

**Original Instruction Manual
for UA-AMC series
Pneumatic Hydraulic Impulse
Tools
Ver.2-0**



Read all safety warnings, instructions, illustrations, and specifications provided with this power tool. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.

Do not discard the safety and operating instructions. Give them to the operator. Save these instructions for future reference.

Intended Use : The tool is designed to tighten or loosen threaded fasteners.

URYU SEISAKU, LTD.



Familiarize yourself with this instruction manual before installation, operation, maintenance, and inspection to use this system correctly and safely.



With the below items in mind, familiarize yourself with this instruction manual.

Be familiar with all the products and any miscellaneous concerns including safety recommendations before usage. The safety level is sorted by “Danger” and “Note” in this instruction manual.



: The misuse of the product will cause the operators the death or severe injury and the event has to be reported to all personnel immediately.



: The misuse of the product will cause the operator to be injured moderately and the physical damage to your equipment.

- Make this manual available with all the appropriate people.
- If you lose the warning and caution labels, please contact Uryu or the supplier from whom you purchased your UAAMC tool. We request you to make the labels available with yours for safety.
- Be sure to share this manual with the personnel who operate UAAMC tool.

Safety Instructions

General Safety

- Only qualified and trained operators should install, adjust or use the tool. Operators and maintenance personnel must be physically able to handle the bulk, weight and power of the tool.
- Do not modify the tool. Modifications can reduce the effectiveness of safety measures and increase the risks to the operator.
- Stop using the tool if discomfort, tingling feeling or pain occurs.

Work Area Safety

- Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- Do not use the tool in potentially explosive atmospheres, such as in the presence of flammable liquids, gases or dust. The tool is not insulated from coming into contact with electric power. Proceed with care in unfamiliar surroundings. Hidden hazards may exist.
- Always secure workpiece. Use clamps or other practical way to secure and support the workpiece to a stable platform. Holding the workpiece by hand or against your body is unstable and may lead to loss of control.
- Be aware of slippery surfaces caused by use of the tool and of trip hazards caused by the air line.
- Keep bystanders, children and visitors away while operating the tool. Distraction can cause you to lose control.

Pneumatic Safety

- Do not exceed the maximum air pressure stated on the tool.
- Always shut off air supply, drain hose of air pressure and disconnect the tool from air supply when not in use, when making repairs or before changing accessories. Plug the air inlet when not in use.

- Use correct hoses and always check for damaged or loose hoses and fittings. Whipping hoses can cause severe injury.
- An accessible means to shut off air supply should be provided at each tool station.
- Do not use quick-disconnect couplings at tool inlet. Use hardened steel (or material with comparable shock resistance threaded hose fittings.
- Whenever universal twist couplings (claw couplings are used, install lock pins and use whipcheck safety cables to safeguard against possible hose-to-tool and hose-and-hose connection failure.
- Do not abuse the hose. Never use the hose for carrying, pulling or hanging the tool.
- Keep the hose away from heat, oil, sharp edges or moving parts. Damaged or entangled hoses increase the risk.
- Release the throttle trigger / lever in the case of an interruption of the air supply.
- Never direct air at yourself or anyone else.

Personal Safety

- Stay alert, watch what you are doing and use common sense when operating the tool. Do not use any tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating a tool may result in serious personal injury.
- Maintain a balanced body position and secure footing. Avoid awkward or off-balanced postures. Change the posture during extended tasks, which may help to avoid discomfort and fatigue. If the operator experiences symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensation or stiffness, the operator should tell the employer and consult a qualified health professional immediately.
- Prevent unintentional or inadvertent start. Ensure that the throttle trigger / lever is in the off-position before connecting the tool to air supply, picking up or carrying the tool. Carry the tool only by the handle. Carrying the tool with your finger on the throttle trigger / lever or energising the tool that has the throttle trigger / lever on invites accidents.
- Never hold the drive socket / bit or drive extension. Keep hands away from rotating drives.
- Dress properly. Do not wear loose clothing, jewellery and neck ware. Keep your hair, clothing and gloves away from all moving parts.
- Use personal protective equipment such as dust mask, non-skid safety shoes and hard hat as instructed by the employer and as required by occupational health and safety regulations.
- Wear suitable gloves to protect hands against hazards such as crushing, impacts, cuts and abrasions and heat. Do not wear loose fitting gloves or gloves with cut or frayed fingers. When using gloves, always be sure that the gloves will not prevent the throttle mechanism from being released.



- Always wear impact-resistant eye protection during the operation of the tool. The grade of protection required should be assessed for each use.
- Remove any adjusting wrench before turning the tool on. A wrench that is left attached to a rotating part of the tool may result in personal injury.
- Ensure that the workpiece is securely fixed.



Do not use the tool in confined spaces. Beware of crushing hands between the tool and workpiece, especially when unscrewing.



-Keep clear of pinch point between the tool, support handle and any fixed object in the work area.

Noise

Unprotected exposure to high noise levels can cause permanent, disabling, hearing loss and other problems such as tinnitus (ringing, buzzing, whistling or humming in the ears). Risk assessment and implementation of appropriate controls for these hazards are essential.

Note : ISO 9612 describes the guidelines for the measurement and assessment of exposure to noise level at the workplace.



- Use hearing protection in accordance with employer's instructions and as required by occupational health and safety regulations. Look after your hearing protection.

- Always ensure that the silencer is in place and in good working order when the tool is operating.

Vibration

Exposure to vibration can cause disabling damage to the nerves and blood supply of the hands and arms. If you experience numbness, tingling, pain or whitening of the skin in your fingers or hands, stop using the tool, tell the employer and consult a physician immediately.

Note : The procedures of ISO 5349 are required when exposure at the workplace is to be assessed.

- Support the weight of the tool in a stand, tensioner or balancer if possible.

- Hold the tool with a light but safe grip taking account of the required hand reaction forces. The risk from vibration is generally greater when the grip force is higher.

- Wear warm clothing when working in cold conditions and keep your hands warm and dry. Direct cold air away from the hands.

- Use sleeve fittings where practicable.

Dust and Fumes

Dust and fumes generated when using the tool can cause ill health (e.g. cancer, birth defects, asthma and/or dermatitis).

Risk assessment and implementation of appropriate controls for these hazards are essential.

- Direct the exhaust so as to minimise disturbance of dust in a dust-filled environment. Where dusts or fumes are created, the priority shall be to control them at the point of emission.

Residual Risks

- Gloves can become entangled with the rotating drive, causing severed or broken fingers. Rotating drive sockets and drive extensions can easily entangle rubber coated or metal reinforced gloves.

- Additional residual risks may arise when using the tool which may not be included in the safety warnings. These risks can arise from misuse, prolonged use and so on. Even with the application of the relevant safety regulations and the implementation of safety devices, certain residual risks cannot be avoided. (e.g. injuries caused when changing any parts, blades or accessories)

Tool Use and Care

- Hold the tool correctly: be ready to counteract normal or sudden movements – have both hands available.

- Keep the tool dry and clean – free from oil and grease for better control of the tool.

- Do not force the tool. Use the correct tool for your application. The correct tool will do the job better and safer at the rate for which it is designed.

- Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the tool operation. If damaged, get the tool repaired before use.

- Select and maintain and replace the socket / bit properly to prevent an unnecessary increase in noise / vibration level(s).

- Socket retainer pin and ring are consumable parts. Check and replace them if worn or damaged.
- Clean the exhaust silencer and filter frequently or replace in order to prevent clogging and decreased power.
- Store the tool out of the reach of children and do not allow persons unfamiliar with these instructions to operate the tool. Tools are dangerous in the hands of untrained users.

Operating Instructions

(1) Air Pressure

UAAMC series are designed to be operated at 0.4MPa - 0.6MPa.

(2) Air Hose and Fitting

- Use the correct hoses and fittings for safety operation and optimum performance. See 'technical specifications' for air hose sizes and air inlet threaded.
- Blow out the air hose before connecting a tool.

(3) Dry and Clean Air

- Air filter and oil-fog lubricator should be preferably installed in a position within 3m from the tool.
- Dust, wear particles, corrosive fumes and excessive moisture cause rust and sticking of vanes and ruin the motor.

(4) Forward / Reverse Lever

- Set forward / reverse lever to 'R' for clockwise operation and to 'L' for anticlockwise operation.
- Note the position of the reverse mechanism before operating the tool. Be aware of the direction of rotation.

(5) Throttle Trigger / Lever

- Grip the handle firmly and pull the throttle trigger or depress the throttle lever firmly until the tool automatically shuts off. Fastening torque does not reach preset torque if you release the trigger / lever prior to automatic shut-off.

(6) Exhaust Air

- The direction of the exhaust air is adjustable for eye and ear protection. Silencer turns for your adjustment.

(7) Suspension Device

- When using a suspension ring / yoke, check that it is in good condition and correctly assembled.

(8) Warm Up

- Should the tool be left for some periods especially at low temperatures below 5°C, initially the tool may not deliver tightening force. This can be remedied by cycling the tool on a test fixture or by fixing the anvil on a vice and agitating the pulse unit for approximately 10 seconds, which will preheat the pulse unit.

Maintenance Instructions

- Continuous satisfactory operation depends upon proper tool care and regular maintenance.
- Get the tool serviced by a qualified repair person.
- Use URYU genuine parts for replacement. This will ensure that the safety and the optimum performance of the tool are maintained

Lubrication

- It is important to lubricate regularly to get maximum performance and trouble-free operation.
- For air motor, supply light turbine oil, ISO VG32 properly through air inlet (see table 1-A) or line lubricator (see table 1-B).
- For air motor bearings, coat one-third of the bearing with high quality grease, Multemp PS No. 2 (see table 2) or equivalent.
- Do not lubricate the tool with flammable or volatile liquids such as kerosene, diesel or jet fuel

Overhaul

- After every 100,000 fasteners or 3 months, whichever comes earlier, it is recommended to drain and refill the pulse unit and grease the bearings in the air motor (see table 2). Do not substitute any other fluid. Failure to use Hyrando Jinen oil could damage the tool, increase maintenance and decrease performance. If the presence of water is noted, it is recommended that a small amount of oil should be run through the air motor to wash out any rust residue in the motor.
- After every 200,000 fasteners or 6 months, the pulse unit should be inspected carefully. Inspect hard parts for damages or wearing. Replace damaged parts. All sealing parts (i.e. SU-ring, O-rings and supporter rings) and consumable parts (i.e. driving blade springs) in the pulse unit each time you disassemble the pulse unit. Also replace shut-off valve spring with a new one when you overhaul the tool.
- More frequent overhaul may be needed when the tool is used in heavy duty condition. Preventative maintenance cycle should be set from your own experience of the way the tool behaves, e.g. based on maintenance records and through examination reports.
- The exhaust silencer and filter should be cleaned frequently or replaced between the preventative maintenance cycles.
- If the tightening torque tends to drop by more than 10% from the preset torque, oil volume in the pulse unit may have become lower. The pulse unit needs overhauling. Do not try to increase torque by the torque adjuster as sudden torque drop may occur.
- Ensure that any labels on the tool are kept in legible condition. Replace any damaged label.

Disposal of Tool



- Separate collection of used tools and packaging allows materials to be recycled and used again. Re-use of recycled materials helps to prevent environmental pollution and reduces the demand for raw materials. The tool is made of steel, aluminium alloy, casting iron, plastic and rubber. Disassemble the tool, degrease and separate parts by material. When disposing the tool, make sure not to cause pollution to human being and the environment. Follow your local laws and regulations relating to disposal.

Table of Contents

1. Before Usage	P.7
2. What is the electronically controlled oil pulse wrench angle detection type?	
2.1 Overview	P.9
2.2 Features	P.9
3. Hardware Features	P.9
4. Specifications	P.10
5. System Layout & Accessories	
5.1 System Layout	P.11
5.2 Accessories	P.11
6. Points of Tool Operation and Handling	
6.1 How-to-use	P.12
6.2 Points of handling	P.12
7. Tool Setup	
7.1 Tool Adjustment and Cut Value Determination	P.13
7.2 Tool Adjustment Points	P.14
7.3 Setting the angle	P.17
8 Trouble shooting	
8.1 Tool does not run	P.20
8.2 Tool does not stop	P.21
9. Maintenance and management	
9.1 Cautionary instructions in handling	P.18
9.2 Pre-start inspection	P.18
9.3 Periodic inspection	P.18

1. Before Usage

Uryu pneumatic torque and angle transducerized UAAMC oil pulse tool (hereunder, UAAMC) is designed to tighten and loosen fasteners with the hydraulic impact / pulses created by compressed air. Never modify or operate UAAMC for the purpose other than the intended usage. This will cause operators death or severe injury.



Workstation Requirements

○ **Use air compressor only as power supply**

Other high-pressure gas like acetylene gas will cause operators death or severe injury.

○ **Use the correct size of air hose.**

Use the oilproof air hose which can stand the external stress and the specified burst pressure. Never use the worn-out air hose.

○ **Connect fittings to air hose firmly.**

○ **Illuminate and clean the workstation to prevent operators from being injured.**

The loose connection of air hose will cause operator death or severe injury.

○ **Operate UAAMC at the proper air pressure.**

○ **Supply UAAMC with clean and dry air only.**

○ **Lubricate UAAMC periodically.**

Use regulator, filter, and lubricator for operation. Be sure to check the dynamic air pressure at the tool inlet.

○ **Never operate UAAMC in explosive environment.**

Clothing in operation

○ **Wear the neat fitting clothing in operation.**

Do not wear either loose fitting clothing or jewels in operation. Bundle your long hair.

○ **Wear protective clothing including hard hat,**

safety glasses, safety shoes, dust mask, and ear plugs.

Operation

○ **Operate UAAMC for intended purpose only.**

○ **Fix UAAMC to workpiece firmly.**

○ **Keep hands/cloth away from rotating drives.**

○ **Have a break at regular intervals.**

○ **Maintain a balanced body position.**

○ **Never apply electricity to UAAMC.**

○ **Never place any magnet near UAAMC.**

○ **Never operate UAAMC under no load.**

○ **Be sure to check that there is no dust inside the air hose when it is connected to UAAMC.**

○ **Use the industrial socket only.**

○ **Attach a socket to UAAMC firmly.**

○ **Use the specified retainer pin to attach socket.**

○ **Inspect a socket at regular intervals.**

○ **Never modify UAAMC.**

○ **Do not remove any part from UAAMC.**

○ **Start it slowly.**

○ **Suspend UAAMC firmly.**

○ **Be sure to check that Valve Lever is not pulled when an air hose is connected to UAAMC.**

○ **Do not catch Valve Lever when you carry UAAMC.**

○ **When there is any risk of injury, malfunction, and so on, disconnect UAAMD from air supply and detach an air hose from UAAMC.**

Be sure to detach an air hose from UAAMC when you replace accessory, replace and make adjustments to UAAMC. When you detach an air hose from UAAMC, be sure to release the remaining air in the air hose by pulling Valve Lever after air supply valve is closed.



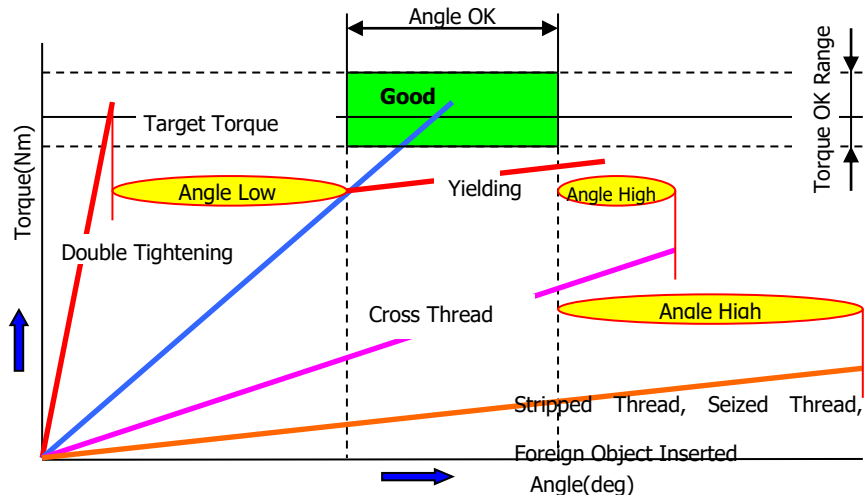
- **Stay alert, watch what you are doing and use common sense when operating the tool. Do not use any tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating tools may result in serious personal injury. A moment of inattention while operating power tools may result in serious personal injury.**
- **Keep children, bystanders and visitors away while operating the tool. Distraction can cause you to lose control.**
- **Do not run UAAMC excessively and/or more than necessary.**
- **Deflect the direction of exhaust air to protect yourself.**
- **Support the usage of UAAMC well with robust cable when you operate UAAMC at a high place.**
- **Overhaul UAAMC and store it in a dry room when you do not use it.**
- **Use the power tool, accessories and tool bits etc. in accordance with these instructions. If you need any safety advice, please contact us or our authorized distributor.**
- **Check the operation direction of tool before you pull Valve Lever.**
- **Attach a socket to a fastener firmly.**
- **Use hearing protection in accordance with employer's instructions and as required by occupational health and safety regulations. Look after your hearing protection.**
- **Be careful to touch the Anvil and socket of UAAMC after operation. Otherwise, you may get burnt.**
- **Handle UAAMC and air hose with care.**

2. What is the electronically controlled oil pulse wrench angle detection type?

2.1 Overview

This is a compressed air-driven control tool equipped with a torque sensor and an angle resolver that enable fastener tightening to suit various demands and conditions by connecting to UEC-4800 series of multi-function controllers.

Various abnormalities are detected by automatically stopping at the set torque and monitoring the rotation angle at the same time.



2.2 Features

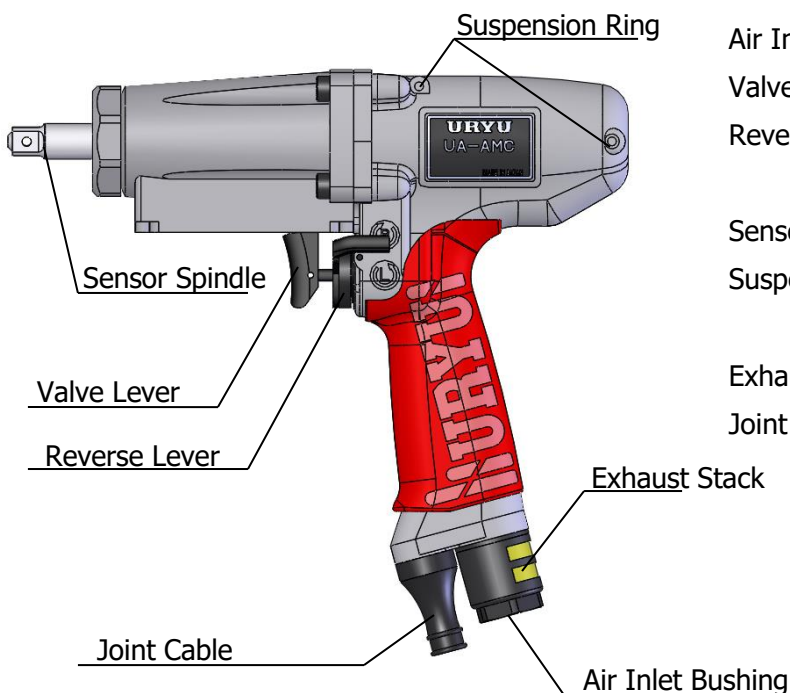
Sensor : Uryu unique non-contact and magnetostrictive torque sensor is adopted. The angle sensor uses a resolver, which is durable without wear on the sensor shaft.

Oil Pulse : Equipped with an auto-relief mechanism, achieves high accuracy, high efficiency, and high durability.

Motor Section : Equipped with a high-efficiency dual chamber air motor.

Small models (UA400AMC - UA600AMC) with low target torque and difficult to control use triple-chamber motors that provide high torque while keeping the rotations to a minimum.

3. Hardware Features



Air Inlet Bushing : Port for Air Hose

Valve Lever : Trigger

Reverse Lever : Running Rotation Change
(R for CW, L for CCW)

Sensor Spindle : Fix a socket using pin and O-ring

Suspension Ring : Hang the tool to the device including balancer

Exhaust Stack : Directional air exhaust

Joint Cable :

Cable connecting the tool to the controller, including the power supply and signal wires of the torque/angle sensor.

4. Specifications

Model Number	Nominal Bolt Capacity mm	Torque Range (N·m)			Free Speed RPM
		0.4MPa	0.5MPa	0.6MPa	0.6MPa
UA400AMC	6	4 - 9	5 - 11	7 - 13	3,200
UA500AMC	6 - 8	8 - 18	9 - 20	11 - 25	3,800
UA600AMC	8	14 - 26	16 - 30	18 - 38	4,300
UA700AMC	8 - 10	20 - 35	25 - 40	30 - 50	6,200
UA800AMC	10 - 12	30 - 45	35 - 50	40 - 60	5,300
UA900AMC	10 - 12	30 - 55	35 - 65	40 - 80	5,300
UA1000AMC	12	40 - 70	45 - 75	50 - 90	5,000
UA1300AMC	14	65 - 95	70 - 130	85 - 150	4,600

Model Number	Overall Length w/o socket mm	Weight w/o Socket kg	Sq. Drive Size mm	Hose ID mm	Air Inlet Size	Noise Level (dB(A))	Vibration Total Value (3-axes)		
UA400AMC	193	1.35	9.5sq	6.5	NPT 1/4"	78	< 2.5 (m/s ²)		
UA500AMC	193	1.35		8		80			
UA600AMC	198.5	1.4						80	
UA700AMC	207.5	1.5							80
UA800AMC	215.5	1.7							
UA900AMC	227.5	2.15	12.7sq	11		82			
UA1000AMC	235	2.45							
UA1300AMC	256.5	3.25							

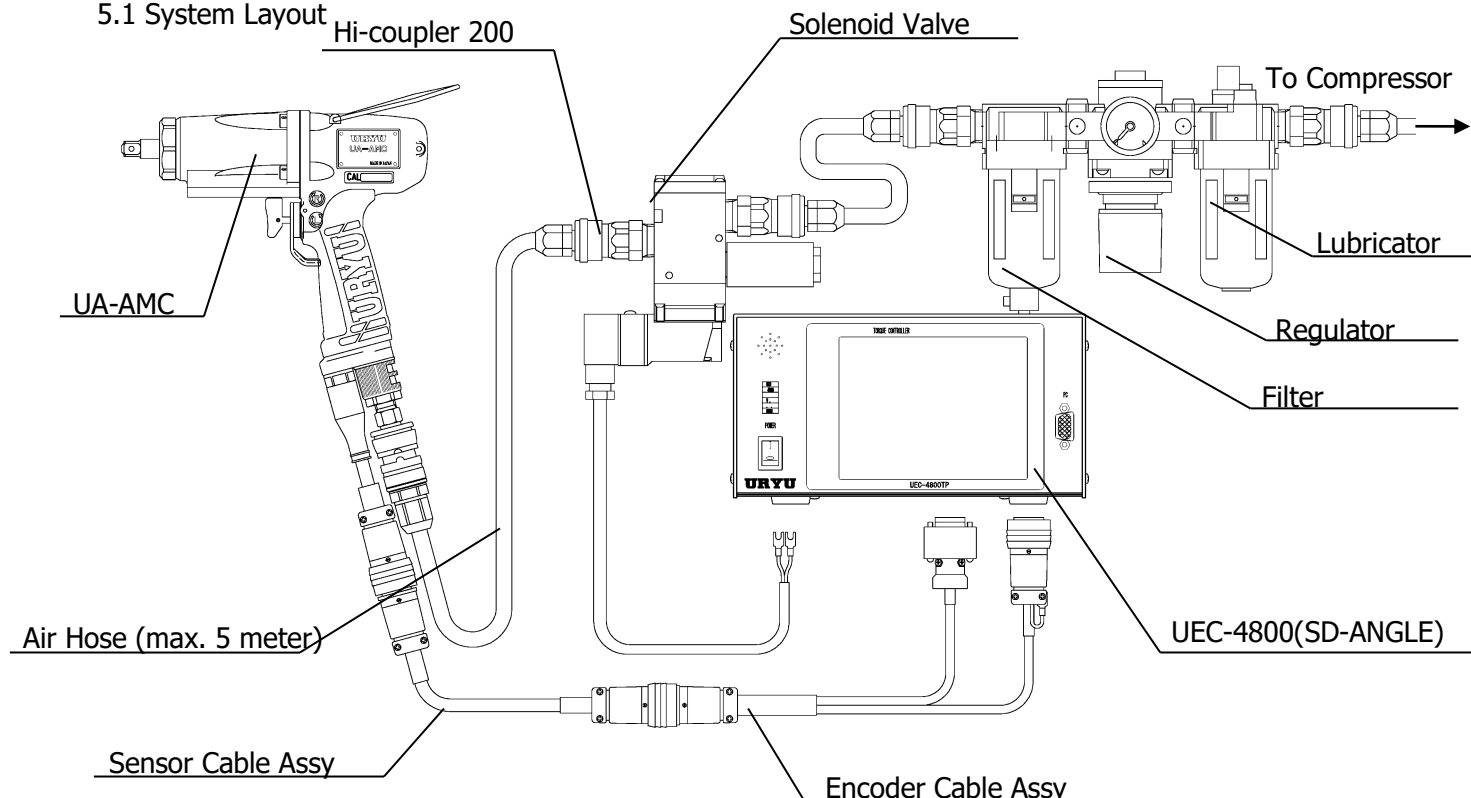
Note that the above torque values are for guidance purpose only. Please choose the best tool as per the actual application. Do not force UA800AMC to output more than 60 Nm. There is a risk of tool breakage.

These declared values given in the table were obtained by laboratory type testing in accordance with **ISO 15744 for sound levels** and **ISO 28927-2 for vibration values** and are not adequate for use in risk assessments. Values measured in individual work places may be higher than the declared values. The actual exposure values and risk of harm experienced by an individual user are unique and depend upon the way the user works, the workpiece and the workstation design, as well as upon the exposure time and the physical condition of the user.

We, URYU SEISAKU, LTD., cannot be held liable for the consequences of using the declared values, instead of values reflecting the actual exposure, in an individual risk assessment in a work place situation over which we have no control.

5. System Layout & Accessories

5.1 System Layout



5.2 Accessories

	Features	Model Number / Description	Part Number
UEC-4800	Standard Type	UEC-4800A(SD-ANGLE)	
	Touch Screen Type	UEC-4800TPE(SD-ANGLE)	
Encoder Cable	-	Encoder Cable Assy	911-074-0
Sensor Cable Assy	Length: 5-meter	Sensor Cable Assy 3F5	911-068-0
	Length: 10-meter	Sensor Cable Assy 3F10	911-069-0
	Length: 15-meter	Sensor Cable Assy 3F15	911-070-0
Coiled Hose Assy (Combination of air hose and sensor cable)	Hose ID: 6.5 mm	Coiled Hose Assy $\phi 6.5 \times 45 \times 27$ (R)	935-184-0
	Hose ID: 8 mm	Coiled Hose Assy $\phi 12 \times 45 \times 27$ (R) 1.1	935-280-0
	Hose ID: 11 mm	Coiled Hose Assy $\phi 16 \times 76 \times 27$ (R) 0.8	935-182-0
Solenoid Valve	Standard type	Solenoid Valve Assy (VP542)	911-075-0
	Large capacity type	Solenoid Valve Assy (VP742)	911-076-0
Hi-coupler 200	For VP542	Hi-coupler 200-30SM	909-484-0
	For VP742	Hi-coupler 200-40SM	933-073-0

WARNING

- Install an air filter, regulator, or lubricator, etc., to ensure clean compressed air and proper air pressure (dynamic pressure at tool inlet) are regularly lubricated (turbine oil ISOVG32) before use.
- Use an air hose that is oil-resistant, resistant to external friction, and complies with the working air pressure of the specified bore diameter. Also, do not use worn-out hose.
- When installing or replacing the accessory tool, make sure to stop the supply of compressed air and remove the air hose when adjusting or when danger is anticipated.
- When replacing the tool, turn off UEC-4800, remove the tool, and turn on the power after connecting the tool.
- We recommend using well-guided sockets that match our spindle diameters.

6. Points of Tool Operation and Handling

6.1 How-to-use

- (1) Pulling the valve lever rotates the socket spindle. (There are two rotational speeds and a slow rotation function.)
- (2) Determine the direction of rotation, and tighten the socket securely to the bolt (or nut).
- (3) When the bolt (or nut) is seated and the dynamic torque reaches "START", torque/angle measurement starts.
- (4) The tool stops automatically when the set "CUT" torque is reached.
- (5) At this time, UEC-4800 displays the peak tightening torque and the bolt turning angle of "CUT" from the set "SNUG", and judges from various set values. If a "NOK" judgement comes out before the "CUT" torque is reached by the setting, the tool stops at that point. ※ For detailed UEC-4800 settings and operations, refer to UEC-4800's instruction manual.

6.2 Points of handling

The tightening accuracy and tool performance are also affected. To use the tool performance to the maximum, please note the following points.

○**Depending on the tightening status**

Torque varies depending on the grade and length, such as torque coefficient (coefficient determined by the finished condition of bolts and workpiece) even if bolts of the same diameter are used. Torque also changes depending on the finish of the workpiece seating surface to be tightened and the condition between the workpieces to be tightened. When the bolt and nut rotate together, the torque drops significantly.

○**Backlash of the socket**

If a socket with a lot of backlash is used, the transmitted torque from the tool is lost greatly. Use sockets of the correct size for the bolts.

○**Valve lever**

Pull the valve lever firmly to activate the tool. If the valve lever is not pulled correctly, the tool may not stop automatically.

○**The sensor of this product is a magnetostrictive sensor.**

This is a magnetostrictive sensor. Keep the magnet close to the tool, as it may be affected by magnetism and cause malfunction.

○**Do not touch the socket being tightened.**

If the socket is touched during bolt tightening, the tightening torque cannot be measured correctly.

○**Connector clamping**

When you connect the hose and cable to tool, do not apply any stress to the sensor cable or may cause broken wire. Be sure to follow the instruction below before use.

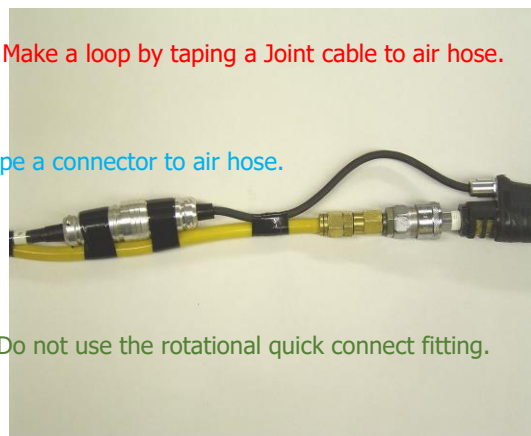
- 1) Mount the sensor cable on the air hose, as shown right so that any stress goes to air hose.
- 2) Do not use swivel fitting. The anti-rotational quick connect fitting, as shown below, to prevent air hose and cable from twisting comes standard with the UAAMC tool.

Description	Part Number
Lock Plug (1/4")	933-042-0

Make a loop by taping a Joint cable to air hose.

Tape a connector to air hose.

Do not use the rotational quick connect fitting.



7. Tool Setup

7.1 Tool Adjustment and Cut Value Determination

Make the controller settings. See further info from the manual of controller.

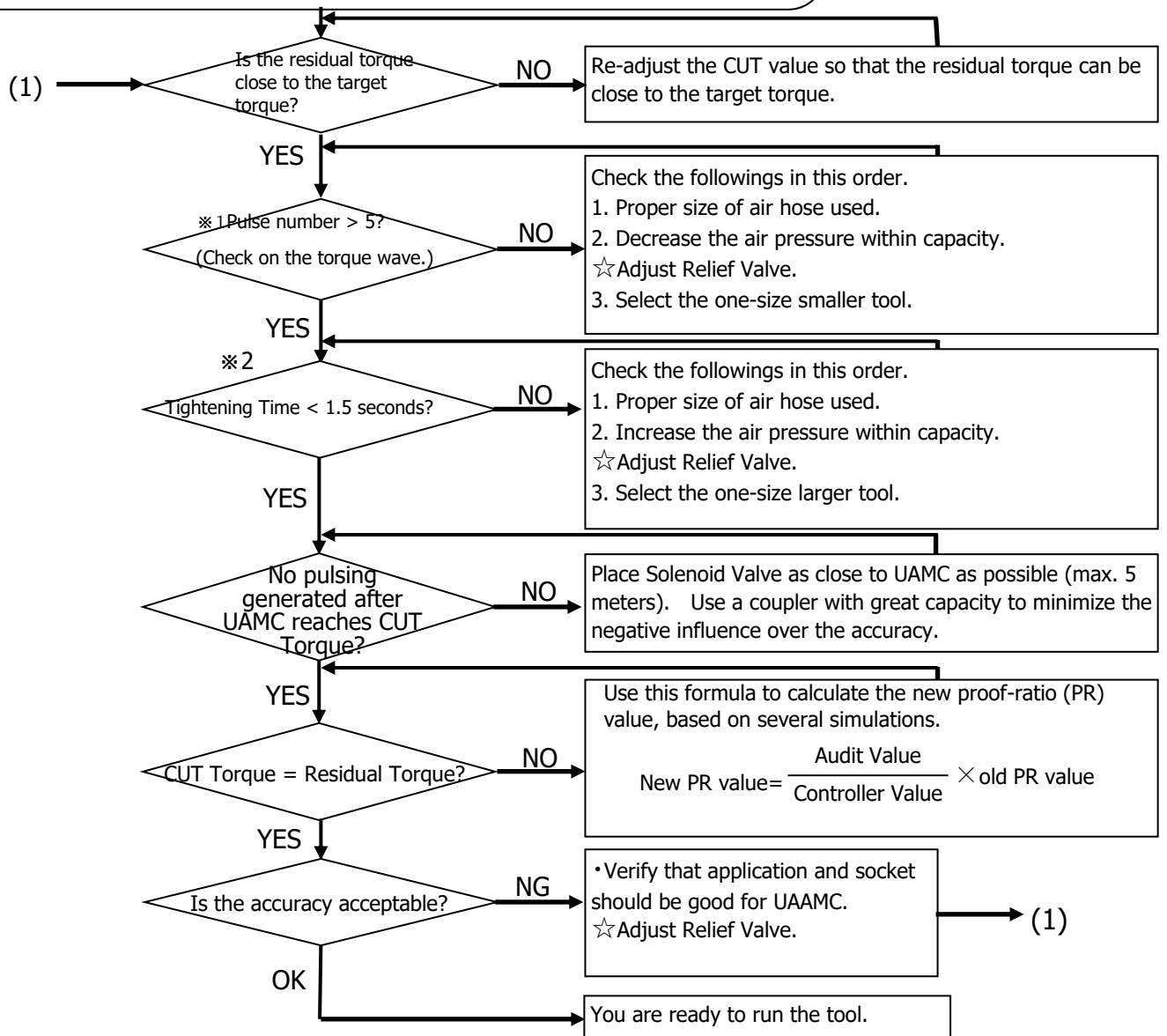
○Basic Settings

- Input the CAL value on tool.
- START value: 2 - 3 % of CAL value
- The next formula should be adhered to: High Torque > CUT torque > Snug torque > Low Torque

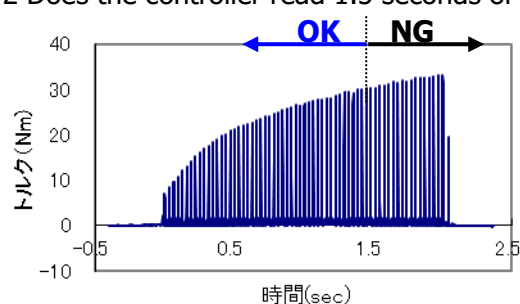
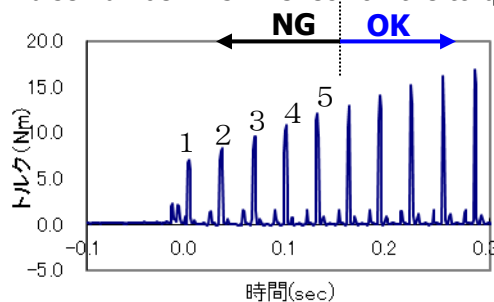
○MODE Setting

Make it 5 to operate the pneumatic torque transducerized UAAMC.

- Snug Torque value: 50 - 70 % of CUT value
(Guideline: 50% for hard joint & 70% for soft joint)



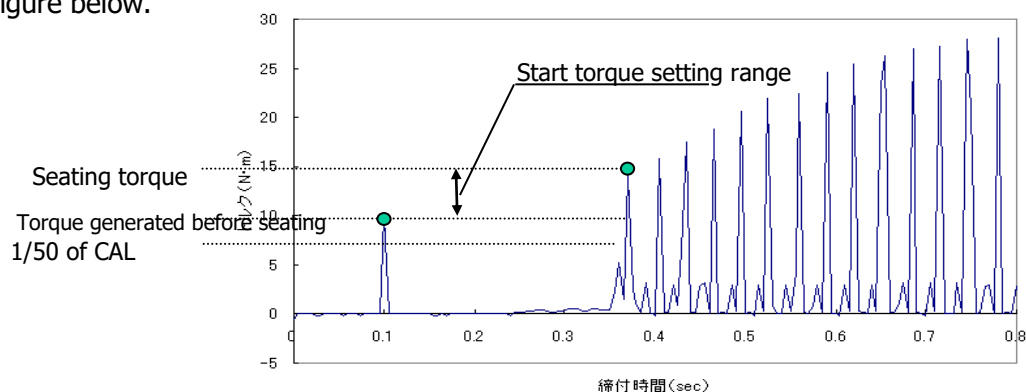
※1 Pulse number > 5? Check on the torque wave.※2 Does the controller read 1.5 seconds or less?



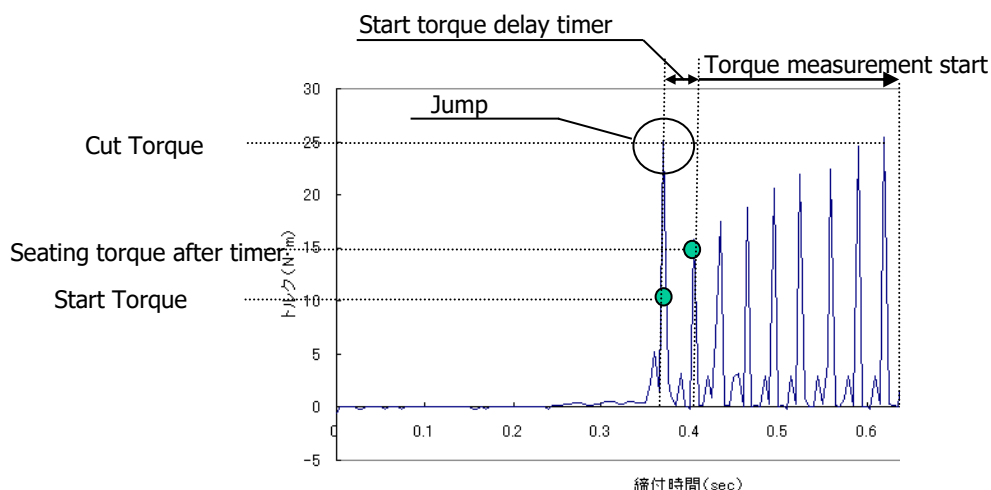
7.2 Tool Adjustment Points

7.2.1 Determination of start torque

Torque may be generated before seating due to the characteristics of the workpiece. Check the tightening waveform to see if torque is generated before seating, and adjust the start torque within the range shown in the figure below.



When using a socket with a high air pressure or heavy mass, the torque value may jump when seated and reach the cutting torque. When a jump occurs as shown in the figure below, delay the timing of torque measurement using the "torque measurement start delay" timer.

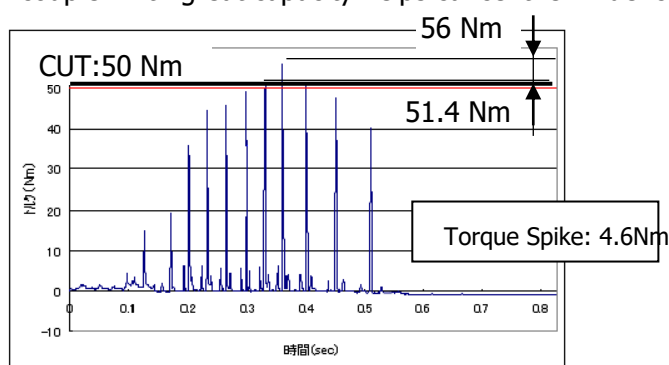


7.2.2 Spike in Displayed Torque / TORQUE-HIGH

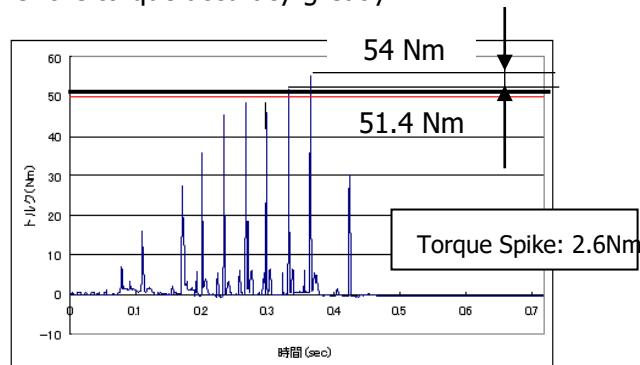
If the displayed torque on the controller exceeds the cutting torque (set value) or TORQUE-HIGH frequently occurs, take measures such as residual pressure treatment or lowering the air pressure to achieve more stable tightening.

7.2.2.1 Residual Pressure Treatment

The residual air pressure may cause UAAMC to keep pulsing after the external valve is closed. The usage of coupler with great capacity helps cancel the influence over the torque accuracy greatly.



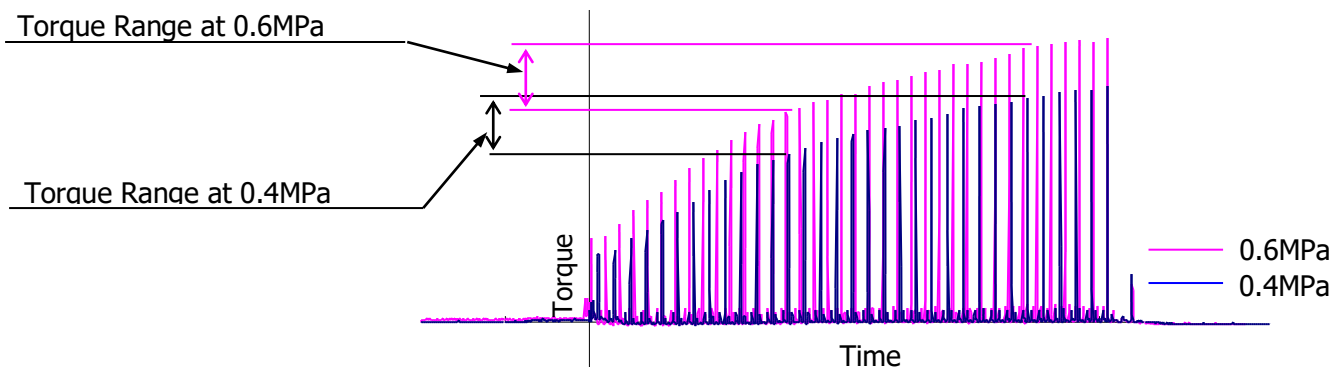
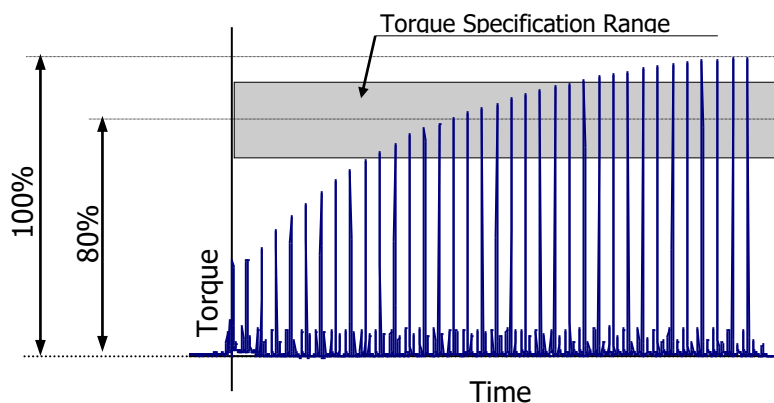
Before Treatment



After Treatment

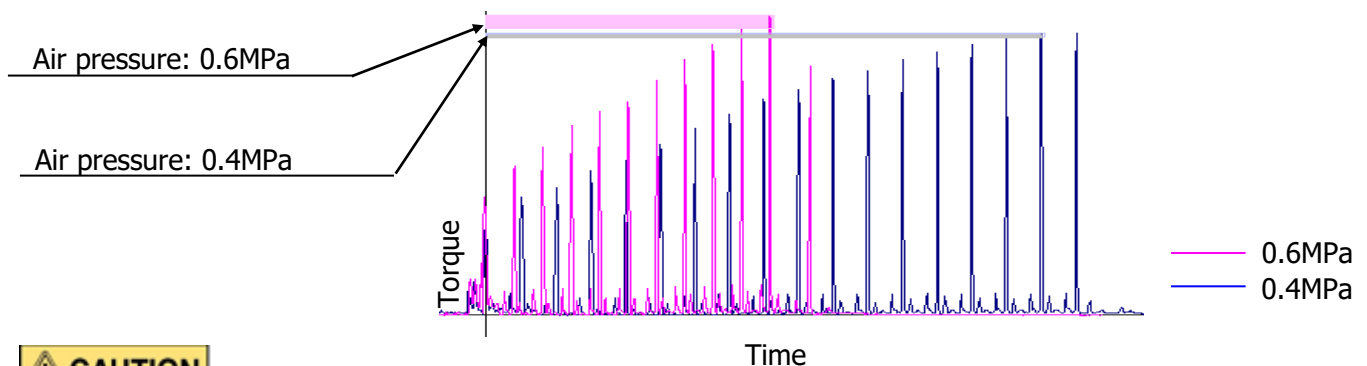
7.2.2.2 Air Pressure Adjustment

The air pressure level applied to tool will determine the maximum torque output level. As shown in the below graph, there is a liner increase in the torque output at each air pressure level and the torque wave will be flat as time passes. If you adjust the air pressure and achieve the target torque at which the torque curve starts getting flat (about 80% of the rated torque), you will have less torque spikes and better torque accuracy.



If there is a sharp increase in displayed torque per pulse close to cut torque, you will see over-torqueing / torque high error frequently. The decent adjustment of air pressure will allow dynamic torque to make a liner increase per pulse, which will lead to the better accuracy.

Peak torque per pulse, close to cut torque, difference between air pressures



Note that the recommended torque range of UAAMC is 0.4 – 0.6 MPa.

7.2.2.3 Installation of two-step valves

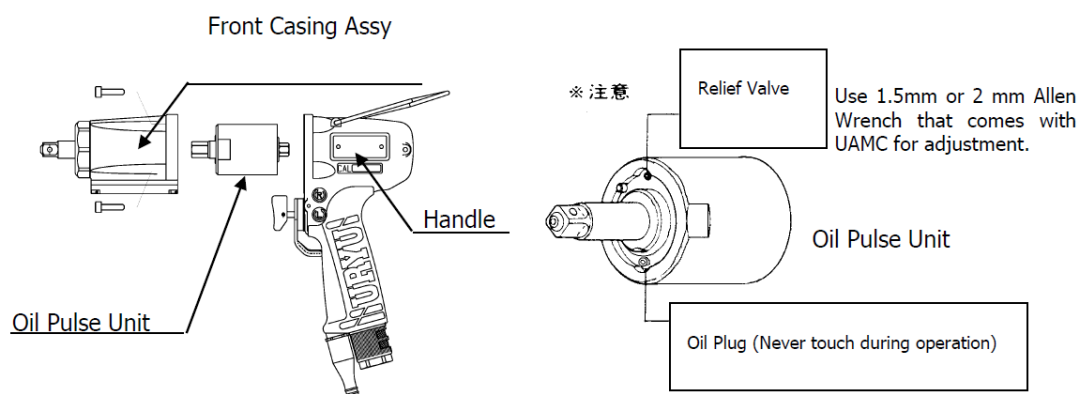
For ultra-hard workpieces such as tightening rigid bodies together, the seating torque may jump, the tightening torque may jump out greatly with respect to the CUT value, or the measurement angle may become "0" due to the small number of pulses. In such a case, slow rotation is performed by the two-step valve until the start torque is exceeded, and then when the start torque is exceeded, high-speed rotation is switched, enabling detailed control and measurement.

Description	Max. Air Volume	Air Inlet Thread (Japanese Size)	Part Number
Two-step Valve Assembly	1.15m ³ /min	Rc3/8	852-312-1
	2.0m ³ /min	Rc1/2	852-779-1

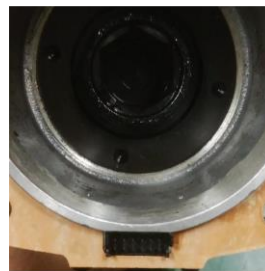
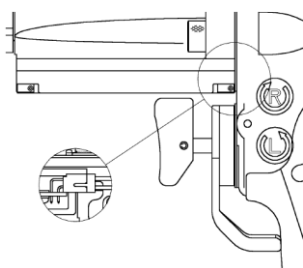
7.2.3 Adjusting the Relief Valve

Since UA-AMC Wrench Series is equipped with an auto-relief mechanism, it is not necessary to adjust the relief valve under normal tightening conditions. However, adjust the relief valve according to the tightening conditions if you want to increase the tightening accuracy more.

- (1) Remove the air hose. Make sure that UEC-4800 is turned off before starting operation.
- (2) Loosen the four Allen Head Bolts of the Sensor Casing Assy and remove the Sensor Casing Assy with its Socket Spindle facing downward. Note that the Sensor Casing Assy is connected to the Handle side by a connector (electronic terminal). Exercise care when separating the Sensor Casing Assy.



Enlarged Pictures of Connector between Handle and Front Casing



(3) Take out the Oil Pulse unit, and adjust the Relief Valve Spindle on the Front Liner Plate side with the Allen Wrench (1.5mm or 2mm) provided. Turning the relief valve clockwise increases the torque, while turning it counterclockwise decreases the torque. However, in the shipping condition, the Relief Valve is adjusted near the MAX and the torque will not increase. When adjusting, first turn it counterclockwise, take care not to turn it clockwise too much.

(4) Follow the above steps in reverse to assemble carefully so as not to damage the electronic terminals. Apply anti-loosening (screw lock #1401) to the bolts.



- Be sure to turn off the power to UEC-4800 before starting work.
- The Sensor Casing Assy is connected to the main unit by an electrical terminal. Be careful not to damage the terminal parts.
- Securely connect the electric terminals, tighten the bolts, and check that the socket spindle rotates smoothly and that UEC-4800 does not detect any error before use.

7.2.4 Adjustment of measured torque and displayed torque

If the tightened actual workpiece is measured with a torque sensor, etc., there may be a difference from the torque value indicated on the controller. In such a case, correct the proof-ratio of basic setting to the value of the new proof ratio obtained by the following formula

$$\text{New Proof-ratio Value} = \frac{\text{AverageAuditValue}}{\text{AverageDisplayValue}} \times \text{Old Proof-ratio Value}$$

7.3 Setting the angle

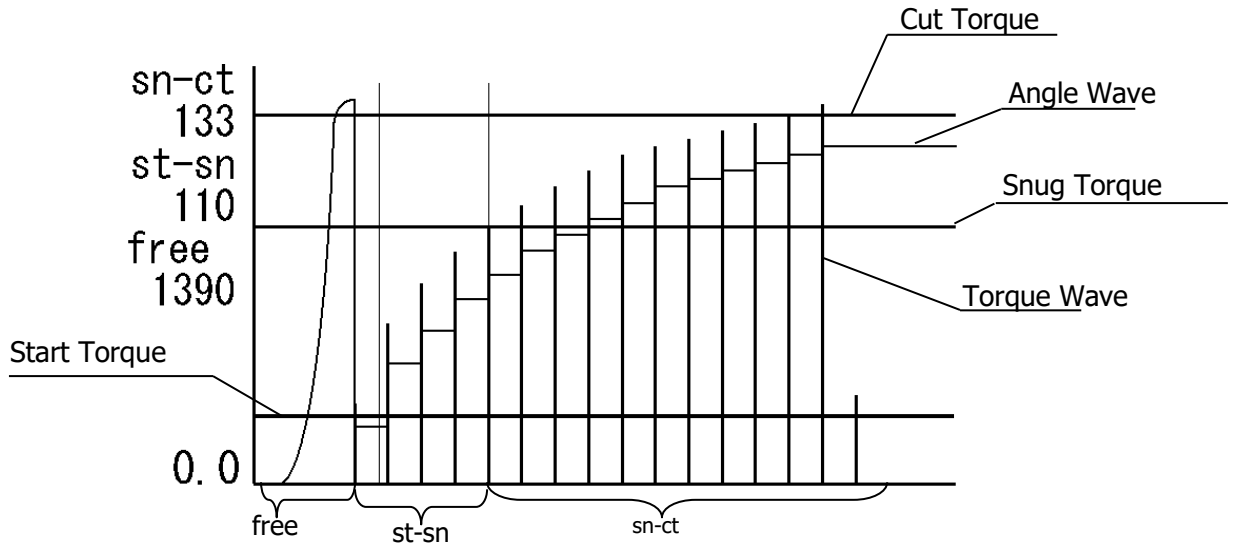
By measuring the angle at the same time as the torque, it is possible to detect various errors such as double tightening and cross thread. However, be careful not to shake the hand because it is a hand-held tool.

Angle measurement has three measurement points in free • st-sn • sn-ct.

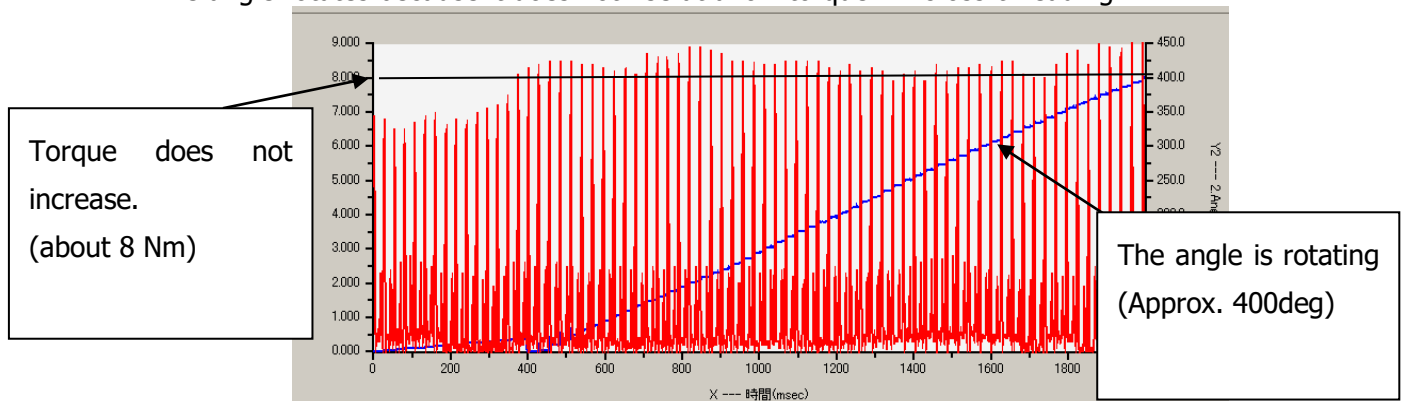
sn-ct : Angle from snug torque to 10msec after final pulse

st-sn : Angle from start torque to snug torque

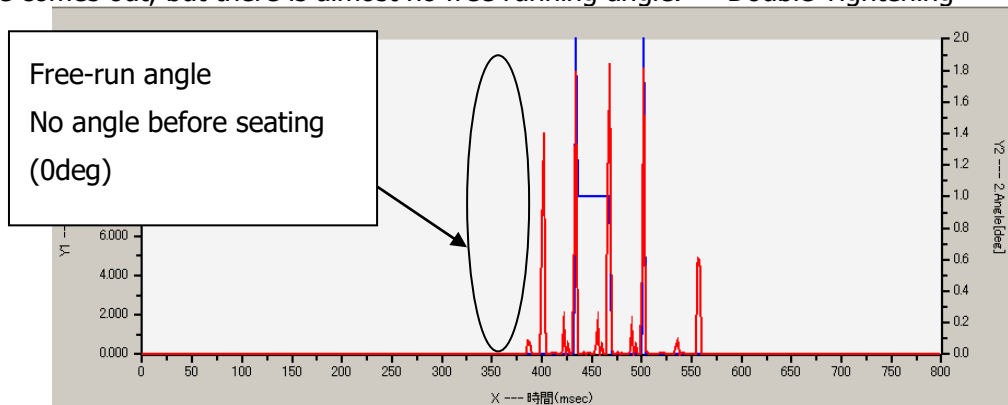
free : Measured from 400ms prior to start torque



The angle rotates because it does not rise at a low torque. → cross-threading



Torque comes out, but there is almost no free running angle. → Double Tightening

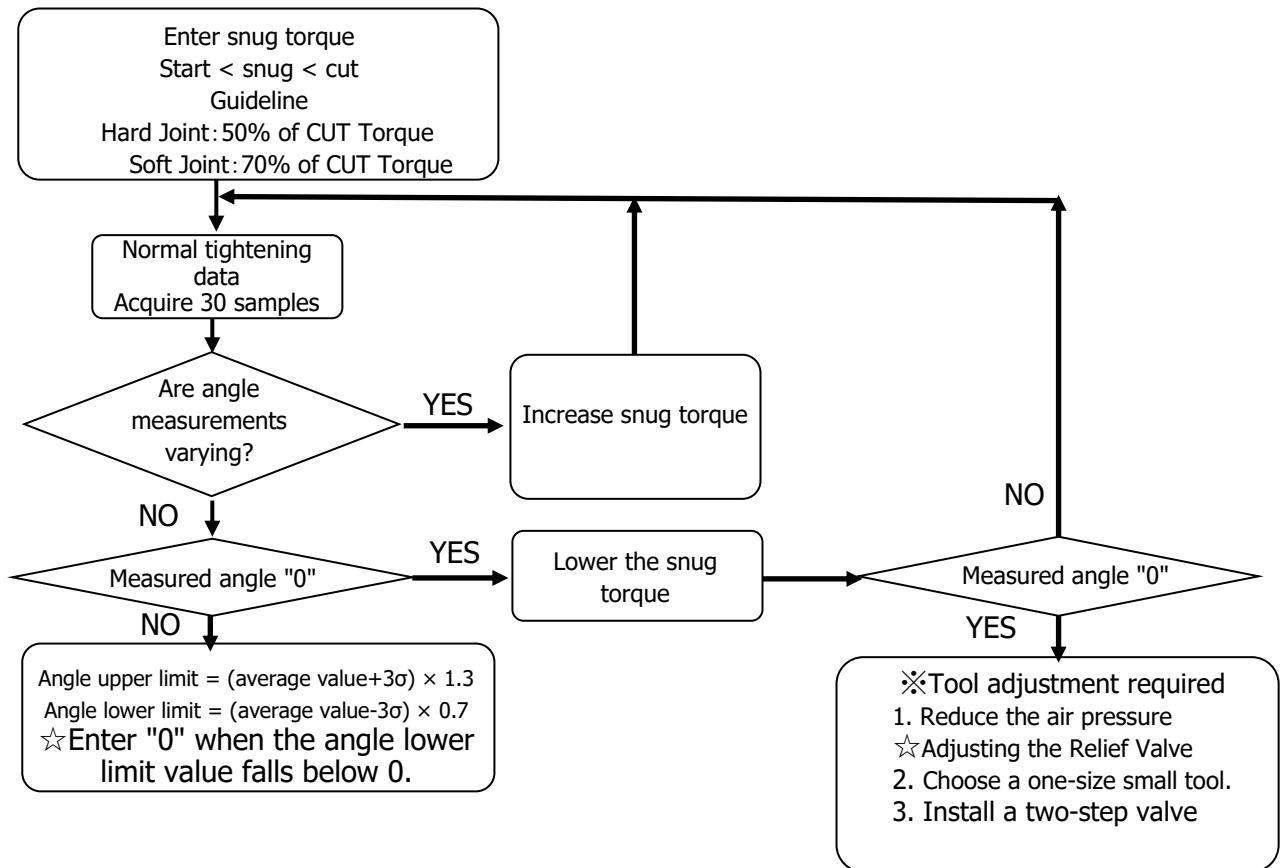


7.3.1 Setting Snug Torque (Angle Measurement Start Torque) and Angle Upper and Lower Limits

To measure the tightening angle, the snug torque is used as the starting point, so stable angle measurement is performed by adjusting the snug torque.

The angle upper and lower limits are determined from the measured angle of the tightening result performed normally.

Since the torque-angle relationship may change even when the pre-process of the workpiece is changed, various change points can also be found by periodically monitoring the angular distribution.



※When adjusting the tool, refer to P.9. Adjustment of the tool and check the tightening torque, process capacity, etc. again.

7.3.2 Free-run angle

Setting the lower limit of the free-run angle is effective as a function of double tightening detection. If the free-run angle is lower than the lower limit, "Free-run angle error" is detected.

Determine the free-run angle for normal tightening after monitoring the preferred samples of tightening.

- To measure the free-run angle, set MODE setting and angle display selection of UEC-4800 to "2" or "3".
- To make a judgement by the free-run angle, set MODE setting and free-run angle detect of UEC-4800 to "1" or "2".
- When only double tightening is monitored, set the free-run angle lower limit to approximately 50 to 100 and monitor the angles between normal and double tightening to confirm that it is properly distinguished before use.

※Since the free-run angle is not saved in UEC-4800, use UEC-4800 setting software (connected to a PC) for saving the data.

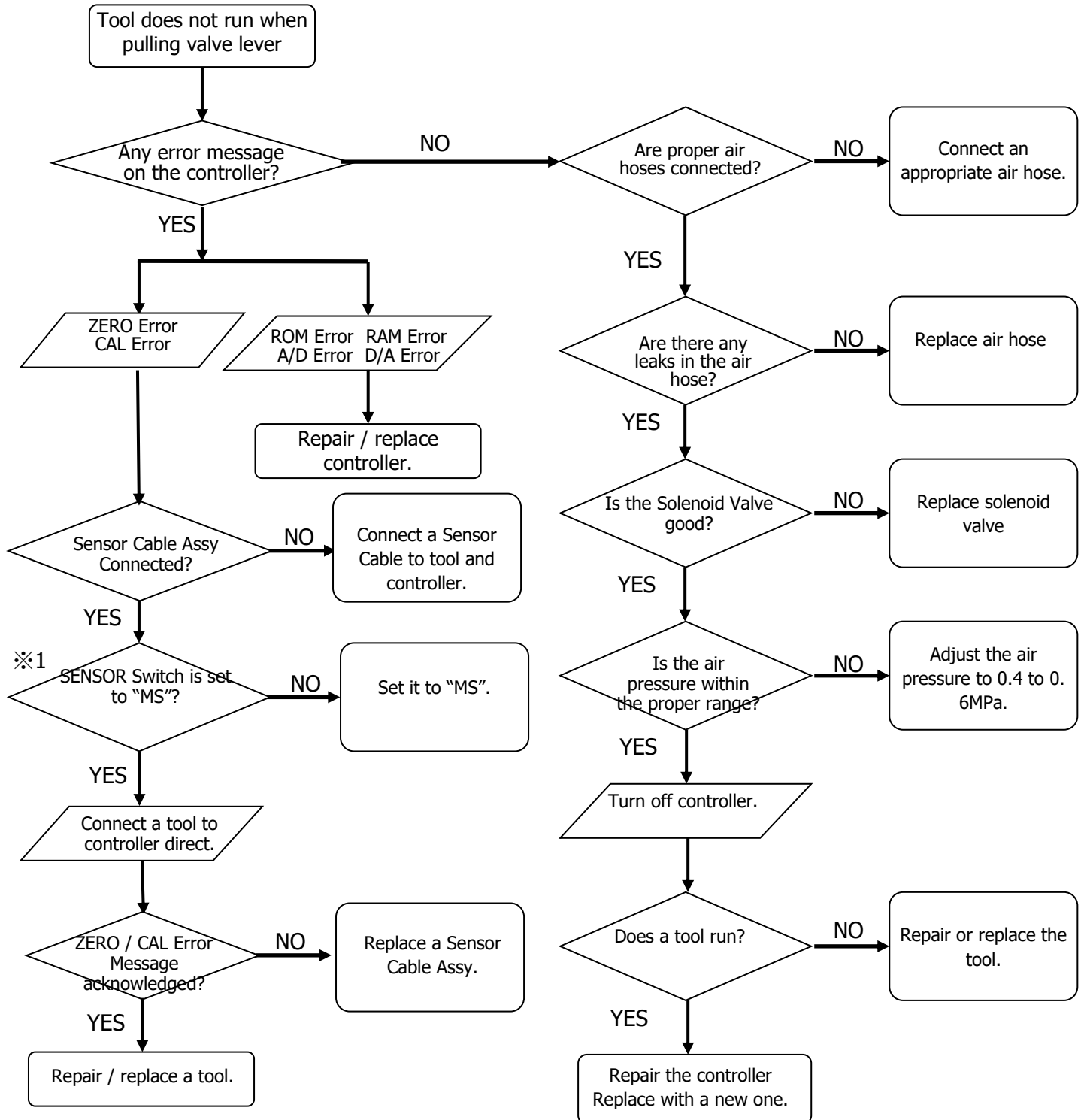
8. Trouble shooting

When trouble occurs during use after installation of the tool, check as follows.

8.1 Tool does not run



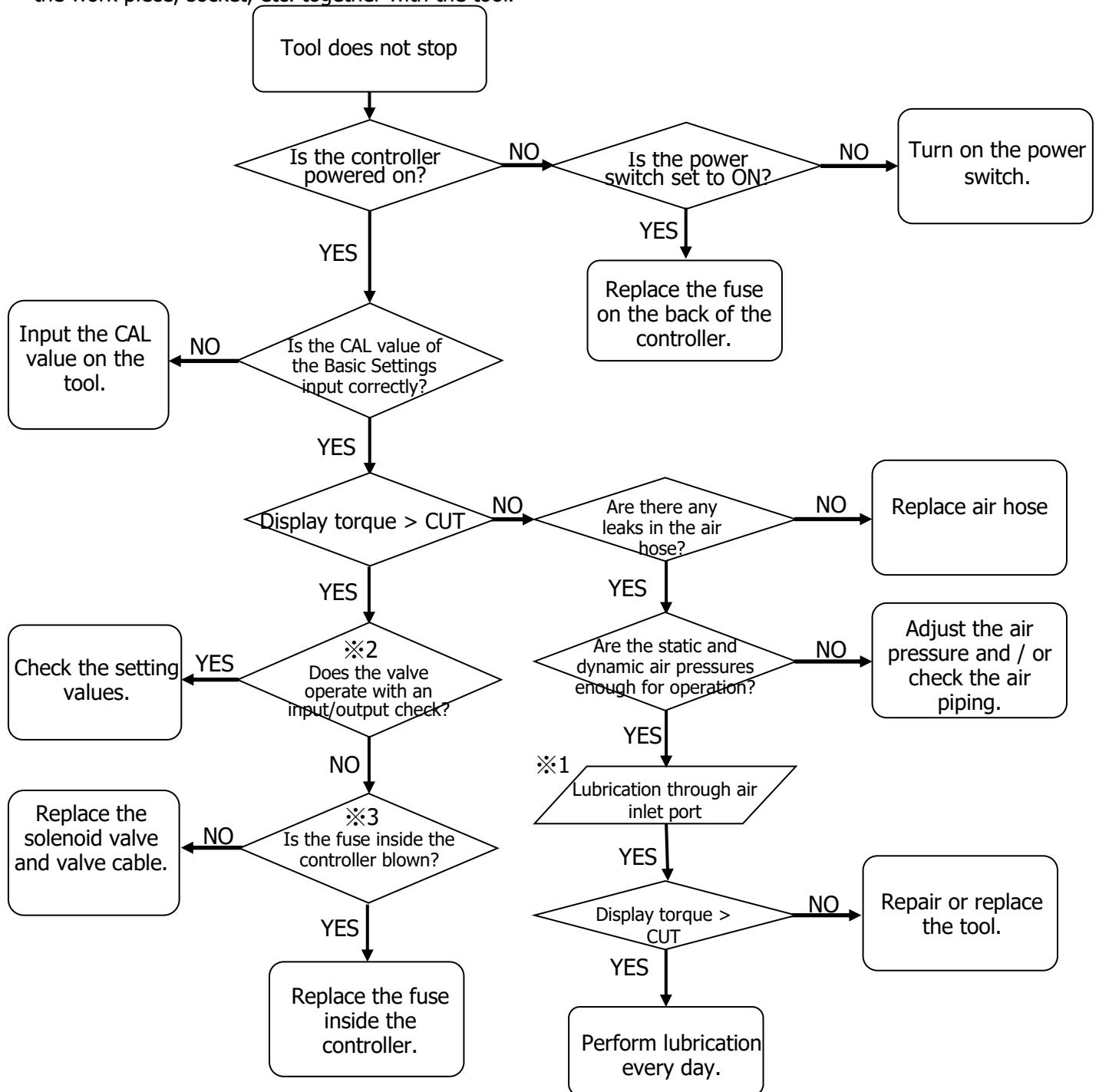
- When installing, removing, or changing wiring of the tool, turn off the power to the controller and ensure safety. Carry out work carefully at the place.
- By operating the controller according to the instruction manual of each controller.



※1 Check the SENSOR switch on the rear panel of the controller.

8.2 Tool does not stop

The transmitted torque from the tool to the workpiece changes due to changes in the tightening conditions, such as changes in the workpiece or cracks in the socket, and the tightening time and number of pulses change. The following is a flowchart for finding a fault for a tool. If there is a change in the tightening result, such as a longer tightening time than when installing the tool, check that there is no abnormality in the work piece, socket, etc. together with the tool.



※1 Apply a few drops of turbine oil ISOVG32 directly from the air inlet of the tool. Then, run the tool slightly under no load. Note that oil mist is emitted from the exhaust stack during idling.

※2 Check the operation of the solenoid valve with the I/O check of the controller.

※3 Check if the 24V output fuse on the internal board of the controller is blown. Before checking, be sure to turn off the power securely and perform the work safely according to the instruction manual of controller.

9. Maintenance and management

9.1 Cautionary instructions in handling

WARNING

- Check each part of the tool for looseness, wear, etc.
- The sensor installed in UA-AMC wrench is a magnetostrictive sensor. If the magnet is brought close to the tool, it may be affected by magnetism and cause malfunction.



CAUTION

- Supply a small amount of turbine oil ISOVG32 to the motor section.
- Install a pressure reducing valve to maintain torque accuracy, and use at a constant pressure between 0.4MPa and 0.6MPa.
- Do not drop the tool or subject it to severe shocks. Especially, please be careful when using a tool box, etc. because an amplifier board is built in the lower side of the sensor case.
- Securely ground the FGs at the rear of UEC-4800. Also, install a surge suppressor in peripheral equipment to prevent malfunction due to noise from motors, electromagnetic valves, etc. in the vicinity.
- If the product is used in a cold region (approximately 5°C or less), warm up the product before starting work. There is a possibility of slipping (pulse is not generated).

Warm-up operation: Fix the spindle with a vise, etc., hit the spindle once or twice for about 10 seconds, and then try and run it.

9.2 Pre-start inspection

When the power of UEC-4800 is turned on, self-diagnosis starts. If the power is continuously turned on, turn off the power once and then turn it on again.

9.3 Periodic inspection

Periodically check the product to avoid inadequate performance, inadequate tightening, or delayed tightening cycle.

We recommend repairing and checking every three months or 100,000 fasteners.

WARNING

Dedicated jigs and special skills are required for disassembly, assembly, and repair. For disassembly, adjustment, and inspection/repair, be sure to contact your dealer or distributor.