

Appendix A

Torsion Band Replacement Procedure for the 33210 Gravitational Torsion Balance No. 00683-19

1. Removing the old torsion band:

Note: Careful disassembly and reassembly is required in replacing the torsion band.

- Remove the 33210 Gravitational Torsion Balance from its permanent mounting if it is in one.
- Refer to fig. 1 of the main instruction sheet. Verify that the lower suspension is locked in place by tightening the two knurled nuts **5** on the underside of the metal casing.
- Remove the two large lead balls from the swivel support **8**.
- Remove the two side clips keeping the two glass plates in place around the metal casing. After the first clip is removed, be certain to hold the glass plates in place as the second clip is removed to prevent the glass plates from falling and breaking.
- Carefully remove the two glass plates.
- Refer to Fig. 8 of the main instruction. Slowly unlock the lower suspension by unscrewing the two knurled nuts **5**. Remove the lower suspension by first removing the two plastic retainers **13** and carefully pulling the lower suspension out from the metal casing.
- Remove the lower torsion band cap from the lower suspension. There are two types of lower suspension caps. Older versions consist of a pressed-on brass ring that must be pulled off with needle-nose pliers. Newer versions consists of a cap with setscrew that can be easily removed by hand after the setscrew is loosened with a small screwdriver.
- Move the concave mirror **8** down to the lower end of its travel on the lower suspension to give easier access to the upper end of the suspension, and place the lower suspension in a safe place outside of the metal casing.
- The upper end of the old torsion band is removed by first removing the torsion head **1**. To remove the torsion head, loosen the knurled head screw **12** and the retaining screw on the opposite side of the carrier tube. The torsion head is spring loaded and should pop up when the two screws are loosened. Remove the torsion head from the carrier tube.
- Remove the upper end of the torsion band by unscrewing the small setscrew in the torsion head and pulling the upper shaft of the torsion band out of the torsion head.

2. Preparing the new 00683-19 Torsion Band for placement into the Gravitational Torsion Balance:

Caution! The torsion band is a very delicate component and must be handled with great care. Do not pull or kink the band since this can cause it to break.

- Loosen and remove the retaining screw at the upper end of the filament tray. The upper end is identified by the single brass band pressed on the silver shaft of the torsion band. The lower end of the torsion band has a cap with a setscrew secured to the unfinished brass shaft.