

Portable Automatic Welding Carriage for fillet welding



T89001974

# IK-72 WELDING 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.**

IK-72 WELDING

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
	<b>DANGER</b>	Improper handling is very likely to cause death or serious injury.
	<b>WARNING</b>	Improper handling can cause death or serious injury.
	<b>CAUTION</b>	Improper handling can cause injury or physical damage. It is also used to point out dangerous habitual action.
	<b>Notice sign</b>	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.

## IK-72 WELDING

- 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 controller made or recommended by a welding machine manufacture.
- Read the instruction manual for the gas flow rate controller 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 roller 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 roller 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.**

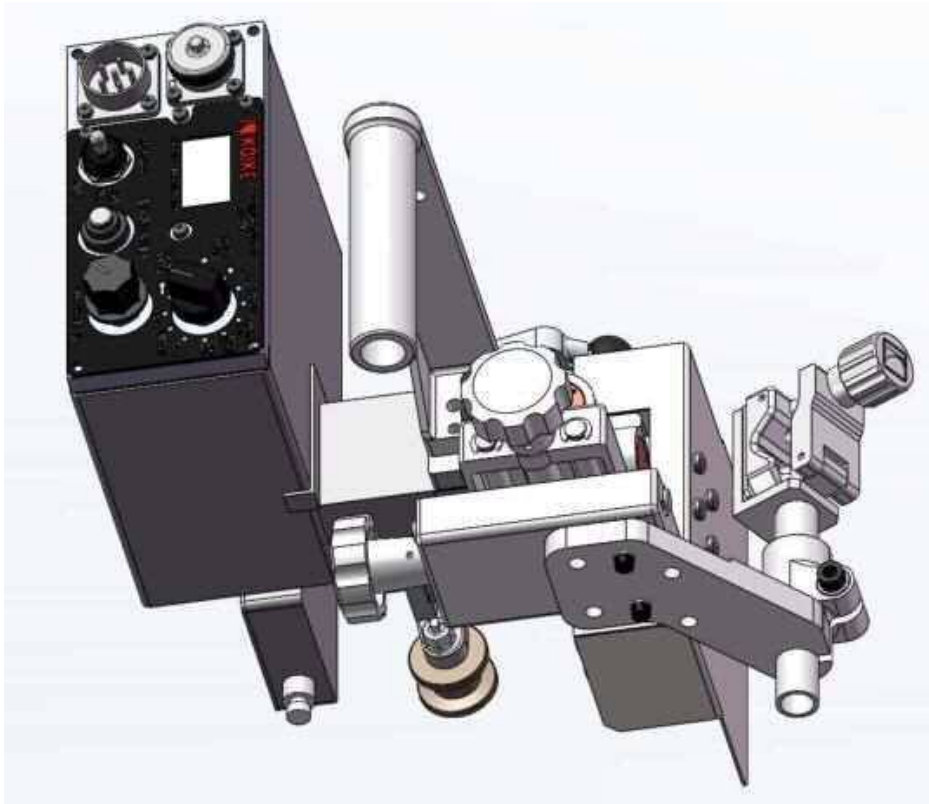
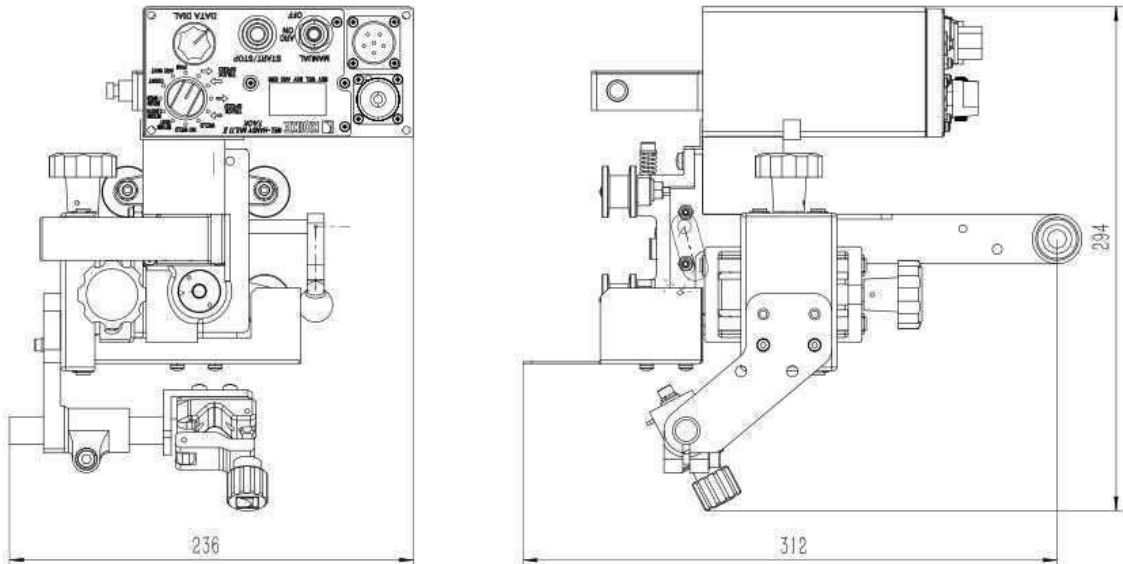


- Spatters and hot base metal right after welding can cause fire.
- Imperfect connection of cables or imperfect contact on the route of the electric current on the steel bar and other base metal can cause fire because of heating due to resistance.
- Arcs generated on the container of gasoline or other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

Safety labels and labels for correct operations are stuck to the machine.

- Carefully read labels before operation and follow the instructions decried on them.
- Never peel off the labels. Keep them clean and legible at all times.





## 4 Features and specifications

### 4.1 Features

This machine 'IK-72 WELDING' 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 powerful magnet has dramatically enhanced the tracing reliability and tractive force, thereby ensuring stable traveling.
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. The roller arm is possible the change of taking in and out with one-touch operation due to the fixation ceremony by the screw.
10. The height of the tracing roller can be changed in three stages.
11. Motor with encoder is installed and actual speed is displayed on digital meter.
12. 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



The following configuration becomes IK-72 WELDING configuration. If you have purchased in the WU-5R alone, please refer to page 22.


1. Main unit	1set
2. Control cable	1pc
3. Exclusive use welding torch (option)	
4. Accessories	
*Hexagon wrench (M6/M5)	1pc each
Instruction manual	1pc



### 4.3 Specifications

Item	Specifications
Model	Weaving unit WU-5R
Input power supply	DC24V 1.2A (supplied from IK-72 WELDING)
Weight	5kg
Carriage dimensions	L125×W91×H185mm(Includes torch holder) L4.9×W3.6×H7.3inch(Includes torch holder)
Drive motor	2 phase excitation stepping motor Step angle 1.8degrees
Mechanical section	Reduction ratio 1/318 Length From the rotation center to the torch tip 100mm / 3.94inch
Forward/backward angles	5°
Allowable torque	20kgf · cm / 17.4lbf · inch ※ It becomes numeric value in the weaving unit drive shaft portion. By the hold method of the blowtorch, the numerical value mentioned above may not appear. So, please note this beforehand.
Torch holder	For direct torch For curved torch

## 5 Method of operation



 WARNING	<p><b>Kindly take care about following things to avoid getting an electric shock.</b></p>
	<ul style="list-style-type: none"> <li>● 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.</li> </ul>
<ul style="list-style-type: none"> <li>● Do not use welding equipment without case or cover.</li> <li>● 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.</li> <li>● Kindly use input voltage within <math>\pm 10\%</math> 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.</li> <li>● 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.</li> <li>● Kindly weld below the rated current and usage rate of torch to prevent dielectric breakdown due to overheating.</li> <li>● 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.</li> <li>● Do not throw or drop main body of carriage. There is risk of damaging insulation by breaking.</li> <li>● 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.</li> </ul>	

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

 WARNING	<p><b>Kindly take care about following things to avoid falling off of carriage</b></p>
	<ul style="list-style-type: none"> <li>● 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.</li> </ul>

**5.1 Operation panel**

V3.33

 <p><b>WARNING</b></p>	<p>Kindly take care about following things to avoid getting an electric shock.</p>
	<ul style="list-style-type: none"> <li>■ 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.</li> </ul>

- 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 DC 24V)  
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 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.
- Never fail to turn OFF the power switch (1) before attaching or detaching the receptacle.
- 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.

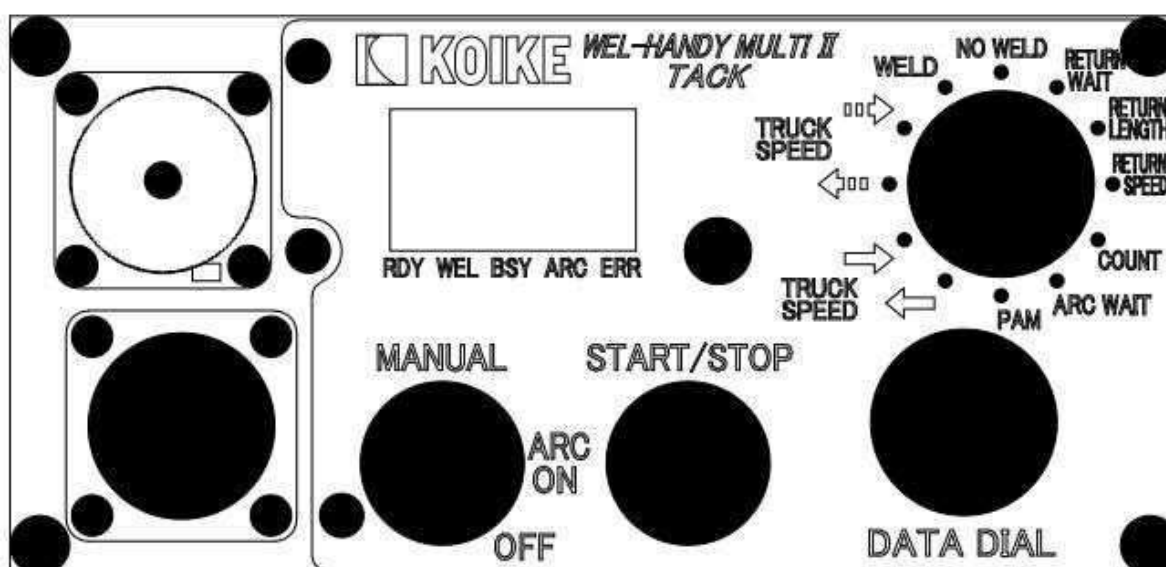
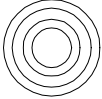

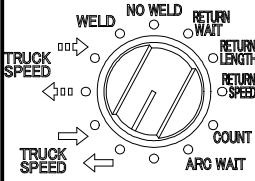

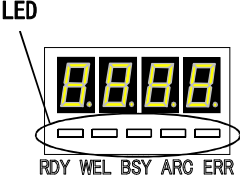






Fig 5 Operation panel



### 5.1.1 Explanation about operation Unit functions

Display	Name	Function
	<b>START/STOP Button</b>	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
	<b>Arc changing over switch</b>	<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>⚠ <b>Kindly take care as Arc is generated if torch end is touching welding material.</b></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>
	<b>SELECT SWITCH</b>	It is used for selecting each parameter and traveling mode. Kindly verify <b>5.2.2 Regarding SELECT SWITCH</b> for each parameter.
	<b>DATA DIAL</b>	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.
	<b>Digital Meter</b>	<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
	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.
	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)
	When welding distance is 0 during TACK operation	Kindly set welding distance at more than 1mm or 0.1inch.
	Motor overload error	Please make sure the load is not applied to the motor.

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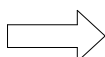


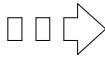



	Trduck backup err (parameter)	Please make sure the truck and the WU-5R is not OFF the power while fine-tuning move in operation or limit switch . After the change if you want to back up the parameters , please OFF the power to the truck is stopped . After the error occurs, it returns to the parameters 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
	Trduck 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.




### 5.1.2 Regarding SELECT SWITCH

In IK-72 WELDINGTACK, 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.



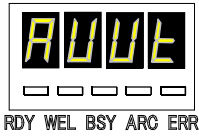
Operation unit display	Digital display	Setting range	Factory default
TRUCK SPEED  	 RDY WEL BSY ARC ERR	50~1500mm/min	—
		2.0~59.0inch/min	
		Function	
TRUCK SPEED  	 RDY WEL BSY ARC ERR	50~1500mm/min	—
		2.0~59.0inch/min	
		Function	
WELD  RDY WEL BSY ARC ERR	Digital display	Setting range	Factory default
		1~999.9mm	20.0mm
		0.1~39.4inch	0.8inch
Function			

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		<p><b>Welding distance setting(It shows length of the portion to be weld)</b>                  This mode is selected to set welding distance at the time of TACK travelling mode.                  It displays welding distance value at stopping of carriage on the digital meter.                  It is possible to change the welding distance at TACK welding by turning DATA DIAL while carriage is stopped.                  It is possible to change welding distance during TACK traveling by matching SELECT SWITCH to WELD or by Arc changing over switch operation.(Kindly refer to page no.22 for change method details)</p>	
		<p><b>CAUTION</b> When it is set to 0mm, it displays error and it is not possible to operate.                  Kindly operate by setting at more than 1mm or 0.1inch .</p>	
Operation unit display	Digital display	Setting range	Factory default
NO WELD		0~999.9mm	20.0mm
		0.1~39.4inch	0.8inch
		Function	
		<p><b>Preliminary feeding distance settings (It shows length of the portion not to be weld)</b>                  This mode is selected to set preliminary feeding distance at the time of TACK travelling mode.                  It displays preliminary feeding distance value on the digital meter at stopping of carriage.                  It is possible to change the preliminary feeding distance at TACK welding by turning DATA DIAL while carriage is stopped.                  It is possible to change preliminary feeding distance during carriage travelling by matching SELECT SWITCH to NO WELD or by Arc changing over switch operation.(Kindly refer to page no.22 for change method details)                  Kindly always keep the carriage maximum speed of travelling during preliminary feeding distance as (1500mm/min or 59.0inch/min).</p>	
Operation unit display	Digital display	Setting range	Factory default
RETURN WAIT		0~999.9s	0.0s
		Function	
		<p><b>Welding return waiting time setting (It shows welded time at stop state while ARC is ON after completion of welding)</b>                  This mode is selected to set welding return waiting time at the time of continuous travelling mode and TACK 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.                  Welding return waiting time can be changed if SELECT SWITCH is matched with RETURN WAIT during carriage is travelling.</p>	
Operation unit display	Digital display	Setting range	Factory default
RETURN LENGTH		0~999.9mm	0.0mm
		0~39.4inch	0.0inch
		Function	

IK-72 WELDING



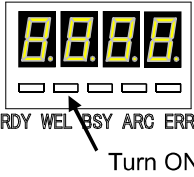
		<p><b><u>Welding return distance settings(It shows length of the portion to be weld in the opposite direction while Arc is ON after welding completion)</u></b>                  This mode is selected to set welding return distance at the time of continuous travelling mode and TACK travelling mode.                  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.                  Welding return distance during carriage travelling can be changed by matching SELECT SWITCH to RETURN LENGTH or by Arc changing over switch operation.(Kindly refer to page no.22 for change method details)</p>
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Operation unit display	Digital display	Setting range	Factory default
RETURN SPEED		50~1500mm/min	50mm/min
		2.0~59.0inch/min	2.0inch/min
		Function	
		<p><b><u>Welding return speed settings(It shows travelling speed at the time of welding return distance )</u></b>                  This mode is selected to set welding return travelling speed at the time of continuous travelling mode and TACK travelling mode.                  It displays welding return speed value during stopping of carriage on digital meter.                  Further welding return speed can be changed by turning DATA DIAL during stopping</p>	
Operation unit display	Digital display	Setting range	Factory default
COUNT		0~9999 times	0 time
		Function	
		<p><b><u>Welding frequency settings</u></b>                  It is welding frequency at the time of TACK travelling mode.                  It displays welding frequency during stopping of carriage on digital meter.                  Welding frequency at the time of TACK 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 travelling till START/STOP button or Limit switch is pressed.</p>	
Operation unit display	Digital display	Setting range	Factory default
ARC WAIT		0~10.0s	0.5s
		Function	



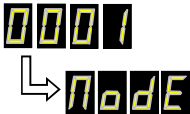


		<p><b><u>Arc stability time setting (It shows time till start of travelling of carriage after Arc ON)</u></b></p> <p>This mode is selected to set Arc stability time at the time of continuous travelling mode and TACK travelling mode.</p> <p>It is time till start of travelling of carriage by pressing START/STOP button.</p> <p>It carries out welding while carriage is in stop state during Arc stability time and countdowns digital meter time.</p> <p>It displays Arc stability time value on the digital meter while carriage is in stop state.</p> <p>Arc stability time can be changed by turning DATA DIAL only while carriage is in stop state.</p> <table border="1" data-bbox="580 562 1422 846"> <tr> <td data-bbox="580 562 786 846"> <p><b>CAUTION</b></p> </td> <td data-bbox="786 562 1422 846"> <p>Since welding is carried out in Arc stability time by initial Arc current, it is necessary to set initial Arc settings at welding current end.</p> <p>Though Arc stability time at carriage end is from start to last, it is from the time of pressing of START/STOP button (Arc signal ON) till travelling of carriage.</p> <p><b>Kindly verify operation manual of welding current for initial Arc setting.</b></p> </td> </tr> </table>	<p><b>CAUTION</b></p>	<p>Since welding is carried out in Arc stability time by initial Arc current, it is necessary to set initial Arc settings at welding current end.</p> <p>Though Arc stability time at carriage end is from start to last, it is from the time of pressing of START/STOP button (Arc signal ON) till travelling of carriage.</p> <p><b>Kindly verify operation manual of welding current for initial Arc setting.</b></p>
<p><b>CAUTION</b></p>	<p>Since welding is carried out in Arc stability time by initial Arc current, it is necessary to set initial Arc settings at welding current end.</p> <p>Though Arc stability time at carriage end is from start to last, it is from the time of pressing of START/STOP button (Arc signal ON) till travelling of carriage.</p> <p><b>Kindly verify operation manual of welding current for initial Arc setting.</b></p>			







IK-72 WELDING

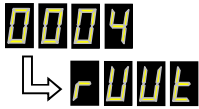
Operation unit display	Digital display	Setting range	Factory default
PAM		0000~0011	—
		<p style="text-align: center;">Function</p> <p><b>Parameter setup mode</b>                      Each parameter can be set from this mode. ⚡ This mode can be operated only while carriage is in stop state.                      For more information on the parameters number , please check “<b>details parameter number</b>” .</p> <p><b>Setup method</b>                      1)Turn SELECT SWITCH and</p>  <p>and match it.</p> <p>2)Select the parameter number to be changed by turning DATA DIAL.</p> <p>3)Set by pressing START/STOP button.</p> <p>4)                      Edit by turning DATA DIAL. It turns ON WEL of LED during editing.</p>  <p>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>	

**details parameter number**

Parameter number	Content
	<p><b>Input prevent erroneous settings</b>                      Setting range : 0000~9999                      Factory default : 0114                      Parameter values enables you to edit the parameters at the time of  .                      In other value will be entered only this parameter.                      Please use for the erroneous input prevention.</p>
	<p><b>Traveling function additional settings</b>                      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 Value=1) and B2(A Value=4)</p>

IK-72 WELDING

Set value =1+4=5			
	Content	A Value	
		ON	OFF
B0	After the end of welding , it returns automatically to the welding start position:ON <Caution> Because of the copying of the fillet weld, the original position and the displacement occurs	1	0
B1	Tack welding only: Processing at the time of the stop at STOP switch OFF : Start tuck operation from the beginning ON : Start a tuck operation from the stop was continued. ※Tuck portion was stopped during the welding is done the welding from the next tack without welding.	2	0
B2	Welding distance, Preliminary feeding distance:Extension function OFF : Extension only during the arc changing over switch "MANUAL" Stopped at the OFF ON : arc changing over switch Extended operating in the first time of "MANUAL", It stops at the second time of "MANUAL" (Self-holding)	4	0
  	<p><b>Arc stability waiting time settings</b>                      Allowed range : 0~10.0s                      ※ It can be also set in ARC WAIT OF SELECT SWICTH.</p>		
  	<p><b>Torch switch ON Set output time (Crater processing)</b>                      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.</p> <ul style="list-style-type: none"> <li>• If the setting of the welding power source is Mu self-holding (crater not supported), please refer to the this parameter to 0.</li> <li>• In the case of self-holding Available (crater corresponding) Please set this value to a value of from 0.4 to 1.0.</li> <li>• 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.</li> </ul> <p>※Depending on the welding power supply might not be compatible with this specification. Please adjust in the 1.0.</p>		



**Welding return waiting time settings**

Allowed range : 0~ 999.9s

☞ It can be also set in RETURN WAIT of SELECT SWICTH.

**※Usage Guidelines**

Welding current during welding return waiting time changes according to crater (self-holding) existence flag setting.

“With” Crater (self-holding) '	“Without” Crater (self-holding)
Welding by crater electric current	Welding by this electric current

**☞Point of consideration while using**

Kindly match the Crater (self-holding) setting at welding current end and at carriage end without fail.

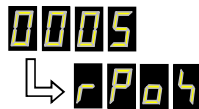
Kindly match setting of Crater (self-holding) switch of welding current as per shown in the below Table.

Kindly set carriage end settings by parameter setting mode.

At Welding current end		At carriage end
“With” Crater (self-holding)	↔	-0.1 or 0.1~1.0
	Matching	
“Without” Crater (self-holding)	↔	

**CAUTION**

There are cases when welding operation is not done as per settings when settings are not matching. Kindly use by matching the Crater (self-holding) settings without fail.



**Welding return distance settings**

Allowed range : 0~999.9mm

0~39.4inch

☞ It can be also set in RETURN LENGTH OF SELECT SWICTH.

**※Usage Guidelines**

Welding current during welding return waiting time changes according to crater (self-holding) existence flag setting.

“With” Crater (self-holding) '	“Without” Crater (self-holding)
Welding by crater electric current	Welding by this electric current

**☞Point of consideration while using**

Kindly match the Crater (self-holding) setting at welding current end and at carriage end without fail.

Kindly match setting of Crater (self-holding) switch of welding current as per shown in the below Table.







Kindly set carriage end settings by parameter setting mode.

At Welding current end		At carriage end
“With” Crater (self-holding)	↔	-0.1 or 0.1~1.0
	Matching	
“Without” Crater (self-holding)	↔	

**CAUTION**

There are cases when welding operation is not done as per settings when settings are not matching. Kindly use by matching the Crater (self-holding) settings without fail.

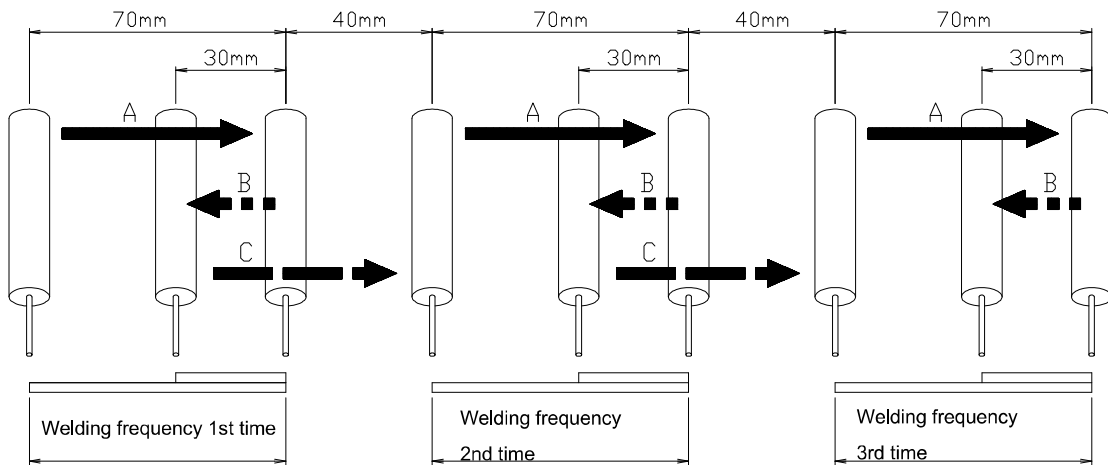
IK-72 WELDING

<p>0006  </p>	<p><b><u>Welding return speed settings</u></b>                  Allowed range : 50~1500mm/min                  2.0~59.0inch/min                  ↷ It can be also set in RETURN SPEED OF SELECT SWICTH.</p>
<p>0007  </p>	<p><b><u>Welding frequency settings</u></b>                  Allowed range : 0~999                  Factory default : 0                  It is welding frequency at the time of TACK travelling mode.                  It displays welding frequency during stopping of carriage on digital meter.                  Welding frequency at the time of TACK 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 travelling till START/STOP button or Limit switch is pressed.</p>
<p>0008  </p>	<p><b><u>Torch switch signal minimum time setting</u></b>                  Allowed range : 0.4~1.5s                  Factory default : 0.7s                  You can set the ON time of the torch switch.                  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>0009  </p>	<p><b><u>Speed, position display unit inch setting</u></b>                  Allowed range : 0~1                  Factory default : 0(Except USA)                  You can switch the unit to be displayed in inch and millimeter.                  0 : mm                  1 : inch                  After this parameter setting, please power restart.</p>
<p>0010  </p>	<p><b><u>Speed and Moving position correction</u></b>                  Allowed range : 50~200%                  Factory default : 100%                  You can run the display of the actual speed correction.                  Actual speed = Traveling display × [parameter value]%</p>
<p>0011  </p>	<p>Not used</p>

### 5.1.3 Operation Pattern Diagram

Example 1) Parameter setting value of tack/stitch welding

Welding distance	70mm/2.76inch	Operation sequence	Movement
Welding return distance	30mm/1.18inch	A	→ Welding movement
Preliminary feeding distance	40mm/1.57inch	B	←····· Welding return distance
Welding frequency	3times	C	→····· preliminary feeding distance
Without self-holding setting			



☞ In Stop operation, carriage travelling or welding can be stopped by START/STOP button or Limit switch irrespective of welding frequency.

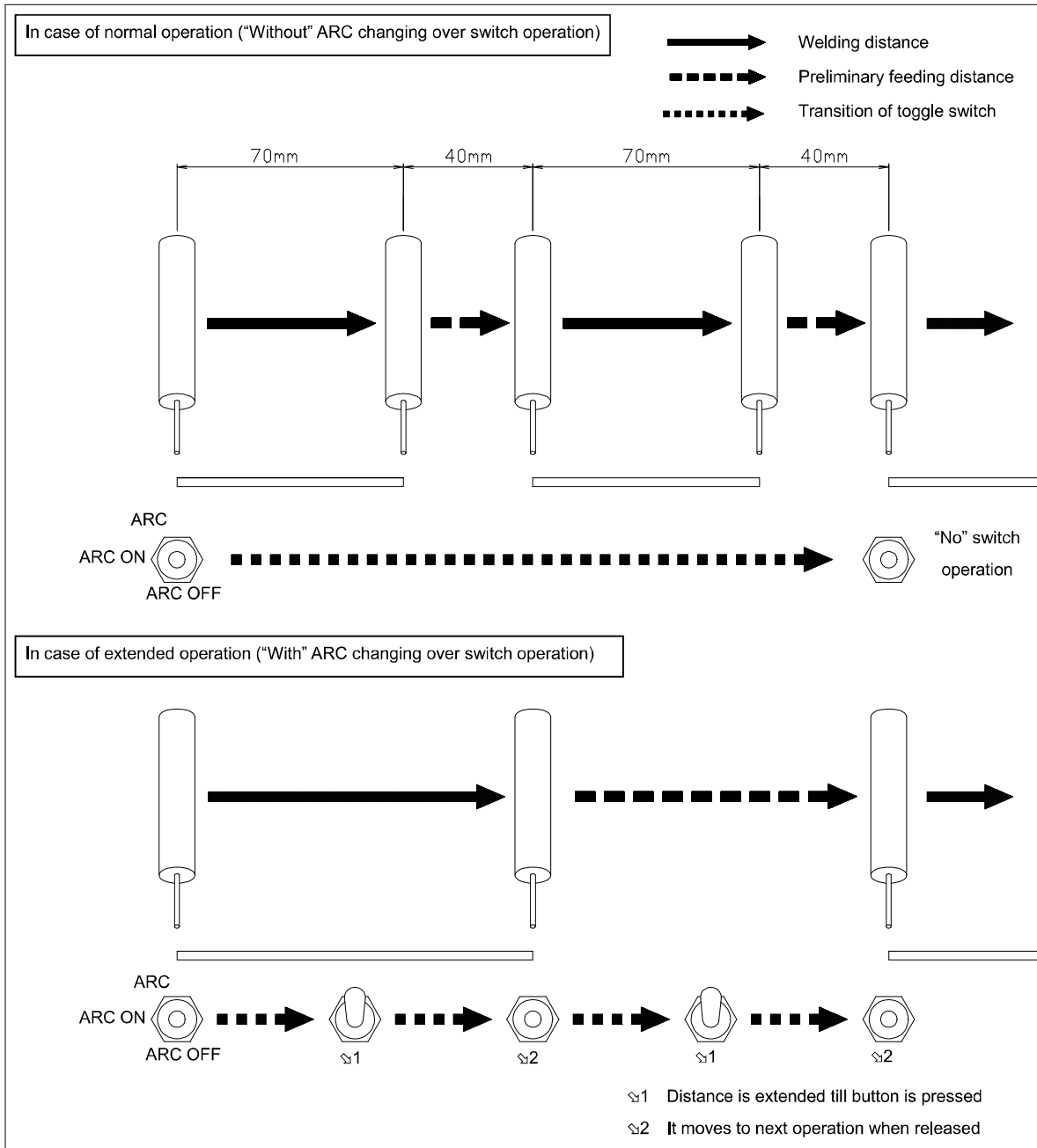
☞ In case of "0" welding frequency, it operates TACK/STITCH repetitively till carriage is stopped.

☞ Only at the time of pressing of Limit switch during welding movement, welding movement is terminated at that point and it shifts to welding return operation. Further at the point of end of welding return operation, travelling and welding operations are stopped.

☞ When START/STOP button is pressed, it stops travelling and welding at that point of pressing of button during any of the operation.

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

Kindly operate by referring to below mentioned settings while changing distance during TACK/STITCH welding operation.



## 6 Preparation of work if you have purchased in WU-5R unit

### 6.1 Package contents (WU-5R unit)

If you have purchased in WU-5R unit, packing contents are as follows.

Please check before assembling.


1. Weaving unit body ----- 1set
2. IK-72 WELDING Operation panel name plates----- 1 unit
3. Weaving mounting plate----- 1 unit

- |  |             |
|--|-------------|
| 4. Holder mounting bracket-----                                | 1 unit      |
| 5. Arm mounting plate-----                                     | 2 units     |
| 6. Eye bolt M6 (with nut)-----                                 | 1 set       |
| 7. Hexagon hole bolt BC-5×16 (WS,with WF)-----                 | 4 units     |
| 8. Hexagon hole bolt BC-5×12 (with WS )-----                   | 6 units     |
| 9. Countersunk screw with cross hole SF-5×12 -----             | 4 units     |
| 10. Hexagon hole bolt BC-5×18 (WS,with WF)-----                | 4 units     |
| 11. 3 points of Pan head sems screws SP-3×6(WS, with WF) ----- | 2 units     |
| 12. Hex wrench (M5) -----                                      | 1 unit      |
| 13. Instruction manual, Warranty card-----                     | 1 part each |

## 6.2 Machine Assembly

Following Assembly, the top purchase WU-5R alone, when assembled to IK-72 WELDINGtack/stitch will need work.

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



 <b>CAUTION</b>	<p><b>In case if you get connected WU-5R, make sure to Turn Off the Power.</b></p>
<p>■ When the power is on if it gets connected there is a possibility of failure.</p>	



## 7 Welding operation


### 7.1 Preparation and procedure for welding

Conduct welding in the following manner, while referring to the Fig. 5 “System connection diagram” and the operation procedure in item 5.1.

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


(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.


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

(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.


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

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

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

(6) Press the tracing roller against the vertical plate, and set the carriage in the welding position.

- (7) For attraction by magnet, incline the magnet lever as shown in Fig.5
- (8) 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.
- (9) Select each parameter by SELECT SWITCH and set parameter value by DATA DIAL.  
(Kindly refer to Regarding SELECT SWITCH on page 19 for operation method)
- (10) 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)
- (11) Turn DATA DIAL and set travelling speed.  
(LED of "BSY" turns ON during carriage operation and LED of "WEL" turns ON during ARC generation)
- (12) Determine the start position.  
※Positioning of carriage (fine tuning) can be carried out easily by pressing Limit switch.
- (13) Finely adjust the welding conditions (current, voltage, speed, etc.) as necessary.
- (14) Press START/STOP button, and start welding. (Arcs will be generated at the same time.)

 **CAUTION**

**Pay attention to the following during welding.**

- Wear a welding mask, face guard, and welding protectors to protect yourself from arc light, fumes, and spatters.

- (15) Finely adjust the welding conditions (current, voltage, speed, etc.) as necessary.
- (16) 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

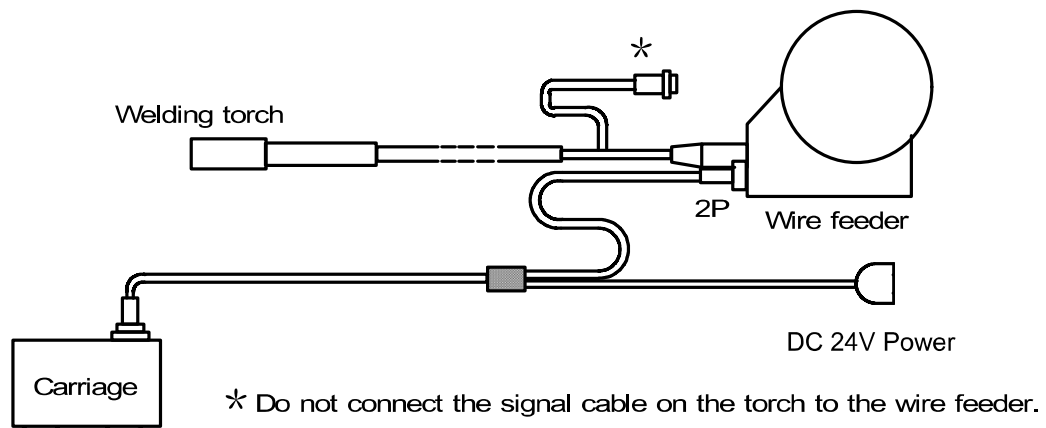


Fig.8 System connection diagram

### 7.3 Applicable welding machine and signal adaptor

This welding machine is to be used in combination with a semi-automatic (CO<sub>2</sub>, 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(DC 24V), 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 6.1 "Maintenance and inspection.")  
When trouble occurs, refer to 6.3 "Trouble and corrective measures."

 <b>WARNING</b>	<b>Kindly take care about following things to avoid getting an electric shock.</b>
	<ul style="list-style-type: none"> <li>■ 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.</li> </ul>

- 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 DC 24V)  
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) Clean the nozzle and check the tip for abrasion.
- (2) Clean wheels. (Removal of iron powder etc.)
- (3) Check guide rollers for smooth rotation. (Cleaning)
- (4) Remove spatters from the carriage.







### **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) Guide roller
- (2) Rubber wheel
- (3) Auto stop switch
- (4) Printed circuit board

### 8.3 Maintenance and inspection

Defects	Cause/check position				
(1) Slipping off of profiling while traveling	1) Guide roller 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 roller and carriage is not rotating smoothly.				
(2) No electric power supply	1) No power supply voltage to outlet. 2) Cable is disconnected. <table border="1" style="width: 100%; margin-top: 10px;"> <tr> <td style="text-align: center;"><b>WARNING</b></td> <td><b>Kindly take care about following things to avoid getting an electric shock.</b></td> </tr> <tr> <td style="text-align: center;"></td> <td> <ul style="list-style-type: none"> <li>■ 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.</li> </ul> </td> </tr> </table>	<b>WARNING</b>	<b>Kindly take care about following things to avoid getting an electric shock.</b>		<ul style="list-style-type: none"> <li>■ 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.</li> </ul>
<b>WARNING</b>	<b>Kindly take care about following things to avoid getting an electric shock.</b>				
	<ul style="list-style-type: none"> <li>■ 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.</li> </ul>				
(3) Traveling speed of carriage is not changing	<table border="1" style="width: 100%; margin-top: 10px;"> <tr> <td style="text-align: center;"><b>WARNING</b></td> <td><b>Kindly take care about following things to avoid getting an electric shock.</b></td> </tr> <tr> <td style="text-align: center;"></td> <td> <ul style="list-style-type: none"> <li>■ Kindly carry out continuity check by tester while electric supply is turned OFF.</li> <li>■ 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.</li> </ul> </td> </tr> </table> 1) Defective motor 2) Defective printed board 3) Disconnection of motor encoder line	<b>WARNING</b>	<b>Kindly take care about following things to avoid getting an electric shock.</b>		<ul style="list-style-type: none"> <li>■ Kindly carry out continuity check by tester while electric supply is turned OFF.</li> <li>■ 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.</li> </ul>
<b>WARNING</b>	<b>Kindly take care about following things to avoid getting an electric shock.</b>				
	<ul style="list-style-type: none"> <li>■ Kindly carry out continuity check by tester while electric supply is turned OFF.</li> <li>■ 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.</li> </ul>				

IK-72 WELDING

<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="571 1525 1273 1715"> <tr> <td style="text-align: center;"><b>WARNING</b></td> <td><b>Kindly check the conduction between terminals by tester while electric supply is turned OFF.</b></td> </tr> <tr> <td colspan="2"> <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>	<b>WARNING</b>	<b>Kindly check the conduction between terminals by tester while electric supply is turned OFF.</b>	<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>	
<b>WARNING</b>	<b>Kindly check the conduction between terminals by tester while electric supply is turned OFF.</b>				
<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>				

IK-72 WELDING

(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 weaken even at drawing off magnet lever	1) Defective magnet rotation shaft *If the rotating shaft broken it must be changed.
(13) Display of Digital meter does not changed 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) Wearing off of Rubber roller. * 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 " <b>※metric,inch switch over method</b> " for changing method. <b>※Be sure that metric inch switching operation is done when the board is replaced.</b>
(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.

## IK-72 WELDING

(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 " <b>✕metric,inch switch over method</b> " for changing method. <b><u>✕Be sure that metric inch switching operation is done when the board is replaced.</u></b>

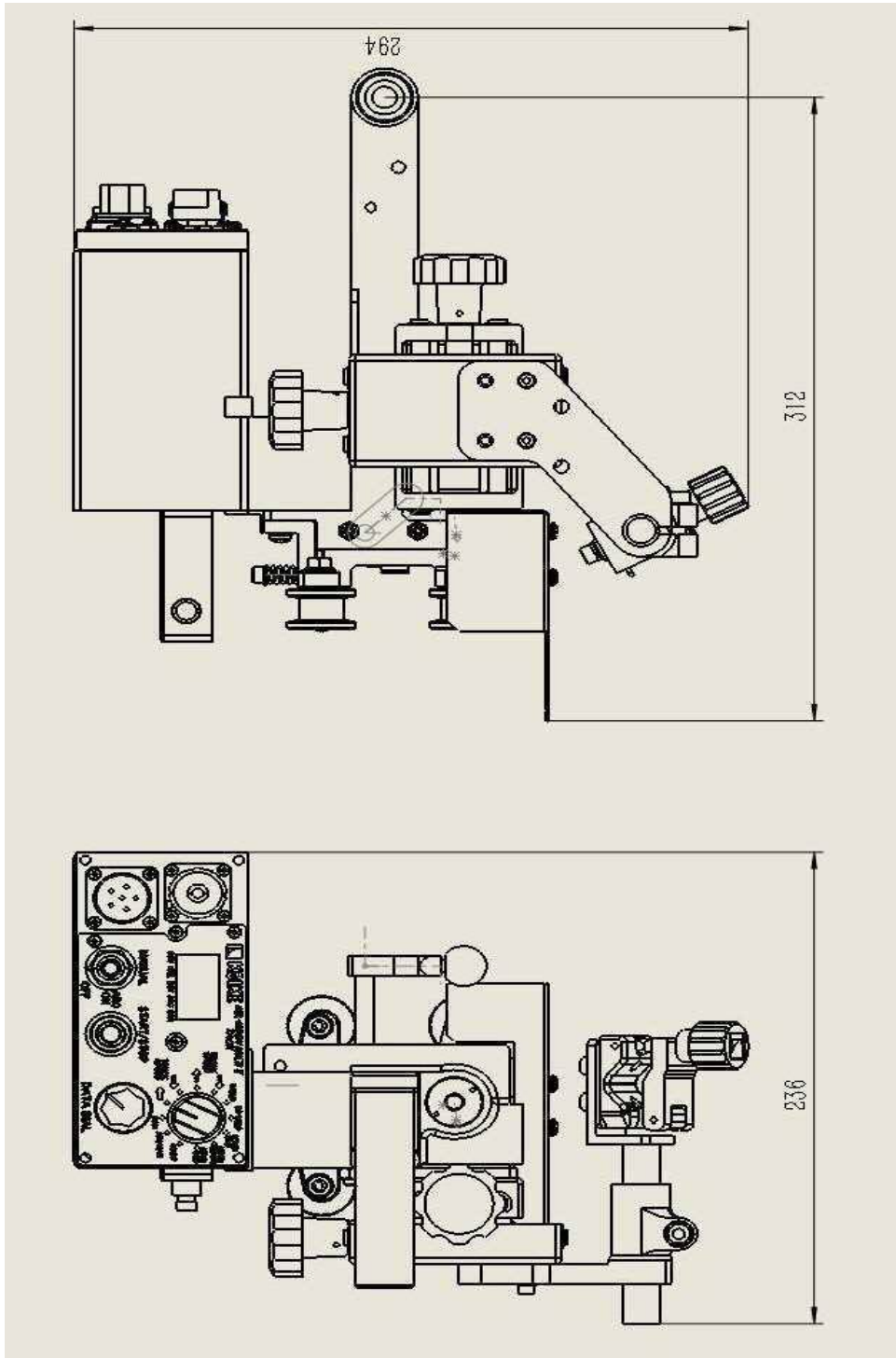
### 8.4 Warranty

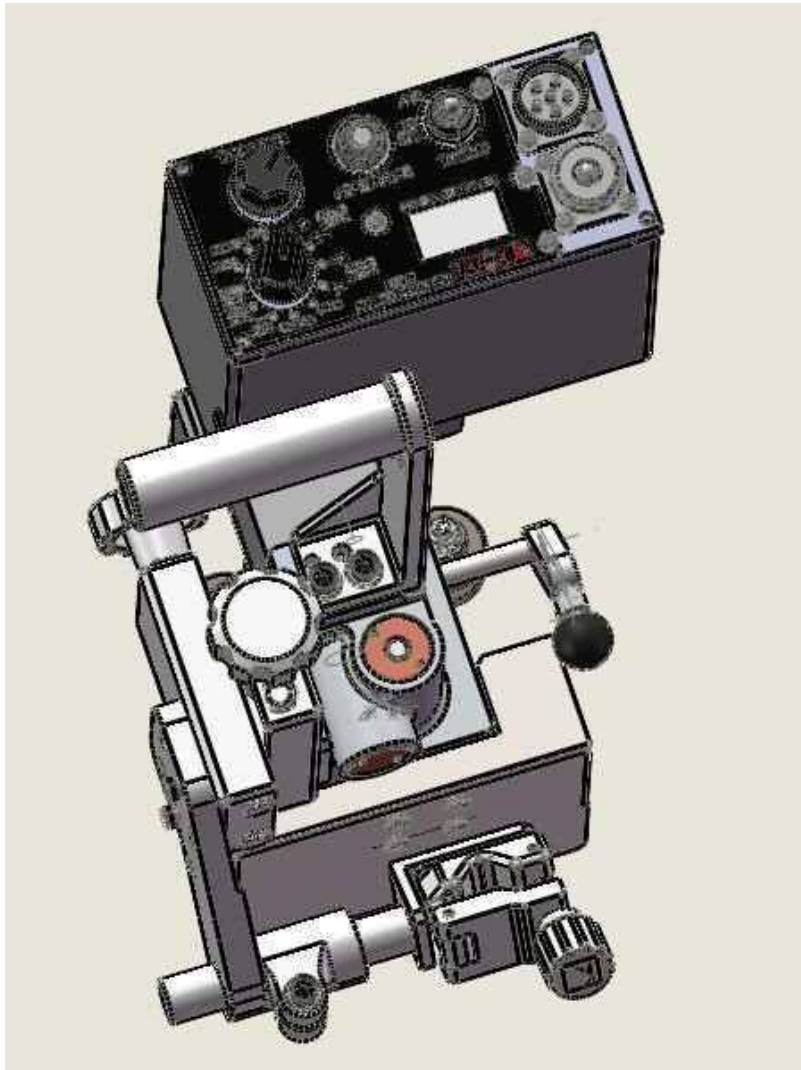
This is thoroughly inspected and tested before leaving the factory, and guaranteed for 12 months from the date of purchase against defective workmanship and material. Should any trouble develop, return the complete equipment prepaid to KOIKE Sanso Kogyo Co., Ltd.  
Authorized KOIKE Distributor.





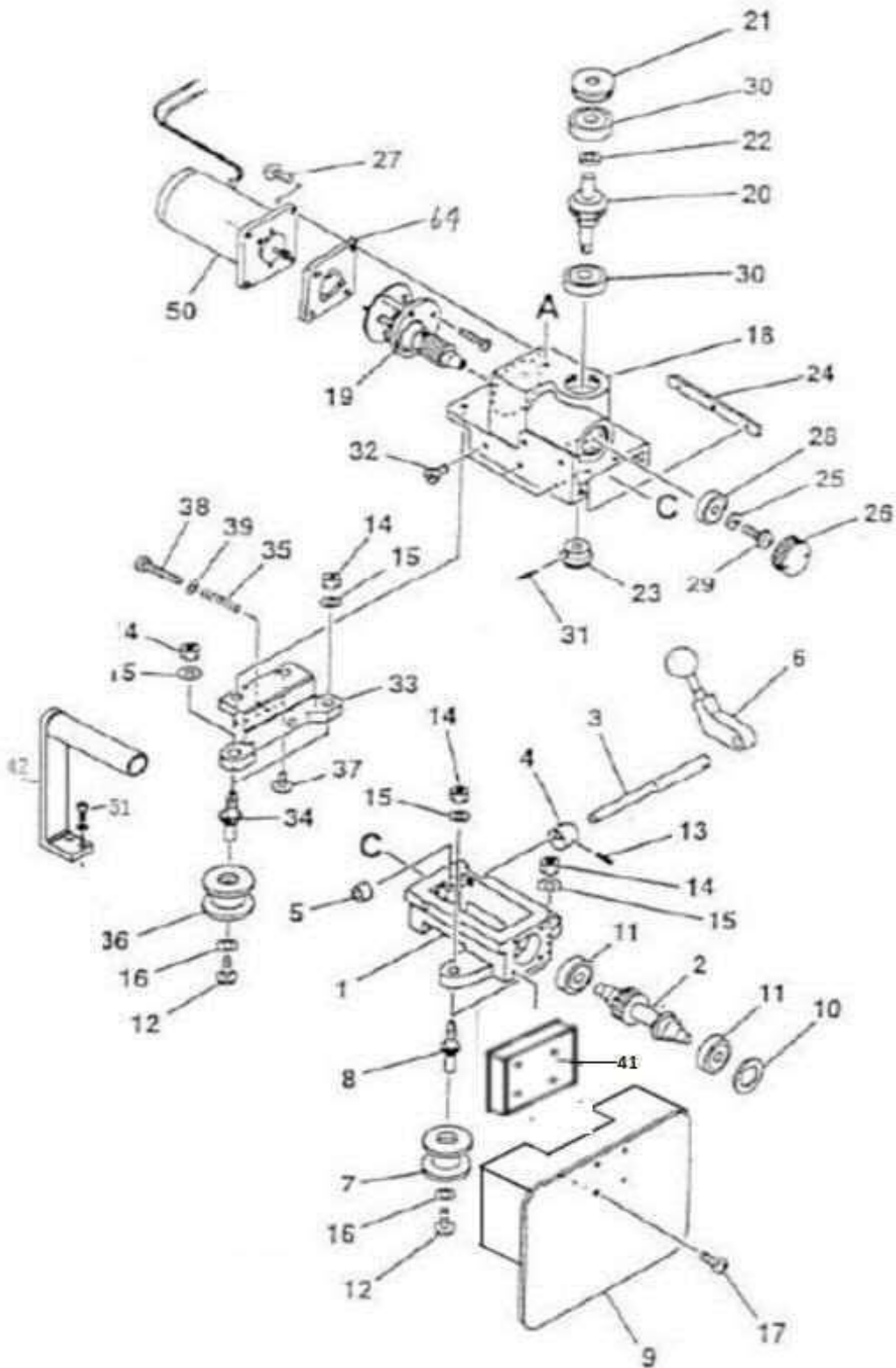
10 Assembly drawing of IK-72 WELDING





11、 Part List

11.1 Main and Driving units

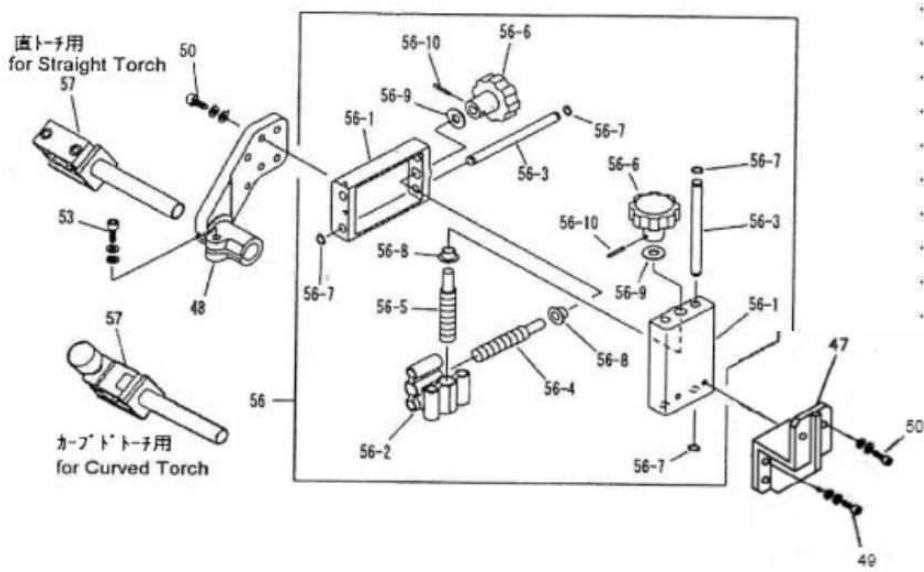


**IK-72 WELDING**

**Main Body and driving unit**

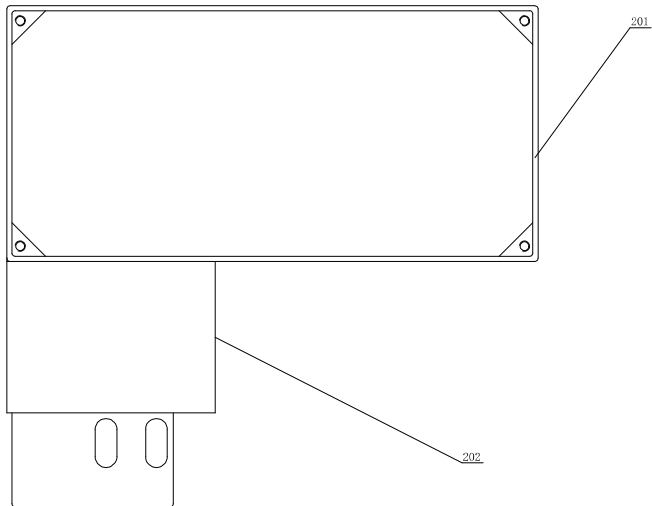
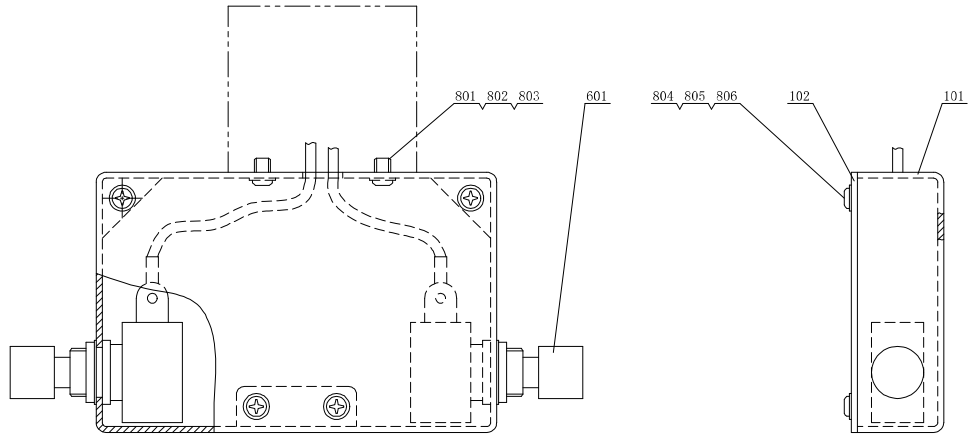
No.	Designation	QTY	Stock No.	Remarks	No.	Designation	QTY	Stock No.	Remarks
1	Main body	1	T60031674		38	Hexagon bolt	1	T6C030530	BC-5x30
2	Driving shaft assembly	1	T60031606						
3	Clutch shaft	1	T60038839	102L					
4	Eccentric ring	1	T60031608		41	Insulating board adjust	1	T89000612	
5	Stopper	1	T61000811		42	Handle	1	T61000601	
6	Clutch holder assembly	1	T60031610						
7	Side roller assembly	2	T60031611		50	Motor(with pinion)	1	T89002603	
8	Side roller shaft (A)	2	T60031612		51	Hexagon blot	2	T6C440620	BC-6x20(WS)
9	Heat shield	1	T89000497						
10	Collar ring	1	T89001535		64	Flange	1	30000242	
11	Bearing	2	T6A030627	627ZZ ★					
12	Screw	4	T6C530306	SP-3×6(WS)					
13	Spring	1	T6B022012	PR-2×12					
14	Hex 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	sliding key	1	T60031621						
25	Washer	1	T60031015						
26	Bearing cover	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	Hexagonal stop screw	3	T6C540515	SS-5×15					
33	Side roller Bracket	1	T60031675						
34	Side roller shaft (B)	2	T60031613						
35	Spring	1	T60031676						
36	Side roller assembly	2	T60031611						
37	Screw	2	T6C530514	SP-5×14					

11.2 Torch holder





11.3 Limited











# **IK-72 W OPERATION MANUAL**

***Operation Manual - Version T89001749***



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2022-5.26