



AB (Fine Art) Airbrush

Customer Note: New "AB" Airbrushes are factory inspected for immediate use.

The "AB" Airbrush maintenance and replacement parts instructions are for Airbrushes that have been used extensively and require refurbishing.

HOW THE AB WORKS:

The illustration below gives you an idea what is going on inside your AB. As the finger lever is pressed down, air from your compressor is channeled through the air valve through the body of the airbrush. The airstream then splits, and part of the air is pushed across the edge of the power wheel (A) while the rest goes through the airblast tube (B). The edge of the power wheel is serrated, so that the air pushing against it causes the power wheel to spin. You will notice that the shaft on which the power wheel rotates passes through a slot in the walking arm. Actually, the portion of the shaft which rides in the slot is offset from center, so that with a cam like action the spinning of the power wheel causes the walking arm (and thus the needle) to oscillate back and forth. The speed regulator screw controls the speed of the power wheel (and thus the walking arm and needle) by regulating the volume of air pushing against the power wheel.

When you press down on the finger lever, you let air into the airbrush and start the needle moving back and forth. Then as you pull back on the finger lever, the walking arm is pushed forward, and in turn the oscillating needle is pushed into the stream of air coming from the airblast tube. Thousands of times per minute, the needle retracts into the needle bearing, picks up a coating of color and then moves forward, drawing the color out of the bearing and into the airstream, where the color is blown off the needle and onto the surface you are painting. The needle is tapered, so that as you pull back farther on the finger lever, a thicker portion of the needle is exposed to the airstream and a wider band of color is formed.

A line is thus formed by the action of the needle passing back and forth in front of the stream of air coming from the airblast jet, and you control the thickness of that line with the finger lever. But the quality of that line and the ease with which you can control it are affected by three other

controls, all of which regulate the volume or the pressure of the air passing through the airbrush.

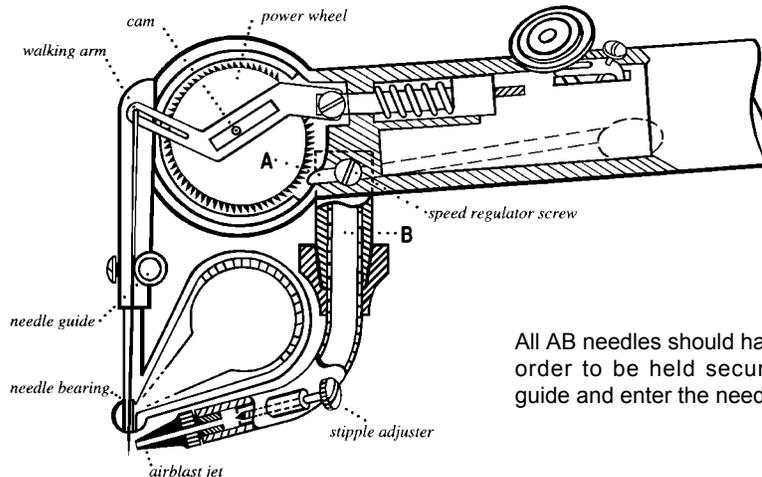
METHODS OF CONTROL:

As mentioned before, the speed regulator screw controls the volume of air hitting the power wheel, and so controls the speed of the needle. The faster the needle moves, the more color is being blown onto the surface you are painting during a given length of time. If you want to form a thin line, you can do so by having the needle moving at a high speed and sweeping the airbrush very quickly over your work, or by having the needle oscillating much slower and moving the airbrush more slowly. Obviously the second method offers the most control and is a major advantage of using the Paasche AB.

There is another method of controlling the speed of the needle, however, and that is by adjusting the pressure of the air coming into the airbrush. In this case, if you have the speed regulator screw turned wide open (counterclockwise) with low air pressure (8-15 P.S.I.) from your air source, the power wheel and needle will move slowly. But the needle will also move slowly using a high air pressure (25-35 P.S.I.) with the speed screw turned almost closed (clockwise).

A comparable situation exists for the flow of air through the airblast tube. The stipple adjuster screw restricts the airflow through the airblast jet and across the needle. When the air is almost closed off, a grainy or stippling effect is created. But the same effect happens with the stipple adjuster wide open using a very low air pressure.

As you can see, there are many different combinations of settings for these three controls (the speed regulator, the stipple adjuster, and the air pressure) each combination producing a characteristic effect, both in spray pattern and handling of the airbrush.



All AB needles should have a bow in them in order to be held securely by the needle guide and enter the needle bearing properly.

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BASIC PRECAUTIONS:

Before starting any adjustments or parts replacements, a couple of precautions should be observed. The fine tip of the needle is very delicate, and once damaged it is difficult to straighten again. Remove the needle before beginning a repair, or if necessary use an old needle. Secondly, most of the threaded parts are made of brass, and the threads are easily stripped. Do not force the parts to do what they don't want to do.

(See section "Speed Regulator Screw" for specific example of this problem.)

ADJUSTING STIPPLE ADJUSTER & AIRBLAST JET:

The stipple adjuster is the screw at the elbow of the airblast tube. It controls the airflow through the airblast tube. By turning this screw in (clockwise), you restrict the volume of air blown out the airblast jet and across the needle. When the air is almost shut off you create a grainy, stippling effect.

The threads of the stipple screw can become so loose that it will not hold its position in the airblast tube and will gradually turn out as you use the airbrush. As a preventive measure, we suggest you avoid excessive turning in and out of this screw. From the fully closed position, you only need to turn the screw two full turns to fully open this little valve.

If the screw is too loose, you can tighten the threads' fit by pressing a dab of beeswax onto the threads and rolling the screw between your thumb and forefinger to work the beeswax into the threads. Only a thin coating is needed. Then pass the screw very briefly over a match flame, melting the beeswax into the threads. The wax will adhere better as you insert the screw back into the airblast tube.

SPEED REGULATOR SCREW:

This screw works much the same as the stipple adjuster. It controls airflow and thus the speed of the power wheel and the needle. Again, all the adjustments happen within a range of two turns of the screw. As noted before, do not try to force the screw tighter than it wants to go. You can shear the head of the screw right off, leaving the screw firmly embedded in the body of the airbrush, impossible to remove.

POWER WHEEL TOP SHAFT BEARING ADJUSTING:

Adjusting shaft bearings is a procedure that should be done only if the power wheel is sluggish, is intermittently binding, or is completely stuck. To check this, remove the needle, then try to operate the power wheel and walking arm, pressing down the finger lever and moving it back and forth. If the power wheel runs smoothly now, the problem is with your needle, not with the bearing adjustments. If the problem continues, however, you will need to adjust the bearings. If the power wheel is sluggish or will not move at all, it could be that you simply need to loosen the top bearing a little. Remove the top grease cap, exposing the top shaft bearing. You will find the bearing covered with grease, which you may want to remove in order to see the slot in the top of the bearing better. To adjust the bearing, use a screwdriver with a blade as wide as the opening into which the bearing fits. A larger screwdriver can be filed down to fit exactly the slot in the bearing. While pressing down on the finger lever for air, slowly loosen the top bearing (turn counter-clockwise). If the power wheel frees itself and begins to run smoothly, you have found the problem. To adjust the bearing accurately, tighten it again until the power wheel stops, then loosen it just until the power wheel runs smoothly. This is a matter of 1/16 to 1/8 turn, never more than 1/4 turn. Do not loosen the bearing beyond the point where the power wheel frees itself and runs smoothly. Beyond this point the power wheel will begin to vibrate in the bearing. It will appear to be running smoothly but then will suddenly bog down. If this happens, tighten the bearing a little. You will find the power wheel returns to normal speed.

If you find that the power wheel runs smoothly for a while then freezes up again, the problem is that the threads in the power wheel cover have become too worn to hold the bearing snugly in place. The power wheel happens to spin in the same direction needed to tighten the top shaft bearing. If the bearing does not fit snugly in the power wheel cover, the power wheel will actually drag the bearing until it stops the power wheel! The remedy for this situation is the same as for the loose stipple adjuster or speed control—work beeswax into the threads of the bearing. Over a long time period, the beeswax will wear out and this repair will have to be done again.

FINGER LEVER ADJUSTING SCREW:

This screw is located at the back of the finger lever, in the lever fork, and adjusts the "rest position" of the finger lever. When you turn the adjusting screw in, the walking arm is pushed farther into the stream of air from the airblast jet. By adjusting this screw you set the width of the line created when the finger lever is simply depressed, but not pulled back (the "rest position" spray width.) Note: In the "farthest forward rest position" you get no spray if the color cup is properly positioned.

Be careful with the two extremes of this adjustment. If you turn the adjusting screw too far out (counter-clockwise), the needle moves to the very end of the slot in the walking arm, and the needle binds between this slot and the slot in the color cup support. Always check that the needle is at least a "hair's breadth" from the very end of the walking arm slot.

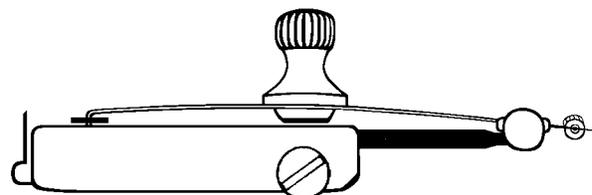
On some ABs, if you turn the adjusting screw too far in (clockwise), the walking arm will be pushed too far forward and will hit the front of the opening in the power wheel cover through which it extends.

SHAPING THE NEEDLE:

In general an AB needle should be curved in two directions. Viewed from the side the needle should have a slight arch, so that the needle guide can hold it firmly in the slot in the needle bearing. Viewed from the top, the needle should curve underneath the lip of the needle guide screw. Both arch and curve should be gradual bends along the length of the needle, with no sudden bends or angles. About 3/8 inch at the tip of the needle—that portion which rides in and out of the needle bearing—should be left straight. In fact, try not to touch the tip at all as you are arching and curving the needle, for fear of distorting the needle. Remember that you are shaping the needle to fit your particular airbrush.

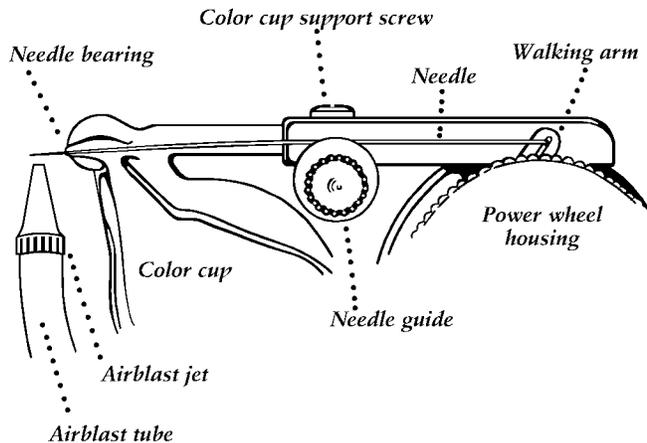
The arch (side view) of the needle does not need to be too great—just enough to give a little tension when the needle guide is screwed all the way down. With a more extreme arch the tip of the needle rides in the bearing at too great an angle. In addition, the motion of the needle is not as smooth, because the crest of the arch is passing in and out from under the needle guide.

Side View of Arch in Needle Under Needle Guide



Continued on page 3

Top View of Curve in Needle Under Needle Guide

**SHAPING THE NEEDLE** (Continued from page 2):

The other curve of the needle (top view) is the one that varies most from airbrush to airbrush. Again, there should be a gradual curve, with a straight section at the tip of the needle. The idea is to curve the needle completely under the lip of the needle guide (if the needle rides at the edge of the lip, the needle will not stay in place as it oscillates), and at the same time for the tip of the needle to ride nearly parallel with the edges of the slot in the needle bearing. It is normal for the tip of the needle to sit at a slight angle in the needle bearing—with the curve in the needle, you can't help it. But this angle should be minimized, to keep the needle from binding in the needle bearing.

ADJUSTING THE COLOR CUP:

The color cup is clamped into the color cup support by tightening the screw on the front side of the support. To determine how far the color cup should project from the support, first run the Finger Lever Adjusting Screw out (counter-clockwise) until there is just a "hair's breadth" remaining between the butt end of the needle and the end of the slot in the walking arm. This finger lever position is called the "farthest forward rest position."

Now slide the color cup in or out of the support until the tip of the needle comes to the end of the slot in the needle bearing but does not project from it. Attach the AB to your air compressor and start the needle moving with the finger lever in the "farthest forward rest position" (push down the lever but do not pull back). Slide the color cup out until the needle does not project from the bearing—you now have the correct color cup position for the "farthest forward rest position." Note: The rapidly moving tip is easier to see against a white background.

The color cup can also be partially rotated to allow you to spray onto a surface more or less horizontally. You will notice as you rotate the color cup, the position of the needle bearing changes, necessitating a readjustment of the airblast tube and in a few instances even a recurvature of the needle. For this reason you will probably want to find one position for the color cup which is comfortable for you and then stick with it. The amount of tilt is limited, from a position in line with the power wheel housing to about 30 degrees below this line.

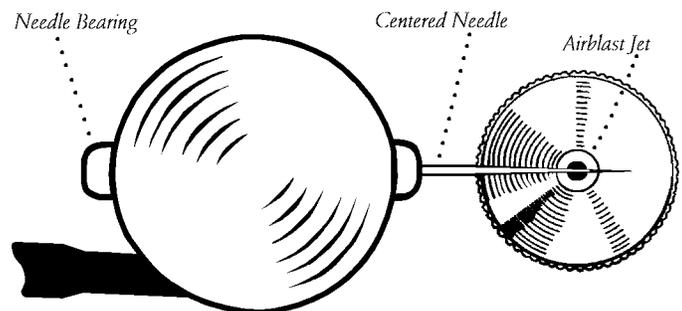
AIR VALVE PARTS REPLACEMENT:

This is rarely necessary, but these parts can be replaced fairly simply. Unscrew the valve nut and remove the spring plunger, and washer in that order. Use a small stiff wire with a slight hook bent into the end of it to fish out the washer. Then place a new washer on the plunger and insert the plunger and washer together. To avoid compressing the springs too far, screw the valve nut in only until it is slightly below the level of the air valve casing.

ADJUSTING THE AIRBLAST TUBE:

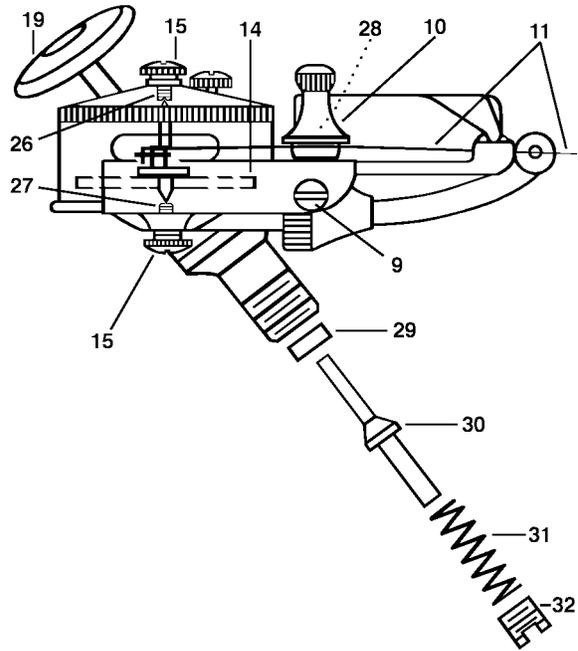
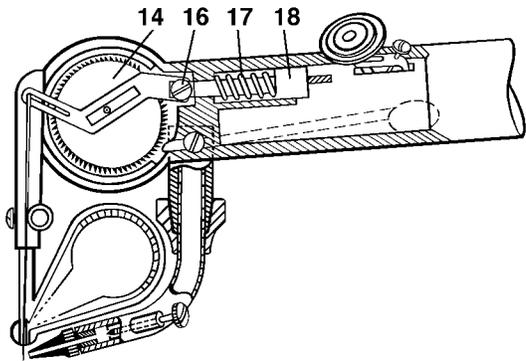
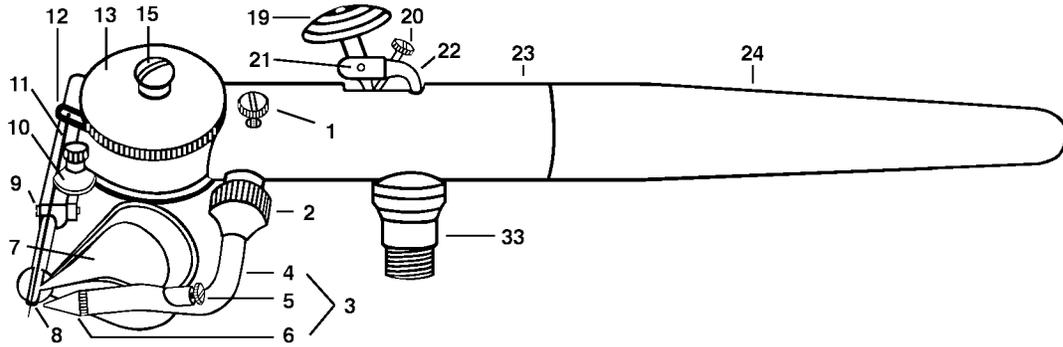
Check that the color cup is properly positioned as described above. With pliers loosen the locknut where the airblast tube attaches to the body of the airbrush. Now rotate the airblast tube, screwing it in (counter-clockwise) or out (clockwise) until the airblast jet is about 1/64 inch from the end of the needle bearing. Now with the air turned off pull back the finger lever so that the needle is pushed out in front of the airblast jet. The distance from the needle to the tip of the jet should be about 1/64 inch. Very carefully you may bend, if necessary, the airblast tube where it enters the locknut and arches to the body of the airbrush to accomplish this second adjustment. Do not bend at the elbow of the airbrush tube or in front of the elbow for two reasons: (1) curved tubing such as the elbow in the airblast tube is inherently more brittle and tends to crack if leverage is applied to it, and (2) there is a soldered joint where the stipple adjuster is attached to the elbow, which may break if pressure is applied.

Finally set the airblast tube so that the needle, when extended, passes through the center of the airstream from the airblast jet—that is, as you sight down the hole in the airblast jet, the needle should cross the center of that hole. If the needle is off center, you will get a stippling effect, and for some applications you may wish to set the airblast tube in this way purposely.



The "AB" Airbrush is not suitable for use with alcohol or lacquer colors. Any water color, opaque or oil can be used with brilliant results.

See Page 4 for AB Replacement Parts and Parts Numbers.



If Parts are worn and aforementioned repairs are not proving helpful, Paasche suggests the purchase of replacement parts listed below. Any Parts not listed MUST be replaced at the Factory.

* Denotes Part to be Fitted at the Factory.
For further information contact Paasche Service Department.

NO.	PART NO.	DESCRIPTION
1.	A-140	Speed Regulator Screw
2.	A-139	Air Blast Tube Locknut
3.	A-173	Right Hand Air Blast Tube Assembly
	A-173LH	Left Hand Air Blast Tube Assembly
4.	*A-138	Right Hand Air Blast Tube
	*A-138LH	Left Hand Air Blast Tube
5.	A-146	Stipple Adjuster
6.	A-101	Air Blast Jet
7.	A-179	Right Hand Color Cup Assembly
	A-179LH	Left Hand Color Cup Assembly
8.	A-177	Right Hand Needle Bearing
	A-177LH	Left Hand Needle Bearing
9.	A-160	Color Cup Screw
10.	A-142	Needle Guide
11.	A-116	Needles (Dozen)
	A-116LH	Left Hand Needles (Dozen)
12.	A-107	Walking Arm
13.	*A-131	Right Hand Wheel Housing
	*A-131LH	Left Hand Wheel Housing
14.	*A-172	Power Wheel & Shaft Assembly
15.	A-114	Grease Cup
16.	A-106	Walking Arm Shaft (Screw)
17.	A-105	Walking Arm Spring
18.	A-104	Walking Arm Plunger
19.	A-121	Finger Lever and Button
20.	A-146	Lever Adjusting Screw (Old# A-60)
21.	A-58	Lever Pivot
22.	A-14	Lever Fork
23.	A-122	Right Hand Shell (Includes A-128)
	A-122LH	Left Hand Shell (Includes A-128)

SPECIAL NOTE: Periodically the Grease Cup (Item 15) should be removed and the Bearing checked for Grease - Apply if necessary.

NO.	PART NO.	DESCRIPTION
24.	F-143	Handle (Old Style A-161)
26.	A-133	Top Shaft Bearing
27.	A-154	Bottom Shaft Bearing
28.	A-143	Needle Guide Spring
29.	A-52	Valve Washer (Pack of 6)
30.	H-21A	Valve Plunger
31.	A-22	Valve Spring
32.	A-23A	Air Valve Nut
33.	A-128	Valve Casing

PART NO.	ACCESSORIES
A-34	Airbrush Hanger
A-64	Screw Driver
A-117	Tweezers
AB-CASE	Case

PART NO.	HOSE & ACCESSORIES
A-1/8-6	Air Hose W/ Couplings
A-1/8-6MT	Air Hose W/ MT Moisture Trap
AC-1/8	-1/4" Coupling
AC-20	1/8"-1/4"-40 Coupling
MT	Moisture Trap
HF-1/4	Valve Assembly