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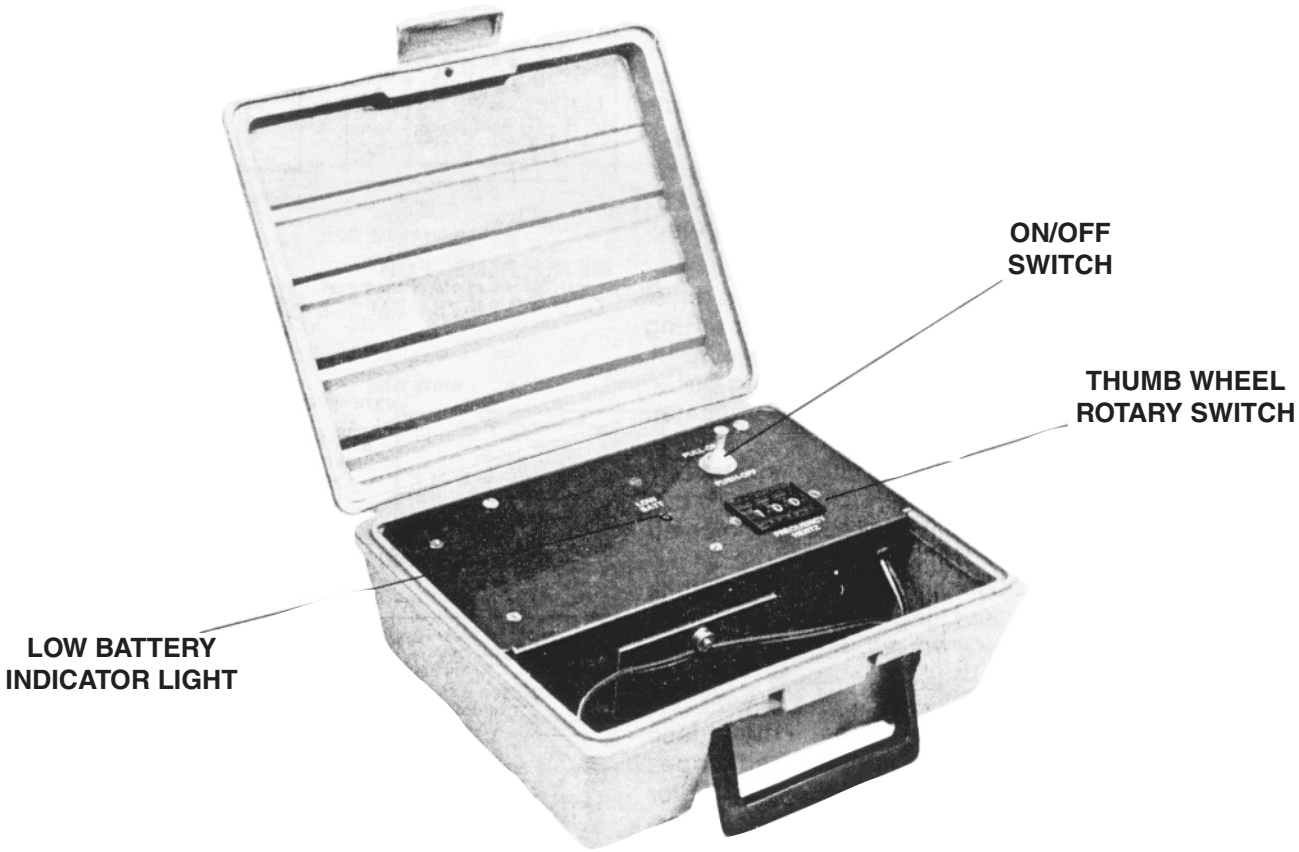
Form No. 102444

Operating Instructions for:

51271
D-01190AA
HT2545

CALIBRATOR



This calibrator is designed to shop test for accuracy the meter reading of the 75 GPM and 200 GPM hydraulic testers. Although the testers do not need to be tested before each use, the tester should be calibrated for meter accuracy at six months to one year intervals.

Testers should be calibrated sooner if:
- a wrong meter reading is suspected
- the tester was repaired due to damage

TEST PROCEDURE

Hook-up

WARNING: The following procedure should be performed only by qualified personnel familiar with this type of equipment.
The calibrator plugs into the jack marked CAL on the instrument panel of the hydraulic tester.

Calibrator Set-up

Note: The calibration decals shown in Figure 1 are examples only. Refer to the decal in your tester for the specific flow settings for your tester.

1. Refer to the calibration decal in your tester for all flow and calibration information.
   Note: The exact location of the decal on your specific tester will vary due to the model, age, and capacity of the tester. Generally, the decal will be located on the inside of the electrical mounting box covered by the meter panel, tachometer, or battery.

Issue Date: Rev. 7-10-95

TESTER CALIBRATION
LOW RANGE

1. Attach calibrator to the jack marked "CAL".
2. With all power off, insure that the meter needle zeros out. Tap the meter face lightly with your finger to make sure the needle repositions to zero. Wipe the lens surface with a rag dampened with household detergent and water to remove any electrostatic charge on the meter lens. If the needle must be adjusted, use the zero-adjuster screw located at the lower center of the meter.
3. Pull the ON/OFF switch to turn the tester on. Switch the flow selector switch to LOW and be certain the FLOW/RPM switch is in the FLOW position.

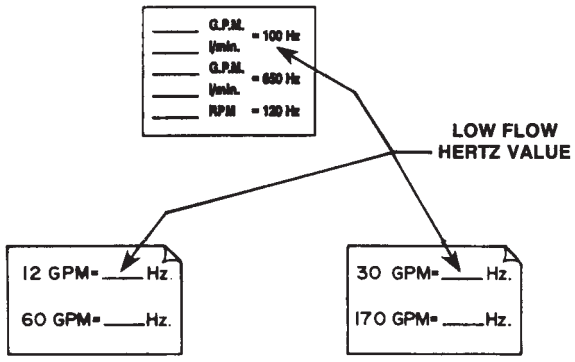
   NOTE: If either HIGH or LOW FLOW setting requires recalibration, it is accomplished by adjusting the "pots" located on the electronic board. (See Figure 2.)
4. Find the LOW FLOW Hz. value on the calibration decal found on the inside bottom of the electronic mounting box and dial this value on the calibrator. (See Figure 1.)
5. After dialing in the Hz. value, the corresponding GPM value found on the decal should be precisely indicated on the flow tester.

IMPORTANT: *If the LOW FLOW GPM value is precisely indicated, skip to the HIGH RANGE section. If the GPM value is not precisely indicated continue in LOW RANGE.*

NOTE: The electronic meter panel must be level while making "pot" adjustments.

6. Adjust the meter needle down scale several increments by turning the LOW FLOW "pot" counter clockwise. Adjust the "pot" until the LOW FLOW GPM value is precisely indicated. Tap the meter face lightly with your finger to be sure the needle does not reposition itself. Readjust "pot" if necessary. Refer to Figure 2 for the location of the "pots" on your particular meter panel board.

IMPORTANT: *Do not adjust the "pot" marked "Temp O" or the "pot" marked "Temp Cal" as these are adjusted at the manufacturer.*



75 GPM TESTER **200 GPM TESTER**

FIGURE 1. CALIBRATION DECAL(S)

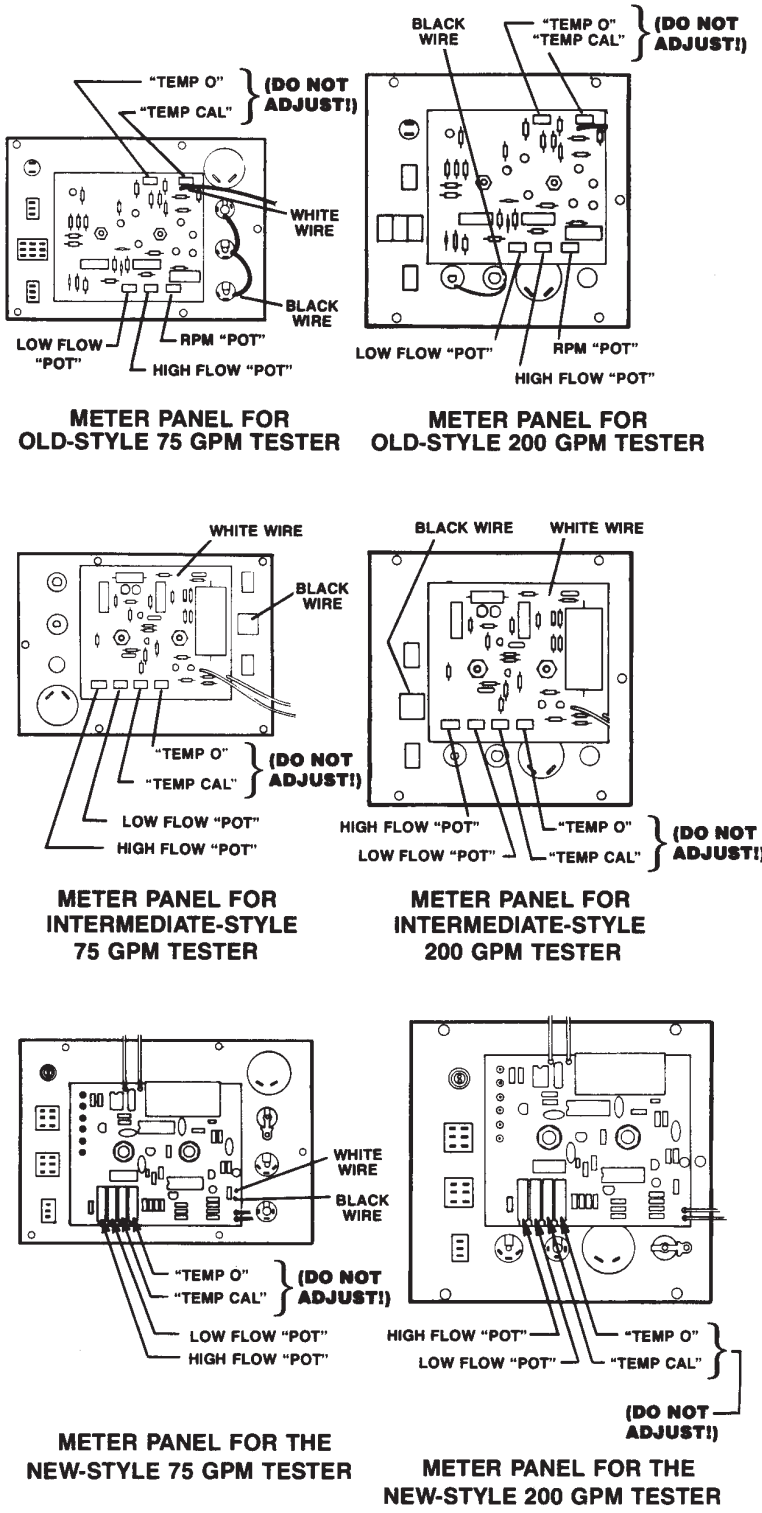


FIGURE 2. VARIOUS METER PANEL BOARDS for 75 AND 200 GPM TESTERS

TESTER CALIBRATION
HIGH RANGE

1. With the tester switch the "HI-LOW" range switch to high position. Be certain the "FLOW/RPM" switch is in the FLOW position.
2. Check the low battery light on the hydraulic tester. If the low battery light is on, replace the batteries.

NOTE: The electronic meter must be level before beginning any adjustment.

3. Find the HIGH FLOW Hz. value on the calibration decal (Refer to Figure 3.) and dial this value on the calibrator.

IMPORTANT: *After dialing in the HIGH FLOW Hz. value. the corresponding GPM value found on the decal should be precisely indicated on the flow tester. If it is indicated, the meter panel is properly adjusted, if it is not indicated continue HIGH RANGE section.*

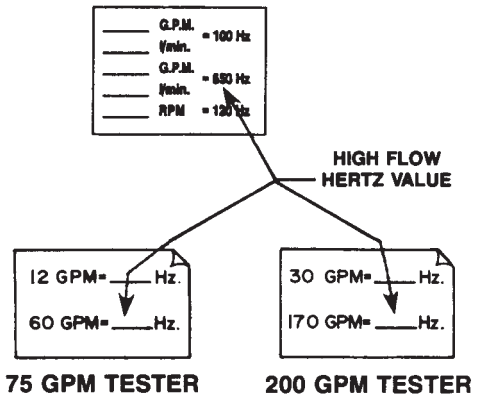


FIGURE 3. CALIBRATION DECAL(S)

4. Adjust the needle down scale several increments by turning the HIGH FLOW "pot" counterclockwise. Readjust the "pot" until the HIGH FLOW GPM value is precisely indicated. Tap the meter face lightly with your finger to be certain the needle does not reposition itself. Readjust the "pot" is necessary.
5. Switch back to the LOW FLOW setting and readjust the calibrator to the low Hz. value. If the needle does not precisely indicate the LOW FLOW GPM value found on the decal, readjust according to step 6 under "Low Range" and zero in on GPM reading.
6. Switch back to HIGH FLOW setting, readjust the calibrator to the high Hz. value and check against the HIGH FLOW GPM value found on the decal. Readjust if required by repeating steps 2 and 3 of "High Range" and zero in on GPM reading.
7. When an acceptable reading is shown on the meter, coat the "pots" with a bright colored, fast-drying lacquer, such as fingernail polish to prevent tampering.
8. Reinstall the meter panel and tachometer panel securely to the electronic box.

Tachometer Check (Single Ratio Tachometer)

To recalibrate your single ratio (.5:1) tachometer, use the following procedure:
NOTE: The hydraulic tester must be using auxiliary power before starting this procedure.

1. Place the "FLOW/RPM" switch in the "RPM" position.
2. Put the tester's "ON/OFF" switch in the "ON" position.
3. Attach the calibrator to the tester jack marked "TACH". Dial 100 Hz on the calibrator.
4. If the hydraulic tester meter reads exactly 2,000 RPM the tachometer is within tolerance but if it does not, continue to step 5.
5. Locate the RPM "pot" shown on the old style meter panel board in Figure 2 or, after locating the pot adjusting screw, fully turn it counterclockwise.
6. Turn the RPM "pot" adjusting screw clockwise until the meter reads precisely 2,000 RPM. When this reading is shown on the meter, coat the RPM "pot" adjusting screw with a brightly colored, fast-drying lacquer such as fingernail polish to prevent tampering.

PHOTO PICKUP CHECK

NOTE: The hydraulic tester must be using auxiliary power before starting this procedure.

1. ***For incandescent light pickup:*** Insert the photo pickup into the input jack on the tachometer. After turning the tester on, and light switch on, visually check to insure that the incandescent light is on inside the photo pickup (if so equipped).
   For infrared pickup: When using an infrared pickup the light switch must be off. Check the infrared pickup by placing a 1-1/2" to 2" strip of white tape on a dark surface. With the sensor pointed at the tape from a few inches away, move the sensor back and forth across the tape. This movement should cause the meter needle to move showing that the infrared bulb is functioning.
2. Place the tester selector switch in the phototach position and switch the "HI/LOW" switch to the "HI" position.
3. Point the photo pickup at a lighted fluorescent light. The meter should read from 7,000 to 7,600 RPM with 60 cycle electrical systems or 5,800 to 6,200 RPM with 50 cycle electrical systems.
   NOTE: If the meter does not show the values shown above, repeat the preceding instructions entitled "Tachometer Check (Single Ratio Tachometer)".

Tachometer Check (Multiratio Tachometer)

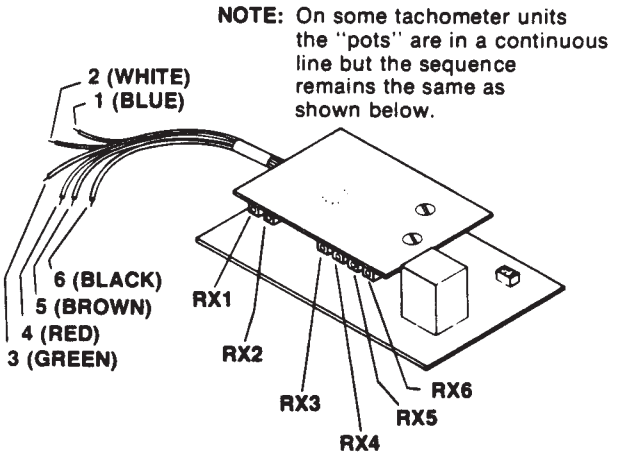
Pre-Calibration Hook-up

1. Connect external power to the jack marked "AUX PWR".
2. Turn the tester on by pulling the "ON/OFF" switch to the "ON" position.
3. Place the "FLOW/RPM" switch in the "RPM" position.
4. Switch the "HI-LOW" switch to the "LOW" position.
5. Connect the calibrator to the cal jack on the meter panel.

Tachometer Calibration

Refer to Figure 4 for the location of the tachometer "pots".

1. Place the tachometer selector switch in the .346:1 position. Next, adjust the calibrator to 15 ± .1 Hertz. If the flow tester meter reads 1300 RPM the "pot" is ok. If not, place the meter panel in a level position, adjust the "pot" RX1 with a screwdriver. Fully turn the adjusting "pot" on the tachometer panel clockwise until a very slight clicking noise can be heard or felt. See Figure 4 at right for the location of the tachometer "pot". Then turn counterclockwise until the meter panel reads exactly 1300 RPM.



2. Place the tachometer selector switch in the .5:1 position. Next, adjust the calibrator to 25 ± .1 Hertz. If the flow tester meter reads 1500 RPM the "pot" is ok. If not, place the meter panel in a level position, adjust the "pot" RX2 with a screwdriver. Fully turn the adjusting "pot" on the tachometer panel clockwise until a very slight clicking noise can be heard or felt. See Figure 4 above for the location of the tachometer "pot". Then turn counterclockwise until the meter panel reads exactly 1500 RPM.
3. Place the tachometer selector switch in the 1:1 position. Next, adjust the calibrator to 50 ± .1 Hertz. If the flow tester meter reads 1500 RPM the "pot" is ok. If not, place the meter panel in a level position, adjust the "pot" RX3 with a screwdriver. Fully turn the adjusting "pot" on the tachometer panel clockwise until a very slight clicking noise can be heard or felt. See Figure 4 above for the location of the tachometer "pot". Then turn counterclockwise until the meter panel reads exactly 1500 RPM.
4. Place the tachometer selector switch in the 1.25:1 position. Next, adjust the calibrator to 54 ± .1 Hertz. If the flow tester meter reads 1300 RPM the "pot" is ok. If not, place the meter panel in a level position, adjust the "pot" RX4 with a screwdriver. Fully turn the adjusting "pot" on the tachometer panel clockwise until a very slight clicking noise can be heard or felt. See Figure 4 above for the location of the tachometer "pot". Then turn counterclockwise until the meter panel reads exactly 1300 RPM.
5. Place the tachometer selector switch in the 1.5:1 position. Next, adjust the calibrator to 75 ± .1 Hertz. If the flow tester meter reads 1500 RPM the "pot" is ok. If not, place the meter panel in a level position, adjust the "pot" RX5 with a screwdriver. Fully turn the adjusting "pot" on the tachometer panel clockwise until a very slight clicking noise can be heard or felt. See Figure 4 above for the location of the tachometer "pot". Then turn counterclockwise until the meter panel reads exactly 1500 RPM.
6. Place the tachometer selector switch in the 2:1 position. Next, adjust the calibrator to 100 ± .1 Hertz. If the flow tester meter reads 1500 RPM the "pot" is ok. If not, place the meter panel in a level position, adjust the "pot" RX6 with a screwdriver. Fully turn the adjusting "pot" on the tachometer panel clockwise until a very slight clicking noise can be heard or felt. See Figure 4 above for the location of the tachometer "pot". Then turn counterclockwise until the meter panel reads exactly 1500 RPM.
7. Place the tachometer selector switch in the phototach postion. Next, adjust the calibrator to 25 ± .1 Hertz. If the flow tester meter reads 1500 RPM the "pot" is ok. If not, place the meter panel in a level position, adjust the "pot" RX7 with a screwdriver. Fully turn the adjusting "pot" on the tachometer panel clockwise until a very slight clicking noise can be heard or felt. See Figure 4 above for the location of the tachometer "pot". Then turn counterclockwise until the meter panel reads exactly 1500 RPM.

Photo Pickup Check

NOTE: The hydraulic tester *must* be using auxiliary power before starting this procedure.

1. ***For incandescent light pickup:*** Insert the photo pickup into the input jack on the tachometer. After turning the tester on, and light switch on, visually check to insure that the incandescent light is on inside the photo pickup (if so equipped).
   For infrared pickup: When using an infrared pickup the light switch must be off. Check the infrared pickup by placing a 1-1/2" to 2" strip of white tape on a dark surface. With the sensor pointed at the tape from a few inches away, move the sensor back and forth across the tape. This movement should cause the meter needle to move showing that the infrared bulb is functioning.
2. Place the tester selector switch in the phototach position and switch the "HI/LOW" switch to the "HI" position.
3. Point the photo pickup at a lighted fluorescent light. The meter should read from 7,000 to 7,600 RPM with 60 cycle electrical systems or 5,800 to 6,200 RPM with 50 cycle electrical systems.
   NOTE: If the meter does not show the values shown above, repeat the preceding instructions entitled "Tachometer Check (Multiratio Tachometer)".
4. After making the calibrations, coat the six tachometer "pots" with a brightly colored, fast-drying lacquer such as fingernail polish to prevent tampering.
5. Reinstall the meter panel and tachometer panel securely to the electronic box.

Note: Shaded areas reflect last revision(s) made to this form.