



Portable Automatic Welding Carriage for fillet welding

T89002425

IK-72T W2 OPERATION MANUAL



For every person who will be engaged in operation and maintenance supervision, It is recommended to read through this manual before any operations, so as to permit optimum operation of this machine.

KOIKE ENGINEERING TANGSHAN CO.,LTD.

INTRODUCTION

Thank you very much for purchasing this product. Read this instruction manual thoroughly to ensure correct, safe and effective use of the machine. Read the manual first to understand how to operate and maintain the machine. Cooperation between colleagues in the workplace is essential for safe, smooth operation.

Make sure you read, understand and take all the necessary safety precautions.










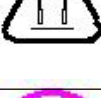



SAFETY PRECAUTIONS

This product is designed to be safe, but it can cause serious accidents if not operated correctly. Those who operate and repair this machine must read this manual thoroughly before operating, inspecting and maintaining the machine. Keep the manual near the machine so that anyone who operates the machine can refer to it if necessary.

- Do not use the machine carelessly without following the instructions in the manual.
- Do not use the machine until you have thoroughly understood the explanations in the manual.
- For safety, leave the installation, maintenance, inspection, and repair of the machine to a trained person who has thorough knowledge about welding machines or to a qualified operator.
- For safety, leave the operation of the machine to a person with complete knowledge of the instruction manual and sufficient skill.
- For safety education, make use of respective lecture meetings sponsored by the Welding Society and Welding Association, as well as by headquarters and branches of related scientific societies and associations. Make use of qualification tests for welding engineers and welding technicians as well.
- After reading the manual, keep it together with the warranty within reach of people concerned. Read the manual again as necessary.
- Contact our dealers or our branch office, sales office, or local office for any obscure points.
- When this manual is lost or damaged, place an order promptly with our dealer for another copy.
- When transferring the machine, be sure to attach the instruction manual to the machine to transfer it to the next owner.

QUALIFICATIONS FOR MACHINE OPERATOR

Operators and repair staff of this machine must completely understand the contents of the instruction manual and they must be qualified and educated to handle this equipment.

Symbol	Title	Meaning
	General	General caution, warning, and danger.
	Be careful not to get your fingers caught.	Possible injury to fingers if caught in the insertion part.
	Caution: Electric shock!	Possible electric shock under special conditions.
	Ground this equipment.	Operators must ground the equipment using the safety grounding terminal.
	Pull out the power plug from the outlet.	Operators must unplug the power plug from the outlet when a failure occurs or when there is a danger of lightning.
	Caution against bursting	Possible bursting under certain conditions.
	General	General warning.
	Caution: Hot!	Possible injury due to high temperature under certain conditions.
	Caution: Ignition!	Possible ignition under certain conditions.
	Caution: Magnet	Generating a magnetic field and magnetic waves.
	Wear light shielding goggles.	Be sure to wear light shielding goggle when looking at welding arcs.
	Wear dust/gas mask.	Wear a mask when dust, smoke, or gas is to be generated during work.
	Do not lift.	Lifting the carriage is prohibited to prevent an accident due to falling.




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1 Safety information

Most accidents are caused by negligence of basic safety regulations during operation, inspection, and maintenance. Carefully read, understand, and master the safety precautions and preventive measures written in this manual or on the machine before operation, inspection, and maintenance of the machine.

- Carefully read this manual before use.
- Conduct installation of motive power source on the primary side, select the location of installation, store high-pressure gas, install pipes, store products after welding, and dispose of waste in conformity with laws and your in-house regulations.
- Precautions are provided in this manual for safe operation of the machine and prevention of injury to you or other people or other damage.
- Improper handling of the machine will cause injury or damage at various levels. The levels are classified into three categories, which are represented by respective caution symbols and signal terms to call people's attention. These symbols and terms are used in the same way on the warning labels stuck to the machine.

Caution symbol	Signal terms	Definition of terms
	DANGER	Improper handling is very likely to cause death or serious injury.
	WARNING	Improper handling can cause death or serious injury.
	CAUTION	Improper handling can cause injury or physical damage. It is also used to point out dangerous habitual action.
	Notice sign	The notice sign notifies machine operators and maintenance men of precautions as to parts of the machine or peripheral equipment that will lead to breakdown.

The serious injury mentioned above refers to loss of eyesight, injury, burns (high/medium temperature), electric shock, bone fracture, poisoning which leave an aftereffect or require hospitalization or regular treatment at a hospital for an extended period of time. The injury refers to a wound, burn, or electric shock which do not need hospitalization or regular treatment at a hospital for an extended period of time. The physical damage refers to damage to assets and extensive loss due to damage to the machine.

2 Safety precautions



WARNING

Strictly observe the following to prevent accidents resulting in serious injury or death.

- This welding machine is designed and manufactured by taking safety into consideration. However, never fail to observe the warning and precautions described in this instruction manual, otherwise accidents leading to serious injury or death can result.
- Keep people out of the space around the welding machine and working area.
- The welding machine generates a magnetic field around itself. Such a magnetic field affects certain types of sensors and clocks. For the same reason, any person who have a pacemaker in his heart shall not approach the welding machine in operation or the welding space unless he has obtained doctor's permission.
- For safety, leave the installation, maintenance, inspection, and repair of the machine to a person who has thorough knowledge about welding machines or to a qualified operator.
- For safety, leave the operation of the machine to a person with complete knowledge of the instruction manual and sufficient skill.
- Do not use this machine for any purpose other than arc welding described in the instruction manual.
- Do not remodel the machine.
- Check the safety around the machine before operation to prevent accidents.
- Be sure to hold the handle when carrying the machine.
- Wear leather gauntlets when touching the machine during welding or right after operation.
Do not touch the welded surface until it has cooled.



WARNING

Strictly observe the following to prevent electric shock.



- Do not touch the charged section; otherwise fatal electric shock or burns can result. When the power on the input side is turned on, the input circuit and the inside of the welding machine are charged. Even if the input power is turned off, the capacitor may have been charged. When the welding power is output, the electrode and base metal, as well as the metal portion in contact with these, are charged.
- Never touch charged sections.
- The welding power supply case and base metal, as well as jigs electrically connected to them, shall be grounded in conformity with the law (Technical Standard for Electric Equipment) by a qualified electric engineer.
- Turn off all power supplies on the input side by means of switches in the switch boxes before installation, maintenance, and inspection. The capacitor will not discharge completely right after the input power is turned off. Check that no voltage is remaining before maintenance or inspection.
- Periodically conduct maintenance and inspection. Repair damaged parts before

resuming operation.

- Do not use cables with Insufficient capacity or damaged cables whose conductors are exposed.
- firmly tighten and insulate cable connections.
- Firmly connect the welding cable on the base metal side at a location as close as possible to the base metal.
- Do not use the machine with the welding machine case or coser removed.
- Be sure to cover the input and output terminals before use.
- Do not use broken or wet gauntlets.
- Never fail to use a life-line when working in high places.
- Turn off power switches of all devices and input-side power supply when the machine is not used.
- Do not wear wet clothes.
- Do not stand on or touch the wet floor.
- Do not use the machine outdoors when it is raining.
- Do not leave the machine outdoors after use.
- Be sure to install a fuse or breaker on the input power supply side.
- Check the supply voltage of the machine before use.
The tolerance for the input supply voltage is plus or minus 10% of the rating.
Use of the machine out of the folerance is prohibited.
- The metal receptacle (plug) on the tough-rubber sheath cable is threaded.
Tighten it firmly.
- Be sure to ground the tough-rubber sheath cable of the machine.
- Turn off the power and stop operation in the following cases, and ask an engineer with special knowledge of electricity to repair.
 - *Broken or worn-out cables
 - *Damage due to water leakage or other liquid
 - *Malfunction of the machine inspire of operation in conformity with the instruction manual.
 - *Breakdown of the machine.
 - *Abnormal performance of the machine which requires tune-up.
- Ask an engineer with expertise to maintain, inspect, or repair the machire.
- Please make sure that any foreign material does not attach to the connector of the machine nor to the plug of the power cable when the plug of the power cable is connected to the machine.
Foreign materials can cause short-circuits or melt the connector.
- **In case if you get connected WU-5R, make sure to Turn Off the Power.**
Caution: When the power is on if it gets connected there is a possibility of failure.

**CAUTION**

Use protective gear to protect you and others from arc light, scattered spatters/slugs, and noise.

- The arc light includes harmful ultraviolet rays and infrared rays, causing inflammation of eyes or burns.
- Scattered spatters and slugs can damage your eyes and cause burns.
- Noise can cause hearing difficulties.
- Wear light-shielding goggles or hand shield, which blocks light sufficiently, for welding operation or monitoring welding.
- Wear protective goggles to protect your eyes from spatters and slugs.
- Install a protective curtain around the welding site so that arc light will not reach the eyes of people around the site.
- Wear protective gear such as leather gauntlets, clothes with long-sleeves, leg cover, leather apron, helmet, and safety shoes.
- When the noise level is high, wear a noise-proofing protector.

**CAUTION**

Use protective gear to protect you and others from fumes and gas generated by welding.

- Welding generates fumes and gas. Inhalation of such fumes and gas can damage your health.
- Welding operation in a small space causes deficiency of oxygen, which is very likely to cause suffocation.
- To prevent gas poisoning and suffocation, use the local waste disposal facilities stipulated by the law (Industrial Safety and Health Law and Regulations to Prevent Damage due to Dust) or use an effective inhaler.
- When the welding space is small, ventilate the space sufficiently or wear an inhaler. Have a trained watchman monitor welding.
- Welding operation near places where degreasing, washing, or spraying is conducted may lead to generation of harmful gas. Do not conduct welding near such places.
- Welding zinc plated steel sheets or other coated steel sheets will generate harmful fumes. Remove the coating before welding, or wear an inhaler before operation.
- Noise is less than 70 dB.

**CAUTION**

Strictly observe the following to prevent gas cylinders from falling or bursting.



- Gas cylinders, when they fall, can cause accidents leading to death or injury.
- High-pressure gas is contained in gas cylinders. Improper handling of gas cylinders can cause a burst or emission of high-pressure gas, causing accidents that lead to death or injury.
- Handle gas cylinders in conformity with the law (High Pressure Gas Control Law).
- Do not expose gas cylinders to high temperatures.
- Set gas cylinders in a special cylinder stands to prevent the gas cylinders from falling.
- Never generate arcs on gas cylinders. Do not hook the welding torch on gas cylinders, or do not allow electrode to touch gas cylinders.
- Do not bring your head close to the discharge port when opening the valve on the gas cylinder.
- Attach a protective cap to gas cylinders when they are kept unused.
- Use a gas flow rate contgear made or recommended by a welding machine manufacture.
- Read the instruction manual for the gas flow rate contgear before use, and strictly observe the precautions.
- Never use a gas cylinder from which gas is leaking or a broken gas cylinder.
- Use gas cylinders only for specified purposes.
- DO not apply oil or grease to the valve on gas cylinders.
- When the valve on gas cylinders is hard to open, contact the dealer.

**CAUTION**

Strictly observe the following to prevent injury due to rotary section.



- Do not bring your hands, hair, or clothes close to the cooling fan of the welding power supply or the feeder gear of the wire feeder; otherwise you can be caught in them.
- Do not bring your head near the end of the welding torch during wire inching; otherwise the wire may stick in your eyes.
- When the spool of wire is released, you can get hurt.
- Do not use the welding machine with its case or cover removed.
- Ask a trained person who has thorough knowledge of welding machines or a qualified person to remove the case for maintenance, inspection, or repair. Install a protective fence around the welding machine to prevent people from getting near carelessly.
- DO not bring your hand, fingers, hair, or clothes close to the rotating cooling fan or the gear of the feeder.
- Do not bring your head near the end of the welding torch during wire inching.
- Secure the end of the wire with the wire stopper on the spool when storing or moving the spool of wire or when setting it in the wire feeder.
- When inserting the spool of wire into the wire guide on the wire feeder, firmly hold the wire so that it will not be released.

**CAUTION**

Strictly observe the following to prevent fire, explosion, or burst.



- Spatters and hot base metal right after welding can cause fire.
- Imperfect connection of cables or imperfect contact on the route of the electric current on the steel bar and other base metal can cause fire because of heating due to resistance.

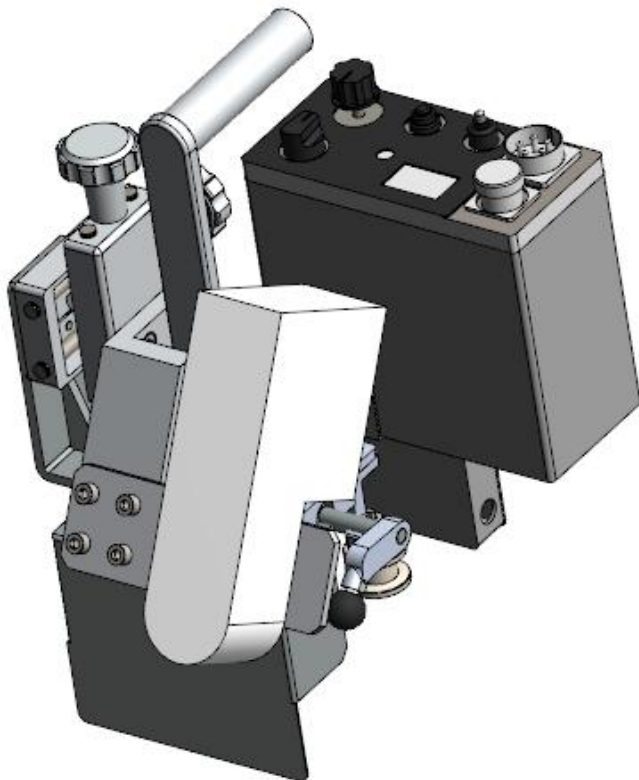
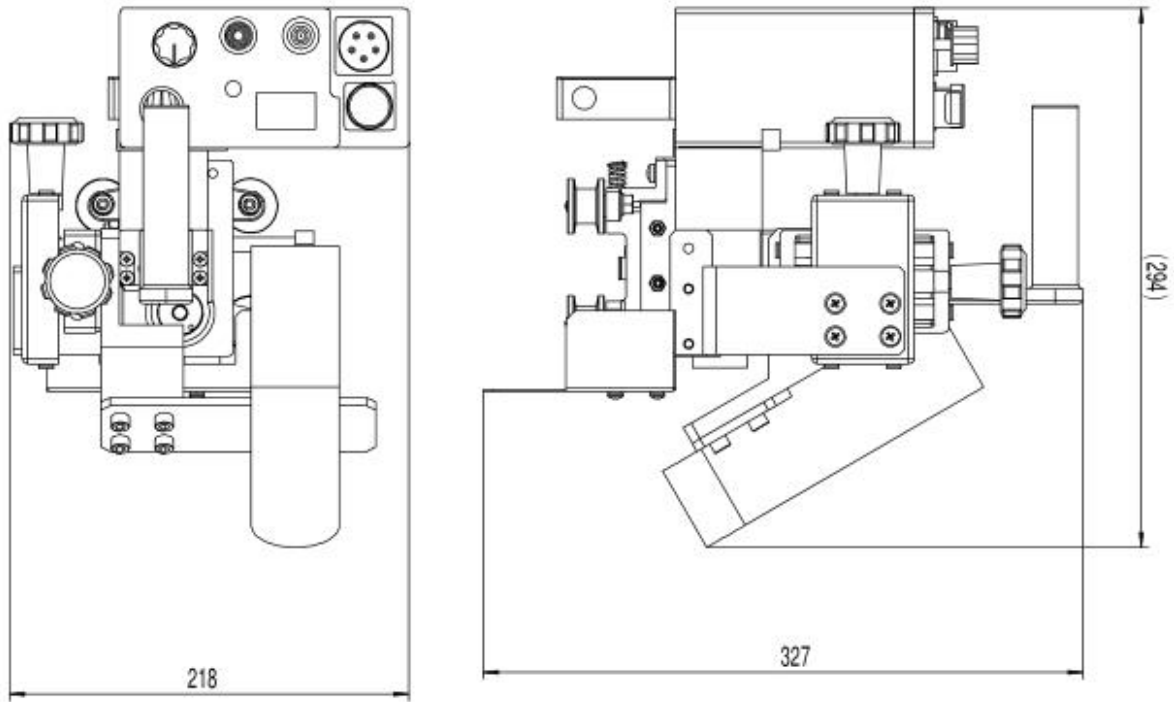


- Arcs generated on the container of gasoline or other inflammables can cause explosion.

- welding of sealed tanks or pipes can cause bursts.
- Do not do welding in a place where scattered spatters will be in contact with inflammables.
- Do not do welding in a place near inflammable gas.
- Do not bring hot base metal right after welding close to inflammables.
- Welding on ceilings, floors, and walls may cause fire on the hidden side. Remove inflammables from the hidden side.
- Firmly tighten cable connections, and firmly connect the welding cable on the base metal side at a location as close as possible to the base metal.
- Do not weld gas pipes filled with gas.
- Do not weld sealed tanks or pipes.
- Provide a fire extinguisher near the welding place to prepare for the worst.
- Do not weld a container that has inflammables inside.
- Do not have a lighter, matches, or other inflammables with you during welding.

3 Equipment outline

The outline dimensions of the equipment are as follows



4 Features and specifications

4.1 Features

This machine 'IK-72T W2' is a welding carriage equipped with a weaving unit WU-5R. Vertical and horizontal weaving welding is enabled by simple operation.

1. Compact, Light weight, Durable and Low gravity.
2. The high-quality track (1D/3D) greatly improves the reliability and traction of the equipment, thus ensuring the driving stability.
3. It is able to operate plural machine by improved tracing reliability and automatic stopping function.
4. Can change weaving condition (swing speed, amplitude, stop time, origin position) of welding.
5. With the adoption of SELECT SWITCH with an emphasis on usability from the sheet switch, operation can be easily carried out.
6. By the origin position adjustment function, the origin alignment can be easily carried out.
7. Forward angle, back angle adjustment can be done.
8. While weaving welding, tack/stitch running can be done.
9. Because of the IK-72T installation mode, the change of receiving and placing can be realized by one-touch operation.
10. Install the motor with encoder to improve the accuracy of running speed..
11. By pressing the Limit switch while stopping of carriage, carriage moves at constant speed and it becomes easy to align.

The above features are expected to exhibit their effects in terms of "welding efficiency" and "operation by unskilled workers."



4.2 Configuration of IK-72T-W2


1. Main unit	1set
2. Control cable	1pc
3. WU-5R weaving unit	1set
4. Exclusive use welding torch (option)	1set
5. 1D · 3D track made in KOIKE ENGINEERING TANGSHAN (option)	1set
6. 2D track made in KOIKE SANSO JAPAN (option)	1set
7. Accessories	
Hexagon wrench (M6/M5)	1pc each
Operation manua	1set



4.3 Specifications

Item	Specifications
Model	IK-72T W2
Input power supply	AC100-240V \pm 10%
Weight	10kg
Carriage dimensions	L295×W218×H327mm(Includes torch holder) L11.6×W8.58×H12.87inch(Includes torch holder)
Speed control	Dial operation
Cutting speed	150 - 700 mm/min
Cutting thickness	5 - 30 mm (by standard accessories cutting tip)
Bevel angle	0 - 45 degree
Minimum radius of curve	2,000 mm (for three-dimensional rail) 2,500 mm (for two-dimensional rail)
Torch holder	For direct torch For curved torch

5 Method of operation



 WARNING	<p>Kindly take care about following things to avoid getting an electric shock.</p>
	<ul style="list-style-type: none"> ● Kindly remove input plug from outlet while checking, dis-assembling or repairing and turn OFF the control source while leaving. If it is necessary to carry out checking in the energized state, professional engineer having enough knowledge and skill about electric handling should go since there is risk of short circuit, getting electric shock.
<ul style="list-style-type: none"> ● Do not use welding equipment without case or cover. ● Kindly use power outlet with earth pin outlet since input plug has earth pin. It is connected to main body of carriage in operation panel. ● Kindly use input voltage within $\pm 10\%$ for power supply input to input plug (Kindly use input voltage in the range of AC100V~AC240V) There is risk of short circuit due to failure of printed board on operation panel. ● In case of crack in insulation cover of power cable and torch cable, do not expose it to high temperature. There is risk of short circuit due to tearing of insulation covering. ● Kindly weld below the rated current and usage rate of torch to prevent dielectric breakdown due to overheating. ● Kindly place power cable and torch cable in proper manner so that they are not stretched or pulled. There is possibility of breakage of insulation by damaging holding part and connector part due to pulling. ● Do not throw or drop main body of carriage. There is risk of damaging insulation by breaking. ● While connecting to power cable plug to main body, kindly connect after verifying that foreign object is not touching to connector of main body, power cable plug .There is risk of connector erosion due to short circuit by foreign object. 	

	<p>WARNING</p>
<p>Strictly observe the following to prevent burns.</p>	
<ul style="list-style-type: none"> ■ Never directly touch the torch nozzle, tip, orifice, insulation cylinder, and the surface of the carriage which are very hot right after welding. 	

 WARNING	<p>Kindly take care about following things to avoid falling off of carriage</p>
	<ul style="list-style-type: none"> ● Do not lift the carriage by holding its Handle. There is risk of falling off carriage while holding carriage by handle, if there is shock impact at carriage or if mounting screw of handle is loose.

5.1 Operation panel

V3.33

 WARNING	<p>Kindly take care about following things to avoid getting an electric shock.</p>
	<p>■ Kindly remove input plug from outlet while checking, dis-assembling or repairing and turn OFF the control source while leaving. If it is necessary to carry out checking in the energized state, professional engineer having enough knowledge and skill about electric handling should go since there is risk of short circuit, getting electric shock.</p>
<p>■ Do not use welding equipment without case or cover.</p> <p>■ Kindly use power outlet with earth pin outlet since input plug has earth pin. It is connected to main body of carriage in operation panel.</p> <p>■ Kindly use input voltage within $\pm 10\%$ for power supply input to input plug (AC 100-240V) There is risk of short circuit due to failure of printed board on operation panel.</p> <p>■ In case of crack in insulation cover of power cable and torch cable, do not expose it to high temperature. There is risk of short circuit due to tearing of insulation covering.</p> <p>■ Kindly place power cable and torch cable in proper manner so that they are not stretched or pulled. There is possibility of breakage of insulation by damaging holding part and connector part due to pulling.</p> <p>■ Never fail to turn OFF the power switch (1) before attaching or detaching the receptacle.</p> <p>■ When you remove the plug, put rubber cap on the receptacle to prevent dust and dirt.</p> <p>■ When you found dust and dirt in the receptacle, remove these before connecting electric power cable plug.</p>	

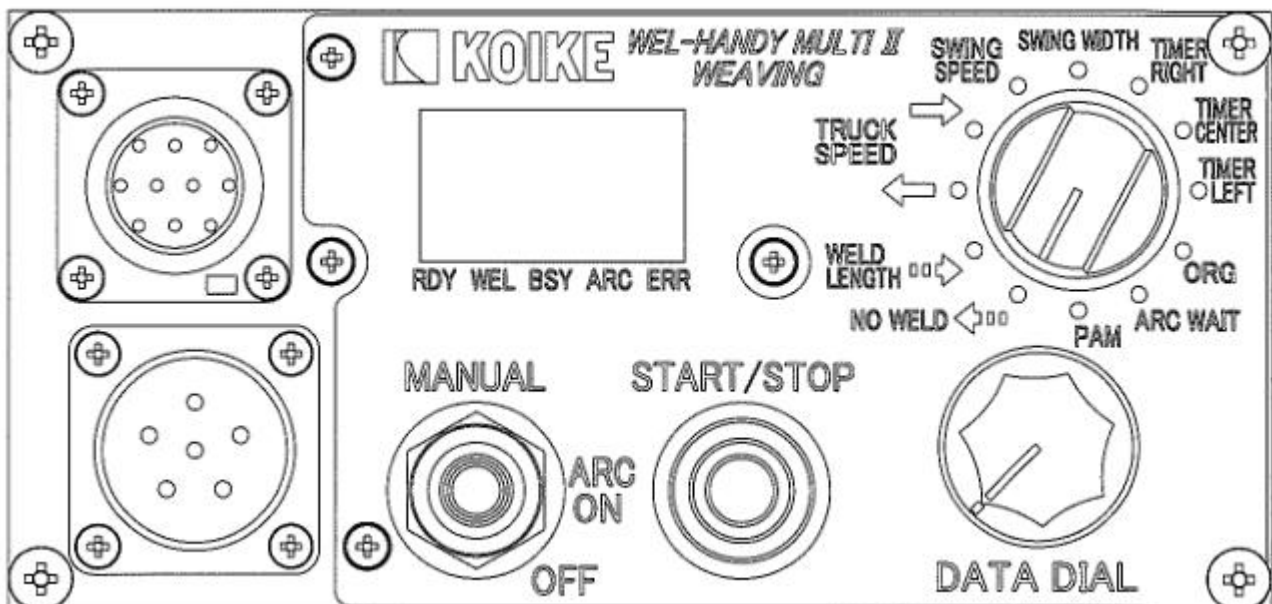
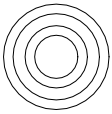


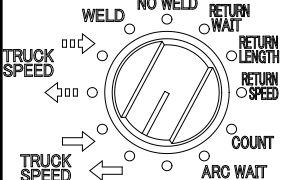
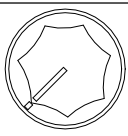
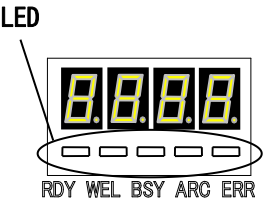


Fig 1 Operation panel

5.1.1 Explanation about operation Unit functions

Display	Name	Function
 <p>START/STOP</p>	START/STOP Button	<p>It is used at the time of start/stop of travelling of carriage. Moreover, there are cases where this function is used to set parameters</p> <p>※When an error occurs, the error display is reset when you press the START / STOP switch . However , error if there is still cause of the error occurs again . Check each error Solution , please remove the cause .</p>
 <p>MANUAL ARC ON OFF</p>	Arc changing over switch	<p>There can be 3 modes of changing over in 3 point changing over switch as shown below.</p> <p>MANUAL : Kindly use it in wire inching and arc test. Wire comes out only while switch is on MANUAL.</p> <p>⚠ Kindly take care as Arc is generated if torch end is touching welding material.</p> <p>ARC ON : Kindly use this position in normal welding operation. carriage starts traveling automatically after start of welding by pressing START/STOP button.</p> <p>ARC OFF : Only traveling of carriage is possible without welding operation by pressing START/STOP button at this position. Further it is used to change welding distance, preliminary feeding distance, welding return distance during traveling of Tack carriage (For details, refer to page 22)</p> <div style="border: 1px solid black; padding: 5px;"> <p> Caution Please do not press the START / STOP button while you are down to MANUAL side .</p> <p>•Press the START / STOP button while you are down to MANUAL side , and back to the ARC ON continues to output the arc signal , and then traveling trolley and to ARC OFF. Again , the running of the arc output and the truck and press the START / STOP button will stop . Please be when subjected to the above-mentioned operation and restart to turn OFF the power once .</p> </div>
 <p>WELD NO WELD RETURN WAIT TRUCK SPEED RETURN LENGTH RETURN SPEED COUNT TRUCK SPEED ARC WAIT</p>	SELECT SWITCH	<p>It is used for selecting each parameter and traveling mode. Kindly verify 5.1.2 Regarding SELECT SWITCH for each parameter.</p>
 <p>DATA DIAL</p>	DATA DIAL	<p>It is used in setting carriage travelling speed and each parameter. It increases the value at clockwise rotation and decreases at anti-clockwise rotation. Moreover, it outgrows increase/decrease of value at swift rotation.</p>
 <p>LED RDY WEL BSY ARC ERR</p>	Digital Meter	<p>It displays carriage travelling speed or value of each parameter. Operation status of carriage can be known from LED display of digital meter.</p> <p>RDY : It turns ON when electric supply of carriage is ON.</p> <p>WEL : It turns ON when welding signal is displayed while carriage is travelling.</p> <p>BSY : It turns ON during carriage is operating regardless of display/non display of welding signal.</p> <p>ARC : It turns ON at option of MANUAL, ARCON in (5) arc mode changing over switch.</p> <p>ERR : It turns ON at generation of operation error. At this time corresponding error number of error content is displayed on digital display</p>

<Regarding Error number>

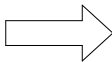
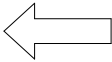



Error number	Error contents	Dealing method
E007	Encoder line Connection error	Please confirm whether an encoder line isn't connected to MD-CN10. If it is connected, connect it to MD-CN5.
E008	Motor deviation over error	Kindly verify whether there is load on motor or motor DC line or encoder line is slipping off. If line is slipping/ coming off, kindly connect motor DC line to MD-CN4 and encoder line to MD-CN5.
E010	Welding signal detection error	Kindly verify welding current (delivery device) connection (check whether welding current is turned OFF or check whether power supply cable is disconnected or whether signal connector is slipped out/fall off)
E011	Welding signal inverse detection error	Please make sure crater settings match in contact power supply side and the truck side.
E014	When welding distance is 0 during TACK/STITCH operation	Kindly set welding distance at more than 1mm or 0.1inch.
E024	Motor overload error	Please make sure the load is not applied to the motor.
E025	Truck backup error (parameter)	Please make sure the truck and the WU-5R is not OFF the power while fine-tuning move in operation or limit switch . After the change if you want to back up the parameters , please OFF the power to the truck is stopped . After the error occurs, it returns to the parameters of the time that was backed up to the one before . parameter : Parameters that can be arbitrarily set change system parameter :Internal parameters that can not be arbitrarily set change
E026	Truck backup err (system parameter)	




- ✧ In error return method, kindly turn OFF the power supply by removing power cable plug from operation panel and then after verifying as per above mentioned dealing method, kindly insert the plug in operation panel and turn ON electric supply.
- ✧ When an error occurs , the error display is reset when you press the START / STOP button , and after checking the above-mentioned Resolution Please use eliminate the cause .





5.1.2 Regarding SELECT SWITCH

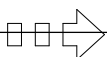
In IK-72T W2, it is possible to carry out continuous welding and TACK welding operation by selecting each mode and each parameter by SELECT SWITCH




Regarding each mode and each parameter it is given as below.


Operation unit display	Digital display	Setting range	Factory default
TRUCK SPEED  		50~1500mm/min	—
		2.0~59.0inch/min	
		Function	
		Continuous traveling mode It is used when carriage is to be run continuously . When this mode is selected, carriage starts traveling in the direction of directing arrow by pressing START/STOP button. It shows carriage traveling speed value during stop and traveling operation. It is possible to change carriage traveling speed by turning DATA DIAL during stop and traveling of carriage. ※Running speed of tack/stitch driving mode of the carriage also set here. Kindly turn DATA DIAL in clock wise direction to increase speed of carriage and in anti-clock wise direction to reduce speed.	
Operation unit display	Digital display	Setting range	Factory default
SWING SPEED 		400~1500mm/min	400mm/min
		15.7~59.0inch/min	15.7inch/min
		Function	
		<u>Weaving swing speed setting</u> Selecting when setting the swing speed during weaving operations. ※Weaving swing speed of tack/stitch driving mode also set here. During the stop in the digital meter, swing speed value is displayed. Swing speed can be changed by turning DATA DIAL during the stop. Swing speed can be changed during the carriage driving by combined SELECT SWITCH to SWING SPEED. In a state in which combined to SWING SPEED if you press the START / STOP button, weaving works alone. (An arc does not occur at the time of the movement alone)	
Operation unit display	Digital display	Setting range	Factory default
SWING WIDTH 		0~100.0mm	10.0mm
		0~3.94inch	0.39inch
		Function	
		<u>Weaving swing width setting</u> Selecting when setting the swing width during weaving operations. ※Weaving swing width of tack/stitch driving mode also set here. During the stop in the digital meter, swing width value is displayed. Swing width can be changed by turning DATA DIAL during the stop. Swing width can be changed during the carriage driving by combined SELECT SWITCH to SWING WIDTH. In a state in which combined to SWING WIDTH if you press the START / STOP button, weaving works alone. (An arc does not occur at the time of the movement alone)	

Operation unit display	Digital display	Setting range	Factory default
TIMER RIGHT		0~10.0s	0s
		Function	
		<p><u>Right torch stop time setting</u> Selecting when setting the right torch stop time during weaving operations. Right torch stop time of tack/stitch driving mode also set here. During the stop in the digital meter, right torch stop time value is displayed. Right torch stop time can be changed by turning DATA DIAL during the stop. Right torch stop time can be changed during the carriage driving by combined SELECT SWITCH to TIMER RIGHT. In a state in which combined to TIMER RIGHT if you press the START / STOP button, weaving works alone. (An arc does not occur at the time of the movement alone)</p>	
TIMER CENTER		0~10.0s	0s
		Function	
		<p><u>Central torch stop time setting</u> Selecting when setting the central torch stop time during weaving operations. Central torch stop time of tack/stitch driving mode also set here. During the stop in the digital meter, central torch stop time value is displayed. Central torch stop time can be changed by turning DATA DIAL during the stop. Central torch stop time can be changed during the carriage driving by combined SELECT SWITCH to TIMER CENTER. In a state in which combined to TIMER CENTER if you press the START / STOP button, weaving works alone. (An arc does not occur at the time of the movement alone)</p>	
TIMER LEFT		0~10.0s	0s
		Function	
		<p><u>Left torch stop time setting</u> Selecting when setting the left torch stop time during weaving operations. Left torch stop time of tack/stitch driving mode also set here. During the stop in the digital meter, left torch stop time value is displayed. Left torch stop time can be changed by turning DATA DIAL during the stop. Left torch stop time can be changed during the carriage driving by combined SELECT SWITCH to TIMER LEFT. In a state in which combined to TIMER LEFT if you press the START / STOP button, weaving works alone. (An arc does not occur at the time of the movement alone)</p>	

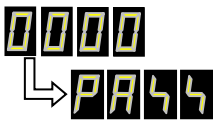
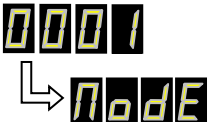
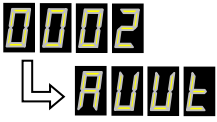
Operation unit display	Digital display	Setting range	Factory default
ORG		—	—
		Function	
<p><u>Origin position adjustment setting</u> During the carriage stopped or carriage traveling by turning the DATA DIAL you can adjust the position of the origin of the torch. Turn the DATA DIAL clockwise, the torch moves to the left. Turn in the counter-clockwise direction, the torch moves to the right.</p>			
Operation unit display	Digital display	Setting range	Factory default
ARC WAIT		0~10.0s	0.5s
		Function	
		<p><u>Arc stability time setting (It shows time till start of travelling of carriage after Arc ON)</u> This mode is selected to set Arc stability time at the time of continuous travelling mode and tack/stitch travelling mode. It is time till start of travelling of carriage by pressing START/STOP button. It carries out welding while carriage is in stop state during Arc stability time and countdowns digital meter time. It displays Arc stability time value on the digital meter while carriage is in stop state. Arc stability time can be changed by turning DATA DIAL only while carriage is in stop state.</p>	
 CAUTION	<p><u>Arc stability time setting (It shows time till start of travelling of carriage after Arc ON)</u> This mode is selected to set Arc stability time at the time of continuous travelling mode and tack/stitch travelling mode. It is time till start of travelling of carriage by pressing START/STOP button. It carries out welding while carriage is in stop state during Arc stability time and countdowns digital meter time. It displays Arc stability time value on the digital meter while carriage is in stop state. Arc stability time can be changed by turning DATA DIAL only while carriage is in stop state.</p>		
Operation unit display	Digital display	Setting range	Factory default
WELD LENGTH		1~999.9mm	20.0mm
		0.1~39.4inch	0.8inch
Function			

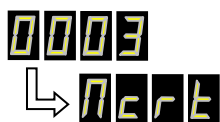


		<p><u>Weaving tack/stitch driving mode and welding distance setting</u> Carriage is selected by you when weaving tack/stitch run is done, also you select welding distance at the time of tack/stitch run. Press the START/STOP button while selecting this mode starts the running of the carriage in the direction of the arrow.※ While weaving welding, tack/stitch running is done. During the stop in the digital meter, welding distance value is displayed. Welding distance at the time of tack/stitch welding can be changed by turning DATA DIAL during the stop. If you want to change the welding distance in tack/stitch traveling, the SELECT SWITCH To change from match to WELD LENGTH, or you can change the operation of the arc changeover switch. (Please refer to page 26 for more information on how to change.)</p> <table border="1" data-bbox="550 609 1476 705"> <tr> <td data-bbox="550 609 758 705">  </td> <td data-bbox="758 609 1476 705"> When it is set to 0mm/0inch, it displays error and it is not possible to operate. Kindly operate by setting at more than 1mm or 0.1inch. </td> </tr> </table> <p>Carriage traveling speed will run with the value of the continuous running mode (CARRIAGE SPEED).</p>		When it is set to 0mm/0inch, it displays error and it is not possible to operate. Kindly operate by setting at more than 1mm or 0.1inch.
	When it is set to 0mm/0inch, it displays error and it is not possible to operate. Kindly operate by setting at more than 1mm or 0.1inch.			

Operation unit display	Digital display	Setting range	Factory default		
PAM	 <p>RDY WEL BSY ARC ERR</p>	0000~0011	—		
		<p style="text-align: center;">Function</p> <p><u>Parameter setup mode</u> Each parameter can be set from this mode. ※ This mode can be operated only while carriage is in stop state. Details about parameter numbers are given below. ※ For more information please refer to each function of the SELECT SWICTH . For more information on the parameters number, please check <u>Parameter number details.</u></p> <p>1)Turn SELECT SWITCH and</p> <table border="1" data-bbox="566 1227 774 1344"> <tr> <td style="background-color: black; color: yellow; font-weight: bold; font-size: 2em;">PAN</td> </tr> <tr> <td style="text-align: center;">□ □ □ □ □</td> </tr> </table> <p>RDY WEL BSY ARC ERR and match it.</p> <p>2)Select the parameter number to be changed by turning DATA DIAL. 3)Set by pressing START/STOP button. 4)Edit by turning DATA DIAL. It turns ON WEL of LED during editing.</p> <table border="1" data-bbox="582 1512 790 1624"> <tr> <td style="background-color: black; color: yellow; font-weight: bold; font-size: 2em;">8.8.8.8</td> </tr> <tr> <td style="text-align: center;">□ □ □ □ □</td> </tr> </table> <p>RDY WEL BSY ARC ERR Turn ON</p> <p>5)Set by pressing START/STOP button after completion of editing.</p> <p>※)While initializing, turn OFF electric supply for once after above mentioned operation, and turn ON the electric supply again and complete the operation.</p>		PAN	□ □ □ □ □
PAN					
□ □ □ □ □					
8.8.8.8					
□ □ □ □ □					

Parameter number details

Parameter number	Function		
	<p><u>Input prevent erroneous settings</u> Parameter values enables you to edit the parameters at the time of the 0114 In other value becomes an input of only this parameter. Please use for the erroneous input prevention. Setting range: 0000~9999 Factory default: 0114</p>		
	<p><u>Traveling function additional settings</u> Setting range: 0~7 Factory default: 0 You can add a function at the time of the truck traveling. Please enter the sum of the A value of each item is set value. Example: If you want to turn on the B0(A=1) and B2(A=4) Set value =1+4=5</p>		
		Function	A
			ON OFF
B0	After the end of welding, if ON to return automatically to the welding start position. ※ For the fillet weld of the copying operation, the original position and the displacement occurs.	1	0
B1	Process at the time of the stop in the tack welding STOP switch. OFF : Start tuck operation from the beginning ON : Start a tuck operation from the stop was continued. However, tuck portion was stopped during the welding is done the welding from the next tack without welding	2	0
B2	Tack welding, Empty run distance Extension function OFF : Only stops at the extension OFF between the arc changeover switch ON ON :Extended operating in the arc changeover switch 1 time ON, the stop at the second time of ON (self-holding)	4	0
	<p><u>Arc stability waiting time settings</u> Setting range : 0~10.0s Factory default: 0s ☞ It can be also set in ARC WAIT OF SELECT SWICTH.</p>		



Torch switch ON output time setting (crater Process)

Setting range :-0.1~1.0s

Factory default: 0

Set the torch switch output ON time during welding start-up to the welding power source.

- If the setting of a welding power source is Mu self-holding of (crater non-compliant), this parameter Please to 0 the data.
- In the case of self-holding Available (crater corresponding) Please set this value to a value of from 0.4 to 1.0.
- If, is set to the above values, please set to -0.01 If the arc interruption occurs frequently. In this case the signal is in the ON state until the arc STOP timing. However, there is a case that does not correspond to this specification by welding power source. Please adjust in the 1.0.

Welding return waiting time settings

Setting range: 0~999.9s

Factory default: 0s

This mode is selected to set welding return waiting time at the time of continuous travelling mode and TACK/STITCH travelling mode.

It displays welding return waiting time value while stopping on the digital meter.

It is possible to change the welding return waiting time by turning DATA DIAL during stopping of carriage.

By crater (self-holding) the presence or absence setting, will change the welding current in the welding return latency.









※Caution

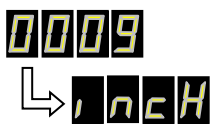



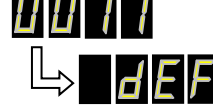
Please be sure to match the crater (self-holding) set in the welding power source side and the truck side. In accordance with the following table the crater (self-holding) switch of the welding power supply, please to fit the setting.

How to set the truck side, please set in the number 0003 parameter setting mode.






Welding power source	Truck
Crater (self-holding) "ON"	-0.1 or 0.1~1.0
Crater (self-holding) "OFF"	0000

	<p>Caution If the setting does not match, it might welding operation is not to set street. Please use the combined always crater (self-holding) setting.</p>
--	---

	<p>Welding return distance setting Setting range: 0~999.9mm 0~39.4inch Factory default: 0mm 0inch This mode is selected to set welding return distance at the time of continuous travelling mode and TACK/STITCH travelling mode. It operates after completion of welding return waiting time. It operates after completion of welding distance at welding return waiting time as 0s. It displays welding return distance value while stopping of carriage on digital meter. It is possible to change welding return distance by turning DATA DIAL during stopping of carriage.</p> <p>By crater (self-holding) the presence or absence setting, will change the welding current in the welding return latency.</p> <p>※Caution Please be sure to match the crater (self-holding) set in the welding power source side and the truck side. In accordance with the following table the crater (self-holding) switch of the welding power supply, please to fit the setting. How to set the truck side, please set in the number 0003 parameter setting mode.</p> <table border="1" data-bbox="480 842 1323 1014"> <thead> <tr> <th>Welding power source</th> <th>Truck</th> </tr> </thead> <tbody> <tr> <td>Crater (self-holding) "ON"</td> <td>-0.1 or 0.1~1.0</td> </tr> <tr> <td>Crater (self-holding) "OFF"</td> <td></td> </tr> </tbody> </table> <p> Caution If the setting does not match, it might welding operation is not to set street. Please use the combined always crater (self-holding) setting.</p>	Welding power source	Truck	Crater (self-holding) "ON"	-0.1 or 0.1~1.0	Crater (self-holding) "OFF"	
Welding power source	Truck						
Crater (self-holding) "ON"	-0.1 or 0.1~1.0						
Crater (self-holding) "OFF"							
	<p>Welding return speed settings Setting range: 50~1500mm/min 2.0~59.0inch/min Factory default:200mm/min 7.9inch/min This mode is selected to set welding return travelling speed at the time of continuous travelling mode and TACK/STITCH travelling mode. It displays welding return speed value during stopping of carriage on digital meter.</p>						
	<p>Welding frequency settings Setting range: 0~999time Factory default: 0time It is welding frequency at the time of TACK/STITCH travelling mode. It displays welding frequency during stopping of carriage on digital meter. Welding frequency at the time of TACK/STITCH travelling by turning DATA DIAL only while stopping of carriage. (It is not possible to make changes while carriage is travelling) If welding frequency is set to 0, it continues with TACK/STITCH travelling till START/STOP button or Limit switch is pressed.</p>						
	<p>Torch switch signal minimum time time setting Setting range: 0.4~1.5s Factory default: 0.7s Torch switch ON time, OFF time time setting to ensure this setting. If this value is small, so there is a case where welding power source is not able to receive the signal, please be careful.</p>						

	<p>Metric, Inch switch over settings</p> <p> : Metric  : Inch</p> <p>The displayed set value of speed and distance can be switched in metric and inches. Refer to "switch over method of metric and inch" for method to switch. ※ The factory default is the metric specifications.</p>
	<p>Speed, moving position correction</p> <p>Setting range: 50~200% Factory default: 100% Can run the display of the actual speed correction. Actual speed = Traveling display × [This parameter value]%</p>
	<p>Not used</p>




5.1.3 Metric, Inch switch over method

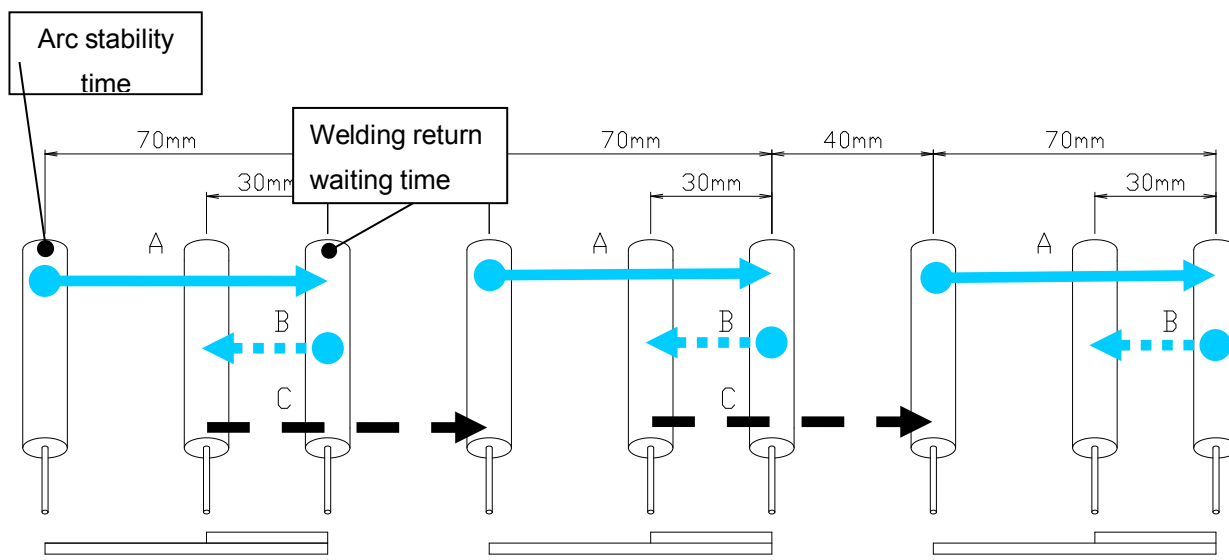
1. Turn ON the electric supply.
 2. Select "PAM" in selection switch and turn ON the START/STOP switch for once.
 3. Turn the DATA DIAL and select , then turn ON START/STOP switch for once.
 4. Select  or  and then turn ON the START/STOP switch for once.
-  : Metric specification (mm)
 : Inch specification (inch)
5. Turn OFF the electric supply.
 6. Turn ON electric supply again.
 7. Turn OFF electric supply after display of speed.
 8. Turn ON electric supply again(Changing over completion)
- ☞ Initial setting is Metric specification.
 - ☞ While using in Inch specification, kindly change it to Inch specification by above mentioned operation while changing internal board.
 - ☞ Kindly keep interval between turning ON/OFF of electric supply for more than 2 seconds.
 - ☞ Kindly carry out verification by traveling speed display after completion of changing over.
- (10~1500mm specification, 2.0~59.0 Inch specification)

5.1.4 Weaving tack/stitch running motion pattern diagram

Example 1) Weaving tack/stitch welding parameter setting

Welding distance	70mm / 2.76inch
Welding return distance	30mm / 1.18inch
Sky transmission distance	40mm / 1.57inch
Welding return waiting time	1sec
Arc stability time	1sec

Operation sequence	Movement
A	 Welding movement
B	 Welding return distance
C	 preliminary feeding distance






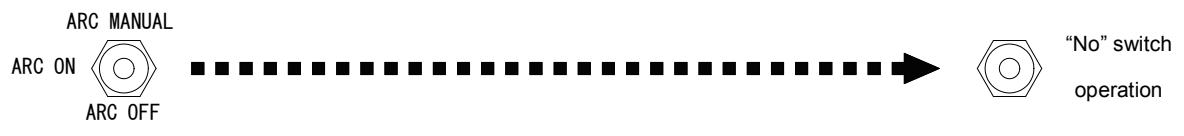
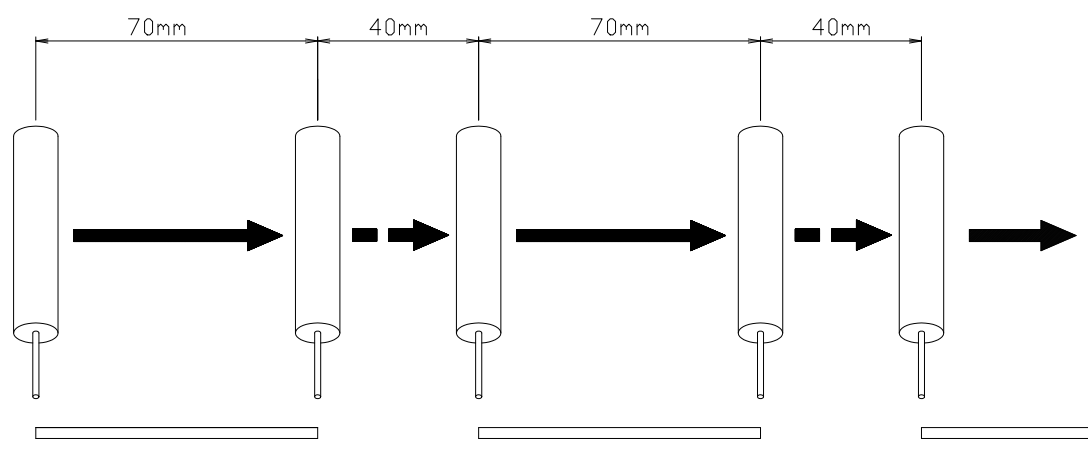
- ※In the weaving tack driving and at the time of the operation, the weaving operation will be done. At the time of sky transmission distance, the weaving operation is not done.
- ※Stop work by START / STOP button or limit switch, the running and welding can be stopped.
- ※Only when the limit switch is pressed during welding movement, welding move at the time the limit switch is pressed. Motion is finished and moves to welding return movement.
Driving and welding will stop at the time of the welding return operation is completed.
- ※If the START/STOP button has been pressed, in any action at the time the START/STOP button has been pressed Driving and welding stops.
- ※If you stop in the START / STOP button or limit switch, weaving unit will stop back to always origin position.

Further, "Welding distance", "Preliminary feeding distance", "Welding return distance" can be changed by operating "Arc changing over switch" during weaving tack/stitch welding operation.

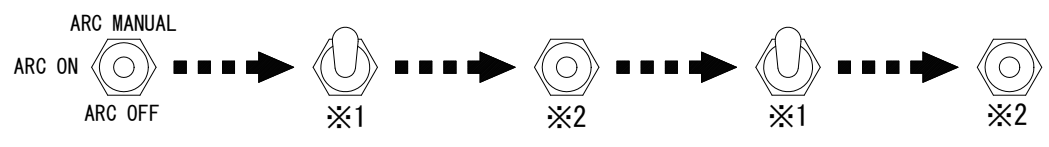
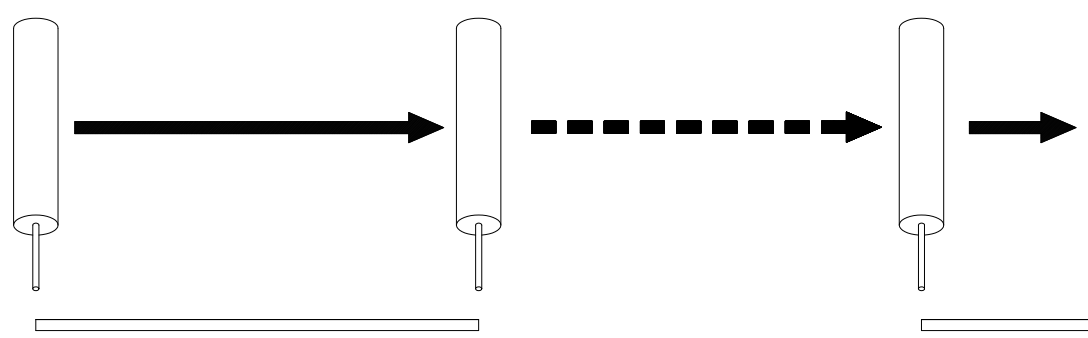
Kindly operate by referring to below mentioned settings while changing distance during weaving tack/stitch welding operation.

In case of normal operation ("Without" ARC changing over switch)

 Welding distance
 Preliminary feeding distance
 Transition of toggle switch



In case of extended operation ("With" ARC changing over switch)



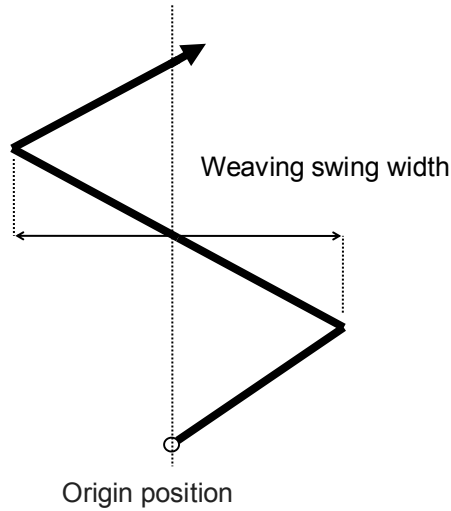
※1 Distance is extended till button is pressed
 ※2 It moves to next operation when released

5.1.5 Weaving movement time chart

The weaving movement at the time of the weaving welding becomes like the following time chart.

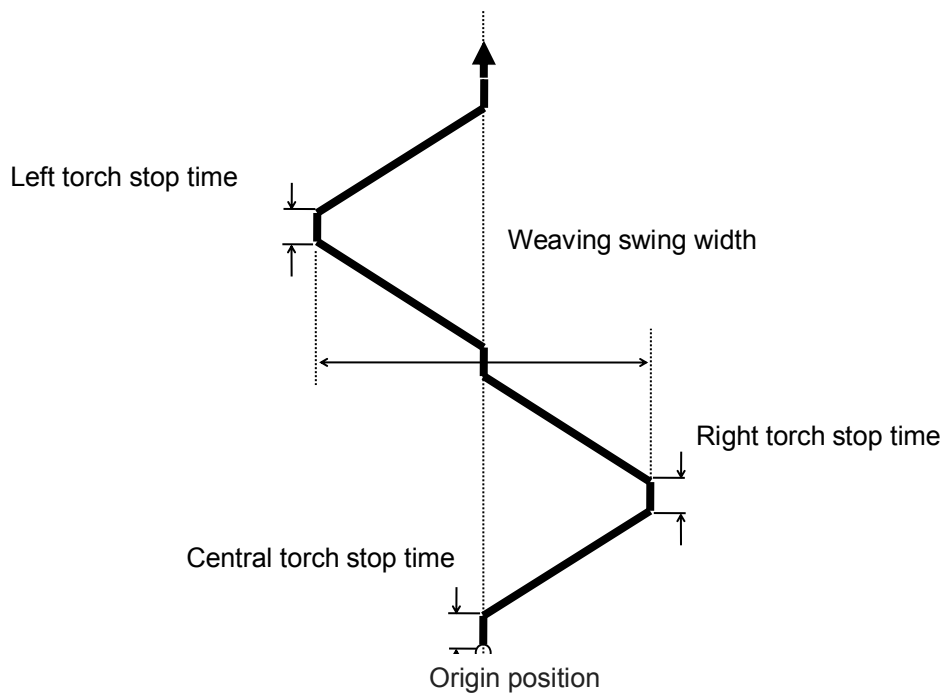
Example1) Parameter settings

Central torch stop time	0sec
Left torch stop time	0sec
Right torch stop time	0sec
Weaving swing width	10mm / 0.39inch



Example2) Parameter settings

Central torch stop time	1.0sec
Left torch stop time	1.0sec
Right torch stop time	1.0sec
Weaving swing width	10mm / 0.39inch

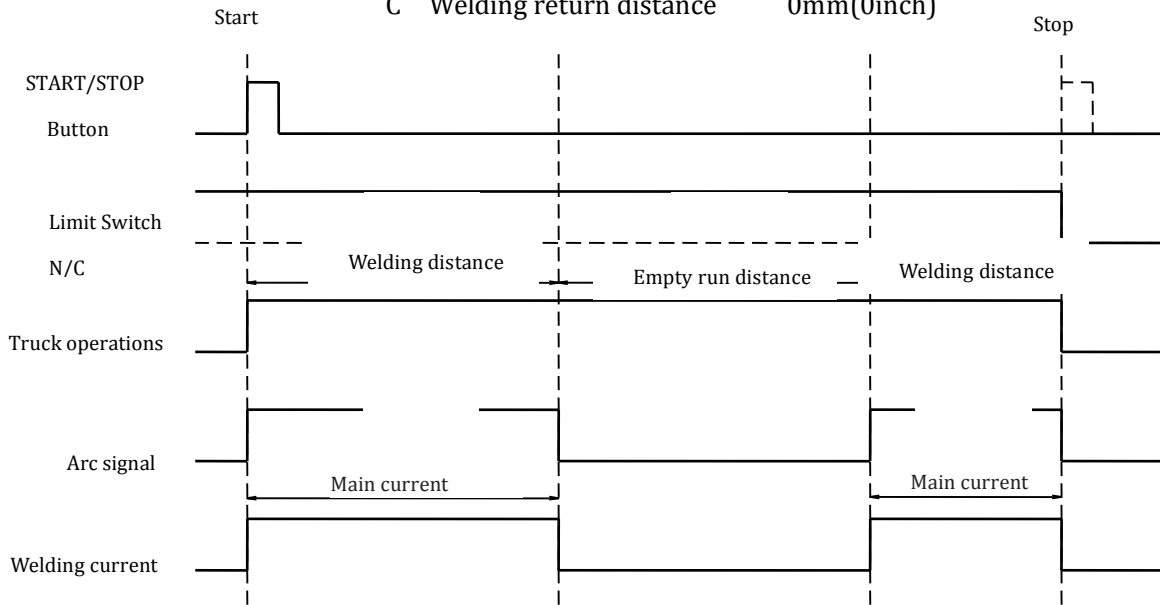


※Weaving swing speed, is the speed at the position 100 mm or 3.94 inch away from the center of rotation.

5.1.6 tack/stitch running motion Time chart

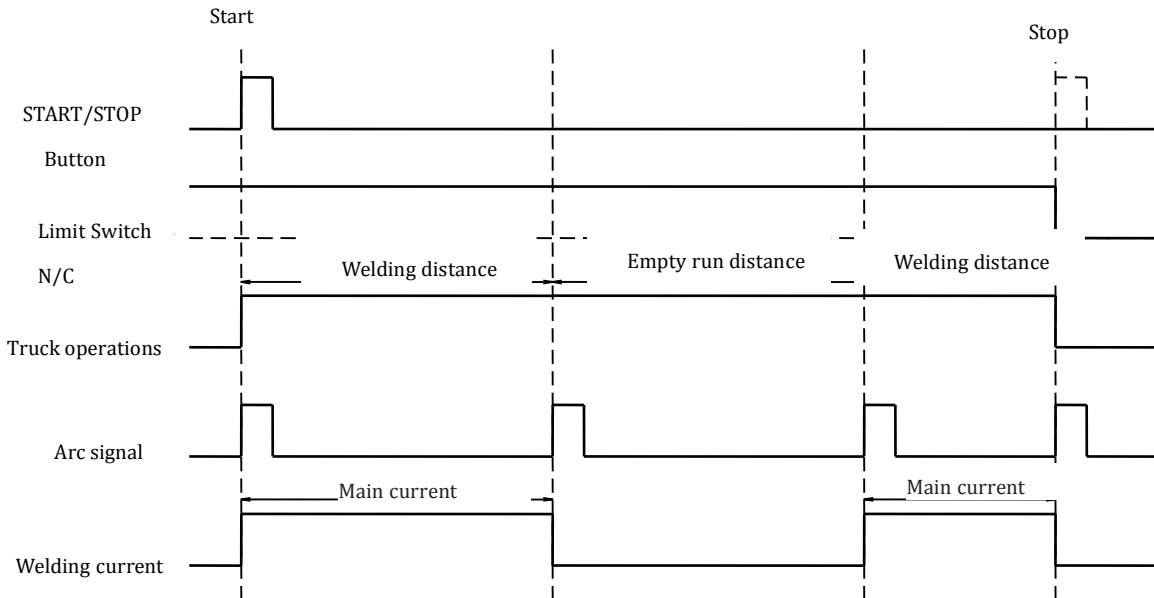
Crater (self-holding)"OFF" setting

- A Arc stability waiting time 0s
- B Welding return waiting time 0s
- C Welding return distance 0mm(0inch)



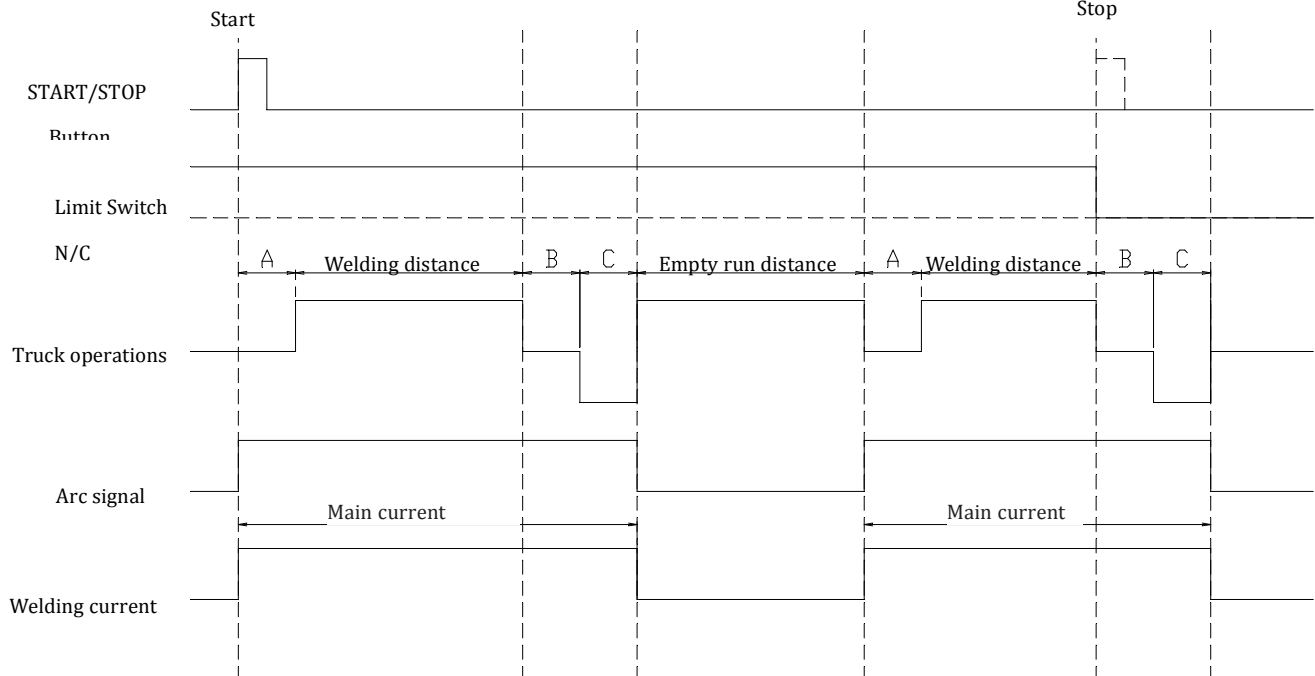
Crater (self-holding)"ON" setting

- A Arc stability waiting time 0s
- B Welding return waiting time 0s
- C Welding return distance 0mm(0inch)



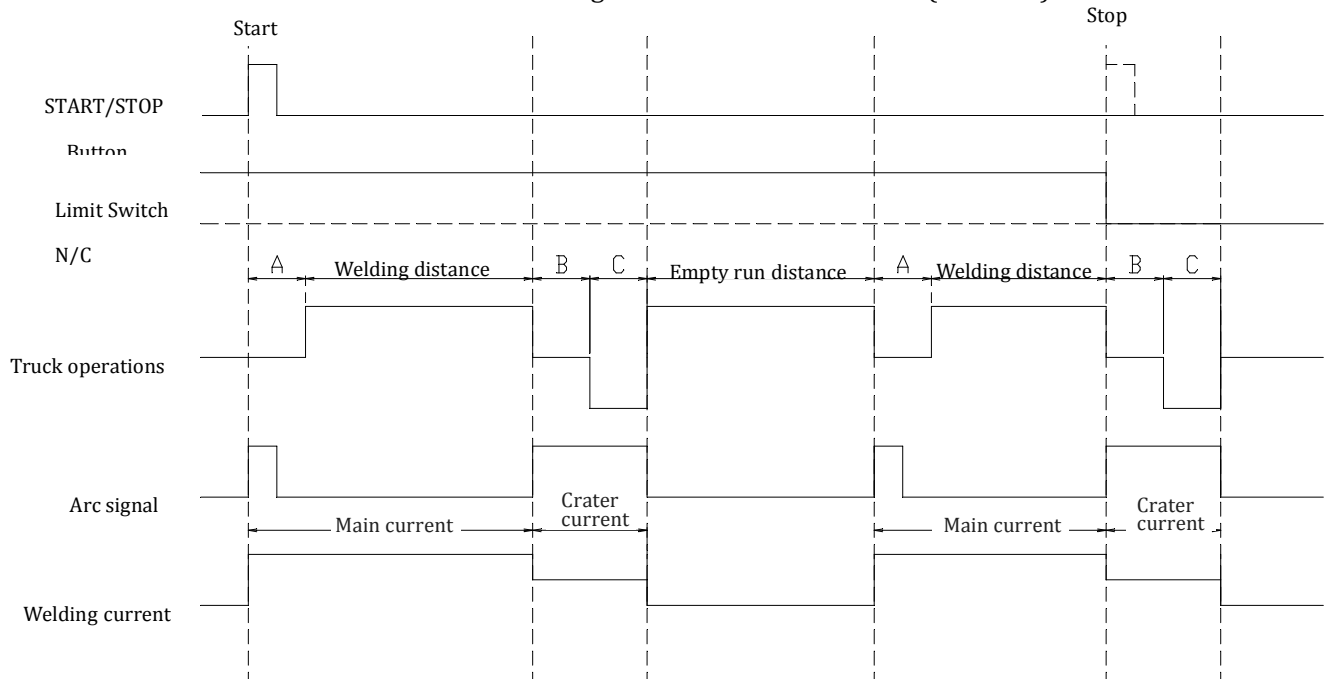
Crater (self-holding)"OFF" setting

- A Arc stability waiting time 1.0s
- B Welding return waiting time 1.0s
- C Welding return distance 5mm(0.19inch)



Crater (self-holding)"ON" setting

- A Arc stability waiting time 1.0s
- B Welding return waiting time 1.0s
- C Welding return distance 5mm(0.19inch)



6 Preparation Operation

6.1 Contents of package

The contents of the standard package are shown below. Check them carefully before assembling the machine

1) Main unit + WU-5R (IK-72T W2)	1set
2) Control cable	1set
3) Welding torch bracket (optional)	1set
4) M5/M6 hexagonal wrench	each 1 set
5) Operation Manual	1set

6.2 Machine Assembly

1. Take out the IK-72T W2 Body from Packaging Box
2. Take out the main body of weaving unit and accessories out of packing box.
3. It will secure the weaving unit body and the weaving mounting plate with the hexagon bolts BC-5×12 (with WS).
4. IK-72T W2 holder mounting bracket installed in the hexagon hole bolts BC-5×16 (WS, with WF).
5. Slide unit with holder mounting bracket fixed in the hexagon hole bolts BC-5×12 (with WS).
6. IK-72T W2 attach arm mounting plate with cross hole with plate screw SF-5×12.
7. Arm mounting plate removed from the IK-72T W2 is installed in the hexagon hole bolts BC-5×18 (WS, with WF).
8. IK-72T W2 operation panel is installed in pan head semi screws SP-3×6 (WS, with WF) WEAVING operation panel nameplate 3.
9. IK-72T W2 on which M6 eye bolt (with nut) is installed.
10. IK-72T W2 to which handle that is attached to the 90 ° direction installed in changing state.
11. Insert weaving unit cable metal plug into IK-72T W2 operation panel receptacles.

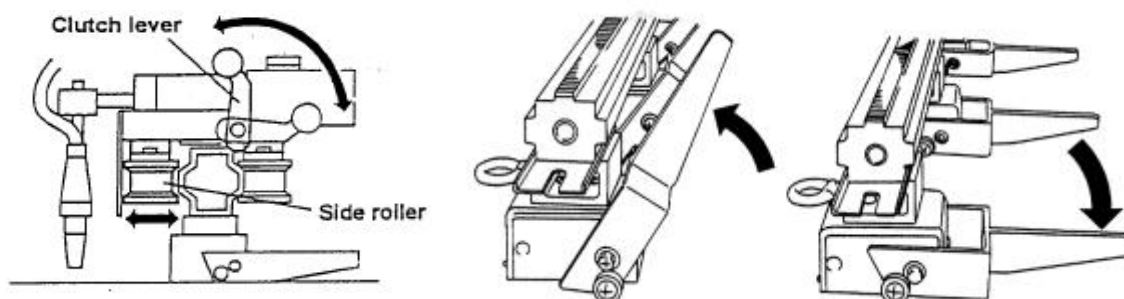


Fig. 2 Assembly diagram

6.3 Trouble and corrective measures

1) The machine will not move (the motor will not run)

Reasons of Failures	Inspection	Troubleshooting
1) The Power is turned off	Check the power; Check the plug.	
2) The power cables are disconnected	Use a detector to test the cables: "~" indicates being disconnected.	Fix the broken cables.
3) Poor contact	Check whether the wiring and terminal wiring board are connected correctly.	Reconnect the wires.
4) Switch failure	Remove the switch and use a detector to check whether the conduction is good between the terminals.	If the switch is damaged, it will be replaced.
5) Speed control resistor failure	Use a detector to detect the resistance which should be 50 K Ω .	If the resistor is damaged, it will be replaced.
6) The wires are disconnected.	Use a detector to check whether the conduction of the wires is good.	Replace the broken wires.
7) Motor failure	If the above test results are normal, then the motor is likely to be faulty.	Repair or replace the motor with a new one.
8) Controller failure	If the above test results are normal, then the controller is likely to be faulty.	Replace the damaged controller.

2) The machine will not move (the motor run)

Reasons of Failures	Inspection	Troubleshooting
1) speed control resistor	Remove the speed control resistor, and connect the detection probe to resistor terminals ② and ① or ② and ③; if the resistor is normal, slowly turn the knob, and the detector pointer should move between the 0-50K Ω .	Replace the faulty resistor
2) controller	If the 1) item test result is normal, it indicates that the controller is faulty.	Replace the faulty controller

3) The machine will not move (the motor run)

Reasons of Failures	Inspection	Troubleshooting
1) mechanical failure	Open the gear box and check the operation of the clutch.	Remove and clean dirt.
2) reduction gear idling	Although the motor is normal, the reduction gear remain idling even if the direction switch is turned and the driving wheel is braked manually..	Replace the gear (complete)



4) The device is not operating properly.

Reasons of Failures	Inspection	Troubleshooting
1) too fast as to the speed	Voltage is not normal.	Check voltage.
2) no low speed	1) Speed control resistor failure	Replace with a new resistor.
	2) Wire failure	Repair the wire.
	3) Motor failure	Repair the motor or install a new motor.
	4) Controller failure	Replace the controller.
3) no high speed	The supply voltage is reduced.	Use a detector to test voltage
4) vibration phenomenon	1) Gear wear	Replace with a new one.
	2) Clutch key wear	Replace or repair it.
	3) The gap between the shaft and the drive wheel is too large	Replace or repair it.
	4) The hoses or rubber insulated conductors affect the device running smoothly.	Pay attention when operating.
	5) The drive device and the drive wheel crack; or the external material wear.	Replace or repair them.

7 Welding operation


7.1 Preparation and procedure for welding

Conduct welding in the following manner, while referring to the Fig 3“System connection diagram” and the operation procedure in item 8.1.

	WARNING
Strictly observe the following to prevent electric shock.	
	<ul style="list-style-type: none"> ■ Turn OFF the control power and welding power, and then conduct operations from (1) to (4) shown below. ■ When you remove the plug, put rubber cap on the receptacle to prevent dust and dirt. ■ When you found dust and dirt in the receptacle, remove these before connecting electric power cable plug.


(1) Connect power cable to Receptacle of operation unit. (By connecting power cable, it turns ON LED on Digital meter and “RDY” at the same time. It also turns ON LED of “ARC” when ARC changing over switch is on ARC ON position)

(2) Mount the exclusive use torch on the torch holder of WU-5R.


	CAUTION
When tightening the torch holder, use the accompanying wrench bar or other tools in an appropriate size.	
<ul style="list-style-type: none"> ■ Improper tool can cause unexpected injury. 	

(3) Connect the torch to the mating wire feeder.

(4) Connect the 2-core metal plug of the control cable to the metal socket of the wire feeder and the input power plug to the nearest outlet.

	CAUTION
Set the welding power supply side in the “No Self-Holding (or No Crater Treatment)” position.	
<ul style="list-style-type: none"> ■ When it is set in the “Self-Holding (or Crater Treatment)” position, arcs will not stop even if welding is completed. 	

(5) Turn ON the power switch of the welding power supply and insert the wire into the torch. (Insert the torch cable straightly.)

	CAUTION
When inserting the wire, do not bring your head near the wire that comes out of the tip.	
<ul style="list-style-type: none"> ■ Your eyes can be damaged. 	


(6) Install equipment body on track (1D/3D)

- (7) Turn the handle of the slide unit assembly (UP/DOWN or FRONT/REAR) for torch position alignment.

Origin position of the torch can be adjusted by turning the DATA DIAL to fit the SELECT SWITCH

according to ORG.

- (8) Select each parameter by SELECT SWITCH and set parameter value by DATA DIAL.
(Kindly refer to Regarding SELECT SWITCH on page 28 for operation method)
- (9) Match SELECT SWITCH to either of continuous travelling mode or weaving tack travelling mode settings after completion of each parameter settings. (it matches with operation unit directing arrow display part. Kindly refer to Regarding SELECT SWITCH on Page no.19 for operation method)
- (10) Turn DATA DIAL and set travelling speed.
(LED of "BSY" turns ON during carriage operation and LED of "WEL" turns ON during ARC generation)
- (11) Determine the start position.
※Positioning of carriage (fine tuning) can be carried out easily by pressing Limit switch.
- (12) Finely adjust the welding conditions (current, voltage, speed, etc.) as necessary.
- (13) Press START/STOP button, and start welding. (Arcs will be generated at the same time.)

 CAUTION
Pay attention to the following during welding.
<ul style="list-style-type: none"> ■ Wear a welding mask, face guard, and welding protectors to protect yourself from arc light, fumes, and spatters.

- (14) Finely adjust the welding conditions (current, voltage, speed, etc.) as necessary.
- (15) Welding can be stopped by means of the stop switch or limit switch. (While the carriage stops, arcs stop at the same time.)

7.2 System connection diagram

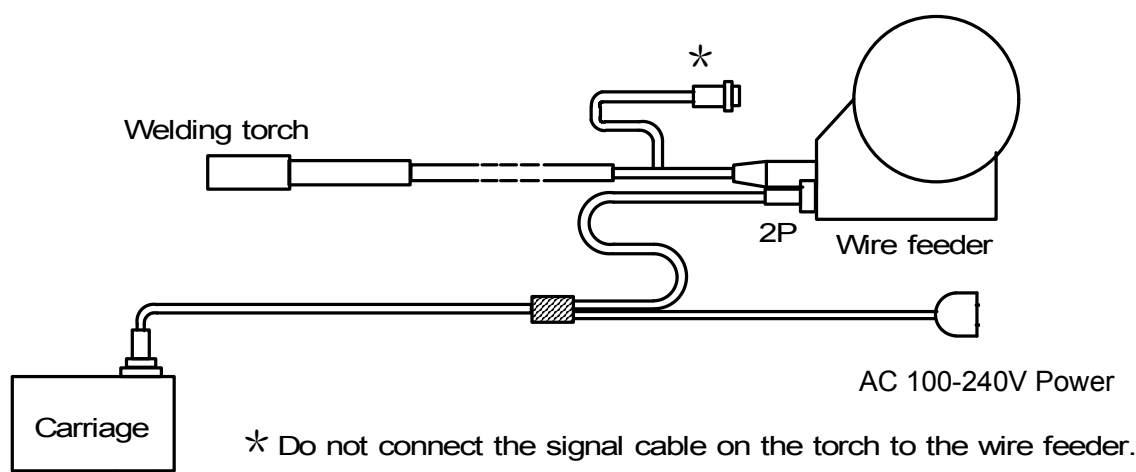


Fig 3 System connection diagram

7.3 Applicable welding machine and signal adaptor

This welding machine is to be used in combination with a semi-automatic (CO₂, MAG) welding machine (power supply and feeder) available on the market.

The signal cable plug is D25-2P (connectable to wire feeders made by Matsushita or Daihen). Plugs for connection to wire feeders of other manufacturer are also available as options. Contact us in that case. Contact the manufacturer of the wire feeder you use for purchasing a correct torch that matches the feeder.



(Note) The welding cable, gas hose and torch switch cable must be connected to the wire feeder. The connecting hardware and connector differ according to power supply manufacturer. Use the correct ones.

7.4 Operational precautions

- 1) Make sure that the operating voltage is as specified, If the difference exceeds $\pm 10\%$ of the input power(AC 100-240V), trouble can occur.
- 2) Clean the traveling surface to remove remaining bars, slugs, spatters, etc. before starting welding. (For prevention of slippage during welding.)
- 3) When long cables are necessary, take appropriate measures for the cables to prevent catching or entanglement by means of a jig crane, etc.

8 Maintenance

For correct operation of the machine for an extended period of time without trouble, the daily maintenance is indispensable. (Refer to 8.1 "Maintenance and inspection.")
When trouble occurs, refer to 6.3 "Trouble and corrective measures."

 WARNING	Kindly take care about following things to avoid getting an electric shock.
	<ul style="list-style-type: none"> ■ Kindly remove input plug from outlet while checking, dis-assembling or repairing and turn OFF the control source while leaving. If it is necessary to carry out checking in the energized state, professional engineer having enough knowledge and skill about electric handling should go since there is risk of short circuit, getting electric shock.

- Do not use welding equipment without case or cover.
- Kindly use power outlet with earth pin outlet since input plug has earth pin. It is connected to main body of carriage in operation panel.
- Kindly use input voltage within $\pm 10\%$ for power supply input to input plug (Kindly use input voltage in the range of AC100-240V)
There is risk of short circuit due to failure of printed board on operation panel.
- In case of crack in insulation cover of power cable and torch cable, do not expose it to high temperature. There is risk of short circuit due to tearing of insulation covering.
- Kindly weld below the rated current and usage rate of torch to prevent dielectric breakdown due to overheating.
- Kindly place power cable and torch cable in proper manner so that they are not stretched or pulled. There is possibility of breakage of insulation by damaging holding part and connector part due to pulling.
- Do not throw or drop main body of carriage. There is risk of damaging insulation by breaking.
- While connecting to power cable plug to main body, kindly connect after verifying that foreign object is not touching to connector of main body, power cable plug. There is risk of connector erosion due to short circuit by foreign object.



WARNING

As for the attachment, removal of the drive wheel, please use 2 spanners without fail.

- Hold the driving wheel of the other side, when attaching or removing the driving wheels. And then loosen the hexagon nut on the side of attaching or removing the driving wheels.
There is the possibility that damages the part of drive relation.

8.1 Maintenance and inspection

8.1.1 Daily inspection

- (1) Whether the cleaning torch is blocked or worn.
- (2) Clean the wheels. (remove iron powder, etc.)
- (3) Clean insulation board
- (4) Cleaning the surface and sliding parts of the equipment
- (5) Check for excessive clearance or wear of sliding parts







8.1.2 Monthly inspection

- (1) Check the locking screws of the torch holder, tracing arm, handle, carriage bottom plate, etc. for looseness.
- (2) Check cables (torch and control) for twisting or broken sheathing.
- (3) Confirmation of the operation of limit switch.
- (4) Confirmation of smooth operation of the slide unit by means of the front/rear, up/down control knob.
- (5) Check the switches on the operation panel for looseness or breakage, and confirm the operation of switches.
- (6) Clean the conduit liner of the torch.
- (7) Check the operation panel, switches, and controls for looseness or breakage. Check their operation.

8.2 Recommended spare parts

- (1) Side gear assembly
- (2) Track (1D/3D)
- (3) Auto stop switch
- (4) Printed circuit board

8.3 Maintenance and inspection

Defects	Cause/check position				
(1) Slipping off of profiling while traveling	<ul style="list-style-type: none"> 1) Guide gear is not rotating. 2) Cable is stuck in and it is blocking smooth traveling of carriage. 3) Traveling surface is not smooth and wheel cannot touch the surface. 4) Lot of sputter is adhered on driving gear and carriage is not rotating smoothly. 				
(2) No electric power supply	<ul style="list-style-type: none"> 1) No power supply voltage to outlet. 2) Cable is disconnected. <table border="1" data-bbox="612 969 1378 1341"> <tr> <td data-bbox="612 969 876 1070" style="text-align: center;">WARNING</td> <td data-bbox="876 969 1378 1070">Kindly take care about following things to avoid getting an electric shock.</td> </tr> <tr> <td data-bbox="612 1070 876 1341" style="text-align: center;"></td> <td data-bbox="876 1070 1378 1341"> <ul style="list-style-type: none"> ■ Since above mentioned 1) and 2) checking are to be carried out while control power supply is ON, professional engineer having enough knowledge and skill about electric handling should go to prevent risk of short circuit, getting an electric shock. </td> </tr> </table>	WARNING	Kindly take care about following things to avoid getting an electric shock.		<ul style="list-style-type: none"> ■ Since above mentioned 1) and 2) checking are to be carried out while control power supply is ON, professional engineer having enough knowledge and skill about electric handling should go to prevent risk of short circuit, getting an electric shock.
WARNING	Kindly take care about following things to avoid getting an electric shock.				
	<ul style="list-style-type: none"> ■ Since above mentioned 1) and 2) checking are to be carried out while control power supply is ON, professional engineer having enough knowledge and skill about electric handling should go to prevent risk of short circuit, getting an electric shock. 				
(3) Traveling speed of carriage is not changing	<table border="1" data-bbox="612 1391 1378 1883"> <tr> <td data-bbox="612 1391 876 1514" style="text-align: center;">WARNING</td> <td data-bbox="876 1391 1378 1514">Kindly take care about following things to avoid getting an electric shock.</td> </tr> <tr> <td data-bbox="612 1514 876 1883" style="text-align: center;"></td> <td data-bbox="876 1514 1378 1883"> <ul style="list-style-type: none"> ■ Kindly carry out continuity check by tester while electric supply is turned OFF. ■ Since above mentioned 1) and 2) checking are to be carried out while control power supply is ON, professional engineer having enough knowledge and skill about electric handling should go to prevent risk of short circuit, getting an electric shock. </td> </tr> </table> <ul style="list-style-type: none"> 1) Defective motor 2) Defective printed board 3) Disconnection of motor encoder line 	WARNING	Kindly take care about following things to avoid getting an electric shock.		<ul style="list-style-type: none"> ■ Kindly carry out continuity check by tester while electric supply is turned OFF. ■ Since above mentioned 1) and 2) checking are to be carried out while control power supply is ON, professional engineer having enough knowledge and skill about electric handling should go to prevent risk of short circuit, getting an electric shock.
WARNING	Kindly take care about following things to avoid getting an electric shock.				
	<ul style="list-style-type: none"> ■ Kindly carry out continuity check by tester while electric supply is turned OFF. ■ Since above mentioned 1) and 2) checking are to be carried out while control power supply is ON, professional engineer having enough knowledge and skill about electric handling should go to prevent risk of short circuit, getting an electric shock. 				

<p>(4) No welding operation and no traveling of carriage at the pressing of START/STOP button while stopping of carriage</p>	<p>1) Limit switch at carriage traveling direction side is pressed. ⇨ Carriage starts traveling by pressing Limit switch which is at opposite side of carriage traveling direction. 2) Defective START/STOP button 3) Defective printed board 4) Defective Limit switch or disconnection Limit switch</p>				
<p>(5) There is welding operation but no traveling of carriage at the pressing of START/STOP button while stopping of carriage</p>	<p>1) Defective printed board 2) Disconnection of motor (disconnection of DC line or disconnection of both DC line and encoder line)</p>				
<p>(6) There is traveling of carriage but no welding operation at the pressing of START/STOP button while stopping of carriage</p>	<p>1) ARC OFF option is selected in Arc mode changing over switch. 2) No welding current. 3) Metal outlet for torch switch is not connected. 4) Kindly verify whether there is short circuit between ①-② metal outlet pin • In case of short circuit, welding current is defective • In case of no short circuit, there must be disconnection of cable , defective printed board</p>				
<p>(7) No stopping of welding operation and traveling of carriage at the pressing of START/STOP button during welding operation</p>	<p>1) Defective START/STOP button 2) Defective printed board</p>				
<p>(8) There is stopping of welding operation but no stopping of traveling of carriage at the pressing of START/STOP button during welding operation</p>	<p>1) Defective printed board</p>				
<p>(9) No stopping of welding and traveling of carriage even at pressing of Limit switch</p>	<p>1) Limit switch is not pressed completely. 2) Defective Limit switch *Kindly verify conduction of terminal 1- terminal 4 of Limit switch by tester. At normal conduction, it makes “click” sound at pressing of Limit switch and it turns OFF the conduction between terminals at the same time.</p> <table border="1" data-bbox="612 1547 1378 1756"> <tr> <td data-bbox="612 1547 874 1653" style="text-align: center;">WARNING</td> <td data-bbox="874 1547 1378 1653">Kindly check the conduction between terminals by tester while electric supply is turned OFF.</td> </tr> <tr> <td colspan="2" data-bbox="612 1653 1378 1756"> <p>■ If electric supply is turned ON during verification of conduction between terminals by tester, there is risk of electric shock due to short circuit.</p> </td> </tr> </table>	WARNING	Kindly check the conduction between terminals by tester while electric supply is turned OFF.	<p>■ If electric supply is turned ON during verification of conduction between terminals by tester, there is risk of electric shock due to short circuit.</p>	
WARNING	Kindly check the conduction between terminals by tester while electric supply is turned OFF.				
<p>■ If electric supply is turned ON during verification of conduction between terminals by tester, there is risk of electric shock due to short circuit.</p>					
<p>(10) There is stopping of traveling of carriage but no stopping of welding operation at pressing of Limit switch</p>	<p>1) Should be “with Self holding” option selected at welding current. * Kindly set it to “Without self-holding”. 2) Defective printed board.</p>				

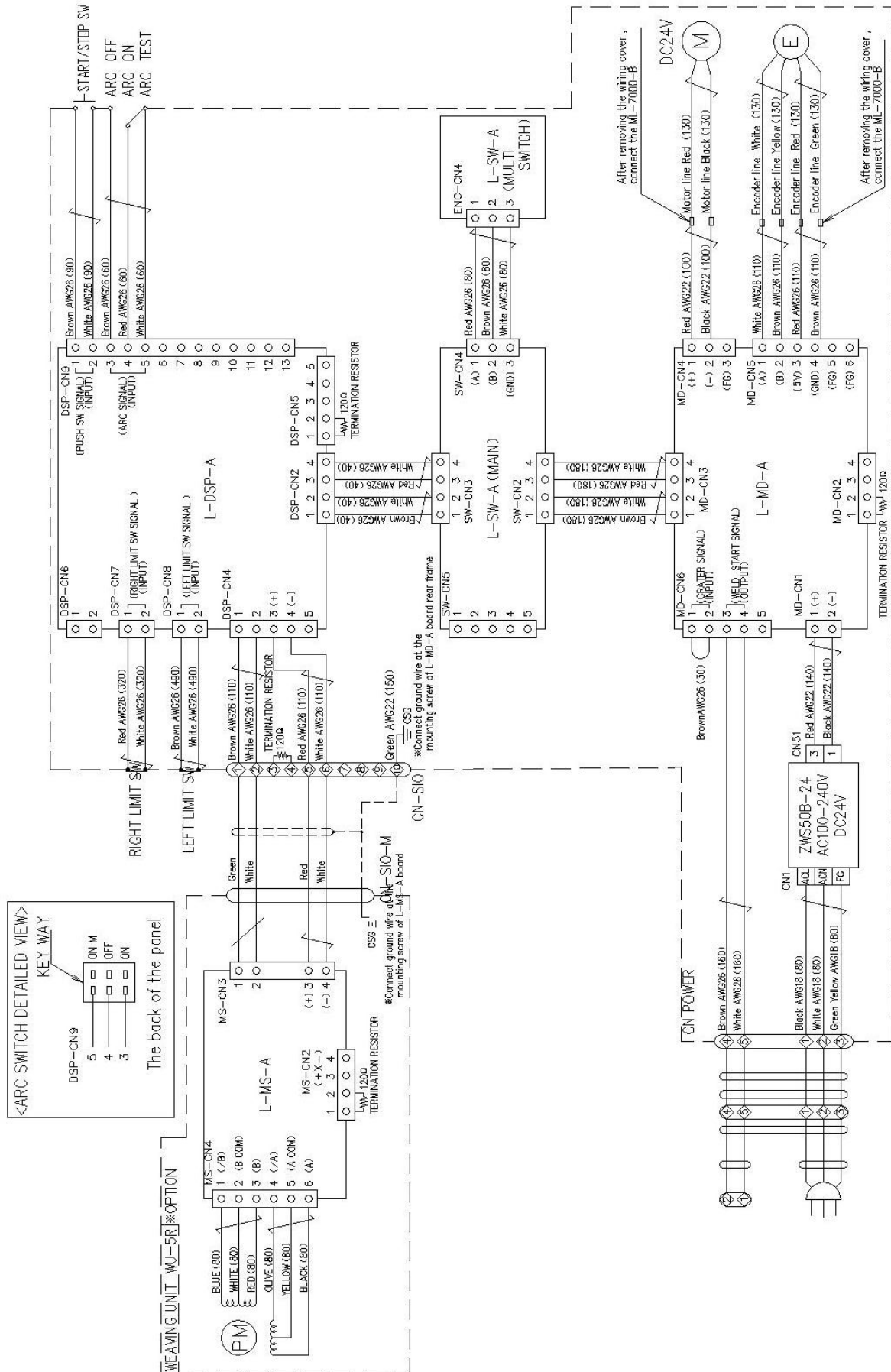
(11) There is stopping of welding operation but no stopping of traveling of carriage at pressing of Limit switch	1) Defective printed board
(12) Absorption force is not weakened even at drawing off magnet lever	1) Fault of Rotating Shaft of Track (1D/3D) Magnet *If the rotating shaft broken it must be changed.
(13) Display of Digital meter does not change even after turning of SELECT SWITCH	1) Defective printed board. 2) Disconnection of electric wire
(14) Numeric value of parameter does not change	1) Defective printed board. 2) Disconnection of electric wire
(15) Error display E.008 is displayed.	1) Motor DC line and encoder line are pulled out or disconnected. *Kindly remove the operation panel and check state of these lines. Motor DC line is connected to MD-CN4 and encoder line is connected to MD-CN-5.
(16) Error display E.010 is displayed.	1) Welding current is turned OFF. 2) Disconnection of power supply cable 3) slipping off of signal connector
(17) Error display E.014 is displayed.	1) Welding distance parameter of weaving tack travelling mode becomes 0 . * Kindly set welding distance parameter at more than 1mm or 0.1inch.
(18) There is huge difference between parameter setting Welding distance, free travelling distance, welding return distance and actual travelled distance	1) Gear wear. * Kindly change it to new product.
(19) Digital display of speed units are different from the settings which are used.	1) There is possibility that the setting of Metric and inch specifications are different from the used specification. Switch the unit on the basis of the switching method of operation. Refer to " ✕metric,inch switch over method " for changing method. <u>✕Be sure that metric inch switching operation is done when the board is replaced.</u>
(20) Digital display of the control panel table for weaving not shown.	1) WU-5R is not connected to the body. 2) Connection cable is disconnected. Printed circuit board failure.

(21) Digital display on the control panel are displayed for weaving but WU-5R is not working.	1) Stepping motor failure. 2) Printed circuit board failure. 3) Weaving swing width has become to 0. Referring to page 19 please change weaving swing width.
(22) Digital display of the parameters are not reflected in the weaving operations.	1) Stepping motor failure. 2) Printed circuit board failure.
(23) Digital display of speed units are different from the settings which are used.	2) There is possibility that the setting of Metric and inch specifications are different from the used specification. Switch the unit on the basis of the switching method of operation. Refer to " ※metric,inch switch over method " for changing method. <u>※Be sure that metric inch switching operation is done when the board is replaced.</u>

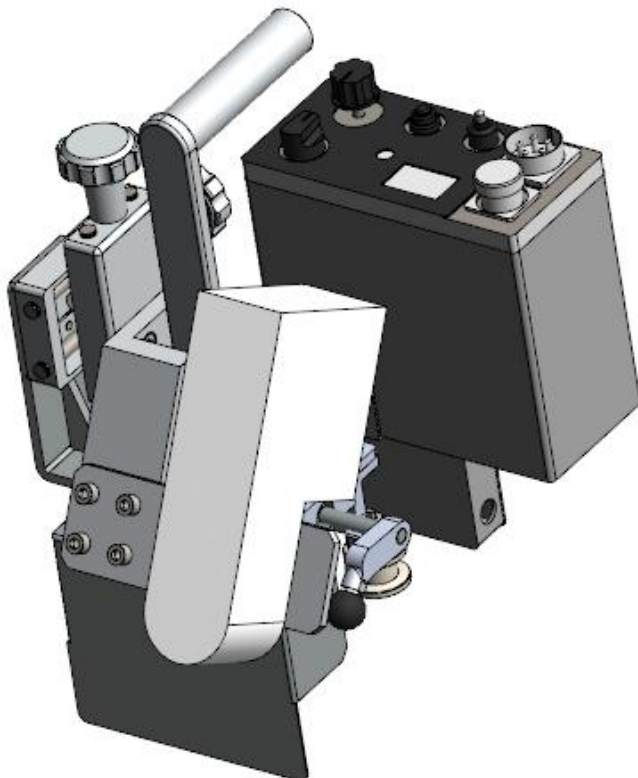
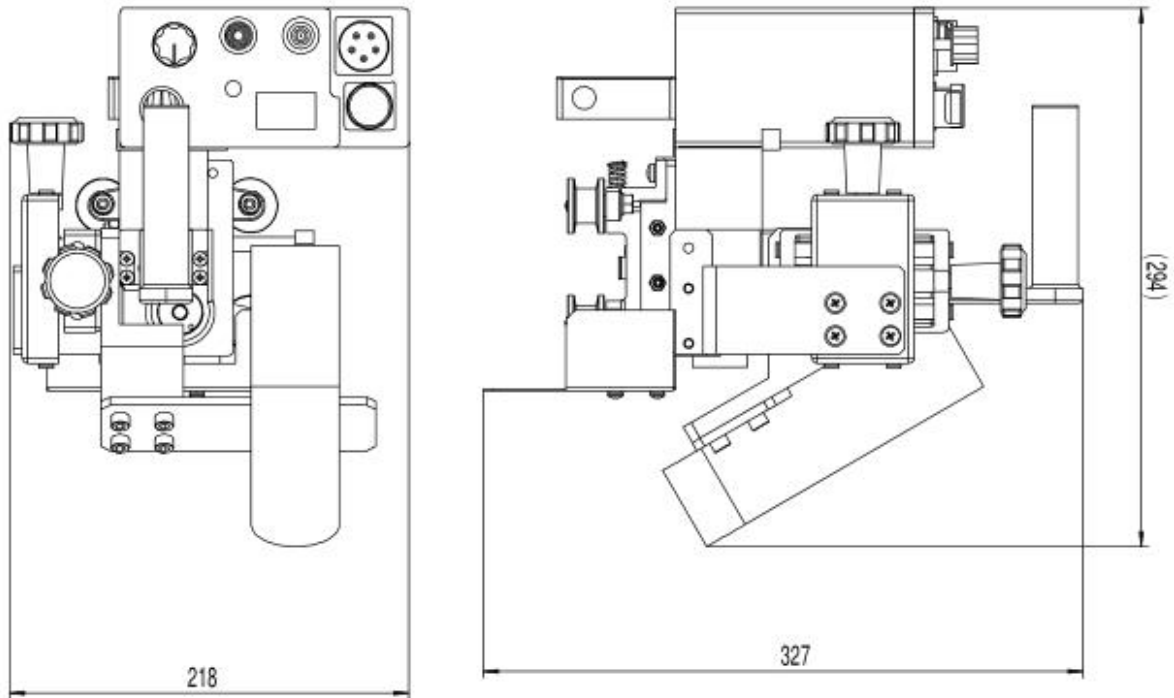
8.4 Warranty

This is thoroughly inspected and tested before leaving the factory, and guaranteed for 12 months from the date of purchase against defective workmanship and material. Should any trouble develop, return the complete equipment prepaid to KOIKE Sanso Kogyo Co., Ltd.
 Authorized KOIKE Distributor.

9 Wiring diagram

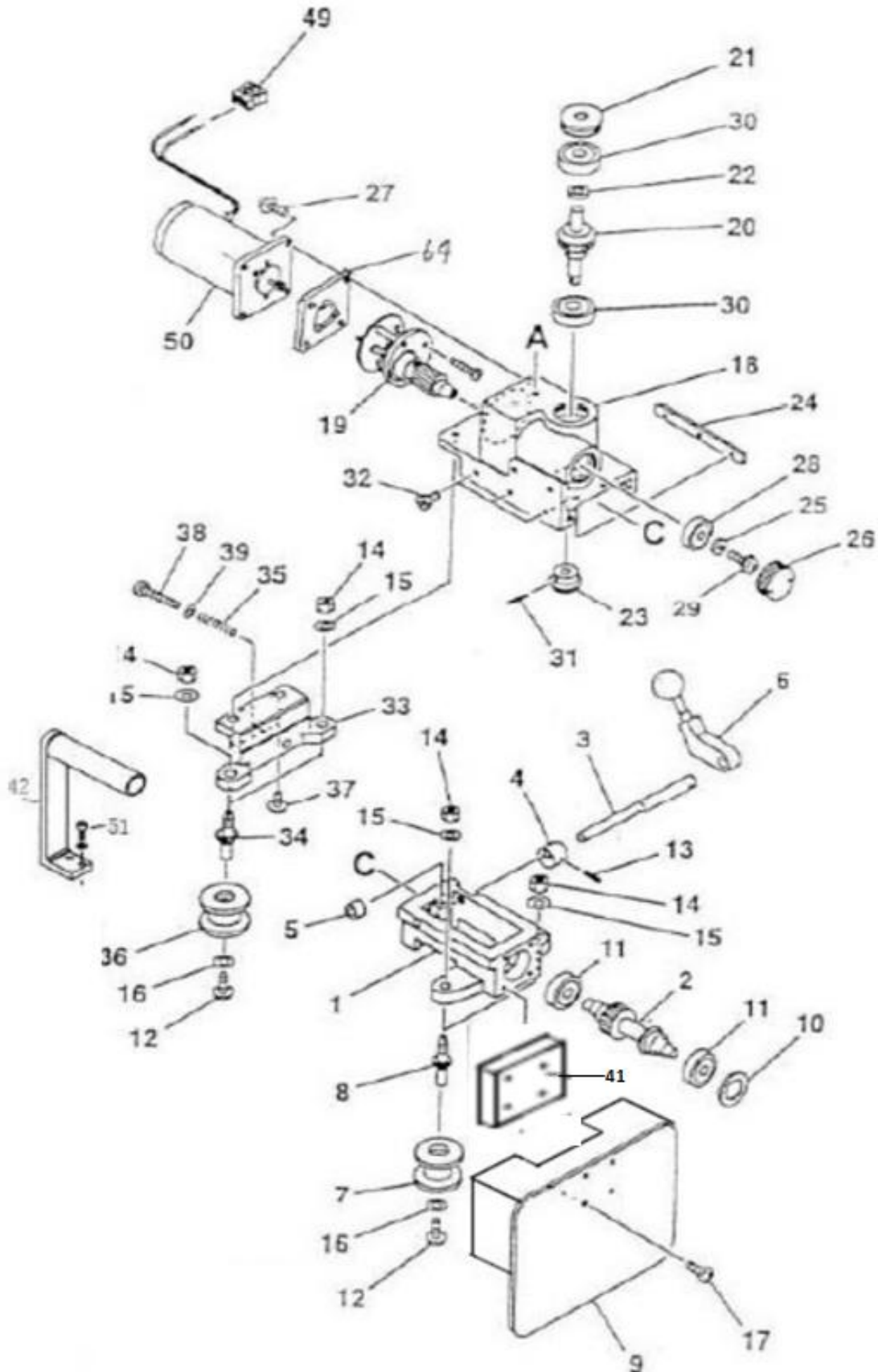


10 Assembly drawing of IK-72T W2



11、 Part List

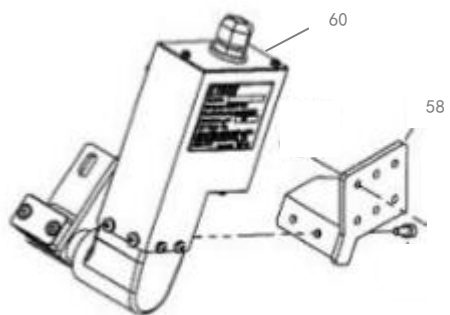
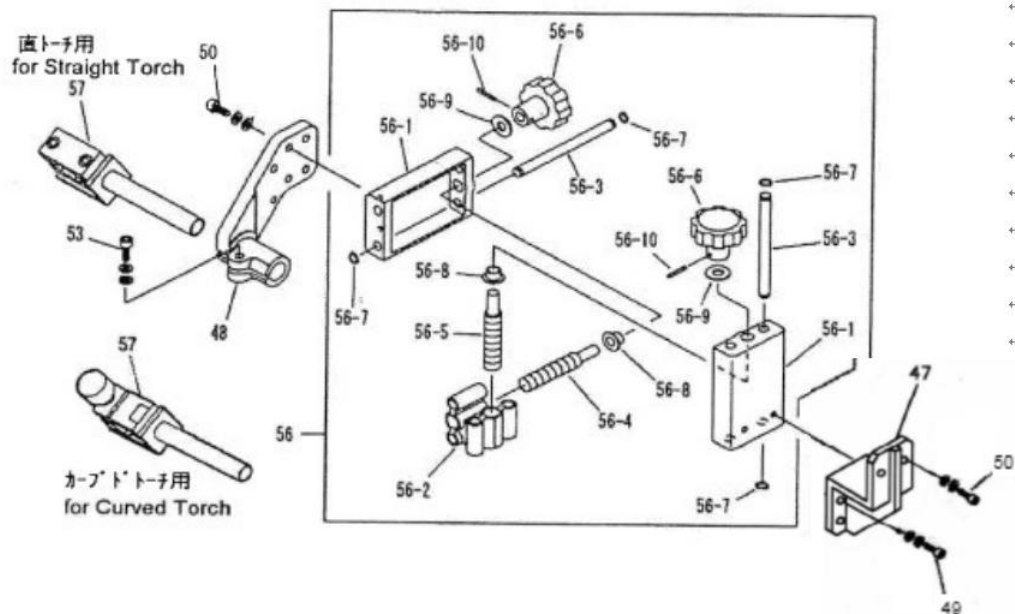
11.1 Main and Driving units



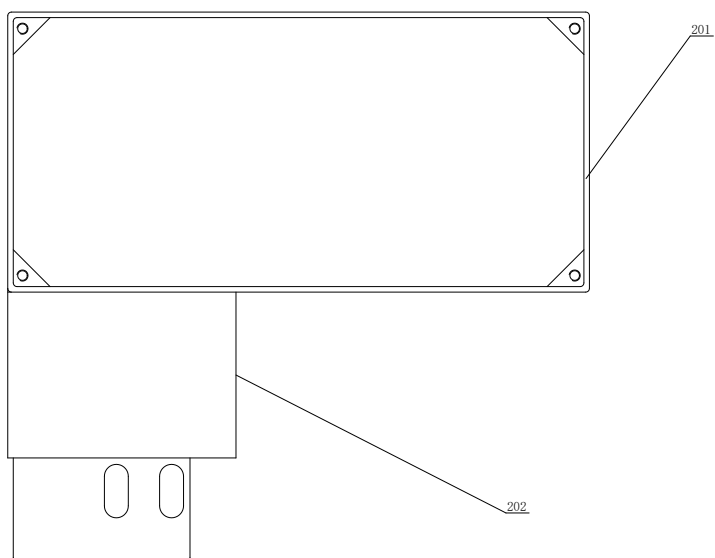
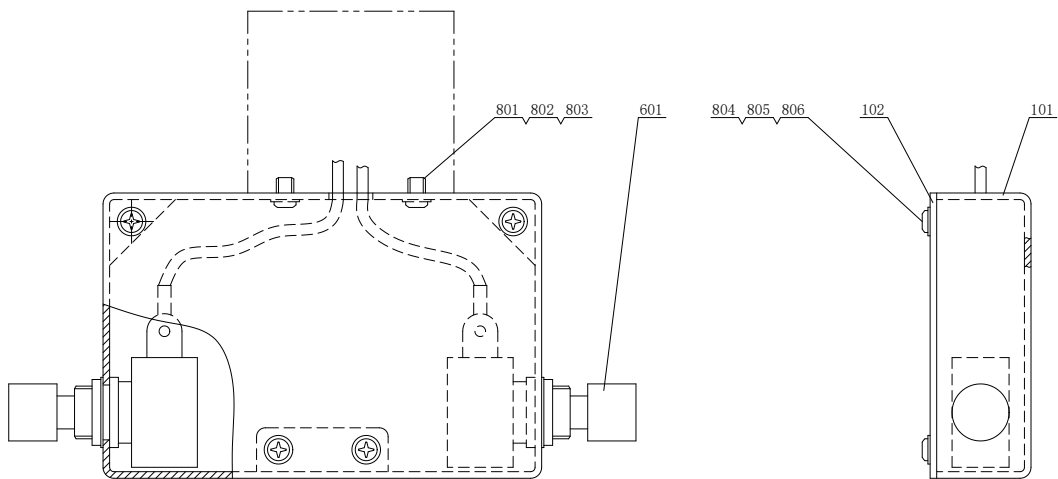
Main and driving units

ITEM NO.	PART NAME	Q'TY	STOCK NO.	REMARKS	ITEM NO.	PART NAME	Q'TY	STOCK NO.	REMARKS
1	Machine base	1	T60031674		36	Side gear assembly	2	T60031611	
2	Drive shaft assembly	1	T60031606		37	Screw	2	T6C530514	SP-5×14
3	Clutch shaft	1	T60038839	102L.	38	Hexagon bolt	1	T6C030530	BC-5×30
4	Eccentric collar	1	T60031608		41	Insulating board just	1	T89000612	
5	Stopper	1	T61000811		42	Handle	1	T61000601	
6	Clutch holder assembly	1	T60031610						
7	Side gear assembly	2	T60031611		50	Motor(with pinion)	1	61001570	
8	Side gear shaft(A)	2	T60031612		51	Hexagon blot	2	T6C440620	BC-6x20(WS)
9	Heat shield	1	T89000497						
10	Liner	1	T89001535		64	Fange	1	30000242	
11	Bearing	2	T6A030627	627ZZ ★					
12	Screw	4	T6C530306	SP-3×6 with WS					
13	Spring pin	1	T6B022012	PR-2×12					
14	Nut	4	T6D010060	NH-6					
15	Washer	4	T6D500060	WF-6					
16	Washer	4	T6D500030	WF-3					
17	Screw	4	T6C520408	SP-4×8					
18	Gear box	1	T60031615						
19	Gear assembly	1	T61000715	With screw					
20	Worm wheel assembly	1	T60031617						
21	Bearing retainer	1	T60031618						
22	Collar(A)	1	T60031619						
23	Bevel gear (B)	1	T60031620						
24	Slide key	1	T60031621						
25	Washer	1	T60031015						
26	Bearing retainer	1	T60031014						
27	Screw	4	T6C520416	SP-4×16					
28	Bearing	1	T6A030627	627ZZ ★					
29	Screw	1	T6C520408	SP-4×8					
30	Bearing	2	T6A030628	628ZZ ★					
31	Spring pin	1	T6B022516	PR-2.5×16					
32	Screw	3	T6C540515	SS-5×15					
33	Side gear bracket	1	T60031675						
34	Side gear shaft(B)	2	T60031613						
35	Spring	1	T60031676						

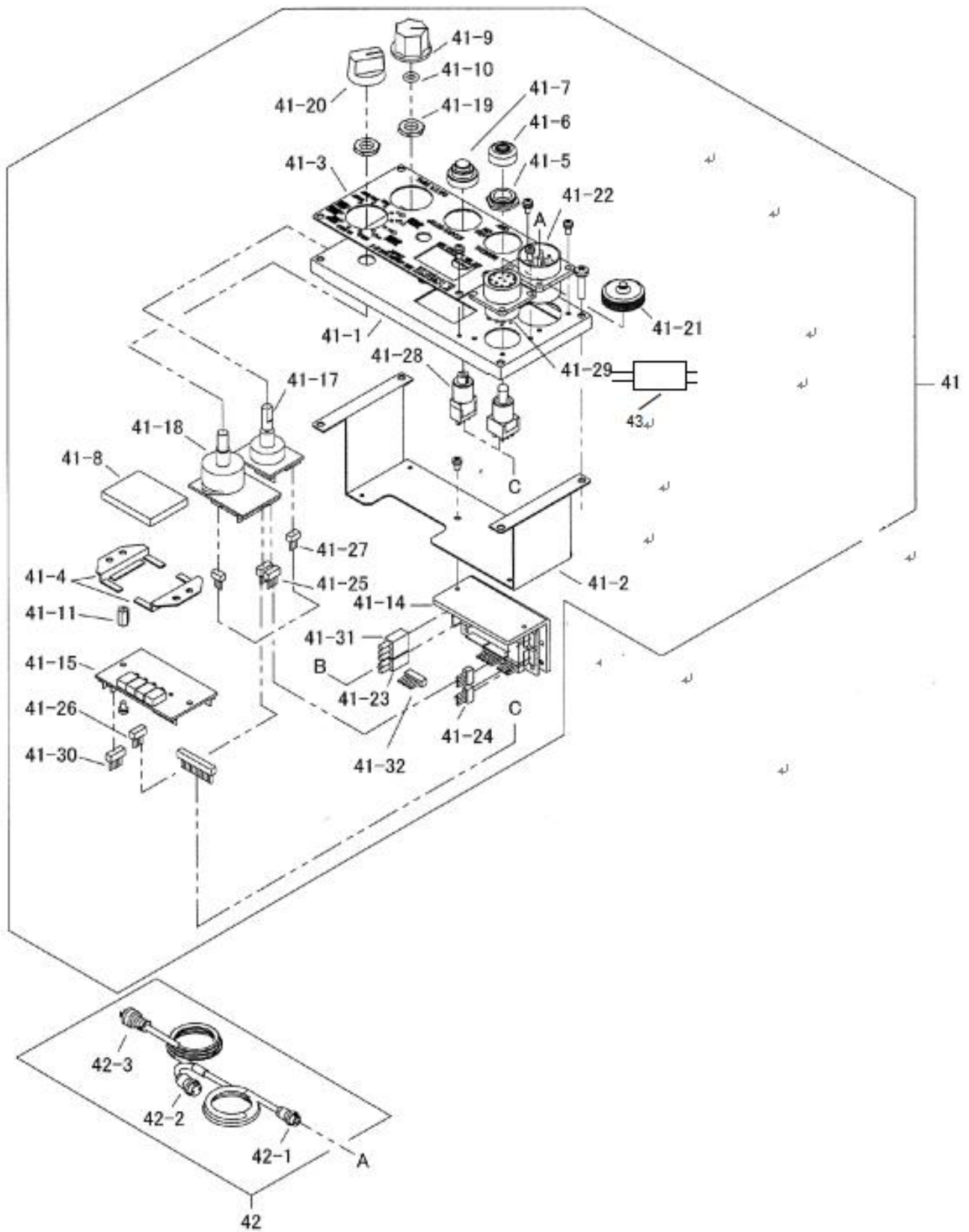
11.2 Torch holder



11.3 Limiting device



11.4 Electrical parts



Electrical parts

ITEM No.	PART NAME	QT	STOCK No.	REMARKS	ITEM No.	PART NAME	QT	STOCK No.	REMARKS
41	Operation panel assembly	1	61007880		41-30	Terminal resistance	1	61006520	DSP-CN5 (5P)
41-1	Panel board	1	61006484		41-31	Extension harness ass' y	1	61006506	Moter line
41-2	Power blacket	1	61006512		41-32	Extension harness ass' y	1	61006507	Encoder
41-3	Name plate	1	61006513		42	Machine connection cable	1	T95D02429	Vietnam
41-4	Glass pressing	2	61006450		42-1	Plug	1	T30001884	Vietnam
41-5	Dust proof nut	1	60032480		42-2	Plug	1	T6N460013	Vietnam
41-6	Water proof cap	1	60032431		42-3	Power plug	1	T95000741	Vietnam
41-7	Water proof cap	1	64000024		43	Filter	1	T95001086	
41-8	Dark gray glass	1	61006298						
41-9	Nob	1	60031249						
41-10	O-ring	1	60036472	P-6					
41-11	Spacer	2	64000497	Hexagon type M3 SP-10					
41-12	Spacer (metal)	1	64000518	Hollow type M3 ER-7					
41-13	Spacer(resin)	1	64000519	Hollow type M3 EP-7					
41-14	L-MD-A circuit board	1	61006243	※1					
41-15	L-DSP-A circuit board	1	61006246	※1					
41-16	Power circuit board	1	64000511	50W					
41-17	L-SW-A(MULTI SWITCH) circuit board	1	61006244						
41-18	L-SW-A(MAIN) circuit board	1	61006245	※1					
41-19	Volume nut	2	6D400001						
41-20	Nob	1	61005744	K-90-S					
41-21	Receptacle cap	1	64000525	NJC-20-Rca 70mm					
41-22	Receptacle assembly	1	61006514						
	Socket	1	T95001733	NCS-256-R (角)					
41-23	Output harness ass' y	1	61006505	CN51~MD-CN1 (4P~2P)					
41-24	Terminal resistance	1	61006519	MD-CN2(4P)					
41-25	Harness ass' y A(4P~4P)	1	61006508	MD-CN3~SW(MAIN)-CN2					
41-26	Harness ass' y B(4P~4P)	1	61006516	DSP-CN2~SW(MAIN)-CN3					
41-27	Harness ass' y C(3P~3P)	1	61006517	SW(MAIN)-CN4~SW(MULTI)-CN4					
41-28	Switch ass' y	1	61006518	DSP-CN9					
	Pushbutton switch	1	60038204	MB2011L/B					
	Toggle switch	1	6N110009	M-2029L/B					
41-29	Receptacle	1	64000523	NJC-2010-RF					

IK-72T W2 OPERATION MANUAL

Version T89002425

Date of issue: June.2019

KOIKE ENGINEERING TANGSHAN CO., LTD.