

# Metallisation

Thermal spray equipment and consumables



## Equipment Specification

ARC140/S250-CL Arc Spray System

## TYPICAL SYSTEM CONFIGURATIONS

Pictured below is a range of typical system configurations. Variations of these configurations may be possible. Contact Metallisation to discuss your specific application requirements.

### STANDARD CONFIGURATION – PULL WITH WIRE ON MIG REELS

Most commonly used in engineering workshops where a compact footprint is useful and a 5m supplies package length is sufficient. Pull only is suitable for most applications but for heavy usage, a 5m push/pull setup is recommended.



Energiser and pull drive unit

5m supplies from wire drive to pistol



Pistol

### STANDARD CONFIGURATION – PUSH/PULL WITH WIRE ON MIG REELS

Most commonly used for extended engineering applications or small scale anti-corrosion applications where high spray rates are not needed.



Energiser and push/pull drive unit (mounted on energiser, wall, floor or trolley)

5m, 10m or 20m supplies from wire drive to pistol



Pistol

### STANDARD CONFIGURATION – PUSH/PULL WITH WIRE IN DRUMS

Most commonly used for small scale anti-corrosion applications where high spray rates are not needed.



Wire in Drums

3m max.



Energiser and push/pull drive unit (mounted on energiser, wall, floor or trolley)

5m, 10m or 20m supplies from wire drive to pistol



Pistol

## INTRODUCTION

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The following specification covers the standard range of ARC140/S250-CL Arcspray systems. For the specific offer, please refer to a detailed quotation and cross-reference the part numbers for each piece of equipment.

The ARC140/S250-CL system with a 5m pull only setup is ideally suited to small engineering job shops where a combination of manual or tool post mounted spraying is performed.

Alternatively, the S250 energiser, setup with a push/pull drive system and 5m, 10m or 20m supplies is ideally suited to small anti-corrosion applications where higher material throughput is not necessary (spraying small brackets for example). For larger areas, the ARC140/S350-CL with the 350A energiser is recommended.

The new Metallisation ARC140/S250-CL (Closed Loop) is a unique blend of ability and innovation. We've taken our proven performer, the ARC140 pistol and drive system plus the sealed, switched voltage S250 Energiser and added Closed Loop current control. This enables the operator to set the spray current independent of wire type before starting the job, enabling easier setup and protection of the system from over-current. The control function is now controlled by a simple PLC which ensures improved reliability as less component parts are required. It also makes fault finding simple using a standard multimeter with the I/O for the PLC/

The S250CL features sealed electronics for excellent reliability in the harshest of spray environments. The design also allows for multiple customer-specific packaging options for the wire drive and dispense. In one option, for example, the unit is neatly mounted on the energiser, leaving it free to swivel and follow the operator when spraying. Other options include floor or trolley mounting of the wire drive unit.

There is no motor in the pistol. Instead, the Arc140/S250-CL uses our patented 'Synchrodrive' system, where a single, sealed motor and flexible drive arrangement, powers a reliable, positive drive push/pull up to a length of 20m. This results in a long reach and lightweight flexibility of the pistol and supplies – and more comfortable and productive working conditions for the operator.

**Safety:** The equipment quoted will produce levels of noise, ultra violet light and dust that will require safety measures to be taken by those using the equipment. It may use pressurised gases. Careful consideration should also be given to the positioning of this equipment. It is the responsibility of the user to ensure that all appropriate measures are taken to ensure safe operation in accordance with local requirements. Metallisation will be pleased to advise as appropriate.

## BENEFITS

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### NEW S250CL ENERGISER

- ✦ Closed Loop Current Control – easy setup / reliable spray rate / over-current protection.
- ✦ Easy setup – set the spray current before starting to spray
- ✦ Over-current limit protection – protects all parts of spray system from over-current, regardless of wire type
- ✦ PLC control for improved reliability and ease of maintenance / fault finding
- ✦ PLC program supplied on an EPROM in case the PLC needs reprogramming
- ✦ 250 Amp continuous operation
- ✦ Easy access energiser panels & external fuse bank for reduced Mean Time to Repair (MTTR)
- ✦ Large 'Site Capable' wheels and rigid handle offers excellent portability on site and in workshop
- ✦ Sealed electrical control circuit - reduces dust ingress for added reliability
- ✦ Clear displays and large controls give ease of operation

### GENERAL BENEFITS

- ✦ Push/Pull system for a more stable arc ensuring quality coatings with consistent operation.
- ✦ Patented Flexible Drive system (Synchronised)
- ✦ 5 to 20 Meter supplies packages from the wire to the pistol for spraying accessibility.
- ✦ New, higher powered, sealed / lubed for life inverter drive motor.
- ✦ Air-cooled cables reduce pistol supply weight and operator fatigue.
- ✦ Lightweight and good balance for ease of pistol manoeuvrability.
- ✦ Suitable for Anti-corrosion and engineering wires, steels, copper and bronzes etc.
- ✦ Uses 1.6mm to 2.5mm wire sizes without changing feed rollers.
- ✦ Easy to maintain, less than 3 minutes to change contact tubes and nozzles. Contact tubes and nozzles do not require adjustment.
- ✦ Low running costs as compared with gas systems.
- ✦ Soft start for smooth start ups reducing electrical loading on components.
- ✦ Steel reinforced conduits for extended service life.
- ✦ Choice of coating textures
- ✦ Wire dispense packaging options allow drive unit to be compactly mounted on the energiser or separately on the floor / wall
- ✦ When wire drive is energiser mounted, the drive unit can rotate through 180° to follow the operator whilst spraying
- ✦ Quick release power, air and control couplings allow quick assembly / disassembly of package

## ARC140 PISTOL

Part No.	Description
ARC140F-EV16	Arc140 Pistol for 1.6mm pull (Engineering)
ARC140F-CG16	Arc140 Pistol for 1.6mm push/pull (Engineering)
ARC140-CG16	Arc140 Pistol for 1.6mm wires (all wires)
ARC140-CG20	Arc140 Pistol for 2.0mm wires (all wires)
ARC140-CG23	Arc140 Pistol for 2.3mm wires (all wires)
ARC140-CG25	Arc140 Pistol for 2.5mm wires (all wires)



The Pistol has been designed to give consistent throughputs with high coating quality. It is a lightweight, heavy-duty unit with robust but compact construction.

### TECHNICAL OVERVIEW

- ✦ Designed and used in practice for anti-corrosion and engineering coatings.
- ✦ Standard 1.6, 2.0, 2.3 and 2.5mm wire size
- ✦ No requirement to change feed rollers when changing wire sizes.
- ✦ Quality coating.
- ✦ CG (constant geometry head) ensuring smooth feed, repeatable wire alignment and no adjustment of contact tubes / nozzle arrangement required.
- ✦ The Wire Drive Unit utilises intermeshed steel wormshaft and bronze wormwheels, being driven by a lightweight, flexible drive.
- ✦ Lightweight air-cooled conductor cables are fitted; which reduces the operator supported weight and further improves the overall balance of the Pistol.
- ✦ Closed arc for improved spray conditions and efficiency.
- ✦ Arc140F pistol includes flywheel for better stability at low spray rates with engineering wires

**Technical data**

Description	Characteristics
Maximum Current	<b>350 Amps</b>
Weight	<b>2.3 Kgs</b>
Weight – at a held height of 1.2 M	<b>4.5 Kgs – inc Cables and Hoses</b>
Width	<b>102mm</b>
Length	<b>457mm</b>
Height	<b>229mm</b>

**Typical performance figures for the Arc140 pistol**

Material	Wire Diameter	Throughput (kg/hr @ 250A)	Coverage m <sup>2</sup> /kg/100μ
Metallisation Wire 02E Zinc	2.0mm <b>2.3mm</b>	<b>26</b>	<b>0.82</b>
Metallisation Wire 01E/17E/25E Aluminium & Alloys	2.0mm <b>2.3mm</b>	<b>6</b>	<b>2.88</b>
Metallisation Wire 021E Zinc/Aluminium 85/15	2.0mm <b>2.3mm</b>	<b>22</b>	<b>1.00</b>
Metallisation Wire 05E Copper	<b>1.6mm</b>	<b>12.5</b>	<b>0.91</b>
Metallisation Wire 30E,35E,45E, 55E,57E,60E 65E,80E,84E Steels	<b>1.6mm</b>	<b>11.3</b>	<b>1.02</b>
Metallisation Wire 75E Nickel Aluminium	<b>1.6mm</b>	<b>13.6</b>	<b>1.09</b>
Metallisation Wire 10E Aluminium Bronze	<b>1.6mm</b>	<b>11.3</b>	<b>1.37</b>
Metallisation Wire 15E Phosphor Bronze	<b>1.6mm</b>	<b>15.8</b>	<b>0.91</b>
Metallisation Wire 70E/71E Monel	<b>1.6mm</b>	<b>14.3</b>	<b>1.02</b>
Metallisation Cored Wire 103T FeCrB	<b>1.6mm</b>	<b>7.2(@180A)</b>	<b>1.18</b>

Throughput is assumed to be independent of wire diameter. Preferred wire diameter shown in bold. All data provided is an approximation and is offered as guidance only as performance can vary depending on application and parameters.



## SUPPLIES PACKAGE

Part No.	Description
SUP140-EV5P	5M Supplies Package for S250/V300/S350 Energiser
SUP140-EV10P	10M Supplies Package for S250/V300/S350 Energiser
SUP140-EV20P	20M Supplies Package for S250/V300/S350 Energiser
SUP140-EX20CP	Extension to 10M Supplies Package for S250/V300/S350 Energiser to make 20m
7144	PTFE Wire Conduits (Supplied by the meter)
6274/5	½" Clamp Pads for PTFE Tubing

### STANDARD SUPPLIES PACKAGE INCLUDES



Power, Air and Control Cables



Flexible Drive Cable



Wire Conduits

### Technical overview

- ✦ 5 to 20 meter supplies packages for integration to S250 Energiser.
- ✦ Various wire conduits to suit different applications and wire dispensing methods.
- ✦ Steel reinforced conduits for extended service life.
- ✦ Lightweight air-cooled conductor cables reduce the operator supported weight & fatigue.
- ✦ Supply Package Extensions available, up to a maximum of 20m.
- ✦ Power cables fitted with twist and lock connectors into the energiser. Air hoses fitted with quick release fittings into the energiser.
- ✦ 7144 PTFE tubing is supplied when dispensing from drums to go between the drum dispensing cone and the wire drive unit.

## ENERGISER

Part No.	Description
2220-PLC	S250 (ARC140) Energizer with closed loop current control
2220D-PLC	S250 (ARC140) Energizer with closed loop current control (220/380/440V)



This Energiser has been specifically designed for those users who are likely to spray a varying range of materials. Ideally suited for the Anti-corrosion industry and General Engineering Workshop.

### TECHNICAL OVERVIEW

- ✦ Closed Loop Current Control – easy setup / reliable spray rate / over-current protection
- ✦ PLC control for improved reliability and ease of maintenance / fault finding
- ✦ 250 Amp continuous operation (100% duty cycle)
- ✦ Specifically designed to suit only Arcspraying.
- ✦ Large 'Site Capable' wheels and rigid handle offers portability on site and in workshop
- ✦ Clear displays and large controls give ease of operation.
- ✦ Sealed electrical control circuit - reduces dust ingress for added reliability
- ✦ Easy access energiser panels & external fuse bank for reduced Mean Time to Repair (MTTR).
- ✦ Switched output voltage control
- ✦ 220V/380V/440V input supply options available (hard wired)

### S250 energiser specification

Description	Characteristics
Input Power Requirements	380/440V 50-60Hz 3 Phase
Optional Input Power	220V 50-60Hz 3 Phase
Fusing Required	20A/Phase (415V input)
Max Power Consumption	12 KVA
Duty	0-250 Amps @ 100% Duty Cycle
Output Voltage	0-50Vdc (nominal) Switched High/ Low & 1 – 5
Air Requirements	1.28m <sup>3</sup> /min @ 6bar (45cfm @ 90psi)
Weight	205 Kgs
Dimensions (W x L x H)	680mm x 900mm x 913mm



## WIRE DRIVE UNITS

Part No.	Description
ARC140-DUAEV-PLC	ARC140, inverter electric motor, push/pull drive unit
ARC140-DDAEV-PLC	ARC140, inverter electric motor, pull drive unit

### ARC140-DDAEV-PLC - ARC140, INVERTER ELECTRIC MOTOR, PULL DRIVE UNIT



#### Technical overview:

- ✦ Electric Inverter Drive Motor for smooth wire control.
- ✦ Includes inverter drive motor and flexible drive connection.
- ✦ Pull mechanism positively drives the wire at the pistol via the flexible drive, ensuring controlled wire speed close to the point of arc
- ✦ Allows the complete use of the wire (unlike push only systems)
- ✦ Suitable for dispensing from MIG reels (most common) or coils

### ARC140-DUAEV-PLC - ARC140, INVERTER ELECTRIC MOTOR, PUSH/PULL DRIVE UNIT



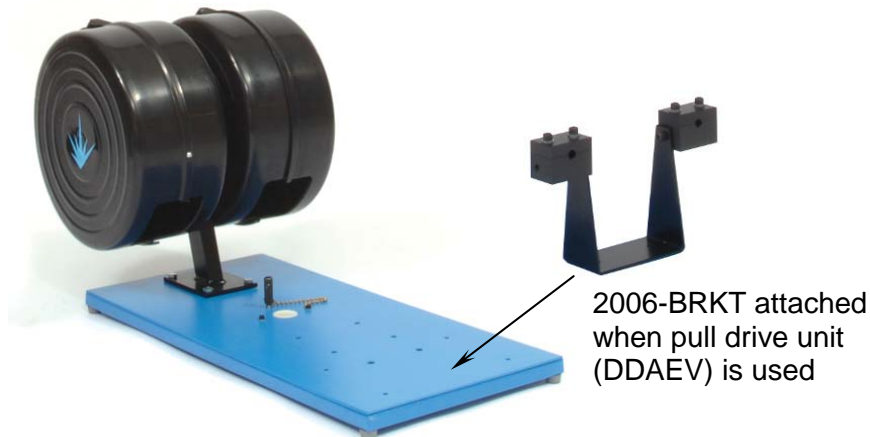
#### Technical overview

- ✦ Electric Inverter Drive Motor for smooth wire control.
- ✦ Includes inverter drive motor, gearbox, wire drive assembly and flexible drive connection.
- ✦ Push/pull mechanism positively drives the wire at the dispenser and also at the pistol via the flexible drive, ensuring constant speed at the drive unit and pistol
- ✦ Allows complete use of all the wire (unlike push only systems)

## WIRE DISPENSE

### MIG REEL WIRE DISPENSER

Part No.	Description
2006-MIG	Wire Dispenser for MIG Reels
2006-BRKT	MIG Reel conduit bracket assy (DDA drive only)



#### Technical overview

- ✦ Specifically designed to suit Arcspraying with the MIG reels being individually insulated from each other.
- ✦ Brake tension to ensure wire does not uncoil.
- ✦ MIG reel dust cover to ensure more consistent spraying.
- ✦ All common anti-corrosion materials and most engineering materials available on MIG reels.
- ✦ Designed to ensure a smooth wire feed to the pistol.
- ✦ The part number 2006-BRKT is required if the pull only version with the ARC140-DDAEV-PLC drive motor is used. The bracket will support the wire conduits to stop them from touching and includes the clamp pads to hold the suitable conduits.

## WIRE DISPENSING CONES (PULLEY)

Part No.	Description
21252	Wire Dispensing Cones – variable position (2 required)
2006-DSP	Wire Dispenser Support Plate



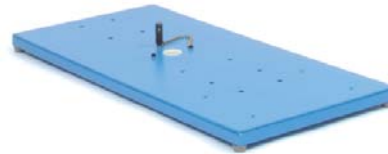
### Technical overview:

The Metallisation wire dispensing cone offers the ability to conveniently dispense anti-corrosion wires from production packs (drums). The wire is neatly guided to a dispense point, then over the pulley to give a free passage of wire from the drum to pistol. Benefits include:

- ✦ Suitable for dispensing Zinc, Aluminium and Zinc/Aluminium wire
- ✦ Specifically designed to suit Arcspraying with the each drum being individually insulated from each other.
- ✦ Variable position clamp assembly allows the clamp to be rotated to give the smoothest wire transfer path from the drum to the pistol.
- ✦ Drums available in 250 Kg for Zinc, 200kg for Zinc/Aluminium and 60Kg for Aluminium.
- ✦ Needs to be used with a wire drive unit (not included in the wire dispensing cone package) and drive support plate (shown above)

## TWO TIER WIRE DISPENSER

Part No.	Description
2006-2T	S350/S700 2 Tier Wire Stand



### Technical overview:

- ✦ Suitable for dispensing raw materials that are only available in coil form
- ✦ Wire straighter (for engineering wires) to ensure smooth wire feed to the pistol
- ✦ Specifically designed to suit Arcspraying with each coil being individually insulated
- ✦ Variable brake tension to ensure wire does not uncoil.
- ✦ Designed to ensure a smooth wire feed to the pistol.
- ✦ Rigid construction
- ✦ Lower tier swings out for Ease of loading and unloading of the Coils.
- ✦ Castors fitted to the bottom of the dispenser allowing excellent manoeuvrability.
- ✦ Shown above with the drive support plate (included in the 2 tier package)

## TOOLKIT



Appropriate hand tools are supplied with the Arcspray system along with an operating manual and pistol case

## OPTIONS

### ARCBEAM

Part No.	Description
ARCBEAM(140)	Arcbeam System Kit for Arc140, 1.6mm wires
ARCBEAM14020	Arcbeam System Kit for Arc140, 2.0mm wires
ARCBEAM14023	Arcbeam System Kit for Arc140, 2.3mm wires



Also comes with 6m air hose to connect to energiser (can be longer on request)

### Technical overview

- ✦ Reduces Arcspray footprint by forming a cone of compressed air outside the spray stream.
- ✦ Finer Coatings
- ✦ Improved Deposit efficiency when spraying onto small components (less overspray).
- ✦ Less apparent porosity.
- ✦ Increased hardness due to higher oxide content

### Technical data

Description.	Characteristic
Maximum Current	350 Amps
Compressed Air	0.7m <sup>3</sup> / min @ 3.5 Bar

## ARC EXTENSIONS

Part No.	Description
ARC140EX500	Arcspray deflector extension 1.6mm, 500mm Long
ARC140EX1000	Arcspray deflector extension 1.6mm, 1000mm Long
ARC140EX1500	Arcspray deflector extension 1.6mm, 1500mm Long



Also comes with 6m air hose to connect to energiser (can be longer on request)

### Technical overview

- ✔ Suitable for internal bores (min Diameter 75mm) or recesses.
- ✔ Variable deflected spray from 0 to 75 Degrees

### Technical data

Description.	Characteristic
Maximum Current	200 Amps
Compressed Air	0.6m <sup>3</sup> / min @ 4.5 Bar

## REMOTE PENDANT

Part No.	Description
2227-PENDANT	Remote Pendant for Stop / Start / Spray and Wire Feed



Also comes with 6m control cable to connect to energiser (can be longer on request)

- ✔ Allows remote operation of the system for when pistol is mounted to a robot or manipulator.
- ✔ Connects into energiser in place of the pistol control cable
- ✔ Eyelet to support pendant.
- ✔ Stop / Start Button Control.
- ✔ Key switch for Spray and Wire Feed.
- ✔ Safety Key control to lock off Spray and Wire feed when not in use.





## NOTES

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# Metallisation

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