

Manual Transmission — Section 13

Unit of length: mm (in)

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US qt, Imp qt)	2.90 (3.06, 2.55) for overhaul 2.65 (2.80, 2.33) for oil change	
Mainshaft	Diameter of ball bearing contact area (transmission housing side) Diameter of needle bearing contact area Diameter of ball bearing contact area (clutch housing side) Runout End play	30.984 – 31.000 (1.2198 – 1.2205) 41.984 – 42.000 (1.6529 – 1.6535) 32.002 – 32.018 (1.260 – 1.261) 0.02 (0.001) max. 0.14 – 0.21 (0.006 – 0.008)	30.93 (1.2177) 41.93 (1.6508) 31.95 (1.2579) 0.05 (0.002) Adjust with a shim.
Mainshaft 3rd gear	I.D. End play Thickness	47.009 – 47.025 (1.8507 – 1.8514) 0.06 – 0.19 (0.002 – 0.007) 30.39 – 30.47 (1.196 – 1.200)	47.08 (1.8535) 0.3 (0.012) 30.30 (1.193)
Mainshaft 4th gear	I.D. End play Thickness	47.009 – 47.025 (1.8507 – 1.8514) 0.06 – 0.19 (0.002 – 0.007) 26.39 – 26.47 (1.039 – 1.042)	47.08 (1.8535) 0.3 (0.012) 26.30 (1.035)
Mainshaft 5th gear	I.D. End play Thickness	47.009 – 47.025 (1.8507 – 1.8514) 0.06 – 0.24 (0.002 – 0.009) 32.89 – 32.97 (1.295 – 1.298)	47.08 (1.8535) 0.3 (0.012) 32.80 (1.291)
Mainshaft 6th gear	I.D. End play Thickness	47.009 – 47.025 (1.8507 – 1.8514) 0.06 – 0.24 (0.002 – 0.009) 28.39 – 28.47 (1.118 – 1.121)	47.08 (1.8535) 0.3 (0.012) 28.30 (1.114)
Spacer collar (Mainshaft)	I.D. O.D. Length	 4th gear side 41.989 – 42.000 (1.653 – 1.654) 5th gear side 41.989 – 42.000 (1.653 – 1.654) 4th gear side 26.53 – 26.58 (1.044 – 1.046) 5th gear side 26.53 – 26.58 (1.044 – 1.046)	 36.06 (1.420) 41.94 (1.651) 41.94 (1.651) 26.51 (1.044) 26.51 (1.044)
Distance collar (Mainshaft)	I.D. O.D. Length	 6th gear side 35.947 – 35.957 (1.4152 – 1.4156) 41.989 – 42.000 (1.6531 – 1.6535) 22.03 – 22.08 (0.867 – 0.869)	 36.00 (1.417) 41.94 (1.651) 22.01 (0.867)
Countershaft	Diameter of needle bearing contact area (clutch housing side) Diameter of needle and ball bearing contact area (transmission housing side) Runout	43.974 – 43.990 (1.7313 – 1.7319) 33.984 – 34.000 (1.3380 – 1.3386) 0.02 (0.001) max.	43.92 (1.7291) 33.93 (1.3358) 0.05 (0.002)
Countershaft 1st gear	I.D. End play (when tightened by the specified torque)	57.010 – 57.029 (2.244 – 2.245) 0.04 – 0.10 (0.002 – 0.004)	57.08 (2.247) Adjust with a washer.
Countershaft 2nd gear	I.D. End play (when tightened by the specified torque)	57.010 – 57.029 (2.244 – 2.245) 0.04 – 0.10 (0.002 – 0.004)	57.08 (2.247) Adjust with a collar.
Countershaft reverse gear	Diameter of needle bearing contact area	51.987 – 52.000 (2.0467 – 2.0472)	51.93 (2.044)
Spacer collar (Countershaft)	I.D. O.D.	43.046 – 43.056 (1.6947 – 1.6951) 51.987 – 52.000 (2.0467 – 2.0472)	43.10 (1.697) 51.94 (2.045)
Reverse idler gear shaft	O.D.	19.989 – 20.000 (0.7870 – 0.7874)	19.93 (0.785)
Reverse driven gear and reverse drive gear	I.D.	25.007 – 25.020 (0.9845 – 0.9850)	25.07 (0.987)

(cont'd)

Standards and Service Limits

Manual Transmission (cont'd) — Section 13

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Oil pump	Driven gear boss-to-transmission housing clearance	0.3 – 0.8 (0.012 – 0.031)	0.9 (0.035)
	Driven gear thickness	17.0 – 17.1 (0.669 – 0.673)	16.9 (0.665)
	Inner-to-outer rotor radial clearance	0.14 (0.006) max.	0.20 (0.008)
	Pump body-to-outer rotor radial clearance	0.1 – 0.2 (0.004 – 0.008)	0.22 (0.009)
	Pump body-to-outer rotor side clearance	0.03 – 0.10 (0.001 – 0.004)	0.15 (0.006)
Synchro ring	Ring-to-gear clearance (ring pushed against gear)	0.85 – 1.10 (0.033 – 0.043)	0.4 (0.016)
Dual cone synchro ring	Clearance (ring pushed against gear)		
	Outer synchro ring-to-gear	0.95 – 1.68 (0.037 – 0.066)	0.6 (0.024)
	Synchro cone-to-gear	0.5 – 1.0 (0.020 – 0.039)	0.3 (0.012)
	Outer synchro ring-to-synchro cone	0.5 – 1.0 (0.020 – 0.039)	0.3 (0.012)
Shift fork	Finger thickness	1st/2nd shift fork 8.9 – 9.0 (0.350 – 0.354)	—
		3rd/4th shift fork 7.4 – 7.5 (0.291 – 0.295)	—
		5th/6th shift fork 7.4 – 7.5 (0.291 – 0.295)	—
		Reverse shift fork 6.4 – 6.5 (0.252 – 0.256)	—
	Finger-to-synchro sleeve clearance	0.45 – 0.65 (0.018 – 0.026)	1.0 (0.039)
Reverse shift arm	Arm-to-reverse shift piece clearance	0.05 – 0.30 (0.002 – 0.012)	0.5 (0.02)
	Groove width	7.05 – 7.20 (0.278 – 0.283)	—
	Arm-to-reverse shift fork clearance	0.05 – 0.35 (0.002 – 0.014)	0.5 (0.02)
	Diameter (at the contact point with the reverse shift fork)	12.8 – 13.0 (0.504 – 0.512)	—
Shift arm	Arm-to-shift piece clearance	0.05 – 0.25 (0.002 – 0.010)	0.5 (0.02)
	Diameter (at the contact point with the shift piece)	12.9 – 13.0 (0.508 – 0.512)	—
Interlock	Interlock-to-select arm clearance	0.03 – 0.15 (0.001 – 0.006)	—
	Diameter (at the contact point with the select arm)	11.95 – 12.00 (0.470 – 0.472)	—
Shift piece	Shift piece-to-shift forks, 5th/6th shift piece and reverse shift piece clearance	0.2 – 0.5 (0.008 – 0.020)	0.6 (0.024)
	Diameter (at the contact point with the shift forks, 5th/6th shift piece and reverse shift piece)	11.9 – 12.0 (0.469 – 0.472)	—