

Operation Manual for Instron 8800/8500

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OUTLINE

Before Your Tests:

- Initial Action
- System Setup
 - System Units Selection
 - Transducer Units Magnitude
 - Display Selection
 - Review Results
- System Calibration
 - Automatic Calibration
 - Manual Calibration

Carrying Out Your Tests

- Limits Selection
- Set Up Your Specimens
- Control Mode Transfers
- Load Protection
- Range Selection
- Set Point Selection
- Zero Suppression Selection
- Waveform Selection
- Test Control

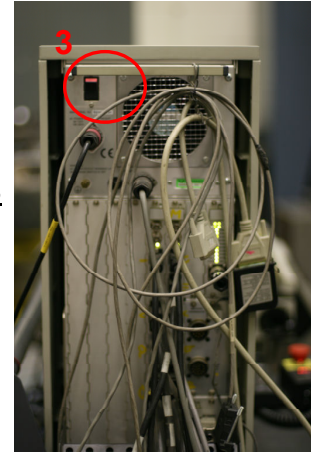
1. Initial Action

1. Make sure the pump is turned on
2. Turn on the valve
3. Set the POWER switch ON (at the back of the controller), then wait until system self-test finishes



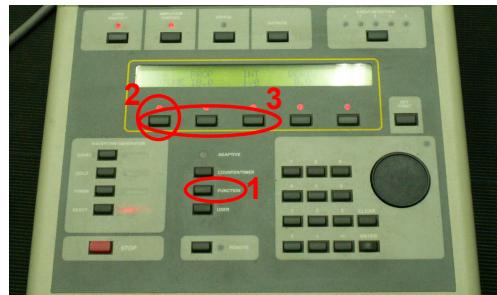
The following may be carried out after system calibration and before your tests

4. Press HYDRAULICS ON button to start hydraulic pump
5. Press ACTUATOR LOW button
6. Press ACTUATOR HIGH button
7. When turning off the system, follow the reverse sequence, you don't need to turn off controller



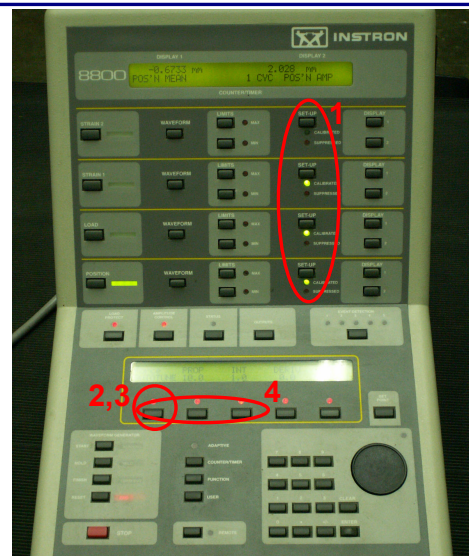
System Units Selection:

1. Press FUNCTION key
2. Press the key under SELECT UNITS
3. Select either SI, METRIC or US CUSTOMARY system of units



Transducer Units Magnitude:

1. Press SETUP key on the mode module (either STRAIN, LOAD or POSITION) you wish to change units magnitude
2. Press the key under CAL.
3. Press the 1st key under the current unit
4. Select the desired system of units



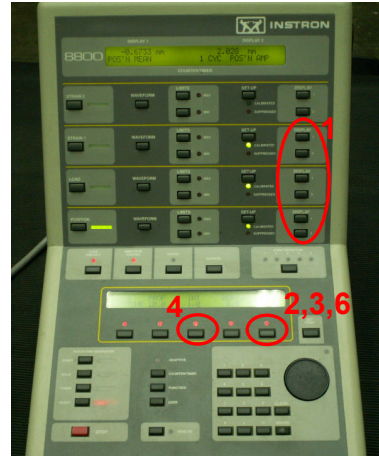
Display Selection:

1. Press the DISPLAY 1 key on the relevant mode controller
2. Select either TRACK, MIN, MAX or AMP, press MORE and you can select MEAN (usually select TRACK)
3. Repeat above procedure to select the other display



Review Results:

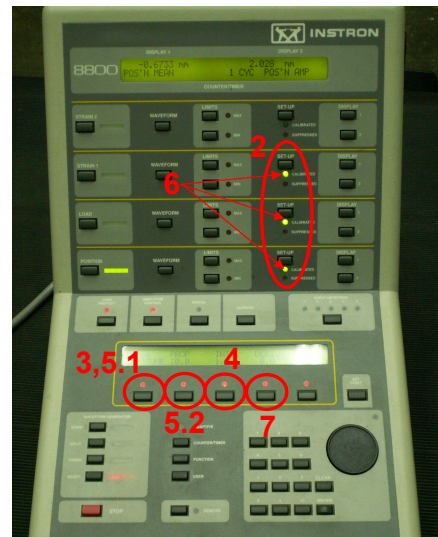
1. Press DISPLAY 1 or 2 key on the relevant mode controller
2. Press the key under MORE
3. Press the key under MORE again
4. Press the key under REVIEW ULTS
5. Read the peaks in the lower display
6. If desired, press RESET to reset both ultimate peaks to the current value



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Automatic Calibration (strain-gage-based-transducers only) :

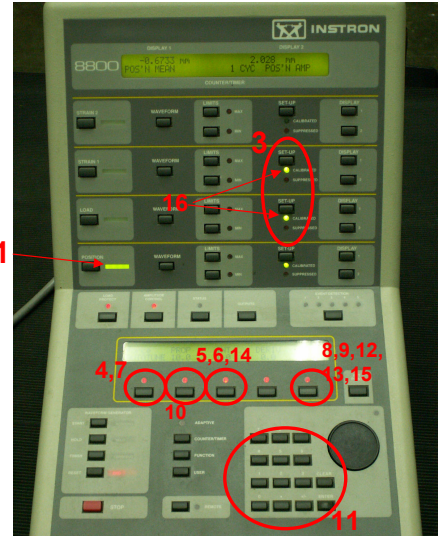
1. Ensure the channel for calibration is not currently in control
2. Press the SETUP key on the mode controller for calibration
3. Press the key under CAL.
4. Press the key under CAL again
5. Either RESTORE a calibration or use AUTO calibrate:
 1. Press the key under RESTORE to restore a previously calibrated values (ask Greg if this is OK)
 2. Press the key under AUTO, ensure transducer at zero point, then press the key under GO
6. Wait until completion of calibration, CALIBRATED indicator should be green (no flashing)
7. Press the key under BALANCE to balance the channel, e.g. cancel out grip weights



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Manual Calibration (for transducers with a calibration relay) :

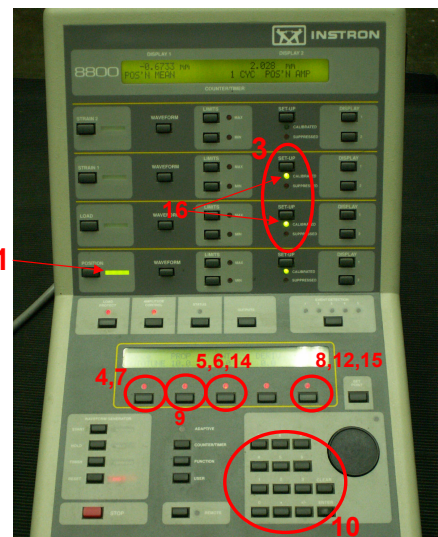
1. Control channel should be POSITION (POSITION indicator should illuminate green)
2. If you are calibrating extensometer, adjust your set up so that POSITION are at zero displacement, and extensometer at gage length
3. Press the SETUP key on the mode controller
4. Press the key under CAL.
5. Press the key under CAL.
6. Press the key under MANUAL
7. Press the key under CORS.BAL (transducers should be near zero point)
8. Press the key under GO (CALIBRATED indicator should flash quickly first, then flash slowly when completed)
9. Press the key under RELEY OFF, it should change to RELAY ON
10. Press the key under SPAN
11. Enter the value of the 75% of the full-scale of the transducer through keypad, then press ENTER
12. Press the key under GO (CALIBRATED indicator should flash quickly first, then decreases with completed)
13. Press the key under RELAY ON, it should change to RELAY OFF
14. Press the key under FINE BAL.
15. Press the key under GO (CALIBRATED indicator should flash quickly first, then illuminates steadily when calibration is completed)
16. Now the transducer should be calibrated!



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Manual Calibration (for transducers without a calibration relay) :

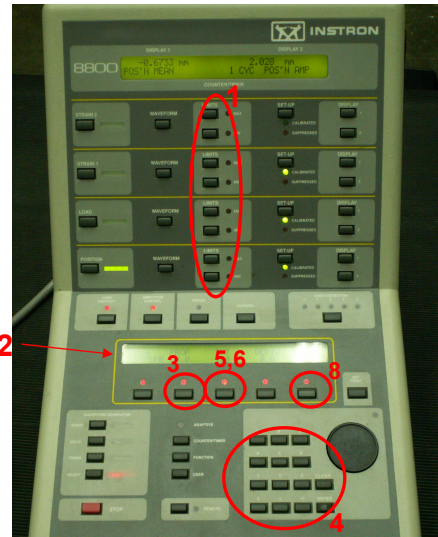
1. Control channel should be POSITION (POSITION indicator should illuminate green)
2. If you are calibrating LVDT or extensometer, adjust your set up so that POSITION is at zero displacement, and LVDT at zero displacement, or extensometer at gage length
3. Press the SETUP key on the mode controller (either STRAIN or LOAD) for calibration
4. Press the key under CAL.
5. Press the key under CAL
6. Press the key under MANUAL
7. Press the key under CORS.BAL (transducers should be near zero point)
8. Press the key under GO (CALIBRATED indicator should flash quickly first, then decreases with completed)
9. Press the key under SPAN
10. Enter the value of the full-scale (ask Greg) of the transducer through keypad, then press ENTER
11. Displace the transducer to the point of the value you just entered, you do this through moving the actuator
12. Press the key under GO (CALIBRATED indicator should flash quickly first, then flash slowly when completed)
13. If your transducer/POSITION is not at zero point, move the actuator to make the POSITION at zero point
14. Press the key under FINE BAL.
15. Press the key under GO (CALIBRATED indicator should flash quickly first, then illuminates steadily when calibration is completed)
16. Now the transducer should be calibrated!



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Limits Selection :

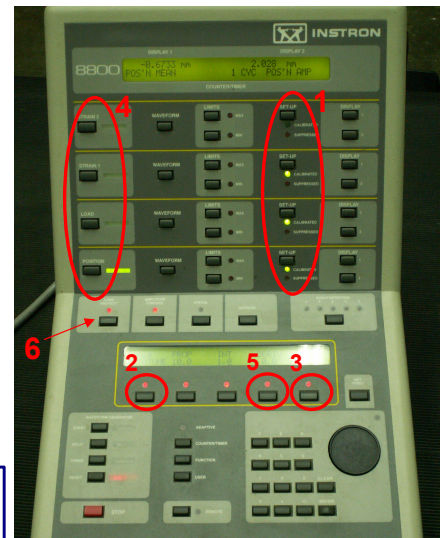
1. Press the LIMIT key on the mode control channel that you want to set up limit
2. The lower display will indicate which limit you want to set
3. Press the key under the current limit value
4. Enter a value for your limit, then press ENTER, ATTN: for compression test, the value should be negative, e.g. you may set up a load limit like MIN = -10 kN and MAX = 1 kN, and a displacement limit like MIN = -4 mm and MAX = 1 mm
5. Press the key under ACTION
6. Press the key under UNLOAD to select limit action as unload
7. Repeat above procedures for all limits you want to set up
8. Press the key under ON/OFF on the lower display to toggle on/off of the limit



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Control mode transfers:

1. Press the SETUP key on the channel into which you want to transfer
2. Press the key under CAL.
3. Press the key under CONTRL DISABLE, it should be changed to ENABLE
4. Press the MODE key on the channel into which you want to transfer
5. Press the key under IMMED to perform an immediate transfer
6. * To transfer from Position control to load or strain control, you will have to turn Load Protection off first, see instruction below



Load Protection:

1. Load protection works in Position control only! Always turn load protection on when it is in position control. This will protect your specimen and also the load cell.
2. Press the LOAD PROTECTION key on the front panel
3. To set the required load protect value (usually 0.2% of the full range), press the key under the current Load Protect value. Enter a value for Load Protect, then press ENTER (Normally you just ignore this step!!!)
4. To enable or disable Load Protect, press the key under ON/OFF. Indicator should be on if Load Protection is enabled

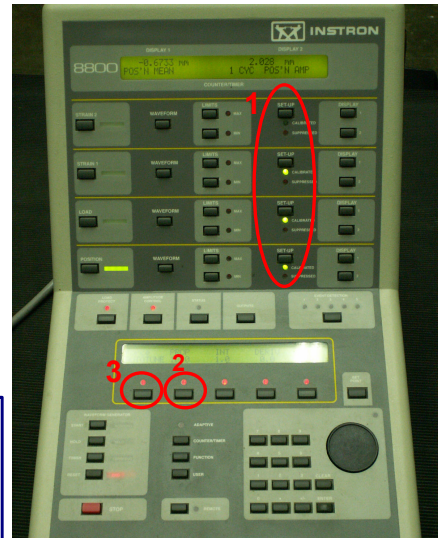


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Range Selection:

You only need to check if the ranging is automatic:

1. Press the SETUP key on the mode channel
2. Press the key under RANGE
3. Press the key under AUTO



Set Point Selection:

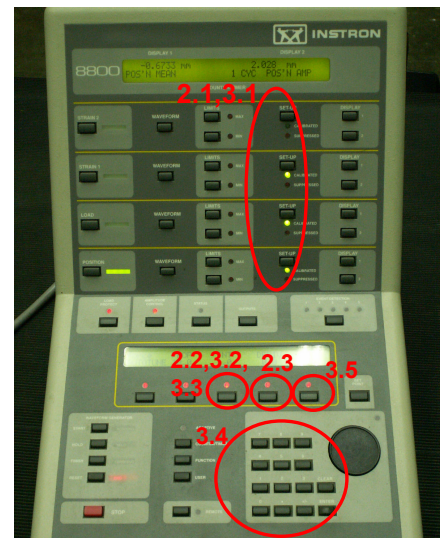
1. You can use Set Point to set up a returning point for the desired mode channel. In position control, set point can be used to quickly and precisely move the actuator to the desired location.
2. Press the SET POINT key on the lower right of the front panel
3. Enter a value for the set point, then press ENTER



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Zero Suppression Selection:

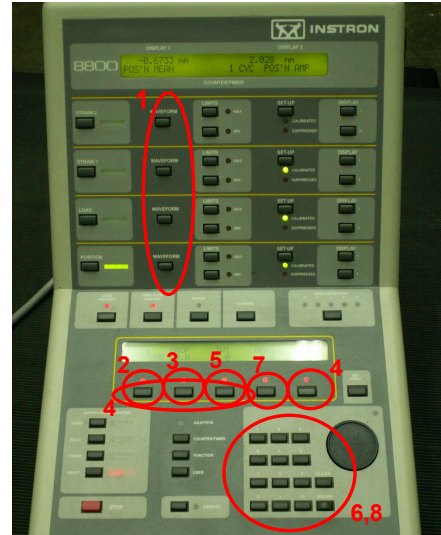
1. Zero suppression is used to shift the absolute zero of the system to a desired "apparent" zero of the user's particular test set up. It is also useful to improve the test resolution.
2. Suppression at the current level:
 1. Press the SETUP key on the channel that you want zero suppressed
 2. Press the key under SUPPRESS
 3. Press the key under SUPPRESS CURRENT, the indicator should illuminate red and the character Δ should appear indicating that the value shown is suppressed
3. Operator Entered Suppression
 1. Press the SETUP key on the channel that you want zero suppressed
 2. Press the key under SUPPRESS
 3. Press the key under the indicated suppression value
 4. Enter a value for zero suppression, then press ENTER
 5. Press the key under ON/OFF to select zero suppression
4. NOTE: To suppress Position, Position should not be the current control mode
5. Load suppression can only work when LOAD is not the current control mode and LOAD PROTECTION is OFF



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Waveform Selection:

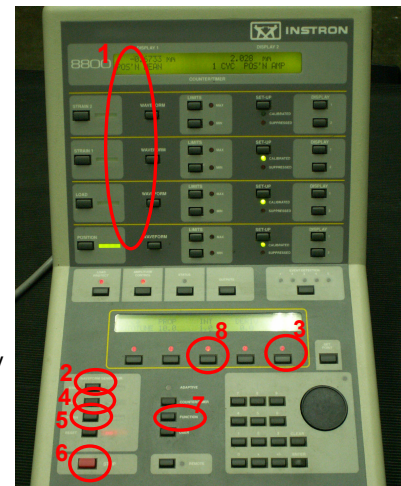
1. Press WAVEFORM key on the relevant control channel
 2. Press the key under cyclic to select either CYCLIC or RAMP
 3. Press the key under SHAPE
- For cyclic waveform
4. Press the key under the desired bipolar waveform; press MORE to select unipolar waveforms
 5. Press the key under the current amplitude if you want to change amplitude
 6. Enter a value for amplitude, then press ENTER
 7. Press the key under the current frequency if you want to change frequency
 8. Enter a value for frequency, then press ENTER
- For ramp waveform (Similar to above procedures)
9. Press to select either S RAMP, D RAMP or TRAPEZ waveforms
 10. For S RAMP (single ramp):
 1. Press the key to the right of the key (3rd key) under SHAPE to change the ramp end-point
 2. Enter a value for the end point, then press ENTER (Caution: the end point value is the relative value with respect to the current point, NOT the absolute value!)
 3. Press the 4th key to change the ramp-rate



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Test Control:

1. Check your test setup, limit setup, load protection (should be off), set point, zero suppression and waveform setup before running the test. Make sure hydraulic power supply and actuator are turned on.
2. Press the WAVEFORM GENERATOR – START key
3. The display will then tell you if adaptive control is enabled, press RESUME to return to previous display
4. You can hold the test by pressing the WAVEFORM GENERATOR – HOLD key at any time. To resume the test, press WAVEFORM GENERATOR – START key again.
5. When the specified wave function finishes, WAVEFORM GENERATOR – FINISH light will illuminate. Or, you can manually finish the test by pressing WAVEFORM GENERATOR – FINISH key.
6. You can use the WAVEFORM GENERATOR – STOP to stop a test. Then you must reset the STOP button before you can again run a waveform:
7. Press the FUNCTION key
8. Press the key under STOP to toggle the Stop key from ACTIVE to RESET
9. In case of any emergency, use the EMERGENCY STOP button on the Hydraulic Control Panel to stop the system. To release this button, twist the button until it pops out



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Constant Amplitude Control:

1. It is recommended to turn on Constant Amplitude Control function when you are running cyclic testing:
2. Press the AMPLITUDE CONTROL key
3. Press the key under ON/OFF
 1. Function is Off if indicator remains off
 2. Function is On if indicator remains On
 3. When indicator flashes, you should either reduce either the frequency or reduce the amplitude

