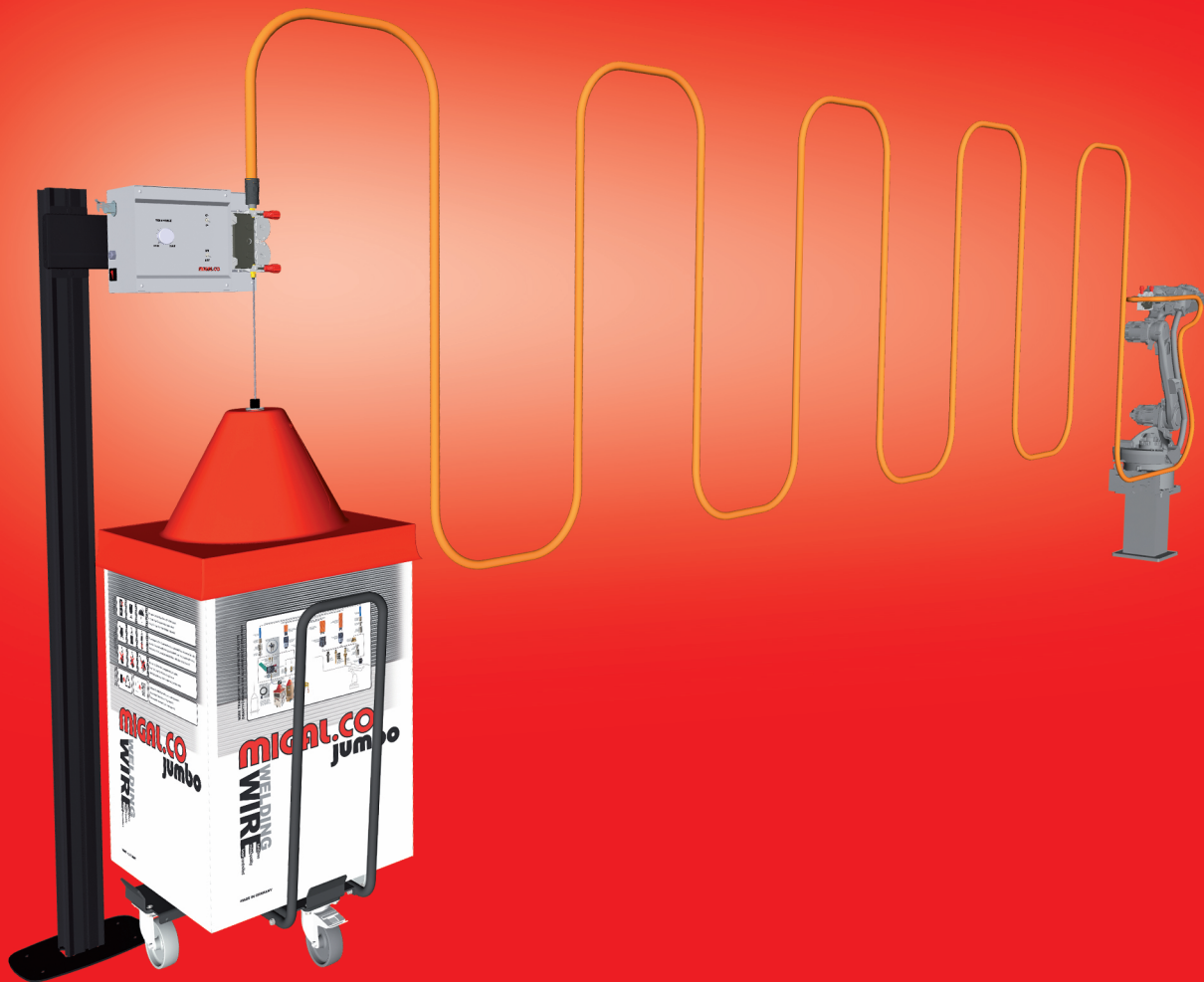


RoboFeed

Pushing the limits of wire transport.



Manual

MIGAL.CO

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General

The unit has been manufactured in accordance with the state of the art and recognised safety regulations. Nevertheless, in the event of incorrect operation or misuse, there is a risk of danger to

- life and limb of the operator or third parties,
- the unit and other material assets of the operator,
- efficient work with the unit.

All persons involved in the commissioning, operation, maintenance and servicing of the unit must

- be appropriately qualified,
- have knowledge of welding and
- read these operating instructions in full and follow them exactly.

The operating instructions must be kept at the place of use of the unit at all times. In addition to the operating instructions, the generally applicable and local rules for accident prevention and environmental protection must be observed.

All safety and hazard information on the unit

- Keep in legible condition
- do not damage
- Do not remove
- Do not cover, paste over or paint over.

Eliminate any faults that may affect safety before switching on the unit.

Intended use

The appliance is intended exclusively for feeding wires for welding or similar applications. Any other use is not as intended and the manufacturer is not liable for any resulting damage.

The instructions in the operating manual and regular maintenance are part of the intended use.

The unit is to be used exclusively for work in the sense of its intended use.

Intended use also includes

- the complete reading and following of all instructions from the operating instructions - the complete reading and following of all safety and danger instructions
- compliance with inspection and maintenance work.

The appliance is designed for industrial and commercial use. The manufacturer is not liable for damage resulting from use in residential areas.

The manufacturer also accepts no liability for defective or faulty work results.

Environmental conditions

Operation or storage of the unit outside the specified range is considered improper. The manufacturer is not liable for any damage resulting from this.

Temperature range of the ambient air:

- during operation: -10 °C to + 40 °C (14 °F to 104 °F)
- during transport and storage: -20 °C to +55 °C (-4 °F to 131 °F)

Relative humidity:

- up to 50 % at 40 °C (104 °F) - up to 90 % at 20 °C (68 °F)

Ambient air: free from dust, acids, corrosive gases or substances, etc. Altitude above sea level: up to 2000 m (6561 ft. 8.16 in.)

Obligations of the operator

The operator undertakes to only allow persons to work on the unit who are

- are familiar with the basic regulations on occupational safety and accident prevention and have been instructed in the handling of the device

- have read and understood these operating instructions and have confirmed this with their signature
- are trained according to the requirements for the work results.

The safety-conscious work of the personnel must be checked at regular intervals.

Obligations of the staff

All persons entrusted with work on the unit undertake, prior to commencing work, to

- to follow the basic regulations on occupational safety and accident prevention
- to read these operating instructions and to confirm by their signature that they have understood and will follow them.

Before leaving the workplace, ensure that no personal injury or damage to property can occur even in the absence.

Mains connection

Ensure that the mains connection is securely earthed!

Self and personal protection

When handling the appliance, you expose yourself to numerous dangers, such as..:

- Flying sparks, hot metal parts flying around
- Arc radiation harmful to eyes and skin
- Harmful electromagnetic fields that pose a danger to the lives of pacemaker wearers.
- Electrical hazard due to mains and welding current
- increased noise pollution
- harmful welding fumes and gases

Use suitable protective clothing when handling the unit. The protective clothing must have the following characteristics:

- flame retardant
- Insulating and dry
- Covering the whole body, undamaged and in good condition - Safety helmet
- Strapless trousers

Protective clothing includes:

- Protect eyes and face from UV rays, heat and flying sparks by using a protective shield with a filter insert in accordance with regulations.
- Behind the shield, wear safety goggles with side shields in accordance with regulations.
- Wear sturdy footwear that is insulating even when wet.
- Protect hands with suitable gloves (electrically insulating, heat protection).
- To reduce noise exposure and protect against injury, wear hearing protection.
- Keep people, especially children, away from the equipment and the welding process during operation.

However, if there are people in the vicinity

- inform them of all hazards (risk of dazzle due to electric arc, risk of injury due to flying sparks, harmful welding fumes, noise pollution, possible hazard due to mains or welding current, ...),
- provide suitable means of protection or
- erect suitable protective walls and curtains.

Danger from harmful gases and fumes

Fumes produced during welding contains gases and fumes that are harmful to health.

Welding fume contains substances that cause cancer according to Monograph 118 of the International Agency for Research on Cancer.

Use spot extraction and room extraction.
If possible, use welding torches with integrated extraction device.

Keep head away from welding fumes and gases.

Smoke and noxious gases produced

- Do not inhale
- Remove the dust from the working area by suitable means.

Ensure that there is a sufficient supply of fresh air. Ensure that there is a ventilation rate of at least 20 m³ / hour at all times.

If ventilation is insufficient, use a welding helmet with air supply.

If it is unclear whether the extraction capacity is sufficient, compare the measured pollutant emission values with the permissible limit values.

The following components, among others, are responsible for the degree of harmfulness of welding fumes:

- Metals used for the workpiece
- Electrodes
- Coatings
- Cleaners, degreasers and the like - Welding process used

Therefore, the relevant material safety data sheets and manufacturer's specifications for the listed components must be taken into account.

Recommendations for exposure scenarios, risk management measures and identification of working conditions can be found on the Health & Safety section of the European Welding Association website (<https://european-welding.org>).

Keep flammable fumes (for example, solvent vapours) away from the arc's radiation area.

Danger due to flying sparks

Flying sparks can cause fires and explosions. Never weld near flammable materials. Combustible materials must be at least 11 metres (36 ft. 1.07 in.) away from the arc or covered with a tested cover.

Have a suitable, tested fire extinguisher ready.

Sparks and hot metal parts can also get into surrounding areas through small cracks and openings. Take appropriate measures to ensure that there is no risk of injury or fire.

Do not weld in areas subject to fire and explosion hazards and on closed tanks, drums or pipes unless they are prepared in accordance with the relevant national and international standards.

Do not weld on containers in which gases, fuels, mineral oils and the like are/were stored. There is a risk of explosion due to residues.

Hazards due to mains and welding current

An electric shock is basically life-threatening and can be fatal.

Do not touch live parts inside or outside the unit.

In MIG/MAG and TIG welding, the welding wire, the wire coil, the feed rollers and all metal parts that are in contact with the welding wire are also live.

Ensure appropriate self-protection and personal protection by means of a dry base or cover that is sufficiently insulating from the earth or ground potential. The base or cover must completely cover the entire area between the body and the earth or ground potential.

All cables and lines must be solid, undamaged, insulated and sufficiently dimensioned. Replace loose connections, scorched, damaged or undersized cables and lines immediately.

The electrode (rod electrode, tungsten electrode, welding wire, ...)

- Never immerse in liquids for cooling
- never touch it when the power source is switched on.

For example, twice the open-circuit voltage of a welding device can occur between the electrodes of two welding devices. If the potentials of both electrodes touch at the same time, there may be a danger to life.

Have the mains and appliance supply lines checked regularly by a qualified electrician to ensure that the protective earth conductor is functioning properly.

Devices of protection class I require a mains with protective conductor and a plug system with protective conductor contact for proper operation.

Operating the unit on a mains without a protective earth conductor and on a socket without a protective earth contact is only permissible if all national regulations on protective separation are observed.

Otherwise, this is considered grossly negligent. The manufacturer is not liable for any damage resulting from this.

If necessary, ensure adequate earthing of the workpiece by suitable means.

Switch off devices that are not in use.

Wear safety harness for fall protection when working at heights.

Before working on the appliance, switch it off and unplug it from the mains.

Secure the unit against being plugged in and switched on again by means of a clearly legible and understandable warning sign.

After opening the unit:

- Discharge all components that store electrical charges
- make sure that all components of the unit are de-energised.

If work on live parts is necessary, call in a second person to switch off the main switch in good time.

Vagrant welding currents

If the instructions given below are not observed, vagrant welding currents may occur which can cause the following:

- Fire hazard
- Overheating of components connected to the workpiece
- Destruction of protective conductors
- Damage to the appliance and other electrical equipment

Ensure that the workpiece clamp is firmly connected to the workpiece. Attach the workpiece clamp as close as possible to the area to be welded.

Install the unit with sufficient insulation from electrically conductive surroundings, e.g. insulation from conductive floor or insulation from conductive racks: Insulation from conductive floors or insulation from conductive racks.

When using current distributors, double-headed holders, etc., observe the following: The electrode of the welding torch not in use also carries potential. Ensure that the unused welding torch is sufficiently insulated.

In automated MIG/MAG applications, only feed the wire electrode to the wire feeder insulated from the welding wire barrel, large spool or wire spool.

EMC measures

In special cases, despite compliance with the standardised emission limits, interference may occur for the intended area of application (e.g. if there are sensitive devices at the installation site or if the installation site is close to radio or television receivers).

In this case, the operator is obliged to take appropriate measures to remedy the fault.

Check and evaluate the immunity of equipment in the vicinity of the unit in accordance with national and international regulations. Examples of equipment susceptible to interference that could be affected by the unit:

- Safety devices
- Network, signal and data transmission lines - IT and telecommunications equipment
- Facilities for measurement and calibration

Special danger points

Keep hands, hair, clothing and tools away from moving parts, such as:

- Gear wheels
- Rollers
- Waves
- Wire coils and welding wires

Do not reach into rotating gear wheels of the wire drive or into rotating drive parts.

Covers and side parts may only be opened / removed for the duration of maintenance and repair work.

During operation

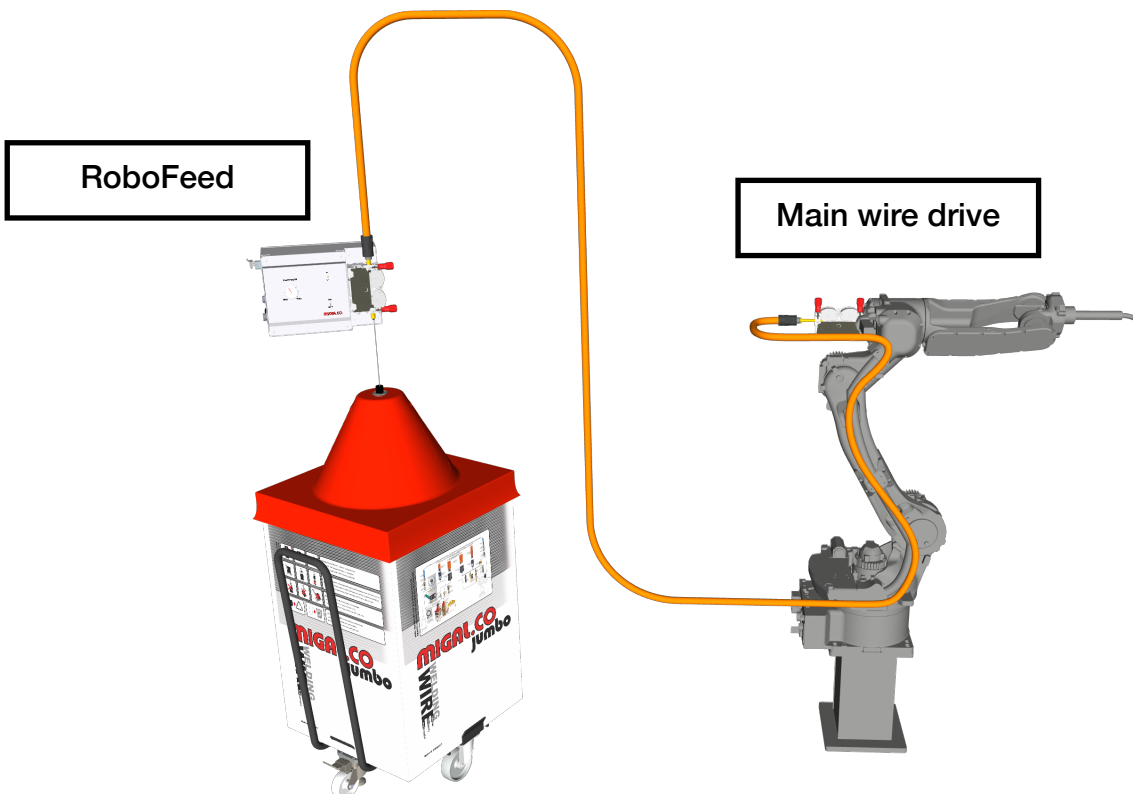
- Ensure that all covers are closed

Exit of the welding wire from the welding torch means a high risk of injury (piercing of the hand, injury to the face and eyes, ...).

Therefore always hold the welding torch away from the body (devices with wire feed) and use suitable safety goggles.

Do not touch the workpiece during and after welding - risk of burns.

Slag can jump off workpieces as they cool down. Therefore, also wear the proper protective equipment when reworking workpieces and ensure adequate protection of other persons.



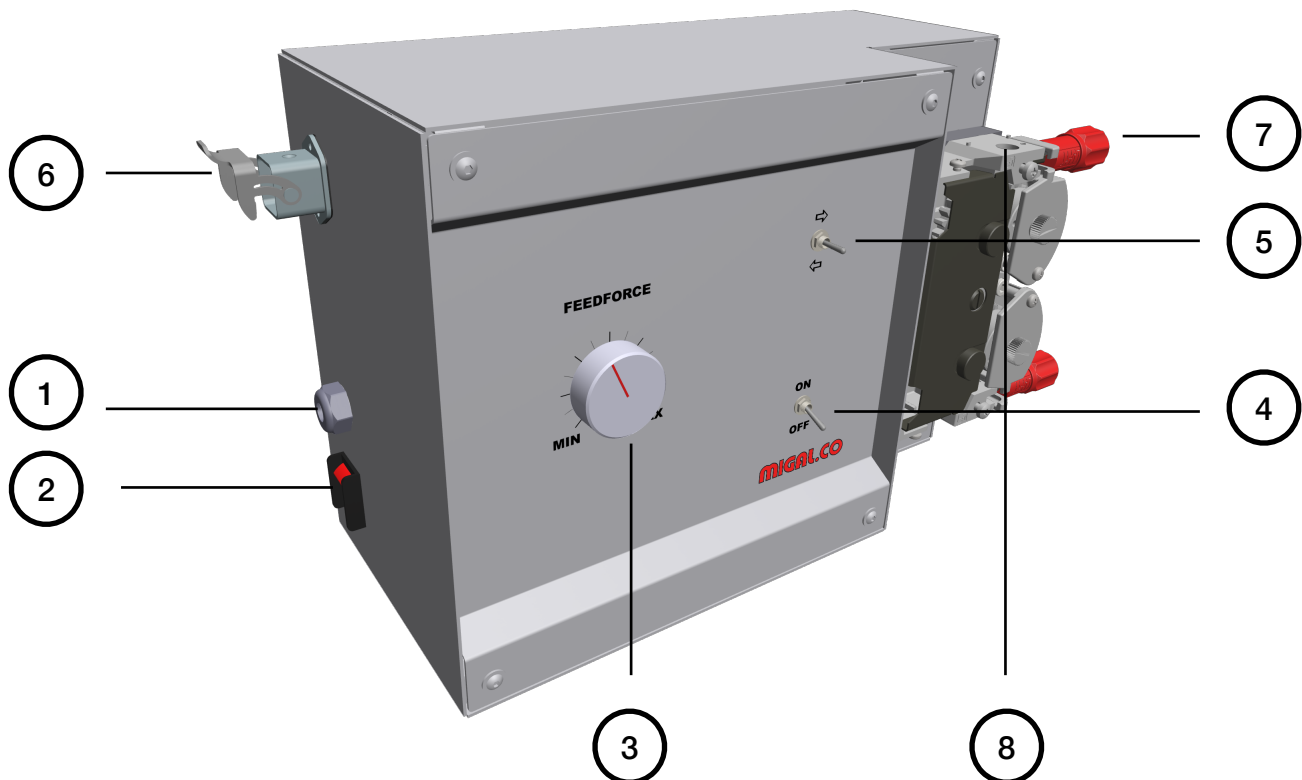
General

The wire feeder RoboFeed is designed to feed wire electrodes for welding from a wire drum or from a spool and then push them into a wire feed hose with adjustable, constant feed force and variable speed. RoboFeed operates to a second wire feeder at the exit of the wire feed hose. Electrical communication between the two wire feeders is not necessary, but can be done via a start/stop signal. The feed force of RoboFeed must be adjusted in such a way that, on the one hand, the wire electrode is not pushed so hard that it deforms (kinks or waves) but, on the other hand, the wire can be removed with the least amount of force at the exit of the wire feed hose. The speed of RoboFeed automatically adjusts to the wire feed speed of the main drive.

Alternatively, RoboFeed can also be used as a wire feeder with constant wire speed.

Connections and controls

- 1) Mains connection
- 2) Mains switch
- 3) Conveying force
The maximum value can be set via the configuration file
- 4) Start/stop switch
Alternatively, the start/stop signal can be made via the electr. interface
- 5) Forward/backward button
To adjust the wire, it can be pushed forwards or backwards by pressing the buttons. In the



first 2 seconds this is done at low speed, then at higher speed. The feed force and the speed of the two stages can be set in the configuration file.

- 6) Electrical interface
The functions of the operating elements 4) and 5) can be carried out with 24 volt inputs. The signal that arrives first is executed. With the constant wire speed option, this can be set via a conductive voltage of 0-10 volts.

- 7) Contact pressure
 The contact pressure of the feed rollers is set here.
- 8) Wire inlet and outlet

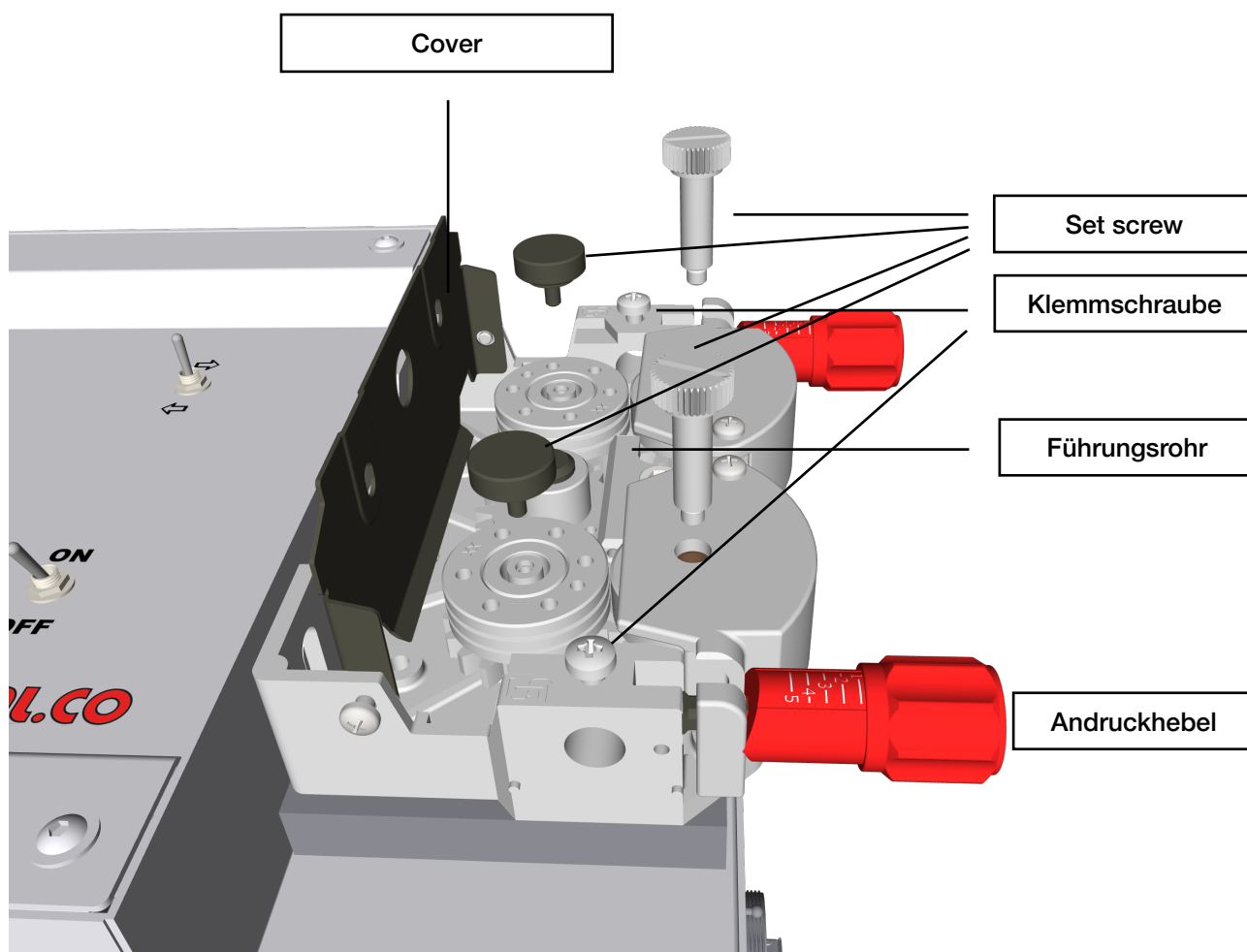
Feed rollers

For optimum wire feeding, the feed rollers must be adapted to the wire diameter to be welded and the wire alloy.

For non-ferrous metals, conveyor rollers with a U-groove are preferable in order not to deform the relatively soft wires. For steel wires, conveyor rollers with V-groove can be used and the pressure rollers can also be smooth.

To replace the feed rollers, the pressure levers must be opened and the 4 fixing screws removed. Then the cover can be opened and the feed rollers can be removed or inserted.

Make sure that the feed rollers are used in such a way that the same wire diameter (embossing on the roller) is used in each case.



CAUTION: The wire drive must not be switched on again until the cover is closed and the fixing screws are inserted.

Inserting the wire

Switch off the wire feeder using the mains switch.

The wire inlet and outlet pieces of the wire feed hoses at the inlet and outlet of the wire drive must be securely fastened with the clamping screws. The pressure levers must be opened. The wire can then be inserted by hand and pushed over the guide tube into the outlet. Close the pressure levers and make sure that the wire is in the grooves of the feed rollers. Switch on the mains switch and continue threading the wire with the forward/backward buttons.

ATTENTION: It may be useful to deburr the end of the wire with a file before threading to avoid damaging the wire feed tube.

When threading the wire, keep the end of the wire feed hose away from the body and especially the face and eyes to avoid injury from the escaping wire electrode .

Set contact pressure

The contact pressure must be adjusted in such a way that the wire electrode is not deformed on the one hand, and perfect conveying is guaranteed on the other.

Setting the feed force (FeedForce)

After inserting the wire, the potentiometer for the feed force should be turned all the way to the left. Set the start/stop switch to ON. Now slowly turn the potentiometer to the right until the wire starts to feed. If the wire feed stops again, turn the potentiometer further to the right until the wire finally comes out at the outlet of the wire feed hose. If the feed force is not sufficient to thread the wire completely, the max. feed force can be increased in the configuration file.

The feed force must never be set so high that the wire becomes kinked or wavy. If it is not possible to thread the wire without kinking or deforming the wire, the wire feed hose must be shortened or the number of bends reduced. Alternatively, a transport hose with rolling friction (rolliner) can be used.

The maximum feed force in the configuration file should be set so that even with the potentiometer in the maximum right position, the wire is not kinked or deformed.

The feed force should be set so that the wire can be removed and stopped at the exit of the wire feed hose with little effort (2 fingers).

Configuration file

A PC with any operating system can be connected to RoboFeed via a USB cable with a micro-USB connection. RoboFeed appears as a drive containing 3 files. The text document PD4CFG contains the configuration data for

- Max. Motor speed in m/min
- Max. Delivery force in Newton with delivery force regulator turned fully to the right
- Inching speed (forward/backward) slow and fast

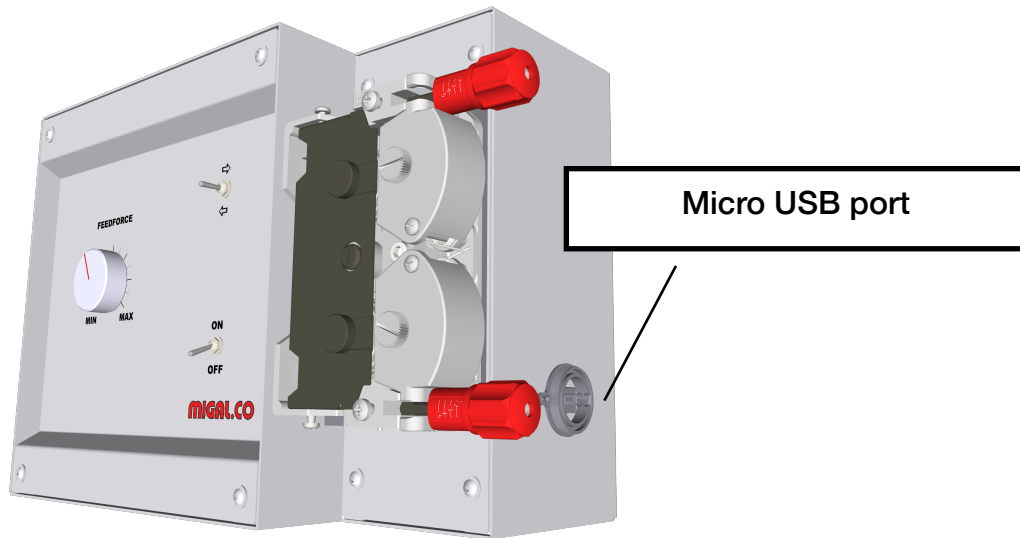
The running direction of RoboFeed can be set via the sign of the max. wire feed speed.

ATTENTION:

- Only whole numbers may be used
- Comments start with ;
- The file may only be changed with a pure text editor (not with e.g. Word or TextEdit).
- The other two files must not be changed or removed.

Configuration file

```
;This file allows to adjust object dictionary parameters
;Note: max. filesize is 4k - comments must start with semicolon
;
USB has to be disconnected and Motor has to be power cycled after
;this file has been modified!
```



```

;
;
;-----
;#####
#####
Values to be changed by user - The following values can be changed
;NO DECIMALS ALLOWED - NO DECIMAL PLACES ALLOWED

;Max. Motorspeed - Max. Wire feed speed in m/min
;For direction change use negative value - For direction change use negative sign
2400:03=-35

;Max. Feeding force in N (max. 165 N) - Max. Feeding force in N (max. 165 N)
2400:01=20

Keying speed slow in m/min - Keying speed slow in m/min
2400:05=8

Keying speed fast in m/min - Keying speed fast in m/min
2400:06=20

;#####
#####

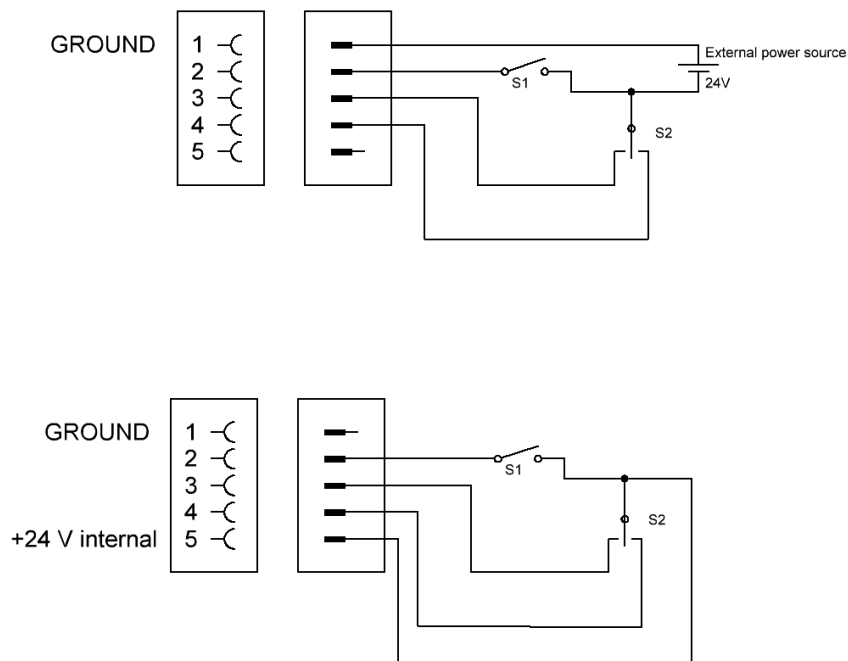
Internal values DO NOT CHANGE - Do not change internal settings.
2102=0x190001
dd4c=1
2300:00=1

```

Electrical interface

The functions of RoboFeed can be controlled via 24 volt signals using the 12-pin Harting Han 3A socket. The built-in switches and the electrical interface are active at the same time. The first signal has priority.

S1 Start/Stop
 S2 Forward/Back



The 24 volts DC can either be obtained internally via pin 5 or supplied from an external voltage source.

Mains voltage

The built-in power supply unit can be used for both 230 volts and 115 volts mains voltage. If the mains voltage is changed, the mains plug must be replaced.

ATTENTION: This work may only be carried out by trained specialist personnel.

Mounting position and control panel

RoboFeed can be mounted with horizontal or vertical wire running direction.

The RoboFeed control panel can be rotated by 90°. To do this, the 4 fastening screws must be loosened, the control panel lifted, turned and screwed on again. The cables to the control elements must not be twisted or torn off.

Before opening the unit, the unit must be disconnected from the mains.

ATTENTION: This work may only be carried out by trained specialist personnel.

The wire running direction can be set via the configuration file.

Wall mounting

RoboFeed can be mounted on a vertical wall with the supplied mounting brackets. See dimension sheet in the appendix.

Technical data

Mains voltage: 115- 230 Volt (50 - 60 Hz)

Wire speed: 0- 50 m/min
Conveying force: 0 - 165 N
Weight: 9,4 kg
Wire diameter: 0.8 - 1.6 mm (larger diameters on request)
Protection class: IP 20
Dimensions: 440 x 255 x 190 mm (lxwxh)

Fault diagnosis

Unit has no function, mains switch is not illuminated

- Check mains cable, plug in mains plug
- Mains socket or mains plug defective
- Mains fuse fallen

Wire feed motor does not move although the mains switch is illuminated and switched on and either the start/stop switch or the forward/backward button is pressed and the feed force potentiometer is turned fully to the right.

- Max. Conveying force set too low in the configuration file

Insufficient delivery capacity

- Incorrect or worn conveyor rollers
- Contact pressure incorrectly set
- Conveying force incorrectly adjusted

Care and maintenance

RoboFeed requires a minimum of care and maintenance under normal operating conditions. However, observing a few points is essential to keep the wire feeding system operational for years.

Each time the machine is put into operation, the feed rollers and the contact pressure must be checked, cleaned and adjusted if necessary. All screw connections must be checked for tightness.

Every 6 months, dismantle the front panel and blow the inside of the unit clean with dry, reduced compressed air.

Safety inspection

A safety inspection is recommended every 12 months.

Disposal

Do not dispose of this appliance in household waste, but recycle it in an environmentally friendly manner.

Data security

The user is responsible for backing up the data (configuration file etc.).

EU Declaration of Conformity according to Low Voltage Directive 2014/35/EU

The manufacturer/marketer

MIGAL.CO GmbH Wattstraße 2, 94405 Landau, Germany

hereby declares that the following product

Product name: RoboFeed

complies with the provisions of the Low Voltage Directive 2014/35/EU - including its amendments in force at the time of the declaration.

The following harmonised standards were applied:

DIN EN IEC 60974-5:2019

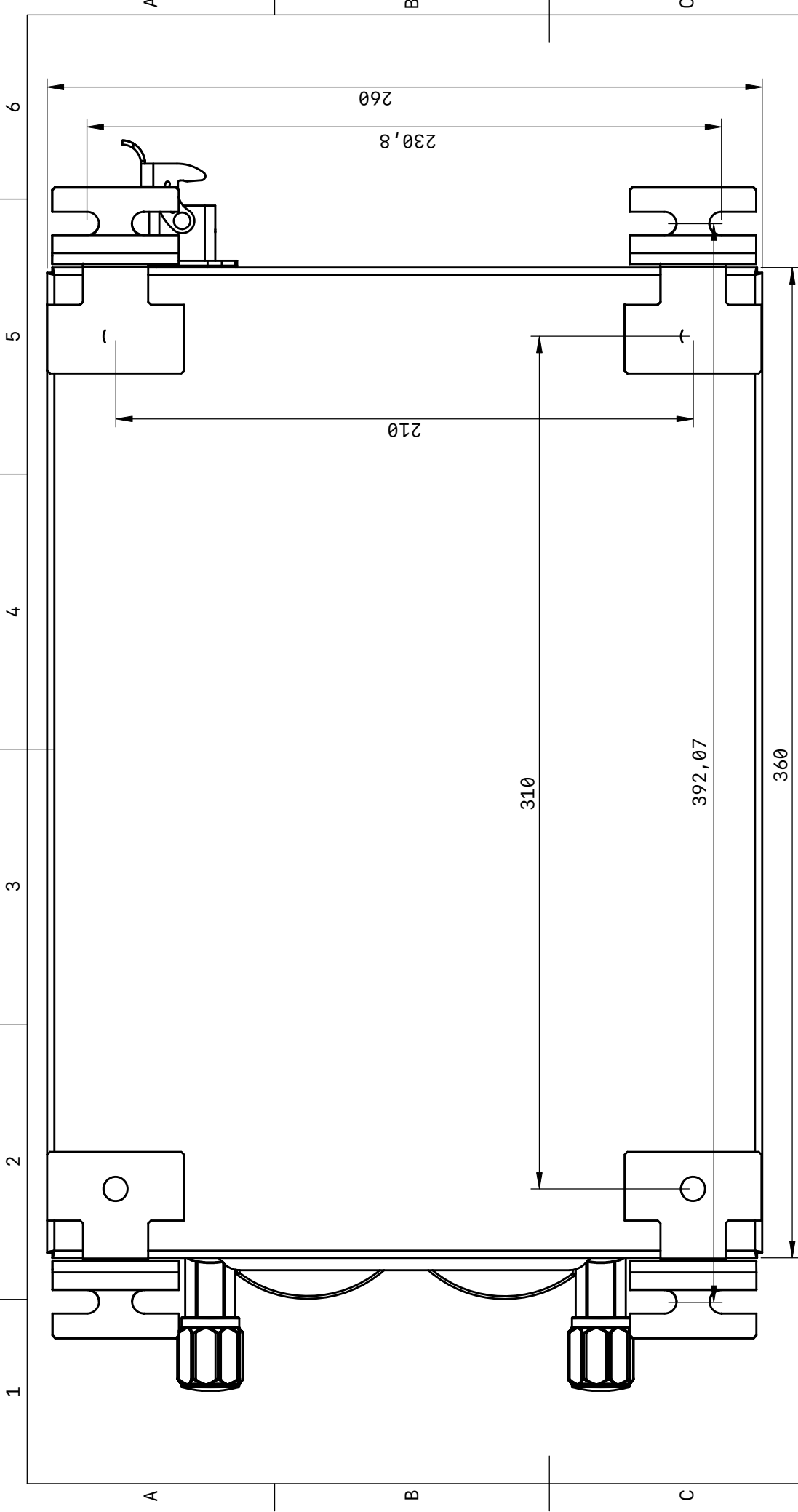
Arc welding equipment - Part 5: Wire feeders

Place: Landau/Isar

Date: 5.10.2021


(Signature)

Robert Lahnsteiner, Managing Director



TITEL

RoboFeed Backview

ZULETZT AKTUALISIERT	EINHEITEN	BLATT
06/01/21	mm	1 / 1
PROJEKTIONSMETHODE 1	MASSSTAB	GRÖSSE
	1:2	A4