

Section E—REAR AXLE—ALL MODELS

INDEX

	Page		Page
Axle shaft assembly	E-1	Differential assembly	E-5
Axle complete	E-6	Differential pinion oil seal	E-5
Data, general	E-7	Hub, rear	E-4
Data, detail	E-7		

LIST OF ILLUSTRATIONS

Fig.		Page	Fig.		Page
E-1	Stripping and assembling half-shaft	E-1	E-4	Checking hub end-float, fully floating shafts	E-4
E-2	Layout of rear axle, semi-floating shafts	E-2	E-5	Cross-section of rear hub	E-5
E-3	Layout of rear axle, fully floating shafts	E-3			

Data, details and illustrations concerning the differential assembly will be found in Section F

Axle shaft assembly

Semi-floating type

To remove Operation E/2

1. Jack up the rear of the vehicle under the chassis frame.
2. Drain off the rear axle oil.
3. Remove the road wheel and the brake drum.
4. Depress the brake pedal and wedge it in that position; detach the brake pipe at the wheel brake unit.
5. Remove the brake components. Section H.
6. Withdraw the shaft assembly complete with anchor plate.

To strip Operation E/4

1. Stand the axle shaft on its splined end and press down squarely on the brake anchor plate and bearing housing flange, using the special annular press block, Part No. 242415 (Fig. E-1). A pressure of up to 20 tons will be required, and it may be necessary to assist the operation with sharp blows on the bearing housing, using a brass drift. Remove the collar.
2. Remove the oil seal and sleeve, the bearing and housing, the brake anchor plate and the distance washer, and oil retaining ring (if necessary).

3. Remove the ball bearing from the housing and the oil seal from the sleeve.
4. The road wheel studs are peened over in the axle shaft flange and the peening should be filed before withdrawing a faulty stud.

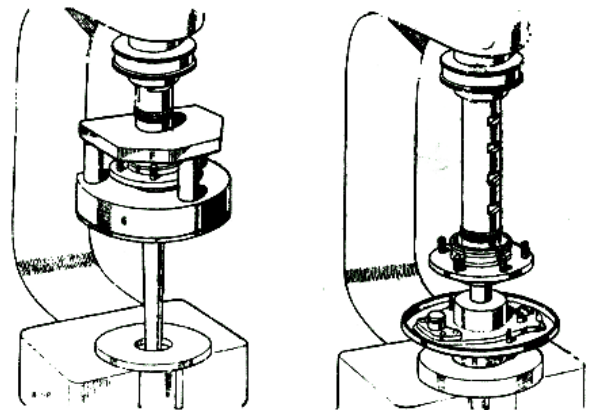


Fig. E-1—Stripping and assembling half-shaft.

To assemble Operation E/6

1. Renew the road wheel studs as necessary.
2. Replace the distance washer, chamfer side down.
3. Examine the bearing for excessive side play or roughness. The bearing should be a *light press fit* in the bore of the hub and on the axle shaft.

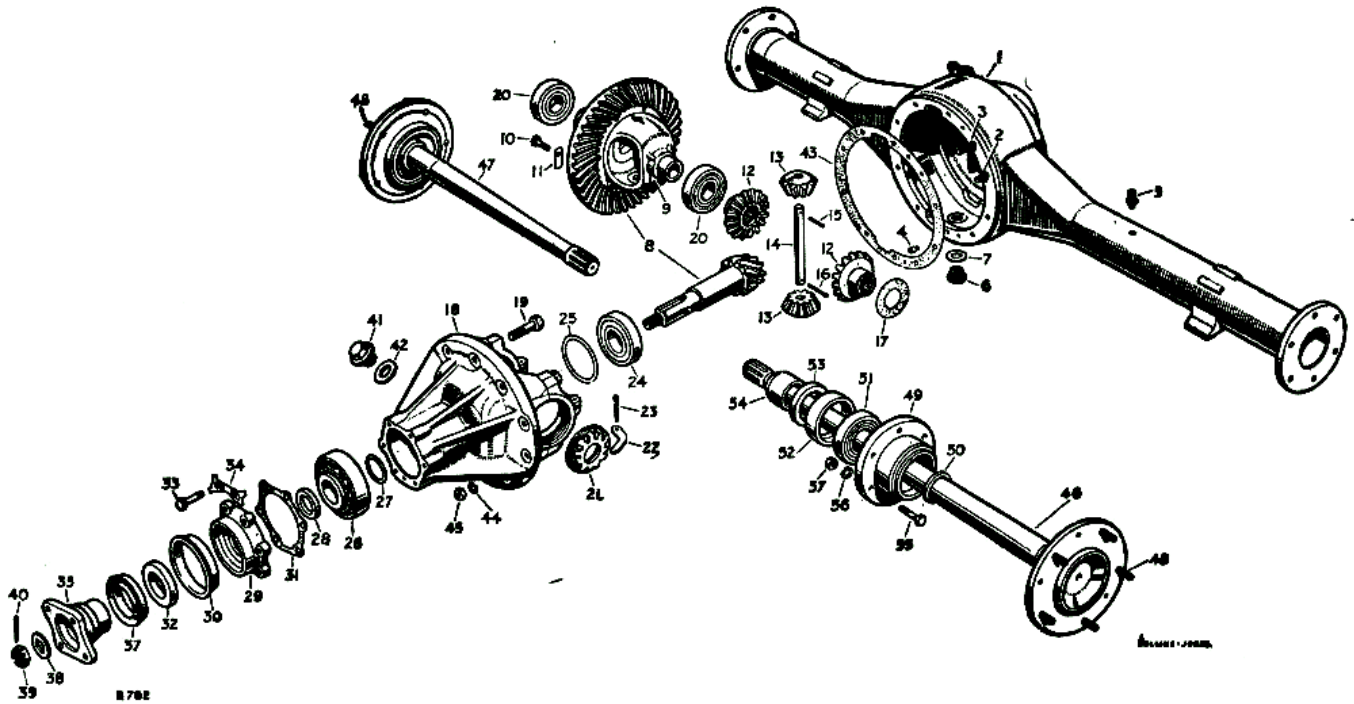


Fig. E-2—Layout of rear axle, semi-floating shafts.

- | | | | |
|-------|--|-------|--------------------------------|
| 1 | Rear axle casing | 28 | Washer for bearing |
| 2-3 | Bolts fixing differential | 29 | Retainer for oil seal |
| 4 | Dowel locating differential | 30 | Mudshield for retainer |
| 5 | Breather | 31 | Joint washer for retainer |
| 6-7 | Oil drain plug | 32 | Oil seal for pinion |
| 8 | Crownwheel and bevel pinion | 33-34 | Fixings for retainer |
| 9 | Differential casing | 35 | Driving flange |
| 10-11 | Fixings for crownwheel | 37 | Dust shield for driving flange |
| 12 | Differential wheel | 38-40 | Fixings for driving flange |
| 13 | Differential pinion | 41-42 | Oil filler plug and washer |
| 14 | Spindle for pinions | 43 | Joint washer for differential |
| 15-16 | Fixings for spindle | 44-45 | Fixings for differential |
| 17 | Thrust washer for differential | 46 | Axle shaft, L.H. |
| 18 | Bevel pinion housing | 47 | Axle shaft, R.H. |
| 19 | Bolt fixing bearing cap | 48 | Stud for road wheel |
| 20 | Roller bearings for differential | 49 | Housing for hub bearing |
| 21 | Serrated nut | 50 | Distance washer |
| 22 | Lock tab | 51 | Bearing for hub |
| 23 | Split pin | 52 | Sleeve for oil seal |
| 24 | Bearing for bevel pinion, pinion end | 53 | Oil seal for hub |
| 25 | Shims for bearing adjustment, pinion end | 54 | Retaining collar |
| 26 | Bearing for bevel pinion, flange end | 55-57 | Fixings for bearing housing |
| 27 | Shims for bearing adjustment, flange end | | |

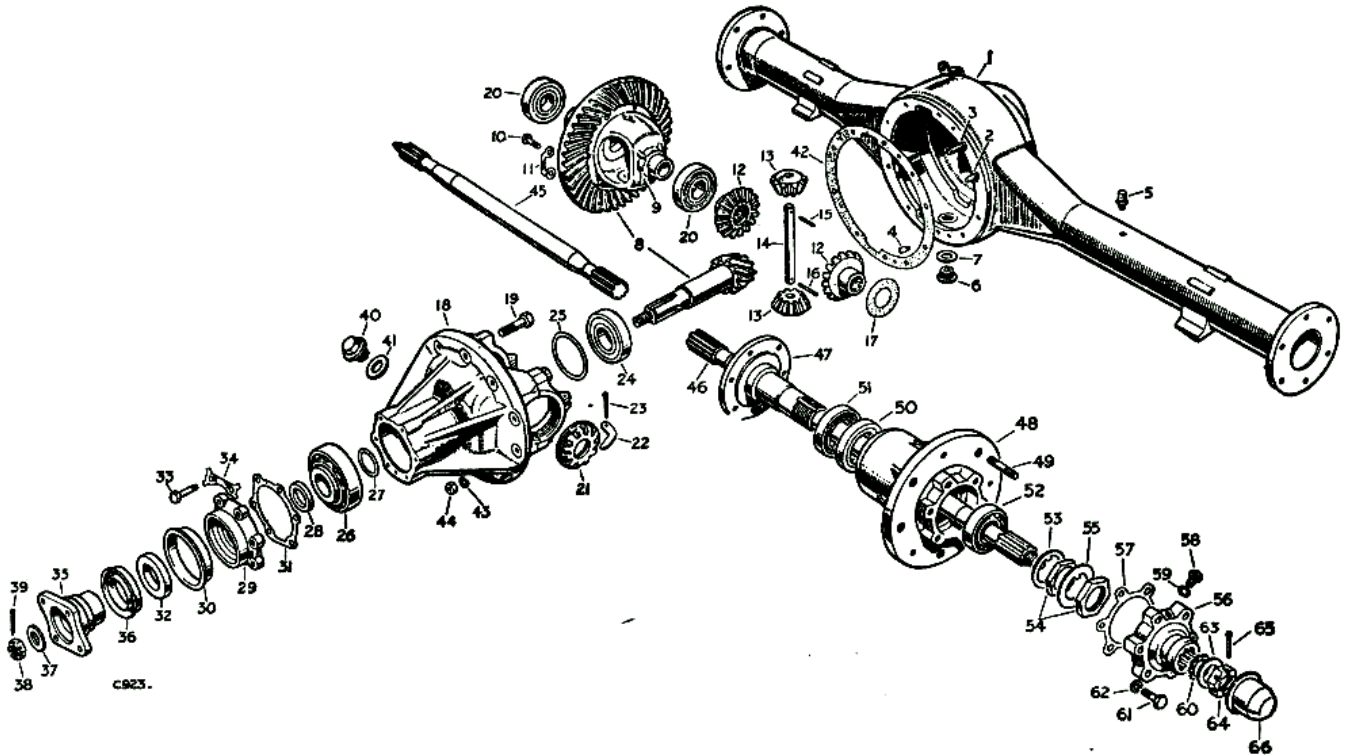


Fig. E-3—Layout of rear axle, fully floating shafts.

- | | | | |
|-------|--|-------|--------------------------------------|
| 1 | Rear axle casing | 31 | Joint washer for retainer |
| 2-3 | Bolts fixing differential | 32 | Oil seal for pinion |
| 4 | Dowel locating differential | 33-34 | Fixings for retainer |
| 5 | Breather | 35 | Driving flange |
| 6-7 | Oil drain plug | 36 | Dust shield for driving flange |
| 8 | Crownwheel and bevel pinion | 37-39 | Fixings for driving flange |
| 9 | Differential casing | 40-41 | Oil filler plug and washer |
| 10-11 | Fixings for crownwheel | 42 | Joint washer for differential |
| 12 | Differential wheel | 43-44 | Fixings for differential |
| 13 | Differential pinion | 45 | Axle shaft, R.H. |
| 14 | Spindle for pinions | 46 | Axle shaft, L.H. |
| 15-16 | Fixings for spindle | 47 | Rear hub bearing sleeve |
| 17 | Thrust washer for differential | 48 | Rear hub assembly |
| 18 | Bevel pinion housing | 49 | Stud for road wheel |
| 19 | Bolt fixing bearing cap | 50 | Hub bearing, inner |
| 20 | Roller bearings for differential | 51 | Oil seal for inner bearing |
| 21 | Serrated nut | 52 | Hub bearing, outer |
| 22 | Lock tab | 53-55 | Fixings—for hub bearing |
| 23 | Split pin | 56 | Driving member for rear hub |
| 24 | Bearing for bevel pinion, pinion end | 57 | Joint washer for driving member |
| 25 | Shims for bearing adjustment, pinion end | 58 | Filler plug for hub driving member |
| 26 | Bearing for bevel pinion, flange end | 59 | Joint washer for filler plug |
| 27 | Shims for bearing adjustment, flange end | 60 | Oil seal for rear axle shaft |
| 28 | Washer for bearing | 61-62 | Fixings—driving member to rear hub |
| 29 | Retainer for oil seal | 63-65 | Fixings—axle shaft to driving member |
| 30 | Mudshield for retainer | 66 | Hub cap, rear |

5. Renew the bearing or bearing housing as necessary, and fit the bearing in the housing; replace the assembly and brake anchor plate on the axle shaft.
6. Place the securing collar over the axle shaft with the chamfer towards the splined end and press it on until it abuts the bearing. A pressure of at least 2½ tons will be required for this operation, as a suitable collar, with an interference fit of .0028 in. (0,07 mm) on the shaft, must be chosen by selective assembly. A suitable press block (Part No. 262757) is illustrated at Fig. E-1.
7. Renew the oil seal as necessary and fit it in the sleeve with the lip away from the axle shaft flange.
8. Press the oil seal and sleeve over the securing collar into the bearing housing.

To refit **Operation E/8**

1. Replace the axle shaft in the axle casing, entering the splined end into the differential.
2. Replace the brake components. Section H.
3. Connect the brake pipe to the wheel cylinder.
4. Refit the brake drum and road wheel.
5. Bleed the brake system. Section H.
6. Lower the vehicle off the jack and refill the differential with oil.

Rear hub assembly, fully-floating axle

To adjust **Operation E/10**

1. Adjust the end-float of the hub bearing by adjusting the hub inner nut, tightening the locknut and checking the end-float by means of a dial test indicator mounted on to one of the wheel studs (see Fig. E-4). Take the reading by pushing the hub as far as possible towards the axle centre, note the indicator reading, pull the hub outwards and again take the indicator reading, the total hub movement so measured should be .004 in. to .006 in. (0,10 mm to 0,15 mm). When the correct end-float has been obtained, bend over two tabs of the locking washer. As a safeguard, the end-float should be checked once more after locking the nuts.

To remove **Operation E/12**

1. Jack up the rear of the vehicle under the chassis frame.
2. Drain off the rear axle oil.
3. Remove the road wheel and brake drum.

4. Depress the brake pedal fully, and wedge it in that position, detach the brake pipes at the wheel brake unit.
5. Remove the brake components. (Section H.)
6. Withdraw the shaft and hub assembly, complete with anchor plate, from the flange, by removing the six securing bolts, spring washers and nuts.

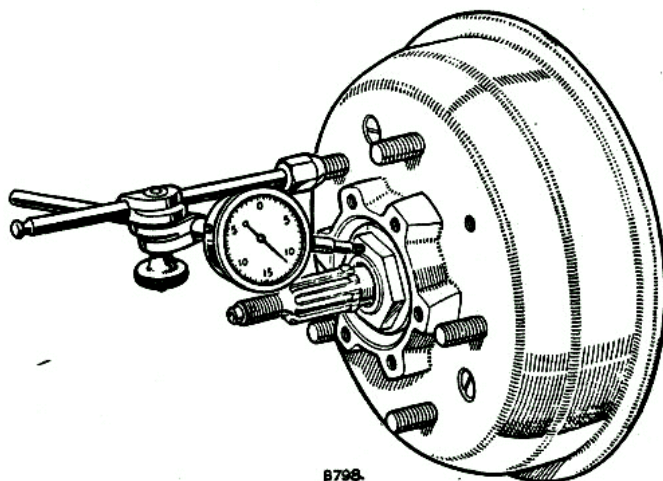


Fig. E-4—Checking hub end-float, fully floating shafts.

To strip **Operation E/14**

1. Remove the hub cap (*press fit*) on the driving member.
2. Remove the driving member and joint washer from the axle shaft and the hub. Remove oil seal.
3. Prise up the locking tabs and remove the locknut, lock washer and adjusting nut from the rear bearing sleeve.
4. Remove the thrust washer and hub complete with the outer roller bearing. Remove brake anchor plate. Withdraw the oil seal and bearings from the hub if necessary.

To assemble hub **Operation E/16**

1. Before assembling the hub, examine the outside diameter of the inner bearing distance piece, on which the oil seal runs, for signs of damage or roughness. Renew as necessary. The distance piece should be a *press fit* on the rear hub bearing sleeve. Any clearance between these two parts will allow oil to leak past on to the brake linings.
2. Examine the two hub bearings and renew them as necessary. Both bearings should be an *easy fit* on the rear hub bearing sleeve and a *press fit* in the hub. If new bearings are slack in the hub, the hub itself should be renewed.
3. Pack the bearings with grease, using a wheel-bearing lubricator, before pressing them into the hub.
4. Examine the oil seal and renew as necessary; press the seal into the hub with the knife edge towards the inner bearing until the oil seal face

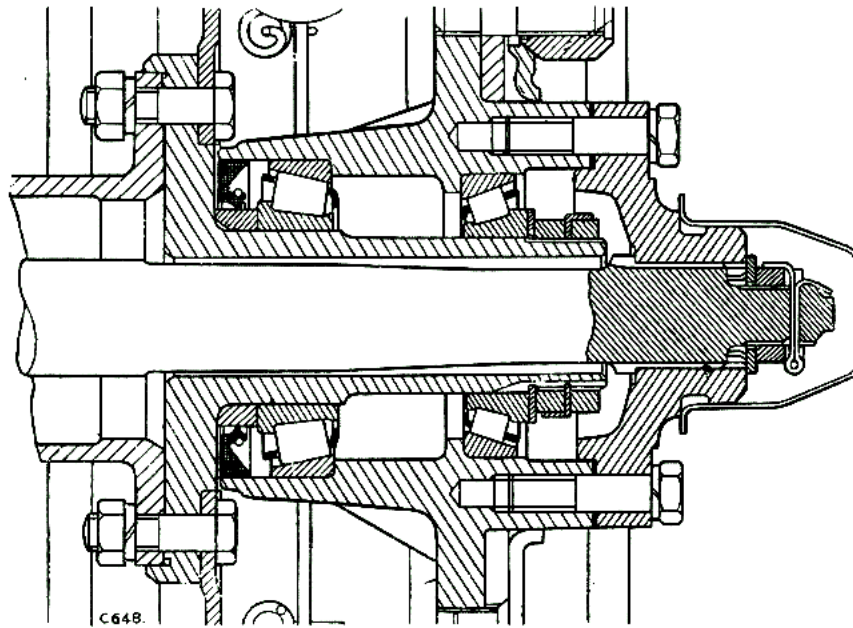


Fig. E-5—Cross-section of fully floating rear hub.

is flush with the rear face of the hub. If the seal is pressed too far in, the element will fail to register on the rear hub bearing sleeve distance piece, so allowing oil to leak past and on to the brake linings.

To assemble complete unit. Operation E/18

1. Bolt the rear hub bearing sleeve and brake anchor plate into position and then slide the complete hub on to the rear hub bearing sleeve.
2. Fit the keyed thrust washer, adjusting nut, lock washer and locknut. Adjust the hub end-float, Operation E/10.
3. Slide the axle shaft through the rear hub bearing sleeve until it locates in the splines of the differential unit. Place a joint washer on to the driving member, then slide the member on to the spline at the end of the axle shaft, securing it to the hub with the six set bolts and washers.
4. Replace oil seal and secure the axle shaft to the driving member by using the slotted nut, plain washer and split pin. Take care not to over-tighten. Tap the hub cap into place.
5. Fill the hub with one-third of a pint (0,190 litres) of oil, through the oil filler plug in the driving member. Replace the filler plug and joint washer.
6. Refill the rear axle with 3 pints (1,75 litres) of oil.

7. Replace brake components and reconnect the brake pipes, bleed and adjust the brakes (Section H).

Differential pinion oil seal

To renew

Operation E/20

Proceed as detailed under Section F, Operation F/2.

**Differential assembly
Semi-floating type axle**

To remove

Operation E/22

1. Jack up the rear of the vehicle.
2. Drain off the axle oil.
3. Remove the road wheels and brake drums.
4. Depress the brake pedal and wedge it in that position; detach the brake pipes at the wheel brake units.
5. Remove the wheel brake components. Section H.
6. Withdraw the shafts complete with driving member about 6 in. (150 mm) from the axle casing.
7. Disconnect the propeller shaft at the differential input flange.

8. Remove the differential assembly from the axle casing.

Fully-floating type axle

To remove the differential on the fully-floating type axle, it is only necessary to remove the hub caps and six bolts securing the driving member. The axle shafts can then be removed.

Note: If any difficulty is anticipated when adjusting the differential, it is recommended that the unit be replaced by a new assembly (obtainable from our Spares Department) and the old one returned for reconditioning.

To strip, examine and assemble

Operation E/24

Proceed as detailed under Section F, Operations F/6, F/8 and F/10. For data see Section F.

To refit

Operation E/26

1. Fit the differential assembly in the axle casing.
2. Connect the propeller shaft to the input flange.
3. Push the axle shafts into the splines of the differential, and secure in position.
4. Replace the wheel brake components. Section H.
5. Replace the brake drums and road wheels.
6. Connect the brake pipes to the wheel brake units and bleed the brake system. Section H.
7. Lower the vehicle to the ground.
8. Refill the axle with oil, 3 pints (1,75 litres).

Axle complete

To remove, Method I

Operation E/28

1. Jack up the rear of the vehicle.
2. Remove both road wheels.
3. Depress the brake pedal and wedge it in that position. Disconnect the flexible brake pipe at the Tee-piece on the differential casing.
4. Disconnect the propeller shaft at the differential input flange. Disconnect one extremity of each check strap.
5. Disconnect one end of each shock absorber.
6. Lower the vehicle on to suitable stands placed under the chassis.

7. Jack up each of the road springs under the shock absorber plate and remove the U-bolt nuts.

8. Lower the springs so that they are relaxed but still on the jacks.

9. Remove the self-locking nuts and shackle bolts from the rear end of the springs, lower the jacks, springs, and axle to the ground, and remove the axle.

To remove, Method II

Operation E/30

An alternative method for removal eliminates removal of the shackle pins; proceed as follows:—

1. Jack up the rear of the vehicle.
2. Drain off the axle oil.
3. Remove the road wheels and brake drums.
4. Depress the brake pedal and wedge it in that position; detach the brake pipes at the wheel brake units.
5. Remove the wheel brake components. Section H.
6. Withdraw the shaft and hub assemblies complete from the axle casing.
7. Disconnect the flexible brake pipe at the Tee-piece on the differential casing.
8. Disconnect the propeller shaft at the differential input flange.
9. Remove the differential assembly from the axle casing.
10. Lower the vehicle on to suitable stands placed under the chassis.
11. Jack up each of the road springs under the shock absorber plate and remove the U-bolt nuts.
12. Lower the springs so that they are relaxed but still on the jacks.
13. Remove the axle casing by manoeuvring it past the road springs and check straps.

To refit

Operation E/32

1. Replace the axle assembly by reversing the removal procedure (Method I or II).
2. Bleed the brake system. Section H.
3. Refill the differential with oil, 3 pints (1,75 litres) and lower the vehicle off the jacking stands.

GENERAL DATA: Semi-floating type

Fitted to all 80, 86, 88 and 107 basic models. 109 models up to 121704761 and 107 Station Wagon up to 131701305.

Note: Fully floating axle shafts are fitted to 109 models from 121704770, 107 Station Wagon from 131701306; they are also available as an optional extra on the 88 models.

Oil capacity	....	3 pints (1,75 litres)
Hub bearing lubrication	Pre-packed with grease	
Final drive	....	Spiral bevel
Ratio, axles numbered		
860001 to 861319	....	4.88 to 1
Ratio, axles numbered		
861320 onwards	....	4.7 to 1

GENERAL DATA: Fully floating type

Oil capacity	....	3 pints (1,75 litres)
Hub bearing lubrication	1/3rd pint (0,190 litres)	Initial assembly only
Final drive	....	Spiral bevel
Ratio	....	4.7 to 1

DETAIL DATA: Semi-floating type

Fit of retaining collar on shaft0028 in. (0,07 mm) interference (selective assembly)
----------------------------------	------	---

DETAIL DATA: Fully floating type

Rear hub assembly:		
Rear hub end-float	....	0.04 to .006 in. (0,010 to 0,16 mm)
Clearance of hub bearing in rear hub bearing sleeve	....	.0002 to .0013 in. (0,005 to 0,033 mm)
Fit of hub bearing in hub	....	.001 to .003 in. (0,025 to 0,075 mm) interference