

# MAGNA 303 Gold

## SPECIAL MAINTENANCE QUALITIES

In maintaining heavy equipment, vehicles, and machinery it is continually necessary to weld a wide variety of different analysis of steel and frequently to weld steels of unknown analysis. A single piece of heavy equipment may have ten or more different steels making up its different components. Today's high speed, high-powered equipment is built from higher alloy, higher yield strength steels.

In the past mild steel electrodes and low hydrogen electrodes have been standard for maintenance welding in many industries. This has resulted in much costly downtime since mild steel electrodes are not adequate for welding today's high yield strength steels or steels of unknown composition.

Mild steel and low hydrogen electrodes have proven their excellence for production welding where most of the variables of welding such as joint design, base metal analysis, and accessibility can be controlled. In general, superior electrodes have not been required for these repetitive controllable production applications. In maintenance, however, the problems are completely different. The maintenance man has to weld many different types of steel, the metal is usually dirty, rusty and oily and often he has only limited accessibility to the area to be welded. Ordinary electrodes are not adequate for the more difficult maintenance conditions.

The introduction of Magna 303 Gold, which is a Ferrite-Balanced, all steel electrode for welding hard-to-weld and dissimilar steel is proving to be popular in maintenance welding in many industries today.

## MAGNA 303 Gold HAS THE FOLLOWING INTERESTING QUALITIES:

### 1. High Physical Properties.

- \* Approximately 225 Brinell hardness
- Tensile Strength as welded maximum 128,000 psi (880 N/mm<sup>2</sup>)
- Tensile Strength work hardened maximum 186,000 psi (1280 N/mm<sup>2</sup>)
- Yield Strength maximum 90,000 psi (630 N/mm<sup>2</sup>)
- Elongation maximum 32%
- Impact Energy maximum 50J: 20 ° C ( 68 °F)

## 2. Microstructure.

A duplex austenite / delta ferrite structure with Shaeffler ferrite value below 35%

## 3. Universal Application Feature.

Magna 303 Gold has exceptional strength and crack resistance. It is ideal for welding any dissimilar steel combination, except for aluminum and copper alloys. It is also recommended for the following metals:

|                       |                 |                    |
|-----------------------|-----------------|--------------------|
| Spring Steel          | Manganese Steel | High Carbon Steel  |
| Vanadium Spring Steel | Stainless Steel | Tool and Die Steel |
| Sulphur Bearing Steel | Cast Steel      | Galvanized Steel   |
| Shock Resisting Steel | Bright Steel    | Dissimilar Steels  |

A major benefit in using Magna 303 Gold is that it eliminates guesswork. In maintenance often a steel of unknown analysis must be welded. If the welder "guesses" what the steel might be and uses the electrode, which might be adequate for that steel, a weld failure will probably occur if he guessed wrongly. If Magna 303 Gold is used, the guesswork is eliminated or at least minimized since this one electrode gives good results on the widest range of dissimilar steel combinations, except for aluminum and copper alloys.

Another benefit of Magna 303 Gold is that it eliminates stocking of many different types of electrodes because of its versatility. In the past many maintenance departments found it necessary to stock many different kinds of electrodes in order to be prepared for any emergency.

**4. Cost Factor.** Magna 303 Gold AC-DC costs much more than mild steel electrodes but it does so much more. What difference does it make if a weld costs six cents or sixty cents? The important factor is whether the welding electrode will keep your machinery producing.

## APPLICATION

No special preparation is necessary when using Magna 303 Gold. However, a 90° vee joint should be used when joining heavy sections. Also maintain a short arc length and use stringer beads.

**Recommended current:** DC reverse polarity (electrode positive)  
or AC.

#### **RECOMMENDED AMPERAGES:**

| Metric  | Inches | Gauge | DC reverse polarity-Electrode + |
|---------|--------|-------|---------------------------------|
|         |        |       | or AC                           |
| 2.4 mm. | 3/32   | 12    | 35-75 amps                      |
| 3.2 mm. | 1/8    | 10    | 60-110 amps                     |
| 4.0 mm. | 5/32   | 8     | 75-140 amps                     |

#### **Welding Positions for Magna 303 Gold:**

Magna 303 Gold is excellent for welding in all positions.

#### **Special Note:**

1. Magna 303 Gold is recommended for repairing worn parts and can be used as a buffer layer in hardfacing applications.
2. Special “ Ionized Arc Transfer” drastically reduces spatter and electrode overheating, especially on small AC machines.
3. Special flux formulation eliminates slag interference in horizontal fillets.