



GULLCO International Details Engineering Behind Its Submerged Arc Welding Machine

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GULLCO International, a manufacturer of welding and cutting automation equipment, has released detailed engineering information on its submerged arc welding machine, the SAM® Submerged Arc Welding System. The disclosure outlines the mechanical and control components that allow the system to perform precision submerged arc and MIG welding across heavy industrial fabrication settings. The information was made available through the company's product documentation and is intended to give fabricators and distributors a clearer view of the equipment's design.

The SAM® system is built around GULLCO's MOGGY® trackless travel carriage platform, a self-contained welding unit that combines a heavy-duty friction drive mechanism with a microprocessor-based motor control system. The carriage, offered as Model GM-02-295, uses a positive chain drive across four rubber-tired wheels and a closed-loop tachometer feedback loop to maintain accurate, consistent travel speed during welding operations. This configuration is designed to support the steady, repeatable motion that submerged arc welding requires for consistent bead quality and weld penetration.

Motor control on the carriage is handled by GULLCO's low-voltage, 24-volt GSP microprocessor, which uses

pulse width modulation to regulate travel speed. The control system is housed in a remote pendant box connected by an 8-foot control cable, giving operators a forward, stop, and reverse switch along with an infinitely variable four-turn speed potentiometer. An LED display shows travel speed in inches per minute or centimeters per minute, allowing operators to monitor and adjust settings without interrupting the weld pass. An interface cable assembly also allows the carriage to be controlled through a Miller HDC 1500 DX power source, and a manual clutch enables free-wheeling movement when the carriage is repositioned by hand.

The carriage's mounting architecture is intended to accommodate a range of shop configurations. The base unit includes a main mounting mast and handle assembly, a mounting arm for a single wire reel, and quick jaw mast clamp assemblies. Vertical and horizontal manual four-inch by four-inch slides, built with hardened ground rods and sleeve bearings, allow for fine positioning adjustments, while a control support arm and a set of adjustable guide roll arms help maintain alignment along the weld joint. The system operates on 42, 115, or 230-volt single-phase, 50/60 Hz AC power, giving fabricators flexibility depending on available shop power.

GULLCO also offers two additional carriage configurations built on the same friction-drive platform. The GM-02-275 model is designed for shops that supply their own single submerged arc package, while the GM-02-250 model includes a 17-inch by 22-inch aluminum mounting plate for customer-supplied wire feeders. Both share the same carriage specifications as the GM-02-295, giving fabricators options based on the welding equipment already in use in their facilities.

"The engineering behind this platform reflects decades of feedback from welding operations that need reliable, repeatable travel control on heavy plate and structural work," said Jeff Zook, Director at GULLCO International. "Submerged arc welding depends heavily on consistent travel speed and stable positioning, and the carriage was engineered specifically to hold that consistency across long weld passes."

Zook added that the modular design of the carriage system was a deliberate response to the variety of welding packages already installed in fabrication shops. "Fabricators are not always working with the same wire feeder or power source from one job to the next," Zook said. "Building a carriage that can integrate with different submerged arc and MIG configurations gives shops more flexibility without requiring a full equipment replacement."

GULLCO International has supplied welding and cutting automation equipment, plate beveling machines, ceramic weld backing, and electrode ovens to industries including shipbuilding, tank welding, infrastructure, military, oil and gas, and power generation. The company maintains operations in Macedonia, Ohio, and Newmarket, Ontario, and distributes its equipment through a network of industrial suppliers.

Additional technical documentation, including manuals and parts lists for the SAM® Submerged Arc Welding System, is available through GULLCO International. For more information, visit

<https://www.gullco.com/product-category/all-categories/weld-automation/submerged-arc-welding-system-sam/>.

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Gullco International

Gullco International is a leading manufacturer and world supplier of welding automation, with over 70 years in business, available in 80 countries worldwide.

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