

Group Ku - Clutch

Adjustment of clutch	see Operation No. Ku 3
Permissible unbalance of clutch	20 cmg (0.28 oz. in.)
Thickness of clutch plate	
not compressed	10.3–10.6 mm (0.41–0.42 in.)
compressed	9.1–9.4 mm (0.36–0.37 in.)
Thickness of clutch facing	3.5 mm (0.14")
Permissible lateral out of true of clutch plate	0.5 mm (0.02 in.)
Torsion spring strength and dampening	
Impact moment	16 mkg (116 ft.lb.)
Impact angle	± 5°15'
Friction moment	1.5–2 mkg (10.5–14.5 ft.lb.)
Clutch pressure springs	see Table on page Ku 3/2
Overlap of ball bearing on clutch throwout collar	0.007–0.018 mm (0.00028–0.0007 in.)
Free travel of clutch pedal	
Type 220	30 mm (1 3/16 in.)
Type 220a	25 mm (1 in.)
 Type 220	
Outer diameter of clutch pedal shaft	15.966–15.984 mm (0.62858–0.62299 in.)
Bore of bushings in bearing tube	16.032–16.059 mm (0.62858–0.62929 in.)
Overlap of bushings in bearing tube	0.00–0.05 mm (0.000–0.002 in.)
 Type 220a	
Outer diameter of ball on clutch pedal shaft	19.947–19.980 mm (0.78531–0.78661 in.)
Bore in bearing plate	20.000–20.021 mm (0.78740–0.78823 in.)
Bore of bushing in clutch pedal	27.040–27.073 mm (1.06456–1.06586 in.)
Outer diameter of bearing tube	26.959–26.980 mm (1.06137–1.06220 in.)
Overlap of bushing in bore of clutch pedal	0.02–0.06 mm (0.0008–0.0024 in.)

Group G - Transmission

Tooth backlash of sliding gears	
First and second speed	0.10–0.16 mm (0.004–0.0065 in.)
Third and fourth speed	0.06–0.12 mm (0.0025–0.005 in.)
Reverse	0.10–0.18 mm (0.004–0.007 in.)
Side play of sliding gears on mainshaft	see table on page G 3/11
End play of sliding gears on mainshaft	0.10–0.18 mm (0.004–0.007 in.)
Tolerances of mainshaft bearing surfaces	see table on page G 3/11
Tolerances of sliding gear bores	see table on page G 3/11
Tolerances of rollers and needles	see page G 3/11
Side play of reverse gear on reverse shaft	0.065–0.111 mm (0.0026–0.00435 in.)
Travel of synchronizer unit to the counter cone of the respective gear	
First, second and third speed	0.8–1.3 mm (0.03–0.05 in.)
Fourth speed	0.5–1.0 mm (0.02–0.04 in.)
Total spring pressure of synchronizer units	7–11 kg (15.5–24.5 lb.)
End play of spacer tube with shims between shifting fork and transmission cover in engaged condition	0.1–0.15 mm (0.004–0.006 in.)
Springs for synchronizer units and shifting forks	see table on page G 3/13
End play between rear cover of transmission case and ball bearing on driveshaft	0.0–0.05 mm (0.00–0.002 in.)
End place between rear cover of transmission case and ball bearing on driveshaft	0.0–0.05 mm (0.00–0.002 in.)
End play between rear cover of transmission case and ball bearing on countershaft	0.10–0.15 mm (0.004–0.006 in.)
Permissible lateral out of true of three-arm flange, checked at outer rim	0.03 mm (0.0012 in.)

Group H - Rear Axle

	Type 220	Type 220a
Adjustment of bevel gear drive	see Operation No. H 3, cf. 40-49	see Operation No. H 3a, cf. 51-60
Permissible out of true of differential housing		
Lateral out of true at flange	0.005 mm (0.0002 in.)	0.005 mm (0.0002 in.)
Vertical out of true at flange	0.01 mm (0.0004 in.)	0.01 mm (0.004 in.)
Permissible out of true of bevel gear shaft at ball bearing seat	0.005 mm (0.0002 in.)	0.005 mm (0.0002 in.)
Tooth backlash of bevel gear drive	0.16-0.20 mm (0.0065-0.008 in.)	0.16-0.20 mm (0.0065-0.008 in.)
Permissible lateral out of true of universal joint flange on bevel gear shaft, checked at outer rim	0.03 mm (0.0012 in.)	0.03 mm (0.0012 in.)
Permissible vertical out of true of rear axle shaft at ball bearing seat	0.02 mm (0.0008 in.)	0.02 mm (0.0008 in.)
Permissible lateral out of true of rear axle shaft at outer rim of flange	0.1 mm (0.004 in.)	0.1 mm (0.004 in.)
End play of rear axle shaft in ball bearing	0.20-0.37 mm (0.008-0.015 in.)	0.32-0.50 mm (0.0125-0.02 in.)
Permissible lateral out of true of rear axle tube at outer rim of flange	0.1 mm (0.004 in.)	0.1 mm (0.004 in.)
Tolerances of ball and roller bearings	H 3/7	see table on page H 3a/8
 Torque Specifications:		
Fastening nut for thrust strut at backrest	—	7.5-8 mkg (54-58 ft.lb.)
Ring gear fastening screws at differential housing ..	7-8 mkg (50-58 ft.lb.)	7-8 mkg (50-58 ft.lb.)
Slotted nut at universal joint flange on bevel gear shaft	16-18 mkg (116-130 ft.lb.)	14-16 mkg (102-116 ft.lb.)
Set screws for thrust washer at inclined bearing on bevel gear shaft	4.5 mkg (32.5 ft.lb.)	3.5 mkg (25.5 ft.lb.)
Threaded ring for bevel roller bearing at differential housing	8-10 mkg (58-72 ft.lb.)	6-7 mkg (43.5-50.5 ft.lb.)