

Product Data Sheet

Metco SM-F100 CONNEX

Universal Plasma Spray Gun for Internal Bore and External Surface Applications

The Metco™ SM-F100 CONNEX is a universal plasma spray gun; equally suited for spraying of internal geometries and external surfaces. Uniquely modular in design, additional elements can be purchased to configure the gun for different lengths and spray angles.

The SM-F100 is engineered for reliable and universal performance for internal and external atmospheric plasma spray processes. A spray kit is available for the SM-F100 CONNEX

to convert the gun for use in ChamPro™ controlled atmosphere applications. It has been designed to meet and efficiently utilize the capabilities of the plasma spray process by producing high quality coatings for a variety of applications and specific spray requirements.

The SM-F100 CONNEX gun is ideally suited for use on complex geometries and internal bore applications such as aerospace and land base gas turbine transition ducts, compressor casings, combustion liners and automotive engine block cylinder bores.

Standard Variants for Internal Spraying



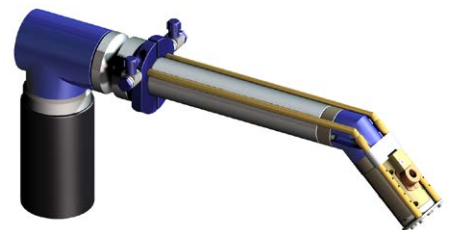
SM-F100 90° Standard

Universal Variants for Internal and External Spraying

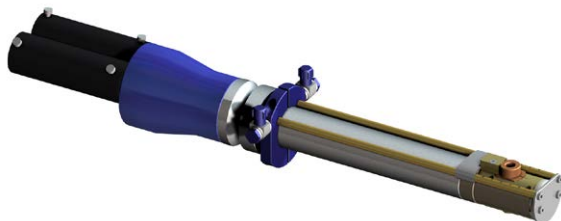


SM-F100 90° Universal

Special 45° Variant for Internal Spraying



SM-F100 45°



SM-F100 180° Standard



SM-F100 180° Universal

1 General Description

The SM-F100 CONNEX Universal Plasma Spray Gun can apply coatings on internal bores down to a minimum dimension of 100 mm (4 in), as well as all external spray surfaces. It has been developed to meet the present aerospace, chemical processing, petro-chemical and general engineering industry coating requirements.

The spray direction of the SM-F100 CONNEX is perpendicular to the gun axis. The gun is designed for machine mounting and is not intended to be handheld. It can be operated in an atmospheric or controlled atmosphere plasma spray environment with minor modifications.

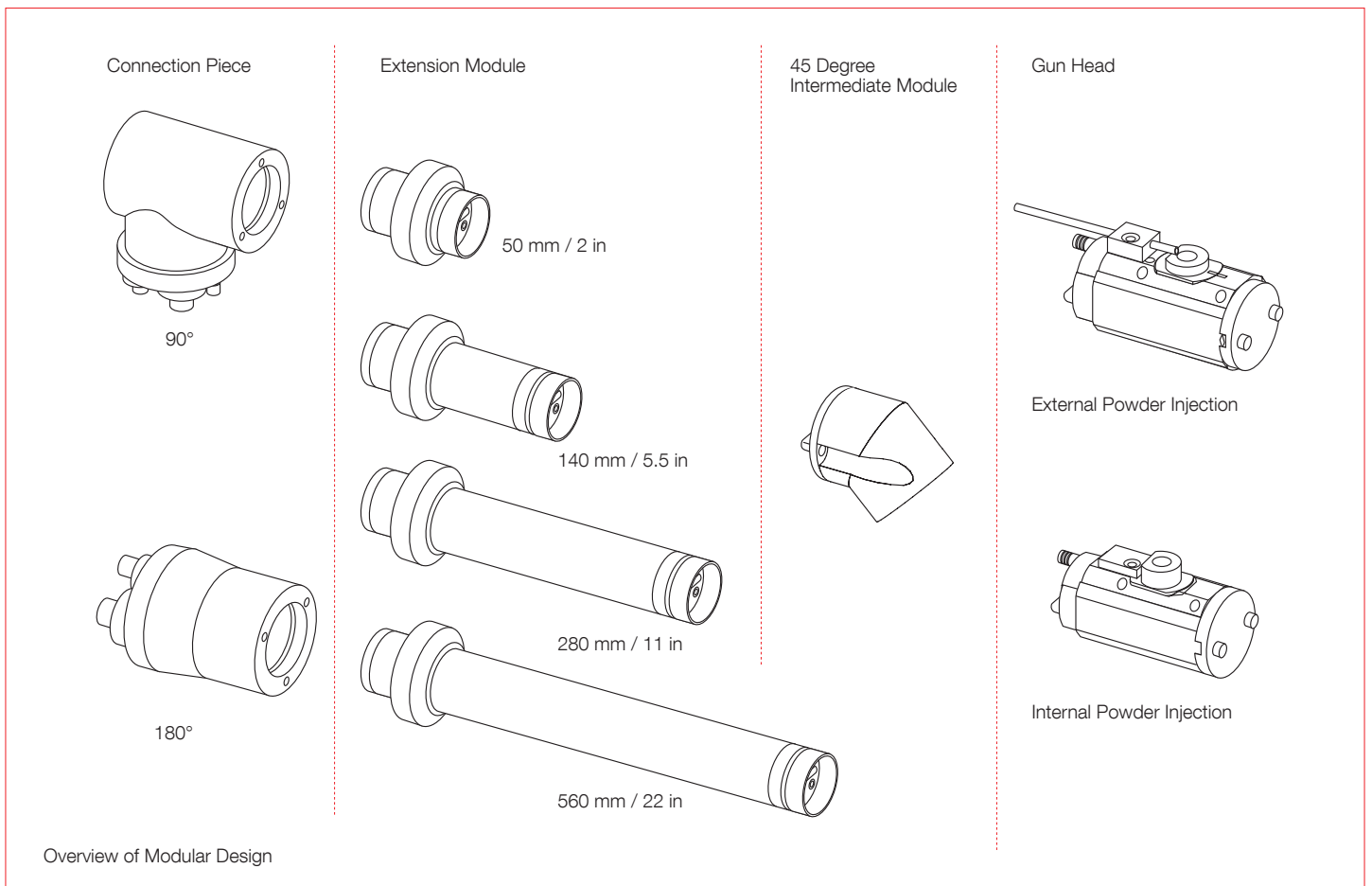
The modular design of the SM-F100 CONNEX disassembles into three parts:

Connection piece: has inlets for electrical current, water, plasma gas and spray powder and is available as a 90° or 180° configuration.

Extension module: conveys the operating media to the gun head. The module is cooled with circulating water. It comes in four standard lengths, with special lengths available upon request.

Gun head: includes all main elements ensuring a continuous and precise plasma jet. The powder injection is integrated into the nozzle, thus preventing turbulence during powder injection. The gun head is available in external or internal powder injection configurations. The advanced gun head design of the SM-F100 produces excellent quality coatings at low power, equivalent to higher power guns, without sacrificing production time.

Optional 45° intermediate module: permits the gun to spray at a 45° angle.



2 Features and Benefits

- Modular construction: provides the user with the freedom of selecting the gun head, connection modules and extension modules to be ordered.
- Controlled atmosphere capability: suitable for use in Metco ChamPro systems with VPS kit.
- Simple hardware configuration: sprays a wide range of materials with a single nozzle / electrode configuration.
- Long life hardware: typical life for tungsten-lined nozzles is in excess of five times that of unlined nozzles when proper cooling is used.
- Machine-mount: appropriate for use with robotic or traverse mechanisms.
- CE-conformity: the SM-F100 plasma gun meets European safety and operation requirements and is CE conformant.
- Universal: one gun can be configured for internal or external use in a matter of minutes.
- Complex geometry capability: applies high quality plasma spray coatings to components with complex geometries and tight clearances.
- Ease of use: operates with combinations of argon and hydrogen, as well as argon and helium without having to change the gun nozzle.
- Low operating costs: resulting from excellent deposition efficiency and powder throughput, as well as simplified maintenance requirements.
- Ease of maintenance: gun hardware designed for safe and easy maintenance with fast and simple hardware changes.
- Versatility: sprays a wide variety of coatings, including ceramics, carbides, pure metals and alloys and cermets.
- Robust design: holds up in the harshest thermal spray environments.

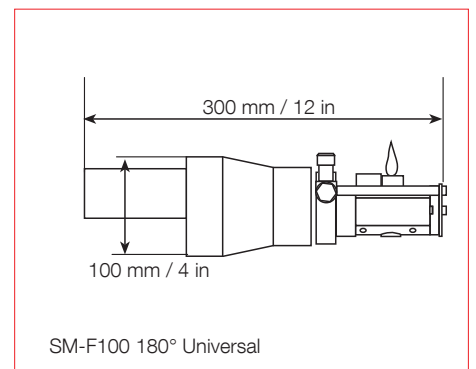
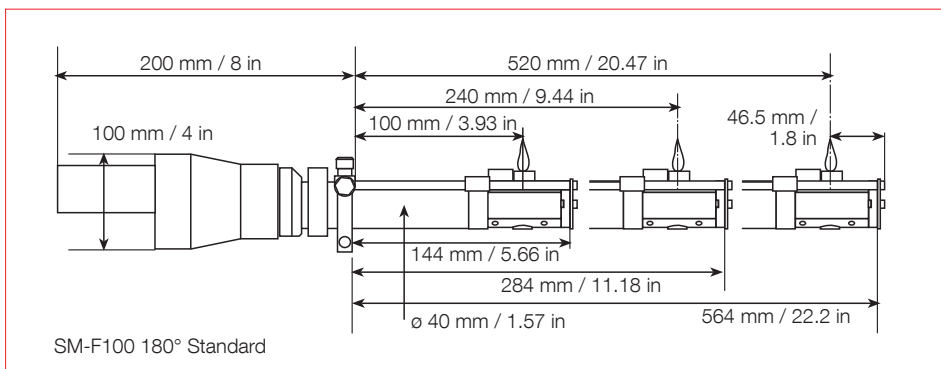
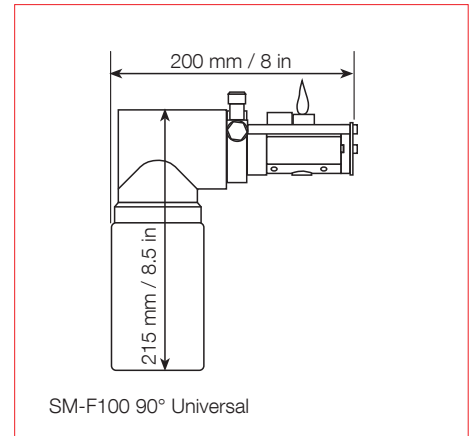
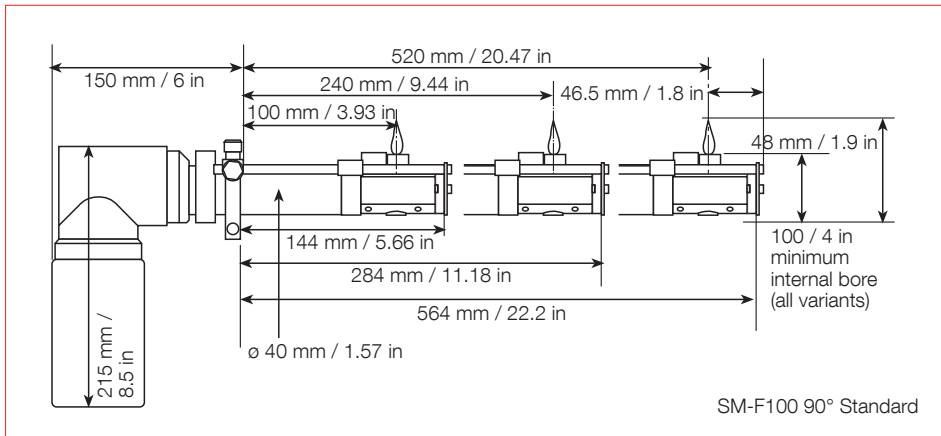
3 Accessories and Options

Oerlikon Metco offers a wide variety of accessories and options for the SM-F100 CONNEX to suit specific spray requirements. These include nozzles, electrodes, powder

port assemblies, air cooling jets, cables and hoses. For a complete list of optional parts and spare parts please refer to the parts lists section of the reference manual.

4 Technical Data

4.1 Dimensions



4.2 Specifications

Power Rating

Maximum	20 kW (100 % duty cycle)	
Minimum ID spray diameter	100 mm	4 in

Weight

Approximate	3 kg	6.6 lbs
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Cooling Water

Inlet temperature	20 °C (± 5 °C)	59 to 68 °F
Inlet pressure	13.5 bar	196 psi
Flow	10 to 14 l/min	4 gallon per minute
Quality		
Total hardness	0.5 Grade F 0.35 Grade E 0.28 Grade D	
Conductivity	> 5 µS/cm	
ph Value	6.6	

Deposit Efficiency

Typical	50 to 80 %	
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Spray rate

Typical	40 to 80 g/min	
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Plasma Gas Purity Requirements

Argon	99.95 %	
Hydrogen	99.995 %	
Helium	99.995 %	

Plasma Controller

Compatible with:	UniCoat™; MultiCoat™	
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Powder Feeder

Compatible with:	all Oerlikon Metco powder feeders	
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Information is subject to change without prior notice.