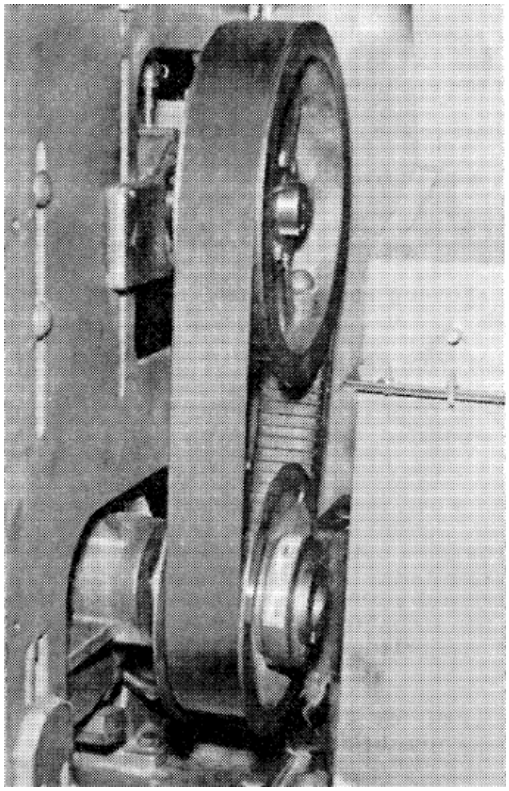
VPS
Variable Speed Drive

Installation & Maintenance Manual

P-5060-TBW
Form 536A



TB Wood's®
Altra Industrial Motion

1. Mount motor on motor base with cap screws furnished.

2. Install companion sheave on driveN unit but do not tighten.

3. Install VPS sheave on motor shaft by first loosening the sleeve clamping cap screw and both locking collar cap screws (refer to expanded diagram). With key in keyseat, slide sheave onto shaft with split end of sleeve toward the motor, solid end of sleeve away from motor. On through shafts, remove decal from solid end of sleeve and affix to stationary object near drive for future reference.

   Note: Never force VPS sheave onto shaft with a hammer or other object. If too tight to install by hand, remove and clean bore, shaft, keyseat and key thoroughly. If the sheave still does not slide onto the shaft easily, spread sleeve with a screwdriver blade in the split.

4. Retighten sleeve clamping cap screw to 10 ft-lb. torque. VPS sheave is now affixed to shaft for permanent operation.

5. With motor now assembled to motor base and VPS sheave installed on motor shaft, set the entire unit in the approximate alignment position but do not secure to floor or foundation.

6. With both locking collar cap screws still loose, adjust VPS sheave to the same outside width as the companion sheave. See "X" in aligning diagram. This is accomplished through use of the adjusting screw shown in the expanded diagram.

7. Adjust motor on motor base to the closest position to the driveN or companion sheave.

8. Drape variable speed belt over sheaves.

9. Move entire driveR unit (motor base, motor and VPS sheave) away from the driveN, or companion sheave, to take up belt slack.

10. Temporarily align drive allowing approximately 1/8" for tightening of companion sheave if Sure-Grip bushing is used.

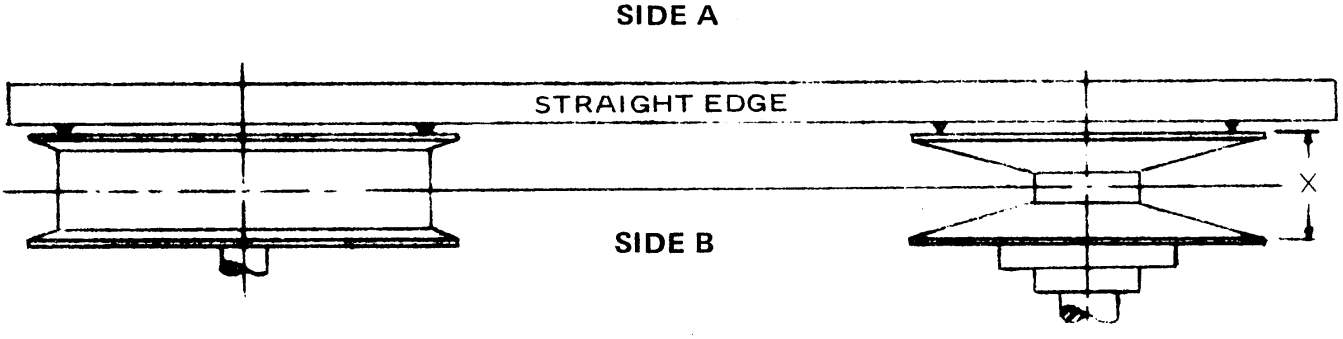
11. Remove variable speed belt from drive.

12. Bolt motor base securely to floor or other foundation. It is suggested that bolts be placed in approximate center of elongated slots in bottom of motor base for possible future drive changes.

13. Permanently align drive. First, recheck temporary alignment after securing motor base to floor. If still satisfactory, tighten companion sheave to driveN shaft. With flanges on VPS sheave still adjusted to the same outside width as that of the companion sheave, check parallel alignment by placing a straightedge (a straight piece of the key stock long enough to span the sheaves will serve the purpose) against the machined outside flat surfaces of both sheaves A in aligning diagram. The straightedge should touch all four surfaces. Repeat on side aligning diagram. When straightedge touches all four surfaces on both sides, the drive has proper parallel alignment.

    Note: To insure normal belt life and flange wear, parallel alignment should never exceed 1/16" for nominal center distance.

ALIGNING DIAGRAM



1⁄ ır angular alignment, place small machine level across both flanges at the top position on th the VPS and companion sheave. Shims can be used under motor base or driveN unit, or ɔth, if necessary, to obtain proper angular alignment.

15. With belt still removed, adjust VPS sheave to the proper width to obtain desired driven speed.

16. "Wiggle" both flanges on the VPS sheave to be sure they are not binding and to lessen the possibility of a "cocked" flange.

17. Tighten both locking collar clamp screws to 20 ft. lbs. on VPS-6T and VPS-7Q and 30 ft. lbs. on all other sizes. To decrease the possibility of a "cocked" flange, grip only the flange being tightened with your free hand.

18. Spin VPS sheave slowly by hand to check for side run-out, or flange wobble. A few thousandths is normal.

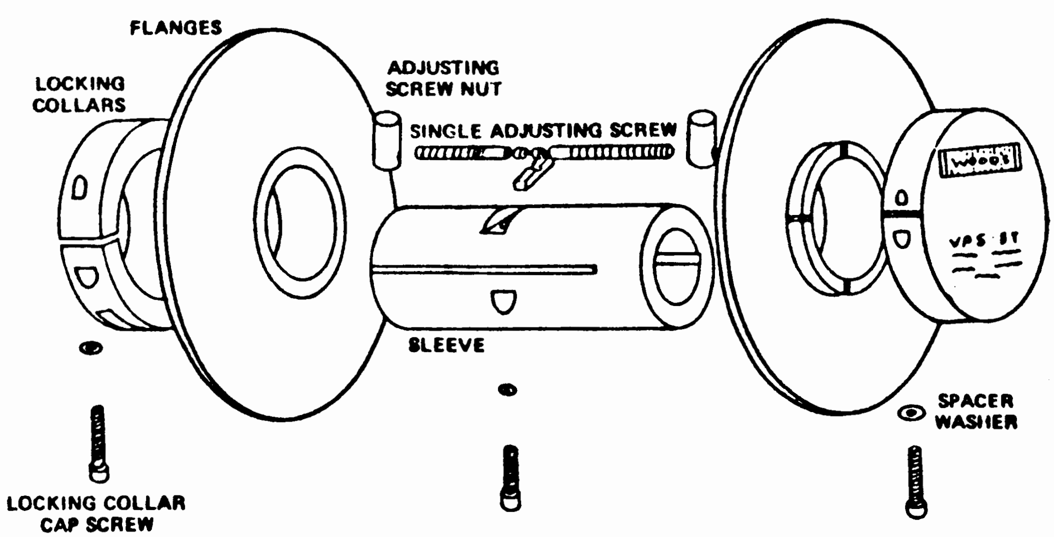
19. Place belt in groove of VPS and companion sheaves. Tension until belt depresses approximately one belt thickness.

20. Start drive, checking both the VPS and the companion sheave for side run-out, or wobble, as well as vibration. Belt tension, under load, should also be checked. It is generally acceptable to operate wide range belts with a slight "bow" in the slack side. Also check drive alignment by sight to be sure motor base, motor, etc. does not shift under load. If all checks out satisfactorily, drive is ready to place in operation.

21. When making future speed adjustments, stop drive, then release Quick-Slide motor base adjusting screw and slide motor to the forward, or closest position to the driveN, or companion sheave. Remove belt from VPS sheave and loosen both locking collar cap screws. Through use of the adjusting screw, adjust flanges to the desired position. After adjustment is accomplished, "wiggle" both flanges on the VPS sheave to be sure they are not "cocked," torque both locking collar cap screws (see step 17), replace belt in groove of VPS sheave, slide motor away from driveN, or companion sheave to take up belt slack, using the motor base adjusting screw for final tensioning. Drive is now ready to start up again.

Note: Always remove belt from VPS sheave when making speed adjustments! Otherwise, belts become wedged and cause "cocked" flanges, resulting in excessive vibration. Never force wide range belts onto or off of sheaves when making speed adjustments or belts will be damaged. Always release Quick-Slide motor base adjusting screw and slide motor to the closest position to the companion sheave, thereby relieving the belt tension so that belt can be easily removed from VPS sheave.

EXPLODED VIEW OF VPS SHEAVE



HINTS IN TROUBLE SHOOTING

ADJUSTING SCREW BREAKAGE: Check to see if both locking collars are tightened securely after each speed adjustment. Premature adjusting screw failure is caused by running sheave with loose locking collars.

SHEAVE WEAR: Worn sheaves reduce belt life. Check sheaves periodically for excessive wear and flange grooving.

PREMATURE FLANGE WEAR OR GROOVING: If wear is on one flange only, check for misalignment, both parallel and angular.

If on both flanges, check for insufficient belt tension, excessive slippage, worn belt "bottoming" in companion sheave. If belt is too loose, the belt slippage will cause sheave groove wear.

VIBRATION: Check VPS sheave for "cocked" flanges by removing belt, loosening both locking collars and "wiggling" flanges with hand. Retighten collars, place belt back on drive, tension properly and start up for test. If this fails to correct the problem—

Replace VPS sheave with another from a smooth running drive.
Test again. If the vibration continues—
Replace companion sheave with another from a smooth running drive.
Test again. If the vibration is not corrected—
Replace entire VPS with a V-belt drive. If the vibration continues, its source cannot be the drive.

CARE OF BELT: Avoid getting oil on belts when lubricating driver and driven units. Excessive oil on belts causes the rubber to swell and the belts fail prematurely. **No lubrication is required on any part of the VPS drive.**

Avoid excessive heat. At temperatures over 140 degrees F., rubber is overcured and the life of the belts is shortened. Keep drives well ventilated. Never use belt dressing on wide range belts.

BELT TENSION: Belts should be checked frequently for proper tension. It is generally acceptable to operate wide range belts with a slight "bow" in the slack side. Excessive tension will cause belt separation and possible damage to bearings in the driver and/or driven units. Insufficient tension will permit excessive slippage and result in damage to belt and flanges.

BELT WEAR: Inspect periodically for belt wear. Badly worn belts will "bottom" in the companion sheave and create excessive slippage, the results being a loss in the driven speed and excessive grooving of the VPS flanges.

PREMATURE BELT WEAR: Check belt tension. Insufficient tension will permit excessive slippage, over-tensioning will cause belt separation and internal breakdown, both accelerating belt wear.

Inspect for misalignment, both parallel and angular.

Check for continuous operation in lower 25% of VPS pitch diameter range. It may be that a larger companion is necessary.

ALIGNMENT: Drives should be checked periodically for proper alignment, both parallel and angular. Misalignment should not exceed 1/16" for normal belt life and flange wear.

LOSS IN DRIVEN SPEED: Check for excessive slippage. Shut drive down, test sheave temperature by feel. A slipping belt will heat sheave excessively.

Check for bottoming in companion sheave. If this condition exists, a replacement belt is needed.

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