Service Call:
Bleeding and Setting Rotation Hydraulic Overload Protection (HOP)

Tools Required:
- S-Wrench Set
- Dynamometer
- Hydraulic Pressure Gauge
- Side Pull Sheave
- Allen Wrench Set
- Suitable Anchor

Model(s):
- Telecon
- C4000
- L4000
- XL4000
- C5000
- Command All
Tech Tip Safety Rules

Danger
Failure to obey the instructions and safety rules in the appropriate Operator's Manual and Service Manual for your machine will result in death or serious injury. Many of the hazards identified in the operator’s manual are also safety hazards when maintenance and repair procedures are performed.

Do Not Perform Maintenance Unless:
- You are trained and qualified to perform maintenance on this machine.
- You read, understand and obey:
  - manufacturer’s instructions and safety rules
  - employer’s safety rules and worksite regulations
  - applicable governmental regulations
- You have the appropriate tools, lifting equipment and a suitable workshop.

The information contained in this tech tip is a supplement to the service manual. Consult the appropriate service manual of your machine for safety rules and hazards.

! WARNING

Escaping fluid under pressure can penetrate skin causing serious injury.

Relieve pressure before disconnecting hydraulic lines. Keep away from leaks and pin holes. Use a piece of cardboard or paper to search for leaks. Do not use your hand.

Fluid injected into skin must be surgically removed within a few hours by a doctor familiar with this type injury or gangrene will result.
Introduction
The purpose of the rotation HOP is to help protect the rotation gear drive from being over-loaded when the unit is subjected to excess side pull. Pressure is measured on two pistons located in the rotation gear box. When the pressure in the sensing valves reaches a set point, the HOP system is activated and the hydraulic oil is dumped back to tank instead of to the functions (Digger-Dig, Winch-Up, 2<sup>nd</sup> and 3<sup>rd</sup> section extend, and Boom Down if equipped).
Step 1
Determine gauge installation location:

- Use test coupler G2 on combined HOP manifold for Rotation HOP
• Use the test coupler attached to the block with the allen head adjustment on the opposite end for separate HOP sensing valve

421579 HOP Sensing Valves Shown
**Step 2**
Locate the proper gauge port and install a bleed hose to remove air out of the system. Rotate back and forth slowly several times to bleed any trapped air out of the gear box. Remove the bleed hose and install the gauge. Ensure the gauge shows 180 psi with the unit running, 300 psi if the unit is equipped with a Hydrasync digger or radio controls. Test at full throttle or with unit function dead headed.

**Step 3**
Position the truck to allow connecting to an anchor or fixed object that can be pulled against. The anchor must be capable of holding up to 2,500 lbs of force. The boom should be positioned so the anchor is perpendicular to the boom.
Step 4
With the boom rotated off the back or side of the truck, lower the boom until the lift cylinders are fully retracted. Attach the side pull sheave and set the boom length by extending the 2\textsuperscript{nd} section using the table below. Measurements are from the center of rotation to the center of the sheave on the side pull adapter with the sheave in the working position.

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Step 5
Extend 3<sup>rd</sup> section out to give winch rope clearance to the side pull sheave and run the rope thru the sheave as shown.

The side pull sheave is only used for testing. (P/N 445219)
Side pull is not permitted during operation.
Step 6
Attach a dynamometer between the winch line and the fixed anchor. Do not exceed 2300 lbs of force when pulling with the winch.

Step 7
Using the lower controls, winch up and apply 1000 PSI of pressure on the gauge. (Make sure to have enough winch line between the side-pull sheave and dynamometer that when HOP dumps the winch line and boom are at a 90 degree angle)
Step 8

Winch up slowly and at idle until the winch stops moving and Rotation HOP dumps. If the pressure exceeds 1700 psi or the dynamometer reads greater than 2300 lbs. stop the test and go to step 9 to adjust pressure. Repeat steps 7 and 8 to retest. Once you have verified that you are not exceeding 2300 lbs. of force on the dynamometer or 1700 psi on the gauge, then pull the handle fully at Wide Open Throttle and set the pressure for 1700 PSI ±50.

⚠️ Do not exceed 2300 lbs. on Dynamometer when pulling winch.

To increase or decrease pressures go to Step 9. Repeat steps 7 and 8 to retest.
Step 9
On the 485770 HOP Manifold increase the pressure by loosening jam nut and adjusting PS1 clockwise, and decrease the pressure by adjusting PS1 counterclockwise. Tighten jam nut when adjustment is complete.
On the 421579 HOP sensing valve, increase the pressure by loosening jam nut and adjusting the allen screw clockwise, and decrease the pressure by adjusting the allen screw counterclockwise. Tighten jam nut when adjustment is complete.