

2-12-4. Engine Specifications (4JH3-TE/HTE/DTE)

Model			4JH3-TE			4JH3-HTE			4JH3-DTE		
Class			4JH3-TE	4JH3-TBE	4JH3-THE	4JH3-HTE	4JH3-HTBE	4JH3-HTHE	4JH3-DTHE		
Configuration			4-stroke, vertical, water cooled diesel engine						4-stroke, vertical, water cooled diesel engine		
Combustion system			Direct injection						Direct injection		
Aspiration			Turbocharger						Turbocharger with intercooler		
Number of cylinders			4						4		
Bore X stroke			84 X 90						84 X 90		
Displacement			1.995						1.995		
Continuous rating output	at crankshaft	kW(hp)/rpm	50.7 (69)/3700						67.7 (92)/3700		
	Brake mean effective pressure	kgs/cm ²	8.41						11.22		
	Piston speed	m/sec.	11.1						11.1		
Maximum output	at crankshaft	kW(hp)/rpm	55.2 (75)/3800						73.6 (100)/3800		
	Brake mean effective pressure	kgs/cm ²	8.90						11.87		
	Piston speed	m/sec.	11.4						11.4		
High idling speed			4275~4325						4275~4325		
Idling speed			675~725						675~725		
Firing order			180° 180° 180° 180° 1 - 3 - 4 - 2 - 1			180° 180° 180° 180° 1 - 3 - 4 - 2 - 1			180° 180° 180° 180° 1 - 3 - 4 - 2 - 1		
Starting system	Starter motor	V-kW	12-1.4 (Model: S114-257G)						12-1.4 (Model: S114-257G)		
	Alternator	V-A	12-55 (Model: LR155-20)						12-55 (Model: LR155-20)		
Cooling system			Fresh water cooling by centrifugal fresh water pump and rubber impeller sea-water pump						Fresh water cooling by centrifugal fresh water pump and rubber impeller sea-water pump		
Cooling water capacity	Engine tank	ℓ	6.0						7.2		
	Sub tank	ℓ	0.8						0.8		
Lubrication system			Forced lubrication with trochoid pump						Forced lubrication with trochoid pump		
Lube oil capacity at eng. installation angle.	Degree		7°	0°	0°	7°	0°	0°	0°		
	Effect/Max.	ℓ	2.0/7.7	2.0/7.0	2.0/7.0	2.0/7.7	2.0/7.0	2.0/7.0	2.0/7.0		
Reduction and reversing gear (Marine gear)											
Model			KBW21 (Parallel)	KM4A (Angle 7°)	KMH4A (Angle 8°)	KBW21 (Parallel)	KM4A (Angle 7°)	KMH4A (Angle 8°)	KMH4A (Angle 8°)		
Type			Multiple friction disc clutch	Servo-cone clutch	Hydraulic clutch	Multiple friction disc clutch	Servo-cone clutch	Hydraulic clutch	Hydraulic clutch		
Reduction ratio	Ahead		2.17, 2.62	1.47, 2.14, 2.63, 3.30	2.04, 2.45	2.17, 2.62	1.47, 2.14, 2.63, 3.30	2.04, 2.45	2.04, 2.45		
	Astern		3.06	1.47, 2.14, 2.63, 3.30	2.04, 2.45	3.06	1.47, 2.14, 2.63, 3.30	2.04, 2.45	2.04, 2.45		
Propeller speed (Ahead) at cont. rating			rpm	1708, 1413	2523, 1731, 1408, 1122	1814, 1507	1708, 1413	2523, 1731, 1408, 1122	1814, 1507	1814, 1507	
Lube oil capacity Effect/Max.			ℓ	0.15/1.2	0.2/1.3	0.2/2.0	0.15/1.2	0.2/1.3	0.2/2.0		
Direction of rotation	Crankshaft		Counterclockwise viewed from stern						Counterclockwise viewed from stern		
	Propeller shaft		C.W. viewed from stern	Bi-rotation		C.W. viewed from stern	Bi-rotation		Bi-rotation		
Dry weight			kg	249	247	250	258	256	259	260	

[Note] 1: Rating Condition, ISO 3046-1

[Note] 2: hp=0.7355 kW

Considerations for Engine Installation

Model			4JH3-TE						4JH3-HTE						4JH3-DTE				
Class			4JH3-TE		4JH3-TBE		4JH3-THE		4JH3-HTE		4JH3-HTBE		4JH3-HTHE		4JH3-DTHE				
Maximum output			kW(hp)/rpm		55.2 (75)/3800						76.3 (100)/3800						91.9 (125)/3800		
Marine gear Model			KBW21		KM4A		KMH4A		KBW21		KM4A		KMH4A		KMH4A				
Shift lever force at engine 1000rpm., lever length 170 mm	Engaging	kg	9.5~10.5		4-5		9.5~10.5		4-5		9.5~10.5		4-5		4-5				
	Disengaging	kg	11.5~12.5		4-6		11.5~12.5		4-6		11.5~12.5		4-6		4-6				
Reduction ratio			2.17/2.62		1.47/2.14/2.63/3.30		2.04/2.45		2.17/2.62		1.47/2.14/2.63/3.30		2.04/2.45		2.04/2.45				
Recommended propeller shaft dia.	Material, JIS. SUS304	φ mm	32	35	30	35	38	32	35	35	38	30	35	38	40	35	38	38	40
	Material, JIS. SUS630	φ mm	30	30	30	30	30	30	30	30	30	30	30	35	30	30	30	30	35
Installation																			
Engine installation angle of crankshaft center to waterline	Recommended	Degree	8°		0°		8°		0°		8°		0°		0°				
	Max.	Degree	15°		7°		15°		7°		15°		7°		7°				
Applicable flexible engine mount			I.D.# X Q'ty		200 X 4						200 X 4						200 X 4		
Type of flexible engine mount					Fixed 1						Fixed 1						Fixed 1		
Installation position of flexible engine mount	Position		(A), (B), (C), (D)						(A), (B), (C), (D)						(A), (B), (C), (D)				
	I.D. No.		200, 200, 200, 200						200, 200, 200, 200						200, 200, 200, 200				
Value of static distortion for flexible engine mount			Approx. mm		4						4						4		
Recommended battery capacity, Min.			V-AH		12-120						12-120						12-120		
Fuel System					Injection pump type: VE						Injection pump type: VE						Injection pump type: VE		
Max. suction head of fuel feed pump			m		0.5						0.5						0.5		
Max. discharge volume of fuel feed pump			ℓ/min.		7.7 at camshaft speed 1900 rpm. engine speed 3800 rpm.						7.7 at camshaft speed 1900 rpm. engine speed 3800 rpm.						7.7 at camshaft speed 1900 rpm. engine speed 3800 rpm.		
Max. discharge pressure of fuel feed pump			kg/cm ²		0.2 at camshaft speed 1900 rpm. engine speed 3800 rpm.						0.2 at camshaft speed 1900 rpm. engine speed 3800 rpm.						0.2 at camshaft speed 1900 rpm. engine speed 3800 rpm.		
Fuel inlet pipe connector outer dia.			φ mm		8						8						8		
Fuel return pipe connector outer dia.			φ mm		8						8						8		
Fuel consumption at cont. rating output			ℓ/hp-hr.		16/69						20/92						24/116		
Cooling System																			
Max. suction head of sea-water pump			m		0.5						0.5						0.5		
Inlet outer dia. of sea-water pump			φ mm		26						26						26		
Operating temp. for thermostat			°C																
Installation position of sub-tank					Same height as the filler cap						Same height as the filler cap						Same height as the filler cap		
Max. overflow pipe length of sub-tank to filler cap and connector outer dia.	Length, m		1						1						1				
	φ mm		9						9						9				
Thread size of water heater tank connector	Size		PT3/8						PT3/8						PT3/8				
	Position		Fresh water coolant pump						Fresh water coolant pump						Fresh water coolant pump				
Intake and Exhaust System																			
Connection outer dia. of exhaust pipe			φ mm		76.3/std. L-type (76/option, U-type)						76.3/std. L-type (76/option, U-type)						76.3/std. L-type (76/option, U-type)		
Min. ventilator capacity of engine room			m ³ /min.		12						16						20		
Max. back pressure, measured within 250mm of exhaust manifold			mm/Aq.		1000						1000						1000		
Max. exhaust temperature at max. output			°C		650						620						710		
Max. boost pressure of turbocharger			kg/cm ²		1.1-1.4						1.5-1.8						1.5-1.8		
Max. engine room temperature			°C		60						60						60		
Alarm System																			
Operating temp. of alarm switch for coolant water			°C		ON: 97-103 OFF: 90-97						ON: 97-103 OFF: 90-97						ON: 97-103 OFF: 90-97		
Operating pressure of alarm switch for engine lubrication			kg/cm ²		0.1-0.3						0.1-0.3						0.1-0.3		