



Fixture, Workholding, and Clamp Safety Guide

Category: Workholding

Audience: Fitters, operators, programmers, supervisors

Badge: Fixtures

Practical checklist for fixtures, jigs, clamps, part loading, tack welds, distortion control, and safe robotic welding workholding.

Important limitation: This document is a general planning aid only. It does not replace OSHA requirements, employer safety programs, equipment manuals, SDS review, qualified risk assessment, training, lockout/tagout procedures, PPE selection, or competent safety review.

Fixture Readiness

- Inspect fixtures for damage, loose components, worn stops, missing pins, broken clamps, or buildup that affects part location.
- Confirm clamps and supports are rated for the load and positioned clear of robot path and weld spatter.

Part Loading

- Verify part orientation, mark identification, fit-up, tack condition, and final clamp status before cycle start.
- Use appropriate lifting and handling methods for heavy or awkward parts.

Weld Access

- Confirm the torch has clearance around clamps, stops, tabs, backing bars, and fixture hardware.
- Avoid creating pinch points between moving robot components, the workpiece, and fixture elements.

Field Checklist

Item	Verified	Notes
Fixture inspected		
Stops/pins present		
Clamps secure		
Part orientation verified		
Tacks acceptable		
Robot clearance verified		
Handling/lift plan used		

Reference Basis

- OSHA 29 CFR 1910 Subpart Q - Welding, Cutting and Brazing.
- OSHA 29 CFR 1910.147 - Control of Hazardous Energy (Lockout/Tagout).
- NIOSH welding fume and manganese exposure resources.
- RAS equipment planning information for robotic arc welding systems using 480V / 60Hz / 3-phase power, RAS-500PR power supply, water-cooled torch packages, torch cleaning, and wire cutting stations.

Revision: RAS Safety Knowledge Base expanded safety resource set. Verify against current site-specific rules before use.