Operating instructions

Ivpont 200 MIG/MAG, LIFT TIG, MMA synergic inverter welding machine
CuSi soldering function

CE

This welding machine is designed for industrial and professional use, in accordance with the IEC974 International Safety Standard.

This welding machine is hereby warranted for one year from the date of purchase.

Please read the instructions carefully before installing and using the machine. Please

contact us with any questions !

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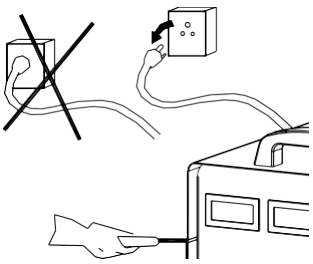
Security

Welding and cutting is dangerous for the operator, the work area or bystanders if the machine is not operated correctly. Therefore, welding/cutting power must be operated only and exclusively in strict compliance with the safety regulations. Please read the following instructions carefully before installing or using the equipment.

-Connecting functions can roll the machine while it is running.



-Disconnect the electrode holder cable before using the welder.

-The safety switch protects the machine against electrical leakage.

-Welding tools must be of good quality.

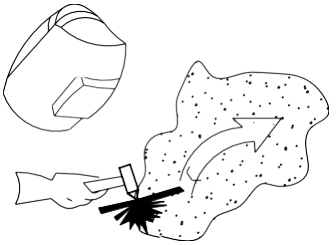
-Skilled operators are required.

: it can be deadly!

-Connect the earth lead as per the basic regulations.

-Remove all contact with live electrical parts of the welder's circuit, electrodes and wires with bare hands. The operator must wear dry welding gloves during welding operations.

-The operator should keep the workpiece away from him.

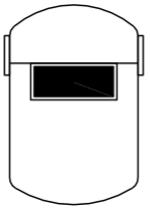


Gas and fumes generated during welding and cutting: harmful to health.

-Avoid inhaling fumes and gases generated during welding.

-Keep the work area well ventilated.

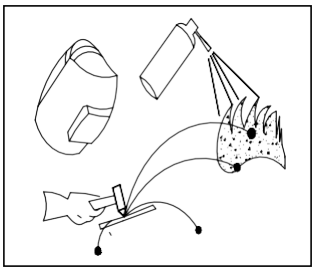
Arc rays: dangerous to human eyes and skin!



-Wear a welding helmet, anti-radiation glass and work clothes when welding

-Safety measures also apply to those in the nearby work area.

Fire hazard



-Can cause fires, so remove flammable materials from the work area.

-Have a fire extinguisher nearby and a trained person who knows how to use it.

Noise: may be harmful to hearing.

-Due to the noise generated by welding/cutting, suitable ear protection is recommended if the noise is high.

In case of failure:

- See the description.

-Contact your dealer or service centre.

Employees handling the equipment must be qualified to carry out welding work:

- be qualified as an electric welder to weld gas shields,
- knowledge of health and safety rules for the operation of high-current equipment such as welding equipment and auxiliary electrical equipment,
- know the health and safety rules for handling cylinders and compressed gas (argon) equipment,
- familiarise yourself with the contents of this manual and use the device as intended

WARNING!

Please read this user guide before installing and commissioning the appliance

1. GENERAL REMARKS

The appliance can only be operated and used if you have read this instruction manual carefully.

Due to continuous technical development, the appearance and some of the functions of the device may change and the details of their operation may differ from those described in the manual and on the packaging. This is not a failure of the device, but the result of progress and continuous changes to the device. The basic equipment of the device may also vary.

Damage to the device resulting from improper handling will void the warranty. Any modification of the rectifier is prohibited and will void the warranty.

2. SECURITY

The Personnel operating the equipment must have the necessary qualifications to carry out welding work:

- They must be qualified as electric welders to weld gas shields.
- You must be familiar with the health and safety principles at work relating to the operation of electrical power equipment, such as welding equipment and electrically powered accessories.
- You must be familiar with the health and safety principles for the handling of compressed gas (argon) cylinders and equipment in the workplace.
- They must be familiar with the contents of this manual and operate the appliance as intended.

FIGYELEM

Welding can pose a safety risk to the operator and bystanders. Special precautions must therefore be taken during welding. Before starting the welding process, familiarise yourself with the health and safety regulations applicable to your workplace.
The following hazards exist during electric welding using the MIG/MAG method:

- **SHOPPING**
- **HARMFUL EFFECTS OF THE ARC ON THE HUMAN EYE AND SKIN**
- **POISONING OF GASES AND GASES**
- **TRADEMENTS**
- **EXPLOSION AND FIRE RISK**
- **ZAJ**

Prevention of electric shock:

- Connect the equipment to a technically sound electrical system with adequate protection and effective earthing (additional protection against electric shock). In addition, check and connect other equipment on the welder's workstation correctly.
- Install the power cables with the appliance switched off.
- Do not touch the uninsulated parts of the electrode holder, electrode and workpiece, including the housing, at the same time.
- Do not use electrode holders and conductor cables with damaged insulation.
- In special shock hazard conditions (high humidity environments and working in closed tanks), work with an assistant to support the welder and ensure safety. Use clothing with good thermal insulation properties and gloves.
- If you notice any abnormalities, contact competent persons to resolve them.
- Do not operate the appliance without the protective covers.

Prevention of harmful effects of the electric arc on human eyes and skin

- Use protective clothing (gloves, apron, leather shoes).
- Use a shield or helmet with appropriately selected filters.
- Use protective curtains made of non-flammable materials and choose the right colour for walls that absorb harmful radiation.

Prevention of fumes and fumes poisoning from electrode coatings during welding and metal evaporation:

- Use ventilation and extraction systems installed in workstations with limited air exchange.
- When working in confined spaces (tanks), ventilate with fresh air.
- Use a mask and breathing apparatus.

Burn injury prevention:

- Use appropriate protective clothing and footwear to avoid burns radiation and sparks.
- Avoid contaminating clothing with fats and oils that can cause inflammation.

Prevention of explosions and fires:

- Do not operate or weld in areas where there is a risk of explosion or fire.
- The welding workstation must be equipped with fire extinguishing equipment.
- The welding workstation must be located at a safe distance from flammable materials.

Preventing the harmful effects of noise:

- Use earplugs or other noise protection.
- Warn bystanders of the danger.

WARNING!

Do not use the power source to thaw frozen pipes. Before

starting the appliance, you must do the following:

- Check the condition of electrical and mechanical connections. Do not use handles or power cables with damaged insulation. Improper insulation of handles and power cables is a risk of electric shock.
- Ensure proper working conditions, including adequate temperature, humidity and ventilation in the workplace. Protect against adverse weather conditions when working outdoors.
- Place the rectifier where it is easy to handle. For operators handling the welding machine:
- Qualified in electric welding using the MIG/MAG method.
- Know and comply with the health and safety requirements for welding work.
- Use appropriate special protective equipment, including gloves, apron, rubber boots and welding shield or helmet with appropriately selected filter.
- Familiarise yourself with the contents of this manual and use the welding machine as intended.
- Any repairs to the appliance should only be carried out after the plug has been removed from the socket. When the appliance is connected to the power source, do not touch with bare hands or a damp cloth, or the parts of the welding circuit.
- It is forbidden to remove the external covers when the appliance is switched on.
- Any modification to the rectifier by unauthorised persons is prohibited and may compromise safety conditions.
- Any maintenance and repair work should be carried out only by authorised personnel, in compliance with the safety regulations for electrical appliances.
- It is strictly forbidden to operate the welding machine in areas where there is a risk of explosion or fire. The welding station must be equipped with fire extinguishing equipment.
- When the work is finished, unplug the appliance from the mains.
- The hazards and general health and safety principles mentioned above do not cover all aspects of welding safety, as they do not take into account the specificities of the working environment. Workplace-specific health and safety instructions, as well as training and instruction provided by supervisory personnel, are important additions to ensure safety.

3. GENERAL DESCRIPTION

MCU MIG-200 is a synergic welding machine for manual welding of steels and non-ferrous metals. allows welding by MMA (coated electrode), Lift TIG and MIG/MAG methods. Spot welding with MIG/MAG methods is possible. Synergic settings are used for MIG/MAG welding, which simplify operation and make the welding machine suitable for less experienced users and hobby welders. A wide range of voltage adjustments allows for custom settings.

By changing the polarization, the device allows MIG/MAG welding with both standard and flux cored wires. The unit allows the connection of a spindle gun (SG) to the mini dispenser mounted inside with wire and D100 spindle with steel or coloured wire. The unit is designed with IGBT technology, significantly reduces the weight and size of the unit while increasing efficiency and reducing power consumption.

The machine is suitable for indoor or covered areas that are not directly exposed to the atmosphere.

4. TECHNICAL PARAMETERS

4.1 Welding machine

Mooring tension:	AC 230V 50Hz
Maximlis energy consumption:	6.1 KVA
Rated idle voltage	58V
Diameters of wire rope:	100mm, 200mm

4.1.1 Parameter setting ranges

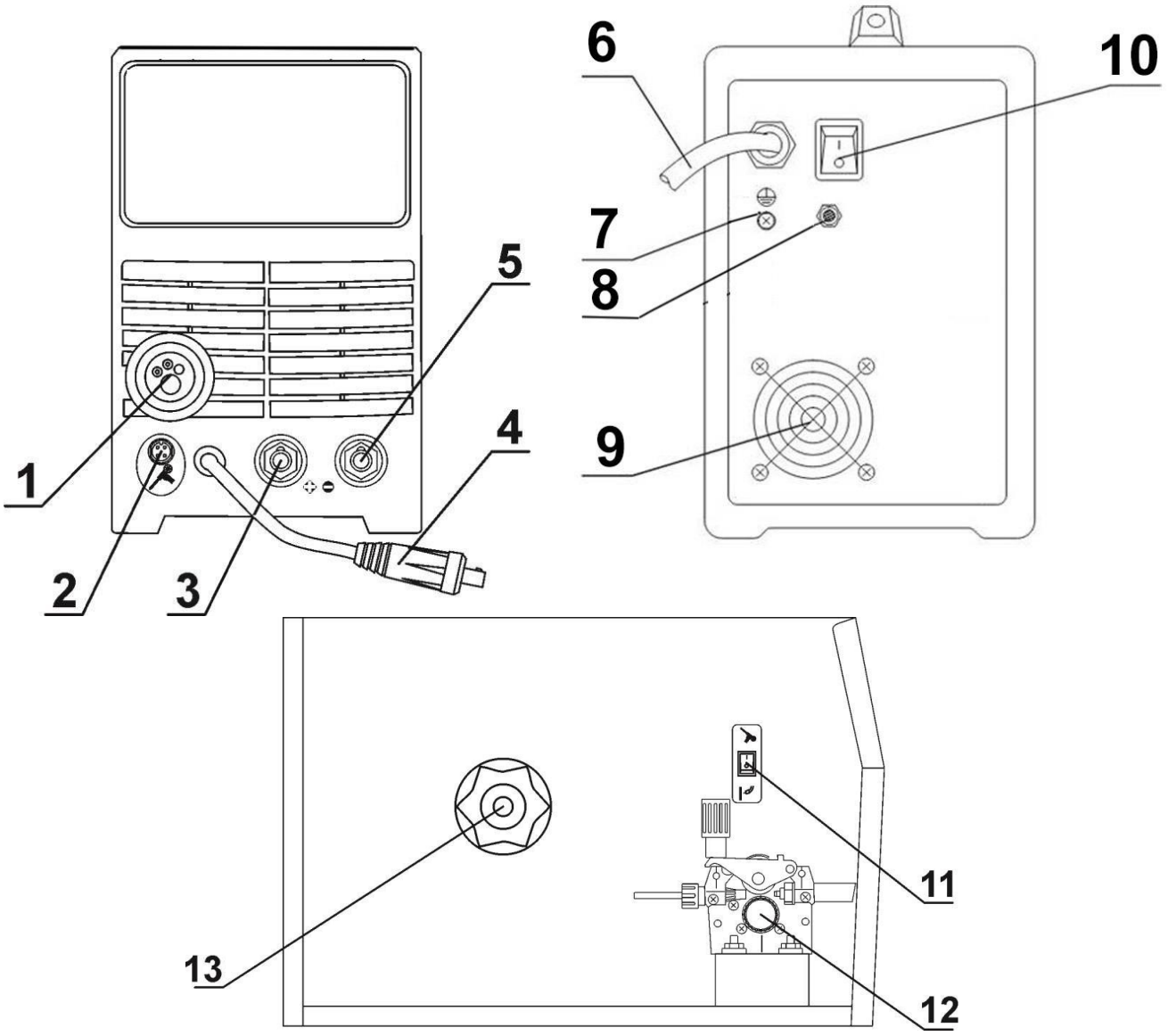
Welding current	**MIG: 30 - 200 A; MMA: 20 - 180 A; Lift TIG:20 - 200A**
Slow start	0 - 10
Inductance:	-10~ 10
Welding stress correction (under SYN MIG):	-3~3V
Burnback:	0 - 10
Gas afterflow 	0.0~ 2.0S
Point time	0.0~ 2.0S

4.1.2 MMA

VRD	ON/OFF
Anti-stick	ON/OFF
Arc Force	0~ 10
Hot start	0~ 10

5. REGISTRATION

If the appliance has been stored or transported in freezing conditions, it is important that the appliance is warmed to above freezing before use.



1. MIG gun connector
2. Control connector
3. Positive socket "+"
4. Polarity inverter plug
5. Negative socket "-"
6. Power cable
7. Earthing screw
8. Protective gas connection
9. Cooling fan
10. Main Switch
11. Spindle gun switch
12. Coal dredging
13. Huzaldob axis

5.1 Cable connection

5.1.1 MMA function

The leads of the welding cable shall be connected to the sockets (3) and (5) on the display panel in such a way that the correct polarity of the electrode is maintained on the electrode holder. The polarity of the welding cable connection depends on the type of electrode used and is indicated on the electrode packaging (negative DCEN or positive DCEP). The body cable shall be securely fastened to the workpiece material. Connect the plug of the instrument to a 230 V 50 Hz mains socket.

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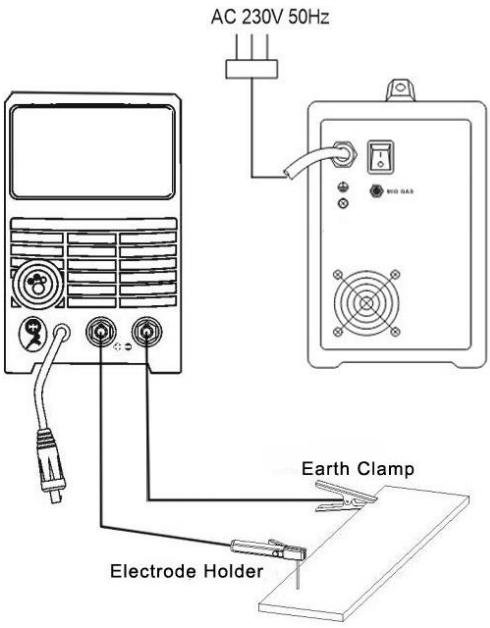
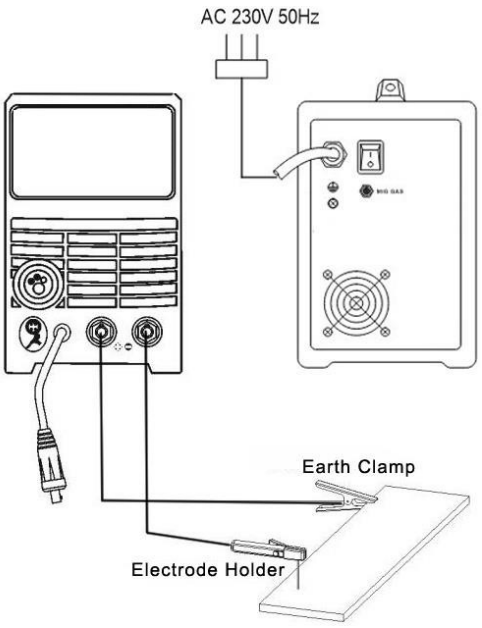


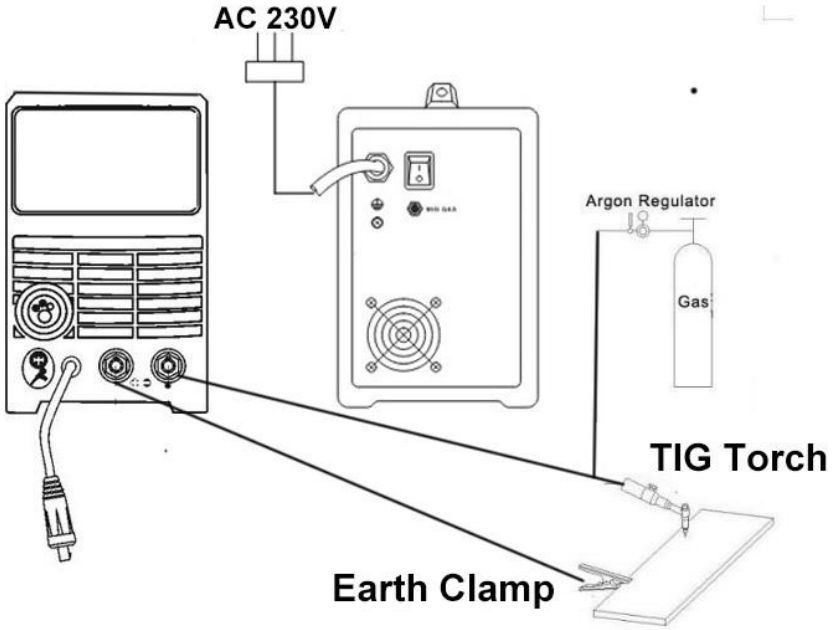
DCEP



DCEN

5.1.2 Lift-TIG function (with tap)

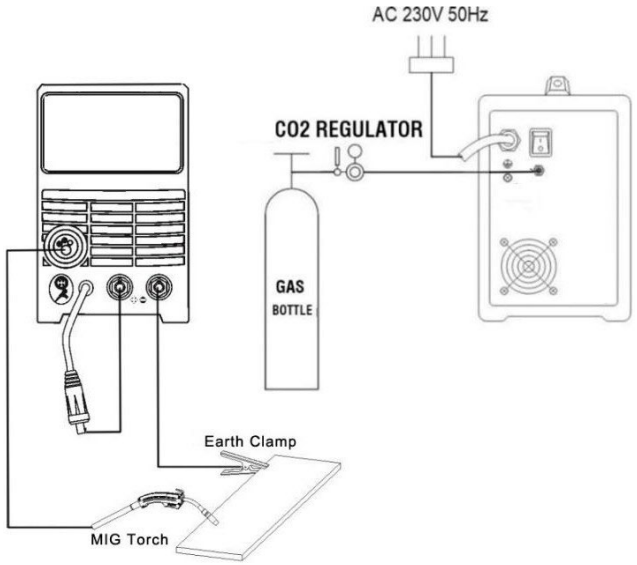
AWI welding requires the use of an AWI gun. A gas-cooled gun with a 200A current capacity and a protective gas control valve is required.
Connect the gun to the negative pole socket (5) and the gas line to the pressure regulator on the gas cylinder. Connect the positive pole (3) of the power source to the workpiece with a body cable. Connect the plug of the appliance to a 230 V 50 Hz wall socket.



5.1.3 MIG function and brazing

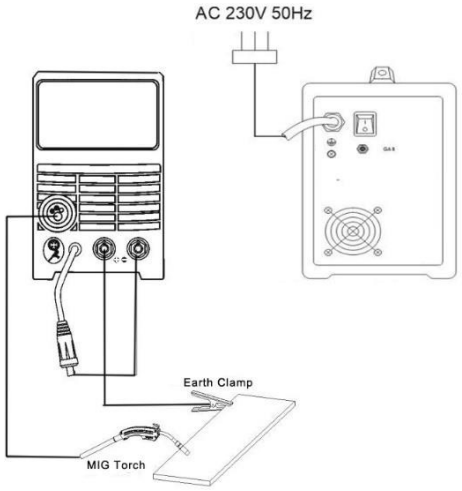
5.1.3.1 Welding and brazing with shielding gas

The gas line of the regulator must be connected to the gas connector (8) on the back of the appliance. Connect the gun to the MIG gun connector (1). Insert the polarity reversing plug (4) into the positive pole socket (3). Connect the negative pole of the power source (5) to the workpiece with a body cable. Connect the appliance to a 230 V 50 Hz socket.



5.1.3.2 Welding with flux cored steel wire (without gas)

Connect the gun to the MIG gun socket (1). Insert the polarity inverter plug (4) into the negative pole socket (5). Connect the positive pole of the power source (3) to the workpiece with a body cable. Connect the device to a 230 V 50 Hz mains socket.



5.1.3.3 Welding with spindle gun/Push-Pull gun (option)

The spindle gun must be connected to the MIG gun socket (1) and the spindle gun socket (2). Insert the polarity inverter plug (4) into the positive pole socket (3). Connect the negative pole of the power source (5) to the workpiece with a body cable. Connect the plug of the appliance to a 230 V 50 Hz wall socket. Set the switch (11) in the wire feeder to the push-pull gun position.

5.2 Connecting the protective gas

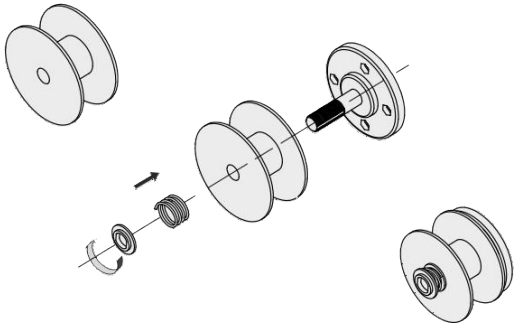
1. Secure the gas cylinder against falling/tipping.
2. Open the bottle valve to remove any dirt.
3. Mount the reducer on the bottle.
4. Connect the pressure regulator to the gas hose at the back of the machine.
5. Open the valve on both the gas cylinder and the reducer.

5.3 Connecting to the network

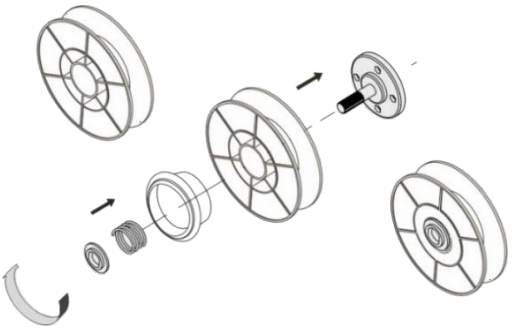
1. The apparatus shall be used only on a single-phase, three-wire power supply system with a grounded neutral pole.
2. The MCU MIG-200 inverter rectifier is designed to operate with a 230 V 50 Hz power supply. The power supply must be stable without voltage drops.
3. The device is equipped with a power cord and plug. Before connecting the power supply, make sure that the power switch (10) is in the OFF position.

5.4 Installation of the wire drum

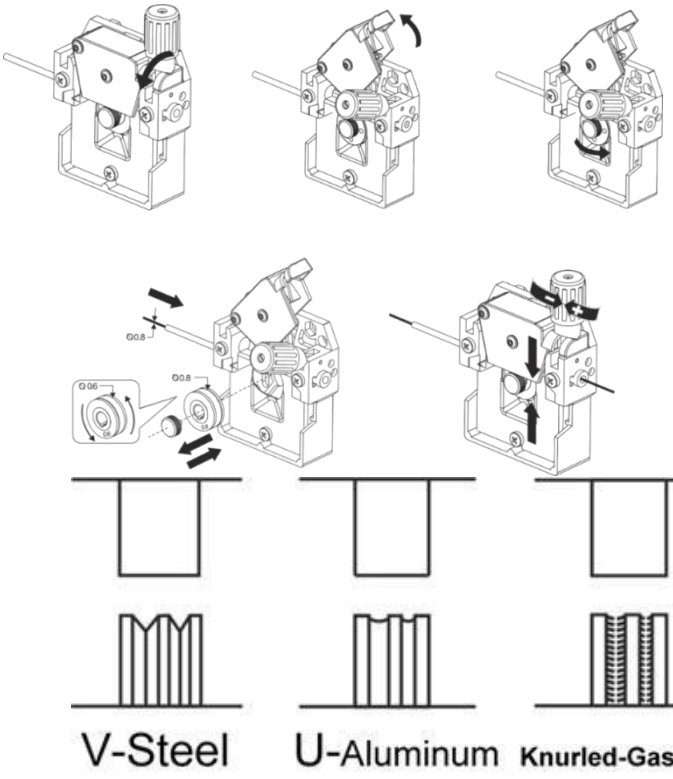
1. Remove the side cover of the engine compartment.
2. Mount the wire wheel on the axle.
3. Secure the wire drum against falling.
4. Loosen the wire rollers.
5. Check that the push rollers are suitable for the type and diameter of the wire. If necessary, install the correct rollers. Use rollers with V-shaped grooves for steel wire and rollers with U-shaped grooves for aluminium wire. For cored wires, the use of dedicated resin coils is recommended.
6. Pull out the end of the wire.
7. Thread the wire through the rollers into the wire guide.
8. Push the wire into the grooves of the drive cylinder.
9. Unscrew the power adapter from the gun, switch on the and insert the wire into the gun by pressing and holding the gun button with the quick wire feed function.
10. Once the wire appears on the end of the gun, release the button and mount the power adapter.
11. Adjust the pressure of the feed rollers by turning the push button. Insufficient pressure will cause the drive roller to slip, while excessive pressure will increase the feed resistance, which can cause wire deformation and damage to the feeder.



Spool D100



Spool D200

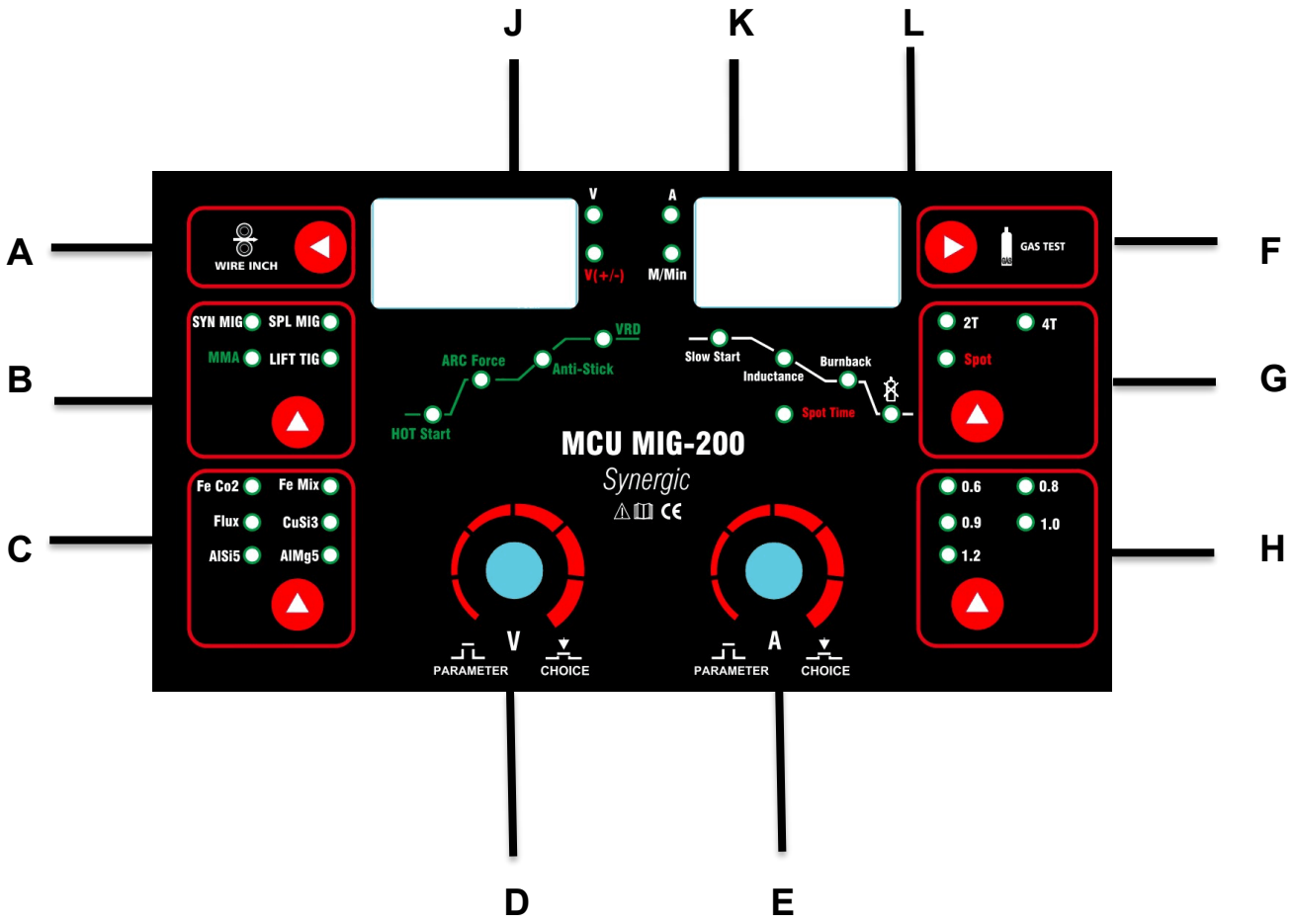


5.5 Preparing the MIG gun

Depending on the type of material to be welded and the diameter of the welding wire, install the appropriate current transmitter and wire guide coil in the MIG gun.
For welding steel, use a current transformer designed for steel welding and a steel insert. For welding aluminium, use a current transformer and Teflon insert designed for welding aluminium.

6. ACTION

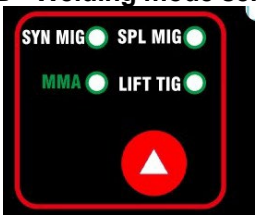
6.1 Dashboard



A - Quick toggle button

Pressing the button causes the welding wire to slip out quickly. Can be used when fitting a wire drum to quickly insert it into the welding gun.

B - Welding mode selection button



SYN MIG:MIG / MAG welding with synergic settings. The unit selects the welding parameters depending on the type and thickness of the material selected. These parameters can be modified by the user. In SYN MIG mode, the current can be displayed and adjusted.

SPL MIG: manual adjustment of welding wire speed and welding voltage for MIG/MAG welding.

C- Welding material selector button: the button is only active during MIG/MAG welding modes.

Fe $_{CO2}$: $_{CO2}$ carbon steel welding 100% $_{CO2}$.

Fe Mix: welding of carbon steels in a shielded $_{Ar/CO2}$ mixture. The recommended mixing ratio is 82% Ar 18% $_{CO2.}$

Filler metal: without gas and welding with flux cored steel wire

$_{CuSi3}$: brazing welding

When selecting parameters, it is recommended to choose low voltage values and high wire speeds. Argon is recommended as a shielding gas, but good results can also be obtained with a mixture of argon and $_{CO2}$ (82/18). The inductance should be set experimentally depending on the thickness and type of material to be welded, taking into account the desired weld shape. Copper-based fillers are generally used as a filler material.

$_{AlSi5}$: welding of silicon alloys with argon shielding gas.

$_{AlMg5}$: welding of aluminium magnesium alloys with argon shielding gas.

D. E - Control button

The (D-left) and (E-right) buttons are used to select the function to set the parameters.

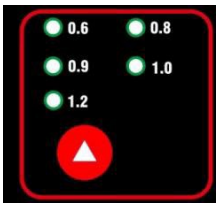
Turning the knobs to the left decreases the parameter value, turning them to the right increases it. The currently set parameter or parameter group is indicated by the illumination of the corresponding LED on the parameter table. In the case of a parameter group, pressing the (E-right) key toggles between the individual parameters of the group. With the button (E-right) you can adjust most parameters, with the coil force button (D-left) you can adjust the voltage correction in SYN MIG synergic settings and the voltage in SPL MIG.

F - Gas test

The button is only active during MIG.MAG welding
Pressing and holding the button the protective gas to flow out, releasing it stops the gas flow.

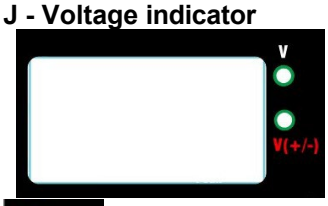
G - MIG gun control button

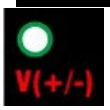
H - Button to select the wire diameter



The button is only used to select the diameter of the wire during MIG/MAG welding in active modes. When the correct mode is selected, the control diode is illuminated.

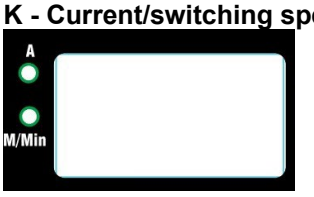
J - Voltage indicator





Welding tension correction (only under SYN MIG)

K - Current/switching speed indicator



Shows the values of the parameters.

L- Parameter setting diagram

Hot start	MMA function - Hot Start: The Hot Start function operates at the moment of arc ignition and causes the welding current to temporarily increase above the value set by the welder. The Hot Start is designed to prevent the electrode from sticking to the material and to assist during arc ignition. For welding smaller parts, it is recommended to use low values for this function to avoid material burn-through. Adjustment range: 0 - 10
Arc Force	MMA function - Arc Force: The Arc Force function allows you to adjust the dynamics of the welding arc. As the arc length decreases, the welding current increases, which helps to stabilise the arcDecreasing the value provides a softer arc and shallower penetration, while increasing the value results in deeper penetration and shorter arc weldability. A high ARC FORCE setting allows welding with minimum arc length and high electrode melting rate. Adjustment range: 0 - 10
Anti-stick	MMA function - Anti-stick ON/OFF: It helps to easily remove the electrode if it sticks to the workpiece.
VRD	MMA function - VRD Function **ON/OFF** This function reduces the voltage at idle. The correct voltage value is restored immediately before the arc is lit. This minimises the risk of electric shock but may make it difficult to light the arcsome cases.
Slow start	Slow draw .For MIG methods only. Setting range: 0~ 10

Inductance	Adjusting the inductance allows you to optimise the arc characteristics depending on the thickness of the welded material, the welding method and the conditions. This feature is useful when welding thin materials using MIG/MAG, for resistance to burn-through, and for brazing galvanised elements. Changing the inductance value also affects the reduction of weld spatter when using CO_2 shielding gas. A higher (+) inductance value reduces spatter, while a negative (-) value increases it. The optimal setting of the inductance value depends on several factors and may deviate from standard recommendations and should therefore be set experimentally during welding experiments. The adjustment of this parameter also allows the brazing of thin (3 mm) galvanized elements with copper alloy ($CuSi_3$) wires in pure argon or, in some cases, in a shielding gas of Ar/CO_2 mixture. Setting: -10~ 10
Burnback	The burn-back time can be set, which determines the duration of the voltage on the output of the device after the wire has stopped. This function prevents the welding wire from sticking to the workpiece and prepares the wire end for the next arc ignition. Higher values of this function result in the wire burning back closer to the tip of the contact. Setting: 0~ 10
Posterior gas flow 	For MIG methods only. Setting range: 0.0~ 2.0S.
Point time	Spot welding time. This function is only available for MIG methods in manual mode. Setting range: 0.0 ~ 2.0S

Brazing

When selecting parameters, it is recommended to choose low voltage values and high wire feed rates. Argon is recommended as a shielding gas, but good results can also be obtained with a mixture of argon and CO_2 (82/18). The inductance should be set experimentally depending on the thickness and type of material to be welded.

Copper-based fillers are usually used as additives. These are wires labelled $CuSi_3$ or SG-CuAl.

The use of a gun with a Teflon lining up to 3 metres long is recommended.

7. WELDING OF ALUMINIUM ALLOYS

Welding aluminium is not a simple task and requires the welder to have experience, knowledge and follow certain practices that will facilitate the welding process of aluminium parts. It is important to remember a few key points that significantly affect the appearance of the weld joint and ensure a successful welding process.

Before welding aluminium parts, the following steps should be carried out:

Tool:

- Make sure that the wire feed rollers are designed to be machined with aluminium: the groove must be in the shape of a "U" and suitable for the corresponding wire diameter. Using the wrong rollers can deform the wire and cause problems during the welding process.
- Make sure that the wire rollers are not too tight. Excessive wire tension can lead to feeding problems.
- Make sure the gun is fitted with a Teflon insert designed for aluminium.
- Check that the welding gun's current transformer is the correct size and that it is designed for aluminium wire.

Workstation:

- Make sure the welding area is properly prepared: the workshop should be clean, well ventilated and have low humidity. The presence of iron oxide dust or dust from steel erosion is not allowed.
- Aluminium welding stations should be vacuumed daily with an industrial vacuum cleaner after the work is completed.
- Welders' clothing should be clean and gloves should not be greasy.

Material preparation:

- Immediately before welding, clean and degrease the welding area.
- Clean the aluminium elements with a clean cloth soaked in a degreasing cleaner, e.g. acetone (alcohol is not a good degreasing agent, we recommend not to use it when cleaning aluminium).
- Remove heavy oxide residues before welding. This can be done manually or mechanically with a steel brush. In cases where the material is heavily contaminated, it may need to be sanded.
- Once the surface has been properly prepared, carry out the welding process as quickly as possible.
- If a part needs to remain unwelded for an extended period, protect it with wrapping paper and secure it with adhesive tape.

Proper storage of the wire

- Aluminium welding wire should be stored in a clean, dry environment, preferably in its original packaging.
- The wire does not need to be stored in an air-conditioned room, but it is best to store it in a place with low humidity. It is important not to immerse the wire in water.
- If you bring a relatively cold pipe into the room on a hot, humid day and open it up immediately, there is a chance that the humid air will contaminate the pipe. Therefore, if you are storing the wire in an air-conditioned room, remember not to unwrap the wire until it has warmed up and adapted to the ambient temperature.
- After finishing the job, remove the wire from the dispenser and store it in a sealed plastic bag for later use.

For welding aluminium alloys, the shielding gas used should be clean, good quality argon gas with a recommended minimum purity of 4.8.The gas flow rate should be selected appropriately based on thickness and welding speed. Good welding results are obtained if the welding process is left-handed.

8. VIEW

8.1 MMA function

1. Touch the electrode to the workpiece, quickly scratch it and then lift it off.
2. In the case of starting the arc with electrodes containing non-conductive slag after the coating has cured, clean the electrode tip beforehand by repeatedly striking it against a hard surface until it makes metallic contact with the workpiece.

8.2 Lift TIG function

1. Open the gas valve of the welding gun to allow the shielding gas to flow.
2. Touch the gun to the workpiece.

8.3 MIG/MAG function

1. Hold the gun close to the workpiece so that there is about 10 mm between the nozzle and the workpiece.
2. Press the button on the welding gun and start the welding process.

9. TABLE OF RECOMMENDED PARAMETER VALUES

9.1 MMA function

Electrode diameter	2,5	3,2	4,0	5,0
Welding current	70 - 100A	110 - 140A	170 - 220A	230 - 280A

9.2 TIG function

Thickness (mm)	Electrode diameter (mm)	Electrode wire diameter (mm)	Welding current (A)	Protective gas flow (l/min)
0,8	1,0	1,0	35 - 45	4 - 6
1,0	1,6	1,6	40 - 70	5 - 8
1,5	1,6	1,6	50 - 85	6 - 8
2,0	2,0 - 2,4	2,0	80 - 130	8 - 10
3,0	2,4 - 3,2	2,4	120 - 150	10 - 12

9.3 MIG function

		Plate iron members hip (mm)	Wire diameter (mm)	Welding current (A)	Welding voltage (V)	Welding speed (cm/min)	Free electrode output (mm)	Gas flow (l/min)
Butt welding	Low welding speed	0.8	0.8,0.9	60～ 70	16～ 16.5	50～ 60	10	10
		1.0	0.8,0.9	75～ 85	17～ 17.5	50～ 60	10	10～ 15
		1.2	0.8,0.9	80～ 90	16～ 16.5	50～ 60	10	10～ 15
		1.6	0.8,0.9	95～ 105	17～ 18	45～ 50	10	10～ 15
		2.0	1.0,1.2	110～ 120	18～ 19	45～ 50	10	10～ 15
		2.3	1.0,1.2	120～ 130	19～ 19.5	45～ 50	10	10～ 15
		3.2	1.0,1.2	140～ 150	20～ 21	45～ 50	10～ 15	10～ 15
		4.5	1.0,1.2	160～ 180	22～ 23	45～ 50	15	15
			1.2	220～ 260	24～ 26	45～ 50	15	15～ 20
			1.2	220～ 260	24～ 26	45～ 50	15	15～ 20
			1.2	300～ 340	32～ 34	45～ 50	15	15～ 20
			1.2	300～ 340	32～ 34	45～ 50	15	15～ 20
	High welding speed	0.8	0.8,0.9	100	17	130	10	15
		1.0	0.8,0.9	110	17. 5	130	10	15
		1.2	0.8,0.9	120	18. 5	130	10	15
		1.6	1.0,1.2	180	19. 5	130	10	15
		2.0	1.0,1.2	200	21	100	15	15
		2.3	1.0,1.2	220	23	120	15	20
		3.2	1.2	260	26	120	15	20

		Plate iron membership (mm)	Wire diameter (mm)	Pistol angle of inclination ( )°	Welding current (A)	Welding voltage (V)	Welding speed (cm/min)	Free electrode output (mm)	Gas flow (l/min)
Horizontal corner seam, butt plug	Low welding speed	1.0	0.8,0.9	450	70～80	17～18	50～60	10	10～15
		1.2	0.9,1.0	450	85～90	18～19	50～60	10	10～15
		1.6	1.0,1.2	450	100～110	19～20	50～60	10	10～15
		2	1.0,1.2	450	115～125	19～20	50～60	10	10～15
		2.3	1.0,1.2	450	130～140	20～21	50～60	10	10～15
		3.2	1.0,1.2	450	150～170	21～22	45～50	15	15～20
		4.5	1.0,1.2	450	140～200	22～24	45～50	15	15～20
		6	1.2	450	230～260	24～27	45～50	20	15～20
		8.9	1.2,1.6	500	270～380	29～35	45～50	25	20～25
		12	1.2,1.6	500	400	32～36	35～40	25	20～25

	High welding speed	1.0	0.8,0.9	450	140	19～20	160	10	15
		1.2	0.8,0.9	450	130～150	19～20	120	10	15
		1.6	1.0,1.2	450	180	22～23	120	10	15～20
		2	1.2	450	210	24	120	15	20
		2.3	1.2	450	230	25	110	20	25
		3.2	1.2	450	270	27	110	20	25
		4.5	1.2	500	290	30	80	20	25
		6	1.2	500	310	33	70	25	25

Water sintered corner seam	Low welding speed	0. 8	0.8,0.9	100	60～70	16～17	40～45	10	10～15
		1.2	0.8,0.9	300	80～90	18～19	45～50	10	10～15
		1.6	0.8,0.9	300	90～100	19～20	45～50	10	10～15
		2.3	0.8,0.9	470	100～130	20～21	45～50	10	10～15
			1.0,1.2	470	120～150	20～21	45～50	10	10～15
		3.2	1.0,1.2	470	150～180	20～22	35～45	10～15	20～25
		4.5	1. 2	470	200～250	24～26	45～50	10～15	20～25

	Plate thickness (mm)	Wire diameter (mm)	Welding current (A)	Welding voltage (V)	Welding speed (cm/min)	Free electrode output (mm)	Gas flow (l/min)
Sarokvarrat	1.6	0.8,0.9	60～80	16～17	40～50	10	10
	2.3	0.8,0.9	80～100	19～20	40～55	10	10～15
	3.2	1.0,1.2	120～160	20～22	35～45	10～15	10～15
	4.5	1.0,1.2	150～180	21～23	30～40	10～15	20～25

10. TROUBLESHOOTING

Symptom of an error	Triggering cause	Troubleshooting
No power, error signal or machine malfunction	No connection or loose connection inside the device	Check and replace the plug if necessary
No hesitation (the dispensing motor is running)	Roller pressure too low	Set the right pressure
	Incorrect groove diameter of the guide roller	Install the correct roller
	Contaminated Wire Guide	Replace the wire insert
	The electrode lead blocks the current	Replace the power transformer
Irregular stalling	Damaged transformer	Replace the power transformer
	The roller groove is dirty or damaged	Clean the roller groove or replace the roller
	The wire roll friction against the welding machine housing	Secure the wire roll properly
Unsuccessful start	Lack of proper contact of the body cable	Repair the body cable contact
	Damaged switch in MIG gun	Replace the switch
	Incorrect connection of the MIG gun to the machine	Check the condition of the electrical connections, check that the connecting pins are intact
The arc is too long and irregular	The welding voltage is too high	Reduce welding stress
	The wire speed is too low	Increase wire speed
The arc is too short	The welding voltage is too low	Increase the welding stress
	The wire speed is too high	Reduce the speed of the wire
The display does not light up after switching on	No power supply	Check the fuses
Cooling is not enough	- There is a physical barrier at the paddles - The fan is blocked by a curved casing	In case of failure, it should be replaced in a workshop. If possible remove the obstruction
Unsatisfactory weld quality in MIG welding	Inappropriate or poor quality materials or consumables were used	Replace the parts that are running out. Replace welding wire or gas cylinder with suitable or better quality materials.
	The protective gas does not flow with sufficient intensity	Check the gas supply hose, repair the hose connection to the fittings and check the condition of the quick couplings. Check the pressure regulator.
Inadequate weld quality with MMA welding method, the electrode adheres to the material to be welded	Incorrect polarity of the welding cable connections	Connect the welding cables properly
	Wet electrode	Replace the electrode
	The appliance is powered by a generator or a long extension cable, insufficient with cross-section cable	Connect the device directly to the mains

11. INSTRUCTIONS FOR USE

The equipment must be operated in an environment free from corrosive materials and excessive dust. Do not place the appliance in dusty areas or near grinding operations. Dust and metal chips can contaminate control panels, cables and internal connections, which can lead to an electrical arc and damage to the appliance.

Avoid operating the appliance in an environment with high humidity, especially if dew forms on metal surfaces. If dew forms on metal parts, for example when bringing a cold appliance into a warm room, wait until the dew has evaporated completely and allow the appliance to reach ambient temperature. Starting the appliance under these conditions may cause damage. It is recommended that the appliance be placed under a roof when used outdoors to protect it from adverse weather conditions.
The device must be operated under the following conditions:

- The effective supply voltage fluctuations should not exceed 10%.
- Ambient temperature between -10°C and +40°C
- Atmospheric pressure between 860 and 1060 hPa
- The relative humidity of the ambient air must not exceed 80%
- Up to 1000 m above sea level

12. MAINTENANCE INSTRUCTIONS

As part of daily maintenance, it is important to keep the appliance clean, check the condition of external connections, and check the condition of wiring and cables.
Replace consumable parts regularly.
Regularly clean the inside of the appliance by blowing compressed air to remove dust and metal chips from control panels, wiring and electrical connections.
At least once every six months, a general check and condition of electrical connections should be carried out, in particular:

- Check the status of the electric shock protection
- Check the condition of the insulation
- Check the operation of the security system
- Make sure the cooling system is working properly

Damage resulting from the use of the appliance in unsuitable conditions and from failure to observe the maintenance recommendations is not covered by the warranty.

13. STORAGE AND TRANSPORT INSTRUCTIONS

The device must be stored in a temperature range between -10°C and +40°C and at a relative humidity of 80%, free from corrosive fumes and dust. Packaged equipment must be transported in closed means of transport and the equipment must be secured to prevent movement and held in the correct position. During transport, the packaged equipment must be secured to prevent movement and kept in the correct position.