



## HH 1 CAST IRON AC/DC REVERSE ELECTRODE

### General Characteristics

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An economical alloy, particularly suited for repairing scaly and corroded castings where machinability is not a factor. An all position electrode, giving an outstanding bond with aged and/or corroded cast iron. The deposit has very little slag, which does not need to be removed between passes. Machinable by grinding only.

### Procedure

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Keep a short arc, only weld short beads (30-50mm, 1.25-2 inches). It is recommended that you peen the weld deposit to relieve weld bead stress. Do not allow part to become overheated. Skip weld on long cracks. Allow part to cool slowly.

### Application

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For the welding of oxidized, scaly, corroded, and chemically affected cast iron. It is recommended for quality applications in foundries and in combination with the other electrodes in the H2 line of cast iron. It is used as a butter pass to contaminated cast iron prior to build-up with other machinable cast iron electrodes.

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Tensile Strength	60,000 PSI
Elongation	20%
Hardness (H.B.) Brinell	Approx. 350

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Diameter (inch)	3/32	1/8	5/32
(mm)	2.5	3.25	4.0

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Amps (approx.)	50-80	75-110	100-150
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## HH 2 CAST IRON AC/DC REVERSE ELECTRODE

### General Characteristics

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Special electrode for cold welding of spheroidal graphite iron, gray cast iron, ductile, nodular and malleable cast iron. Extraordinary high strength combined with excellent welding properties makes this electrode specially suitable for joining cast iron to steel. Despite high strength, the welds and border zones are still machinable if sufficient absorption has taken place and the work piece has cooled off slowly enough. Also ideally suited for the repair of meehanite dies.

### Procedure

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Remove thick oil and dirt from the welding zone; keep a short arc. Deposit short beads (30-50mm, 1.25-2 inches). It is recommended to peen deposit to relieve weld stress. The heating of the work piece, due to the welding operation, should not be so severe that it is not possible to touch the component with one's hand. It is permissible to preheat up to 200° F (390°). However, this temperature must be maintained during the welding operation.

### Application

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For the repair of oily and worn castings, furnace grates, valve housings, heavy cast iron equipment, large foundry fills, joining ductile iron, and other cast iron alloys to steel. It is often used in combination with HH 3 Cast Iron, since HH 2 Cast builds up faster and HH 2 is used for the final pass for best machinability. It is also used for cold welding of gray cast iron and malleable cast iron.

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Tensile Strength	75,000 PSI
Elongation	23%
Hardness (H.B.) Brinell	Approx. 180

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Diameter (inch)	3/32	1/8	5/32	3/16
(mm)	2.5	3.25	4.0	5.0

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Amps (approx.)	50-80	75-110	100-150	110-170
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## HH 3 CAST IRON AC/DC STRAIGHT ELECTRODE

### General Characteristics

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A special pulsed arc electrode producing soft and easily machinable welds on cast iron without preheating. The special coating produces a pulsed arc, which provides easy manipulation in all positions and good bond with the parent metal. The deposit is soft, dense, and highly crack resistant with an easily removed slag. The transition zone is easily machined and can be filed. Produces deposits that are extremely soft and machinable due to minimal base metal dilution.

### Procedure

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Weld with a long arc. (1/4-3/8 inch). Normally, weld only short beads of approximately 20-30mm (0.75-1.25 inches) in order to keep heat input to a minimum. It is recommended that you peen the weld deposit to relieve weld bead stress, while the deposit is still hot. Allow part to cool slowly.

### Application

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For joining and build-up of broken and worn parts of cast iron machine bases, engine blocks, sprockets, levers, housing, frames, and heavy cast iron equipment. It is recommended for joining cast iron to steel, especially where bonding quality and machinability are essentials. Also used as an overlay on top of the build-up cast iron alloys like HH 2 Cast to produce the best possible machinability.

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Tensile Strength	62,000 PSI
Yield Strength	44,000 PSI
Elongation	30%
Hardness (H.B.) Brinell	Approx. 150

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Diameter (inch)	3/32	1/8	5/32	3/16
(mm)	2.5	3.25	4.0	5.0

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Amps (approx.)	50-70	60-110	120-150	140-175
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## HH 122 CAST IRON AC/DC REVERSE ELECTRODE

### General Characteristics

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A nickel-iron type core wire, with an extruded coating, makes this cast iron electrode good for all position welding of most cast irons. This electrode produces more joining strength than the full nickel electrodes, but will not give as machinable a deposit as the full nickel electrodes, such as HH 3 Cast and H133 Cast. It is designed for low cost repair on cast iron.

### Procedure

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Although many cast iron parts do not need preheat, it is recommended that a preheat of 600<sup>o</sup>F be used on large cast iron sections. Use stringer beads when welding and if multiple layers are needed, remove slag between passes. Use proper welding and if multiple and if multiple layers are needed, remove slag between passes. Use proper welding preparation procedures, as with all cast irons, by cleaning and gouging with HH 8 Chamfer where possible. Always slow cool cast iron parts after welding.

### Application

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HH 122 Cast is used to weld cast irons and nodular iron, and to join these irons to steel and other ferrous and non-ferrous materials. It is also used for heavy sections of high strength cast iron. It is used to weld high phosphorus irons, ductile iron and high nickel alloy cast irons.

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Tensile Strength	80,000 PSI
Yield Strength	20,000 PSI
Elongation	20%
Hardness (H.B.) Brinell	Approx. 200-220

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Diameter (inch)	3/32	1/8	5/32
(mm)	2.5	3.25	4.0

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Amps (approx.)	35-80	65-120	75-140
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## HH 133 CAST IRON AC/DC REVERSE ELECTRODE

### General Characteristics

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A full nickel core wire electrode with a new and improved non-conductive coating for welding cast iron. This electrode is designed to operate in all positions, and is manufactured in such a way that the cost is less than other types of electrodes, but the running characteristics and welding performances remain superior. The deposit is machinable, and the electrode has a performance like the nickel-ferrous type electrodes, giving more penetration than most straight polarity, full nickel electrodes. With the non-conductive coating, this electrode can be used in tight positions without side arcing.

### Procedure

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Weld with a medium arc. Normally, preheat and post heat are not necessary, but in colder weather, it is recommended that the part to be welded be preheated to approximately 400° F. As with all cast iron welding, proper care should be used in preparation. i.e.: clean the weld area and prepare with a gouging rod such as HH 8 Chamfer rather than grinding, whenever possible. Weld beads should be peened immediately after welding to relieve weld bead stress. Stringer beads should be used and short beads (1-1 1/2 inches) are recommended. Allow part to slow cool after welding by covering with a heat resistant blanket or by covering with vermiculite.

### Application

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HH 133 Cast is very good for joining and build-up of gray irons and welding steel to cast iron. It is used to repair castings where machinability is an important factor.

<b>Tensile Strength</b>	<b>55,000 PSI</b>
<b>Yield Strength</b>	<b>38,000 PSI</b>
<b>Elongation</b>	<b>30%</b>
<b>Hardness (H.B.) Brinell</b>	<b>Approx. 155</b>

<b>Diameter (inch)</b>	<b>3/32</b>	<b>1/8</b>	<b>5/32</b>
<b>(mm)</b>	<b>2.5</b>	<b>3.25</b>	<b>4.0</b>

<b>Amps (approx.)</b>	<b>70-90</b>	<b>80-120</b>	<b>130-160</b>
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