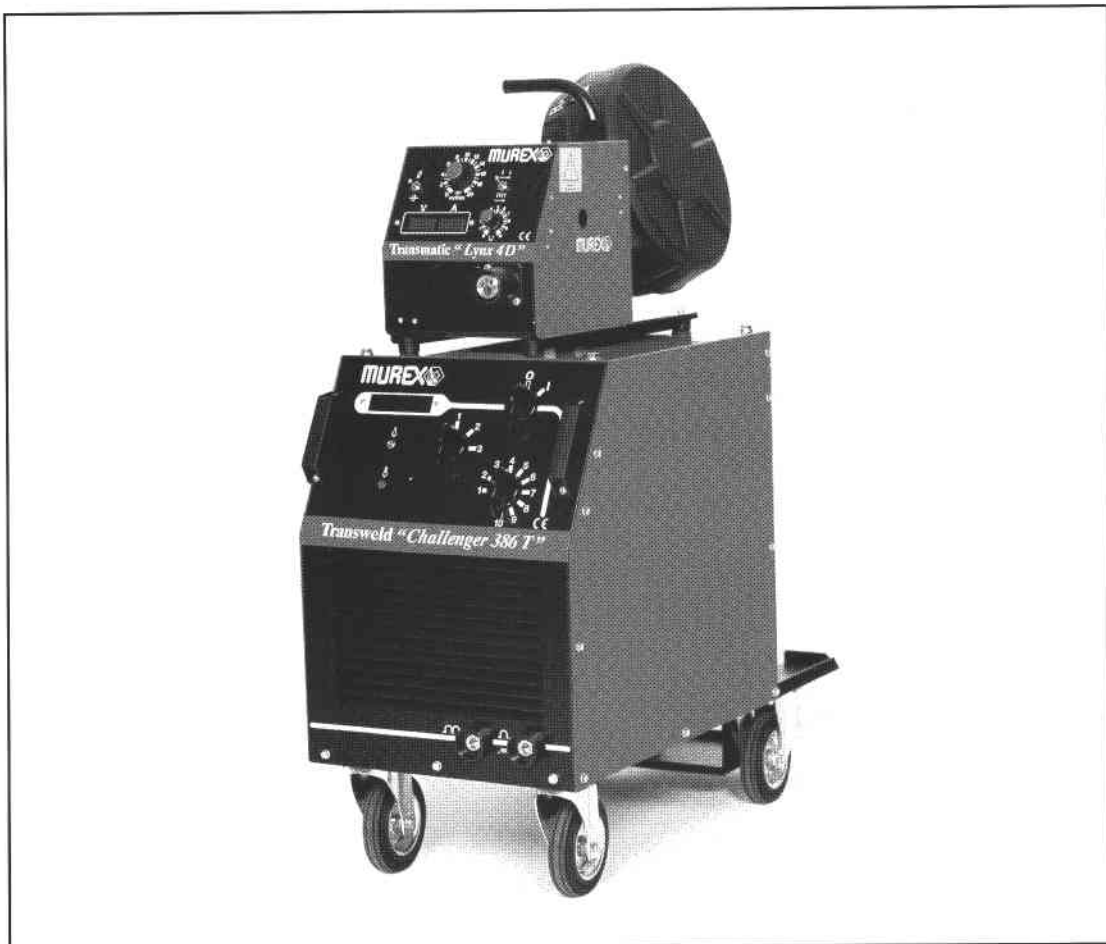




# Operating Manual

## **Transweld *Challenger 301T & 386T* Transmatic *Lynx 2D & 4D***



**Please ensure that this  
Instruction Manual  
is made available  
to the user  
of the equipment.**



## DECLARATION OF CONFORMITY

### Murex Welding Products Ltd.

Declare hereby that:

#### **Transweld *Challenger/Lynx* MIG Welders**

- are manufactured in accordance with the Council Directive 73/23/EEC (1973-02-19) and 89/336/EEC (1989-05-03) amended by Council Directive 93/68/EEC relating to electrical equipment designed for use within certain voltage limits.
- conforms with the protection requirements of Council Directive 89/336/EEC, amended by Council Directives 91/263/EEC, 92/31/EEC and 93/68/EEC relating to electromagnetic compatibility.
- are manufactured in accordance with EN60974-1 Safety Requirements for Arc Welding Equipment.
- are manufactured in accordance with EN50199 Electromagnetic Compatibility for Arc Welding Equipment.

On behalf of Murex Welding Products Ltd  
Hertford Road  
Waltham Cross  
Herts EN8 7RP  
England

A handwritten signature in black ink, appearing to read "P G Dodd".

.....  
**P G Dodd**  
Managing Director

1st November 2002

## Contents

	Page
• <b>Warnings</b> .....	2
• <b>Safety</b> .....	3
• <b>Unpacking/Installation</b> .....	4
• <b>Initial Setting Up</b> .....	5
• <b>Specification</b> .....	6
• <b>Welding Faults</b> .....	7
• <b>Maintenance</b> .....	8
• <b>Circuit Diagram <i>Challenger 301T</i></b> .....	9
• <b>Circuit Diagram <i>Challenger 386T</i></b> .....	10
• <b>Circuit Diagram <i>Lynx 2D/4D</i></b> .....	11
• <b>Parts Lists</b> .....	12



## WARNING



This welding equipment has been designed, manufactured and tested to the highest standards to ensure long and trouble free life. However, regular maintenance is an essential part of keeping the machine operating in a reliable and safe manner and your attention is drawn to any maintenance instructions that are contained in this manual.

In general, all welding equipment should be thoroughly inspected, tested and serviced at least annually. More frequent checking will be required when the equipment is heavily used.

Wear and tear, particularly in electro-mechanical and moving components, are gradual processes. Caught in time, repair costs are small and the benefits in performance reliability and safety are significant. Left alone, they can put the equipment, and you, at risk.

Have this equipment regularly inspected and maintained by an approved service centre.



## WARNING



**ARC WELDING AND CUTTING CAN BE INJURIOUS TO YOURSELF AND OTHERS. TAKE PRECAUTIONS WHEN WELDING. ASK FOR YOUR EMPLOYER'S SAFETY PRACTICES WHICH SHOULD BE BASED ON MANUFACTURERS' HAZARD DATA.**

### **ELECTRIC SHOCK – Can Kill**

- Install and earth the welding unit in accordance with applicable standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves, or wet clothing.
- Insulate yourself from earth and work.
- Ensure your working position is secure.

### **FUMES AND GASES – Can be Dangerous to Health**

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to keep fumes and gases from your breathing zone and the general area.

### **ARC RAYS – Can Injure Eyes and Burn Skin**

- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.

### **NOISE – Excessive noise can damage hearing**

- Protect your ears. Use ear defenders or other hearing protection.
- Warn bystanders of the risks.

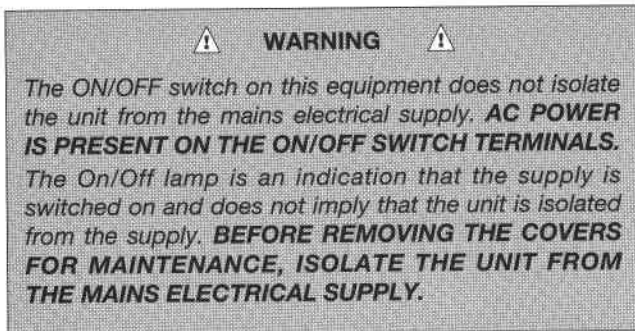
**READ AND UNDERSTAND THE INSTRUCTION MANUAL  
BEFORE INSTALLING OR OPERATING AND SEE WMA PUBLICATION 237  
'The arc welder at work' AVAILABLE FROM THE MANUFACTURER.**

**PROTECT YOURSELF AND OTHERS**

## SAFETY

In any arc welding or gouging operation, it is the responsibility of the user to observe certain safety rules to ensure his personal safety and to protect those working near him.

Read all safety articles relevant to arc welding published by the WMA. Pay particular attention to any **CAUTION** or **WARNING** Notes included in this manual. **CAUTION** indicates possible equipment damage. **WARNING** indicates possible hazard to life.



### 1. Electrical

- ⚠ Treat electricity with respect. Even the open circuit voltage of this equipment can be dangerous. Adjustments to the torch or replacement of torch parts should be undertaken with the mains supply isolated from the unit.  
If damaged torch cables or torch components are found, the unit must be disconnected from the mains and defective parts must be replaced using only Murex spare parts.
- ⚠ Do not work on live circuits or cables. Disconnect the main power supply before checking the machine or performing any maintenance operation.
- ⚠ Be sure the case of the welding machine is properly connected to a good electrical earth.
- ⚠ Have the wiring for the welding machine installed by a qualified electrician. All connections must be made according to specifications in force and to general safety standards.
- ⚠ Do not stand in water or on damp floors while using an arc welder or cutter. Do not use in the rain.
- ⚠ Do not operate with worn or poorly connected cables. Inspect all cables frequently for insulation failure, exposed wires and loose connections.
- ⚠ Do not overload cables or continue to operate with overheating cables. Cables which are too small for the current carried will overheat, causing rapid deterioration of the insulation.
- ⚠ Pay attention that live parts of the torch do not touch any metal which is connected to the earth cable. Fix an insulated hook to hang the torch on when it is not in use.

### 1. Ventilation

- ⚠ Do not weld or cut on containers which have held combustible or flammable materials, or materials which give off flammable or toxic vapours when heated, without proper cleaning.
- ⚠ Locate the welding/cutting operation far enough from any vapour-type degreaser using trichlorethylene or other chlorinated hydrocarbons as solvents. The ultraviolet light from the arc can decompose these vapours into toxic gases at a considerable distance from the arc, even though the concentration of the gases is low enough to be undetectable by smell.
- ⚠ Be sure to provide adequate ventilation for removal and dilution of fume and gases. Fume exhaust facilities near the arc, or a ventilated helmet should be used when cutting in confined spaces or on toxic material.

### 2. Glare

- ⚠ Never look at the arc without wearing eye protection. Always use the proper protective clothing, filter glasses, and gloves. Be careful to avoid exposed skin areas. Do not use cracked or defective helmets or shields.
- ⚠ Never strike an arc when there is someone near who is not protected from the strong light of the arc.
- ⚠ Warn bystanders who are not aware of the dangers of ultra-violet light.

### 3. General

- ⚠ Take care when lifting the unit.
- ⚠ Ensure that cylinders are secured by chains.
- ⚠ Locate the unit so that there is adequate air flow to the ventilation louvres.
- ⚠ Always dress correctly to protect against glare, radiation and spatter.

### 4. Fire

- ⚠ Ensure that the correct type of fire extinguisher is available in the welding area.
- ⚠ Do not weld near flammable materials or liquids, in or near explosive atmospheres, or on pipes carrying explosive gases.

### 5. Vehicle Electrics

- ⚠ When working on motor vehicles, remove the battery and any circuitry which may be damaged by the arc.
- ⚠ Whilst welding be aware of the possibility of 'hidden wires' behind panels or bulkheads.

### 6. Moving Parts



Switch off before accessing areas which contain moving parts. Particular care should be taken when accessing the wire feed mechanism.

## UNPACKING

Immediately upon receipt the equipment should be inspected for damage or missing items. Notify your supplying distributor or Murex Welding Products at once should any fault be found. Remove external packing carefully checking for small items that are included in the cartons.

The Transweld Challenger MIG equipments comprises the following:

- 1416052** Transweld Challenger 386T MIG power source incl. fitted 4 wheel undergear and cylinder tray, primary cable, work return lead and clamp, feeder swivel post assembly
- 1416107** Transweld Challenger 301T MIG power source incl. fitted 4 wheel undergear and gas cylinder tray, primary cable, work return lead and clamp, feeder swivel post assembly
- 1416108** Transmatic Lynx 2D feeder incl. fitted digital volt/ammeter, 0.8/1.0H feedrolls for hard solid wires and wire reel cover
- 1416053** Transmatic Lynx 4D feeder incl. fitted digital volt/ammeter, 1.0/1.2H feedrolls for hard solid wires and wire reel cover
- 1416054** 5m Interconnection cable assembly
- And** MIG torch if ordered

## INSTALLATION

### WARNING!

The power ON/OFF switch on the Challenger 386T power source does not isolate the machine from the electrical supply.

**Location:** The Challenger power source is forced air cooled by a fan mounted in the rear – do not block any of the cooling louvres in the unit. Select a position as free as possible from dirt, dust, moisture or corrosive vapours that might otherwise be drawn into the machine. Preferably locate the machine so that all round access is available for maintenance, wire loading or gas cylinder replacement.

### WARNING!

Before removing screw attached equipment covers isolate the unit from the mains electricity supply.

**The Transmatic Lynx 2D or 4D wire feeder:** This can be located on top of the Challenger power source, either free standing or on the swivel post assembly supplied with the power source. Alternatively it can be moved to a position closer to the work, up to 5m away from the power source with the standard 5m interconnections normally supplied.

**The Interconnection Cable Assembly:** Connect between the Challenger power source rear panel, where the matching dinse socket (+ve) and 10 hole amphenol socket are located, and the feeder rear panel where the female dinse connector, 10 pin amphenol connector and gas fitting are found. The unterminated end of the gas hose at the power source end of the interconnection cable should be connected to the shielding gas supply regulator outlet (usually a 3/8" BSP RH fitting).

**Work Return Lead:** Connect the work return lead dinse plug to the chosen inductance outlet (high or low) on the Challenger lower front panel (this is the –ve connection). Connect the work clamp to a clean area on the workpiece.

**Primary Cable:** The Challenger 386T is designed to operate from a 4-wire industrial 380-440V 3 phase 50/60Hz electrical supply (it requires no neutral connection) and draws up to 17kVA. It should be connected to the mains via a suitable switched isolator with 32A HRC fuses. Alternatively type 4(D) 32A circuit breaker protection can be used. Do not over-fuse!

The Challenger 301T is for use on 230V 1 phase 50/60Hz electrical supplies and draws up to 11kVA. It should be connected to the mains via a suitable switched isolator with, as a minimum 32A slow fuses.

### WARNING!

Ensure the green/yellow earth wire is properly connected to mains earth.

## INITIAL SETTING UP

1. Ensure the power ON/OFF switch on the Challenger power source is set to OFF.

### WARNING!

The power ON/OFF switch on the Challenger 386T power source does not isolate the machine from the electrical supply.

### 2. Feed Rolls

Check that the correct feed rolls are installed for the diameter and type of wire (e.g. hard, soft or cored) to be used. See parts section in this manual for available rolls etc. Note that the Lynx 4D uses a 4-roll drive system and both lower "driven" rolls must match the wire type. To remove/replace the rolls first unscrew the 2 roll retaining screws, note that each roll is reversible and has 2 different grooves in it, the wire diameter in use is marked on the visible side of the roll. Remember to refit the retaining screws before welding commences.

### 3. Fitting Welding Wire

Open the reel cover and remove the reel retaining hand nut from the hub. Fit the wire spool ensuring the wire feeds from the bottom of the reel and that the peg on the reel hub engages in the hole in the side of the spool. Refit the hand nut.

### IMPORTANT

The reel hub incorporates an adjustable braking mechanism to prevent wire spool overrun when the wire feed stops. Ensure the correct setting is used so as not to cause excessive drag on the wire whilst actually welding.

Inside the feeder lift (both) the pressure roll arm(s) first flipping down the (2) pressure setting device(s) (front and rear.) Carefully feed the wire in from the spool through the inlet guide tube at the rear of the feed mechanism, over the (rear) feed roll, (through the intermediate guide, then over the front feed roll) before exiting the feed system into the outlet guide at the back of the central adapter assembly. Before lowering the pressure roll(s) ensure the wire is sitting centrally in the grooves in the feed rolls. Flip-up the pressure setting device(s) to grip the wire.

(Information in brackets refers to 4 roll mechanism.)

### IMPORTANT

Do not apply excessive pressure settings to feed the wire. The correct setting should be just enough to feed the wire smoothly and consistently. Excessive pressure will cause wire deformation, rapid feed roll groove wear and may overload the motor. Poor feeding is usually the result of a poor, dirty or worn torch liner and/or worn contact tip and not due to lack of pressure at the rolls.

### 4. Shielding Gas

Ensure the correct shielding gas cylinder/type is connected. If the cylinder is mounted on the back of the power source ensure the retaining chain is secure. Turn on the gas supply and set the regulator to the correct flow rate, usually between 15 and 25 litres/minute depending on application.

### 5. Work Return Lead

Connect the work return to one of the inductance sockets (high or low) on the power source front panel and the work clamp to a clean area on the workpiece.

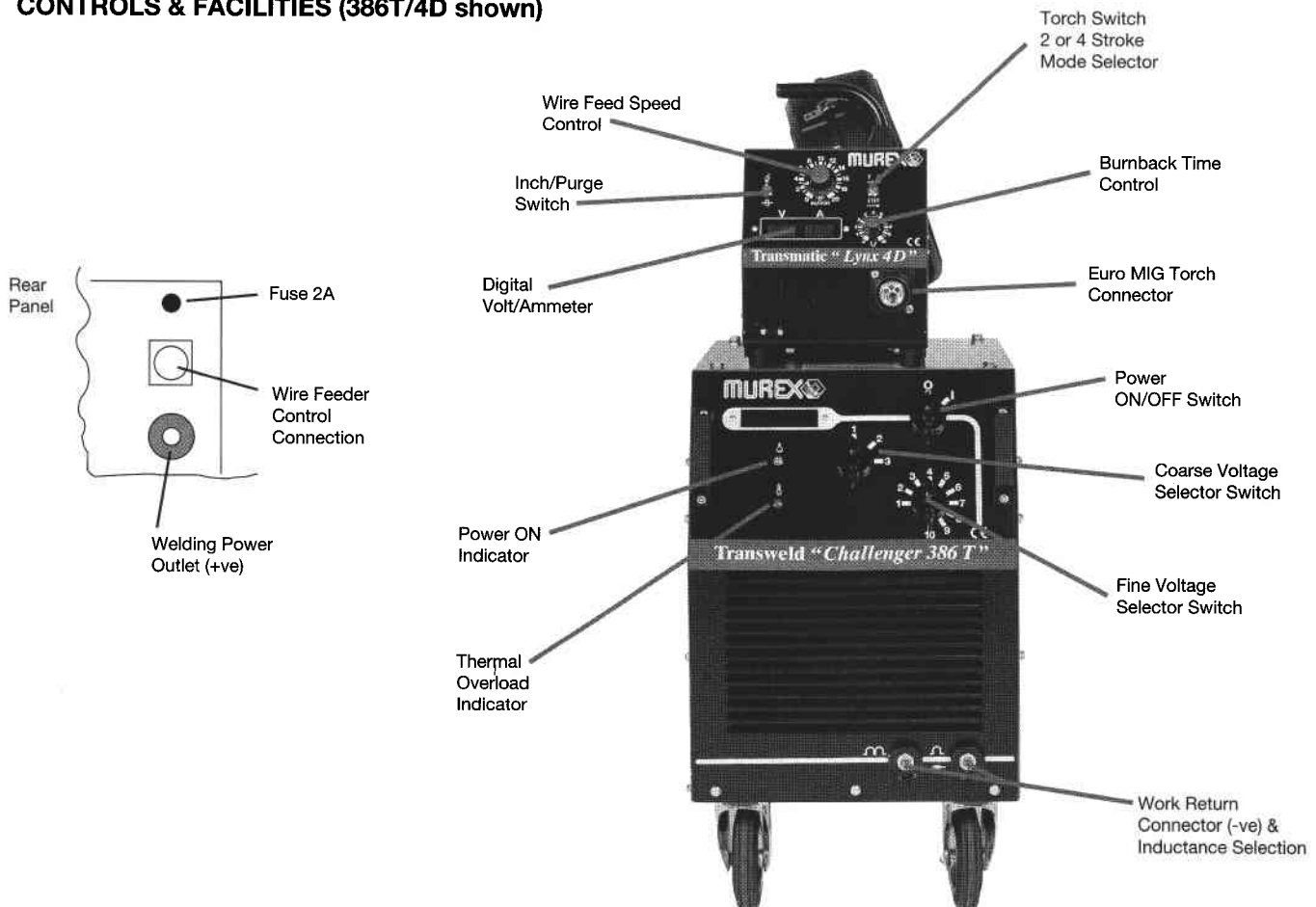
### 6. MIG Torch

Refer to the instructions supplied with the torch and confirm that the relevant liner is correctly installed in it. Remove the contact tip. Connect the torch to the central adapter on the front of the Lynx feeder and tighten the locking ring securely.

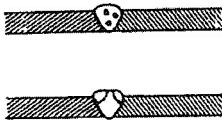

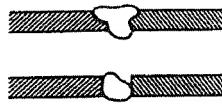



## SPECIFICATION

	<b>Challenger 386T</b>	<b>Challenger 301T</b>
<b>Supply Voltage:</b>	380-440V 3 Phase 50/60Hz	220-240V 1 Phase 50/60Hz
<b>Fuses:</b>	3x32A Slow (HRC type)	32A Slow (min)
<b>Absorbed Power:</b>	17kVA max	11kVA max
<b>Welding Range: (EN60974-1)</b>	40A/16V to 400A/34V§	40A/16V to 300A/29V
<b>Duty Cycle:</b>	380A at 30% (10 minute) 270A at 60% 210A at 100%	270A at 30% 200A at 60% 150A at 100%
<b>Open Circuit Voltage:</b>	17 to 43V in 30 steps (3x10)	17 to 35V in 14 steps (2x7)
<b>Dimensions:</b>	850 x 420 x 720mm 85kg (net)	850 x 420 x 720mm 60kg (net)
	<b>Lynx 4D</b>	<b>Lynx 2D</b>
<b>Wire Diameters/Types:</b>	0.8, 1.0, 1.2 & 1.6mm Hard 1.0, 1.2 & 1.6mm Soft or Tubular	0.8, 1.0 & 1.2mm Hard 1.0 & 1.2mm Soft or Tubular
<b>Wire Feed Speed:</b>	0 to 20m/minute	0 to 20m/minute
<b>Feed System:</b>	4 roll, lower rolls driven	2 roll, lower roll driven
<b>Roll Diameter:</b>	37mm	37mm
<b>Burn-back Time:</b>	0 to 0.5seconds	0 to 0.5seconds
<b>Supply Voltage:</b>	42Vac 50/60Hz (10A)	42Vac 50/60Hz (10A)
<b>Dimensions:</b>	550 x 250 x 340mm 16kg (excl. wire spool)	14kg (excl. wire spool)

## CONTROLS & FACILITIES (386T/4D shown)



## WELDING FAULTS

Trouble		Possible causes
Feed rolls rotate, but no wire feed		1 Pressure rolls not tightened 2 Dirt in wire conduit and/or contact tip
Uneven wire feed		1 Contact tip defective 2 Dirt in the feed roller groove 3 The feed roller groove 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
Porous		1 Too much or too little gas. Required 12-25 l/min 2 Insufficient gas shield due to spatter in gas shroud 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 shroud 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 rectified by trained service technicians.

## MAINTENANCE

### NOTE

Repair and maintenance must only be undertaken by a qualified electrician or approved Murex service engineer

The following maintenance should be carried out at the intervals indicated:

### Daily

1. Check the drive rolls and pressure settings
2. Check the torch to ensure the contact tip, gas nozzle and insulator are clean and in good condition
3. Before fitting a new reel of wire, blow out the liner with clean, dry compressed air
4. Check adjustment or reel hub brake

### Weekly

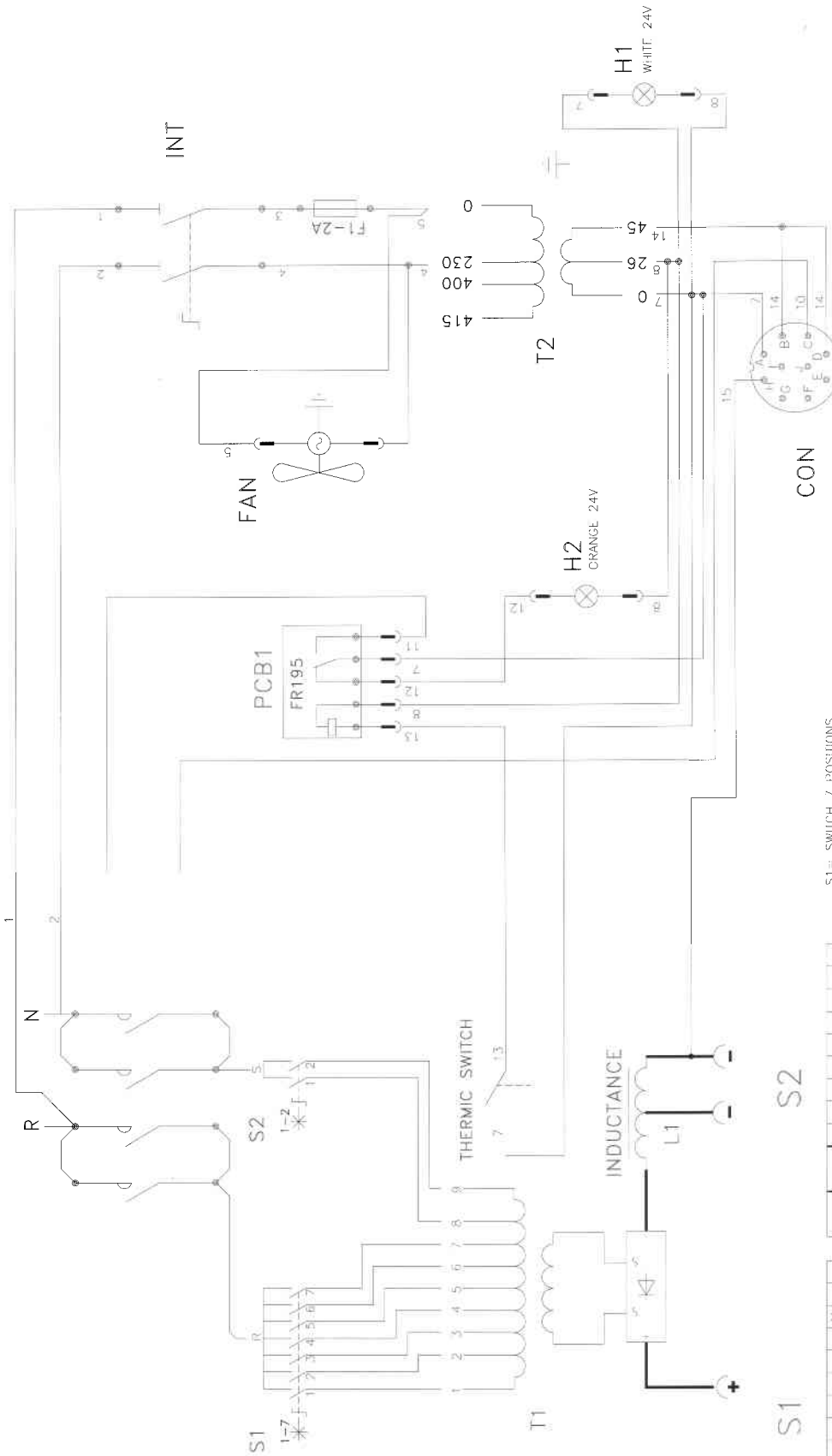
1. Clean dirt and metal dust from around the feed rolls and wire drive mechanism
2. Check for signs of wear in the rolls and guides in the feeder, if necessary replace worn out parts
3. Inspect all cables and connections for signs of degradation or damage, ensure all connectors are fully tightened
4. Check the work return clamp for signs of overheating or discolouration

### Monthly

1. Check all internal electrical and mechanical connections to see they are secure
2. Inspect carefully all insulators and grommets for signs of deterioration

### 2x Annually

1. Isolate the unit from the mains supply and remove the side panels. Carefully brush away any dust, dirt or other debris which may have accumulated.
2. Blow out the remaining dust using clean, dry, compressed air
3. Check the security of all electrical and mechanical connections
4. Carry out an insulation test using a suitable 500Vdc "Megger" type instrument
5. Replace all covers
6. Reconnect to the supply
7. Check operation of all controls



A-B= 42V AC  
 C-D= CONTACT  
 I=- NEGATIVE POLE

S1= SWITCH 7 POSITIONS  
 S2= SWITCH 2 POSITIONS  
 T1= MAIN TRANSFORMER  
 T2= AUXILIARY TRANSFORMER  
 H1= ON-OFF LAMP  
 H2= THERMIC INTERVENTION LAMP  
 K1= CONTACTOR  
 L1= INDUCTANCE  
 INT= ON-OFF SWITCH  
 PCB1= PCB THERMIC INTERVENTION



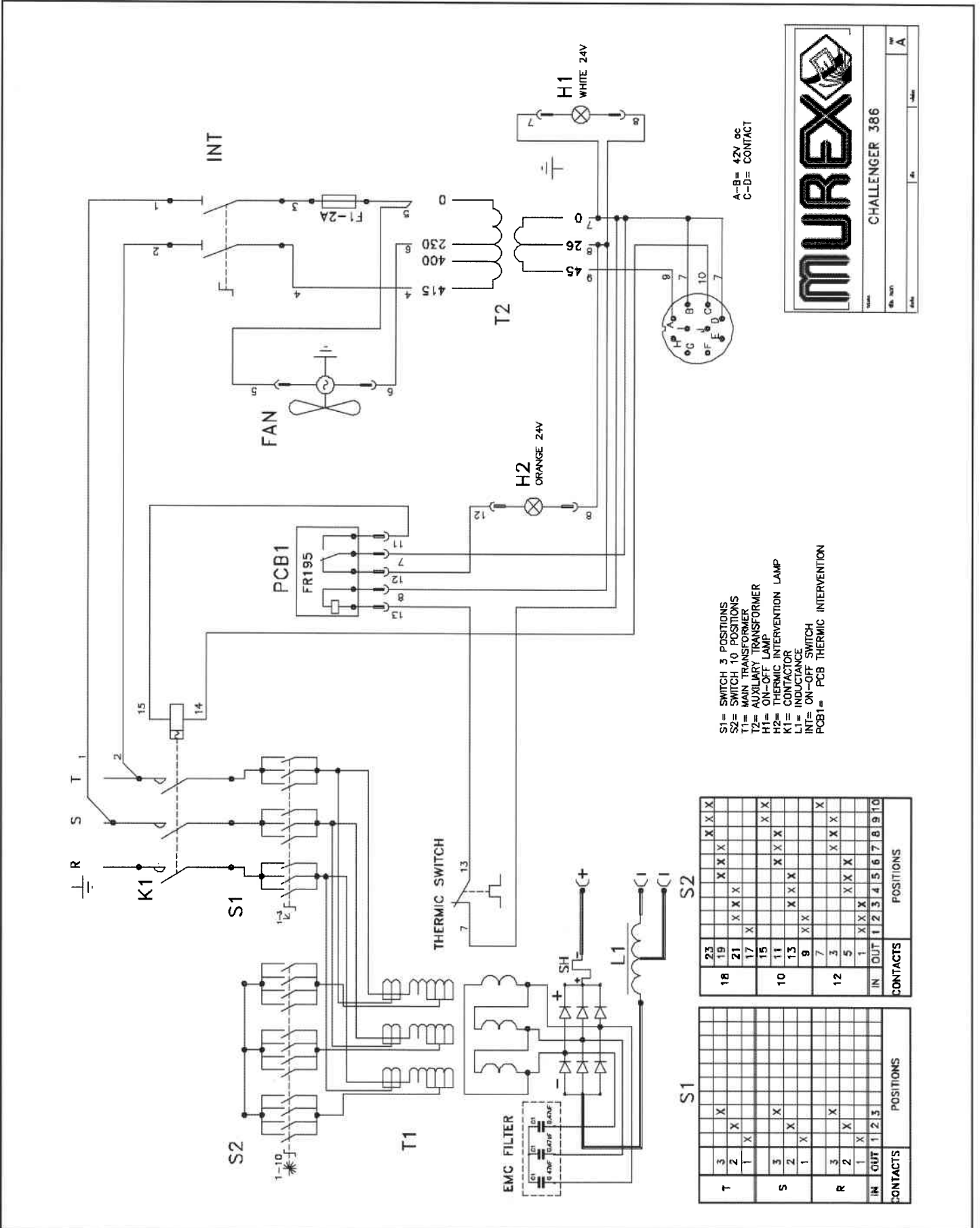
Model: CHALLENGER 301 T  
 Part No: E002092  
 Date: 25/09/2002

R	S1 POSITIONS							CONTACTS	
	1	2	3	4	5	6	7	IN	OUT
7				X					
6					X				
5						X			
4							X		
3								X	
2									X
1									
IN	OUT	1	2	3	4	5	6	7	

N	S2 POSITIONS		CONTACTS	
	1	2	IN	OUT
7				
6				
5				
4				
3				
2				
1				
IN	OUT	1	2	

CIRCUIT DIAGRAM



A-B= 42V ac  
C-D= CONTACT

- S1= SWITCH 3 POSITIONS
- S2= SWITCH 10 POSITIONS
- T1= MAIN TRANSFORMER
- T2= AUXILIARY TRANSFORMER
- H1= ON-OFF LAMP
- H2= THERMIC INTERVENTION LAMP
- K1= CONTACTOR
- L1= INDUCTANCE
- INT= ON-OFF SWITCH
- PCB1= PCB THERMIC INTERVENTION

**MUREX**

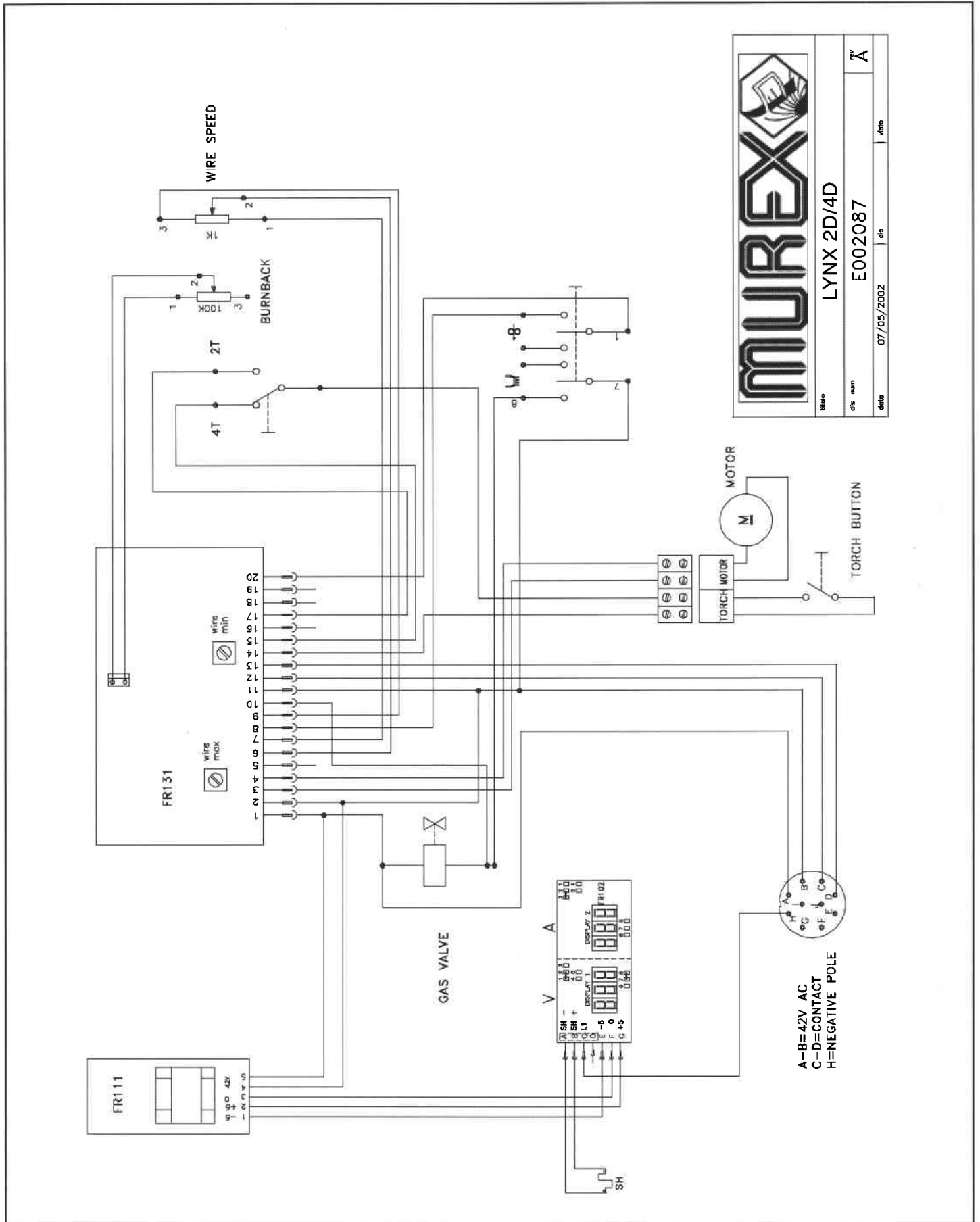
CHALLENGER 386

Model: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Rev: A

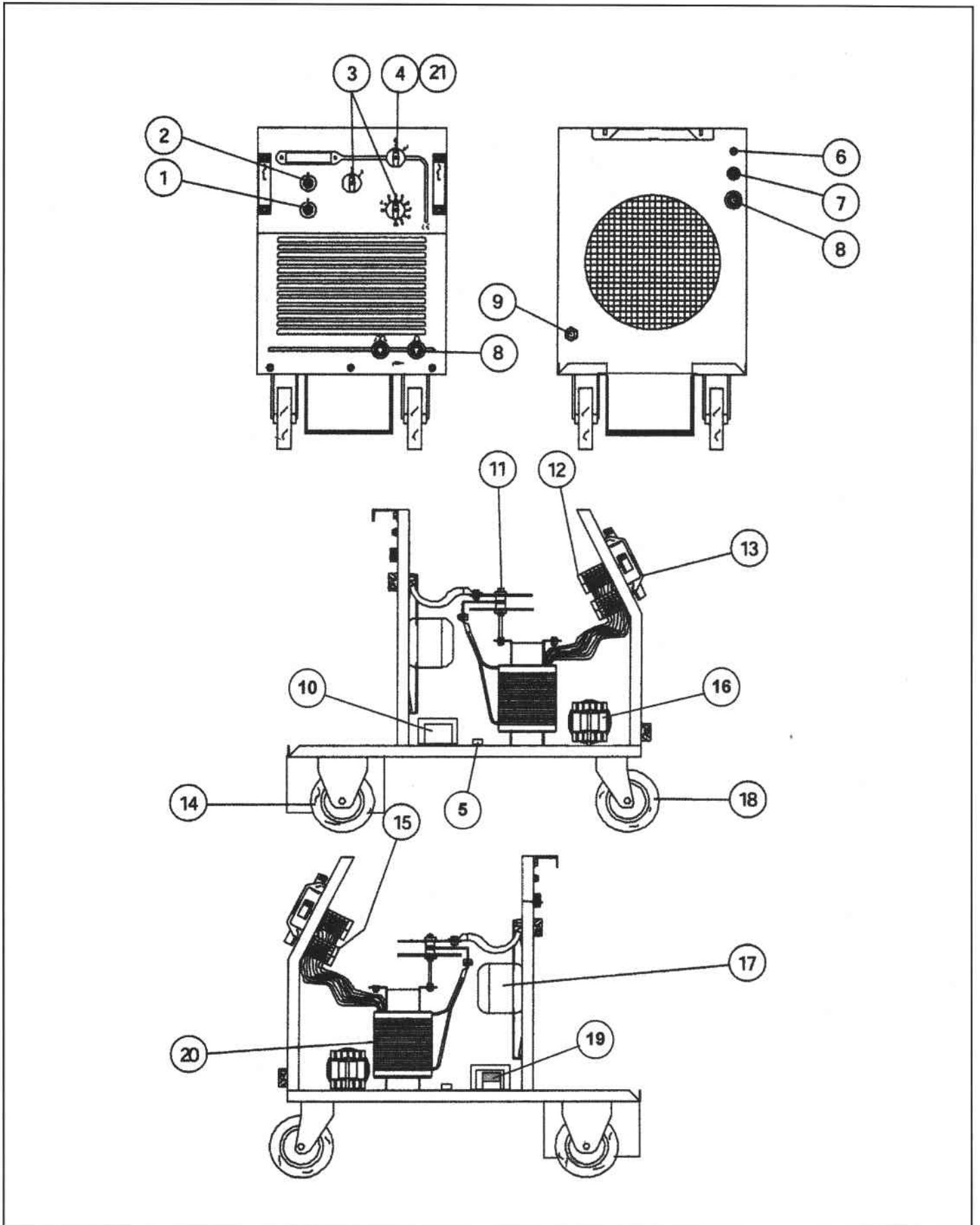
		S2										
		23	19	18	21	17	15	10	13	9	7	12
T	3		X		X	X						
S	2		X		X	X						
R	1		X									
IN	1											
OUT	1											
CONTACTS		1	2	3	4	5	6	7	8	9	10	

		S1		
		1	2	3
T	3			
S	2			
R	1			
IN	1			
OUT	1			
CONTACTS		1	2	3

CIRCUIT DIAGRAM

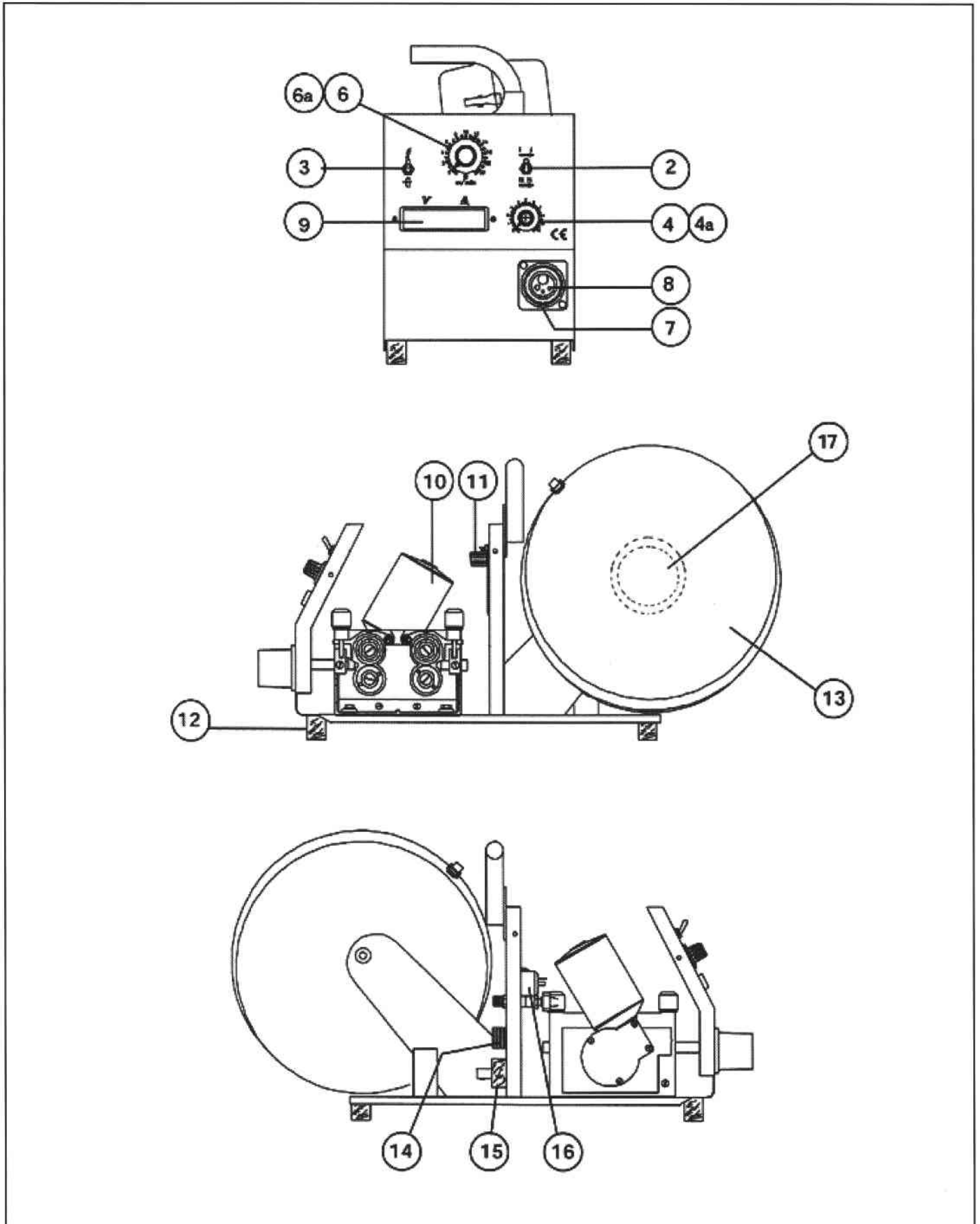


PARTS LIST



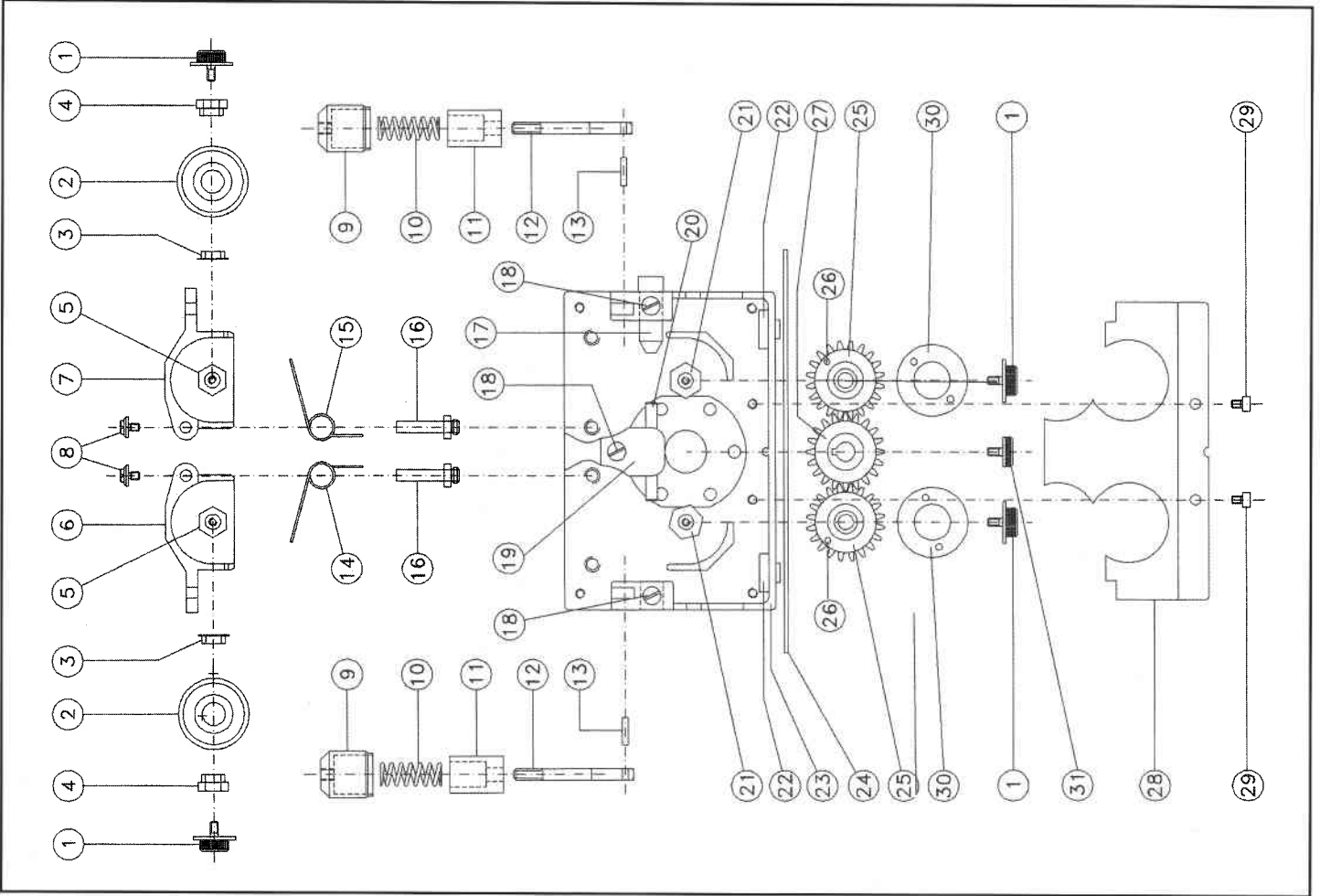


PARTS LIST

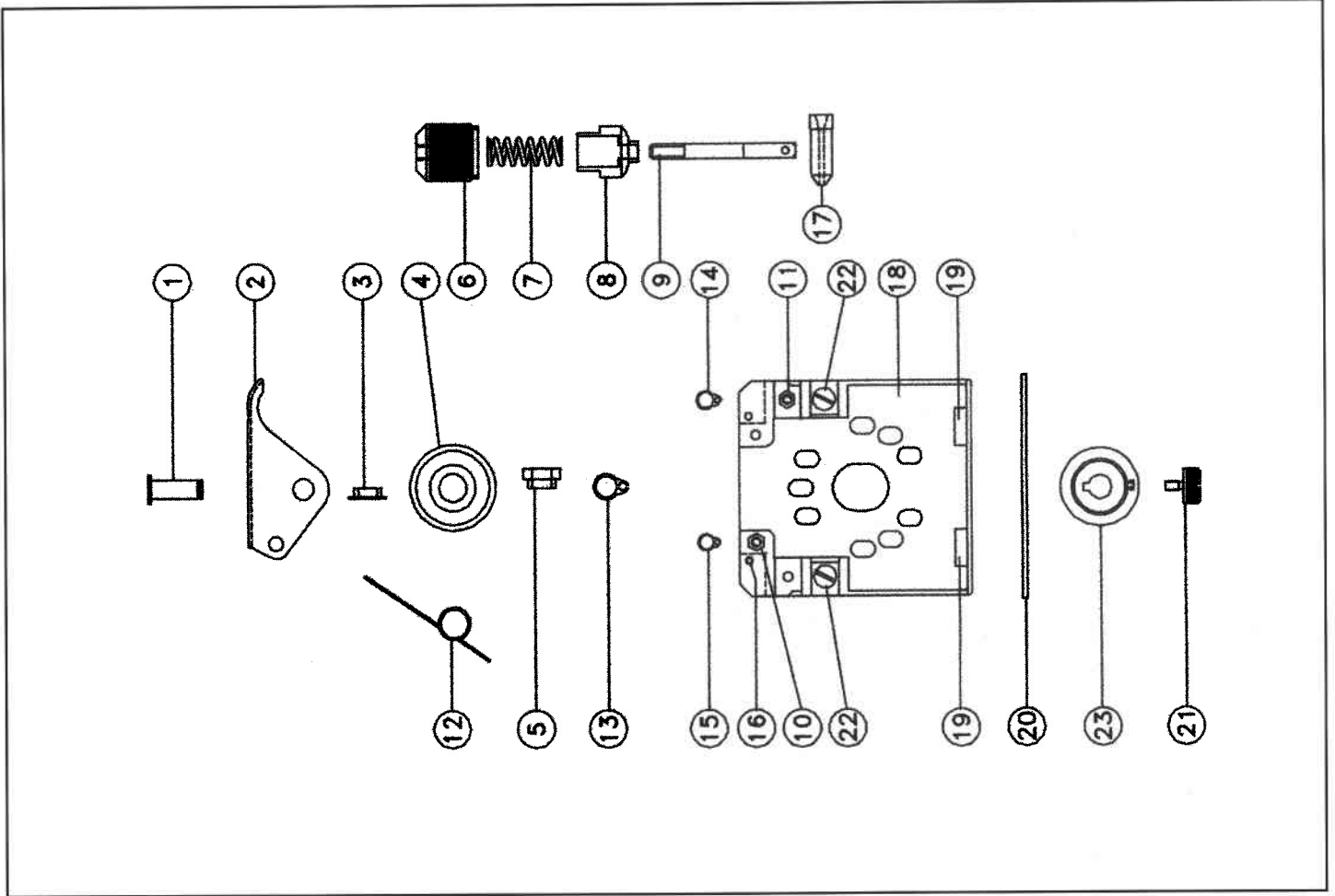


Item	Part Number	Description
2	1416084	Switch 2 Pole 2/4 Stroke
3	1416081	Switch 1 Pole Inch/Purge
4	1416074	Potentiometer 100kohm Burn-Back
4a	1416075	Knob
6	1416072	Potentiometer 1kohm Wire Speed
6a	1416073	Knob
7	1416071	Bushing
8	1416070	Central Adapter Assembly
9	1416078	Digital Volt/Ammeter PCB
-	1416079	Power Supply PCB
10	1416076	Motor
11	1416077	Main Control PCB
12	-	Rubber Foot
13	1416083	Reel Cover Assembly
14	1411519	10 pin Connector
15	678339	Dinse Connector Panel Male
16	1416080	Gas Solenoid Valve
17	1416082	Reel Hub Assembly

## PARTS LIST



Item(s)	Part Number	Description
30a	1416055	Feed Roll 0.8/1.0H (pk of 2)
30b	1416056	Feed Roll 1.0/1.2H (pk of 2) as supplied
30c	1416057	Feed Roll 1.2/1.6H (pk of 2)
30d	1416058	Feed Roll 1.0/1.2S (pk of 2)
30e	1416059	Feed Roll 1.2/1.6S (pk of 2)
30f	1416060	Feed Roll 1.0/1.2T (K) (pk of 2)
30g	1416061	Feed Roll 1.2/1.6T (K) (pk of 2)
2	1416062	Pressure Roll (pk of 2)
25	1416063	Geared Feed Roll Carrier (pk of 2)
26	-	Part of item 25
27	1416064	Drive Gear
Not Shown	1416065	Outlet Guide Tube Liner
1	1416102	Feed Roll Retaining Screw (pk of 5)
31	1416103	Drive Gear Retaining Screw (pk of 2)
21	1416104	Feed Roll Assembly Axle (pk of 2)
9,10,11,12,13	1416066	<b>Pressure Adjuster Kit:</b> 1x Adjuster Knob (9) 1x Spring (10) 1x Barrel (11) 1x Spindle (12) 1x Pivot Pin (13)
3,4,5,6,7,8,14,15,16	1416067	<b>Pressure Arm Kit:</b> 1x Pressure Arm Left (6) 1x Pressure Arm Right (7) 2x Screw (8) 2x Axle (16) 2x Inner Seat (3) 2x Outer Seat (4) 1x Spring LH (14) 1x Spring RH (15) 2x Axle (5)
17,18,19,20	1416068	<b>Guide Kit:</b> 1x Retaining Plate (19) 1x Intermediate Guide (20) 1x Inlet Guide (17) 3x Screw (18)
22,23,24,28,29	1416069	<b>Casting Kit:</b> 1x Feed Plate Casting (23) 1x Insulation Plate (24) 2x Insulator (22) 1x Guard Plate (28) 2x Screw (29)



Item(s)	Part Number	Description
1,3,5,13	1416154	Pressure Roll Axle Kit
2,10,12,15,16	1416155	Pressure Arm Kit
4	1416062	Pressure Roll (pk of 2)
6,7,8,9,11,14	1416156	Pressure Adjuster Kit
17,22	1416157	Inlet Guide & Screws (2)
18,19,20	1416158	Stand & Insulators
21	1416102	Feed Roll Retaining Screw (pk of 5)
23a	1416150	0.8/1.0H Feed Roll (factory fitted)
23b	1416151	1.0/1.2H Feed Roll
23c	1416152	1.0/1.2S Feed Roll
23d	1416153	1.0/1.2T Feed Roll



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**Pt. No. 100573**  
**Issue 2**