



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

ODI RESUME

OFFICE OF DEFECTS INVESTIGATION



Investigation: EA23003
Prompted By: PE23-005
Date Opened: 11/29/2023
Investigator: Stefanie Oldenburg **Reviewer:** Sharon Yukevich
Approver: Tanya Topka
Subject: Momentary Increased Steering Effort

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: Honda (American Honda Motor Co.)
Products: 2022-2023MY Honda Civic, 2023MY Honda CR-V, 2023MY Acura Integra
Population: 532,535 (Estimated)
Problem Description: Vehicle steering can stick and cause a momentary increase in steering effort that could potentially cause overcorrection and an increased risk of a crash

FAILURE REPORT SUMMARY

	ODI	Manufacturer	EWR D&I	Other	Total	EWR Field Reports
All Incidents:	523	804	0	0	1,324*	CONF
Crashes/Fires:	13	1	0	0	14	0
Injury Incidents:	3	0	0	0	3	0
Number of Injuries:	3	0	0	0	3	0
Fatality Incidents:	0	0	0	0	0	0

Description of Other:

*Total eliminates duplicates received by the manufacturer

ACTION/SUMMARY INFORMATION

Action: An Engineering Analysis (EA) has been opened.

Summary:

On March 17, 2023, The Office of Defects Investigation (ODI) opened Preliminary Evaluation (PE23-005) to access the alleged defect of momentary increase in steering effort in model years (MY) 2022 and 2023 Honda Civic vehicles. The complaints report that the momentary increase in steering effort (described as

"sticky steering") occurs mostly at highway speeds after driving for a certain amount of time. The reports have been received over the past 2 years with most occurring with low vehicle mileage.

The steering gear contains a unit that includes a worm gear and a worm wheel. Honda stated this condition of momentary increase in steering effort occurs due to two factors within this unit. During manufacturing, the worm wheel goes through annealing and component conditioning processes. These processes caused internal stress and strain within the worm wheel. This strain was slowly released over the first few months of the vehicle life. Over time, the released strain caused the deformation of the teeth on the worm wheel, causing the worm gear to catch on the worm wheel. This results in the consumer's momentary increased in steering effort. Also, the manufacturing process did not guarantee consistent grease application and therefore, some vehicles within the scope received too little grease which contributes to the momentary increase in steering effort.

Analysis of all relevant data indicates that the subject condition occurs early in the vehicle's life primarily in winter months. Additionally, the subject vehicles need to be driven in a straight line for a period of time, possibly until the vehicle is warmed up, to recreate the condition. The condition does not illuminate a malfunction indicator light (MIL). Some complaints allege Honda dealerships are unable to recreate the condition or state this is a normal vehicle operation. However, Honda released Service Bulletin 23-037 in July of 2023 which accurately describes the condition. To address this issue, Honda directs dealerships to remove the electronic power steering (EPS) gearbox and replace with a new gearbox. Further, Honda stated that the worst case steering effort from all warranty returned parts test was 2.4 pounds.

ODI complaint traffic remains steady. ODI has received 13 crashes to date, 11 of which allege roadway departure due to not being able to overcome the momentary increased steering effort prior to their vehicle leaving the roadway. The remaining 2 incidents claim overcorrection of the steering wheel.

This Engineering Analysis has been opened to further assess the scope, frequency and potential safety related consequences of the momentary increase of steering effort. Further the scope has been expanded to include assessment of the Acura Integra and Honda CR-V models.

To review the ODI reports cited in the Opening Resume ODI Report Identification Number document, go to [NHTSA.gov](https://www.nhtsa.gov).



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OPENING RESUME ODI REPORT IDENTIFICATION NUMBERS

Investigation ID: EA23003

Date Opened: 11/29/2023

Subject: Momentary Increased Steering Effort

List of 523 ODI Report reference numbers:

11464979, 11465169, 11492103, 11492258, 11493181, 11494265, 11494599, 11494669, 11494833, 11495044, 11495425, 11495691, 11495709, 11495724, 11495940, 11495984, 11495985, 11496002, 11496062, 11496361, 11496416, 11496542, 11496638, 11496779, 11496824, 11496837, 11496854, 11496927, 11497252, 11497374, 11497488, 11497555, 11497793, 11497823, 11497897, 11497932, 11498000, 11498281, 11498375, 11498413, 11498482, 11498650, 11498734, 11498764, 11498868, 11498873, 11499277, 11499306, 11499389, 11499440, 11499462, 11499563, 11499897, 11499935, 11499976, 11500055, 11500060, 11500114, 11500390, 11500416, 11500439, 11500555, 11500558, 11500636, 11500638, 11500649, 11500905, 11501134, 11501318, 11501389, 11501541, 11501607, 11501870, 11501920, 11502763, 11502842, 11502917, 11502974, 11503014, 11503165, 11503328, 11503519, 11503632, 11503733, 11503956, 11503999, 11504088, 11504284, 11504287, 11504335, 11504406, 11504548, 11504617, 11504718, 11504736, 11505113, 11505140, 11505268, 11505431, 11505576, 11505602, 11505695, 11505720, 11505776, 11505791, 11505862, 11505874, 11506115, 11506129, 11506520, 11506569, 11506699, 11506874, 11507066, 11507143, 11507155, 11507161, 11507316, 11507529, 11507593, 11507621, 11507767, 11507888, 11507955, 11508019, 11508245, 11508263, 11508409, 11508600, 11508632, 11508785, 11509254, 11509298, 11509301, 11509352, 11509646, 11509895, 11509968, 11510135, 11510478, 11510479, 11510914, 11511120, 11511384, 11511400, 11511623, 11511700, 11511787, 11511813, 11511901, 11512111, 11512496, 11512795, 11512955, 11512968, 11512995, 11513017, 11513019, 11513025, 11513055, 11513082, 11513084, 11513085, 11513110, 11513126, 11513128, 11513137, 11513140, 11513154, 11513160, 11513164, 11513175, 11513212, 11513223, 11513243, 11513277, 11513288, 11513313, 11513314, 11513326, 11513334, 11513348, 11513352, 11513361, 11513368, 11513379, 11513393, 11513397, 11513435, 11513466, 11513489, 11513490, 11513503, 11513534, 11513553, 11513560, 11513561, 11513565, 11513663, 11513702, 11513724, 11513729, 11513766, 11513788, 11513813, 11513873, 11513876, 11513880, 11514077, 11514092, 11514117, 11514134, 11514145, 11514259, 11514264, 11514286, 11514347, 11514391, 11514409, 11514488, 11514490, 11514666, 11514796, 11514882, 11514908, 11514980, 11515070, 11515302, 11515376, 11515455, 11515703, 11515759, 11515806, 11515838, 11515847, 11515881, 11515887, 11515898, 11516077, 11516120, 11516168, 11516409, 11516609, 11516656, 11516678, 11516806, 11516994, 11517085, 11517160, 11517180, 11517429, 11517568, 11517840, 11518044, 11518053, 11518113, 11518519, 11518560, 11518575, 11518796, 11519138, 11519187, 11519589, 11519656, 11519894, 11519904, 11519993, 11520540, 11520541, 11520562, 11520918, 11520968, 11521125, 11521139, 11521317, 11521321, 11521335, 11521464, 11521527, 11521554, 11521700, 11521866, 11522232, 11522386, 11522604, 11523061, 11523104, 11523421, 11524063, 11524158, 11524233, 11524506, 11524620, 11524813, 11525123, 11525321, 11525525, 11525557, 11525575, 11525597, 11525700, 11525748, 11525885, 11526032, 11526640, 11527121, 11527476, 11527780, 11528636, 11528674,

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11525700, 11525748, 11525885, 11526032, 11526640, 11527121, 11527476, 11527780, 11528636, 11528674, 11529523, 11529910, 11530089, 11530090, 11530309, 11530463, 11530495, 11530825, 11531109, 11531705, 11531778, 11532207, 11533290, 11533563, 11533764, 11536811, 11536884, 11536976, 11537077, 11537640, 11537678, 11538419, 11538771, 11539740, 11540610, 11540629, 11540696, 11541016, 11541685, 11542356, 11542649, 11542760, 11542821, 11543640, 11544006, 11544007, 11544407, 11544517, 11544581, 11545001, 11545081, 11545100, 11545106, 11545257, 11545766, 11545876, 11546026, 11546075, 11546103, 11546125, 11546275, 11546621, 11546731, 11546742, 11546815, 11547042, 11547066, 11547199, 11547239, 11547384, 11547570, 11547647, 11547659, 11547725, 11547835, 11547847, 11547884, 11547898, 11548027, 11548029, 11548030, 11548059, 11548112, 11548372, 11548530, 11548557, 11548590, 11548655, 11548751, 11548988, 11549019, 11549077, 11549258, 11549301, 11549525, 11549781, 11549841, 11549851, 11549948, 11550003, 11550012, 11550077, 11550104, 11550143, 11550182, 11550226, 11550375, 11550508, 11550532, 11550716, 11550759, 11550902, 11550918, 11550919, 11550966, 11550981, 11551031, 11551054, 11551084, 11551117, 11551149, 11551184, 11551237, 11551246, 11551253, 11551264, 11551271, 11551297, 11551301, 11551308, 11551381, 11551416, 11551633, 11551640, 11551643, 11551655, 11551684, 11551721, 11551753, 11551756, 11551797, 11551835, 11551948, 11551953, 11551957, 11552037, 11552134, 11552171, 11552189, 11552207, 11552260, 11552264, 11552315, 11552340, 11552390, 11552398, 11552429, 11552437, 11552439, 11552481, 11552486, 11552622, 11552723, 11552783, 11552947, 11552966, 11552994, 11553060, 11553177, 11553367, 11553371, 11553481, 11553509, 11553543, 11553544, 11553547, 11553588, 11553598, 11553625, 11553659, 11554217, 11554273, 11554275, 11554360, 11554415, 11554423, 11554445, 11554465, 11554527, 11554613, 11554798, 11555059, 11555063, 11555117, 11555177, 11555205, 11555344, 11555398, 11555400, 11555461, 11555467, 11555489, 11555544, 11555548, 11555551, 11555566, 11555570, 11555577, 11555579, 11555633, 11555777, 11555792, 11555848, 11555860, 11555881, 11555992, 11556047, 11556153, 11556163, 11556318, 11556320, 11556352, 11556368

July 6, 2023

Version 1

2022–23 Civic EPS Gearbox Replacement

AFFECTED VEHICLES

Year	Model	Trim	VIN Range
2022	CIVIC	ALL	ALL
2023	CIVIC	ALL Except Type R	ALL

SYMPTOM

Steering effort complaint while driving at moderate or highway speeds, with possible complaint of noise at slow speeds, and no MIL illuminated or DTC stored.

POSSIBLE CAUSE

There is a possible steering gearbox malfunction.

CORRECTIVE ACTION

Remove the EPS gearbox assembly and replace with a new gearbox. Keep the original EPS motor/control unit with the new gearbox.

PARTS INFORMATION

Part Name	Part Number	Quantity
Gearbox (4-door Si)	53640-T22-305	1
Gearbox (4-door, 5-door, LX, EX, EX-T)	53640-T21-306	1
Gearbox (4-door, 5-door, Touring, Sport)	53640-T21-305	1
Flange Bolt (12X75)	90161-SX8-T00	4
Washer Bolt (14X85)	90179-T20-A01	4
Flange Bolt (12X30)	90174-T20-A01	2
Flange Bolt (10X20)	90165-THR-A00	4
Washer Bolt (14X45)	90163-TGH-A01	2
Flange Bolt (14X105)	90175-TRW-A00	1

CUSTOMER INFORMATION: The information in this bulletin is intended for use only by skilled technicians who have the proper tools, equipment, and training to correctly and safely maintain your vehicle. These procedures should not be attempted by “do-it-yourselfers,” and you should not assume this bulletin applies to your vehicle, or that your vehicle has the condition described. To determine whether this information applies, contact an authorized Honda automobile dealer.

Part Name	Part Number	Quantity
Flange Bolt (14X33)	90164-T20-A00	5
Washer Bolt (14X85)	90130-T20-A00	1
Flange Bolt (14X35)	90181-TBA-A00	2
Flange Bolt (14X80)	90108-T20-A00	3
Split Pin (3.0X22)	94201-30220	2
Washer Bolt (10X25)	90159-TBA-A00	3
Self-Lock Nut (12mm)	90215-SB0-003	6
Flange Nut (10mm)	90002-S10-000	2

WARRANTY CLAIM INFORMATION

The normal warranty applies.

Civic Si

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
5131C0	Replace the EPS gearbox and transfer motor. Includes steering neutral position relearn, DTC clear and alignment.	1.9 hr	03001	03217	A23037A	53640-T22-305

Civic 4-door and 5-door LX, EX, EX-T

Operation Number	Description	Flat rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
5131C0	Replace the EPS gearbox and transfer motor. Includes steering neutral position relearn, DTC clear and alignment.	1.9 hr	03001	03217	A23037B	53640-T21-306

Civic 4-door and 5-door Touring, Sport

Operation Number	Description	Flat Rate Time	Defect Code	Symptom Code	Template ID	Failed Part Number
5131C0	Replace the EPS gearbox and transfer motor. Includes steering neutral position relearn, DTC clear and alignment.	1.9 hr	03001	03217	A23037C	53640-T21-305

REPAIR PROCEDURE

Refer to Service Information for a more in-depth power steering gearbox removal repair procedure.

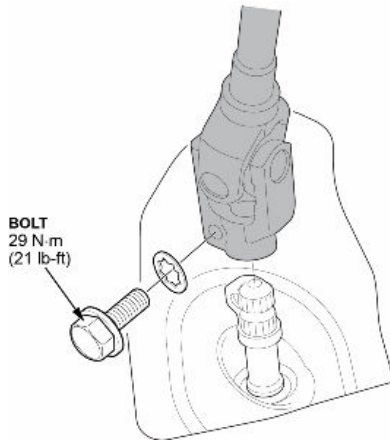
1. Disconnect the 12 volt battery terminal.
2. Raise the vehicle to a comfortable working height.

NOTE: **Keep** the vehicle elevated for the remainder of the procedure.

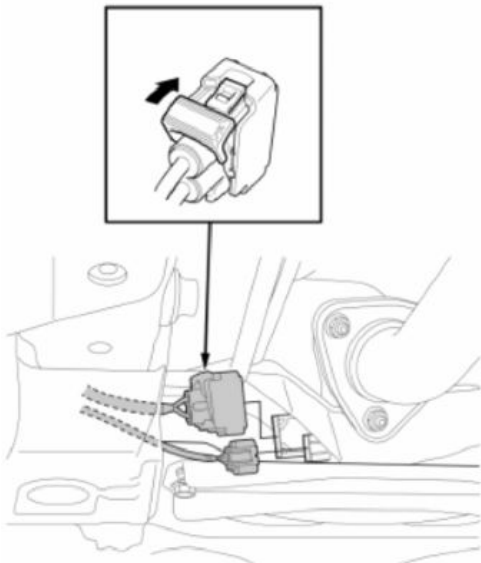
3. Remove the front wheels.
4. Disconnect the steering joint.

NOTE:

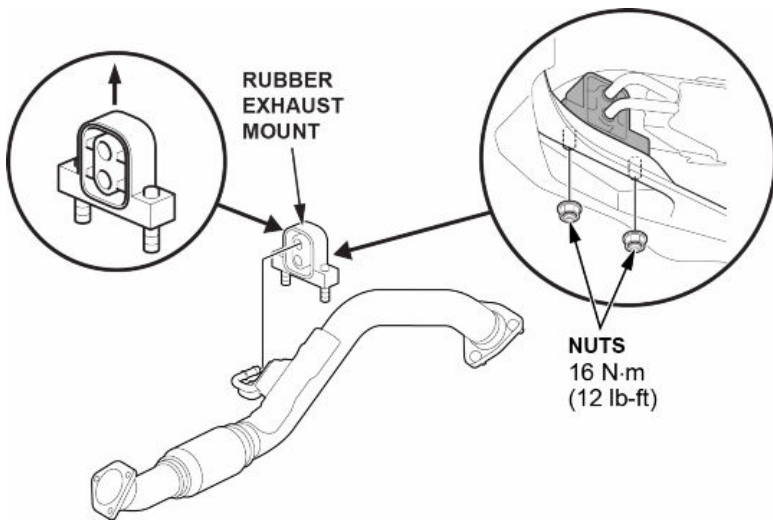
- Set the steering wheel straight ahead before disconnecting the shaft.
- **Do not turn** the steering wheel while disconnecting the steering joint.



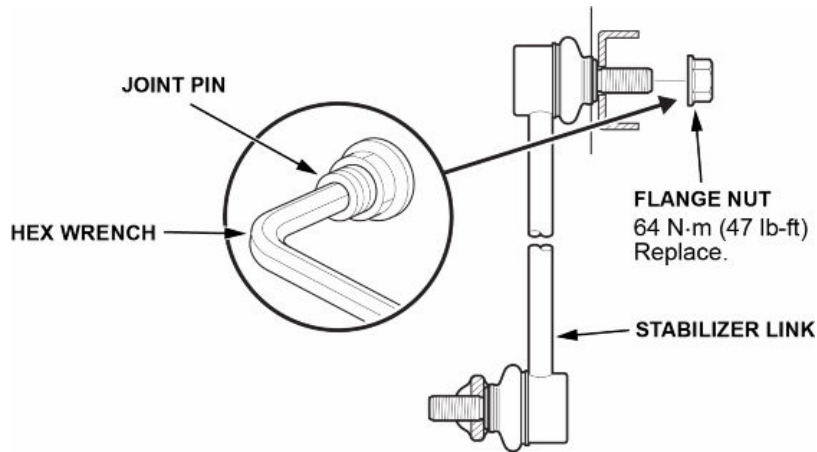
5. Remove the engine undercover.
6. Disconnect the EPS harness connectors.



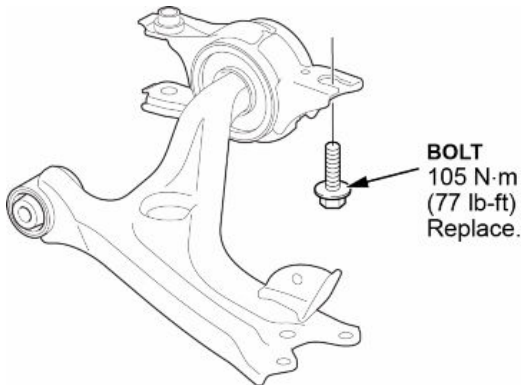
7. Remove the rubber exhaust mount.



8. Disconnect the stabilizer links located on top.



9. Remove the front lower assembly bolt (both sides).



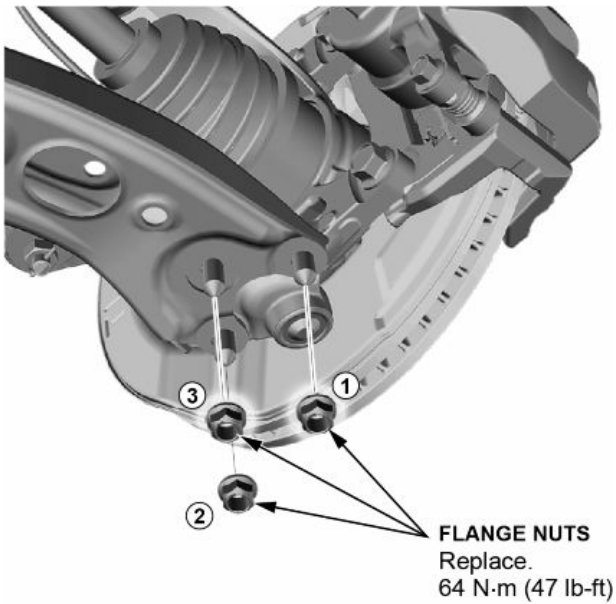
10. Loosen the outer tie-rod end nut (both sides).



OUTER TIE-ROD NUT

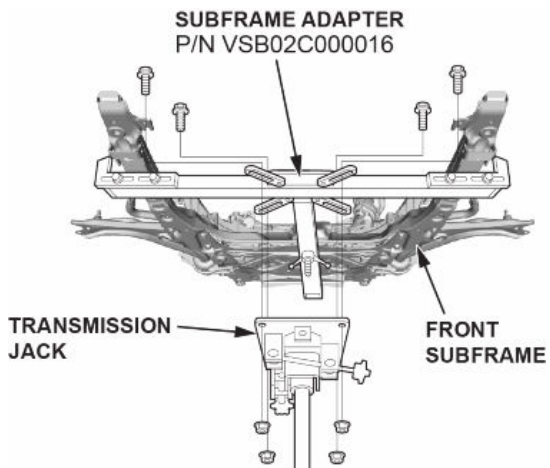
11. Disconnect the front lower arms.

NOTE: During reassembly, loosely install the new flange nuts, then tighten them to the specified torque in the numbered sequence shown.

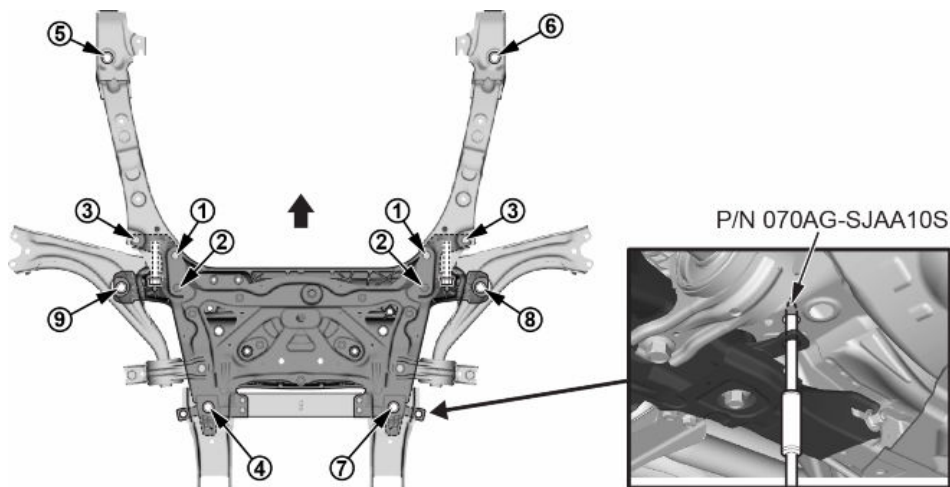


12. Remove the engine torque rod front bolt.

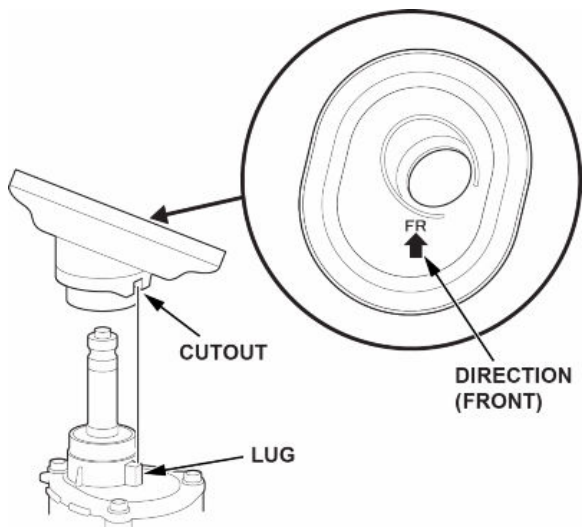
13. Attach the subframe adapter to the front subframe.



14. Raise a transmission jack and line up the slots in the subframe adapter arms with the bolt holes on the transmission jack base, then securely attach the four bolts.

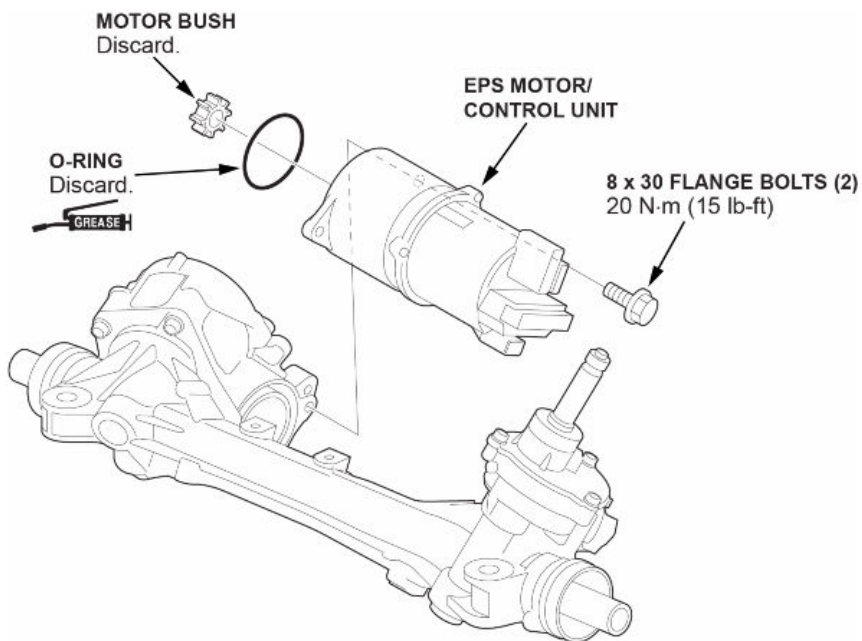


15. Remove the front subframe.
16. Transfer the tie rod ends to the replacement gearbox.
17. Transfer the steering shaft boot to the replacement gearbox.



18. Remove the steering gearbox from the subframe.

19. Separate the EPS motor/control unit from the removed rack and retain for installation on the new gearbox.



20. Install new O-ring (the O-ring is kitted in the new gearbox) to the EPS motor/control unit.

NOTE:

- Apply steering grease or equivalent to the O-ring.
- Discard the motor bush.

21. Install the EPS motor/control unit, but do not install the mounting bolts.

22. Turn the EPS motor/control unit **two or three times** to both the **left and right** in a **45° arc** as shown below.



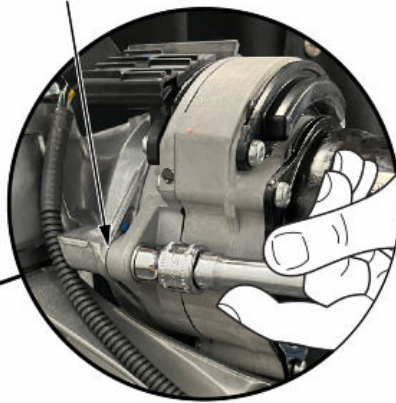
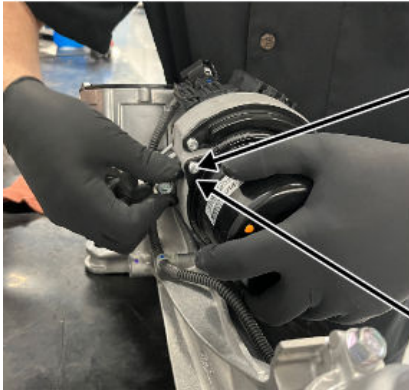
EPS MOTOR CONTROL UNIT
Turn unit two or three times to the right and left (about 45 degrees).

23. Loosely install the EPS motor/control unit mounting bolts by hand but do not fully torque them yet.

NOTE:

- To prevent damaging the motor and/or gearbox, **DO NOT** use power tools to install or tighten the bolts.
- Make sure the EPS motor/control unit is evenly seated on the P/S gearbox.

EPS MOTOR/CONTROL UNIT
Make sure unit is evenly seated.

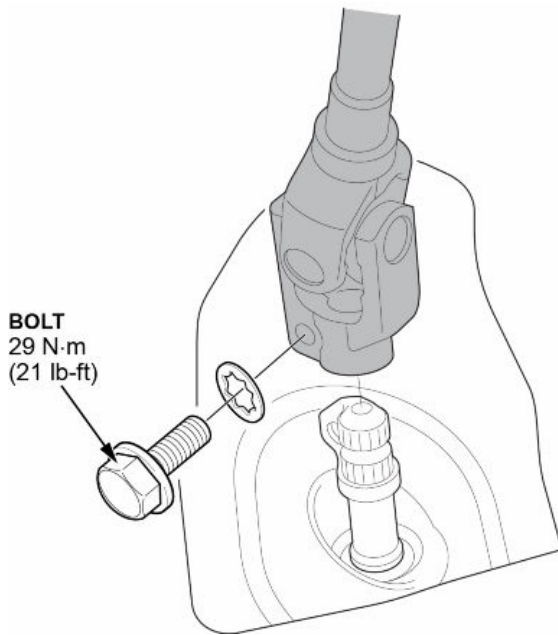


24. Torque the EPS motor/control unit mounting bolts to **20 N·m (15 lb-ft)**.

25. Install the new P/S gearbox with the EPS motor onto the subframe, and reassemble in the reverse order of removal.

26. Install the subframe, see the service information for proper installation and torque specs.

27. Install the pinion shaft to the steering joint **29 N·m (21 lb-ft)**.



28. Install all removed parts in the reverse order of removal.

29. With the front wheels set straight ahead, make sure the steering wheel is centered.

30. Make sure the turning revolutions from center to full lock (left and right) are equal.

NOTE: **If not**, check the installation of the steering wheel and the engagement of the joint/pinion shaft splines.

31. With the tires raised, check for noise and abnormality by turning the steering wheel **fully** to the **right and left** several times.

32. Confirm the EPS provides power assist.

33. Check that the EPS indicator does not come on.

34. Do a wheel alignment.

35. Do the VSA Sensor Neutral Position Memorization.

36. Park the vehicle on a flat and level surface.

37. Connect HDS to the DLC.

38. Turn the vehicle to the ON mode, but do not start the engine.

39. Set the steering wheel in the straight ahead position.

40. Select the **ADJUSTMENT** from the **ABS/TCS/VSA** menu with the HDS, then select **ALL SENSOR**, and follow the screen prompts.

END