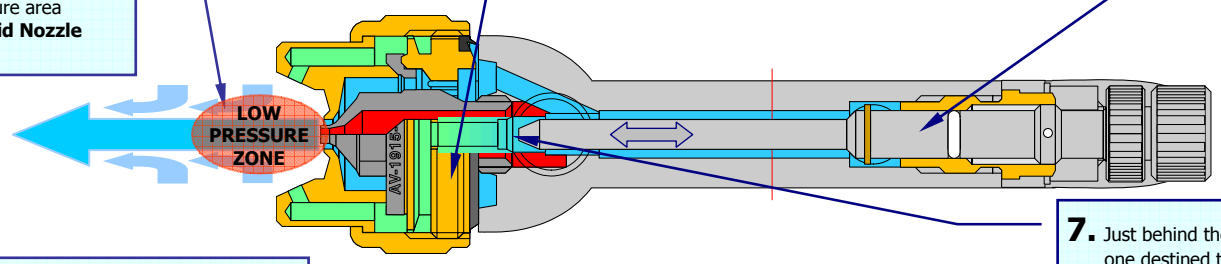
HOW DOES A JGA SUCTION SPRAY GUN WORK?

10. The moving compressed air jet pushes into the static air in front of the **Air Cap** and moves it along with it. More air rushes in to replace it and this in turn is then moved along by the air stream. All of this movement results in the generation of a low-pressure area directly in front of the **Fluid Nozzle** centre hole.

9. The compressed air exiting the centre hole of the **Air Cap** carries out two functions - **Suction** and **Atomisation**. The **Air Baffle** keeps the 'Horn' pattern shaping air and the centre hole atomisation air separate and correctly balanced.

8. The **Spreader Control Air Valve** controls how much air goes to the **Air Cap** 'Horns' to create the fan shape. When fully screwed forward it plugs the chimney of the **Air Baffle** and results in a round shape spray pattern. When fully screwed back, the maximum amount of air can pass and a full size fan will result.

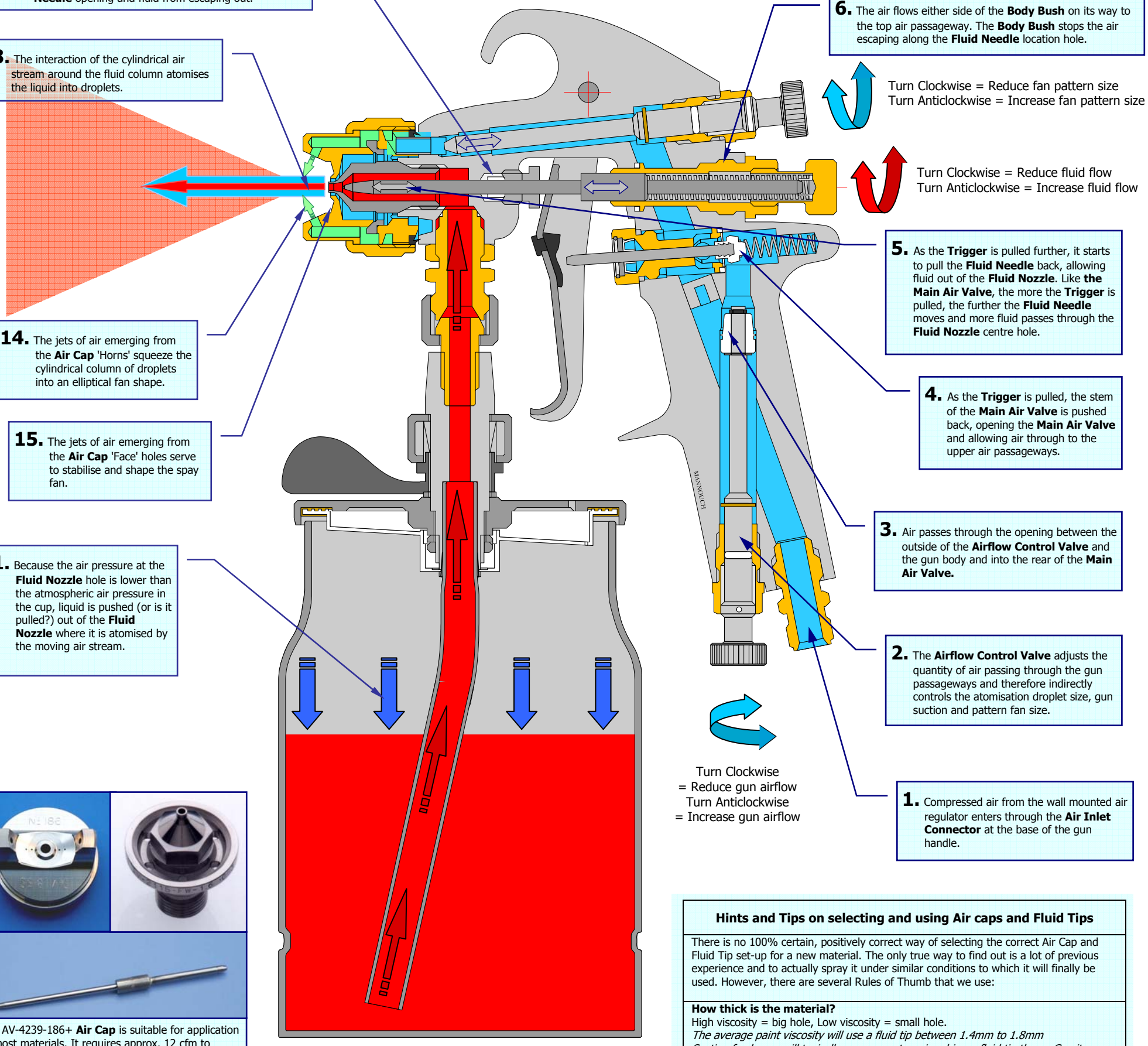


7. Just behind the gun head, the airflow splits into two different paths, one destined to atomise the liquid (blue air) and the second destined to shape the atomised fluid into a spray fan (green air).

12. The adjustable **Fluid Needle Packing** stops air from getting into the fluid passageways through **the Fluid Needle** opening and fluid from escaping out.

6. The air flows either side of the **Body Bush** on its way to the top air passageway. The **Body Bush** stops the air escaping along the **Fluid Needle** location hole.

13. The interaction of the cylindrical air stream around the fluid column atomises the liquid into droplets.



Turn Clockwise = Reduce fan pattern size
Turn Anticlockwise = Increase fan pattern size

Turn Clockwise = Reduce fluid flow
Turn Anticlockwise = Increase fluid flow

5. As the **Trigger** is pulled further, it starts to pull the **Fluid Needle** back, allowing fluid out of the **Fluid Nozzle**. Like **the Main Air Valve**, the more the **Trigger** is pulled, the further the **Fluid Needle** moves and more fluid passes through the **Fluid Nozzle** centre hole.

14. The jets of air emerging from the **Air Cap** 'Horns' squeeze the cylindrical column of droplets into an elliptical fan shape.

4. As the **Trigger** is pulled, the stem of the **Main Air Valve** is pushed back, opening the **Main Air Valve** and allowing air through to the upper air passageways.

15. The jets of air emerging from the **Air Cap** 'Face' holes serve to stabilise and shape the spay fan.

3. Air passes through the opening between the outside of the **Airflow Control Valve** and the gun body and into the rear of the **Main Air Valve.**

11. Because the air pressure at the **Fluid Nozzle** hole is lower than the atmospheric air pressure in the cup, liquid is pushed (or is it pulled?) out of the **Fluid Nozzle** where it is atomised by the moving air stream.

2. The **Airflow Control Valve** adjusts the quantity of air passing through the gun passageways and therefore indirectly controls the atomisation droplet size, gun suction and pattern fan size.

Turn Clockwise
= Reduce gun airflow
Turn Anticlockwise
= Increase gun airflow

1. Compressed air from the wall mounted air regulator enters through the **Air Inlet Connector** at the base of the gun handle.

The AV-4239-186+ **Air Cap** is suitable for application of most materials. It requires approx. 12 cfm to function correctly at a handle input pressure of 45 psi.
The AV-645-FW 1.6mm **Fluid Tip** will also work with most materials, although for higher fluid flow rates or higher viscosity materials the larger AV-645-EX 1.8mm may be more suitable. Both Fluid Tips are suitable for use with the 186+ Air Cap.
The JGA-421-FF **Fluid Needle** is used with the 1.6mm FW tip and the JGA-421-DEX Fluid Needle is used with the 1.8mm Fluid Tip.

The **ITW DeVilbiss JGA** Suction spray gun is a high performance, high production spray gun. It is a Conventional style DeVilbiss Air Atomising Spray Gun used in paint shops all around the World. We recommended that the 186+ air cap be initially set up at a start point of **45 psi** (3 bar) at the handle (when the trigger is pulled). This can then be used to test for atomisation and fan shape/material distribution characteristics. If felt necessary this atomisation pressure may be increased or decreased slightly to optimise the guns spray performance.
The gun is fitted as standard with a 1.1 Litre capacity Aluminium cup. The Aluminium construction is compatible with most Solvent-based and some Water-based materials used for modern finishes.

Hints and Tips on selecting and using Air caps and Fluid Tips

There is no 100% certain, positively correct way of selecting the correct Air Cap and Fluid Tip set-up for a new material. The only true way to find out is a lot of previous experience and to actually spray it under similar conditions to which it will finally be used. However, there are several Rules of Thumb that we use:

How thick is the material?
High viscosity = big hole, Low viscosity = small hole.
The average paint viscosity will use a fluid tip between 1.4mm to 1.8mm
Suction feed guns will typically use one or two sizes bigger fluid tip than a Gravity gun spraying the same fluid due to the Force of Gravity opposing the flow of fluid to the fluid tip orifice

How much do you want to come out/How fast do you want to move your arm?
High flow = big hole, Low flow = small hole
The average sprayer will need a fluid tip between 1.6 to 2.0mm

What air pressure should I use?
The minimum pressure necessary to give adequate atomisation to do the job
Every job and paint type requires a different air pressure - you can only find this out by trying it. Trans-Tech is more flexible than HVLP, but don't overdo it or it won't be any more efficient than an ordinary spray gun. We recommend a start handle input pressure of 30psi when the trigger is pulled, then gradually increase or decrease as necessary until the desired result is achieved. Remember the air pressure on a Suction spray gun also generates the suction to get the fluid to the front of the spray gun. Small air pressure = small fluid flow.

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