

Manual Transmission — Section 13

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US qt, Imp qt)	2.6 (2.7, 2.3) for overhaul 2.3 (2.4, 2.0) for oil change	
Mainshaft	Diameter of bearing contact area Clutch housing side A Transmission housing side C Transmission cover side D 3rd gear B Runout	27.977–27.990 (1.1015–1.1020) 30.987–31.000 (1.2200–1.2205) 27.987–28.000 (1.1018–1.1024) 37.989–38.000 (1.4956–1.4961) 0.02 (0.001) max.	27.930 (1.0996) 30.940 (1.2181) 27.937 (1.0999) 37.935 (1.4935) 0.05 (0.002)
Countershaft	Diameter of bearing contact area Clutch housing side A Transmission housing side B Transmission cover side C Runout	33.000–33.015 (1.2992–1.2998) 31.975–31.988 (1.2589–1.2594) 27.987–28.000 (1.1018–1.1024) 0.02 (0.001) max.	32.950 (1.2972) 31.928 (1.2570) 27.937 (1.0999) 0.05 (0.002)
Reverse idler shaft	Diameter bearing contact area	19.989–20.000 (0.7870–0.7874)	19.93 (0.785)
Reverse drive gear	I.D. Thickness	25.007–25.020 (0.9845–0.9850) 26.45–26.50 (1.041–1.043)	25.078 (0.9873) 26.38 (1.039)
Mainshaft 3rd gear	I.D. Thickness End play (when tightening by specified torque)	44.009–44.025 (1.7326–1.7333) 31.39–31.47 (1.236–1.239) 0.06–0.19 (0.002–0.008)	44.080 (1.7354) 31.32 (1.233) 0.30 (0.012)
Mainshaft 4th gear	I.D. Thickness End play (when tightening by specified torque)	44.009–44.025 (1.7326–1.7333) 29.39–29.47 (1.157–1.160) 0.06–0.19 (0.002–0.008)	44.080 (1.7354) 29.32 (1.154) 0.30 (0.012)
Mainshaft 5th gear	I.D. Thickness End play (when tightening by specified torque)	44.009–44.025 (1.7326–1.7333) 29.39–29.47 (1.157–1.160) 0.06–0.19 (0.002–0.008)	44.080 (1.7354) 29.32 (1.154) 0.30 (0.012)
Mainshaft 6th gear	I.D. Thickness End play (when tightening by specified torque)	44.009–44.025 (1.7326–1.7333) 29.39–29.47 (1.157–1.160) 0.06–0.19 (0.002–0.008)	44.080 (1.7354) 29.32 (1.154) –
Distance collar (Mainshaft 4th, 5th gear)	I.D. Diameter of needle bearing contact area Thickness of needle bearing contact area	30.992–31.002 (1.2201–1.2205) 37.989–38.000 (1.4956–1.4961) 29.56–29.61 (1.164–1.166)	31.050 (1.2224) 37.940 (1.4937) 29.54 (1.163)
Distance collar (Mainshaft 6th, gear)	I.D. Diameter of needle bearing contact area Thickness of needle bearing contact area	27.992–28.002 (1.1020–1.1024) 37.989–38.000 (1.4956–1.4961) 29.56–29.61 (1.164–1.166)	31.050 (1.2224) 37.940 (1.4937) 29.54 (1.163)
Countershaft 1st gear	I.D. Thickness End play (when tightening by specified torque)	53.010–53.029 (2.0870–2.0878) 35.92–36.00 (1.414–1.417) 0.04–0.10 (0.002–0.004)	53.081 (2.0898) 35.85 (1.411) Adjust with a shim
Countershaft 2nd gear	I.D. Thickness End play (when tightening by specified torque)	53.010–53.029 (2.0870–2.0878) 35.92–36.00 (1.414–1.417) 0.04–0.10 (0.002–0.004)	53.081 (2.0898) 35.85 (1.411) Adjust with a collar

(cont'd)

Standards and Service Limits

Manual Transmission (cont'd) — Section 13

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Distance collar (countershaft 2nd gear)	I.D.	37.950–37.960 (1.4941–1.4945)	38.008 (1.496)
	O.D.	46.989–47.000 (1.8500–1.8504)	46.940 (1.848)
	Thickness	36.03–36.05 (1.419–1.419)	Adjust with a collar
	A B	36.07–36.09 (1.420–1.421)	
Countershaft reverse gear	O.D. Thickness	46.989–47.000 (1.8500–1.8504) 50.45–50.55 (1.986–1.990)	46.94 (1.848) 50.38 (1.983)
Synchro ring	Ring-to-gear clearance (ring pushed against gear)	0.85–1.10 (0.033–0.043)	0.4 (0.02)
Double cone synchro ring	Clearance (ring pushed against gear)		
	Outer synchro ring-to-gear	0.95–1.68 (0.037–0.066)	0.6 (0.02)
	Synchro cone-to-gear	0.5–1.0 (0.02–0.04)	0.3 (0.01)
	Outer synchro ring-to-synchro cone	0.5–1.0 (0.02–0.04)	0.3 (0.01)
Shift fork 1st/2nd 3rd/4th and 5th/6th	Finger thickness	7.4–7.6 (0.29–0.30)	—
	Finger-to-synchro sleeve clearance	0.35–0.65 (0.014–0.026)	1.00 (0.039)
Reverse shift fork	Finger thickness	6.4–6.6 (0.25–0.26)	—
	Finger-to-reverse synchro sleeve clearance	0.35–0.65 (0.014–0.026)	1.00 (0.039)
	Groove width	13.20–13.30 (0.520–0.524)	—
	Fork-to-reverse shift arm clearance	0.20–0.50 (0.008–0.020)	0.80 (0.031)
Shift fork shaft	Shaft-to-shift piece clearance	0.25–0.55 (0.010–0.022)	0.85 (0.033)
	Groove width of the shift piece contact point	12.20–12.40 (0.480–0.488)	—
Shift arm	Diameter (at the contact point with the change piece)	7.9–8.0 (0.311–0.315)	—
	Arm-to-change piece clearance	0.1–0.3 (0.004–0.012)	0.55 (0.022)
	Diameter (at the contact point with the shift piece)	7.9–8.0 (0.311–0.315)	—
	Arm-to-shift piece clearance	0.1–0.3 (0.004–0.012)	0.55 (0.022)
Change piece	Groove width of the shift arm contact point	8.1–8.2 (0.319–0.323)	—
Shift piece	Diameter (at the contact point with the shift fork shaft)	11.85–11.95 (0.467–0.470)	—
Reverse shift holder	Diameter (at the contact point with the reverse shift piece)	12.80–13.00 (0.504–0.512)	—
	Diameter (at the contact point with the reverse shift fork shaft)	12.80–13.00 (0.504–0.512)	—
	Holder-to-reverse shift piece clearance	0.20–0.60 (0.008–0.024)	0.8 (0.032)
	Holder-to-reverse shift fork clearance	0.20–0.50 (0.008–0.020)	0.8 (0.032)
Secondary gear	Backlash	0.061–0.121 (0.0024–0.0048)	—
	Preload (starting torque) N·m (kg-cm, lb-in)	1.4–2.6 (14–26, 12.2–22.5)	Adjust with a shim
	Diameter of bearing contact area		
	Clutch housing side	55.002–55.021 (2.1654–2.1662)	—
	Transmission housing side	45.002–45.018 (1.7717–1.7724)	—
	Diameter of oil seal contact area		
	Clutch housing side	54.894–54.940 (2.1612–2.1630)	—
	Transmission housing side	44.911–44.950 (1.7681–1.7697)	—
Extension shaft	Diameter of oil seal contact area	37.438–37.500 (1.4739–1.4764)	—
Oil pump	Clutch housing-to-outer rotor clearance	0.03–0.13 (0.001–0.005)	0.18 (0.007)
	Inner-to-outer rotor clearance	0.14 (0.006)	0.2 (0.01)
	Clutch housing-to-rotor axial clearance	0.10–0.20 (0.004–0.008)	0.22 (0.009)