

FLASH BUTT RAIL WELDING MACHINE

TECHNICAL SPECIFICATIONS

WELDING RANGE

High carbon and medium alloy rail steel

Up to 155 lbs/yd rail 15.5²“

PRODUCTION

Welding time proper

2 to 3 minutes

Overall cycle time allowance

4 to 5 minutes

FORGING UNIT

Maximum forging force

72 tons

Maximum machine stroke

70 M.M.

Maximum upset stroke

1”

Maximum upset speed

¾”/sec.

CLAMPING UNIT

Maximum clamping force

140 tons

RAIL ALIGNMENT

Horizontal adjustment

Automatic

Vertical adjustment

Automatic

GAP CLOSING

Maximum starting gap

7”

RAIL FLOW

left when

Left to right and/or right to

viewed from operator position

WELDING TRANSFORMERS

Transformers rating
cycle

2 @ 90KVA each at 50% duty

Water cooled

WELD TIME

Approximately 120 seconds

UPSET RODS

Water cooled

SHEAR DIES

Full profile shearing is achieved by passing the shear tooling across the weld immediately after the weld is made. The shear dies are hinged at the railhead and suspended in the welding machine. They are automatically applied by the welder head to the correct position

WELDING TRANSFORMERS

The left hand clamp assembly incorporates two water-cooled transformers in the immediate proximity of the rail to be welded. This arrangement allows for a considerable decrease of the short circuit resistance of the welder and assures uniform current distribution at the weld interface.

The terminals of the primary windings of the transformers are connected in parallel at the terminal blocks on the left hand head. The secondary winding terminals of the welding transformers are connected with the left hand electrodes via flexible copper conductors and with the right hand dies through flexible copper conductors and hydraulic guide rod assemblies.

HYDRAULIC SYSTEM

The built-in hydraulic circuit includes a specially built servo system controlling the flashing speed and valves to control other operations.

The external hose connections to the hydraulic unit are customized to each individual application.

CLOSED CIRCUIT WATER COOLING SYSTEM

The built-in water circuit provides for the efficient cooling of the welding transformers, electrode dies and rods via a system of tubing and hose connections. An external water source and pump supply the necessary water through this circuit.

LUBRICATION

Lubrication points are readily accessible for easy servicing by means of commonly available grease and oil as specified in lubrication charts furnished with Instruction Manual.

LANGUAGE

Machine calibration, scales, nameplates, and instruction manuals are expressed in English language.

WELDING MACHINE CONTROLS

A. Initial set up to start operations include:

- 1) Switching on electric power source
- 2) Switching on hydraulic power unit

- 3) **Switching on of water pump**
 - 4) **Switching on welding transformers**
- B. Selections available prior to welding proper:**
- 1) **Changing of starting gap**
 - 2) **Burning off to square rail ends**
- C. Pre-selected adjustments to the automatic welding cycle include:**
- 1) **Programmer timing for various rail sizes.**
 - 2) **Upset stroke**
 - 3) **Sensitivity**

SEQUENCE OF OPERATIONS

- A. Ends of rail are brought into the welding position**
- B. Operator presses machine lower button to bring clamps and electrode dies to rail web level**
- C. Operator presses machine clamp lever causing:**
- 1) **The clamps and electrode dies to firmly grip the rail ends**
 - 2) **Automatically aligns the rail ends in the horizontal plane**
 - 3) **Setting the Shear Dies**
- D. Operator checks matching of rail head surfaces (vertical plane) and carries out adjustments, if necessary, by raising or lowering the entire machine, or suspended for the hoist.**
- E. Operator presses weld button and the following sequences take place automatically**
- 1) **Preheating by flashing and/or impulsing**
 - 2) **Final flashing**
 - 3) **Upset**
 - 4) **Shearing**
- F. Operator presses machine unclamp lever to release the clamps, electrode dies and shear die.**
- G. Operator presses machine raise button to bring the clamps and electrode dies completely clear of rail for free passage and presentation of next rail to be welded.**