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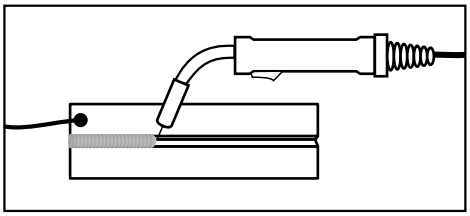
MIG / MAG

MANUAL

RX 250 / RX 400



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ABOUT MIG:

MIG (Metal Inert Gas) welding, also sometimes called GMAW (gas metal arc welding), is a welding process that was originally developed back in the 1940's. MIG welding is a semi automatic process in which a relatively thin wire is feed through welding gun instead of using a flux coated electrode. The wire fed continuously by a wire feeder from a coil and a shielding gas is used as an alternate of flux, this mechanism gives continuous non stop weld and many advantages comprising electrode welding. Originally Argon was used for shielding the weld pool. This inert gas acts as a shield, keeping air borne contaminants away from the weld zone. Due to high cost of Argon, the weld process was modified by replacing Argon with CO_2, because this is active gas some amount of Mn and Si was added to welding wire for cancelling the poor effect of CO_2 on weld pool. Today 's MIG wire is actually MAG(metal active gas) wire. So, the name MIG/MAG welding be famous.

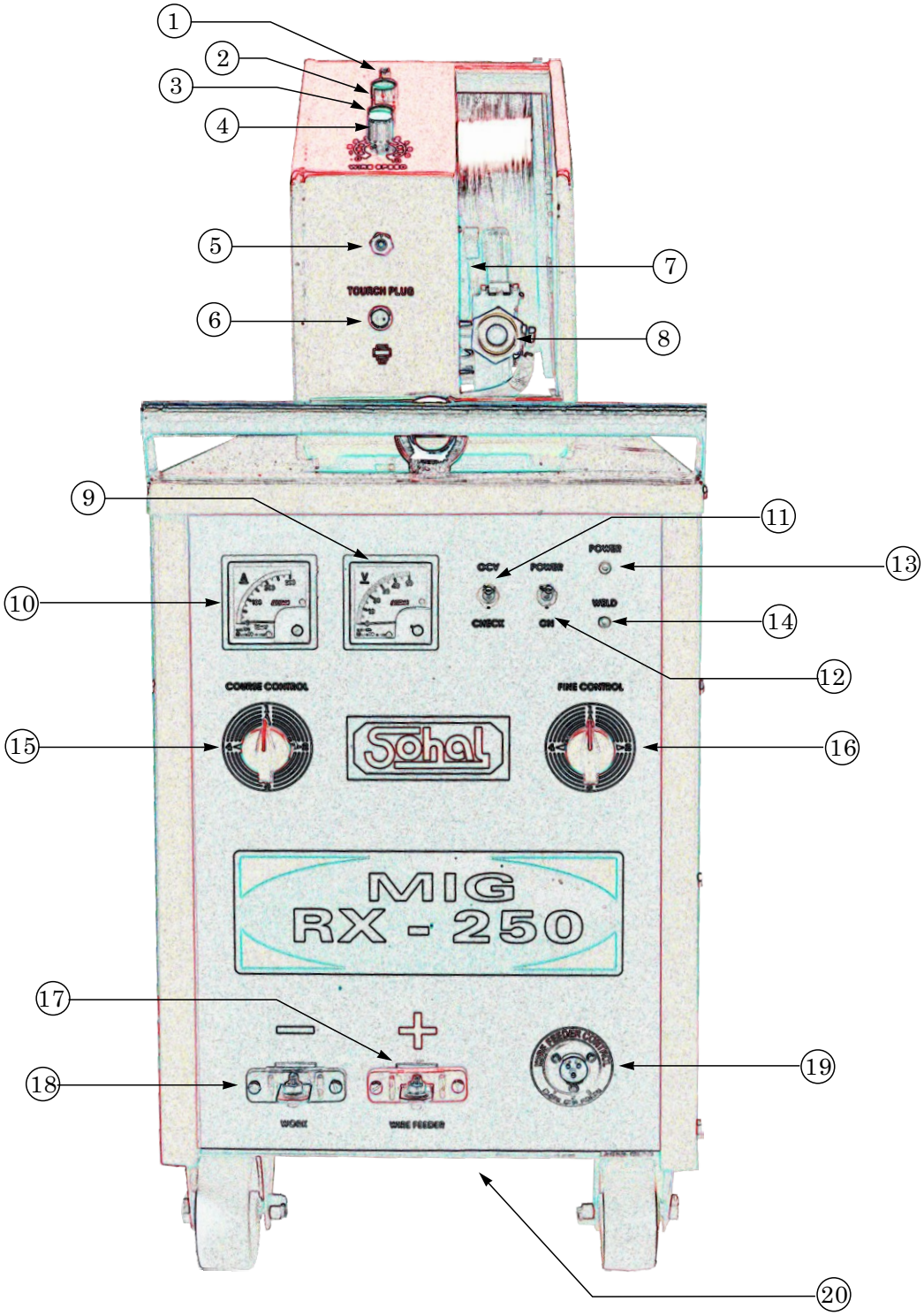
ADVANTAGE OF MIG:

The primary advantage of MIG welding is that it allows metal to be welded much quicker, slag free and continuous than traditional welding "stick welding" techniques. Some major advantages of MIG are listed below:

* It produces long continuous welds.
* Welds much faster, 3 to 5 times faster.
* No slag formed during welding.
* No need to chip or brush welding.
* Clean weld with very little spatter.
* Easy machinable softer welds.
* No burn out at bead corners.
* Great metal filling speed.
* Ideal for thin metal welding.
* Good finish.

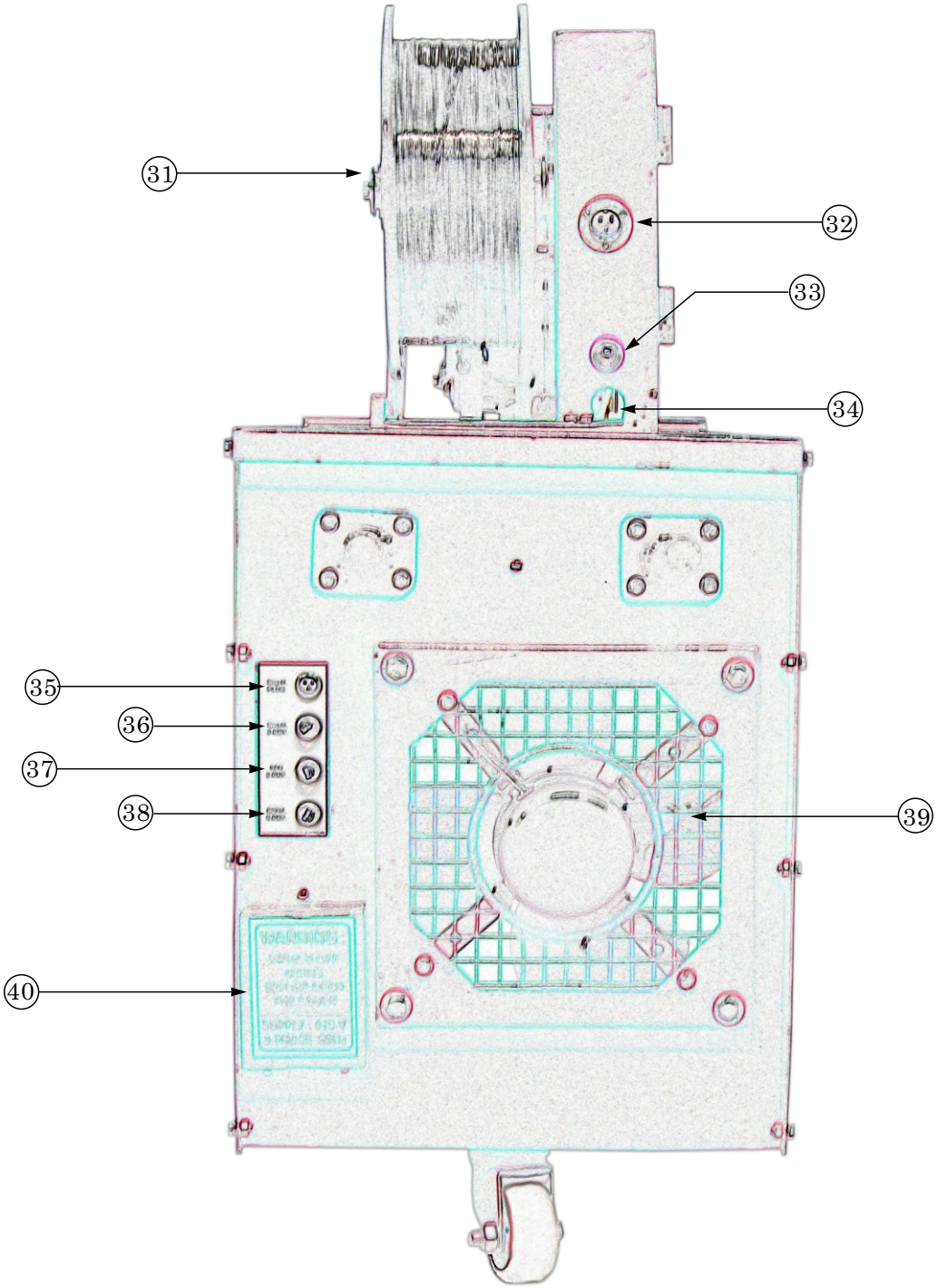
BRIEF DESCRIPTION OF ALL PARTS:

FRONT



BRIEF DESCRIPTION OF ALL PARTS:

REAR



1. POWER INDICATOR: It is placed in front of wire feeder shows the power is on from power source and control cord to wire feeder has been connected.

2. GAS CHECK: Press Gas check push button to check the flow of shielding gas on conical nozzle and scaling on flow meter.

3. WIRE CHECK: Press Wire check push button to check the motor rotation and for feeding wire in torch when you change an empty wire roll with new one.

4. WIRE SPEED: This is knob to set a wire feed speed according to welding volts and for control of welding current, To run motor fast or want to increase in welding current rotate it clock wise and vice-versa. The rotating device below knob is called potentio meter.

5. GAS PLUG: Connect the torch gas pipe here. When gas check or torch trigger is pressed the gas comes from this plug and passes to welding end of torch.

6. TORCH PLUG: This is base plug for the plug that is attached with torch, make the connections by connecting these plugs. When you press torch trigger the trigger switch works through this plug if this plug is not connected torch switching will not work.

7 Feeder Motor: This is variable speed motor attached with a feed roll and gearbox. It feeds wire at a constant speed set from wire speed knob.

8. CENTRAL ADAPTOR PM-3b: It's the connector to connect welding torch, Mig wire and welding current runs through this connector.

9. VOLT METER: By pressing OCV CHECK switch in front of power source, It shows the open circuit volts of power source and when you do the welding it shows welding volts.

10. AMPERE METER: It shows welding current during welding.

11. OCV CHECK: Press this toggle to check the set value of OCV(open circuit volts).

12. POWER ON: Power on toggle switch. It is used for switching power source control circuit and wire feeder ON or OFF. By switch off machine from this switch does not mean the power is removed from power source, it only cuts power of control circuit.

13. POWER LED: It shows power is connected to machine and POWER ON toggle switch is set to on.

14. WELD LED: The weld led shows the status of welding volts, when OCV CHECK toggle switch or torch trigger is pressed will glow.

15. COURSE CONTROL SWITCH: It is 3-POLE 4-WAY rotary switch, It's one step increment make increase in OCV about 5-Volts.

16. FINE CONTROL SWITCH: It's function is same as course control switch, the only difference is it's step size, a step of it will only change in OCV about 2-Volts.

17. WIRE FEEDER TERMINAL: Terminal for connecting wire feeder welding lead. It is positive terminal.

18. WORK TERMINAL: It is negative terminal and connected to workpiece or work table through a work lead.

19. WIRE FEEDER CONTROL PLUG: Connect one side Plug of 3 Core connection lead here and other plug on the back of wire feeder. Through these connection power is provided to wire feeder and to make control between wire feeder and power source.

20. AIR VENT: This is out-let for cooling air at bottom of machine, keep the surface clean below it, to prevent air blockage

31. WIRE SPOOL PIN: This pin is for fixing wire spool. Note that it could not rotate freely, a tensioning spring is placed inside it.

32. CONTROL PLUG: A already mentioned connect control lead plug here.

33. GAS IN-LET: Connection for shielding gas.

34. HOLDER CABLE IN-LET: A welding cable has gone inside from here to give positive current for torch. It's other end is connected to Wire feeder terminal.

35. HEATER PLUG: Connection for CO2 heater plug.

36. FUSE FOR CONTROL TRANSFORMER: This is fuse holder and a fuse inside in protects control transformer from faulty conditions.

37. FUSE FOR FAN: Fuse for cooling fan.

38. FUSE FOR HEATER: To protect heater supply from short circuit, in caseif heater cable or heater gets faulty.

39. COOLING FAN: Give forced air in machine to cool DIODES and MAIN TRANSFORMER.

40. SUPPLY COVER: It protects surrounding from touch with terminal strip behind it. After connecting power supply place the cover back in its original position.

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SETTING WELDING CURRENT:

MIG RX 250

STEP NO.		OCV	WELDING VOLTS	WELDING CURRENT
COURSE	FINE			
1	1	22.8	18	**60**
1	2	23.7	18.3	**65**
1	3	24.7	18.5	**70**
1	4	25.7	18.9	**75**
2	1	26.3	19.3	**85**
2	2	27.6	19.5	**95**
2	3	28.7	19.8	**105**
2	4	29.9	20.6	**115**
3	1	30.9	21.5	**130**
3	2	32.5	22	**145**
3	3	34.3	22.5	**160**
3	4	36.1	23	**175**
4	1	37.4	23.5	**190**
4	2	39.7	24	**210**
4	3	42.0	25	**230**
4	4	44.5	26	**250**

MIG RX 400

STEP NO.		OCV	WELDING VOLTS	WELDING CURRENT
COURSE	FINE			
1	1	27.5	20.0	**100**
1	2	28.5	20.3	**130**
1	3	29.5	21.2	**140**
1	4	30.8	21.5	**160**
2	1	31.6	21.4	**180**
2	2	32.9	22.3	**200**
2	3	34.3	23.8	**200**
2	4	35.8	23.9	**220**
3	1	36.8	23.6	**250**
3	2	38.4	24.4	**260**
3	3	40.2	26	**280**
3	4	42.3	26.9	**300**
4	1	43.8	27.6	**320**
4	2	46.1	29.6	**340**
4	3	48.8	30.7	**360**
4	4	51.5	32.4	**380**

* THE VALUES SHOWN IN TABLE ARE ONLY FOR GUIDELINES. ACTUAL VALUE MAY DIFFER FROM TABLE.

PROBLEMS & THEIR SOLUTIONS:

	Problem	Cause	Solutions
1.	Power indicator does not glow.	One phase or all three phases of power are missing.	Check power supply status then check fuses then check supply cable & connection strip at back of machine.
2.	Wire feeder's power indicator does not glow or it is not functioning.	Three core control cable damage. Melted fuse of PCB. Faulty PCB.	Replace control cable. Replace Fuse. Replace PCB.
3.	Torch switch does not work, But wire & gas Push buttons on wire feeder are working. <u>By pressing torch switch</u>	Dust in torch switch or loose connection of torch plug.	Wash the torch switch with a oil based cleaning agent or replace switch. Replace torch plug.
4.	Gas does not come.	Gas cylinder empty or Heater does not heat up or Pressure regulator faulty or gas pipe blocked or faulty solenoid valve.	Check step by step all causes and replace the faulty component.
5.	Wire dose not come.	Wire coil jam or Pressure lever loose or Motor not running.	Grease wire spool or set appropriate pressure on wire by adjusting pressure lever then check motor if faulty replace it else replace PCB.
6.	Current does not come.	Breakage of control cable.	Find breakage area and repair it or replace it with new cable.
7.	While setting voltage from rotary switches, voltage variation is not linear.	Loose wire on switch. Damaged contacts of switch.	Tighten the loose wire. Replace rotary switch.

*We provide this information to guide only a certified engineer, There is always risk of electric shock during repair please don't do it your self, always get services from a professional engineer or company.

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CAUSE OF WELDING DEFECTS AND THEIR SOLUTION'S:

	Welding defect	Cause	Solutions
1.	Black burned welding bead.	Improper shielding gas. Faulty shielding gas.	If gas heater does not heat up replace it or increase gas flow, shield welding area from air flow. Replace gas cylinder with a cylinder from different lot.
2.	Proper color good welding but some fine holes like needle holes in welding.	Poor quality welding wire.	Replace wire with an old lot of wire or change its brand.
3.	Weld bead raise (hollow from inside) in-between or probably at the end of welding.	Dust, oil or cutting oil on job.	Clean the job.
4.	Low penetration.	Wrong selection of shielding gas. Low welding current.	If you are using argon mixed gas, use Co2 shielding gas. Increase welding current.
5.	Thin sheet burns during welding.	Wrong selection of shielding gas. High welding current.	Use Argon mixed gas instead of Co2. Set the welding current to a relative lower value, if it is not possible increase the welding speed.

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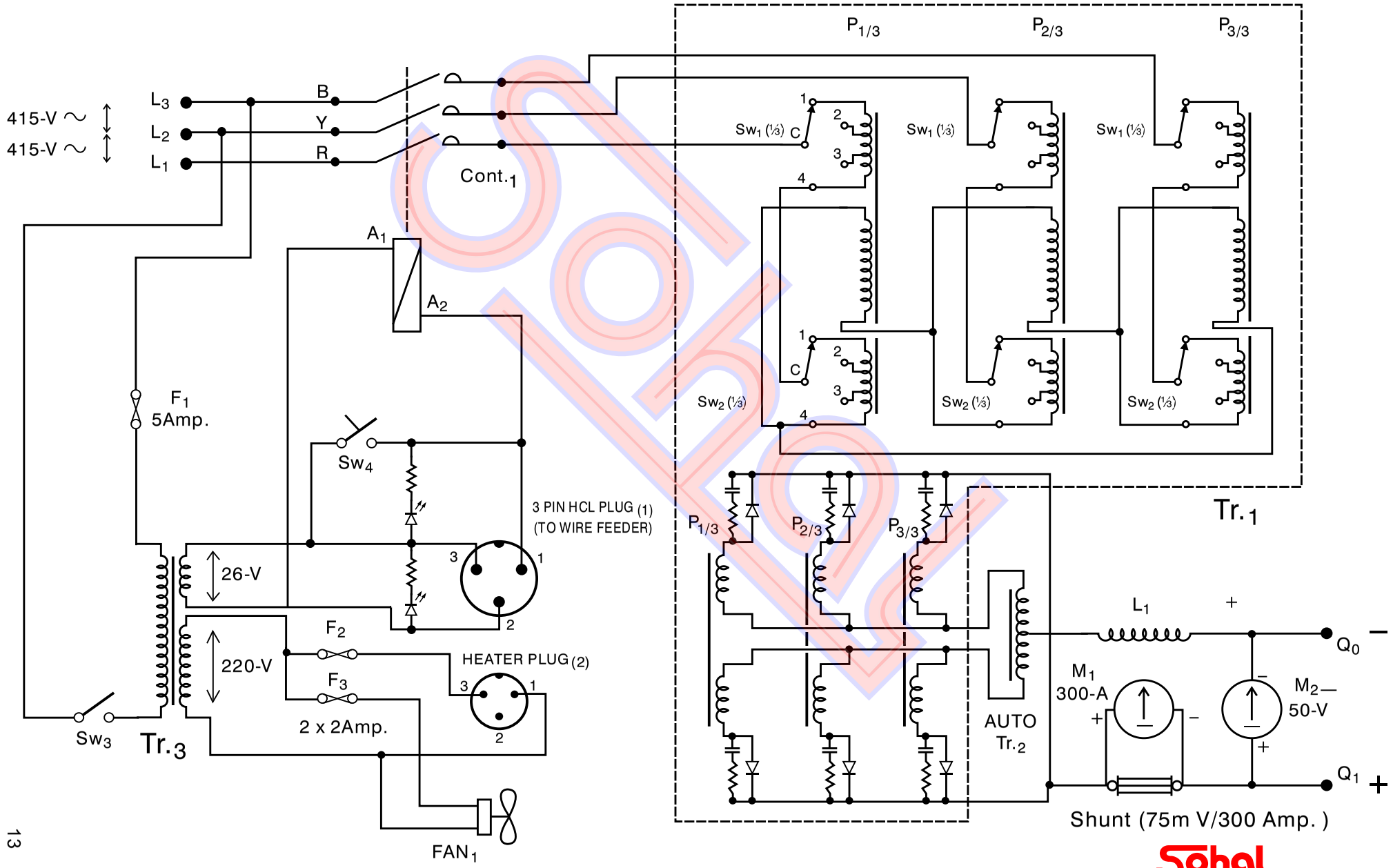
TECHNICAL INFORMATION:

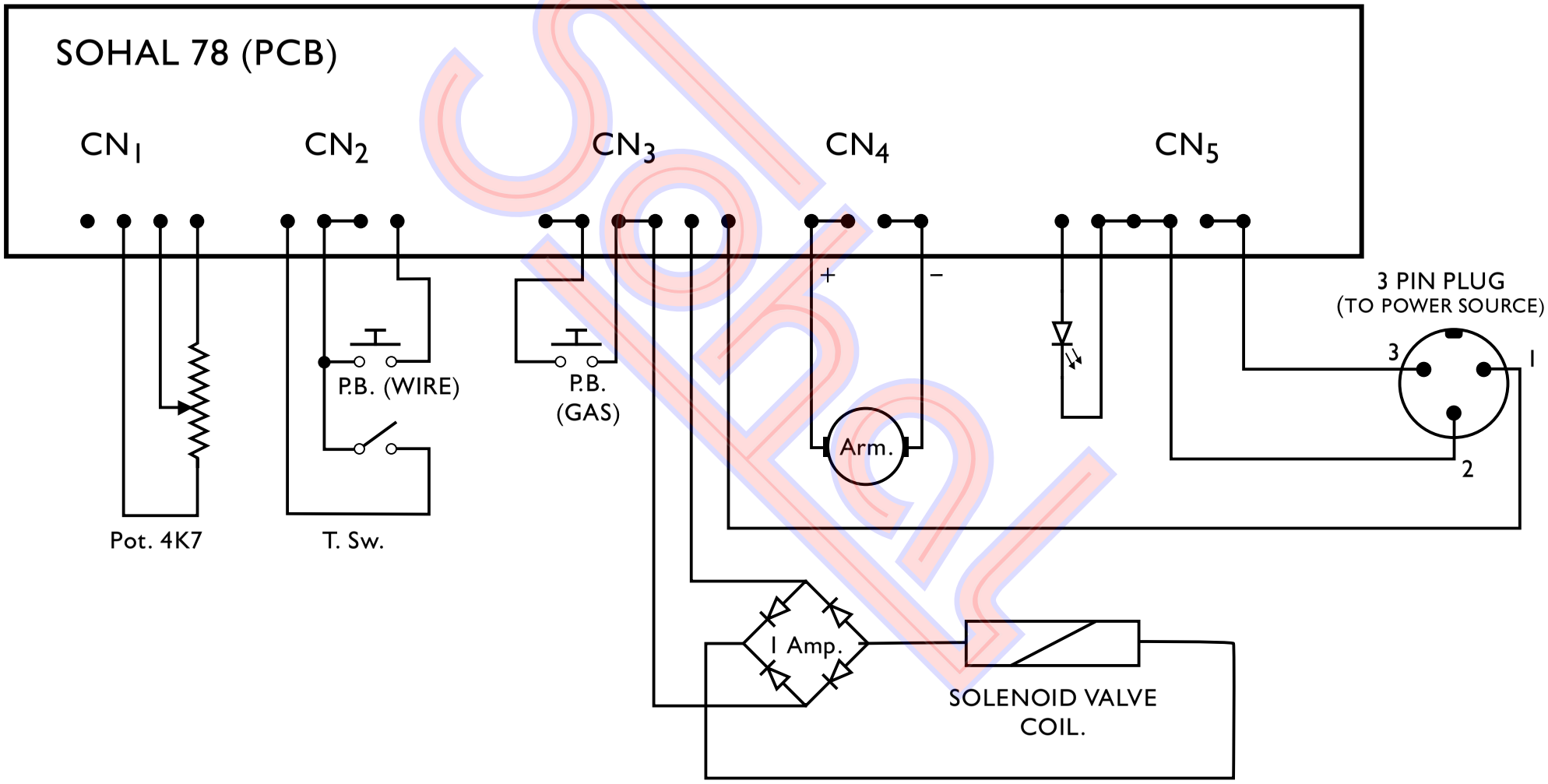
	ITEM	MODEL	
		RX 250	RX 400
MAIN TRANSFORMER	Rated input voltage	400	400
	Supply voltage	415 ±10%	415 ±10%
	Rated frequency	50	50
	Phase	3	3
	Rated power	9.5/7.8	19.4/17.5
	Rated duty cycle	60	60
	OCV	22~45	28~54
	Output current	50~250	80~400
	Type of transformer	Double star	Double star
	Insulation class	Class H	Class H
	Required MCB	16 Amp. 3P	25 Amp. 3P
	Supply Cable	1.5 mm2 or 3/20	2.5 mm2 or 7/22
	Welding Lead	25 mm2	35 mm2
	Cooling Fan	220V AC 80W	220V AC 80W
	Main Contactor	220V AC 150W	220V AC 150W
	Heater	16 Amp. Coil24V AC	16 Amp. Coil24V AC
	OCV Selector Switches	3P 4W 16Amp.	3P 4W 25Amp.
	Diodes	150 N 40	150 N 40
	Fuses Control Tr.	2.5 Amp	2.5 Amp
	Fan	1 Amp	1 Amp
	Heater	1 Amp	1 Amp
	PCB 78C	5 Amp.	5 Amp.
	Feeder Motor	24V DC	24V DC
	Solenoid Valve	24V DC	24V DC

* NOTE : The information provided above may different from actual.

CIRCUIT DIAGRAM OF MIG RX 250 POWER SOURCE

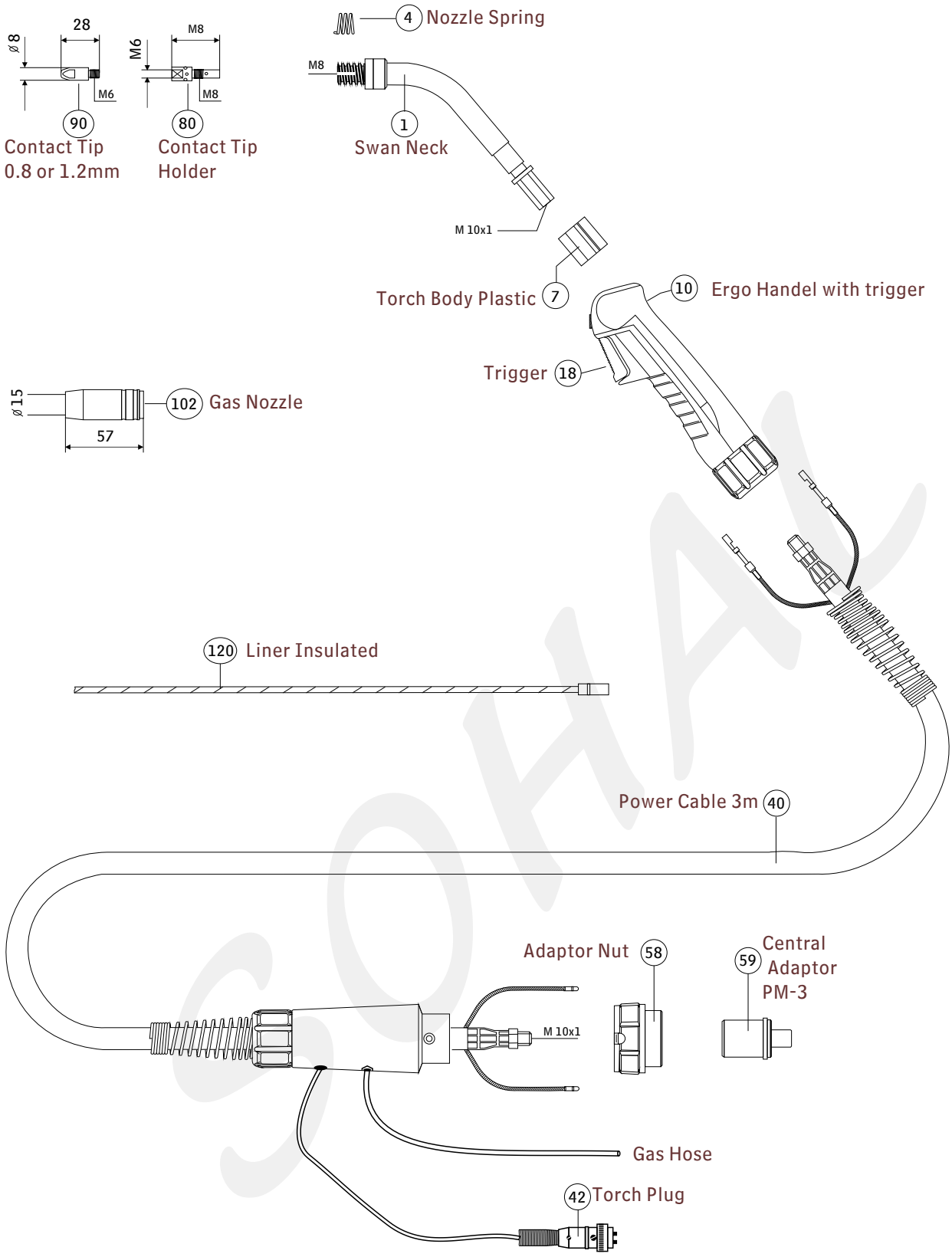


CIRCUIT DIAGRAM OF MIG RX 250 WIRE FEEDER.



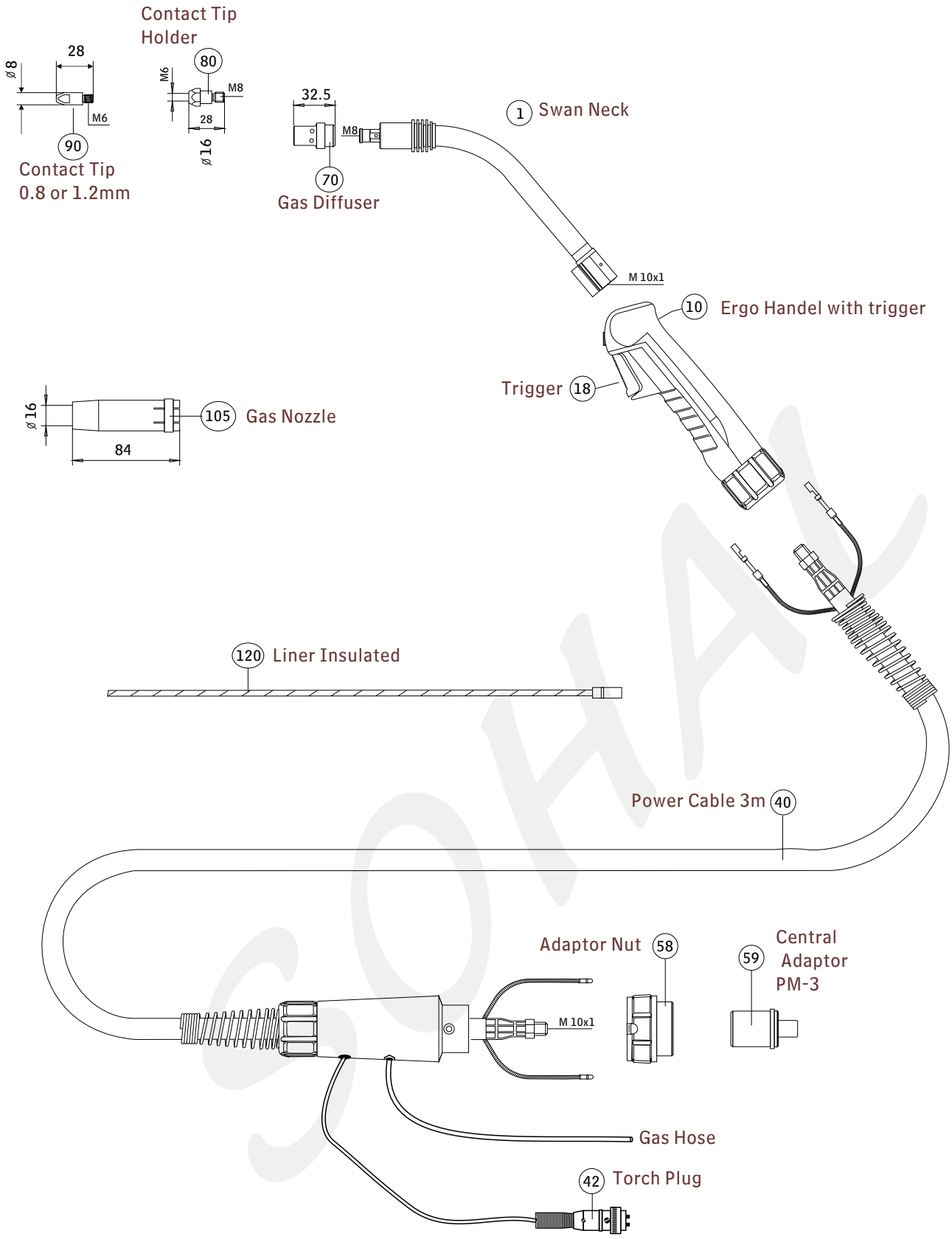
TORCH SPARE GUIDELINES:

MIG TORCH SOHAL AK25-P

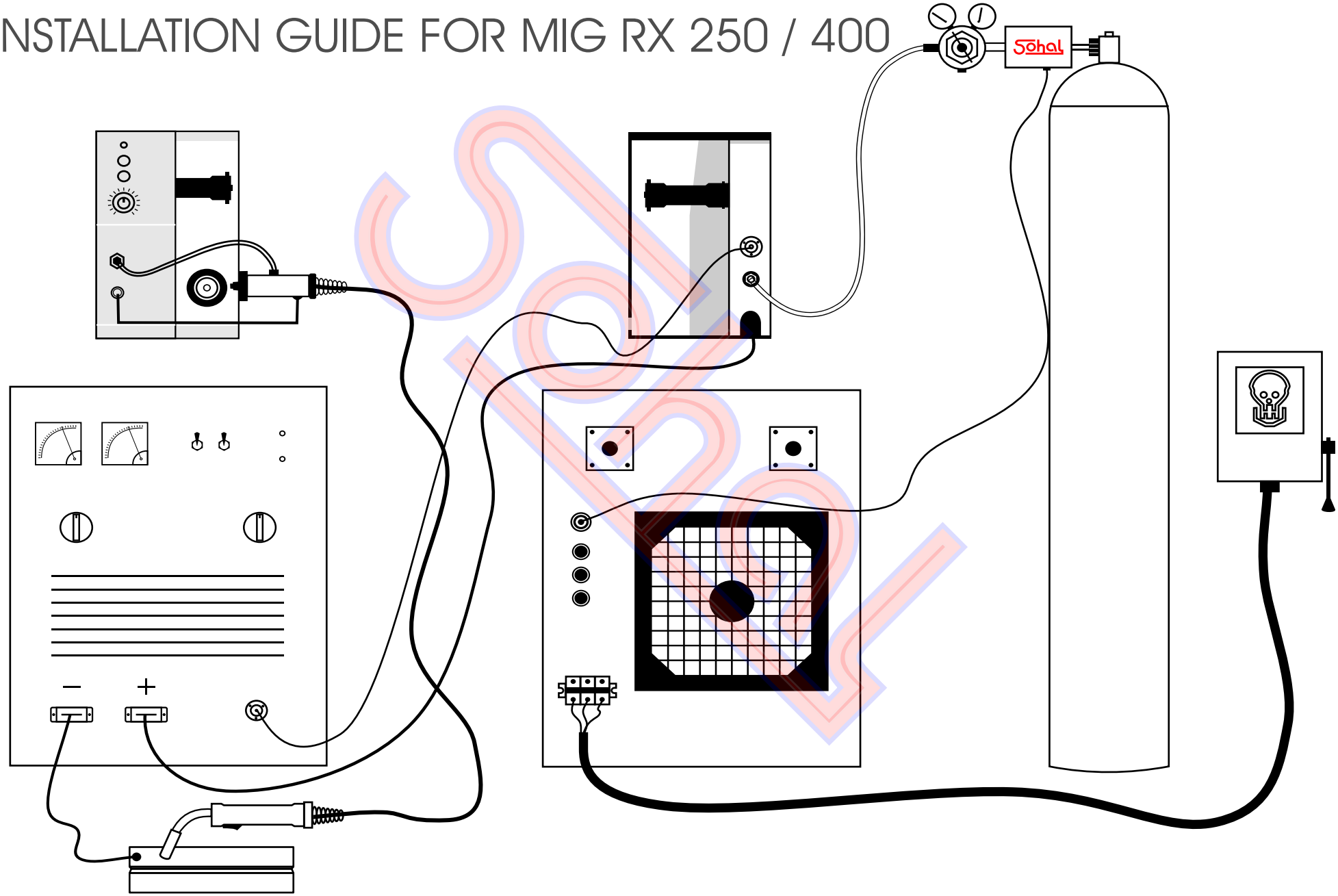


TORCH SPARE GUIDELINES:

MIG TORCH SOHAL 36KD-P



INSTALLATION GUIDE FOR MIG RX 250 / 400



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