# MIG Welder Wire Drive Tension and Liner Maintenance SOP

## 1.0 Maintenance Objective & Frequency

The objective of this procedure is to calibrate the wire drive tension and replace the liner and contact tip on a MIG welder to prevent wire feed inconsistencies, birdnesting, and burnback. Proper tension ensures consistent arc stability and weld quality. This PM is to be performed every 40 hours of arc-on time or monthly, whichever comes first.

## 2.0 Lockout/Tagout (LOTO) & Safety

• Electrical Isolation: Disconnect the welder from the main power supply by unplugging or switching off the disconnect. Apply a personal lock and tag.
• Wire Feed Isolation: Remove the welding wire spool and ensure the wire is not under tension. Disconnect the gas supply if applicable.
• PPE: Wear safety glasses, welding gloves, and flame-resistant clothing. Ensure the work area is free of flammable materials.

## 3.0 Required Tools, Parts & Lubricants

- Wire cutters (side cutters)
- Allen key set (metric, typically 3mm, 4mm, 5mm)
- Flathead screwdriver (small)
- Replacement contact tip (same size as wire diameter)
- Replacement liner (correct length and type for the gun)
- Wire drive roll (if worn, matching wire diameter)
- Compressed air (dry, regulated to 30 psi)
- Lint-free cloth
- Torque wrench (if specified by OEM)

## 4.0 Step-by-Step Maintenance Procedure

1. Perform LOTO as per Section 2.0. Remove the wire spool and cut the wire at the drive rolls to release tension.
2. Remove the nozzle and contact tip from the welding gun using a wrench or pliers. Inspect the contact tip for wear or blockage; replace if the hole is elongated or clogged.
3. Disconnect the gun from the wire feeder. Remove the liner by pulling it out from the gun end. If the liner is stuck, gently tap the gun to dislodge debris.
4. Inspect the liner for kinks, bends, or excessive wear. Replace if any damage is found. Use compressed air to blow out the gun conduit from the feeder end to remove dust and metal shavings.

5. Install the new liner into the gun, ensuring it is fully seated at both ends. Trim the liner to the correct length if necessary, leaving about 1/4 inch protruding from the gun end.

6. Reattach the gun to the wire feeder. Tighten the liner retaining nut securely by hand, then give an additional 1/4 turn with a wrench.

7. Inspect the wire drive rolls for wear or debris. Clean with a lint-free cloth and compressed air. Replace if the grooves are worn or if the roll is slipping.

8. Thread the welding wire through the drive rolls and into the liner. Ensure the wire is properly seated in the drive roll groove.

9. Adjust the wire drive tension. Turn the tension adjustment knob clockwise until the wire begins to feed, then back off slightly until the wire feeds smoothly without slipping. A good test: when the wire is pinched at the gun end, the drive rolls should slip without damaging the wire.

10. Install a new contact tip and nozzle. Tighten the contact tip to 10-15 Nm (or as per OEM spec) using a torque wrench to avoid overtightening.

11. Reinstall the wire spool and ensure the wire is properly aligned through the entire feed path. Close the wire feeder cover.

## 5.0 Verification & Return to Service

1. Remove LOTO and restore power to the welder. Set the wire feed speed to a typical value (e.g., 300 ipm for 0.035 wire).

2. Perform a test weld on a scrap piece of metal. Observe the arc stability and wire feed consistency. The weld should be free of spatter, burnback, or birdnesting.

3. Check the wire feed at the gun end: the wire should feed smoothly without hesitation or jerking.

4. If the test weld is satisfactory, sign off on the PM work order in ServiceGrid. If issues persist, recheck drive roll tension and liner alignment.