

Exchanging a Cylinder Assembly on Tafonius Ventilators

Scope

This document refers to **Tafonius Models only**. It is not applicable to Junior models.

This procedure can be carried out with the tools supplied with Tafonius and with a moderate ability in maintenance procedures

General

A Cylinder Assembly may be changed as part of the annual service procedure or to fix a diaphragm fault

For the procedure, you will need the following tools:

7/32, 3/16 and 5/32 Hex Allen Keys

5/16, 9/16 and 11/16 Spanners

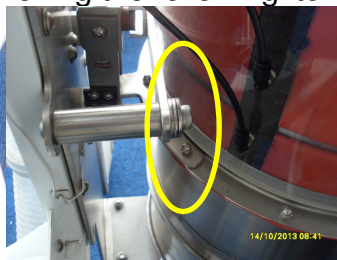
Procedure Outline

1. Prepare Tafonius for disassembly
2. Remove the existing Cylinder Assembly from Tafonius Machine
3. Fit the new Cylinder Assembly
4. Prepare Tafonius for normal working

The procedure involves removing the following items:



4 x Pan Bolts



2 x Lever Bolts



4 x Rod-guide bolts



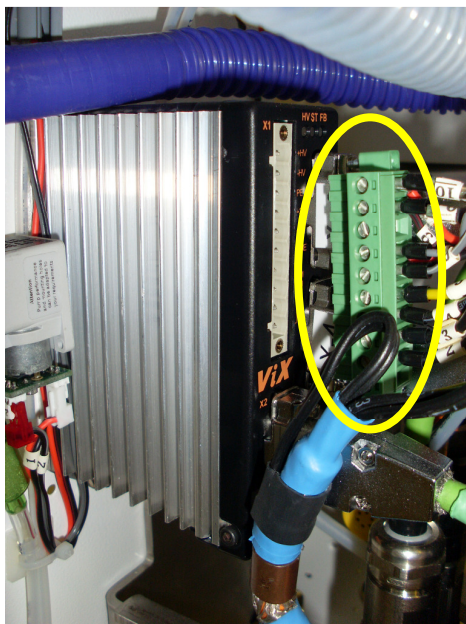
2 x Hose clips

1 x Piston Bolt

The procedures should be followed in strict order to avoid any potential damage to the machine.

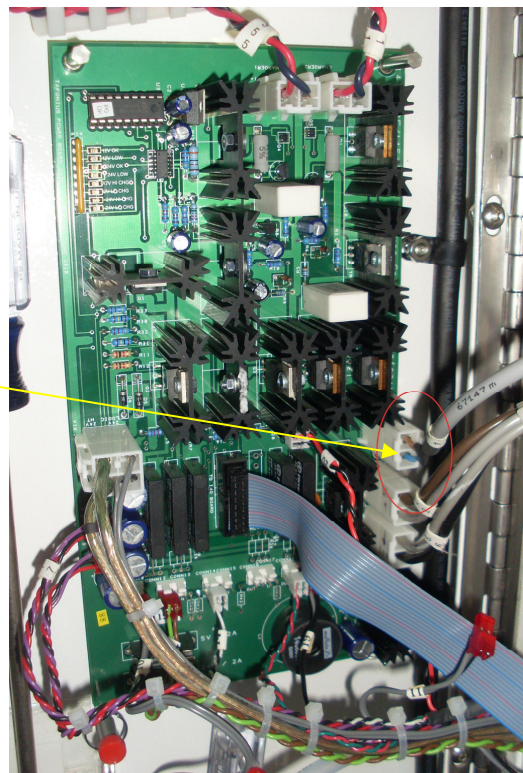
1. Prepare Tafonius for Disassembly

- If the piston is still moveable, then with the machine switched on use the zeroing procedure or the pressure line to take the piston to the bottom of the cylinder.
 - Then turn the PC off by using either the Shutdown button in the Tafonius Shell, or the normal Windows shut-down procedure.
 - Then turn off the mains supply to Tafonius at the wall and remove the plug.
 - Do NOT then turn off Tafonius using the ON/OFF switch as this will move the piston back to the open cylinder position.
 - With the piston at the bottom, disconnect the battery supply by separating the contacts in the battery compartment.
- Also, remove the motor connections to the VIX500AE drive as shown below by pulling out the long green connector. On some models it is first necessary to loosen a securing screw at either end of the green connector



Failure to remove this connector may result in irreparable damage to the VIX drive during the procedure

- Now remove the power supply to the ELO monitor by disconnecting CONN4 on the power board found located on the inside of the back door of the machine as indicated by the highlighted connector in this photo

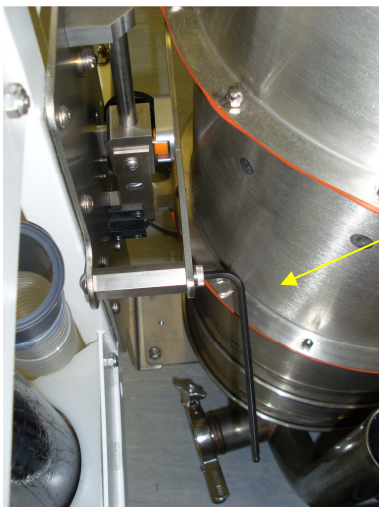




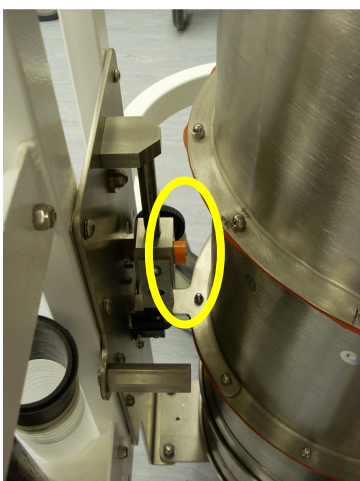
- Remove the vacuum pipe(s) from the vacuum port on the cylinder
- Then remove the two front hoses. Some models are push-fit connectors as shown. Others use jubilee clips. For models with Jubilee clips use the 5/16 spanner to undo these.



- Now lift the cylinder using the cylinder arm and remove the soda-lime tray. Drop the cylinder back down into position.



- Now remove the cylinder lever arm assembly. Use a 3/16 hex key to remove the inner hinge bolts – one on each side. Withdraw the Cylinder lever arm and put aside



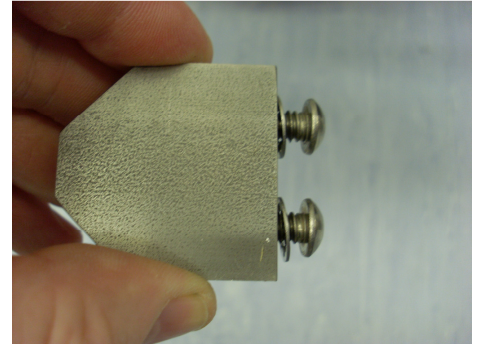
- Then remove the orange roller bearings and put aside.



- Move aside the manual breathing pipe and undo the top rod locator brackets on each side using a 5/32 hex key



Keep the screws safe
by putting them back
in the bracket



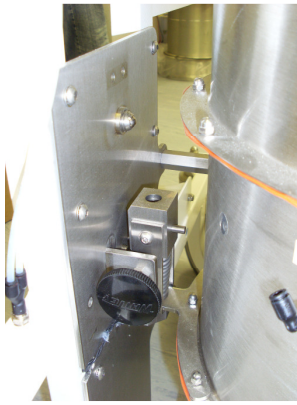
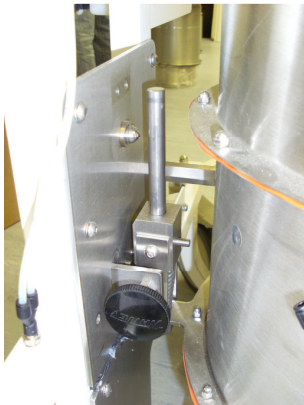
- Now remove the 4 bolts securing the lower drainage pan. Use a 7/32 hex key and a 9/16 spanner.
- Pull the drainage pan backwards and then tilt it to remove it from under the ventilator back-bar. Put to one side



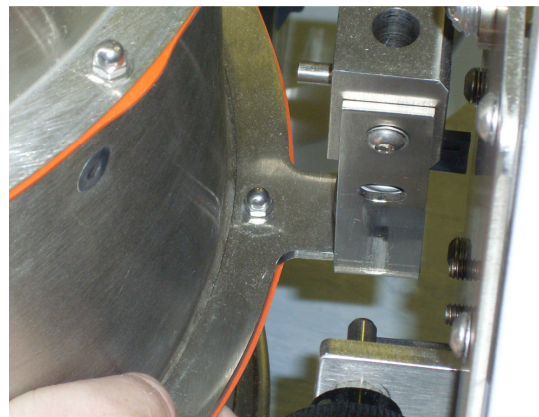
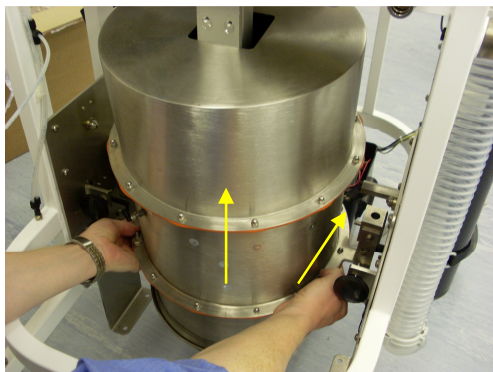
- Now disconnect the piston from the central actuator arm. On early models the piston was connected using a large stainless steel bolt. On later models it is secured using two lock-nuts. Use an 11/16 spanner. If the piston is stuck high inside the cylinder you will need a pair of pliers or a socket spanner to undo the piston bolt.
- If the piston is freely moving, then once the bolt or lock-nuts have been removed it will be seen hanging below the bottom of the cylinder.



- For models with lock-nuts the piston may be 'stuck' to the actuator even though the nuts have been removed. In this case lift the outer cylinder slightly to expose the bottom of the cylinder and then press firmly down on the cylinder to pull it off the actuator spigot.
- Now remove the guide rods from the left and right sides of the cylinder assembly



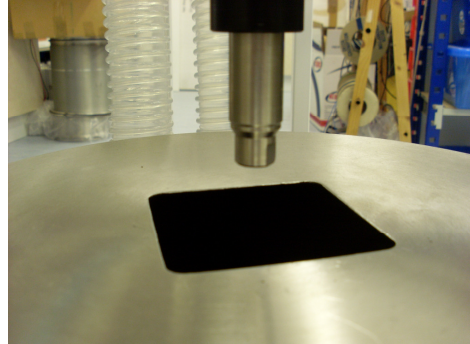
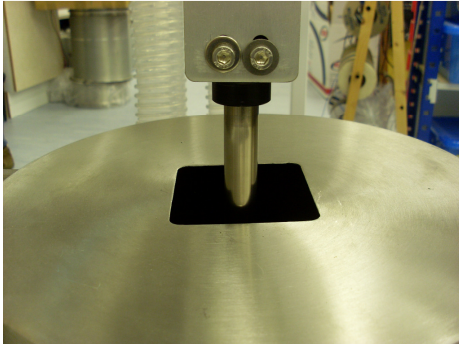
- Lift the cylinder up and push the bottom forwards so the retainer assembly moves out and over the lower rod retainer bracket.



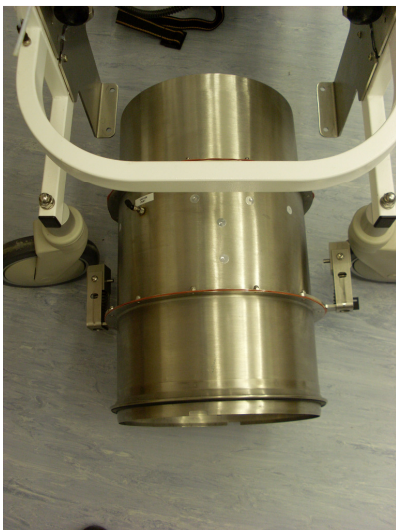
- Then gently lower the cylinder down to the floor. This will reveal the actuator shaft.



- Grab the actuator shaft and pull it up so the end is visible.



- Tilt the top of the cylinder assembly forward and lay the cylinder on its side so that it can be removed from the ventilator



Removal is complete

Fitting the new Cylinder Assembly

The exchange cylinder will be supplied as a sealed and tested unit that just needs fitting into the machine.



The cylinder guide assemblies contain a very strong spring that can be difficult to re-assemble if it comes off the side bracket. For this reason leave the guide assemblies strapped to the side bracket until ready to fit into the machine

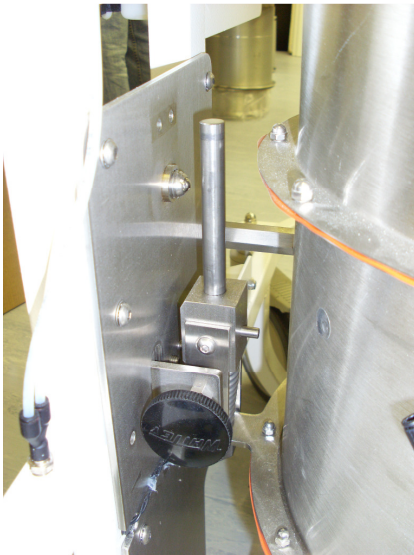
Note the orientation stickers on the cylinder that identify the Front, Left and Right hand side of the cylinder.

- Remove the sticking tape from the outside of the piston and remove any packing material from inside the cylinder
- Cut the wire-ties from the cylinder guide assemblies. Before fitting into the machine make sure the spring and guide are lined up with the side-bracket by looking down through the guide assembly. Use the Actuator rod to confirm that the holes are in line then remove the Actuator rod

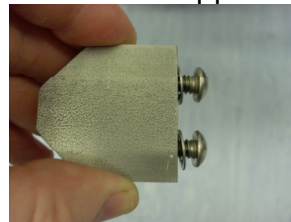




- Fit the cylinder to the ventilator by sliding it under the bump-bar and then lifting it up onto the rod support brackets making sure the actuator rod goes into the central square hole in the top of the cylinder. Let it sit there.



- Now replace the actuator rods down through the spring mechanism until they locate in the lower rod holder bracket.
- Then fit the upper rod holder



brackets on both sides, and tighten fully.

- Place the orange roller bearings back on their spigots
- Then refit the cylinder lever arm making sure that the hinge bolts and the bolts at either end of the main handle are secure.
- Now fit the drainage pan back in place and push the 4 securing bolts up through the framework and catch them with the lock-nuts. Do not tighten these lock-nuts yet.



- Now raise the cylinder and fit the soda-lime tray before latching the cylinder back into place. As the cylinder latches back into place move the drainage pan within its limited range of movement to the best fit with the cylinder. Latch the cylinder and then tighten and secure the 4 drainage pan securing bolts using a 7/32 hex key and a 9/16 spanner



- Once the absorber pan is fitted and tightened, take out the soda-lime tray again and put it to one side.
- Re-connect the green VIX drive motor connector and tighten the end retaining screws
- Reconnect the vacuum hose(s) by pushing them firmly into the connectors on the side of the Cylinder. Where there are 2 hoses one will be longer than the other. Fit the longest hose to the lowest vacuum port connector
- Then reconnect the battery using the connector in the battery box.
- Push the ON/OFF button and the Tafonius will start in Auxiliary mode (The PC will not start as the PC Power connector CONN4 is disconnected).
- Wait for the vacuum to establish. Because the cylinder has been fully open this may take longer than the normal start-up time.
- Wait for the initialisation sequence to complete and then initialise the piston in the normal way by pushing the flashing RUN button.
- The actuator rod will descend to its full extent and Tafonius will enter the normal auxiliary screen mode.
- Once the normal Auxiliary screen has appeared with the piston image and Tidal Volume controls etc on it, push the piston up towards the actuator and then push in, locate and tighten the main piston bolt or lock-nuts(11/16 spanner). In the case of lock-nuts, apply and tighten the first lock-nut fully so it is tight and secure. Then fit the second lock-nut and tighten it so it tightens against the first lock nut.
- Now raise the cylinder and wait for the piston to be moved up out of the way. Fit the absorber pan and lower and lock the cylinder
- Connect CONN4 to the power board
- Close the back door.
- Now reconnect the mains supply and make sure the auxiliary switch on the back door is in the ON position.

Refitting is complete