

# **Giraud Tool Company, Inc.**

## **Motor Upgrade for Gracey Trimmer**

This package is intended to allow the user to upgrade their Gracey trimmer with a higher rpm motor and convenience features not found in the production offering.

This upgrade can be performed with a minimum of hand and power tools. The users should read and understand all these directions before proceeding with the installation process. If for any reason the user does not feel comfortable installing this upgrade package, they have the option to return the unused package for a full refund or send the package with their trimmer to Giraud Tool Company for installation.

The following tools are required to install the motor upgrade package:

- flat blade screw driver
- Phillips blade screw driver
- 5/16" hex socket wrench
- 11/32" hex socket wrench
- 5/64" hex allen wrench
- 3/32" hex allen wrench
- 1/8" hex allen wrench
- pair of slip joint pliers
- pair of end cutting (nipper) pliers (recommended, not required)
- small punch or nail
- small hammer
- 1/4" drill bit and drill
- small round or triangular hand file

These instructions will cover the removal of the existing motor and replacement with the new higher rpm motor, mounting of the new switch box and motor starting capacitor, and an option for replacing the existing cutting blade with a new carbide cutting blade.

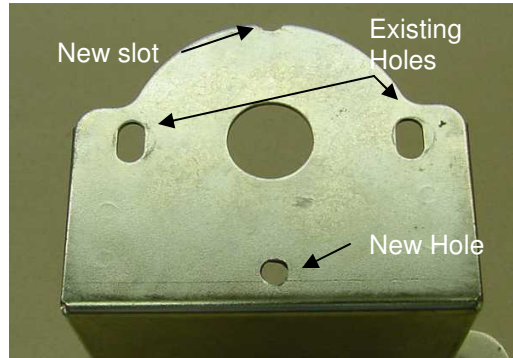
### **MOTOR UPGRADE INSTALLATION**

- Step 1. Unplug the trimmer from any power source and place on a clean dry working surface.
- Step 2. Remove the hardware connecting the power cord clamp to the metal motor mount.
- Step 3. Remove the hardware from the two 8-32 threaded studs securing the motor to the motor mount.
- Step 4. Carefully remove the motor from the motor mount and pull the motor shaft out of the rubber drive shaft.
- Step 5. Remove the four mounting screws holding the trimmer unit to the motor mount and base.
- Step 6. Cut the clamp securing the rubber drive hose to the rear of the trimmer body and remove the drive hose from the trimmer shaft.
- Step 7. Examine the motor mount; you will see two slots horizontally opposite the main clearance hole for the motor shaft. You will need to drill one hole vertically below the main clearance hole for the motor shaft to accept the third threaded stud on

the new motor. You will also need to add a small relief groove to the vertical top of the motor mount above the main shaft clearance hole. This new hole and new relief slot can be made easily with a 1/4" drill bit and drill for the lower hole and the round hand file for the upper relief slot. See Figure 1.

Step 8. Carefully measure the distance from the main shaft clearance hole to the center of the slots on either side.

Step 9. Mark the new location for the lower hole directly under the main shaft clearance hole the same distance from the center of the main shaft clearance hole with the small punch and hammer.



**Figure 1** - Bracket with new hole and slot shown.

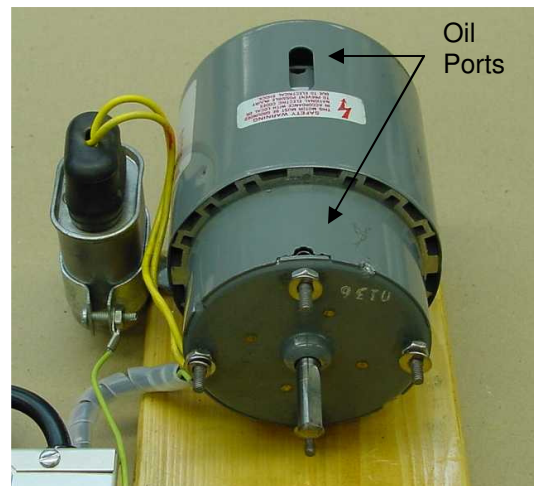
Step 10. Using the 1/4" drill bit, drill through the motor mounting bracket for the lower motor mounting stud. Remove any burrs or sharp projections caused by the drilling before proceeding, using a small file or other suitable tool.

Step 11. Using the small round file, make a relief slot in the top exposed edge of the motor mounting bracket large enough that the new motor can fit flush against the motor mounting bracket. This relief should be approximately 1/8" deep and 1/4" in diameter. Try not to make this relief any larger than necessary for the motor mounting studs to clear. A larger size than needed may reduce the rigidity of the new motor's mounting.

Step 12. Compare the old rubber drive hose length to the new rubber hose supplied with the upgrade kit. Carefully using a sharp knife, cut the new hose to the same length. The new hose can be up to 1/4" shorter than the old hose, but no longer than the old hose.

Step 13. Push the new rubber drive hose onto the trimmer body shaft fully and slide the larger of the two supplied crimp style hose clamps in place. DO NOT CRIMP the hose clamp at this time.

Step 14. Place the modified motor mounting bracket over the threaded stud end of the new motor. Make sure the plain hex nuts are fully threaded down on the studs against the face of the motor and one flat washer is over the hex nut. Do not over tighten, they may twist off the threaded stud, just make sure they are down against the motor end of the shaft with enough threaded shaft protruding to mount the bracket and lock nuts.



**Figure 2** - Motor shown with oil ports facing up. New style black motors use sealed bearings w/ no oil ports.

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Step 15. With the motor mounting bracket over the mounting studs against the flat washers, place another flat washer over the mounting stud and tighten the locking hex nuts. Be sure the oil ports on the motor, if there are present, will be facing up when the motor bracket is placed back on the base. Newer black color Fasco motors do not have oil cups and do not need special orientation. See Figure 2.

Step 16. Remove the single hex nut from the mounting bracket for the starting capacitor, if not already removed from the motor housing. (OMIT FOR FASCO BRAND MOTORS)

Step 17. Mark the location for the new Phillips headed screw to hold the capacitor to the base. See Figure 3. (OMIT FOR FASCO BRAND MOTORS)

Step 18. Using the small punch or nail, start a shallow hole for the capacitor mounting screw and secure the capacitor mounting bracket to the base with the Phillips headed screw. (OMIT FOR FASCO BRAND MOTORS)



**Figure 3** - Capacitor bracket mounted to base with new screw.

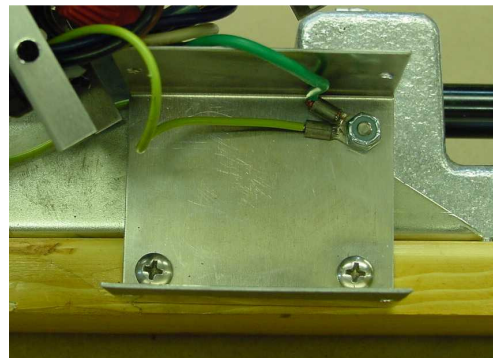
Step 19. Place the smaller of the crimp style hose clamps over the open end of the rubber drive hose and slide up towards the trimmer body.

Step 20. Push the new motor shaft into the rubber drive hose until the holes in the trimmer body mounting feet roughly line up with the clearance holes in the mounting bracket.

Step 21. Place the motor/trimmer/bracket assembly back onto the base and secure with the four original mounting screws.

Step 22. Remove the four small screws from the sides of the switch box and carefully separate the two halves.

Step 23. Using the lower half of the switch box as a template, mark the location for the two mounting screws onto the edge of the base.



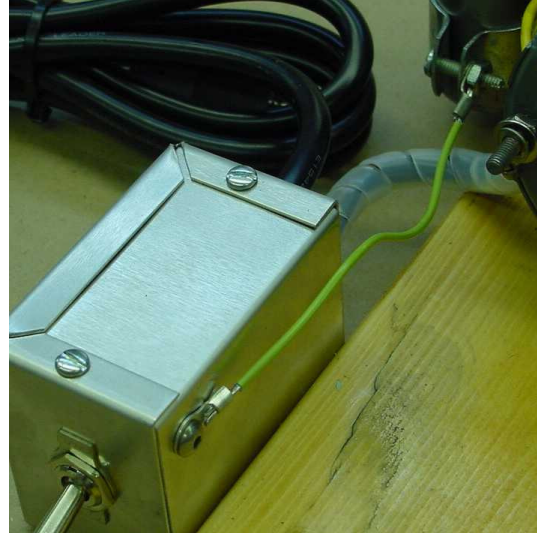
**Figure 4** - Motor switch box mounted on edge of base.

Step 24. Using the small punch or nail and hammer, start two shallow holes and secure the lower half of the switch box to the side of the base. See Figure 4.

Step 25. Replace the upper half of the switch mounting box onto the mounted lower half and secure the four small screws holding the two halves together. Make sure no wires are pinched or damaged in the process.

Step 26. Make sure the green ground wire connecting the capacitor mounting bracket to the switch box is solidly connected and secure. See Figure 5. (OMIT FOR FASCO BRAND MOTORS) For Fasco brand motors, attach the green ground wire to the hole in the motor mounting bracket the original cord clamp was attached through.

Step 27. Examine the rubber drive hose alignment and clearance. You want to make sure the hose is not dragging on the exposed end of the motor face and is as straight as possible. Loosen the four trimmer mounting screws and move the assembly around to get the best results before tightening the mounting screws. Check to make sure the rubber drive hose is free to rotate smoothly without dragging on the motor face.



**Figure 5** - Motor capacitor bracket ground wire running to switch box ground terminal.

Step 28. Crimp the two hose clamps by squeezing the projections on opposite sides of each clamp. This will secure the drive hose to the trimmer and motor shafts and prevent the motor shaft from spinning inside the drive hose and not turning the trimmer shaft under load. See Figure 6.

Step 29. Place the trimmer flat on the work surface, make sure the power switch is in the OFF position and there are not obstructions around the unit. Turn the switch ON and check the trimmer for proper operation.

Step 30. Lubricate the assembly before use by placing several drops of light weight motor oil in the two oil ports on the motor and filling the oil cup on the trimmer body.



**Figure 6** - Crimping the band clamps around the drive hose with side cutting pliers.

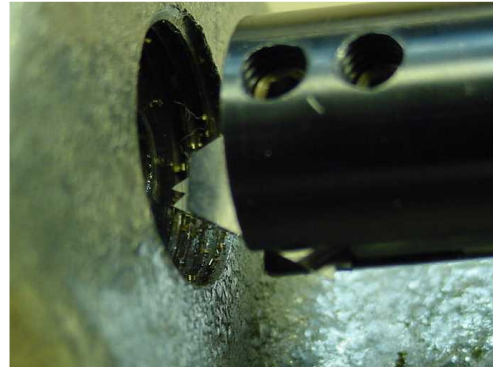
### **CARBIDE BLADE INSTALLATION**

Step 31. Using a 1/8" hex Allen wrench, loosen the locking set screw for the case holder. It is in the tapped hole visible on the horizontal surface directly above the case holder.

Step 32. Remove the case holder from the trimmer body completely and place aside.

Step 33. Using a 3/32" hex Allen wrench, loosen both set screws holding the two piece original cutting blades in the end of the trimmer shaft.

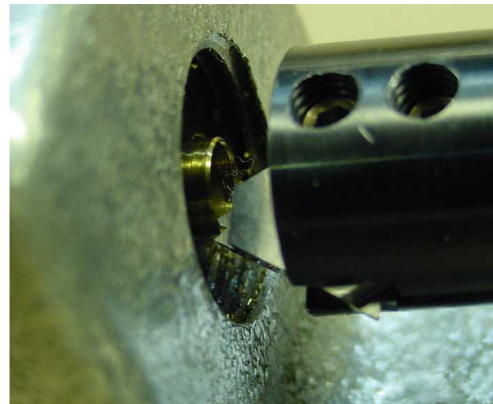
Step 34. With the set screws on the trimmer shaft facing up and the slot horizontal, place the new carbide cutting blade in the end of the trimmer shaft. Examine the blade carefully, you will notice one side of the blade has a portion of the tips ground lower than the rest of the surface, this is the TOP surface. The bottom surface has the entire plane at the same elevation across the triangular shape. The top surface should face the set screws and the bottom surface should face the smooth side of the shaft. See Figure 7.



**Figure 7** - Top surface of blade facing the set screws on trimmer shaft.

Step 35. Reinstall the case holder to the trimmer body. Using a resized case as a gauge, screw the case holder into the body until the case begins to touch the new cutting blade.

Step 36. With the case in the case holder and touching the carbide blade, align the case mouth in the V-groove of the carbide blade tip. Using the case as a tool to hold the blade against the rear of the slot, tighten the front set screw to secure the new cutting blade in place. See Figure 8.



**Figure 8** - Case mouth aligned and securing cutting blade for tightening of the set screw.

Step 37. Back the case holder out of the trimmer body until the case mouth barely touches the cutting blade.

Step 38. Turn on the trimmer and press a fresh resized case into the case holder. As the cutting blade contacts the case mouth, twist the case 180 degrees to ensure a smooth and even chamfer of all surfaces. See Figure 9.

Step 39. Measure the case for overall length and adjust the case holder in or out to vary the trimmed length as required for your specific caliber and preference.



**Figure 9** - Case mouth showing proper adjustment of the cutting blades with even chamfers on inside and outside surfaces.

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Step 40. Tighten the locking set screw securing the case holder to the trimmer body.

For any questions, problems, or suggestions on installation, please contact Giraud Tool Company, Inc. at [doug@giraudtool.com](mailto:doug@giraudtool.com) or by telephone at 281-238-0844 or 713-907-2695.

Thanks for purchasing from Giraud Tool Company, Inc.