PURPOSE

- The purpose of the Global Supplier Standards Manual is to communicate Johnson Controls Inc. metal prototype weld fixture design requirements to the suppliers in our Automotive Experience Division that provide prototype parts. It is the expectation of Johnson Controls Inc. that all suppliers comply with all of the requirements and expectations documented in this manual.

SCOPE

Geographic Applicability-

- This policy applies globally to all JCI Automotive Experience (AE) Manufacturing and Parts Distributions locations that are involved in the purchase of products and services for use internally or resale.
- All elements listed in the document are required unless expressly written in the request for quote or the purchase order from Johnson Controls.

1. Fixtures must be compatible to JCI trunion mounting plate if parts are to be welded on top/bottom, or must be rotated for required positioning (ref. line #2). JCI to provide CAD file for plate.

2. All arc welds are to be performed with weld joint positioned within +/- 150 from horizontal.

3. Must have torch clearance for all arc welds @ 450 +/- 100 to weld root, and +/- 100 travel angle. 3 mm minimum gun/nozzle clearance from any fixture detail at all points.
4. Torch model for clearance evaluation shall be Tregaskiss© 500A, 220 Arm #AS-306-2, 220 Gooseneck # 405-22QC. JCI to provide CAD file for evaluation use.

5. Must have adequate clearance for JCI trans-gun on resistance welded assemblies that must be robotically welded. JCI to provide trans-gun dimensions.

6. Strict adherence for tool locating surfaces to datum schemes on assembly drawings. All part locating surfaces are to be machined. All part locating pins are to be machined, and sized - 0.1mm below drawing minimum dim. for mating hole/feature.

7. Selected locating features are to be adjustable with shim packs (X,Y,Z axis). Reference JCI GMAW & Resistance Welding Tooling Standard: SM-PLUS-ST-XX-XX-E Rev. 08, section 4.2.27 for shim types and specifications. JCI will provide document.

8. No “egg-crate” type fixtures allowed.

9. All fasteners to be metric thread. All fasteners must have a minimum of 1.5 x O.D. thread engagement.

10. Must have adequate clamping that is permanently bolted to the fixture without causing distortion of parts. Magnetic locators are not permitted.

11. No alternative clamping (locking pliers, etc.) without JCI AME review and written approval.

12. Clamps used in “Hot” areas to be steel-to-steel contact, no rubber/plastic tips.

13. All fixtures to validated via standard measurement practices ie; CMM, micrometer, caliper, etc.

14. Aluminum tooling is acceptable with steel part-touching details for datum target areas (if required for part nature or volume use) not necessary to heat treat.

15. Final tool design to be approved by JCI AME Dept. prior to build.