



mitsubishi S12U-MPTK

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MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION

IFM NO.

JN03411-007(1/6)

DATE

Feb. 26, 2003

TITLE

Specification Sheets of S12U-MPTK Engine (IMO Certified Engine)

Specification Sheets of S12U-MPTK Engine that is satisfied with IMO certified engine are enclosed herein.

These specifications are subject to change without notification.

No.	DATE	SIGNATURE	CAUSE
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S12U-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	12
Bore mm (in.)	240 (9.45)
Stroke mm (in.)	260 (10.24)
Displacement liter (in ³)	141.145 (8614)
Compression Ratio	12.7 : 1
Dry Weight - Engine only - kg (lb)	15500 (34171)
Wet Weight - Engine only - kg (lb)	16600 (36596)

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)	337.8 (8019)
(Includes Std. Flywheel)	
Cyclic Speed Variation with Flywheel at 1200 rpm	1/392
1000 rpm	1/275

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)
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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.)	470 (124.2)
Low - liter (U.S. gal.)	330 (87.1)
Total System Capacity (Includes Oil Filter) - liter (U.S. gal.)	520 (137.4)
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

S12U-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.)	520 (137.4)
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 × 12
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)	300 (79.2)
No. of Air Reservoir	2
Air Pressure - MPa (psi)	2.94 (427)

STOP SYSTEM

Air Pressure - MPa (psi)	0.6 (85.4)
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S12U-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 Cooler.....	Shell and Tube Type
Lubricating Oil Filter (Full Flow).....	Paper Element Type
Lubricating Oil Filter (By Pass Flow).....	Paper Element Type
Oil Pan.....	Large Capacity, Steel
Lubricating Oil Thermostat.....	Wax Pellet Type
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)

Jack Bolt
Companion Flange
Standard Tools
Standard Spare Parts

The specifications are subject to change without notification.

APPLICATION: MARINE-USE

S12U-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	2686	2462	2238	2014	Fuel Set Power Flywheel End
	HP	3600	3300	3000	2700	
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	242	242	202	190	
	HP	324	324	272	254	
Intake Air Flow	m ³ /min	252	228	202	180	
	CFM	8874	8026	7104	6352	
Exhaust Gas Flow	m ³ /min	604	546	482	432	
	CFM	21298	19260	17048	15244	
Coolant (Jacket Water) Flow	l/min	1700	1700	1570	1500	
	US GPM	449	449	413	395	
Coolant(Jacket Water) Pressure (Water Pump Outlet)	MPa	0.17	0.17	0.15	0.14	
	psi	24	24	21	20	
Cooling water (A/C & O/C) Flow	l/min	1700	1700	1570	1500	FW temp<40°C
	US GPM	449	449	413	395	
Oil Flow	l/min	1024	1024	940	900	
	US GPM	271	271	247	237	
Radiated Heat to Ambient	×10 ⁴ kcal/h	17.82	16.20	14.40	12.96	
	BTU/min	11826	10714	9524	8572	
Heat Rejection to Coolant (Jacket Water)	×10 ⁴ kcal/h	53.53	48.60	43.14	38.82	
	BTU/min	35397	32144	28532	25675	
Heat Rejection to Air & Oil Cooler	×10 ⁴ kcal/h	80.22	72.90	64.68	58.20	
	BTU/min	53056	48214	42778	38492	

ITEM	UNIT	Propulsion use				Remarks
		S	A	B	C	
Heat Rejection to Exhaust	$\times 10^4$ kcal/h BTU/min	211.98 140198	190.56 126034	164.70 108929	148.20 98018	
Noise Level (Excludes exhaust gas)	dB(A)					Mechanical 1 m Dis. 1.5m H.
Max. No Load Governored Speed	Rpm	1290	1290	1183	1140	

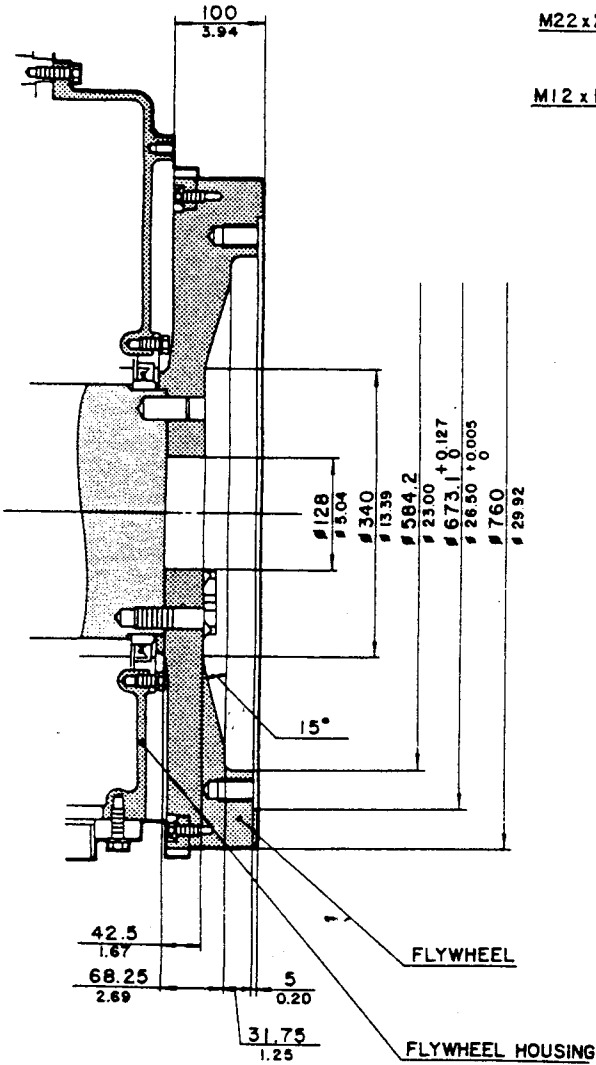
Note: Brake Horse Power at flywheel end.

The specifications are subject to change without notification.

APPLICATION: MARINE-USE

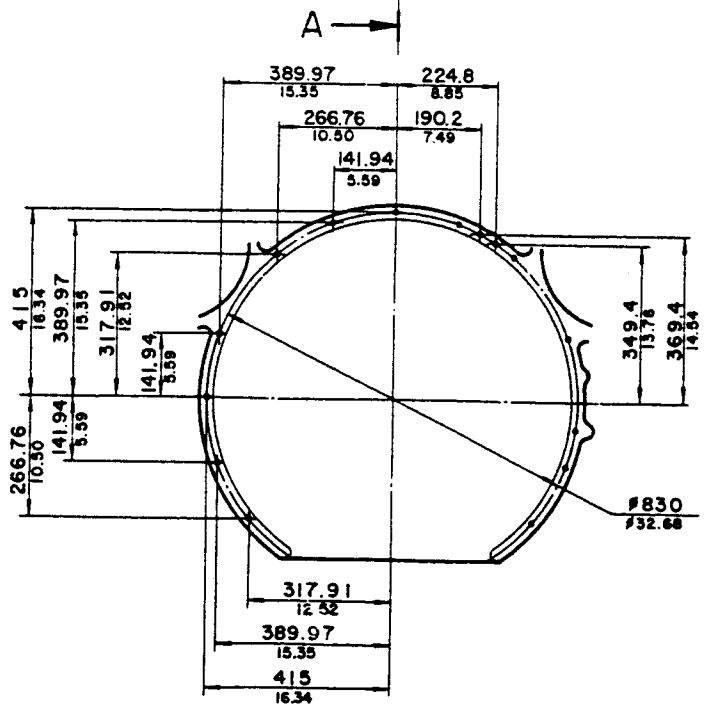
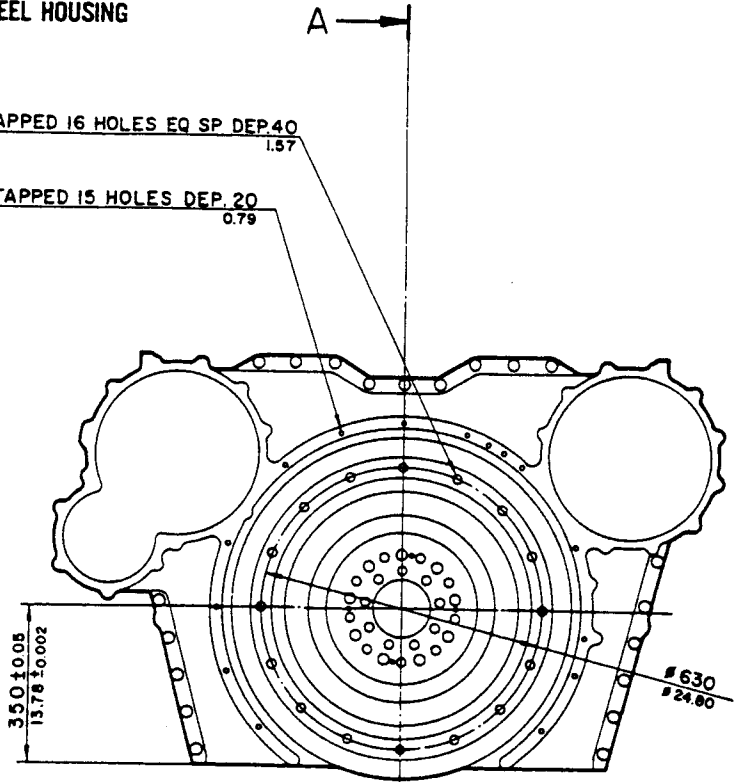
S12U JOINT DETAIL (1/2)

- ① FLYWHEEL
- ② FLYWHEEL HOUSING

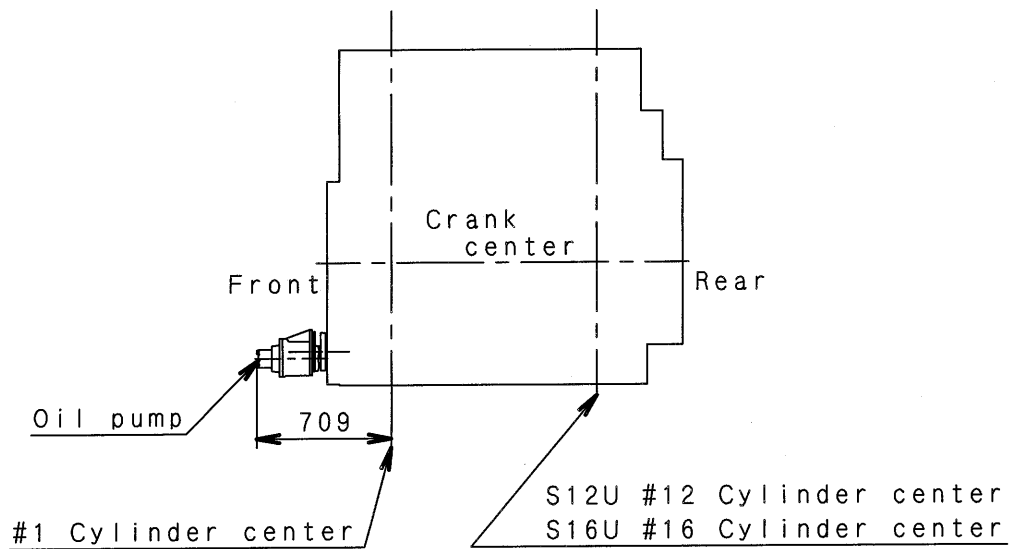
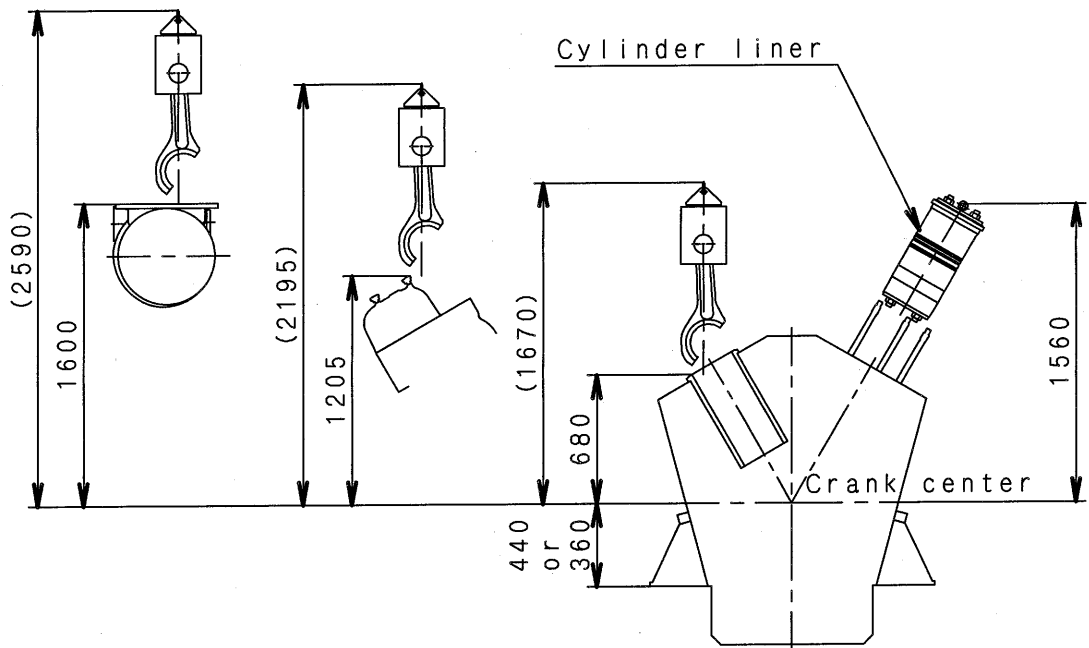


M22 x 2.5 TAPPED 16 HOLES EQ SP DEP. 40
1.57

M12 x 1.75 TAPPED 15 HOLES DEP. 20
0.79

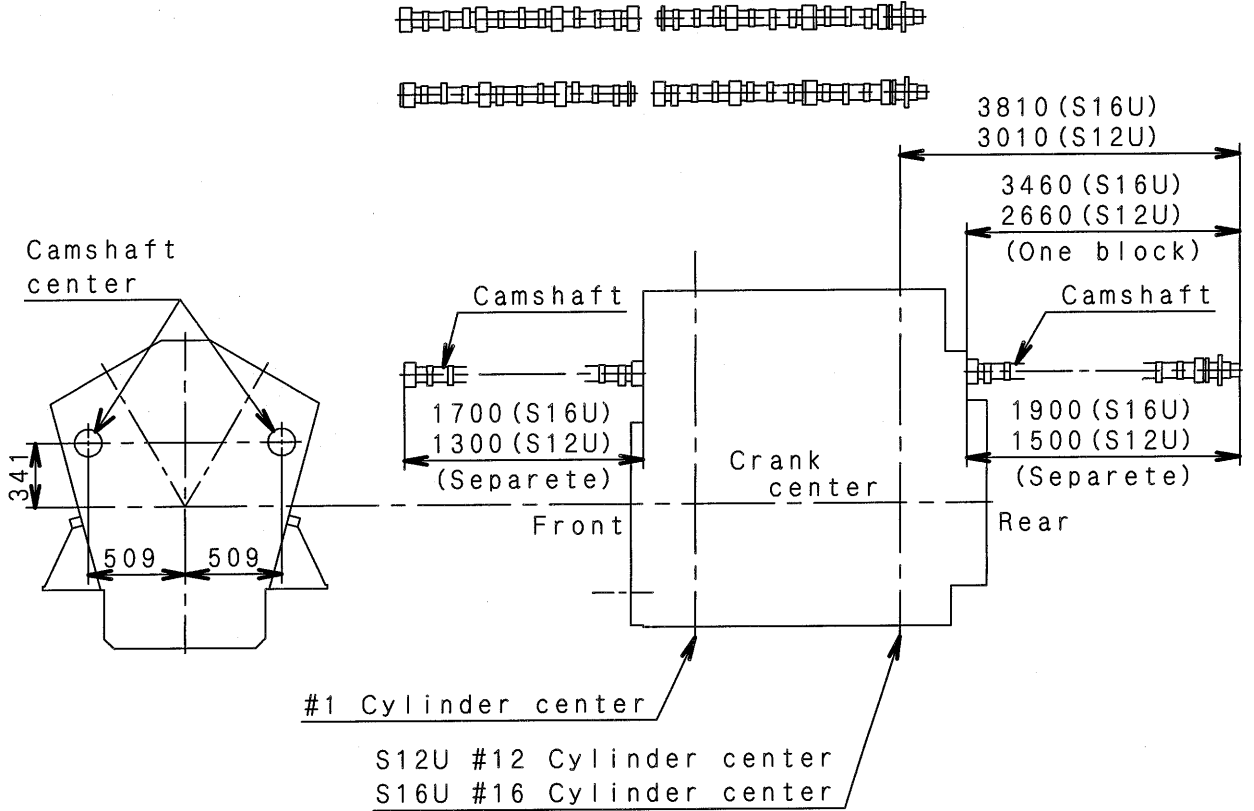


S Uエンジンオーバーホール時の所要寸法
 SU ENGINE OVERHAUL HEIGHT AND LENGTH
 (S12U, S12U)

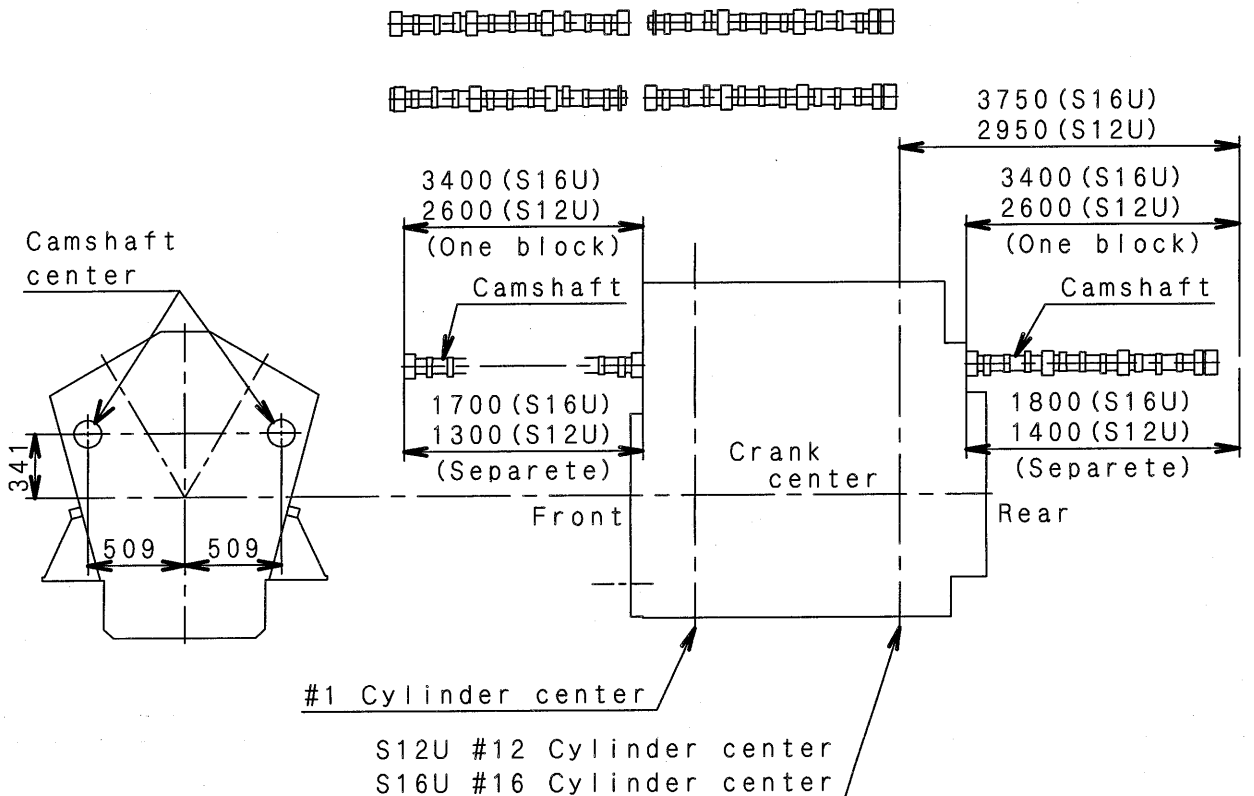


SUエンジンオーバーホール時の所要寸法
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 (S12U, S12U)

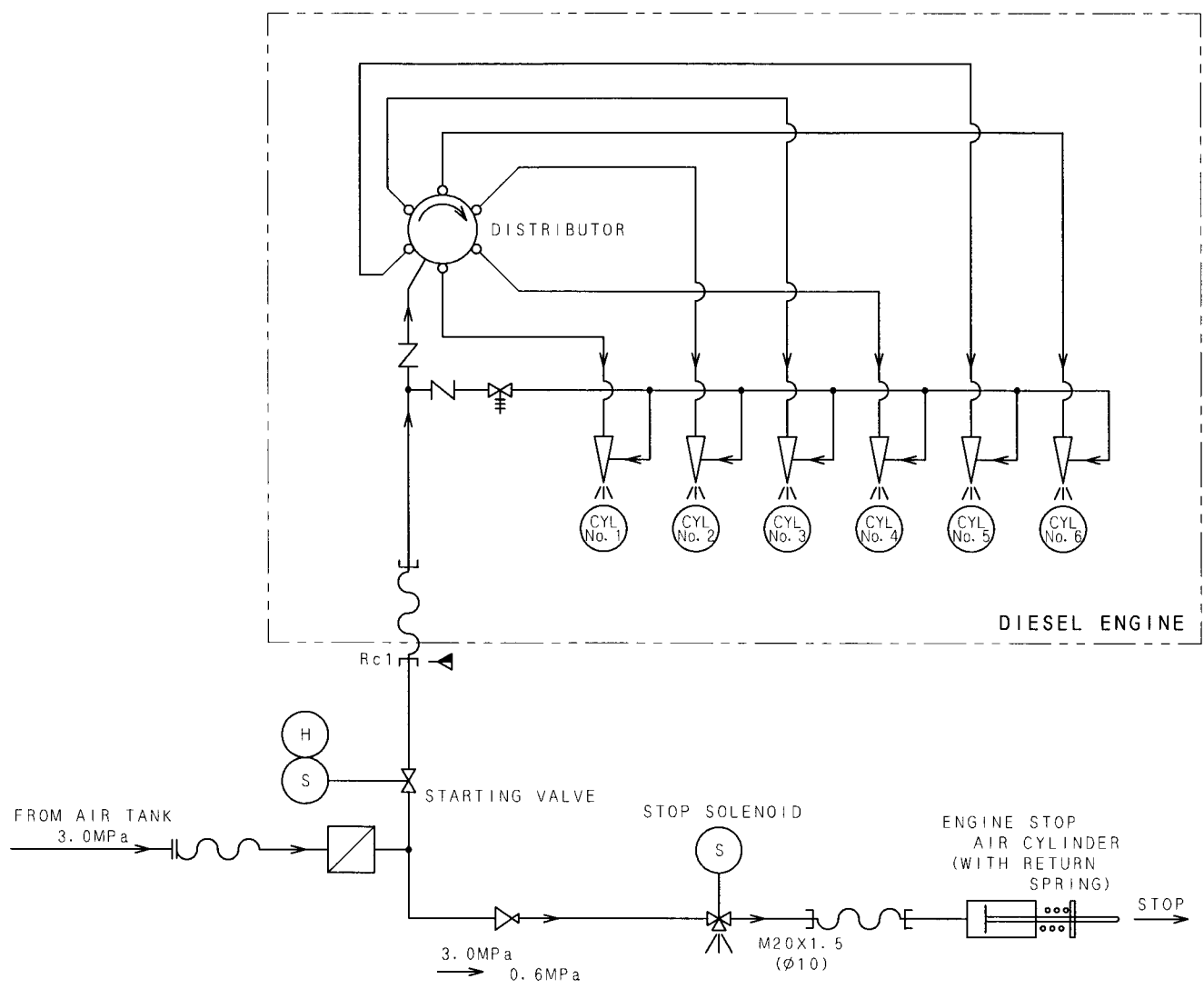
TYPE I



TYPE II



SYMBOL	DESIGNATION
	FLOW DIRECTION
	TÉE PIPE CONNECTION
	FLEXIBLE JOINT
	SCREWED JOINT
	FILTER
	OPEN DRAIN
	SUPPLY SCOPE
	STOP VALVE
	THREE WAY COCK
	SAFETY OR RELIEF VALVE
	REDUCING VALVE
	CHECK VALVE
	SOLENOID DRIVE
	HAND DRIVE
	AIR STARTING VALVE
	DISTRIBUTOR
	PISTON CYLINDER
	LOCALLY MOUNTED
	CYLINDER



出図

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 2004
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FULL-CAD

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

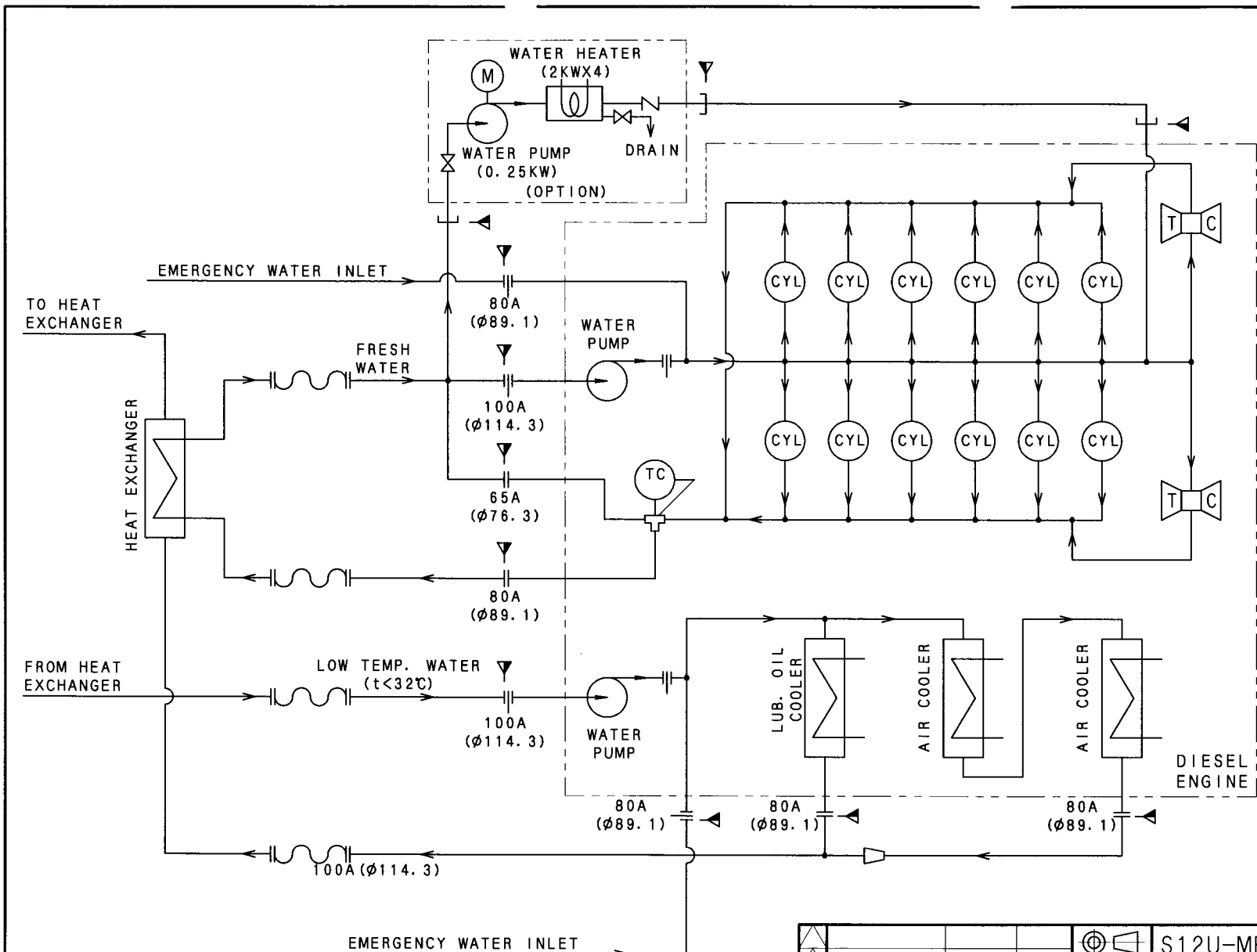
S12U-MPTA, -MPTK
 STARTING AIR SYSTEM

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. 41296-02602

① 新 図	② 1/2	③ 銅鋳造部品	④ 板金溶接品	⑤ 4 相立品
② 旧 引 図	A 3	④ 相立図	⑤ 切削品	⑥ その他(購入品)

SYMBOL	DESIGNATION
	FLOW DIRECTION
	TEE PIPE CONNECTION
	FLANGED JOINT
	SPECTACLE FLANGE
	FLEXIBLE JOINT
	SCREWED JOINT
	REDUCER
	SUPPLY SCOPE
	STOP VALVE
	CHECK VALVE
	THREE WAY THERMOSTAT
	MOTOR DRIVE
	CENTRIFUGAL TYPE PUMP
	COOLER
	HEATER
	TURBOCHARGER
	LOCALLY MOUNTED
CYL	CYLINDER
TC	TEMPERATURE CONTROL



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 2004
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FULL-CAD

CHG	ED-NO	DATE	CHK

S12U-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 HEADQUARTERS.

図面番号 41296-02203
 DRAWING No.

①新図 712' ②相立図 2 鋳物部品 3 板金溶接品 4 組立品
 4 引引図 A 3 5 切削品 6 その他(購入品)

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

