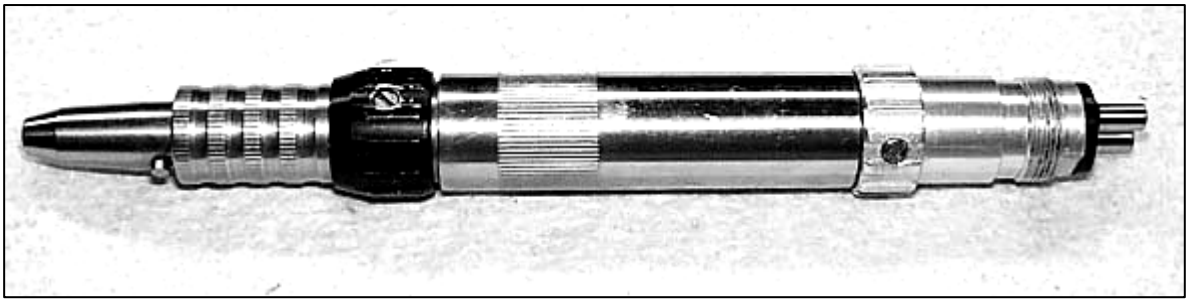
Champion Little Guy 5K Motor
Repair Procedure

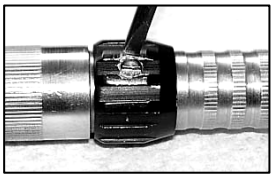


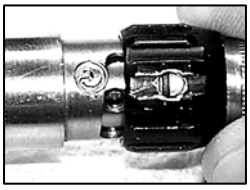
The Champion Little Guy 5K Motor is used mainly by dental hygienists. Typically a prophy cup is inserted in the nose portion and tightened using the chuck collar. The motor is equipped with a forward and reverse ring allowing dual direction spin. The repair on this motor is similar to a Star 5K or 20K motor. As always, try to determine the problem with the handpiece before disassembling the motor.

Some of the most common problems with this handpiece are:

- The motor is locked up.
- The motor has low torque.
- The threads are worn.
- There is a loud grinding noise inside the motor.
- The chuck does not hold a bur or does not open.

The repair procedures for each of these problems is addressed below



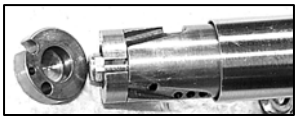


STEP 1

The first disassembly step is to remove the chuck collar. Two screws hold the collar onto the nose of the handpiece. Like all threads on this handpiece, the screws are regular thread. Turn them counterclockwise to remove. Once the screws are removed, you can slide the chuck collar off of the nose. Notice the "G-Clips" located under the collar. These help hold the chuck collar closed during operation. Do not lose these clips.

STEP 2

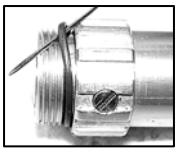
Now place the threaded portion of the motor into a 9/16" collet. Once the collet is secure, wrap the main housing of the motor with a rubber strip. You may unscrew the motor housing from the head. Again, all thread patterns on this handpiece are regular so turn the housing counterclockwise to unscrew.



STEP 3

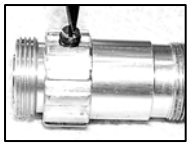
Once the housing has been unthreaded from the head, push the internal motor parts out onto your work surface and remove the

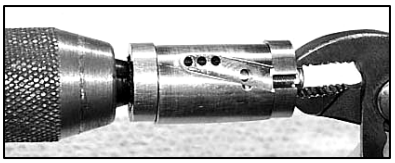
head from the collet. If the problem with the handpiece was only worn threads, replace the head (60203) and reassemble by following **STEP 4** and **STEP 16**. Otherwise, proceed to the next step.



STEP 4

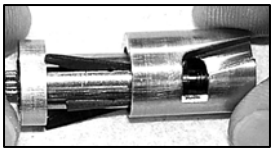
In a complete overhaul you will want to replace the three o-rings on the head and also the forward/reverse valve o-ring. First, remove the top o-ring. Then remove the screw from the forward/reverse ring. Once the screw is removed you can pull the f/r ring off of the head and remove the o-rings with a needle. Then you will need to tap the forward/reverse valve out of the head and remove the o-ring found under the valve.





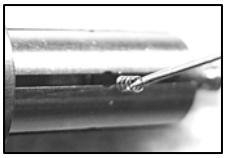
STEP 5

Now that the head is disassembled, we will disassemble the internal motor. You will need to pull the alignment pin and distributor plate off of the motor. Then put the drive gear in your wooden handled collet holder. Once the gear is held securely, unscrew the locknut from the rear of the motor.

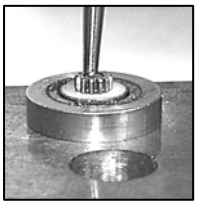


STEP 6

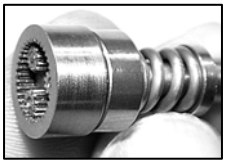
At this point, you can pull the end plate and rotor housing off of the rotor. Carefully remove the blades and springs. Generally, a locked up or low torque motor can be repaired by ultrasonically cleaning the internal motor parts and replacing the blades and springs. Sometimes a new rotor housing is needed as well. Look inside the rotor housing for deep scratches. If they exist, torque will be reduced.



STEP 7

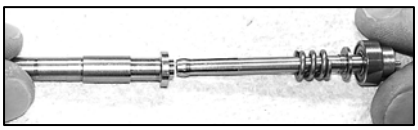


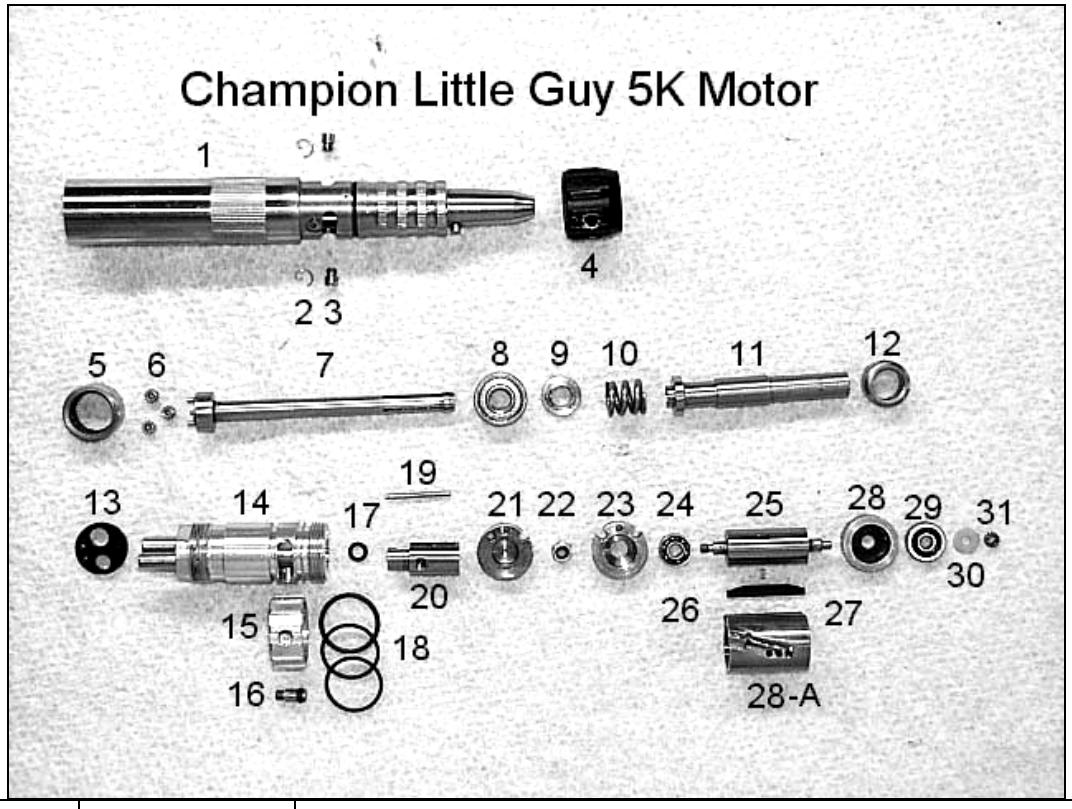
To remove the bearing and or sun gear, place the body of the rotor into your elevated work block as shown. Using a thin punch, tap the rotor post out of the gear, bearing and lower end plate.



STEP 8

The final segment of the motor disassembly regards the chuck mechanism. Remove the gear ring and planetary gears. Now pull the chuck off of the spindle. Then remove the spring, washer and bearing. If the chuck was not holding a bur, you will need to buff the shaft of the spindle and clean the inside of the chuck sleeve. If the chuck would not accept a bur, you will need to replace the chuck sleeve, it is worn out.





Picture Number	Part Number	Description
1	50551	Main Housing
2	50523	Detent Spring
3	50559	Chuck Collar Screw
4	50553	Chuck Collar
5	50510	Ring Gear
6	50569	Idler Gear Set
7	50554-58-68	Chuck/Spindle Assembly
8	60223	Spindle Bearing
9	50557	Spring Spacer
10	50564	Chuck Spring
11	50555	Chuck Sleeve
12	50556	Chuck Opener
13	40422A	4 Hole Gasket
14	50501	Champion Little Guy Head
15	50508	Forward/Reverse Ring
16	50509	Forward/Reverse Ring Screw
17	50520	Forward/Reverse Valve O-Ring
18	50519	Head O-Rings
19	50514	Alignment Pin
20	50507	Forward/Reverse Valve
21	50506	Cover Plate
22	50513	Hex Nut
23	50504	Lower End Plate
24	60225	Lower End Plate Bearing
25	50503	Rotor
26	50516	Rotor Blade Springs
27	50512	Rotor Blades
28 - A	50502	Rotor Housing
28	50505	Upper End Plate
29	60224	Upper End Plate Bearing
30	50515	Spacer Washer
31	50511	Sun Gear

We will address some of the troubleshooting tips now that we are about to reassemble our adapter.

- *The Motor is Locked Up*. This is usually caused by the existence of rust and debris in the internal motor. Disassemble and clean all the motor parts to cure the problem. Occasionally, a broken rotor blade will seize the motor up. Replacing the blades will remedy that problem. If the lock nut is loose or too tight, you may also have a locked up motor. Be sure to adjust the nut as described in **STEP 12**.
- *The Motor Has Low Torque*. In addition to the repair steps mentioned above, you need to do the following. Lap all the motor plates on fine grit sandpaper, (2000 grit). Replace the Forward/Reverse Valve O-Ring like in **STEP 14**. And make sure the spacing between the rotor and lower end plate is correct, see **STEP 9**. You may also need to replace the rotor housing (50502), if it is damaged.
- *The Threads are Worn Out*. Simply replace the head as described in **STEP 14**.
- *There is a Loud Grinding Noise in the Motor*. Generally, replacing the bearings and gears will quiet down the motor. The bearings numbers are 60224 and 60225. Look at **STEP 7**, **STEP 9** and **STEP 10** for the proper repair procedure. Look to **STEP 8** and **STEP 16** on the correct procedure to replace the gears.
- *The Chuck does not hold a bur or does not open*. See **STEP 8** for the correct repair procedure on this issue.

STEP 9

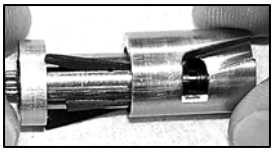
Reassemble the rotor assembly by placing a new bearing into the upper end plate. Stand the rotor up into hole #4 and place the cover plate on top (Bearing Exposed). Now set an old bearing (Same Size) on top of the new bearing. Next, place a piece of paper between the rotor and cover plate. Carefully press the rotor and cover plate together and then remove the piece of paper from the assembly. The cover plate should spin nicely.

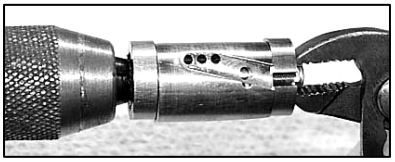
STEP 10

Replace the sun gear by putting the opposite end of the rotor assembly into hole # 4. Then press the gear onto the rotor assembly with a the press until it is fully seated.

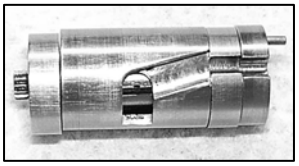
STEP 11

Place the rotor blade springs back into their appropriate holes in the rotor. With those in place, push the blades into the rotor slots. The blades must be put into the slots with the curved edge side down. The flat edges on the blades need to be towards the outside of the grooves to maximize the amount of air they catch. Next, push the rotor housing over the blades. Be sure the alignment pin hole on the edge of the housing is pointing towards the outside.

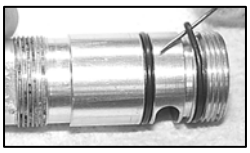




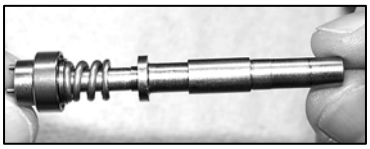
STEP 12
Once again secure the sun gear in your wooden handled collet. Next, slide the upper end plate into its position, bearing away from the rotor, and tighten the assembly by screwing the locknut onto the appropriate threads. If the nut does not have good resistance while being screwed into position, it is faulty and must be replaced. To properly adjust this internal motor, screw the lock nut all the way down, and then back it off approximately ¼ or 1/8 turn. When adjusted properly, you should be able to turn the upper end plate with your fingers.



STEP 13
Line up the alignment pin holes in the rotor housing and lower end plate. Insert the alignment pin and then push the cover plate onto the pin.



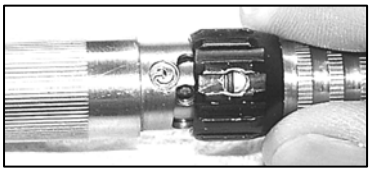
STEP 14
To reassemble the head, place the forward/reverse valve upside down on your work surface. Install the bottom two o-rings and collar onto the head and place the forward/reverse valve o-ring into the groove on the valve. Lower the head over the valve so that the hole in the forward/reverse collar will line up with the hole in the valve. Install the collar screw and third o-ring.



STEP 15
To reassemble the chuck portion of the handpiece, place the bearing, spring spacer, spring and chuck sleeve on to the chuck/spindle. Next install a bur blank into the assembly.

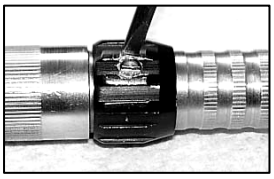
STEP 16
Place a dab of green grease on each gear post. Place the planetary gears on the posts. Then place the ring gear over the three planetary gears.

STEP 17
Place the threads from the head into the 9/16” collet. Stack the chucking mechanism assembly on to the motor assembly. Then place that assembly on top of the head (as shown). Be sure to insert the motor alignment pin in the proper hole. With the forward/reverse ring in the forward position, lower the main housing over the unit and tighten about three quarters of the way. This will allow us to insert the chuck collar and screws properly.



STEP 18

Tighten the main housing until the screw holes in the chuck opener are visible through the grooves cut into the housing where the chuck collar sits (see picture). Now insert the detent springs (g-clips), back into the grooves they fit into.



Once this is done, slide the chuck collar over the nose of the handpiece and line up the holes in the chuck opener with the holes in the chuck collar. Now insert the chuck collar screws and tighten them fully.

STEP 19

Now wrap the main housing with a strip of rubber. Notice there are two flat edges on the bottom of the head. Grab these edges with an adjustable wrench and tighten fully. Placing the gasket back on to the bottom will complete the reassembly.