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Product Data Sheet
Single/Twin 120 and 140 Series Powder Feeders

Volumetric Thermal Spray Powder Feeders for Atmospheric Plasma, HVOF, Combustion Powder Thermospray™ and ChamPro™ Controlled Atmosphere Plasma Processes

The Oerlikon Metco Single and Twin 120 powder feeders are designed for MultiCoat™ spray system for use with atmospheric plasma spray, ChamPro controlled atmosphere plasma spray, HVOF, and powder flame spray processes. The Twin-140 feeder is designed for operation with the UniCoatPro™ LF liquid fuel HVOF spray system and UniCoatPro Plasma spray system.

The volumetric feeding principle employed by the Single and Twin 100 series feeders exhibit excellent feed rate consistency throughout spray runs with only minor variation. The powder feed rate is controlled by a rotating metering disk. Once metered, the powder is transported by the carrier gas through a powder hose to the spray gun powder port(s) where it is then injected into the spray stream. The very stable feed rate contributes significantly to the consistency of the thermally sprayed coating and also results in predictable coating thicknesses.

With the right hopper configuration, the overall feed rate accuracy of these feeders is within ± 1 % of the feed rate set point, which is in accordance with DIN EN 1395-7:2007-04.

Twin series feeders come equipped with two powder hoppers and feed lines, which can be operated independently or together. The single series feeders come equipped with a single hopper and one feed line.

The operator has direct control over all functions and parameters of the powder feeder directly from the spray console, which communicates with the Single or Twin series feeder via a digital protocol.

Twin-120-A Powder Feeder

Single-120-A Powder Feeder

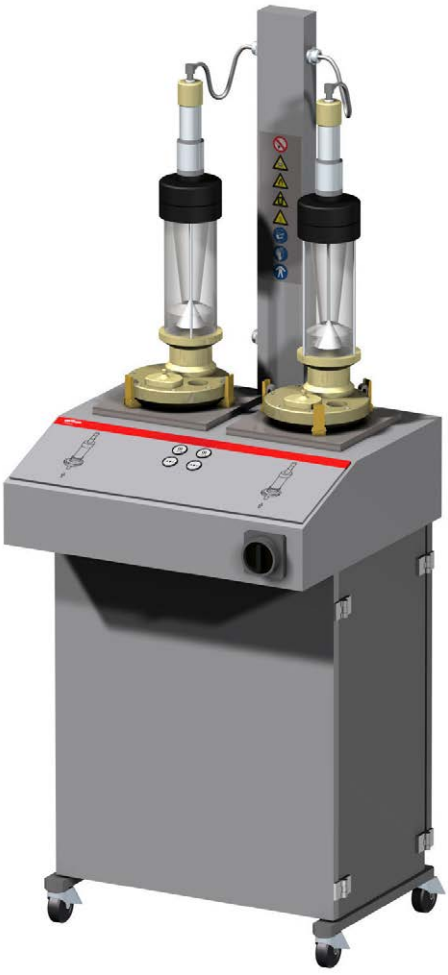
1 Description

1.1 Overview

Model No.	Spray Controller	No. of Powder Lines	Spray Process	Available Powder Hopper*		
Single-120-A	MultiCoat	1	APS, CP	1.1 liter APS	1.5 liter APS	5 liter APS
Single-120-H			HVOF	1.1 liter HVOF	1.5 liter HVOF	
Single-120-AH			APS, CP, HVOF	1.1 liter APS 1.1 liter HVOF	1.5 liter APS 1.5 liter HVOF	
Twin-120-A		2	APS, CP	1.1 liter APS	1.5 liter APS	5 liter APS
Twin-120-H			HVOF	1.1 liter HVOF	1.5 liter HVOF	
Twin-120-AH			APS, CP, HVOF	1.1 liter APS 1.1 liter HVOF	1.5 liter APS 1.5 liter HVOF	5 liter APS
Single-120-V	MultiCoat	1	ChamPro	1.1 liter VPS		5 liter VPS
Twin-120-V		2				
Twin-140	UniCoatPro	2	APS, HVOF-LF	1.1 liter APS	1.5 liter HVOF	

*APS = Atmospheric Plasma Spray; CP = Combustion Powder Thermospray, HVOF = High Velocity Oxy-Fuel Spray, VPS = Vacuum Plasma Spray

Twin-120-V Powder Feeder



Twin-140 Powder Feeder

1.2 Principle of Operation

The spray powder is conveyed by carrier gas, which is argon or nitrogen depending on the coating parameters. The powder feed rate is controlled volumetrically by the speed of the rotating metering disk that receives the powder from the powder hopper. The functionality is controlled by PLC.

The carrier gas is regulated by precision mass flow controllers.

To discharge any potential static that may build up in the feeder, the hopper is grounded.

1.3 Configuration

Single-120 and Twin-120 Powder Feeders

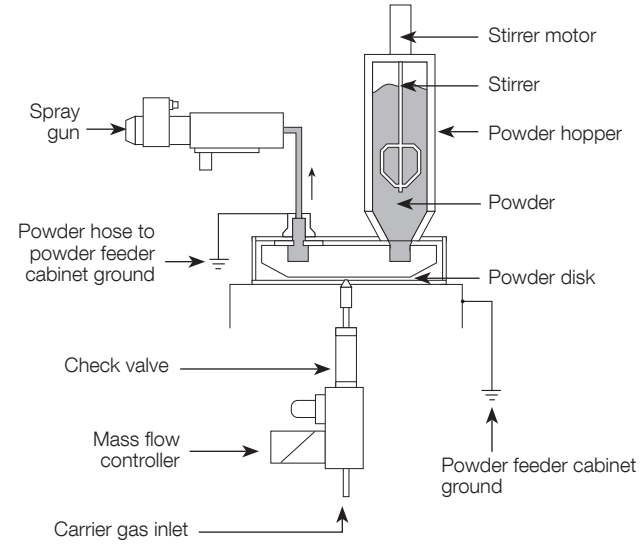
The front compartment of the powder feeder cabinet contains the electronics for control and regulation of the powder feeder functions and communication with the spray controller. The rear compartment houses the carrier gas regulation components. These two compartments are separated by a partition for safety. Both units are easily accessible through a front and rear doors, for servicing.

All connections (carrier gas, power, control) are located on the lower back of the cabinet.

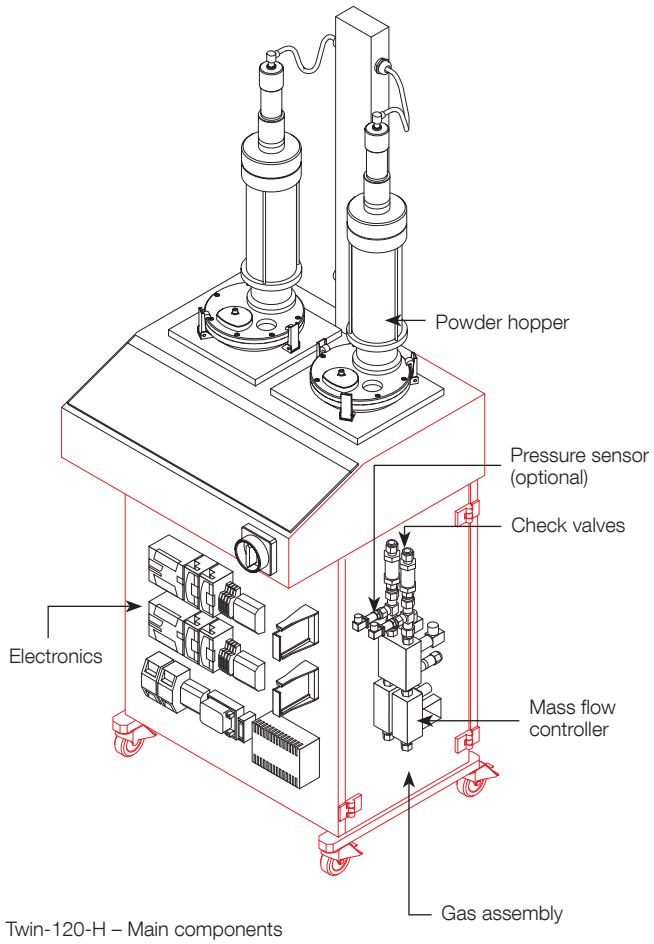
The powder hoppers and metering disks are located on top of the cabinet, where they can be easily removed and replaced as a single unit. For more information on the powder hoppers, please refer to the powder hopper data sheet.

If desired, an optional pressure sensor for the carrier gas can be installed.

The entire operation of the Single-120 and Twin-120 feeders, including stirrer speed, metering disk speed, carrier gas and other feeder-specific parameters are set at the MultiCoat spray controller.



Functional principle



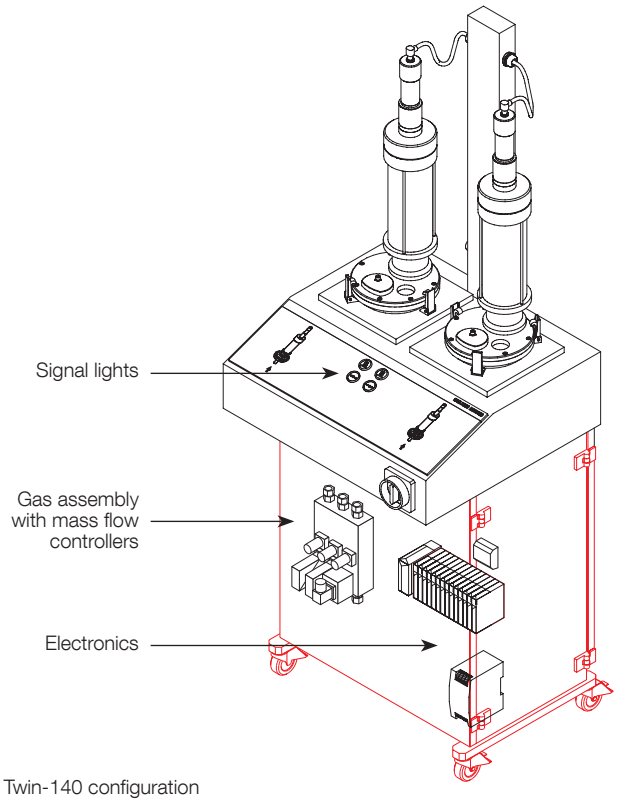
Twin-120-H – Main components

Twin-140

The Twin-140 powder feeder operates in a manner that is similar to that of the Single-120 and Twin-120 feeders. The Twin-140 has integrated electronics and carrier gas control equipment within a single compartment of feeder cabinet.

All functionality for the Twin-140 powder feeder is set and controlled via the UniCoatPro controller, including the temperature of the optional powder feeder hopper heater. Communication between the powder feeder and the controller is via Ethernet Powerlink.

In addition, the Twin-140 features two signal lights that visually indicate the operational state of the feeder.



Twin-140 configuration

1.4 Process-Specific Functionality

ChamPro

The Single-120-V and Twin-120-V have additional functions used with ChamPro controlled atmosphere spray systems, which are selected with the selector switch. They are:

- Operation: Mode for either normal powder feed operation or without powder feed whereby the carrier gas is used to cool and purge the powder injector of the spray gun.
- Gas Evacuation: This draws a vacuum in the hopper after filling the hopper with powder.
- Gas Purge: Pressurizes the hopper so it can be opened and filled with powder.

Depending on the mode selected, the shutoff valve automatically opens or closes.

HVOF

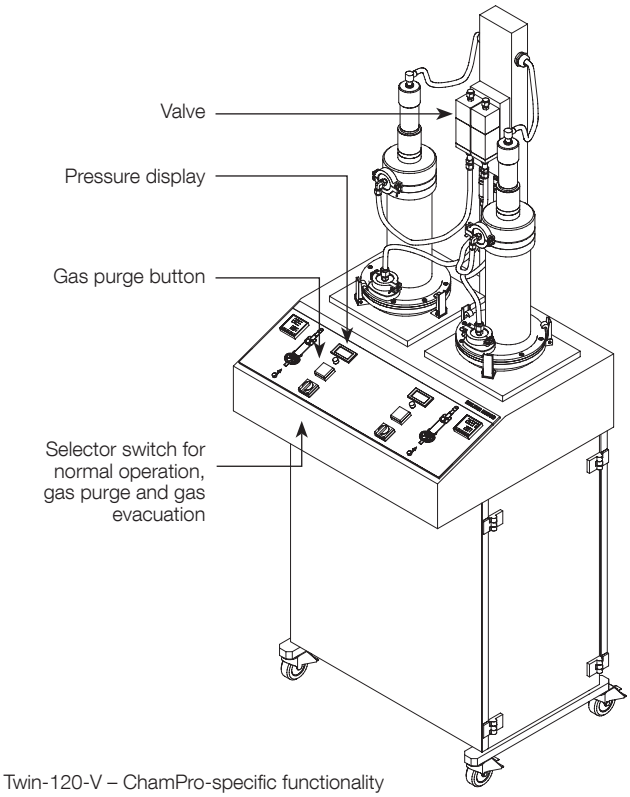
Powder feeder models with an “H” or “AH” designation are required for HVOF spray systems. The HVOF process operates with higher carrier gas pressures, therefore, feeders are equipped with high-pressure metering disk housings and the powder hopper is fitted with an aluminum cover plate. The flanges for the disk metering motor are coded to avoid confusion with the atmospheric plasma spray (APS) powder hoppers. In place of the clamp closures used on the APS hopper lids, the lids of HVOF powder hoppers are threaded.

APS and HVOF

Single-120-AH and Twin-120-AH powder feeders can be used for both atmospheric plasma and HVOF operation.

The Twin-120-AH has two carrier gas inlets, one each for APS and HVOF. The carrier gas is controlled by two mass flow controllers and the two powder lines can be both be used for APS, both for HVOF or one powder line for each.

The Single-120-AH has two carrier gas inlets, one each for APS and HVOF, and each with a mass flow controller for carrier gas. The single powder feed line can be used either for APS or HVOF.



Twin-120-V – ChamPro-specific functionality

2 Features and Benefits

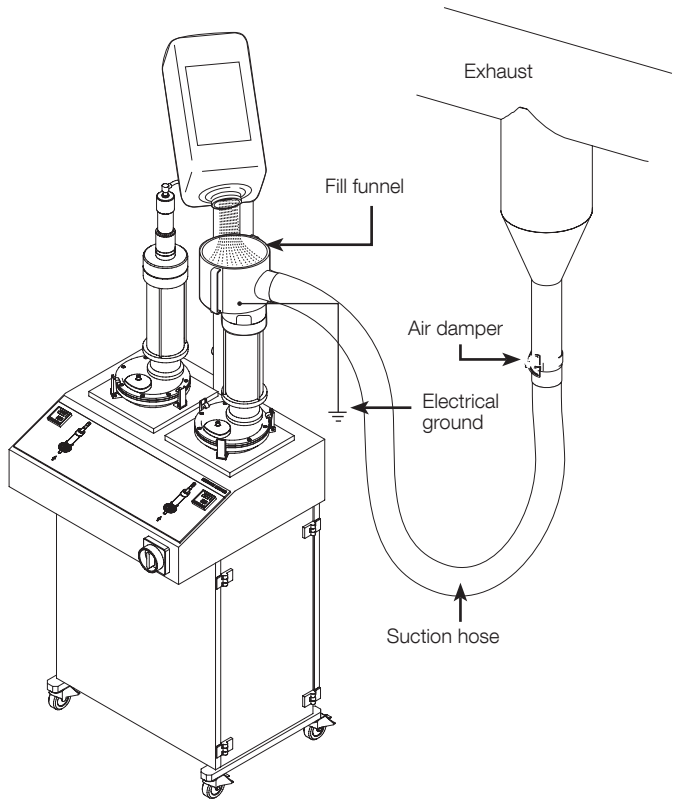
- Volumetric powder delivery is highly accurate, even during long spray runs for more reproducible coatings
- Powder feed rates are quickly achieved and stabilized saving time and powder costs.
- Excellent repeatability, regardless of powder type, or powder particle morphology.
- Mass flow controlled carrier gas for stable gas flow across a wide range of operating parameters.
- All powder feeder functions are controlled, set and monitored at the system controller, simplifying operation and spray parameter setup.
- Feeds all thermal spray powders, from very coarse particle sizes through very fine particle sizes (5 µm to 200 µm).
- Simple, robust construction requires little maintenance and provides years of trouble-free service.
- Designed for very safe operation; HVOF models are designed for high pressure operation.

3 Options and Accessories

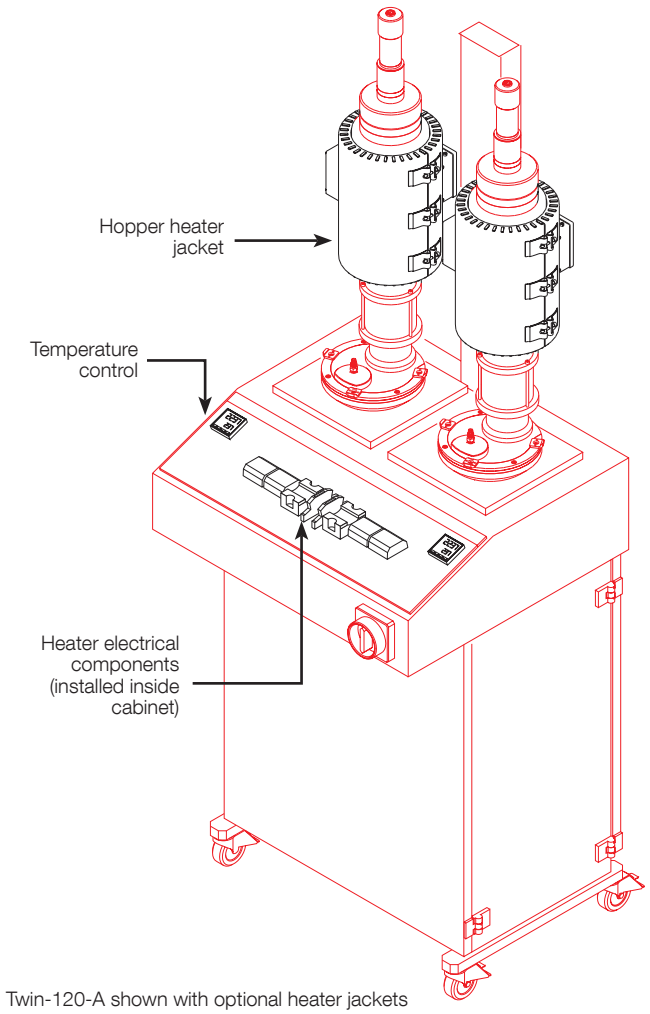
Heater Jackets: When using hygroscopic powders, hopper heating jackets are available to ensure the powder remains free from moisture during spraying.

This option consists of a heater jacket for the hopper, temperature control on powder feeder and electrical heating components. This heater jacket is only available for the 1.1 liter and 5 liter powder hoppers.

Heater Specifications		
Power	2 x 500 W (at 230 V)	
Temperature Range	40 to 80 °C	104 to 176 °F
Precision	± 3 °C	± 5.4 °F



Powder refilling funnel



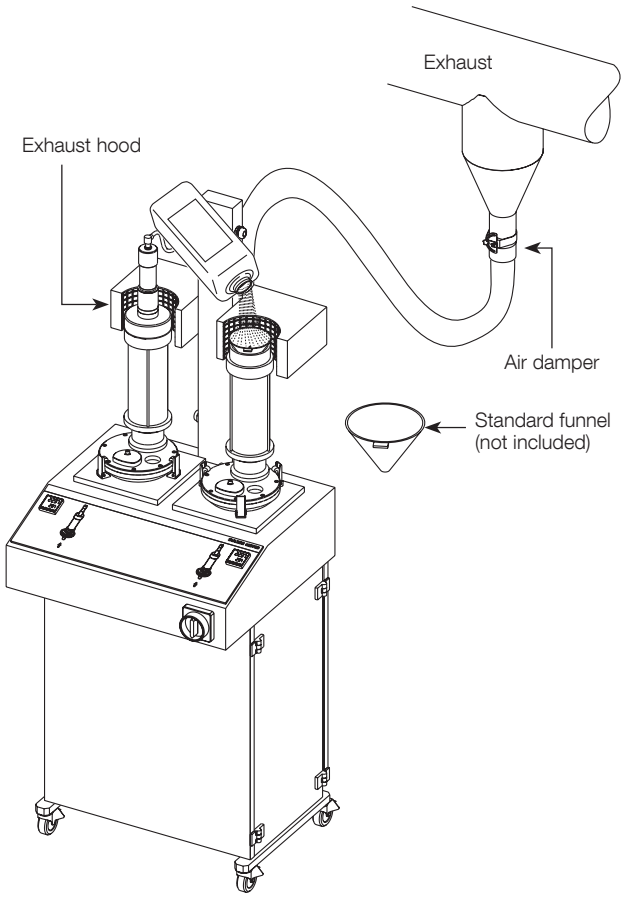
Twin-120-A shown with optional heater jackets

Powder Refilling Device: For those specialized applications that use pyrophoric or explosive powders, Oerlikon Metco offers two options for safely filling powder hoppers. These are:

Powder Refilling Funnel: Provides a connection to the system exhaust so any powder overflow is safely extracted. The kit consists of a fill funnel, hose, air valve and mounting hardware.

Powder Refilling Cap: A stationary device that encloses the open powder feeder hoppers with a hood that extracts any overflow powder.

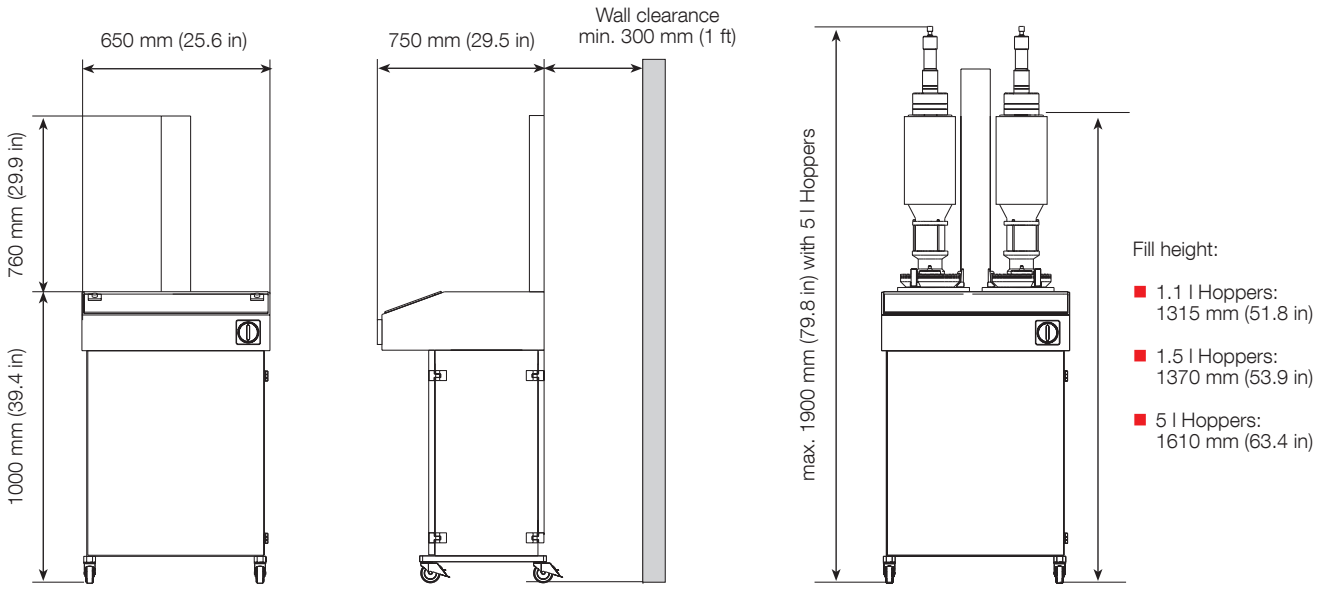
Retrofits: A Single-120 powder feeder can be factory retrofitted to a Twin-120 powder feeder.



Powder refilling cap

4 Technical Data

4.1 Dimensions



4.2 Specifications

Power Requirements			
Single/Twin-120			
Voltage		230 V	
Frequency		50 Hz	
Power Consumption (without heaters)		0.5 kW	
Twin-140			
Voltage		90 to 260 VAC	
Frequency		48 to 62 Hz	
Power Consumption (without heaters)		0.5 kW	
Stirrers			
Power		36 W (1.5 A)	
Precision		± 3%	
Nominal Control		3300 rpm (22 / 24 V × 3600 rpm)	
Metering Disks			
Power		60 W (2.5 A)	
Precision		± 0.08 %	
Nominal Time to Reach Setpoint		6 s	
Speed Control Range		0.25 to 10 rpm (2.5 to 100 % full speed)	
Powder Feed Accuracy		± 1 % max. deviation from setpoint	
Carrier Gas			
Type			
HVOF		Nitrogen	
All Other Spray Processes		Argon or Nitrogen	
Supply Pressure (min)			
APS		3 bar	43.5 psi
HVOF-LF		6 bar	87.0 psi
HVOF-GF		9 bar	130.5 psi
Supply Flow (min.)			
APS		20 NLPM	45.7 SCFH
HVOF-LF		100 NLPM	228.3 SCFH
HVOF-GF		100 NLPM	228.3 SCFH
Output Flow (min.)			
APS	(Argon and Nitrogen)	20 NLPM	45.7 SCFH
HVOF-LF	(Nitrogen)	16 NLPM	36.5 SCFH
HVOF-GF	(Argon and Nitrogen)	20 NLPM	45.7 SCFH
Housing			
Safety Standard		IP 54 (IEC 60529)	
Spray Powder			
Particle Size		≤ 200 µm	
Weight			
Without Hoppers		105 kg	231.5 lb
Operating Environment			
Temperature		+10 to +40 °C	+50 to +104 °F
Humidity		<75%, non-condensing	
System Compatibility			
Single/Twin-120-A, -H, -AH		MultiCoat	
Twin-140		UniCoatPro LF, UniCoatPro Plasma	

Information is subject to change without prior notice.

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