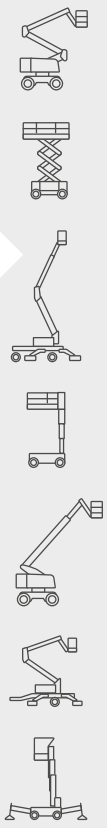


SERVICE AND REPAIR MANUAL

HT23RTJ O - HT23RTJ O SW - HT67RTJ O - HT23RTJ PRO - HT23RTJ PRO SW - HT67RTJ PRO

Color screen display

4001276670 E 06.23 USA / GB

2 Responsibilities

2.1 Owner's responsibility

The owner (or hirer) has the obligation to inform technician of the instructions contained in the Operator Manual and Maintenance Book.

The owner (or hirer) has the obligation to renew all manuals or decals that are either missing or in bad condition.

Additional decals can be ordered from HAULOTTE Services®

The owner (or hirer) is responsible for applying the local regulations regarding maintenance of the machine.

2.1.1 Product modification

Without the written permission from HAULOTTE®, modifying a HAULOTTE® product is a Safety concern.

Any modification may violate Haulotte design parameters, local regulations and industry standards.

If you desire a modification to the product, tanks to submit a request in writing to HAULOTTE®.

2.2 Technician's responsability

The technician must read and understand the contents of this manual, operators manuals and the decals affixed on the machine.

The technician must inform the owner (or hirer) if the manual or any decals are missing or in poor condition, and of any malfunction of the machine.

Only authorized and qualified operators may operate HAULOTTE® machines.

Name	Description
KA2	Relay-Generator control
EL906	Light- Activ' Lighting SystemCounterweight light
EL907	Light- Activ' Lighting SystemBoom light
HL910A	Light- Activ' Lighting SystemTurret light
HL910B	Light- Activ' Lighting SystemTurret light
HL911	Light- Activ' Lighting SystemGround control box light
HL912A	Light- Activ' Lighting SystemPlatform control box light
HL912B	Light- Activ' Lighting SystemPlatform control box light
HL912C	Light- Activ' Lighting SystemPlatform light
HL912D	Light- Activ' Lighting SystemPlatform light
HL913	Light- Activ' Lighting SystemUnder basket light
SA910	Activ'Lighting System selector
SN900	Sensor-Twilight sensor
SP100	Detector-High speed pressure
SP300	Detector (Tier III) -Engine oil pressure
SP800	Sensor-Strain gauges
SP801	Sensor-Strain gauges
SQ300	Detector-Fuel level
SQ521	Proximity sensor for dual load option (Boom stowed)
SQ523	Detector-Boom 1000 lbs angle limit zone
SQ531	Detector-ILSBoom length
SQ533	Boom length inductive sensor (ON if retracted)
SQ590	Detector-Boom retracted / down
SQ591	Detector-Boom retracted / down
SQ800	Detector-Tilt sensor
SQ802	Detector-Cable break 2
SQ990	Detector-Cable break 1
SR721	Detector-Tilt + 10°
SR720	Detector-Tilt - 10°
ST300	Detector (Tier III) -Engine overheating
ST900	Detector-Hydraulic oil overheating

- After inserting the bearing, lubricate and fit the pin.

6.2 Bearings

For the reassembly of bearings, respect the following stages :
- Clean boring and/or the pins to remove all the foreign bodies.
- Slightly lubricate boring and/or pins.
- Lubricate the ring of the bearing slightly.
- To fit bearing in a boring: take support on the external ring of the bearing.
- To fit bearing on an axis: take support on the interior ring of the bearing.

Torque Values

MS00005

Class 12.9

Metric fastener torque chart.

This charts is to be used as a guide only unless noted elsewhere in this manual.

Size (mm)	Dull dry(A)		Lubed(B)		Yellow dry(C)	
	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
5	79	9	68	7.75	91	10.3
6	139	15.7	116	13.2	155	17.6
Size (mm)	**Dull dry**		**Lubed**		**Yellow dry**	
	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
8	28	38	23.6	32	31.4	42.6
10	55	75	46.7	63.3	62.3	84.4
12	95.9	130	81	110	108	147
14	154.15	209	129	175	172	234
16	239.7	325	202	274	269	365
18	331	449	278	377	371	503
20	469.8	637	394	535	525	713
22	645.3	875	536	727	715	970
24	807.6	1095	682	925	909	1233

2 SAE fastener torque chart

Size	Thread	Grade 5	Grade 8	A574 High strength black oxide bolts

SAE fastener torque chart.

This charts is to be used as a guide only unless noted elsewhere in this manual.

		Lubed		Dry		Lubed		Dry		Lubed	
		in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
1/4	20	80	9	100	11.3	110	12.4	140	15.8	130	14.7
	28	90	10.1	120	13.5	120	13.5	160	18	140	15.8
		Lubed		**Dry**		**Lubed**		**Dry**		**Lubed**	
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
5/16	18	13	17.6	17	23	18	24	25	33.9	21	28.4
	24	14	19	19	25.7	20	27.1	27	36.6	24	32.5
3/8	16	23	31.2	31	42	33	44.7	44	59.6	38	51.5
	24	26	35.2	35	47.4	37	50.1	49	66.4	43	58.3

Fuel tank-Filling-up

MS00009

1 Warning

- Only an authorised and qualified technician is permitted to work on the machines HAULOTTE®.
- The use of this form implies that its user has been trained on this type of equipment.
- It is important that the person working on the machine is familiar with all of the safety information contained in the user manual.
- Generally speaking, the user must comply with regulatory obligations in force, particularly those relating specifically to working alone, co-activity and manual load handling...
- The user must have all the permits/authorizations required to work (fire permit, etc.) and comply with the specific safety instructions at the intervention site.
- Only risks linked specifically to activities relating to the disassembly and assembly of the machine HAULOTTE® are described in this sheet.

2 Risk prevention

Means of protection to be used when implementing the range

	Appropriate workwear		Gloves
	Safety shoes		

3 You will need

	- Standard tool kit		- Place barriers around the perimeter of the work area

4 Consumable

Use only oils whose features correspond to HAULOTTE® recommendations (Section C - Familiarization - Consumable) or contact HAULOTTE Services®.

Not mix two different characteristics fuel: if necessary, purge and clean the circuit.

5 Filling

Touch the exterior of the filling hole with the pump spout before starting pouring to avoid any risk of static electricity causing sparks.

Make sure you are standing up-wind to avoid being splashed by the fuel.

1. Loosen and remove the tank cap .
2. Fill up the tank.
3. Refit and tighten the tank cap .
4. Clean up any fuel that may have escaped from the tank.

Check and replacing the pads

MS00013

1 You will need

	- Standard tool kit - Protective goggles - Gloves		- Place barriers around the perimeter of the work area

Exclusively use tools and auxiliary average adapted.

Always wear necessary safety clothing.

2 Preliminary operation

The operations of disassembling if they exist should be carried out only on the installations completely disconnected and must be entrusted only to people having the necessary technical training.

Respect, in addition to the instructions appearing in the present instructions, the legal tendencies generally applicable for safety accident prevention.

All the precautions must be done in work before intervening on and near the machine.

After completion of work, all the covers and safety devices must be positioned back completely and operational.

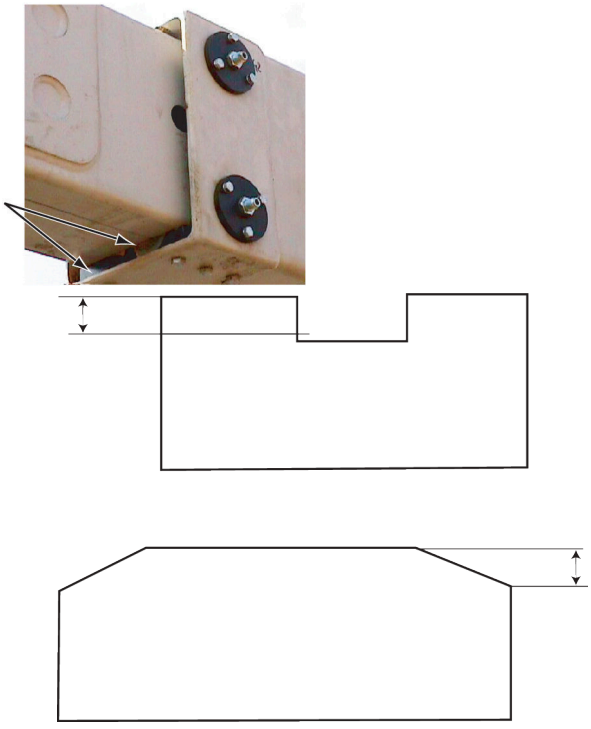
3 Boom lubrication

Using adequate oil specification describe above :
- Oil the parts of the telescope subject to friction (with a spatula).
- Oil the telescoping cable.

4 Check the worn of friction pads

Check the telescoping friction pad wear indicators.

Change the pad if the indicator is not visible.

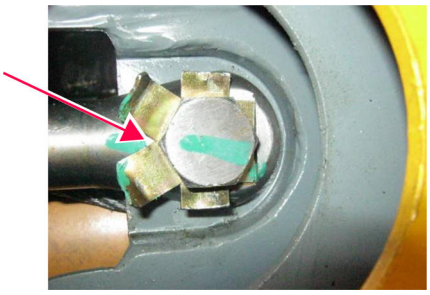


5 Removing / Replacing the pads

Changing the top intermediate tube and telescope upper and side pads without removing the boom.

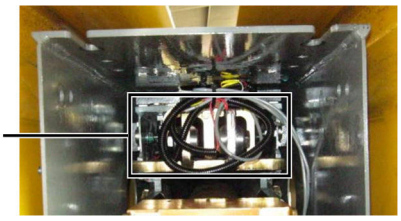
Procedure of dismantling / reassembling telescope cylinder MS00014

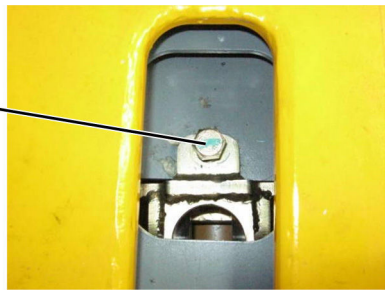
- Undo the screws holding the retraction cables.



The final configuration is as follows :

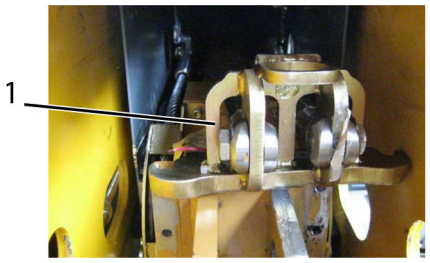
- Remove the telescope extension cable support plate(1) screw (2).





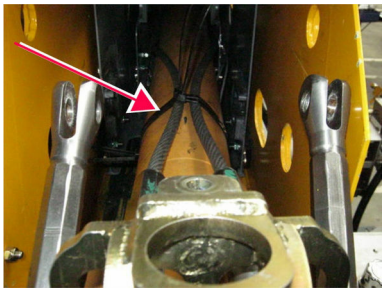
- Pull the cable support plate (1) back to the rear of the telescope cylinder.

N.B.-:-GENTLY PULL THE CABLE SUPPORT PLATE (1) ON THE BACK SO THAT YOU CAN RECOVER THE EXTENSION CABLES INSIDE THE BOOM BASE HOUSING.



- Extend the cylinder :
  - Sling the cylinder via the connecting rod fastening.
  - Lift the cylinder to free it from the recesses, then pull it

- Pull the cylinder up to the opening at the back of the turntable.



Pressure adjustment

MS00022

1 You will need

	- Standard tool kit - Protective goggles - Gloves		- Place barriers around the perimeter of the work area

Exclusively use tools and auxiliary average adapted.

Always wear necessary safety clothing.

2 Pressure adjustment

To allow checking operation, refer to the following table about originally pressure adjustment.

If the values measured by test are not equal to the following :
- Do not use the machine.
- Setting updating is needed.

Description	In Bar	In PSI
General	240 +/- 5	3481 +/-72
PressureLS)	30 +/- 5	435 +/- 72
Emergency pump	240 +/- 2	3481 +/- 29
Boom raise	240 +/- 5	3481 +/- 72
Descent boom	100 +/- 5	1450 +/- 72
Telescoping boom extension	100 +/- 5	1450 +/- 72
Telescoping boom retraction	240 +/- 5	3481 +/- 72
Turret slewing	120 +/- 5	1740 +/- 72
Jib telescopinc extension	210 +/- 5	3046 +/- 72
Jib telescopic retraction	240 +/- 5	3481 +/- 72
Rotation basket	140 +/- 5	2031 +/- 72
Charge drive / brake circuit	25 +5 / -0	362 +72 / -0
Drive FWS - REV	320 +/- 5	4641 +/- 72
Change of cubic capacity drive motor	50 +5 / -0	725 +72 / -0

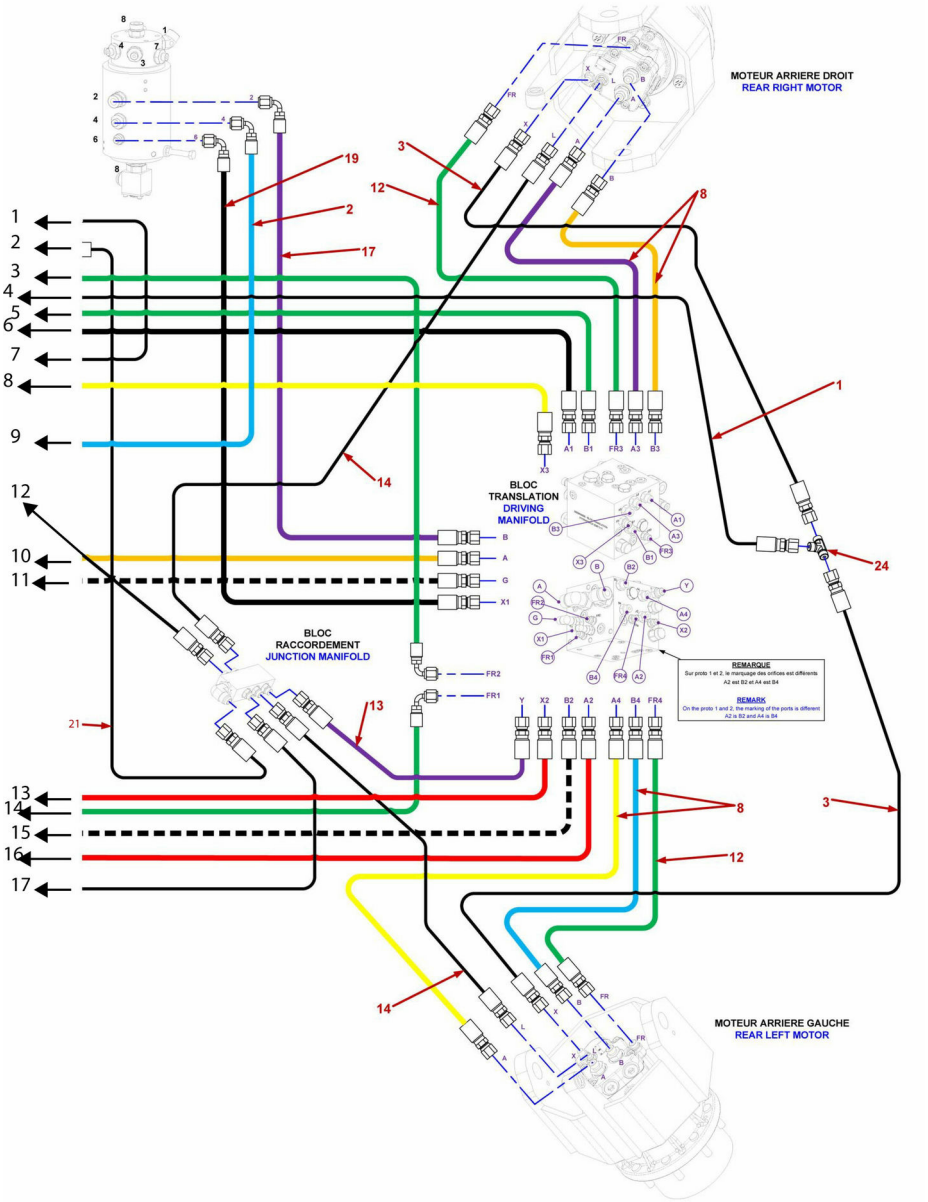
3 Port plug for pressures control

All pressures could be ckecked by connecting a pressure gauge on port M as shown below

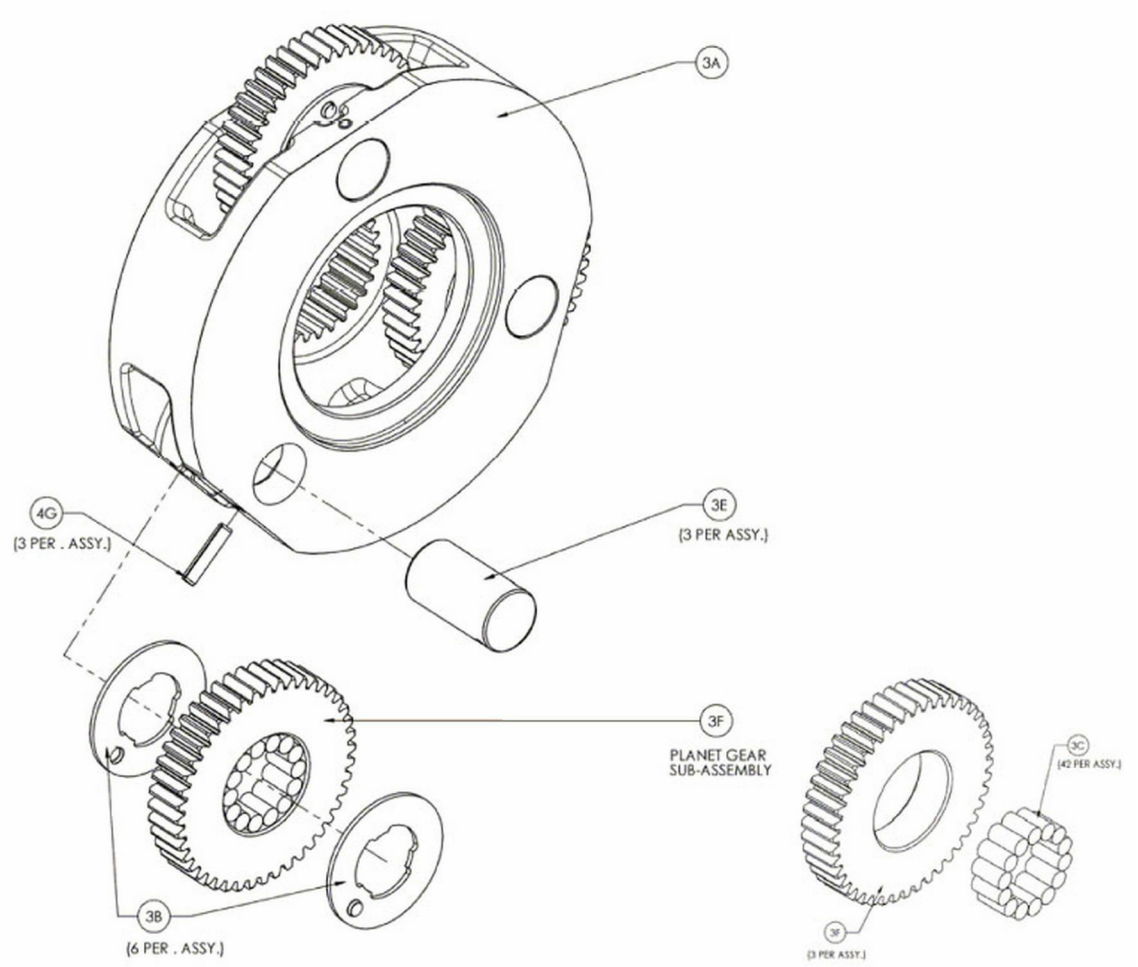
Hydraulic ways

MS00023

Folio 2 / 2



5 Input carrier disassembly



1. Using a 1/8" diameter punch, drive the Roll Pin (4G) into the Planet Shaft (3E) until it bottoms against the Carrier (3A).
2. Using a soft face hammer, tap the Planet Shaft (3E) out of the Carrier (3A).
3. Using a 1/8" diameter punch, drive the Roll Pin (4G) out of the Planet Shaft (3E).

N.B.-:-THE ROLL PINS (4G) SHOULD NOT BE REUSED WH EN REASSEMBLING THE UNIT.

1. Siide the Planet Gear (3F)and the 2 Thrust Washers (3B) out of the Carrier (3A).
2. Remove the 14 needle Bearings (3C) from the bore of the Planet Gear (3F).
3. Repeat steps for each of the 2 remaining planet gears.

N.B.-:-FOR REASSEMBLING UNIT, PLEASE REFER TO THE EXPLODED VIEWS IN THE DISASSEMBLY SECTIONS.

Dismantling / Reassembling wheels reducer

MS00026

Item	Description
8F	O-ring
8H	Back-up ring
8J	Brake rotor
8K	Brake stator
8L	Spring
9	Input shaft
10	Sun gear
11	Sun gear
12	O-ring plug or plastic plug
15	Identification plate
16	Drive screw
17	O-ring
18	O-ring
19	Bolt
20	Retaining ring
21	Bolt
22	Pressure plug

Procedure of dismantling / reassembling hydraulic rotary actuators MS00028

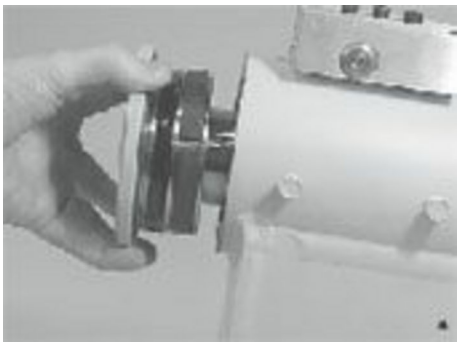
1 You will need

	- PIPE VISE - HEX WRENCH - ASSORTED SCREWS - SAFETY GLASSES - END CAP REMOVAL TOOLS - DRILL - FLASHLIGHT - Rubber mallet - PLASTIC MANDREL - PRY BAR - FELT MARKER - T-HANDLE SCREW EXTRACTOR - HEX WRENCH SET - SEAL TOOLS - PUNCH - DOWEL PINS		- Place barriers around the perimeter of the work area

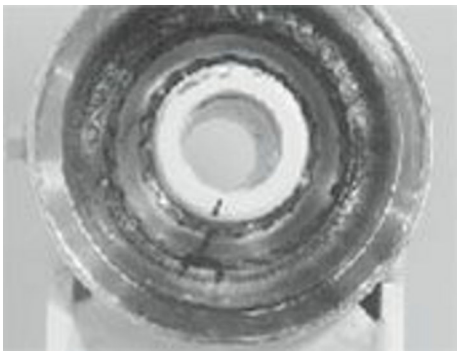
- The technician should take all steps to protect themselves or others against all risks of injury related to this intervention.
- The technician should ensure that suitable PPE (personal protective equipment) for the job is used, and check the particular conditions of environment in which the material can be found (see safety information specific to the operation site).
- Position the machine on a flat ground, stabilized and in a released environment.
- Cut the contact, to remove the key, to open cut it battery.
- Place a "DO NOT USE" decal near the start/stop contactor (key switch) to inform the personnel that interventions are being carried out on the equipment.
- The pressure in the hydraulic system is very important. It can cause accidents. Relieve the pressure before any intervention and never search for oil leaks by hand.
- Attention to the risks of burns, the hydraulic system works at high temperatures.
- The exhaust fumes of the engines contain harmful products of combustion. Only start and run the engine in a well ventilated area. In a closed room, you must use a suitable system to evacuate the exhaust to the outside.

Procedure of dismantling / reassembling hydraulic rotary actuators MS00028

1. Insert the shaft (2) into the piston (3). Be careful not to damage the piston seals. Do not engage the piston gear teeth yet.

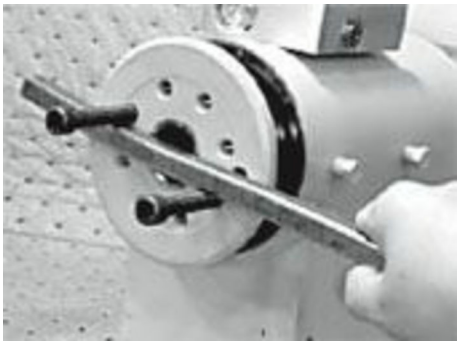


1. Looking at the actuator from the end opposite the shaft flange, use the exisitng timing marks to align the gear teeth on the shaft (2) with the gear teeth on the inside of the piston (3). When the marks align, gently tap the flange end of the shaft with a rubber mallet until the gear teeth engage.



1. Install two bolts in the threaded holes in the flange. Using a metal bar, rotate the shaft in a clockwise direction until the wear guides are seated inside the housing bore.

N.B.-:-AS THE SHAFT IS ROTATED, BE CAREFUL NOT TO DISENGAGE THE PISTON AND HOUSING GEARING.



1. Install the stop tube (400) onto the shaft end if necessary. Stop tubes are an available option to limit the rotation of an actuator.

1. Coat the threads on the end of the shaft with anti-seize grease to prevent galling.

- Do not run the engine in an enclosed area. Exhaust gas can cause air pollution and exhaust gas poisoning.
- Keep your hands away from rotating parts (such as fan, pulley, belt, flywheel etc.) during operation.
- Do not operate the machine while under the influence of alcohol or drugs.
- Do not wear loose, torn or bulky clothing around the machine. It may catch on moving parts or controls, leading to the risk of accidents. Use additional safety items, e.g. hard hat, safety boots or shoes, eye and hearing protection, gloves, etc., as appropiate or required.
- Do not wear radio or music headphones while operating engine.
- Check to see if it is safe around the engine before starting.
- Reinstall safeguards and shields securely and clear all maintenance tools when starting the engine after maintenence.

- Do not use ether or any starting fluid for starting the engine, or a sever damage will occur.
- When starting the engine after a long storage (of more than 3 months), first set the stop lever to the "STOP" position and then activate the starter for about 10 seconds to allow oil to reach every engine part.

4.2 Checks during operation

4.2.1 Oil pressure lamp

The lamp lights up to warn the operator that the engine oil pressure has dropped below the prescribed level. If this should happen during operation or should not go off even after the engine is accelerated more than 1000rpm, immediately stop the engine and check the following

1. Engine oil level
2. Lubricant system.

4.2.2 Fuel

To avoid personal injury
- Fluid escaping from pinholes may be invisible. Do not use hands to search for suspected leaks ; use a piece of cardboard or wood, instead. If injured by escaping fluid, see a medical doctor at once. This fluid can produce gangrene or a severe allergic reaction.
- Check any leacks from fuel pipes or fuel injection pipes. Use eye protection when checking for leaks.

Be careful not to empty the fuel tank. Otherwise air may enter the fuel system, requiring fuel system bleeding.

4.2.3 Immediately stop the engine if :

- The engine suddenly slows down or accelerates.
- Unusual noises are suddenly heard.
- Exhaust fumes suddenly become very dark.
- The oil pressure lamp or the water temperature alarm lamp lights up.

4.3 Reversed engine revolution and remedies

To avoid personal injury
- Reversed engine operation can make the machine reverse and run it backwards. It may lead to serious trouble.
- Reversed engine operation may make exhaust gas gush out into the intake side and ignite the air cleaner; it could catch fire.

Reversed engine revolution must be stopped immediatly since engine oil circulation is cut quickly, leading to serious trouble.

4.3.1 How to tell when the engine starts running backwards

1. Lubricating oil pressure drops sharply. Oil pressure warning light, if used, will light.

Kubota diesel engine

MS00029A

Problem	Probable cause	Solution
When engine must be stopped immediately	Engine revolution suddenly decreases or increases	- Check the adjustments, injection timing and the fuel system.
	Unusual sound is heard suddenly	- Check all moving parts carefully.
	Color of exhaust suddenly turns dark	- Check the fuel injection system, especially the fuel injection nozzle.
	Bearing parts are overheated	- Check the lubricating system.
	Oil lamp lights up during operation	- Check the lubricating system. - Check, if the engine bearing clearances are within factory specs. - Check the function of the relieve valve in the lubricating system. - Check pressure switch. - Check filter base gasket.
When engine overheats	Engine oil insufficient	- Check oil level. Replenish oil as required.
	Fan belt broken or elongated	- Change belt or adjust belt tension.
	Coolant insufficient	- Replenish coolant.
	Excessive concentration of antifreeze	- Add water only or change to coolant with the specified mixing ratio.
	Radiator net or radiator fin clogged with dust	- Clean net or fin carefully.
	Inside of radiator or coolant flow route corroded	- Clean or replace radiator and parts.
	Fan or radiator or radiator cap defective	- Replace defective parts.
	Thermostat defective	- Check thermostat and replace if necessary.
	Temperature gauge or sensor defective	- Check temperature with thermometer and replace if necessary.
	Overload running	- Reduce load.
	Head gasket defective or water leakage	- Replace parts.
	Incorrect injection timing	- Adjust to proper timing.
	Unsuitable fuel used	- Use the specified fuel.

N.B.-:-IF THE CAUSE OF TROUBLE CAN NOT BE FOUND, CONTACT HAULOTTE SERVICES®.

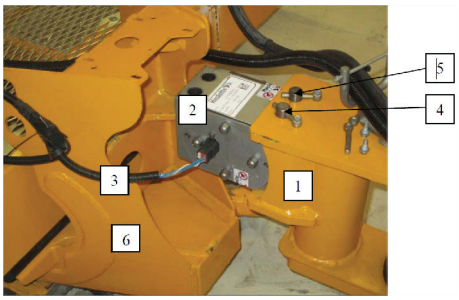
Weighing adjustment procedure (calibration)

MS00164

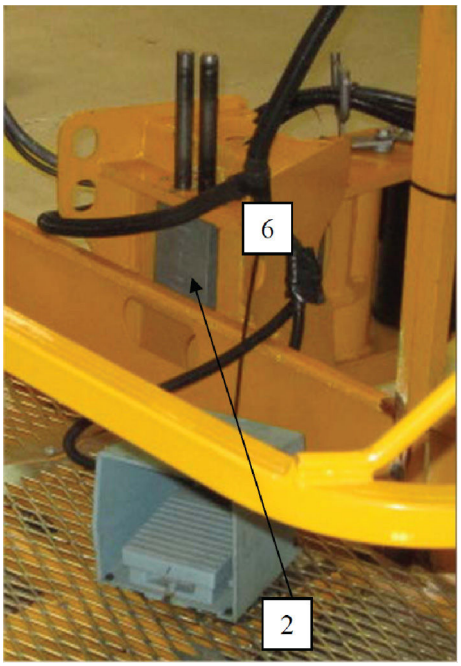
Platform lifting

6 Assembly of the vibrating wire load cell

- Assembly of the load cell (2) on the link part
- Grease the pins (4) and (5)
- Put the pins (4) and (5) through the parts (1) and (2)
- Fix it with the clevis pins
- Plug the cable (3) on the load cell (2) with contact grease NYE 760 G (2820308450)



- Put the platform support (6) on the load cell (2)



Remove/Re-install jib cylinder

MS00224

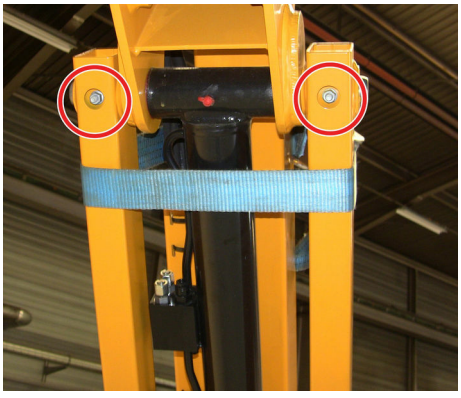
- Switch off the ignition and remove the ignition key.
- Place a do not operate tag at the start/stop switch location to inform personnel that the equipment is being worked on.

- Locate, disconnect and plug the hoses supplying the jib cylinder. .

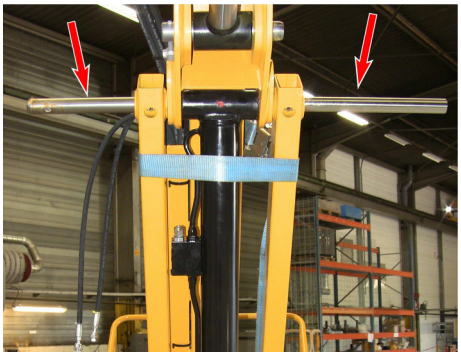
N.B.-:-USE AN OIL COLLECTION PAN TO AVOID POLLUTING THE ENVIRONMENT

- Strap the arm and jib tie-rods using a ratchet strap.

- Remove the 2 end-play take up screws.



- Withdraw the pin from the cylinder but leave the pin used for withdrawal in place. Only remove it after removing the pin on the rod side



Remove - Replace wheel pivot and gear motor

MS00225

6 Re-installation

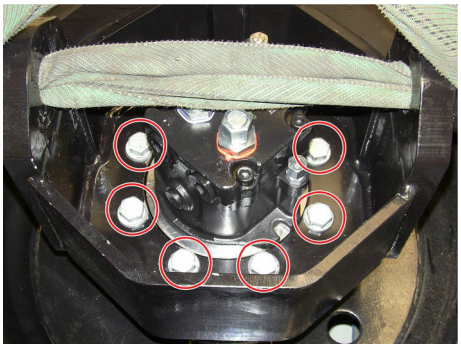
- Remount in reverse order to removal.
- If the reduction gear has been replaced, note its traceability number. And add the amount of oil per reduction gear 0.77 l / 0.20 gal.

- Clean the surfaces when installing components.
- Transfer the marking from the old gear motor to the new gear motor.
- To make installation easier, grease the surfaces of the wheel pivot that will be in contact with the gear motor.

⚠ Tighten the screws crosswise.

- Tighten the screws connecting the gear unit to the wheel pivot to a torque of 260 Nm.

N.B.-:-24 MM PIN WITH EXTENSION.

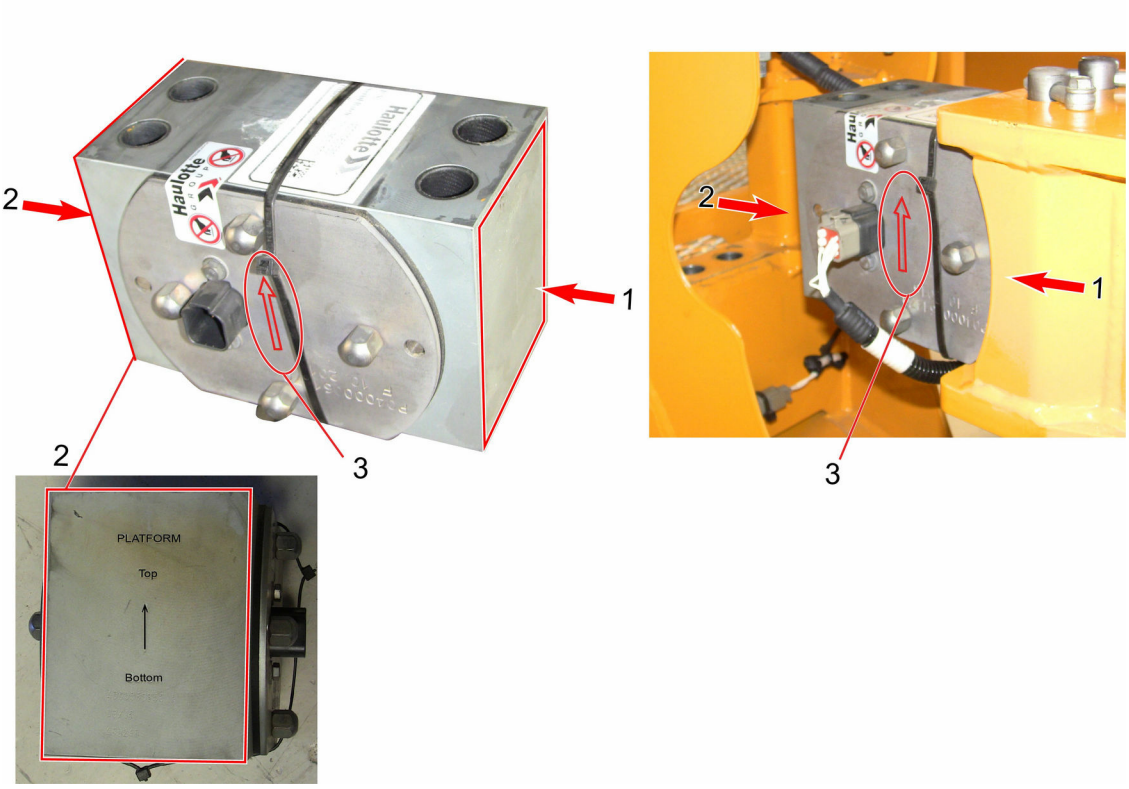


- Tighten the 2 screws on the reduction gear to a torque of 57 Nm.

N.B.-:-USE A WRENCH WITH AN EXTENSION CORD.

Remove - Replace load cell

MS00226



- Apply contact grease for the connector .

7 Additional operations

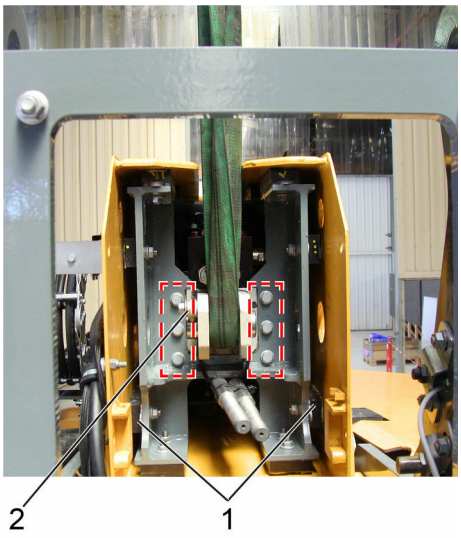
- Clean the work area.
- Calibrate the load cell. Refer to machine sheet MS0057.

In compliance with the country's laws, have the machine approved by an accredited organization.

Remove/replace the telescope cylinder

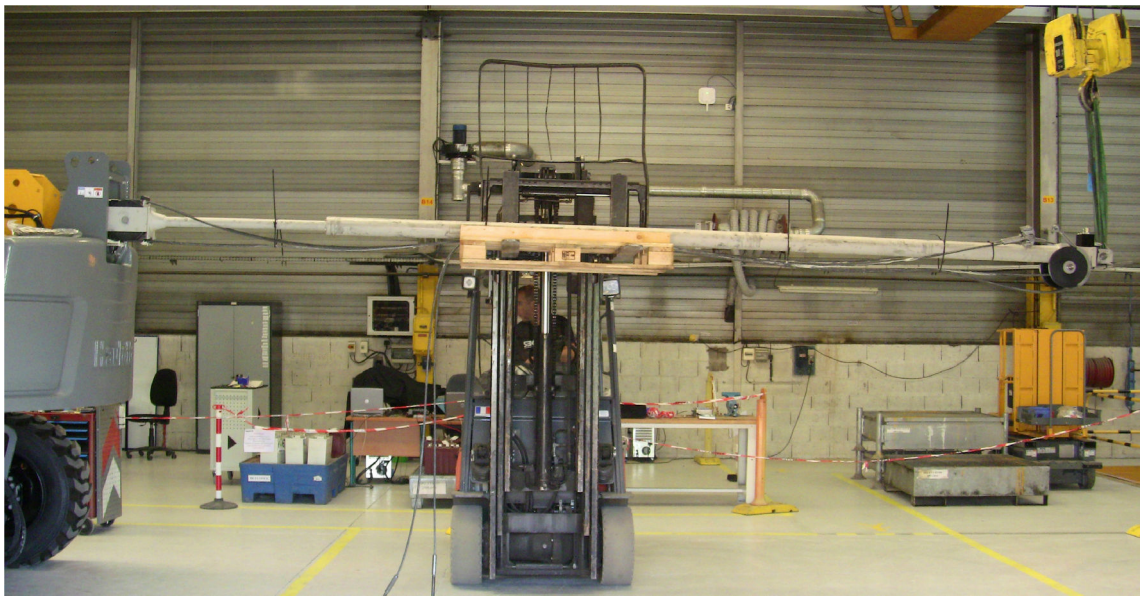
MS00227

- Refit the pin (2) of the tie rod to sling the cylinder.
- Unscrew the 6 screws from the telescopic cylinder bracket.
- Unscrew the 2 lower side pads (1).
- Remove the telescopic cylinder bracket.



- Place the hoses and wiring harnesses in the turntable.
- Gradually pull the cylinder from the rear.
- Before fully extending the cylinder, all the cables (under and over the cylinder) must be attached every 50 cm / 19.6 in with plastic collars.

- When the cylinder has come out far enough and the guidance portion of the cylinder is still in the foot of the boom, position fork lift (or another means of handling the movement) under the cylinder.
- Extend the cylinder.



- Place the cylinder on 2 trestles or a wooden wedge.

Removal - Replacement of the steering cylinder MS00228

- Verify absence of any oil leaks.
- Top up the hydraulic oil if necessary.

In compliance with the country's laws, have the machine approved by an accredited organization.

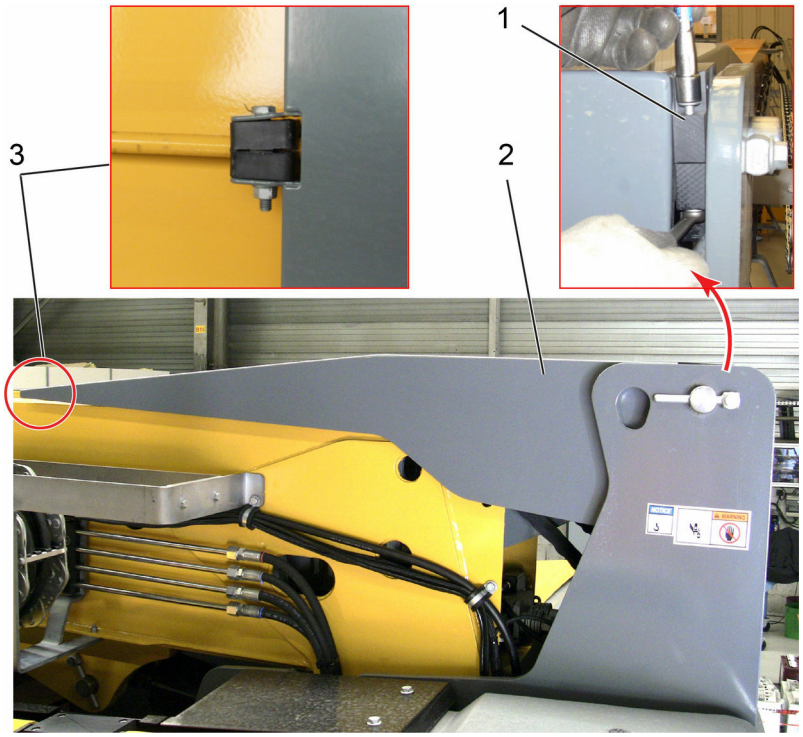
Remove - Replace the boom/jib/box assembly

MS00230

- Switch off the ignition and remove the ignition key.
- Place a do not operate tag at the start/stop switch location to inform personnel that the equipment is being worked on.

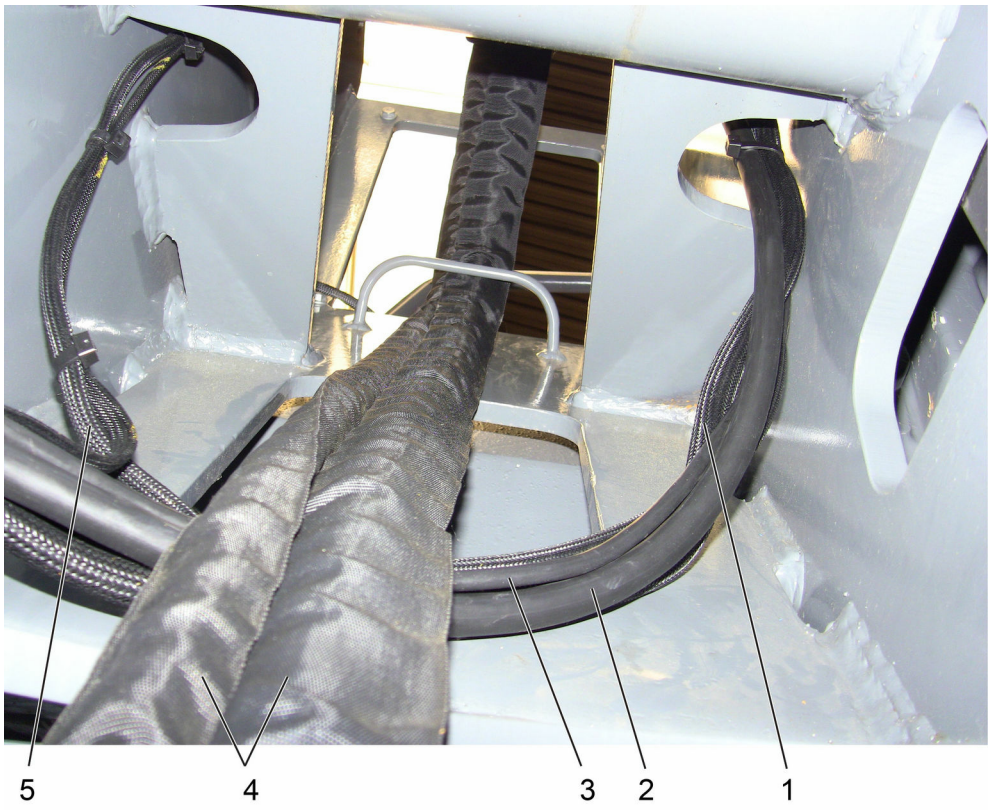
Remove the cover (2)

- Remove the pads (1) on each side of the cover.
- Remove the front pad .



Remove - Replace the boom/jib/box assembly MS00230

View under the turntable



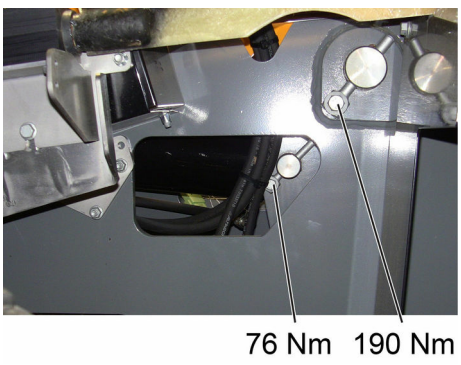
Put contact grease on the connectors

- CAN BUS CN06–1.
- CAN BUS CN06–2.
- CN05A.
- CN05B.
- Twilight sensor.
- Work light.

- Grease the pins, the seals, and the bored holes.
- Check that the seals are on the connections before reconnecting the hoses.

To avoid the hoses twisting when they are connected to the rigid tubes, hold them firmly when tightening the couplings.

- Remember to refit the pin stop screws. Tighten the screws to the recommended torque : 76 Nm.
- Tighten the boom pin stop screw to a torque of 190 Nm.



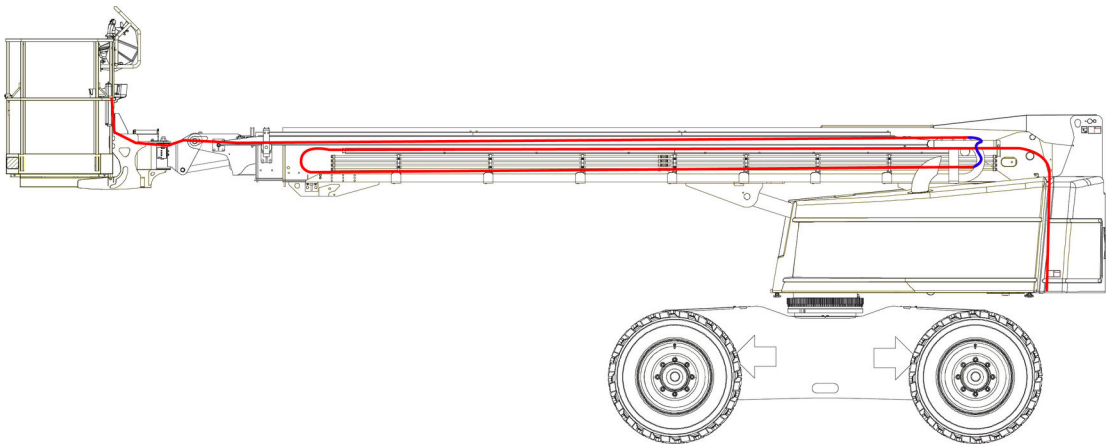
7 Additional operations

- Clean off any residual oil or grease.
- Clean the work area.
- From the low control panel, operate the platform leveling to bleed the circuit

Remove/re-install the harnessBUS CAN

MS00232

1 Concerned area



2 Warning

- Only an authorised and qualified technician is permitted to work on the machines HAULOTTE®.
- The use of this form implies that its user has been trained on this type of equipment.
- It is important that the person working on the machine is familiar with all of the safety information contained in the user manual.
- Generally speaking, the user must comply with regulatory obligations in force, particularly those relating specifically to working alone, co-activity and manual load handling...
- The user must have all the permits/authorizations required to work (fire permit, etc.) and comply with the specific safety instructions at the intervention site.
- Only risks linked specifically to activities relating to the disassembly and assembly of the machine HAULOTTE® are described in this sheet.

- Beware of the risk of burns; the hydraulic system operates at high temperatures.
- The pressure in the hydraulic system is very important. It can cause accidents. Relieve the pressure before beginning any work and never search for oil leaks using your hands.
- The engine exhaust gases contain harmful combustion products. Always start and run the engine in a well ventilated area. In a closed room, ensure the exhaust gases are evacuated to the outside.
- Do not wear any metal jewellery (rings, watches, chains, etc.) when working on the batteries.
- ONLY use insulated tools when working on or near batteries or electrical connections.
- Do not produce sparks or flames or smoke near the battery.

3 Risk prevention

Means of protection to be used when implementing the range

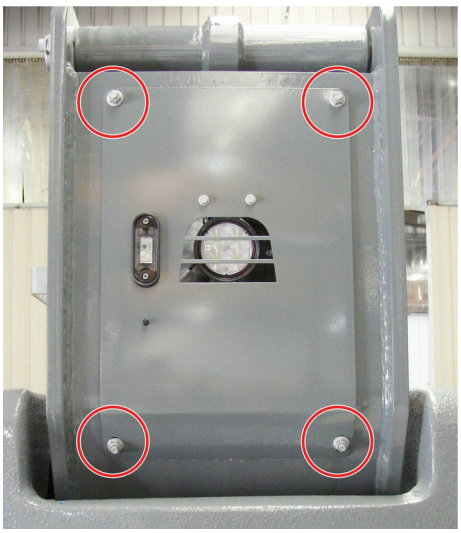
- Appropriate workwear .
- Safety shoes .
- Gloves .

Disassembly - Assembly Activ' Lighting System

MS00233

5.1.1 Reference 4000510640

- Unscrew the 4 nuts from the rear cover.
- Remove the cover.



- Disconnect the connector (2) from the light.
- Undo the 2 screws (1).
- Remove the light .
- Carry out the operations in reverse order to refit.
  Apply contact grease for the connector .

5.2 Part number 4000466490

- Open the cover on the control box-side.

Boom cylinder

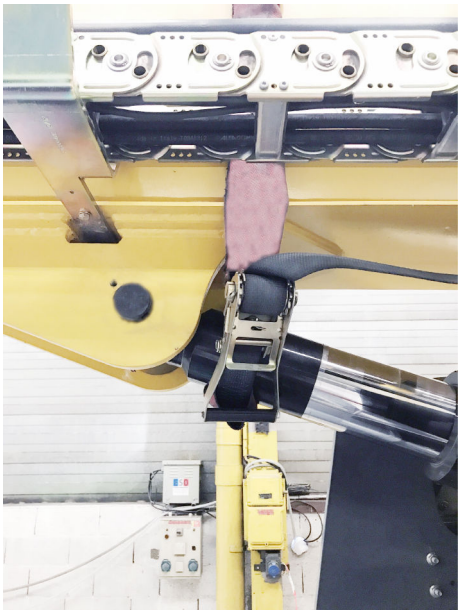
Removal - Replacement boom cylinder

MS00239

- Switch off the ignition and remove the ignition key.

- Attach slings to the boom.
- Apply a small amount of tension on the bridge crane :
- • 1 hoisting strap(s) for 3000 kg / 6,615 lbs at a length of 3 m / 9 ft 10 in.
  • Bridge crane 3000 kg / 6,615 lbs (minimum).

- Sling the boom lifting cylinder :
- • 1 ratcheting straps that support 4000 kg / 8818,5 lbs at a length of 6 m / 19 ft 7 in.
- Pass the strap between the chains and the boom.



Remove/Re-install output compensation cylinder

MS00240

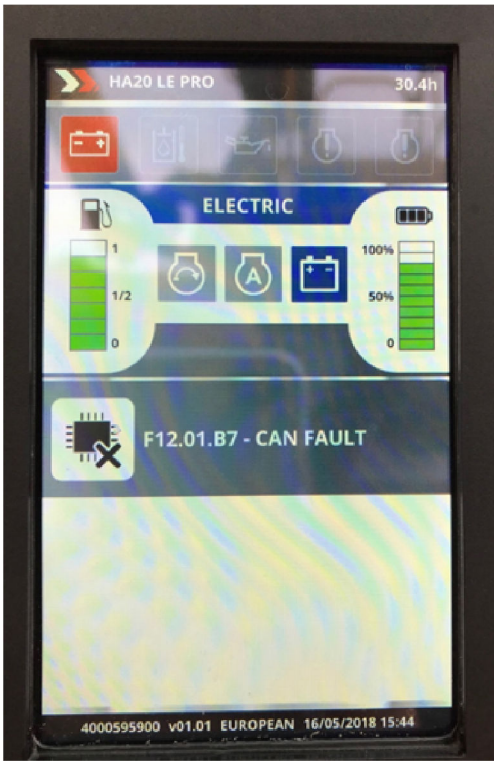
- Sling the boom on the boom by passing the sling between the chains and the tube.
- Lift the bridge crane slowly to secure the boom.

- Switch off the ignition and remove the ignition key.

- Strap the level compensation cylinder using the ratchet strap.
- Pass the sling between the rigid tubes and the tube.

⚠ Do not climb on the counterweight.

Example :



FAILURES	N	Dec	Bit	Description
F12.01 CAN Fault Check wires	A	1	b0	CAN network failure detected with turret B2 ECU (U100) Machine switched OFF, with multimeter, check the resistance between 1001 (CAN high) and 1002 (CAN low) is nearly 60 ohms (if 0ohm or 120ohm: failure, check "res term" connection for all ECUs) Check ECU supplies line Check address connections for each B2 ECU (CN106.18/CN106.19/CN106.20)
		2	b1	CAN network failure detected with keyboard switches ECU (U107)
		4	b2	CAN network failure detected with onboard screen ECU (U101)
		8	b3	CAN failure detected with drive front left inverter
		16	b4	CAN failure detected with drive front right inverter
		32	b5	CAN failure detected with drive rear left inverter
		64	b6	CAN failure detected with drive rear right inverter
		128	b7	CAN failure detected with pump inverter
		256	b8	CAN failure detected with generator inverter
		512	b9	CAN failure detected with Battery Management System
		1024	b10	CAN failure detected with CAT I Screen
		2048	b11	CAN failure detected with Charger

Failures	N	Dec	Bit	Description
Joysticks				
F05.05 Turret Joystick SM900X	D	1	b0	Turret rotation joystick failure : Out of range[0.2.4.8] V --> SM900X<0.20V & SM900X>4.80V - Check joystick signal
		2	b1	Turret rotation joystick failure : Analogue signal and out of neutral incoherence Boom joystick failure : Analogue signal and out of neutral incoherence --> SM900N = 1 & 2.45V<SM900Y<2.55V & 2.45V<SM900X<2.55V -->OrSM900N = 0 & SM900Y<2.00V & SM900Y>3.00V & SM900X<2.00V & SM900X>3.00V - Check joystick signal - Check joystick out of neutral input
F05.11 Joystick neutral SM902Y	A			No detection of joystick's neutral position at machine's power-on --> SM902Y<2.35V | SM902Y>2.65V - Release joystick / Check joystick
F05.12 Joystick neutral 2 SM901Y	A			No detection of joystick's neutral position at machine's power-on --> SM901Y<2.35V | SM901Y>2.65V - Release joystick / Check joystick
F05.13 Joystick neutral 3 SM900X/Y	A			No detection of joystick's neutral position at machine's power-on --> SM900X<2.35V | SM900X>2.65V | SM900Y<2.35V | SM900Y>2.65V - Release joystick / Check joystick

Failures	N	Dec	Bit	Description
Sensors				
F07.17 Incoherence position 2	General check on angle position can be done as following :			
	Telescope retracted, horizontal boom :			--> SQ533=ON & SQ531=OFF & SQ590=OFF & SQ591=OFF
	To erase F07.17 failure: fold the machine, check the position detectors (repair if one is broken), power off the machine and the power on. If failure is still active then one of the six detectors defining the machine position is not in the expected state.			
	D	1	b0	Incoherence between position sensors : Boom limit switch and folded position --> SQ590=ON & SQ521=ON & SQ533=ON
		2	b1	Incoherence between position sensors : Boom limit switch and folded position --> SQ590=ON & SQ521=ON & SQ533=OFF
		4	b2	Incoherence between position sensors : Boom limit switch and folded position --> SQ590=ON & SQ521=OFF & SQ533=OFF
		8	b3	Incoherence between position sensors : Boom magnet detector and telescope magnet detector and folded position --> SQ590=OFF & SQ591=ON & SQ523=OFF & SQ531=ON
		16	b4	Incoherence between position sensors : Boom magnet detector and telescope magnet detector and folded position --> SQ590=ON & SQ591=OFF & SQ523=OFF & SQ531=ON
		32	b5	Incoherence between position sensors : Boom magnet detector and telescope magnet detector and folded position --> SQ590=OFF & SQ591=ON & SQ523=ON & SQ531=OFF
		64	b6	Incoherence between position sensors : Boom magnet detector and telescope magnet detector and folded position --> SQ590=ON & SQ591=OFF & SQ523=ON & SQ531=OFF

Failures	N	Dec	Bit	Description
Switches				
F13.02 Platform switches Sw:2 dir active	D	1	b0	Detected failure on upper console switches : Two directions active at the same time for steering rocker switch --> SM902L=ON & SM902R=ON
		2	b1	Detected failure on upper console switches : Two directions active at the same time for jib switch --> SA621U=ON & SA621D=ON
		4	b2	Detected failure on upper console switches : Two directions active at the same time for platform rotation switch --> SA751U=ON & SA751D=ON
		8	b3	Detected failure on upper console switches : Two directions active at the same time for platform level switch --> SA721U=ON & SA721D=ON
		16	b4	Detected failure on upper console switches : Two directions active at the same time for steering mode switch --> SA101C=ON & SA101S=ON
		32	b5	Detected failure on Activ'Lighting System switch:2 directions active at the same time

1 Wiring diagram

N.B.-:-TO ENSURE THAT YOU ALWAYS HAVE THE LATEST VERSION OF OUR ELECTRICAL AND HYDRAULIC DIAGRAMS, PLEASE LOG ON TO OUR WEBSITE : HTTPS://WWW.E-TECHNICAL-INFORMATION.COM

https://www.e-technical-information.com

Engine part - Tier 4 - TD 2,2 - 4000421620K - folio 11