



VACGEN

# Assembly Guide

## RD2 Bellows Assembly Replacement

### AS0005

#### VGS03-02T05



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## RD2 Bellows Change

1. Use old drawing numbers as reference
2. If fitted remove extended bearing support or locking collar (8) if not fitted.
3. Look for joint in rotating shaft, (See notes on drawing)
4. **IMPORTANT SAFETY NOTE:** The inner push rod is under load by a spring, so when parting the shaft by unscrewing, it is very important that you have a good hold on the shaft, to stop it launching off the thread! So, take care at the next stage.
5. Cut through the tack weld NEAREST the flange, with a triangular needle file and unscrew shaft.
6. Remove the inner shaft (Push Rod) while holding the shaft vertical.
7. Tip upside down into a pot and three slugs and four balls will fall out.  
NOTE: For refitting, it is: ball, slug, ball, slug ball, slug, ball.
8. Remove azimuthal index knob (12)
9. Remove cover plate from top of main rotation knob, held on by three screws.
10. Looking down on main knob and remove the 2 cap head screws that holds the retainer wobble bearing housing (10).

### OLD VERSION

11. Remove the four grub screws holding the azimuthal barrel on (11), a shortened allen key is required to do this.
12. Pull off azimuthal assembly

### NEW VERSION

Use new drawing numbers as reference

13. Wind azimuthal fully in, this stops the bellows twisting in op 13
14. Undo Retaining nut (1) and remove
15. Remove the four screws holding the azimuthal barrel on (8), a shortened allen key is required to do this.
16. Pull off azimuthal assembly

Use old drawing number as reference.

17. Loosen grub screw in lower index ring (18).
18. Look inside the knob recess to locate the spiral clip by index scale (31) and remove.
19. Remove the knob (3) this will now leave you with the rotatory bearing assembly.
20. Undo the three screws holding item bearing assembly (2) to the drive (1)
21. Remove main bearing housing, noting that it must be angled slightly owing to the bent shaft.



NOTE: The next stage requires great care, so not to damage the bellows internally.

22. While hold the rotating shaft and body, careful pull and work the shaft out of the drive with the bearings attached to the shaft. The shaft will need to come out at a slight angle, once the first set of bearings are free.

NOTE: The shaft is bent, so hold the bellows over gentle, so the shaft does not drag down the inside of the bellows.

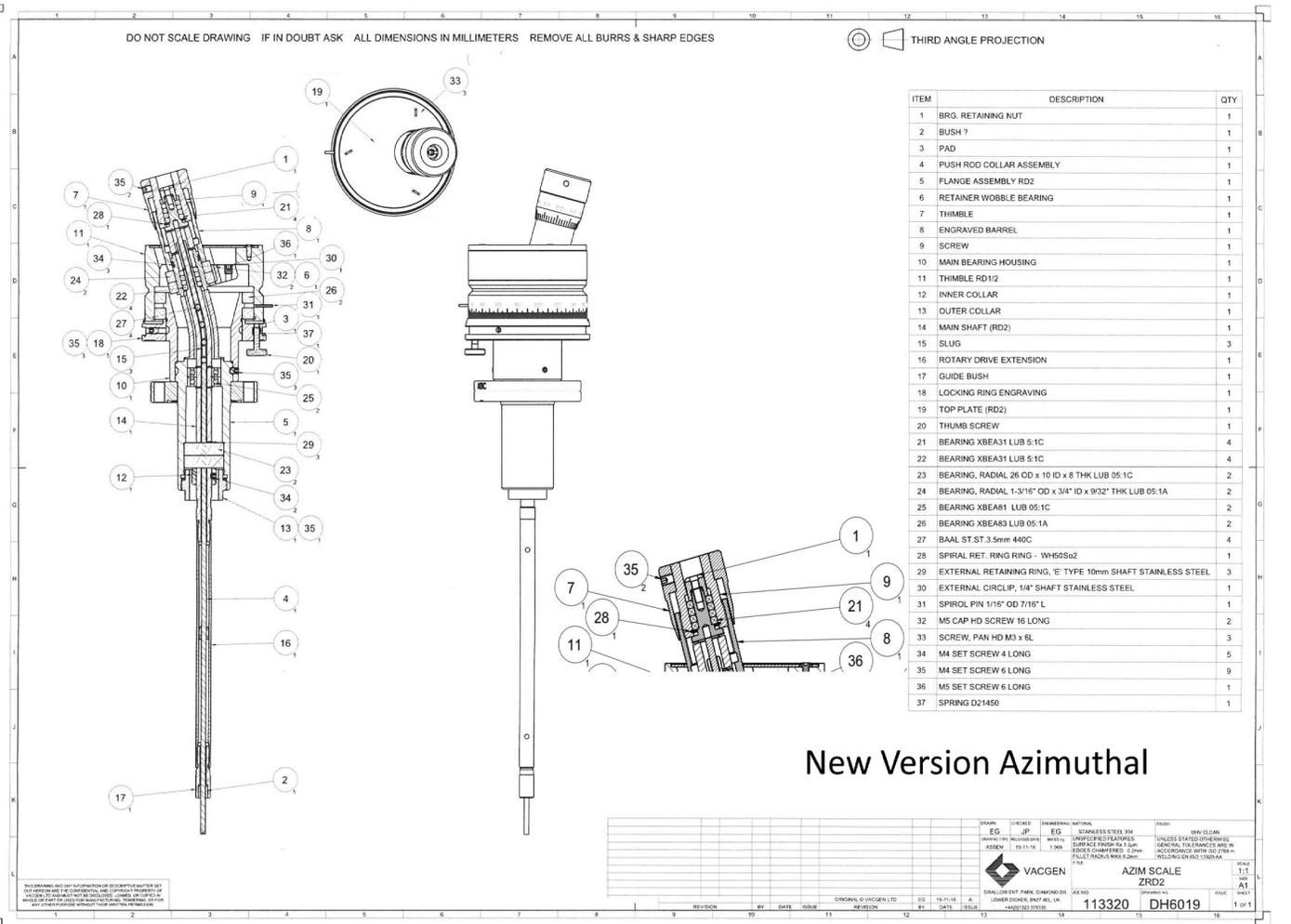
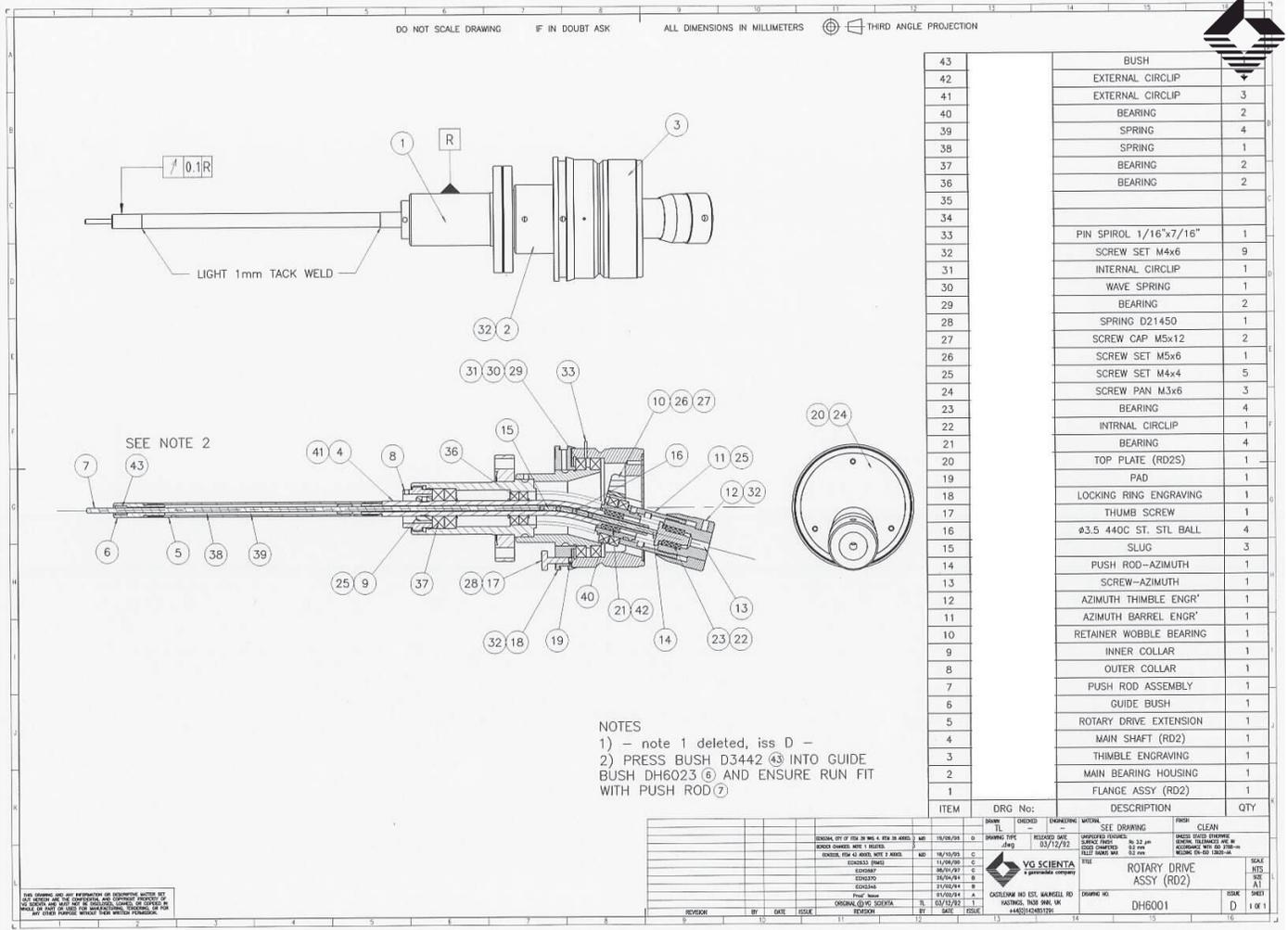
23. There is an azimuthal shaft inside the main rotating shaft that sits inside the short section pass the bend in the shaft (14). Note the orientation when removing, the dished end is facing the balls.

NOTE: On the new version the azimuthal shaft is welded to the azimuthal bellows assembly, so cannot be removed.

Refit in reverse but noting:

1. On the old version, make sure the azimuthal shaft is fitted inside the main rotating shaft (14). This needs to be fitted with the cupped end inserted first, so it locates against the ball.
2. When refitting the shaft into the bellows, make sure the set of 4 ball bearing races on the drive shaft are correctly inserted inside the housing on top of the main bellows (21). These should move freely in the bore.
3. Once the drive is fully assembled, fit the slugs and balls in the following orientation: ball, slug, ball, slug ball, slug, ball
4. Do not do the cap headed screws up tight on the retainer wobble bearing housing (10) until the last stage, (i.e. The rest of the drive is fully assembled). Centralise the azimuthal housing clamp and then do up tight.
5. The shaft will need welding, with a 1mm to 2mm stitch weld.

# DRAWINGS



## New Version Azimuthal