



Metallisation

Thermal spray equipment and consumables

EXCELLENCE AND SUPPORT SINCE 1922



Equipment Specification

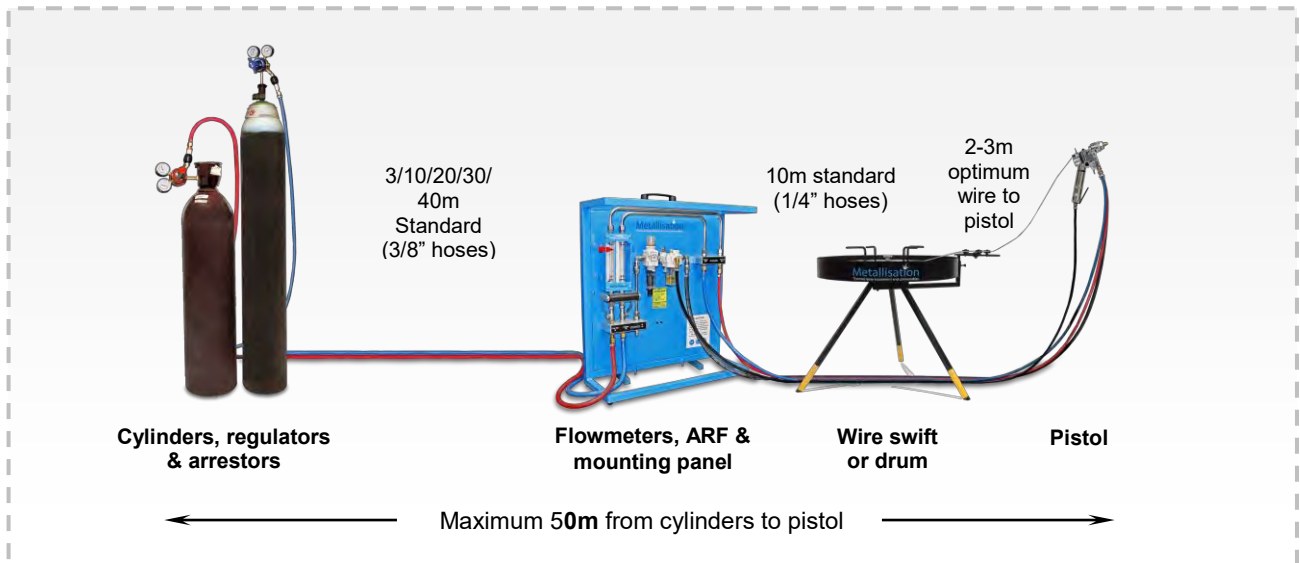
MK61-FS Flame Spray System

TYPICAL SYSTEM CONFIGURATIONS

Pictured below is a range of typical system configurations. Variations of these configurations may be possible. Contact Metallisation to discuss your specific application requirements.

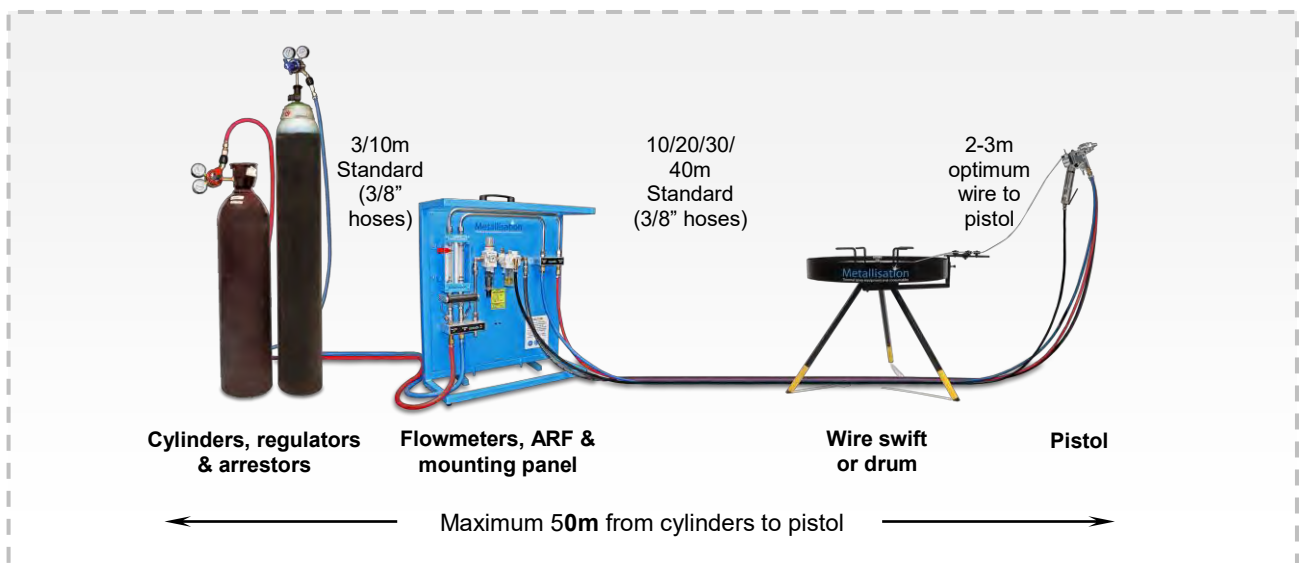
STANDARD CONFIGURATION

Most commonly used for spraying materials from coils. This is the preferred configuration with long supplies packs as the flowmeter board is closely accessible to the operator.



'REVERSED' EXTENDED SUPPLIES CONFIGURATION

For some applications, it may be required to have long supplies between the flowmeter board and the pistol. In this case, 3/8" hoses will be supplied for the entire length and the 'L' version of the pistol is also required.



NB: Cylinders not supplied

INTRODUCTION

The following specification covers the entire standard range of MK61 FS flamespray system. For the specific offer, please refer to the attached quotation and cross reference the part numbers for each piece of equipment.

The Metallisation MK61-FS is an oxygen-acetylene fuelled flamespray system, primarily for spraying engineering coatings of steels, bronzes, copper and importantly, Molybdenum. The lightweight, robust pistol offers the possibility to reclaim damaged parts for small to medium sized applications. Molybdenum can also be sprayed with the MK61-FS as a soft bond coat through to a very hard, wear resistant coating. The MK61-FS system can be used for anti-corrosion coatings where propane is not readily available. The 'FS' stands for Free-Standing as the new control board can be free standing or wall mounted to suit all site or in-house applications.

Extended supplies package options are being increasingly used to maximise efficiency when working on large job sites such as refineries, petro-chemical sites and offshore structures. The extended supplies packages, up to 50m from cylinders to pistol, allows the cylinders to be remotely located whilst the operator moves around the job with just the pistol and occasionally moving the control panel. The length of supplies is limited by the pressure of the acetylene. Longer supplies are possible with the propane fuelled MK73-FS as well as faster spray rates for corrosion coatings.

New in 2014 is a more 'site friendly' control panel. It is more robust and offers further protection to the flowmeter and ARF unit. It can be wall mounted or will free-stand on the floor. The flow of hoses is neater than the previous unit.

Safety: The equipment quoted will produce levels of noise and dust that will require safety measures to be taken by those using the equipment. It will use pressurised air and will also use flammable gases. Careful consideration should also be given to the positioning of this equipment. It is the responsibility of the user to ensure that all appropriate measures are taken to ensure safe operation in accordance with local requirements. Metallisation will be pleased to advise as appropriate.

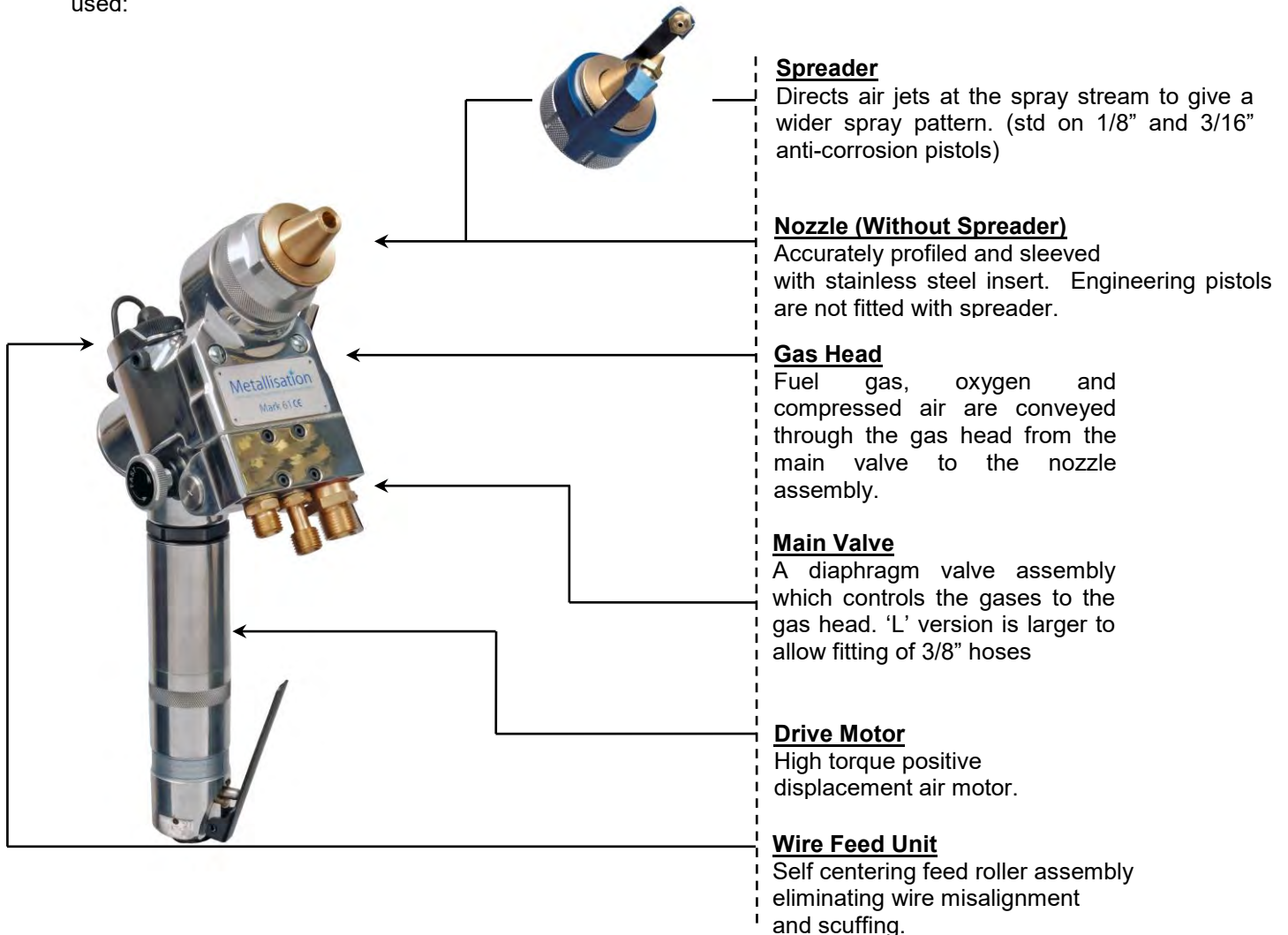
BENEFITS

- ✦ Stop/start version allows operator to stop spraying and leave the flame lit (e.g., whilst inspecting or moving the work piece).
- ✦ Wire sizes 1.5mm to 4.76mm (3/16") to suit many application and coating requirements.
- ✦ Suitable for Engineering wires, steels, copper and bronzes plus anti-corrosion materials.
- ✦ Spreader and non-spreader versions to allow detail work or larger areas to be sprayed efficiently.
- ✦ New, free standing or wall mounted control panel with Safety shut-off valve.
- ✦ Optional panel mounted oxygen regulator for long supplies setups.
- ✦ Variable wire speed control.
- ✦ Two stage air cap gives optimal setting for lighting and spraying.
- ✦ Rugged construction combined with light-weight and balance for ease of handling.
- ✦ Variety of hose lengths to suit each application.
- ✦ Flow meters for optimal setting of parameters and fault finding.
- ✦ Flow meters include large pointers for ease of checking from a distance.
- ✦ Air Regulator and Filter (A.R.F.) unit supplies motor air, nozzle air.
- ✦ Optional deflected extensions for access to difficult to spray areas (anti-corrosion wires only).
- ✦ Variety of wire dispense methods and packaging available.

MK61 PISTOL

Part No.	Description
GAS61-1.5MM	MK61 flamespray pistol - 1.5mm
GAS61-1.6MM	MK61 flamespray pistol - 1.6mm
GAS61-2MM	MK61 flamespray pistol – 2.0mm
GAS61-3MM	MK61 flamespray pistol – 3.0mm
GAS61-1/8	MK61 flamespray pistol – 1/8” – 1 motor (anti-corrosion)
GAS61-1/8-E	MK61 flamespray pistol – 1/8” – 1 motor (engineering)
GAS61-1/8(2)	MK61 flamespray pistol – 1/8” – 2 motor (engineering/Moly)
GAS61-3/16	MK61 flamespray pistol – 3/16” – 1 motor (anti-corrosion)
GAS61L-1/8	MK61 Pistol 1/8" wires for 3/8" hose supplies
GAS61L-3/16	MK61 Pistol 3/16" wires for 3/8" hose supplies
GAS61-1/4-R	MK61 flamespray pistol 1/4” Rokide rods
GAS61-3/16-R	MK61 flamespray pistol – 3/16” Rokide rods

Pistols vary dependant on the wire size that is to be sprayed. The Pistol shown is for a standard 3/16” System. The table above this illustration gives the variant pistol part numbers for the relevant wire size that is used:



TECHNICAL OVERVIEW

- ✦ Primarily for spraying engineering coatings (steel, copper and molybdenum)
- ✦ Flame produced by burning acetylene and oxygen gases
- ✦ The anti-corrosion variant has the stop/start nozzle setup. The engineering variant has the continuous nozzle setup that is better suited to spraying engineering wires.
- ✦ A 2-motor variant of 1/8" pistol is offered to enable optimum bond and hard coatings of Molybdenum to be applied.
- ✦ Wire drive via high torque, positive displacement air motor that also doubles as the handle
- ✦ The 'L' variant of pistol is used only when 3/8" hoses are needed to be supplied to the pistol, e.g. when the control board is >10m from the operator
- ✦ The '-R' variant of the pistols are used for spraying Rokide ceramic rods in the sizes shown.

TECHNICAL DATA

Description	Characteristics
Weight – at a held height of 1.2 M	3.18 Kgs – inc hoses
Width	95mm
Length	257mm
Height	286mm
Compressed air usage	50m ³ /hr @ 5.5 bar (minimum) 6.5 bar (max motor torque)
Oxygen usage	1.19-2.56 m ³ /hr @ 1.5-2.2 bar
Acetylene usage	0.57-1.14 m ³ /hr @ 1.03 bar

The gas and oxygen pressure and consumption figures shown cover the full range of possible nozzle assemblies which could be used, e.g. 1.6mm lowest, 3/16" highest consumption.

TYPICAL PERFORMANCE FIGURES FOR THE MK61 PISTOL

Material	Wire Diameter	Throughput kg/hr	Coverage m ² /kg/100μ
Metallisation Wire 99E Molybdenum	1/8"	0.7 (Bond) 2.5 (Hard Coat)	1.02
Metallisation Wire 30E/35E/45E/55E/ 57E/60E/65E/80E Steels	1/8"	4.0 – 4.5	0.91-1.1
Metallisation Wire 05E Copper	1/8"	5.9	0.91
Metallisation Wire 10E and 15E Bronzes	1/8"	5.7	0.91-1.1
Metallisation Wire 02E Zinc	1/8"	15.9	0.91
Metallisation Wire 01E Aluminium	1/8"	3.2	3.57

All data provided is an approximation and is offered as guidance only as performance can vary depending on application and parameters.

TOOLKIT



Appropriate hand tools are supplied with the Flame spray pistol along with an operating manual and pistol case

SUPPLIES PACKS

GENERAL SPECIFICATION

Red	Tubing to EN 559 for Acetylene
Blue	Tubing to EN 559 for Oxygen
Black	Tubing for Compressed Air



Supplies from regulators to flowmeters



Acetylene Hose



Oxygen Hose

Supplies from flowmeters to Pistol



Acetylene Hose



Oxygen Hose



Nozzle air Hose



Motor Air Hose

‘STANDARD’ SETUP

In our standard setup, we would expect the flowmeter to pistol length to be 10m maximum and extended supplies would have longer hoses between the cylinders and the flowmeters.

SUPPLIES PACKS FROM REGULATORS TO FLOWMETERS

Consists of 1 oxygen and 1 acetylene hose of the stated length with appropriate fittings. All hoses are 3/8” diameter.

Part No.	Description
SUP61-FS-IN-3M	Mk61 F/S Board System, 3M Supplies Package from Regulators to Board
SUP61-FS-IN-10M	Mk61 F/S Board System, 10M Supplies Package from Regulators to Board
SUP61-FS-IN-20M	Mk61 F/S Board System, 20M Supplies Package from Regulators to Board
SUP61-FS-IN-30M	Mk61 F/S Board System, 30M Supplies Package from Regulators to Board
SUP61-FS-IN-40M	Mk61 F/S Board System, 40M Supplies Package from Regulators to Board

SUPPLIES PACKS FROM FLOWMETERS TO PISTOL

Consists of 1 oxygen, 1 acetylene, 1 nozzle air and 1 motor air hose of the stated length with appropriate fittings. Gas hoses are all 1/4” diameter. Acetylene and oxygen hoses are fitted with safety check valves to minimise the possibility of back-feeding of gases.

Part No.	Description
SUP61-FS-OUT-10M	Mk61 F/S Board System, 10M Supplies Package from Board to Pistol

‘REVERSED’ EXTENDED SUPPLIES SETUP

In some applications, the site requirements may need longer hoses between the flowmeters and the pistol. This setup we call a ‘reversed’ extended supplies setup and 3/8” hoses are required for the full length of the supplies package. This requires that an ‘L’ type pistol is also used which enables the 3/8” hoses to be fitted. Refer to Metallisation for more detail on these setups.

CONTROL BOARD AND ANCILLARIES

Part No.	Description
27000-FS	Freestanding Flamespray Control Board - Mk73/Mk61
27030-FS	Panel Mount Oxygen Regulator for freestanding Flamespray Control Board - Mk73/Mk61



27000-FS complete



27000-FS with 27030-FS fitted.
 Also shows optional flashback arrestors fitted.

TECHNICAL OVERVIEW

- For standard longer hose setups, the panel mounted oxygen regulator (p/n 27030-FS) is offered. This unit allows the operator to make adjustments to the oxygen at the panel when the cylinder regulators are a long distance from the panel. Note that the fuel should only need to be set once and the flows are balanced with the oxygen regulator, hence no fuel regulator is offered at the panel.
- For some sites, safety regulations request a method of rapid shut-off of the gas supply so the safety shut-off valve is included. Additional arrestors are sometimes also requested and can be fitted as shown on the right.
- Flowmeters (p/n 21130) are used with Metallisation regulators to ensure correct mixture of acetylene and oxygen is fed to the pistol to give the optimum flame for the material sprayed. They are used as a primary diagnosis tool for fault finding and are mounted in a robust steel/Perspex case.
- The high flow Air Regulation and Filtration unit (ARF, p/n 27020-FS) is made up of an input regulator, filter bowl, lubricator and output regulator for the nozzle air. A single supply feeds both the motor air (lubricated) and nozzle air (dry). The unit can be expanded to allow attachment of a third output to feed the optional deflected extension.

REGULATORS AND ARRESTORS

Part No.	Description
21231	3/8" BSP Acetylene Regulator (long supplies)
21247	3/8" BSP Oxygen Regulator (long supplies)
21124	3/8" BSP LH Gas Flashback Arrestor
21125	3/8" BSP RH Oxygen Flashback Arrestor



TECHNICAL OVERVIEW - REGULATORS

- High flow regulators with minimal restriction offer reliability of operation and more repeatable lighting of the pistol through optimised gas flow rates.
- Complies with BS EN ISO 2503 standards

TECHNICAL OVERVIEW – FLASHBACK ARRESTORS

- Use together with Metallisation regulators and hoses with check valves for maximum safety
- Sintered metal flame arrestor quenches the flame front resulting from a flashback.
- Pressure relief valve safely vents excess pressure and fumes
- Pressure sensitive cut-off valve, incorporating a tamper-proof reset mechanism, prevents the re-ignition of unburnt gases after a flashback.
- Complies with BS EN 730-1 standards

WIRE DISPENSE

WIRE SWIFT

Part No.	Description
24750A	Wire Swift – Wire Dispenser/Straightener



TECHNICAL OVERVIEW

- ✦ Tripod base giving stability and strength and ball race thrust bearing for continued free rotation with adjustable brake preventing over-run of wires
- ✦ Easily adjusted wire retention arms which may be used for dispensing from coils or removed for dispensing from MIG or LAYER reels
- ✦ Ability to carry wire coils of diameters from 10" (250mm) - 30" (750mm) inside diameter
- ✦ Provision for a wire straightener for stiff materials such as 1/8" steels etc

WIRE DISPENSING CONES

Part No.	Description
21252	Wire Dispensing Cones – variable position



TECHNICAL OVERVIEW:

The Metallisation wire dispensing cone offers the ability to conveniently dispense anti-corrosion wires from production packs (drums). The wire is neatly guided to a dispense point, then over the pulley to give a free passage of wire from the drum to pistol. Benefits include:






- ✦ Fitted Pulley to ensure a smooth wire feed to the pistol.
- ✦ Variable position clamp assembly allows the clamp to be rotated to give the smoothest wire transfer path from the drum to the pistol.

DEFLECTED FLAME SPRAY EXTENSION

Part No.	Description
GAS-EXT-150	Gas Extension Deflector 150mm
GAS-EXT-300	Gas Extension Deflector 300mm
GAS-EXT-450	Gas Extension Deflector 450mm



TECHNICAL OVERVIEW

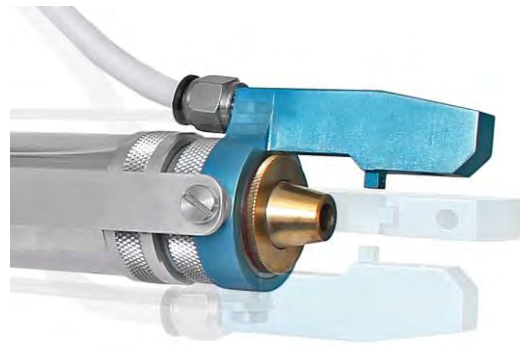
-  Fits directly to Metallisation MK73 (oxy-propane) or MK61 (oxy-acetylene) flame spray pistols.
-  Will spray from 0° to 90° deflection.
-  For use with 1/8" (3.17mm) or 3/16" (4.76mm) anti-corrosion wires.
-  Requires additional regulated air supply (see ARF section).
-  Coating characteristics with the extension are in line with standard flame sprayed coating characteristics (adhesion, surface finish).

TECHNICAL DATA

Description	Characteristics		
	150mm	300mm	450mm
Weight	1.1kg	1.3kg	1.5kg
Overall length	270mm	420mm	570mm
Typical access envelope (head diameter + spray stream formation)	75mm		
Compressed air usage	Approx. same as standard gas pistol		
Oxygen usage	Same as standard gas pistol		
Fuel gas usage	Same as standard gas pistol		

SPRAY DEFLECTION

The spray head will deflect the spray stream from 0° up to 90° by varying the air pressure either at the regulated air supply or the ball valve on the extension. The deflector is able to rotate through 180° using the rotator, ensuring that spraying into almost any area is possible.



FITTING THE EXTENSION

As standard, the extension will fit directly onto any Metallisation MK73 or MK61 pistol that is already spraying 1/8" or 3/16" wire.

The front end of the standard pistol will be removed and the air nipple, nozzle, insert, mixing block, O-rings, air nipple lock ring, lock ring washer and flexible washer are retained.

The extension unit is screwed onto the front of the pistol in the same manner as the standard air cover would be fitted.

The standard consumable parts retained are then assembled into the front of the extension. Alternatively, a full set of parts can be supplied that will be dedicated to the extension (see below)

Different parameters are used when spraying with the extension unit and the gas, oxygen and air pressures will need to be changed as appropriate.




Front end parts kit

Part No.	Description
GAS-EXT-1/8 KIT	Front end parts for 1/8" wire on gas extension
GAS-EXT-3/16 KIT	Front end parts for 3/16" wire on gas extension

ARF CONVERSION

Part No.	Description
GAS-EXT-ARF KIT	Parts to modify ARF to add deflector air reg

TECHNICAL OVERVIEW

-  The existing ARF unit is made up of a filter bowl, lubricator, regulator
-  The GAS-EXT-ARF KIT includes all items to add an additional regulated outlet for the deflector air supply.
-  Picture shows the kit fitted to the standard ARF.





NOTES



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