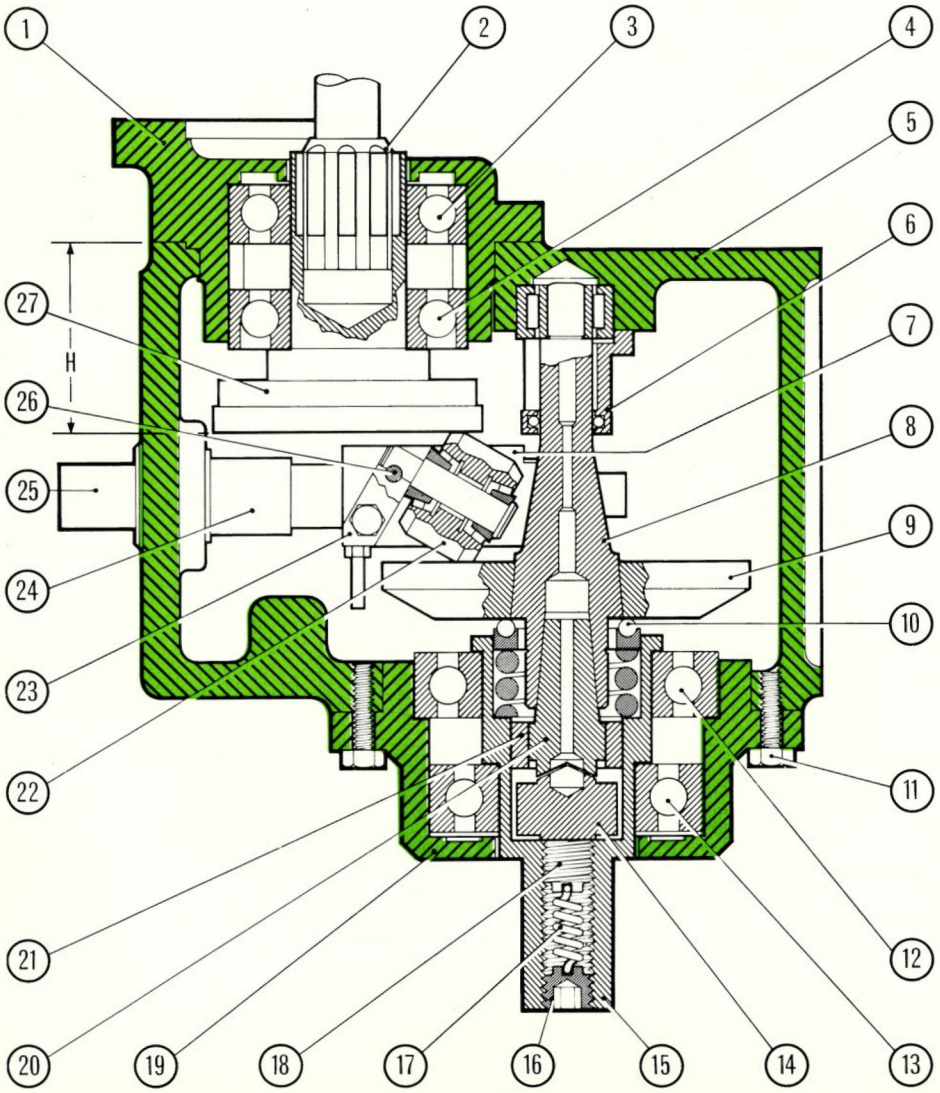
Monotype Bulletin 88

F.U.DRIVE

ADVANCED MAINTENANCE FOR THE F.U. VARIABLE-SPEED DRIVE

This variable transmission is now available for composition casters and Super casters, as an alternative to the Varigear. A general description of the unit and recommended maintenance procedures for caster operatives appeared in *Bulletin 84*. The following covers advanced repair work and as such is addressed exclusively to experienced maintenance engineers or such operatives as possess the skills and equipment to undertake the operations described.



Inspection

First remove the four hexagon-head screws which secure the inspection cover to the top face of the unit, and take off the cover. This will expose the roller and discs so that their condition can be examined. Normal operation produces a highly-polished finish on the face of the discs, and this burnishing effect increases with use. If, however, the working faces of the discs are grooved and the tracks of the roller are pitted and worn, these and, possibly, other components will need replacement.

Dismantling

1. Drain the oil from the unit by removing the plug from the underside of the transmission case.

2. Remove the pulley from the output shaft (15), taking care not to damage the cast-iron case of the unit, the pulley, the shaft end (see *Bulletin 84*) or the shaft oil seal (not shown on the drawing).

3. Isolate the machine from the mains supply, note the positions of the cable connections on the motor terminal block so that they can be repeated correctly on assembly, and disconnect the lead.

4. Remove the complete assembly from the machine and continue further dismantling on the bench.

5. Separate the motor from the transmission case by removing the four nuts (14, *Bulletin 84*).

6. Place to one side the eight cylindrical rubber cushions (10, *Bulletin 84*) which will fall from the flexible coupling when the motor is withdrawn.

7. Do not disturb the coupling pinion (2) without first noting its location on the input shaft: its position affects the full-length engagement of the cushion elements in the coupling.

8. Inspect the oil seal (not shown on the drawing) on the input shaft and, if necessary, replace.

9. Note that the motor flange (13, *Bulletin 84*) has a small groove to permit any weepage from the oil seal to escape past the mating flange faces: when the motor is fitted (instruction 28) make certain that the groove is in the same position, i.e. at the base of the assembly.

10. Remove the socket screw (16) and withdraw the torsion spring (17), bearing in mind that the end coils of the spring are engaged in the slots of the screws (16 & 18).

11. Run back the screw (18) by one or two turns.

12. In preparation for the removal of the output housing (19), lightly centre-mark the adjacent faces of its flange and the transmission case (5) so as to repeat its original position on re-assembly (instruction 25). This is important, since oil entry ducts for the bearings, etc. must be aligned correctly.

13. Remove the screws (11) and take off the output housing, together with the disc

(9) and the output spindle (8). Item (6) is a reservoir which feeds oil (via the central duct in the output spindle) to the thrust cams (14 & 20).

14. If the output disc (9) requires re-grinding or replacement, this, together with the spindle (8) and thrust cam (20), must be removed from the housing (19). The disc is secured on its spindle by a self-locking taper and a light press will be required to effect the separation.

15. Inspect the working surfaces of the thrust cams (14 & 20). These should have a smooth, polished finish, but in the event of their being damaged and needing replacement, the disc-side cam (20) can be dislodged from its taper fitting by a light hammer blow on its plain diameter.

16. The shaft-side thrust cam is best removed by the use of a suitable internal extractor: however, in the absence of such a tool, it can be released by advancing the torsion spring screw (18) until it makes contact with the bush (21), when further advance of the screw will jack out both cam and bush.

17. Inspect the bearings (12 & 13): replacements can be fitted after pressing out the shaft (15) from its housing (19).

18. If the transmission roller (22) is to be renewed it is best replaced by a complete assembly which includes the roller, spindle, two taper-roller bearings and the roller mounting block (23) which is secured to its carrier (7) by the bolts (26).

19. The speed control shaft screw (25) need not normally be disturbed or renewed, but should this be necessary, a pin-wrench must be made for the gland nut (24). It should be noted that the gland nut thread is sealed with PTFE tape which will require renewal on assembly, when the gland nut should be advanced to the point at which the control shaft turns freely, but without undue end-play.

20. Remove the input housing (1) by taking out the four socket-head screws which become visible after removal of the motor. If the input disc (27) is to be re-ground or replaced or if the bearings (3 & 4) are changed, the distance 'H' indicated on the drawing should be checked. This dimension is such that, with any replacement parts fitted including, possibly, a new roller assembly, the end face of the roller block will be at 90° to the face of the input disc (27). This can be checked with a small square across the two faces. Whilst minor deviations from the perpendicular may be tolerated, any significant variation should be taken up by interposing a gasket between the housing and the transmission case (5).

Re-assembly

21. Commence re-assembly with the input housing (1), carrying out the checks recommended in instruction 17, and bearing in mind the importance that the bevelled face of the traction roller (22) is correctly aligned to give full-width contact with the disc. Movement about the locking bolts (26) is provided for this adjustment, which is best checked by placing a light behind the contact surfaces of roller and disc.

22. After tightening bolt (26) check to see that the alignment has not been disturbed.

23. The roller traverse stops on the speed control shaft are set at the Works and should not be disturbed. If, however, these are removed, note their positions carefully so that they may be restored to their original locations, since they determine the overall speed range of the unit.

24. See that the screw (18) is retracted sufficiently to allow compression of the spring (17) until such time as the flange of the output housing (19) abuts firmly against the transmission case.

25. Refer to instruction 12 and re-introduce the output housing (19) and internal assemblies into the transmission case (5). Care will be needed when re-positioning the balls in the thrust race (10) to see that none is lost.

26. Advance the screw (18) until it makes firm contact with the end of the shaft-side thrust cam (14), fit the torsion spring (17) with its end coil located in the slot (18), and insert screw (16).

27. Before fitting the input/output housings to the transmission case, clean the mating surfaces and lightly smear these with a good-quality oil-proof jointing compound.

28. Refer to instruction 9, remount the motor (see *Bulletin 84*), return the complete assembly to the machine, make good the power connections (see instruction 3) and refill the transmission case with oil as directed in *Bulletin 84*.

Type carrier adjustments for high-speed moulds

In our instruction leaflet (F1876 11/70) dealing with the essential maintenance of high-speed composition moulds series 300000, we state that when operating moulds over 12pt or 11D the type carrier connecting rod yoke eye must be coupled through its left-hand hole and the upper hole in the cam lever extension, as for large-type composition.

Although this is theoretically correct, the clearance is very small. If adjustments are to their extreme tolerance, it is possible for the product to be collected by the type carrier before it has been completely ejected from between the sideblocks, thus resulting in faulty ejection and shearing of the type.

To be absolutely safe therefore, we recommend that the large-type composition setting of the type carrier is now used for all high-speed moulds over 10pt and 9D.

Recommended spares for Boston stitchers

Boston No. 7 Stitcher

Qty		Part No.
1	Adjusting Lever	WAAE30499
1	Clincher Plate	WAAV30574
1	Clincher Slide	WAAW30068
2	Clinchers (Flat Wire)	WAAV30022
2	Clinchers (Round Wire)	WAAV30023
1	Clincher Slide Actuating Link Plunger	WAAW30271
1	Clincher Slide Actuating Link Plunger Screw	WAAW30275
1	Wire Grip Spring	WAAT31008
1	Wire Grip, fixed	WAAT31006
1	Wire Grip, movable	WAAT30356
2	Wire Grip Shoes	WAAT30069
1	Wire Grip Shoe Spring	WAAT30551
1	Bender Bar Latch	WAAS30094
1	Driver Bar Spring	WAAR30076
1	Driver Bar Spring Rivet	WAAR30077
2	Wire Cutters	WAAP30000
1	Swivel Operating Lever	WAAL30582
1	Swivel Operating Lever Sector	WAAL30230
1	Supporter Spring Rod	WAAU30541
1	Swivel Operating Lever Spring	WAAL30548
1	Driver (Flat Wire)	WAAR30242
1	Driver (Round Wire)	WAAR30231
1	Pin Wrench	WTAB31098
1	Swivel, assembled	WAAL30080

Boston Multiple Stitcher

Qty		Part No.
1	Wire Cutter Slide	WAAP30434
1	Faceplate Adjusting Bar Stud Nut (Slotted)	WABV30914
1	Faceplate Adjusting Bar Stud	WABV30913
4	Clinchers	WAAV30028
1	Clincher Plate	WAAV30944
2	Wire Grips	WAAT30290
2	Wire Grip Springs	WAAT30925
1	Supporter	WAAU30035
1	Driver	WAAR30016
1	Wire Grip Retaining Clip	WAAT30926
2	Retaining Clip Screws	WAAT30082
1	Driver Bar	WAAR30328
1	Swivel Operating Spring	WAAL30903
2	Wire Cutters	WAAP30096
1	Swivel Operating Lever Hub Stud	WAAL30898
2	Supporter Spring Lever Springs	WABR8124
1	Swivel Operating Lever	WAAL30895
1	Bender Bar Latch	WAAS30310
2	Faceplate Retaining Clips	WABP30256
2	Faceplate Retaining Clip Screws	WABP122
1	Swivel, assembled	WAAL30034
2	Driver Bar Springs	WAAR30329
2	Driver Bar Spring Rivets	WAAR18500
1	Pin Wrench	WTAB31098

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