

Redashe Anti-Static

SPOT BLASTER

N.A.T.O
Approved



“Spot Blast aircraft paint and corrosion away”

Redashe



AP 119G-0923-1

IMPACT FINISHING EQUIPMENT- SPOT BLASTER TYPE 1650AS

GENERAL AND TECHNICAL INFORMATION (-1)

BY COMMAND OF THE DEFENCE COUNCIL

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Ministry of Defence

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CHAPTER 1

LEADING PARTICULARS AND DESCRIPTION

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LEADING PARTICULARS

Redashe Spot Blaster Type NAS1650-RJ20S (complete)

Dimensions:

Height	365mm (14.4 in)
Diameter	305mm (12.0 in)
Total Weight	18Kgs including 5Kgs at blasting media
Air Supply requirement pressure:	100 psi
Volume	Total requirement 30 to 35 CFM

Air lines, must be 12mm (½") bore minimum. Connectors used must be of sufficient bore to ensure the airflow and pressure are not reduced, any filter/regulators in the system must be clean.

Introduction

- 1) The Redashe Spot Blaster Type NAS1650-RJ20S (Fig. 1) is used to remove small areas of corrosion on a range of ferrous and non-ferrous materials. It is fully portable and is capable of being operated by one person. Operated from a supply of compressed air the blaster requires a minimum air supply of 100 psi (6.6 bar) & 30 to 35 cfm. The unit comprises a spherical container mounted on a base. A 2.5m (98.4 in) long convoluted suction hose connected to the container top delivers glass bead or grit blasting medium via internal pipeline to a triggered blasting nozzle contained in a pistol assembly attached to the other end of the hose. The blasting medium is propelled by a filtered compressed air supply attached to a connection point at the container end of the hose and delivered to the nozzle by a second internal pipeline. Holes around the circumference of the base are used to stow seven differently profiled rubber nozzle attachments and one brush attachment.



Fig 1 Redashe Spot Blaster Type NAS1650-RJ20S

CONSTRUCTION

Spherical Container

- 2) A spherical container (see Fig.2) comprising two steel hemispheres joined by a sealed seam is spot welded to a circular steel base. The top hemisphere is a double skin construction. The inner skin, which is shouldered and terminates at the sealed seam, forms the upper section of the blast medium container. The top of the inner skin has a rolled lip, which faces but is separated from the outer skin. The space between the inner and outer skins forms a separation chamber. An orificed spigot provides a suction outlet connection. The bottom hemisphere is single skinned and forms the lower section of the blast medium container.

An aperture at the top of the container is fitted with a flanged cylindrical black plastic cover, which is inserted into the aperture so that two holes through the flange locate two threaded studs mounted on the top of the container. The top provides the connection point for the suction hose and is secured by two plastic coated knurled nuts. A supple black plastic blasting medium supply tube is contained within a protective stiff plastic outer tube. Both tubes are attached to an integrally moulded collared spigot mounted on four support legs near the top centre of the cylinder. The inner supply tube is inserted into the spigot allowing passage of the blasting medium. The outer tube fits over the spigot blanking the tube at that end. A small hole drilled near the top of the outer tube allows pressure equalization when the tube is inserted into the blasting medium. With the cover fitted the free ends of the tubes extend to within approximately 38mm (1.5 in) from the container bottom. A 'V' ring locates a groove on the top of the collar and provides a positive seal for the blasting medium supply tube when the suction hose is connected. A press fit wire mesh strainer locates the underside of

the collar, a hole in the centre allowing passage of the plastic tubes. Two integrally moulded plastic supports on the top of the cover and a plastic cross member secured by self tapping screws at each end provide a carrying handle for the complete unit when the cover is fitted and secured.

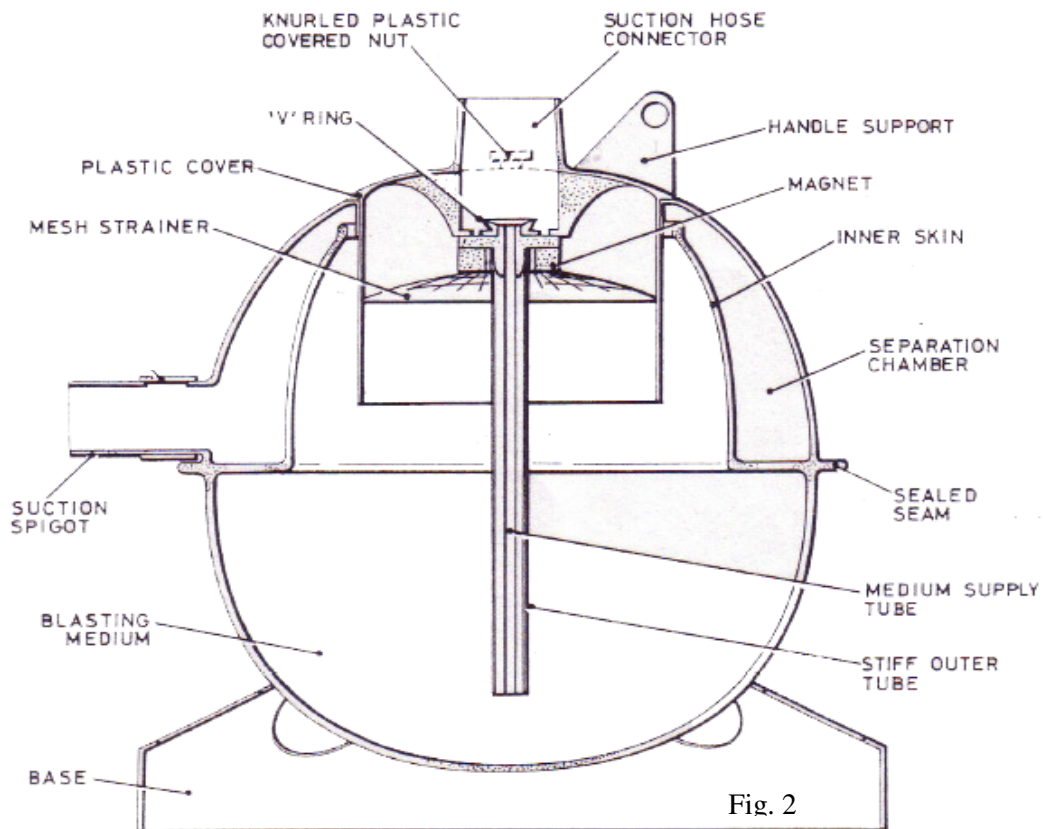


Fig. 2

Suction Hose and Supply Hose Assemblies (Fig 3 and 4)

- 3) The convoluted suction hose assembly terminates in a moulded plastic connector at the container end and is screwed to a blasting pistol assembly at the other end. The hose contains two pipelines; one to deliver compressed air via a trigger operated valve in the pistol assembly and one to deliver the blasting medium from the container to the blasting injector in the pistol assembly. The blasting medium pipeline has a brass 14mm AF male union at the container end and is secured directly to the injector using a 0.5in crimped hose clip. The brass union is secured by a 0.5in crimped hose clip and is attached to the hose connector by insertion through a collar and secured by a 14mm AF locknut. The collar is located on four legs and forms part of the connector moulding. Fig 3 illustrates the main hose assembly and Fig 4 details the two pipelines and the pistol assembly with the convoluted hose and pistol casing removed.

As the action of spot blasting can cause the build up of a very high static electrical charge, especially using glass beads under ideal climatic conditions, the blasting medium pipeline is manufactured from conductive plastic. A bonding strap attached to the steel union by the locknut exits the end of the convoluted hose and terminates in a soldered tag to locate one of the threaded studs on the container top. A separate earth lead is also supplied with a soldered tag to locate similarly on the medium container top and the other with a spring clip for attachment to the item being spot blasted.

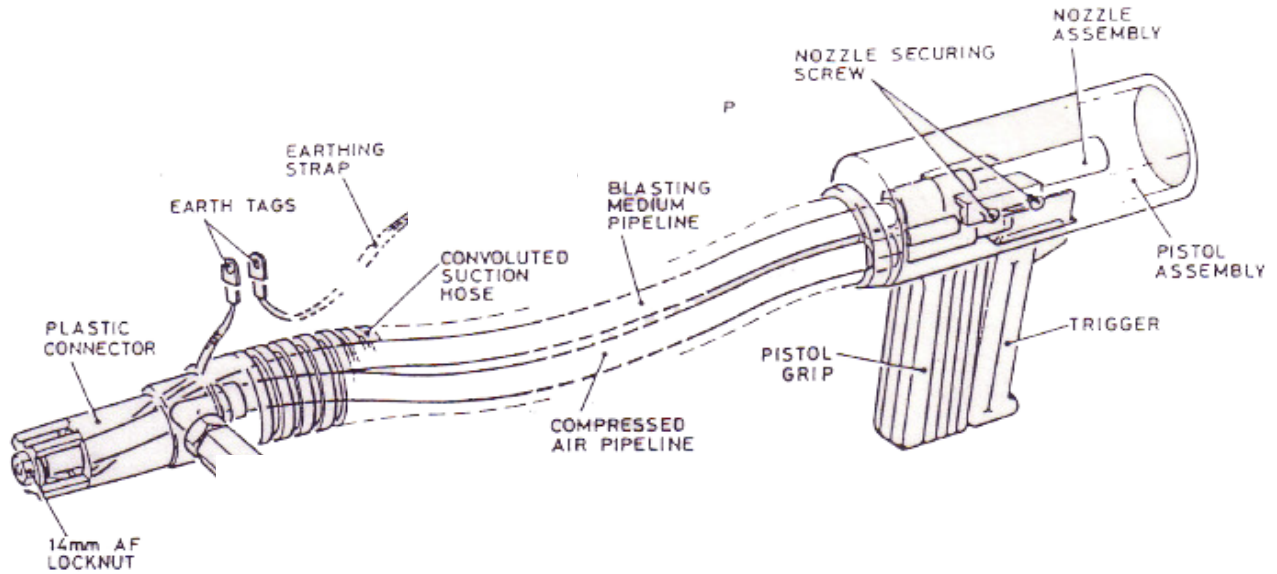
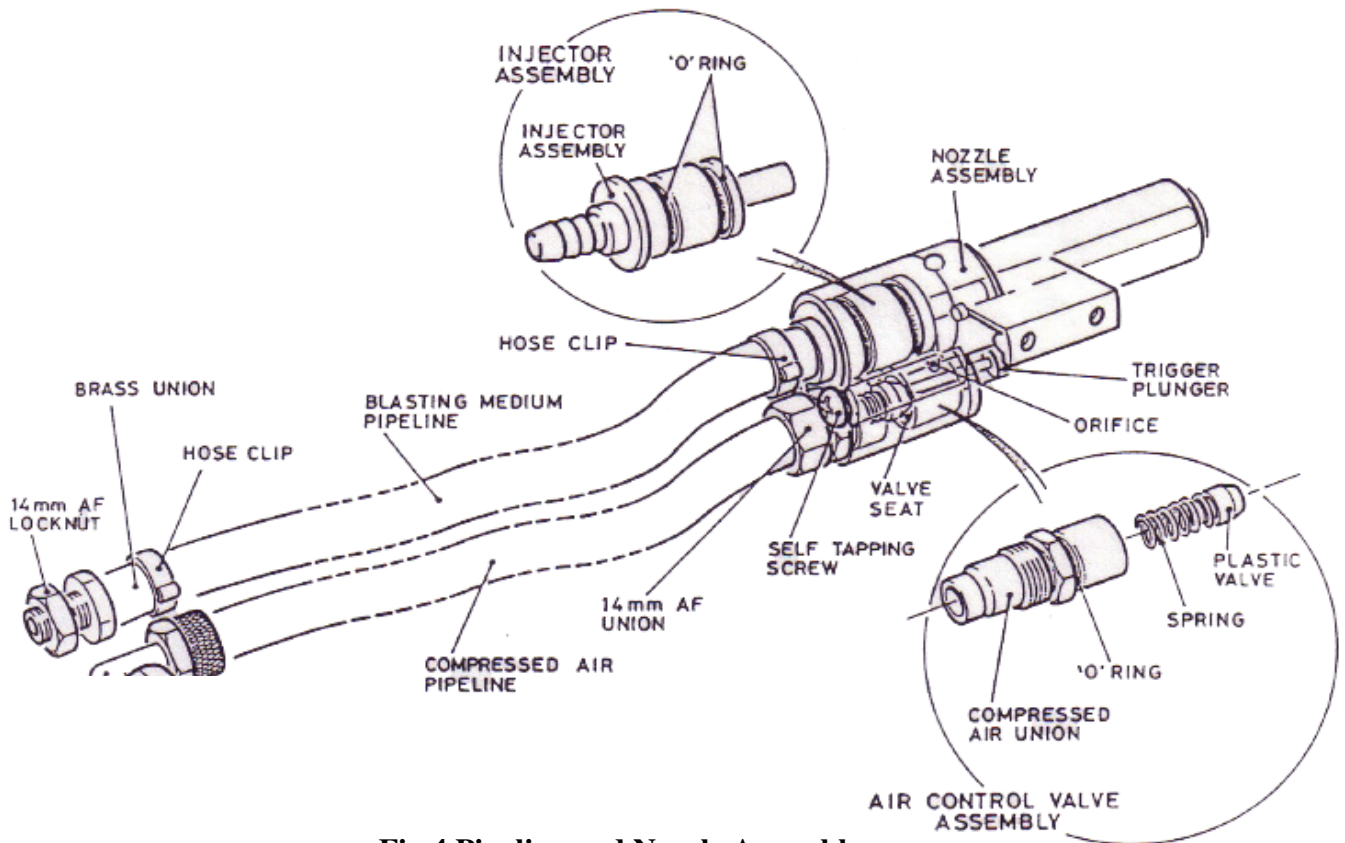


Fig 3 Suction Hose & Pistol Assembly



**Fig 4 Pipeline and Nozzle Assembly –
Convoluted Hose and Pistol Casing Removed**

The compressed air pipeline connected to the pistol assembly via a 14mm AF screwed brass female union. The other end of the pipeline has a screwed elbow union, which exits a hole in a shoulder on the hose connector and is secured by a 17mm AF nut, this then connects to the Air Mover Assembly.

Pistol and Nozzle Assembly (Fig 3 and 4)

- 4) The pistol casing and grip are formed from a single moulding manufactured from high impact plastic. The trigger is a separate moulding and locates a mounting at the base of the grip. It is secured by a rivet, which also acts as a pivot. A profiled section at the top of the trigger enters the pistol moulding, via a slot in the underside. It depresses a plunger, which operates the compressed air supply valve in the nozzle assembly when the trigger is squeezed.

The nozzle assembly comprises a plastic moulding with two shouldered chambers, which are open at each end. The top larger chamber forms the nozzle and houses the blasting medium injector (R1860-AS) this part is sacrificial and will need replacing. The lower chamber contains the air control valve and operating plunger. An orifice in the moulding connects the air supply chamber to the blasting medium chamber. The air control valve and blasting medium injector are retained by two self-tapping screws locating holes in the moulding. Bracket mouldings on either side of the nozzle assembly locate the inside walls of the pistol casing. Two self-tapping screws inserted through countersunk holes on each side of the casing secure the nozzle assembly in position.

OPERATION

- 5) With the compressed air supply connected and turned on, operating the trigger opens the air supply valve in the nozzle assembly. Air is delivered under pressure to the nozzle via the orifice in the nozzle moulding. The venturi effect will suck the blasting medium from the container to the nozzle where it is ejected under pressure by the compressed air. The blasting medium strikes the metal surface and removes corrosion, which is then drawn into the suction tube, accompanied by rebounding blasting medium, under the influence of the Air Mover. The corrosion and blasting medium are returned to the container via the mesh filter, which collects the larger flakes of removed material. The smaller particles of material dust are drawn into the Dust Bag via the separation chamber.

The shaped outlets of the rubber nozzle attachments are such that the correct nozzle can be selected to suit a wide range of corroded metal profiles in order to maintain a seal between the metal and the nozzle. In addition, the nozzle attachments are supple enough to be manipulated with a free hand to improve the seal when blasting unusual profiles. Some spillage of blasting medium may occur and this can be removed if the vacuum cleaner is left running on completion of spot blasting.

NOTES.

- A) When blasting ferrous materials, separation between removed corrosion and the blasting medium is improved by the magnet situated behind mesh strainer in the container top.
- B) It is important that the Air Mover is kept clean and suction is maintained in order to minimise the leakage from the nozzle.

Blasting Media

- 6) The unit is recommended for use with the following blasting media: -
100 to 200 micron glass beads for aluminium and aluminium alloy surfaces
80 to 120-aluminium oxide grit for general-purpose use.
30 to 40 Plastic Media Paint removal Fine / Delicate work.

Compressed Air Supply

- 7) The unit requires a volume of compressed air of 30 to 35cfm. Air pressures for blasting media are as follows: -
For glass beads: 100 psi (6.6 bar) & 30 to 35 cfm
For aluminium oxide grit: 100 psi (6.6 bar) & 30 to 35 cfm
For Plastic media 100 psi (6.6 bar) & 30 to 35 cfm
The minimum air supply hose diameter is 12mm (0.5in)

Venturi Air Mover

- 8) The required Venturi effect setting will be established by experience.

RUBBER NOZZLE ATTACHMENTS

- 9) The profiled rubber nozzle attachments are identified by a number as shown in Fig 5.

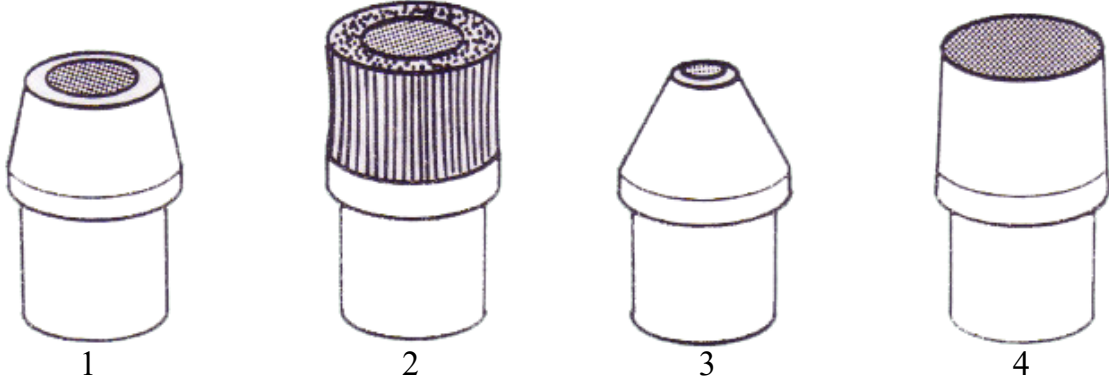
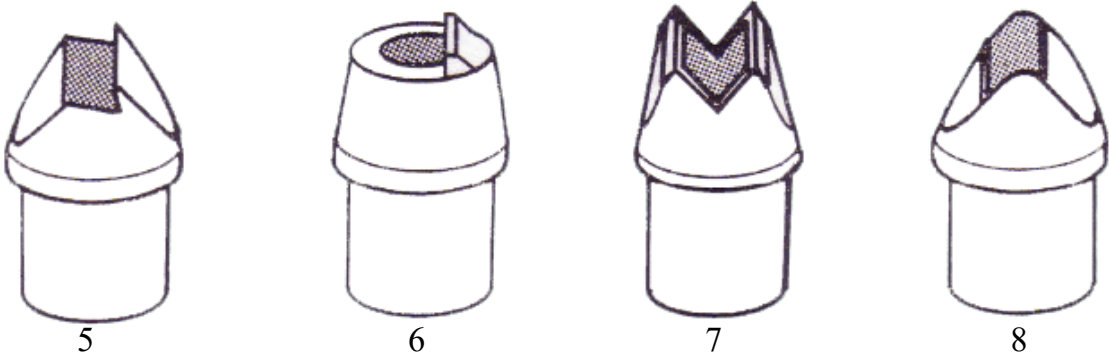


Fig 5 Nozzle Attachment Identification



CHAPTER 2

OPERATING INSTRUCTIONS

CONTENTS

- 2.1 Pre-use checks
- 2.2 Preparation for use
- 2.3 Operating Instructions
- 2.4 Fault Finding

Table

1 Fault Finding

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WARNINGS:

- **TO AVOID THE POSSIBILITY OF INJURY TO THE EYES IT IS MANDATORY THAT PERSONNEL WEAR AUTHORIZED EYE PROTECTION WHEN OPERATING SPOT BLASTING EQUIPMENT.**
- **ALWAYS WEAR PROTECTIVE CLOTHING, WHICH WILL COVER EXPOSED SKIN.**
- **TO AVOID THE POSSIBILITY OF INJURY TO PERSONNEL NEVER OPERATE THE SPOT BLASTER WITH THE NOZZLE CLEAR OF THE BLASTING SURFACE.**
- **TO AVOID THE POSSIBILITY OF A LARGE STATIC ELECTRICITY DISCHARGE, ENSURE THE HOSE EARTHING STRAP IS CONNECTED TO THE CONTAINER.**
- **BEFORE USING THE SPOT BLASTER ON AN AIRCRAFT, ENSURE THE EARTH LEAD IS CONNECTED BETWEEN THE UNIT AND AN AIRCRAFT EARTH POINT.**

PRE-USE CHECKS

- 2.1 Before commencing operation of the blaster carry out pre-use checks as follows: -
 - 1.1.i Check the blaster unit and suction hose for damage.
 - 1.1.ii Ensure all nozzle attachments are present and undamaged
 - 1.1.iii Ensure the pistol trigger operates freely
 - 1.1.iv Check that the blasting medium is dry, in good condition, uncontaminated and of the type required for the task. Replenish or change as necessary.

Note:

- 1 The blasting medium should be level with the container internal shoulder (maximum) and must never be allowed to fall 51mm (2in) below this level when operating.
- 2 Using a damp blasting medium will cause blockage of the hoses.
- 3 Check the Air Mover. Ensure it is clean.

PREPARATION FOR USE

2.2) To prepare the blaster for use proceed as follows: -

2.2.1 Empty blasting medium from the separation chamber by tilting the unit towards the suction spigot. Return the medium to the container.

Note:

Blasting medium can be trapped in the separation chamber during transportation or by rough handling.

2.2.2 Fit the hose assembly to the medium container by carefully aligning the two sets of splines and pushing together. Do not twist. The hose assembly can also be secured using two short self-tapping screws.

2.2.3 Ensure the hose earth strap is secured beneath one medium container knurled knob.

2.2.4 Connect the earth strap spring clip to an aircraft earth point.

ADJUSTMENT

The effect of the ring jet can be varied by adjusting its air gap. To achieve this loosen slightly the clamp ring on the body, and turn the lower body. Screwing it into the body decreases the air gap (and decreases its effect) and vice versa. This can be done whilst the unit is working to get the best effect or to tailor or unit to the air supply available.

OPERATING INSTRUCTIONS

2.3) To operate the blaster proceed as follows: -

2.3.1 Carry out the pre-use checks detailed in (1)

2.3.2 Carry out the procedures detailed in (2) as necessary.

2.3.3 Connect a compressed air supply to the unit of the correct volume and pressure (see Chapter 1 (12)).

2.3.4 Ensure the Air Mover is connected to the suction spigot. Do not turn on.

2.3.5 Fit a suitable nozzle to the pistol.

2.3.6 Open the air supply valve to the unit and then turn on the air supply to the Venturi Air Mover.

2.3.7 Place the nozzle against the surface to be blasted and operate the pistol trigger as required. Ensure the nozzle is held against the blasting surface to maintain a seal.

2.3.8 Check the pressure drop recorded on the pressure gauge is not more than about 15 to 20 psi. If it is the blasting effect will be reduced. Remedy as necessary.

2.3.9 On completion of blasting: -

2.3.9i Use the Venturi Air Mover suction to remove all spilt blasting medium

2.3.9ii Close the air supply valve and disconnect the air supply hose from the blaster.

2.3.9iii Remove the earth lead from the aircraft.

FAULT FINDING

2.4) Table 1 details some faults and their possible causes which may be experienced during normal operation of the Spot Blaster. The list is not comprehensive and should be used as a guide only.

TABLE 1 – FAULT FINDING

SYMPTOM OF FAULT	POSSIBLE CAUSE
Blaster Nozzle Leaking	Suction Hose damaged or kinked.
	Wrong nozzle attachment.
	Insufficient air supply
	Venturi Air Mover not set high enough.
Little or no blasting medium from the nozzle.	Blasting Medium pipeline damaged, kinked or blocked.
	Feedpipe in the container missing, damaged, kinked or blocked.
	Faulty seal between the container and the blasting medium pipeline.
	Damp blasting medium.
	Low level of blasting medium in the container.
No blasting medium or air from the nozzle.	Air filter blocked.
	Air pipeline damaged, kinked or blocked.
	Faulty air supply.
	Compressed air valve in the pistol faulty.
Ineffective blasting.	Blasting medium heavily contaminated.
	Wrong blasting medium.

CHAPTER 3 **MAINTENANCE** **CONTENTS**

- 1 Introduction
- 2 Preventive Maintenance
- 3 Corrective Maintenance
- 3.1 Dismantling – Suction Hose and Pistol Assembly
- 3.2 Dismantling – Nozzle Assembly
- 4 Cleaning and Examination
- 5 Re-Assembly
- 6 Standard Serviceability Test
- 7 Spare Parts

Annex:

- A List of Spare Parts

INTRODUCTION

- 1) This chapter details the preventive and corrective maintenance required to maintain the efficient operation of the blaster unit. A list of parts is contained in Annex A.

- 2) **PREVENTIVE MAINTENANCE**

To carry out preventive maintenance proceed as follows: -

- 2.1.1 Carry out a visual check of the blaster unit, the suction hose and the pistol. Ensure no damage is apparent and that the suction hose is not blocked or kinked.
- 2.1.2 Check the nozzle attachments are present and undamaged.
- 2.1.3 Empty the blasting medium and check for holes in the container base.
- 2.1.4 Ensure the mesh strainer in the blasting medium container is not blocked or damaged.
- 2.1.5 Clean the mesh strainer magnet.
- 2.1.6 Check the 'V' ring in the container to. Ensure intact.
- 2.1.7 Fill the medium container (as required) and refit the container top.

CORRECTIVE MAINTENANCE

Dismantling – Suction Hose and Pistol Assembly

- 3.1 To dismantle the suction hose and pistol assembly proceed as follows: -
 - 3.1.1 Remove the hose from the container cover by removing the two self-tapping screws (if fitted)
 - 3.1.2 Remove the 17mm AF air connector block and locknut securing the compressed air line. Push the elbow union into the suction hose.
 - 3.1.3 Remove the 14mm AF lock nut securing the blasting medium pipeline at the hose connector and remove the earthing strap tag.
 - 3.1.4 Remove the four self-tapping screws securing the nozzle assembly.
 - 3.1.5 Using a pair of pliers rotate the nozzle assembly through 90 degrees and remove it from the pistol casing complete with the two pipelines.
 - 3.1.6 Remove the compressed air valve plunger.

DISMANTLING – NOZZLE ASSEMBLY

To dismantle the nozzle assembly proceed as follows: -

- 3.2.1 Remove the two self-tapping screws from the nozzle moulding.

Note:

It is necessary to undo each screw a little at a time to avoid damage to the 14mm AF brass union.

- 3.2.2 Remove the compressed air valve assembly.
 3.2.3 Remove the blasting medium hose complete with injector.
 3.2.4 Cut the blasting medium pipeline clips to remove the union or injector as necessary. Discard the clips and fit replacement items on reassembly.

CLEANING AND EXAMINATION

4 Carry out the following: -

- 4.1 Clean all parts using an approved solvent as necessary.
 4.2 Examine all parts checking for wear, blockage or damage, especially: -
 4.2.1 The blasting medium pipeline where the unions are attached.
 4.2.2 The blasting medium feed pipe in the container top.
 4.2.3 The compressed air valve plunger and valve seat
 4.2.4 The air connector block filter.
 4.2.5 The injector 'O' ring seals.
 4.2.6 The 'V' ring in the container cover.
 4.2.7 The blaster nozzle - ensure the bore is smooth.
 4.2.8 The compressed air pipeline – ensure no kinks.
 4.2.9 The suction hose – ensure no kinks or splits.
 4.2.10 The earth straps.
 4.2.11 The mesh strainer.
 4.2.12 Discard all worn or damaged parts and fit replacement items on reassembly

CLOTH BAG WITH ZIP

Fitted to the 38mm spigot of the 1650AS-RJ20S Spot Blaster to collect dirt and dust. Should be cleaned regularly using zip to empty contents. Care should be taken not to spread dust around the workshop or to breathe in the dust (an appropriate dust mark should be used).

If the bag's material gets badly contaminated it can be washed but should not be used again until it is completely dried.

RE-ASSEMBLY

- 5 To re-assemble carry out a reverse of the procedures detailed in (4) and carry out a standard serviceability test (SST).

STANDARD SERVICEABILITY TEST

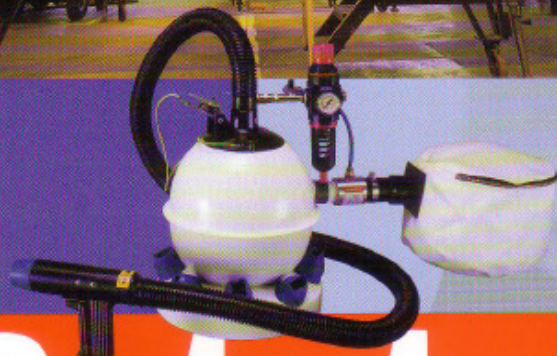
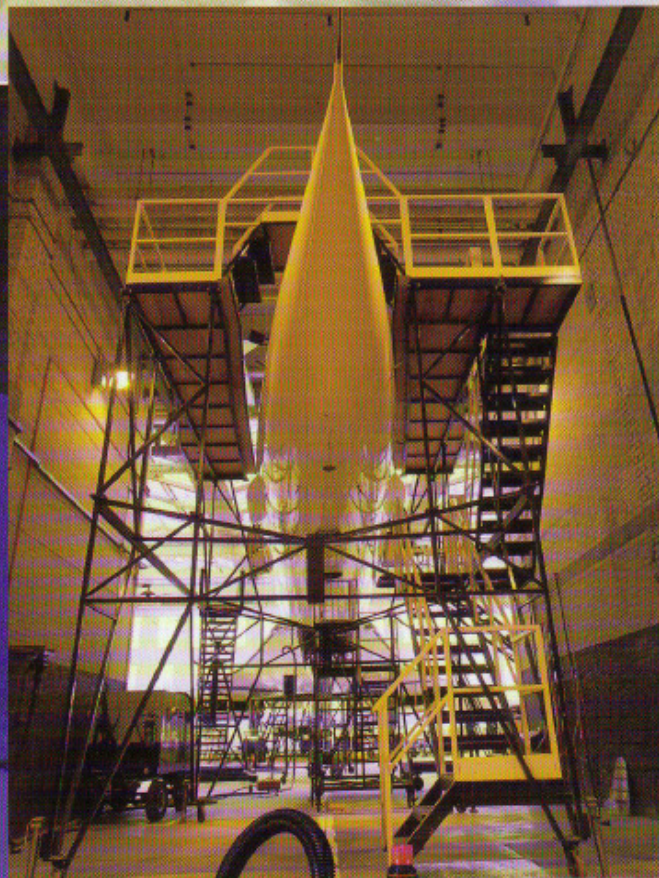
- 6 To carry out an SST carry out the procedures detailed in Chapter 2 (3).

SPARE PARTS

- 7 Annex A provides a list of spare parts and reference numbers.

CHAPTER 3 ANNEX A **LIST OF SPARE PARTS**

ITEM DESCRIPTION	PART NO:	SECTION/REF NO:
Injector (Sacrificial suffers wear)	R1860-AS	4A/5963
Blast Nozzle Assembly	R1654	4A/5964
V-Ring	R5060	4A/5965
Pistol Valve Set	R1655	4A/5966
Medium Container Top	R1486	4A/5968
Medium Container	R1482	4A/5969
Medium Hose Coupling (Container End)	R1546-AS	4A/5971
Medium Hose Coupling (Pistol End)	R1547-AS	4A/5972
Air Hose	R1666-AS	4A/5973
Medium Hose Complete with Clips	R1667-AS	4A/5974
Pistol Assembly Complete	R1660-AS	4A/5975
Suction Nozzles	R1928	
Elbow Coupling (Air)	R5104	4A/5985
38mm Cuffs 2 Required	D3003	
Suction Hose (2m)	R5039	4A/5987
Earth Lead and Tags (2 pieces)	R1487-AS	4A/5988
Air Filter Assembly	R2018	4A/5989
Paper Filter Bags (Pk 10)	D1060	
Air Mover	ERJ20S	
Cloth Bag AS Spot Blaster	D1100	
MEDIA:		
25kg Bag Glass Beads	100/200	
50kg Bag of Aluminium Oxide	120 Grit	
25Kg Bag Plastic Media	30/40 Grit	



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