Castolin Eutectic®
Eutectic Castolin

OPERATING MANUAL

TEROMATEC 400

Castolin Eutectic®
Eutectic Castolin

TEROMATEC 400

Wire Feeder

TEROMATEC 400

Instructions Manual

Parts List

Contents

PRIOR TO INSTALL YOUR TEROMATEC WIRE FEEDER, PLEASE READ CAREFULLY ALL INFORMATION HEREIN CONTAINED

1.1) - DESCRIPTION

TeroMatec is designed for welding wires feeding, using conventional rectifiers as power source.

It is a quite versatile equipment and can operate connected to a DC constant current power source. TeroMatec 400 operates with wires in diameters 1.6, 2.4 and 2.8mm. A voltage sensor controls welding current and wire speed oscillation, thus helping to maintain arc length constant.

TeroMatec 400 is an easy operating equipment. Wire feeding starts when arc is open and stops when arc is interrupted. Remote control unit enables operator to control wire feeding or retrocession.

2) - SAFETY MEASURES

An welding operation should NEVER be started prior to take following safety procedures:

Eye protection

Always wear an welding helmet with adequate lens in order to protect eyes and face (Table 1)

Welding type	Lens nº
Non-ferrous metals	11
Ferrous metals	12

Table 1: Recommended lens level according to welding type

Arc should NEVER be started in presence of persons not wearing adequate protection. Eyes exposition to arc luminosity causes serious damages.

Body protection

During welding, insulating gloves as well as adequate clothing should be worn for protection against spatters and arc radiation.

Ventilation

Care must always be taken to provide sufficient fresh air, specially when welding in enclosed spaces, since fumes and gases produced during welding process are quite harmful. On the other hand, avoid air stream directly on torch since this affects gas protection.

Electrical protection

When dealing with any electrical equipment, special care must be taken in order to not touch “live” (energized) parts.

Solid and insulated footwear (rubber-soled) must be worn; even thus, avoid step on wet ground. Check if torch is adequately insulated and if welding cables are in perfect conditions (without any worn-out, burnt or unthreaded segments).

NEVER open cabinet prior to disconnect equipment from main electrical system. In order to provide additional protection to operator, equipment must be always grounded using ground-cable supplied together with feeding cable.

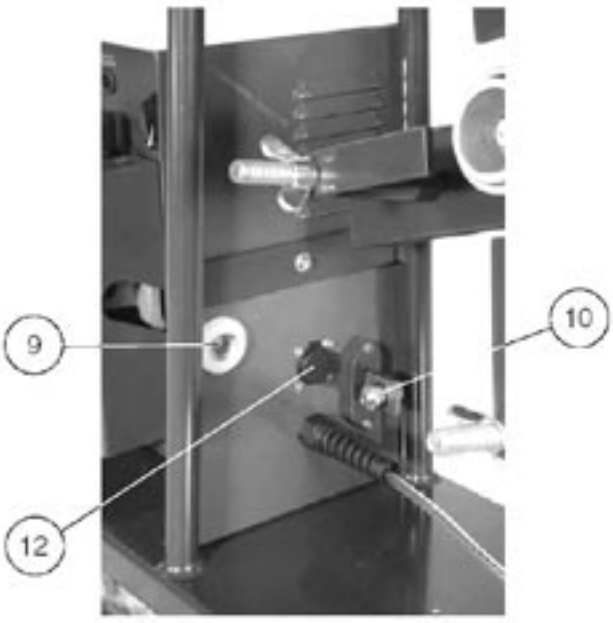
Firefighting measures

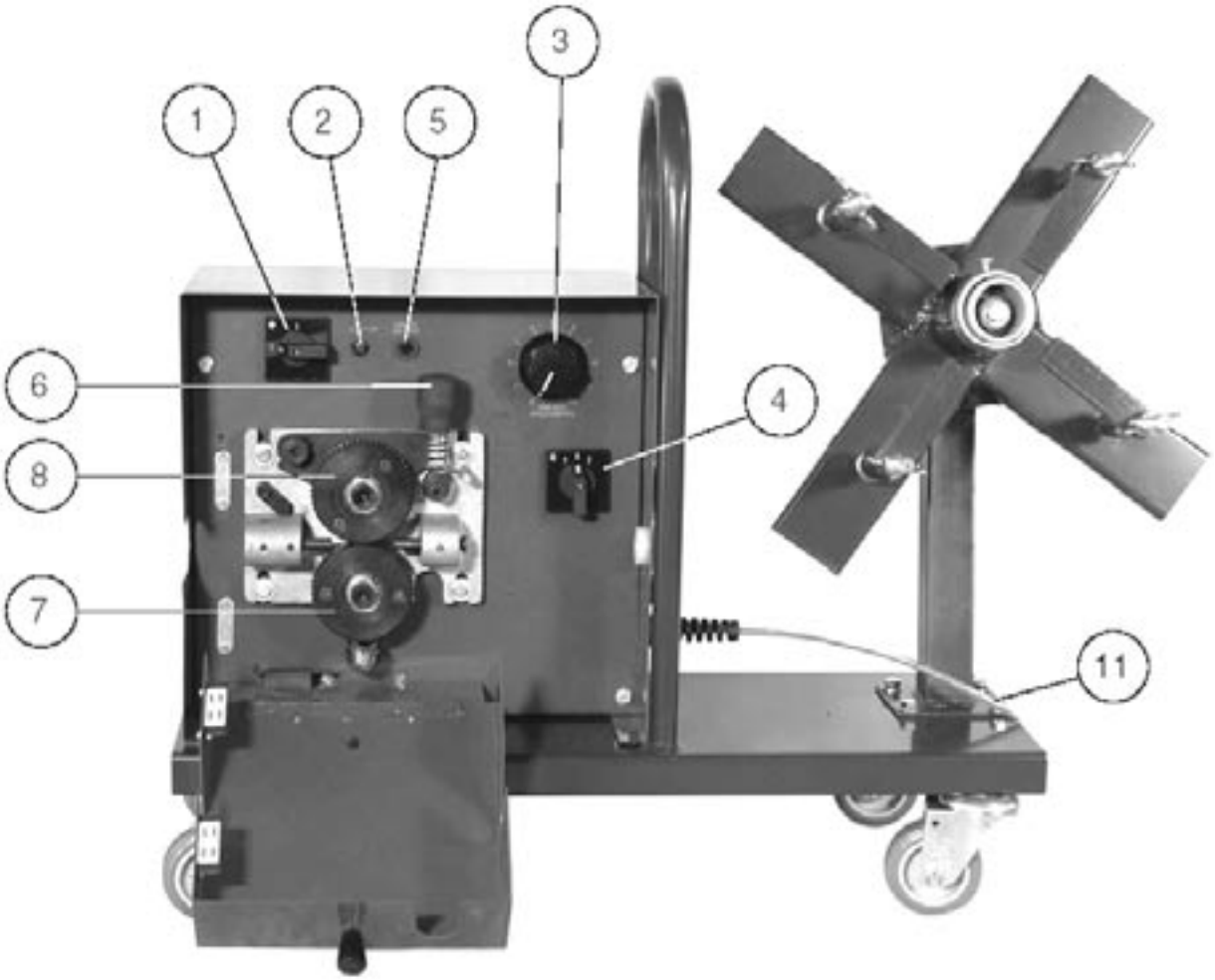
All inflammable material (such as paper, straw, wood, woven, tow) must be removed from welding area. When welding any inflammable material container, make sure that it has been previously thoroughly washed with water or a non-inflammable solvent and that it is totally dry and free of any residual vapours.

In case of fire or short-circuit, NEVER throw water on any electrical equipment. Disconnect equipment from main electrical system and use a CO_2 or chemical power fire extinguisher.

3) - TECHNICAL CHARACTERISTICS

Current range	100 to 400 A
Nominal current	400 A
Duty cycle	100%
Voltage	78V ± 10% AC or DC
Needed welding source	Constant current, AC/DC
Arc ignition voltage	80V maximum
Engine voltage	28 VDC maximum
Engine power	95W
Wire speed	12 m/min.
Wire diameter(mm)	1.6/2.4/2,8
Wire spool weight	30 kg
Weight without cables	24 kg
Dimensions (HxWxL) (mm)	560 x 255 x 835





4) - CONTROLS AND CONNECTIONS

4.1 - Wire feeder

1) On-Off switch: Allows to turn-on and switch-off the wire feeder
2) Pilot lamp (LED): During wire feeding this LED indicates that engine is energized and switches-off during welding
3) Speed wire control: Allows wire speed adjustment, increasing or decreasing speed during welding
4) Wire control switch: Allows wire feeding or retrocession
5) Circuit-breaker: For circuit protection in case of overload
6) Wire pressure knob: Allows adjustment of adequate wire feeding pressure
7) Wire traction pulley
8) Wire pressure pulley
9) Wire inlet guide
10) Current cable connector
11) Connection cable to workpiece
12) Socket for remote control connection

4.2 - Remote Control

13) On-Off switch
14) Wire reversion knob

5) ASSEMBLY OF WIRE FEEDING PULLEY

Pulley assembly consists of 4 knurled disks and one spacer. One disk is market 3/32”on one face and 1/16” on the other face. Combination of knurled disks with spacer allows use of three different wire diameters. Figure below shows assembly according to wire diameter.

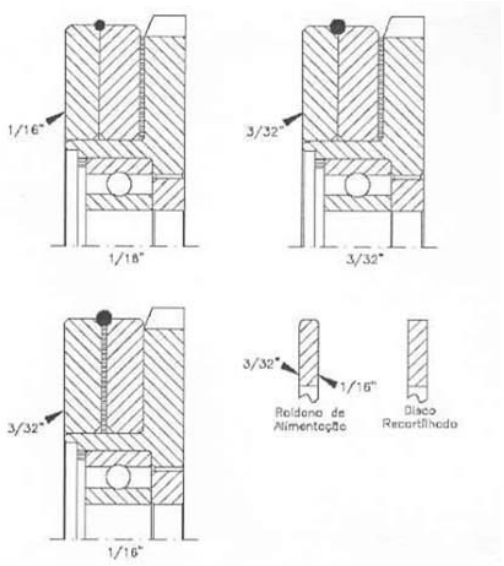


Figure 1: Assembly according to wire diameter

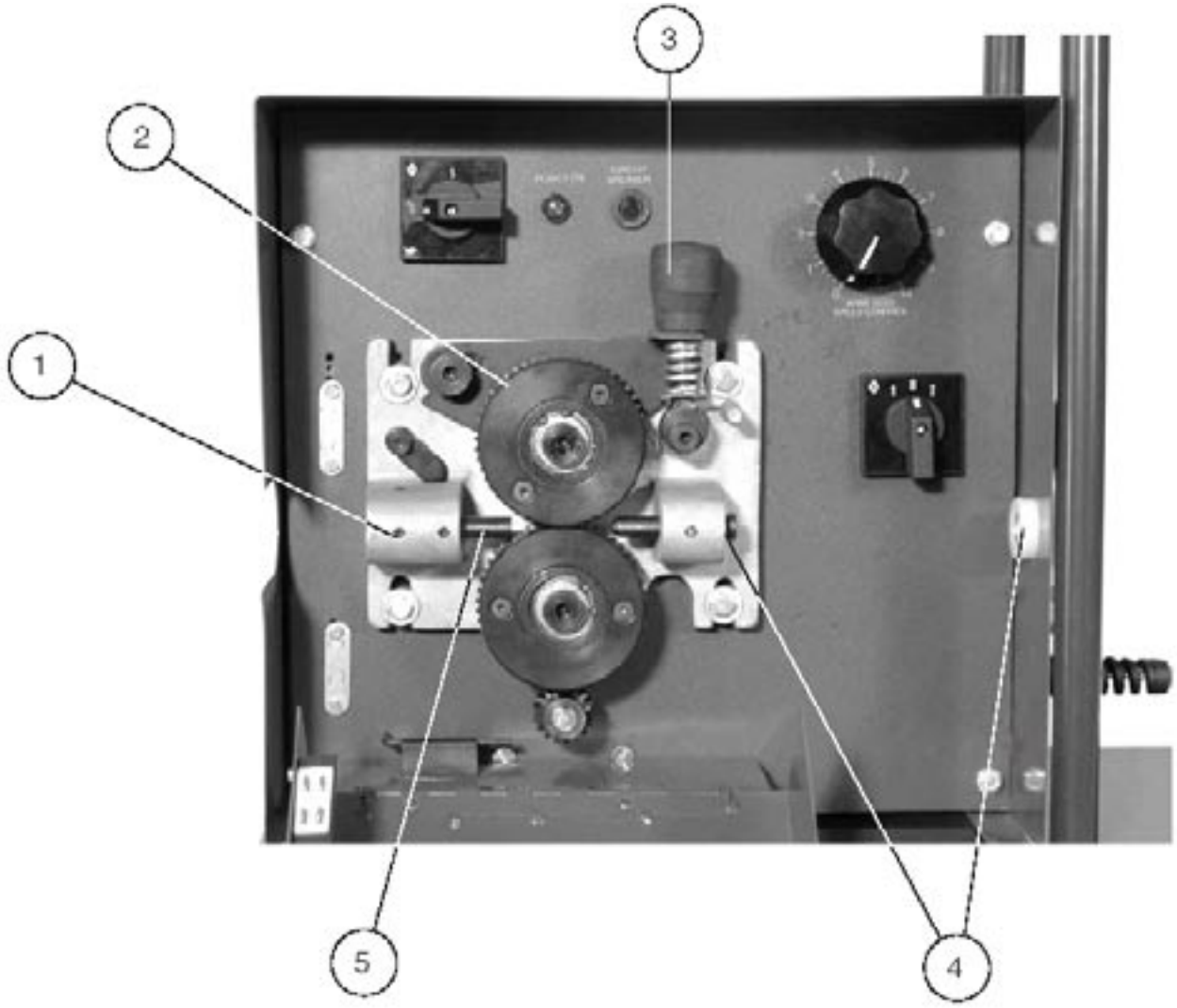
6) - TORCH AND WIRE ASSEMBLY ON TEROMATEC

Warning!: During TeroMatec 400 assembly power source must be disconnected.

a) Connect power source positive cable to TeroMatec terminal.
b) Connect power source negative cable and TeroMatec ground-cable to workpiece.

Note: Diameter os positive and negative cables must be dimensioned according to current to be used.

c) Remove torch nozzle and contact tip. Check if tip and “conduite” (conductor tube?) are according to wire diameter to be used.



d) Assemble TeroMatec torch. Unfasten allen-type screws (as per figure below), insert torch adapter and fasten screws again.

e) Position wire coil on support, locking it with the e bolts. When using wire supplied with spool, remove wire support.

f) Lift pressure arm (2) by releasing pressure knob (3).

g) Insert wire tip through inlet (4) and outlet (5) guides. Check if wire is free of fins or other defects which make wire feeding difficult.

h) Return pressure arm to original position and adjust pressure using pressure knob (3). Pressure should be sufficient to allow continuous and smooth wire feeding. Low pressure causes intermittent wire feeding and excessive pressure causes wire deformation. In both cases wire feeding is impaired.

7) - OPERATION

a) Switch-on power source.

Warning! When power source is switched on, entire feeding set (base and pulleys) as well as torches are “live” (energized). Do not touch them and do not touch torch on workpiece.

b) Adjust wire speed control to position 5.

c) Switch-on TeroMatec (using on-off switch on panel or on-off switch on remote control unit).

d) Adjust wire reversion knob on panel to 8 position (or to FWD position on remote control unit) until wire shows up at torch tip. Re-adjust knob on panel to “0” position (or release remote control knob) to stop wire feeding.

e) Disconnect power source and TeroMatec.

f) Assemble contact tip and torch nozzle.

g) Switch-on power source.

h) Adjust power source current according to welding type to be performed.

i) Switch-on TeroMatec

j) Select a workpiece and make a sample in order to adjust speed according to wire diameter and desired deposition rate.

k) Touch wire tip on workpiece to start welding operation and adjust speed/tension until desired result is obtained.

l) To interrupt welding, rapidly withdraw torch from workpiece.

8) - WELDING PROCEDURES

The variable parameters in TeroMatec process are: voltage, current, torch dislocation speed and distance between torch tip and workpiece.

Arc voltage effects:

Arc voltage alterations affect welding operation as follows:

1) High voltage (too long arc) causes spatter increase, porosity, wider beads and irregular welding deposit.

2) Low voltage results in irregular and narrow deposit, unstable arc and makes wire feeding difficult.

Welding current effects:

Current alterations affect welding operation as follows:

1) High current produces wider beads and increases fusion and penetration rates, generating excessive penetration and too much spatters.

2) Low current results in narrow beads and low penetration rates. This is an advantage in case of thin materials (under 1/4”), where better penetration control is required.

Torch dislocation speed effects:

Variations in torch dislocation speed affect welding operation as follows:

1) When dislocation speed is too high, result is low penetration and spatter increase.

2) When dislocation speed is too low, result is excessive penetration, slag inclusions and irregular deposit beads.

Effects caused by distance (stick-out) between torch tip and workpiece:

To obtain a stable arc it is generally recommended a distance (stick-out) of 50mm for most part of wired used with TeroMatec.

1) If distance (stick-out) is too short, current will be too high causing

excessive penetration and spatters sticking to torch contact tip.

2) A too long distance (stick-out) makes welding control difficult, generating high spatter quantity and unstable arc.

Obs.: Out of position welding makes arc starting more difficult due to high deposition rates produced and too high fluidity of molten pool.

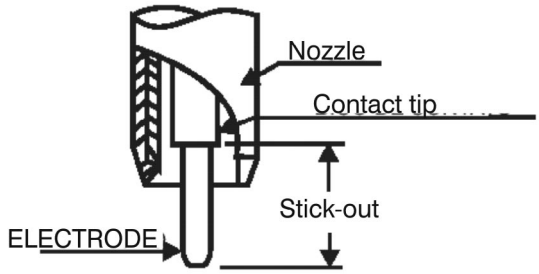


Figure: Electrical stick-out

9) - MAINTENANCE

Warning!: Equipment must be totally disconnected prior to perform any type of maintenance on torch or on TeroMatec.

Torch Maintenance

a) Disassemble TeroMatec torch

b) Remove insulating elements and adapter

c) Remove conductor tube and ensure that there are no worn-out segments. Stretch-out torch cable to facilitate assembly.

d) Clean contact tip and nozzle; check for wear signs and replace them if necessary.

e) Re-assemble contact tip and nozzle.

TeroMatec Maintenance

a) Remove lateral cover and clean inside equipment using dry compressed air, free of oil and at low pressure in order to remove dust from cabinet interior.

b) Clean relay contacts using an specific cleaner for this function.

c) Check if speed control rheostat contact track presents any wear signs or failure.

d) Check electrical connections and cables insulation; replace them in case of any defect.

e) Close lateral cover.

f) Remove both cylinders and check for wear signs on gears. Replace them if necessary. Worn-out or damnified cylinders make wire feeding difficult.

g) Clean out dust from cylinders using a wirebrush.

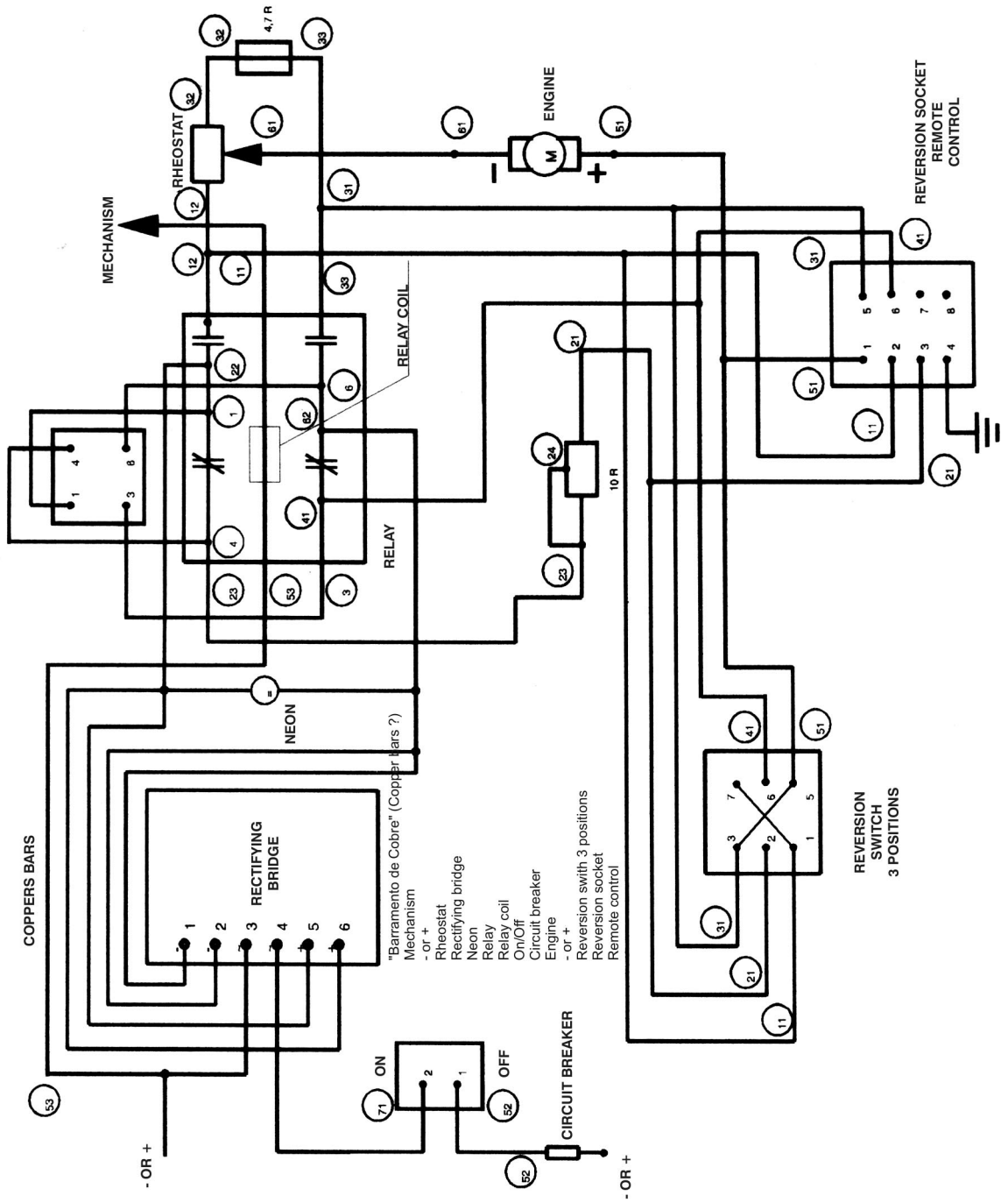
h) Clean cylinders shafts with an adequate solvent, lubricate them with appropriate grease type. Re-assemble cylinders and check for free movement.

i) Check engine gear; in case of wear, replace it.

j) Check functioning of break elements and adjust pressure if necessary.

k) Check insulation elements; Replace them in case of any defect.

10 - ELECTRICAL DIAGRAM



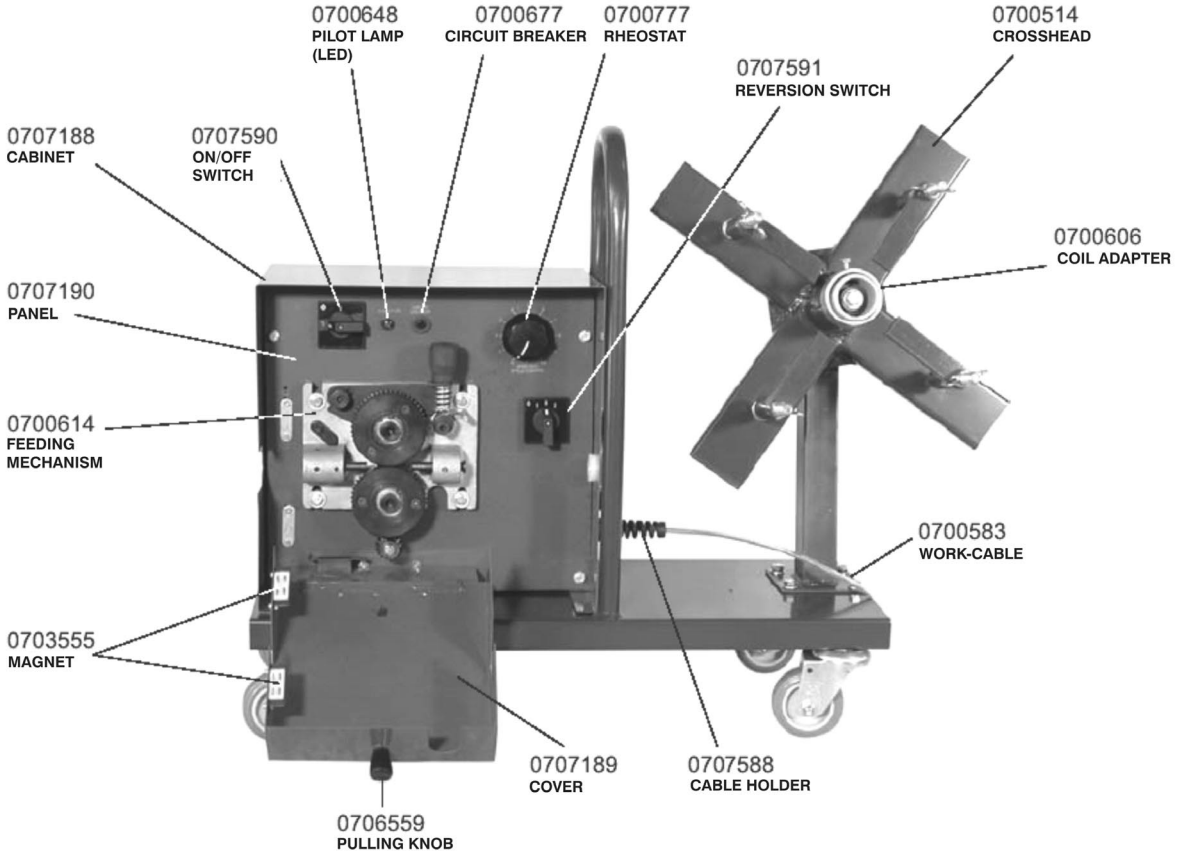
11 - REPAIR

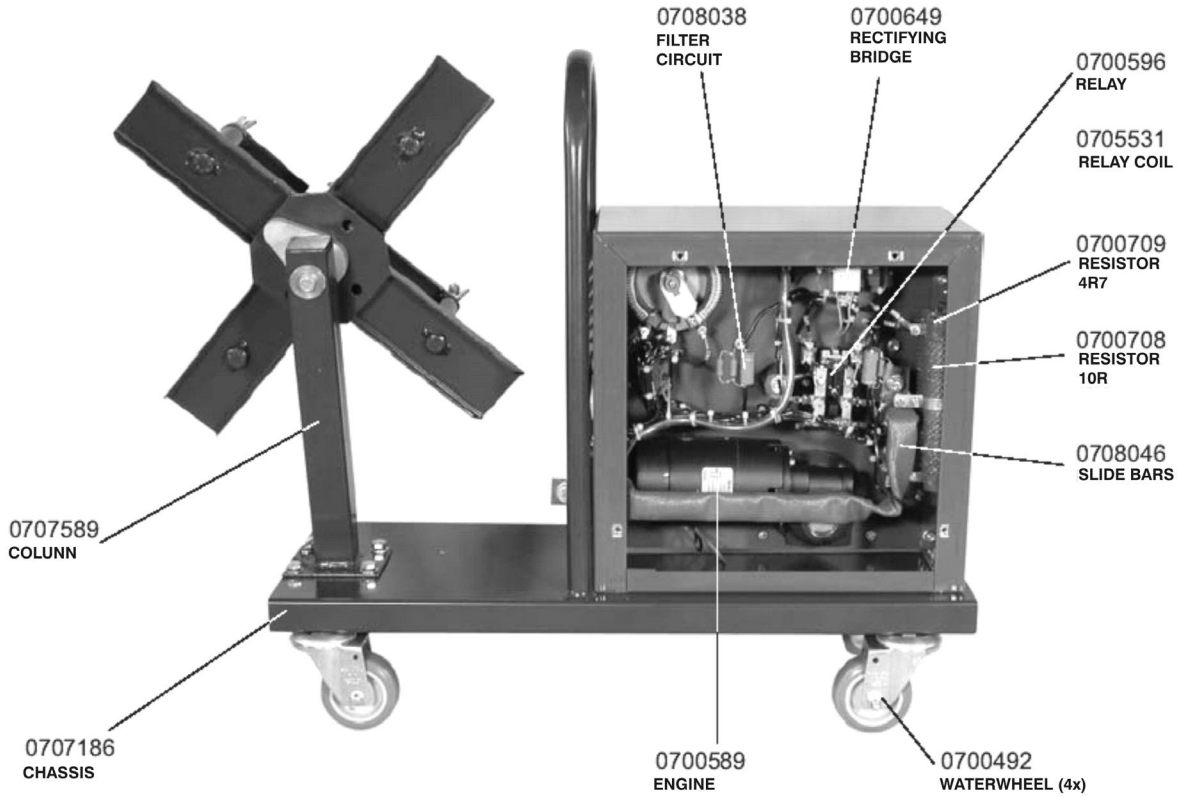
To ensure optimum functioning and performance of an Eutectic equipment, only original spare parts should be used, supplied or approved by Eutectic do Brasil. Use of not-original or not-approved parts generates warranty cancellation.

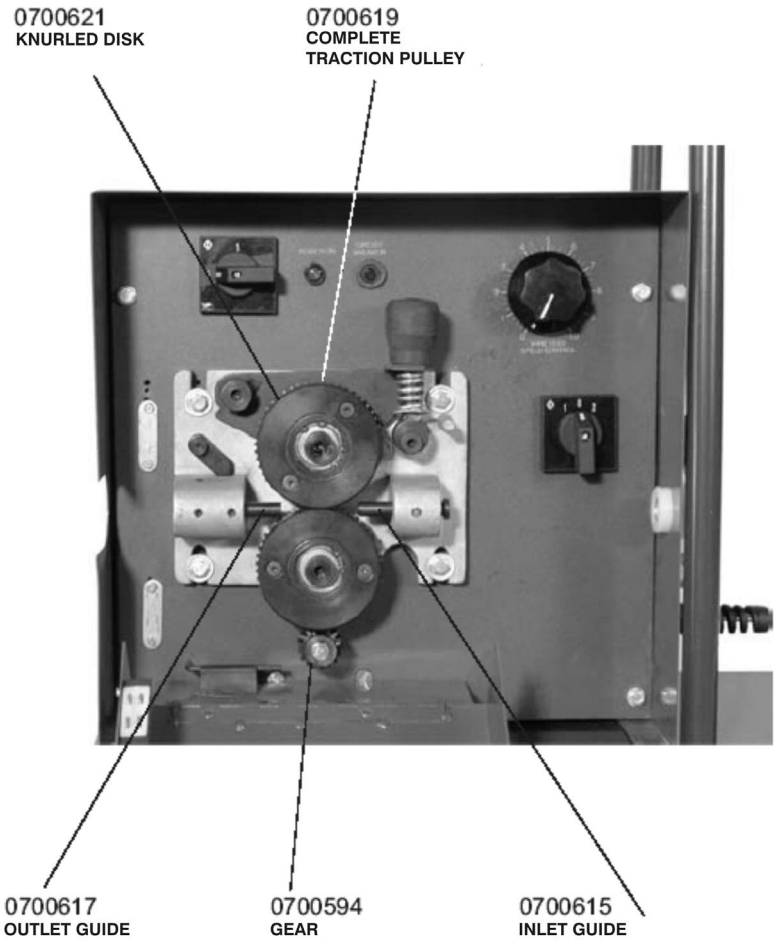
12 - TROUBLESHOOTING GUIDE

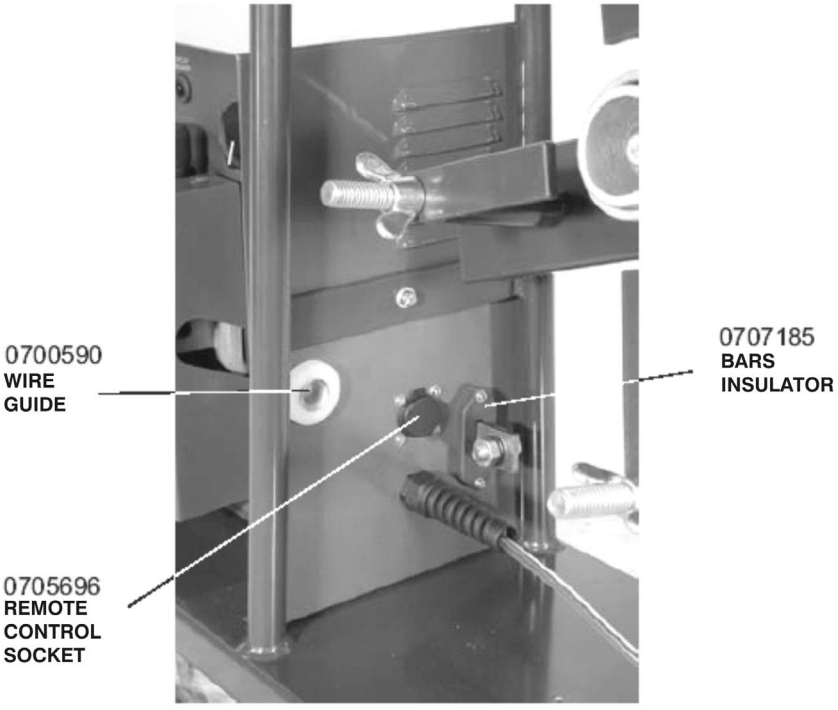
Fault	Cause	Solution
Engine does not function.	Tension failure on power source	Check fuses on feeding switch
	Tension failure on wire feeder	Check feeding cable power source/ wire feeder
	Defect on control plate	Replace control plate
Improper or unstable wire feeding during welding	Damnification on pulleys teeth gears	Replace pulleys
	Problem in electrical connections	Check engine connections
Wire slides in traction pulleys	Low pulleys pressure	Press adjustment knob to obtain proper wire traction pressure
	Too high pulleys pressure generating wire deformation	Slightly unfasten pressure adjustment knob
	Excessive pressure on break of coil adapter	Decrease adapter pressure by unfastening screw
	Wire is entrapped inside the torch	Disassemble torch, deobstruct it and clean wire guide.
	Wrong torch angle	Operate torch as vertical as possible
Wire slides in traction pulleys	Excessive pressure on pulleys	Decrease pressure using adjustment knob
	Deranged pulleys or torch inlet guide	Aligne pulleys or centralize inlet guide
Entrapped or burning wire	Contact tip burnt	Unfasten tip nut and press feeding switch so that tip comes out together with the wire. Eliminate burnt area or replace contact tip
No speed control	Electrical circuit	Verify rheostat
Unstable welding current	Wire slides in traction pulleys	Adjust pulleys pressure
	Torch damage	Check spiral guide and contact tip

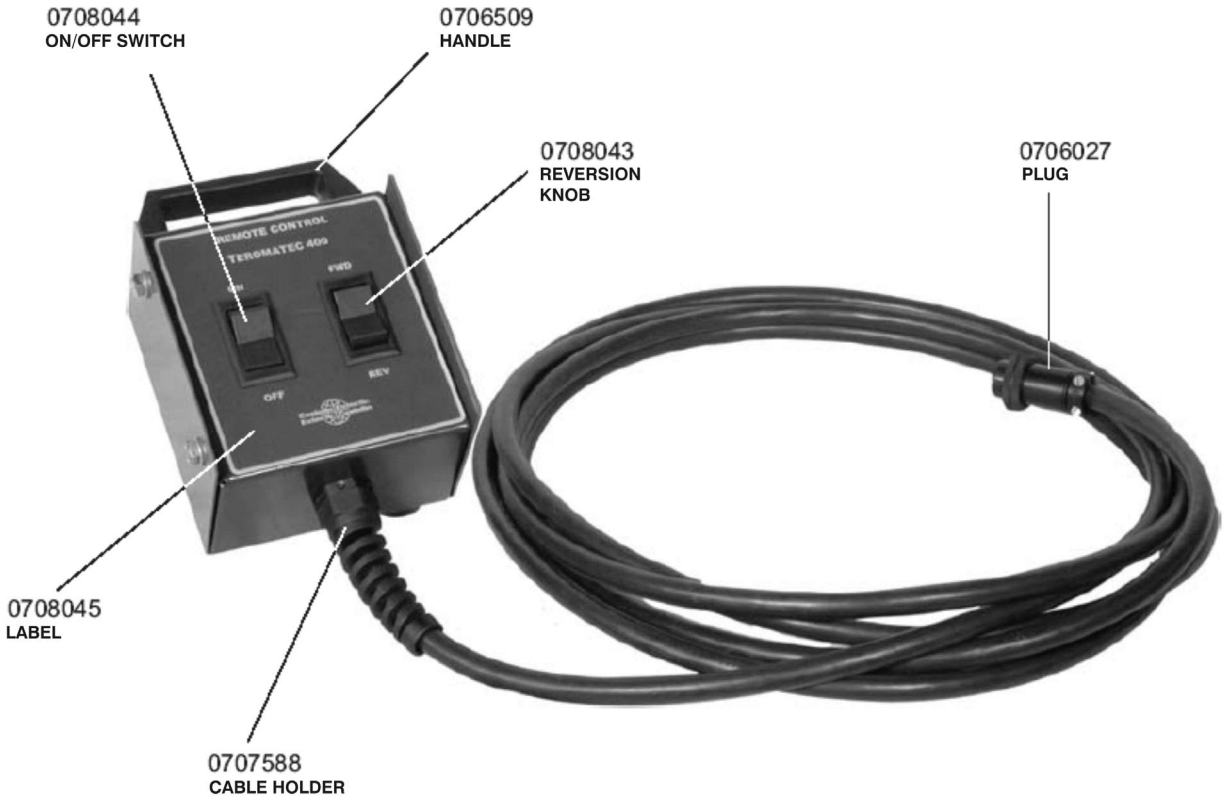
13 - SPARE PARTS






0700621
KNURLED DISK
0700619
COMPLETE
TRACTION PULLEY
0700617
OUTLET GUIDE
0700594
GEAR
0700615
INLET GUIDE


0700590
WIRE
GUIDE
0707185
BARS
INSULATOR
0705696
REMOTE
CONTROL
SOCKET


0708044
ON/OFF SWITCH
0706509
HANDLE
0708043
REVERSION
KNOB
0706027
PLUG
0708045
LABEL
0707588
CABLE HOLDER
REMOTE CONTROL
TEROMATEC 40s
FWD
OFF
REV

EUTECTIC DO BRASIL LTDA.

R. Ferreira Viana, 146 - CEP 04761-010 - Toll Free: 0800 7034370 - Tel.: 0(XX)11-2131-2300 - Fax: 0(XX)11-2131-2393 - São Paulo - SP

- BELO HORIZONTE: Tel.: 0(XX)31-2191-4488 - FAX: 0(XX)31-2191-4491
- PORTO ALEGRE: Tel.: 0(XX)51-3241-6070 - FAX: 0(XX)51-3241-6070
- RIBEIRÃO PRETO: 0(XX)16-624-6486 - FAX: 0(XX)16-624-6116
- RECIFE: Tel.: 0(XX)81-3327-2197 - FAX: 0(XX)81-3327-6661
- CURITIBA: Tel.: 0(XX)41-339-6207 - FAX: 0(XX)41-339-6234
- SALVADOR: Tel.: 0(XX)71-374-6691 - FAX: 0(XX)71-374-6703

Internet: http://www.eutectic.com.br

GARANTIA

A **EUTECTIC DO BRASIL LTDA.,** Garante aos seus usuários, que os equipamentos de sua fabricação são produzidos dentro da mais avançada técnica e com rigoroso controle de qualidade, assegurando dentro das condições e prazos abaixo um perfeito funcionamento.

1. EQUIPAMENTOS

1.1 - A garantia é válida para todos os equipamentos da marca **EUTECTIC CASTOLIN** produzidos e/ou comercializados pela **Eutectic do Brasil Ltda**.

2. INSTALAÇÃO E USO

2.1 - A instalação e/ou operação dos equipamentos, bem como as condições de trabalho, devem atender as normas da ABNT. Diferentes condições das indicadas invalidam as cláusulas de Garantia deste Termo.

3 . GARANTIA

3.1 - A garantia é de um ano sem qualquer ônus ao adquirente, é limitada à substituição e/ou conserto de eventuais peças defeituosas ou a correção de qualquer defeito de produção mediante constatação do nosso departamento de Assistência Técnica.

3.2 - A substituição e/ou conserto referido no item anterior não se aplica às peças com desgaste natural de uso (como roldanas de tração, tochas, acessórios de soldagem, etc), bem como por imperícia ou mau uso na utilização do equipamento ou ainda, que tenham sido consertadas ou modificadas por pessoas não credenciadas pela **Eutectic do Brasil Ltda.**

3.3 - Em nenhuma hipótese, caso ocorra a necessidade de substituição de qualquer componente coberto por este termo, o período de garantia original será dilatado pelo acréscimo de eventuais garantias suplementares do componente substituído.

4 - LOCAL DO REPARO

4.1 - O reparo e/ou substituição de peças será realizado por Técnicos da **Eutectic do Brasil Ltda.,** ou credenciadas pela mesma.

4.2 - Quanto constatado que o reparo do equipamento só será possível em nossas instalações (fábrica), ou nas firmas por nós autorizadas, o frete do transporte (ida e volta) ocorrerá por conta do adquirente usuário.

5 - PRAZO

5.1 - Os prazos de garantia iniciam a partir da data da emissão da Nota Fiscal da **Eutectic do Brasil Ltda.**

6 - RESPONSABILIDADE

6.1 - Esta garantia é válida somente para o equipamento que estiver em uso e na posse do adquirente usuário original.

6.2 - A responsabilidade da **Eutectic do Brasil Ltda.,** é limitada à substituição e/ou reparo dos componentes, não se responsabilizando por eventuais prejuízos por lucros cessantes ou pela indenização de quaisquer outros danos indiretos ou imediatos.

N° Série:_____

Eutectic do Brasil Ltda.

Equipamento modelo: ..... n° Série .....

Nota Fiscal n°: ..... Data: .....

Cliente: ..... Tel.: .....

Cidade: ..... Estado: .....