This guide provides installation, operation and configuration of Cascade Portable Clamp Force Indicator (Dynamometer) for measuring Roll Clamp force. This instrument comes with a handheld numeric display control. The battery can be recharged through the battery charger supplied. Clamp force can be measured in various units: kg, lb, N and dN. See the schematic, below, for controller connections for cell input and battery charging.

This indicator can be used to determine clamp force retention and calibration for roll clamp attachments.
KEY FUNCTIONS

A **ON** - Turns controller on. Hold for two (2) seconds.
B **ZERO** - Zeros the cell. This value is permanently stored into the instrument's memory.
C **OFF** - Turns controller off.
D **TARE** - Takes the difference of initial applied force and a second applied force.
E **UNIT** - Select unit to measure force. The selected unit will show as a lit LED light on the controller.
F **HOLD** - Locks the force value on display. This can be unlocked by pressing HOLD again.

SETUP

1 Assemble the cell and controller as shown.
2 With the attachment arms vertical, stabilize the load and open the arms enough to attach a strap and the cell between the load and long arm contact pad.
3 Hook the strap at the top of the arm contact pad.
4 Hook the cell onto the bottom hook of the strap. Adjust the strap length so that the cell is in the center of the contact pad.
1. Make sure the cell is aligned with the arm contact pad.
2. Press ON button on controller.
3. Press UNIT to select desired weight unit: kg, lb, N, dN.
4. Press ZERO to zero out any weight.
5. Slowly clamp the load. Clamp fully at 2/3rd throttle, holding the CLAMP lever several seconds.
6. Take note of the clamp force on the display. Release the clamp. Record the display value. Determine if the clamp force value is correct and does not exceed recommended clamp force for rolls being handled.

NOTE: Clamp Force required to prevent crushing is commonly marked on the roll. Refer to the section “Adjust Clamp Force”.

NOTE: For an expanded recommended procedure for setting clamp force, see Cascade Technical Bulletin TB 284 (Part Number 6053675).

1. Install a 5000 psi (345 bar) pressure gauge at the truck CLAMP supply terminal.
2. Clamp on a typical roll in the vertical roll handling position and slowly lift roll. If slippage occurs, increase truck system pressure in 100 psi (7 bar) increments until roll does not slip.
3. Lift roll 3 ft. (1 meter) and quickly lower roll, alternately stopping and starting the carriage to determine one of the following:
   - If roll does slip, increase truck system pressure in 100 psi (7 bar) increments until roll stops slipping.
   - If the roll does not slip, the pressure may be set accurately. Go to Step 4.
4. Check rolls for damage to determine if there is excessive clamp force. If rolls are damaged, decrease truck system relief pressure in 100 psi (7 bar) increments until roll slips.
5. Test Roll Clamp in a variety of operating conditions representing normal day to day operation. If roll slippage is reported by the driver, increase system pressure 100 psi (7 bar). Test again for secure clamping.
6. Keep a log of any roll slippage, pressure adjustments, and hydraulic system maintenance.
Connections

Batterying Charger - The controller uses a NiCd battery pack that is 7.2 V and 500 mAh in rating.

IMPORTANT: Charge the battery for at least four (4) hours before using.
Cascade calibrates the Dynometer 03 prior to shipment. Perform this procedure only if the instrument is not reading properly.

**IMPORTANT:** This procedure must be done with a known force applied to the cell. To calibrate, force must be done at 100% capacity.

1. Turn on the controller by pressing the ON key.
2. When “8.8.8.8.8. 8.” appears on the display, press HOLD twice. “H1 1” will appear on the display.
3. Press ZERO until “-0000-” appears on the display.
4. Press HOLD to zero the cell. The controller will exit the current display and provide a visual check indicating that the cell has been zeroed.
5. Press UNIT to select the appropriate unit for the known force.
6. Turn the controller off and repeat steps 1 and 2.
7. Press ZERO until “P5 5” appears on the display.
8. Press HOLD to enter the menu. “00000” will appear on the display.
9. Clamp a known force onto the cell.
10. To enter the known force by pressing ZERO to move the blinking digit to the right and TARE to increase the value of the selected digit.
11. Press UNIT to cancel the entered value.
12. Press HOLD to store the value. The controller will exit the current display and will provide a visual check of the entered value.
IMPORTANT: Cascade has setup the Dynomometer 03 for immediate use. Change the settings ONLY when necessary.

NOTE: The controller must be turned off in order to access the settings menu.

SETTING THE ROUNding VALUE AND DECIMAL PLACEMENT
This setting allows the display to show how accurate the measurement needs to be.

IMPORTANT: For settings done in kg, lb and dN, one decimal digit must be entered.

1 Turn on the controller by pressing the ON key.
2 When “8.8.8.8.8.” appears on the display, press HOLD twice. “H1 1” will appear on the display.
3 Press HOLD to enter the rounding menu.
4 Press ZERO to select the decimal place. The following options are available:
   - 0.00X (1/1000th place)
   - 0.0X (1/100th place)
   - 0.X (1/10th place)
   - X (1st place)
   “X” is determined with the step 5.
5 Press TARE to select a rounding value for the measure force to round to: 1, 2, 5, 10, 20 or 50
   For example, if the cell measured a force of 5,648 lbs. and “10” is the rounding value, the controller will display 5,650 lbs.
6 Press HOLD to store the value and go back to the main preferences menu.
7 Press ZERO to go to another preference or press UNIT for 2 sec to exit to the main preferences menu.

SETTING DIGITAL FILTER
The filter option averages the input signal to enhance accuracy.

1 Turn on the controller by pressing the ON key.
2 When “8.8.8.8.8.” appears on the display, press HOLD twice. “H1 1” will appear on the display.
3 Press ZERO until “L2 2” appears on the display.
4 Press HOLD to enter the digital filter menu.
5 Press ZERO to select one of the following options:
   - L 00 - standard filter
   - L 01 - enhanced filter
6 Press HOLD to store the desired option. This will also go back to the main preferences menu.
7 Press ZERO to go to another preference or press UNIT for 2 sec to exit to the main preferences menu.
SETTING OPTIONAL AUTOMATIC ZERO

The automatic zero option will allow the cell to zero when turning the controller on.

1. Turn on the controller by pressing the ON key.
2. When “8.8.8.8.8.8.” appears on the display, press HOLD twice. “H1 1” will appear on the display.
3. Press ZERO until “03 3” appears on the display.
4. Press HOLD to enter the automatic zero menu.
5. Press ZERO to select one of the following options:
   - 0 00 - No automatic zeroing will be performed when the controller is turned on.
   - 0 SI - All weight found will be set to zero when the instrument is turned on.
   - IMPORTANT: Setting the scale to zero is only possible when the weight is less than 5% the cell maximum value. To change this setting, see “Setting the Cell’s Maximum Force”
6. Press HOLD to store the desired option. This will also go back to the main preference menu.
7. Press ZERO to go to another preference or press UNIT for 2 sec to exit to the main preference menu.

SETTING THE CELL’S MAXIMUM FORCE VALUE

For an applied force that exceeds a set maximum value, “OL” will appear on the display.

1. Turn on the controller by pressing the ON key.
2. When “8.8.8.8.8.8.” appears on the display, press HOLD twice. “H1 1” will appear on the display.
3. Press ZERO until “E6 6” appears on the screen.
4. Press HOLD to enter the maximum force menu. A previous set value may appear on the display. To change this value, go to step 5; otherwise, go to step 7.
5. Press ZERO to move the blinking digit to the right.
6. Press TARE to increase the value of the selected digit.
7. Press UNIT to cancel the entered value.
8. Press HOLD to store the entered value. This will also go back to the main preference menu.
9. Press ZERO to go to another preference or press UNIT for 2 sec to exit to the main preference menu.
ENABLE/DISABLE SERIAL OUTPUT

Choose to enable or disable data output from a continuous force, transmitted through a serial output.

1 Turn on the controller by pressing the ON key.
2 When "8.8.8.8.8.8." appears on the display, press HOLD twice. "H1  1" will appear on the display.
3 Press ZERO until "S7 7" appears on the display.
4 Press HOLD to enter the serial output menu.
5 Press ZERO to select one of the following options:
   S 00 - No serial transmission. (Cascade recommends)
   S SI - Weight/force data will be transmitted.
6 Press HOLD to store the desired option. This will also go back to the main preference menu
7 Press ZERO to go to another preference or press UNIT for 2 sec to exit to the main preference menu.

ENABLE/DISABLE PEAK FUNCTION

Enabling this option will display and hold the maximum applied force value reached. This option is good for break testing. Press HOLD to unlock this result from the display.

NOTE: For a precise reading of peak value, the serial transmission should be enabled. Once the peak value is displayed, data will be transmitted through the serial output.

1 Turn on the controller by pressing the ON key.
2 When "8.8.8.8.8.8." appears on the screen, press HOLD twice. "H1  1" will appear on the display.
3 Press ZERO until "P8 8" appears on the display.
4 Press HOLD to enter the peak function menu.
5 Press ZERO to select one of the following options:
   P 00 - The controller will display a dynamic applied force.
   P SI - The controller will display the maximum applied force reached.
6 Press HOLD to store the desired option. This will also go back to the main preference menu.
7 Press ZERO to go to another preference or press UNIT for 2 sec to exit to the main preference menu.
**IMPORTANT:** All settings and data will be lost when the memory is cleared. Preferences and calibration will need to be performed.

1. Turn on the controller by pressing the **ON** key.
2. When “8.8.8.8.8.8.” appears on the display, press **HOLD** twice. “H1 1” will appear on the display.
3. Press **ZERO** until “−−−−−−” appears on the display.
4. Press **HOLD** to enter the menu. The display will show “-HELP-“.
5. Press **ZERO** to clear the memory or **HOLD** to exit this menu.
   **NOTE:** Pressing **HOLD** will exit to the current display without clearing the memory.
6. Press **ZERO** to go to another preference or press **UNIT** for 2 sec to exit to the settings display.
Do you have questions you need answered right now? Call your nearest Cascade Service Department. Visit us online at www.cascorp.com

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