M.2005D

- Clé Mémotork
- Memotork wrench
- Memotork Drehmomentschlüssel
- Memotork sleutel
- Llave Memotork
- Chiave Memotork

Notice d'instructions
Instruction manual
Bedienungsanleitung
Gebruiksaanwijzing
Guia de instrucciones
Istruzioni per l'utilizzo

NU-M.2005D/95

FACOM®

Sommaire

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ISO 6789 - EN.26789 Type 2 Class A Wrench precision: ± 1 % ± 1 digit

	Nm	mKg	Lb.Ft	Lb.in	Resolution				■	
	min → max	min → max	min → max	min → max	Nm	mKg	Lb.Ft	Lb.in	"	mm
M.2005-25D	5 → 25	0,51 → 2,55	3,69 → 18,45	44,3 → 221,3	0,01	0,001	0,01	0,1	1/4	9 x 12
M.2005-100D	20 → 100	2,04 → 10,2	14,79 → 73,8	177,4 → 885,1	0,05	0,01	0,03	0,4	3/8	9 x 12
M.2005-250D	50 → 250	5,10 → 25,5	36,95 → 184,9	442 → 2210	0,1	0,01	0,1	1	1/2	14 x 18

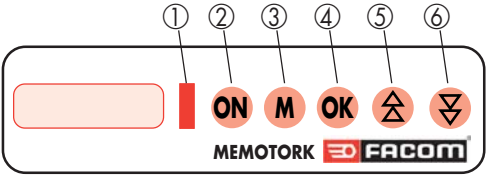
Memory capacity : 900 tensioning settings.
Display : High-stability liquid crystal, 4 digits + symbols.
Multi-function keys : Sealed, waterproof to EN 60529 IP 54.
Power : 4 1.5 V alkaline batteries (4 x AA WN 1500).
Endurance : 40 hours continuous operation.
Precision : The grip includes a calibration position indicator.

Output RS.232 should be protected to EN 60529 IP 54.

Operating temperature : 0° to +50° C.
Storage temperature : -20° to +70° C
Output type : type RS.232.

Sensitivity drift :
0,02 % per 1° centigrade.
Thus at 0° C. : 0,4 %
and at 50° C. : 0,6 %

Description



Keypad

As a safety precaution, an acoustic signal is given each time a key is pressed.

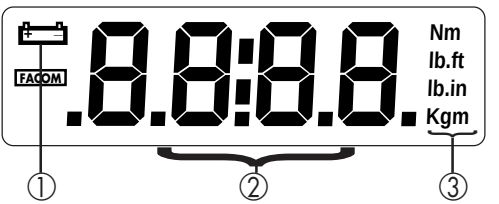
① **LED** : Red light, complements acoustic alarm.

② ON : Wrench is on. *(automatic switch-off, see page 18)*

③ M : Select operating mode.

④ OK : Confirmation of selection. Also used to reset to zero.

⑤⑥ Allow fast or slow setting of torque limit, and also recall of stored settings.



Display *(4 digits + symbols)*

① Battery alarm *(see page 26)*

② Alphanumeric display. Shows operating modes; torque values, tensioning setting numbers, date, hour, minute and error messages.

③ Units of measure.

Preparing the wrench

4 charged batteries
To insert batteries : remove screw from the back of the wrench. Take out the power pack and insert the 4 batteries.

1 - Press **ON**. The wrench gives three beep tones and displays tESt, then performs a function check and reaches its calibrated setting.

2 - If this is the first startup after battery charging, the wrench will be in direct reading mode, in Nm.

3 - If the wrench has already been used, it will be set to the mode and unit being used when it was last switched off.

4 - Confirm your selection using the **OK** key. Or select a different mode (see page 7) and confirm using the **OK** key.

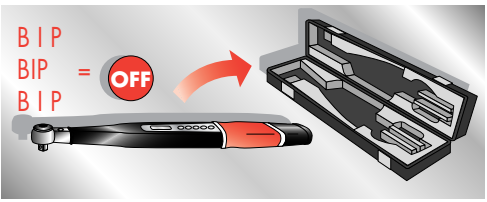
Automatic switch-off

• If the wrench is not used for 50 seconds, it partially switches off to save battery power. The display switches off and the buzzer gives a beep tone every 5 seconds to indicate standby status.

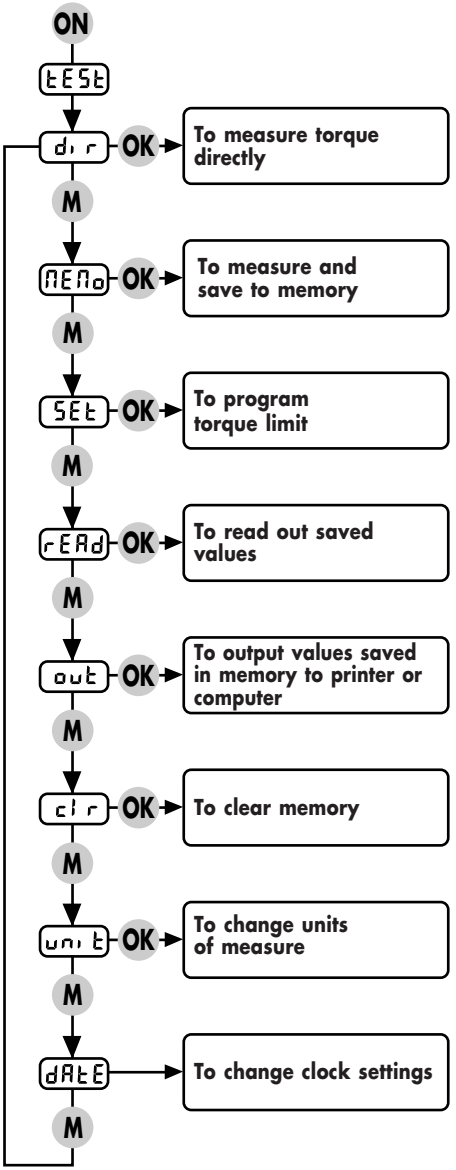
• If the wrench is not used for 4 minutes, it switches off completely.

• To switch off the wrench before the 4 minute delay expires, press any key except the **ON** key: the wrench gives three beep tones and switches off. Otherwise, press the **ON** key to reset the wrench to operating mode.

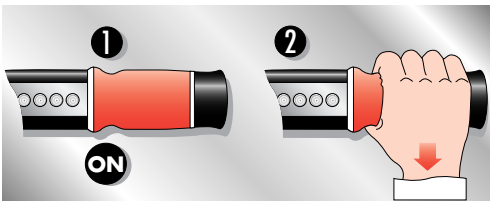
Tip



Operating principle



Tip



Changing units

unit

There are four units available *(Nm, mkg, Lb/ft and Lb/in)*. To select a unit, press the **M** key until the message unit appears. Press **OK** to confirm. Press the ⏫ or ⏬ key to make the desired unit flash on and off. Press the **OK** key to confirm selection and exit unit.

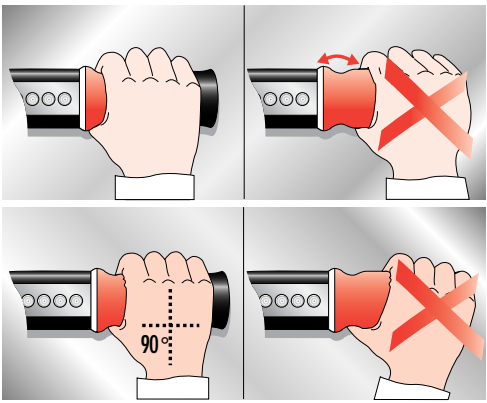
Changing clock settings

dAtE

Find the message dAtE using the M key. This message is displayed for a few seconds; then month and date followed by hour and minutes are shown in sequence. Press **OK**. The month flashes on and off on the display. Press the ⏫ key to set the current month, then press **OK** to confirm. The date now automatically flashes on and off. Set the current date using the ⏬ key and confirm using the **OK** key. The hour and minutes appear next: proceed in the same way. Once the minutes are confirmed the dAtE message reappears and the values selected are displayed in turn. If they are as you want, press the **M** key to leave dAtE mode. If not, press **OK** and restart the clock setting procedure.

NOTE: When first used, or after the batteries have been changed, the wrench selects month 01, date 01, hour 00 and minute 00.

Tip



Direct reading

Press **M** until dir is displayed. Confirm selection by pressing **OK**: the message 0.00 will appear.
Tensioning can now begin.

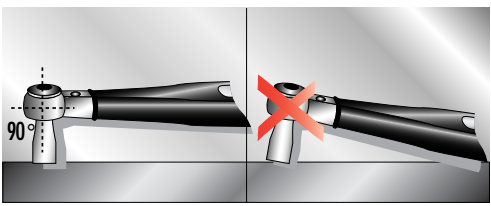
Tensioning

A - Position wrench perpendicularly to the axis of tensioning.
B - Position hand in the middle of grip.
C - Pull on the wrench with a gradual perpendicular movement.
D - Note the increase in torque shown on the display and stop pulling immediately the desired torque is displayed. The wrench displays the maximum torque applied.
E - There are three ways of moving on to the next tensioning operation:

- E1 - Reduce the torque level to below 10% of the wrench's maximum capacity; this is taken into account when a new torque setting is applied.
- E2 - Wait for 15 seconds, after which the first displayed torque setting will be cleared and the second tensioning operation can be performed.
- E3 - Press **OK**: the first torque setting will be cleared and the second tensioning operation can be performed.

If the wrench's maximum capacity is reached, the message StoP appears and a beep tone sounds. If 120% of the maximum capacity is reached, the message ErrS appears and a continuous beep tone sounds *(see error table on page 25).*

Tip



Choosing a torque limit SEt

The desired torque value *(limit)* for tensioning is programmable. The wrench automatically signals when this limit is reached *(beep tone and lit signal)*.

A - Press M until message SEt appears.

B - Confirm selection using OK; the display shows the previously programmed limit or an automatic limit equivalent to 10% of the wrench's maximum capacity.

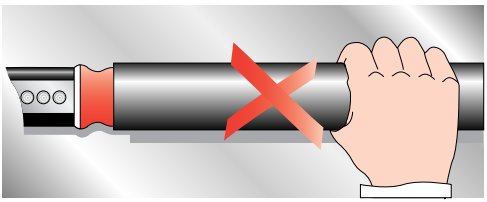
C - To modify the limit use the ▲ and ▼ keys. Using the keys to alter the limit will cause an equivalent increase or decrease in the applied power of the wrench. A fast numerical scan can be obtained by pressing the appropriate key for more than 2 seconds.

D - Confirm the limit using OK.

E - The wrench switches to memory mode and the display shows the limit and the tensioning number in turn.

NOTE: When no limit is entered *(display is clear)*, it is possible to work without a warning light or a beep tone.

Tip



Storing tensioning settings in memory

MEMo

The tensioning operation can be stored in memory with or without a torque limit being programmed.

A - Press M until message MEMo appears.

B - Confirm using OK; the display shows the limit and the tensioning number in turn.

C - Perform the tensioning operation. The torque progression is indicated by a beep tone which increases in intensity as the torque increases.

D - When the limit is reached the beep tone and flashing led display both become continuous.

E - Once the limit is reached, there is an interval of 15 seconds for saving it by pressing OK. While saving is taking place the message LOAd is displayed. Once the save operation is finished the wrench automatically moves on to the next tensioning value and the tensioning number increases by one.

F - If the limit is not saved to memory, the next tensioning value can be accessed by reducing the applied torque to below 10% of the wrench's capacity or by waiting for 15 seconds.

• When the memory is full, the wrench displays the message FULL.

• Exit from MEMo mode using M key.

Reading saved values

rEAd

A - Press M until message rEAd appears.

B - Confirm selection using OK. The display will show in turn the number of the last tensioning operation performed and its value.

C - Using the ▲ and ▼ keys it is possible to scan through the values saved in the memory.

• If the memory is empty the display flashes the message NOOO. The wrench then automatically returns to direct reading mode.

• Exit from rEAd mode using M key.

Clearing saved values from memory

A - Press **M** until message clr appears.
B - Confirm selection using **OK**. The display will show a flashing clr message.
C - If data is to be cleared, confirm once more using **OK**. When the memory is empty the display shows the message End and the wrench makes 3 beep tones. If the data is not to be cleared, exit clr mode using **M** key before second confirmation.
D - After 2 seconds the wrench moves to direct reading mode.

Transferring stored data from memory to a printer or computer

A - Press **M** until message out appears.
B - Confirm selection using **OK**. The display will show one of the following flashing messages:
• out1 for computer transfer or fast printer with memory.
• out2 for normal printers.
Using the ⇕ key select out1 or out2 and confirm using **OK**. The display flashes out1 or out2 during transfer.
C - When transmission is finished the display shows the message End and the wrench makes three beep tones.
D - Use the **OK** key to repeat the operation, or exit out mode by using the **M** key.
• Values remain stored in wrench memory in all cases *(precaution against paper jam)*.
• The printout shows: the tensioning setting number, the date and time of storage in memory, the torque value in the unit of measure selected at the time of printing.
The tensioning operations performed can therefore be printed out in the desired units.
• Anticlockwise torque values are preceded by a "-" sign.
• If the torque exceeds the threshold of 4%, an asterisk (*) will appear on the printed record.
• If the torque exceeds the threshold of 8%, two asterisks (**) will show on the printed record.
• To interrupt data transmission, press **M**.
• If the memory is empty, the wrench display flashes 0000 then moves to direct reading.
• Exit out mode using **M** key.

Error code table

Each error message is preceded by a beep tone

Err

Err1 : Problem with torque gauge.
• Exit Err1 using M key.
• Tensioning torque can no longer be measured; other modes remain functional.
• Wrench must be returned for repair.

Err2 : Problem with zero reset.
• Check that the wrench has not been activated with torque already applied. • If no torque can be applied by pressing ON key again, wrench must be returned for repair. • Tensioning torque can no longer be measured but other modes remain functional.

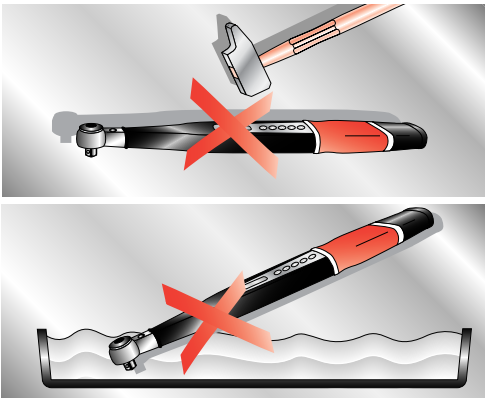
Err3 : Problem with memory or with clock.
• Exit from Err3 occurs when wrench switches off automatically.
• If message persists after several attempts, wrench must be returned for repair.

Err4 : Problem with RS.232 output.
• Exit Err4 using M key.
• All modes remain functional except out mode for data transfer. If message persists after seversi attemps, wrench must be returned for repair.

Err5 : Excess load on wrench.
• Error message appears when torque of 120% of maximum capacity is applied to the wrench. A two-tone beep sounds.
• Exit from Err5 occurs when wrench switches off automatically.

Err6 : Problem with wrench body.
• Wrench must be returned for repair.

Tip



Battery alarm

• If voltage drops below 4.3 V, the wrench makes three beep tones three times consecutively and the  symbol appears.
• There is a time interval of 20 minutes to finish tensioning operations and transfer values to memory.
• Before stopping definitively, the wrench emits a continuous beep tone and the message bAt appears.

Recommendations

• Never exceed the maximum torque of your wrench, especially when untightening an object or tensioning at an angle.
• Use a dry cloth to clean your wrench: do not use either solvents or detergents.
• Do not take your wrench to pieces.

Ensuring precision

• It is recommended that you have your wrench checked periodically *(around once a year or more often if it is used intensively).*
• ⚠ If the wrench is dropped, return it to eliminate any risk of accident.

Precision checking and updating of documents:
• The FACOM measurement laboratory offers the following services:

Inspection report: Inspection and adjustment *(if necessary)* at 20%, 60% and 100% of wrench capacity to within the standard tolerances. Issue of a dated and numbered inspection report.

Calibration certificate: Inspection and adjustment of the wrench at from 6 to 12 points using inspection equipment in conformity with the national measurement standard. Issue of a dated and numbered official certificate.
For further information, consult your dealer.

⚠ **Always return your wrench with battery for repair or calibration.**

Glossary of terms and messages used

Terms used

Capacity: Defines the wrench's range of use. The requirements and testing methods of Standards **ISO 6789** and **EN26789** cover a specific range of measurement from 20% to 100% of the maximum torque value of the wrench.

Resolution: Smaller variation of torque visible on wrench display.

Limit: Value of "target" torque which tensioning must reach as closely as possible.

Inspection report: Document attesting to the precision of a dynamometric tool. Standard **NFX07-011** defines the information contained in this document.

Led: High-intensity warning light.

Buzzer: High-intensity acoustic *(beep)* alarm.

Messages used

dir : Direct reading of torque mode.

SEt : Torque limit adjustment mode.

MEMo : Memory mode.

loAd : Indicates torque setting is being saved to memory.

rEAd : Read values saved to memory.

out : Transfer of data saved to memory to a printer or computer.

clr : Memory clear mode.

End : All values saved to memory are cleared.

0000 : Memory is empty.

Full : Memory is full.

unit : Changeover of unit of measure.

StoP : Maximum wrench capacity is exceeded.

dAtE : Clock adjustment.

bAt : Low battery indicator.

F **Couples de serrage recommandés pour boulonnerie acier normalisée.**
Couples déterminés à 85 % de la limite élastique pour une boulonnerie noire ou zinguée, lubrification sommaire *(coefficient de frottement 0,15).*

GB **Recommended torque values for standardised steel bolts**
Torque assessed at 85 % of the limit of elasticity for a black or zinc nut and bolt, basic lubrication *(friction coefficient of 0.15).*

D **Empfohlene Ànziehdrehmomente für genormte stahlschrauben**
Die Drehmomente liegen bei 85 % der Dehnungsgrenze bei verzinkten bzw. brünierten Verschraubungen *(0,15 Reibungskoeffizient).*

NL **Aanbevolen aanhaalkoppels voor genormaliseerde stalen bouten.**
Het moment is bepaald op een waarde van 85% van de rekgrens voor een zwarte of verzinkte gemonteerde bout, licht ingevet *(wrijvingscoëfficiënt 0,15).*

E **Pares de apriete aconsejados para pernos de acero normalizado.**
Pares determinados al 85 % del limite elàstico para pernos negros o de zinc, ligeramente lubrificados *(coeficiente de rozamiento 0,15).*

I **Coppie di serraggio raccomandate per bulloneria in acciaio normalizzato.**
Valori determinati all'85% del limite di elasticità dei bulloni di fabbricazione accurata ingrassati e montati con rondelle piatte *(coefficiente di attrito 0,15).*

			ISO 898/1 DIN ISO 898/1		NF E 25100		NF EN 20898-1		
			M 5-6	M 5-8	M 6-8	M 8-8	M 9-8	M 10-9	M 12-9
Ø mm	ISO mm	mm	C (Nm)	C (Nm)	C (Nm)	C (Nm)	C (Nm)	C (Nm)	C (Nm)
1,6	0,35	3,2	0,075	0,105	0,12	0,16	0,18	0,235	0,275
2	0,40	4	0,159	0,222	0,254	0,339	0,381	0,498	0,582
2,5	0,45	5	0,33	0,463	0,529	0,705	0,793	1,04	1,21
3	0,50	5,5	0,57	0,8	0,91	1,21	1,38	1,79	2,09
4	0,70	7	1,3	1,83	2,09	2,78	3,16	4,09	4,79
5	0,80	8	2,59	3,62	4,14	5,5	6,27	8,1	9,5
6	1	10	4,49	6,2	7,1	9,5	10,84	14	16,4
8	1,25	13	10,9	15,2	17,4	23	26,34	34	40
10	1,50	16	21	30	34	46	52	67	79
12	1,75	18	37	52	59	79	90	116	136
14	2	21	59	83	95	127	143	187	219
16	2	24	93	130	148	198	224	291	341
18	2,5	27	128	179	205	283		402	471
20	2,5	30	182	254	291	402		570	667
22	2,5	34	250	350	400	552		783	917
24	3	36	313	438	500	691		981	1148
27	3	41	463	649	741	1022		1452	1700
30	3,5	46	628	880	1005	1387		1969	2305
33	3,5	50	854	1195	1366	1884		2676	3132
36	4	55	1096	1534	1754	2418		3435	4020
39	4	60	1424	1994	2279	3139		4463	5223
42	4,5	65	1760	2464	2816	3872		5515	6453
45	4,5	70	2203	3085	3525	4847		6903	8079
48	5	75	2659	3722	4254	5849		8330	9748
52	5	80	3425	4795	5480	7335		10731	12558
56	5,5	85	4270	5978	6832	9394		13379	15656
60	5,5	90	5306	7428	8490	11673		16625	19455
64	6	95	6382	8935	10212	14041		19998	23402
Re (N/mm²)			**300**	**400**	**480**	**640**		**900**	**1080**