

**TALUS MB-H**  
**OPERATORS MANUAL**



**Designed and Manufactured by:**  
**Clayton Engineering Ltd**  
**Ludlow Road**  
**Knighton**  
**Powys**  
**LD7 1LP**

**Tel: +44 (0) 1547 528216/528237**  
**Fax: +44 (0) 1547 520507**  
**email: [enquiries@claytonengineering.co.uk](mailto:enquiries@claytonengineering.co.uk)**

# TALUS MB-H

# OPERATORS MANUAL

THIS COPY BELONGS  
TO:

RNLI PART NUMBER L16-58

MAB PART NO:THRNL10118

# **CONTENTS To be sorted on completion**

<b>TALUS MB-H TRACTOR .....</b>	<b>1</b>
<b>HANDBOOK AMENDMENTS .....</b>	<b>3</b>
<b>TRANSFER MOVEMENTS .....</b>	<b>4</b>
<b>BUILD SPECIFICATION AND RECORDS.....</b>	<b>5</b>
<b>SECTION 1.0.....</b>	<b>6</b>
<b>SAFETY NOTES .....</b>	<b>6</b>
1.1 GENERAL.....	6
1.2 DRIVING.....	7
1.3 PASSENGERS .....	7
1.4 GRADIENTS AND SLIPWAYS .....	8
1.5 WINCH.....	8
<b>SECTION 2.0.....</b>	<b>9</b>
<b>GENERAL OVERVIEW .....</b>	<b>10</b>
2.1 INTRODUCTION .....	10
<b>SECTION 3.0.....</b>	<b>11</b>
<b>TECHNICAL SPECIFICATION.....</b>	<b>11</b>
3.1 MAIN DIMENSIONS .....	11
3.2 WEIGHT.....	11
3.3 ENGINE.....	11
3.4 TRANSMISSION .....	11
3.5 CONTROL.....	12
3.6 BRAKES.....	12
3.7 SPEED .....	12
3.8 MAXIMUM TRACTIVE EFFORT .....	12
3.9 MAXIMUM WINCH PULL .....	12
<b>SECTION 4.0.....</b>	<b>12</b>
<b>PRINCIPLES OF OPERATION .....</b>	<b>13</b>
4.1 INDUCTION/ EXHAUST SYSTEM.....	13
4.2 AIR BLAST COOLING SYSTEM .....	14
4.3 SEA WATER HEAT EXCHANGERS .....	15
4.4 HYDRAULIC DRIVE SYSTEMS.....	16
<b>SECTION 5.0.....</b>	<b>17</b>
<b>OPERATIONAL INSTRUCTIONS .....</b>	<b>17</b>
5.1 GENERAL CARE OF MACHINE .....	17
5.2 FRONT HULL DOOR .....	17
5.3 BONNET .....	20
5.4 SIDE AIR HATCHES .....	22
5.5 MARLIN SPIKE.....	24
5.6 AIR HATCH CAB ROOF .....	25
5.7 OUTER COCKPIT ROOF HATCH.....	26

5.8 HAND RAIL - ROOF.....	28
5.9 INNER COCKPIT ROOF HATCH.....	<b>Error! Bookmark not defined.</b>
5.10 COCKPIT MAIN DOOR .....	29
5.11 IMMERSION HEATERS AND BATTERY CHARGING .....	30
5.12 FM200 FIRE EXTINGUISHER SYSTEM.....	<b>Error! Bookmark not defined.</b>
5.13 AIR CONDITIONING .....	<b>Error! Bookmark not defined.</b>

## **SECTION 6.0.....32**

<b>METHOD OF CONTROL.....</b>	<b>32</b>
6.1 MAIN INSTRUMENT PANEL .....	32
6.2 SMALL INSTRUMENT PANEL .....	33
6.3 SWITCH PANEL .....	33
6.4 TRACK DRIVE.....	35
6.5 START UP.....	37
6.6 JOYSTICK CONTROLLER .....	37
6.7 DRIVING.....	38
6.8 STOPPING THE ENGINE.....	40
6.9 CHECK LIST FOR MACHINE OPERATION .....	40
6.9.1 BEFORE STARTING .....	40
6.9.2 STARTING.....	40
6.9.3 DRIVING.....	40
6.9.4 BEFORE ENTERING SEA.....	40
6.9.5 AFTER LEAVING SEA.....	40
6.9.6 BEFORE SHUTDOWN .....	41
6.9.7 AFTER SHUTDOWN .....	41
6.10 SYSTEM FAULT FINDING .....	42
6.11 WINCH CONTROL .....	47
6.12 BILGE PUMPS.....	51
6.13 TOW RELEASE.....	51
6.14 SEAT.....	52
6.15 ABANDON PROCEDURE.....	54

## **SECTION 8.0 (WILL BE SECTION 7) .....55**

<b>SPECIAL PROCEDURES AND OPERATIONS .....</b>	<b>55</b>
8.1 RECOVERY OF THE TALUS MB-H (A/C) WITH FAILED TRANSMISSION .....	55
8.2 EMERGENCY RECOVERY PROCEDURE .....	59
8.3 TRANSMISSION FAILURE .....	59
8.4 ENGINE FAILURE.....	59
8.5 MACHINE STUCK UP TO A DEPTH OF 0.5M.....	59
8.6 MACHINE STUCK TO A DEPTH GREATER THAN 0.5M.....	60
8.7 OIL SAMPLING - GENERAL .....	62
8.8 OIL SAMPLE – SPLITTER BOX .....	63
8.9 OIL SAMPLES - TRACK GEARBOXES.....	63
8.10 OIL SAMPLE - HYDRAULIC TANK .....	63
8.11 OIL SAMPLE - WINCH GEARBOX.....	63
8.12 OIL SAMPLES FROM A4V HYDRAULIC PUMP MAIN LINES .....	64

**SECTION 9.0 (WILL BE SECTION 8) .....66**

**TORQUE CHARTS & LUBRICATION SCHEDULES ..... 66**

- 9.1 CHASSIS BOLT TORQUES – TALUS MB-H (A/C)....**Error! Bookmark not defined.**
- 9.2 FLUIDS AND LUBRICANTS SCHEDULE – TALUS MB-H (A/C) **Error! Bookmark not defined.**
- 9.3 GREASE POINTS – TALUS MB-H (A/C) .....**Error! Bookmark not defined.**
- 9.4 LUBRICATION RECORDS .....**Error! Bookmark not defined.**
- 9.5 AIR TEST RECORDS..... 67
- 9.6 REPAIR / ADJUSTMENT RECORDS.....**Error! Bookmark not defined.**
- 9.7 COMPONENTS & DOCUMENTS SUPPLIED WITH THE TALUS MB-H (A/C)  
.....**Error! Bookmark not defined.**

**SECTION 10.0 - INSPECTION SCHEDULES.....68**

(WILL BE SECTION 9)

- 10.1 TALUS MB-H (A/C) POST IMMERSION CHECKS .... ERROR! BOOKMARK NOT DEFINED.1**
- 10.2 TALUS MB-H (A/C) WEEKLY CHECKS .ERROR! BOOKMARK NOT DEFINED.2**
- 10.3 TALUS MB-H (A/C) MONTHLY CHECKSERROR! BOOKMARK NOT DEFINED.4**
- 10.4 TALUS MB-H (A/C) 6 MONTHLY CHECKS ..... ERROR! BOOKMARK NOT DEFINED.7**
- 10.5 TALUS MB-H (A/C) 12 MONTHLY CHECKS ..... ERROR! BOOKMARK NOT DEFINED.**

## **TALUS MB-H TRACTOR**

The Talus MB-H tractor has been designed and developed exclusively for lifeboat launch and recovery.

This handbook is intended for the guidance of Operational Staff to assist with the operation and maintenance of the Talus MB-H Tractor.

As experience is gained or design changes occur it may be necessary to amend certain pages. The pages are numbered 1/0, 2/0, etc in the top right hand corner and any subsequent amendments will change to 1/1 or even 1/2, etc. Extra pages will be numbered 1.1/0, 2.1/0, etc. These amendments are logged on Page 2.







## BUILD SPECIFICATION AND RECORDS

MACHINE NO.	IDENT	MAB JOB NO.
		REMARKS
YEAR OF REFIT		
DATE REFIT COMPLETED		
VIN		
REGISTRATION NO. / IRISH		
SIMRAD RADIO S/NO.		
DATE OF RE-COMMISSION		
PLACE OF RE-COMMISSION		
CURRENT STATION		
ENGINE SERIAL NO.		
ENGINE TYPE.		
ALTERNATOR		
AMMETER/VOLTMETER		
SPLITTER BOX S/NO.		
SPLITTER BOX TYPE		
L.H. TRACK PUMP S/NO.		
R.H. TRACK PUMP S/NO.		
WINCH PUMP S/NO.		
L.H. TRACK MOTOR S/NO.		
R.H. TRACK MOTOR S/NO.		
WINCH MOTOR S/NO.		
L.H. TRACK GEARBOX S/NO.		
L.H. TRACK GEARBOX TYPE		
R.H. TRACK GEARBOX S/NO.		
R.H. TRACK GEARBOX TYPE		
WINCH GEARBOX S/NO.		
BRAKE - WET / DRY		
WINCH G/BOX / MOTOR SHIM		
OPEN TOE GROUSERS		
TRACK PADS FITTED		
MC6 CONTROLLER S/NO.		
MC6 ENCLOSURE S/NO.		
MC6 SOFTWARE ISSUE		
BB3 S/NO.		
DOZER CONVERSION		
Ma / Mb TAPPING POINT		
WEIGHT AS BUILT		

## **SECTION 1.0**

### **SAFETY NOTES**

#### **1.1 GENERAL**

- 1.1.1 Safety notes are included at appropriate points throughout this manual and are divided into “Warning” and “Caution” notes. The convention used is that a Warning relates to a potential personnel hazard, and a “Caution” relates to potential equipment damage.
- 1.1.2 Improper operation, lubrication, repair or maintenance of this vehicle can be dangerous and could result in injury or death. Safety information is provided in this manual which if not heeded could lead to injury or death. Proper use of the planned maintenance system is essential.
- 1.1.3 Clayton Engineering Limited cannot anticipate every event that may create a hazard. The warnings in this manual are therefore not all-inclusive. If a tool, work method or technique is used that is not specifically recommended by Clayton Engineering Limited or an R.N.L.I. local operating procedure / standard operating procedure, you must satisfy yourself that it is safe for you and others.
- 1.1.4 Personnel must make themselves familiar with the systems and their components before carrying out any maintenance. They are to read and be aware of all warnings and cautions shown in the manual and those others listed in other manuals and procedures.
- 1.1.5 All work on the machine is to be carried out in accordance with relevant instructions and good engineering practices, paying particular attention to the following precautions.
  - 1.1.5.1. Ensure that any CBM job cards associated with the task being carried out are reviewed before commencing any work.
  - 1.1.5.2. Before commencing work on any electrical circuit or assembly, all electrical power supplies associated with the circuit or assembly must be isolated. Supplies are not to be re-connected until the person responsible is satisfied that all necessary actions have been taken to make the equipment safe for re-connection.
  - 1.1.5.3. Before commencing work on the engine, the engine starting circuit must be isolated.
  - 1.1.5.4. Before commencing work on any pressurised system i.e. fuel system, hydraulic system, cooling system etc, the system must be allowed to cool down and all pressure must be released.
  - 1.1.5.5. Before working with hazardous substances, personnel must have read all relevant instructions and hazard sheets, must wear protective clothing including gloves and goggles when necessary and ensure all relevant safety precautions are carried out.
  - 1.1.5.6. All lifting and slinging equipment must be in good order and in date for the statutory requirements for both test and examination. All lifting and slinging equipment must be rated to a Safe Working Load in excess of the weight to be lifted.

- Warning**     **The immersion heater circuit is 110V (240V on tractors not recently having undergone either an EAO or refit at Knighton). Ensure that this circuit is isolated from the mains supply before carrying out any maintenance work – risk of contact with live parts.**
- Warning**     **The noise levels generated by the engine in the cab can be high. Ensure that the driver wears suitable ear defenders when operating the machine – loss of hearing hazard.**
- Warning**     **The mineral and diesel oils used in this equipment are skin irritants and can be harmful if swallowed. Ensure that any fluids contacting the skin are thoroughly washed off – toxic hazard (Refer to the appropriate Health & Safety Document).**

The following safety notes apply when operating with the boat launching carriage, or when driving the Talus MB-H tractor with no carriage attached:

## **1.2 DRIVING**

- 1.2.1 Only tractor drivers that have been trained to the required standard are allowed to operate the Talus MB-H.
- 1.2.2 Whenever the Talus MB-H is being manoeuvred, the driver must ensure that he or she has good all round visibility and is aware of any obstacles or personnel within the vicinity of the tractor and carriage.
- 1.2.3 If operating in regions of poor visibility or when the drivers vision is impeded due to pushing the boat to the launch site, banks-men are to be used to direct the driver.
- 1.2.4 When the carriage is connected to the tractor, the safety chain connection must always be fitted between the tractor and carriage.
- 1.2.5 The safety chain should be removed prior to entering the water when conducting a falls launch.
- 1.2.6 If difficult launch conditions are expected and the need to disconnect the carriage may arise, the safety chain connection can be removed but then the winch rope must be connected to the carriage.

## **1.3 PASSENGERS**

- 1.3.1 No personnel are to ride on the rear platforms whilst the tractor and carriage are coupled together and in motion.
- 1.3.2 During the recovery of the boat from the water only one member of the shore crew is permitted to stand on the rear platform to assist with the transfer of the winch rope to the boat. (The safety halyard must be secured between the handrails). Once the winch rope is under load this person should enter the cab and close the door.

## **1.4 GRADIENTS AND SLIPWAYS**

- 1.4.2 If the surface of the slope is contaminated in any way with algae, oils, greases, snow or ice, it is essential that this material is removed before negotiating the gradient. If it is not possible to remove all contamination and the slipway has to be negotiated it is essential that the rig is driven down the slipway with the boat launching carriage being pushed down.
- 1.4.3 If gradients of greater than 10% have to be driven down, regardless of surface conditions, the rig must be turned around and the boat launching carriage pushed down the gradient.

## **1.5 WINCH**

- 1.5.1 The hydraulic winch has been designed and developed for the Talus MB-H in order to be able to carry out all normal winching operations associated with launch and recovery of carriage mounted boats. It also provides adequate capacity for self recovery in the event of the machine becoming stuck in difficult beach conditions.
- 1.5.2 The winch is fitted with a Dynex Dux winch rope and the unit has a maximum line pull capacity of 15 tonnes on the first layer. Some machines where difficult recovery conditions are experienced have been adjusted to give a 17.5 tonne pull on the first layer.
- 1.5.3 The winch is only designed for the following operations:
- 1.5.3.1 Normal winching operations associated with the launch and recovery of a carriage mounted boat.
  - 1.5.3.2 Self-recovery of the tractor, if bogged down.
  - 1.5.3.3 Self-recovery of the tractor up a shingle bank or slipway.
  - 1.5.3.4 Recovery of the boat launching carriage up a shingle bank or slipway, or if bogged down.
- 1.5.4 Recovery can be carried out from either the front or the rear of the machine but depends on the availability of a suitable anchor point.
- 1.5.5 The winch must not be used for any of the following operations:
- 1.5.5.1 Hoisting or lifting vertically any load
  - 1.5.5.2 Lowering a load in excess of 32 tonnes down an incline or slipway of maximum gradient 1:5.
- Warning**      **During operation of the winch, ensure all personnel remain well clear of the rope at all times – friction burn hazard (moving rope), and crush hazard (rope winding on drum).**

- Warning**      **During operation of the winch, ensure all personnel remain well clear of the winch drum – shear, cutting and entanglement hazards.**
- Caution:**      **When undertaking any winching or lowering always ensure the load maintains tension on the rope. Do not allow slack to develop or snatch loads to be applied to the rope.**

## **SECTION 2.0**

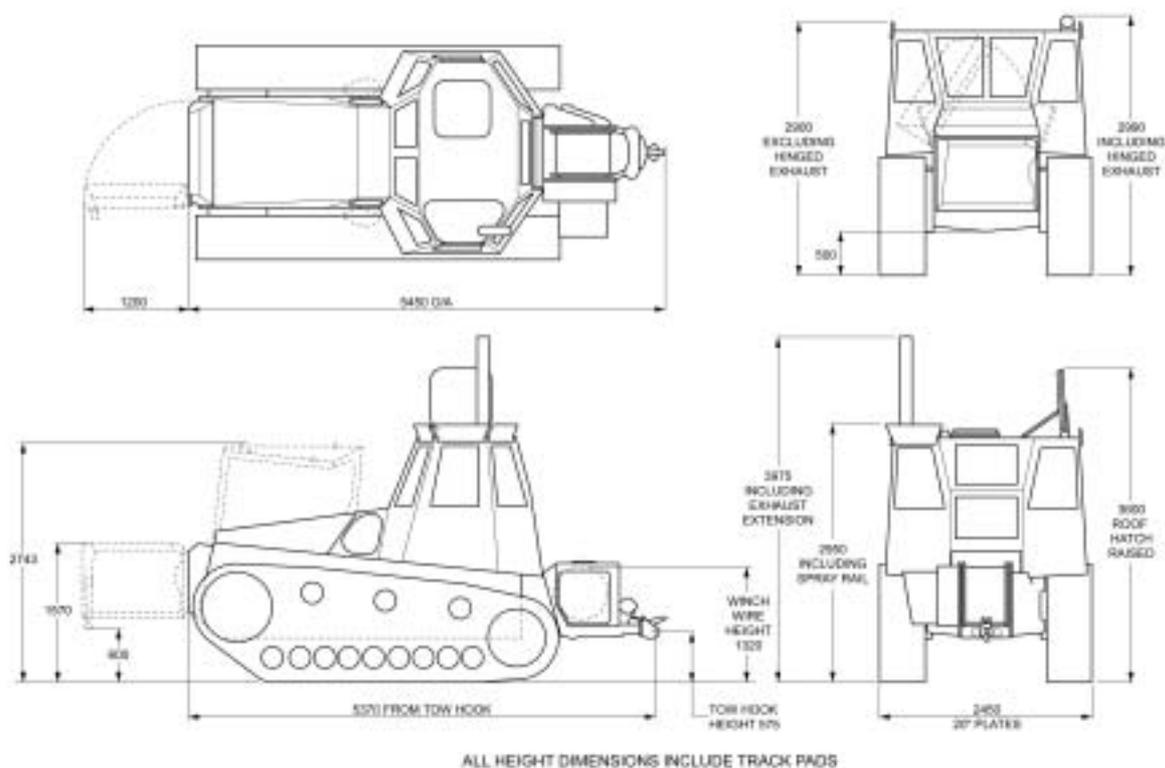
### **GENERAL OVERVIEW**

#### **2.1 INTRODUCTION**

- 2.1.1 The Talus MB-H tractor has been specifically designed to Launch and recover lifeboats from beaches.
- 2.1.2 The tractor is able to operate on a wide range of beach terrains. It is able to work in sea conditions where it is considered safe to operate with carriage launched lifeboats.
- 2.1.3 The Talus MB-H is commonly used to launch and recover 15 tonne lifeboats, on an 11 tonne carriage. It is capable of towing such boats at speeds of up to 10 km/hr on varying surface conditions. It has the ability to work at full power in up to 2.5m depth of calm water. The waterproof, protective cockpit, and dual control, allows operation of the vehicle whilst facing in either direction.
- 2.1.4 The electric control and hydrostatic drive system utilises a single “joystick” controller for all transmission functions; this is protected by the safety feature of a “dead man” foot pedal. The engine is a Caterpillar 3208 V8 diesel.
- 2.1.5 In the event of mechanical failure, the vehicle has the ability to be “closed down” and abandoned on the sea bed in up to 9.0m of water, without the ingress of sea water.
- 2.1.6 Extensive corrosion protection is employed to reduce maintenance whilst continuously working in the very hostile environment of sea water and beach conditions.
- 2.1.7 The Talus MB-H can perform a range of hauling, winching and heavy recovery operations either on dry land or in flooded areas in addition to its original lifeboat launching applications.

## SECTION 3.0

### TECHNICAL SPECIFICATION



### 3.1 MAIN DIMENSIONS

Overall Length	5.45m
Overall Width	2.45m
Overall Height with Exhaust Extension	3.98m
Overall Height without Exhaust Extension (top of spray rail)	2.95m
Ground Clearance	0.44m

### 3.2 WEIGHT

Without Track Pads	17.82 tonnes
With Track Pads	18.42 tonnes

### 3.3 ENGINE

Type	Caterpillar 3208 V8 Diesel
Power	216 BHP
Low Idle	1000 RPM
High Idle	2900/3000 RPM

### 3.4 TRANSMISSION

Type	Infinitely variable full hydrostatic system
Max Pressure	380 Bar (5,500 PSI)

### **3.5 CONTROL**

Hydraulic servo system 38Bar (0-550 PSI)

### **3.6 BRAKES**

Hydrostatic and fail-safe multi-plate disc

### **3.7 SPEED**

Maximum speed - 10 km/hr

### **3.8 MAXIMUM TRACTIVE EFFORT**

On bare grousers (firm ground)

Dynamic - 16.7 tonnes

Static - 16.9 tonnes

On Aluminium/ rubber pads (dry concrete)

Dynamic - 14.5 tonnes

Static - 14.7 tonnes

### **3.9 MAXIMUM WINCH PULL**

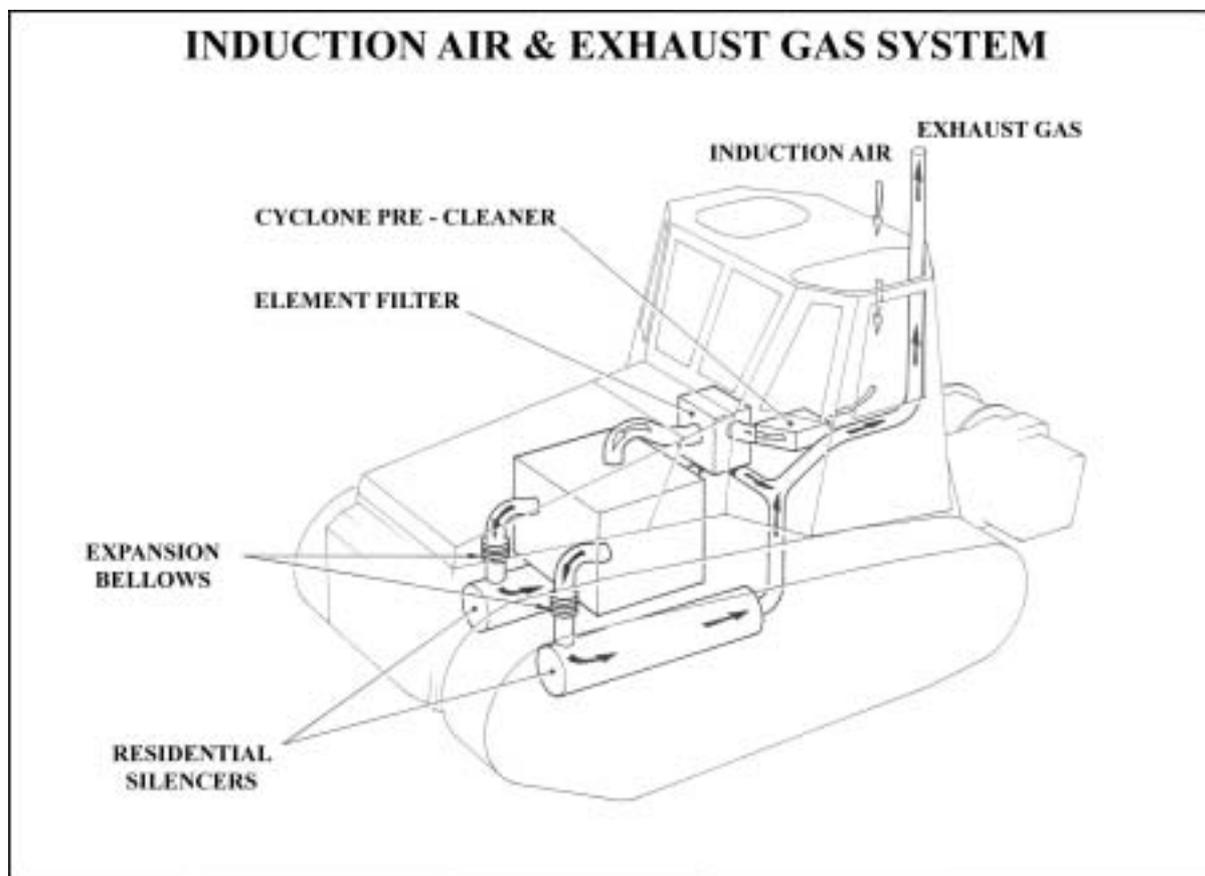
First layer - 15 tonnes (Normal Setting)

First Layer - 17.5 tonnes (Maximum Setting)

## SECTION 4.0

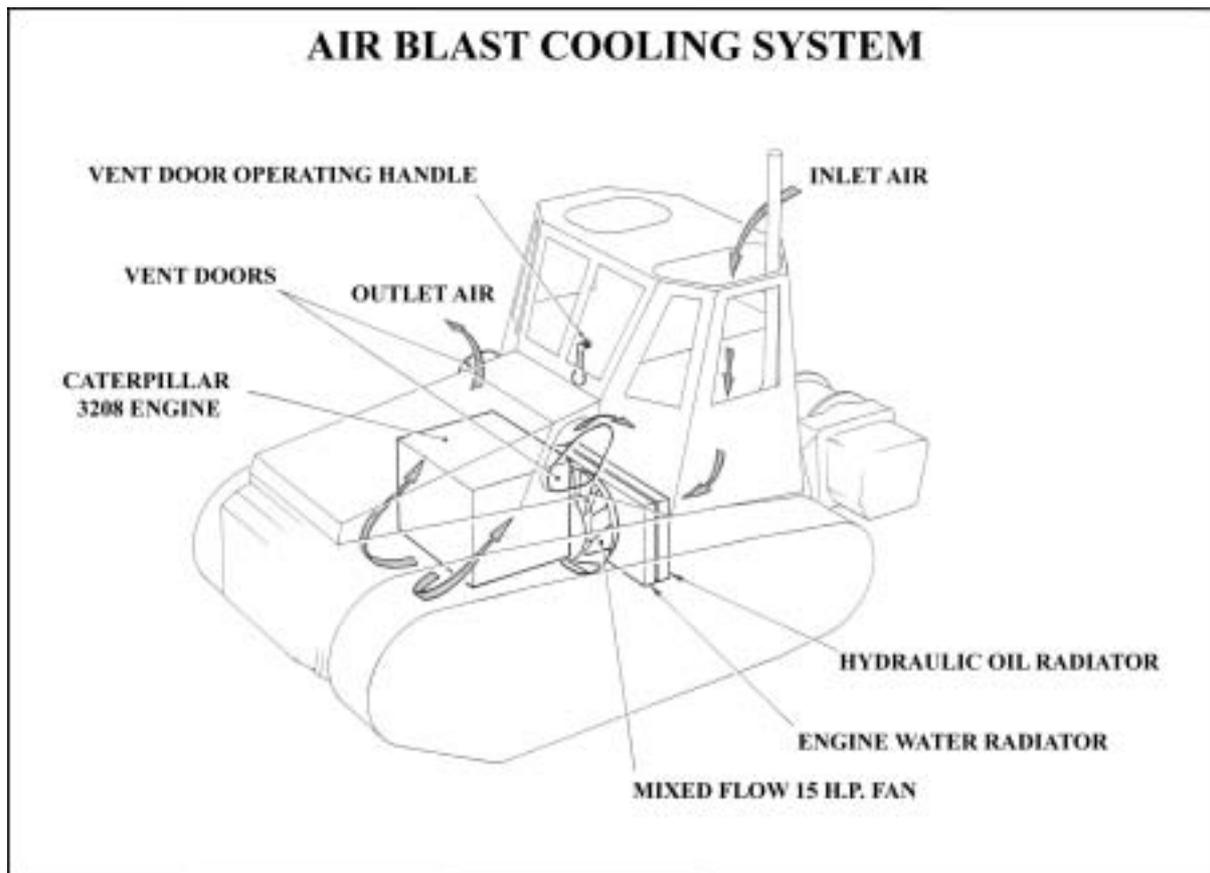
### PRINCIPLES OF OPERATION

#### 4.1 INDUCTION/ EXHAUST SYSTEM



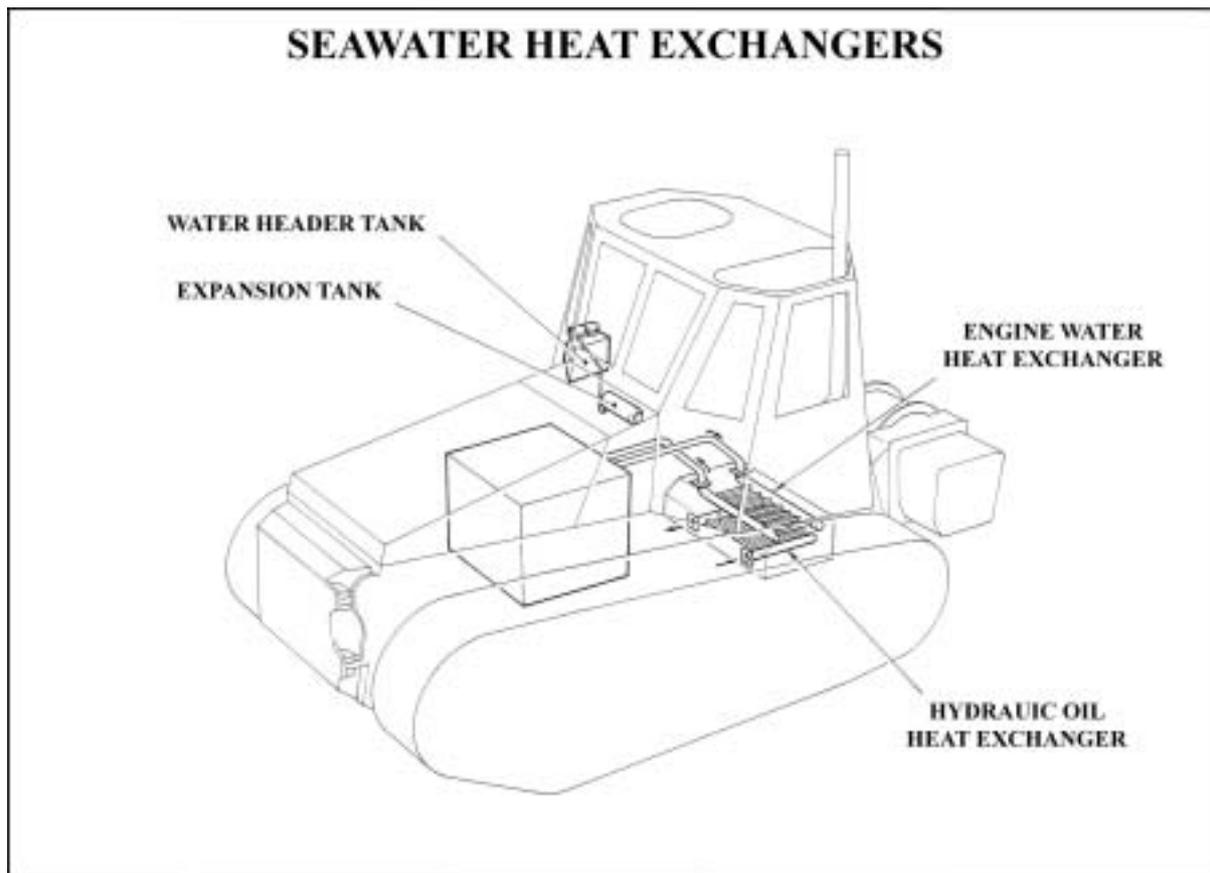
- 4.1.1 This illustration shows the key components associated with the induction air flow into the engine and the exhaust gas route from the engine.
- 4.1.2 Combustion air is drawn down the main air duct on the left hand side of the cab by the main cooling fan and is bled into the cyclone pre-cleaner half way down the air duct. The combustion air then passes via the filter element to the inlet manifold.
- 4.1.3 Exhaust gases are discharged from both banks of the V8 engine via expansion bellows into a pair of residential silencers which are accessed through the main belly plates.
- 4.1.4 The exhaust gases from the silencers are then combined into a single exhaust pipe and exit the machine via pipe work in the air duct and an extension pipe.
- 4.1.5 The complete exhaust system is clad in heat insulating fibre blanket/wool and either Stainless Steel or Fibreglass shields. This is to minimise heat rejection into the engine and air duct compartments.

## 4.2 AIR BLAST COOLING SYSTEM



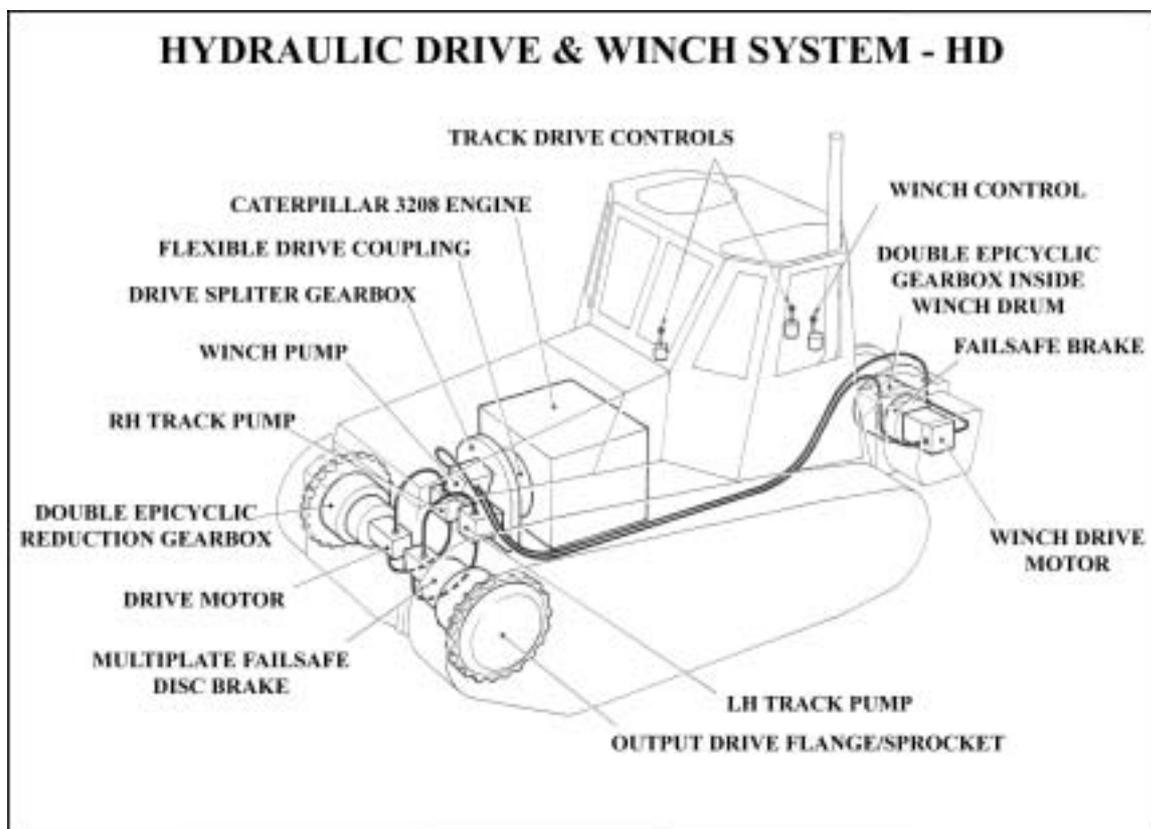
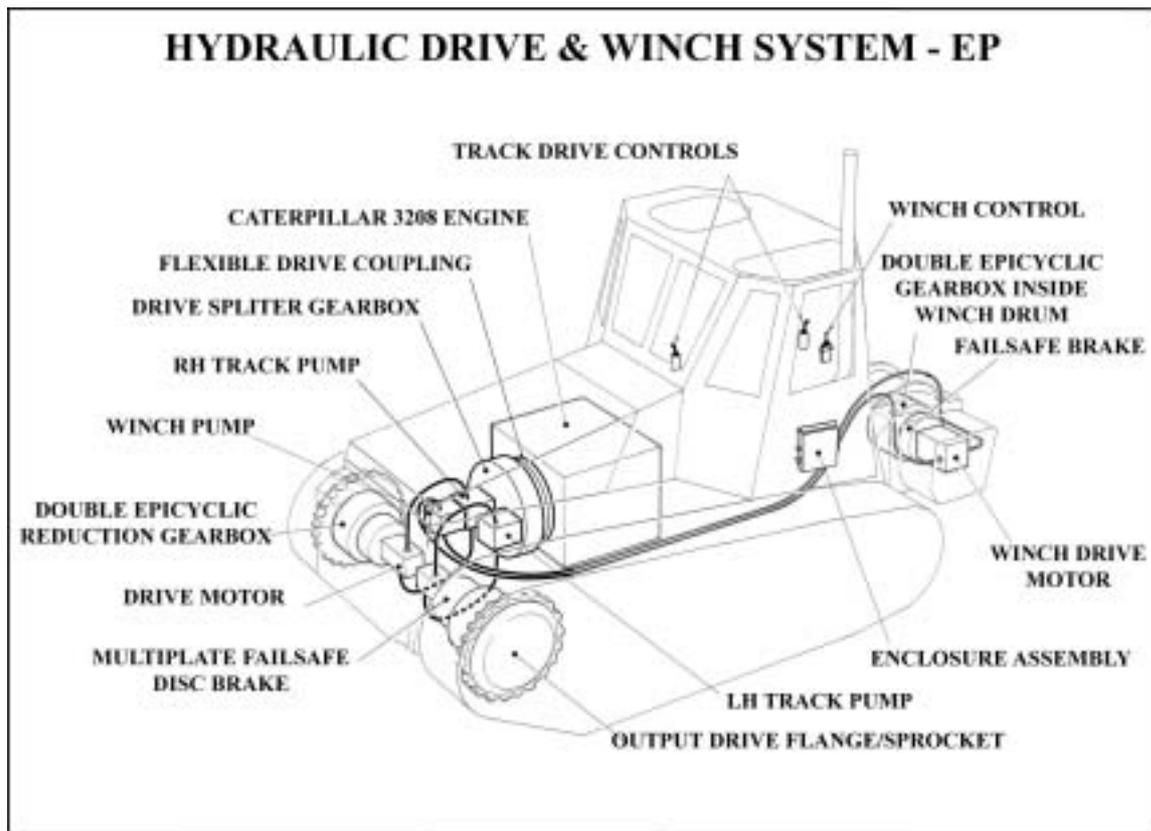
- 4.2.1 This illustration shows the location of the Main Cooling Fan and Air Blast Radiators.
- 4.2.2 The main cooling air flow enters the machine through the air hatch on the top of the cab, passes through the two oil and coolant radiators, and is expelled through the two side hatches.
- 4.2.3 The fan is belt driven off the crankshaft pulley.

### **4.3 SEA WATER HEAT EXCHANGERS**



- 4.3.1 When the Talus MB-H crawler enters the sea, the Side Hatches are closed and cooling of the engine coolant and hydraulic oil is automatically taken over by the sea water heat exchangers located in the floodable compartment in the base of the rear hull.
- 4.3.2 There is no requirement for the operator to take any other action other than ensure that the side hatches are closed.
- 4.3.3 There is a sensor on the left hand side hatch which operates a warning lamp in the cab which is extinguished when the hatches are closed.
- 4.3.4 In addition, a float switch warning system is also fitted to the machine. The float switch triggers a warning buzzer if the machine enters the water with the side hatches open.

#### 4.4 HYDRAULIC DRIVE SYSTEMS



4.4.1 These illustrations show the location of the main track drive and winch drive components, together with the routing of the main line hydraulic hoses on HD and EP machines.

## **SECTION 5.0**

### **OPERATIONAL INSTRUCTIONS**

#### **5.1 GENERAL CARE OF MACHINE**

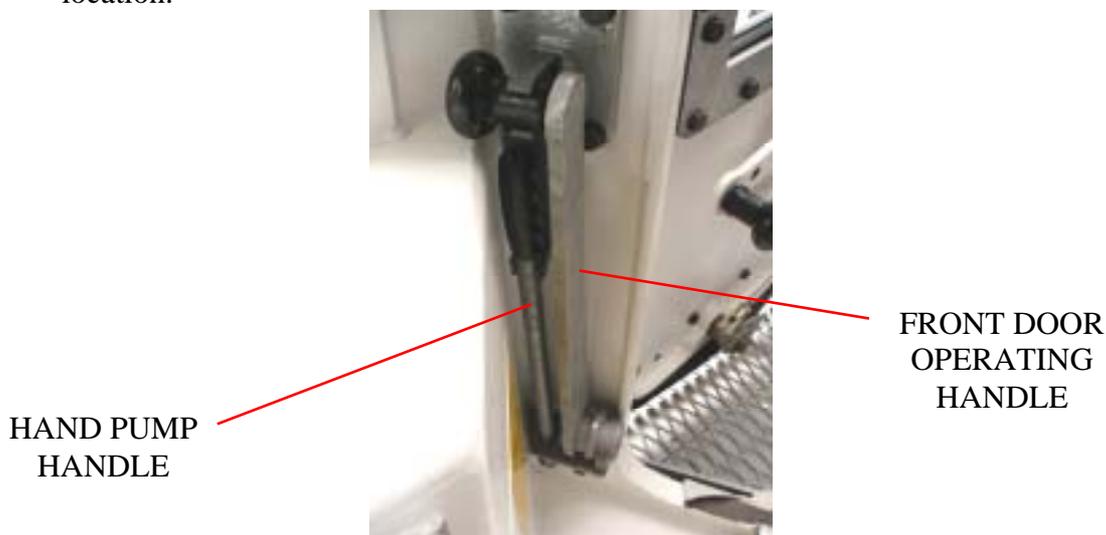
- 5.1.1 Always ensure that metal treated and painted surfaces are kept in good repair. Any damaged areas should be cleaned up and painted with a zinc rich paint plus the appropriate top coat colour.
- 5.1.2 After every salt water immersion, thoroughly hose down the machine with fresh water.
- 5.1.3 Remove any debris from the tracks and inspect for and repair any damage on the machine.
- 5.1.4 Wipe down exterior upper cab areas of machine with a rag soaked in Shell Ensis DWO 1200 and spray all other exterior surfaces with a generous coating of Shell Ensis DWO 1200.
- 5.1.5 Ensure that the underside of the machine and the inboard side of the tracks are well washed down and sprayed with Shell Ensis DWO 1200.
- 5.1.6 An airless spray gun can be supplied for spraying Shell Ensis DWO 1200.

#### **5.2 FRONT HULL DOOR**

- 5.2.1 The front hull door can be “locked” from the outside by padlocking the locking cap in place over the latch actuator. The key is the same as for the other four padlocks used on the machine. It is very important to ensure that the front door latch mechanism is always adjusted to give sufficient preload on the latch.
- 5.2.2 The door provides access to the front of the Talus MB-H for maintenance and repair.



- 5.2.3 The stainless steel lock bracket fits over the square section of the latch shaft and prevents rotation of the shaft. This prevents accidental opening of the door on rough ground if the latch preload has not been set correctly.
- 5.2.4 To open the front hull door, use the special operating lever located inside the cockpit on the right hand side of the main door.
- 5.2.5 The bonnet hand pump and bypass hand pump operating handle is also stowed in this location.



- 5.2.6 Engage the operating lever onto the latch spindle and rotate in the direction indicated on the lever.



- 5.2.7 Except for when it is in use, the operating lever must be kept in the cockpit at all times. It is recommended that the driver should check that the lever is stowed before starting the Talus MB-H.
- 5.2.8 The front hull door provides access to the following:
- i) Batteries
  - ii) Battery isolator switch
  - iii) Battery charge circuit fuses
  - iv) Bonnet raise and lower (manual pump)
  - v) Inflation point for front sprung loaded roller air springs
  - vi) Front bilge pump
  - vii) Cooling system overflow bottle

- viii) Exhaust system
- ix) Radiator drain (coolant)
- x) Engine block drain (coolant) **See Note Below**
- xi) Engine sump drain **See Note Below**
- xii) Splitter box drain **See Note Below**
- xiii) Hydraulic oil suction line
- xiv) Hydraulic oil drain valve
- xv) Hydraulic oil returns manifold
- xvi) Track and winch pumps
- xvii) Track drive motors and gearboxes
- xviii) Track motor bypass system
- xix) Track and winch pump boost filters
- xx) On-board filtration connection points

**Note:- The R.H. belly plate has to be removed to gain access to drain these three compartments.**



On Board filtration Connection points



Engine sump drain & Splitter box drain



Engine block drain (coolant)

**Warning:** The front hull door is heavy and great care must be exercised when opening and closing the door, especially if the vehicle is on a slope which may greatly increase the effective weight of the door – crush hazard.

**Caution:** The front hull door must be closed at all times when the machine is operational.

**Caution:** Always ensure that the latch preload is set correctly and the lock bracket is fitted to prevent the front door opening during operation.

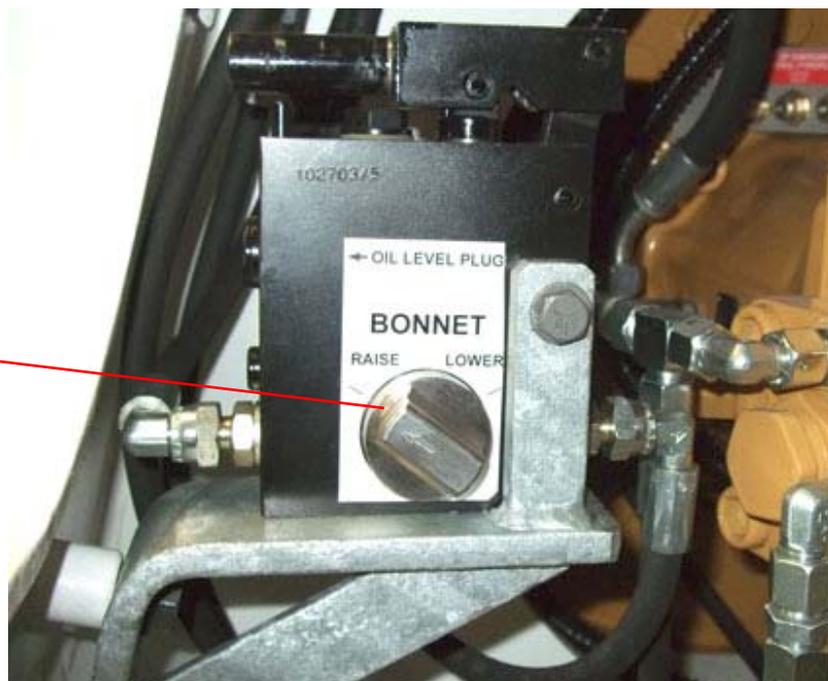
### **5.3 BONNET**

- 5.3.1 The bonnet is restrained by toggle clamps in five positions. The M16 (Grade 10.9) securing bolts should be torqued to 110Nm. When these clamps are released the bonnet is opened by a hand pump hydraulic system accessed via the front hull door.
- 5.3.2 The hand pump has a selector switch for “Raise”, “Lower” and “Neutral”. With the selector switch in the “Neutral” position the pump will not operate
- 5.3.3 To operate the hand pump, use the operating handle located inside the cockpit on the right hand side of the main door.



- 5.3.4 Select “Raise” on the hand pump to open the bonnet.

KNOB IN  
“RAISE”  
POSITION



- 5.3.5 When the bonnet is fully open, the swing down safety strut is to be unclipped and swung into position on the cylinder. This safety strut prevents the cylinder closing and holds the bonnet open safely.



- 5.3.6 Select “Lower” on the hand pump and operate hand pump until the bonnet weight is taken on the safety strut.
- 5.3.7 In the event of a hose / fitting failure the ram will lock and thus prevent the bonnet from closing in an uncontrolled manner. At all times the bonnet requires pumping to either open or close.
- 5.3.8 Before closing the bonnet, ensure that the seal is clean and undamaged. Also check that the bonnet sealing face is free from damage.
- 5.3.9 To close the bonnet, select “Raise” on the hand pump and jack open the bonnet to release any load on the safety strut. Swing the safety strut away from the cylinder and stow in the retaining clip.
- 5.3.10 Select “Lower” on the hand pump and jack down the bonnet. When the bonnet has been closed as far as possible, engage and lightly tighten all five toggle clamps.
- 5.3.11 Torque the rear two toggle clamps to 110Nm, followed by the other three. Finally go around all five clamps and torque to 110Nm. It will be necessary to go around all clamps at least three times before a stable torque figure is established.
- 5.3.12 During tightening of the toggle clamps operate the hand pump in order to unload the ram assembly.
- 5.3.13 The bonnet provides access in conjunction with the front door to the following:
- i) Caterpillar 3208 Engine
  - ii) Induction manifold and pipe work.
  - iii) Exhaust system
  - iv) Track and winch pumps
  - v) Hydraulic control lines
  - vi) Splitter gearbox services

**Warning:** The bonnet safety strut must be engaged at all times when the bonnet is open – crush hazard.

**Caution:** The bonnet must be must be closed at all times when the machine is being moved.

## 5.4 SIDE AIR HATCHES

5.4.1 The side hatches are operated from the remote handle inside the cockpit. They are mechanically linked and lock over-centre in the “closed” position.

SIDE HATCH WARNING LAMP



CAB LIGHTS

5.4.2 A visual indicator above the rear window illuminates to warn the driver when the hatches are open.

5.4.3 This indicator is controlled by a proximity switch on the left hand side hatch.



PROXIMITY SWITCH



FLOAT SWITCH

5.4.4 In addition to this warning lamp to indicate the status of the side hatches, a warning buzzer controlled by a float switch is also fitted to the Talus MB-H crawler.

- 5.4.5 The float switch is located at the base of the RH winch side plate. It is essential that the operation of the float switch is checked after each immersion. A Warning decal in the cab informs the driver of the mode of operation and test requirement.



WARNING DECAL

- 5.4.6 The float switch will operate the warning buzzer if the machine is driven into the water with the side hatches open.
- 5.4.7 The side hatches allow cooling air to be discharged to atmosphere. They should remain open during normal operations on dry land. When operating in proximity of the sea, the side hatches are to be closed.
- 5.4.8 The side hatches provide access for routine maintenance as follows:

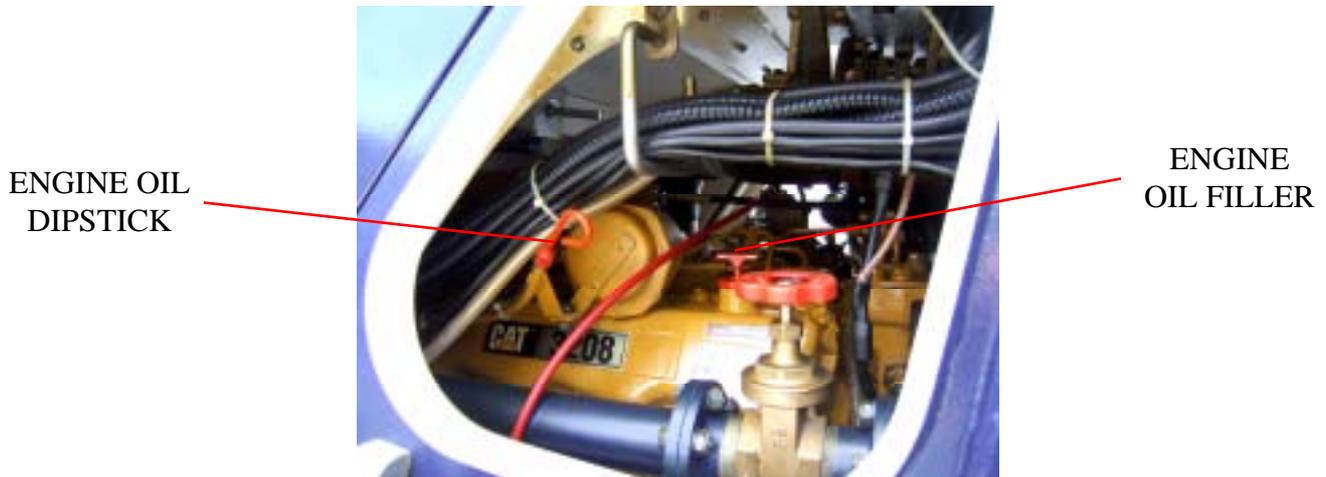
#### 5.4.8.1 Right Hand Side Hatch

- i) Fuel filters and priming pump.
- ii) Main suction oil shut off valve.

FUEL  
PRIMING  
PUMP

#### 5.4.8.2 Left Hand Side Hatch

- i) Engine oil dipstick.
- ii) Engine oil filler
- iii) Air cleaner “filter minder”
- iv) Water expansion tank pressure cap
- v) Main suction oil shut off valve



**Caution: Do not operate in the sea with side hatches open.**

#### 5.5 MARLIN SPIKE & HATCHET

5.5.1 The Marlin spike and hatchet are stowed in a special stainless steel mounting bracket on the right hand rear handrail.



NEW PHOTO REQUIRED OF RNLI TH WITH HATCHET AND MARLIN SPIKE

5.5.2 The Marlin spike is used for tightening and removing `D` shackle pins and other general uses.

5.5.3 The hatchet is used for emergency cutting of the FCB launching falls.

- 5.5.4 Always ensure the Marlin spike and hatchet are kept securely stowed and bare metal areas well greased.

## **5.6 AIR HATCH CAB ROOF**

- 5.6.1 This hatch is closed and secured by two handles, with additional protection provided by a padlock if required.



- 5.6.2 Before the machine is started or run, this hatch must be open and secured in the horizontal position. When the hatch is open ensure that both handles are stowed together with the security wire. Both cooling and combustion air is taken into the machine through this hatch.



- 5.6.3 Ensure the seal fitted to the hatch is at all times in undamaged condition.
- 5.6.4 With the air hatch open the exhaust extension pipe is fitted to the top of the exhaust outlet in the air duct. There is an option for a 90 degree hinged bracket exhaust outlet for use at stations with a low door lintel.
- 5.6.5 Only under vertical clearance limitations should this extension pipe be removed. Once adequate clearance is available the extension pipe must be refitted to the outlet pipe. The extension pipe can be stowed on the rear left hand walkway.
- 5.6.6 The bilge outlet hoses are carried in a galvanised bracket, which is fitted to the carrier bracket above the left hand rear window once the air hatch is opened.

**Caution: Do not start or run the vehicle engine with the Air Hatch closed.**

## **5.7 ROOF HATCH**

- 5.7.1 The roof hatch can be padlocked for security with the same key as for the air hatch.
- 5.7.2 The hatch should, at all operating times be secured in the open-vertical position with the stay bar.



- 5.7.3 The operating handle locks over-centre in both open and closed positions.
- 5.7.4 A damper cylinder is fitted between the roof hatch and the cab roof in order to reduce the closing speed of the hatch.
- 5.7.5 When opening the hatch the torsion spring provides additional lifting force to assist in the operation.
- 5.7.6 A folding stay bar opens out during this operation and will latch once the roof hatch reaches the open position.
- 5.7.7 In order to close the hatch, the sprung loaded plunger on the folding stay bar is disengaged by pulling on the split ring and biasing the stay bar downwards.

**Warning:** When closing the roof hatch from within the tractor the roof hatch handle should be firmly held in one hand whilst closing the hatch as there is no secondary mechanical safety system should the damper fail during the closing operation - crush hazard.



5.7.8 The hatch will close gradually and can be locked down using the catch mechanism. The inner and outer handle assemblies both perform the latching process.



5.7.9 During normal operating conditions the roof hatch is to be set in the semi closed position with the hatch resting with the rubber catch pads on the cab roof seal rail.



5.7.10 In the event of abandoning the tractor through the roof hatch and if time is limited, the hatch can be forced to close at a greater rate by pressing down firmly on the hatch whilst it is closing under damper control.

- 5.7.11 If in the event of a requirement to abandon the tractor and it is not possible to exit via the cab door or roof hatch a tipped hammer is available to shatter a window to provide an alternative means of escape.

**PHOTO AND ILLUSTRATION REQUIRED**

## **5.8 ACCESS ONTO ROOF**

5.8.1 It is important that if anyone is carrying out any work on the roof that a safety harness is worn and secured to a suitable anchor point.

**Warning: Exercise great care when mounting or dismounting the roof area. – Trip and falling hazard.**

## **5.9 COCKPIT MAIN DOOR**

5.9.1 The main door can be padlocked from the outside using the same key as for the air and roof hatches.



ASSISTOR  
SPRING AND  
DAMPER

5.9.2 An assist spring and damper are fitted which reduce the effective weight of the door and also control the rate of movement of the door.

5.9.3 The main door operating handle locks over-centre in both open and closed positions.

5.9.4 The tractor should normally be operated with the cockpit door closed.

5.9.5 To latch the door in the open position, rotate the security bar in position to retain the door and then fit the security pin to lock the security bar in place.



SECURITY  
BAR

SECURITY  
PIN

**Warning:** The main door is heavy and care must be exercised when opening and closing the door, especially if the vehicle is on a slope which can increase the effective weight of the door – crush hazard.

**Warning:** Ensure whenever the door is open that the securing bar is across the door and that the security pin is fully engaged – crush hazard.

**Caution:** At all times in the proximity of the sea, close the door to avoid ingress of sea water.

## **5.10 IMMERSION HEATERS AND BATTERY CHARGING**

5.10.1 Inside the cockpit door on the right hand side is a moulded enclosure which carries an immersion heater socket and a battery charging socket.



BATTERY  
CHARGING  
SOCKET

IMMERSION  
HEATER  
SOCKET

5.10.2 It is advised that the immersion heater fitted to the tractor is connected to the electrical supply in the tractor house during the winter months.

5.10.3 The immersion heater maintains the oil temperature in the hydraulic tanks at a nominal setting of 10°C. A single phase supply of either 240 or 110V AC is required. The 240v sockets are being phased out and being replaced with 110V sockets at EAO's and refits. Refer to spec sheet to ascertain which type is currently fitted.

5.10.4 The Niphan battery charging socket is connected via 8 Amp fuses in the cab socket box via a second fuse box, above the left hand track gearbox, to the main battery isolator switch inside the front door. 8 Amp fuses are also fitted in this fuse box.

5.10.5 The main battery isolator switch must be on in order to charge the batteries.

5.10.6 The Niphan socket can be used to power a hand held search lamp provided an in-line fuse is fitted. The maximum rating of the search light must be no more than 120 Watts (5 amps)

**Warning: Do not attempt to run or move the machine when connected to a fixed electrical supply – risk of contact with live parts.**

**Warning: Ensure that the electrical supply is isolated before making and breaking the electrical connection on the moulded enclosure - risk of contact with live parts.**

### **5.11 FIRE DETECTION SYSTEM**



5.11.1 The fire detection system consists of two basic elements:

- Heat detection probes (under the bonnet)
- Automatic warning lamp/buzzer (inside the cab)

5.11.2 The heat probes within the bonnet area and warning buzzer within the yellow control box in the cab are fitted and generate an audible warning in case of fire.

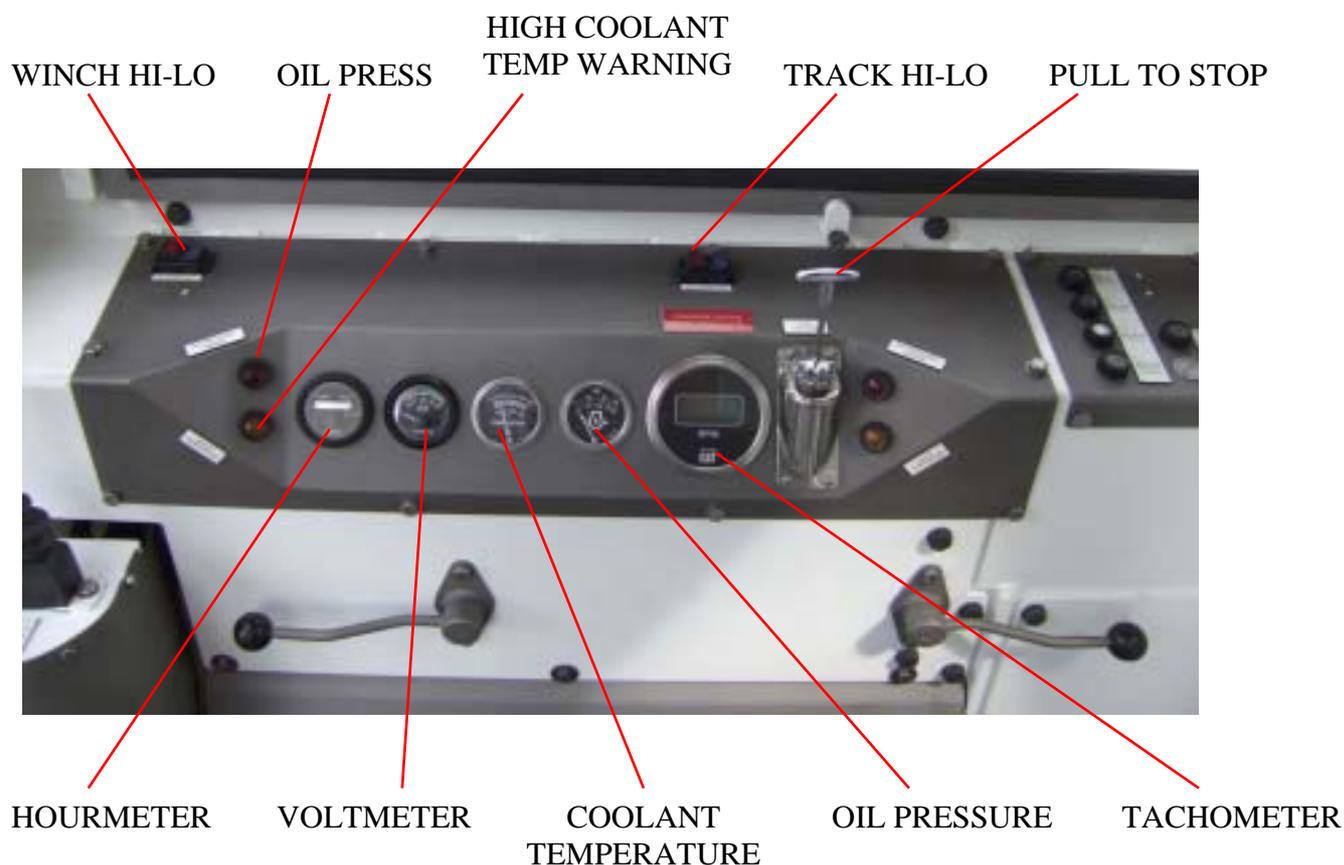
5.11.3 If the warning buzzer sounds .....

**Need to establish the RNLI SOP for abandoning the TH**

## SECTION 6.0

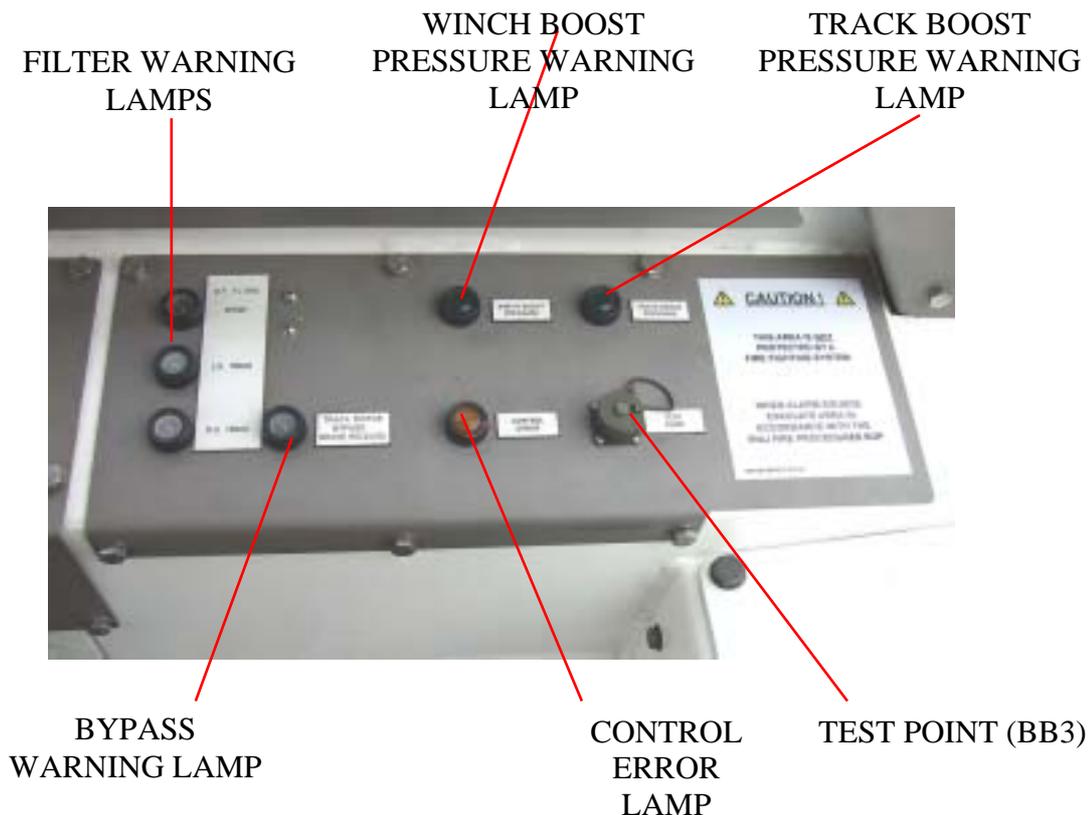
### METHOD OF CONTROL

#### 6.1 MAIN INSTRUMENT PANEL



- 6.1.1 The “Pull to Stop” control when pulled up will stop the engine. Twisting the nut clockwise on top of the control will lock the control.
- 6.1.2 The control must be pushed down before the engine will start.
- 6.1.3 Below the panel are two mechanically linked throttle control levers, for either rear or front facing operation positions. Raising either of the levers increases the engine speed.
- 6.1.4 The engine speed setting at idle should be 1000 RPM.
- 6.1.5 A voltmeter is mounted in the instrument panel and when the isolator switches are on, it gives a reading of the voltage output from the batteries. This reading should normally be between 24-28 Volts. Early machines are fitted with an ammeter.

## 6.2 SMALL INSTRUMENT PANEL



6.2.1 Each filter is monitored by individual warning lamps. There is no neon warning lamp on the actual filter head. Early indications of a blockage will be evident with intermittent warning light illumination when operating with cold hydraulic oil and high engine revs. Take action as soon as possible and change the elements.

6.2.2 If any of the warning lamps come on it is recommended that all H.P. filter elements are changed.

**Caution: Do not wash out filter elements**

6.2.3 The two red lamps are warning lamps for track and winch pump boost pressure.

6.2.4 If these lamps either stay on at start up or come on during running the machine must be stopped and the cause of the fault investigated.

## 6.3 SWITCH PANEL

6.3.1 The overhead (side) switch panel carries all the main switch controls for the operation of the Talus MB-H.

From the rear:-

- i) Rear Wiper.
- ii) Rear Work Lights.
- iii) Rear Headlights.
- iv) Bilge Pumps.
- v) Cab Lights.
- vi) Klaxon.
- vii) Push to Start.
- viii) Alternator Warning Lamp
- ix) Isolator Switch.
- x) Indicators.
- xi) Hazard Lights.
- xii) Side and Front Lights.
- xiii) Front Work Lights.
- xiv) Front Wipers

REAR

FRONT



6.3.2 The cab isolator switch isolates all electrical circuits within the cab.

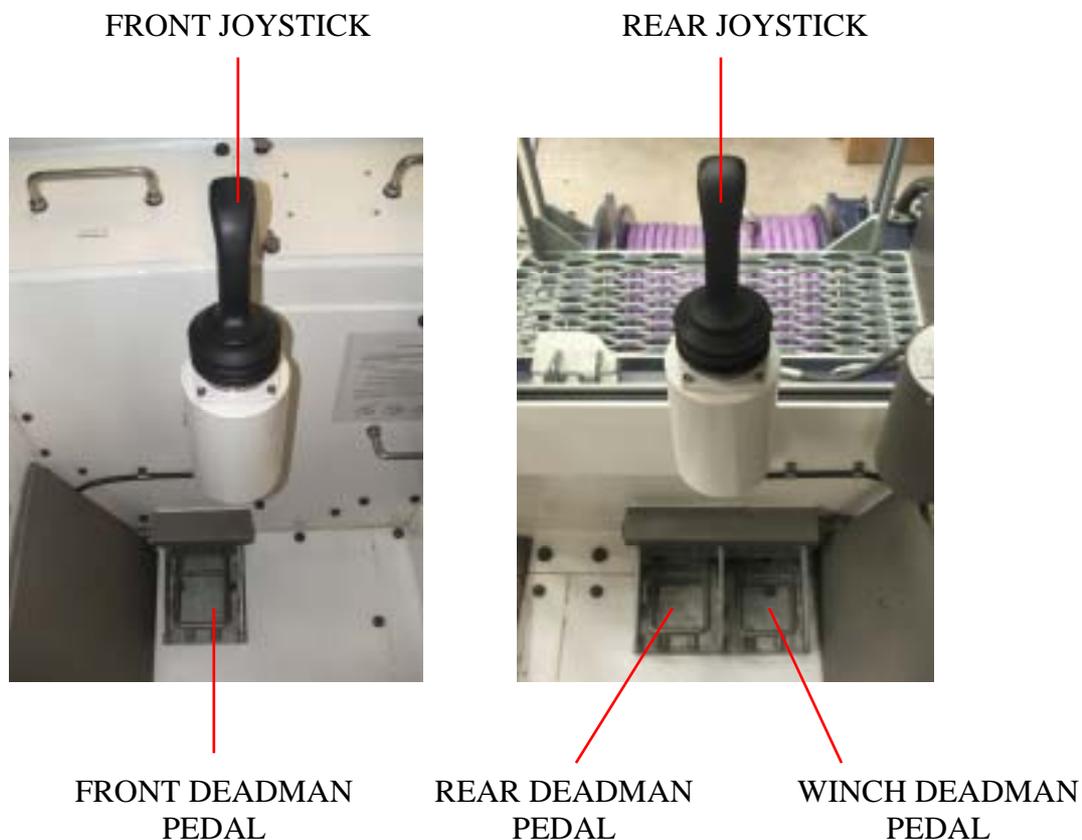
**Caution: Do not switch off the Cab Isolator Switch with the diesel engine still running.**



6.3.3 The push to start switch is isolated by the key switch in the rear upper panel.

## 6.4 TRACK DRIVE

- 6.4.1 All operating functions of the track drive are controlled via a multi-directional joystick controller. A second track drive control is provided at the rear of the machine to give the same control as is available at the front when the operator's seat is facing in the rear direction.



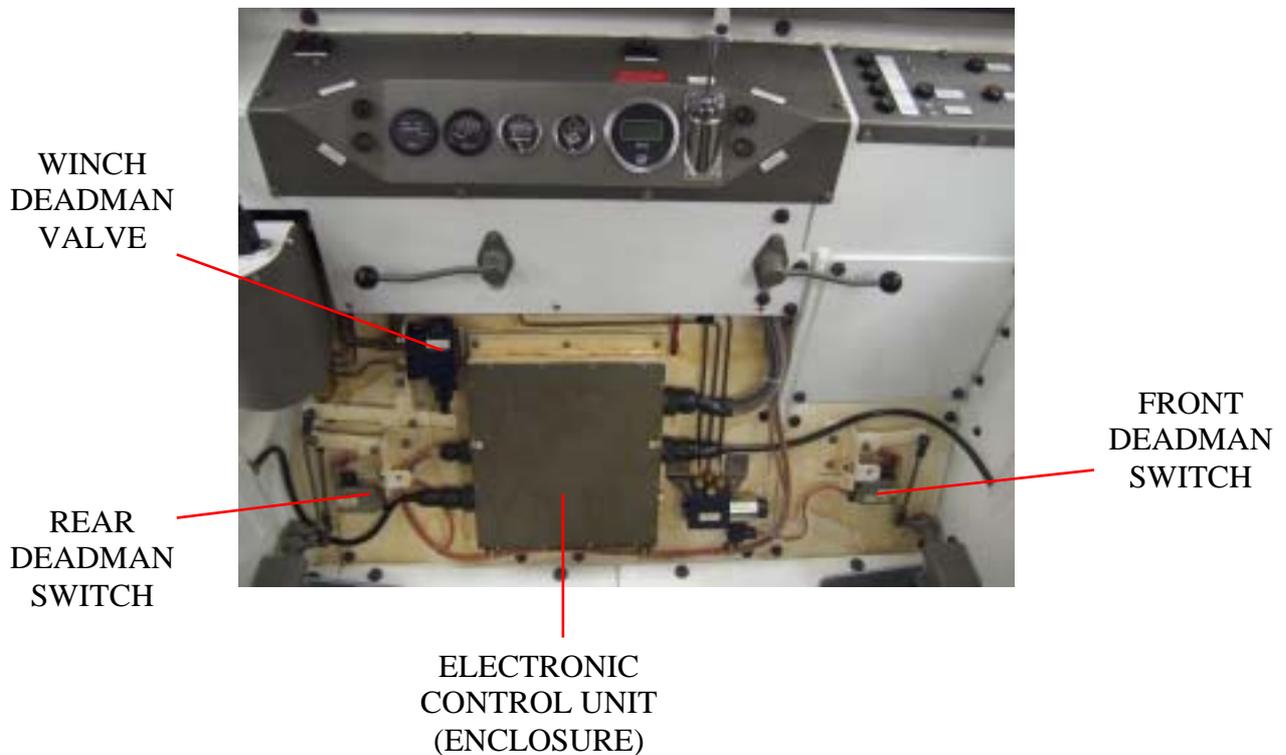
- 6.4.2 The operator input is converted into track movement by an electronic controller and a closed loop hydrostatic drive system. The electronic control system incorporates the following automated features:

- 6.4.2.1 **Straight line speed synchronisation**, ensuring that the machine travels straight ahead when the joystick is in the straight ahead position by means of closed loop control.
- 6.4.2.2 **Engine load limiting control**, acting to prevent the engine stalling due to excessive load by means of limiting the engine speed pull down. If the engine speed drop is excessive the control system reduces the load by de-stroking the track drive pumps. If additional speed is required the engine speed must be increased.

6.4.2.3 **Fault Finding**, using built in diagnostics. A system error light and test point are fitted on the small instrument panel adjacent to the filter warning lights.



6.4.3 The electronic control unit and deadman switches are mounted on the inclined panel under the throttle panel.



## **6.5 START UP**

- 6.5.1 Switching on the cab isolator switch energises the electronic control system.
- 6.5.2 The control system is isolated by a deadman pedal. This pedal must be depressed to allow control from the joystick. If the pedal is raised during operation, the machine will perform an emergency stop.
- 6.5.3 The left foot is used to control the deadman pedal in either direction of seating.
- 6.5.4 Before starting the engine check that:
  - 6.5.4.1 Both track drive joysticks are centralised.
  - 6.5.4.2 The engine pull to stop control is in the down position.
  - 6.5.4.3 Both deadman pedals are in the raised position.
  - 6.5.4.4 The throttle is set to minimum.
- 6.5.5 When the deadman pedal is depressed for the first time after switching on the cab isolator switch, the error light will illuminate for two seconds. This is normal and acts to check that the light is working.
- 6.5.6 If machine will not drive, check that both joysticks are centralised with the deadman pedal pressed prior to selecting drive.
- 6.5.7 See [Section 6.9](#) for full start up procedure.

## **6.6 JOYSTICK CONTROLLER**

- 6.6.1 With the deadman pedal depressed, movement of the joystick from the central position (forwards and backwards) results in the following sequence of events:
  - 6.6.1.1 Release of the automatic fail safe brakes.
  - 6.6.1.2 Actuation of the fully variable pumps and motors, controlling the transmission of power to the independent track drives.
  - 6.6.1.3 Continual variation of the control signal throughout the angular displacement.
- 6.6.2 Steering related movements of the joystick (left and right) perform the following functions:-
  - 6.6.2.1 Automatically vary the control signal to each pump (low and high range).
  - 6.6.2.2 Automatically vary the control signal to each motor (high range).
  - 6.6.2.3 Ensures smooth turns throughout the 360° control zone.

- 6.6.3 As more severe turns are instigated, the control system automatically slows down the speed of travel, to ensure that sharp directional changes are safely controlled at lower speeds. There are thus the following types of turn that can occur whilst the vehicle is travelling in a forwards (or backwards) direction:
- 6.6.3.1 Inside track slowed, outside track full speed
  - 6.6.3.2 Inside track considerably slowed, outside track slowed
  - 6.6.3.3 Inside track stopped, outside track slowed.
- 6.6.4 For turns that are required on the spot, a full “Contra Rotate” facility is provided.
- 6.6.5 In normal conditions there is a dead-band on the joystick travel running through the  $270^{\circ} - 0^{\circ} - 90^{\circ}$  zone.
- 6.6.6 To operate in this zone an electrical push button on the joystick activates the “Contra Rotate” function, which commands the inside track to reverse and the outside track to go forward thereby turning the machine on the spot in the desired direction of rotation.
- 6.6.7 The “Contra Rotate” button only functions in the  $270^{\circ} - 0^{\circ} - 90^{\circ}$  zone. Accidental operation at other times will not activate contra rotate.
- 6.6.8 To ensure controlled operation in the contra rotate manoeuvre, bring the machine to a halt, press the contra rotate button and then move the joystick in the required direction. The further the joystick is moved the greater the speed of contra rotation.
- 6.6.9 The control system will not enable the “Contra Rotate” function until the joystick is centralised and the “Contra Rotate” button pressed.
- 6.6.10 Ensure that sufficient engine revs are applied before a contra rotate manoeuvre is executed because a significant amount of power is required.
- 6.6.11 Do not press the contra rotate button unless a contra rotate manoeuvre is required. Although this will not cause any damage to the machine, if the button is pressed it will result in the machine going straight into a contra rotate manoeuvre when the joystick is moved into the contra rotate band.

## **6.7 DRIVING**

- 6.7.1 Considering the joystick as a compass will explain its function.  $0^{\circ}$  is straight ahead and  $180^{\circ}$  is dead astern. Any angular position denotes the mode of turn. All steering variations are controlled automatically. Movement of the joystick from the central position controls the speed of operation, for a pre-set engine speed.
- 6.7.2 Point the joystick in the desired direction of travel and push the joystick further from its central position to control the speed.

- 6.7.3 Forward and rearward movement of the joystick is damped by a friction device that is set to ensure that if released, the joystick does not change position. Left and right movement of the joystick is spring centred such that if released the joystick returns to the straight ahead position.
- 6.7.4 A speed range HI-LO facility is provided to allow more sensitive control for close manoeuvring. The electrical switch control is situated on the Instrument Panel above the Tachometer.
- 6.7.5 The speed range can be selected at will, and the system will automatically compensate for the change.
- 6.7.6 Speed control is a combination of joystick position, speed range HI or LOW selection and throttle setting.
- 6.7.7 For close manoeuvring where high speed travel is not required, always use the LOW speed range setting and a moderate throttle position, sufficient to give the required speed for manoeuvring and to avoid the engine labouring.
- 6.7.8 The control system has been set to give safe deceleration from full speed in HIGH range. Consequently the stopping distance may be further than expected.
- 6.7.9 When driving up hill, or on ground that requires a high drawbar pull, always ensure that the throttle setting is sufficiently high to allow the engine to develop sufficient power to proceed at the desired speed. Increasing the joystick setting will only increase the speed if there is sufficient power available.
- 6.7.10 The control system load sensing function automatically reduces the effect of the joystick setting if the engine starts to labour.
- 6.7.11 At all times exercise care in control of the machine. Smooth transitions of speed or direction will result in safer operation and more reliable service from the machine.
- 6.7.12 In normal operating conditions stop the machine by moving the joystick back to the central position and then release the deadman pedal. Do not use the deadman pedal as a means of stopping the machine unless an emergency stop is required.

**Warning:** When manoeuvring the vehicle at slow speed use “Low” speed range to prevent over-travel of the vehicle.

**Warning:** Release of the deadman pedal with the joystick in a driving mode will result in an emergency stop and could cause injury to personnel on the boat if they are not restrained.

## **6.8 STOPPING THE ENGINE**

- 6.8.1 Before stopping the engine check that both track drive joysticks are centralised, both 'Dead Man' pedals are in the raised position and the throttle is set to minimum.
- 6.8.2 The EP system will register a fault if the engine is switched off whilst the track deadman pedal is depressed.

## **6.9 CHECK LIST FOR MACHINE OPERATION**

### **6.9.1 BEFORE STARTING**

- i) Battery Isolator Switch on
- ii) Front Door Closed and locked
- iii) Air Hatch open
- iv) Exhaust Stack fitted
- v) Bilge Pipes fitted
- vi) Roof Hatch open (Resting on catches)
- vii) Cab Door closed
- viii) Side Hatches open

### **6.9.2 STARTING**

- i) Front Door Handle stowed
- ii) Cab Isolator Switch on
- iii) Joysticks in neutral position
- iv) Deadman Pedals raised
- v) "Pull To Stop" pushed down
- vi) Key Switch on
- vii) Throttle set to minimum
- viii) Push To Start. (System error lights will flash twice).

### **6.9.3 DRIVING**

- i) Increase Throttle (1500 RPM)
- ii) Push Deadman Pedal down (System error light will flash twice for the first depression of the Deadman Pedal).
- iii) Operate Joystick to control machine

### **6.9.4 BEFORE ENTERING SEA**

- i) Bilge Pumps on
- ii) Close Side Hatches

### **6.9.5 AFTER LEAVING SEA**

- i) Bilge Pumps off
- ii) Open Side Hatches

### **6.9.6 BEFORE SHUTDOWN**

- i) Carry out Post Immersion tasks.

### **6.9.7 AFTER SHUTDOWN (IF MACHINE IS NOT HOUSED)**

- i) Allow machine to cool down (If time is available)
- ii) Remove Exhaust Stack and stow on Rear Handrail
- iii) Unclip Bilge Hoses and place in Air Duct
- iv) Close Air Hatch and lock
- v) Close Roof Hatch and lock
- vi) Switch off Battery Isolator Switch
- vii) Close Front Door and lock
- viii) Stow Front Door Handle
- ix) Close Side Hatches
- x) Close Cab Door and lock

## **6.10 SYSTEM FAULT FINDING**

- 6.10.1 The system error light can illuminate for many reasons. It will illuminate for two seconds after switching on the electrical power at the Cab Isolation Switch and after pressing the deadman pedal for the first time. This is normal and serves as a bulb check. If the bulb flashes, it is an indication of a system error.
- 6.10.2 The system is designed to degrade gracefully and there are faults that can arise which do not affect continued operation of the vehicle. For example if there is a fault with the engine speed sensor the load limiting control will be inhibited, resulting in a loss of this feature. All other aspects of the system will continue to function normally.
- 6.10.3 A fault may occur on one of the joysticks, resulting in no drive being available. It may be possible to use the other joystick as an emergency.
- 6.10.4 In the event of a system error, at the first available opportunity connect the BB3 diagnostic tool to the test point connection adjacent to the error lamp.
- 6.10.5 Switch on the BB3 and carry out the following procedure to establish the error code:
- i) Turn off Cab Isolator Switch.
  - ii) Remove dust cap from test point on front instrument panel.
  - iii) Connect Test Lead to BB3
  - iv) Connect BB3 Test Lead to Test Point, ensuring that the keyways on the connector are correctly aligned.
  - v) Turn on Cab Isolator Switch.
  - vi) If BB3 display is in German, press “ALT” and “CLEAR” keys together, then press “2” for English.
  - vii) Press f2 to receive the error code.
  - viii) Pressing (1) displays the ACTUAL FAULTS
  - ix) Pressing (2) displays the SAVED FAULTS
  - x) Pressing (3) activates DELETE FAULTS
- 6.10.6 The tables on the following pages list possible error messages and remedial action.

<b>Error code</b>	<b>Error message</b>	<b>Possible Cause</b>	<b>Effect</b>	<b>Remedy</b>
60	pumpL forw	Solenoid pump left forward defective, wire broken, or short to earth.	Hydraulic motor is set to max. displacement. Only backward drive is possible.	Check solenoid, wiring and connectors.
61	pumpL backw	Solenoid pump left backward defective, wire broken, or short to earth.	Hydraulic motor is set to max. displacement. Only forward drive is possible.	Check solenoid, wiring and connectors.
62	motorL	Solenoid hydraulic motor left defective, wire broken or short to earth.	The hydraulic motor is set to max. displacement.	Check solenoid, wiring and connectors.
63	pumpR forw	Solenoid pump right forward defective, wire broken, or short to earth.	Hydraulic motor is set to max. displacement. Only backward drive is possible.	Check solenoid, wiring and connectors.
64	pumpR backw	Solenoid pump right backward defective, wire broken, or short to earth.	Hydraulic motor is set to max. displacement. Only forward drive is possible.	Check solenoid, wiring and connectors.
65	motorR	Solenoid hydraulic motor right defective, wire broken or short to earth.	The hydraulic motor is set to max. displacement.	Check solenoid, wiring and connectors.
70	dieselpoti	Voltage of throttle potentiometer out of range.	Load limit controller not Active.	i) Check potentiometer, wiring and connectors. ii) Calibrate the potentiometer. iii) Replace potentiometer and calibrate.

Error code	Error message	Possible Cause	Effect	Remedy
71	LLC error	Diesel engine characteristic out of range	Load limit controller not Active.	i) Switch off Cab isolator switch and re-start. ii) Calibrate the potentiometer. ii) Calibrate the diesel engine characteristic.
80	dr. f1 calib	Joystick potentiometer drive 1 signal, front joystick, outside calibration values.	Only drive with rear joystick is possible.	i) Check front joystick, wiring and connectors. ii) Calibrate front joystick. iii) Replace front joystick assembly and calibrate.
81	dr. f2 calib	Joystick potentiometer drive 2 signal, front joystick, outside calibration values.	Only drive with rear joystick is possible.	i) Check front joystick, wiring and connectors. ii) Calibrate front joystick. iii) Replace front joystick assembly and calibrate.
82	drive f. diff	Too big difference between potentiometer drive 1 signal and potentiometer drive 2 signal, front joystick.	Only drive with rear joystick is possible.	i) Check front joystick, wiring and connectors. ii) Calibrate front joystick. iii) Replace front joystick assembly and calibrate.
84	st. f1 calib	Joystick potentiometer steer 1 signal, front joystick, outside calibration values.	Only drive with rear joystick is possible.	i) Check front joystick, wiring and connectors. ii) Calibrate front joystick. iii) Replace front joystick assembly and calibrate.

Error code	Error message	Possible Cause	Effect	Remedy
85	st. f2 calib	Joystick potentiometer steer 2 signal, front joystick, outside calibration values.	Only drive with rear joystick is possible.	i) Check front joystick, wiring and connectors. ii) Calibrate front joystick. iii) Replace front joystick assembly and calibrate.
86	steer. f. diff	Too big difference between potentiometer steer 1 signal and potentiometer steer 2 signal, front joystick.	Only drive with rear joystick is possible.	i) Check front joystick, wiring and connectors. ii) Calibrate front joystick. iii) Replace front joystick assembly and calibrate.
87	dr. r1 calib	Joystick potentiometer drive 1 signal, rear joystick, outside calibration values.	Only drive with front joystick is possible.	i) Check rear joystick, wiring and connectors. ii) Calibrate rear joystick. iii) Replace rear joystick assembly and calibrate.
88	dr. r2 calib	Joystick potentiometer drive 2 signal, rear joystick, outside calibration values.	Only drive with front joystick is possible.	i) Check rear joystick, wiring and connectors. ii) Calibrate rear joystick. iii) Replace rear joystick assembly and calibrate.
89	drive r. diff	Too big difference between potentiometer drive 1 signal and potentiometer drive 2 signal, rear joystick.	Only drive with front joystick is possible.	i) Check rear joystick, wiring and connectors. ii) Calibrate rear joystick. iii) Replace rear joystick assembly and calibrate.

Error code	Error message	Possible Cause	Effect	Remedy
90	st. r1 calib	Joystick potentiometer steer 1 signal, rear joystick, outside calibration values.	Only drive with front joystick is possible.	i) Check rear joystick, wiring and connectors. ii) Calibrate rear joystick. iii) Replace rear joystick assembly and calibrate.
91	st. r2 calib	Joystick potentiometer steer 2 signal, rear joystick, outside calibration values.	Only drive with front joystick is possible.	i) Check rear joystick, wiring and connectors. ii) Calibrate rear joystick. iii) Replace rear joystick assembly and calibrate.
92	steer r. diff	Too big difference between potentiometer steer 1 signal and potentiometer steer 2 signal, rear joystick.	Only drive with front joystick is possible.	i) Check rear joystick, wiring and connectors. ii) Calibrate rear joystick. iii) Replace rear joystick assembly and calibrate.
A0	diesel frq	Diesel frequency under low idle speed	Load limit controller not active	Check frequency sensor, wiring and connectors
A2	frq Right	No track frequency right side, although pump current is over 20 %	Speed synch. controller not active	Check right motor speed sensor, wiring and connectors.
A4	frq Left	No track frequency left side, although pump current is over 20 %	Speed synch. controller not active	Check left motor speed sensor, wiring and connectors.

Error code	Error message	Possible Cause	Effect	Remedy
B0	master-slave com	Communication error in Control Unit.	Only drive with front joystick is possible.	Replace Control Unit.
---	start condition !	No start condition after pressing dead-man pedal	No drive possible.	Set both joysticks to neutral position. Possibly error at joy-stick.

6.10.7 Full instructions relating to the use of the BB3 controller to identify and rectify faults are contained in the BB3 operating instructions (OM 1743). A copy of these instructions is supplied with the BB3. Also supplied with the BB3 is a copy of the EP software Configuration / Calibration information (OM 1811).

6.10.8 The brake release solenoid is not included in the electronic fault finding systems. If the valve fails to open when drive is demanded from the joystick, the engine will come under load, but the vehicle will not drive because the brakes have not been released. If this occurs, the following procedure is to be followed:

- i) Open the front door of the vehicle.
- ii) Close the ball valve located below the brake release shuttle valve.



BALL VALVE  
CLOSED –  
(HANDLE  
HORIZONTAL)

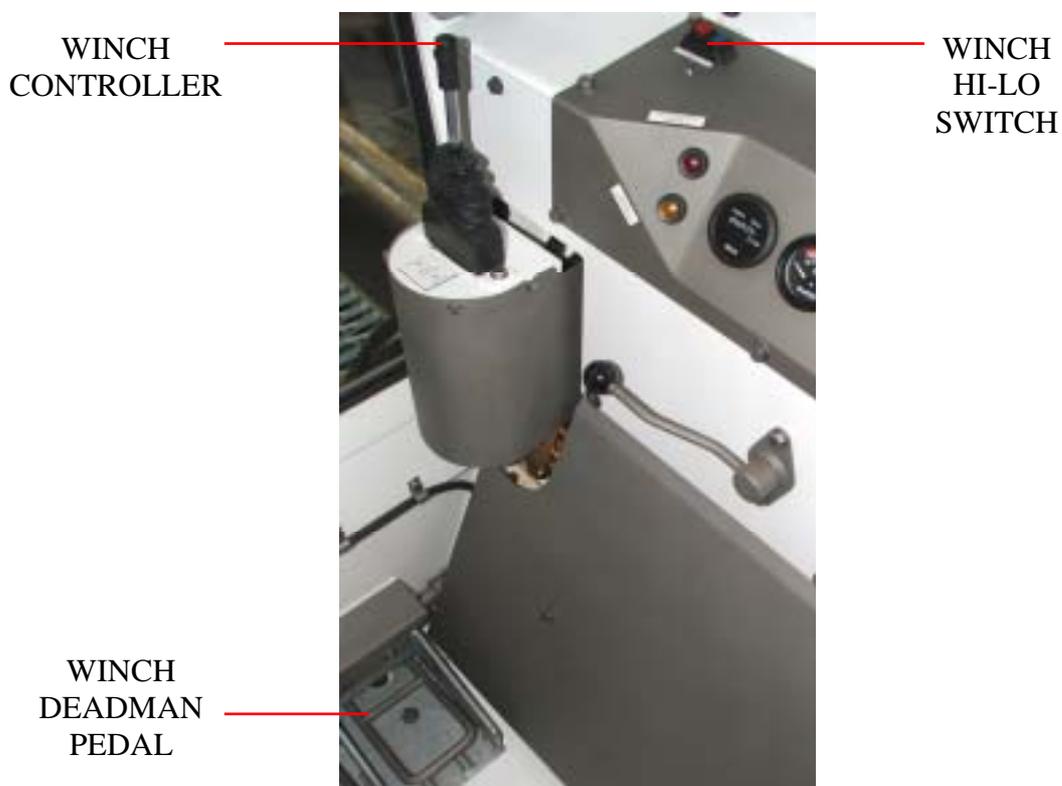
- iii) Close front door.
- iv) Ensure tracks are chocked if the machine is likely to move when the brakes are released.
- v) Operate the brake release hand pump from within the cab.

**Warning:** Do not park vehicle on an incline. Always “chock” the machine at the front and rear ends of the tracks.

**Warning:** Track Brakes are now inoperative. Ensure that hand pump pressure is released to reapply the brakes before leaving the vehicle.

## 6.11 WINCH CONTROL

6.11.1 All operating functions of winch are via a two directional joystick controller.



6.11.2 The joystick is isolated by a deadman pedal. This pedal must be depressed to make the joystick live to control the winch. If the pedal is raised during operation, the winch will stop.

6.11.3 The right foot is used to operate the winch deadman pedal.

6.11.4 The joystick controller is direction related. Push the controller away to pay out the winch rope and pull the controller in to wind in the winch rope.

6.11.5 Initially the controller automatically releases the 'fail safe' brake and then controls the speed of winching for a set engine speed.

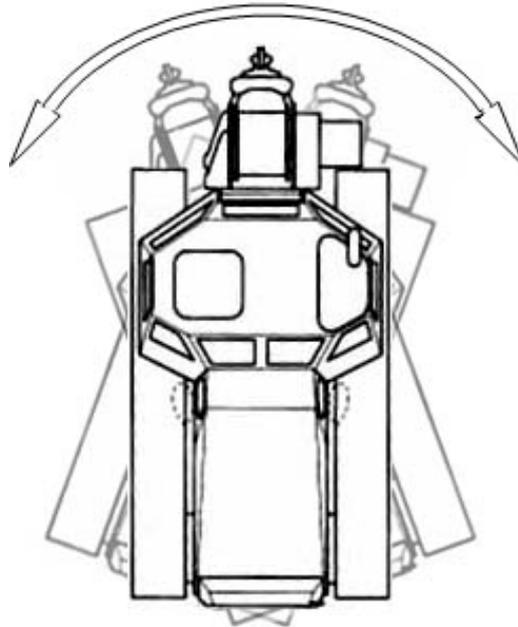
6.11.6 To the side of the controller on the instrument panel is a HI-LO control switch which selects either fast or slow control response. The speed of operation of the winch is thus controlled with a combination of HI-LO switch position, engine speed and joystick position.

6.11.7 The winch drum is pre-grooved to facilitate proper rope layering. The first four grooves from the wedge end of the drum are painted white.

6.11.8 A 100 metre 21/25 Dynex Dux 75 rope is secured to the drum using a DIN wedge and the rope is wound on in three and a half layers.

6.11.9 The winch rope is initially wound on with a pulling resistance of one tonne minimum, three tonnes maximum in order to achieve good layering and coiling of the rope.

6.11.10 Correct layering of the rope can be easily achieved by contra-rotating the machine slightly to ensure a tidy 'lay' of the rope. This contra-rotate manoeuvre can be carried out whilst winching is taking place.



6.11.11 A VIP hook assembly (pink) is connected to the end of the winch rope.

6.11.12 A parking lug for the winch rope is located on the tow frame. The VIP hook is connected to the parking lug when the rope is fully wound in and not in use. **BJH TO REVIEW WITH M. PERRY AND J. DEAS.**

6.11.13 The winch has line pull of 15 tonnes on the first layer and the automatic fail safe brake will hold this load.

6.11.14 It is important to ensure that three full winds are left on the drum if the full 15 tonnes is applied to the rope on the first layer. The driver will be aware of this situation once one white groove is visible on the winch drum.

6.11.15 Alternative rope lengths of 75m and 50m are available for fitting to the Talus MB-H.

- 6.11.14 A facility for self recovery from the front of the machine is available. Secured under the machine is a pennant which runs from the front door to the rear walkway. If the need arises the pennant is released from both ends of the machine. The winch rope is then attached making sure that the routing of the rope is correct and will not foul the tow hook release cross shaft. The pennant is then drawn through under the machine until enough winch rope is available for recovery needs. **BJH TO REVIEW WITH J. DEAS AND M. PERRY.**



- 6.11.15 It is essential that during any winching operation that the winch rope is guided at the front of the machine either through the ‘D’ shackle or the bow shackle on the twin rope system fitted to machines that have extra recovery equipment fitted ([See: Emergency Recovery Procedure – Section 7.2](#))

**Caution:** Only winch under load in low range.

**Caution:** The winch is designed for use in the “over-wound” condition and must not be “under-wound”.

## **6.12 BILGE PUMPS**

- 6.12.1 There are two bilge pumps in the Talus MB-H located in the front hull and rear hull.
- 6.12.2 The bilge pumps in the machine are operated by a two position switch.
- 6.12.3 The first switch position operates the rear hull pump. The second switch position operates the rear hull and front hull bilge pumps.
- 6.12.4 It is acceptable to have the bilge pumps operating in a dry environment.
- 6.12.6 Both bilge pumps are to be switched on when the Talus MB-H is operating in the vicinity of the sea.

## **6.13 TOW RELEASE**

- 6.13.1 A tow release handle is situated adjacent to the main cockpit door.



- 6.13.2 When the operator is seated facing the winch (rear) the handle is operated by the left hand. Pulling the handle towards the operator releases the hook.



6.13.3 The handle should be returned to the parked position (away from operator), where upon re-coupling, the hook will automatically re-engage.

6.13.4 A spring bias system is fitted between the tow hook release cross shaft and the tow hook release arm. This mechanism maintains a light load on the release arm to prevent accidental release of the tow hook if the Tractor and Carriage come to an abrupt halt or are travelling over rough terrain.

**Warning:** Ensure that all personnel are clear of the tow hitch and carriage tow bar prior to release.

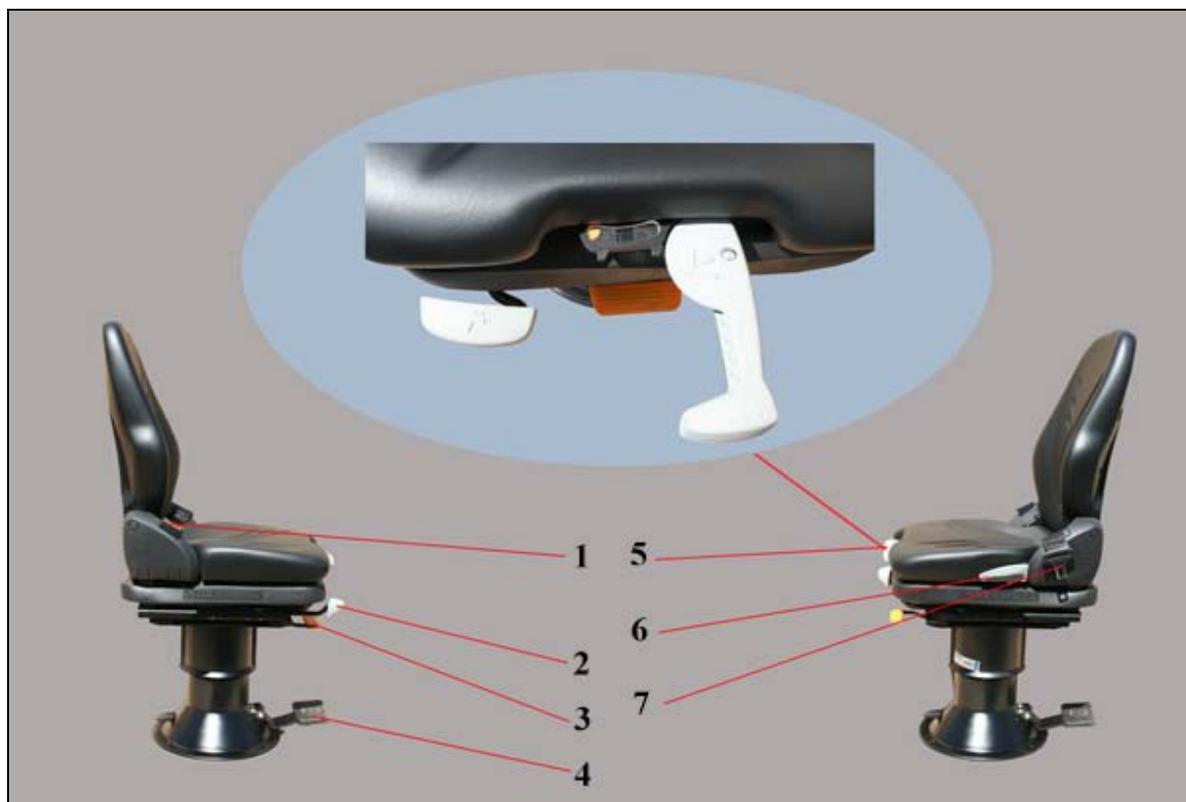
**Caution:** Never rely on the tow hook as the only means of securing the carriage to the tractor except during launches that require separation of the carriage from the tractor. In this case travel the minimum distance without additional towing security.

## **6.14 SEAT**

6.14.1 The Talus MB-H is fitted with a Grammer seat; this is mounted on a Pioneer Rotolift base.

6.14.2 The Grammer seat and Rotolift base have the following adjustable features:

1. Lap Belt
2. Fore/Aft adjustment
3. Raise and Lower adjustment
4. Rotation Control pedal
5. Weight adjustment
6. Adjustable Angle Backrest
7. Lap Belt



6.14.3 To rotate the seat to face in the opposite direction, press down the rotation control pedal with the heel and initiate rotation. The pedal can then be released and the seat rotated to the desired position. The latch system will automatically re-engage when the seat faces either forward or reverse.

6.14.4 To set the correct “weight” setting:

- i) Fold out weight adjustment handle (5) completely.
- ii) Hold it at the front and move it upwards or downwards (10 movements from minimum to maximum).
- iii) Before every new movement, bring the handle back to the starting position (audible locking sound).
- iv) The drivers weight has been set correctly when the arrow is in the middle of the window.
- v) The “weight” adjustment for each driver must be set before the machine is driven.
- vi) When the minimum / maximum has been reached, there will be an “empty” movement in the handle.
- vii) When the “weight” has been set, fold the handle back into the home position.

## **6.15 ABANDON PROCEDURE**

- 6.15.1 In the event of the machine having to be abandoned the operator should ensure that if at all possible it is left in a totally watertight condition:
- 6.15.2 Ensure front door is closed and operating handle stowed in cab.
- 6.15.3 Close side air hatches. Turn the operating handle one and a half turns in a clockwise direction. Ensure mechanism locks in the over-centre position.
- 6.15.4 If the mechanism fails for any reason the hatches can be manually closed from the outside and locked shut with the external locking handles.
- 6.15.5 Close the cab door and operate the latch mechanism. Ensure the over-centre mechanism locks in position. The operating handle should be aligned with the pip pin locking bracket.
- 6.15.6 Remove the exhaust extension and if time permits stow this in the cab.
- 6.15.7 Climb through the roof hatch and close it ensuring that the over-centre mechanism locks in position.
- 6.15.8 Climb down onto the rear walkway via the roof ladder
- 6.15.9 Unclip the bilge hose bracket and lower into the air duct.
- 6.15.10 Close air hatch and lock shut with two operating handles.
- 6.15.11 If time is available, lock side hatches with external locking handles.
- 6.15.12 Abandon machine.
- 6.15.13 On returning to the machine, open all hatches and check for ingress of water.

**Warning:**     **Nothing in this procedure shall require the operator to risk his personal safety in order to safeguard the vehicle. The operator shall not remain in the vehicle unless it is safe for him to do so.**

## **SECTION 7.0**

### **SPECIAL PROCEDURES AND OPERATIONS**

#### **7.1 RECOVERY OF THE TALUS MB-H WITH FAILED TRANSMISSION**

- 7.1.1 If failure of the transmission system occurs, recovery of the Talus MB-H from locations that are not accessible to the low loader can be carried out using the push/pull bar (only available from Clayton Engineering Ltd). Great care has to be taken when using the push / pull bar to manoeuvre the disabled Talus MB-H. **On no account should the disabled Talus MB-H be hauled down a slope unless a suitable vehicle is connected to the rear to control the descent.**
- 7.1.2 At all times during the recovery of a disabled Talus MB-H there should be a qualified person in the cab to apply the brakes if required.
- 7.1.3 To recover the vehicle it is necessary to release the automatic failsafe brakes and allow the track motors to free-wheel. This is achieved as follows:

**Warning: If the vehicle is on a slope ensure that the tracks are securely chocked.**

- 7.1.3.1 Remove right hand parcel shelf cover in cab.
- 7.1.3.2 Select "JACK OFF" position on hand pump selector switch. (Arrow pointing forwards).



- 7.1.3.3 If the motors are not to be bypassed (for brake release valve failure only), move ball valve lever (under cab hand pump access panel L16-3043-037) 90 degrees towards the cab.



BALL VALVE  
LEVER

- 7.1.3.4 On earlier machines the ball valve is located above the bonnet hand pump inside the front door and the handle has to be removed 90° towards the hand pump.

- 7.1.3.5 Operate hand pump until solid resistance is felt. If power is available the motor bypass warning light will illuminate.

- 7.1.3.6 Move the lever on the ball valve forward of the hand pump back towards cab as far as it will go.



BALL VALVE  
LEVER

- 7.1.4 The brakes are now jacked off, the motors are able to free-wheel (if the ball valve lever by the Racor filter (7.1.3.3) has not been closed). The ball valve by the hand pump prevents leakage of pressurised oil back through the hand pump.

7.1.5 Tow the machine to the required location to carry out necessary repairs. If the brakes start to come back on due to leakage, move lever on ball valve away from cab as far as possible and repeat operations (7.1.3.2, 7.1.3.3, 7.1.3.4 & 7.1.3.5).

7.1.6 If only brake release valve failure has occurred (See 7.1.3.3) the machine can be driven under its own power. With the brakes jacked off the Talus MB-H will only have hydrostatic braking.

7.1.7 To return the vehicle to normal operation, proceed as follows:

7.1.7.1 Select "ON" position at hand pump selector switch. (Arrow pointing rearwards).



7.1.7.2 Move lever on ball valve away from cab.



7.1.7.3 If the motors have not been bypassed, move the lever on the ball valve under cab hand pump access panel to the inline position.



- 7.1.7.4 It is important to ensure that the motor bypass warning lamp is operational and is extinguished following movement of the ball valve away from the cab.
- 7.1.7.5 Check oil level in hand pump by removing banjo bolt and pouring hydraulic oil into filler port until oil is seen coming out of the banjo connection port.
- 7.1.7.6 Rotate the hand pump switch to “NEUTRAL” position. (Arrow pointing down).
- 7.1.7.7 Fully depress hand lever with handle removed.



- 7.1.7.8 Select “ON” position on pump switch and ensure ball valve handle is fully away from the cab.



- 7.1.7.9 Replace right hand cover on parcel shelf.

## **7.2 EMERGENCY RECOVERY PROCEDURE – REVIEW WITH J. DEAS & MARK PERRY**

- 7.2.1 It is not possible to outline recovery procedures for all emergency conditions that could arise.
- 7.2.2 The listing which follows gives an outline of possible emergency conditions and a recommendation of possible courses of action. Obviously each emergency will have to be fully assessed at the time and the appropriate action authorised by the most senior personnel present.
- 7.2.3 Where beach conditions are difficult, e.g. a mud hole, the vehicle can be fitted with extra recovery gear. Details of how to use this equipment are outlined at the end of this section.

## **7.3 TRANSMISSION FAILURE**

- 7.3.1 Release the fail safe brakes and bypass the motors ([See Section 7.1](#)). The vehicle can then either winch itself to a safe place if the winch is operational, or it can be towed by another machine.

## **7.4 ENGINE FAILURE**

- 7.4.1 Release the fail safe brakes and bypass the motors ([See Section 7](#)). The vehicle can then be towed to a safe place.

## **7.5 MACHINE STUCK UP TO A DEPTH OF 0.5M**

### **7.5.1 Recovery from Rear**

- 7.5.1.1 Pay out winch rope and attach to a suitable anchor. (Anchor trailer, heavy plant equipment or well secured eye bolt).
- 7.5.1.2 With approximately 2,000 RPM set on the engine, take up any slack on the winch rope and apply load (LOW RANGE on winch control). At the same time apply drive to the tracks again in LOW RANGE ensuring that only SMALL movements of the joystick are made.
- 7.5.1.3 It is permissible to pull the winch joystick fully back and hold it in this position, this will give a fifteen tonne line pull on the rope. It is essential to make only small movements on the track control joystick in order to keep the tracks rotating and gain maximum traction for recovery.

### 7.5.2 Recovery from the front

- 7.5.2.1 The procedure is exactly the same as for recovery from the rear with the exception that the winch rope has to be passed under the machine and through the shackle on the front towing eye.
- 7.5.2.2 A pennant is permanently secured under the machine in order to draw the winch rope through in emergency conditions. See [Section 6](#) for details.

## **7.6 MACHINE STUCK TO A DEPTH GREATER THAN 0.5M**

7.6.1 This condition is more severe than the previous one for obvious reasons but it also means that access to the front towing eye is either limited or impossible.

### 7.6.2 Recovery from the rear

- 7.6.2.1 Pay out winch rope and attach to a suitable anchor. (Anchor trailer, heavy plant equipment or well secured eye bolt).
- 7.6.2.2 With approximately 2,000rpm set on engine take up slack on winch rope and apply load (LOW RANGE on winch control). At the same time apply drive to the tracks again in LOW RANGE ensuring that only SMALL movements of the joystick are made.
- 7.6.2.3 It is permissible to pull the winch joystick fully back and hold it in this position, this will give a fifteen tonne line pull on the rope. It is essential to make only small movements on the track control joystick in order to keep the tracks rotating and gain maximum traction for recovery.

### 7.6.3 Recovery from the front

- 7.6.3.1 At locations where there is a danger of machines becoming stuck in deep mud/sand they are fitted with special recovery gear at the front of the machine.
- i) A longer pennant running from the rear walkway to the stowage eye bolted to the top of the front door.
  - ii) A heavy 28mm strop from the front towing eye to the stowage eye bolted to the top of the front door.
  - iii) Twin strops linked with a bow shackle for winch rope guidance.
- 7.6.3.2 If a suitable vehicle is found which can exert a sensible pull from the front of the machine it must pull using the heavy 28mm wire connected to the front bottom towing eye.
- 7.6.3.3 On no account must any attachment be made high up on the front of the Talus MB-H. This will only result in the machine being pulled further into the hole.

- 7.6.3.4 If winching from the front is a viable option the rope must be drawn under the hull using the pennant wire. See [Section 6](#) for details.
- 7.6.3.5 Because access to the shackle on the front towing eye will be impossible the winch rope has to be threaded through the bow shackle on the twin strops as shown in the illustration. If this is not done the rope will foul the tracks when load is applied.
- 7.6.3.6 When winching and driving follow the procedures as outlined in sections 6.7 and 6.11. regarding the operation of the track and winch control joysticks.
- 7.6.3.7 It is easier to set the winch rotation at a set speed and then match the track speed to maintain an appropriate tension on the rope.

## **7.7 OIL SAMPLING – GENERAL REVIEW DURING TH CBM EVENT**

- 7.7.1 At intervals designated by the R.N.L.I., oil samples are to be taken from the engine for analysis.
- 7.7.2 The need may also arise to have samples taken from other areas of the machine.
- 7.7.3 In each case ensure that the correct procedure outlined below is followed.
  - 7.7.3.1 Oil must be at operating temperature when taking sample.
  - 7.7.3.2 It is essential that all sampling equipment is kept clean.
  - 7.7.3.3 Remove suction pipe from plastic bag.
  - 7.7.3.4 Screw new sample bottle into suction pump.
  - 7.7.3.5 Fit new suction pipe into pump.
  - 7.7.3.6 Operate pump and fill bottle about three quarters full.
  - 7.7.3.7 Remove bottle from pump and taking care to keep dirt out. Screw clean cap onto the bottle.
  - 7.7.3.8 Record all details of the vehicle, compartment, oil type, hours on oil and sample date.
  - 7.7.3.9 It is also important to record whether oil has been changed before or after the sample has been taken.
  - 7.7.3.10 Pack sample bottle and the sample information in a jiffy bag and despatch to Clayton Engineering for analysis.

## **7.8 OIL SAMPLE - ENGINE**

- 7.8.1 Remove dipstick and insert suction pipe until it strikes the bottom of the sump. Withdraw pipe 50-60mm so that sample is taken from the central area of the sump.

### **7.9 OIL SAMPLE – SPLITTER BOX**

- 7.9.1 Remove dipstick and insert suction pipe until it strikes the bottom of the sump. Withdraw pipe 50-60mm so that sample is taken from the central area of the sump.

### **7.10 OIL SAMPLES - TRACK GEARBOXES**

- 7.10.1 Rotate drive sprocket until white level line on outside of gearbox is horizontal.
- 7.10.2 Remove Silicone “plug” and then level plug from outside face of gearbox.
- 7.10.3 Insert sampling tube and take sample. If tube will not pass through due to a gear being in the way, rotate drive sprocket until access can be gained.
- 7.10.4 Replace level plug and re-apply Silicone sealant to cavity.

### **7.11 OIL SAMPLE - HYDRAULIC TANK**

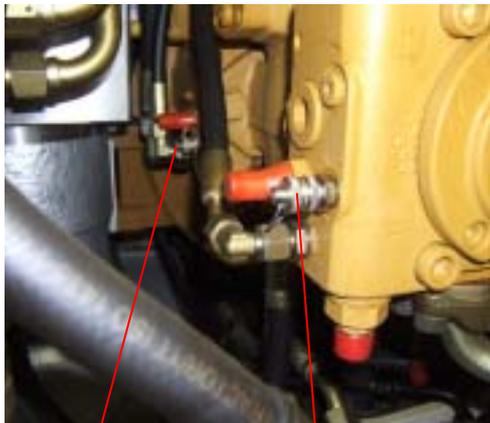
- 7.11.1 Remove upper front M12 x 1.75 Set Screw from access panel on right hand hydraulic tank (under side seat).
- 7.11.2 Insert sampling tube through this hole and withdraw sample.
- 7.11.3 Replace setscrew with Silicone sealant under washer.

### **7.12 OIL SAMPLE - WINCH GEARBOX**

- 7.12.1 Remove winch motor cover.
- 7.12.2 Operate winch, winding rope off and back onto the drum for at least five minutes. This will agitate the oil in the gearbox.
- 7.12.3 Remove level plug from the drain hose and allow a quantity of oil to drain from the hose before taking the oil sample.
- 7.12.4 After taking sample – top up with oil specified in [Section 8](#) to ensure a small positive head above level plug in preparation for the next sample to be taken.

## **7.12 OIL SAMPLES FROM A4V HYDRAULIC PUMP MAIN LINES**

7.12.1 An oil sampling tap assembly is a special piece of equipment that can be used to take oil samples from the tapping points (Ma/Mb) on the main drive pumps.



Ma  
RH PUMP

Ma  
WINCH PUMP



Mb  
LH PUMP

7.12.2 Connect the fitting on the end of the flexible tube attached to the tap assembly to the pressure tapping adaptor fitted to Port Ma / Mb. Ensure the tap is CLOSED and the blanking plug is fitted.

7.12.3 The engine should then be started and the pump operated for a few minutes in order to flow an amount of oil between the pump and motor. (Drive forwards and backwards). Ideally the oil should be at its operating temperature, but it may not always be practical to achieve this.

7.12.4 Keep the engine running and ensure that no-one operates the joystick.

7.12.5 With the engine running at tick-over speed, ensure the brass tap is closed and then remove the blanking plug from the end of the fitting on the tap assembly.

7.12.6 Using a suitable container gradually open the tap assembly, remove the bottle top. Do not hold anything above the bottle whilst removing the top to ensure that no contaminant falls into the bottle.

7.12.7 When the top is removed move the tap outlet pipe so that it discharges oil into the bottle from a height of about 100mm. The tap outlet should not be held directly above the bottle. Again this is to prevent contaminant falling into the bottle.

7.12.8 When the bottle is full, move the tap assembly away and direct the oil stream into the original container. **DO NOT SWITCH THE TAP OFF WHILST FILLING THE SAMPLE BOTTLE.**

7.12.9 Replace the top on the sample bottle.

7.12.10 The discharge tap can then be closed

7.12.11 Remove the tap and secure the female cap to the tapping point on the pump.

- 7.12.12 Record all details of the vehicle, compartment, oil type, hours on oil and sample date.
- 7.12.13 It is also important to record whether oil has been changed before or after the sample has been taken.
- 7.12.14 Pack sample bottle and the sample information in a jiffy bag and despatch to Clayton Engineering for analysis.

**SECTION 8.0****REPAIR / ADJUSTMENTS AND AIR TEST RECORDS****8.1 REPAIR / ADJUSTMENTS PAGE**

It is important that whenever any work is carried out on the Talus MB-H that this is recorded on the following pages.

<b>DATE</b>	<b>ITEM</b>	<b>SIGNATURE</b>

**8.2 AIR TEST RECORDS**

<b>DATE</b>	<b>RESULT, SEALS CHANGED OR OTHER ACTION</b>	<b>SIGNATURE</b>

## **SECTION 9.0 - INSPECTION SCHEDULES**

For the inspection schedule refer to the Talus MBH crawler planned maintenance document no PM-0001-LR-20 produced by RNLI Engineering Office.