

Miggy 125

Introduction

MIGGY 125 is a handy semi-automatic. The ideal semi-automatic specially designed for MIG/MAG-body repair welding as well as general repair and hobby welding in sheet steel.

MIGGY 125 is connectable to 220–240V 1-phase 50 Hz, 220–380 V, 3-phase 50 Hz and 220 V, 3-phase 60 Hz.

MIGGY 125 is equipped with 4 swivel castors. One of the topside handles can be used for suspension above the work area.

The PSE 90 welding gun (swan neck type) is included.

Technical data

MIGGY 125 is designed in accordance with international standards, SEN 8301, ISO 700, NF A 85013 and BS 638 part 3:1979

Mains connection

1-phase, 50 Hz

Voltage (V)	220	240
Max. cont. current (A)	5	4,5
Fuse, slow (A)	10	10
Cable area (mm ²)	3×1,5	3×1,5

3-phase, 50 Hz

Voltage (V)	220	380
Max. cont. current (A)	2,4	1,4
Fuse, slow (A)	10	10
Cable area (mm ²)	4×1,5	4×1,5

3-phase, 60 Hz

Voltage (V)	220
Max. cont. current (A)	2,4
Fuse, slow (A)	10
Cable area (mm ²)	1,5

Recommended cable areas and fuses comply with Swedish regulations governing rubber and plastic insulated cables.

Permitted load

Duty cycle (%)	100	60	20
Current (A)	40	55	100
Voltage (V)	16	17	19

Open-circuit voltage

$U_o = 19-29$ V 3-phase

$U_o = 23-33$ V 1-phase

Auxiliary voltage

42 V, AC

Power factor

at 90A/18,5 V $\lambda = 0,85$

Efficiency

at 90A/18,5 V $\mu = 0,7$

Temperature class

F 155°C (311°F)

Protection criteria

IP 21 AN

Return cable

10 mm² copper with contact clamp, length 3 m.

Wire dimensions

Steel \varnothing 0,6–0,8 mm

Wire reel

Type 46

OD–200 mm

Dimensions and weight

see page 16.

Assembly instructions

Unpacking and delivery inspection

Start by unpacking the machine. Please observe that the cellular plastic ends of the packaging material include a number of parts which are needed to assemble the machine. The machine is supplied complete with a welding gun and printed instructions.

Now make sure that you have the following components and parts in front of you. See also photos on page 23.

1. MIGGY 125. Make sure that the machine is intended for the mains voltage you have available. You can see this on the data plate on the machine and on the inspection sticker.
- 1 a. The machine is supplied with a connected mains cable. If it is a single-phase machine, the cable will also have an earthed plug. Three-phase machines, however, require a suitable 16 A, three-phase plug of industrial type and suitable for your three-phase supply socket.
- 1 b. Earth return cable and clamp.
2. Welding gun PSE 90.
- 2 a. Contact tips, 1 pcs marked 08; 1 pcs marked 10. The contact tips are taped to the handle of the torch.
3. Bracket for wire reel.
4. Reel hub.
5. Reel guard (textile strap).
6. Earth return clamp.
7. Polyethylene bag containing fasteners for above items 3 to 6:
 - 2 bolts + nuts (M5)
 - 1 bolt + nut + spring washer (M6)
 - 1 bolt + nut + 2 washers (M8)
 - hex socket wrench (5 mm).

The accessory kit contains the following:

8. Gas reduction valve.
9. Gas hose.
10. Welding screen.
11. Polyethylene bag containing:
 - 11 a. 2 hose clips
 - 11 b. Gas flow gauge
 - 11 c. 3 pcs contact tips for 0,8 mm filler wire (steel), marked 10.

Assembly

To assemble the equipment items, see assembly drawing on page 22 which can be followed out and studied together with the following instructions. The drawing shows assembly in six stages (A–F). The numbers refer to the component list above.

Start by removing the right-hand side panel, see "item A", assembly drawing, by lifting the panel upwards and pulling it outwards.

Bracket 3

The bracket for the wire reel is installed as described under "item B". First remove the two self-tapping screws on the back panel of the machine. Fit the reel guard, 5, between the bracket and the back panel so that the hole in the guard aligns with the left-hand screw hole B2. Take the two M5 x 12 bolts and nuts, out of the polyethylene bag 7. Mount these in the two left-hand holes. Replace and tighten the self-tapping screws in the two right-hand holes.

The feed unit's plastic guide for the filler wire should protrude from the middle hole of the three holes in the bottom part of the bracket.

NOTE! On no account should the machine be used without this guide since this would imply a risk of damage to the earthing of the machine and consequently a risk of electrocution.

Hub 4

The reel hub is mounted on the bracket as shown by "item B". Take the largest bolt (M8) and the two washers provided out of the polyethylene bag 7. Fit one washer to the bolt and insert it into the hub, through the hole in the hub and bracket. A long-nosed pair of pliers is a suitable tool for this job. Should you not have a suitable tool, you can tape the bolt to a sufficiently long screwdriver to get it into place. Fit the nut and other washer, observing that the small stud on the hub must fit into the equivalent hole on the bracket before the nut is tightened down.

Welding gun 2

The gun is connected to the appropriate outlet on the front panel of the machine, "item C". Using the hex socket wrench provided in the polythene bag 7, slacken the hex socket screw in the connecting block (C1). Insert the cable holder, making sure it stays in position (C2). Insert the hose end of the gun into the connecting block. Make sure that it bottoms fully (C3). Then tighten the hex socket screw (C4) securely.

Contact tips 2a and 11c

The contact tip is screwed into the contact tube at the front of the swan neck. (See user instructions and parts list for PSE 90 which will be found in the same polythene bag as the torch).

Before the contact tip can be fitted, the other gas nozzle must be removed. The contact tip is screwed in and tightened carefully using a suitable type of wrench. Then push the gas nozzle in sufficiently to bring the front of the two nozzles to an equal height.

There are two sizes of contact tips, marked 08 and 10. The markings specify the interior diameter of the hole. Tips marked 08 are used for filler wire up to 0.6 mm diameter, nozzles marked 10 for filler wire up to 0.8 mm diameter.

Wire reel, wire feed and pressure arm

Assembly drawing, "item D", shows how the filler wire reel is fitted and how the wire is threaded forward and into the welding hose. The reel should be fitted to the hub so that the wire comes from underneath into the wire guide. Two clatches on the hub hold the reel.

On a new reel, the end of the wire is pushed in and bent over the side. When loosening the end of the wire, hold it firmly so that it does not spring out and uncoil. Cut off the damaged part of the wire, smooth off the tip with a file so that the wire will run easily through the soft wire guide of the polymedium hose. This is very important. A sharp wire tip could easily penetrate through the wire guide as well as the wall of the polymedium hose and seriously damage the function of the equipment.

Insert the wire into the protruding wire guide on the back of the equipment and push it through to the rollers (D1). Before feeding the wire through the guide nozzle of the feed unit, the pressure arm complete with pressure roller must be folded up (D2). The wire can now be pushed by hand through the guide nozzle and into the hose (D3).

Lower the pressure roller (D4) and make sure that it enters correctly and aligns with the other feed roller (D4a). The pressure of the feed rollers is adjusted at the factory but can also be adjusted by means of the screw on the pressure arm.

A rule of thumb for this setting procedure is not to set the pressure higher than permits the wire to be brought to a stop in the torch by pressing the contact nozzle against a piece of wood or equivalent, causing the wire to slip in the feed rollers. Should the wire stick to the contact tip and the pressure is too high, the wire will not stop, causing it to ravel up in the outlet nozzle of the feed unit. This is difficult to straighten out and if the correct pressure is used, it is also completely unnecessary. Another disadvantage of too high a feed pressure is that the welding wire is flattened which causes undue wear on the wire guide and, will give a reduction in contact area in the torch nozzle.

Gas hose 9

Connect the gas hose between the machine's magnetic valve and the reducer valve on the gas cylinder, see item E. If the hose is stiff and unwieldy, it can be softened by heating the ends up with hot water.

Fit the hose by first inserting it through the hole at the back of the machine beneath the bracket. Fit a hose clip 11a at each end of the hose. Push the hose on to the valve nipples using a bending action, and then tighten down the hose clips securely. Getting the hoses on to the ends of the nipples is considerably simplified if the nipples are wet.

Gas cylinder and reducer valve

Then connect the valve to the gas cylinder. The gasket provided with the valve must first be fitted to the connecting end of the valve.

NOTE! The connecting threads for the reducer valve on gas cylinders differ depending on the type of gas. The reducer valve provided in the accessory kit is intended for gas mixtures but can also be used for pure Argon. If CO₂ (carbon dioxide) is to be used, another type of valve will be required. A gas mixture is generally used for welding steel since it is an all-round gas which is also beneficial to welding economy.

The loose nut on the valve is then fitted to the connecting part of the cylinder and tightened down using a suitable wrench. Also make sure that the hose nipple nut is fully tightened.

Mains connections

First make sure that your electrical distribution centre is correctly fused. See table "Mains connections" on page 4. Any reconnection on three-phase models should be done according to the wiring diagram shown on page 15.

When fitting a mains connection plug, it is an absolute necessity that the green/yellow wire of the mains cable is connected to the earth screw of the plug, i.e. direct to the metal of the plug. The other

three wires are connected to the terminals marked R - S - T in any order.

NOTE! Connection of a three-phase plug and any modifications to wiring, from 380 V to 220 V, three-phase, should only be done by an authorized electrician.

Forwarding of filler wire and setting the gas flow

Connect the machine to the mains (F1) and the earth return to the workpiece. Make sure that the machine is not covered over and has adequate cooling. Set the course selector switch to position 1. Select a halfway setting for the wire feed. Straighten out the hose. Press the gun trigger to feed the wire through the hose and the gun (F3). Be careful when the wire emerges from the gun, the sharp tip can cause injury if due care is not taken.

When using the gas flow gauge, set the wire feed to its bottom position. Or, lift the pressure arm so that the wire is not fed forward. The soft funnel is then placed over the gas nozzle and held in position after which the trigger is pulled.

The flow of gas is now adjusted by means of the reducer valve until the ball in the flow gauge shows the correct amount of gas flow which should be between 8-10 litres. Too much gas will not spoil the weld, but is an unnecessary waste. For the setting of welding parameters, see the table on page 13. Should faults occur, see the troubleshooting table.

Welding

1. Adjust welding voltage with the switch marked OFF, 1-5 (see table, page 13).
2. Adjust wire feed speed with the potentiometer marked 1-10 (see table, page 13). This is valid for the 3-phase unit. The 1-phase performance is marked 1-5.
3. Then, by pulling the trigger of the welding gun, the welding process starts. As soon as you release the trigger, the process stops.

NOTE! Close fit between the rear end of the gas nozzle and the lock ring is important.

Maintenance and service

In order to maintain trouble-free feed, frequent cleaning of the wire feed mechanism and wire feed guide of the welding gun with compressed air is required. The entire equipment should be cleaned with compressed air, once a year.

Accessories

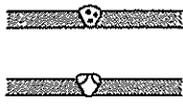
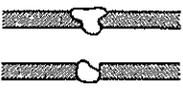
A MIGGY 125 accessory kit is available. This kit includes:

Reduction valve, three contact tips, gas flow meter, welding shield, gas hose and hose clips. Order no 321 248-880.

In addition, a carriage fitted with large wheels, a gas cylinder support as well as a wire reel holder (Reel type 25-O.D.300 mm) is available. Order no. 321 258-880.

Trouble causing irregular or no arc

Trouble	Possible causes
Feed roller rotates, but no wire feed	1 Pressure roller not tightened 2 Dirt in wire conduit and/or contact tip
Uneven wire feed	1 Contact tip defective 2 Dirt in the feed roller track 3 The feed roller track is defective
Arc doesn't strike	1 Poor contact return cable/workpiece
Arc is long and unstable	1 Voltage too high
Almost no arc	1 Voltage too low

Weld defects	Appearance	Possible cause
Pores		1 Too much or too little gas. Required 8–10 l/m 2 Insufficient gas shield due to spatter in gas nozzle 3 Draughty work area 4 Distance between gun and workpiece too great and/or incorrect handling of gun 5 Workpiece moist, oily or rusty
Insufficient deposition		1 Excessive welding speed 2 Current too low in proportion to welding speed
Lack of fusion		1 Uneven gun movement 2 Voltage too low
Spatter		1 Voltage too high 2 Gas nozzle not properly cleaned
Uneven weld		1 Excessive wire stick-out 2 Current too high in proportion to voltage 3 Welding speed too low
Insufficient penetration		1 Current too low in proportion to voltage

NOTE! Defects or trouble in electric components, such as control circuits, contactor, switches, transformers, etc should be taken care of by trained service technicians.