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Instruction Manual Part #13143Q – Rev. 8/04

Eastwood Buffing and Metal Finishing

Part #13143



IMPORTANT SAFETY INSTRUCTIONS

Virtually any metal can be buffed to a mirror-like shine. Aluminum, brass, copper, pot metal, steel and stainless steel can all be buffed to a high shine using the high-quality buffing compounds, wheels, and other supplies available from Eastwood. The contents of the kit you purchased are on the packing list which came with it. Please check the contents of your package against the packing list to ensure that no items were overlooked.

If any of the items on your packing list were not included in your kit, please call

Eastwood Customer Service Department at 1-800-544-5118
to receive any missing items.

IMPORTANT SAFETY NOTICE

- *Wear safety glasses or a face shield at all times. Observe all applicable safety precautions.*
Buffing motors typically spin at over 3,000 rpm and material can be ejected from them or the part on which you are working at speeds of up to 80 mph.
- *Wear tight fitting LEATHER gloves at all times.*
Materials being buffed can get hot, and frequently have sharp edges. To protect your hands, leather gloves are best. They should also fit tightly so they will not become caught in the buffing wheel.
- *Always wear a properly fitting dust mask.*
Prolonged exposure to the fine dust particles produced by buffing can harm your lungs.
- *Do not wear loose-fitting clothing and if your hair is long, tie it back or wear a cap.*
It is best to wear a long-sleeved shirt and to make sure that the cuffs are buttoned to prevent the shirt from getting caught in either the motor's shaft or the buffing wheel.
- *Hold your work firmly and never look away while buffing.*
Since the buffing wheel spins very quickly and the motor is very powerful, a work piece can become a projectile and may injure either yourself or others in your workshop if it is allowed to slip out of your hands.
- *Use minimum pressure against the wheel.*
Let the wheel do the work! Roughly two pounds of force is sufficient. This is about the amount of force required to close a file cabinet drawer.
- *Always buff so that the wheel runs off the edge of the work piece – never into the edge.*
If an edge should get caught in the wheel, the workpiece could be ripped from your hands and hurled across the workshop, possibly injuring either yourself or those watching you.
- *Do not put your fingers inside a piece to hold it. Avoid handling sharp edges.*

PRINCIPLES OF BUFFING

The Difference Between “Polishing” and “Buffing”

“Polishing” a piece of metal removes a moderate amount of metal from the piece, using coarse to medium abrasives in stages. The piece will have a “brushed” look and you will not be able to see any reflections in it. Polishing removes scratches and minor surface imperfections which are too deep for buffing compounds to remove efficiently. If you run your fingernail over a scratch and it gets caught, then the piece should be polished before buffing. The key to success in polishing is to remove just enough material to make the surface even and no more.

“Buffing” removes very small surface irregularities and makes the surface almost perfectly smooth by removing a very small amount of metal. Just like polishing, buffing is done in stages from coarse to fine. Buffing compound grits are so fine that you might not be able to tell the difference between compounds by rubbing some between your fingers. Their difference in performance, however, is significant.

What Are “Cutting” and “Coloring” Compounds?

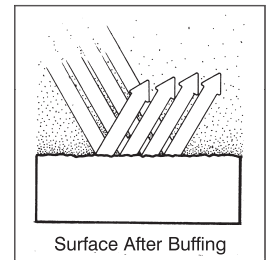
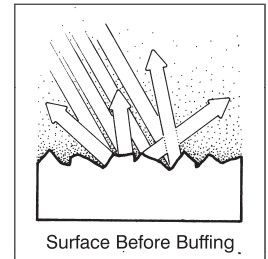
“Cutting” compounds are coarse and will remove a fair amount of material quickly. The first stages of buffing could be referred to as the “cutting” stages. “Coloring” compounds are extremely fine and result in the mirror-like shine which is the result of an excellently done buffing project. The final stage of buffing could be referred to as the “coloring” stage.

Practice Makes Perfect!

If you are unfamiliar with any of the steps, we strongly recommend that you practice on a scrap piece of trim before attempting to work on a piece you intend to install on your vehicle. Remember: you can always remove a little more metal if necessary, but you can't put it back easily.

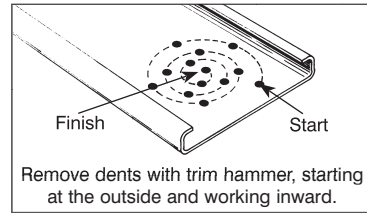
Leveling and Polishing (Smoothing) The Metal Surface

Inspect all pieces before buffing to determine if any prep work is needed. You will need to remove all rust, dents, high spots, and deep scratches. The following sections will explain how to remove these and other imperfections in preparation for buffing.



Dent Removal

In most cases it is possible to restore a dented piece of stainless or aluminum trim to its original condition. We recommend using Eastwood's Trim Hammer and Anvil Set (#13116) for dent removal. The Trim Hammer (#13146) is designed to access most areas. It may however, be necessary to custom grind a bolt head to access dented areas under a flange. Start at the outside of the dent and work your way around the outside of the dent and gradually inward in a circular pattern. This will shrink the metal back to its original shape. If you work from the inside of the dent outward, you will stretch the metal further and possibly ruin the piece. It is better to make several light passes and slowly work the piece back into shape than to try to remove the dent with a few heavy blows.



Filing

Next use a fine file (such as an ignition point file) to "knock down" any high spots, but be careful not to remove too much material from the hammered area. Inspect your work to make sure it is as smooth as possible and, if necessary, use the trim hammer to bring up any low spots, then repeat the filing to remove any high spots. Finally, sand/polish the surface using one of the methods detailed in the next section.

Sanding/Polishing (hand, expander wheel, and greaseless compounds)

Once the piece is as even as you can make it using the trim hammer and file, sand the area with 220 grit sandpaper to remove the file marks (320-600 grit for hard metals). Soft metals like aluminum will require little work, while harder metals such as stainless steel will take more time. In some cases hand sanding may be all that is needed. To speed your work consider using an expander wheel, greaseless compounds and/or abrasive rolls detailed in the following sections.

A. Expander Wheel

The Eastwood Expander Wheel Kit (#13127) combines both filing and sanding into one step and comes ready-to-use with five different aluminum oxide abrasive bands. It is ideal for larger pieces like grill trim and hubcaps. The abrasive bands on the Expander Wheel maintain the flattest surface. Work from coarse belts to fine to at least 220 grit for soft metals and to 320-600 grit for hard metals. **NOTE:** It's better to start with an abrasive that's too soft rather than too coarse. For a smoother cut on steel, leveling aluminum or other soft metals apply Grinder's Grease (#13119) or Tripoli Compound (#13135) directly to the spinning belt.

TECH TIP: Smoothing soft metal surfaces finer than 220 grit and hard metal surfaces finer than 600 grit may eliminate the use of Tripoli or Emery Compound and speed the buffing process. Always change the angle of attack by 90° (or as close as the shape of the part allows) as you work through successively finer grit abrasives and compounds to assure previous grit lines are removed. If deeper scratches or pits are noticed, it usually means that polishing and buffing steps were all done in the same direction thus disguising the deeper imperfections.

Using High Performance Trizact Belts on Your Expander Wheel

Further smoothing the surface at this point will save substantial buffing time. Additional smoothing can be done with the 3M Trizact Bands available as a set of 5 (#13159). These bands are comparable to 100, 200, 400, 700, and 1200 grit. The precise structure of the abrasive used on the Trizact band delivers fast effective cutting throughout the life of the belt. These belts last about 2-5 times longer than our regular abrasive bands and resist loading even when used with aluminum. Apply Tripoli (#13135) or Grinder's Grease (#13119) directly to the spinning abrasive band when using the Trizact A30, #13115C, (comparable to 700 grit) or the Trizact A16, #13115D, (comparable to 1200 grit), on aluminum or other soft metals to assure a smooth cut, and prevent metal pick-up. (Metal pick-up results in a rougher surface by removing grains of metal and depositing them in a different area.)

TECH TIP: For slightly contoured surfaces, use the Finishing Belts (#13139) which combine the cleaning and metal conditioning power of Finishing Belts with the ease-of-use and speed of the Expander Wheel.

B. Greaseless Compounds

When polishing highly contoured surfaces, use Eastwood's Greaseless Compounds (80 grit - #13129, 120 grit - #13194, 220 grit - #13131, 320 grit - #13132). When applied to a dedicated spiral sewn or loose section buff, these compounds convert your buff to a flexible sanding wheel. For use, follow the instructions on the Greaseless Compound labels.

NOTE: Greaseless compounds can also be applied to mini buffing wheels, goblet and facer buffs, or felt bobs. Greaseless Compounds are applied to the spinning buff wheel in the same manner as the buffing compounds. Greaseless Compounds should have a rubbery consistency. If you find the greaseless compounds are hard on the ends and will not transfer to the wheel, simply cut off the hard end with a sharp knife and reapply.

C. Abrasive Rolls

Abrasive Rolls in both cylinders and tapers in 80, 120, 240, and 320 grits are available from Eastwood. These rolls are used with your High Speed Pneumatic or Electric Die Grinder. The Mandrels for these rolls are available in lengths from 2 3/4" to 6" long. We recommend using the shortest mandrel that will reach. The cartridge rolls are best used with light side pressure, letting the spinning abrasive roll do the cutting rather than excessive side pressure.

NOTE: Excessive side pressure may cause the mandrel to bend or break.

SMOOTHING THE SURFACE, CONT.

C. Abrasive Rolls, continued

Insert the glued end of the abrasive cartridge roll fully onto mandrel extension and twist clockwise until tight. NOTE: Enlarge mounting hole slightly with an awl to ease mounting rolls on mandrel. Mount mandrel with abrasive roll in pneumatic or an electric die grinder (**22,000 rpm maximum speed**). The abrasive roll will tend to tighten itself further in use. If using abrasive rolls on softer metals like aluminum, or for a smoother cut, apply Grinder's Grease (#13119) or Tripoli Compound (#13135) to the spinning abrasive roll. Apply spinning Abrasive Roll to work surface using light pressure. The underlying abrasive will become exposed as the roll is used. As with all polishing and buffing processes, change the contact angle by 90° (or as close to 90° as the part will allow) so that you can see when the previous grit marks have been removed.

Aluminum and other soft metal surfaces need to have a surface as smooth or smoother than what a 220 grit abrasive would yield. Stainless Steel and other hard metals should be brought to a 400-600 grit or finer finish before using the buffing wheels and compounds. Using buffing wheels and compounds on surfaces rougher than recommended will result in an uneven surface.

BUFFING INSTRUCTIONS

Choose the Right Wheel and Compound for the Job

Use the chart below to make your selection. The condition of the piece on which you are working will determine whether or not all three buffing steps will be necessary. A felt bob, facer, mushroom, goblet, or mini buff can be substituted as necessary to buff deeply recessed areas.

Buffing Wheel and Compound Selection Chart					
Materials	Steel, Iron Stainless, or Other Hard Materials	Soft Metals, Brass, Copper, Aluminum Die-cast, Zinc	Chrome Nickel Plate	Solid and Plated Gold Silver	Plastics
Step 1 – Rough Compound, Buff	Emery, Treated/ Untreated Sisal	Tripoli, Treated/ Untreated Spiral/Ventilated	N/A	N/A	Plastic Loose/String
Step 2 – Intermediate Compound, Buff	Stainless Treated/Untreated Spiral/Ventilated	N/A	Stainless* Treated/Untreated Spiral/Ventilated	N/A	N/A
Step 3 – Final Compound, Buff	White Rouge Loose Section	White Rouge Loose Section	White Rouge Loose Section	Jeweler's Rouge* Flannel	Plastic Flannel String
Recommended RPM for 4-10" Wheels	3600	3600	3600	1800-3600	1800

NOTE: Condition of the workpiece dictates the steps necessary. Some pieces may only require final finishing (Step 3).

*Use caution to prevent buffing through plating.

BUFFING INSTRUCTIONS, CONT.

Buffing Wheel and Motor Selection

For successful buffing, it is important that the motor and buffing wheel you use are matched. If your motor is not powerful enough for the wheel you are using,

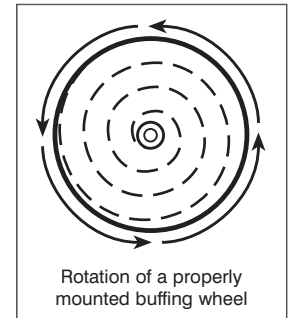
the motor will not be able to maintain proper speed. If the motor turns too fast, excess heat will build up and the work piece might become permanently discolored. Use the chart above to choose the right motor/wheel combination. Different wheel thicknesses can be achieved by stacking buffs together.

Motor/Wheel Specification Chart

Motor Size	Maximum Wheel Thickness			
	4" Dia.	6" Dia.	8" Dia.	10" Dia.
1/3 hp Motor	2 1/2"	2"	1"	1/2"
1/2 hp Motor	3"	2 1/2"	1 1/2"	1"
3/4 hp Motor	3 1/2"	3"	2"	1 1/2"
1 1/2 hp Motor	4"	3 1/2"	2 1/2"	2"

Mounting the Buffing Wheel

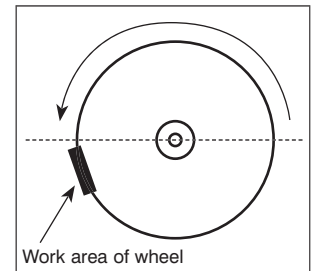
Attach the buffing wheel to the buffing motor spindle, making sure that it is mounted securely between the flange washers. When mounted properly, the top of the wheel should spin toward you and down when the buffing motor is running. NOTE: Wheel stitching orientation is of no consequence to wheel performance or durability.



Applying Compound to the Buffing Wheel

With the buffing wheel attached and the motor running, gently touch the appropriate tube of compound to the face of the wheel for one to two seconds. Apply the compound slightly below the centerline of the wheel. (See illustration at right)

NOTE: It is normal for the compound to appear to be dried out. The compound consists of a graded abrasive in a hard wax binder. The heat from contacting the spinning buffing wheel surface will melt the binder and the wheel will pick up the compound.



BUFFING INSTRUCTIONS, CONT.



Buffing the Right Way:

1. Wear a respirator, gloves, face shield, and long-sleeved shirt.
2. Stand in a comfortable position.
3. Hold the work firmly and use the area just below the centerline of the wheel.
4. Remember to let the wheel do the work!
5. Never leave a running buffer unattended.

Dressing The Buffing Wheel

After a period, it will be necessary to dress the surface of the wheel to remove dried compound and particle build-up. The Eastwood Buffing Rake (#13120) does this quickly and easily and also removes minor high spots on an out of balance wheel. Holding the rake securely, lightly touch the rake to the spinning wheel in the same manner as the compound and slightly below wheel centerline.

Working the Piece

Since much buffing is done with stainless steel, we will use that as an example. Keep in mind that the condition of the piece on which you are working will determine the wheel/compound combinations and steps necessary.

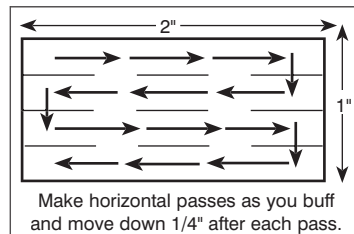
One of the keys to successful buffing is to let the wheel do the work. Use only light pressure against the wheel and always keep the piece moving.

Before you begin, double check the surface of the piece to ensure that there are no deep scratches in the surface. If you can catch your fingernail in the scratch, you will have to file and sand it out before you begin buffing. Please refer to **Preparing Pieces Before Polishing & Buffing** (page 4).

First, mount a treated or untreated Sisal Wheel and load it with Emery Compound. Emery is fairly coarse and will remove fine scratches, leaving a uniform finish. **NOTE:** The treated Sisal Wheel will produce faster results.

With the buffing motor off, make practice runs with your piece to determine your pattern. Be aware of any corners, sharp edges, or bolt holes that the wheel may catch. Work on one small area at a time.

Begin in one area and work the part across the buff horizontally. Use light pressure and move down 1/4" after each pass until you have finished. Inspect your work frequently. When you have finished that section, move on to the next one, reapplying compound as necessary.



BUFFING INSTRUCTIONS, CONT.

NOTE: If the work piece starts to bounce while you are buffing, either the wheel is improperly mounted, needs to be dressed, or you are applying too much pressure. **Remember to let the wheel do the work.**

After you have buffed the entire piece, clean it thoroughly with PRE (#10041Z), Metal Wash (#10120), lacquer thinner, or dish washing detergent and let it cool before continuing. Make sure all traces of the compound you were just using are wiped from the piece before continuing. Otherwise you will contaminate the next wheel and compromise your results.

Store Wheels and Compounds Properly

Remove the Sisal Wheel from the buffing motor and place it along with the Emery Compound in a sealable plastic bag.

NOTE: It is very important that only ONE type of compound be used on each buffing wheel. We suggest placing each wheel and its compound tube in separate, sealable plastic bags (i.e., one bag with your Sisal Wheel and Emery Compound, another with your Spiral Wheel and Stainless Compound, etc.) to prevent accidentally applying the wrong compound to your buffing wheel. This also helps to keep the wheels and compounds contamination free.

Now mount the treated, untreated, or ventilated Spiral Sewn Wheel to the motor and apply the Stainless Compound. Again, buff the piece in the same manner as when you used the Emery Compound, working the piece at right angles to the previous grit scratches until all Emery Compound scratches are eliminated. You will notice that the Stainless Compound is not as aggressive as the Emery Compound, but that it will smooth out the buffing marks left by the more coarse Emery Compound.

NOTE: A Ventilated Buff may be used as an alternative to a Spiral Sewn wheel. The pleats of the Ventilated Buff tend to slap the surface and cut about twice as fast as Spiral Sewn wheels. The Spiral Sewn wheel may be preferred when working on delicate parts or between fins on a valve cover. The Ventilated Buff is more likely to "grab" surface irregularities but yields faster results, and runs cooler. The "treated" versions of Spiral and Ventilated wheels speed results and last longer than untreated wheels.

Buffing in Restricted Spaces

Buff deeply recessed areas with either the Stainless (#13136), Tripoli (#13135) or White Rouge. Use our Mini Buff Set (#13140) with either the 1/4" shank (#13054) or the 1/8" shank (#13063) mandrel. For more deeply recessed areas, use a Felt Cone (#13050), one of our sets of Felt Buffing Bobs, Tapered Goblet Buff (#13045), a Mushroom Buff (#13174), or Facer Buff (#13171, 13172, 13173),

Compound should be applied more sparingly to felt bobs. Periodically spin the bob against a wire brush or old hack saw blade securely mounted in a bench vise to remove buildup. Use only one compound per felt bob.

BUFFING INSTRUCTIONS, CONT.

Inspect Your Progress

Check your progress from time-to-time while buffing. Inspect the piece by looking at the reflection of a single light bulb in the surface. If the reflection is irregular as you move the piece, the surface is uneven and will not buff out. Try to keep your buffing as smooth and even as possible. Remember: let the wheel do the work.

If you notice medium scratches in the piece, but your fingernail does not catch on them, mark those areas and repeat the Sisal/Emery process. Do not attempt to buff them out with the Stainless Compound.

If you notice scratches which are deep enough for your fingernail to catch, then you will need to re-polish the piece (See page 4) and repeat the buffing process from the start.

When you have finished the entire piece, let it cool, clean it, and put the Spiral Wheel and Stainless Compound in a sealable plastic bag.

Final Buffing or "Coloring"

Next mount the loose section wheel and apply White Rouge Compound to the wheel. Initially work a small area at a time as done in previous steps. Again change your angle of attack by 90° so you can easily see when the Stainless Steel Compound scratches have been removed. Then make a light pass with the direction of wheel rotation over the longest length of the piece. Now you will see what the final piece will look like. The Loose Section Buff and White Rouge Compound has little cutting ability, but serves mostly to bring out the "color" of the metal.

A Note About Heat Generated by Buffing

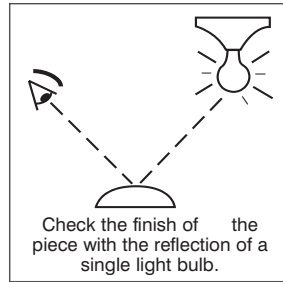
The friction resulting from buffing generates heat. Be careful when handling just-buffed parts: they will be hot. It is also very important to be sure to keep the piece on which you are working moving as you are buffing it to prevent discoloration and distortion. The heat is not beneficial, it is merely a by-product of the buffing process.

Buffing Aluminum and Other Soft Metals and Plastics

These materials require only two buffing steps. Please refer to the chart on Page 6 for the best wheel/compound combinations. For more detailed information, we recommend the instructional video "The Art of Buffing Video" (#13004). It gives clear, concise advice on all stages of a buffing project.

Keep that New Look Longer

To keep your freshly-buffed parts looking their best, we recommend using Autosol Polish, available in 100 gram tube (#13170), and 1000 gram can (#13175).



BUFFING INSTRUCTIONS, CONT.

Special Protection for Polished Metals

Your polished parts will start to oxidize almost immediately. We strongly recommend using Eastwood's DiamondClear for bare metal - High Gloss (Aerosol, #10200Z or Pint, #10189Z) to prevent oxidation and keep the beautiful luster you just worked so hard to achieve. For a virtually invisible shield of protection (protects for up to 2 years) try one of our ZoopSeal kits: (#10516Z) Starter Kit and (#105172Z) Master Kit.

For Superior Protection

Use the HotCoat™ Powder Coating System to apply Gloss Clear (#10093) or Super Gloss Clear (#10286). For a custom look, use one of the translucent powders.

TROUBLESHOOTING

Problem	Possible Cause: Corrective Action
The Wheel Turned Black	This is normal. No action needed,
Metallic Build-up On Wheel	This is normal especially when buffing soft metals like aluminum and brass. Eventually the wheel should be cleaned using the Buff Rake (#13120) to avoid galling the surface.
Black Streaks On Part Being Buffed	This usually indicates excessive compound application. Apply compound often but sparingly.
Scratches/Pits Are Still Visible Even After Final Buffing	Even highly polished surfaces have fine scratches. Most of these can be eliminated by making your last pass with the direction of rotation. If deeper scratches or pits are noticed, it usually means that polishing and buffing steps were all done in the same direction thus disguising the deeper imperfections. Always change the angle of attack by 90° (or as close as the shape of the part allows) as you work through successively finer grit abrasives and compounds to assure previous grit lines are removed.

CAUTION

When buffing plastic parts, generation of any heat must be avoided to prevent damage.

OTHER ITEMS

Items for Tight Spot Buffing

Eastwood has a wide selection of Mini Buffs, Felt Bobs, Mushroom Buffs, Facer Buffs, and Goblet Buffs ideal for tight spaces.

#13116 Eastwood Trim Hammer and Anvil Set

For dent removal.

#13127 Eastwood Expander Wheel Kit

Combines both filing and sanding into one step. Comes ready-to-use with five different abrasive bands.

#13139 Expander Wheel Finishing Belts

For contoured surfaces, these bands combine the cleaning and metal conditioning power with the ease-of-use and cleaning of the expander wheel.

#13159 3M™ Trizact™ Belt Set

This 4 band set brings rough surfaces to a 1200 grit finish for faster buffing. Unique abrasive structure delivers consistent cutting throughout belt life.

#13120 Eastwood Buffing Rake

Quickly and easily removes dried compound and particle build-up as well as minor high spots on an out-of-balance wheel.

#10198 Eastwood HotCoat™ Powder Coating System

Clear and translucent powder finishes provide superior protection vs. liquid coatings.

#13004 Art of Buffing Video

Excellent resource for additional buffing tips and techniques.

Flexible Shafts: #13009–Small, #13415–Large, #13014–Large with Motor
Ideal for working in tight spots or on large pieces. For finer detail work #13305 Pro Craft Bench Top Motor or #13328 Pro Craft Hanging Motor.



www.eastwood.com

If you have any questions about the use of this product, please contact

The Eastwood Technical Service Department

1-800-CAR-TEC1 (1-800-227-8321)