

Metallisation

Thermal spray equipment and consumables



Equipment Specification

ARC170AC-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 – PUSH/PULL WITH WIRE IN DRUMS

Most commonly used for in-house anti-corrosion applications where drums can easily be handled.



Zn wire
in drums

3m max.



Energiser and
push/pull drive unit

10m supplies from wire
drive to pistol



Pistol

Standard drum system part numbers (see page 14 for more detail of included items)

Part No.	Description
ARC170AC-3210D	ARC170 Air Cooled System, 1/8" (3.17mm), 10m supplies, drum dispense
ARC170AC-31610D	ARC170 Air Cooled System, 3/16" (4.76mm), 10m supplies, drum dispense (zinc only)

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

Most commonly used for on-site anti-corrosion where the handling of drums is not easy.



Energiser, MIG dispenser and
push/pull drive unit

10m supplies from wire
drive to pistol



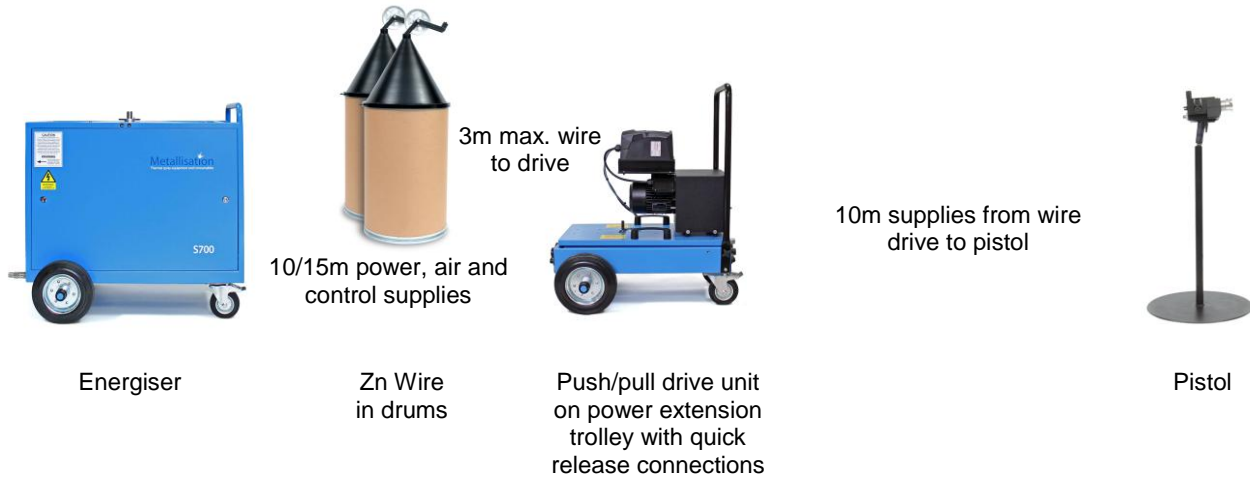
Pistol

Standard Hardboard/MIG reel system part numbers (see page 14 for more detail of included items)

Part No.	Description
ARC170AC-3210HB	ARC170 Air Cooled System, 1/8" (3.17mm), 10m supplies, Hardboard/MIG reels
ARC170AC-31610HB	ARC170 Air Cooled System, 3/16" (4.76mm), 10m supplies, Hardboard/MIG reels

EXTENDED CONFIGURATION – PUSH/PULL WITH WIRE IN DRUMS

Most commonly used in on-site applications where it is a benefit to site the energiser remotely from the spray area where access limitations may apply. Drums allow longer spraying times between wire changes. The use of the trolley allows easy movement of the drive unit around the site and local quick release connection of the supplies for maintenance.



EXTENDED CONFIGURATION – PUSH/PULL WITH WIRE ON MIG/HARDBOARD REELS

Most commonly used in on-site applications where it is a benefit to site the energiser remotely from the spray area where access limitations may apply. The use of the trolley allows easy movement of the drive unit around the site and local quick release connection of the supplies for maintenance.



Note: For certain applications using large diameter stiff wires such as zinc/aluminium alloy or aluminium in drums, the use of drum cones may not be suitable and a drum trolley will improve wire feed reliability. Refer to the wire dispense section for more information.

Extended configurations will generally be quoted/supplied as the standard system previously mentioned plus the additional items (trolley and extension supplies package).

INTRODUCTION

The following specification covers the standard range of ARC170 Arcspray systems. For the specific offer, please refer to a detailed quotation and cross-reference the part numbers for each piece of equipment.

The ARC170AC variant has been developed with air cooled cables for a lighter hand-held pistol weight when spraying at 700A. The use of air cooled cables, as well as some other pistol modifications have reduced the hand held weight by about 2kg – a significant benefit to the spray operators. Feedback from users of the existing 700A push systems is that the pistol is less restricted in movement and lighter than the systems that they are used to. This, combined with the ability to have 10m push/pull and even longer extended supplies systems is making the ARC170AC a great solution for large scale anti-corrosion applications. As an additional development, the drive motor is now a powerful brushless AC motor with inverter control.

The Metallisation ARC170AC offers high throughput with large diameter wires (1/8" and 3/16"), and is the recommended system for large scale, anti-corrosion applications. The ARC170AC's proven and patented Synchrodrive push/pull system has no motor in the pistol, resulting in a lighter, more maneuverable hand-held spray gun which has a 10m wire dispense distance. The system's robust design also includes the established Constant Geometry (CG) head, which ensures a smooth and consistent spray quality.

The new S700CL, 700 amp energiser still offers high spray rates for reduced spraying times over large areas but is now combined with 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 S700CL energiser also 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.

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

NEW AIR COOLED SUPPLIES PACK

- Final 2.5m of supplies to the pistol uses air cooled cables, reducing the weight of copper and integrating the air supply to the pistol into the cables. This further reduces the weight by removing a separate air hose to the pistol.

S700CL 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 the 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
- 700 Amp continuous operation at 100% duty cycle
- 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

- High throughputs of Zinc, Aluminium and Zinc / Aluminium 85/15 – reduces spraying time
- 700 amps continuous operation – reduces spraying time
- Large wires for greater efficiencies
- Push/Pull system for a more stable arc ensuring quality coatings with consistent operation
- Patented Flexible Drive system (Synchronised)
- Pistol to Dispenser length available as 10m as standard
- Pistol to Energiser length available as 10m, 20m or 25m as standard.
- Maintenance free, brushless AC drive motor
- Variable wire speed control – gives variable spray rates
- Suitable for anti-corrosion wires 3.17mm (1/8") to 4.76mm (3/16")
- Easy to maintain, less than 3 minutes to change contact tubes and nozzles
- Choice of coating textures
- Low running costs, as compared with gas systems
- Steel reinforced conduits for extended service life
- Quick release power, air and control couplings allow quick assembly / disassembly of package

ARC170 PISTOL

Part No.	Description
ARC170AC-CG32	Arcspray170 Pistol for 1/8" (3.18mm) anti-corrosion wires - Air cooled cables
ARC170AC-CG316	Arcspray170 Pistol for 3/16" (4.76mm) anti-corrosion wires - Air cooled cables



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

TECHNICAL OVERVIEW

- ✦ Air-cooled cable entry on terminals reduces hand-held pistol weight and has all supplies entry at the rear of the pistol for better balance and flexibility
- ✦ For spraying anti-corrosion coatings on large surface areas in the spray shop and onsite environment
- ✦ Spreader Air Jets to allow a wider spray pattern for large surface areas
- ✦ CG (constant geometry) head ensuring smooth feed, repeatable wire alignment and no adjustment of contact tubes required
- ✦ The Wire Drive Unit utilises intermeshed steel wormshaft and bronze wormwheels, being driven by a lightweight, flexible drive
- ✦ Closed arc for improved spray conditions and coating quality

TECHNICAL DATA

Description	Characteristics
Maximum Current	700 Amps
Weight	3.2 Kgs
Weight – at a held height of 1.2 M	8 Kgs – inc Cables and Hoses
Width	120mm
Length	280mm
Height	310mm

TYPICAL PERFORMANCE FIGURES FOR THE ARC170 PISTOL

Material	Wire Diameter	Throughput (kg/hr @ 700A)	Coverage m ² /kg/100µ
Metallisation Wire 01E Aluminium	3.17mm (1/8")	21	3.18
	4.76mm (3/16")	24	3.13
Metallisation Wire 02E Zinc	3.17mm (1/8")	72	0.96
	4.76mm (3/16")	92	0.94
Metallisation Wire 21E Zinc/Aluminium 85/15	3.17mm (1/8")	70	1.07
	4.76mm (3/16")	75	1.07

For Aluminium wire, the deposit efficiency has been proven to increase by approximately 5% when sprayed at 350A instead of 700A. Deposit efficiency for Zinc and Zinc/Aluminium 85/15 does not change with spray current.

With larger wire diameters, the throughput has been proven to increase.

All data provided is an approximation and is offered as guidance only as performance can vary depending on application and parameters.

TOOLKIT

Appropriate hand tools are supplied with the Arcspray system along with an operating manual.

SUPPLIES PACKAGE

Part No.	Description
SUP170AC-10M	Arcspray170 10m Supplies Package - Air cooled cables
SUP06AC-EXT10H	10M High Power Extension Trolley supplies package for onboard inverter AC drive systems
SUP06AC-EXT15H	15M High Power Extension Trolley supplies package for onboard inverter AC drive systems

STANDARD SUPPLIES PACKAGE INCLUDES



Power cables / air hose manifold / air-cooled cables and control cable



**Flexible Drive
1 off**



**Pair of Wire conduits
1 off**

TECHNICAL OVERVIEW

- 10 metre supplies package available as standard (max wire feed distance 10m)
- Power and air cables connect to manifold that converts to lighter weight air-cooled cables for the last 2.5m up to the pistol, reducing the hand-held weight.
- Supplied with all fittings appropriate to connect to ARC170-AC Pistol and S700CL Energiser
- Steel reinforced conduits for extended service life

10/15M EXTENSION SUPPLIES INCLUDES



**Power cables
2 off**



**Air hose
1 off**



**Control cable
1 off**



**Motor drive cable
1 off**

TECHNICAL OVERVIEW

- 10m or 15m Power Extension Trolley (PET) supplies package available as standard.
- Supplied with all fittings appropriate to connect to between S700 Energiser and Power Extension Trolley
- Quick release power, air and control couplings allow quick assembly / disassembly of package

ENERGISER

Part No.	Description
S700-PLC-ACD	S700 (ARC170/701) Energizer with Closed Loop Current control for AC Drive Units
S700D-PLC-ACD	S700 (ARC170/701) Energizer with Closed Loop Current control for AC Drive Units (220/380/415V)



The S700 Energiser has been specifically designed for those users who wish to spray large areas at high throughputs of anti-corrosion materials.

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
- ✦ 700 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).

S700 ENERGISER SPECIFICATION

Description	Characteristics		
	380v	415v	220v
Input Power Required 50-60Hz 3 Ph	380v	415v	220v
Fusing Required	60A/Phase	55A/Phase	104A/Phase
Typical Power Consumption*	22.5 KVA (Zinc 26Vdc/700A output) 33 KVA (Aluminium 38Vdc/700A output)		
Duty	0-700 Amps @ 100% Duty Cycle		
Output Voltage @ 440V supply voltage	0-49Vdc (nominal) Switched High / Low & 1 – 5		
Air Requirements	1.56m ³ /min @ 6bar (55cfm @ 90psi)		
Weight	296 Kgs (653Lbs)		
Dimensions (W x L x H)	670mm x 900mm x 875mm		

*The KVA is based on a standard supplies package length, note this will increase as the supply length increases.

WIRE DRIVE UNITS

Part No.	Description
ARC170-ACDUA-32	Arcspray170 push/pull AC drive unit with onboard inverter for 1/8" (3.17mm) wires
ARC170-ACDUA-316	Arcspray170 push/pull AC drive unit with onboard inverter for 3/16" (4.76mm) wires
ARC170AC-DUA-32HB	ARC170 1/8" (3.17mm) AC Drive unit for Hardboard/MIG Dispensing
ARC170AC-DUA-316HB	ARC170 3/16" (4.76mm) AC Drive unit for Hardboard/MIG Dispensing
ARC170AC-DUA-32D	ARC170 1/8" (3.17mm) AC Drive unit for Drum/Cones Dispensing (zinc only)
ARC170AC-DUA-316D	ARC170 3/16" (4.76mm) AC Drive unit for Drum/Cones Dispensing (zinc only)



ARC170AC-DUA-XXHB version



ARC170AC-DUA-XXD version

The ARC170 wire drive unit is a push/pull system. The drive mechanism operates through an electric AC drive motor with a flexible drive cable up to the pistol. This unit is fitted with a 1m flying lead and a 5m-extension cable.

TECHNICAL OVERVIEW

- ✦ Brushless Electric AC Drive Motor options, for smooth wire feed and minimal maintenance
- ✦ Push / Pull mechanism positively drives the wire to the pistol
- ✦ Ease of loading and unloading of wires, using 'Quick Fit' couplings on Conduits
- ✦ Easily adjustable wire tensioners for a consistent feed of different wire sizes and materials
- ✦ Different sized drive rollers for 3.17mm (1/8") and 4.76mm (3/16") materials
- ✦ Drive unit is available on its own for use with the drum trolley
- ✦ Hardboard reel version fits all common MIG and Hardboard reels

WIRE DISPENSE

WIRE DISPENSING CONES (PULLEY)

Part No.	Description
21252	Wire Dispensing Cones – variable position (2 required)
7144	PTFE Wire Conduits (Supplied by the meter)
6274/5	½” Clamp Pads for PTFE Tubing



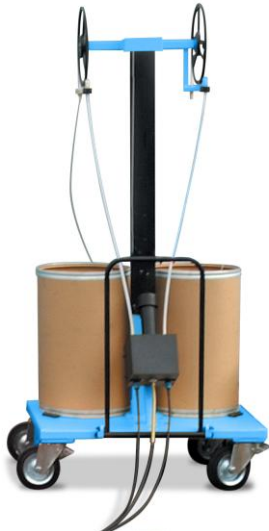
TECHNICAL OVERVIEW:

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, over the pulley, to give a free passage of wire from the drum to pistol. Benefits include:

- ✦ Suitable for dispensing Zinc 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
- ✦ Used with a drum dispense drive unit

DRUM TROLLEY

Part No.	Description
2006-DT	S350/S700 Drum Trolley for 3/16" and stiff wires
2006-PDT	S700 Powered Drum Trolley for ARC701/170 Systems



TECHNICAL OVERVIEW

- ✦ Required for dispensing Zn/Al and 1/8" Aluminium wire (3/16" Aluminium wire not available in drums)
- ✦ Additional height of dispensing pulleys ensures smooth, no kink dispensing of wire
- ✦ Specifically designed to suit Arcspraying with the each drum being individually insulated from each other
- ✦ Fitted Pulley to ensure a smooth wire feed to the pistol
- ✦ Large 'Site Capable' wheels
- ✦ Mounting provided for Wire Drive Unit (see drive units)
- ✦ Includes vinyl dust covers for drums (Not Shown)
- ✦ Powered Drum Trolley (PDT) option available for extended supplies systems.

POWER EXTENSION TROLLEY

Part No.	Description
2006-PETH	High power extension trolley for ARC170/701 systems



TECHNICAL OVERVIEW

- ✦ Power extension trolley designed to allow the energiser to be sited away from the spray job
- ✦ Large 'Site Capable' wheels and rigid handle offers excellent portability on site
- ✦ Quick release power, air and control couplings allow quick assembly / disassembly of package
- ✦ Drive support plate bolts to trolley

OPTIONS

REMOTE PENDANT

Part No.	Description
PLC-PENDANT-K	Remote operation pendant for PLC energisers + e-stop kit



Also comes with 10m control cable to connect to energiser (can be longer on request)

- ✦ Allows remote operation of the system 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

CONVERSION KITS

Part No.	Description
ARC170-CK32	Arc170 4.76mm (3/16") to 3.17mm (1/8") Conversion Kit
ARC170-CK316	Arc170 3.17mm (1/8") to 4.76mm (3/16") Conversion Kit

- ✦ Conversion Kits include all required Driver Rollers, Nozzle, Aircap, Contact Tubes and Wire conduits

USEFUL INFORMATION

ITEMS SUPPLIED WITH A STANDARD SYSTEM

The following list details the items included in a standard system.

STANDARD DRUM SYSTEMS	STANDARD MIG SYSTEMS	QTY	PAGE
ARC170 Pistol (1/8 or 3/16")	ARC170 Pistol (1/8 or 3/16")	1	6/7
Standard supplies package (10m)	Standard supplies package (10m)	1	8
S700 Energiser (380/415)	S700 Energiser (380/415)	1	10
Drive unit for drums/cones	Drive unit for Hardboard/MIG reels	1	11
Wire dispensing cones		2	12
Clamp blocks for cones		2	12
PTFE tubing from cones to drive unit		2x2m	12

When extended supplies systems and optional extras are quoted, the standard systems above will be quoted with the additional parts quoted as extra line items.

TIME TO SPRAY

The table below shows the approximate time it would take to spray a given area with 100 µm coating thickness.

MATERIAL	AREA (m ² @100µ)	APPROX GUN-ON SPRAY TIME
Metallisation Wire 01E/17E/25E Aluminium & Alloys	10	9 mins
	100	1 hrs 30 mins
Metallisation Wire 02E Zinc (3/16")	10	8 mins
	100	1 hrs 20 mins
Metallisation Wire 021E Zinc/Aluminium 85/15	10	8 ½ mins
	100	1 hrs 35 mins

For thicker or thinner coatings, the spraying time varies in proportion to the thickness. For example, it takes approximately 2 minutes to spray a 1m² area of zinc at 100µ. It would take 4 minutes to spray the same area at 200µ.

The given times are approximate 'gun-on' spray times and do not make any allowance for stoppages, wire changes, part manipulation etc. Typically, an 'average' job (a fairly simple structure of 'I' beams) would take around twice the gun on spray time to complete the actual job.

Note: The information given above is intended for guidance purposes only. Material usage and time taken will depend on a number of factors, these include the quality of the prepared substrate and the shape and size of the job.



NOTES

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