DTT-L Series Digital Torque Testers
User Manual

DTT-L Series Digital Torque Testers
User Manual

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ASG, Division of Jergens, Inc.

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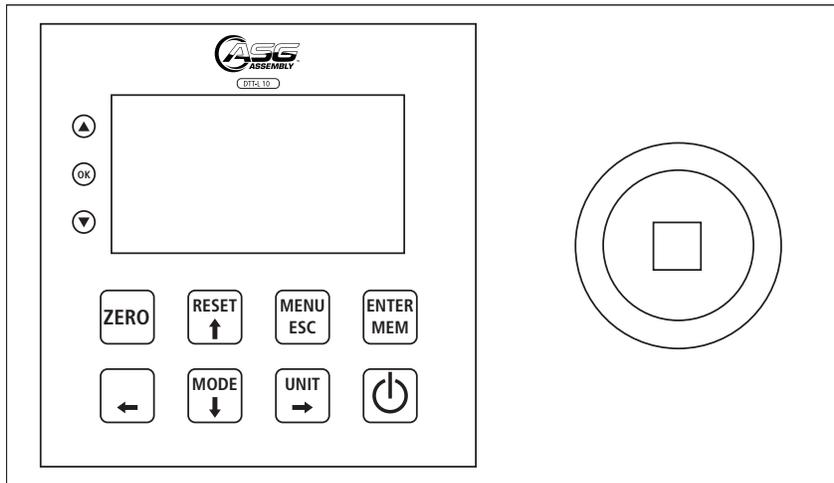
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Service and Warranty

ASG, Division of Jergens, Inc., warrants to the original purchaser buying the ASG DTT-L meter with the intention of use rather than resale, for a period of 1 year. ASG will replace those items found to be defective or otherwise fail to conform, or at ASG's option repay the price paid for the item. The buyer's remedies with respect to any item found to be defective or otherwise not conforming shall be limited exclusively to the right of replacement or repayment. In no event shall ASG be liable for any incidental, special or consequential damages or for damages in the nature of penalties.

DISCLAIMER: Seller makes no other warranty what-so-ever, expressed or implied, and all implied warranties of merchantability and fitness for a particular purpose are disclaimed and excluded from this transaction and shall not apply to the goods sold hereunder. The ASG DTT-L meter is an electronic instrument and should be treated with the same care given any sensitive electronic instrument. Avoid dropping the unit or dropping items on the unit. Avoid high shock loads to the transducer. Use the proper driver adapter when using clutch type power tools.

Overload Capacity Caution

Do not exceed the capacity of the unit. The overload capacity of a DTT-L meter is 200% of its maximum load capacity. If the meter is taken over capacity, a warning tone will sound, the word "OVERLOAD" will flash on the LCD, and the unit will LOCK until the RESET button is pressed. Immediately stop applying torque when the overload warnings are observed. A unit subjected to overload or subjected to harsh conditions, such as use with an impact tool, will not be covered under warranty.

System Overview

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System Overview (Continued)

Model	DTT-L 5, DTT-L 10, DTT-L 30, DTT-L 50, DTT-L 100, DTT-L 200
Size	7.125" x 4.375" x 2.125" (181mm x 111mm x 54mm) Size with Mounting Plate*: 8.625" x 4.375" x 2.125" (219mm x 111mm x 54mm)
Weight	4.8 lb (2.2 kg) Weight with Mounting Plate: 6.6lb (3 kg)
Display	Graphics LCD display size 128x64 dots
Battery	28 Hours (NiMH 4.2/v rechargeable)
Battery Charger	9V 500mA 110 Volt with US Plug (Optional International Charger Available: 9 Volt, 670 mA, 90-264 VDC, ASG # 66619)
ADC	16 Bit
CPU	8 Bit
Key Button	8 Buttons
Unit of Measure	6-7 User Selectable Torque Units (Depending on Model)
Mode of Measure	3 Modes: Track, Peak, and First Peak
Display Digits	6 Digits Maximum
Special Function	Auto Shutdown, Auto Reset, Pass/Fail, Memory, Torque Bar, Battery Indicator and Charging Status, Transducer State
Memory	200 Readings with Alarm when Full
Accuracy	± 0.5% of Full Scale

* DTT-200 and DTT-500 come with mounting plate

Model Number	ASG Number	Torque Range	
		lbf.in	N.m
DTT-L 5	66650	0.5 - 5.0	0.06 - 0.56
DTT-L 10	66651	1.0 - 10.0	0.11 - 1.13
DTT-L 30	66652	3.0 - 30.0	0.33 - 3.4
DTT-L 50	66653	5.0 - 50.0	0.56 - 5.6
DTT-L 100	66654	10.0 - 100.0	1.13 - 11.3
DTT-L 200	66655	20.0 - 200.0	2.3 - 22.6
DTT-L 500	66657	50.0 - 500.0	5.6 - 56.5

Battery Chargers

9 Volt, 500 mA, 90-264 VDC
US Power Adapter (Supplied)

9 Volt, 670 mA, 90-264 VDC International
Power Adapter (Optional, Must Order
Separately)

ASG #66603

ASG #66619

Standard Equipment

All DTT-L meters are supplied with the following standard items:

- DTT-L torque meter
- Battery charger/Power adapter
- NOTE: Rundown adapters sold separately; International charger also sold separately

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Instructions for Using the Rundown Adapters

Below is a list of **all** rundown adapters ASG offers for the DTT and DTT-L Series

- Rundown adapters are included with the DTT torque testers. See charts in DTT manual on page 6 for more information.
- Rundown adapters are **not** included with the DTT-L torque tester, choose the needed rundown adapters from the chart below when ordering the tester.

ASG Adapter Number	Drive Size	Torque Range	
		lbf.in	N.m
66620	4 mm HIOS	0.25 - 2.0	0.03 - 0.23
66631	4 mm HIOS	1.3 - 5.0	0.15 - 0.56
66612 *	1/4" Hex	1.3 - 5.0, 4.5 - 26.0 *	0.15 - 0.56, 0.51 - 2.94 *
66617	1/4" Hex	4.5 - 26.0	0.51 - 2.94
66633	4 mm HIOS	4.5 - 26.0	0.51 - 2.94
66635	5 mm HIOS	4.5 - 26.0	0.51 - 2.94
66618	1/4" Hex	25.0 - 80.0	2.8 - 9.03
66639	5 mm Hex	25.0 - 80.0	2.8 - 9.03
66634	3/8" Hex	50.0 - 200.0	5.65 - 22.6
66642	3/8" Hex	50.0 - 500.0	5.65 - 56.5

* ASG Adapter #66612 comes with two springs covering torque range from 1.3-5.0 lbf.in (0.15-0.56) and 4.5-26.0 lbf.in (0.51-2.94 N.m)

ASG #66620 ASG #66631 ASG #66612 ASG #66617 ASG #66633

ASG #66635 ASG #66618 ASG #66639 ASG #66634 ASG #66642

Usage

Procedure for Manual Torque Drivers

- Attach a proper adapter to connect the driver to the 3/8" female square.

- NOTE: It is NOT recommended to use the power tool adapters to calibrate hand torque tools.

- Select FIRST PEAK mode using the MODE button. Press the RESET button if the display is not at 0.

- Turn the driver or wrench clockwise or counterclockwise until the "break" point is reached.

- In FIRST PEAK no other reading can then be displayed until the reset button is pressed.

- The LCD display will show the torque that the driver or wrench is set at. Note the reading or write it down. To enter it into the DTT-L memory press the ENTER/MEM button. If you are testing several tools, note the memory numbers of the readings for the various tools. This number is in the upper right hand corner of the LCD. The unit can save up to 200 readings. After that, no further readings can be entered until the memory is cleared.

- If the torque is not correct, adjust the tool. Repeat the test. When the reading is proper, perform the test several times to be sure the readings are consistent. The proper reading may be an average of several readings.

Procedure for Power Screwdrivers

- Put the appropriate rundown adapter into the unit's female 3/8" square socket. It allows the power tool to reach its working speed before tightening up and causing the clutch to operate.

- Run the tool in reverse to make sure the adapter is unwound. Do not disassemble the driver adapter.

- Make sure the unit is in PEAK mode. If it is not, use the MODE button to select PEAK mode.

- Press the ZERO button to be sure the display is at 0.

- Run the tool forward until it shuts off. The reading on the display will be the torque setting of the tool's clutch. Note the reading or write it down.

- To enter it into the units memory, press the ENTER/MEM button. If you are testing several tools, note the memory numbers of the readings for the various tools. This number is in the upper right hand corner of the LCD. The unit can save up to 200 readings. After that no further readings can be entered until the memory is cleared.

- If the torque is not correct, adjust the clutch. Repeat the test. When the reading is proper, perform the test several times to be sure the readings are consistent. The proper reading may be an average of several readings.

- Always unwind the rundown adapter after each test. Do NOT leave the spring under tension while not in use.

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Battery Indicator

Before using the unit, make sure the battery has been charged. If the battery is low, the LCD may not function. If the battery dies during use, the on/off switch will need to be cycled to use the unit after the charger is connected. Allow the battery to fully charge then detach the charger.

CAUTION: If the battery overheats during charging a thermal fuse will open. The unit will not operate until the fuse resets. Allow the DTT meter to sit for up to 30 minutes with the charger disconnected then turn the unit back on.

If the battery level is less than 4.6 V, the "**Battery Empty**" message will be displayed and the tester will power down automatically. When battery charger is connected and battery is charging, the plug icon will blink. NOTE: Only use the 9V adapter/charger supplied. **The supplied charger is a battery charger only. It is not to be used as an AC adapter to power the DTT meter in place of using the batteries in normal operation.**

Battery Level > 5.00V

4.99V > Battery Level > 4.8V

4.79V > Battery Level > 4.7V
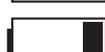
4.69V > Battery Level > 4.65V

Battery Level < 4.65V

Charging symbol

TRACK PF AM ✚ IIII 000
0.0 N-cm PASS
CW 9:19
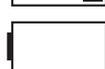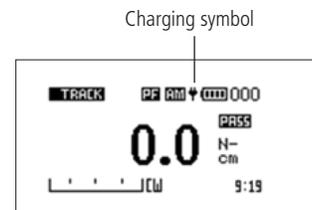
Basic Function

Clockwise torque is displayed on the DTT-L and recognized by the symbol "CW." Counter-clockwise torque is displayed on the DTT-L and recognized by the symbol "CCW."

Display of Clockwise/Counter-Clockwise

TRACK PF OFF AR IIII 001
18 N-mm
CW

Load indicator bar for clockwise

Clockwise symbol

TRACK PF OFF AR IIII 001
18 N-mm
CCW

Load indicator bar for counter-clockwise

Counter-clockwise symbol
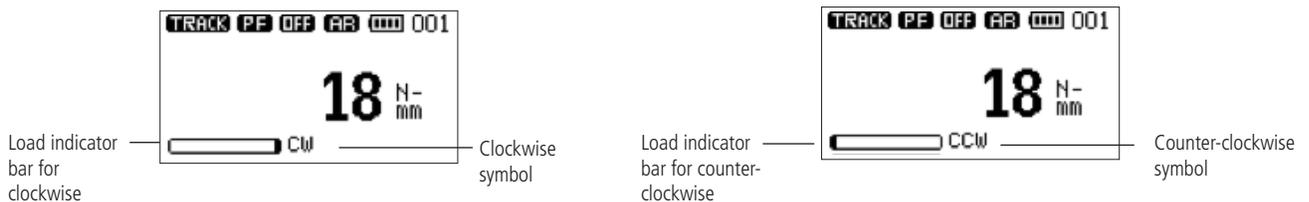
A load indicator bar alerts the operator as to how much torque load is being applied to the transducer as related to its full scale rating.

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Basic Function (Continued)

Zeroing the Tester

While operating the tester, it may be necessary to zero the display so that residual torque does not become part of the measured reading. Press and release the ZERO key.

Changing the Unit of Measure

You can choose from the following units of measure depending on the capacity of your tester: N.mm (not available on the DTT-L 500), N.cm, N.m, kgf.cm, kgf.m, lbf.in, and lbf.ft. To change the display units, press the UNIT key. Each time the UNIT key is pressed, it will select the next available unit until the tester returns to its original setting. The DTT-L automatically converts readings as new units of measure are selected.
NOTE: All units may not be displayed depending on tester capacity.

Changing the Mode of Measure

You can choose from the following modes of measure: Track, First Peak, and Peak. To change the display mode, press the MODE key. Each time the MODE key is pressed, it will select the next available mode until the tester returns to its original setting.

Track Mode

Press the MODE key until "Track" appears on the display. The display will now indicate the torque applied in either direction as it is applied to the transducer.
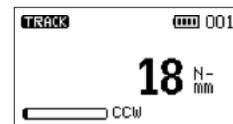
First Peak Mode

Press the MODE key until "FPeak" appears on the display. The display will show the torque level applied to the transducer.
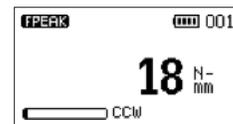
Peak Mode

Press the MODE key until "Peak" appears on the display. The display will show the maximum torque applied to the transducer during a cycle.

Basic Function (Continued)

Backlit Display

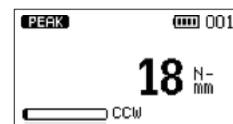When you press any key or apply torque to the transducer greater than 0.5% of full scale, the backlight will go on for 60 seconds.

Saved Reading to Memory

Any reading can be saved anytime by pressing the **MEM** key. A total of 200 readings can be stored in the database including the reading unit.
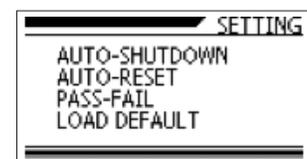
Main Menu

- Press the **MENU/ESC** key to access the main menu
- To move between the sub-menus listed on the main menu page, press the **UP** or **DOWN ARROW** keys to move the cursor
- Press **ENTER** to select the sub-menus, activate features and enter values. Within sub-menus, **UP**, **DOWN**, **LEFT** and **RIGHT ARROW** keys will also change numerical values.
- Press **ESC** to return to the main menu page

Setting

- To access the **SETTING** menu, press the **MENU/ESC** key. Use the **UP** or **DOWN ARROW** keys to move the cursor to **SETTING**. Press **ENTER**.
- To move between the submenus listed in the **SETTING** menu, press the **UP** or **DOWN ARROW** keys to move the cursor. The sub-menus in the setting menu are auto-shutdown, auto-reset, pass-fail, and load default.
- Press **ENTER** to select the sub-menus, activate feature and enter values. Within sub-menus the **UP**, **DOWN**, **LEFT** and **RIGHT ARROW** keys will also change numerical values.
- Press **ESC** to return to the setting menu page

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Main Menu (Continued)

Auto-Shutdown

- To set Auto-Shutdown, press the **MENU/ESC** key, the display will show the main menu page. Use the **UP** and **DOWN ARROW** keys to move the cursor point to **SETTING**. Press the **ENTER** key and use the **UP** and **DOWN ARROW** keys to move the cursor point to **AUTO-SHUTDOWN**. Press the **ENTER** key. The display will show the Auto-Shutdown menu page.

- The Auto-Shutdown feature can be enabled to conserve battery power where the meter powers down after 5, 10, and 15 minutes (depending on auto-shutdown time) since the last key press. Use the **UP** and **DOWN ARROW** keys to move the cursor to the auto-shutdown time preferred and press **ENTER.**

- Press **ESC** key to return to the main menu page. If you activate this feature, the **OFF** symbol will be displayed on the main display.

Auto-Reset

The Auto-Reset feature is used to automatically reset the reading value in peak mode. This mode works when the reading value is higher than the setting value, causing the peak value to change to a new held value. The user does not need to press the **RESET** key, since the peak value will automatically reset. This feature works in peak mode only. If this feature is activated, the icon "AR" will display on main display.
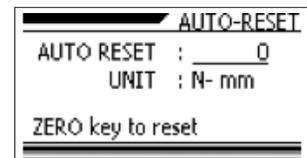
- To set Auto-Reset, press the **MENU/ESC** key, the display will show the main menu page. Use the **UP** and **DOWN ARROW** keys to move the cursor point to **SETTING**. Press the **ENTER** key and use the **UP** and **DOWN ARROW** keys to move the cursor point to A**UTO-RESET**. Press the **ENTER** key. The display will show the Auto-Reset menu page.

- Press the **ESC** key to return the main menu page

- Use the **UP** and **DOWN ARROW** keys to change the value. Use the **RIGHT ARROW** key to change the unit. Press **ZERO** key to reset value to zero. Press **ENTER** key to set new value and return to setting menu. Press **ESC** to return to setting menu.

- Auto-Reset feature will automatically be disabled if you set **AUTO-RESET** = 0

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▎ Main Menu (Continued)

Pass-Fail

The pass-fail feature is used to set a defined acceptable maximum and minimum torque range for measuring. It is activated by setting the lower level and upper level torque limit. As long as the torque value is within this range, the green LED display button will light up OK. Any reading values outside this range (higher or lower), the orange LED display buttons will light up. The orange up arrow will light up if the torque range is higher than the set range and the orange down arrow will light up if the torque range is lower than the set range. If this feature is activated, the PF symbol will display on the main display.

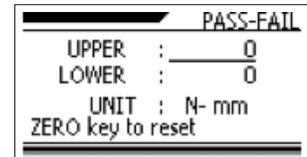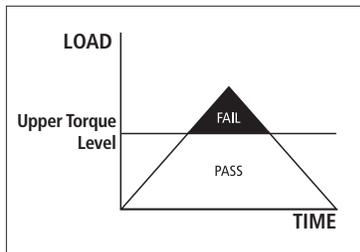- To access the Pass-Fail menu, press the **MENU/ESC** key, the display will show the main menu page. Use the **UP** and **DOWN ARROW** keys to move the cursor point to **SETTING**. Press the **ENTER** key and use the **UP** and **DOWN ARROW** keys to move the cursor point to **PASS-FAIL**. Press **ENTER**. The display will show the Pass-Fail menu page.

- Press the **ESC** key to return the main menu page

- Use the **UP** and **DOWN ARROW** keys to change the value. Use the **RIGHT ARROW** key to change the unit. Use the **LEFT ARROW** key to toggle between the upper and lower limits. Press the **ZERO** key to reset value to zero. Press the **ENTER** key to set new value and return to setting menu. Press **ESC** to return to setting menu.

NOTE: Lower level must be less than the upper level
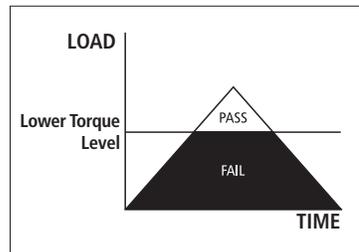
Example:

Lower Level = 0 N.m

Upper Level = 20 N.m

Example:

Lower Level = 20 N.m

Upper Level = 0 N.m

Example:

Lower Level = 10 N.m

Upper Level = 20 N.m

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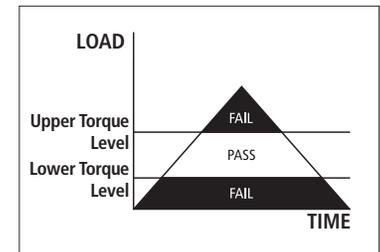
Main Menu (Continued)

Load Default

The Load Default setting is used to restore the auto-shutdown, auto-reset, and pass-fail to its original setting. These features will all be turned off.

```
                      ▟ LOAD DEFAULT
AUTO-SHUTDOWN = OFF
AUTO-RESET    = OFF
PASS-FAIL     = OFF

Press ENTER > Accept
```

- To access the Load Default menu, press the **MENU/ESC** key, the display will show the main menu page. Use the **UP** and **DOWN ARROW** keys to move the cursor point to **SETTING**. Press the **ENTER** key. Press the **UP** and **DOWN ARROW** keys to move the cursor point to **LOAD DEFAULT** and press the **ENTER** key.

- Press the **ENTER** key to reset to default settings

- Press the **ESC** key to return the main menu page
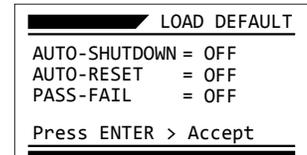
Memory

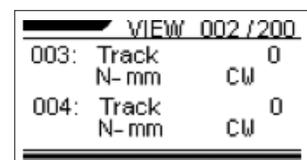This is used to view the saved record, delete the last record, or delete all records.

```
                       ▟ MEMORY
VIEW
DELETE LAST
DELETE ALL
```

- To access the Memory menu, press the **MENU/ESC** key, the display will show the main menu page. Use the **UP** and **DOWN ARROW** keys to move the cursor point to **MEMORY**. Press the **ENTER** key. The display will show the Memory menu page.

- In this sub-menu, memory is able to be viewed, delete last, or delete all

- Press the **ESC** key to return to the main menu page

View

This is used to view all saved records in memory. The detail of each saved record consists of mode, reading value with unit, and direction.

```
                  ▟ VIEW 002/200
003: Track             0
     N-mm         CW
004: Track             0
     N-mm         CW
```

- To access the View menu, press the **MENU/ESC** key, the display will show the main menu page. Use the **UP** and **DOWN ARROW** keys to move the cursor point to **MEMORY**. Press the **ENTER** key. Press the **UP** and **DOWN ARROW** keys to move the cursor point to **VIEW** and press the **ENTER** key.

- Use the **UP** and **DOWN ARROW** keys to scroll through the readings

- Press the **ESC** key to return to the memory menu page

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Main Menu (Continued)

Delete Last

This is used to delete the last saved record.

- To access the Delete Last menu, press the **MENU/ESC** key, the display will show the main menu page. Use the **UP** and **DOWN ARROW** keys to move the cursor point to **MEMORY**. Press the **ENTER** key. Press the **UP** and **DOWN ARROW** keys to move the cursor point to **DELETE LAST** and press the **ENTER** key. The display will show the Delete Last menu page.

- Press the **ESC** key to return to the memory menu page

- Press the **UP** and **DOWN ARROW** keys to select **NO** or **YES**. If you select **NO** and press the **ENTER** key, the monitor will return to the memory menu page. If you select **YES** and press the **ENTER** key, the meter will delete the last saved record and return to the memory menu page.
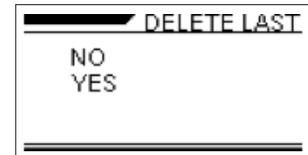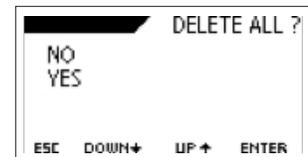
Delete All

This is used to delete all saved records.

- To access the Delete All menu, press the **MENU/ESC** key, the display will show the main menu page. Use the **UP** and **DOWN ARROW** keys to move the cursor point to **MEMORY**. Press the **ENTER** key. Press the **UP** and **DOWN ARROW** keys to move the cursor point to **DELETE ALL** and press the **ENTER** key. Press the **UP** or **DOWN ARROW** keys to move the cursor point to **DELETE ALL** and press the **ENTER** key. The display will show the Delete All menu page.

- Press the **ESC** key to return to the memory menu page

- Press the **UP** or **DOWN** arrow keys to select **NO** or **YES**. If you select **NO** and press the **ENTER** key, the meter will return to the memory menu page. If you select **YES** and press the **ENTER** key, the meter will delete all saved records and return to the memory menu page.

Calibration

ASG service technicians to calibrate the meter; please contact ASG for additional calibration information.

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Main Menu (Continued)

Transducer State

This is used to check the status of the transducer. If you suspect that your transducer has sustained an overload, check the status of the transducer immediately. To access the Transducer State menu, press the **MENU/ESC** key, the display will show main menu page. Use the **UP** and **DOWN ARROW** keys to move the cursor point to **TRANSDUCER STATE**. Press the **ENTER** key. Press the **UP** and **DOWN ARROW** keys to move the cursor point to **VIEW** and press the **ENTER** key.

- Place the meter horizontally on a flat level surface and go to the main menu page

- Use the **UP** and **DOWN ARROW** keys to move the cursor point to **TRANSDUCER STATE** and press the **ENTER** key

- The display will show the **TRANSDUCER STATE** menu page. Press the **ESC** key to return to the main menu page

- If the % offset is greater than 10%, please contact ASG to arrange for evaluation

- Transducer state offset number is for reference only and does not determine whether the transducer is yielded

- These values are given only as an indicator – the need for repair may vary according to the individual characteristics of the transducer
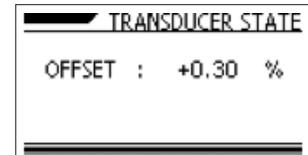
About

This shows the information regarding your tester (model, capacity, firmware revision, serial number).

- To access the About menu, press the **MENU/ESC** key, the display will show main menu page. Use the **UP** and **DOWN ARROW** keys to move the cursor point to **ABOUT**. Press the **ENTER** key. The display will show the **ABOUT** menu page.

- Press the **ESC** key to return to the main menu page

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