

TRUCHECK™ 10 N·m - 2000 N·m



One of the concerns in putting a torque tester into an environment where people are not calibration specialists is that incorrect selections will be made with the potential of incorrect tool setting and consequently joint failure.

The 'TruCheck™' torque wrench testers aim to cut the cost of purchasing a torque wrench calibration system, and remove the fears over the complexity of using such equipment.

There are two versions available, the 'TruCheck™' being the most basic version, and the 'TruCheck™ Plus' having greater functionality, to offer more flexibility.



4	TRUCHECK™
43221*	TruCheck™ 10 - 350 N·m
43226*	TruCheck™ 10 - 250 lbf·ft
43222*	TruCheck™ Plus 10 - 350 N·m
43230*	TruCheck™ 100 - 1000 N·m
43237*	TruCheck™ 75 - 750 lbf·ft
43231*	TruCheck™ Plus 100 - 1000 N·m
43244®	TruCheck™ 200 - 2000 N·m
43245®	TruCheck™ Plus 200 - 2000 N·m
TCACC.CW	UKAS accredited calibration - clockwise
TCACC.CW+CCW	UKAS accredited calibration - clockwise and counter clockwise

* 43221, 43222 and 43226 supplied with ½" female square drive
 + 43230, 43231 and 43237 supplied with 27 mm male hexagon plus ¾" sq. dr. socket
 ® 43244 and 43245 supplied with 27 mm male hexagon plus 1" sq.dr socket

NOTE: UKAS accredited calibration is from 5% to 100% of full scale for 43221, 43226, 43222 and 10% to 100% for 43230, 43231, 43237, 43244 & 43245.

NOTE: If you order a UKAS accredited calibration, this certificate shall be provided in place of the traceable calibration certificate.

PRO-TEST



The Professional Torque Tester - Series 2, Pro-Test, is an accurate, highly specified and easy to operate instrument for testing and calibrating all types of torque wrench.

- 'Pro-Test' is priced to make in-house testing a viable proposition even for the smaller industrial and automotive torque wrench user
- Guaranteed classification to BS7882:2008, Class 1 or better over the primary calibration range (20% to 100% of full scale), Class 2 or better over the secondary calibration range (lowest calibrated value to 20% of full scale). Class 1 equates to ±0.5% of reading
- Three essential operating modes allow the Pro-Test to be used with all torque wrench types 'Track' displays the live value, 'Peak Memory' records the highest value and 'First Peak Memory' records the first peak of torque (for click type torque wrenches). Both memory modes can be used with manual or automatic reset
- Large back lit display is easily visible from a distance and in poor light
- Display and Transducer are hard-wired together with a 600 mm cable
- All common units of torque measurement are included
- Pictorial mode selection incorporated for ease of use
- User can select the language they wish to work in (most European languages are included)
- Transducer can be mounted for torque wrench operation in the horizontal or vertical plane
- RS-232-C is included for the output of reading to a printer, PC, data capture unit, SPC software etc
- Optional mounting plate gives greater flexibility of mounting options
- All user settable parameters are menu selectable from the front panel
- Supplied in a robust carry case with a data transfer lead to connect to a PC or printer
- As standard, all transducers are calibrated in a clockwise direction. For additional anti-clockwise direction order Part No. PROTEST.CCW

4	PRO-TEST (Professional Torque Tester Series 2)
43218	Pro-Test 60, 1.2 - 60 N·m
43219	Pro-Test 400, 8 - 400 N·m
43220	Pro-Test 1500, 30 - 1500 N·m

4	ANCILLARY PRODUCTS FOR PRO-TEST
62198.BLK9005	Mounting Bracket
60253	12v DC Power Supply for Series 2
29190	1" x 36mm socket
PROTEST.CCW	Counter Clockwise Calibration when ordered with new unit



TST



The TST combines simplicity with up to date technology to provide a high quality instrument for the testing and calibration of low capacity torque tools.

Featuring an internal transducer complete with Rundown Fixture, the TST is available in 3 torque ranges, 0.04 to 2 N·m, 0.5 to 10 N·m and 1.25 to 25 N·m. Class 1 system accuracy over its Primary range ($\pm 0.5\%$ of reading from 20% to 100% of full scale).

What makes the TST genuinely versatile is the interface for an external transducer. This interface, accessed by a 2 way switch on the TST, allows the connection of any transducer from Norbar's "SMART" range and most mV/V calibrated transducers from Norbar or other manufacturers.

- Pictorial display panel for easy mode selection.
- Limit detection with low, pass and fail indication. Up to 8 target values can be set.
- Digital limit state output for control of external tools.
- Operation from fast charge internal battery pack (maximum time of 3 hours 20 minutes for full charge) or a.c. supply (90 to 264 Volts).
- RS-232-C serial data interface for connection to a printer or PC. Continuous RS 232 output when used in track mode (up to 11 readings per sec).
- Pulse count feature in Impulse mode and Clutch Tool mode.
- 'SMART' intelligence for transducer recognition.
- Memory for calibration details of 20 non-'SMART' mV/V calibrated transducers.
- Analogue output allows the instrument to be used as part of a process control system for performance analysis.
- User selectable frequency response for each mode of operation.
- All user selectable features have password protection. The instrument can be issued to users with only the required modes of operation and units of measure enabled. This feature can virtually eliminate operator induced errors.
- 1/4" Female Hex to 1/4" female square adaptor comes supplied as standard.

4	TST (Torque Screwdriver Tester Series 2)
43212	TST 2, 0.04 - 2 N·m
43213	TST 10, 0.5 - 10 N·m
43214	TST 25, 1.25 - 25 N·m
TST.CCW	Counter clockwise calibration when ordered with new unit

TST is supplied complete with a Rundown Fixture for joint simulation. Additional rundowns are available see page 58.

TTT



The TTT shares all of the extensive features of the TST except that it has no internal transducer. Instead, the TTT offers not one but three external transducer interfaces allowing any three transducers to be simultaneously connected. Selection between the transducers is made by a rotary switch at the back of the instrument case.

Any transducer from Norbar's 'SMART' range and most mV/V calibrated transducers from Norbar or other manufacturers can be connected to the TTT. The 'SMART' feature means that once a transducer has been connected, the instrument will automatically recognise calibration details such as mV/V output, serial number and capacity.

- Pictorial display panel for easy mode selection.
- Limit detection with low, pass and fail indication. Up to 12 target values can be set.
- Digital limit state output for control of external tools.
- Operation from fast charge internal battery pack (maximum time of 3 hours 20 minutes for full charge) or a.c. supply (90 to 264 Volts).
- RS-232-C serial data interface for connection to a printer or PC. Continuous RS 232 output when used in track mode (up to 11 readings per sec).
- Pulse count feature in Impulse mode and Clutch Tool mode.
- 'SMART' intelligence for transducer recognition, now displays transducer capacity, units and Serial No.
- Memory for calibration details of 20 non-'SMART' mV/V calibrated transducers.
- Analogue output allows the instrument to be used as part of a process control system for performance analysis.
- User selectable frequency response for each mode of operation.
- All user selectable features have password protection. The instrument can be issued to users with only the required modes of operation and units of measure enabled. This feature can virtually eliminate operator induced errors.
- Peak memory modes can now be configured to have auto reset (previously only manual reset was possible).
- Series 3 users can set up their own measurement units, making it possible to interface with non torque transducers, for example load or pressure.

4	TTT (TORQUE TOOL TESTER SERIES 3)
43228	TTT Instrument
TTT.CCW	Counter clockwise calibration when ordered with new unit



T-BOX XL™



The T-Box XL™ together with Norbar's Torque Data Management System (TDMS) software provides the complete solution for torque tool calibration, data logging and data management and archiving on your PC.

- Can be used as a hand held portable device – using the provided neck strap – or bench mounted
- Features a 7" (178mm) colour touch screen LCD display with on screen graphic icons for simple and easy tool selection
- Can connect up to 4 Smart Transducers including transducers with angle capabilities for instant connectivity. Alternatively, non Norbar transducers with a mV/V output can be programmed into the T-Box XL memory
- 2 USB ports, one RS232 serial port and an ancillary connection (USB cable supplied as standard)
- Supplied with Norbar's Torque Data Management System software (TDMS) for complete tool data management and archiving on your PC
- T-Box XL contains a large capacity memory that will enable a user to collect data and store in excess of 100,000 individual test results directly to the instrument and then synchronise to the TDMS software
- Includes 8 modes for torque tool measurement: Track, Click, Dial & Electronic, Stall, Screwdriver, Hydraulic, Graph and Pulse
- Pre-loaded with Tool Templates for the entire Norbar product range of Torque Wrenches, PneuTorques and EvoTorques, enabling the user to simply assign individual tools to perform calibrations to the relevant ISO standard

4	T-BOX XL™
43258	T-Box XL™ Instrument with TDMS Software



TDMS SOFTWARE



4	TDMS SOFTWARE
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61132 TDMS Software (supplied on USB Flash Drive)
Supplied as standard with T-Box XL™.

SPARES FOR INSTRUMENTATION PRODUCTS

4	SPARES FOR INSTRUMENTATION PRODUCTS
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38876	Rechargeable Battery Pack for Pro-Log, TST & TTT
39406	Battery Pack for T-Box and T-Box XL™
29610	¼" Female – ½" Male Sleeve Adaptor
29611	½" Female – ¾" Male Sleeve Adaptor
29612	½" Female – 1" Male Sleeve Adaptor
29613	¾" Female – 1" Male Sleeve Adaptor
29614	¾" Female – ½" Male Sleeve Adaptor

4	SERIAL DATA LEAD KIT
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60248 Serial Data Lead Kit

Note: Serial Data Lead Kit is not suitable for use with HE Instrument and TruCheck™

60259 USB to Serial Data Lead (Does not work with USM)

This kit enables Norbar "CE Marked" instruments (Post January 1996 ETS, TWA and DTS plus all Pro-Test, TST and TTT) to connect to most PCs.

PART NUMBER SUFFIX SYSTEM

Transducers can be ordered for use with Norbar's current range of instruments (TST, TTT, TTL-HE and T-Box XL™), and as Industry Standard (mV/V calibrated) for certain display instruments from other manufacturers.

A part number suffix system is used to identify the type of calibration required. For example, a 1000 N·m Static Transducer for use with a TTT instrument would become part number 50772.LOG.

SUFFIX	USAGE	CERTIFIED IN
.LOG	TST, TTT, TTL-HE & T-Box XL™	Torque Units
.IND	Instruments of non Norbar manufacture (check with Norbar for suitability) and TST, TTT, TTL-HE & T-Box XL™	mV/V

Where the transducer suffix .LOG is used, the transducer is calibrated with an instrument, as a system, a calibration certificate is provided in torque units. A full scale mV/V figure is also supplied.



TRANSDUCERS FMT



Flange Mounted Transducers incorporate mounting points for securely fixing the transducer to the working surface. The transducer lead is also included and is fitted with a high quality Lemo® connector, suitable for attachment to TST, TTT and T-Box XL™ instruments.

All are 'SMART' which means they have a built in memory circuit containing essential information about the transducer, that Norbar's instruments will immediately recognise.



4	FMT (Flange Mounted Transducers)
50671.LOG*	0.04-2 N·m ¼" sq. dr. with Joint Simulator
50671.IND*	0.04-2 N·m ¼" sq. dr. with Joint Simulator
50672.LOG	0.5-10 N·m ¼" sq. dr. with Joint Simulator
50672.IND	0.5-10 N·m ¼" sq. dr. with Joint Simulator
50673.LOG	1.25-25 N·m ¼" + ⅜" sq. dr. with Joint Simulator
50673.IND	1.25-25 N·m ¼" + ⅜" sq. dr. with Joint Simulator
50677.LOG*	0.4-20 lbf·in ¼" sq. dr. with Joint Simulator
50677.IND*	0.4-20 lbf·in ¼" sq. dr. with Joint Simulator
50678.LOG	5-100 lbf·in ¼" sq. dr. with Joint Simulator
50678.IND	5-100 lbf·in ¼" sq. dr. with Joint Simulator
50679.LOG	12.5-250 lbf·in ¼" + ⅜" sq. dr. with Joint Simulator
50679.IND	12.5-250 lbf·in ¼" + ⅜" sq. dr. with Joint Simulator

* If using this transducer with a Series 1 TST or TTT (Part No. s 43198- 43201) or a Pro-Log Display instrument, please contact Norbar.



4	FMT (Flange Mounted Transducers)
50674.LOG	7.5-150 N·m ½" + ⅜" sq. dr. with Joint Simulator
50674.IND	7.5-150 N·m ½" + ⅜" sq. dr. with Joint Simulator
50680.LOG	5-100 lbf·ft ½" + ⅜" sq. dr. with Joint Simulator
50680.IND	5-100 lbf·ft ½" + ⅜" sq. dr. with Joint Simulator
50675.LOG	20-400 N·m ½" + ¾" sq. dr.
50675.IND	20-400 N·m ½" + ¾" sq. dr.
50681.LOG	12.5-250 lbf·ft ½" + ¾" sq. dr.
50681.IND	12.5-250 lbf·ft ½" + ¾" sq. dr.

4	FMT (Flange Mounted Transducers)
50676.LOG	30-1500 N·m ½", ¾" + 1" sq. dr.
50676.IND	30-1500 N·m ½", ¾" + 1" sq. dr.
50682.LOG	20-1000 lbf·ft ½", ¾" + 1" sq. dr.
50682.IND	20-1000 lbf·ft ½", ¾" + 1" sq. dr.
TD1. CCW	Counter clockwise calibration for FMT & STB when ordered with new unit

Includes integral transducer lead with connector to suit TST, TTT and T-Box XL™

4	FMT (Ancillary Section)
50539	2 N·m Joint Simulator (also fits TST)
50540	10 N·m Joint Simulator (also fits TST)
50541	25 N·m Joint Simulator (also fits TST)
50692	150 N·m Joint Simulator
50819	400 N·m Joint Simulator
52236	¼" Hexagon - ¼" Square Drive Adaptor
52237	¼" Hexagon - ⅜" Square Drive Adaptor
52251	⅜" Female Square - 22mm Bi Square Adaptor
52246	½" Female Square - 22mm Bi Square Adaptor
52245	¾" Female Square - 22mm Bi Square Adaptor
52254	½" Female Square - 35mm Bi Square Adaptor
52241	¾" Female Square - 35mm Bi Square Adaptor
52242	1" Female Square - 35mm Bi Square Adaptor



4	
62221.BLK9005	FMT Mounting Bracket 2 to 400 N·m
62220.BLK9005	FMT Mounting Bracket 150 to 1500 N·m

STATIC TRANSDUCERS



The accuracy and quality of the Norbar Static Torque Transducers has made them the first choice of many calibration laboratories throughout the world. Up to 5000 N·m (5000 lbf·ft) classified to BS7882:2008, typically better than Class 1 for the primary classification range ($\pm 0.5\%$ of reading from 20% to 100% of full scale).

- Robust, heat treated, alloy steel torsion shaft design.
- Designed to ignore non torsional forces.
- Operates in clockwise and anti-clockwise directions.
- Calibration up to 100,000 N·m with a UKAS accredited Certificate.
- Calibrated in clockwise direction as standard. Anti-clockwise provided on request.
- ‘SMART’ transducers have a built in memory circuit which contains essential information about the transducer. This information can be read by Norbar’s TST, TTT, TTL-HE & T-Box XL™ instruments meaning that when the transducer is connected, it is immediately recognised and ready for use.
- ‘SMART’ transducers can also be used with many other instruments. However, these will operate as normal ratio calibrated (mV/V) transducers- the ‘SMART’ data will not be read.



4	STATIC TRANSDUCERS	
50587.xxx*	0.1-1 N·m	¼" M x ¼" F
50588.xxx	0.25-2.5 N·m	¼" M x ¼" F
50589.xxx	0.5-5 N·m	¼" M x ¼" F
50590.xxx	1-10 N·m	¼" M x ¼" F
50591.xxx	2.5-25 N·m	¾" M x ¾" F
50592.xxx	5-50 N·m	¾" M x ¾" F
50593.xxx	10-100 N·m	½" M x ½" F
50594.xxx	25-250 N·m	½" M x ½" F
50701.xxx	25-250 N·m	¾" M x ¾" F
50596.xxx	50-500 N·m	¾" M x ¾" F
50772.xxx	100-1000 N·m	1" M x 1" F
50766.xxx	150-1500 N·m	1" M x 1" F
50611.xxx	0.1-1 lbf·ft	¼" M x ¼" F
50615.xxx	0.5-5 lbf·ft	¼" M x ¼" F
50618.xxx	1-10 lbf·ft	¼" M x ¼" F
50620.xxx	2.5-25 lbf·ft	¾" M x ¾" F
50836.xxx	5-50 lbf·ft	½" M x ½" F
50624.xxx	10-100 lbf·ft	½" M x ½" F
50625.xxx	25-250 lbf·ft	½" M x ½" F
50702.xxx	25-250 lbf·ft	¾" M x ¾" F
50627.xxx	50-500 lbf·ft	¾" M x ¾" F
50773.xxx	100-1000 lbf·ft	1" M x 1" F
50610.xxx*	1-10 lbf·in	¼" M x ¼" F
50612.xxx	2.5-25 lbf·in	¼" M x ¼" F
50614.xxx	5-50 lbf·in	¼" M x ¼" F
50617.xxx	10-100 lbf·in	¼" M x ¼" F
50619.xxx	25-250 lbf·in	¾" M x ¾" F
50621.xxx	50-500 lbf·in	¾" M x ¾" F
50623.xxx	100-1000 lbf·in	½" M x ½" F
50609.xxx*	10-100 ozf·in	¼" M x ¼" F

TD2.CCW Alternative calibration direction for transducers up to 1500 N·m / 1000 lbf·ft when ordered with new unit

M=Male F=Female
Standard Calibration is performed loading clockwise only

4	STATIC TRANSDUCERS	
50703.xxx	250-2500 N·m	½" M x ½" F
50791.xxx	300-3000 N·m	½" M x ½" F
50599.xxx	500-5000 N·m	½" M x ½" F
50669.xxx@	700-7000 N·m	½" M x ½" F
50704.xxx	250-2500 lbf·ft	½" M x ½" F
50630.xxx	500-5000 lbf·ft	½" M x ½" F
TD5.CCW@	Alternative calibration direction for transducers from 1501 N·m to 7000 N·m / 1001 lbf·ft to 5000 lbf·ft when ordered with new unit	
50776.xxx	1000-10000 N·m	2½" M x 2½" F
50603.xxx	2500-25000 N·m	2½" M x 2½" M
50797.xxx	2500-25000 N·m	2½" M x 2½" F
50781.xxx	5000-50000 N·m	2½" M x 2½" F
50794.xxx*	5000-50000 N·m	3½" M x 3½" M
50783.xxx	8000-80000 N·m	3½" M x 3½" F
50816.xxx	10000-100000 N·m	3½" M x 3½" F
50796.xxx	10000-100000 N·m	3½" M x 3½" M
50777.xxx	1000-10000 lbf·ft	2½" M x 2½" F
50635.xxx	2500-25000 lbf·ft	2½" M x 2½" M
50798.xxx	2500-25000 lbf·ft	2½" M x 2½" F
50799.xxx	3000-30000 lbf·ft	2½" M x 2½" F
50795.xxx	5000-50000 lbf·ft	3½" M x 3½" M
50782.xxx	6000-60000 lbf·ft	3½" M x 3½" F
50637.xxx+	10000-100000 lbf·ft	3½" M x 3½" M
TD3.CCW+	Alternative calibration direction for transducers from 7001 N·m to 100000 N·m / 5001 lbf·ft to 100000 lbf·ft when ordered with new unit	
-	15000-150000 N·m	4½" M x 4½" M
-	20000-200000 N·m	4½" M x 4½" M

* .LOG versions not suitable for use with TST, TTT or TTL-HE, purchased pre Feb 2016.

@ UKAS accredited calibration up to 6000 N·m. A non accredited value at 7000 N·m is extrapolated and provided for reference only.

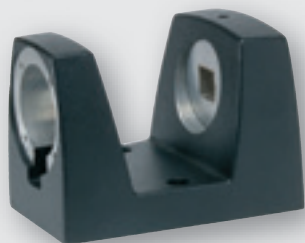
+ UKAS accredited calibration up to 80000 lbf·ft. A non accredited value at 100000 lbf·ft is extrapolated and provided for reference only.



STATIC TRANSDUCERS (continued)



4	STATIC TRANSDUCERS
SECCAL.CW	Secondary Calibration in one direction on static transducers with 2.5" square drives to extend the range below 10% of the rated capacity, when ordered with new unit
SECCAL.CW+CCW	Secondary Calibration in two directions on static transducers with 2.5" square drives to extend the range below 10% of the rated capacity, when ordered with new unit
ADDCALPOINTS.NEW	Additional calibration steps below 10% of rated capacity to 2% for transducers up to 7000 N·m (5000 lbf·ft) when ordered with new unit



Bench stands ensure the correct mounting of Norbar's Static Torque Transducers up to 5000 N·m (5000 lbf·ft).

4	BENCH STANDS FOR STATIC TORQUE TRANSDUCERS
50211	Small frame size (10 N·m) ¼" sq.
50212	Small frame size (50 N·m) ⅜" sq.
50213	Small frame size (100/250 N·m) ½" sq.
50220	Large frame size (250/500 N·m) ¾" sq.
50221	Large frame size (1000/1500 N·m) 1" sq.
50127.BLK9005	Extra large size (7000 N·m) 1½" sq.
52014	¼" Insert for Small Bench Stands
52015	⅜" Insert for Small Bench Stands
52016	½" Insert for Small Bench Stands
52017	¾" Insert for Large Bench Stands
52018	1" Insert for Large Bench Stands



ROTARY TRANSDUCERS



Rotary transducers are designed to measure the torque from continuously rotating shafts such as Impulse Power Tools and certain non-impulse tools with a severe clutch action.

This range offers class leading performance with impulse tools and will be supplied with a UKAS accredited calibration certificate from Norbar's laboratory.

These transducers are known as 'SMART' transducers. They have built-in intelligence in the form of a memory circuit which contains essential information about the transducer which can be read by the appropriate type of instrument (TST, TTT, TTL-HE & T-Box XL™), thus reducing set-up time.

They will also work with instruments that cannot read the memory information, by inputting the relevant calibration details manually.

Not for use with Impact Tools.

Angle measurement also available.

4	ROTARY TRANSDUCERS
50708.xxx	0.25-5 N·m ¼" M/F Hex
50709.xxx	1-20 N·m ¼" M/F Hex
50710.xxx	1-20 N·m ¼" F/M sq. dr.
50719.xxx	0.75-15 lbf·ft ¼" F/M sq. dr.
50711.xxx	3.75-75 N·m ⅜" F/M sq. dr.
50720.xxx	2.5-50 lbf·ft ⅜" F/M sq. dr.
50712.xxx	10-200 N·m ½" F/M sq. dr.
50721.xxx	7.5-150 lbf·ft ½" F/M sq. dr.
50713.xxx	12.5-250 N·m ¾" F/M sq. dr.
50722.xxx	10-200 lbf·ft ¾" F/M sq. dr.
50714.xxx	25-500 N·m ¾" F/M sq. dr.
50723.xxx	15-300 lbf·ft ¾" F/M sq. dr.
50715.xxx	75-1500 N·m 1" F/M sq. dr.
50724.xxx	50-1000 lbf·ft 1" F/M sq. dr.
TD2.CCW	Counter clockwise calibration.

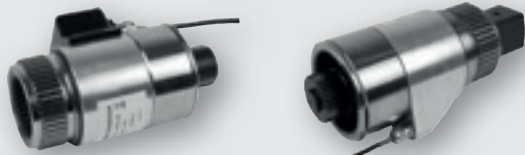
Angle options available, contact Norbar.

ANNULAR TRANSDUCERS



These Annular Transducers are designed to fit directly to Norbar torque multipliers and will accurately measure the torque output from the gearbox, via a display instrument (Instrument supplied separately).

- Up to 5000 N·m (5000 lbf·ft) classified to BS7882:2008, typically better than Class 1 for the primary classification range ($\pm 0.5\%$ of reading from 20% to 100% of full scale).
- Robust heat treated alloy steel torsion tube design.
- Designed to ignore non torsional forces.



4 ANNULAR TRANSDUCERS FOR HT/ET/PTM-92 AND HT/ET/PTM-119 SERIES

Suitable for HT/ET/PTM-92

50753.xxx	270-2700 N·m 1" sq. dr.
50793.xxx	400-4000 N·m 1" sq. dr.

Suitable for HT/ET/PTM-119

50755.xxx	450-4500 N·m 1½" sq. dr.
50756.xxx	600-6000 N·m 1½" sq. dr.

Standard Calibration is performed loading counter clockwise only.



- ‘SMART’ transducers have a built in memory circuit which contains essential information about the transducer. This information can be read by Norbar’s TST, TTT, TTL-HE & T-Box XL™ instruments meaning that when the transducer is connected, it is immediately recognised and ready for use.
- ‘SMART’ transducers can also be used with many other instruments. However, these will operate as normal ratio calibrated (mV/V) transducers- the ‘SMART’ data will not be read.

4 ANNULAR TRANSDUCERS FOR STANDARD SERIES GEARBOX

Suitable for PT1, PT1A and PT2

50638.xxx	100-1000 N·m ¾" sq. dr.
50648.xxx	100-1000 lbf·ft ¾" sq. dr.

Suitable for heavy duty HT2, PT1, PT1A and PT2

50639.xxx	150-1500 N·m 1" sq. dr.
50649.xxx	150-1500 lbf·ft 1" sq. dr.

TD2.CCW Alternative calibration direction for transducers up to 1500 N·m / 1000 lbf·ft when ordered with new unit

Suitable for HT5 and PT5

50640.xxx	250-2500 N·m 1" sq. dr.
50650.xxx	250-2500 lbf·ft 1" sq. dr.
50641.xxx	350-3500 N·m 1" sq. dr.

Suitable for HT6 and PT6

50700.xxx	350-3500 N·m 1½" sq.dr.
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Suitable for HT7 and PT7

50643.xxx	500-5000 N·m 1½" sq. dr.
50652.xxx	500-5000 lbf·ft 1½" sq. dr.

TD5.CCW@ Alternative calibration direction for transducers from 1501 N·m to 7000 N·m / 1001 lbf·ft to 5000 lbf·ft when ordered with new unit

4 ANNULAR TRANSDUCERS FOR 72 MM SERIES GEARBOX (HT & PT) (Not suitable for PTM tools)

Suitable for PT 72mm Remote series and HT-72

50666.xxx	100-1000 N·m
50667.xxx	150-1500 N·m
50668.xxx	200-2000 N·m

Standard Calibration is performed loading counter clockwise only. (Not suitable for PTM tools). Alternative drive shaft is available to suit PTM tools

4 ANNULAR TRANSDUCERS FOR SMALL DIAMETER SERIES GEARBOX (HT & PT)

Suitable for HT60 and PT5500

50663.xxx	600-6000 N·m 1½" sq. dr.
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Standard Calibration is performed loading counter clockwise only.

4 ANNULAR TRANSDUCERS FOR STANDARD SERIES GEARBOX

Suitable for HT9 and PT9

50644.xxx	1000-10000 N·m 1½" sq. dr.
50653.xxx	700-7000 lbf·ft 1½" sq. dr.

Suitable for HT11 and PT11

50645.xxx	2000-20000 N·m 2½" sq. dr.
50654.xxx	1500-15000 lbf·ft 2½" sq. dr.

Suitable for HT12 and PT12

50764.xxx	3500-35000 N·m 2½" sq. dr.
50765.xxx	2500-25000 lbf·ft 2½" sq. dr.

Suitable for HT13 and PT13

50646.xxx	5000-50000 N·m 2½" sq. dr.
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Suitable for PT14

50647.xxx	10000-100000 N·m 3½" sq. dr.
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TD4.CCW Alternative calibration direction for transducers from 7001 N·m to 100000 N·m / 5001 lbf·ft to 75000 lbf·ft when ordered with new unit

-	30000-300000 N·m
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Suitable for PT18.MTS
Standard Calibration is performed loading counter clockwise only.

@ UKAS accredited calibration up to 6000 N·m. A non accredited value at 7000 N·m is extrapolated and provided



ANNULAR TRANSDUCERS
(continued)



Fixed Connector



180° Swivel Connector

4 TORQUE & ANGLE ANNULAR TRANSDUCERS

Suitable for heavy duty PT1, PT1A and PT2

50820.LOGA* 100-1000 N·m ¾" sq. dr.
Fixed Connector

50821.LOGA* 150-1500 N·m 1" sq. dr.
Fixed Connector

* Can only be used with remote/plain sleeve motors i.e. not a standard PT handle, due to cable interference

* Only fits to PT with HD final stage carrier having 1" female sq. dr.

Suitable for HT5 and PT5

50822.LOGA 350-3500 N·m 1" sq. dr.
Fixed Connector

Suitable for HT7 and PT7

50834.LOGA 500-5000 N·m 1½" sq. dr.
180° Swivel Connector

Suitable for HT9 and PT9

50824.LOGA 1000-10000 N·m 1½" sq. dr.
180° Swivel Connector

Suitable for HT11 and PT11

50825.LOGA 2000-20000 N·m 2½" sq. dr.
180° Swivel Connector

Suitable for HT12 and PT12

50826.LOGA 3500-35000 N·m 2½" sq. dr.
180° Swivel Connector

Suitable for HT13 and PT13

50827.LOGA 5000-50000 N·m 2½" sq. dr.
180° Swivel Connector

Suitable for HT14 and PT14

50828.LOGA 10000-100000 N·m 3½" sq. dr.
180° Swivel Connector

PT13 & PT14 require special front cover plate with added dowel clearance holes

Suitable for HT15 and PT15

50832.LOGA 15000-150000 N·m 4½" sq. dr.
180° Swivel Connector

Suitable for HT16 and PT16

50829.LOGA 20000-200000 N·m 5" sq. dr.
180° Swivel Connector

Suitable for HT17 and PT17

50830.LOGA 25000-250000 N·m 6" sq. dr.
180° Swivel Connector

Suitable for HT18 and PT18

50831.LOGA 30000-300000 N·m 6" sq. dr.
180° Swivel Connector

Torque and Angle Annular Transducer Note:

- 5000 N·m and above include dowels on both mounting faces.
- Angle resolution < 1° when used with T-Box XL™.
- CW+CCW calibration is standard.
- Use 60308.xxx series lead for direct connection to T-Box XL™ for torque and angle/turns monitoring and storage.
- PT square drive and other parts may require removal to fit transducer.
- All the above are standard construction. Harsh Environment models are available on request.
- '.INDA' versions are available on request.

Note: PTs and reactions with dowel holes can be supplied at an extra cost on request. Request details on PneTorque®Type '.XD'

4 ANNULAR TRANSDUCERS

SECCAL.CW	Secondary Calibration in one direction on annular transducers for HT/PT9 & HT/PT11 to extend the range below 10% of the rated capacity, when ordered with new unit
SECCAL.CW+CCW	Secondary Calibration in two directions on annular transducers for HT/PT9 & HT/PT11 to extend the range below 10% of the rated capacity, when ordered with new unit
ADDCALPOINTS.NEW	Additional calibration steps below 10% of rated capacity to 2% for transducers up to 7000 N·m (5000 lbf·ft) when ordered with new unit

If ordering a static, annular or rotary transducer you will also require a corresponding lead (see list below). To comply with the latest calibration standards, most new transducer leads will have a suffix to indicate the length in centimetres.

4 TRANSDUCER LEADS

60216.200	PRO-LOG, TST, TTT & T-Box XL™ to 10 Way Transducer for use with Norbar Rotary Transducers
60217.200	PRO-LOG, TST, TTT & T-Box XL™ to 6 Way Transducer for use with Norbar Static & Annular Transducers
60223.200	PRO-LOG, TST, TTT & T-Box XL™ to no connector
60224.200	10 Way Transducer to no connector
60225.200	6 Way Transducer to no connector
51067.225	ETS to Transducer (Pre 1994) + 5 way (60055)
60152.225	ETS to Transducer (Post 1994) + 5 way (60163)
60308.400	PRO-LOG, TST, TTT & T-Box XL™ to Torque & Angle Annular Transducers
60308.600	PRO-LOG, TST, TTT & T-Box XL™ to Torque & Angle Annular Transducers
60308.1000	PRO-LOG, TST & TTT to Torque & Angle Annular Transducers

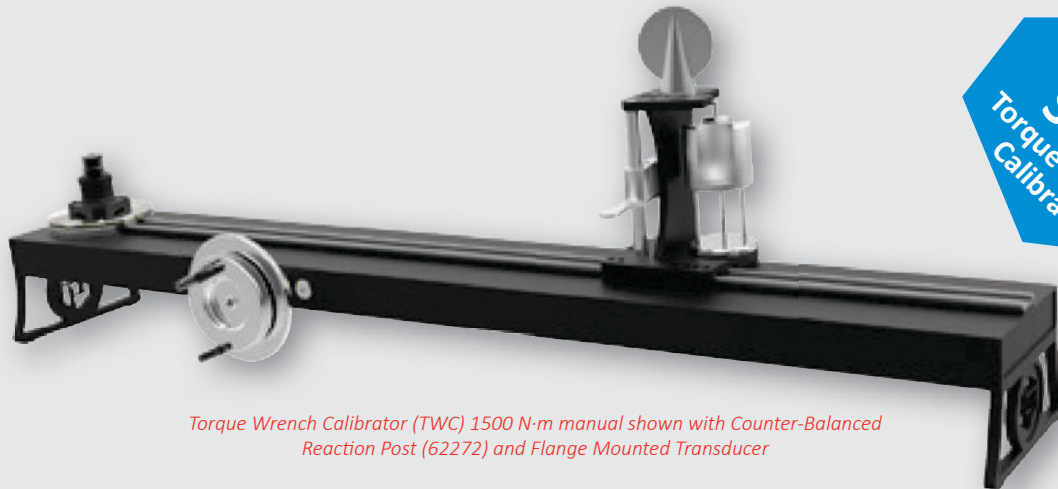
Other lengths can be ordered at an additional cost.

Note: The system should be calibrated with the increased length lead, as calibration may be effected.

Note: The maximum permissible cable length is 15m for TST or TTT. Contact Norbar for further details.



TORQUE WRENCH CALIBRATOR



**Coming
Soon**
Torque Wrench
Calibrator

Torque Wrench Calibrator (TWC) 1500 N-m manual shown with Counter-Balanced Reaction Post (62272) and Flange Mounted Transducer

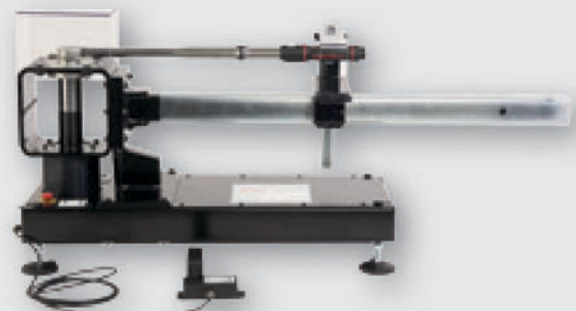
Torque wrench loader products on this page are designed to assist in calibrating torque wrenches to ISO6789:2003 and BS EN 26789:2003 when combined with Norbar transducers and measuring instruments.

In 2017, ISO6789 will be heavily revised and will split into Part 1 and Part 2 where the purpose of Part 2 is to ensure greater consistency between torque calibration laboratories. Part 2 of the standard will tighten the requirements for torque wrench loading meaning that existing manually operated and powered loaders will not generally be sufficient. Norbar's new Torque Wrench Calibrator is a manually operated torque wrench loader that will be upgradable to become a powered, automated device that will calibrate torque wrenches to Part 2 of the revised ISO6789.

- Rotating transducer design ensures that load is applied at 90° to the torque wrench handle
- Patent pending Counter-Balanced Reaction Post removes side loads caused by misaligned torque wrench geometry – as required by the revised ISO6789. Optional feature
- Precision lead screw reduces backlash during pauses in loading cycle to record indicated torque value
- Designed for existing Norbar Flange Mounted Transducers and can accept Norbar Static Transducers (requires optional support collar)
- Two frame sizes available at launch: 400 N-m and 1500 N-m. Both are upgradable to meet the requirements of ISO6789 Part 2 through the addition of the Counterbalanced Reaction Post and automation module (available later in 2017)
- 1500 N.m frame size features a geared drive with fast and slow input speeds having a 4.5:1 ratio between them. This enables the torque wrench to be more rapidly advanced to the reaction post using the higher gear and then easily loaded using the lower gear
- Aerospace alloy construction reduces weight for mobile laboratory applications

4	TORQUE WRENCH CALIBRATOR (TWC)
60311	Torque Wrench Calibrator 400 N-m Manual
60314	Torque Wrench Calibrator 1500 N-m Manual
62272	TWC Counter-Balanced Reaction Post Assembly

To learn more about the forthcoming changes to ISO6789, please follow this link:
<http://www.norbar.com/en-gb/News-Events/Blog/entryid/471/Default>.

ISO 1500 AND ISO 3000
LOADERS & ATTACHMENTS

4	TORQUE WRENCH LOADERS
20505	Loader, ISO 3000 N·m
20506	Motorised ISO 3000 N·m



60194	Kit to motorise a 60118 or 60300 (ISO 1500)
20606	Reaction Plate for small Torque Wrenches
60237	Motorised Torque wrench loader Lead to TTT or TST

Note: 60237 is required when converting a pre 2003 motorised loader from ETS display to TTT or TST display system.

TEST FIXTURES



The Norbar Joint Simulation Rundown Assemblies are designed to simulate the working conditions of screwed or bolted joints. Used in conjunction with a Norbar transducer and display instrument, the output of torque controlled power tools can be measured against a range of simulated joint rates, from hard through to soft.

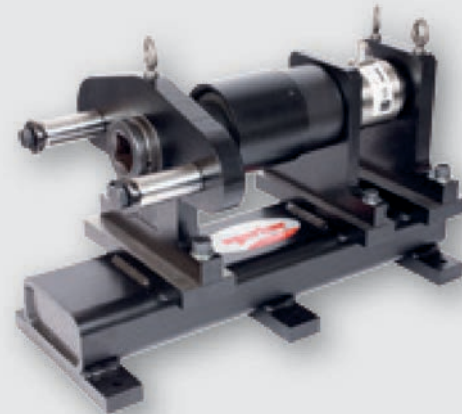


4	JOINT SIMULATION RUNDOWN ASSEMBLIES
50313	0.2-2 N·m (2-20 lbf-in)
50251	2-10 N·m (20-100 lbf-in)
50252	5-50 N·m (5-50 lbf-ft)
50253	10-100 N·m (10-100 lbf-ft)
50254*	100-500 N·m (100-500 lbf-ft)
The above are for use with Norbar static square to square transducers and bench stands.	
* To be used with large frame size bench stands, all others to be used with small frame bench stands.	
50693	10-140 N·m (10-100 lbf-ft)
50694	100-700 N·m (70-500 lbf-ft)
The above are for use with the Norbar STB1000.	

4	WASHER STACKS FOR JOINT SIMULATION RUNDOWN ASSEMBLIES
50175	0.2-0.7 N·m Stack A for use with 50313
50176	0.5-1.4 N·m Stack B for use with 50313
50177	1.2-2.8 N·m Stack C for use with 50313
50178	2-6 N·m Stack D for use with 50251
50179	6-12 N·m Stack E for use with 50251
50695	5-30 N·m Stack A for use with 50252
50696	20-50 N·m Stack B for use with 50252
50697	50-70 N·m Stack C for use with 50252
50180	10-50 N·m Stack F for use with 50253 and 50693
50192	30-100 N·m Stack G for use with 50253 and 50693
50698	80-140 N·m Stack H for use with 50253 and 50693



Shown with TruCheck™ Plus 1000 (not included)



Shown with 1½" M/F Static Transducer (not included)

4	POWER TOOL TEST FIXTURE FOR TRUCHECK™ PLUS 1000 AND 2000
50757	Power Tool Test Fixture for TruCheck™ Plus 1000
50774	Power Tool Test Fixture for TruCheck™ Plus 2000
50758	1000 N·m Joint Simulator Rundown Assembly
50775	2000 N·m Joint Simulator Rundown Assembly

4	ET/PT POWER TOOL TEST RIG
50800	7000 N·m ET, PT Power Tool Test Rig (supplied with the 8 reaction plates on page 59 (excluding blank reaction plate) and ¾", 1" and 1½" sq. dr. adaptors)
50803	7000 N·m ET, PT Power Tool Test Rig without Reaction Plates (supplied with ¾", 1" and 1½" sq. dr. adaptors)

Note: The static transducer 50669.LOG does not come supplied as standard with the tool test rig. The standard range of 700 - 7000 N·m will not cover the full powered multiplier range, additional calibration may be required, please see below:

ADDCALPOINTS.NEW

Additional calibration steps below 10% of rated capacity to 2% for transducers up to 7000 N·m (5000 lbf-ft) when ordered with new unit



TEST FIXTURES



1½" M/F Static Transducer required (not included)

4	7000 N.m UNIVERSAL TOOL TEST RIGS
50801	Universal 7000 N-m ET, PT & Hydraulic Tool Test Rig (supplied with the 8 reaction plates to the right (excluding blank reaction plate) and ¾", 1" and 1½" sq. dr. adaptors)
50804	Universal 7000 N-m Test Rig without Reaction Plates (supplied with ¾", 1" and 1½" sq. dr. adaptors)



Universal Hydraulic Tool Test Rig
with Reaction Plates (50801)



4	SPARES FOR 50800, 50801, 50803 & 50804
50800.29	2" AF Socket 1½" sq. dr.
50800.28	2" AF Socket 1" sq. dr.
50800.27	2" AF Socket ¾" sq. dr.



50800.26	Special 2" UNC Bolt
50800.25	Type B UNC High Tensile 2" UNC Nut
50548.4	Washer Stack Kit 100 - 7000 N-m (Also for use with RD5000)

See page 60 for accessories for use with Hydraulic Tool Calibration Fixture

4	REACTION PLATES FOR USE WITH 50803 & 50804
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81024	Suitable for ET/PTM 119, PT 4500 and PT 5500
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81025	Suitable for ET/PTM 92
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81026	Suitable for ET/PT/PTM 72
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81027	Suitable for PTM 52
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81028	Suitable for PT 2700
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81029	Suitable for PT 1, PT 1A and PT 2
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81030	Suitable for PT 5 and PT 6
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81031	Suitable for PT 7
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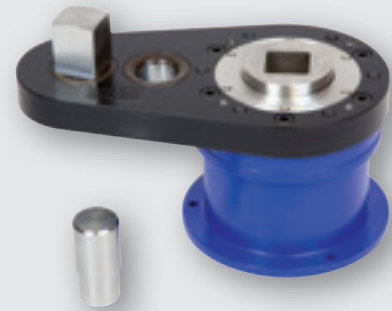
81032	Blank Reaction Plate for Universal Test Rigs
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HYDRAULIC TOOL CALIBRATION FIXTURES

Norbar's Hydraulic Tool Calibration Fixture is a robust device that allows accurate testing of hydraulic torque wrenches. A system comprises of a Calibration Fixture and Transducer, also required is a torque measuring instrument and transducer cable.

- Bearing support for transducer gives improved accuracy.
- Interchangeable stainless steel square and round reaction posts.
- Hardened steel inserts to location reaction posts in two positions: suits most hydraulic wrenches.
- Optimised material sections for robust but portable design.
- For hexagon link wrenches, a wide range of hexagon to square adaptors are available.

HYDRAULIC TOOL CALIBRATION FIXTURES



*Hydraulic Tool Calibration Fixture shown with Transducer
(Transducer not included)*

4	CALIBRATION FIXTURES
80031	Hydraulic Calibration Fixture up to 7000 N·m
80029	Hydraulic Calibration Fixture up to 50000 N·m
80032	Hydraulic Calibration Fixture up to 80000 N·m
81022	Reaction Bar for 80031
81023	Reaction Bar for 80029

4	TRANSDUCERS FOR USE WITH 80031 / 80030
50703.xxx*	250-2500 N·m 1½" sq. dr. M/F
50704.xxx*	250-2500 lbf-ft 1½" sq. dr. M/F
50599.xxx*	500-5000 N·m 1½" sq. dr. M/F
50630.xxx*	500-5000 lbf-ft 1½" sq. dr. M/F
50669.xxx*	700-7000 N·m 1½" sq. dr. M/F

4	TRANSDUCERS FOR USE WITH 80029 / 80030
50776.xxx@	1000-10000 N·m 2½" sq. dr. M/F
50777.xxx@	1000-10000 lbf-ft 2½" sq. dr. M/F
50797.xxx@	2500-25000 N·m 2½" sq. dr. M/F
50781.xxx@	5000-50000 N·m 2½" sq. dr. M/F
50798.xxx@	25000 lbf-ft 2½" sq. dr. M/F

4	TRANSDUCERS FOR USE WITH 80032
50782.xxx	6000-60000 lbf-ft 3½" sq. dr. M/F
50783.xxx	8000-80000 N·m 3½" sq. dr. M/F

Harsh Environment Transducers available on request.

9	DUAL CALIBRATION FIXTURE
80030	Dual Calibration Fixture

Note: Houses 1 transducer up to 7000 N·m and 1 transducer up to 50000 N·m in a bench top plate.

9	ADDITIONAL CALIBRATION
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The transducers shown include clockwise only calibration from 10% to 100% of rated capacity. For other calibration options, see below:

***ADDCALPOINTS.NEW**

Additional calibration steps below 10% of rated capacity to 2% for transducers up to 7000 N·m (5000 lbf-ft) when ordered with new unit

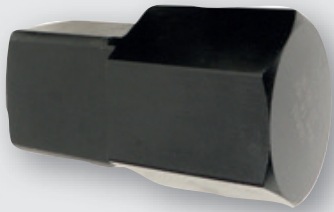
@SECCAL.CW

Secondary Calibration in one direction on static transducers with 2.5" square drives to extend the range below 10% of the rated capacity, when ordered with new unit

SECCAL.CW+CCW

Secondary Calibration in two directions on static transducers with 2.5" square drives to extend the range below 10% of the rated capacity, when ordered with new unit





Hexagon to Square



Fixture shown with Hydraulic Torque Wrench

4	HEXAGON TO SQUARE ADAPTORS - METRIC
29619.24	24mm Hex to 1½" Sq. (Max 3000 N·m)
29619.27	27mm Hex to 1½" Sq. (Max 4000 N·m)
29619.30	30mm Hex to 1½" Sq. (Max 4000 N·m)
29619.32	32mm Hex to 1½" Sq. (Max 4900 N·m)
29619.36	36mm Hex to 1½" Sq. (Max 7000 N·m)
29619.41	41mm Hex to 1½" Sq. (Max 8700 N·m)
29619.46	46mm Hex to 1½" Sq. (Max 8700 N·m)
29619.50	50mm Hex to 1½" Sq. (Max 8700 N·m)
29619.55	55mm Hex to 1½" Sq. (Max 8700 N·m)
29619.60	60mm Hex to 1½" Sq. (Max 8700 N·m)
29619.65	65mm Hex to 1½" Sq. (Max 8700 N·m)
29619.70	70mm Hex to 1½" Sq. (Max 8700 N·m)
29619.75	75mm Hex to 1½" Sq. (Max 8700 N·m)
29619.80	80mm Hex to 1½" Sq. (Max 8700 N·m)
29620.50	50mm Hex to 2½" Sq. (Max 18500 N·m)
29620.55	55mm Hex to 2½" Sq. (Max 25000 N·m)
29620.60	60mm Hex to 2½" Sq. (Max 32000 N·m)
29620.65	65mm Hex to 2½" Sq. (Max 36000 N·m)
29620.70	70mm Hex to 2½" Sq. (Max 36000 N·m)
29620.75	75mm Hex to 2½" Sq. (Max 36000 N·m)
29620.80	80mm Hex to 2½" Sq. (Max 59000 N·m)
29620.85	85mm Hex to 2½" Sq. (Max 59000 N·m)
29620.90	90mm Hex to 2½" Sq. (Max 59000 N·m)
29620.95	95mm Hex to 2½" Sq. (Max 59000 N·m)
29620.100	100mm Hex to 2½" Sq. (Max 52000 N·m)
29620.105	105mm Hex to 2½" Sq. (Max 52000 N·m)
29620.110	110mm Hex to 2½" Sq. (Max 52000 N·m)
29620.115	115mm Hex to 2½" Sq. (Max 52000 N·m)
29620.130	130mm Hex to 2½" Sq. (Max 52000 N·m)

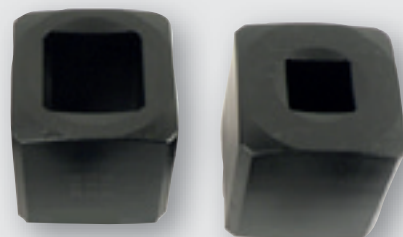
4	HEXAGON TO SQUARE ADAPTORS - IMPERIAL
29623.120	1¼" Hex to 1½" Sq. (Max 4900 N·m)
29623.123	1⅞" Hex to 1½" Sq. (Max 7000 N·m)
29623.126	1⅝" Hex to 1½" Sq. (Max 8700 N·m)
29623.129	1⅞" Hex to 1½" Sq. (Max 8700 N·m)
29623.132	2" Hex to 1½" Sq. (Max 8700 N·m)
29623.135	2⅞" Hex to 1½" Sq. (Max 8700 N·m)
29623.138	2⅝" Hex to 1½" Sq. (Max 8700 N·m)
29623.141	2⅞" Hex to 1½" Sq. (Max 8700 N·m)
29624.135	2⅞" Hex to 2½" Sq. (Max 25000 N·m)
29624.138	2⅝" Hex to 2½" Sq. (Max 32000 N·m)
29624.141	2⅞" Hex to 2½" Sq. (Max 36000 N·m)
29624.144	2¾" Hex to 2½" Sq. (Max 36000 N·m)
29624.147	2⅞" Hex to 2½" Sq. (Max 36000 N·m)
29624.150	3⅞" Hex to 2½" Sq. (Max 59000 N·m)
29624.156	3½" Hex to 2½" Sq. (Max 59000 N·m)
29624.162	3⅞" Hex to 2½" Sq. (Max 52000 N·m)
29624.168	4¼" Hex to 2½" Sq. (Max 52000 N·m)
29624.174	4⅝" Hex to 2½" Sq. (Max 52000 N·m)
29624.180	5" Hex to 2½" Sq. (Max 52000 N·m)
29624.186	5⅝" Hex to 2½" Sq. (Max 52000 N·m)
29624.198	6⅞" Hex to 2½" Sq. (Max 52000 N·m)

4	SLEEVE ADAPTORS
86034.4	Adaptor 1½" Male sq. ¾" Female sq.
21214	Adaptor 1½" Male sq. 1" Female sq.
29617	Adaptor 2½" Male sq. 1½" Female sq.
29618	Adaptor 3½" Male sq. 2½" Female sq.

Special 'Engineer to Order' hexagon and square adaptors available on request.



Dual Calibration Fixture
Part No. 80030
(Transducers not included)



Sleeve Adaptor

HARSH ENVIRONMENT INSTRUMENTS

Norbar have worked closely with the oil and gas industry to produce a range of torque instruments and transducers suitable for use in the harshest environments such as ship decks, oil rigs and refineries. Norbar uses a variety of corrosion resistant materials, high specification connectors and sealing techniques meaning that products in our HE range can be used in such environments without impairing their performance or life span. Although originally designed to meet the needs of the oil and gas industry, Norbar's HE range is the ideal choice whenever it is necessary to apply or measure torque outdoors in potentially wet or dusty conditions.

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Multipliers For Subsea	64
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HARSH ENVIRONMENT INSTRUMENT



TTL-HE is a portable torque measuring instrument designed for use in harsh environments. The TTL-HE operating on battery power with one of the 'HE' range of transducers connected, has an ingress protection rating of IP65/IP67. Typical operating environments are where high humidity, water or salt water spray and dust may be an issue. Features include; 10 measurement modes, 13 units of torque (with additional USER units feature), 12 pairs of limits and text displayed in 11 languages.

- IP65/67 rated
- Bi-directional calibration
- Battery power use in harsh environments (mains supply for charging)
- All features are in common with TST and TTT instruments
- Supplied in IP67 rated carry case
- Please contact Norbar for full details of available transducers

4 HARSH ENVIRONMENT RANGE

43217 TTL-HE Instrument (inc. IP67 rated carry case)
Supplied with clock and counter-clockwise calibration

HARSH ENVIRONMENT TRANSDUCERS



The accuracy and quality of the Norbar Torque Transducers has made them the first choice of many calibration laboratories throughout the world. The Harsh Environment Range of Transducers has been specifically designed for use with the Norbar TTL-HE Instrument.



4	STATIC TRANSDUCERS
50787.xxx	300-3000 N·m 1½" M/F sq. dr.
50751.xxx*	300-3000 N·m 1½" M/M sq. dr.
50705.xxx	500-5000 N·m 1½" M/F sq. dr.
50706.xxx	500-5000 lbf-ft 1½" M/F sq. dr.
50728.xxx	1000-10000 N·m 2½" M/F sq. dr.
50788.xxx	1000-10000 N·m 2½" M/ 2" M sq. dr.
50789.xxx	1500-15000 N·m 2½" M/ 2⅝" M sq. dr.
50726.xxx	2500-25000 N·m 3½" M/M sq. dr.
50727.xxx	4000-40000 N·m 3½" M/M sq. dr.
50743.xxx+	10000-100000 lbf-ft 3½" M/M sq. dr.

* Suitable for use in Hydraulic Test Pots.
 + UKAS accredited calibration up to 80000 lbf-ft. A non accredited value at 100000 lbf-ft is extrapolated and provided for reference only.
 Static Transducers 3000 N·m and above supplied in carry case.

4	ANNULAR TRANSDUCERS
50767.xxx	100 - 1000 N·m including drive shaft
50745.xxx	350 - 3500 N·m including drive shaft
50725.xxx	1000 - 10000 N·m no drive shaft

Other transducers available upon request.
 All above HE transducers supplied with clockwise and counter clockwise calibration.

Designed for use with the Harsh Environment Instrument range (TTL-HE) of products

4	INSTRUMENTATION LEADS
60245.200	TTL-HE to HE Transducer
60250.200	TTL-HE to Norbar Static & Annular Transducers
60263.200	TTL-HE to Rotary Transducers
60266.200	HE Transducer to TTT, TST and T-Box XL™
60261.200	Serial Data Lead for TTL-HE

Other lengths can be ordered at an additional cost.
 Note: The system should be calibrated with the increased length lead, as calibration may be affected.
 Note: The maximum permissible cable length 15m for Transducer Leads, 7m if using 60266 with a T-Box XL™. Contact Norbar for further details.

TTL-HE INSTRUMENT AND TRANSDUCER KITS



4	TTL-HE INSTRUMENT AND TRANSDUCER KITS
60287.LOG	5000 N·m M/M TTL-HE Kit, inc. Lead (Class 4)
60295.LOG	10000 N·m M/M TTL-HE Kit, inc. Lead (Class 5)
60296.LOG	15000 N·m M/M TTL-HE Kit, inc. Lead (Class 6)
60289.LOG	40000 N·m M/M TTL-HE Kit, inc. Lead (Class 7)

Note: Kits for use with Intervention Tool Test Pots

INTERVENTION TOOL TEST POTS



These reaction pots allow for the accurate testing of API rotary intervention tools.

- Conform to ISO13628-8:2002 and API 17D
- Customer specific solutions also available
- Lightweight all aluminium construction
- Incorporated lifting handles
- Eye bolts provided on larger units

4	INTERVENTION TOOL TEST POTS
80019	ISO13628-8:2002 Class 4 Intervention Tool Test Pot
80024	ISO13628-8:2002 Class 5 Intervention Tool Test Pot
80025	ISO13628-8:2002 Class 6 Intervention Tool Test Pot
80020	API 17D Class 7 Intervention Tool Test Pot
81018	Deck Mount Kit for API Verification Pot

MULTIPLIERS FOR SUBSEA



4	MULTIPLIERS FOR INTEGRATION INTO SUB SEA INTERVENTION TOOLS
77331	HT5 5:1 for Sub Sea Intervention Tools
77301	HT5 5:1 for Sub Sea Splined Output



As above but supplied with transducer with an accuracy of $\pm 2\%$.

4	MULTIPLIERS WITH INTEGRATED TRANSDUCER
77141.IND	HT5 5:1 with Integrated Transducer 350 - 3500 N·m
77142.MAO2	HT5 5:1 with Integrated Transducer 4 - 20 mA 2 wire 600 - 3000 N·m

INTERVENTION TOOL VERIFICATION KITS



Each kit comprises a test pot, an instrument, a transducer and a transducer lead in a water tight carry case.



4	INTERVENTION TOOL TORQUE VERIFICATION KIT
60278.xxx	3000 N·m ISO13628 Class 4 Intervention Tool Torque Verification Kit
60281.xxx	10000 N·m ISO13628 Class 5 Intervention Tool Torque Verification Kit
60282.xxx	15000 N·m ISO13628 Class 6 Intervention Tool Torque Verification Kit
60279.xxx	25000 N·m API 17D Class 7 (short) Intervention Tool Test Kit
60280.xxx	40000 N·m API 17D Class 7 (short) Intervention Tool Test Kit

Other Test Pots and Torque Verification Kits are available for standard and non standard API Intervention tool test and verification. Please contact Norbar.



Norbar's wide range of standard equipment notwithstanding, there are applications when something special is required.

As an ISO 9001 accredited company, Norbar will undertake the design and manufacture of special equipment against agreed customer specifications.

These projects range from modified torque wrench end fittings to complete torque and angle control of valve testing kits. Relevant European safety directives are applied where appropriate, leading to well engineered reliable products that are designed to make tasks safer and easier.

For more information on Norbar's Engineer to Order service please e-mail your enquiry to technical@norbar.com or visit the Engineer to Order section of the Norbar website at: www.norbar.com/en-gb/Services/Engineer-to-Order



Valve Testing Kit



Pipe Clamp Actuation Tool



Remote Operated Torque & Angle Kits



Wet Pipe Clamp Tool under test

Subsea Torque Multipliers
(Class 4-6/7 shown)

