

# ECLIPSE

PROFESSIONAL ENGINEERING TOOLS

## TORQUE CONTROL TOOLS & ACCESSORIES

### Product Guide



TORQUE WRENCHES

PROF. TORQUE WRENCHES

TORQUE HANDLES

AUTOMOTIVE TORQUE WRENCHES

INDUSTRIAL TORQUE WRENCHES

PROF. INDUSTRIAL TORQUE WRENCHES

TORQUE SCREWDRIVERS

TORQUE MULTIPLIERS

SOCKET SETS

ADJUSTABLE WRENCHES

## ECLIPSE TORQUE TOOLS

Eclipse torque wrenches are manufactured in the UK and incorporate the very latest design, manufacturing and quality control technology to achieve the highest level of innovation and precision in the field of torque control equipment.

## GLOBAL SERVICE

Neill Tools are pleased to advise the availability of tool re-calibration services to the original factory standard at five locations on five different continents. The accredited laboratories are situated in the UK, Australia, USA, Singapore and China, and use the same equipment and procedures as the factory (which has UKAS accreditation). Please contact sales@neill-tools.co.uk for full details of the repair and re-calibration services available.

## THE OFFICIAL MARK OF QUALITY



Eclipse torque wrenches conform to the most stringent quality standards set by UKAS (the UK Government body who set the laboratory standards for calibration services). The factory manufactures according to BSEN ISO/IEC 17025:2000 which sets the standard for the technical competence of the original testing laboratory. This should not be confused with laboratories claiming ISO 9000:2000, as this standard relates only to a laboratory's quality management systems. We guarantee all our tools and products against defective workmanship and materials so you can be sure of first class quality every time.

## ECLIPSE TORQUE WRENCHES: TRACEABLE CALIBRATION

A Certificate of Calibration is generated on the production line during calibration for each torque wrench and is individually packed with each product.

### Certificate Key

1. Torque wrench model
2. Torque wrench individual serial number
3. Torque settings to which the wrench is calibrated
4. Upper and lower tolerance
5. The actual torque readings achieved by the wrench
6. The standard against which the wrench is being tested
7. Details of the test equipment and calibration certificate number. This information provides the traceability to our UKAS laboratory and hence to national standards



		<b>Neill Tools Ltd</b> <small>Atlas Way, Atlas North, Sheffield S4 7DQ England                  Tel: +44 (0)114 201 4242 Fax: +44 (0)114 281 4252                  sales@neill-tools.co.uk www.spear-and-jackson.com</small>																													
<b>Certificate of Calibration</b>																															
Model: <b>ESLI 3/8"</b>		Serial No: <b>2010/206474</b>																													
Maximum Capacity: <b>54.0</b>		Units: <b>N.m.</b>																													
Inspector: <b>np</b>		Ambient Temperature: <b>20°C</b>																													
<table border="1"> <thead> <tr> <th>Set Torque</th> <th>Min</th> <th>Max</th> <th colspan="4">Actual Readings</th> </tr> </thead> <tbody> <tr> <td>10.0</td> <td>9.82</td> <td>10.42</td> <td>9.94</td> <td>9.92</td> <td>9.93</td> <td>9.92</td> </tr> <tr> <td>30.0</td> <td>28.85</td> <td>31.25</td> <td>29.63</td> <td>29.62</td> <td>29.61</td> <td>29.58</td> </tr> <tr> <td>54.0</td> <td>51.92</td> <td>56.25</td> <td>54.66</td> <td>54.64</td> <td>54.60</td> <td>54.51</td> </tr> </tbody> </table>	Set Torque	Min	Max	Actual Readings				10.0	9.82	10.42	9.94	9.92	9.93	9.92	30.0	28.85	31.25	29.63	29.62	29.61	29.58	54.0	51.92	56.25	54.66	54.64	54.60	54.51			
Set Torque	Min	Max	Actual Readings																												
10.0	9.82	10.42	9.94	9.92	9.93	9.92																									
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54.0	51.92	56.25	54.66	54.64	54.60	54.51																									
The limits shown and the test equipment used for this calibration comply with the requirements of <b>ISO 6789 : 2003</b>																															
The uncertainty of the test equipment at 20° is $\pm 1\% k = 2$ .																															
The test equipment used in the performance of the above calibration has international traceability through the following calibration laboratory which is UKAS accredited to ISO 17025:2005																															
UKAS Laboratory No: 0256		Date of Calibration <b>19 Oct 2011</b>																													
Tester Model: 50028, Dedicated Transducer System		Quality Manager <b>N Parlett</b>																													
Serial No: 28635																															
Cert No: 124957																															



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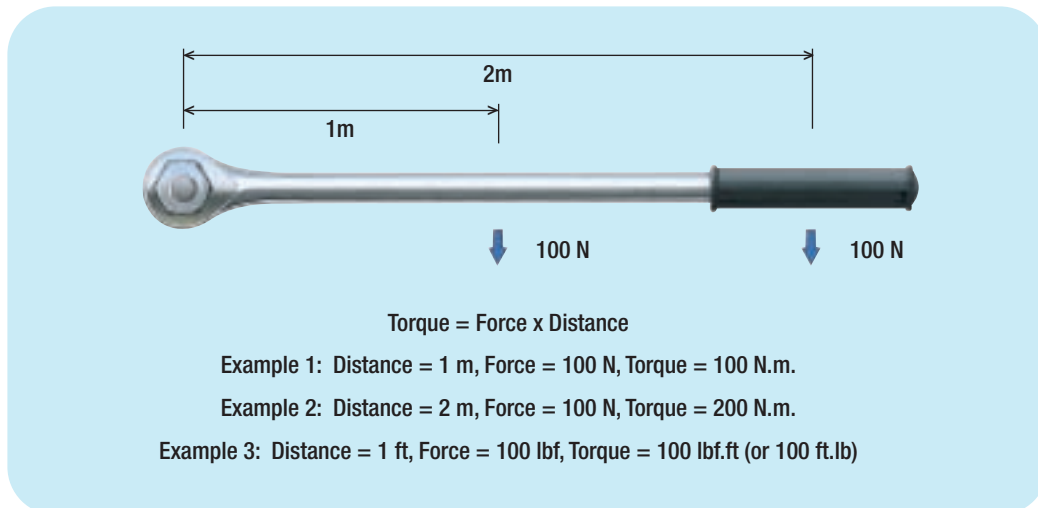


## WHAT IS TORQUE?

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 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

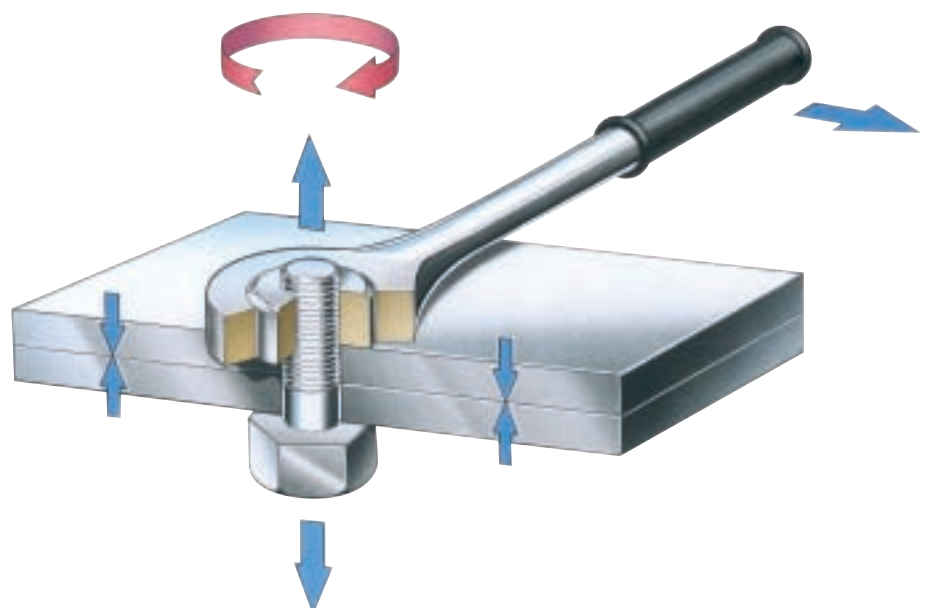
Although many methods exist to join two or more parts together, the ease of assembly and disassembly provided by threaded fasteners make them the ideal choice for many applications.

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

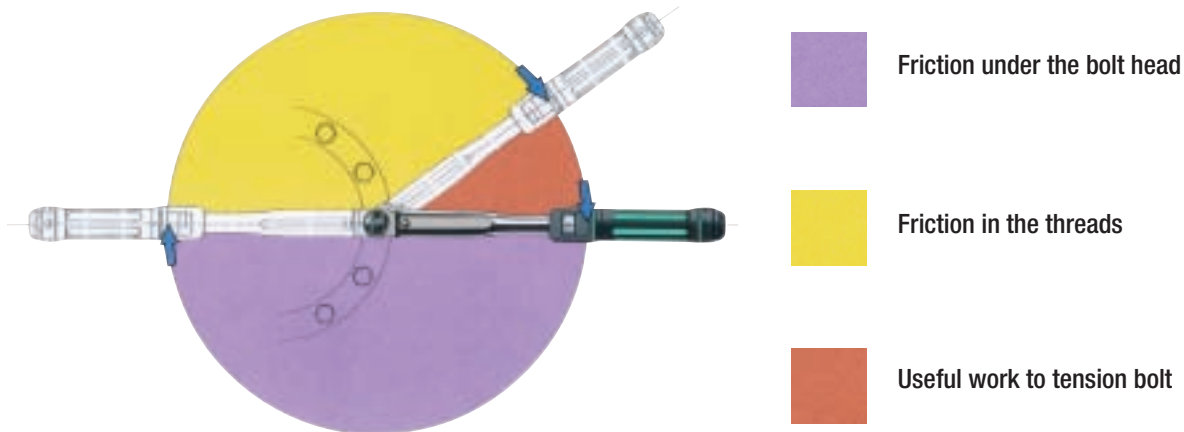
When an assembly is clamped by tightening a nut and bolt, the induced tension causes the bolt to stretch. An equal force acts to compress the parts which are thus clamped.

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.



## FRICITION 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 opposite 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 & OIL	0.70	0.65	0.70	0.75
	ZINC & WAX	0.60	0.55	0.65	0.55

## 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:

- a. Bolts are new, standard finish, uncoated and not lubricated (other than the normal protective oil film).
- b. The load will be 90% of the bolt yield strength.
- c. The coefficient of friction is 0.14.
- d. 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 5.



	<b>BOLT GRADE</b>									
	3.6	4.6	5.6	5.8	6.8	8.8	9.8	10.9	12.9	
	Torque in N.m									
	MM									



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	97.7	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	1011	1213	36
M 27	298	398	497	663	795	1060	1193	1491	1789	41
M 30	405	540	675	900	1080	1440	1620	2025	2430	46
M 33	550	734	917	1223	1467	1956	2201	2751	3301	50
M 36	708	944	1180	1573	1888	2517	2832	3540	4248	55
M 39	919	1226	1532	2043	2452	3269	3678	4597	5517	60
M 42	1139	1518	1898	2530	3036	4049	4555	5693	6832	65
M 45	1425	1900	2375	3167	3800	5067	5701	7126	8551	70
M 48	1716	2288	2860	3813	4576	6101	6864	8580	10296	75
M 52	2210	2947	3684	4912	5895	7859	8842	11052	13263	80
M 56	2737	3650	4562	6083	7300	9733	10950	13687	16425	85
M 60	3404	4538	5673	7564	9076	12102	13614	17018	20422	90
M 64	4100	5466	6833	9110	10932	14576	16398	20498	24597	95
M 68	4963	6617	8271	11029	13234	17646	19851	24814	29777	100

## 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

lbf x 4.45 = N  
N x 0.225 = lbf

### Flow

l/s x 2.119 = cu.ft/min  
cu.ft/min x 0.472 = l/s

### Pressure

lbf/in<sup>2</sup> x 0.069 = bar  
bar x 14.504 = lbf/in<sup>2</sup>

### Power

hp x 0.746 = kW  
kW =  $\frac{\text{N.m} \times \text{rev/min}}{9546}$

## FORMULAE

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

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

M = torque lbf.ft  
P = bolt tension lbf  
D = bolt dia.ins

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

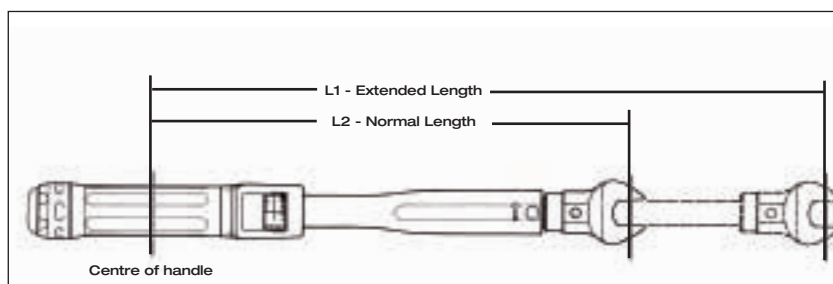
M = torque N.m  
P = bolt tension Newtons  
D = bolt dia.mm

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

## FORMULAE 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 a ratio)

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

$$M1 = 100$$



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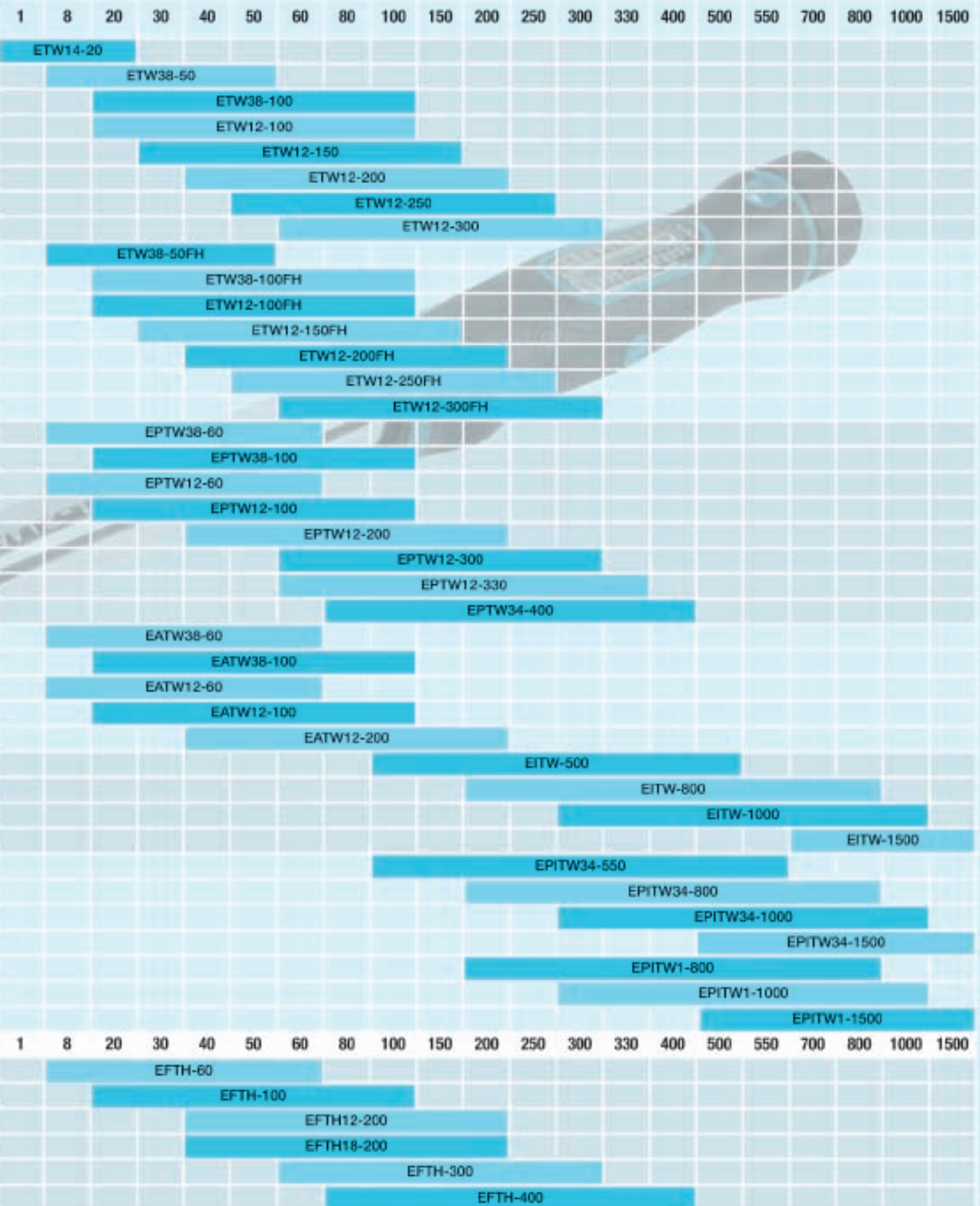
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RANGE	HEAD TYPE	ACCURACY	OTHER SELECTION CRITERIA	TYPICAL APPLICATIONS	DRIVE
ECLIPSE	Push Through Ratchet	+/-3%	Can be used in a clockwise & an anti-clockwise direction (push) through ratchet	General workshop, garage and tyre shop torque applications	1/4"
					3/8"
					1/2"
ECLIPSE FIXED HEAD	Fixed, Push Through	+/-3%	Fewer working parts compared to ratchet type wrenches	General workshop, garage and tyre shop torque applications	3/8"
					1/2"
ECLIPSE PROFESSIONAL	Push Through Ratchet	+/-3%	Can be used in a clockwise & an anti-clockwise direction (push) through ratchet  Finer adjustment than the Eclipse range	General workshop, garage and tyre shop torque applications	3/8"
					1/2"
ECLIPSE AUTOMOTIVE	Bi-directional Ratchet	+/-3%	Where space is limited	Torque applications in the confined spaces of modern motor vehicles	3/4"
					3/8"
ECLIPSE INDUSTRIAL	Ratchet	+/-4%	For ultimate torque control in heavy duty applications	Truck and bus tyre shops, as well as rail maintenance	1/2"
					3/4"
ECLIPSE PROFESSIONAL INDUSTRIAL	Ratchet	+/-3%	For precision applications requiring a higher torque	Truck and bus tyre shops, as well as rail maintenance	3/4"
					1"
ECLIPSE PROFESSIONAL TORQUE HANDLES	Female End Adjustable	+/-3%	Where a spanner end fitting rather than a socket is required	When the joint is a break union, eg a brake pipe	Size
					9 x 12
					9 x 12
					14 x 18
					14 x 18

**Torque in N.m**



## ECLIPSE TORQUE WRENCHES RATCHET HEAD

### Torque Mechanism

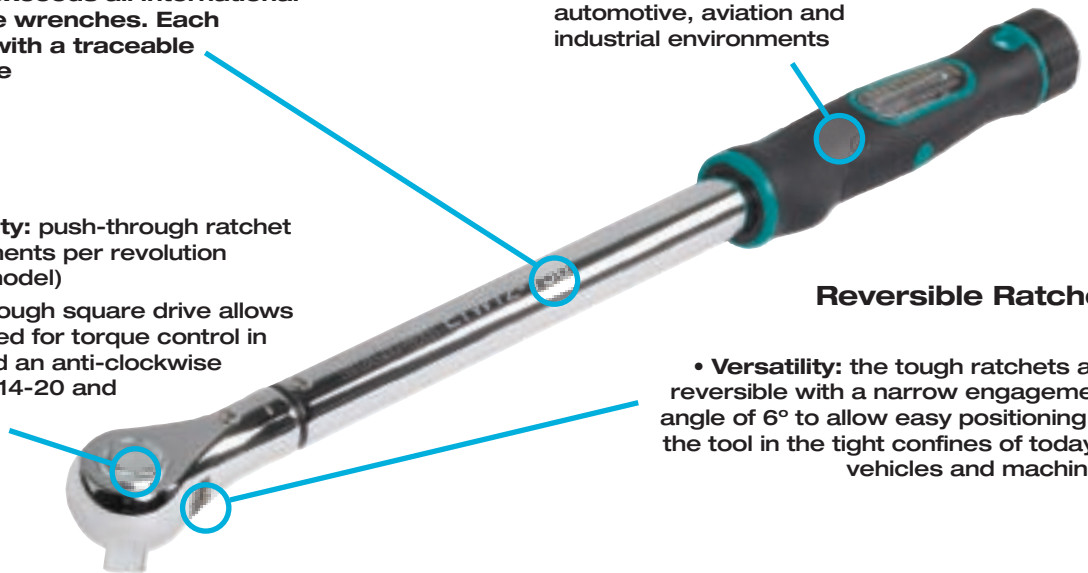
Accuracy of +/- 3% exceeds all international standards for torque wrenches. Each wrench is supplied with a traceable calibration certificate

### Ratchet

- **Strength & Durability:** push-through ratchet with 60-72 engagements per revolution (depending on the model)
- **Versatility:** push through square drive allows the wrench to be used for torque control in both a clockwise and an anti-clockwise direction (note: ETW14-20 and ETW38-50 are with reversible ratchets so do not have this feature)

### Handle

- **Comfort & Safety:** two component ergonomic handle for maximum comfort and slip resistance
- **Durability:** Handle material and lens resist chemicals in common usage in the automotive, aviation and industrial environments



### Reversible Ratchet

- **Versatility:** the tough ratchets are reversible with a narrow engagement angle of 6° to allow easy positioning of the tool in the tight confines of today's vehicles and machines

### Micrometer Scale

**Versatility & Accuracy:** micrometer scale gives simple and error free setting (On dual scale wrenches, the micrometer increment applies to the N.m scale)



### Adjustment Mechanism

**Safety:** a robust lock prevents accidental adjustment of the wrench during use.

**Speed and Ease of Use:** quick and light adjustment with the minimal of effort over the entire scale in approximately ten complete turns.



Part No.	Square Drive Inch	Range N.m	Range lbf.ft	Resolution N.m	Ratchet Diameter mm	Engagements per Revolution	Length mm	Weight kg
ETW14-20	1/4"	1-20	10-180*	0.05	30	72	230	0.4
ETW38-50	3/8"	8-50	6-35	0.10	30	72	230	0.4
ETW38-100	3/8"	20-100	15-75	0.50	38	60	405	1.0
ETW12-100	1/2"	20-100	15-75	0.50	38	60	405	1.0
ETW12-150	1/2"	30-150	20-110	0.50	38	60	455	1.1
ETW12-200	1/2"	40-200	30-150	1.00	46	60	505	1.2
ETW12-250	1/2"	50-250	40-185	1.00	46	60	560	1.4
ETW12-300	1/2"	60-300	45-220	1.00	46	60	610	1.6

\*lbf.in

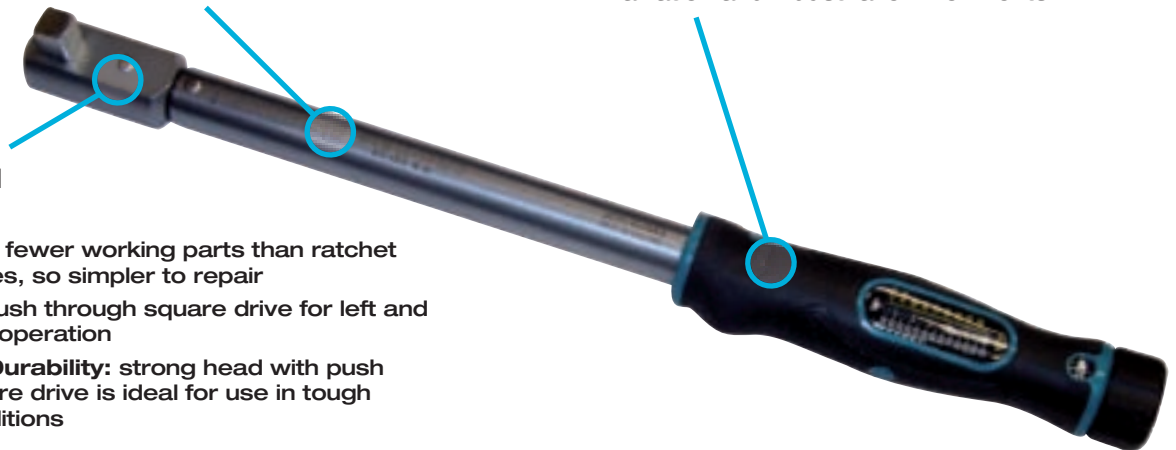
## ECLIPSE TORQUE WRENCHES FIXED HEAD

### Torque Mechanism

Accuracy of +/- 3% exceeds all international standards for torque wrenches. Each wrench is supplied with a traceable calibration certificate

### Handle

- **Comfort & Safety:** two component ergonomic handle for maximum comfort and slip resistance
- **Durability:** Handle material and lens resist chemicals in common usage in the automotive, aviation and industrial environments



### Fixed Head

- **Ease of use:** fewer working parts than ratchet type wrenches, so simpler to repair
- **Versatility:** push through square drive for left and right handed operation
- **Strength & Durability:** strong head with push through square drive is ideal for use in tough working conditions

### Micrometer Scale

**Versatility & Accuracy:** micrometer scale gives simple and error free setting (On dual scale wrenches, the micrometer increment applies to the N.m scale)



### Adjustment Mechanism

**Safety:** a robust lock prevents accidental adjustment of the wrench during use.

**Speed and Ease of Use:** quick and light adjustment over the entire scale in approximately ten complete turns.



Part No.	Square Drive	Range	Range
	Inch	N.m	lbf.ft
ETW38-50FH	3/8"	8-50	6-35
ETW38-100FH	3/8"	20-100	15-75
ETW12-100FH	1/2"	20-100	15-75
ETW12-150FH	1/2"	30-150	20-110
ETW12-200FH	1/2"	40-200	30-150
ETW12-250FH	1/2"	50-250	40-185
ETW12-300FH	1/2"	60-300	45-220

## ECLIPSE PROFESSIONAL TORQUE WRENCHES RATCHET HEAD

### Ratchet

- **Strength & Durability:** push-through ratchet with 60-72 engagements per revolution (depending on the model)
- **Versatility:** push through square drive allows the wrench to be used for torque control in both a clockwise and an anti-clockwise direction
- **Accuracy:** offset ratchet pawls give a narrow engagement angle

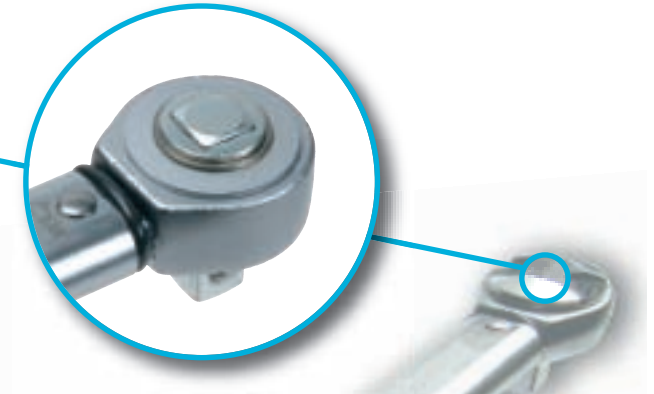
### Adjustment Lock

- **Safety:** a robust lock prevents accidental adjustment of the wrench during use.
- **Ease of use:** Fingertip light adjustment



### Handle

- **Comfort & Safety:** two component ergonomic handle for maximum comfort and slip resistance
- **Durability:** Handle material and lens resist chemicals in common usage in the automotive, aviation and industrial environments



### Torque Scale

- **Versatility & Accuracy:** Unique 'harmonic drive' scale mechanism allows for a long scale length and therefore accurate and error free setting

### Torque Mechanism

- **Accuracy:** less parts to maintain when compared to 'pivot block' mechanisms
  - **Accuracy:** +/-3% exceeds all international standards for torque wrenches. Each wrench is supplied with a traceable calibration certificate
  - **Ease of use:** Simple calibration adjustments without disassembly



Part No.	Square Drive Inch	Range N.m	Range lbf.ft	Ratchet Diameter mm	Engagements per Revolution	Length mm	Weight kg
EPTW38-60	3/8"	8-60	5-45	35	72	312	0.66
EPTW12-60	1/2"	8-60	5-45	40	72	320	0.74
EPTW38-100	3/8"	20-100	15-80	35	72	353	0.73
EPTW12-100	1/2"	20-100	15-80	40	72	359	0.80
EPTW12-200	1/2"	40-200	30-150	42	72	442	1.01
EPTW12-300	1/2"	60-300	45-220	49	60	570	1.38
EPTW12-330	1/2"	60-330	45-250	49	60	683	1.50
EPTW34-400	3/4"	80-400	60-300	49	60	683	2.09

**ECLIPSE PROFESSIONAL TORQUE HANDLES (FEMALE FITTING)\***

- 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)
- 9x12mm and 14 x 18mm rectangular type handles



Part No.	Square Drive Inch	Range N.m	Range lbf.ft	Length mm	Weight kg
EFTH-60	9x12	8-60	5-45	300	0.55
EFTH-100	9x12	20-100	15-80	340	0.6
EFTH12-200	9x12	40-200	30-150	421	0.78
EFTH18-200	14x18	40-200	30-150	431	0.78
EFTH-300	14x18	60-300	45-220	546.5	1.13
EFTH-400	14x18	80-400	60-300	658	1.78

\*Available on request. Minimum order quantities apply

**ECLIPSE AUTOMOTIVE TORQUE WRENCHES (RATCHET HEAD)\***

- **Versatility:** The reversible ratchet is designed with compact dimensions and a narrow engagement angle resulting from the 72 tooth pattern. This makes the wrench ideal for use in the confined spaces of modern motor vehicles and other applications where space is limited
- **Accuracy:** of +/- 3% exceeds all international standards for torque wrenches. Each wrench is supplied with a traceable calibration certificate
- **Comfort & Safety:** two component ergonomic handle for maximum comfort and slip resistance
- **Durability:** Handle material and lens resist chemicals in common usage in the automotive, aviation and industrial environments
- **Safety:** a robust lock prevents accidental adjustment of the wrench during use



Part No.	Square Drive Inch	Range N.m	Range lbf.ft	Ratchet Diameter mm	Engagements per Revolution	Length mm	Weight kg
EATW38-60	3/8"	8-60	5-45	31	72	307	0.6
EATW12-60	1/2"	8-60	5-45	31	72	307	0.6
EATW38-100	3/8"	20-100	15-80	31	72	347	0.7
EATW12-100	1/2"	20-100	15-80	31	72	347	0.7
EATW12-200	1/2"	40-200	30-150	41	72	443	1.0

\*Available on request. Minimum order quantities apply

## ECLIPSE INDUSTRIAL TORQUE WRENCHES

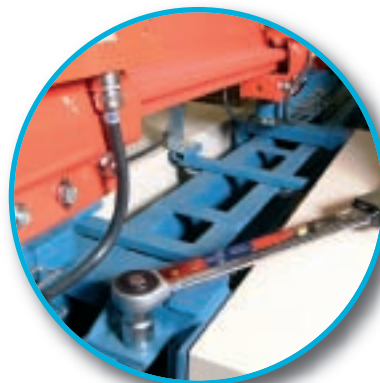
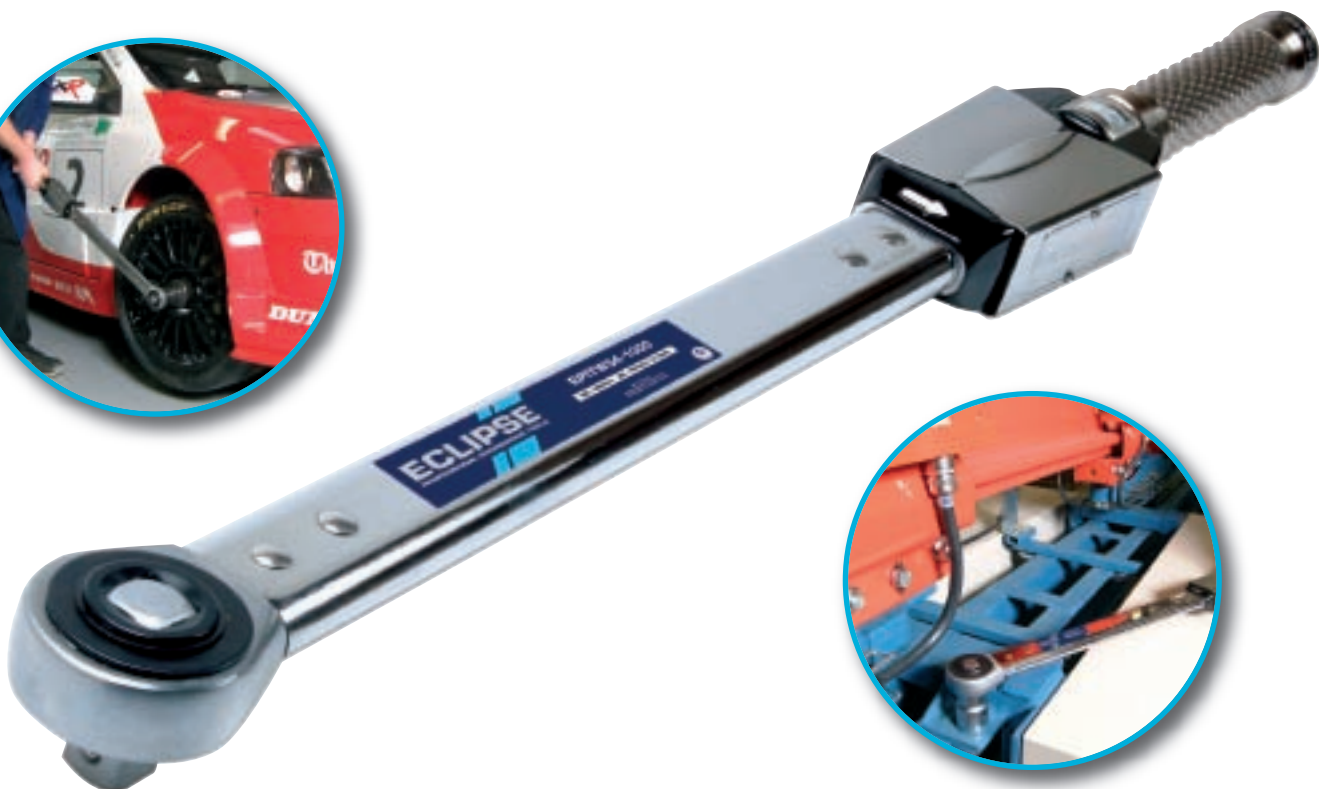
- **Accuracy:** +/-4%, even in arduous working conditions. Each wrench is supplied with a traceable calibration certificate
- **Accuracy:** large break angle improves accuracy by reducing the possibility of over torquing
- **Safety:** cam control of the mechanism gives a controlled break which will not throw the operator off balance
- **Versatility:** dual scaled – N.m and lbf.ft



Part No.	Square Drive Inch	Range N.m	Range lbf.ft	Ratchet Diameter mm	Engagements per Revolution	Length mm	Weight kg
EITW-500	3/4"	100-500	70-350	70	36	910	5.2
EITW-1000	3/4"	300-1000	200-750	70	36	1475	7.3
EITW-1500	3/4"	70-1500	500-1000	70	36	1475	10.4

**ECLIPSE PROFESSIONAL INDUSTRIAL TORQUE WRENCHES  
RATCHET HEAD**

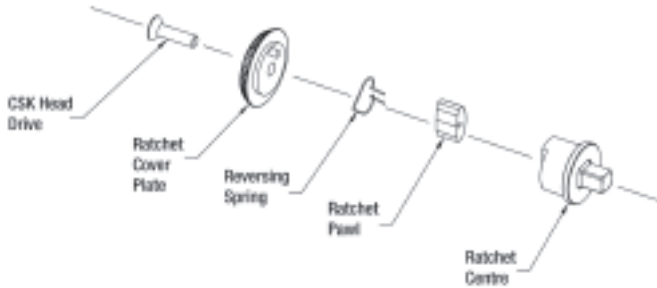
- **Accuracy:** +/- 3% reading
- **Ease of Use:** non length dependent - extension handle can be used to reduce operator effort (handle supplied as standard with 800, 1000 and 1500 N.m models)
- **Accuracy:** long scale length in N.m and lbf.ft allows error free setting
- **Versatility:** fine 60 tooth ratchet allows the wrench to be used in confined spaces
- **Ease of Use:** positive 'click' can be heard, seen and felt
- **Storage & Protection:** supplied in hard carry case



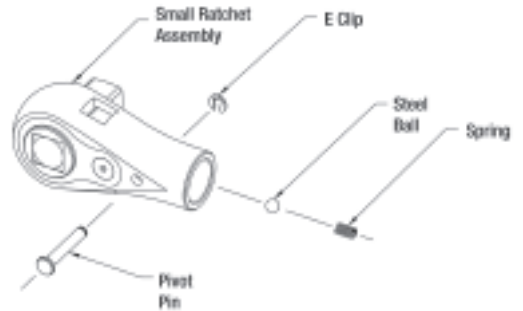
Part No.	Square Drive Inch	Range N.m	Range lbf.ft	Ratchet Diameter mm	Engagements per Revolution	Length mm	Length (Inc Ext Handle) mm	Weight kg
EPITW34-550	3/4"	110-550	80-400	61	60	845	-	4.0
EPITW34-800	3/4"	200-800	150-600	75	60	1035	1535	5.2
EPITW1-800	1"	200-800	150-600	75	60	1035	1535	5.2
EPITW34-1000	3/4"	300-1000	220-750	75	60	1250	1750	5.8
EPITW1-1000	1"	300-1000	220-750	75	60	1250	1750	5.8
EPITW34-1500	3/4"	500-1500	370-1100	75	60	1570	2070	6.7
EPITW1-1500	1"	500-1500	370-1100	75	60	1570	2070	6.7

## RATCHET REPAIR KITS

### Eclipse Range

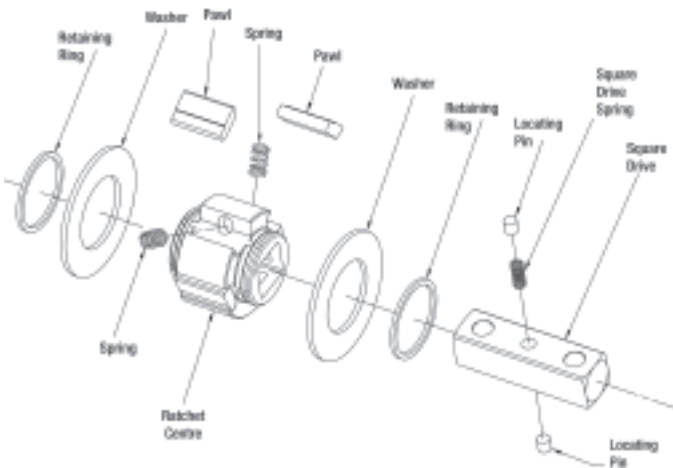


Part No	For Torque Wrenches	Box Qty
E13425	ETW14-20	1
E13426	ETW-38-50	1



Part No	For Torque Wrenches	Box Qty
E13427	ETW1/2-50	1
E13407	ETW38-100	1
E13409	ETW12-100 / ETW12-150	1
E13408	ETW12-200 / ETW12-250 / ETW12-300	1

### Eclipse Professional Range



Part No	For Torque Wrenches	Box Qty
E13212	EPTW38-60 / EPTW38-100	1
E13213	EPTW12-60 / EPTW12-100	1
E13214	EPTW12-200	1
E13215	EPTW12-300 / EPTW12-330	1
E13216	EPTW34-400	1

### Eclipse Automotive Professional Range

#### Assembled Ratchet Head

Part No	For Torque Wrenches	Box Qty
E11598	EATW38-60 / EATW38-100	1
E11618	EATW12-60 / ETW12-100	1
E11622	EATW12-200	1

### Eclipse Industrial Range

#### Ratchet Repair Kit

Part No	For Torque Wrenches	Box Qty
E12307	EITW-500 / EITW-800 / EITW-1000 / EITW-1500	1

#### Kit contains

Description	Qty
Ratchet Centre	1
Side Washers	2
Circlips	2
Pawls	4
Springs	4

**ECLIPSE TORQUE SCREWDRIVERS**



Bit holder can be removed and replaced with a wide range of screwdriver blades



Part No.	Hex Holder Size	Range N.m	Length mm	Weight kg
ETS14-15	1/4"	0.3 - 1.5	155	0.235
ETS14-30	1/4"	0.6 - 3.0	155	0.235
ETS14-60	1/4"	1.2 - 6.0	155	0.235

# TORQUE MULTIPLIERS



## TORQUE MULTIPLIERS

### WHAT IS A TORQUE MULTIPLIER?

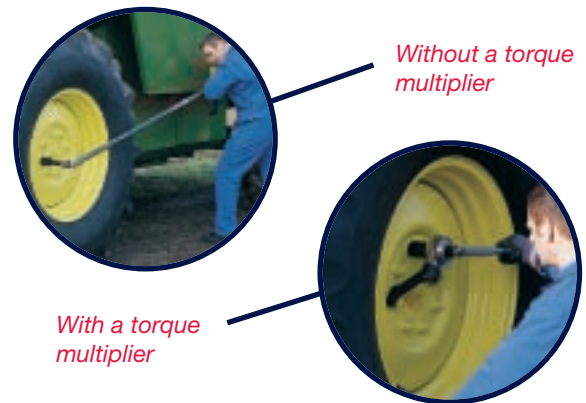
A torque multiplier is a device that increases the torque that can be applied. Because the power output cannot exceed the power input, the number of output revolutions will be lower than the number of input revolutions (torque x rpm = power).

### WHAT ARE THE ADVANTAGES OF TORQUE MULTIPLIERS?

**Safety:** Using long levers can be dangerous. Torque multipliers reduce the lever length or operator effort by a factor of 5, 25 or 125.

**Flexibility:** Torque multipliers are ideal for use in confined spaces where it may not be possible to fit long levers.

**Accuracy:** Torque is most accurate when it is applied smoothly and slowly. Torque multipliers help to achieve this by removing much of the physical effort from the tightening task.



### HOW DO ECLIPSE HANDTORQUE™ MULTIPLIERS WORK?

Eclipse Handtorque™ Multipliers incorporate an ‘epicyclic’ or ‘planetary’ gear train that has one or more stages. Each stage of gearing increases the torque applied by a factor of 5, so Eclipse multipliers typically offer ratios of 5:1, 25:1 and 125:1

With the planetary gear system, torque is applied to the input gear (known as the ‘sun’ gear), causing the three or four ‘planet’ gears whose teeth engage with the ‘sun’ gear to rotate. The outside casing of the multiplier (the annulus) also engages with the planet gear teeth and would normally rotate in the opposite direction to the sun gear.

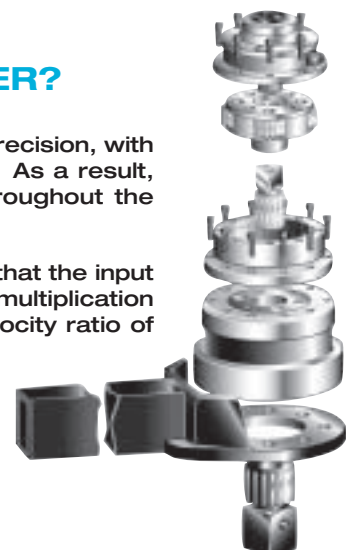
However, a reaction arm prevents the annulus from rotating, allowing the planet gears to orbit around the sun. The planet gears are held in a ‘planetary’ carrier which also holds the input square drive so that, as the planet gears orbit around the sun gear, the carrier and therefore the square drive turn. Without the reaction arm to keep the annulus stationary, the output square will not apply torque.

### WHY CHOOSE AN ECLIPSE HANDTORQUE™ MULTIPLIER?

**Accuracy & Reliability:** Eclipse gearboxes are built to an extremely high standard of precision, with all gears rotating on needle roller bearings about hardened and ground journal pins. As a result, Eclipse Handtorque™ multipliers have a torque multiplication accuracy of +/-4% throughout the operating range, taking the uncertainty out of high torque tightening.

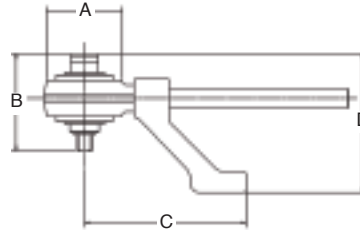
**Accuracy:** No gearbox is 100% efficient and so the velocity ratio (the number of turns that the input has to make to achieve one revolution of the output) is not the same as the torque multiplication ratio. Eclipse multipliers are engineered such that each gear stage has a typical velocity ratio of 5.45:1, resulting in a true torque multiplication factor of 5:1.

**Safety & Ease of Use:** Torque output calculations on Eclipse multipliers are a matter of simple arithmetic, with little risk of incorrect bolt loading due to conversion errors. Unlike most other manufacturers’ multipliers, there is no need for graphs or formulae to calculate the input torque required to achieve a particular output.



**ECLIPSE HT3 ‘HIGHWAYMAN’ TORQUE MULTIPLIERS**

- 5:1 torque multiplication with a guaranteed accuracy of better than +/- 4%.
- Two reaction bar styles for maximum versatility.
- Robust construction for minimum maintenance and a longer life.
- Spare 3/4” output square included in the 1300 N.m kit.
- Robust carry case ideal for inclusion in a heavy vehicle tool kit.



Part No	Description	Range N.m	Range lbf.ft	Ratio	Input Square in	Output Square in	A mm	B mm	C mm	D mm	Tool Weight kg	Reaction Weight kg
E17220	HT3 Torque Multiplier	1300	960	5:1	1/2	3/4	108	126	210	180	3.8	1.3
E17221	HT3 Torque Multiplier	2700	2000	5:1	3/4	1	108	128	210	186	3.8	1.3



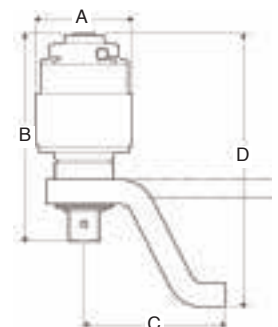
**ECLIPSE HT4 TORQUE MULTIPLIERS**

- True 15.5:1 or 26:1 torque multiplication with a guaranteed accuracy of better than +/- 4%.
- High ratios allow small torque wrenches to be used.
- Robust construction for minimum maintenance and a longer life.
- Anti Wind Up Ratchet (anti backlash) fitted to allow safer and more practical operation.
- Angle protractor for easy torque and angle tightening.
- Robust carry case with replacement square.

Part No	Description	Range N.m	Range lbf.ft	Ratio	Input Square in	Output Square in	A mm	B mm	C mm	Tool Weight kg	Reaction Weight kg
E17022	HT4 Torque Multiplier	3000	2200	15.5:1	1/2	1	108	156	450	6.1	1.9
E17021	HT4 Torque Multiplier	4500	3300	26:1	1/2	1	108	173	450	7.0	1.9

**ECLIPSE HANDTORQUE™ SMALL DIAMETER SERIES**

- Reduced diameter allows for better access, particularly on pipe flanges.
- Reaction taken from high strength spline
- Reaction foot can slide on the spline to allow for sockets of various lengths.
- Anti Wind Up Ratchet (anti backlash) fitted to allow safer and more practical operation.



Part No	Description	Range N.m	Range lbf.ft	Ratio	Input Square in	Output Square in	A mm	B mm	C mm	D min mm	D max mm	Tool Weight kg	Reaction Weight kg
E18008	Small diameter torque multiplier 60/25	6000	4400	25:1	1/2	1½	119	271	154	320	351	10.6	4
E18012	Small diameter torque multiplier 60/125	6000	4400	125:1	1/2	1½	119	301	172	350	381	12.1	4

## WHAT IS AN ANTI WIND UP RATCHET?

With any high ratio gearbox (25:1 or more), a certain amount of wind up (backlash) has to be taken up before any useful tightening work is applied to the nut. Each time the input device is released, the wind up will rotate it back against the direction of operation. The Anti Wind Up Ratchet (AWUR) on Eclipse torque multipliers retains all of the wind up force as it is created.

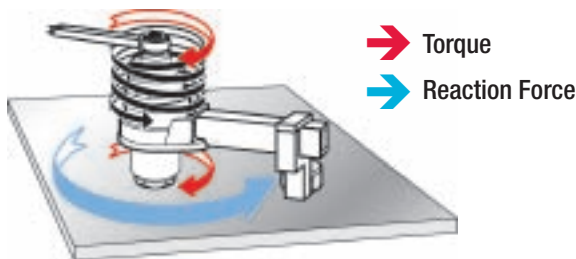


## WHAT ARE THE BENEFITS OF THE ECLIPSE ANTI WIND UP RATCHET?

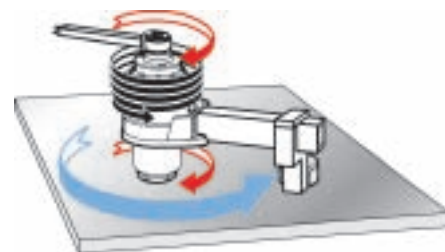
**Safety:** The torque input device cannot fly backwards against the direction of operation if it is suddenly released.

**Ease of Use:** Without an anti wind up ratchet, it is generally necessary to make continuous 360° sweeps with the torque input device to prevent the multiplier unwinding. However, any obstructions will make this impossible.

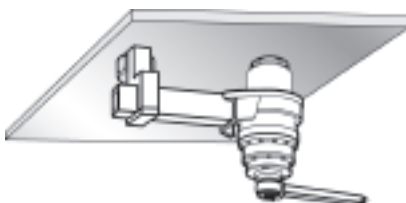
**Versatility and Safety:** With an Anti Wind Up Ratchet fitted, the multiplier locks onto the nut, because the reaction plate is held hard against the reaction point. This means that, even when used upside down, the multiplier supports its own weight.



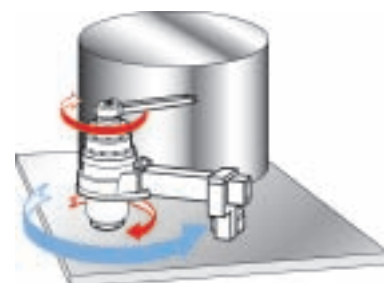
Multiplier behaves like a very stiff 'spring'



Multiplier will achieve maximum torque only after the 'spring' has been taken up



In this application the multiplier is used upside down and is able to support its own weight because the reaction plate is held hard against the reaction point



In this application, if it takes more than 180° to take up the wind-up at the required torque, this tightening operation will be impossible without an 'Anti Wind-Up Ratchet'

**SOCKET SETS**

For tightening and loosening nuts

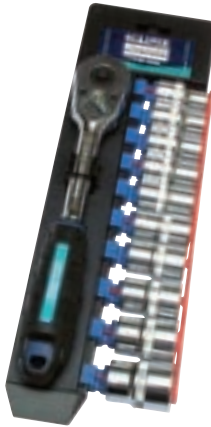
- 1/2" square drive, double hex
- Triple plated chrome vanadium
- Surface drive and high torque system
  - full face contact for maximum torque
  - ideal for fasteners with worn heads

**11 Piece Socket Set**

Part No	Box Qty
EC-SS11M1/2U	1

**Contains**

Sockets	Qty
10mm	1
11mm	1
12mm	1
13mm	1
14mm	1
15mm	1
17mm	1
19mm	1
21mm	1
22mm	1
Plus	Qty
Ratchet	1



**24 Piece Socket Set**

Part No	Box Qty
EC-SS24M1/2U	1

**Contains**

Sockets	Qty
10mm	1
11mm	1
12mm	1
13mm	1
14mm	1
15mm	1
17mm	1
19mm	1
21mm	1
22mm	1
23mm	1
24mm	1
27mm	1
30mm	1
32mm	1
Plus	Qty
Sliding T Bar 250mm	1
Universal Joint	1
Speed Handle 395mm	1
Extension Bar 125mm	1
Extension Bar 250mm	1
Reversible 72 tooth Ratchet Handle	1



**WRENCHES**

**adjustable wrenches with soft feel handles**

Part No	Size	Jaw Width	Pack Qty
ADJW6	6" (150mm)	1 1/8" (27mm)	5
ADJW8	8" (200mm)	1 1/8" (33mm)	5
ADJW10	10" (250mm)	1 1/2" (38mm)	5
ADJW12	12" (300mm)	1 3/4" (45mm)	5



For tightening nuts and bolts

- The extra wide jaw can be used to tighten large nuts and bolts
- Metric scale laser etched onto the jaw ensures fast setting of the tool
- Rust resistant lacquer increases the product's life
- Ergonomic soft feel sleeve gives maximum comfort and grip

**adjustable wrenches with steel handles**

Part No	Size	Jaw Width	Pack Qty
ADJW6S	6" (150mm)	1 1/8" (27mm)	5
ADJW8S	8" (200mm)	1 1/8" (33mm)	5
ADJW10S	10" (250mm)	1 1/2" (38mm)	5
ADJW12S	12" (300mm)	1 3/4" (45mm)	5
ADJW15S	15" (375mm)	1 3/4" (45mm)	5



For tightening nuts and bolts

- The extra wide jaw can be used to tighten large nuts and bolts
- Metric scale laser etched onto the jaw ensures fast setting of the tool
- Ergonomic handle includes an offset ring spanner

**adjustable wrenches with extra wide jaws**

Part No	Size	Jaw Width	Pack Qty
ADJW6WJ	6" (150mm)	1 3/8" (34mm)	6
ADJW8WJ	8" (200mm)	1 1/2" (38mm)	6
ADJW10WJ	10" (250mm)	2" (50mm)	6



Ideal for plumbing, automotive, maintenance, repair and assembly tasks

- Body made from chrome vanadium steel for maximum strength and durability
- The extra thin jaws allow access to confined spaces
- The jaws are angled at 15° for a firm and secure grip on the nut
- Soft feel, anti-slip handle for added safety and comfort
- Scale laser etched onto the head for ease of use
- The jaw capacity is around 40% greater and the throat depth is approximately 30% deeper than standard adjustable wrenches of equivalent sizes

CELEBRATING  
OVER  
100  
YEARS  
OF EXPERIENCE

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