



FACOM SERVICES

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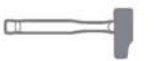
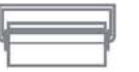
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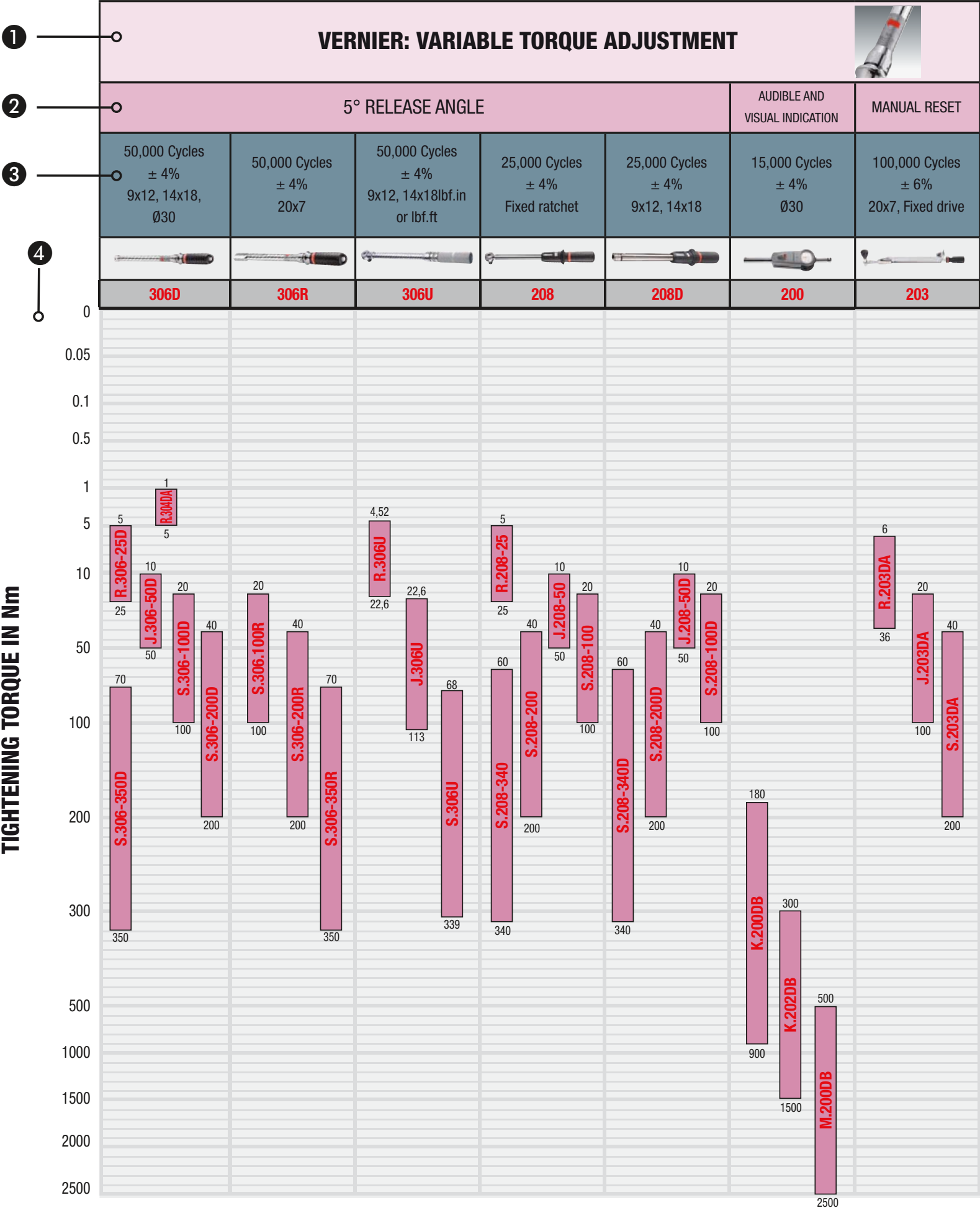


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SELECTION GUIDE

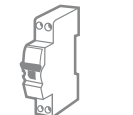
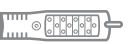
TO FIND THE RIGHT WRENCH FOR YOUR APPLICATION:

- 1 Choose the type of application
- 2 Choose the torque-setting method





4 Choose the torque range



- When using a non-standard accessory or crowfoot, torque applied does not match torque set.

The diagram shows two horizontal rods. The top rod is labeled "L Standard" and has a small gap between the left end and the right end. The bottom rod is labeled "L Modified" and has a larger gap between the left end and the right end. The gap is labeled "C Applied" and "C Set".

TORQUE CONTROL GUIDE

Tightening torque and tensile load

- Application of the correct force (tensile load) is essential for a reliable assembly:
 - under-tightened fasteners: can work loose
 - over-tight fasteners: may distort components to be connected, or shear the fastener.
- Tensile load depends on tightening torque applied to the fastener and the friction coefficient.

Tensile load (Fo)

The force in Newtons (N) which maintains pressure contact between assembled components.

Tightening torque (Cs)

The product of a force and the leverage length at which it is applied: Torque (N.m) = Force (in Newtons) x length (in metres).

Tightening torque table:

Torque values are given for 85% fastener yield strength (documentation E 25-030).

1. Friction coefficient

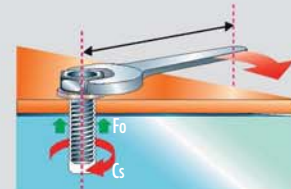
Choose the appropriate table according to type of fasteners used (0.10, 0.15, or 0.20). Example: $\mu = 0.10$

2. Fastener -grade

The grade of a fastener denotes its quality (best is 12.9). Check the appropriate column for the fasteners used. Example: fastener dia. 10, fastener grade

3. Tightening torque (Cs).

Torque values are listed in Newton-metres (Nm) for each type of fastener. In the example given, the fastener would be tightened to a torque of 36 Nm.



CONVERSION TABLE

The internationally accepted unit is the Newton-metre (Nm).

1. To convert Nm

- Newton-metres to Kilogramme-force metres: 1 N.m = 0.102 kgf.m
- Newton-metres to Pound-force feet: 1 Nm = 0.738 lbf.ft
- Newton-metres to Pound-force inches: 1 Nm = 8.851 lbf.in
- Newton-metres to Ounce-force inches: 1 Nm = 141.61 ozf.in

2. To convert kgf.m




- Kilogramme-force metres to Newton-metres: 1 kgf.m = 9.81 N.m
- Kilogramme-force metres to Pound-force feet: 1 kgf.m = 7.23 lbf.ft
- Kilogramme-force metres to Pound-force inches: 1 kgf.m = 86.8 lbf.in

3. To convert lbf.ft

- Pound-force feet en Newton-metres: 1 lbf.ft = 1.35 N.m
- Pound-force feet to Kilogramme-force metres: 1 lbf.ft = 0.138 kgf.m
- Pound-force feet to Pound-force inches: 1 lbf.ft = 12 lbf.in

4. To convert lbf.in

- Pound-force inches to Newton-metres: 1 lbf.in = 0.1129 N.m
- Pound-force inches to Kilogramme-force metres: 1 lbf.in = 0.0115 kgf.m
- Pound-force inches to Pound-force feet: 1 lbf.in = 0.083 lbf.ft
- Pound-force inches to Ounce-force inches: 1 lbf.in = 16 ozf.in

ISO 272			Steel fastener grades to ISO 898-1													
			5,6		5,8		6,8		8,8		9,8		10,9		12,9	
d mm	ISO mm	mm	Cs	Fo	Cs	Fo	Cs	Fo	Cs	Fo	Cs	Fo	Cs	Fo	Cs	Fo
1,6**	0,35	3,2	0,06	260	0,084	364	0,096	416	0,128	555	0,144	624	0,189	815	0,221	954
2**	0,4	4	0,126	432	0,177	604	0,202	690	0,27	921	0,303	1 036	0,396	1 352	0,463	1 582
2,5**	0,45	5	0,261	718	0,365	1 006	0,417	1 150	0,556	1 533	0,626	1 724	0,82	2 251	0,96	2 634
3	0,5	5,5	0,44	1 077	0,62	1 508	0,71	1 724	0,95	2 298	1,09	2 586	1,4	3 376	1,64	3 951
4	0,7	7	1,03	1 868	1,44	2 615	1,65	2 988	2,2	3 985	2,49	4 484	3,23	5 853	3,78	6 849
5	0,8	8	2,03	3 053	2,85	4 275	3,25	4 885	4,34	6 514	4,92	7 335	6,3	9 568	7,4	11 196
6	1	10	3,53	4 310	4,95	6 034	5,6	6 896	7,5	9 195	8,53	10 336	11	13 506	12,9	15 805
8	1,25	13	8,5	7 904	11,9	11 066	13,6	12 647	18,2	16 863	20,63	18 968	26	24 768	31	28 984
10	1,5	16	16,8	12 580	23	17 612	27	20 128	36	26 838	41	30 197	52	39 418	61	46 128
12	1,75	18	29	18 337	40	25 672	46	29 339	62	39 119	70	44 022	91	57 457	106	67 236
14	2	21	46	25 175	65	35 245	74	40 280	99	53 707	111	60 251	145	78 882	170	92 309
16	2	24	71	34 597	100	48 436	115	55 356	153	73 808	173	83 165	225	108 406	263	126 858
18	2,5	27	99	42 094	139	58 932	159	67 351	220	92 440			313	131 897	366	154 348
20	2,5	30	140	54 059	196	75 682	225	86 494	311	119 003			440	169 385	515	198 216
22	2,5	34	192	67 511	269	94 515	307	108 017	424	148 374			602	211 534	704	247 540
24	3	36	241	77 845	338	108 983	387	124 552	534	171 437			758	243 914	887	285 432
27	3	41	355	102 393	498	143 350	569	163 829	784	225 110			1 114	320 832	1 304	375 442
30	3,5	46	483	124 491	677	174 287	773	199 185	1 067	274 030			1 515	390 072	1 773	456 467
33	3,5	50	653	155 083	915	217 116	1 046	248 132	1 442	341 347			2 048	485 926	2 397	568 637
36	4	55	841	182 032	1 177	254 845	1 346	291 252	1 855	400 571			2 636	570 369	3 085	667 453
39	4	60	1 088	218 667	1 523	306 135	1 741	349 868	2 399	481 158			3 410	685 159	3 990	801 782
42**	4,5	65	1 348	250 311	1 887	350 435	2 156	400 497	2 965	550 683			4 223	784 306	4 941	917 805
45**	4,5	70	1 681	292 970	2 353	410 158	2 690	468 752	3 698	644 534			5 267	917 973	6 164	1 074 223
48**	5	75	2 032	329 254	2 845	460 956	3 251	526 807	4 470	724 359			6 367	1 031 663	7 450	1 207 265
52**	5	80	2 608	395 006	3 651	553 008	4 172	632 009	5 737	869 013			8 171	1 237 685	9 562	1 448 354
56**	5,5	85	3 255	456 159	4 557	638 622	5 208	729 854	7 161	1 003 549			10 199	1 429 298	11 935	1 672 582
60**	5,5	90	4 032	532 893	5 645	746 050	6 451	852 629	8 871	1 172 365			12 634	1 669 732	14 785	1 953 941
64**	6	95	4 856	602 793	6 798	843 911	7 769	964 470	10 683	1 326 146			15 215	1 888 753	17 805	2 210 243

$\mu = 0.10$ tightening torques for phosphated or galvanised fasteners with full lubrication (μ = average friction coefficient)

TORQUE CONTROL GUIDE

$\mu = 0.15$ tightening torques for coated or bright fasteners fitted dry (μ = average friction coefficient)



ISO 272			Steel fastener grades to ISO 898-1													
			5,6		5,8		6,8		8,8		9,8		10,9		12,9	
d mm	ISO mm	mm	Cs	Fo	Cs	Fo	Cs	Fo	Cs	Fo	Cs	Fo	Cs	Fo	Cs	Fo
1,6**	0,35	3,2	0,075	234	0,105	327	0,12	374	0,16	499	0,18	561	0,235	732	0,275	857
2**	0,4	4	0,159	388	0,222	544	0,254	621	0,339	829	0,381	932	0,498	1 217	0,582	1 424
2,5**	0,45	5	0,33	648	0,463	907	0,529	1 036	0,705	1 382	0,793	1 555	1,04	2 030	1,21	2 375
3	0,5	5,5	0,57	972	0,8	1 362	0,91	1 556	1,21	2 075	1,38	2 335	1,79	3 048	2,09	3 567
4	0,7	7	1,3	1 685	1,83	2 359	2,09	2 696	2,78	3 594	3,16	4 044	4,09	5 279	4,79	6 178
5	0,8	8	2,59	2 759	3,62	3 862	4,14	4 414	5,5	5 886	6,27	6 626	8,1	8 645	9,5	10 116
6	1	10	4,49	3 891	6,2	5 448	7,1	6 226	9,5	8 302	10,84	9 334	14	12 194	16,4	14 269
8	1,25	13	10,9	7 145	15,2	10 003	17,4	11 432	23	15 242	26,34	17 146	34	22 388	40	26 198
10	1,5	16	21	11 379	30	15 930	34	18 206	46	24 275	52	27 313	67	35 655	79	41 724
12	1,75	18	37	16 594	52	23 231	59	26 550	79	35 401	90	39 835	116	51 995	136	60 845
14	2	21	59	22 789	83	31 905	95	36 463	127	48 618	143	54 570	187	71 408	219	83 563
16	2	24	93	31 385	130	43 939	148	50 216	198	66 955	224	75 422	291	98 340	341	115 079
18	2,5	27	128	38 123	179	53 373	205	60 998	283	83 746			402	119 454	471	139 787
20	2,5	30	182	49 039	254	68 655	291	78 463	402	107 941			570	153 657	667	179 811
22	2,5	34	250	61 326	350	85 857	400	98 123	552	134 806			783	192 157	917	224 865
24	3	36	313	70 616	438	98 863	500	112 986	691	155 489			981	221 266	1 148	258 928
27	3	41	463	93 042	649	130 259	741	148 868	1 022	204 577			1 452	291 534	1 700	341 157
30	3,5	46	628	113 045	880	158 263	1 005	180 872	1 387	248 811			1 969	354 209	2 305	414 500
33	3,5	50	854	141 009	1 195	197 412	1 366	225 614	1 884	310 343			2 676	441 828	3 132	517 033
36	4	55	1 096	165 409	1 534	231 573	1 754	264 655	2 418	363 974			3 435	518 282	4 020	606 501
39	4	60	1 424	198 910	1 994	278 474	2 279	318 257	3 139	437 669			4 463	623 253	5 223	729 339
42**	4,5	65	1 760	227 588	2 464	318 624	2 816	364 141	3 872	500 694			5 515	713 110	6 453	834 491
45**	4,5	70	2 203	266 613	3 085	373 258	3 525	426 580	4 847	586 548			6 903	835 386	8 079	977 579
48**	5	75	2 659	299 530	3 722	419 342	4 254	479 248	5 849	658 966			8 330	938 528	9 748	1 098 277
52**	5	80	3 425	359 684	4 795	503 558	5 480	575 495	7 335	791 306			10 731	1 127 011	12 558	1 318 843
56**	5,5	85	4 270	415 172	5 978	581 240	6 832	664 275	9 394	913 378			13 379	1 300 871	15 656	1 522 296
60**	5,5	90	5 306	485 416	7 428	679 583	8 490	776 666	11 673	1 067 916			16 625	1 520 971	19 455	1 779 860
64**	6	95	6 382	548 969	8 935	768 556	10 212	878 350	14 041	1 207 731			19 998	1 720 102	23 402	2 012 885

$\mu = 0.20$ tightening torques for coated or bright fasteners. (μ = average friction coefficient)

ISO 272			Steel fastener grades to ISO 898-1													
			5,6		5,8		6,8		8,8		9,8		10,9		12,9	
d mm	ISO mm	mm	Cs	Fo	Cs	Fo	Cs	Fo	Cs	Fo	Cs	Fo	Cs	Fo	Cs	Fo
1,6**	0,35	3,2	0,086	210	0,12	294	0,137	335	0,183	447	0,206	503	0,269	657	0,315	769
2**	0,4	4	0,183	349	0,256	488	0,293	558	0,39	744	0,439	837	0,573	1 093	0,671	1 279
2,5**	0,45	5	0,383	582	0,536	815	0,612	931	0,816	1 242	0,918	1 397	1,2	1 824	1,4	2 134
3	0,5	5,5	0,66	874	0,92	1 224	1,06	1 399	1,41	1 866	1,6	2 099	2,07	2 740	2,43	3 207
4	0,7	7	1,51	1 514	2,11	2 120	2,42	2 422	3,22	3 230	3,66	3 635	4,74	4 744	5,5	5 552
5	0,8	8	3	2 481	4,2	3 473	4,81	3 970	6,4	5 293	7,27	5 958	9,4	7 774	11	9 098
6	1	10	5,2	3 498	7,2	4 893	8,3	5 598	11,1	7 464	12,57	8 392	16,3	10 962	19,1	12 828
8	1,25	13	12,6	6 426	17,7	8 997	20	10 283	27	13 710	30,62	15 423	39	20 137	46	23 565
10	1,5	16	25	10 238	35	14 334	40	16 382	53	21 843	61	24 575	78	32 082	92	37 542
12	1,75	18	43	14 934	60	20 908	69	23 895	92	31 860	105	35 849	136	46 795	159	54 760
14	2	21	69	20 514	97	28 719	111	32 822	148	43 763	167	49 142	218	64 277	255	75 218
16	2	24	108	28 280	152	39 592	174	45 248	232	60 331	262	67 944	341	88 611	399	103 694
18	2,5	27	149	34 324	209	48 054	239	54 919	330	75 421			469	107 549	549	125 856
20	2,5	30	213	44 188	298	61 863	341	70 700	471	97 253			667	138 456	781	162 023
22	2,5	34	293	55 298	411	77 418	470	88 478	648	121 574			920	173 269	1 077	202 762
24	3	36	366	63 630	513	89 083	586	101 809	809	140 084			1 148	199 376	1 343	233 313
27	3	41	544	83 910	762	117 474	871	134 257	1 201	184 517			1 706	262 920	1 997	307 672
30	3,5	46	737	101 914	1 032	142 679	1 180	163 062	1 628	224 292			2 311	319 331	2 704	373 685
33	3,5	50	1 004	127 210	1 406	178 094	1 607	203 536	2 216	279 953			3 148	398 593	3 684	466 438
36	4	55	1 288	149 174	1 803	208 844	2 060	238 679	2 840	328 236			4 036	467 413	4 723	546 973
39	4	60	1 677	179 487	2 348	251 282	2 683	287 179	3 697	394 919			5 255	562 393	6 150	658 119
42**	4,5	65	2 070	205 323	2 898	287 452	3 312	328 516	4 554	451 710			6 486	643 344	7 590	752 849
45**	4,5	70	2 596	240 641	3 635	336 897	4 154	385 025	5 712	529 410			8 136	754 008	9 520	882 350
48**	5	75	3 130	270 321	4 383	378 449	5 009	432 514	6 887	594 706			9 809	847 006	11 478	991 177
52**	5	80	4 041	324 763	5 657	454 668	6 465	519 620	8 889	714 478			12 661	1 017 590	14 816	1 190 797
56**	5,5	85	5 034	374 739	7 048	524 635	8 054	599 582	11 075	824 426			15 773	1 174 182	18 458	1 374 043
60**	5,5	90	6 266	438 337	8 772	613 672	10 026	701 340	13 785	964 342			19 634	1 373 457	22 976	1 607 237
64**	6	95	7 533	495 676	10 546	693 947	12 052	793 082	16 572	1 090 488			23 603	1 553 119	27 620	1 817 480

TORQUE SERVICES

EXPERTISE IS THE KEY OF TRUST

EA and bilateral recognition agreements



ACCREDITATION[®]
2-1934.Range available
on www.cofrac.fr

FACOM has its own control laboratory in its site of Morangis, France. This laboratory is accredited by COFRAC, signatory of the EA multilateral recognition agreement.

Facom's laboratory is your partner:

- For accurate torquing.
- For calibrating and regularly checking your tools in accordance with ISO requirements.
- For mutually recognised validity of tool calibration and inspection with European and other countries based on multilateral or bilateral recognition agreements (EA ; ILAC).
- For relating your tools back to the national and international (SI) system of units.

Periodical checking of your tools ensures peace of mind.

Note 1: For more details on the services offered by the laboratory, refer to the after-sales catalogue or the web site www.facom.com
Note 2: A calibration certificate issued with the COFRAC-ETALONNAGE logotype guarantees the results are related to the SI international unit system.



Signatories of the EA multilateral recognition agreement



COFRAC, Comité Français d'Accréditation



DKD Deutscher Akkreditierungsrat



ÖKD Bundes Ministerium für wirtschaftliche Angelegenheiten



BKO Belgische Kalibratie Organisatie obo Organisation Belge d'Etalonnage



DANAK Danish Accreditation National Agency of Industry & Trade



ENAC Entidad Nacional de Acreditacion



FINAS Finnish Accreditation Service



NAB National Accreditation Board



ACCREDIA Ente Italiano di Accreditamento



NA Norwegian Accreditation



RVA Raad voor Accreditatie



IPAC Instituto Português de Acreditação



CAI Czech Accreditation Institute



UKAS United Kingdom Accreditation Service



SWEDAC Swedish Board for Accreditation & Conformity



SAS Swiss Accreditation Service



ESYD Hellenic Accreditation System



PCA Polskie Centrum Akredytacji

Signatories to bilateral recognition agreements



NATA National Association of Testing Authorities



SANAS South Africa National Laboratory Accreditation Service



A2AL American Association for Laboratory



SAC Singapore Confederation of Industries



REMINDER: When a tool sent under guarantee is functional and complies with our prescriptions, a manufacturer compliance certificate is supplied with the product, however this certificate cannot be used in lieu and place of a calibration certificate, nor control report. When a COFRAC accredited service is requested, it is invoiced, even when the wrench cannot be repaired. This service will not be invoiced when a new machine package (FMN) following this check has been accepted. Information on COFRAC accredited services is valid on the day the catalogue is printed.

COFRAC TORQUE SERVICES

The FACOM laboratory offers different services within its COFRAC N° 2-1934 accreditation for measuring torque.

The COFRAC calibration logotype guarantees direct relation of the results with the I.S. international unit system (linked with national and international calibres).



ACCREDITATION N°
2-1934. Range available
on www.cofrac.fr

1. COFRAC calibration certificate with declaration of conformity (3 or 10 points) for graduated tools by FACOM or other brands.

In the 0.04 N.m to 3000 N.m accreditation range as per the ISO 6789 standard (*)

- Direct reading torque wrenches (type 1)- Dial- Electronic
- Vernier torque wrenches (type 2).
- Vernier torque drivers 0.04 Nm to 10 Nm.



2. Adjustment to the torque requested with Calibration certificate with COFRAC declaration of conformity (1 point). In the 0.04 N.m to 3000 N.m accreditation range as per the ISO 6789 standard (*)

- Non-vernier click torque wrenches (type 2) 1 Nm to 350 Nm
- Vernier torque drivers 0.04 Nm to 10 Nm.



3. COFRAC calibration certificate for FACOM torque testers (please consult us for other makes).

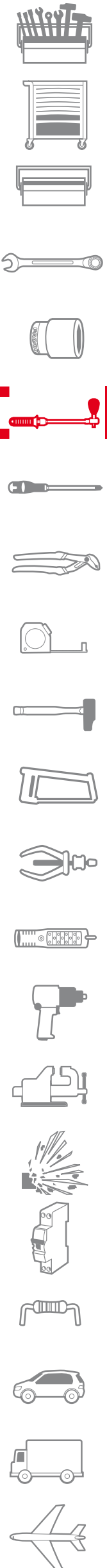
Within the 0.04 Nm to 5000 Nm accreditation range

- Electronic type E.4000 and E.5000- 0.1 Nm to 3,000 Nm
- Electronic type E.2000- 2.5 N.m to 1000 N.m
- Mechanical type CDS- 0.05 Nm to 12 Nm



(*): For manual control torque tools with a maximum torque below or equal to 10 N.m, the means uncertainty (see p.7) can exceed $\pm 1\%$ specified in the ISO 6789 standard. In this case, the tolerance acceptable for the tool is reduced accordingly to guarantee conformity of the tool.

In case of partial request, an offer will be issued and the wrench kept for six weeks maximum. Then it will be returned.



COFRAC ACCREDITED SERVICES


Caution! The name of the user company must be specified when ordering a COFRAC calibration certificate.

FACOM MAKE OR OTHER MAKE




TORQUE WRENCHES AND SCREWDRIVERS



Description	Uncertainty Method and means	Measuring range	
COFRAC 3-point calibration certificate with declaration of conformity for graduated tools	see table on next page	0.04 N.m to 360 N.m	CVC.RJS
		360 N.m to 3000 N.m	CVC.KM
COFRAC 10-point calibration certificate with declaration of conformity for graduated tools	see table on next page	0.04 N.m to 3000 N.m	CEC10.RJS
		360 N.m to 3000 N.m	CEC10.KM
Presetting with COFRAC1-point calibration certificate with declaration of conformity	see table on next page	0.04 N.m to 3000 N.m	PRER.CO



TORQUE CONTROLLERS

Description	Uncertainty Method and means	Measuring range	
COFRAC calibration certificate torque meter 1 direction	see table on next page	0.04 N.m to 1000 N.m	CEC11
COFRAC calibration certificate torque meter 2 direction	see table on next page	0.04 N.m to 1000 N.m	CEC12
Facom E.5000 torque meter, 1 directions	see table on next page	10 N.m to 1000 N.m	CEC31
Facom E.5000 torque meter, 2 directions	see table on next page	10 N.m to 1000 N.m	CEC32

After analysis, any tool outside the packaged framework may be give rise to writing an offer.

1 - Within the guarantee, this package includes:

- The check as per procedures, NF EN ISO 6789 (except § 5.1.6: overload test and § 5.1.7: endurance test which are not applied) or specific procedures, validated by COFRAC.
- Overhauling the tool if necessary.
- A document with the values before and after intervention.
- COFRAC calibration certificate with declaration of conformity for graduated tools or COFRAC calibration certificate in the case of torquemeters.
- Carriage to the distributor.

2 - For FACOM tools outside the framework of the guarantee and out of tolerance, overhauling will be subject to an offer.

- If it is accepted: the cost of the service will correspond to the price of the repair package + price of the COFRAC calibration certificate with declaration of conformity for graduated tools or COFRAC calibration certificate in the case of torquemeters.
- If it is refused: the cost of the service will correspond, if the tool is functional, to the price of the COFRAC calibration certificate with declaration of conformity for graduated tools or COFRAC calibration certificate in the case of torquemeters.

TABLES OF UNCERTAINTIES AND COFRAC ACCREDITED METHODS



1. CALIBRATION OF MANUAL CONTROL TORQUE TOOLS

Measuring range	Uncertainty of the means	Methods and means used
0.04 N.m to 1 N.m	$\pm (1.2 \cdot 10^{-3} \text{ N.m} + 4 \cdot 10^{-3} \cdot C)$	Comparison with the CALS 010 sensor no. 0108
0.5 N.m to 5 N.m	$\pm (6 \cdot 10^{-3} \text{ N.m} + 4 \cdot 10^{-3} \cdot C)$	Comparison with the CCS05 sensor no. 5191
1 N.m to 10 N.m	$\pm (6 \cdot 10^{-3} \text{ N.m} + 4 \cdot 10^{-3} \cdot C)$	Comparison with the CS1 sensor no. 1248
5 N.m to 50 N.m	$\pm 1 \cdot 10^{-2} \cdot C$	Comparison with the CS50 sensor no. 166
10 N.m to 100 N.m	$\pm 1 \cdot 10^{-2} \cdot C$	Comparison with the CS 100 sensor no. 135
15 N.m to 150 N.m	$\pm 1 \cdot 10^{-2} \cdot C$	Comparison with the CS 150 sensor no. 74
40 N.m to 400 N.m	$\pm 1 \cdot 10^{-2} \cdot C$	Comparison with the CS 400 sensor no. 134
100 N.m to 1000 N.m	$\pm 1 \cdot 10^{-2} \cdot C$	Comparison with the CS 1000 sensor no. 142
150 N.m to 1500 N.m	$\pm 1 \cdot 10^{-2} \cdot C$	Comparison with the CS 1500 sensor no. 150-8
400 N.m to 3000 N.m	$\pm 1 \cdot 10^{-2} \cdot C$	Comparison with the CS 3000 sensor no. 300-11

2. CALIBRATION OF TORQUEMETERS (TORQUE MEASUREMENT DEVICES)

Measuring range	Uncertainty of the means	Methods and means used
5 cN.m to 35 cN.m	$\pm (0.1 \text{ cN.m} + 2 \cdot 10^{-3} \cdot C)$	Right-hand torque calibration bench with bar no. BW-B-1-059 and weight no. BW-W-1-053
10 cN.m to 70 cN.m	$\pm (0.1 \text{ cN.m} + 2 \cdot 10^{-3} \cdot C)$	Right-hand torque calibration bench with bar no. BW-B-2-048 and weight no. BW-W-2-048
0.5 N.m to 4 N.m	$\pm (10^{-3} \text{ N.m} + 2 \cdot 10^{-3} \cdot C)$	Right-hand torque calibration bench with bar no. BW-B-3-065 and weight no. BW-W-3-057
1 N.m to 12 N.m	$\pm (5 \cdot 10^{-3} \text{ N.m} + 2 \cdot 10^{-3} \cdot C)$	Right-hand torque calibration bench with bar no. BW-B-4-065 and weight no. BW-W-4-062
0.04 N.m to 1 N.m	$\pm (10^{-3} \text{ N.m} + 2 \cdot 10^{-3} \cdot C)$	Suspended weight and disc system disc no. 21400
0.5 N.m to 50 N.m	$\pm (5 \cdot 10^{-3} \text{ N.m} + 2 \cdot 10^{-3} \cdot C)$	Suspended weight and arm system no. 21420
10 N.m to 150 N.m	$\pm (0.02 \text{ N.m} + 2 \cdot 10^{-3} \cdot C)$	Suspended weight and arm system no. 21421
20 N.m to 1000 N.m	$\pm (0.06 \text{ N.m} + 2 \cdot 10^{-3} \cdot C)$	Suspended weight and arm system no. 21428
150 N.m to 5000 N.m	$\pm (0.20 \text{ N.m} + 2 \cdot 10^{-3} \cdot C)$	Suspended weight and arm system no. 21515
10 N.m to 100 N.m	$\pm (0.05 \text{ N.m} + 5 \cdot 10^{-3} \cdot C)$	Comparison with a torque meter reference HBM TB1A/100 no. 061730083 associated with the measurement bridge HBM MGC plus no. 019783
100 N.m to 1000 N.m	$\pm (0.05 \text{ N.m} + 5 \cdot 10^{-3} \cdot C)$	Comparison with a torque meter reference HBM TB1A/1000 no. 052830025 associated with the measurement bridge HBM MGC plus no. 019783

C = torque applied.

These 2 tables give indications on the measurement range of the means, the absolute uncertainty of the means, the method and means used to perform a task. Example: Torque wrench reference S.306-200D capacity 40 N.m to 200 N.m. Service requested (product designation): COFRAC calibration certificate FACOM graduated wrench.

- Service reference: CEC10.RJS Mark no.1 corresponds for the link with the tables.

Mark no.1 is located in table 1 containing the following indications:

- Means measurement range: 40 N.m to 400 N.m,
- Absolute uncertainty of the means: $\pm 1 \cdot 10^{-2} \cdot C$
- Method and means used: Comparison with the CS 400 sensor no. 134

CAUTION ! In case of partial request, an offer will be issued and the wrench kept for six weeks maximum. Then it will be returned.

"High performance" click wrenches

SERIES 306

CLICK WRENCHES

"HIGH PERFORMANCE"

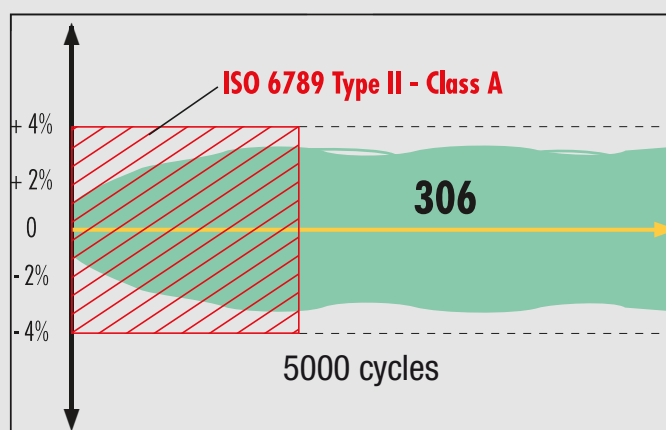
ISO 6789 TYPE II - CLASS A PRECISION ITSELF IN HEAVY DUTY!

HIGH PERFORMANCE

- Intensive use: reliability of mechanism tested to 50,000 cycles.
- Durable accuracy: remains within ISO 6789 tolerances after more than 5,000 cycles.
- Accuracy set at $\pm 2\%$ ex works.

SAFE

- Accurate, tamper-proof vernier. Easy to read and set for error-free adjustment.
- Automatically locking torque adjustment, no risk of accidental release.



ERGONOMIC

- Ergonomic handle.
- Increased length for improved torque transfer and accuracy.
- Hanging ring for storage.



306A - Click wrenches with removable ratchet



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Factory accuracy: $\pm 2\%$ except:
 - R.306-25D - K306-600D - K306-1000D ($\pm 4\%$).
 - R.304DA ($\pm 6\%$).
 - Reliability of mechanism: 50 000 cycles (wrenches up to 200 N.m).
 - Use possible with accessories:
 - End fitting: 9 x 12 or 14 x 18 mm.
 - Diameter: 30 mm.
 - One-way wrenches usable for unscrewing by reversing the bits.
 - Numbered wrenches supplied with ISO 6789 calibration certificate.
 - Supplied in a plastic box with ratchet and hinged handle (except Ref R.306A25 - R.301A - K.306A600 - K.306A1000).

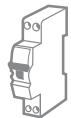
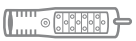
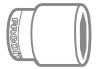
	Capacity [N.m]	Attachment	Graduation [N.m]	L [mm]	Wrench	Ratchet	Knob	Box	$\Delta\Delta$ [kg]
R.301A	1 - 5	9 x 12	0,05	185	R.304DA	R.372		BP.102	0,290
R.306A25	5 - 25	9 x 12	0,10	271	R.306-25D	R.372		BP.D1	0,450
J.306A50	10 - 50	9 x 12	1,00	357	J.306-50D	J.372	S.305P	BP.D2	0,930
J.306A100	20 - 100	9 x 12	1,00	437	S.306-100D	J.372	S.305P	BP.D2	1,050
S.306A100	20 - 100	9 x 12	1,00	437	S.306-100D	S.372	S.305P	BP.D2	1,050
S.306A200	40 - 200	14 x 18	1,00	515	S.306-200D	S.382	S.305P	BP.D3	1,260
S.306A350	70 - 350	14 x 18	2,00	725	S.306-350D	S.382	S.305P	BP.D3	1,790
K.306A600	120 - 600	14 x18	2,00	990	K.306-600D	K.382		BP.D600	5,160
K.306A1000	200 - 1000	Ø 30 mm	4,00	1280	K.306-1000D	K.151A		BP.D1000	5,900

306D - Click wrenches without accessories



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Factory accuracy: $\pm 2\%$ except:
 - R.306-25D - K.306A600 - K.306A1000 ($\pm 4\%$).
 - R.304DA ($\pm 6\%$).
 - Reliability of mechanism: 50 000 cycles (wrenches up to 200 N.m).
 - Use possible with accessories:
 - End fitting: 9 x 12 or 14 x 18 mm.
 - Diameter: 30 mm.
 - One-way wrenches usable for unscrewing by reversing the bits.
 - Numbered wrenches supplied with ISO 6789 calibration certificate.
 - Supplied in plastic box.


	Capacity [N.m]	Attachment	Graduation [N.m]	L [mm]	Box	$\Delta\Delta$ [kg]
R.304DA	1 - 5	9 x 12	0,05	185	BP.102	0,290
R.306-25D	5 - 25	9 x 12	0,10	271	BP.D1	0,450
J.306-50D	10 - 50	9 x 12	1,00	357	BP.D2	0,930
S.306-100D	20 - 100	9 x 12	1,00	437	BP.D2	1,050
S.306-200D	40 - 200	14 x 18	1,00	515	BP.D3	1,260
S.306-350D	70 - 350	14 x 18	2,00	725	BP.D3	1,790
K.306-600D	120 - 600	14 x 18	2,00	945	BP.D600	4,600
K.306-1000D	200 - 1000	Ø 30 mm	4,00	1280	BP.D1000	5,900



▣ "Low torque" click wrench with fixed ratchet




- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Factory accuracy: ± 6%.
 - Reliability of mechanism: 50,000 cycles.
 - Compact wrench for confined access.
 - Ratchet with 72 teeth (5°) for use with sockets.
 - One-way wrench.
 - Numbered wrench supplied with ISO 6789 calibration certificate.
 - Supplied in a box, dim. (L. x W.): 205 x 120 mm.

	Capacity [N.m]	Graduation [N.m]	Square ["]	L [mm]	Box	[g]
R.306-5	1 - 5	0,05	1/4	197	BP.102	300

▣ S.306R - Click wrenches with attachment 20 x 7 mm




- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Factory accuracy: ± 2%.
 - Reliability of mechanism: 50,000 cycles (wrenches --> 200 N.m).
 - Use possible with accessories attachment 20 x 7 mm.
 - One-way wrenches usable for unscrewing by reversing the bits.
 - Numbered wrenches supplied with ISO 6789 calibration certificate.
 - Wrenches supplied in plastic protection tube.

	Capacity [N.m]	Attachment	Graduation [N.m]	L [mm]	ΔΔ [kg]
S.306-100R	20 - 100	20 x 7	1	420	1,040
S.306-200R	40 - 200	20 x 7	1	510	1,300
S.306-350R	70 - 350	20 x 7	2	698	1,890

▣ R-J-S.306U - Click wrenches with dual lbf.in or lbf.ft and N.m graduation.



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Factory accuracy: ± 2% .
 - Reliability of mechanism: 50,000 cycles.
 - Click wrenches with dual lbf.in or lbf.ft and N.m graduation.
 - Reversible model.
 - Full metal wrenches with knurled handle.
 - Numbered wrenches supplied with ISO 6789 calibration certificate.
 - Supplied in plastic box with ratchet.

	Capacity [lbf.in]	Capacity [lbf.ft]	Attachment	Graduation [lbf.in]	Capacity [lbf.ft]	Square ["]	L [mm]	Box	ΔΔ [kg]
R.306U	40 - 200	-	9 x 12	1	-	1/4	285	BP.D1	0,460
J.306U	200 - 1000	-	9 x 12	5	-	3/8	379	BP.D2	1,050
S.306U	-	30 - 250	14 x 18	-	30 - 250	1/2	600	BP.D3	1,630

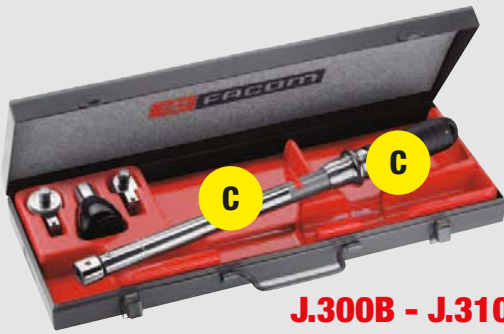
306 SERIES WRENCH SETS

EACH MODULAR SET COMES IN A STEEL CASE WITH ONE OR TWO EMPTY COMPARTMENTS THAT CAN EACH HOLD AN ADDITIONAL MODULE OF SOCKETS OR OTHER ACCESSORIES.

- Building a set:
1. Check which size modules ("module" column) the set will take; e.g. S.300B takes 2 modules size C (C+C).
2. Choose modules of the correct size. For the S.300B, with 9 x 12 end fittings, one can choose e.g. S.300-2 and J.300-3 (both size C modules). See below.



R.300B



J.300B - J.310B - S.300B



MODULES / mm	A 9 x 5 mm	B 14 x 5 mm	C 15 x 10 mm	
	R.300-1 1/4" Sockets 7-8-10-11-13 mm R.209 150 g		J.300-1 3/8" Sockets 10-11-13-15-16-17-18-19 J.210 ΔΔ 540 g J.300-11 3/8" Sockets 10-11-13-15-16-17-18-19 J.210 ΔΔ 680 g	S.300-1 1/2" Sockets 11-13-15-16-17-18-19-21-22 S.210 ΔΔ 850 g S.300-11 1/2" Sockets 16-17-18-19-21-22-24-27 S.210 ΔΔ 980 g
		R.300-2 Open ends no.10: 8-10-11-12-13 mm ΔΔ 200 g	J.300-2 Open ends no. 10: 11-13-15-16-17-18-19 mm ΔΔ 380 g	S.300-2 Open ends no.10: 11-13-15-16-17-18-19 mm ΔΔ 350 g
		R.300-3 Ring ends no.12: 8-10-11-12-13 mm ΔΔ 200 g	J.300-3 Ring ends no.12: 10-11-13-15-16-17-18-19 mm ΔΔ 380 g	S.300-3 Ring ends no.12: 11-13-15-16-17-18-19 mm ΔΔ 350 g
		R.300-4 1/4" Hex bits RT: 3-4-5-6 mm ΔΔ 100 g	J.300-4 3/8" Hex bits JT: 5-6-8-10 mm ΔΔ 190 g	S.300-4 1/2" Hex bits ST: 6-8-10-12 mm ΔΔ 330 g













300B SERIES

MODULAR SETS

- Contents of 300B series modular sets:**
- 1 306D series wrench.
 - 1 ratchet, 1 square drive, 1 pivot knob S.305P (except R.300B), 1 steel case with storage tray, (2 free compartments for modules).

	Capacity N.m	End fitting	Wrench	Content Ratchet	Square	Box set	Storage module	Kit	 "	Module	$\Delta\Delta$ kg
R.300B	5-25	9 x 12	R.306-25D	R.372	R.373	BP.115	PL.141A	322 x 128 x 50	1/4	A+B	1,5
J.300B	10-50	9 x 12	J.306-50D	J.372	J.373	BT.118	PL.140	470 x 175 x 55	3/8	C+C	3,1
J.310B	20-100	9 x 12	S.306-100D	J.372	J.373	BT.118	PL.137	470 x 175 x 55	3/8	C+C	3,3
S.300B	20-100	9 x 12	S.306-100D	S.372	S.373	BT.118	PL.137	470 x 175 x 55	1/2	C+C	3,3
S.310B	40-200	14 x 18	S.306-200D	S.382	S.383	BT.119	PL.138	625 x 175 x 55	1/2	C+E	4,4
S.320B	70-350	14 x 18	S.306-350D	S.382	S.383	BT.120	PL.139	770 x 175 x 55	1/2	D+F	5,3



MODULES / mm	 28 x 10 mm	 24 x 10 mm	 39 x 10 mm
		S.300-21  1/2" Sockets 17-18-19-21-22-24-27-30-32 mm S.210 $\Delta\Delta$ 1300 g	
	S.300-12 Open ends 11: 16-17-18-19-21-22-24-27 mm $\Delta\Delta$ 1280 g	K.300-2 Open ends 11: 22-24-27-30-32 mm $\Delta\Delta$ 1020 g	S.300-22 Open ends 11: 17-18-19-21-22-24-27-30-32 mm $\Delta\Delta$ 1580 g
	S.300-13 Ring ends 13: 16-17-18-19-21-22-24-27 mm $\Delta\Delta$ 1140 g		S.300-23 Open ends 13: 17-18-19-21-22-24-27-30-32 mm $\Delta\Delta$ 1,440 g K.300-3 Ring ends 13: 22-24-27-30-32-34-36 mm $\Delta\Delta$ 1320 g
	S.300-14  1/2" Hex. bits ST: 8-10-12-14 mm $\Delta\Delta$ 400 g		S.300-24  1/2" Hex. Bits ST: 8-10-12-14-17 mm $\Delta\Delta$ 540 g

"Multi-purpose" click wrenches

SERIES 208**CLICK WRENCH**
"MULTI-PURPOSE"**ISO 6789 TYPE II - CLASS A**
THE COMPACT WRENCH FOR
ALL APPLICATIONS**HEAVY-DUTY**

- Reliability of mechanism tested to 25000 cycles.
- Resistant to all hydrocarbons for use in garages or industrial environments.

Reliable

- Accurate to within $\pm 4\%$ in accordance with ISO 6789.
- Long-lasting accuracy.
- Double (coarse and fine) vernier adjustment.

**Compact**

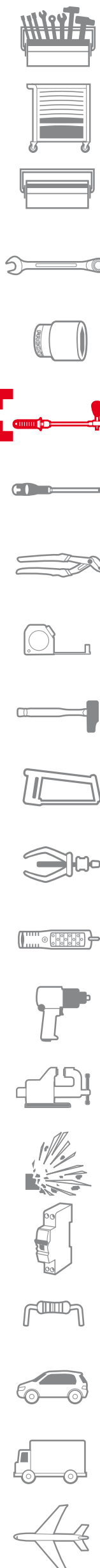
- Shorter and lighter for working in congested spaces.
- Fixed ratchet version with a smaller head.

2 SERIES:

- With fixed ratchet.



- With removable ratchet.




R-J-S.208 - Click wrenches with fixed ratchet



NF EN ISO 6789, ISO 6789, DIN EN ISO 6789

- Accuracy: ± 4%.
- Reliability of mechanism 25 000 cycles.
- Ratchet with 72 teeth (5° increment) for use with sockets.
- One-way wrenches.
- Sensitive and sound click when reaching torque.
- Automatic reset.
- Supplied with ISO 6789 calibration certificate.
- Supplied in plastic protection tube.


	Capacity [N.m]	Graduation [N.m]	Square ["]	L [mm]	ΔΔ [kg]
R.208-25	5 - 25	0,1	1/4	300	0,500
J.208-50	10 - 50	0,5	1/2	357	0,900
S.208-100	20 - 100	1,0	1/2	416	1,040
S.208-200	40 - 200	2,0	1/2	479	1,220
S.208-340	60 - 340	2,0	1/2	632	1,540

J-S.208D - Click wrenches without accessories



NF EN ISO 6789, ISO 6789, DIN EN ISO 6789

- Accuracy: ± 4%.
- Reliability of mechanism 25 000 cycles.
- End fitting: 9 x 12 or 14 x 18 mm for accessories (ratchets, polygon and open end bits).
- One-way wrenches usable for unscrewing by reversing the bits.
- Sensitive and sound click when reaching torque.
- Automatic reset.
- Supplied with ISO 6789 calibration certificate.
- Supplied in plastic protection tube.


	Capacity [N.m]	Attachment	Graduation [N.m]	L [mm]	ΔΔ [kg]
J.208-50D	10 - 50	9 x 12	0,5	337	0,780
S.208-100D	20 - 100	9 x 12	1,0	396	0,920
S.208-200D	40 - 200	14 x 18	2,0	466	1,110
S.208-340D	60 - 340	14 x 18	2,0	618	1,430

J-S.208A - Click wrenches with removable ratchet



NF EN ISO 6789, ISO 6789, DIN EN ISO 6789

- Accuracy: ± 4%.
- Reliability of mechanism 25 000 cycles.
- End fitting: 9 x 12 or 14 x 18 mm for accessories (ratchets, polygon and open end bits).
- One-way wrenches usable for unscrewing by reversing the bits.
- Sensitive and sound click when reaching torque.
- Automatic reset.
- Supplied with ISO 6789 calibration certificate.
- Supplied in plastic protection tube with ratchet.

	Capacity [N.m]	Attachment	Graduation [N.m]	Square ["]	L [mm]	Wrench	Ratchet	ΔΔ [kg]
J.208A50	10 - 50	9 x 12	0,5	3/8	337	J.208-50D	J.372V	0,780
S.208A100	20 - 100	9 x 12	1,0	1/2	396	S.208-100D	S.372V	0,920
S.208A200	40 - 200	14 x 18	2,0	1/2	466	S.208-200D	S.382V	1,110
S.208A340	60 - 340	14 x 18	2,0	1/2	618	S.208-340D	S.382V	1,430

Manual reset wrenches

MANUAL RESET WRENCH

THE SIMPLE, HEAVY-DUTY WRENCH

Simple and reliable

- Strong, dependable wrenches.
- Accuracy to within $\pm 6\%$ of the reading in accordance with ISO 6789.
- Numbered and supplied with a calibration certificate.

Triple signal

- Release of the rocker when preset torque is reached produces a triple visual, sensory and audible signal.
- Clear graduated scale ensures precise torque settings.
- Scale pointer movement helps to monitor torque increase.



R-J-S.203DA - Manual reset wrenches



- Accuracy: $\pm 6\%$.
- R.203A wrench, graduated in N.m. with fixed square.
- J.203A - S.203A wrenches, graduated in daN.m.
- Supplied in plastic storage case with ISO 6789 calibration certificate.

	Capacity [daN.m]	Graduation	Square ["]	L [mm]	Box	$\Delta\Delta$ [g]
R.203DA	0,6 - 3,6	2,0 N.m	1/4	320	BP.D5	300
J.203DA	2,0 - 10,0	0,5 daN.m	3/8	440	BP.D5	800
S.203DA	4,0 - 20,0	1,0 daN.m	1/2	460	BP.D5	900

R-J-S.203A - Manual reset wrenches with removable square drive



NF EN ISO 6789, ISO 6789, DIN EN ISO 6789

- Accuracy: $\pm 6\%$ value displayed.
- R.203A wrench, graduated in N.m.
- J.203A - S.203A wrenches, graduated in daN.m.
- Supplied in plastic storage case with ISO 6789 calibration certificate.

	Capacity [daN.m]	Graduation	Square ["]	Square	L [mm]	Wrench	Knob	Box	$\Delta\Delta$ [kg]
R.203A	0,6 - 3,6	2,0 N.m	1/4	-	320	R.203DA	R.200P	BP.D5	0,400
J.203A	2,0 - 10,0	0,5 daN.m	3/8	J.203E	440	J.203DA	S.200P	BP.D5	0,950
S.203A	4,0 - 20,0	1,0 daN.m	1/2	S.203E	460	S.203DA	S.200P	BP.D5	1,000

J-S.202A - Manual click wrenches with removable ratchet



NF EN ISO 6789, ISO 6789, DIN EN ISO 6789

- Accuracy: $\pm 6\%$ value displayed.
- 1/4" square wrench: see product ref R.203A.
- Supplied in plastic storage case with ISO 6789 calibration certificate.


	Capacity [daN.m]	Graduation	Square ["]	L [mm]	Wrench	Ratchet	Box	$\Delta\Delta$ [kg]
J.202A	2-10	0,5 daN.m	3/8	460	J.203DA	J.152	BP.D5	1,000
S.202A	4-20	1,0 daN.m	1/2	470	S.203DA	S.152	BP.D5	1,120



■ SJ-K214 - Extension for 203 series wrench



- Can double or triple the capacity of wrenches ref J.203DA - S.203DA.
- Use with:
 - 152 ratchets.
 - Bits series 20: SJ.214.
 - Sockets 3/4": K.214A.


	Capacity [daN.m]	L [mm]	$\Delta\Delta$ [kg]
SJ.214	x2	400	0,680
K.214A	x3	860	3,000

■ R-J-S.205E - Modular sets with sockets



NF EN ISO 6789, ISO 6789, DIN EN ISO 6789

- Each of these sets has a free slot for an additional bit module.
- Choice of module and size (refer to the table).
- Supplied with a handle:
 - R.200P (R.205E).
 - S.200P (J.205E - S.205E).
- Supplied with extension SJ.214 (except R.205E).
- Supplied in a grey metal box.

	Capacity [daN.m]	Square ["]	Wrench	Socket	Box	Tray	ΔΔ [kg]
R.205E	0,6 - 3,6	1/4	R.203DA	R.300.1	BT.112G	PL.142	1,350
J.205E	2 - 10	3/8	J.203DA	J.300.11	BT.118	PL.136	4,260
S.205E	4 - 20	1/2	S.203DA	S.300.11	BT.119	PL.135	4,700

High-torque wrenches

SERIES 200

HIGH-TORQUE WRENCH

HIGH-TORQUE WRENCH

Comfort of use

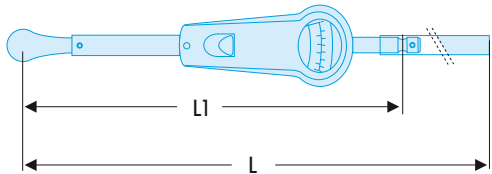
- Large dial.
- Separate N.m and lbf.ft scales.
- Accurate to within $\pm 4\%$ of the reading in accordance with ISO 6789.
- Light signal on reaching preset torque.

Sturdy

- Large round end fitting Ø 30 mm.
- Optional use with jack or lifting gear.



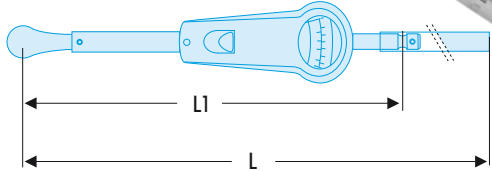
■ KM.B - High-torque wrenches with ratchet and drive square



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Accuracy: $\pm 4\%$ value displayed.
 - Two reading scales: N.m and lbf.ft.
 - Large size dial.
 - Light alarm when reaching torque.
 - Cylindrical attachment diameter 30 mm.
 - Numbered wrenches supplied with calibration certificate.
 - Wrenches supplied in metal case with storage module, dim. (L. x W. x H.): 760 x 220 x 140 mm.

	Capacity [N.m]	Capacity [lbf.in]	Square ["]	Square	L [mm]	L1 [mm]	Wrench	Ratchet	Handle	Box	Tray	$\Delta\Delta$ [kg]
K.201B	180 - 900	150 - 650	3/4	M.200E	1019	595	K.200DB	K.151A	K.200MA	BT.102	PL.549	7,900
K.203B	300 - 1500	250 - 1100	3/4	K.200E	1019	595	K.200DB	K.151A	K.202MA	BT.102	PL.549	8,000
M.201B	500 - 2500	300 - 1800	1	M.200EA	-	724	M.200DB	M.151	-	BT.102	PL.549	18,000

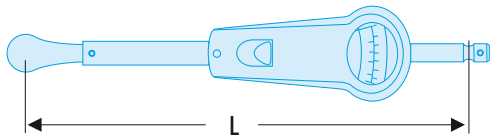
■ KM.B - High-torque wrenches with drive square



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Accuracy: $\pm 4\%$ value displayed.
 - Two reading scales: N.m and lbf.ft.
 - Large size dial.
 - Light alarm when reaching torque.
 - Cylindrical attachment diameter 30 mm.
 - Numbered wrenches supplied with calibration certificate.
 - Wrenches supplied in metal case with storage module, dim. (L. x W. x H.): 760 x 220 x 140 mm.

	Capacity [N.m]	Capacity [lbf.ft]	Capacity [lbf.ft]	Square ["]	Square	L [mm]	L1 [mm]	Wrench	Handle	Box	Tray	$\Delta\Delta$ [kg]
K.200B	180 - 900	150 - 650	150 - 650	3/4	M.200E	1019	595	K.200DB	K.200MA	BT.102	PL.549	6,20
K.202B	300 - 1500	250 - 1100	250 - 1100	3/4	K.200E	1019	595	K.200DB	K.202MA	BT.102	PL.549	6,30
M.200B	500 - 2500	300 - 1800	300 - 1800	1	M.200EA	-	724	M.200DB	-	BT.102	PL.549	13,00

■ KM.DB - High-torque wrenches without accessories



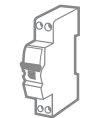
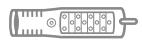
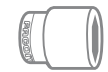
- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Accuracy: $\pm 4\%$ value displayed.
 - Two reading scales: N.m and lbf.ft.
 - Large size dial.
 - Light alarm when reaching torque.
 - Cylindrical attachment diameter 30 mm.
 - Numbered wrenches supplied with calibration certificate.

	Capacity [N.m]	Capacity [lbf.ft]	Graduation [N.m]	Capacity [lbf.ft]	L [mm]	$\Delta\Delta$ [kg]
K.200DB	180 - 900	150 - 650	25	150 - 650	595	3,60
K.202DB	300 - 1500	250 - 1100	50	250 - 1100	595	4,65
M.200DB	500 - 2500	300 - 1800	100	300 - 1800	724	5,70

■ M.200M Handle for wrench M.200DB



- Telescopic handle gives up to 3m leverage including length of wrench.
- Complete with fasteners.
- Weight: 8.144 kg.



TORQUE MULTIPLIERS

FOR HIGH TIGHTENING AND LOOSENING TORQUES WITHOUT AN EXTERNAL POWER SOURCE

MORE ACCURATE, SAFER AND MORE COMPACT

- Slow, gentle torque application ensures improved accuracy.
- Reduced lever arm compared to a high-torque wrench ensures operator safety.
- Reduced size allows multipliers to be used where high torque wrenches cannot reach.



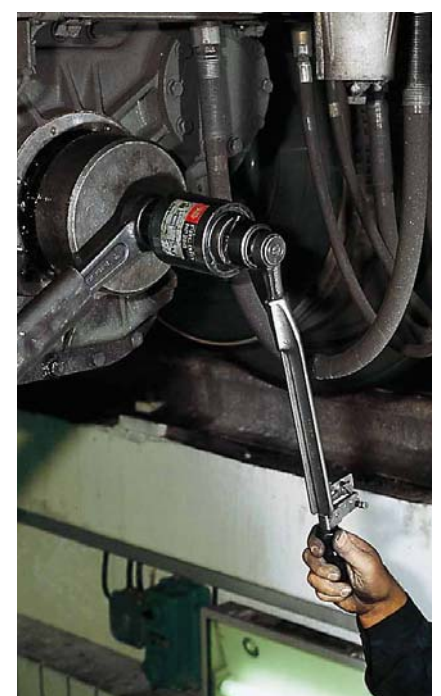
TYPE MC

- Compact and lightweight for awkward spaces.
- With stop lever.



TYPE NP

- Input torque limiter to protect the mechanism.
- Non-return system for increased safety.
- Lifetime-lubricated mechanism for ease of maintenance.
- Supplied with two reaction arms, one straight and one offset.



TORQUE MULTIPLIER SELECTION GUIDE

Required input torque: $\text{input torque} = \frac{\text{output torque}}{\text{multiplying factor}}$

Example: Specified tightening torque: 2000 Nm
Model NP.300B
→ Input torque = $2000 / 25 = 80 \text{ Nm}$.

	Input drive	Output drive	Accuracy	Multiplying factor	Max. input torque	Max. output torque
MC.130B	1/2"	3/4"	+/-4%	5	260	1300
MC.270B	3/4"	1"	+/-4%	5	540	2700
NP.100B	1/2"	3/4"	+/-4%	25	40	1000
NP.200B	1/2"	1"	+/-4%	25	80	2000
NP.300B	1/2"	1"	+/-4%	25	120	3000
NP.600B	1/2"	1 1/2"	+/-4%	25	240	6000

WARNING

- For your safety, use only impact grade sockets and accessories. Always lock sockets with the appropriate pin and ring.
- Never use manual or pneumatic impact wrenches with this type of tool.

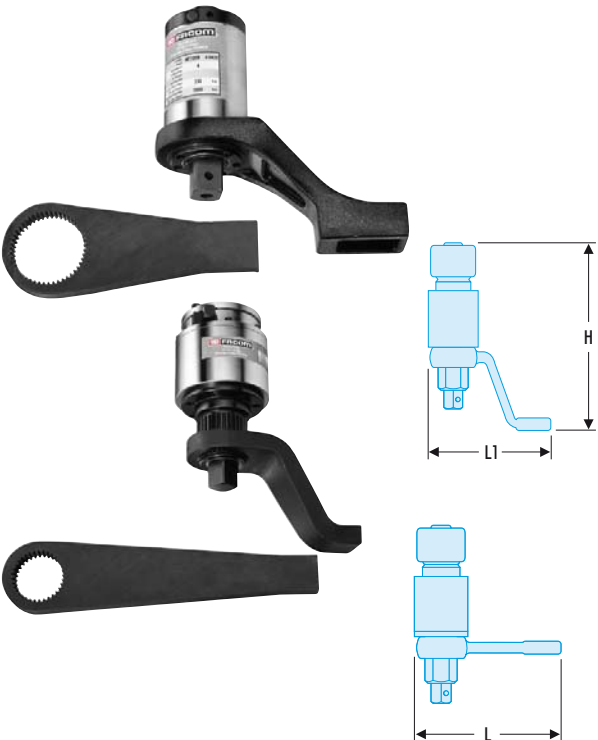
MC.B Torque Multiplier



- Compact and lightweight models suited to maintenance work on vans, trucks.
- Multiplication ratio: 5:1.
- Supplied with 2 reaction arms (straight and angled) and one spare drive square.

	A [mm]	B [mm]	C [mm]	d [mm]	L [mm]	ΔΔ [kg]
MC.130B	126	263	180	106	396	3,80
MC.270B	128	263	186	106	396	3,80

NP.B - Sets with torque multiplier



- Powerful tightening and untightening without external energy source.
- Constant multiplication ratio: 25:1.
- Safety: input torquer limiter.
- Non-return system.
- Rate = 25:1.
- Supplied with 2 reaction arms (straight and angled) and one spare drive square, with a compliance certificate.

	A [mm]	B [mm]	C [mm]	d [mm]	ΔΔ [kg]
NP.100B	174	165	218	72	3,00
NP.200B	174	165	218	72	3,00
NP.300B	224	141	285	108	7,00
NP.600B	271	154	351	119	10,60

Release wrenches

SERIES 648

RELEASE WRENCHES

FULL TORQUE CONTROL

STURDY AND DURABLE

- Sturdy wrench for production environments.
- For intensive and repetitive use, tested to over 100,000 cycles.
- Accuracy: +/-4% in accordance with ISO6789.

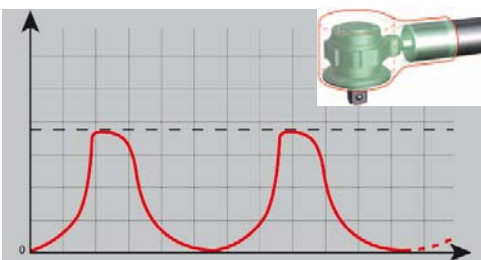
SAFE AND RELIABLE

- Release technology: prevents exceeding the torque set on the key.
- For all application points: torque repeatable over time.
- Preset non graduated wrenches: no operator setting errors.



RELEASE TECHNOLOGY

Torque set cannot be exceeded, as the mechanism releases once the torque set is reached.
Accuracy and repeatability guaranteed, tightening accuracy no longer lies on the operator's hand, but in a reliable mechanism.
Wrench intended for production or assembly workshops, as it guarantees reliable tightening even in highly repetitive and busy working conditions.



Removable knob: for a firm grip directly on the body of the wrench.

648 - Release wrenches



NF EN ISO 6789, ISO 6789, DIN EN ISO 6789

- Accuracy: ± 4% (except R.648.10 at ± 6%).
- Proven reliability: 100,000 cycles.
- Torque adjustment using a control bench, with a key:
 - 82H.6 for products R.648-10 - R.648-25 - J.648-50.
 - 82H.10 for product S.648-110.
- Hydrocarbon-resistant removable handle.
- Numbered wrenches supplied with ISO 6789 calibration certificate.
- Supplied in plastic tube.

	Capacity [N.m]	Square ["]	L [mm]	ΔΔ [kg]
R.648-10	2 - 10	1/4"	178	0,300
R.648-25	5 - 25	1/4"	238	0,450
J.648-50	10 - 50	3/8"	328	0,900
S.648-110	25 - 110	1/2"	446	1,600

"Non vernier" adjustable wrenches

**248 AND 446
SERIES****ADJUSTABLE WRENCHES**
"NON GRADUATED"**COMPACT, DURABLE PRODUCTION
WRENCHES****Durable**

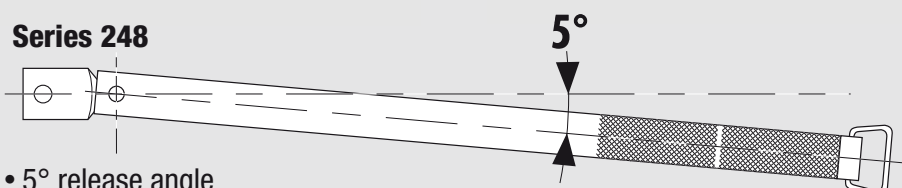
- For intensive and repetitive use, tested to over 100,000 cycles.

Compact and lightweight

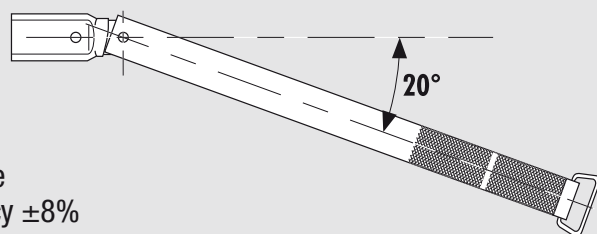
- Shorter and more compact for working in confined spaces.
- Reduced weight for increased comfort when performing intensive tasks.

Safe

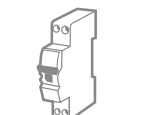
- Non-graduated preset torque wrenches for production applications.
- Preset with a hex key and a torque meter, no risk of accidentally altering settings.
- Touch and sound signals on release: can be used in noisy and poor visibility conditions.

Series 248

- 5° release angle
- 9x12 and 14x18 end fittings
- Accuracy $\pm 4\%$

Series 446

- Wide (20°) release angle
- 20x7 end fitting accuracy $\pm 8\%$


**SERIES 248****SERIES 446**

■ "Non vernier" adjustable click wrenches

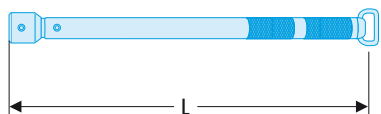


NF EN ISO 6789, ISO 6789, DIN EN ISO 6789

- Accuracy: $\pm 4\%$.
- Proven reliability: 100,000 cycles.
- End fitting: 9 x 12 or 14 x 18 mm.
- Wrenches which can be preset and used in tightening and untightening.
- Torque adjustment with a key using a control bench, see range of torque controllers.
- Knurled metal handle.
- Numbered wrenches supplied in plastic protection tube.

	Capacity [N.m]	Capacity [lbf.in]	Capacity [lbf.ft]	Attachment	Capacity [lbf.ft]	L [mm]	$\Delta\Delta$ [kg]
R.344DA	1 - 5	10 - 50	-	9 x 12	-	200	0,240
R.248-25D	5 - 25	45 - 220	-	9 x 12	-	250	0,280
J.248-50D	10 - 50	90 - 440	-	9 x 12	-	331	0,740
S.248-100D	20 - 100	-	15 - 74	9 x 12	15 - 74	399	0,880
S.248-200D	40 - 200	-	30 - 148	14 x 18	30 - 148	464	1,080
S.248-340D	60 - 340	-	44 - 250	14 X 18	44 - 250	618	1,400

■ R-J-S.446 - "Non vernier" wide angle adjustable wrenches



NF EN ISO 6789, ISO 6789, DIN EN ISO 6789

- Accuracy: $\pm 8\%$.
- Proven reliability: 50,000 cycles.
- End fitting: 9 x 12 or 20 x 7 mm.
- Wrenches adjustable with a torquemeter, see range of torque controllers.
- Wrenches supplied with ISO 6789 calibration certificate.
- Wrenches supplied in plastic protection tube.

	Capacity [N.m]	Attachment	Square ["]	L [mm]	$\Delta\Delta$ [g]
R.446-25	5 - 25	9 x 12	1/4	214	380
J.446-50	10 - 50	20 x 7	3/8	279	490
S.446-100	20 - 100	20 x 7	1/2	407	840

RANGE ELECTRONIC

WRENCHES AND ADAPTERS

FACOM offer an electronic range, for high productivity and accuracy.
Torque range from 1.5 to 340 Nm.

E.306 SERIES

for electronic precision in torque tightening.



E.506 SERIES

for occasional torque & angle tightening.



E.316 SERIES

a single tool for torque & angle tightening for high productivity.



E.406 SERIES

for basic angular tightening.



In confined spaces, our wrenches and adapters provide torque or angle increments.



- The electronic display prevents reading errors.
- Tightening is indicated by the LEDs and buzzer (in all 4 series).
- Easy to use through the same user interface on all models.

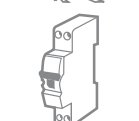


WHY USE TORQUE/ANGLE TIGHTENING ?

Angle tightening eliminates friction issues related with torque tightening. The movement, and hence fastener tension, is defined by the screw pitch and tightening angle.

Torque/angle tightening is performed in 2 steps:

- Pre-torquing to approach the parts and eliminate interface faults.
- Then tightening at a specific angle. Proper assembly tension prevents the fastener from loosening or breaking.

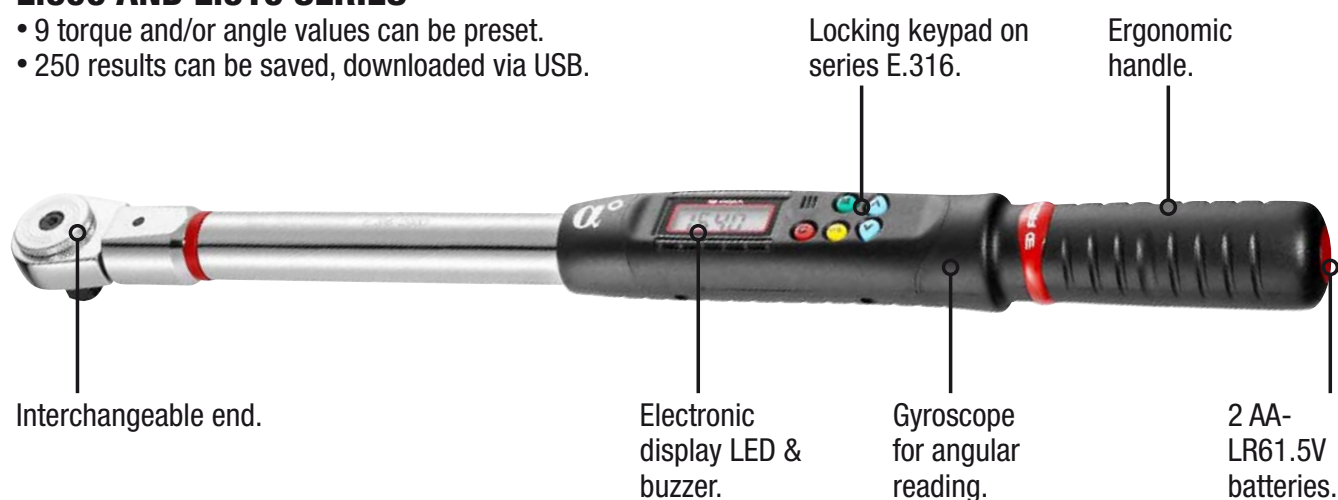


RANGE ELECTRONIC

WRENCHES AND ADAPTERS

E.306 AND E.316 SERIES

- 9 torque and/or angle values can be preset.
- 250 results can be saved, downloaded via USB.



SERIES E.506

- 9 torque and/or angle values can be preset.
- 50-result memory.



SERIES E.406

- 9 preset angle values.
- 50-result memory.



Electronic torque wrenches and adapters

E.306D - Electronic torque wrenches




- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Accuracy: $\pm 2\%$ between 20% and 100% wrench capacity.
 - Measuring mode: peak or follower.
 - Measuring unit: N.m, lbf.ft, lbf.in and kg.cm.
 - Bits: 9 x 12 and 14 x 18 mm.
 - Numbered wrenches supplied with ISO 6789 calibration certificate.
 - Presetting possible of 9 torque and/or angle values.
 - Memory 250 values with PC USB link.
 - Supplied in plastic case with foam interior.

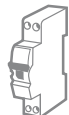
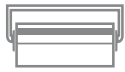
	Capacity [N.m]	L [mm]	$\Delta\Delta$ [kg]
E.306-30D	1,5 - 30,0	360	1,520
E.306-135D	6,7 - 135,0	375	1,520
E.306-200D	10 - 200	474	2,400
E.306-340D	17 - 340	594	2,560

E.306A - Electronic torque wrenches with ratchet



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Accuracy: $\pm 2\%$ between 20% and 100% wrench capacity.
 - Measuring mode: peak or follower.
 - Measuring unit: N.m, lbf.ft, lbf.in and kg.cm.
 - Bits: 9 x 12 and 14 x 18 mm.
 - Numbered wrenches supplied with ISO 6789 calibration certificate.
 - Presetting possible of 9 torque and/or angle values.
 - Memory 250 values with PC USB link.
 - Supplied in plastic case with foam interior.

	Capacity [N.m]	Square ["]	L [mm]	Ratchet	$\Delta\Delta$ [kg]
E.306A30R	1,5 - 30,0	1/4	390	R.372	1,604
E.306A135J	6,7 - 135,0	3/8	415	J.372V	1,697
E.306A135S	6,7 - 135,0	3/8	415	S.372V	1,709
E.306A200S	10 - 200	1/2	530	S.382V	2,699
E.306A340S	17 - 340	1/2	650	S.382V	2,859



E.316D - Electronic torque / angle wrenches



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Accuracy:
 - Torque: $\pm 2\%$ between 20% and 100% wrench capacity.
 - Angle: $\pm 2^\circ$.
 - End fitting: 9 x 12 and 14 x 18 mm.
 - Measuring mode: peak or follower.
 - Locking keypad (the operator has access only to program choices and result memorising).
 - Measuring unit: N.m, lbf.ft, lbf.in, kg.cm and deg.
 - Presetting possible of 9 torque and/or angle values.
 - Memory 250 values with PC USB link.
 - Supplied with calibration certificate.
 - Supplied in plastic case and foam module.

	Capacity [N.m]	L [mm]	$\Delta\Delta$ [kg]
E.316-30D	1,5 - 30,0	360	1,520
E.316-135D	6,7 - 135,0	375	1,520
E.316-200D	10 - 200	474	2,400
E.316-340D	17 - 340	594	2,560

E.316A - Electronic torque / angle wrenches with ratchet



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Accuracy:
 - Torque: $\pm 2\%$ between 20% and 100% wrench capacity.
 - Angle: $\pm 2^\circ$.
 - End fitting: 9 x 12 and 14 x 18 mm.
 - Measuring mode: peak or follower.
 - Locking keypad (the operator has access only to program choices and result memorising).
 - Measuring unit: N.m, lbf.ft, lbf.in, kg.cm and deg.
 - Presetting possible of 9 torque and/or angle values.
 - Memory 250 values with PC USB link.
 - Supplied with calibration certificate.
 - Supplied in plastic case and foam module.

	Capacity [N.m]	Square ["]	L [mm]	Ratchet	$\Delta\Delta$ [kg]
E.316A30R	1,5 - 30,0	1/4	390	R.372	1,604
E.316A135J	6,7 - 135,0	3/8	415	J.372V	1,697
E.316A135S	6,7 - 135,0	1/2	415	S.372V	1,709
E.316A200S	10 - 200	1/2	530	S.382V	2,699
E.316A340S	17 - 340	1/2	650	S.382V	2,859

E.406 E.406 - Electronic angle adapter



- Accuracy: $\pm 2^\circ$.
- Angular range: 1 – 360°.
- Measuring unit: degree.
- Accuracy: 0,1°.
- Presetting possible of 9 angle values.
- Memory 50 values.
- Supplied in plastic case with calibration certificate.

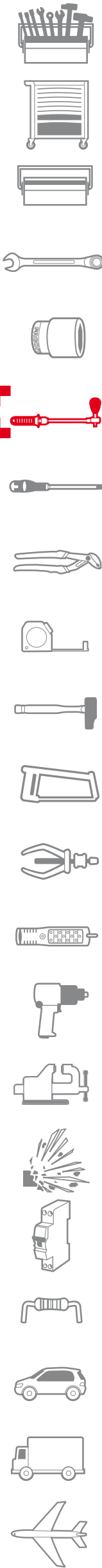
E.506 - Electronic torque / angle adapter



NF EN ISO 6789, ISO 6789, DIN EN ISO 6789

- Accuracy:
 - Torque: $\pm 3\%$ between 20% and 100% wrench capacity.
 - Angle: $\pm 2^\circ$.
- Measuring mode: peak or follower.
- Cycle counter.
- Locking keypad (the operator has access only to program choices and result memorising).
- Measuring unit: N.m, lbf.ft, lbf.in, kg.cm and deg.
- Presetting possible of 9 torque and/or angle values.
- Memory 50 values.
- Supplied in plastic case with calibration certificate.

	Resolution	Capacity [N.m]
E.506-135S	0,1	6,7 - 135,0
E.506-200S	0,1	10 - 200
E.506-340S	0,1	17 - 340



RELEASE TYPE TORQUE DRIVERS

AN ACCURATE, DURABLE LOW-TORQUE TOOL

RELIABLE, HIGH PERFORMANCE

- Reliability of mechanism tested over more than 50,000 operations.
- Accuracy exceeds ISO 6789 specified performance of $\pm 6\%$.
- Automatic reset every 120°.

SAFE

- Automatically releases upon reaching the specified torque, impossible to exceed the set value.
- Protected adjustment system: no risk of accidentally altering settings.
- Flattened profile prevents tool rolling on the work-top.

ERGONOMIC

- Clear, easy to read vernier.
- Ergonomic handle providing an excellent grip.
- Lightweight.



ISO 6789 TYPE II - CLASS D - CLASS F

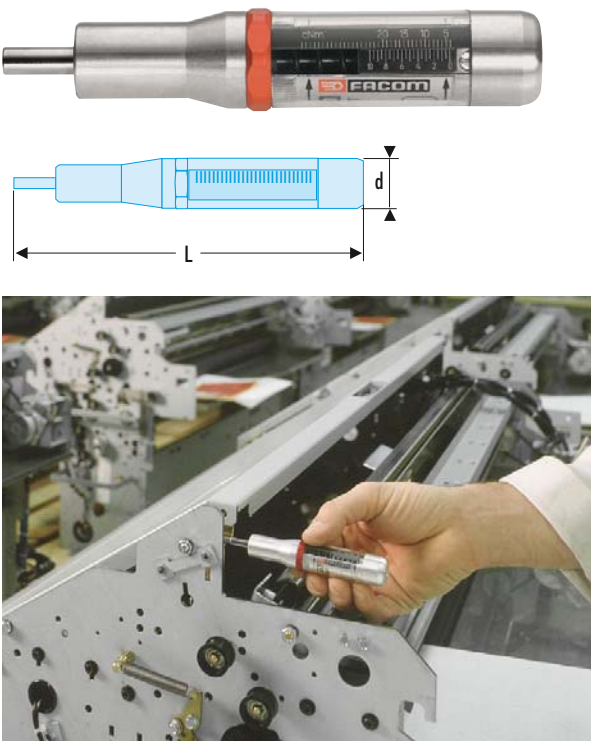
SERIES A.300MT



SERIES A.400



A.MT - Micro-Tech® "low torque" screwdriver



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Lightweight and compact screwdriver for low torque load.
 - Right-hand torquing.
 - Female hex output for use with bits series 0 - 4 mm (1/4" output with ECR.0 drive optionally).
 - 82H.4: Adjustment key 4 mm.
 - Supplied with calibration certificate and adjustment key.

	Capacity [cN.m]	Graduation	d [mm]	L [mm]	Bits	ΔΔ [g]
A.300MT	4 - 20	0,05	21	96,5	0	75
A.301MT	15 - 75	0,50	23	130,0	1	130

A.400 - Screwdriver with vernier adjustment



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Class II type D (A.400 maintenance).
 - One-direction screwdriver, right-hand torquing.
 - Female hex output for use with 1/4" bit.
 - ECR drive 1/4" - 1/4" for sockets and accessories optional.
 - 1/4" drive on the handle for use with a ratchet handle type A.300PA.
 - 82H.4: Adjustment key.
 - Supplied with calibration certificate, adjustment key and individual identification number.

	Graduation [N.m]	L [mm]	Torque N.m	ΔΔ [g]
A.402	0,1	147	0,5 - 2,5	280
A.404	0,5	147	2 - 10	400

ECR.0 Drive socket adapter

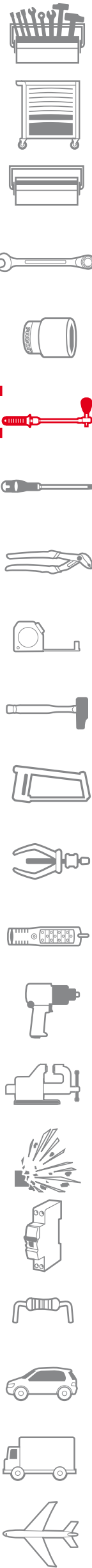


- Bit to use 1/4" sockets with the torque screwdrivers A.300MT - A.340MT.
- 6-point drive 4 mm.
- Length: 22 mm.
- Weight: 7 g.

ECR Socket adapter - 1/4"



- NF ISO 1173, ISO 1173
- Bit to use 1/4" sockets with the torque screwdrivers A.400 - A.440 - A.301MT - A.341MT.
 - Length: 25 mm.
 - Weight: 15 g.



A.300PA Ratchet handle for torque screwdrivers



- Adapting ratchet handle: increased tightening power for repeating or high torque tightening.
 - For torque screwdrivers capacity 0.50 --> 10 N.m.
 - Max torque: 30 N.m.
- Weight: 85 g.

A.MTJ1 - Micro-Tech® torque screwdriver sets



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Lightweight and compact screwdriver for low torque load.
 - Right-hand torquing.
 - Female hex output for use with bits series 0 - 4 mm (1/4" output with ECR.0 drive optionally).
 - Bits series 0 drive 4 mm.
 - Adjustment key 4 mm.
 - Supplied in case with calibration certificate.

	Capacity [N.m]	Screwdriver	Bits	ΔΔ [g]
A.300MTJ1	4-20	A.300MT	Slotted head : 1,8 - 2,5, PH 0,9 - 1,3 - 1,5 - 2 mm, PZ 0 - 1 - 2 mm	300
A.301MTJ1	15-75	A.301MT	Slotted head : 4 - 4,5 - 5,5, PH 1,5 - 2,5 - 3 mm, PZ 0 - 1 mm	370

A.J2 - Torque screwdriver sets



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Class II type D (A.400 maintenance).
 - One-direction screwdriver, right-hand torquing.
 - Female hex output for use with bits series 1 - 1/4".
 - 1/4" drive on the handle for use with a ratchet handle type A.300PA.
 - Ratchet handle (A.300PA).
 - Adjustment key 4 mm.
 - Supplied in case with calibration certificate and individual identification number.

	Wrench	Knob	Screwdriver	Bits	Bit holder	Box	Tray	[g]
A.402J2	A.402-20	A.300PA	A.402	Slotted head : 4,5 - 6,5 - 8, Hexagon: 3 - 4 - 5 mm, PZ 1 - 2 - 3 mm	EF.1P4	BP.102	PL.436	700
A.404J2	A.404-20	A.300PA	A.404	Slotted head : 4,5 - 6,5 - 8, Hexagon: 3 - 4 - 5 mm, PZ 1 - 2 - 3 mm	EF.1PA	BP.102	PL.436	830

A.J1 - Torque screwdriver sets - 1/4" sockets



- NF EN ISO 6789, ISO 6789, DIN EN ISO 6789
- Class II type D (A.400 maintenance).
 - One-direction screwdriver, right-hand torquing.
 - Female hex output for use with 1/4" bit.
 - 1/4" drive on the handle for use with a ratchet handle type A.300PA.
 - Ratchet handle A.300PA.
 - ECR drive 1/4" - 1/4" for sockets and accessories.
 - Extensions 1/4" (R.210 and R.215).
 - Adjustment key 4 mm.
 - Supplied in case with calibration certificate and individual identification number.

	Wrench	Knob	Socket	Screwdriver	Box	Tray	ΔΔ [kg]
A.402J1	A402 - 20	A.300PA	R.3,2 - 4,0 - 5,0 - 5,5 - 6,0 - 7,0 - 8,0 - 9,0 - 10,0 mm	A.402	BP.115	PL.434	1,10
A.404J1	A404 - 20	A.300PA	R.3,2 - 4,0 - 5,0 - 5,5 - 6,0 - 7,0 - 8,0 - 9,0 - 10,0 mm	A.404	BP.115	PL.434	1,20

TORQUE ACCESSORIES

7 TYPES OF ACCESSORY



• Wrench fitted with a ratchet J.372, a knob S.305P and a socket.



3 types of end fitting:



1. CHOOSE YOUR WRENCH OR DRIVER

306	208	200	203
R.304DA R.306-25D J.306-50D S.306-100D R.306U J.306U	J.208-50D S.208-100D		
S.306-200D S.306-350D S.306U K.306-600D	J.208-200D S.208-340D		
K.306-1000D		K.200DB K.202DB M.200DB	
S.306-100R S.306-200R S.306-350R			R.203DA J.203DA S.203A

E.306	E.316	248	446
E.306-30D E.306-130D	E.316-30D E.316-130D	R.344DA R.248-25D J.248-50D S.248-100D	R.446-25
E.306-200D E.306-340D	E.316-200D E.316-340D	S.248-200D S.248-340D	J.446-50 S.446-100

A.400 A.300MT	A.440 A.340MT
A.402 A.404	A.442 A.444
A.300MT A.301MT	A.340MT A.341MT

2. CHOOSE THE TYPE OF ACCESSORY

9x12	J.372 S.372	R.372 J.372V S.372V	R.373 J.373 S.373	Series 10	Series 12
14x18	S.382	S.382V K.382A	S.383 K.383	Series 11	Series 13
Ø 30		K.200DB K.202DB M.200DB	K.151A M.151		
20x7		J.152 S.152	J.203E S.203E	Series 20	

9x12	J.372 S.372	R.372 J.372V S.372V	R.373 J.373 S.373	Series 10	Series 12
14x18	S.382	S.382V K.382A	S.383 K.383	Series 11	Series 13
20 x 7		J.152 S.152	J.203E S.203E	Series 20	

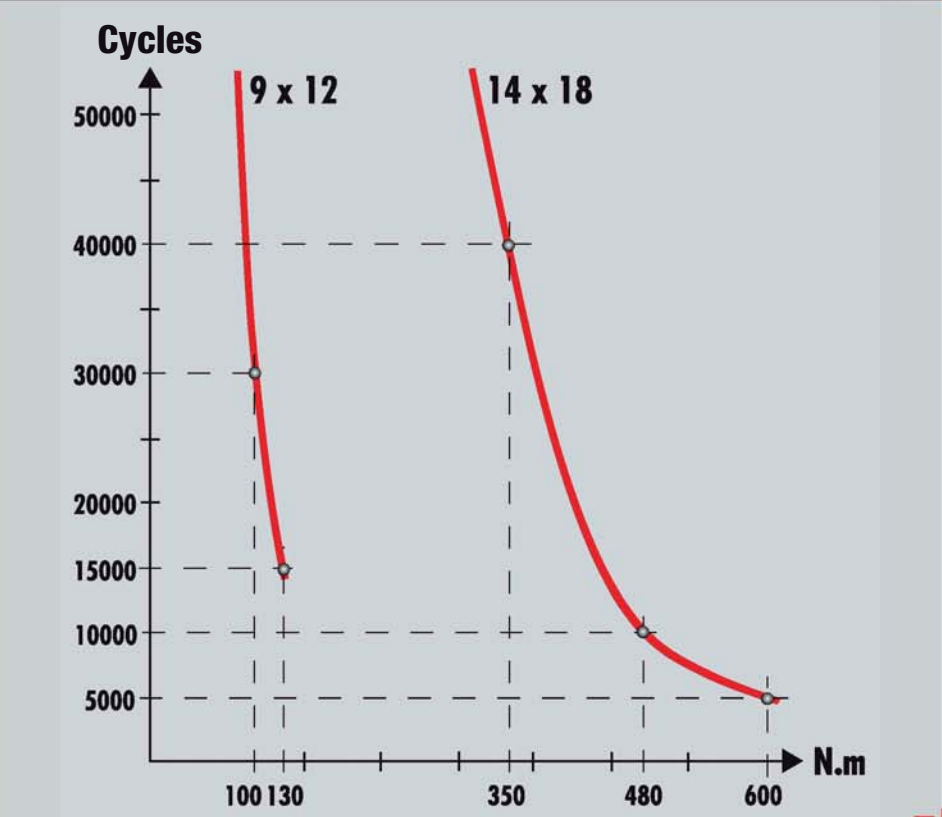
Ø 1/4	ECR	
Ø 4		ECRO

See the torque wrench and driver selection guide on p. 342

SAFETY OF END FITTINGS

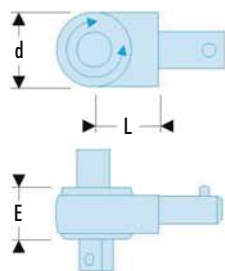
When the wrench releases, the torque accessories are subjected to severe shocks that can cause them to fail after a certain number of cycles.

- The diagram below shows the number of cycles not to be exceeded according to the applied torque. The accessory must be replaced before reaching the maximum number of cycles.



Accessories 9 x 12 mm

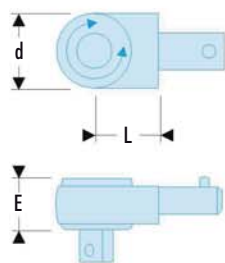
Ratchets - drive 9 x 12 mm



- For use with pivot handle S.305P.

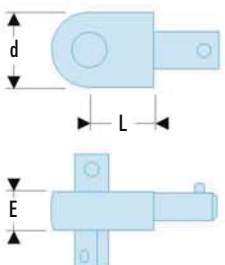
	Square ["]	d [mm]	E [mm]	L [mm]	ΔΔ [g]
J.372	3/8	37	26	15	155
S.372	1/2	37	26	15	165

Compact ratchets - drive 9 x 12 mm



	Square ["]	d [mm]	E [mm]	L [mm]	ΔΔ [g]
R.372	1/4	27	19	15	70
J.372V	3/8	37	26	15	140
S.372V	1/2	37	26	15	150

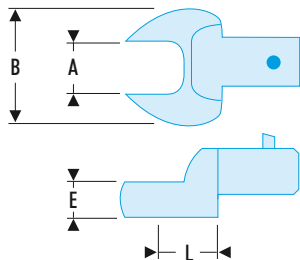
Square drive - drive 9 x 12 mm




- For use with pivot handle S.305P, except the R.373 model.

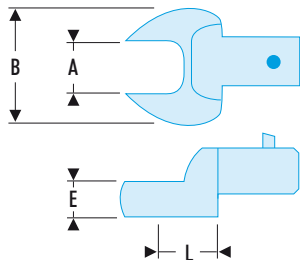
	Square ["]	d [mm]	E [mm]	L [mm]	ΔΔ [g]
R.373	1/4	23	14	15	55
J.373	3/8	26	17	15	85
S.373	1/2	26	17	15	100


▣ Metric open end bits - drive 9 x 12 mm



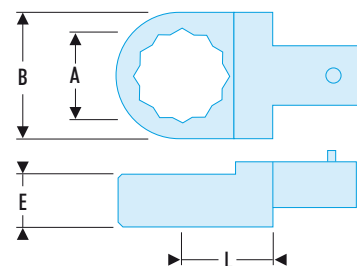
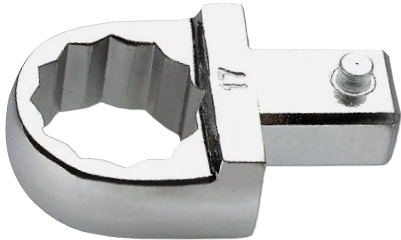
	A [mm]	B [mm]	E [mm]	L [mm]	ΔΔ [g]
10.7	7	21,0	5	17,5	33
10.8	8	22,0	5	17,5	32
10.9	9	23,5	6	17,5	38
10.10	10	24,5	6	17,5	37
10.11	11	26,0	6	17,5	36
10.12	12	27,5	7	17,5	44
10.13	13	29,0	7	17,5	45
10.14	14	31,5	7	20,0	42
10.15	15	33,0	9	20,0	61
10.16	16	35,5	9	20,0	60
10.17	17	37,5	9	20,0	62
10.18	18	39,0	9	20,0	69
10.19	19	41,5	9	20,0	67


▣ Inch open end bits - drive 9 x 12 mm



	A ["]	B [mm]	E [mm]	L [mm]	ΔΔ [g]
10.1/4	1/4	19	5	17,5	33
10.5/16	5/16	19	5	17,5	26
10.3/8	3/8	25	6	17,5	38
10.7/16	7/16	25	6	17,5	36
10.1/2	1/2	31	7	17,5	43
10.9/16	9/16	31	7	20,0	41
10.5/8	5/8	37	9	20,0	60
10.11/16	11/16	37	9	20,0	59
10.3/4	3/4	40	9	20,0	69

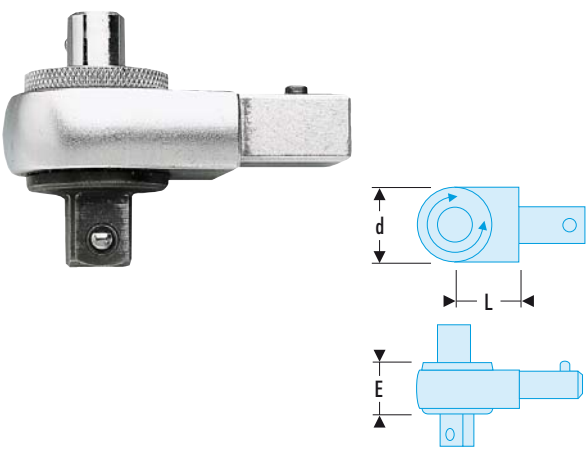
▣ Polygon drives - drive 9 x 12 mm



	A [mm]	B [mm]	E [mm]	L [mm]	ΔΔ [g]
12.7	7	20	7,9	17,5	33
12.8	8	20	7,9	17,5	33
12.9	9	20	7,9	17,5	32
12.10	10	20	7,9	17,5	36
12.11	11	20	7,9	17,5	34
12.12	12	20	12,1	17,5	41
12.13	13	20	12,1	17,5	40
12.14	14	23,5	12,1	17,5	49
12.15	15	24,5	12,1	17,5	46
12.16	16	26,5	12,9	17,5	54
12.17	17	27,5	13,1	17,5	50
12.18	18	30	13,1	17,5	57
12.19	19	31	13,1	17,5	67

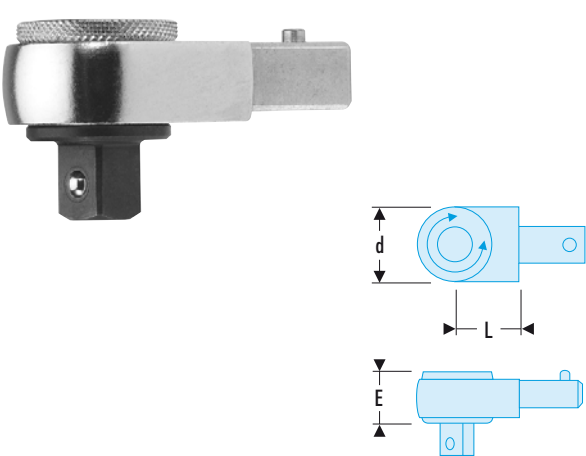
Accessories 14 x 18 mm

S.382 Ratchet - drive 14 x 18 mm



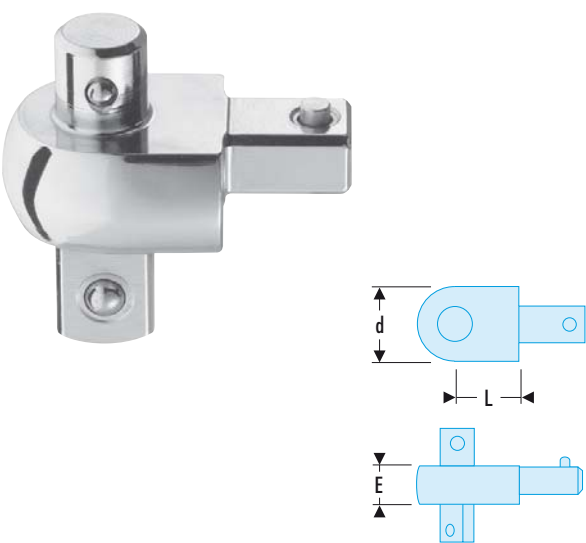
- For use with swivel handle S.305P.
- Square: 1/2".
- Weight: 300 g.

Compact ratchets - drive 14 x 18 mm



	Square ["]	d [mm]	E [mm]	L [mm]	ΔΔ [g]
S.382V	1/2	41	26	27	285
K.382A	3/4	69	35	27	870

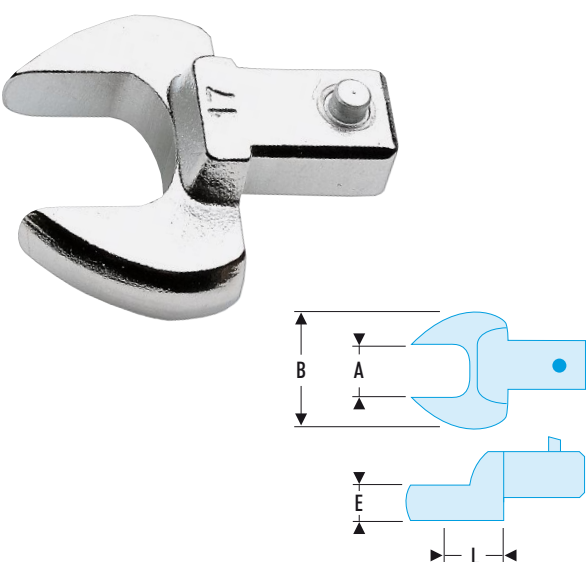
Square drive - drive 14 x 18 mm



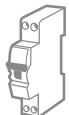
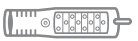
- For use with pivot handle S.305P, except the K.383 model.

	Square ["]	d [mm]	E [mm]	L [mm]	ΔΔ [g]
S.383	1/2	32	22	27	160
K.383	3/4	38	22	27	340

Metric open end bits - drive 14 x 18 mm

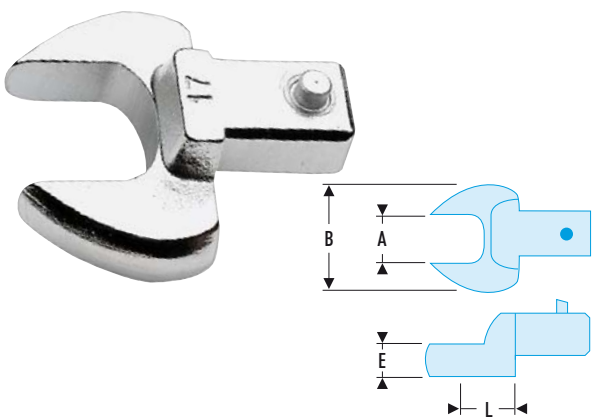


	A [mm]	B [mm]	E [mm]	L [mm]	ΔΔ [g]
11.13	13	34	8	25,0	114
11.14	14	34	8	25,0	113
11.15	15	34	8	25,0	111
11.16	16	39	10	25,0	140
11.17	17	39	12	25,0	134
11.18	18	39	12	25,0	136
11.19	19	45	12	25,0	140
11.21	21	45	12	25,0	157
11.22	22	52	14	25,0	161
11.23	23	52	14	25,0	172
11.24	24	52	14	25,0	165
11.27	27	59	16	32,5	222
11.30	30	64	18	32,5	277
11.32	32	64	18	32,5	269



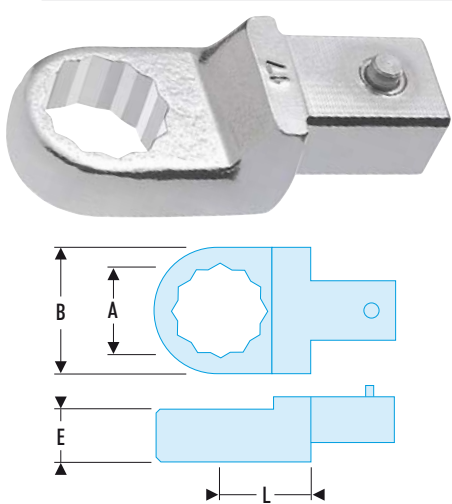
Accessories

Inch open end bits - drive 14 x 18 mm



	A ["]	B [mm]	L [mm]	ΔΔ [g]
11.1/2	1/2	34	25,0	114
11.9/16	9/16	34	25,0	111
11.5/8	5/8	39	25,0	140
11.11/16	11/16	39	25,0	137
11.3/4	3/4	45	25,0	156
11.13/16	13/16	45	25,0	152
11.7/8	7/8	52	25,0	172
11.15/16	15/16	52	25,0	167
11.1'1/4	1'1/4	59	32,5	266
11.1'1/16	1'1/16	64	32,5	221

Polygon drives - drive 14 x 18 mm



	A [mm]	d [mm]	E [mm]	L [mm]	ΔΔ [g]
13.13	13	30,0	11	25	113
13.14	14	30,0	11	25	109
13.15	15	30,0	11	25	107
13.16	16	30,0	11	25	127
13.17	17	30,0	12	25	123
13.18	18	30,0	12	25	118
13.19	19	31,0	12	25	141
13.21	21	33,0	12	25	133
13.22	22	35,0	14	25	153
13.23	23	38,0	14	25	157
13.24	24	38,0	14	25	143
13.27	27	41,5	16	31	183
13.30	30	45,0	18	31	223
13.32	32	47,5	18	31	209
13.34	34	51,0	11	31	212
13.36	36	53,0	19	31	193

Accessories 20 x 7 mm

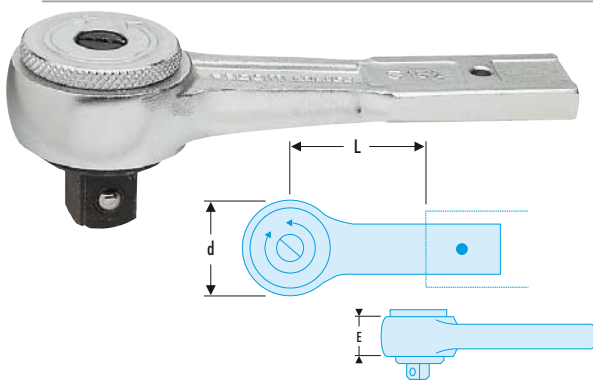
Swivel handles - drive 20 x 7 mm



- Allows to maintain the wrench parallel with the tightening plane and contribute to tightening accuracy.
- Used with square bits Ref J.203E - S.203E and torque wrench ref. R.203 DA.

	d [mm]	L [mm]	Wrench	ΔΔ [g]
R.200P	22	45	R.203DA	20
S.200P	36	55	J.203E - S.203E	55

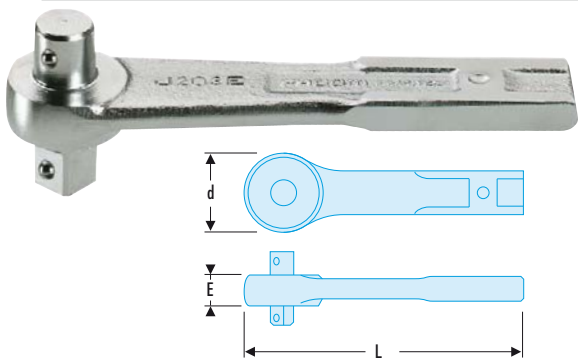
Ratchets - drive 20 x 7 mm



- 5° increment.
- For use on torque wrenches ref. J.203DA - S.203DA - S.306-100R - S.306-200R - S.306-350R.

	Square ["]	d [mm]	E [mm]	L [mm]	Wrench	ΔΔ [g]
J.152	3/8	38	25	55	J.203DA	274
S.152	1/2	38	25	55	S.203DA - S.306-100R - S.306-350R - S.306-200R	275

Square drive - drive 20 x 7 mm



- For use on torque wrenches ref. J.203DA - S.203DA - S.306-100R - S.306-200R - S.306-350R.

	Square ["]	d [mm]	E [mm]	L [mm]	ΔΔ [g]
J.203E	3/8	25	11	56	140
S.203E	1/2	25	11	56	150

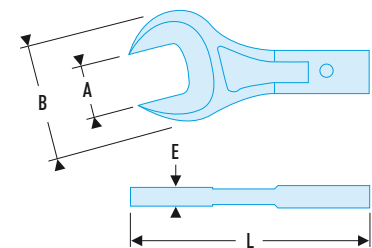
Adapters - drive 20 x 7 mm



- For use with:
 - bits 9 x 12 mm on wrenches max capacity 100 N.m.
 - bits 14 x 18 mm on wrenches max capacity 600 N.m.

	Attachment	ΔΔ [g]
J.274	9 x 12	135
S.284	14 x 18	145

Open end bits - drive 20 x 7 mm



- For use on torque wrenches series 203, 306R and 446.

	A [mm]	B [mm]	E [mm]	L [mm]	ΔΔ [g]
20.10	10	24	6,0	105	60
20.11	11	24	6,0	105	60
20.12	12	29	6,0	106	60
20.13	13	29	6,0	106	60
20.14	14	29	6,0	106	65
20.15	15	40	7,5	109	105
20.16	16	40	7,5	109	105
20.17	17	40	7,5	109	105
20.18	18	40	7,5	109	100
20.19	19	40	7,5	109	100
20.21	21	53	8,0	112	145
20.22	22	53	8,0	112	145
20.23	23	53	8,0	112	145
20.24	24	53	8,0	112	140
20.26	26	53	8,0	112	130
20.27	27	66	9,0	115	185
20.28	28	66	9,0	115	185
20.29	29	66	9,0	115	185
20.30	30	66	9,0	115	185
20.32	32	66	9,0	115	180
20.35	35	74	10,0	118	220
20.36	36	74	10,0	118	220

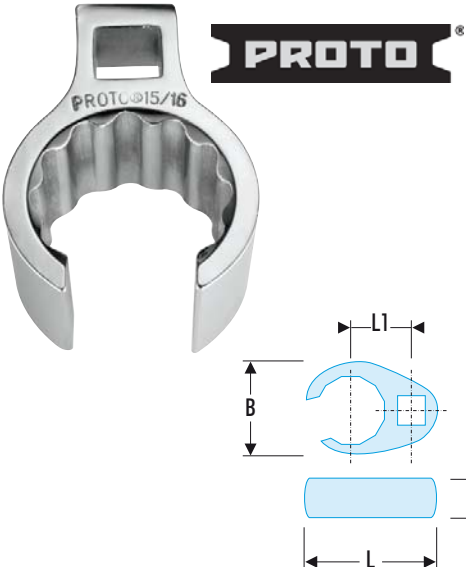
Special accessories

S.305P Swivel handle



- Allows to maintain the wrench parallel with the tightening plane.
 - Use with 3/8" and 1/2" ratchets and drive squares.
 - Max diam. size: 45 mm.
 - Length: 66 mm.
- Weight: 110 g.

3/8" 12-point Crowfoot flare bit



- Thin wall 12-point high head.
- Built to aeronautical specifications.
- Drive square: 3/8".
- Dimensions: 5/8" --> 1 1/16.
- Finish: chromed.

	A ["]	B [mm]	C [mm]	E [mm]	L [mm]	L1 [mm]	ΔΔ [g]
4920FL	5/8	18,3	24,2	24,2	19,05	11,20	40
4922FL	11/16	18,3	26,3	26,3	20,20	12,50	44
4924FL	3/4	18,3	29,2	29,2	21,40	14,00	53
4926FL	13/16	18,9	31,1	31,1	22,60	15,40	56
4928FL	7/8	19,3	33,8	33,8	25,00	16,70	67
4930FL	15/16	19,0	35,9	35,9	24,20	17,30	68
4932FL	1	19,8	37,7	37,7	26,20	19,00	77
4934FL	1-1/16	20,0	39,5	39,5	27,00	18,10	84

PROTRACTOR ATTACHMENTS

DESIGNED FOR CYLINDER-HEADS

FACOM offers a complete range of specially designed tools

Maximum visibility

- Choice of tapered drum with reverse laser marking. (DMP.360, DM.360L, D.360L) or flat drum with normal marking. (DM.360, DM.370) Set the drum to the value recommended by the manufacturer and stop at zero.

Easier to attach

- Wide range of drum-locking accessories: Clamp, magnet, 3 limit stops (24, 45 and 65 mm).

Compliance with manufacturers' recommendations

- It is essential to apply the manufacturers' recommended cylinder head torques.
- Tightening to the correct torque with a suitable torque wrench.
- Correct torquing sequence and turn angle.



DM - Angular tightening wrenches



- Flat drum with top reading.
- Drum positioning on the value recommended by the manufacturer, then tightening to zero.
- Graduations: 2°.
- Male and female square drive.
- Fixed point by flexible with magnet.

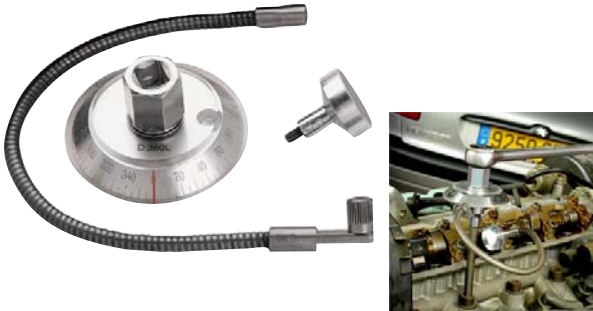
	Square ["]	d [mm]	L [mm]	ΔΔ [g]
DM.360	1/2	63	410	350
DM.370	3/4	73	430	550

D.360L Lateral reading angular tightening wrench



- Lateral reading tapered drum for maximum legibility.
 - Double presetting index (red line). For tightening, just align the marks.
 - Accuracy: 2°.
 - Square 1/2".
 - Supplied with stops of 24 - 45 - 65 mm.
- Weight: 414 g.

DM.360L Lateral reading angular tightening wrench with flexible arm and magnet



- Lateral reading tapered drum for maximum legibility.
 - Double presetting index (red line). For tightening, just align the marks.
 - Accuracy: 2°.
 - Square 1/2".
 - Supplied with 1 flexible and 1 magnet.
- Weight: 500 g.

DMP.360L Angular tightening set



- Including:
 - 1 lateral reading angular tightening wrench (D.360L).
 - 3 stops, length 24 - 45 - 65 mm.
 - 1 flexible.
 - 1 pair of pliers.
 - 1 magnet.
 - Supplied in a plastic case, dim. (L. x W. x H.): 375 x 180 x 145 mm.
- Weight: 550 g.

NEW

TORQUE CONTROLLER

EASY TORQUE CONTROL FOR ALL!

- Simple and fast**
- Easy to use device with minimum settings to avoid errors.
 - For testing wrenches before use.
- Wide torque range**
- 3 devices covering a wide torque range from 2 to 1000 Nm.
- Safe**
- No risk of bad reading by the operator: limit value and tolerance can be preset, indication by orange, green, red LED.
 - RS232 output for traceability.



E.2000

E.2000 - Torque controllers



- Accuracy: $\pm 1\%$, ± 1 digit.
- Measuring unit: N.m, lbf.ft, lbf.in.
- Measuring mode: monitor, edge and peak.
- Possible presetting of a limit value and tolerance with orange, green, red LED indicator.
- RS232 PC link.
- Dimensions (L. x W. x H.): 150 x 150 x 90 mm.
- Supplied with a calibration certificate.

	Capacity [N.m]	Square ["]	Square	$\Delta\Delta$ [kg]
E.2000-50	2 - 50	3/8"	-	2,60
E.2000-350	10 - 350	1/2"	-	2,60
E.2000-1000	100 - 1000	-	27	4,60

