Summary
- Unlike the most recent through-arm robots from Motoman (EA1400N/1900N and the SSA2000), the original ES1400 and EA1900 robots are unique.
- This document provides a summary as to why these robots are unique and includes installation instructions for the LSR Unicable.
- Spare parts and other information can be found in the M058 (LSR Systems Tech Guide for Motoman EA1400N, EA1900N, and SSA2000).
- **NOTE: TOUGH GUN I.C.E.™ System is NOT compatible with the Tregaskiss LSR System. Use the Motoman OEM unicable in these situations.**

Motoman EA1400 and EA1900
- This through-arm model was the first one release 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 the newer systems.
- KEY POINT: the LSR Unicable 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 1900 (XRC Series) robots are unique from the EA1400N, EA1900N and SSA2000.
Installation Instructions for the LSR Unicable

- These instructions are based on the assumption that the 5800 Clutch System (below) is already installed on the faceplate of the robot.

NOTE: Clutch System (5800) Components

*NOTE: 2008 Model shown below with NEW outer cover. Older models have an all aluminum outer cover but the instructions for the LSR Unicable installation are applicable for this system as well.

![Diagram of Clutch System Components]

Figure 2 – The 5800 Clutch System is compatible with the Motoman EA1400, EA1900, EA1400N, EA1900N and the 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 NEW outer cover. Older models have an aluminum outer cover but (other than step #1) the instructions for the LSR Unicable installation are applicable for this system as well.

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

![Diagram of Outer Cover Removal]

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 Unicable at the Front of the EA1400/1900

- Connect wire connectors (they are not polarity specific).
- Insert LSR Unicable Connector through mounting face of robot.
- Insert LSR Unicable Connector into flange-cable connector of the 5800.
- NOTE: Push the LSR Unicable down into the Flange Cable Connector and hold.
- While applying pressure to the LSR Unicable, secure the connector by tightening M6x20 SHCS, using 5 mm Allen key.

![Diagram of LSR Unicable installation](image)

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

STEP #3: Re-Install the Outer Cover
- Reverse the directions of STEP #1.

STEP #4: Install Gooseneck to the 5800
- STEP #4a: Insert new Gooseneck into connector housing until neck is fully seated.

![Diagram of Gooseneck installation](image)

Figure 5 – For best results, remove the consumables from the gooseneck and re-install them during STEP #9. This technique will allow for the new QUICK LOAD Liner to be correctly installed.
• STEP #4b: Tighten Gooseneck bolt clockwise with 5 mm Allen key to torque specifications (60 in.-lbs. or 7 Nm).

NOTE: For best results, install the gooseneck without the consumables!

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

STEP #5: Installation of LSR Unicable at the Rear of the EA1400/1900
• Remove the cover on the side of the robot (Figure 7).

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.
• Install the back-end of the LSR Unicable through the casting of the robot (Figure 8)
  
  o 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.

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

• Fish the cable through the robot using the access provided when the cover is removed.

STEP #6: Install Power Pin (or Euro connection)

• Once the back-end of the LSR Unicable is pulled through the robot, add the power pin (or Euro connection) to the LSR Unicable.
  
  o NOTE: Use wrenches to ensure the pin is secure and will not come loose. Adjustable wrenches are NOT recommended and they may strip the brass components!

• Tighten the power pin (or Euro connection) 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 Unicable is pulled through the robot, add the power pin (or Euro connection).

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 (QLL) is from the rear of the LSR Unicable (just like a conventional liner); however, subsequent liner replacements will be completed at the front of the LSR System.

- Add the QUICK LOAD Liner Retainer (Part #415-26) to the back of the QUICK LOAD Liner.
- From the rear of the LSR Unicable, feed replacement liner through the unicable using short strokes to avoid kinking.
- Secure the liner retainer in place with either the thread, or the power pin cap.
- 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.
- At the front of the gooseneck, trim the liner (See Figure 10).
- Push liner back into front of gun and hold in place.
- Trim conduit to a 5/8” (16 mm) stick out.
- Remove any burr that may obstruct wire feed.

**Figure 10** – The recommended cut length for the QLL is 5/8” (16mm). Make sure the liner is pushed into the gooseneck when this length is determined.

**TIP:** Before cutting the liner, push the liner into the gooseneck

STEP #8: Installing LSR Unicable into the Wire Feeder

- Install the control cable.
  - Connect the jumper control cable to the main control cable of the LSR Unicable.
  - Connect to the wire feeder as per the manufacturer’s instructions.
- Install into wire feeder as per the manufacturer’s instructions.

**Figure 11** – Install the power pin or Euro connection 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 the Gooseneck

**Figure 12**– Install the consumables to the gooseneck using the instructions listed below.

**IMPORTANT**
- Be sure all parts are tightened well before welding to prevent overheating of contact tip.
- Torque specs - Retaining Head 80 in.-l bs. / Contact Tip 30 in.-lbs.
- When installing the retaining head make sure it is tightened with a 5/8” (16 mm) wrench.
- To prevent scoring on retaining head do not use pliers.

**Removal and Replacement**
- Pull slip-on nozzles off with a clockwise twisting motion.
- When installing nozzle, exposed insulator should nest inside TOUGH GUN I.C.E.™ insulator to assure concentricity.
- Replace retaining head with large bore toward the gooseneck. Tighten until retainer is secure.
- External gooseneck thread can be cleaned with a 9/16” - 18 die.

STEP #10: Replace the Cover on the Robot
- Reverse the instructions from step #5 and re-install 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 following Tech Guide for this information:
  - Low-Stress Robotic (LSR) System for MOTOMAN EA1400N, EA 1900N and SSA2000 Robots.
  - Part Number: M058.