

# TORQUE TOOLS



# 5 TORQUE TOOLS



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## The U.A. lab

Torque wrenches are precision instruments which require the utmost care. Their reliability is of fundamental importance for users and, for this reason, their calibration requires particular care and regular checking. These operations have to be done in laboratories which guarantee to have the necessary technology and equipment and, in this way, they can become reliable reference points for persons using and selling these instruments. The UTENSILERIE ASSOCIATE (U.A.) laboratory has obtained the prestigious accreditation as SIT Calibration Centre (Centre nr. 97) for torque measurements between 9 Nm and 1000 Nm according to the UNI-CEI EN 45000 norms.



## The SIT certification



The SIT Certificate is an official document which, according to the measurements carried out, indicates the state of calibration of instruments such as torque wrenches.

Measurements are made according to the norms UNI EN 26789 (ISO 6789) which define, in particular, the precision required for torque tools ( $\pm 4\%$  or  $\pm 6\%$  for torque wrenches depending on the type, and  $\pm 6\%$  for torque screwdrivers).

The SIT certificate provides proof of calibration and forms an essential part of professional working practices.

The SIT certificate has international validity thanks to EAL recognition (European Cooperation for the Accreditation of Laboratories).

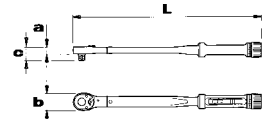


## 810

UNI-EN 26789

### Torque wrenches with reversible ratchet

- Adjustable torque model for tightening to the right
- Precision  $\pm 4\%$  of the preset torque value
- Readings in Nm and ft.lbs
- Sensitive and sound alarm on reaching preset torque value
- Automatic resetting on pressure release after disengagement
- Supplied with test certificate



capacity		resolution		□	a	b	c	L	Kg
Nm	ft.lbs	Nm	ft.lbs						
4÷20	3÷15	0,1	0,075	1/4	14	32	27	300	0,70
10÷50	8÷37	0,5	0,35	3/8	14	32	27	370	0,75
20÷100	15÷74	0,5	0,35	3/8	14	32	27	370	0,75
30÷150	22÷110	1	0,75	1/2	19,5	43	35	472	1,2
40÷200	30÷145	1	0,75	1/2	19,5	43	35	472	1,2
60÷300	45÷220	2	1,5	1/2	19,5	43	35	572	1,4

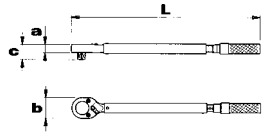


## 810/800

UNI-EN 26789

### High capacity torque wrench with reversible ratchet

- Adjustable torque model for tightening to the right
- Precision  $\pm 4\%$  of the preset torque value
- Readings in Nm and ft.lbs
- Sensitive and sound alarm on reaching preset torque value
- Automatic resetting on pressure release after disengagement
- Supplied with test certificate



capacity		resolution		□	a	b	c	L	Kg
Nm	ft.lbs	Nm	ft.lbs						
160÷800	129÷572	2,5	7,4	3/4	29	65	50	1050	5,1

## TORQUE TIGHTENING: conversion factors

Value given in	Value required in					
	Ncm	Nm	Kgcm	Kgm	in.lbs	ft.lbs
Ncm	1	0,01	0,10197	0,00102	0,0885	0,00738
Nm	100	1	10,197	0,10197	8,850	0,7375
Kgcm	9,807	0,09807	1	0,01	0,868	0,0723
Kgm	980,7	9,807	100	1	86,80	7,233
in.lbs	11,299	0,11299	1,152	0,01152	1	0,0833
ft.lbs	135,59	1,3559	13,826	0,13826	12	1

Value required = Value given x conversion factor

# TORQUE TOOLS

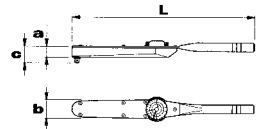


## 823 N

UNI-EN 26789

### Torque wrenches with dial

- Dial with a needle that can be positioned for storing the torque values reached, or for setting the torque tightening valves
- Precision  $\pm 4\%$  of the preset torque valves
- Dual and opposed Nm and ft.lbs readings for tightening to the right to the left
- Supplied in plastic case with test certificate



Nm	capacity in. lbs	ft.lbs	Nm	resolution in. lbs	ft.lbs	”	a mm	b mm	c mm	L mm	Kg
2÷9	15÷75	–	0,2	1	–	1/4	29	53	38	255	0,4
6÷30	50÷250	–	0,5	5	–	3/8	29	53	41	255	0,5
14÷70	120÷600	–	1	10	–	3/8	30	53	44	380	0,8
50÷240	–	35÷175	2,5	–	5	1/2	35	55	54	545	1,3
160÷800	–	120÷600	10	–	10	3/4	41	74	64	1185	4,1



## 824 A/75

UNI-EN 26789

### Torque screwdriver for micro-mechanic

- Adjustable torque model for tightening to the right for use together with bits from the 664 series or, using an adapter, with socket wrenches from the 1/4” manual series
- Precision  $\pm 6\%$  of the preset torque valve
- Readings in Ncm
- Automatic disengagement on reaching the preset torque valve
- Automatic resetting after 120°
- Supplied with regulation wrench and test certificate

capacity Ncm	resolution Ncm	”	L mm	gr
15÷75	0,5	1/4	135	120



## 824 A

UNI-EN 26789

### Torque screwdrivers

- Adjustable torque model for tightening to the right, for use together with bits from the 664 series or, using an adapter, with socket wrenches from the 1/4” manual series
- Precision  $\pm 6\%$  of the preset torque value
- Readings in Nm
- Automatic disengagement on reaching the preset torque valve
- Automatic resetting after 120°
- Supplied with regulation wrench and test certificate

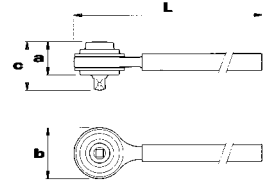
capacity Nm	resolution Nm	”	L mm	gr
0,5÷2,5	0,1	1/4	145	280
2÷10	0,5	1/4	167	400



## 828 X4

### Torque multiplier

- Light, compact model used in the maintenance of industrial vehicles, agricultural machinery and earth-moving equipment
- Supplied in nylon bag together with a safety lever and test certificate

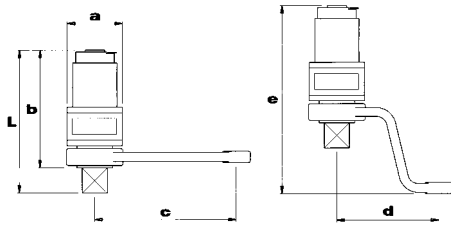


capacity Nm	transmission ratio	input torque max Nm	multiplication ratio	□	■	a mm	b mm	c mm	L mm	Kg
1400	4:1	400	1:3,4	1/2	3/4	63	90	85	600	3,2
2700	4:1	800	1:3,4	3/4	1	80	95	113	680	5,1

## 828 N

### Torque multipliers

- Ratchet model with inversion lever for tightening to the right or to the left
- Non-return safety system that maintains multiplier tension, thus avoiding dangerous returns at the end of each tightening operation
- A disengagement device to protect the mechanism comes into force if the maximum capacity of the multiplier is exceeded
- Automatic resetting once the overload has been released
- Supplied in leather case with straight and angled safety lever and test certificate

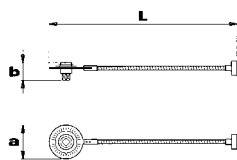


capacity max Nm	transmission ratio	input torque max Nm	multiplication ratio	□	■	a mm	b mm	c mm	d mm	e mm	L mm	Kg
1200	4:1	350	1:3,4	1/2	3/4	86	203	190	120	255	226	8,4
3000	16:1	280	1:10,5	1/2	1	86	237	190	120	288	261	9,6
7000	64:1	210	1:33	1/2	1 1/2	114	274	270	185	403	310	19,2

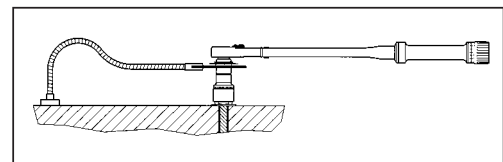
## 830

### Angle torque goniometers

- Model for use together with torque wrenches to effect angle control tightenings
- Flexible rod secured by magnets
- Polycarbonate goniometer



■	□	capacity	resolution	a mm	b mm	L mm	gr
1/2	1/2	0 ÷ 360°	5°	75	40	450	265
3/4	3/4	0 ÷ 360°	5°	75	70	450	450



## PRELOADINGS AND TORQUE DATA

		<b>BOLTS AND NUTS CLASSES (METRIC THREADS, TRIANGULAR SHAPE, HIGH PITCH)</b>																			
		<b>4,8</b>						<b>5,8</b>						<b>6,8</b>							
		friction coefficient <b>0,10</b>		friction coefficient <b>0,15</b>		friction coefficient <b>0,20</b>		friction coefficient <b>0,10</b>		friction coefficient <b>0,15</b>		friction coefficient <b>0,20</b>		friction coefficient <b>0,10</b>		friction coefficient <b>0,15</b>		friction coefficient <b>0,20</b>			
		Pre-loading N	Torque Nm	Pre-loading N	Torque Nm	Pre-loading N	Torque Nm	Pre-loading N	Torque Nm	Pre-loading N	Torque Nm	Pre-loading N	Torque Nm	Pre-loading N	Torque Nm	Pre-loading N	Torque Nm	Pre-loading N	Torque Nm		
<b>M 3</b>	0,5	5,5	2,5	1221	0,5	1102	0,64	991	0,75	1508	0,62	1362	0,8	1224	0,92	1724	0,71	1556	0,91	1399	1,06
<b>M 4</b>	0,7	7	3	2117	1,17	1909	1,48	1716	1,71	2615	1,44	2359	1,83	2120	2,11	2988	1,65	2696	2,09	2422	2,42
<b>M 5</b>	0,8	8	4	3460	2,3	3126	2,93	2812	3,4	4275	2,85	3862	3,62	3473	4,2	4885	3,25	4414	4,14	3970	4,81
<b>M 6</b>	1	10	5	4885	4,01	4410	5	3965	5,9	6034	4,95	5448	6,2	4898	7,2	6896	5,6	6226	7,1	5598	8,3
<b>M 8</b>	1,25	13	6	8958	9,7	8097	12,3	7283	14,3	11066	11,9	10003	15,2	8997	17,7	12647	13,6	11432	17,4	10283	20
<b>M 10</b>	1,5	16	8	14257	19,1	12896	24	11604	28	17612	23	15930	30	14334	35	20128	27	18206	34	16382	40
<b>M 12</b>	1,75	18	10	20782	33	18806	42	16925	49	25672	40	23231	52	20908	60	29339	46	26550	59	23895	69
<b>M 14</b>	2	21	12	28532	52	25828	67	23249	78	35245	65	31905	83	28719	97	40280	74	36463	95	32822	111
<b>M 16</b>	2	24	14	39210	81	35569	105	32051	123	48436	100	43939	130	39592	152	55356	115	50216	148	45248	174
<b>M 18</b>	2,5	27	14	47707	113	43207	145	38901	169	58932	139	53373	179	48054	209	67351	159	60998	205	54919	239
<b>M 20</b>	2,5	30	17	61267	159	55578	206	50079	241	75682	196	68655	254	61863	298	86494	225	78463	291	70700	341
<b>M 22</b>	2,5	34	17	76512	217	69503	283	62671	332	94515	269	85857	350	77418	411	108017	307	98123	400	88478	470
<b>M 24</b>	3	36	19	88224	274	80032	354	72114	415	108983	338	98863	438	89083	513	124552	387	112986	500	101809	586
<b>M 27</b>	3	41	19	116045	403	105448	525	95098	617	143350	498	130259	649	117474	762	163829	569	148868	741	134257	871
<b>M 30</b>	3,5	46	22	141090	548	128118	712	115502	835	174287	677	158263	880	142679	1032	199185	773	180872	1005	163062	1180
<b>M 33</b>	3,5	50	24	175760	741	159810	968	144171	1138	217116	915	197412	1195	178094	1406	248132	1046	225614	1366	203536	1607
<b>M 36</b>	4	55	27	206303	953	187464	1242	169064	1459	254845	1177	231573	1534	208844	1803	291252	1346	264655	1754	238679	2060
<b>M 39</b>	4	60		247823	1233	225432	1614	203418	1900	306135	1523	278474	1994	251282	2348	349868	1741	318257	2279	287179	2683
<b>M 42</b>	4,5	65	32	283685	1527	257933	1995	232699	2346	350435	1887	318624	2464	287452	2898	400497	2156	364141	2816	328516	3312
<b>M 45</b>	4,5	70		332033	1905	302161	2497	272726	2943	410158	2353	373258	3085	336897	3635	468752	2690	426580	3525	385025	4154
<b>M 48</b>	5	75	36	373155	2303	339467	3013	306364	3548	460956	2845	419342	3722	378449	4383	526807	3251	479248	4254	432514	5009
<b>M 52</b>	5	80		447673	2955	407642	3882	368064	4579	553008	3651	503558	4795	454668	5657	632009	4172	575495	5480	519620	6465
<b>M 56</b>	5,5	85	41	516980	3689	470528	4839	424704	5705	638822	4557	581240	5978	524635	7048	729854	5208	664275	6832	599582	8054
<b>M 60</b>	5,5	90		603945	4570	550138	6013	496782	7102	746050	5645	679583	7428	613672	8772	852629	6451	776666	8490	701340	10026
<b>M 64</b>	6	95	46	683166	5503	622164	7233	561767	8537	843911	6798	768556	8935	693947	10546	964470	7769	878350	10212	793082	12052

## PRELOADINGS AND TORQUE DATA

				BOLTS AND NUTS CLASSES (METRIC THREADS, TRIANGULAR SHAPE, HIGH PITCH)																			
				8,8						10,9						12,9							
mm	mm	mm	mm	friction coefficient 0,10		friction coefficient 0,15		friction coefficient 0,20		friction coefficient 0,10		friction coefficient 0,15		friction coefficient 0,20		friction coefficient 0,10		friction coefficient 0,15		friction coefficient 0,20			
				Pre-loading	Torque	Pre-loading	Torque	Pre-loading	Torque	Pre-loading	Torque	Pre-loading	Torque	Pre-loading	Torque	Pre-loading	Torque	Pre-loading	Torque	Pre-loading	Torque	Pre-loading	Torque
				N	Nm	N	Nm	N	Nm	N	Nm	N	Nm	N	Nm	N	Nm	N	Nm	N	Nm	N	Nm
M 3	0,5	5,5	2,5	2298	0,95	2075	1,21	1866	1,41	3376	1,4	3048	1,79	2740	2,07	3951	1,64	3567	2,09	3207	2,43		
M 4	0,7	7	3	3985	2,2	3594	2,78	3230	3,22	5853	3,23	5279	4,09	4744	4,74	6849	3,78	6178	4,79	5552	5,5		
M 5	0,8	8	4	6514	4,34	5886	5,5	5293	6,4	9568	6,3	8645	8,1	7774	9,4	11196	7,4	10116	9,5	9098	11		
M 6	1	10	5	9195	7,5	8302	9,5	7464	11,1	13506	11	12194	14	10962	16,3	15805	12,9	14269	16,4	12828	19,1		
M 8	1,25	13	6	16863	18,2	15242	23	13710	27	24768	26	22388	34	20137	39	28984	31	26198	40	23565	46		
M 10	1,5	16	8	26838	36	24275	46	21843	53	39418	52	35655	67	32082	78	46128	61	41724	79	37542	92		
M 12	1,75	18	10	39119	62	35401	79	31860	92	57457	91	51995	116	46795	136	67236	106	60845	136	54760	159		
M 14	2	21	12	63707	99	48618	127	43763	140	78882	145	71408	187	64277	218	92309	170	83563	219	75218	255		
M 16	2	24	14	73808	153	66955	198	60331	232	108406	225	98340	291	88611	341	126858	263	115079	341	103694	399		
M 18	2,5	27	14	92440	220	83746	283	75421	330	131897	313	119454	402	107549	469	154348	366	139787	471	125856	649		
M 20	2,5	30	17	119003	311	107941	402	97253	471	169385	440	153657	570	138456	667	198216	515	179811	667	162023	781		
M 22	2,5	34	17	148374	424	134806	552	121574	648	211534	602	192157	783	173269	920	247540	704	224865	917	202762	1077		
M 24	3	36	19	171437	534	155489	691	140084	809	243914	758	221266	981	199376	1148	285432	887	258928	1148	233313	1343		
M 27	3	41	19	225110	784	204577	1022	184517	1201	320832	1114	291534	1452	262920	1706	375442	1304	341157	1700	307672	1997		
M 30	3,5	46	22	274030	1067	248811	1387	224292	1628	390072	1515	354209	1969	319331	2311	456467	1773	414500	2305	373685	2704		
M 33	3,5	50	24	341347	1442	310343	1884	279953	2216	485926	2048	441828	2676	398593	3148	568637	2397	517033	3132	466438	3684		
M 36	4	55	27	400571	1855	363972	2418	328236	2840	570369	2636	518282	3435	467413	4036	667453	3085	606501	4020	546973	4723		
M 39	4	60		481158	2399	437669	3139	394919	3697	685159	3410	623253	4463	562393	5255	801782	3990	729339	5223	658119	6150		
M 42	4,5	65	32	550683	2965	500694	3872	451710	4554	784306	4223	713110	5515	643344	6486	917805	4941	834491	6453	752849	7690		
M 45	4,5	70		644534	3698	586548	4847	529410	5712	917973	5267	835386	6903	754008	8136	1074223	6164	977579	8079	882350	9620		
M 48	5	75	36	724359	4470	658966	5849	594706	6887	1031663	6367	938528	8330	847006	9809	1207265	7450	1098277	9748	991177	11476		
M 52	5	80		869013	5737	791306	7535	714478	8889	1237685	8171	1127011	10731	1017590	12661	1448354	9562	1318843	12558	1190797	14816		
M 56	5,5	85	41	1003549	7161	913378	9394	824426	11075	1429298	10199	1300871	13379	1174182	15773	1672582	11935	1522296	15656	1374043	18458		
M 60	5,5	90		1172365	8871	1067916	11673	964342	13785	1669732	12634	1520971	16625	1373457	19634	1953941	14785	1779860	19455	1607237	22976		
M 64	6	95	46	1326146	10683	1207731	14041	1090488	16572	1888753	15215	1720102	19998	1553119	23603	2210243	17805	2012885	23402	1817480	27620		