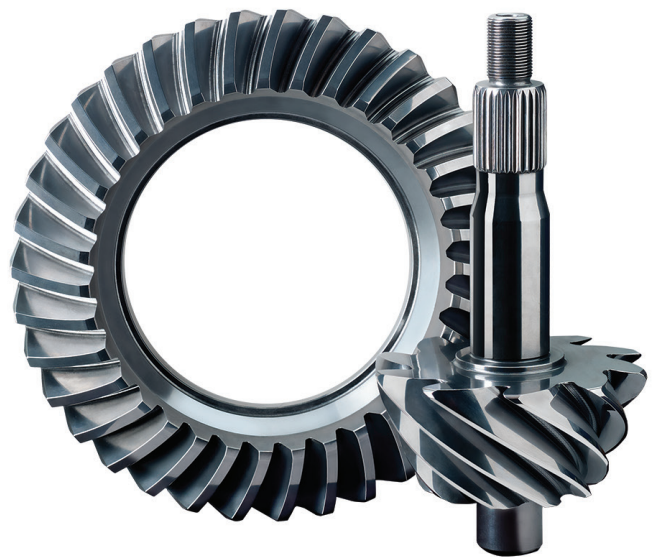


Eaton Performance
Ring & Pinion Installation Instructions



Eaton Performance Ring & Pinion Installation Instructions



IMPORTANT

We highly recommend that you read this set of instructions completely before beginning the installation of this new gear set. Correct installation can be the difference in a safe extended gear life, or premature failure.

1. Remove the old gear set and thoroughly clean both the ring gear carrier and rear end housing with solvent. After cleaning, air-dry all parts.
2. Examine the ring gear mounting surface for nicks or burrs which might prevent a flush mounting of the newly installed ring gear. Ring/ Pinion tooth depth variations can result from a ring gear that is "cocked" on its mounting surface. If a ring gear spacer is to be used, also check it for surface imperfections. Nicks or burrs can be removed by using block-backed grit paper or a small file. Following material removal, rewash in solvent and air dry. Mount ring gear. Loctite ring gear bolts and torque to factory specifications.
3. All gears have been "lapped" in sets and should never be mixed with another ring gear or pinion. Check to see serial numbers are the same on the ring gear and pinion.
4. Each gear set is pre-run and marked on the pinion face with its proper depth setting called the "Checking Distance". This dimension is from the face of the pinion to the axle centerline. A setting tool must be used to measure the checking distance. Pinion depth is adjusted by adding or subtracting shim thickness. Stay +/- .002" of the pinion dimension. (See Illustrations 'A' and 'B').
5. Once the pinion depth is achieved, install a new crush collar (preload shim pack for Dana's) and seal. Then loctite the pinion nut and tighten to 15 inch-pounds rotating torque with used bearings or 25 inch-pounds with new bearings.
6. With the pinion gear installed, position ring gear and carrier into housing to check backlash. Gears are developed to be run at .008" to .012" backlash for street gear sets and .006" to .008" backlash for competition gear sets.
7. Adjustments for backlash are done by spanner rings in the housing or shim packs behind the carrier bearing cups (GM) or cones (Dana). Always be sure carrier bearings are pre-loaded. The carrier should not fall out of the housing, but should have to be "tapped" in during final installation. Replace bearing caps and torque to factory specifications.
8. You are now ready to verify the tooth contact pattern. A gear marking compound should be used. Paint gear teeth with compound in several spots and rotate ring gear several revolutions. A tooth contact pattern will appear and should be similar to the pattern shown in Illustration 'C'. If the pattern is not in the approximate position shown, reset pinion depth and backlash to correct pattern. Pinion shims usually must be moved in .003" increments to notice a pattern change. If a pattern is heavy toe subtract shims, (see illustration D). If a pattern is heavy heel add shims, (see illustration E).

Note: Reverse this procedure for 8" and 9" Ford.

Fill the case with the required amount of GL-5 rated EP 85W-90 gear lube, and maintain the proper level at all times. Proper maintenance is a must to protect you and the gear set.

Final results

Properly designed, manufactured, and maintained gears, correctly assembled by you in a clean, rigid gear box, and operated with the proper lubricant, will result in safe and satisfactory performance. Be sure that the gear set properly fits the application.

Noise acceptability

A gear-driven unit will produce a certain amount of noise. Some noise is acceptable and might be audible at certain speeds or under various driving conditions. The slight noise is not detrimental to operation of the rear axle and must be considered normal.

NOTICE

Manufacturer's obligation for warranty returns shall be limited to repairing, or replacing, or crediting at its option, any parts found to be defective. Manufacturer will not be liable for charges and/or other expenses incurred, nor shall it be liable for damages or injury to persons or property resulting from the misuse or improper installation of any part subject to this warranty. The warranty contained herein is expressly in lieu of any and all other warranties, including any implied warranty of merchantability or fitness for any particular purpose.

Illustration A
GM – Chrysler

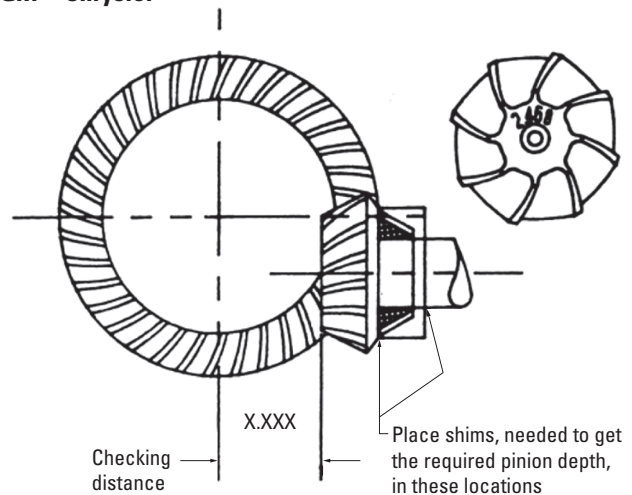
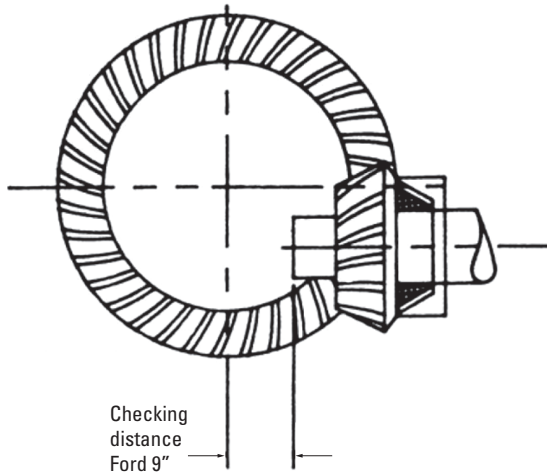


Illustration B
Ford 9 inch



Place shims, needed to get the required pinion depth, between bearing support and housing

Illustration C
Correct load patterns

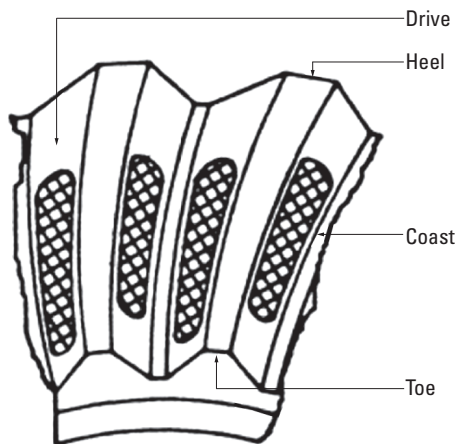


Illustration D
Incorrect pattern
(Drive side)

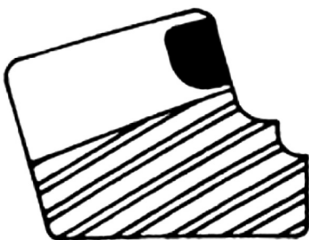
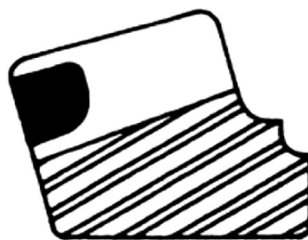


Illustration E
Incorrect pattern
(Drive side)



Break in procedure

New ring & pinion gears sets require a break-in period to prevent damage from overheating*. This is because a new ring and pinion installed with new bearings will initially generate higher than normal operating temperatures.

*An exception to the new gear set break-in requirement is the Eaton Performance Super Finish series of ring & pinions. Super Finish gears have an additional/final surface finishing process that is applied to the gear set after all machining and heat-treating operations have been completed. This results in an industry-leading level of smoothness and consistency, reduced friction, wear, noise, heat generation and elimination of the need for break-in.

General Instructions:

1. Raise the vehicle on jack stands, making sure the front wheels are blocked and that the jack stands are **secured**.
 - a. ****Do not attempt to perform this break-in procedure without completing these steps.**
2. Fill the axle with the appropriate quantity of gear lubricant.
3. Run the vehicle in the forward direction at moderate speed for no less than 2-3 minutes.
 - a. Do not exceed 2000 engine rpm while the vehicle's wheels are off the ground.
4. Run the vehicle in the reverse direction at moderate speed for no less than 2-3 minutes.
 - a. Do not exceed 2000 engine rpm while the vehicle's wheels are off the ground.
 - b. ****IMPORTANT:** allow the axle to cool a minimum of 30-40 minutes after completion of steps 3 & 4 above.
5. Lower the vehicle back to the ground and remove the jack stands.
6. Drive the vehicle at slow-moderate speeds for no more than 15-20 miles.
 - a. ****IMPORTANT:** allow the axle to again cool a minimum of 30-40 minutes after completion of step 6 above.
7. Best Practice: change the gear lubricant after the first 500 miles; this will flush out any metal particles that may have come from the new components.

Instructions for Specialty Applications:

Oval Track Vehicles:

1. Raise the vehicle on jack stands, making sure the front wheels are blocked and that the jack stands are secured.
 - a. ****Do not attempt to perform this procedure without completing these steps.**
2. Fill the axle with the appropriate quantity of gear lubricant.
3. Run the vehicle in the forward direction at moderate speed for no less than 2-3 minutes.
 - a. Do not exceed 2000 engine rpm while the vehicle's wheels are off the ground.
4. Run the vehicle in the reverse direction at moderate speed for no less than 2-3 minutes.
 - a. Do not exceed 2000 engine rpm while the vehicle's wheels are off the ground.
 - b. ****IMPORTANT:** allow the axle to cool a minimum of 30-40 minutes after completion of steps 3 & 4 above.

5. Lower the vehicle back to the ground and remove the jack stands.
6. Drive the vehicle at slow-to-moderate speeds for 3-4 laps.
 - a. ****IMPORTANT:** allow the axle to again cool a minimum of 30-40 minutes after completion of step 6 above.
7. Run 3-4 "hot laps"
 - a. ****IMPORTANT:** allow the axle to again cool a minimum of 30-40 minutes after completion of step 7 above.
8. Best Practice: change the gear lubricant after the first race; this will flush out any metal particles that may have come from the new components.

Drag Strip:

1. Raise the vehicle on jack stands, making sure the front wheels are blocked and that the jack stands are secured.
 - a. ****Do not attempt to perform this procedure without completing these steps.**
2. Fill the axle with the appropriate quantity of gear lubricant.
3. Run the vehicle in the forward direction at moderate speed for no less than 2-3 minutes.
 - a. Do not exceed 2000 engine rpm while the vehicle's wheels are off the ground.
4. Run the vehicle in the reverse direction at moderate speed for no less than 2-3 minutes.
 - a. Do not exceed 2000 engine rpm while the vehicle's wheels are off the ground.
 - b. ****IMPORTANT:** allow the axle to cool a minimum of 30-40 minutes after completion of steps 3 & 4 above.
5. Lower the vehicle back to the ground and remove the jack stands.
6. Proceed to starting line.

Trucks/SUVs:

1. Beyond the "general instructions" above, do not perform any heavy towing for the first 500 miles after installing the new ring & pinion set.
 - a. ****IMPORTANT:** allow the axle to cool a minimum of 30-40 minutes after the first 15 miles of towing.

*****WARNING**

- 1. Operator must remain in driver's seat and always make sure front wheels are blocked and jack stands are secured before attempting this procedure -- never exceed 2000 rpm with the wheels off the ground. Failure to follow this warning could result in serious damage, physical injury or death!**
- 2. Overloading and/or overheating during break-in can cause gear oil break-down/failure, resulting in premature ring & pinion wear or failure.**

Reference Torque Specifications (Check with the manufacturer of your differential and case)

APPLICATION	RING GEAR BOLTS (FT-LB)	CARRIER CAP BOLTS
CHRYSLER 8.7" IRS	55	65 - 75
CHRYSLER 8.75" (489)	45	90
DANA 36 Corvette	55	70
DANA 44 Corvette	55	60
DANA 60	110	85
FORD 8"	70	50 - 60
FORD 8.8"	70	70 - 85
FORD SUPER 8.8" IRS	97 - 102	76 - 89
FORD 9"	70 - 120	80 - 90
GM 8.4"	65	60
GM 8.6"	60	65
GM 12 BOLT- 8.875"	45	60 - 65

*Fastener choice affects the amount of torque that can be applied.

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