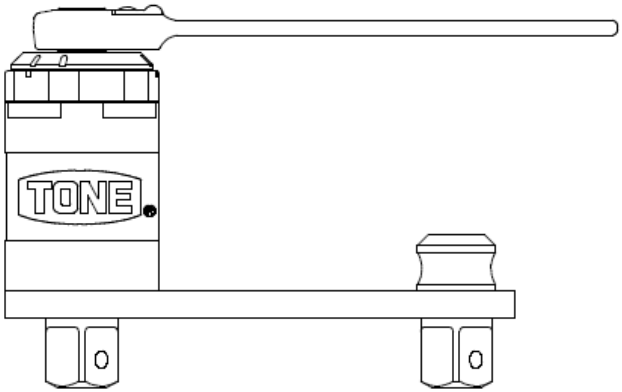
TONE® 強力パワーレンチ
SUPER POWER WRENCH

取扱説明書
INSTRUCTION MANUAL No. 1708

TO BE PRESERVED
要保管

製品番号 MODEL	P150A	／	P150AT
	P300A	／	P300AT
	P600A	／	P600AT



⚠CAUTION

●製品をご使用される前に、取扱説明書をお読みいただき、理解していただいた上でご使用ください。

●取扱説明書は、いつでも読めるように所定の場所に大切に保管してください

Read and fully understand all the instructions before use.

Keep this manual in designated place for easy and quick reference.

TONE株式会社
TONE CO., LTD.

■PREFACE

Thank you for purchasing the **Super Power Wrench**

■Upon receipt, check and confirm the following:
- Check for any damage.
- Check for any loose or missing screws and bolts.
- Check the model as per order.
- Check all the accessories are contained (➪P.32).

If any problems are found, contact your distributor.

■Read this instruction manual carefully before use.
Full understanding of this manual is essential
to prevent personal injury or malfunction.

■Keep this manual in the case for reference.

■If the manual or warning label is lost or becomes illegible,
or if an 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.

■SAFTY INSTRUCTION

This manual specifies three (3) basic safety instructions:

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

DANGER	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	Warning is used to indicate hazardous or unsafe practices which could result in severe personal injury or death in the worst case.
CAUTION	Caution is used to indicate hazardous or unsafe practices which could result in personal injury, product or property damage.

Even if the risk is classified as CAUTION , the risk could become more serious depending on the conditions. Make sure to follow all instructions when operating these tools.

13. Application

■Manual power wrench is for tightening and loosening large bolt/nut.

14. ⚠ Precautions for Use

■To prevent accidents or personal injury read and follow all instructions listed below.

⚠DANGER

●Beware of falling accidents when working at elevated heights.

○Dangerous situation can arise due to damage to the wrench from excessive input or inappropriate handling of reaction force, or if the reaction arm comes loose.

○Provide safety net or canvas as safe guarding against falling items.

○Confirm that no one is underneath the working site before operation.

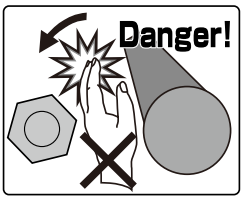
Failure to follow these instructions may result in accidents.

●During operations, do not approach the reaction arm with your hands, fingers, legs, or feet, etc.

○Note that the reaction arm rotates in the opposite direction of the output angle adjustor.

○Be sure that hands, fingers, legs, feet, etc. are not in the path of the reaction arm before commencing operations.

Hands, fingers, legs, and feet may get caught between the equipment, which can result in severed finger or limbs.



⚠DANGER

●Avoid the ratchet handle rotation radius.

○ When changing the dial on the clutch following input, the ratchet handle may rotate. For safety reasons, do not suddenly take your hand away from the handle.

○Check that no one is in the work area before commencing operations.

The presence of others in the work area may lead to injury.

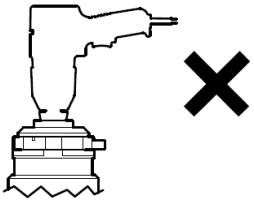
⚠WARNING

●Do not use power tools for input.

○This unit is designed for manual input. Do not use power tools including impact wrenches and electronic wrenches.

Failure to follow these instructions may result in malfunction and injury.

Power tools such as impact wrenches.



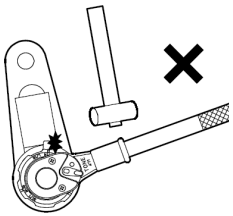
●Do not set a pipe on ratchet and use it.

Use the ratchet with pipe can result in malfunction and injury.

●Do not hit with a hammer when changing the dial on the clutch.

○Following input, the clutch dial may lock, making difficult to change to another setting, or there may be so much weight on it that it not move at all. See page for instructions on changing the clutch dial settings.

Failure to follow these instructions may result in malfunction and injury.



⚠WARNING

●Do not use attachments.

○Do not place attachments between the square drive and the socket (including extension bars, joints, adapters, etc.).

If the Super Power Wrench falls over during operations, or if any attachments break, it may affect torque precision, and may cause injury.

●Place the reaction arm on a hard surface (one that will not bend or break).

○Because the surface where the reaction arm is placed receives roughly the same stress level as the output torque, select a hard surface that will not bend or break under pressure.

Failure to follow these instructions may result in malfunction, accidents or inaccuracy.

●Place the reaction arm on a stabilized reaction member.

○Since the reaction member receives the same force as output force, choose a rigid object as reaction member.

○If not possible, cover a soft place with an iron to buffer. Attach a shock absorber firmly.

Failure to follow these instructions may result in accidents or injury.

●Beware of falling accidents when working at elevated heights.

○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 accidents.

⚠WARNING

●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.

Failure to follow these instructions may result in injury.

●Do not exceed unit capacity.

○Use the wrench only within its capacity.

Failure to observe capacity limits may result in damage to the unit or injury to the user.

●Properly install the sockets as described in this manual.

○Incomplete installation may result in accident and personal injury.

See "Changing parts" (⇨P.43).

●Do not disassemble or modify the wrench.

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

○Disassembly and Re-assembly is permitted for the following consumable parts: Reaction arm and Sockets.

●Store the wrench in the metal case and place it in protected storage when not in use.

○Store the wrench in a secure, dry location to keep any unauthorized personnel away.

Failure to follow these instructions may result in malfunction or accidents.

●Contact your distributor for repair service.

○Repair work should only be carried out by a qualified technician.

○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 Super Power Wrench body, reaction arm, socket, Hexagonal L Wrench and other accessories.

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

○Make sure that a socket and a reaction arm are correctly installed on the wrench.

○Make sure that set screws are securely fastened.

Failure to follow these instructions may result in accidents and personal injury.

⚠CAUTION

●Keep work area clean.

■Cluttered areas and benches invite accidents.

●Keep children away.

■Do not let children touch wrenches.

■All visitors should be kept away from work area.

●Secure work area.

■Keep body stance balanced and firm.

■Keep the 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 shoes when operating.

■Always wear safety helmet.

⚠CAUTION

●**Use genuine accessories and attachments manufactured by TONE CO., Ltd.**

■Use the genuine accessories mentioned in this instruction manual or TONE's general catalog.

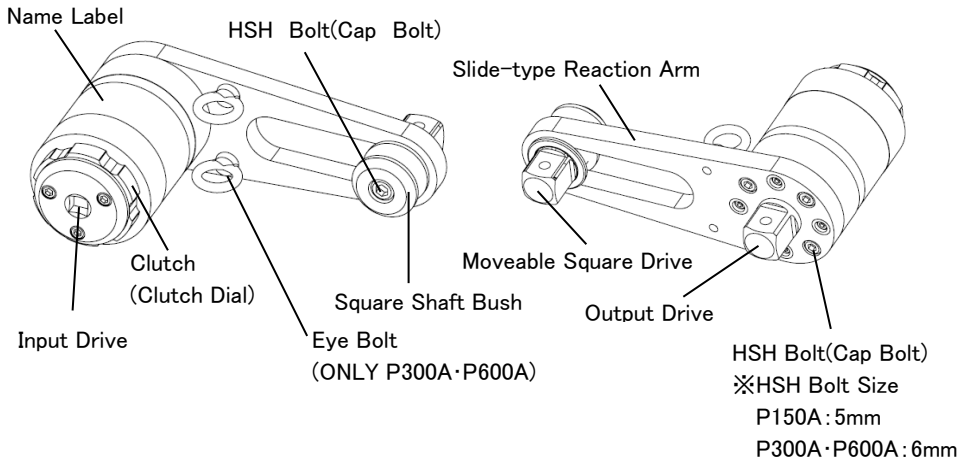
●**Maintain the wrench**

■Keep the wrench handle clean, dry and free of oil or grease.

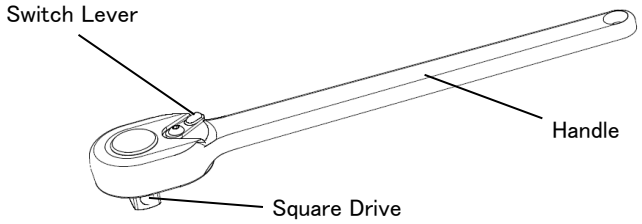
15. Part Name・Accessories・External Dimensions

Parts Name

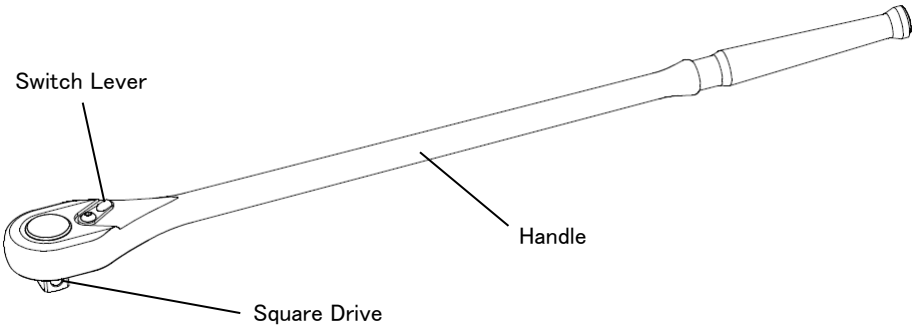
●P150A～P600A



●Ratchet handle 371(P150A)



●Ratchet handle 371L(P300A・P600A)



Accessories

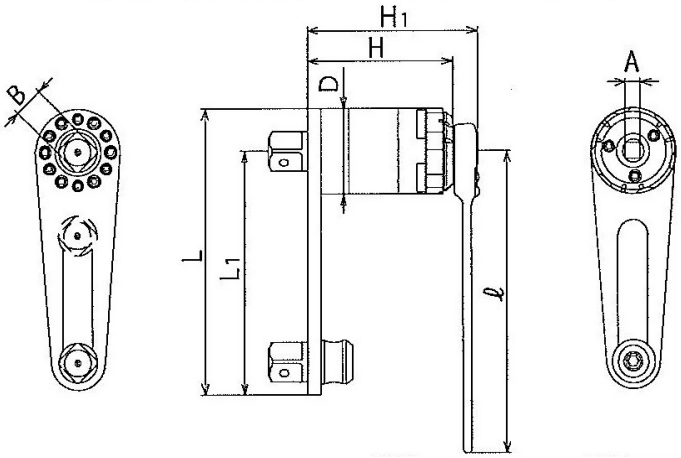
Model	P150A	P300A	P600A
Ratchet Handle	371	371L	371L
Slide-type Reaction Arm *	150PNHS	300PNHS	600PNHS
Hexagon Socket Head Cap Screw *	M6×15 (6)	M8×20 (4)	M8×20 (6)
Hexagonal L Wrench	○(5・8mm)	○(6・8mm)	○(6・10mm)
Eye Bolt	×	○(2)	○(2)
Metal Case	○	○	○
Inspection Certificate	○	○	○
User Manual	○	○	○

●Slide-type reaction arm and Hexagon socket head cap screw is attached on the Super Power Wrench.

●Contact your distributor for the accessories above and other optional accessories as well.

External Dimensions

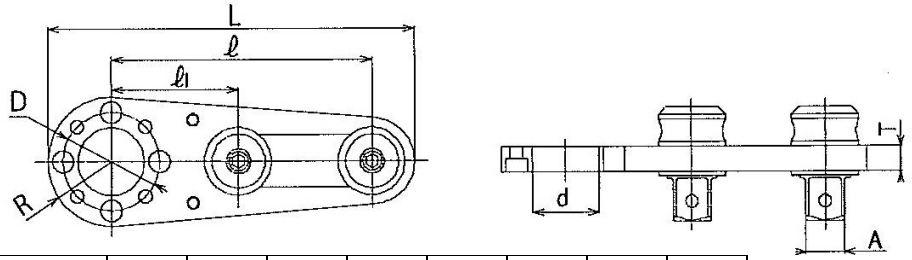
●Super Power Wrench



Model	D	H	A	B	ℓ	L	H1	L1
P150A	71	122	12.7	25.4	248	235	142	200
P150AT					369		139	
P300A	84	138	12.7	25.4	450	242	158	200
P300AT					693		158	
P600A	96	172	12.7	38.1	450	348	192	300
P600AT					693		192	

(mm)

●Slide-type Reaction Arm



Model	ℓ	ℓ1	L	T	R	D	d	A
150PNHS	172	69	235	12	35	55	39	25.4
300PNHS	172	84	242	16	42	64	44	25.4
600PNHS	267	95	348	16	48	75	55	38.1

(mm)

16.Before use

■Check followings before using the Super Power Wrench.

16-1. Selecting Suitable Model

Check the instructions on nut and bolt torque before tightening.
When the torque is NOT noted, check with the manufacturer or decide on the torque referring to the instructions that come with the screws.

Reference **T=K･D･N**

T：Torque (N･m)	K：Torque coefficient
D：Bolt shaft diameter (mm)	N：Axial tension (kN)

Caution for Loosening

It is often the case that more than double of tightening torque is needed for loosening, due to gathered rust or deteriorated threads.
When tightening torque is about the same as the max, output torque of the wrench, it may not be able to loosen bolt/nut. In that case, it is better to use models with a bigger torque range.
In case the rust is heavy, apply penetrating type lubricant, below on threads and wait approximately 10 minutes before loosening.
Do not forget to wipe out lubricant completely before re-tightening to prevent bolt from being come loose.

16-2. Inspection

Check that there is no obvious deformation of the wrench, reaction arm, socket, and other accessories.

Do not use the product if there are any abnormalities.

Make sure that the reaction arm is properly fastened with hexagon socket head cap screws.
If not, tighten the screws with the attached hexagonal L wrench.
For more information, see “Changing parts” (➪P.42).

16-3. Selecting a Socket

To prevent the unit from falling over, attach the socket compatible with the nuts and bolts you are using.

16-4.Attaching Reaction Arm (➪P.42)

Check that the reaction arm is properly attached, and also make sure that the reaction arm does not come loose from the main unit.

16-5.Attaching Socket (➪P. 43)

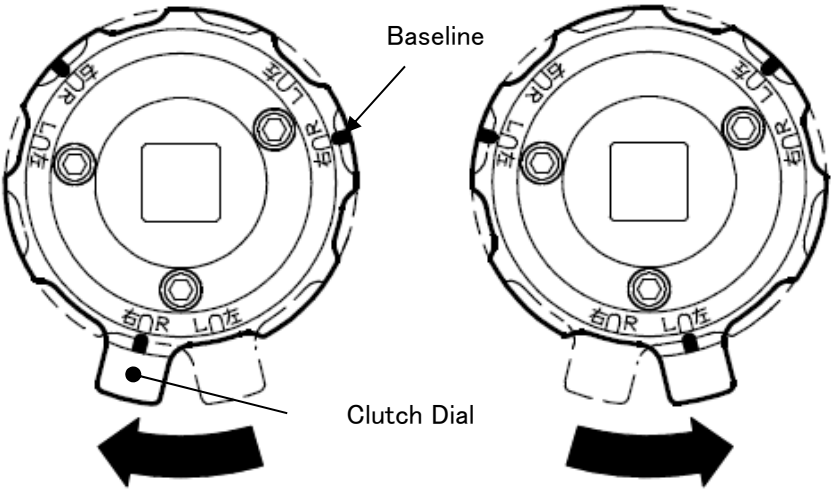
Check that the sockets are properly attached, and also make sure that the socket does not come loose from the main unit.

16-6. Clutch

Purpose of the Clutch

When using ratchet handle, a significant portion of the input may be absorbed by gear backlash (gap between the gears) or elastic deformation of the materials, resulting in input loss. The clutch is intended to prevent input loss and improve efficiency of operations.

Part name and operations



When rotate clockwise, adjust the baseline to Right (R).

When rotate counter-clockwise, adjust the baseline to Left (L).

⚠CAUTION

●Before starting the unit, check that the output square drive rotation direction and the clutch direction conform.

Failure to operate the clutch dial properly may lead to damage to or breakdown of the unit, or injury to the user.

16-7.Calculation of Input Torque

Target input torque of ratchet handle or torque wrench can be calculated by method below.

【 How to calculate input torque 】

① Calculate from formula

Output torque = **Input torque** × **Magnification**

② Calculate from magnification diagram (on P) or rating plate

《 Example 》

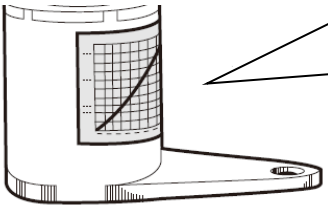
Super Power Wrench：P150A Target torque： 1000 N･m

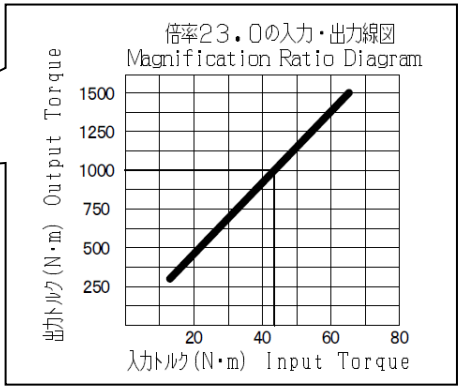
① In the case, Magnification for 1000N･m is 23.0 on the Inspection Certificate.

Output torque = **Input torque** × **Magnification**

$$\textbf{Input torque} = \frac{\textbf{Output torque}}{\textbf{Magnification}} = \frac{1000}{23.0} \fallingdotseq 43.5\ \text{N･m}$$

②





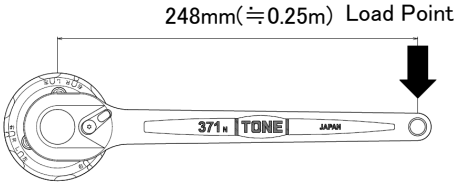
Thus, **43.5 N･m** is required for input torque to obtain 1000N･m

●When use a ratchet wrench, calculate from following formula.

Input torque = **Newton (N)** × **Length (m)**

$$\textbf{Newton(N)} = \frac{\textbf{Input torque}}{\textbf{Length (m)}} = \frac{43.5}{0.25} = 174\text{N}$$

※ "Length" means the distance from the center of wrench to load point. "Length" is depended on the load point.



Thus, **174N** is required for load point to obtain 43.5N･m by ratchet wrench (371)

16-8.Warm up the Super Power Wrench before uses it.

⚠CAUTION

●**Try to use several time as a warming up before use the Super Power Wrench.**

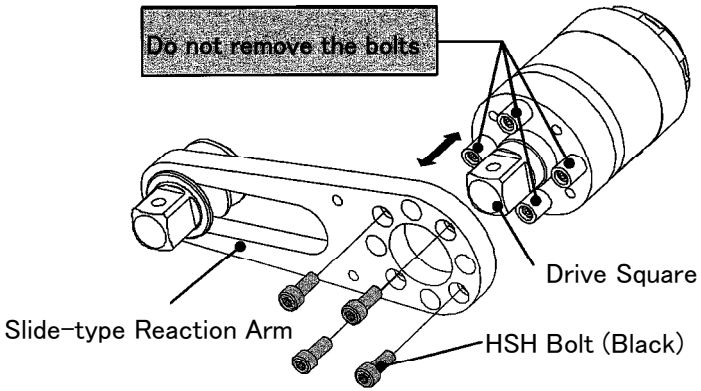
■Without warming up, the wrench is not able to output torque stably.

17.Changing parts

17-1.Attach/Remove Reaction Arm

○Attach Reaction Arm

①Attach reaction arm to the Super Power Wrench and Tighten HSH bolt (black) by using hexagonal L wrench securely.



Remove Reaction Arm

①Loosening HSH bolt (black) and remove the reaction arm.

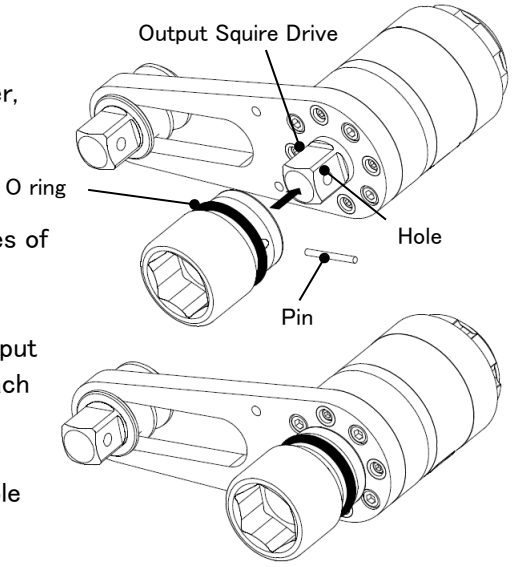
17-2.Attach/Remove Socket

①To prevent the unit from falling over, attach a socket compatible with the nuts and bolts you are using.

②Remove the O ring from the grooves of the socket, and remove the pin.

③Line up the through hole of the output drive and the socket pinhole, and attach the socket.

④Attach the pin to the socket pin hole so that the pin does not come out, set the O ring in the groove.



【Picture for Attaching Pin/O-ring】

⑤Check that the O ring is properly attached, and also make sure that the socket does not come loose from the main unit.

○Remove socket.

①Detach the O ring from the grooves of the socket, and remove the pin.
②Remove the socket from the output drive.

⚠WARNING
●**Check that there are no cracks, chips, wear or deformation of the socket.** A damaged socket may lead to injury to the user.
●**Check that there is no deformation of the O ring, and that the pin is not bent, broken, or cracked.** The pin and the O-ring are replaceable supplies. Replace them if there are any problems. Injury may result if the socket falls down or the pin flies out.

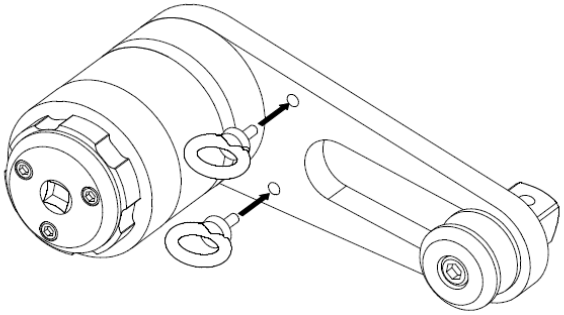
⚠WARNING

●After attaching the socket, pull on it to make sure that it is properly attached.

If it is not properly attached, the socket may come loose during use, creating a dangerous situation. A loose socket may also result in hindered unit durability, unit breakdown, or injury to the user.

17-3.Set Eyebolt （ONLY P300A/P300AT･P600A/P600AT）

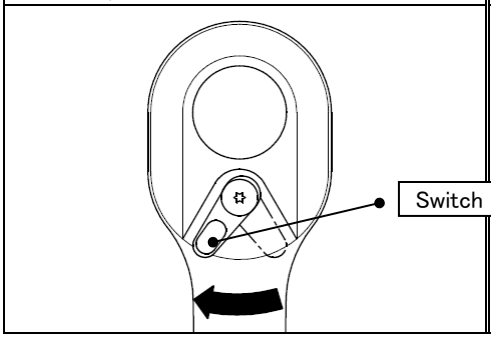
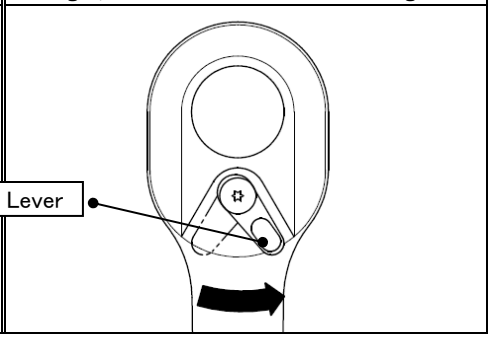
①Set the Eyebolt following the picture.
Adjust the direction of Eyebolt by setting washer.



18. Unit Operations

①Set the switch lever according to the intended direction of the output angle adjustor as shown below.

Note **Set the target torque before use torque wrench following the instruction manual**

When rotate the output angle adjustor to the left, set the switch lever to the Left.	When rotate the output angle adjustor to the right, set the switch lever to the Right
	

⚠WARMING

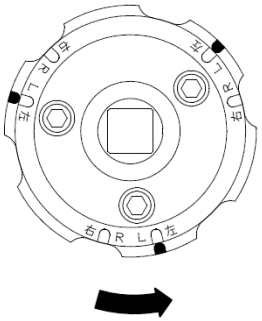
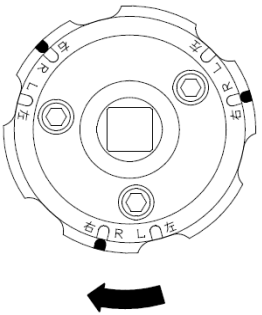
●**The torque wrench in the set, use in clockwise direction only.**

Use ratchet wrench in the set for loosening.

○The torque wrench is only for tightening. Never use the torque wrench for loosening operation.

Failure to following this instruction may result in malfunction and injury.

②Set the clutch according to the intended direction of the output drive as shown below.

When rotate the output angle adjustor to the left, set the clutch dial to the Left (L).	When rotate the output angle adjustor to the right, set the clutch dial to the Right (R)
	

⚠CAUTION

●**Before starting the unit, check that the output angle adjustor rotation direction and the clutch direction conform.**

Incorrect use of the clutch may result in damage to the unit.

●**Try to use several time as a warming up before use the Super Power Wrench.**

Without warming up, the wrench is not able to output torque stably.

③Set the Super Power Wrench to bolt/nut.

Reaction arm must be placed securely against a solid member and set the socket for loosening and tightening without gap between the socket and bolt or nut.

Slide-type reaction arm receives large force almost equivalent to output torque by set the socket and place to the adjacent bolt or nut to be tightened or loosened. This is how to do it.

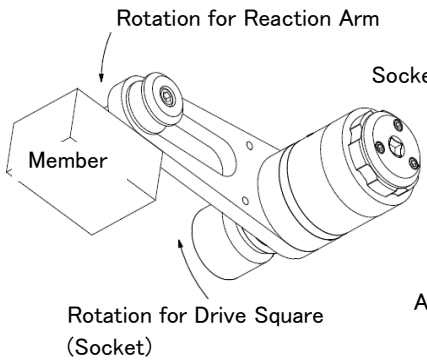
(1). Select right size of socket for the bolt to receive output torque and set the socket to moveable square drive.

(2). Loosening the HSH bolt and set the socket to the bolt/nut by sliding the moveable square drive.

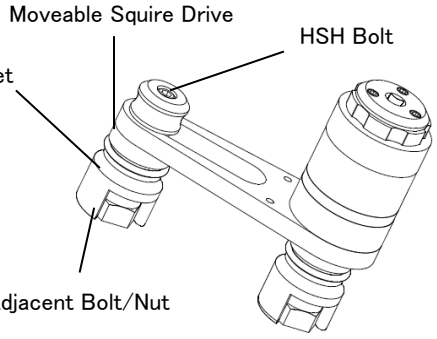
(3). Tighten the HSH bolt, which is loosened in the step (2), for fixing moveable square drive. Receive output torque by the socket set on moveable squire drive

Note **Reaction arm must be placed squarely against a solid member or surface adjacent to the bolt/nut to be tightened, as such member or surface receives large force almost equivalent to output torque.**

●Receive output torque by reaction arm plate



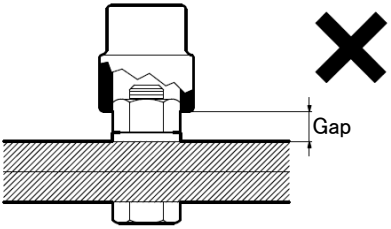
●Receive output torque by the socket set on moveable squire drive



⚠CAUTION

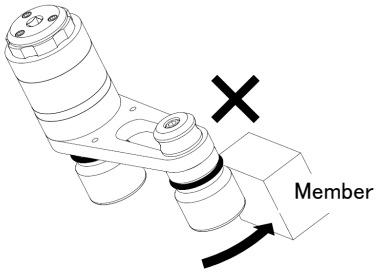
●Push the socket in so that it covers the nuts and bolts completely.

If the socket is not properly inserted, the bolts and nuts may be damaged, and the socket may come loose, which may lead to injury.

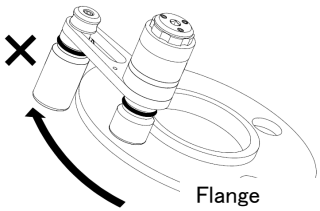


●Do not receive output torque by square drive or outside of socket.

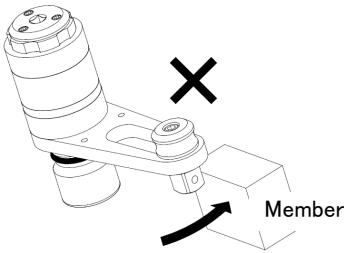
Failure to do so may result in accidents and personal injury



※Do not place drive square or outside of socket against a solid member or surface adjacent to the bolt/nut to be tightened or loosened, as such member or surface receives large force almost equivalent to output torque.



※Do not receive output torque by outside of socket on the square shank or Flange etc.

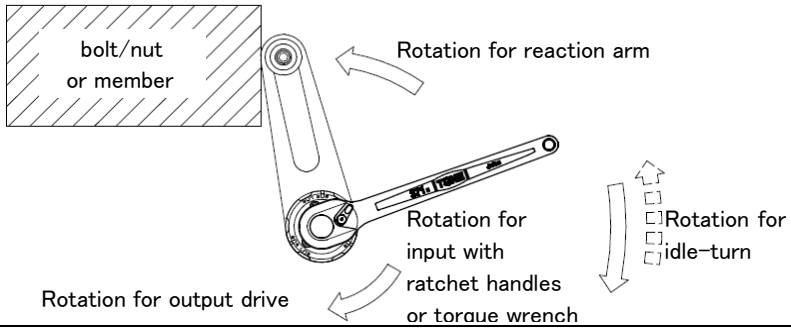


※Do not receive output torque by square shank.

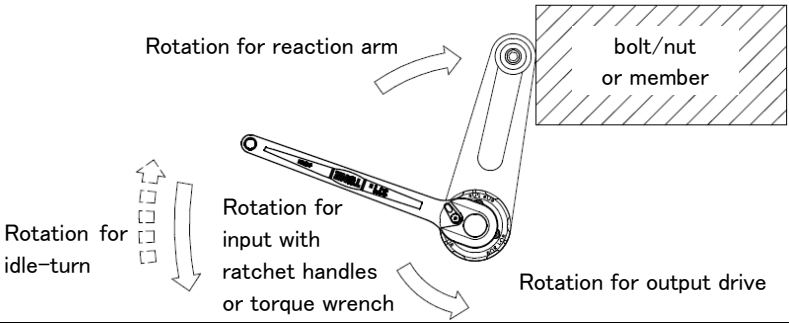
○Contact your distributor to order custom made reaction arm for special application

④Mount ratchet handle or torque wrench on the Super Power Wrench and set to bolt/nut. Reaction arm rotates in the direction opposite to the in-and-output direction. Apply reaction arm on solid and unbendable members to burden reaction force. Output drive of the Super Power Wrench rotates same direction with mounted ratchet handle/torque wrench.

Rotate output drive clockwise direction



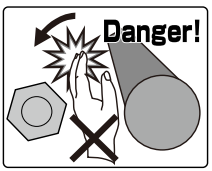
Rotate output drive anticlockwise direction



Note **In case of using torque wrench, when reaching preset torque, the wrench makes a clicking sound as well as a light retroaction.**

⚠DANGER

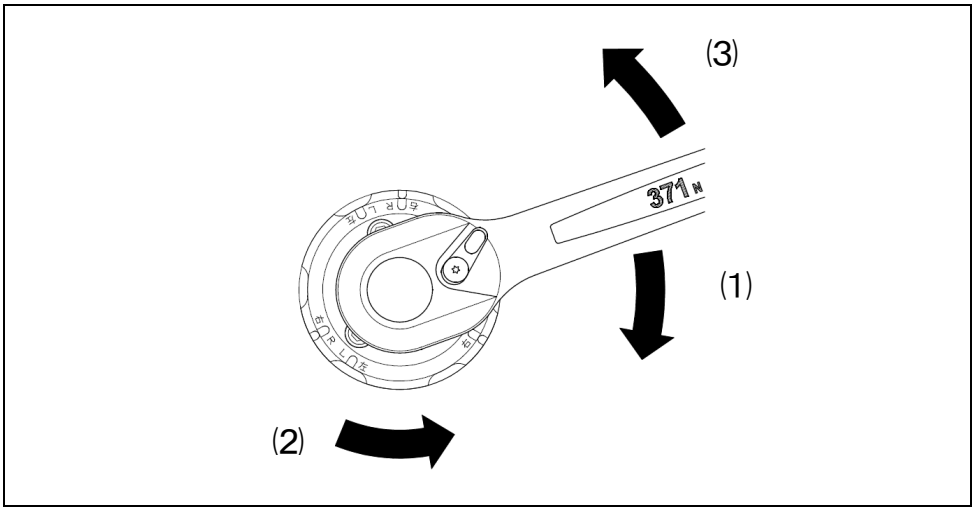
●During operations, do not approach the reaction arm with your hands, fingers, legs or feet, etc.



Hands, fingers, legs, and feet may get caught between the equipment, which can result in severed finger or limbs.

⑤After tightening operation, it is often hard to detach the wrench because elastic force generated inside of the wrench is imposing a large load in between reaction arm and bolt/nut. After tightening operation, it is often hard to detach the wrench because elastic force generated inside of the wrench is imposing a large load in between reaction arm and bolt/nut. In such case, execute following procedure to release load to detach the wrench.

(1). Input force with ratchet handle or torque wrench rightly and keep the force.
(2). Switch over the clutch-stem on the other direction. Do not release force from ratchet handle or torque wrench before completion of directional switch-over.
(3). While doing step (2), release force slowly from ratchet handle or torque wrench until run out the elastic force (opposite direction).



⚠DANGER

●Avoid the ratchet handle rotation radius.

○ When changing the dial on the clutch following input, the ratchet handle may rotate. For safety reasons, do not suddenly take your hand away from the handle.

○Check that no one is in the work area before commencing operations.

The presence of others in the work area may lead to injury.

19. Maintenance and inspection

○Use only a damp cloth to clean your wrench and sockets since certain cleaning agents and solvents are harmful to those parts. Some of these include: benzene, thinner, gasoline and etc.

○Store a wrench in the metal case after operation and keep it dry.

20.Periodic Inspection

○Contact your distributor for services available.

○Annual inspection is suggested to keep long life of wrench.

○Magnification of wrench might slightly vary depending on frequent and period of use.

21.Error and Status Inspection

■Following chart is the rough guidance of diagnosis in case of malfunction. Majority of breakage derives from miss-use of clutch and reaction arm and too much input torque.

①Square drive(input shaft) does not rotate

Cause	Countermeasure <remarks>
Clutch-stem position is reverse	See switch-over clutch procedure
Breakage	★Contact your distributer

②Input drive rotates, but output drive does not.

Cause	Countermeasure <remarks>
Breakage	★Contact your distributer

③Switch-over-clutch is not effective

Cause	Countermeasure <remarks>
Clutch-stem stuck by reaction	Turn clutch-stem while applying force in input direction.
Breakage or deformation	★Contact your distributer

④Required output torque is not obtained (rotation is not uniform)

Cause	Countermeasure <remarks>
The position of clutch-stem is neutral	Check the position of clutch-stem.
Reaction arm is not supported sufficiently	See method of use
Wrong torque setting inferior precision	Refer to torque wrench instruction manual
Breakage	★Contact your distributer

⑤Breakage of output drive

Cause	Countermeasure <remarks>
Excessive input	★Contact your distributer

⑥Breakage of HSH bolt

Cause	Countermeasure <remarks>
Improper supporting of reaction arm	See method of use

22.Features

○Small input torque gains big output torque by planetary gear mechanism.

○Switch-over-clutch, adjacent to input drive portion, prevents power loss and increases tightening efficiency.

○Do not need electrics for use the wrench.

○No noise by using the wrench so easy to protect the working condition.

○Torque setting is made easy by using torque wrench for input force.

23.Specifications

Super Power Wrench

Model	Output torque (N·m)	Input torque (N·m)	Magf.	Gear Ration	Weight (kg)
P150A	300～ 1500	13～65	23.0	25.0	4.6
P300A	600～ 3000	36～180	16.7	18.2	7.1
P600A	1200～ 6000	51～255	23.5	25.5	11.7

※"Weight" means the total weight of the Super Power Wrench, Slide-type reaction arm, and ratchet wrench.

※Actual magnification may vary depending on condition.

Check the magnification of the new Super Power Wrench shipped on the inspection certificate.

Contact your distributor to check the magnification of the Super Power Wrench after buy the wrench.

※Tightening torque accuracy is ±5%

Super Power Wrench (with torque wrench)

Model	Set context		Output Torque (N·m)	Input Torque (N·m)	Weight (kg)
	Super Power Wrench	Torque Wrench			
P150AT	P150A	T4MN100	460～1500	20～65	4.9
P300AT	P300A	T4MN300	1002～3000	60～180	7.9
P600AT	P600A	T4MN300	1410～6000	60～255	12.5

※"Weight" means the total weight of the Super Power Wrench, Slide-type reaction arm, and ratchet wrench.

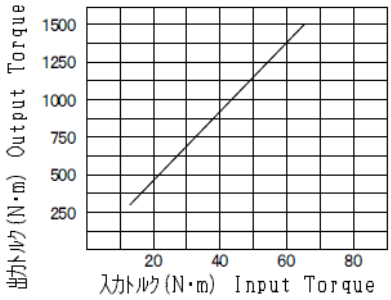
※The output and input torque shown on chart are the figures when used with torque wrench contained in set.

※The output torque on the same condition depends on the tightening torque accuracy and the accuracy of torque wrench.

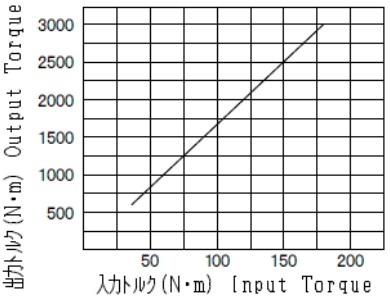
Magnification Diagram

Output torque	=	Input torque	×	Magnification

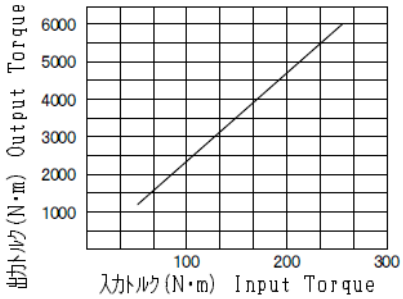
P150A（倍率23.0/Magf.23.0）



P300A（倍率16.7/Magf.16.7）



P600A（倍率23.5/Magf.23.5）



※Actual magnification may vary depending on condition.

Check the magnification of the new Super Power Wrench shipped on the inspection certificate.

Contact your distributor to check the magnification of the Super Power Wrench after buy the wrench.

24.Aftersales Service

●Use the Super Power Wrench properly according to this instruction manual and WARNING LABEL on the body of the Super Power Wrench.

●Provide model, serial number, date of purchase and details of failure when contacting your distributor.

⚠CAUTION

●Do not use the Super Power Wrench when malfunction, deficiency in its performance, personal injury or property loss is foreseen.

If possible, prepare backup the Super Power Wrench beforehand.

MEMO

MEMO

MEMO

●予告なしに改良・仕様変更をする場合があります。
変更の場合、取扱説明書の内容が変わりますのでご注意ください。

●Specifications may be changed without notice.
Modification of instruction manual will be substituted for the notice.

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