Glasses for Missions, Inc. Instruction Manual



All praise and thanks to Jesus Christ, our Lord and Savior, who has blessed us with a vision to help restore sight and vision to His people in many lands, with a simple and inexpensive reading glasses program!

Work station & hand tools

Tools needed:

Saw, Jig, Scraper, 1/8 inch Round file, Bending Tool, Needle nose pliers, Clamp, and Sandpaper (not shown)





Supplies needed:

Lens 67 mm, Tubing, Stainless steel wire

Step # 1

Making the frame:

Start with the frame wire (the longest wire). The length of the jig will give you the approximate center of the wire.



Put the approximate center of the wire in the slot in the metal block on the left end of the jig.





First, bend the wire tight against both sides of the wooden block under the movable pin using your fingers. Second, use the pliers to get sharp 90 degree bends.

Next, bend the wire up and around the pin, then down against the jig. The bend must be tight.



Do the same to both sides.



Remove frame wire from the wooden block by moving the movable pin one way, then lift the wire slightly above the pin, then move the pin the other way and lift the wire off the block.

At this point the frame will not be perfectly straight. Use the pliers as shown and bend so the angle of the bends are as close to square (90 degrees) as you can get them.





Also, the wire should be directly behind the other as shown.

Then put one side of the nosepiece in the widest part of the pliers (not in the cutters) as deep as possible, keeping the wire at a 90 degree angle to the pliers. Then bend the wire horizontally (out like airplane wings).





True up your bends so that your frame looks like this.



Do the same to both sides.





Remove the frame, turn it over, and insert it back into the cutout. Hold tightly and bend the other side the same way.



Hold tightly and bend the wire to a sharp 90 degrees around the left end of the frame.

Insert the nosepiece into the cutout under the metal plate.

True up your bends and your frame should now look like this.





This is the front of the frame.

Place the frame back in the slot in the metal block, with the front of the frame facing up, and the wire under the pin.



Then bend the wire up around the pin and down against the jig.





Do the other side the same way, also with the frame facing up.

Your frame should now look like this.



With the front of the frame facing to the right, place the loop you just bent around the upright metal just to the left of the wooden block.





Then bend the wire around the other upright metal.

Do the same on the other side, also with the front of the frame to the right.



Your finished bends should look like this.



Now we need to bend the frame to match the curvature of the lenses. With the front of the frame facing away from you, grasp the portion of the frame that will be behind the top of one of the lenses, and with your thumbs, bend slightly.





Do the same to both sides.

Step #2

Making the Earpieces:

Set frame aside and cut 2 pieces of tubing to the width of the inside of the jig.



Pick up the earpiece wire. The smooth end is used to make the coil for the hinge, and the stamped end is used to hold the tubing in place. Slide the tubing on the earpiece wire from the smooth end over the stamping and slightly past the end of the wire (so it doesn't scratch when the glasses are put on).





Put the smooth end of the earpiece wire in the widest part of the pliers and bend to about 90 degrees.



Insert the short piece of straight wire in the hold farthest from you in the metal block on the jig. Insert the bent end of the earpiece wire into the hole closest to you. Now put the shorter straight wire through the small hole in the end of the bender with one pin.



Note: If you have trouble getting the wire in the small hole, there may be a burr on the end of the wire. Just cut off a tiny bit off of the end of the wire. This will allow it to go in easier.

Note #1: While winding the coils on the earpiece, care must be taken to keep the short piece of wire straight. If bent, you cannot get a good coil. This means that while winding the coil you must keep the handle of the bender level, being careful not to push up or down on it.

Note #2: Do not hold the bender down. The bender must rise as it forms the coil, so if you hold it down the wire will wrap over itself, ruining the coil.

To make the left earpiece: Turn the bender counterclockwise. As the pin pushes the earpiece wire around, it starts to bend. When it reaches the position shown (wire pointing to the left), count #0. Continue turning and counting turns, then stop at #5 with the wire in alignment with the back wall of the jig, pointing to the left.



To make the right earpiece: Follow the same steps, but wind clockwise instead. Also, count #0 when the wire starts to bend and points to the right. Continue turning until you reach #5 with the wire in alignment with the back wall of the jig, pointing to the right.



Cut off the excess wire from the coil. Notice the angle of the coil to the pliers. This is very important in order to keep the earpieces from missing the stop and opening too far.



Finished coils should look like this (opposite of each other).



Make sure the tubing is sticking out enough to cover the end of the wire (to keep the wire from scratching when the glasses are put on).

Insert the earpiece coil in the hole on the front wall of the jig, with the wire pointing to the right.

Note: If it will not fit in the hole, cut the wire a little closer to the coil.

Hold the coil down in the hole with your left hand and bend the right end down about 45 degrees.





Step #3

Installing Earpieces:

With the frame upside down and the front facing away from you, put an earpiece on with the bottom of the coil facing up and the cutoff portion pointing towards the nosepiece (if in doubt look at the sample glasses). It is easier to completely install one side at a time.



Close the earpiece to the frame. Keep the hold in your left hand upside down with your forefinger directly under the coil. Place the tip of the needle nose pliers at the top of the coil (as shown) and press down against your finger. The coil must be tight against the bend.



Then reach up with your thumb and bend the wire tight against the bottom of the coil towards the nosepiece. Bend only half of the way down (90 degrees).

Note: If the wire is not bent tight against

the bottom of the coil, and there is up and down movement in the coil, it may miss the stop.



Cut off the wire leaving about 3/4 of the length of the coil.

Note: If you cut it too short it will be hard to bend down and may not act as a stop.



To bend the stop the rest of the way, put pliers on the end of the wire and on the outside of the top of the coil and squeeze tightly. Bend as tight to the coil as possible. You cannot get it too tight! Do both earpieces in this way.





Check and see if the earpieces open up equally to about 90 degrees to the frame. If not, grasp the stop with the tip of the pliers and bend so that it is contacted sooner or later as needed.



Grasp the stop with the tip of the pliers and ben so it is contacted earlier or (as in this example) later.

It should now look like this. Check both earpieces.

Your frame should now look like this.







Step #4

Preparing the Lenses:

The number on the tab on the lenses indicates the power (or "strength") of the lenses. It is a good idea to keep the tab with the finished glasses so that you know what power they are (or else mark them with the labels provided).

Start by putting the lenses in the cutout in the jig. If you are right handed, the tab goes to the right. Hold the lenses down with the left hand and use the saw slot to the right to cut off the tab. If you are left handed do the exact opposite.



Rotate the lenses 90 degrees. Then line up the cut edge of the lenses parallel to the mark on the jig.



Use the center slot to cut the lenses in half.

Then round and smooth the sharp edges and remove the saw marks with the scraper tool. Make sure that the portions of the lenses that touch the nose are very smooth for the comfort of the wearer (and for looks).

Shape the lenses by sanding the corners until they are round. Round all three sharp corners on both halves.







Place the cut side (top) of the lenses down against the jig with the side against the metal plate. Then hold the round file against the lens and the metal plate and file a mark on the lenses. Do this on both edges of both lenses (this indicates the approximate position where to put the notches to hold the lenses in the frames). If you are left handed, you can use the other end of the metal plate to mark the lenses.



Hold the frame in your left hand with the front facing to the right. (**Note**: The widest part of the lenses goes toward the nosepiece.) Line up the marks on the edges of the lenses with the bottom of the bend in the wire that holds them. The top edges of the lenses should be even with the top of the frame wire. If not, make a new mark as needed to move the lens up or down. In the example shown, the notch needs to be filed a little lower than the mark in order to raise the lens to the top of the frame wire (on the right edge of the lens).



To file the notch, place the lenses with the concave sides against the front of the jig, with the notch mark just a little above the jig, and file the notch a little at a time, checking it on the frame until you are sure that the notch is in the right place. Then file the notch as deep as one half of the diameter of the file.

Step #5

Installing the Lenses:

To install the lenses, put in the outside frame loop first, then slide the wide portion of the lenses down into the nosepiece. It should "click" firmly in place.



If the lenses are too loose and do not "click" firmly in place, bend the outside frame loop slightly closer to the nosepiece.



Step #6

Adjustments:

Now you have a pair of glasses. A few simple adjustments and you will have a nice pair of glasses. It is recommended that the adjustments always be made in this order:

Adjustment #1:

Look at the glasses from the front. They should be straight across the top. Bend at the nosepiece to straighten.





It should now look like this.

Adjustment #2:

Tighten the loops holding the lenses so that the lenses have no tilt movement (front to rear). Place the pliers on the loops as shown and squeeze the loops tight against the lenses.





Tighten all 4 loops (2 loops on each lens).

Adjustment #3: Notice the twist in the glasses shown.



Twist straight at the nosepiece



Adjustment #4: Proper tilt of the lenses.

Notice the lenses in the factory made glasses in the background. The bottom of the lenses tilt slightly to the rear.



To achieve that, we need to reduce the distance between the bottom of the hinge coil and the lenses.



This can be done to both sides at once by laying the glasses upside down and squeezing between the thumb and forefinger as shown. Or you can do each side separately with the pliers, being careful not to scratch the lenses. Keep in mind that both earpieces need to touch the table at the same time.



Adjustment #5:

The earpieces need to be in alignment with the top of the frame while folded.





(example of misaligned earpieces)

If they do not, grasp the coil with your fingers or with pliers, and bend into alignment with the top of the frame while closed.



Adjustment #6:

Four point check.

With the glasses upside down on a flat surface, all four points (each corner of the frame and the earpieces) need to touch the table at the same time. To adjust, increase or decrease the distance between the bottom of the hinge and the lenses.

Note: This adjustment will affect adjustment #5, which will in turn affect adjustment #6, so you will need to go back and forth between these two adjustments until you get them to meet the conditions in both adjustments.



Now you have a nice pair of glasses. All that is needed now is for you to mark them so that you know what power they are. The easiest way is to shorten the tabs you cut off of the lenses and slip them onto the earpiece (the wide side of the hole in the tab goes on first). Or you can use the labels provided in the kit.





