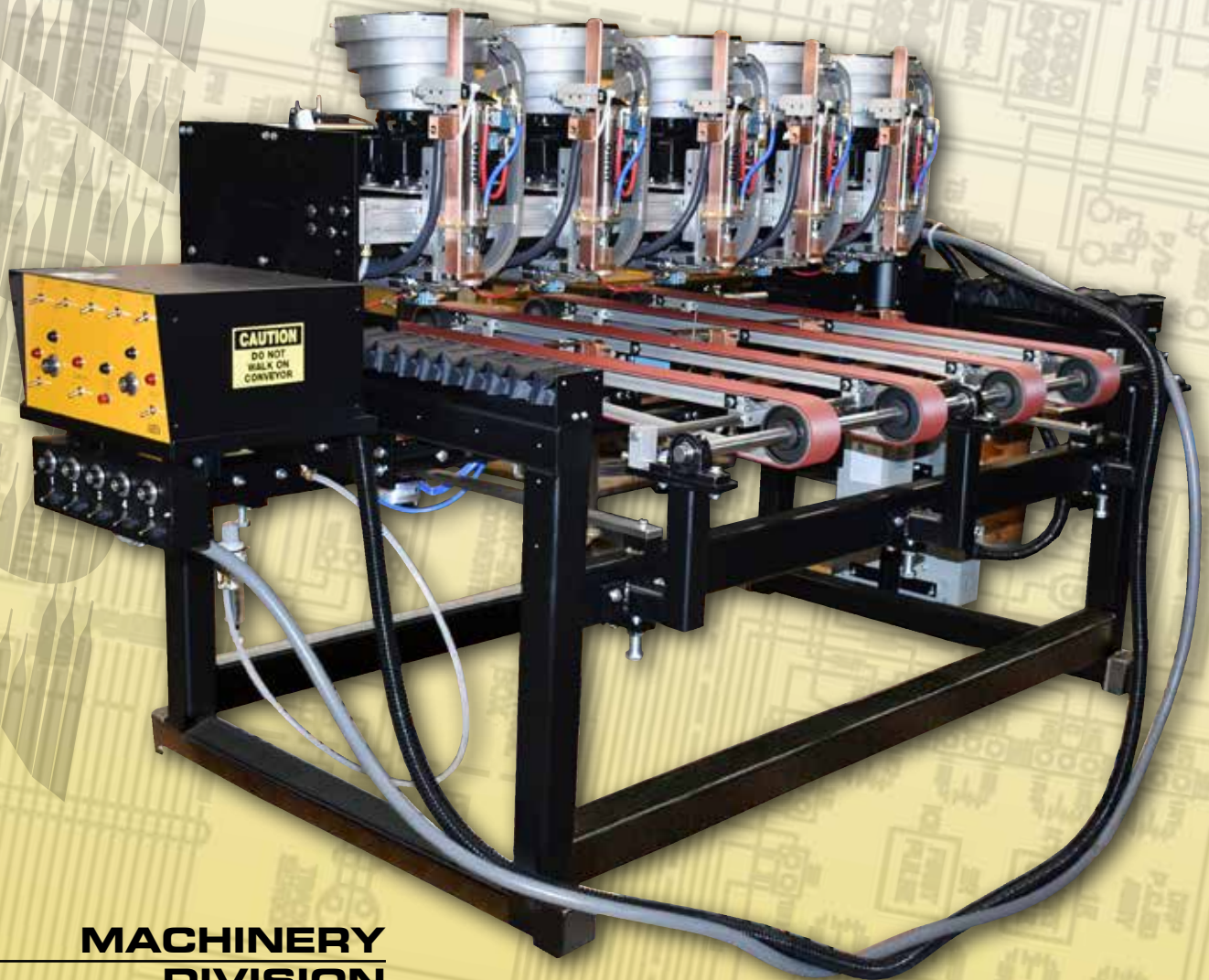


MULTIHEAD

MULTIHEAD PINSPOTTER



**MACHINERY
DIVISION**

OWNER'S MANUAL

Part #:
40012 (240V)
40013 (480V)

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MH507A SETUP

- 1) a)** FGMH 507A Version 208-230 VAC, 3 Phase, 60 Amp minimum circuit protection.
Circuit protection must be a High Magnetic type circuit breaker or slow blow type fuses.
(Due to the inherent inrush current produced by this machine when welding Duro Dyne recommends using the next size larger current capacity wire over code when possible.)
Connect 3 Phase to 60 Amp Disconnect Box.
Connect Control Console to a 120 VAC power supply.
Control Box is internally fused for 3 Amps
- b)** FGMH 507A Version 480 VAC, 3 Phase, 30 Amp minimum circuit protections.
Circuit protection must be a High Magnetic type circuit breaker or slow blow type fuses.
(Due to the inherent inrush current produced by this machine when welding Duro Dyne recommends using the next larger current capacity wire over code when possible).
Connect the 3 Phase to 30 Amp Disconnect Box.
Connect Control Console to a 120 Vac power supply.
Control Box is internally fused for 3 Amps
- 2)** Locate the holes on the side of the MH507A Frame and bolt the control console support bracket using the supplied bolts.
- 3)** Place the control console on the bracket and connect it to a source of 110V AC power, or wire a 110 VAC source to terminals 33 (neutral) and 32 (hot) inside of the control console.
- 4)** Connect the air line to the regulator.
- 5)** Adjust the regulator pressure to 100 psi
- 6)** Repeat steps 7 through 10 for all five vibrator bowls.
- 7)** Place a Bowl and Vibrator Assembly in position on its mounting plate.
- 8)** Position the bowl so there is a slight space between the bowl and the feed track, (1/8"- 1/4"). This is to minimize noise. (Make sure to re-torque Allen Bolt to 25 ft/lbs.)
- 9)** Plug the vibrator power plug into its receptacle on the rear plate of the machine.

Your MH507A is now ready for initial adjustments.

INTRODUCTION

The new MH507A represents the finest production-line Pinspotter available today. Backed by Duro Dyne's years of pinspotting experience the MH507A Multi Head system will provide maximum fastening quality with minimum maintenance

The carriage design eliminates the need for stopping the material for installation of fasteners. Combined with welded clip pins; the carriage ensures a quality product at production speeds of up to 25 ft per minute

The solid state components, proven on thousands of machines, are centrally located to make preventive maintenance easy. All components are easily reached through simple access panels.

This manual is designed to be your guide to keeping your MH507A operating at peak performance for years to come.

IMPORTANT: Always follow manufacturer's recommendations for proper safety and handling procedures, for all materials used in conjunction with this machine as outlined in Safety Data Sheet (SDS) for each product

MH507A INITIAL ADJUSTMENTS

- 1)** Push the High Voltage Disconnect Switch to the "ON" position. Turn on the air.
- 2)** Turn the MH507A control console power switch "ON" the light will go on.
- 3)** Turn the weld switch to "OFF" the weld power light will go off.
- 4)** Turn the carriage switch to "OFF" the carriage light will go off.
- 5)** Turn all head switches on the MH507A control console to the "ON" position.
- 6)** Cycle the unit observing which heads come down and whether their movement is synchronized. (All heads should come down together.) If one or more heads are slow or fast, loosen the nut on the quick exhaust adjustable muffler and turn the screw until the head is in sync with the others; clockwise to slow down, counter clockwise to speed up.

NOTE: All heads are synchronized at the factory. However, as air components are "broken in," slight adjustment may be needed. Therefore, head speed should be checked.

Repeat steps 7 through 11 for all five bowls.

- 7)** Add clip pins to vibrator bowl (hopper).
- 8)** Turn the vibrator switch # 1 on the vibrator control Panel to the "ON" position.
- 9)** With the feed track empty, Turn Vibrator control until the hopper begins to vibrate.
- 10)** Adjust the vibrator speed control #1 on the vibrator control panel so that the clip pins climb the spiral track inside the vibrator bowl without vibrating off.
- 11)** When the clip pins fill the track up to the sensor assembly, the vibrator will automatically shut off.
- 12)** If your unit does not have a carriage system, skip to the MH507A Operation Section otherwise proceed to Step 13.
- 13)** Turn the carriage switch to "ON" the carriage light will go on.
- 14)** Cycle the unit observing the carriage movement. The carriage must move smoothly and evenly with no binding. (Wand switch must be in down position. Carriage won't continue to walk if wand switch is up.)

SEE APPENDIX II

NOTE: The carriage is factory adjusted to a production line speed of approximately 25 FPM

Machines installed in a Vicon or Mestek coil line have a wand switch for controlling the carriage return.

- 15)** For the carriage return adjustment:
 - A)** Turn power to control console to off
 - B)** Standing in front of the machine, pull the carriage toward you.
 - C)** Turn power to control console on.
 - D)** Carriage will return to the "Home Position." Adjust Flow Controls on the carriage cylinder until the carriage returns smoothly.

The MH507A is now ready for operation

MH507A OPERATION

- 1)** Be sure the high voltage disconnect switch is in the "ON" Position air is at 100 PSI, and the MH507A control console is plugged in or wired and on.
- 2)** Be sure the MH507A control console power switch and the weld power switch are in the "ON" position, both lights will be lit.

NOTE: For the Carriage models make sure the carriage switch is in the "ON" position.

- 3)** Place the head switches in the "ON" position on the MH507A control console for the heads you desire to use.
- 4)** Put the vibrator switches on the vibrator control panel for the heads you desire to use in the "ON" position
- 5)** Never actuate the unit with the weld switch in the "ON" position and no metal over the weld tip severe pitting on the lower weld tip will occur if this is done.
- 6)** For maximum weld quality, make sure the sheet metal rides over and is in flat contact with the lower weld tips.
- 7)** The weld time and dwell time settings control the weld quality of all heads of the MH507A Pinspotter. The weld time is the length of time the transformers are on, a fraction of a second is all the time generally needed for a quality weld. Excess time wastes energy and burns pins. **(If the pin glows red up to the washer the weld time is too long.)** The weld timer should be set for the minimum time required for a strong weld, the dwell time is the length of time the upper welding tip remains in down position. The dwell time should always be longer than then weld time to allow the weld to cool.
- 8)** It is suggested that you pretest a run using a small sample of steel and liner you intend to use in final liner production. Different thickness of metal and or liner may require slight adjustments in weld and dwell time. Only change timer settings when material change results in poor weld quality or performance.

MAINTENANCE

- 1)** To prolong the weld tip life and improve weld quality, it is imperative that the weld tips are always kept clean. For best results, use a solvent to remove adhesive from tips; a wire brush to remove any galvanize deposits; and a fine emory cloth to smooth tip surfaces.
- 2)** When the lower weld tip becomes worn in one area, loosen the locking cap screw and rotate the point of wear away from the point of contact of the tip. Additional lower weld tips and plates can be ordered from your local distributor.
- 3)** Depending on usage and maintenance, upper welding tips will have to be periodically replaced. Replacement upper weld tips can be ordered from your local distributor. To replace the upper weld tip loosen the locking cap screw and remove the weld tip. Insert new tip with undercut running parallel to frame, and then lock in place. Cycle the machine to check feeding.
- 4)** If feeding is erratic, readjust the upper weld tip height by loosening the lock nut and then turning the weld cylinder shaft clockwise to raise the tip, Lock the tip in place with locking nut.

5) Do not lubricate the air supply. Do not put lubricant in regulator assembly.

6) Grease the pillow block bearings every 3-6 months through grease fittings on the top of the bearing.

NOTE: Never apply any type of oil on brake bar surfaces. Should oil or grease accidentally get on the bar remove the lubricant immediately to protect the brake shoes. Failure to do this will render the carriage inoperable.

THEORY OF OPERATION MH507A

When the MH507A is given a signal to start (either by pushing the center red button on the control console or by jumping terminals 35 and 36 through an automatic controller) the signal flows through the Interrupt Relay contacts and activates the Dwell Timer. The Dwell Timer energizes the Dwell Relay which:

- A)** Activates the Carriage/Brake Solenoid, locking the brakes and moving the carriage forward.
- B)** Energizes the First Pulse Relay locking it in.
- C)** Deactivates both Feed Interrupt Relays preventing pin feeding during the dwell cycle.
- D)** Passes signal to the head switches at the top of the MH507A control console.
- E)** Energizes the Interrupt Timer which activates the Interrupt Relay preventing another signal reaching the Dwell Timer for as long as the Interrupt Timer is set.

The head switches in the control console (when they are in "ON" position) pass the 24 volt signal through the Feed Reed Switches of their respective heads activating their Dwell Solenoid and driving the weld tip down.

As the weld tip moves down a signal flows through the Weld Switch on the MH507A Control Console and activates the Weld Timer. The Weld Timer energizes the Weld Relay which passes 220 volts to the solid state Weld Relay which activates the 220 volts (or 480 volts if unit is wired for 440 volts) to the welding transformers, powering the transformers for as long as the weld timer is set.

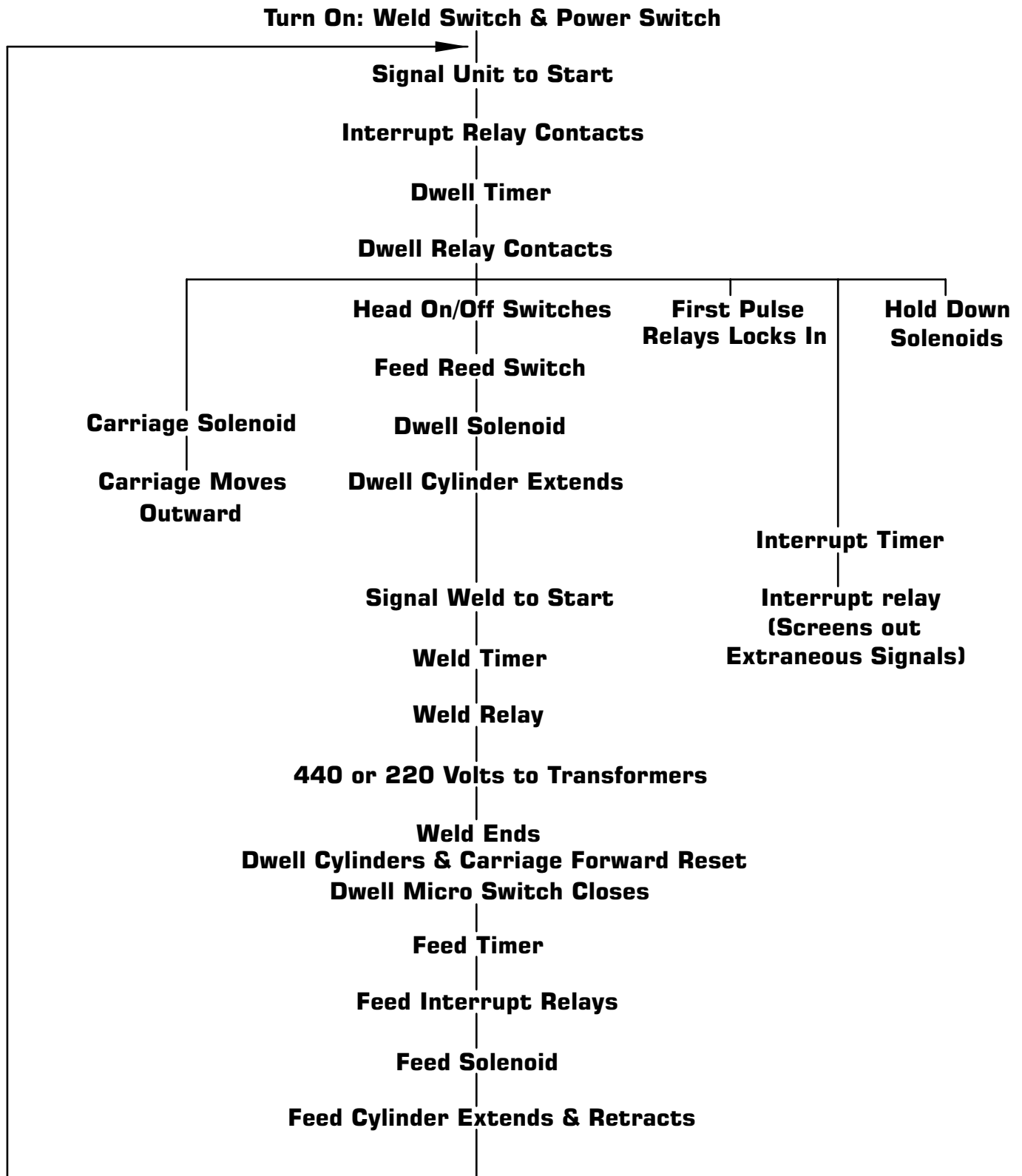
After the Dwell Timer cycles, the Dwell Relay deactivates causing:

- A)** All dwell cylinders to retract.
- B)** The carriage brakes return and
- C)** Re-energizes the Feed Interrupt Relays. When each Dwell Cylinder is fully retracted it closes the Dwell Micro Switch passing a signal to the Feed Timer. The feed timer in turn passes a signal through the Feed interrupt relays activating the Feed Solenoid causing the Feed Cylinder to extend. This breaks the feed reed switch preventing a dwell cycle during feed. At the end of the feed timer cycle, the Feed Cylinder retracts closing the Feed Reed Switch and readying the unit for another cycle.

The reed switch on each feed cylinder and the micro switch on top of each of the head assemblies acts as interlocks preventing the feed and dwell cylinders extending at same time.

NOTE: If your unit is not a carriage unit, the theory of operation is the same except the dwell relay does not activate the carriage brake solenoid.

MULTIHEAD FLOW CHART



MH507A AUTO SHIFT SERVICE GUIDE

Duro Dyne has called upon its many years of resistance welding experience in designing the MH507A Pinspotter, Your unit has been rigorously factory tested and inspected to provide you with many years of dependable service

SIMPLIFIED STEP BY STEP PROCEDURE

The Service Guide supplements your Owner's Manual, and is designed to help you quickly and systematically isolate and identify the correct Pinspotter problems. Troubleshooting procedures are grouped according to symptoms in three functional areas; Feed and Dwell Assemblies, Vibrator and Weld Quality.

EASY TO USE

To use The Guide properly, you simply:

- 1) IDENTIFY SYMPTOM(S) IN THE INDEX ON PAGE 7.
- 2) TURN TO THE APPROPRIATE GUIDE SECTION.
- 3) FOLLOW THE TEST PROCEDURES IN THAT SECTION IN SEQUENCE.

With the help of this Guide you should be able to correct most problems that occur. However, if you feel that a particular problem is beyond your capability by all means, contact your Duro Dyne distributor, your Duro Dyne Tech Service or the nearest Duro Dyne facility.

WHAT TO DO BEFORE YOU BEGIN TROUBLESHOOTING

CONSULT THE MANUAL

Before you refer to this Service Guide, you should consult your Owner's Manual and re check all "Set Up", "initial Adjustment", "Operation" and "Maintenance" procedures.

INSPECT THE UNIT

If the problem still persists, the next step is a MH507A visual inspection. Turn off the electricity that is, disconnect your MH507A from its power supply - and carefully check both the Control Console and the machine for loose, broken or disconnected wires. Also check the air circuit for leaky air connections or cut hoses.

POSITION IT PROPERLY

The location of your MH507A in relation to the power supply and the size of its power connection can greatly affect the weld quality. For maximum efficiency position your unit as close as possible to the power supply and use #6 (or bigger) wire for the connection to the breaker box.

HOW TO IDENTIFY WELD QUALITY SYMPTOMS

By WELD we mean that the transformers are energized, sending a pulse of electricity through the clip pin, causing it to begin to fuse to the sheet metal.

To properly troubleshoot weld quality problems, you must first pinpoint the symptom by test welding clip pins to bare sheet metal. The symptom will then show up in one of four categories:

- 1)** Pins weld to bare metal but not on lined work.
- 2)** Pins weld to bare metal but can easily be removed.
- 3)** Pins weld to bare metal but remain on weld tip as it retracts.
- 4)** Pins do not weld at all.

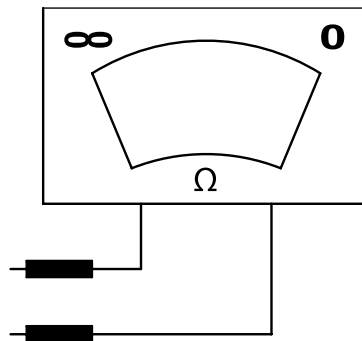
Before performing any troubleshooting steps in the weld Quality Section, always check:

- 1)** Air Pressure for minimum 100PSI during usage of unit
- 2)** Input voltage for minimum 220V (or 480V on those units so wired)
- 3)** Weld and Dwell Timer for correct settings - See Owner's Manual "Operation" section.
- 4)** Upper and Lower Weld Tips for extreme wear
- 5)** Foreign Material in the Air Supply (i.e. Oil or Moisture).

WHEN MEASURING RESISTANCE (OHMMETER)

HOW TO USE TEST METERS WITH THIS GUIDE

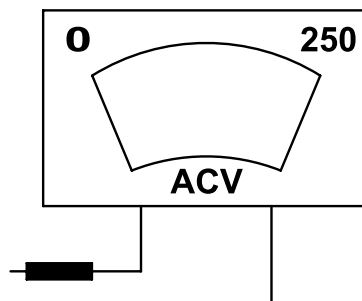
Since the MH507A utilizes electric components to control the operation of the air circuit, it is necessary to use a voltmeter and ohmmeter to perform the simple procedures outlined in this guide.



- 1) Always disconnect power supply.
- 2) Set ohmmeter at x1000 scale and keep it there for all resistance readings.
- 3) Touch two probes together and "zero" the ohmmeter.

WHEN MEASURING AC VOLTAGES (VOLTMETER)

Just remember that an electric circuit is much like an air circuit. When something goes wrong, the circuit must be traced through, with each component individually tested for correct operation in a given sequence. That's why it's so important to check the components in each troubleshooting section in the order of their appearance in the guide



- 1) Set voltmeter at nearest scale above (never below) voltage you wish to read.
- 2) On timer controlled voltage readings, movement of meter is more important than true voltage reading. (A timer's cycle can begin and end before the meter has time to register an accurate voltage reading).
- 3) Voltage readings listed in this Guide represent ideal situations. Actual readings vary according to input voltage and meter accuracy. Minimum voltage required for satisfactory MH507A operation is 220V 480V for units so wired.

SERVICE INDEX

DWELL AND FEED SECTION

- 1)** No heads cycle. (A cycle consists of the weld tips moving down & retracting followed by the feed cylinders moving out & retracting).
- 2)** One or more heads do not cycle, but at least one does.
- 3)** All dwell cylinders do not retract (tip remains down)
- 4)** Sluggish movement of welding tip.
- 5)** No feed - All heads.
- 6)** One or more heads do not feed, but at least one does.
- 7)** Slide pusher does not retract
- 8)** Slide pusher hits upper weld tip.
- 9)** Slide pusher throws clips past upper weld tip.
- 10)** Slide pusher does not place pins on upper weld tip.
- 11)** Sluggish slide pusher.

VIBRATOR SECTION

- 12)** Vibrator does not vibrate at all.
- 13)** Vibrator vibrates but not enough to move the pins up the hopper.
- 14)** Vibrator does not shut off.

WELD QUALITY SECTION

- 15)** No weld.
- 16)** Pins weld to bare metal but remain on upper weld tip as it retracts.
- 17)** Pins weld to bare metal but not through liner or can easily be removed.

TRANSPORT SECTION

- 18)** Carriage does not move out.
- 19)** Carriage does not return at end of sheet.

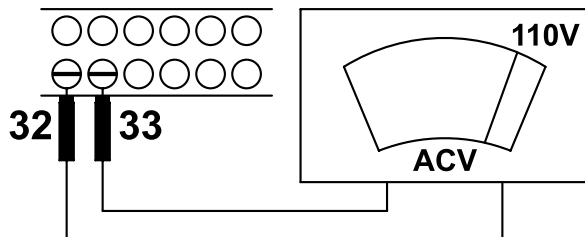
I. NO HEADS CYCLE

With air and electricity on, depress the red cycle switch on Duro Dyne MH507A Controller. If the unit cycles then the problem is in the coil line controller. Contact your coil line manufacturer. If the unit does not cycle proceed to Step 1.

- 1.** Check to make sure the line cord of the control console is plugged into a source of 110 volt. Check to make sure the 220V (480 on 440 units) High Voltage Disconnect Switch is in the "ON" position.

NOTE: Make sure you have 110 VAC at Terminals 33 & 32.

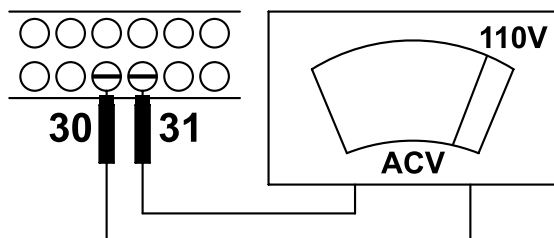
- 2.** Check to make sure power switch is in the "ON" position.
- 3.** If the power lamp is lit, skip to Step 7.
- 4.** If the dwell lamp lights up when the cycle switch is pushed, skip to Step 11.
- 5.** Place a volt meter across terminals 32 and 33 in the control console.



- A.** If the meter reads 110 volts proceed to Step 6.
- B.** If the meter reads 0 volts, the control console is not receiving 110 volts. Check the wires for breaks or loose connections.

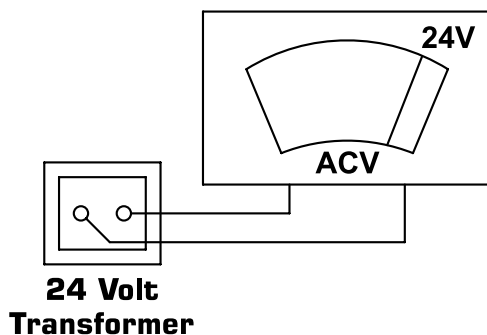
- 6.** **A.** Remove the 3 AMP fuse from rear of control console. Place the OHM meter on both ends of the fuse. If meter reads "0" proceed to step B. If meter reads ∞ "infinity symbol" replace the fuse.

- B.** Place the voltmeter across terminals 30 and 31 in the control console.



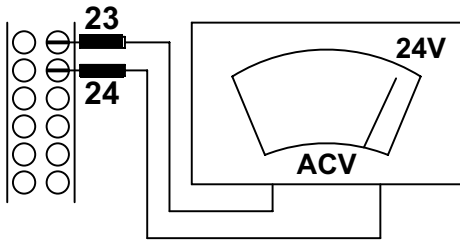
- i.** If the meter reads "110" volts proceed to Step C.
- ii.** If the meter reads "0" volts replace the control console on/off switch.

- C.** Place the voltmeter across the terminals of the 24 volt transformers in the control console.



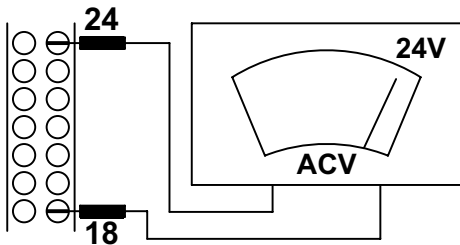
- i.** If the meter reads "24" volts proceed to Step 7.
- ii.** If the meter reads "0" volts replace the 24 volt transformers

7. Place a voltmeter across terminals 23 and 24 in the control console.



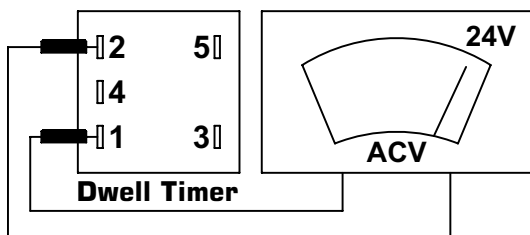
- A.** If the meter reads "24" volts proceed to Step 8.
- B.** If the meter reads "0" volts check for bad connections or broken wires from the transformers to terminals 23 and 24.

8. Place voltmeter across terminals 24 and 18. Depress the cycle switch.



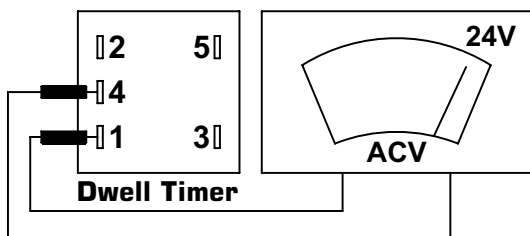
- A.** If the meter reads "24" volts proceed to Step 9.
- B.** If the meter reads "0" volts replace the cycle switch.

9. Place a voltmeter across terminals 1 and 2 or the dwell timer in the control console. Depress the cycle Switch.



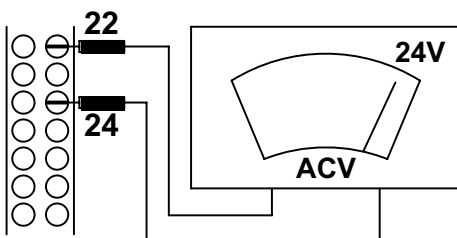
- A.** If the meter reads "24" volts proceed to Step 10.
- B.** If the meter reads "0" volts replace the interrupt relay.

10. Disconnect the wire to terminal 3 or 5 of the dwell timer. Place a voltmeter on terminals 1 and 4 of the dwell timer in the control console. Depress the cycle switch.



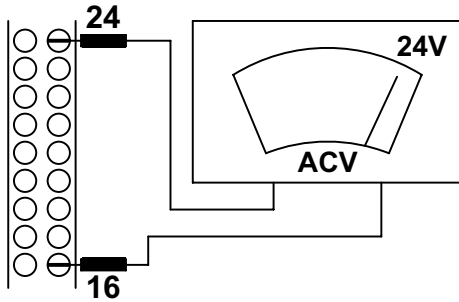
- A.** If the meter reads "24" volts replace the wire to 3 or 5 of the timer and proceed to Step 11.

11. Place a voltmeter on terminals 22 and 24 in the control console. Depress the cycle switch.



- A.** If the meter reads "24" volts proceed to Step 12.
- B.** If the meter reads "0" volts replace dwell relay.

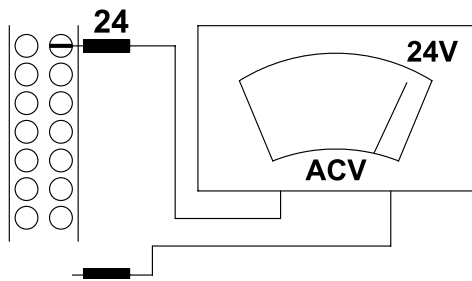
- 12.** Place a voltmeter on terminals 24 and 19 in the control console. Depress the cycle switch.



A. If the meter reads "24" volts something has been missed or you are in the wrong section of this manual. If the meter reads 0 volts, replace the dwell relay.

II. ONE OR MORE HEADS DO NOT CYCLE BUT AT LEAST ONE DOES

- 1.** Check that the head switch for the inoperative head(s) is (are) in "ON" position. Turn the Dwell Time to "10".
- 2.** Place one lead of a voltmeter on terminal 24 in the control console. Place the other lead on the terminal indicated for the head(s) not operating. Push the cycle switch.

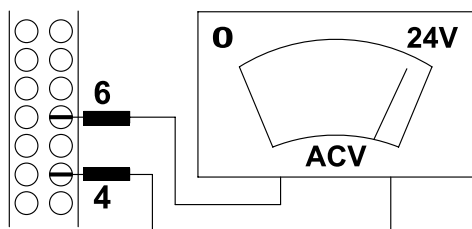


A. For each head; if the meter reads "24" volts, proceed to Step 3.

B. If meter reads "0" volts, replace corresponding Head Switch in control console.

Head 1 - 24 and 1
Head 2 - 24 and 2
Head 3 - 24 and 3
Head 4 - 24 and 4
Head 5 - 24 and 5

- 3.** Take the cover off the terminal tray (located under the Dwell Solenoid) for the head(s) that are not operating. Place a voltmeter on terminals 6 and 4 and press the cycle switch.

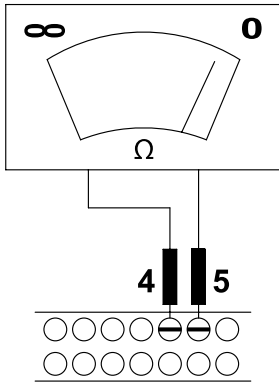


A. If the meter reads "24" volts proceed to Step 4.

B. If the meter reads "0" volts the problem is a broken wire or connection from the control console to the terminal strip.

SHUT OFF the air and the electric

4. Place all head switches in the "OFF" position. Place an ohm meter across terminals 4 and 5 in the terminal tray. Push the slide pusher (s) into the fully retracted position then extend the slide pusher(s) forward all the way.

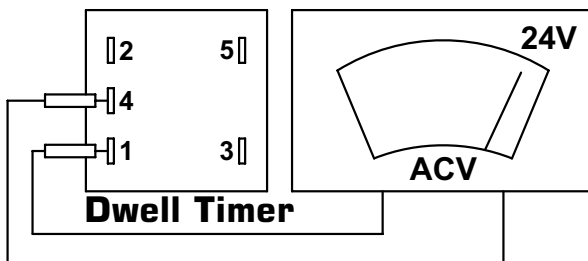


A) If the meter reads "0" when the pusher is all the way back and ∞ "infinity symbol" when fully extended. Replace the dwell solenoid.

B) If the meter reads infinite when the pusher is retracted, loosen the set screws on the reed switch mounted on the feed cylinder and move back and forth until a "0" reading is obtained on the meter. Failure to get a "0" reading indicates a bad reed switch and it must be replaced. If the meter reads "0" in both the extended and retracted positions, the reed switch must also be replaced.

III. ALL DWELL CYLINDERS DO NOT RETRACT (THE WELD TIP REMAINS DOWN)

1. Disconnect the potentiometer wires from terminals 5 and 3 on the dwell timer in the control console. Place a jumper wire across terminals 5 and 3 of the dwell timer. If nothing happens, proceed to Step 2. If the cylinder retracts, replace potentiometer.
2. Place a voltmeter across terminals 1 and 4 of the dwell timer.



A. If the meter reads "24" volts replace dwell timer.

B. If the meter reads "0" volts replace dwell relay.

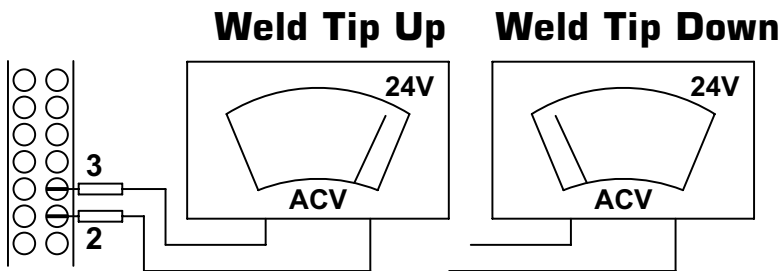
IV. SLUGGISH MOVEMENT OF WELDING TIP

1. Check the Air Pressure
Air pressure must be minimum 80 psi during cycle. If trouble persists Proceed to Step 2
2. Check for oil or water in lines.
If oil or water is in lines, disconnect and blow out air lines. Remove and clean all exhaust mufflers. Reconnect air lines. Cycle unit repeatedly to remove excess oil Reconnect exhaust mufflers. If trouble persists proceed to Step 3.
3. Check Dwell Cylinder Shaft for Binding.
The Shaft should be able to move freely. If trouble persists, proceed to Step 4.
4. Check for Air Leakage or restrictions.
Replace cut or pinched air lines. If trouble persists, proceed to Step 5.
5. Replace the Dwell Solenoid.

V. ONE OR MORE HEADS DO NOT FEED BUT AT LEAST ONE DOES

SHUT OFF AIR

1. Remove the terminal tray covers (located under the Dwell Solenoid) of the inoperative head(s). Place a voltmeter across terminals 2 and 3. Move the dwell cylinder up and down.

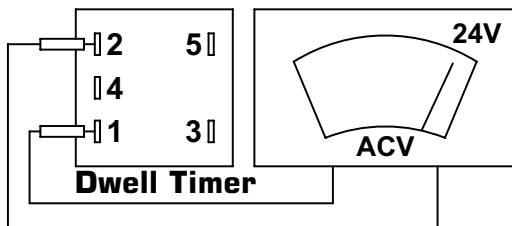


A. If the meter reads "0" volts when the head is all the way up and "24" volts when down proceed to step 2.

B. If the meter reads "24" volts in both positions replace the micro switch on the dwell cylinder.

C. If the meter reads "0" volts in both positions check for a bad connection in the micro switch or the terminal tray. If the connection is okay replace the micro switch.

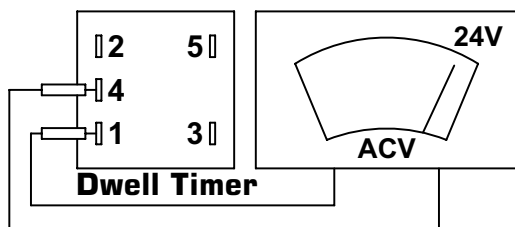
2. Turn Air/Electric on. Place a voltmeter across the feed timer terminals 1 and 2 in the control console. Cycle the unit.



A. If the meter reads "24" volts, proceed to Step 3.

B. If the meter reads "0" volts check for a loose connection or a broken wire.

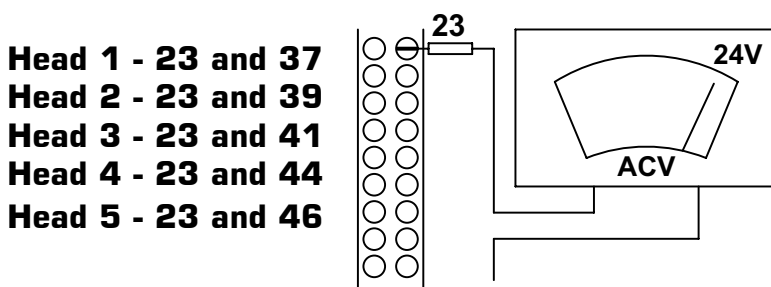
3. Remove the wire from terminal 3 or 5 of the feed timer located in the control console of the defective head(s). Place the voltmeter across terminals 1 and 4 on the feed timer in the control console. Cycle the unit.



A. If the meter reads "24" volts replace the wire to 3 or 5 of the feed timer and proceed to Step 4.

B. If the meter reads "0" volts replace the feed timer.

4. Place one lead of the voltmeter on terminal 23 in the control console. Place the other lead on the terminal indicated in the chart for the faulty head.



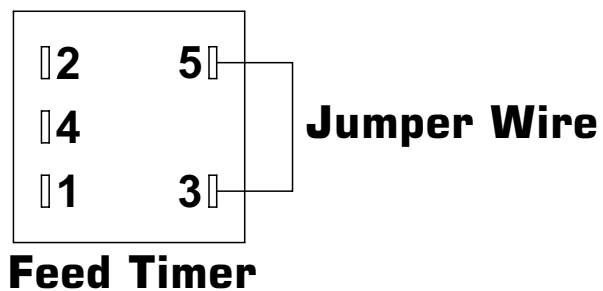
A. If the meter reads “0” volts replace the feed interrupt relay for the head(s) involved (one relay operates 1, 2 & 3 (R5) the other 4 & 5 (R6)).

B. If the meter reads 24 volts replace the feed solenoid for the inoperative head.

VI. SLIDE PUSHER DOES NOT RETRACT

1. Feed Timer/Resistor Test

Remove console cover. Air/Electricity “ON” Cycle unit so that slide pusher does not retract. Place a jumper wire across terminals 3 and 5 of the feed timer for the head which does not retract. Refer to the parts identification for the location.



A. If the slide pusher retracts and remains retracted after the jumper is removed, replace the resistor.

B. If the slide pusher does not retract, replace the Feed Timer.

VII. SLIDE PUSHER HITS UPPER WELD TIP

1. Upper Weld Tip Height Adjustment

Air “OFF”/Electricity “ON” Loosen the lock nut on the Dwell Cylinder shaft; screw the shaft clockwise to raise the Upper Weld Tip. Lock in position. Air/Electricity “ON” Cycle the unit Repeat this step as necessary to get the proper adjustment.

VIII. SLIDE PUSHER THROWS CLIPS PAST UPPER WELD TIP

1. Check Upper Weld Tip for magnetism. Place a clip pin under the Upper Weld Tip. If the tip does not retain the pin, replace the Upper Weld Tip. Check Slide Pusher for Binding.

IX. SLIDE PUSHER DOES NOT PLACE PINS ON UPPER WELD TIP

1. Check for Binding.

Air/Electricity "OFF". Hold the Upper Weld Tip "UP". Move the Slide Pusher into the extended position. Check that the Pusher is aligned with the Upper Weld Tip and that neither it nor the clip pins bind under the Upper Weld Tip. If trouble persists, proceed to Step 2.

2. Check Slide Pusher Pawl

Air/Electricity OFF With the Slide Pusher in extended position, check that the pawl is free.

X. SLUGGISH SLIDE PUSHER

1. Check Air Pressure

Air pressure must be a minimum of 80 psi during usage. If trouble persists, proceed to Step 2.

2. Check for oil or water in lines.

If oil or water is in the air lines, disconnect and blow out all the air lines. Remove and clean the exhaust mufflers reconnect the air lines. Cycle the unit repeatedly to remove oil. Reconnect the exhaust mufflers if the trouble persists, proceed to Step 3.

3. Check the Slide Pusher of the Feed Cylinder Shaft for Binding.

Both should be able to move freely. If trouble persists, proceed to Step 4.

4. Replace the Feed Solenoid.

XI. VIBRATOR DOES NOT VIBRATE AT ALL

NOTE: Remove the clip pins from the feed tract on all vibrator test procedures.

1. Perform Initial Check

A. Air ON

B. High Voltage Disconnect- ON- Fuses all okay

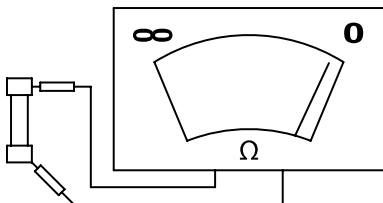
C. Vibrator On/Off Switch ON

D. The Vibrator Base Line Cord Plug is attached to the Vibrator Receptacle
At the front of MH507A

E. The Vibrator Speed Control is at the MAXIMUM Setting

2. Fuse Test

Air/Electricity off Remove the fuse from the fuse holder in the vibrator control box place an OHM meter on each end of the fuse.



A. If the meter reads "0" OHMS re-insert the fuse & proceed to Step 3.

B. If the meter reads ∞ "infinity symbol" OHMS replace the fuse.

3. Track Sensor Clean Out

Remove sensor from track casting if vibrator runs check line of sight through track casting, Test cycle the unit if the problem persists re-performs the initial Check (step1) and then proceed to step 4.

4. Vibrator sensor receive Board check

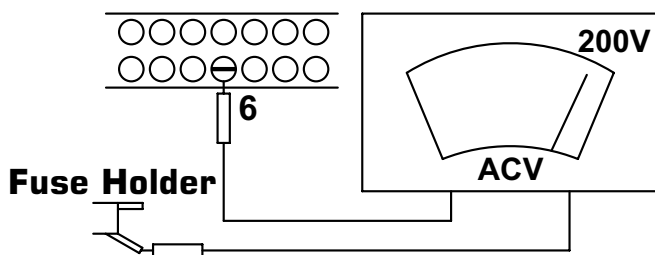
- A.** Remove non working vibrator take neighboring vibrator cord only and plug into non working vibrator head.
- B.** If this neighboring vibrator works vibrator that was removed is defective.
- C.** If vibrator still does not work leave neighboring vibrator plugged in for test purposes.
- D.** Remove cover from vibrator sensor board receiver mounting box located on the back of the head track casting.
- E.** Locate term strip on receiver board and jump term C to term D (term strip marked A through H left to right)
- F.** If vibrator runs replace sensor. (Make sure procedure #3 was checked first)
- G.** If vibrator still will not function jump term A to F on receiver board, if vibrator runs replace receiver board if vibrator still does not run go to step 5

5. Vibrator Control Relay Check- mounted on back wall of transformer enclosure.

- A.** Using Volt Meter test term #3 and #4 of solid state relay for 24 Vac
- B.** If there is 0 volts, check wires for brakes. If there are no broken wires, go back over step 4.
- C.** If voltage is 24 Vac Led on solid state relay will be on.
- D.** Check terminals 6 & 7 for 220V. If meter reads 220V, check terminals 1 & 2 on the relay. If voltage reads 0V, relay is good.

6. OPEN THE VIBRATOR CONTROL BOX AND LIFT THE TOP COVER OF MH507A

If all vibrators do not operate, turn all vibrator speed controls to the maximum. Place one lead of a voltmeter on terminal #6 and the other lead to terminal #7 of any head.



A. If the meter reads 220 volts proceed to Step 5. (Voltage may vary due to vibrator speed control.)

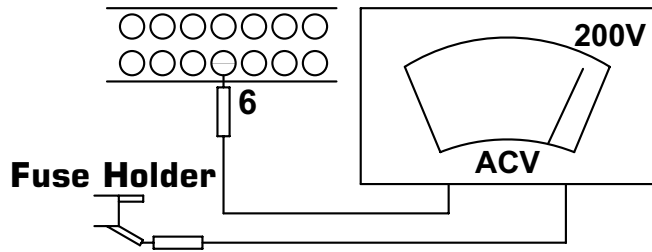
B. If the meter reads "0" volts, proceed to steps 7, 8 & 9.

NOTE: On 480 volt units the problem may be a 220 volt step down transformer mounted behind the Relay Box. Check all connections to the transformer. If all connections are good, replace the 220 volt step down transformer.

Perform steps 7, 8, & 9 with one lead of a voltmeter on terminal #6 of the transformer inclosure terminal strip closest to the vibrator control box.

7. FUSE HOLDER TEST

Place the voltmeter on the fuse holder terminal that is wired to the vibrator On/Off switch.

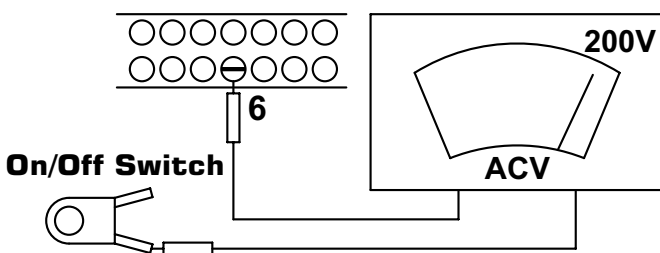


A. If the meter reads “220” volts proceed to Step 8.

B. If meter reads “0” volts recheck the fuse, if the fuse is good replace the fuse holder

8. VIBRATOR ON/OFF SWITCH

Place the voltmeter on the On/Off Switch terminal that is connected to the vibrator speed control. Place the switch in the “ON” position.

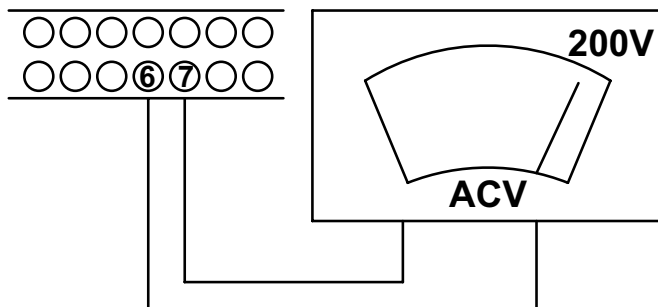


A. If the meter reads “220” volts proceed to Step 9.

B. If the meter reads "0" volts replace the vibrator On/Off Switch.

9. VIBRATOR SPEED CONTROL

Place the voltmeter on the screw head of terminal 6 & 7. Increase the vibrator speed to maximum.

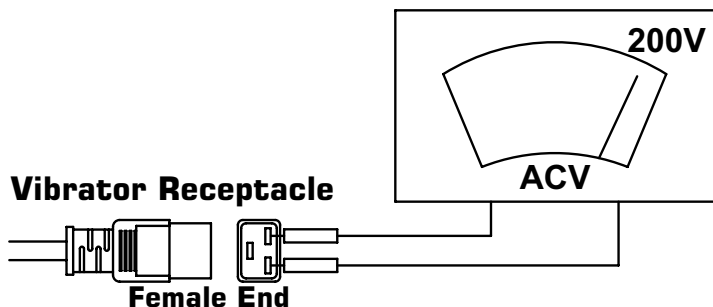


A. If the meter reads “220” volts proceed to Step 10.

B. If the meter reads "0" volts replace the vibrator speed control.

10. VIBRATOR SENSE SWITCH TEST

Place the leads of a voltmeter into the upper and the lower slots of the inoperative vibrator receptacle.

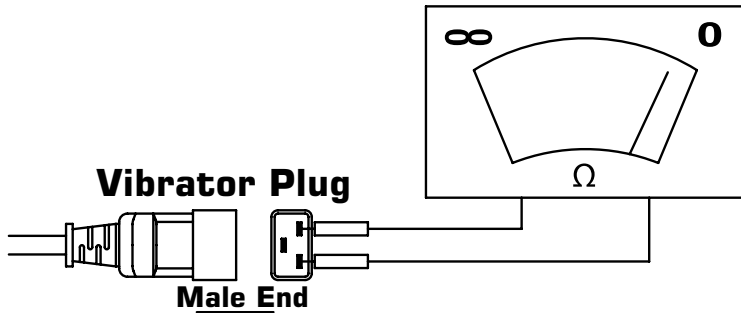


A. If the meter reads “220” volts proceed to Step 11.

B. If the meter reads "0" volts, refer to step 4.

11. VIBRATOR TEST

Place the leads of an OHM meter on the vibrator plug prongs.



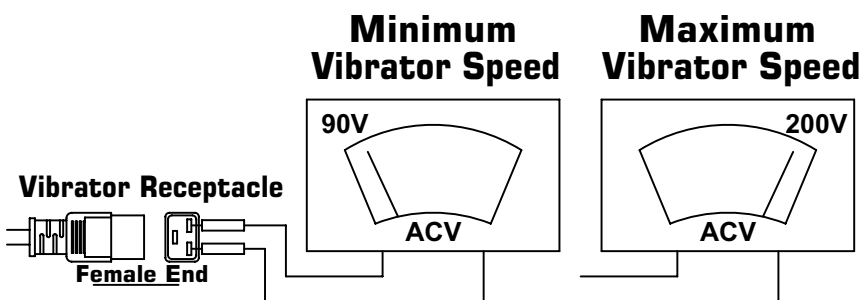
If the meter reads " ∞ " Resistance the problem is either a bad vibrator coil or a bad connection between the vibrator coil and the plug.

XII. VIBRATOR VIBRATES BUT NOT ENOUGH TO MOVE PINS UP HOPPER

1. CHECK THAT THE BOLT ATTACHING THE VIBRATOR BOWL TO THE BASE IS TORQUE TO 25 FT.
If trouble persists proceed to Step 2.

2. VIBRATOR SPEED CONTROL TEST

Remove the vibrator receptacle of the defective vibrator from the top panel of the MH507A. Set the voltmeter to the nearest scale above 200 Volts, Electricity on (Vibrator On/Off Switch On. Vibrator Base Line Cord plugged into the Vibrator Receptacle. The Feed Track empty of pins. Connect a voltmeter (as shown), across the Vibrator Power Receptacle contacts of the defective vibrator, and take AC voltage readings as you vary the Vibrator Speed Control of the defective vibrator.



A. If the meter reads as shown (from 90 V to 220 V Min.) the Vibrator Speed Control is OK; proceed to Step 3.

B. If the meter does not show significant voltage change as the vibrator speed control is varied from high to low: replace the Vibrator Speed Control.

XIII. VIBRATOR DOES NOT SHUT OFF

Sensor and Receiver Board Check

Go to step 4 perform section A and D.

A. Locate term strip remove wire from term C or term D.

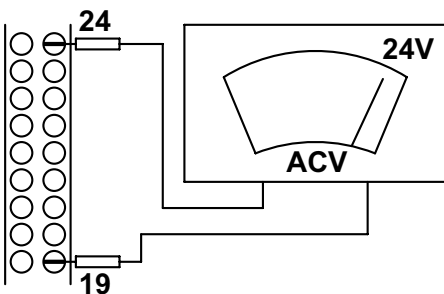
B. If vibrator stops sensor is defective.

C. Remove wire from term F if vibrator stops Receiver Board is defective.

D. If vibrator continues running replace vibrator control relay.

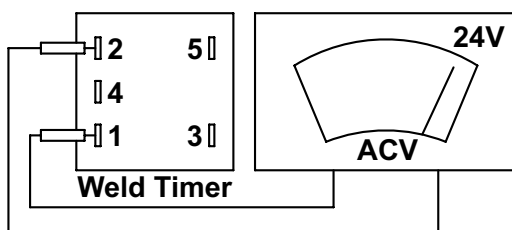
XIV. NO WELD (TRANSFORMERS DO NOT GO ON)

1. Check that the air is at a minimum of 100 psi.
2. Check that 220 volt (480 Volts on units so wired) High Voltage Disconnect Switch is on.
3. Check that the weld switch is in the "on" position.
4. **A.** Depress the cycle switch. If the weld lamp lights up skip to Step 8.
B. Turn all the head switches off, turn the weld "ON." Turn the weld time to 10; dwell time to "0". Place one lead of a voltmeter on the ground bar Place the other end on any upper weld tip assembly. Cycle the unit. If the meter reads greater than "0"volts, you are in the wrong section of the manual. Go to (XVII) PINS WELD TO BARE METAL BUT NOT THROUGH LINER OR CAN EASILY BE REMOVED. If the meter reads "0" volts proceed to Step 5.
5. Place a 24 voltmeter across terminals 24 and 19 in the control console. Cycle the unit.



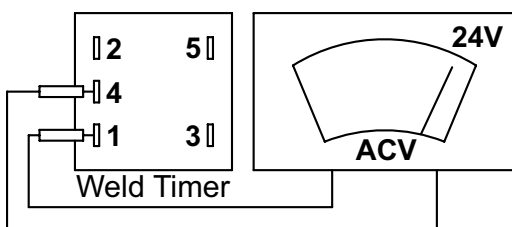
- A.** If the meter reads "24" volts proceed to step 6.
- B.** If the meter reads "0" volts the problem is a bad weld Relay, weld switch, or a broken connection to the weld Switch from the relay socket to the weld switch.

6. Place a voltmeter across terminals 1 and 2 of the weld timer in the control console. Cycle the unit



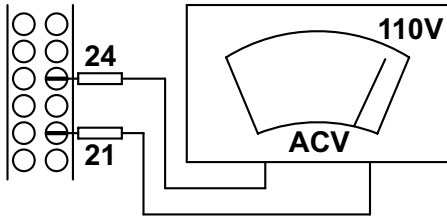
- A.** If the meter reads "24" volts proceed to step 7.
- B.** If the meter reads "0" volts check for any loose connection or a broken wire between the weld switch and terminal 1 of the weld timer
- C.** If there are no broken wires, replace the weld switch.

7. Remove the wire from terminal 3 or 5 of the weld timer. Place a voltmeter across terminals 1 and 4 of the weld timer control console Cycle the unit



- A.** If the meter reads "24" volts replace the wire on the terminal 3 or 5 of the weld timer and proceed to step 8.
- B.** If the meter reads "0" volts replace the weld timer

8. Set the weld timer to maximum, all heads switches "OFF". Place a voltmeter across terminals 24 and 21 in the control console. Cycle the unit.



A. If the meter reads "24" volts proceed to step 9

B. If the meter reads "0" volts check for broken wires from terminals 24 or 21 to the weld relay

C. If the wires and connections are okay replace the weld relay.

9. With the weld timer set to maximum and the head switch "OFF". Place a voltmeter across each Solid State Weld relay input (terminal 3&4) and cycle the unit

A. If the meter reads "24" volts on terminal 3 & 4, you have probably overlooked something in the previous testing

B. If the meter reads "0" on any or all relay inputs, the problem is a broken wire from terminal 24 or 21 to relay.

XV. PINS WELD TO BARE METAL BUT REMAIN ON UPPER WELD TIP AS IT RETRACTS

If the Clip Pin glows red up to the washer, decrease the Weld Time. The dwell time should always allow the weld to cool slightly before the weld tip retracts.

If the Clip Pin does not glow red up to the washer, increase the dwell and the weld time".

Refer to Owner's Manual: "Operation", steps 7 and 8.

XVI. PINS WELD TO BARE METAL BUT NOT THROUGH LINER

1. CHECK AIR PRESSURE.

Air pressure must be a minimum of 80 psi during a cycle. If trouble persists, proceed to Step 2.

2. CHECK FOR OIL OR WATER IN AIR LINES.

If oil or water are in lines disconnect and blow out all air lines. Remove and clean the exhaust mufflers. Reconnect the air lines. Cycle the unit repeatedly to remove the oil. Reconnect the exhaust mufflers. If trouble persists, proceed to Step 3.

3. CHECK DWELL CYLINDER SHAFT FOR BINDING.

The shaft should be able to move freely. If trouble persists, proceed to Step 4.

4. INCREASE WELD/DWELL TIMES

Slightly increase both Weld and Dwell Timer settings. (Refer to MH507A Owner's Manual Operation steps 7 and 8.) The Upper Weld Tip should not begin to retract until the weld cycle is completed. If trouble persists proceed to Step

5. CHECK CLIP PIN POINTS

The clip pin points must be sharp enough to penetrate the liner.

6. CHECK CARRIAGE MOVEMENT

A. If the carriage does not move at all. Skip to Section VII- CARRIAGE DOES NOT MOVE OUT.

B. If the carriage moves, check that it does not move faster or slower than the transfer belts of the coil line. The carriage should not pull or hamper steel. Refer to MH507A Owner's Manual: "Initial Adjustments. Steps 12-15.

7. CHECK HEAD SPEEDS

All heads should travel up and down at the same speed. If the heads are not synchronized, refer to MH507A Owners' Manual: Initial Adjustments. Step 6.

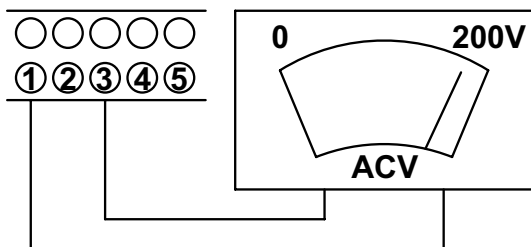
XVII. IF PINS WELD BUT ARE EASILY REMOVED ALWAYS INCREASE WELD AND DWELL TIME FIRST

NOTE: IF UNIT IS WIRED FOR 480 CHANGE ALL MENTION OF 220 TO 480 IN THE FOLLOWING STEPS

CHECK VOLTAGE

1. Open the High Voltage Disconnect Box. Check for proper voltage across all legs.

2. Open the transformer cover of the MH507A. Set the voltmeter to test 220 or 480 volts. Air/Electricity "ON" Weld Switch "ON". Weld pins to bare metal while reading the voltage across 1 & 5 terminal strips. Terminal 5 is factory wired, if #5 wire is moved to another term, then use that terminal for test example 1 & 3)

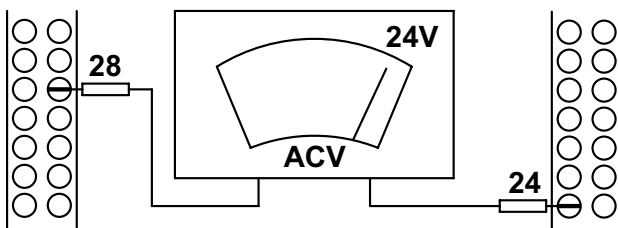


A. If the meter shows a drop greater than 10%, the problem could be either poor wiring from unit to power source or too many machines on one line. Isolate the MH507A on a separate line to the main power box. Move the MH507A as close as possible to power box. Check that the power supply wire to the MH507A is #6 or heavier.

B. If the meter reads less than a 10% drop, change the transformer taps.

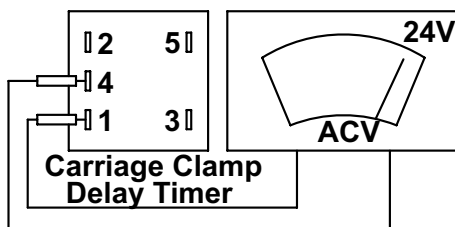
XVIII. CARRIAGE DOES NOT MOVE OUT

1. Check that the Carriage Switch on the MH507A Console is in the "ON" position.
2. Check that the Carriage Return Wand Switch is being depressed when a steel sheet is passing through the MH507A (When the switch is depressed, the carriage should move freely). If carriage will not move by hand with the wand switch depressed. Go to Section XIX.
3. Check for loose or broken wires in the control console on the small terminal strip on the back plate of the console
4. Check that the Carriage/Brake regulator gauges in the back of the lower tube are set to proper PSI (See Appendix II)
5. Check the Carriage for binding. The carriage should move freely with the air off.
6. With the Carriage Switch on the MH507A Console "ON", place a voltmeter between terminals 23 and 26 in the control console. Cycle the unit.



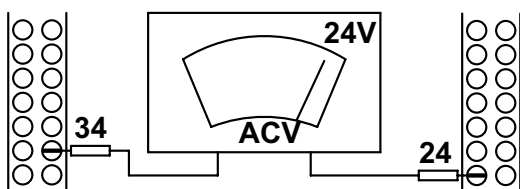
- A. If the meter reads "24" volts, proceed to Step 7.
- B. If the meter reads "0" volts, replace the Carriage Switch.

7. With the Carriage Switch on the MH507A Console "ON", place a voltmeter between terminals 1 and 4 of the Carriage Timer in the Control Console. Cycle the unit.



- A. If the meter reads "24" volts, proceed to Step 8.
- B. If the meter reads "0" volts, replace the Carriage Timer.

8. With the Carriage Switch "ON", place a voltmeter between terminals 24 and 34 in the Control Console. Cycle the unit.

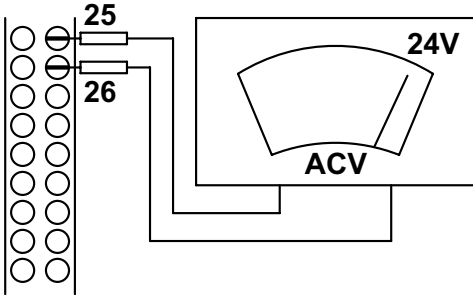


- A. If the meter reads "24" volts, replace the Carriage/ Brake Solenoid
- B. If the meter reads "0" volts, replace the Carriage Relay.

XIX. CARRIAGE DOES NOT RETURN OR JERKS FORWARD AND THEN RETURNS

1. With power "OFF" check that the Carriage Return Flow Controls are not shut off.

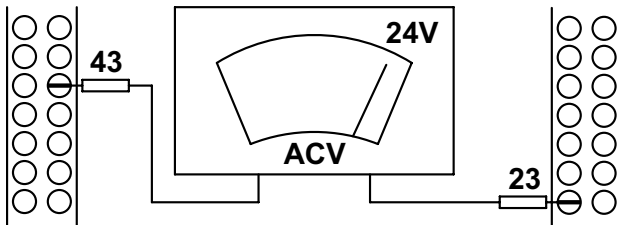
2. Place an OHM meter between terminals 25 and 26 in the MH507A Control Console.



A. If the meter reads greater than 0 with the Wand Up and "0" with Wand depressed, proceed to Step 3.

B. If the meter reads other than above, replace the Wand Switch.

3. Place a voltmeter between terminals 23 and 43 in the MH507A Control Console.



A. If the meter reads "24" volts, replace the Carriage Return Solenoid.

B. If the meter reads "0" volts, replace the Carriage Return Relay.

APPENDIX I

CARRIAGE SOLENOID ASSEMBLE

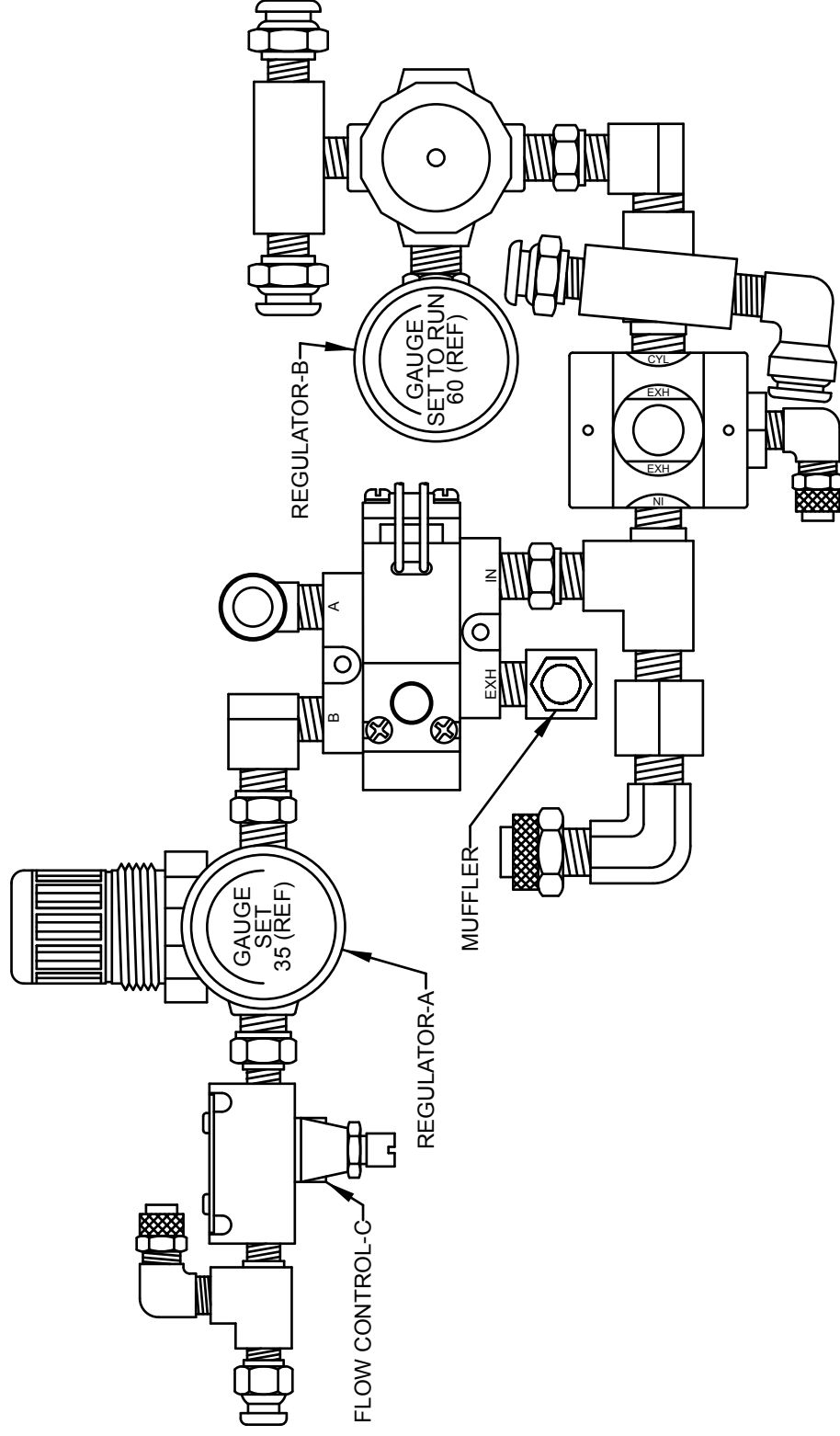
Regulator A: Controls the reset of the brake and carriage forward solenoid stands by for forward signal the gauge will indicate pressure when the carriage is at rest and drop to 0 PSI when the carriage is activated.

Regulator B: Controls the amount of pressure driving the brake and carriage forward. The higher the pressure; the stronger and faster the force pushing the carriage forward. The gauge will read 0 PSI when the carriage is at rest and will indicate pressure when the carriage is activated.

Flow Control C: Regulates the "cushion" of the carriage when it returns to home position, set at factory. Opening the valve (counter clockwise) will give the carriage less cushion. Closing the valve (clockwise) will give the carriage more cushion.

Note: Any changes in the settings of Regulators A or B and Flow Control C require cycling of the machine for 10-20 times to "Set-In" adjustments. After 10-20 cycles, the new setting will be in effect.

CARRIAGE SOLENOID ASSEMBLY



WELD TRANSFORMER MODIFICATIONS

The Weld Transformers (located in the Black Enclosure on the Upper Carriage) may be adjusted if the welds are either too hot or too cold as shown below.

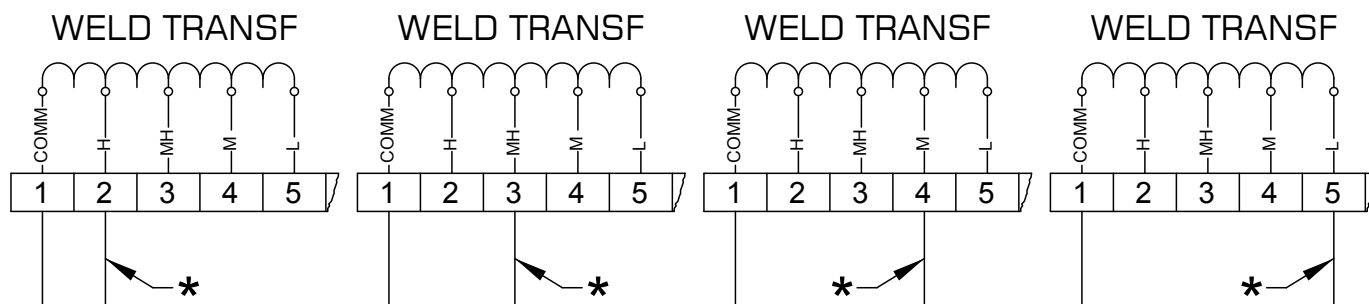
NOTE: The current machine weld options are as shown below. (DO NOT move the wire on Terminal-1)

FOR THE HIGHEST
WELD, SECURE ^{1*}
LEAD TO TERM-2

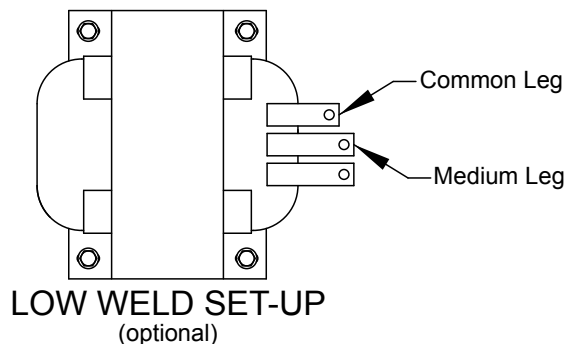
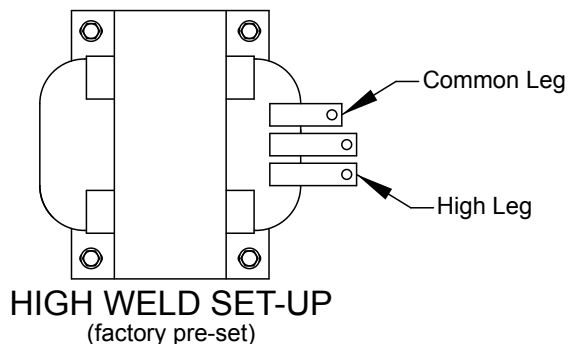
FOR A
MEDIUM-HIGH
WELD, SECURE ^{1*}
LEAD TO TERM-3

FOR A MEDIUM
WELD, SECURE ^{1*}
LEAD TO TERM-4

FOR A LOW
WELD, SECURE ^{1*}
LEAD TO TERM-5



NOTE: If the welds still aren't satisfactory (too hot), move the Weld Cable connections as listed below. (located on the Weld Transformers), View shown from above for illustrative purposes.



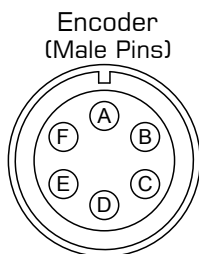
Standard MH507A Encoder: (wheel diameter 1.909; travel 6"; CPR 2,048 or 300 *optional CPR available)

When securing our Encoder into the operating system, wire terminations are as shown below:

(The Encoder unit is located at the center of the machine by the Conveyor System)

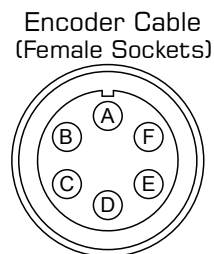
Encoder

Encoder Terminal	Encoder Pin	Encoder Wire Color
Common	A	Black
V+	B	White
A+	C	Brown
A-	D	Yellow
B+	E	Red
B-	F	Green



Cable to Coil-Line Console

Encoder Terminal	Encoder Cable Pin	Encoder Cable Wire Color
Common	A	Green / White
V+	B	White / Green
A+	C	Blue / White
A-	D	White / Blue
B+	E	Orange / White
B-	F	White / Orange



MH507A MULTIHEAD PARTS

ITEM DESCRIPTION

17189	Plate Assembly
17190	Plate Assembly
17191	Upper Weld Tip
17192	Lower Weld Tip
17203	Insulator
17231	Dwell Cylinder
17269	Feed Cylinder Bracket
17317	Feed Speed Control
17319	Feed Timer
17319	Weld Timer
17319	Dwell Timer
17319	Interrupt Timer
17320	Interrupt Potentiometer
17323	Relay
17326	Muffler
17329	Vibrator Fuse
17330	Vibrator Fuse Holder
17333	Vibrator Speed Control
17334	Vibrator On/Off Switch
17347	Feed Channel
17348	Feed Channel Plate
17351	Feed Pusher/Pawl
17355	Quick Exhaust
17356	Adjustable Muffler
17359	Bracket Insulator
17363	Feed Reed Switch
17364	Feed Cylinder
17377	Regulator
17394	Short Shaft Extension
39068	Receiving Board
39106	24V Transformer
39157	Encoder/Connector Assy (2048)
39195	Conveyor Support Magnet
39196	220V Vibrator Female Power Cord
39273	Vibrator Base Plate
39291	Solid State Relay
39296	Vibrator Bowl
39298	Vibrator Base
39301	Console

ITEM DESCRIPTION

39306	Head Switch
39306	On/Off Switch
39306	Weld Switch
39307	Test Switch
39319	220V Safety Switch
39320	440V Safety Switch
39321	440/220 Step Down Transformer
39329	Carriage Flow Control
39338	Upper Tip Retainer Block
39339	Power Supply Bar
39343	Micro Switch Bracket
39344	Micro Switch
39352	Track Side Rails
39353	Anti-Friction Strip
39359	Feed Channel Spacer
39374	Lower Mandrel Assembly
39375	Mandrel Only
39376	Copper Helpers
39377	Mandrel Clamps
40099	Universal Belt Tensioner Assy
40324	Feed Solenoid
40325	Dwell Solenoid
40328	Carriage Solenoid
40386	Carriage Cylinder
40390	Limit Switch
40393	Carriage Brake Cylinder
40394	Return Cylinder
40395	Brake Pad (Pair)
40397	Return Solenoid
44056	Universal Insulated Bracket (Lower)
44057	Universal Insulated Bracket (Upper)
44093	Vibrator Line Cord Kit
44095	Track Sensor
44097	Vibrator Control Relay
44101	220V 7KVA Transformer
44123	MH507A Head Weld Cable
44124	MH507A Ground Weld Cable
44125	2AMP 250V Fuse
44126	Encoder/Connector Assy (300)



MACHINERY DIVISION

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