TM-716D 2011–03

Eff. w/Style Number HD-6

Processes

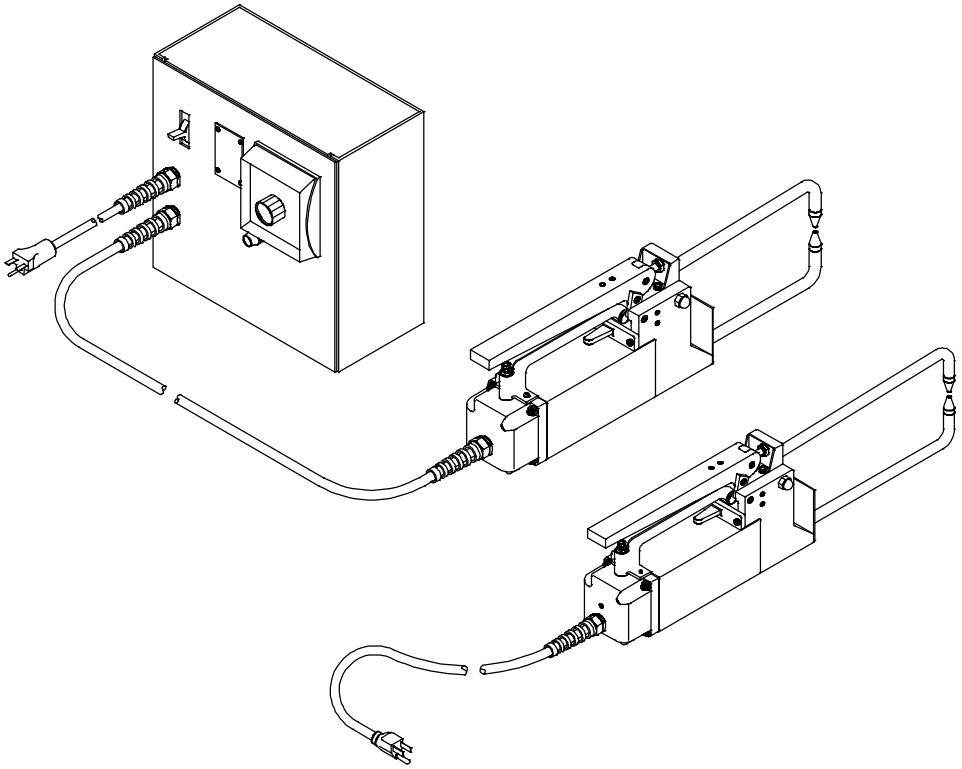
Resistance Spot Welding

Description

1 Phase

MSW-41, MSW-41T, MSW-42, MSW-42T, LMSW-52, And LMSW-52T

Portable Resistance Spotwelders



TECHNICAL MANUAL

File: Resistance Spot Welding

Visit our website at

www.MillerWelds.com

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SECTION 1 – SAFETY PRECAUTIONS FOR SERVICING

Protect yourself and others from injury — read and follow these precautions.

1.1 Symbol Usage

OM-716H - 2011–12, safety_spottm 2010–03

DANGER! – Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

Indicates a hazardous situation which, if not avoided, could result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

NOTICE *– Indicates statements not related to personal injury.*

☞ *Indicates special instructions.*

This group of symbols means Warning! Watch Out! ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

1.2 Servicing Hazards

The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard.

Only qualified persons should service, test, maintain, and repair this unit.

During servicing, keep everybody, especially children, away.

ELECTRIC SHOCK can kill.

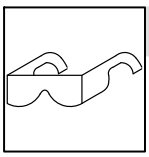
- Do not touch live electrical parts.
- Turn OFF unit, and disconnect and lockout input power using line disconnect switch, circuit breakers, or by removing plug from receptacle before servicing unless the procedure specifically requires an energized unit.
- Insulate yourself from ground by standing or working on dry insulating mats big enough to prevent contact with the ground.
- Do not leave live unit unattended.
- If this procedure requires an energized unit, have only personnel familiar with and following standard safety practices do the job.
- When testing a live unit, use the one-hand method. Do not put both hands inside unit. Keep one hand free.
- Disconnect input power plug or conductors from deenergized supply line BEFORE moving unit.

MOVING PARTS can injure.

- Do not put hands between tips.
- Keep away from pinch points.
- OSHA and/or local codes may require additional guarding to suit the application.

HOT PARTS can burn.

- Do not touch hot parts bare handed.
- Allow cooling period before working on equipment.
- To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.



FLYING METAL or DIRT can injure eyes.

- Wear safety glasses with side shields or face shield during servicing.
- Be careful not to short metal tools, parts, or wires together during testing and servicing.

ELECTRIC AND MAGNETIC FIELDS (EMF) can affect Implanted Medical Devices.

- Wearers of Pacemakers and other Implanted Medical Devices should keep away from servicing areas until consulting their doctor and the device manufacturer.

SHOCK HAZARD from testing.

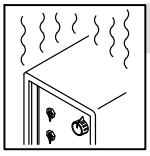
- Turn Off unit before making or changing meter lead connections.
- Use at least one meter lead that has a self-retaining spring clip such as an alligator clip.
- Read instructions for test equipment.

WELDING can cause fire or explosion.

- Protect yourself and others from flying sparks and hot metal.
- Do not spot weld where flying sparks can strike flammable material.
- If test welds are required, follow Safety Precautions in Owner's Manual and on safety label(s).

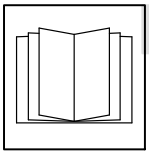
FALLING EQUIPMENT can injure.

- Use equipment of adequate capacity to lift and support the unit.
- Follow the guidelines in the Applications Manual for the Revised NIOSH Lifting Equation (Publication No. 94–110) when manually lifting heavy parts or equipment.
- Secure unit during transport so it cannot tip or fall.



OVERUSE can cause OVERHEATING.

- Allow cooling period; follow rated duty cycle.
- Reduce duty cycle before starting to weld again.



READ INSTRUCTIONS.

- Use Testing Booklet (Part No. 150 853) when servicing this unit.
- Consult the Owner's Manual for welding safety precautions.
- Use only genuine replacement parts from the manufacturer.
- Read and follow all labels and the Technical Manual carefully before installing, operating, or servicing unit. Read the safety information at the beginning of the manual and in each section.

1.3 California Proposition 65 Warnings

Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

This product contains chemicals, including lead, known to the state of California to cause cancer, birth defects, or other reproductive harm. *Wash hands after use.*

For Gasoline Engines:

Engine exhaust contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

For Diesel Engines:

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

1.4 EMF Information

Electric current flowing through any conductor causes localized electric and magnetic fields (EMF). Welding current creates an EMF field around the welding circuit and welding equipment. EMF fields may interfere with some medical implants, e.g. pacemakers. Protective measures for persons wearing medical implants have to be taken. For example, access restrictions for passers–by or individual risk assessment for welders. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Do not place your body between welding cables. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep head and trunk as far away from the equipment in the welding circuit as possible.
5. Connect work clamp to workpiece as close to the weld as possible.
6. Do not work next to, sit or lean on the welding power source.
7. Do not weld whilst carrying the welding power source or wire feeder.

About Implanted Medical Devices:

Implanted Medical Device wearers should consult their doctor and the device manufacturer before performing or going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 – INTRODUCTION

2-1. Specifications

Model	AC Input Voltage 50/60 Hz 1-Phase	Work Capacity Combined Thickness Uncoated Mild Steel	Rated Output At 50% Duty Cycle*	Welder Dimensions			Weight	
				Height	Width	Length	Net	Ship
MSW-41T	110	1/8 in.** (3.2 mm)	1.5 kVA	6 in. (152 mm)	4-1/2 in. (114 mm)	13 in. (330 mm)	34 lb (15.4 kg)	38 lb (17.2 kg)
LMSW-52T	220	3/16 in.** (4.7 mm)	2.5 kVA	6 in. (152 mm)	4-1/2. in (114 mm)	16 in. (406 mm)	42 lb (19.1 kg)	45 lb (20.4 kg)

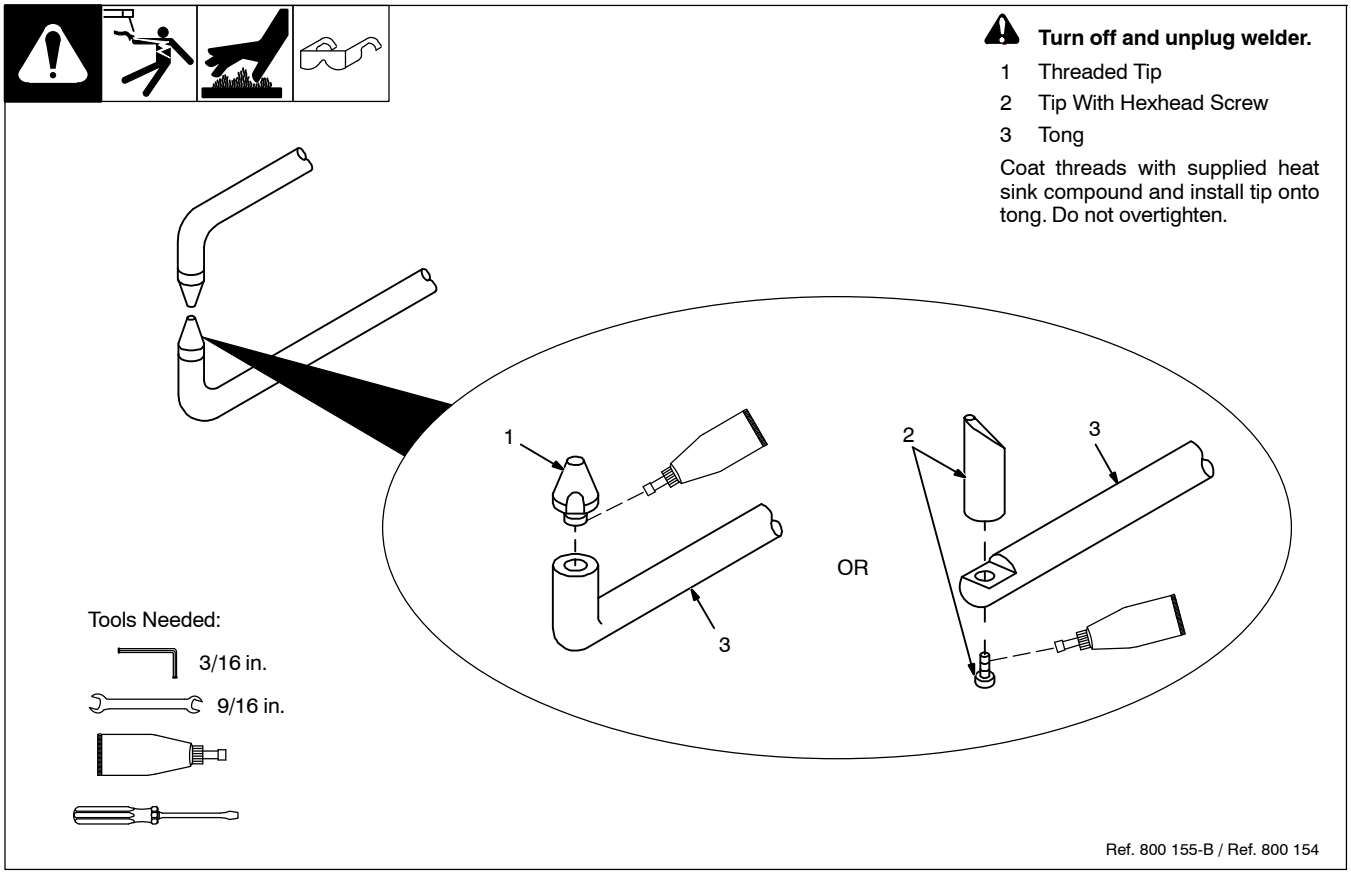
*Based on 10 second time period; means unit can weld for 5 seconds out of each 10 second time period.
** Not recommended for aluminum or copper alloys.

Model	MSW-41, 41T			LMSW-52, 52T		
Tong Length	6 in. (152 mm)	12 in. (305 mm)	18 in. (457 mm)	6 in. (152 mm)	12 in. (305 mm)	18 in. (457 mm)
Input Volts	110			220		
Output Amps ±10%	5500	4500	3600	6750	5800	4850

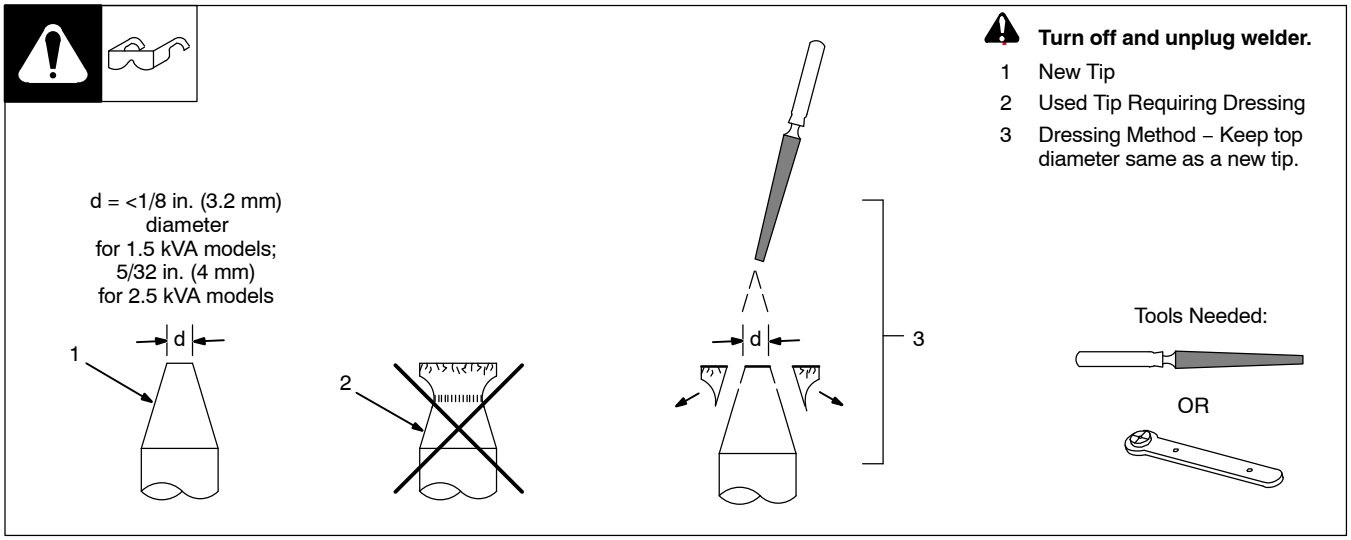
SECTION 3 – INSTALLATION

3-1. Installing Or Dressing Tips

A. Installing Tips

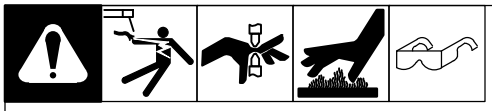


B. Dressing The Tips

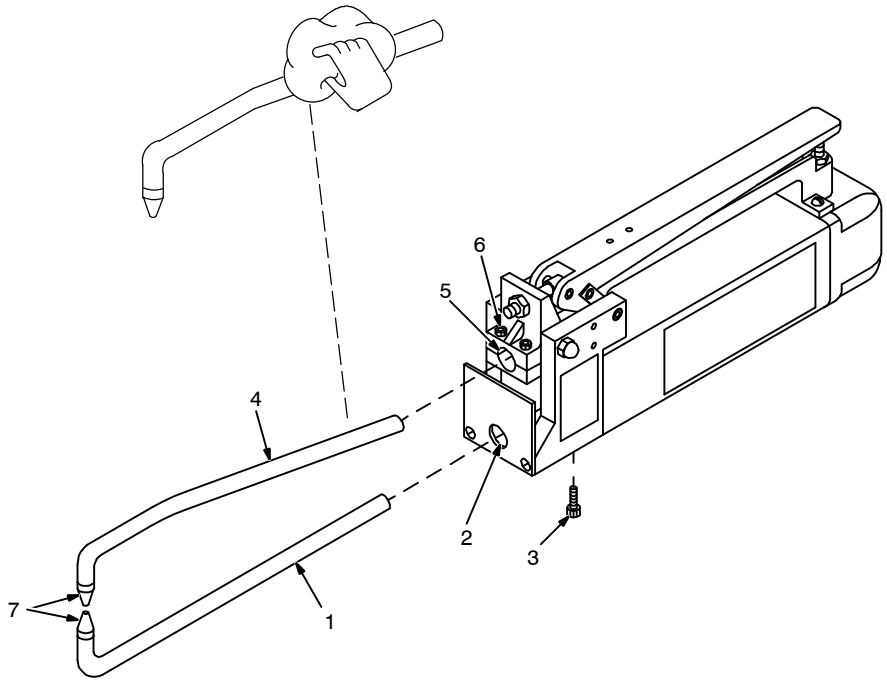


Notes

3-2. Installing Or Cleaning Tongs



OSHA and/or local codes may require additional guarding to suit the application.



Turn off and unplug welder.

☞ *Be sure tong ends are clean and not corroded before installing. Clean tongs with fine steel wool.*

Bottom Tong:

1 Bottom Tong

2 Hole In Spatter Guard

3 Bottom Tong Securing Screws (4)

Loosen the four screws. If needed, use a rubber mallet to loosen tong.

Slide tong into bottom tong holder as far as possible, and position so that tip is pointing straight up.

Loosely tighten screws.

Top Tong:

4 Top Tong

5 Top Tong Holder/Pivot Casting

6 Top Tong Securing Screws (4)

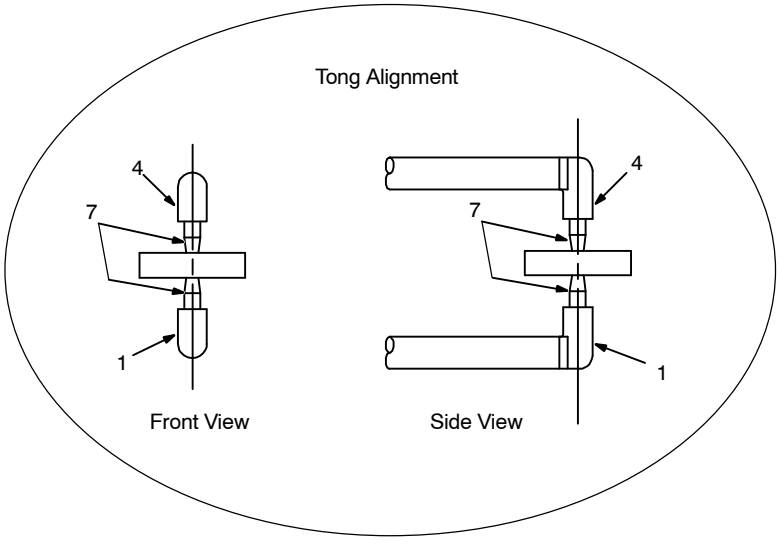
Loosen the four screws. If needed for removal, use a rubber mallet to loosen tong.

Slide tong into pivot casting as far as necessary, so that tip mates with bottom tip when tongs are closed.

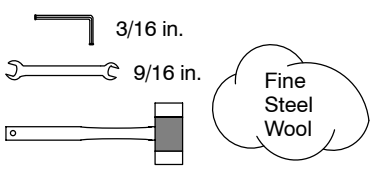
Loosely tighten screws.

7 Tips

Adjust tong positions to line up centers of tips as shown. Tighten screws.

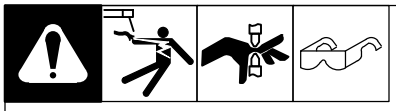


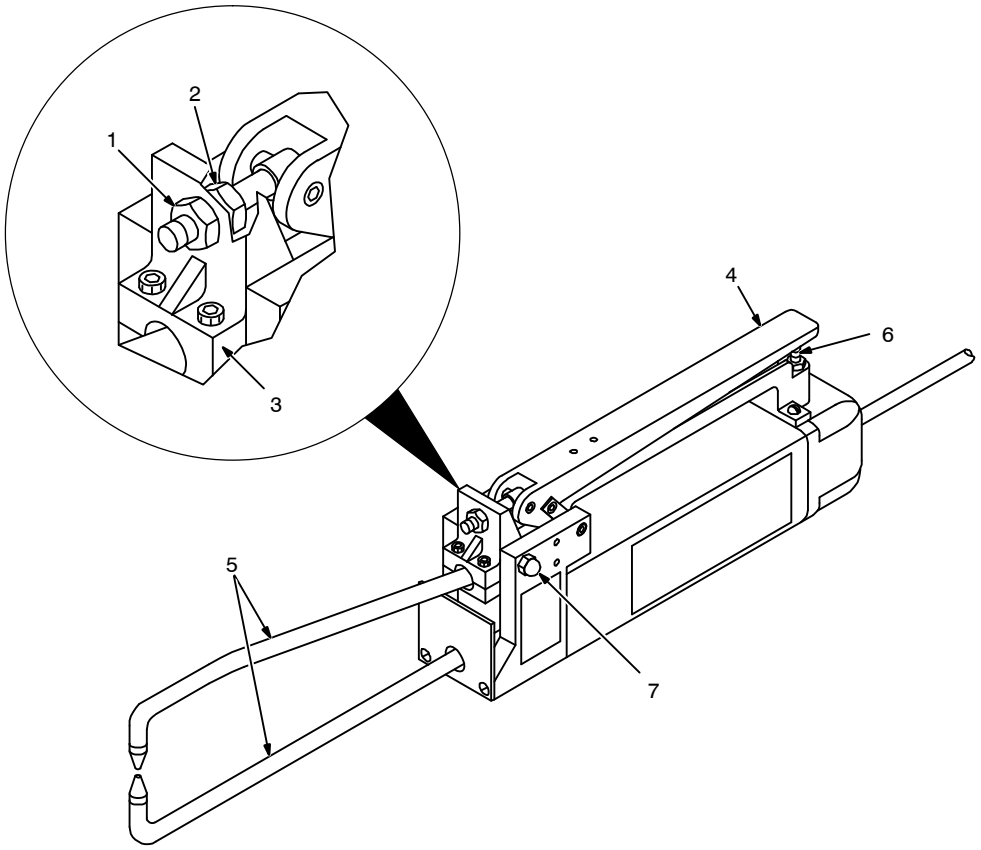
Tools Needed:



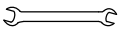
800 155-A / Ref. 800 154-A

3-3. Adjusting Tong And Hand Lever Pressure





Tools Needed:



9/16, 11/16 in.

Ref. 800 156

Turn off and unplug welder.

Excessive tong pressure can damage tips. Do not use tongs as a clamp or vice to hold workpiece together. If the two pieces of material to be welded do not make good contact at the point of the intended weld, clamp material to provide good contact between surfaces.

☞ *Tong pressure is adjustable, and must be checked and/or set before operation. Correct tong pressure is necessary to create a quality weld and to prevent damage to tips.*
Too much tong pressure causes the weld nugget to dimple and material to splash out around the nugget area.
If tong pressure is too weak, parts are loose when the tongs close, severe arcing occurs between workpieces, and no weld can be made.

1 Front Nut

2 Rear Nut

3 Pivot Casting

4 Hand Lever

5 Tongs

To increase tong pressure, loosen front nut. The farther the front nut is turned out, the greater the pressure on the tips when the hand lever is closed. Turn the rear nut up to the pivot casting to lock the position.

To decrease tong pressure, loosen the rear nut and turn the front nut up to the pivot casting.

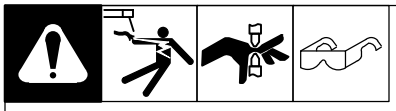
6 Machine Screw

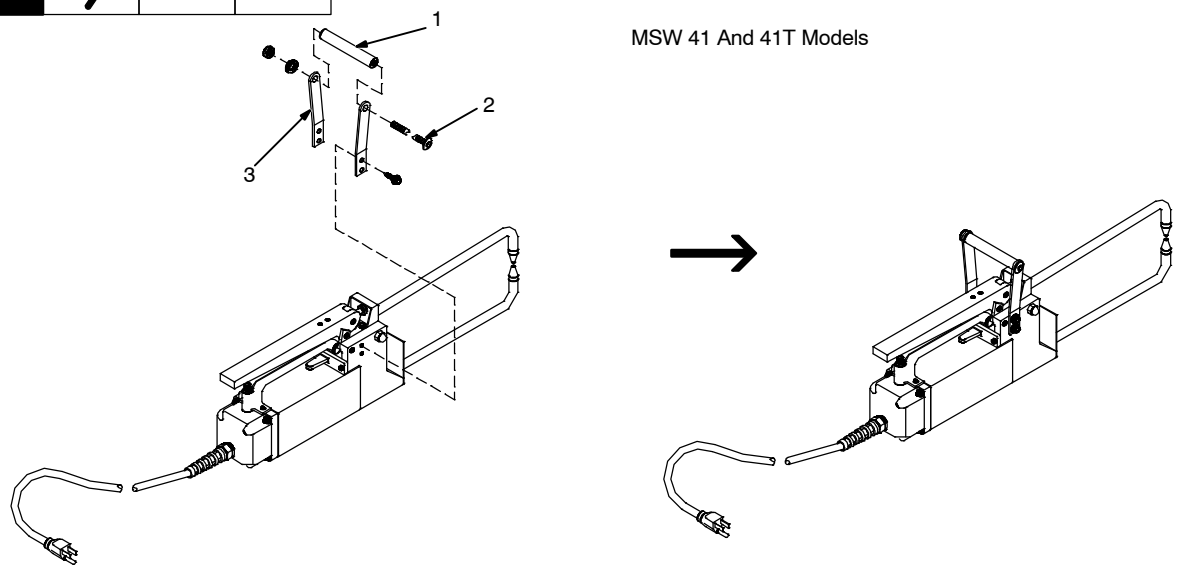
The farther down the screw is turned, the farther the hand lever will close. Adjustment of this screw will determine if the tongs lock on the material, or just pull up tight. Adjust screw to allow lever to be raised easily after the weld has been completed.

7 Hex Nut

To adjust pressure needed to push down hand lever, turn the hex nuts located on each side of the pivot casting.

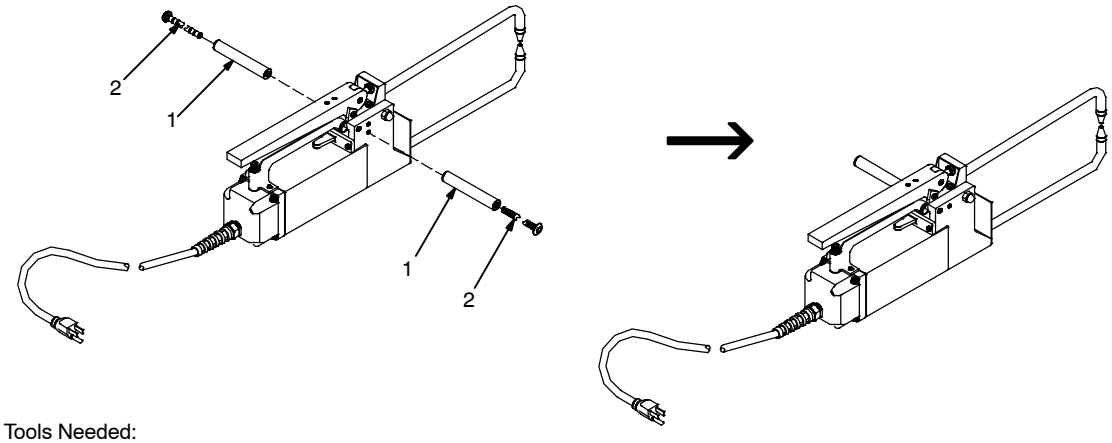
3-4. Installing Handle





MSW 41 And 41T Models

MSW 52, And 52T Models



Tools Needed:

7/16, 3/8 in.

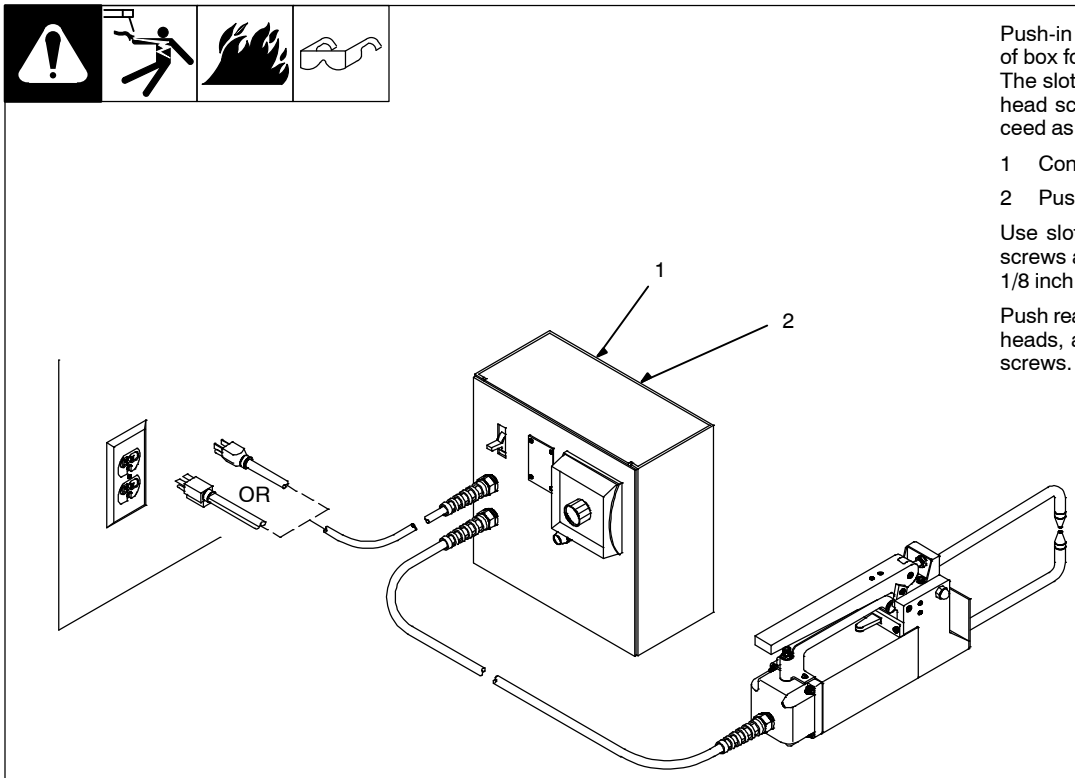
Ref. 802 056-A

Turn off and unplug welder.

1 Wooden Handle
2 Handle Bolt
3 Brackets (41 And 41T Models Only)

Install handle onto the spot welder as shown above. For 52, and 52T Models, install handle onto either side as desired for either right-hand or left-hand use.

3-5. Mounting Control Box



Push-in slots are provided on rear of box for wall mounting if desired. The slots will fit over 1/4 inch hex-head screws. To mount box, proceed as follows:

1 Control Box

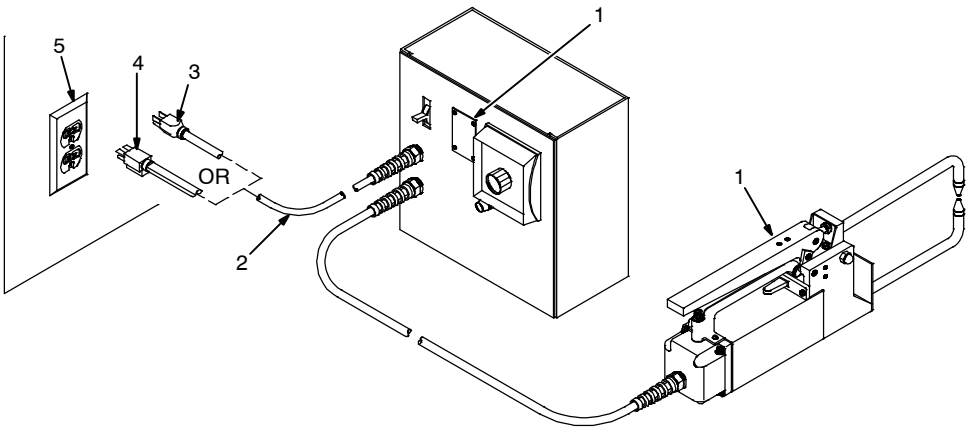
2 Push-In Slots (Not Shown)

Use slots as template and install screws at desired locations leaving 1/8 inch stickout.

Push rear slots firmly against screw heads, and slide box down onto screws.

800 233-A

3-6. Connecting Input Power (T Models)



Operate spot welder from a separately fused or circuit breaker protected circuit, and use correct size input conductors.

1 Rating Label (Not Visible As Shown On Spot Welder)

2 Cord

3 Parallel Plug On 110 Volts AC Models

4 Tandem Plug On 220 Volts AC Models

Do not cut ground terminal off plug.

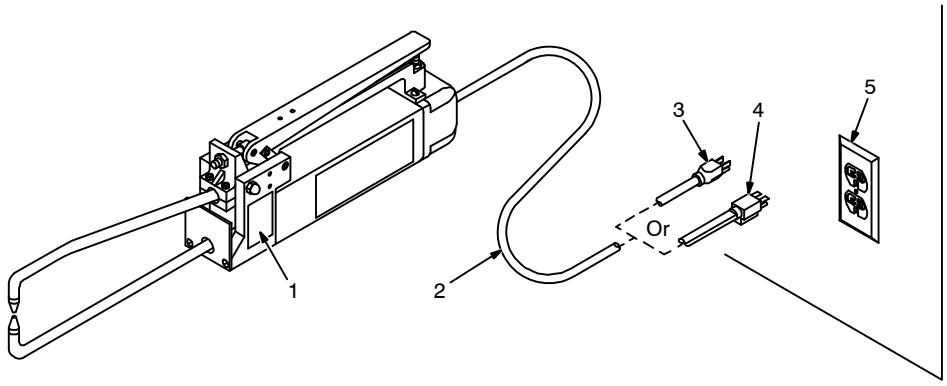
5 Grounded Receptacle

Connect plug to matching grounded receptacle.

Model	Input Conductor Size (AWG)	Fuse/Circuit Breaker Size In Amperes
1.5 kVA 110 Volt	No. 10	30
1.5 kVA 220 Volt	No. 12	15
2.5 kVA 220 Volt	No. 10	30

Ref. 800 233-A

3-7. Connecting Input Power (Non-T Models)



Input power supply wiring and receptacle must meet National Electrical Code and all other code requirements.

Operate spot welder from a separately fused or circuit breaker protected circuit, and use correct size input conductors.

1 Rating Label

2 Cord

3 Parallel Plug On 110 Volts AC Models

4 Tandem Plug On 220 Volts AC Models

Do not cut ground terminal off plug.

5 Grounded Receptacle

Connect plug to matching grounded receptacle.

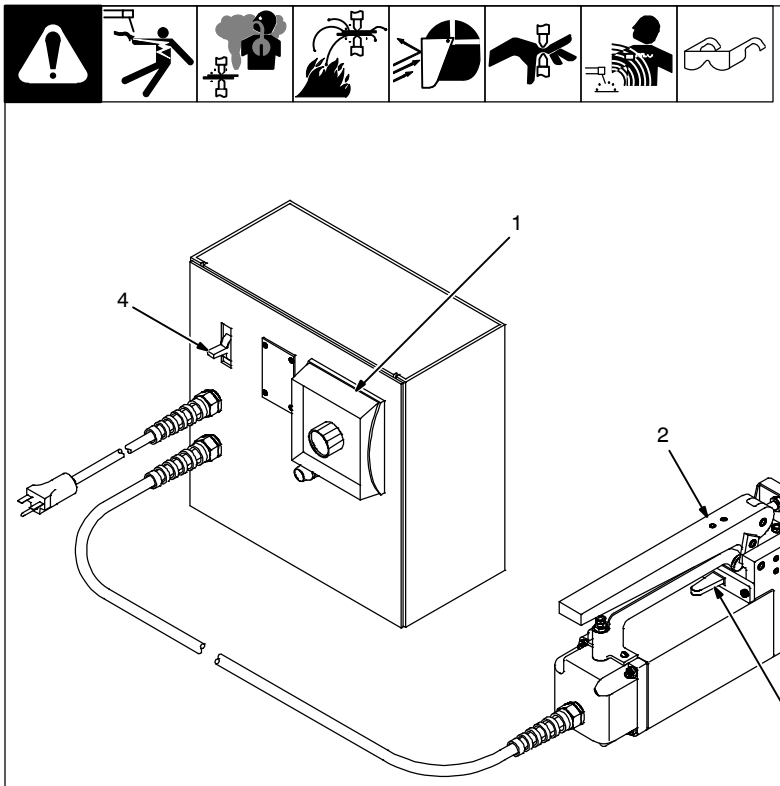
Model	Input Conductor Size (AWG)	Fuse/Circuit Breaker Size In Amperes
1.5 kVA 110 Volt	No. 10	30
2.5 kVA 220 Volt	No. 10	30

Ref. 800 156

Notes

SECTION 4 – OPERATION

4-1. Controls (T Models)



1 Spot Weld Timer And Pilot Light

Weld time adjusts from 0 to 5 seconds. The pilot light turns on when the weld cycle begins and off when the cycle ends.

2 Hand Lever

Use lever to open and close tongs. Close the hand lever during the welding process to compress the material between the tips. To adjust tong pressure, see Section 3-3.

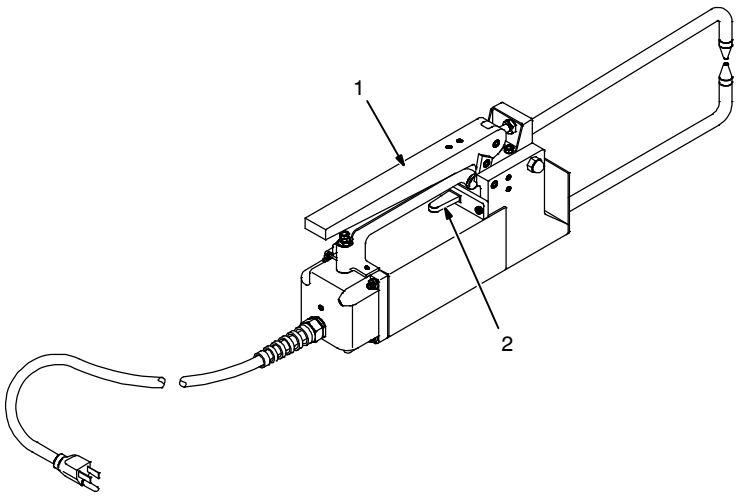
3 Start Switch

Move start switch sideways in either direction to start weld cycle. When weld cycle time ends, or the start switch is released, weld output stops, and the timer resets for another weld cycle.

4 Power Switch

146 013-B

4-2. Controls (Non-T Models)



1 Hand Lever

Use lever to open and close tongs. Close the hand lever during the welding process to compress the material between the tips. To adjust tong pressure, see Section 3-3.

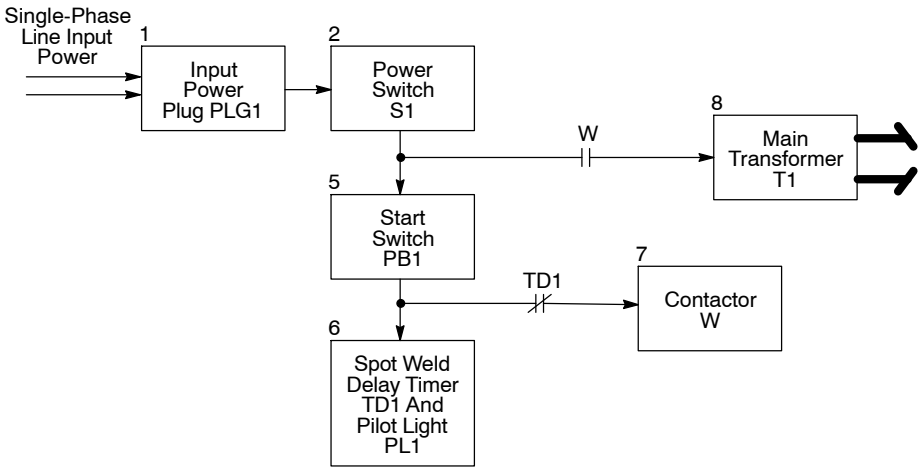
2 Start Switch

Use switch to turn weld current On and Off. Move switch sideways in either direction to start weld current. Release switch to stop weld current.

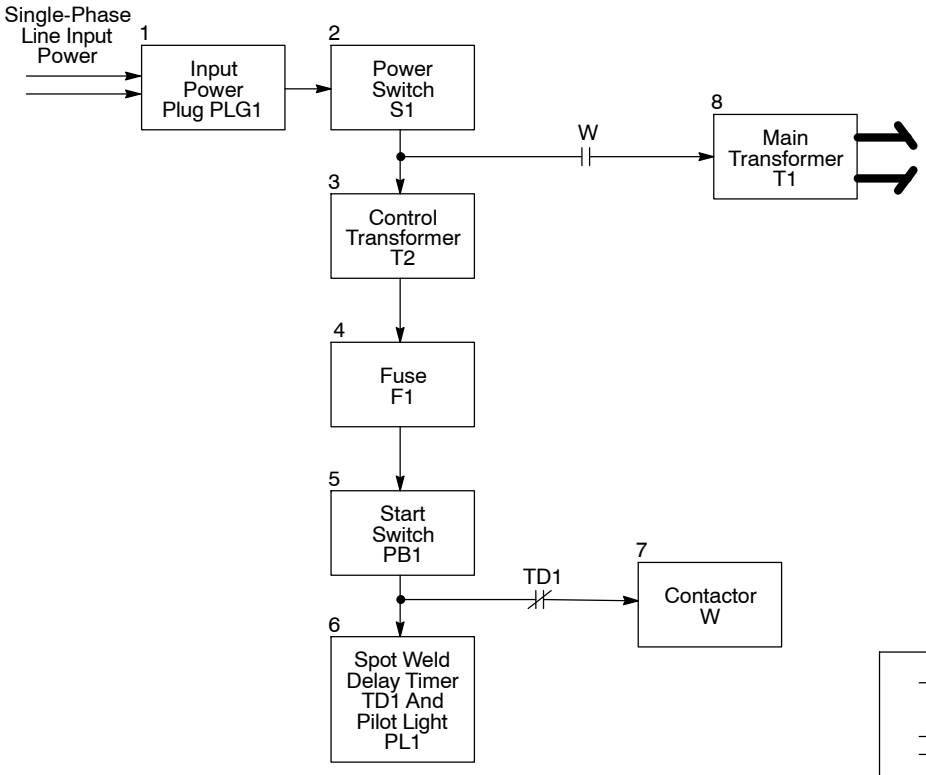
145 104-A

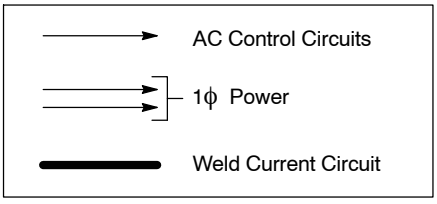
SECTION 5 – THEORY OF OPERATION

110 Volts Model With A Timer



220 Volts Models With A Timer





1 Input Power Plug PLG1

Provides connection for line input power.

2 Power Switch S1

Turns unit On/Off.

3 Control Transformer T2 (220 V Models)

Supplies power to spot timer control circuit.

4 Fuse F1 (220 V Models)

Provides overload protection for T2.

5 Start Switch PB1

Turns weld current On/Off.

6 Spot Weld Delay Timer TD1 And Pilot Light PL1

TD1 provides 0 to 5 seconds of weld time.

PL1 turns on when weld cycle begins and turns off when weld cycle ends.

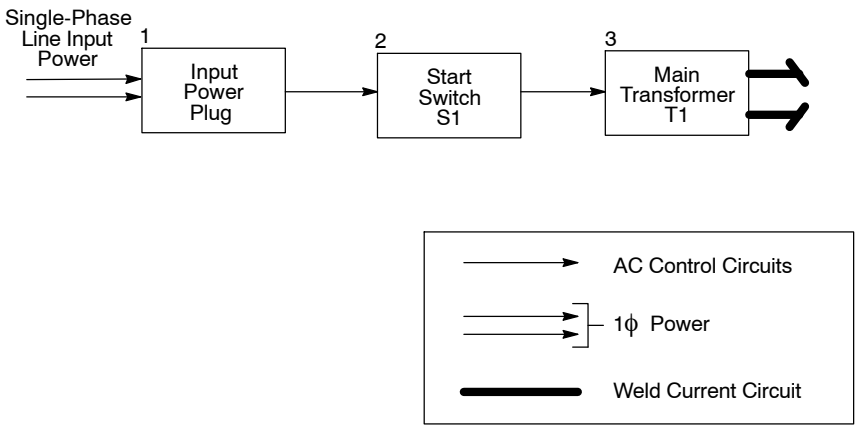
7 Contactor W

Connects line input power to main transformer T1.

8 Main Transformer T1

Supplies power to weld output circuit. The transformer steps up the current and steps down the voltage. Resistance spot welds are made with very low voltage (1-3 volts) and with very high current (4000-5000 amperes) applied under pressure for a brief time period (1-3 seconds) which causes intense localized heating and a weld.

For Models Without A Timer



1 Input Power Plug

Provides connection for line input power.

2 Start Switch S1

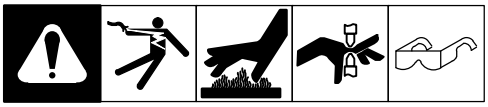
Turns weld current On/Off.

3 Main Transformer T1

Supplies power to weld output circuit. The transformer steps up the current and steps down the voltage. Resistance spot welds are made with very low voltage (1-3 volts) and with very high current (4000-5000 amperes) applied under pressure for a brief time period (1-3 seconds) which causes intense localized heating and a weld.

SECTION 6 – TROUBLESHOOTING

6-1. Troubleshooting Table



☞ *See Sections 6-2, 6-3 and 6-4 for test points and values and Section 9 for parts location.*

☞ *Use Miller Testing Booklet (Part No. 150 853) when servicing this unit.*

☞ *See the Miller Extranet for service memos that may aid in the repair of this product.*

Trouble	Remedy
No weld output.	Check and replace line fuses or reset circuit breaker. If line fuses or circuit breaker continues to open, check main transformer T1 and control transformer T2 if applicable.
	For 220 V models effective with Style No. JA41, check fuse F1, and replace if necessary (see Section 7-2).
	Check continuity of input power cord and plug PLG1, and replace if necessary.
	Check continuity of interconnecting cord, and replace if necessary.
	Check continuity of Power switch S1, and replace if necessary.
	Check continuity of start switch PB1, and replace if necessary.
	Check coil voltage and connections of contactor W. Check continuity of coil and condition of contacts. Replace W if necessary.
	Check main transformer T1 for signs of winding failure. Check continuity across winding, and check for proper connections. Replace T1 if necessary.
	For 220 V models, check control transformer T2 for signs of winding failure. Check continuity across windings, and check for proper connections. Replace T2 if necessary
No weld output; input line circuit breakers or fuses trip or blow repeatedly.	Possible internal short-circuit. Check bottom tong clamp insulation (2 pieces – see Section 9, Parts List) for cracks or arc tracks. Replace insulation if necessary.
	Possible internal short-circuit. Check main transformer insulation (2 pieces – see Section 9, Parts List) for cracks or arc tracks. Replace insulation if it is burned through or worn.
Low weld output.	Dress or replace tips (see Section 3-1).
	Check tip threads. Replace tips if necessary (see Section 3-1).
	Remove and clean tongs. Remove insulator plugs from front housing, and blow out tong holders with compressed air (see Section 3-2).
	Clean ends of tongs and tong holders (see Section 3-2).
	Check Power switch S1 contacts for pitting and wear. Replace S1 if necessary.
	Check start switch PB1 contacts for pitting and wear. Replace PB1 if necessary.
	Check contactor W contacts for pitting and wear. Replace W if necessary.
	Check tong braid for loose connections, fraying, or overheating. Replace tong braid if necessary.
Longer than normal weld time required.	Dress or replace tips (see Section 3-1).
	Clean workpieces.
	Adjust tong pressure (see Section 3-3).
	Clean ends of tongs and tong holders (see Section 3-2).
	Check input line voltage.
	Check contactor W contacts for pitting and wear. Replace W if necessary.
Burn through at point of weld.	Shorten weld time.
	Adjust tong pressure (see Section 3-3).
	Dress or replace tips (see Section 3-1).
	Realign tips (see Section 3-2).
Tips overheating.	Not enough tong pressure. Increase tong pressure.
	Weld time too long. Reduce weld time.
	Material too thick for the spot welding machine.

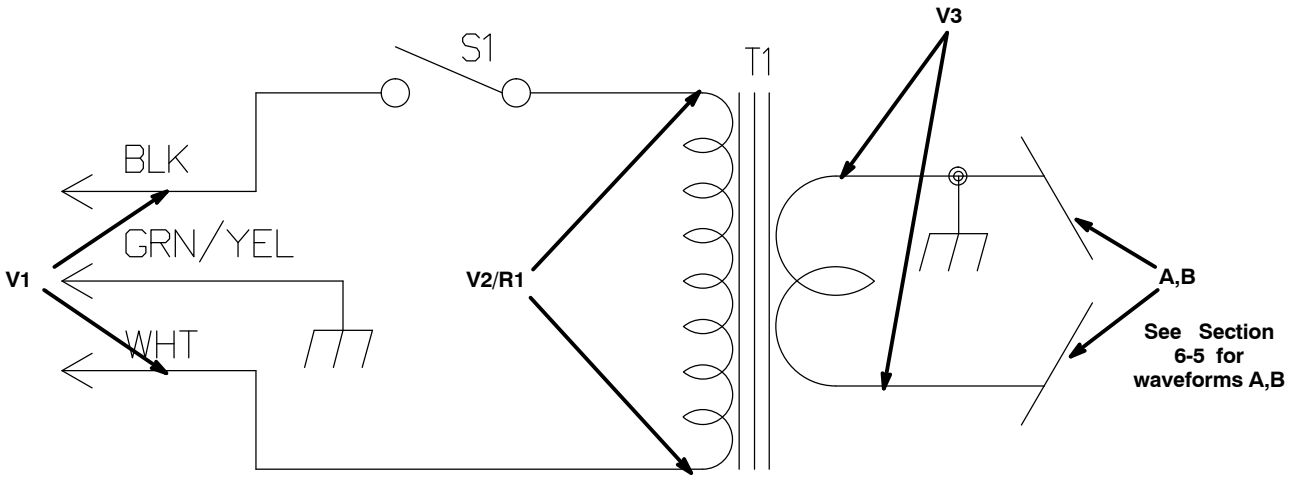
Tips arcing on material.	Not enough tong pressure. Increase tong pressure.
	Tips not aligned correctly. Realign tips or dress tips to proper diameter (see Section 3-1).
	Base material may be welded to tips causing high resistance and poor electrical current flow. Clean or dress tips (see Section 3-1).
Spatter or molten material being expelled out during welding operation.	Incorrect tip alignment. Dress tips so that they align and are flat on the material (see Section 3-1).
	Excessive tong pressure. Reduce tong pressure.
	Output amperage too high. Reduce amperage setting, if applicable (not available on air-cooled models).
	Weld time too long. Reduce weld time.
Inconsistent weld nugget.	Inconsistent weld time. Install a weld timer, if applicable.
	Not enough tong pressure. Increase tong pressure.
Hole in middle of weld.	Contact area of tips is too large. Change to a smaller tip diameter or dress tips back to original diameter (see Section 3-1).
Poor weld or no weld at tips.	Material too thick for spot welding machine. Check that material thickness is within capacity of spot welding machine.
	Tongs are too long. Reduce tong length.
	Remove coating from material for intimate contact between pieces. Remove oxides and chemical compounds including galvanized coating.
Spot weld delay timer TD1 not functioning properly.	Be sure that all spot weld delay timer TD1 leads are secure.
	Replace spot weld delay timer TD1.

Notes

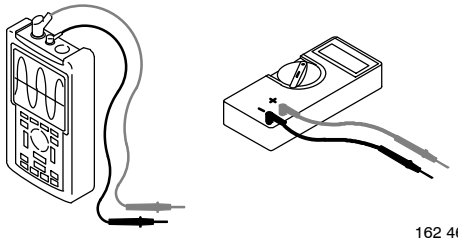
6-2. Troubleshooting Circuit Diagram For 1.5 KVA (110 Or 220V) And 2.5 KVA (220V) Models

Resistance Values	
a) Tolerance – ±10% unless specified	
b) Turn Off unit and disconnect plug before checking resistance	
R1	0.4 ohms (110V, 1.5 kVA models)
R1	0.8 ohms (220V, 2.5 kVA models)
R1	1.1 ohms (220V, 1.5 kVA models)

Voltage Readings	
a) Tolerance – ±10% unless specified	
b) Reference – as indicated	
c) Wiring Diagram – see Section 8	
V1	115 or 230 volts AC
V2	115 or 230 volts AC with S1 closed
V3	1.6 volts AC open-circuit voltage (1.5 kVA)
V3	2.5 volts AC open-circuit voltage (2.5 kVA)



Test Equipment Needed:

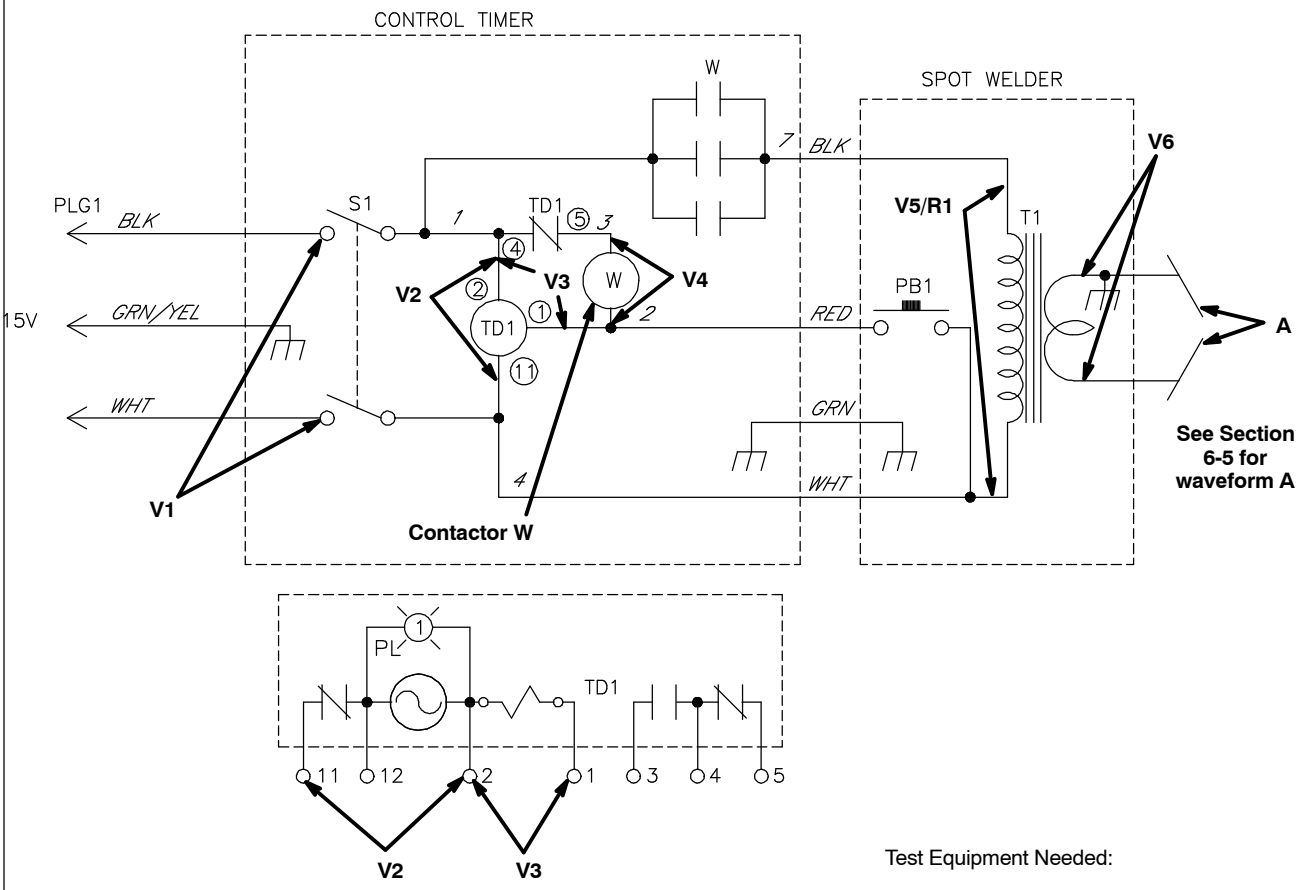


162 467-B

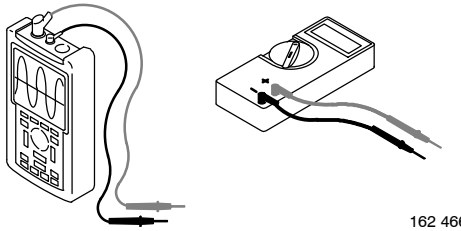
6-3. Troubleshooting Circuit Diagram For 1.5 KVA, 110 Volts Model

Resistance Values	
a) Tolerance – ±10% unless specified	
b) Turn Off unit and disconnect plug before checking resistance	
R1	0.4 ohms

Voltage Readings	
a) Tolerance – ±10% unless specified	
b) Reference – as indicated	
c) Wiring Diagram – see Section 8	
V1	115 volts AC
V2	115 volts AC with S1 closed
V3	115 volts AC with PB1 closed
V4	115 volts AC with PB1 closed and TD1 not timed out
V5	115 volts AC with W energized
V6	1.6 volts AC open-circuit voltage



Test Equipment Needed:

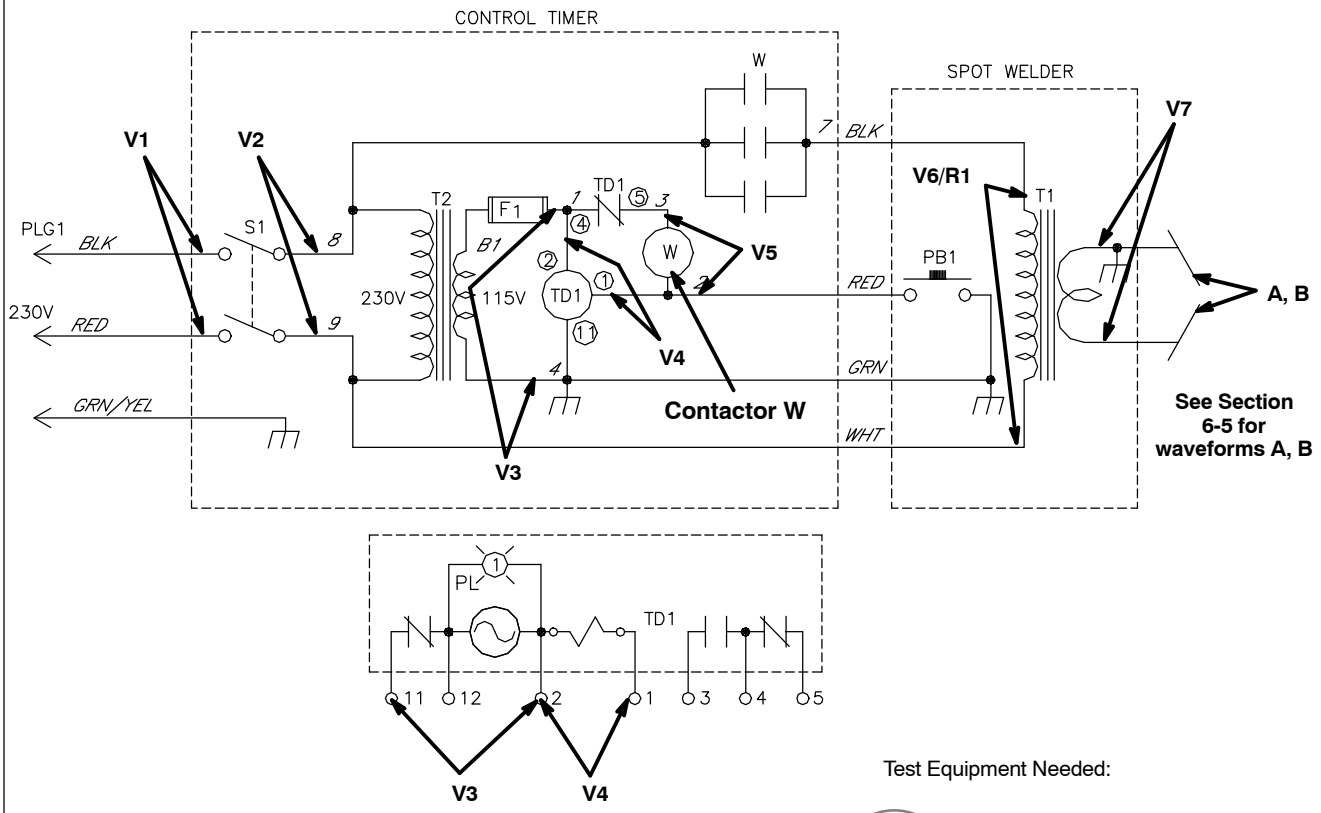


162 466-C

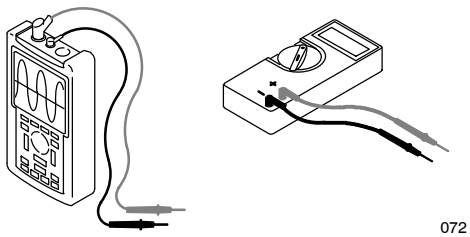
6-4. Troubleshooting Circuit Diagram For 1.5 And 2.5 KVA, 220 Volts Models

Resistance Values	
a) Tolerance – ±10% unless specified	
b) Turn Off unit and disconnect plug before checking resistance	
R1	1.5 kVA, 220 V model: 1.1 ohms 2.5 kVA, 220 V model: 0.8 ohms

Voltage Readings	
a) Tolerance – ±10% unless specified	
b) Reference – as indicated	
c) Wiring Diagram – see Section 8	
V1	230 volts AC
V2	230 volts AC with S1 closed
V3	115 volts AC with S1 closed
V4	115 volts AC with PB1 closed
V5	115 volts AC with PB1 closed and TD1 not timed out
V6	230 volts AC with W energized
V7	1.5 kVA, 220 V model: 1.6 volts AC open-circuit voltage 2.5 kVA, 220 V model: 2.5 volts AC open-circuit voltage

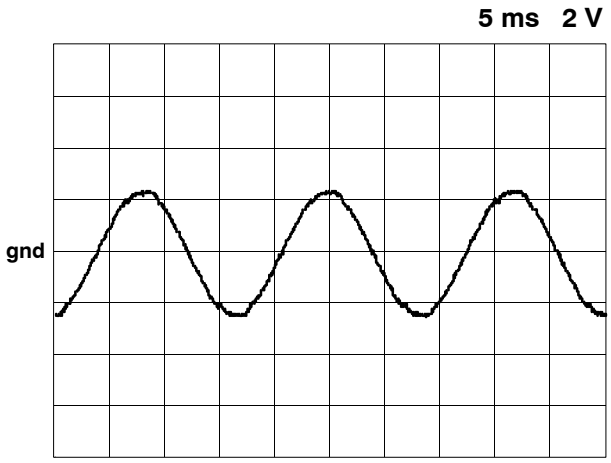


Test Equipment Needed:

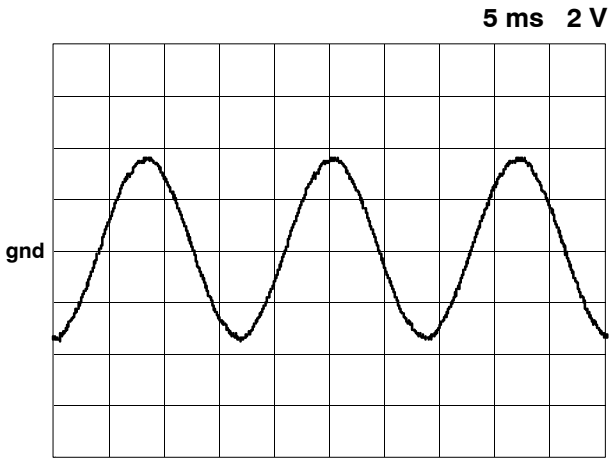


072 065-C

6-5. Waveforms For Sections 6-2, 6-3 And 6-4

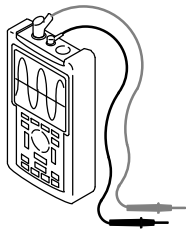


A. AC Open-Circuit Voltage For 1.5 KVA Models



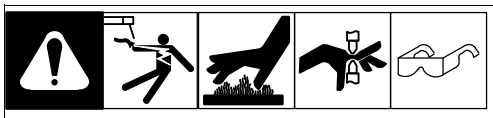
B. AC Open-Circuit Voltage For 2.5 KVA Model

Test Equipment Needed:

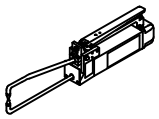
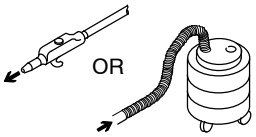


SECTION 7 – MAINTENANCE

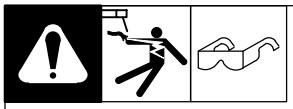
7-1. Routine Maintenance



Disconnect power before maintaining.

Every Use	3 Months	6 Months
 Inspect Tips	 Replace Unreadable Labels	 OR Blow Off Or Vacuum Unit During Heavy Service, Clean Monthly

7-2. Overload Protection For 220 Volts Model

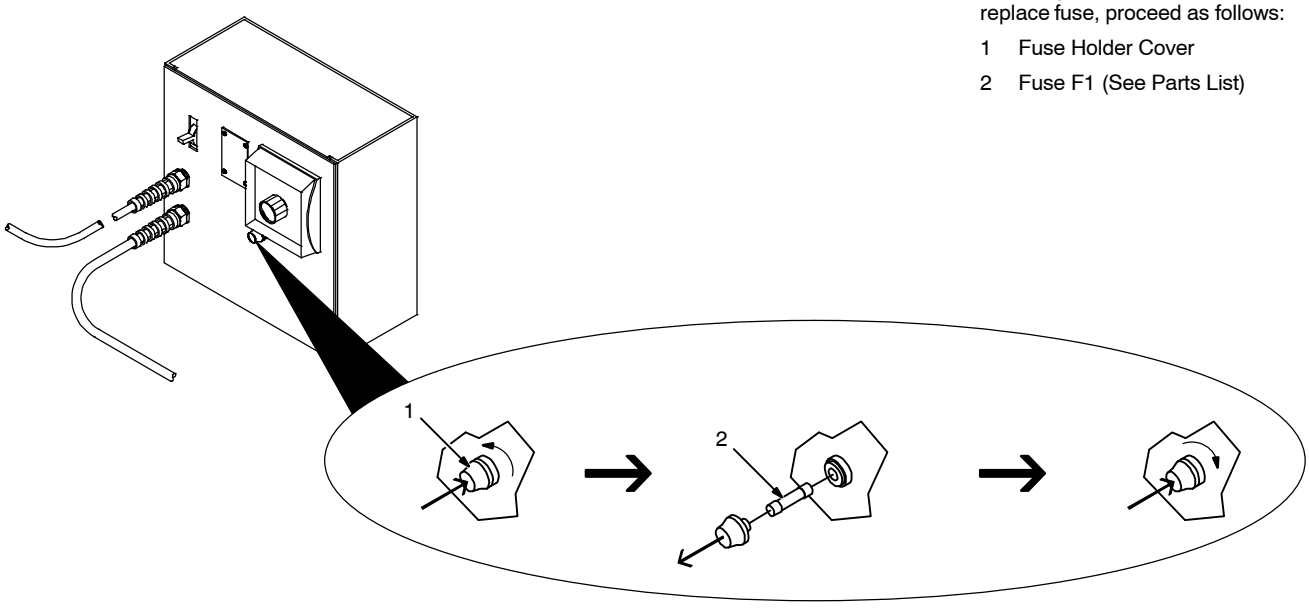


Turn Off unit and disconnect input power.

If fuse opens, unit shuts down. To replace fuse, proceed as follows:

1 Fuse Holder Cover

2 Fuse F1 (See Parts List)



Ref. 800 233-A / Ref. 800 185-A

SECTION 8 – ELECTRICAL DIAGRAMS

☞ *The circuits in this manual can be used for troubleshooting, but there might be minor circuit differences from your machine. Use circuit inside machine case or contact distributor for more information.*

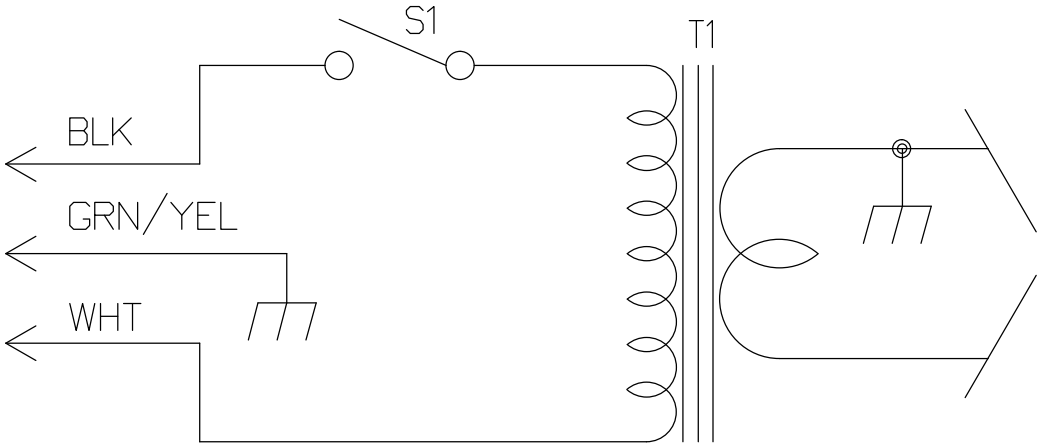
The following is a list of all diagrams for models covered by this manual.

Model	Serial Or Style Number	Circuit Diagram	Wiring Diagram
MSW-41, MSW-42, LMSW-52	5595 or S1A1 thru KD-52	478-A1♦♦	
	KD-53 and following	162 467-B	
MSW-41T	HD-6 and following	162 466-C	
MSW-42T & LMSW-52T	HD-6 thru JA-40	048 101-A	
	JA-41 and following	072 065-C	

⚠ WARNING

ELECTRIC SHOCK HAZARD

- Do not touch live electrical parts.
- Disconnect input power or stop engine before servicing.
- Do not operate with covers removed.
- Have only qualified persons install, use, or service this unit.



162 467-B

Figure 8-1. Circuit Diagram For MSW-41, MSW-42, And LMSW-52 Effective With Style No. KD-53 And Following

⚠ WARNING	• Do not touch live electrical parts. • Disconnect input power or stop engine before servicing. • Do not operate with covers removed. • Have only qualified persons install, use, or service this unit.
ELECTRIC SHOCK HAZARD	

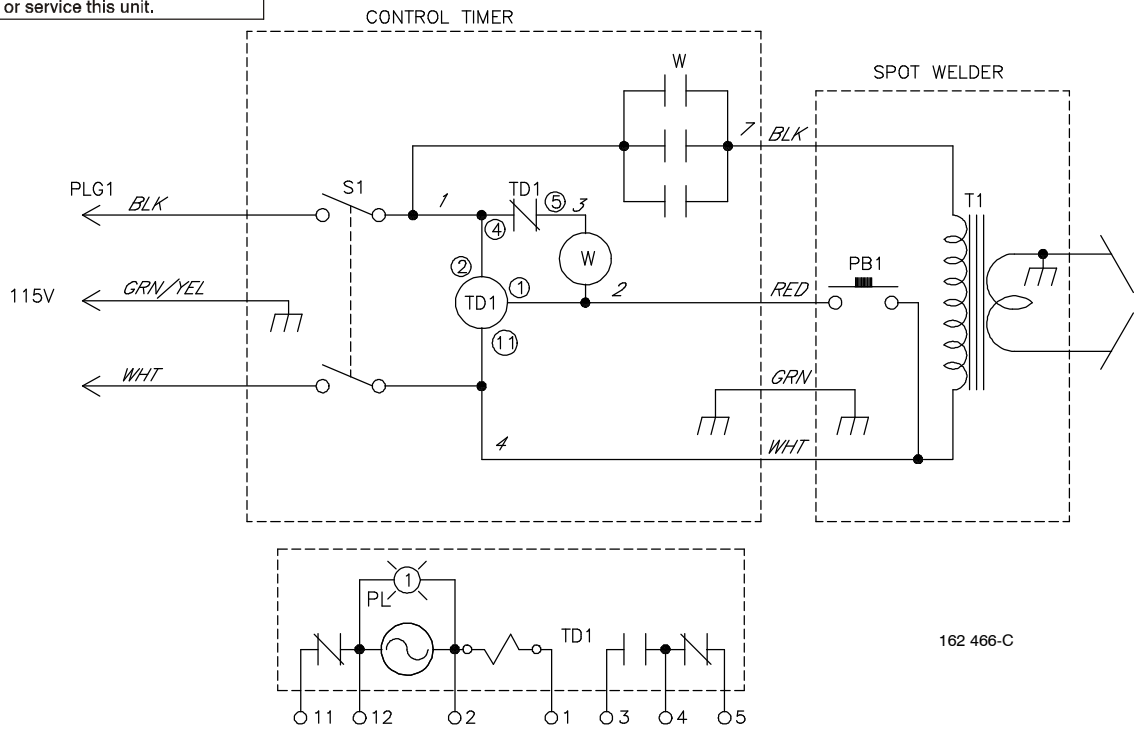


Figure 8-2. Circuit Diagram For MSW-41T Effective With Style No. HD-6 And Following

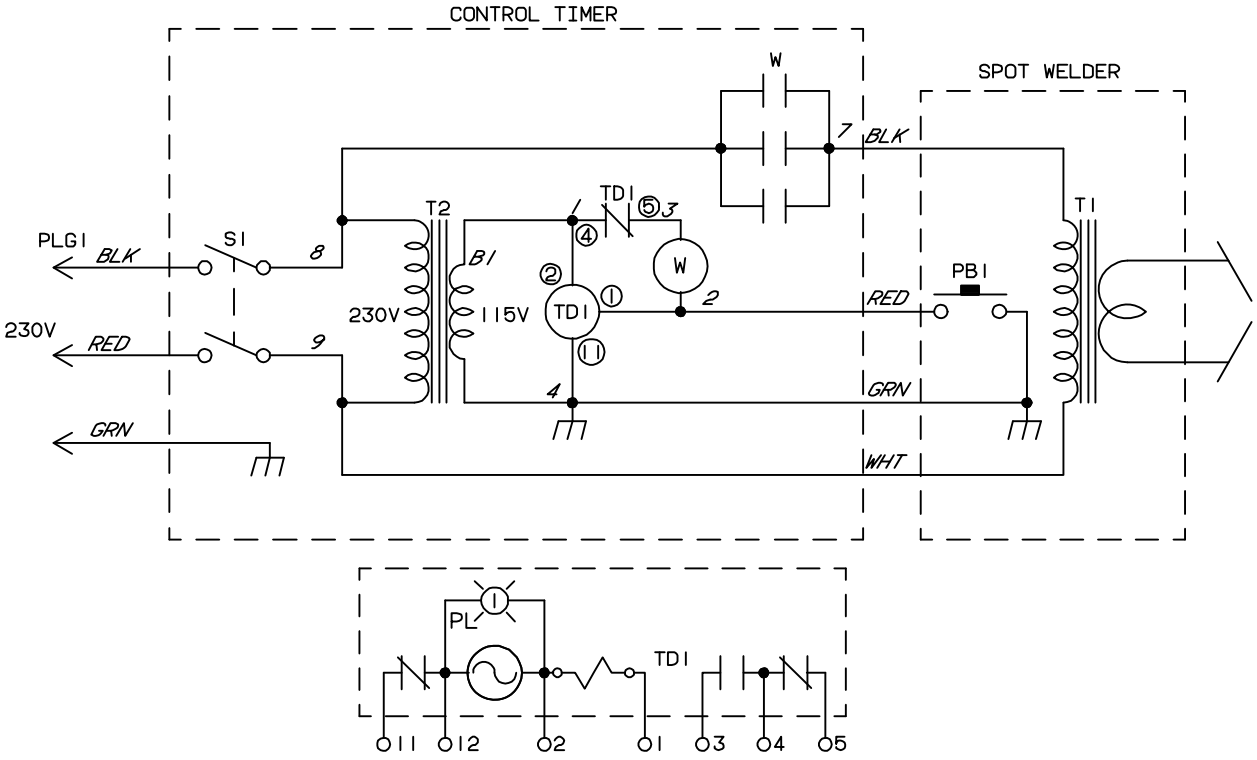


Figure 8-3. Circuit Diagram For MSW-42T And LMSW-52T Effective With Style No. HD-6 Thru JA-40

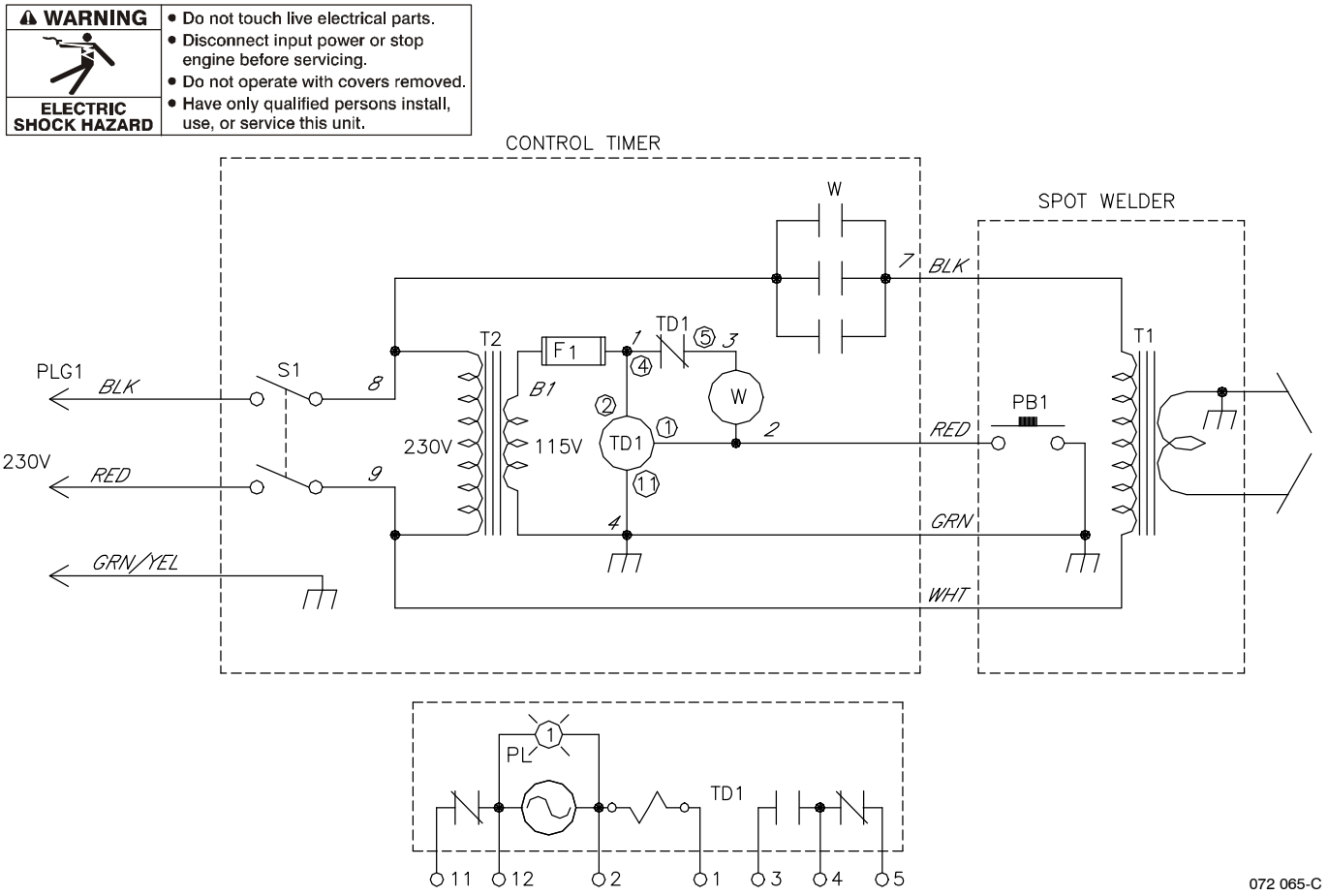


Figure 8-4. Circuit Diagram For MSW-42T And LMSW-52T Effective With Style No. JA-41 And Following

TM-716D 2011–03

Eff. w/Style Number HD-6

Processes

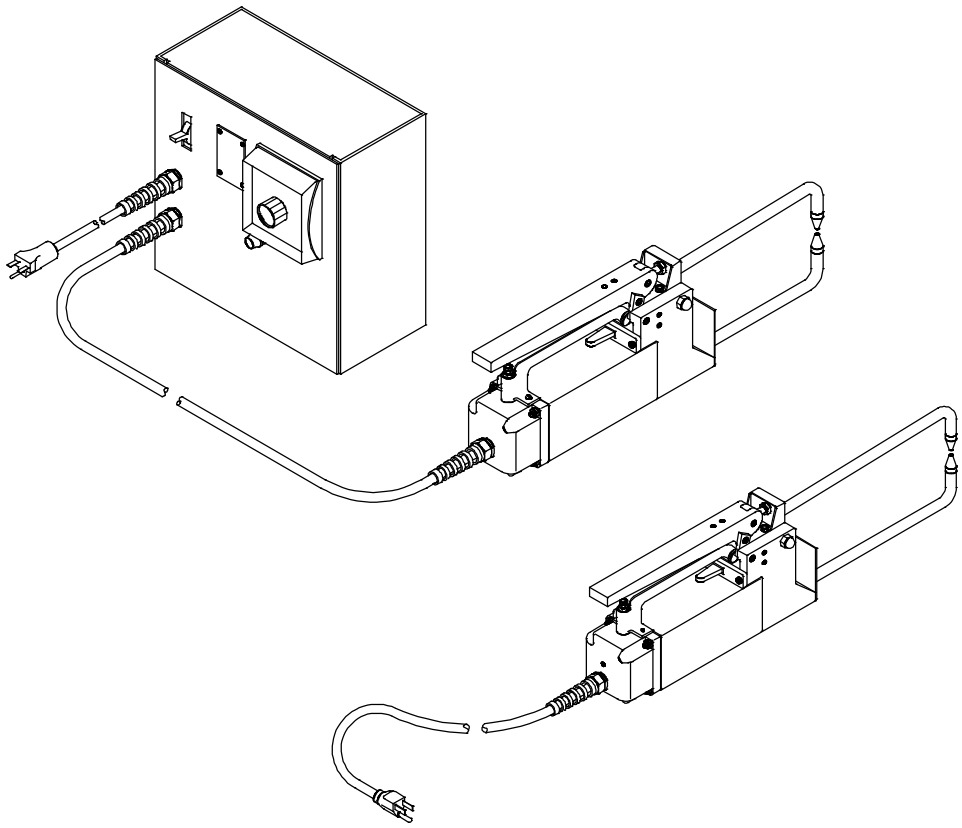
Resistance Spot Welding

Description

1 Phase

MSW-41, MSW-41T, MSW-42, MSW-42T, LMSW-52, And LMSW-52T

Portable Resistance Spotwelders



PARTS LIST

Visit our website at

www.MillerWelds.com

☞ *Hardware is common and not available unless listed.*

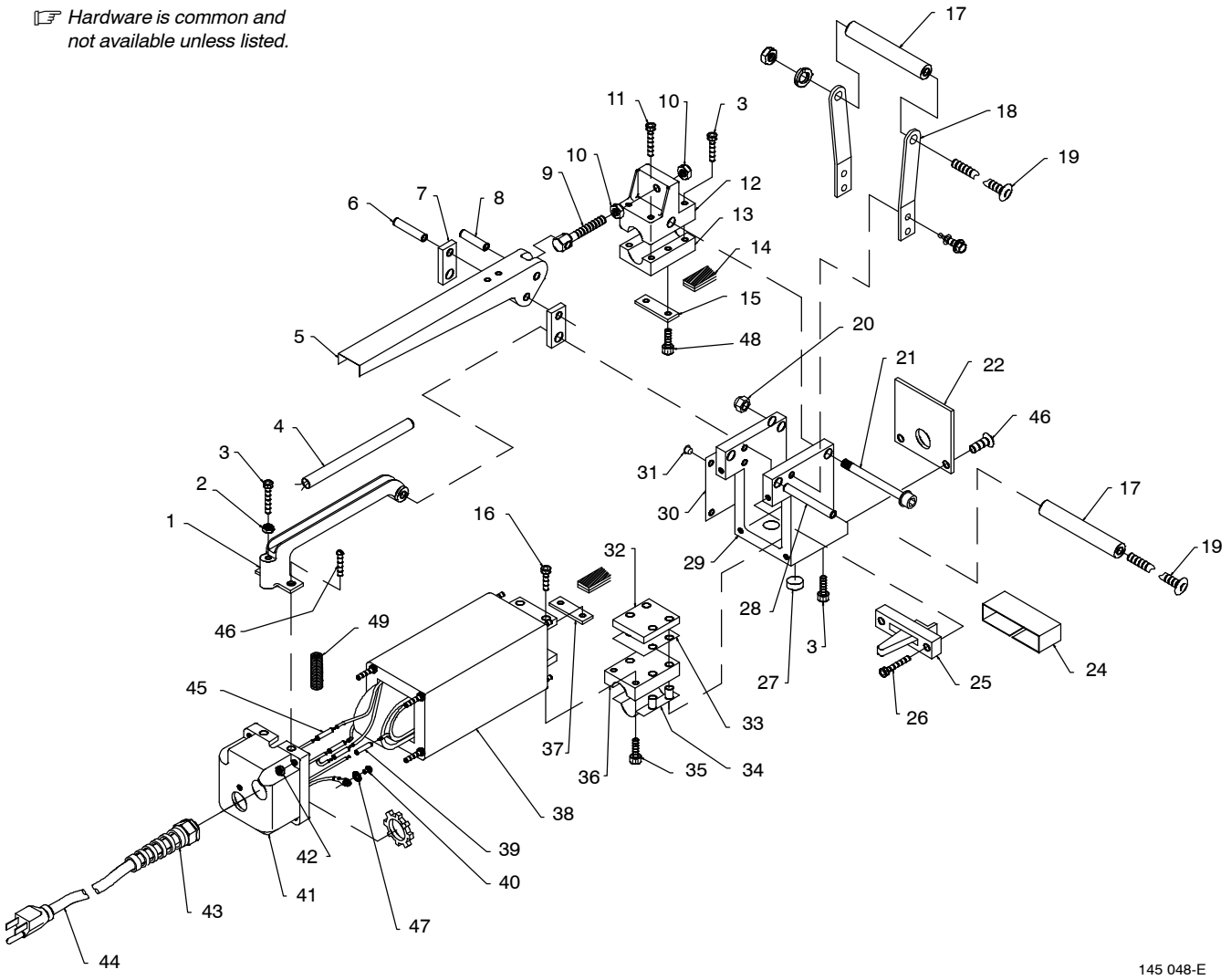


Figure 9-1. Main Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity Model 41,41T	42,42T	52,52T
1		019 643	HANDLE, carrying	1	1	
1		019 646	HANDLE, carrying			1
2		601 865	NUT, stl hex full fnsh .250-20	1	1	1
3		602 009	SCREW, cap stl sch .250-20 x 1.250	7	7	7
4		023 660	WIRING HARNESS, switch	1	1	1
5		023 199	LEVER, operating	1	1	
5		082 090	LEVER, operating			1
6		010 714	PIN, spring CS .312 x 1.750	1	1	1
7		010 712	LINK, tgl connecting	2	2	2
8		010 713	PIN, spring CS .312 x 1.250	1	1	1
9		010 715	BOLT, pressure adjustment	1	1	1
10		601 876	NUT, stl hex jam .437-20	2	2	2
11		010 668	SCREW, cap stl sch .250-20 x 1.500	2	2	3
12		017 668	HOLDER, tong top	1	1	1
13		010 709	CLAMP, tong top	1	1	1
14		010 623	BRAID, tong set of four	1	1	1

Item No.	Dia. Mkgs.	Part No.	Description	Quantity Model 41,41T	42,42T	52,52T

Figure 9-1. Main Assembly (Continued)

15		010 716	CLAMP, connecting top tong braid	1	1	1
16		602 008	SCREW, .250-20 x 1.000soc hexhd (Prior to LC622590)	4	4	4
16		602 008	SCREW, .250-20 x 1.000soc hexhd (Eff w/LC622590)	2	0	2
17		602 262	HANDLE, wood	1	1	1
18		024 130	BRACKET, mtg handle	2		
19		601 778	BOLT, crg stl .250-20 x 4.500	1	1	1
20		601 854	NUT, al hex .375-24	2	2	2
21		010 710	STUD, stl .375-24 x 3.375 (Prior to JE29)	1	1	1
21		095 297	STUD, stl .375-24 x 3.750 (Eff w/JE29)	1	1	1
22		026 607	GUARD, spatter	1	1	1
24		070 017	INSULATION, switch	1	1	1
25	S1	*011 746	SWITCH, control (includes)	1	1	1
		011 291	CONTACT, assembly switch	1	1	1
		023 987	CONTACT, switch	1	1	1
		011 292	TOGGLE, switch	1	1	1
		070 035	BASE	1	1	1
26		122 210	SCREW, 10-32 x .625hexwhd slt stl	2	2	2
27		026 759	INSULATOR, plug sec scr	2	2	2
28		010 711	PIN, spring .375-3.00	1	1	1
29		017 667	HOUSING, front (Prior to KE664390)	1	1	1
29		169 122	HOUSING, front (Eff w/KE664390)	1	1	1
30			NAMEPLATE (order by model and style number)	1	1	1
31		602 024	SCREW, drive U 2 x 3/16	4	4	4
32		010 708	RETAINER, clamp tong	1	1	1
33		026 605	INSULATION, bottom clamp	1	1	1
34		181 179	INSULATION, tong	1	1	1
35		602 004	SCREW, cap stl sch .250-20 x .750	2	2	2
36		010 707	CLAMP, bottom tong	1	1	1
37		039 052	CLAMP, threaded connecting tong braid (included w/Item 5, Fig 6-2)	1	1	1
38	T1	+036 825	TRANSFORMER, pwr main (Prior to JE35) (Fig 9-2)	1		
38	T1	+095 345	TRANSFORMER, pwr main (Eff w/JE35) (Fig 9-2)	1		
38	T1	+036 950	TRANSFORMER, pwr main (Prior to JE35) (Fig 9-2)		1	
38	T1	+095 350	TRANSFORMER, pwr main (Eff w/JE35) (Fig 9-2)		1	
38	T1	+036 826	TRANSFORMER, pwr main (Prior to JE35) (Fig 9-2)			1
38	T1	+095 354	TRANSFORMER, pwr main (Eff w/JE35) (Fig 9-2)			1
		143 140	LABEL, warning general precautionary	1	1	1
39		600 675	SPLICE, butt 16-14 wire	2	2	2
40		111 630	SCREW, 10-32 x .250hexwhd slt stl	1	1	1
41		019 642	COVER	1	1	1
42		601 847	NUT, stl slflkg hex mscr 10-32	4	4	4
43		115 104	CONNECTOR, clamp cable 1/2 in (Prior to LB015364)	1		
43		134 900	STRAIN RELIEF, cable flexible (Eff w/LB015364)	1		
43		115 104	CONNECTOR, clamp cable 1/2 in (Prior to LB022769)		1	1
43		134 900	STRAIN RELIEF, cable flexible (Eff w/LB022769)		1	1
44		094 503	CABLE, pwr 10ft 16ga 3/C	1		
44		094 504	CABLE, pwr 10ft 16ga 3/C		1	1
45		026 763	TUBING, gl acrylic No. 7 x 2.500	3	3	3
46		128 237	SCREW, 10-32 x .500hexwhd slt stl	4	4	4
47		602 205	WASHER, tooth .195 id x 0.381 od x .025t stl pld int #10 (Eff w/LC622590)	1	0	1
48		217 299	SCREW, .250-20 x .87 soc hex gr8 pln (Eff w/LC622590)	2	0	2
49		110 463	TUBING, corrugated plastic slit .250 dia (Eff w/MA500121K)	1		1

*Recommended Spare Parts.

+When ordering a component originally displaying a precautionary label, the label should also be ordered.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and style number required when ordering parts from your local distributor.

Replace Coils At Factory Or Factory Authorized Service Station.

Item No.	Part No.	Description	Quantity Model 41,41T	42,42T	52,52T
		Figure 9-2. Transformer, Power Main (Figure 9-1 Item 38)	036 825 095 345	036 950 095 350	036 826 095 354
1	026 601	INSULATION	1	1	
1	026 602	INSULATION			1
2	033 610	COIL, pri 115V (Prior ro JE35)	1		
2	095 312	COIL, pri 115V (Eff w/JE35)	1		
2	033 611	COIL, pri 230V (Prior to JE35)		1	
2	095 309	COIL, pri 230V (Eff w/JE35)		1	
2	033 612	COIL, pri 230V (Prior to JE35)			1
2	095 308	COIL, pri 230V (Eff w/JE35)			1
3	010 157	STUD, stl No. 10-32 x 8.125	4	4	
3	010 156	STUD, stl No. 10-32 x 11.125			4
4	137 943	NUT, core stud	4	4	4
5	+033 123	BAR, sec	1	1	
5	+033 122	BAR, sec			1

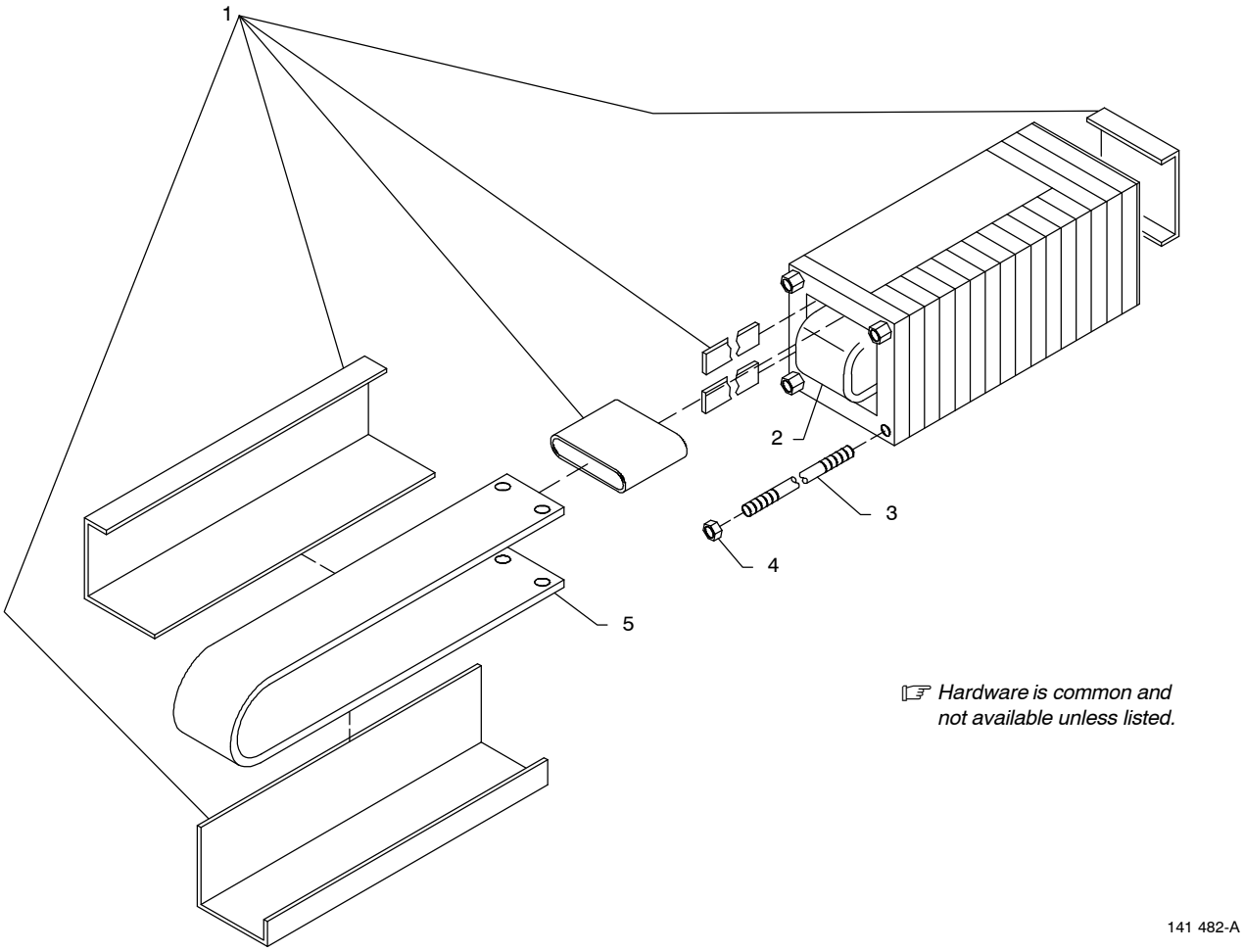


Figure 9-2. Transformer, Power Main

+Item 37 on Figure 9-1 is included when ordering these items as replacement parts.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and style number required when ordering parts from your local distributor.

Item No.	Dia. Mkgs.	Part No.	Description	Quantity Model 115V	230V
			Figure 9-3. Timer, Spot (230V Illustrated)	041 081	041 082
1			NAMEPLATE, (order by model and style numbers)	1	1
2	S1	124 511	SWITCH, tgl DPST 40A 600VAC	1	1
3	W	190 525	CONTACTOR, def prp 40A 3P 120 VAC coil w/links	1	1
4		032 152	CABINET	1	1
5	T2	605 856	TRANSFORMER, control 230/460		1
6		168 308	PANEL, front	1	1
7	TD1	605 952	TIMER, delay reset 5sec 120V	1	1
8		046 432	HOLDER, fuse		1
9	F1	*012 653	FUSE, mintr gl .5A		1
10		087 179	CABLE, interconnecting 10ft	1	1
11	PLG1	096 822	CABLE, pwr 10ft 16ga 3/c	1	
11	PLG1	096 481	CABLE, pwr 10ft 16ga 3/c		1
12		115 104	CONNECTOR, clamp cable 1/2 in (Prior to LB015364)	2	
12		134 900	STRAIN RELIEF, cable flexible (Eff w/LB015364)	2	
12		115 104	CONNECTOR, clamp cable 1/2 in (Prior to LB022769)		2
12		134 900	STRAIN RELIEF, cable flexible (Eff w/LB022769)		2

☞ *Hardware is common and not available unless listed.*

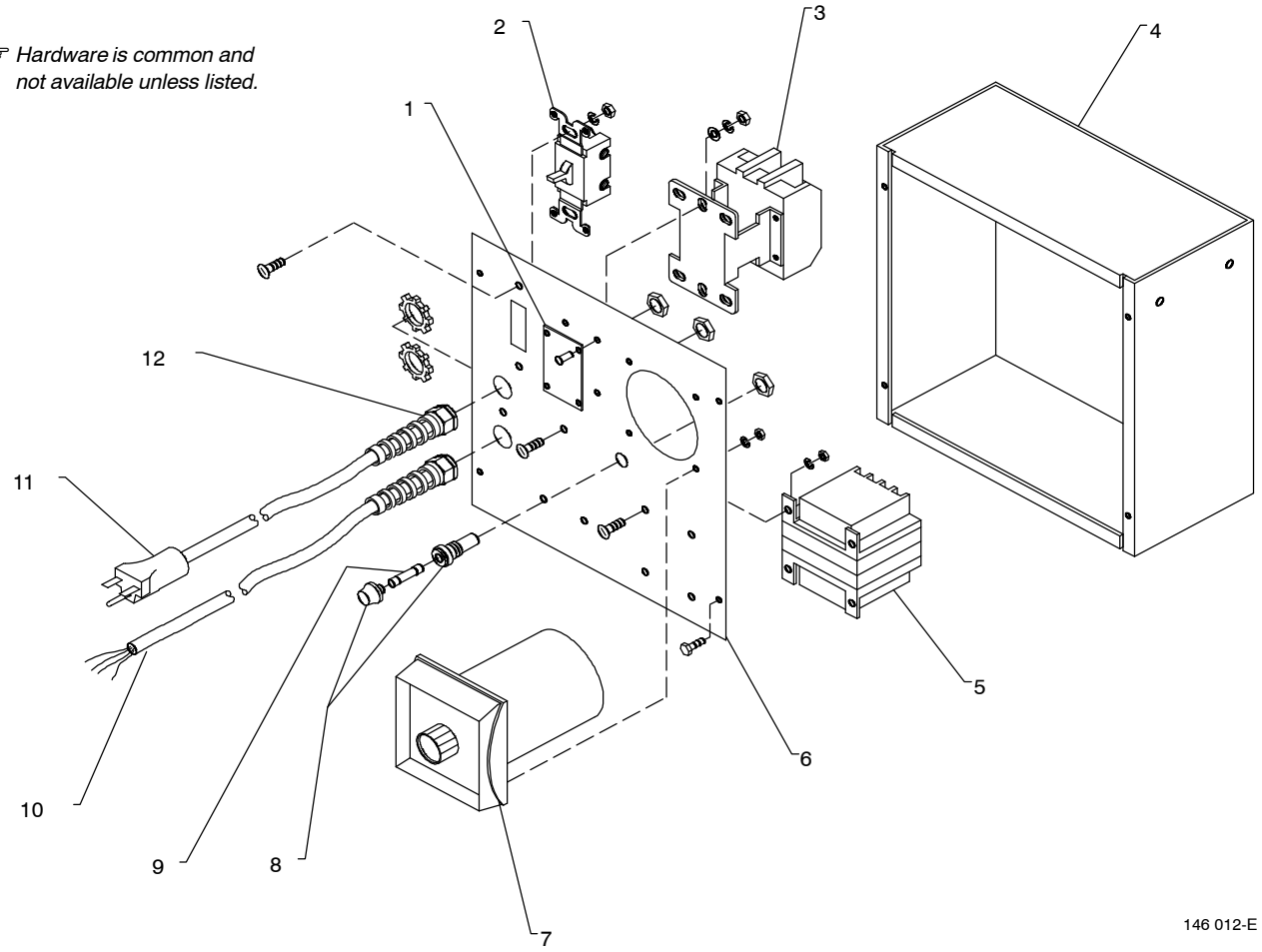
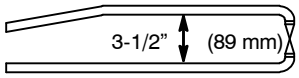
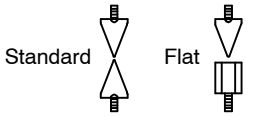
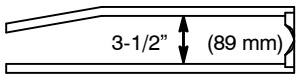
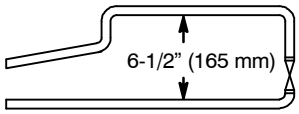
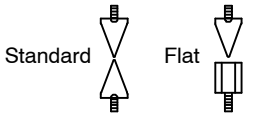
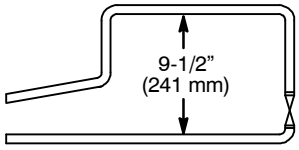
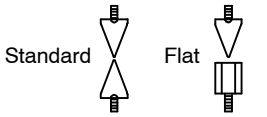
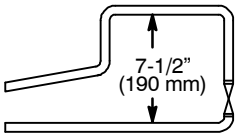
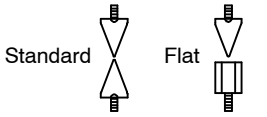
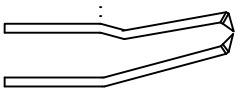
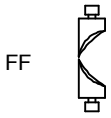
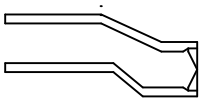
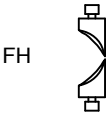


Figure 9-3. Timer, Spot (230V Illustrated)

*Recommended Spare Parts.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and style number required when ordering parts from your local distributor.

Chart 9-1. Spot Welder Tips

 **STANDARD**	6" (152 mm) **040 197** 12" (305 mm) **040 198** 18" (457 mm) **040 199**	 **040 211** **040 212**
 **MO OFFSET**	6" (152 mm) **040 200** 12" (305 mm) **040 201** 18" (457 mm) **040 202**	 **040 215**
 **TT-6**	12" (305 mm) **040 203** 18" (457 mm) **040 204**	 **040 211** **040 212**
 **TT-9**	12" (305 mm) **040 205** 18" (457 mm) **040 206**	 **040 211** **040 212**
 **G-7**	8" (203 mm) **040 207**	 **040 211** **040 212**
 **FF**	8" (203 mm) **040 208**	 **040 213**
 **FH**	5" (127 mm) **040 209**	 **040 214**

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Notes

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