

M-300-C Mechanized Welding Machine

Advanced Technology

The M-300-C external welder is a functional upgrade to the CRC-Evans M-300 system.

This single torch external welding system offers consistent welding parameter and quality control, and provides the user 32 programmable welding passes. The onboard computer ensures precise control of welding parameters: travel speed, oscillation, dwell times, etc.

The M-300-C is a self-contained platform incorporating a travel carriage, wire feed motor and wire spool, computer control box, and adjustable welding head. Optimized for FCAW processes, this versatile design easily interfaces with most welding power sources. The M-300-C has the ability to perform external downhill dilution, uphill fill, and uphill cap welding.

Welding System

Features	Benefits
<ul style="list-style-type: none"> ▶ API 30° or compound joint design ▶ Increased deposition rate ▶ Microprocessor control ▶ Easy operation ▶ Consistent weld properties 	<ul style="list-style-type: none"> ▶ With any joint design ▶ Higher production rates ▶ Precise control of essential parameters ▶ Lower cost per weld ▶ Less physical strain on welders ▶ Consistent weld quality

Mechanical Specifications

Length	21"	533mm	Wire Spool Weight	10lbs	4.5 or 5kg
Width	20"	508mm	Vertical Axis Stroke	2.75"	69.9mm
Height	14"	356mm	Head Angle Adjustment	±0-10°	-
Weight (w/o wire spool)	51lbs	23.18kg			
Oscillation Speed ¹			0-250 BPM		-
Oscillation Width ²			0-0.999"		0-25.4mm
Dwell Time ²			0-1.0 seconds		-
Wire Feed Speed ³			100-420 IPM		2.54-10.67 meter/min
Travel Speed ⁴			4-21 IPM		0.1-0.53 meter/min
Wire Feed Motor (DC Brush-type motor)			Speed controlled via digital encoder		
Travel Motor (DC Brush-type motor)			Speed controlled via digital encoder		
Oscillation Motor			Uses a digital stepper motor		
Minimum Cutback Distance (bevel to coating)			Please consult CRC		
Minimum Cutback Distance (bevel to concrete)			12"		304.8mm

¹ Uses 70:1 gear box for high torque; speed based on width setting, dwell time

² Based on beats per minute ³ For 55.3:1 gear box ⁴ For 941:1 gear box

Electrical Specifications

- Required main power: 24 VDC regulated. Auto-switching AC (115V to 230V) to DC 24V power supply provided by CRC-Evans with M-300-C system
- Generator requirement: 30 KVA per shack
- Temperature Range: -40°C to +70°C
Contact CRC-Evans for extreme weather application setup requirements

Welding Power Supplies Supported

- Lincoln DC-400
- Lincoln Invertec V350 Pro
- Miller XMT 350
- Most appropriately rated CV power supply*

(Contact CRC for support of other power source)

* May require special design interface from CRC engineering if not currently designed.

Programmable Welding Parameters

- Motor speeds
- Crater Fill Time
- Potentiometer Function
- Burn Back Time
- Oscillation Width
- Pre- and Post- Purge Times
- Oscillation Frequency
- Dry Cycle Mode
- Right and Left Dwell Times
- Turn Display On or Off
- Clockwise and Counterclockwise Welder Type
- Enable / Disable Oscillation Width Adjustment
- Travel Direction
- Travel Motor Startup Delay
- Oscillation Frequency



Additional Features

- Thirty-two programmable welding passes
- Enforced limits on programmable welding parameters (motor speeds, oscillation width, etc.)
- No trim pots or jumper settings on any hardware component
- Feedback from optical encoders on digital motors removes the need for motor calibration
- Removable elastomeric keyboard is easy to replace after prolonged use
- On board display shows critical weld parameters (Travel Speed, Wire Feed Speed, Oscillation Width and Frequency, Dwell Times, and Pass Name) as well as user-friendly diagnostic information
- System can be configured to perform a single pass on multi-station jobs or perform all passes on a single station
- Independent modular power driver stages for all motors assist in easy troubleshooting
- Programmable potentiometer can be set to control wire feed speed or travel speed

Conformance Testing

■ CE European Certification

The CRC Evans External Welder (M-300-C) was tested to EN 55011, Group 1 Class A and was found to be in compliance with the required criteria.

465 T-FC – Welding Wire

EN ISO 17632-A	T50 6 1Ni P M 1 H5
EN ISO 17632-B	T556T1-1MA-N2-UH5
AWS A5.36	E81T1-M21A8-Ni1-H4
AWS A5.36M	E551T1-M21A6-Ni1-H4
UNS	W2103X

Flux cored wire for automatic welding


Description

Seamless rutile, Nickel alloyed, flux cored wire for single or multilayer welding of Carbon, Carbon-Manganese and high strength pipe grades. Designed to have the optimized cast, helix and feed ability for CRC-Evans welding systems under the M-series. This seamless, copper coated wire provides optimum protection against hydrogen absorption. Excellent weldability in all positions, very low spatter and fast freezing, easy removable slag concept. Exceptional mechanical (toughness) properties of this wire even at low temperatures (-60°C), also suitable for post weld heat treatment.

Typical Composition of All-weld Metal					
	C	Si	Mn	Ni	Gas
wt-%	0.06	0.45	1.30	0.85	M21

Mechanical Properties of All-weld Metal		
	u	s
Yield strength R_e N/mm ² (MPa):	550 (≥500)	520 (≥500)
Tensile strength R_m N/mm ² (MPa):	610 (560-690)	580 (560-690)
Elongation A ($L_0=5d_0$) %:	25 (≥18)	29 (≥18)
Impact work ISO-V KV J	-40°C:	90
	-60°C:	60 (≥47)

u: untreated, as-welded, shielding gas M21
s: stress relieved, 620°C / 2h, shielding gas M21

Operating Data					
	Shielding gases	ø mm	Amps A	Voltage V	=+
	M21; M33 (EN ISO 14175)	1.2	160-280	22-30	

Pipe Grade	L415MB-L450MB (L485MB) API spec. 5L: X60, X65, (X70)
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Packaging	5 kg - D200 spool: 1 carton box contains 4 spools a 5 kg
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480 T-FC – Welding Wire

EN ISO 18276-A	T 55 5 Mn1Ni P M 1 H5
EN ISO 18276-B	T625T1-1MA-N3M1-UH5
AWS A5.36	E91T1-M21A6-K2-H4
AWS A5.36M	E62T1- M21A5-K2-H4
UNS Number	W2103X

Flux cored wire for automatic welding


Description

Seamless micro-alloyed rutile flux cored wire for single and multi-pass welding of high-strength pipe grades. Designed to have the optimized cast, helix and feed ability for CRC-Evans welding systems under the M-series. Slag concept is designed for fast freezing and is easy to remove. The mechanical properties of this wire even at low temperatures (-50 °C), along with its extremely low hydrogen content, make it particularly useful for pipeline construction welding. Other applications are found in the offshore industry, in shipbuilding, and for constructions using high-strength steels.

Typical Composition of All-weld Metal				
	C	Si	Mn	Ni
wt-%	0.05	0.30	1.6	1.0

Mechanical Properties of All-weld Metal		
	u* acc. to EN ISO	
Yield strength R_e N/mm ² (MPa):	≥580	
Tensile strength R_m N/mm ² (MPa):	640-820	
Elongation A ($L_0=5d_0$) %:	≥18	
Impact work ISO-V KV J	-40°C:	90
	-60°C:	≥47

u*: untreated, as-welded – shielding gas Ar + 15-25% CO2

Operating Data					
	Shielding gases	ø mm	Amps A	Voltage V	=+
	Ar + 15-25% CO2	1.2	160-280	22-30	

Pipe Grade	L450MB-L485MB (L555MB) API spec. 5L: X65, X70, (X80)
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Packaging	5 kg - D200 spool: 1 carton box contains 4 spools a 5 kg
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! Disclaimer

Although great care has been taken in compiling the information contained in this catalogue, CRC-Evans does not accept responsibility for the consequences of any errors, nor for the effects of any subsequent changes made by the various sources of data.

Dimensions and weights provided for reference only. Dimensions, specifications and weights can vary depending upon final configuration of the equipment. Please contact CRC-Evans to confirm final weights and dimensions prior to shipment.

Welding Wire is only suitable for CRC-Evans M-300/M-400 series.

