DeVILBISS

Operation Manual: Gti -A Automatic Gun

Important:
Read and follow all instructions and SAFETY PRECAUTIONS before using this equipment

SB-E-2-366-F

CE

DESCRIPTION

The GTI-A is a production spray gun suitable for use with automatic and semi-automatic machines.
The design uses EPA compliant atomising technology to reduce overspray and improve coating efficiency. To handle a wide range of coating materials the material passages, fluid tip and needle are manufactured from high grade stainless steel. Pressure feed material supply can be re-circulating or direct.

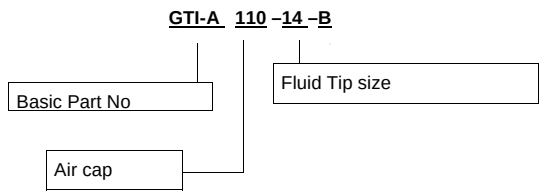
A removable spray head simplifies maintenance and cleaning of material wetted components. The gun is triggered by compressed air to a single acting cylinder by a remotely positioned 3 way valve (supplied by user).

APPLICATION: General purpose solvent based and waterborne coating materials, food and pharmaceutical processes.

IMPORTANT: These guns are not designed for use with highly corrosive or highly abrasive materials 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, contact your local distrubutor or ITW Finishing Direct

MODELS

For ordering information see chart 1,2 & 3 for the selection of air cap, tip and needle combinations.



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.

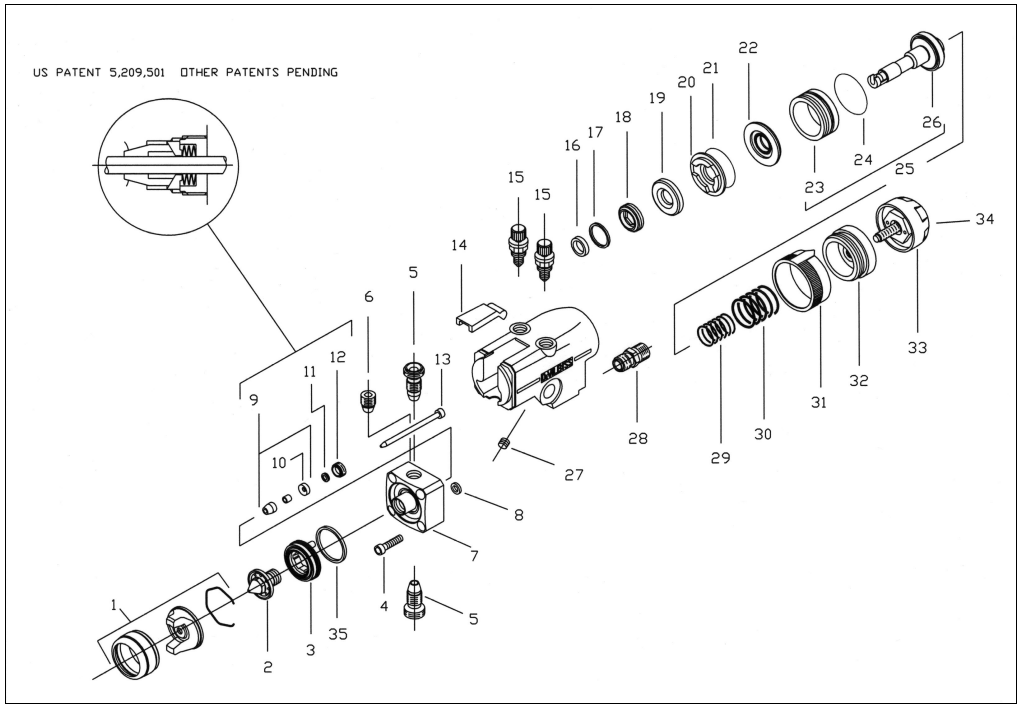
Parts List

REF	DESCRIPTION	ORDER No.	QTY
*1	AIR CAP / RETAINING RING	GTI-407-*	1
1a	SPRING CLIP	JGA-156-K5	1
+**2	NOZZLE (UP TO 1.5 mm)	GTI-213-**-K	1
	NOZZLE (1.6 mm to 2.2 mm)	GTI-214-**-K	1
3	BAFFLE + SEAL	GTIA-425-K	1
4	SCREW	SSF-3120-K4	4
5	FLUID CONNECTOR $^{3}/_{8}$"UNIVERSAL	AGG-58	2
6	PLUG	AGG-59	1
7	SPRAY HEAD	GTIA-402	1
+ 8	'O' RING	SSG-8099-K10	2
+ 9	PACKING SET	AGG-444	1
10	PACKING PIECE	AGGS-31	1
+ 11	DISC SPRING	SSN-1023-K6	6
12	RETAINING SCREW	AGGS-32-K5	1
+13	NEEDLE (FOR GTI-213 TIP) NEEDLE (FOR GTI-214 TIP)	GTIA-420-K AGG-420-DEX-K	1 1
14	COVER	AGG-33	1
15	CONTROL VALVE	AGG-403	2
+ 16	SEAL	SST-7711	1
17	SEAL RING	AGG-39	1
18	LOCKING RING	AGGS-29	1
+19	VALVE SEAT	AGG-4	1
20	SPACER	AGG-5	1
+21	'O' RING	SSG-8102-K5	1
+22	SEAL & SPACER ASSEMBLY	AGG-415-K	1
23	CYLINDER SLEEVE	AGG-8	1
24	'O' RING	SSG-8083-K5	1
25	PISTON AND CYLINDER KIT	AGG-410	1
26	PISTON SEAL	SST-7713	1
27	SET SCREW	SSF-2048-K5	1
28	AIR INLET CONNECTOR 1/4 UNIVERSAL	CT-316	2
29	SPRING (INNER CYLINDER SPRING)	AGG-35-1	1
+30	SPRING (Outer Cylinder Spring)	AGG-12-1	1
31	ZERO SLEEVE	AGG-36	1
32	END CAP	AGG-9	1
33	RATCHET KNOB/SCREW ASSY.	AGG-402-1	1
34	SET SCREW	SSF-2047	1
35	SEAL	GTI-33-K5	1

* - * Denotes Aircap Number - Available Aircaps No's 105 ,110 and 122

** - ** Denotes Fluid Tip Size—Available Sizes;
GTI-213 0.85, 1.0, 1.1, 1.2, 1.3,1.4,1.5 mm
GTI-214 1.6, 1.8, 2.0 and 2.2 mm

\+ - Parts included in service Kit (see accessories)



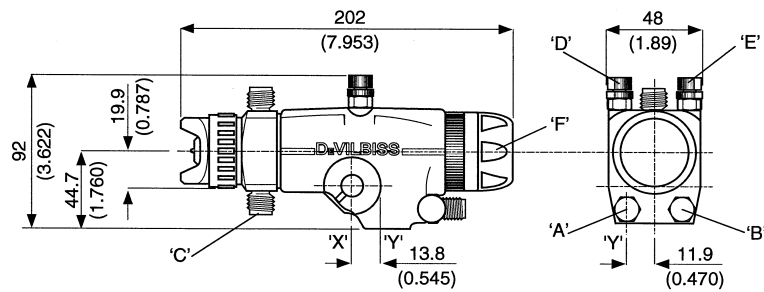


Figure 2

SPECIFICATIONS

HOSE CONNECTIONS
MINIMUM CYLINDER OPERATING PRESSURE: 4.5 bar (65 lbf/in²)
MAXIMUM RECOMMENDED WORKING PRESSURES

Thread Code:	' B'	'N'
Atomisation Air:	¼" BSP	¼" NPS
Cylinder Air:	¼" BSP	¼" NPS
Material:	$^3/_8$" BSP	$^3/_8$"NPS

Air Supply	: P1=9 bar (130 lbf/ in²)
Material Supply	: P2=14 bar (200 lbf/ in²)
105 Air Cap Pressure	: 0.7 bar (10 lbf/in²)
Gun Inlet	: 2.0 bar (30 lbf/in²)

AIR CONSUMPTION:

	@ 2 bar
105	453 l/min
110	269 l/min
122	340 l/min

DIMENSIONS: See Figure 2
WEIGHT: 950g

⚠ SAFETY WARNINGS

E

Fire and explosion

Solvents and coating materials can be highly flammable or combustible when sprayed. **ALWAYS refer to the coating material suppliers instructions and COSHH sheets before using this equipment**

Users must comply with all local and national codes of practice and insurance company requirements governing ventilation, fire precautions, operation and house-keeping of working areas

This equipment, as supplied, is **NOT** suitable for use with Halogenated Hydrocarbons.

Static Electricity can be generated by fluid and/or air passing though hoses. To prevent such a risk, earth continuity to the spray equipment and the object being sprayed should be maintained.

Personal Protective Equipment

Toxic vapours – When sprayed, certain materials may be poisonous, create irritation or be otherwise harmful to health. Always read all labels and safety data sheets for the material before spraying and follow any recommendations. ***If In Doubt, Contact Your Material Supplier***

The use of respiratory protective equipment is recommended at all times. The type of equipment must be compatible with the material being sprayed

Always wear eye protection when spraying or cleaning the spraygun

Gloves must be worn when spraying or cleaning the equipment

Training – Personnel should be given adequate training in the safe use of spraying equipment.

Misuse

Never aim a spraygun at any part of the body

Never exceed the max. recommended safe working pressure for the equipment

The fitting of non-recommended or non-original spares may create hazards

Before cleaning or maintenance, all pressure must be isolated and relieved from the equipment

The product should be cleaned using a gun washing machine. However, this equipment should not be left inside gun washing machines for prolonged periods of time.

Noise Levels

The A-weighted sound level of sprayguns may exceed 85 dB (A) depending on the set-up being used. Details of actual noise levels are available on request. It is recommended that ear protection is worn at all times when spraying

INSTALLATION

IMPORTANT: In order 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 material passages.

See Figs 1 and 2 Mount gun using the 12.7mm (1/2") diameter hole 'X' and secure with screw. An additional 10mm diameter x12.5mm deep dowel hole 'Y' has been provided to enable users to centre the spray gun with mounting fixtures of their own design.

HOSING: Use separate filtered regulated air supplies for atomising and cylinder air.

Connect the cylinder air 'A' via a control valve. For fast cylinder operation the control valve should be fitted as close to the gun as possible or an additional quick exhaust valve installed in the line.

Attach atomising air hose to connector 'B'.

Connect material hose(s) 'C' to the spray head. If material recirculation is not required, remove one of the connectors and fit plug supplied with the gun. **WARNING:** See instructions under "Replacement of Parts".

Recommended hose sizes up to 10m (34 ft) long,

Atomisation Air:	8mm (5/16") bore	Cylinder Air:	6mm (1/4") bore
Material:	9.5mm (3/8") bore		

OPERATION (See figure 2.)

1. Mix, prepare and strain the material to be sprayed according to the paint manufacturers instructions. Use a lint free mesh to strain the material.

2. Adjust the spray gun controls and atomising pressure before turning material supply on.

2.1. Open valves 'D' marked FAN and 'E' marked ATOM by turning counter-clockwise.

2.2. To adjust fluid needle for full travel. Close fluid needle adjusting knob 'F' clockwise until resistance is felt, then open by turning 5 to 6 full turns counter clockwise.

2.3. Regulate cylinder air pressure to 4.5 bar (65lbf/in2).

2.4. Adjust atomising air pressure at the cap. Start with a low regulated pressure ie. 2 bar (30 lbf/in2). Turn on cylinder air and trigger spray gun with control valve. Increase regulated pressure to achieve 0.7bar (10 lbf/in2). Note that normal operating pressure at the air cap could be in the range of 8 - 12lbf/in2. Turn off atomising air supply and trigger spray gun to release pressure.

NOTE: Use Pressure Test Unit or Test Cap Kit (see accessories) to check the atomising pressure at the cap.

3. Turn on material supply, trigger spray gun and adjust material flow, see chart 1/2 for guidance.

4. Test spray and observe spray pattern. Adjust material or atomisation pressures until the desired pattern is obtained. If it is not practical to control the material flow by pressure regulation, the fluid needle adjusting knob has ratchet stops and zero sleeve to aid fine material adjustment by restricting the fluid needle movement. Close knob by turning clockwise and gradually open using ratchet stops until the correct material flow is achieved.

5. Other adjustments can be made using the valves marked 'Fan' and 'Atom'. The fan valve will alter the spray width from full fan to round. 'Atom' valve controls the degree of atomisation from fine to coarse.

NOTE: If the process requires altering the spray width recheck and adjust the air cap atomisation pressure (see '2.4' above).

PREVENTATIVE MAINTENANCE

FLUSHING THE SYSTEM

1. Turn off atomising air supply and material supply.
2. Relieve system pressures, open material relief valve and trigger gun into booth or container.
3. Remove air cap.
4. Replace material with a suitable solvent.
5. Turn on solvent supply and flush hose and gun by triggering gun or recirculation.

NOTE: If may be necessary to fit a shut-off valve to the return line on circulating systems and trigger the gun to clean front portion of the spray head and fluid tip.

Air cap, clean 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 obstruction. Never use a steel wire or hard implement which will damage the air cap and result

REPLACEMENT OF PARTS

NOTE: Order numbers shown in parts list for figure 1 with suffix "-K2" etc. at the end of the number indicates a kit of parts. **Example:** Ref 11. SSN-1023-K6 is a kit of six disc springs.

TO REMOVE SPRAY HEAD ASSEMBLY See Figure 1.

Disconnect material hose(s). Unscrew the retaining ring and remove the air cap.

1. Using a small screwdriver remove the black plastic cover (14) at the top of the spray gun. Check that the slot in the piston (25) is uppermost so that the fluid needle (13) can be removed. If the slot is not in the correct position remove knob (33) and use a screwdriver in the centre hole of the end cap (32) to rotate the piston (25) to its correct position.
2. Remove the 4 hexagon socket screws (4) holding the spray head (7) to the body.
3. Pull the spray head (7) forward to disengage the locating pin.
4. Slide the spray head (7) up to disengage fluid needle (13) from piston (25). With spray head removed all components can easily be removed and replaced.

Material Connectors/Plug (5, 6)

WARNING: To provide protection from the ingress of Halogenated Hydrocarbon materials, the spray head material passages are sealed. It is essential when fitting connector/plug (5, 6) that sealing compound is applied and it is tightened to the recommended torque. Do not remove or tighten fluid tip (2) if connector(s) (5, 6) are not fitted to the spray head, as it may loosen the spray head insert and cause irreparable damage.
Remove connector(s)/plug with a 6mm hexagon key and clean threads in the spray head. Apply a medium strength thread locking/sealing compound to the external chamfer and threads of the new connector. Screw into spray head and tighten. Recommended Torque : 8 Nm (70lbf in).

Fluid tip (2) and/or baffle (3)
Unscrew the fluid tip (2) remove baffle (3).
To replace baffle, place over spiggot and engage tube into right hand hole (looking from front of gun i.e.larger of the two). Screw in fluid tip and tighten to recommended torque 16Nm (140lbf in).

Fluid Needle (13) and Packing Set (9)

Remove Spray Head Assembly, Fluid Tip (2) and Baffle (3) as described.

4.1. Remove needle (13).
4.2. Remove retaining screw (12) using a hexagon key, remove disc springs (11), packing piece (10) and needle packing set (9).
Refer to enlarged view on Figure 1.
4.3. Fit new retaining screw (12), disc springs (11), packing piece (10) and needle packing set (9) over needle (13).
4.4. Insert assembly into Spray Head and screw in retaining screw (12) by hand.
4.5. Remove needle (13) and re-insert from opposite end (See Figure 3).
4.6. Draw needle (13) back until the hexagon key fits into the retaining screw without touching the end of the needle (See Figure 4).
4.7. Fully tighten retaining screw then back off approximately half a turn – check the needle movement. The needle should not require excessive force to be moved or be loose – adjust if necessary.
4.8. Remove needle (13).
4.9. Re-assemble baffle (3) and fluid tip (2) as described above.
4.10. Re-fit needle (13) in correct orientation.

5. Re-assemble spray head to gun. Check 'O' rings (8) are in position. Engage fluid needle (13) into piston. Push spray head in and align with location pin. tighten screws (4). Refit air cap and material hose(s).

TO DISMANTLE GUN BODY, See Figure 1.
Disconnect hoses and release screw (27).

6. Remove spray head assembly see steps 1 to 4 and ratchet knob (33).

7. Piston (25) and Seals (16, 19 and 26).

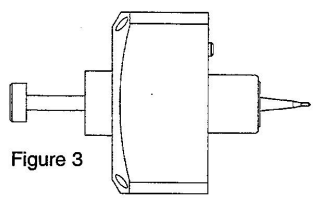


Figure 3

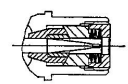


Figure 4

7.1. Remove end cap (32) using pin spanner which is part of the accessory tool kit AGG-412.

7.2. Remove springs (29 and 30) and piston (25). Care must be taken when removing the piston (25) from the gun to ensure that the front forks do not damage the front seal (16).

7.3. Remove the cylinder sleeve (23), accessory tool J-24728 can be used to extract it from the body.

7.4. Remove the seal and spacer (22), 'O' ring (21), spacer (20) and valve seat (19).

7.5. Using the hexagon key tool provided in the AGG-412 accessory tool kit, remove the seal locking ring (18), front seal (16) and seal ring (17).

7.6. Fit new front seal (16) into the locking ring (18) and using the hexagon key re-assemble, with seal ring (17) into body.

7.7. To replace piston seal (26), clamp accessory tool J-24708 into vice jaws, pins upwards. Position holes in piston (25) onto tool locating pins.

-Remove piston end cap and seal (26), clean end cap threads and end of piston. Fit new seal to piston, wipe clean the bore of the cylinder sleeve (23) and apply a light coating of soft petroleum jelly, remove 'O' ring (24) and replace with a new one.

Push cylinder sleeve over piston seal (26) ensuring the end of the cylinder sleeve with the identification groove is pushed on first.

Apply one drop of medium strength thread locking/sealing compound to the threads of the piston end cap and assemble to piston. Carefully tighten piston end cap, compressing seal (26) until end cap makes contact with the back face of the piston. -Recommended torque: 3.5 Nm (30lbf in).

NOTE: This assembly should be left standing upright for 1 hour to allow to compound to cure.

7.8. Re-assemble valve seat (19) ensuring lip is facing out towards the back of the gun body.

7.9. Re-assemble spacer (20) and 'O' ring (21).

7.10. Remove piston and cylinder sleeve assembly from tool and carefully push seal and spacer (22) onto piston with lips of seal facing away from cylinder sleeve.

7.11. Fit complete assembly into gun.

7.12. Refit springs (29 and 30), zero sleeve (31) and end cap (32) and tighten down to ensure all inner components have been securely compressed into position. Recommended torque 21-24 Nm (190-210lbf in).

7.13. Using a screwdriver rotate piston (25) so that forks are facing upwards to allow spray head to be fitted.

7.14. Re-assemble spray head and knob (33). See step 5

8. Connectors (28), remove connector and clean threads in the gun body. Apply a medium strength thread locking/sealing compound to the new connector's thread and screw into gun body. Do not overtighten leave approx 2mm of thread visible above the gun body face. Recommended torque 17-18Nm (150-160lbf/in).

ACCESSORIES

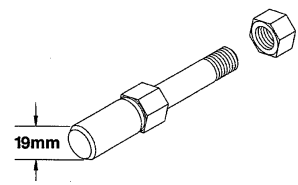
TEST CAP AND GAUGE KIT: Order GTI-459 add cap No. Example: GTI-459-**105**.

To check atomising pressure remove air cap and fit test cap and gauge.

SERVICE KIT: Order GTIA-406 Parts marked with + are

included in the kit.

GUN MOUNTING STUD KIT: Order KK-4573



TOOL KIT: Order AGG-412. -Comprising 4mm hexagon key for (4, 12, 27). Key Wrench for (18). Pin spanner for (32). 1.5mm hexagon key for (34).

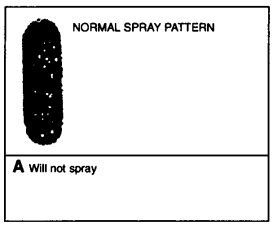
EXTRACTOR TOOL: Order J-24728 for (23).

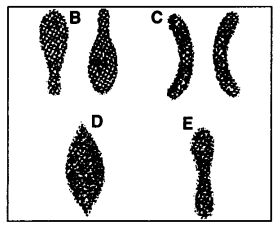
PISTON ASSEMBLY FIXTURE: Order J-24708, for seal (26) replacement.

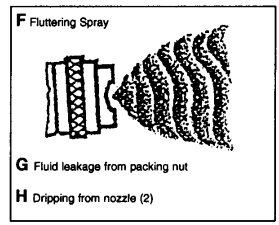
REMOTE 'FAN' CONTROL ADAPTOR Order AGG-75.For an independantly regulated fan air supply, remove 'FAN' valve (D) and fit adaptor. **NOTE:** It is possible to exceed 0.7 bar (10lbf/in2) at the air cap with the use of this adaptor.

SERVICE CHECKS

CONDITION







	CAUSE	CORRECTION
A	1. No pressure at the gun	1. Check air/material lines
	2. Piston stops moving	2. Check adjusting knob (33)
B	1. Material build-up on air cap/fluid tip	1. Clean air cap/fluid tip
C	2. Worn or damaged baffle (3).	2. Replace baffle
D	1. -Too much material	1. Increase air pressure or decrease material flow
E	1. Material too much	1. Reduce material flow
F	1. Insufficient material in tank or an obstruction	1. Fill tank or clear obstruction
	. in the hose.	
	2. Gun material passage blocked	2. Clean.
	3. Worn packing (9)	3. Replace
	4. Loose or damaged fluid tip	4. Tighten or replace.
G	1. Packing worn (9)	1. Replace packing.
	2. Rough needle shaft (13)	2. Polish contact point with packing with fine emery cloth.
H	1. Fluid tip blockage.	1. Remove and clean.
	2. Worn or damaged fluid tip (2) or needle (13)	2. Replace

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