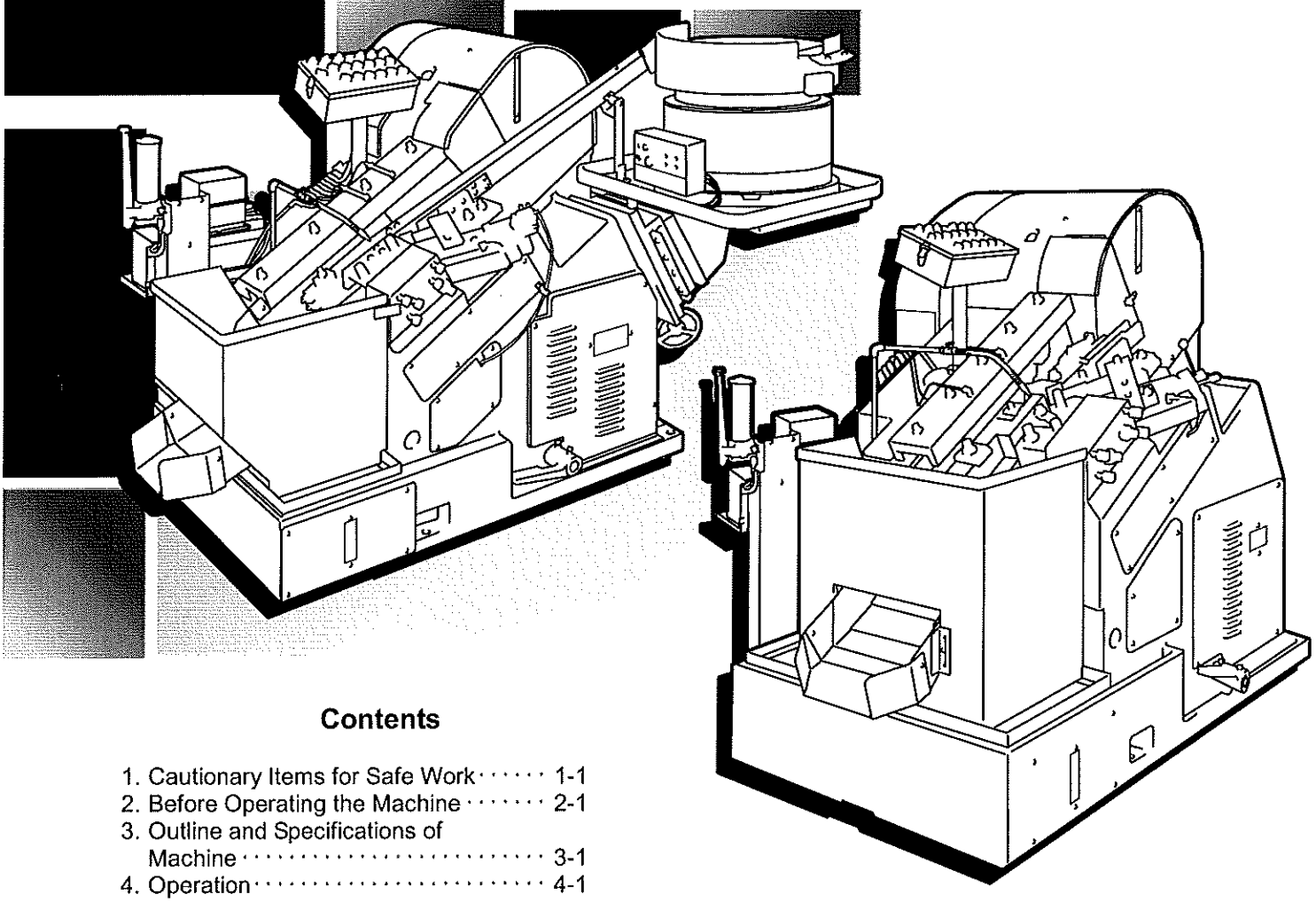
Sanmei

THREAD ROLLING MACHINE
THI-6R/10R
INSTRUCTION MANUAL



Contents

SANMEI WORKS CO., LTD.

1. Cautionary Items for Safe Work

Meanings and dangerous ranks of alarm marks

The alarm marks used in this manual are classified in three stages according to the dangerous rank, and trouble seriousness and possibility.
The alarm marks and their meanings are listed below. Completely understand the meanings of the alarm marks, and be sure to observe the instructions.

Alarm mark	Warning notice	Meaning and dangerous rank of alarm
DANGER	DANGER	The occurring danger is extremely serious. If any instruction or procedure is not obeyed, it may lead to a death or serious injury.
WARNING	WARNING	The occurring danger is serious. If any instruction or procedure is not obeyed, it may lead to a serious or slight injury.
CAUTION	CAUTION	The occurring danger may lead to a middle or slight injury or damage a machine component.

DANGER	
Inhibitation	**Never remove the covers (flywheel cover, pitman wheel cover and others) of the rotating part.** If any part of your body touches the running part, you may be caught in, thus causing a serious wound or death accident. If any cover is inevitably removed for maintenance or other purposes, previously turn the primary power source.
	Never open the control panel. Otherwise it may result in an electric shock. The person qualified for electricity must do the breaker check and others.
	Do not run the machine keeping the safety cover and protective cover removed. Otherwise, the arm or hair may be wound in by the rotating part, etc., possibly resulting in a serious human accident.
	During operation of the machine, do not come near any operating section (starter, ram, etc). Otherwise, the hand or arm may be pinched, thus causing a serious human accident.
	Do not operate the machine keeping the interlock of each safety device or safety cover removed. Otherwise, any pinching operation of the rotating or moving part, an electric shock, etc. may occur, possibly resulting in a serious human accident.
	Plural operators do not operate the machine at the same time. If any operator still touches the machine when another operator operates the machine by mistake, the machine, possibly suffering from a serious human accident may wind in the latter.
Contact inhibitation	**Never be near the high-speed rotating area of the machine.** Otherwise, the hand or arm may be pinched, possibly resulting in a serious human accident. Do not be near any operating part while the machine is running.

DANGER

 Obey the instruction	**A qualified electrical service person only must maintain or repair the electrical system.** If it is done by any unqualified worker, it may lead to an electric shock or serious human accident.
	When removing the flywheel, use the crane or other which sufficiently bear the weight, taking care during the work. If the flywheel drops, it will cause a serious accident.
	When using the crane, press or similar, the qualified worker must do the work. Moreover, take care since the work handles a heavy object. Otherwise, it may cause a serious human accident.
	The battery used in the PLC must be store at the place which cannot be reached by the hand of a child. If it is drunk by mistake, it may lead to a death.

WARNING

 Inhibitation	**Never rewrite the content of the PLC program.** Otherwise, the machine will unexpectedly operate to possibly lead to a machine trouble. If it is inevitably necessary to rewrite the program, gain the permission of SANMEI or responsible person. Moreover, be sure to store the content of the written program at each concerned section. If this is skipped, the machine will sometimes become disable to maintain and modify.
	Do not replace any battery used in the PLC with one different in the model, polarity or other. There may be a danger of explosion. For replacement, use the battery of the model recommended by the maker or equivalent. Dispose of the used battery according to the instruction of the manufacturer.
 Ground check	**Be sure to ground the machine.** If it is not grounded, the leak breaker will not be activated when electricity leaks. Do not connect any ground cable to the gas pipe. Otherwise, it may be exploded. Unless it is grounded, it may cause an electric shock. Apply the ground work of Special Class 3 to keep the ground resistance under 100Ω. Assure the cross-sectional area of 14mm^2 or more for the ground cable.
 Obey the instruction	**When loosening the bolt or removing part, keep the stable posture for the work.** If it is worked in any unstable posture, the body balance will be broken to possibly cause an unexpected injury.
	Assure the maintenance area. Assure the maintenance area (workable space for machine maintenance). Moreover, install it at the place where any interference is not present when the door of the control panel is opened and closed.

CAUTION

 Inhibitation	**Do not climb the machine or place any material on the machine.** If it drops or falls down, it will cause an injury.
	Do not disassemble, repair, relocate or discard the machine. If any defective part is present, it may cause a fire, electric shock or part drop, thus causing a wound.
	Do not use any new and old belts together. Since the length and driving elongation are different between them, it may cause the transmission loss of the power and shorten the life of the belt.

CAUTION	
 Inhibition	**Any person who is disordered in the acuity, auditory or mental sense must not operate the machine.** Otherwise, any machine abnormality or similar will not be sensed, possibly resulting in a serious human accident.
	Do not place any flammable dangerous material around the machine. If it is placed near the machine, it will catch fire to cause an explosion or fire hazard.
	Do not do any welding work or handle fire around the machine. Otherwise, the oil used in the machine may catch fire to cause a fire hazard.
	Do not put on any ring, necklace, watch, etc. Otherwise, it may cause an electric shock or winding-in accident.
	Do not operate the machine, drinking alcohol, chemical, etc. Otherwise, it may cause a wrong judgment, possibly resulting in a serious human accident.
	Do not remove any warning notice sticker. Otherwise, it may cause an accident. If it is removed, contact our company.
 Wet hand inhibited	**Do not operate or maintain the machine with wet hand.** Otherwise, an electric shock may cause a serious human accident.
 Ground check	**Be sure to separately ground the machine.** If it is not separately grounded, it is very dangerous since the ground fault current flows into this machine from another machine if the ground terminal, etc. comes into contact failure. When using the frame, etc. of the factory building as the ground pole, be sure to separate it from the ground of an electric welder, electric discharge machine or other noise generating machine. Otherwise, the noise may malfunction the machine.
 Contact inhibitation	**During setup, do not touch any continuous operation button.** If the ram is brought into continuous operation, it may cause such a human accident as the hand or similar is caught in.
 Obey the instruction	**When removing the part, take care to prevent the finger or similar from being pinched.** Otherwise, it may cause a wound.
	In emergency (malodor, irregular sound, large vibration, etc), stop the operation and turn off the power switch. If the operation is continued in any irregular state, it may cause an electric shock or fire.
	Before replacing the belt, turn off the power source of the machine and clearly notify "Under maintenance". If the machine is carelessly operated during belt replacement, you may be pinched by the flywheel, thus resulting in a serious human accident.
	Carefully set up the set of the dies to precisely adjust the pitch. If this process is skipped, it may cause not only a defectively threaded product but also an accident of the machine breakage due to the pull-back, etc.
	Keep the air pressure on the primary side at 0.4 to 0.6Mpa. If the air pressure drops, it will cause the improper operation of the equipment.

⚠ CAUTION

Obey the instruction

Carefully adjust the flow rate of lubricant.

If the flow rate is choked more than necessary, it will cause the slide surface to be seized.

On the oil in use, periodically inspect its properties. If the oil quality varies or any impurity is mixed, immediately remove it and renew the oil.

The deteriorated lubricant causes the friction on the slide surface, thus reducing the precision of the machine.

When operating the machine, be sure to put the earplugs.

Otherwise, the noise may impair the auditory organs.

Make the floor as horizontal as possible, and install it at the place where the ground is sufficiently strong.

Do not install it at any place of the extremely high or low temperature. Do not install it at any place where chips, cutting oil, cooling water, etc. is splashed from another machine. (Ambient temperature: 0° to 45° Ambient humidity: 90% (Note that the temperature must vary without dewing.))

It may cause a wound or accident.

Input the power source, separating it from that of the electric welder, electric discharge machine or similar machine which generates noise.

Otherwise, the noise may cause the machine to malfunction. If the capacity of the power source is insufficient, the voltage may drop to malfunction the machine.
Be sure to lead the power cables directly and separately from the sufficient power source.
Power source voltage : Nominal power source voltage within a fluctuation of –15% to +10%
Power source frequency : Nominal power source frequency within a fluctuation of ±2Hz

When using the machine, operate it within the load capacity specified in the specifications and operation manual.

If any excessive load is applied, the machine may be seriously damaged.

In the rolling process, be sure to use the processing oil.

If it runs at the high speed without use of the processing oil, the accumulated processing heat or other may thermally seize the friction surface or cause another trouble.

Only a person who masters the operation, learns the safety education and is qualified as the operator by the company must operate the machine.

If any unskilled person operates the machine, it may cause a human accident or machine trouble.

Only a person who knows the method to stop the machine in emergency or at the normal time must operate the machine.

If the method of emergency stop in emergency is not known, it may cause a human accident, and if it is not stopped in the proper procedure, it will trouble the machine.

When operating the machine, put on the safety clothing.

Otherwise, it may cause a wound.
Be sure to put on the safety shoes and gloves, and helmet or working cap.

A person with long hair settles the hair with the working cap, and operates the machine.

If any hair is wound in by the machine, it will result in a human accident.

■ **Safety rules for operation (Item to keep)**

Make sure that any working tool or die is not placed on the machine or cover.
Make sure that all adjustment areas are securely fastened.
Clean the working area off waste material and obstacles.
Wipe the floor surface of the working area off oil and similar against the slip.
If any defect, danger or abnormality is present, immediately contact the foreman.

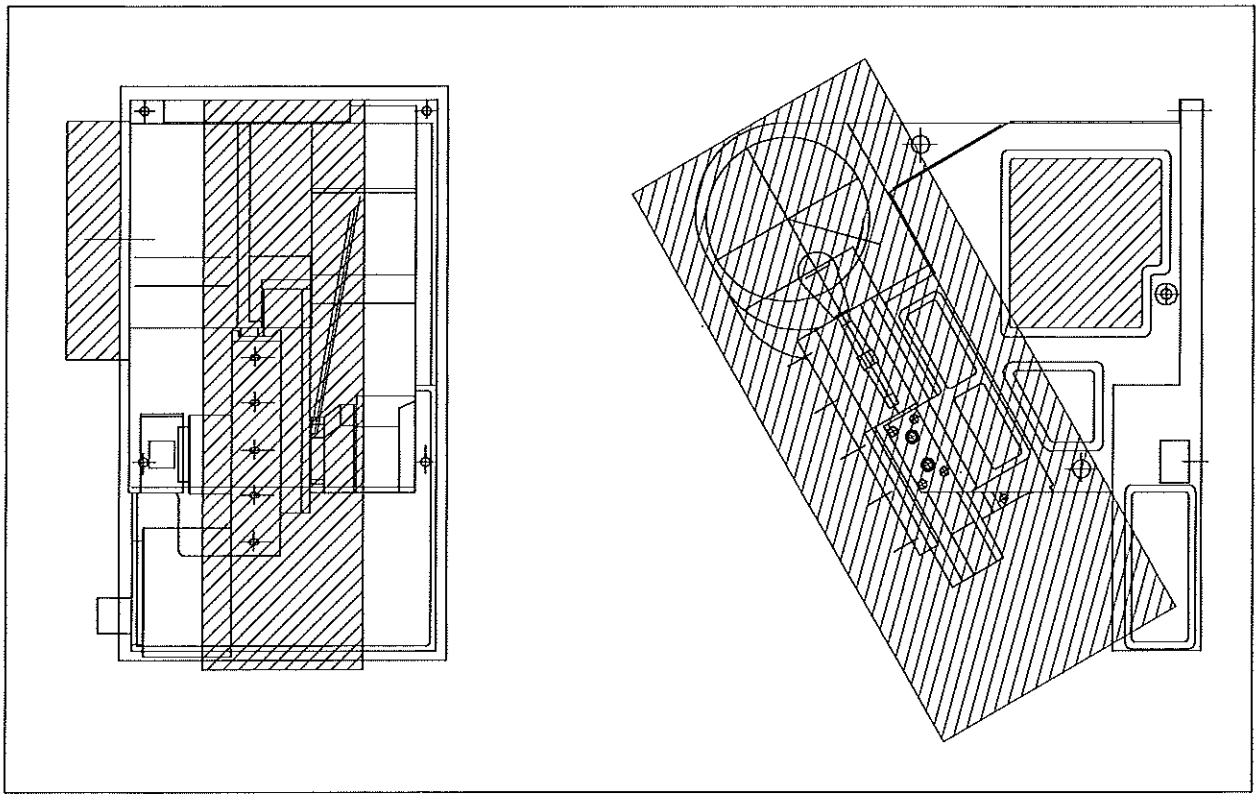
■ **Safety rules for setup (Items to inhibit)**

Do not use any mismatched tool, spanner, wrench or other tool.
Do not use any pliers instead of the spanner and wrench.
Do not use any wider-mouthed spanner or round-cornered wrench.
Do not use any screwdriver instead of the wedge and chisel.
Do not hit any spanner or wrench with the steel-made hammer.
(If it is necessary to hit it, use copper hammer.)
Do not tighten any screw, bolt, nut or similar using the pipe which breaks the thread.
Do not forcibly turn any bolt or nut which may be thermally seized.

a. Dangerous area

Though care is taken for safety during design and manufacture of the equipment, the dangerous areas are inevitably remained. During the work, take sufficient care for the access to the drive ram area, starter area and discharge rail damper area, and their operation and contact.

The dangerous areas of this machine are hatched in the following drawing.



⚠	**DANGER**
Do not touch any operating area. The machine rotates at a high speed. If any part of the human body touches the operating area, the body will be wound in, possibly resulting in a serious injury or death. During continuous operation, never be near any operating area (hatched in the drawing).	

⚠	**DANGER**
Never remove any cover of the rotating part. If any cover is inevitably removed for the maintenance or other purpose, be sure to turn off the power source on the primary side.	

2. Before Operating the Machine

Thank you very much for purchasing our machine.
Special care is taken for the safety in the design and manufacture stages of the machine.
However, to safely operate and maintain the machine, it is necessary for the operators and maintenance service person to observe the safe rules.

■ For proper operation, refer to the Instruction Manual.

Even if the machine is designed and manufactured with sufficient care, the component may be broken or troubled due to the carelessness or mistake of the operator or service person, possibly leading to a human accident in the worst case.
Accordingly, the operators and service person must read through this Instruction Manual and observe the instructions.

■ After understanding, operate the machine.

When reading the Instruction Manual to the last, read the cautionary items once again and completely understand the content. Then operate the machine.
Store this Instruction Manual without dirtiness, and at the accessible place in order to refer to it at all times.

■ Take the daily care, and keep the rules.

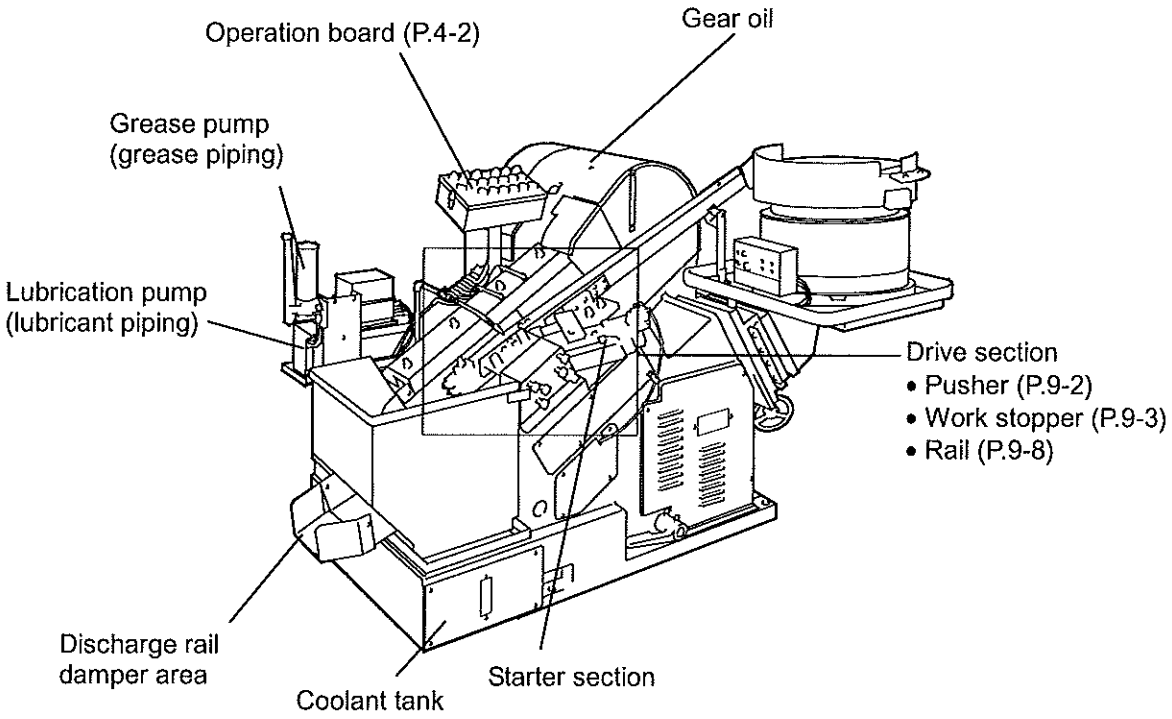
Copy "6. Work-start Inspection Table" and "7. Periodic Inspection Table", and use it for the daily maintenance.
It is also requested to observe the safe rules which are specified by the safety laws and your company.

* If any doubtful point is found in the instruction manual, consult the business man of SANMEI WORKS.

3. Outline and Specifications of Machine

6R/10R

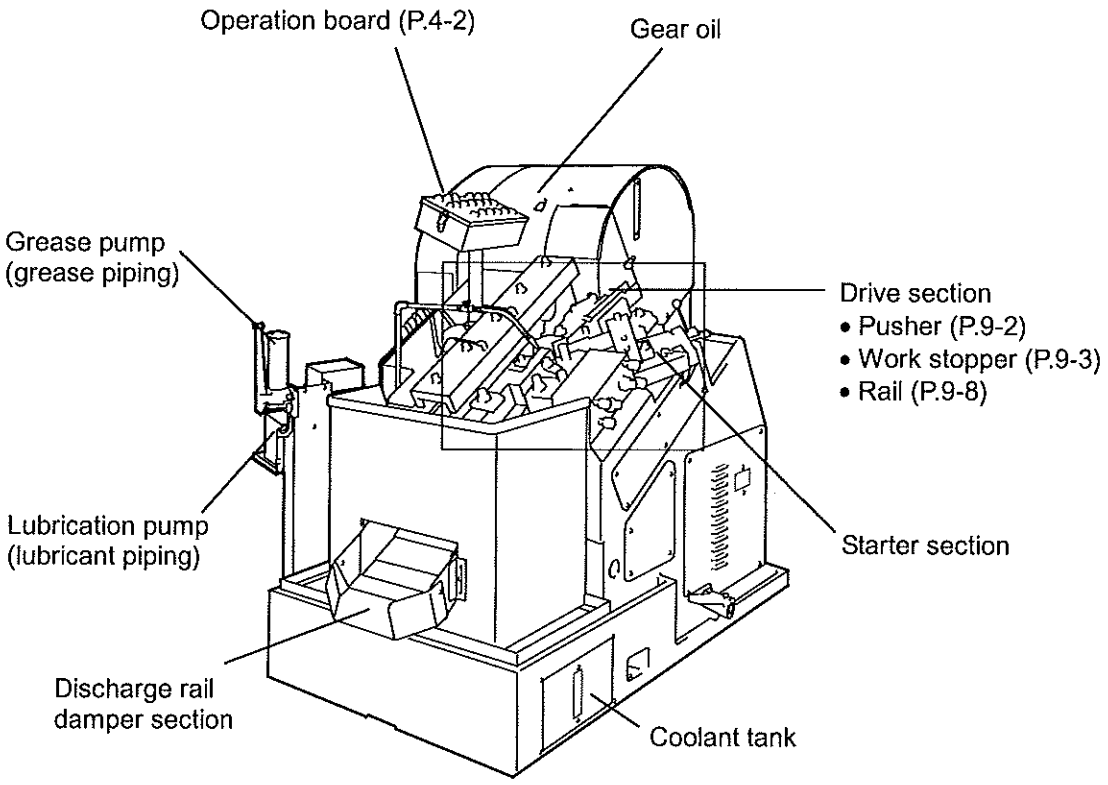
■ 6R Series



■ Rolling machine THI-6R specifications

Item	Specifications	
Rollable maximum nominal diameter	M6	
Rollable maximum thread length	30mm	
Rollable maximum under head length	55mm (Note, for half-thread)	
Rolling performance (per minute)	120 to 250 pieces	
Transmission	Inverter	
Standard die dimensions	90/105×25W×30Hmm	
Die pocket dimensions	98/135×23/25×55Hmm	
Ram stroke	220mm	
Starter	Circular cam method	
Pitch alignment	Turnbuckle method	
Supply device	ø500 vibratory feeder (According to specifications)	
Motor applied and others	Main motor	Fuji Electric Totally enclosed fan-cooled motor 200V 3 phases 4P 3.7kW
	Inverter	Fuji Electric Inverter FRN5.5G11S-2 200V 3 phases Output 17A
	Lubrication pump	Showa Cycle pump YMAS6-1TY-6P 200V 3 phases 4P 10W
	Coolant pump	Fuji Electric Self-priming type oil pump VKN043A 200V 3 phases 2P 40W
	Grease pump	Showa Sinepump SHGD6
Machine dimensions	W970×L1270×H1150mm	

■ **10R Series**

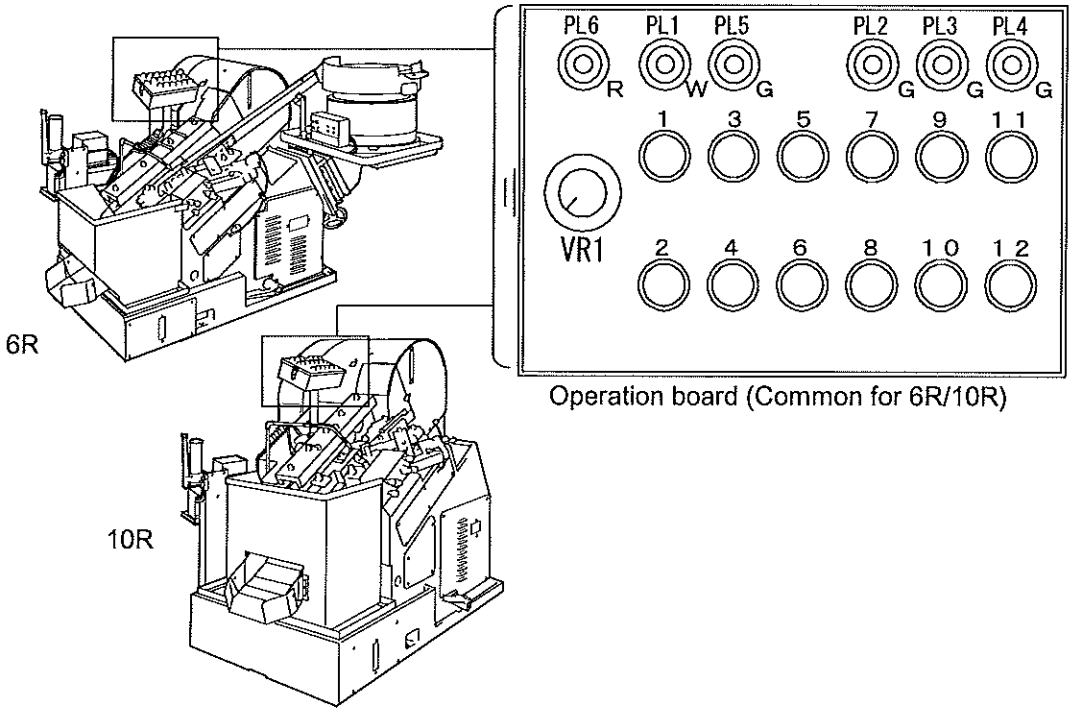


■ **Rolling machine THI-10R specifications**

Item	Specifications	
Rollable maximum nominal diameter	M10	
Rollable maximum thread length	40mm	
Rollable maximum under head length	75mm (Note, for half-thread)	
Rolling performance (per minute)	100 to 200 pieces	
Transmission	Inverter	
Standard die dimensions	135/150×40W×40Hmm	
Die pocket dimensions	136/180×38/40×75Hmm	
Ram stroke	340mm	
Starter	Circular cam method	
Pitch alignment	Turnbuckle method	
Supply device	ø500 vibratory feeder (According to specifications)	
Motor applied and others	Main motor	Fuji Electric Totally enclosed fan-cooled motor 220V 3 phases 4P 7.5kW
	Inverter	Fuji Electric Inverter FRN11G11S-2 200V 3 phases Output 46A
	Lubrication pump	Showa Cycle pump YMAS6-1TY-6P 200V 3 phases 4P 10W
	Coolant pump	Fuji Electric Self-priming type oil pump VKN053A 200V 3 phases 2P 60W
	Grease pump	Showa Sinepump SHGD6
Machine dimensions	W1060×L1550×H1440mm	

4-1. Description of operation board

For details, refer to the drawing in each board.



Operation board (Common for 6R/10R)

■ **Indicationn lamp (Indication color: W = White, R = Red, G = Green)**

Indication lamp	Lamp color	Name	Operation description
PL6	R	Inverter trouble	Lit when the inverter is troubled.
PL1	W	Power source (ON)	Lit when the power is supplied.
PL5	G	Ram (forward run)	Lit for continuous operation.
PL2	G	Lubrication pump (ON)	Lit when the lubrication pump runs.
PL3	G	Oil pump (ON)	Lit when the cutting oil pump runs.
PL4	G	Hopper (ON)	Lit when the supply device runs.

■ **Operation switches (Indication color: G = Green, R = Red, C = Blue, Y = Yellow)**

Indication lamp	Lamp color	Name	Operation description
1	G	Power source (ON)	Press it, and the power will be turned ON.
2	R	Power source (OFF)	Press it, and the power will be turned OFF.
3	G	Ram (forward run)	Press it, and the ram will continuously run.
4	R	Ram (stop)	Press it, and the ram will stop.
5	C	Ram jog	While it is pressed, the ram runs forward.
6	Y	Ram reverse jog	While it is pressed, the ram runs backward.
7	G	Lubrication pump (ON)	Press it, and the lubrication pump will run.
8	R	Lubrication pump (OFF)	Press it, and the lubrication pump will stop.
9	G	Oil pump (ON)	Press it, and the cutting oil pump will run.
10	R	Oil pump (OFF)	Press it, and the cutting oil pump will stop.
11	G	Hopper (ON)	Press it, and the supply device will run.
12	R	Hopper (OFF)	Press it, and the supply device will stop.

4-2. Power turn-ON and shutdown

a. Power turn-ON

Press up the handle of the breaker on the left upper area of the operation/control panel on the rear of the main body.
The power will be turned ON.
If the power is turned OFF since the breaker is activated due to the overcurrent, etc, remove the trouble which causes it. Then, fully lower the handle of the breaker to the extreme, and press it up.

Check whether the power lamp on the operation board is lit or not.
Unless it is lit, check the power source on the primary side.
Unless the power lamp is lit though the power is ON on the primary side, contact the maintenance service man, and check whether the non-fuse breaker in the control panel is activated or not.

b. Power shutdown

After stopping all equipments with the buttons on the operation board, press down the handle of the breaker in the control panel to shut down the power source.

DANGER

A qualified electrical service person only must maintain or repair the electrical system.
If it is done by any unqualified worker, it may lead to an electric shock or serious human accident.

5. Machine Starting Method after Long Holidays 6R/10R

a. Coolant

After the machine has stopped for holidays or other long terms, the rolling oil may run out in the coolant pump.
It the internal fluid runs out, the pump does not suck any oil even though the motor runs. In such a case, fill approx. 150cc of the priming oil from the discharge port of the coolant.

b. Slide surface

After the machine is stopped for a long term, the lubrication may run out on the slide surface.
If the machine is brought into continuous operation, the slide surface may be damaged.
Refill the lubricant, press the lubrication pump "ON" and press the jog button of the lubrication pump 2 to 3 times to forcibly discharge the oil. Then run the pump approx. 10 minutes under no load.

6. Work-start Inspection Table

Work-start inspection table

Inspection date		Machine No.				Person in charge										Section/responsible person name														Judgment result Normal O Defective ×							Approval	
year month																																						
No.	Inspection item	Inspection method	Criterion	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
1	Lubricant	Visual check	Specified amount																																			
2	Grease	Visual check	Specified amount																																			
3	Coolant	Visual check	Specified amount																																			
4	Air pressure	Pressure gauge Visual check	0.4 to 0.6MPa																																			
5	Discharge rail damper	Visual check	Does it operate normally?																																			
6	Starter stop	Visual check	Does it operate normally?																																			
7																																						

7. Periodic Inspection Table

The periodic maintenance and inspection are recommended to maintain the machine precision and safely operate the machine. Since the periodic inspection table is shown below, refer to it.

Machine No. :
Inspection date :
Service person : Sign

Inspection item	Inspection method	Inspection interval	Result	Remarks
Wear of main bearing	Abnormal noise during operation	Every day		
Run-out of main shaft	Measure the run-out of Pitman	Every 3 months		
Main V belt and pulley	Visual check	Every 3 months		
Wear of cam	Visual check	Every 3 months		
Wear of cam roller follower	Turn it with hand to check the backlash.	Every 3 months		
Wear of starter slide	Turn it with hand to check the backlash.	Every month		
Wear of pusher	Visual check	Every month		
Wear of work stopper	Visual check	Every month		
Scratch of die pocket	Check it with hand feeling.	During setup		
Wear at the tip area of rail	Visual check	Every 3 months		
Wear of rail	Visual check	Every 3 months		
Parallelism of ram die block	Measure with dial gauge.	Every 3 months		
Wear of slide surface	Move the ram for check.	Every 3 months		
Wear of ram pin	Move the ram with hand to check the backlash.	Every 3 months		
Wear of adjusting plate	Visual check	Every month		

8. Description of Terms Used

6R/10R

The terms used in this manual are described as follows.

■ **Machine and concerned**

Term	Description
Adjusting plate	Guide plate to feed the product into the die
Inner rail end plate	Part to support and guide the products when the parts are fed into the dies.
Rail	Guide to transfer the part from the supply device to the die
Starter	Mechanism to feed the product into the die
Starter circular cam	Cam to drive starter synchronously with the rotation of the machine
Starter center lever	Lever to connect the cam and starter
Die block	Block where the die is set up on the fixed side
Pitman gear	Geared plate to convert the rotary movement into the linear movement
Flywheel	Flywheel to transmit the power from the motor to the drive section.
Plunger	Plate to push and feed the product into the die.
Ram	Block where the die is set up on the movable side The product is rolled and formed with the reciprocation linear movement joined to Pitman gear.
Work separator	Block to separate one by one the products which are continuously flowed on the rail.

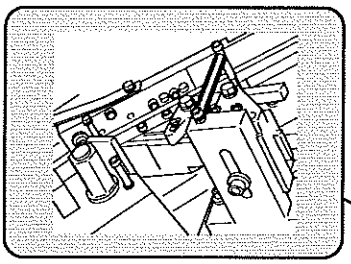
■ **Electricity and concerned**

Term	Description
Electric circuit	It is a path where electricity flows.
Voltage	It is a pressure which drives the electricity to flow. (Unit: volt (V))
Current	It is the pressure of the electric current when the electricity flows. (Unit: ampere (A))
Alternate current (AC)	The strength of the voltage and current, and the current direction alternate at the constant intervals.
Direct current (DC)	The strength and direction of the current are continuously constant.
Electromagnetic switch (magnet)	When it is energized, the switch opens and closes the electric circuit with the force of the electric magnet. It is mainly used for the electricity of a large capacity.
Relay	When it is energized, the relay opens and closes the electric circuit with the force of the electric magnet. It is used to control the electricity such as signals.
Electromagnetic valve (solenoid valve)	When it is energized, the device opens and closes the valve with the force of the electric magnet. It is used to control the flow of the fluid such as an air and oil, etc.
Electromagnetic switch protective circuit (thermal relay)	The device protects the rotary component and others from the overcurrent, etc. If any overcurrent is detected, the circuit will be shut down.
Transformer	The device converts the AC voltage.

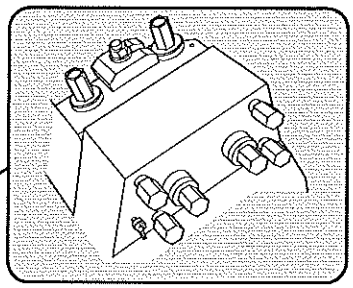
9. Adjusting Method of Each Component

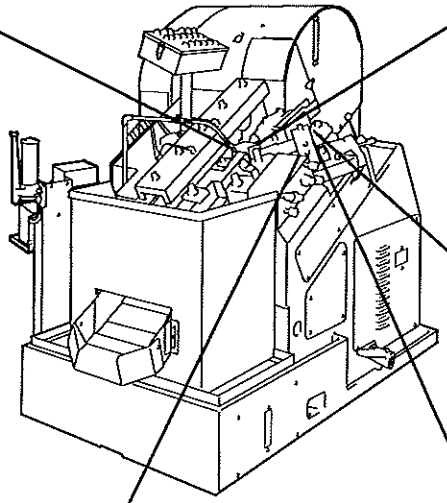
6R/10R

c. Replacement of work separator (P.9-3)

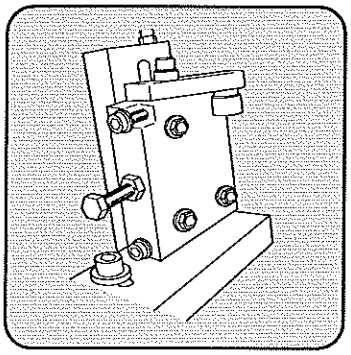


d. Pitch alignment method (P.9-4)

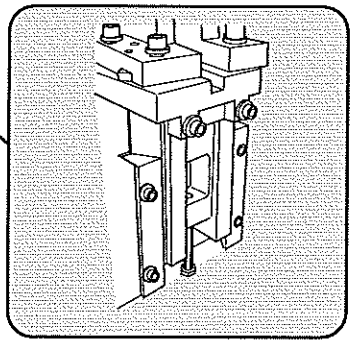


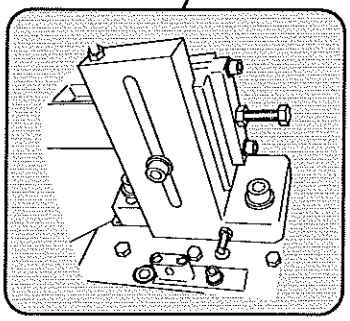


a. Replacement of pusher (P. 9-2)

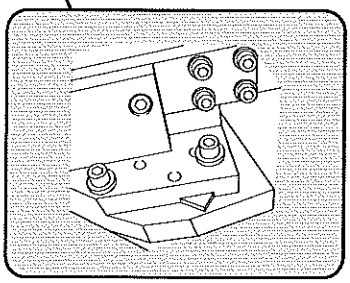


e. Up/down adjustment of rail (P.9-8)





e. Up/down adjustment of pusher (P.9-2)



f. Width adjustment of rail (P.9-8)

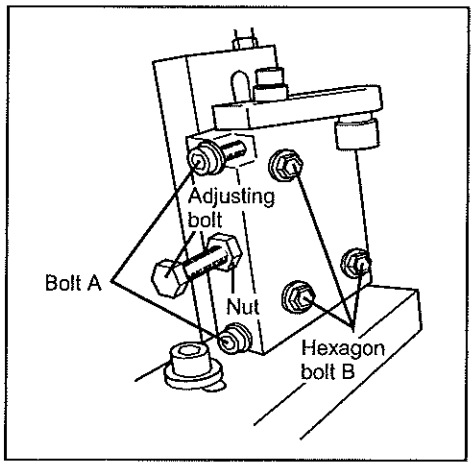
a. Replacement of pusher (Rolling of products of different nominal diameters)

(1) Jog the starter to return to the backward end.

(2) Loosen the nut in the right figure, and turn the adjusting bolt counterclockwise to return it.

(3) Loosen two bolts A, and fall down the block of the adjusting bolt to be lateral. In this state, loosen three hexagon bolts B, and remove the pusher from the holder.

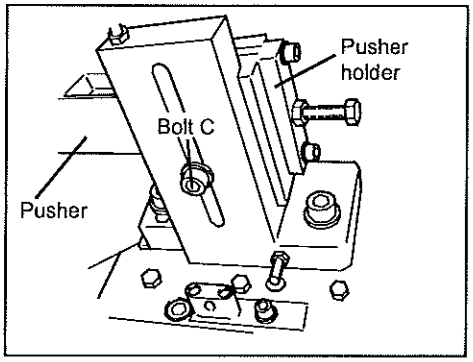
(4) After replacing the pusher with the new one, reverse the procedure (1) through (3) to reinstall the new pusher, and adjust the projection of the pusher with the adjusting bolts.



b. Up/down adjustment of pusher

(1) Loosen the bolt C, and adjust it together with the pusher holder.

(2) After adjustment, tighten the bolt C to fasten the pusher holder.



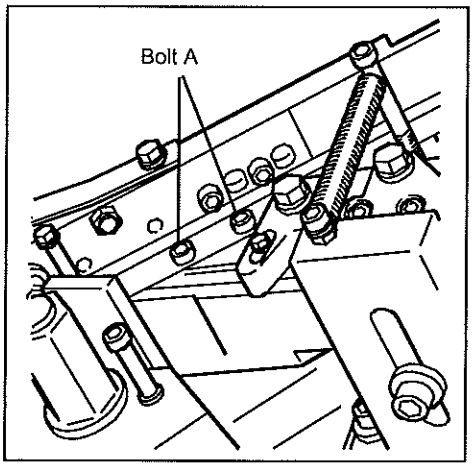
	WARNING
Work in the stable posture. If you work in the unstable posture, you may loss the balance to cause an unexpected wound.	

c. Replacement of work separator (Rolling of products of different nominal diameters)

(1) Remove two bolts A, and the work separator cover.

(2) Remove the pusher in the procedure of "b. Replacement of pusher".
In this state, slide the work separator sideward, and it will be removed.
For removal, pull the separator lever toward you.

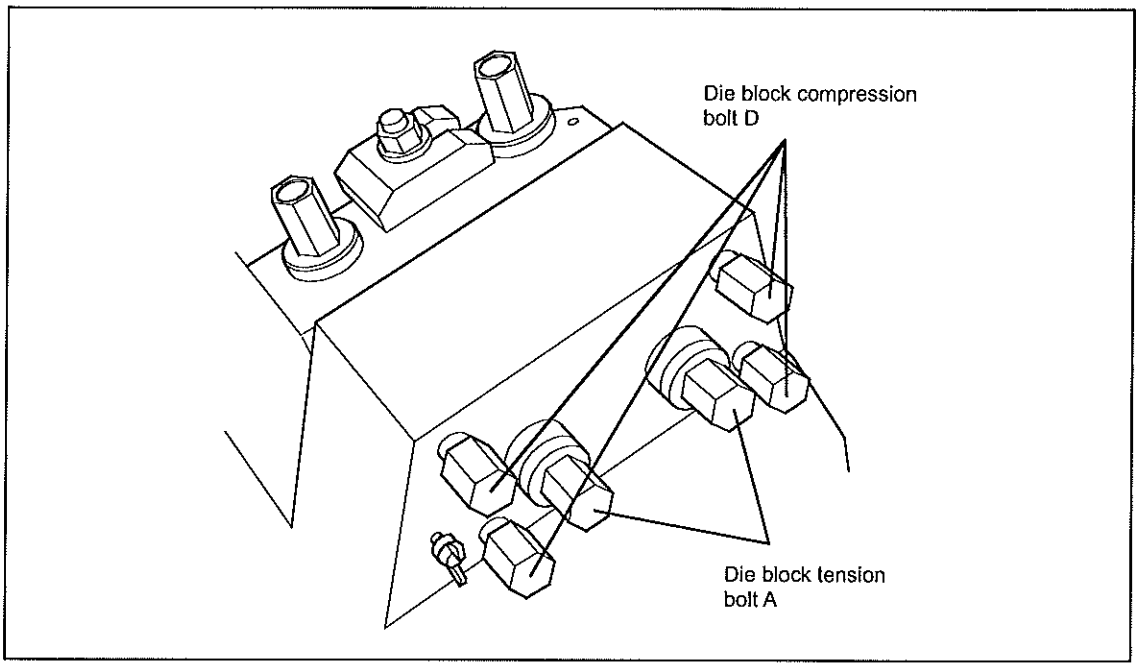
(3) After replacing the work separator with the new one, reverse the procedure of (1) thru (2) to install the work separator cover and pusher.



⚠	**CAUTION**
The spring of the work separator is activated. When removing the separator, take care to prevent the hand from being pinched with the lever.	

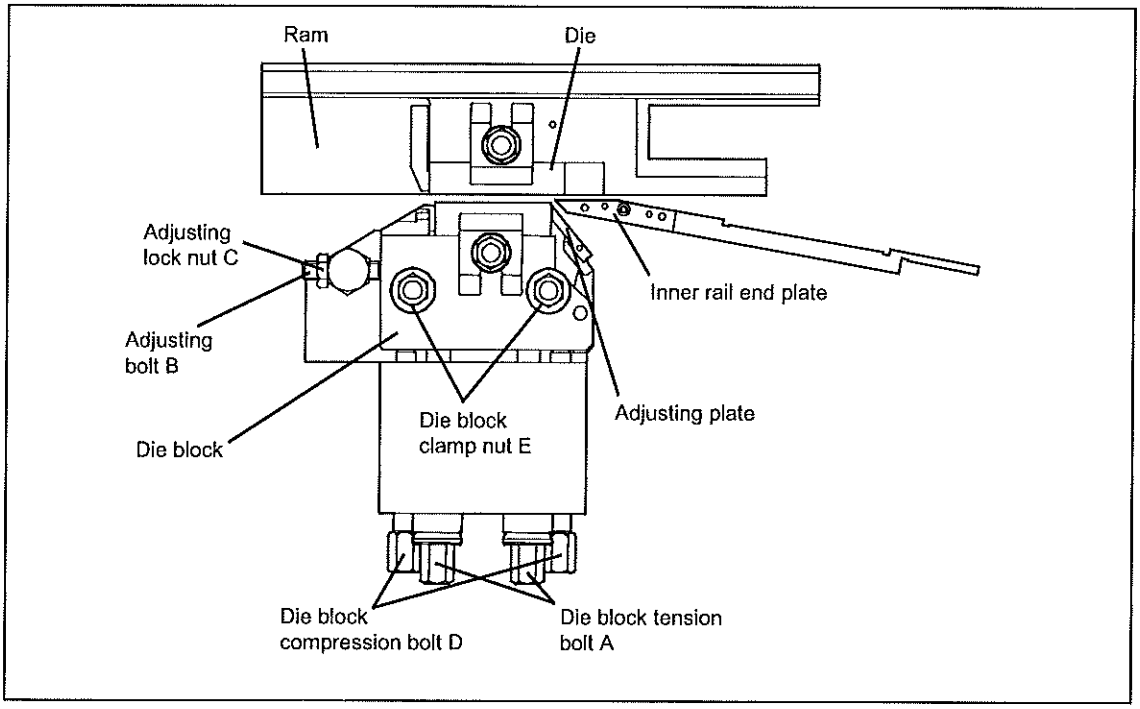
d. Pitch alignment method

When replacing the die, align the pitch in the following procedure.



(1) Loosen two die block tension bolts (pull bolt) A as far as they can be rotated with hand.

(2) Loosen die block compression bolt D.



(3) Loosen the adjusting lock nut C, and loosen the adjusting bolt B.

(4) Loosen two die block clamp nuts E.
In this state, verify that the die block can be moved with hand.
If they can not be moved, readjust the bolts and nuts which are loosened in (1) through (3).

(5) Lower the die block forward with hand.

(6) Install the die on the pocket.
When installing the die on the pocket, sufficiently check the die pocket for burr, scratch, dust and others.

(7) Temporarily tighten the clamp nut E to fasten the die block.

(8) Jog the ram to move to the position where the pockets of the movable die and fixed die face each other.

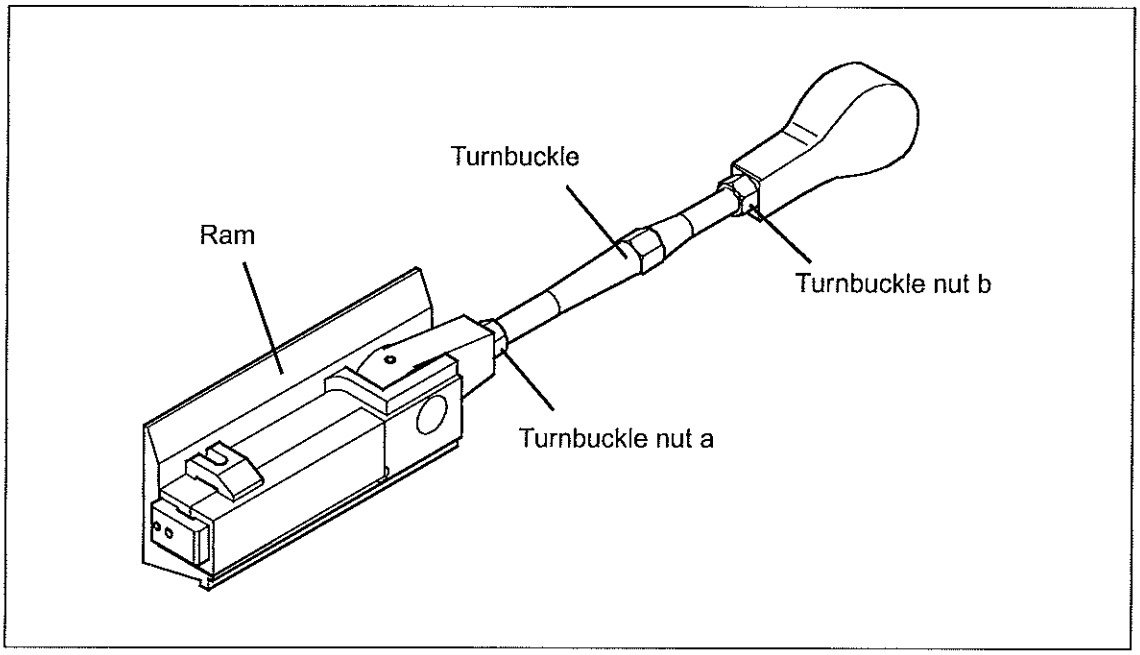
(9) As shown in the figure, pinch two works on the inlet and outlet sides of the die, and tighten the die block compression bolt B clockwise.
Tighten the bolts as far as the work is pinched with the dies and cannot be pulled off.

(10) Pinch the work between the adjusting plate and adjusting holder, and press the die block as far as the work is lightly activated. Then tighten the adjusting bolt B.
When the die block is completely positioned, fasten the adjusting bolt B with the nuts.

(11) In this state, tighten the die block clamp nut D.

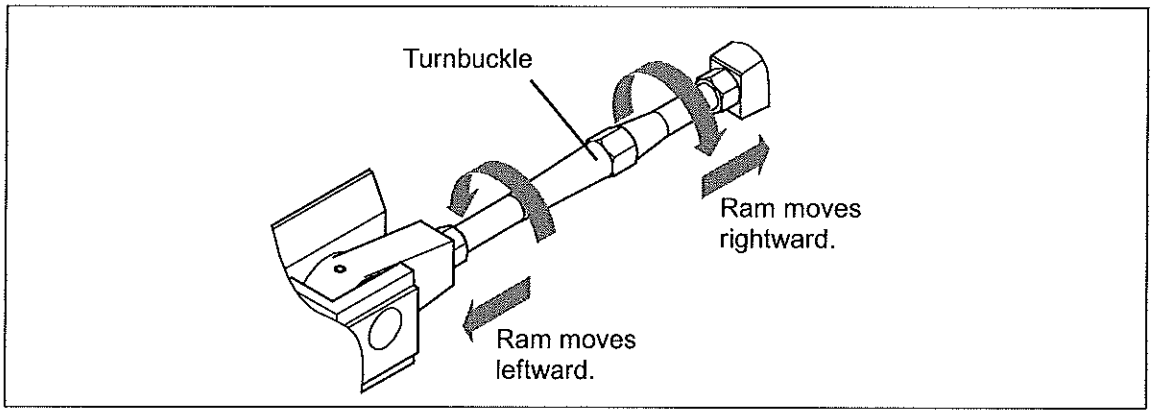
(12) Tighten the die block tension bolt A clockwise.
At this time, the die block is lowered as the bolt A is tightened. Therefore, retighten the compression bolt D to make the dies securely grip the work.

(13) Jog the ram to move, take out the gripped work, and tighten the compression bolt D one turn.



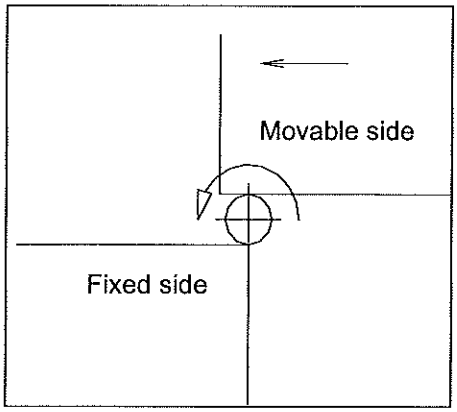
(14) Loosen the turnbuckle nuts a and b of the ram.
Since the turnbuckle nut a is a left hand type and b is a right hand type, turn them far, and they will be loosened.

(15) Turn the turnbuckles toward you, and the ram will be moved rightward. Turn them in the reverse direction (far), and the ram will be moved leftward.
The rotation direction of the turnbuckle is related with the movement direction of the ram as follows.

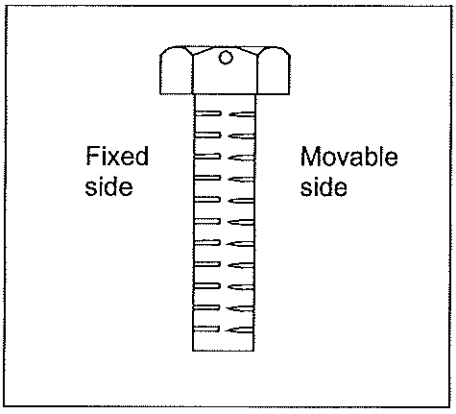


10R Series: Since the thread pitch of the turnbuckle is 2mm, the ram is moved 4mm as the turnbuckle is turned one turn.
6R Series: Since the thread pitch of the turnbuckle is 1.5mm, the ram is moved 3mm as the turnbuckle is turned one turn.

(16) Grip the work on the die, and jog it to turn half a turn.
At this time, mark the head of the work, in order to make it easy to find which part bites the die on the fixed side.



(17) From the die mark on the work, judge which is higher, the movable die and fixed die, and move the ram with the turnbuckle to align the pitch.
The left side of the mark on the head indicates the mark of the fixed die, and the right side indicates the mark of the movable die. Since the movable die is lower in case of the right figure, turn the turnbuckle toward you to move the ram rightward. Since the lead of the die is lower rightward, turn the turnbuckle toward you, and the ram will move rightward to make the die mark of the movable side higher. Turn the turnbuckle far, and the ram will move leftward to make the die mark on the movable side lower.



(18) After the pitch alignment is completed, turn the turnbuckle nuts a and b toward you to lock the turnbuckle.
Jog several works to be rolled. When it is verified that the pitch is properly aligned, the pitch alignment is completed.

CAUTION

Carefully set up the dies, and accurately align the pitch.
If it is skipped, it causes not only the occurrence of defective thread but also such an accident as the machine is troubled due to the pull-back.

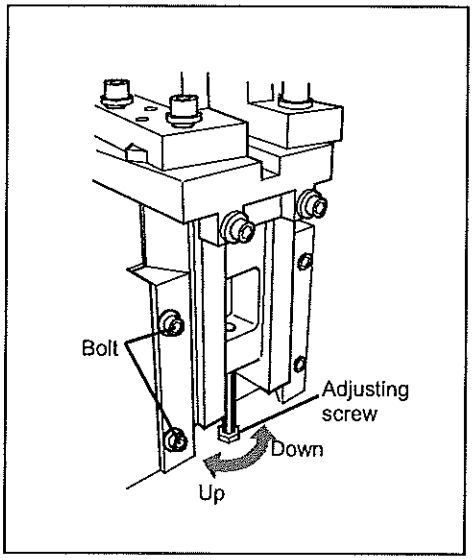
e. Up/down adjustment of rail (Up/down adjustment of rail for semi-thread rolling)

(1) Loosen the bolt which fastens the rail bracket base as shown in the figure.

(2) Turn the adjusting screw to adjust the rail up and down.

(3) After the adjustment, lock the adjusting screw with the nut, and securely tighten the bolt to fasten the rail bracket base.

Turn the adjusting screw counterclockwise to move the rail downward, and clockwise to move the rail upward.



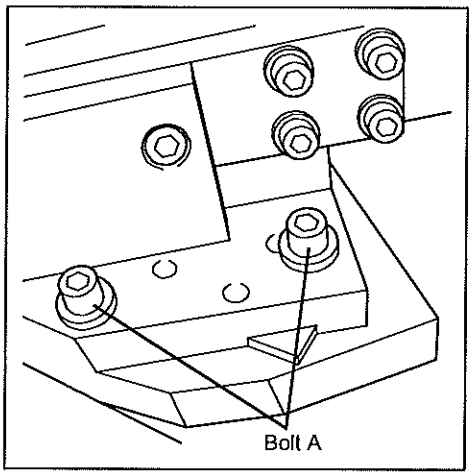
⚠	**CAUTION**
Securely tighten the bolts. If any bolt is loose, the rail which is the process reference becomes unstable, thus causing the occurrence of defective thread.	

f. Width adjustment of rail (For works of different nominal sizes)

(1) Loosen two bolts A.

(2) Move the outer rail bracket to adjust the width of the rail.

(3) After the adjustment, securely tighten two bolts A to fasten the rail bracket.



THI-6R/10R Instruction Manual

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Appendix 2. Index