SINGLE EZ-AIR KIT
EZ/SAK
OPERATION MANUAL

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</table>
Thank you for purchasing a Miyachi Unitek Single EZ-Air™ Kit.

Upon receipt of your equipment, please thoroughly inspect it for shipping damage prior to its installation. Should there be any damage, please immediately contact the shipping company to file a claim, and notify us at:

Amada Miyachi America  
1820 South Myrtle Avenue  
Monrovia, California 91016  
Phone: (626) 303-5676  
FAX: (626) 358-8048  
E-mail: info@amadamiyachi.com

The purpose of this manual is to supply operating and maintenance personnel with the information needed to properly and safely operate and maintain the Miyachi Unitek Single EZ-Air Kit.

This kit can be added to an existing weld head (typically a Model 80A, 83A, 84A, 86A, or 180A), and will replace a standard air kit. The installation instructions give procedures for retrofitting a weld head that has a standard air kit installed.

We have made every effort to ensure that the information in this manual is accurate and adequate.

Should questions arise, or if you have suggestions for improvement of this manual, please contact us at the above location/numbers.

Amada Miyachi America is not responsible for any loss due to improper use of this product.
This instruction manual describes how to operate, maintain and service the Single EZ-Air Kit, and provides instructions relating to its SAFE use. Separate manuals provide similar information for the Power Supply and the Weld head. Procedures described in these manuals MUST be performed, as detailed, by QUALIFIED and TRAINED personnel.

For SAFETY, and to effectively take advantage of the full capabilities of the workstation, please read these instruction manuals before attempting to use the workstation.

Procedures other than those described in these manuals or not performed as prescribed in them, may expose personnel to electrical, burn, or crushing hazards.

After reading these manuals, retain them for future reference when any questions arise regarding the proper and SAFE operation of the workstation.

Please note the following conventions used in this manual:

**WARNING:** Comments marked this way warn the reader of actions which, if not followed, might result in immediate death or serious injury.

**CAUTION:** Comments marked this way warn the reader of actions which, if not followed, might result in either damage to the equipment, or injury to the individual if subject to long-term exposure to the indicated hazard.
LIMITED WARRANTY

1. (a) Subject to the exceptions and upon the conditions set forth herein, Seller warrants to Buyer that for a period of one (1) year from the date of shipment ("Warranty Period"), that such Goods will be free from material defects in material and workmanship.

(b) Notwithstanding the foregoing and anything herein to the contrary, the warranty set forth in this Section 1 shall be superseded and replaced in its entirety with the warranty set forth on Exhibit A hereto if the Goods being purchased are specialty products, which include, without limitation, laser products, fiber markers, custom systems, workstations, Seller-installed products, non-catalogue products and other custom-made items (each a "Specialty Products.")

(c) EXCEPT FOR THE WARRANTY SET FORTH IN SECTION 1(A), SELLER MAKES NO WARRANTY WHATSOEVER WITH RESPECT TO THE GOODS (INCLUDING ANY SOFTWARE) OR SERVICES, INCLUDING ANY (a) WARRANTY OF MERCHANTABILITY; (b) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; (c) WARRANTY OF TITLE; OR (d) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE.

(d) Products manufactured by a third party and third party software ("Third Party Product") may constitute, contain, be contained in, incorporated into, attached to or packaged together with, the Goods. Third Party Products are not covered by the warranty in Section 1(a). For the avoidance of doubt, SELLER MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO ANY THIRD PARTY PRODUCT, INCLUDING ANY (a) WARRANTY OF MERCHANTABILITY; (b) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; (c) WARRANTY OF TITLE; OR (d) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE. Notwithstanding the foregoing, in the event of the failure of any Third Party Product, Seller will assist (within reason) Buyer (at Buyer’s sole expense) in obtaining, from the respective third party, any (if any) adjustment that is available under such third party’s warranty.

(e) Seller shall not be liable for a breach of the warranty set forth in Section 1(a) unless: (i) Buyer gives written notice of the defect, reasonably described, to Seller within five (5) days of the time when Buyer discovers or ought to have discovered the defect and such notice is received by Seller during the Warranty Period; (ii) Seller is given a reasonable opportunity after receiving the notice to examine such Goods; (iii) Buyer (if requested to do so by Seller) returns such Goods (prepaid and insured to Seller at 1820 South Myrtle Avenue, Monrovia, CA 91016 to such other location as designated in writing by Seller) to Seller pursuant to Seller’s RMA procedures and Buyer obtains a RMA number from Seller prior to returning such Goods for the examination to take place; and (iii) Seller reasonably verifies Buyer’s claim that the Goods are defective and that the defect developed under normal and proper use.

(f) Seller shall not be liable for a breach of the warranty set forth in Section 1(a) if: (i) Buyer makes any further use of such Goods after giving such notice; (ii) the defect arises because Buyer failed to follow Seller’s oral or written instructions as to the storage, installation, commissioning, use or maintenance of the Goods; (iii) Buyer alters or repairs such Goods without the prior written consent of Seller; or (iv) repairs or modifications are made by persons other than Seller’s own service personnel, or an authorized representative’s personnel, unless such repairs are made with the written consent of Seller in accordance with procedures outlined by Seller.
(g) All expendables such as electrodes are warranted only for defect in material and workmanship which are apparent upon receipt by Buyer. The foregoing warranty is negated after the initial use.

(h) Subject to Section 1(e) and Section 1(f) above, with respect to any such Goods during the Warranty Period, Seller shall, in its sole discretion, either: (i) repair or replace such Goods (or the defective part) or (ii) credit or refund the price of such Goods at the pro rata contract rate, provided that, if Seller so requests, Buyer shall, at Buyer’s expense, return such Goods to Seller.

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EXCEPT FOR THE WARRANTY SET FORTH BELOW IN THIS EXHIBIT A, SELLER MAKES NO WARRANTY WHATSOEVER WITH RESPECT TO THE GOODS (INCLUDING ANY SOFTWARE) OR SERVICES, INCLUDING ANY (a) WARRANTY OF MERCHANTABILITY; (b) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; (c) WARRANTY OF TITLE; OR (d) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE.

Warranty Period: The Warranty Period for Specialty Products is for one (1) year, and the Warranty Period for laser welders and laser markers is two (2) years (unlimited hours), and the Warranty Period for the laser pump diodes or modules is two (2) years or 10,000 clock hours, whichever occurs first (as applicable, the “Warranty Period”). The Warranty Period begins as follows: (i) on orders for Goods purchased directly by Buyer, upon installation at Buyer’s site or thirty (30) days after the date of shipment, whichever occurs first; or (ii) on equipment purchased by a Buyer that is an OEM or systems integrators, upon installation at the end user’s site or six (6) months after the date of shipment, whichever occurs first.

Acceptance Tests: Acceptance Tests (when required) shall be conducted at Amada Miyachi America, Inc., Monrovia, CA, USA (the “Testing Site”) unless otherwise mutually agreed in writing prior to issuance or acceptance of the Acknowledgement. Acceptance Tests shall consist of a final visual inspection and a functional test of all laser, workstation, enclosure, motion and accessory hardware. Acceptance Tests shall include electrical, mechanical, optical, beam delivery, and software items deliverable under the terms of the Acknowledgement. Terms and conditions for Additional Acceptance Tests either at Seller’s or Buyer’s facility shall be mutually agreed in writing prior to issuance or acceptance of the Acknowledgement.

Performance Warranty: The system is warranted to pass the identical performance criteria at Buyer’s site as demonstrated during final Acceptance Testing at the Testing Site during the Warranty Period, as provided in the Acknowledgement. Seller explicitly disclaims any responsibility for the process results of the laser processing (welding, marking, drilling, cutting, etc.) operations.

Exclusions: Seller makes no warranty, express or implied, with respect to the design or operation of any system in which any Seller’s product sold hereunder is a component.

Limitations: The limited warranty set forth on this Exhibit A does not cover loss, damage, or defects resulting from transportation to Buyer’s facility, improper or inadequate maintenance by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the equipment, or improper site preparation and maintenance. This warranty also does not cover damage from misuse, accident, fire or other casualties of failures caused by modifications to any part of the equipment or unauthorized entry to those portions of the laser which are stated. Furthermore, Seller shall not be liable for a breach of the warranty set forth in this Exhibit A if: (i) Buyer makes any further use of such Goods after giving such notice; (ii) the defect arises because Buyer failed to follow Seller’s oral or written instructions as to the storage, installation, commissioning, use or maintenance of the Goods; (iii) Buyer alters or repairs such Goods without the prior written consent of Seller; or (iv) repairs or modifications are made by persons other than Seller’s own service personnel, or an authorized representative’s personnel, unless such repairs are made with the written consent of Seller in accordance with procedures outlined by Seller.
Seller further warrants that all Services performed by Seller’s employees will be performed in a good and workmanlike manner. Seller’s sole liability under the foregoing warranty is limited to the obligation to re-perform, at Seller’s cost, any such Services not so performed, within a reasonable amount of time following receipt of written notice from Buyer of such breach, provided that Buyer must inform Seller of any such breach within ten (10) days of the date of performance of such Services.

Seller shall not be liable for a breach of the warranty set forth in this Exhibit A unless: (i) Buyer gives written notice of the defect or non-compliance covered by the warranty, reasonably described, to Seller within five (5) days of the time when Buyer discovers or ought to have discovered the defect or non-compliance and such notice is received by Seller during the Warranty Period; (ii) Seller is given a reasonable opportunity after receiving the notice to examine such Goods and (a) Buyer returns such Goods to Seller’s place of business at Buyer’s cost (prepaid and insured); or (b) in the case of custom systems, Seller dispatches a field service provider to Buyer’s location at Buyer’s expense, for the examination to take place there; and (iii) Seller reasonably verifies Buyer’s claim that the Goods are defective or non-compliant and the defect or non-compliance developed under normal and proper use.

All consumable, optical fibers, and expendables such as electrodes are warranted only for defect in material and workmanship which are apparent upon receipt by Buyer. The foregoing warranty is negated after the initial use.

No warranty made hereunder shall extend to any product whose serial number is altered, defaced, or removed.

**Remedies:** With respect to any such Goods during the Warranty Period, Seller shall, in its sole discretion, either: repair such Goods (or the defective part). **THE REMEDIES SET FORTH IN THE FOREGOING SENTENCE SHALL BE BUYER’S SOLE AND EXCLUSIVE REMEDY AND SELLER’S ENTIRE LIABILITY FOR ANY BREACH OF THE LIMITED WARRANTY SET FORTH IN THIS EXHIBIT A.** Representations and warranties made by any person, including representatives of Seller, which are inconsistent or in conflict with the terms of this warranty, as set forth above, shall not be binding upon Seller.

Products manufactured by a third party and third party software (“Third Party Product”) may constitute, contain, be contained in, incorporated into, attached to or packaged together with, the Goods. Third Party Products are not covered by the warranty in this Exhibit A. For the avoidance of doubt, **SELLER MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO ANY THIRD PARTY PRODUCT, INCLUDING ANY (a) WARRANTY OF MERCHANTABILITY; (b) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; (c) WARRANTY OF TITLE; OR (d) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE.** Notwithstanding the foregoing, in the event of the failure of any Third Party Product, Seller will assist (within reason) Buyer (at Buyer’s sole expense) in obtaining, from the respective third party, any (if any) adjustment that is available under such third party’s warranty.
CHAPTER 1
DESCRIPTION

Section I: Features

Features

The Single EZ-Air Kit, herein called EZ-Air, is an accessory for weld heads that pneumatically controls the actuation of the electrodes and maintains the preset firing force. At a predetermined firing force the EZ-Air closes the inlet and outlet valves to the weld head actuation cylinder and eliminates over-force. EZ-Air operates from power supply-generated power and has the following features:

- Is compactly packaged and can be retrofitted to Miyachi Unitek Models 80A, 83A, 84A, 86A, or 180A weld heads without removal of the weld head covers
- Powered from the power supply: 24 VAC/DC output; no separate control box required
- Contains EZ-CLEAN Valve which eliminates the need to re-adjust force after cleaning and dressing electrodes
- Contains operator-visible firing indicator lights
- Permits easy set-up of multiple weld heads to fire at the same force
- Contains a built-in down speed limiter to eliminate weld over-force and limit excessive impact force
- One knob force setting (per electrode), which requires no resetting, simplifies set-up and setting maintenance, with the following effects:
  - Process stability reduces process maintenance and training for users
  - Delivers accurate and repeatable force set-up with reduced process variation
  - Produces higher yields with reduced scrap from process variation due to incorrect force set-up
CHAPTER 1: SYSTEM DESCRIPTION

Section II: Kit Components

Reference Publications

Related manuals, which you will need, include the manuals that are provided with your weld head and your power supply. If you need additional copies of any of these manuals, they can be procured from Amada Miyachi America.

Major Components

Figure 1-1 shows the major components of the unit. Normally, these will be the only components associated with installation and operation. The function of each item is described below.

Firing Indicator. A green indicator that lights when the firing switch closes and stays lit until the end of the weld cycle. Thus, if a malfunction occurs, the operator can determine whether or not a firing signal is present.

Initialization Signal Received Indicator. An amber indicator, visible through a hole in the EZ-Air cover, that lights when the initialization signal is received from the power supply, and stays lit until the pre-set force has been reached. If a problem occurs, the operator can determine whether or not the problem is internal to the EZ-Air.

Air Cylinder Down Supply. Male elbow fitting, ¼ inch OD tube to ½ inch male NPT brass. Connects controlled compressed air to weld head air cylinder top port.

Air Cylinder Up Supply. Male elbow fitting, ¼ inch OD tube to ½ inch male NPT brass. Connects controlled compressed air to weld head air cylinder bottom port.

Down Speed Control Valve Adjustment. Operator adjustment that allows setting of the downspeed of the electrodes to reduce part impact pressure.

Weld Head Firing Switch Cable and Connector. Female cable jack, Amphenol Type 80-MC2F. Mates with connectors (Amphenol Type MC23M80-MC2M) from the weld head.

EZ-Clean Valve. Allows bleeding of input air supply to permit dressing of electrodes.

Shop Air Supply Input Fitting. ½ inch F’NPT fitting for connecting shop compressed air to EZ-Air. Shop air supply must be 85–140 psi. (586–965 kPa).

Fixed Air Regulator. Controls pressure of air from shop air source into EZ-Air. Regulator is factory set for 78 psi (538 kPa) and does not require any user adjustment.
**EZ-AIR**

**24 Volt Power Source Cable and Connector.** Conducts 24 volt solenoid drive power from the power supply to the EZ-Air.

**Signal Cable and Connector.** Two-conductor male plug to connect firing signal to the power supply.

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**Figure 1-1. Single EZ-Air, Components**
CHAPTER 1: SYSTEM DESCRIPTION

EZ-AIR-DC

8-pin weld head connector. Conducts 24 VDC solenoid drive power from the power supply to the EZ-AIR-DC, connects firing signal and voltage pickup to the power supply.
Section III: Sequence of Operation

EZ-Air uses a single four-way solenoid valve to direct air between the down solenoid valve and the up solenoid valve (figure 1-2). The following steps describe the sequence of operation of the EZ-Air kit.

- **Initial Air Applied.** Upon initial application of air (whether or not power is applied), air pressure is applied through the four-way solenoid valve and the up solenoid valve to the lower chamber of the cylinder, driving the piston up. Air is exhausted through the four-way solenoid valve.

- **Down Stroke.** During the electrode down stroke, air pressure is directed to the upper chamber of the cylinder, forcing the piston down. Waste air exhausts from the lower chamber through the down solenoid valve and the four-way solenoid valve.

- **Constant Force.** When the electrode reaches weld force, the up and down solenoid valves close and air is trapped in both the upper and lower chambers of the cylinder. Weld force remains constant as the air cylinder piston cannot move. The four-way solenoid valve also switches to its off position, reversing the air connections to the up and down solenoid valves.

Figure 1-2. Sequence of Operation
 CHAPTER 1: SYSTEM DESCRIPTION

- **Up Stroke.** At the completion of the weld, the up and down solenoid valves open. This causes the application of air pressure to the lower chamber of the cylinder, returning the piston to its up position.
CHAPTER 2
GETTING STARTED

Section I: Planning for Installation

EZ-Air is about the same size as the standard air system and uses power from the weld head power supply. Therefore, there should be no space or power problems in installing the EZ-Air onto an existing weld head.

Space Requirements
An outline drawing of the EZ-Air is included in Appendix A. The specific dimensions are:

- Width: 3.5 in. (88.9 mm)
- Depth: 6.4 in. (162.6 mm)
- Height: 5.5 in. (139.7 mm)
- Weight: 2.5 lb. (1.1 kg)

Power Requirements
Power is derived directly from the power supply; no special considerations are required. The EZ-Air requires the following power:

- EZ-AIR: 24 VAC/DC - 5% / +10% power, 1/2 A

Compressed Air Requirements
The EZ-Air has a 1/4 inch F’NPT fitting for connection to a shop air source of 85–130 psi (586–897 kPa). It is recommended that a auto drain air filter with a 5-micron element (Amada Miyachi America Part Number 10-373-01, catalog number ADAF) be placed in the air line.

CAUTION: A shop air compressor using synthetic oil will cause damage to the EZ-Air, Petroleum-based oil only is recommended.
CHAPTER 2: GETTING STARTED

Section II: EZ-Air Set-up

Unpacking

Unpack the EZ-Air from its shipping box and verify that all parts are present. The table below lists the components of the ship kit, Amada Miyachi America Part Number 4-81108-01, which contains parts needed to install the EZ-Air.

**NOTE:** Carefully place the packing materials back in the packing boxes and store for future shipping.

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<th>Use</th>
<th>Amada Miyachi America Part Number</th>
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<tr>
<td>Plastic tubing</td>
<td>Make pneumatic connections</td>
<td>050-138</td>
<td>9 ft</td>
</tr>
<tr>
<td>Elbow fitting</td>
<td>Replace existing fitting on weld head</td>
<td>325-200</td>
<td>2</td>
</tr>
<tr>
<td>Fitting</td>
<td>Adapter for shop-air input</td>
<td>325-185</td>
<td>1</td>
</tr>
<tr>
<td>Wrench</td>
<td>Install EZ-Air</td>
<td>4-35442-01</td>
<td>1</td>
</tr>
<tr>
<td>Bolt, hex head</td>
<td>Mount EZ-Air on 180 weld head</td>
<td>160-063</td>
<td>2</td>
</tr>
<tr>
<td>T-Nut</td>
<td>Mount EZ-Air on 180 weld head</td>
<td>465-231</td>
<td>2</td>
</tr>
<tr>
<td>Flange screw</td>
<td>Mount EZ-Air on 80 weld head</td>
<td>160-060</td>
<td>2</td>
</tr>
<tr>
<td>Cap screw</td>
<td>Mount EZ-Air on 84 weld head</td>
<td>160-061</td>
<td>2</td>
</tr>
<tr>
<td>Washer, flat</td>
<td>Mount EZ-Air</td>
<td>755-025</td>
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<tr>
<td>User’s Manual</td>
<td>Installation/Operation instructions</td>
<td>990-126</td>
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Installation

Installation consists of physically mounting the EZ-Air on the weld head, connecting the power and signal cables, and connecting the pneumatic tubing. If the EZ-Air is a retrofit, the original air system must first be removed and the new kit installed.

**Removing Existing Air System from Weld head**

1. Turn off shop air and remove connection to existing kit.
2. Remove the existing tubes to the top and bottom of the cylinder.
3. Note which way each of the two valve assemblies are facing. Remove the existing valve assemblies from the top and bottom of the air cylinder. Clean any pipe joint sealant from cylinders (figure 2-1).
4. Disconnect the weld head firing switch cable and the air kit cable from the power supply.

![Figure 2-1. Removing Existing Air System](image)
CHAPTER 2: GETTING STARTED

NOTE: If weld head cylinder has exceeded 10 million cycles, we recommend replacing it at this time. See your weld head manual for instructions.

4 From the packing box, remove the EZ-Air and shipping kit (which contains the mounting hardware). **NOTE:** Only one set of mounting hardware will apply to each application; the remaining parts are extra. See table 2-1 for appropriate parts.

5 See the following paragraphs for the appropriate steps to physically replace the existing air kit with the new EZ-Air.

**Installing EZ-Air on an 80A or 86A Weld Head**

1 Remove the two mounting bolt that secure the existing air kit and remove the air kit.

2 Loosely install two new hex head flange screws from the ship kit.

3 Slide the EZ-Air onto the two screws (figure 2-2) and tighten the screws with the open-end wrench from the ship kit.

**CAUTION:** Be sure no part of the EZ-Air touches the copper power bars; any contact will cause shorting of the weld current.

**Installing EZ-Air on an 83A or 84A Weld Head**

**CAUTION:** In the case of the 84 weld head, the air kit mounting screws also secures the weld head. Be sure to secure the weld head from falling before removing the air kit mounting screws.

1 After securing the weld head, remove the two mounting bolts that secure the existing air kit and weld head to the vertical support. Remove the air kit.

2 Loosely install two new hex head cap screws, from the ship kit, through the vertical support into the weld head.

3 Slide the EZ-Air onto the two screws and tighten the screws with the end wrench from the ship kit.

**CAUTION:** Be sure no part of the EZ-Air touches the copper power bars; any contact will cause shorting of the weld current.

**Installing the EZ-Air on an 180A Weld Head**

1 From the weld head vertical support, remove the plastic end cap.

2 Loosen the two screws that secure the air kit and slide the air kit, screws, and T-nuts upward out of the top of the vertical support.

Figure 2-2. Installing EZ-Air On Model 80A or 86A Weld Head
CHAPTER 2: GETTING STARTED

3  Loosely install two new flanged hex head bolts, from the ship kit, into the two T-nuts, also supplied in the ship kit. Slide the two assemblies into the vertical support slot and replace the end cap.

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CAUTION

Be sure no part of the EZ-Air touches the copper power bars; any contact will cause shorting of the weld current.

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4  Slide the EZ-Air onto the two screws and adjust it so that its top is approximately at the same height as the air cylinder. Tighten the screws with the end wrench from the ship kit.
Section III: Pneumatic and Power Connections

Pneumatic

1. From the packing kit locate two new elbow joints (without valves) and install the joints into the two valve ports of the cylinder. The elbow fittings should face in the general direction that the earlier valve assemblies faced. That is, the lower one faces upwards, and the upper one faces slightly outward of the rear of the weld head.

   **NOTE:** The cuts to be made in step 2 must be smooth and square. We recommend using an SMC TKA-1 tube cutter. Do not use pliers, wire nippers or scissors.

2. From the packing kit, locate the pneumatic tubing for connections between the EZ-Air and the up and down ports of the cylinder. Cut two pieces from the tubing 9 inches long. The remaining tubing can be used for the shop-air connection (step 4).

3. Using the included push-in fittings, connect the pneumatic tubing.

   **NOTE:** Be sure the tubing is pushed in all of the way to prevent leakage, leading to imperfect welds. As shown in figure 2-3, the connections are intuitive. That is, the upper valve goes to the cylinder’s upper port; the lower valve to the lower port.

4. Connect the shop air to the EZ-Air shop air supply input fitting.

Power

1. Connect the valve driver cable connector to the 24 volt connector on the rear of the power supply.

2. **24VAC/DC EZ-AIR:**
   - A. Connect the valve driver cable connector to the 24 volt connector on the rear of the power supply.
   - B. Connect the signal cable connector to the firing switch connector on the power supply.

3. **24VDC EZ-AIR-DC:**
   - A. Connect weld head driver cable to connector labeled WELD HEAD on control
   - B. Connect voltage sense cable between EZ-AIR-DC and electrodes, if desired.
CHAPTER 3
OPERATING INSTRUCTIONS

Section I: Operating Precautions

General Operator Safety

WARNINGS
Always wear safety goggles any time you are operating a weld head.

Never wear loose clothing or jewelry when operating the weld head. It could be caught in the mechanism.

Before operating a weld head, read the manuals on the power supply and the weld head. Particularly note the specific hazards associated with those components.

Section II: Preparing for Operation

Pre-Operational Checks

Before operating the equipment, verify that the power and compressed air connections are made to the EZ-Air as described in Chapter 2, Section III. Verify that all pneumatic connections are secure and that there are no air leaks.

Verify that the (red) EZ-Clean valve (figure 1-1) is slid fully down (non-purge position).

Verify that the weld head and power supply are properly connected.

Turning the Equipment On

To apply power to the unit, follow the directions in the respective power supply User’s Manual.

Section III: Operation

Set-Up

CAUTION: Adjustment of the EZ-Air should only be done by an experienced and trained individual.

1. Refer to the appropriate weld head user’s manual for spring-force set-up. Disregard air adjustments.

2. Set the down speed control valve adjuster (figure 1-1) to provide an acceptable welding speed.

NOTE: Once set-up is completed, there are no separate steps required during weld head operation except that the EZ-Clean valve (figure 1-1) can be actuated to purge the air during electrode dressing. To do so, push the EZ-Clean (red) slide valve up. To restore pressure, slide the valve down.
CHAPTER 4
USER MAINTENANCE

Section I: Precautions

General Operator Safety

WARNINGS

Always wear safety goggles any time you are operating a weld head.

Never wear loose clothing or jewelry when operating the weld head. It could be caught in the mechanism.

Before operating a weld head, read the manuals on the power supply and the weld head. Particularly note the specific hazards associated with those components.

Section II: Operator Maintenance

Preventive Maintenance

The only preventive maintenance required for the EZ-Air is occasional lubrication of the EZ-Clean valve, whenever necessary. The valve should only be lubricated with a petroleum or lithium based grease.

CAUTION: Do not use synthetic oil. It will damage the EZ-Air.

Corrective Maintenance

The only recommended user corrective maintenance is clearing foreign matter that might jam a valve open. If the weld head fails to move up or down, refer to table 4-1 and perform the actions prescribed.
## Troubleshooting Table

**NOTE:** Table presumes all power and pneumatic connections are made and properly adjusted.

<table>
<thead>
<tr>
<th>FAULT</th>
<th>CHECK FOR:</th>
<th>POSSIBLE CAUSE</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weld head does not move upward when air is first applied.</td>
<td></td>
<td>Problem with input shop air</td>
<td>Verify correct input shop air pressure. See Chapter 2, Compressed Air Requirements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EZ-Clean valve is closed (in up position).</td>
<td>Open valve by pushing downward.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Internal valve is stuck.</td>
<td>Contact company representative.</td>
</tr>
<tr>
<td>Weld head does not go downward when footswitch is pressed (first position for two-level foot switches).</td>
<td>Neither green firing indicator nor amber initialization signal received indicator light.</td>
<td>Problem exists in power supply, footswitch, or cable connections.</td>
<td>Check cable connections. Refer to appropriate power supply manual.</td>
</tr>
<tr>
<td></td>
<td>Amber initialization signal received indicator is lit.</td>
<td>Internal valve is stuck.</td>
<td>Contact company representative.</td>
</tr>
<tr>
<td></td>
<td>Down Speed Limiter valve is closed.</td>
<td></td>
<td>Turn valve counterclockwise to open.</td>
</tr>
<tr>
<td>Weld head moves downward too forcefully when footswitch is pressed (first position for two-step foot switches).</td>
<td></td>
<td>Down Speed Limiter valve requires adjustment.</td>
<td>Contact company representative.</td>
</tr>
</tbody>
</table>

### Table 4-1. Troubleshooting Table

## Repair

If problems cannot be resolved using the above troubleshooting table, contact Amada Miyachi America at the address/telephone/fax shown in the Foreword.
## APPENDIX A
### Specifications

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>3.5 in. (88.9 mm)</td>
</tr>
<tr>
<td>Depth</td>
<td>6.4 in. (162.6 mm)</td>
</tr>
<tr>
<td>Height</td>
<td>5.5 in. (139.7 mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>2.5 lb. (1.1 kg)</td>
</tr>
<tr>
<td>Power Requirements</td>
<td>24VAC/DC -5%/+±10%, ½A (Derived from power supply)</td>
</tr>
<tr>
<td>Compressed air Requirements</td>
<td>85–140 psi (586–965 kPa)</td>
</tr>
<tr>
<td></td>
<td>An auto drain air filter with a 5-micron element (part number 10-373-01, catalog number ADAF) is recommended</td>
</tr>
<tr>
<td></td>
<td><strong>CAUTION:</strong> Compressor supplying air must <em>not</em> be lubricated with synthetic oil.</td>
</tr>
<tr>
<td>Operating Environment</td>
<td>60–113°F (15.5–45°C)</td>
</tr>
<tr>
<td></td>
<td>93% Relative Humidity (maximum) at 104°F (40°C)</td>
</tr>
</tbody>
</table>
Outline Drawing
(Dimensions are in inches)

Figure A-1. Outline Dimensions
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