ZOM-10000-X

Hydraulic RHGSE Display Programming

Hydraulic Rescue Hoist Ground Support Equipment

Reference: ZOM-10000-X

Appendix E

E.1 Information

E.1.1 Support
Please contact Zephyr International LLC with any questions.

Zephyr Technical Support
>Email: info@zephyrintl.com
>Phone: 1-843-365-2675

Online Support
>Visit website at www.zephyrintl.com
>>- Sign up for the Members Only section, browse available information and resources.
>>- Register your serial number information and identify a point of contact for future service bulletin release(s).

E.1.2 Table of Contents

E.1.3 Warnings & Notes

NOTE:
The displays will not illuminate if the inboard battery is discharged because of neglecting to charge the batteries.

If the displays start blinking, then go out completely, the battery has dipped below 8 volts. This can happen when the battery charger is left unplugged, or the system is used continuously for more than two hours.

The indicator readouts may also fail due to low voltage or a blown fuse. If this occurs, the operator must use caution and visually watch the cable as it approaches the starting position.

E.2 Introduction

Load Indication System.

The Ground Support System **is not intended** for precision load application, but only as a tool to be used to apply approximate loading to ensure the cable is tensioned and conditioned during ground maintenance. However, in the event one desires to understand the accuracy of the load display then the following section applies.

NOTE:

The display of the load is accurate to within +/- 5% only in the retracting direction. Each machine is tested in the factory to ensure it is within these limits.

- The displayed load in the extend direction is slightly higher than the actual load due to the slight inefficiency of the capstans and the fact that the motor must overhaul the load.

- The load indication system consists of a load cell and a load display. The load cell reacts to the torque of the hydraulic motor as it pulls or resists the pull of the wire rope.

- Therefore, the exact calibration curve for each machine is measured in the factory, and a calibration curve calculated. The calibration curve is supplied with each machine.

⚠️ **WARNING**

Do not attempt to tighten or loosen the bolt that attaches the load cell to the reaction arm. Doing so will change the load cell display and render it inaccurate.

E.3 Load Display Programming

E.3.1 Method A: Rescue Hoist Test Stand

To adjust or program the Load Display on the Hydraulic RHGSE, a Rescue Hoist Test Stand (RHTS) can be employed to complete the task. The following procedure

- Perform a load calibration run. Set up the Omega DP25BS as follows:

Step 1 - Set Dip switches for a 0-100 MV input signal:

1	2	3	4	5	6	7	8
X	O	C	O	O	X	X	O

Step 2 - Set dip switches for a 10 V excitation voltage:

1	2	3	4	5	6	7	8
C	O	C	O	O	C	O	O

Step 3 - Program the meter as follows:

    3.1 Select input type **INPt**

        o 100M

    3.2 Select decimal point display

        o FF.FF

    3.3 Scale with unknown loads as follows:

    3.4 Determine the load cell sensitivity from the load cell calibration sheet. Load Cell sensitivity is mV out = LSC=_____

    3.5 IN1= internal meter value (press tare twice then press Menu to store the value IN2= LSCx5x100=_____

    3.6 Rd1=0000

    3.7 Rd2=LSC

    3.8 Select Reading Configuration to set the input resolution

    3.9 Set R.2=1 for a 20mV input signal

Step 4 - Set up the system and measure the actual loads indicated by the test frame and the output of the load cell in mV and record them on the test data sheet.

Step 5 - Plot the results and calculate the slope of the curve in lbs. (m)V and the y intercepts point.

Step 6 - Calculate the GSE max load **Y= M x LSC+B** to determine the mechanical correction factor

Step 7 - Change the decimal point display to **FFFF**

Step 8 - Reprogram the meter with the new Rd2=**Y=_____**

Step 9 - Make another run and measure the actual test frame indicated loads and the GSE indicated loads

    9.1 Plot the new loads and determine if the indicated loads are with 5% of each other at the high end of each range.

    9.2 Extending maximum load range is 300 lbs. (136 kg)

    9.3 Retracting maximum load range is 600 lbs. (272.2 kg)

Step 10 - Enter the results into the calibration test data record and include the data into the ATP record for the unit.

E.3.2 Method B: Scaling w/ a Known Load

- If a RHTS is not available, it is possible to scale the Load Display by other means. This method will require operating the RHGSE at extreme loads to use the known weight of the RHGSE as the calibrated load by which the Load Display will be programmed.

NOTE:
The RHGSE will start to lift off the ground at around 600 lbs. (272.2 kg).

Step 1 - Actuate the Extend/Retract Rocker Switch to the Retract position

NOTE:
The Hydraulic Pump should be running, but the capstans and tub should not be rotating.

Step 2 - Press the **MENU** button until the meter shows RD.S.O.

Step 3 - Press the >**TARE** button. The meter shows IN1 (Input 1).
IN1 (Input 1) is the unscaled display reading at minimum input.

Step 4 - Press the >**TARE** button again. The meter shows last stored value for Input 1.

Step 5 - Press the >**TARE** button once more. The meter shows the actual signal being received.

Step 6 - Press the **MENU** button to store this value as IN1 (Input 1). The meter shows
RD1 (Read 1). RD1 (Read 1) is the desired display reading at Input 1.

Step 7 - Press the >**TARE** button. The meter shows the last stored value for Read 1.

Step 8 - Press the ^**NT/GRS** button to change the value of your digits to 0000

Step 9 - Press the >**TARE** button to scroll horizontally to the next digit.

Step 10 - Press the **MENU** button to store value as RD1. The meter shows IN 2(Input 2).

Step 11 - Start retracting the load with the hoist and adjust the load on the GSE until the GSE just starts to lift off the ground. Try to keep the load as steady as possible. (This requires an assistant to run the hoist while the next steps are performed.

Step 12 - Press the >**TARE** button again. The meter shows the last stored value for Input 2.

Step 13 - Press the >**TARE** button once more. The meter shows the actual signal being received.

Step 14 - Press the **MENU** button to store Input 2 value. The meter shows RD 2(Read 2).

Step 15 - RD2(Read 2) is the desired display reading at input 2.

Step 16 - Press the >**TARE** button. The meter shows the last stored value for Read 2.

Step 17 - Press the ^**NT/GRS** button to change the value of your digits to 0600

Step 18 - Press the >**TARE** button to scroll horizontally to the next digit until the meter reading matches the load cell meter reading of 600

Step 19 - Press the **MENU** button to store value as RD 2(Read 2). The meter momentarily shows STRD, followed by RD.CF. Meter scaling is now complete.
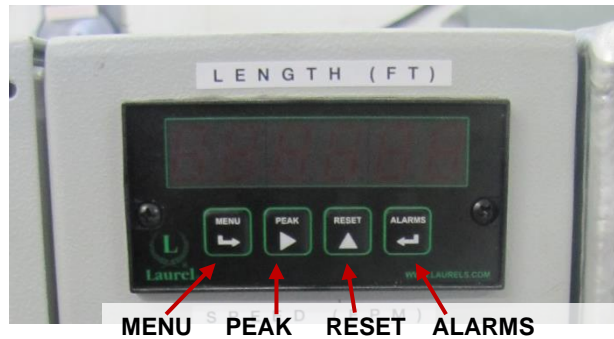
E.4 Length Display

E.4.1 Adjusting the Length Display Alarm Set-point.

Step 1 - Determine if the set point needs to be reset by pressing **"ALARMS"** to display the set point.

NOTE:

The set point must be set to -0.1 or -00000.1.

If set point is correct skip to Step 7.

MENU   PEAK   RESET   ALARMS

NOTE:

It may also display -0.1 and the red LED and the display will be flashing.

Step 2 - If not -00000.1, press **"PEAK"** within 30 seconds.

Step 3 - Press **"MENU"** to scroll across the digits to reset them to -00000.1.

Step 4 - For the first digit, press **"RESET"** to change the digits until the negative sign appears.

Step 5 - Press **"MENU"** to scroll to the next digit, and then press **"RESET"** until it displays 0.

NOTE:

Repeat Step 5 for the next five (5) digits.

Step 6 - Press **"MENU"** to scroll to the next digit, and then press **"RESET"** until it displays 0.1.

Step 7 - Press **"ALARMS" twice** and the display should return to 0.0