

Torque Screwdriver Models 1.5 N.m to 6 N.m (13 lbf.in to 53 lbf.in)

Norbar's new range of Torque Screwdrivers embodies the values of the TT series: accuracy, ease of use and comfort in use. With an accuracy that exceeds the requirement of ISO6789 ($\pm 6\%$ for tools up to 10 N.m). Furthermore, they are engineered to retain this accuracy over many thousands of tightened cycles.

- Supplied with a 1/4" hexagon bit holder designed using a 4mm hexagon stem.
- For maximum versatility and particularly for applications with limited access, the bit holder can be removed and replaced with widely available screwdriver blades.
- Easy torque adjustment without the need of additional specialist tools.
- All tools feature a lock to prevent accidental adjustment of the set torque.
- Accuracy exceeds the requirements of ISO6789.
- Traceable calibration certificate for the clockwise direction supplied with all adjustable tools. (not 'P' Types).
- Tool 'slips' when torque is achieved removing the possibility of 'over-tightening'.
- Comfortable, durable handle. The handle is constructed using two materials; a base material for strength overlaid with a soft feel grip for comfort and slip resistance.
- Also available in kit form supplied with a range of 12 screwdriver bits.



Adjustables - N.m

Model	Part No.	Range	Length	Weight
		N.m	mm	Kg
TTs1.5 N.m	13475	0.3 - 1.5	155	0.235
TTs3.0 N.m	13476	0.6 - 3	155	0.235
TTs6.0 N.m	13509	1.2 - 6	155	0.235



Torque Screwdriver Kit

Adjustables - lbf.in

Model	Part No.	Range	Length	Weight
		lbf.in	mm	Kg
TTs13 in.lb	13515	2.5 - 13	155	0.235
TTs26 in.lb	13516	5 - 26	155	0.235
TTs53 in.lb	13517	10 - 53	155	0.235



Bit holder can be removed and replaced with widely available screwdriver blades.

Production 'P' Type

Model	Part No.	Range		Length	Weight
		N.m	lbf.in	mm	Kg
TTs1.5	13510	0.3 - 1.5	2.5 - 13	155	0.235
TTs3.0	13511	0.6 - 3	5 - 26	155	0.235
TTs6.0	13512	1.2 - 6	10 - 53	155	0.235



TTi Wrench

Models 20 N.m and 50 N.m (180 lbf.in and 35 lbf.ft)

Durability has been a primary development goal – both in terms of the lifetime of components and longevity of calibration accuracy. Cycle testing of wrenches at full torque was a key element of the development process and, in total, several million tightening cycles were accumulated. The result is a product that you can use with complete confidence that you have the best tool for the job.

- Accuracy: $\pm 3\%$ of reading exceeds all international standards for torque wrenches. Each wrench is supplied with a traceable calibration certificate.
- Micrometer scale for simple and error free setting. (On dual scale wrenches, the micrometer increment applies to the N.m scale.)
- Quick and light adjustment: adjustment over the entire scale can be achieved with minimal effort in approximately ten complete turns (exact number varies by model).
- Adjustment lock: all models feature a lock to prevent accidental adjustment of the set torque.
- Comfortable, durable handle: the handle is constructed using two materials: a base material for strength overlaid with a soft feel grip for comfort and slip resistance. The handle material and lens resist chemicals in common usage in the automotive, aviation and industrial environments.
- Versatile ratchets: the tough ratchets are reversible and have a narrow engagement angle of 5° to allow easy positioning of the tool in the tight confines of today's vehicles and machines.
- Can also be supplied as Fixed Head (TTf) and Female ended Torque Handles (TTfth), for further details see page 15.



Norbar Non-Magnetic torque wrenches are designed primarily for the medical MRI scanner market. However, they will prove invaluable where ever a torque wrench has to be used in the presence of a strong magnetic field. There are currently four models:

- 1 - 20 N.m, 3/8" sq. dr. Part No. 13292
- 1 - 20 N.m, 1/2" sq. dr. Part No. 13585
- 8 - 50 N.m, 3/8" sq. dr. Part No. 13294
- 8 - 50 N.m, 1/2" sq. dr. Part No. 13295



Ratchet Adjustables - Dual Scale

Model	Square Drive	Part No.	Range		Resolution	Ratchet Diameter	Engagements per revolution	Length	Weight
	in		N.m	lbf.ft	N.m	mm		mm	Kg
TTi20	3/8"	13285	1 – 20	10 – 180*	0.05	30	72	230	0.4
TTi20	1/2"	13640	1 – 20	10 – 180*	0.05	30	72	230	0.4
TTi50	3/8"	13658	8 – 50	6 – 35	0.1	30	72	329	0.6
TTi50	1/2"	13659	8 – 50	6 – 35	0.1	30	72	329	0.6

* lbf.in N.m only and lbf.ft only versions are available, contact Norbar for details.

TTi Wrench

Models 60 N.m to 300 N.m (45 lbf.ft to 220 lbf.ft)

In engineering this range, Norbar has paid close attention to accuracy, ease of setting and comfort in use.

Durability has been a primary development goal – both in terms of the lifetime of components and longevity of calibration accuracy. Cycle testing of wrenches at full torque was a key element of the development process and, in total, several million tightening cycles were accumulated. The result is a product that you can use with complete confidence that you have the best tool for the job.

- Accuracy: $\pm 3\%$ of reading exceeds all international standards for torque wrenches. Each wrench is supplied with a traceable calibration certificate.
- Micrometer scale for simple and error free setting. (On dual scale wrenches, the micrometer increment applies to the N.m scale.)
- Quick and light adjustment: adjustment over the entire scale can be achieved with minimal effort in approximately ten complete turns (exact number varies by model).
- Adjustment lock: all models feature a lock to prevent accidental adjustment of the set torque.
- Versatile ratchets: the tough ratchets have a narrow engagement angle of between 5° and 7.5° across the range, allowing easy positioning of the tool in the tight confines of today's vehicles and machines.
- Bi-directional torque: the ratchets are 'push through' meaning that these wrenches will provide torque control in both the clockwise and anticlockwise directions.
- Comfortable, durable handle: the handle is constructed using two materials: a base material for strength overlaid with a soft feel grip for comfort and slip resistance. The handle material and lens resist chemicals in common usage in the automotive, aviation and industrial environments.



Adjustment is achieved by rotating the end knob. The centre ring provides the lock feature.



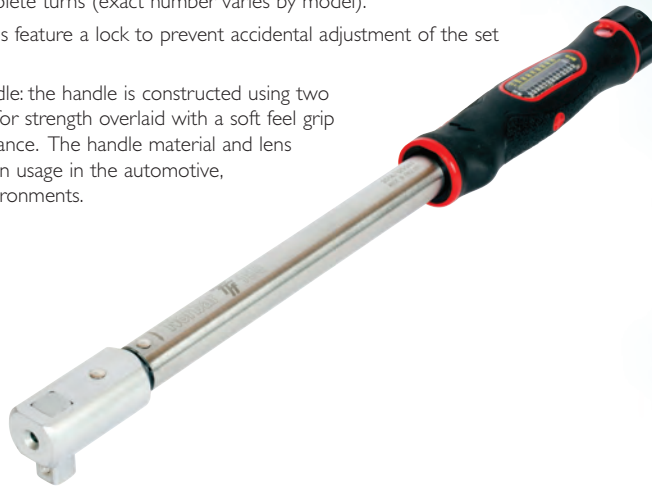
Ratchet Adjustables - Dual Scale

Model	Square Drive	Part No.	Range		Resolution	Ratchet Diameter	Engagements per revolution	Length	Weight
	in		N.m	lbf.ft	N.m	mm		mm	Kg
TTi60	$\frac{3}{8}$	13679	12 – 60	10 – 45	0.25	38	48	348	0.9
TTi60	$\frac{1}{2}$	13680	12 – 60	10 – 45	0.25	38	48	348	0.9
TTi100	$\frac{3}{8}$	13440	20 – 100	15 – 75	0.5	38	48	405	1.0
TTi100	$\frac{1}{2}$	13441	20 – 100	15 – 75	0.5	38	48	405	1.0
TTi150	$\frac{1}{2}$	13442	30 – 150	20 – 110	0.5	38	48	455	1.1
TTi200	$\frac{1}{2}$	13443	40 – 200	30 – 150	1.0	46	48	505	1.2
TTi250	$\frac{1}{2}$	13444	50 – 250	40 – 185	1.0	46	60	560	1.4
TTi300	$\frac{1}{2}$	13445	60 – 300	45 – 220	1.0	46	60	610	1.6

N.m only and lbf.ft only versions are available, contact Norbar for details.

TTf and TTfth Wrenches

- Accuracy: $\pm 3\%$ of reading exceeds all international standards for torque wrenches. Each wrench is supplied with a traceable calibration certificate.
- Micrometer scale for simple and error free setting. (On dual scale wrenches, the micrometer increment applies to the N.m scale.)
- Quick and light adjustment: adjustment over the entire scale can be achieved with minimal effort in approximately ten complete turns (exact number varies by model).
- Adjustment lock: all models feature a lock to prevent accidental adjustment of the set torque.
- Comfortable, durable handle: the handle is constructed using two materials: a base material for strength overlaid with a soft feel grip for comfort and slip resistance. The handle material and lens resist chemicals in common usage in the automotive, aviation and industrial environments.



Fixed Head Adjustables - Dual Scale

Model	Square Drive	Part No.	Range		Resolution	Length	Weight
	in		N.m	lbf.ft	N.m	mm	Kg
TTf20	$\frac{3}{8}$	13550	1 - 20	10 - 180*	0.05	224	0.4
TTf60	$\frac{3}{8}$	13685	12 - 60	10 - 45	0.25	337	0.8
TTf100	$\frac{3}{8}$	13552	20 - 100	15 - 75	0.5	388	1
TTf100	$\frac{1}{2}$	13553	20 - 100	15 - 75	0.5	388	1
TTf150	$\frac{1}{2}$	13554	30 - 150	20 - 110	0.5	440	1
TTf200	$\frac{1}{2}$	13555	40 - 200	30 - 150	1.0	490	1.1
TTf250	$\frac{1}{2}$	13556	50 - 250	40 - 185	1.0	540	1.2
TTf300	$\frac{1}{2}$	13557	60 - 300	45 - 220	1.0	590	1.4

*lbf.in N.m only and lbf.ft only versions are available, contact Norbar for details.



Fixed Head (TTf)

Female Ended Adjustables - Dual Scale

Model	End Fitting	Part No.	Range		Resolution	Length	Weight
	mm		N.m	lbf.ft	N.m	mm	Kg
TTfth20	9 x 12	13600	1 - 20	10 - 180*	0.05	214	0.4
TTfth50	9 x 12	13666	10 - 50	8 - 35	0.1	310	0.6
TTfth60	9 x 12	13667	12 - 60	10 - 45	0.25	322	1
TTfth100	9 x 12	13603	20 - 100	15 - 75	0.5	386	1
TTfth150	9 x 12	13604	30 - 150	20 - 110	0.5	440	1
TTfth200	9 x 12	13605	40 - 200	30 - 150	1.0	490	1.1
TTfth200	14 x 18	13606	40 - 200	30 - 150	1.0	490	1.1
TTfth250	14 x 18	13607	50 - 250	40 - 185	1.0	540	1.2
TTfth300	14 x 18	13608	60 - 300	45 - 220	1.0	590	1.4

*lbf.in N.m only and lbf.ft only versions are available, contact Norbar for details.



Female Torque Handle (TTfth)

Professional Torque Wrench Model 5

The Model 5 is a torque wrench that offers high accuracy and the convenience of interchangeable 1/4 in. hexagon bits. (ISO 1173:1988 Form C drive bits).

- Accuracy of $\pm 3\%$ of reading exceeds all torque wrench standards.
- Traceable calibration certificate supplied, to satisfy ISO9000:2000 quality systems.
- 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 and optional stepless ratchet.



Production 'P' Types

The 'P' type version prevents unauthorised alteration of torque setting. No external calibration equipment is required to set the Model 5 'P' Type.

Coloured end seals are provided to identify the wrench to a particular operator, torque setting or calibration period.



Model 5 'P' Type



Adjustable Torque Wrenches

Model	Units	Square Drive	Part No.	Range	Length	Weight
		in			mm	kg
5	N.m	1/4	13001	1-5 N.m	170	0.12
5	lbf.in	1/4	13002	10-50 lbf.in	170	0.12
5	kgf.cm	1/4	13003	10-50 kgf.cm	170	0.12



Optional stepless ratchet. (Part No. 13122)

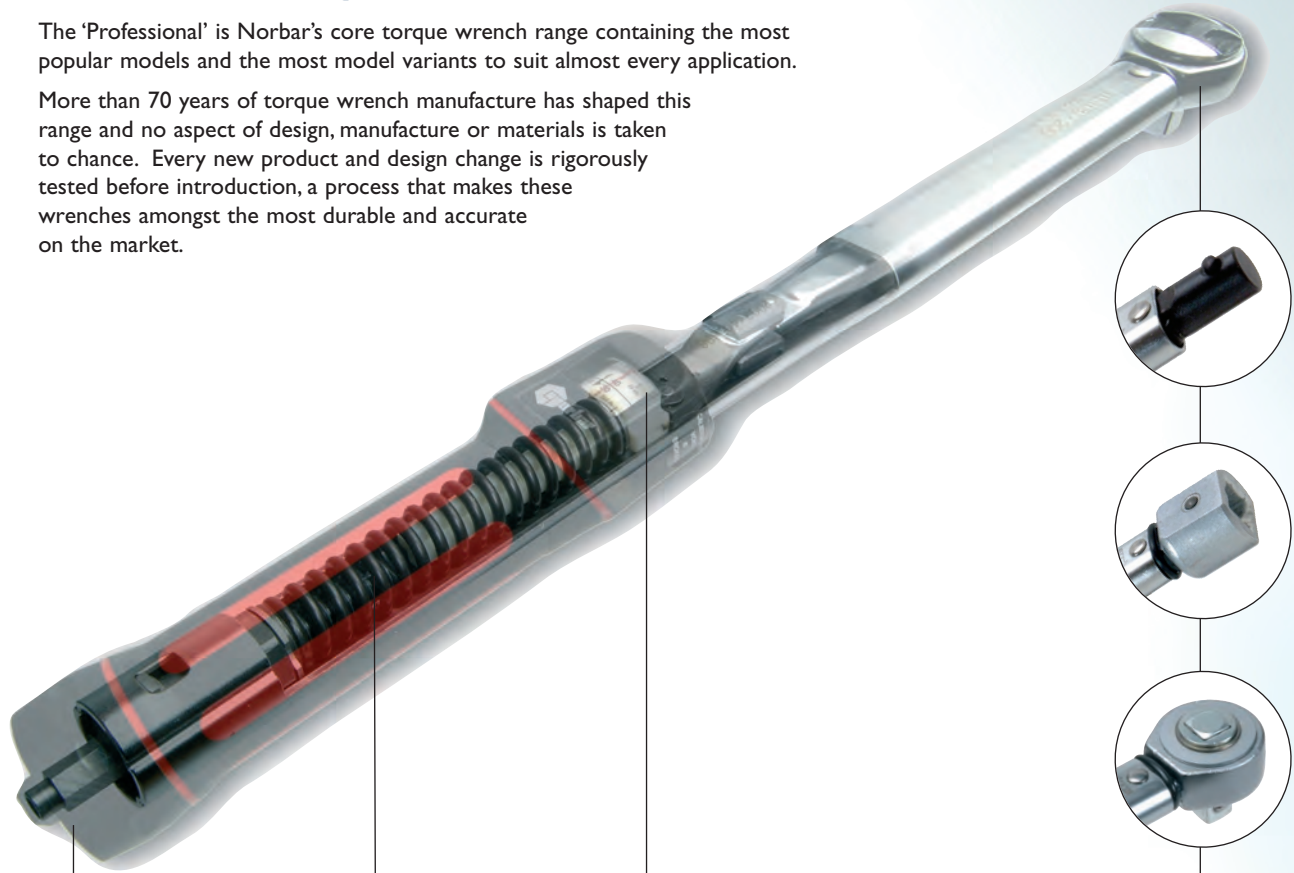
'P' Type Torque Wrenches

Model	Units	Square Drive	Part No.	Range	Length	Weight
		in			mm	kg
5 'P'	N.m	1/4	13004	1-5 N.m	154	0.12
5 'P'	lbf.in	1/4	13005	10-50 lbf.in	154	0.12
5 'P'	kgf.cm	1/4	13006	10-50 kgf.cm	154	0.12

Professional Torque Wrench

The 'Professional' is Norbar's core torque wrench range containing the most popular models and the most model variants to suit almost every application.

More than 70 years of torque wrench manufacture has shaped this range and no aspect of design, manufacture or materials is taken to chance. Every new product and design change is rigorously tested before introduction, a process that makes these wrenches amongst the most durable and accurate on the market.



Adjustment Lock

A robust lock prevents accidental adjustment of the wrench during use. Fingertip light adjustment comes from the best design and materials.

Torque Mechanism

Norbar's accurate mechanism has been developed and enhanced over a 50 year period and several million examples have been produced. Less parts to maintain than 'pivot block' mechanisms. Simple calibration adjustments without disassembly.

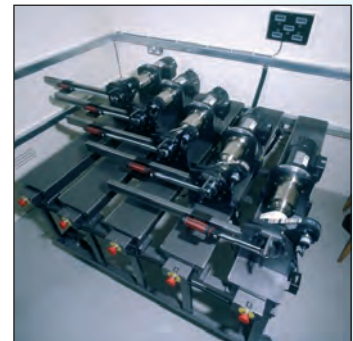
Torque Scale

Unique 'harmonic drive' scale mechanism allows a long scale length and therefore accurate and error free setting.

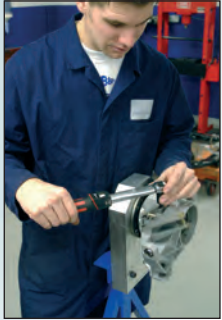


Ratchets

The Professional torque wrench is available with a choice of ratchets and as a 'Torque Handle' for interchangeable fittings.



Norbar 5 station tester is used for durability and benchmark testing.



Professional Torque Wrench 'Automotive' Ratchet Models

The Professional torque wrench offers an ideal combination of accuracy, robust construction, comfort and ease of use.

The reversible ratchets on these models are designed with compact dimensions and a narrow engagement angle resulting from the 72 tooth pattern. These features make the wrench ideal for use in the confined spaces of modern motor vehicles and many other applications. Reversible ratchet models give torque control in anti-clockwise direction only.

- Accuracy of $\pm 3\%$ of reading exceeds all international standards for torque wrenches.
- Every wrench is supplied with a calibration certificate to satisfy the requirements of ISO 9000:2000.
- Soft feel handle provides excellent grip even in oily conditions.
- Handle material and lens resist all chemicals in common automotive, industrial and aviation use.
- Locking mechanism prevents accidental adjustment of the wrench during operation.
- Long scale graduated in N.m and lbf.ft allows for foolproof and accurate setting.
- Supplied in moulded box for storage and protection.



Ratchet Adjustables - Automotive Ratchet

Model	Square Drive	Part No.	Range		Ratchet Diameter	Engagements per revolution	Length	Weight
	in		N.m	lbf.ft	mm		mm	Kg
60	$\frac{3}{8}$	13010	8 – 60	5 – 45	31	72	307	0.6
60	$\frac{1}{2}$	13011	8 – 60	5 – 45	31	72	307	0.6
100	$\frac{3}{8}$	13012	20 – 100	15 – 80	31	72	347	0.7
100	$\frac{1}{2}$	13013	20 – 100	15 – 80	31	72	347	0.7
200	$\frac{1}{2}$	13014	40 – 200	30 – 150	41	72	443	1.0

Professional Torque Wrench 'Industrial' Ratchet Models

These wrenches offer the same outstanding features as those on the previous page but with a wider model range – up to 400 N.m – and a different ratchet concept.

The push-through ratchets on these models are robustly engineered for strength and durability. The strength and high wear resistance comes from the design of the tooth pattern while a principle of offset ratchet pawls gives a narrow engagement angle of 5° on wrenches up to and including Model 200 and 6° on Models 300 to 400.

The push through square drive is not only a robust design but allows the wrench to be used for torque control in both the clockwise and anti-clockwise directions. Please note that the 3/4" square drive of the Model 400 has to be removed and re-inserted on the other side of the ratchet head rather than pushed through.



Ratchet Adjustables - Industrial Ratchet N.m/lbf.ft Models

Model	Square Drive	Part No.	Range		Ratchet Diameter	Length	Weight
	in		N.m	lbf.ft	mm	mm	Kg
60	3/8	13042	8 – 60	5 – 45	35	312	0.66
60	1/2	13043	8 – 60	5 – 45	40	320	0.74
100	3/8	13044	20 – 100	15 – 80	35	353	0.73
100	1/2	13045	20 – 100	15 – 80	40	359	0.80
200	1/2	13046	40 – 200	30 – 150	42	442	1.01
300	1/2	13047	60 – 300	45 – 220	49	570	1.38
330	1/2	13049	60 – 330	45 – 250	49	683	1.50
400	3/4	13050	80 – 400	60 – 300	49	683	2.09

lbf.in Models

Model	Range
	lbf.in
13075	70 - 530
13076	70 - 530
13077	100 - 800
13078	100 - 800
13079	400 - 1800
13080	500 - 2500
13082	500 - 3000
13083	700 - 3500

All other features as table to the left.



Adjustable - 16mm Spigot

Model	Part No.	Range		Length	Weight
		N.m	lbf.ft	mm	Kg
60TH	13018	8 – 60	5 – 45	301	0.55
100TH	13019	20 – 100	15 – 80	340	0.6
200TH	13020	40 – 200	30 – 150	423	0.78
300TH	13021	60 – 300	45 – 220	548	1.13



Professional Torque Wrench Torque Handles

Norbar Torque Handles are based on the 'Professional' wrench range and share the same high precision engineering.

Two end fitting styles are catered for: 16mm diameter spigot type and the 9 x 12mm and 14 x 18mm rectangular type.

For many applications a spanner end fitting rather than a socket is the best or, often, the only solution. Typically this will be because the joint is a pipe union (such as a brake pipe).

Female Ended Adjustable - 9 x 12mm and 14 x 18mm

Model	Part No.		Range		Length	Weight
	9x12	14x18	N.m	lbf.ft	mm	Kg
60TH	13022	-	8 – 60	5 – 45	300	0.55
100TH	13023	-	20 – 100	15 – 80	340	0.6
200TH	13024	13025	40 – 200	30 – 150	421/431	0.78
300TH	-	13026	60 – 300	45 – 220	546.5	1.13
330TH	-	13027	60 – 330	45 – 250	658	1.37
400TH	-	13028	80 – 400	60 – 300	658	1.78

Production 'P' Type - 16mm Spigot

Model	Part No.	Range		Length	Weight
		N.m	lbf.ft	mm	Kg
60THP	11167	8 – 60	5 – 45	280	0.55
100THP	11143	20 – 100	15 – 80	320	0.6
200THP	11144	40 – 200	30 – 150	402	0.78
300THP	11117	60 – 300	45 – 220	640	1.13

Female Ended Production 'P' Type - 9 x 12mm & 14 x 18mm

Model	Part No.		Range		Length	Weight
	9x12	14x18	N.m	lbf.ft	mm	Kg
60THP	11170	-	8 – 60	5 – 45	280	0.55
100THP	11150	-	20 – 100	15 – 80	319	0.6
200THP	11151	11152	40 – 200	30 – 150	400/410	0.78
300THP	-	11153	60 – 300	45 – 220	528	1.13
400THP	-	13068	80 – 400	60 – 300	640	1.75

Available Fittings

See pages 28 & 29





End Cap Kit and Locking Tool
Part No. 11698



'P' Type wrenches have no scale. They must be set against a torque testing device such as Norbar's Professional Torque Tester (see page 68).



Professional Torque Wrench Production 'P' Types

'P' Type wrenches are designed for the production environment where they will be set and then dedicated to a particular application. There is no scale, the wrench must be set against a torque testing device such as Norbar's Professional Torque Tester (see page 68).

'P' Type wrenches are available with two ratchet types – 'Industrial' and 'Automotive' (see explanation on pages 18 and 19) and as 'Torque Handles' for interchangeable end fittings.

Ratchet Torque Wrench Production 'P' Type - Automotive Ratchet

Model	Square Drive	Part No.	Range		Ratchet Diameter	Engagements per revolution	Length	Weight
	in		N.m	lb.ft	mm		mm	Kg
60 'P'	3/8	11164	8 – 60	5 – 45	31	72	286	0.6
60 'P'	1/2	11171	8 – 60	5 – 45	31	72	286	0.6
100 'P'	3/8	11138	20 – 100	15 – 80	31	72	326	0.69
100 'P'	1/2	11139	20 – 100	15 – 80	31	72	326	0.69
200 'P'	1/2	11140	40 – 200	30 – 150	41	72	423	1.0

Ratchet Torque Wrench Production 'P' Type - Industrial Ratchet

Model	Square Drive	Part No.	Range		Ratchet Diameter	Engagements per revolution	Length	Weight
	in		N.m	lb.ft	mm		mm	Kg
60 'P'	3/8	13051	8 – 60	5 – 45	35	72	291	0.62
60 'P'	1/2	13052	8 – 60	5 – 45	40	72	299	0.69
100 'P'	3/8	13053	20 – 100	15 – 80	35	72	332	0.68
100 'P'	1/2	13054	20 – 100	15 – 80	40	72	338	0.74
200 'P'	1/2	13055	40 – 200	30 – 150	42	72	422	0.96
300 'P'	1/2	13057	60 – 300	45 – 220	49	60	663	1.45
400 'P'	3/4	13056	80 – 400	60 – 300	49	60	663	2.04



Professional Torque Wrench Models 650 - 1500

- Accuracy of $\pm 3\%$ of reading.
- Traceable calibration certificate supplied.
- Non length dependent. Extension handle can be used to reduce operator effort (handle supplied as standard with Model 800, 1000 and 1500).
- Positive 'click' can be heard, seen and felt.
- Low weight - Model 1000 just 5.8kg.
- Long scale length in N.m and lbf.ft allows error free setting.
- Fine 60 tooth ratchet allows the wrench to be used in confined areas.
- Supplied in carry case for storage and protection.



Extension Handle Part No. 14142 - supplied as standard with Models 800 to 1500

Ratchet Adjustables

Model	Square Drive	Part No.	Range		Ratchet Diameter	Engagements per revolution	Length	Length inc ext handle	Weight*
	in		N.m	lbf.ft	mm		mm	mm	Kg
650	$\frac{3}{4}$	14037	130 - 650	100 - 480	61	60	886	-	4.0
800	$\frac{3}{4}$	14015	200 - 800	150 - 600	75	60	1035	1535	5.2
800	1	14016	200 - 800	150 - 600	75	60	1035	1535	5.2
1000	$\frac{3}{4}$	14002	300 - 1000	220 - 750	75	60	1250	1750	5.8
1000	1	14003	300 - 1000	220 - 750	75	60	1250	1750	5.8
1500	$\frac{3}{4}$	14004	500 - 1500	370 - 1100	75	60	1570	2070	6.7
1500	1	14005	500 - 1500	370 - 1100	75	60	1570	2070	6.7

*Weight excluding extension handle. Extension handle, length 700 mm, weight 1.6 kg



Adjustable Torque Handles

Model	End Fitting	Part No.	Range		Length mm	Weight Kg
			N.m	lbf.ft		
650 TH	14x18mm Female	14041	130 – 650	100 – 480	831	3.6
650 TH	22mm Male	14040	130 – 650	100 – 480	821	3.6

Available Fittings

See page 29



Torque Handles Production 'P' Type

Model	End Fitting	Part No.	Range		Length mm	Weight Kg
			N.m	lbf.ft		
650THP	14x18mm Female	14043	130 – 650	100 – 480	831	3.6
650THP	22mm Male	14042	130 – 650	100 – 480	821	3.6



End Cap Kit and Locking Tool
Part No. 14166

Ratchet Torque Wrench Production 'P' Type

Model	Square Drive	Part No.	Range		Ratchet Diameter	Engagements per revolution	Length	Length inc ext handle	Weight*
	in		N.m	lbf.ft	mm		mm	mm	
650 'P'	3/8	14039	130 – 650	100 – 480	61	60	886	-	4.0
800 'P'	3/8	14017	200 – 800	150 – 600	75	60	1035	1535	5.2
800 'P'	1	14018	200 – 800	150 – 600	75	60	1035	1535	5.2
1000 'P'	3/8	14007	300 – 1000	220 – 750	75	60	1250	1750	5.8
1000 'P'	1	14008	300 – 1000	220 – 750	75	60	1250	1750	5.8
1500 'P'	3/8	14009	500 – 1500	370 – 1100	75	60	1570	2070	6.7
1500 'P'	1	14010	500 – 1500	370 – 1100	75	60	1570	2070	6.7

*Weight excluding extension handle. Extension handle, length 700 mm, weight 1.6 kg

Slimline™ Torque Wrench Model SLO Fixed Head and Torque Handles

- Accuracy exceeds all international standards.
- Unmistakable signal when set torque is reached.
- Traceable calibration certificate supplied to satisfy ISO 9000:2000 quality systems.
- Fixed head version has a push through square for left and right handed torque tightening.
- Moulded grip aids correct handle location and operator comfort.

For 1 - 20 N.m ratchet torque wrenches, see the TT range on page 13.



Adjustable Wrenches - Fixed Head

Model	Square Drive	Part No.	Range		Length	Weight
	in		N.m	lbf.in	mm	Kg
SLO Fixed	$\frac{3}{8}$	11035	1 – 20	10 – 180	211	0.4
SLO Fixed	$\frac{3}{8}$	11125	4 – 20	40 – 180	213	0.4

Adjustable Torque Handles

Model	End Fitting	Part No.	Range		Length	Weight
			N.m	lbf.in	mm	Kg
SLO TH	16mm Spigot	11036	1 – 20	10 – 180	207	0.4
SLO TH	16mm Spigot	11126	4 – 20	40 – 180	210	0.4
SLO TH	9x12mm Female	11122	4 – 20	40 – 180	205	0.4

Slimline™ Torque Wrench Model SLO 'P' Type

- Torque Handle versions are available for both 16mm spigot and 9 x 12mm fittings.
- Production 'P' type versions are designed to discourage unauthorised alteration.
- 'P' Type versions have no scale. These wrenches must be set against a torque testing device such as Norbar's Professional Torque Tester (see page 68).



Torque Handles Production 'P' Types

Model	End Fitting	Part No.	Range		Length	Weight
			N.m	lbf.in	mm	Kg
SLO THP	16mm Spigot	11090	1 – 20	10 – 180	207	0.4
SLO THP	9x12mm Female	11088	1 – 20	10 – 180	203	0.4



16mm Spigot



9x12mm Female

Available Fittings

See pages 28 & 29



Fixed Head



Ratchet Head

Ratchet and Fixed Head - Production 'P' Types

Model	Square Drive	Part No.	Range		Ratchet Diameter	Engagements per revolution	Length	Weight
	in		N.m	lbf.in	mm		mm	Kg
SLO 'P'	¼	11085	1 – 20	10 – 180	29	72	218	0.4
SLO 'P'	⅜	11086	1 – 20	10 – 180	29	72	218	0.4
SLO Fixed	⅜	11089	1 – 20	10 – 180	-	-	211	0.4

Industrial Torque Wrench Adjustable Models

- Robust construction gives accurate results, to $\pm 4\%$, even in arduous working conditions.
- Every wrench supplied with a calibration certificate to satisfy requirements of ISO 9000:2000.
- The large break angle improves accuracy by reducing the possibility of over torquing.
- Cam control of the mechanism gives a controlled break which will not throw the operator off balance.
- Dual scaled, N.m and lbf.ft.
- Supplied in a carry case for storage and protection.
- If storage space is limited, for example in vehicle tool kits, models 4R to 5R can be supplied in two piece form where the longer of the pieces is 900mm (see page 27).
- For 2000 N.m, see 6R Split Industrial on page 27



Carry case standard (except 4 TH and 4 THP)



Adjusting Scale



Ratchet Adjustables

Model	Part No.		Range		Ratchet Diameter mm	Engagements per revolution	Length †		Weight Kg
	3/4"	1"	N.m	lbf.ft			mm	Kg	
3AR	12001	12001.01	100 – 500	70 – 350	70	36	910	5.2	
4R	12006	12006.01	150 – 700	100 – 500	70	36	1150	6.3	
4AR	12007	12007.01	200 – 800	150 – 600	70	36	1250	6.4	
5R	12009	12009.01	300 – 1000	200 – 750	70	36	1475	7.3	
5AR	12012	12012.01	700 – 1500	500 – 1000	70	36	1475	10.4	

† Length with adjusting nut set to minimum torque.

Industrial Torque Wrench Torque Handles, Production 'P' Type and Split Models

- Robust construction gives accurate results, to $\pm 4\%$, even in arduous working conditions.
- Every adjustable wrench supplied with a calibration certificate to satisfy requirements of ISO 9000:2000.
- The break angle improves accuracy by reducing the possibility of over torquing.
- All models listed are also available as Production 'P' types with no setting scale. These must be set against a torque testing device such as Norbar's Professional Torque Tester. See page 68.
- 'P' Type Wrenches can be set by the factory or distributor on request. Part code SQ2222.
- Supplied in a carry case for storage and protection (except 4TH and 4THP).



Split Industrial in Box.



Adjustable and Production 'P' Type Torque Handles

Model	End Fitting	Part No.	Range		Length †	Weight
			N.m	lbf.ft		
4 TH	22mm Spigot	12003	130 – 550	100 – 400	935	4.6
4 THP	22mm Spigot	12017	130 – 550	100 – 400	835	4.6

† Length with adjusting nut set to minimum torque.

Available Fittings

See page 29



Ratchet Torque Wrench Split Adjustables

Model	Part No.		Range		Ratchet Diameter	Engagements per revolution	Length †	Weight
	3/4"	1"	N.m	lbf.ft				
4R	12102	12102.01	150 – 700	100 – 500	70	36	1150	6.3
5R	12101	12101.01	300 – 1000	200 – 750	70	36	1475	7.3
6R	-	12100	900 – 2000	600 – 1500	70	36	1920	13

† Length with adjusting nut set to minimum torque.

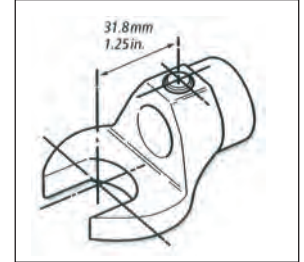


'P' Type - Sealed Adjustment

A/F Size mm	Open Ends		Ring Ends		Flare Ends	
	Part No.	Max Torque* (N.m)	Part No.	Max Torque* (N.m)	Part No.	Max Torque* (N.m)
7	29841	9	29881	25	29921	4
8	29842	13	29882	35	29922	7
9	29843	19	29883	45	29923	9
10	29844	25	29884	52	29924	12
11	29845	32	29885	73	29925	16
12	29846	41	29886	89	29926	25
13	29847	51	29887	107	29927	28
14	29848	63	29888	128	29928	31
15	29849	77	29889	150	29929	38
16	29850	92	29890	175	29930	46
17	29851	107	29891	201	29931	53
18	29876	128	29913	230	29953	65
19	29877	149	29914	261	29954	74
20	29852	172	29892	294	29932	86
21	29853	198	29893	330	29933	100
22	29854	225	29894	330	29934	112
23	29855	255	29895	330	29935	123
24	29856	287	29896	330	29936	143
25	29857	322	29897	330	-	-
26	29858	330	29202.M26	330	-	-
27	29878	330	29915	330	29955	150
29	29860	330	-	-	-	-
30	29861	330	29202.M30	330	29204.M30	200
32	29863	330	29202.M32	330	29204.M32	200
Imperial - in						
¼	29701	7	29726	25	-	-
⅜	29702	13	29727	35	-	-
½	29703	21	29728	42	-	-
⅝	29704	32	29729	73	-	-
¾	29705	48	29730	115	-	-
⅞	29706	67	29731	170	-	-
1	29707	90	29732	226	-	-
1 ⅙	29708	118	29733	260	-	-
1 ⅓	29709	150	29734	305	-	-
1 ½	29710	187	29735	330	-	-
1 ⅝	29711	230	29736	330	-	-
1 ¾	29712	281	29737	330	-	-
1	29713	330	29738	330	-	-
1 ⅙	29714	330	29739	330	-	-
1 ⅓	29715	330	29202.I18	330	-	-
1 ⅝	29716	330	29202.I19	330	-	-
1 ¾	29717	330	29202.I20	330	-	-
1 ⅞	29718	330	29202.I21	330	-	-

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

For other available sizes contact Norbar



Where the distance between centres differs from 1.25 in (31.8mm) the torque applied will not be as set on the wrench (see page 10)

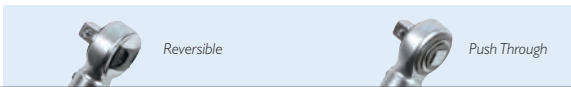


Torque Handle Fittings Fittings for 16mm Spigot



Square Drive	Part No.	Diameter	
		mm	in
3/8	29828	19	0.75
1/2	29827	25	1.0

Ratchet Heads



Square Drive	Part No.	Diameter		No. Teeth	Ratchet Type
		mm	in		
3/8	29826	34	1.3	36	Push Through
3/8	29829	30.5	1.2	72	Reversible
1/2	29825	40	1.6	72	Push Through
1/2	29830	40	1.6	72	Reversible

Accessories for 16mm Spigot

Part No.	Description
29832	Blank End Fitting for In-line Open End
85242	Blank End Fitting for Open End
11343	Blank End Fitting for Ring End
72000	Spigot Adaptor 16mm to 22mm



Part No. 29832



Part No. 85242



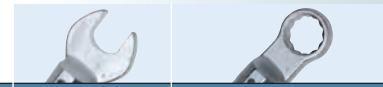
Part No. 11343



Part No. 72000

Fittings for 22mm Spigot

Spanner End Fittings



A/F Size mm	Open End Part No.	Ring End Part No.
22	29963.22	29960.22
24	29963.24	29960.24
27	29963.27	29960.27
30	29963.30	29960.30
32	29963.32	29960.32
36	29963.36	29960.36
41	29963.41	29960.41
46	29963.46	29960.46

Accessories for 22mm Spigot

Part No.	Description
29969	3/4" Fixed Head
29972	3/4" Ratchet
85719	Blank End Fitting for Open End
85720	Blank End Fitting for Ring End



Part No. 29969



Part No. 29972



Part No. 85719



Part No. 85720

Ratchet Repair Kits and Square Drives

Ratchet Repair Kits

Part No.	Square Drive	Description	No. of Teeth*	To Suit Torque Wrench
	in			
13491	$\frac{3}{8}$	Ratchet Replacement Kit	24	TTi 50/100 N.m, 75 ft.lb
13492	$\frac{1}{2}$	Ratchet Replacement Kit	24	TTi 50 - 300 N.m & 75 - 220 ft.lb
13493	$\frac{1}{2}$	Heavy Duty Ratchet Replacement Kit	30	TTi (over 250 N.m/185 lbf.ft)
11598	$\frac{3}{8}$	'Automotive Ratchet' - Beta Reversible	72	Model 60 & 100
13212	$\frac{3}{8}$	'Industrial Ratchet' - Push Through	24	Model 60 & 100 / TTi 50/100 N.m, 75 ft.lb
11618	$\frac{1}{2}$	'Automotive Ratchet' - Beta Reversible	72	Model 60 & 100
13213	$\frac{1}{2}$	'Industrial Ratchet' - Push Through	24	Model 60 & 100
11622	$\frac{1}{2}$	'Automotive Ratchet' - Beta Reversible	72	Model 200 & 300
11623	$\frac{1}{2}$	'Automotive Ratchet' - Beta Push Through	72	Model 200 & 300
13214	$\frac{1}{2}$	'Industrial Ratchet' - Push Through	24	Model 200 / TTi50 - 300 N.m & 75 - 220 ft.lb
13215	$\frac{1}{2}$	'Industrial Ratchet' - Push Through	30	Model 300 & 330 (13047, 13049 & 13057)
13216	$\frac{3}{8}$	'Industrial Ratchet' - Push Through	30	Model 400 (13050 & 13056)
11691	$\frac{1}{2}$	Push Through	24	Model 330
14195	$\frac{3}{8}$	Push Through	60	Model 550
14196	$\frac{3}{8}$	Push Through	60	Model 800 - 1500
14197	1	Push Through	60	Model 800 - 1500
11811	$\frac{1}{4}$	Reversible	72	SL0
11812	$\frac{3}{8}$	Reversible	72	SL0
12307	-	Does not include square drive 12297	36	Industrial (except 6R)
12373	1	Ratchet Repair Kit	36	6R

* Please count the teeth in the ratchet annulus. Please note: this does not always correspond with the number of 'clicks' per revolution.

Square Drive Assemblies

Part No.	Square Drive	To Suit Torque Wrench
	in	
11914	$\frac{3}{8}$	SL0 Fixed Head
11941	$\frac{3}{8}$	SL1
29682	$\frac{1}{2}$ to $\frac{3}{8}$	SL1
29684	$\frac{1}{2}$	SL1 and SL2
29683	$\frac{1}{2}$	SL3
12297	$\frac{3}{8}$	Industrials and Professional Model 550
12299	1	Industrials and Professional Model 550
14157	$\frac{3}{8}$	Professionals Models 800 - 1500
14165	1	Professionals Models 800 - 1500

Electrode Wrenches

The correct tightening of carbon/graphite electrodes is known to increase the energy efficiency of electric arc furnaces and prevents electrode sections from being lost in the furnace.

Norbar Electrode Wrenches are based on two well proven torque wrench designs: electrodes up to 8 inches use the 'Professional' type, 9 inches and upwards are based on the 'Industrial' wrench.

- Positive torque control increases energy efficiency.
- Self-clamping action speeds the tightening operation.
- Unmistakable signal when the set torque is reached.
- A wide range of electrode sizes, 8 to 24 inches, can be tightened.



200mm to 300mm Electrodes

Diameter		Part No.	Max Torque		Length	Torque Radius	Weight
mm	in		N.m	lbf.ft			
200	8	12506	312	230	928	723	3.2
250	10	12530	542	400	1140	890	6.8
300	12	12531	780	575	1280	990	8.4

350mm to 600mm Electrodes - High Range Torques

Diameter		Part No.	Max Torque		Length	Torque Radius	Weight
mm	in		N.m	lbf.ft			
350	14	12532	1140	840	1767	1451	13.8
400	16	12533	1300	950	1810	1480	14.3
450	18	12535	1500	1110	1720	1355	16.5
500	20	12536	2000	1475	2200	1805	20
550	22	12537	2370	1750	2555	2135	25.4
600	24	12538	2370	1750	2590	2135	26.1
600.HD	24	12538.HD	3200	2360	3335	2880	31.7