

SECTION 211-02: Power Steering
REMOVAL AND INSTALLATION

2014 F-150 Workshop Manual
Procedure revision date: 10/25/2013

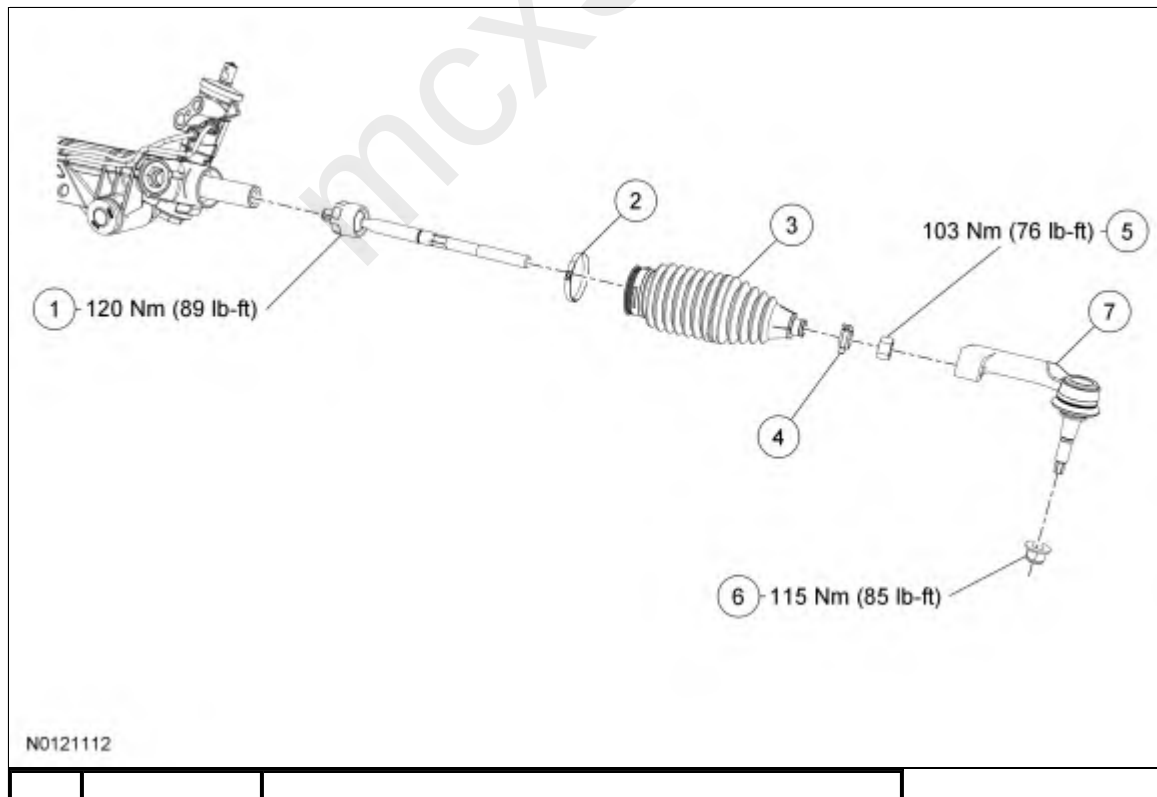
Inner Tie Rod

Special Tool(s)

 ST1525-A	Boot Clamp Pliers 205-D067 (D87P-1098-A) or equivalent
 ST2945-A	Separator, Ball Joint Tool 204-592

Material

Item	Specification
Premium Long-Life Grease XG-1-C or XG-1-K (US); CXG-1-C (Canada)	ESA-M1C75- B



Item	Part Number	Description
1	3280	Inner tie rod
2	—	Inner bellows boot clamp (part of 3332 service kit)
3	—	Steering gear bellows boot (part of 3332 service kit)
4	—	Outer bellows boot clamp (part of 3332 service kit)
5	W712367	Tie-rod jam nut
6	W520215	Outer tie-rod end nut
7	3A130	Outer tie-rod end

Removal

NOTICE: The steering gear boots and clamps are designed to produce an airtight seal and protect the internal components of the steering gear. If the seal is not airtight, the vacuum generated during turning will draw water and foreign material into the gear, causing damage. Zip ties do not provide an airtight seal and must not be used.

NOTICE: When servicing inner tie rods, a new bellows boot and clamps must be installed or a leak may occur causing steering gear damage.

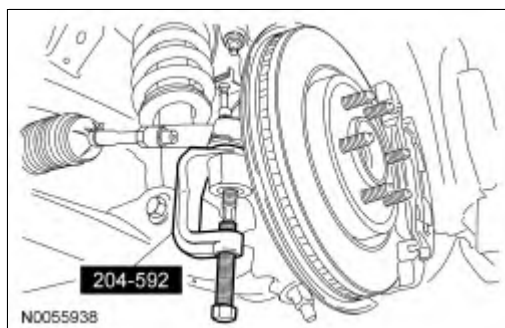
NOTICE: The inner tie-rod ball joint grease is not compatible with water. Water trapped in the grease will damage the joint.

1. **NOTICE:** For vehicles equipped with Electronic Power Assist Steering (EPAS), disconnect the negative battery cable anytime the steering linkage is being serviced or damage to the steering gear internal power relay may occur resulting in steering gear replacement.

If equipped with Electronic Power Assist Steering (EPAS), disconnect the battery ground cable. For additional information, refer to [Section 414-01](#).

2. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to [Section 100-02](#).
3. Loosen the tie-rod jam nut.
4. Remove and discard the outer tie-rod end nut.
5. **NOTICE:** Use care when installing the Ball Joint Tool Separator or damage to the tie-rod end boot may occur.

Using the Ball Joint Tool Separator, separate the outer tie-rod end from the wheel knuckle.



6. **NOTE:** Note the number of times the outer tie-rod ends turn for reference during assembly.

Remove the outer tie-rod end.

7. Remove the tie-rod jam nut from the inner tie rod.

8. **NOTE:** New bellows boot clamps must be installed.

Remove and discard the inner and outer bellows boot clamps.

9. Remove and discard the steering gear bellows boot.

10. **NOTE:** Place the steering gear at the center position. Use an appropriate-sized crowfoot wrench on the flat of the rack gear to resist rotation and to prevent damage during removal and installation of the inner tie rod.

NOTE: If repairing the RH side, it will be necessary to pull back the LH inner tie-rod boot to hold the steering gear.

NOTE: An assistant may be needed for removal of the RH inner tie rod.

While holding the steering gear rack, use an appropriate-sized crowfoot wrench to remove the inner tie rod.

11. Thoroughly clean and inspect all the parts to be reused. Install new parts as necessary.

Installation

1. **NOTICE:** Place the steering gear at the center position. Use an appropriate-sized crowfoot wrench on the flat of the rack gear to resist rotation and to prevent damage during the installation of the inner tie rod.

NOTE: An assistant may be needed for installation of the RH inner tie rod.

Using an appropriate-sized crowfoot wrench, install the inner tie rod.

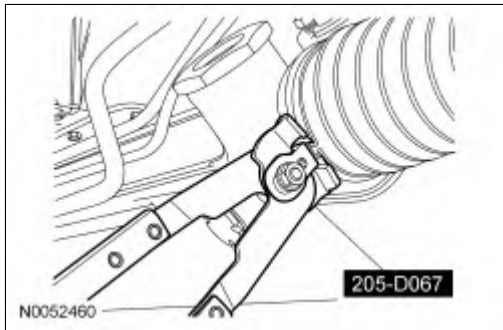
- Tighten to 120 Nm (89 lb-ft).

2. **NOTE:** Apply the specified grease to the bellows boot groove on the inner tie rod.

NOTE: Make sure the steering gear bellows boot is positioned correctly over the steering gear housing bead and the groove in the inner tie rod.

Install the new steering gear bellows boot.

3. Using the Boot Clamp Pliers, install a new inner bellows boot clamp.



4. **NOTE:** Make sure the end of the steering gear bellows is positioned between the 2 grooves on the inner tie rod or an internal leak can result.

Install a new outer bellows boot clamp.

5. Thread the tie-rod jam nut onto the inner tie rod.
6. **NOTE:** Install the outer tie-rod end the same number of turns as recorded during the removal.

Install the outer tie-rod end.

7. **NOTICE:** Make sure that the tie-rod end boots are seated correctly on the tie-rod ends or failure may occur.

Connect the outer tie-rod end to the wheel knuckle and install a new tie-rod end nut.

- Tighten the new nut to 115 Nm (85 lb-ft).
8. Tighten the tie-rod jam nut.
- Tighten to 103 Nm (76 lb-ft).
9. Check and if necessary, adjust the front toe. For additional information, refer to [Section 204-00](#).
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