Motoman

HyperFeed II
with MWI
HyperFeed II-EA
with MWI

Wire Feeder System
Manual

Part Number: 151116-1CD
Revision: 0
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Chapter 1

Introduction

1.1 About This Document

This manual provides coverage of the Motoman HyperFeed II/MWI Wire Feed System, and is organized as follows –

CHAPTER 1 - INTRODUCTION
Chapter 1 provides an overview of the HyperFeed II/MWI Wire Feed System and associated components, a list of reference documents, and contact information for Motoman Customer Support.

CHAPTER 2 - SAFETY
Chapter 2 provides general safety information regarding installation, operation, and maintenance of Motoman robotic systems and peripheral equipment.

CHAPTER 3 - EQUIPMENT DESCRIPTION
Chapter 3 provides a description of the complete HyperFeed II/MWI Wire Feed System as well as individual components of this system.

CHAPTER 4 - INSTALLATION
Chapter 4 provides installation procedures for the HyperFeed II/MWI Wire Feed System.

CHAPTER 5 - MAINTENANCE AND TROUBLESHOOTING
Chapter 5 provides maintenance data and schedules for the HyperFeed II/MWI Wire Feed System.

APPENDIX A - ILLUSTRATED PARTS LIST
Appendix A contains the Illustrated Parts List (IPL). The IPL provides “exploded” views and part listings for the HyperFeed II/MWI Wire Feed System.
1.2 Overview — HyperFeed II / MWI Wire Feed System

The HyperFeed II / MWI Wire Feed System is designed to help manufacturers robotically weld more parts per hour by optimizing application uptime and throughput. The HyperFeed II / MWI Wire Feed System rapidly starts and ends welds and interfaces efficiently with a variety of semi-automatic welding power supplies. In addition, it can be interfaced with all Motoman robots that use NX100, XRC, MRC, and ERC robot controllers. Thus, manufacturers with new Motoman robots and welding equipment, as well as those with legacy models, can all benefit from the advanced technology of the HyperFeed II / MWI Wire Feed System.

The HyperFeed II / MWI Wire Feed System consists of the following components –

- Three configurations of the robot-mounted, enclosed, HyperFeed II Wire Feeder –
  - HyperFeed II–EA. . . . . . . . . . . . . . . . .P/N 152648–1 (see Figure 1)
  - HyperFeed II . . . . . . . . . . . . . . . . . .P/N 152123–1 (see Figure 1)
  - HyperFeed II . . . . . . . . . . . . . . . . . .P/N 152123–2 (see Figure 1)
- A controller-mounted Motoman Welder Interface (MWI) Circuit Board Assembly (refer to Section 1.6).
- Various interconnect cables and wire harness assemblies.

![Figure 1 HyperFeed II Wire Feed Units and Associated Motoman Robot Applications](image_url)
1.3 Features — HyperFeed II / MWI Wire Feed System

The HyperFeed II / MWI Wire Feed System provides the following features and innovations –

- LCD display on the Wire Feeder indicates wire feed rate, motor direction, motor current (during manual INCH FWD operation), and error codes
- Replacement feed-roll kit numbers (and contact telephone number) are clearly labelled inside each of the Wire Feeders, and also listed in Section 3.2.3 of this System Manual
- Easy feed-roll change-out
- Wire INCH FWD and INCH REV push buttons on each of the Wire Feeders provide for manual feed of welding wire (forward or reverse) through the feed roll unit
- Shock sensor override switch on each Wire Feeder assists the operator in fast crash (collision) recovery
- Seven-pin and four-pin shock sensor plugs on each Wire Feeder allow connection to various torch types without the need for adapter cables
- Powerful 4-roll, low-inertia feed roll unit in each Wire Feeder is driven by 120-watt motor with built-in encoder
- High-frequency Pulse Width Modulation (PWM) motor speed control ensures precise control of feed motor speed and direction change for fast response starts and stops
- Data bus communications port for digital communications between the Motoman Welder Interface (MWI) Circuit Board Assembly and the HyperFeed II Wire Feeder
- Hardware current limiting for fast response motor and electronics protection

1.4 Overview — HyperFeed II Wire Feeders

As stated in Section 1.2, three HyperFeed II Wire Feeder configurations are available to the customer. The configurations are identical in function, but differ in shape and mechanical configuration (see Figures 1, 2, 3, 4, 5, 6, and 7). The HyperFeed II Wire Feeders are fully-enclosed and electrically isolated.

With any of the HyperFeed II Wire Feeder configurations, the operator can expect –

- fast, low-spatter weld starts.
- precise wire feed during the welding process.
- fast arc termination, with minimized “ball” formation at the wire end.
1.5 Features — HyperFeed II / HyperFeed II–EA Wire Feeders

- The HyperFeed II and HyperFeed II–EA Wire Feeders attach to the upper arm (U-arm) of their respective robots. This mounting location provides for ease of installation and optimal operational dynamics for the upper robot arm and wire feeder (see Figure 9).
- The enclosed design of the Wire Feeders protects internal components against contamination from dust, dirt, and airborne welding by-products. This design also provides easy access to internal Wire Feeder components when necessary.
- All of the Wire Feeder configurations contain two motor-driven, grooved wire feed rolls, and two flat-top (ungrooved) follower rolls. The ungrooved follower rolls apply pressure against the grooved feed rolls with an adjustable force. The amount of force applied to the follower rolls adjusts welding wire pull force.
- The grooved wire feed rolls are oriented so that the stamped marking for the required wire diameter faces the open side of the wire feed unit (visible to the operator).
- Standard feed roll size (as installed at the factory) is 0.9 mm / 1.2 mm (0.035 in./0.045 in.). Optional feed roll sizes are available from Motoman (refer to Section 3.2.3). Available feed roll sizes are also shown on a label inside all of the HyperFeed II Wire Feeders.
- A 24-volt, wire feed motor drives the feed roll unit to feed welding wire to the weld torch. A four-quadrant, Pulse Width Modulation (PWM) motor speed control, along with feedback data from an optical, 2-channel encoder, assures precise control of wire feed dynamics. All Wire Feeder configurations can supply wire to the torch at a rate of up to 19.05 m (750 in.) per minute.
- All Wire Feeder configurations are rated for 500 Ampere weld current at 100 percent duty cycle. Depending on model and configuration, the Wire Feeders are equipped with either a standard Tweco #5 power pin adapter or a Mechafin power pin adapter (see Figure 1). Weld torch replacement is not required when replacing previous Motoman PWF wire feeders.
- Reconnection of the torch cable is easily accomplished by inserting the torch cable power pin into the torch adapter, and tightening a retaining screw (TWECO #5) or retaining colar (MECHAFIN) on the adapter.
Figure 2  HyperFeed II–EA Wire Feeder, P/N 152648-1 — Front Isometric View
Figure 3 HyperFeed II–EA Wire Feeder, P/N 152648-1 — Rear Isometric View and Detail View “A”
Figure 4 HyperFeed II Wire Feeder, P/N 152123-1 — Front Isometric View
Figure 5  HyperFeed II  Wire Feeder, P/N 152123-1 — Rear Isometric View
Figure 6  HyperFeed II Wire Feeder, P/N 152123-2 — Front Isometric View
Figure 7  HyperFeed II Wire Feeder, P/N 152123-2 — Rear Isometric View
1.6 Overview — Motoman Welder Interface (MWI) Assembly

New to the HyperFeed II – Series of Wire Feed Systems, is the Motoman Welder Interface (MWI) Assembly. The MWI is an integral part of the HyperFeed Wire Feed System, and consists of a circuit board assembly mounted on the interior surface of the robot controller access door, along with various interconnecting wires and cable assemblies.

The MWI is connected to the HyperFeed II (or HyperFeed II–EA) Wire Feeder, and other system components, through discrete analog signal cables and a communication network cable. The multi-purpose MWI processes I/O status generated by the robot controller and routes this information to the Welding Power Source. The MWI also routes Welding Power Source and Wire Feeder signals to the robot. The MWI then measures and digitizes data from the robot controller for wire feed speed and voltage, and transmits this data through the communication cable to the HyperFeed II (or HyperFeed II–EA) Wire Feeder.

A simplified diagram of this signal flow is shown in Figure 8.

![Figure 8 Motoman Welder Interface (MWI) Assembly — Simplified Communication/Interface Diagram]

1.7 System Compatibility

The HyperFeed II/MWI Wire Feed System is currently approved for use with the following Motoman controllers and robots —

<table>
<thead>
<tr>
<th>MOTOMAN CONTROLLERS</th>
<th>MOTOMAN ROBOTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC, MRC, NX100, XRC, XRC 2001</td>
<td>HP6, HP50-20, HP20, HP20-6, SK6, SK16, SK16-M, UP6, UP20, UP20-6, UP20M</td>
</tr>
<tr>
<td>EA1400N, EA1900N, SSA2000</td>
<td>K6, K10, SK16, SK16X, SK16-6</td>
</tr>
</tbody>
</table>
The HyperFeed II/MWI Wire Feed System is compatible with any of the following Welding Power Sources –

<table>
<thead>
<tr>
<th>WELD POWER SOURCE</th>
<th>MOTOMAN P/N</th>
<th>MFG P/N</th>
<th>WELD INTERFACE CABLE¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lincoln Invertec V350</td>
<td>N/A</td>
<td>K1728-5, K1728-6, K1728-7, K1728-11</td>
<td>94877034</td>
</tr>
<tr>
<td>Miller Deltaweld 302</td>
<td>152152-1</td>
<td>Miller 903392</td>
<td>149492-1 to -3</td>
</tr>
<tr>
<td>Miller Deltaweld 452</td>
<td>137062-1</td>
<td>Miller 903394</td>
<td>149492-1 to -3</td>
</tr>
<tr>
<td>Miller Deltaweld 652</td>
<td>137063-1</td>
<td>Miller 903396</td>
<td>149492-1 to -3</td>
</tr>
<tr>
<td>Miller XMT 350 CC/CV</td>
<td>152153-1</td>
<td>Miller 907161</td>
<td>149492-4 to -8</td>
</tr>
<tr>
<td>Miller XMT 456 CC/CV</td>
<td>—</td>
<td>Miller 907010</td>
<td>149492-4 to -8</td>
</tr>
<tr>
<td>Miller Maxtron 450</td>
<td>700047-1</td>
<td>Miller 903287</td>
<td>149492-16 to -18</td>
</tr>
<tr>
<td>Motoman MotoArc 350i</td>
<td>137200-2</td>
<td>—</td>
<td>149492-10 to -12</td>
</tr>
<tr>
<td>Motoman MotoArc 450</td>
<td>137201-3</td>
<td>—</td>
<td>149492-10 to -12</td>
</tr>
<tr>
<td>Motoman MotoArc 500i</td>
<td>137202-2</td>
<td>—</td>
<td>149492-10 to -12</td>
</tr>
<tr>
<td>Motoman MotoArc 650</td>
<td>137203-2</td>
<td>—</td>
<td>149492-10 to -12</td>
</tr>
<tr>
<td>Motoman ArcMaster 351</td>
<td>147551-1</td>
<td>—</td>
<td>149492-10 to -12</td>
</tr>
<tr>
<td>Motoman ArcMaster 501</td>
<td>500109-1</td>
<td>—</td>
<td>149492-10 to -12</td>
</tr>
<tr>
<td>Thermal Arc PowerMaster 500</td>
<td>147549-1</td>
<td>Thermal Arc 100060</td>
<td>149492-13 to -15</td>
</tr>
<tr>
<td>Thermal Arc PowerMaster 500P</td>
<td>147550-1</td>
<td>Thermal Arc 100054</td>
<td>149492-13 to -15</td>
</tr>
</tbody>
</table>

¹ Welder interface cables are available in 3, 6, or 8 meter lengths. The MotoArc interface cables can be used with the Thermal Arc PowerMaster power sources, but the Thermal Arc PowerMaster interface cables can NOT be used with the MotoArc power sources.
1.8 Reference Documentation

In addition to this System Manual, the following supplemental titles are included with your HyperFeed II/MWI Wire Feed System documentation package –

- Motoman Operator's Manual for Arc Welding (P/N 149235-1)
- Motoman manipulator (robot) manuals
- Vendor manuals for system components not manufactured by Motoman, but supplied with your shipment.

1.9 Customer Support Information

If you need assistance with any aspect of your HyperFeed II/MWI system, please contact Motoman Customer Support at the following 24-hour telephone number –

937. 847. 3200

For routine technical inquiries, you can also contact Motoman Customer Support at the following e-mail address –

techsupport@motoman.com

When using e-mail to contact Motoman Customer Support, please provide a detailed description of your issue, along with complete contact information. Please allow approximately 24 to 36 hours for a response to your inquiry.

Note: Please use e-mail for routine inquiries, only. If you have an urgent or emergency need for service, replacement parts, or information, you must contact Motoman Customer Support at the telephone number shown above.

Please have the following information ready before you call –

- Robot Type. . . . . . . . . . . . Refer to robot for your particular application
- Wire Feed System. . . . . . . . HyperFeed II/MWI Wire Feed System
- Wire Feeder . . . . . . . . . HyperFeed II –or– HyperFeed II EA
- Primary Application. . . . . . Arc Welding
- Controller Type . . . . . . . . . ERC, MRC, XRC, XRC 2001, NX100
- Software Version . . . . . . . . . Access this information on the Programming Pendant LCD display screen by accessing MAIN MENU | SYSTEM INFO | VERSION

- Robot Serial Number . . . . Located on robot data plate
- Robot Order Number . . . . . Order Number plate (label) can be found in two locations –
  - Robot base
  - Access door of robot controller
NOTES
Chapter 2

Safety

2.1 Introduction

It is the purchaser’s responsibility to ensure that all local, county, state, and national codes, regulations, rules, or laws relating to safety and safe operating conditions for each installation are met and followed.

We suggest that you obtain and review a copy of the ANSI/RIA National Safety Standard for Industrial Robots and Robot Systems (ANSI/RIA R15.06-1999). You can obtain this document from the Robotic Industries Association (RIA) at the following address:

RoboticIndustriesAssociation
900VictorsWay
P.O.Box3724
AnnArbor,Michigan48106
TEL:(734)994-6088
FAX:(734)994-3338
www.roboticsonline.com

Ultimately, well-trained personnel are the best safeguard against accidents and damage that can result from improper operation of the robot system. The customer is responsible for providing adequately trained personnel to operate, program, and maintain the robot cell. NEVER ALLOW UNTRAINED PERSONNEL TO OPERATE, PROGRAM, OR REPAIR THE ROBOT SYSTEM!

We recommend approved Motoman training courses for all personnel involved with the operation, programming, or repair of the robot system. This training is designed to familiarize personnel with the safe and correct operation of the robot system.
This safety section addresses the following:

- Standard Conventions (Section 2.2)
- General Safeguarding Tips (Section 2.3)
- Mechanical Safety Devices (Section 2.4)
- Installation Safety (Section 2.5)
- Programming, Operation, and Maintenance Safety (Section 2.6)

### 2.2 Important Advisory Information

Throughout this manual you will find advisory paragraphs (denoted by graphic symbols and bold typeface). All of these (except “NOTE”) direct the reader's attention to information and procedures that are essential to the safety of personnel or protection of equipment.

The type of information contained in the various advisories is described below. These are listed here in descending order of importance to the safety of personnel and protection of equipment.

**DANGER!**

Information appearing under the DANGER caption concerns the protection of personnel from an immediate and imminent hazards that, if not avoided, will result in immediate, serious personal injury or loss of life in addition to equipment damage.

**WARNING!**

Information appearing under the WARNING caption concerns the protection of personnel and equipment from potential hazards that can result in personal injury or loss of life in addition to equipment damage.

**CAUTION!**

Information appearing under the CAUTION caption concerns the protection of personnel and equipment, software, and data from hazards that can result in minor personal injury or equipment damage.

*Note: Information appearing in a Note caption provides additional information that can be helpful in understanding the item being explained.*

### 2.3 General Safeguarding Tips

All operators, programmers, plant and tooling engineers, maintenance personnel, supervisors, and anyone working near the robot must become familiar with the operation of this equipment. All personnel involved with the operation of the equipment must understand potential dangers of operation. General safeguarding tips are as follows:

- Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation of this robot, the operator’s manuals, the system equipment, and options and accessories should be permitted to operate this robot system.
• Do not enter the robot cell while it is in automatic operation. Programmers must have the teach pendant when they enter the robot cell.

• Improper connections can damage the robot. All connections must be made within the standard voltage and current ratings of the robot I/O (Inputs and Outputs).

• The robot must be placed in Emergency Stop (E-Stop) mode whenever it is not in use.

• In accordance with ANSI/RIA R15.06-1999, section 4.2.5, Sources of Energy, use lockout/tagout procedures during equipment maintenance. Refer also to Section 1910.147 (29CFR, Part 1910), Occupational Safety and Health Standards for General Industry (OSHA).

2.4 Mechanical Safety Devices

The safe operation of the robot, positioner, auxiliary equipment, and system is ultimately the user's responsibility. The conditions under which the equipment will be operated safely should be reviewed by the user. The user must be aware of the various national codes, ANSI/RIA R15.06-1999 safety standards, and other local codes that may pertain to the installation and use of industrial equipment. Additional safety measures for personnel and equipment may be required depending on system installation, operation, and/or location. The following safety equipment is provided as standard:

• Safety fences and barriers
• Light curtains and/or safety mats
• Door interlocks
• Emergency stop palm buttons located on operator station, robot controller, and programming pendant

Check all safety equipment frequently for proper operation. Repair or replace any non-functioning safety equipment immediately.

2.5 Installation Safety

Safe installation is essential for protection of people and equipment. The following suggestions are intended to supplement, but not replace, existing federal, local, and state laws and regulations. Additional safety measures for personnel and equipment may be required depending on system installation, operation, and/or location. Installation tips are as follows:

• Be sure that only qualified personnel familiar with national codes, local codes, and ANSI/RIA R15.06-1999 safety standards are permitted to install the equipment.
• Identify the work envelope of each robot with floor markings, signs, and barriers.
• Position all controllers outside the robot work envelope.
• Whenever possible, install safety fences to protect against unauthorized entry into the work envelope.
• Eliminate areas where personnel might get trapped between a moving robot and other equipment (pinch points).
• Provide sufficient room inside the workcell to permit safe teaching and maintenance procedures.

### 2.6 Programming, Operation, and Maintenance Safety

All operators, programmers, plant and tooling engineers, maintenance personnel, supervisors, and anyone working near the robot must become familiar with the operation of this equipment. Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation, manuals, electrical design, and equipment interconnections of this robot should be permitted to program, operate, and maintain the system. All personnel involved with the operation of the equipment must understand potential dangers of operation.

• Inspect the robot and work envelope to be sure no potentially hazardous conditions exist. Be sure the area is clean and free of water, oil, debris, etc.

• Be sure that all safeguards are in place. Check all safety equipment for proper operation. Repair or replace any non-functioning safety equipment immediately.

• Do not enter the robot cell while it is in automatic operation. Be sure that only the person holding the programming pendant enters the workcell.

• Check the E-Stop button on the programming pendant for proper operation before programming. The robot must be placed in Emergency Stop (E-Stop) mode whenever it is not in use.

• Back up all programs and jobs onto suitable media before program changes are made. To avoid loss of information, programs, or jobs, a backup must always be made before any service procedures are done and before any changes are made to options, accessories, or equipment.

• Any modifications to PART 1, System Section, of the robot controller concurrent I/O program can cause severe personal injury or death, as well as damage to the robot! Do not make any modifications to PART 1, System Section. Making any changes without the written permission of Motoman will VOID YOUR WARRANTY!

• Some operations require standard passwords and some require special passwords. Special passwords are for Motoman use only. YOUR WARRANTY WILL BE VOID if you use these special passwords.

• The robot controller allows modifications of PART 2, User Section, of the concurrent I/O program and modifications to controller parameters for maximum robot performance. Great care must be taken when making these modifications. All modifications made to the controller will change the way the robot operates and can cause severe personal injury or death, as well as damage the robot and other parts of the system. Double-check all modifications under every mode of robot operation to ensure that you have not created hazards or dangerous situations.

• Check and test any new or modified program at low speed for at least one full cycle.

• This equipment has multiple sources of electrical supply. Electrical interconnections are made between the controller and other equipment. Disconnect and lockout/tagout all electrical circuits before making any modifications or connections.
• Do not perform any maintenance procedures before reading and understanding the proper procedures in the appropriate manual.
• Use proper replacement parts.
• Improper connections can damage the robot. All connections must be made within the standard voltage and current ratings of the robot I/O (Inputs and Outputs).
Chapter 3

Equipment Description

3.1 Introduction

Chapter 1 presented an overview of the HyperFeed II / MWI Wire Feed System. This chapter presents a more detailed description of the component parts of that system.

The HyperFeed II / MWI Wire Feed System must be integrated with a complete robotic welding environment in order for the system to perform its intended functions. Figure 9 shows a typical integration configuration.

![Figure 9](image-url)  
*Figure 9 Typical Interconnections – HyperFeed II / MWI Wire Feed System*
3.2 **HyperFeed II and HyperFeed II–EA Wire Feeders**

The HyperFeed II and HyperFeed II–EA wire feeders are fully-enclosed and electrically isolated (see Figures 1, 2, 3, 4, 5, 6, and 7).

The wire feeders are designed around the concept that higher weld system productivity requires fast-response wire feeding. High-performance wire feeding means improved arc starting and reduced spatter at arc end. This results in higher weld system productivity. The HyperFeed II and HyperFeed II–EA wire feeders are equipped with a low-inertia drive system, small diameter drive rolls, and high-performance drive motor control circuitry.

Each type of wire feeder is designed for attachment to an integral mounting pad on the upper arm of applicable robots (refer to Chapter 4).

The HyperFeed II–EA wire feeder is intended for use with the EA1900N or SSA2000 *ExpertArc* welding robots. It comes with a new custom power-pin design (Mechafin) that more efficiently transfers weld power from the wire feeder to the welding torch with reduced voltage drop and heat. The HyperFeed II–EA wire feeder also utilizes a “front-load liner” that enables the customer to replace the torch liner without removing the torch cable from the wire feeder. When needed, a new liner can be installed by simply pushing it into the torch cable from the welding torch end.

The standard HyperFeed II wire feeder is designed to fit all other Motoman welding robots. It is available in a “-1” or “-2” configuration. The “-1” and “-2” versions are identical except for the type of installed torch feeder adapter (see Figures 1, 4, 5, 6, and 7). The “-1” version is fitted with the Mechafin torch feeder adapter with locking collar. The “-2” version is fitted with the more traditional Tweco #5 torch feeder adapter and torch liner. Both units are compatible with Motoman K-series, SK-series, UP-series, and HP-series robots (see Figure 1).

Both the HyperFeed II and the HyperFeed II–EA wire feeders are equipped with a standard thread-on wire inlet conduit adaptor and a quick-connect conduit adaptor.

Each wire feeder consists of the following main components –

- Motor Control Circuit Board
- Enclosure Assembly
- Feed Roll Unit
- Feed Roll Unit Drive Motor
- Welding Gas Control Valve

### 3.2.1 Motor Control Circuit Board

The Motor Control Circuit Board (see Figure A.2 in Appendix A) is the same for both the HyperFeed II and the HyperFeed II–EA wire feeders.

The Motor Control Circuit Board serves as the primary connection point for all interconnection cables, except the weld (+) cable, that are routed to the wire feeder. In addition, the Motor Control Circuit Board processes all data, signal, and power input/output (I/O) for the wire feeder. This circuit board also controls the flow of inert welding gas through a gas valve that is internal to wire feeder enclosure.
3.2.2 Enclosure Assembly

The enclosure assemblies for the HyperFeed II and the HyperFeed II–EA differ considerably in appearance, but both serve the same purpose. The enclosure assembly encloses and protects internal wire feeder components from impact and contamination from dirt, grease, airborne welding by-products, and other foreign matter. The enclosure assembly also serves as a mounting surface for the various connectors, switches, and LCD display that are integral parts of the wire feeder.

3.2.3 Feed Roll Unit (Frame)

The Hyperfeed II and the HyperFeed II–EA wire feeders are equipped with identical feed roll units (see Figure A.3 in Appendix A). Each feed roll unit contains an upper and lower feed roll assembly. Upper feed rolls are geared and are driven by the feed roll drive motor. Lower feed rolls are smooth and apply adjustable force against the upper, driven feed rolls. Feed rolls are identified by the diameter of the welding wire they are designed to handle. Feed rolls for 0.9 mm / 1.2 mm (0.035 in./0.045 in.) wire are factory-installed as standard equipment. Other feed roll sizes and an annual maintenance kit are available through Motoman (see Table 1).

The Feed Roll Unit is rated for 500 Amps of welding current at a 100 percent duty cycle. The maximum welding wire feed rate is 750 in. per minute (IPM).

Table 1 Available Feed Roll Kits and Annual Maintenance Kit

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>MOTOMAN P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-Groove, Flat-top roll, 0.9 mm/1.2 mm (0.035 in./0.045 in.), Hard Wire, 2 grooved rolls</td>
<td>151480-1</td>
</tr>
<tr>
<td>V-Groove, Flat-top roll, 0.8 mm/1.0 mm (0.030 in./0.040 in.), Hard Wire, 2 grooved rolls</td>
<td>151480-2</td>
</tr>
<tr>
<td>V-Groove, Flat-top roll, 1.2 mm/1.6 mm (0.045 in./0.063 in.), Hard Wire, 2 grooved rolls</td>
<td>151480-3</td>
</tr>
<tr>
<td>V-Groove, Flat-top roll, 0.9 mm/0.9 mm (0.035 in./0.035 in.), Hard Wire, 2 grooved rolls</td>
<td>151480-4</td>
</tr>
<tr>
<td>V-Groove, Flat-top roll, 1.2 mm/1.2 mm (0.045 in./0.045 in.), Hard Wire, 2 grooved rolls</td>
<td>151480-5</td>
</tr>
<tr>
<td>U-Groove, Flat-top roll, 1.0 mm/1.2 mm (0.040 in./0.045 in.), Soft Wire, 2 grooved rolls</td>
<td>151480-6</td>
</tr>
<tr>
<td>Annual maintenance kit for flat-top feed frame, new flat-top rolls and gears</td>
<td>151417-1</td>
</tr>
</tbody>
</table>

NOTES –
1. Wire sizes shown in this chart do NOT represent a RANGE of wire sizes. The wire sizes shown for each feed roll kit are the two wire sizes that can be accommodated by the feed rolls in the kit. The feed rolls incorporate two machined, circumferential grooves, sized to accommodate the two wire sizes listed in the table. When a feed roll is inserted into the feed roll unit, one of the feed roll grooves accommodates one of the welding wire sizes associated with that feed roll. When the feed roll is removed and re-inserted with the sides transposed, the feed roll groove accommodates the other welding wire size listed for that particular feed roll. The grooved, feed rolls are designed so that the stamped marking for the currently selected wire diameter faces the open side of the wire feed unit for easy reading by the operator or repair technician.

2. Each feed roll kit includes the following –
   - Two grooved rolls
   - One center wire guide tube
   - One output wire guide tube *(used only with the HyperFeed II Wire Feeder, P/N 152123-2)*
3.2.4 Feed Roll Unit Drive Motor

A 24-volt motor drives the Feed Roll Unit to feed welding wire to the welding torch as needed. Pulse Width Modulation (PWM) circuitry on the Motor Control Circuit Board, along with feedback data from a motor-mounted encoder, ensures precise control of drive motor dynamics.

The Feed Roll Unit Drive Motor is mounted vertically in the HyperFeed II–EA wire feeder. In the HyperFeed II wire feeder, the motor is mounted horizontally. Functionality is identical in both units.

3.2.5 Welding Gas Control Valve

A Welding Gas Control Valve is located inside both the HyperFeed II and HyperFeed II–EA wire feeders.

3.3 HyperFeed II–EA Wire Feeder — Front Panel Features

Note: Figure 10 shows the front panel features described below.

3.3.1 Power Pin Adapter (Mechafin)

The Hyperfeed II–EA Wire Feeder is equipped with a Mechafin power pin adapter. The power pin adapter and retaining collar are used to secure the torch cable to the wire feeder. Refer to Chapter 4 for installation procedure.

3.3.2 Weld (+) Cable Attach Point

Large bolt/screw combination, copper bus bar, and insulator block provide a convenient and secure mounting point for the positive (+) cable from the welding power source.

3.3.3 Shock Sensor Connectors

Mate with a 4-pin or 7-pin shock sensor cable plug. Provides I/O port for welding torch shock sensor signal.

3.3.4 Access Doors

Two hinged doors (one plastic and one aluminum) provide access to internal wire feeder components for cleaning, inspection, adjustment, or component replacement.

Note: The plastic access door is secured in the closed position by two captive screws. These fasteners ensure a good seal between the access door and the Frame / Enclosure Assembly. They also serve to prevent unintentional access to the Motor Control Circuit Board.

3.3.5 Aluminum Frame / Enclosure Assembly

The frame / enclosure assembly encloses and protects internal wire feeder components from impact, and contamination from dirt, airborne welding by-products, and other foreign matter. The frame / enclosure assembly also serves as a mounting surface for the various connectors, switches, circuit boards, and the LCD display that are integral to the wire feeder.
Figure 10 HyperFeed II–EA Wire Feeder — Front Panel Features
3.4  **HyperFeed II–EA Wire Feeder — Rear/Side Panel Features**

*Note: Figure 11 shows the rear / side panel features described below.*

*Note: Some rear / side panel feature shown in Figure 11 are not described below. In these cases, the description shown in the graphic sufficiently describes the feature.*

### 3.4.1 Switch – Shock Sensor Override

When this switch is moved to the OVERRIDE position, the Motor Control Circuit Board (internal to the Wire Feeder) overrides the shock sensor and prevents the wire feed motor from feeding welding wire in the forward direction. However, the wire feed motor can still move welding wire in the reverse direction.

With the switch in the OVERRIDE position, the robot can be moved away from the point of torch impact, and the shock sensor can be reset. The wire feed motor remains unable to feed welding wire in the forward direction until the override switch is moved back to the NORMAL position.

*Note: Always ensure that the shock sensor override switch is in the NORMAL position during operation of the robotic welding system. Move the switch to the OVERRIDE position only long enough to allow repositioning of the robot arm and welding torch in the event of a torch collision.*

### 3.4.2 Push Button – INCH FWD

This momentary action push button switch activates the feed roll unit to feed the welding wire forward (toward the weld torch) when depressed. Wire feed rate is set for 1524 mm (60 in.) per minute at the factory.

### 3.4.3 Push Button – INCH REV

This momentary action, push button switch activated the feed roll unit to feed the welding wire in reverse (away from the weld torch) when depressed. Wire feed rate is set for 1524 mm (60 in.) per minute at the factory.

### 3.4.4 LCD Display Panel

The three-digit LCD Display Panel shows wire feed speed in inches per minute (IPM) during a weld cycle. When INCH FWD mode is selected (either at the Wire Feeder or the Programming Pendant) the LCD Display Panel shows the wire feed speed in bright characters and the wire feed motor current draw in dimmed characters. The LCD Display Panel can also show certain error codes associated with the Wire Feeder (refer to Chapter 5).

### 3.4.5 Wire Inlet / Quick Disconnect

This is the HyperFeed II–EA Wire Feeder entrance port for welding wire. It is intended to connect wire conduit (from wire spool or “pay-off” pack) to the Wire Feeder. The Wire Feeder is shipped from the factory with both a thread-on fitting and a quick disconnect (QD) fitting. The QD fitting is designed for use with ELCo, Inc. WireWizard™ conduit.
Figure 11 HyperFeed II–EA Wire Feeder — Rear / Side Panel Features
3.5 **HyperFeed II Wire Feeder — Front Panel Features**

*Note: Figure 12 shows the front panel features described below.*

*Note: Some front panel feature shown in Figure 12 are not described below. In these cases, the description shown in the graphic sufficiently describes the feature.*

*Note: The [-1] version of the HyperFeed II Wire Feeder is shown in Figure 12. The [-2] version is not shown, but is identical to the [-1] with the exception of the power pin adapter. The [-1] is configured with the Mechafin adapter. The [-2] is configured with the Tweco #5 adapter.*

3.5.1 **Power Pin Adapters**

- **MECHAFIN**
  
  The Hyperfeed II Wire Feeder [-1] is equipped with the MECHAFIN power pin adapter. The power pin adapter and retaining collar are used to secure the torch cable to the wire feeder. Refer to Chapter 4 for installation procedure.

- **TWECO #5**
  
  The Hyperfeed II Wire Feeder [-2] is equipped with the TWECO #5 power pin adapter. Use of the TWECO #5 ensures correct fit-up to older, legacy torches.

3.5.2 **Shock Sensor Connectors**

Mate with a 4-pin or 7-pin shock sensor cable plug. Provides I/O port for welding torch shock sensor signal.

3.5.3 **Access Doors**

Two plastic, hinged access doors (LH and RH) provide access to internal wire feeder components for cleaning, inspection, adjustment, or component replacement.

*Note: The LH plastic access door is secured in the closed position by two captive screws. These fasteners ensure a good seal between the access door and the Frame/Enclosure Assembly. They also serve to prevent unintentional access to the Motor Control Circuit Board.*

3.5.4 **Aluminum Frame / Enclosure Assembly**

The frame/enclosure assembly encloses and protects internal wire feeder components from impact, contamination from dirt, airborne welding by-products, and other foreign matter. The frame/enclosure assembly also serves as a mounting surface for the various connectors, switches, circuit boards, and the LCD display that are integral to the wire feeder.
3.5.5 Switch – Shock Sensor Override

When this switch is moved to the OVERRIDE position, the Motor Control Circuit Board (internal to the Wire Feeder) overrides the shock sensor and prevents the wire feed motor from feeding welding wire in the forward direction. However, the wire feed motor can still move welding wire in the reverse direction.

With the switch in the OVERRIDE position, the robot can be moved away from the point of torch impact, and the shock sensor can be reset. The wire feed motor remains unable to feed welding wire in the forward direction until the override switch is moved back to the NORMAL position.

*Note: Always ensure that the shock sensor override switch is in the NORMAL position during operation of the robotic welding system. Move the switch to the OVERRIDE position only long enough to allow repositioning of the robot arm and welding torch in the event of a torch collision.*

3.5.6 Push Button – INCH FWD

This momentary action push button switch activates the feed roll unit to feed the welding wire forward (toward the weld torch) when depressed. Wire feed rate is set for 1524 mm (60 in.) per minute at the factory.

3.5.7 Push Button – INCH REV

This momentary action, push button switch activated the feed roll unit to feed the welding wire in reverse (away from the weld torch) when depressed. Wire feed rate is set for 1524 mm (60 in.) per minute at the factory.
Figure 12 HyperFeed II Wire Feeder — Front Panel Features
3.6 HyperFeed II Wire Feeder — Rear Panel Features

Note: Figure 13 shows the rear panel features described below.

Note: Some rear panel features shown in Figure 13 are not described below. In these cases, the description given in the graphic sufficiently describes the feature.

3.6.1 LCD Display Panel

The three-digit LCD Display Panel shows wire feed speed in inches per minute (IPM) during a weld cycle. When INCH FWD mode is selected (either at the Wire Feeder or the Programming Pendant) the LCD Display Panel shows the wire feed speed in bright characters and the wire feed motor current draw in dimmed characters. The LCD Display Panel can also show certain error codes associated with the Wire Feeder (refer to Chapter 5).

3.6.2 Wire Inlet / Quick Disconnect

This is the HyperFeed II Wire Feeder entrance port for welding wire. It is intended to connect wire conduit (from wire spool or “pay-off” pack) to the Wire Feeder. The Wire Feeder is shipped from the factory with both a thread-on fitting and a quick disconnect (QD) fitting. The QD fitting is designed for use with ELCo, Inc. WireWizard™ conduit.

Figure 13 HyperFeed II Wire Feeder — Rear Panel Features
3.7 **Motoman Welder Interface (MWI) Assembly**

### 3.7.1 Overview and Operation

The Motoman Welding Interface (MWI) functions as a gateway between the robot controller and various welding equipment components.

The MWI is comprised of two main components (see Figure 14) –

- Robot Interface Board (Motherboard) . . . . . . . . . . Motoman P/N 148571-1
- Welder Interface Board (Daughterboard) . . . . . . . . . . Motoman P/N 148570-1

![Figure 14 Motoman Welder Interface (MWI) Assembly — Component Locations](image)

#### 3.7.1.1 Robot Interface Board (Motherboard)

The Robot Interface Board monitors signals generated by the Robot Controller and routes the signals to the Wire Feed Unit or the Welder Interface Board, as necessary. When a signal is generated by the Robot Controller, it is passed to the Robot Interface Board where it is digitized. All discrete I/O signals are digitized, as are the three analog channels generated by the Robot Controller. These signals are routed to various locations, dependant upon the type of equipment being interfaced.
Most discrete I/O signals are routed to the wire feeder and to the Welder Interface Board.

Some of these same signals are also routed (ported) to the wire feeder via an isolated Controller Area Network (CAN) bus.

Signals that are directed to the wire feeder include –

- ArcON
- Inch
- Retract
- Gas Purge
- Arc Established
- A digitized representation of the commanded wire feed speed

The Robot Interface Board also contains power circuitry supplies and conditions 24 VDC, 12 VDC, and 5 VDC to the various power rails required by the system. The Robot Interface Board operates on 100 percent isolated power rails to ensure attenuated electrical impulse noise.

Software, generated and maintained by Motoman, is loaded onto a micro controller chip on the Robot Interface Board prior to shipment to the customer. The software directs the flow of information into and out of the Robot Interface Board and allows an operator an opportunity to view the data as it passes. The software also monitors selected signals while welding to generate a weld-by-weld report that details operation of the equipment and the welding process.

The Robot Interface Board also provides electrical and physical connection points for the Welder Interface Board (refer to Section 3.7.1.2).

Jumper shunt blocks are used to change motherboard circuit configurations by bridging certain header pins on the circuit board. When a jumper shunt block is moved from one pair of header pins to another pair of header pins, MWI functions are enabled or disabled. Jumper shunt block position is set at the factory, but can be changed in the field under certain conditions (refer to Chapter 5).

Please contact Motoman Customer Support before making any changes to the factory-set configuration (refer to Section 1.9).

Light emitting diodes (LED) are located on the motherboard. Each LED has two possible states: illuminated or not illuminated. The state of each LED indicates the status of system components and functions. Refer to Chapter 5 for LED locations and functions.

A 10-position thumb wheel switch is located on the Robot Interface Board (see Figure 14). This switch allows the MWI assembly to be used with various weld power sources. Refer to Table 2 for a listing of thumb wheel switch functionality.
Coverage of Robot Interface Board functions in greater detail than that already presented is beyond the intended scope of this System Manual. Should you have questions or a need for additional information concerning the Robot Interface Board, please contact Motoman Customer Support (refer to Section 1.9).

### 3.7.1.2 Welder Interface Board (Daughterboard)

The Welder Interface Board (daughterboard) is physically attached to the Robot Interface Board (motherboard) by 4 threaded standoff spacers, and is electrically connected to the Robot Interface Board through a 40-pin, D-type connector. The socket portion of the connector is located on the Robot Interface Board (motherboard), while the plug portion of the connector is located on the Welder Interface Board (daughterboard).

During installation, as the Welder Interface Board is aligned and attached to the threaded standoff spacers on the Robot Interface Board, the D-type connector plug engages the D-type connector socket to establish electrical connection between the two circuit boards.

Jumper shunt blocks are used to change Welder Interface Board circuit configurations by bridging certain header pins on the circuit board. When a jumper shunt block is moved from one pair of header pins to another pair of header pins, MWI functions are enabled/disabled, or scaling values are adjusted. Jumper shunt block position is set at the factory, but can be changed in the field under certain conditions (refer to Chapter 5).

Please contact Motoman Customer Support before making any changes to the factory-set configuration (refer to Section 1.9).

Light emitting diodes (LED) are located on the Welder Interface Board. Each LED has two possible states: illuminated or not illuminated. The state of each LED indicates the status of system components and functions. Refer to Chapter 5 for LED locations and functions.

<table>
<thead>
<tr>
<th>THUMB WHEEL SWITCH SETTING</th>
<th>WELD POWER SOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>All MotoArc and ArcMaster power sources¹</td>
</tr>
<tr>
<td>1</td>
<td>n/a</td>
</tr>
<tr>
<td>2</td>
<td>n/a</td>
</tr>
<tr>
<td>3</td>
<td>n/a</td>
</tr>
<tr>
<td>4</td>
<td>n/a</td>
</tr>
<tr>
<td>5</td>
<td>n/a</td>
</tr>
<tr>
<td>6</td>
<td>n/a</td>
</tr>
<tr>
<td>7</td>
<td>n/a</td>
</tr>
<tr>
<td>8</td>
<td>n/a</td>
</tr>
<tr>
<td>9</td>
<td>All Miller DeltaWeld and XMT power sources²</td>
</tr>
</tbody>
</table>

**NOTES:**

¹ Weld Power Source generates the ArcEstablished signal
² MWI generates the ArcEstablished signal
The Welder Interface Board relays signals between the Robot Interface Board (refer to Section 3.7.1.1) and the welding power source.

In this capacity, the Welder Interface Board performs the following functions –

- Isolates discrete input signals
- Provides dry-contact relay outputs
- Generates three channels of isolated analog output
- Scales and isolates three channels of analog input before passing the signals to the Robot Interface Board.

Power for the Welder Interface Board is passed-up from the Robot Interface Board. A 24-volt power rail, generated by the robot, is present and labelled “WLDR+24V and “WLDRCOM.” 12 VDC and 5 VDC are also passed-up from the Robot Interface Board for powering the I/O and isolated power supply. An isolated power supply generates the required voltage for the isolated side of the analog input and output channels.

Several discrete input signals provide the status of welding power sources and ancillary welding accessories –

- Arc Established
- Arc Failure
- Gas Outage
- Wire Outage
- Wire Stuck

Each of these signals is designed to activate with either sink or source signals from a welding power source.

Coverage of Welder Interface Board functions in greater detail than that already presented is beyond the intended scope of this System Manual. Should you have questions or a need for additional information concerning the Welder Interface Board, please contact Motoman Customer Support (refer to Section 1.9).

### 3.7.1.3 Mounting Plate

The mounting plate is a 410 mm (16.1 in.) by 310 mm (12.2 in.) 12-gauge sheet steel plate. This plate mounts to the interior surface of the robot controller door and provides a sturdy mounting surface for all MWI components (see Figure 9).

Four internally-threaded steel mounting standoffs are integral to the interior surface of the robot controller door and provide the attach points for the mounting plate. The spacing and position of these standoffs match holes in the mounting plate. Four M4 X 10 screws (with captive lock and flat washers) secure the mounting plate to the mounting standoffs on the robot controller door. These screws are delivered to the customer in a plastic bag that is attached to the mounting plate at the factory.

The Robot Interface Board (motherboard) is physically attached to the mounting plate by six threaded standoff spacers.

A protective paint coating (white) is applied to both sides of the mounting plate at the factory.
3.7.1.4 Power Transformer

A power transformer is attached to the mounting plate. The transformer converts an input voltage (120 VAC) to a lower output voltage (24 VAC). This output (or secondary) voltage provides power to the Motor Control Circuit Board (a component of the robot-mounted HyperFeed II or HyperFeed II–EA Wire Feeder).

3.7.1.5 Cable Assemblies

Various cable assemblies are attached to connectors located on the Robot Interface Board (motherboard) and the Welder Interface Board (daughterboard). Please refer to Chapter 5 for the location and description of the connectors.
Chapter 4

Installation

4.1 Preliminary Information

CAUTION!
Assign HyperFeed II/MWI Wire Feed System installation to qualified technicians who are familiar with the installation and set-up of this type of equipment.

CAUTION!
Be sure to handle all system components with care. The HyperFeed II/MWI Wire Feed System is designed for an industrial environment, but can be damaged by rough handling.

CAUTION!
Always comply with establish safety guidelines and procedures throughout the installation process (refer to Chapter 2). Failure to employ safe installation practices can result in equipment damage and/or injury to personnel.

The HyperFeed II/MWI Wire Feed System can be installed in a short amount of time by a qualified technician.

The HyperFeed II/MWI Wire Feed System is currently approved for use with specific models and types of robotic welding equipment (refer to Section 1.2 and Section 1.7). The system is designed for quick mounting and a minimum of scheduled maintenance.

4.2 Required Materials

All components, most cabling, and most hardware items required for installation of the HyperFeed II / MWI Wire Feed System are included with your shipment. There are, however, some required items that the customer must supply, such as weld cables and typical installation / maintenance tools (refer to Section 4.2.1 and Section 4.2.2).
4.2.1 Customer-supplied Items

- Gas hose with 5/8-18 right-hand-thread hose fitting
- Weld (+) cable, Weld (–) cable (see Table 3)
- Welding wire conduit with 1/2-20 UNF female fitting

*Note: The HyperFeed II / MWI Wire Feed System does not include the positive (+) weld power cable to the wire feeder or the negative (–) weld power cable to the positioner (tooling fixtures). The customer must order these cables and specify the required lengths (see Table 3).*

Table 3 Available Welding Cables

<table>
<thead>
<tr>
<th>Motoman Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>130887-10</td>
<td>4/0 weld cable, 4.6 m (15 ft)</td>
</tr>
<tr>
<td>130887-2</td>
<td>4/0 weld cable, 7.6 m (25 ft)</td>
</tr>
<tr>
<td>130887-3</td>
<td>4/0 weld cable, 9.1 m (30 ft)</td>
</tr>
<tr>
<td>130887-4</td>
<td>4/0 weld cable, 10.7 m (35 ft)</td>
</tr>
<tr>
<td>130887-5</td>
<td>4/0 weld cable, 12.2 m (40 ft)</td>
</tr>
<tr>
<td>130887-6</td>
<td>4/0 weld cable, 13.7 m (45 ft)</td>
</tr>
<tr>
<td>130887-7</td>
<td>4/0 weld cable, 15.2 m (50 ft)</td>
</tr>
<tr>
<td>152593-2</td>
<td>2/0 weld cable, 7.5 m (25 ft)</td>
</tr>
<tr>
<td>152593-3</td>
<td>2/0 weld cable, 9 m (30 ft)</td>
</tr>
<tr>
<td>152593-4</td>
<td>2/0 weld cable, 10.5 m (35 ft)</td>
</tr>
<tr>
<td>152593-5</td>
<td>2/0 weld cable, 12 m (40 ft)</td>
</tr>
<tr>
<td>152593-6</td>
<td>2/0 weld cable, 13.5 m (45 ft)</td>
</tr>
<tr>
<td>152593-7</td>
<td>2/0 weld cable, 15 m (50 ft)</td>
</tr>
</tbody>
</table>

4.2.2 Recommended List of Hand Tools and Equipment

- Safety glasses and face shield
- Flashlight or work light
- Gloves
- Level (short and long)
- Adjustable wrench (large and small)
- Phillips and flat-blade screwdrivers
- Hammer (small, non-marring)
- Socket set (SAE and Metric)
- Open-end wrench set (SAE and Metric)
- Allen® wrench set (SAE and metric)
4.3 HyperFeed II Wire Feeder

This section gives the procedures for mounting the HyperFeed II Wire Feeder to the upper arm of a non-EA/SSA series robot.

Note: Installation procedures for the HyperFeed II–EA Wire Feeder (for Motoman EA/SSA-series robots) begin in Section 4.4 of this chapter.

Note: This section assumes that an existing wire feeder (if present) has been removed from the mounting pad, in preparation for installation of the HyperFeed II Wire Feeder.

4.3.1 Preparations Prior to Mounting

1. Carefully remove the HyperFeed II Wire Feeder from protective shipping carton.

   Note: Do not unpack the Motoman Welder Interface (MWI) Assembly at this time. Set this part of the shipment aside in a secure location for later installation and set-up.

2. Carefully remove any protective shipping materials from the HyperFeed II Wire Feeder. Discard or recycle the protective shipping materials.

3. Inspect the Wire Feeder for shipping damage.

   Note: Notify your shipping contractor if you notice any shipping damage.

4. Locate packages of mounting hardware that are included with the HyperFeed II Wire Feeder. Put these aside in a secure location for later use.

5. Apply power to the robot, welding power source, and robot controller.

6. Use the Programming Pendant to jog the robot to a low position for easy access to U-Axis upper arm.

7. Remove power from the robot, welding power source, and robot controller.

4.3.2 Mounting Procedures

1. Locate mounting hardware inside feeder. Mounting hardware includes –
   • (4) M6 x 30 set screws
   • (4) M6 flat washers
   • (4) M6 nuts

2. Using the programming pendant, jog the robot to a lowered position for easy access to upper arm.

3. Shut power OFF to robot and power source.

4. Insert four M6 x 30 set screws into the four installation holes on upper arm of robot. Tighten each with an M3 Allen wrench (see Figure 15).
5. With the torch cable connection pointing toward the front of the robot, lower the HyperFeed II Wire Feeder onto the four set screws through the four holes on bottom of feeder (see Figure 15).

6. Secure Hyperfeed to upper arm using four M6 nuts and washers and tighten with an M10 wrench (see Figure 15).

Figure 15 Mounting Location — HyperFeed II Wire Feeder

Do not make any connections until feeder is securely in place.
4.3.3 Connecting the Welding Power Cable

The welding power cable is routed through the back of the wire feeder and connected to an internal bus bar.

Procedure –
1. Open left side of wire feeder.
2. Using a 10 mm Allen wrench, remove the bolt and washers from the bus bar connection. Save hardware for later use.
3. Route the power cable through back of wire feeder to bus bar.
4. Using hardware removed in Step 1, secure power cable to bus bar using a 10 mm Allen wrench.

4.3.4 Connecting the Gas Line

1. Connect external gas hose to the gas adapter on back of wire feeder.
2. Verify connection is tight.

4.3.5 Connecting the Impact Sensor Cable and Torch

1. Connect impact sensor cable to front of wire feeder
2. Loosen the torch locking knob on the torch cable adapter (Tweco #5)
3. Insert torch end into the torch cable adapter until it stops.
4. Tighten the torch locking knob.
5. Lightly pull torch to ensure a tight fit.

4.3.6 Connecting and Feeding Weld Wire

Note: Customer-supplied wire conduit with 1/2-20 UNF female fitting required.

Procedure –
1. Turn all power (power source, robot) OFF.
2. Locate customer-supplied wire conduit.
3. Trim liner to 65 mm (2.56 in.).
4. Route wire conduit through back of wire feeder.
5. Loosen set screw on input wire feeder guide.
6. Insert liner into input wire feeder guide and tighten collar nut.
7. Tighten set screw on input wire feeder guide.
8. Release tension adjusters and lower both feed roll carriages.
9. Pull approximately 12 in. of welding wire from the wire liner, and 6 in. of wire liner from the wire conduit.
10. Release tension adjusters and lower both feed roll carriages.

11. Insert welding wire into input wire feeder guide and through center guide tube output wire feeder guide.

12. Raise feed rolls and engaged tension adjusters.

13. Guide the wire liner into the input wire feeder guide and past the set screw. Do not push liner past input wire feeder guide.

14. Tighten the set screw onto the wire liner with a 1.5 mm Allen wrench.

15. Connect the wire conduit connector to the input wire feeder guide. The input wire feeder guide has a 1/2-20 UNF male thread.

16. Push and hold the inch-forward push button until wire comes out of the torch tip. The welding wire tension may need adjustment to allow wire to pass through.

### 4.3.7 Adjusting the Welding Wire Tension

Note: Excessive wire tension is the most common cause of poor wire feeder performance.

Procedure –

1. Press and hold the inch-forward push button to feed welding wire though the torch and onto the floor.

2. Inspect the shape of welding wire on the floor. When the tension adjustments are set properly, the wire on the floor forms a large uniform circle with no spiral or helix. No further adjustments are needed. If a spiral or helix is formed, there is too much wire tension.

Note: Use the indicator markings on the feed role tension adjusters for pressure reference only. However, the numeric markings must match on each adjuster for proper wire pressure/tension.

3. Adjust the feed roll tension adjusters to eliminate wire slippage or tension.

Note: On each tension adjuster, the number “4” indicates the greatest amount of tension applied to the wire. The number “1” indicates the least amount of tension.

4. Repeat Step 1 through Step 3 as necessary

### 4.4 HyperFeed II–EA Wire Feeder

This section gives the procedures for mounting the HyperFeed II–EA Wire Feeder to the upper arm of an EA/SSA-series robot.

Note: Installation procedures for the HyperFeed II Wire Feeder (for Motoman non-EA/SSA robots) begin in Section 4.3.

Note: This section assumes that an existing wire feeder (if present) has been removed from the mounting pad, in preparation for installation of the HyperFeed II–EA Wire Feeder.
4.4.1 Preparations Prior to Mounting

1. Carefully remove the HyperFeed II–EA Wire Feeder from protective shipping carton.

   Note: Do not unpack the Motoman Welder Interface (MWI) Assembly at this time. Set this part of the shipment aside in a secure location for later installation and set-up.

2. Carefully remove any protective shipping materials from the HyperFeed II–EA Wire Feeder. Discard or recycle the protective shipping materials.

3. Inspect the Wire Feeder for shipping damage.

   Note: Notify your shipping contractor if you notice any shipping damage.

4. Locate packages of mounting hardware that are included with the HyperFeed II–EA Wire Feeder. Put these aside in a secure location for later use.

5. Apply power to the robot, welding power source, and robot controller.

6. Use the Programming Pendant to jog the robot to a low position for easy access to U-Axis upper arm.

7. Remove power from the robot, welding power source, and robot controller

4.4.2 Mounting Procedure

1. Remove the mounting bracket from the HyperFeed II–EA Wire Feeder (see Figure A.2 in Appendix A). Set removed hardware aside for use in Step 3.

2. Attach the mounting bracket to the robot mounting pad with supplied hardware.

   Note: You can apply two or three drops of medium-strength Loctite® thread locking compound to each of the four attaching bolts to ensure torque retention. Do not substitute application of Loctite® for installation of the lock washers. The lock washers must be installed exactly as shown in Section 4.5.

3. Attach the HyperFeed II–EA Wire Feeder to the mounting bracket with the hardware that was removed in Step 1.

4.4.3 Cable and Gas Hose Connections

CAUTION!

Do not make any connections to the HyperFeed II–EA Wire Feeder until it is securely mounted on the robot upper arm mounting pad.

After the HyperFeed II–EA Wire Feeder is mounted securely to the robot, locate the interconnect cables and install them in accordance with the system cable diagrams. These diagrams are included with the documentation package supplied with your HyperFeed II/MWI Wire Feeder System.

Note: All connecting cables are labelled at each end to facilitate the interconnection between system components.
4.4.4 Connection — Welding Power Source (+) Cable and Data Bus Cable

CAUTION!
When routing and connecting the weld (+) cable, provide approximately 76 mm (3 in.) of slack in the cable run to allow required future adjustment of the feed roll unit fore and aft positioning.

Procedure –
1. Attach the Weld Power Source (+) cable to the attach point at the front of the HyperFeed II–EA Wire Feeder (see Figure 10).
2. Attach data bus cable to the connector on the side of the HyperFeed II–EA Wire Feeder (see Figure 11).

4.4.5 Connection — Gas Hose

CAUTION!
Ensure that the shielding gas hose and fittings are secure and without leaks. A leaking gas fitting or hose will result in excessive shielding gas usage.

Note: Customer shall provide the shielding gas supply tank.

Note: Customer shall supply a gas hose with 5/8 – 18 hose fittings (right hand thread), in the length required to route from the shielding gas supply tank to the connector panel at the base of the robot.

Procedure –
1. Route a suitable gas hose from the shielding gas supply tank to the base of the robot. Connect the hose to the gas supply tank and to the gas input fitting provided on the base of the robot.
2. Locate the gas hose that is included in the HyperFeed II/MWI Wire Feeder System shipping package.
3. Connect one end of the hose to the gas input connector on the HyperFeed II–EA Wire Feeder (see Figure 11). Connect the other end of the hose to the gas fitting on the upper arm (U-Axis) of the robot.

4.4.6 Connection — Wire Feeder Power Cable

One end of the wire feeder power cable is connected to the wire feeder at the factory (see Figure 11).

Procedure –
1. Carefully route the power cable (see Figure 11) from the HyperFeed II–EA Wire Feeder up to the connector socket on the robot upper arm.
2. Insert the power cable plug into the socket. Ensure that the index key way (socket) and index key (plug) are aligned for correct fit.
3. Gently push the plug into the socket as far as it will go.
4. Gently push in and turn the connector plug backshell clockwise approximately 1/4 turn until it locks with the connector socket.

Note: A solid “click” (both felt and heard) indicates correct engagement and lock of the backshell with the connector socket. This type of connector does not require safety wire or other security methods to prevent loosening of the connector backshell.

4.4.7 Connection — Shock Sensor Cable

Procedure –

1. Connect shock sensor cable assembly to connector socket on the front of the wire feeder (4-pin or 7-pin, as required)
2. Connect the other end of the shock sensor cable to the inline connector socket that feeds from the torch cable.

4.4.8 Connection — Torch Cable

Refer to procedures given in Section 4.3.5.

4.4.9 Feeding Welding Wire Through Feed Roll Unit

Refer to procedures given in Section 4.3.6.

4.4.10 Adjusting the Welding Wire Tension

Refer to procedures given in Section 4.3.7.

4.5 Installing the Motoman Welder Interface (MWI™) Assembly

CAUTION!
Always comply with Electrostatic Discharge (ESD) protective procedures when installing MWI circuit boards, cable assemblies and connectors. Most of the components on the MWI circuit boards are sensitive to ESD and, therefore, require special handling. Refer to Section 5.6.1 and Section 5.6.2 prior to installation or maintenance of the Motoman Welder Interface (MWI) Assembly.

Locate the interconnect cables for the Motoman Welder Interface (MWI) Assembly and install them in accordance with the system cable diagrams. These diagrams are included with the documentation package supplied with your HyperFeed II/MWI Wire Feeder System.

Note: All connecting cables are labelled at each end to facilitate the interconnection between system components.
NOTES
Chapter 5
Maintenance and Troubleshooting

5.1 General

WARNING!
Make sure that all sources of hazardous energies are de-energized / disconnected before inspecting or servicing the HyperFeed II / MWI Wire Feed System. Because of typical interconnections between the HyperFeed II / MWI Wire Feed System and related peripheral equipment, more than one source of energy can exist.

WARNING!
Comply with standard lockout / tagout procedures when inspecting or servicing the HyperFeed II / MWI Wire Feed System.

WARNING!
HyperFeed II/MWI Wire Feed System maintenance should be performed by authorized personnel who are familiar with the design and construction of this product.

WARNING!
Read through the procedures completely before performing any maintenance task. Be sure that you understand the procedure, have the proper tools, and comply with all safety precautions.

Note: Maintenance intervals listed in this chapter are recommendations, only. Adjust the frequency and level of repair maintenance and preventive maintenance to comply with your specific equipment schedules and shop environment.

5.2 Recommended Spare Parts List

Motoman recommends stocking spare parts for the HyperFeed II / MWI Wire Feed System. The recommended spare parts are listed in Table 4.

5.3 How to Order Spare or Replacement Parts

To order spare parts or replacement parts for your HyperFeed II / MWI Wire Feed System, please refer to Table 4 and Appendix A of this System Manual, then contact Motoman Customer Support (refer to Section 1.9).
Table 4  Recommended Spare Parts List — HyperFeed II / MWI Wire Feed System

<table>
<thead>
<tr>
<th>RECOMMENDED SPARE PART</th>
<th>MOTOMAN P/N</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEY, SHAFT, FEED MOTOR</td>
<td>148442-1</td>
<td>1</td>
</tr>
<tr>
<td>GEAR, MAIN DRIVE, FEED ROLL</td>
<td>148436-1</td>
<td>1</td>
</tr>
<tr>
<td>ADAPTER, GEAR, FEED ROLL</td>
<td>148438-1</td>
<td>4</td>
</tr>
<tr>
<td>WASHER, RETAINING</td>
<td>148435-1</td>
<td>4</td>
</tr>
<tr>
<td>KNURLED FIXING SCREW</td>
<td>148434-1</td>
<td>4</td>
</tr>
<tr>
<td>RETAINING SCREW, FEED ROLL</td>
<td>148433-1</td>
<td>2</td>
</tr>
<tr>
<td>MOTOR, WIRE FEEDER, 24VDC / 200RPM, OPTICAL 2-CH ENC, NO FAN</td>
<td>147753-4</td>
<td>1</td>
</tr>
<tr>
<td>FRAME, FEEDER, 4 ROLL, 2 ROLL DRIVE FLAT TOP ROLL</td>
<td>147752-2</td>
<td>1</td>
</tr>
<tr>
<td>VALVE ASSY, GAS, HYPERFEED II ENCLOSED FEEDER, W/CONNECTOR</td>
<td>152171-1</td>
<td>1</td>
</tr>
<tr>
<td>SWITCH ASSY, MOMENTARY, PUSH BUTTON, INCH/RETRACT, HFII-EA</td>
<td>152149-2</td>
<td>2</td>
</tr>
<tr>
<td>CABLE ASSY, RCKER, 2-POSITION SHOCK SENSE OVERRIDE, HFII-EA</td>
<td>152146-2</td>
<td>1</td>
</tr>
<tr>
<td>FUSE, MDL, 8AMP, 250VAC 8 AMP, 250 VAC</td>
<td>130293-10</td>
<td>6</td>
</tr>
<tr>
<td>FUSE, SUBMINITURE, FAST ACTING, 800 mA</td>
<td>153006-3</td>
<td>4</td>
</tr>
<tr>
<td>FUSE, SUBMINITURE, FAST ACTING, 2.0 A</td>
<td>153006-6</td>
<td>4</td>
</tr>
<tr>
<td>FUSE, SUBMINITURE, FAST ACTING, 250 mA</td>
<td>153006-1</td>
<td>2</td>
</tr>
</tbody>
</table>

NOTE – Refer to Appendix A for location and identification of parts listed in this table.

5.4  HyperFeed II / HyperFeed II–EA Wire Feeders

5.4.1  General Cleaning

The robot-mounted HyperFeed II and HyperFeed II-EA Wire Feeders are fully enclosed and typically require only occasional cleaning to remove dust and other particulates. Use dry, compressed air (40 psig maximum) and a soft bristle brush to clean the interior of the wire feeder.

Do not attempt to clean the controller-mounted MWI Assembly. Some circuit board components can be damaged by Electrostatic Discharge (ESD) and, therefore, require special handling and cleaning procedures that comply with ESD precautions (refer to Section 5.6.1 and Section 5.6.2). Please contact Motoman Customer Support if you need additional information on this subject (refer to Section 1.9).
5.4.2 Maintenance — Drive Motor

The Drive Motor is a sealed unit, and does not contain parts that require inspection or service by the customer. The Drive Motor is designed for a long service life, and should provide reliable service over a long period of time. Do not attempt to disassemble the Drive Motor. If you suspect that the Drive Motor is in need of overhaul or replacement, please contact Motoman Customer Support (refer to Section 1.9).

5.4.3 Maintenance — Feed Roll Unit

5.4.3.1 Schedule

<table>
<thead>
<tr>
<th>ITEM</th>
<th>INSPECTION PERIOD</th>
<th>INSPECTION/MAINTENANCE PROCEDURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEED ROLL UNIT</td>
<td>WEEKLY</td>
<td>• MAKE A VISUAL INSPECTION OF THE FEED ROLL UNIT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• REPLACE DEFECTIVE OR DAMAGED COMPONENTS AS REQUIRED</td>
</tr>
<tr>
<td>FEED ROLL UNIT</td>
<td>WEEKLY</td>
<td>• LISTEN FOR ABNORMAL OPERATIONAL NOISE (GRINDING, EXCESSIVE NOISE, ETC.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• IF DETECTED, CONTACT MOTOMAN CUSTOMER SUPPORT (REFER TO SECTION 1.9).</td>
</tr>
<tr>
<td>FEED ROLL UNIT</td>
<td>MONTHLY OR ON CONDITION</td>
<td>• PURGE THE INSIDE OF THE FEED ROLL UNIT WITH COMPRESSED AIR (40 PSIG MAX)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• CLEAN THE GROOVES IN THE FEED ROLLERS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• CLEAN THE BORE OF THE OUTLET ADAPTER</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PURGE THE WIRE CONDUIT WITH COMPRESSED AIR. CHECK FOR WEAR. REPLACE WIRE CONDUIT IF NECESSARY.</td>
</tr>
<tr>
<td>FEED ROLL UNIT GEARS</td>
<td>500 HOURS</td>
<td>• LUBRICATE GEARS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• CONTACT MOTOMAN CUSTOMER SUPPORT FOR THE CORRECT GREASE TYPE TO USE IN THIS APPLICATION (SECTION 1.9).</td>
</tr>
</tbody>
</table>

5.4.3.2 Grooved Feed Roll Replacement

Procedure (see Figure A.3 in Appendix A) –

1. Disable power to robot and welding power source.
2. Pull both feed roll pressure adjusters up and out to release the feed roll carriages.
3. Use a suitable flat-blade screw driver to loosen and remove both feed roll securing screws and washers. Put this hardware aside in a secure location for later use.
4. Pull the old feed rolls off the feed roll gear adapters.
5. Taking care with alignment of the indexing pins on each gear adapter, push the new (or reversed old) feed rolls fully onto the feed roll gear adapters.
6. Reinstall both feed roll securing screws and tighten with a flat blade screwdriver.
5.4.3.3 Flat Feed Roll Replacement

Procedure (see Figure A.3 in Appendix A) –

1. Disable power to robot and welding power source.
2. Pull both feed roll pressure adjusters up and out to release the feed roll carriages.
3. Use a suitable flat-blade screwdriver to carefully pry an old feed roll from its feed roll carriage.

*Note: The flat feed rolls are a snap fit in the ABS plastic feed roll carriages.*

4. Place the replacement feed roll assembly into its feed roll carriages and use your thumb to press it into the feed roll carriage.

*Note: The feed roll assembly is fully seated when you hear and feel it “click” into position in the ABS plastic feed roll carriage.*

5. Repeat Step 3 and Step 4 for the remaining feed roll carriage.
6. Ensure that both feed roll tension adjusters are pulled up and out to a fully horizontal position.
7. Push the left feed roll carriage up into its seated, horizontal position and hold in this position.
8. Push the left feed roll pressure adjuster down and inward to its vertical position to lock the left feed roll carriage into its normal horizontal operating position.
9. Repeat Step 6 through Step 8 for the right feed roll carriage.

5.4.4 Wire Size Change

To change welding wire size, the center guide tube and output wire feeder guide may need to be replaced, depending upon weld wire size (see Figure A.3 in Appendix A). These two components, along with the upper and lower feed roll assemblies, are supplied in kit form (refer to Table 1 in Chapter 3). To order new or replacement feed roll kits, please contact Motoman Customer Support (refer to Section 1.9).

5.4.4.1 Remove Old Welding Wire

Procedure –

1. Disable power to robot and welding power source.
2. Pull both feed roll pressure adjusters up and out to release the feed roll carriages.
3. Using a 1.5 mm Allen wrench, loosen the set screw on the input wire feeder guide.
4. Loosen the wire feed conduit and remove it from input wire feeder guide.
5. Cut welding wire.
6. Pull remaining wire out through the torch.
5.4.4.2 Replace the Output Wire Feeder Guide / Center Guide Tube

Procedure –
1. Loosen, but do not remove, the torch locking knob (Tweco #5 adapter, only).
2. Loosen the retaining ring and slide it away from the wire feeder (Mechafin adapter, only).
3. Remove the torch assembly.
4. Using a flat-blade screwdriver, remove both feed roll securing screws.
5. Remove both grooved feed roll assemblies
7. Remove the old output wire feeder guide.
8. Loosen, but do not remove, the center guide tube screw.
9. Remove the center guide tube.
10. Install the new center guide tube and center it.
11. Tighten the center guide tube screw.
12. Push the new output wire feeder guide into the feed roll end of the power pin.
13. Tighten the output wire feeder set screw.
15. Replace both grooved feed roll assemblies.
16. Insert feed roll securing screws and tighten with a flat-head screwdriver.
17. Pull the right feed roll pressure adjuster up and out to a horizontal position.
18. Push the right feed roll carriage up to horizontal position and hold.
19. Push the right feed roll pressure adjuster down and inward to lock it in a vertical position.
20. Repeat Step 17 through Step 19 for the left feed roll pressure adjuster.

Note: Installing the input wire feeder guide with the set screw visible allows for easy adjustments if needed.

21. Install the input wire feeder guide with the set screw clearly visible.
22. Tighten the input wire feeder guide screw using a flat-head screwdriver.
23. Check that the input wire feeder guide and center guide tube are secure. Adjust as necessary
24. Insert and feed the new welding wire through the wire feeder.

5.4.4.3 Insert and Feed New Welding Wire

Procedure –
1. Ensure that the weld power source is OFF
2. Ensure that robot servo power is OFF.
3. Pull approximately 12 in. of welding wire from the wire liner, and 6 in. of wire liner from the wire feed conduit.
4. Pull both feed roll pressure adjusters to release the flat feed roll carriages.
5. Push the welding wire through the input wire feeder guide, center guide tube, feed rolls, and into the output wire guide.
6. Raise the left and right feed roll carriages into place and lock them into position with the feed roll pressure adjusters.
7. Push the wire liner into the input wire feeder guide past the set screw, but not out of the input wire feeder guide.
8. Tighten the set screw onto the wire liner with a 1.5 mm Allen wrench.
9. Connect the wire guide connector to the input wire feeder guide.
10. Feed the wire until it comes out of the torch tip. The welding wire tension may need adjustment to allow wire to pass through.

5.4.4.4 Adjust Welding Wire Tension

CAUTION!
Over-tightening the feed roll pressure adjusters causes excessive knurling and/or deformation of the wire. Too much wire tension may cause excessive wear of the feed rolls and shorten the welding tip service life.

1. Press and hold the feed button on the Programming Pendant to feed welding wire through the torch and onto the floor.
2. Inspect the shape of welding wire on the floor. When the tension adjustments are set properly, the wire on the ground forms a large uniform circle with no spiral or helix. No further adjustments are needed. If a spiral or helix is formed, there is too much wire tension.

Note: Use the indicator markings on the feed role tension adjuster for pressure reference only. However, the numeric markings must match for proper wire pressure / tension.

3. Adjust the feed roll tension adjusters to eliminate wire slippage or tension. On each tension adjuster, the number 4 indicates the highest tension applied to the wire, while the number 1 indicates the lowest tension.
4. Repeat Step 1 through Step 3 as necessary.
## 5.5 Troubleshooting

### Table 5 Troubleshooting Chart

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Welding wire does not feed properly.</strong></td>
<td>Wire size does not match the marking on the feed rolls.</td>
<td>Replace feed rollers to match wire size.</td>
</tr>
<tr>
<td></td>
<td>Groove is worn.</td>
<td>Replace feed rollers.</td>
</tr>
<tr>
<td></td>
<td>V-groove is rounded off.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rusted feed roller(s).</td>
<td>Replace feed rollers.</td>
</tr>
<tr>
<td></td>
<td>Wire is damaged.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Groove of feed roller is not aligned with welding wire.</td>
<td>Remove feed rolls and reinstall. Ensure rolls are properly seated.</td>
</tr>
<tr>
<td></td>
<td>Powder or dust accumulated in input wire guide.</td>
<td>Remove input wire guide and clean. Examine source of dirt (wire, liner) and replace.</td>
</tr>
<tr>
<td></td>
<td>Powder or dust accumulated in output wire guide.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feed roll pressure incorrect.</td>
<td>Adjust feed roll pressure. Do not over tighten.</td>
</tr>
<tr>
<td><strong>No gas at the weld.</strong></td>
<td>Defective gas valve.</td>
<td>Contact Motoman Customer Support (refer to Section 1.9).</td>
</tr>
<tr>
<td></td>
<td>Crimped, kinked, or damaged gas supply hose.</td>
<td>Check condition of gas supply hose. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td>Depleted gas supply.</td>
<td>Replace welding gas supply cylinder.</td>
</tr>
<tr>
<td><strong>Feeder will not feed wire resulting in a “missing arc generation” alarm when attempting to weld. “E06” displayed on LED display of feeder.</strong></td>
<td>Shock sensor override switch is in “override” position causing the feeder to only operate in the reverse direction.</td>
<td>Place the shock sensor override switch back in the “normal” position to resume normal operation.</td>
</tr>
<tr>
<td><strong>At startup an “E06” message is displayed on the LED display located on the rear of the feeder and feeder will not operate.</strong></td>
<td>“E06” indicates a Motor 1 error caused by excessive motor current or bridge current at startup. Once this error occurs, no further feeder operation will occur.</td>
<td>Error E01 will occur if power is not connected to the feeder or if there is a larger internal problem. Ensure that all power cables are properly connected and in good condition. With robot controller power on, open the circuit board compartment and see if LED D30 is illuminated. If not disconnect power and check fuse MDL fuse of the circuit board panel. If problems still exist after reapplication of power, contact Motoman for further assistance.</td>
</tr>
</tbody>
</table>
Table 5 Troubleshooting Chart (Continued)

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>At startup an “E02” message is displayed on the LED display located on the rear of the feeder and feeder will not operate.</td>
<td>“E02” indicates a communication error occurred between the Hyperfeed II feeder and the MWI interface. Once this error occurs, further operation of the feeder is halted until power is cycled.</td>
<td>Error E02 will occur if the CAN communication cable is not connected or is damaged between the MWI and HyperFeed II feeder. Ensure that all communication cables are properly connected and in good condition. With robot controller power on, open the circuit board compartment and see if LED D43 is illuminated. If not disconnect power and check fuse F3. If problems still exist after reapplication of power, contact Motoman for further assistance.</td>
</tr>
<tr>
<td>At startup an “E03” message is displayed on the LED display located on the rear of the feeder and feeder will not operate.</td>
<td>“E03” indicates problem with the H-bridge circuit of the motor control. According the motor control board, there is more current then expected on the bridge circuit.</td>
<td>Error E03 will occur if power is not connected to the feeder or if there is a larger internal problem. Ensure that all power cables are properly connected and in good condition. With robot controller power on, open the circuit board compartment and see if LED D30 is illuminated. If not disconnect power and check fuse F1. If problems still exist after reapplication of power, contact Motoman for further assistance.</td>
</tr>
<tr>
<td>At startup an “E04” message is displayed on the LED display located on the rear of the feeder and feeder will not operate.</td>
<td>“E04” indicates that one or both of the encoder channels was not detected when the motor commanded it to move in a specified direction</td>
<td>Verify that the connections between J1 on the motor control board and the encoder cable connected to the bottom of the motor are well seated and that the cable is in good condition. If the cable and connections appear to be in good condition, contact Motoman service department.</td>
</tr>
<tr>
<td>At any point, “E05” is displayed on the LED display located on the rear of the feeder.</td>
<td>This error code has not been implemented at this point and will not occur. Reserved for future use.</td>
<td>Reserved</td>
</tr>
</tbody>
</table>
Table 5 Troubleshooting Chart (Continued)

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>At startup or at any point during operation an &quot;E06&quot; message is displayed on the rear of the feeder and forward operation of the wire feed system ceases. Reverse operation of the feeder continues to operate as normal.</td>
<td>&quot;E06&quot; indicates that the shock sensor override switch is in the “Override” position preventing forward operation of the feeder.</td>
<td>Once the robot has been moved away from the crash site, place the “Override” switch back in the “Normal” position to ensure proper operation.</td>
</tr>
</tbody>
</table>
| After applying power to the robot controller, the feeder will not advance wire and the LED display is not illuminated at all. | Upon powering the robot controller, the welder interface board (XEW01 / MEW01) must generate 24 VDC to power the MWI which in-turn powers the HyperFeed II. | • Ensure the MWI interface cable is connected to the welder interface board (MEW01/XEW01).  
• Verify that 24 VDC is being generated at welder interface board by ensuring that D4 (Robot 24 VDC) LED on MWI interface is illuminated.  
• Verify that D30 (digital +5VDC) is illuminated on the MWI interface.  
• Verify that all connectors from the MWI interface to the feeder are firmly seated and all cables are in good working condition.  
• Verify that D24 (+5VDC) is illuminated on the motor control board in the feeder. If D24 is not illuminated check fuse F2 and replace if needed.  
• Ensure that reset switch (S1) is not depressed or malfunctioning on the motor control circuit board.  
• For further troubleshooting contact Motoman for assistance. |

5.6 Motoman Welder Interface (MWI) Assembly

Customer-performed maintenance on the Motoman Welder Interface (MWI™) Assembly is limited to the following procedures –

- Removing / replacing circuit board assemblies
- Checking integrity of circuit board cable connections
5.6.1 Potential for Component Damage by Electrostatic Discharge (ESD)

CAUTION!
Always comply with Electrostatic Discharge (ESD) protective procedures when removing / replacing MWI circuit boards or connectors. Most of the components on the motherboard and daughterboard are sensitive to ESD and, therefore, require special handling. Please contact Motoman Customer Support before removing or replacing an MWI circuit board.

If you are removing / replacing circuit boards or removing/ re-seating connectors on the motherboard or daughterboard, you must take the necessary precautions to prevent accidental static discharge (ESD) to the components on the circuit boards.

At any time, your body can hold a large static voltage charge that can easily damage components on the circuit boards. Always ensure that all power sources are disconnected before removing/replacing either of the MWI circuit boards or removing/re-seating any of the circuit board connectors.

CAUTION!
Be sure to use a properly designed commercial grounding strap – do not make one yourself. Commercial units incorporate an internal 1-Megohm resistor that protects you if you accidentally touch live power. The resistor ensures that you do not become the path of least resistance to ground (otherwise know as electrocution!).

The best way to protect against ESD component damage is to use a commercially available ESD protection kit. These kits typically contain a wrist strap and mat, with ground wires for attachment to the MWI™ mounting plate and controller cabinet.

Motoman recommends that you obtain one of these kits and become familiar with its operation prior to touching, removing, or replacing any of the MWI circuit boards or removing / re-seating circuit board connectors.

5.6.2 ESD Warning Label

The following label is used in this document to alert the reader to components and assemblies that can be damaged by Electrostatic Discharge (ESD) –

![ESD Warning Label](image-url)
5.6.3 Replacing a Circuit Board

Please refer to Section 5.6.1, Section 5.6.2 and contact Motoman Customer Support, (refer to Section 1.9) before attempting to remove or install an MWI circuit board assembly (motherboard, daughterboard).

5.6.4 Checking Integrity of MWI Circuit Board Cable Connections

Check security and integrity of circuit board sockets and associated cable assembly plugs. Figure 17 shows motherboard connectors. Figure 18 shows daughterboard connectors.

**Figure 17** Motherboard — Identification of Circuit Board Connector/Cable Assembly Connections

**Figure 18** Daughterboard — Identification of Circuit Board Connector/Cable Assembly Connections
5.6.5 Jumper Shunt Blocks — Factory Settings

**CAUTION!**
Do not change factory-set jumper shunt block positions. Changes to the factory-set positions can change HyperFeed II/MWI Wire Feed System operating parameters. Unauthorized changes to parameters can result in equipment damage. Contact Motoman Customer Support before making any changes to the jumper shunt block position (refer to Section 1.9).

Refer to Figure 19 for locations and settings of jumper shunt blocks on the motherboard. Refer to Figure 20 for locations and settings of jumper shunt blocks on the daughterboard.

![Figure 19 Motherboard — Factory Settings for Jumper Shunt Blocks](image)
5.6.6 Diagnostic Light Emitting Diodes (LED)

Both the motherboard and daughterboard include diagnostic Light Emitting Diodes (LED). This type of diode exhibits a unique property of emitting visible light when connected to a specific voltage polarity and level. As a result of this unique illumination characteristic, the LED can visually indicate the status of various processes and functions of the HyperFeed II/MWI Wire Feed System.

Motherboard LED locations are shown in Figure 21. Daughterboard LED locations are shown in Figure 22.

In addition, data in Table (motherboard) and Table (daughterboard) describes system status indicated by the state of each LED (illuminated/not illuminated).
### Figure 21  Diagnostic LED Color and Location — Motherboard

<table>
<thead>
<tr>
<th>LED</th>
<th>INDICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D4</td>
<td>LED shows status of 24 VDC Power Generated from Weld Board &amp; Fused by F2 (800 mA)</td>
</tr>
<tr>
<td>D15</td>
<td>LED Indicates the Status of the Isolated 12 VDC Bus used for Analog Inputs Fused by F4 (100 mA)</td>
</tr>
<tr>
<td>D29</td>
<td>LED Indicates the Status of the 5V Isolated CAN Communication Bus &amp; Fused by F3 (250 mA)</td>
</tr>
<tr>
<td>D30</td>
<td>LED Shows Status of 5 VDC Power Rail Used to Power Logic Circuits Fused by F1 (800 mA) and by F2 (800 mA)</td>
</tr>
</tbody>
</table>
**Figure 22** Diagnostic LED Color and Location — Daughterboard

<table>
<thead>
<tr>
<th>LED</th>
<th>INDICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2</td>
<td>Indicates the Status of the Acron Command being Sent to the Feeder &amp; Welder.</td>
</tr>
<tr>
<td>D3</td>
<td>Indicates the Status of the Inch Forward Command being Sent to the Feeder &amp; Welder.</td>
</tr>
<tr>
<td>D4</td>
<td>Indicates the Status of the Inch Reverse Command being Sent to the WireFeeder</td>
</tr>
<tr>
<td>D5</td>
<td>Indicates the Status of the Gas PUrge command being Sent to the WireFeeder.</td>
</tr>
<tr>
<td>D6</td>
<td>Indicates the Status of the “Aux 1” Relay.</td>
</tr>
<tr>
<td>D7</td>
<td>Indicates the Status of the “Aux 2” Relay.</td>
</tr>
<tr>
<td>D8</td>
<td>Indicates the Status of the “Aux 3” Relay.</td>
</tr>
<tr>
<td>D9</td>
<td>Indicates the Status of the “Aux 4” Relay.</td>
</tr>
<tr>
<td>D10</td>
<td>Indicates the Status of the “Aux 5” Relay.</td>
</tr>
</tbody>
</table>
5.7 Wire Feeder LCD Display Functionality

The LCD Display (an integral part of the HyperFeed II and HyperFeed II–EA wire feeders) provides the operator or service technician with access to the condition or state of the wire feed system.

The following is a description of the data presented via the LCD Display, and the meaning of that data –

5.7.1 Power-Up

Upon application of power to the HyperFeed II/MWI Wire Feed System, the wire feeder and interface perform several diagnostic routines that test the hardware and cabling.

If, upon application of power, any of the following error messages are visible on the LCD Display, consult the troubleshooting chart in Section 5.5 –

- E01
- E02
- E03
- E04
- E06

5.7.2 While Welding

When the wire feeder is operating in “play” mode, the LCD Display will show the actual motor speed as reported by the motor’s optical encoder. This data will be brightly displayed on the LCD Display. In addition, the “forward” direction LED will be illuminated.

5.7.3 In Stand-by Mode

The LCD Display will go dim and read “00.0” indicating no wire feed speed and no motor current.

5.7.4 Inch Fwd

When INCH FWD is selected, either at the wire feeder (push button) or from the Programming Pendant, the display will toggle between reading the actual wire feed speed and the motor current. The actual wire feed speed is displayed brightly. The motor current value is displayed dimly. The display of the motor current value is helpful in determining the feed ability of the wire feed system. Upon changing the torch liner, it is wise to measure and note the measured motor current after installing the new liner. This value will act as the baseline, to which any future measurements should be compared. As the motor current value increases through normal operation, it indicates additional motor current required to pull the wire and indicates increased drag on the system. An increase of two to three amps indicates a need to investigate the cause of the drag (obstruction, clogged liner, etc.)
5.7.5 **Inch Rev**

When INCH REV is selected, either at the wire feeder (push button) or from the Programming Pendant, the wire feeder LCD Display indicates the actual motor speed and direction.

5.8 **Robot Parameters Associated with the Wire Feeder**

Table 6 lists standard robot parameters that are associated with operation of the HyperFeed II and HyperFeed II–EA Wire Feeders.

<table>
<thead>
<tr>
<th>STD PARAMETERS</th>
<th>DESCRIPTION</th>
<th>NUMERICAL VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1PØ11 = 8</td>
<td>R1 wire inch speed from Prog Pendant (low speed)</td>
<td>Max speed % (955 \times 0.08) = 76 IPM¹</td>
</tr>
<tr>
<td>A1PØ12 = 31</td>
<td>R1 wire inch speed from Prog Pendant (high speed)</td>
<td>Max speed % (955 \times 0.31) = 296 IPM¹</td>
</tr>
<tr>
<td>A2PØ12 = 8</td>
<td>R2 wire inch speed from Prog Pendant (low speed)</td>
<td>Max speed % (955 \times 0.08) = 76 IPM¹</td>
</tr>
<tr>
<td>A2PØ12 = 31</td>
<td>R2 wire inch speed from Prog Pendant (high speed)</td>
<td>Max speed % (955 \times 0.31) = 296 IPM¹</td>
</tr>
<tr>
<td>A3PØ11 = 8</td>
<td>R3 wire inch speed from Prog Pendant (low speed)</td>
<td>Max speed % (955 \times 0.08) = 76 IPM¹</td>
</tr>
<tr>
<td>A3PØ12 = 31</td>
<td>R3 wire inch speed from Prog Pendant (high speed)</td>
<td>Max speed % (955 \times 0.31) = 296 IPM¹</td>
</tr>
<tr>
<td>A4PØ11 = 8</td>
<td>R4 wire inch speed from Prog Pendant (low speed)</td>
<td>Max speed % (955 \times 0.08) = 76 IPM¹</td>
</tr>
<tr>
<td>A4PØ12 = 31</td>
<td>R4 wire inch speed from Prog Pendant (high speed)</td>
<td>Max speed % (955 \times 0.31) = 296 IPM¹</td>
</tr>
</tbody>
</table>

¹ IPM = Inches per Minute
Appendix A
Illustrated Parts List

A.1 Introduction

A.1.1 Arrangement

Appendix A is arranged as follows –
• Appendix A.1 – Introduction
• Appendix A.2 – Illustrated Parts List (IPL)

A.1.2 General

The Illustrated Parts List (IPL) identifies, describes, and illustrates detail parts of the HyperFeed II/MWI positioner.

A.1.3 Purpose

The IPL provides parts identification and descriptive information for use in provisioning, purchasing, storing, and issuing spare parts.

A.2 Illustrated Parts List (IPL)

The Illustrated Parts List contains illustrations (exploded views) and associated parts list tables that show detail parts of a particular component, assembly, or subassembly.

A.2.1 IPL Layout

The IPL is arranged so that the illustration (exploded view) for an assembly appears directly above the parts list table for that illustration. When this is not possible, due to a large illustration or an extensive parts list table, the parts list table will be listed on the facing page. This format always attempts to
present the illustration and its associated parts list table to the reader in one view, regardless of viewing format (PDF or printed).

**A.2.2 Item Categories Not Included in the IPL**

The following item categories are not included in the IPL –

- Standard hardware items (attaching parts) such as nuts, screws, washers, etc. These are commercially available to the customer.
- Bulk items and consumables such as wire, cable, sleeving, tubing, certain fluids, etc. These are commercially available to the customer.
- Permanently attached parts that lose their identity because they are welded, soldered, riveted, etc., to other parts, assemblies, or subassemblies.

**A.2.3 Parts List Table Structure**

Each figure’s parts list table contains the following data columns –

- **FIG / ITEM**
  An entry in this column gives the item number for a part shown in the associated illustration (exploded view). The item number listed in this column is the same as the item number shown on the illustration. Item numbers on the illustration are identified by a circled number and leader line that points to the particular part (item) on the illustration.

  *Note: Items not shown in the illustration are indicated by a dash (–) prefix to the item number. An example could include a right-hand (RH) part that is otherwise identical to the illustrated left-hand (LH) part.*

- **MOTOMAN P/N**
  An entry in this column gives the part number for an item. Refer to this number when ordering or referencing the part.

- **DESCRIPTION**
  An entry in this column gives the description (nomenclature) for an item number or part number.

- **QTY**
  An entry in this column gives the total quantity of an item or part number required for an assembly or subassembly in which the part appears. The quantity given in this column may or may not be the total quantity required for the complete end item. The letters "REF" in this column indicate a reference to the top assembly in the figure.
### Figure A.1 Exploded View – HyperFeed II Wire Feeder (P/N 152123-1, P/N 152123-2)

<table>
<thead>
<tr>
<th>FIG/ITEM</th>
<th>MOTOMAN P/N</th>
<th>DESCRIPTION</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.1</td>
<td>152123-1</td>
<td>HYPERFEED II WIRE FEEDER (MECHAFIN POWER PIN ADAPTER)</td>
<td>REF</td>
</tr>
<tr>
<td>A.1</td>
<td>152123-2</td>
<td>HYPERFEED II WIRE FEEDER (TWECO #5 POWER PIN ADAPTER)</td>
<td>REF</td>
</tr>
<tr>
<td>1</td>
<td>—</td>
<td>—</td>
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<tr>
<td>24</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
**Figure A.2** Exploded View – HyperFeed II–EA Wire Feeder, P/N 152648-1

<table>
<thead>
<tr>
<th>FIG/ITEM</th>
<th>MOTOMAN P/N</th>
<th>DESCRIPTION</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.2</td>
<td>152648-1</td>
<td>WIRE FEEDER, HYPERFEED II–EA</td>
<td>REF</td>
</tr>
<tr>
<td>1</td>
<td>147753-3</td>
<td>ADAPTER, POWER PIN, HYPERFEED II (Mechafin)</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>147764-2</td>
<td>DOOR, ACCESS, WIRE FEEDER, LH</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>148600-1</td>
<td>CIRCUIT BOARD ASSY, MOTOR CONTROL</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>152145-2</td>
<td>BULKHEAD CONNECTOR, 7-PIN, COLLISION DETECT</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>472482-6</td>
<td>BULKHEAD CONNECTOR, 4-PIN, COLLISION DETECT</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>147763-1</td>
<td>HINGE, POSITIONING</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>152834-1</td>
<td>PLATE, NUT, HINGE TO COVER</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>130441-8</td>
<td>NUT, HEX, ½ -13, ZP</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>130444-8</td>
<td>WASHER, LOCK, ⅞ in.</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>132216-1</td>
<td>BUS, CABLE</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>132216-1</td>
<td>BUSHING, INSULATING</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>152836-1</td>
<td>BRACKET, MOUNTING, WIRE FEEDER TO ROBOT</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>150608-2</td>
<td>CABLE ASSY, PIGTAIL, DATA COMM</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>152169-1</td>
<td>CABLE ASSY, POWER, HYPERFEED II</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>147753-4</td>
<td>MOTOR, WIRE FEED, 24VDC, 200 RPM</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>147752-2</td>
<td>FRAME, FEEDER, 4-ROLL, 2-ROLL DRIVE</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>152838-1</td>
<td>DOOR, WRAPPER ASSY</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>137798-6</td>
<td>GRÖMME, 1.125 in. ID X 1.750 in. OD</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>152146-2</td>
<td>SWITCH ASSY, ROCKER, 2-POS, COLLISION DETECT OVERRIDE</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>149654-1</td>
<td>GUIDE, INLET, QUICK DISCONNECT</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>152149-2</td>
<td>SWITCH ASSY, MOMENTARY, PUSH BUTTON, INCH FWD</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>152149-2</td>
<td>SWITCH ASSY, MOMENTARY, PUSH BUTTON, INCH REV</td>
<td>1</td>
</tr>
<tr>
<td>23</td>
<td>147745-1</td>
<td>FILTER, DISPLAY</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>152833-1</td>
<td>WRAPPER, MAIN, WRAPPER ASSY</td>
<td>1</td>
</tr>
</tbody>
</table>
### Figure A.3 Exploded View – Feeder Frame, 4-Roll, 2-Roll Drive, Flat Top Roll

<table>
<thead>
<tr>
<th>FIG/ITEM</th>
<th>MOTOMAN P/N</th>
<th>MECHAFIN P/N</th>
<th>DESCRIPTION</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.3</td>
<td>147752-2</td>
<td>MEFR9940</td>
<td>FRAME, FEEDER, 4-ROLL, 2-ROLL DRIVE, FLAT TOP ROLL</td>
<td>REF</td>
</tr>
<tr>
<td>1</td>
<td>—</td>
<td>62445</td>
<td>FEED PLATE</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>148437-1</td>
<td>74768</td>
<td>AXLE SHAFT GEAR ADAPTOR, FEED ROLL</td>
<td>2</td>
</tr>
<tr>
<td>*3</td>
<td>148438-1</td>
<td>74783</td>
<td>GEAR ADAPTOR, FEED ROLL</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>—</td>
<td>74917</td>
<td>FEED ROLL V-GROOVE, 0.9 mm, 1.2 mm</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>148435-1</td>
<td>74770</td>
<td>WASHER ( REF 74770-1 )</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>148434-1</td>
<td>73089</td>
<td>KNUREALED FIXING SCREW</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>148436-1</td>
<td>74789</td>
<td>MAIN GEAR DRIVE TO MOTOR</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>148433-1</td>
<td>62037</td>
<td>RETAINING SCREW, FEED ROLL</td>
<td>1</td>
</tr>
<tr>
<td>*9</td>
<td>148095-1</td>
<td>62287</td>
<td>INTERMEDIATE GUIDE</td>
<td>1</td>
</tr>
<tr>
<td>-9A</td>
<td>—</td>
<td>62286</td>
<td>INTERMEDIATE GUIDE – 1.6 mm - 3.2 mm WIRE</td>
<td>OPT</td>
</tr>
<tr>
<td>-9B</td>
<td>148095-2</td>
<td>62285</td>
<td>INTERMEDIATE GUIDE, SUPER GLIDE, 0.6 mm - 1.6 mm WIRE</td>
<td>OPT</td>
</tr>
<tr>
<td>-9C</td>
<td>—</td>
<td>62284</td>
<td>INTERMEDIATE GUIDE, SUPER GLIDE, 1.6 mm - 3.2 mm WIRE</td>
<td>OPT</td>
</tr>
<tr>
<td>10</td>
<td>—</td>
<td>62614</td>
<td>PRESSURE DEVICE WITH SCALE</td>
<td>2</td>
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<tr>
<td>11</td>
<td>—</td>
<td>62294</td>
<td>PIN</td>
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<td>12</td>
<td>—</td>
<td>103506</td>
<td>PRESSURE ARM, RIGHT-HAND</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>—</td>
<td>103507</td>
<td>PRESSURE ARM, LEFT-HAND</td>
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<tr>
<td>14</td>
<td>149369-1</td>
<td>62083</td>
<td>LOCATING PIN, PRESSURE ARM</td>
<td>2</td>
</tr>
<tr>
<td>*15</td>
<td>—</td>
<td>62012</td>
<td>PRESSURE ROLL</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>—</td>
<td>62095</td>
<td>AXLE, PRESSURE ROLL</td>
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</tr>
<tr>
<td>17</td>
<td>148432-1</td>
<td>62035</td>
<td>CIRCLIP</td>
<td>2</td>
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<tr>
<td>18</td>
<td>148439-1</td>
<td>100169</td>
<td>GUIDE, WIRE FEEDER, INPUT</td>
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<tr>
<td>19</td>
<td>—</td>
<td>62078</td>
<td>SCREW</td>
<td>3</td>
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<tr>
<td>20</td>
<td>147658-1</td>
<td>62280</td>
<td>INSULATION MOUNTING KIT, 2.0 mm THICK BASE PLATE</td>
<td>OPT</td>
</tr>
</tbody>
</table>

*Parts included in Annual Maintenance Kit, Motoman P/N 1511417-1*
Figure A.4  Motoman Welder Interface (MWI) Assembly
Table A.1 Parts List – Motoman Welder Interface (MWI) Assembly

<table>
<thead>
<tr>
<th>FIG/ITEM</th>
<th>MOTOMAN P/N</th>
<th>DESCRIPTION</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.4</td>
<td>150700-1</td>
<td>INTERFACE ASSY, HYPERFEED II, NX100/XRC/MRC, SINGLE RBT</td>
<td>REF</td>
</tr>
<tr>
<td></td>
<td>150700-2</td>
<td>INTERFACE ASSY, HYPERFEED II, NX100/XRC/MRC, DUAL RBT</td>
<td>REF</td>
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<tr>
<td>1</td>
<td>150701-1</td>
<td>PLATE, MOUNTING, WELD INTERFACE, NX100 UPPER DOOR</td>
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<td>2</td>
<td>130965-1</td>
<td>TRANSFORMER, 115 VAC/24 VAC</td>
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<tr>
<td>3</td>
<td>146336-1</td>
<td>DUCT, WIRING, 3/4 X 2, WHITE</td>
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<tr>
<td>4</td>
<td>146335-1</td>
<td>DUCT COVER, 3/4, WHITE</td>
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<tr>
<td>5</td>
<td>148571-1</td>
<td>BOARD ASSY, PC, HYPERFEED, MWI MOTHERBOARD, W/O SOFTWARE</td>
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<tr>
<td>6</td>
<td>148570-1</td>
<td>BOARD ASSY, PC, HYPERFEED, MWI DAUGHTERBOARD, ANALOG WELDER CONTROL</td>
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<td>7</td>
<td>151009-1</td>
<td>CABLE ASSY, POWER, 120 VAC, NX100 TB1 TO MWI MOTHERBOARD (J12)</td>
<td>1</td>
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<tr>
<td>8</td>
<td>150754-1</td>
<td>CABLE ASSY, P/T, POWER/COMM, MWI MOTHERBOARD TO GLAND PLATE (LEFT SIDE OF NX100 CONTROLLER)</td>
<td>1</td>
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<tr>
<td>9</td>
<td>150726-1</td>
<td>JUMPER, GROUND, 600mm, NX100, M4 TO M4 RING TERMINALS</td>
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<td>10</td>
<td>479154-1</td>
<td>CLAMP, CABLE SUPPORT</td>
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<td>11</td>
<td>400828-5</td>
<td>TIE, CABLE, PLASTIC, 14 5/8 in., WHITE, MED DUTY</td>
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<td>12</td>
<td>152265-1</td>
<td>CABLE ASSY, SHOCK SENSE, NX100</td>
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<td>-12A</td>
<td>152265-2</td>
<td>CABLE ASSY, SHOCK SENSE, MRC/XRC</td>
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<tr>
<td>13</td>
<td>152539-1</td>
<td>PLUG, JUMPER, E-STOP, MWI BOARD, 2-CH EXT E-STOP CONN</td>
<td>1</td>
</tr>
</tbody>
</table>

NOTES –
A dash (–) preceding an item number indicates that the item is not shown in the illustration.
REF indicates a reference to the top assembly in the figure.
NP indicates that an item is NON-PROCURABLE. This usually indicates that the item is part of a kit or next higher assembly, and is not available separately.
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