

Welding Procedure

Welding Cast Iron

Cast iron is a generic term describing a variety of iron-base alloys containing 1.7% to 4.5% carbon. The high carbon content of cast iron increases welding difficulty compared to welding steels which possess a lower carbon content.

The most common cast irons are the gray irons although malleable and nodular types are often encountered. Malleable and nodular cast iron offer more ductility than gray iron since they include a round graphite structure whereas gray iron contains graphite in flake form which results in brittleness.

Because welding on these cast irons does create undesirable metallurgical changes in the heat-affected zone, every procedure imaginable has been written for cast iron welding. The procedure listed here is successful in most cases. However, it should be pointed out that some cast irons are virtually unweldable.

Recommended Filler Metal

AMPCO-TRODE® 10 and AMPCO-TRODE® 40

Preheat

300° to 600°F (149° to 315°C) depending on type and mass.

Welding Procedure

Small size electrodes are used with the shielded metal-arc process since they prevent localized overheating which may cause cracking. The weld metal should be deposited in stringer beads by the skip welding technique, depositing welds three to five inches long to prevent localized overheating. If the part being welded is of such a construction that its ends are not free to expand or contract, it is advisable to peen the weld immediately after depositing to remove the stresses.

In the case of objects that do not permit preheating, smaller sized electrodes should be used with the lowest possible amperage in order to obtain a good bond. In some cases, welds of only one inch long can be deposited without overheating the part. On some grades of cast iron, AMPCO-TRODE® 10 will do a better job while on others, AMPCO-TRODE® 40 will perform better.

Postheat

A postheat equal to or slightly higher than the preheat temperature is recommended followed by slow cooling, often using a welding blanket

