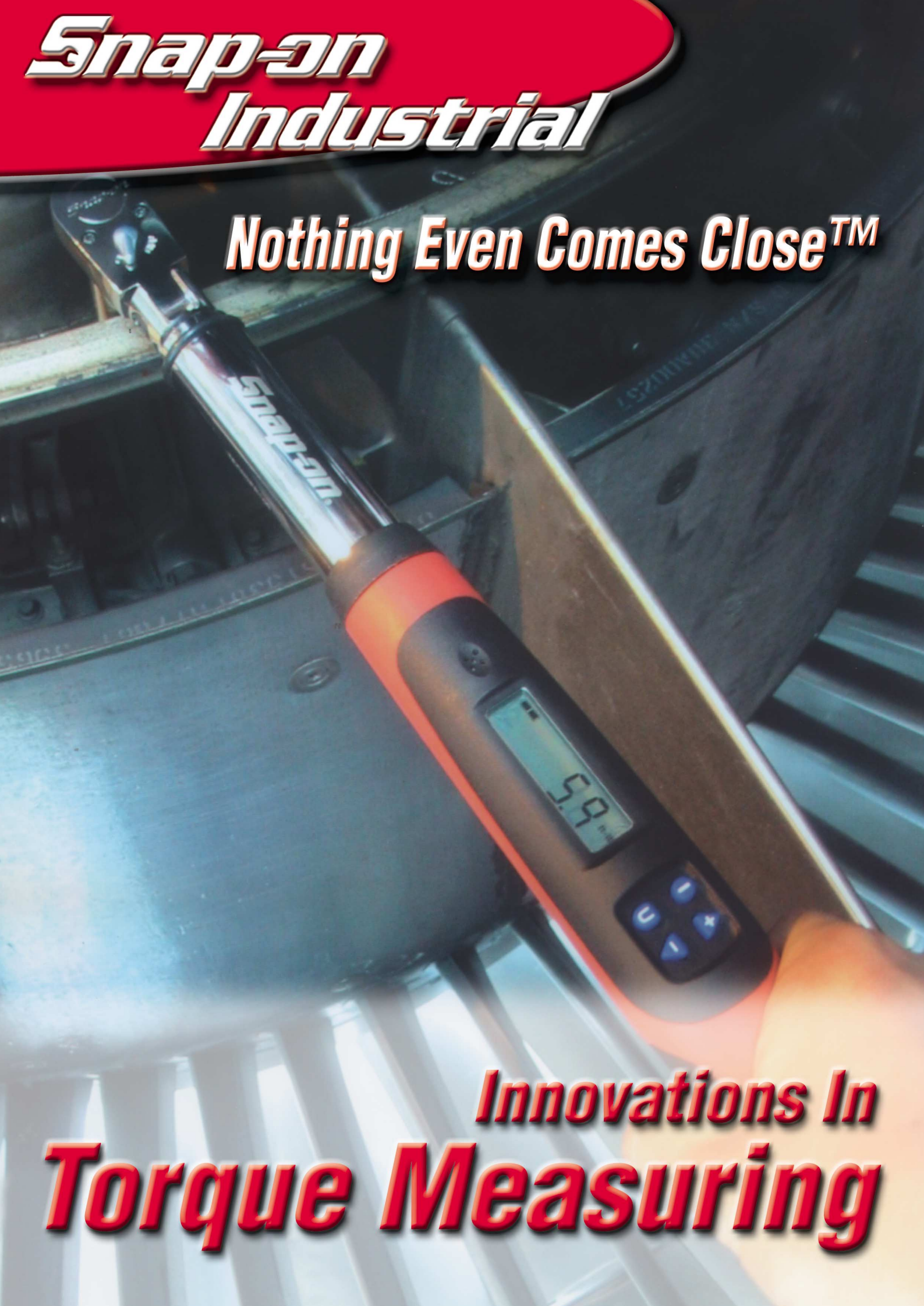


***Snap-on  
Industrial***

***Nothing Even Comes Close™***



***Innovations In  
Torque Measuring***

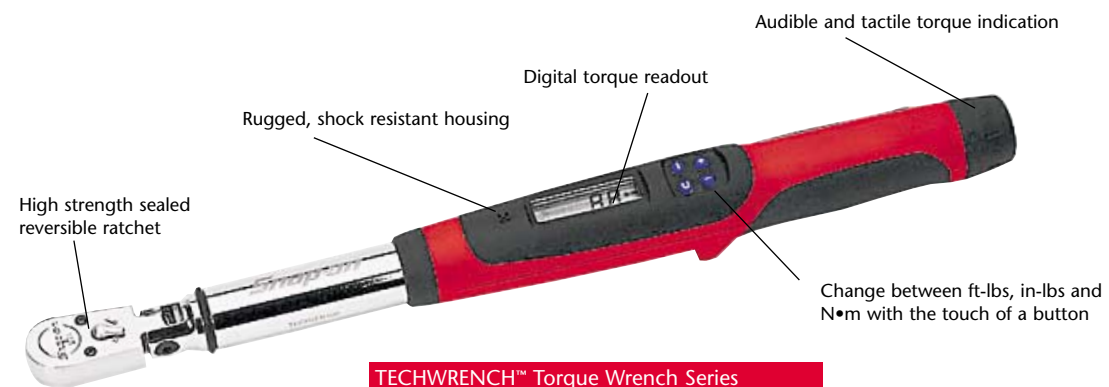
# TORQUE

## Measuring & Testing

Snap-on® gives you more ways to turn more fasteners than anyone else, and most importantly, we give you all the options you need to tighten them correctly. Snap-on® gives you the advantage of the largest selection of torque tools, so whether you are looking for torque screwdrivers or full featured calibration systems, we have the products in the styles and the ranges you need.

These are the products that have earned their reputation in the real world where it matters most – in the factories and shops, in the field and in the laboratories. They are products trusted to build jet engines and farm tractors, spacecraft and machine tools, nuclear reactors and automobiles. Wherever rotating assemblies or high stresses occur, that's where you'll find the world's finest torque products.

You'll know them when you see them. They're all branded Snap-on®. Because Nothing Even Comes Close™.



- TECHWRENCH™ Torque Wrench Series**
- Cutting edge torque wrenches
  - Memory models store and download data
  - "D" series software prevents inadvertent presets
  - Accurate to within 2% clockwise, 3% counterclockwise on flex head models



- TTC2800 Calibrator**
- Top of the line tester and calibrator with mechanized loading

### What You Need To Know About Accuracy... For All Mechanical Click-Type Wrenches.

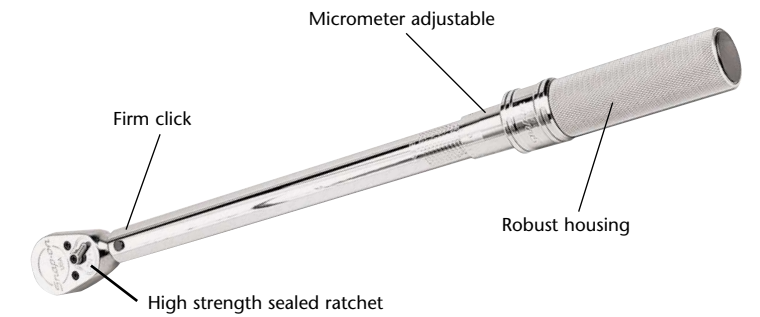
The ANSI Standard allows 4% of reading error between 20% and 100% of wrench capacity. Below 20% ANSI allows an error in reading equal to 0.8% of wrench capacity.

#### What Does This Mean To You?

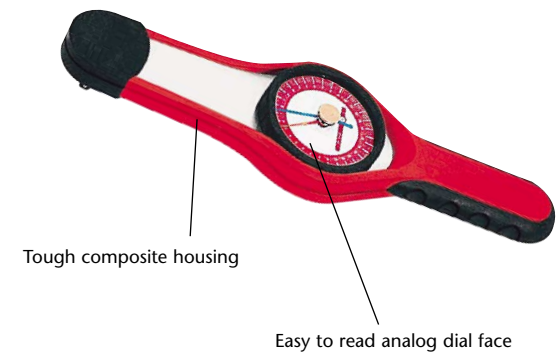
Using a wrench at 5% of its full scale may result in up to 16% error in reading. How can you be sure you are anywhere near the fastener torque specification?

#### Use Caution When Buying Torque Wrenches Rated Below 20% of Full Scale.

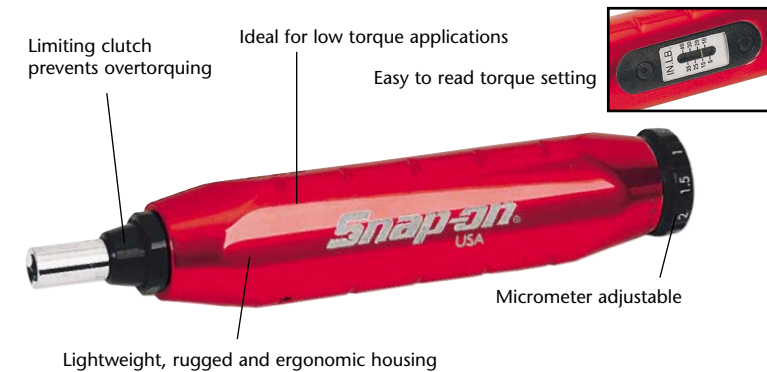
Torque wrenches that are scaled below 20% of full scale may not be accurate and may lead users to operate them below their useful range. Select a torque wrench so your working range falls near the mid point of its capacity.



- QD Series Torque Wrenches**
- Adjustable, preset and interchangeable head models
  - Accurate to within 4% clockwise and 6% counterclockwise



- TE Series Dial Wrenches**
- Direct reading accurate to within 3%
  - Ideal for torque verification



- QDRIVER™ Series Torque Drivers**
- Adjustable and Preset models
  - Accurate to within 6% clockwise



- TQ Series Torque Wrenches**
- Durable split beam style torque wrench
  - No need to zero after use
  - 4% accurate in clockwise direction only



## Torque TORQOMETER® Torque Wrenches



U.S. Reading - Standard 2% Accuracy							
Square Drive, inches	Follow-up Models	Signal Models	Range	Increments	Length, inches	Width, inches	Head* Depth, inches
1/4	TE1FUE†	—	15 in. lb.	1/4 in. lb.	11 1/4	3 3/8	1 3/4
	TE3FUE†	—	30 in. lb.	1/2 in. lb.	11 1/4	3 3/8	1 3/4
	TE6FUE†	—	75 in. lb.	1 in. lb.	11 1/4	3 3/8	1 3/4
3/8	TE12FUE†	—	150 in. lb.	2 1/2 in. lb.	11 1/4	3 3/8	1 3/4
	TE25FUE†	—	300 in. lb.	5 in. lb.	11 1/4	3 3/8	1 3/4
	TE50FUE†	—	600 in. lb.	10 in. lb.	14 15/32	3 3/8	1 3/4
	TE25FFUE†	—	25 ft. lb.	1/2 ft. lb.	14 15/32	3 3/8	1 3/4
	TE50FFUE†	—	50 ft. lb.	1 ft. lb.	14 15/32	3 3/8	1 3/4
	TE100FUE‡	—	100 ft. lb.	1 ft. lb.	21 1/2	2 3/4	2
1/2	TE175FUE‡	—	175 ft. lb.	2 1/2 ft. lb.	21 1/2	2 3/4	2
	TE250FUE‡	—	250 ft. lb.	5 ft. lb.	21 1/2	2 3/4	2
	TE352FUE‡	—	350 ft. lb.	5 ft. lb.	28 7/8	2 3/4	2 1/4
3/4	TE602FUE‡	TE602LE‡	600 ft. lb.	10 ft. lb.	46 1/2	2 3/4	3
	TE1003FUE‡	TE1003LE‡	1000 ft. lb.	10 ft. lb.	74	3	3 1/2
1	TE2003FUE‡	TE2003LE‡	2000 ft. lb.	25 ft. lb.	122	3 1/2	6 1/2

\*Includes square drive dimension. †Composite housing. ‡Steel housing.

### Guaranteed Accuracy:

Within ± 2% of the reading from 20% of full scale to full scale clockwise and counterclockwise.



Newton Meter Reading - Standard 2% Accuracy							
Square Drive, inches	Follow-up Models	Signal Models	Range N•m	Increments N•m	Length, inches	Width, inches	Head* Depth, inches
1/4	TESI5FUE†	—	5	.2	11 1/4	3 3/8	1 3/4
	TESI10FUE†	—	10	.5	11 1/4	3 3/8	1 3/4
3/8	TESI20FUE†	—	20	.5	11 1/4	3 3/4	1 3/4
	TESI30FUE†	—	30	1.0	11 1/4	3 3/8	1 3/4
	TESI70FUE†	—	70	2.0	14 15/32	3 3/8	1 3/4
	TESI75FUE†	—	75	1.0	14 15/32	3 3/8	1 3/4
	TESI125FUE‡	—	125	5.0	21 1/2	2 3/4	2
1/2	TESI250FUE‡	—	250	5.0	21 1/2	2 3/4	2
	TESI500FUE‡	—	500	10.0	28 7/8	2 3/4	2
3/4	TESI800FUE‡	TESI800LAE	800	20.0	46 1/2	2 3/4	3
	TESI1360FUE‡	TESI1360LE	1360	20.0	74	3	3 1/2
1	TESI2803FUE‡	TESI2803LE	2800	50.0	122	3 1/2	6 1/2

\*Includes square drive dimension. †Composite housing. ‡Steel housing.

### Guaranteed Accuracy:

Within ± 2% of the reading from 20% of full scale to full scale clockwise and counterclockwise.

• ASME Spec. B107.14M-1994

## TORQOMETER® Torque Wrenches Torque



Combination U.S./Metric Reading - Standard 2% Accuracy							
Square Drive, inches	Follow-up Models	N•m Range	N•m Increments	U.S. Range	U.S. Increments	Length, inches	Width, inches
1/4	TEC1FUE†	16 kg•cm	1 kg•cm	15 in. lb.	.5 in. lb.	11 1/4	3 3/8
	TEC3FUE†	35 kg•cm	1 kg•cm	30 in. lb.	1 in. lb.	11 1/4	3 3/8
	TEC6FUE†	90 kg•cm	2.5 kg•cm	75 in. lb.	1 in. lb.	11 1/4	3 3/8
3/8	TEC12FUE†	175 kg•cm	5 kg•cm	150 in. lb.	5 in. lb.	11 1/4	3 3/8
	TEC25FUE†	350 kg•cm	10 kg•cm	25 ft. lb.	1 ft. lb.	11 1/4	3 3/8
	TEC50FUE†	700 kg•cm	20 kg•cm	600 in. lb.	20 in. lb.	14 15/32	3 3/8
	TEC100FUE‡	14 kg•m	.5 kg•m	100 ft. lb.	2 ft. lb.	21 1/2	2 3/4
1/2	TEC175FUE‡	25 kg•m	1 kg•m	175 ft. lb.	5 ft. lb.	21 1/2	2 3/4
	TEC250FUE‡	35 kg•m	1 kg•m	250 ft. lb.	10 ft. lb.	21 1/2	2 3/4
	TEC352FUE‡	50 kg•m	1 kg•m	350 ft. lb.	10 ft. lb.	46 1/2	2 3/4
	TEC602FUE‡	80 kg•m	2 kg•m	600 ft. lb.	20 ft. lb.	46 1/2	2 3/4

\*Includes square drive dimension. †Composite housing. ‡Steel housing.

## Torque Screwdrivers

### Preset Torque Screwdrivers

Ideal tools for low torque assemblies and precision applications. Drivers accept all standard 1/4" hex screwdriver bits. Cam-over torque limiting clutch free-wheels when set torque is achieved. Accuracy is ±6% in clockwise direction only for all drivers in series. Lightweight, rugged construction features red anodized aluminum body with stainless steel shank. Comfortable, ergonomic tri-lobe grip and magnetic bit retention.

Stock No.	Range, Minimum	Range, Maximum	Length, inches
QDRIVER1P	6 in. oz. (4 N•cm)	32 in. oz. (22 N•cm)	4 1/16
QDRIVER2P	10 in. oz. (7 N•cm)	100 in. oz. (70 N•cm)	5 5/8
QDRIVER3P	1.5 in. lb. (16 N•cm)	15 in. lb. (169 N•cm)	5 5/8
QDRIVER4P	4 in. lb. (45 N•cm)	40 in. lb. (451 N•cm)	6



### Adjustable Torque Screwdrivers

Ideal tools for low torque assemblies, precision applications and dash/under dash work on most domestic and imported vehicles. Drivers accept all standard 1/4" hex screwdriver bits. Cam-over torque limiting clutch free-wheels 90° when set torque is achieved. Accuracy is ±6% in clockwise direction only for all drivers in series. Lightweight, rugged construction features red anodized aluminum body with stainless steel shank. Comfortable, ergonomic tri-lobe grip and magnetic bit retention.

Stock No.	Range	Length, inches
QDRIVER2	20 - 100 in. oz. (14 - 70 N•cm)	5 7/16
QDRIVER3	3 - 15 in. lb. (34 - 169 N•cm)	5 7/16
QDRIVER4	5 - 40 in. lb. (56 - 451 N•cm)	6 1/16

## Torque Angle Gauges



### Torque Angle Gauges

**TA362.** Allows you to follow manufacturer's specifications calling for fasteners to be tightened after torque loads are applied. Calibrated in degrees in large, easy-to-read increments. 3/4" square drive.  
**TA360.** Similar to TA362 above except 1/2" square drive.

- WARNING**
- Do not exceed rated torque.
  - Do not use to break fasteners loose.
  - Periodic recalibration is necessary to maintain accuracy of any torque wrench. Recalibrate every 6 months or more frequently depending on use.
  - Read additional safety precautions on pages M1 to M4, CAT700.





## Torque TECHWRENCH™ Torque Wrenches

### TECHWRENCH™ Features

- Accuracy (Ratchet Models) 2% CW, 3% CCW. (Ratchet Memory Models) 1%CW, 1.5%CCW.
- Accuracy (Interchangeable Head models) 4% CW, 6% CCW.
- Each button has ONLY one function (power on, select unit of measure, increase fastener torque setting, decrease fastener torque setting).
- All models include 3 "AA" batteries for power.
- Comfortable, non-slip grip handle.
- "D" Models feature fastener torque setting and tolerance range setting
- Stand on handle bottom keeps tool from rolling off flat surface.
- Flex-head ratchet moves 15°.
- All models have a Low Battery Indicator and Auto-Shut-Off (after 2 minutes idle).
- Designed to withstand shocks without failure.
- Splash-proof, protects against water and most automotive shop fluid.
- CE Conformity. Includes storage case.
- Memory models include "Techlog" software CD.
- Operates at a temperature of 40-110°F (5-42°C).
- Can be stored at a temperature of 0-122°F (-20 to 50°C).
- Handles humidity up to 90% and is non-condensing.
- EU/CE-DE, ES, FR, IT, NL, PT, UK, all models.

TECH2FR100



### Standard Models / 2% Accuracy / Ratcheting

Stock No.	TECH1FR240	TECH2FR100	TECH3FR250	TECH4R600
Square Drive, inches	¼	⅜	½	¾
Head Type	Sealed Flex	Sealed Flex	Sealed Flex	Sealed
Gear Teeth	36	36	32	32
Gear Action	10°	10°	10°	11°
Range in. lb.	24-240	60-1200	300-3000	720-7200
Range ft. lb.	2-20	5-100	25-250	60-600
Range N•m	2.7-27.12	6.7-135	34-339	81-813
Head Depth, inches	⅞	⅞	¾	1 ¼
Head Width, inches	⅞	1 ½	1 ½	2 ½
Housing Color	Red	Red	Red	Red
Length, inches	15 ¼	17 ¼	26 ¼	48
Electronics	Tech	Tech	Tech	Tech
Ratchet Service Kit	RKRT936	RKRF936	RKRS936	RKRQC4

TECH2Y100



### Standard Models / 4% Accuracy / Interchangeable Head

Stock No.	Range in. lb.	Range ft. lb.	N•m	Shank Diameter	Electronics	Housing Color	Length, inches*
TECH1J240	24-240	2-20	2.7-27.12	J (0.425")	Tech	Red	13 ¼
TECH1JD240	24-240	2-20	2.7-27.12	J (0.425")	Preset	Grey	13 ¼
TECH2Y100	60-1200	5-100	6.7-135	Y (0.560")	Tech	Red	15 ½
TECH2YD100	60-1200	5-100	6.7-135	Y (0.560")	Preset	Grey	15 ½
TECH3X250	300-3000	25-250	34-339	X (0.735")	Tech	Red	23 ¼
TECH3XD250	300-3000	25-250	34-339	X (0.735")	Preset	Grey	23 ¼
TECH4Z600	720-7200	60-600	81-813	Z (0.990")	Tech	Red	42
TECH4ZD600	720-7200	60-600	81-813	Z (0.990")	Preset	Grey	42

\*Wrench length specification does not include the length of interchangeable heads.

## TECHWRENCH™ Memory Torque

TECH2FRM100



### Memory Models / 1% Accuracy / Ratcheting

Stock No.	TECH1FRM240	TECH2FRM100	TECH3FRM250	TECH4RM600
Square Drive, inches	¼	⅜	½	¾
Gear Teeth	36	36	36	32
Gear Action	10°	10°	10°	11°
Range in. lb.	24-240	60-1200	300-3000	720-7200
Range ft. lb.	2-20	5-100	25-250	60-600
Range N•m	2.7-27.12	6.7-135	34-339	81-813
Head Depth, inches	⅞	⅞	¾	1 ¼
Head Width, inches	⅞	1 ½	1 ½	2 ½
Housing Color	Red	Red	Red	Red
Length, inches	15 ¼	17 ¼	26 ¼	48
Electronics	Tech	Tech	Tech	Tech
Ratchet Service Kit	RKRT936	RKRF936	RKRS936	RKRQC4

TECH2YDM100



### Memory Models / 4% Accuracy / Interchangeable Head

Stock No.	Range in. lb.	Range ft. lb.	N•m	Shank Diameter	Electronics	Housing Color	Length, inches*
TECH1JM240	24-240	2-20	2.7-27.12	J (0.425")	Tech	Red	13 ¼
TECH1JDM240	24-240	2-20	2.7-27.12	J (0.425")	Preset	Grey	13 ¼
TECH2YM100	60-1200	5-100	6.7-135	Y (0.560")	Tech	Red	15 ½
TECH2YDM100	60-1200	5-100	6.7-135	Y (0.560")	Preset	Grey	15 ½
TECH3XM250	300-3000	25-250	34-339	X (0.735")	Tech	Red	23 ¼
TECH3XDM250	300-3000	25-250	34-339	X (0.735")	Preset	Grey	23 ¼

\*Wrench length specification does not include the length of interchangeable heads.



### WARNING

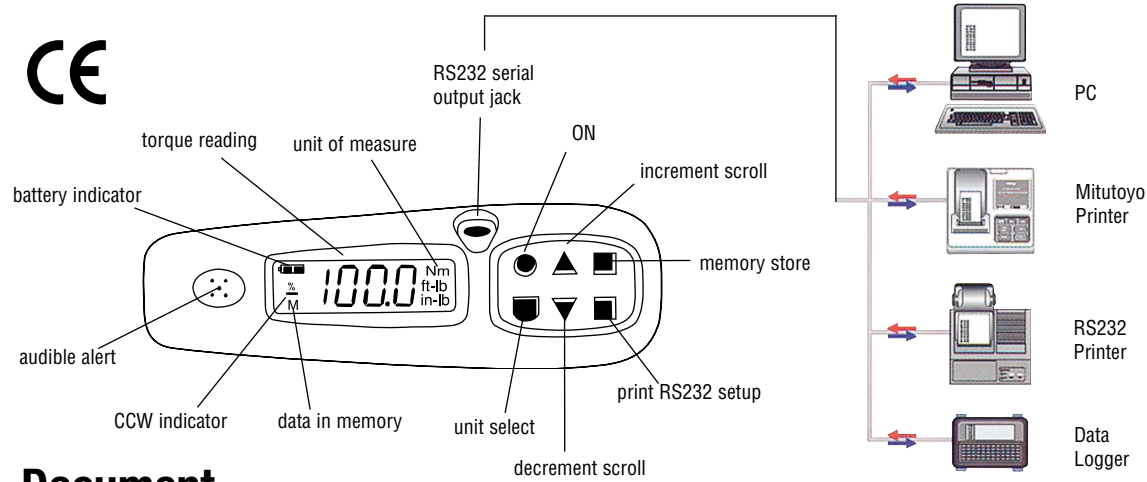
- Do not exceed rated torque.
- Do not use chrome or industrial finish hand tools with power drivers.
- Over torquing can cause breakage. Wrench can break while breaking fasteners loose. An out of calibration torque wrench can cause part of tool breakage.
- Periodic recalibration is necessary to maintain accuracy.



- Do not use a torque wrench to break fasteners loose.
- Do not use with impact wrenches.
- Frequently inspect, clean, and lubricate ratchet mechanism with light oil.
- Broken tools can cause injury.
- Read additional safety precautions on pages M1 to M4, CAT700.

## TORQUE Techwrench™

**TECHMEMORY™ Electronic Torque Wrenches**  
**TORQLOG™ software converts up to 1,000 stored readings**  
**to a Microsoft® Excel® spread sheet.**



### Document Torque Readings

during assembly  
 ISO & SPC  
 military defense  
 aviation

#### TECHWRENCH™ Features

- Accuracy**
- Includes "Certificate of Calibration" traceable to the National Institute of Standards and Technology.
- Easy-to-use**
- Each button has only one function.
  - Choose from in. lb, ft. lb, or N•m scales.
  - Comfortable, non-slip grip handle.
  - Stand on handle bottom keeps tool from rolling off flat surface.
  - Flex-head ratchet moves 15° in both directions.
  - Low Battery Indicator and Auto-Shut-Off.
- Rugged**
- Designed to withstand shock without failure.
  - Splash-proof, protects against water and most automotive shop fluid.
  - High strength, sealed ratcheted head keeps out dirt & grit.
  - Storage case included.



For more information visit:  
[www.snapon.com/torque/techwrench](http://www.snapon.com/torque/techwrench)



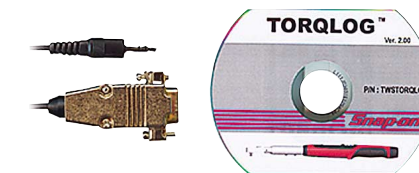
- WARNING**
- Do not exceed rated torque.
  - Over torquing can cause breakage. Wrench can break while breaking fasteners loose. An out of calibration torque wrench can cause part of tool breakage.
  - Periodic recalibration is necessary to maintain accuracy.
  - Do not use a torque wrench to break fasteners loose.

- Do not use with impact wrenches.
- Frequently inspect, clean, and lubricate ratchet mechanism with light oil.
- Broken tools can cause injury.
- Read additional safety precautions on pages M1 to M4, CAT700.

EU/CE - DE, ES, FR, GB, IT, NL, PT  
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## Sample TECHMEMORY™ Microsoft® Excel® Spread Sheet

**TECHMEMORY™ Electronic Torque Wrenches**  
 Includes TORQLOG™, a downloading software on CD for IBM PC's, and a 6 ft. RS232 serial cable. Two Excel templates are also on the CD for customer convenience. The DOWNLOAD template provides basic statistical analysis of dumped readings. The DATE/TIME template adds a date and time stamp to each reading while the wrench is attached to the PC. Each can be customized to suit specific user needs.



Includes:  
 software, 6 ft RS232 cable,  
 & blow molded case

## Techwrench Data Logging TORQUE

**TORQLOG™ DATE-TIME DATA LOGGING TEMPLATE**  
 Use when down-loading individual readings while the wrench is attached to a PC.

**ENTER JOB INFORMATION HERE:**

Company Name: _____	Mean: 9.63	0
Operator Name: _____	Min: 6.90	0
Date: _____ Time: _____	Max: 14.50	0
Shift: _____ Supervisor: _____	Range: 7.60	0
Project Number: _____	STDEV: 2.13	
Number of Fasteners: _____		
High Torque Limit: _____		
Low Torque Limit: _____		
Units: _____		
(ft-lb, in-lb, Nm)		

Connect TECHWRENCH to computer, open TORQLOG program, then [Click to Start](#)

Note: For automatic DATE and TIME stamp to function you must allow macros. For Excel 2000 users, click on Tools, Macro, Security and select Medium. Then, exit Excel and open this template again. In the macros window select Enable Macros. For other versions, see your Help pull-down.  
 \* for proper statistical results, UNITS and direction (CW or CCW) must all be the same.

No.	Torque Value*	Units*	Date	Time	Notes
1	8.1	ft-lb	3/17/2004	2:38:39PM	
2	8.4	ft-lb	3/17/2004	2:38:43PM	
3	10.0	ft-lb	3/17/2004	2:38:46PM	
4	10.5	ft-lb	3/17/2004	2:38:49PM	
5	9.9	ft-lb	3/17/2004	2:38:52PM	
6	8.5	ft-lb	3/17/2004	2:38:55PM	
7	6.9	ft-lb	3/17/2004	2:38:57PM	
8	6.7	ft-lb	3/17/2004	2:39:03PM	
9	8.3	ft-lb	3/17/2004	2:39:06PM	
10	8.9	ft-lb	3/17/2004	2:39:08PM	
11	8.7	ft-lb	3/17/2004	2:39:10PM	
12	9.0	ft-lb	3/17/2004	2:39:16PM	
13	13.8	ft-lb	3/17/2004	2:39:19PM	
14	14.5	ft-lb	3/17/2004	2:39:22PM	
15	12.1	ft-lb	3/17/2004	2:39:24PM	
16	9.7	ft-lb	3/17/2004	2:39:27PM	
17					

### Specifications – TECHWRENCH™ Torque Wrenches (located on facing page)

Stock No.	TECH1FRM240	TECH2FRM100	TECH3FRM250	TECH4RM600	
Square Drive, inches	1/4	3/8	1/2	3/4	
Head Type	Flex-Ratchet	Flex-Ratchet	Flex-Ratchet	Ratchet	
Gear Teeth	36	36	36	32	
Gear Action	10°	10°	10°	11°	
Range in. lb.	24-240	60-1200	300-3000	720-7200	
Range ft. lb.	2-20	5-100	25-250	60-600	
Range N•m	2.7-27.12	6.7-135	34-339	81-813	
Head Depth	0.44" (11.1mm)	0.62" (15.9mm)	0.75" (19.1mm)	1.25" (31.8mm)	
Head Width	0.88" (22.2mm)	1.16" (29.4mm)	1.58" (41.3mm)	2.5" (63.5mm)	
Torque Setting Resolution	0.1 ft. lb. (0.1 N•m, 1 in. lb.)	0.1 ft. lb. (0.1 N•m, 1 in. lb.)	0.1 ft. lb. (0.1 N•m, 1 in. lb.)	0.1 ft. lb. (0.1 N•m, 1 in. lb.)	
Overall Length	15" (381mm)	17" (432mm)	26" (660mm)	48"	
Ratchet Service Kit	RKRT936	RKRF936	RKRS936	RKRQC4	
Memory Capacity	All models - 1,000 peak reading - Reading number, torque values, units of measure				
Power	All models - 3 AA batteries (included)				
Operating Temperature	All models - 40 to 110°F (5 to 42°C)				
Storage Temperature	All models - 0 to 122°F (-20 to 50°C)				
Humidity	All models - up to 90%, non-condensing				
Digital Download	All models - RS232 (True) - selectable 1200 to 19.2K Baud				
Accuracy (72°F):	CW	CCW	TECH4	CW	CCW
TECH1, 2, 3	±1%	±1.5% of reading, 20% to 100% to full scale	Ratchet Head	±2%	±3% of reading, 20% to 100% of full scale
Flex Ratchet Head	±2%	±3% of reading, 10% to 19% to full scale(non-flexed)		±4%	±6% of reading, 10% to 19% of full scale
	±4%	±8% of reading, 5% to 9% of F.S (TECH2 only)			



## TORQUE Electronic Torque Testers



QC1ETT50

### Electronic Torque Testers

Designed to be a sturdy, low-cost tester, these electronic torque testers can be placed on the wall in the factory or on a bench to allow operators to test torque wrenches or power tools without having to leave their station.

- Integral transducer and sturdy housing allow mounting in virtually any position.
- Unique neck design allows operator to see display when testing long torque wrenches.
- Accuracy better than  $\pm 1\%$  of indicated value (10% to 100% of full range of transducer).
- Track and Peak modes.
- Can be used with non-impacting power tools (joint rate simulators required).
- Dual scale (English/N•m or English/dN•m).
- Auto/manual display reset.
- Reads bidirectionally (clockwise and counterclockwise).
- Uses rechargeable NiCad batteries.
- All testers include power adaptor cord, socket adaptor (internal to internal) and PB1ETT Plastic Storage Case.

Stock No.	Drive Size, inches	Range	
		English	N•m
QC1ETT400	¼	40-400 in. oz.	28-280 cN•m
QC1ETT10	¼	10-100 in. oz.	7.0-70.6 cN•m
QC1ETT50	¼	5-50 in. lb.	5.6-56 dN•m
QC1ETT100	¼	10-100 in. lb.	11.3-113 dN•m
QC2ETT250	⅜	25-250 in. lb.	28-280 dN•m
QC2ETT1000	⅜	100-1,000 in. lb.	113-1,130 dN•m
QC3ETT250	½	25-250 ft. lb.	34-339 N•m
QC4ETT600	¾	60-600 ft. lb.	81-813 N•m



#### WARNING

- Do not exceed rated torque.
- Over torquing can cause breakage. Wrench can break while breaking fasteners loose. An out of calibration torque wrench can cause part of tool breakage.
- Periodic recalibration is necessary to maintain accuracy.
- Do not use a torque wrench to break fasteners loose.



- Do not use with impact wrenches.
- Frequently inspect, clean, and lubricate ratchet mechanism with light oil.
- Broken tools can cause injury.
- Read additional safety precautions on pages M1 to M4, CAT700.

## VERSATEST™ Electronic Torque Tester Torque

The VERSATEST™ Indicator is a laboratory grade instrument used for precise, in-house torque wrench testing and calibration. High precision torque transducers provide system readings with an accuracy of  $\pm 0.25\%$  of indicated value. Transducers are available in ranges from 15-200 in. oz. to 200-2,000 ft. lb. and feature a special built-in memory chip that identifies the range and maintains the calibration between all VERSATEST™ Indicators. Set-up and calibration programming is entered via front panel membrane keys. The VERSATEST™ can store and recall up to 3,000 different torque/force readings. Statistical analysis stored in memory can be downloaded to a computer or serial printer. A hard-wired lithium battery keeps the internal memory and the date/time clock operating for up to ten years.



VERSATEST

TTC400

### Transducers

All TTC Series Transducers include the correct adaptor for the indicated torque range.

Stock No.	Description	Drive Size, inches	Range	Bench Top Mounting Bracket
TTC5	Transducer	¼	15-200 in. oz.	TTC3421
TTC6	Transducer	¼	4-50 in. lb.	TTC3421
TTC65	Transducer	¼	15-150 in. lb.	TTC3421
TTC7	Transducer	⅜	30-400 in. lb.	TTC3421
TTC8	Transducer	⅜	80-1000 in. lb.	TTC3421
TTC10	Transducer	½	10-125 ft. lb.	TTC3422
TTC11	Transducer	½	20-250 ft. lb.	TTC3422
TTC12	Transducer	¾	60-600 ft. lb.	TTC3422
TTC13	Transducer	1	100-1000 ft. lb.	TTC15001
TTC14	Transducer	1	200-2000 ft. lb.	TTC15001
TTC400*	4-in-1 Transducer	¼	4-50 in. lb. (min.)	—
		⅜	30-400 in. lb.	—
		⅜	80-1000 in. lb.	—
		½	20-250 ft. lb. (max.)	—

\*TTC400 requires the TTC5000-1 Adaptor Plate when used with the TTC600 Manual Loader, TTC800 Motorized Loader and VERSA600LDR.

### VERSATEST™ Specifications:

<b>Display:</b>	Large 5.5" x 1.5" backlit LCD graphics display (240 x 64 dot matrix, 0.67" torque digits character height)
<b>Capacity:</b>	5 significant digits $\pm$ 32,000 counts (16 bit A/D)
<b>Sample Rate:</b>	2000 samples per second
<b>Display Rate:</b>	5 updates per second
<b>Accuracy*:</b>	$\pm 0.25\%$ OF READING AT 25° C (WITH TTC Transducer calibration)
<b>Temperature Drift:</b>	+ 0.03% / °C (+0.017% / °F)
<b>Bar Graph:</b>	100 segment analog of applied torque scaled to Limits Set value
<b>Units of Measure:</b>	in. oz., in. lb., ft. lb., N•m, dN•m, kg•cm and kg•m
<b>Modes:</b>	Track, Peak Hold, First Peak, Power Tool
<b>Soft Key User Interface:</b>	Units, Calibration, Date/Time, Statistics, Hi/Low Limits Set, Data Store, Data Recall, Printer Set-up, Zero, Auto/Manual Store/Send/Clear
<b>Select Keys:</b>	Increment, Decrement, Shift Left, Shift Right, Enter
<b>Operating Temperature:</b>	10 to 32° C (50 to 90° F)
<b>Storage Temperature:</b>	-20 to 50° C (-2 to 122° F)
<b>Humidity:</b>	85% Relative Humidity @ 21° C (70°F)
<b>Dimensions:</b>	10" wide x 4" high x 10.5" deep (including carry handle)

### Features:

- Large LCD Display
- Automatic Downloading
- Two RS232C Serial Ports—Use with Printer and PC
- Data Storage/Recall (with Date/Time stamp) holds up to 3,000 measurements
- Real Time Clock
- Smart Transducers
- Solenoid Locking Mechanical Loader
- Analog Output—Connect to Oscilloscope or X-Y Plotter
- External Printer can be mounted on top of the VERSATEST unit
- Remote Foot Switch Interface for Send/Print Functions
- Multiple Languages (English, German, Spanish, French)
- Four Modes—TRACK, PEAK HOLD, FIRST PEAK, POWER TOOL
- Statistic Process Control (SPC) built-in
- CE Conformity



VERSATEST600

**VERSATEST600.** Provides high speed monitoring of static and dynamic torque inputs. Includes the VERSATEST™ Indicator, VERSA600LDR Loader, TTC12 Transducer, TTC400 4-in-1 Transducer and TTC5000-1 4-in-1 Adaptor Plate.

**VERSA600LDR.** Portable, table-top torque wrench loader with safety shield. Unit will load dial, micrometer, beam and electronic torque wrenches. Optional torque screwdriver testing kit allows testing of torque screwdrivers. Maximum capacity to 600 ft. lbs. Use with any TTC Series Transducer from 15 in. oz. to 600 ft. lbs. Four cushion pads for adhesion to work surfaces without slipping. Large wheel for smooth cranking action.

### Accessories

TTC1121	Serial Printer	TTC501	PC Connector
TTC3421	Mounting Bracket "A".	TTC502	Printer Connector
TTC3422	Mounting Bracket "A".	TTC75002	Torque Screwdriver
TTC15002	Mounting Bracket "C".		Testing Kit

<b>Power Supply:</b>	Auto Switching 100VAC-24-VAC, 50/60 Hz, 50 watts
<b>Data Storage/Recall:</b>	3,000 Measurements
<b>Statistical Analysis:</b>	Max, Min, Range, Mean, Sigma N, Sigma, Cp, Cpk, % Error, -NoGo, +NoGo
<b>Histogram:</b>	Lower Set Limit, Upper Set Limit, 10 Divisions
<b>Printer/Computer Serial Output Port:</b>	RS232 (True), 300-19.2K Baud
<b>Computer Serial Com Port:</b>	RS232 (True), 300-19.2K Baud
<b>Analog Output:</b>	+(CW)/-(CCW) 1.8V at Transducer Full Range Linearity, $\pm 1\%$ of reading
<b>Loader Control Relays:</b>	Two, Normally Open, Form A, Rated 12VDC @ 1/2A close contact at 110° CW or CCW or torque/force transducer range

\*TTC Transducers used with, but not calibrated to, the VERSATEST™ Indicator provide a system accuracy of  $\pm 0.5\%$  of reading @ 25° C.

## Torque Electronic Torque Tester and Calibrator

Use the TTC2000/TTC2800 System to accurately test all types of torque wrenches, torque screwdrivers, torque multipliers, cable tensiometers, tension and compression gauges as well as power tools such as nut runners, and electric/pneumatic screwdrivers.

Developed under contract to the U.S. Air Force, the TTC2000/TTC2800 Electronic Torque Tester/Calibrators are the standard by which torque instruments are tested and calibrated.

### TTC2000/2800 System Specifications

#### TTC2000 Manual Loader System

**Torque/Force Display** Eight digit, alpha-numeric, super bright red LED, 0.55 inch character height

**Capacity** 8 digits +/- 32,000 counts (16 bit A/D)

#### Accuracy\*

+/- 0.25% of reading at 25° C (with TTC Transducer calibration)

**Temperature Drift** + 0.03% / C (+ 0.017% / F)

\* TTC Transducers used with, but not calibrated to, the TTC610/810.

Indicator provides a system accuracy of +/- 0.5% of reading @ 25° C.

#### Units of Measure

**TORQUE:** ft. lb., in. lb., in. oz., N•m, dN•m, kg•cm and kg•cm;

**FORCE:** lbf, ozf, N, dN, kp and gf; **ANGLE:** degrees

#### Angle Resolution (Optical Rotary Encoder)

Bi-directional, X4 quadrature logic

#### Maximum Range Display

2-line x 16 character 5 x 8 dot-matrix LCD used for MAX. Transducer Range, Units, Angle, Calibration, Date/Time, Statistics, Torque/Force or Torque/Angle Limits Set, Data Store/Recall, Printer Set Up

#### Modes

Track, Peak Hold, Angle, First Peak, Power Tool

**Operating Temperature** 10 to 32° C (50 to 90° F)

**Storage Temperature** -20 to 50° C (-2 to 122° F)

**Humidity** Up to 90%, Non-condensing

**Power Supply** UL Approved, 120VAC/220VAC, 50/60 Hz

**Data Storage /Recall** 3,000 Measurements

**Statistical Analysis** Max, Min, Range, Mean, SigmaN, Sigma,

Cp, Cpk, % Error, -NoGo, +NoGo

#### Histogram

Lower Set Limit, Upper Set Limit, 10 Divisions

#### Printer/Computer Serial Output Port

RS232 (True), 300-19.2K Baud

#### Computer Serial COM Port

RS232 (True), 300-19.2K Baud (Optional)

#### Analog Output

+(CW)/-(CCW) 1.8V at Transducer Full Range Linearity, +/-1% of reading

#### Loader Control Relays

Two, Normally Open, Form A, Rated 12DVC @ 1/2A close contact at 110% CW or CCW or torque/force transducer range

#### Loader Hand Crank

Input torque 8 ft. lb. Maximum, Output Torque 2,000 ft. lb. Maximum

#### TTC2800 Motorized Control Loader System

(as above with TTC800 Motorized Control Loader)

#### Modes

Manual; Auto Dial; Auto 1st Peak

#### Power Supply

120VAC +/- 10% Hz @ 3.14A (including motor current);

#### TTC2800-220V

Power Supply 220VAC +/- 10% Hz @ 3.14A (including motor current); (with step-down transformer for motor control.)

### Features:

- Automatic Sensor Recognition with TTC Series "Smart" Transducers
- Range: 15 in. oz. to 2,000 ft. lb (bi-directional)
- Total Uncertainty (10% to 100% of range): +/- 0.25% of indicated torque value
- Alpha-numeric 8 digit display
- Memory to 3,000 values
- Includes low profile serial printer
- Date and time stamp for stored values
- Statistical analysis performed on stored data
- Programmable manual or automatic options for clear, store and print functions
- Recall and review of stored torque values
- Modes—TRACK, PEAK, FIRST PEAK, POWER TOOL and ANGLE
- RS232C port is standard
- Analog output is standard
- Full digital circuitry
- Eight torque measurement units: in. oz., in. lb., ft. lb., cN•m, dN•m, N•m, kg•cm and kg•m.
- Automatic lock-up for transducer protection
- Automatic zero
- Automatic transducer recognition
- Operates on 120VAC or 240VAC.
- CE Conformity.



### TTC2000 Manual System / TTC2800 Motorized System

Description	Application/Use
<b>TTC2000 Components</b>	
<b>TTC600</b> Mechanical Loader	Applies load to torque wrenches for testing. Includes loader, torque indicator stand, torque pin, protective shield, small transducer adaptor, and power cord. 45" W x 24" D x 9.5" H.
<b>TTC610</b> Digital Indicator	Torque tester for the TTC2000 System.
<b>KRL762PY</b> Roller/Storage Cabinet	Used to mount TTC600/TTC610 (TTC2000) and store accessories. <i>Not available individually.</i>
<b>TTC2800 Components</b>	
<b>TTC800</b> Motorized Loader	Applies load to torque wrenches for testing on TTC2800 System.
<b>TTC810</b> Digital Indicator	Torque Tester for the TTC2800 System
<b>KRL762PY</b> Roller/Storage Cabinet	Used to mount or TTC800/TTC810 (TTC2800) and store accessories. <i>Not available individually.</i>

Complete with all necessary cables and brackets. Sensors sold separately.

## Electronic Torque Tester and Calibrator Torque



### Transducers

All TTC Series Transducers include the correct adaptor for the indicated torque range.

Stock No.	Description	Drive Size, inches	Range	Bench Top Mounting Bracket
TTC5	Transducer	1/4	15-200 in. oz.	TTC3421
TTC6	Transducer	1/4	4-50 in. lb.	TTC3421
TTC65	Transducer	1/4	15-150 in. lb.	TTC3421
TTC7	Transducer	3/8	30-400 in. lb.	TTC3421
TTC8	Transducer	3/8	80-1000 in. lb.	TTC3421
TTC10	Transducer	1/2	10-125 ft. lb.	TTC3422
TTC11	Transducer	1/2	20-250 ft. lb.	TTC3422
TTC12	Transducer	3/4	60-600 ft. lb.	TTC3422
TTC13	Transducer	1	100-1000 ft. lb.	TTC15001
TTC14	Transducer	1	200-2000 ft. lb.	TTC15001
TTC400*	4-in-1 Transducer	1/4	4-50 in. lb.	—
		3/8	30-400 in. lb.	—
		3/8	80-1000 in. lb.	—
		1/2	20-250 ft. lb.	—
		—	—	—

**TTC5000-1 4-in-1 Adaptor Plate** — — —  
 \*TTC400 requires the TTC5000-1 Adaptor Plate when used with the TTC600 Manual Loader, TTC800 Motorized Loader and VERSA600LDR.

### Weight Sets

The following calibration equipment can be used to calibrate any TTC Series Transducer. All weights are NIST (NBS) traceable.

- TTC3200** Weight Set #1 (Use for all TTC Series Transducers)
- TTC3210** Weight Set #2 (For 200 in. oz. to 250 ft. lb. TTC Series Transducers)
- TTC3220** Weight Set #3 (For 600 ft. lb. To 2,000 ft. lb. TTC Series Transducers)

### Calibration Wheels / Arms

The following calibration equipment can be used to calibrate any TTC Series Transducer. Arms are certified to manufacturers standards.

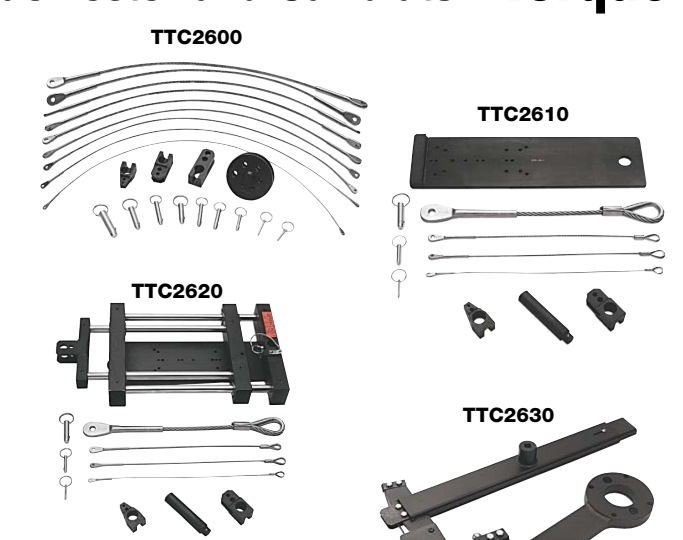
- TTC500** 2.5" Calibration Wheel, 1/4" sq. dr.
- TTC1510** 5" Calibration Wheel, 1/4" sq. dr.
- TTC1520** 10" Calibration Butterfly, 1/2" sq. dr. with adaptors.
- TTC1540** 40" Calibration Arm, 1 1/4" sq. dr. with adaptors.

### Joint Rate Simulator Adaptors

Use with torque tester when testing non-impacting power tools. Square drive adaptor is placed on top of square drive of the torque tester and tightened with a set screw. An adaptor bit is inserted into the power tool and mated to the top of the joint adaptor. By stacking the Belleville washers in set patterns, the joint rate adaptor can simulate soft, medium, or hard joints.

Stock No.	Drive Size, inches	Capacity, in. lb.	Adaptor Bit	Load Screw
<b>QC1JRS50</b>	1/4	50	1/4" Hex x 3/16" Hex	1/4" x 28 x 1
<b>QC2JRS400</b>	3/8	400	3/8" Square Internal x 3/8" Hex	3/16" x 20 x 1.5
<b>QC2JRS1000</b>	3/8	1,000	3/8" Square Internal x 1/2" Hex	3/8" x 18 x 1.5

**WARNING**  
 • Counter balance or anchor mounting base.  
 • Read additional safety precautions on pages M1 to M4, CAT700.



### Force Testing Equipment

- TTC2600** Tensiometer Testing Kit
  - TTC2610** Tension Gauge Testing Kit
  - TTC2620** Compression Gauge Testing Kit
  - TTC2630** Force Arm Kit (Only one is needed for any Force Testing Kit)
- Reaction arms, cables, mounting plates and fixtures are available for testing tension meters plus compression and tension gauges. The TTC600 and TTC800 Loaders and TTC Series Transducers can be configured to deliver compression and tension loads.  
 • The TTC610/TTC810 Indicator also provides measurement, display, storage and statistical analysis for FORCE inputs.

### Weight Hanger / Trays

The following calibration equipment can be used to calibrate any TTC Series Transducer. Weight Trays certified as to weight.

- TTC301** Weight Hanger, 8 oz.
- TTC3040** Weight Tray, 7.5 lb.
- TTC3020** Weight Tray, 15 lb.
- TTC3030** Weight Tray, 50 lb.



### Accessories

Stock No.	Description
<b>TTC501</b>	PC Cable. Connects TTC610 Digital Indicator to PC.
<b>TTC502</b>	Printer Cable. Connects TTC610 Digital Indicator to printer.
<b>TTC25002</b>	Free standing calibration stand with mounting block and hardware for use with TTC2000/TTC2800 Systems and all TTC Series Transducers.
<b>TTC75002</b>	Torque Screwdriver Testing Kit
<b>TTC900121</b>	Smart Cable Replacement
<b>TTC5500-1</b>	Extension Arm







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Snap-on Tools Repair Centre  
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Northamptonshire  
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## Torque Standards & Certification

Snap-on torque wrenches are designed and manufactured to exceed these national and international standards:

ASME B107.14M-1994  
BSEN 26789 : 1994  
ISO 6789 : 1992  
U.S.A. GGG-W-00686-C (GSA-FSS)



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