

**K-MARINE ENGINEERING PTE LTD**

4 PENJURU PLACE, #01-17 SINGAPORE 608782

Tel. : +65 6250 2501 Fax : +65 6250 4839

Email : sales@kmarine.com.sg/kmarine@singnet.com.sg

CUSTOMER ORDER REF. : 20250118**JOB RECORD**

CUSTOMER		VESSEL	M.T. "HUA SHUN 198"	JOB NO.	2079
ITEM	STEERING GEAR SYSTEM	CLASS	C.C.S.	DATE	14/03/25
MAKE/MODEL	NANJING HANZHUANG MARINE EQUIPMENT CO., LTD/R4A-400-28	S. NO.	116613	RECORDED BY	BOBBY LAI
COMPONENT	RUDDER CARRIER BEARING RENEWAL	STATUS	TRUNNION MEASUREMENT DATA AT REASSEMBLY	DIMENSIONS	N.A.
INSTRUMENT	INSIDE MICROMETER, DIGITAL VERNIER & FEELLER GAUGE			I.D. NO.	IM1000

TRUNNION BUSH & PIN MEASUREMENT

LOCATION	DESCRIPTION	X-AXIS (P-S)	Y-AXIS (F-A)	LOCATION	DESCRIPTION	X-AXIS (P-S)	Y-AXIS (F-A)
FORWARD TOP	TRUNION BUSH I.D.	80.48	80.30	AFT TOP	TRUNION BUSH	81.55	80.48
		81.09	80.12			81.35	80.45
	TRUNION PIN O.D.	79.81	79.95		TRUNION PIN	79.90	79.95
		79.90	79.94			79.82	79.92
	CLEARANCE	0.67	0.35		CLEARANCE	1.65	0.53
		1.19	0.18			1.53	0.53
FORWARD BOTTOM	TRUNION BUSH I.D.	80.77	80.31	AFT BOTTOM	TRUNION BUSH	80.84	80.40
		80.65	80.35			80.83	80.31
	TRUNION PIN O.D.	79.92	79.93		TRUNION PIN	79.92	79.93
		79.88	79.94			79.88	79.94
	CLEARANCE	0.85	0.38		CLEARANCE	0.92	0.45
		0.77	0.41			0.95	0.37

TRUNNION & TILLER SIDE CLEARANCE

FORWARD TOP	0.9
FORWARD BOTTOM	1.1
AFT TOP	1.4
AFT BOTTOM	1.3

RUDDER STOCK & NECK BUSH CLEARANCE

PORT	1.0
STBD	1.2
FWD	0.9
AFT	0.2

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COMPONENT	RUDDER CARRIER BEARING RENEWAL	STATUS	RUDDER CARRIER AT DISASSEMBLY	DIMENSIONS	N.A.
INSTRUMENT	N.A.			I.D. NO.	N.A.



NOTE : (1) THE CARRIER BEARING HOUSING C/W SPHERICAL ROLLER BEARING WERE EXTRACTED FROM POSITION FOR THE PURPOSE OF RENEWAL, UPON THE EXTERNAL SUSPENSION OF THE RUDDER C/W STOCK.

(2) THE SPLIT-TYPE TILLER WAS DISMANTLED FOR JOB ACCESS, UPON COMPLETION OF PRECEDING WORKS OF WHICH ALL REINSTATED IN GOOD ORDER.

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COMPONENT	RUDDER CARRIER BEARING RENEWAL	STATUS	RUDDER CARRIER AT REASSEMBLY	DIMENSIONS	N.A.
INSTRUMENT	N.A.			I.D. NO.	N.A.



NOTE : (1) THE RUDDER CARRIER SPHERICAL ROLLER BEARING WAS REPLACED WITH NEW UNIT INSTALLED IN PLACE IN GOOD ORDER.

RUDDER CARRIER SPHERICAL ROLLER BEARING, SKF/23060 CC W33 X 1 UNIT

(2) BEARING HOUSING OIL SEALS WERE RENEWED IN CONJUNCTION.

OIL SEALS, NAK/TC 300 X 340 X 20 X 3 OFF

(3) EPOXY GLUE WAS APPLIED BETWEEN RETAINING SLEEVE & SPLIT COTTER OF THE RUDDER STOCK ACCORDINGLY AS REQUIRED.

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COMPONENT	RUDDER CARRIER BEARING RENEWAL	STATUS	HYDRAULIC RAM CYLINDERS, ETC. DISMANTLING & REINSTALLATION FOR ACCESS	DIMENSIONS	N.A.
INSTRUMENT	N.A.			I.D. NO.	N.A.



NOTE : HYDRAULIC RAM CYLINDERS WITH ATTACHMENTS & ACCESSORIES WERE DISMANTLED & SHIFTED ASIDE AS REQUIRED FOR THE TILLER DISMANTLING ACCESS, UPON COMPLETION OF PRECEDING WORKS OF WHICH ALL REINSTALLED IN GOOD ORDER.

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ITEM	STEERING GEAR SYSTEM	CLASS	C.C.S.	DATE	15/03/25
MAKE/MODEL	NANJING HANZHUANG MARINE EQUIPMENT CO., LTD/R4A-400-28	S. NO.	116613	RECORDED BY	BOBBY LAI
COMPONENT	RUDDER CARRIER BEARING RENEWAL	STATUS	STEERING GEAR SYSTEM OPERATION TEST UPON JOB COMPLETION	DIMENSIONS	N.A.
INSTRUMENT	N.A.			I.D. NO.	N.A.



NOTE : ATTENDED TO THE OPERATION TEST OF THE STEERING GEAR SYSTEM SATISFACTORILY UPON COMPLETION OF ALL WORKS.

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COMPONENT	RUDDER CARRIER BEARING RENEWAL	STATUS	HANGING STAGING & EYE-PADS INSTALLATION	DIMENSIONS	N.A.
INSTRUMENT	N.A.			I.D. NO.	N.A.



NOTE : HANGING STAGING WAS ERECTED AT THE RUDDER POSITION FOR THE EYE-PADS & CHAIN BLOCKS INSTALLATION ON BOTH SIDES, WORKING & ACCESSING FROM WORKBOAT ARRANGED FOR PURPOSED.

HANGING STAGING, 3ML X 1MW X 1.5D X 2 SETS

STEEL EYE-PAD, 10 TON S.W.L. X 1 OFF X 2 SIDES (HULL PORT & STBD) & 10 TON S.W.L. X 2 OFF X 2 SIDES (RUDDER PORT & STBD)

CHAIN BLOCK WITH LIFTING SHACKLES & WIRES, 5 TON S.W.L. X 2 UNITS X 2 SIDES (FORWARD PORT & STBD) & 10 TON S.W.L. X 1 UNIT X 2 SIDES (AFT PORT &

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COMPONENT	RUDDER CARRIER BEARING RENEWAL	STATUS	RUDDER BODY POOR WELDING SEAMS REWELDING UP IN CONJUNCTION	DIMENSIONS	N.A.
INSTRUMENT	N.A.			I.D. NO.	N.A.



NOTE : THE RUDDER BODY ACCESSIBLE POOR WELDING SEAMS IN WAY OF THE RUDDER STOCK NUT STBD SIDE ACCESS PLATE WAS REPAIRED BY ELECTRIC ARC GOUGING IN & WELDING UP FROM BOTH SIDES ACCORDINGLY, WHILST THE PORT SIDE ACCESS PLATE WAS STILL OPENED.

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ITEM	STEERING GEAR SYSTEM	CLASS	C.C.S.	DATE	13/03 ~ 15/03/25
MAKE/MODEL	NANJING HANZHUANG MARINE EQUIPMENT CO., LTD/R4A-400-28	S. NO.	116613	RECORDED BY	BOBBY LAI
COMPONENT	RUDDER CARRIER BEARING RENEWAL	STATUS	RUDDER STOCK NUT INSPECTION IN CONJUNCTION	DIMENSIONS	N.A.
INSTRUMENT	N.A.			I.D. NO.	N.A.



NOTE : (1) THE RUDDER STOCK NUT WAS PERFORMED INSPECTION WITH THE PORT SIDE INSPECTION ACCESS PLATE GAS CUT OPEN UP FOR THE PURPOSE.

(2) THE RUDDER STOCK NUT SPACE WASTED LOWER HORIZONTAL PLATE WAS RENEWED BY STEEL INSERTION WITH SINGLE VEE FULL WELDING UP COMPLETE WITH BACKING STRIPS (5T X 40W).

NEW HIGH TENSILE STEEL GRADE ABS/EH36 INSERTION WITH CURVATURE AT BOTH LONGI. SIDES, 12.5T X 800W X 1,000L X 1 OFF (IN 2 LONGI. SECTIONS)

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ITEM	STEERING GEAR SYSTEM	CLASS	C.C.S.	DATE	15/03 ~ 16/03/25
MAKE/MODEL	NANJING HANZHUANG MARINE EQUIPMENT CO., LTD/R4A-400-28	S. NO.	116613	RECORDED BY	BOBBY LAI
COMPONENT	RUDDER CARRIER BEARING RENEWAL	STATUS	RUDDER STOCK NUT PORT SIDE INSPECTION ACCESS PLATE REINSTALLATION	DIMENSIONS	N.A.
INSTRUMENT	N.A.			I.D. NO.	N.A.



NOTE : THE RUDDER STOCK NUT PORT SIDE INSPECTION ACCESS PLATE WAS REINSTALLED WITH SINGLE VEE FULL WELDING UP COMPLETE WITH BACKING STRIPS (5T X 40W) UPON COMPLETION OF PRECEDING WORKS IN GOOD ORDER.
PORT SIDE ACCESS PLATE, 20T X 600L X 400H X 2 CORNERS 100R X 1 OFF

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COMPONENT	RUDDER CARRIER BEARING RENEWAL	STATUS	RUDDER BODY AIR TEST TO 0.2 BAR	DIMENSIONS	N.A.
INSTRUMENT	N.A.			I.D. NO.	N.A.



NOTE : THE RUDDER BODY WAS PERFORMED AIR TEST TO 0.2 BAR BY SHIP'S COMPRESSED AIR SUPPLY TO CONFIRM TIGHTNESS; DUE TO ABSENCE OF VENT PLUG, NEW HOLE WAS DRILLED & TAPPED ON BODY TO 1/4" B.S.P. FOR THE PURPOSE.

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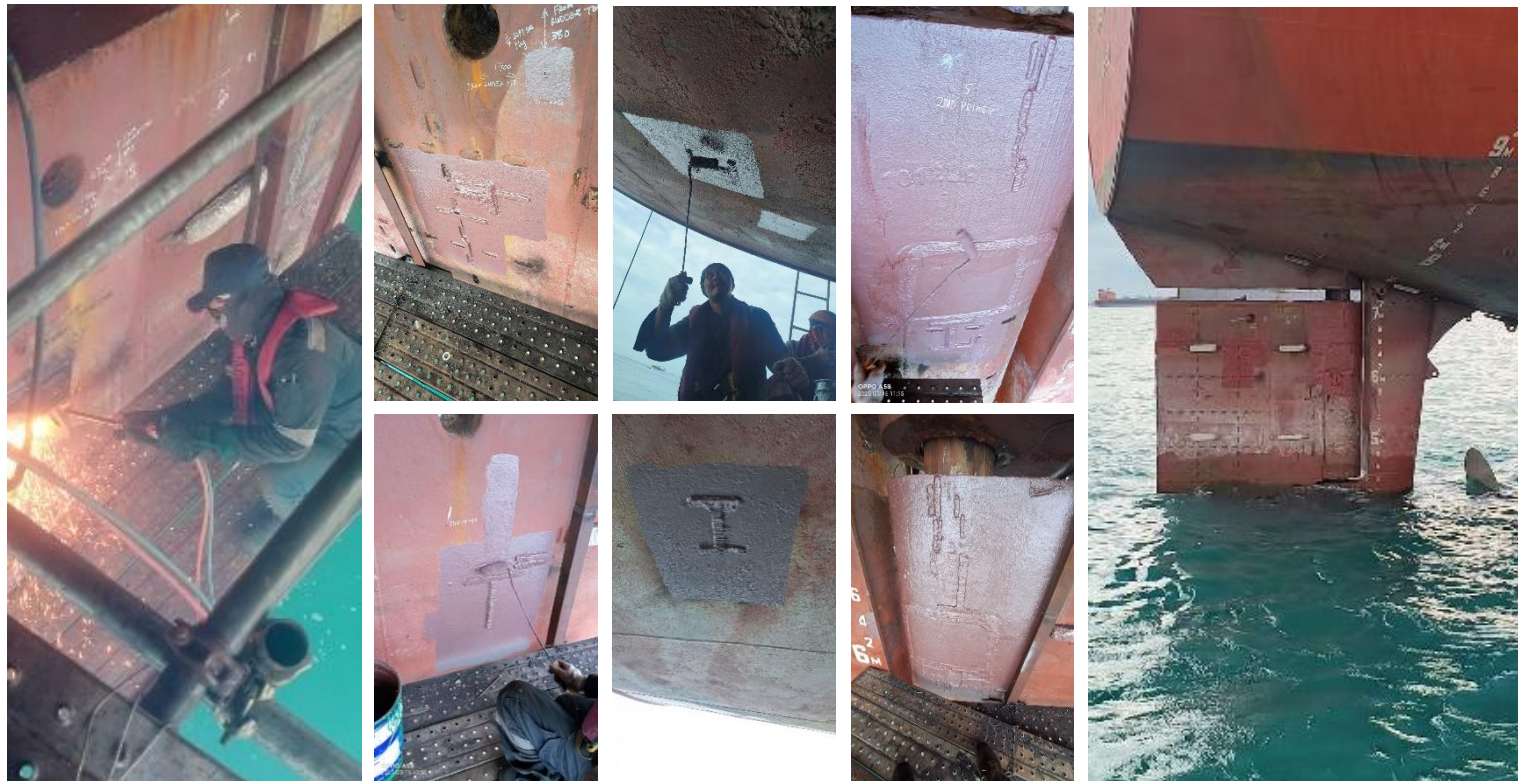
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ITEM	STEERING GEAR SYSTEM	CLASS	C.C.S.	DATE	16/03/25
MAKE/MODEL	NANJING HANZHUANG MARINE EQUIPMENT CO., LTD/R4A-400-28	S. NO.	116613	RECORDED BY	BOBBY LAI
COMPONENT	RUDDER CARRIER BEARING RENEWAL	STATUS	ACCESSORY EYE-PADS REMOVAL & DISTURBED AREAS PAINT TOUCHING UP	DIMENSIONS	N.A.
INSTRUMENT	N.A.			I.D. NO.	N.A.



NOTE : (1) ALL LIFTING CHAIN BLOCKS WITH ACCESSORIES WERE DISMANTLED & REMOVED UPON COMPLETION OF PRECEDING WORKS.
THE TEMPORARY EYE-PADS WERE GAS CUT CROPPED OFF, & DISTURBED AREAS GROUND FLUSH & APPLIED WITH SHIP'S PAINT SIMILARLY
UPON COMPLETION OF PRECEDING WORKS.

(2) THE HANGING STAGING WAS DISMANTLED & REMOVED IN GOOD ORDER UPON COMPLETION OF PRECEDING WORKS.