snorkel

A38E



PARTS & SERVICE MANUAL

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Foreword

Introduction

HOW TO USE THIS MANUAL

This manual is divided into 7 Sections,
The right hand pages of each Section is marked with a black section number printed at the top corner of each page which can be used as a quick guide.

SPECIAL INFORMATION

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in severe injury or death.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in severe injury or death.

CAUTION

Indicates a potentially hazardous sit uation which, if not avoided, may result in minor or moderate injury.

WORKSHOP PROCEDURES

CAUTION

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. Please note that this manual does contain warnings and cautions against some specific service methods which could cause personal injury, or could damage a machine and make it unsafe. Please understand that these warnings cannot cover all conceivable ways in which service, whether or not recommended by Snorkel, can be done, or the possible hazardous consequences of each conceivable way, nor could Snorkel investigate all ways. Anyone using service procedures or tools, whether or not recommended by Snorkel, must satisfy themselves thoroughly that neither personal safety nor machine safety will be jeopardised.

Notes: Give helpful information.

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Introduction & Specifications 1.0
General Description & Machine Specifications.

Machine Preparation 2.0
Information on the preparation for use, shipment, forklifting, transporting and storage.

Operation 3.0
Operating Instructions & Safety Rules.

Maintenance 4.0
Preventative Maintenance & Service Intervals.

Troubleshooting 5.0
Causes of and Solutions to typical problems.

Schematics 6.0
Schematics and Valve Block Diagram with description and location of components.

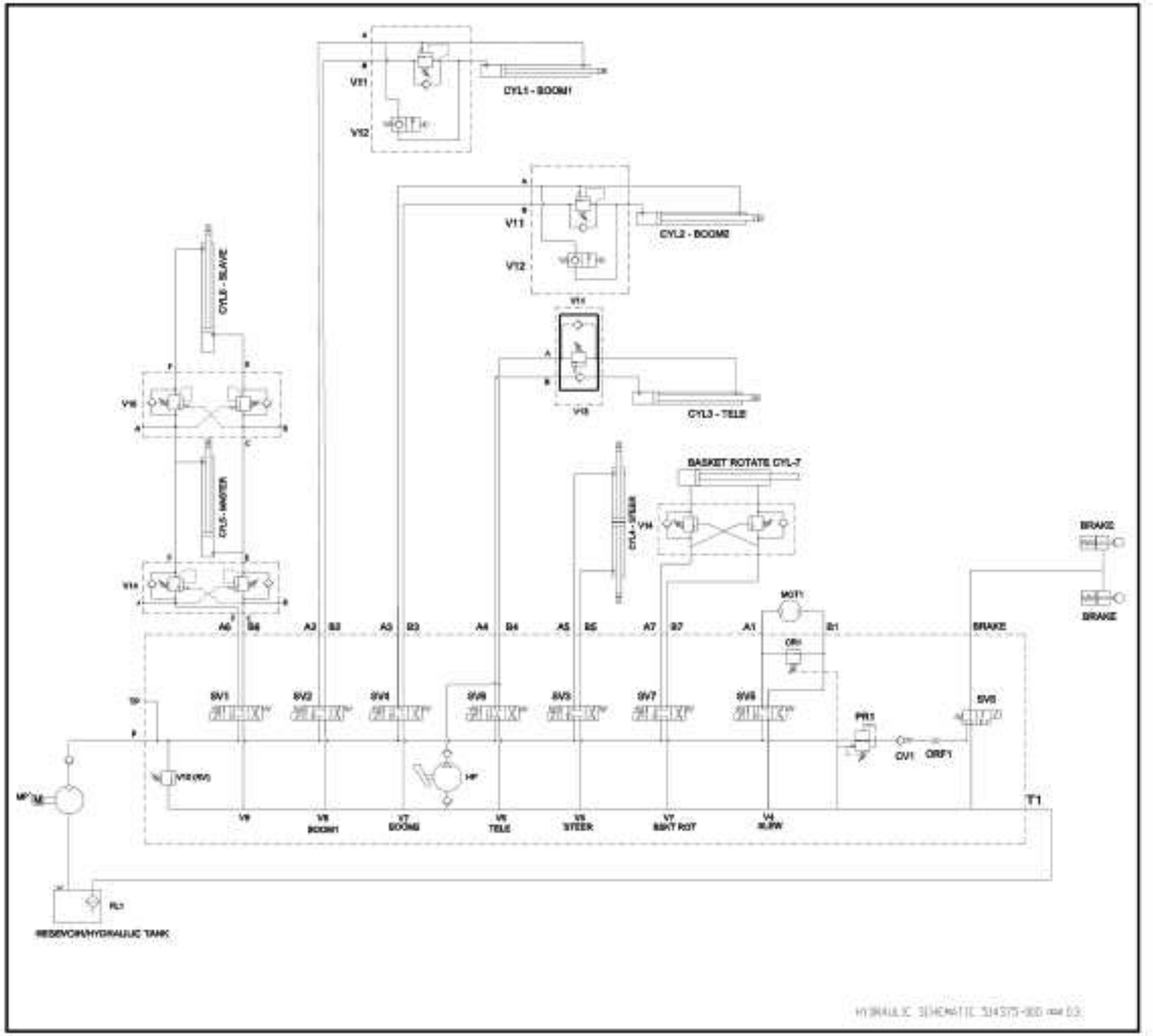
Illustrated Parts Breakdown 7.0
Complete parts lists with illustrations.

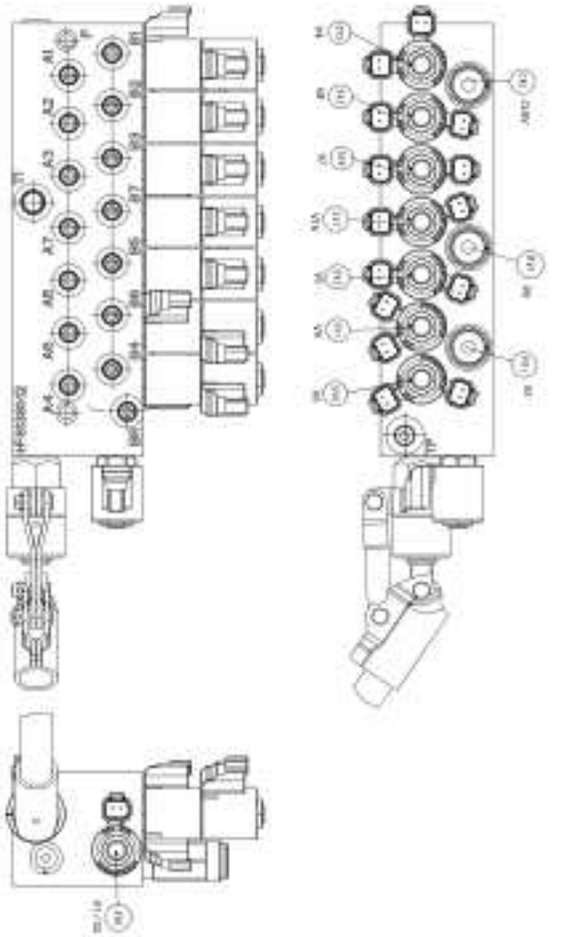
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5.1 General Troubleshooting

Problem	Cause	Action
All functions inoperable. Electric motor does not start.	1. Blown main fuse	Check the 300A fuse and replace if necessary
	2. Faulty Battery Charger	Connect charger to batteries and check the output voltage. If less than 48v, repair or replace. Check input voltage to charger. Check the internal charger protection fuse.
	3. Faulty Battery	Charge batteries overnight. Check individual cell voltage. Replace as necessary.
	4. Loose or broken battery leads	Check resistance and continuity of each individual lead. Replace as required.
	5. Emergency Stop buttons contacts failed	Check resistance and continuity of each individual lead. Replace as required.
	7. Loose Upper Control Box Terminal	Unscrew connector, align locating tabs and reconnect
	8. Battery Disconnect plug loose	Check and reconnect. Check the internal steel points for pitting or damage
Electric motor starts but all functions are inoperable	1. Low hydraulic oil	Check and top up using ISO VG 46 hydraulic oil.
	2. Faulty hydraulic pump	Insert a pressure gauge in the G1 port of the valve block. Operate a function to the limit of stroke. Check that relief valve pressure develops. Repair or replace.
	3. Faulty controller	Check the 10mm cable terminals for tightness.
Electric motor continues to run when action has ceased	1. Line contactor malfunction	Check the contact faces. Fusing or arcing due to contamination destroys the contacts. Replace the unit.
Platform elevates very slowly or not at all	1. Leaking emergency lowering valves	Check the operating levers and cables. Check closure of the control knob at the base of the control valve block. Remove and replace the cylinder-mounted valves as necessary.
	2. Faulty lift valve solenoids	Test the voltage to the mast and jib solenoids. Swap around solenoids to isolate the problem. Solenoids are not serviceable.
	3. Platform overloaded	Remove excessive load. Check the pressure setting of the hydraulic 'lift limit' relief valve (CT11) on the block. This may only be reset at 215 kg payload in the platform.
	4. Low Battery level	Check the battery cell voltages after recharging. Total battery pack voltage should exceed 18v. Charge the batteries or replace faulty battery unit.
Platform drifts down uncontrollably	1. Leaking emergency lowering / hose burst valves	Check the operating levers and cables. Check contamination within the valve. Check closure of the control knob (CT14) at the base of the control valve block. Remove and replace the cylinder-mounted valves as necessary.
	2. Cylinder piston seal internal leakage	Switch off all power functions. Disconnect the hose from the annular side of the cylinder and check for small oil flow. Oil flow indicates a faulty cylinder piston seal. Remove and repair the cylinder.
	3. Platform is overloaded	Remove excessive weight. The Safe Working Load is 215kg for A38

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MMB- Main Manifold Block

Figure 6-3, : Hydraulic Schematic (Hydraulic Platform Rotate)

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2. Provide a suitable container to catch the drained oil. Hydraulic tank has a capacity of 25 Litres (6.5 Gallons US).
3. Remove the drain plug on the lower side and allow all oil to drain.
4. Clean the magnetic drain plug and reinstall.
5. Disconnect the return hose and hose fitting from inlet port of the hydraulic return filter. Loosen and remove the filter cover retaining bolts. Remove filter (10 micron) assembly. Replace with a new filter.
6. Fill the hydraulic reservoir with hydraulic oil (see Section 1-2) checking level with dipstick.
7. Recycle used oil as per local environmental regulations.

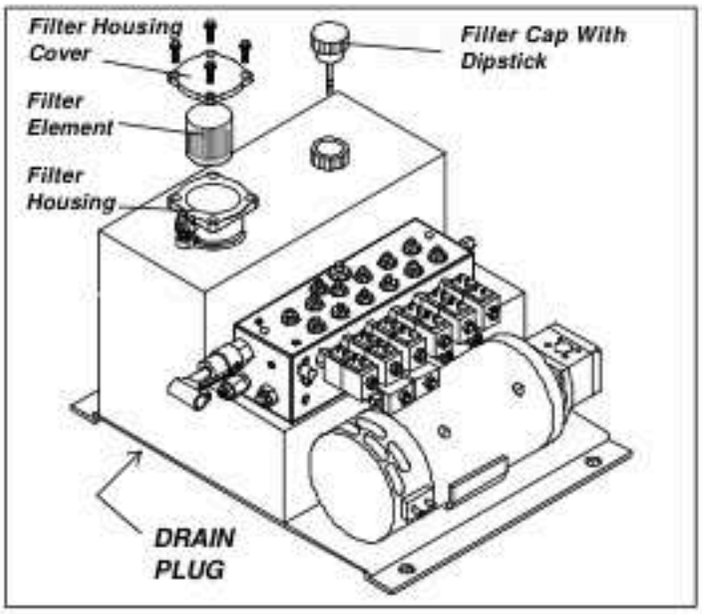


Figure 4-2: Oil and Filter Replacement

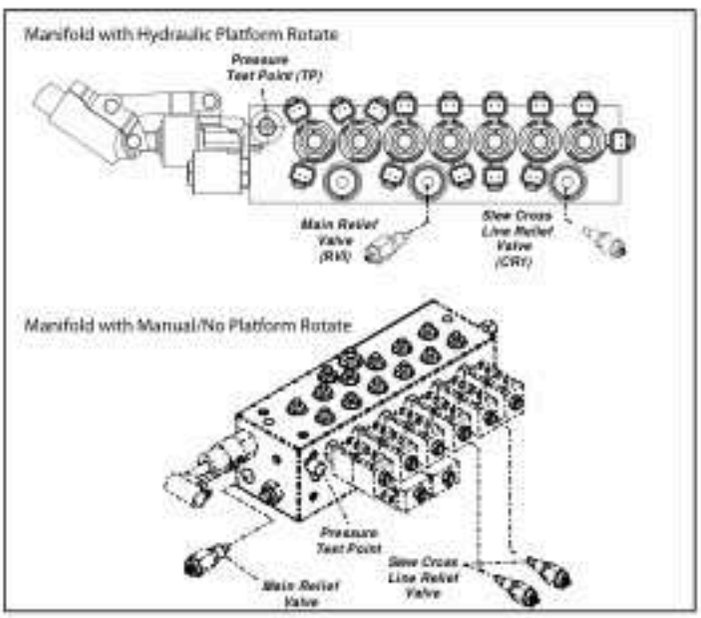


Figure 4-3: Manifold Block

4.5 Setting Hydraulic Pressures (Figure 4-3)

Check the hydraulic pressures whenever the pump, manifold or relief valve have been serviced or replaced.

WARNING

The hydraulic oil may be of sufficient temperature to cause burns. Wear safety gloves and safety glasses when handling hot oil. The oil in the hydraulic system is under very high pressure which can easily cause severe cuts. Obtain medical assistance immediately if cut by hydraulic oil.

MAIN RELIEF VALVE *(Figure 4-3,4)*

1. Operate the hydraulic system for 10-15 minutes to warm the oil.
2. Remove the cover from the Chassis body.
3. Insert pressure gauge into the high pressure gauge port (TP) on the Manifold Block.
4. Loosen locknut on main relief valve and turn adjusting screw anticlockwise two full turns using a 4 mm Allen key.
5. Operate the Telescope RETRACT function switch from lower controls and keep it activated.
6. Slowly turn the main relief valve adjusting screw clockwise until the pressure gauge reads 175 Bar (2538 p.s.i.) pressure.
7. Release the Telescope RETRACT switch.
8. Tighten locknut on main relief valve while holding the adjusting screw in position.

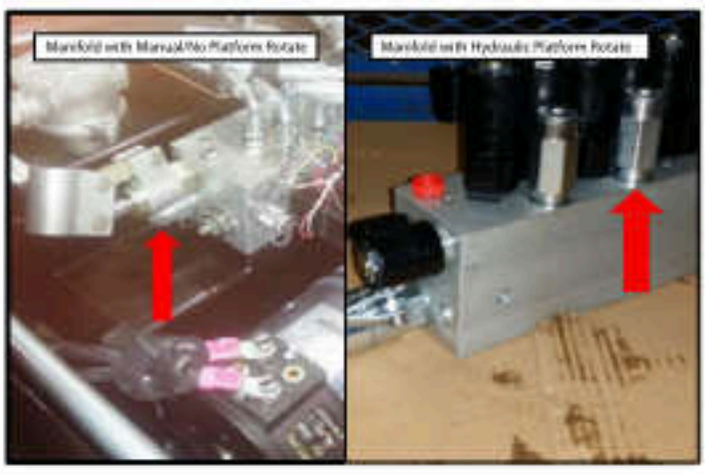


Figure 4-4: Setting Main Relief Pressures

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5. To rotate the **"PLATFORM" RIGHT**, the Controller Joystick should be moved forward. Conversely to rotate **"PLATFORM" LEFT** move the Controller Joystick backward.
6. Position the Platform perpendicular to the booms when driving or stowing the areial platform.

MANUAL PLATFORM ROTATE

Turn the hand crank (refer to Figure 3-2) counterclockwise to rotate the platform to the left and clockwise to rotate the platform to the right.

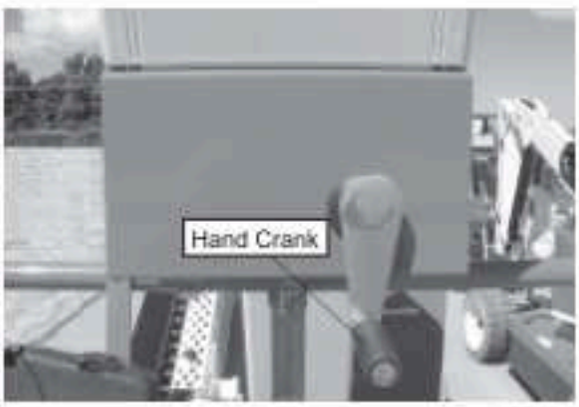


Figure 3-2: Manual Platform Rotator

Position the platform perpendicular to the booms when driving or stowing the aerial platform.

EMERGENCY SITUATIONS & EMERGENCY OVERRIDE

In any emergency situation, the first action to be taken should be to hit the red "Emergency Stop" button for instant cutout of all functions. It will then be required to twist the button clockwise, this releases the cutout and the machine can be operated again.

If the audible Tilt warning alarm sounds, normal control functions will cease to operate. This will be due to the following problem ;

- the machine is out of level i.e. Tilt Sensor has been activated.

In this situation the only machine functions that will operate are descent functions, descend to the ground in a controlled manner and cycle the power (push and release the emergency stop) to restore all functions, move the machine to a level surface and continue with normal operation.

Note that during emergency operation, controls will operate at a fixed, slow speed and will not allow the raising or extending of the Booms.

The Booms can be lowered or retracted.

Emergency Lowering

⚠ CAUTION ⚠

When operating this function, extreme care must betaken to ensure that the person carrying out the task does not become trapped by the structure. **DO NOT** climb down the Elevating Assembly to operate these valves.

Should the machine become inoperable when elevated, request a person on the ground to lower the platform using the emergency lowering valves. These are red knobs (push type) mounted at the base of the 2 Main Hydraulic Lift Cylinders (See Figure 3-3).

Operate the lower boom first by pushing slowly.

The boom will descend slowly. The speed of descent is controlled by retaining pressure on the valve - ensure a slow controlled rate of descent at all times. Descent can be halted at any time by removing pressure from the red knob.

Repeat the operation if necessary for the upper boom when cylinder is in reach of the ground.

With both main booms lowered fully it should then be possible to leave the platform safely.





Before operating the Emergency Lowering Valves the surrounding area should first be cleared of any potential obstructions. It is also important that when the valve is pushed, it is initially done slowly. This is so that sudden movement will not occur in the Elevating Assembly, leading to a potentially unstable machine.

Figure 3-3: Emergency Lowering

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