



# Wheel end bearing and seal installation guide

## Automotive edition

Featuring front and rear wheel drive models



# Introduction

## Contents

The **SKF Seal and Bearing Installation Guide (SKF #457809)** covers the removal and installation of SKF seals and bearings on front and rear wheel drive passenger cars.

Applications include:

- Front axle seals and bearings
- Rear axle seals and bearings
- Pinion seals

Installation instructions also are provided for SKF Speedi-Sleeves—ultra thin, stainless steel wear sleeves used to repair scored or seal-worn shafts.

## For more information

For more information on seal and bearing installation and maintenance, ask for these SKF training materials:

- Roller and Ball Bearings Self-Study Program (#457640)
- Automotive Shaft Seals Self-Study Program (#457492)
- How to Inspect a Bearing Poster (#457235)
- Passenger Car and Light Truck Seals and Bearings Catalog (#457205)

To request these materials, or order additional copies of this guide, please write to:

### SKF

890 N. State Street, Suite 200

Elgin, IL 60123-9332

Attn: Marketing Communications

**Note:** All material has been carefully compiled and thoroughly checked. However, no responsibility for possible errors can be assumed.

## General tips for proper bearing and seal maintenance

Follow these guidelines whenever replacing seals and bearings.

### For improved seal performance:

- Work with clean tools.
- Pre-lube the seal with the same lubricant being retained.
- Double-check the seal part number before installation.
- Inspect the shaft and bore for burrs, nicks or other damage before installing a new seal.
- Never reuse old seals.
- Never hammer directly on a seal.

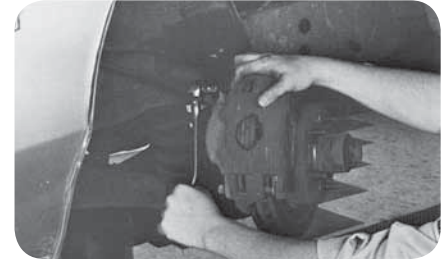
### For improved bearing performance:

- Work with clean tools, in clean surroundings.
- Keep bearings wrapped until ready to install.
- Pre-lube bearings before installation.
- Keep bearing lubricants clean and in covered containers when not in use.
- Remove all outside dirt from housing before exposing bearings.
- Clean the inside of the housing before replacing bearings.
- Never spin a bearing with compressed air.
- Never hammer directly on a bearing.
- Never mix old and new bearing parts.

# Front wheel tapered bearing sets and seals for disc and drum brakes

## Bearing/seal removal

1. Raise the front end of the car on a hoist, or safe support it on jack stands. Never work on a car supported only by a bumper jack.
  2. Remove the hubcap or wheel cover. Use a wrench or jack handle to take off wheel lug nuts. Then pull straight back to remove the wheel.
  - 2A. **On disc brake cars**, loosen and remove the brake caliper mounting bolts (fig. 1). **CAUTION:** The brake line does not need to be disconnected, but the caliper must be **supported** while disconnected to avoid brake line damage. The caliper can usually be rested on the lower "A" frame or suspended by a wire loop.
  3. Using pliers or a screwdriver, remove the dust cover and cotter pin (fig. 2).
  4. Loosen the adjusting nut. Jerk the rotor or drum assembly to loosen the washer and outer wheel bearing (brakes may have to be backed off). Push the assembly back on the spindle.
  5. Remove the adjusting nut, washer and outer wheel bearing (fig. 3).
  6. Pull the drum or rotor assembly straight off the spindle. Do not let the inner bearing or seal drag on the spindle threads.
  7. With seal side down, lay the rotor or drum on the floor. Place a drift or broom handle against the inner face of the bearing cone. Carefully tap out the old seal and inner bearing (fig. 4).
  8. Before discarding the seal, record its part number to aid in selecting the correct SKF replacement. **Never reuse old seals.** Contamination entering past an old seal will ruin a bearing.
  9. Clean and inspect the old bearing thoroughly before reusing it (see **Cleaning and Inspection**).
- CAUTION:** If either the cup or cone is damaged, discard the entire bearing and replace it with a new one. Remember to drive the used bearing cup out of the hub.
- CAUTION:** Never install a new bearing cone with a used bearing cup, or vice versa.
10. Match the part number of the old bearing to select the correct SKF replacement.



**Loosen brake caliper mounting bolts (fig. 1).**



**Pull off dust cover (fig. 2).**



**Remove adjusting nut, washer and outer bearing (fig. 3).**



**Tap out old seal and inner bearing (fig. 4).**



Rinse bearing in clean solvent (fig. 5).



Compressed air may be used to dry cleaned bearing (fig. 6).



Grease bearing (fig. 7).



Place inner side of drum or rotor face up (fig. 8).

## Inspection and cleaning

**Note:** Equipment must conform to OSHA standards.

1. Using a clean solvent and a clean dry cloth, remove oil, grease and dirt from the hub cavity, dust cover and spindle.
2. Use a clean brush to remove dust from brake parts.

**CAUTION:** To avoid inhaling asbestos brake dust, never blow off brake parts with compressed air.

3. Place the bearing in a metal basket and suspend it in a clean container or tank of solvent. If a basket is not available, suspend the bearing with a wire or place it on a metal plate at the bottom of the container or tank.
4. Rinse the bearing in clean solvent (fig. 5). Dry it thoroughly. Natural air drying is the safest method to use. Compressed air (free of all condensed moisture) may be used to blow out the bearings, but only after dirt has been removed (fig. 6).

**CAUTION:** Never spin a bearing with compressed air. Personal injury may result. Also, never use water or steam to clean or rinse a bearing. Moisture causes corrosion, which results in premature bearing failure.

5. Inspect the cleaned bearing thoroughly for nicks, pitted areas, and damage. If any of these are present, discard the entire bearing and replace it with a new one.
6. If it will not be reused immediately, dip the cleaned bearing in a protective lubricant or coat the surface with a light grease. Rotate the bearing to work grease thoroughly in and around the rollers and on the races. Wrap the lubricated bearing in waterproof paper and place it in a clean box.
7. Inspect the spindle for burrs, nicks or embedded particles. Carefully smooth out any roughness with an emery cloth.

**Note:** Deep scores or grooves on the shaft surface where the seal makes contact must be repaired before reassembling the wheel (see **SKF Speedi-Sleeves** page 16).

## Bearing/seal installation

1. Be sure the new seal is the correct one for the application. If you are replacing the bearing, the new part number must match the old one. To select part numbers for either bearings or seals, consult the SKF Passenger Car, Light and Medium Truck Seals and Bearings Catalog (SKF #457205).
2. By hand or with an SKF bearing repacker PB270, force grease through the cage and rollers or balls and on all surfaces of the bearing (fig. 7).
3. Place the inner side of the drum or rotor face up. If you are replacing the bearing cup, use the proper tool to drive the new cup into the hub (fig. 8).
4. Coat the hub cavity with the same wheel bearing grease, to the depth of the bearing cup's smallest diameter. Apply a light coat of grease to the spindle.
5. Place the inner bearing in the hub. Lightly coat the lip of the new SKF seal with the same wheel bearing grease.
6. Slide the seal onto the proper SKF installation tool. The seal should fit over the tool's adaptor, and the sealing lip should point toward the bearing (fig. 9).
7. Position the seal so it starts squarely in the hub without cocking. Tap the tool until the seal bottoms out. When the sound of the striking mallet changes, the seal will be fully seated in the hub (fig. 10).
8. If an installation tool is unavailable, use a wood block and hammer to drive in the seal. Never hammer directly on the seal. Be careful not to cock the seal.

## Front wheel reassembly

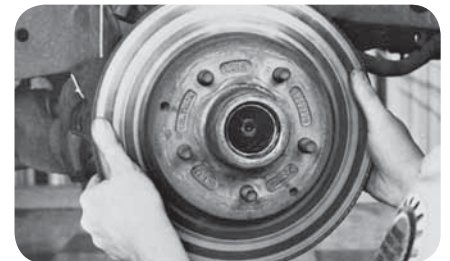
1. Carefully lift and push the drum or rotor assembly onto the spindle. Keep the drum or rotor centered, so the seal is not touched or damaged by the spindle threads. Push the drum or rotor back until the seal is seated on the spindle's seal surface (fig. 11).
2. Install the outer bearing cone, washer and adjusting nut in that order (fig. 12).
3. Replace the caliper on disc brake equipped cars.
4. Replace the wheel. Replace lug nuts and tighten evenly.



**Slide SKF seal onto installation tool (fig. 9).**



**Tap tool until seal is seated in hub (fig. 10).**



**Replace drum or rotor (fig. 11).**



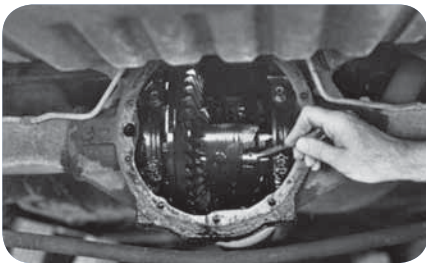
**Install outer bearing (fig. 12).**

## Bearing adjustment

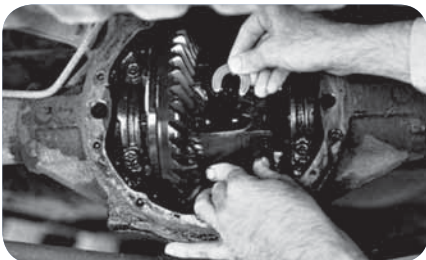
5. Rotate the wheel to be sure the brakes are not dragging. Dragging brakes will cause a false adjustment.
6. Adjust the bearing to manufacturer's recommended setting. If this information is not available, follow these guidelines. While rotating the wheel, tighten the adjusting nut until there is a slight bind and all bearing surfaces are in contact.
7. Back off the adjusting nut 1/16 to 1/8 turn, or to the nearest locking hole, or enough so that the wheel rotates freely with .001" to .010" end play.
8. Insert and bend the cotter pin. Replace the dust cover.
9. Torque lug nuts to manufacturer's recommended specifications.
10. Lower the car slowly.
11. Replace the wheel cover or hub cap.

## Rear wheel bearings and seals for disc and drum brakes

**Note:** Before starting any removal procedures, determine if the axle shafts are held in place by C-shaped locks at the inner end, or by a retainer plate bolted to the axle housing. Then follow the steps below appropriate to "C-lock" or "non-C-lock" type of axle shaft. If unsure, remove the differential carrier cover.



**Loosen differential pinion shaft locking bolt (fig. 13).**



**Remove C-Lock (fig. 14).**

## Bearing/seal removal

1. Raise the rear end of the car on a hoist or support it on jack stands. Both rear wheels must be elevated. Do not work on cars supported only by bumper jacks.
2. Remove the hub cap or wheel cover. Use a wrench or jack handle to take off wheel lug nuts. Pull straight back to remove the wheel.
3. Detach any retaining clips or bolts holding brake drums to axle shaft flanges. Remove brake drums.

**Note:** Brake adjustment may have to be backed off. Emergency brake must be off.

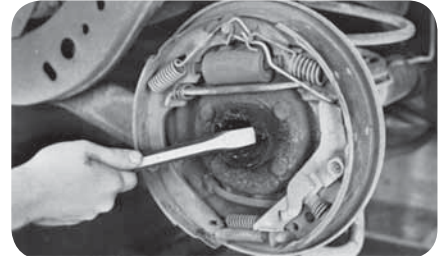
4. Brush dirt from the brake drum

## C-Lock axles

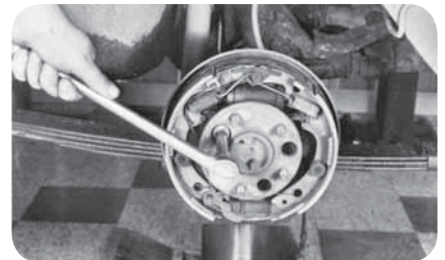
5. Place a container or pan under the differential and remove the differential carrier cover. Allow the rear axle lubricant to drain.
6. Loosen the differential pinion shaft locking bolt. Remove the pinion shaft (fig.13).
7. Push in on the axle shaft (toward the center of the car). Remove the C-lock from the grooved end of the shaft (fig. 14). Replace the pinion shaft and locking bolt temporarily, to keep differential gears in position.
8. Pull the axle shaft from the housing. Be careful not to damage the bearings and seal, which remain in the housing.
9. Insert a suitable tool (pry bar) behind the seal and pry it from the bore (fig. 15). Discard the seal. Never reuse old seals.
10. Place the legs of a slide hammer behind the bearing and remove it.
11. Inspect the old bearing for nicks, pitting and damage. If there is any damage, the entire bearing must be replaced. Never interchange new and old bearing parts.

## Non C-Lock axles

5. Remove the nuts holding the retainer plate to the backing plate (fig. 16).
6. Slide the retainer plate off of the studs. To prevent the brake backing plate from slipping off, reinstall and finger tighten the lower nuts.
7. Grip the axle shaft flange with a puller or slide hammer. Remove the axle shaft and bearing assembly (fig. 17).
8. Remove the seal from the housing.
9. Inspect the old bearing for nicks, pitting and damage. If there is any damage, the entire bearing must be replaced. Never interchange new and old bearing parts.
10. To replace the bearing, put the axle in a vise. Use a chisel and hammer to nick the bearing retainer in 3 or 4 places. Be careful not to damage the axle shaft.
11. Slide the loosened retainer from the shaft (fig. 18).
12. Place the shaft in an arbor press. Press the bearing off the shaft and discard it.



**Pry out seal (fig. 15).**



**Remove nuts holding retainer plate (fig. 16).**



**Grip axle shaft flange with a slide hammer (fig. 17).**



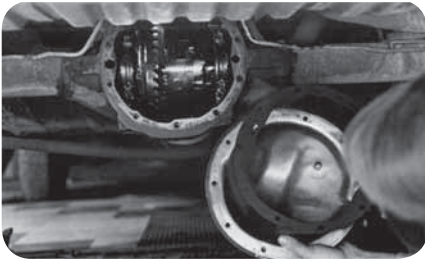
**Slide off retainer (fig. 18).**



**Pre-lube seal with differential lubricant (fig. 19).**



**Tap new bearing into shaft cavity (fig. 20).**



**Replace differential cover with new gasket (fig. 21).**



**Use arbor press to install bearing (fig. 22).**

## Bearing/seal installation

*Be sure the new seal and bearing are correct for the application. Check part numbers against the old seal. Use the SKF Services Passenger Car and Light Truck Seals and Bearing Catalog (SKF #457205).*

*Steps listed below apply to either C-Lock or non C-Lock axles.*

### C-Lock axles

1. Inspect the axle shaft and housing for nicks or scratches. Carefully file to remove surface imperfections.

**Note:** Deep scores or grooves on the shaft where the seal makes contact must be repaired. (See SKF Speedi-Sleeve page 16)

2. Pre-lube the seal with same lube as contained in the differential (fig. 19). Put a light coat of grease on and around all surfaces of the bearing.
3. Use a bearing installation tool to press the new bearing into the axle shaft cavity. (The tool should only contact the press fit outer race.) The bearing is at proper depth when it contacts the bearing seat in the axle tube. Be sure the bearing is seated squarely – not cocked – against the shoulder.
4. Place the new seal on a seal installation tool. Position the seal in the axle bore. Use a mallet to tap the seal into the bore until it “bottoms out” and is flush with the end of the housing (fig. 20).

**Note:** The sound of the mallet changes when the seal bottoms out.

5. Remove the differential pinion shaft locking bolt. Remove the shaft. Slide the axle shaft into place. Make sure the shaft splines do not damage the new seal. It will be necessary to turn the axle slightly to engage the splines into the differential side gear.
6. Install the C-lock on the inner end of the axle shaft. Pull the shaft outward so the C-lock seats squarely in the counter bore of the differential side gear.
7. Insert the differential pinion shaft through the case and gears. The lock bolt hole should align with the hole on the shaft. Install the lock bolt and tighten to approximately 15-22 ft. lbs.
8. Clean the differential housing and cover. Use a new gasket when installing the cover (fig. 21).
9. Fill the differential with lubricant to the bottom of the filler hole.



## Non C-Lock axles

1. Inspect the axle shaft and housing. Clean shaft cavity. Lubricate the new bearing and seal, as described above (steps 1 and 2, under C-Lock Axle instructions).
2. Use an arbor press to install the new bearing on the axle shaft (fig. 22). Always apply pressure to the press-fit race (in this case the inner race is press fit).
3. Press on the bearing retainer.

**Note:** Never press the bearing and retainer onto the shaft at the same time.

4. Insert the new seal. Use a seal installation tool to press it into the housing.
5. Carefully insert the shaft and bearing into the housing. Avoid damaging the seal. Be sure the bearing is seated properly in the housing.
6. Install the retainer plate over the axle housing studs. Torque securing nuts to 35 ft. lbs.

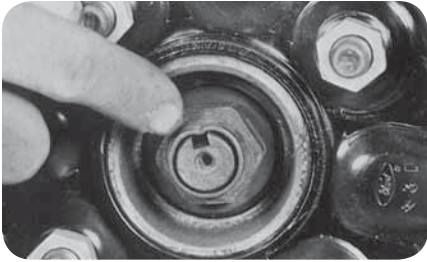
## Rear wheel reassembly (Both C-Lock and non C-Lock)

1. Install the brake drum.
2. Replace the wheel.
3. Replace lug nuts and tighten evenly.
4. Lower the car.
5. Torque lug nuts to manufacturer's recommended specifications.
6. Install the hubcap or wheel cover.

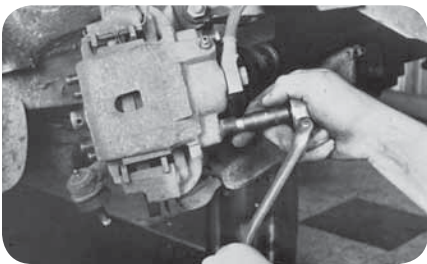
## Front wheel bearings and seals for Chrysler, General Motors and Ford

*Front axle assemblies on front wheel drive cars vary by manufacturer. Following are seal and bearing replacement guidelines for Chrysler, Ford and General Motors late model front wheel drive cars. Consult the service manual for specific manufacturer recommendations.*

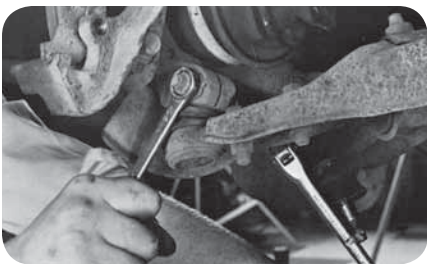
**Note:** Four wheel drive cars and front wheel drive import cars are not covered. Consult the manufacturer's service manual for bearing and seal replacement guidelines.



**Ford-Turn hub retaining nut to overcome crimp in collar (fig. 23).**



**Loosen brake caliper mounting bolts (fig. 24).**



**Ford and Chrysler – Loosen bolt on lower control arm (fig. 25).**



**Ford and Chrysler – Mark cam position before disassembly (fig. 26).**

## Ford, General Motors and Chrysler Hub assembly removal

The hub is pressed or bolted to the steering knuckle assembly. In some cases removal of the bearing assembly and the knuckle is required to replace front wheel seals and bearing.

1. Remove the hub cap or wheel cover. Loosen the wheel nuts.
2. With the car on the floor, remove the cotter pin or lock on the hub nut. Apply brakes and loosen the hub nut.

**On Ford models**, turn the hub retaining nut until it overcomes the crimp in the nut collar (fig. 23). Do not use a screwdriver, chisel or impact type tool, which may damage the hub assembly. Remove the nut and washer. Discard the hub nut.

3. Raise the front end of the car and support it on jack stands. Never work on a car supported only by a bumper jack.
4. Use a wrench or jack handle to take off wheel hub nuts. Pull straight back to remove the wheel and tire.
5. Use proper tools to disconnect the tie rod end from the steering arm and remove the brake hose retainer.
6. Loosen and remove the brake caliper mounting bolts (fig. 24). Remove the caliper from the rotor.

**Note:** The caliper must be supported while disconnected to avoid brake line damage. Suspend it by a wire loop.

7. Pull the rotor straight off the hub and studs.

**On Ford and Chrysler models**, remove the bolt holding the lower control arm to the steering knuckle (fig. 25).

- 7A. Loosen the bolts that attach the strut to the knuckle. If the bolts incorporate an adjustment cam, mark the cam position before disassembly (fig. 26). Use the manufacturer's specified tool (or equivalent) to push the constant velocity joint outer shaft until it is free of the hub/bearing/knuckle assembly.

While supporting the knuckle, remove strut bolts. Slide the hub/bearing/knuckle off of the strut.

- 7B. **On General Motors cars**, carefully remove the bolts that hold the hub/bearing assembly to the knuckle (fig. 27).

**Note:** Never use a hammer, which could cause internal bearing damage.

Install a puller and remove the hub/bearing assembly from the shaft (fig. 28).

## Chrysler models only Bearing/seal removal

1. Whenever the hub is removed, service procedures require that a **new** bearing is installed.
2. Using a suitable tool, remove the hub from the knuckle. With the tool in position, drive the hub through the bearing (fig. 29).

**Note:** Bearing races may separate during removal.

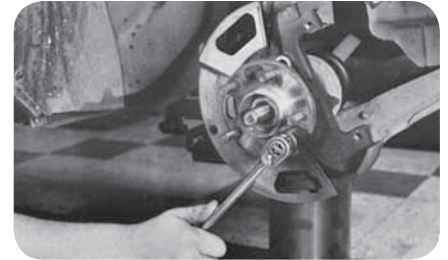
3. Use a bearing puller to grip and remove the bearing outer race.
4. Remove the bearing retainer from the knuckle assembly. Use a screwdriver to carefully pry out the seal. **Never reuse old seals.** Wipe dirt out of the knuckle cavity.
5. With the knuckle supported on two wood pieces, use a socket to press the inner bearing out of the knuckle (fig. 30). Record the part number and discard the old bearing.
6. Select a new bearing and seal correct for the application. Refer to the SKF Passenger Car, Light and Medium Truck Seals and Bearings Catalog (SKF #457205).

## Chrysler models only Bearing/seal installation

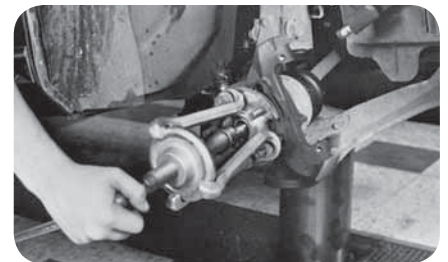
1. Lightly coat the outer surface of the bearing with wheel bearing grease.
2. Use a suitable installation tool to press the new bearing into the knuckle. Apply pressure to the **outer race** only.
3. Press on the bearing retainer and tighten retaining screws to approximately 20 ft. lbs.
4. Use a socket to press the hub into the bearing. To avoid bearing damage, apply pressure to the inner race of the bearing only.
5. Lightly coat the seal lip with wheel bearing grease. Place the seal in the knuckle cavity and press it into position with a seal installation tool.

## General Motors only Bearing/seal removal

1. The front wheel bearing is permanently sealed and lubricated assembly. Adjustment is not possible.
2. The steering knuckle seal should be replaced before a new bearing is installed. Remove and discard the steering knuckle seal. Select a replacement correct for the application. Refer to the SKF Passenger Car, Light and Medium Truck Seals and Bearings Catalog (SKF #457205).



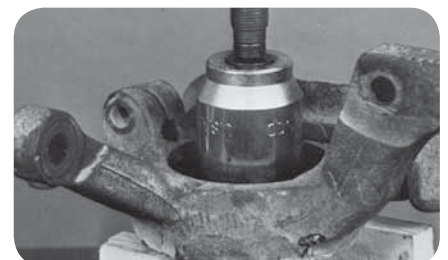
**General Motors – Loosen hub/ bearing assembly bolts (fig. 27).**



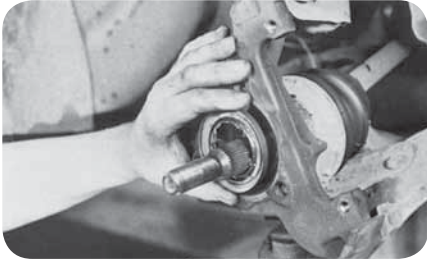
**General Motors – Use puller to remove hub bearing assembly (fig. 28).**



**Chrysler – Remove hub from knuckle (fig. 29).**



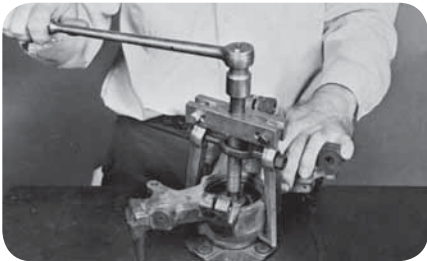
**Chrysler – Use socket to press out old bearing (fig. 30).**



**General Motors – Position new seal in bore (fig. 31).**

## General Motors only Bearing/seal installation

1. Clean dirt from shaft surface and steering knuckle bore. Inspect for burrs, nicks or damage.
2. Apply wheel bearing grease on the new seal and knuckle bore. Position the seal in the bore, and press it in with a seal installation tool (or equivalent) (fig. 31).



**Ford – Grip and remove knuckle from hub (fig. 32).**

## Ford models only Bearing/seal removal

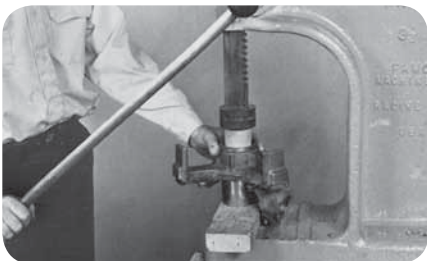
1. Using a jaw type puller, grip the knuckle and remove it from the hub (fig. 32).
2. Use a screwdriver to remove the snap ring/bearing retainer from the knuckle assembly.
3. Place a spacer tool on the face plate of an arbor press.
4. Position the knuckle assembly (outboard side up) over the spacer tool (fig. 33). Apply pressure to the outer race and press the bearing out of the knuckle.



**Ford – Place knuckle assembly over spacer tool (fig. 33).**

## Ford models only Bearing/seal installation

1. Inspect and clean the knuckle bore and hub housing. Severely scratched areas should be filed or polished before installing the new bearing.
2. Front wheel bearings and seals are removed and installed together as one cartridge unit. Bearings are pre-greased, sealed and pre-set. They cannot be adjusted. If the bearing/seal cartridge is disassembled, the entire unit must be replaced.
3. Place a spacer tool on the arbor press face plate. Position the knuckle assembly (outboard side down) over the spacer tool. Insert a new bearing in the inboard side of the knuckle. Place a bearing installer tool against the outer race. Press the bearing into the knuckle until it seats squarely against the shoulder of the knuckle bore.
4. Use pliers or a suitable tool to press the snap ring into the knuckle.
5. Place the spacer tool on the press plate. Position the hub (lugs facing down) over the spacer, and the knuckle assembly (outboard side down) over the hub.
6. Place the bearing installer tool on the inner race of the bearing and press down until it is seated squarely in the hub (fig. 34).



**Ford – Use arbor press to install new bearing in hub (fig. 34).**

**Note:** Hub should rotate freely in the knuckle after installation.

7. Use the proper installation tools to remove the old dust seal on the C.V. joint outer shaft. Install a new dust seal.

## Ford and Chrysler Bearing/seal reassembly

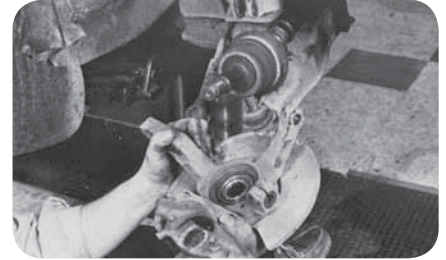
1. Place the knuckle assembly on the ball joint stud (fig. 35). By hand, push the shaft into the hub as far as possible. Shaft splines should engage hub splines during installation.
2. Loosely attach the knuckle to the strut. Install the bolts without tightening. On models incorporating cam bolts, markings made prior to disassembly should realign for correct positioning.
- 3A. On **Chrysler models**, tighten the bolts on the knuckle and strut to 45 ft. lbs. Tighten the lower control arm stud or ball joint stud to 50 ft. lbs. (fig. 36). Position the tie rod end into the steering arm. Tighten the nut to 35 ft. lbs. Install cotter pin.
- 3B. On **Ford cars**, insert a hub/knuckle installer tool, and tighten to approximately 120 ft. lbs. until the hub is fully seated. Remove the tool. Insert the washer. Install and finger tighten the hub nut. Tighten the strut mounting bolts. Connect the lower control arm and tie rod onto the knuckle.

## General Motors Bearing/seal reassembly

1. Push the hub and bearing assembly onto the axle shaft (fig. 37).
2. Partially tighten the hub nut (approx. 74 ft. lbs.) until the hub/bearing assembly is seated squarely on the shaft.

## Ford, Chrysler and General Motors Bearing/seal reassembly

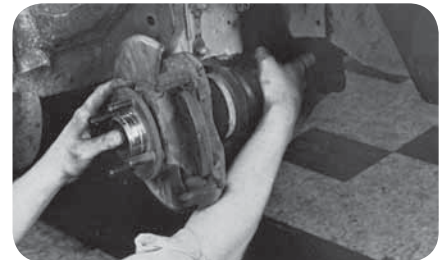
1. Place the rotor over the studs. Install the caliper assembly over the disc. Tighten caliper mounting bolts.
2. Connect the brake hose retainer to the strut and tighten screws. Insert the hub washer and hub nut.
3. While applying brakes, tighten the hub nut to approximately 180 ft. lbs. (fig. 38). Install lock nut. Insert a new cotter pin and bend it tightly against the lock nut.
- 3A. On **Ford models**, it is necessary to use a hardened chisel or similar tool to crimp the nut collar in the stub on the shaft. This will stake the hub nut in position.
4. Install the wheel and tire assembly. Tighten wheel nuts to 80 ft. lbs.
5. Install hub cap or wheel cover. Lower the car.



**Ford and Chrysler – Place knuckle assembly on ball joint stud (fig. 35).**



**Chrysler – Tighten lower control arm attaching bolt (fig. 36).**



**General Motors – Push shaft into hub (fig. 37).**



**Tighten hub nut while applying brakes (fig. 38).**

## Rear wheel bearings and seals

**On some Ford and Chrysler models**, rear axle seals and bearings are removed and installed very similarly to the front wheel seals and bearings on Rear Wheel Drive cars. Refer to the seal and bearing replacement procedures (for drum brakes) found on pages 3-6.

**On General Motors models**, the rear hub and wheel bearing are assembled and installed together as a single unit. One hub/bearing assembly is bolted to each end of the car's rear axle.

Refer to the manufacturer service repair manual for wheel hub/bearing assembly replacement procedures.

## Pinion seal replacement

Pinion seal maintenance recommendations vary by manufacturer. Generally these seals must be replaced when leaks develop. Pinion seals should be checked and replaced whenever servicing a universal joint.

Replacement of the pinion seal usually requires removal and installation of only the pinion shaft nut and flange.

**Note:** A circular mounting flange, U-bolts or straps are used to hold the driveshaft in position on the differential pinion. The mounting flange attaches directly to the pinion yoke, while U-bolts/straps contact the bearing cups.

### Seal removal

1. Raise the car on a hoist.
2. Make a mark where the driveshaft and the pinion flange meet (fig. 39). The driveshaft and flange were balanced at the factory and must be reassembled in the same position.
3. Disconnect the driveshaft by unbolting the mounting flange. If straps or U-bolts are used, tape the bearing cups in place (be careful not to lose bearing rollers). Remove the straps or U-bolts.
4. Support the driveshaft to prevent strain on the universal joint, and the transmission extension housing seal (fig. 40).
5. With a torque wrench placed on the pinion nut, record the pinion bearing preload.
6. Support the pinion yoke and remove the pinion nut and the washer.
7. Place a pan under the seal to hold any lube that drains from the rear axle.



**Mark the driveshaft and pinion flange (fig. 39).**

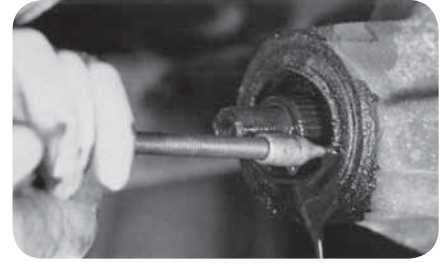


**Support driveshaft (fig. 40).**

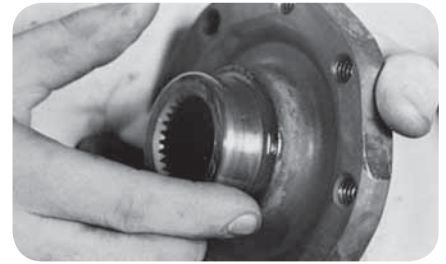
8. Mark the pinion yoke and shaft to identify correct position for reassembly. Remove the pinion yoke.
9. Use a seal puller or suitable tool to pry out the old seal (fig. 41). Discard the old pinion seal. Be careful not to damage the seal housing. **Never reuse old seals.**

## Seal installation

1. Select a new seal for the application. Refer to the SKF Passenger Car, Light and Medium Truck Seals and Bearings Catalog (SKF #457205).
2. Clean and inspect the pinion yoke seal surface (fig. 42). If damaged, it may be repaired using a shaft repair kit: the SKF Speedi-Sleeve. See Speedi-Sleeve section (page 16) for instructions.
3. Apply lubricant to the seal lips (fig. 43). With an SKF seal installation tool and adapter (or similar tool), press the seal into the housing (fig. 44). The seal should be centered and seated squarely.
4. Check pinion shaft splines and yoke for burrs or damage. Wipe the pinion clean.
5. Apply lubricant to the outer diameter of the pinion yoke and on flange splines.
6. Replace the pinion yoke on the shaft. Match previously made marks so shaft and yoke align.
7. While holding the flange, tighten the pinion nut to previously recorded disassembly or preload torque.
8. Connect rear end of the driveshaft to the pinion. Align previously made markings.
9. Replace the circular mounting flange or install U-bolts or straps, and secure the driveshaft in position.
10. Add lubricant to within 1/8 -1/4" from the bottom of the filler hole. Do not overfill.
11. Lower the car.



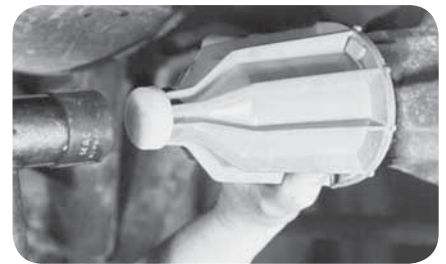
**Pry out old pinion seal (fig. 41).**



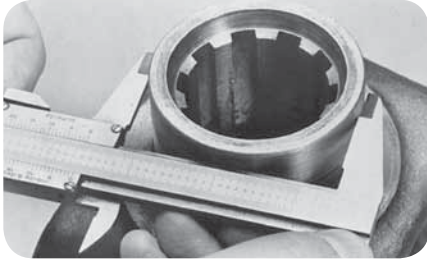
**Inspect pinion yoke seal surface (fig. 42).**



**Apply lube to seal lips (fig. 43).**



**Position installation tool and tap seal into housing (fig. 44).**



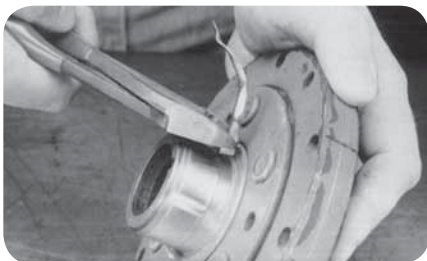
**Measure shaft diameter in three places (fig. 45).**



**Place Installation tool over Speedi-Sleeve (fig. 46).**



**Tap tool to install sleeve over shaft (fig. 47).**



**Pry flange off installed Speedi-Sleeve (fig. 48).**

## Shaft repair with SKF Speedi-Sleeve®

**NOTE:** If you can catch your fingernail in a seal track or shaft groove, a Speedi-Sleeve should be installed to prevent leakage. Refer to the SKF Passenger Car, Light and Medium Truck Seals and Bearings Catalog (SKF #457205) for Speedi-Sleeve sizes. The correct Speedi-Sleeve will be listed with the seal application data.

### SKF Speedi-Sleeve installation

1. Clean the surface where the seal contacts the shaft. File down any burrs or rough spots.
2. Measure the diameter where the sleeve will be positioned on an unworn portion of the shaft. Measure in three positions and average the reading in case the shaft is out of round (fig. 45). If the average diameter is within the range for a given Speedi-Sleeve size, there is sufficient press fit built into the sleeve to keep it from sliding or spinning. No cement is necessary.
3. If the groove does not require filling, apply a light layer of non-hardening sealant to the inner surface of the sleeve.
4. If the shaft is deeply scored, fill the groove with non-hardening epoxy type filler. Install Speedi-Sleeve before the filler hardens.
5. Determine how far back the sleeve must be positioned to cover the old seal wear tracks. Measure to the exact point, or mark directly on the surface.  
  
The sleeve must be placed over the worn area, not just bottomed or left flush with the end of the shaft.
6. Place installation tool over the Speedi-Sleeve. The flange end of the sleeve goes on the shaft first (fig. 46).
7. Gently tap the center of the tool until the sleeve covers the seal worn surface (fig. 47).  
  
If the installation tool supplied with the sleeve is too short, a length of PVC pipe or tubing with a squared-off, burr-free end can be substituted.
8. Leave the Speedi-Sleeve flange intact unless clearance is required. Use side cutters to pry the flange away from the seal surface and twist it into a coil - The flange will break loose along the pre-cut line (fig. 48).
9. After the Speedi-Sleeve is installed, check the shaft for burrs (which could damage the seal).
10. Lubricate the end of the Speedi-Sleeve when installing the seal.
12. Proceed with seal and bearing installation, as outlined in this brochure.



## Notes

# Notes

## Notes

Automotive technicians worldwide are installing confidence with high quality SKF brand components. Our expanding product line includes wheel bearing kits and unitized hubs, transmission rebuild kits, seals, timing belt kits, Speedi-Sleeve® shaft repair kits and more. Broad market coverage and industry-leading logistics assure the right part, right when you need it. For more information about all the ways we can help you and your customers install confidence, contact your SKF distributor. Or visit us online: [www.vsm.skf.com](http://www.vsm.skf.com)



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**SKF VSM NA**

890 N. State Street

Suite 200

Elgin, IL 60123

1-800-882-0008

[www.vsm.skf.com](http://www.vsm.skf.com)

