High-precision Torque Meter

Product Introductions

AP-2

AP-10

AP-50

AP-100

AP-300

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■Special Thanks to our customer

Thank you for choosing our high-precision torque meter. To ensure the tool fully utilizes its maximum performance and extend its life, please read this manual before use.

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■General Safety Warnings

WARNING : Read all safety warnings and all instructions.

Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference.

■Work area safety

-Keep work area clean and well lit. Cluttered or dark areas invite accidents.

-Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes.

-Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.

■Electrical safety

-How to recharge

- Please switch off power supply of torque tester and plug battery charger in power supply.
- When charging is over, pull out electric wire, open tester switch and check display on screen.
- Place battery charger in proper position after it cools down.

-The charging shall not exceed 6 hours.

-Except nickel-hydrogen battery, no other batteries shall be used.

-The tester shall not be used when charging.

-When screen displays LOBAT, stop measuring and charge the battery.

-The battery charger is only used for charging battery of tester.

-Please don't place objects on charger box. Do not fiercely pull the electric wire or use the wire for tying.

-When connecting or disconnecting charger, be sure to switch off the power supply.

-Disassembly of battery is not allowed.

-Power tool plugs must match the outlet. Never modify the plug in any way. Unmodified plugs and matching outlets will reduce risk of electric shock.

-Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.

-Do not expose power tools to rain or wet conditions. Water entering a power tool/its adaptor will increase the risk of electric shock.

-Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.

-When operating a power tool outdoors, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.

-If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply for its adaptor. Use of an RCD reduces the risk of electric shock.

General Safety Warnings

■Personal safety

- Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.
- Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.
- Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
- Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.

■Power tool use and care

- Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed.
- Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- Disconnect the plug from the power source before making any adjustments, changing accessories, or storing power tools. Such reventive safety measures reduce the risk of starting the power tool accidentally.
- Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.Power tools are dangerous in the hands of untrained users.
- Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- Keep screw bit clean. Properly maintained screw bit with sharp edges are easier to control.
- Use the power tool, accessories and screw bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.

Read before use:

■Please read the following notices before use:

-It is prohibited to exceed the maximum torque value described in Technical indexes on Page 3; if the torque exceeds rated measuring value by 120%, it will damage interior of tester.

-The battery charger shall not be used for other batteries except NIMH battery, even the battery (Non-NIMH battery) is produced by its own manufacturer.

-The torque tester shall not be used for measuring of continuous impact tools like pneumatic screw driver or impact wrench,

-Please refer to instructions on Page 7 for use of battery charger,

-Please use designated product to connect data output port,

-When disconnecting, please bind the data wire well and avoid damaging PIN of connector,

-After test, please switch off power supply,

-Please don't knock or place heavy objects on display panel.

-Avoid excessively internal adjust when in calibration or other occasions.

-Handle with care and avoid heavy falling.

-The torque tester is very sensitive to environment, so avoid use it in following environments:

- Places where water, oil or other liquids spills
- Place with vibration, dirt or heat current
- Outdoor or places where electric spark may occur
- Environment with high temperature (proper humidity: 20%-65%, proper temperature: 15-35℃)
- Places with other factors that may damage the torque tester

-The torque tester shall not be stored in environment with high temperature and humidity so as not to reduce its performance.

Declaration of Conformity CE/Service

■Declaration of Conformity CE

We (ASA Enterprise Corporation) declare under our sole responsibility that the products high-precision torque meter described under this manual are in conformity with the following Directives/ or standardization documents: EMC Directive 2014/30/EU.

■Service

Have your high-precision torque meter serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the controller is maintained.

■Warranty

We offer one-year free repair service with this product. The warranty is valid for one year from the date of purchase entered on the Product Information Form. Please note that this warranty policy does not apply to the circumstances listed below and we will charge for repair or labor cost if necessary.

-Normal damage to the spare parts: Micro-switch

-The unit was not plugged to designated power source.

-Improper use or attempt to repair unit by user.

-Out of the warranty period or the user cannot present the manual.

■Inspection and calibration

-The unique sensing mechanism adopted by this tester can ensure long-term accuracy. The tools used for checking its accuracy is also provided. Even though, we suggest returning the torque tester back to manufacturer for inspection annually. (Please be noted that this service will be charged).

-Delivery of tester shall comply with precision standard of our company. Considering different use conditions of tester, long-term use will affect the precision. Therefore, our company provides calibration and necessary inspection service; meanwhile, we suggest using the regular calibration document attached with this tester.

■Precautions in returning back tester for calibration or maintenance.

-Place tester in original toolbox so as to avoid damage in transportation.

-Except original objects in toolbox, no other objects shall be placed in the box. Self-made mounting plate, tool or standby tool head shall not be placed in. Our company assumes no liability hereto.

-Please describe failure in detail.

■Battery Recycle

-The product is provided with environmental rechargeable battery together with the machine. According to laws in different countries and regions, it is illegal to discard waste battery in urban rubbish dump. Please consult local officials in charge of managing solid waste for recovery or disposal of waste battery.

Product Information

■Feature

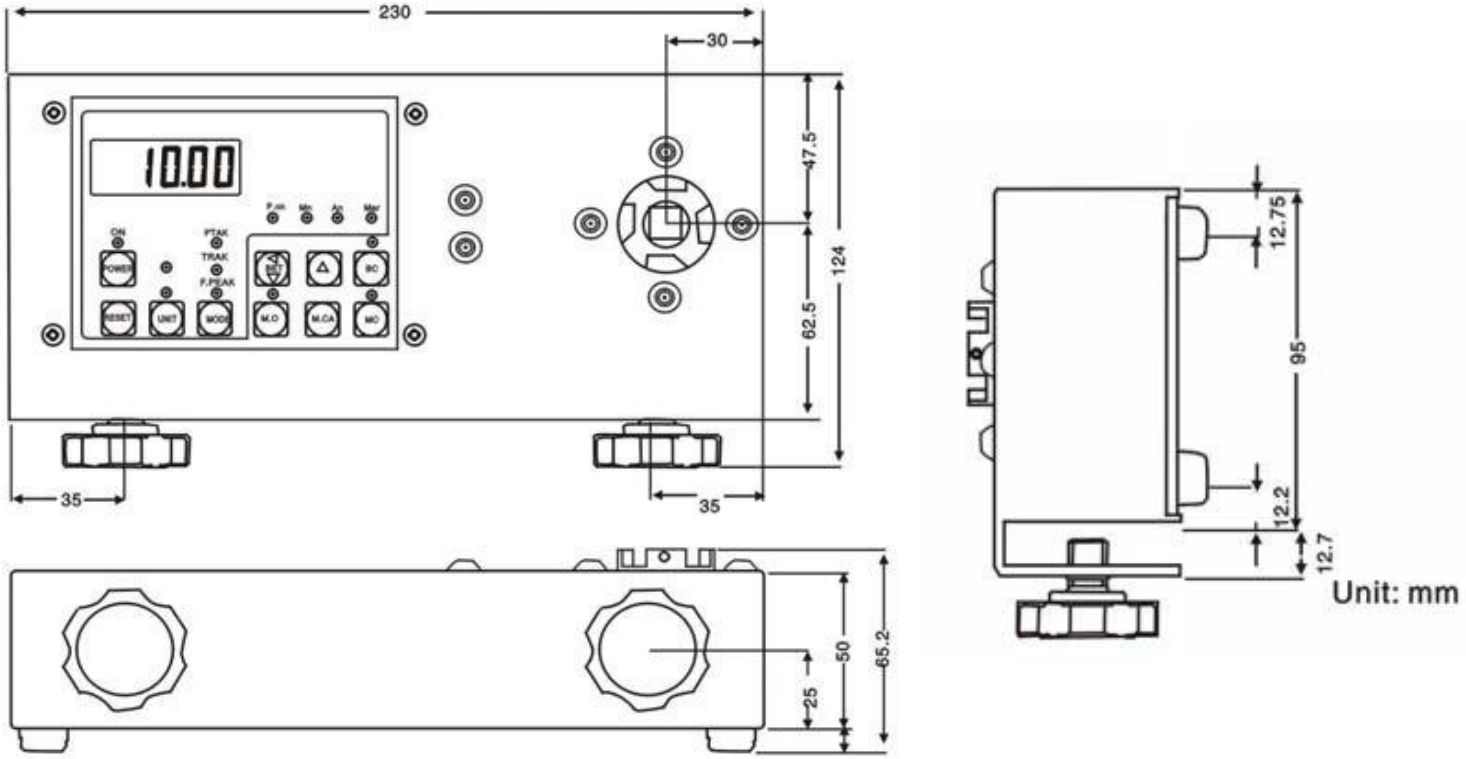
- Wide measuring range, high accuracy and the models are complete.
- Attached the measuring joint (either one) can be run clockwise or counter-clockwise to measure the o/p torque with usual bit and the measured value will be cleared in setting time automatically.
- There are two measuring units: kgf-cm/ N.m and three measuring models: PEAK/TRACK/F.PEAK for choosing to operate easily.
- It can be calculated and displayed the maximum and average torque value.
- Built-in an o/p terminal which it can be connected to the computer for recalling, editing and calculating and measured datum.
- The meter is attached rechargeable batteries, small volume and light weight, it is convenient to use.

Model		AP-2	AP-10	AP-50	AP-100	AP-300
Standard measuring range	(Kgf-cm)	0.03~2.00	0.15~10.00	0.75~50.0	1.5~100.0	4.5~300.0
	(N.m)	0.003~0.200	0.015~1.000	0.075~5.00	0.15~10.00	0.45~30.00
Accuracy		In ±0.5% (199 digi or less ±1 digi)				
Display		LCD digital display				
Measuring direction		Clockwise, counterclockwise directions				
Measuring mode	PEAK	Lock display when the torque reaches peak value				
	TRACK	Display changed along with the current torque value				
	F.PEAK	Lock display when the torque reaches first peak value				
Power source		Ni-MH chargeable battery/ charge life up to 300 times up				
Charging time		6 hours				
Working Time		8 hours				
AC adaptor		Input: AC100~240V、60/50Hz Output: DC7.3~8V、0.5A				
Socket Size		20mm				
Dimension (mm)		230 (L)x 120 (W)x 60 (H) mm				
Weight (kg)		2.0kg				
Caution		1. No applicable for measuring semi-auto shut-off type of electric and pneumatic tools. 2. The max measuring range cannot be over the standard measuring range.				

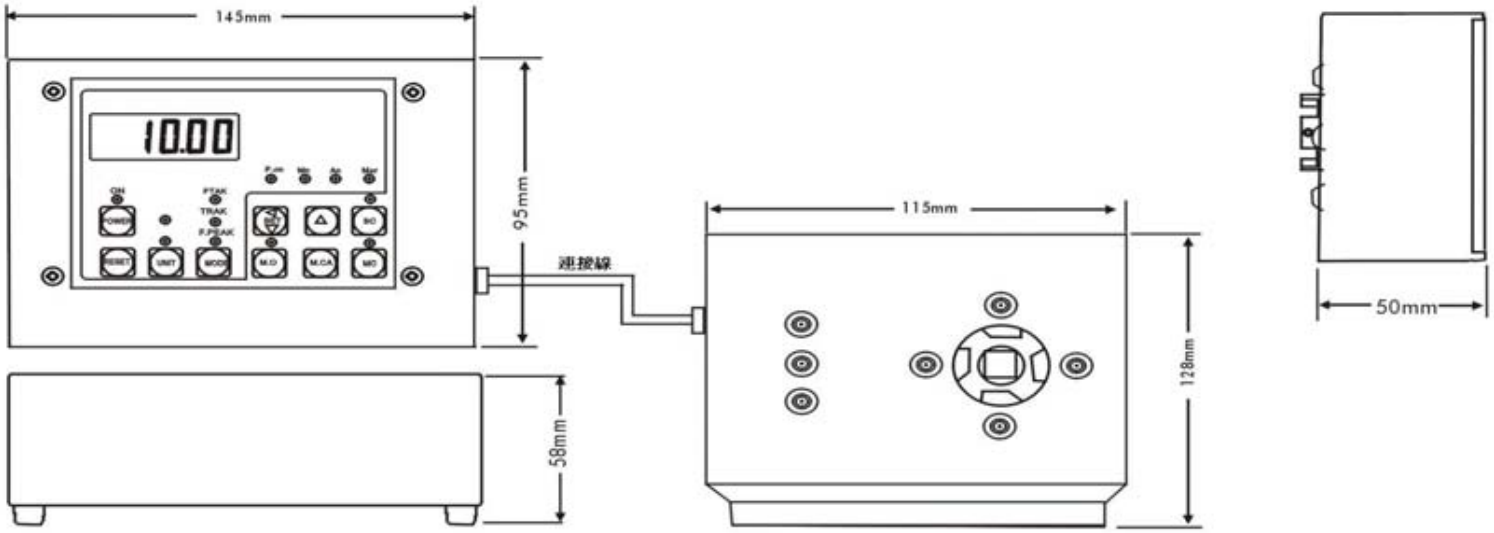
■Integrated Outline Drawing (AP-2/10/50/100)

Outline dimensions of all models are the same.

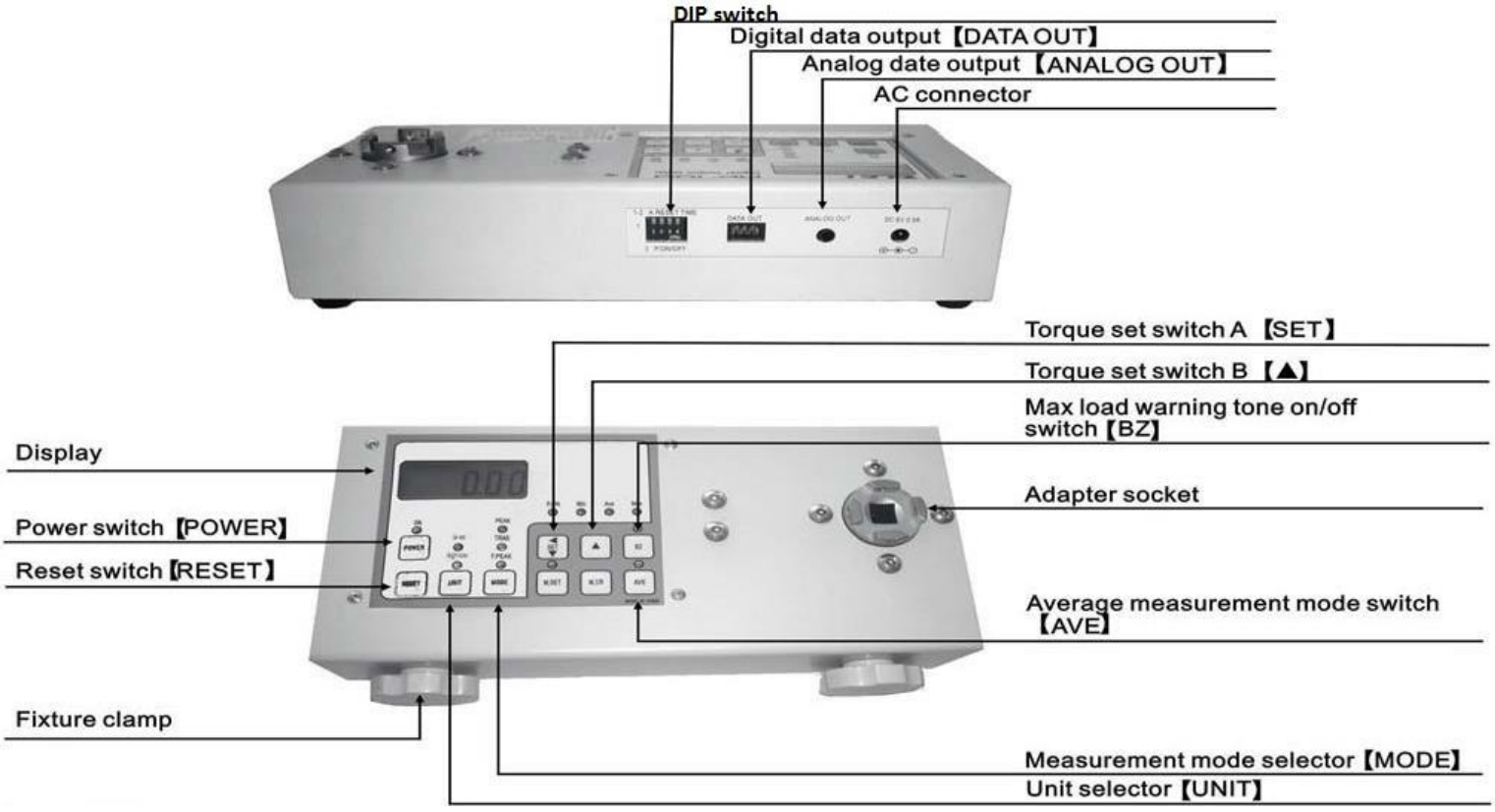
−Note: Technical specifications or appearance of torque tester are subject to alternation without prior notice



■Separated Outline Drawing (AP-300)



■Outline


DIP switch
Digital data output【DATA OUT】
Analog date output【ANALOG OUT】
AC connector
Torque set switch A【SET】
Torque set switch B【▲】
Max load warning tone on/off switch【BZ】
Display
Adapter socket
Power switch【POWER】
Reset switch【RESET】
Average measurement mode switch【AVE】
Fixture clamp
Measurement mode selector【MODE】
Unit selector【UNIT】

■Outline

<table>
<tr><th>Part name</th><th>Function</th></tr>
<tr><td>Power</td><td>Key switch : When power supply starts, the LED lights, if the tester is not operated within 10 minutes after being started (or torque load value is less than 10) , the power supply</td></tr>
<tr><td>RESET</td><td>Return display data to zero.</td></tr>
<tr><td>Display Screen</td><td>Display test unit
<table>
<tr><td>MODEL</td><td>Kgf.cm</td><td>N,m</td></tr>
<tr><td>AP-02/AP-10</td><td>0.00</td><td>0.000</td></tr>
<tr><td>AP-50/AP-100</td><td>0.0</td><td>0.00</td></tr>
<tr><td>AP-300</td><td>0.0</td><td>0.00</td></tr>
</table></td></tr>
<tr><td>UNIT</td><td>Select corresponding measuring units below based on customer’s demand :N.m<->kgf-cm</td></tr>
<tr><td>MODE</td><td>PEAK: lock display when the torque reaches peak value (press RESET to cancel).
TRACK: displays change to current torque value.
F.PEAK: lock display when the torque reaches first peak value.</td></tr>
<tr><td>AC connector</td><td>Used for battery charging.</td></tr>
<tr><td>ANALOG OUT</td><td>Output port of analog voltage data.</td></tr>
<tr><td>DATA OUT</td><td>Output measured data. This function contributes to use the torque tester in data management</td></tr>
<tr><td>DIP switch</td><td>Used for timing setting of automatic reset..</td></tr>
<tr><td>SET A [SET]</td><td>Beep alarm will occur when reaching the maximum torque load value.</td></tr>
<tr><td>SET B [▲]</td><td>Beep alarm will occur when setting reaches preset torque.</td></tr>
<tr><td>ON/OFF switch for alarm of the max. load[BZ]</td><td>When starting this function, LED display light is on.</td></tr>
<tr><td>Average Measuring Mode [AVE]</td><td>When average measuring mode is on, the LED display light is on and will display the average testing value.</td></tr>
<tr><td>Joint of adapter</td><td>Used for connecting torque tools when using test head or adapters of other types.</td></tr>
</table>

* Statistical processing control (SPC) refers to monitoring of the change on production process used for quality control in statistical method.

■Selection of Joint for Measurement

-Some "joint for measurement" is attached to this product. At the time of measurement of a tool, the joint corresponding to a tool is surely used.

■ASJ Joint

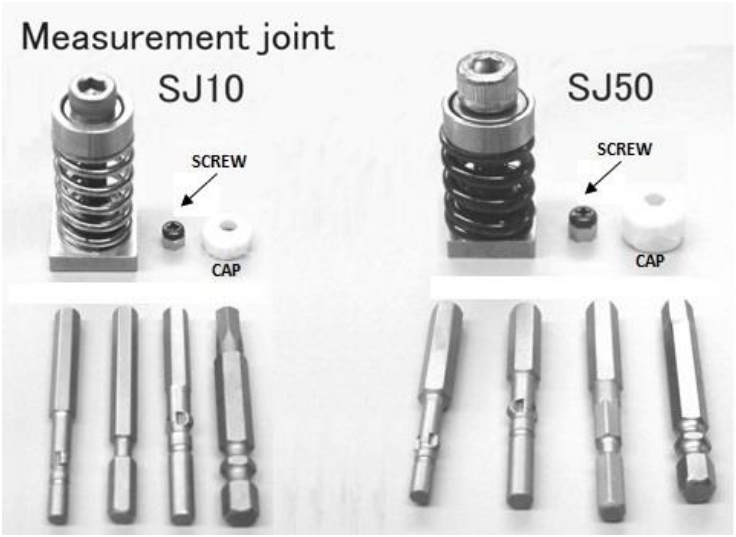
-ASJ joint is used for measurement of an electric driver.

-In case joint is chosen, tolerance level is checked and it is cautious of exaggerated torque enough.

■ASJ Joint (Coiled-spring compression system)

Model Of ASJ joint	Torque range (kgf.cm)
SJ-03(Option)	0.2-2.5
SJ-10	1.5-10.0
SJ-50	5.0-50.0
ASJ-100(Option)	50.0-300.0

-The bolt omission prevention function was newly carried in joint. By attaching an omission prevention screw, if a bolt separates from a plinth, it will race, and it does not decompose and trouble is not caused to work.（However, when it continues racing, a ridge may be worn out and torque value may change.） Moreover, by wear, the metal fatigue, etc. of a screw, where a spring is closed, it is left, and a bolt may jump out with the pressure.)



■Notice for use:

-Do not overload above the measurement range.

-Please check before use: Whether the bolt and bearing parts are greased.

-Please loosen and keep the spring after using the torque meter.

-The suggested used time is around 2500 times (testing), but if it has below problems, please stop using and exchange the new ASJ Joint.

- The spring is bent and deformed, the bolt is worn.
- When there is unusual sound while operating.

■Operation instructions

First check battery charging state. When power starts and battery capacity is insufficient, "LOBAT" will be displayed. In such case, please charge the battery with battery charger for at least 3 hours but no more than 6 hours.

-Ensure stability of the torque tester.

-Select required measurement unit 【UNIT】. (N. m←→kgf.cm)

-Zero adjustment. Select the【MODE】to "TRACK" and simultaneously press【SET】and【▲】for no more than 2 seconds. This can adjust the tester to zero. (Note: if pressed for more than 2 seconds, it will become another mode. In such case, please press【RESET】and repeat zero adjustment setting) .

-The selection mode switch is "PEAK" or "F. PEAK"

• In "PEAK" mode, the screen displays the maximum measured value, so the display does not change. The maximum measured value for model AP-100 is 10N.n and corresponding display value is 15. Please measure within this range.

• In "F. PEAK" mode, the screen displays the maximum value achieved for the first time in test period;

-Please press【RESET】to clear display.

-Please use test head to measure the torque of electric screw driver according to detailed description below.

-Test head can be altered to measure tools of other types. (Refer to "Use adapter converter to measure the torque value of non-electric screw driver")

-After measurement, please be sure to turn off power supply and pull tools away from socket.

■How to use SJ Joint to measure the torque of electric screw driver

-Insert SJ Joint into socket of electric torque tester and then place electric screw driver head to be measured in test head.

-Select reverse rotation of electric screw driver (REV) to make the spring of test head a little loose; the spring can be slightly rotated by hand.

-Press RESET to make readings return to zero.

-Select FOR rotation of electric screw driver till it stops automatically and the spring has already been tightened at this moment.

-When screw driver stops rotation, the display screen will display torque value of this screw driver.

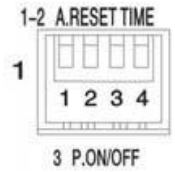
-Select reverse rotation of electric screw driver (REV) to make the spring of test head loose and then press RESET to clear readings.

-Repeat operations above to determine readings of torque value. Adjust to proper torque value by referring to test torque parameters table of electric screw driver

■Function Description

DIP switch: Make sure to switch off power supply before replacing DIP switch.

• Automatic Reset



Switoh number		A.RESET TIME		P.ON/OFF	
		1	2	3	4
Time to auto-reset[1]	1 sec	ON	ON	–	–
	2 sec	OFF	OFF	–	–
	5 sec	ON	ON	–	–
	OFF	OFF	OFF	–	–
Data output	Printer ON[2]	–	–	–	–
	Printer OFF	–	–	–	–

• Note:

–After starting automatic reset function, the RESET key does not work.

• Data output

–Computer monitoring software can be selected; refer to operation manual of monitoring software of ASA torque meter for specific functions.

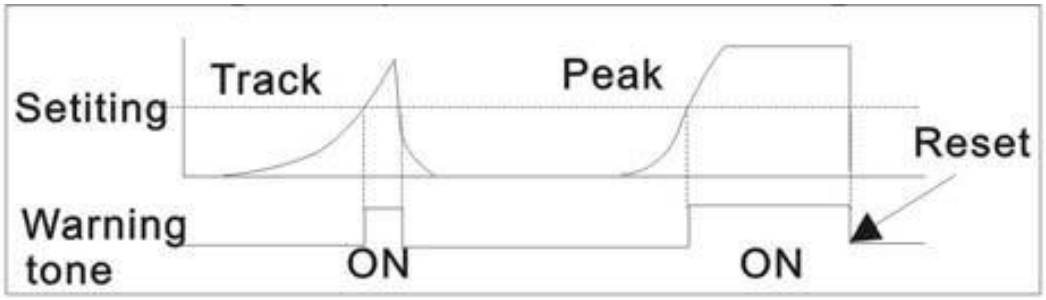
• Torque setting

–Electric tester is provided with alarm device which will produce beep alarm when reaching the maximum torque load.

–Beep alarm will also occur when torque setting is altered.

–Torque setting can be altered as per needs. When beep alarm occurs, it means the set torque value has been finished with measurement.

Example: (Torque value is set as 100)
Data can be output only when measured value reaches 100.

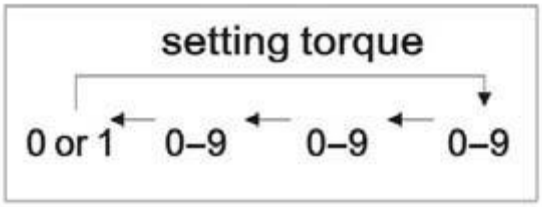


■Set functions of torque buttons

-Buttons

① 【SET】

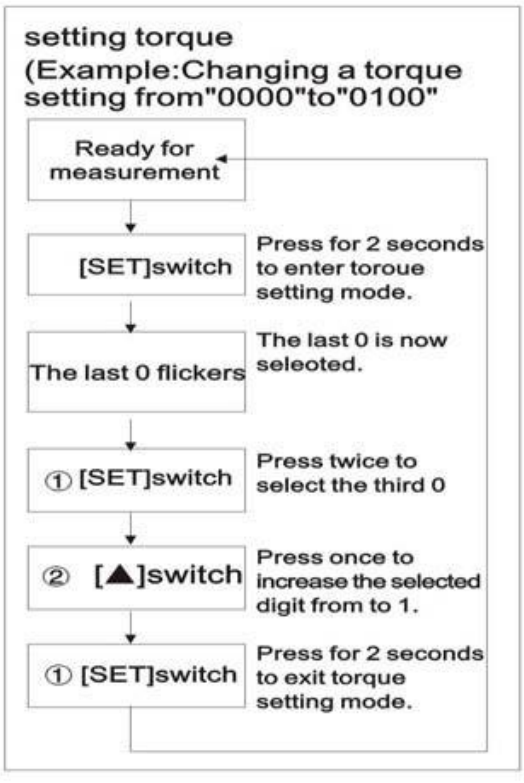
1. Press the button for 2 seconds to enter torque setting mode and press again for 2 seconds to quit it.
2. When tester is in torque setting mode, the four-digi display can be adjusted with one digi each time.



-Use SET to select digits for adjustment. The selected digit flashes. When pressing SET each time, the next digit near left is selected (or, the leftmost digit is selected and the rightmost digit is to be selected after pressing the button.)

② Upward button 【▲】: When test is in torque setting mode, press this button to increase selected value with 1 increased for each time of pressing.
Note: The leftmost value can only be 0 or 1.

③ 【RESET】: Press this button to make tester enter test preparation state. When tester is in torque setting mode, press this button to cancel setting and quit torque setting state.



■Measure the average torque value

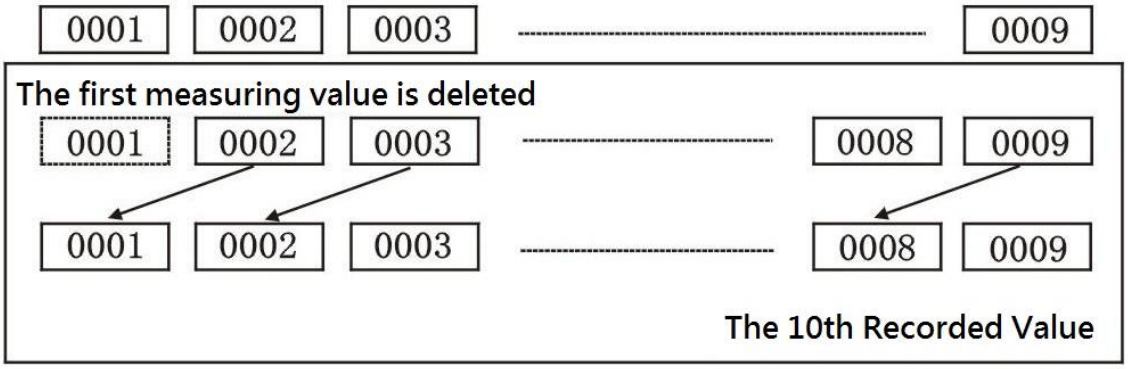
-Purpose: Manage the torque value during daily work.

■Process of measuring

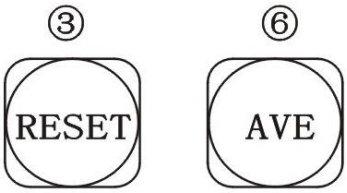
-Please conclude the minimum, average and maximum value in each measuring data; each data has more than 10 measuring values.

3. The measuring result will be arranged from 0001 to 0009, will not record the negative value. When the torque tester exits the average mode, the measuring values will be deleted automatically.

4. If the measuring value is less than 9 records, the screen will only display those records. (less than 9 records.)



■The button function during average measuring mode



④ RESET button 【RESET】:

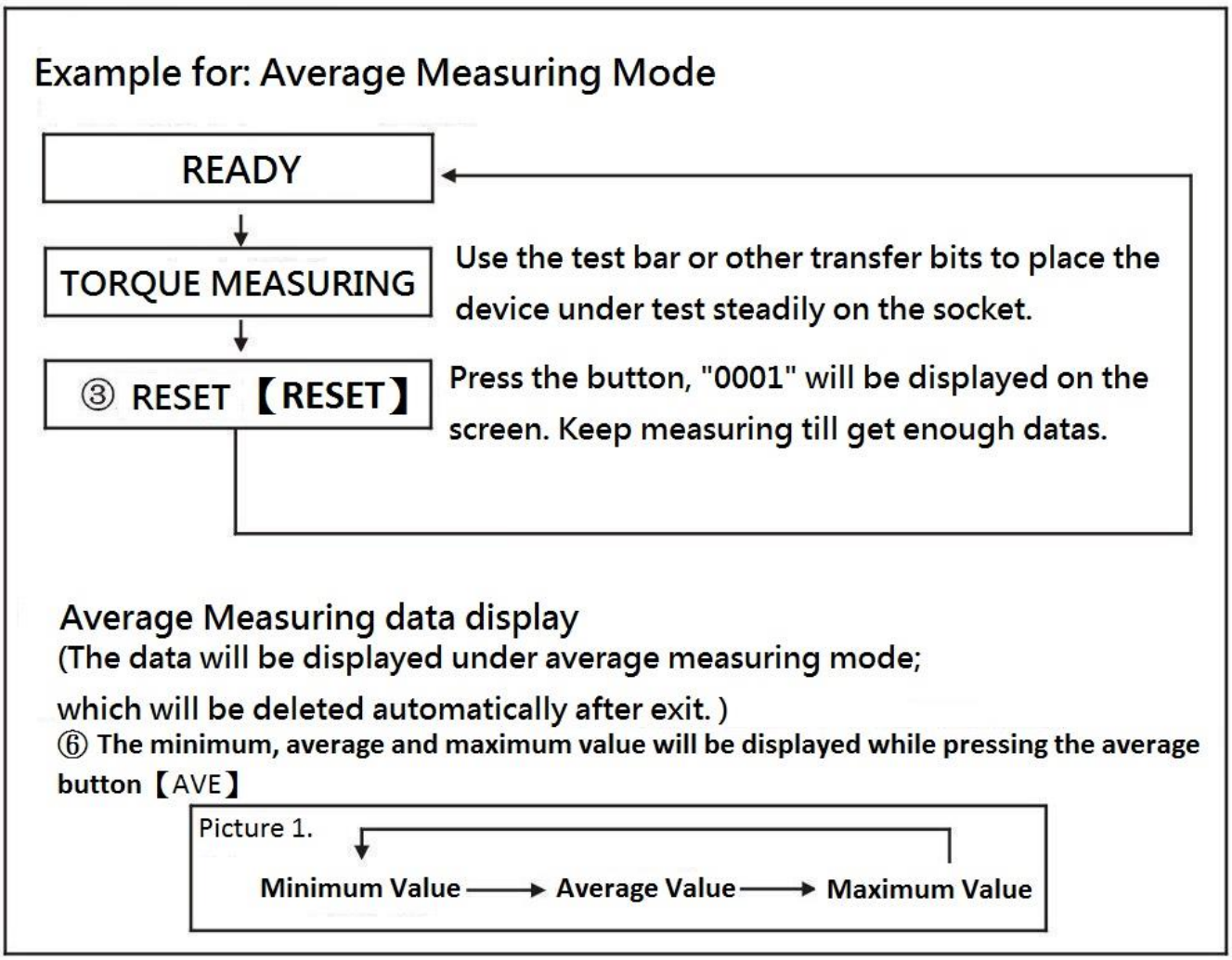
-Press this button during average measuring mode to enter the measuring status.

⑤ Average Value button 【AVE】

-Press this button for 2 seconds to enter or exit the average measuring mode.

-The LED light will be on during the average measuring mode.

-The display value will be average value and shown the cycle of it.



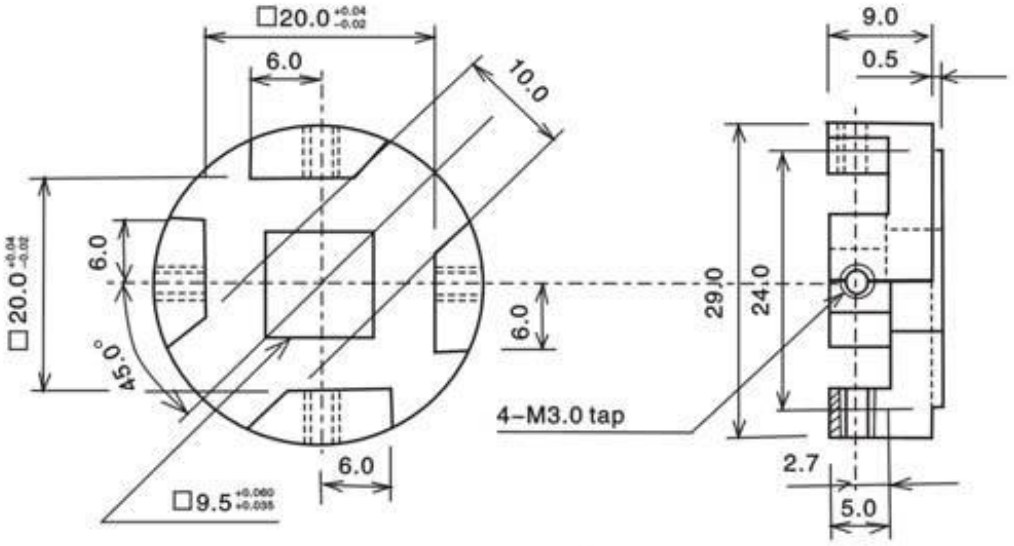
1. Please make sure to set the MODE into “PEAK” or “F.PEAK” before entering the average measuring mode.
2. The UNIT button will not be able to work during the average measuring mode.

■Use of Socket

–Except test or threaded rod, joint adapter can also be used to insert tool head into socket for torque test. Pay attention to followings when using the joint adapter.

–Pre-cautions in using joint adapter

- Make sure the adapter is firmly inserted into socket.
- Make sure the adapter will not break in test.
- The joint adapter shall not be used when vertical torque exceeds 10kgs.
- Do not use this torque tester to measure impact tools, and please follows other torque measuring principles strictly.



■Troubleshooting

-If there is any functional defects occurs on the torque tester, please follow the below instruction to proceed the troubleshooting. If the problem cannot be solved by below instructions, please contact ASA Company or the distributors.

Defect	Cause	Solution
"LOBAT" displayed	Low battery	Charge the battery according to page.3 description, if the problem cannot be solved, please contact the manufacturer or distributor
No displaying on the screen	The test hasn't been used or the battery is being discharged for a long time	Switch off the power and charge the batter. (not more than 6 hours), then turn it on to see if the display is normal. If the problem cannot be solved, please contact the manufacturer or distributor
Displayed value fails to return to zero	Zero setting is not conducted	Conduct the zero setting
Constant change of displayed value	"TRACK" mode is selected	Change to "PEAK" mode
Battery cannot be charged	The battery connecting wire is not fully inserted into the socket	Check whether the connection is okay
	Wrong connection of wiring plug	Connect the battery charge socket
		If the problem cannot be solved, please contact with the manufacturer or distributor
"LOBAT" is displayed again after complete charging	Battery life ends	Send it back to manufacturer to repair
	Insufficient charging	Re-charge (not over 6 hours)
Screen displays values while it is not required	May be caused by noise produced by power supply	Press REST button to clear the screen

Enjoying in Technique of Assemblies

Retailer's Stamp		Attention! The generic or unsuitable parts might seriously affect the torque meter's lifespan, please purchase the parts from original manufacturer to secure your rights.