

## Product Data Sheet

### Metco 3MBTD Plasma Spray Extension Gun

**A robust and versatile plasma spray extension gun that is widely used throughout the thermal spray industry.**

The Metco™ 3MBTD is a heavy duty, air-cooled plasma spray extension gun that is widely utilized throughout the thermal spray industry, and has been selected as the equipment of choice for various coating application specifications. The Metco 3MBTD is an improved version of the Metco 3MBT extension gun. It utilizes hardware that has been designed for versatile and safe operation. When changing from one spray material or plasma gas to another, the changeover is fast—nozzles and electrodes are plug-in/pull-out assemblies that require no alignment or adjustments.

#### 1 General Description

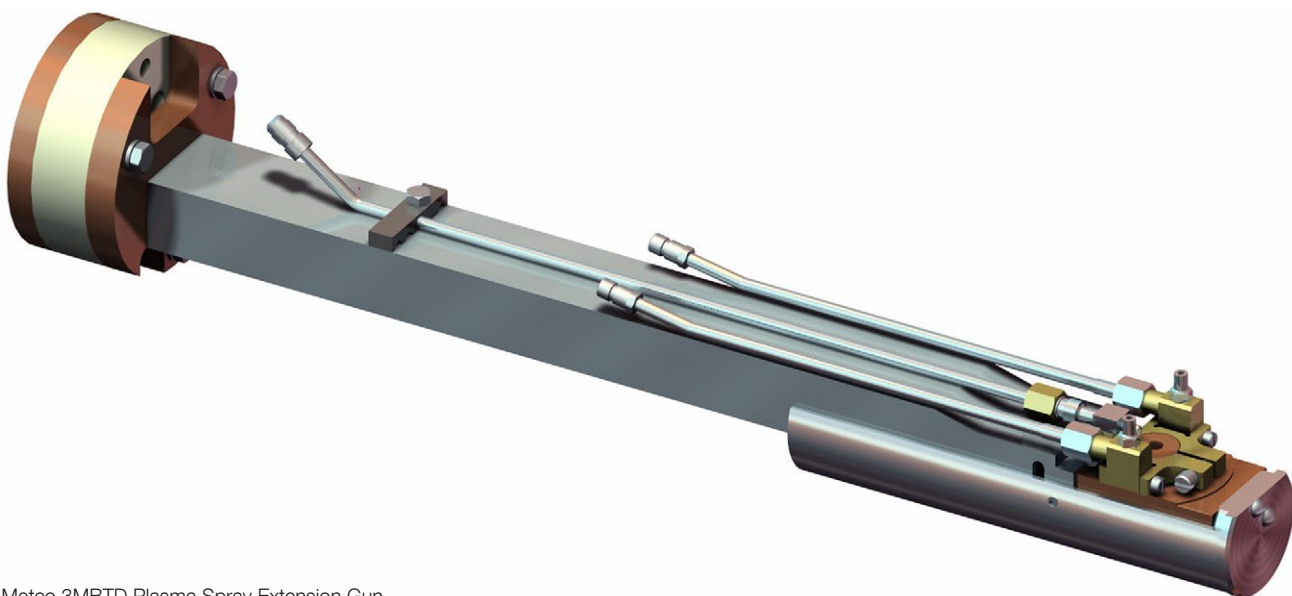
The Metco 3MBTD is based on the design of the reliable Metco 3MB series guns—proven performers throughout the thermal spray coating industry.

The gun is offered in two versions:

Gun Model	Usable Length	
3MBTD-24	508 mm	20 in
3MBTD-34	775 mm	30.5 in

The Metco 3MBTD uses many of the same parts as 3MB series guns, including gun components such as nozzles, electrodes, powder ports and O-rings. When coating internal surfaces as small as 100 mm (4 in) in diameter, 3MB series parameters can be used as a starting point for the Metco 3MBTD plasma spray extension gun.

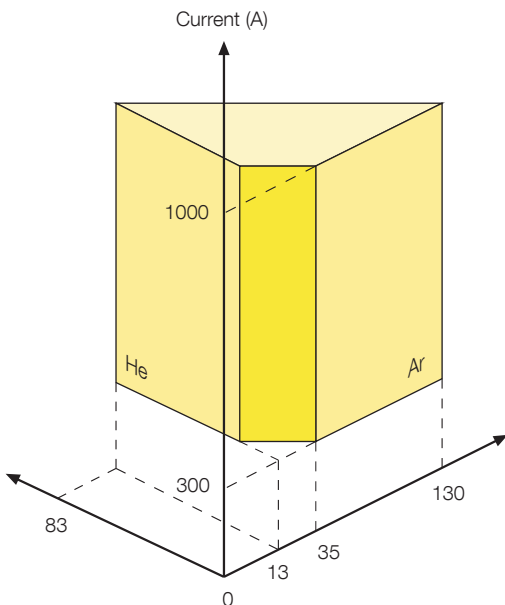
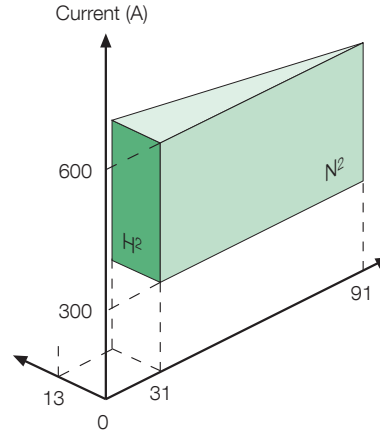
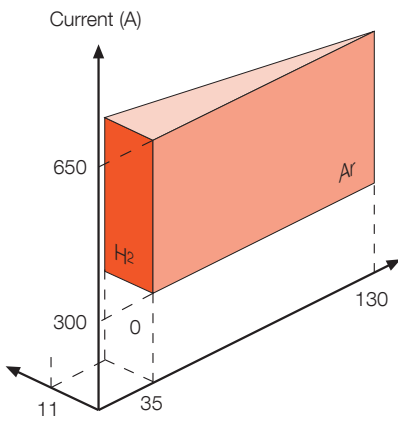
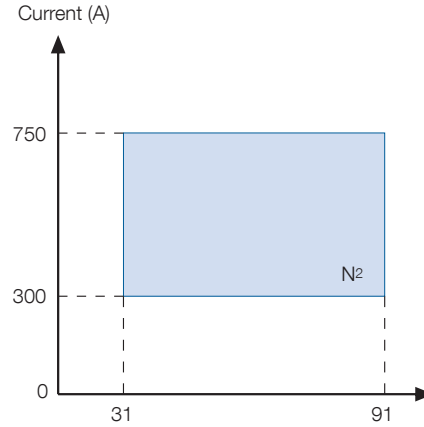
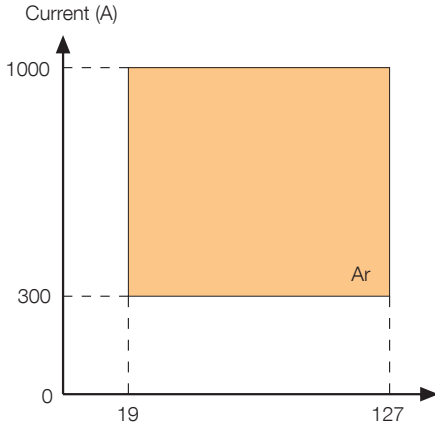
The gun's water-cooled power cables cannot be cross-connected due to right-hand and left-hand thread design. Heavy plastic insulators are provided to protect the operator from electrical shock.



Metco 3MBTD Plasma Spray Extension Gun

## 1.1 Process Gas Combinations

Spray parameters using the following gas combinations can be utilized with the Metco 3MBTD spray gun:



Process Gas	Current (A)	NLPM	SCFH
<b>Argon Operation</b>			
Ar	300 to 1000	19 to 127	43 to 290
<b>Nitrogen Operation</b>			
N <sub>2</sub>	300 to 750	31 to 91	71 to 208
<b>Argon/Hydrogen Operation</b>			
Ar	300 to 650	35 to 130	80 to 297
H <sub>2</sub>		0 to 11	0 to 25
<b>Nitrogen/Hydrogen Operation</b>			
N <sub>2</sub>	300 to 600	31 to 91	71 to 208
H <sub>2</sub>		0 to 11	0 to 25
<b>Argon/Helium Operation</b>			
Ar	300 to 1000	13 to 130	30 to 297
He		0 to 83	0 to 190
Ar + He		≥ 35	≥ 80

## 2 Benefits

### Effective:

- High power (40 kW @ 100% duty cycle)
- Versatile coating choices using a full compliment of coating materials for practically any application
- Applies high quality TBC ceramics and associated bond coats
- Coats internal geometries as small as 100 mm (4 in)
- Coats to depths of 775 mm (30.5 in) using the Metco 3MBTD-34 model gun
- Integrated air jets keep coated surfaces clean
- Gun power cables are threaded differently to prevent improper cable connection
- Uses lighter weight 3M393 hoses and cables, but can also be adapted to use 8MH hoses and cables
- Spray angle of 90°
- Supplied with sturdy robot gun mounting bracket

### Efficient:

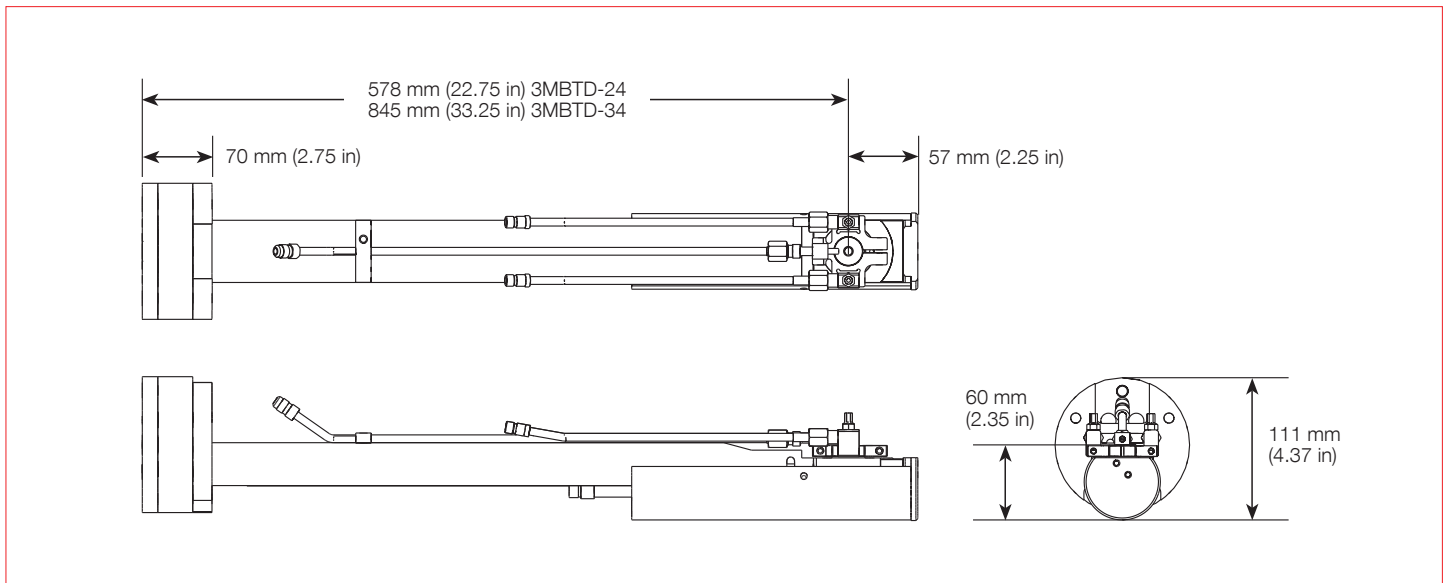
- Uses many of the same spare parts as 3MB series guns, reducing the number of spare parts to stock
- Use standard Metco 3MB series plasma spray parameters for many applications, reducing parameter development time
- Hose and cable pigtails, 1.2 m (4 ft) long, allow for quick gun changes
- Long-life gas insulator, fabricated from heat-resistant plastic, ensures durability
- Long-life gas distribution ring improves flow stability using nitrogen parameters

### Economical:

- Inexpensive operation using low-cost nitrogen as the plasma spray gas
- Low operating cost per hour

## 3 Technical Data

### 3.1 Dimensions



## 3.2 Specifications

### Power Rating

Power (measured at gun)	max.	40 kW
-------------------------	------	-------

<b>Amperage</b>	min. – max.	300 to 1000 A
-----------------	-------------	---------------

Argon operation		300 to 1000 A
-----------------	--	---------------

Nitrogen operation		300 to 750 A
--------------------	--	--------------

Argon / Nitrogen operation		300 to 600 A
----------------------------	--	--------------

Argon / Hydrogen operation		300 to 650 A
----------------------------	--	--------------

Argon / Helium operation		300 to 1000 A
--------------------------	--	---------------

### Gas Quality

#### Argon – Ar

Minimum requirements		99.95%
----------------------	--	--------

European standard		99.998%
-------------------	--	---------

#### Helium – He

Minimum requirements		99.995%
----------------------	--	---------

European standard		99.998%
-------------------	--	---------

#### Nitrogen – N<sub>2</sub>

Minimum requirements		99.7%
----------------------	--	-------

European standard		99.996%
-------------------	--	---------

### Cooling Air Requirements

Pressure	5.2 bar	75 psi
----------	---------	--------

Flow	394 NLPM	900 SCFH
------	----------	----------

### Cooling Water Requirements

Inlet temperature	max.	18 °C	65 °F
-------------------	------	-------	-------

Inlet pressure		9.7 bar	140 psi
----------------	--	---------	---------

Flow	min.	16 l/min	4.2 gal/min
------	------	----------	-------------

Conductivity	max.	10 µS
--------------	------	-------

### Workpiece Geometry

Diameter or width	min.	102 mm	4 in
-------------------	------	--------	------

Depth or reach <sup>a</sup>	max.	1010 mm	39.7 in
-----------------------------	------	---------	---------

Spray distance	min.	64 mm	2.5 in
----------------	------	-------	--------

### Weight

Approximate <sup>b</sup>	4.7 kg	10.3 lb
--------------------------	--------	---------

### Compatibility

Controller	9MC, 9MCE, MultiCoat™
------------	-----------------------

Powder feeder	5MPE, 9MP series, Twin 120-A, Twin 220-A, Twin 150
---------------	--

Power supply	10MR, PT-1120, PT-1320, PT3X-1000, PT3X-500/200
--------------	---

<sup>a</sup> Can be extended by manipulator arm

<sup>b</sup> With mounting bracket / without hoses and cables