Legacy® Acoustical Shell Rework Instructions

The steel channel that holds the bottom mast guide rollers in place must be secured to the front of the inside of the outer mast extrusion. The two fixed lower panels connected by a hinge must be removed to gain access to the front of the mast extrusion.

Figure 1

Raise the mast to the top of its stroke. Use masking tape or other means to securely hold this hinged panel in its folded (raised) position during this rework process.

Remove the fixed lower panel assembly (consisting of the main front panel and bottom, hinged panel) from the frame by removing the 12 screws fastening it to the frame.

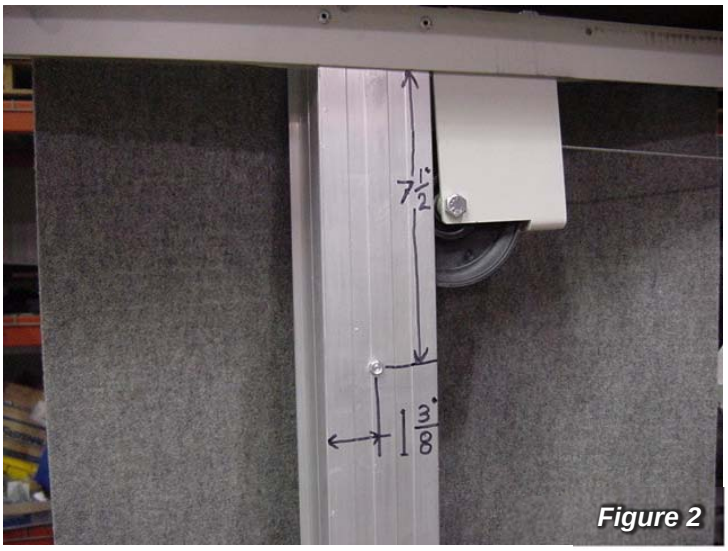

Figure 2

Carefully measure and mark the screw location on the front of the outer mast extrusion as shown. Note that the screw is NOT centered horizontally on the mast extrusion. This offset is required so that the screw does not interfere with the cable inside the mast assembly.

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Wenger Corporation, 555 Park Drive, P.O. Box 448, Owatonna, Minnesota 55060-0448
Questions? Call.....USA: 800-4WENGER (493-6437) • Worldwide: 1-507-455-4100 • www.wengercorp.com


Figure 3

Use an electric drill/driver to install one #10-16 x 3/4" self-drilling screw through the outer mast extrusion into the steel channel that holds the guide rollers. No pilot hole should be necessary.

Be careful not to strip out the screw in the steel channel. If this happens, remove the screw and try again ½" above or below the previous hole.


Figure 4

Looking under the cable pulley from the back side of the shell, check to make sure that the steel channel is located tight against the inside of the extrusion as shown.

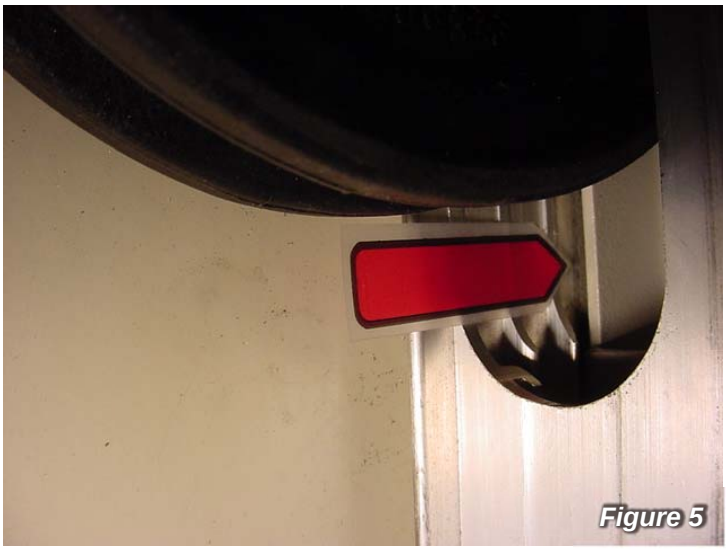
Figure 5

If not, either the screw is not tight enough or the lower rollers are not in position and are hung up on either side of their guide channels. This must be rectified for proper shell operation. Loosen the screw that was just installed and use a screwdriver or other tool to align the rollers with their respective channels.

Reinstall the lower fixed panels on to the frame. Do not use the screws previously removed from the panels as the holes in the panels may have been damaged when removed. Use the 12 new ¼-14 x 3/4" screws supplied.


Figure 6

Drill an access hole (approximately 1-1/2" diameter) on the panel side of the outer mast extrusion extrusion. It should be centered on the extrusion (right to left) and 2" up from the bottom of the extrusion. Deburr both sides of the hole as required. Lower the mast.

Remove the crank handle using a 7/16" wrench or socket.

Remove the black vinyl cap on the bearing on the top of the frame directly above the handle.

Remove black plastic cover over the spring mechanism by removing nine screws. (These screws may be Phillips or Hex Head with a slot.)

Figure 7

Figure 8

BEFORE


Figure 9

AFTER

Position the Spring Winder Tool on top of the shaft as shown below. Be sure the bracket is fully seated into the side frame and the drive bolt on the winder shaft is fully engaged in the slot on top of the spring shaft. (Turn the input shaft on the winder as necessary to align and seat the drive bolt fully in the slot in the top of the shaft.)

Figure 10

Figure 11

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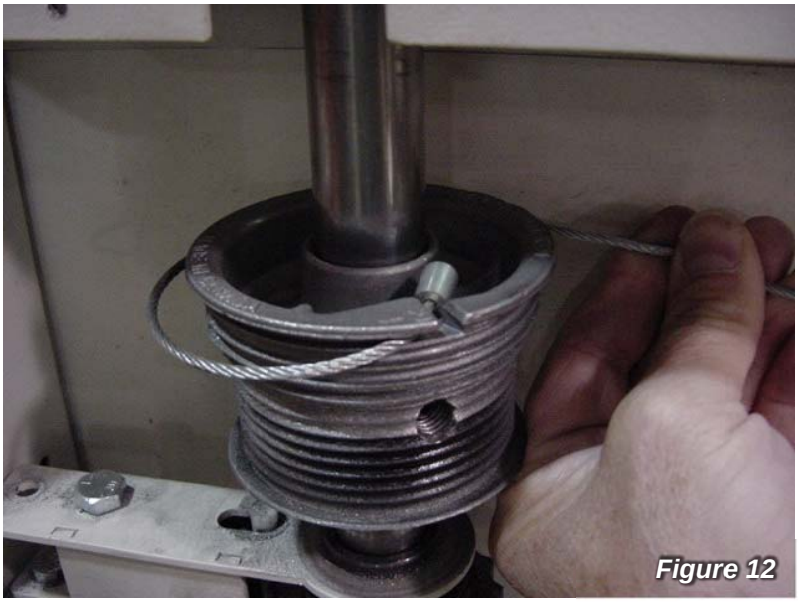
Figure 12

Turn the input shaft on the spring winder clockwise. (A 7/16" socket or nut driver in an electric drill works well as it takes numerous turns to complete this entire replacement process.)

Continue a few turns until enough slack is developed in the cable to unhook the cable from the drum. Remove the cable from the drum by sliding it out of the slot on the top side.

Release the tension on the spring by turning the input shaft on the winder counterclockwise. (At this point, the spring will be wound about 22 full turns. It will take many revolutions of the spring winder input shaft to release the tension.)

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Figure 13

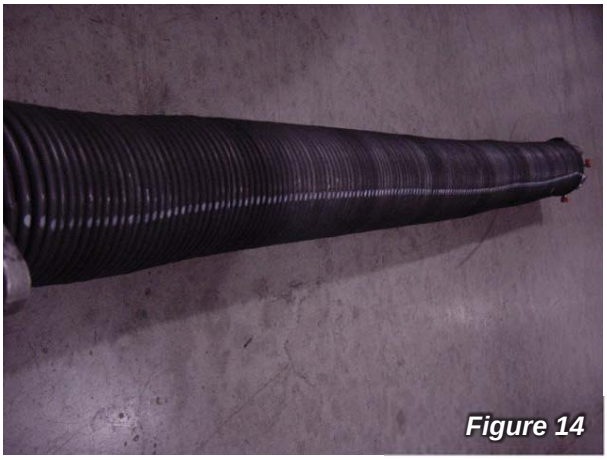


Figure 14

Remove the spring winder.

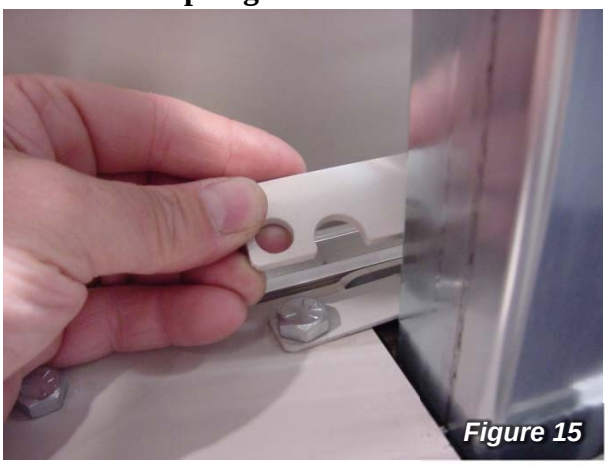


Figure 15

Remove the two nuts and cap screws at the top of the frame that hold the mast bearings in position. These capscrews are located directly in front of and on either side of the mast. Place the stop strap sent with the repair kit as shown with the notches pointing toward the rear of the shell.


Figure 16

Replace the cap screws and nuts and tighten the stop strap in position.

After installation, the strap will look like this:

Figure 17


Figure 18

Remove the two bolts (each) securing the top and bottom bearings and the two bolts holding the gearbox assembly to the frame.

Remove the vertical spring shaft assembly from the frame by first pulling the top of the shaft out of the frame and then the bottom. (The six bolts will be reused with the new spring shaft. The old spring shaft will be returned to the factory.)

Position the new vertical spring shaft in the frame as before.

Slide the new bottom bearing on the vertical spring shaft.

Reinstall and tighten the bolts holding the top and bottom bearings.

Tighten the bottom bearing setscrews against the shaft.

Slide the spring driver down the shaft, positioning it .030” to .100” above the heads of the bolts holding the bearing flange to the frame. The cable L-bracket included in the kit can be used as a shim for setting the distance as shown

Attach the gearbox assembly to the frame as before. Position the input shaft horizontally and tighten the bolts.

Attach the new shaft brake mechanism to the gearbox using the capscrew and nut removed with the old vertical spring shaft assembly.

Figure 19

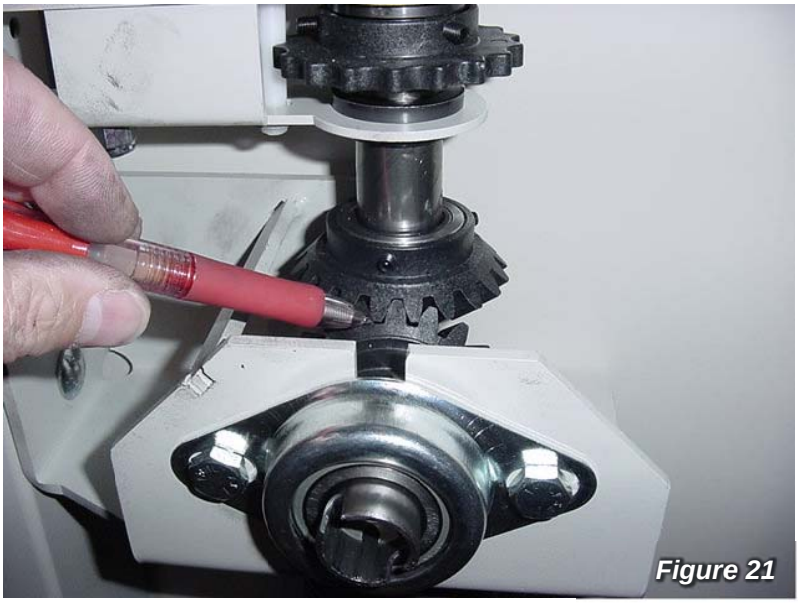
Some models will have a lock mechanism controlled by the knob as seen on the far left of the photo. This mechanism is to be eliminated and is NOT included in the gear rework kits. Once removed, the locking knob and shaft can be discarded.


Figure 20

Remove the three setscrews from the <u>vertical</u> shaft gear using a 3/32" Allen wrench. Inspect the setscrews.

If the setscrews are bare like the one on the left in the photo, replace with the proper Wenger-supplied setscrew (recommended) or apply a small amount of Loctite 242 (or equivalent) to setscrew threads in the metal ring inside the gear and partially reinstall the setscrews.

If the setscrews have the yellow adhesive applied like the one shown in the photo, they can be used in the gear as is without the need for Loctite.



Align the gears by holding the gears snugly together while the surfaces of the outer ends of the teeth are flush. This ensures full gear tooth engagement.

During the adjustment process, the vertical shaft gear will slide on its shaft.

The horizontal shaft and gear will slide as an assembly in the horizontal shaft bearing. (The gear on the horizontal shaft is pre-installed, torqued and Loctited at the factory. Do not loosen these set screws.)

While holding the gears in this position, tighten the setscrews in the horizontal shaft bearing. Continuing to hold the gears in proper alignment, lightly snug the three setscrews in the vertical shaft gear against the shaft. Continue by immediately torquing these setscrews to 20 inch-pounds. Rotate the shafts as necessary to access all setscrews.

Proper gear adjustment, setscrew torquing and thread locking is critical to this installation. Failure to follow the instructions above will result in premature operational failure of the shell.

With the mast fully lowered, remove the lower end of the cable from the mast by removing the nut exposed by the 1½" hole drilled in the bottom of the outer mast extrusion.
Pull the cable down a few inches beyond the bottom of the mast extrusion, being careful not to pull the other end out of reach into the side of the extrusion at the top.


Figure 22

Insert the cable loop through the L-bracket as shown.

Slide the L-bracket up into the extrusion and install it over the end of the bolt. Secure the L-bracket with the same nut that was removed in an earlier step. (Make sure that the L-bracket is straight and vertical so as not to cause interference inside the extrusion.)

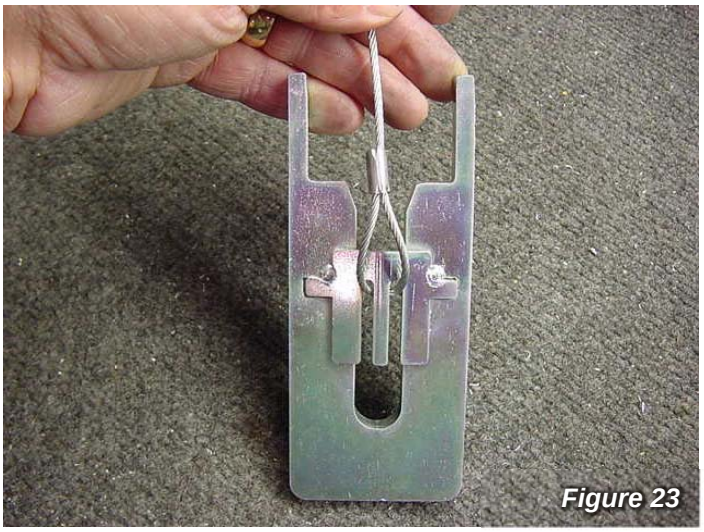


Figure 23

Attach the counterweight to the cable by hooking the loop in the cable over the tab on the extrusion as shown.

Pull the cable up through the mast extrusion and over the pulley to take the slack out of the cable. Feed the counterweight up into mast extrusion in the channel provided at the front (performance side) of the extrusion. Temporarily secure it with masking tape across the bottom of the mast extrusion.

Mast cut away for clarity and showing slack between counterweight and L-bracket.

Figure 24

Install the cable winder on the vertical spring shaft as before.


Figure 25

Wind the spring by turning the winder input shaft clockwise. Wind the spring shaft 21 turns by watching and counting full turns at the bottom end of the spring or by counting the number of spirals formed by the line painted on the side of the spring.

Attach the top end of the cable to the cable drum on the spring shaft assembly. Rotate the drum on the shaft (counterclockwise as viewed from above) to take all of the slack out of the cable and pull the counterweight up against the L-bracket.

Figure 26

Figure 27

Position the top edge of the cable drum 2¾" down from the bottom of the bearing flange (or top of the shell frame) and securely tighten the drum setscrews.

Rotate the input shaft on the winder counterclockwise until the cable is taught and supporting the weight of the shell. The spring winder should be free. Remove the spring winder.

Temporarily re-install the crank handle. Cycle the shell fully up and down several times and check for proper operation. Once proper operation is confirmed, remove the crank handle.

Reattach plastic spring cover using the original hardware.

Reattach the vinyl cap on the bearing on the top of frame using a small amount of adhesive.

Reattach the crank handle.

Install new Operational Instruction decal over the original instruction decal.

Install new CAUTION decal directly below the crank handle, centered across the width of the cover.

Figure 28