

- Ⓓ Bedienungsanleitung
- Ⓔ Operating Instructions
- Ⓕ Instructions de service
- Ⓖ Gebruiksaanwijzing
- Ⓔ Instrucciones de uso



Invert 130/40  
Invert 130/60



- |   |                   |  |
|---|-------------------|--|
| Ⓓ | <b>Achtung!</b>   | Lesen Sie diese Anleitung vor der Installation und Inbetriebnahme aufmerksam durch.          |
| Ⓔ | <b>Attention!</b> | Carefully read through these instructions prior to installation and commissioning.           |
| Ⓕ | <b>Attention!</b> | Prière de lire attentivement la présente notice avant l'installation et la mise en service.  |
| Ⓖ | <b>Attentie!</b>  | Lees deze instructies voor de installatie en ingebruikname aandachtig door.                  |
| Ⓔ | <b>¡Atención!</b> | Lea con detenimiento estas instrucciones antes de la instalación y de la puesta en servicio. |



## Table of Contents

1	Technical Specifications	6.1	Tips for TIG-Welding
2	Scope of Application	7	Overloads
2.1	Information	8	Trouble Shooting
3	Commissioning	9	Safety Information
4	Description	9.1	Protection against Electrical Accidents
5	Operation	10	Wiring Diagram
6	TIG-Welding (optional)		

## 1 Technical Specifications

		<b>Invert 130/40</b>	<b>Invert 130/60</b>
Mains voltage:		1 ~ 230/240 V	1 ~ 230/240 V
Mains frequency:		50 - 60 Hz	50 - 60 Hz
Setting range:		100 V	100 V
Stromeinstellbereich:		5 - 130 A	5 - 130 A
Power input:	manual arc	4.5 kVA	4.85 kVA
	TIG	3.1 kVA	3.1 kVA
Operating voltage:	manual arc	20,2 - 25,2 V	20.2 - 25.2 V
	TIG	10,2 - 15,2 V	10.2 - 15.2 V
Max. current draw:		27 A	27 A
Mains fuse:		16 A time-lag	16 A time-lag
Duty cycle at max. output (25 °C/ 40 °C):	manual arc	130 A / 50 % / 35 %	130 A / 80 % / 55 %
	TIG	130 A / 40 % / 30 %	130 A / 60 % / 40 %
Operating modes:		manual arc/TIG	manual arc/TIG
Setting:		stepless	stepless
Suitable electrodes	manual arc	from 1.5 mm Ø	from 1.5 mm Ø
	TIG	for steel 0.3 mm and up	for steel 0.3 mm and up
Protection class:		IP 23 S	IP 23 S
Cooling:		F	F
Insulation class:		F	F
Temperature range:	operation	-10 °C - +40 °C	-10 °C - +40 °C
Dimensions ( l x w x h):		255 x 110 x 210 mm	235 x 110 x 220 mm
Weight:		4.9 kg	4.9 kg
Operating conditions:		relative humidity 10-80 %	relative humidity 10-80 %

## 2 Scope of Application

The inverter welding machines are designed as a compact, easy to operate and field-safe unit. With it all metals (except aluminium) can be welded. Special consideration has been given to stick electrode welding capabilities, i.e. vertical-down welding. Due to its wide range of welding current setting the Invert 130 is very versatile, e.g. for sheet metal and steel welding. In addition there is the capability of TIG welding with scratch start. With this welding process steel, stainless steel and NF-metals (except aluminium) can be welded, e.g. thin plate welding or car body work.

## Product Liability/Warranty




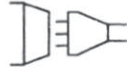

This product shall only be used as specified. Any other use requires the written consent of Metabo GmbH, Business Unit Elektra Beckum, P.O.Box 1352, D-49703 Meppen, Germany. Please contact your dealer for any warranty claims.

Warranty work will essentially be carried out by service centres authorised by us. Repairs beyond the warranty period may be carried out only by our authorised service centres.

**Please preserve all repair invoices!**

We reserve the right to make technical changes!

## 2.1 Information - Shown On Type Plate

a) Identification					
1) Manufacturer Address			Trademark		
2) Type			3) Serial number		
4) 			5) ISO / IEC 60974-1		
b) Welding output					
6) 		8) ~50 Hz		10) 15 A / 20,6 V to 160 A / 27 V	
7) 		9) $U_0 = 48 \text{ V}$		11) $X$	
		12) $I_2$		11a) 35 %	
		13) $U_2$		11b) 60 %	
				11c) 100 %	
				12a) 160 A	
				12b) 130 A	
				12c) 100 A	
				13a) 26 V	
				13b) 25 V	
				13c) 24 V	
c) Energy input					
14)  1 ~ 50 Hz		15) $U_1 = 230 \text{ V}$		16) $I_{1\text{max}} = 37 \text{ A}$	
				17) $I_{1\text{eff}} = 22 \text{ A}$	
22) IP23		23) 			

The following explanations refer to the numbered boxes shown in Figure 2.3 according to ISO/IEC 60974-1.

### a) Identification

- Box 1 Name and address of the manufacturer or distributor or importer and, optionally, a trade mark and the country of origin, if required
- Box 2 Type (identification) as given by the manufacturer
- Box 3 Traceability of design and manufacturing data, e.g. serial number
- Box 4 Welding power source symbol (optional) e.g.



Single-phase transformer



Single- or three-phase transformer-rectifier



Single- or three-phase static frequency converter-transformer-rectifier



Three-phase motor-generator



Three-phase motor-generator-rectifier



Three-phase rotating frequency Converter



Single-phase combined a.c. and d.c. power source



Engine-a.c. generator



Engine-generator-rectifier

- Box 5 Reference to this Standard confirming that the welding power source complies with its requirements

## b) Welding Output

Box 6 Welding process Symbol e.g.:



Manual metal arc welding with covered electrodes



Tungsten inert-gas welding



Metal inert and active gas welding including the use of flux cored wire



Selfshielded flux cored arc welding



Submerged arc welding



Symbol for plasma cutting



Symbol for plasma gouging

Box 7



Symbol for welding power sources which are suitable for supplying power to welding operations carried out in an environment with increased hazard of electric shock (if applicable).

Box 8

Welding current symbol e.g.:



Direct current



Alternating current, and additionally the rated frequency in hertz e.g.: ~50 Hz

Box 9

$U_0 \dots V$  Rated no-load voltage

a) Arithmetic mean value in case of direct current

b) RMS value in case of alternating current

c)  $U_r \dots V$  Reduced rated no-load voltage in case of a voltage reducing device

d)  $U_s \dots V$  Switched rated no-load voltage in case of an a.c. to d.c. switching device

Box 10

$\dots A / \dots V$  to  $\dots A / \dots V$  Range of output, rated minimum and maximum welding current and their corresponding conventional load voltage.

Box 11

X Duty cycle (duty factor) symbol.

Box 12

$I_2$  Rated welding current symbol.

Box 13

$U_2$  Conventional load voltage symbol.

Boxes

11a, 11b, 11c ...% Values of the duty cycle (duty factor).

12a, 12b, 12c ... A Values of the rated welding current.

13a, 13b, 13c ... V Values of the conventional load voltage.

These boxes form a table with corresponding values of the three settings:

a) ... % duty cycle (duty factor) at the rated maximum welding current;

b) 60 % duty cycle (duty factor);

and

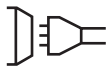
c) 100 % duty cycle (duty factor) as far as relevant.

Column a) need not be used if the duty cycle (duty factor) for the rated maximum welding current is 60 % or 100 %.

Column b) need not be used if the duty cycle (duty factor) at the rated maximum welding current is 100 %.

### c) Energy input

Box 14 Energy input symbol e.g.:



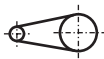
Input supply, number of phases (e.g. 1 or 3), symbol for alternating current and the rated frequency (e.g. 50 Hz or 60 Hz)



Engine



Motor



Belt drive

Box	Electrically powered welding power sources	Box	Mechanically powered welding power sources
15	$U_1 \dots V$ Rated supply voltage	18	$n \dots \text{min}^{-1}$ Rated load speed
16	$I_{1\text{max}} \dots A$ Rated maximum supply current	19	$n_0 \dots \text{min}^{-1}$ Rated no-load speed
17	$I_{1\text{eff}} \dots A$ Maximum effective supply current	20	$n_i \dots \text{min}^{-1}$ Rated idle speed, if applicable
Boxes 15 to 17 form a Table with corresponding values.		21	$P_{1\text{max}} \dots \text{kW}$ Maximum power consumption, if applicable

Box 22 IP.. Degree of protection, e.g. IP21 or IP23.

Box 23  Symbol for protection class II, if applicable.

### 3 Commissioning

#### Caution:

This product is assembled with great care and thoroughly checked. All units undergo a computerised check before leaving the factory. Please check your machine for transport damage after unpacking. In case such damage is detected please notify your supplier immediately.

Ensure that mains voltage matches the machine's rated voltage as shown on its name plate. Connect to 230/240 V AC circuit. The supply circuit need to be protected by a 16 amp time-lag fuse. Operation of other electrical equipment on the same circuit while welding is limited.

Pure argon (of at least 99.998 % purity) is preferably used for TIG welding. Connection of the TIG torch to the gas cylinder must be by means of a suitable pressure reducing device (max. 10 bar). The earth cable must have a minimum lead cross section of 16 mm<sup>2</sup>. After setting the main switch [1] to ON the machine is ready to operate.

### 4 Description

#### Controls

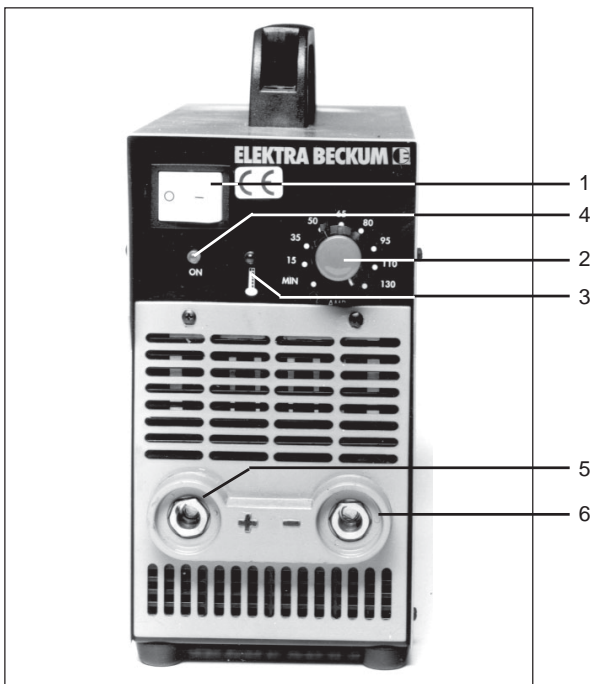


Figure 1: Front panel

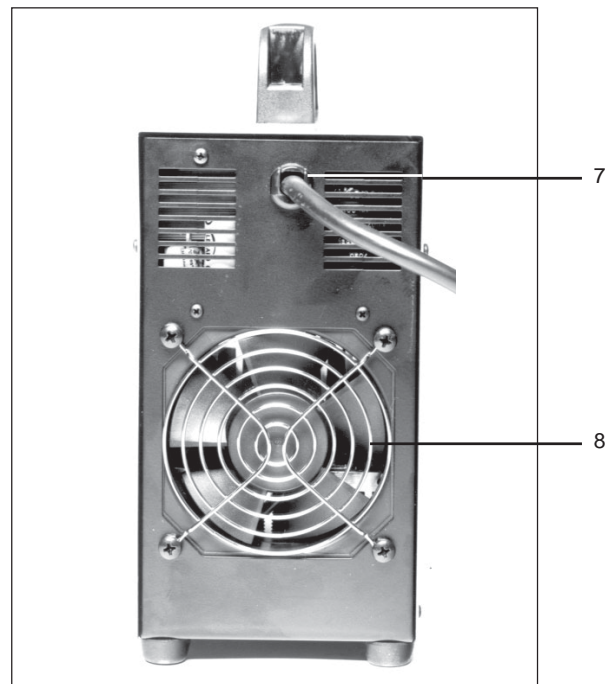


Figure 2: Rear view

- 1 Mains ON/OFF switch
- 2 Welding current setting 5 - 130 A; with integrated automatic hot start
- 3 Neon control light; indicates thermal overloads or short circuits
- 4 ON/OFF control light
- 5 Socket for positive (+) pole; electrode holder, TIG: earth cable
- 6 Socket for negative (-) pole; earth cable, TIG: torch
- 7 Power cable
- 8 Cooling fan

### 5 Operation

The welding machines Invert 130/40 and 130/60 are primary clocked inverters, suitable for manual arc welding with coated stick electrodes and for direct current TIG welding (optional).

The electrode diameter and the required welding current are selected according to the material to be welded.



Dust, dirt and metal chips will harm any welding machine. It is of particular importance that the air ventilation for cooling is not disabled.

Prior to welding the joints must be cleaned and dirt, rust, grease and paint removed. Also slag from previous welds must be completely removed.

Attach earth clamp firmly to work piece, assuring good metal to metal contact. Check that all cables and connectors are in proper operating condition to ensure proper current conduction.

Place the uncoated end of the electrode into a notch of the electrode holder. With the welding machine a welding accessory kit, consisting of welding visor and pick hammer, can be purchased. The tinted glass of the welding visor protects the eye from harmful rays (ultraviolet and infrared rays). The clear glass plate protects the dark glass from spatters and breakage. When removing slag it is strongly recommended to wear eye protection to prevent injury from sharp and hot slag particles. Depending on electrode type and eye sensitivity protective glasses are available in different shades. Normally protective glasses of shade DIN 9 are used for electrodes from 1.5 mm to 4 mm Ø.

Select the correct welding current as shown below:

Current (A)	Electrode Ø	Material Thickness
25 - 50	1.0 - 2.0 mm	1.0 - 2.0 mm
50 - 100	2.0 - 2.5 mm	2.0 - 4.0 mm
100 - 140	2.5 - 3.25 mm	4.0 - 8.0 mm
140 - 220	3.25 - 5.0 mm	8.0 - 12.0 mm

In principle do not use too thick an electrode.

As a general rule calculate **40 amps welding current per 1 mm of electrode core wire diameter**. Depending on electrode type, material thickness and weld position this calculated value may have to be adjusted plus or minus. The Invert 130/40 and 130/60 works perfectly with thin plate, which is the outstanding feature of this machine, aside from its extreme compact and robust design. It is characteristic of an inverter to generate a true direct current, which makes for a soft and smooth running arc with reduced spatter formation.

## Overview Of Stick Electrodes And Their Correct Use

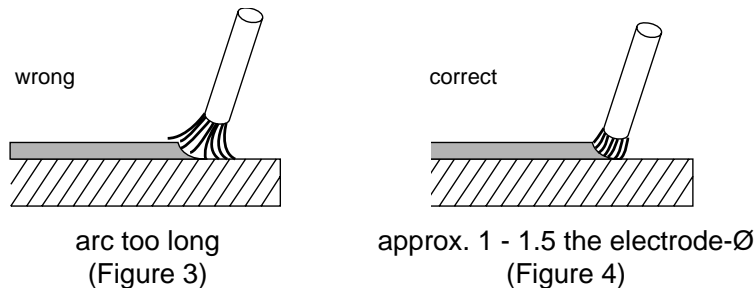
In order to achieve a good weld the electrode has to be dry, so storing in a dry place is essential. Should electrodes have become moist, dry in an oven at 200°C to 300°C for 1 - 2 hours.

Basic-coated electrodes **always** require pre-drying at 200°C to 300°C for 3 hours, unless they are vacuum-packed. Stick electrodes are coded according to EN 499 and other standards, such as B.S. 639, AWS-SFA 5.1 and ISO 2560. The codes are always shown on the electrode package. The electrode description is defined by the manufacturer according to the standards, the description is checked by an independent test institute for compliance. This information is shown on the packaging.

## Welding Hints

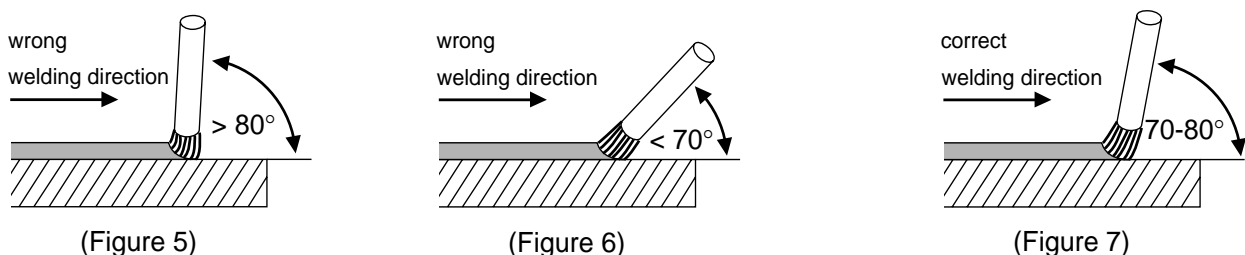
Because of the multitude of and great differences in the important points for welding only the very basic operations for the most common electrodes for low-carbon steels, the rutile or rutile cellulose electrode, are introduced here. In the case that other electrodes have to be used, the electrode manufacturers supply upon request all relevant information for the type of special electrode to be used.

Always make some trial welds on scrap material. Select electrode diameter and welding current as per Table 1. Attach earth clamp to work piece and place electrode into electrode holder as described earlier. Now hold the electrode tip approx. 2 cm above the starting point of your weld seam. Hold the welding visor in front of your face and draw the electrode with a short stroke along the groove. Through the welding shield you watch the arc, keeping it to a length of 1 to 1.5 times the electrode diameter.



The correct arc length is important for a good weld, because with too short or too long an arc both welding current and working voltage change. A low working voltage causes insufficient penetration. Too high or too low welding current gives a poor welding seam. Too long an arc does not sufficiently melt the parent material, resulting in high spatter losses. Also the air, with its detrimental substances like hydrogen and nitrogen, may get access to the weld pool.

For a good weld the work angle of the electrode (or electrode inclination angle) is of substantial importance. The inclination should be  $70^\circ - 80^\circ$  to the welding direction. With the work angle too steep slag will run under the weld pool, too flat an work angle causes the arc to spatter, in both cases the result is a porous, weak welding seam (see figure 5 - 7).



The welder has to keep the arc at the same length, that is the electrode burn-off is compensated by feeding the electrode into the weld. At the same time the welder has to watch the weld pool for even penetration and width.

Welding is always done from left to right (backhand welding).

At the end of the welding seam the electrode can not simply be lifted or pulled from the weld, this creates porous end craters, which weaken the weld. To correctly terminate a weld the electrode is held for a short moment at the end of the weld seam, then lifted in an arc over the just laid weld.



Remove slag only after it has cooled down and is no longer glowing.

If an interrupted weld is to be continued, the slag at the end of the already finished weld must be removed. Then the arc can be started either in the groove or on the weld, as described earlier, and then moved to the end of the weld, which has to be thoroughly melted for good fusion. Welding is then continued normally.



## 6 TIG Welding (optional)

Due to the same welding characteristics as with manual arc welding, TIG welding is possible with models Invert 130/40 and 130/60.

For TIG welding a TIG torch model SR 17 V (see section 11) is used, which is always connected to the negative (-) pole. The arc is started by scratching with the tungsten electrode on the workpiece (causing a short-circuit). The shielding gas is supplied directly from the pressure reducing device of the gas cylinder to the torch. A gas flow rate of 6-7 l/min is recommended. Pure argon is required as shielding gas.

The earth lead is connected to socket [4]. The welding current is selected with the potentiometer [2], then the arc is ignited by a brief contact of the tungsten electrode with the workpiece (scratch start).

### 6.1 Practical Hints for Operation

To ensure good arc starting and good welding results the following should be adhered to:

- ① Electrode types  
Only thoriated electrodes are recommended for use, e.g.  
WT 20 1.8 - 2.2 % thorium oxide, colour code: red or grey
- ② Electrode diameter  
The electrode diameter must correspond to the welding current.  
Rule of thumb:    less than 80 A    Ø 1.0 mm  
                          70 to 140 A    Ø 1.6 mm
- ③ Tungsten electrodes have to be ground in longitudinal direction. Use a fine grit grinding wheel and grind from tip to shaft.
- ④ Too much gas flow can reduced the arc starting ability (arc extinguished by blowing).

## 7 Overloads

The inverter welding machines are positively protected against overloads by several independent protection devices. If the permissible duty cycle is exceeded, the machine is shut down automatically. This is indicated by the control light [3]. After a short cooldown period the machine is operational again.

**Important:** Do not switch the machine off during the cooldown period, as this will cut the power to the fan, considerably extending the cooldown period.

## 8 Trouble Shooting

When welding the control light [3] comes on and the welding current goes off.	Thermal overload protection has engaged. Let machine run idle for several minutes to let cool down.
It is difficult to keep the arc burning.	If the electrode is not moist, damaged or has been stored too long, there may be a voltage drop (less than 190 V at full load), probably caused by too long and extension cord.
Machine switched on but no welding current.	<ul style="list-style-type: none"><li>- check mains fuse</li><li>- voltage too high (over 250 V), which triggers the corresponding protection device</li></ul>
Poor arc starting with TIG welding	<ul style="list-style-type: none"><li>- insufficient or no gas supply</li><li>- tungsten electrode wrongly ground</li><li>- wrong electrode diameter</li><li>- workpiece surface not clean (oil, grease)</li></ul>
Porous welding seam	<ul style="list-style-type: none"><li>- wrong setting of shielding gas flow rate (too much or too little)</li><li>- wrong shielding gas (pure argon only)</li><li>- impurities in shielding gas</li><li>- wrong position of TIG torch</li></ul>

## 9 Safety Precautions/Accident Prevention

- This Welding Machine should only be used for its intended application (TIG and manual arc welding).
- Operate machine only on power supply circuits having a fully operational protective bonding circuit (earth/ground lead).
- Know and adhere to all applicable local safety standards and codes.

### 9.1 Protection against the Risk of Electric Shock

The earth cable is to be firmly attached to the workpiece, ensuring good conduction. Protect welding cables and the power cable from damage. Replace damaged cables with genuine Elektra Beckum replacement parts. Place torch or electrode holder on insulated backing during short work breaks. For longer work breaks switch machine off. Wear dry and insulating gloves and shoes when welding. Always disconnect machine from power by pulling the power cable's plug from the outlet before servicing.

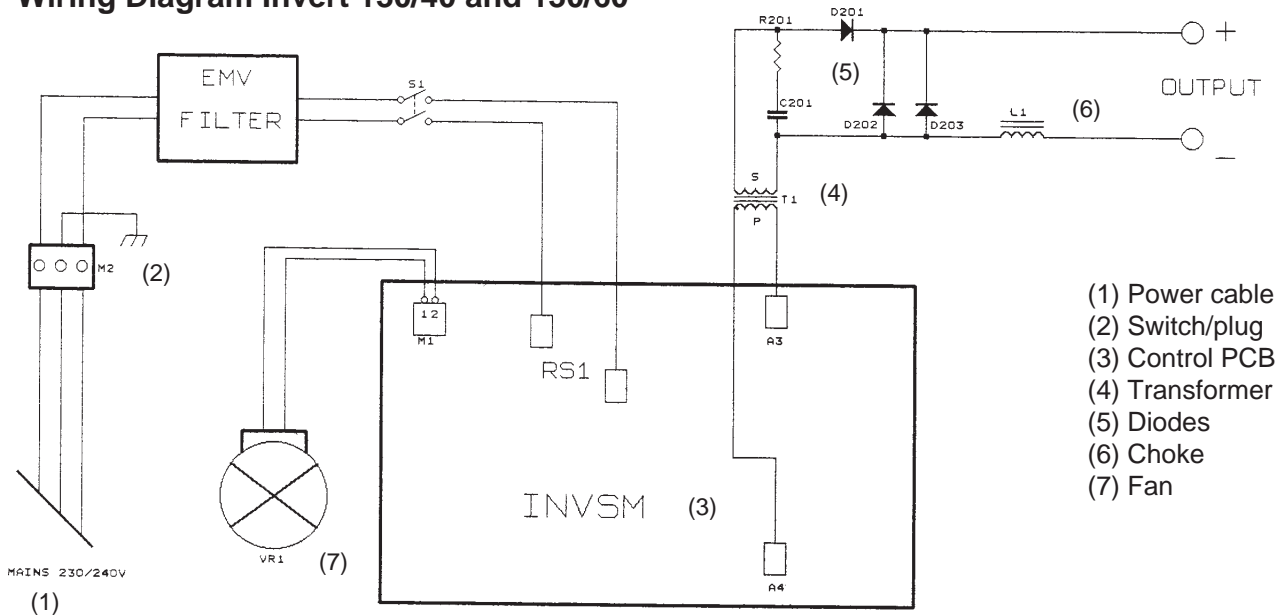
#### Protection against UV Rays, Burns and Fumes:

- Wear suitable protective clothing to prevent burns (sleeved gloves, welding apron etc.).
- Always use a welding visor.
- Screen off workplace to protect other persons working nearby against UV rays.
- Welding materials with contaminated surfaces may generate toxic fumes. Ensure surface is clean before welding.
- Zinc-plated or galvanized material should not be welded as zinc fumes are highly toxic.
- When welding under an increased electrical hazard it is important to wear undamaged, dry and insulating clothing.

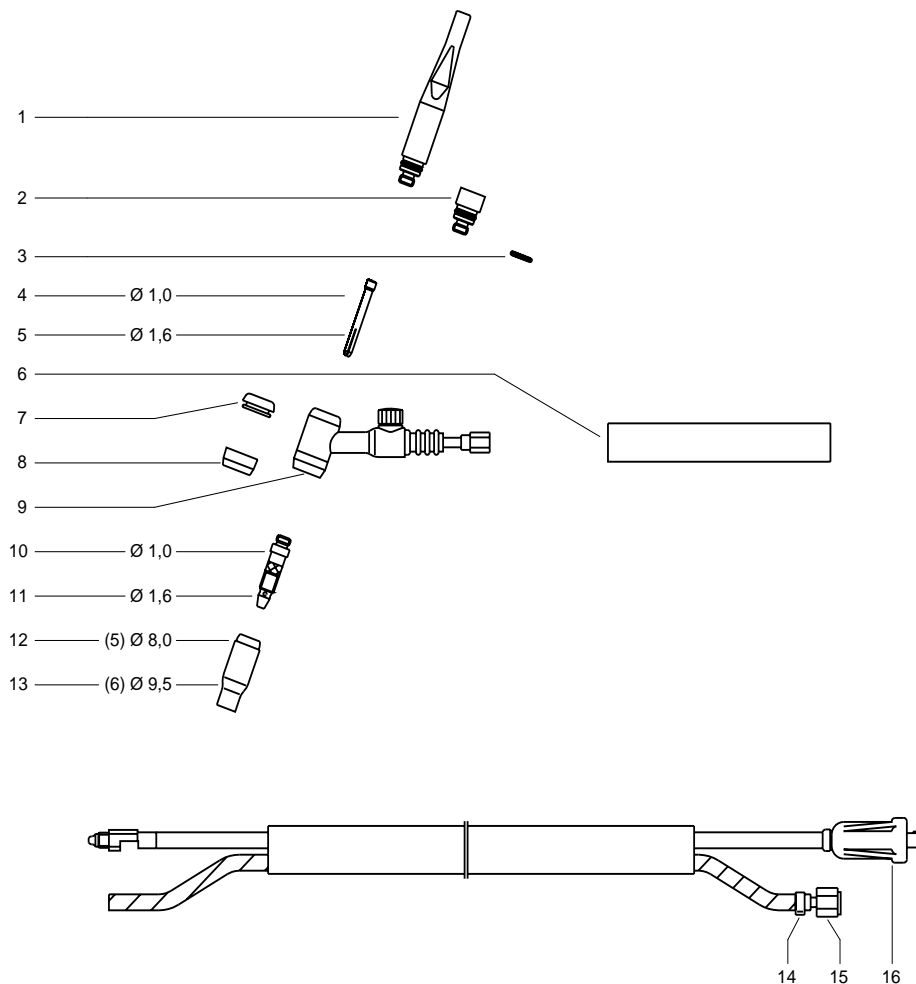
#### Fire Prevention

- Hot slag or sparks can cause fire when getting in contact with combustible solids, liquids and gases.
- Remove all combustible and inflammable material from the work area.
- Fuel, lubricant and solvent containers must not be welded, even when they are empty. The same applies to hollow spaces containing or having contained combustible materials.

## 10 Wiring Diagram Invert 130/40 and 130/60



## 11 Exploded View Drawing and Spare Parts List TIG-Torch SR 17 V



1	132 712 7230
2	132 712 7248
3	132 712 7892
4	132 712 7078
5	132 712 7086
6	132 766 9202
7	132 766 9199
8	132 712 7256
9	132 717 1174

10	132 712 7132
11	132 712 7140
12	132 712 7876
13	132 712 7175
14	132 766 9148
15	132 766 9180
16	821 503 7887

**D DEUTSCH****KONFORMITÄTSERKLÄRUNG**

Wir erklären in alleiniger Verantwortlichkeit, dass dieses Produkt mit den folgenden Normen übereinstimmt\* gemäß den Bestimmungen der Richtlinien\*\*.

**F FRANÇAIS****DECLARATION DE CONFORMITE**

Nous déclarons, sous notre seule responsabilité, que ce produit est en conformité avec les normes ou documents normatifs suivants\* en vertu des dispositions des directives\*\*

**IT ITALIANO****DICHIARAZIONE DI CONFORMITÀ**

Noi dichiariamo sotto la nostra esclusiva responsabilità che il presente prodotto è conforme alle seguenti norme\*. in conformità con le disposizioni delle normative\*\*

**PT PORTUGUÊS****DECLARAÇÃO DE CONFORMIDADE**

Declaramos sob nossa responsabilidade que este produto está de acordo com as seguintes normas\*. de acordo com as directrizes dos regulamentos\*\*

**FIN SUOMI****VAATIMUKSEN MUKAISUUSVAKUUTUS**

Vakuutamme, että tämä tuote vastaa seuraavia normeja\*. on direktiivien määräysten mukainen\*\*

**DA DANSK****OVERENSSTEMMELSESTEST**

Hermed erklærer vi på eget ansvar, at dette produkt stemmer overens med følgende standarder\*. iht. bestemmelserne i direktiverne\*\*

**EL ΕΛΛΗΝΙΚΑ****ΔΗΛΩΣΗ ΑΝΤΙΣΤΟΙΧΕΙΑΣ**

Δηλώνουμε με ίδια ευθύνη ότι το προϊόν αυτό αντιστοιχεί στις ακόλουθες προδιαγραφές\* σύμφωνα με τις διατάξεις των οδηγιών\*\*

**ENG ENGLISH****DECLARATION OF CONFORMITY**

We herewith declare in our sole responsibility that this product complies with the following standards\* in accordance with the regulations of the undermentioned Directives\*\*

**NL NEDERLANDS****CONFORMITEITSVERKLARING**

Wij verklaren als enige verantwoordelijke, dat dit product in overeenstemming is met de volgende normen\* conform de bepalingen van de richtlijnen\*\*

**ES ESPAÑOL****DECLARACION DE CONFORMIDAD**

Declaramos bajo nuestra exclusiva responsabilidad, que el presente producto cumple con las siguientes normas\*. de acuerdo a lo dispuesto en las directrices\*\*

**SV SVENSKA****FÖRSÄKRAN OM ÖVERENSSTÄMMELSE**

Vi försäkrar på eget ansvar att denna produkt överensstämmer med följande standarder\*. Enligt bestämmelserna i direktiven\*\*

**NO NORGE****SAMSVARERKLÆRING**

Vi erklærer under eget ansvar at dette produkt samsvarer med følgende normer\*. henhold til bestemmelsene i direktiv\*\*

**POL POLSKI****OŚWIADCZENIE O ZGODNOŚCI**

Oświadczamy z pełną odpowiedzialnością, że niniejszy produkt odpowiada wymogom następujących norm\*. według ustaleń wytycznych\*\*

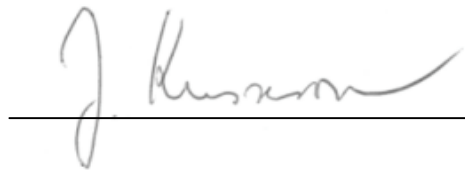
**HU MAGYAR****MEGEGYZŐSÉGI NYILATKOZAT**

Kizárólagos felelősségünk tudatában ezennel igazoljuk, hogy ez a termék kielégíti az alábbi szabványokban lefektetett követelményeket\*. megfelel az alábbi irányelvek előírásainak\*\*

**INVERT 130/40**

\* EN 60974-1, EN 50199

\*\* 89/ 336/ EWG, 72/ 23/ EWG, 93/68/ EWG



Jürgen Kusserow

Vorstand



ELEKTRA BECKUM AG – Daimlerstraße 1 – 49716 Meppen

Portugal: BOLAS-Maq. e Ferramentas de Qualidade, S.A.; Rua B, Lotes 8-10-12; Apartado 55, 7000-171 Evora Codex; (+351) 266 - 74 93 00; (+351) 266 - 74 93 09; bolas@mail.telepac.pt

Puerto Rico: J.J. Trading; PMB 409 P.O. Box 4956 Caguas; ; Puerto Rico 00726-4956; (+1) 787- 739 9693; (+1) 787- 739 1177; jochi@coqui.net

Qatar: Gulf Iron; P.O.Box 4076; ; Doha; (+974) 4 68 35 11; (+974) 4 68 40 65; ganes@guflinco.com

Rep. de Panamá: German-Tec (Panamá) S.A.; Via Argentina 46-70; Apartado 342, Zona 9 A.; Panamá; (+507) 2 23 77 05; (+507) 2 69 18 66; germanite@cablenoda.net

Republic of South Africa: Metabo Power Tools SA (Pty.) Ltd.; 165 Van DER BUIJ STREET; MEADOWDALE - Germiston; Johannesburg; (+27) 11 - 372 - 96 00; (+27) 11 - 453-41 63; ebotha@metabo.co.za

Rumania: S.C. Agent Trade S.R.L.; Splaiul Unirii 235-237; ; 74299 Bucuresti 3; (+40) 1 - 3 46 31 31; (+40) 1 - 3 46 31 51; agent@dtal.kappa.ro

Russia: OOO ITA-Strojninko; Uliza Alabjansk 3; ; 125057 Moskva; (+7) 095 - 198 43 14/198 17 13; (+7) 095 - 198 43 14; metabo\_service@mail.ru

Schweiz: Metabo (Schweiz) AG; Lindauerstr. 17; ; 8317 Tagelswangen; (+41) 52 - 3 54 34 44; (+41) 52 - 3 54 34 45; service@metabo.ch

Senegal: Ets. M.Y.S.; 12, Rue Tolbiac; B. P. 2389; Dakar; (+22) 1 - 823.67.14; (+22) 1 - 823.67.14;

Singapore: HOMELY HARDWARE PTE LTD; No. 1 Ubi Crescent #01-01; Number One Building; Singapore 408563; (+65) 67 48 28 66; (+65) 67 45 38 72; sales@homely.com.sg

Slovakia: STAMET Bratislava spol. s r.o.; M.R. Stefanika 28; ; 90201 Pezinok; (+421) 33 - 641 2522; (+421) 704 - 6 41 25 22; metabo@siatmet.sk

Slovenia: Dilux d.o.o.; Ogrincova 17; ; 1000 Ljubljana; (+386) 61 - 1 68 16 20; (+386) 61 - 1 68 16 16; metabo@dilux.si

South Korea: Metabo-Korea Co. Ltd.; Room No. 101, Daesung Building; 263-1 Incheon-Dong, Chung-Gu; Seoul; (+82) 2 - 22 76 09 14/5; (+82) 2 - 2 78 62 62; kwilee@metabokorea.co.kr

Sri Lanka: Hunter + Company Ltd.; General Hardware Importers ; P.O. Box 214 / 130 Front Street; Colombo 11; (+94) 1 - 2 81 71 / 72 / 73; (+94) 1 - 5 11 81 83; hunters@euroka.lk

St. Lucia: Eurotools Int'l Ltd.; P.O.Box RB 2484; Rodney Bay, Gros Islet, West Indies; Santa Lucia; (+1)758 - 452-99 14; (+1)758 - 452-99 15; eurotools@candwv.lc

Sultanate of Oman: Suhail & Saud Bahwan Building Materials L.L.C.; ; P.O. Box 169 / 7003 ; Muscat; (+968) 1 71 09 83; (+968) 1 71 57 55; ssbom@omantel.net.om

Sverige: Metabo Sverige AB; Skiffervägen 6; ; 553 03 Jönköping; (+46) 36 - 10 06 60; (+46) 36 - 16 07 54; mwidell@metabo.dk

Syria: Bachar & Elias; Taoutet; Boite Postal 325; ; Aleppo; (+963) 21 - 2 11 80 30; (+963) 21 - 2 11 62 45; taoutetco@net.sy

Taiwan: Taiwan Overseas Trade Co. Ltd.; No. 103 Chung King N. Road Sec. 4.; Taipei; (+886) 2 - 28 11 08 08; (+886) 2 - 28 16 98 38; 1900330@ms9.isinet.net.tw

Thailand: SSM - Sri Siam Mongkol Co., Ltd.; 1570-1576 Krung Kasem RD.; ; Pomprab Bangkok 10100; (+66) 2 - 3 28 11 89; (+66) 2 - 3 28 13 04; vinal@ssm.co.th

Tunesia: L'Equipment Moderne; 86, Ave. de Carthage; ; 1000 Tunis; (+216) 1 - 25 83 92; (+216) 1 - 35 18 45; equipement-moderne@planet.tn

Turkey: Burfa A.S.; Voyvoda Cad. 61-65; ; 80003 Karaköy-Istanbul; (+90) 212 - 2 56 49 50; (+90) 212 - 2 38 98 26; elalet@burfa.com

Ukraine: Conservice; Ukrainian-Russian Joint Venture 2; Narodnohop Opolcheniaya; 03 151 Kiev; (+380) 44 - 2 45 94 34; (+380) 44 - 2 45 96 57; comserv@ukrnet.net

United Arab Emirates: Sedana Trading Co; P.O. Box 1919; ; Sharjah; (+971) 6 - 533 05 51; (+971) 6 - 533 73 68; sedana@emirates.net.ae

United States of America: Metabo Corporation; 1231 Wilson Drive / P.O.Box 2287; Brandywine Industrial Park; West Chester, PA 19380; (+1) 610 - 4 36 59 00; (+1) 610 - 4 36 90 72; info@metabousa.com

Uruguay: Goldfarb S. A.; Rio Negro 1617; P.O. Box 11100; Montevideo; (+598) 2 - 92 26 06; (+598) 2 - 92 12 69; goldfarb@montevideo.com.uy

Venezuela: OLY-COPIA C.A.; 3 ra Transversal Los Ruices ; Edificio Píncipal II, Piso 4; Caracas 1071; (+58) 212 - 2 37 30 22; (+58) 212 - 2 39 23 65; masmus@olyvcpa.com

Vietnam: HUU HONG MACHINERY CO., LTD.; 157-159 Xuan Hong Street, Ward 12; Tan Binh District; Ho Chi Minh City; (+84) 8 - 811 74 54; (+84) 8 - 811 63 38; TVTinh@hcm.pt.vn

Yugoslavia: WHM WOBY HAUS MARKET; Brace Ribnikara 55.; ; 21000 Novi Sad; (+38) 12 15 28 56; (+38) 12 15 24 57; woby@EUNET.yu

Zimbabwe: Field Technical Sales; 45 Kelvin Road North; Graniteside; Harare; (+263) 4 - 77 52 56-9; (+263) 4 - 77 06 95; costa@field.icon.co.zw

India: Metabo Power Tools PVT Ltd.; Plot No. 40, WMDC Industrial Complex; Amblihank Road, Kharavadi; Chakan, Tal.: Khed, Dist.-Pune(Pin410501); (+91) 213 - 55 22 03; (+91) 213 - 55 21 61

Indonesia: P. T. Kawan Lama Sejahtera; Gedung Kawan Lama Jl. Puri Kencana No. 1; Meruya - Kembangan; Jakarta 11610; (+62) 21 - 5 82 82 82; (+62) 21 - 5 82 55 88; kawanlama@kawanlama.com

Iran: Kalavaran Co. Ltd.; P.O.Box: 11365 - 4653; ; Tehran; (+98)21 - 67 00 662/67 01 383; (+98)21 - 67 09 427; kalavaran@kalavaran.com

Israel: Proter + Cohn Ltd.; Technological P.O.Box 33215 / 3; Haatzmaut Road; 33033 Haifa; (+972) 4 - 8 64 04 68; (+972) 4 - 8 67 18 03; dubovskiy@matav.net.il

Italia: Carlo Stecher & Figli S.r.l.; Via Buozzi, 22; ; 20 097 San Donato Milanese (MI); (+39) 02 - 52 77 71; (+39) 02 - 55 60 03 22; cstechel@stechel.it

Japan: Metabo Japan Co., Ltd.; 5-1024-3, Baigou, Ohme-city; Tokyo 198-0063; (+81) 4 - 28 77 05 66; (+81) 4 - 28 77 05 07

Jordan: Newport Trading Agency; P.O.Box 6166 / 151 Hashimi Str.; City Center; Amman 111 18; (+962) 6 - 465 56 80; (+962) 6 - 464 54 39; isakkab@nta.com.jo

Kenya: Agriquip Agencies (E.A.) Ltd.; Lusaka Rd.; P.O.Box 30 612; Nairobi; (+254) 2 - 54 02 70 / 73; (+254) 2 - 54 00 56; pravaok@wananika.co.ke

Kingdom of Saudi Arabia: Saudi Industrial Tools Corporation; Madinah Road, Kilo 9; P.O.Box 11429; Jeddah 21453; (+96) 62 - 6 82 04 58; (+96) 62 - 6 91 12 67; sitaco@sitaco.com.sa

Kuwait: Naser Moh. Al-Sayer; Gen. Trading & Contracting Co.; P.O. Box 663 SAFAT; 13007 State of Kuwait; (+965) 47 47 137; (+965) 47 47 945; Alsayer\_electro@hotmail.com

Latvia: SIA WESS Instrumentum un Tehnika Ltd.; Gambu dambis 34 a.; ; 1005, Riga; (+371) 7 38 23 53; (+371) 7 34 94 72; imanis.wessinst@apollo.lv

Latvia: Stoller Sija; Krasta 42; ; 1003, Riga; (+371) 7 24 55 61; (+371) 7 24 55 62; stoller@stoller.lv

Lebanon: SPAN s.a.r.l.; Tools & Equipment Division; P.O. Box 90 - 1218; Beirut; (+961) 1 - 888 288; (+961) 1 - 902 690; span20@cyberia.net.lb

Lithuania: Technikonas; Savanoriu 286; ; 3042 Kaunas; (+370) 37 - 31 15 53; (+370) 37 - 31 10 21; Robertas@technikonas.lt

Macedonia: MAKWELD D.O.O.; Ilindenska 138; ; 1000 Skopje; (+389) 2 - 363 180; (+389) 2 - 364 746; MAKWELD@mrt.net.mk

Magyarország: INNOSEVICE-METABO Márkaszervez Kft.; 1101 Bp. Köbányai út 47./b.; ; 1475 Budapest; (+36) 12 - 60 67 12; (+36) 12 - 60 14 23; info@innoservice@mail.datanet.hu

Malaysia: Finetools SDN BHD; No. 7 Jalan 1/92C; Batu 3 1/4 Jalan Cheras; 56100 Kuala Lumpur; (+60) 3 - 92002966 / 92003966; (+60) 3 - 92007599; finetools@pd.jaring.my

Malta: G + T Imports Limited; Metabo Shop, Birkirkara By-Pass; ; Ikin BZN 11; (+356) 21 - 43 54 24; (+356) 21 - 41 73 58; gimprints@mail.global.net.mt

Mauritania: S.T.A.F. B.P. 40246; ; Nouakchott; (+22) 525 33 85; (+22) 525 14 09; staf@staf.mr

Mauritius: Dena - Supplies Ltd.; 2A Deschattres Street; ; Port Louis; (+230) 2 12 64 05; (+230) 2 10 17 57; dena@intnet.mu

Mexico: Uniservicio Ferretero S.A de C.V.; Matamoros No. 237 Col. la Joya ; Del. Tlalpan; C.P. 14090 México, D.F.; (+52) 5 - 555 737 233; (+52) 5 - 555 737 244; info@metabo.com.mx

Moldova: BRISAR-COM S.R.L.; str. Sciusev, 78; ; 2012 Chisinau; (+379) 2 - 22 24 50; (+379) 2 - 27 77 87; Alexey@orest.mldnet.com

Morocco: Ste Yyes Rouger; 20 Bd. Ibn Tachfine; ; 20300 Casablanca; (+212) 2 31 25 06; (+212) 2 - 31 24 62

Nederland: Metabo Nederland b.v.; Postbus 180; ; 3620 AD Breukelen; (+31) 3462 - 6 42 44; (+31) 3462 - 6 35 54; verkoop@metabo.nl

New Caledonia: Ets. Szemmelweis; 3, Rue Fernand Forest; Boite Postale 668; 98845 Nouméa; (+687) 27 20 02; (+687) 27 30 94; szemmelweis@canti.nc

New Zealand: Tooline Ltd.; 49 A Souter Road; P.O. Box 797; Christchurch; (+64) 3 - 36 55 931; (+64) 3 - 36 55 932; martin@tooline.co.nz

Nigeria: Mathani Brothers Ltd.; 60 Park View North Action.; London W3 OPT; (+44) 20 - 8992 5727; (+44) 20 - 8992 5335; bestline@infoweb.abs.net

Nigeria: Bestline Nigeria Ltd.; 15, Hospital Road; Ojodi Apapa; Lagos; (+234) 1 - 774 1305; (+234) 1 - 774 1305; bestline@infoweb.abs.net

Norway: Metabo Norge AS; Postboks 1296; ; 3205 Sandefjord; (+47) 33 - 44 55 55; (+47) 33 - 44 55 50; psteingirsen@metabo.no

Pakistan: Mercantile Company; Mercantile House 44-Brandreth Road; ; Lahore; (+92) 42 - 7 66 11 887 63 06 81; (+92) 42 - 7 66 45 897 63 45 95; miranco@brain.net.pk

Paraguay: Taguato S.A.; Avda.Gra.Santos No. 1948/Tte. Garay; ; Asuncion; (+595) 981 - 43 15 13; (+595) 21 - 33 36 77; taguato@conexion.com.py

Peru: Sucecion Carlos Kaufmann; Juan de Arona 760, Of. 102.; ; San Isidro ; (+51) 14 - 4 22 86 31; (+51) 14 - 4 42 41 30; kaufmann@terra.com.pe

Philippines: Mach Tools Inc.; 185 A & B del Monte Avenue.; ; Mannaes, Quezon City; (+63) 2 - 3 61 01 49; (+63) 2 - 3 61 48 41; nancytanyu@speedsurf.pacific.net.ph

Poliska: Metabo Polska Sp. z o.o.; Gdynska 28; ; 73-110 Stargard Szczecinski; (+48) 91 - 5 78 11 95; (+48) 91 - 5 78 07 76; serwis@metabo.pl

Polymésie francçaise: Ets Dieumégard Import; BP 14 132 Anue.; ; Tahiti; (+689) 42 32 38; (+689) 41 24 00; ets-dieumegard@mail.pt

Country: Company: Address 1: Address 2: City: Phone: Fax: E-mail (+355) 42 - 3 30 62; abequir@t-online.de

Algerie: Haddad Equipment Professional; 98 A. Site du Lycée.; ; 16012 Rouiba; (+213) 21 - 85 49 05; (+213) 21 - 85 57 72; hraprouiba@hotmail.com

Argentina: Metabo Argentina S.A.; Teniente Grial 4773; ; 1702 - Ciudadela - Buenos Aires; (+54) 11 - 44 88 - 9180; (+54) 11 - 44 88 - 39 89; info@metabo.com.ar

Australia: Metabo Pty. Ltd; 10 Dalmore Drive.; Scoresby, Melbourne, Vic. 3179; (+61) 3 - 97 65 01 99; (+61) 3 - 97 65 01 89; sales@metabo.com.au

Bahrain: Bokhamses Establishment; Bldg. 334 Block 321 Old Exhibition Road; P.O. Box 5262, Manama; (+973) 71 36 15 / 71 41 74; (+973) 71 26 12; bokhamses@batelec.com.bh

Bangladesh: East Bengal Impex; 175, Nawabpur Road (4th floor); ; Dhaka; ; (+880) 2 - 9 56 94 77 / 9 55 04 00

Belarus: Rosinstrumentum LTD, INTL DEPT.; PR-T Skkoriny 107-11; P.O.Box 67-220023 Minsk; (+375) 17 263 99 94; (+375) 17 263 99 94; metabo@rosinstrumentum.com

Belgique: Metabo Belgium; ; 1 Hoiveld 3 - 5; ; 1702 Groet Bilgareden; (+32) 2 - 4 67 32 10; (+32) 2 - 4 66 75 28; general@metabo.be

Bolivia: Agencias Generales S.A.; Casilla de Correo 530 Avda. San Martin S-0253; ; Cochabamba; (+591) 4 - 425 10 62; (+591) 4 - 425 10 61; agsa@supernet.com.bo

Bosnia and Herzegovina: Agrarkombinat; Malejvicka 1.; Banja Luka; (+387) 51 - 302 718; (+387) 51 - 785 708; agrokombinat@blic.net

Brazil: Metabo do Brasil Ltda.; Rua Guicurus 306 - Vila Conceicao; ; Diadema - Sao Paulo - Cep 09911-630; (+55) 11 - 40 51 - 25 11; (+55) 11 - 4056 - 4152; metabo@metabo.com.br

Bulgaria: KIROV Ltd.; Gara Iskar; Ponuschik-Nedeltscho-Bonitshev-Str.10; 1582 Sofia; (+359) 2 - 9 78 58 90; (+359) 2 - 9 78 86 04; service@krov.net

Canada: Metabo Canada Inc.; 190 Britannia Road East, Unit No. 12; Mississauga, Ontario, L4Z 1 W6; (+1) 905 - 575 06 08; (+1) 905 - 755 06 11; info@metabo.ca

Ceska Republika: Metabo s.r.o.; Kralovicka 544.; ; 250 01 Brandy nad Labem; (+420) 202 - 80 44 55; (+420) 202 - 80 44 56; mlanda@metabo.cz

Chile: Nordchil S.A.; San Diego 895.; ; Santiago de Chile; (+56) 2 - 6 72 29 11; (+56) 2 - 6 99 04 85; empresa@nordchil.cl

Colombia: FUROTTOOLS Ltda.; Avenida Caracas No. 74-25; Edificio Ferricentros-4 Piso; Bogota; (+57) 1 - 348 28 99; (+57) 1 - 348 29 16; allesch@compusene.com

Costa Rica: Capris S.A.; Frente la Imprenta Nacional, La Uruca; P.O. Box 7-2400; San José; (+506) 2 32 91 11; (+506) 2 32 93 53; webmaster@capris.co.cr

Croatia: CFOM d.o.o.; Obrtnicka 2.; ; 10000 Zagreb; (+385) 1 - 24 06 246; (+385) 1 - 24 06 000; info@cfom-zagreb.hr

Cyprus: Med Marketing Ltd. (eurotools); P.O. Box 27017; ; 17, Digenis Akritas Ave; 1641 Lefkosia, Cyprus; (+357) 22 - 34 95 77; (+357) 22 - 34 93 94; condam@spidernet.com.cy

Danmark: Metabo Danmark A/S; Helgeshoj Allé 12.; ; 2630 Tastrup; (+45) 43 - 31 34 00; (+45) 43 - 31 34 01; scarstensen@metabo.dk

Deutschland: Metabowerke GmbH.; Walter-Rauch-Str. 1.; ; 72622 Nuertingen; 0180 - 3 00 04 16; 0180 - 300 04 17; tueller@metabo.de

Ecuador: Macuarinas Henríquez C.A.; P.O.Box 09 - 01 - 49 61.; ; Guayaquil; (+593) 4 - 25 43 00; (+593) 4 - 25 49 39; mhca@impasat.net.ec

Eestiäsa: AVS MECRO; Peterburi tee 44.; ; 11415 Tallinn; (+372) 620 11 11; (+372) 620 11 12; macro@macro.ee

Egypt: Modern Machines & Materials Co.; 18, Geziret El Arab. St.; ; Mohandseen Giza (Cairo); (+20) 2 - 3 03 02 51 / 3 47 89 17; (+20) 2 - 3 02 58 96;

El Salvador: Metabo S.A. de C.V.; Colonia Santa Clara, Pasaje C No. 20; Cuscatlaningo; San Salvador; (+503) 2 - 38 47 65; (+503) 2 86 52 36; metabo1@telesal.net

Espana: Herramientas Metabo S.A.; Poligono Ind. Prado del Espino; C/Forjadores, 12; 28660 Boadilla del Monte (Madrid); (+34) 91 - 6 32 47 40; (+34) 91 - 6 32 41 47; wbuhrfe@metaboes.com

Ethiopia: SUTCO Pvt. Ltd. Co.; W. 19 K. 50 HN new, Wollo Sefer.; ; Addis Ababa; (+251) 1 - 52 68 19; (+251) 1-53 53 55; sutco@telecom.net.et

Finland: Wihuri Oy Autola; P.O. Box 58 Matkitalitie 9.; ; 01511 Vantaa; (+358) 9 - 41 58 15; (+358) 9 - 41 58 22 07; mauri.rathonen@autola.wihuri.fi

France: Metabo S.A.; Z.A. C. 2, Avenue des Ormeaux.; ; 78180 Montigny-LeReponneux; (+33) 1 - 30 64 55 30; (+33) 1 - 30 44 37 68; Metabo.fr@wanadoo.fr

Ghana: Emmoock Powercom Ltd.; Knutsford, Avenue opp. Morocco House; P.O. Box 1783; Accra; (+233) 21 - 66 39 94; (+233) 21 - 78 02 90; emmoockpowercom@hotmail.com

Great Britain: Metabo (UK) Ltd.; 25 Majestic Road ; Nursing Industrial Estate; Southampton / SO 16 0YT; (+44) 2380 - 73 20 00; (+44) 2380 - 74 75 00; info@metabo.co.uk

Guatemala: Almacen la Palma S.A.; 2a Calle 4-38, Zona 9.; ; Guatemala Ciudad, 01009; (+502) 3 32 47 24; (+502) 3 32 47 81; almpalma@amigo.net.gt

Hellas: Fedon N. Economides & Co.; Prigiponion Street 27.; ; 11363 Athinai; (+30) 1 - 8 21 60 83 / 8 84 29 66; (+30) 1 - 8 82 56 00; fedon@compulink.gr

Hong Kong: Jebson & Co. Ltd.; 9/F, Jebson Motor Group Building; 924-926 Cheung Sha Wan Road; Kowloon / Hong Kong; (+852) 29 26 22 00; (+852) 28 82 19 78; rileyand@mail.jebson.com.hk

Iceland: Fosberg Ltd.; Sudurlandsbraut 14.; ; 108 Reykjavik; (+354) 57 57 600; (+354) 57 57 605; fossberg@fossberg.is

## Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>