

Tohnichi torque wrench with LS type Digital Angle Module Model M-DW

To customers:

Before using this product, please read this operating instruction carefully to use it properly.
If you have any question, please contact your nearest distributor or
TOHNICHI MFG. CO., LTD. This operating instruction should be stored in a safe place.



Angle Display Module M-DW



DWQL100N (QL100N torque wrench with M-DW)

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Cautions on Safety

Warning

- The torque used during tightening work should be less than the maximum torque of the attached torque wrench.
- Consider the environment of the workplace.
- Do not use the main body in the a moist or wet place.
Failure to observe this may result in electric shock or smoking.
Keep the workplace well illuminated.
- Working in a dark place may cause an accident.
- Do not use the product in a place exposed to a combustible liquid or gas.
Failure to observe this may result in an explosion or a fire, causing an accident.
- Use specified accessories and options.
Failure to observe this may cause an accident or an injury.

Cautions

- (1) Use only the specified battery.
- (2) When not using the product for a long period of time, store it with the battery removed.
- (3) Do not give vibrations or a shock to the product.
- (4) Use the product only in the working environment mentioned in the operating instruction.
- (5) Before use, carry out daily inspection to check the settings.
- (6) Note that if the product is wetted with water or oil, it may result in trouble or burnout.
- (7) Note that if the product is dropped or hit, it may result in damage and trouble.
- (8) Use the product within the measurement range mentioned in the operating instruction.
- (9) Be sure to conduct periodic inspection on the product.

If the product emits a foul odor or ignites during use, stop using it immediately, move this measuring instrument to a safety place, and contact TOHNICHI MFG. CO., LTD.

1 . Overview

The M-DW is digital an angle module is designed to be attached to our torque wrench with limit switch. The LS type torque wrench can be used as an angle wrench by attaching this module. An angle from the setting torque of the torque wrench is measured.

2 . Features

- Easily attachable to our LS type torque wrench.
- Capable of easily measuring a tightening angle from the setting torque of the torque wrench.
- Bright and easy-to-see 7-segment LED for clear reading of a display value in a dim place.
- Provided with only one operation key for simple operation.

3 . Specifications

M-DW
Specifications

| | |
|-----------------------|--|
| Angle Range | 0 ~ 999° |
| 1 digit | 1° |
| Angle Accuracy | ±2° + 1 digit (Angular velocity is 30 to 180°/sec. when the bolt is turned to 90°) |
| Display | 7-segment LED, 3 digits/Character height: 10 mm |
| Continuous Operation | Approx. 60 hours |
| Operating Environment | 0 to 40°C, 85% HR or less (no condensation) |
| Standard Accessories | Limit switch with connector: 1 pc Screws & washers: 2 pcs. each Operating Instruction 1 manual, AA-size battery: 1 pc. |

Example M-DW is attached to a click type torque wrench, QL

Torque accuracy ± 3%

| Model | Angle Measuring Range [°] | | Torque Range [N·m] | |
|----------|---------------------------|---------|--------------------|------|
| | MIN ~ MAX | 1 digit | MIN ~ MAX | Grad |
| DWQL50N | 0 ~ 999 | 1 | (5) 10 ~ 50 | 0.5 |
| DWQL100N | | | (10) 20 ~ 100 | 1 |
| DWQL140N | | | (25) 30 ~ 140 | 1 |
| DWQL200N | | | (30) 40 ~ 200 | 2 |
| DWQL280N | | | (30) 40 ~ 280 | 2 |
| DWQL420N | | | (40) 60 ~ 420 | 2 |

Parenthesized torque graduation values are minimum possible setting values of snug torque. However, there is no assurance for the accuracy of the minimum possible setting values.

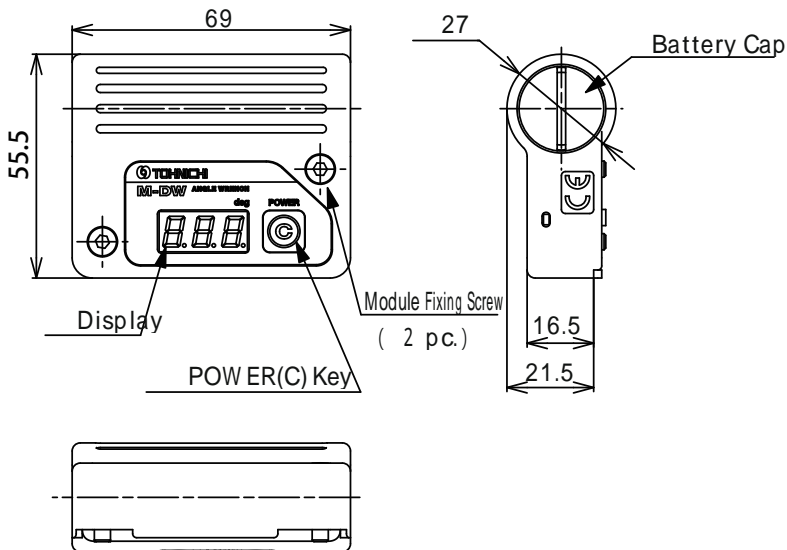
The M-DW can be attached to other LS type torque wrenches than the above-mentioned. (Not attachable to the QSPCAL, ALS, ACLS, SMS type torque wrenches, SPLS8N, and RSPLS8N) When attaching to a special LS type torque wrenches, see "9. Precautions for Use".

If the M-DW and the LS type torque wrench are purchased separately and attached, the torque graduation may not be adjusted to the parenthesized values depending on the adjustment condition of the LS type torque wrench.



The torque used during tightening work should be less than the maximum torque of the attached torque wrench

4 . Names of Parts



Display

Displays an angle value.

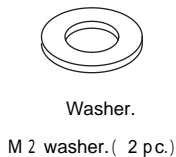
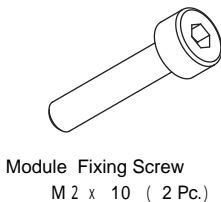
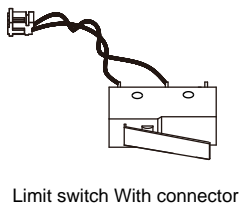
POWER (C) key

- 1.To turn on,press this key,wen turn off press this key more 2 seconds.
- 2.If this key is pressed while on the angle displays, the angle value will be cleared to 0. If pressed with the display turned off, the display is turned off. If held down for 2 seconds or longer with the display turned on, the display is turned off.

Battery cap

This is a battery replacement cap. (Right-handed screw)

Standard Accessories

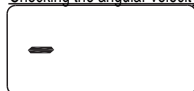


5 . Functions

Angular velocity check and zero correction function

When the power is turned on, angular velocity is checked to make zero correction. Unless the torque wrench is standstill at that time, "Er0" appears, repeating the angular velocity check. If "Er0" does not disappear, see "10. Error Messages". Angular velocity zero correction is automatically made when the standstill state continues for 2 seconds or longer while the display is being turned on.

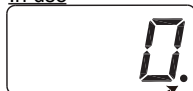
Checking the angular velocity



Error display



In use


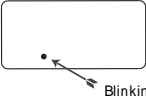



Momentarily displayed while correcting the angular velocity.

Power-saving function

The M-DW is automatically placed in the power-saving mode when it is not being used (when not operating the key or activating the torque wrench).

The power-saving mode includes 3 phases which work as shown in the following table.

| Status | 1 . Lower display brightness | 2 . Standby | 3 . Shutdown |
|--------------------------|--|---|---|
| Display |  Display dimmed |  Blinking |  Display turned off |
| Prerequisite | 5-second continuation of the unused state | 1-minute continuation of the unused state | 10-minute continuation of the unused state |
| Resetting Method | Press the POWER (C) key or activate the torque wrench. | Press the POWER (C) key. | Press the POWER (C) key. |
| Operation upon Resetting | The display is brightened. The angle display is cleared when reset by the POWER (C) key. Measurement is continued when the torque wrench is activated. | The display is turned on. (The angular velocity is not checked.) | The display is turned on to check the angular velocity. |

Remaining battery capacity display function

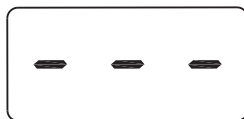
Once the remaining battery capacity is running out, a display value blinks.

If it discharges further, a bar display appears, disabling the battery.

Once the display starts blinking, replace the battery as soon as possible.



Blinking



Bar display

6 . Usage

Attach the M-DW to the LS type torque wrench. See “8. Attaching to the LS Type Torque Wrench”. This step is not required if you have purchased an integrated torque wrench.

Adjust the setting torque of the torque wrench to the snug torque. See the “Operating Instruction for Torque Wrench”.

Set the specified AA-size battery in the main unit. See “7. Battery Replacement”.

Peel off the protective sheet from the display.

Pressing the POWER (C) key turns on the power and makes angular velocity zero point correction at the same time. Place the torque wrench standstill in a stable place. Unless it is standstill, “Er0” appears, continuing angular velocity correction.

Once the torque wrench is applied with a load and reaches the snug torque, it is activated. If it is further rotated, it counts the angle.

* Even if it is ratcheted halfway, the angle is additionally counted.

Seeing the angle display, tighten up to the specified angle.

After untightening, press the POWER (C) key to clear the angle display.

7 . Battery Replacement

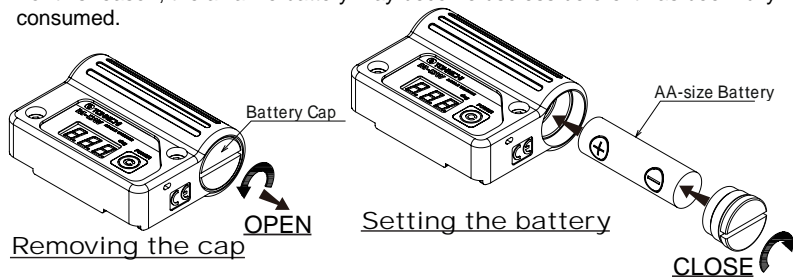
The product is made available by setting one AA-size battery in the main unit. When setting the battery, take care of the polarity, and securely close the battery cap. See the figure below.

Commercially available nickel-hydrogen rechargeable battery and alkaline battery are both available. If the alkaline battery is used, however, the battery characteristics may not be fully exhibited.

* The nickel-hydrogen rechargeable battery and the alkaline battery have different cut-off voltages.

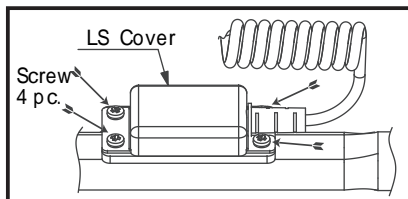
The product has been designed for the cut-off voltage of the nickel-hydrogen rechargeable battery which is repeatedly available in view of the environment.

For this reason, the alkaline battery may become useless before it has been fully consumed.

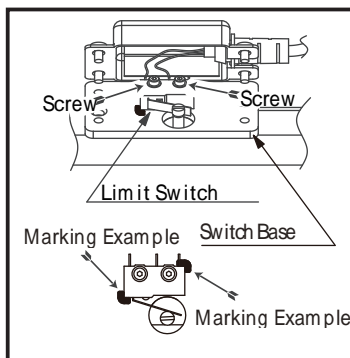


8 . Attaching to LS Torque Wrench

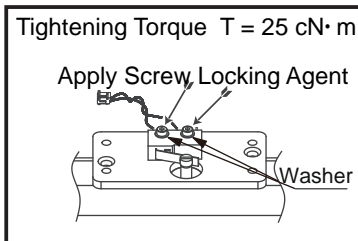
- 1 . Loosen 4 LS cover setscrews, and open the LS cover.




- 2 . Here are two set of tapped hole for mounting the limit switch, so make marks on the switch base as shown in the figure at right to check the position where the limit switch has been mounted. Then loosen the two limit switch fixing screws and remove the limit switch.

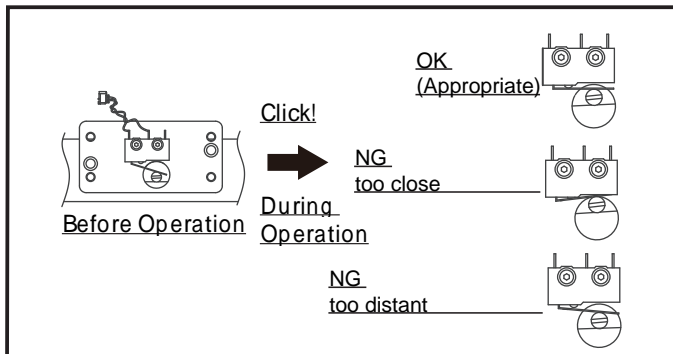


- 3 . Mount the limit switch with connector using the screws and washers, matching the switch to the position marked. Apply screw locking agent (ThreeBond TB1324N recommended) on the screw threads, and use a torque screwdriver to carry out the tightening.

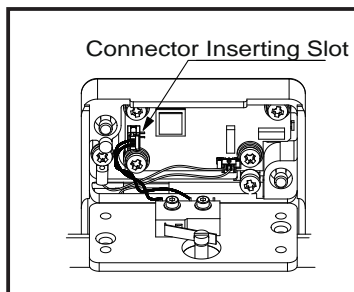


- 4 . After replacing the limit switch with connector, check the continuity utilizing a tester.

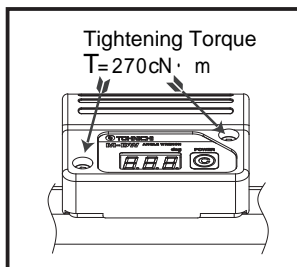
 If the lever of the limit switch with connector is pressed too strongly it will cause damage, and if the pressing amount is insufficient the switch will not operate normally.



- 5 . Insert the connector of the limit switch into a connector inserting slot in the board.



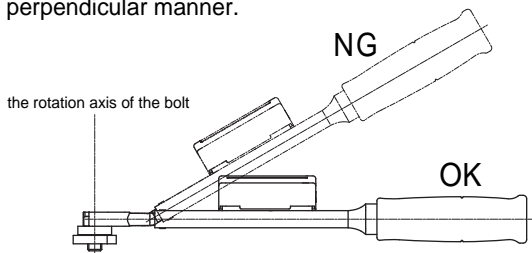
- 6 . Attach the digital angle module in such a manner that the wiring will not be caught. Tighten the two module fixing screws with $T = 270 \text{ cN}\cdot\text{m}$.



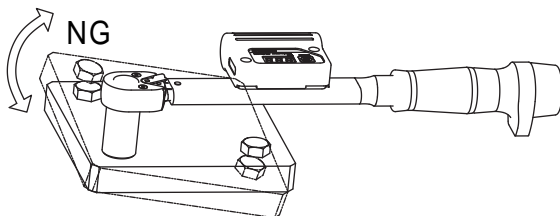
- 7 . Turn on the display, and when the display is dimmed after 5 seconds or more, activate the torque wrench. If the display is brightened, it indicates that assembly has been properly done.

9 . Precautions for Use

Use the digital angle module in such a manner that it will be perpendicular to the rotation axis of the bolt. Otherwise, the angle cannot be accurately measured. The product is not available for the LS type torque wrench where it cannot be attached in a perpendicular manner.



Firmly fix a workpiece. If it turns during measurement, a measurement angle goes out of order.



About ratcheting

Even if ratcheting is performed after activating the torque wrench, the angle is additionally counted, allowing continuous tightening. However, there occurs an error of less than 1° when activating the torque wrench. An angle error will be accumulated if ratcheting is repeated many times in one tightening operation.

10 . Error Messages

The M-DW has a self-diagnostic function and displays an error message at the time of failure. The following lists the error messages and their remedies.

| Error message | Description | Remedy solution |
|---------------|--------------------------------|---|
| Er0 | Defective sensor /amp. circuit | Place the torque wrench standstill in a stable place free from vibrations. If the error disappears, the torque wrench is available. If not, the sensor or amp. circuit is defective. Repair is required. Contact our distributor or TOHNICHI MFG. CO.,LTD. |
| Er3 | Limit switch left turned on | Turn off the power. With the torque wrench deactivated, turn on the power again. If the error is cleared, the torque wrench is available. If not, the limit switch is dislocated, or the switch or the torque wrench is defective. Review a limit switch position. If the error still persists after reviewing the position, repair is required. Contact our distributor or TOHNICHI MFG. CO., LTD. |
| Er8 | Defective CPU/memory | Repair is required. Contact our distributor or TOHNICHI MFG. CO., LTD. |

Designs and specifications are subject to change without notice.



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