# Standards and Service Limits

## Automatic Transmission — Section 14

| | MEASUREMENT | STANDARD (NEW) | SERVICE LIMIT |
|---|---|---|---|
| Transmission fluid | Capacity ℓ (US qt, Imp qt) | 7.0 (7.4, 6.2) for overhaul<br>2.9 (3.1, 2.6) for fluid change | |
| Hydraulic pressure kPa (kg/cm$^2$, psi) | Line pressure at 2,000 rpm in [D] or [1] position | 850-900 (8.5-9.0, 121-128) | 800 (8.0, 114) |
| | 1st clutch pressure at 2,000 rpm in [D] or [1] position | | |
| | 2nd clutch pressure at 2,000 rpm in [D] position | 500 (5.0, 71)<br>Fully-closed throttle<br>↓<br>900 (9.0, 128)<br>throttle more than 3/16 opened | 450 (4.5, 64)<br>Fully-closed throttle<br>↓<br>800 (8.0, 114)<br>throttle more than 3/16 opened |
| | 3rd clutch pressure at 2,000 rpm in [D] position | | |
| | 4th clutch pressure at 2,000 rpm in [D] position | | |
| | 1st-hold clutch pressure at 2,000 rpm in [1] position | 850-900 (8.5-9.0, 121-128) | 800 (8.0, 114) |
| | 2nd clutch pressure at 2,000 rpm in [2] position | | |
| | 4th clutch pressure at 2,000 rpm in [R] position | | |
| | Throttle B pressure — Throttle fully closed | 0-15 (0-0.15, 0-2) | 0-15 (0-0.15, 0-2) |
| | Throttle B pressure — Throttle fully opened | 610-670 (6.1-6.7, 87-95) | 610-670 (6.1-6.7, 87-95) |
| Stall speed rpm | Check with car on level ground | 2,100 | 1,950-2,250 |
| Clutch | Clutch initial clearance — 1st-hold | 0.7-0.9 (0.028-0.035) | — |
| | Clutch initial clearance — 1st | 0.65-0.85 (0.026-0.033) | — |
| | Clutch initial clearance — 2nd, 3rd, 4th | 0.75-0.95 (0.030-0.037) | — |
| | Clutch return spring free length — 1st | 41.4 (1.630) | 39.4 (1.551) |
| | Clutch return spring free length — 2nd, 3rd, 4th | 33.0 (1.299) | 31.0 (1.220) |
| | Clutch disc thickness — 1st-hold, 1st, 2nd, 3rd | 1.88-2.00 (0.074-0.079) | Until grooves worn out. |
| | Clutch disc thickness — 4th | 2.28-2.40 (0.090-0.094) | Until grooves worn out. |
| | Clutch plate thickness — 1st-hold, 1st | 1.95-2.05 (0.077-0.081) | Discoloration |
| | Clutch plate thickness — 2nd, 3rd, 4th | 2.25-2.35 (0.089-0.093) | ↕ |
| | Clutch end plate thickness* — Mark 1 | 2.05-2.10 (0.081-0.083) | |
| | Clutch end plate thickness* — Mark 2 | 2.15-2.20 (0.085-0.087) | |
| | Clutch end plate thickness* — Mark 3 | 2.25-2.30 (0.089-0.091) | |
| | Clutch end plate thickness* — Mark 4 | 2.35-2.40 (0.093-0.094) | |
| | Clutch end plate thickness* — Mark 5 | 2.45-2.50 (0.096-0.098) | |
| | Clutch end plate thickness* — Mark 6 | 2.55-2.60 (0.100-0.102) | |
| | Clutch end plate thickness* — Mark 7 | 2.65-2.70 (0.104-0.106) | |
| | Clutch end plate thickness* — Mark 8 | 2.75-2.80 (0.108-0.110) | |
| | Clutch end plate thickness* — Mark 9 | 2.85-2.90 (0.112-0.114) | Discoloration |
| Valve body | Stator shaft needle bearing contact I.D. (torque converter side) | 28.000-28.021 (1.102-1.103) | Wear or damage |
| | Stator shaft needle bearing contact I.D. (ATF pump side) | 31.000-31.013 (1.220-1.221) | — |
| | ATF pump driven gear I.D. | 14.016-14.034 (0.552-0.553) | Wear or damage |
| | ATF pump driven gear shaft O.D. | 13.980-13.990 (0.550-0.551) | Wear or damage |
| | ATF pump gear side clearance | 0.03-0.05 (0.001-0.002) | 0.07 (0.003) |
| | ATF pump gear-to-body clearance — Drive | 0.210-0.265 (0.008-0.010) | — |
| | ATF pump gear-to-body clearance — Driven | 0.070-0.125 (0.003-0.005) | — |
| Regulator valve body | Sealing ring contact I.D. | 37.000-37.025 (1.457-1.458) | 37.05 (1.459) |

* Clutch end plate diameter: 1st: 116 mm (4.57 in)
1st-hold, 2nd, 3rd and 4th: 120 mm (4.72 in)

Unit of length: mm (in)

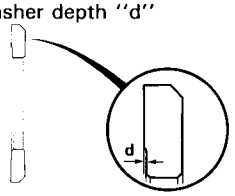
## Automatic Transmission (cont'd) — Section 14

| | MEASUREMENT | STANDARD (NEW) | SERVICE LIMIT |
|---|---|---|---|
| 2nd accumulator body | Sealing ring contact I.D. | 35.000-35.025 (1.378-1.379) | 35.05 (1.380) |
| Shifting device and parking brake control | Reverse shift fork finger thickness | 5.90-6.00 (0.232-0.236) | 5.40 (0.213) |
| | Parking brake pawl | — | Wear or other defect |
| | Parking gear | — | Wear or other defect |
| Servo body | Shift fork shaft bore I.D. | 14.000-14.005 (0.5512-0.5514) | — |
| | | 14.006-14.010 (0.5514-0.5516) | — |
| | | 14.011-14.015 (0.5516-0.5518) | — |
| | Shift fork shaft valve bore I.D. | 37.000-37.039 (1.457-1.458) | 37.045 (1.4459) |
| Transmission | Diameter of needle bearing contact area | | |
| | On mainshaft and stator shaft | 23.980-23.993 (0.944-0.945) | Wear or damage |
| | On mainshaft 4th gear collar | 33.975-33.991 (1.3376-1.3382) | ↕ |
| | On mainshaft 1st gear collar | 32.975-32.991 (1.298-1.299) | ↕ |
| | On countershaft (right side) | 41.005-41.015 (1.614-1.615) | ↕ |
| | On countershaft 3rd gear collar | 43.975-43.991 (1.731-1.732) | ↕ |
| | On countershaft 4th gear | 34.975-34.991 (1.377-1.378) | ↕ |
| | On countershaft reverse gear collar | 36.975-36.991 (1.4557-1.4563) | ↕ |
| | On countershaft 1st gear collar | 33.975-33.991 (1.3376-1.3382) | ↕ |
| | On secondary shaft 2nd gear | 36.975-36.991 (1.4557-1.4563) | ↕ |
| | On reverse idler gear shaft | 13.990-14.000 (0.5508-0.5512) | Wear or damage |
| | Inside diameter | | |
| | Mainshaft 1st gear | 38.000-38.016 (1.496-1.497) | Wear or damage |
| | Mainshaft 4th gear | 40.000-40.016 (1.5748-1.5754) | ↕ |
| | Countershaft 1st gear | 40.000-40.016 (1.5748-1.5754) | ↕ |
| | Countershaft reverse gear | 43.000-43.016 (1.693-1.694) | ↕ |
| | Countershaft 4th gear | 41.000-41.016 (1.614-1.615) | ↕ |
| | Countershaft 2nd gear | Involuted spline | ↕ |
| | Countershaft 3rd gear | 52.000-52.019 (2.0472-2.0480) | ↕ |
| | Secondary shaft 2nd gear | 43.000-43.016 (1.693-1.694) | ↕ |
| | Reverse idler gear | 18.007-18.020 (0.7089-0.7094) | ↕ |
| | Reverse idler shaft holder | 14.416-14.434 (0.5676-0.5683) | Wear or damage |
| | Mainshaft 1st gear collar length | 35.00-35.05 (1.378-1.380) | — |
| | Mainshaft 1st gear collar flange thickness | 2.95-3.10 (0.116-0.122) | Wear or damage |
| | Countershaft reverse gear collar length | 16.00-16.05 (0.630-0.632) | — |
| | Countershaft reverse gear collar flange thickness | 2.95-3.05 (0.116-0.120) | Wear or damage |
| | Diameter of countershaft one-way clutch contact area | 88.869-88.895 (3.499-3.500) | Wear or damage |
| | Diameter of parking gear one-way clutch contact area | 72.212-72.225 (2.8430-2.8435) | Wear or damage |
| | Mainshaft ATF feed pipe O.D. | 11.47-11.48 (0.4516-0.4520) | 11.45 (0.451) |
| | Mainshaft ATF feed pipe O.D. | 5.97-5.98 (0.2350-0.2354) | 5.95 (0.2343) |
| | Mainshaft sealing ring 37 mm thickness | 1.980-1.995 (0.078-0.079) | 1.80 (0.071) |
| | Mainshaft bushing I.D. | 6.018-6.030 (0.2369-0.2374) | 6.045 (0.238) |
| | | 11.500-11.518 (0.4528-0.4535) | 11.53 (0.454) |
| | Countershaft ATF feed pipe O.D. | 11.47-11.48 (0.4516-0.4520) | 11.45 (0.451) |
| | Countershaft ATF feed pipe O.D. | 7.97-7.98 (0.3138-0.3142) | 7.95 (0.313) |
| | Countershaft bushing I.D. | 8.000-8.015 (0.315-0.316) | 8.03 (0.316) |
| | | 11.500-11.518 (0.4528-0.4535) | 11.53 (0.454) |
| | Secondary shaft sealing ring 35 mm thickness | 1.980-1.995 (0.078-0.079) | 1.80 (0.071) |
| | Mainshaft sealing ring groove width | 2.025-2.060 (0.080-0.081) | 2.08 (0.082) |
| | Secondary shaft sealing ring groove width | 2.025-2.060 (0.080-0.081) | 2.08 (0.082) |

(cont'd)

# Standards and Service Limits

## Automatic Transmission (cont'd) — Section 14

| | MEASUREMENT | | STANDARD (NEW) | SERVICE LIMIT |
|---|---|---|---|---|
| Transmission (cont'd) | Selector hub O.D. | | 55.67-55.70 (2.192-2.193) | Wear or damage |
| | Thrust washer thickness | | | |
| | Mainshaft 4th gear right side | | 4.45-4.55 (0.175-0.179) | Wear or damage |
| | Mainshaft 4th gear left side | | 3.45-3.55 (0.136-0.140) | Wear or damage |
| | Mainshaft 1st gear right side | | 1.45-1.50 (0.057-0.059) | 1.40 (0.055) |
| | Mainshaft 1st gear left side | | 2.43-2.50 (0.096-0.098) | Wear or damage |
| | Countershaft 3rd gear collar length | 1 | 35.425-35.440 (1.3947-1.3953) | — |
| | | 2 | 35.440-35.455 (1.3953-1.3959) | — |
| | | 3 | 35.455-35.470 (1.3959-1.3965) | — |
| | | 4 | 35.470-35.485 (1.3965-1.3970) | — |
| | | 5 | 35.485-35.500 (1.3970-1.3976) | — |
| | | 6 | 35.500-35.515 (1.3976-1.3982) | — |
| | Countershaft 2nd gear spacer length | | 17.90-17.95 (0.705-0.707) | — |
| | Cotter thickness | 1 | 1.975-2.000 (0.078-0.079) | — |
| | | 2 | 2.000-2.025 (0.079-0.080) | — |
| | | 3 | 2.025-2.050 (0.080-0.081) | — |
| | | 4 | 2.050-2.075 (0.081-0.082) | — |
| | | 5 | 2.075-2.100 (0.082-0.083) | — |
| | | 6 | 2.100-2.125 (0.083-0.084) | — |
| | | 7 | 2.125-2.150 (0.084-0.085) | — |
| | | 8 | 2.150-2.175 (0.085-0.086) | — |
| | | 9 | 2.175-2.200 (0.086-0.087) | — |
| | | 10 | 2.200-2.225 (0.087-0.088) | — |
| | | 11 | 2.225-2.250 (0.088-0.089) | — |
| | | 12 | 2.250-2.275 (0.089-0.090) | — |
| | | 13 | 2.275-2.300 (0.090-0.091) | — |
| | | 14 | 2.300-2.325 (0.091-0.092) | — |
| | | 15 | 2.325-2.350 (0.092-0.093) | — |
| | | 16 | 2.350-2.375 (0.093-0.094) | — |
| | Cotter retainer thickness | 1 | 2.97-3.00 (0.117-0.118) | — |
| | | 2 | 3.00-3.03 (0.118-0.119) | — |
| | | 3 | 3.03-3.06 (0.119-0.120) | — |
| | | 4 | 3.06-3.09 (0.120-0.122) | — |
| | | 5 | 3.09-3.12 (0.122-0.123) | — |
| | Countershaft reverse gear thrust washer thickness | | 1.45-1.50 (0.057-0.059) | 1.40 (0.055) |
| | Countershaft 1st gear collar length | | 62.50-62.55 (2.461-2.463) | — |
| | Thrust washer thickness | | | |
| | Countershaft 1st gear left side | | 3.43-3.50 (0.135-0.138) | Wear or damage |
| | Secondary shaft 2nd gear | | 4.45-4.55 (0.175-0.179) | Wear or damage |
| | Secondary shaft spacer 31 mm length | | 33.00-33.05 (1.299-1.301) | — |
| | End play | | | |
| | Mainshaft 4th gear | | 0.10-0.22 (0.004-0.009) | — |
| | Mainshaft 1st gear | | 0.08-0.33 (0.003-0.013) | — |
| | Countershaft 3rd gear | | 0-0.03 (0-0.001) | Adjust with a 3rd gear collar or cotters |
| | Countershaft 2nd gear | | 0-0.05 (0-0.002) | |
| | Countershaft 4th gear | | 0.05-0.11 (0.002-0.004) | Adjust with a cotter retainer |
| | Countershaft reverse gear | | 0.10-0.25 (0.004-0.010) | — |
| | Countershaft 1st gear | | 0.10-0.31 (0.004-0.012) | — |
| | Secondary shaft 2nd gear | | 0.01-0.07 (0.0004-0.0028) | Adjust with a thrust washer |
| | Reverse idler gear | | 0.05-0.18 (0.002-0.007) | — |
| | Secondary shaft 2nd gear thrust washer depth "d" | | 0 (0) | — |
| |  | | 0-0.3 (0-0.001) | — |
| | | | 0.03-0.06 (0.001-0.002) | — |
| | | | 0.06-0.09 (0.002-0.004) | — |
| | | | 0.09-0.12 (0.004-0.005) | — |

| | MEASUREMENT | STANDARD (NEW) | | | |
|---|---|---|---|---|---|
| | | Wire Dia. | O.D. | Free Length | No. of Coils |
| Spring | Idle shaft spring A | 0.7 (0.028) | 5.7 (0.224) | 14.6 (0.575) | 7.0 |
| | Servo detent spring | 1.0 (0.039) | 7.6 (0.299) | 14.8 (0.538) | 5.5 |
| | Regulator valve spring A | 1.58 x 2.0 (0.062 x 0.079) | 14.7 (0.579) | 88.6 (3.488) | 20.9 |
| | Regulator valve spring B | 1.8 (0.071) | 9.6 (0.378) | 44.0 (1.732) | 14.7 |
| | Stator reaction spring | 6.0 (0.236) | 38.4 (1.512) | 30.3 (1.193) | 2.0 |
| | Torque converter check valve spring | 1.1 (0.043) | 8.4 (0.331) | 41.8 (1.646) | 15.7 |
| | Relief valve spring | 1.1 (0.043) | 8.4 (0.331) | 44.4 (1.748) | 19.5 |
| | Cooler relief valve spring | 1.2 (0.047) | 8.4 (0.331) | 35.7 (1.406) | 16.5 |
| | One-way relief valve spring | 0.9 (0.035) | 6.4 (0.252) | 25.1 (0.988) | 11.9 |
| | LSD relief valve spring | 0.8 (0.031) | 8.4 (0.331) | 37.3 (1.469) | 12.1 |
| | 2nd orifice control valve spring | 0.8 (0.031) | 8.1 (0.319) | 47.9 (1.886) | 16.0 |
| | 3rd orifice control valve spring | 0.9 (0.035) | 8.6 (0.339) | 48.3 (1.902) | 16.6 |
| | 4th exhaust valve spring | 0.6 (0.024) | 7.6 (0.299) | 24.4 (0.961) | 7.9 |
| | Throttle valve B spring A/B/C/D | 0.9 (0.035) | 7.1 (0.280) | 29.0 (1.142) | 12.6 |
| | 1-2 shift valve spring | 0.9 (0.035) | 8.6 (0.339) | 40.4 (1.591) | 14.5 |
| | 2-3 shift valve spring | 0.8 (0.031) | 7.0 (0.276) | 43.7 (1.720) | 21.2 |
| | 3-4 shift valve spring | 0.8 (0.031) | 7.0 (0.276) | 43.7 (1.720) | 21.2 |
| | 1st-hold accumulator spring | 3.4 (0.134) | 24.3 (0.957) | 64.7 (2.547) | 6.7 |
| | 1st accumulator spring | 2.3 (0.091) | 20.0 (0.787) | 104.6 (4.118) | 14.8 |
| | 4th accumulator spring | 3.0 (0.118) | 18.0 (0.709) | 84.5 (3.327) | 12.8 |
| | 2nd accumulator spring | 3.3 (0.130) | 20.2 (0.795) | 78.0 (3.071) | 11.8 |
| | 3rd accumulator spring | 3.2 (0.126) | 19.0 (0.748) | 88.6 (3.488) | 14.3 |
| | Lock-up shift valve spring | 1.0 (0.039) | 8.6 (0.339) | 51.3 (2.020) | 19.8 |
| | Lock-up timing valve B spring | 0.8 (0.031) | 5.6 (0.220) | 27.8 (1.094) | 16.4 |
| | Lock-up control valve spring A/B/C | 0.8 (0.031) | 6.6 (0.260) | 38,3 (1.508) | 25.0 |
| | Servo control valve spring | 1.0 (0.039) | 8.1 (0.319) | 53.5 (2.106) | 20.8 |
| | Modulator valve spring A/B | 1.4 (0.055) | 9.4 (0.370) | 33.0 (1.299) | 10.5 |
| | CPC valve spring A/B/C | 1.0 (0.039) | 6.8 (0.268) | 32.1 (1.264) | 15.6 |
| | 4-3 kick down valve spring | 0.9 (0.035) | 6.6 (0.260) | 30.7 (1.209) | 12.9 |
| | 3-2 kick down valve spring | 1.0 (0.039) | 6.1 (0.240) | 27:1 (1.067) | 13.4 |
| | 2nd exhaust valve spring | 1.0 (0.039) | 6.1 (0.240) | 27.1 (1.067) | 13.4 |