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metco

Product Data Sheet
Single 240 Series Gravimetric Powder Feeder

Oerlikon Metco's Single 240 series powder feeders offers the intrinsic precision of our volumetric feeders combined with the superior feed rate control of our gravimetric technology.

Consistent powder feed rate contributes directly to coating thickness repeatability. The Oerlikon Metco Single 240 utilizes cutting-edge gravimetric load-cell technology to deliver highly accurate feed rates. If desired, Single-240 series feeders can also be operated in standard volumetric powder feed mode.

Oerlikon Metco's Single-240 series powder feeders are designed for use with Oerlikon Metco UniCoatPro thermal spray systems. The operator has complete control of and accessibility to all feed parameters via the UniCoatPro Operator's Desk, which communicates directly with the Single 240. Multiple Single 240 powder feeders can be operated independently or simultaneously. Up to four Single 240 feeders can be controlled using the UniCoatPro system platform.

All of the powder hoppers designed for use with UniCoatPro systems, such as the 1.1 aluminum liter, 1.5-liter acrylic and 5-liter aluminum hoppers, can be used with Single 240 powder feeders. Aluminum hoppers can be equipped with a heater, which requires the heating jacket for the hopper and the installation of the heater control unit. Single 240 feeders can be purchased with the heater option factory installed or field-retrofitted at a later date.

Customers can choose from four models of the Single 240 powder feeder, depending on the thermal spray process(es) that will be used:

Model	APS	HVOF-LF	Heater Option
Single-240-CS	✓	✓	✓
Single-240-CS-BP	✓	✓	✓
Single-240-CS-HT-230	✓	✓	✓ (230 V)*
Single-240-CS-HT-115	✓	✓	✓ (115 V)*

APS: Atmospheric Plasma Spray
HVOF: High Velocity Oxy-Fuel Spray (Liquid-Fueled)
*Heater jacket and Alunimum hoppers purchased separately

Single 240 series feeders use standard Oerlikon Metco powder feeder components, including suction/spreader bars, stirrers and disks. The wide range of options available allow customers to configure their feeder for their specific spray application.

Single 240 Powder Feeder shown with heater option installed.

1 Principle of Operation

Single 240 series powder feeders are equipped with a vibrating wire load cell, thereby basing the feed rate on a loss of weight principle that uses volumetric powder feeding technology and gravimetric feed rate control.

Single 240 series feeders can operate in either of two modes:

- **Volumetric Mode:** Powder is conveyed on a volume per unit time basis (open loop), with excellent accuracy and repeatability
- **Gravimetric Mode:** Powder is conveyed on a weight per unit time basis (closed loop) with superior accuracy and repeatability

When in gravimetric mode, the superior powder feed rate accuracy and repeatability is achieved through the acquisition and evaluation of measurement data:

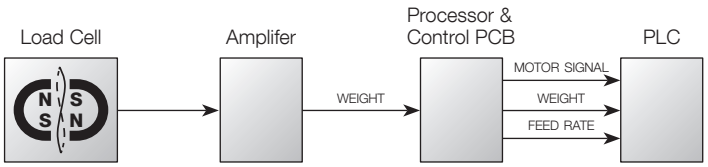
- **Load Cell:** Transmits the powder weight to the measuring signal amplifier based on the vibrating wire principle.
- **Measuring Signal Amplifier:** Amplifies the signal received from the load cell and transmits it to the Processor and Control Printed Circuit Board (PCB).
- **Signal Processor:** Performs adaptive filtering and calculates the reduction of weight per unit of time. Using an advanced adaptive control algorithm, the powder feed rate is regulated by controlling the rotational speed of the powder disk. The calculated data is also sent to the PLC.
- **Programmable Logic Controller (PLC):** Communicates with the thermal spray controller and the Processor and Control PCB.

All parameters to operate the Single 240 feeder are accessible via the operator interface of the thermal spray controller (UniCoatPro). These parameters can be stored as part of the spray recipe at the controller:

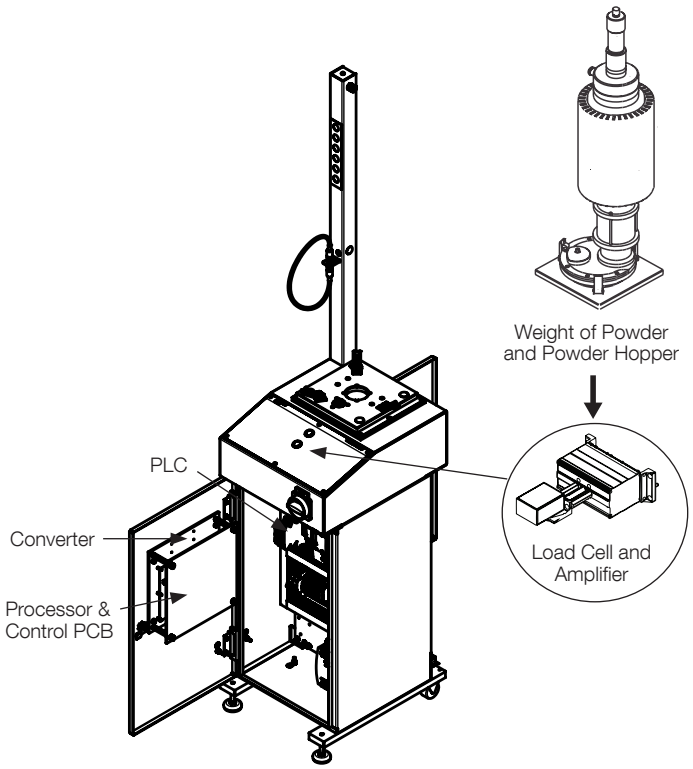
- Switching the metering disk on or off
- Setting the rotational speed of the metering disk
- Switching the stirrer on or off
- Setting the rotational speed of the stirrer
- Preselecting the carrier gas (argon or nitrogen)
- Switching the carrier gas on or off
- Setting the carrier gas flow
- Setting the powder feed rate

In addition, the spray controller monitors the feedback communications received from the powder feeder via the PLC:

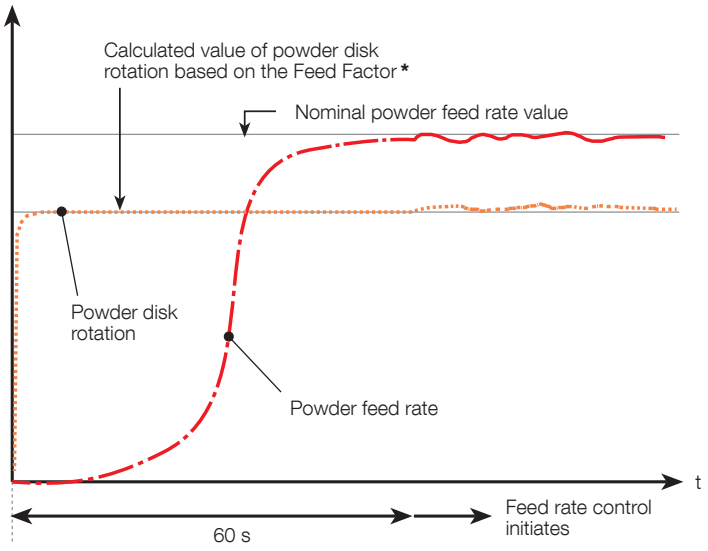
- Metering disc rotational speed
- Stirrer rotational speed
- Carrier gas flow
- Powder feed rate



Single 240 Series Powder Feeders: Powder Weight Processing



Single 240 Series Powder Feeders: Main Components



Single 240 Series Powder Feeders: Feed Rate Control Ramp-Up

* The Feed Factor is the proportional value of the feed rate versus disc speed for a given powder. Using this constant enables the feeder to quickly reach a stable feed rate.

2 Features and Benefits

- Excellent powder feed accuracy and repeatability based on gravimetric, rotating disk technology
- Accuracy is maintained throughout the spray run, even for extended spray campaigns,
- Gravimetric (feed rate control) or volumetric operation modes
- Fast feed rate stabilization time saves time and powder costs
- Feed rate is independent of the height of the powder in the hopper
- Feed rate is independent of the temperature
- Robustly insensitive to vibrations resulting from normal shop activity, air drafts and temperature changes
- While in volumetric operating mode, the gravimetric mode can monitor the feed rate using a preset tolerance
- Two-way communication with the controller maintains the powder feed recipe settings
- Monitors low powder flow and the low levels (weight) of powder in the hopper; warning the operator via the controller interface
- 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 types thermal spray powders, from very coarse through very fine particle sizes (5 µm to 200 µm)
- Highly configurable to the spray application requirements using the wide range of available optional components
- Simple, robust construction requires little maintenance and provides years of trouble-free service
- Designed for very safe operation; HVOF model is designed for high pressure operation

3 Accessories and Options

Oerlikon Metco offers a a wide variety of accessories and options for Single 240 series powder feeders to suit specific spray requirements. These include:

- Metering disks of different groove sizes and substrate materials
- Suction and spreader bars of different widths, heights and angles
- Stirrer configurations

For a complete list of optional parts and spare parts please refer to the parts lists section of the reference manual.

Powder Hoppers:

- 1.1 liter aluminum, may be equipped with heater jacket
- 1.5 liter acrylic
- 5.0 liter aluminum, may be equipped with heater jacket

Heater Option:

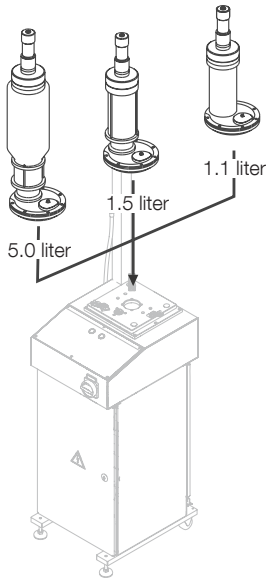
The heater option is recommended when using hygroscopic powders to prevent the powder from absorbing moister. It consists of:

- Heating jacket for the powder hopper
- Temperature controller installed on the feeder console

Heaters can only be used with aluminum hoppers and must be chosen for the size of the hopper (1.1 or 5.0 liter)

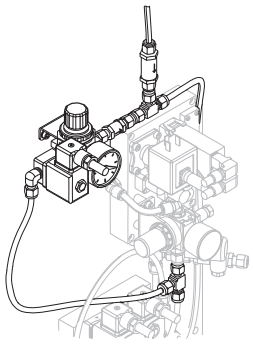
Bypass and Carrier Gas Switch Options:

Optional Bypass is used for fast filling of powder insert with carrier gas to quickly reach the operating pressure. An optional carrier gas switch easily allows to switch between carrier gas argon and nitrogen.

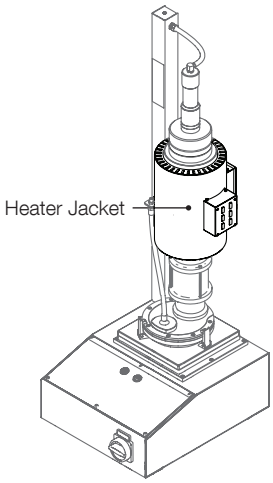


Feeder Model	Available Hoppers
Single 240	1.1 Liter APS 1.1 Liter HVOF-LF 1.5 Liter APS 1.5 Liter HVOF-LF 5.0 Liter APS 5.0 Liter HVOF-LF

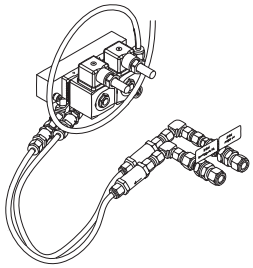
Powder Hopper Options for Single 240 Series Powder Feeders



Option Bypass



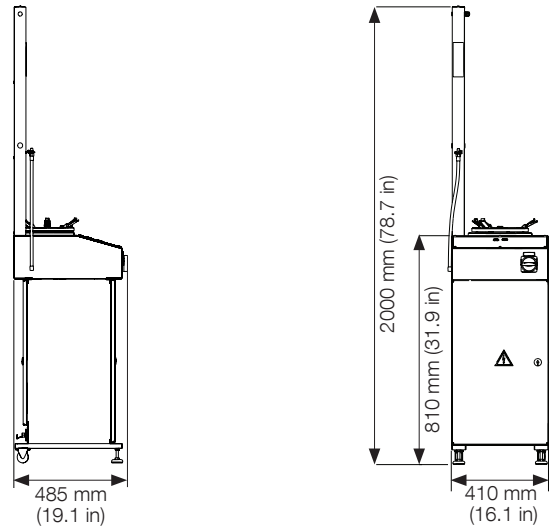
Heater Option



Option Carrier Gas Switch

4 Technical Data

4.1 Dimensions



4.2 Specifications

Power Requirements			
Voltage (without option heating)		100 to 120 VAC / 200 to 240 VAC (± 10 %)	
Voltage (with option heating)		100 to 120 VAC (± 10 %, with single-phase transformer) 200 to 240 VAC (± 10 %, no single-phase transformer required)	
Frequency		50/60 Hz	
Power Consumption	without heaters	0.3 kW	
	with heaters	0.8 kW	
Fusing		max 16 A (CE)	max 20 A (UL)
Load Cell			
Type		Vibrating Wire	
Maximum Load including hopper		60 kg	132.3 lb
Carrier Gas			
Type		Argon or Nitrogen	
Connection	APS	3/8 in Swagelok	
Supply Pressure (max)	APS / HVOF	4 bar	58 psi
Supply Flow Min		100 NLPM	228.3 SCFH
Output Flow Max		16 NLPM	36.5 SCFH
Powder Feeding [a]			
Feed Rate		20 to 150 g/min	2.6 to 19.8 lb/h
Feed Rate Deviation (max)		± 2 g/min	± 0.26 lb/h
Weight			
Without Hoppers		85 kg	187 lb
Operating Environment			
Temperature		+10 to +40 °C	+50 to +104 °F
Humidity		<75%, non-condensing	
Compatibility			
System Platform [b, d]		UniCoatPro	
Spray Gun [c]		All Oerlikon Metco APS and HVOF-LF Spray Guns	

a. With correct hopper, feeder hardware and parameters
b. Using the Single 240 powder feeder model that matches the system platform spray process(es)
c. Thermal spray guns using powder as the feedstock material
d. Handling Interface UniCoatPro Profibus (SAP ID 4094265) mandatory for integration into UCPP

Information is subject to change without prior notice.

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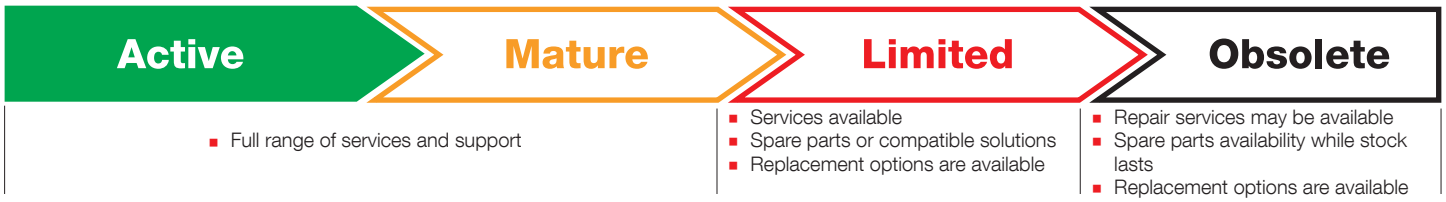
5 Life-Cycle Status and Support Options

Our four-phase life cycle model keeps you informed about available services and support options throughout the life span of your equipment



5.1 Single 240

- Current Life Cycle Status: Active
- Inception Date: October 2021

During the Active phase, you have our full sup-port and range of services. Using our life-cycle services will keep your equipment in the best operating condition

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5.2. Keeping You Informed

We will notify you early and transparently about your options as your equipment enters into the next life-cycle phase, providing your equipment is registered with Oerlikon Metco

5.2.1. Life-Cycle Notification

Provides early information about the upcoming life-cycle phase change and how your equipment can be best supported.

5.2.2.Life-Cycle Status Statement

Provides information about the current life-cycle status and all available options and services to maintain your equipment in best condition.

5.3. The Oerlikon Metco Difference

Benefit from our selection of comprehensive ser-vices designed to ensure:

- Consistent spray quality, with little to no parame-ter shift
- Compliance with your ISO quality requirements
- Maximized equipment uptime
- Extended overall equipment lifetime
- Fast availability of spare parts

5.4. Your Best Value for Peak Performance

Choose from our broad portfolio of services to keep your equipment in top condition now and in the future

- Spare parts
- Preventive maintenance
- Repair Service
- Customer training

Take advantage of an Oerlikon Metco Service Agreement tailored to your specific needs!

For more information on your service and support options, please contact your Oerlikon Metco Account Manager.

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