

Appendix B: Preparing a ROPS for the Scale Model Tractor

Either one or two model tractors can be used for the Mr. Good Egg Farmer activity. If one model tractor is used it must come *without* a ROPS, and a model ROPS must be constructed to retrofit the tractor. If two model tractors are used, one must come *without* a ROPS and the other must be fitted *with* a ROPS if it does not already have one. Constructing the ROPS for the model tractor is a good project activity for 4H, FFA, or vocational agriculture students.

These directions explain how to construct and fit a ROPS to a model tractor. The step-by-step list of instructions that starts on this page is accompanied by a series of diagrams numbered Figure 1 through Figure 9. The diagrams begin on page 38.

1. Obtain a 1/16th-scale model farm tractor without a ROPS. These are available from tractor equipment dealers and farm supply stores for about \$30. (Many farm safety instructors already have model tractors.) To avoid conveying false information to the participants, make sure the real tractor that the model represents has a ROPS retrofit package available. Also make sure the scale model tractor you purchase has sufficient space on the rear axle between the tractor fenders and the tractor body to fit a small clamp (see Figures 1 and 3). Check to make sure that the space between the seat back and the steering wheel is large enough to seat a medium-sized hen's egg (see Figure 2).

A 1/16th-scale model of an International Farmall 856 works well for several reasons. (a) There is 1/2 inch of space on the rear axle housing between the tractor fender and the tractor body. (b) The seat is large enough and back far enough from the steering wheel to accommodate a large hen's egg. (c) The seat is large enough to attach two Velcro sticky back squares, one on the seat bottom and the other on the upright seat back. (d) A retrofit ROPS package is available for actual full-size Farmall 856 tractors. The instructions and drawings that follow explain how to construct a ROPS for this 1/16th inch scale model tractor. If you use a different size scale model tractor, you will need to adjust the specifications given in Figures 1-9.

Note: An easier alternative is to obtain two similar-sized, 1/16th scale model tractors, one that comes equipped with a ROPS and one that does not. Both tractors must have a seat and operator's compartment large enough to accommodate a medium sized hen's egg. In this case two tractors are used to conduct the demonstration, one without a ROPS for the first demonstration, the second tractor with the ROPS and the unbelted Mr. Good Egg Farmer for the second demonstration, and the same ROPS-equipped model tractor with the belted Mr. Good Egg operator for the third demonstration. If you choose this alternative, skip instructions 2 through 7 and go to Appendix C for instructions about how to construct the platform.

2. If you decide to retrofit a model tractor with a model ROPS, attach two 1/2-inch diameter, vinyl-coated steel, wire-harness clamps to the model tractor's rear axle. Place each clamp between the fender and the tractor body as shown in Figure 3. These clamps can be purchased in automotive, hardware, or electrical supply stores.
3. Obtain a 1/4-inch diameter steel rod 14 1/2 inches long. Using a tap and die set, thread one inch of both ends of the rod. Use a 1/4-inch x 20-threads/inch die (see Figure 4).

4. Make two marks on the same side of the steel rod 5 1/2 inches from each end. Place one end of the steel rod upright in a vise. Heat the rod with a torch at the 5 1/2-inch mark and bend the rod inward to achieve a 90-degree angle. Repeat the procedure for the other end of the rod. Bend the rod to the dimensions listed in Figure 5. Be careful to make the bends 90 degrees each and in the same plane to keep the upright portions of the two sides parallel. If bent properly, the U-shaped rod should lie flat on the workbench or tabletop. If you don't have a torch to heat the rod, notch the inside bend of the rod with a triangular file at the two marks 5 1/2 inches from each end of the rod. Then bend each 6-inch end of the rod to a 90-degree angle using a vise to hold the 6-inch upright portion close to the notch. Gently bend and tap the rod with a hammer until a fairly tight-rounded bend brings the top portion of the ROPS to a 90-degree angle with the 6-inch upright side. Repeat the process for the other side. Again, be careful to keep the upright portions of the two sides of the bent rod parallel and in the same plane.
5. Place one 1/4-inch nut on each end of the model ROPS you have just constructed. Screw each nut all the way up to the end of the threads on each side of the rod and finger tighten. These two nuts act as spacers that keep the rod from falling through the holes in the clamp. (See Figure 6.)
6. Place the ends of the model ROPS through the holes in the clamps (see Figure 7). Add a second 1/4-inch nut on each side of the model ROPS (see Figure 8.) Slightly tighten the nuts and adjust the ROPS to the proper angle by tilting it back or forward as needed (see Figure 9). Then tighten the second set of nuts to hold the clamps in place. A small socket wrench attached to a screwdriver works well.
7. Remove the model ROPS. Paint the unthreaded portion with a flat black paint. Do not paint the threaded ends (see Figure 5). Allow the paint to dry and then reinstall the ROPS on the model tractor.

WARNING!

YOU SHOULD NEVER CONSTRUCT A HOMEMADE ROPS FOR A REAL TRACTOR. THESE INSTRUCTIONS AND DIAGRAMS APPLY ONLY TO MAKING A ROPS FOR A TOY, SCALE MODEL TRACTOR.

HOMEMADE ROPS ARE NOT CERTIFIED AND MAY FAIL DURING AN OVERTURN RESULTING IN INJURY, DEATH, AND COSTLY LIABILITY CLAIMS.

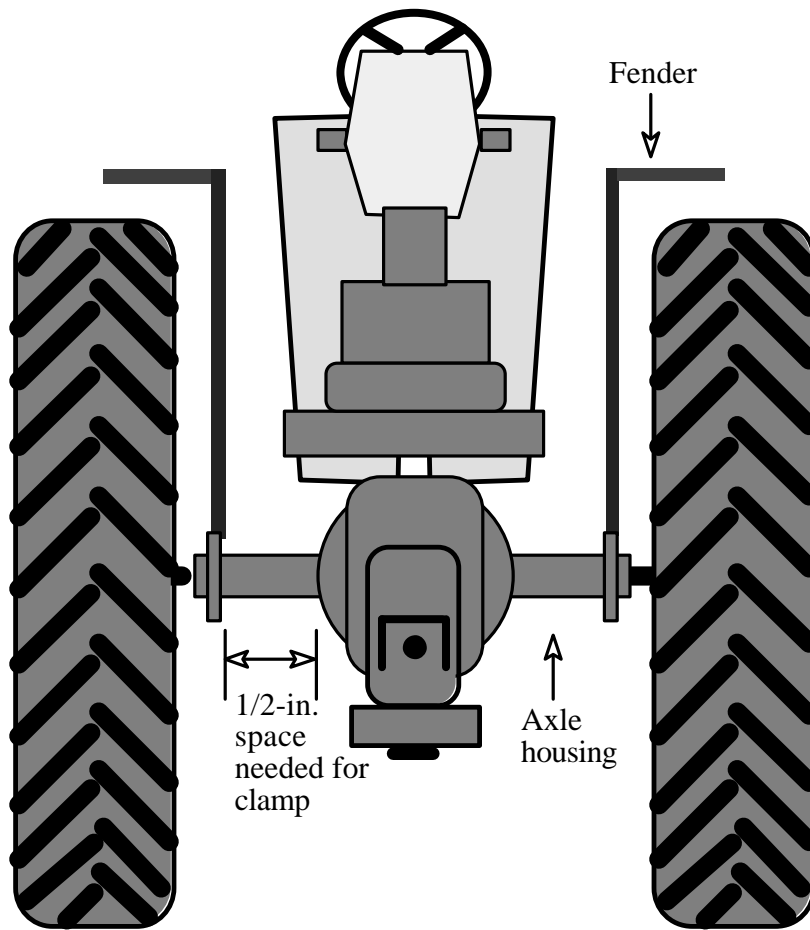


Figure 1: Back view of model tractor

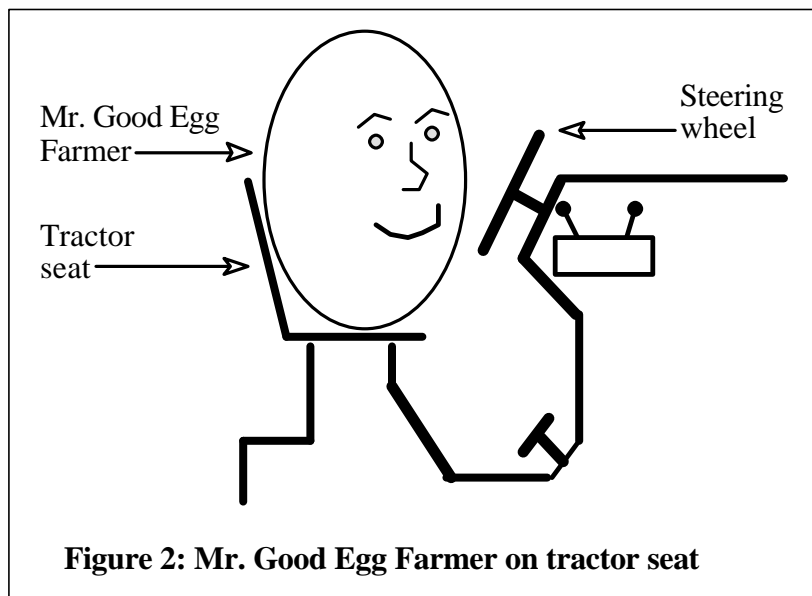


Figure 2: Mr. Good Egg Farmer on tractor seat

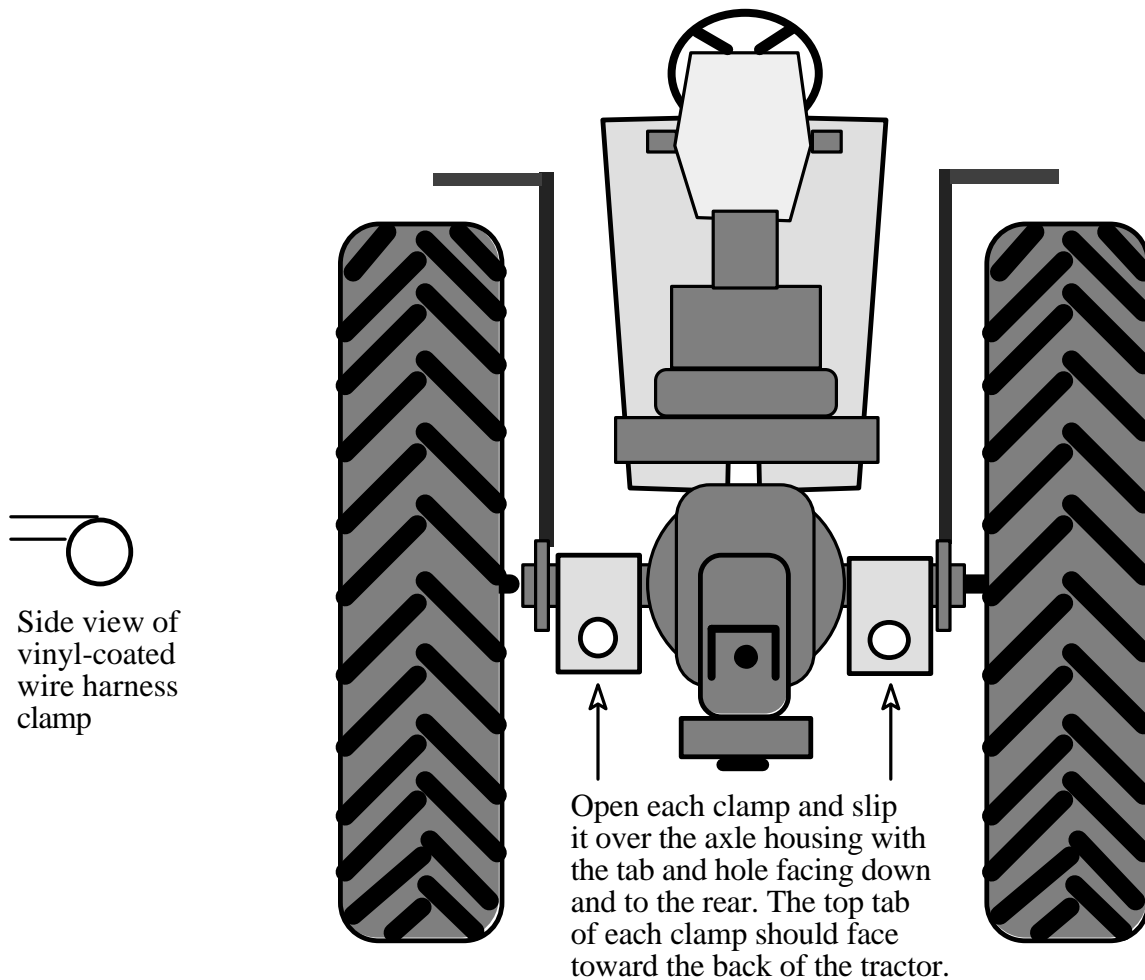


Figure 3: Positioning vinyl-coated wire harness clamps on the axle housing

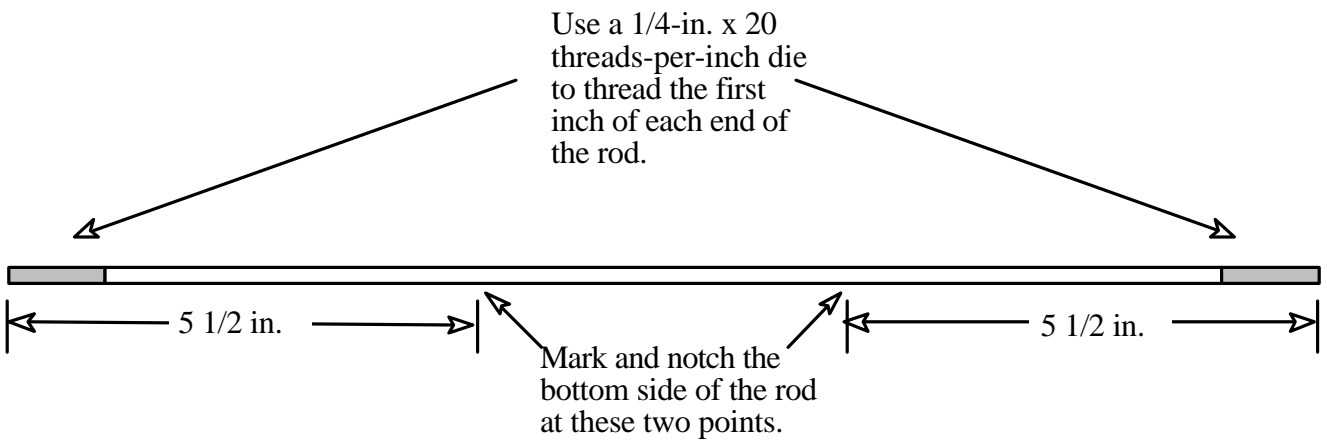


Figure 4: Steel rod 1/4-in. diameter x 14 in. long with threaded ends

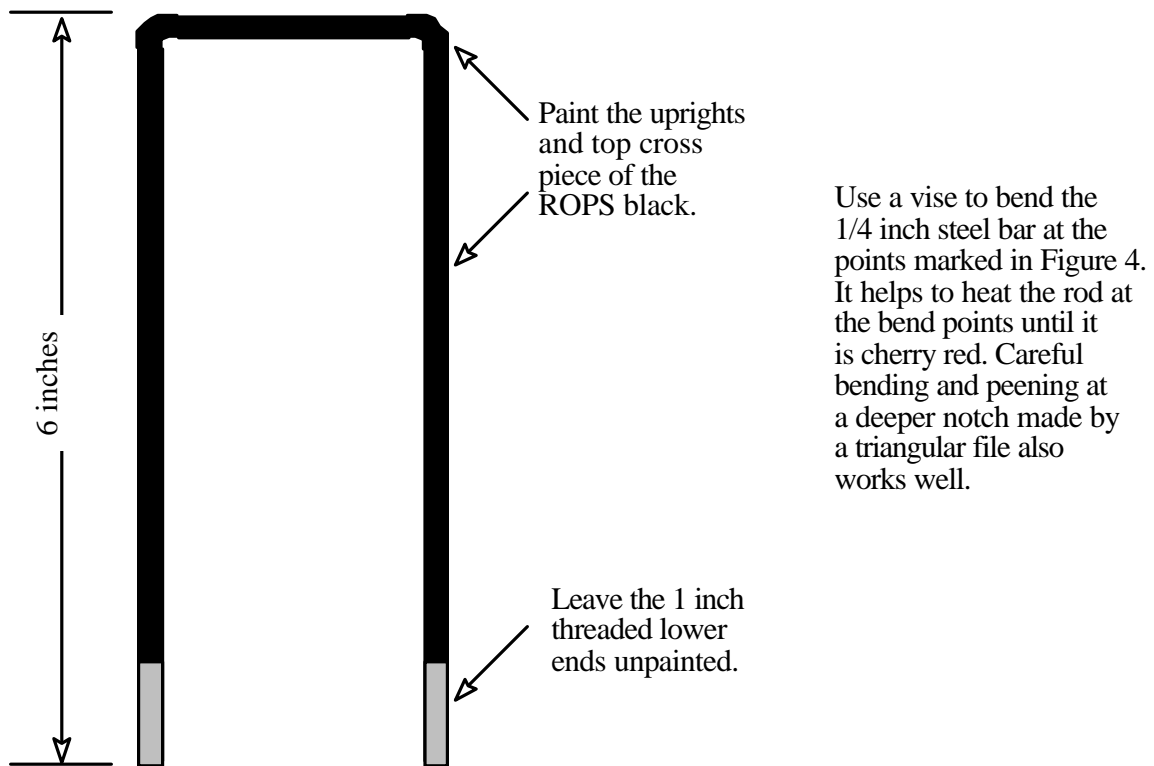


Figure 5: Dimensions of finished model ROPS

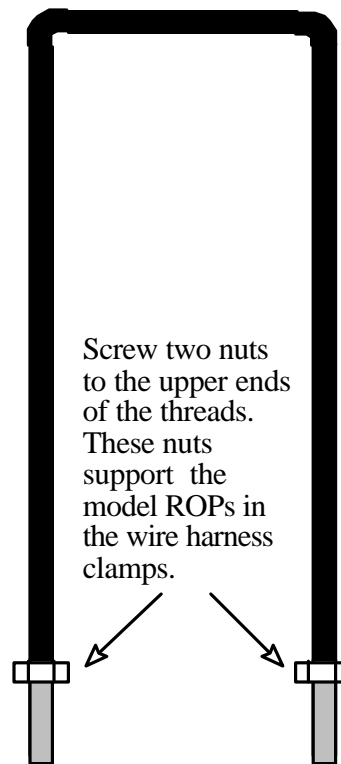


Figure 6: Position of support nuts

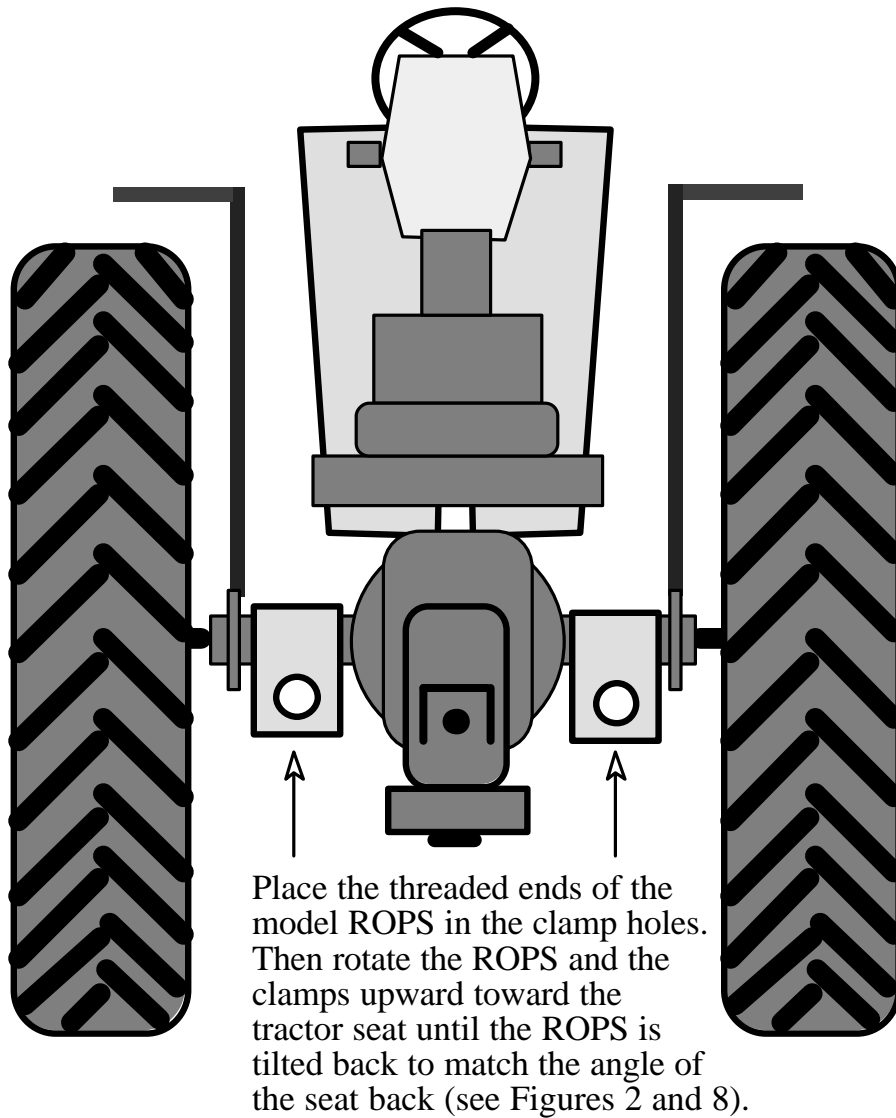


Figure 7: Placing the ROPS on the model tractor

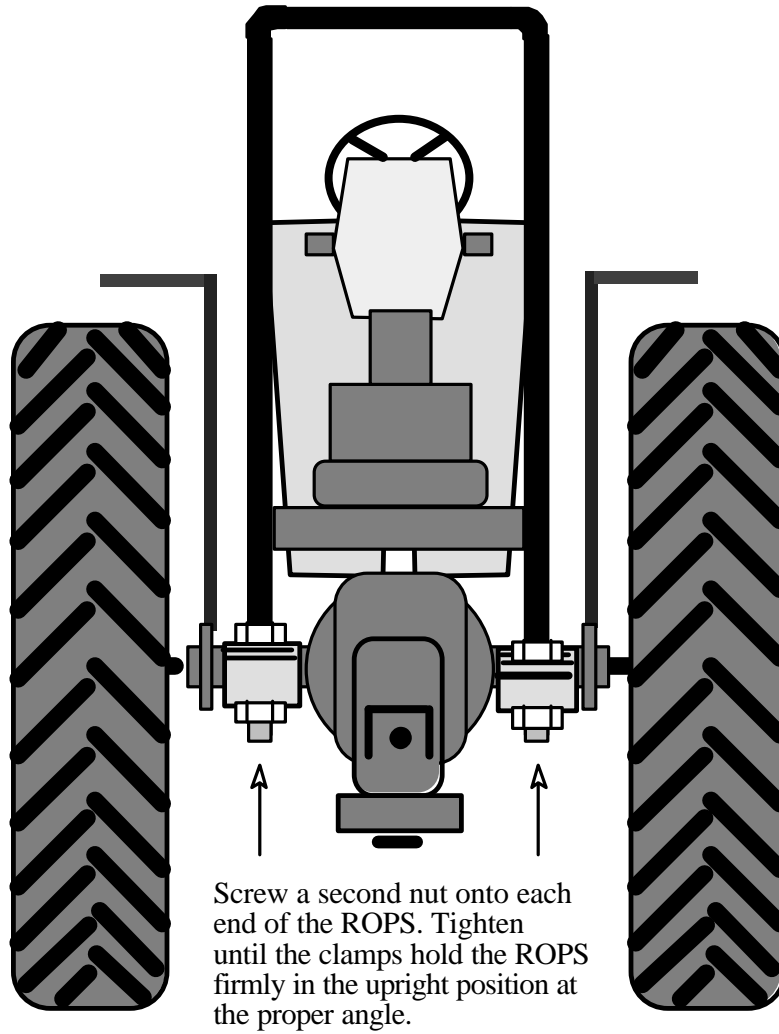


Figure 8: Attaching the ROPS to the model tractor

