

BADGER

MODEL 200 DETAIL™

BOTTOM FEED, SINGLE ACTION
INTERNAL MIX

INSTRUCTION
BOOK



AIR-BRUSH

SPECIAL NOTE: Read instructions for proper care in handling and operation. Use in well ventilated area. Always read and follow instructions, cautions and warnings on materials being sprayed. See back page for further information.

At **BADGER AIR-BRUSH CO.** we are extremely proud of our people and our products. Our continued growth and success is based upon high quality and conscientious craftsmanship in the manufacture of each and every **BADGER** product. At **BADGER AIR-BRUSH CO.** there is a feeling of accomplishment, pride and dedication to you, the **BADGER** airbrush user, that bonds the entire **BADGER** family, and goes into the design, development and manufacture of every airbrush we make.

Each airbrush and all of its components are carefully machined, inspected, assembled by hand and tested in actual use to be certain it meets BADGER'S and your high standards of quality. Then, and only then, the BADGER name is put on it.

This dedication to excellence and commitment to satisfaction prompts us to stand behind all of our products and offer the following warranty.

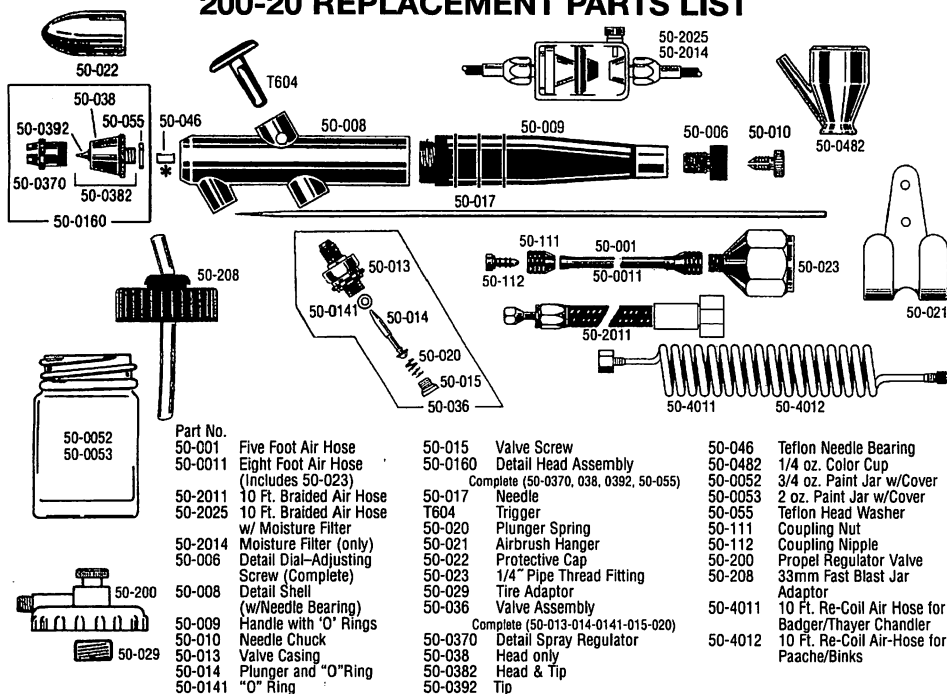
WARRANTY

Your BADGER airbrush is warranted against all manufacturing defects of material and/or factory workmanship origin for a period of two years. Any part or material that becomes defective or is worn so as to not be usable within one year of purchase will be repaired or replaced at our discretion and expense. Your Badger airbrush has a lifetime warranty for any necessary factory labor (After the first year, the only cost of factory repair will be the cost of shipping to the factory and repair related parts). These warranties do not cover damage caused by negligence, accidents, misuse, or units that have been abused or altered in any way. The Teflon needle bearing has a lifetime warranty and if ever necessary will be replaced at the factory without cost, except for to the factory shipment cost, to the airbrush owner.

CONGRATULATIONS on your purchase of the Model 200-20, a superior quality-precision crafted airbrush designed, engineered, and manufactured by **BADGER AIR-BRUSH CO.** The Model 200-20 has a single-size paint tip, spray regulator, and needle that work with any properly reduced medium, including acrylics, gouache, inks and dyes, enamels, lacquers, stains, etc. The Model 200-20 works especially well with Badger Air-Opaque™, Air-Tex™, and MODELflex™ paints.

The Model 200-20 bottom feed is an ideal tool for artists, high school students, hobbyists, van painters, taxidermists, etc.

200-20 REPLACEMENT PARTS LIST



*The Teflon® Needle Bearing Carries a Lifetime Warranty and Free Replacement at the Factory only

READ INSTRUCTIONS CAREFULLY BEFORE OPERATING

1. Attach air hose to air supply (air source should be off). If using compressor, CO2 or other pressurized air "tank" with an air regulator there should be a 1/4" male fitting to which the air hose is connected. It is a good idea to wrap these threads with Teflon plumber's tape (available at any hardware store) prior to attaching air hose to ensure a proper air seal. Make certain 1/4" female fitting on air hose is completely extended from air hose end to ensure it screws properly and completely on to 1/4" male air source fitting. If using propellant, use Badger propel regulator (50-200). Screw propel regulator to propellant can (make certain propel regulator is in off position –adjusting screw turned counter-clockwise), then attach air hose to propel regulator. NOTE: On Badger air hoses with 1/4" female fitting the threads to attach the air hose to the propel regulator are recessed inside the 1/4" female fitting.
2. Attach airbrush to opposite end of air hose. Gently turn airbrush (clockwise) onto air hose until tightened snugly. If desired, give one gentle twist with small pliers to ensure an absolute seal at the air hose/airbrush connection.
3. Turn on air source and regulate air pressure to approximately 23-28psi for most bottom feed airbrush applications or 15-20psi for most gravity feed airbrush applications. On compressors without an air regulator and gauge you should be ready to connect your color jar to the airbrush and begin spraying as soon as you turn the compressor on. If using a compressor with no on/off switch simply plug it in. If your compressor has an on/off switch put it in the on position. If using a CO2 or other pressurized air "tank" turn the regulator dial counter-clockwise to open the airflow.
4. Attach or drop in your color. If using a bottom feed airbrush fill your paint jar or color cup to the desired level of color. In the case of a color cup simply attach the cup to the airbrush color inlet stem coming down from the forward part of the airbrush. If using a jar, screw the jar adaptor to the jar and attach it to the airbrush by inserting the jar adaptor into the color inlet stem. Give your color cup or jar adaptor a gentle twist to secure the friction fit and prevent the color cup or jar adaptor from slipping out of the airbrush during use. If using a gravity feed airbrush simply pour or drop your color (with an eyedropper) into the permanent color chamber atop the airbrush. NOTE: the rule of thumb for color viscosity related to airbrushing is to reduce/thin the material you wish to spray to a viscosity equal to 2% milk or thinner. The manufacturer of the material you are spraying should have a recommended thinning agent, so check with them on how to thin their product correctly for airbrushing. In the case of any Badger paints the thinning agent is distilled water, but all Badger paints are made ready to spray.
5. Begin spraying. If you are using a dual action airbrush (air & paint flow both being operated by the trigger of the airbrush) press down on the trigger to start air flowing through the airbrush then slowly pull back on the trigger to release color. Always press down on your trigger first then pull back on the trigger – the further you pull back on the trigger the more color you will spray and the further you should be from your work surface to avoid an undesired spray effect. To make a fine line work close to the surface - press down on the trigger, begin slowly moving your airbrush, and pull back on the trigger just a little bit until you see color on your work surface.
6. If you have a single action airbrush (all you operate at the trigger is the air flow) press down on the trigger to start the air flow, then turn the adjusting screw at the rear of the airbrush counter-clockwise until color comes out and you achieve your desired spray pattern. The further you turn the adjusting screw counter-clockwise the more color you will spray, the further you should be from the surface you are spraying. The less you turn the adjusting screw, the less color you will spray and the finer the line you will achieve when working close to your work surface. NOTE: On the external mix Badger Model 350 the color adjustment is done at the front of the airbrush. Turn the fluid cap clockwise for more color and counter-clockwise for less color. It is advisable to test your spray patterns on a scratch pad before spraying on to your project surface.

The following are some exercises you can do to learn to use and become proficient with your airbrush.

LEARN TO TRIGGER-When using a dual action airbrush, best results are achieved by a good consistent motion and pace. Start motion, depress trigger to start air flow, pull back on trigger to spray color, return trigger to forward position to stop color, release trigger to stop air flow, stop motion. Always maintain an even distance from airbrush to project surface when a consistent spray pattern is desired (this is an extremely important point to remember when spraying three dimensional items). **DON'T ARC** (unless you desire a varying spray effect in your finish). If airbrush motion is at varying distances from the project surface the finish will be uneven. The best way to learn to trigger your airbrush is to have fun and play with it-draw figure eights and/or write you name at varying distances from your practice surface, getting a feel for fine lines and spray pattern formations at different distances from the surface and with different paint volumes. Spray a fine line, then move back from the surface and spray a shadow for that line. Tear a sheet of paper and use it as a mask: hold the paper up to your practice surface and spray along the torn edge to create clouds. Next hold a small jar cap up to your practice surface (on the edge of the clouds) and spray around the jar cap's edge-remove it to see the eerie sky you have just airbrushed! Spray through stencils or a doily or anything you have handy to spray through or around. **HAVE SOME FUN!** You'll get comfortable with your airbrush and learn to use it faster. You can practice these same exercises with a single action airbrush, and it should be slightly easier to learn, as you are presetting a spray pattern and cannot inadvertently or accidentally change it by pulling back on the trigger too much or at the wrong time.

EXERCISE ONE/FREE HAND CONTROLLED EFFECT

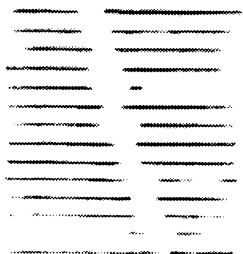


FIG. 1



FIG. 2

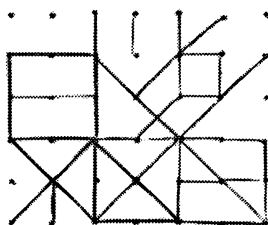


FIG. 3

The exercise shown in **Fig. 1** will enable you to draw straight lines without forming dots or puddles at the beginning and end of each line. This is triggering again, see page 3. **Fig. 2** is a parallel line graduating from narrow to broad. These are made by releasing more color and at the same time, lifting the airbrush away from the surface. Practice daily to develop trigger action control. **Fig. 3**, layout in pencil 1/2 inch squares. Airbrush the dots as small as possible and connect dots with straight lines of even tone. Practice every lesson carefully before proceeding to the next one.

EXERCISE TWO

On a board or paper, lightly pencil in a number of 1/2 inch squares. Hold the airbrush about 1/2 inch from the surface and spray paint small dots on the intersecting lines, as shown in Fig. 4. Use liquid food coloring. When you are able to place the dots accurately, begin enlarging the size of the dots, Fig. 5., by allowing more color to flow through the airbrush. At the same time increase the distance between the airbrush and the paper or board. If the airbrush is held too closely to the paper "puddle" will form and spread (as in Figs. 6 & 7). Aim for accuracy not speed and continue practicing until you can spray paint any size dot exactly where you want it. This simple lesson will give you control of the position and density of dots or shapes you require, which are important for touch-ups and fill-in work.

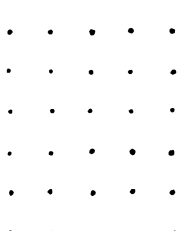


Fig. 4

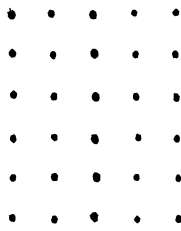


Fig. 5

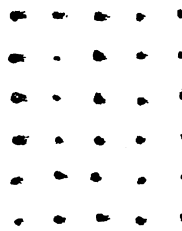


Fig. 6

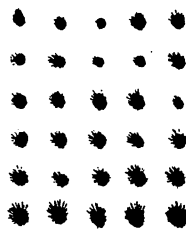


Fig. 7

MASKING OFF

In the next several exercises you will need to mask off a square area. Make a mask from 4 pieces of scrap paper (Fig. 8). These masks are held in place by masking tape, keeping the atomized material from creeping into the margins around the area. When using masks spray over the edge.

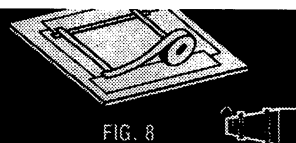


FIG. 8

EXERCISE THREE/EVEN TONES

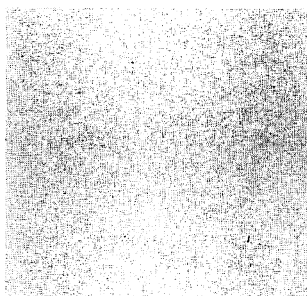


FIG. 9



FIG. 10

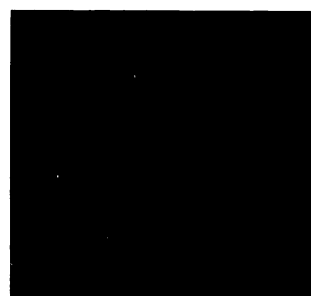


FIG. 11

To accomplish a flat tone, we will airbrush a fine consistency of paint from left to right at the top of the taped area. Hold the airbrush about four inches from the surface of the sheet. Be sure to spray a portion of the tape so that no light line shows when the masking tape is removed. Use the trigger technique on page 3 throughout this lesson. Now airbrush from right to left overlapping the previously airbrushed strokes. Continue down the entire sheet, trying not to create a line pattern with the airbrush. Over spray the tape, both right and left and top and bottom. Begin at the top again and so the entire page. Repeat the exercise until you reach the desired smooth coverage of the entire area. Do not attempt to cover the entire sheet with a heavy tone at one time. Build the tone gradually (Figs. 9-11). Make sure the work and tape are dry before removing the masking tape. This should be done carefully to avoid tearing the surface of the paper it is adhered to. If your first results are not satisfactory, repeat the lesson until you are satisfied.

MAINTENANCE AND CLEANING OF YOUR AIRBRUSH

Careful maintenance of your airbrush is essential if it is to continue to work effectively. One of the most important factors that affect the performance of the airbrush is cleanliness. The small passages inside the airbrush can become blocked easily by dried paint if the airbrush is not cleaned after each use. If there is still a useable amount of color in the color cup or reservoir when you have finished spraying, pour the remainder back into the original paint bottle. Operate the airbrush, spraying on a scrap piece of paper until the color is gone and only air is sprayed. Spray with clean water, Air-Opaque™ Cleaner or an appropriate solvent until the spray is colorless. Always clean the airbrush every time you finish spraying. Some types of paints can dry remarkably fast. If the paint is allowed to dry inside the airbrush you may be able to dissolve it with clean water. Cleaning with a solvent is the next step. If cleaning with solvent does not dissolve the blockage, you will have to disassemble the airbrush.

CLEANING OF YOUR AIRBRUSH

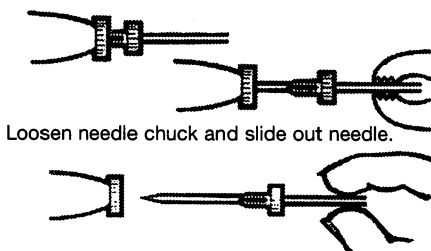
To clean the airbrush, take a clean color cup or jar full of cleaner. Insert into the airbrush, spray some cleaner through the airbrush at broad and small patterns. After removing color cup or jar, turn brush upside down and press trigger. This will remove any material still in the airbrush.

Another method of cleaning the airbrush is back flushing. Take a soft cloth and cover the spray regulator-depress the trigger. This will cause a bubbling in the paint reservoir. Take away the cloth and spray and repeat this procedure several times. After this is done you should remove the needle for cleaning.

Spray regulator should be cleaned using a soft bristle brush. Insert into the cavity of the spray regulator and rotate until the paint is removed.

If the needle is stuck in the airbrush, carefully loosen the needle chuck, then grasp the end of the needle with a pair of pliers and twist in a counter-clockwise direction to release the needle. Inspect for hardened paint which causes the needle to bind. If there is a residual stain on the needle, it can be polished off using a pink eraser. Hold the needle flat on a worktable, run the eraser the full length of the needle, turn the needle slowly by rolling it towards yourself and repeat the process. Be careful not to bend the tip. Remove all eraser particles by running the needle between your thumb and forefinger.

To replace a bent needle, set needle adjusting screw all the way forward.



Loosen needle chuck and slide out needle.

Insert new needle. Slide it forward with slight pressure from index finger until the needle stops. Do not push forward with great pressure, as the needle may split the delicate paint tip and also damage the needle point. To lock the needle in place tighten needle chuck into needle adjusting screw. Turn needle adjusting screw to desired spray pattern.

A bent needle will prevent you from airbrushing a fine line and will cause an erratic direction of spray. A bent tip does not always have to be discarded. Place the needle on a firm surface at the angle of the tip. Straighten the tip by running your fingernail across it on the tabletop while you turn the needle slowly. Run your fingernail from the body of the needle outward towards the tip.

TO SPRAY

After mixing and thinning paint, fill paint jar about 2/3 full (or less). Attach jar of paint to airbrush, turn air on and press trigger. Test your spray on old newspaper or other material. Make any necessary spray adjustments and get the "feel" of your airbrush. *(Be sure that paint or fumes cannot reach any flame. Also make sure there is adequate ventilation).*

REPLACING THE TIP

Begin by removing head (50-038) from the body of the airbrush. Place 3-cornered reamer (50-061) through center post of the head as you would position the needle. Grasping head, turn reamer counter-clockwise to remove damaged tip.

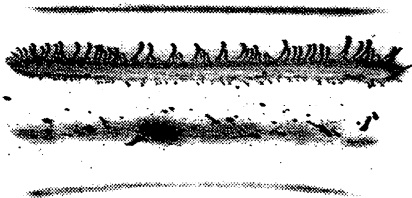
Place new tip on pointed end of reamer. Place a small amount of beeswax (50-050) to threads of tip. Hold tip in place with index finger while gently pushing head up to meet tip. Slowly turn head counter-clockwise until tip is seated firmly in head and there is no visible gap between head and tip.

With a lighted match, melt wax while turning head so as to seal the joint. After wax has hardened (approximately 10 seconds), gently remove excess with fingertips. Remove 3-cornered reamers. Return head to body of airbrush.

TROUBLESHOOTING YOUR AIRBRUSH

- 1) **GRAINY SPRAY.** Caused by paint being too thick. Add water or thinner sparingly to the mixture and check the needle and regulator tip for dried paint. Also check the air supply to make sure airbrush is being operated at the proper pressure.
- 2) **BUCKLING PAPER.** Paint may be too thin or you may be applying paint in too heavy a coat.
- 3) **PAINT BLOBS AT THE ENDS OF THE STROKE.** You are spraying paint before moving your hand and stopping the movements before shutting off the paint flow.
- 4) **FLARED ENDS.** Caused by turning the wrist while airbrushing. The whole forearm should move horizontally across the paper.
- 5) **CENTIPEDES.** Caused by spraying too much paint too close to the paper. If a fine line is desired, lightly pull back on the front trigger.
- 6) **SPLATTERING.** Caused by permitting the needle to snap back into the tip. Always release the trigger gently. Check for dried paint on needle or tip. Also may be caused by triggering. See page 3 for proper triggering.
- 7) **CURVED STROKE.** Caused by arcing arm too close to the paper. Arm should always be parallel to the work, unless this effect is desired.
- 8) **BUBBLES THROUGH THE COLOR CUP.** The spray regulator might be turned out too far, or the head may be loose. Check both and tighten if necessary.
- 9) **COLOR SPRAY CANNOT BE SHUT OFF.** Tip may be clogged. This is recognized by a "spongy" feel when needle is set into tip. Remove the head from the air brush and clean the tip - see Maintenance and Cleaning, page 4.
- 10) **PULSATING.** This is caused by the head being loose or the tip not seated properly. See page 4, Replacing the tip.

The only other reason that the airbrush may begin to pulsate is if the needle bearing wears down or falls out. There is a life-time warranty on this part because the owner cannot replace this part. If this occurs send back to factory for no-charge service (see warranty, page 2).



PLEASE READ CAREFULLY BEFORE USING YOUR BADGER AIRBRUSH

Your new Badger airbrush should provide you with many hours of enjoyment. However, because of the nature of airbrushing and of the composition of materials which you may use in your air brush, we are providing you with information about potential hazards.

Many materials commonly used in arts and crafts projects (such as lacquers, varnishes, adhesives, fixatives, powders, acrylics and solvents) can be extremely hazardous. Not all of these materials will be used in your airbrush, but may be used in some other phase of your project. We recommend that you always find out what is in the material you use. We suggest that when using any chemical substance that you request a copy of the manufacturer's Material Safety Data Sheet from your art supply dealer. This will give you some indication of the dangers posed and some of the precautions you need to take.

ALWAYS READ AND FOLLOW LABEL DIRECTIONS CAREFULLY

CHILDREN Hazardous materials pose an even greater risk to children due to their lesser body weight and frequent lack of care in following directions. **CHILDREN SHOULD ALWAYS BE SUPERVISED WHEN USING AN AIRBRUSH OR ART MATERIALS** (unless the materials have been certified by the Crayon, Watercolor and Craft Institute). An airbrush is not a toy. It should not be pointed at anyone or at oneself.

GOOD HYGIENE IS IMPORTANT ANYTIME YOU ARE WORKING WITH ART MATERIALS

- Do not smoke, eat or drink while airbrushing.
- Avoid putting your fingers in your mouth while working on art projects.
- Be sure to clean your fingernails and wash your hands when you are finished.
- Be especially careful of the materials you use if you have cuts or open sores.
- **STOP WORK AT THE FIRST SIGN OF DIZZINESS, NAUSEA, HEADACHE, BLURRED VISION, OR SKIN IRRITATION.** Seek fresh air immediately, and call a doctor if the symptoms persist or are severe.

VENTILATION An open window does not provide adequate ventilation when working with hazardous art materials. When working with these materials, you should have an exhaust ventilation system (one which removes vapors, dusts, etc., from the area in which you are working and vents to the outside). A general ventilating system dilutes toxic vapors with fresh air to lower their concentration to a safer level.

Many factors have to be considered to determine the kind of ventilating system you should have. We suggest that you contact the National Institute for Occupational Safety & Health, (NIOSH), Robert A. Taft Laboratories, 4676 Columbia Parkway, Cincinnati, Ohio 45226 for publications which they have dealing with ventilating systems.

RESPIRATORS A respirator may pose more of a hazard than a help unless:

- you get one designed to filter out the specific hazardous substance you are working with
- one that fits properly
- you keep it properly cleaned and maintained.

We suggest you buy only a NIOSH® approved respirator and read and follow carefully the instructions which come with it.

A respirator may not be suitable for some people with heart or breathing problems. Information on respirators is also available from NIOSH at the address above.

RESOURCES In addition to NIOSH, you might want to read **Health Hazards Manual for Artists** by Michael McCann, PhD (published by the Foundation for the Community of Artists, 280 Broadway, Suite 412, New York, New York 10007) or contact the Consumer Products Safety Commission, Washington, D.C. 20207.

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BADGER AIR-BRUSH

9128 W. Belmont Ave., Franklin Park, IL

847.678.3104 Fax 847.671.4352

www.badgerairbrush.com