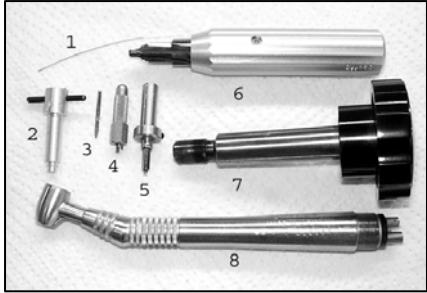


MIDWEST QUIET-AIR STANDARD – JC (JACOBS CHUCK) & MIDWEST QUIET-AIR STANDARD IN-SIGHT FIBER-OPTIC REPAIR PROCEDURE



1. Wire Reamer
2. MWQA Standard Back Cap Wrench (00012)
3. High Speed Bur
4. MWQA Jacobs Chuck Bur Tool (40402)
5. High Speed Spindle Punch (00024 & 00024R)
6. MWQA Head Reamer (00023)
7. MWQA Threading Tap (00023A)
8. MWQA Standard Handpiece

The Midwest Quiet-Air is the most common handpiece. It will probably account for the largest percentage of your high-speed handpiece repairs. This model is an easy handpiece to repair. Many of the procedures for this handpiece will relate to other models in the Midwest line, as well as models from other manufacturers. The most common tools needed to repair this handpiece have been included in the picture above. Please note that the Standard and In-Sight Fiber-Optic models have a Jacobs chuck design for the insertion and removal of the high speed burs.

STEP 1 Try to determine the problem before opening the handpiece. Insert a high speed bur, checking that it inserts smoothly and tightens securely. Twist the bur manually to feel how smoothly it turns. Attach it to your air hose and run the handpiece (if you can). Check that air pressure is at 38 p.s.i.. Listen for the appropriate pitch at full speed and for a smooth rundown. Check the water spray – it should be a fine mist. Attempt to cut a shell to test the torque. Disassemble the handpiece following the instructions below.

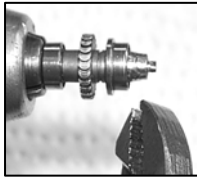
DISASSEMBLY



STEP 2 Remove the back cap with your MWQA S back cap wrench (00012). The cap unscrews in a counter clockwise direction. Remove the turbine, and investigate the cause of the problem.

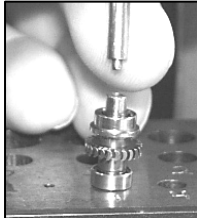
TIP: Sometimes the cap is very tight. Be very careful not to let the tool slip and strip or scratch the back cap. If the cap is damaged by the tool, it should be replaced.

STEP 3 Using the MWQA Jacobs Chuck Bur Tool (40402), twist the chuck counter clockwise a few turns and remove it. Examine the turbine to determine if it has a nut on it as shown on the schematic drawing. If it does have a nut, proceed to Step 4. If it does not have a nut, skip to Step 5.



STEP 4

Using your wooden hand-held collet (#00036), grab the small shoulder at the rear of the spindle. Refer to the schematic drawing. Tighten the collet firmly on the shoulder. Then, using a small pair of channel lock pliers, remove the nut by turning counter clockwise.



STEP 5

Place the entire turbine unit into hole #1 with the chuck side down. Using the high-speed spindle punch (00024 + 00024R), place the punch tip in the bur hole. Using the press, push the spindle out of the bearings and impeller.

This is an exploded view of a Midwest Quiet Air Standard handpiece. The top assembly (without a spindle nut) is the most frequently encountered turbine style of the two, as it is a newer model. However, older models (with a spindle nut) are still in use and may be encountered. Note: The aftermarket impeller can be used in either assembly. It has been machined with the spacer washer (#5) already on it.

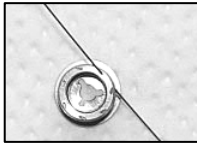


Picture Number	Part Number	Description
1	40401	Spindle Nut
2	40410	Spring Washer
3	404071 404072	O-Ring - Blue Square O-Ring - Black
4	40405B	Flanged Bearing
5	40411QLS	Spacer Washer .017
6	40412QL	Original Impeller
7	40412	Aftermarket Impeller
8	40405C	Straight Bearing
9	40411X	Spindle Without Threads
10	40411X	Spindle With Threads
11	40403	Chuck
12	40408	Standard Back Cap

STEP 6 Remove any o-rings that might still be on the bearings, in the back cap or inside the head. Place the old bearings and o-rings aside and get new parts from your inventory.

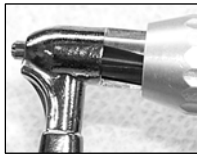
***TIP:** If the o-ring did not remain on the front flanged bearing when you pushed the turbine out, it is still inside the head and must be removed.*

STEP 7 Clean the parts in an ultrasonic cleaner until clean. When the parts are removed, make sure to blow them completely dry before attempting reassembly.

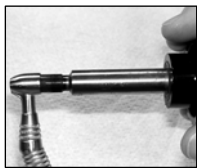


STEP 8 Examine the back cap. Check the seven air exhaust holes, making sure they are clean and open. If they are dirty or clogged, run a wire reamer through them.

***TIP:** If these air exhaust holes are not completely clean, the handpiece will not run at full power.*



STEP 9 Use the Midwest Quiet-Air head reamer (00023) to ensure that no dents are present. To do this, insert the tool all the way into the head. First, twist the tool in a counterclockwise direction 1 - 2 turns – this will push any dents back out. Then, twist the tool in a clockwise direction to cut any remaining material out. Remove the tool and blast air into the head and the air, water and exhaust lines to thoroughly clean them.

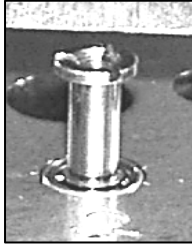


STEP 10 Sometimes the back cap threads in the head of the handpiece can get filled with gunk or they can become damaged or worn, making it difficult to screw the back cap on. This can be easily fixed using the MWQA threading tap (00023A). **Try screwing the back cap on to determine if this procedure is necessary.** If so, place the tool squarely into the back cap. Slowly turn the tool in a counterclockwise direction until it seats squarely into the first thread – a small click is usually felt. Then, begin to slowly turn the tool in a clockwise direction, paying careful attention not to cross-thread the tool into the handpiece. Continue twisting the tool into the handpiece until it is approximately ¼ inch deep into the head (the depth of the threads). Carefully, unscrew the tool and blast air into the head and ports to thoroughly clean out any material left behind.

REASSEMBLY

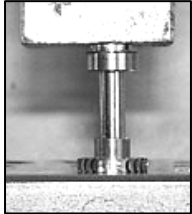


STEP 11 Insert a new O-ring (404072) in the cap. Use your needle to position it in the slot. With a pen oiler (shown at left), lightly oil the O-ring and set the cap aside.



STEP 12

Set the rear straight bearing (40405C) into hole #2 in your work block, so that the side with the visible balls facing upwards, towards the ram of the press. Align the spindle (40411X) squarely over the bearing. Use the ram of the press to push the spindle through the bearing until snug. Pick the block up off the press and shake the bearing and spindle out of the hole.



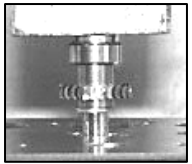
STEP 13

Place the front flange of the impeller squarely into hole #1 of the work block. Double check that the front flange of the impeller is down in the work block, so that it will spin in a clockwise direction when reassembled. Refer to the exploded view, if necessary. Using the ram of the press, push the spindle through the impeller until the flange on the impeller is snug against the bearing.



STEP 14

Original Turbine Only: Place flat spacer washer on the spindle (on the aftermarket impeller this washer has been machined onto it).



STEP 15

Place the flanged bearing (40405B) into hole #3 of the work block. Be sure that the flange on the bearing is facing upwards, closest to the ram of the press. Place the partially assembled turbine into the bearing and press it snugly into place.

STEP 16

If there was a lock nut on the front of the turbine, reinstall it at this time. Tighten the nut just a little. Not too tight! You may also need to apply a small amount of loctite to secure the nut.

STEP 17

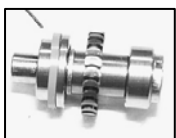


Closely examine the chuck, looking at the threads and teeth for signs of wear or damage. Insert a high speed bur into the chuck (above left). Reinsert the bur and chuck into the spindle. Using the MWQA Jacobs Chuck Bur Tool (40402), tighten the chuck securely around the bur (below left). Check that the bur is being held tightly. If it is secure, leave the bur in to assist during reassembly. If the bur is loose, replace the chuck and test it again.

TIP: When tightening a bur into the chuck, do not insert the bur past the relief on the bur or the chuck will be damaged.

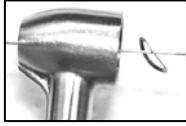
TIP: Chucks become damaged when tightened without a bur or when running the handpiece without a bur. **NEVER RUN A HIGH SPEED HANDPIECE WITHOUT A BUR.** The chuck may fly out of the spindle causing injury.

Tip: If the bur is tight to install, use a shipping blank inserted partially into the chuck. Then rotate slightly pushing the ears of the chuck outward. This should make for smooth installation.



STEP 18

Put a rubber o-ring (404071 or 404072) on to the flanged bearing.



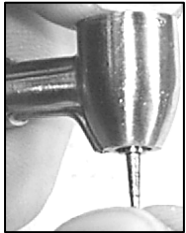
STEP 19

Use a needle to properly position the spring washer into the head of the handpiece, with the arc facing up.



STEP 20

Holding the handpiece in a position so the spring washer stays in place, insert the turbine without the back cap.

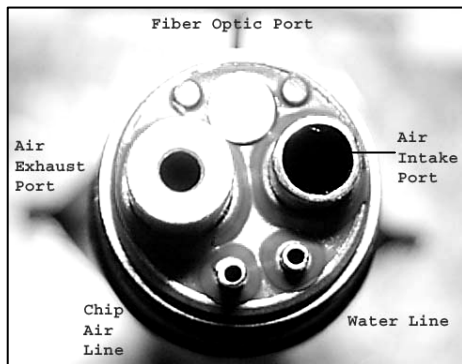


STEP 21

Holding the bur, wiggle the turbine to seat the front o-ring.

STEP 22 Screw on the back cap being very careful not to cross-thread it. Tighten it with the back cap wrench. The handpiece is now fully assembled.

STEP 23 Test the handpiece by rotating the bur between your thumb and forefinger. The rotation should be smooth and easy, without drag.



TIP: At first it may not feel as smooth as it should. Squirt a one second blast of The Dentist's Choice "Once a Day" lubrication into the air intake port. Put the handpiece on "air". Hold it at 38 p.s.i. for about 30 seconds. It should start to wind up to full speed. It will whine when it is at full power.

TIP: If it will not turn, recheck for a crimped O-ring and examine the spring washer to see if it slipped out of position!

When testing the handpiece, flip the water on to make sure the water lines are clear. Always test for torque or cutting power. Use a seashell for testing the handpiece. A piece of plastic does not work, it melts. Remember when testing for torque, a Midwest Quiet-Air will stop at about 6oz to 8oz of pressure. If it is not running properly it will stop the instant you touch something hard. If it cuts well and sounds good, it is done!