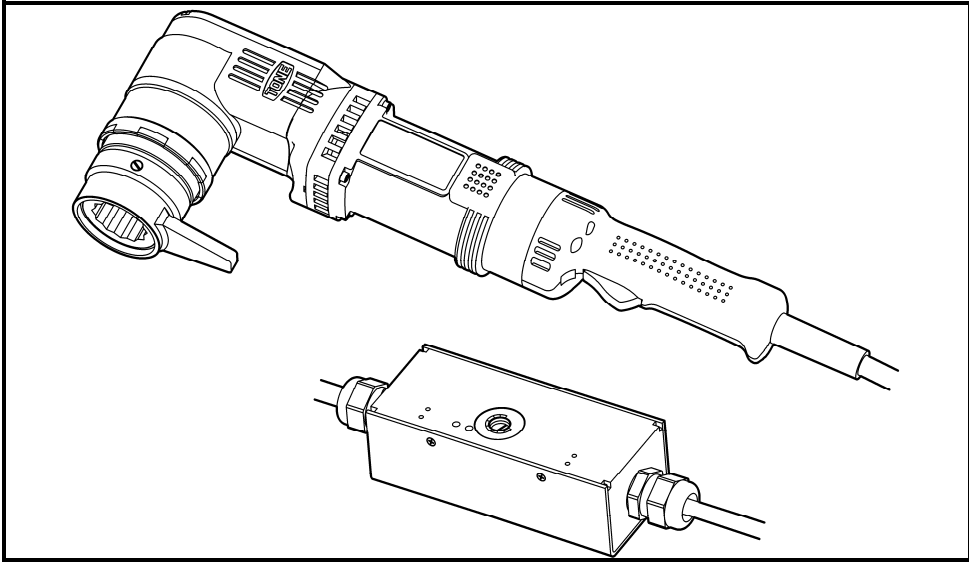


TONE® **TURN OF THE NUT TIGHTENING WRENCH**



INSTRUCTION MANUAL No.1310

MODEL	TNC-24EZA-1
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WARNING

Read and fully understand all the instructions before use.
Keep this manual in designated place for easy and quick reference.
The models mentioned on this manual are designed for use outside Japan.
Warranty shall be void if above mentioned models are use in Japan.

TONE CO., LTD.

PREFACE

Thank you for purchasing **TURN OF THE NUT TIGHTENING WRENCH**.

- Upon receipt, check and confirm the following:
 - Check any transport damages.
 - Check for any loose or lost screws and bolts.
 - Check the model as per order.
 - Check all the accessories are contained.

If any problems are found, contact your distributor.

- Read this instruction manual carefully before use.
Full understanding of manual is essential to prevent personal injury or malfunction.
- Keep this manual in a bag attached to the back of metal case lid for easy and quick reference.
- If manual or warning label is lost or becomes illegible, or if additional manual is required, contact your distributor.

If you have any questions about the products or the contents of this instruction manual, contact your distributor.




This manual is only applicable to outside Japan.

SAFETY INSTRUCTIONS

This manual specifies three (3) basic safety instructions:



■ Instructions are classified by degree of risk and described as follows:

	Danger is used to indicate threatening dangerous or unsafe practices which could immediately result in severe personal injury or death in the worst case.
	Warning is used to indicate hazardous or unsafe practices which could result in severe personal injury or death in the worst occasion.
	Caution is used to indicate hazardous or unsafe practices which could result in personal injury or product or property damage.



Even if the risk is classified as  , risk could become more serious result depending on conditions. Make sure to follow all instructions when using.

TABLE OF CONTENTS

1. GENERAL SAFETY INSTRUCTIONS.....	4
2. APPLICATION.....	7
3.  PRECAUTIONS FOR USE	7
4. PART NAME & ACCESSORY.....	16
5. BEFORE USE	18
6. CHANGING BAR SOCKET.....	19
7. OPERATING PROCEDURE.....	20
8. ERROR & STATUS INDICATION	25
9. INSPECTION & MAINTENANCE.....	26
10. FEATURES	27
11. SPECIFICATIONS.....	28
12. AFTERSALES SERVICE	28

1. GENERAL SAFETY INSTRUCTIONS

WARNING

When using electric tools, basic safety precautions, including the following, should always be followed to reduce the risk of fire, electric shock and personal injury. Read all these instructions before operating this product and keep these instructions.

SAVE THESE INSTRUCTIONS

1) Work area

- a) Keep work area clean and well lit. Cluttered and dark areas invite accidents.
- b) 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.
- c) Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.

2) Electrical safety

- a) Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools. Unmodified plugs and matching outlets will reduce risk of electric shock.
- b) 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.
- c) Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
- d) 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.

- e) 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.

3) Personal safety

- a) 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.
- b) Use safety equipment. Always wear eye protection. Safety equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- c) Avoid accidental starting. Ensure the switch is in the off position before plugging in. Carrying power tools with your finger on the switch or plugging in power tools that have the switch on invites accidents.
- d) 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.
- e) Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
- f) 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.
- g) If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of these devices can reduce dust related hazards.

4) Power tool use and care

- a) 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.
- b) 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.
- c) Disconnect the plug from the power source before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- d) 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.
- e) Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tools operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- f) Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- g) Use the power tool, accessories and tool bits etc., in accordance with these instructions and in the manner intended for the particular type of power tool, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from intended could result in a hazardous situation.

5) Service

- a) Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

2. APPLICATION

- **TURN OF THE NUT TIGHTENING WRENCH** is an electric tool for tightening High Strength Hexagonal Bolts/Nuts according to Turn-of-Nut Method.

3. ⚠ PRECAUTIONS FOR USE

- To prevent accident, personal injury and etc, read and follow all instructions listed below.
- Follow all instructions listed below before using the tool.

⚠ DANGER

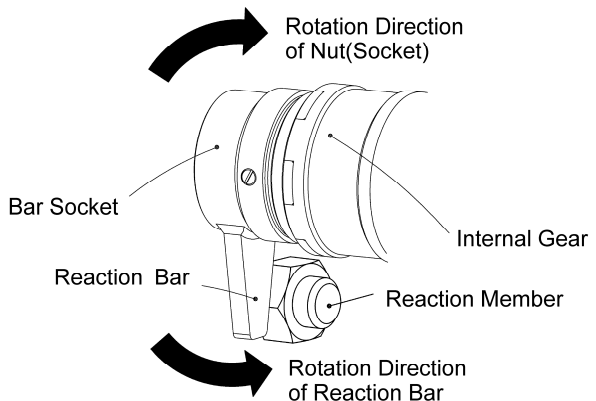
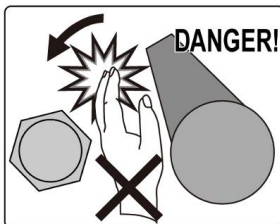
● Beware of electric shock when operating at high place.

- Failure to follow this instruction may result in fall down accidents.

● Do not touch bar socket when operating.

- Remove the gap between the bar socket and the reaction member in order not to pinch finger, hand or foot.
- Beware that the reaction bar on the bar socket rotates to opposite direction to that of nut rotating direction.

Failure to follow this instruction may result in personal injury such as finger amputation.

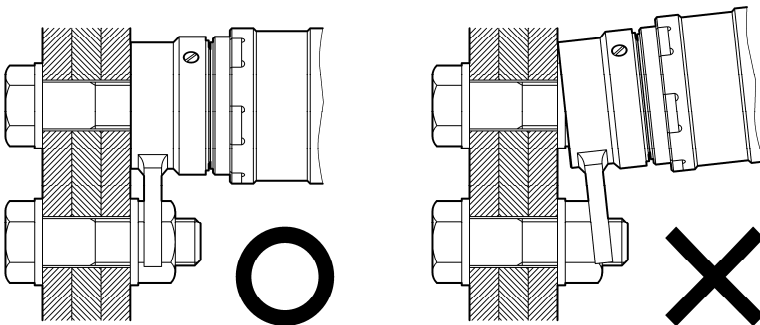


WARNING

● Bar socket must be placed perpendicular to a solid reaction member.

- Place the reaction bar properly to the reaction member.
- Use buffers like steel plate in between the reaction member and the bar socket if the reaction member is not solid. Also, make sure the buffers placed securely.

Failure to follow this instruction may result in insufficient tightening result or breakage of the bolt and nut or personal injury.



● Never use the wrench under rainy or snowy condition.

Failure to follow this instruction may result in electric shock or electric leakage.

● Hold the wrench firmly when in operation.

- The wrench stops automatically with huge reaction force just after tightening bolt completely.

Failure to follow this instruction may result in person injury.

● Electric cord must be regularly inspected.

- Stop using the wrench if there is a problem with the electric cord.
- Contact your distributor for repair.

Failure to follow this instruction may result in electric shock or electric leakage.

WARNING

● **Never use the wrench around the place where gasoline, gas, thinner, benzene, etc., are stored.**

- Do not use the wrench around flammable substances to avoid the accidental fire caused by the spark out of the electric motor.

Failure to follow this instruction may result in explosion or fire.

● **Beware of fall down accident when working at a high place.**

- Wear safety belt.
- Provide safety net or canvas as safe guarding against falling items.
- Confirm that no one is underneath the working site before operation.
- Stop operation when physically or mentally tired.

Failure to follow these instructions may result in fall down accidents.

● **Avoid overloading.**

- Use the wrench and its accessories within the rated specifications.

Overloaded the wrench and its accessories may result in malfunction of the wrench or accidents or personal injury.

● **Properly install bar sockets as described in this manual.**

Incomplete installation may result in accidents and personal injury.

See “CHANGING BAR SOCKETS” on page (⇨ P.19)

● **Avoid accidental starting.**

- Never carrying the wrench with your fingers on the switch when the plug is connected to power source.

Accidental starting may result in personal injury.

 **WARNING**

● **Disconnect the plug from the power source when:**

- Not in use.
- Changing accessories.
- Inspection and maintenance.
- Or other danger is foreseen.

Failure to follow this instruction may result in accidental starting and personal injury.

● **Do not disassemble or modify the wrench.**

Disassembly or modification made by unauthorized personnel may result in malfunction or personal injury.

* Disassembly & Re-assembly work is permitted for the following expendables: Bar Sockets, Set Screws, Carbon Brushes.

● **Store the wrench in the metal case and keep it at the designated place when not in use.**

- Store the wrench in lockable dry location to keep any unauthorized personnel away.

Failure to follow this instruction may result in malfunction or accidents.

● **Immediate stop using and then unplug the wrench when unusual sound, vibration or smell is detected.**

- Contact your distributor.

Failure to follow this instruction may result in serious injury.

● **Contact your distributor for repair service.**

Repair work done by an inexperienced person may cause accidents, injury or malfunction.

 **WARNING**

● **Check the following items before operation.**

- Check for any deformation, crack or damage on the wrench body, sockets, electric cord, plug earth cable and etc.

Do not use the wrench if any problems are found on items listed above.

Failure to follow this instruction may result in electric shock, fire, burn accidents or personal injury.

● **Use appropriate power source as indicated on the rating plate.**

Failure to follow this instruction may result in fire or burn accidents.

● **Immediately check the wrench when it is dropped down or banged.**

- Check for deformation, crack, damage and other abnormality.

Stop using the wrench if any abnormality is found.

Continued use of the fault wrench may result in accidents and personal injury.

● **Check if leakage breaker is available together with earth connection.**

- Recommended leakage breaker: Rating capacity at 15mA and acting time below 0.1sec.

Failure to follow this instruction may result in electric shock, fire or leakage.

● **Grounding required during operation.**

Failure to follow this instruction may result in electric shock, fire or leakage.

WARNING

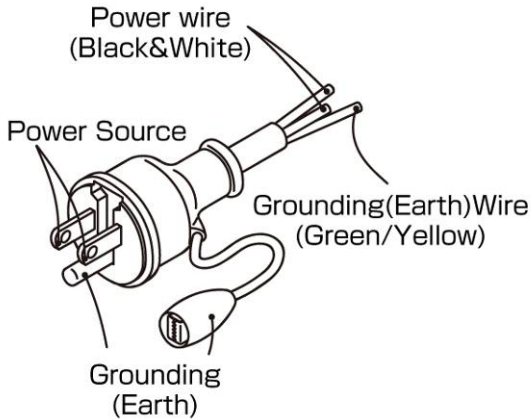
- **Do not connect ground lead to gas pipe.**

Failure to follow this instruction may result in fire or burn accidents.

- **If extension cable is used, apply those with earth and 3-P cable.**

- Use one of leads for earth and connect to earth on the wrench side.

Applying 2-P cable may result in electric shock.



CAUTION

● Use commercial power supply.

● Follow the instructions below when using generators.

- Use 50–60Hz sinusoidal power supply without high harmonic wave. Power supply including high harmonic wave may cause malfunction or breakage of the wrench.

- Use high capacity generators.

Almost 2kW (2kVA) is required per one wrench.

- The operating voltage must remain within +/-10% of the rated voltage at all times.

- Do not use inverter generators.

Inverter generators may cause malfunction or breakage of the wrench.

(Inverter Generator: The engine rpm will speed up and slow down automatically due to the wattage being pulled from the generator.)

● Do not use welder generators.

- Welder generators may cause malfunction or breakage of the control base installed in the wrench.

- Some welder generators produce electrical noise which may make the wrench out of control.

● Do not use welders along with the wrench.

- The wrench may be out of control due to extraordinary electrical noise even if welders are connected to other generators that TN wrenches are not connected to.

● Keep work area clean.

- Cluttered areas and benches invite accidents.

● Keep children away.

- Do not let children touch the wrench and electric cord.
- All visitors should be kept away from work area.

CAUTION

● **Secure work area.**

- Keep body stance balanced and firmed.
- Never wrap the electric cord around something.
- Do not trip over the electric cord during operation.
- Keep work area well lit.

● **Use suitable model for each application.**

- Do not use the wrench beyond its rated specifications.
- Do not use the wrench for purpose not intended.

● **Dress properly.**

- Always wear gloves and non-skid footwear when operating outdoor.
- Always wear safety helmet.

● **Use genuine accessories or attachments manufactured by Maeda Metal Industries, Ltd.**

● **Do not connect multiple plugs to a single outlet by using multiple outlet adaptors.**

Over current may cause fire, accidents or malfunction.

● **Do not abuse the electric cord.**

- Never use the electric cord for carrying, pulling or unplugging the power.
- Keep the electric cord away from heat, oil, sharp edge or moving parts.

● **Keep electric motor well ventilated.**

- Do not put any foreign materials in the vent.
- Do not block exhaust vent.

CAUTION

- **Maintain the wrench.**
 - Keep the wrench handle clean, dry and free of oil or grease.
- **Provide leakage breaker as a shock guard for each wrench.**
- **When using an extension cord, make sure that voltage remains within +/- 10% of the rated voltage at all time.**
- **When applying an extension cord, select shorter extension units than specified below depending on the cross section.**

Nominal conducting cable cross section		Max. Length
		110–120 V
H07RN-F	1.25 mm ²	10 m
	2.0 mm ²	15 m
	3.5 mm ²	30 m
AWG 14		50 ft(15 m)
AWG 12		80 ft(25 m)
AWG 10		130 ft(40 m)

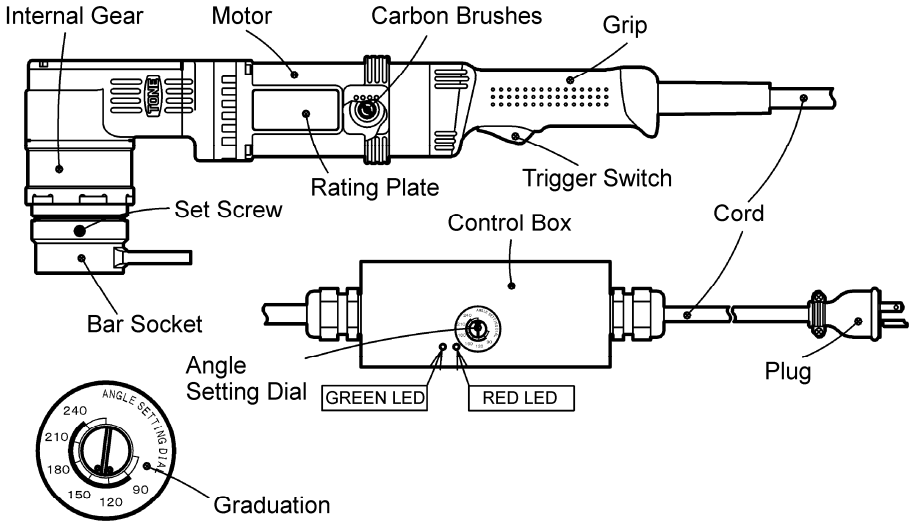
- Using extension cord more than Maximum Length may result in malfunction or breakdown due to performance drop of the wrench.

- **Observe local laws and rules concerning noise level.**

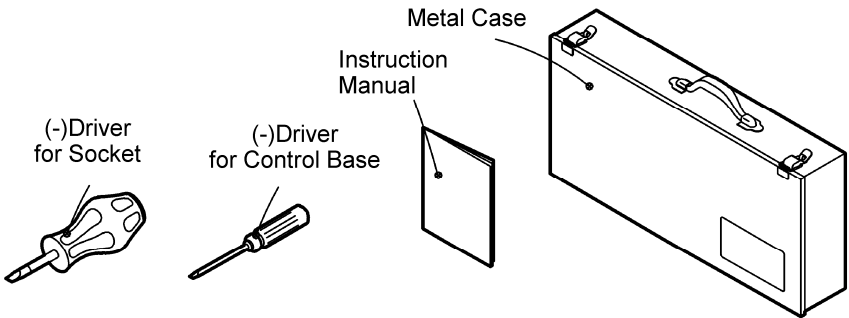
4. PART NAME & ACCESSORY

Part Name

Main Body



Accessory



Accessories

MODEL	ACCESSORIES
TNC-24EZA-1	1 size of bar socket (24UR32T or 24UR36T or 24UR41T) Screwdriver (-) * PSD-M2 (for socket) * BBD-M50 (for control base) Metal Case Instruction manual

- Contact your distributor for accessories listed above.

5. BEFORE USE

WARNING

- **Check followings before connecting the plug into power source.**

Accidental starting invites personal injury.

- Check for any deformation, crack or damage on the wrench body, socket electric cord, etc.
Do not use the wrench if any problem is found on items above.
- Make sure to use commercial power supply.
Use appropriate power source as indicated on the rating plate.
- Choose proper bar socket suitable for bolts to be tightening.
- Make sure that the bar socket is correctly installed on the wrench.
Loose installation may result in accidents and personal injury.
See “CHANGING BAR SOCKET”(⇨P.19)
- Implement exercise procedure before operation.

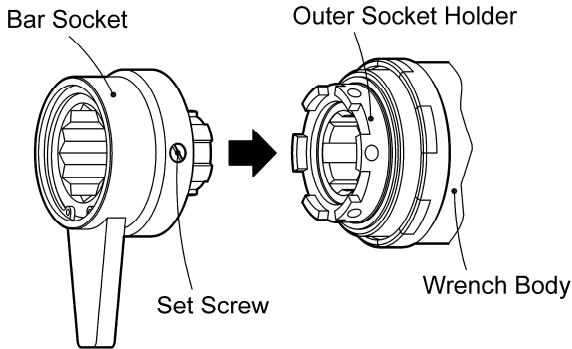
CAUTION

- **Exercise procedure with no-load should be carried out at least 5 minutes before operation.**

Failure to follow this instruction may result in making the wrench stuck on the bolts.

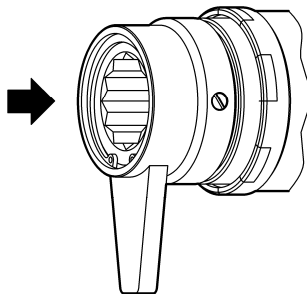
6. CHANGING BAR SOCKET

- Remove bar socket form the wrench by unscrewing set screws with (-) driver. Do not remove the set screws completely from outer socket holder.



- Select adequate bar socket for the bolts being tightened.
i.e. Use TONE genuine 7/8" bar socket for tightening 7/8" high strength hexagonal bolts/nuts.
- Mount the bar socket on the wrench body and remove the gap between the bar socket and the wrench body.

Fasten the set screws only after the gap is completely removed.



- Pull the bar socket in order to confirm that the bar socket was mounted on the wrench body completely.

7. OPERATING PROCEDURE

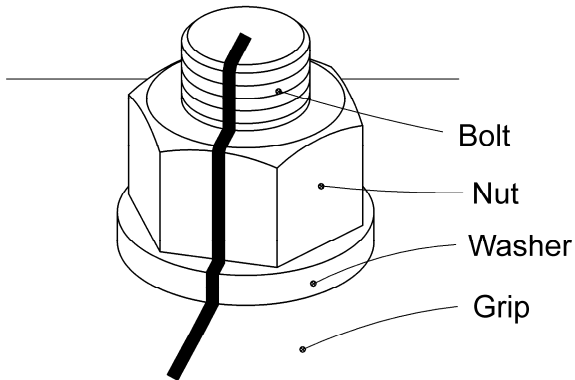
BEFORE OPERATION

【Snug Tightening】

Tighten the bolts /nuts to remove the gap between the nut and the grip.

【Marking】

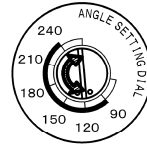
Put the straight line mark on the bolt, nut, washer and grip as the drawing below after finishing the “Snug Tightening”.



1. Operating procedure for turn of the nut tightening.

- ① Set the desired angle of rotation by using (-) driver as a general accessory, though the angle graduation is just a rough indication.

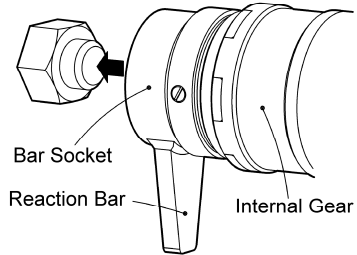
* Adjust the tightening angle setting when high accuracy tightening angle control is required. (⇨ P.23)



① Adjust angle setting dial

- ② Slide the bar socket over the bolt and nut assembly.

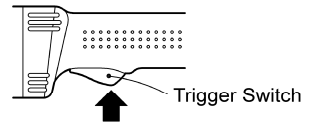
* Check the position of the reaction member since the reaction bar on the bar socket rotates to opposite direction to that of bolt and nut rotating direction.



② Slide bar socket over nut

- ③ Squeeze trigger switch to start tightening. The bar socket rotates to tighten the bolt/nut when the reaction bar contacts the reaction member.

- GREEN LED keeps going ON and OFF until the wrench shuts off automatically. (⇨ P.25)



③ Squeeze trigger switch

* Beware not to pinch finger, hand or foot by the reaction bar.

- ④ The wrench shuts off automatically when the preset angle is reached.

- GREEN LED remains ON after the tightening procedure is completed properly.

(GREEN LED goes OFF when the trigger switch is released.)

- Do not release the trigger switch during the operation to complete the tightening operation properly.

* In case that RED LED goes ON and OFF during the tightening operation ③ and ④ above, any troubles happen on the wrench. (⇨ P.25)

DANGER

- Never put hand, fingers and foot between the reaction bar and the reaction member.

Failure to follow this instruction invites personal injury.

 **WARNING**

- **Keep the electric motor well ventilated. Do not put any foreign materials in to the vent.**

Failure to follow this instruction may result in electric shock or malfunction.

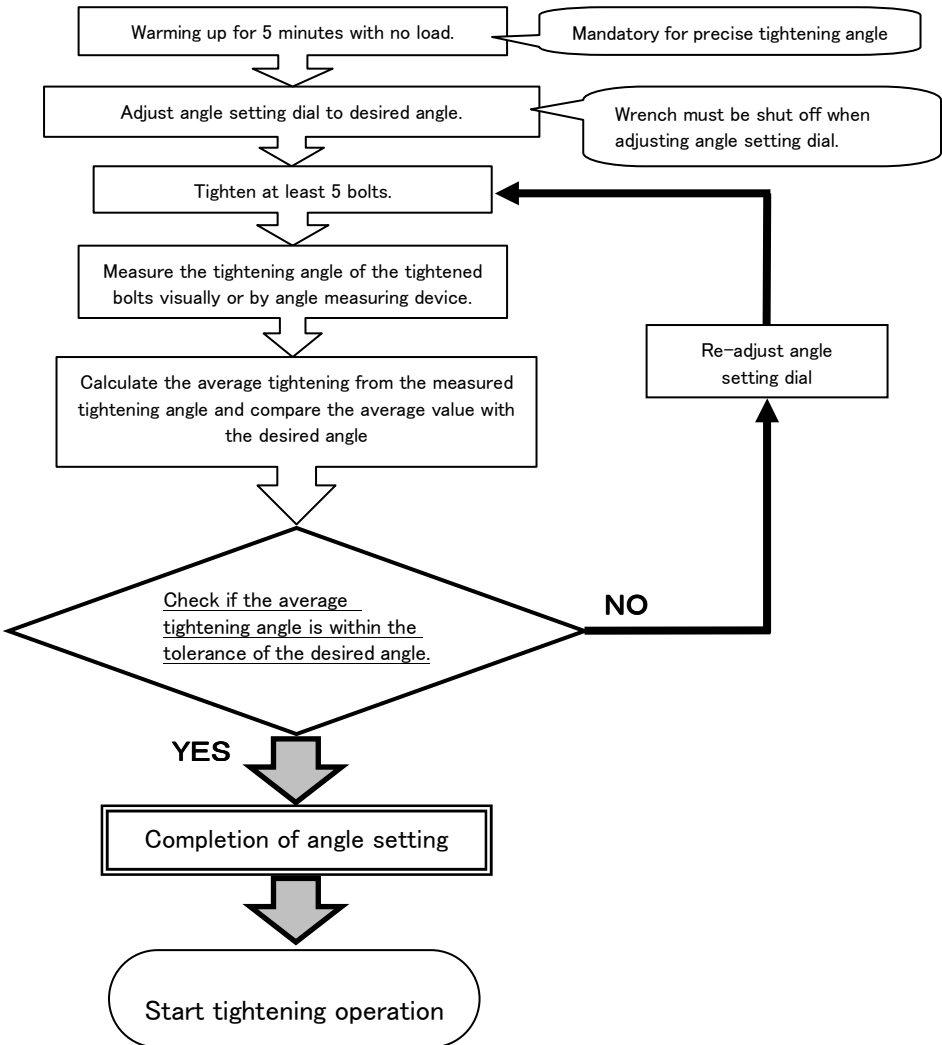
- **Do not abuse the wrench to avoid malfunction and breakage.**

- **Never tighten the same bolt/nut twice. (Never apply too much torque to the same bolt/nut.)**

Failure to follow this instruction may result in breakage of the bolt/nut, malfunction and personal injury.

2. Adjustment of Tightening Angle Setting

- Adjust tightening angle setting before tightening when high accuracy tightening angle control is required.



 **WARNING**

● **Adjustment of the tightening angle setting has to be done daily before operation and when tightening conditions change.**

● **Periodically overhaul of the wrench is recommended to implement steady and proper turn of the nut tightening.**

● **Never tighten the same bolt/nut twice. (Never apply too much torque to the same bolt/nut.)**






Failure to follow this instruction may result in breakage of the bolt/but, malfunction and personal injury.

8. ERROR & STATUS INDICATION




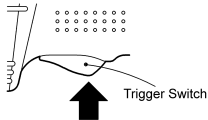




■ The wrench is provided with green and red LED that indicate whether the tightening has successfully completed or not, or an error has occurred or not.

● : Light Off (G) (R) : Light On ⚙ : Quick On & Off (5 times/sec)
 ⚙ : On & Off (2 times/sec) ⬠ : Slow On & Off (1 time/sec)

Normal Tightening Condition

Indication	LED Meaning	Indication	LED Meaning
 ↓ After 1 sec. 	Power ON ↓ "Ready"	 ↓ Start Tightening  ↓ Complete Tightening 	No-load operation ↓ Tightening operation ↓ Tightening Finished

Trouble Detected during Tightening

Indication	LED Meaning	Remedy
	<ul style="list-style-type: none"> • Tightening was not finished normally. • Release trigger switch before tightening finished. • Tightening the same bolt twice. • Inching action detected. 	<ul style="list-style-type: none"> • Check the tightened bolts and nuts. • Do not release the trigger switch during tightening, • Never tighten the same bolt twice. • Avoid inching action of trigger switch.
 ↓ Reset  Ready		<Method of Reset> * To reset the wrench, squeeze the trigger switch once. And then, the wrench is now ready.
 -----  -----  ↓ Alternation 	Any troubles happen on the wrench.	Need to repair. Contact your distributor.

9. INSPECTION & MAINTENANCE

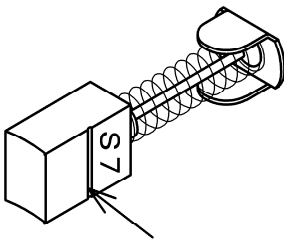
WARNING

- **Disconnect plug from power source before inspection and maintenance.**

Accidental starting invites serious injury.

- Clean dust and debris from the bar socket and the socket holder periodically.
- Use only a damp cloth to clean the wrench and bar socket since certain cleaning agents and solvents are harmful to those parts. Some of these include: benzene, thinner, gasoline and etc.
- Never put solvents into the exhaust vent.
- Store the wrench in the metal case after operation and keep it dry.
- Carbon brush must be regularly inspected and replaced with the new genuine carbon brush when brush length becomes less than 1/4".
 - * Carbon brushes are placed in two positions. These carbon brushes must be replaced at the same time.
 - * Indicate the wrench model when carbon brushes are needed because carbon brush differs from model to model.

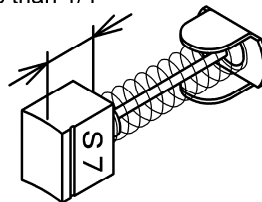
NEW



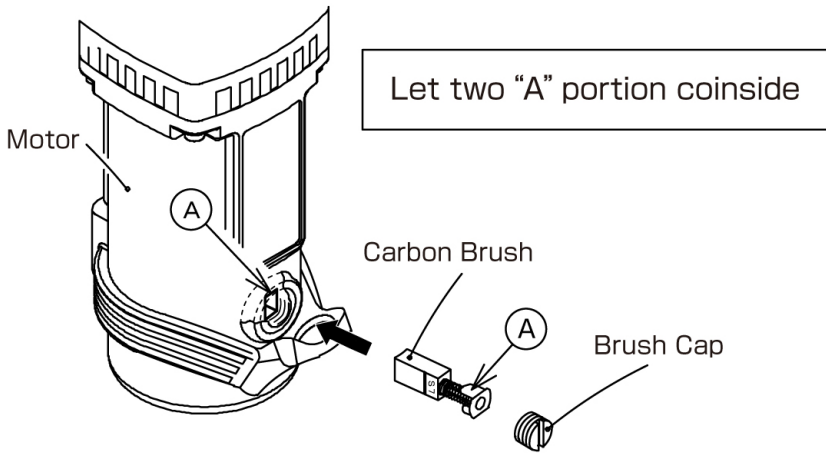
Limit of brush length

Time to Replace!

Less than 1/4"



- Replace carbon brush as the drawing below.



- Overhaul must be carried out every 6 months or 30,000 tightening whichever comes first. Contact your distributor for overhaul.

10. FEATURES

- Short-nosed Corner Type Turn of the Nut Wrench.
- All New Design Aluminum Motor.

11. SPECIFICATIONS

Model	TNC-24EZA-1
Voltage (Single Phase)	110V-120V
Max Current (A)	14.5A
Max Power (W)	1650W
Rated Max Torque (lbf.ft)	920lbf.ft
Controllable Angle Range	90~240 Degree ^{※1}
Repeated Accuracy	± 10 Degree ^{※2}
No-load Speed	11min ⁻¹ (rpm)
Main Body Weight (kg)	6.5kg ^{※3}
Control Box Weight (kg)	1.0kg
Adaptable Bolt Diameter	3/4", 7/8", 1" (A325, A490)

※1: Angle graduations are just a guidance.

※2: Repeated Accuracy means the variations in rotation angle of nuts under the same tightening conditions.

※3: Weight excludes socket, cord and control box.

12. AFTERSALES SERVICE

- Use the wrench properly in accordance with CAUTIONS and WARNINGS mentioned on the instruction manual, wrench body and accessories.
- Provide model, serial number, date of purchase and details of failure when contacting your distributor.

CAUTION

- **Do not use the wrench when malfunction, deficiency in wrench's performance, personal injury or property loss is foreseen.**

If possible, prepare backup wrenches beforehand.

TONE[®] TONE CO., LTD.



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OSAKA 556-0017, JAPAN,

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e-mail: overseas@tonetool.co.jp

● Specifications and the design are subject to change without notice. ●