



The Voice of Torque Control



TORQUE WRENCHES &
SCREWDRIVERS

2022

LEGEND

GENERIC

Accuracy (%)	Torque & Angle	Digital Display
Single Scale	Dual Scale	Multi Scale
Calibration Certificate	UKAS Accredited Certification	IP Rated
Bluetooth Enabled	Case Included	

SCREWDRIVERS & TORQUE WRENCHES

Ratchet	Torque Handle	Fixed
Adjustment Lock	Declaration of Conformance	Calibration Certificate
1/4" Hex Bit Holder		

MANUAL TORQUE MULTIPLIERS

Adjustable Reaction	Anti Wind-up Ratchet	
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POWERED TORQUE TOOLS

Adjustable Reaction	2 Speed	Air Consumption - litres/sec
Lifting Attachment	Bi-Directional	

TORQUE MEASUREMENT INSTRUMENTS

Multi Transducers	Back-up Data	
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HARSH ENVIRONMENT INSTRUMENTS

Multi Transducers		
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ULTRASONIC MEASUREMENT

Back-up Data		
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CONTENTS

About Norbar - The Voice of Torque Control	2
Introduction to Torque	3
Torque Screwdrivers and Torque Wrenches	8
ISO 6789:2017	9
Torque Screwdrivers	11
TT Torque Wrenches	11
TTi Non-Magnetic Torque Wrenches	12
NorTorque®	13
NorTorque® Tethered Torque Wrenches - for working at height	16
Slimline™ Torque Wrenches	17
Professional Torque Wrenches Model 5	18
Professional Torque Wrenches	19
Professional 'P' Type Torque Wrenches	23
Professional Torque Wrenches NLD Series	25
Industrial Torque Wrenches Adjustable & 'P' Type - New Generation	27
Industrial Torque Wrench - Bi-Square	29
Electrode Wrenches	29
Electronic Screwdriver and Torque Wrenches	30
ProTronic® Electronic Torque Wrenches	31
ProTronic® Plus Electronic Torque Wrenches	33
ProTronic® Plus Electronic Torque Screwdriver	35
ProTronic® Plus Model 10 and Model 30	36
ProTronic® Plus TorqApp™	37
NorTronic® Electronic Torque Wrenches	39



ENMS 621748



ABOUT NORBAR - THE VOICE OF TORQUE CONTROL

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GLOBAL SERVICE

We are the world’s leading specialist in torque control and we are engaged solely in the design, development and production of torque tightening and measuring equipment.

Our customers include manufacturers and engineering services in such diverse sectors as aerospace, energy, oil and gas, mining and sub-sea.

There are sales and service branches as shown above. In addition, we have distributors of our torque control products in more than 60 countries around the world.

In our 2022 catalogue you will find the recently launched ProTronic® and ProTronic® Plus, a new family of high-precision electronic torque and angle wrenches. You will find full information on these exciting new products, along with details of the partnering Android app for ProTronic® Plus, on pages 31 to 38 and on our website.

We continue to invest in the very latest design, manufacturing and quality control technology to achieve the highest level of innovation and precision in the field of torque control and equipment.

A GLOBAL, LOCAL BUSINESS

From our humble beginnings over 75 years ago, in a small workshop in North Bar, to our latest purpose built factory on Wildmere Road, Norbar has pioneered many of today’s solutions for torque control. Our offices around the world are excellent at taking core Banbury product and developing it for your use in your application. From manual torque wrenches to sophisticated control systems we are still dedicated to being the best at what we do. Norbar is now a member of the Snap-on Incorporated family of companies and is proud to be part of a business which has beliefs, values and a vision closely aligned with those that Norbar was founded on. We still strive to be “The best torque tool company in the world. Respected, profitable and a great place to work.”



We are excited to inform you that the well-regarded brand FASTORQ is now a part of the Norbar family. Based in New Caney, Texas, FASTORQ are a global provider of precision bolt loading and removal solutions and offer a range of products well suited to complement Norbar’s existing product range. FASTORQ are a pioneer in the hydraulic tools industry and today design, manufacture and sell a revolutionary line of bolting solutions and specialty bolting lubricants delivering timely resolutions to bolting challenges of all sizes on land or sea. FASTORQ’s highly skilled team of engineers and bolting technicians have over 100 combined years of bolting knowledge.



INTRODUCTION TO TORQUE

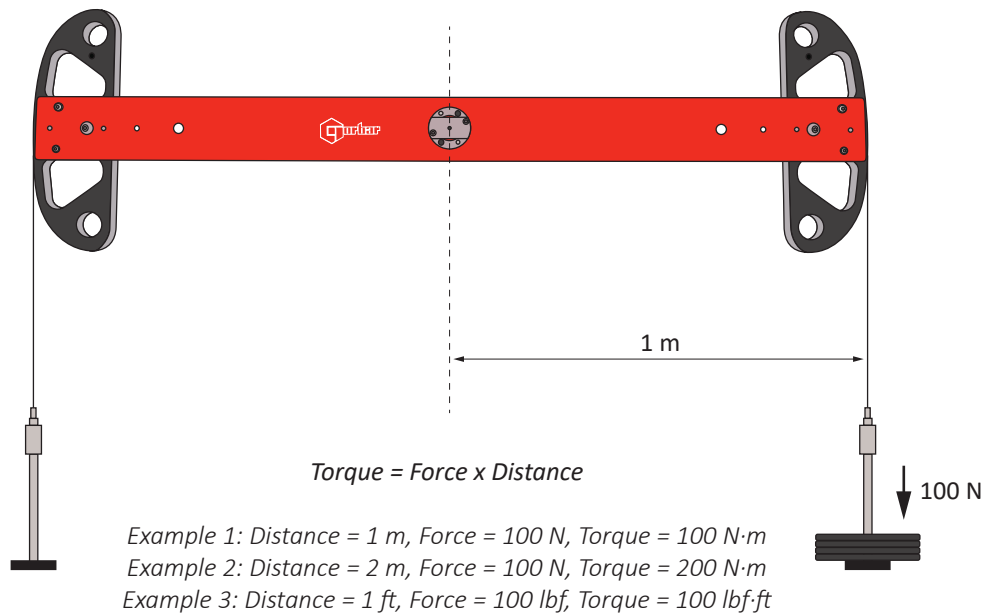
What is Torque?

Torque is any force or system of forces that tends to cause rotation about an axis.

Measurement of Torque

Imagine someone tightening a bolt using a socket attached to a meter (m) long bar. If they apply 10 kg of force (kgf) perpendicular to the bar they will produce a torque of 10 kgf·m at the axis (the centre of the bolt).

However, under the S.I. system of measurement, force is expressed in Newtons (N) rather than kgf. The conversion between kgf and N is x 9.807 so the person is applying 98.07 N·m of torque.



The Importance of Torque Control

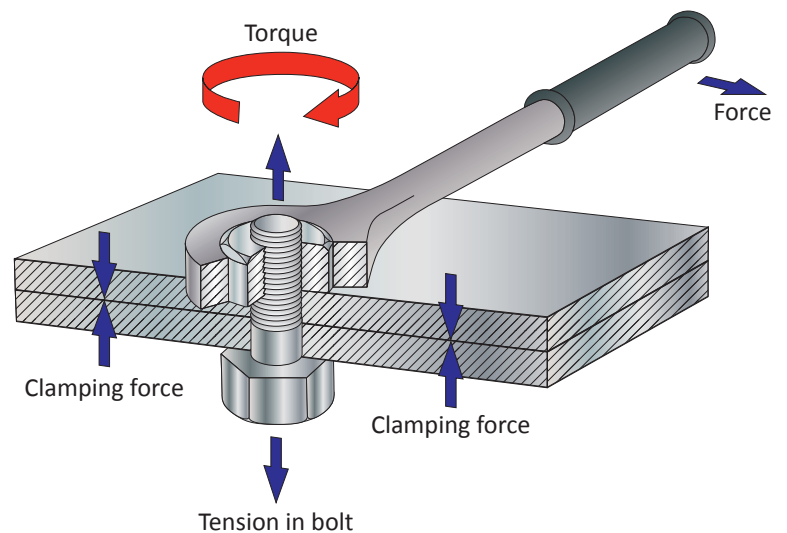
Although many methods exist to join two or more parts together, the ease of assembly and disassembly provided by threaded fasteners make them the ideal choice for many applications.

The object of a threaded fastener is to clamp parts together with a tension greater than the external forces tending to separate them. The bolt then remains under constant stress and is immune from fatigue. However, if the initial tension is too low, varying loads act on the bolt and it will quickly fail. If the initial tension is too high, the tightening process may cause bolt failure. Reliability therefore depends upon correct initial tension. The most practical way of ensuring this is by specifying and controlling the tightening torque.

Bolt Tension

When an assembly is clamped by tightening a nut and bolt, the induced tension causes the bolt to stretch. An equal force acts to compress the parts which are thus clamped.

The proof load of a bolt, normally established by test, is the load which just starts to induce permanent set – also known as the yield point. Typically bolts are tightened to between 75% and 90% of yield.

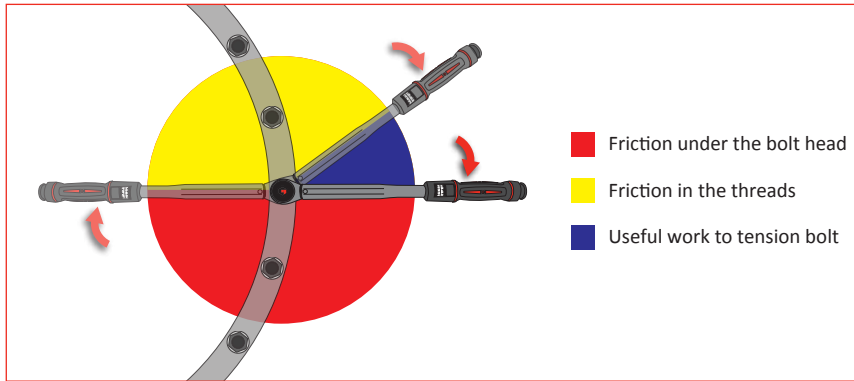




INTRODUCTION TO TORQUE

Friction in the Bolted Joint

When a threaded fastener is tightened, the induced tension results in friction under the head of the bolt and in the threads. It is generally accepted that as much as 50% of the applied torque is expended in overcoming friction between the bolt head and the abutting surface and another 30% to 40% is lost to friction in the threads. As little as 10% of the applied torque results in useful work to tension the bolt.



Given that up to 90% of the applied torque will be lost to friction, it follows that any changes in the coefficient of friction resulting from differences in surface finish, surface condition and lubrication can have a dramatic effect on the torque versus tension relationship. Some general points can be made:

- Most torque tightened joints do not use washers because their use can result in relative motion between the nut and washer or the washer and joint surface during tightening. This has the effect of changing the friction radius and hence affects the torque-tension relationship. Where a larger bearing face is required then flange nuts or bolts can be used. If washers are to be used, hard washers with a good fit to the shank of the bolt give lower and more consistent friction and are generally to be preferred.
- Degreasing fasteners of the film of oil usually present on them as supplied will decrease the tension for a given torque and may result in shear of the fastener before the desired tension is achieved.
- Super lubricants formulated from graphite, molybdenum disulphide and waxes result in minimal friction. Unless allowance is made in the specified tightening torque, the induced tension may be excessive causing the bolt to yield and fail. However, used in a controlled manner, these lubricants serve a useful purpose in reducing the torque to produce the desired tension meaning that a lower capacity tightening tool can be used.
- For reasons of appearance or corrosion resistance, fasteners may be plated. These treatments affect the coefficient of friction and therefore the torque versus tension relationship.
- Friction is often deliberately introduced into the fastener to reduce the possibility of loosening due to vibration. Devices such as lock-nuts must be taken into account when establishing the correct tightening torque.

As a rough guide, the calculated tightening torque should be multiplied by the factor from the table below according to surface treatment and lubrication.

		Surface Condition of Bolt			
		Untreated	Zinc	Cadmium	Phosphate
Surface Condition of Nut	Untreated	1.00	1.00	0.80	0.90
	Zinc	1.15	1.20	1.35	1.15
	Cadmium	0.85	0.90	1.20	1.00
	Phosphate and oil	0.70	0.65	0.70	0.75
	Zinc with wax	0.60	0.55	0.65	0.55



INTRODUCTION TO TORQUE

Tightening to Yield

Bolts tightened to yield provide consistently higher preloads from smaller diameter bolts. The reduced fastener stiffness reduces the fatigue loading to which the bolt is subjected under repeated external load reversals, e.g. cylinder heads and connecting rods.

In theory, a bolt tightened to its yield point will provide the strongest and most fatigue-resistant joint possible, within the physical limitations of the bolt material and manufacturing process.

The downside of this method is the cost of the sophisticated equipment necessary to determine when the bolt goes into yield.

Torque Tension Calculator

For further information and guidance on establishing the correct tightening torque for a fastener, see Norbar's web based calculator, www.norbar.com/Support/Calculators/Torque-Tension-Calculator

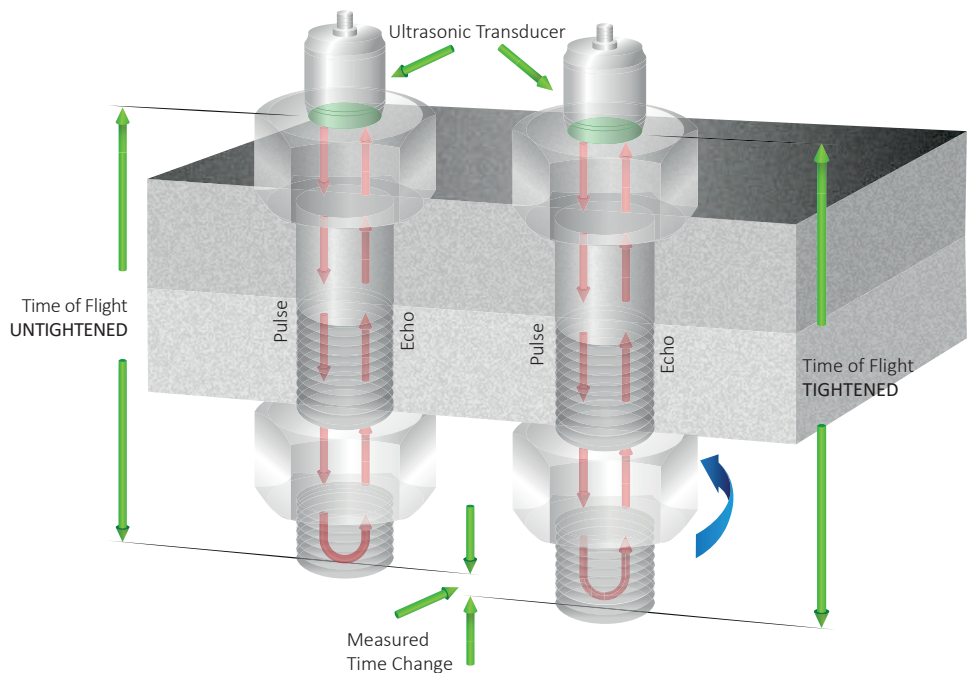


Calculated Maximum Torque		Calculated Maximum Load		
N.m.: 0.05		kN: 0.15		
lbf. ft.: 0.04		lbf: 34.7		
Bolt Properties				
Bolt Diameter	<input type="text" value="1.6"/>	mm		
Yield Stress	<input type="text" value="180"/>	N/mm ²		
Pitch	<input type="text" value="0.35"/>	mm		
Pitch Diameter	<input type="text" value="1.373"/>	mm		
Root Diameter	<input type="text" value="1.171"/>	mm		
Hex A/f Diameter	<input type="text" value="3.2"/>	mm		
Standard Parameters				
Bolt Type	<input type="text" value="Metric Coarse"/>			
Bolt Dia.	<input type="text" value="1.6"/>			
Grade	<input type="text" value="3.6"/>			
Friction Coefficients				
Thread	<input type="text" value="0.14"/>			
Head	<input type="text" value="0.14"/>			
<input type="button" value="Defaults"/>				
These torque and load values are for guidance only! Always check with equipment/bolt manufacturer				

When Torque Doesn't Equal Tight

As we have established, it is the tension in a fastener rather than the torque that is the critical factor. Torque is an indirect means of establishing tension and in a correctly engineered joint and with a controlled tightening process, it is a satisfactory method under the majority of circumstances.

However, in joints that are highly critical due to safety or the cost and implications of machine down-time, a more direct means of establishing tension is needed. Various methods exist including several types of load indicating bolts or washers. However, one of the most versatile methods is to measure the extension of the bolt due to the tightening process using ultrasound.







INTRODUCTION TO TORQUE

Recommended Maximum Torque Values

The information supplied here is intended to be an acceptable guide for normal conditions. For critical applications, further information and research will be necessary. The following basic assumptions have been made:

- Bolts are new, standard finish, uncoated and not lubricated (other than the normal protective oil film)
- The load will be 90% of the bolt yield strength
- The coefficient of friction is 0.14
- The final tightening sequence is achieved smoothly and slowly

If lubrication is to be applied to the nut/bolt, multiply the recommended torque by the appropriate factor shown in the table on page 4. Alternatively, use the Torque/Tension Calculator on the Norbar website (shown on page 5) which enables fastener and friction conditions to be modified with ease.

 M	BOLT GRADE									 mm
	3.6	4.6	5.6	5.8	6.8	8.8	9.8	10.9	12.9	
	Torque in N·m									
M 1.6	0.05	0.07	0.09	0.11	0.14	0.18	0.21	0.26	0.31	3.2
M 2	0.11	0.14	0.18	0.24	0.28	0.38	0.42	0.53	0.63	4
M 2.5	0.22	0.29	0.36	0.48	0.58	0.78	0.87	1.09	1.31	5
M 3	0.38	0.51	0.63	0.84	1.01	1.35	1.52	1.9	2.27	5.5
M 4	0.71	0.95	1.19	1.59	1.91	2.54	2.86	3.57	4.29	7
M 5	1.71	2.28	2.85	3.8	4.56	6.09	6.85	8.56	10.3	8
M 6	2.94	3.92	4.91	6.54	7.85	10.5	11.8	14.7	17.7	10
M 8	7.11	9.48	11.9	15.8	19	25.3	28.4	35.5	42.7	13
M 10	14.3	19.1	23.8	31.8	38.1	50.8	57.2	71.5	85.8	17
M 12	24.4	32.6	40.7	54.3	65.1	86.9	97.9	122	147	19
M 14	39	52	65	86.6	104	139	156	195	234	22
M 16	59.9	79.9	99.8	133	160	213	240	299	359	24
M 18	82.5	110	138	183	220	293	330	413	495	27
M 20	117	156	195	260	312	416	468	585	702	30
M 22	158	211	264	352	422	563	634	792	950	32
M 24	202	270	337	449	539	719	809	1,011	1,213	36
M 27	298	398	497	663	795	1,060	1,193	1,491	1,789	41
M 30	405	540	675	900	1,080	1,440	1,620	2,025	2,430	46
M 33	550	734	917	1,223	1,467	1,956	2,201	2,751	3,301	50
M 36	708	944	1,180	1,573	1,888	2,517	2,832	3,540	4,248	55
M 39	919	1,226	1,532	2,043	2,452	3,269	3,678	4,597	5,517	60
M 42	1,139	1,518	1,898	2,530	3,036	4,049	4,555	5,693	6,832	65
M 45	1,425	1,900	2,375	3,167	3,800	5,067	5,701	7,126	8,551	70
M 48	1,716	2,288	2,860	3,813	4,576	6,101	6,864	8,580	10,296	75
M 52	2,210	2,947	3,684	4,912	5,895	7,859	8,842	11,052	13,263	80
M 56	2,737	3,650	4,562	6,083	7,300	9,733	10,950	13,687	16,425	85
M 60	3,404	4,538	5,673	7,564	9,076	12,102	13,614	17,018	20,422	90
M 64	4,100	5,466	6,833	9,110	10,932	14,576	16,398	20,498	24,597	95
M 68	4,963	6,617	8,271	11,029	13,234	17,646	19,851	24,814	29,777	100



INTRODUCTION TO TORQUE

Torque Conversion Factors

Units to be converted	S.I. Units		Imperial Units			Metric Units	
	cN·m	N·m	ozf·in	lbf·in	lbf·ft	kgf·cm	kgf·m
1 cN·m =	1	0.01	1.416	0.088	0.007	0.102	0.001
1 N·m =	100	1	141.6	8.851	0.738	10.20	0.102
1 ozf·in =	0.706	0.007	1	0.0625	0.005	0.072	0.0007
1 lbf·in =	11.3	0.113	16	1	0.083	1.152	0.0115
1 lbf·ft =	135.6	1.356	192	12	1	13.83	0.138
1 kgf·cm =	9.807	0.098	13.89	0.868	0.072	1	0.01
1 kgf·m =	980.7	9.807	1389	86.8	7.233	100	1

FORCE

$$\text{lbf} \times 4.45 = \text{N}$$

$$\text{N} \times 0.225 = \text{lbf}$$

FLOW

$$\text{l/s} \times 2.119 = \text{cu-ft/min}$$

$$\text{cu-ft/min} \times 0.472 = \text{l/s}$$

PRESSURE

$$\text{lbf/in}^2 \times 0.069 = \text{bar}$$

$$\text{bar} \times 14.504 = \text{lbf/in}^2$$

POWER

$$\text{hp} \times 0.746 = \text{kW}$$

$$\text{kW} = \frac{\text{N}\cdot\text{m} \times \text{rev/min}}{9,546}$$

Formulae

Accepted formulae relating torque and tension, based on many tests are:-

For Imperial Sizes

$$M = \frac{P \times D}{60}$$

M = torque lbf·ft
P = bolt tension lbf
D = bolt diameter (ins)

For Metric Sizes

$$M = \frac{P \times D}{5000}$$

M = torque N·m
P = bolt tension Newtons
D = bolt diameter (mm)

These formulae may be used for bolts outside the range of the tables.

Formula for Calculating the Effect of Torque Wrench Extensions

$$M1 = M2 \times L1/L2$$

Where L1 is the normal length and L2 is the extended length, M1 is the set torque and M2 the actual torque applied to the nut.

Example

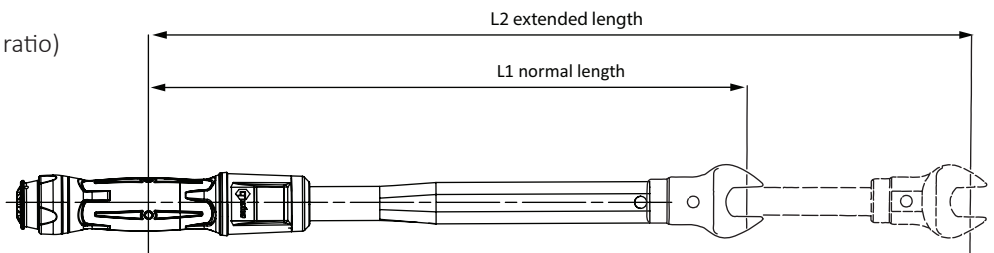
The required torque on the fastener is 130 N·m (M2) but what do you set on the torque wrench scale?

$$L1 = 500 \quad L2 = 650$$

(units of length not important, this is ratio)

$$M1 = 130 \times 500/650$$

$$M1 = 100$$



For further information and guidance on converting torque and calculating the effect of torque wrench extensions download our purpose-built applications for iPhone and Android.



TORQUE SCREWDRIVERS AND TORQUE WRENCHES

Norbar Torque Tools manufacture an extensive range of high quality torque screwdrivers and torque wrenches to cover torque values from 0.3 N·m to 2,000 N·m. They are designed and manufactured to exceed international standards for accuracy.

In addition to the normal 'adjustable' torque wrenches, Norbar offer Production 'P' Type versions which can be pre-set and dedicated to a particular application. This setting system is designed to discourage unauthorised alteration.

All Norbar torque wrenches are offered as standard with a quality ratchet. For applications where interchangeable end fittings are required, 'Torque Handles' which allow for interchangeable spanner fittings, are also available in various models up to 650 N·m.

ISO 6789:2017	9
Torque Screwdrivers	11
TT Torque Wrenches	11
TTi Non-Magnetic Torque Wrenches	12
NorTorque®	13
NorTorque® Tethered Torque Wrenches - for working at height	16
Slimline™ Torque Wrenches	17
Professional Torque Wrenches Model 5	18
Professional Torque Wrenches	19
Professional 'P' Type Torque Wrenches	23
Professional Torque Wrenches NLD Series	25
Industrial Torque Wrenches Adjustable & 'P' Type - New Generation	27
Industrial Torque Wrench - Bi-Square	29
Electrode Wrenches	29
Spanner End Fittings for 16 mm Torque Handles	41
Spanner End Fittings for 22 mm Torque Handles	42
Spigot Accessories	42
Large Spanner End Fittings for 16 mm Spigot Torque Handles up to 300 N·m	43
Large Spanner End Fittings for 22 mm Spigot Torque Handles up to 650 N·m	44
UKAS Accredited Calibration Certification	45





Since 1993, ISO 6789 has been the international standard for “Assembly tools for screws and nuts – hand torque tools”. The standard now covers a range of topics guiding the design, marking, conformance testing and calibration of hand torque tools. As such, it is a key reference document for torque wrench manufacturers and those re-calibrating torque wrenches in the after sales market. While it is not primarily aimed at torque tool users, some users may benefit from understanding the parameters that torque wrench manufacturers are working to and the standard will be necessary for larger users carrying out their own, in-house testing or calibration.

Norbar's UKAS accredited laboratory has been working to the new standard since September 2017 and was the first laboratory to do so.



What has changed?

The 2003 edition was itself a development of the 1993 edition. The 2003 standard divided requirements into three sections of: design conformance testing; quality conformance testing and recalibration. The intention was to allow different groups of users to identify the relevant clauses for their needs.

The 2017 edition takes this logic even further and divides the standard into two distinct parts:

Part 1 still provides requirements for design and quality control during manufacture, it also provides specifications for documenting conformance of hand torque tools. This documentation is referred to as a declaration of conformance because it is stating that the torque tool conforms to the requirements of the standard.

Part 2 defines the requirements for calibration of torque tools including the establishment of uncertainty budgets and the content of certificates of calibration.

Calibration is defined by ISO as: “a set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system ... and the corresponding values realised by standards.”

Calibration does not include adjustment or imply conformance, it provides information for the user to assess and act upon.

Why make it more complex?

The standard is splitting into two parts because it has been recognised that torque tool calibration requirements have moved on since the standard was last published in 2003.

The two new parts can be described as one part which follows closely to the 2003 standard and one part which provides a consistent framework for calibrating a hand torque tool to the level that exists in accredited calibration laboratories across the world. The titles of the standards help clarify the difference.

EN ISO 6789-1:2017 (Part 1): Requirements and Methods for design conformance testing and quality conformance testing- Minimum requirements for declaration of conformance.

The quality conformance testing performed under Part 1 is the testing performed on a new torque tool during manufacture. The document that manufacturers will now deliver is a declaration of conformance rather than a calibration certificate. This is because the manufacturer is declaring that the tool conforms to the standard.

EN ISO 6789-2:2017 (Part 2): Requirements for calibration and determination of measurement uncertainty.

The calibration performed under Part 2 is a traceable calibration including steps to understand the factors for that particular torque tool that might cause the calibration values to vary from calibration to calibration. Any UKAS accredited laboratory in the United Kingdom, or indeed any laboratory accredited to ISO 17025 by an appropriate organisation, will be required to establish the uncertainty by conducting these steps. A model of torque tool that the laboratory has not seen before would take about 60 minutes to calibrate to the new standard.



ISO 6789-1:2017 (Part 1)
Feature Icon



ISO 6789-2:2017 (Part 2)
Feature Icon



ISO 6789:2017



How does it affect a torque tool user?

If a current end user was previously content to buy a new torque tool and put it into service on the basis of the calibration certificate supplied with the tool by the manufacturer, then they can continue to do so after the standard changes, even though the new piece of paper is now called a declaration of conformance.

If the end user's quality control processes currently require a traceable calibration certificate issued by an accredited laboratory then they will already not accept the current manufacturer's document but will be paying for a calibration in an accredited laboratory.

If the end user is currently happy with the manufacturer's document for a new tool, then a periodic assessment from their in-house facility or from a sub-contractor should provide an equivalent level of confidence in the performance of the tool. Under the new Part 1 these sub-contractors will be able to continue that work as long as they observe the new changes, but they will not be able to call it a calibration and will not be able to issue a calibration certificate. They will be able to issue a declaration of conformance.

In essence, one of the key changes in the standard is to protect the use of the term calibration. It will initially be confusing to both end users and service providers, but the International Standards Organisation has clear definitions of words such as calibration and we will have to adapt our thinking to conform.

Torque Wrench Calibrator (TWC)

To help our customers meet the requirements of this new standard we have launched the TWC Auto which enables torque wrench calibration or testing in accordance with ISO 6789-2:2017. Further details can be found on page 111.



Further Information

Further information on the new standard can be found on our website through the following link:

www.norbar.com/Quality/ISO-6789

If you have any questions specifically on the new standard please make contact with us here:

ISO6789@norbar.com



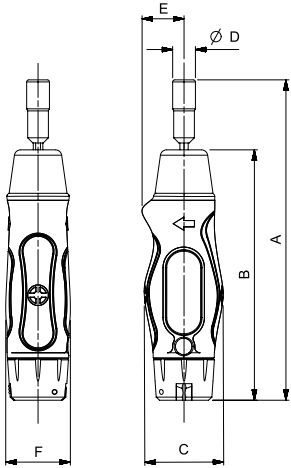
TORQUE SCREWDRIVERS



Versatile, accurate and easy torquing for smaller fasteners and restricted spaces

- Accuracy to $\pm 6\%$ meets the requirements of ISO 6789-1:2017
- Supplied with $\frac{1}{4}$ " hexagon bit holder
- Single scale, either N·m or lbf·in

NOTE: Bit set is only sold separately or as part of kit - see website for bit set details



MODEL	ALL MODELS	
Dimensions (mm)	A	155
	B	121
	C	38
	$\varnothing D$	11
	E	20
	F	31
Weight (kg)	0.2	

2 ADJUSTABLE N·m

13850	TTs1.5, $\frac{1}{4}$ ", 0.3 - 1.5 N·m
13851	TTs3.0, $\frac{1}{4}$ ", 0.6 - 3 N·m
13852	TTs6.0, $\frac{1}{4}$ ", 1.2 - 6 N·m

2 ADJUSTABLE lbf·in

13853	TTs13, $\frac{1}{4}$ ", 2.5 - 13 lbf·in
13854	TTs26, $\frac{1}{4}$ ", 5 - 26 lbf·in
13855	TTs53, $\frac{1}{4}$ ", 10 - 53 lbf·in

2 PRODUCTION 'P' TYPE

13856	TTs1.5, $\frac{1}{4}$ ", 0.3 - 1.5 N·m, 2.5 - 13 lbf·in
13857	TTs3.0, $\frac{1}{4}$ ", 0.6 - 3 N·m, 5 - 26 lbf·in
13858	TTs6.0, $\frac{1}{4}$ ", 1.2 - 6 N·m, 10 - 53 lbf·in
SQ2222	Pre-set, etch and certify (Allow 3 days delivery for this service)

2 ADJUSTABLE N·m KIT

13700	TTs0.3 - 1.5 N·m Kit with 12 piece bit set and case
13701	TTs0.6 - 3 N·m Kit with 12 piece bit set and case
13702	TTs1.2 - 6 N·m Kit with 12 piece bit set and case
28937	12 Piece $\frac{1}{4}$ ", Hex bit set

TT TORQUE WRENCHES



For no-nonsense torquing - comfortable, accurate and easy to use

- Accurate to $\pm 3\%$ of reading which meets the requirements of ISO 6789-1:2017
- Micrometer scale for simple and error free setting
- All models feature a lock to prevent accidental adjustment of the set torque
- Handle and lens materials resistant to commonly used industrial chemicals



TTi Reversible Ratchet



TTf Fixed Head



TTfth Torque Handle

2 RATCHET ADJUSTABLE - DUAL SCALE

13830	TTi20, $\frac{1}{4}$ ", 4 - 20 N·m, 35 - 180 lbf·in
13831	TTi20, $\frac{3}{8}$ ", 4 - 20 N·m, 35 - 180 lbf·in
13841	TTi50, $\frac{3}{8}$ ", 10 - 50 N·m, 8 - 35 lbf·ft
13842	TTi50, $\frac{1}{2}$ ", 10 - 50 N·m, 8 - 35 lbf·ft

2 RATCHET ADJUSTABLE - N·m ONLY

13832	TTi20, $\frac{1}{4}$ ", 4 - 20 N·m
13833	TTi20, $\frac{3}{8}$ ", 4 - 20 N·m
13843	TTi50, $\frac{3}{8}$ ", 10 - 50 N·m
13844	TTi50, $\frac{1}{2}$ ", 10 - 50 N·m

2 RATCHET ADJUSTABLE - lbf·ft ONLY

13834	TTi15, $\frac{1}{4}$ ", 35 - 180 lbf·in
13835	TTi15, $\frac{3}{8}$ ", 35 - 180 lbf·in
13845	TTi35, $\frac{3}{8}$ ", 8 - 35 lbf·ft
13846	TTi35, $\frac{1}{2}$ ", 8 - 35 lbf·ft

2 FIXED HEAD ADJUSTABLE

13836	TTf 20, $\frac{3}{8}$ ", 4 - 20 N·m, 35 - 180 lbf·in
13837	TTf 20, $\frac{3}{8}$ ", 4 - 20 N·m (N·m ONLY)
13838	TTf 15, $\frac{3}{8}$ ", 35 - 180 lbf·in (lbf·in ONLY)

2 FEMALE TORQUE HANDLE ADJUSTABLE

13839	TTfth 20, 9 x 12 mm, 4 - 20 N·m, 35 - 180 lbf·in
13847	TTfth 50, 9 x 12 mm, 10 - 50 N·m, 8 - 35 lbf·ft
13840	TTfth 20, 9 x 12 mm, 4 - 20 N·m (N·m ONLY)
13848	TTfth 50, 9 x 12 mm, 10 - 50 N·m (N·m ONLY)



TTI NON-MAGNETIC TORQUE WRENCHES



Carefully selected and tested materials replace the ferrous components present in standard torque wrenches, thereby giving an extremely low magnetic footprint. Being based on the TT range of torque wrenches means that they also retain the high standards of Norbar's other torque wrenches. Perfect for MRI scanner applications.

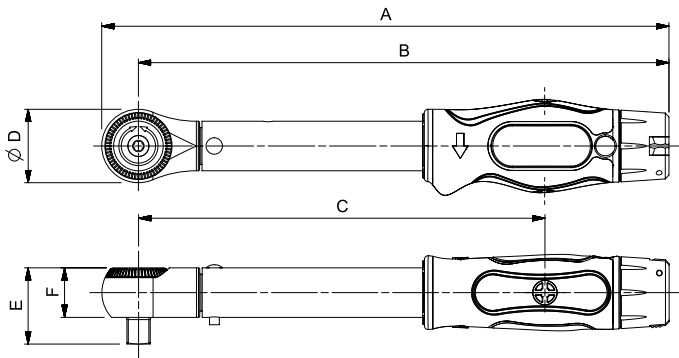
4 ADJUSTABLE - DUAL SCALE

13900	TTi20, 3/8" Non-Mag, 4 - 20 N·m, 35 - 180 lbf-in
13901	TTi20, 1/2" Non-Mag, 4 - 20 N·m, 35 - 180 lbf-in
13902	TTi50, 3/8" Non-Mag, 10 - 50 N·m, 8 - 35 lbf-ft
13903	TTi50, 1/2" Non-Mag, 10 - 50 N·m, 8 - 35 lbf-ft

4 ADJUSTABLE - N·m ONLY

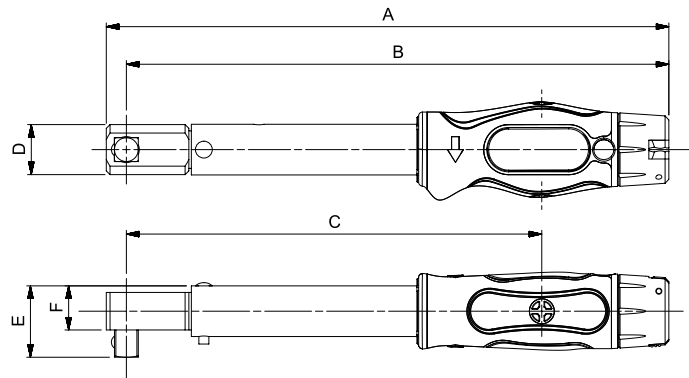
130503	TTi20, 3/8" Non-Mag, 3 - 20 N·m
130504	TTi20, 1/2" Non-Mag, 3 - 20 N·m
13906	TTi50, 3/8" Non-Mag, 10 - 50 N·m
13907	TTi50, 1/2" Non-Mag, 10 - 50 N·m

TTi Ratchet / Non-Magnetic

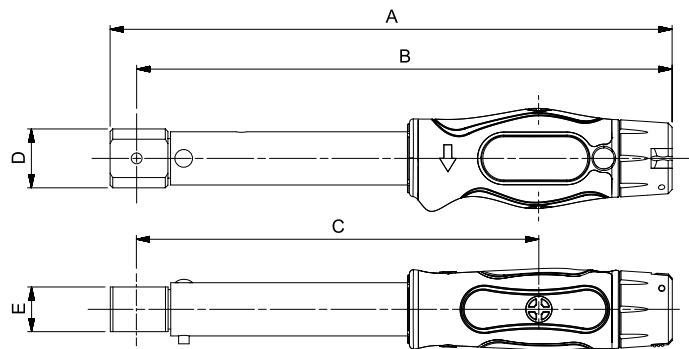


Model	TT Torque Wrenches / Non-Magnetic					
	TTi20 TTi15	TTi50 TTi35	Ttf20 Ttf15	TTfth20	TTfth50	
Part Number	13830, 13831, 13832, 13833, 13834, 13835, 13900, 13901, 130503, 130504	13841, 13842, 13843, 13844, 13845, 13846, 13902, 13903, 13906, 13907	13836, 13837, 13838	13839, 13840	13847, 13848	
Dimensions (mm)	A	232	328	225	214	310
	B	217	313	217	204	300
	C	166	263	166	153	250
	∅D	30	30	20	22	22
	E	31	31	28	17	17
	F	20	20	18	N/A	N/A
Weight (kg)	0.5	0.7	0.5	0.4	0.6	

TTf Fixed Head



TTfth Female Torque Handle



TTi50 tightening a pedal crank of a bicycle



TTi20 Non-Magnetic in application on an MRI Scanner

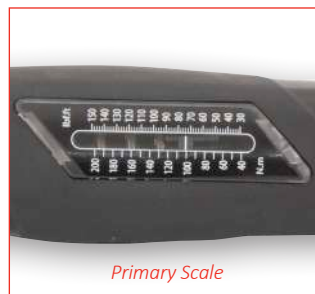


NORTORQUE®

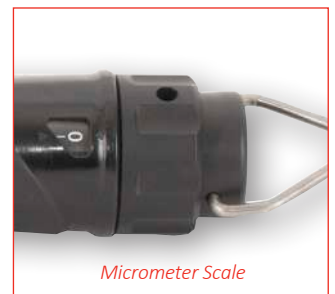


The NorTorque® utilises Norbar’s proven mechanism and internal components and incorporates them into a purposeful and attractive torque wrench that will delight a wide range of users from professional mechanics to hobby enthusiasts

- Accurate to $\pm 3\%$ of reading which meets the requirements of ISO 6789-1:2017
- Light and fast adjustment saves operator time and effort
- Micrometer scale applying to the primary torque units (N·m on a dual scale wrench) for simple and error-free setting
- ‘Push-through’ ratchets allow torque control in both the clockwise and counter-clockwise directions
- Tough ratchets with narrow engagement angles allow for easy positioning of the tool in confined spaces (5° for models up to 200 N·m and 6° for models 300 N·m and above)
- Push/pull lock is fast and intuitive to use and prevents accidental adjustment of the set torque
- Convenient hanger feature for tool storage also aids wrench unlocking and adjustment
- Tethered versions are available for working at height (see page 16)



Primary Scale



Micrometer Scale



2 RATCHET ADJUSTABLE - DUAL SCALE

130101*	Model 60, 3/8", 12 - 60 N·m, 10 - 45 lbf-ft
130103*	Model 100, 1/2", 20 - 100 N·m, 20 - 80 lbf-ft
130104	Model 200, 1/2", 40 - 200 N·m, 30 - 150 lbf-ft
130105	Model 300, 1/2", 60 - 300 N·m, 45 - 220 lbf-ft
130106	Model 340, 1/2", 60 - 340 N·m, 45 - 250 lbf-ft

2 RATCHET ADJUSTABLE - N·m ONLY

130111*	Model 60, 3/8", 12 - 60 N·m
130113*	Model 100, 1/2", 20 - 100 N·m
130114	Model 200, 1/2", 40 - 200 N·m
130115	Model 300, 1/2", 60 - 300 N·m
130116	Model 340, 1/2", 60 - 340 N·m

* Supplied with 1/2" sq. dr. adaptor
 * Supplied with 3/8" sq. dr. adaptor



2 FEMALE TORQUE HANDLE ADJUSTABLE - DUAL SCALE

130121	Model 60, 9 x 12 mm, 12 - 60 N·m, 10 - 45 lbf-ft
130123	Model 100, 9 x 12 mm, 20 - 100 N·m, 20 - 80 lbf-ft
130125	Model 200, 9 x 12 mm, 40 - 200 N·m, 30 - 150 lbf-ft
130126	Model 200, 14 x 18 mm, 40 - 200 N·m, 30 - 150 lbf-ft
130127	Model 300, 14 x 18 mm, 60 - 300 N·m, 45 - 220 lbf-ft
130128	Model 340, 14 x 18 mm, 60 - 340 N·m, 45 - 250 lbf-ft

2 FEMALE TORQUE HANDLE ADJUSTABLE - N·m ONLY

130131	Model 60, 9 x 12 mm, 12 - 60 N·m
130133	Model 100, 9 x 12 mm, 20 - 100 N·m
130135	Model 200, 9 x 12 mm, 40 - 200 N·m
130136	Model 200, 14 x 18 mm, 40 - 200 N·m
130137	Model 300, 14 x 18 mm, 60 - 300 N·m
130138	Model 340, 14 x 18 mm, 60 - 340 N·m

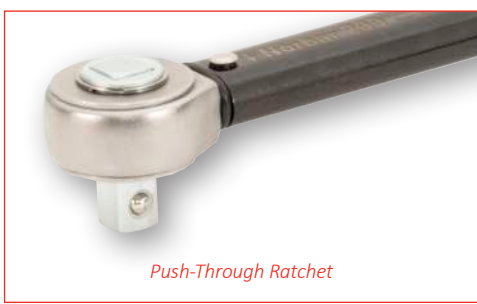


2 TORQUE HANDLE ADJUSTABLE 16 mm SPIGOT - DUAL SCALE

130141	Model 60, 16 mm spigot, 12 - 60 N·m, 10 - 45 lbf-ft
130142	Model 100, 16 mm spigot, 20 - 100 N·m, 20 - 80 lbf-ft
130143	Model 200, 16 mm spigot, 40 - 200 N·m, 30 - 150 lbf-ft
130144	Model 300, 16 mm spigot, 60 - 300 N·m, 45 - 220 lbf-ft

2 TORQUE HANDLE ADJUSTABLE 16 mm SPIGOT - N·m ONLY

130161	Model 60, 16 mm spigot, 12 - 60 N·m
130162	Model 100, 16 mm spigot, 20 - 100 N·m
130163	Model 200, 16 mm spigot, 40 - 200 N·m
130164	Model 300, 16 mm spigot, 60 - 300 N·m



Push-Through Ratchet



Female Torque Handle



16 mm Spigot End

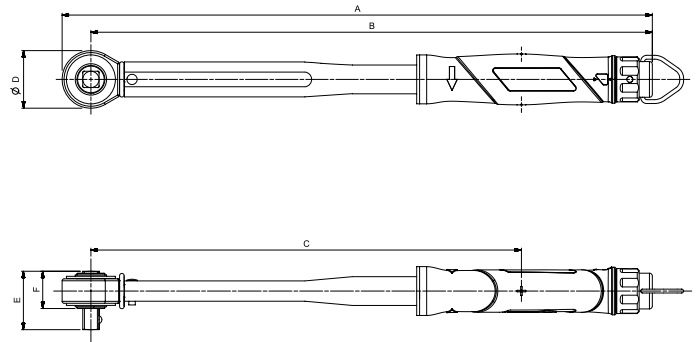


NORTORQUE®



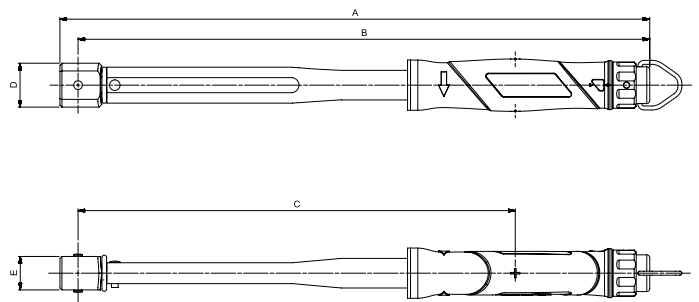
Ratchet Adjustable

Model	NorTorque 60	NorTorque 100	NorTorque 200	NorTorque 300	NorTorque 340	
Part Number	130101 130111	130103 130113	130104 130114	130105 130115	130106 130116	
Dimensions (mm)	A	328	375	459	587	679
	B	310	354	437	562	654
	C	209	252	335	460	552
	ØD	36	42	45	52	52
	E	34	38	45	45	45
	F	21	22	25	25	25
Weight (kg)	0.7	0.8	1.0	1.4	1.6	



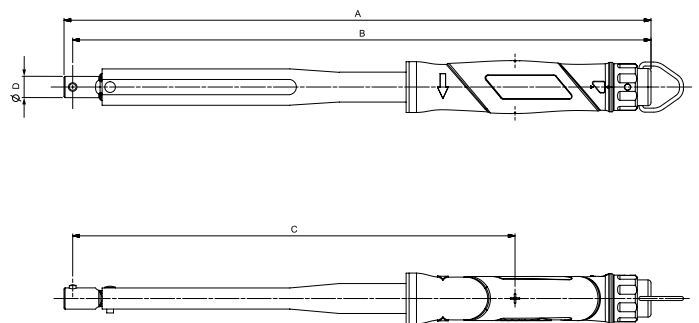
Female Torque Handle Adjustable

Model	NorTorque 60 9 x 12 mm	NorTorque 100 9 x 12 mm	NorTorque 200 9 x 12 mm	NorTorque 200 14 x 18 mm	NorTorque 300 14 x 18 mm	NorTorque 340 14 x 18 mm
Part Number	130121 130131	130123 130133	130125 130135	130126 130136	130127 130137	130128 130138
Dimensions (mm)	A	319	360	437	446	566
	B	308	348	426	430	550
	C	206	247	324	329	448
	D	22	22	24	33	36
	E	20	20	20	25	28
Weight (kg)	0.6	0.7	0.8	0.9	1.2	1.3



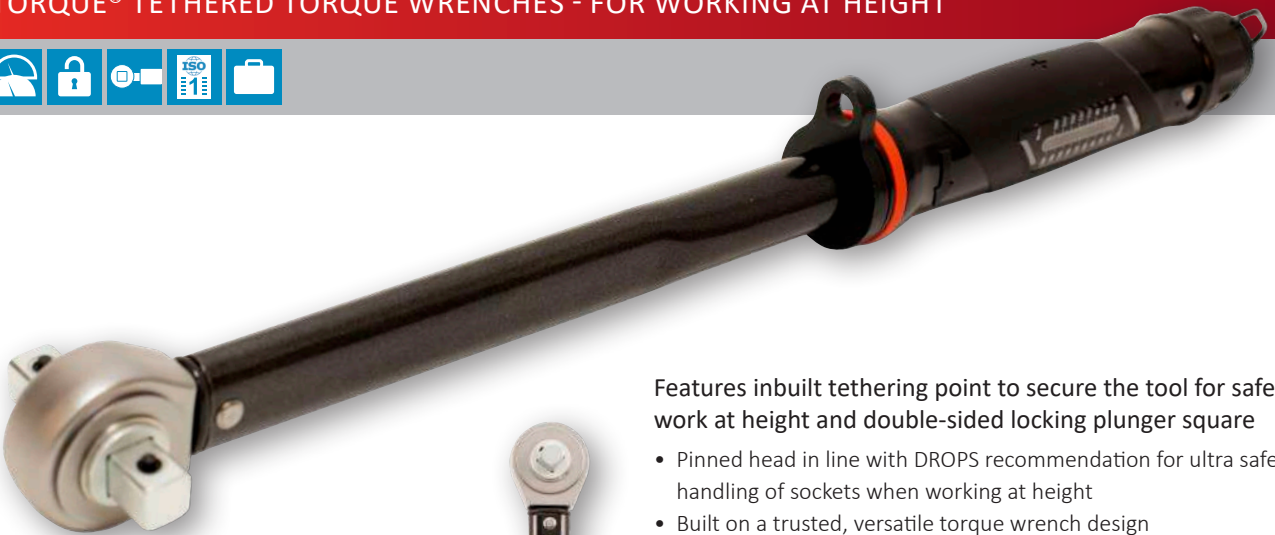
Torque Handle Adjustable 16 mm Spigot

Model	NorTorque 60	NorTorque 100	NorTorque 200	NorTorque 300	
Part Number	130141 130161	130142 130162	130143 130163	130144 130164	
Dimensions (mm)	A	317	357	439	564
	B	310	350	433	557
	C	208	248	331	455
	ØD	16	16	16	16
Weight (kg)	0.6	0.7	0.8	1.1	





NORTORQUE® TETHERED TORQUE WRENCHES - FOR WORKING AT HEIGHT



Features inbuilt tethering point to secure the tool for safe work at height and double-sided locking plunger square

- Pinned head in line with DROPS recommendation for ultra safe handling of sockets when working at height
- Built on a trusted, versatile torque wrench design
- Accurate to $\pm 3\%$ of reading which meets the requirements of ISO 6789-1:2017
- Light and fast adjustment saves operator time and effort
- Micrometer scale for simple and error free setting
- Lock feature helps prevent accidental adjustment of the set torque
- Convenient hanger feature for tool storage also aids wrench unlocking and adjustment



Tethering Point

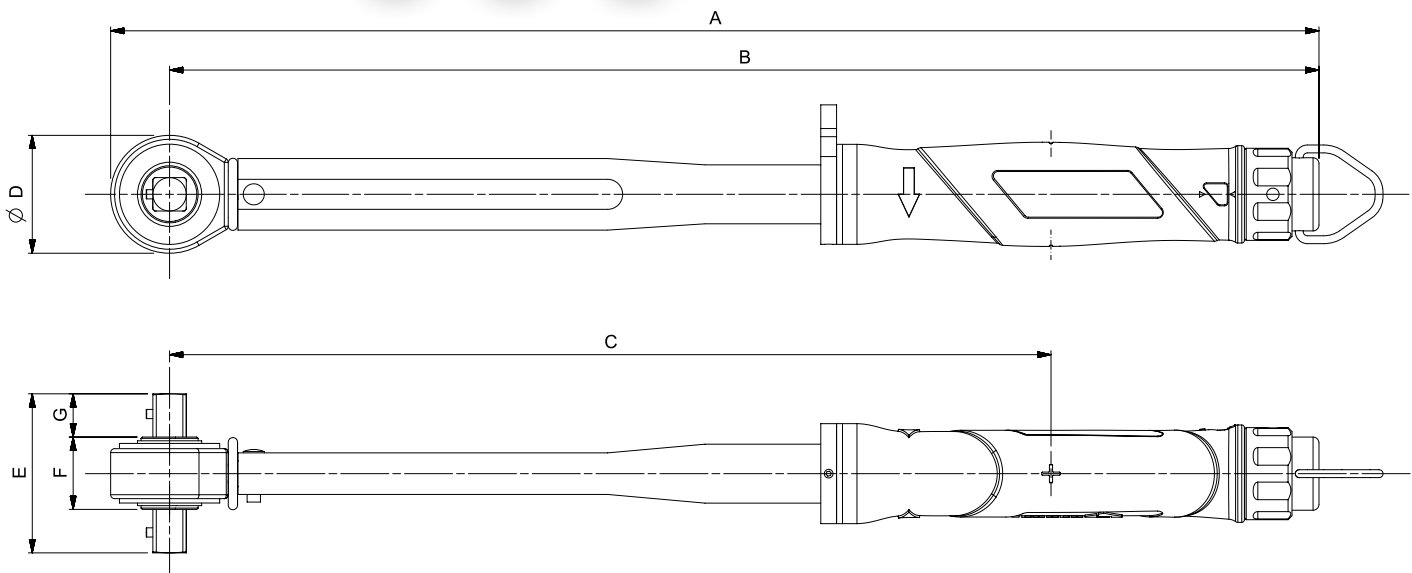


Double-Sided Locking Plunger Square



2	RATCHET ADJUSTABLE - DUAL SCALE
130178	Model 100, 1/2", 20 - 100 N-m, 20 - 80 lbf-ft
130179	Model 200, 1/2", 40 - 200 N-m, 30 - 150 lbf-ft
130180	Model 300, 1/2", 60 - 300 N-m, 45 - 220 lbf-ft

Model	NorTorque Tethered Torque Wrenches			
	Model 100	Model 200	Model 300	
Part Number	130178	130179	130180	
Dimensions (mm)	A	375	459	589
	B	354	437	562
	C	252	335	460
	ØD	42	45	54
	E	53	59	59
	F	22	28	28
	G	16	16	16
Weight (kg)	0.9	1.1	1.5	





SLIMLINE™ TORQUE WRENCHES



- Accurate to ±3% of reading which meets the requirements of ISO 6789-1:2017
- Unmistakable signal when set torque is reached
- High quality 72 tooth ratchet allows use in confined spaces
- Fixed head version has a push-through square for left and right handed torque tightening
- Moulded grip aids correct hand location and operator comfort

2		ADJUSTABLE RATCHET - DUAL SCALE
11123	SLO, 1/4", 4 - 20 N·m, 40 - 180 lbf·in	
11087	SLO, 3/8", 4 - 20 N·m, 40 - 180 lbf·in	



2		ADJUSTABLE - FIXED HEAD - DUAL SCALE
11125	SLO, 3/8" Fixed Head, 4 - 20 N·m, 40 - 180 lbf·in	



2		TORQUE HANDLE ADJUSTABLE - DUAL SCALE
11126	SLO 16 mm spigot, 4 - 20 N·m, 40 - 180 lbf·in	
11122	SLO 9 x 12 mm female, 4 - 20 N·m, 40 - 180 lbf·in	

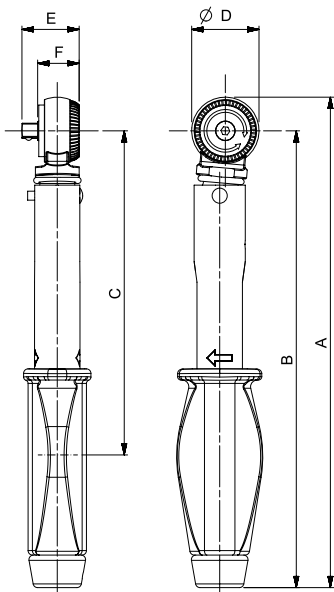


Production 'P' type versions are designed to discourage unauthorised alteration. They have no scale and so must be set against a torque measuring device such as Norbar's TruCheck™ 2 - see page 90.

2		PRODUCTION 'P' TYPE (Must be set using a Torque Tester, see pages 90 - 97)
11089	SLO, 3/8" Fixed Head, 1 - 20 N·m, 10 - 180 lbf·in	
11085	SLO, 1/4", 1 - 20 N·m, 10 - 180 lbf·in	
11086	SLO, 3/8", 1 - 20 N·m, 10 - 180 lbf·in	
11090	SLO, 16 mm spigot, 1 - 20 N·m, 10 - 180 lbf·in	
11088	SLO, 9 x 12 mm female, 1 - 20 N·m, 10 - 180 lbf·in	
SQ2222	Pre-set, etch and certify (Allow 3 days delivery for this service)	

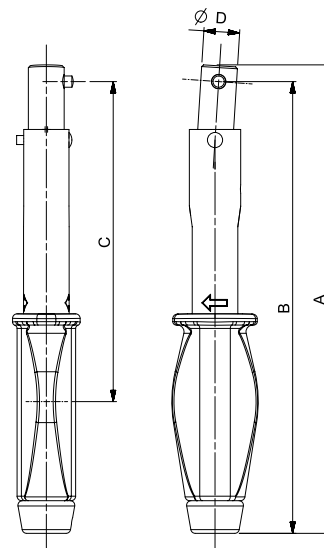
SLO Ratchet

Model	SLO 1/4"	SLO 3/8"
Part Number	11123 11085	11087 11086
Dimensions (mm)	A	219
	B	204
	C	146
	ØD	30
	E	26
	F	19
Weight (kg)	0.4	0.4



SLO Spigot Torque Handle

Model	SLO Spigot	
Part Number	11126 11090	
Dimensions (mm)	A	206
	B	199
	C	143
	ØD	16
Weight (kg)	0.4	



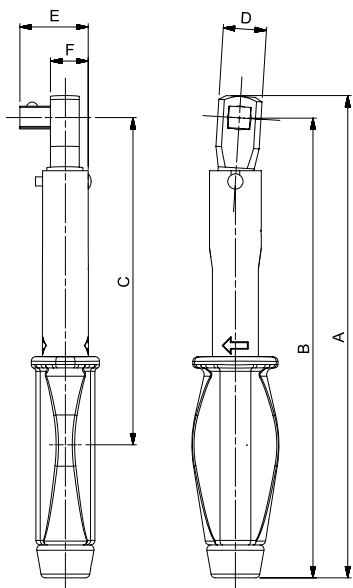


SLIMLINE™ TORQUE WRENCHES



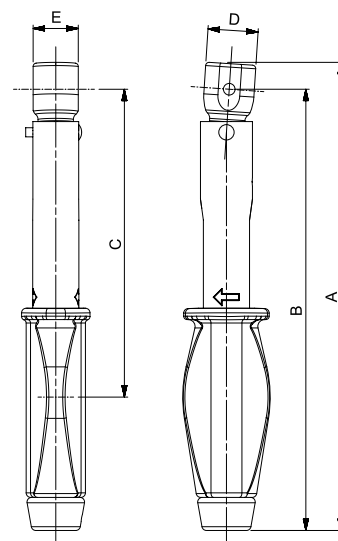
SLO Fixed Head

Model	SLO 3/8" Fixed Head	
Part Number	11125 11089	
Dimensions (mm)	A	213
	B	203
	C	145
	D	19
	E	30
	F	17
Weight (kg)	0.4	



SLO Female Torque Handle

Model	SLO FTH	
Part Number	11122 11088	
Dimensions (mm)	A	205
	B	194
	C	135
	D	22
	E	20
Weight (kg)	0.4	



PROFESSIONAL TORQUE WRENCHES MODEL 5



The Model 5 is a unique torque wrench that offers the convenience of interchangeable 1/4" hexagon bits. (ISO 1173:2001 Form C drive bits).

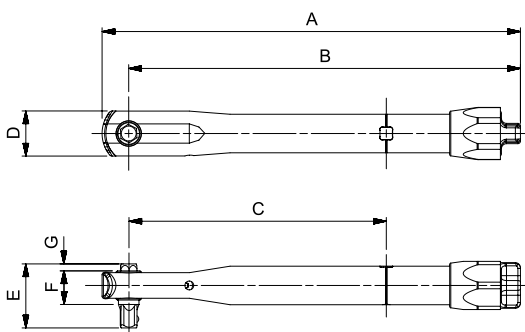
- Accuracy meets the requirements of ISO 6789-1:2017
- Non-length dependent. The Model 5 remains accurate regardless of hand position
- Supplied in a storage case. The case allows space for the storage of additional drive bits

Also available as Production 'P' Types, preventing unauthorised alteration of torque setting. No external calibration equipment is required to set the Model 5 'P' Type.

2	ADJUSTABLE
13001	Pro 5, 1/4" female hex, 1 - 5 N·m
13002	Pro 5, 1/4" female hex, 10 - 50 lbf·in
13003	Pro 5, 1/4" female hex, 10 - 50 kgf·cm

8	MODEL 5 SPARES
28900	1/4" Hex to 1/4" male square drive

Model	Adjustable	'P' Type
Part Number	13001 13002 13003	13004 13005 13006
Dimensions (mm)	A	165
	B	155
	C	102
	D	18
	E	25
	F	13
	G	2.8
Weight (kg)	0.1	0.1



Model 5 'P' Type in storage case



PROFESSIONAL TORQUE WRENCHES



Since its original, award winning launch in 1984 and extensive face-lift in 2000, Norbar's Professional torque wrench range has become one of the most popular wrench ranges available worldwide. In this re-engineered version, the core principles of accuracy, durability and comfort are carried over but almost every component part is new and improved.



- Accurate to $\pm 3\%$ of reading which meets the requirements of ISO 6789-2:2017
- Supplied with a traceable 'Calibration Certificate' allowing end users to adhere to more stringent quality control processes

- Large scale for better visibility and more accurate setting
- Fast scale adjustment reducing the effort required to adjust. If you adjust your wrench regularly, you can do more work



Compared with other torque wrenches:

Norbar's 'harmonic drive' scale provides a long scale length for good resolution and accurate setting in both scale units. By contrast, micrometer type scales allow accurate setting in the primary scale unit but relatively poor accuracy of setting in the secondary units because of limited resolution. The Professional wrench is amongst the easiest wrenches on the market to accurately set.

Timestrip® Feature

Torque wrenches should be calibrated once a year as a minimum, more frequently in harsh environments and with high levels of usage. Norbar's Timestrip® gives a visual indication that the wrench is due for re-calibration and has 3, 6, 9 and 12 month graduations. (Timestrip® is a registered trademark of Timestrip UK Ltd).



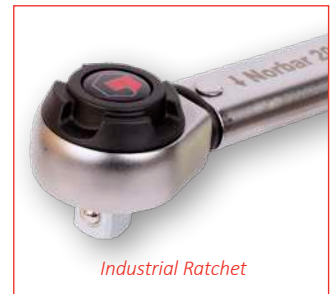
Unlocked



Locked



Automotive Ratchet



Industrial Ratchet



Timestrip®



Professional Scale



Female Torque Handle



16 mm Spigot End



PROFESSIONAL TORQUE WRENCHES



'Mushroom' Square Drive

2 INDUSTRIAL RATCHET ('Mushroom' Head) - DUAL SCALE

15002*	Pro 50, 3/8", 10 - 50 N·m, 7.5 - 37.5 lbf·ft
15003	Pro 100, 1/2", 20 - 100 N·m, 15 - 75 lbf·ft
15004	Pro 200, 1/2", 40 - 200 N·m, 30 - 150 lbf·ft
15005	Pro 300, 1/2", 60 - 300 N·m, 44 - 222 lbf·ft
15006	Pro 340, 1/2", 60 - 340 N·m, 44 - 250 lbf·ft
15007*	Pro 400, 3/4", 80 - 400 N·m, 60 - 300 lbf·ft

2 INDUSTRIAL RATCHET ('Mushroom' Head) - N·m ONLY

15042*	Pro 50, 3/8", 10 - 50 N·m
15043	Pro 100, 1/2", 20 - 100 N·m
15044	Pro 200, 1/2", 40 - 200 N·m
15045	Pro 300, 1/2", 60 - 300 N·m
15046	Pro 340, 1/2", 60 - 340 N·m
15047*	Pro 400, 3/4", 80 - 400 N·m

2 INDUSTRIAL RATCHET ('Mushroom' Head) - lbf·ft ONLY

15172*	Pro 50, 3/8", 7.5 - 37.5 lbf·ft
15173	Pro 100, 1/2", 15 - 75 lbf·ft
15174	Pro 200, 1/2", 30 - 150 lbf·ft
15175	Pro 300, 1/2", 44 - 220 lbf·ft
15176	Pro 340, 1/2", 44 - 250 lbf·ft
15177*	Pro 400, 3/4", 60 - 300 lbf·ft

2 INDUSTRIAL RATCHET ('Mushroom' Head) - lbf·in ONLY

15052*	Pro 50, 3/8", 90 - 440 lbf·in
15053	Pro 100, 1/2", 200 - 900 lbf·in
15054	Pro 200, 1/2", 400 - 1,800 lbf·in
15055	Pro 300, 1/2", 500 - 2,500 lbf·in
15056	Pro 340, 1/2", 500 - 3,000 lbf·in
15057*	Pro 400, 3/4", 700 - 3,500 lbf·in

* Supplied with 1/2" sq. dr. adaptor

· Supplied with 3/8" sq. dr. adaptor

* Model 400 supplied with a Stepped Square

2 AUTOMOTIVE RATCHET (Reversible) - DUAL SCALE

15008	Pro 15, 1/4", 3 - 15 N·m, 27 - 132 lbf·in
15009	Pro 15, 3/8", 3 - 15 N·m, 27 - 132 lbf·in
15010	Pro 25, 1/4", 5 - 25 N·m, 44 - 220 lbf·in
15011	Pro 25, 3/8", 5 - 25 N·m, 44 - 220 lbf·in
15012	Pro 50, 3/8", 10 - 50 N·m, 7.5 - 37.5 lbf·ft
15013	Pro 50, 1/2", 10 - 50 N·m, 7.5 - 37.5 lbf·ft
15014	Pro 100, 3/8", 20 - 100 N·m, 15 - 75 lbf·ft
15015	Pro 100, 1/2", 20 - 100 N·m, 15 - 75 lbf·ft
15016	Pro 200, 1/2", 40 - 200 N·m, 30 - 150 lbf·ft

2 AUTOMOTIVE RATCHET (Reversible) - N·m ONLY

15018	Pro 15, 1/4", 3 - 15 N·m
15019	Pro 15, 3/8", 3 - 15 N·m
15020	Pro 25, 1/4", 5 - 25 N·m
15021	Pro 25, 3/8", 5 - 25 N·m
15022	Pro 50, 3/8", 10 - 50 N·m
15023	Pro 50, 1/2", 10 - 50 N·m
15024	Pro 100, 3/8", 20 - 100 N·m
15025	Pro 100, 1/2", 20 - 100 N·m
15026	Pro 200, 1/2", 40 - 200 N·m

2 AUTOMOTIVE RATCHET (Reversible) - lbf·ft ONLY

15142	Pro 50, 3/8", 7.5 - 37.5 lbf·ft
15143	Pro 50, 1/2", 7.5 - 37.5 lbf·ft
15144	Pro 100, 3/8", 15 - 75 lbf·ft
15145	Pro 100, 1/2", 15 - 75 lbf·ft
15146	Pro 200, 1/2", 30 - 150 lbf·ft

2 AUTOMOTIVE RATCHET (Reversible) - lbf·in ONLY

15028	Pro 15, 1/4", 27 - 132 lbf·in
15029	Pro 15, 3/8", 27 - 132 lbf·in
15030	Pro 25, 1/4", 44 - 220 lbf·in
15031	Pro 25, 3/8", 44 - 220 lbf·in
15032	Pro 50, 3/8", 90 - 440 lbf·in
15033	Pro 50, 1/2", 90 - 440 lbf·in
15034	Pro 100, 3/8", 200 - 900 lbf·in
15035	Pro 100, 1/2", 200 - 900 lbf·in
15036	Pro 200, 1/2", 400 - 1,800 lbf·in



PROFESSIONAL TORQUE WRENCHES



2 TORQUE HANDLE ADJUSTABLE 16 mm SPIGOT - DUAL SCALE

15060	Pro 15, 16 mm spigot, 3 - 15 N·m, 27 - 132 lbf-in
15061	Pro 25, 16 mm spigot, 5 - 25 N·m, 44 - 220 lbf-in
15062	Pro 50, 16 mm spigot, 10 - 50 N·m, 7.5 - 37.5 lbf-ft
15063	Pro 100, 16 mm spigot, 20 - 100 N·m, 15 - 75 lbf-ft
15064	Pro 200, 16 mm spigot, 40 - 200 N·m, 30 - 150 lbf-ft
15065	Pro 300, 16 mm spigot, 60 - 300 N·m, 44 - 222 lbf-ft

2 TORQUE HANDLE ADJUSTABLE 16 mm SPIGOT - N·m ONLY

15070	Pro 15, 16 mm spigot, 3 - 15 N·m
15071	Pro 25, 16 mm spigot, 5 - 25 N·m
15072	Pro 50, 16 mm spigot, 10 - 50 N·m
15073	Pro 100, 16 mm spigot, 20 - 100 N·m
15074	Pro 200, 16 mm spigot, 40 - 200 N·m
15075	Pro 300, 16 mm spigot, 60 - 300 N·m

2 TORQUE HANDLE ADJUSTABLE 16 mm SPIGOT - lbf-ft ONLY

15082	Pro 50, 16 mm spigot, 7.5 - 37.5 lbf-ft
15083	Pro 100, 16 mm spigot, 15 - 75 lbf-ft
15084	Pro 200, 16 mm spigot, 30 - 150 lbf-ft
15085	Pro 300, 16 mm spigot, 44 - 220 lbf-ft

2 TORQUE HANDLE ADJUSTABLE 16 mm SPIGOT - lbf-in ONLY

15090	Pro 15, 16 mm spigot, 27 - 132 lbf-in
15091	Pro 25, 16 mm spigot, 44 - 220 lbf-in
15092	Pro 50, 16 mm spigot, 90 - 440 lbf-in
15093	Pro 100, 16 mm spigot, 200 - 900 lbf-in
15094	Pro 200, 16 mm spigot, 400 - 1,800 lbf-in
15095	Pro 300, 16 mm spigot, 500 - 2,500 lbf-in



2 FEMALE TORQUE HANDLE ADJUSTABLE - DUAL SCALE

15100	Pro 15, 9 x 12 mm, 3 - 15 N·m, 27 - 132 lbf-in
15101	Pro 25, 9 x 12 mm, 5 - 25 N·m, 44 - 220 lbf-in
15102	Pro 50, 9 x 12 mm, 10 - 50 N·m, 7.5 - 37.5 lbf-ft
15103	Pro 100, 9 x 12 mm, 20 - 100 N·m, 15 - 75 lbf-ft
15104	Pro 200, 9 x 12 mm, 40 - 200 N·m, 30 - 150 lbf-ft
15105	Pro 200, 14 x 18 mm, 40 - 200 N·m, 30 - 150 lbf-ft
15106	Pro 300, 14 x 18 mm, 60 - 300 N·m, 44 - 222 lbf-ft
15107	Pro 340, 14 x 18 mm, 60 - 340 N·m, 44 - 250 lbf-ft
15108	Pro 400, 14 x 18 mm, 80 - 400 N·m, 60 - 300 lbf-ft

2 FEMALE TORQUE HANDLE ADJUSTABLE - N·m ONLY

15110	Pro 15, 9 x 12 mm, 3 - 15 N·m
15111	Pro 25, 9 x 12 mm, 5 - 25 N·m
15112	Pro 50, 9 x 12 mm, 10 - 50 N·m
15113	Pro 100, 9 x 12 mm, 20 - 100 N·m
15114	Pro 200, 9 x 12 mm, 40 - 200 N·m
15115	Pro 200, 14 x 18 mm, 40 - 200 N·m
15116	Pro 300, 14 x 18 mm, 60 - 300 N·m
15117	Pro 340, 14 x 18 mm, 60 - 340 N·m
15118	Pro 400, 14 x 18 mm, 80 - 400 N·m

2 FEMALE TORQUE HANDLE ADJUSTABLE - lbf-ft ONLY

15122	Pro 50, 9 x 12 mm, 7.5 - 37.5 lbf-ft
15123	Pro 100, 9 x 12 mm, 15 - 75 lbf-ft
15124	Pro 200, 9 x 12 mm, 30 - 150 lbf-ft
15125	Pro 200, 14 x 18 mm, 30 - 150 lbf-ft
15126	Pro 300, 14 x 18 mm, 44 - 220 lbf-ft
15127	Pro 340, 14 x 18 mm, 44 - 250 lbf-ft
15128	Pro 400, 14 x 18 mm, 60 - 300 lbf-ft

2 FEMALE TORQUE HANDLE ADJUSTABLE - lbf-in ONLY

15130	Pro 15, 9 x 12 mm, 27 - 132 lbf-in
15131	Pro 25, 9 x 12 mm, 44 - 220 lbf-in
15132	Pro 50, 9 x 12 mm, 90 - 440 lbf-in
15133	Pro 100, 9 x 12 mm, 200 - 900 lbf-in
15134	Pro 200, 9 x 12 mm, 400 - 1,800 lbf-in
15135	Pro 200, 14 x 18 mm, 400 - 1,800 lbf-in
15136	Pro 300, 14 x 18 mm, 500 - 2,500 lbf-in
15137	Pro 340, 14 x 18 mm, 500 - 3,000 lbf-in
15138	Pro 400, 14 x 18 mm, 700 - 3,500 lbf-in

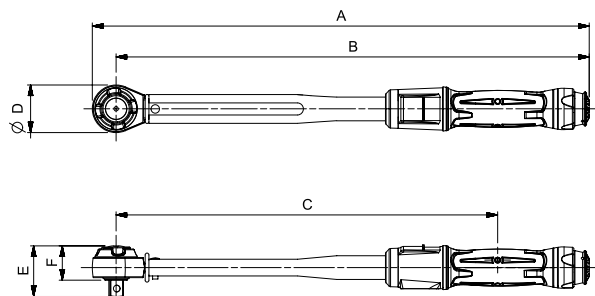


PROFESSIONAL TORQUE WRENCHES



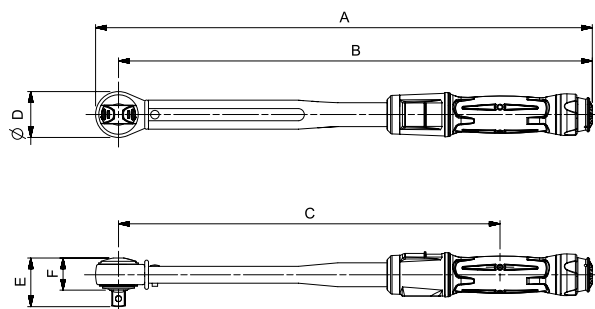
Industrial Ratchet

Model	Pro 50	Pro 100	Pro 200	Pro 300	Pro 340	Pro 400	
Part Number	15002	15003	15004	15005	15006	15007	
	15042	15043	15044	15045	15046	15047	
	15172	15173	15174	15175	15176	15177	
	15052	15053	15054	15055	15056	15057	
Dimensions (mm)	A	335	387	470	593	685	686
	B	317	364	447	567	659	661
	C	231	278	361	480	572	574
	∅D	35	45	45	52	52	51
	E	37	48	48	48	48	47
	F	26	32	32	33	33	24
Weight (kg)	0.7	0.9	1.1	1.4	1.5	1.9	



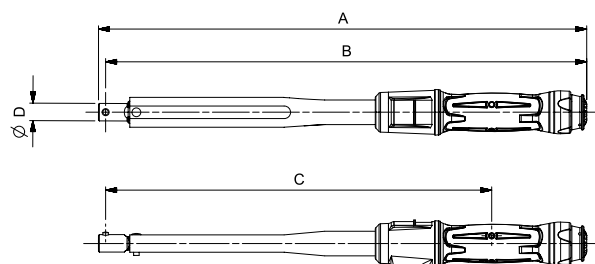
Automotive Ratchet

Model	Pro 15 Pro 25	Pro 50 3/8"	Pro 50 1/2"	Pro 100 3/4"	Pro 100 1"	Pro 200	
Part Number	15008, 15009, 15010, 15011, 15018, 15019, 15020, 15021, 15028, 15029, 15030, 15031	15012 15022 15142 15032	15013 15023 15143 15033	15014 15024 15144 15034	15015 15025 15145 15035	15016 15026 15146 15036	
	A	221	327	327	367	367	465
	B	209	312	312	352	352	444
	C	140	226	226	266	266	358
Dimensions (mm)	∅D	25	30	30	30	30	43
	E	25	33	38	33	38	46
	F	18	22	22	22	22	30
	Weight (kg)	0.3	0.7	0.7	0.8	0.8	1.0



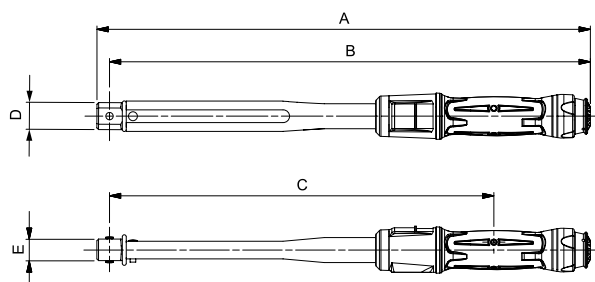
Spigot Torque Handle

Model	Pro 15 Pro 25	Pro 50	Pro 100	Pro 200	Pro 300	
Part Number	15060 15061 15070 15071 15090 15091	15062 15072 15082 15092	15063 15073 15083 15093	15064 15074 15084 15094	15065 15075 15085 15095	
	A	223	322	363	445	569
	B	216	316	356	438	563
	C	148	229	269	351	476
	∅D	16	16	16	16	16
	Weight (kg)	0.3	0.6	0.7	0.9	1.2



Female Torque Handle

Model	Pro 15 Pro 25	Pro 50	Pro 100	Pro 200 9 x 12 mm	Pro 200 14 x 18 mm	Pro 300	Pro 340	Pro 400	
Part Number	15100 15101 15110 15111 15112 15122 15130 15131	15102 15112 15122 15132	15103 15113 15123 15133	15104 15114 15124 15134	15105 15115 15125 15135	15106 15116 15126 15136	15107 15117 15127 15137	15108 15118 15128 15138	
	A	218	325	365	442	453	570	662	664
	B	204	314	354	431	440	557	649	649
	C	139	227	267	345	353	440	562	563
	D	22	22	22	25	34	34	34	32
	E	20	20	20	20	26	28	28	24
Weight (kg)	0.3	0.6	0.7	0.9	1.0	1.2	1.3	1.7	





PROFESSIONAL 'P' TYPE TORQUE WRENCHES



For production line applications requiring a sealed torque setting, 'P' Type wrenches have no scale and must be set against a suitable torque measuring device (see pages 90 - 97).

- Accurate to ±3% of reading which meets the requirements of ISO 6789-1:2017
- Colour-coded adjustment seals and locking tool provided
- On request 'P' Type wrenches can be set, marked with the setting and certified for production line applications requiring a sealed torque setting. Only if a pre-set has been requested will the tool be supplied with a Declaration of Conformance



Colour-coded adjustment seals



- Push-through ratchet allows clockwise and counter-clockwise torque control

2	PRODUCTION 'P' TYPE - INDUSTRIAL RATCHET (Push-through square)
13051	Pro 60, 3/8", 12 - 60 N·m, 5 - 45 lbf-ft
13052	Pro 60, 1/2", 12 - 60 N·m, 5 - 45 lbf-ft
13053	Pro 100, 3/8", 20 - 100 N·m, 15 - 75 lbf-ft
13054	Pro 100, 1/2", 20 - 100 N·m, 15 - 75 lbf-ft
13055	Pro 200, 1/2", 40 - 200 N·m, 30 - 150 lbf-ft
13057	Pro 300, 1/2", 60 - 300 N·m, 45 - 220 lbf-ft
13056	Pro 400, 3/4", 80 - 400 N·m, 60 - 300 lbf-ft
11698	Calibration Kit Professional 'P' Type
SQ2222	Pre-set, etch and certify (Allow 3 days delivery for this service)



- Reversible, 72 tooth ratchet

2	PRODUCTION 'P' TYPE AUTOMOTIVE RATCHET (Reversible)
11164	Pro 60, 3/8", 12 - 60 N·m, 5 - 45 lbf-ft
11171	Pro 60, 1/2", 12 - 60 N·m, 5 - 45 lbf-ft
11138	Pro 100, 3/8", 20 - 100 N·m, 15 - 75 lbf-ft
11139	Pro 100, 1/2", 20 - 100 N·m, 15 - 75 lbf-ft
11140	Pro 200, 1/2", 40 - 200 N·m, 30 - 150 lbf-ft
SQ2222	Pre-set, etch and certify (Allow 3 days delivery for this service)



Must be set against a suitable torque measuring device



Setting a 'P' Type Torque Wrench



2	TORQUE HANDLE PRODUCTION 'P' TYPE - 16 mm SPIGOT
11167	Pro 60, 16 mm spigot, 12 - 60 N·m, 5 - 45 lbf-ft
11143	Pro 100, 16 mm spigot, 20 - 100 N·m, 15 - 75 lbf-ft
11144	Pro 200, 16 mm spigot, 40 - 200 N·m, 30 - 150 lbf-ft
11117	Pro 300, 16 mm spigot, 60 - 300 N·m, 45 - 220 lbf-ft
SQ2222	Pre-set, etch and certify (Allow 3 days delivery for this service)



2	FEMALE TORQUE HANDLE PRODUCTION 'P' TYPE
11170	Pro 60, 9 x 12 mm, 12 - 60 N·m, 5 - 45 lbf-ft
11150	Pro 100, 9 x 12 mm, 20 - 100 N·m, 15 - 75 lbf-ft
11151	Pro 200, 9 x 12 mm, 40 - 200 N·m, 30 - 150 lbf-ft
11152	Pro 200, 14 x 18 mm, 40 - 200 N·m, 30 - 150 lbf-ft
11153	Pro 300, 14 x 18 mm, 60 - 300 N·m, 45 - 220 lbf-ft
13068	Pro 400, 14 x 18 mm, 80 - 400 N·m, 60 - 300 lbf-ft
SQ2222	Pre-set, etch and certify (Allow 3 days delivery for this service)

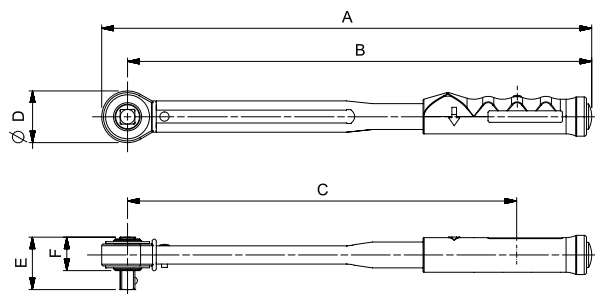


PROFESSIONAL 'P' TYPE TORQUE WRENCHES



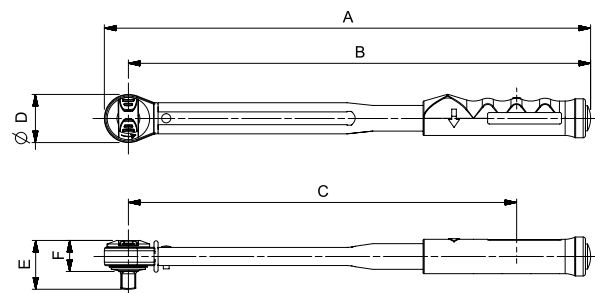
Industrial Ratchet

Model	Pro 60, 3/8"	Pro 60, 1/2"	Pro 100, 3/8"	Pro 100, 1/2"	Pro 200	Pro 300	Pro 400
Part Number	13051	13052	13053	13054	13055	13057	13056
Dimensions (mm)	A	295	301	335	342	425	668
	B	277	281	317	321	403	641
	C	212	216	252	256	338	577
	ØD	36	42	36	42	45	54
	E	34	38	34	38	46	46
	F	21	23	21	22	29	29
Weight (kg)	0.6	0.7	0.7	0.7	1.0	1.2	2.0



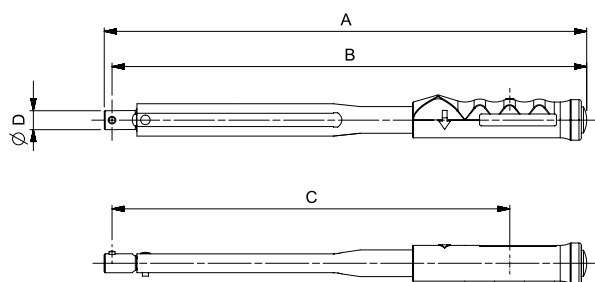
Automotive Ratchet

Model	Pro 60, 3/8"	Pro 60, 1/2"	Pro 100, 3/8"	Pro 100, 1/2"	Pro 200
Part Number	11164	11171	11138	11139	11140
Dimensions (mm)	A	289	289	351	351
	B	274	274	314	314
	C	209	209	249	249
	ØD	30	30	30	30
	E	33	38	33	38
	F	22	22	22	22
Weight (kg)	0.6	0.6	0.7	0.7	1



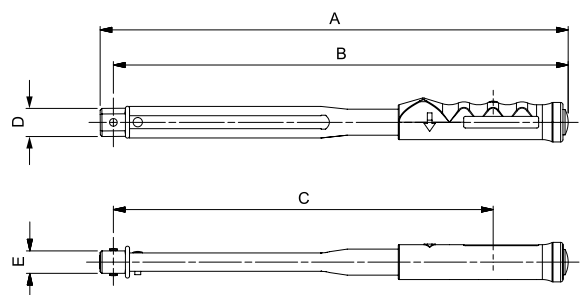
Spigot Torque Handle

Model	Pro 60	Pro 100	Pro 200	Pro 300
Part Number	11167	11143	11144	11117
Dimensions (mm)	A	283	324	405
	B	277	317	399
	C	212	252	334
	ØD	16	16	16
Weight (kg)	0.6	0.6	0.8	1.1



Female Torque Handle

Model	Pro 60 9 x 12 mm	Pro 100 9 x 12 mm	Pro 200, 9 x 12 mm	Pro 200, 14 x 18 mm	Pro 300 14 x 18 mm	Pro 400 14 x 18 mm
Part Number	11170	11150	11151	11152	11153	13068
Dimensions (mm)	A	286	326	403	414	534
	B	274	314	392	400	518
	C	210	250	327	336	453
	D	22	22	25	34	36
	E	20	20	20	26	28
Weight (kg)	0.6	0.6	0.8	0.8	1.1	1.8





PROFESSIONAL TORQUE WRENCHES NLD SERIES



For precision applications up to 1,500 N·m

- Exceptionally clear torque signal from unique mechanism
- Non-length dependant (NLD) so can be used with or without the supplied extension handle (optional on Pro 650)
- Extension handle significantly reduces operator effort to achieve high torque values
- Accurate to ±3% of reading which meets the requirements of ISO 6789-2:2017
- On request 'P' Type wrenches can be set, marked with the setting and certified for production line applications requiring a sealed torque setting. Only if a pre-set has been requested will the tool be supplied with a Declaration of Conformance



2	ADJUSTABLE RATCHET - DUAL SCALE
14037	Pro 650, 3/4", 130 - 650 N·m, 100 - 480 lbf-ft
14015	Pro 800, 3/4", 200 - 800 N·m, 150 - 600 lbf-ft
14016	Pro 800, 1", 200 - 800 N·m, 150 - 600 lbf-ft
14002	Pro 1000, 3/4", 300 - 1,000 N·m, 220 - 750 lbf-ft
14003	Pro 1000, 1", 300 - 1,000 N·m, 220 - 750 lbf-ft
14004	Pro 1500, 3/4", 500 - 1,500 N·m, 370 - 1,100 lbf-ft
14005	Pro 1500, 1", 500 - 1,500 N·m, 370 - 1,100 lbf-ft

2	ADJUSTABLE RATCHET - N·m ONLY
14038	Pro 650, 3/4", 130 - 650 N·m
14024	Pro 800, 3/4", 200 - 800 N·m
14025	Pro 800, 1", 200 - 800 N·m
14026	Pro 1000, 3/4", 300 - 1,000 N·m
14027	Pro 1000, 1", 300 - 1,000 N·m
14028	Pro 1500, 3/4", 500 - 1,500 N·m
14029	Pro 1500, 1", 500 - 1,500 N·m

2	ADJUSTABLE RATCHET - lbf-ft ONLY
14044	Pro 650, 3/4", 100 - 480 lbf-ft
14045	Pro 800, 3/4", 150 - 600 lbf-ft
14046	Pro 800, 1", 150 - 600 lbf-ft
14047	Pro 1000, 3/4", 220 - 750 lbf-ft
14048	Pro 1000, 1", 220 - 750 lbf-ft
14049	Pro 1500, 3/4", 370 - 1,100 lbf-ft
14050	Pro 1500, 1", 370 - 1,100 lbf-ft

2	TORQUE HANDLE ADJUSTABLE - DUAL SCALE
14040	Pro 650, 22 mm spigot, 130 - 650 N·m, 100 - 480 lbf-ft

2	FEMALE TORQUE HANDLE ADJUSTABLE - DUAL SCALE
14041	Pro 650, 14 x 18 mm, 130 - 650 N·m, 100 - 480 lbf-ft

2	RATCHET PRODUCTION 'P' TYPE (Must be set using a Torque Tester, see pages 90 - 97)
14039	Pro 650, 3/4", 130 - 650 N·m, 100 - 480 lbf-ft
14017	Pro 800, 3/4", 200 - 800 N·m, 150 - 600 lbf-ft
14018	Pro 800, 1", 200 - 800 N·m, 150 - 600 lbf-ft
14007	Pro 1000, 3/4", 300 - 1,000 N·m, 220 - 750 lbf-ft
14008	Pro 1000, 1", 300 - 1,000 N·m, 220 - 750 lbf-ft
14009	Pro 1500, 3/4", 500 - 1,500 N·m, 370 - 1,100 lbf-ft
14010	Pro 1500, 1", 500 - 1,500 N·m, 370 - 1,100 lbf-ft
SQ2222	Pre-set, etch and certify (Allow 3 days delivery for this service)

2	TORQUE HANDLE PRODUCTION 'P' TYPE (Must be set using a Torque Tester, see pages 90 - 97)
14042	Pro 650, 22 mm spigot, 130 - 650 N·m, 100 - 480 lbf-ft
SQ2222	Pre-set, etch and certify (Allow 3 days delivery for this service)

2	FEMALE TORQUE HANDLE PRODUCTION 'P' TYPE (Must be set using a Torque Tester, see pages 90 - 97)
14043	Pro 650, 14 x 18 mm, 130 - 650 N·m, 100 - 480 lbf-ft
SQ2222	Pre-set, etch and certify (Allow 3 days delivery for this service)



8	PRO 650 - 1500 ACCESSORY
14142	Extension Handle (included with Pro 800 - 1500 as standard)



All models supplied in carry case

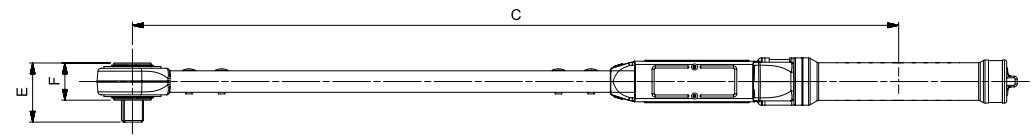
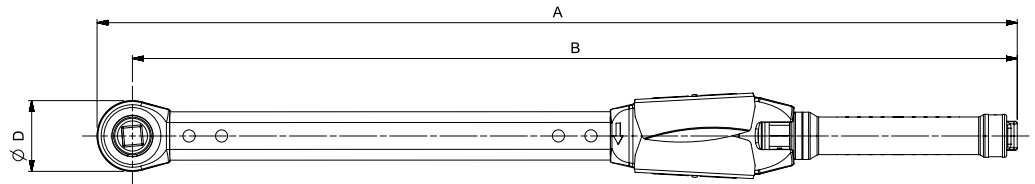


PROFESSIONAL TORQUE WRENCHES NLD SERIES



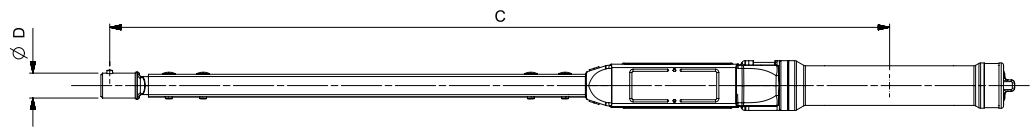
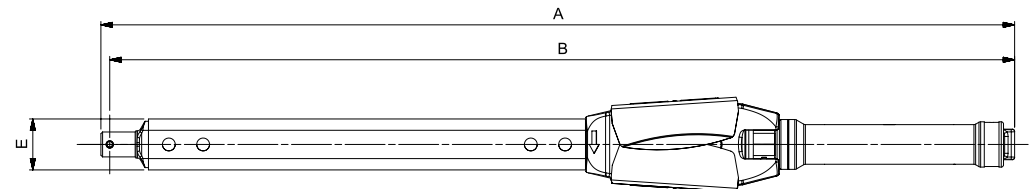
Push-Through Ratchet

Model	Pro 650	Pro 800 ¾"	Pro 800 1"	Pro 1000 ¾"	Pro 1000 1"	Pro 1500 ¾"	Pro 1500 1"	Pro 650 'P' Type	Pro 800 ¾" 'P' Type	Pro 800 1" 'P' Type	Pro 1000 ¾" 'P' Type	Pro 1000 1" 'P' Type	Pro 1500 ¾" 'P' Type	Pro 1500 1" 'P' Type	
Part Number	14037 14038 14044	14015 14024 14045	14016 14025 14046	14002 14026 14047	14003 14027 14048	14004 14028 14049	14005 14029 14050	14039	14017	14018	14007	14008	14009	14010	
Dimensions (mm)	A	856	1,037	1,037	1,245	1,245	1,571	1,571	848	1,030	1,030	1,238	1,238	1,563	1,563
	B	823	999	999	1,208	1,208	1,533	1,533	816	992	992	1,201	1,201	1,526	1,526
	C	713	889	889	1,097	1,097	1,423	1,422	713	889	889	1,097	1,097	1,424	1,423
	ØD	66	75	75	75	75	75	75	66	75	75	75	75	75	75
	E	56	58	66	58	66	58	66	55	58	66	58	58	58	66
	F	30	33	33	38	38	38	38	35	38	38	38	38	38	38
Weight (kg)	4.0	5.2	5.2	5.8	5.8	6.7	6.7	4.0	5.2	5.2	5.7	5.7	6.7	6.7	



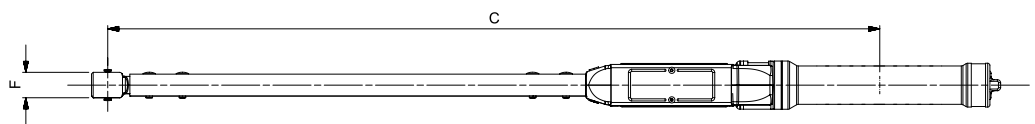
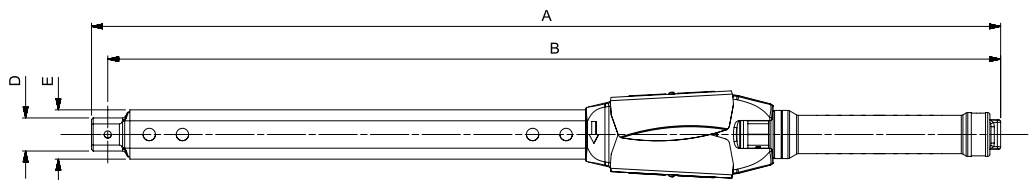
Spigot Torque Handle

Model	Pro 650	Pro 650 'P' Type	
Part Number	14040	14042	
Dimensions (mm)	A	807	800
	B	799	792
	C	688	689
	ØD	22	22
E	45	45	
Weight (kg)	3.6	3.6	



Female Torque Handle

Model	Pro 650	Pro 650 'P' Type	
Part Number	14041	14043	
Dimensions (mm)	A	830	823
	B	815	808
	C	704	705
	D	30	30
	E	45	45
	F	23	23
Weight (kg)	3.6	3.6	



NOTE: When using the Extension Handle (14142) add 495 mm to dimensions 'A' and 'B', add 515 mm to dimension C and add 1.6 kg to the weight.



INDUSTRIAL TORQUE WRENCHES ADJUSTABLE & 'P' TYPE - NEW GENERATION



4AR-N shown split in case

Packed dimensions:

3AR-N to 5R-N
970 x 260 x 95 mm

5AR-N & 6R-N
1,172 x 243 x 91 mm
(L x W x H)



A long-time customer favourite for their unmistakable signal and robustness but now simple to accurately set and split for ease of storage and transportation.

- Unique profiled cam and reaction plate - gives clear torque break point reducing the possibility of over-torquing
- Robust construction gives accurate results to ±4% even in arduous working conditions, meeting the requirements of ISO 6789-1:2017
- Easy to read scale is shielded from dust, dirt and spray
- Easy to set accurately
- Can be split and packed in two parts for a smaller, easier to transport package
- Push-through ratchet allows two direction torquing
- Designed to be cost effectively serviced
- New handle - more comfortable and guides operator's hand to correct position



2 RATCHET ADJUSTABLE - DUAL SCALE

120101	3AR-N, 3/4", 120 - 600 N·m, 100 - 450 lbf·ft
120101.01	3AR-N, 1", 120 - 600 N·m, 100 - 450 lbf·ft
120110	4AR-N, 3/4", 200 - 800 N·m, 150 - 600 lbf·ft
120110.01	4AR-N, 1", 200 - 800 N·m, 150 - 600 lbf·ft
120115	5R-N, 3/4", 300 - 1,000 N·m, 200 - 750 lbf·ft
120115.01	5R-N, 1", 300 - 1,000 N·m, 200 - 750 lbf·ft
120118	5AR-N, 3/4", 700 - 1,500 N·m, 500 - 1,000 lbf·ft
120118.01	5AR-N, 1", 700 - 1,500 N·m, 500 - 1,000 lbf·ft
120120	6R-N, 1", 900 - 2,000 N·m, 700 - 1,500 lbf·ft

2 RATCHET ADJUSTABLE - N·m ONLY

120107	3AR-N, 3/4", 120 - 600 N·m
120107.01	3AR-N, 1", 120 - 600 N·m
120114	4AR-N, 3/4", 200 - 800 N·m
120114.01	4AR-N, 1", 200 - 800 N·m
120117	5R-N, 3/4", 300 - 1,000 N·m
120117.01	5R-N, 1", 300 - 1,000 N·m
120119	5AR-N, 3/4", 700 - 1,500 N·m
120119.01	5AR-N, 1", 700 - 1,500 N·m
120121	6R-N, 1", 900 - 2,000 N·m

2 TORQUE HANDLE ADJUSTABLE - DUAL SCALE

120102	3AR-N, 22 mm Spigot, 120 - 600 N·m, 100 - 450 lbf·ft
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2 TORQUE HANDLE ADJUSTABLE - N·m ONLY

120108	3AR-N, 22 mm Spigot, 120 - 600 N·m
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2 RATCHET PRODUCTION 'P' TYPE (Must be set using a Torque Tester, see pages 90 - 97)

120104	3AR-N, 3/4", 120 - 600 N·m, 100 - 450 lbf·ft
120104.01	3AR-N, 1", 120 - 600 N·m, 100 - 450 lbf·ft
120111	4AR-N, 3/4", 200 - 800 N·m, 150 - 600 lbf·ft
120111.01	4AR-N, 1", 200 - 800 N·m, 150 - 600 lbf·ft
120116	5R-N, 3/4", 300 - 1,000 N·m, 200 - 750 lbf·ft
120116.01	5R-N, 1", 300 - 1,000 N·m, 200 - 750 lbf·ft
120130	5AR-N, 3/4", 700 - 1,500 N·m, 500 - 1,000 lbf·ft
120130.01	5AR-N, 1", 700 - 1,500 N·m, 500 - 1,000 lbf·ft

2 TORQUE HANDLE PRODUCTION 'P' TYPE (Must be set using a Torque Tester, see pages 90 - 97)

120105	3AR-N, 22 mm Spigot, 120 - 600 N·m, 100 - 450 lbf·ft
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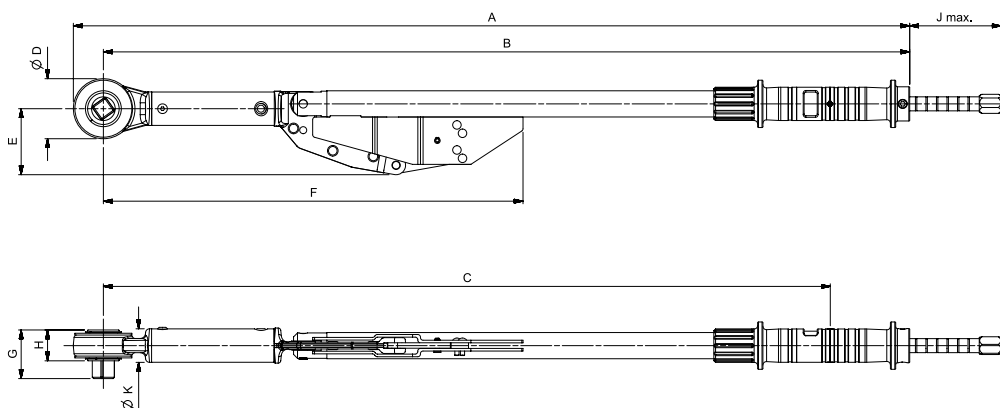


INDUSTRIAL TORQUE WRENCHES ADJUSTABLE AND 'P' TYPE - NEW GENERATION



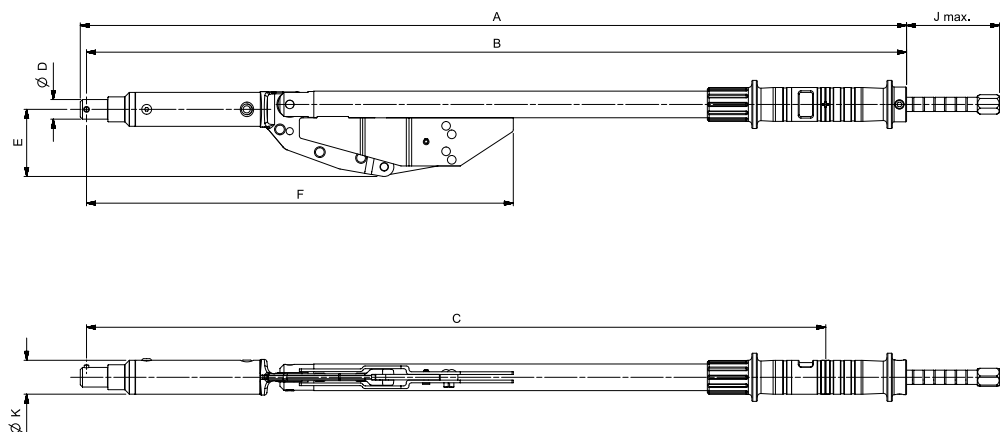
Industrial Push-Through Ratchets

Model	3AR-N	3AR-N 'P' Type	4AR-N	4AR-N 'P' Type	5R-N	5R-N 'P' Type	5AR-N	5AR-N 'P' Type	6R-N	
Part Number	120101 120101.01 120107 120107.01	120104 120104.01	120110 120110.01 120114 120114.01	120111 120111.01	120115 120115.01 120117 120117.01	120116 120116.01	120118 120118.01 120119 120119.01	120130 120130.01	120120 120121	
Dimensions (mm)	A	954	1,214	1,214	1,449	1,449	1,764	1,764	1,855	
	B	920	1,180	1,180	1,415	1,224	1,730	1,730	1,820	
	C	829	829	1,089	1,089	1,324	1,324	1,635	1,773	
	ØD	69	69	69	69	69	69	69	69	
	E	75	75	75	75	75	75	75	75	
	F	479	479	738	738	974	974	1,379	1,379	
	G	¾" = 55 1" = 63	¾" = 55 1" = 63	¾" = 55 1" = 63	¾" = 55 1" = 63	¾" = 55 1" = 63	¾" = 55 1" = 63	¾" = 55 1" = 63	¾" = 55 1" = 63	63
	H	35	35	35	35	35	35	35	35	35
	J max.	105	18	105	18	105	18	105	18	85
ØK	38	38	38	38	38	38	38	38	38	
Weight (kg)	6.0	6.0	6.7	6.7	7.4	7.4	9.6	9.6	12.75	



Spigot Torque Handle

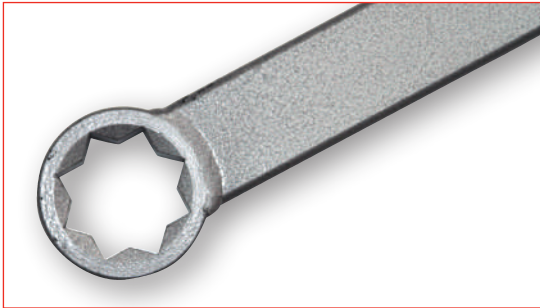
Model	3AR-N	3AR-N 'P' Type
Part Number	120102 120108	120105
Dimensions (mm)	A	927
	B	920
	C	829
	ØD	22
	E	75
	F	479
	J max.	105
ØK	38	
Weight (kg)	6.0	5.3



Design Nos. 182086 and 182087 (Canada); Design Nos. 004671063-0001 and 004671063-0002 (EU); Design Nos. D863904 and D871870 (USA)



INDUSTRIAL TORQUE WRENCH - BI-SQUARE



The 1 1/16" Bi-square version of the Industrial Torque Wrench was developed specifically with rail track maintenance in mind. The critical need of the rail industry is to reduce the chance of any object being left on the track. Fitting directly onto rail fishplate bolts means that no socket or square drive is required, two components that could potentially be separated from the regular version of the Industrial Torque Wrench. Other versions of this tool are available on request.

2	BI-SQUARE - DUAL SCALE
12026	1 1/16" Bi-Square, 300 - 1,000 N·m, 200 - 750 lbf·ft

ELECTRODE WRENCHES



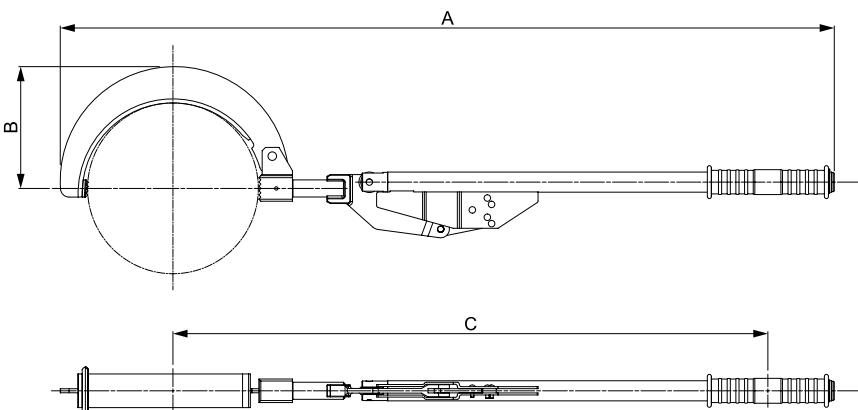
For torque tightening of carbon electrodes

Standard torque settings are shown. Other settings are available. The 8" diameter electrode wrench uses the Professional torque handle as the control mechanism. Above 8" the Industrial wrench is used as the control mechanism.

9	LOW RANGE
12506	8" (200 mm) 312 N·m
12530	10" (250 mm) 542 N·m
12531	12" (300 mm) 780 N·m
Other models available on request.	

9	HIGH RANGE
12532	14" (350 mm) 1,140 N·m
12533	16" (400 mm) 1,300 N·m
12535	18" (450 mm) 1,500 N·m
12536	20" (500 mm) 2,000 N·m
12537	22" (550 mm) 2,370 N·m
12538	24" (600 mm) 2,370 N·m
12538.HD	24" (600 mm) 3,200 N·m

Model	8" (200 mm)	10" (250 mm)	12" (300 mm)	14" (350 mm)	16" (400 mm)	18" (450 mm)	20" (500 mm)	22" (550 mm)	24" (600 mm)	24" (600 mm)
Part Number	12506	12530	12531	12532	12533	12535	12536	12537	12538	12538.HD
Dimensions (mm)	A	897	1,150	1,286	1,764	1,825	1,727	2,211	2,571	3,350
	B	159	194	239	288	299	336	386	398	446
	C	658	883	994	1,443	1,472	1,643	1,811	2,141	2,885
Weight (kg)	3.2	6.8	8.4	13.8	14.3	16.5	20.0	25.4	26.1	31.7





ELECTRONIC SCREWDRIVER AND TORQUE WRENCHES

Norbar Torque Tools offers a range of high-precision electronic torque tools including a screwdriver and an extensive selection of torque wrenches to cover torque values from 0.45 to 800 N.m.

Many of the options in this section have the capability to connect to software that more easily manages data and configures settings. These highly accurate electronic torque and angle tools are the perfect solution for applications that require precision and control.

All Norbar torque wrenches (excluding screwdriver) are offered as standard with a quality ratchet. For applications where interchangeable end fittings are required, 'Torque Handles' which allow for interchangeable spanner fittings, are also available in various models.

- ProTronic® Electronic Torque Wrenches 31
- ProTronic® Plus Electronic Torque Wrenches 33
- ProTronic® Plus Electronic Torque Screwdriver 35
- ProTronic® Plus Model 10 and Model 30 36
- ProTronic® Plus TorqApp™ 37
- NorTronic® Electronic Torque Wrenches 39
- Spanner End Fittings for 16 mm Torque Handles 41
- Spanner End Fittings for 22 mm Torque Handles 42
- Spigot Accessories 42
- Large Spanner End Fittings for 16 mm Spigot Torque Handles up to 300 N-m 43
- Large Spanner End Fittings for 22 mm Spigot Torque Handles up to 650 N-m 44
- UKAS Accredited Calibration Certification 45





PROTRONIC® ELECTRONIC TORQUE WRENCHES



New

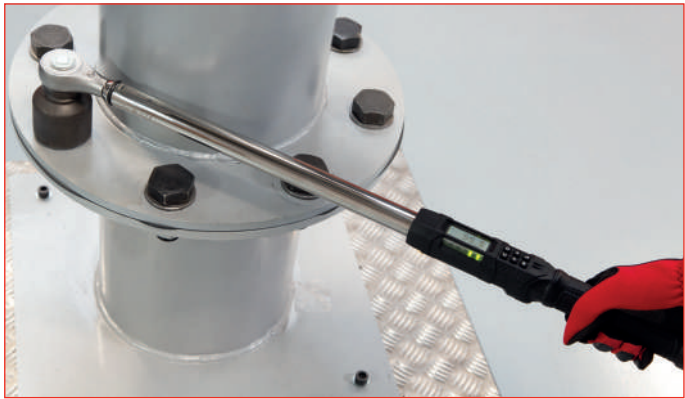


Large backlit LCD display

The ProTronic® is a high precision electronic torque wrench with a large backlit LCD display, that measures accurate and consistent torque readings. It also features an audible buzzer when pre-set torque/angle value is reached.

- Dual progressive LEDs positioned both sides of the wrench provide an easy visual representation of torque progress allowing the user to more easily anticipate torque target
- Large LCD screen with bright backlight; numbers become larger and bolder during active torque for optimal viewing
- Four alert modes (LCD, progressive LED, audible, vibration) provide excellent feedback in all working conditions
- 5 easily selectable torque units: N·m, lbf·ft, lbf·in, dN·m, kg·cm and kg·m (200 N·m and above)
- The ability to programme up to 10 pre-sets in the tool saves time in setting up frequently occurring applications
- A wide range of advanced features (cycle counter, customisable sleep timer, language selection, auto torque calculation for torque adaptors, calibration alerts, battery level indication, and numerous alert mode customisations) allow the user to tailor the tool to their work preferences
- Torque THEN Angle mode gives the user the ability to conveniently apply an angle to a fastener directly after achieving a torque target without the need to remove the torque wrench from the application
- Settings allow for operation in either English, Spanish, French, German, Italian, Dutch or Portuguese
- Power interruption technology helps to prevent loss of work and continuity if the wrench is impacted
- Patent pending built-in calibration factor feature allows different head lengths to be easily accommodated
- Handle designed for a comfortable and secure grip
- Battery cap has been designed to prevent accidental loosening
- Storage case included
- Supplied with a traceable 'Calibration Certificate' conforming with ISO 6789-2:2017, allowing end users to adhere to more stringent quality control processes

4	PROTRONIC
130517	ProTronic 100, 3/8", 5 - 100 N·m
130518	ProTronic 100, 1/2", 5 - 100 N·m
130519	ProTronic 200, 1/2", 10 - 200 N·m
130520	ProTronic 340, 1/2", 17 - 340 N·m



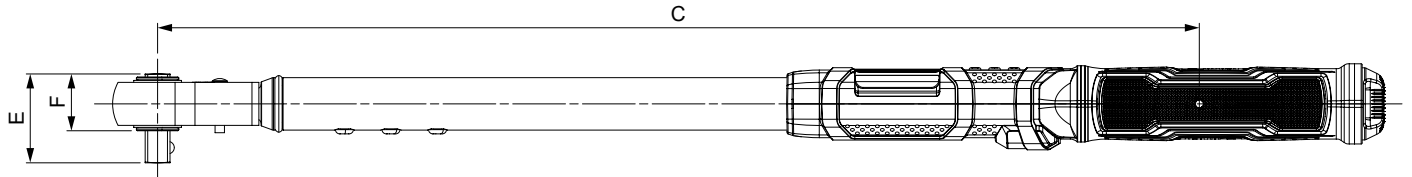
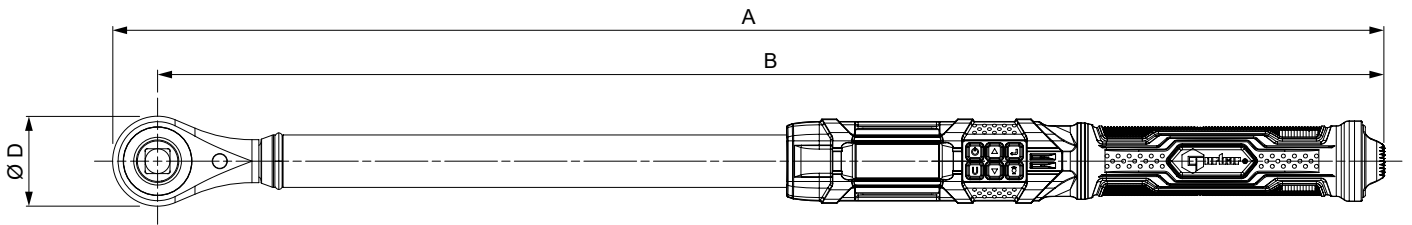
Dual progressive LEDs positioned both sides of the wrench provide an easy visual representation of torque progress



PROTRONIC® ELECTRONIC TORQUE WRENCHES



Model	ProTronic 100 ½"	ProTronic 100 ½"	ProTronic 200 ½"	ProTronic 340 ½"	
Part Number	130517	130518	130519	130520	
Dimensions (mm)	A	458	462	650	749
	B	439	439	627	723
	C	344	344	533	629
	ØD	38	46	46	52
	E	34	45	45	45
	F	21	29	29	29
Weight (kg)	1.15	1.30	1.65	1.85	



- Accuracy of $\pm 2\%$ when operating between 20% to 100% of tool capacity.
- Angle accuracy of $\pm 1\%$ of reading, $\pm 1^\circ$ @ Angular Velocity $> 10^\circ/\text{Sec} < 180^\circ/\text{Sec}$, $\pm 1^\circ$ for test fixture



PROTRONIC® PLUS ELECTRONIC TORQUE WRENCHES

Calibration details



New



ProTronic® Plus ratchets are detachable on models 100, 200 and 340 allowing for easy customisation from Norbar's huge range of fittings

The ProTronic® Plus retains all the features available in the ProTronic® standard versions and then adds more. Equipped with Bluetooth®, the ProTronic® Plus works alongside a specially created app that allows uploading of wrench configurations and logging of streamed torque and angle readings.

- Patent pending Torque AND angle combo modes allow the user to monitor torque and angle simultaneously
- Works alongside newly developed TorqApp™ designed for live streaming of readings as they are taken
- Dual progressive LEDs have additional settings allowing customisation to user preference
- Up to 50 pre-sets can be programmed into the tool. Preset lock feature allows the tool to be set-up with only these pre-sets available to the operator
- Sequence programming and job modes allows the user to chain together pre-sets in a particular sequence
- UKAS accredited torque calibration in both clockwise and counter-clockwise direction

4	PROTRONIC PLUS
130512	ProTronic Plus 100, 3/8", 5 - 100 N·m
130513	ProTronic Plus 100, 1/2", 5 - 100 N·m
130514	ProTronic Plus 200, 1/2", 10 - 200 N·m
130515	ProTronic Plus 340, 1/2", 17 - 340 N·m
130516	ProTronic Plus 800, 3/4", 40 - 800 N·m



ProTronic® Plus 100 shown with an open end fitting attached (not included)



Dual progressive LEDs positioned both sides of the wrench provide an easy visual representation of torque progress



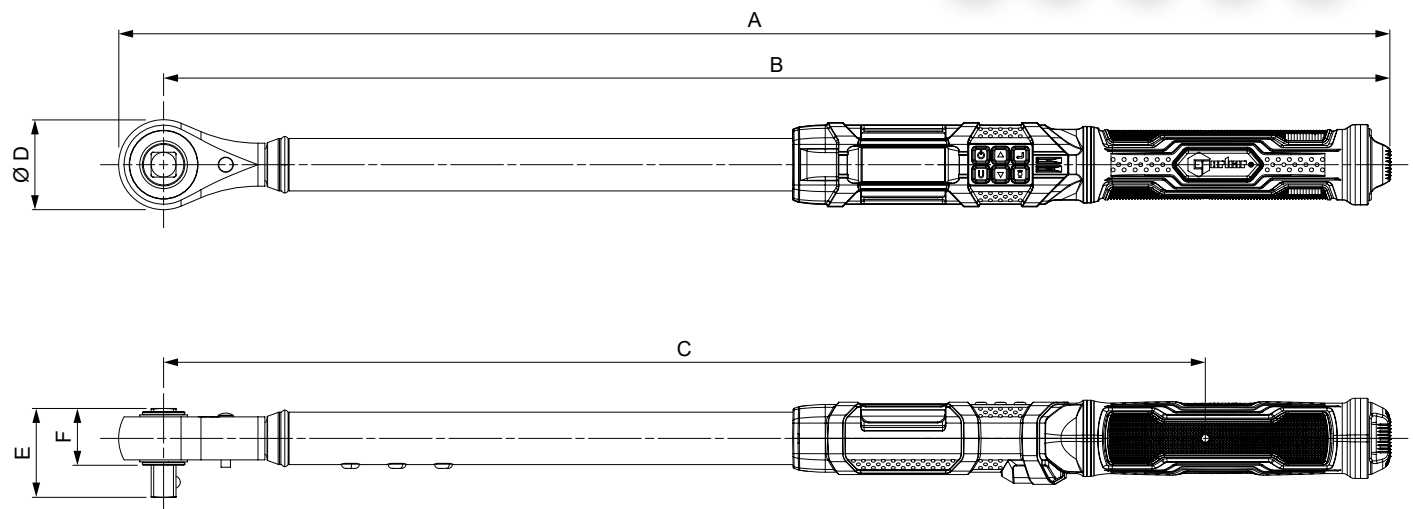
PROTRONIC® PLUS ELECTRONIC TORQUE WRENCHES



Large backlit LCD display



Model	ProTronic Plus 100 3/4"	ProTronic Plus 100 1/2"	ProTronic Plus 200 1/2"	ProTronic Plus 340 1/2"	ProTronic Plus 800 3/4"	
Part Number	130512	130513	130514	130515	130516	
Dimensions (mm)	A	458	462	650	749	1,264
	B	439	439	627	723	1,233
	C	344	344	533	629	1,138
	ØD	38	46	46	52	63
	E	34	45	45	45	55
	F	21	29	29	29	32
Weight (kg)	1.15	1.30	1.65	1.85	4.95	



- Accuracy of $\pm 2\%$ when operating between 20% to 100% of tool capacity.
- Accuracy of $\pm 4\%$ when operating between 5% to 19% of tool capacity, except for ProTronic® Plus 9, 10 and 30 where the counter clockwise accuracy between 5% to 19% will be 6%.
- Angle accuracy of $\pm 1\%$ of reading, $\pm 1^\circ$ @ Angular Velocity $> 10^\circ/\text{Sec} < 180^\circ/\text{Sec}$, $\pm 1^\circ$ for test fixture



PROTRONIC® PLUS ELECTRONIC TORQUE SCREWDRIVER

Calibration details



New

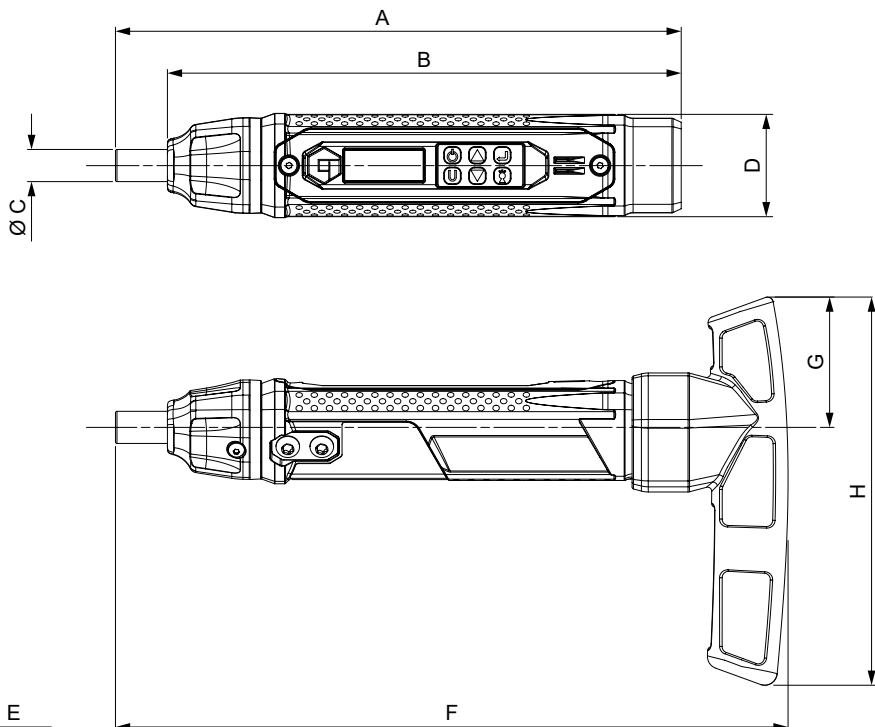


The ProTronic® Plus Screwdriver retains all the features of the ProTronic® standard and Plus Wrench in a smaller package with flush fitted buttons to avoid accidental activation during use.

4	PROTRONIC PLUS
130524	ProTronic Plus 9, 1/4" Female Hex, 0.45 - 9 N·m



ProTronic® Plus 9 comes supplied with L shaped handle for easier torque application



Model	ProTronic Plus 9 1/4"	
Part Number	130524	
Dimensions (mm)	A	190
	B	173
	C	11
	D	35
	E	30
	F	226
	G	44
	H	131
Weight (kg) without Handle	0.21	
Weight (kg) with handle	0.33	



PROTRONIC® PLUS MODEL 10 AND MODEL 30

Calibration details

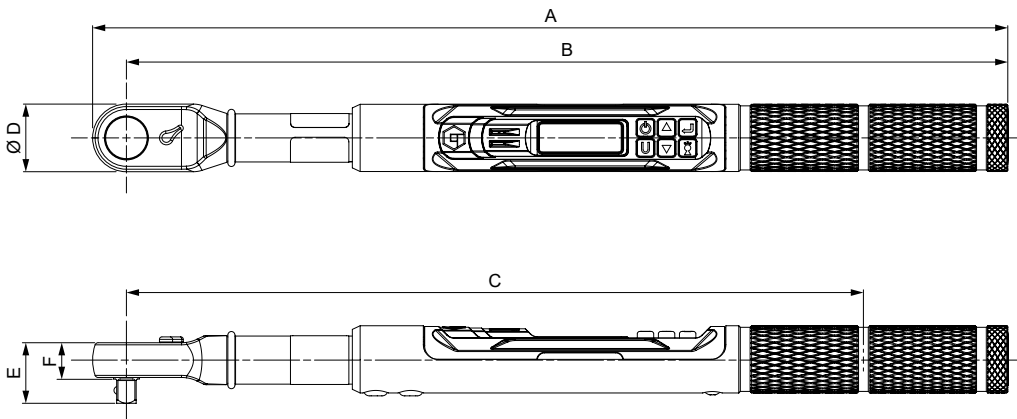


New



The ProTronic® Plus Model 10 and Model 30 retain all the features of the ProTronic® standard and Plus Wrench in a more compact design allowing for lower torque and access to more space limited applications.

4	PROTRONIC PLUS
130522	ProTronic Plus 10, ¼", 0.5 - 10 N·m
130523	ProTronic Plus 30, ¼", 1.5 - 30 N·m



Model	ProTronic Plus 10 ¼"	ProTronic Plus 30 ¼"
Part Number	130522	130523
Dimensions (mm)	A	282
	B	271
	C	234
	ØD	22
	E	20
	F	12
Weight (kg)	0.39	0.42



PROTRONIC® PLUS TORQAPP™

New Android App

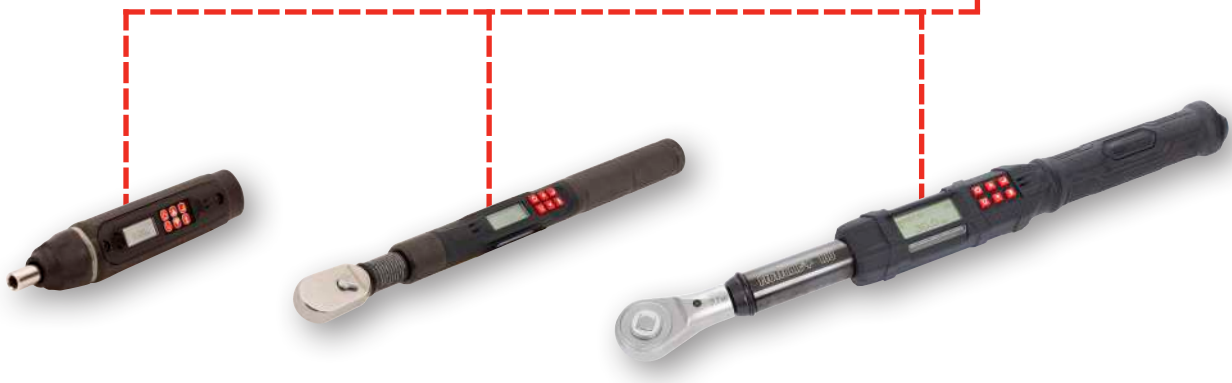


TorqApp™ is a free, mobile application that connects to ProTronic® Plus, allowing the user to intuitively change tool settings and download results. Currently available on Android devices with iOS to follow.

- Intuitively change tool settings with ease directly from your Android device
- Instantly receive individually-completed results, with the ability to email these in .csv format quickly
- Monitor application data and progress in real time aiding the operator in keeping a track of bolting progress, particularly useful for sequenced/linked jobs
- Revisiting failed results when in sequence is easy
- Easily view, download or upload application and tool information for past results helping to keep a comprehensive record for traceability purposes

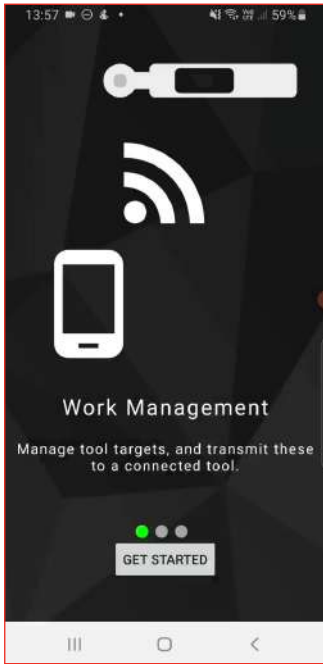


TorqApp™ can connect to any of these products 1 at a time

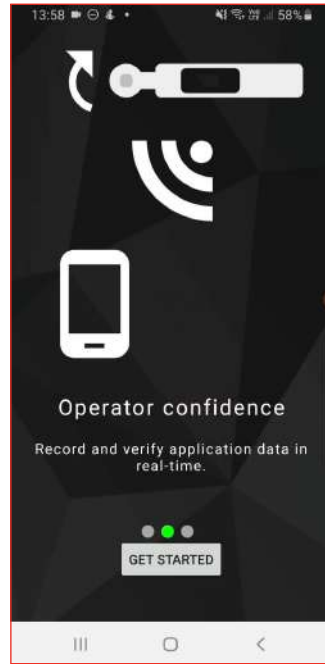




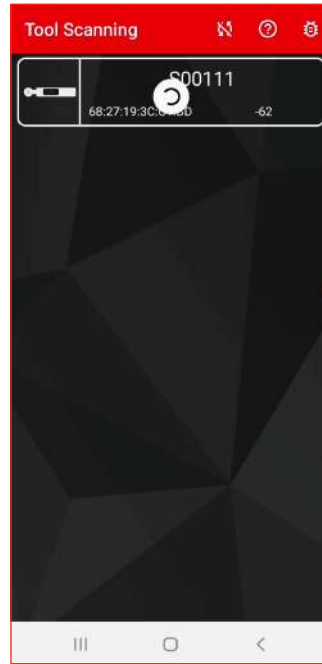
PROTRONIC® PLUS TORQAPP™



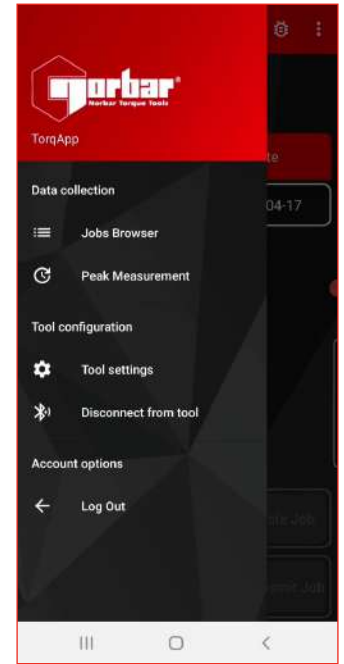
TorqApp™ allows the operator to easily manage tool targets and transmit to a connected tool



TorqApp™ records and verify's application data in real-time



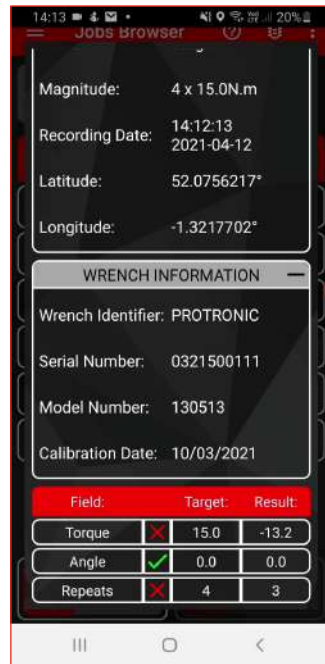
Quickly connecting and disconnecting tools is straightforward and intuitive



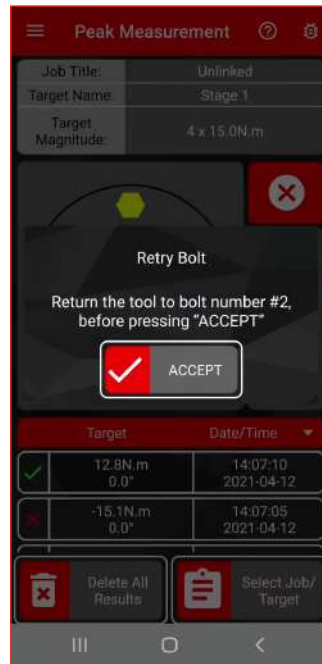
TorqApp™ main menu



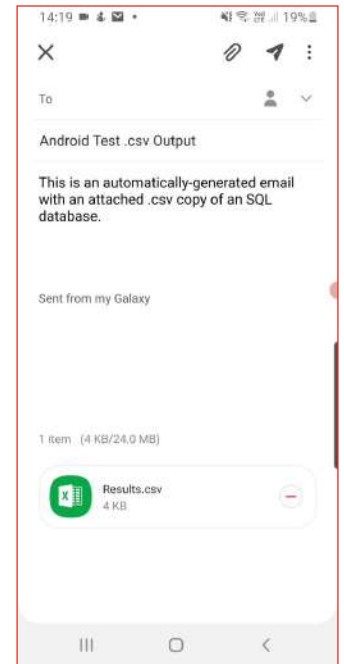
Sequence programming and job modes easily set up in the app allows the user to chain together pre-sets in a particular sequence



Application and tool information provides a comprehensive record for traceability purposes



Easily revisit bolting applications that failed at the end of sequences



The ability to email results in csv format



NORTRONIC® ELECTRONIC TORQUE WRENCHES



The NorTronic®, Norbar's electronic torque wrench, sets the benchmark with its unique Torque Data System (TDS) software and combination of accuracy, wireless capability and angle measurement, in a versatile, robust and easy to use package.

- Accurate and traceable torque and angle control
- Two full colour OLED displays positioned at 90° to each other for visual indication both horizontally and vertically
- 3 models covering 5 - 330 N·m
- Extension bars can be made available to increase the operating range of the tool up to 860 N·m, contact Norbar for more information.
- IP44 protection against dust and water ingress
- One piece aluminium handle
- Extruded aluminium case
- Torque & Angle readings can be sent to TDS via the USB lead. For a 868 MHz or 915 MHz wireless connection, a wireless adaptor is required for your PC. Each wireless adaptor can handle up to 8 wrenches. NorTronic® Bluetooth® versions must be connected to TDS via USB lead
- Bluetooth® interface versions with plaintext protocol for easy integration into user environments; set targets, get results, and stream live torque and angle data using your own software and equipment on phones, computers and tablets
- Ability to interface to ProSuite® process control software
- Calibration date of tool can be displayed via TDS or third party software
- ASCII mode allows for interfacing the tool to third party software
- When used with a HandTorque® gearbox the NorTronic® can directly display, save and send the output Torque of the HandTorque®
- Ability to set a Torque, Angle and Final Torque Target
- Ability to produce and save Torque & Angle graphs (in real time) from a USB connected tool
- Ability to have up to 15 linked or non-linked targets on the tool at any one time
- Angle calibration in accordance with VDI/VDE 2648
- UKAS accredited torque calibration in both clockwise and counter-clockwise direction



NorTronic® DLL (Dynamic Link Library) plugin enables NorTronic® 868 MHz and 915 MHz version tools to be interfaced to a customer's existing production line control software. DLL is not compatible with Bluetooth® versions.

Contact Norbar for more details.



NORTRONIC® ELECTRONIC TORQUE WRENCHES

Calibration details



4 NORTRONIC 868 MHZ

43500	NorTronic 50, 3/8", 868 MHz, 5 - 50 N·m
43501	NorTronic 50, 1/2", 868 MHz, 5 - 50 N·m
43502	NorTronic 200, 1/2", 868 MHz, 20 - 200 N·m
43503	NorTronic 330, 1/2", 868 MHz, 33 - 330 N·m
43508	USB Wireless Adaptor, 868 MHz

For UK, Europe, Singapore and India



4 NORTRONIC 915 MHZ

43504	NorTronic 50, 3/8", 915 MHz, 5 - 50 N·m
43505	NorTronic 50, 1/2", 915 MHz, 5 - 50 N·m
43506	NorTronic 200, 1/2", 915 MHz, 20 - 200 N·m
43507	NorTronic 330, 1/2", 915 MHz, 33 - 330 N·m
43509	USB Wireless Adaptor, 915 MHz

For USA, Canada, Australia and New Zealand



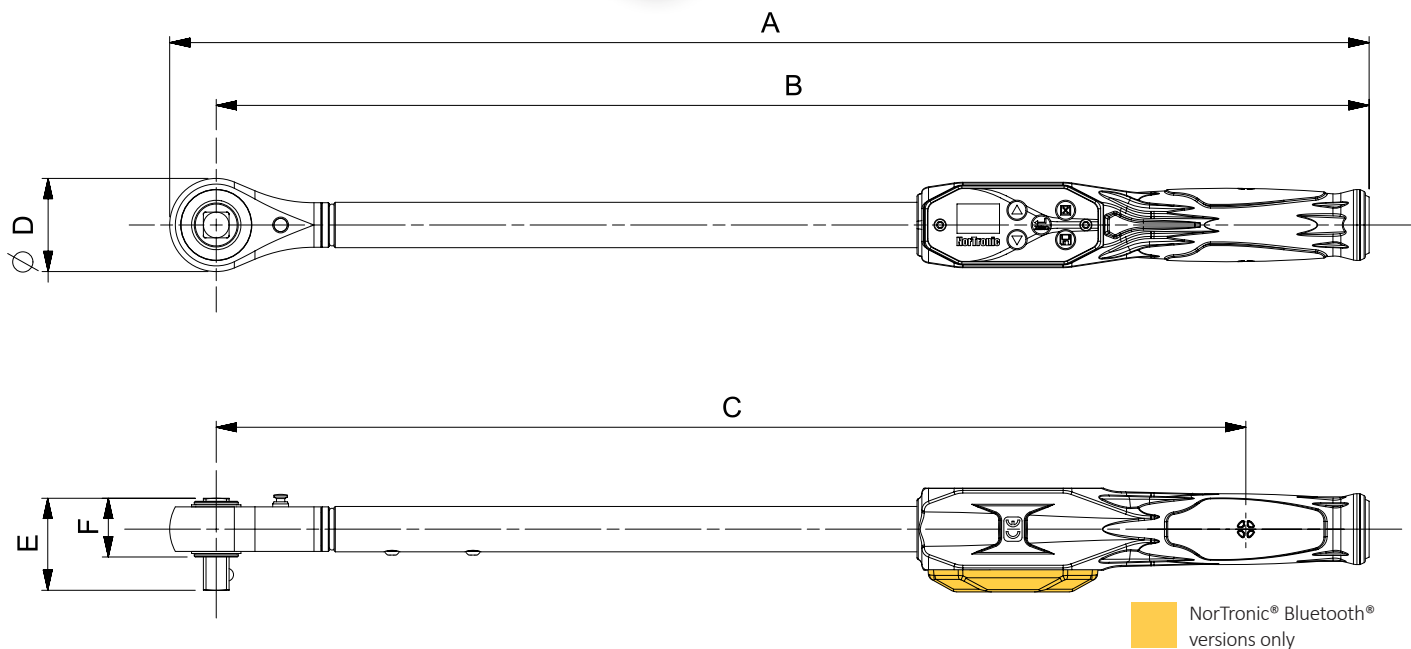
4 NORTRONIC BLUETOOTH®

43534	NorTronic 50, 3/8", Bluetooth®, 5 - 50 N·m
43535	NorTronic 50, 1/2", Bluetooth®, 5 - 50 N·m
43536	NorTronic 200, 1/2", Bluetooth®, 20 - 200 N·m
43537	NorTronic 330, 1/2", Bluetooth®, 33 - 330 N·m
43513	USB Wireless Adaptor, Bluetooth®



43536 NorTronic® 200 Bluetooth® version

Model	NorTronic 50 3/8"	NorTronic 50 1/2"	NorTronic 200 1/2"	NorTronic 330 1/2"
Part Number	43500 43504 43534	43501 43505 43535	43502 43506 43536	43503 43507 43537
Dimensions (mm)	A	468	472	592
	B	449	449	569
	C	388	388	508
	ØD	38	46	46
	E	34	45	45
	F	21	29	29
Weight (kg)	1.2	1.2	1.5	1.9





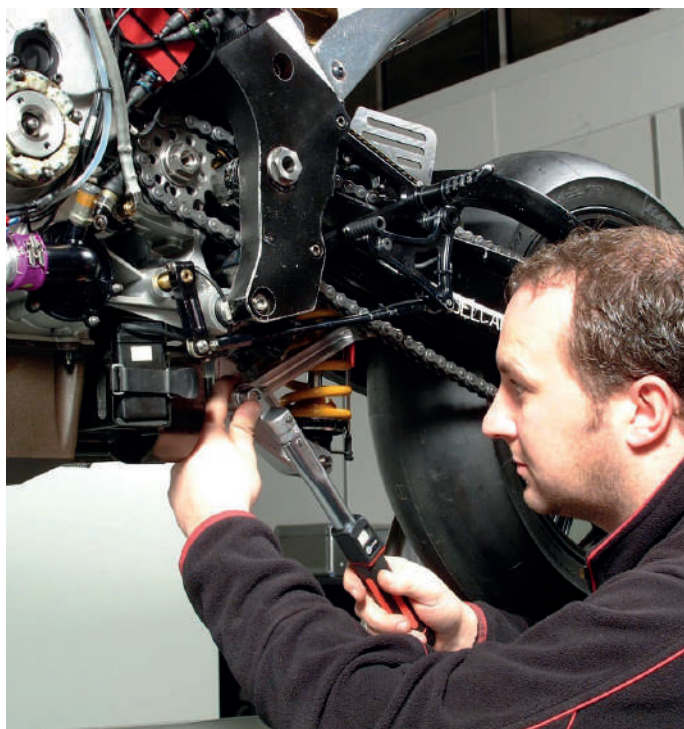
SPANNER END FITTINGS FOR 16 mm TORQUE HANDLES

See below for explanation of part numbers. Other sizes available on request – including bespoke ETO solutions.



2	OPEN ENDS METRIC	2	OPEN ENDS IMPERIAL
29841	7 mm, 9 N·m*	29701	¼", 7 N·m*
29842	8 mm, 13 N·m*	29702	⅜", 13 N·m*
29843	9 mm, 19 N·m*	29703	½", 21 N·m*
29844	10 mm, 25 N·m*	29704	⅞", 32 N·m*
29845	11 mm, 32 N·m*	29705	1", 48 N·m*
29846	12 mm, 41 N·m*	29706	⅞", 67 N·m*
29847	13 mm, 51 N·m*	29707	⅞", 90 N·m*
29848	14 mm, 63 N·m*	29708	1 ¼", 118 N·m*
29849	15 mm, 77 N·m*	29709	¾", 150 N·m*
29850	16 mm, 92 N·m*	29710	1 ⅜", 187 N·m*
29851	17 mm, 107 N·m*	29711	⅞", 230 N·m*
29876	18 mm, 128 N·m*	29712	1 ⅝", 281 N·m*
29877	19 mm, 149 N·m*	29713	1", 330 N·m*
29852	20 mm, 172 N·m*	29714	1 ½", 330 N·m*
29853	21 mm, 198 N·m*	29715	1 ⅝", 330 N·m*
29854	22 mm, 225 N·m*	29716	1 ⅞", 330 N·m*
29855	23 mm, 255 N·m*	29717	1 ¾", 330 N·m*
29856	24 mm, 287 N·m*	29718	1 ⅞", 330 N·m*
29857	25 mm, 322 N·m*		
29858	26 mm, 330 N·m*		
29878	27 mm, 330 N·m*		
29860	29 mm, 330 N·m*		
29861	30 mm, 330 N·m*		
29863	32 mm, 330 N·m*		
297100	36 mm, 330 N·m*		

2	RING ENDS METRIC	2	RING ENDS IMPERIAL
29881	7 mm, 25 N·m*	29726	¼", 25 N·m*
29882	8 mm, 35 N·m*	29727	⅜", 35 N·m*
29883	9 mm, 45 N·m*	29728	½", 42 N·m*
29884	10 mm, 52 N·m*	29729	⅞", 73 N·m*
29885	11 mm, 73 N·m*	29730	1", 115 N·m*
29886	12 mm, 89 N·m*	29731	⅞", 170 N·m*
29887	13 mm, 107 N·m*	29732	⅞", 226 N·m*
29888	14 mm, 128 N·m*	29733	1 ¼", 260 N·m*
29889	15 mm, 150 N·m*	29734	¾", 305 N·m*
29890	16 mm, 175 N·m*	29735	1 ⅜", 330 N·m*
29891	17 mm, 201 N·m*	29736	⅞", 330 N·m*
29913	18 mm, 230 N·m*	29737	1 ⅝", 330 N·m*
29914	19 mm, 261 N·m*	29738	1", 330 N·m*
29892	20 mm, 294 N·m*	29739	1 ½", 330 N·m*
29893	21 mm, 330 N·m*		
29894	22 mm, 330 N·m*		
29895	23 mm, 330 N·m*		
29896	24 mm, 330 N·m*		
29915	27 mm, 330 N·m*		



2	FLARE ENDS METRIC
29921	7 mm, 7 N·m*
29922	8 mm, 6 N·m*
29923	9 mm, 5 N·m*
29924	10 mm, 26 N·m*
29926	12 mm, 13 N·m*
29927	13 mm, 34 N·m*
29928	14 mm, 24 N·m*
29929	15 mm, 18 N·m*
29930	16 mm, 66 N·m*
29931	17 mm, 56 N·m*
29953	18 mm, 45 N·m*
29954	19 mm, 80 N·m*
29932	20 mm, 60 N·m*
29933	21 mm, 43 N·m*
29934	22 mm, 172 N·m*
29935	23 mm, 153 N·m*
29936	24 mm, 118 N·m*
29955	27 mm, 76 N·m*

* Max torque values listed are proof torques quoted in BS 192:1982 & BS 3555:1988 (tested on hardened hexagon test stud).



SPANNER END FITTINGS FOR 22 mm TORQUE HANDLES

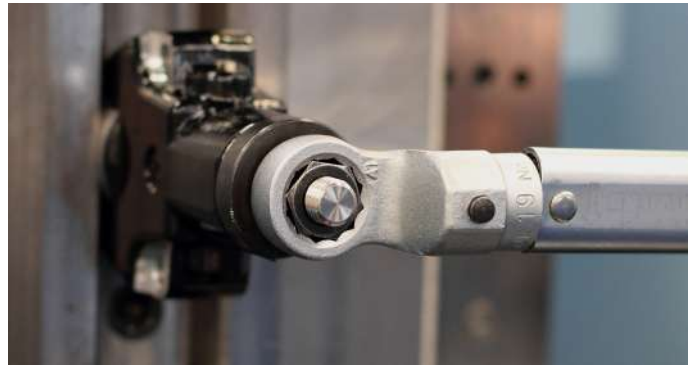
See below for explanation of part numbers. Other sizes available on request – including bespoke ETO solutions.



2	OPEN ENDS METRIC
29963.22	22 mm Open End, Max 225 N·m
29963.24	24 mm Open End, Max 287 N·m
29963.30	30 mm Open End, Max 536 N·m
29963.32	32 mm Open End, Max 550 N·m
29963.36	36 mm Open End, Max 550 N·m
29963.41	41 mm Open End, Max 550 N·m
29963.46	46 mm Open End, Max 550 N·m



2	RING ENDS METRIC
29960.22	22 mm Ring End, Max 367 N·m
29960.24	24 mm Ring End, Max 450 N·m
29960.27	27 mm Ring End, Max 550 N·m
29960.30	30 mm Ring End, Max 550 N·m
29960.32	32 mm Ring End, Max 550 N·m
29960.36	36 mm Ring End, Max 550 N·m
29960.41	41 mm Ring End, Max 550 N·m
29960.46	46 mm Ring End, Max 550 N·m



SPIGOT ACCESSORIES



2	16 mm SPIGOT ACCESSORIES
44509	3/8" Ratchet with Push-through square
29825	1/2" Ratchet with Push-through square
44510	1/2" Ratchet with Push-through square for NorTronic
29828	3/8" Fixed Square Drive
29827	1/2" Fixed Square Drive
29829	3/8" Reversible Ratchet Head
29830	1/2" Reversible Ratchet Head
29832	Blank End Fitting
85242	Blank End Fitting for Open End
11343	Blank End Fitting for Ring End
72000	Spigot Adaptor 16 mm female to 22 mm male



2	22 mm SPIGOT ACCESSORIES
29969	3/4" Square Drive Fixed Head
29972	3/4" Ratchet with Push-through square
85719	Blank End Fitting for Open End
85720	Blank End Fitting for Ring End





LARGE SPANNER END FITTINGS FOR 16 mm SPIGOT TORQUE HANDLES UP TO 300 N·m

See below for explanation of part numbers. Other sizes available on request – including bespoke ETO solutions.

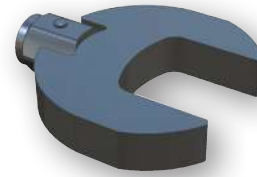


2 OPEN OFFSET
METRIC 16 mm

29218.OO.Mxx | 30 - 80 mm

2 OPEN OFFSET
IMPERIAL 16 mm

29218.OO.lxx | 1 3/16" - 3 1/4"



2 OPEN INLINE
METRIC 16 mm

29218.OI.Mxx | 30 - 80 mm

2 OPEN INLINE
IMPERIAL 16 mm

29218.OI.lxx | 1 3/16" - 3 1/4"

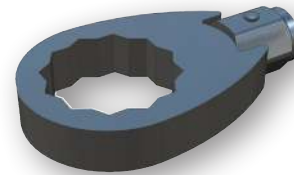


2 RING OFFSET
METRIC 16 mm

29218.RO.Mxx | 30 - 80 mm

2 RING OFFSET
IMPERIAL 16 mm

29218.RO.lxx | 1 3/16" - 3 1/4"



2 RING INLINE
METRIC 16 mm

29218.RI.Mxx | 30 - 80 mm

2 RING INLINE
IMPERIAL 16 mm

29218.RI.lxx | 1 3/16" - 3 1/4"

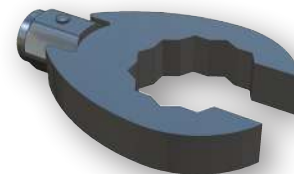


2 FLARE OFFSET
METRIC 16 mm

29218.FO.Mxx | 11 - 80 mm

2 FLARE OFFSET
IMPERIAL 16 mm

29218.FO.lxx | 1 3/16" - 3 1/4"

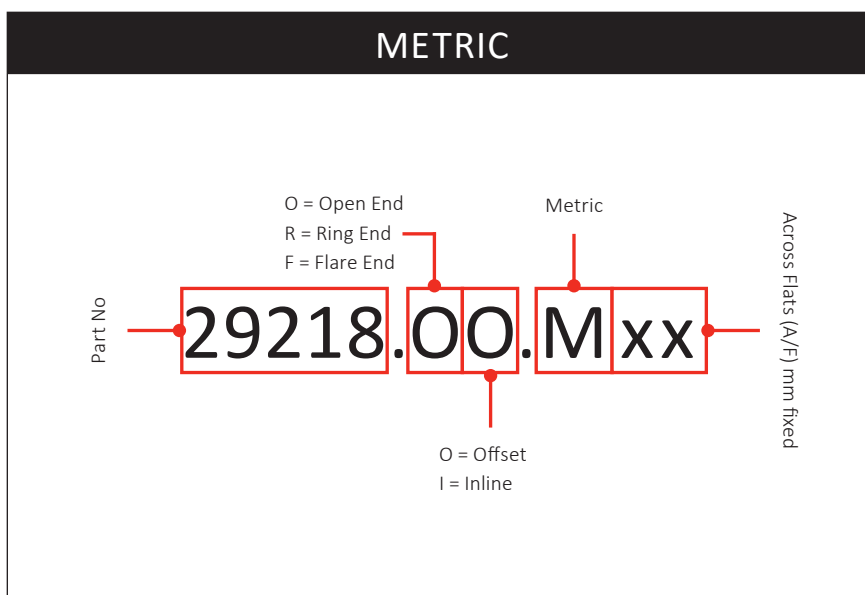


2 FLARE INLINE
METRIC 16 mm

29218.FI.Mxx | 30 - 80 mm

2 FLARE INLINE
IMPERIAL 16 mm

29218.FI.lxx | 1 3/16" - 3 1/4"



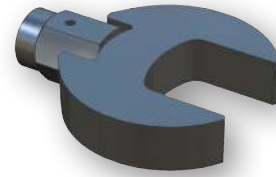


LARGE SPANNER END FITTINGS FOR 22 mm SPIGOT TORQUE HANDLES UP TO 650 N·m

See below for explanation of part numbers. Other sizes available on request – including bespoke ETO solutions.



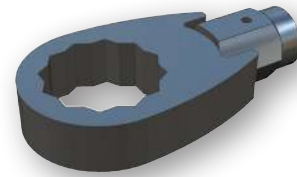
2	OPEN OFFSET METRIC 22 mm	2	OPEN OFFSET IMPERIAL 22 mm
29219.OO.Mxx	30 - 80 mm	29219.OO.lxx	1 3/16" - 3 1/4"



2	OPEN INLINE METRIC 22 mm	2	OPEN INLINE IMPERIAL 22 mm
29219.OI.Mxx	30 - 80 mm	29219.OI.lxx	1 3/16" - 3 1/4"



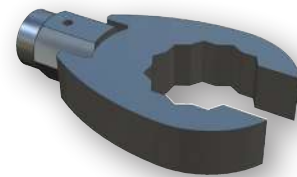
2	RING OFFSET METRIC 22 mm	2	RING OFFSET IMPERIAL 22 mm
29219.RO.Mxx	30 - 80 mm	29219.RO.lxx	1 3/16" - 3 1/4"



2	RING INLINE METRIC 22 mm	2	RING INLINE IMPERIAL 22 mm
29219.RI.Mxx	30 - 80 mm	29219.RI.lxx	1 3/16" - 3 1/4"

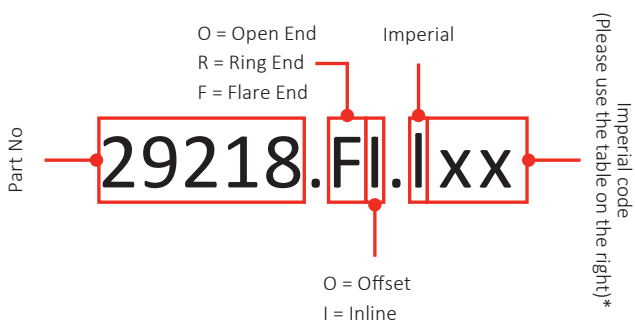


2	FLARE OFFSET METRIC 22 mm	2	FLARE OFFSET IMPERIAL 22 mm
29219.FO.Mxx	30 - 80 mm	29219.FO.lxx	1 3/16" - 3 1/4"



2	FLARE INLINE METRIC 22 mm	2	FLARE INLINE IMPERIAL 22 mm
29219.FI.Mxx	30 - 80 mm	29219.FI.lxx	1 3/16" - 3 1/4"

IMPERIAL



IMPERIAL A/F	CODE	IMPERIAL A/F	CODE	IMPERIAL A/F	CODE
1 3/16"	19	1 15/16"	31	2 11/16"	43
1 1/4"	20	2"	32	2 3/4"	44
1 5/16"	21	2 1/16"	33	2 13/16"	45
1 3/8"	22	2 1/8"	34	2 7/8"	46
1 7/16"	23	2 3/16"	35	2 15/16"	47
1 1/2"	24	2 1/4"	36	3"	48
1 9/16"	25	2 5/16"	37	3 1/16"	49
1 5/8"	26	2 3/8"	38	3 3/8"	50
1 11/16"	27	2 7/16"	39	3 3/16"	51
1 3/4"	28	2 1/2"	40	3 1/4"	52
1 13/16"	29	2 9/16"	41		
1 7/8"	30	2 5/8"	42		

*Example: 1 7/8" open inline for 22 mm Spigot = 29219.OI.I30



UKAS ACCREDITED CALIBRATION CERTIFICATION



Accredited Calibration Laboratory No. 0256

The hallmark of Norbar’s high standard of workmanship is clearly seen in the fact that we were the first torque equipment manufacturer to have an in-house UKAS accredited calibration laboratory. We have no intention of resting on our laurels and take pride that we still provide the most comprehensive service available, ensuring we evolve to continue to meet your needs.

Norbar’s laboratory has approval for torques between 0.005 and 108,500 N·m and operates to BS EN ISO/IEC 17025:2017, which sets standards for the technical competence of the laboratory. This should not be confused with laboratories claiming ISO 9001 which relates only to a laboratory’s quality management systems.

The part numbers shown below are for a comprehensive calibration, for all new torque screwdrivers and torque wrenches, including NorTronic®, up to the maximum capacity shown.

Please see page 141 for Norbar's After Sales Service.

12	ONE DIRECTION
TWCC4.CW	Up to 400 N·m / 300 lbf·ft
TWCC5.CW	Up to 1,000 N·m / 750 lbf·ft
TWCC6.CW	Up to 3,000 N·m / 2,200 lbf·ft

12	TWO DIRECTIONS
TWCC4.CW+CCW	Up to 400 N·m / 300 lbf·ft
TWCC5.CW+CCW	Up to 1,000 N·m / 750 lbf·ft
TWCC6.CW+CCW	Up to 3,000 N·m / 2,200 lbf·ft

