APPLICATION NOTE AN-001

DIAPHRAGM REPLACEMENT FOR GT100 AND GT200

1 Purpose of this Application Note

The purpose of this application note is to explain and illustrate the steps used to replace the diaphragm of the STI Series GT100 pressure transducer (7,500 to 20,000 PSI pressure range) and the STI Series GT200 pressure transducer (3,000 to 20,000 PSI pressure range).

2 Replacement Components

Replacement kits and components should be purchased from STI in advance. Several kits are available according to pressure range. Kit parts and o-rings are not range sensitive.

		Diaphragm w/Grease			O-ring	
Range (PSI)	Kit P/N	P/N	Thickness (inches)	QTY	P/N	QTY
3,000	212975-11	212890-12	0.005	1	200910	1
5,000	212975-11	212890-12	0.005	1	200910	1
7,500	212975-11	212890-12	0.005	1	200910	1
10,000	212975-11	212890-12	0.005	1	200910	1
15,000	212975-11	212890-12	0.005	1	200910	1
20,000	212975-11	212890-12	0.005	1	200910	1

Table 1: Diaphram kits and o-ring part numbers.

3 Screw Torque Requirements

Screws are tightened in a specific pattern to a torque value of 123 in-lbs.

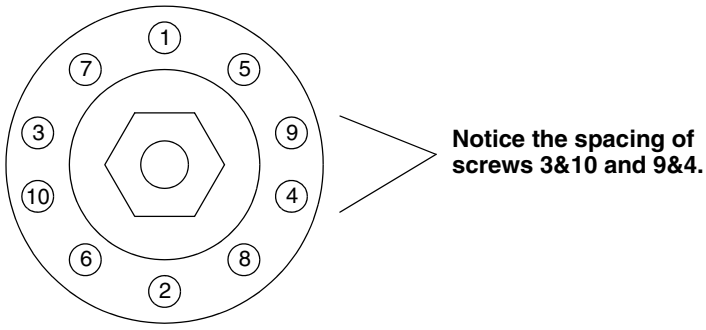

Figure 1: Screw torque sequence.

4 Procedure

1. Secure the instrument for removal of the pressure cap.

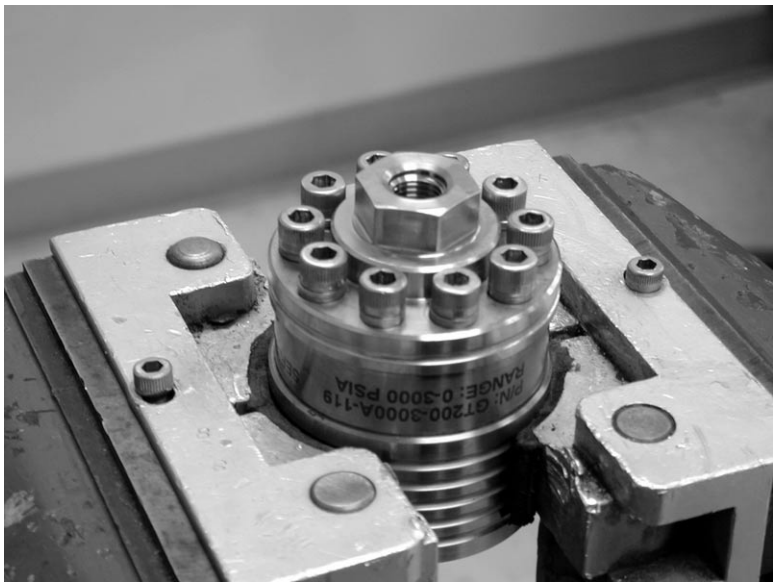

Figure 2: Secured transducer.

2. Mark the cap relative to the base for proper re-alignment in Step 11.

Figure 3: Cap re-alignment mark.

3. Loosen the cap screws, remove screws and lock-washers and discard. Remove the pressure cap and place the base along with the cap on a clean work surface.

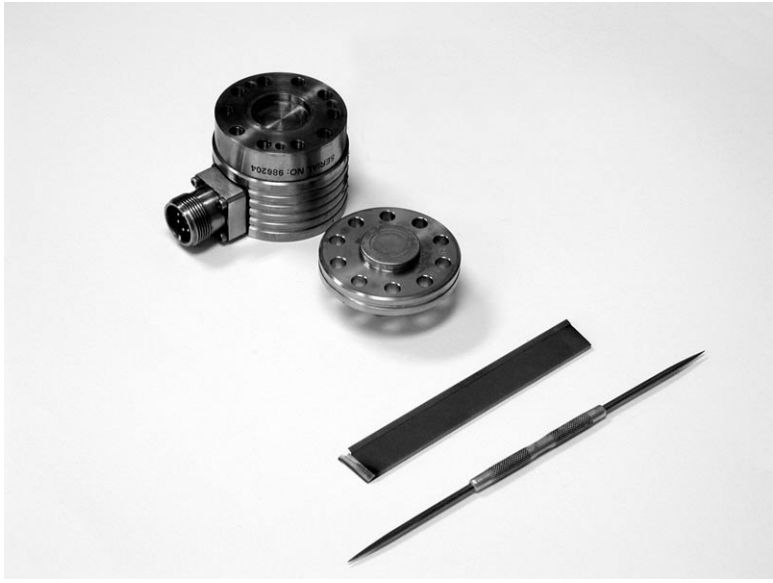

Figure 4: Transducer base, cap and tools.

4. Remove the diaphragm from the cap.

NOTE Be careful not to scratch the surface of the cap.

Figure 5: Removing the diaphragm.

5. Remove the o-ring by inserting the tool into one of it's two oil-fill holes and gently prying against cap.

NOTE Be careful not to scratch the surface of the cap.

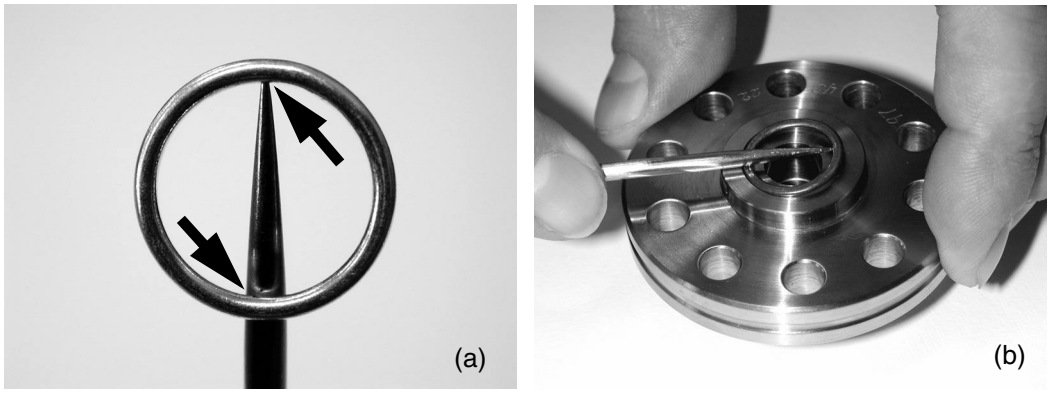

Figure 6: (a) Two oil-fill holes. (b) Removing the o-ring.

6. Clean the cap and element surfaces using a suitable solvent.

NOTE If the transducer has a ruptured diaphragm, check to see that the sensing element and cap surface have a 32 µinch finish or better. If finish is not 32 µinch or better, it must be polished.

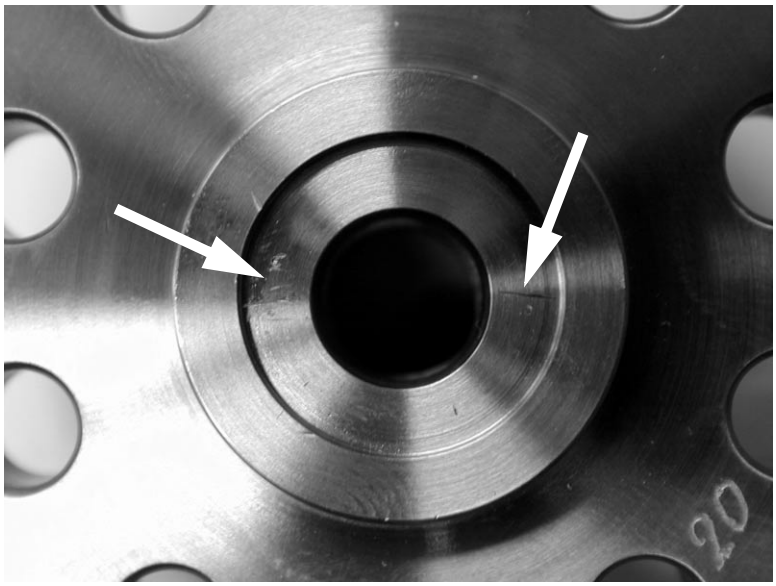

Figure 7: Example of damaged cap.

7. Install a new o-ring on the pressure cap. The o-ring should be press-fit by hand only.

Figure 8: Installed o-ring.

8. Install a new diaphragm on cap and place cap with diaphragm side down on a smooth and clean work surface. Angle the cap and rotate while appying a slight amount of pressure so the diaphragm seats firmly against the cap.

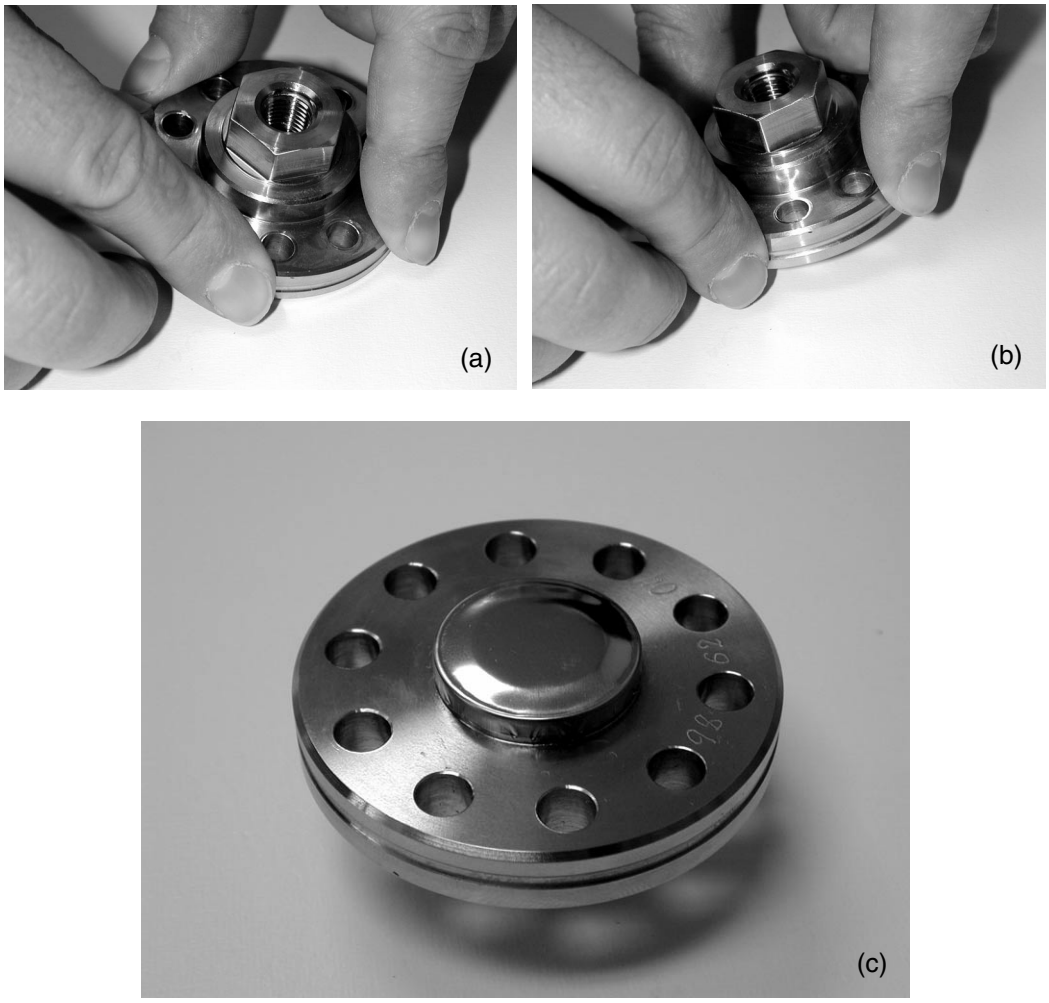

Figure 9: (a) & (b) Rotating the cap. (c) Installed diaphragm.

9. Apply a pea-sized amount of Krytox® grease to your finger and gently rub the top of the diaphragm.

NOTE It is important to apply the grease evenly so that a thin film can be formed.

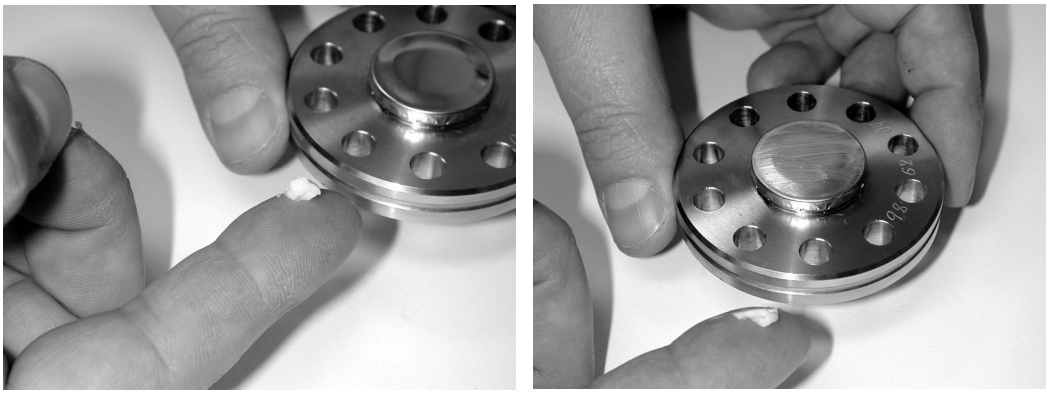

Figure 10: (a) Before applying grease. (b) After applying grease.

10. Place cap onto the base and spin several times to evenly distribute the grease.

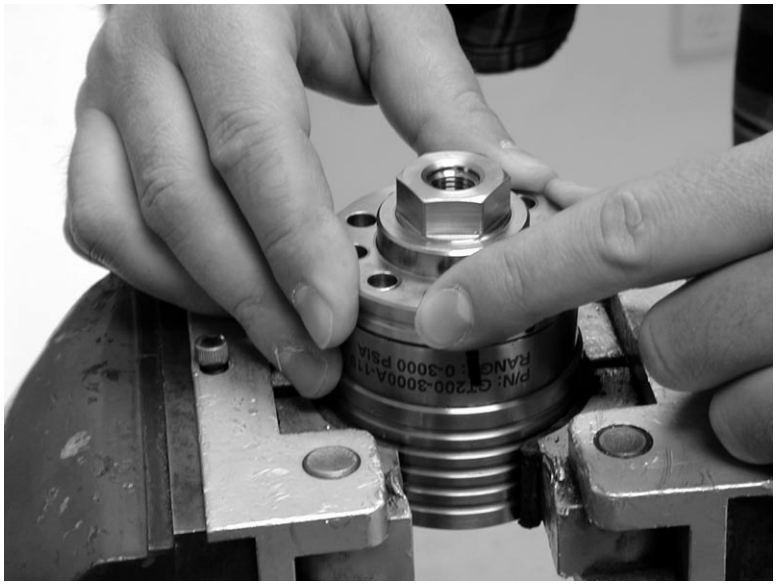

Figure 11: Rotating cap to distribute grease.

11. Align the marks made in Step 2 and install new screws and lock-washers. The screws should be finger-tight only.

Figure 12: Re-aligning cap using marks from Step 2.

12. Torque the screws in the pattern detailed in Figure 1 progressively to 123 in-lbs. The gap between the base and cap should be even when complete.

Figure 13: Setting the screw torque in proper sequence.

13. Apply proof pressure and perform a linearity and hysteresis test.

14. If the linearity or hysteresis results are not within the acceptable limits, Steps 1 through 10 must be repeated.