

## Operation Manual: AGNC-501 AUTOMATIC GUN



### Important:

Read and follow all instructions and **SAFETY PRECAUTIONS**  
before using this equipment

### DESCRIPTION

A lightweight diaphragm operated automatic spray gun for use with abrasive and/or water based materials such as Porcelain Enamel. **ROUND SPRAY!** This gun atomises finishing material by means of compressed air and deposits them in the presence of an electrostatic field between the charged gun and an earthed part being coated. The standard gun fitted with a rubber diaphragm is not suitable for use with solvent based coating materials, however it can be converted for use with solvent based coating materials by fitting a PTFE protective diaphragm see Accessories.

Remotely positioned valves (supplied by user) control the air supplies for atomisation and diaphragm operation. Coating material supply is by a pressure feed system.

**IMPORTANT:** These guns are not designed for use with highly corrosive or highly abrasive coating material and if used with such materials it must be expected that the need for thorough cleaning and/or the necessity for replacement parts will be increased. If there is any doubt regarding the suitability of a specific material, advise what material is to be used and/or submit a sample for test.

### SPECIFICATIONS

#### HOSE CONNECTIONS

Air supply Atomising:	1/4" NPS
Diaphragm:	6mm push-in tube connector
Coating material supply:	3/8" NPS

#### MAXIMUM RECOMMENDED WORKING PRESSURES

Atomising air supply	: P <sub>1</sub> =7 bar (100 lbf/in <sup>2</sup> )	<b>Air consumption:</b>	: 200 l /min (7 cfm)
Diaphragm air supply	: P <sub>3</sub> =7 bar (100 lbf/in <sup>2</sup> )	<b>Approx Fluid Flow Rate:</b>	: 2 - 6 Fl.oz /min
Coating material supply	: P <sub>2</sub> =6 bar (87 lbf/in <sup>2</sup> )	<b>Weight:</b>	: 492g.
		<b>Nozzle Material:</b>	: Stainless Steel
		<b>Electrode Location:</b>	: Air Cap

#### DECLARATION OF CONFORMITY

We, ITW DeVILBISS, Ringwood Road, Bournemouth, Dorset, England, declare under our sole responsibility that the product to which this declaration relates is in conformity with the following standard(s) or other normative document(s)

**BS EN 292 : Parts 1 and 2 : 1991, Safety of Machinery.**

**BS EN 1953**

following the provisions of the Machinery Directive 89/392/EEC as amended by Directive 91/368/EEC.

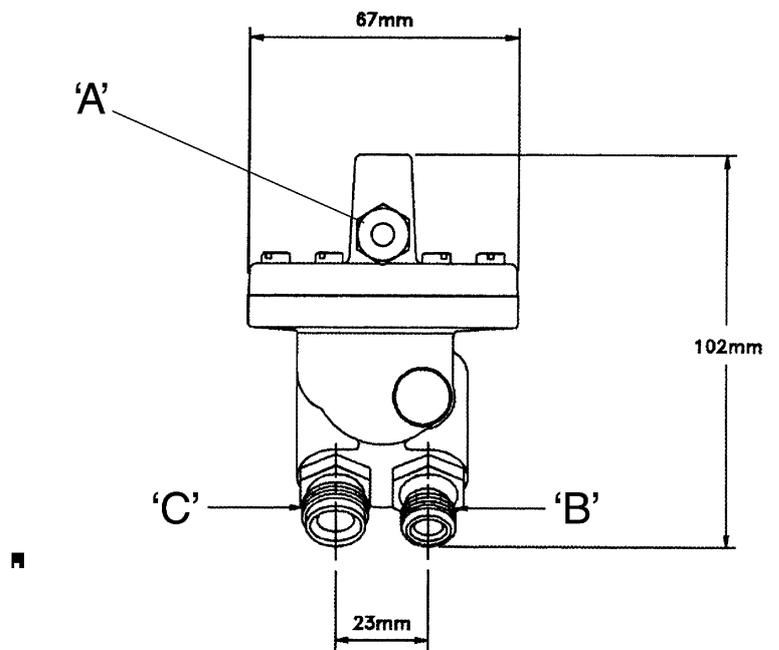
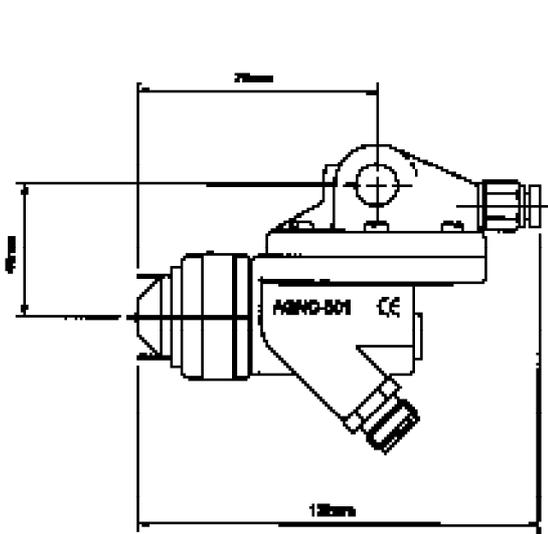
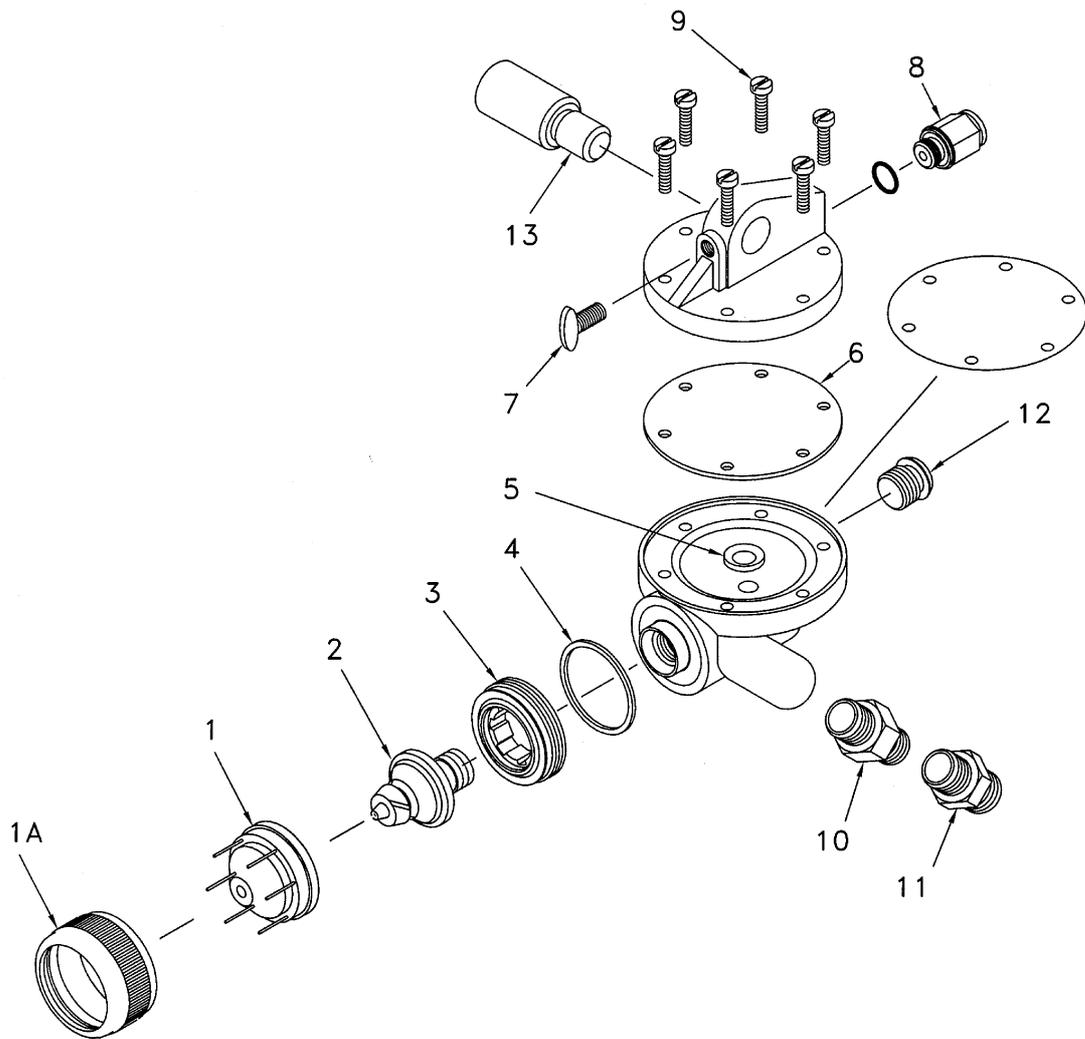


Figure 2

**Parts List**

Ref.	Order No.	Description	Qty.
1	41722-108	Air cap	1
1a	JGHV-98	Retaining Ring	1
2	AGGC-407-K	Nozzle	1
3	JGHV-447	Baffle	1
*4	JGD-14-K5	Seal	1
*5	AGN-18	Seat	1
*6	AGN-7	Diaphragm	1
7	SSF-5711-ZN	Screw	1
8	SPS-13007	Tube connector 6mm	1
9	SSF-4272-K6	Screw	6
10	H-2008	Connector 1/4" NPS	1
11	H-1580-A	Connector 3/8" NPS	1

**INSTALLATION** see figure 2

**IMPORTANT:** To ensure that this equipment reaches you in first class condition, protective coatings, rust inhibitors etc., have been used. Flush all equipment through with a suitable solvent before use to remove these agents from the material passages.

The AGNC gun operation is different to models that have a needle valve to control the coating material flow. To shut coating material flow off, air pressure must be maintained on the diaphragm (6) to seal against seat (5). The simplest method of gun control is to use a normally open three way valve for the diaphragm air supply 'A' and a normally closed three way valve for the atomising air supply 'B'. These valves can automatically or manually operated.

To prevent unatomised coating material spoiling the finish the sequence of control valve operation should be;

<u>To Spray</u>	1. Atomising air 'B'	ON
	2. Diaphragm air 'A'	OFF
<u>Stop spraying</u>	3. Diaphragm air 'A'	ON
	4. Atomising air 'B'	OFF

The timing of these valve operations will depend on the speed of gun operation required, for some applications the atomising air supply could be continuously ON and the diaphragm air control valve operated when spray is required.

**CAUTION:** In case of an air supply failure it is recommended that a fail-safe valve is fitted to the coating material supply to prevent accidental spillage.

Separate filtered regulated air supplies are required for atomising and diaphragm operation.

Mount the gun on a 12.5 mm (1/2") diameter rod and secure with screw (7).

**Hosing**

1. Connect a 6 mm outside diameter nylon tube to the push-in connector 'A' via a three way normally open valve.
2. Attach atomising air supply hose to connector 'B' via a three way normally closed valve.
3. Attach coating material hose to connector 'C' from a pressure feed source.

**Recommended hose sizes**, up to 10 metres long.

Atomising air supply 8mm (5/16") internal diameter.

Coating material supply 9.5mm (3/8") internal diameter.

# SAFETY WARNINGS

## FIRE AND EXPLOSION

Solvents and coating materials can be highly flammable or combustible, especially when sprayed.

- Work stations must be provided with adequate ventilation/exhaust to prevent the build-up of flammable vapours.
- Smoking and naked flames must not be allowed in the spraying or mixing areas.
- Fire extinguishing equipment must be provided in the spraying and mixing areas.

Users must comply with all local and national codes of practice and insurance company requirements governing ventilation, fire precautions, operation, maintenance and housekeeping of work stations.

HALOGENATED HYDROCARBON SOLVENTS - for example 1,1,1-Trichloroethane and Methylene Chloride can chemically react with aluminium and galvanised or zinc coated parts and cause an explosion hazard. Read the label and data sheet of the material you intend to spray.

This equipment, as supplied, is suitable for use with Halogenated Hydrocarbons and the user must ensure that all other equipment in the system is also suitable for use with these materials. **DO NOT SPRAY MATERIALS CONTAINING THESE SOLVENTS EXCEPT WITH EQUIPMENT SPECIFICALLY DESIGNATED BY THE MANUFACTURER AS BEING SUITABLE FOR SUCH USE.**

STATIC ELECTRICITY - is generated by fluid moving through pipes and hoses. A static spark, capable of igniting certain solvents and coating materials, could be produced by high fluid flow rates. To prevent the risk of fire or explosion, earth continuity to the spray equipment and object being sprayed should be maintained.

## PERSONAL PROTECTIVE EQUIPMENT

TOXIC VAPOURS - when sprayed, certain materials may be poisonous, create irritation or otherwise be harmful to health. Always read carefully all labels and safety/performance data for the material being sprayed and follow any recommendations. **IF IN DOUBT, CONSULT THE MATERIAL SUPPLIER.**

- The use of respiratory protective equipment is recommended at all times when spraying. The type of respiratory protective equipment used must be compatible with the material being sprayed and the level of concentration.
- Always wear eye protection when spraying or cleaning the equipment.
- Gloves must be worn for spraying or cleaning the equipment when certain coating materials and solvents are used.

## TRAINING

Personnel should be given adequate training in the safe use and maintenance of this equipment. Training courses on all aspects of the equipment are available. For details contact your local representative. The instructions and safety precautions contained in this literature and the literature supplied with the coating material should be read and understood before the equipment is used.

## MISUSE

- All spray guns project particles at high velocity and must never be aimed at any part of the body.
- Never exceed the recommended safe working pressures for any of the equipment used.
- The fitting of non-recommended or non-original accessories or spare parts may create hazardous conditions.
- Before dismantling the equipment for cleaning or maintenance, all pressures, air and material, must be isolated and released.

The disposal of non-metallic materials must be carried out in an approved manner. Burning may generate toxic fumes. The removal of waste solvents and coating materials should be carried out by an authorised local waste disposal service.

The materials used in the construction of this equipment are (bearing in mind the warning on Halogenated Hydrocarbons) solvent resistant enabling the equipment to be cleaned using gun washing machines. However, this equipment must not be left inside the gun washing machine for prolonged periods of time after the automatic cleaning cycle has been completed.

The solvents used in the gun washing machine should be regularly checked to ensure that the equipment is not flushed through with contaminated material. Follow the recommendations of the machine manufacturer.

## NOISE LEVELS

The continuous A-weighted sound pressure level of this spray gun may exceed 85 dB(A) depending on the air cap/fluid tip set-up being used. Sound levels are measured using an impulse sound level meter and analyser, when the gun is being used in a normal spraying application. Details of actual noise levels produced by the various air cap/fluid tip set-ups are available on request.

## OPERATION

The AGN gun operation is different to models that have a needle valve to control the coating material flow. To shut coating material flow off, air pressure must be maintained on the diaphragm (6) to seal against seat (5). To prevent coating material leaks from the nozzle the regulated diaphragm air supply pressure 'A' must be at least 0.5 bar (8 lbf/in<sup>2</sup>) higher than the coating material supply.

**CAUTION:** To prevent accidental discharge of coating material always turn off and release coating material pressure when the gun is not in use.

1. Mix, prepare and filter the coating material to be sprayed to the manufacturer's instructions.
2. Adjust the spray gun control and regulate air and coating material pressures before turning on the air and coating material supplies.
  - 2.1. Adjust the atomising air pressure. Use the Pressure Test Unit (see accessories) to adjust the atomising air pressure. Follow the instructions in the Operation Manual supplied with the unit.
  - 2.2. Adjust diaphragm air supply pressure 'A' to 2 bar (30 lbf/in<sup>2</sup>).
  - 2.3. Regulate coating material pressure to 0.4 bar (6 lbf/in<sup>2</sup>).
3. Turn on atomising and diaphragm air supply to the spray gun before turning on coating material supply. Test spray by operating atomising and diaphragm air control valves.

<u>Test Spray</u>	1. Atomising air 'B'	ON
	2. Diaphragm air 'A'	OFF
<u>Stop spraying</u>	3. Diaphragm air 'A'	ON
	4. Atomising air 'B'	OFF

If the finish is too wet or dry adjust the coating material supply pressure until the desired pattern is achieved.

**CAUTION:** Remember to increase the diaphragm air pressure if the coating material pressure is increased.

If the atomisation is too coarse increase the air pressure, if too fine reduce the air pressure.

The recommended spray distance is 305-380 mm (12" – 15") to suit article being sprayed.

## PREVENTATIVE MAINTENANCE

Flushing the system:

1. Turn off atomising air 'B' and coating material 'C' supplies and relieve pressures. **CAUTION:** DO NOT turn off diaphragm air supply 'A'.
2. Replace coating material with a suitable solvent, reduce pressure and turn on supply.
3. Remove air cap, operate the gun with diaphragm control valve, **do not turn on atomising air supply**. Flush system until clean.

Clean air cap by immersing in solvent, brush or wipe clean. If any holes in the air cap are blocked use a toothpick or broom straw to remove the obstruction. Never use a steel wire or hard implement which will damage the air cap and result in a distorted pattern.

## REPLACEMENT OF PARTS

**Note:** Order numbers shown in parts list for figure 1 with suffix '-K5' etc. at the end of the order No. indicates a kit of parts. Example JGD-14-K5 is a kit of five seals.

### NOZZLE (2) AND BAFFLE (3).

Remove parts in the following order (1, 2, 3 and 4). Replace any worn or damaged parts. Reassemble in reverse order.

Recommended tightening torque for nozzle (2), 14-16 Nm (125 - 140 lbf in).

### SEAT (5) or DIAPHRAGM (6).

Remove screws (9), top plate and diaphragm (6). Unscrew seat (5) using a 1/4" hexagon key. Replace worn or damaged parts. Reassemble in reverse order. Recommended tightening torque for screws (9), 4 Nm (35 lbf in).

**Note:** Protective diaphragm AGN-8 (see accessories) is fitted between the gun body and the rubber diaphragm (6) to prevent solvent based coating material contacting the rubber diaphragm.

### CONNECTORS (10, 11).

Remove connector (10 or 11) and clean threads in gun body. Apply a medium strength thread locking/sealing compound to the taper thread of the new connector, screw into gun body and tighten. Recommended torque 16 Nm (140 lbf in).

## SERVICE CHECKS

CONDITION	CAUSE	CORRECTION
<b>WILL NOT SPRAY</b>	1.No pressure at the gun. 2.Gun passages blocked.	1. Check air and coating material lines. 2. Clean.
<b>FLUTTERING</b>	1.Insufficient material in tank, cup or an obstruction in the hose. 2. Gun material passage blocked. 3. Worn seal (4). 4. Loose or damaged nozzle.	1. Fill tank/cup, or clear obstruction 2. Clean. 3. Replace. 4. Tighten or replace.
<b>DRIPPING FROM NOZZLE</b>	1.Incorrect air pressure on diaphragm  2 .Seat (5) dirty or worn. 3 .Damaged or worn diaphragm (6).  1.Air leak from valve (13).	1. Increase air pressure to at leased 0.5 bar (8 lbf/in <sup>2</sup> ) above coating material pressure. 2. Clean or replace. 3. Replace.  1. Replace 'O' ring (12).

## ACCESSORIES

Service kit **Order KK-4998** contains parts marked with \* in Parts List for figure 1.

Protective diaphragm **Order AGN-8-K5**. Converts gun for use with solvent based materials. Fit between the gun body and standard rubber diaphragm.

Universal clamp **Order 3600**. Attaches gun stud AGN-16 to a 19 mm (<sup>3</sup>/<sub>4</sub>" diameter rod. Allows the gun to be positioned at any angle.

Multipurpose spanner **Order SPN-5**. Contains necessary sizes for maintenance and hose connections.

Cleaning brush **Order 4900-5-1-K3** for cleaning threads and recesses of gun.

Remote pressure cup **Order KB-522-55**, maximum working pressure 3.5 bar (50 lbf/in<sup>2</sup>), capacity 2.0 litres. Add thread code to order No., B=BSP, N=NPS. Order hoses separately.

**Pressure feed tanks:** A range of sizes are available manufactured in zinc coated steel or stainless steel construction. Please contact your local DEVILBISS Distributor for information.

# NOTES

### **ITW Finishing Systems and Products**

Ringwood Road  
Bournemouth BH11 9LH England  
Tel. No. (01202) 571111  
Telex No. 41213  
Telefax No. (01202) 581940

### **ITW Oberflächentechnik GmbH**

Justus-von-Liebig-Straße 31  
63128 Dietzenbach  
Tel. (0 60 74) 403-1  
Telex: 4 191 533  
Telefax: (0 60 74) 403300

### **ITW Surfaces Et Finitions**

163-171 avenue des Auréats B.P. 1453  
26014 VALENCE CEDEX FRANCE  
Tél. (33) 75-75-27-00  
Télex 345 719F DVILBIS