



PROPOSAL FOR DRYDOCK PACKAGE (CRANES)

STI BLACK HAWK



Zenith Marinetech Ltd.

169-9, Goldenroot-ro 129beon-gil
Gimhae-si, Gyeongnam,
Korea 51012
Tel : +82 55 322 2355

SUBMITTED TO
Piyush Waghmare
Technical Superintendent.



Scorpio Marine Management India Pvt. Ltd.

Scorpio House - Central Avenue
Hiranandani Business Park - Powai,
Mumbai 400076

Introduction

- Zenith Marinetech Ltd is a Korean marine crane engineering company, specializing in design, maintenance, service and after-sales support of marine cranes and has signed an exclusive agency agreement with Sangsangin Industry (ex-Dongnam Marine Crane) and an agency agreement with Oriental concerning their cranes in terms of both service and distribution of equipment and parts.
- Based on the Pre-Docking Inspection carried out on on 07th June 2025, we recommend spares and service as a Dry Dock Package.



PROPOSAL FOR CRANE REPAIR IN DD

ne (STBD)

REPAIR ATTENDANCE – SCOPE OF WORK (Zhoushan, China)

- Initial load testing and inspection of crane along-with Ship Owner to ascertain the necessary spares which are required to be renewed. The inspection report which was undertaken earlier will be useful to zero the defect in a better way. Following will be undertaken to identify the necessary spares:
 - Checks of all hydraulic blocks, main control valve, limit valves, gear box and brake.
 - Inspection of Jib Hinge pin and associated assembly. Cylinder pin, bearing etc. for abnormal noise/ any deformation / defect after the boom and cylinder is removed for maintenance by the yard.
 - Replacement of hoses will be undertaken by our team, identifying the fittings which requires renewal.
- After completion of the checks a report with recommended spares will be provided, which can be discussed along with our team to finalise the spares. The spares will be supplied within a week based on the requirement.
- Post receipt of the spares, fitment of spares, overhauling of brakes/motor/MCV etc. can be undertaken by our team. The quote for the service and spares will be separately made based on the quantum of spares and job.
- Final load testing in front of the surveyor.



PROPOSAL FOR CRANE REPAIR IN DD

REPAIR ATTENDANCE – QUOTATION

NO	DESCRIPTION	QTY	UNIT	AMOUNT (USD)
	SERVICE ATTENDANCE IN ZHOUSHAN, CHINA			
1	REMOVAL AND FITMENT OF HOSES (HHC & PVC) MIN 5 DAYS REQUIRED (2 SERVICE ENGINEERS)	1	LUMSUM	
2	INITIAL INSPECTION, FINAL TRIALS AND LOAD TESTING	1	LUMSUM	
	TOTAL			
NOTE :	1. SERVICE ATTENDANCE IS FOR CRANES ONLY			
	2. YARD SUPPORT TO BE PROVIDED WHEREVER REQUIRED			
	3. ONE YARD WORKER SUPPORT REQUIRED ALL THE TIMES.			
	4. STANDBY AT THE YARD AND DELAYS DUE TO NATURAL CALMITY AND OTHER IRRESISTIBLE FORCES SHALL BE REGARDED AS WORKING			



PROPOSAL FOR CRANE REPAIR IN DD - STI BLACK HAWK

TOTAL ESTIMATE FOR DD PACKAGE

NO	DESCRIPTION	AMOUNT (USD)
1	SERVICE ATTENDANCE IN ZHOUSHAN, CHINA	
2	QUOTATION FOR SPARES (HHC, PVC)	
	TOTAL	
	DISCOUNT @ 20%	
	FINAL ESTIMATE INCLUDING SERVICE AND SPARES	



INSPECTION REPORT – STI BLACK HAWK

Hose Handling Crane -10 T (DONGNAM)

HOSES FITTED ONBOARD



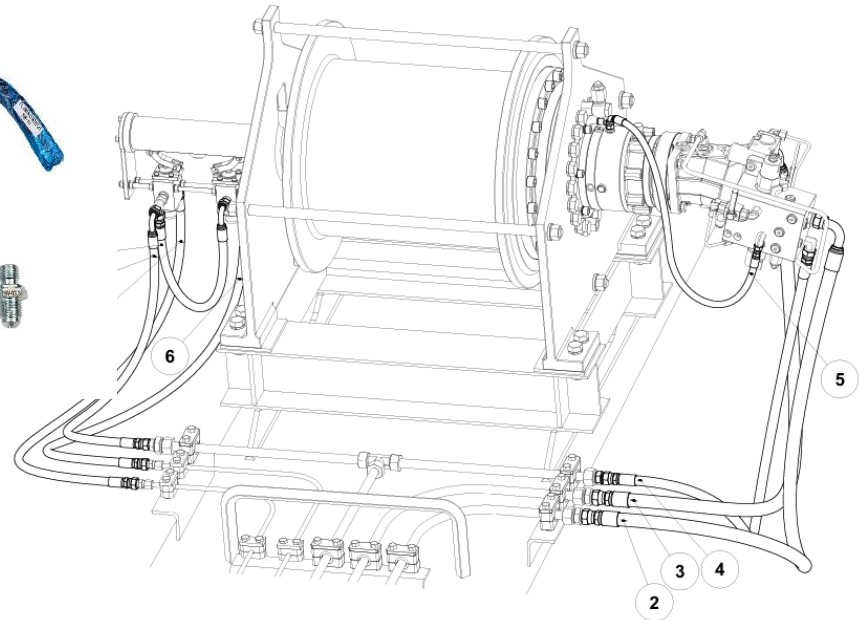
Based on the inspection report and photographs the condition of hydraulic hoses and fittings are not good.

The condition of the hoses deteriorates over a period due to UV Radiation due to sunlight, Mechanical Wear and Tear, Temperature Fluctuations, Saltwater Exposure and Finite lifespan of rubber hoses.

Denso or Grease Tape is known to prevent corrosion, but the most important role is to prevent hose burst by ageing in adverse atmosphere. Corrosion of hose couplings and fitting results in weakening leading to unwanted spill on deck or even inadvertent environment pollution. The vessels vibration escalates detachment / deterioration of the hoses, therefore, even if the hoses looks good externally, it is advisable to replace periodically to avoid downtime.

The hoses and fittings have been already supplied. However, fitment of the same can be undertaken by our team if the vessel is docking in Zhoushan, China

HOSE SUPPLIED ALONG WITH 3D MANUAL



Hoses and fittings will be provided in the 3D HFOB (Hose and Fitting Order Book) for easy reference and understanding.

This is a unique 3D reference drawing which is exclusively made by zenith for easy identification and fitment of Hoses. The crew can themselves renew the hoses, thus reducing on the cost for the same by the yard.

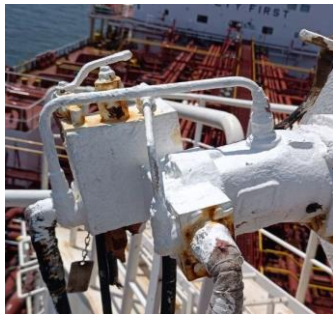


INSPECTION REPORT – STI BLACK HAWK

Hose Handling Crane -10 T (DONGNAM)



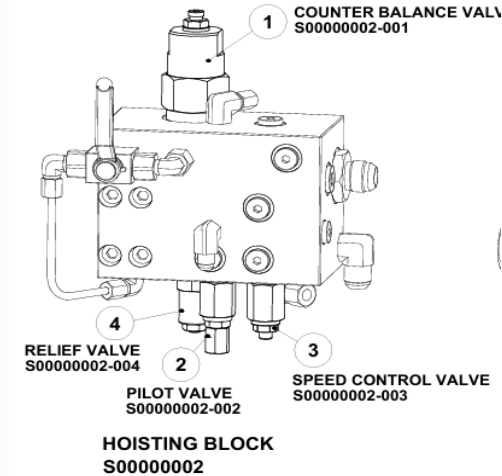
HOISTING BLOCK



PTS HOISTING BLOCK



LUFFING BLOCK



Counterbalance Valve. It is to control oil flow smoothness (liner operation) in lowering and hoisting so if it is damaged or gets old, its tension loosens then sometimes hunting in hoisting occurs which will create dangerous situation during handling cargo.

Pilot Valve. It controls the brake opening and closing. It was corroded at the top of the screw bolt and not adjustable due to corrosion. This will raise the pressure suddenly resulting in damage of brake components like Lining Disc, Spring and Seals.

With reference to the Inspection Report and the photos

Hoisting Block: The pilot valve and speed control valve of hoisting block are rusted and adjustment is also not possible.

Luffing Block : The condition of Luffing block is satisfactory.

Counterbalance valve is supplied. **However, we recommend replacement of pilot valve and speed control valve.**

Personal Transfer system completely bypassed. Inspection for the same not undertaken.



INSPECTION REPORT – STI BLACK HAWK

Hose Handling Crane -10 T (DONGNAM)

BRAKE ADAPTER AND FLANGE



PTS HOISTING WINCH



HOISTING WINCH

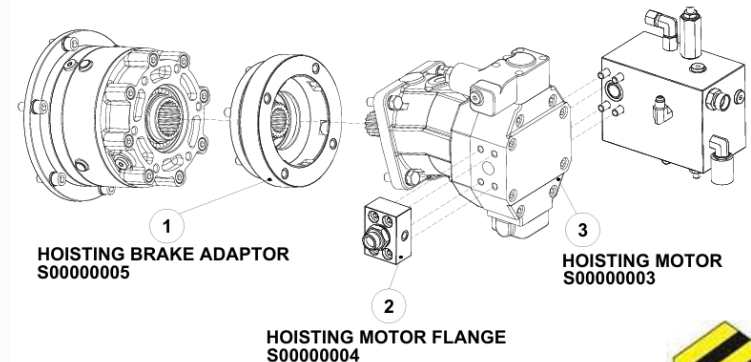
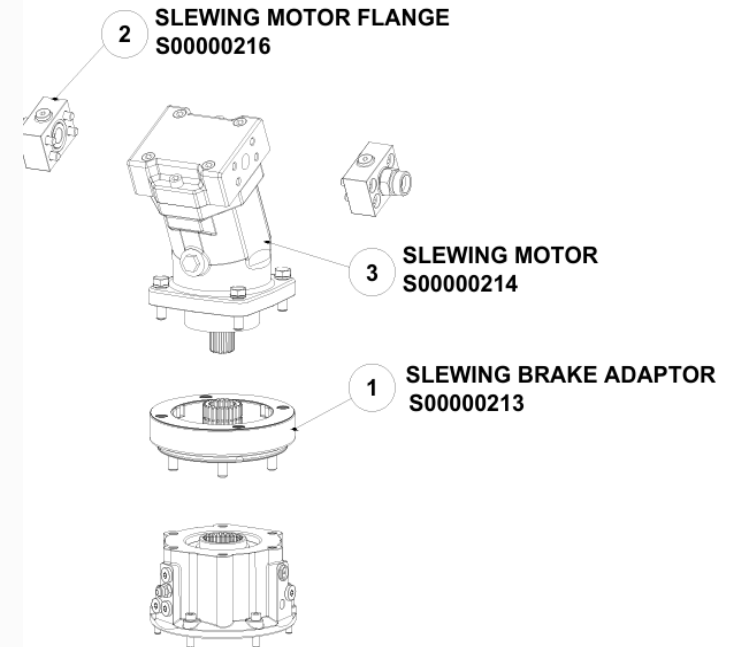


SLEWING WINCH

Brake Adaptor is an integral part which connects the motor and Brake, Brake adaptor is made up of aluminum and due to aging, it starts to crack. The cracks may propagate and result in **ingress of water** (rain/seawater) to the brake resulting in seizing of brake. While undertaking the overhauling of the brakes, cracks are observed on the adapter.

It is strongly recommended to renew the brake adaptors after 5 years even if the cracks are not visible as brake adaptor life span is usually around 5 years only. PTS Winch brake adapter is supplied. Brake adapter for Hoisting /Slewing winch and Slewing Motor Flanges to be renewed.

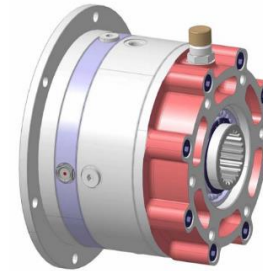
Personal Transfer system completely bypassed. Inspection for the same not undertaken.



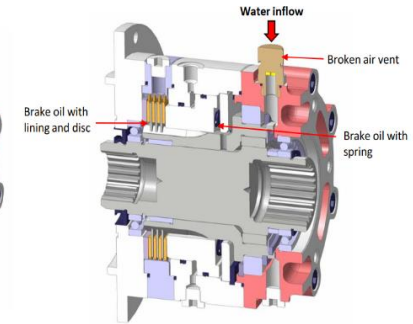
INSPECTION REPORT – STI BLACK HAWK

Hose Handling Crane -10 T (DONGNAM)

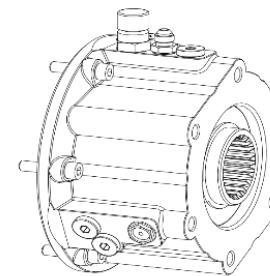
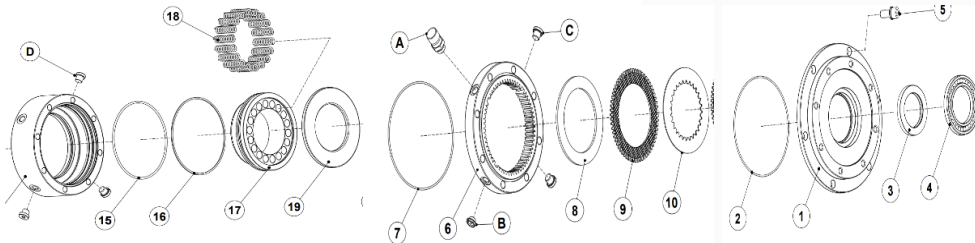
HOISTING/SLEWING WINCH BRAKE



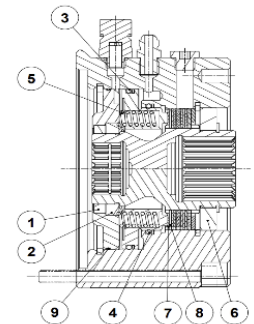
Hoisting Brake (Part No. : S00000006)



Hoisting Brake Repair Kit (Part No. : S00000006-040)



BRAKE REPAIR KIT S00000211-027
INCLUSIVE ALL ITEMS IN LIST



Section view

It is commonly observed that the water inflows through broken air vent and is oxidized with brake oil as indicated and then it gets sticky as much for lining or disc or spring not to travel or unspring.

Brake repair kit for all the brakes supplied. However, our engineer can undertake overhauling in Zhoushan, China



INSPECTION REPORT – STI BLACK HAWK

Hose Handling Crane -10 T (DONGNAM)

HOISTING/LOWERING LIMIT ASSEMBLY

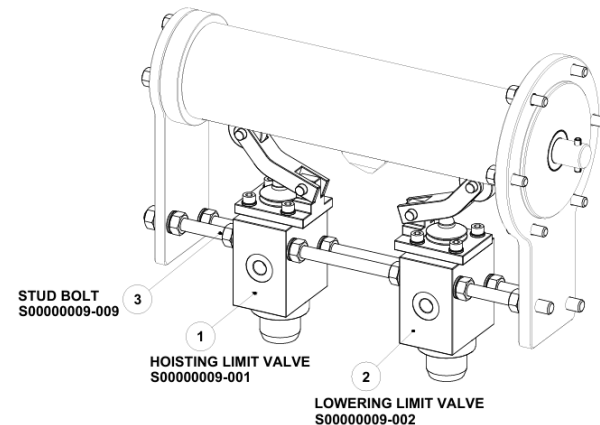
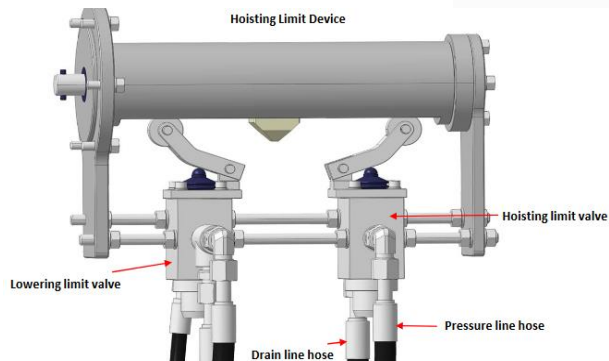


Hoisting and Lowering Limit Valve is a safety device during Hoisting and lowering operations.

With reference to the photos and Inspection Report. Hoisting Lowering Limit is working.

We recommend repair of hoisting limit device as it is wasted considerably.

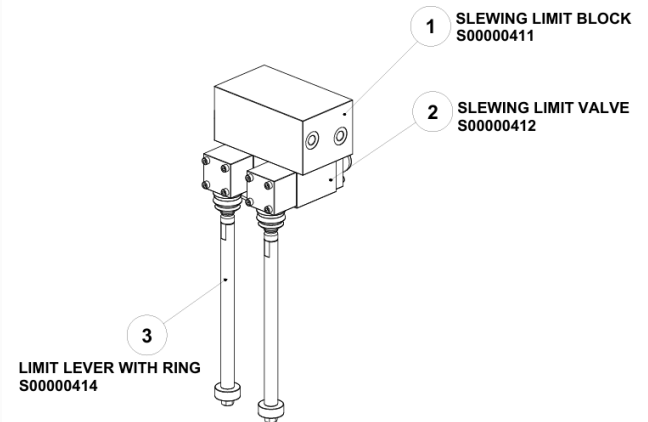
We can supply the hoisting limit device without valves.



INSPECTION REPORT – STI BLACK HAWK

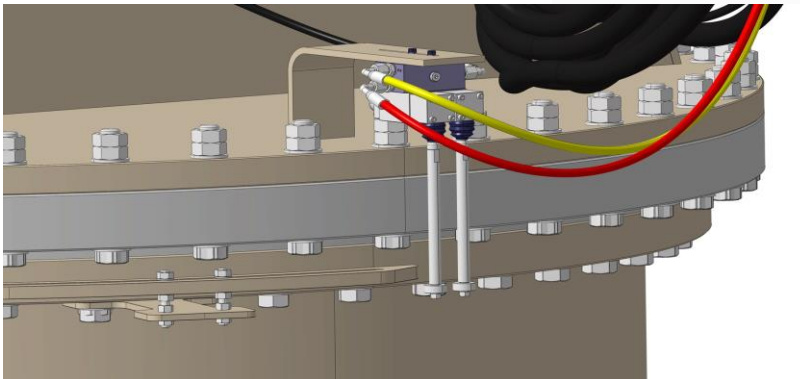
Hose Handling Crane -10 T (DONGNAM)

SLEWING LIMIT VALVE



With reference to the photos and Inspection Report.

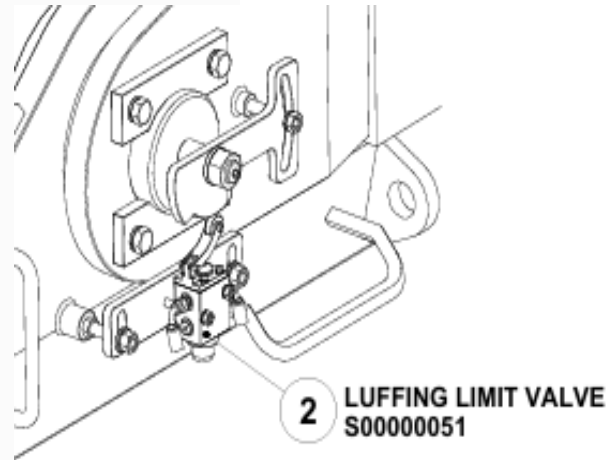
Slewing limit valve is working. **We recommend maintenance of Slewing Limit valve.**



INSPECTION REPORT – STI BLACK HAWK

Hose Handling Crane -10 T (DONGNAM)

LUFFING LIMIT VALVE



With reference to the photos and Inspection Report.

Luffing Limit Valve is not working.

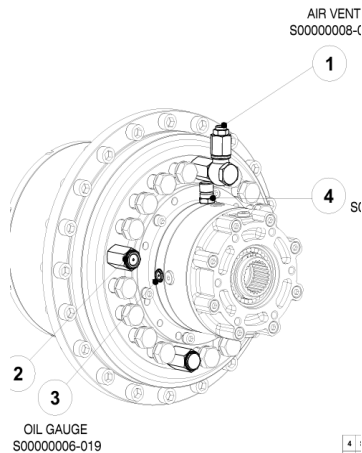
We recommend the renewal of luffing limit valve.



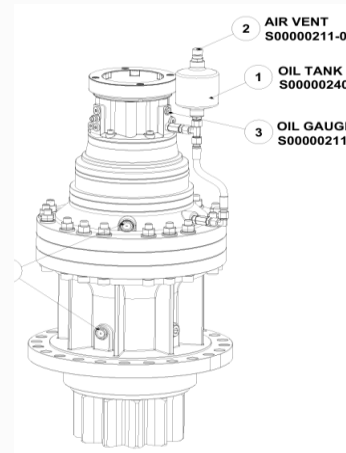
INSPECTION REPORT – STI BLACK HAWK

Hose Handling Crane -10 T (DONGNAM)

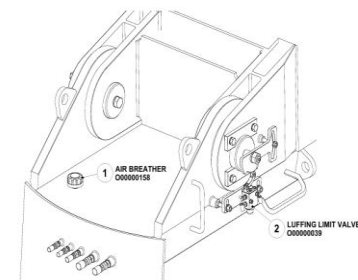
OIL SIGHT GLASS GAUGE / AIR VENT



SLEWING GEARBOX OIL POT



AIR BREATHER



We recommend following to be renewed as a Dry dock routine:

1. Slewing Gearbox Oil Pot –Oil pot rusted and damaged. **It is recommended to renew.**
2. Oil Sight Glass Gauge – **It is recommended to replace as DD Routine to check the Oil inside the brake.**
3. Air Vent – It is commonly observed that air vents in hoisting and slewing winch are broken or damaged and given least importance. Salt water or rainwater enters in through this damaged air vent and mix with the oil inside the brake making it sticky. Further, the parts inside like, springs, pistons, rack gear etc will get corroded and gradually the brake will not function properly. **It is recommended to replace all the Air vents as a DD routine**
4. Air Breather – The air breather is damaged and corroded, which will result in ingress of water inside the tank making the oil contaminated. **The condition of air breather is satisfactory**



INSPECTION REPORT – STI BLACK HAWK

Hose Handling Crane -10 T (DONGNAM)



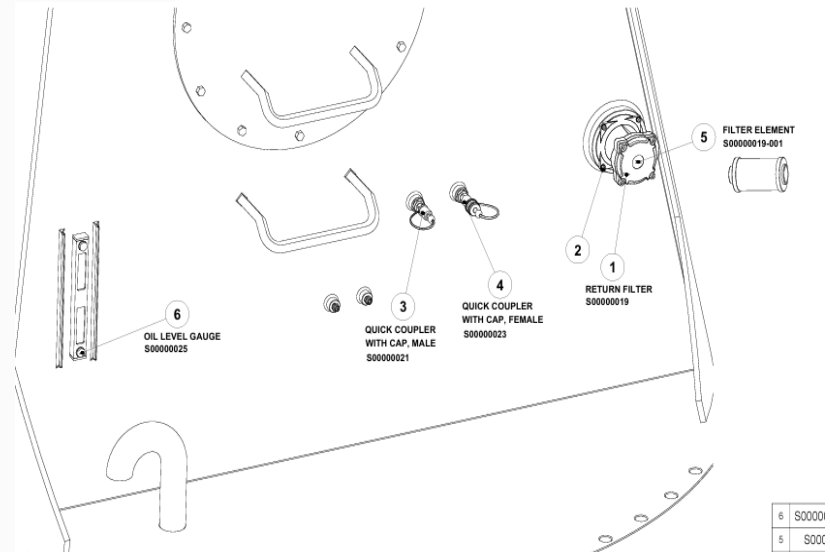
OIL LEVEL GAUGE



RETURN FILTER



QUICK COUPLER



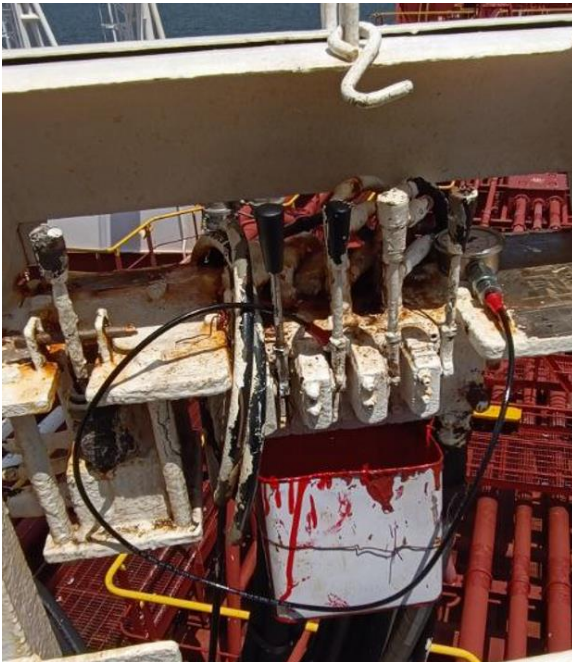
We recommend following to be renewed as a Dry dock routine:

1. Return Filter – It is recommended to replace filter as a DD Routine. **Return filter element to be replaced.**
2. Quick Coupler – Quick coupler is rusted. **To be replaced due to rust – should be ready to be used in any emergency.**
3. Suction Filter – **To be renewed as a DD routine.**
4. Level Gauge – The condition of Level gauges are satisfactory. **However, recommended to be replaced for further usage as part of the DD routines.**

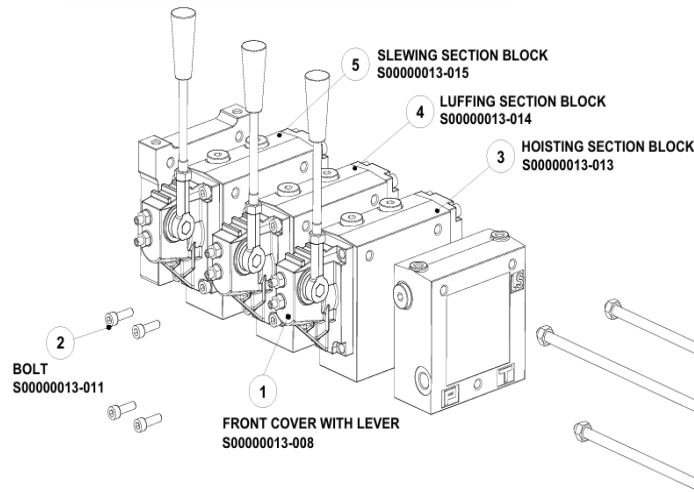


INSPECTION REPORT – STI BLACK HAWK

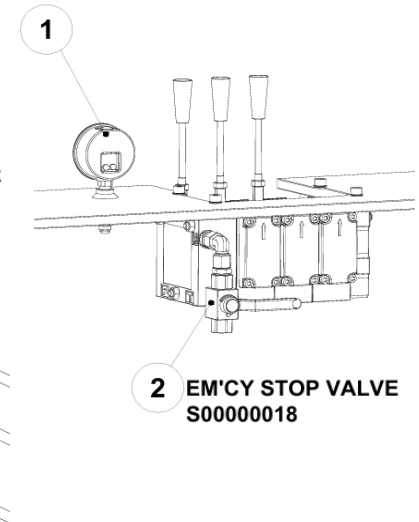
Hose Handling Crane -10 T (DONGNAM)



MAIN CONTROL VALVE



EMERGENCY STOP VALVE



All the relief valve of main control valve cannot be adjusted. Leakage observed from the luffing section block front cover lever.

We recommend renewal of main control valve

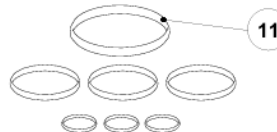
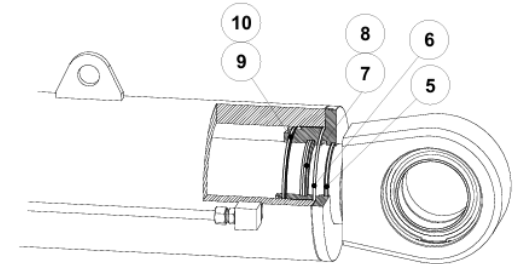
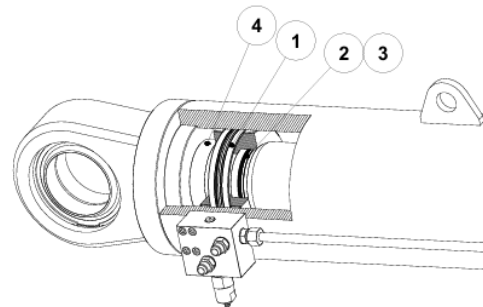
Emergency stop valves are corroded. It is recommended to be replaced



INSPECTION REPORT – STI BLACK HAWK

Hose Handling Crane -10 T (DONGNAM)

CYLINDER SEAL KIT



**CYLINDER SEAL KIT S00000059-016
INCLUSIVE ALL ITEMS IN LIST**

11	S00000059-016	CYLINDER SEAL KIT	1 SET	ALL IN LIST
10	S00000059-026	BACK UP RING	1 EA	
9	S00000059-025	O-RING	1 EA	
8	S00000059-024	BACK UP RING	1 EA	
7	S00000059-023	ROD PACKING	1 EA	
6	S00000059-022	O-RING	1 EA	
5	S00000059-021	DUST SEAL	1 EA	
4	S00000059-020	SET SCREW	1 EA	
3	S00000059-019	BACK UP RING	2 EA	
2	S00000059-018	O-RING	1 EA	
1	S00000059-017	PISTON PACKING	1 EA	
NO.	PART NO.	DESCRIPTION	QTY	REMARKS
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APPROVED		DESIGNED		
BY :		BY :		
		 ZENITH MARINETECH		
DOC. NAME : LUFFING CYLINDER ASSY				

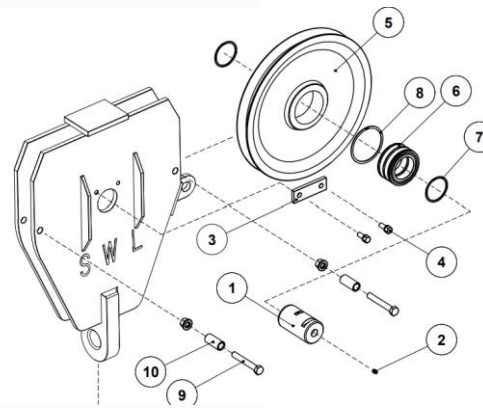
It is recommended to overhaul cylinder in the DD. We have supplied the cylinder seal kit.



INSPECTION REPORT – STI BLACK HAWK

Hose Handling Crane -10 T (DONGNAM)

SHEAVE WITH BEARING AND COLLAR



15	S00000058-017	LATCH KIT	1 SET	
14	S00000058-016	SWIVEL HOOK	1 EA	INCL. LATCH KIT
13	S00000058-015	CHAIN	1 EA	
12	S00000058-014	CONNECTING LINK	2 EA	
11	S00000058-013	SHACKLE	2 EA	
10	S00000058-012	SPACER PIPE	2 EA	
9	S00000058-011	HEX BOLT & S/W	2 SET	
8	S00000058-010	SNAP RING	2 EA	
7	S00000058-009	COLLAR	2 EA	
6	S00000058-008	BEARING	1 EA	
5	S00000058-007	SHEAVE	1 EA	
4	S00000058-006	HEX BOLT & S/W	2 SET	
3	S00000058-005	KEY PLATE	1 EA	
2	S00000058-004	GREASE NIPPLE	1 EA	
1	S00000058-003	PIN	1 EA	
NO.	PART NO.	DESCRIPTION	QTY	REMARKS
APPROVED BY: _____ DESIGNED BY: _____				
DOC. NAME: HOOK BLOCK WITH CHAIN ASSY				

It is commonly observed that sheaves gets worn out during the service period. Due to insufficient greasing the sheaves gets stuck and it is difficult process to replace the sheaves as it requires staging and hot work. The sheave material is not hardened as it may damage the wire ropes otherwise. Also, when the sheaves are not rotating, wire rope makes friction with the sheaves and subsequently gets damaged. Wear observed in the sheaves

We recommend maintenance of sheaves

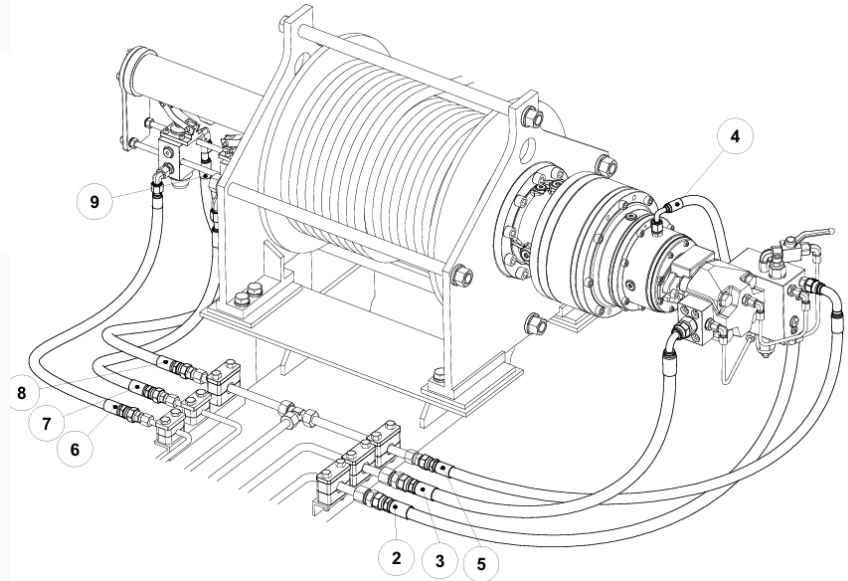


INSPECTION REPORT – STI BLACK HAWK

Provision Crane – 2T PORT / 4T STARBOARD (Dongnam)

HOSE SUPPLIED ALONG WITH 3D MANUAL

HOSES FITTED ONBOARD



The condition of the hoses deteriorates over a period due to UV Radiation due to sunlight, Mechanical Wear and Tear, Temperature Fluctuations, Saltwater Exposure and Finite lifespan of rubber hoses. Denso or Grease Tape is known to prevent corrosion, but the most important role is to prevent hose burst by ageing in adverse atmosphere. Corrosion of hose couplings and fitting results in weakening leading to unwanted spill on deck or even inadvertent environment pollution. The vessels vibration escalates detachment / deterioration of the hoses, therefore, even if the hoses looks good externally, it is advisable to replace periodically to avoid downtime.

The hoses and fittings have been already supplied. However, fitment of the same can be undertaken by our team if the vessel is docking in Zhoushan, China

INSPECTION REPORT – STI BLACK HAWK

Provision Crane – 2T PORT / 4T STARBOARD (Dongnam)

HOISTING BLOCK

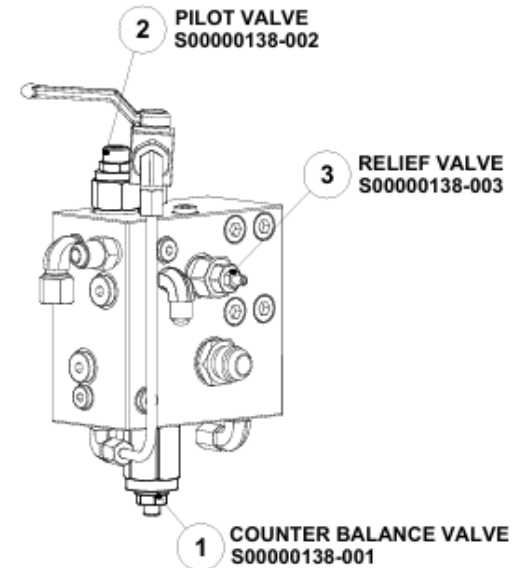


Counterbalance Valve. It is to control oil flow smoothness (liner operation) in lowering and hoisting so if it is damaged or gets old, its tension loosens then sometimes hunting in hoisting occurs which will create dangerous situation during handling cargo.

Pilot Valve. It controls the brake opening and closing. It was corroded at the top of the screw bolt and not adjustable due to corrosion. This will raise the pressure suddenly resulting in damage of brake components like Lining Disc, Spring and Seals.

With reference to the Inspection Report and the photos

Hoisting Block: The condition of the hoisting block is satisfactory. Pilot valve and reducing valve of both the crane cannot be adjusted.



**HOISTING BLOCK
S00000138**

INSPECTION REPORT – STI BLACK HAWK

Provision Crane – 2T PORT / 4T STARBOARD (Dongnam)

SLEWING BLOCK / LUFFING BLOCK

PVC 2T



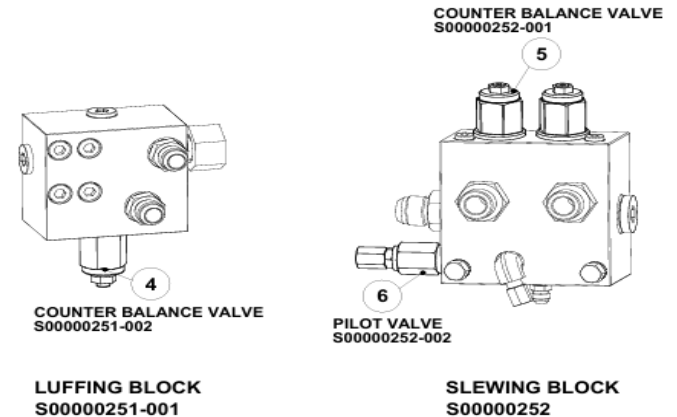
PVC 4T



SLEWING WINCH



LUFFING BLOCK



With reference to the Inspection Report and the photos

Slewing Block: The condition of the Slewing block is satisfactory.

Luffing Block: The condition of the Luffing block is satisfactory. However, counterbalance valve of both the crane cannot be adjusted

We have supplied 2 counterbalance valve for both the cranes.

However, it is recommend to replace pilot valve and reducing valve of both the cranes.

INSPECTION REPORT – STI BLACK HAWK

Provision Crane – 2T PORT / 4T STARBOARD (Dongnam)

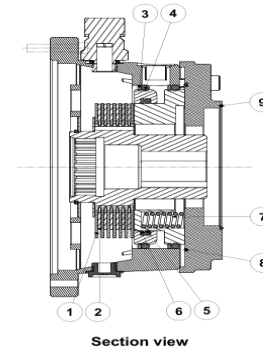
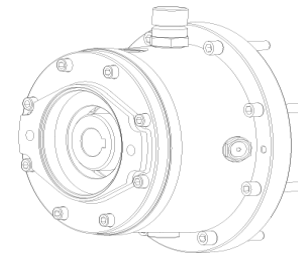
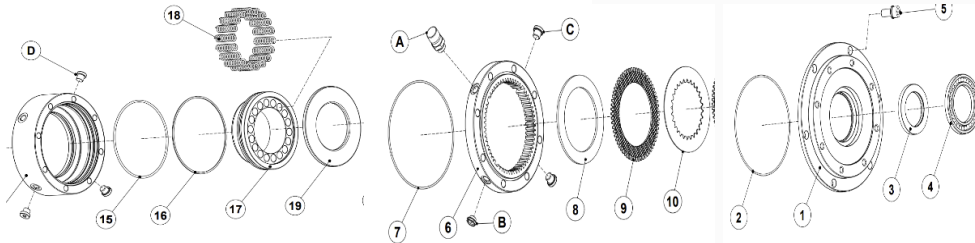
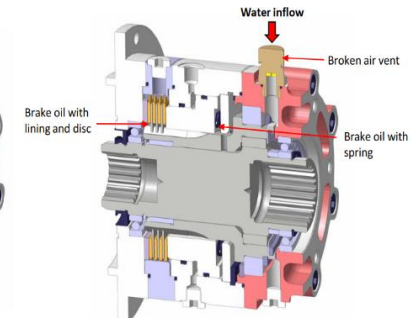
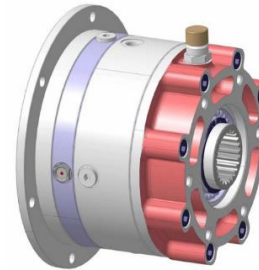
HOISTING/SLEWING WINCH BRAKE



PVC 2T



PVC 4T



It is commonly observed that the water inflows through broken air vent and is oxidized with brake oil much for lining or disc or spring not to travel or unspring.

Corrosion observed on the slewing winch and possibility of cracks in the slewing brake adapter. Slewing winch bolts corroded excessively

We have supplied brake repair kit for hoisting winch. We recommend overhauling of Slewing brake with Brake Repair Kit.

Our team can undertake overhauling of brakes if the drydock is in Zhoushan, China



INSPECTION REPORT – STI BLACK HAWK

Provision Crane – 2T PORT / 4T STARBOARD (Dongnam)

HOISTING / LOWERING LIMIT VALVE

PVC 2T



PVC 4T

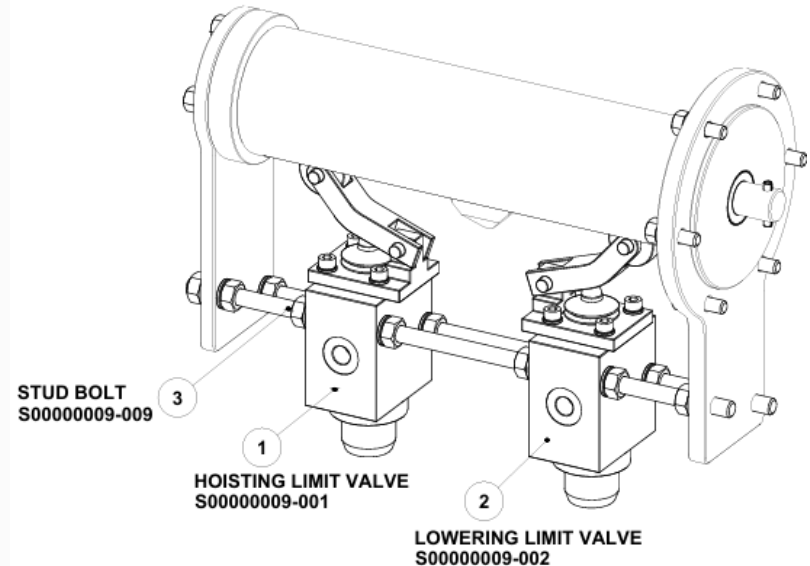



Hoisting and Lowering Limit Valve is a safety device during Hoisting and lowering operations.

With reference to the photos and Inspection Report.

The condition of limit valve assembly is satisfactory.

We recommend maintenance of the same.



3	S00000009-009	STUD BOLT	2 EA	INCL. 14 SET NUT & S/W
2	S00000009-002	LOWERING LIMIT VALVE	1 EA	
1	S00000009-001	HOISTING LIMIT VALVE	1 EA	
NO.	PART NO.	DESCRIPTION	QTY	REMARKS
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APPROVED			DESIGNED	
BY :			BY :  ZENITH MARINETECH	
DOC. NAME :			HOISTING LIMIT DEVICE ASS'Y	

INSPECTION REPORT – STI BLACK HAWK

Provision Crane – 2T PORT / 4T STARBOARD (Dongnam)

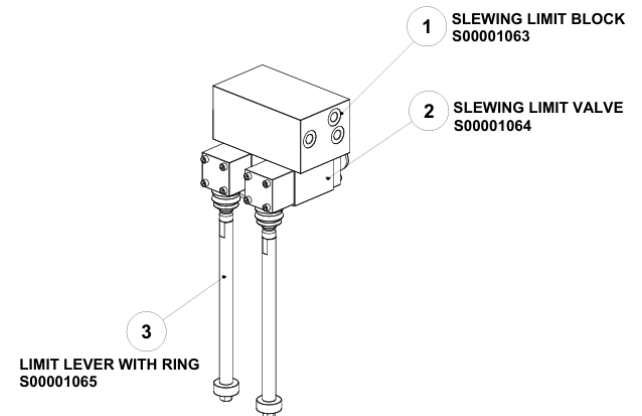
SLEWING LIMIT



PVC 2T



PVC 4T



With reference to the photos and Inspection Report.

Corrosion observed on the Slewing limit block and limit valve. Limit valve working

We recommend maintenance of the slewing limit valve assembly

3	S00001065	LIMIT LEVER WITH RING	4 SET	
2	S00001064	SLEWING LIMIT VALVE	4 EA	
1	S00001063	SLEWING LIMIT BLOCK	2 EA	
NO.	PART NO.	DESCRIPTION	QTY	REMARKS
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APPROVED		DESIGNED		
BY :		BY :  ZENITH MARINETECH		
DOC. NAME :		SLEWING LIMIT DEVICE SPARE ORDER BOOK		

INSPECTION REPORT – STI BLACK HAWK

Provision Crane – 2T PORT / 4T STARBOARD (Dongnam)

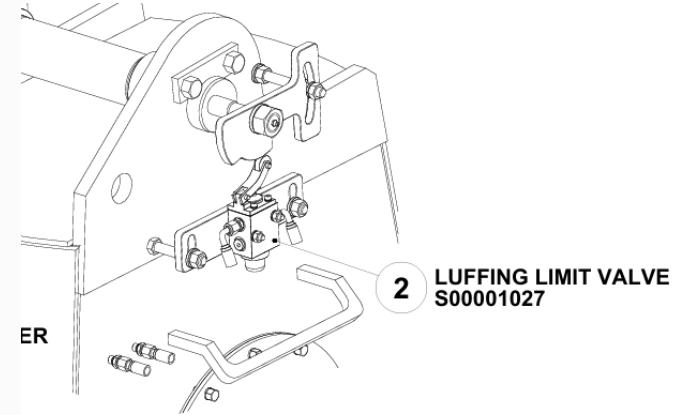
LUFFING LIMIT VALVE



PVC 2T



PVC 4T



With reference to the photos and Inspection Report.

Luffing Limit switch not working.

We recommend renewal of Luffing Limit valve



INSPECTION REPORT – STI BLACK HAWK

Provision Crane – 2T PORT / 4T STARBOARD (Dongnam)

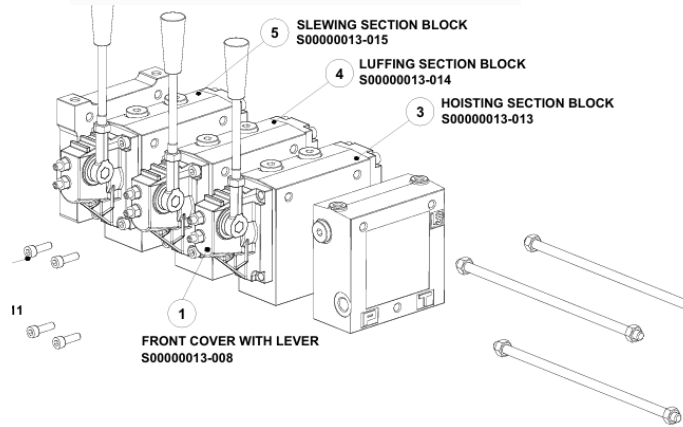
MAIN CONTROL VALVE



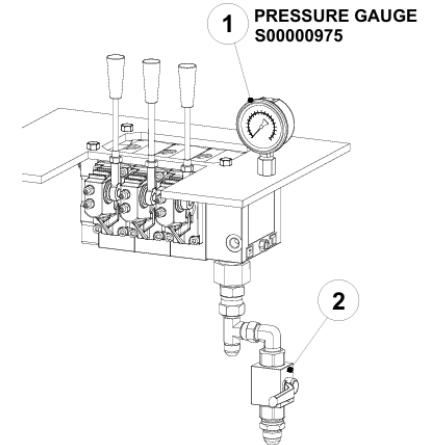
PVC 2T



PVC 4T



EMERGENCY STOP VALVE



Emergency stop valve corroded and to be replaced as a DD routine.

We recommend renewal of emergency stop valve.

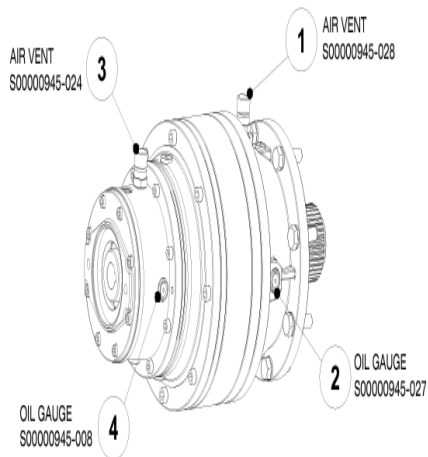
50 % relief valves of main control valve are not adjustable.

It is recommended main control valve to be renewed.

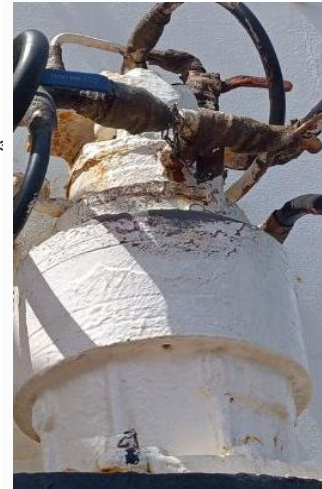
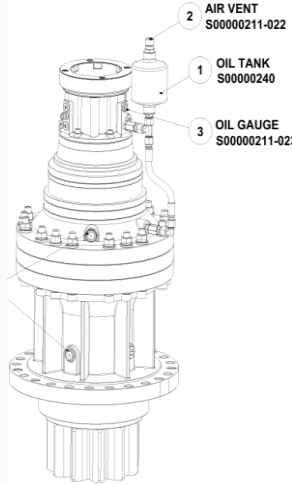
INSPECTION REPORT – STI BLACK HAWK

Provision Crane – 2T PORT / 4T STARBOARD (Dongnam)

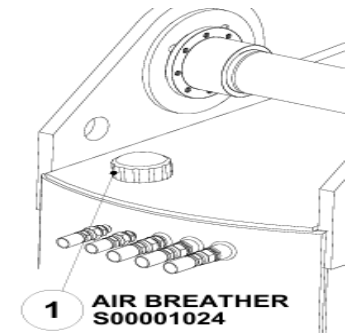
OIL SIGHT GLASS GAUGE / AIR VENT



SLEWING GEARBOX OIL POT



AIR BREATHER



We recommend following to be renewed as a Dry dock routine:

1. Slewing Gearbox Oil Pot – The Oil pot is generally broken /damaged /corroded in HHC. Water from the damaged oil pot will ingress inside the brake resulting malfunction of brake. **It is recommended to replace the oil pot**
2. Oil Sight Glass Gauge – **It is recommended to replace as DD Routine to check the Oil inside the brake.**
3. Air Vent – It is commonly observed that air vents in hoisting and slewing winch are broken or damaged and given least importance. Salt water or rainwater enters in through this damaged air vent and mix with the oil inside the brake making it sticky. Further, the parts inside like, springs, pistons, rack gear etc will get corroded and gradually the brake will not function properly. **It is recommended to replace all the Air vents as a DD routine**
3. Air Breather – **To be replaced as DD routine**



INSPECTION REPORT – STI BLACK HAWK

Provision Crane – 2T PORT / 4T STARBOARD (Dongnam)

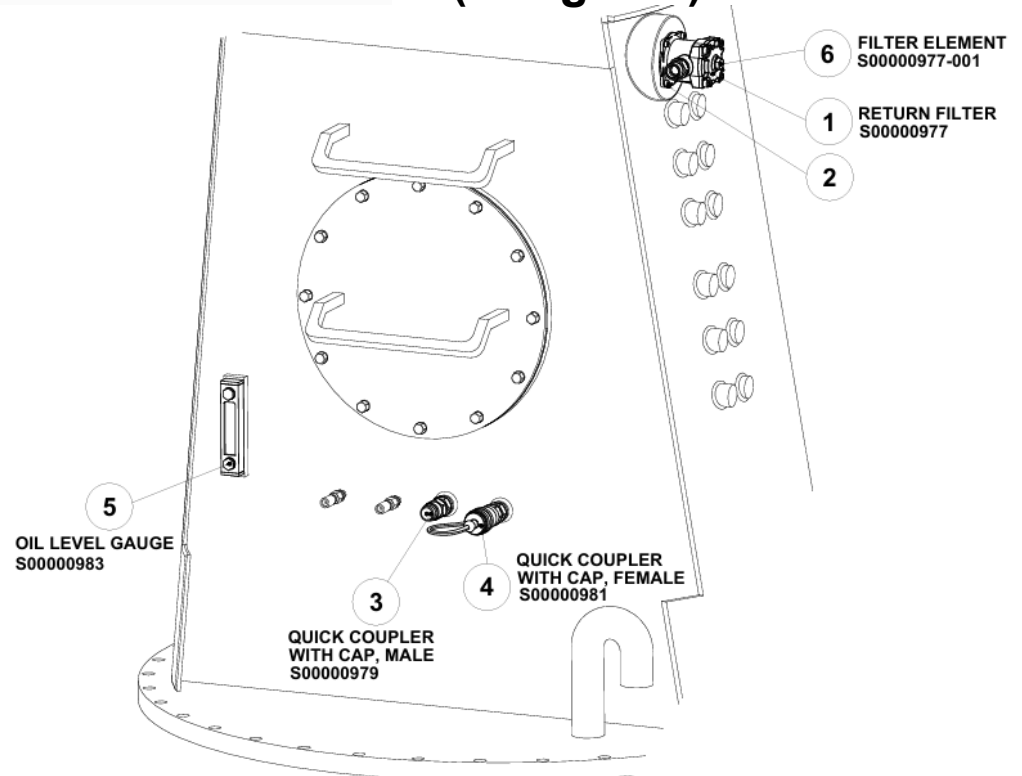


OIL LEVEL GAUGE



RETURN FILTER

QUICK COUPLER



We recommend following to be renewed as a Dry dock routine:

1. Return Filter – Supplied
2. Quick Coupler – Quick coupler is generally not used and gets corroded. To be replaced as it is used for emergency operations.
3. Suction Filter – Supplied.
4. Level Gauge – Supplied.



INSPECTION REPORT – STI BLACK HAWK

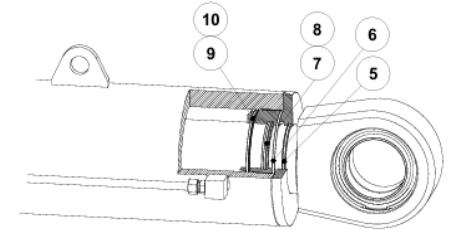
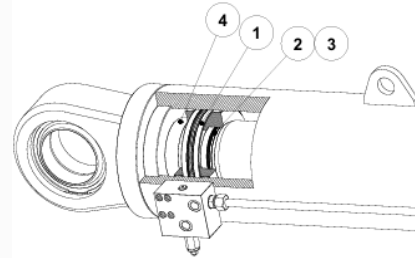
Provision Crane – 2T PORT / 4T STARBOARD (Dongnam)



PVC 2T



PVC 4T



CYLINDER SEAL KIT S00001057-023
INCLUSIVE ALL ITEMS IN LIST

11	S00001057-023	CYLINDER SEAL KIT	1 SET	ALL IN LIST
10	S00001057-022	BACK UP RING	1 EA	
9	S00001057-021	O-RING	1 EA	
8	S00001057-020	BACK UP RING	1 EA	
7	S00001057-019	ROD PACKING	1 EA	
6	S00001057-018	O-RING	1 EA	
5	S00001057-017	DUST SEAL	1 EA	
4	S00001057-016	SET SCREW	1 EA	
3	S00001057-015	BACK UP RING	2 EA	
2	S00001057-014	O-RING	1 EA	
1	S00001057-013	PISTON PACKING	1 EA	
NO.	PART NO.	DESCRIPTION	QTY	REMARKS

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APPROVED

BY :

DESIGNED

BY :

**ZENITH
MARINETECH**

DOC. NAME :

LUFFING CYLINDER ASS'Y

It is recommended to overhaul cylinder. We have supplied the cylinder seal kit.



INSPECTION REPORT – STI BLACK HAWK

Engine Room Crane – 4T (Dongnam)



1. All the function were tried out and found to be satisfactory.
2. The limit switch is operational and in good condition
3. Electrical hygiene satisfactory and maintained well
4. Rack gear, Pinion and pin greased and maintained well
5. Magnetic brakes to be renewed as DD routine
6. Remote pendant and cable to be replaced



INSPECTION REPORT – STI BLACK HAWK

FREEFALL LIFEBOAT DAVIT (FASSMER)

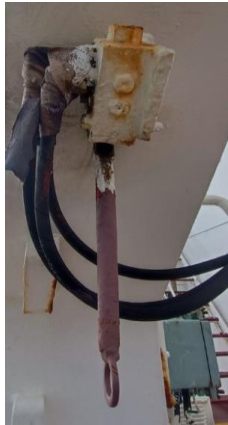


1. All the function were tried out and found to be satisfactory.
2. Overhauling of cylinder to be undertaken. Cylinder seal kit supplied.
3. The winch wire rope and sheave satisfactory
4. The condition of Pulley is satisfactory
5. Sight glass and air vent painted. To be renewed as a DD routine



INSPECTION REPORT – STI BLACK HAWK

RESCUE BOAT DAVIT (Dongnam)



1. All the function were tried out and found to be satisfactory.

2. Remote control and transfer cable satisfactory. 3. The winch wire rope and sheave satisfactory

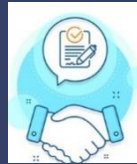
4. Slewing Brake to be overhauled. Brake repair kit supplied

5. Sight glass and air vent painted. To be renewed as a DD routine. Supplied

6. Hoses to be replaced. Supplied



Proposal



The spares recommended are to ensure reliability and reduce the downtime of the cranes during its service period. We propose to accept the recommendation for better upkeep of the cranes.

