snorkel

TM12



CE

Inc. Option 2-2 deg

PARTS & SERVICE MANUAL

Part Number 514233-200

August 2017

Serial Number 060000 and after

Replaces Nov 2014

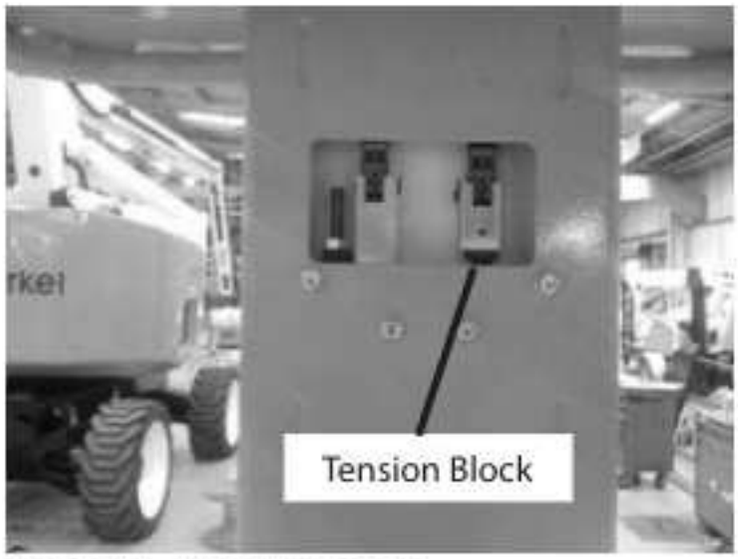
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Chain Tension Inspection & Adjustment

Refer to Figure 3-16: "Elevating Assembly," on page Section 3-20.

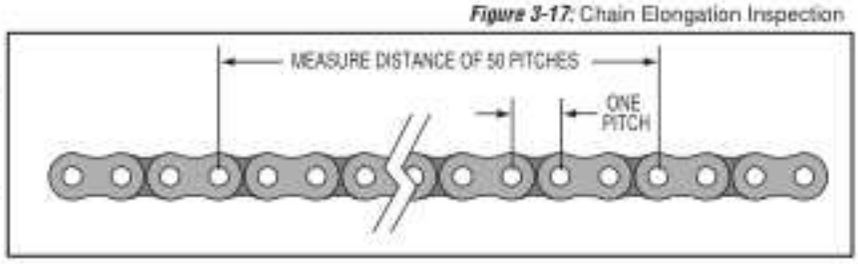
The lifting chains can be seperatly adjusted and should always be close to the same tension. This tension should be checked annually and adjusted if necessary. To do this task a spring scale will be needed with 20kg (**44 lb.**) capacity.

1. Place 227kg (**500 lbs.**) in the platform.
2. Remove the *chain inspection cover* (43) and raise the platform approximately 54cm (**21 in.**) until the outer inspection hole lines up with the inner inspection hole.
3. Attach the spring scale to one of the outer chains and pull until the chain makes contact with the inner surface of the mast section. Note the scale reading.
4. Repeat step 3 on the other outer chain.
5. Compare the scale readings. The readings for each chain in the outer set should be within 20% of each other. If not then carefully adjust the slack chain until the readings are equal. Torque up the locknuts to 25 Nm.
6. Repeat steps 3 - 5 for the inner set of chains. The readings for each chain in the inner set should be within 20% of each other.



Chain Elongation Inspection

Figure 3-17: Chain Elongation Inspection



At five-year intervals, the chains should be removed from the mast and the entire length of the chain inspected for excessive wear and elongation. Follow the procedure below to disassemble the elevating assembly. With the lift chains removed, hang them vertically from something capable of holding 100kg (**220 lbs.**). Inspect the chains thoroughly, looking for cracks in the chain links, kinks in any portion of chain, and excessive corrosion. Complete the following elongation test:

1. Attach approximately 25kg (**55 lbs.**) to the lower end of each chain.
2. Measure the distance between 50 pins. This distance should be 63.5cm - 65.4cm (**25 in. - 25 1/2 in.**).
3. Remove the weight and measure the same on the other three chains.

If the chains have elongated beyond the indicated range, replace the lift chain sets. Before reinstalling the lift chains, take this opportunity to thoroughly clean and lubricate the entire chain. Reassemble the elevating assembly as described below.

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REPLACING THE EZ230 CONTROL MODULE

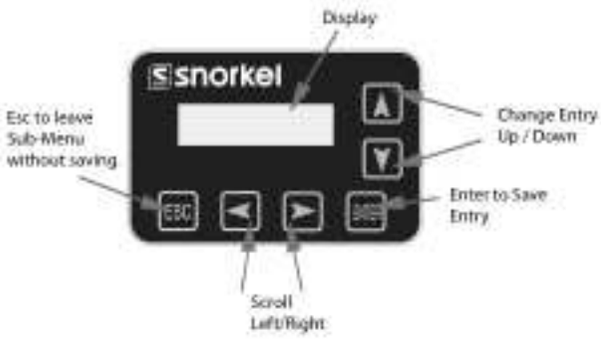
If for any reason you have to replace the EZ230 control module it is important that you complete the following procedures:

⚠ WARNING ⚠

If the EZ230 control module is replaced and/or moved within the machine for any reason the tilt sensor must be reset for zero ° using the following procedure.
Failure to do so could result in serious injury or death.

To follow this procedure you need to switch the Ezcal display in the upper Control box into "calibration mode".

1. Place the machine on a firm level surface , ≤ 0.25 °
2. Use a Gauge to confirm that the front and rear of the chassis are level to within +/- 0.25 ° in both directions
3. Switch the machine on and press and hold Esc for 5 Seconds until "Ezlift Menu" is displayed.
4. Scroll to access level.(Enter)
5. Enter code 2222 for access level 2 .(Enter)
6. Scroll to setups.(Enter)
7. Change defaults. (Enter)
8. Select 1= Scissor. (Enter)
9. Scroll to model. (Enter)
10. Select 1 = TM12 (Enter followed by ESC)
11. Scroll to tilt setups . (Enter)
12. Calibrate level. (Enter)
13. Enter for yes.



To confirm calibration has worked switch the machine of then back on again.

14. Scroll to Diagnostics. (Enter)
15. System. (Enter)
16. Scroll to tilt, both readings should be below 0.2 ° if not repeat from 5.

4.3 TROUBLESHOOTING TABLES

The next step is to refer to the Troubleshooting charts in Tables.
Refer to Hydraulics Section for detailed Troubleshooting information on the Pump/Motor Controller.
Read and understand the Principles of Operation before commencing any trouble shooting.

⚠ WARNING ⚠

RISK of SERIOUS INJURY.

Ensure that the work platform is resting on a firm, level surface.

The elevating assembly must be supported by an overhead hoist when troubleshooting and servicing the electrical/hydraulic system.

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Lift Chain Lubrication

Refer to Figure 3-16: "Elevating Assembly," on page Section 3-20.

With platform in the stowed position;

- remove the *platform mast cover* (43).
- apply enough aerosol chain lubricant to the exposed portion of all four chains to allow the lubricant to run down the chains.
- replace the cover.
- remove the chain inspection cover (44).
- raise platform approximately 10cm (**4 in.**), until the inner set of chains are visible through the chain inspection hole.
- apply enough aerosol chain lubricant to the exposed chain to allow the lubricant to run down the chain.
- replace chain inspection cover.

Elevating Assembly Wear Inspection

Refer to Figure 3-16: "Elevating Assembly," on page Section 3-20.

At the same time as the chain lubrication task, inspect all elevating assembly components for wear.

With the platform in the stowed position;

- inspect the system through the *platform mast cover* (43) to look for worn *pulleys* (11 & 13) or damaged components.
- Inspect the *chain anchors* (7,10 and 12) and visible portions of lift chain as you lubricate it.
- Look for cracks in the chain links, kinks in any portion of chain, and excessive corrosion.

From the lower controls, raise the platform and block the elevating assembly (see Figure 3-1: "Supporting Elevating Assembly," on page Section 3-3).

- Inspect the *inner chain anchors* (9, 30 and 31) and the ends of the chains for damage or worn parts. If damage is present, replace the components.

IMPORTANT: There are two pairs of two chains each, for a total of four chains. If only one chain of either pair is damaged, both chains in the pair must be replaced.

Sequence Rope Tension Inspection & Adjustment

1. Elevate the platform and support the elevating assembly, **see section 3.1.**

2. Adjust the tension in the ropes to ensure they will stay seated in their pulley wheels during lift and lowering as shown in the below picture. you should just be able to pull each rope against the outer mast with one finger.

3. Raise the platform to its full height and visually inspect each rope for damage.





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3-13 PROXIMITY SWITCH

⚠ WARNING ⚠

Never perform work within the elevating assembly area while the platform is elevated without first blocking the elevating assembly, **see Section 3-1.**

REMOVAL

1. Raise the platform and gain access to the proximity switch located within the chassis on the front bulkhead close to the mast. **See WARNING note above.**
2. Turn the base control key-switch to OFF and press the emergency stop button to OFF.
3. Disconnect the proximity switch plug from the wiring harness proximity switch connector.
4. Remove one nut and one shakeproof washer from the proximity switch and remove the proximity switch (Refer to Figure 3-21).

Figure 3-21 Proximity Switch



INSTALLATION

1. Remove one nut and one shakeproof washer from the proximity switch (Refer to Figure 3-21).
2. Fit the proximity switch into the chassis mounting hole at the front of the machine.
3. Refit the shakeproof washer and the nut.
4. Initially set the proximity switch with the sensing head projecting approximately 20mm externally from the chassis external face and tighten the proximity switch nut.
5. Connect the proximity switch plug into the wiring harness proximity switch connector.
6. Turn base control key-switch to Lower Control and twist and pull the emergency stop button to ON.
7. Remove the supporting block **(see Section 3-1)** prior to operating the mast lowering functions to check that the proximity switch will not foul the mast and that the proximity switch and related functions operate correctly.

To check that the proximity switch will not foul the mast:

8. Slowly lower the mast and ensure/check that the proximity switch will not foul the mast.

To check that the proximity switch position is set correctly and functions operate correctly:

9. Raise the platform floor approximately 500mm above the chassis.
10. Lower the platform and check if the proximity switch activates.
    Lowering of the platform will automatically stop (armguard delay) and requires the lowering controls to be released and waiting 3 seconds before the lowering controls can be reactivated to continue the platform lowering operation.
11. With the platform lowered (stowed position or below the proximity switch switching position, i.e. proximity switch is closed) activate the drive function. Check that the depression guard bars (see Figure 3-10) raise and that the full travel speed range is activated.
12. With the platform raised just above the proximity switch switching point i.e. proximity switch is open, activate the drive function. Check that the depression guard bars (see Figure 3-10) are lowered and only reduced travel speed is activated.

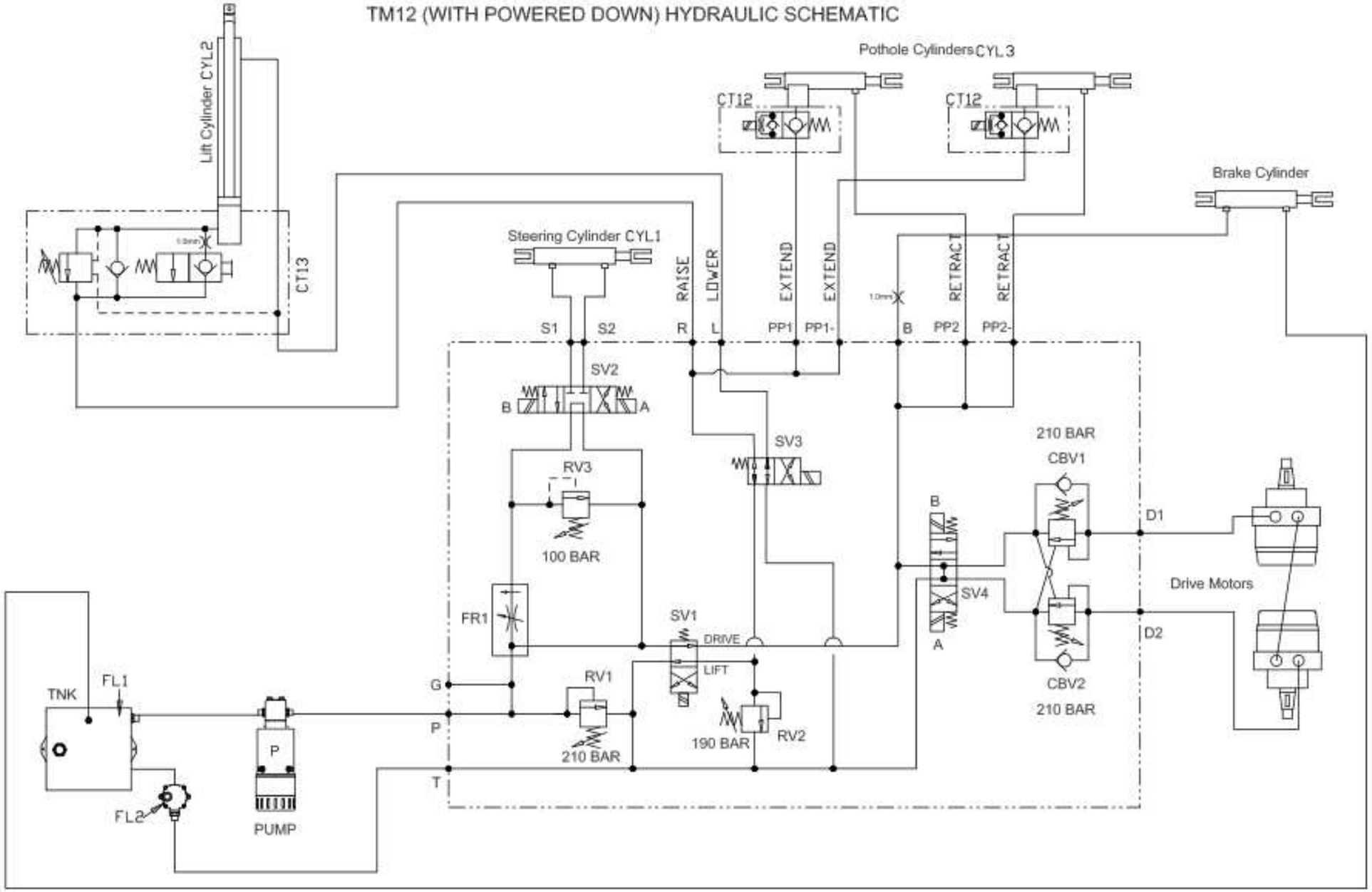
If the proximity switch does not activate or the functions do not operate correctly:

13. Raise the platform to gain access to the proximity switch. **See WARNING note above.**
14. Adjust the position of the proximity switch sensing head closer to the mast.
    Important: Positional adjustments are to be made in small increments only (approximately 1mm) followed by ensuring/checking that the proximity switch will not foul the mast and that the proximity switch position is set correctly and functions operate correctly (see relevant steps above).

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TM12 (WITH POWERED DOWN) HYDRAULIC SCHEMATIC



ISSUE	DATE	BY	C/N No.	ISSUE	DATE	BY	C/N No.
				01	27.03.15	CH	26611
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MATERIAL

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