S16R2-PTAW2-E-C柴油机技术参数

本资料为S16R2-PTAW2-E-C柴油机相关技术参数。

"额定功率定义 (T0102-0016C)"内容必须严格遵从.

必须采用双轴承式发电机及弹性联轴器. 必须采用下防振方式的隔振系统.

必须进行扭振计算.

本资料内参数如有更改，不进行通知

版本		上海菱重发动机有限公司		
	初版： 2024.08			
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		批准	校对	编写
		松浦唯		朱志强

S16R2-PTAW2-E-C 技术参数

发动机基本参数

型式		四冲程，水冷	
进气方式		增压，水空中冷（淡水）	
气缸排列		60°V	
缸数		16	
缸径 mm(in.)		170	(6.69)
行程 mm(in.)		220	(8.66)
排量 liter(in^3)		79.90	(4876)
压缩比		14.0:1	
净重	- 仅发动机- kg(lb)	7750	(17089)
毛重	- 仅发动机 - kg(lb)	8200	(18081)

性能参数

稳态转速波动率			
电子调速器 - %		±0.25 或更优	
最大超速能力 - rpm		1750	
旋转部件转动惯量	(S.I.) kg·m^2($lb·ft^2$)	33.22	(788)
(包含标准飞轮)	(GD^2) kgf·m^2($lbf·ft^2$)	132.9	(3154)
周期性转速波动率（@1500rpm）	1500rpm	1/182	

发动机安装

飞轮壳背面承受最大弯矩 - kgf·m(lbf·ft)		450	(3256)

进气系统

最大进气阻力（包含管路）			
使用清洁的空滤滤芯 - mm H_2O (in.H_2O)		400	(15.7)
使用肮脏的空滤滤芯 - mm H_2O (in.H_2O)		635	(25.0)

排气系统

最大允许排气背压 - mm H_2O (in.H_2O)		600	(23.6)

润滑系统

机油压力	怠速 -MPa(psi)	0.34~0.5	(49.3~79.8)
	额定转速 - MPa(psi) (机油温度70°C以上)	0.49~0.7	(71.1~101.5)
最高油温 - °C(°F)		105	(221)
标准油底壳机油容量	高 - liter (U.S.gal)	260	(68.7)
	低 - liter (U.S.gal)	194	(51.2)
全润滑系统机油容量 (含滤清器) - liter (U.S.gal)		290	(76.6)
外冷油器系统最大外部阻力- kgf/cm2(psi)		1.02	-(14.6)
最大安装倾角 (标准油底壳)	前倾	6°	
(仅发动机)	后倾	6°	
	横倾	25°	

冷却系统

冷却液容量 (仅发动机) - liter (U.S.gal)		157	(41.5)
空冷器冷却液容量 (仅发动机) - liter (U.S.gal)		33	(8.7)
发动机出水口最大阻力 - kgf/cm^2(psi)		0.35	(5.0)
曲轴中心上方最大允许的静压 - m(ft)		10	(32.8)
标准节温器温度调节范围（发动机冷却液）- °C(°F)		71～85	(160～185)
标准节温器温度调节范围（空冷器）- °C(°F)		42～55	(108～131)
发动机进口冷却液最高温度- °C(°F)	不使用外接冷油器	75	(167)
发动机出口冷却液最高温度- °C(°F)	不使用外接冷油器	83	(181)
	使用外接冷油器	98	(208)
冷却液最小膨胀空间（占全系统）%		10	
空冷器进口冷却液最高温度 PTAW 型- °C(°F) (环境温度 25°C)		45	(113)

S16R2-PTAW2-E-C 技术参数

燃油系统

喷油泵	Mitsubishi PS8 Type × 2	
输油泵最大进油阻力 - mm Hg (in. Hg)	75	(3.0)
最大回油阻力 - mm Hg (in.Hg)	150	(5.9)

启动系统

充电发电机 - V-Ah	24-35
启动电机容量 - V -kW	24-7.5×2
启动电路允许最大电阻 - m Ω	1.5
推荐蓄电池最小容量	
5°C(41°F)或以上环境温度 - Ah	400
5°C(41°F) 至 - 5°C(23°F)环境温度	600

发动机的标定

下表所有参数是在大气压力100kPa(29.6inHg) ,温度25°C(77°F) 以及相对湿度30%的标准环境下， 发动机装备标准附件，如空滤、进排气管、燃油系统以及润滑系统等条件下标定。

项目 项目	单位	备用	主用	DCP	
		50Hz	50Hz		
发动机转速	rpm	1500	1500		
缸数		16			
缸径	mm (in.)	170 (6.69)			
行程	mm (in.)	220 (8.66)			
排量	liter ($in.^3$)	79.9 (4876)			
制动功率（不带风扇）	kW (HP)	2430 (3257)	2209 (2961)		
平均有效压力（不带风扇）	MPa (kgf/cm^2) (psi)	2.43 (24.8) (353)	2.21 (22.5) (320)		
活塞平均速度	m/s (ft/min)	11.0 (2165)	11.0 (2165)		
最大机械摩擦损失功率 （不带风扇）	kW (HP)	152 (204)	152 (204)		
进气流量	m^3/min (CFM)	212 (7486)	191 (6744)		
排气流量	m^3/min (CFM)	562 (19844)	506 (17867)		
冷却液流量 仅发动机阻力	liter/min (U.S. GPM)	1650 (436)	1650 (436)		
冷却液流量 @ 0.35 kgf/cm^2 外部阻力	liter/min (U.S. GPM)	1500 (396)	1500 (396)		
空冷器冷却液流量 (仅PTAW)	liter/min (U.S. GPM)	920 (243)	920 (243)		
空冷器冷却液流量 @ 0.35 kgf/cm^2 外部阻力	liter/min (U.S. GPM)	850 (224)	850 (224)		
最大允许风扇损失功率	kW (HP)	100 (134)	100 (134)		
环境辐射热量	kcal/hr (kJ/hr) (BTU/min)	160810 (673158) (10636)	144825 (606244) (9579)		
冷却液带走热量	kcal/hr (kJ/hr) (BTU/min)	879095 (3679931) (58142)	791711 (3314138) (52363)		
空冷器带走热量	kcal/hr (kJ/hr) (BTU/min)	594997 (2490684) (39352)	535853 (2243105) (35441)		
排气带走热量	kcal/hr (kJ/hr) (BTU/min)	1636045 (6848557) (108206)	1455749 (6093830) (96281)		
噪音等级	dB(A)	TBD	TBD		

. 功率定义书（T0102-0016C）的相关要求必须满足。

本资料内参数如有更改，不进行通知

发动机标定

下表所有参数是在大气压力100kPa(29.6inHg) ,温度25°C(77°F) 以及相对湿度30%的标准环境下， 发动机装备标准附件，如空滤、进排气管、燃油系统以及润滑系统等条件下标定。

项目 项目	单位	备用	主用	DCP	
		50Hz	50Hz		
发动机转速	rpm	1500	1500		
缸数		16			
缸径	mm (in.)	170 (6.69)			
行程	mm (in.)	220 (8.66)			
排量	liter ($in.^3$)	79.9 (4876)			
制动功率（不带风扇）	kW (HP)	2430 (3257)	2209 (2961)		
平均有效压力（不带风扇）	MPa (kgf/cm^2) (psi)	2.43 (24.8) (353)	2.21 (22.5) (320)		
活塞平均速度	m/s (ft/min)	11.0 (2165)	11.0 (2165)		
最大机械摩擦损失功率 （不带风扇）	kW (HP)	152 (204)	152 (204)		
进气流量	m^3/min (CFM)	212 (7486)	191 (6744)		
排气流量	m^3/min (CFM)	562 (19844)	506 (17867)		
冷却液流量 仅发动机阻力	liter/min (U.S. GPM)	1650 (436)	1650 (436)		
冷却液流量 @ 0.35 kgf/cm^2 外部阻力	liter/min (U.S. GPM)	1500 (396)	1500 (396)		
空冷器冷却液流量 (仅PTAW)	liter/min (U.S. GPM)	920 (243)	920 (243)		
空冷器冷却液流量 @ 0.35 kgf/cm^2 外部阻力	liter/min (U.S. GPM)	850 (224)	850 (224)		
外接冷油器机油流量	liter/min (U.S. GPM)	70 (18)	70 (18)		
最大允许风扇消耗功率	kW (HP)	100 (134)	100 (134)		
环境辐射热量	kcal/hr (kJ/hr) (BTU/min)	160810 (673158) (10636)	144825 (606244) (9579)		
冷却液带走热量	kcal/hr (kJ/hr) (BTU/min)	825492 (3455546) (54597)	743436 (3112056) (49170)		
空冷器带走热量	kcal/hr (kJ/hr) (BTU/min)	594997 (2490684) (39352)	535853 (2243105) (35441)		
外接冷油器带走热量	kcal/hr (kJ/hr) (BTU/min)	80405 (336579) (5318)	72413 (303124) (4789)		
排气带走热量	kcal/hr (kJ/hr) (BTU/min)	1609243 (6736363) (106433)	1431612 (5992792) (94685)		
噪音等级	dB(A)	TBD	TBD		

. 功率定义书（T0102-0016C）的相关要求必须满足。

本资料内参数如有更改，不进行通知

Specification Sheets of S16R2-PTAW2-E-C Engine

Specification Sheets of S16R2-PTAW2-E-C Engine are enclosed herein.

"Rating definitions (T0102-0016C)" must be strictly observed.

A double bearing generator and a flexible coupling must be used. The lower type vibration isolating system must be used. Torsional vibration calculation must be done.

The specifications are subject to change without notice.

Revision				
	First Edition : November, 2024	SHANGHAI MHI ENGINE CO.,LTD.		
		Approved by	Checked by	Drawn by
		MATSUURA		ZHU

GENERAL ENGINE DATA

Type	4-Cycle, Water Cooled	
Aspiration	Turbo-Charged, Aircooler (Fresh Water)	
Cylinder Arragement	60°V	
No.of Cylinders	16	
Bore mm(in.)	170	(6.69)
Stroke mm(in.)	220	(8.66)
Displacement liter(in^3)	79.9	(4876)
Compression Ratio	14.0:1	
Dry Weight - Engine only - kg(lb)	7750	(17089)
Wet Weight - Engine only - kg(lb)	8200	(18081)

PERFORMANCE DATA

Steady State Speed Stability Band at any Constant Load			
Electric Governor - %		±0.25 or better	
Maximum Overspeed Capacity - rpm		1750	
Moment of inertia of Rotating Components	(S.I.) kg･m^2($lb･ft^2$)	33.22	(788)
(Includes Std.Flywheel)	(GD^2) kgf･m^2($lbf･ft^2$)	132.9	(3154)
Cyclic Speed Variation with Flywheel at 1500rpm		1/182	

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Flywheel Housing - kgf･m(lbf･ft)	450	(3256)

AIR INLET SYSTEM

Maximum Intake Air Restriction (Includes piping)		
With Clean Filter Element - mm H_2O (in.H_2O)	400	(15.7)
With Dirty Filter Element - mm H_2O (in.H_2O)	635	(25.0)

EXHAUST SYSTEM

Maximum Allowable Back Pressure - mm H_2O (in.H_2O)	600	(23.6)

LUBRICATION SYSTEM

Oil Pressure at ldle - MPa(psi)		0.34～0.55	(49.3～79.8)
at Rate Speed - MPa(psi) (at oil temp.＞70℃)		0.49～0.7	(71.1～101.5)
Maximum Oil Temperature - °C(°F)		105	(221)
Oil Capacity of Standard Pan	High - liter (U.S.gal)	260	(68.7)
	Low - liter (U.S.gal)	194	(51.2)
Total System Capacity (lncludes Oil Filter) - liter (U.S.gal)		290	(76.6)
Maximum External Friction Head at External Oil Cooler System- kgf/cm^2(psi)		1.02	(14.6)
Maximum Angle of lnstallation (Std. Pan)	Front Down	6°	
(Engine Only)	Front Up	6°	
	Side to Side	25°	

COOLING SYSTEM

Coolant Capactiy of Jacket (Engine Only) - liter (U.S.gal)		157	(41.5)
Coolant Capactiy of Air Cooler (Engine Only) - liter (U.S.gal)		33	(8.7)
Maximum External Friction Head at Engine Outlet - kgf/cm^2(psi)		0.35	(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)
Standard Thermostat (modulating)Range of Air cooler- °C(°F)		42～55	(108～131)
Maximum Coolant Temperature at Engine Inlet- °C(°F)	External oil cooler not used	75	(167)
Maximum Coolant Temperature at Engine Outlet- °C(°F)	External oil cooler not used	83	(181)
	External oil cooler used	98	(208)
Minimum Coolant Expansion Space - % of System Capacity		10	
Maximum Coolant Temperature at Air cooler Inlet, PTAW type-°C(°F) (at ambient 25°C)		45	(113)

FUEL SYSTEM

Fuel Injector	Mitsubishi PS8 Type × 2	
Maximum Suction Head of Feed Pump - mm Hg (in. Hg)	75	(3.0)
Maximum Static Head of Return & Leak Pipe - mm Hg (in.Hg)	150	(5.9)

STARTING SYSTEM

Battery Charging Alternator - V-Ah	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	400	
Below 5°C(41°F) through - 5°C(23°F)	600	

ENGINE RATING

All data represent net performance with standard accessories such as air cleaner, inlet /exhaust manifolds, fuel oil system, L.O. pump, etc. under the condition of 100kPa(29.6inHg) barometric pressure, 77°F(25°C) ambient temperature and 30% relative humidity.

ITEM	UNIT	STAND-BY POWER	PRIME POWER	DCP	
		50Hz	50Hz		
Engine Speed	rpm	1500	1500		
No. of Cylinders		16			
Bore	mm (in.)	170 (6.69)			
Stroke	mm (in.)	220 (8.66)			
Displacement	liter ($in.^3$)	79.9 (4876)			
Brake Horse power without Fan	kW (HP)	2430 (3257)	2209 (2961)		
Brake Mean Effective Pressure without Fan	MPa (kgf/cm^2) (psi)	2.43 (24.8) (353)	2.21 (22.5) (320)		
Mean Piston Speed	m/s (ft/min)	11.0 (2165)	11.0 (2165)		
Maximum Regenerative Power Absorption Capacity without Fan	kW (HP)	152 (204)	152 (204)		
Intake Air flow	m^3/min (CFM)	212 (7486)	191 (6744)		
Exhaust Gas Flow	m^3/min (CFM)	562 (19844)	506 (17867)		
Coolant Flow @ engine restriction only	liter/min (U.S. GPM)	1650 (436)	1650 (436)		
Coolant Flow @ 0.35 kgf/cm^2 external restriction	liter/min (U.S. GPM)	1500 (396)	1500 (396)		
Coolant Flow to Aircooler (PTAW only)	liter/min (U.S. GPM)	920 (243)	920 (243)		
Coolant Flow to Aircooler @ 0.35 kgf/cm^2 external restriction	liter/min (U.S. GPM)	850 (224)	850 (224)		
Allowable Fan Loss Horse Power	kW (HP)	100 (134)	100 (134)		
Radiated Heat to Ambient	kcal/hr (kJ/hr) (BTU/min)	160810 (673158) (10636)	144825 (606244) (9579)		
Heat Rejection to Coolant	kcal/hr (kJ/hr) (BTU/min)	879095 (3679931) (58142)	791711 (3314138) (52363)		
Heat Rejection to Air Cooler	kcal/hr (kJ/hr) (BTU/min)	594997 (2490684) (39352)	535853 (2243105) (35441)		
Heat Rejection to Exhaust	kcal/hr (kJ/hr) (BTU/min)	1636045 (6848557) (108206)	1455749 (6093830) (96281)		
Noise Level	dB(A)	TBD	TBD		

・The requirements in "Rating definitions (T0102-0016C)" must be satisfied.

The specifications are subject to change without notice.

ENGINE RATING

All data represent net performance with standard accessories such as air cleaner, inlet /exhaust manifolds, fuel oil system, L.O. pump, etc. under the condition of 100kPa(29.6inHg) barometric pressure, 77°F(25°C) ambient temperature and 30% relative humidity.

ITEM	UNIT	STAND-BY POWER	PRIME POWER	DCP	
		50Hz	50Hz		
Engine Speed	rpm	1500	1500		
No. of Cylinders		16			
Bore	mm	170			
	(in.)	(6.69)			
Stroke	mm	220			
	(in.)	(8.66)			
Displacement	liter	79.9			
	($in.^3$)	(4876)			
Brake Horse power without Fan	kW	2430	2209		
	(HP)	(3257)	(2961)		
Brake Mean Effective Pressure	MPa	2.43	2.21		
	(kgf/cm^2)	(24.8)	(22.5)		
without Fan	(psi)	(353)	(320)		
Mean Piston Speed	m/s	11.0	11.0		
	(ft/min)	(2165)	(2165)		
Maximum Regenerative Power	kW	152	152		
Absorption Capacity without Fan	(HP)	(204)	(204)		
Intake Air flow	m^3/min	212	191		
	(CFM)	(7486)	(6744)		
Exhaust Gas Flow	m^3/min	562	506		
	(CFM)	(19844)	(17867)		
Coolant Flow	liter/min	1650	1650		
@ engine restriction only	(U.S. GPM)	(436)	(436)		
Coolant Flow	liter/min	1500	1500		
@ 0.35 kgf/cm^2 external restriction	(U.S. GPM)	(396)	(396)		
Coolant Flow to Aircooler	liter/min	920	920		
(PTAW only)	(U.S. GPM)	(243)	(243)		
Coolant Flow to Aircooler	liter/min	850	850		
@ 0.35 kgf/cm^2 external restriction	(U.S. GPM)	(224)	(224)		
Oil Flow to External Oil Cooler	liter/min	70	70		
	(U.S. GPM)	(18)	(18)		
Allowable Fan Loss Horse Power	kW	100	100		
	(HP)	(134)	(134)		
Radiated Heat to Ambient	kcal/hr	160810	144825		
	(kJ/hr)	(673158)	(606244)		
	(BTU/min)	(10636)	(9579)		
Heat Rejection to Coolant	kcal/hr	825492	743436		
	(kJ/hr)	(3455546)	(3112056)		
	(BTU/min)	(54597)	(49170)		
Heat Rejection to Air Cooler	kcal/hr	594997	535853		
	(kJ/hr)	(2490684)	(2243105)		
	(BTU/min)	(39352)	(35441)		
Heat Rejection to External Oil Cooler	kcal/hr	80405	72413		
	(kJ/hr)	(336579)	(303124)		
(external oil cooler, mounted on radiator)	(BTU/min)	(5318)	(4789)		
Heat Rejection to Exhaust	kcal/hr	1609243	1431612		
	(kJ/hr)	(6736363)	(5992792)		
	(BTU/min)	(106433)	(94685)		
Noise Level (1 m height & distance)	dB(A)	TBD	TBD		
(excludes, lntake,Exhaust & Fan)					

・ The requirements in "Rating definitions (T0102-0016C)" must be satisfied.

The specifications are subject to change without notice.