



KHULNA SHIPYARD LIMITED

BANGLADESH NAVY, KHULNA

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BABE (F) -290/IPV-1/SB/2022-23/

28 September 2022

Dear Sir

INVITATION FOR QUOTATION OF "YANMAR ENGINE" (Model: 4LHA-HTP).

1. Khulna Shipyard Limited (KSY) will procure "YANMAR ENGINE" (Model: 4LHA-HTP) as per attachment specification (03 Page), following terms & condition:
2. Submission of quotation as local supply terms:
 - a) Please send your offer as a local supply items. Offer should include supply of materials at KSY site including custom duty, local vat & tax etc within **06/10/2022 (1500 Hours)** by e-mail or closed envelop.
 - b) Payment: 100% payment will be made after receiving the material at KSY and satisfactory acceptance after deducting of VAT and TAX.
 - c) Items to be delivered within 30 days from the date of Purchase Order at KSY site.
3. 1% (one) Bid Bond/Earnest Money of the total quoted CPT value must be submit with offer. Bid Bond may be Pay Order/Bank Guarantee in favour of Khulna Shipyard Limited, Khulna.
4. 10% Performance Guarantee (PG) is to be submitted before Purchase Order. This PG will release after receiving the material and satisfactory acceptance by KSY.
5. Offer Validity: 45 Days from Tender Opening Date.

Yours sincerely

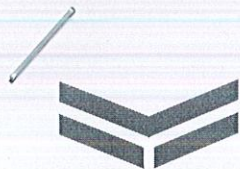

M M KHANRUL ALAM
Commercial Officer
For Managing Director

Description as per Contract:

1 X RHIB with lowering and hoisting arrangement will be provided. RHIB as ship's boat will be for 8 persons with inboard diesel engine, the max speed at least 25 knots with 3 personnel. The boat is about 5.5m in length. Type : JYB55W, Engine : Yanmar, Japan (4LHA-HTP, 160 HP).

Specification for Engine:

- | | | | |
|-----|-------------------------|---|---|
| 1. | Type | : | 4-Cycle, Direct Injection Vertical, Single Acting, Water Cooled, Turbo Charged Diesel Engine. |
| 2. | Model | : | 4LHA-HTP |
| 3. | Classification | : | Non Classification |
| 4. | No. of Cylinders | : | 4 Cylinders |
| 5. | Bore x Stroke | : | 100 x 110 |
| 6. | Displacement | : | 3.455 liters |
| 7. | Rated Output | : | 118 kw |
| 8. | Rated Revolution | : | 3300 rpm |
| 9. | Starting System | : | Electric Starting by DC Motor |
| 10. | Cooling System | : | FW Cooling with SW and FW Pumps |
| 11. | Lubrication System | : | Wet Pump System, forced lubrication by gear pump |
| 12. | Dry Weight | : | 342 KG (Engine only) |
| 13. | Country of Origin | : | Japan |
| 14. | Country of Manufacturer | : | Japan |


YANMAR

MARINE DIESEL ENGINES

4LHA Series - HTP / DTP / STP

Engine Model		4LHA-HTP	4LHA-DTP	4LHA-STP
Max. output at crankshaft*	kW [mhp]	113 [154] @3300 rpm	140 [190] @3300 rpm	169 [230] @3300 rpm
Max. output at crankshaft**	kW [mhp]	118 [160] @3300 rpm	147 [200] @3300 rpm	177 [240] @3300 rpm
Configuration		In-line, 4-stroke, vertical, water-cooled diesel engine		
No. of cylinders		4 cylinder		
Displacement		3.455 L [211 cu in]		
Bore x stroke		100 mm x 110 mm [3.94 in x 4.33 in]		
Aspiration		Turbocharged & intercooled		
Combustion system		Direct injection, VE rotary pump	Direct injection, in-line pump	Direct injection, in-line pump
Starting system		Electric starting 12V - 2.5 kW		
Engine management		Mechanical		
Cooling system		Fresh water cooling by centrifugal fresh water pump Seawater cooling by rubber impeller seawater pump		
Alternator		12V - 80A		
Lubrication system		Enclosed, forced lubricating system		
Engine lube oil specifications		API class: CD or higher, SAE grade: 15W-40		
Direction of rotation at crankshaft		Counterclockwise viewed from stern		
Dry weight without gear		342 kg [754 lbs]	365 kg [805 lbs]	365 kg [805 lbs]
Engine dimensions† L x W x H		1131 x 719 x 811 mm		
Emission compliance		EU RCD 1, BSO II, EMC		
Flywheel housing size		SAE #4		
Controls		Mechanical		

* Fuel temperature 40°C at the inlet of the fuel injection pump (ISO 8665: 2006)

** Fuel temperature 25°C at the inlet of the fuel injection pump (ISO 3046)

†Dimensions include KMH50A gearbox and L-type elbow (Dimensions may vary with other gears/elbow)

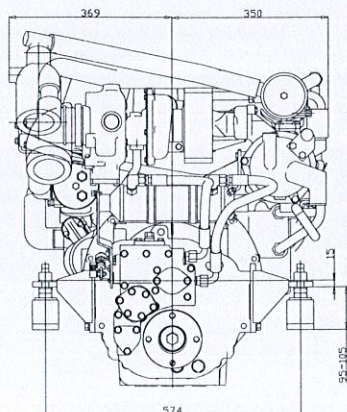
NOTE:

 Fuel condition: Density at 15°C = 0.84 g/cm³; 1 kW = 1.3596 mhp = 1.3410 HP

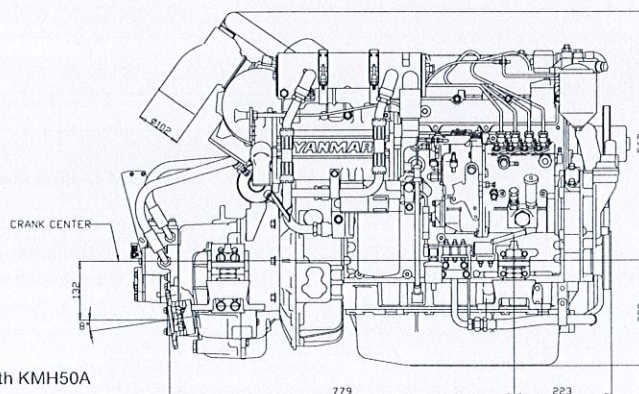
Technical data is according to (ISO 8665)/(ISO 3046)

DIMENSIONS

Rear view



Right side view

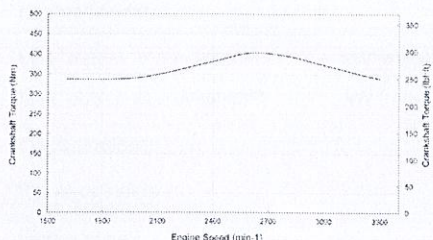

 4LHA with KMH50A
(Not to be used for engine installation)

www.yanmar.com/marine

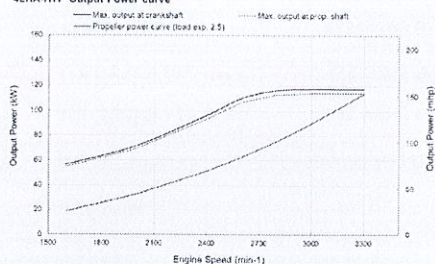


PERFORMANCE CURVES

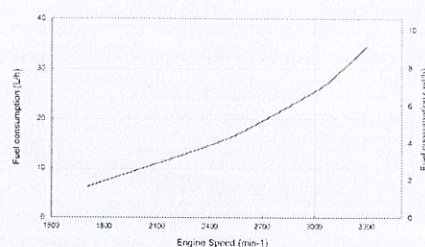
4LHA-HTP Torque curve



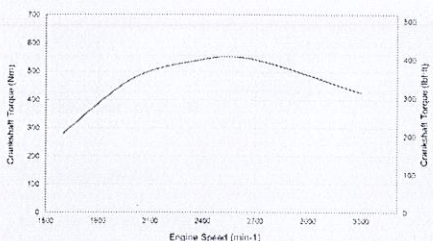
4LHA-HTP Output Power curve



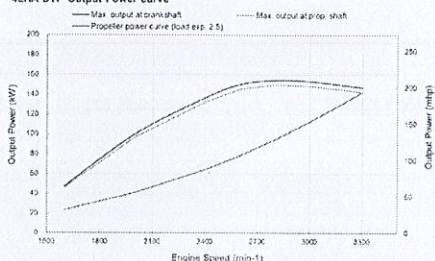
4LHA-HTP Fuel consumption (load exp. 2.5)



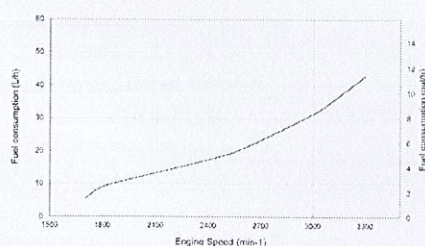
4LHA-DTP Torque curve



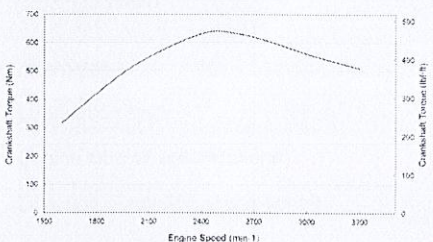
4LHA-DTP Output Power curve



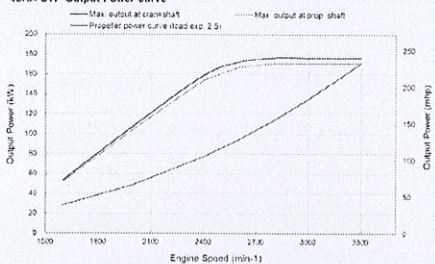
4LHA-DTP Fuel consumption (load exp. 2.5)



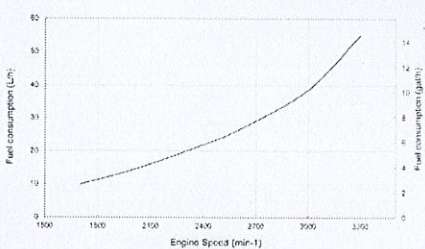
4LHA-STP Torque curve



4LHA-STP Output Power curve



4LHA-STP Fuel consumption (load exp. 2.5)



MARINE GEAR*

Model	KMH50A-LH [down angle 8°]			KMH50V-LH [down angle 8°]			ZF63A [down angle 8°]		
Type	Hydraulic multi-disc			Hydraulic multi-disc			Hydraulic, wet multi-disc		
Dry weight	58** [128 lbs]			59 kg [130 lbs]			30 kg [66 lbs]		
Reduction ratio [fwd/asn]	1.67/1.67^^	2.13/2.13	2.43/2.43	1.22/1.22	1.58/1.58	2.08/2.08	1.22/1.22	1.56/1.56	2.04/2.04 2.54/2.54
Direction of rotation [viewed from stern]	Clockwise & counterclockwise			Clockwise & Counterclockwise			Clockwise & counter clockwise		
Lubrication system	Forced lubrication						Forced lubrication		
Lube oil specifications	API class: CF or higher, SAE grade: #30						ATF		
Max. lube oil capacity	1.8 L			5.4 L			4.0 L		
Dry weight - engine & gear	400 kg [882 lbs]			401 kg [884 lbs]			386 kg [851 lbs]		

*For other configurations, consult your local Yanmar distributor.

**Dry weight includes cooler and brackets

^^ KMH50A-LH (1.67 ratio) is not available as standalone supply & hence need to order with engine.

ACCESSORIES

Standard engine package

- Exhaust mixing elbow [L-type]
- Alternator 12V - 80A
- 3G instrument panel

Optional accessories

- High-riser mixing elbow [instead of L-elbow]
- Flexible mounts
- Extension wire harness [3m, 5m, 10m, 20m]
- SOLAS including Certificate [factory fit only]
- Air venting device for cooling water tank

- Lube oil evacuation pump
- Water separator
- Trolling valve [only for KMH50A]

NOTE: All data subject to change without notice. Text and illustrations are not binding.