

Mark Lee Express Brown # 2 Instructions

Wear safety glasses when performing the following operations.

Metal Preparation Tools Required:

- Abrasive paper preferably cloth backed 120-400 grit
- Selection of files

Remove pitting with files and or abrasive paper. Your metal preparation will probably begin with coarse grit abrasive paper, but should be completed using 320 or 400 grit.

Degreasing Tool Required:

- Detergent, Simple Green® recommended
- Scrub brush
- Tongs or wire hooks
- Air compressor or paper towels
- Clean cotton gloves

Degreasing is essential in getting fine results. Parts should be soaked in hot soapy water using a cleaner such as Simple Green®. Scrub parts with a brush during the cleaning process. Remove parts from the cleaning solution with tongs or hooks. Rinse thoroughly with hot water, dry with compressed air or blot with paper towels. Do not touch cleaned parts with bare hands as the oils from your body can contaminate the metal. Wear cotton gloves while handling degreased metal parts.

Etching Tools Required (optional):

- Sandblasting gun
- 150 grit garnet (aluminum oxide can be used)

Etching helps the first applications to take hold of the base metal. Etching can be accomplished chemically (acid dip) or mechanically (blasting with media). I do not recommend using acid because it is too hard to control. Blasting with 150 grit garnet is the best. The polished metal will appear dull grey after blasting but the process of rust browning will bring the sheen back. The finish will look almost the same whether or not it is blasted. The blasting is best to do after the degreasing and parts should only be handled with clean cotton gloves. **Warning:** Do not blast with glass beads as the beads produce different textures on hard and soft steel.

Application Tools Required:

- Vinyl or latex gloves
- Cotton gloves
- Natural sea sponge, cellulose sponge, cotton swabs, or poly foam paint brush
- Small glass or plastic container
- Propane torch or other heat source
- Container for boiling distilled or deionized water (tap water can be used in many parts of the country but it depends on the mineral content in your area)
- Steel wire brush (.003 - .005" bristles) or oil free steel wool

Pour solution into small glass or plastic container. Warm the metal parts to 150-200 degrees Fahrenheit with a propane torch or other heat source. Use vinyl or latex gloves during application. Dip applicator in solution and apply to warmed metal parts. If the solution does not evaporate right away run the flame back over the metal parts to dry the coating. A coating of brown to yellow rust will immediately form.

Coat two more times drying the coating with the flame each time. Using clean cotton gloves remove

powdery residue with steel wool or a fine wire brush. The coating is very tough so do not be afraid of carding it too hard. The metal should now be an uneven brown coating. Do not worry about uneven finish, as it will even out with each application. Warm metal parts again and coat with solution three times. Card off the loose residue and repeat the steps of coating and carding until it gets difficult to card. There are usually some yellow streaks mixed in with the brown. At this point dip in warm tap water, 100-110 degrees F. Dry the parts with compressed air and card again. The carding should be much easier after the water dip. Warm the parts again, put on several coats, dip in water, and card parts. If you want a more plum brown head the water to 150 degrees Fahrenheit or higher. You can get any shade of brown up to plum brown black just by raising the water temperature.

Neutralizing Tools Required:

- Baking soda
- Glass or plastic container large enough to contain the part

When satisfied with the metal finish place the parts in a container with a solution of baking soda and water for 5 minutes (concentration is not important). Rinse the parts, dry and coat the browning with RIG (gun grease) and leave set for 24 hours.

Tips from Mark Lee:

During the entire browning operation do not touch the metal with you bare hands, you can leave contamination spots in the finish.

If you use steel wool for carding make sure to buy oil free steel wool. It is available at fine wood working stores.

Garnet is preferred for etching as it is unlikely to imbed in the metal. This is only a concern on parts that rub against each other such as the bolt.

Do not try to brown the ends of the barrel because you don't want any browning solution in the bore. Polish the barrel crown back to white after browning. I don't plug bores anymore but I make sure I am using fresh water when doing barrels.

If you do not have a boiling tank and are only going to do a few guns you can buy a piece of PVC pipe, glue a cap on one end, hang your barrel in the pipe and fill the pipe with boiling water each cycle.

Parts can be strung on a wire for boiling but -DO NOT- wire brush the parts with wire attached. The wire brush can grab the chain of parts and cause serious injuries! I almost lost an eye when the wire brush grabbed the string of parts.

After initial cleaning, a light scrub down with a scotch pad while in the water rinse is often helpful to insure that all cleaner residue is removed.

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The Mark Lee Express Brown #2 and
RIG® Gun Grease are both available at:

www.trackofthewolf.com

#ML-XBROWN2-4 Express Brown 4 fl. oz. bottle

#RIG-1 Rust Inhibiting Grease 1.5 oz.