

Eureka Welding Alloys

2000 E. Avis Drive

Madison Heights, MI 48071

Phone: 248-588 0001 Fax: 248-585 7711 Toll Free: 800-962 8560

WELDING PROCEDURE FX DIE STEEL

The procedures that follow are those that should be used when repairing most all iron based tools and dies. Pay close attention to the base metal that is called out and the preheating, postheating, and tempering temperatures that are recommended.

- A.** Qualify the base metal composition, if possible. Perform hardness tests on die face and also the impression area if possible.
 - B.** Visually inspect the tool or die to determine the reason for failure and establish the exact area of repair. Record any dimensions that will be altered during the course of repair for reference when remachining to original dimensions.
 - C.** Machine, grind, EDM, or Arc Air Gouge defective areas. If arc air gouging is the preparation method to be used then preheating before preparation is recommended particularly if the die failed by cracking. Preparation for welding by re-machining, EDM or grinding does not require preheating. Remove all cracks completely. Remove the minimum of 3/8" of metal below impression surface to ensure the working surface is relatively pure weld. Use templates to insure a minimum removal of 3/8" die material and the lands.
 - D.** Preheat to a minimum of 800°F. - 1000°F. for one hour per inch of thickness. Do not exceed 1100° F or softening of the FX die block could result.
 - E.** Select the appropriate welding process for the repair condition encountered.
-

Eureka Welding Alloys

2000 E. Avis Drive

Madison Heights, MI 48071

Phone: 248-588 0001 Fax: 248-585 7711 Toll Free: 800-962 8560

Choose one or more of the following welding processes.

1. The G.T.A.W. or tig process, using direct current straight polarity (D.C.S.P.) with 100% argon shielding gas.
2. The S.M.A.W. or stick electrode process.
3. The G.M.A.W. or wire welding process using direct current reverse Polarity.

WELDING PARAMETERS

TYPE	SIZE	AMPERAGE	VOLTS
Metal Cored Wire	.045" 1.2 mm	125 – 225	16 – 28
Metal Cored Wire	1/16" 1.6mm	180 – 400	25 – 33
Flux Cored Wire	1/16" 1.6mm	180 – 400	25 – 33
Flux Cored Wire	3/32" 2.4mm	350 – 600	27 – 35
Flux Cored Wire	1/8" 3.2mm	500 – 900	30 – 38

Use DC Current with a Stick Out of
1/4"-1 1/4" (6mm-32mm)

RECOMMENDED SHIELDING GASES

75% Argon, 25% Co2

90% Argon, 10% Co2

92% Argon, 8% Co2

100% CO2 will produce low quality arc conditions

GAS FLOW RATE

.045" 1.2 mm 20-50 CFH

1/16" 1.6mm 30-60 CFH

3/32" 2.4mm 80-120 CFH

1/8" 3.2mm 80-120 CFH

- F. Alloy Selection: Select an alloy that meets the service requirements of the tool or die while in operation.
-

Eureka Welding Alloys

2000 E. Avis Drive

Madison Heights, MI 48071

Phone: 248-588 0001 Fax: 248-585 7711 Toll Free: 800-962 8560

- G.** Peen each weld deposit immediately after breaking arc.
 - H.** Eliminate all undercuts, square-up rounded corners.
 - I.** Immediately after welding, the dies should be post heated back to preheat temperature at a minimum of 800°F. - 1000°F. to equalize weld deposit and tool or die temperature prior to slow cooling. This practice contributes to reducing distortion and residual stress.
 - J.** Slow cool welded tool or die to room temperature in still air or a minimum of 150°F.
 - K.** Temper the welded tool or die by immediately placing the section into the furnace at a temperature that is conducive to the required hardness of the welding alloy being used. Refer to the tempering curve of the last alloy deposited for attaining desired hardness.
 - L.** Slow cool to 150°F. minimum.
 - M.** Double temper, strongly recommended to reduce residual stress. Follow temper procedure shown in line item **K**.
 - N.** Slow cool in still air to room temperature.
 - O.** Test hardness on both the die face and the weld to assure proper response in tempering.
 - P.** Commence with machining.
-