STEMCO®

PRO-TORQ® INSTALLATION CHART

PRO-TORQ®

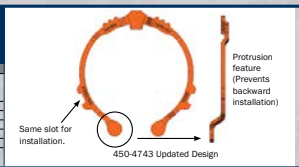
Installation Procedure and Wheel Bearing Adjustment

TOOLS REQUIRED FOR INSTALLATION

Part Numbers	(3/4˝ Drive) Socket Req'd.	Owatonna Co. Ref. Part No.	Euclid Int'l. Ref. Part No.
Trailer Axle Nut			
447-4723	4 13/16˝ 8 point	1941	E-1597
447-4724			
Trailer Axle Nut			
447-4743	3 3/4˝ 8 point	1925	E-1925
449-4973	4 3/8˝ 8 point	1917	E-1917
Drive Axle Nut			
449-4904	4 1/8˝ 6 point	1915	E-1915
449-4973	4 3/8˝ 8 point	1917	E-1917
449-4974	3 3/4˝ 8 point	1925	E-1925
449-4975	3 3/4˝ 8 point	1925	E-1925

Part Numbers	(3/4˝ Drive) Socket Req'd.	Owatonna Co. Ref. Part No.	Euclid Int'l. Ref. Part No.
Steering Spindle Nut			
448-4836			
448-4837	2 1/2˝ 6 point	1921	E-1921
448-4838			
448-4839	2 5/8˝ 6 point	1922	E-1922
448-4840	2 1/2˝ 6 point	1921	E-1921
448-4863	3 1/2˝ 6 point	1920	2 1/2-12
448-4864	3˝ 6 point	1906	E-1906
448-4865	3˝ 6 point	1906	E-1906

Note: Ford application 12,000 lbs. SIFCO Steer Axle requires OEM inner washer to be installed prior to installation of PRO-TORQ® nut system.



STEP 1

REMOVE THE KEEPER FROM THE NUT:
Use a small screwdriver to carefully pry the keeper arm from the undercut groove on each side until the keeper is released.

STEP 2

Thread the nut onto the axle until hand tight against the bearing.

STEP 3

SEAT THE BEARING:

With hub or hub/drum only:
Using a torque wrench:

A (1) Tighten the nut to 200 ft-lbs. Spin the wheel at least one full rotation.
(2) Tighten the nut to 200 ft-lbs. Spin the wheel at least one full rotation.
(3) Tighten the nut to 200 ft-lbs.
B Back the nut off until it is loose.

With hub/drum/wheels:
A Tighten the nut to 200 ft-lbs while the wheel is rotating.
B Back the nut off until it is loose.

STEP 4

ADJUST THE BEARING:

With hub or hub/drum only:
Using a torque wrench:

A (1) Tighten the nut to 100 ft-lbs. Spin the wheel at least one full rotation.
(2) Tighten the nut to 100 ft-lbs. Spin the wheel at least one full rotation.
(3) Tighten the nut to 100 ft-lbs.
B Back the nut off one raised face mark (according to chart).

With hub/drum/wheels:
Using a torque wrench:

A Tighten the nut to 100 ft-lbs while the wheel is rotating.
B Back the nut off one raised face mark (according to chart).

WARNING
Failure to follow this instruction could cause the wheel to come off and cause bodily injury.
Failure to back off the nut will cause the bearing to run hot and be damaged.

STEP 5

INSTALL THE KEEPER:
ORANGE SIDE FACING OUT

A Insert the keeper tab into the undercut groove of the nut and engage the keyway tang in the axle keyway. Insert keeper tab with the orange side facing out.
B Engage the mating teeth.
C Compress and insert the keeper arms, one at a time, into the undercut groove with a small screwdriver.

FOR STEERING SPINDLE NUT 448-4836, 448-4839, 448-4840, 448-4863, 448-4864 & 448-4865:

A Align the flat of the keeper with the milled flat on the spindle and insert the keeper tab into the undercut groove of the nut. Insert keeper tab with the orange side facing out.
B Engage the mating teeth.
C Compress and insert the keeper arms, one at a time, into the undercut groove with a small screwdriver.

STEP 6

If the inner tang does not line up with the keyway, back the nut off slightly until it does. Using a small screwdriver, compress and insert the keeper arms, one at a time, into the undercut groove. The orange painted side of the keeper must be facing out.

STEP 7

Failure to follow this instruction could cause the wheel to come off and cause bodily injury.
Make sure that the keeper tab and keeper arms are fully seated into the undercut groove.

STEP 8

Inspect keyway tang to insure it does not contact the bottom of the keyway.
If contact exists, immediately notify your PRO-TORQ® representative.

STEP 9

ACCEPTABLE END PLAY:
The dial indicator should be attached to the hub or brake drum with its magnetic base. Adjust the dial indicator so that its plunger is against the end of the spindle with its line of action approximately parallel to the axis of the spindle.

Grasp the wheel or hub assembly at the 3 o'clock and 9 o'clock positions. Push and pull the wheel-end assembly in and out while oscillating the wheel approximately 45 degrees. Stop oscillating the hub so that the dial indicator tip is in the same position as it was before oscillation began. Read the bearing end-play as the total indicator movement.

***Acceptable end-play is .001" – .005"**

For single nut self-locking systems, consult manufacturers' specifications.
STEMCO assumes no responsibility for other manufacturers' bearing warranty.

FINAL BACKOFF

PART NUMBER	BACKOFF
Trailer Axle Nut	
447-4723	1/8 turn
447-4724	
449-4973	
Steering Spindle Nut	
448-4836	
448-4838	
448-4839	1/4 turn
448-4863	
448-4864	
448-4865	
Drive Axle Nut	
449-4904	
449-4973	1/8 turn
449-4974	
449-4975	

AJUSTE FINAL

NO. PARTE	AFLOJAR
Tuerca para Eje de Remolque	
447-4723	1/8 de vuelta
447-4724	
449-4973	
Tuerca de Eje de Dirección	
448-4836	
448-4838	
448-4839	1/4 vuelta
448-4863	
448-4864	
448-4865	
Tuerca para Eje de Tracción	
449-4904	
449-4973	1/8 de vuelta
449-4974	
449-4975	

STEMCO®
A Higher Standard of Performance.™
an EnPro Industries company

TMC's Recommended Wheel Bearing Adjustment Procedure for Standard Spindle Nuts

Proper wheel bearing adjustment is critical to the performance of wheel seals and other related wheel end products. For that reason, we are proud to be a part of TMC's Wheel End Task Force.

We are happy to bring these standards to you in the form of this technical guide. Working together, in this way, STEMCO helps keep your rigs rolling.

The following seven step bearing adjustment recommendation for standard spindle nuts was developed by TMC's Wheel End Task Force. It represents the combined input of manufacturers of wheel end components.

STEP 1.

Bearing lubrication:

Lubricate the wheel bearing with clean lubricant of the same type used in the axle sump or hub assembly.

STEP 2.

Initial adjusting nut torque:

Tighten the adjusting nut to a torque of 200 ft-lbs, while rotating the wheel.

STEP 3.

Initial back off:

Back the adjusting nut off one full turn.

STEP 4.

Re-torque adjustment:

Re-torque adjusting nut to 50 ft-lbs while rotating the wheel.

STEP 5.

Final back off:

AXLE TYPE	THREADS PER INCH	FINAL BACK OFF
STEER (Single Nut)	12	1/6 Turn*
	18	1/4 Turn*
STEER (Double Nut)	14	1/2 Turn
	18	1/2 Turn
DRIVE	12	1/4 Turn
	16	1/4 Turn
TRAILER	12	1/4 Turn
	16	1/4 Turn

** Install cotter pin to lock axle nut in position.*

STEP 6.

Jam nut torque:

AXLE TYPE	NUT SIZE	TORQUE SPECIFICATIONS
STEER (Double Nut)	Less than 2⅝"	200-300 ft-lbs
DRIVE	Dowel Type Washer	300-400 ft-lbs
	Tang Type Washer	200-275 ft-lbs
TRAILER	2⅝" and Over	200-300 ft-lbs

STEP 7.

Acceptable end play:

The dial indicator should be attached to the hub or brake drum with its magnetic base. Adjust the dial indicator so that its plunger is against the end of the spindle with its line of action approximately parallel to the axis of the spindle.

Grasp the wheel or hub assembly at the 3 o'clock and 9 o'clock positions. Push and pull the wheel-end assembly in and out while oscillating the wheel approximately 45 degrees. Stop oscillating the hub so that the dial indicator tip is in the same position as it was before oscillation began. Read the bearing end-play as the total indicator movement.

NOTE: Acceptable end-play is .001"- .005".

For single nut self-locking systems, consult manufacturers' specifications.
STEMCO assumes no responsibility for other manufacturers' bearing warranty.

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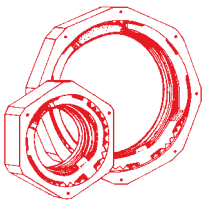
PRO-TORQ®

ADVANCED AXLE SPINDLE NUTS



THIS PROCEDURE WILL CONSISTENTLY PRODUCE A BEARING SETTING OF .001" TO .003" END PLAY.

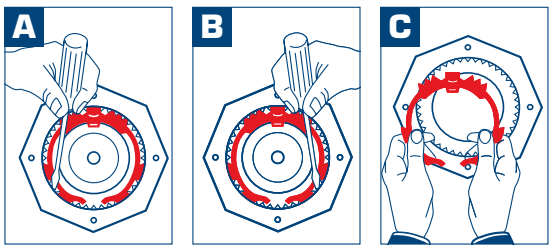
Pro-Torq® Installation Procedure for PreSet® or LMS® Hubs:
Pro-Torq® spindle nuts may be used with PreSet® or LMS® hub assemblies. When used with these systems, it is important to follow the hub manufacturers' product specific installation instructions. For PreSet and LMS hub assemblies, torque the Pro-Torq spindle nut to a minimum of 250 ft. lbs. Engage the keeper. If the keeper can not be engaged, advance the spindle nut until it can be engaged.
DO NOT BACK OFF THE SPINDLE NUT.

WARNING

Failure to follow this instruction could cause the wheel to come off and cause bodily injury.
The PRO-TORQ® Spindle Nut is sold as an assembly with the keeper in place. **DO NOT** attempt to place the nut on the spindle or tighten or loosen the nut on the spindle while the keeper is locked inside the nut. Doing so may deform the keeper and allow the nut to unthread during operation.
For unitized hub or spacer system follow manufacturer recommended torque procedure.

Stemco, Longview, Texas — Made in U.S.A.

STEP 1

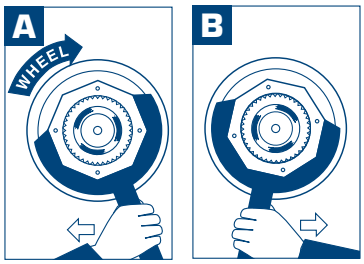


INSTALLATION PROCEDURE AND WHEEL BEARING ADJUSTMENT

REMOVE THE KEEPER FROM THE NUT:

A, B, C Use a small screwdriver to carefully pry the keeper arm from the undercut groove on each side until the keeper is released.

STEP 2



SEAT THE BEARING:

With hub or hub/drum only:
Using a torque wrench:

A **(1)** Tighten the nut to 200 ft-lbs. Spin the wheel at least one full rotation.
(2) Tighten the nut to 200 ft-lbs. Spin the wheel at least one full rotation.
(3) Tighten the nut to 200 ft-lbs.

B Back the nut off until it is loose.

With hub/drum/wheels:

A Tighten the nut to 200 ft-lbs while the wheel is rotating.

B Back the nut off until it is loose.

TOOLS REQUIRED FOR INSTALLATION			
Part Numbers Socket Req'd.	**(3/4" Drive) Ref. Part No.**	**Owatonna Co. Ref. Part No.**	**Euclid Int'l.**
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447-4724			
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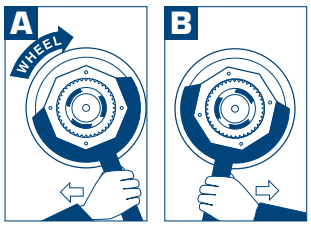
449-4973	4 3/8" 8 point	1917	E-1917
Steering Spindle Nut			
448-4836	2 1/2" 6 point	1921	E-1921
448-4837			
448-4838			
448-4839	2 5/8" 6 point	1922	E-1922
448-4840	2 1/2" 6 point	1921	E-1921
448-4863	3 1/2" 6 point	1920	2 1/2-12
448-4864	3" 6 point	1906	E-1906
448-4865	3" 6 point	1906	E-1906
Drive Axle Nut			
449-4904	4 1/8" 6 point	1915	E-1915
449-4973	4 3/8" 8 point	1917	E-1917
449-4974	3 3/4" 8 point	1925	E-1925
449-4975	3 3/4" 8 point	1925	E-1925

Note: Ford application 12,000 lbs. SIFCO Steer Axle requires OEM inner washer to be installed prior to installation of PRO-TORQ® nut system.

STEP 3



ADJUST THE BEARING:

With hub or hub/drum only:

Using a torque wrench:

1 **(A)** Tighten the nut to 100 ft-lbs.
Spin the wheel at least one full rotation.
(B) Tighten the nut to 100 ft-lbs.
Spin the wheel at least one full rotation.
(C) Tighten the nut to 100 ft-lbs.

2 Back the nut off one raised face mark (according to chart).

With hub/drum/wheels:

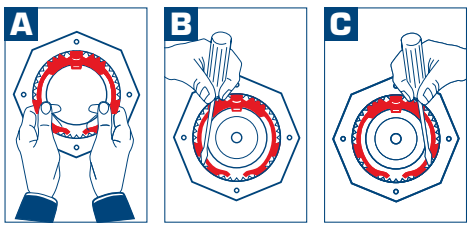
Using a torque wrench:

1 Tighten the nut to 100 ft-lbs while the wheel is rotating.
2 Back the nut off one raised face mark (according to chart).

WARNING
Failure to follow this instruction could cause the wheel to come off and cause bodily injury. Failure to back off the nut will cause the bearing to run hot and be damaged.

FINAL BACKOFF	
PART NUMBER	**BACKOFF**
Trailer Axle Nut 447-4723 447-4724 449-4973	1/8 turn
Trailer Axle Nut 447-4743	1/4 turn
Steering Spindle Nut 448-4836 448-4838 448-4839 448-4863 448-4864 448-4865	1/4 turn
Steering Spindle Nut 448-4837 448-4840	1/3 turn
Drive Axle Nut 449-4904 449-4973 449-4974 449-4975	1/8 turn

STEP 4



INSTALL THE KEEPER:

ORANGE SIDE FACING OUT

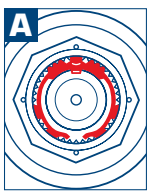
A Insert the keeper tab into the undercut groove of the nut and engage the keyway tang in the axle keyway. Insert keeper tab with the orange side facing out.
B Engage the mating teeth.
C Compress and insert the keeper arms, one at a time, into the undercut groove with a small screwdriver.

For Steering Spindle Nut 448-4836, 448-4839, 448-4840, 448-4863, 448-4864, & 448-4865:

A Align the flat of the keeper with the milled flat on the spindle and insert the single keeper tab into the undercut groove of the nut. Insert keeper tab with the orange side facing out.
B Engage the mating teeth.
C Compress and insert the keeper arms, one at a time, into the undercut groove with a small screwdriver.

WARNING — Failure to follow this instruction could cause the wheel to come off and cause bodily injury. Do not bend or manipulate keyway tang in any way. Doing so may cause the tang to break off in service. **Recommended practice is to replace the keeper each time the Pro-Torq nut assembly is removed for maintenance purposes.**

STEP 5



INSPECT THE INSTALLATION:

A **Failure to follow this instruction could cause the wheel to come off and cause bodily injury.** Make sure that the keeper tab and keeper arms are fully seated into the undercut groove. Inspect keyway tang to insure it does not contact the bottom of the keyway. If contact exists, immediately notify your PRO-TORQ® representative.

STEP 6

ACCEPTABLE END PLAY:

The dial indicator should be attached to the hub or brake drum with its magnetic base. Adjust the dial indicator so that its plunger is against the end of the spindle with its line of action approximately parallel to the axis of the spindle.

Grasp the wheel or hub assembly at the 3 o'clock and 9 o'clock positions. Push and pull the wheel-end assembly in and out *while oscillating the wheel approximately 45 degrees.* Stop oscillating the hub so that the dial indicator tip is in the same position as it was before oscillation began. Read the bearing end-play as the *total* indicator movement.

*Acceptable end-play is .001" - .005"

For single nut self-locking systems, consult manufacturers' specifications. STEMCO assumes no responsibility for bearing warranty.