

JP-5000

HVOF Gun

Introduction

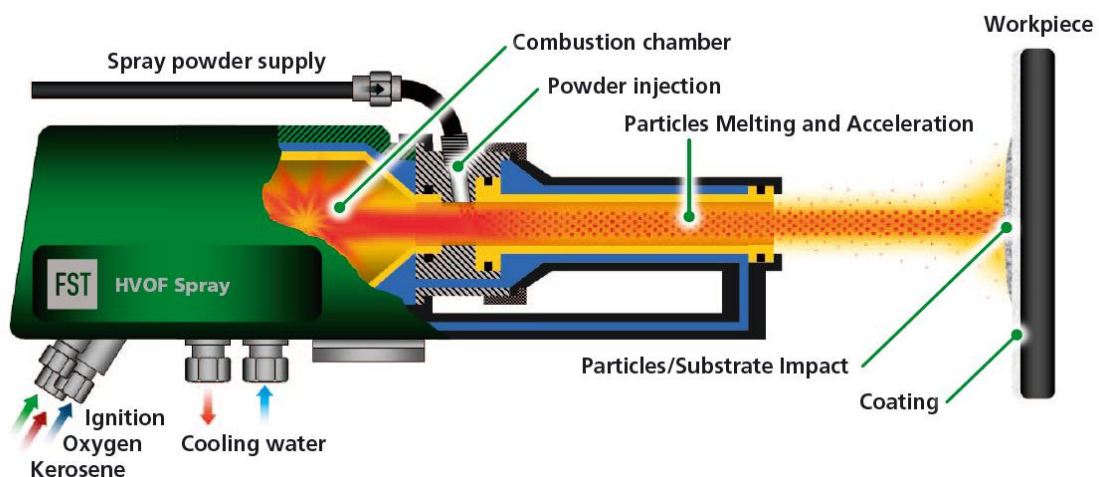
The JP-5000 HVOF gun is designed for the liquid-fuel HVOF spray process and can be considered as the benchmark for HVOF guns. Robust, long-lasting components are used throughout, ensuring long spray runs and low maintenance requirements.

The JP-5000 liquid-fuel HVOF gun is a proven design using economical kerosene fuel to generate high quality, dense, wear resistance and/or corrosion resistance coatings. Coatings can be applied very thick and exhibit favorable compressive stresses that increase bond strength and coating performance. The JP-5000 design is simple, rugged, featuring durable, long service life components that can withstand the harshest industrial spray environments, reliably and repeatedly.

The JP-5000 is designed for machine mounting and may be fixed on robots, linear traverse units and other manipulators.



The JP-5000 is designed for liquid-fuel (kerosene) and oxygen operation. Fuel and oxygen are fed into the gun, atomized by the coaxial stabilizer and ignited in the combustion chamber, resulting in a supersonic flame. Spray powder from the powder feeder is fed radially into the supersonic flame through two powder ports positioned directly after the combustion chamber. The spray stream is accelerated through a converging / diverging nozzle to several times the speed of sound. The spray particles are heated to a molten or semi-molten state and propelled at high velocity, impacting the coating surface in a plastic state.

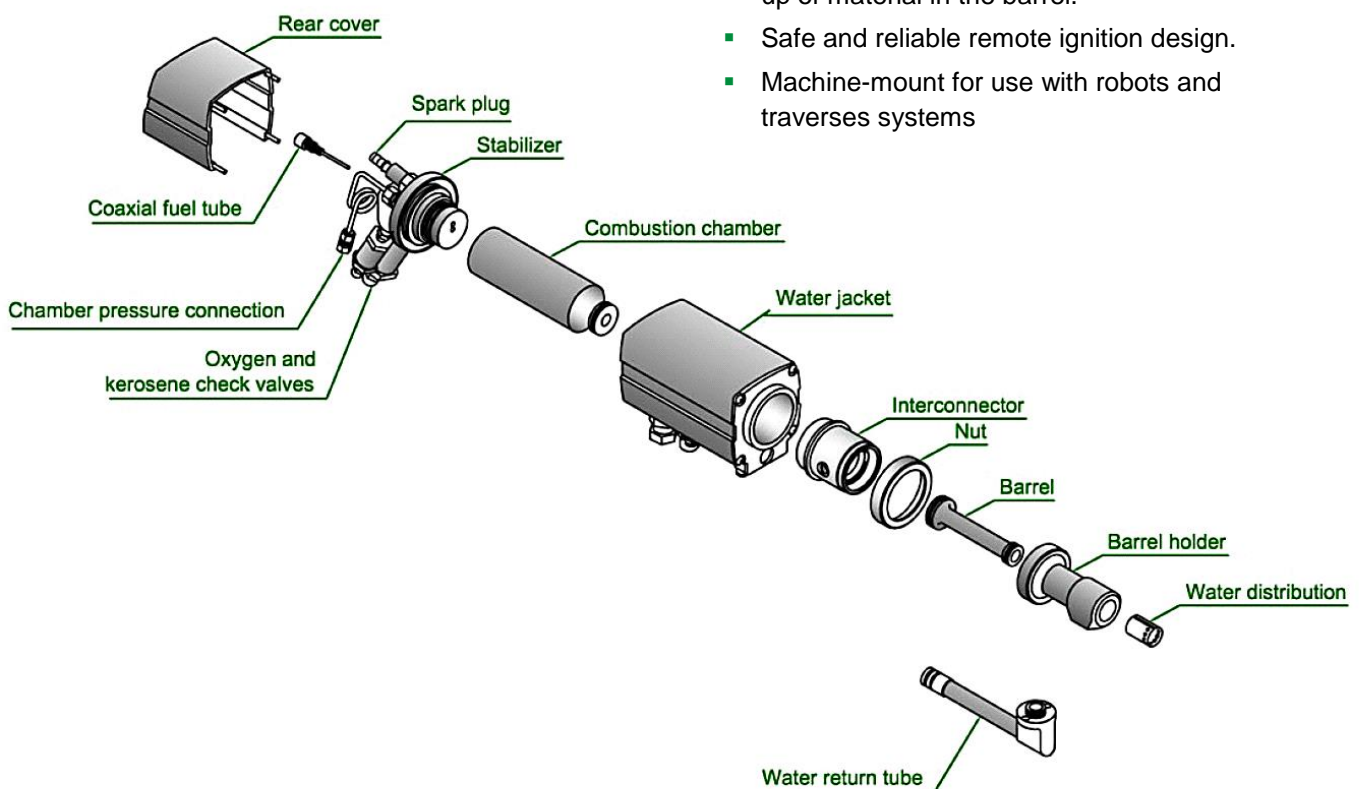


Several barrel lengths (4, 6 and 8 in) are available to optimize the dwell time of the spray particles in the jet stream, while keeping the dwell time of the particle to a minimum.

Liquid fuel HVOF offers certain advantages over gas fuel processes, such as the easy availability and handling of fuel, and higher energy density associated with these fuels. The increased quantity of heat available results in denser coatings with higher bond strengths.

Features & benefits

- Coating exhibit excellent wear resistance.
- Superior micro hardness compared to other thermal spray technologies
- Very high bond strengths, typically exceeding 80 MPa (10000 psi)
- High density coatings with minimal porosity
- Low impurities and oxides levels
- Compressive stresses in the coating.
- Thick coatings, up to or exceeding 6 mm (0.25 inch) are possible
- Smooth “as-sprayed” surface finishes
- Low-cost process using liquid fuel (kerosene)
- Dual port, radially fed powder injection
- Simple design resulting in low and easy maintenance.
- Different barrel lengths available for specific spray materials/coating results
- Highly polished barrel ID’s minimize build-up of material in the barrel.
- Safe and reliable remote ignition design.
- Machine-mount for use with robots and traverses systems



FST offers the following JP-5000 HVOF Controllers:

- **MP-50 Fully automatic closed-loop multi-process thermal spray system. Available versions:**
 - ◆ MP-50 Professional
 - ◆ MP-50 Advanced
- **HV-50 Fully automatic closed-loop single process HVOF system. Available versions:**
 - ◆ HV-50 Basic
 - ◆ HV-50 Professional
 - ◆ HV-50 Advanced
- **HV-25 Semi-automatic single process HVOF system. Available Versions:**
 - ◆ HV-25
 - ◆ HV-25i

Specifications

Description	Value 1	Value 2
General		
Gas Velocity	550 – 750 m / s	1800 – 2400 ft / sec
Total Power	290 kW	1,000,000 Btu / hr
Cooling Capacity	90 kW	320,000 Btu / hr
Power in Flame	200 kW	680,000 Btu / hr
Combustion Chamber Pressure	6-8 bar	85 – 120 psi
Exhaust Flow (Min.)	15,000 m ³ / hr	8750 ft ³ / min
Oxygen	17– 20 bar 1100 nlpm	245 – 290 psi 2300 scfh
Nitrogen (Carrier Gas)	8 – 10 bar 20 nlpm	115 – 145 psi 42 scfh
Kerosene	17-20 bar 35 l / hr	245 – 290 psi 9.2 gal / hr
Compressed Air	6 bar	90 psi
Cooling Water		
Pressure	13 – 15 bar	185 – 220 psi
Flow	40 l / min	10 gal / min
Inlet Temp. (Max.)	25 °C	75 °F
Quality	< 40 µS / cm	
Torch Weight (approx.)	5 kg	11 lb

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