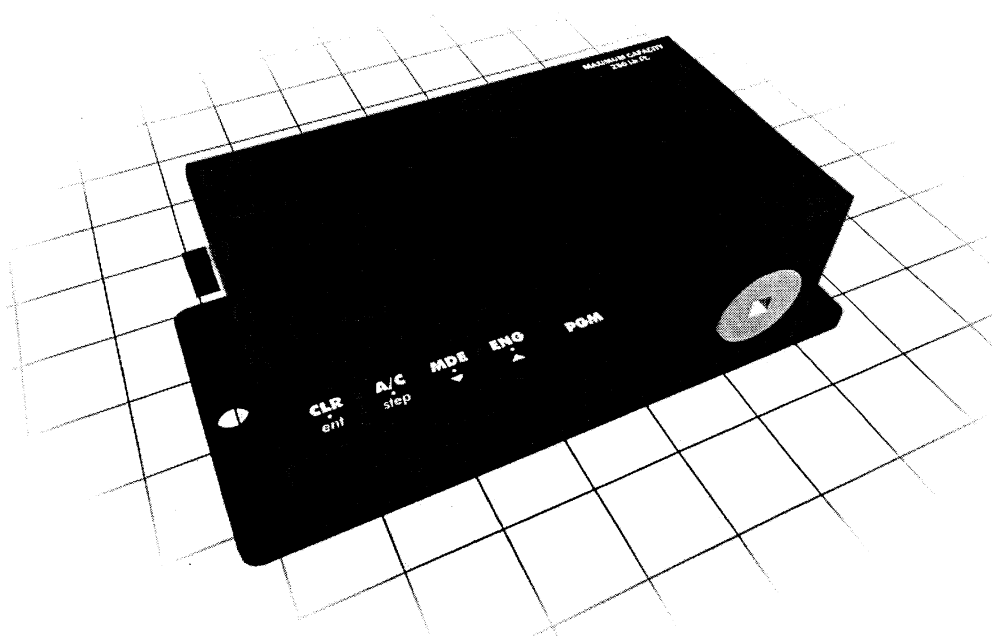


UTS-3000

Production Torque Tester



USER'S GUIDE
Jan 25, 1999



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INTRODUCTION

DESCRIPTION

The UTS-3000 Series Torque Testers are designed specifically for the needs of today's production facilities. These powerful and versatile systems accommodate most testing requirements at an outstanding cost benefit. Systems include dedicated internal transducers in vertical or horizontal configurations, and rundown fixtures for power/pulse tool testing (see Order Info. for details).

Single-step operation ensures ease of use and training, state of the art electronics provides functionality and flexibility, and the unique keylock feature enables tamper-proof operation if required.

SPECIFICATIONS

Dimensions	Width: 9.75", Height: 3.5", Depth: 4.25", Weight: 5 Lbs.
Power Requirements	Mains power 120V, 60Hz or NiMH batteries.
Operating Temperature Range	0°C to 50°C
Data Communications	RS-232-C
Accuracy	0.5% of Indicated Reading
Range	10% to 100%
Lockout Combinations	Mode, Auto Clear, Mode & Auto Clear, Engineering Units, Mode & Engineering Units, Auto Clear & Engineering Units, Mode & Auto Clear & Engineering Units, None (Off)
Display	4 active digits
Units	Selectable engineering units
Filter	Selectable Hz filter: 500, 1000, 1500, & 2000

FEATURES

- Keylock security
- RS-232 data output
- Simple one button operation
- Dedicated, integrated transducer in horizontal or vertical configurations

Clockwise and Counterclockwise Operation:

The UTS-3000 is capable of operating in both the clockwise and counterclockwise directions. Be aware however, that if a unit is not calibrated in the counterclockwise direction, it will not function in the counterclockwise direction, and the "OVERLOAD" flag will appear.

Also, when working in either of the peak modes, the default direction is set by the first reading taken. If you wish to change direction, the unit must be zeroed before taking a reading in the new direction. Remember to always remove hysteresis when changing transducer direction.

COMPONENTS

CONTENTS

Buttons

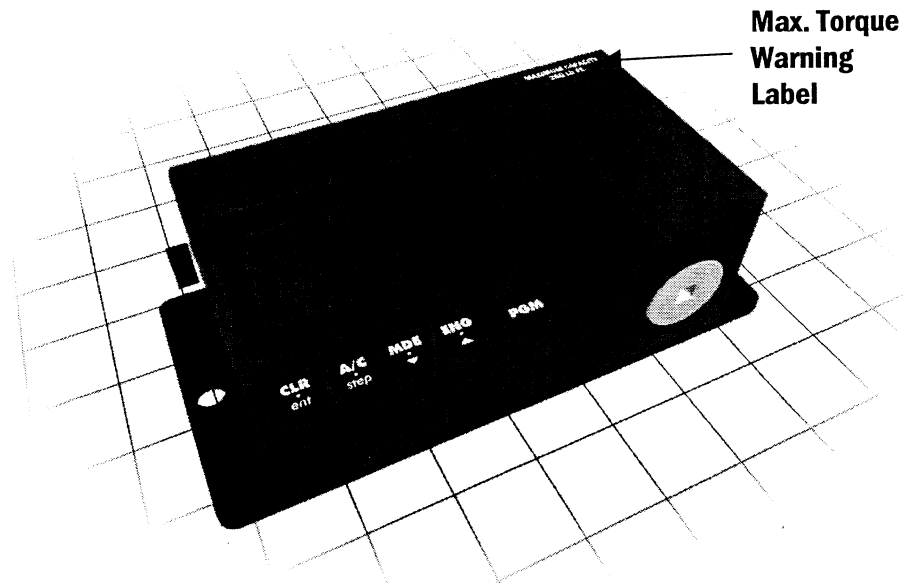
Left-Side Panel

Zero
DC In
Power
RS-232
Keylock

Other Components

Over-Torque Protection Ring
Batteries
UTS Rundown Fixtures
RS-232

BUTTONS

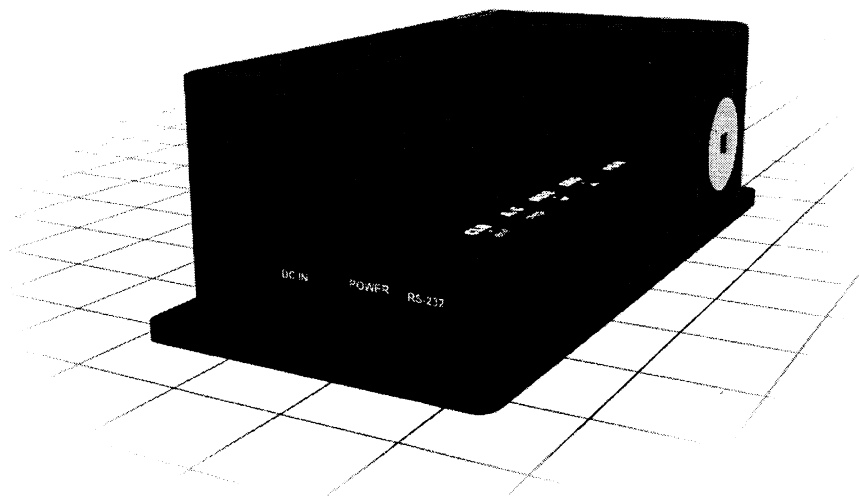


The five buttons on the face of the UTS-3000 each perform multiple functions. The dominant function, labeled in bolder, larger letters, are those buttons used during normal unit operation. These include: CLR, A/C, MDE, ENG, and PGM.

The secondary functions, labeled in thinner, smaller letters, are those buttons used during programming. These include: ent, step, down arrow, and up arrow.

LEFT-SIDE PANEL

The side panel of the UTS-3000 contains various buttons and interface connections:



Zero

Zero the unit. Occasionally, the user may wish to re-establish the zero reference between the transducer and the tester. To zero the unit during operation, press the power switch to the "ON" position and release.

DC In

The interface for the AC Adapter supplied with the unit. Use this if you plan on working under Mains power.

Power

This momentary switch turns the unit ON and OFF. Press the switch in the desired direction and release. Note that the "ON" position of the power switch also functions as the Zero switch.

RS-232

If you are downloading to a printer, data collector, computer, etc., this is the mini-plug interface for the RS-232 cable. Values are sent via RS-232 every time the unit auto-clears or the  button is pressed. See Page 6 for details.

Keylock

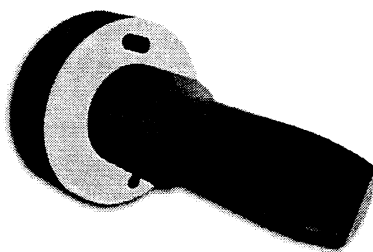
The "key", a small black plastic connector, inserts into the small hole on the left side of the unit. When this key is removed, those functions and modes specified for lockout will become non-functional.

OTHER COMPONENTS**Over-Torque Protection Ring (Optional)**

As a safety measure against transducer overload, the over-torque protection ring is a mechanical device affixed to the internal transducer. Designed to limit the torsional deflection of the transducer shaft, the protection rings extends the transducer's overload protection to 250% full scale.

Batteries

UTS-3000 Series Testers employ a dedicated charging circuit. With the AC adapter plugged-in, the battery will fully charge in approximately 3 hours – the system can be used during this process.

UTS Rundown Fixtures

Inside the shroud of the UTS Rundown Fixture is a washer stack, held in place by a threaded cap screw or bolt. This washer stack is comprised of special beveled washers, designed to compress as the screw or bolt tightens.

By varying the arrangement of these beveled washers, joint rates can be simulated. From a hard "slam" joint to a soft joint, the UTS Rundown Fixture can be configured to any need. Unless otherwise specified, our standard configuration Rundown Fixture is set for a medium joint.

RS-232



Every time the unit clears a reading, whether through the Auto Clear function or when the  button is pressed, that reading is transmitted through the RS-232 port. This value can be read by a printer, computer, data collector, etc.

* RS-232 cable sets are not included with system, but may be ordered separately.

RS232 Transfer Protocol

Protocol	Value
Cable	9 pin to mini-plug.
Baud	9600
Parity	Xon, Xoff
Bits	8
S Bit	1

RS232 Datastream Format

sddddd buuuucl, where:

s	Sign (space or -)	c	Carriage Return
d	Data with Decimal Point	l	Line Feed
u	Units		

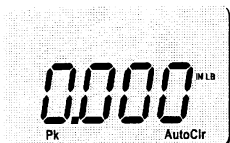
RS232 Cable Pinouts

Pin #	Description	Pin #	Description
1	Unused	6	Unused
2	Transmit	7	Unused
3	Receive	8	Unused
4	Unused	9	Unused
5	Ground		

SETTING MODES

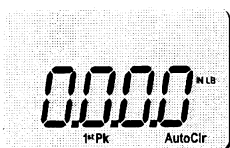
The UTS-3000 supports three modes of operation: Peak, 1st Peak, and Track. These modes are selectable with the  button.

PEAK



Peak displays and retains the maximum torque experienced by the transducer. Peak mode is used for dial torque wrench testing and power tool verification/testing.

1ST PEAK



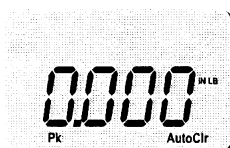
When the  key is pressed, the operating mode switches to 1st Peak. 1st Peak detects the "first peak" of torque experienced by the transducer. 1st Peak mode is used for click wrench calibration and testing. Capturing the initial torque signal drop as occurs when a click wrench actuates, 1st Peak eliminates all operator influences to provide the user with actual torque wrench performance data.

TRACK



When the  key is pressed again, the operating mode switches to Track. Track displays torque as it is being applied to the transducer. Track mode is used primarily for verifying calibration of the unit, and can also be used when testing and calibrating dial torque wrenches or in conjunction with a torque loading mechanism.

* Notice that "AutoClr" disappears when Track is enabled.

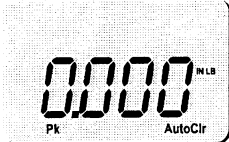


Pressing the  key again cycles back to Peak mode.

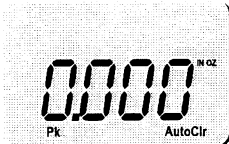
* Now that the mode has switched back to Peak, "AutoClr" reappears.

SETTING ENGINEERING UNITS

The UTS-3000 supports eight engineering units: FT LB, IN LB, IN OZ, Kgf m, KgfCm, gfCm, Nm, and cNm. These units are selectable on the fly through use of the  button, which will cycle through all eight units.

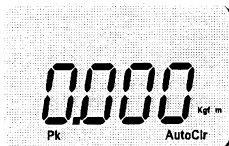


A unit set for IN LBs.



When the  button is pressed, units change to IN OZ.

* Changing the engineering units will clear the peak.



Pressing  again switches the units to Kgf m. Continue pressing the  button until the desired engineering unit is reached.

* The selection order is: Kgf m, KgfCm, gfCm, cNm, Nm, FT LB, IN LB, IN OZ.

NOTE: When scrolling through the different engineering units, an Over-Range designator “_ _ _” may appear, signifying an out of range selection. For example, a 1,000 Lb.ft. system would show over-range if Oz.in. were selected.

SETTING AUTO-CLEAR

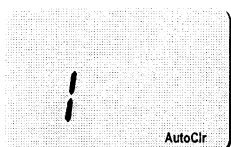
Auto-Clear works in the Peak and 1st Peak Modes, freeing the operator from manually clearing the display after taking a reading. Auto-Clear can be set from one to nine seconds, or completely off.



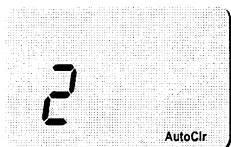
When AutoClr is disabled, the reading will continue to display until the operator presses the  key.



Pressing the  key displays the current Auto-Clear setting.



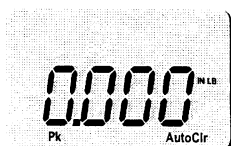
Pressing the  key again will change "OFF" to a value of "1", referring to the number of seconds the system will hold a reading on the screen before clearing.



Repeatedly press the  key to scroll from "OFF" to "9". When the desired value is shown, press the  button.



Once  is pressed, the unit will return to operational mode, with AutoClr now showing on the bottom right of the display. Because AutoClr is now active, this reading will show for the user specified number of seconds...



...And then clear the display. From now on, every reading will clear automatically after the specified number of seconds.

* Remember that AutoClr will not work in Track Mode.

PROGRAMMING

CONTENTS

Set Filter
Low Limit
High Limit
Sleep Mode
Lock-Out Mode

The Program Key (**PGM**) is located on the front panel. Pressing the Program Key repeatedly will cycle through the following Program Functions (please see the associated sections for details about each function). To deactivate the program button, remove the tamper-key on the left side of the unit.

SET FILTER



The filter is used to set the Hz speed at which the unit will capture peak. Press the **PGM** key one time to access the Set Filter Function. This example shows a unit set at 500 Hz.



Pressing the **ENG** key will increase the value by 500 to 1000 Hz.



Pressing the **ENG** key again will increase the value by 500 to 1500 Hz.



Pressing the **ENG** key again will increase the value by 500 to 2000 Hz.



Press **ENG** again and the value will cycle back to 500 Hz.

* You can also use the **MR** key to cycle through the Hz settings, but in decreasing order.

When finished, press the **CLR** key to accept the value and return to operational mode, or press the **PGM** key to accept the value and continue to the next Program Function.

LOW LIMIT



Use the low limit setting as a means of visually flagging the operator when a reading fails to reach a desired minimum value. Press the **PGM** key twice to access the Low Limit Function. This example shows an unset low limit. Press the **CLR** key to begin editing.

SLEEP MODE



To conserve battery life, the UTS-3000 is equipped with a "sleep" mode, which sets the unit to standby after a user-settable amount of time has passed without activity. To access the sleep mode, press the **PGM** key four times. This example shows sleep turned off.



Press the **ENG** key to increase the number of minutes the unit will wait for input, or press the **MDR** key to decrease the number. This example shows a value of four minutes.



The highest possible sleep setting is 20 minutes. Press **CLR** to accept the value and return to operational mode, or press the **PGM** key to accept the value and continue to the next function.

LOCK-OUT MODE



For security reasons, it may be desirable to limit the modes and functions available to the personnel using this equipment. The Lock-Out Mode enables the user to specify the modes and functions unavailable to others, and ensure that security by removing the Program Key located on the left side of the unit.



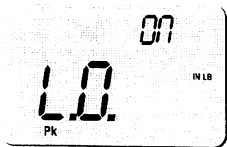
Use the **MDR** or **ENG** keys to cycle through all the possible lockout choices. This example indicates that after the program key is removed, the operator will not be able to change the unit's operation mode.



This example indicates that after the program key is removed, the operator will not be able to change the status of Auto Clear.



This example indicates that after the program key is removed, the operator will not be able to change the unit's operation mode or change the status of Auto Clear.



This example indicates that after the program key is removed, the operator will not be able to change the unit's operation mode or engineering units.

* The possible lockout options are: Mode, Auto Clear, Mode & Auto Clear, Engineering Units, Mode & Engineering Units, Auto Clear & Engineering Units, Mode, Auto Clear, & Engineering Units, and None (OFF).

CALIBRATION

We strongly urge against customer use of the calibration function. This is used by Utica or Utica approved technicians for the calibration of transducers to displays. If you wish to recalibrate an existing system, you must contact technical support. A calibration instruction manual is available upon request. With instructions, calibration of transducers can be performed with certified calibration arms and weights.

WARRANTY REPAIR STATION

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