

Low-Stress Robotic (LSR) System Installation

ADDENDUM

May 2021 | **M066**
For Motoman® XRC EA1400/EA1900 Robots

The data contained in this addendum is either in addition to or takes exception to data appearing later in this manual.

Summary

- Unlike the Motoman® EA1400N, EA1900N and SSA2000 through-arm robot models, the original EA1400 and EA1900 robot models are unique.
- This document provides a summary as to why these robots are unique and includes installation instructions for the LSR uncable.
- Spare parts and other information can be found in the archived M058 technical guide at https://www.tregaskiss.com/wp-content/uploads/2020/12/Archived_M058_TOUGH_GUN_ThruArm_Series_Robotic_MIG_Guns_for_Motoman.pdf.
- **NOTE:** TOUGH GUN I.C.E.® technology is NOT compatible with the Tregaskiss® LSR system. Use the Motoman OEM uncable in these situations.

Motoman EA1400 and EA1900

- This through-arm model was the first one released by Motoman.
- Often times, this series is referred to as the “XRC” series (XRC is the model of the robot controller for these robots).
- These systems are unique and provide limitations that are not found on newer systems.
- **KEY POINT:** The LSR uncable for this series is unique and will NOT work for other Motoman models.

Distinguishing Features of the EA1400 and EA1900

- The logo on the side of the robot reads “EA1400” or “EA1900”.
- There is an offset feeder at the rear of the robot.
- The casting of the robot features a bend near the upper arm.

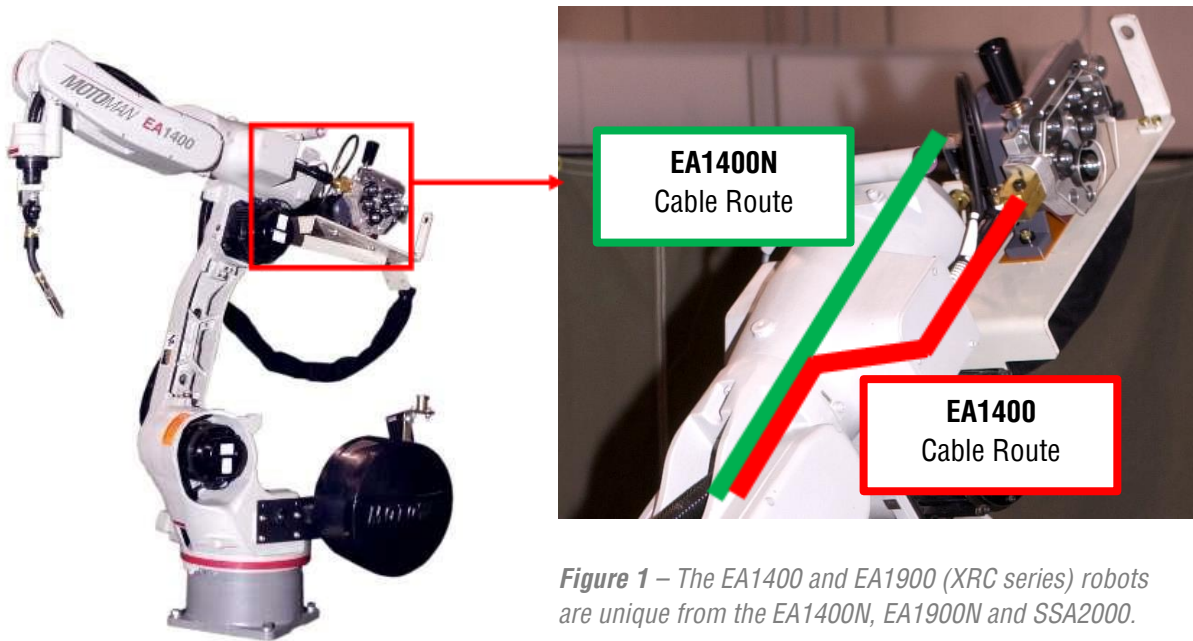


Figure 1 – The EA1400 and EA1900 (XRC series) robots are unique from the EA1400N, EA1900N and SSA2000.

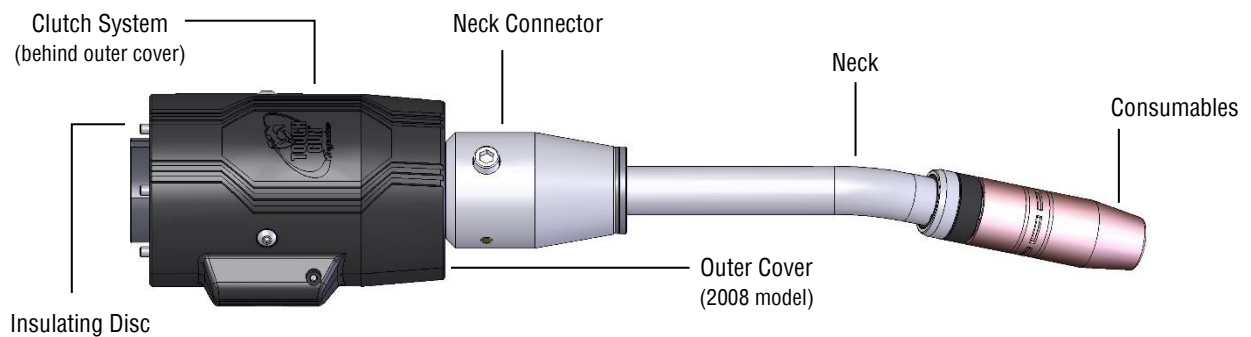
Installation Instructions for the LSR Unicable

IMPORTANT: These instructions are based on the assumption that the 5800 clutch system (shown below) is already installed on the faceplate of the robot.

Clutch System Components

NOTE: 2008 model shown below with new outer cover. Older models have an aluminum outer cover but the instructions for the LSR unicable installation are also applicable for this system.

Figure 2 – The 5800 clutch system is compatible with the Motoman EA1400, EA1900, EA1400N, EA1900N, and SSA2000. The most recent model is shown here with a black outer cover, rather than the original aluminum design.



Step #1: Remove the Outer Cover of the 5800

NOTE: 2008 model shown below with the new outer cover. Older models have an aluminum outer cover but (other than **Step #1**), the instructions for the LSR uncable installation are also applicable for this system.

1. Unthread (3) M4 SBHCS using 2.5 mm Allen key.
2. Unthread (1) M3 SHCS using 2.5 mm Allen key, and pull apart both cover halves.
3. Insulating disc should remain in place, located by dowel.

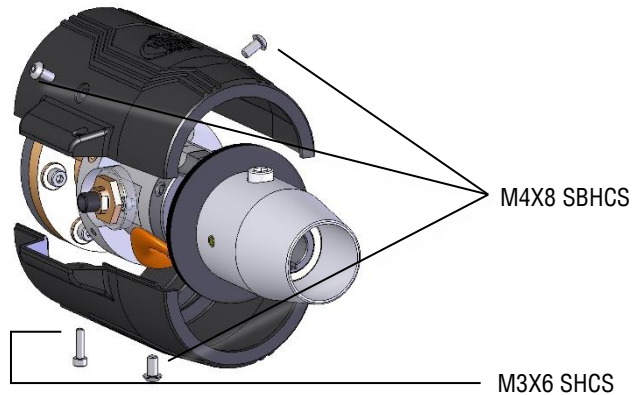


Figure 3 – The most recent 5800 features the black outer cover that splits into two pieces, using a total of (4) fasteners to hold it together.

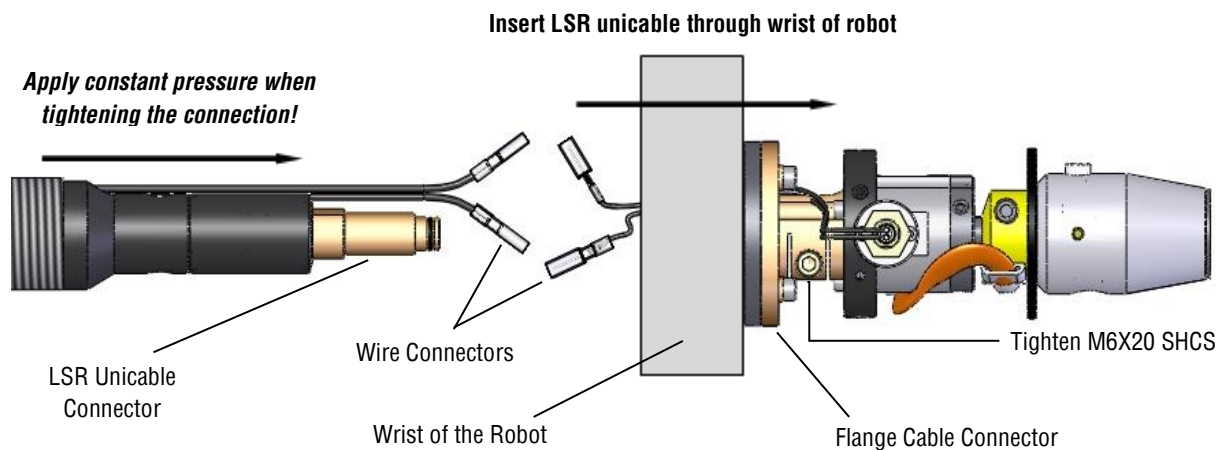
Step #2: Install the LSR Uncable at the Front of the EA1400/EA1900

1. Connect wire connectors (they are not polarity specific).
2. Insert LSR uncable connector through mounting face of robot.
3. Insert LSR uncable connector into flange cable connector of the 5800.

NOTE: Push the LSR uncable down into the flange cable connector and hold.

4. While applying pressure to the LSR uncable, secure the connector by tightening M6X20 SHCS using 5 mm Allen key.

Figure 4 – When installing the LSR uncable to the 5800 clutch system, be sure to maintain pressure towards the 5800 when tightening the M6 screw to ensure a reliable connection.



Step#3: Reinstall the Outer Cover

1. Reverse the directions of **Step #1**.

Step #4: Install Neck to the 5800

1. Insert new neck into connector housing until neck is fully seated. See **Figure 5**.
2. Tighten neck bolt clockwise with 5 mm Allen key to torque specifications (60 in-lbs or 7 Nm). See **Figure 6**.

Figure 5 – For best results, remove the consumables from the neck and reinstall them during Step #9. This technique will allow for the new QUICK LOAD® liner to be correctly installed.

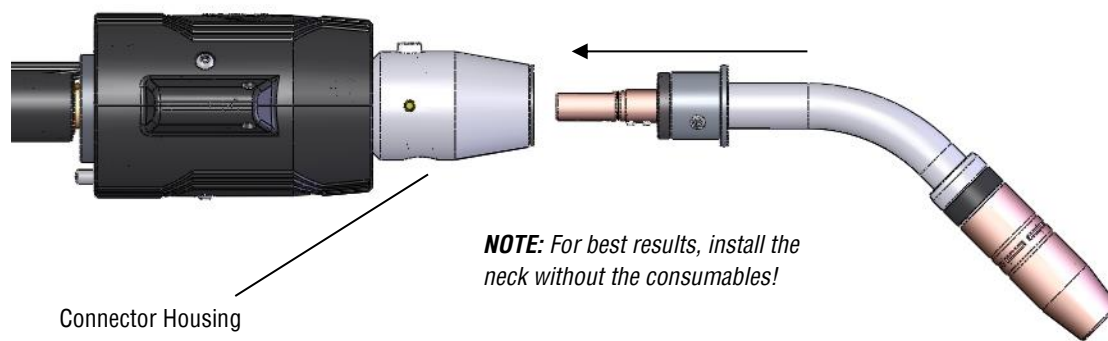
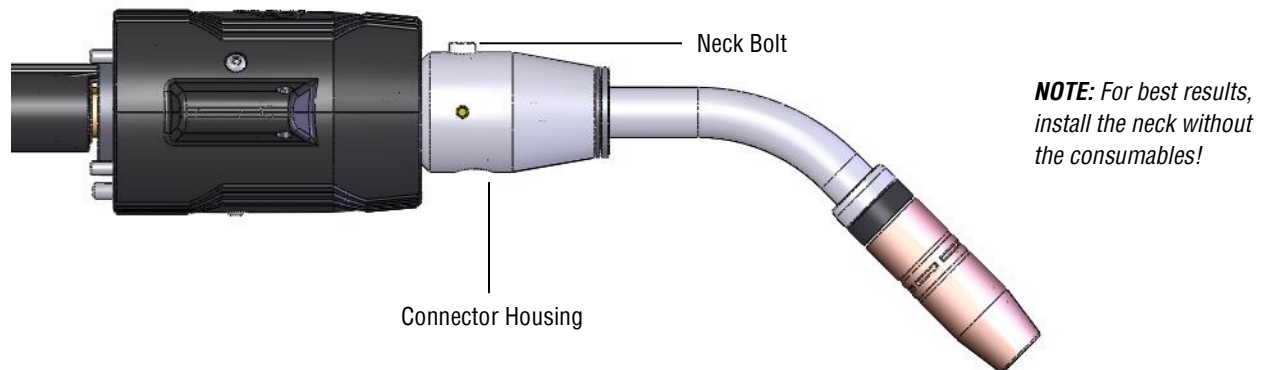


Figure 6 – When adding the neck, apply just enough pressure to hold it in place as you tighten the neck bolt to 60 in-lbs (7 Nm).



Step #5: Installation of LSR Unicable at the Rear of the EA1400/EA1900

1. Remove the cover on the side of the robot. See **Figure 7**.
2. Install the back end of the LSR unicable through the casting of the robot. See **Figure 8**.
NOTE: The LSR unicable must be installed through the casting of the robot WITHOUT the power pin or Euro connection. Otherwise, it will not fit through the casting.
3. Fish the cable through the robot using the access provided when the cover is removed.

Figure 7 – On the side of the robot, remove the (3) screws holding the cover in place. Doing so provides access to the LSR unicable as it is fished through the casting of the robot.

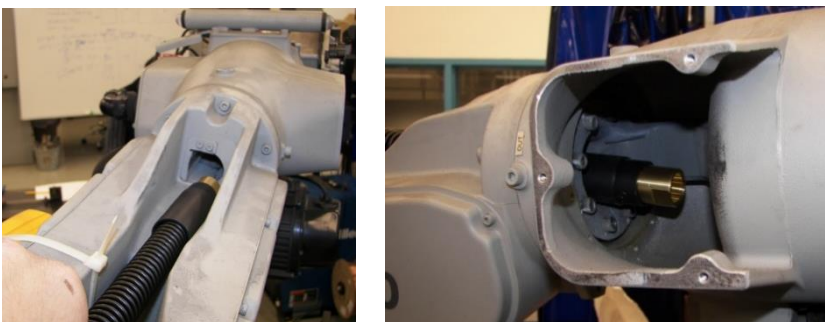
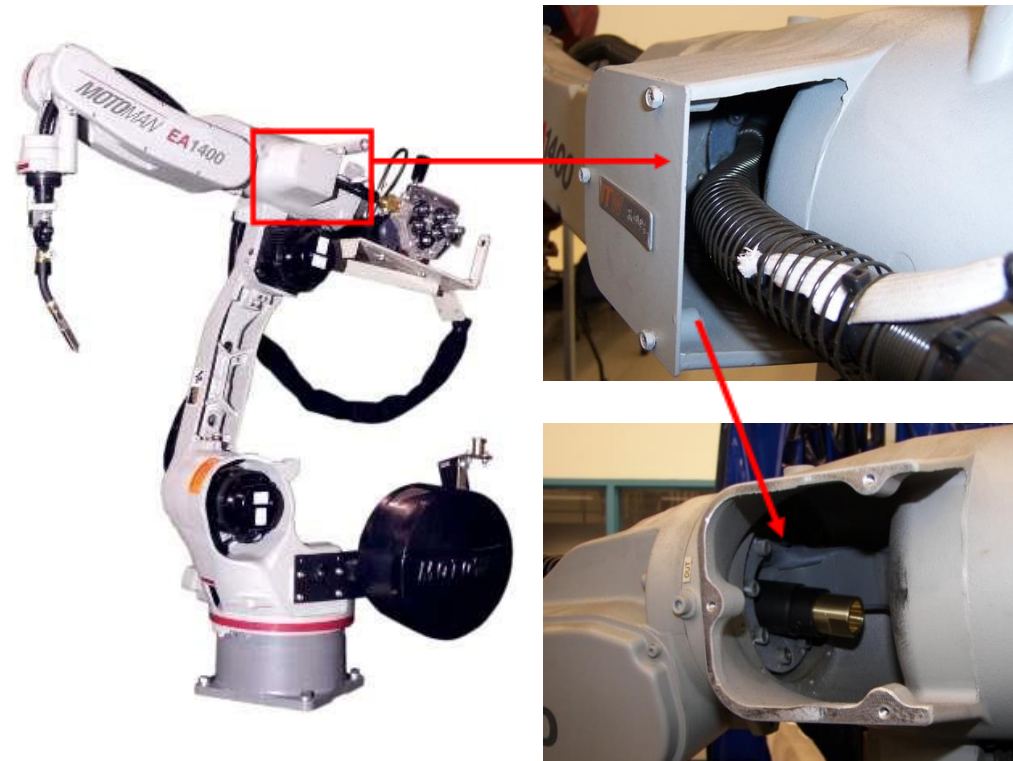


Figure 8 – Insert the back end of the LSR unicable through the hole in the casting of the upper arm.

Step #6: Install Power Pin (or Euro Connector)

1. Once the back end of the LSR uncable is pulled through the robot, add the power pin (or Euro connector) to the LSR uncable.
NOTE: Use wrenches to ensure the pin is secure and will not come loose. Adjustable wrenches are NOT recommended, as they may strip the brass components!
2. Tighten the power pin (or Euro connector) to the rear block using a 1" (25 mm) wrench on the rear block and a 5/8" (16 mm) or 3/4" (19 mm) wrench on the power pin.



Figure 9 – Once the LSR uncable is pulled through the robot, add the power pin (or Euro connector).

NOTE: Make sure a wrench is used to provide a tight connection. Adjustable wrenches are NOT recommended!

Step #7: Installation of the QUICK LOAD Liner (first installation only)

NOTE: The initial installation of the QUICK LOAD liner is from the rear of the LSR uncable (just like a conventional liner); however, subsequent liner replacements will be completed at the front of the LSR system.

1. Add the QUICK LOAD liner retainer (part # 415-26) to the back of the QUICK LOAD liner.
2. From the rear of the LSR uncable, feed replacement liner through the uncable using short strokes to avoid kinking.
3. Secure the liner retainer in place with either the thread or the power pin cap.
NOTE: If power pin is thread-in type:
 - Using a 10 mm wrench, turn thread-in liner retainer in a clockwise direction and tighten in power pin.
4. At the front of the neck, trim the liner. See **Figure 10**.
5. Push liner back into front of gun and hold in place.
6. Trim conduit to a 5/8" (16 mm) stick-out.
7. Remove any burr that may obstruct wire feed.

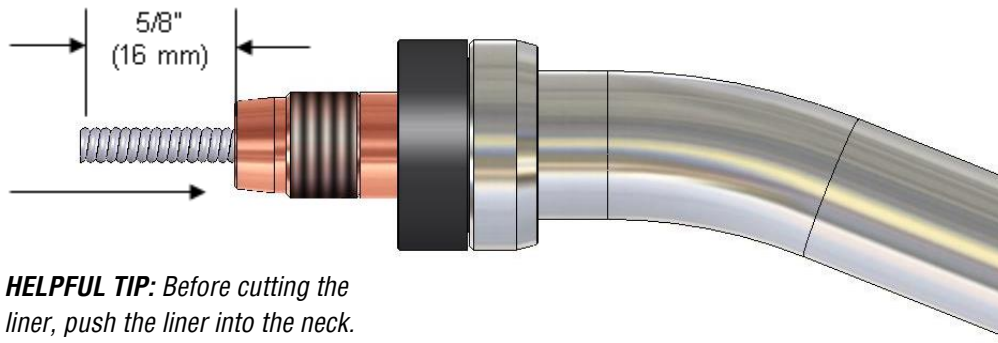


Figure 10 – The recommended cut length for the QUICK LOAD liner is 5/8" (16 mm). Make sure the liner is pushed into the neck when this length is determined.

HELPFUL TIP: Before cutting the liner, push the liner into the neck.

Step #8: Installing LSR Unicable into the Wire Feeder

1. Install the control cable.
 - a. Connect the jumper control cable to the main control cable of the LSR unicable.
 - b. Connect to the wire feeder as per the manufacturer's instructions.
2. Install into wire feeder as per the manufacturer's instructions.



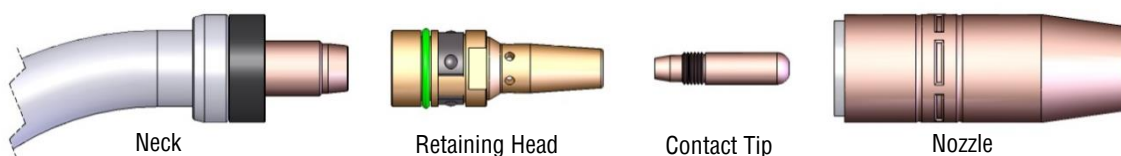
Figure 11 – Install the power pin or Euro connector to the wire feeder as per the manufacturer's instructions. The wire feeder control cable is also added during this step.

Step #9: Install Consumables to Neck

IMPORTANT:

1. Be sure all parts are tightened well before welding to prevent overheating of contact tip.
2. Torque specs: Retaining head – 80 in-lbs; Contact tip – 30 in-lbs
3. When installing the retaining head, make sure it is tightened with a 5/8" (16 mm) wrench.
4. To prevent scoring on the retaining head, do not use pliers.

Figure 12 – Install the consumables to the neck using the instructions below.



Removal and Replacement of Consumables

1. Pull slip-on nozzles off with a clockwise twisting motion.
2. When installing nozzle, exposed insulator should nest inside TOUGH GUN I.C.E. insulator to ensure concentricity.
3. Replace retaining head with large bore toward the neck. Tighten until retainer is secure.
4. External neck thread can be cleaned with a 9/16"-18 die.

Step #10: Replace the Cover on the Robot

1. Reverse the instructions from **Step #5** and reinstall the cover to the robot.



*Figure 13 – To complete the installation, return the cover that was removed in **Step #5**.*

Maintenance/Spare Parts/Parts Breakdown

Refer to the archived M058 technical guide at https://www.tregaskiss.com/wp-content/uploads/2020/12/Archived_M058_TOUGH_GUN_ThruArm_Series_Robotic_MIG_Guns_for_Motoman.pdf.

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