

# STAR TITAN SWL SCALER REPAIR PROCEDURE

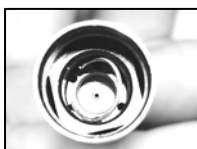


The Star Titan SWL Scaler is similar to the Star Titan Scaler in function. It does differ from its counterpart in one key respect. It has a swivel base. It requires the use of a star swivel connector to operate. It is slightly more difficult to repair than the non-swivel scaler, but most of the replacement parts are the same. Most replacement parts are available for this scaler. As always, try to determine the problem before disassembling the motor.

Some of the most common problems with the scaler are:

- There is no vibration at the tip.
- The scaler has low vibration.
- The spindle spins around.
- The tip cannot be removed.
- There is a water leak.

The repair procedures for each of these problems is addressed below



## STEP 1

Remove the water line from the scaler. To do this, you must first remove the water line clip from the rear of the scaler. It is a c-clip that is visible just above the water line as you look through the back end of the scaler. You can remove this clip with a dental explorer or other thin metal tool with a hook on the end of it.



## STEP 2

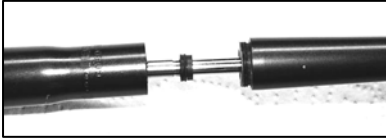
Once the water line clip has been removed from the scaler, you can pull the water line out. Simply grab a portion of the water line with a pair of tweezers and pull straight out of the scaler (as shown).



## STEP 3

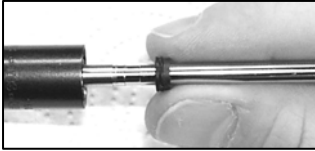
Now unscrew the nose piece from the scaler. Use a couple pieces of rubber and a tight grip to unscrew it from the main housing. Once this is done, remove the two large o-rings from the spindle. Sometimes the o-rings will be stuck up inside the nose piece and can be removed with some tweezers.





#### STEP 4

The next step is to unthread the main housing from the connector housing. Once again the threads are regular and you may need to use a couple pieces of rubber and a tight grip to unscrew this portion. Once you unscrew this piece, the internal workings of the scaler will be visible.



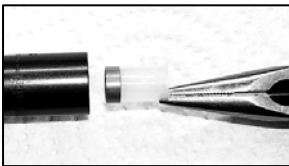
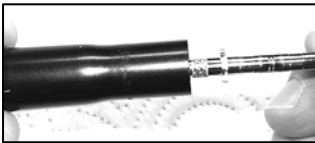
#### STEP 5

In this step, you will remove the four quad o-rings and rotor. Pull the o-rings and rotor off the tip of the scaler spindle. Look to see if the o-rings are cracked or if the rotor is damaged.



#### STEP 6

You may notice a nut is holding the bottom end of the spindle in the connector housing. Use a pair of needle nose pliers or the nut remover from your scaler tool set (00038A). Turn the nut counterclockwise to unscrew. Once this nut is removed, you need to pull the spindle out of the connector housing. It is not easy and will take some force.



#### STEP 7

If the flex tubing and crimp rings did not come out with the spindle, they are still inside the connector housing. They must be removed. Reach into the housing with a pair of needle nose pliers and remove the flex tubing and crimp rings.



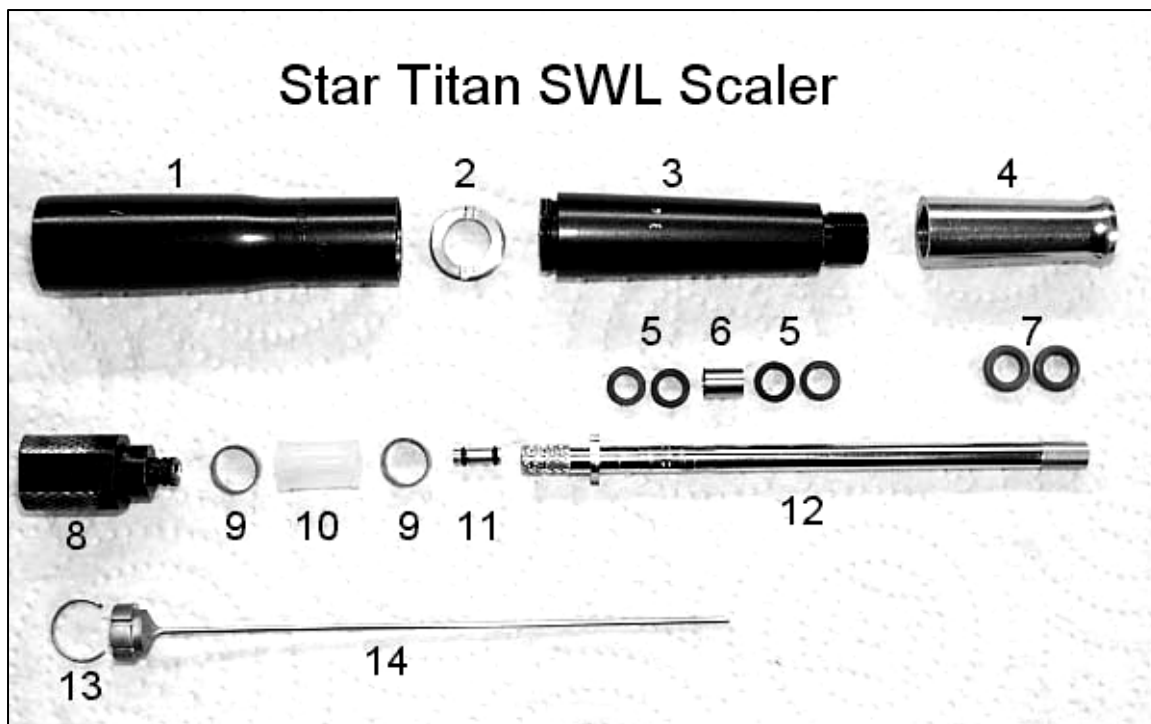
#### STEP 8

You now need to remove the air connector from the connector housing. The air connector is fragile and its availability is not consistent. Be very careful during this process. Place the bottom of the housing into the open end of the scaler repair tool set cylinder (00038A). With this done, place the hollowed out end of the scaler repair tool set drive post into the top end of the housing. It should sit firmly around the knurled end of the air connector we are trying to remove from the housing. Before driving the connector out of the housing, your assembly should look like the picture (at left). If it does, press the drive post until the air connector is removed.



#### STEP 9

**If, and only if there is a water leak problem, you will need to change the water line brace. Insert the water brace tool (00039) into the bottom end of the spindle.** Once it makes contact with the water line brace, press hard and turn the tool clockwise. After you turn the tool a few times, it should be embedded into the brace. Pull the tool out of the spindle and replace the brace. Note: Once you remove a water line brace it is ruined and must be replaced.



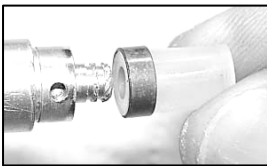
Picture Number	Part Number	Description
1	20101B	Connector Housing
2	20101C	Retaining Nut
3	20101A	Main Housing
4	20102	Nose Piece
5	20117	Quad O-Ring
6	20107	Rotor
7	20118	Large O-Ring
8	20125	Air Connector (Swivel Insert)
9	20110	Crimp Ring
10	20111	Flex Tubing
11	20109	Water Line Brace
12	20104	Scaler Main Spindle
13	20122	Water Line Brace Retaining Clip (Snap Ring)
14	20121	Water Line

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

- *There is no vibration at all.* This is usually caused by the rotor being cracked. Remove the main housing as in **STEP 4**. Pull off the rotor and quad o-rings and simply replace them following **STEP 18**.
- *The Motor Has Low Torque.* A scaler can have low torque if the quad o-rings are pushed on too close to the rotor. This would limit the travel of the rotor and limit torque. Look to **STEP 18** to properly space the o-rings. Be sure the rotor is not

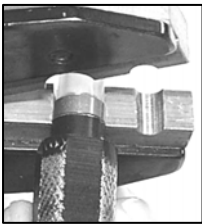
damaged and there is no debris on the spindle. A split flex tube would also cause low torque. Replace it following **STEP 10 & 11** if damaged.

- *The spindle spins around.* Spinning can be caused by a split flex tube or faulty crimp ring. They must be replaced using **STEP 10 & 11**. In addition, the dog ears on the bottom of the spindle could be loose. In this case, the spindle must be replaced. The very tip of the spindle could be loose as well, so check for that.
- *The tip cannot be removed.* If the tip does not spin, use a wrench to unscrew it from the spindle. If the tip simply spins around and around, it must be removed using force. Grab the spindle with needle nose pliers just below the base of the scaler tip and above the nose piece. This is not easy and will take some effort. Then grab the scaler tip with channel lock pliers and unscrew it.
- *There is a water leak.* Water leaks can be caused by a bad swivel o-rings or a faulty water line brace. First check to see that the swivel o-rings are in good condition. If so, change the water line brace using **STEP 9**.



### STEP 10

To reassemble the main shaft of the scaler, place a crimp ring over one end of your flex tubing. Make sure the ring is flush with the end of the tubing (above left). Next, push the flex tubing all the



way onto the nurlled end of the air connector. Once this is done, you can crimp the crimp ring securely onto the air connector (below left). Crimp the ring with your crimp ring tool (00029). Turn the air connector 90 degrees and crimp again. This insures the quality of the hold.



### STEP 11

To attach the spindle, place the second crimp ring flush with the top edge of the flex tubing. Insert the bottom of the spindle into the tubing. Rotate the dog ears near the bottom of the spindle so that they are lined up with two of the four, flat smooth sides of the air connector (as shown). It is very important that the spindle dog ears are properly aligned with the flat sides of the air connector. This will allow the spindle to pass through the internal workings of the connector housing in the next assembly step.



### STEP 12

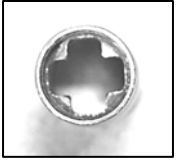
Adjust the height of the spindle by stacking the internal spindle assembly on the scaler repair tool pyramid piece (00038A). Assemble the two housings and nose piece. Place the bottom edge of the connector housing onto the bottom flange of the pyramid piece (as shown left & below right). Adjust the spindle so that the tip is even with or very slightly above the height of the housing nose piece. Once the proper spindle height has been attained, double check that the spindle dog ears are in line with two of the flat sides of the air connector.





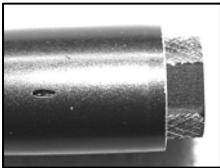
### STEP 13

With the spindle properly aligned you need to crimp the top crimp ring onto the flex tube and spindle. Like before, you will need to crimp the ring, then turn the unit 90 degrees and crimp again.



### STEP 14

Now the spindle assembly must be installed into the connector housing. Once again, alignment is very important. Look at the picture to the left and take note of the four grooves on the inside of the housing. The dog ears on the spindle must line up with two of the grooves.



### STEP 15

To properly align the spindle assembly, the four flat sides on the air connector must line up with the four small air exhaust ports near the rear of the connector housing (see picture). Insert the assembly until you can no longer push it into the housing by hand.



### STEP 16

You will now need to place a 7/16" collet on top of the large hole on your work block. Place the tip of the scaler spindle into the top of the collet. The scaler assembly will now rest on the top of the collet with the back of the connector housing and air connector pointing up. Now place the scaler tool pyramid piece into the rear of the air connector (as shown). Tap the tool until the air connector is fully inserted inside the connector housing. The pyramid tool will automatically keep you from tapping the air connector in too far.



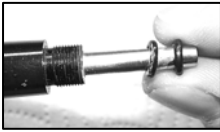
### STEP 17

With the spindle assembly properly installed, we need to insert the spindle retaining nut. Slide the nut over the spindle shaft and into place on the connector housing. Then, using the spindle nut tool or a pair of pliers, screw the nut into place.



### STEP 18

Now, push the first two quad o-rings onto the spindle. There is a small groove just below the holes in the spindle. This is where the bottom o-rings sit. Push the rotor onto the spindle until it touches the bottom o-rings. Place the top o-rings on the spindle just above the rotor. There is a groove above the rotor where the top two o-rings sit. Once this is done, screw the main housing onto the connector housing.



### **STEP 19**

Place the top two large o-rings over the tip of the spindle. Push them all the way to the top of the main housing and screw on the nose piece. Install the water line back into the rear of the connector housing. Use a small flat tool, to push the water line until it is fully seated. Once the water line is properly installed, the water line retaining clip must be snapped into place. Simply drop it into the back of the air connector and properly seat it by pressing it in with a flat head screwdriver.