ROHRMAN
SCHWEISSTECHNIK

Original-Operation Instructions Welding torches MIG/MAG

EN 60 974-7

Rohrman Schweisstechnik GmbH
Hosterfeldstraße 2 · D-41747 Viersen
Tel. +49(0)2162/106065-0
Fax +49(0)2162/106065-55
www.rohrman.de
info@rohrman.de

Index

1 General

1.1 Informations to this operation manual

This operation manual contains important instructions to the treatment of MIG/MAG welding torches during the instalation, setting up and the operation, about the maintenance and care as also the disposal.

The precondition for secure, intended and economic operation is the compliance with all safety instructions and treatment instructions.

The notice of the instructions helps avoiding hazards, deminishes repair-cost and downtime and increases lifetime of the welding torch.

Moreover the actual accident prevention regulations and safety rules of the welding location must be observed.

This operation manual should be read carefully before beginning of all work! It is part of the product performance and should be kept near the welding torch accessible for the personnel at any time.

1.2 Further applicable documents

Each torch will be delivered with a specific data sheet. This data sheet contains torch specific informations and is part of this operation manual.

If no data sheet is attached please ask your distributor.

Because the welding torch operates with a power source, a wire feeder and optionally a cooling unit, the operation manuals of these equipments should also be observed.

1.3 Copyright

1.4 Explanation of symbols

Warning notices are additionally noticed by warning symbols.
In this operation manual the following warning symbols are used:

SYMBOL	SIGNIFICATION
	General warning notice
	Danger of electrical power
	Explosion danger
	Danger of fire
	Burning danger
	Risk of inhalation of toxic substances
	Danger of strong UV-radiation
	General notices and useful advices for handling

1.5 Warning notices

The warning notices as used in this operation manual are introduced by signal which bring to expression the extend of the hazard. The warning sybol points additionally to the kind of hazard.

In this operation manual the following warning notices are used:

DANGER

Danger for life!

Consequences from failure to comply …

▸ Notices for avoidance

A warning notice of this kind of danger level signalizes a threadning dangerous situation. If the dangerous situation will not be avoided, leads this to death or to serious injuries. These instructions must be complied in order to avoid the danger of death or of serious injuries of personnel.

PRECAUTION

Risk of injury!

Consequences from failure to comply …

▸ Notices for avoidance

A warning notice of this kind of danger level signalizes a possible dangerous situation. If the the dangerous situation will not be avoided could this lead to death or to serious injuries. These instructions must be complied in order to avoid the danger of death or of serious injuries of personnel.

CAUTION

Risk of personnel damage...!

Consequences from failure to comply …

▸ Notices for avoidance

A warning notice of this kind of danger level signalizes a possible dangerous situation. If this situation will not be avoided it could lead to slight or moderate injuries. These instructions must be complied in order to avoud personnel injuries.

NOTE

Text of reference …

A note signalizes additional information that is important for the further processing or that facilitates the described work.

1.6 Limited liability

All disclosures and notices in this operation manual have been collected taking in account of all valid standards and regulations, the state of art as well as our long standing knowledge and experience.

We reserve alterations of the discussed welding torches in the context of further devellopments. From the notices, pictures and descriptions in this operation manual claims cannot be derived.

The manufacturer does not accept liability for damages and operational disruptions caused by:

- noncompliance of this operation manual,
- improper use,
- use of inadequately trained personnel,
- use of improper operating materials,
- faulty connection,
- non use of original components,
- technical alterations not corresponded with **Rohrman Schweisstechnik GmbH**,
- non implementation of required maintenance.

Rohrman Schweisstechnik GmbH, is liable for any of our errors or omissions, excluded further claims in the context of the duties from the in the contract entered warranty obligations. Damage compensation regardless on whatever legal grounds they derive are excluded.

1.7 Warranty

We, Rohrman Schweisstechnik GmbH, deliver a tested quality product. At the time of delivery we warrant an error free product, free from material- or processing errors and suitable for the intented use to the state of art and to the legal regulations.

Warranty claims can be raised only for fabrication errors, but not for damages caused by natural wear or improper use. No warranty will be taken for poor work results. Wear parts are excluded from the warranty.

The Warranty policy covers no damages or functional defects caused by improper use as there are:

- not following the notices in this operation manual,
- improper installation or -assembly,
- inadequate maintenance,
- altering of product against original state,
- overloading, misuse or improper use,
- mechanical damages caused by collision or accident.

2 Security

2.1 General

This chapter gives important instructions to all security aspects for optimal protection of personal as well as safety and fault-free operation.

WARNING

Danger for not complying the security notices!

Substancial danger can arise if the security notices and handling instructions in this operation manual will not be complied.

- ▸ All warn notices and -instructions must be noted.
- ▸ Also must be noted the secrurity notices in the applicable documents.

2.2 The intended use

The welding torches op the series MIG/MAG are meant exclusively for welding with inert gas (MIG) or with active gas (MAG). Some models are suitable for welding with self protecting cored wire. The application should only be used by trained, professional personnel in compliance with the relevant regulations. An other use byond its intended purpose does not comply with these regulations.

The welding torches MIG/MAG meet the regulation of EN 60 974-7 and are not an equipment with its own functionality. Only after to the connection with a welding power source arc welding is feasible.

WARNING

Danger with non complied use!

Any use beyond the intended purpose can lead to dangerous situations.

- ▸ Use the welding torch only for the intendend purpose.
- ▸ Follow all notices and instructions of this operation manual.

Claims of any kind due to damage of non-intented use are excluded.

The risk bears only the operator.

2.3 Security notices

For secure handling of the welding torch the following security notices should be noted:

- Welding operations should only be performed and followed by professional personnel who have knowledge of the relevant regulations of arc welding.
- Personnel should wear dry protective cloth and eyeprotection.
- Welding operations should not be performed in potential explosive environment.
- Personnel with pacemaker or other medical implant should not perform operations with arc welding equipment.
- The welding torch and -hose and cable package should be checked on outside visible damages. A damaged welding torch should not be put in operation.
- Check the orderly state of the power source, the cooling unit and the wire feeder as well as the function of the operation elements before starting the operation.
- Repair of the welding torch or of the connection lead should only be made by an authorized professional shop or by the factory service. Substancial dangers for the user might occur by inexpertly repairs.
- Defect components should only be changed by original Rohrman Schweisstechnik GmbH components. Only these parts may garantee the security requirements.
- The welding torch should be put aside so that no contact with current conducting parts may occur.
- During maintenance and cleaning the power source should be turned off.
- The torch package should not be put over hot or sharp edges.

2.4 Sources of danger

In the following the direct and indirect sources of danger, which may lead to accidents with arc welding, are listed.

2.4.1 Electric current

DANGER

Danger for life by electrical current!

By contact with leads or loaded workpieces danger for life exists! Pay attention to the following notices in order to avoid hazards by contact with electrical power:

- ▸ Wear dry protective cloth.
- ▸ Take insulation precautions when distance to conductive parts is less than 2 meters.
- ▸ Switch off the power source during all maintenance on the welding torch.

2.4.2 Strong heat devellopment

DANGER

Burning hazard!

The torch head, the workpiece and flying sparks and spatters are hot and may cause burning! The following notices should be noted to avoid burnings:

- ▸ Protect the eyes for flying sparks and spatters.
- ▸ Wear suitable protective cloth.
- ▸ With overhead welding wear additional head protection.

2.4.3 Strong radiation

WARNING

Danger of strong radiation during welding!

Strong radiation arrises in the area of the arc during welding!

Please obey the following notices in order to avoid injuries by strong radiation:

- ▸ Wear eye protection with radiation protection filter.
- ▸ Protect open skin against UV-radiation.
- ▸ Protect other people by shielding the welding area.

2.4.4 Harmful substances in the breathing air

WARNING

Danger by harmful substances!

Harmful smoke and gases may occur during the welding procedure!

Please note the following notices in order to avoid harmful substances in the breathing air:

- ▸ Workpieces degreased with cloric solvents should be rinsed thoroughly water in order to avoid toxic phosgen gas.
- ▸ Extract smoke and gases by a suitable exhausting.
- ▸ Wear a respirator when exhausting may not be possible.
- ▸ Pay attention to the wind direction when welding outside.

2.4.5 Danger of injury by the welding wire

PRECAUTION

Possible stick injury by the welding wire!

By unintentionally turning on the wire feeder, stick injuries may occur.

- ▸ Shut off power source before maintenance operations on the welding torch.
- ▸ Bend the end of welding wire or put a protective piece of cork on.

2.4.6 Explosion danger

DANGER

Explosion danger during welding!

Welding on containers, apparats or pipelines may lead to explosions. Please obey the following notices in order to avoid the unleash of explosions:

- Please obtain the approval for welding operations. Never weld in areas marked as potentially explosive.
- Make sure that no explosive atmosphere exists in the welding area.
- Empty the container, clean and fill with protective atmosphere.
- Make sure that no excess pressure arises.

2.4.7 Fire hazard

WARNING

File hazard while welding!

Fire may occur during and after welding! Please obey the following notices in order to avoid the arising of fire:

- Remove or cover flamable materials from the working area or from the workwear.
- Seal or shield areas with covered flamable materials.
- Provide extinguishing agent.
- Organise after welding fire posts or fire guards.

2.4.8 Dangers of the work area

WARNING

Various dangers of the work area!

Depending on the nature of the work area indirect dangers may occur! Please note the following references in order to avoid injuries:

- Use an adaquate welding unit in the case of increased danger by humid environment or humid wear and place the welding unit beyond the dangerous area. Secure the welding unit by an RCD (FI interruptor).
- Use additional insulation against touching of electrical leads in confined areas (distance of less than 2 meters).
- Please remove additional equipment from the work area in order to prevent stray current or burning of the safety line.
- Secure gasbottles against overthrowing.
- In work areas with a noise level of more than 80 db (A) please wear earprotection.

2.5 Responsibility of the operator

As the welding torch is employed in the comercial sector, the operator is subject of the legal duties of occupational health and safety regulations. Additional to the work safety regulations in this operational manual safety-, accident prevention and environmental regulations must be adhered to.

The operator must ...

- be informed re the valid work security regulations and must determine specific dangers which arise from special work circumstances at the location. If the work place is permanentely installed he should execute operating instructions.
- set the unambiguous competence of personnel for installation, operation, maintenance and cleaning.
- ensure that all cooperaters dealing with the welding torch read and understand this operation manual.
  Moreover he should retrain personnel and inform them re the dangers arising from welding torches.
- supervise the security- and danger concious work of personnel in accordance with this operation manual and valid regulations.
- ensure the accessability of this operation manual and all further regulations to operation- and maintenance personnel.
- set the operation responsibility and refuse to allow third party to enable adverse safety instructions!
- provide necessary protection equipment.

Moreover the operator is reponsable for faultless condion of the welding torch. Therefore the operator must ...

- ensure that the maintenance- and cleaning interval as described will be respected.
- verify regulary the security provisions on functional competence and completelyness.
- ensure that combination of welding torch and power source match according EMV-regulation 2004/108/EG.

2.6 Personnel requirements

2.6.1 Qualification of personnel

WARNING

Danger of injury with inadequate qualification.

Improper handling could lead to significant personal- or property damage.

▶ All work should be carried out by qualified personnel.

In this operation manual the following qualifications for the different fields activities will be described:

- **Technical personnel**

  is due to its technical training, knowledge and experience in the position to carry out its transferred work.

Personnel with limited reaction capability by for instance by drugs, alcohol or medicine are not licened.

Personnel in training, teaching or instructing position or in the context of education should only be active under supervision of experienced personnel!

NOTICE

Pay attention to the valid regulations of age- and profession specific regulations in the selection of operating people.

2.7 Personal protection equipment

WARNING

Danger of injuries by the use of faulty or missing protection equipment!

It is mandatory to wear personal protection equipment in order to minimize health impairments.

- ▸ Always wear the neccesary protection equipment for the respective job.
- ▸ Follow the attached notices for the personal protection equipment in the work area.

Wear the following protection equipment with all work with the welding torch:

Tight, flame retardant work safety clothing
Additional leather apron to protect for burning with definite jobs

Welding gloves to protect for burnings, radiation and electrical contact

Safety shoes with steel noses and insulating, oilrestent security sole

Faceprotection with suitable filter to protect the eyes and sight against flashes, burnings and strong UV-radiation

Please, wear the following protection equipment when working with the welding torch depending on the work area:

Securety helmet to protect the head for folling objects
Suitable head protection when overhead welding

Ear protection in environments with a noise level of more than 80 db(A)

3 Technical data

3.1 General data

Welding process:	MIG/MAG	
Welding wire:	Round wire	
Welding position:	all	
Protective gas:	CO_2 or mixed gas M21	
Guidance:	handguided	machineguided
Type of protection:	IP3X	IP2X
Voltage demensioning (peak value):	113 V_{SS}	141 V_{SS}
Current type:	Direct current (DC)	
Polarity of wire:	positive	
Control at handle start/stop:	42 V/1 A max./2 phases	
Environment temperature at work place:	–10 ... +40 °C	
Temperature in store:	–25 ... +55 °C	
Relative Humidity:	< 90 % (at 20 °C)	
Cooling:	air or water	
With water cooled torches:		
Flow rate (min.):	1.0 l/min	
Entrance pressure (min.):	2.5 bar	
Entrance pressure (max.):	3.5 bar	
Entrance temperature (max.):	40 °C	
Exit temperature (max.):	60 °C	
Cooling capacity (min.) (depending on application)	1000 W	

3.2 Torch specific data

NOTICE

The torch specific data are listed in the attached data sheet. This datasheet is part of this operation manual.

The datasheets contain information on the capacity rating of the torch. The drawings show the assembly and application of the respective wear parts and components.

4 Structure and function

4.1 Description of structure

With MIG/MAG welding the wire electrode is guided through the welding torch. Between wire electrode and work piece an arc is created which melts work piece and wire. The arc and the welding puddle are protected by inert (MIG) gas or active (MAG) gas.

When triggering the switch at the handle the welding power source will deliver the welding current and puts protective gasflow and wire feed on. The welding current will be transferred by the welding tip on the welding wire. More controls may exsist depending on the model of welding torch.

The cooling of the welding torch comes with air or water.

NOTICE

The way of cooling is mentioned in the attached data sheet.

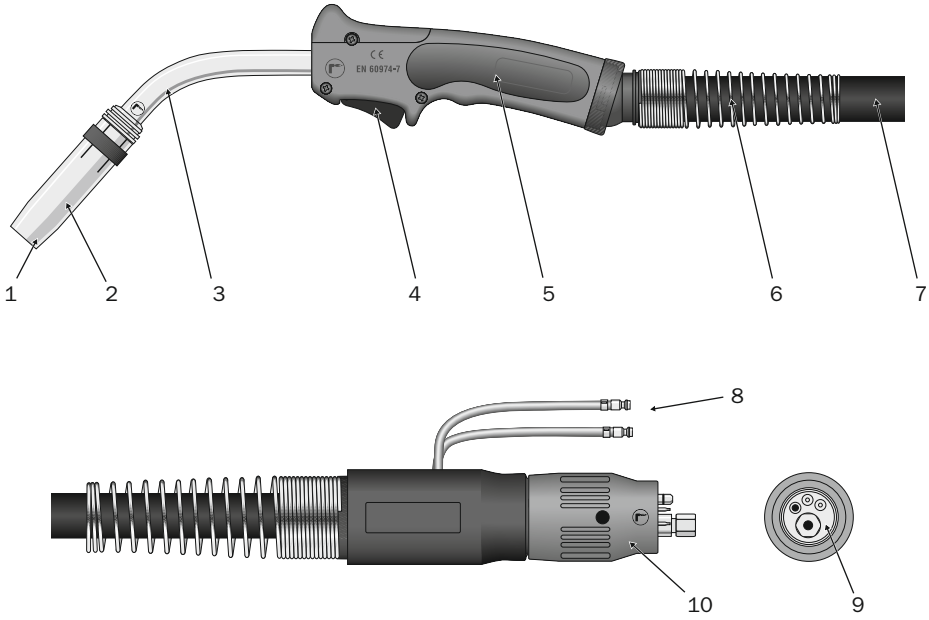
4.2 Scope of delivery

NOTICE

The scope of delivery may vary to the torch model. Please check the correct delivery based on the included datasheet and packing list.

Check the consignment completeness and on visual damages. Report an incomplete or damaged consignment immediately to your distributor/supplier.

4.3 Principle construction



1	gas nozzle
2	contact tip (inside)
3	swan neck
4	contact switch
5	handle (optional remote control available)
6	kink protection
7	hose and cable package
8	cooling connection (optional)
9	central connection (alternativ connections available)
10	connection nut

NOTICE

Depending on execution of the torch further remote controls may be integrated in the power source. The type of connection is adapted to the type of power source. For further information, please look in the data sheet of the torch and in the operation manual of the power source.

5 Start-up

WARNING

Danger of injury during start-up!

With faulty procedure during the start-up of the welding torch danger of injury exists.

▸ Shut off the additional units and gas entrance before starting-up the power source.

5.1 Assembly of wire liner

- Select wire liner matching with welding wire as described in ***chapter 7.3.3*** change of ***Wire liner***.

5.2 Assembly of contact tip

- Select contact tip matching with welding wire as described in ***chapter 7.3.1*** change of ***Contact tip***.
- Select gas nozzle matching with welding position as described in ***chapter 7.3.2*** change of ***Gas nozzle***.

5.3 Connection to the power source

NOTICE

Check the electrical contact points of the central connector on cleanliness and aridness and the contact pins should not be bended or even brocken.

- ▸ Remove dirtyness from the central connector and exchange defect parts.
- ▸ Lay out the hose and cable package straight and without torsions.

- Set up the wire feeder according the operation manual of the wire feeder.
- Thread the wire in the wire stud as described in ***chapter 6.2*** threading of ***Welding wire***.
- Fit the central connection into the matching points.
- Screw the central connector together hand fastened with the machine side connector.

5.4 Connecting water cooler

NOTICE

Check if the matching connections entrance (blue) and exit (red) on the water cooler are existant.

Normally quick connect couplers of type 21 NW 5 are used.

- ▸ The hose connectors should be put in without force in order to avoid kink.
- ▸ If the lenght of the water hoses is not sufficient extension hoses may be purchased at your distributor.

- Put the plugs for water entrance (blue) and for water exit (red) in the water cooler. Care for secure seats of the quick connectors and check the water tightness.
- Check the operational readiness of the water cooler with reference of the operation manual of the water cooler.

6 Operation

6.1 Tests before starting work

Carry out the following tests before starting working:

- Is the right protecting gas connected?
- Is protective gas in sufficient quantity available?
- Is the wire reserve sufficienly available?
- No damages on the welding torch or hose and cable package?
- Personal protection equipment available and intact?
- No dangers in the working environment?

6.2 Threading the welding wire

- Remove eventual burr of the wire start.
- Put in the wire as described in the operation manual of the wire feeder.
- Lay out straight the hose and cable package, avoid bends.
- Switch to inching, until the wire comes out the contact tip.

6.3 Welding process

- Put earth cable thight sothat the welding current can return to the power source.
- Adjust the gasflow on the pressure regulator. Type and volume of protection gas is dependent of the welding proces.
- Current level and wire feed speed are to be adjusted according welding task.
- Put on power source, wire feed and water cooler.
- Press the on/switch on the torch handle and start the welding procedure.

6.4 Work interruptions

- Release on/off switch on the torch handle.
- Wait for postflow of protection gas.
- Lay off welding torch isolated.
- Shut off power source, wire feed water cooler and gasbottles after work.

7 Maintenance/Cleaning

NOTICE

Shut off power source and gas supply and additional equipment before starting maintenance and cleaning.

7.1 Visual inspection

Execute the following inspection before any use:

- Inspect welding torch and package visualy on outside damages. Do not use a damaged welding torch.
- Inspect gas nozzle and contact tip on spatter bridges. If needed clean the gas nozzle. Exchange the gas nozzle with severe wear.
- Check safe seat of the connections to the power source and to the cooling unit.

7.2 Cleaning

7.2.1 Torch cleaning

- Remove gas nozzle and detach sputter in the nozzle area.
- Remove impurities from swan neck and handle with a rag.
- Inspect spatter guard, clean or exchange with heavy wear.

7.2.2 Cleaning of wire liner

- Remove package from the power source and lay off welding torch straight, avoid bending.
- Release wire guide and draw wire from the torch.
- Clean wire conduit with compressed air from both sides. With heavy wear, exchange liner.

7.3 Exchanging of wear parts

7.3.1 Exchanging of contact tip

To exchange contact tip proceed as follows:

- Remove gas nozzle from swan neck
- Remove contact tip with end wrench and unscrew
- Screw in new contact tip hand tight
- Remount gas nozzle

7.3.2 Exchange gas nozzle

To exchange gas nozzle proceed as follows:

- Remove worn out gas nozzle from swan neck
- Remount new gas nozzle

7.3.3 Exchange wire liner

To exchange wire liner proceed as follows:

Fitting out of wire liner:

- Remove nut or wire guidance from stud.
- Lay package straight out.
- Remove contact tip.
- Draw out wire liner to the central connector.

Installing of wire liner:

- Select correct inner diameter of liner for the wire diameter.
- Pusch new liner carefully through conduit.
- Screw on nut or wire guidance.
- Cut off liner with side cutting plier just over the tip holder. The contact tip should press the liner slightly when screwed in.
- Remove the burr and if needed sharp in an angle of 40°.
- Screw in contact tip.

Installing of a plastic liner:

- Remove old liner.
- Shift in the plastic liner.
- Screw in contact tip.
- The end of the plastic liner may well exceed the liner stud by 10–15 cm.
- The adjustment on the wire feeder according the manufacturers directions.

Installing of a combi-liner:

- Remove old liner.
- Shift in metal wire spiral of combi-liner at first.
- Screw in contact tip without cutting the metal wire spiral.
- The end of the plastic liner may well exceed the liner stud by 10–15 cm.
- The adjustment on the wire feeder according the manufacturers directions.

8 Trouble shooting

Trouble	Cause	Remedy
Swan neck gets hot	Contact tip loose	Fasten contact tip
	Lack of cooling flow	Check cooling system
No function with trigger	Power source shut off	Switch on power source
	Control lead broken	Check control lead and connector on the power source
Wire sticks to the contact tip	Wrong setting on the power source	Change setting
	Worn out tip	Exchange tip
Wire feed unsteady	Wire guidance blocked	Clean wire guidance
	Contact tip does not match with wire diameter	Exchange contact tip, liner or wire
	Problem of the wire feed	Check wire feeder
Wrong arc	Spatter bridge between gas nozzle and contact tip	Clean tip and nozzle
Unsteady arc	Contact tip not matching with wire diameter	Exchange tip or wire
	Worn out tip	Exchange tip
	Wrong setting on the power source	Change setting
Pore formation	Spatter bridge between tip and nozzle	Clean torch acc 7.2.1
	Lack of gas	Check gas setting and gas bottle containment
	Draught air	Protect work place against draught air

NOTICE

Please notice the operation manual of the power source. If the trouble cannot removed by the mentioned remedies, call for the service support of your distributor.

9 Storage

Clean the welding torches, if the torches will not be needed for a longer periode, as described in ***chapter 7.2 Cleaning***.

Store the welding torches and additional parts in a dry, clean and frost free place with compliance under the technical data specified environment conditions.

10 Disposal

Disposal of the packing material

The packing material protects the welding torch against transportation damages and are selected to environmental- and disposal compatible criteria thus recyclable. Recycling of packing material saves recources and deminishes waste generation.

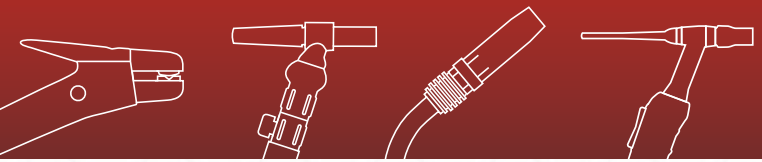
Dispose not needed packing materials according local regulations.

Disposal of worn out torches

The welding torch contains mainly of recyclable materials.

- Scrap metals.
- Recycle plastics.
- Sort out the othe materials and dispose.

The communital authorities or specialised disposal enterprises may give information for environmental sound disposal.



ROHRMAN
SCHWEISSTECHNIK

Your welding supply distributor:

10/2014

Rohrman Schweisstechnik GmbH
Hosterfeldstraße 2 · D-41747 Viersen
Tel. +49(0)2162/106065-0
Fax +49(0)2162/106065-55
www.rohrman.de
info@rohrman.de