



## ICR Refurbishment Detail

### Scope of Work - Controller

- Inspect exterior and interior of cabinet for missing, broken or incorrect components. Install/replace as needed.
- Inspect teach pendant, all cables and connectors
- Inspect for proper input voltage set-up (customer to confirm)
- Install safety jumpers to be able to cycle robot without errors
- Apply power and check for proper "boot up" sequence
- Confirm teach pendant functionality along with all E-stops
- Clean inside / outside of controller cabinet and cables/connectors
- Replace fans as needed
- Replace contactors (if applicable)
- Replace batteries, label accordingly
- Remove and clean all circuit boards and servo amps
- Replace filter (if applicable)
- Replace any missing hole cover plates
- Confirm media port or disk drive functionality
- Paint if needed

### Scope of Work – Robot Manipulator:

- Inspect for missing, broken or incorrect components
- Inspect castings
- Inspect for defective seals and oil leaks
- Inspect counter balancer (if applicable)
- Inspect hard stops and limit switches
- Inspect all connectors and cables
- Test J3 connections (EE /CS/CP/Air/Gas etc.)
- Check for legible witness (mastering) marks or stickers, replace as needed
- Secure to test stand and attach appropriate test weight
- Conduct grease and/or oil analysis on each axis.
- Conduct backlash testing on each axis.
- Install test program to exercise each individual axis.
- Conduct brake drop test (pass/fail)
- Install test program to exercise all axis simultaneously.
- Identify and repair any abnormal vibrations which occur on any axis or motion.
- Replace Axis Reducer / Gear Box grease per OEM specifications,
- Grease all axis cross roller bearings / bushings / joint bearings.
- Install new counter balance bushing kits **(if needed and applicable)**
- Replace all belts **(if applicable)**
- Replace batteries or battery pack, label accordingly
- Replace cable shrouds **(if applicable)**
- Paint manipulator if needed
- **Run for minimum 8 hours under full load**
- **Conduct Infrared thermal scanning of bearings, wrist, motors and RV's**