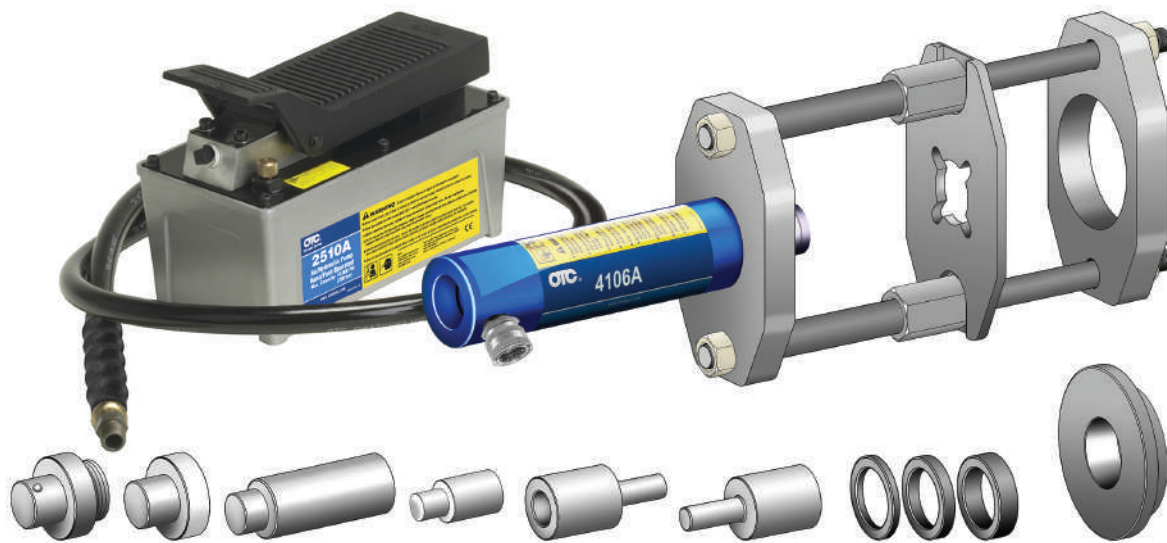




4274
4275

Hendrickson Front Suspension Bushing Tool



Applications: Volvo, Navistar, Paccar

INSTRUCTIONS



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Explanation of Safety Signal Words

The safety signal word designates the degree or level of hazard seriousness.



DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Safety Precautions



WARNING: To prevent personal injury and/ or property damage,



- Study, understand, and follow all safety precautions and operating instructions before using this Hendrickson Front Suspension Bushing Tool. If the operator cannot read instructions, operating instructions and safety precautions must be read and discussed in the operator's native language.

- Only qualified operators may install, operate, adjust, maintain, clean, repair, inspect, or transport this suspension bushing tool.



- Wear eye protection that meets ANSI Z87.1, CE EN166, AS/NZS 1337, and OSHA standards.
- Do not use this suspension bushing tool for anything other than its intended purpose.
- No alteration shall be made to this product.
- Inspect the condition of the suspension bushing tool before each use; do not use if damaged, altered, or in poor condition.
- Use only those repair parts called out in the parts list in this document. Items found in the parts list have been carefully tested and selected by OTC.

Hose



- Before operating the pump, tighten all hose connections using the correct tools. Do not overtighten; connections need only be secure and leak-free. Overtightening can cause premature thread failure or high pressure fittings to split at pressures lower than their rated capacities.
- Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut OFF the pump, and open the control valve to release all pressure. NEVER grasp a leaking, pressurized hose with your hands; the force of escaping hydraulic fluid could cause serious injury.
- Do not subject the hose to any potential hazard such as fire, extreme cold or heat, sharp surfaces, or heavy impact. Do not allow the hose to kink, twist, curl, or bend so tightly that the fluid flow within the hose is blocked or reduced. Do not use the hose to move attached equipment. Periodically inspect the hose for wear, because any of these conditions can damage the hose and result in personal injury.
- Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials, such as creosote-impregnated objects and some paints. Consult the manufacturer before painting a hose. Never paint couplers. Hose deterioration due to corrosive material can result in personal injury.

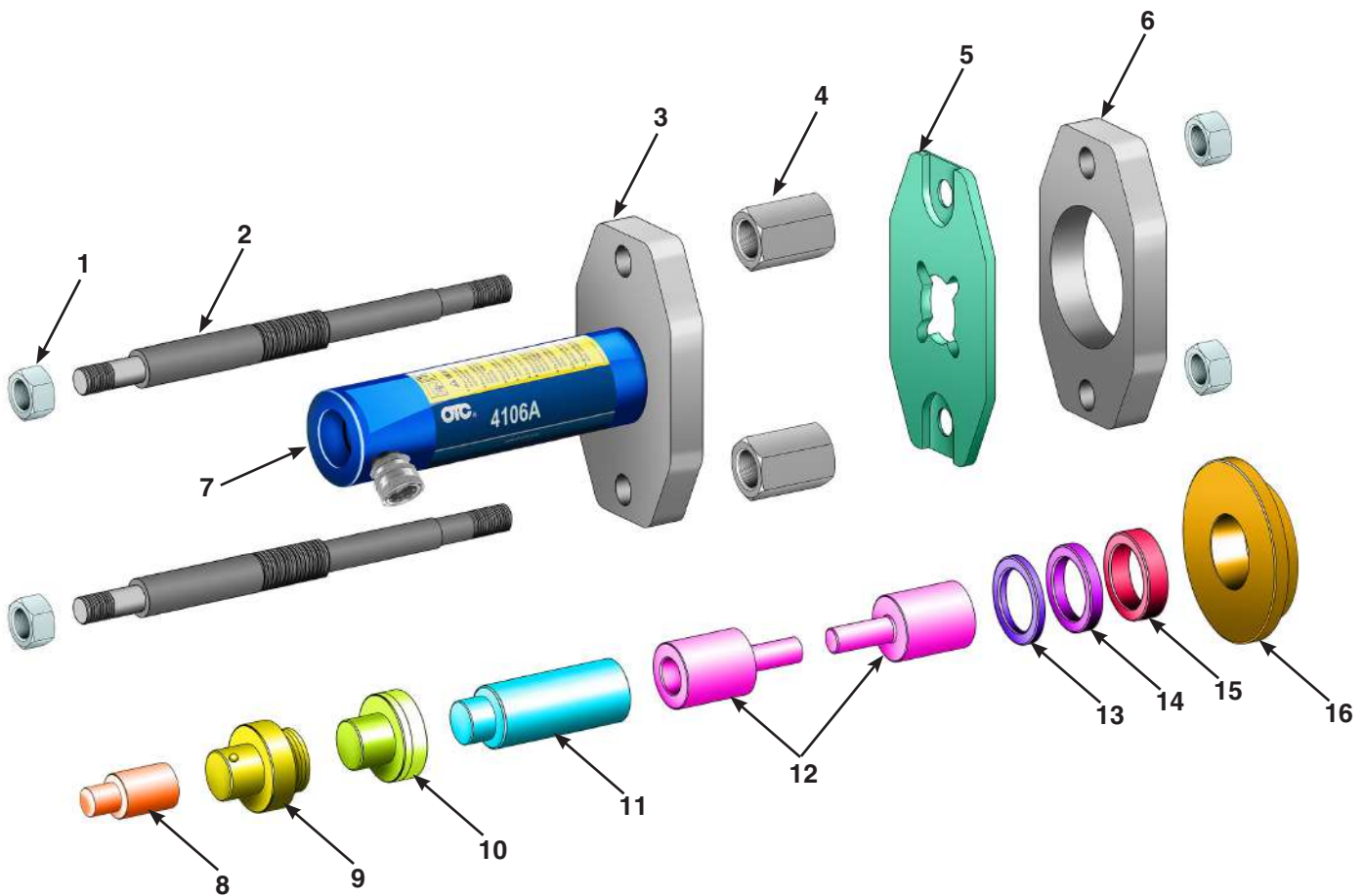
Pump

- Do not exceed the maximum capacity of the pump or tamper with the internal high pressure relief valve. Creating pressure beyond the rated capacity can result in personal injury.
- Completely retract the cylinder before opening the filler screw on the pump to add hydraulic fluid. An overfill can cause personal injury due to excess reservoir pressure created when cylinders are retracted.

Cylinder







- Do not exceed the maximum capacity of the cylinder. Creating pressure beyond the rated capacity can result in personal injury.
- Adapters must be aligned and fully engaged so cylinder force is straight, avoiding an off-center load condition.

Parts List



Item No.	Part No.	Qty.	Description
1	576924	1	Hex Nut Kit <i>(contains four nuts)</i>
2	575170	2	Threaded Rod
3	575173	1	Cylinder Mounting Plate
4	575169	2	Clamping Nut
5	577677	1	Clamping Plate
6	575172	1	Head Plate
7	4106A	1	Hydraulic Cylinder <i>(25 Ton)</i>
8	577546	1	Alignment Pin
9	577542	1	Cylinder Adapter
10	577882	1	Bushing Adapter
11	577706	1	Extension
12	577544	2	Alignment Tool
13	578286	1	Spacer "A"
14	578288	1	Spacer "B"
15	577962	1	Spacer "C"
16	577560	1	Bushing Support
	575166	1	Warning Decal <i>(not shown)</i>
	104031	1	Warranty / Authorized Service Center List <i>(not shown)</i>
	36886	1	Hose Assembly <i>(4275 only; not shown)</i>
	2510A	1	Air / Hydraulic Pump <i>(4275 only; not shown)</i>
	9798	1	Hose Half Coupler <i>(4275 only; not shown)</i>

VOLVO – Spring Eye Bushing Removal

VOLVO	577542 Cylinder Adapter	577544 Alignment Tool	577560 Bushings Support	577706 Extension	57782 Bushings Adapter	577962 Spacer "C"
						
Remove	✓	✓	✓	✓	✓	
Install	✓	✓	✓		✓	✓

Spring Eye Bushing Removal

1. Insert the two *alignment tools* into the bushing as shown in Figure 1.
2. Place the *bushing support* over an alignment tool.
3. Place the *head plate* over the bushing support.
4. Place the *clamping plate* over the other alignment tool with the cutouts in the plate facing away from the bushing.
5. Assemble the *clamping nuts* to the *threaded rods*.
6. Insert a threaded rod through the lower holes in the clamping plate and the head plate. Install a *hex nut* on the end of the threaded rod, fully seated and finger tight.
7. Insert a threaded rod through the upper holes in the clamping plate and the head plate. Install a hex nut on the end of the threaded rod, fully seated and finger tight.
8. Tighten the clamping nuts to the clamping plate 1/4 to 1/2 turn past hand tight. See Figure 2.

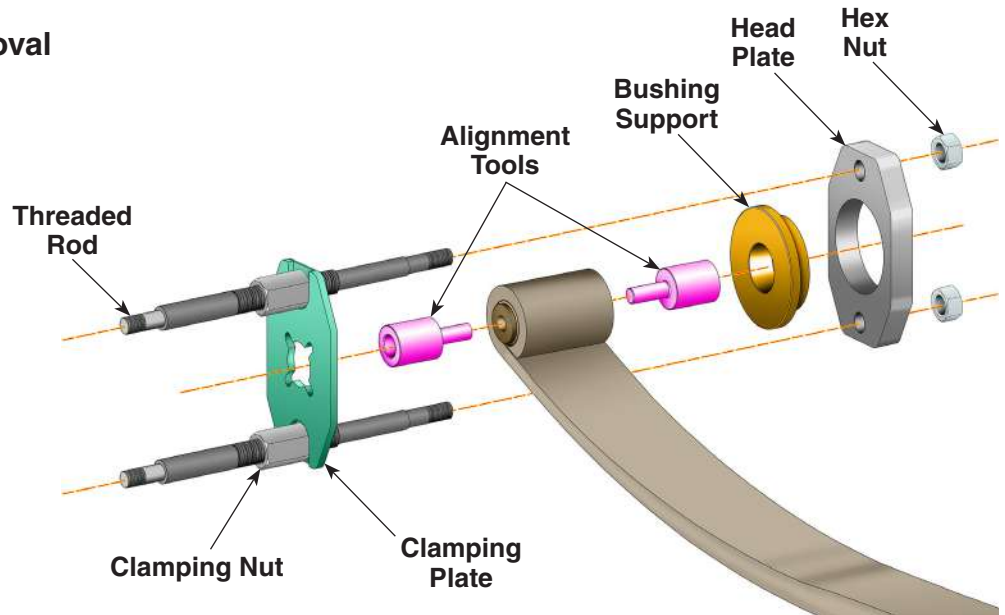


Figure 1

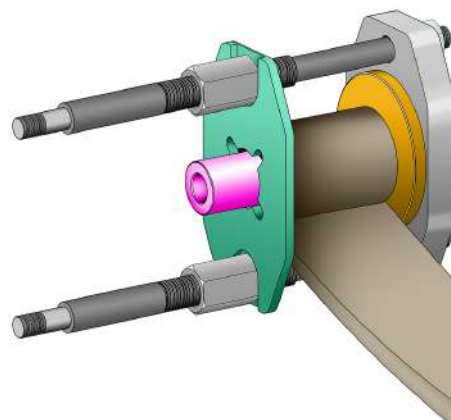
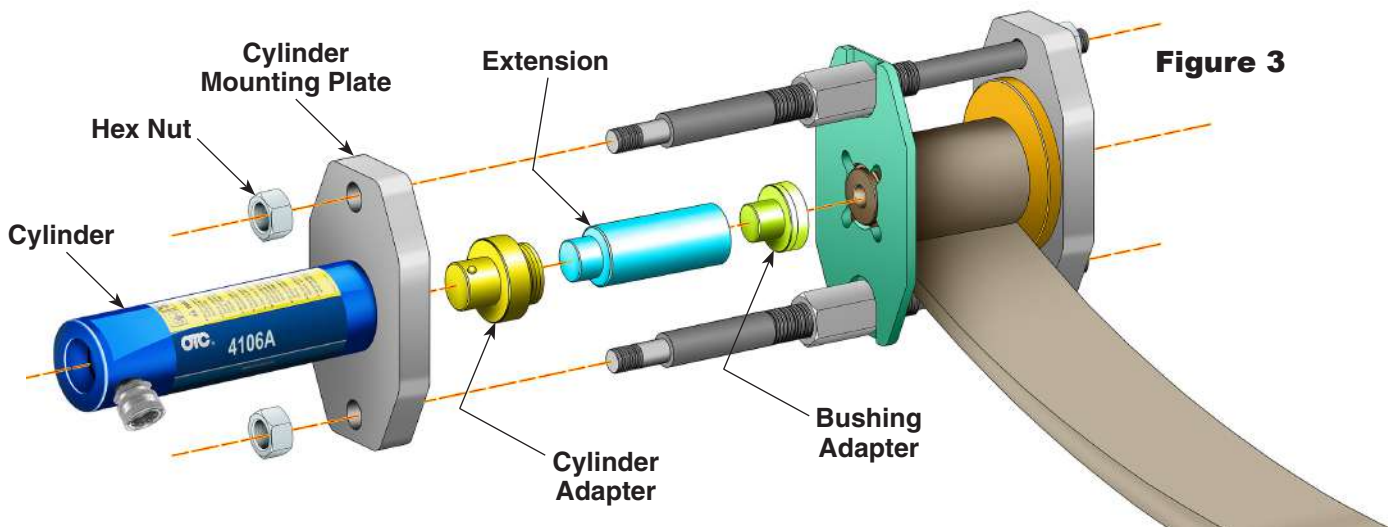


Illustration showing the assembly after steps 1 – 8.

Figure 2

VOLVO – Spring Eye Bushing Removal



Spring Eye Bushing Removal contd.

9. Thread the cylinder into the *cylinder mounting plate*. See Figure 3.

⚠ WARNING: To prevent personal injury, the cylinder must be fully threaded into the cylinder mounting plate.

10. Install the cylinder mounting plate onto the end of the threaded rods. Assemble the hex nuts on the threaded rods until they are fully seated and finger tight.

11. Carefully remove the two alignment tools.

12. Insert the cylinder adapter into the head of the cylinder.

13. Insert the extension into the cylinder adapter.

14. Place the bushing adapter into the extension.

15. Prepare the hydraulic pump for use by following the instructions provided with the pump regarding hookup, venting, priming, and operation.

⚠ WARNING: To prevent personal injury, pump capacity must not exceed 10,000 psi.

16. Connect the hydraulic hose from the hydraulic pump to the cylinder.

17. Verify all components are aligned. Slowly and carefully operate the pump to extend the cylinder piston rod. Guide the assembly until the bushing adapter contacts the bushing. Operate the pump until the bushing is driven out of the spring.



⚠ WARNING: To prevent personal injury from possible breakage under pressure, do not stand in the vicinity of the tool while the spring eye bushing is being extracted. It is especially important to not stand in the direction of the hydraulic force.

18. Retract the cylinder piston rod. Spring eye bushing removal is complete. *Note: Do not remove the tool assembly from the spring before installing the new bushing because the alignment would be lost.*

VOLVO – Spring Eye Bushing Installation

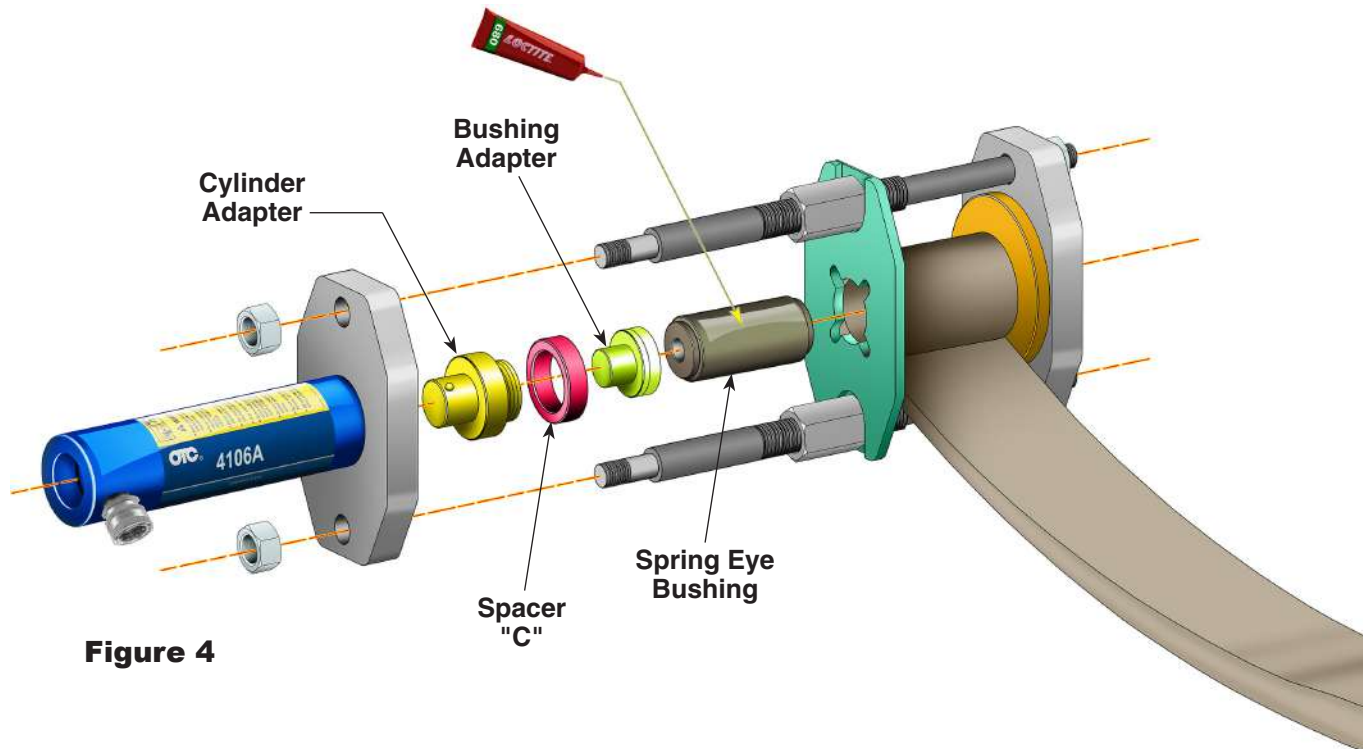


Figure 4

Spring Eye Bushing Installation

1. Remove residual adhesive from the inside diameter of the beam using Hendrickson-approved methods. The cylinder and cylinder mounting plate may be removed to allow easier access to the spring eye.
Note: Do not loosen the clamping nuts, or remove the head or clamping plate, before installing the new bushing because the alignment would be lost.

2. Insert the cylinder adapter into the head of the cylinder as shown in Figure 4.

3. Place spacer "C" over the cylinder adapter.

4. Insert the bushing adapter into the cylinder adapter.

5. Clean the outer diameter of the new bushing and apply Loctite® 680 adhesive, being careful to apply the adhesive to metal only. Do not apply adhesive to the rubber part of the bushing.

6. Hold the bushing against the face of the bushing adapter.

7. Operate the pump to extend the cylinder piston rod. Guide the assembly until the bushing contacts the bore of the spring. Check the alignment of the spring eye bushing.

⚠ WARNING: To prevent personal injury, pump capacity must not exceed 10,000 psi.

8. Operate the pump to drive the bushing into the spring. When the spacer contacts the clamping plate, bushing installation is complete.



⚠ WARNING: To prevent personal injury from possible breakage under pressure, do not stand in the vicinity of the tool while the spring eye bushing is being installed. It is especially important to not stand in the direction of the hydraulic force.

9. Wipe away any residual Loctite® 680 adhesive from exposed faces of the bushing, spring, and tools.

NAVISTAR – Spring Eye Bushing Removal

NAVISTAR	577542 Cylinder Adapter	577544 Alignment Tool	577546 Alignment Pin	577560 Bushings Support	577706 Extension	578286 Spacer "A"
	Remove	✓	✓	✓	✓	✓
Install	✓	✓	✓	✓		✓

Spring Eye Bushing Removal

1. Insert the two *alignment tools* into the bushing as shown in Figure 1.
2. Place the *bushing support* over an alignment tool.
3. Place the *head plate* over the bushing support.
4. Place the *clamping plate* over the other alignment tool with the cutouts in the plate facing away from the bushing.
5. Assemble the *clamping nuts* to the *threaded rods*.
6. Insert a threaded rod through the lower holes in the clamping plate and the head plate. Install a *hex nut* on the end of the threaded rod, fully seated and finger tight.
7. Insert a threaded rod through the upper holes in the clamping plate and the head plate. Install a hex nut on the end of the threaded rod, fully seated and finger tight.
8. Tighten the clamping nuts to the clamping plate 1/4 to 1/2 turn past hand tight. See Figure 2.

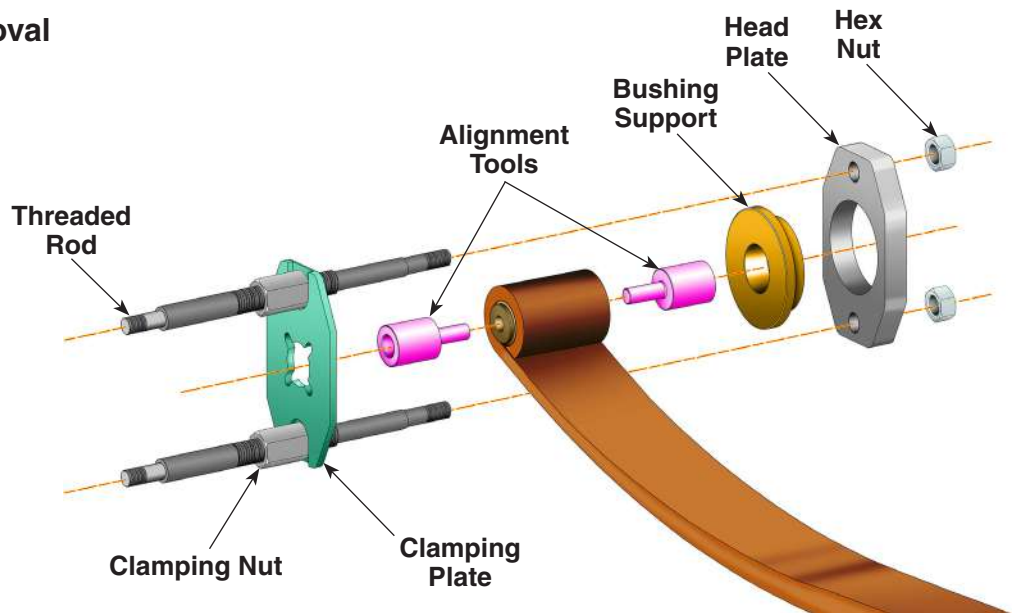


Figure 1

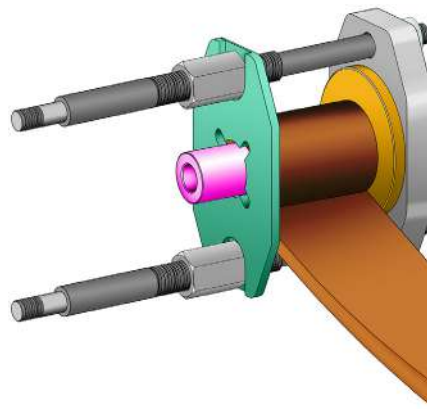
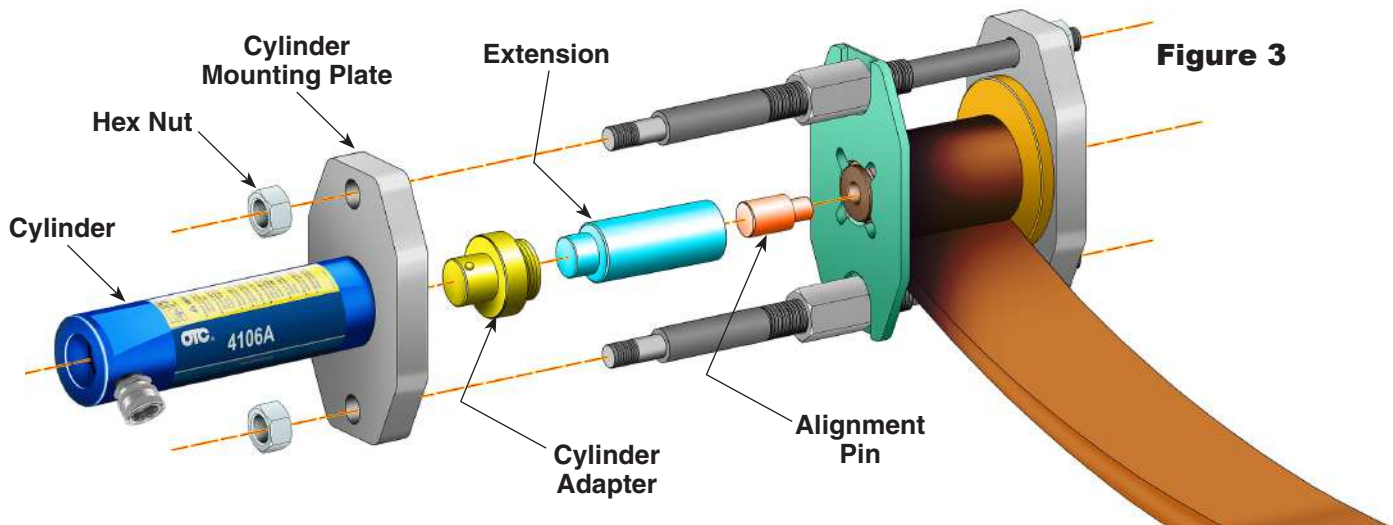


Illustration showing the assembly after steps 1 – 8.

Figure 2

NAVISTAR – Spring Eye Bushing Removal



Spring Eye Bushing Removal contd.

9. Thread the cylinder into the *cylinder mounting plate*. See Figure 3.

⚠ WARNING: To prevent personal injury, the cylinder must be fully threaded into the cylinder mounting plate.

10. Install the cylinder mounting plate onto the end of the threaded rods. Assemble the hex nuts on the threaded rods until they are fully seated and finger tight.

11. Carefully remove the two alignment tools.

12. Insert the cylinder adapter into the head of the cylinder.

13. Insert the extension into the cylinder adapter.

14. Place the alignment pin into the extension.

15. Prepare the hydraulic pump for use by following the instructions provided with the pump regarding hookup, venting, priming, and operation.

⚠ WARNING: To prevent personal injury, pump capacity must not exceed 10,000 psi.

16. Connect the hydraulic hose from the hydraulic pump to the cylinder.

17. Verify all components are aligned. Slowly and carefully operate the pump to extend the cylinder piston rod. Guide the assembly until the alignment pin enters the bushing. Operate the pump until the bushing is driven out of the spring.

⚠ WARNING: To prevent personal injury from possible breakage under pressure, do not stand in the vicinity of the tool while the spring eye bushing is being extracted. It is especially important to not stand in the direction of the hydraulic force.

18. Retract the cylinder piston rod. Spring eye bushing removal is complete. *Note: Do not remove the tool assembly from the spring before installing the new bushing because the alignment would be lost.*

NAVISTAR – Spring Eye Bushing Installation

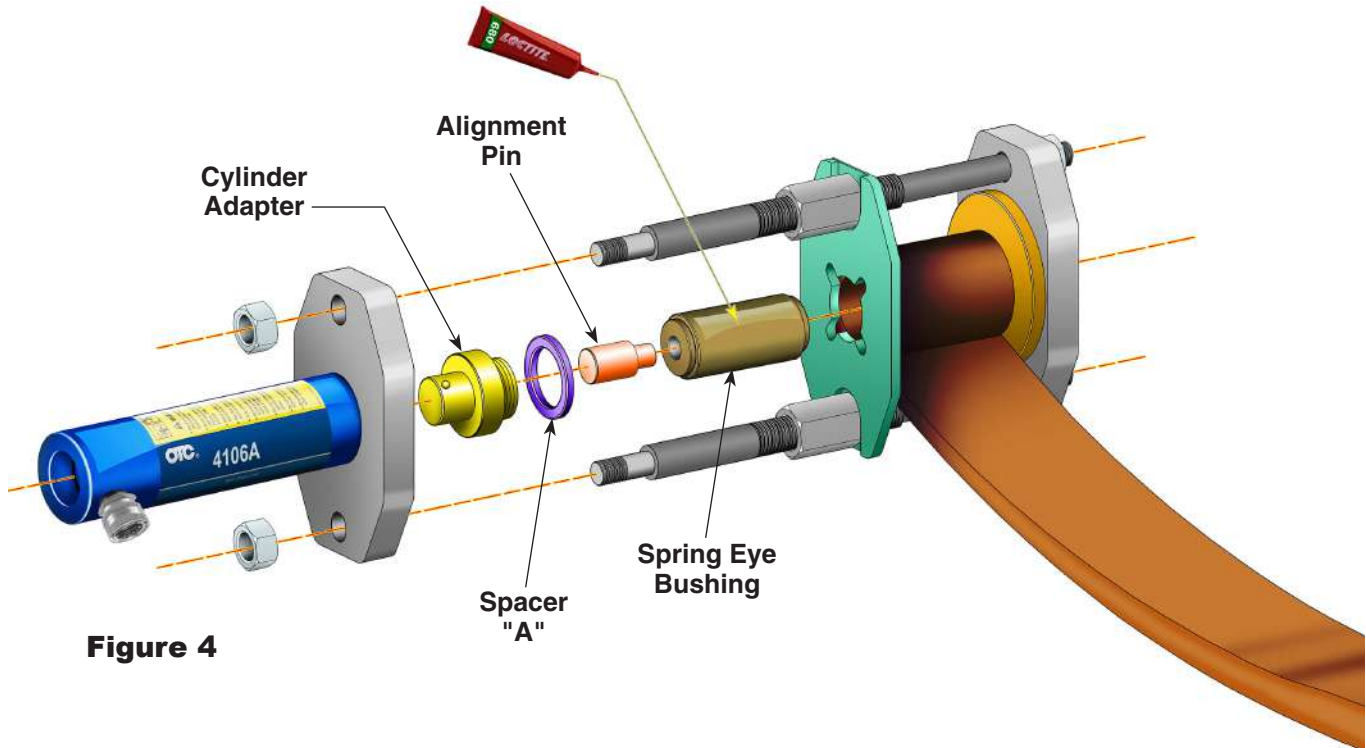


Figure 4

Spring Eye Bushing Installation

1. Remove residual adhesive from the inside diameter of the beam using Hendrickson-approved methods. The cylinder and cylinder mounting plate may be removed to allow easier access to the spring eye.
Note: Do not loosen the clamping nuts, or remove the head or clamping plate, before installing the new bushing because the alignment would be lost.
2. Insert the cylinder adapter into the head of the cylinder as shown in Figure 4.
3. Place spacer "A" over the cylinder adapter.
4. Insert the alignment pin into the cylinder adapter.
5. Clean the outer diameter of the new spring eye bushing and apply Loctite® 680 adhesive, being careful to apply the adhesive to metal only. Do not apply adhesive to the rubber part of the bushing.
6. Place the spring eye bushing over the alignment pin.
7. Operate the pump to extend the cylinder piston rod. Guide the assembly until the bushing contacts the bore of the spring. Check the alignment of the spring eye bushing.

⚠ WARNING: To prevent personal injury, pump capacity must not exceed 10,000 psi.

8. Operate the pump to drive the bushing into the spring. When the spacer contacts the clamping plate, bushing installation is complete.



⚠ WARNING: To prevent personal injury from possible breakage under pressure, do not stand in the vicinity of the tool while the spring eye bushing is being installed. It is especially important to not stand in the direction of the hydraulic force.

9. Wipe away any residual Loctite® 680 adhesive from exposed faces of the bushing, spring, and tools.

PACCAR – Thru-Hole Spring Eye Bushing Removal

PACCAR Thru-Hole Type	577542 Cylinder Adapter	577544 Alignment Tool	577546 Alignment Pin	577560 Bushing Support	577706 Extension	578286 Spacer "A"
	Remove	✓	✓	✓	✓	✓
Install	✓	✓	✓	✓		✓

Spring Eye Bushing Removal

1. Insert the two *alignment tools* into the bushing as shown in Figure 1.
2. Place the *bushing support* over an alignment tool.
3. Place the *head plate* over the bushing support.
4. Place the *clamping plate* over the other alignment tool with the cutouts in the plate facing away from the bushing.
5. Assemble the *clamping nuts* to the *threaded rods*.
6. Insert a threaded rod through the lower holes in the clamping plate and the head plate. Install a *hex nut* on the end of the threaded rod, fully seated and finger tight.
7. Insert a threaded rod through the upper holes in the clamping plate and the head plate. Install a hex nut on the end of the threaded rod, fully seated and finger tight.
8. Tighten the clamping nuts to the clamping plate 1/4 to 1/2 turn past hand tight. See Figure 2.

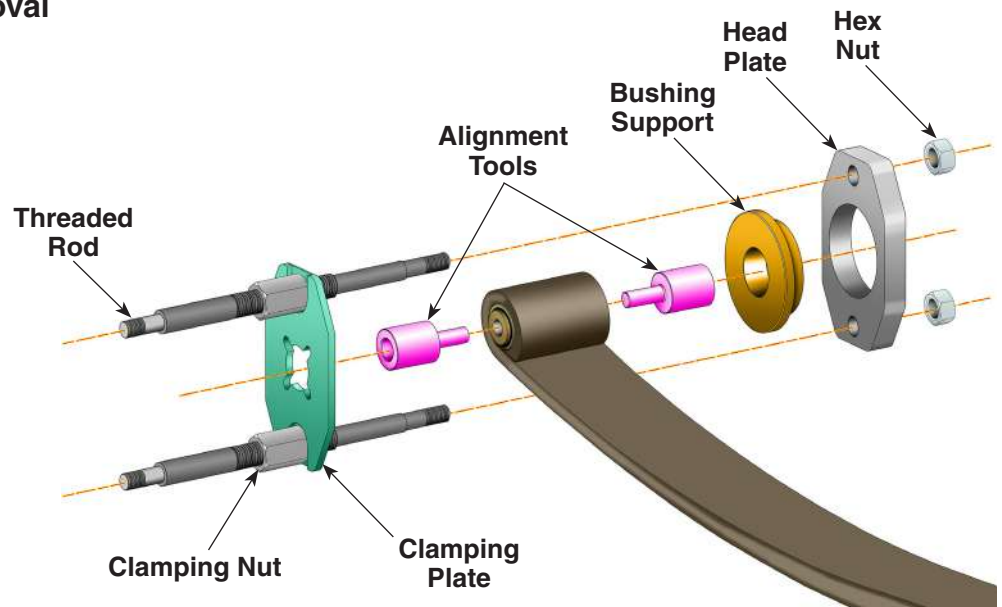


Figure 1

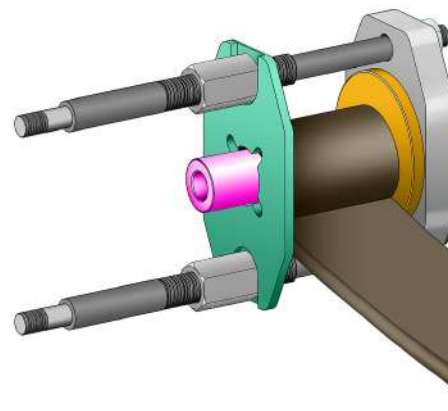
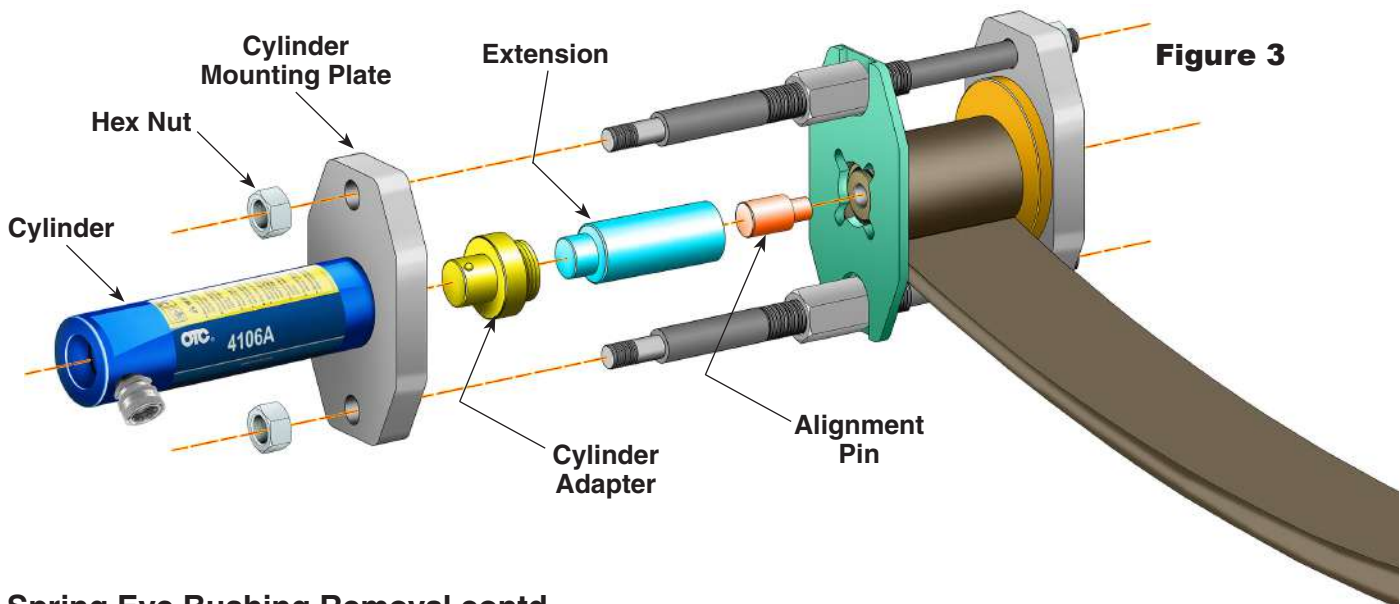


Illustration showing the assembly after steps 1 – 8.

Figure 2

PACCAR – Thru-Hole Spring Eye Bushing Removal



Spring Eye Bushing Removal contd.

9. Thread the cylinder into the *cylinder mounting plate*. See Figure 3.

⚠ WARNING: To prevent personal injury, the cylinder must be fully threaded into the cylinder mounting plate.

10. Install the cylinder mounting plate onto the end of the threaded rods. Assemble the hex nuts on the threaded rods until they are fully seated and finger tight.

11. Carefully remove the two alignment tools.

12. Insert the cylinder adapter into the head of the cylinder.

13. Insert the extension into the cylinder adapter.

14. Place the alignment pin into the extension.

15. Prepare the hydraulic pump for use by following the instructions provided with the pump regarding hookup, venting, priming, and operation.

⚠ WARNING: To prevent personal injury, pump capacity must not exceed 10,000 psi.

16. Connect the hydraulic hose from the hydraulic pump to the cylinder.

17. Verify all components are aligned. Slowly and carefully operate the pump to extend the cylinder piston rod. Guide the assembly until the alignment pin enters the bushing. Operate the pump until the bushing is driven out of the spring.

⚠ WARNING: To prevent personal injury from possible breakage under pressure, do not stand in the vicinity of the tool while the spring eye bushing is being extracted. It is especially important to not stand in the direction of the hydraulic force.

18. Retract the cylinder piston rod. Spring eye bushing removal is complete. *Note: Do not remove the tool assembly from the spring before installing the new bushing because the alignment would be lost.*

PACCAR – Thru-Hole Spring Eye Bushing Installation

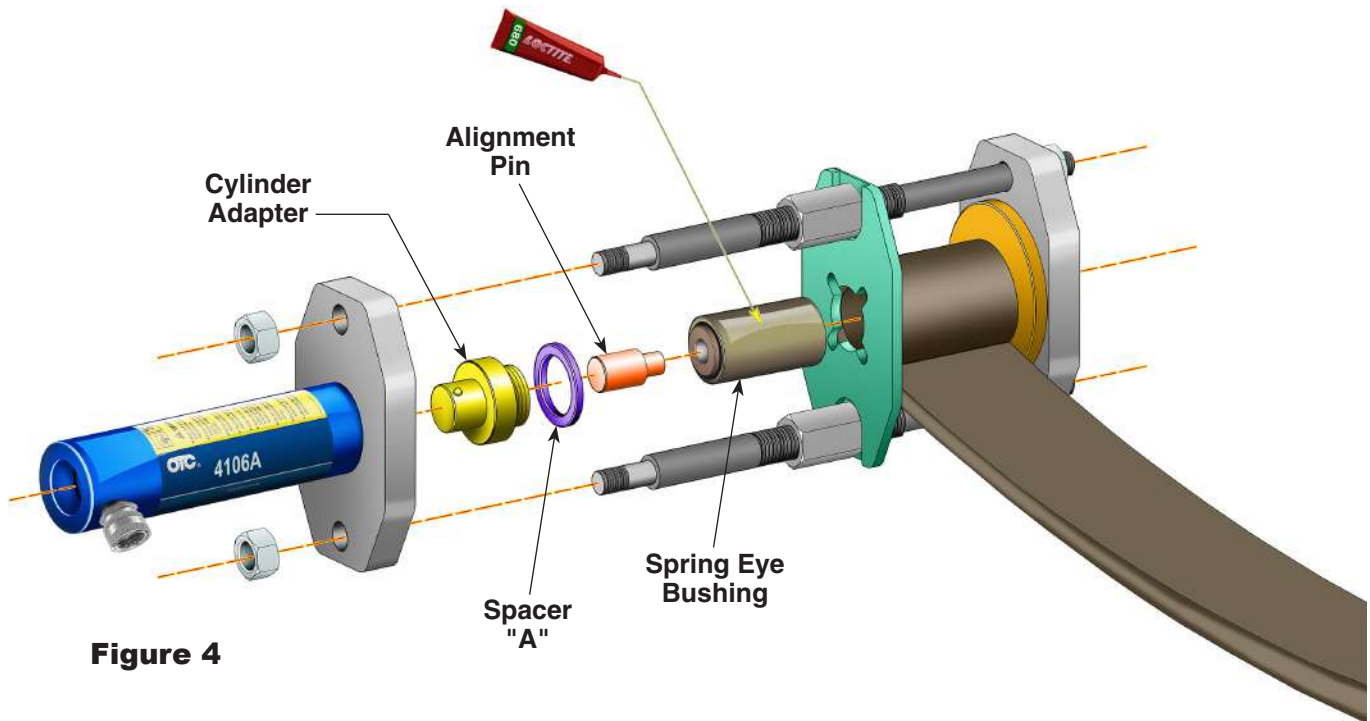


Figure 4

Spring Eye Bushing Installation

1. Remove residual adhesive from the inside diameter of the beam using Hendrickson-approved methods. The cylinder and cylinder mounting plate may be removed to allow easier access to the spring eye. *Note: Do not loosen the clamping nuts, or remove the head or clamping plate, before installing the new bushing because the alignment would be lost.*
2. Insert the cylinder adapter into the head of the cylinder as shown in Figure 4.
3. Place spacer "A" over the cylinder adapter.
4. Insert the alignment pin into the cylinder adapter.
5. Clean the outer diameter of the new bushing and apply Loctite® 680 adhesive, being careful to apply the adhesive to metal only. Do not apply adhesive to the rubber part of the bushing.
6. Install the spring eye bushing over the alignment pin.
7. Operate the pump to extend the cylinder piston rod. Guide the assembly until the bushing contacts the bore of the spring. Check the alignment of the spring eye bushing.

⚠ WARNING: To prevent personal injury, pump capacity must not exceed 10,000 psi.

8. Operate the pump to drive the bushing into the spring. When the spacer contacts the clamping plate, bushing installation is complete



⚠ WARNING: To prevent personal injury from possible breakage under pressure, do not stand in the vicinity of the tool while the spring eye bushing is being installed. It is especially important to not stand in the direction of the hydraulic force.

9. Wipe away any residual Loctite® 680 adhesive from exposed faces of the bushing, spring, and tools.

PACCAR – Bar-Pin Spring Eye Bushing Removal

PACCAR Bar-Pin Type	577542 Cylinder Adapter	577544 Alignment Tool	577560 Bushing Support	577706 Extension	578288 Spacer "B"
	Remove	✓	✓	✓	✓
Install	✓	✓	✓		✓

Spring Eye Bushing Removal

1. Insert the two *alignment tools* into the bushing as shown in Figure 1.
2. Place the *bushing support* over an alignment tool.
3. Place the *head plate* over the bushing support.
4. Place the *clamping plate* over the other alignment tool with the cutouts in the plate facing away from the bushing.
5. Assemble the *clamping nuts* to the *threaded rods*.
6. Insert a threaded rod through the lower holes in the clamping plate and the head plate. Install a *hex nut* on the end of the threaded rod, fully seated and finger tight.
7. Insert a threaded rod through the upper holes in the clamping plate and the head plate. Install a hex nut on the end of the threaded rod, fully seated and finger tight.
8. Tighten the clamping nuts to the clamping plate 1/4 to 1/2 turn past hand tight. See Figure 2.

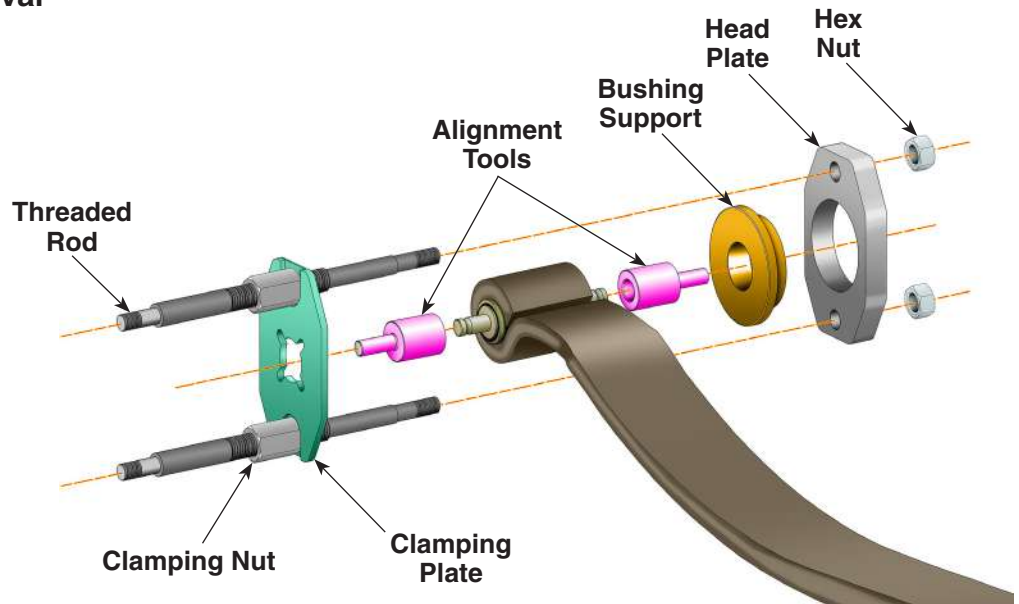


Figure 1

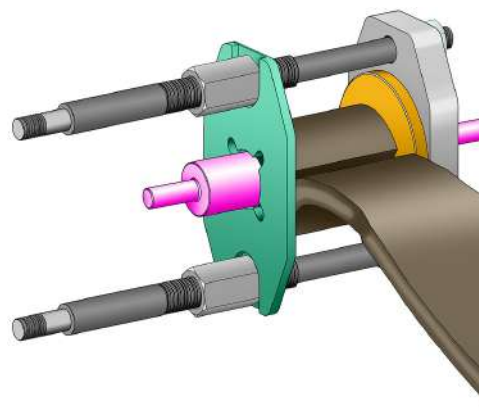
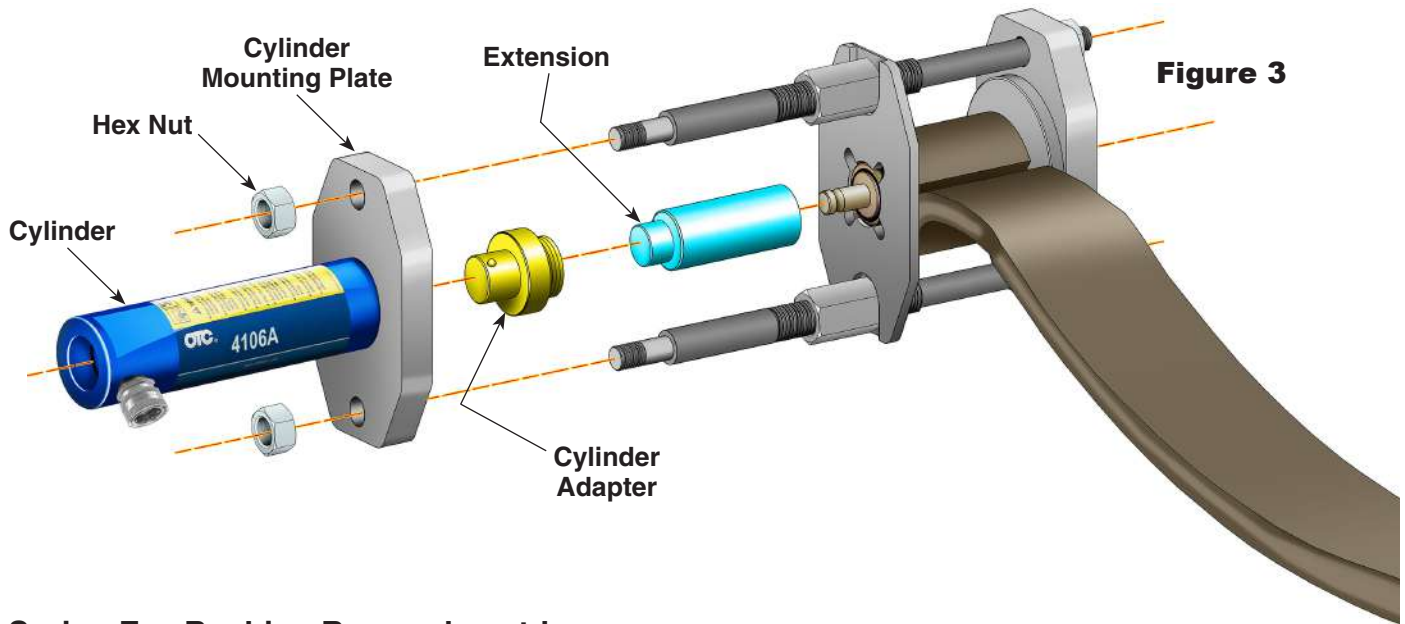


Illustration showing the assembly after steps 1 – 8.

Figure 2

PACCAR – Bar-Pin Spring Eye Bushing Removal



Spring Eye Bushing Removal contd.

9. Thread the cylinder into the *cylinder mounting plate*. See Figure 3.

⚠ WARNING: To prevent personal injury, the cylinder must be fully threaded into the cylinder mounting plate.

10. Install the cylinder mounting plate onto the end of the threaded rods. Assemble the hex nuts on the threaded rods until they are fully seated and finger tight.

11. Carefully remove the two alignment tools.

12. Place the extension over the bushing.

13. Insert the cylinder adapter into the head of the cylinder.

14. Prepare the hydraulic pump for use by following the instructions provided with the pump regarding hookup, venting, priming, and operation.

⚠ WARNING: To prevent personal injury, pump capacity must not exceed 10,000 psi.

16. Connect the hydraulic hose from the hydraulic pump to the cylinder.

17. Verify all components are aligned. Slowly and carefully operate the pump to extend the cylinder piston rod. Guide the assembly until cylinder adapter slips over the end of the extension. Operate the pump until the bushing is driven out of the spring.

⚠ WARNING: To prevent personal injury from possible breakage under pressure, do not stand in the vicinity of the tool while the spring eye bushing is being extracted. It is especially important to not stand in the direction of the hydraulic force.



18. Retract the cylinder piston rod. Spring eye bushing removal is complete. *Note: Do not remove the tool assembly from the spring before installing the new bushing because the alignment would be lost.*

PACCAR – Bar-Pin Spring Eye Bushing Installation

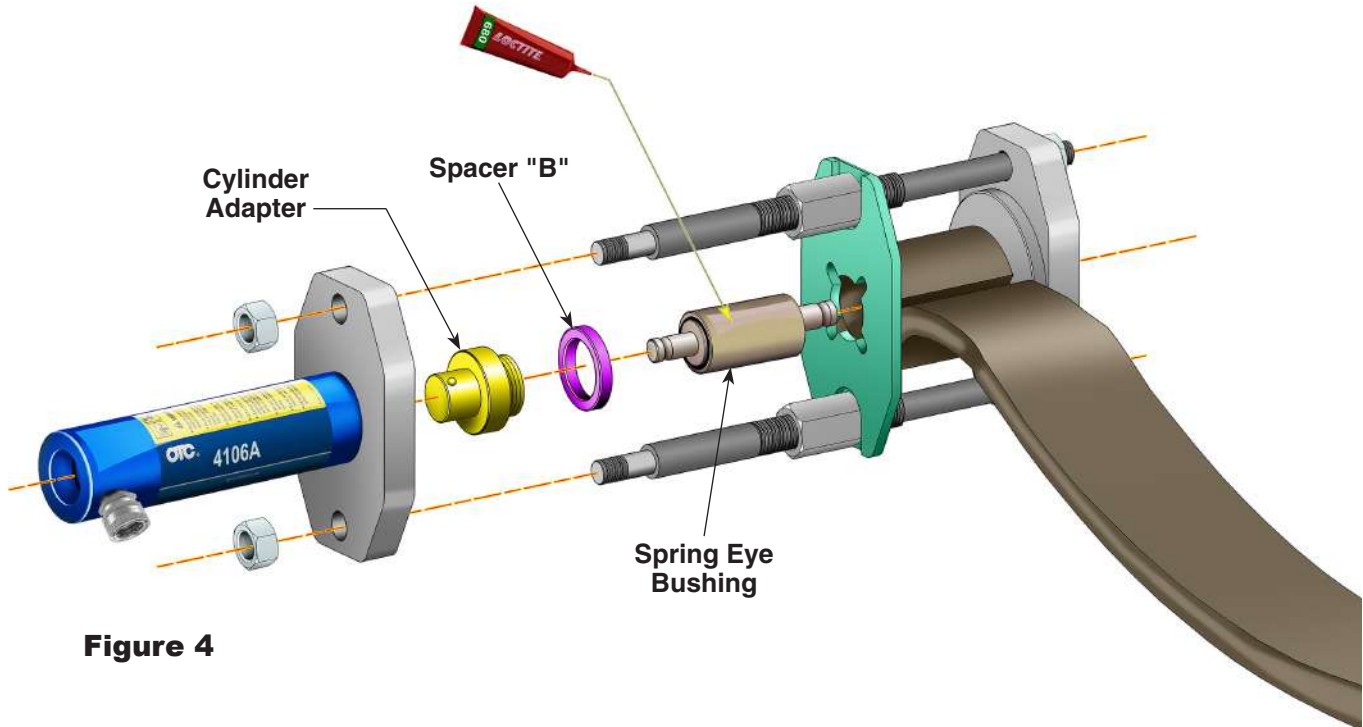


Figure 4

Spring Eye Bushing Installation

1. Remove residual adhesive from the inside diameter of the beam using Hendrickson-approved methods. The cylinder and cylinder mounting plate may be removed to allow easier access to the spring eye. *Note: Do not loosen the clamping nuts, or remove the head or clamping plate, before installing the new bushing because the alignment would be lost.*

2. Insert the cylinder adapter into the head of the cylinder as shown in Figure 4.

3. Place spacer "B" over the cylinder adapter.

4. Clean the outer diameter of the new bushing and apply Loctite® 680 adhesive, being careful to apply the adhesive to metal only. Do not apply adhesive to the rubber part of the bushing.

5. Insert the new spring eye bushing into the cylinder adapter.

6. Operate the pump to extend the cylinder piston rod. Guide the assembly until the bushing contacts the bore of the spring. Check the alignment of the spring eye bushing.

⚠ WARNING: To prevent personal injury, pump capacity must not exceed 10,000 psi.

7. Operate the pump to drive the bushing into the spring. When the spacer contacts the clamping plate, bushing installation is complete.



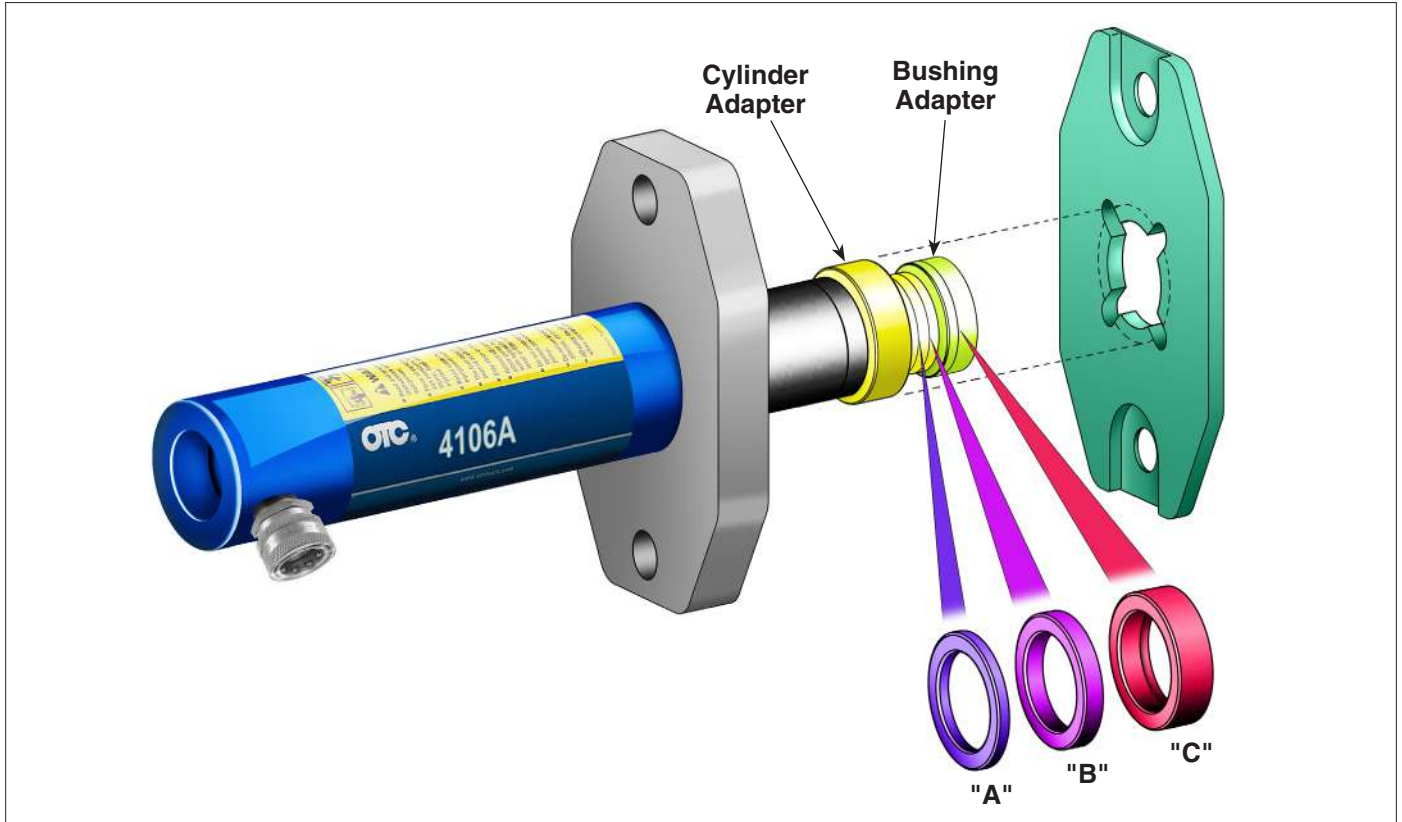
⚠ WARNING: To prevent personal injury from possible breakage under pressure, do not stand in the vicinity of the tool while the spring eye bushing is being installed. It is especially important to not stand in the direction of the hydraulic force.

9. Wipe away any residual Loctite® 680 adhesive from exposed faces of the bushing, spring, and tools.

Tool Information

Use the Cylinder Adapter and the Bushing Adapter as Spacers

The graduation marks on No. 577542 Cylinder Adapter and No. 577882 Bushing Adapter match the thicknesses of the three spacers ("A", "B", and "C"). If the spacer needed for an application is not available, the graduation marks may be used to monitor bushing depth during installation.



Application	Graduation Mark
Navistar Thru-Hole Type Spring Eye Bushing	A
Paccar Thru-Hole Type Spring Eye Bushing	A
Paccar Bar-Pin Type Spring Eye Bushing	B
Volvo Spring Eye Bushing	C

Adapter Kits

The chart below outlines the Hendrickson Suspension Tool packages and Adapter Kits available for specific Hendrickson applications. If you currently own one tool package, consider purchasing adapter kits for other specific applications.

Hendrickson Tool Package Part No.		No. 2510A Air/Hyd. Pump (w/ hose & coupler)	No. 4263 Bare Tool	Hendrickson Adapter Kits available		
				No. 4250 (Volvo, Navistar, and Paccar)	No. 4254 (Comfort Air, Primaxx EX, and FCCC V-Ride)	No. 4255 (AIRTEK NXT [rear bushing only])
4246	Tool Packages include items marked w/ ✓		✓		✓	
4247		✓	✓		✓	
4261		✓	✓			✓
4274			✓	✓		
4275		✓	✓	✓		

Inspection and Maintenance



CAUTION: To prevent personal injury,

- Only qualified personnel shall perform inspections to this Hendrickson Front Suspension Bushing Tool.
- Before each use, an approved inspector must inspect the suspension bushing tool for bends, cracks, dents, elongated holes, or missing hardware. If damage is found, discontinue use.
- Use only those repair parts called out in the parts list in this document. Items found in the parts list have been carefully tested and selected by OTC.

Maintenance

To prevent contamination from entering the hydraulic system and damaging the cylinder, keep the cylinder clean. When the cylinder is not in use, keep the piston rod fully retracted and stored upside down. Use protective covers on disconnected quick couplers.

Disposal

At the end of its useful life, dispose of the suspension bushing tool according to federal, state, and local regulations.