

Hydraulic Installation Guidelines Appendix D

Shaft to Flywheel Bearing Fits

If the flywheel that is used with a clutch/brake or clutch is supported on ball bearings, the outer race of the bearing is a tight fit in the flywheel bore and the inner race of the bearing is a slip fit on the shaft. This allows the inner races, along with spacers and other shaft mounted components to be clamped up axially to prevent them from rotating relative to the shaft in normal operation. A similar shaft fit is often used with cylindrical roller bearings. To obtain the proper clearance for a slip fit for the above arrangements a shaft tolerance of g6 is recommended. The g6 tolerance is tabulated in Table D1.

If other types of bearings such as taper roller or spherical roller are used, the fitting practice recommended by the bearing manufacturer should be used, for both the flywheel bore to outer race and shaft to inner race fits.

In all cases, the shaft mounted components must be brought into firm axial contact before the shaft locknut, shaft cap, or other retaining device is installed and tightened. This is necessary to prevent any of the shaft mounted components from rotating relative to the shaft which will cause wear and eventual looseness of those components. This looseness can lead to premature wear of the clutch/brake or clutch, and possibly result in an unsafe condition of the machine. The best method to assure the shaft mounted components are firmly clamped axially is to use a hydraulic ram or a jackscrew assembly to eliminate all axial clearance from the assembly before the retaining device is installed.

Table D1
“g6” Tolerances for Shaft

Nominal Diameter		Shaft O.D. Tolerance (g6)	
mm	inches	mm	inches
Over 6 to 10	Over .24 to .40	-.005 / -.014	-.0002 / -.0006
Over 10 to 18	Over .40 to .71	-.006 / -.017	-.00025 / -.00065
Over 18 to 30	Over .71 to 1.19	-.007 / -.020	-.0003 / -.0008
Over 30 to 50	Over 1.19 to 1.97	-.009 / -.025	-.0004 / -.0010
Over 50 to 80	Over 1.97 to 3.15	-.010 / -.029	-.0004 / -.0011
Over 80 to 120	Over 3.15 to 4.73	-.012 / -.034	-.0005 / -.0014
Over 120 to 180	Over 4.73 to 7.09	-.014 / -.039	-.0006 / -.0016
Over 180 to 250	Over 7.09 to 9.85	-.015 / -.044	-.0006 / -.0018
Over 250 to 315	Over 9.85 to 12.41	-.017 / -.049	-.0007 / -.0019
Over 315 to 400	Over 12.41 to 15.75	-.018 / -.054	-.0007 / -.0021
Over 400 to 500	Over 15.75 to 19.69	-.020 / -.060	-.0008 / -.0024