

## **SPECIFICATION**

### **MARK 74 POWDER FLAME SPRAY SYSTEM**

#### **Item 1 Metallisation Mark 74 Powder Spray Pistol**

The Metallisation Mark 74 Powder Spray Pistol is designed to produce coatings from a large range of powders. This pistol can be both hand held and machine mounted. Powder delivery can be either gravity fed from a hopper or by a separate powder feed unit.

The pistol is designed for continuous use by the contract or production user who requires a pistol that is easy to maintain and will give long periods of trouble-free operation with minimum spares requirements.

A notable feature of this pistol is its rugged construction which is designed to meet all the requirements of the practical metal sprayer.

Finger tip operation of the trigger valve below the canister ensures instantaneous stop/start control of the powder feed.

The Mark 74 nozzle system provides an excellent flame stability and easy lighting. This design also ensures true axial alignment of the component parts and gives added safety features.

The spreader air cap provides a narrow spray pattern and densifies the coating. This is particularly necessary when spraying ceramics.

The main valve supplying fuel gas and oxygen to the gas head is of the multi diaphragm type, in which the sealing diaphragms are operated collectively by a pre-set cam. Internal leakage between fuel gas and oxygen ports is impossible.

The Mark 74 Pistol is recommended for numerous coating applications including, thermal barrier, wear resistance and as a dielectric. This pistol utilises an oxygen and acetylene fueled gas mixture to give a pistol that is capable of spraying ceramic coatings as well as all the full range of metal powders.

**Weight** - complete, excluding supply hoses 1.85Kg (4lb)

**Dimensions**

Note these dimensions are for a pistol with gun mount; these being with the largest overall dimensions.

Length overall : 21.0 cm (8¼")  
Height overall : 33.5 cm (13¼")  
Width overall : 12.5 cm (5")

**Item 2 Hoses**

A set of colour coded hoses are provided for gas services and compressed air supply as follows:-

Acetylene Hose - Red - 5 metres long  
Oxygen Hose - Blue - 5 metres long

for connection of services between short pistol hoses and flashback arrestors (or flowmeters if fitted)

Compressed Air Hose - Black - 5 metres long 3/8" BSP  
Vibrator Air Hose - Black - 5 metres long 1/4" BSP

**Item 3 Auto Drain Filter and Air Pressure Regulator**

Auto Drain Duplex Air Filter complete with mounting brackets fitted with connector block having two additional air outlets (supplied plugged). The Air Pressure Regulator is supplied with lockable pressure adjusting knob and a pressure gauge indicating regulated air pressure.

**Items 4 & 5 Multi-Stage Pressure Regulators (fuel gas and oxygen)**

Designed to withstand the rigours of hard daily use, the new 'TS' Series of 2-Stage Regulators are manufactured to a high standard of craftsmanship. Precision engineered, and using all-brass stampings, the regulators incorporate many features which improve reliability and extend service life. Along with the many in-built safety devices, these features afford maximum protection in the event of individual or operational abuse.

The 'TS' Series complies fully with the detailed specifications incorporated in the new British (BS EN 585) and International (ISO 2503) Standards.

### **Items 6 & 7      Flashback Arrestors (fuel gas and oxygen)**

Flame Arresting Safety Device Type 70 is designed to protect regulator/manifold gas supply from severe forms of flashback. The design features:-

- 1)      A sintered metal frame arrestor to quench the flame front resulting from a flashback
- 2)      A pressure relief valve to safely vent-off excess pressure and fumes
- 3)      A pressure sensitive cut-off valve, incorporating a tamper proof reset mechanism, to prevent the re-ignition of unburnt gases after a flashback.

### **RECOMMENDED ADDITIONAL PARTS**

#### **Item 8              Flowmeters**

The Metallisation Flowmeter when used in conjunction with the Metallisation Powder Spray Pistols and Metallisation Pressure Regulators ensure that the correct mixture of fuel gas and oxygen is fed to the pistol in the correct quantities. Hence, the optimum flame for any particular application can be produced quickly, easily and with confidence.

Each flowmeter comprises two working parts; a tapered borosilicate glass tube with ceramic scale and a dynamically balanced float providing stability and accuracy.

The instruments are mounted in and protected by a sturdy steel case with a protective perspex cover which allows the unit to be wall mounted. Left hand threads are standard on the fuel gas fittings so that gas and oxygen hoses cannot be incorrectly fitted (see mounting instructions). The large floats, scale divisions and indicators enable the unit to be used at a distance and without recourse to mental arithmetic.

The Flowmeters are also valuable as fault finding aids because, where flows differ greatly from those given for a particular nozzle arrangement, a fault in this area is indicated. The relevant parts should then be examined.

#### **Item 9              Flowmeter Hoses**

One set of 3 metre long colour coded hoses for connection of flowmeters for multi-stage pressure regulators.

**Item 10**      **Pneumatic Vibrator**

One Pneumatic Vibrator to assist feed of non-free flowing powders. Supplied with a bolt to fit into the top of the pistol. An on/off valve is included for air supply. A black hose 5 metres long is supplied with Item 2 for attachment to air filter connector block part (Item 3) complete with mini-air pressure regulator.

**Item 11**      **Powder Feed Attachment**

When powder feed is required remote from the pistol, the hopper can be replaced by this attachment which allows the connection of a powder feed hose (9550) to a powder feed unit (PSPF)

**Item 12**      **Powder Feeder PSPF**

General Specification

The PSPF Powder Feeder is a precision powder metering system, designed and manufactured to enhance the performance of all thermal spray systems, including high velocity systems. Whatever the application, be it reclamation or high throughput production, the PSPF's versatility, reliability and accuracy have made it the most practical powder feeder available.

The outstanding feed characteristics of the PSPF are due to the use of an auger style feed screw to precisely meter and convey powder from within the canister. By virtue of its design, a feed screw provides the most positive means of delivering powder in an accurate and consistent manner. Erratic flow caused by powder lumping, bridging or clogging and other problems such as pulsation are easily overcome by the positive feeding nature of the feed screw. Actual feed rate is determined by the feed screw RPM which is variable by means of a digital logic controller. This controller provides closed loop control of motor speed (relative to set point) thereby maintaining extremely accurate and consistent feed rates, which are easily reproduced.

To assist in maintaining continuity to the point of powder injection, an electromagnetic vibratory feeder drive and two separate mixing chambers are incorporated into the system. Unlike most vibrators, which are only tamping devices, the vibratory feeder drive imparts a unique vibratory motion to the canister which creates a gentle wave action within the canister itself. This causes the powder to boil from bottom to top, preventing particle segregation due to varying sizes and densities typical of today's spray powders.

Upon exiting the canister, the powder is metered into a carburettor where a regulated stream of carrier gas is introduced. The turbulence caused by the tangential entry of gas ensures that a thorough distribution of particles is maintained. Immediately prior to exiting the feeder, the powder and gas enter a secondary, patented mixing chamber called a CYCLONE MIXER. The internal geometry of this device causes cyclonic mixing of the powder and gas, again assuring a thorough distribution of particles in the gas stream. Secondly, it serves as a precautionary buffer in the event of any powder irregularities. Upon leaving the cyclone mixer, the powder is evenly dispersed within the gas stream, feeding with an unequalled accuracy and flowing consistently without interruption. With powder delivery conditions optimised, maximum efficiency is realised at the point of injection. The benefit is recognised in the increased ability to apply uniform, close tolerance coatings, consistently and productively.

Physical and Operational Characteristics

Canister Capacity	4050 c.c.
Max. Operating Pressure	7 Bar
Carrier Gas Flow Range	0.25-55 l/min
Electrical Characteristics	115/230vac 50/60 hz (switchable)
Max. Feed Screw Speed	500 rpm
Feed Rate Change	0.1-45 Kg/Hr
Feed Rate Precision	(+/-) 0.5 gm/min (typical)

Height	1295mm
Width	457mm
Depth	457mm
Weight	90 Kgs