Metallisation

Thermal spray equipment and consumables

Equipment Specification

ARC528E-ICC 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 IN DRUMS

Most commonly used for high volume production applications such as tube mill weld repair, multi-void tubes coating, capacitor coating and LPG cylinders etc. The material in drums minimises downtime due to material changes.

5m as standard from wire to pistol.
Longer lengths are possible*

5m power, air, control supplies as standard. Longer lengths are possible, normally 25m maximum.

S250 or S350 Energiser

Wire in drums or coils (use 2-tier dispenser)

Pistol

STANDARD CONFIGURATION – PULL WITH WIRE ON MIG REELS

Most commonly used for lower volume production applications and mainly engineering coatings where materials are not available in drums or coils.

5m as standard from wire to pistol.

5m power, air, control supplies as standard. Longer lengths are possible, normally 25m maximum.

S250 or S350 energiser. MIG reels mounted on energiser, floor or wall.

Pistol

* Standard distance from wire to the pistol is 5m. Within the industrial applications, longer lengths are achieved. Consideration must be take to minimise the drag / resistance of the wire during feeding. In practice, this means keep the wire run as straight as possible and use free running, large diameter pulleys when changing wire direction. When running in conduit, PTFE should be used.

INTRODUCTION

The following specification covers the standard range of ARC528-ICC Arcspray systems. For the specific offer, please refer to a detailed quotation and cross-reference the part numbers for each piece of equipment.

The new Metallisation ARC528E-ICC systems, with either the 250 amp or 350 amp energiser, offers the ultimate in reliability and precision for demanding production applications. This includes both anti-corrosion and engineering coatings.

Wire drive is supplied at the heavy-duty pistol by a highly accurate, powerful DC servo motor, driving a robust gearbox and drive roller system. The high performance pistol incorporates proven Metallisation technology, including a unique constant geometry (CG) head. This ensures smooth and consistent spray quality and minimal downtime when changing consumable spares.

A new addition to the 528E system in 2008 is the quick release supply package option. To further reduce machine downtime, the supplies package can be chosen with a quick release option, enabling the pistol to be removed quickly from the line and either maintained or exchanged for a spare pistol for preventative maintenance routines.

Also in 2008 is a new range of PLC controlled energisers 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. All of the control electronics are in a sealed area of the energiser to protect them from the often harsh, production environment.

The 528E-ICC is offered with either the 250 amp or 350 amp energiser, depending on your production and throughput requirements. As an alternative, a high throughput version is also offered with either 700 amp or 1000 amp energisers. Please refer to the appropriate brochure and specification for more details on these products or consult with Metallisation to determine the most suitable system for your requirements.

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 S250-ICC AND S350-ICC ENERGISERS

- 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
- E-stop integration to link from and / or to production equipment
- Remote stop/start linking for control by production equipment
- Speed control link to production line to vary spray rate with production speed. Enables even coatings to be applied during ramp-up, shut down or production variances.
- PLC program supplied on an EPROM in case the PLC needs reprogramming
- 250 Amp or 350 Amp continuous operation at 100% duty cycle
- Easy access energiser panels & external fuse bank for reduced Mean Time to Repair (MTTR)
- Sealed electrical control circuit - reduces dust ingression for added reliability
- Clear displays and large controls give ease of operation
- Integrated Arc current monitor - Stops pistol and supplies an output signal linked to production equipment if arc current stops i.e. due to wire out.
- 24v Safety relay circuit for external interlocks, extraction, acoustic, door locks etc.

GENERAL BENEFITS

- Pull system ensuring quality coatings with consistent operation.
- Proven Arcspray system for automatic production environments
- Suitable for Anti-corrosion and Engineering wires, steels, copper and bronzes.
- Sealed/lubed for life DC Servo motor.
- 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.
- 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 with standard 5m package.
- Safety interlocks.
- Choice of coating textures.
- Well over 400 528 systems sold into automatic applications since 1994.

ARC528E PISTOL

Part No.	Description
ARC528E-CG16	Arc528E Pistol for 1.6mm wires (all wires)
ARC528E-CG20	Arc528E Pistol for 2.0mm wires (all wires)
ARC528E-CG23	Arc528E Pistol for 2.3mm wires (all wires)

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

TECHNICAL OVERVIEW

- Designed to spray both Anti-corrosion and Engineering coatings.
- Standard 1.6 through to 2.5mm wire size
- No requirement to change feed rollers when changing wire sizes.
- CG (constant geometry head) ensuring smooth feed, repeatable wire alignment and no adjustment of contact tubes required.
- The Drive box is factory lubricated for longer life.
- A range of spray head sizes to accommodate high spray rates, large wire diameters and fine coatings, small wire diameters.
- Closed arc for improved spray conditions and efficiency.
- Armature voltage feed back for closed loop wire speed control.
- Tacho feed back for Motor speed display and integration into closed loop production systems.

Technical data

Description	Characteristics
Maximum Current	450 Amps
Weight	7.4 Kgs
Weight – at a held height of 1.2 M	10 Kgs – inc Cables and Hoses
Width	102mm
Length	457mm
Height	229mm

Typical performance figures for the Arc528E pistol at current shown

Material	Wire Diameter	Throughput (kg/hr	Coverage m^2/kg/100µ
Metallisation Wire 02E Zinc	2.0mm **2.3mm**	**36.0** (@350A)	**0.82**
Metallisation Wire 01E/17E/25E Aluminium & Alloys	2.0mm **2.3mm**	**8.5** (@350A)	**2.88**
Metallisation Wire 021E Zinc/Aluminium 85/15	2.0mm **2.3mm**	**31.0** (@350A)	**1.00**
Metallisation Wire 05E Copper	**1.6mm**	**15**(@300A)	**0.91**
Metallisation Wire 30E,35E,45E, 55E,57E,60E 65E,80E,84E Steels	**1.6mm**	**13.6**(@300A)	**1.02**
Metallisation Wire 75E Nickel Aluminium	**1.6mm**	**16.4**(@300A)	**1.09**
Metallisation Wire 10E Aluminium Bronze	**1.6mm**	**13.6**(@300A)	**1.37**
Metallisation Wire 15E Phosphor Bronze	**1.6mm**	**19**(@300A)	**0.91**
Metallisation Wire 70E/71E Monel	**1.6mm**	**17.2**(@300A)	**1.02**
Metallisation Cored Wire 103T FeCrB	**1.6mm**	**7.2**(@180A)	**1.18**

Typical performance figures for the Arc528E pistol at 250A

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

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
SUP528E-5-350	ARC528E 5Mtr supplies pack for S250 / S350 systems
SUP528QR-STD	ARC528E Quick release kit for standard systems

STANDARD SUPPLIES PACKAGE INCLUDES

Power, Air and Control Cables

Wire Conduits

Technical overview

- 5 meter supplies package as standard with all fittings appropriate to connect to 528E Pistol and Energisers.
- Longer power, air and control supplies package options available to suit your application
- Protective cover supplied for protection in a workshop environment.
- Various wire conduits to suit different applications and wire dispensing methods (dedicated conduits for 5m lengths or PTFE tubing for longer lengths and 3.17mm wires

QUICK RELEASE KIT INCLUDES

1m power and air extension with quick release connections

Technical overview

- 1m power cable and air hose extensions with quick release fittings
- Needs to be ordered in conjunction with the supplies package to enable the quick release fittings to be fitted to the main supplies package.

ENERGISER

Part No.	Description
2220-ICC	S250 (ARC528E) Energizer with closed loop current control
2220D-ICC	S250 (ARC 528) Energizer with closed loop current control (220/380/440V)
2227-ICC	S350 (ARC528E) Energizer with closed loop current control
2227D-ICC	S350 (ARC 528) Energizer with closed loop current control (220/380/440V)

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 and 350 amp continuous operation (100% duty cycle)
- Clear displays and large controls give ease of operation.
- Sealed electrical control circuit - reduces dust ingression for added reliability
- Easy access energiser panels & external fuse bank for reduced Mean Time to Repair (MTTR).
- Switched output voltage control
- Integrated Arc current monitor - Stops pistol and supplies an output signal linked to production equipment if arc current stops i.e. due to wire out.
- 24v Safety relay circuit for external interlocks, extraction, acoustic, door locks etc.
- 220V/380V/440V input supply options available (hard wired)

S250-ICC 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^3 /min @ 6bar (45cfm @ 90psi)
Weight	210 Kgs
Dimensions (W x L x H)	680mm x 900mm x 913mm

S350-ICC energiser specification

Description	Characteristics
Input Power Requirements	380/440V 50-60Hz 3 Phase
Optional Input Power	220V 50-60Hz 3 Phase
Fusing Required	28A/Phase (415V input)
Max Power Consumption	16 KVA
Duty	0-350 Amps @ 100% Duty Cycle
Output Voltage	0-50Vdc (nominal) Switched High/ Low & 1 – 5
Air Requirements	1.28m^3 /min @ 6bar (45cfm @ 90psi)
Weight	220 Kgs
Dimensions (W x L x H)	680mm x 900mm x 913mm

WIRE DISPENSE

WIRE DISPENSING CONES (PULLEY)

Part No.	Description
21252	**Wire Dispensing Cones – variable position (2 required)**

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.

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.

MIG REEL WIRE DISPENSER

Part No.	Description
2008-ICC-MIG	**MIG Dispenser for ICC style energisers**

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.

OPTIONS

ARCBEAM

Part No.	Description
ARCBEAM	Arcbeam System Kit for ARC340/ARC528E, 1.6mm wires
ARCBEAM(2.0)	Arcbeam System Kit for ARC340/ARC528E, 2.0mm wires
ARCBEAM(2.3)	Arcbeam System Kit for ARC340/ARC528E, 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	$0.7m^3$ / min @ 3.5 Bar

ARC EXTENSIONS

Part No.	Description
ARCEXT*150	Arcspray340/528 extension, 1.6mm wires, 150mm long
ARCEXT*500	Arcspray340/528 extension, 1.6mm wires, 500mm long
ARCEXT*1000	Arcspray340/528 extension, 1.6mm wires, 1000mm long
ARCEXT*1500	Arcspray340/528 extension, 1.6mm wires, 1500mm long

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

Picture shows extension fitted to ARC140 pistol

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^3 / min @ 4.5 Bar

NOTES

Metallisation

Thermal spray equipment and consumables

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