

WELDING PROCEDURE
For Automotive Industry
Cast Steel; Flame Hardenable
0050A (Gr. 37; 190 M; M-3A76A; NP 2088)

Foundry Properties as Received:
170/229 BHN

Applications:

Draw punches and rings. Restrike pads and flange die pads. Trim die buck where flame hardening is employed. Receptive base material for Ion-nitriding.

Heat Treatment:

Flame hardenable to 55 HRC minimum. Heat with torch to 1500°F. - 1700°F. (light cherry red). Material may be air or liquid quenched depending on section size. Liquid quench can help reduce distortion.

Preparation and Welding Tips:

Verify the grade and condition of material to be welded.

Remove all scale, dirt, oils, drawing compounds or other surface contaminants.

Remove all cracks, notches, porosity, inclusions, or sharp surface defects.

Avoid sharp corners caused by machining or grinding.

A preheat and postheat of 200°F. to 400°F. is recommended. Heat should be applied so as not to "shock" the casting or welded surface.

A postheat to relieve stress and promote uniform cooling is also suggested.

Select appropriate weld alloy for the required procedure.

Follow manufacturer recommendations for polarity, volts or amperage.

Stringer beads are mandatory with a maximum bead length of 2" to 4".

Frequent peening, while hot, is required for all welds.

Preparation and Welding Tips: (continued)

Hard overlay material should not exceed 5 MM. in finished weld thickness.

Rod Selection for Repair of Engineering Changes:

1. **Underlay**

A mild steel weld alloy such as Eureka 27 or 28 is recommended.

2. **Hard Overlay**

Medium wear of flange draw:

Eureka EXP-10. Hard as welded 36 to 40 HRC. Non-heat treatable.

High wear flange or draw:

Eureka 72. Hard as welded 52 to 56 HRC. Minimum of 2 passes of overlay material required to counter weld dilution with the underlay alloy or base material.

Recommended underlay, Eureka 27 or 28, for large build up. For areas not exceeding 5 MM. finished weld deposit Eureka 72 may be applied directly to the casting.

Trim:

Eureka 74. Hard as welded 56 to 58 HRC.

3. **Flame Hardenable:**

Eureka 145, anneal, then flame harden.

Nominals:

C:	.40/.50	Si:	.20/.50	Mn:	.90/1.20
Cr:	.80/1.00	Mo:	.35/.50	V:	.15 max.
S:	.05 max.	P:	.045 max.		