INSTRUCTION MANUAL FOR MIG/MAG (CO2) WELDING MACHINE

MODEL WARMIG-400

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ILLUSTRATIONS

INTRODUCTION.

WARMIG Series MIG / MAG (CO_2) Machines are Switch type constant voltage type. They can be used for MIG (Metal Inert Gas) Welding in SS and Al. and MAG (Metal Active gas) Welding in MS. This machine mainly consists of following components in it.

1) Power Source.
2) Wire Feeder
3) Regulator Flow-meter
4) MIG Welding Torch
5) Inter Connecting Cable

THE SYSTEM

POWER SOURCE.

The power source has following components

Main Transformer

The main transformer is a constant voltage type transformer with the tapings on the primary side to adjust the output voltage. Super Enameled Copper wirers are used for primary winding and fiber glass coated strips are used for secondary windings. The coils are varnished with H Class grade varnish for durability.

Rectifier Stack.

Rectifier stack is a full wave rectifier with six diodes (Three Modules in 250 Amps range). The diodes are mounted on well designed heat sink for better performance.

Voltage adjusting Switch.

Two switches are used to adjust the out put voltage. The two switch operates in coarse fine combination to give maximum number of voltage adjustments.

Ammeter.

Ammeter is provided on the front panel to read the out put current during welding

Voltmeter

Voltmeter is provided on the front panel to read the welding Voltage

Cooling Fan.

Industrial heavy duty fan operating on single phase is provided for proper cooling of transformer and Rectifier

WIRE FEEDER.

Wire Feeder has the following components.

Wire feeder motor with Mechanism.

WARMIG Series machines employ permanent magnet type DC Motors for wire feeding. The feeding mechanism is two roll type and is designed for easy changing of rollers depending on the wire size.

Drive Card.

The drive card used to drive the wire feeder motor is MOSFET based and the design is rugged enough to absorb the voltage fluctuation. The electronic stopping circuitry is provided for instant stopping of the wire feed.

Sequence Card.

The sequence card is controls the sequence of events in the welding process and it uses only TTL Logic. Provision is made to adjust the BURN-OFF timing.

MIG Welding Torch.

The machines comes with 36KD Torch in 400 Amps and 25AK torch in 250 Amps models. The details of the assembly drawing in shown in the fig.

NOTE: THE LINER OF THE TORCH HAS TO BE CLEANED ON A REGULAR BASIS FOR GOOD WELDING RESULTS

PRE INSTALLATION REQUIRMENT.

The WARMIG Series machines comes with the complete package ready to use. What it requires to put the machine in use is three-phase power supply, Gas cylinder and the MIG wire.

NOTE: THE MACHINE COMES WITH CO_2 GAS REGULATOR ONLY

INSTALLATION.

The pictorial installation diagram is attached in this manual.

NOTE: PROPER INPUT CABLE TO BE USED TO CONNECT THE MACHINE TO THE POWER SUPPLY AND SEPARATE EARTHING TO BE PROVIDED.

SAFETY.

All safety precautions are to be taken for the safety of welders and surrounding people. Some of them are listed below.

1) Keep the welding area free from all inflammable materials.
2) Welders has to use proper welding helmets (with proper filter glass) as ultra violet radiation is a part of welding process.
3) Proper Apron, Hand Gloves and shoes has to be used by the welder.
4) Welding area should be covered properly so that people working around do not affected by the ultra violet radiation.

VOLTAGE SETTING CHART.

		COARSE					
		1	**2**	**3**	**4**	**5**	**6**
FINE	**1**	17.4	19.9	23.0	27.3	32.9	41.5
	2	17.9	20.5	23.6	28.3	34.1	43.9
	3	18.3	21.1	24.4	29.0	35.6	46.6
	4	18.8	21.6	25.3	30.3	37.3	49.8
	5	19.2	22.3	26.1	31.5	39.2	52.9

NOTE: Voltage indicated are NO-LOAD Voltages and the welding voltages will be lower than this.

WIRE FEED RATE CHART

Wire feed rate in meters per minute as per the setting of feeder potentiometer is given below.

Sr. No.	Position of Potentiometer	Feed rate in Meters per Minute
1	10	1.5
2	20	3.9
3	30	6.0
4	40	8.3
5	50	11.1
6	60	12.8
7	70	14.0
8	80	15.6
9	90	16.6
10	100	17.3

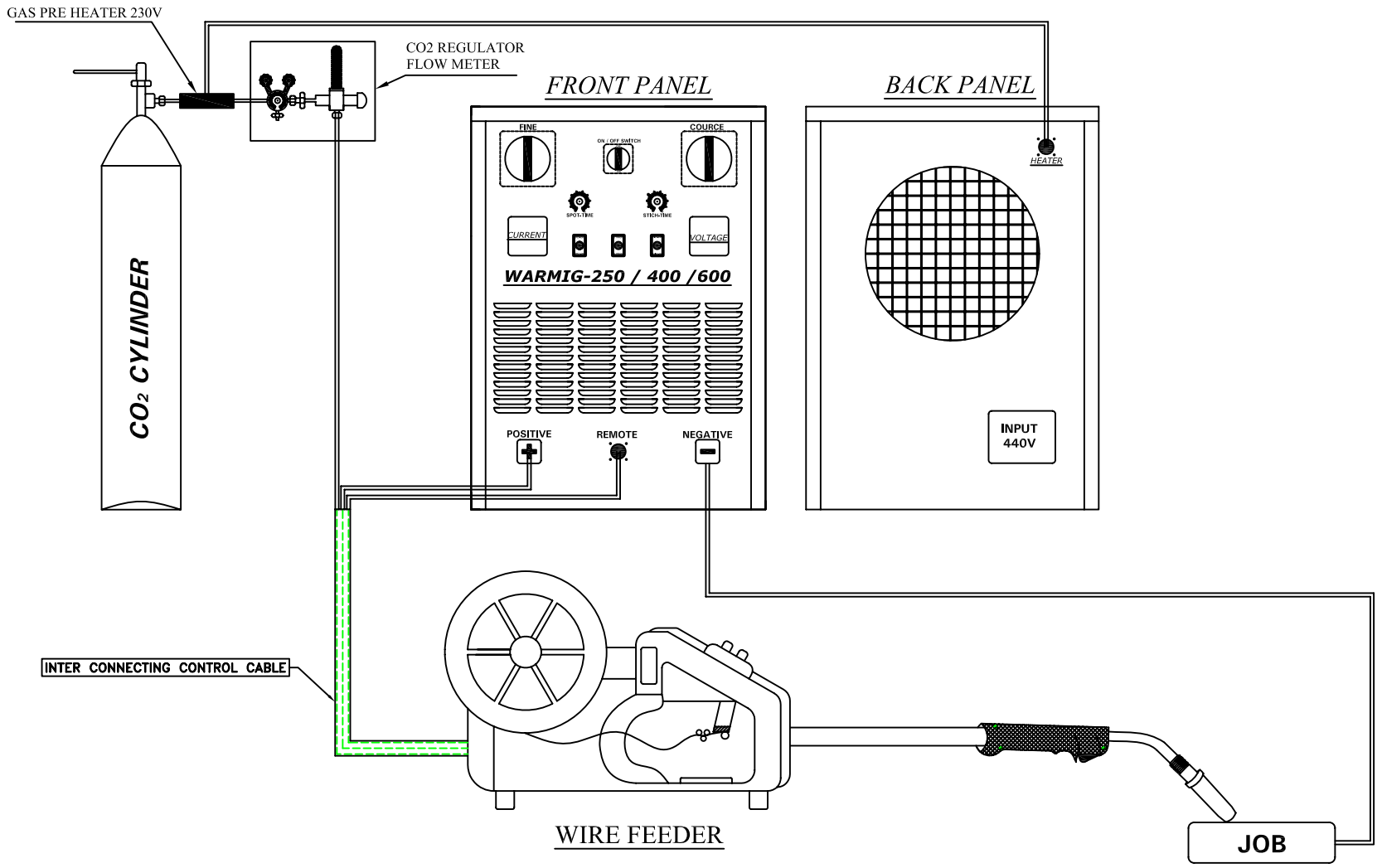
OPERATION.

1) Install the machine as shown in the installation diagram.
2) Load the MIG Wire on to the spool holder provided on the Wire feeder.
3) Keep the feeder mechanism in unlock position.
   Pass the wire through the wire feed mechanism and then through the EURO On the front panel of the feeder.
4) Now connect the torch to the EURO Connector.
   Bring back the feeder mechanism to lock position
5) Press the inch switch provided on the feeder, (kindly note that the feed knob setting should not be at zero) now the wire will start moving in to Torch. Keep it pressed till the wire comes out the TIP of the torch.
6) Connect the regulator heater combination to the CO2 cylinder.
7) Release the CO2 gas
8) Now one dial of the regulator will show the pressure inside the cylinder, now tighten the screw provided on the regulator till the other dial shows 1.5 Kg pressure.
9) Keep the feed knob to Zero position and press the torch trigger and release the valve provided on the flow meter. Adjust the flow meter to have a gas of around 15 Ltrs/Min.
10) Now the machine is ready to use, Select the voltage required, set the feed rate, hold the torch on to the job and press the torch trigger. Arc will be created now move the torch along the joint evenly to get good weld finish.

FAULT FINDING

Sr. No.	Fault	What to check
1	Machine is switched on but neither the mains indicator glows nor the fan is operating	1) Check for the proper three phase supply 2) Check the control fuse mounted on the control transformer of the power source
2	The machine is Switched on but the indicator on the feeder do not glow and on operating the inching button the wire feeder	1) Check the three core inter connecting cable connection at both the machine end and feeder end. 1) Check the glass fuse provided on the feeder (the glass fuse is mounted on the panel between the front panel of the feeder and the control box)
3	When the machine is started the wire start to come out of the torch automatically with out triggering the switch on the torch	Check the NC element connected to the inching switch of the feeder (If the NC contact is faulty the two wires connected to the this element can be shorted for temporary relief)
4	When the torch trigger is pressed the wire comes out of the torch but gas do not flow and the voltage do not come	Check the three core inter connecting cable connection at both the machine end and feeder end.
5	When the torch trigger is pressed the wires comes out of the torch , gas starts flowing but welding do not takes place	1) Check for the proper three phase connection 2) Set the feeder knob to zero and set the COARSE and FINE SWITCH to the maximum and press the trigger on the torch, then volt meter should show a voltage of around 55 volts in WARMIG-400and 39 Volts in WARMIG-250. If the voltage is less than this check the3 phase supply and for proper operation of the contactor.
6	Welding is taking place but the current tends to drop in between and the arc goes up to the TIP of the torch	The feed rate set is low increase the feed rate till you get proper and steady current
7	Welding is taking place but a jerk is felt while welding and the torch is pushed away from the job	The wire feed set is high. Reduce the wire feed rate till you get a steady welding current
8	Each time welding is finished long wire comes out of the torch	BURN-OFF time set is too high Blue color preset is provided on the sequence card (a card with two relays). Adjust this to set it right. NOTE: this adjustment has to be done only if it of utmost importance and it is causing high inconvenience to the welder

Rev.No	Revision note	Date	Signature	Checked



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Drawn by	Checked by	Approved by	File name	Date	Scale
SHRUTIKA	PRABHUDAS	RAMAKANTH	CONVENTIONAL	16-06-2010	1:1

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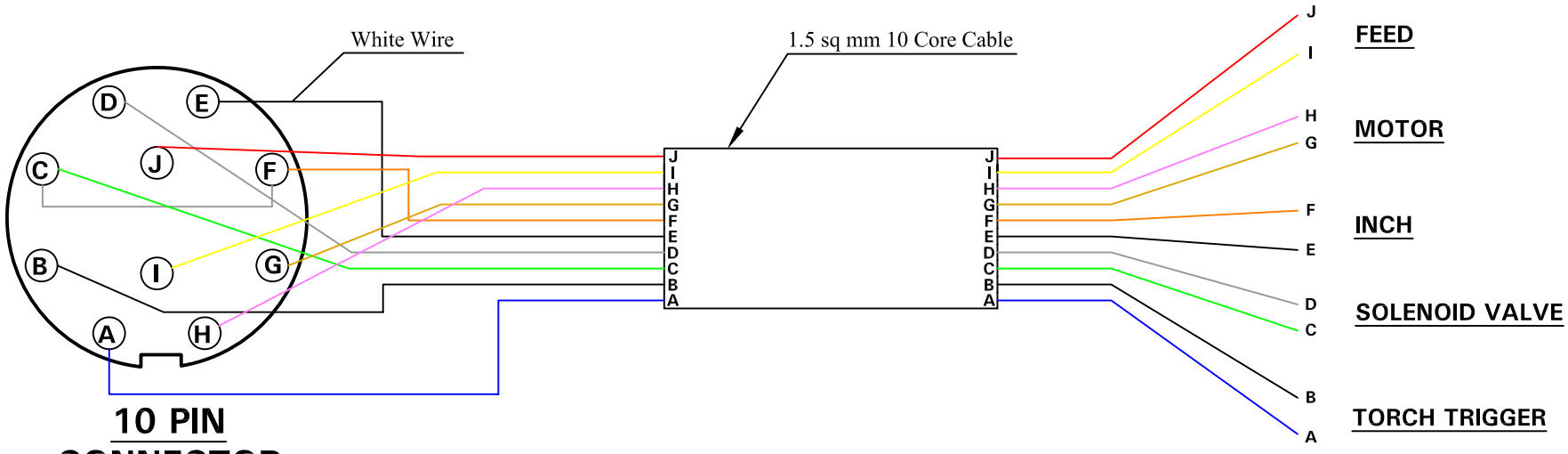
MACHINE NAME :- WARMIG- 250 / 400 / 600	Remark :-	
MODEL :- INSTALLATION DIAGRAM	Type :-	Drawing No.
PART NAME :-	Rev :-	

Rev.No	Revision note	Date	Signature	Checked

CONTROL WIRING DIAGRAM OF WARMIG WITH 2-4 TRACK SYSTEM



10 PIN CONNECTOR

INTER CONNECTING CABLE DIAGRAM

WIRE COLOUR DETAILS

WIRE COLOUR	WIRE COLOUR NAME
	BROWN
	SAFARON
	BLUE
	VIOLET
	RED
	PINK
	GREY
	YELLOW
	GREEN

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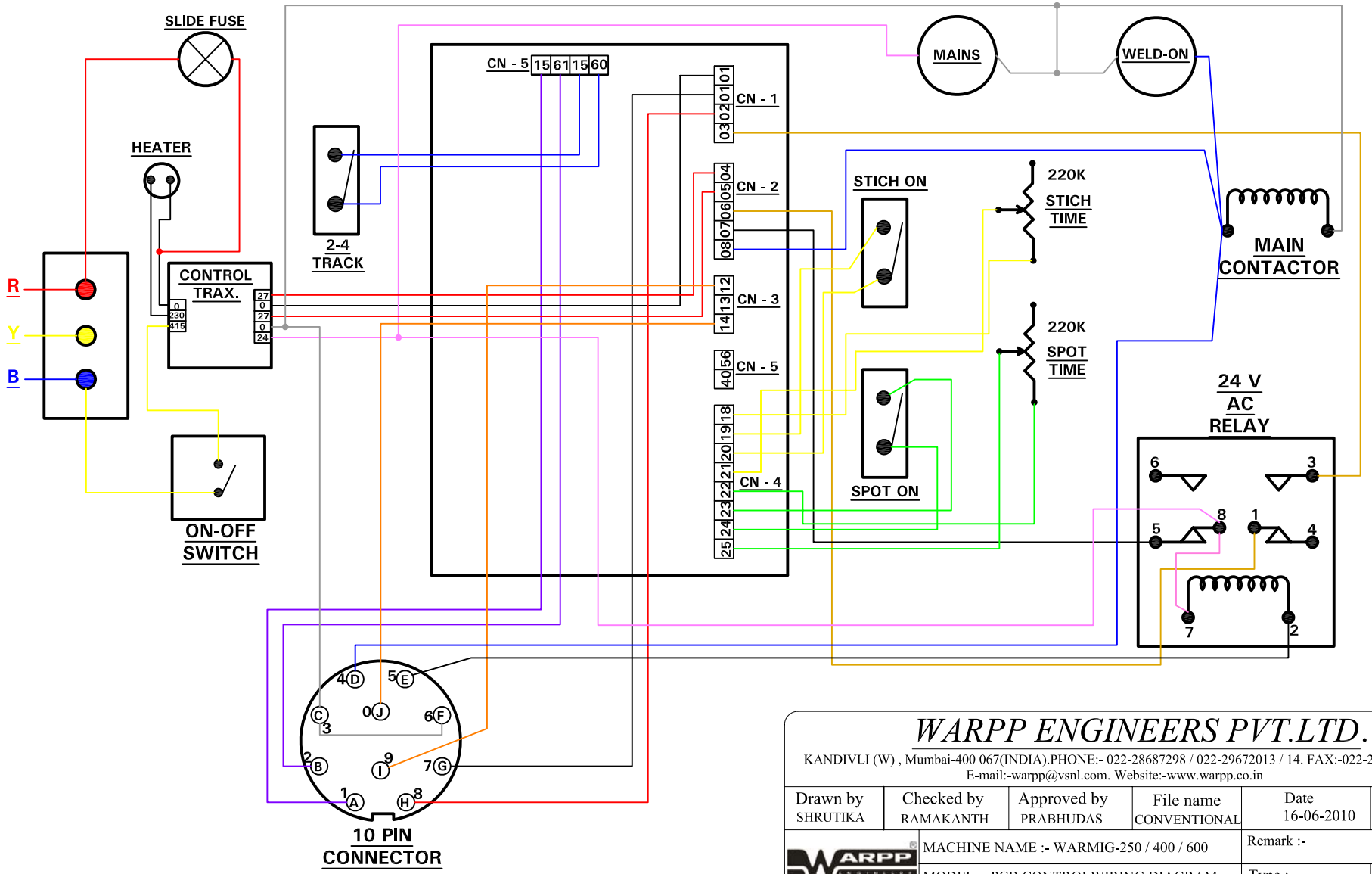
MACHINE NAME :- WARMIG-250 / 400 / 600	Remark :-	
MODEL :- INTER CONNECTION CABLE WIRING DIAGRAM	Type :-	Drawing No.
PART NAME :-	Rev :-	

Rev.No	Revision note	Date	Signature	Checked

CONTROL WIRING DIAGRAM OF WARMIG WITH 2-4 TRACK SYSTEM



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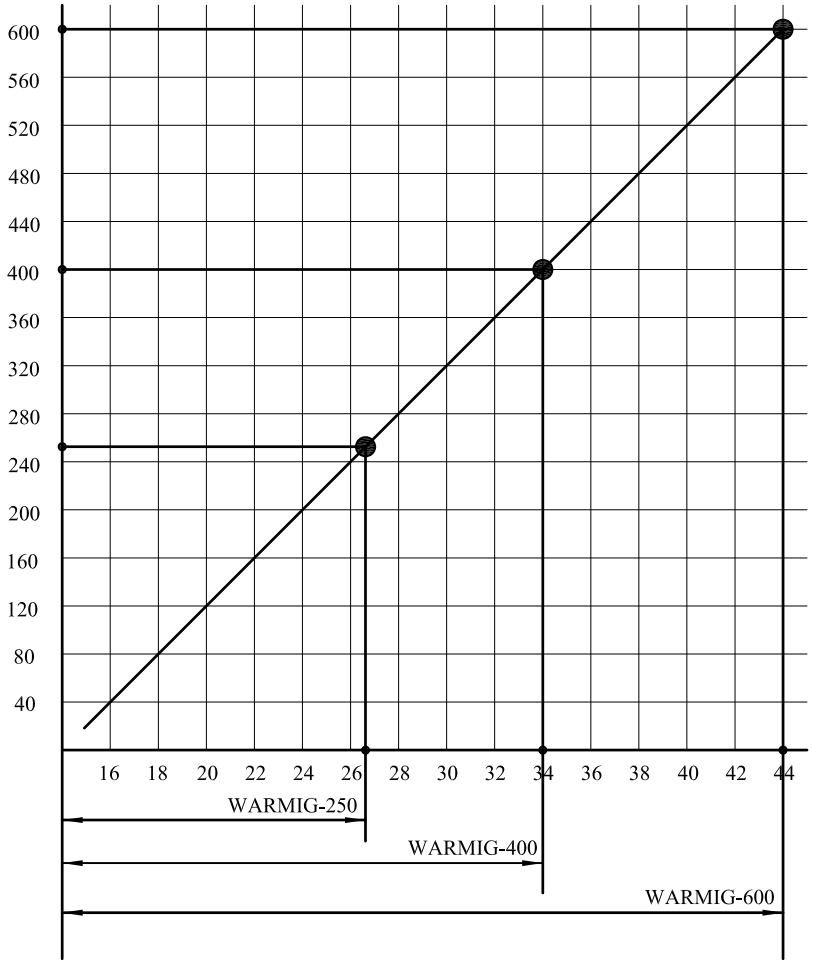
MACHINE NAME :- WARMIG-250 / 400 / 600	Remark :-	
MODEL :- PCB CONTROLWIRING DIAGRAM	Type :-	Drawing No.
PART NAME :-	Rev :-	

Rev.No	Revision note	Date	Signature	Checked



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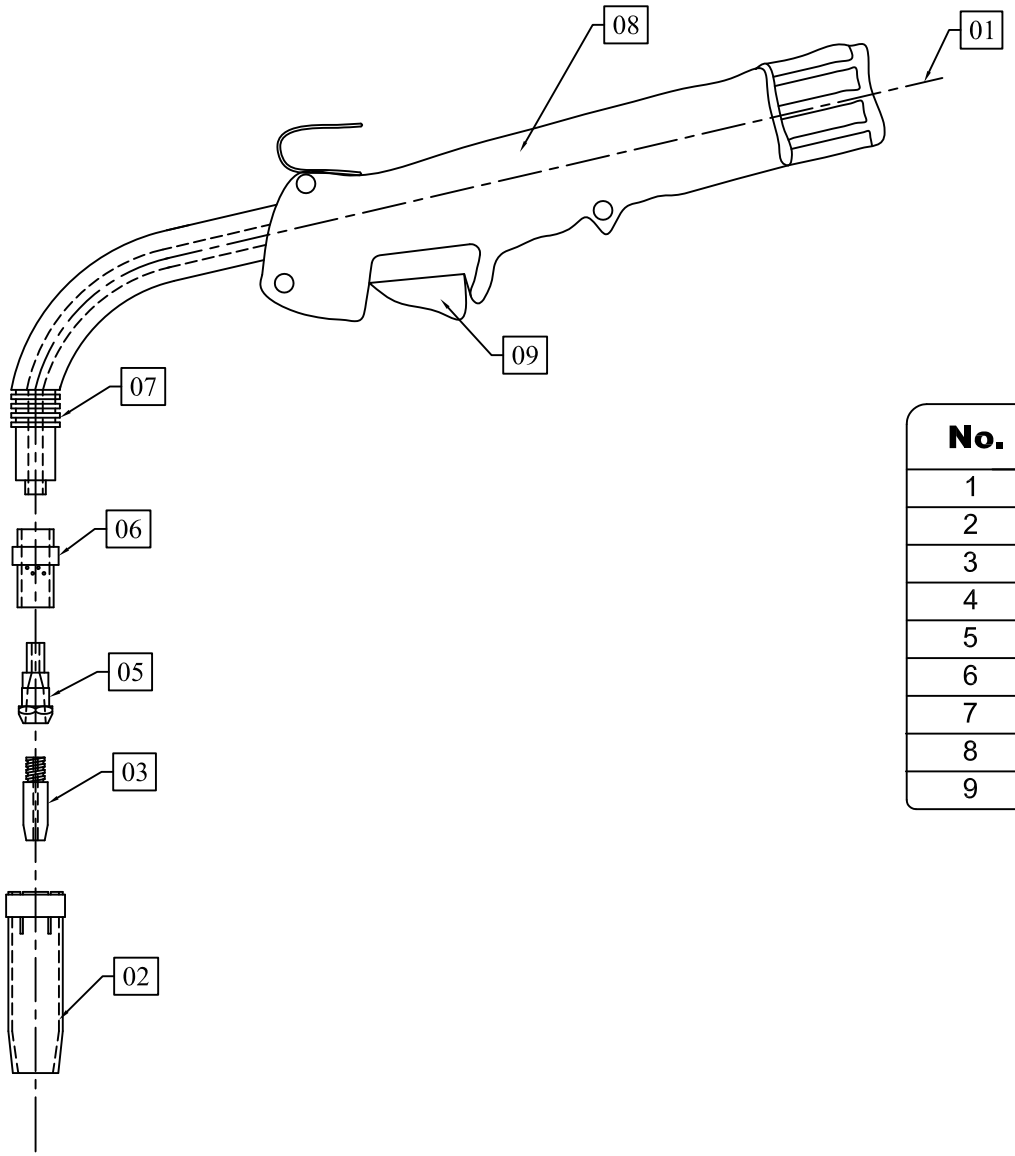
MACHINE NAME :- WARMIG-250 / 400 / 600	Remark :-	
MODEL :- VOLT-AMP.CURVE	Type :-	Drawing No.
PART NAME :-	Rev :-	

LIST OF SPARES FOR WARMIG-MACHINES			
	WARMIG-250	**WARMIG-400**	**WARMIG-600**
Description	**Part No.**	**Part No.**	**Part No.**
Sequence and drive card With 2/4 Track Function	C170203	C170203	C170203
Wire feeder D.C Motor	C2454	C2454	C2454
Solonoid Valve	C2601	C2601	C2601
Control Transformer	C140503	C140503	C140503
Digital Panel meter 0.75MVDC	C2429		
Digital Panel meter 200V DC	C2430		
Ampere meter (Analouge)		C2427	
Volt. Metere		C2428	C2428
Primary Coil	C1108	C1107	C1111
Secondary Coil	C1115	C1114	C1118
Choke Coil	C1128	C1127	C1129
Diode Monoblock	C150703		
Diode		C150401	C150502
Exhaust fan	C160403	C160403	C160403
Rotary Switch	C2201		
Rotary Switch 3 pole 5 way		C2217	C2217
Rotary Switch 3 pole 6 way		C2216	C2216
Rotary Switch	C2206	C2206	C2206
Shunt			
Power Plug Metal type Male (3 Pin)	C2411	C2411	C2411
Power Plug Metal type Female (3 Pin)	C2412	C2412	C2412
Power Plug Metal Type Male (2 Pin)	C2413	C2413	C2413
Power Plug Metal Type Female (2 Pin)	C2414	C2414	C2414
Out Put Connector	C180303	C180101	C180202
Contactor	C2302	C2303	C2303

SR.NO.	DESCRIPTION	MATL.	QTY.	WT.EACH	TOTAL WT.	REMARK



36KD TORCH

No.	Description	Part Number
1	LINER	T1702
2	GAS NOZZLE	T1804
3	CONTACT TIP 0.8-M8 X 30	T0814
4	CONTACT TIP 1.2-M8 X 30	T0815
5	TIP HOLDER M8	T0903
6	DIFUSER	T0609
7	SWAN NECK	T2002
8	HANDLE	T0610
9	TIGGER	T0909

REV.NO	REVISION NOTE	DATE	SIGN.	CHECKED

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ALL DIMENSIONS IN mm				DRAWING NAME:- DETAILS OF TORCH PARTS		
LINEAR DIMNS.				TORCH MODEL:- 36KD TORCH		
OVER	——	06	30	DRAWN BY / DATE	CHECKED BY / DATE	APPROVED BY / DATE
UPTO	06	30	1000	SHRUTIKA SAWANT DATE:- 25-08-2007	RAMAKANTH BHAGAVATH DATE:- 25-08-2007	PRABHUDAS GOLLA DATE:- 26-08-2007
TOL.	±0.5	±0.75	±1.0			
DRAWING NO:- WEPL-T0016 / 01 OUT OF 0001						
REV.NO:- 00				REMARK :-		