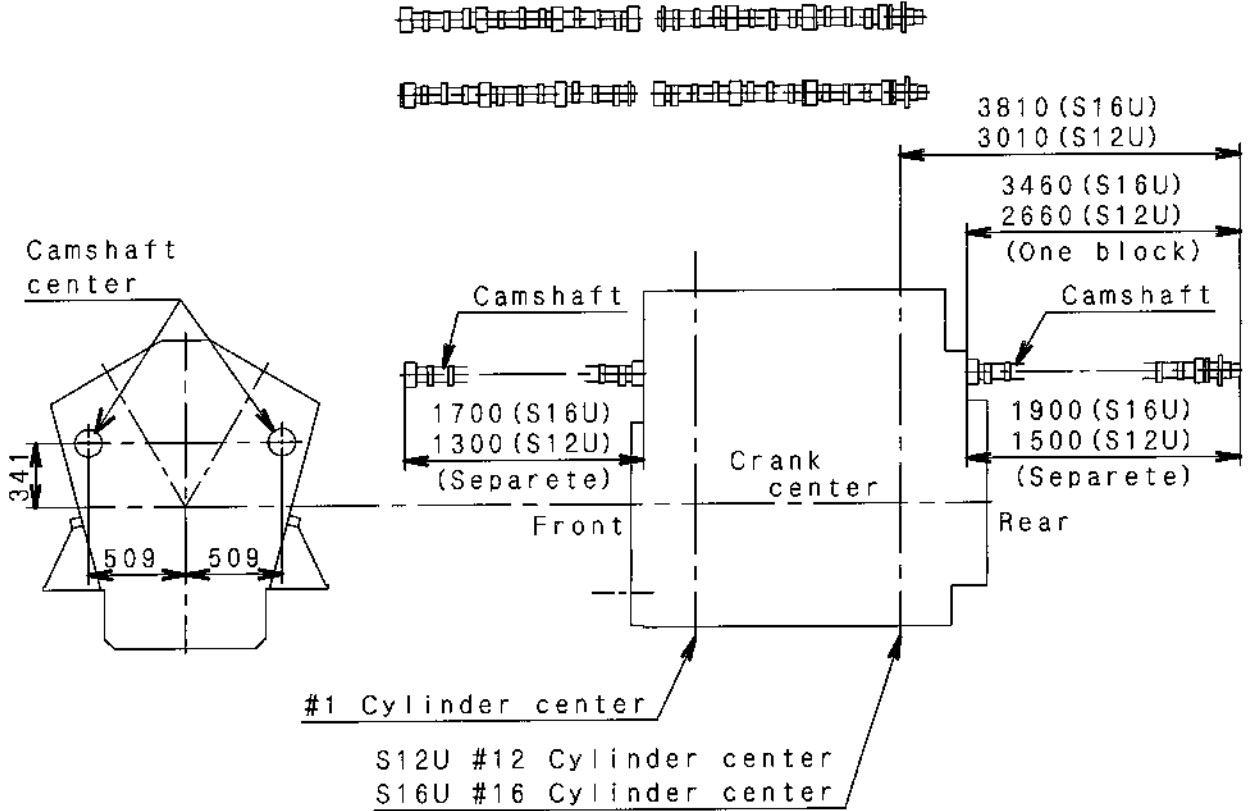


S Uエンジンオーバーホール時の所要寸法
 SU ENGINE OVERHAUL HEIGHT AND LENGTH
 (S12U, S12U)

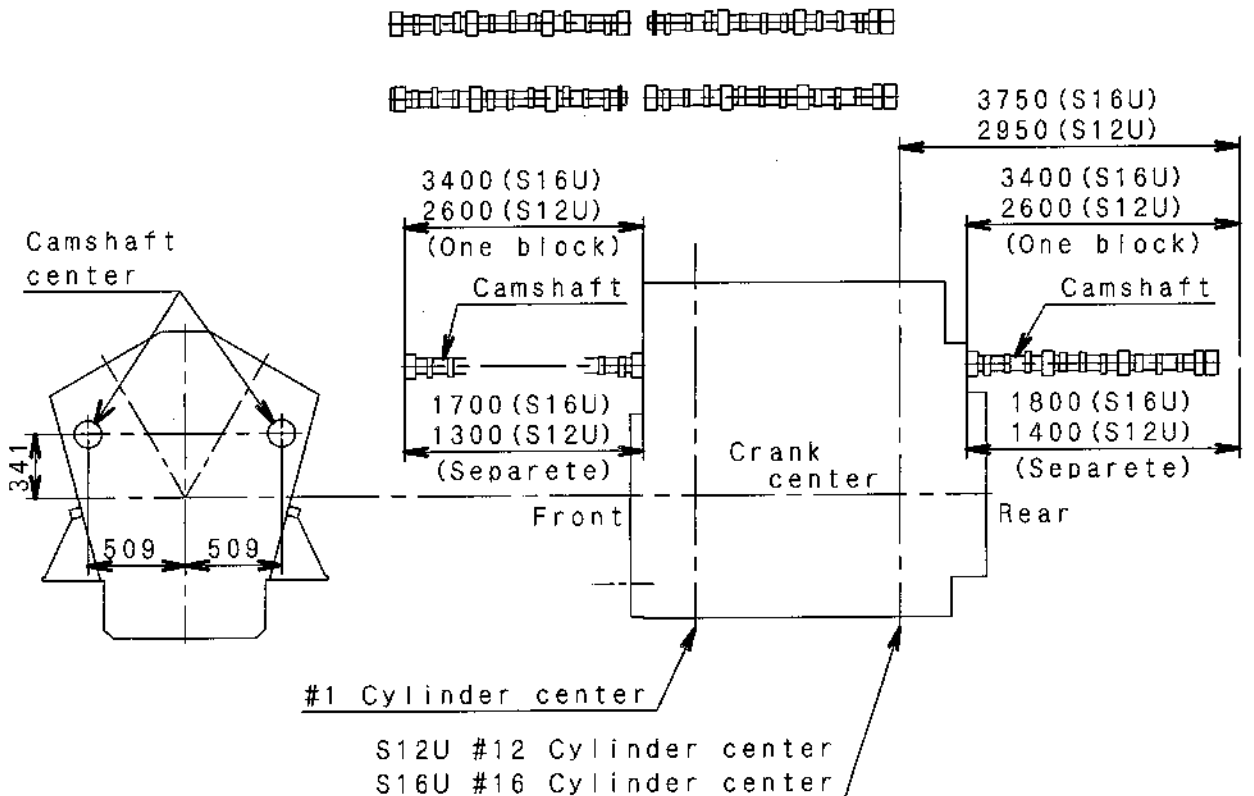


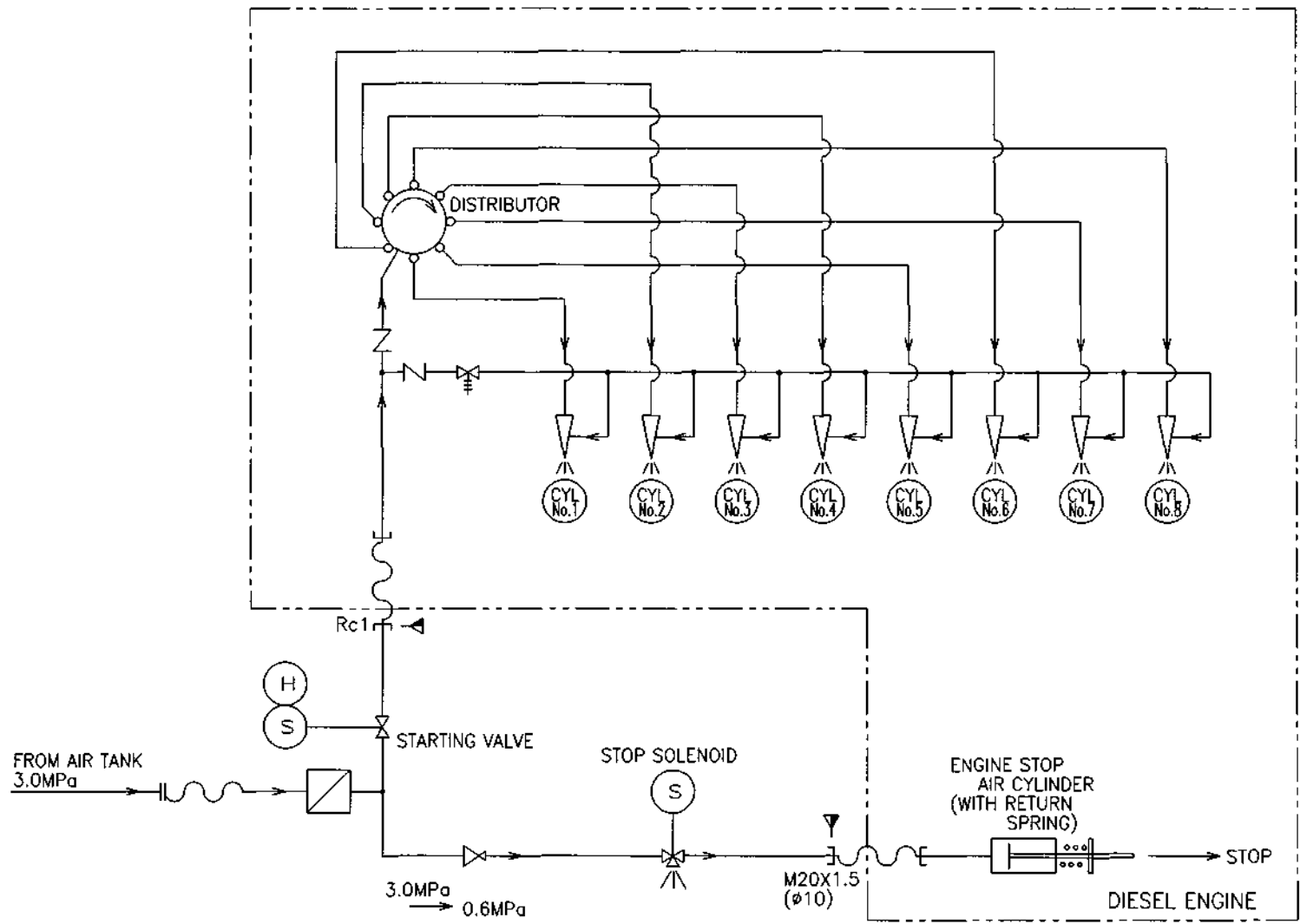
SUエンジンオーバーホール時の所要寸法
 SU ENGINE OVERHAUL HEIGHT AND LENGTH
 (S12U, S12U)

TYPE I



TYPE II





CHG	EO-NO	DATE	CHK

3rd ANGLE PROJECTION
尺貫 SCALE

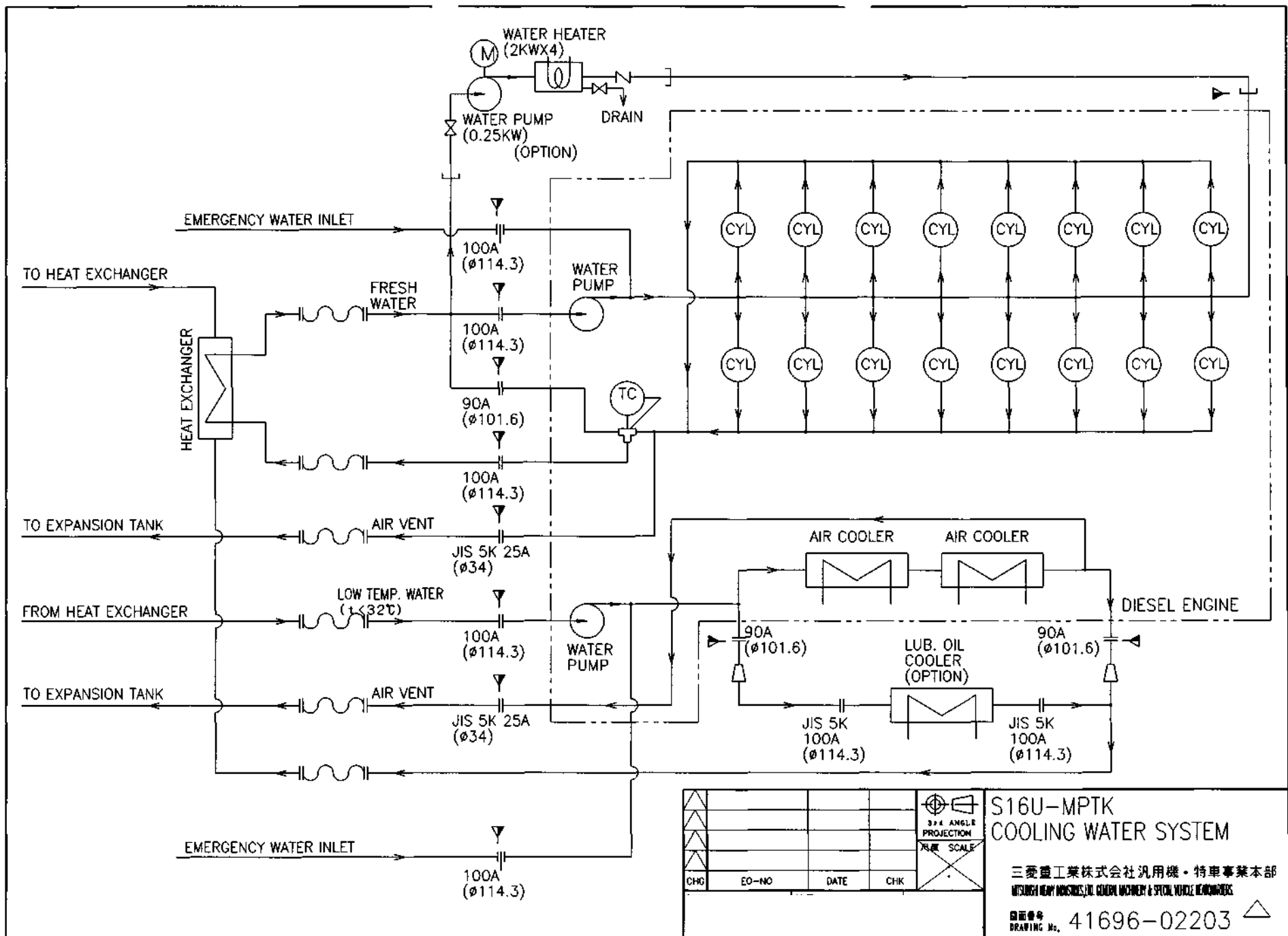
S16U-MPTA, -MPTK STARTING AIR SYSTEM

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. 41696-02601

①新図 ②サイズ ③組立図 ④切欠品 ⑤その他(購入品)
④旧引図 A3 ①組立図 ②組立部品 ③検査部品 ④組立品 ⑤切欠品 ⑥その他(購入品)

FULL-CAD



FULL-CAD

CHG	EO-NO	DATE	CHK

3/4 ANGLE PROJECTION
尺貫 SCALE

S16U-MPTK
COOLING WATER SYSTEM

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 DEPARTMENT

図面番号
DRAWING No. 41696-02203

- ① 新図
- ② 訂正
- ③ 訂正
- ④ 訂正
- ⑤ 訂正
- ⑥ 訂正
- ⑦ 訂正
- ⑧ 訂正
- ⑨ 訂正
- ⑩ 訂正
- ⑪ 訂正
- ⑫ 訂正
- ⑬ 訂正
- ⑭ 訂正
- ⑮ 訂正
- ⑯ 訂正
- ⑰ 訂正
- ⑱ 訂正
- ⑲ 訂正
- ⑳ 訂正
- ㉑ 訂正
- ㉒ 訂正
- ㉓ 訂正
- ㉔ 訂正
- ㉕ 訂正
- ㉖ 訂正
- ㉗ 訂正
- ㉘ 訂正
- ㉙ 訂正
- ㉚ 訂正
- ㉛ 訂正
- ㉜ 訂正
- ㉝ 訂正
- ㉞ 訂正
- ㉟ 訂正
- ㊱ 訂正
- ㊲ 訂正
- ㊳ 訂正
- ㊴ 訂正
- ㊵ 訂正
- ㊶ 訂正
- ㊷ 訂正
- ㊸ 訂正
- ㊹ 訂正
- ㊺ 訂正
- ㊻ 訂正
- ㊼ 訂正
- ㊽ 訂正
- ㊾ 訂正
- ㊿ 訂正

CAPACITY OF COOLING WATER, LUBRICATING OIL AND FUEL OIL PUMP

Item	Engine speed (min ⁻¹)	Pump Capacity (l/min) / Total head (MPa)				
		S6U	S6U2	S8U	S12U	S16U
Jacket Water	1200	1300/0.17	—	1430/0.16	1700/0.17	1870/0.16
	1000	1100/0.14	1100/0.14	1210/0.13	1430/0.14	1570/0.13
	900	1000/0.12	1000/0.12	1100/0.11	1300/0.12	1430/0.11
	720 and 750	850/0.08	850/0.08	930/0.07	1100/0.08	1210/0.07
Raw water	1200	1300/0.17	—	1430/0.16	1700/0.17	1870/0.16
	1000	1100/0.14	1100/0.14	1210/0.13	1430/0.14	1570/0.13
	900	1000/0.12	1000/0.12	1100/0.11	1300/0.12	1430/0.11
	720 and 750	850/0.08	850/0.08	930/0.07	1100/0.08	1210/0.07
Lube oil	1200	550/0.56	—	725/0.56	1024/0.65	1300/0.85
	1000	460/0.52	604/0.52	604/0.52	850/0.57	1080/0.57
	900	410/0.50	544/0.50	544/0.50	770/0.53	980/0.53
	720 and 750	330/0.40	435/0.40	435/0.40	610/0.42	780/0.42
Fuel oil	1200	22.5/0.20	—	22.5/0.20	22.5/0.20	22.5/0.20
	1000	18.8/0.20	18.8/0.20	18.8/0.20	18.8/0.20	18.8/0.20
	900	16.9/0.20	16.9/0.20	16.9/0.20	16.9/0.20	16.9/0.20
	720 and 750	14.1/0.20	14.1/0.20	14.1/0.20	14.1/0.20	14.1/0.20

SU Water Pump Performance

