SERVICE BULLETIN

MITSUBISHI MOTORS

GLOBAL AFTER SALES OFFICE, MITSUBISHI MOTORS CORPORATION

PURPOSE : INFORMATION	ISSUE NO. : MSB-13EXL37-001	DATE : 2013-04-19
SUBJECT : DISASSEMBLY AND REASSEMBLY OF A POWER STEERING GEAR BOX		<Destination/Model> (AS SHOWN BELOW) KA0T/KB0T/KH8W <M/Y> 06-14
GROUP : POWER STEERING		

1. Description :

See the attached document for the information about the change of mention in the applicable service manual.

2. Applicable service manual :

See the attached document

3. Details :

See the attached document

※ **Applicable destination : EUR/RUSSIA/G.EXP/GCC/MMAL/NZ/THAILAND/MEXICO/SOUTH AFRICA/BRAZIL/SINGAPORE/KOREA/ARGENTINA**

※ **About the applicable manual for SINGAPORE and KOREA, please see the service manual for "EXP/GCC"**

For overseas market

Destination	Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
EU	2007 L200 Workshop Manual	CCRE07E1-CD(Eng)	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-110-44900-01)	Attached sheet 3
	2007.5 L200 Workshop Manual	CCRE07E2-CD(Eng) CCRS07E2-CD(Spa) CCRF07E2-CD(Fre) CCRG07E2-CD(Ger)		
EU/ RUSSIA	2009 L200 Workshop Manual	CCRE09E1-CD(Eng) CCRS09E1-CD(Spa) CCRF09E1-CD(Fre) CCRG09E1-CD(Ger) CCRI09E1-CD(Ita) RUSSIA:N/A	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-18500-01)	Attached sheet 4
	2010 L200 Workshop Manual	CCRE10E1-CD(Eng) CCRS10E1-CD(Spa) CCRF10E1-CD(Fre) CCRG10E1-CD(Ger) CCRI10E1-CD(Ita) RUSSIA:N/A	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-46400-01)	Attached sheet 5
	2011 L200 Workshop Manual	CCRE11E1-CD(Eng) CCRS11E1-CD(Spa) CCRF11E1-CD(Fre) CCRG11E1-CD(Ger) CCRI11E1-CD(Ita) RUSSIA:N/A	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-54900-01)	Attached sheet 6 (Attached sheet 5)
	2012 L200 Workshop Manual	CCRE12E1-CD (Eng) CCRS12E1-CD (Spa) CCRF12E1-CD (Fra) CCRG12E1-CD (Ger) CCRI12E1-CD (Ita) RUSSIA:N/A		
	2013 L200 Workshop Manual	CCRE13E1-CD (Eng) CCRS13E1-CD (Spa) CCRF13E1-CD (Fra) CCRG13E1-CD (Ger) CCRI13E1-CD (Ita) RUSSIA:N/A	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-66800-01)	
	2014 L200 Workshop Manual	CCRE14E1-CD (Eng) CCRS14E1-CD (Spa) CCRF14E1-CD (Fra) CCRG14E1-CD (Ger) CCRI14E1-CD (Ita) RUSSIA:N/A	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-79800-01)	Attached sheet 7
EXP/GCC	2007 L200 Workshop Manual	PWTE0603R-1(Eng) PWTS0604R-1(Spa)	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-110-61000-01)	Attached sheet 8
	2008 L200 Workshop Manual	PWTE0703R(Eng) PWTS0704R(Spa)	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-110-61001-01)	Attached sheet 9
EXP/GCC/ MEXICO	2009 L200 Workshop Manual	PWTE0806R(Eng) PWTS0807R(Spa) MEXICO:DRAFT	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-00000-01)	Attached sheet 10
	2010 L200 Workshop Manual	PWTE0903R(Eng) PWTS0904R(Spa) MEXICO:DRAFT	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-28200-01)	Attached sheet 11 (Attached sheet 10)
	2011 L200 Workshop Manual	PWTE1002R(Eng) PWTS1003R(Spa) MEXICO:DRAFT	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-28201-01)	
THAI	2006 TRITON Workshop Manual	DRAFT	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY	Attached sheet 12

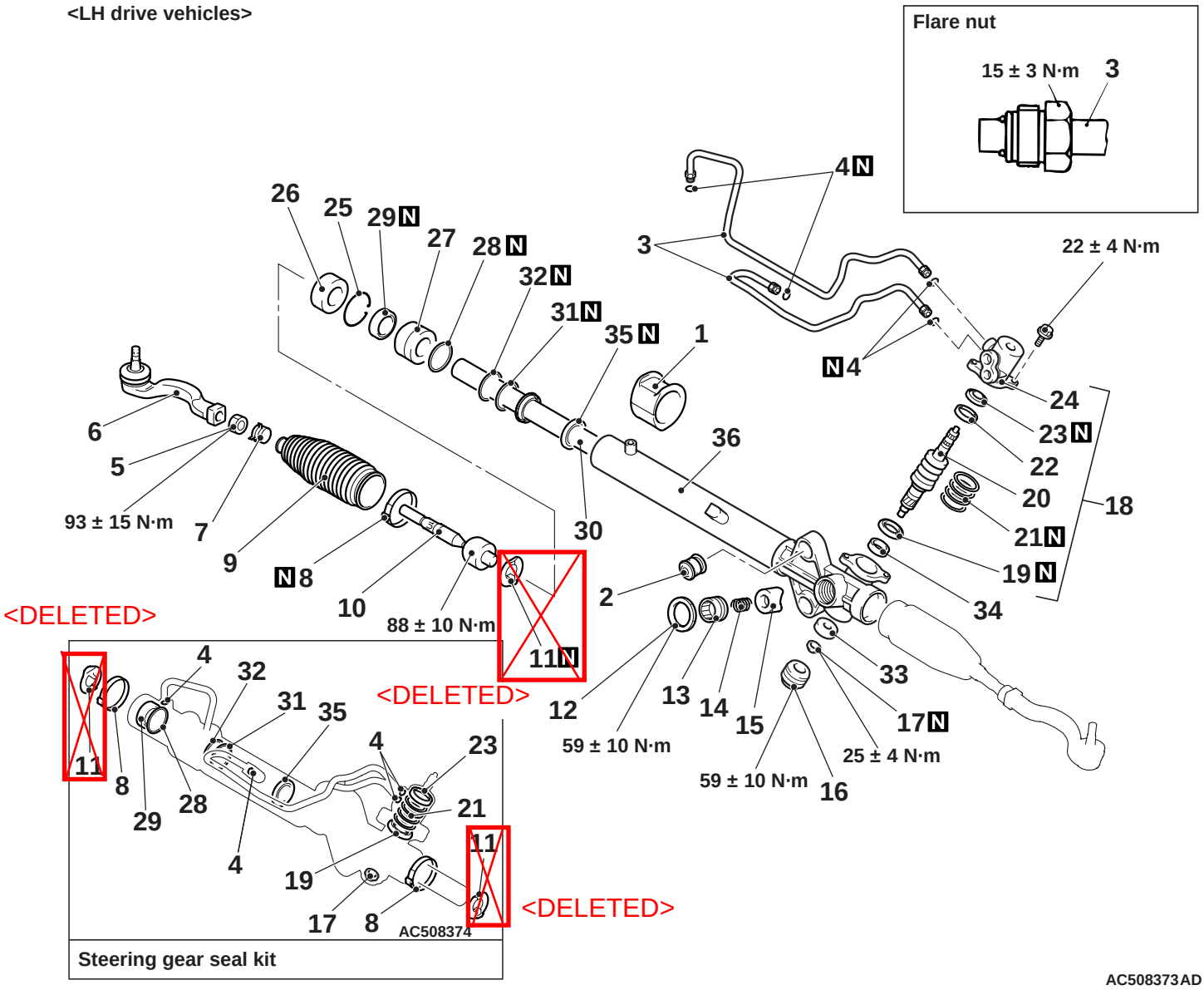
Destination	Applicable manual	Pub. No.	Applicable title (INFO ID)	Contents
			(M372-01-110-38600-01)	
	2008 TRITON Workshop Manual	DRAFT	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-110-64300-01)	Attached sheet 13
	2009 TRITON Workshop Manual	DRAFT	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-21501-01)	Attached sheet 14
	2010 TRITON Workshop Manual	DRAFT		
MMAL	2007 TRITON Workshop Manual	MR936105	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-110-50200-01)	Attached sheet 15
	2007.5 TRITON Workshop Manual	MR936245	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-110-66500-01)	
MMAL/NZ	2008 TRITON Workshop Manual	MR936232 NZ:DRAFT	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-110-58002-01)	Attached sheet 16
	2009 TRITON Workshop Manual	MR936476 NZ:DRAFT	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-23700-01)	
	2010 TRITON Workshop Manual	MR936949 NZ:DRAFT	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-23701-01)	
EXP/GCC/ RUSSIA/ THAI/ MMAL/NZ ※1	2009 PAJERO SPORT Workshop Manual	PWJE0808R-2(Eng) PWJS0809R-2(Spa) RUSSIA:N/A THAI/NZ:DRAFT MMAL:DRAFT BRAZIL/SOUTH AFRICA/MEXICO:DRAFT	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-24800-01)	Attached sheet 17
	2010 PAJERO SPORT Workshop Manual	PWJE0910R(Eng) PWJS0911R(Spa) MMAL:MR936972 RUSSIA:N/A THAI/NZ:DRAFT BRAZIL/SOUTH AFRICA/MEXICO: DRAFT	POWER STEERING GEAR BOX AND LINKAGE DISASSEMBLY AND REASSEMBLY (M372-01-111-44200-01)	Attached sheet 18 (Attached sheet 17)
	2011 PAJERO SPORT Workshop Manual	PWJE1004R(Eng) PWJS1005R(Spa) MMAL:AU900055 RUSSIA:N/A THAI/NZ/DRAFT BRAZIL/SOUTH AFRICA/MEXICO: DRAFT		

※ 1: BRAZIL, SOUTH AFRICA, ARGETINA, MEXICO

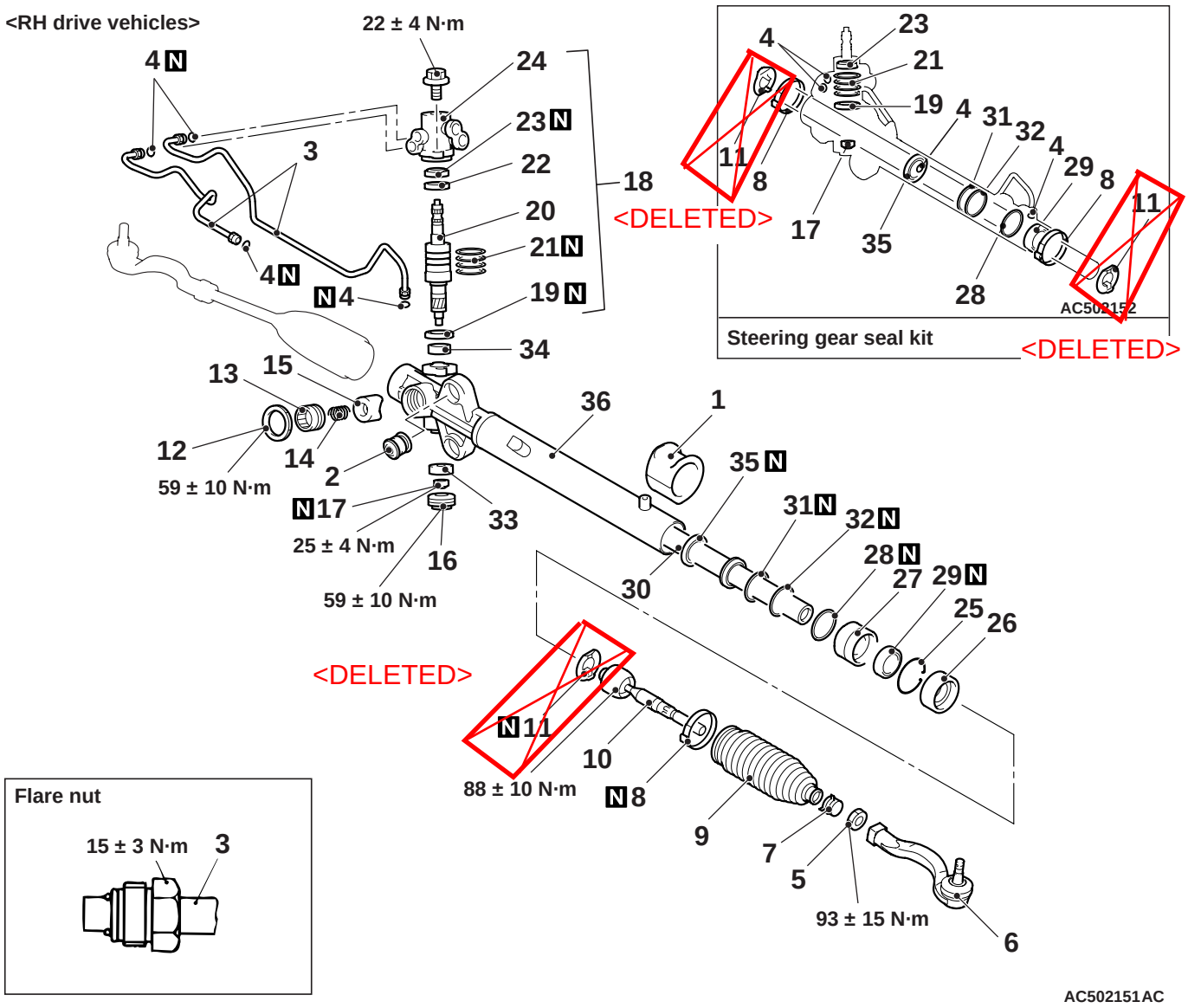
Attached sheet 3 (1/4)

DISASSEMBLY AND REASSEMBLY

M1372011100449



Attached sheet 3 (2/4)



Disassembly steps

>>O<<	1.	Gear mounting rubber
	2.	Gear housing mounting bushing
	3.	Feed pipe
	4.	O-ring
>>N<<	5.	Lock nut
>>N<<	6.	Tie rod end
	7.	Clip
>>M<<	8.	Bellows band
	9.	Bellows
~~>>L<<~~	~~10.~~	~~Tie rod~~
~~>>L<<~~	~~11.~~	~~Tab washer~~ <DELETED>
>>K<<	•	Total pinion torque adjustment
>>J<<	12.	Lock nut
<<A>> >>J<<	13.	Rack support cover
	14.	Support spring
	15.	Rack support
>>I<<	16.	End plug
	17.	Lock nut

Disassembly steps (Continued)

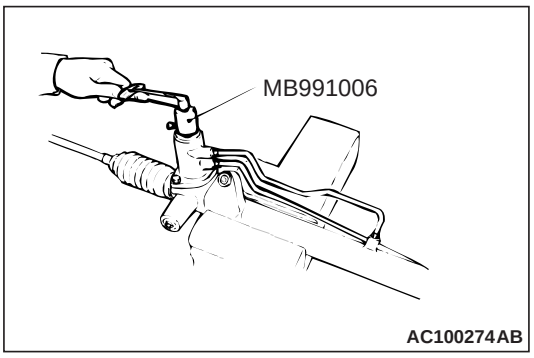
	18.	Valve housing assembly
<<B>> >>H<<	19.	Lower oil seal
<<B>>	20.	Pinion and valve assembly
<<C>> >>G<<	21.	Seal ring
<<D>> >>F<<	22.	Upper bearing
<<D>> >>F<<	23.	Upper oil seal
	24.	Valve housing
<<E>> >>E<<	25.	Circlip
<<F>>	26.	Rack stopper
<<F>> >>D<<	27.	Rack bushing assembly
<<F>> >>D<<	28.	O ring
<<F>> >>D<<	29.	Oil seal
<<F>> >>C<<	30.	Rack assembly
<<C>>	31.	Seal ring
	32.	O-ring
<<G>> >>B<<	33.	Lower bearing
<<H>> >>B<<	34.	Needle bearing
<<I>> >>A<<	35.	Oil seal
	36.	Gear housing

Attached sheet 3 (3/4)
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>>K<< TOTAL PINION TORQUE ADJUSTMENT

⚠ CAUTION

- **Be sure there is no ratcheting or catching when operating the rack towards the shaft.**
- **Measure the total pinion torque through the whole stroke of the rack.**



1. Using special tool preload socket (MB991006), rotate the pinion shaft at the rate of one rotation in four to six seconds to check the total pinion torque and the change in torque.

   Standard value:
   Total pinion torque: 0.6 – 1.7 N·m
   [Change in torque: 0.4 N·m or less]

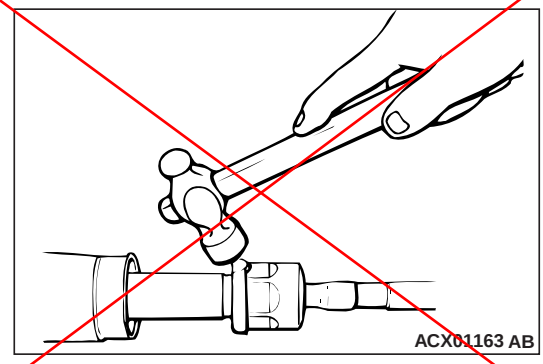
⚠ CAUTION

When adjusting, set at the highest value of the standard value range.

NOTE: If the total pinion toque cannot be adjusted to the standard value within the specified return angle, check the rack support cover components and replace any parts if necessary.

2. If the total pinion torque or the change in torque is outside the standard value, move the rack support cover 0 – 30°, and adjust the pinion torque again.

>>L<< TAB WASHER/TIE ROD INSTALLATION

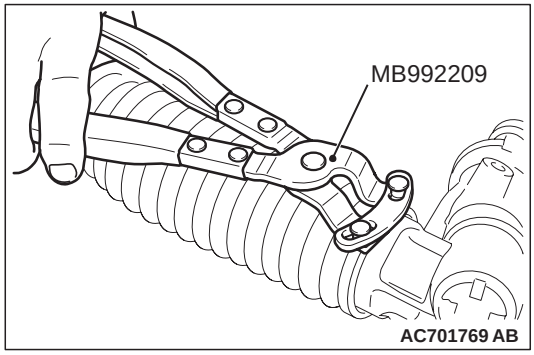


After installing the tie rod to the rack, fold tab washer end (two locations) to tie rod notch.

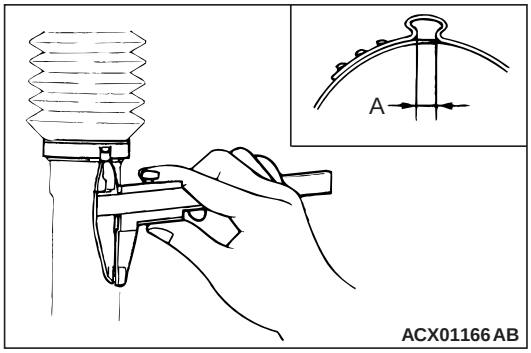
>>M<< BELLOWS BAND INSTALLATION

⚠ CAUTION

- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**



1. Use special tool (MB992209) to crimp the bellows band.

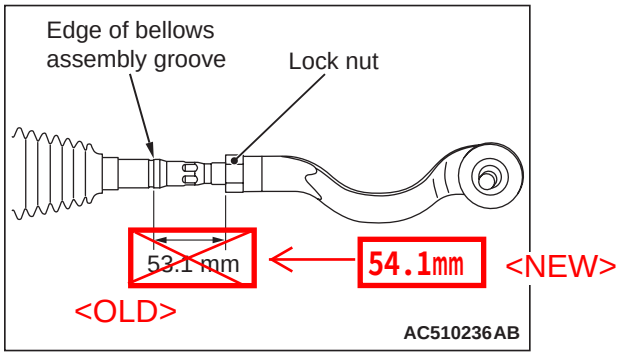


2. Check that crimped width (A) is within the standard value.

   Standard value (A): 2.4 – 2.8 mm

Attached sheet 3 (4/4)

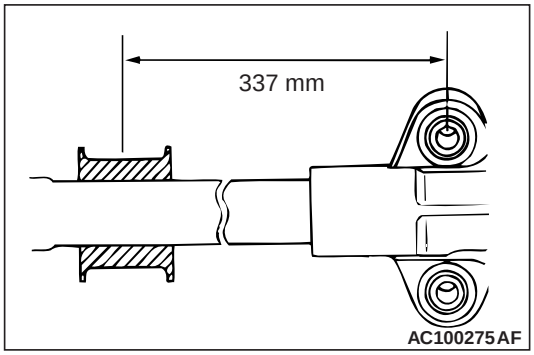
>>N<< TIE ROD END/LOCK NUT INSTALLATION



Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

>>O<< GEAR MOUNTING RUBBER INSTALLATION

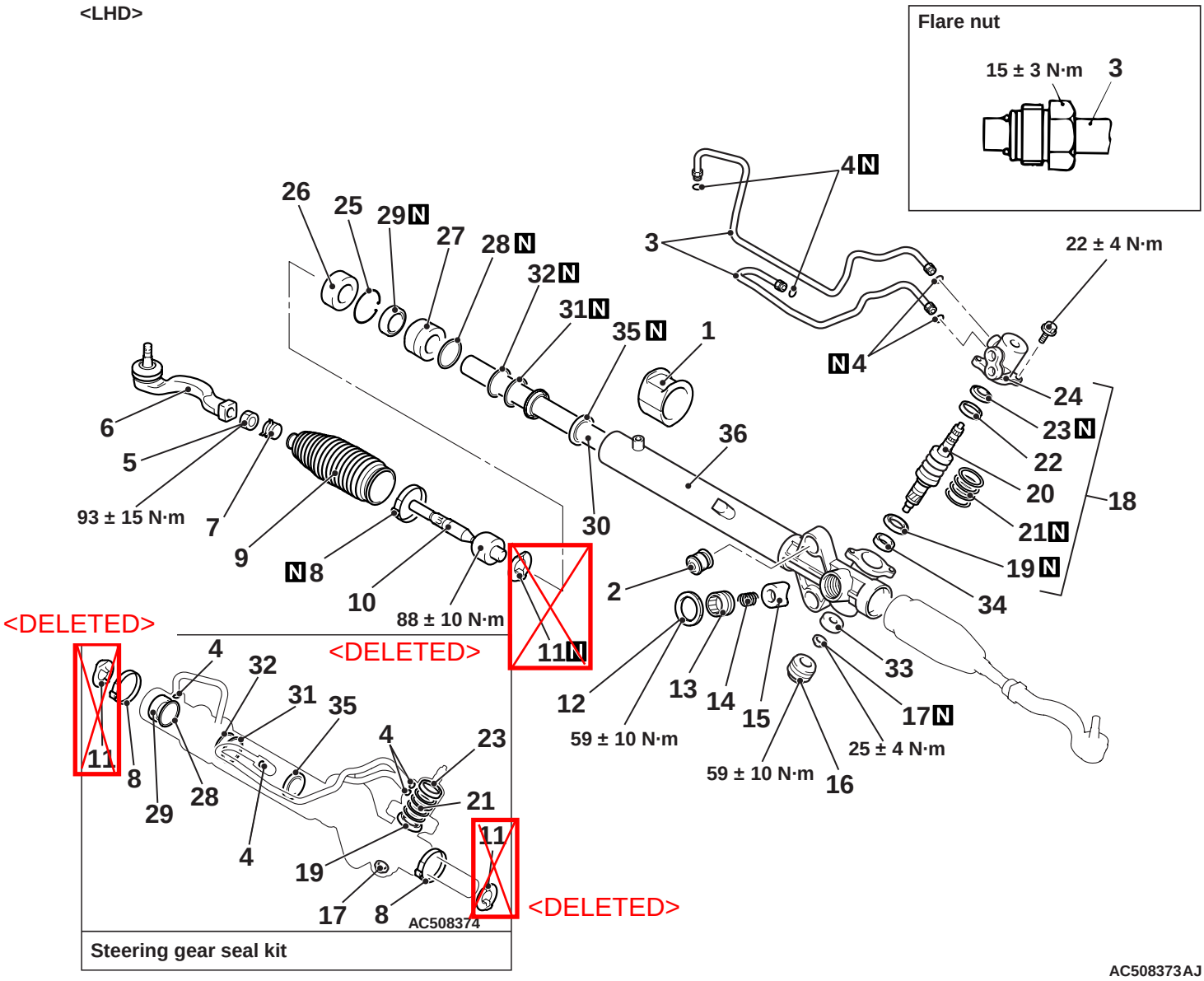


Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

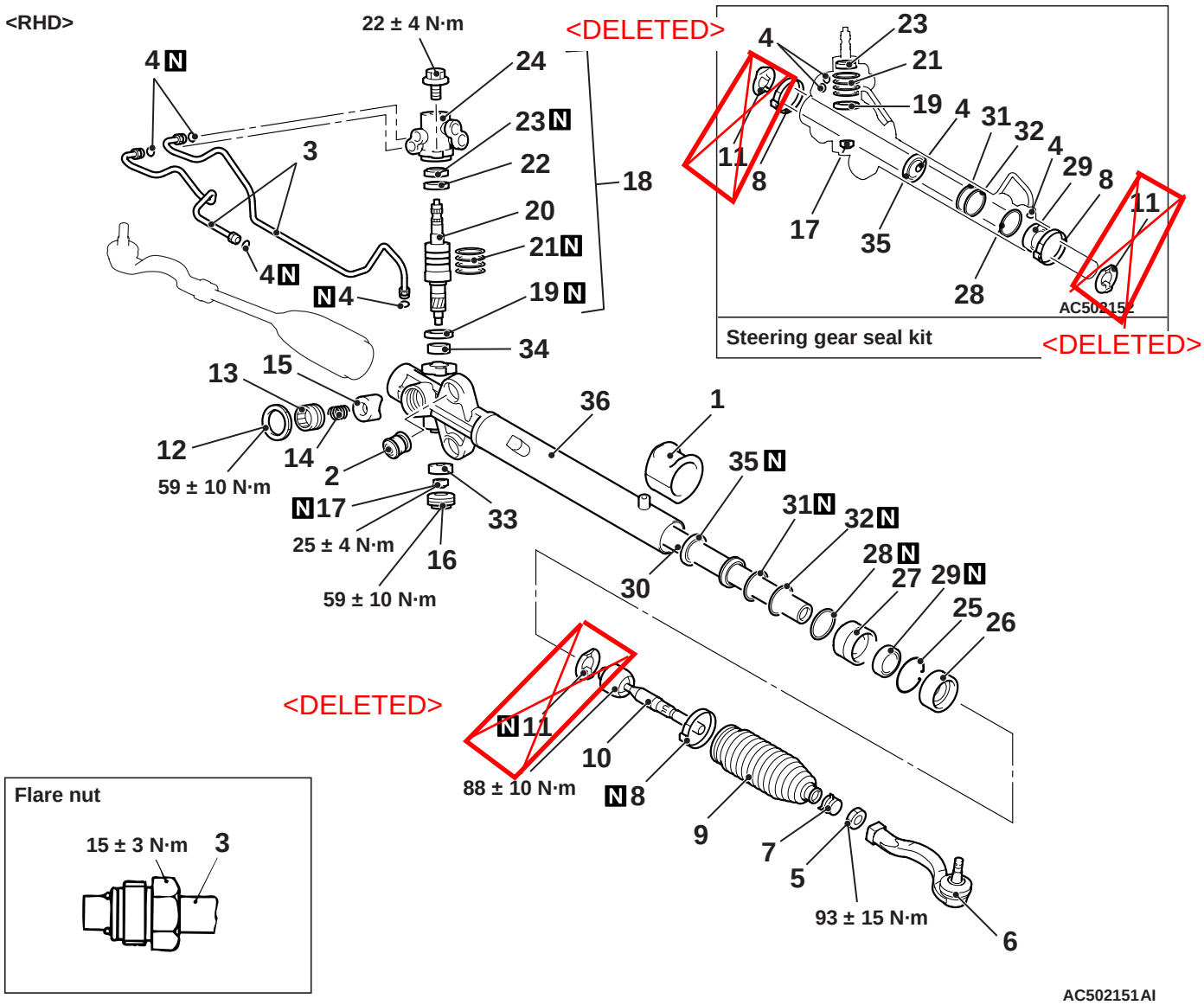
Attached sheet 4 (1/5)

DISASSEMBLY AND REASSEMBLY

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Attached sheet 4 (2/5)

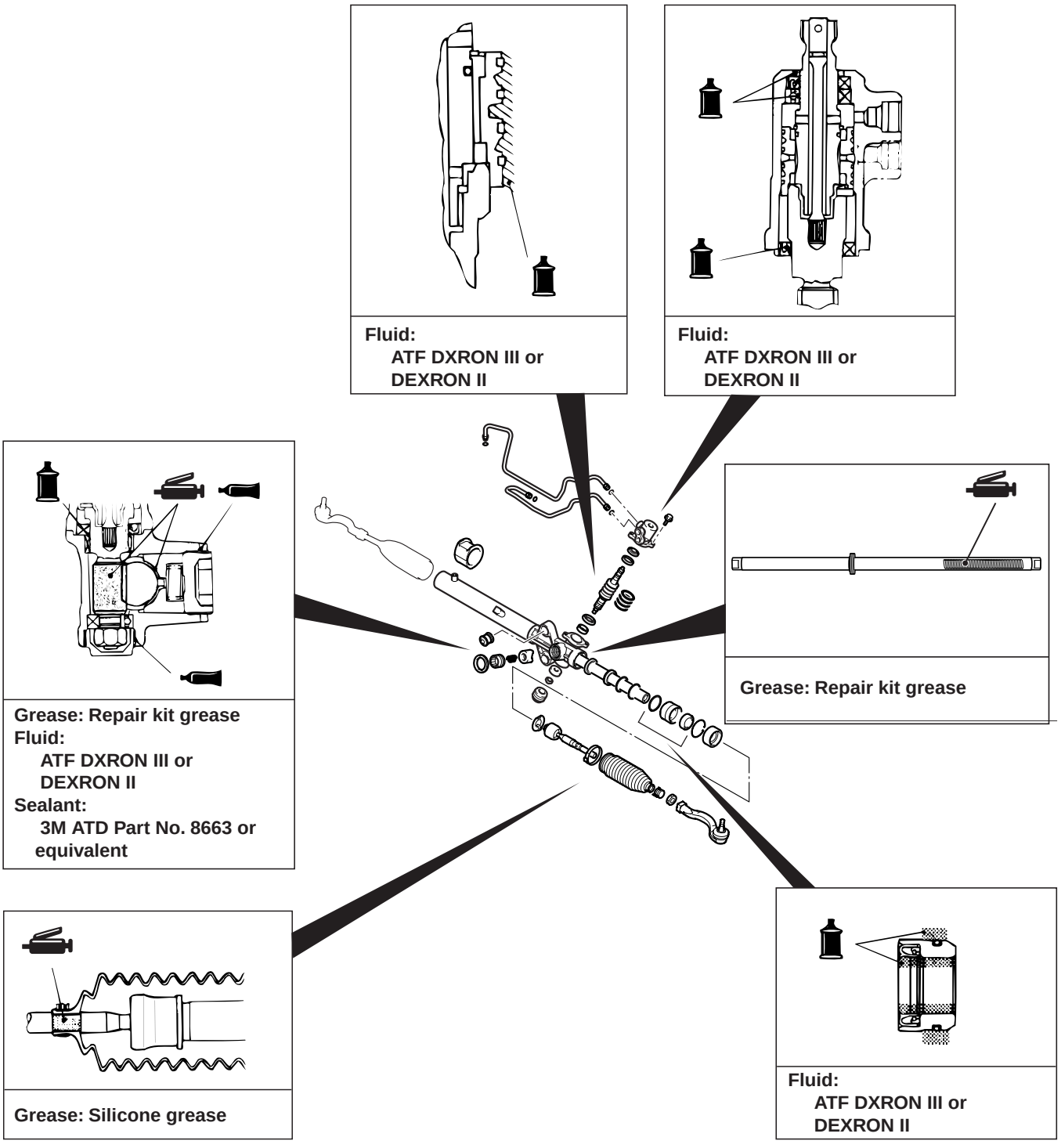


		Disassembly steps
	1.	Gear mounting rubber
	2.	Gear housing mounting bushing
	3.	Feed pipe
	4.	O-ring
>>O<<	5.	Lock nut
>>O<<	6.	Tie rod end
	7.	Clip
>>N<<	8.	Bellows band
	9.	Bellows
<<A>> >>M<<	10.	Tab washer
<<B>> >>L<<	11.	Tie rod
>>K<<	•	Total pinion torque adjustment
>>J<<	12.	Lock nut
<<C>> >>J<<	13.	Rack support cover
	14.	Support spring
	15.	Rack support
>>I<<	16.	End plug
	17.	Lock nut
	18.	Valve housing assembly
<<D>> >>H<<	19.	Lower oil seal
<<D>>	20.	Pinion and valve assembly
<<E>> >>G<<	21.	Seal ring
<<F>> >>F<<	22.	Upper bearing
<<F>> >>F<<	23.	Upper oil seal
	24.	Valve housing
<<G>> >>E<<	25.	Circlip
<<H>>	26.	Rack stopper
<<H>> >>D<<	27.	Rack bushing assembly
<<H>> >>D<<	28.	O-ring
<<H>> >>D<<	29.	Oil seal
<<H>> >>C<<	30.	Rack assembly
<<E>>	31.	Seal ring
	32.	O-ring
<<I>> >>B<<	33.	Lower bearing
<<J>> >>B<<	34.	Needle bearing
<<K>> >>A<<	35.	Oil seal
	36.	Gear housing

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<INCORRECT>
10
<CORRECT>

Attached sheet 4 (3/5)

LUBRICATION AND SEALING POINTS



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DISASSEMBLY SERVICE POINTS

<<A>> TAB WASHER REMOVAL

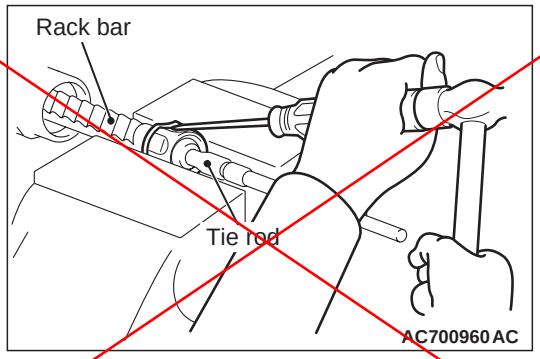
⚠ CAUTION

- **Do not tighten the vise strongly in order not to damage the tie rod.**
- **Do not make an impact to the rack bar.**

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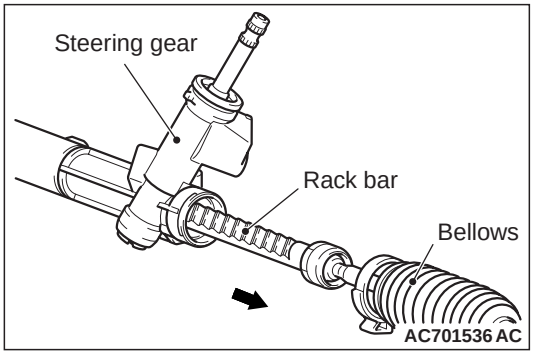
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Attached sheet 4 (4/5)



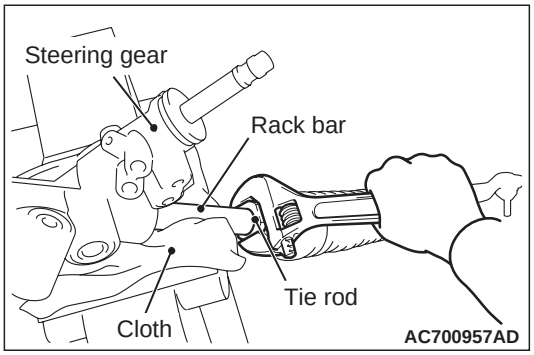
1. Fix the tie rod ball joint part with a vise.
2. Use a screw driver and hammer to lift right and left tab washer caulked edges.

<<B>> TIE ROD REMOVAL



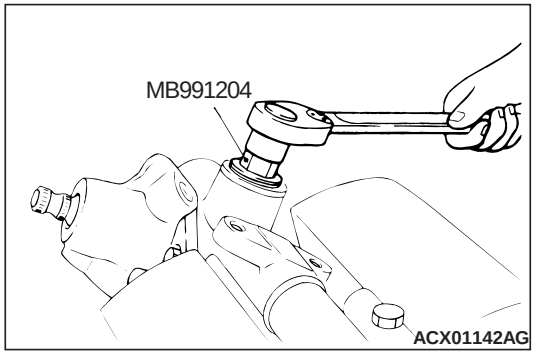
1. Move the bellows and pull the rack bar toward arrow direction.

⚠ CAUTION
Do not tighten the vise strongly in order not to damage the rack bar.



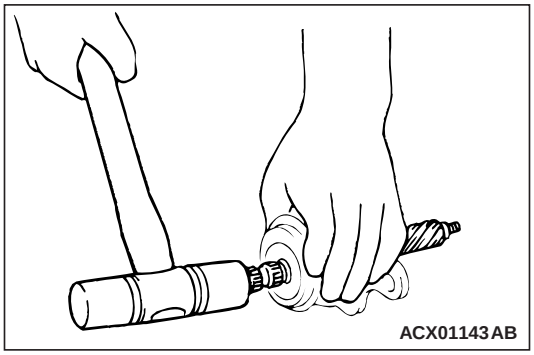
2. Wrap rack bar with cloth in order not to damage, and fix the rack bar with a vise.
3. Use the tool to remove the tie rod.

<<C>> RACK SUPPORT COVER REMOVAL



Using special tool torque wrench socket (MB991204), remove the rack support cover from the steering gear.

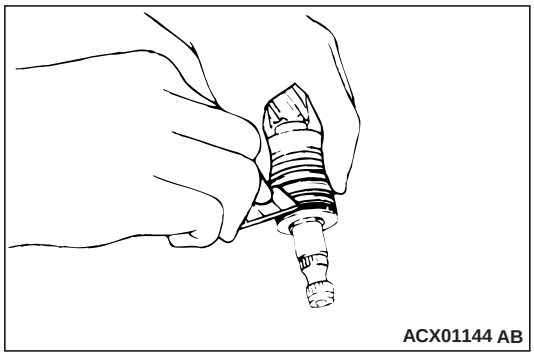
<<D>> LOWER OIL SEAL/PINION AND VALVE ASSEMBLY REMOVAL



Using a plastic hammer, gently tap the pinion to remove it.

<<E>> SEAL RING REMOVAL

⚠ CAUTION
When cutting the seal ring, be careful not to damage the pinion and valve assembly or the rack.



Cut the seal ring and remove it from the pinion and valve assembly or the rack.

Attached sheet 4 (5/5)

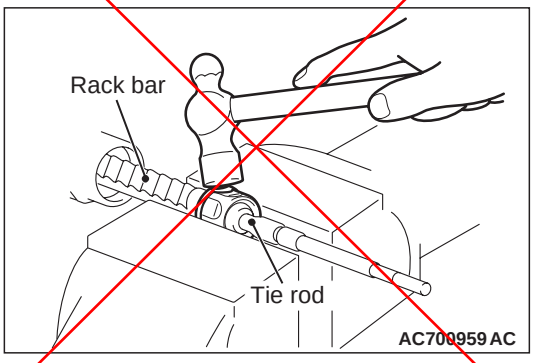
2. Use the tool to install the tie rod.
   Tightening torque: 88 ± 10 N·m

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>>M<< TAB WASHER INSTALLATION

⚠ CAUTION

- **Do not tighten the vise strongly in order not to damage the tie rod.**
- **Do not make an impact to the rack bar.**

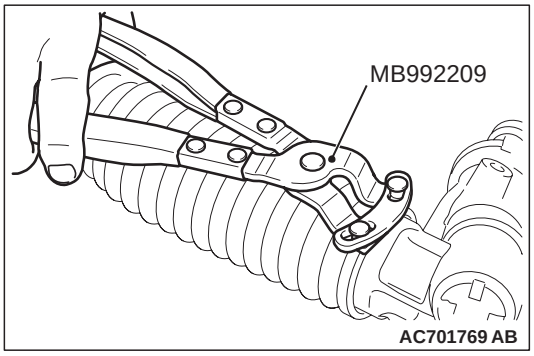


1. Fix the tie rod ball joint part with a vise.
2. Use a hammer to caulk the right and left tab washer at two places.

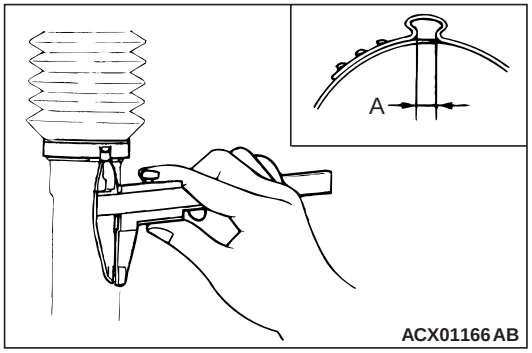
>>N<< BELLOWS BAND INSTALLATION

⚠ CAUTION

- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**

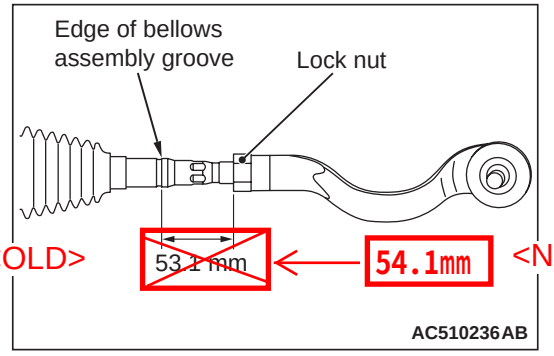


1. Use special tool (MB992209) to crimp the bellows band.



2. Check that crimped width (A) is within the standard value.
   Standard value (A): 2.4 – 2.8 mm

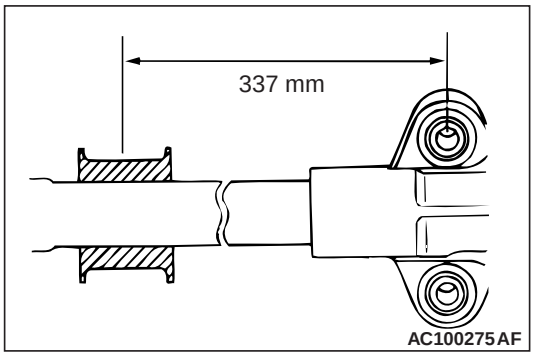
>>O<< TIE ROD END/LOCK NUT INSTALLATION



Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

>>P<< GEAR MOUNTING RUBBER INSTALLATION



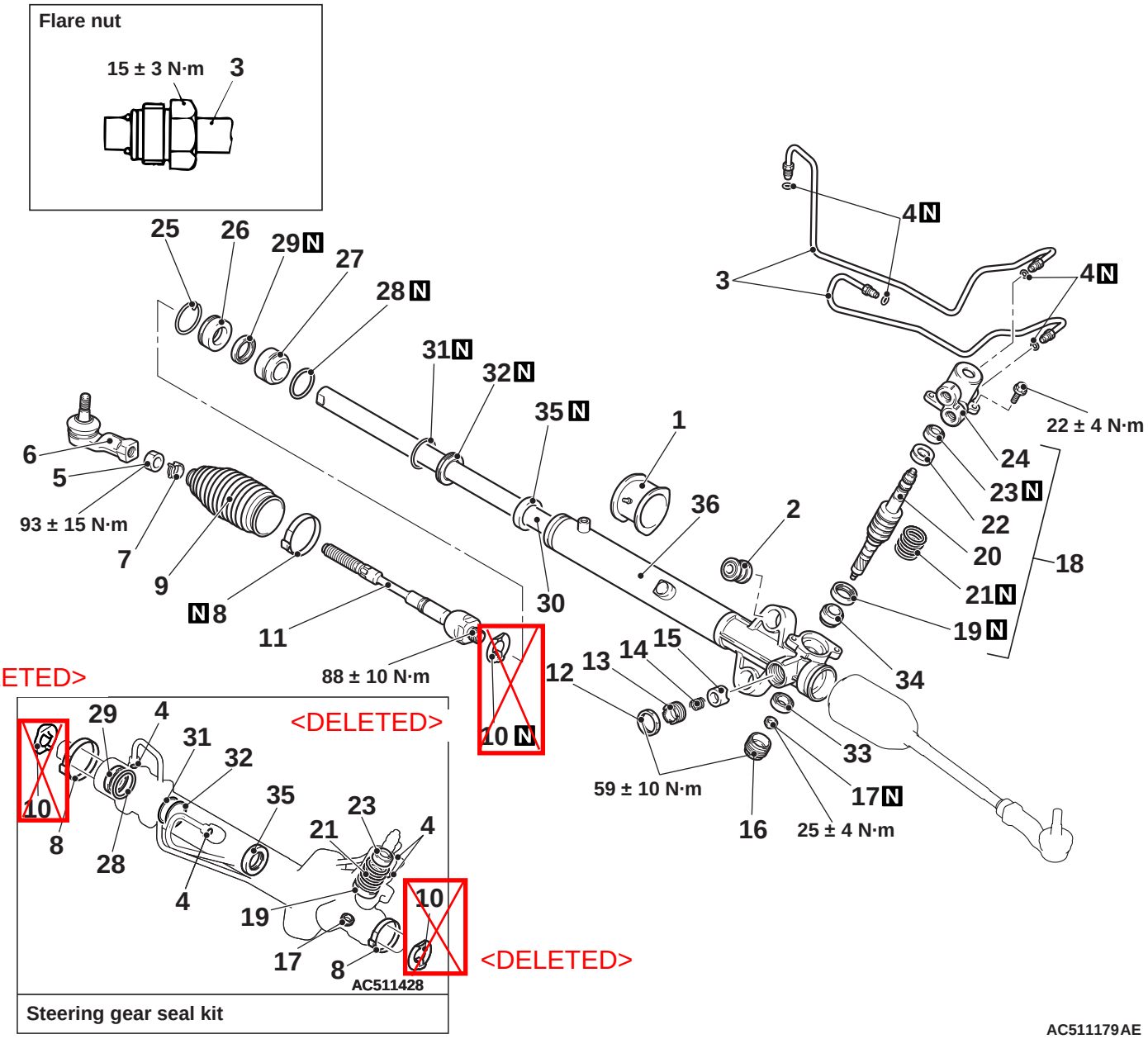
Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

Attached sheet 5 (1/6)

DISASSEMBLY AND REASSEMBLY

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<2WD (except High rider) - LHD>



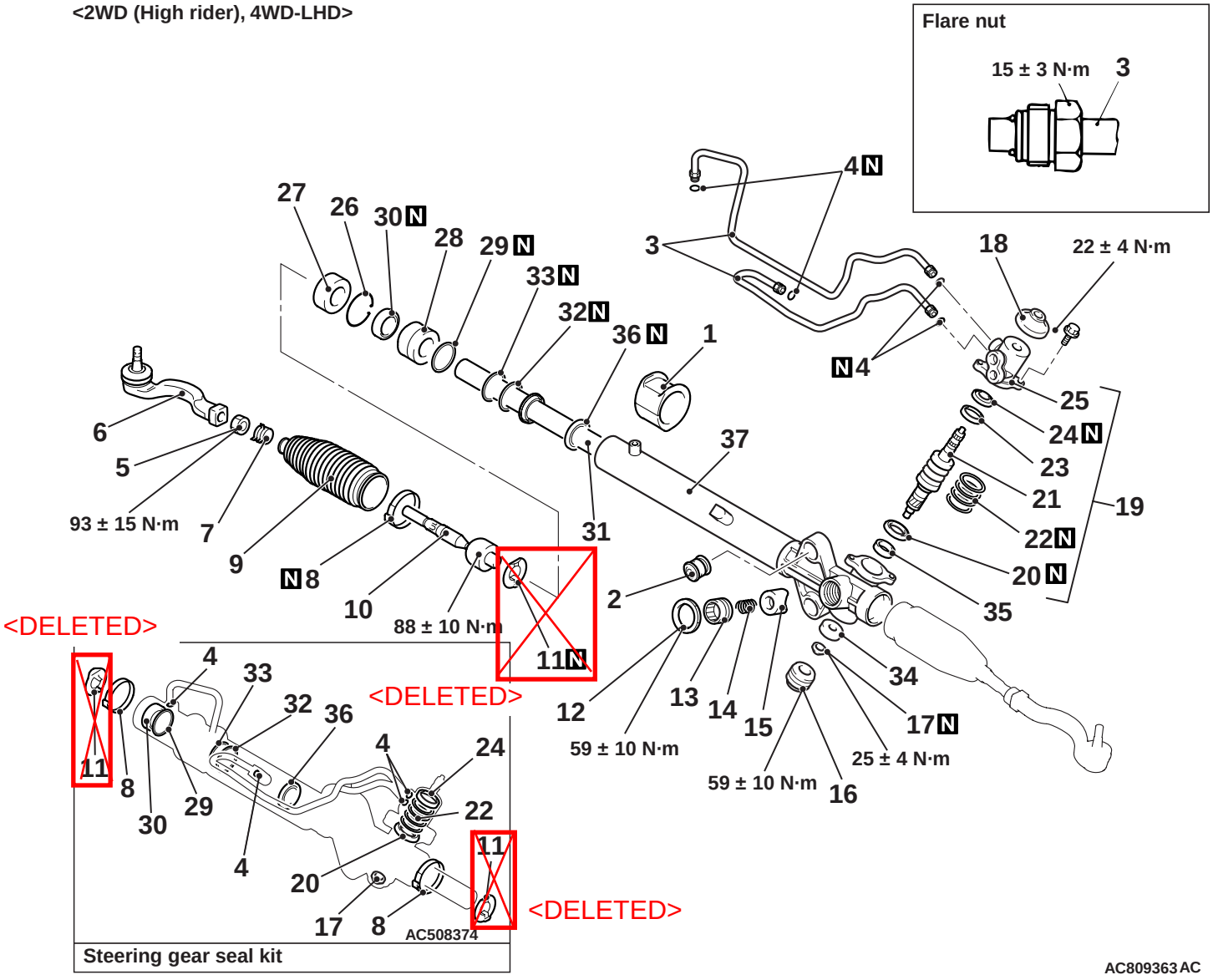
		Disassembly steps
>>P<<	1.	Gear mounting rubber
	2.	Gear housing mounting bushing
	3.	Feed pipe
	4.	O-ring
>>O<<	5.	Lock nut
>>O<<	6.	Tie rod end
	7.	Clip
>>N<<	8.	Bellows band
	9.	Bellows
<<A>> >>M<<	10.	Tab washer <DELETED>
<<B>> >>L<<	11.	Tie rod
>>K<<	•	Total pinion torque adjustment
>>J<<	12.	Lock nut
<<C>> >>J<<	13.	Rack support cover
	14.	Support spring
	15.	Rack support
>>I<<	16.	End plug
	17.	Lock nut
	18.	Valve housing assembly
<<D>> >>H<<	19.	Lower oil seal
<<D>>	20.	Pinion and valve assembly
<<E>> >>G<<	21.	Seal ring
<<F>> >>F<<	22.	Upper bearing
<<F>> >>F<<	23.	Upper oil seal

Attached sheet 5 (2/6)

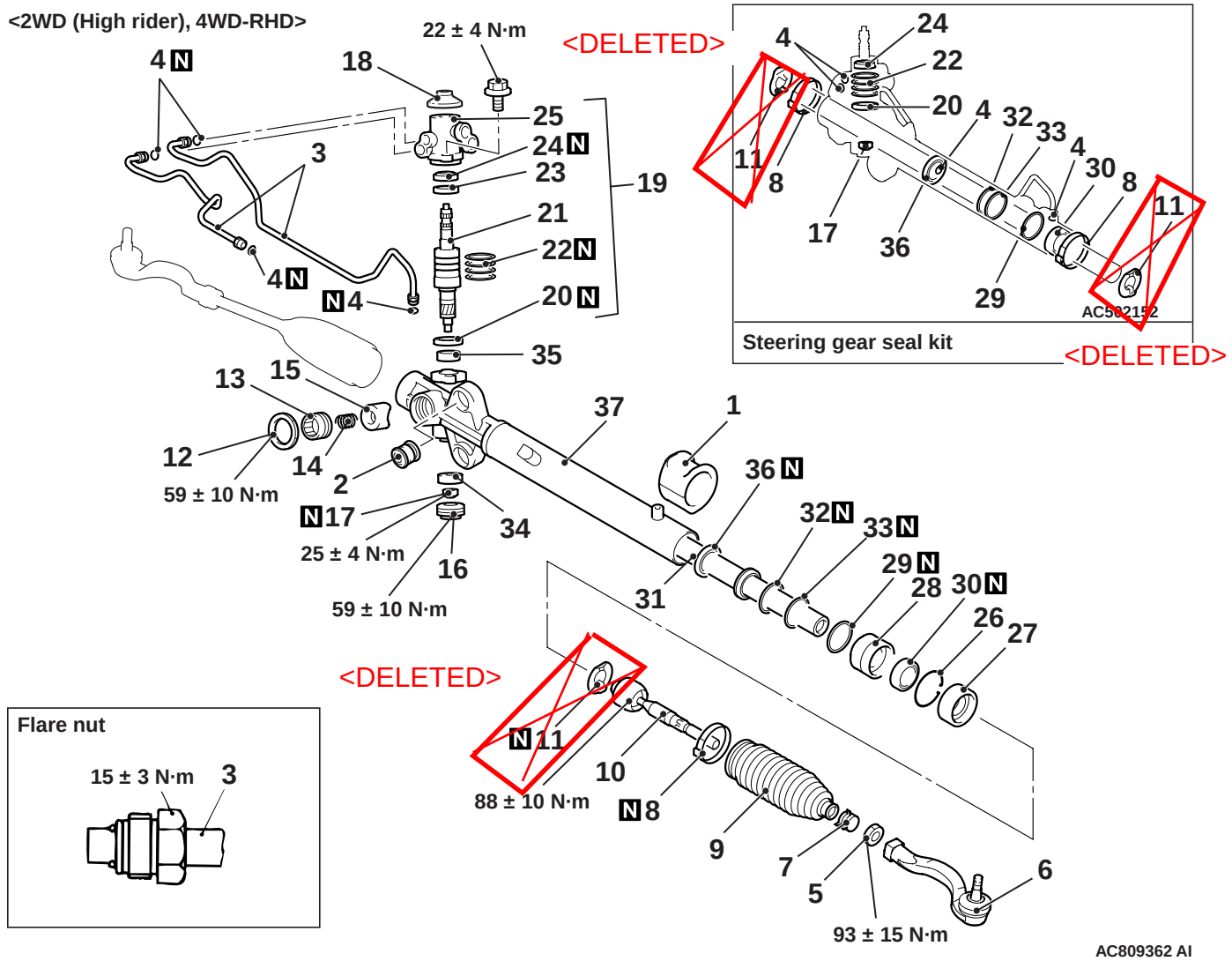
Disassembly steps

		24.	Valve housing
<<G>	>>E<<	25.	Circlip
<<H>>		26.	Rack stopper
<<H>>	>>D<<	27.	Rack bushing assembly
<<H>>	>>D<<	28.	O-ring
<<H>>	>>D<<	29.	Oil seal
<<H>>	>>C<<	30.	Rack assembly
<<E>>		31.	Seal ring
		32.	O-ring
<<I>>	>>B<<	33.	Lower bearing
<<J>>	>>B<<	34.	Needle bearing
<<K>>	>>A<<	35.	Oil seal
		36.	Gear housing

<2WD (High rider), 4WD-LHD>



Attached sheet 5 (3/6)



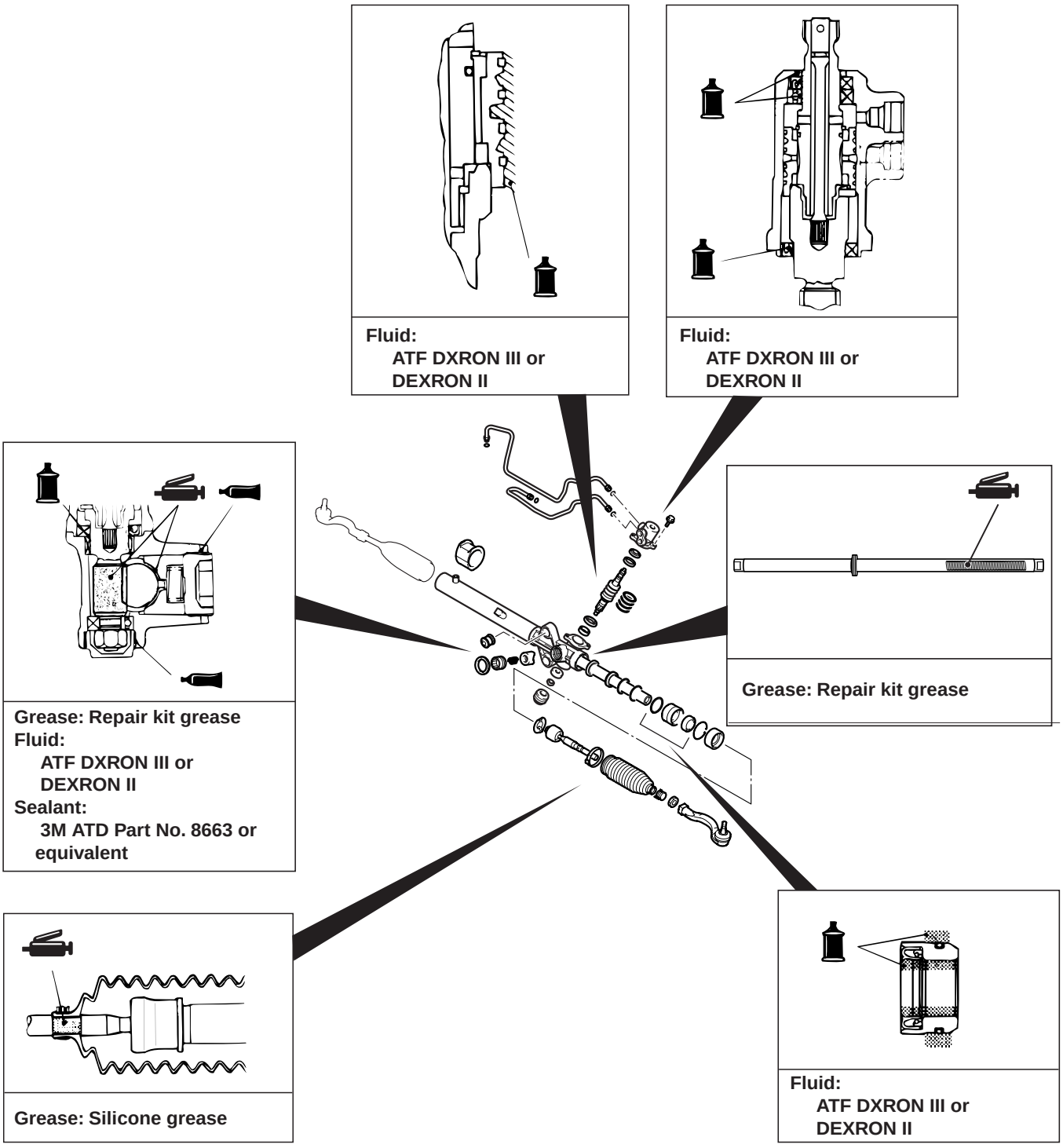
			Disassembly steps
	>>P<<	1.	Gear mounting rubber
		2.	Gear housing mounting bushing
		3.	Feed pipe
		4.	O-ring
	>>O<<	5.	Lock nut
	>>O<<	6.	Tie rod end
		7.	Clip
<DELETED>	>>N<<	8.	Bellows band
		9.	Bellows
<<A>>	>>M<<	10.	Tab washer
<<B>>	>>L<<	11.	Tie rod <INCORRECT>
	>>K<<	•	Total pinion torque adjustment
	>>J<<	12.	Lock nut
<<C>>	>>J<<	13.	Rack support cover
		14.	Support spring
		15.	Rack support
	>>I<<	16.	End plug
		17.	Lock nut

10 <CORRECT>

			Disassembly steps
		18.	Dust cover (Vehicles for RUSSIA or option)
		19.	Valve housing assembly
<<D>>	>>H<<	20.	Lower oil seal
<<D>>		21.	Pinion and valve assembly
<<E>>	>>G<<	22.	Seal ring
<<F>>	>>F<<	23.	Upper bearing
<<F>>	>>F<<	24.	Upper oil seal
		25.	Valve housing
<<G>>	>>E<<	26.	Circlip
<<H>>		27.	Rack stopper
<<H>>	>>D<<	28.	Rack bushing assembly
<<H>>	>>D<<	29.	O-ring
<<H>>	>>D<<	30.	Oil seal
<<H>>	>>C<<	31.	Rack assembly
<<E>>		32.	Seal ring
		33.	O-ring
<<I>>	>>B<<	34.	Lower bearing
<<J>>	>>B<<	35.	Needle bearing
<<K>>	>>A<<	36.	Oil seal
		37.	Gear housing

Attached sheet 5 (4/6)

LUBRICATION AND SEALING POINTS



<DELETED>

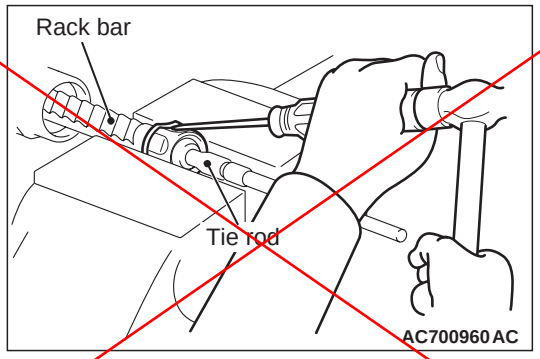
AC508508AC

DISASSEMBLY SERVICE POINTS

<<A>> TAB WASHER REMOVAL

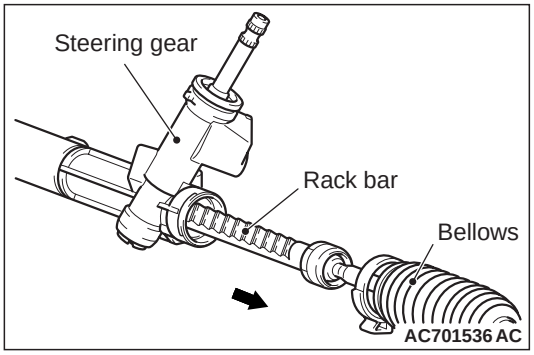
⚠ CAUTION

- Do not tighten the vise strongly in order not to damage the tie rod.
- Do not make an impact to the rack bar.



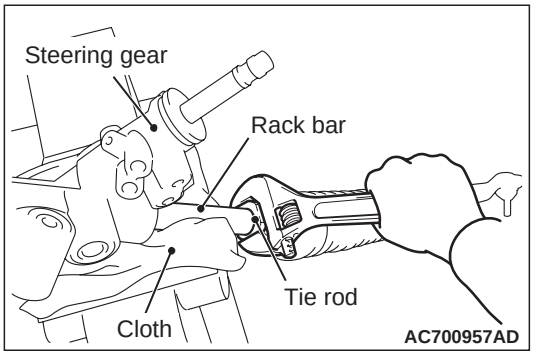
1. Fix the tie rod ball joint part with a vise.
2. Use a screw driver and hammer to lift right and left tab washer caulked edges.

<<B>> TIE ROD REMOVAL



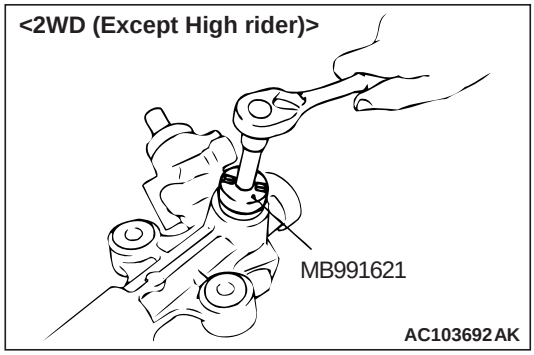
1. Move the bellows and pull the rack bar toward arrow direction.

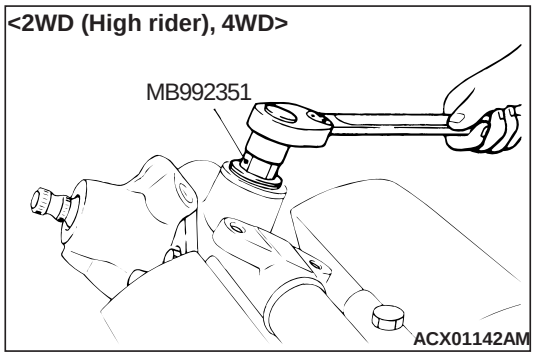
⚠ CAUTION
Do not tighten the vise strongly in order not to damage the rack bar.



2. Wrap rack bar with cloth in order not to damage, and fix the rack bar with a vise.
3. Use the tool to remove the tie rod.

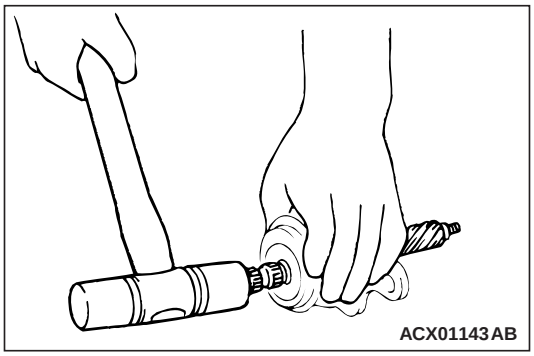
<<C>> RACK SUPPORT COVER REMOVAL





Using special tool rack support cover wrench (MB991621) <2WD (except High rider)>, torque wrench socket (MB992351) <2WD (High rider), 4WD>, remove the rack support cover from the steering gear.

<<D>> LOWER OIL SEAL/PINION AND VALVE ASSEMBLY REMOVAL



Using a plastic hammer, gently tap the pinion to remove it.

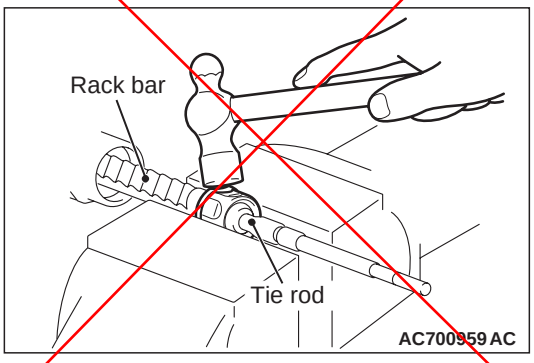
Attached sheet 5 (6/6)

2. Use the tool to install the tie rod.
   Tightening torque: 88 ± 10 N·m

<DELETED>

>>M<< TAB WASHER INSTALLATION

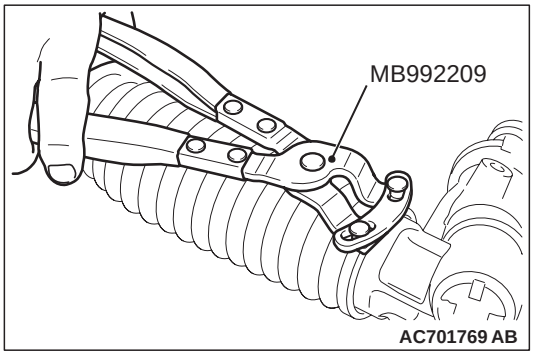
⚠ CAUTION
- **Do not tighten the vise strongly in order not to damage the tie rod.**
- **Do not make an impact to the rack bar.**



1. Fix the tie rod ball joint part with a vise.
2. Use a hammer to caulk the right and left tab washer at two places.

>>N<< BELLOWS BAND INSTALLATION

⚠ CAUTION
- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**

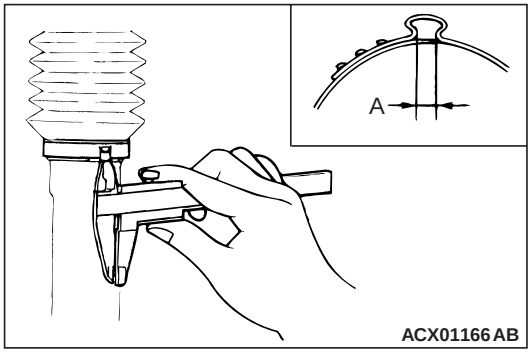


1. Use special tool (MB992209) to crimp the bellows band.

<OLD>

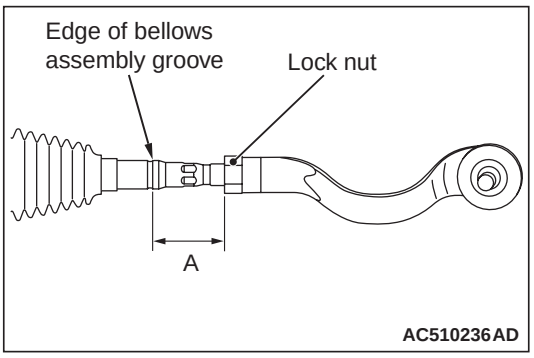
<NEW>

- 166.6 mm <2WD(Except high rider)>
- 54.1 mm <2WD(High rider), 4WD>



2. Check that crimped width (A) is within the standard value.
   Standard value (A): 2.4 – 2.8 mm

>>O<< TIE ROD END/LOCK NUT INSTALLATION



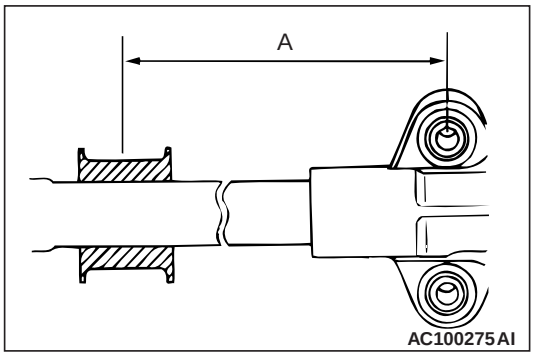
Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

<OLD>

Reference value (A):
- **165.6mm <2WD (except High rider)>**
- **53.1mm <2WD (High rider), 4WD>**

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

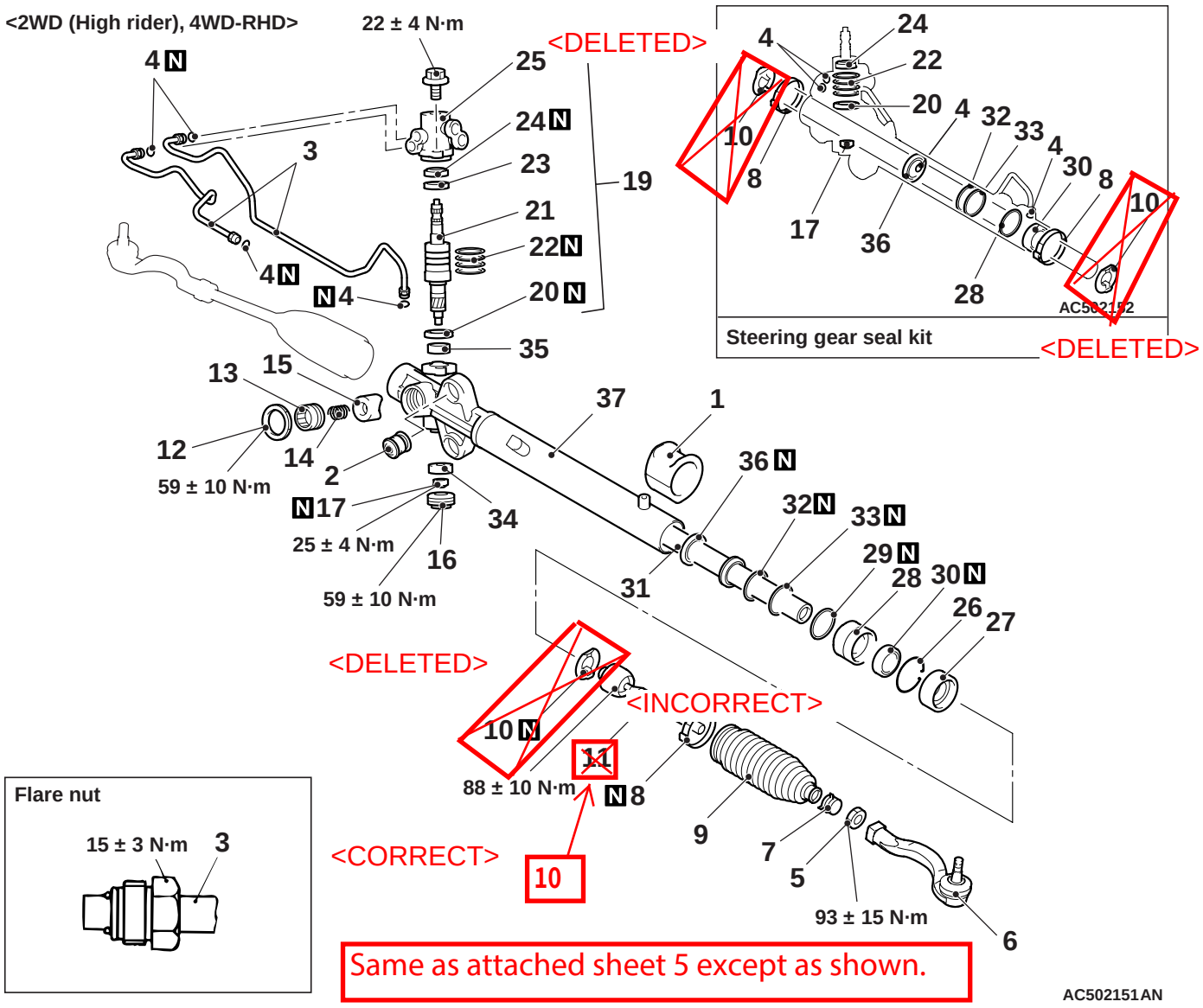
>>P<< GEAR MOUNTING RUBBER INSTALLATION



Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

Reference value (A):
- **326mm <2WD (except High rider)>**

Attached sheet 6



Same as attached sheet 5 except as shown.

Disassembly steps

>>P<<	1.	Gear mounting rubber
	2.	Gear housing mounting bushing
	3.	Feed pipe
	4.	O-ring
>>O<<	5.	Lock nut
>>O<<	6.	Tie rod end
	7.	Clip
>>N<<	8.	Bellows band
	9.	Bellows
<<A>> >>M<<	10.	Tab washer
<<B>> >>L<<	11.	Tie rod <INCORRECT>
>>K<<	•	Total pinion torque adjustment
>>J<<	12.	Lock nut
<<C>> >>J<<	13.	Rack support cover
	14.	Support spring
	15.	Rack support
>>I<<	16.	End plug
	17.	Lock nut

Disassembly steps

	18.	Dust cover (Option) <Vehicles for RUSSIA>
	19.	Valve housing assembly
<<D>> >>H<<	20.	Lower oil seal
<<D>>	21.	Pinion and valve assembly
<<E>> >>G<<	22.	Seal ring
<<F>> >>F<<	23.	Upper bearing
<<F>> >>F<<	24.	Upper oil seal
	25.	Valve housing
<<G>> >>E<<	26.	Circlip
<<H>>	27.	Rack stopper
<H>> >>D<<	28.	Rack bushing assembly
<<H>> >>D<<	29.	O-ring
<<H>> >>D<<	30.	Oil seal
<<H>> >>C<<	31.	Rack assembly
<<E>>	32.	Seal ring
	33.	O-ring
<<I>> >>B<<	34.	Lower bearing
<<J>> >>B<<	35.	Needle bearing
<<K>> >>A<<	36.	Oil seal
	37.	Gear housing

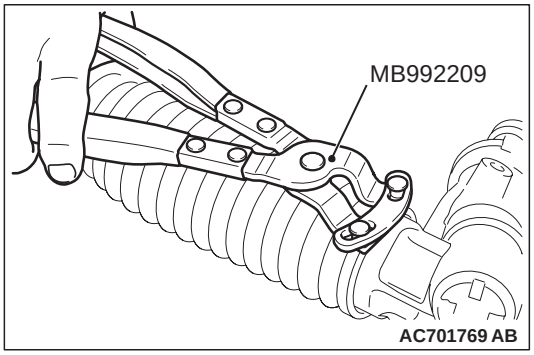
Attached sheet 7

2. Use the tool to install the tie rod.
   Tightening torque: 88 ± 10 N·m

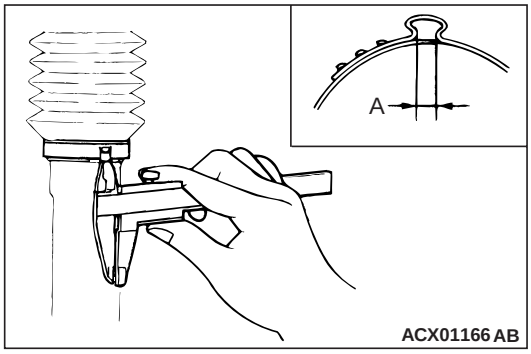
>>M<< BELLOWS BAND INSTALLATION

⚠ CAUTION

- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**



1. Use special tool (MB992209) to crimp the bellows band.



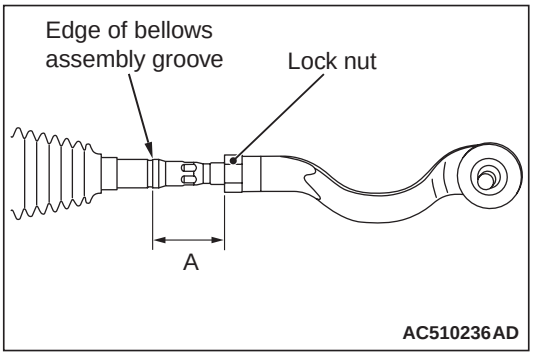
2. Check that crimped width (A) is within the standard value.
   Standard value (A): 2.4 – 2.8 mm

<OLD>

<NEW>

- 166.6 mm <2WD(Except high rider)>
- 54.1 mm <2WD(High rider), 4WD>

>>N<< TIE ROD END/LOCK NUT INSTALLATION



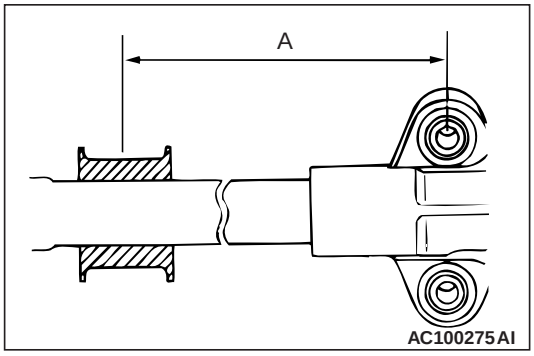
Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

Reference value (A):

- ~~**165.6mm <2WD (except High rider)>**~~
- ~~**53.1mm <2WD (High rider), 4WD>**~~

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

>>O<< GEAR MOUNTING RUBBER INSTALLATION



Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

Reference value (A):

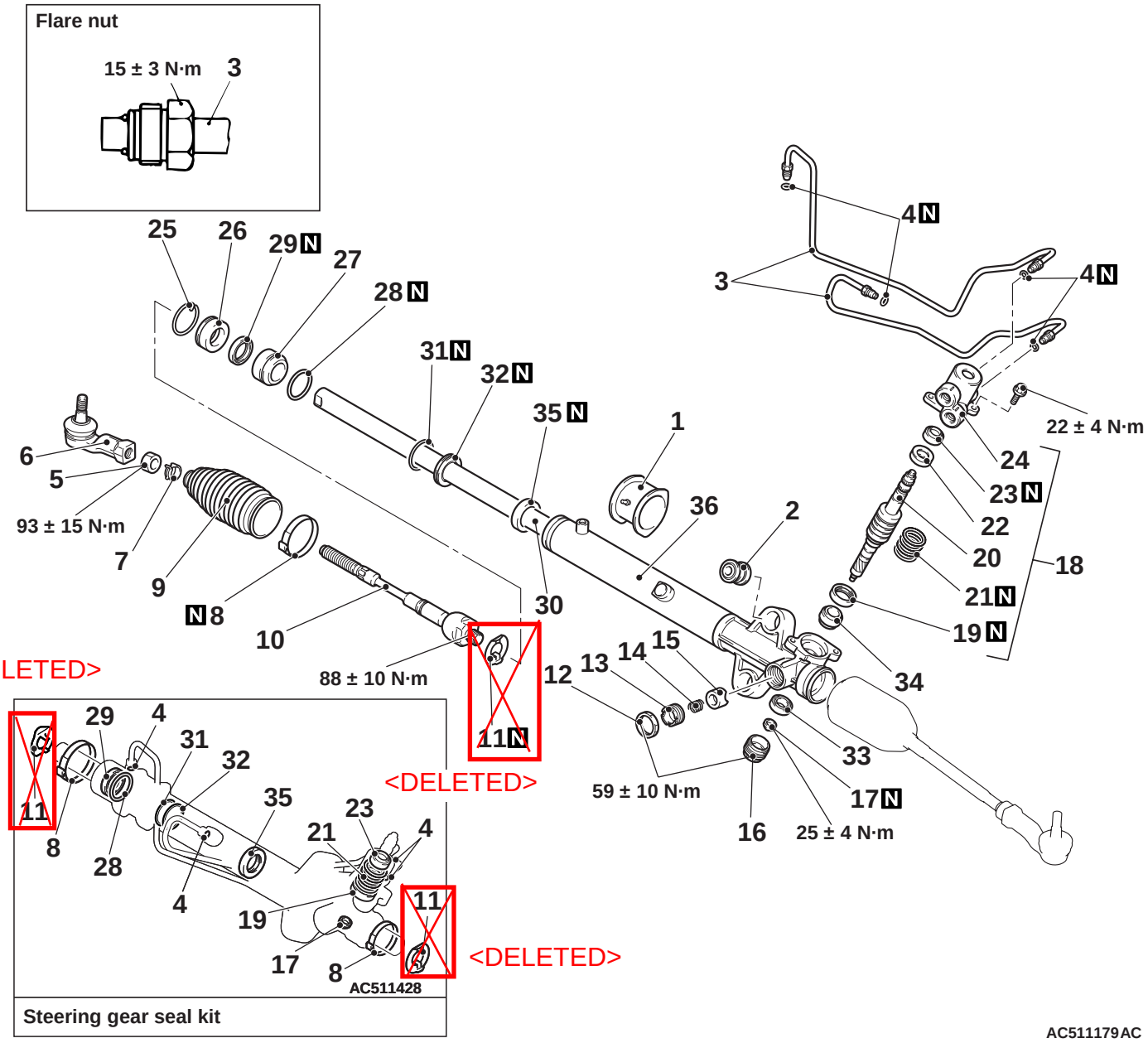
- **326mm <2WD (except High rider)>**
- **337mm <2WD (High rider), 4WD>**

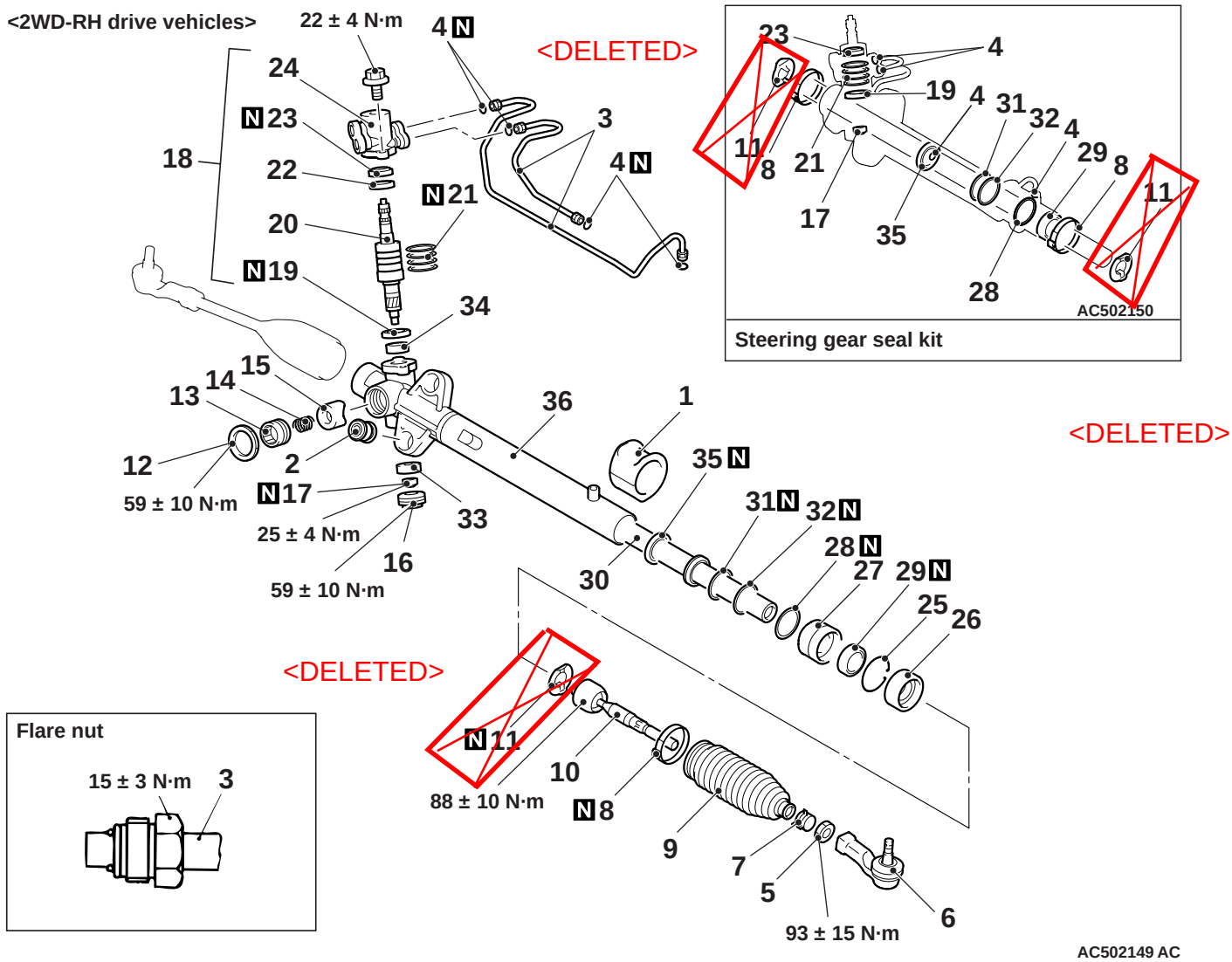
Attached sheet 8 (1/6)

DISASSEMBLY AND REASSEMBLY

M1372011100610

<2WD-LH drive vehicles (Except 2500-DOHC)>





Disassembly steps

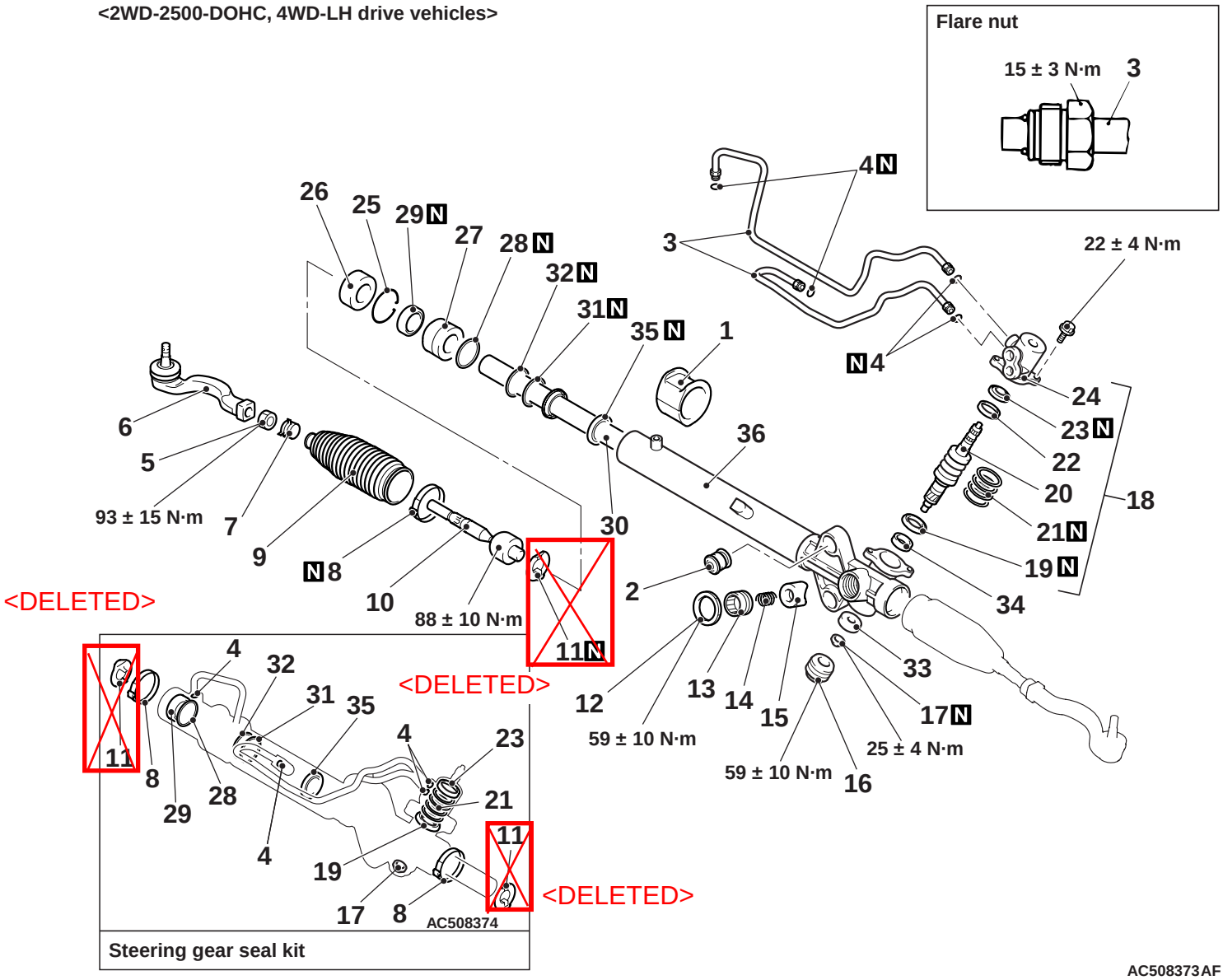
>>O<<	1.	Gear mounting rubber
	2.	Gear housing mounting bushing
	3.	Feed pipe
	4.	O-ring
>>N<<	5.	Lock nut
>>N<<	6.	Tie rod end
	7.	Clip
>>M<<	8.	Bellows band
	9.	Bellows
~~>>L<<~~	10.	Tie rod
~~>>L<<~~	11.	~~Tab washer~~ <DELETED>
>>K<<	•	Total pinion torque adjustment
>>J<<	12.	Lock nut
<<A>> >>J<<	13.	Rack support cover
	14.	Support spring
	15.	Rack support
>>I<<	16.	End plug
	17.	Lock nut

Disassembly steps (Continued)

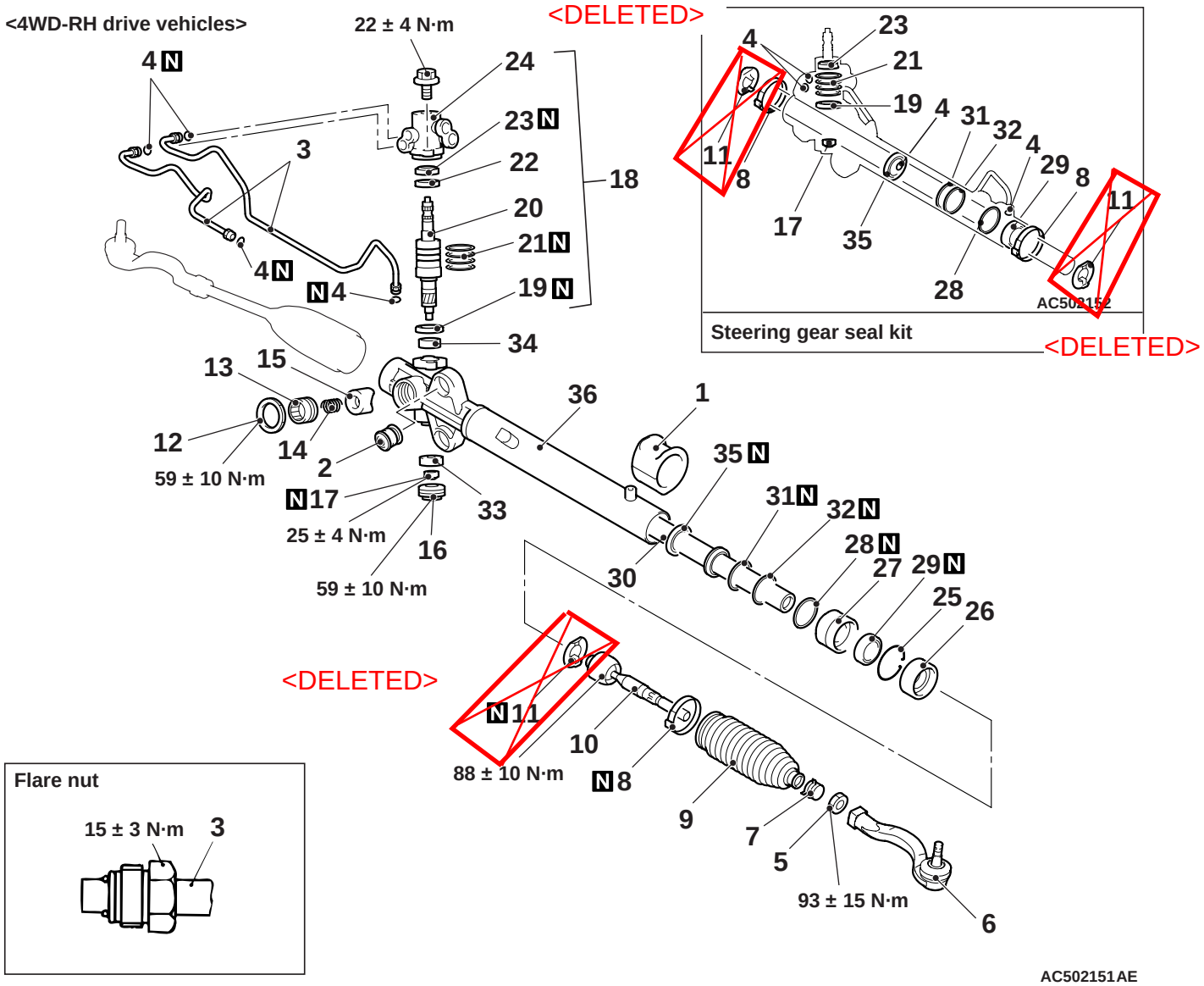
	18.	Valve housing assembly
<<B>> >>H<<	19.	Lower oil seal
<<B>>	20.	Pinion and valve assembly
<<C>> >>G<<	21.	Seal ring
<<D>> >>F<<	22.	Upper bearing
<<D>> >>F<<	23.	Upper oil seal
	24.	Valve housing
<<E>> >>E<<	25.	Circlip
<<F>>	26.	Rack stopper
<<F>> >>D<<	27.	Rack bushing assembly
<<F>> >>D<<	28.	O ring
<<F>> >>D<<	29.	Oil seal
<<F>> >>C<<	30.	Rack assembly
<<C>>	31.	Seal ring
	32.	O-ring
<<G>> >>B<<	33.	Lower bearing
<<H>> >>B<<	34.	Needle bearing
<<I>> >>A<<	35.	Oil seal
	36.	Gear housing

Attached sheet 8 (3/6)

<2WD-2500-DOHC, 4WD-LH drive vehicles>



Attached sheet 8 (4/6)



Disassembly steps

>>O<<	1.	Gear mounting rubber
	2.	Gear housing mounting bushing
	3.	Feed pipe
	4.	O-ring
>>N<<	5.	Lock nut
>>N<<	6.	Tie rod end
	7.	Clip
>>M<<	8.	Bellows band
	9.	Bellows
>>L<<	10.	Tie rod
>>L<<	11.	Tab washer
>>K<<	•	Total pinion torque adjustment
>>J<<	12.	Lock nut
<<A>> >>J<<	13.	Rack support cover
	14.	Support spring
	15.	Rack support
>>I<<	16.	End plug
	17.	Lock nut

<DELETED>

Disassembly steps (Continued)

	18.	Valve housing assembly
<<B>> >>H<<	19.	Lower oil seal
<<B>>	20.	Pinion and valve assembly
<<C>> >>G<<	21.	Seal ring
<<D>> >>F<<	22.	Upper bearing
<<D>> >>F<<	23.	Upper oil seal
	24.	Valve housing
<<E>> >>E<<	25.	Circlip
<<F>>	26.	Rack stopper
<<F>> >>D<<	27.	Rack bushing assembly
<<F>> >>D<<	28.	O ring
<<F>> >>D<<	29.	Oil seal
<<F>> >>C<<	30.	Rack assembly
<<C>>	31.	Seal ring
	32.	O-ring
<<G>> >>B<<	33.	Lower bearing
<<H>> >>B<<	34.	Needle bearing
<<I>> >>A<<	35.	Oil seal
	36.	Gear housing

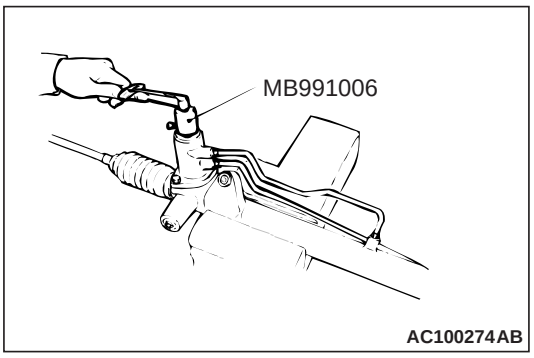
Attached sheet 8 (5/6)

<DELETED>

>>K<< TOTAL PINION TORQUE ADJUSTMENT

⚠ CAUTION

- **Be sure there is no ratcheting or catching when operating the rack towards the shaft.**
- **Measure the total pinion torque through the whole stroke of the rack.**



1. Using special tool preload socket (MB991006), rotate the pinion shaft at the rate of one rotation in four to six seconds to check the total pinion torque and the change in torque.

   Standard value:
   Total pinion torque: 0.6 – 1.7 N·m
   [Change in torque: 0.4 N·m or less]

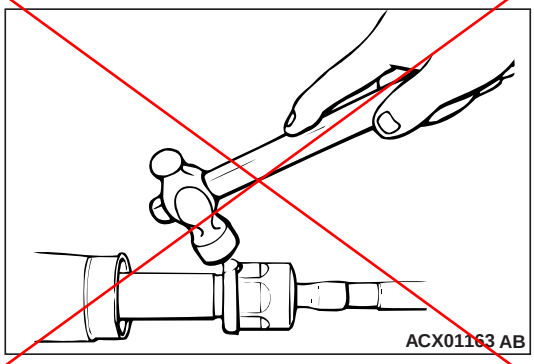
⚠ CAUTION

When adjusting, set at the highest value of the standard value range.

NOTE: If the total pinion toque cannot be adjusted to the standard value within the specified return angle, check the rack support cover components and replace any parts if necessary.

2. If the total pinion torque or the change in torque is outside the standard value, move the rack support cover 0 – 30°, and adjust the pinion torque again.

>>L<< TAB WASHER/TIE ROD INSTALLATION

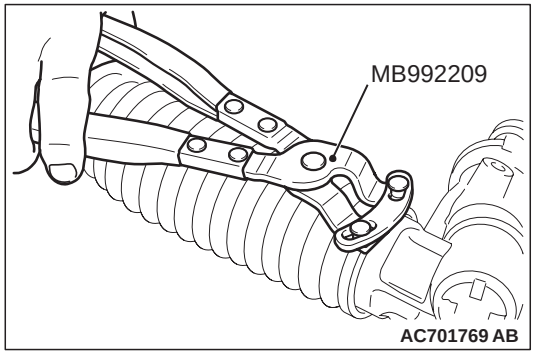


After installing the tie rod to the rack, fold tab washer end (two locations) to tie rod notch.

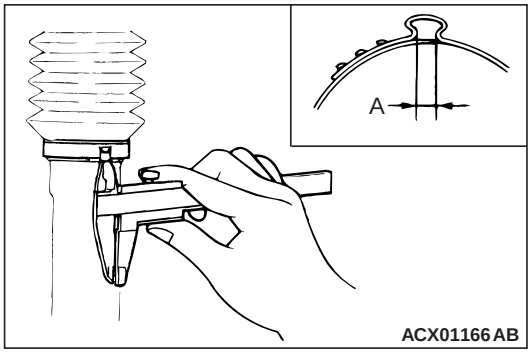
>>M<< BELLOWS BAND INSTALLATION

⚠ CAUTION

- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**



1. Use special tool (MB992209) to crimp the bellows band.

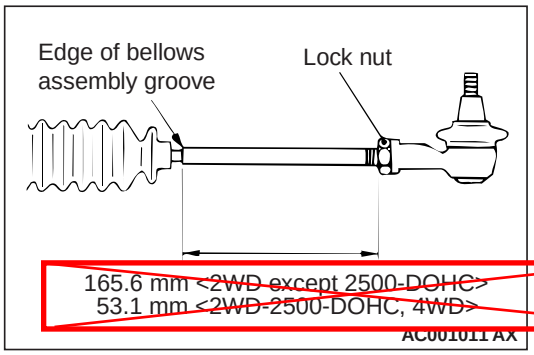


2. Check that crimped width (A) is within the standard value.

   Standard value (A): 2.4 – 2.8 mm

Attached sheet 8 (6/6)

>>N<< TIE ROD END/LOCK NUT INSTALLATION



<OLD>

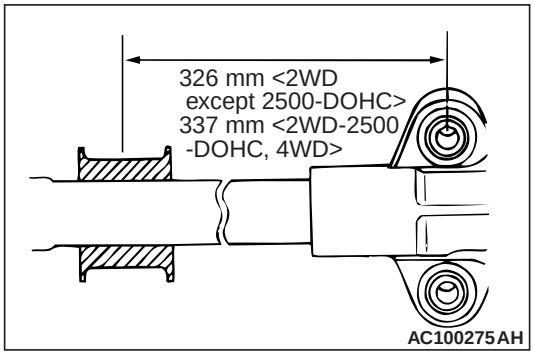
Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

166.6 mm <2WD except 2500-DOHC>
54.1 mm <2WD-2500-DOHC, 4WD>

<NEW>

>>O<< GEAR MOUNTING RUBBER INSTALLATION



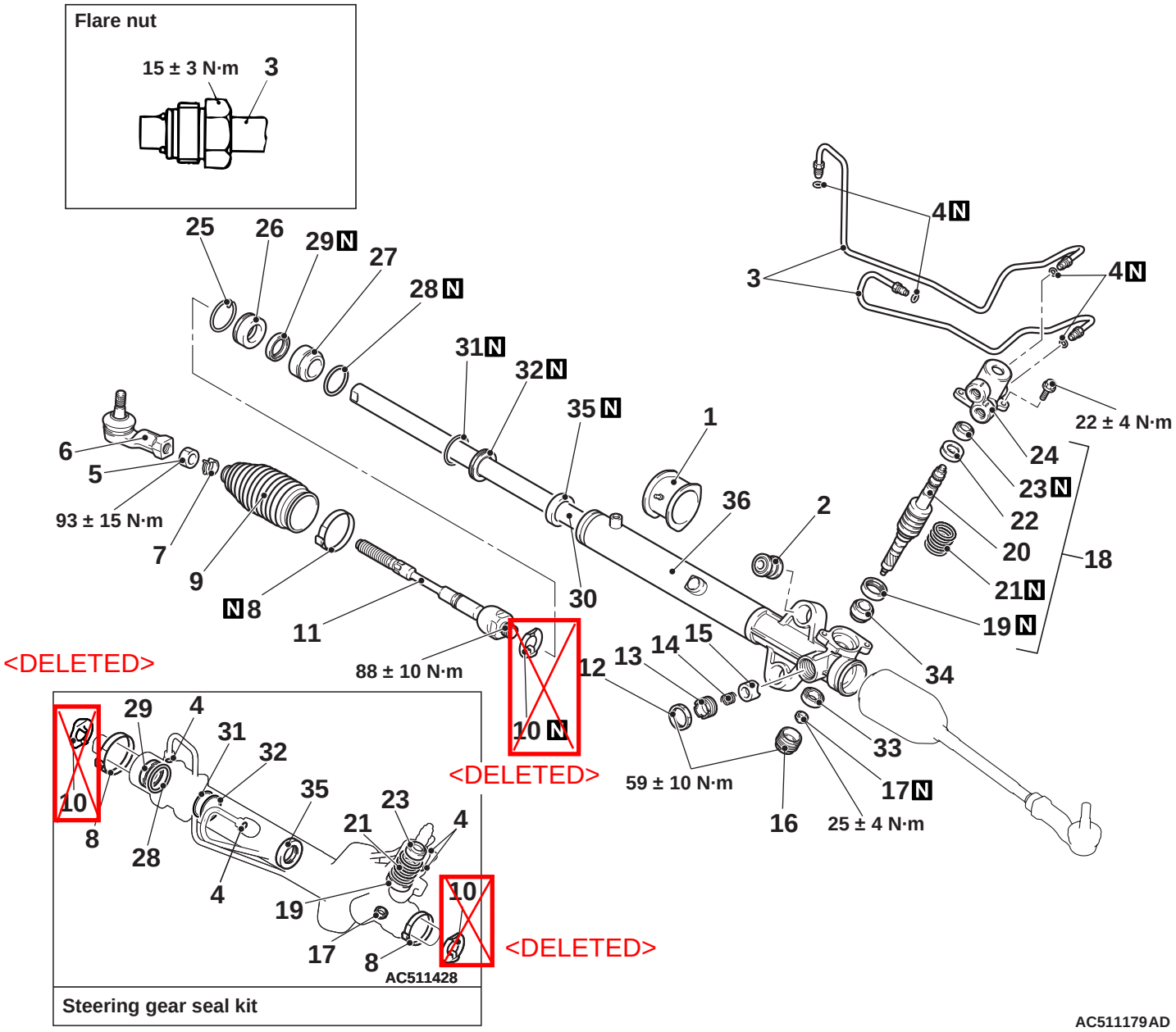
Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

Attached sheet 9 (1/7)

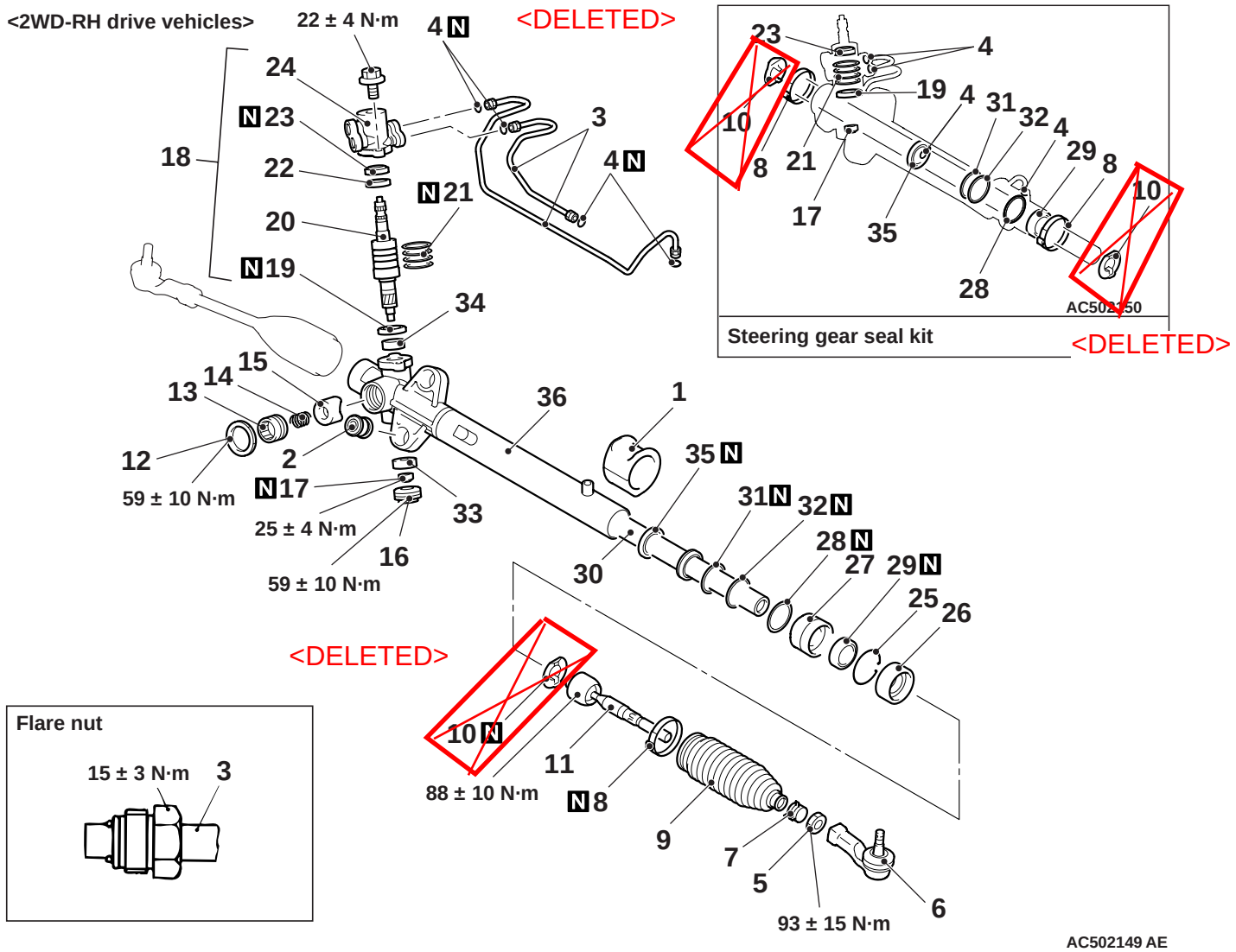
DISASSEMBLY AND REASSEMBLY

M1372011100610

<2WD-LH drive vehicles (Except 2500-DOHC)>



Attached sheet 9 (2/7)

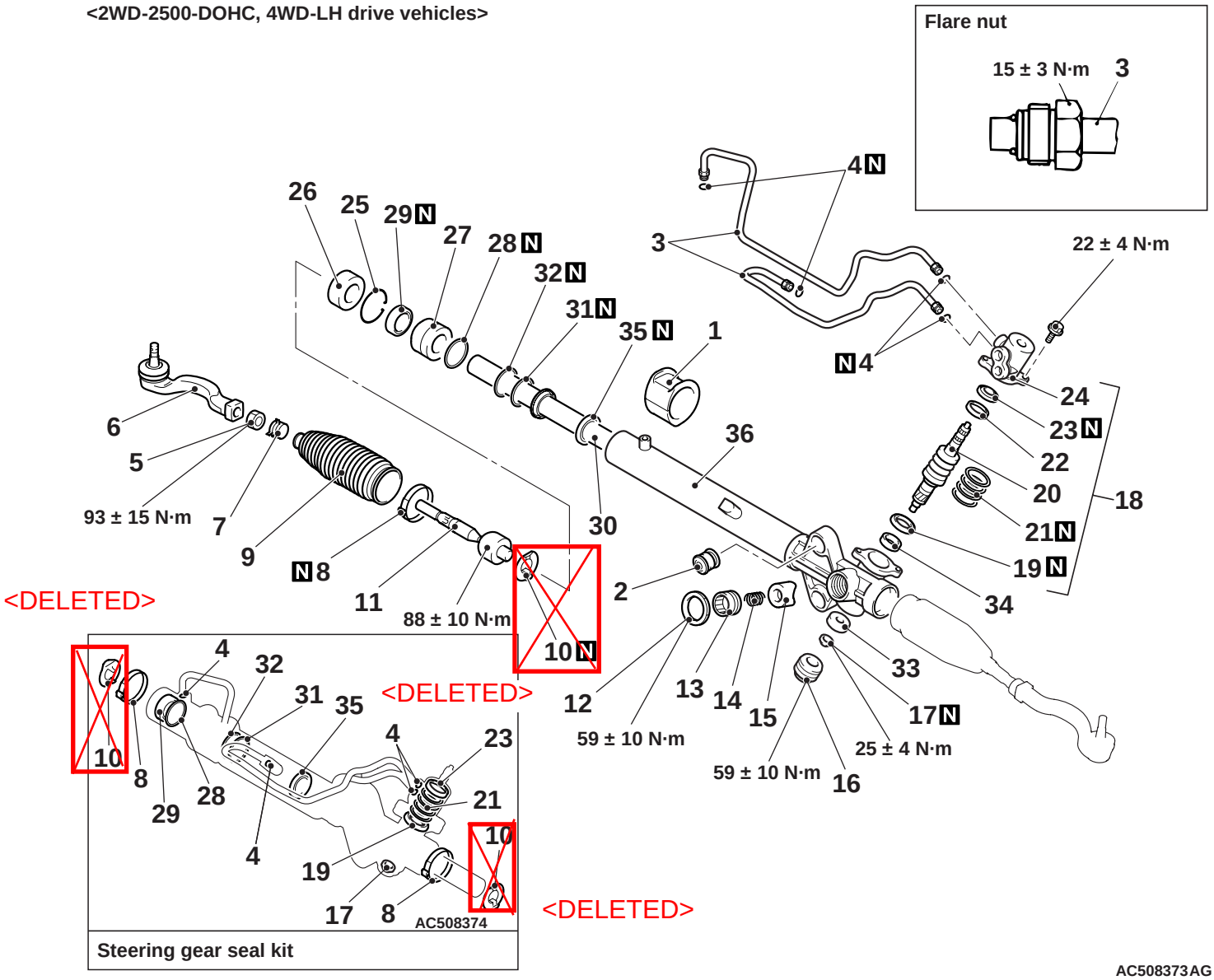


		Disassembly steps
	>>P<<	1. Gear mounting rubber
		2. Gear housing mounting bushing
		3. Feed pipe
		4. O-ring
	>>O<<	5. Lock nut
	>>O<<	6. Tie rod end
		7. Clip
<DELETED>	>>N<<	8. Bellows band
		9. Bellows
<<A>>	>>M<<	~~10. Tab washer~~
<<B>>	>>L<<	11. Tie rod
	>>K<<	• Total pinion torque adjustment
	>>J<<	12. Lock nut
<<C>>	>>J<<	13. Rack support cover
		14. Support spring
		15. Rack support
	>>I<<	16. End plug
		17. Lock nut

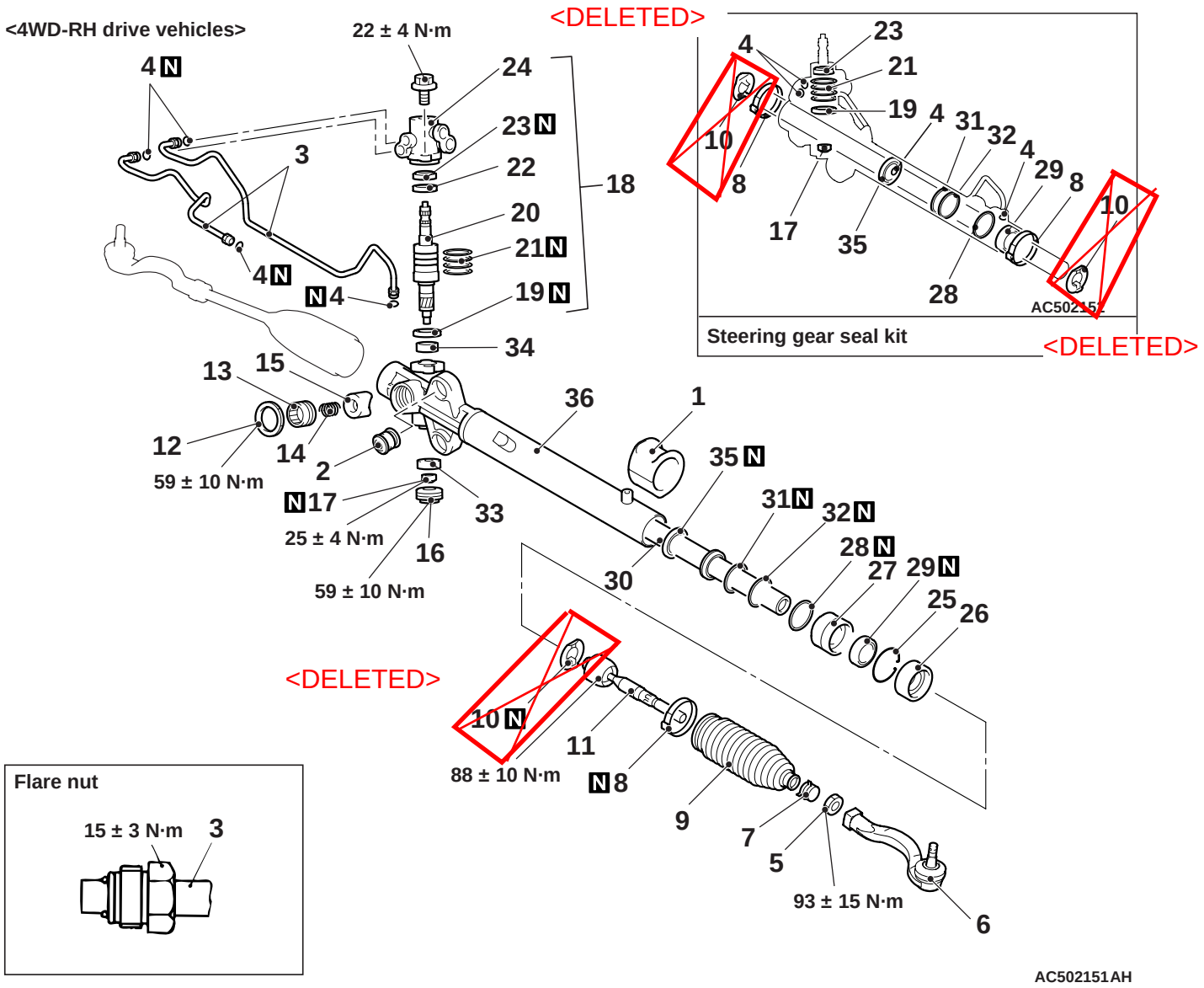
		Disassembly steps
		18. Valve housing assembly
<<D>>	>>H<<	19. Lower oil seal
<<D>>		20. Pinion and valve assembly
<<E>>	>>G<<	21. Seal ring
<<F>>	>>F<<	22. Upper bearing
<<F>>	>>F<<	23. Upper oil seal
		24. Valve housing
<<G>	>>E<<	25. Circlip
<<H>>		26. Rack stopper
<<H>>	>>D<<	27. Rack bushing assembly
<<H>>	>>D<<	28. O ring
<<H>>	>>D<<	29. Oil seal
<<H>>	>>C<<	30. Rack assembly
<<E>>		31. Seal ring
		32. O-ring
<<I>>	>>B<<	33. Lower bearing
<<J>>	>>B<<	34. Needle bearing
<<K>>	>>A<<	35. Oil seal
		36. Gear housing

Attached sheet 9 (3/7)

<2WD-2500-DOHC, 4WD-LH drive vehicles>



Attached sheet 9 (4/7)



			Disassembly steps
	>>P<<	1.	Gear mounting rubber
		2.	Gear housing mounting bushing
		3.	Feed pipe
		4.	O-ring
	>>O<<	5.	Lock nut
	>>O<<	6.	Tie rod end
		7.	Clip
<DELETED>	>>N<<	8.	Bellows band
		9.	Bellows
<<A>>	>>M<<	10.	Tab washer
<<B>>	>>L<<	11.	Tie rod
	>>K<<	•	Total pinion torque adjustment
	>>J<<	12.	Lock nut
<<C>>	>>J<<	13.	Rack support cover
		14.	Support spring
		15.	Rack support
	>>I<<	16.	End plug
		17.	Lock nut

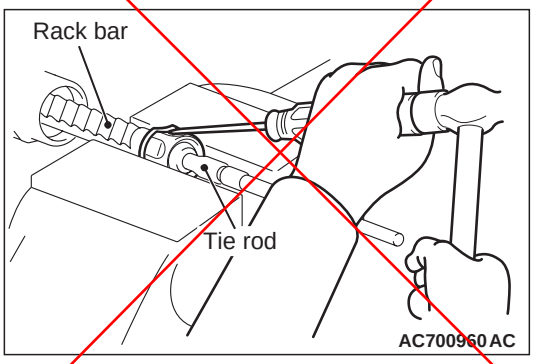
			Disassembly steps
		18.	Valve housing assembly
<<D>>	>>H<<	19.	Lower oil seal
<<D>>		20.	Pinion and valve assembly
<<E>>	>>G<<	21.	Seal ring
<<F>>	>>F<<	22.	Upper bearing
<<F>>	>>F<<	23.	Upper oil seal
		24.	Valve housing
<<G>>	>>E<<	25.	Circlip
<<H>>		26.	Rack stopper
<<H>>	>>D<<	27.	Rack bushing assembly
<<H>>	>>D<<	28.	O ring
<<H>>	>>D<<	29.	Oil seal
<<H>>	>>C<<	30.	Rack assembly
<<E>>		31.	Seal ring
		32.	O-ring
<<I>>	>>B<<	33.	Lower bearing
<<J>>	>>B<<	34.	Needle bearing
<<K>>	>>A<<	35.	Oil seal
		36.	Gear housing

DISASSEMBLY SERVICE POINTS

<<A>> TAB WASHER REMOVAL

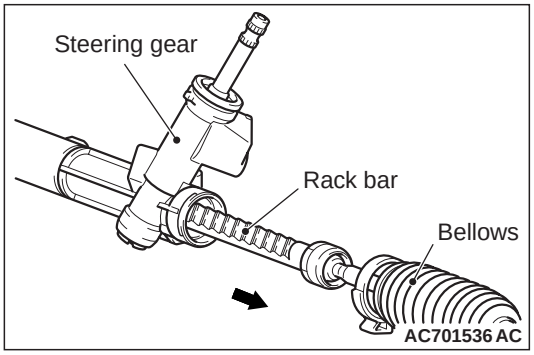
⚠ CAUTION

- **Do not tighten the vise strongly in order not to damage the tie rod.**
- **Do not make aq impact to the rack bar.**



1. Fix the tie rod ball joint part with a vise.
2. Use a screw driver and hammer to lift right and left tab washer caulked edges.

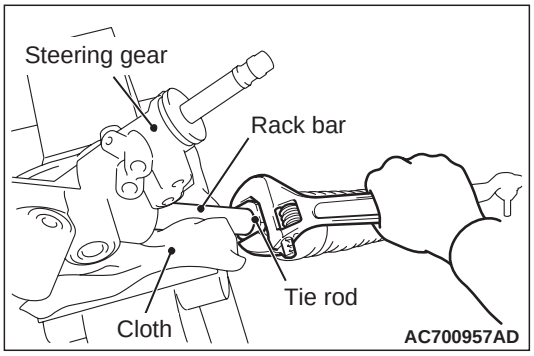
<<B>> TIE ROD REMOVAL



1. Move the bellows and pull the rack bar toward arrow direction.

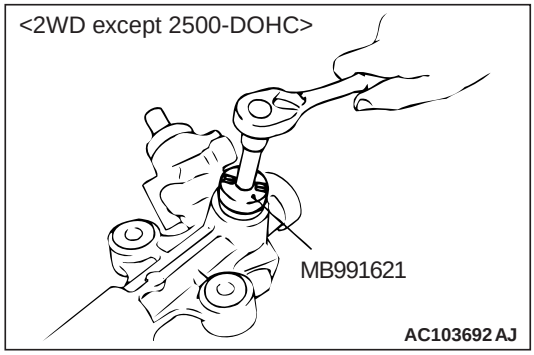
⚠ CAUTION

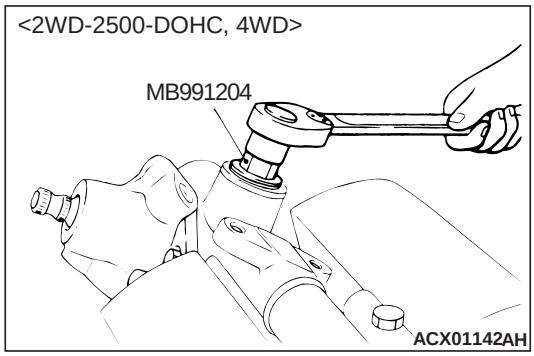
Do not tighten the vise strongly in order not to damage the rack bar.



2. Wrap rack bar with cloth in order not to damage, and tix the rack bar with a vise.
3. Use the tool to remove the tie rod.

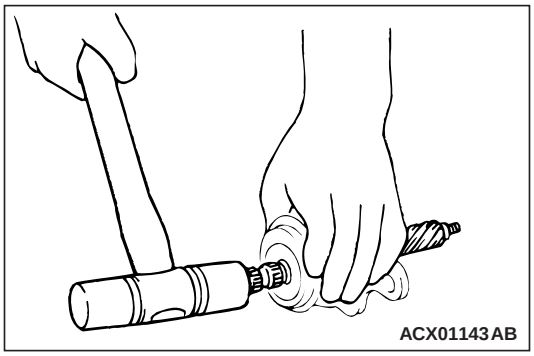
<<C>> RACK SUPPORT COVER REMOVAL





Using special tool rack support cover wrench (MB991621) <2WD except 2500-DOHC>, torque wrench socket (MB991204) <2WD-2500-DOHC, 4WD>, remove the rack support cover from the steering gear.

<<D>> LOWER OIL SEAL/PINION AND VALVE ASSEMBLY REMOVAL



Using a plastic hammer, gently tap the pinion to remove it.

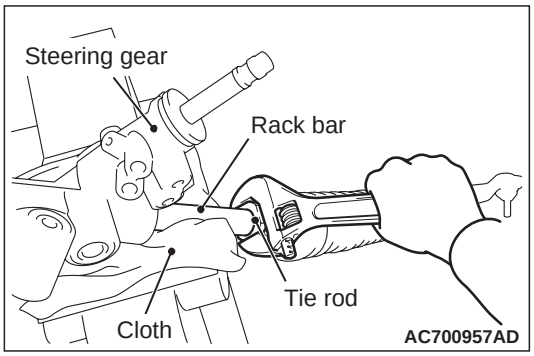
Attached sheet 9 (6/7)

2. If the total pinion torque or the change in torque is outside the standard value, move the rack support cover 0 – 30°, and adjust the pinion torque again.

>>L<< TIE ROD INSTALLATION

⚠ CAUTION

Do not tighten the vise strongly in order not to damage the rack bar.



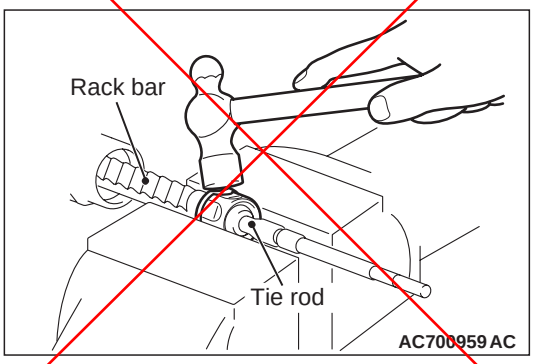
1. Wrap rack bar with cloth in order not to damage, and tix the rack bar with a vise.
2. Use the tool to install the tie rod.

Tightening torque: 88 ± 10 N·m

>>M<< TAB WASHER INSTALLATION

⚠ CAUTION

- **Do not tighten the vise strongly in order not to damage the tie rod.**
- **Do not make aq impact to the rack bar.**



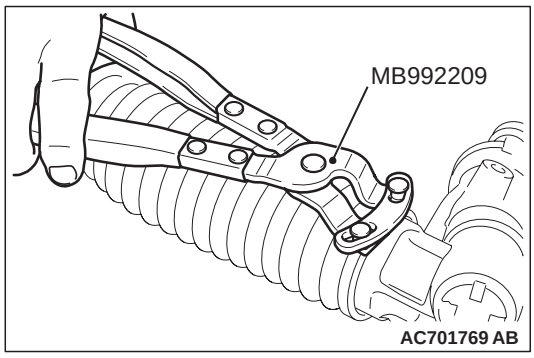
1. Fix the tie rod ball joint part with a vise.
2. Use a hammer to caulk the right and left tab washer at two places.

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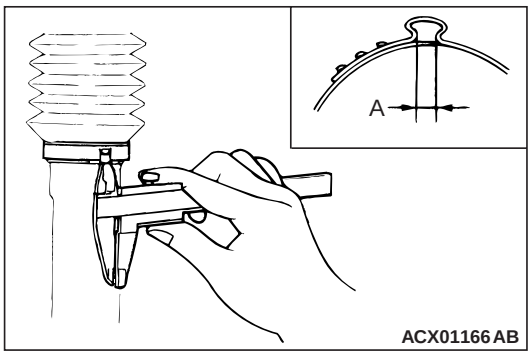
>>N<< BELLOWS BAND INSTALLATION

⚠ CAUTION

- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**



1. Use special tool (MB992209) to crimp the bellows band.

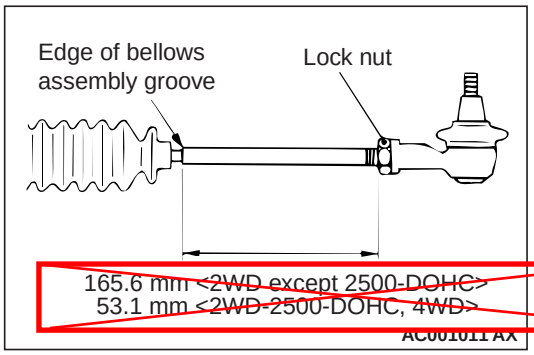


2. Check that crimped width (A) is within the standard value.

Standard value (A): 2.4 – 2.8 mm

Attached sheet 9 (7/7)

>>O<< TIE ROD END/LOCK NUT INSTALLATION



<OLD>

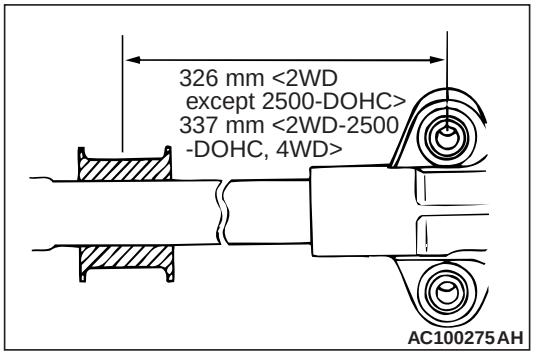
Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

166.6 mm <2WD except 2500-DOHC>
54.1 mm <2WD-2500-DOHC, 4WD>

<NEW>

>>P<< GEAR MOUNTING RUBBER INSTALLATION



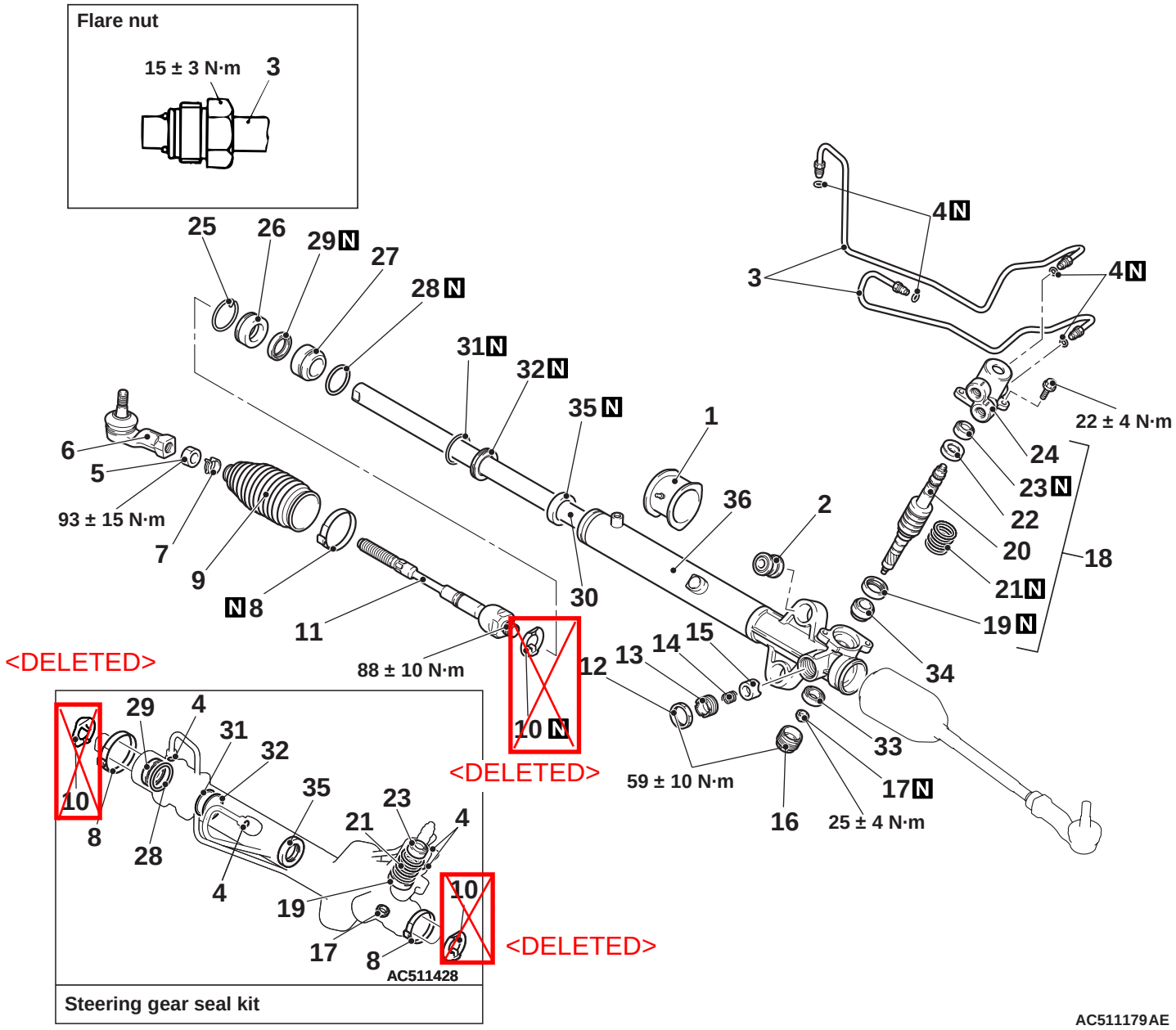
Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

Attached sheet 10 (1/8)

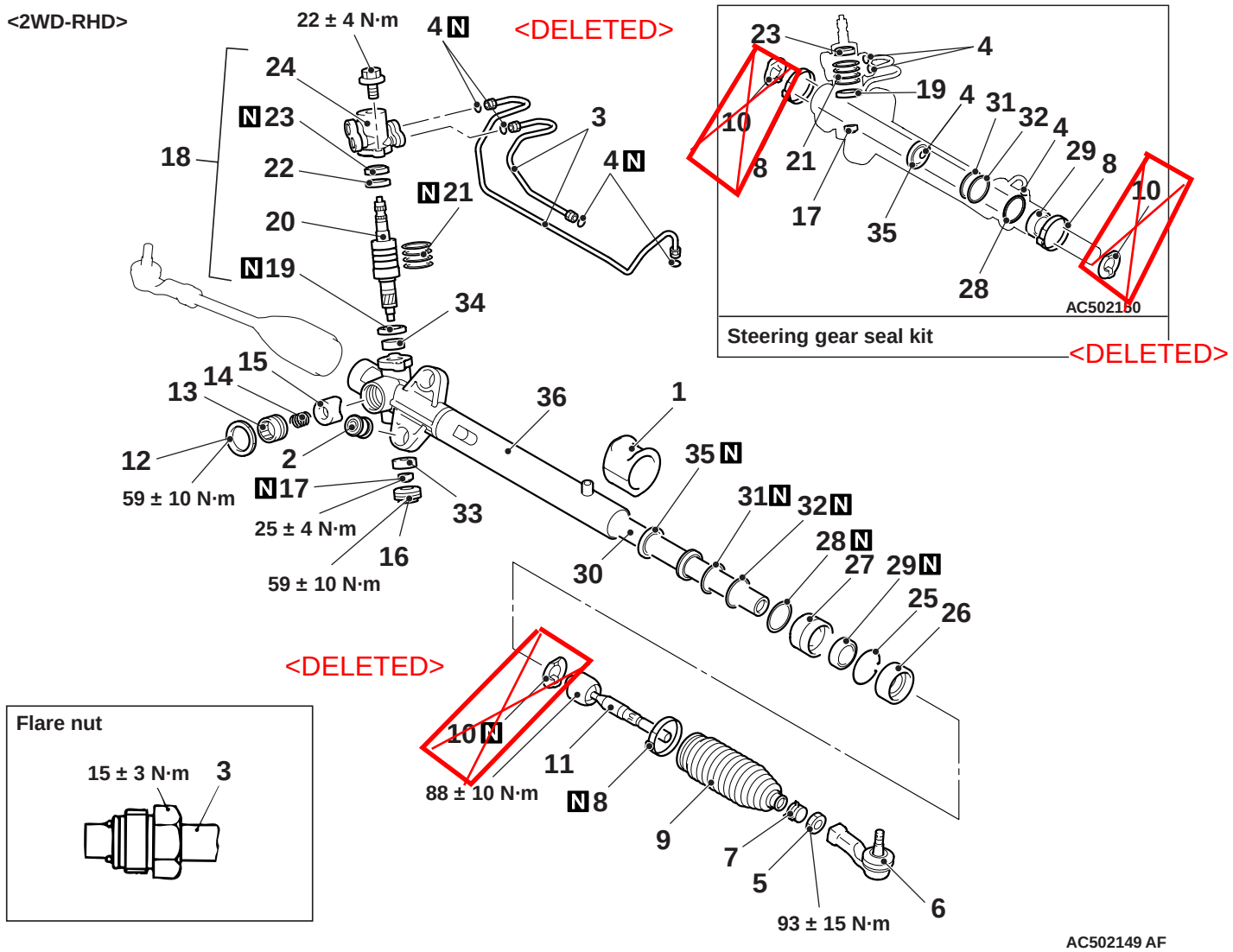
DISASSEMBLY AND REASSEMBLY

M1372011101000

<2WD (except High rider) - LHD>



Attached sheet 10 (2/8)

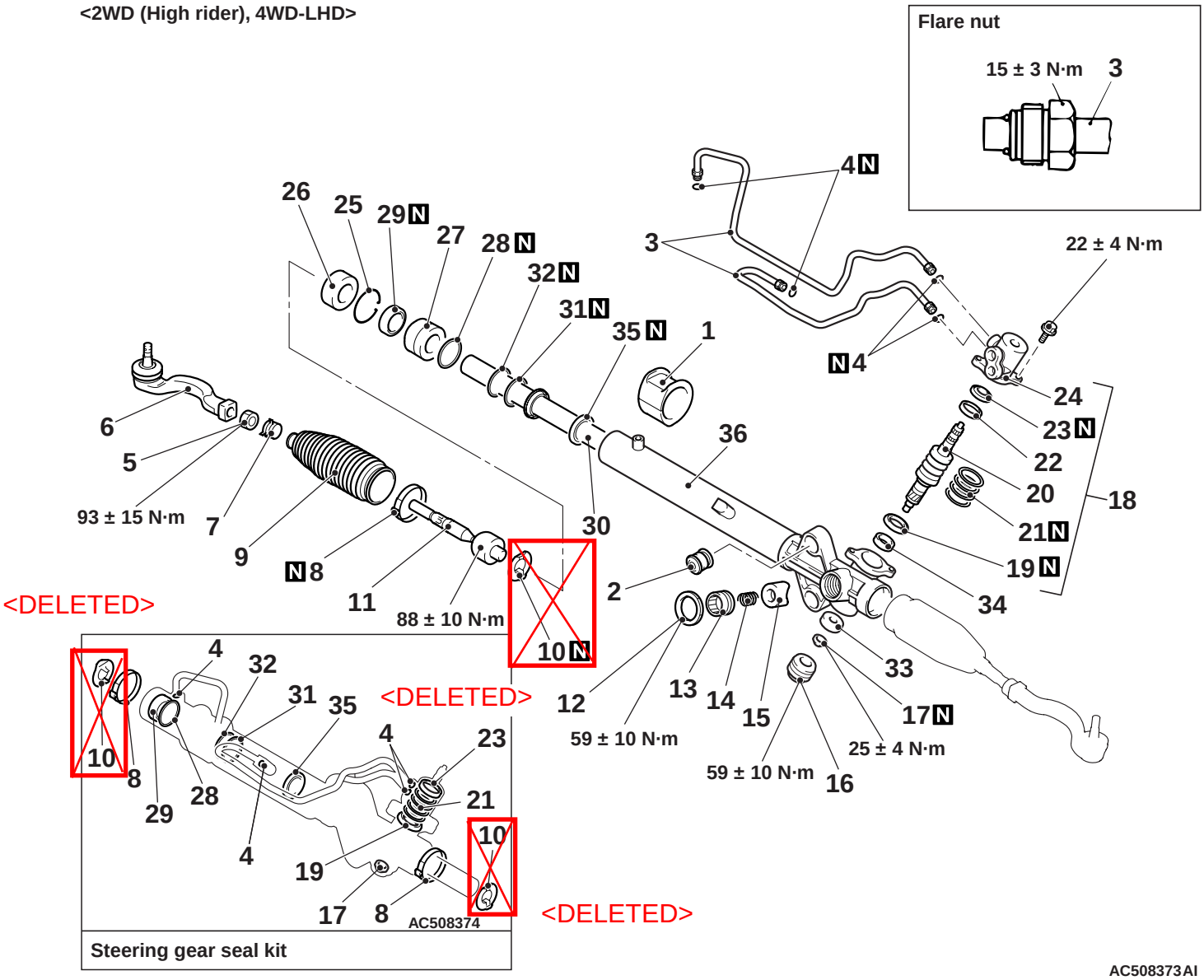


		Disassembly steps
	>>P<<	1. Gear mounting rubber
		2. Gear housing mounting bushing
		3. Feed pipe
		4. O-ring
	>>O<<	5. Lock nut
	>>O<<	6. Tie rod end
		7. Clip
<DELETED>	>>N<<	8. Bellows band
		9. Bellows
<<A>>	>>M<<	~~10. Tab washer~~
<<B>>	>>L<<	11. Tie rod
	>>K<<	• Total pinion torque adjustment
	>>J<<	12. Lock nut
<<C>>	>>J<<	13. Rack support cover
		14. Support spring
		15. Rack support
	>>I<<	16. End plug
		17. Lock nut

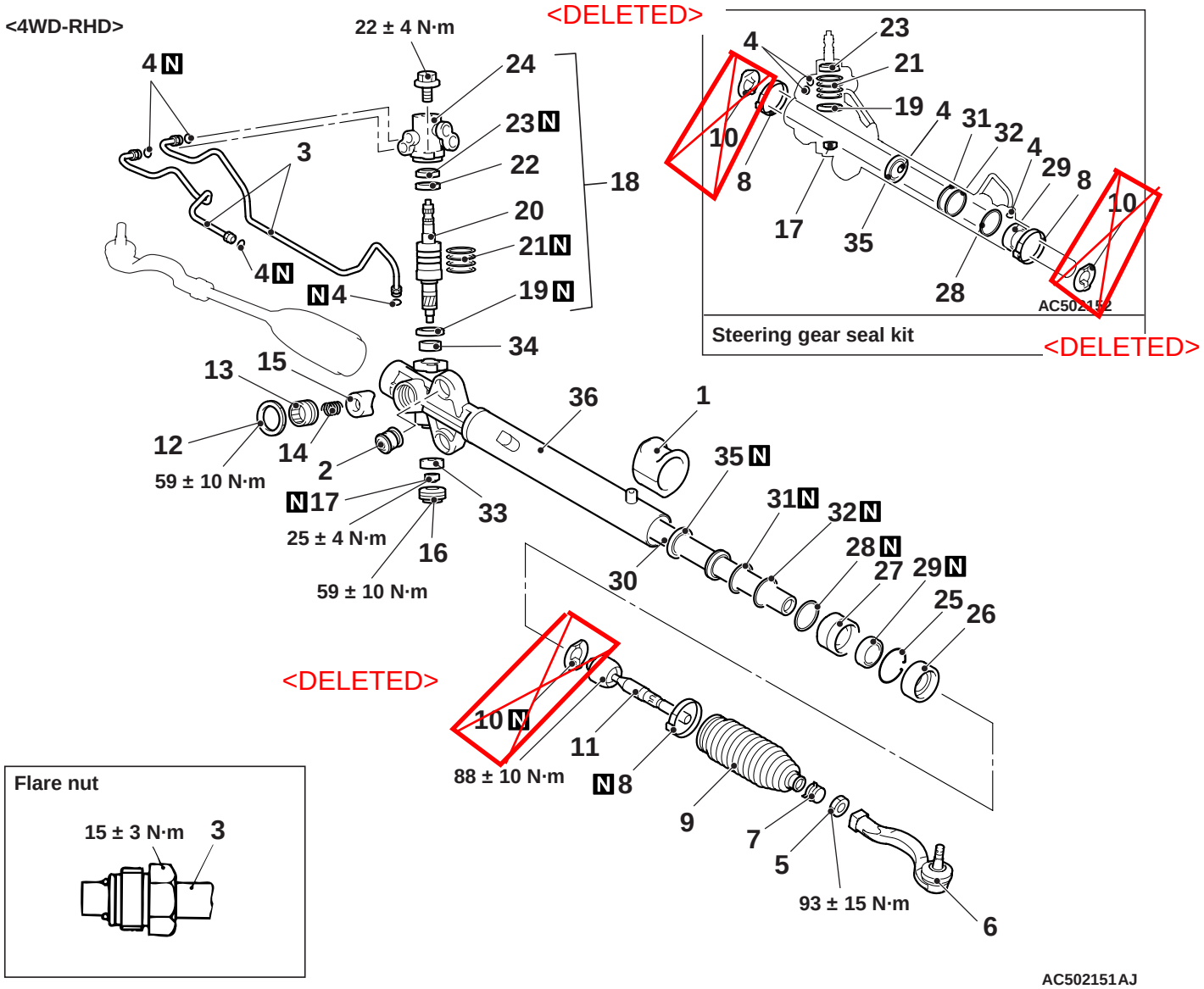
		Disassembly steps
		18. Valve housing assembly
<<D>>	>>H<<	19. Lower oil seal
<<D>>		20. Pinion and valve assembly
<<E>>	>>G<<	21. Seal ring
<<F>>	>>F<<	22. Upper bearing
<<F>>	>>F<<	23. Upper oil seal
		24. Valve housing
<<G>>	>>E<<	25. Circlip
<<H>>		26. Rack stopper
<<H>>	>>D<<	27. Rack bushing assembly
<<H>>	>>D<<	28. O-ring
<<H>>	>>D<<	29. Oil seal
<<H>>	>>C<<	30. Rack assembly
<<E>>		31. Seal ring
		32. O-ring
<<I>>	>>B<<	33. Lower bearing
<<J>>	>>B<<	34. Needle bearing
<<K>>	>>A<<	35. Oil seal
		36. Gear housing

Attached sheet 10 (3/8)

<2WD (High rider), 4WD-LHD>



Attached sheet 10 (4/8)

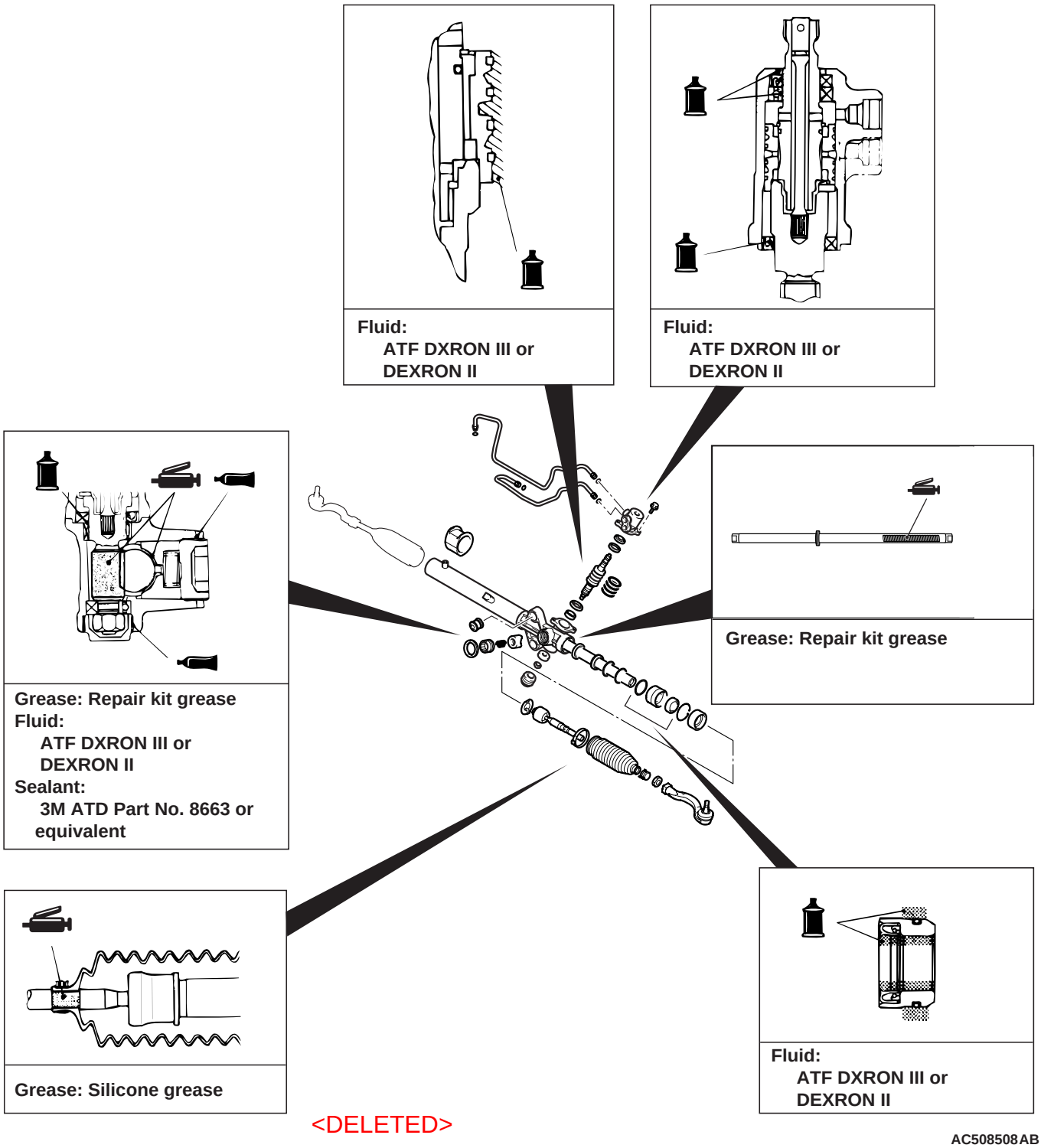


			Disassembly steps
	>>P<<	1.	Gear mounting rubber
		2.	Gear housing mounting bushing
		3.	Feed pipe
		4.	O-ring
	>>O<<	5.	Lock nut
	>>O<<	6.	Tie rod end
		7.	Clip
<DELETED>	>>N<<	8.	Bellows band
		9.	Bellows
<<A>>	>>M<<	10.	~~Tab washer~~
<<B>>	>>L<<	11.	Tie rod
	>>K<<	•	Total pinion torque adjustment
	>>J<<	12.	Lock nut
<<C>>	>>J<<	13.	Rack support cover
		14.	Support spring
		15.	Rack support
	>>I<<	16.	End plug
		17.	Lock nut

			Disassembly steps
		18.	Valve housing assembly
<<D>>	>>H<<	19.	Lower oil seal
<<D>>		20.	Pinion and valve assembly
<<E>>	>>G<<	21.	Seal ring
<<F>>	>>F<<	22.	Upper bearing
<<F>>	>>F<<	23.	Upper oil seal
		24.	Valve housing
<<G>>	>>E<<	25.	Circlip
<<H>>		26.	Rack stopper
<<H>>	>>D<<	27.	Rack bushing assembly
<<H>>	>>D<<	28.	O-ring
<<H>>	>>D<<	29.	Oil seal
<<H>>	>>C<<	30.	Rack assembly
<<E>>		31.	Seal ring
		32.	O-ring
<<I>>	>>B<<	33.	Lower bearing
<<J>>	>>B<<	34.	Needle bearing
<<K>>	>>A<<	35.	Oil seal
		36.	Gear housing

Attached sheet 10 (5/8)

LUBRICATION AND SEALING POINTS



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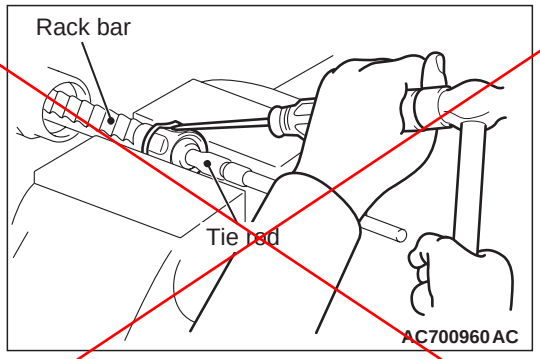
AC508508AB

DISASSEMBLY SERVICE POINTS

<<A>> TAB WASHER REMOVAL

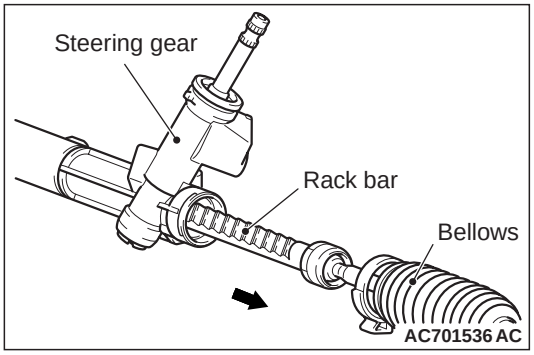
⚠ CAUTION

- Do not tighten the vice strongly in order not to damage the tie rod.
- Do not make an impact to the rack bar.



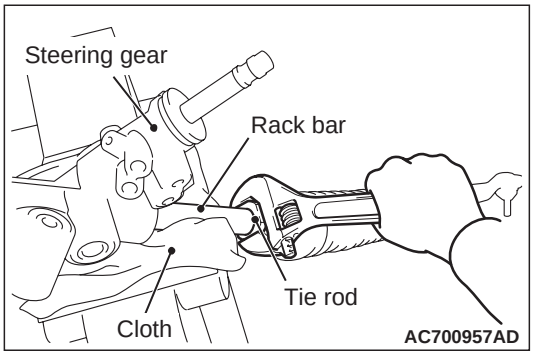
1. Fix the tie rod ball joint part with a vice.
2. Use a screw driver and hammer to lift right and left tab washer caulked edges.

<<B>> TIE ROD REMOVAL



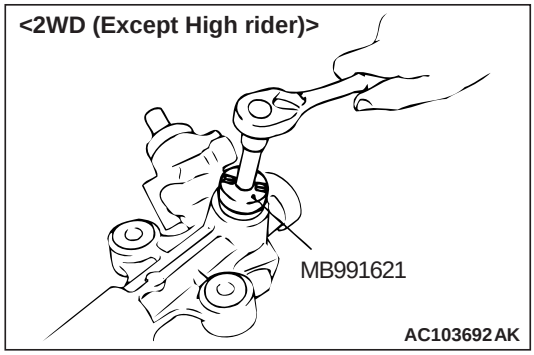
1. Move the bellows and pull the rack bar toward arrow direction.

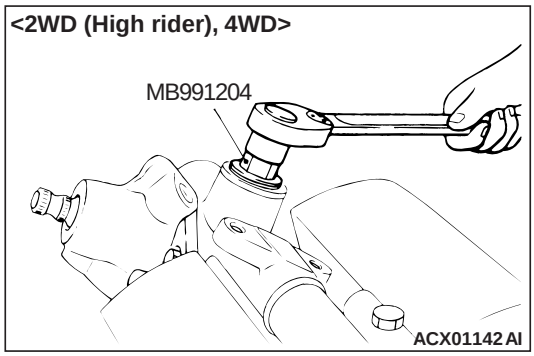
⚠ CAUTION
Do not tighten the vice strongly in order not to damage the rack bar.



2. Wrap rack bar with cloth in order not to damage, and fix the rack bar with a vice.
3. Use the tool to remove the tie rod.

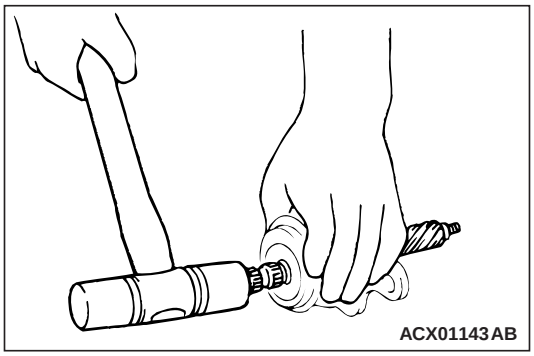
<<C>> RACK SUPPORT COVER REMOVAL





Using special tool rack support cover wrench (MB991621) <2WD (except High rider)>, torque wrench socket (MB991204) <2WD (High rider), 4WD>, remove the rack support cover from the steering gear.

<<D>> LOWER OIL SEAL/PINION AND VALVE ASSEMBLY REMOVAL



Using a plastic hammer, gently tap the pinion to remove it.

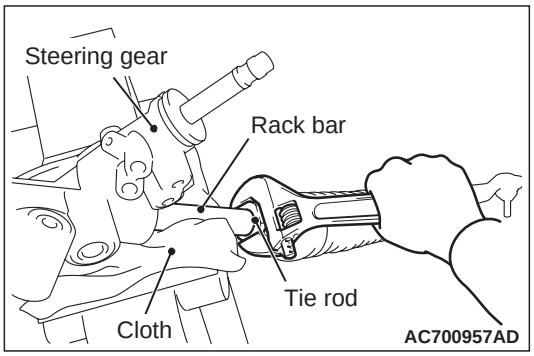
Attached sheet 10 (7/8)

2. If the total pinion torque or the change in torque is outside the standard value, move the rack support cover 0 – 30°, and adjust the pinion torque again.

>>L<< TIE ROD INSTALLATION

⚠ CAUTION

Do not tighten the vice strongly in order not to damage the rack bar.



1. Wrap rack bar with cloth in order not to damage, and fix the rack bar with a vice.
2. Use the tool to install the tie rod.

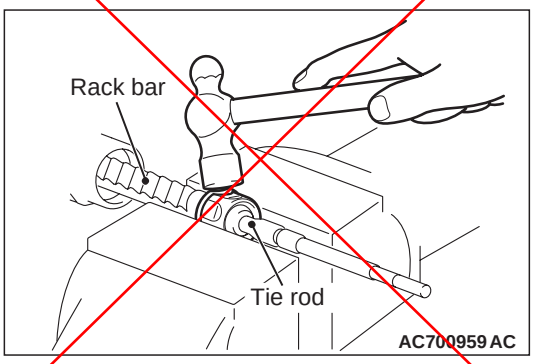
Tightening torque: 88 ± 10 N·m

<DELETED>

>>M<< TAB WASHER INSTALLATION

⚠ CAUTION

- **Do not tighten the vice strongly in order not to damage the tie rod.**
- **Do not make an impact to the rack bar.**

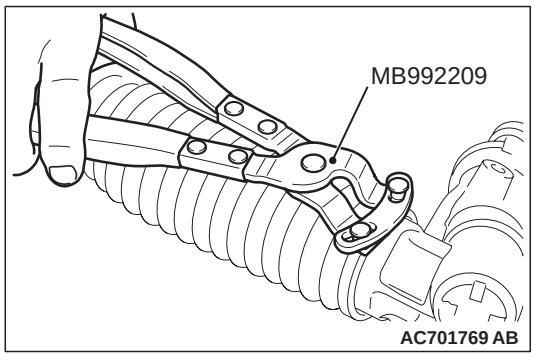


1. Fix the tie rod ball joint part with a vice.
2. Use a hammer to caulk the right and left tab washer at two places.

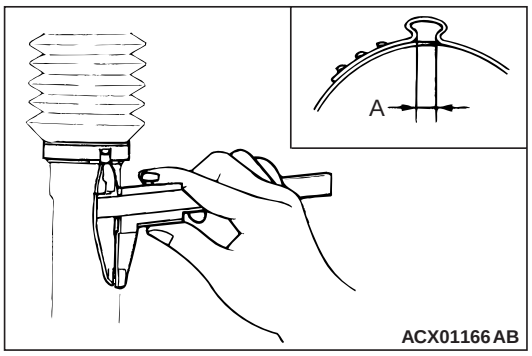
>>N<< BELLOWS BAND INSTALLATION

⚠ CAUTION

- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**



1. Use special tool (MB992209) to crimp the bellows band.

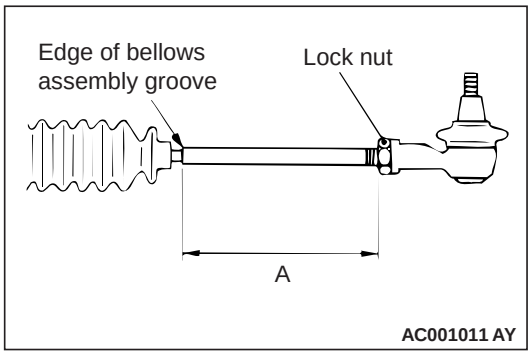


2. Check that crimped width (A) is within the standard value.

Standard value (A): 2.4 – 2.8 mm

Attached sheet 10 (8/8)

>>O<< TIE ROD END/LOCK NUT INSTALLATION



Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

<OLD>

Reference value (A):

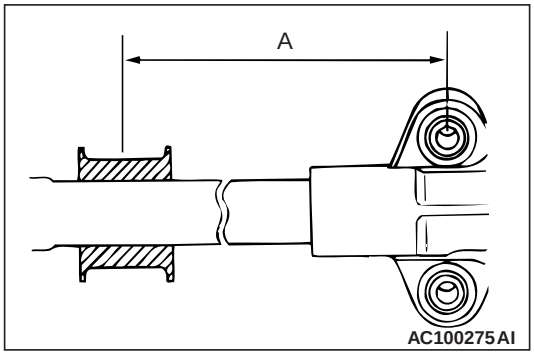
- ~~**165.6mm <2WD (except High rider)>**~~
- ~~**53.1mm <2WD (High rider), 4WD>**~~

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

- **166.6 mm <2WD(Except high rider)>**
- **54.1 mm <2WD(High rider), 4WD>**

<NEW>

>>P<< GEAR MOUNTING RUBBER INSTALLATION



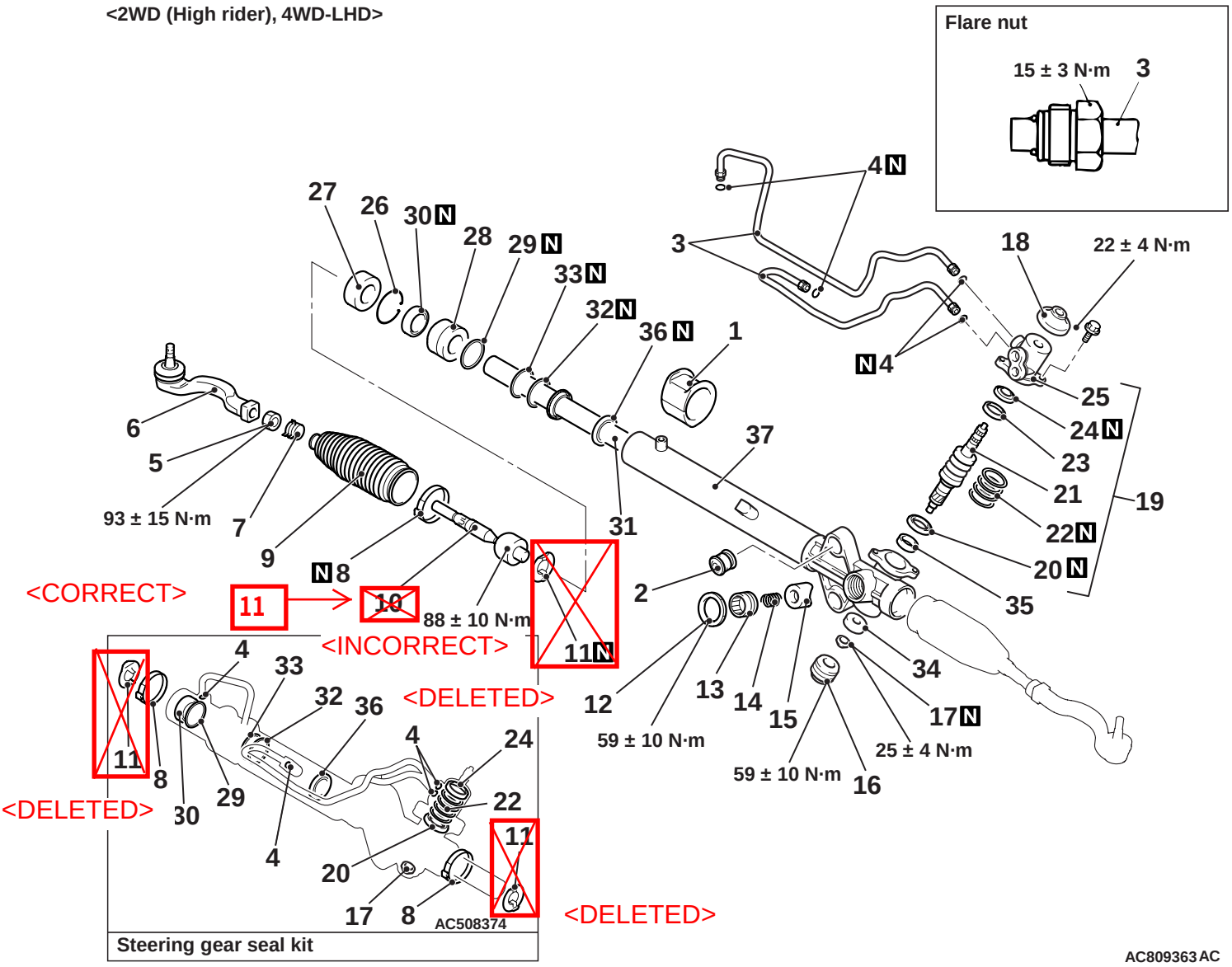
Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

Reference value (A):

- **326mm <2WD (except High rider)>**
- **337mm <2WD (High rider), 4WD>**

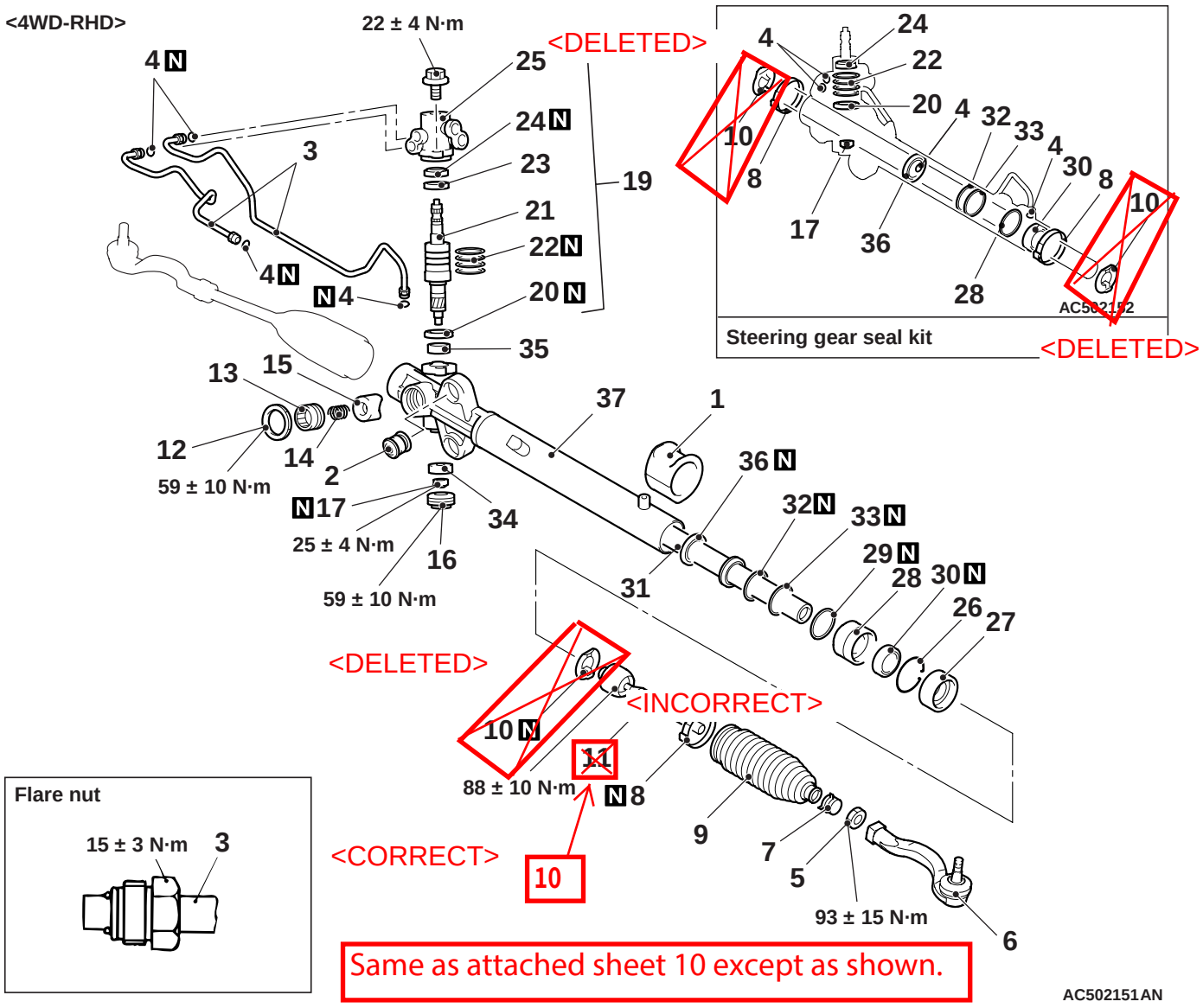
Attached sheet 11 (1/2)

<2WD (High rider), 4WD-LHD>



Same as attached sheet 10 except as shown.

Attached sheet 11 (2/2)



Same as attached sheet 10 except as shown.

Disassembly steps

>>P<<	1.	Gear mounting rubber	
	2.	Gear housing mounting bushing	
	3.	Feed pipe	
	4.	O-ring	
>>O<<	5.	Lock nut	
>>O<<	6.	Tie rod end	
	7.	Clip	
>>N<<	8.	Bellows band	
	9.	Bellows	
<<A>> >>M<<	10.	Tab washer	
<<B>> >>L<<	11.	Tie rod	<INCORRECT>
>>K<<	•	Total pinion torque adjustment	
>>J<<	12.	Lock nut	
<<C>> >>J<<	13.	Rack support cover	
	14.	Support spring	
	15.	Rack support	
>>I<<	16.	End plug	
	17.	Lock nut	

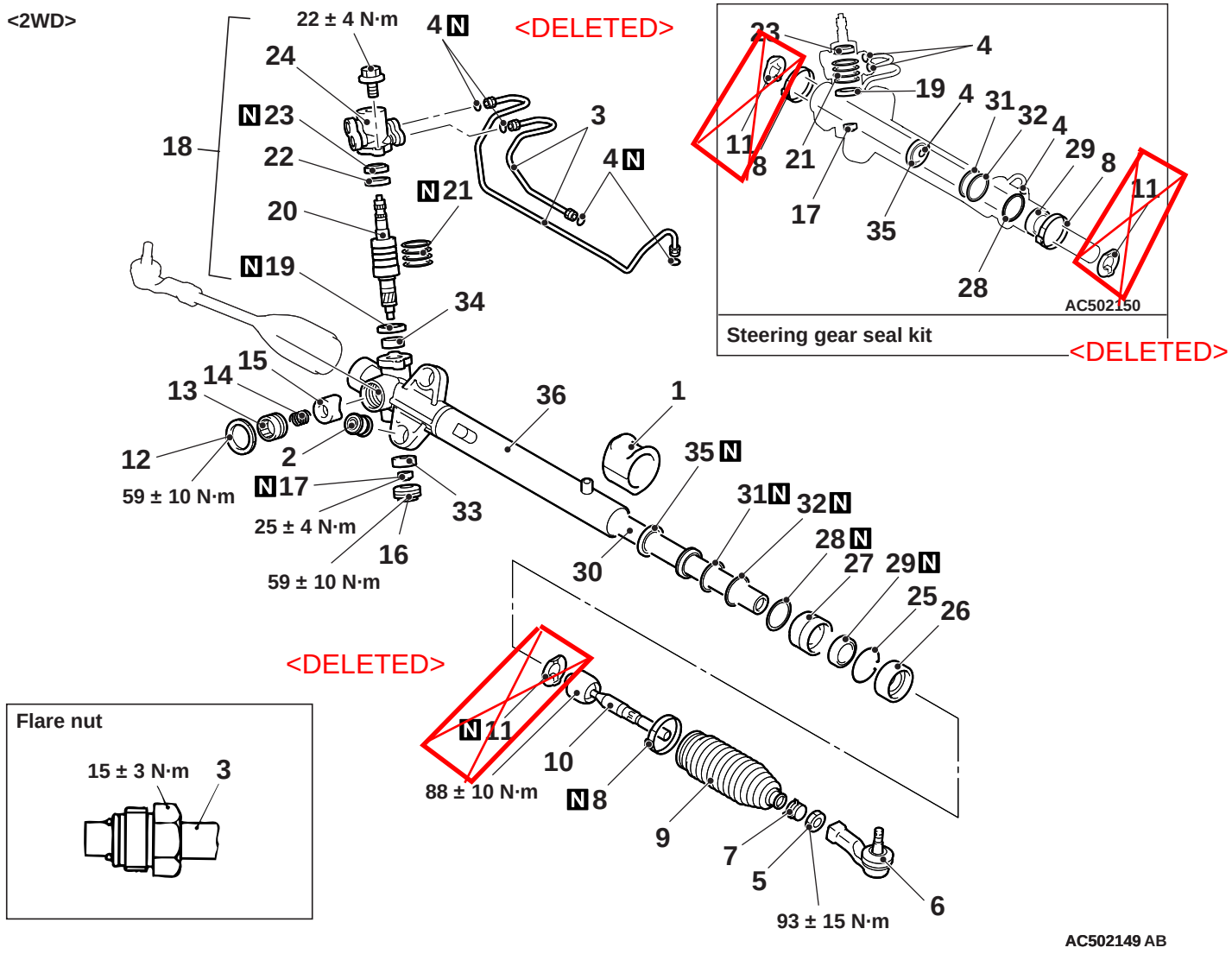
Disassembly steps

	18.	Dust cover (Option) <Vehicles for RUSSIA>	
	19.	Valve housing assembly	
<<D>> >>H<<	20.	Lower oil seal	
<<D>>	21.	Pinion and valve assembly	
<<E>> >>G<<	22.	Seal ring	
<<F>> >>F<<	23.	Upper bearing	
<<F>> >>F<<	24.	Upper oil seal	
	25.	Valve housing	
<<G>> >>E<<	26.	Circlip	
<<H>>	27.	Rack stopper	
<H>> >>D<<	28.	Rack bushing assembly	
<<H>> >>D<<	29.	O-ring	
<<H>> >>D<<	30.	Oil seal	
<<H>> >>C<<	31.	Rack assembly	
<<E>>	32.	Seal ring	
	33.	O-ring	
<<I>> >>B<<	34.	Lower bearing	
<<J>> >>B<<	35.	Needle bearing	
<<K>> >>A<<	36.	Oil seal	
	37.	Gear housing	

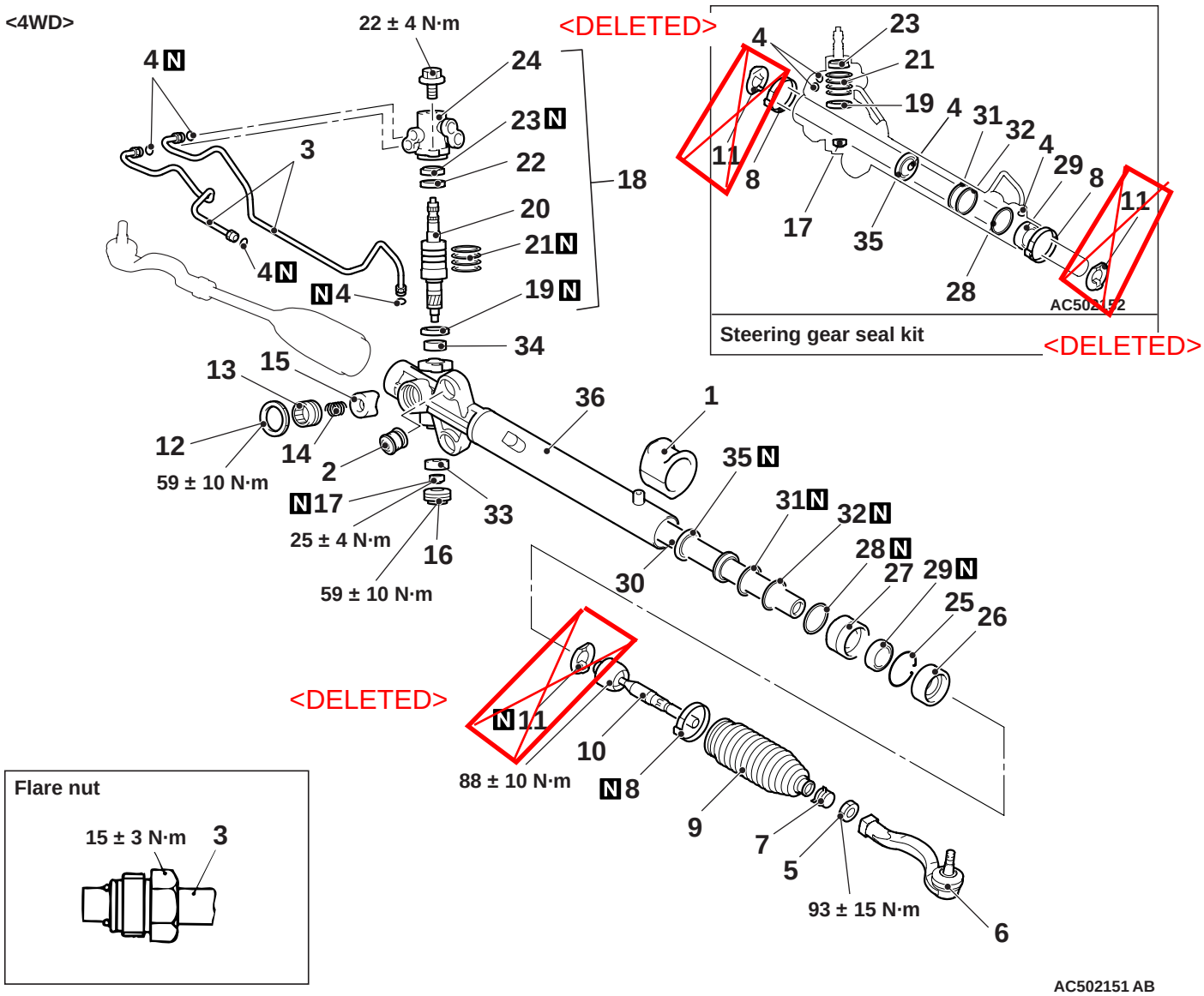
Attached sheet 12 (1/4)

DISASSEMBLY AND REASSEMBLY

M1372011100386



Attached sheet 12 (2/4)



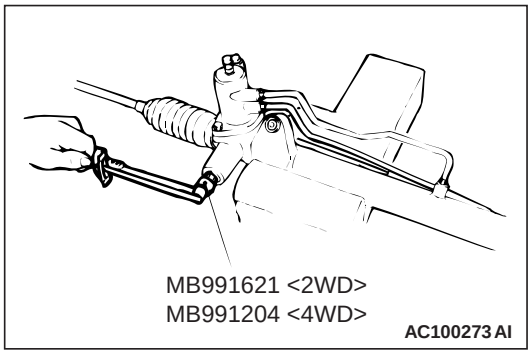
Disassembly steps

>>O<<	1.	Gear mounting rubber
	2.	Gear housing mounting bushing
	3.	Feed pipe
	4.	O-ring
>>N<<	5.	Lock nut
>>N<<	6.	Tie rod end
	7.	Clip
>>M<<	8.	Bellows band
	9.	Bellows
~~>>L<<~~	~~10.~~	~~Tie rod~~
~~>>L<<~~	~~11.~~	~~Tab washer~~ <DELETED>
>>K<<	•	Total pinion torque adjustment
>>J<<	12.	Lock nut
<<A>> >>J<<	13.	Rack support cover
	14.	Support spring
	15.	Rack support
>>I<<	16.	End plug
	17.	Lock nut

Disassembly steps (Continued)

	18.	Valve housing assembly
<<B>> >>H<<	19.	Lower oil seal
<<B>>	20.	Pinion and valve assembly
<<C>> >>G<<	21.	Seal ring
<<D>> >>F<<	22.	Upper bearing
<<D>> >>F<<	23.	Upper oil seal
	24.	Valve housing
<<E>> >>E<<	25.	Circlip
<<F>>	26.	Rack stopper
<<F>> >>D<<	27.	Rack bushing assembly
<<F>> >>D<<	28.	O ring
<<F>> >>D<<	29.	Oil seal
<<F>> >>C<<	30.	Rack assembly
<<C>>	31.	Seal ring
	32.	O-ring
<<G>> >>B<<	33.	Lower bearing
<<H>> >>B<<	34.	Needle bearing
<<I>> >>A<<	35.	Oil seal
	36.	Gear housing

Attached sheet 12 (3/4)

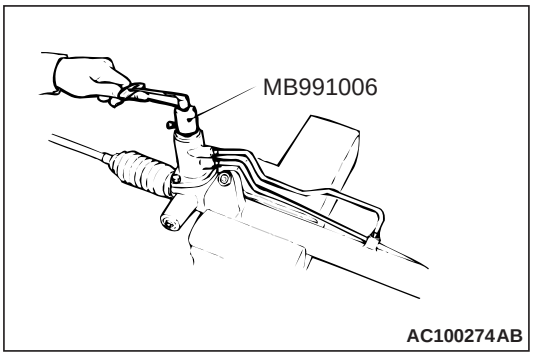


3. Use special tool rack support cover wrench (MB991621) <2WD>, torque wrench socket (MB991204) <4WD> to tighten the rack support cover.
4. Use the special tools to hold the rack support cover, and then tighten the lock nut to 59 ± 10 N·m.

>>K<< TOTAL PINION TORQUE ADJUSTMENT

⚠ CAUTION

- **Be sure there is no ratcheting or catching when operating the rack towards the shaft.**
- **Measure the total pinion torque through the whole stroke of the rack.**



1. Using special tool preload socket (MB991006), rotate the pinion shaft at the rate of one rotation in four to six seconds to check the total pinion torque and the change in torque.

   Standard value:
   Total pinion torque: 0.6 – 1.7 N·m
   [Change in torque: 0.4 N·m or less]

⚠ CAUTION

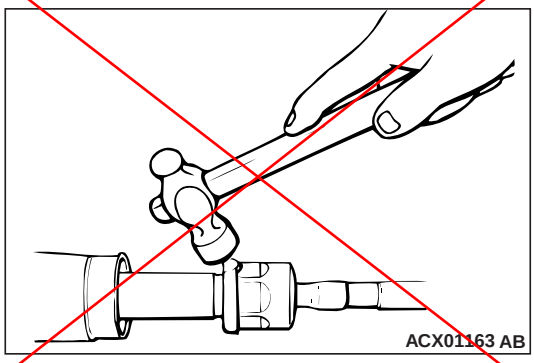
When adjusting, set at the highest value of the standard value range.

NOTE: If the total pinion toque cannot be adjusted to the standard value within the specified return angle, check the rack support cover components and replace any parts if necessary.

2. If the total pinion torque or the change in torque is outside the standard value, move the rack support cover 0 – 30°, and adjust the pinion torque again.

<DELETED>

>>L<< TAB WASHER/TIE ROD INSTALLATION



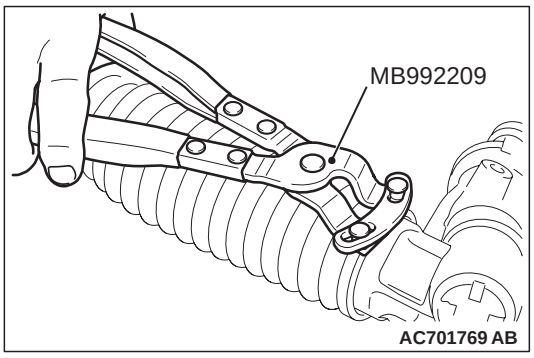
After installing the tie rod to the rack, fold tab washer end (two locations) to tie rod notch.

Attached sheet 12 (4/4)

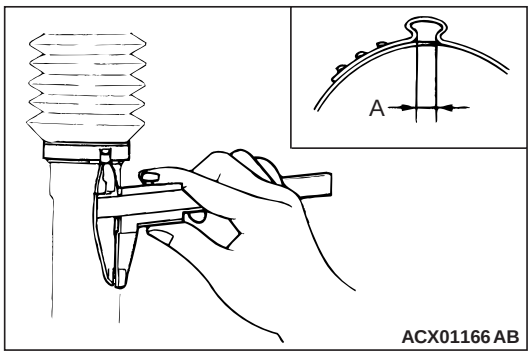
>>M<< BELLOWS BAND INSTALLATION

⚠ CAUTION

- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**



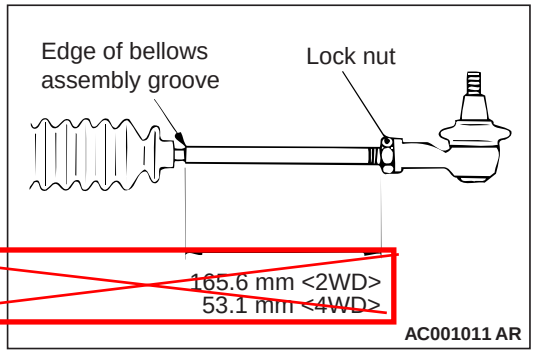
1. Use special tool (MB992209) to crimp the bellows band.



2. Check that crimped width (A) is within the standard value.

   Standard value (A): 2.4 – 2.8 mm

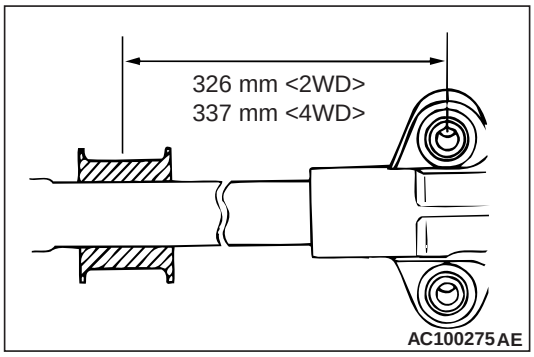
>>N<< TIE ROD END/LOCK NUT INSTALLATION



Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

>>O<< GEAR MOUNTING RUBBER INSTALLATION



Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

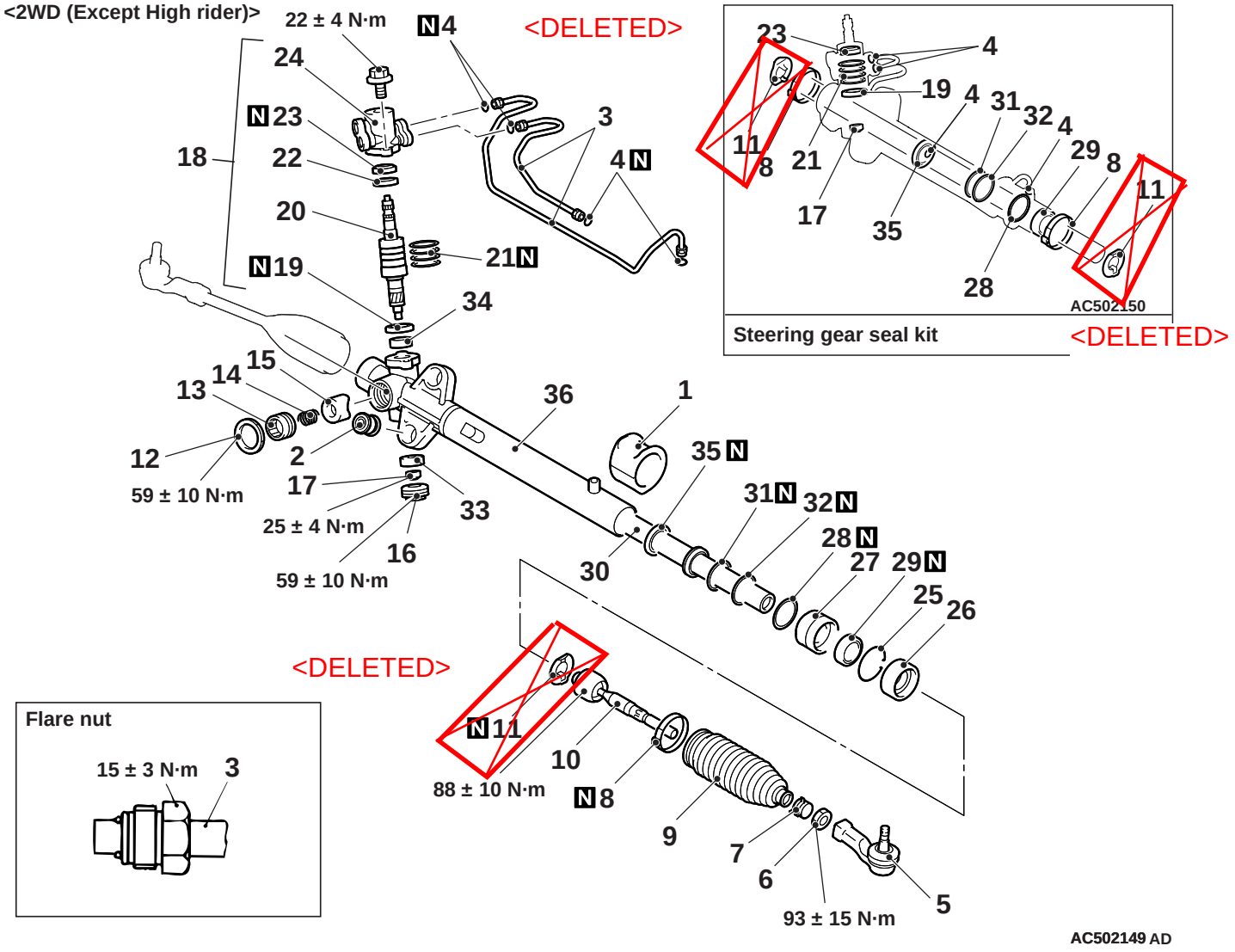
<NEW>

166.6 mm <2WD>
54.1 mm <4WD>

Attached sheet 13 (1/4)

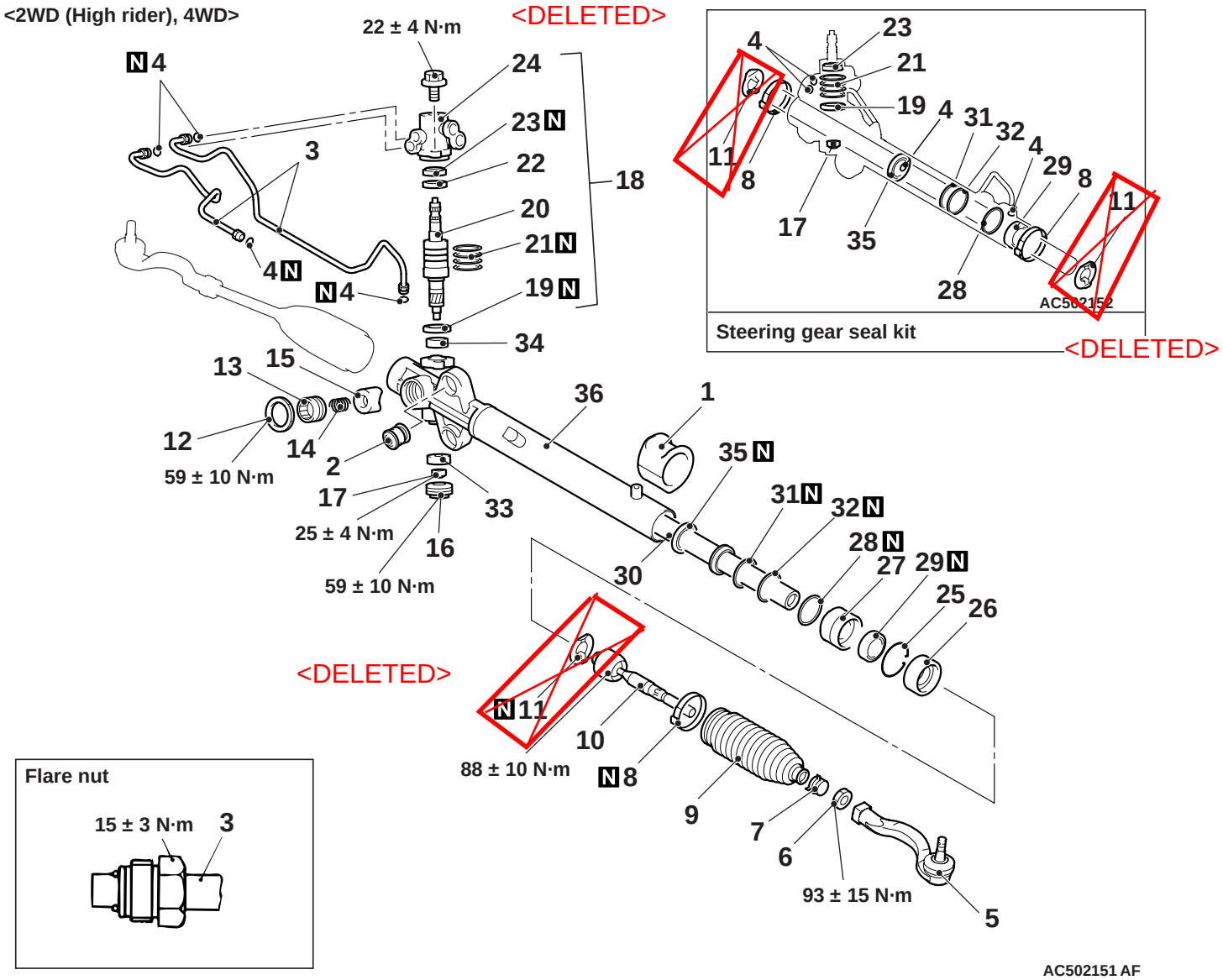
DISASSEMBLY AND REASSEMBLY

M1372011100643



Attached sheet 13 (2/4)

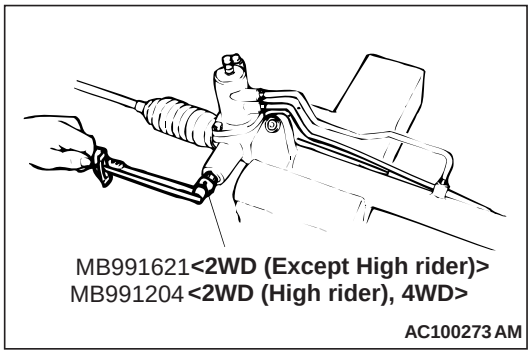
<2WD (High rider), 4WD>



		Disassembly steps
>>O<<	1.	Gear mounting rubber
	2.	Gear housing mounting bushing
	3.	Feed pipe
	4.	O-ring
>>N<<	5.	Tie rod end
>>N<<	6.	Lock nut
	7.	Clip
>>M<<	8.	Bellows band
	9.	Bellows
>>L<<	10.	Tie rod <DELETED>
>>L<<	11.	Tab washer
>>K<<	•	Total pinion torque adjustment
>>J<<	12.	Lock nut
<<A>> >>J<<	13.	Rack support cover
	14.	Support spring
	15.	Rack support
>>I<<	16.	End plug
	17.	Lock nut

		Disassembly steps
	18.	Valve housing assembly
<<B>> >>H<<	19.	Lower oil seal
<<B>>	20.	Pinion and valve assembly
<<C>> >>G<<	21.	Seal ring
<<D>> >>F<<	22.	Upper bearing
<<D>> >>F<<	23.	Upper oil seal
	24.	Valve housing
<<E>> >>E<<	25.	Circlip
<<F>>	26.	Rack stopper
<<F>> >>D<<	27.	Rack bushing assembly
<<F>> >>D<<	28.	O ring
<<F>> >>D<<	29.	Oil seal
<<F>> >>C<<	30.	Rack assembly
<<C>>	31.	Seal ring
	32.	O-ring
<<G>> >>B<<	33.	Lower bearing
<<H>> >>B<<	34.	Needle bearing
<<I>> >>A<<	35.	Oil seal
	36.	Gear housing

Attached sheet 13 (3/4)

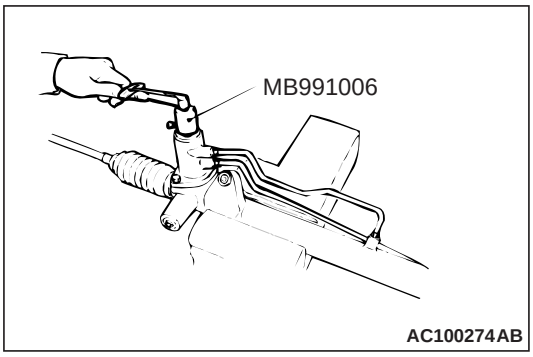


3. Use special tool rack support cover wrench (MB991621) <2WD (Except High rider)> or torque wrench socket (MB991204) <2WD (High rider), 4WD> to tighten the rack support cover.
4. Use the special tools to hold the rack support cover, and then tighten the lock nut to 59 ± 10 N·m.

>>K<< TOTAL PINION TORQUE ADJUSTMENT

⚠ CAUTION

- **Be sure there is no ratcheting or catching when operating the rack towards the shaft.**
- **Measure the total pinion torque through the whole stroke of the rack.**



1. Using special tool preload socket (MB991006), rotate the pinion shaft at the rate of one rotation in four to six seconds to check the total pinion torque and the change in torque.

   Standard value:
   Total pinion torque: 0.6 – 1.7 N·m
   [Change in torque: 0.4 N·m or less]

⚠ CAUTION

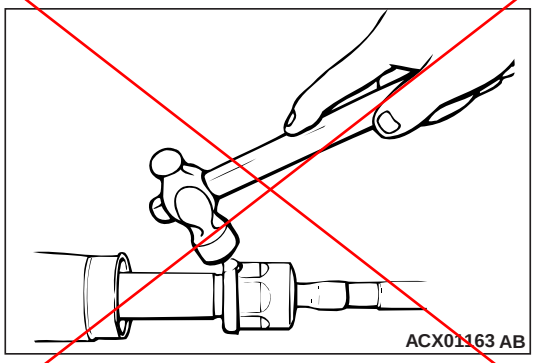
When adjusting, set at the highest value of the standard value range.

NOTE: If the total pinion toque cannot be adjusted to the standard value within the specified return angle, check the rack support cover components and replace any parts if necessary.

2. If the total pinion torque or the change in torque is outside the standard value, move the rack support cover 0 – 30°, and adjust the pinion torque again.

<DELETED>

>>L<< TAB WASHER/TIE ROD INSTALLATION



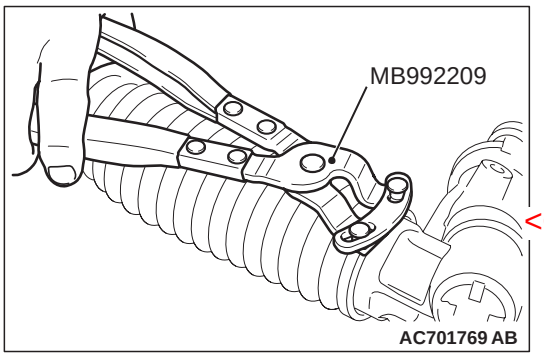
After installing the tie rod to the rack, fold tab washer end (two locations) to tie rod notch.

Attached sheet 13 (4/4)

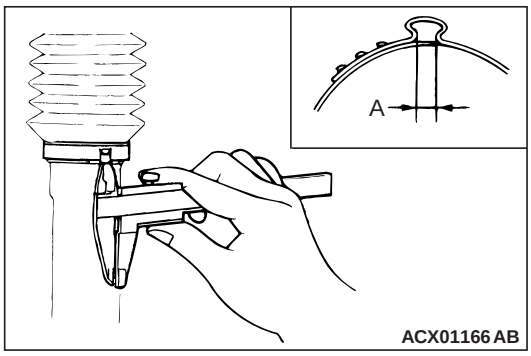
>>M<< BELLOWS BAND INSTALLATION

⚠ CAUTION

- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**



1. Use special tool (MB992209) to crimp the bellows band.



2. Check that crimped width (A) is within the standard value.

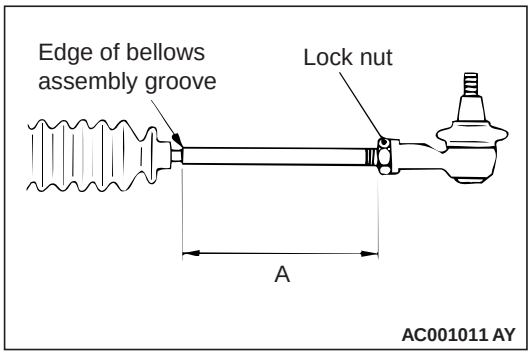
   Standard value (A): 2.4 – 2.8 mm

<OLD>

<NEW>

- 166.6 mm <2WD(Except high rider)>
- 54.1 mm <2WD(High rider), 4WD>

>>N<< TIE ROD END/LOCK NUT INSTALLATION



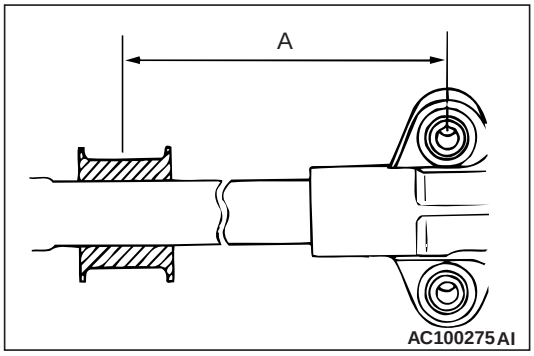
Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

Reference value (A):

- ~~**165.6mm <2WD (Except High rider)>**~~
- ~~**53.1mm <2WD (High rider), 4WD>**~~

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

>>O<< GEAR MOUNTING RUBBER INSTALLATION



Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

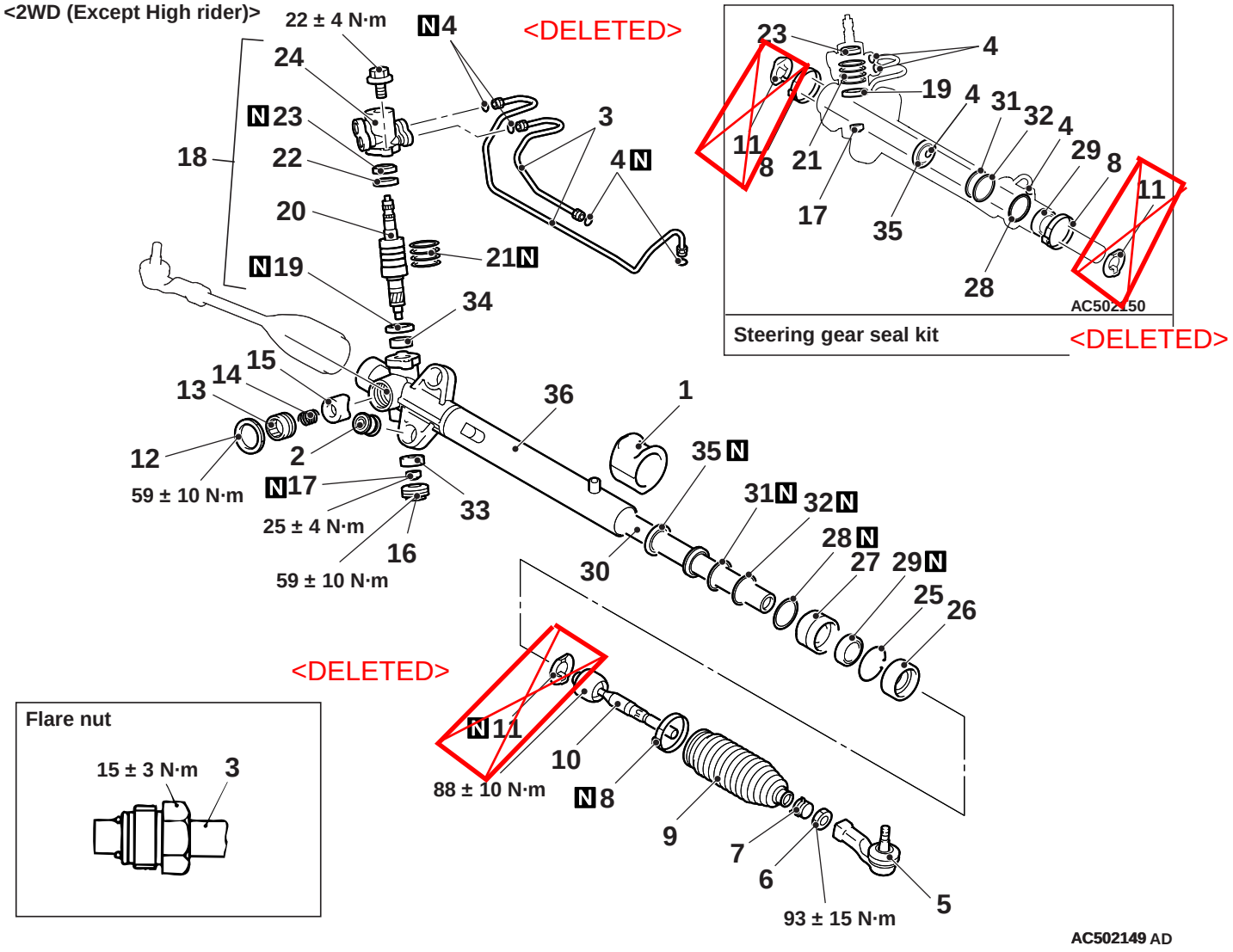
Reference value (A):

- **326mm <2WD (Except High rider)>**
- **337mm <2WD (High rider), 4WD>**

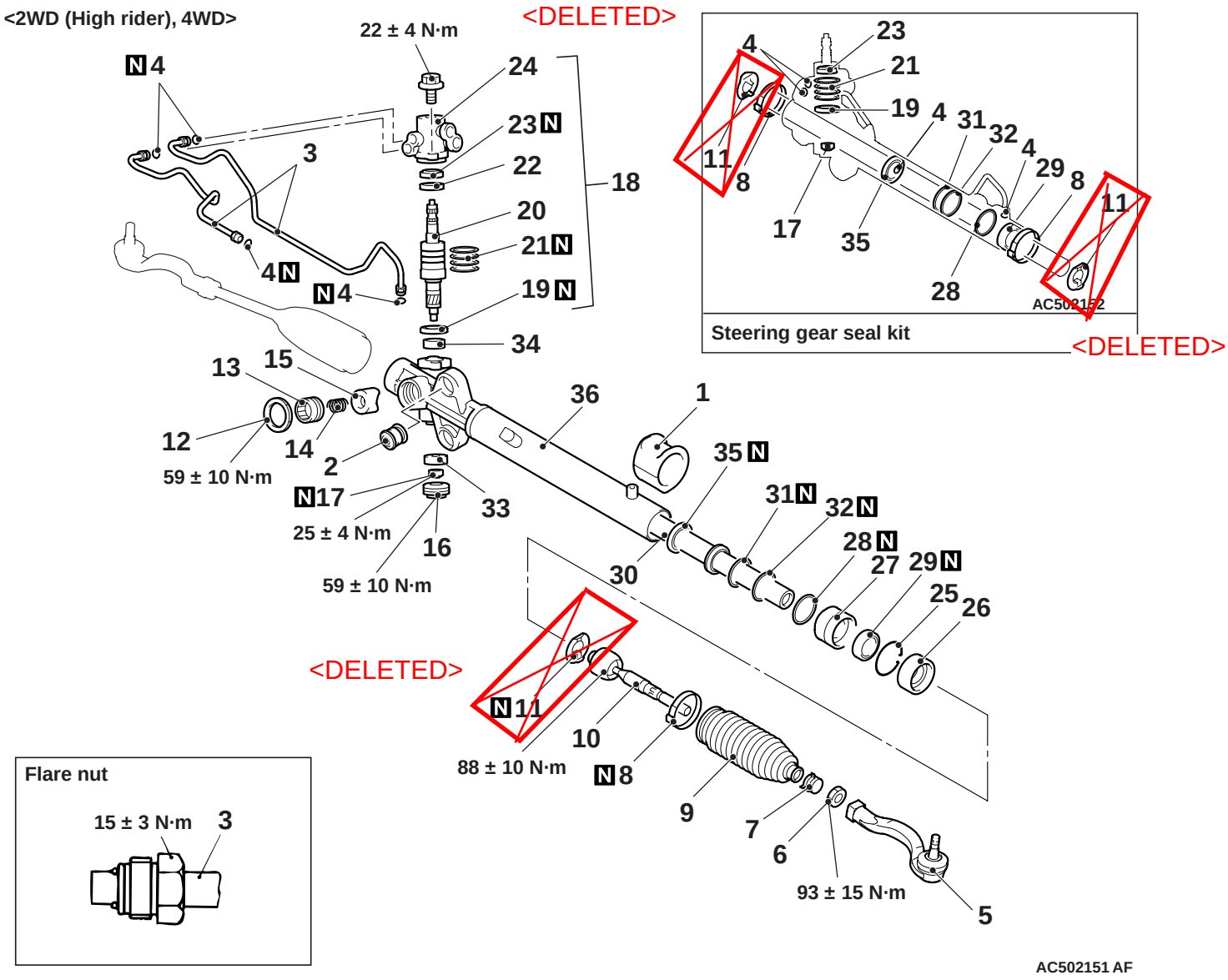
Attached sheet 14 (1/5)

DISASSEMBLY AND REASSEMBLY

M1372011101215



Attached sheet 14 (2/5)



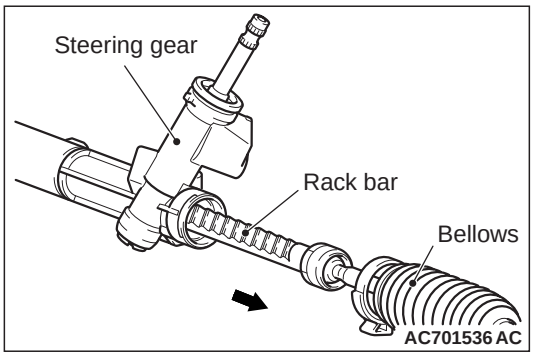
			Disassembly steps
	>>P<<	1.	Gear mounting rubber
		2.	Gear housing mounting bushing
		3.	Feed pipe
		4.	O-ring
	>>O<<	5.	Tie rod end
	>>O<<	6.	Lock nut
		7.	Clip
	>>N<<	8.	Bellows band
		9.	Bellows
<<A>>	>>M<<	10.	Tie rod
<<B>>	>>L<<	11.	Tab washer
	>>K<<	•	Total pinion torque adjustment
	>>J<<	12.	Lock nut
<<C>>	>>J<<	13.	Rack support cover
		14.	Support spring
		15.	Rack support
	>>I<<	16.	End plug
		17.	Lock nut

			Disassembly steps
		18.	Valve housing assembly
<<D>>	>>H<<	19.	Lower oil seal
<<D>>		20.	Pinion and valve assembly
<<E>>	>>G<<	21.	Seal ring
<<F>>	>>F<<	22.	Upper bearing
<<F>>	>>F<<	23.	Upper oil seal
		24.	Valve housing
<<G>>	>>E<<	25.	Circlip
<<H>>		26.	Rack stopper
<<H>>	>>D<<	27.	Rack bushing assembly
<<H>>	>>D<<	28.	O-ring
<<H>>	>>D<<	29.	Oil seal
<<H>>	>>C<<	30.	Rack assembly
<<E>>		31.	Seal ring
		32.	O-ring
<<I>>	>>B<<	33.	Lower bearing
<<J>>	>>B<<	34.	Needle bearing
<<K>>	>>A<<	35.	Oil seal
		36.	Gear housing

Attached sheet 14 (3/5)

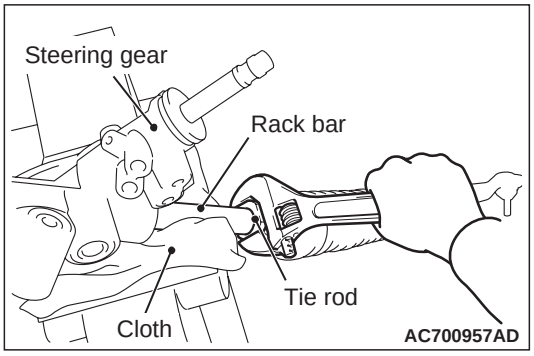
DISASSEMBLY SERVICE POINTS

<<A>> TIE ROD REMOVAL <DELETED>



1. Move the bellows and pull the rack bar toward arrow direction.

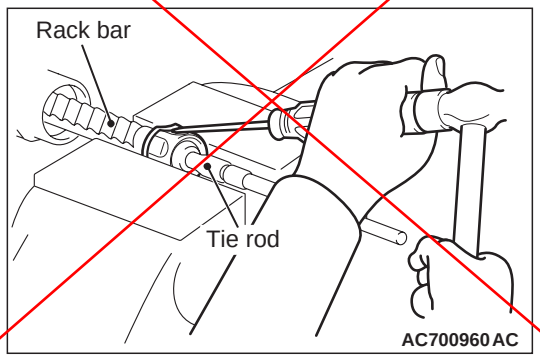
⚠ CAUTION
Do not tighten the vise strongly in order not to damage the rack bar.



2. Wrap rack bar with cloth in order not to damage, and fix the rack bar with a vise.
3. Use the tool to remove the tie rod.

<<B>> TAB WASHER REMOVAL

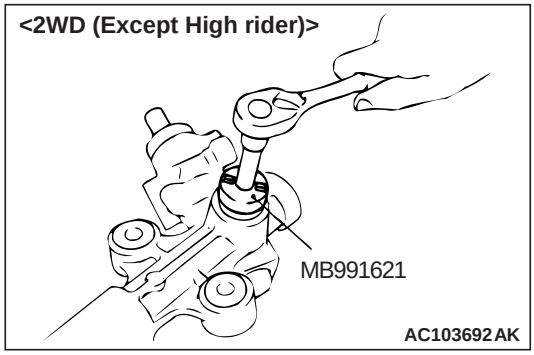
⚠ CAUTION
- **Do not tighten the vise strongly in order not to damage the tie rod.**
- **Do not make an impact to the rack bar.**

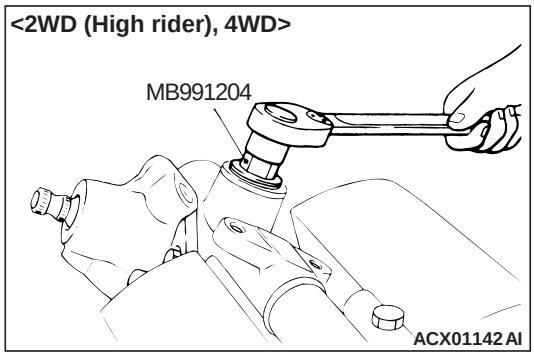


<DELETED>

1. Fix the tie rod ball joint part with a vise.
2. Use a screw driver and hammer to lift right and left tab washer caulked edges.

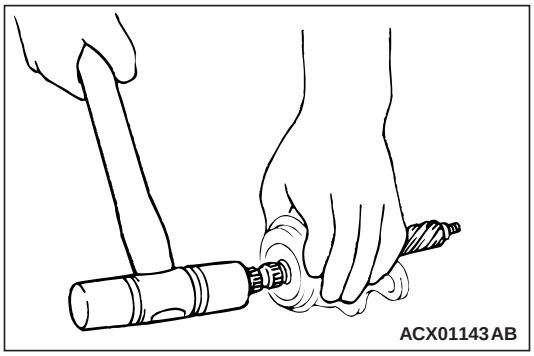
<<C>> RACK SUPPORT COVER REMOVAL





Using special tool rack support cover wrench (MB991621) <2WD (Except High rider)> or torque wrench socket (MB991204) <2WD (High rider), 4WD>, remove the rack support cover from the steering gear.

<<D>> LOWER OIL SEAL/PINION AND VALVE ASSEMBLY REMOVAL

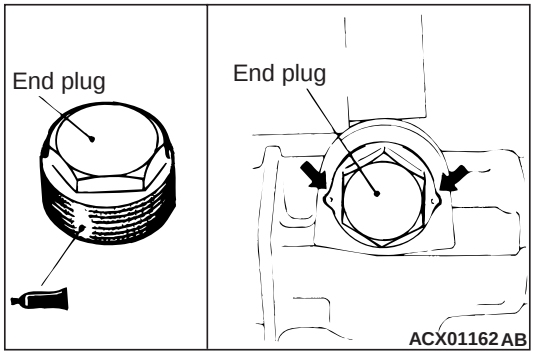


Using a plastic hammer, gently tap the pinion to remove it.

Attached sheet 14 (4/5)

Using special tool torque tube bearing installer (MB990941), press the oil seal into the valve housing.

>>I<< END PLUG INSTALLATION



1. Apply specified sealant to the threaded part of the end plug.

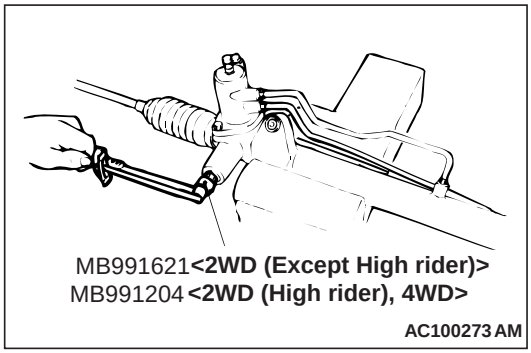
   Specified sealant:
   3M ATD Part No. 8663 or equivalent

2. Secure the threaded portion of the end plug at two places by using a punch.

>>J<< RACK SUPPORT COVER/LOCK NUT INSTALLATION

1. Position the rack at its centre.
2. Apply specified sealant to the threaded part of the rack support cover.

   Specified sealant:
   3M ATD Part No. 8663 or equivalent

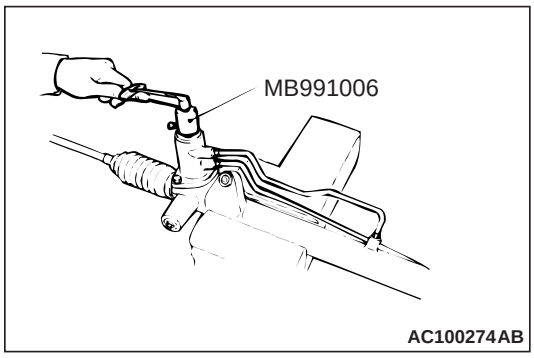


3. Use special tool rack support cover wrench (MB991621) <2WD (Except High rider)> or torque wrench socket (MB991204) <2WD (High rider), 4WD> to tighten the rack support cover.
4. Use the special tools to hold the rack support cover, and then tighten the lock nut to 59 ± 10 N·m.

>>K<< TOTAL PINION TORQUE ADJUSTMENT

⚠ CAUTION

- **Be sure there is no ratcheting or catching when operating the rack towards the shaft.**
- **Measure the total pinion torque through the whole stroke of the rack.**



1. Using special tool preload socket (MB991006), rotate the pinion shaft at the rate of one rotation in four to six seconds to check the total pinion torque and the change in torque.

   Standard value:
   Total pinion torque: 0.6 – 1.7 N·m
   [Change in torque: 0.4 N·m or less]

⚠ CAUTION

When adjusting, set at the highest value of the standard value range.

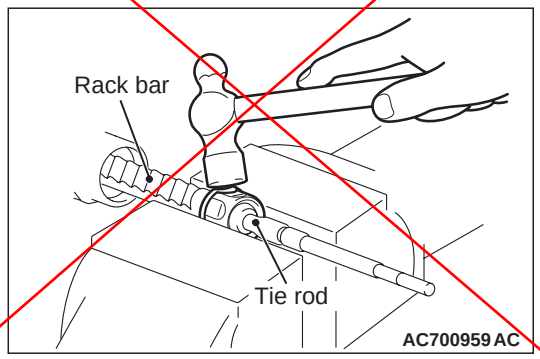
NOTE: If the total pinion toque cannot be adjusted to the standard value within the specified return angle, check the rack support cover components and replace any parts if necessary.

2. If the total pinion torque or the change in torque is outside the standard value, move the rack support cover 0 – 30°, and adjust the pinion torque again.

>>L<< TAB WASHER INSTALLATION

⚠ CAUTION

- **Do not tighten the vise strongly in order not to damage the tie rod.**
- **Do not make an impact to the rack bar.**



1. Fix the tie rod ball joint part with a vise.

<DELETED>

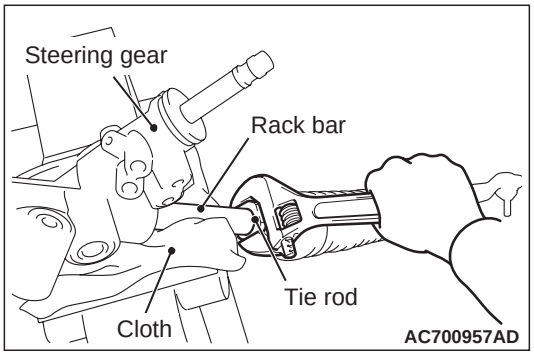
Attached sheet 14 (5/5)

<DELETED>

~~2. Use a hammer to caulk the right and left tab washer at two places.~~

>>M<< TIE ROD INSTALLATION

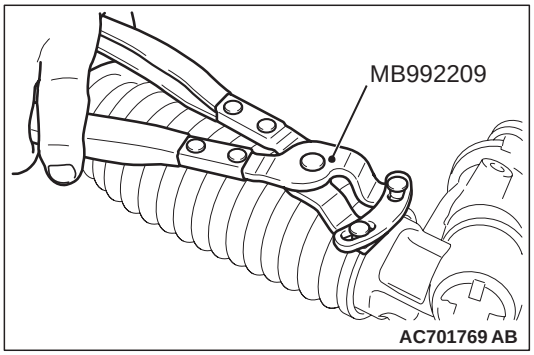
⚠ CAUTION
Do not tighten the vise strongly in order not to damage the rack bar.



1. Wrap rack bar with cloth in order not to damage, and fix the rack bar with a vise.
2. Use the tool to install the tie rod.
   Tightening torque: 88 ± 10 N·m

>>N<< BELLOWS BAND INSTALLATION

⚠ CAUTION
- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**

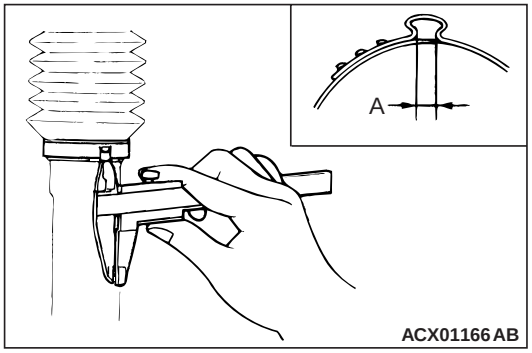


1. Use special tool (MB992209) to crimp the bellows band.

<OLD>

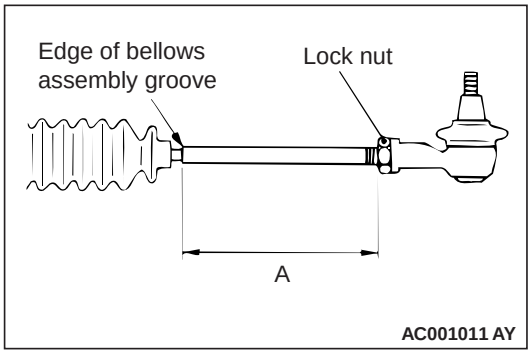
<NEW>

- 166.6 mm <2WD(Except high rider)>
- 54.1 mm <2WD(High rider), 4WD>



2. Check that crimped width (A) is within the standard value.
   Standard value (A): 2.4 – 2.8 mm

>>O<< TIE ROD END/LOCK NUT INSTALLATION



Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

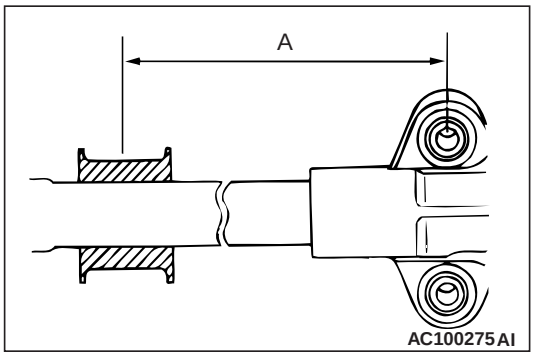
Reference value (A):

<OLD>

- ~~165.6mm <2WD (Except High rider)>~~
- ~~53.1mm <2WD (High rider), 4WD>~~

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

>>P<< GEAR MOUNTING RUBBER INSTALLATION



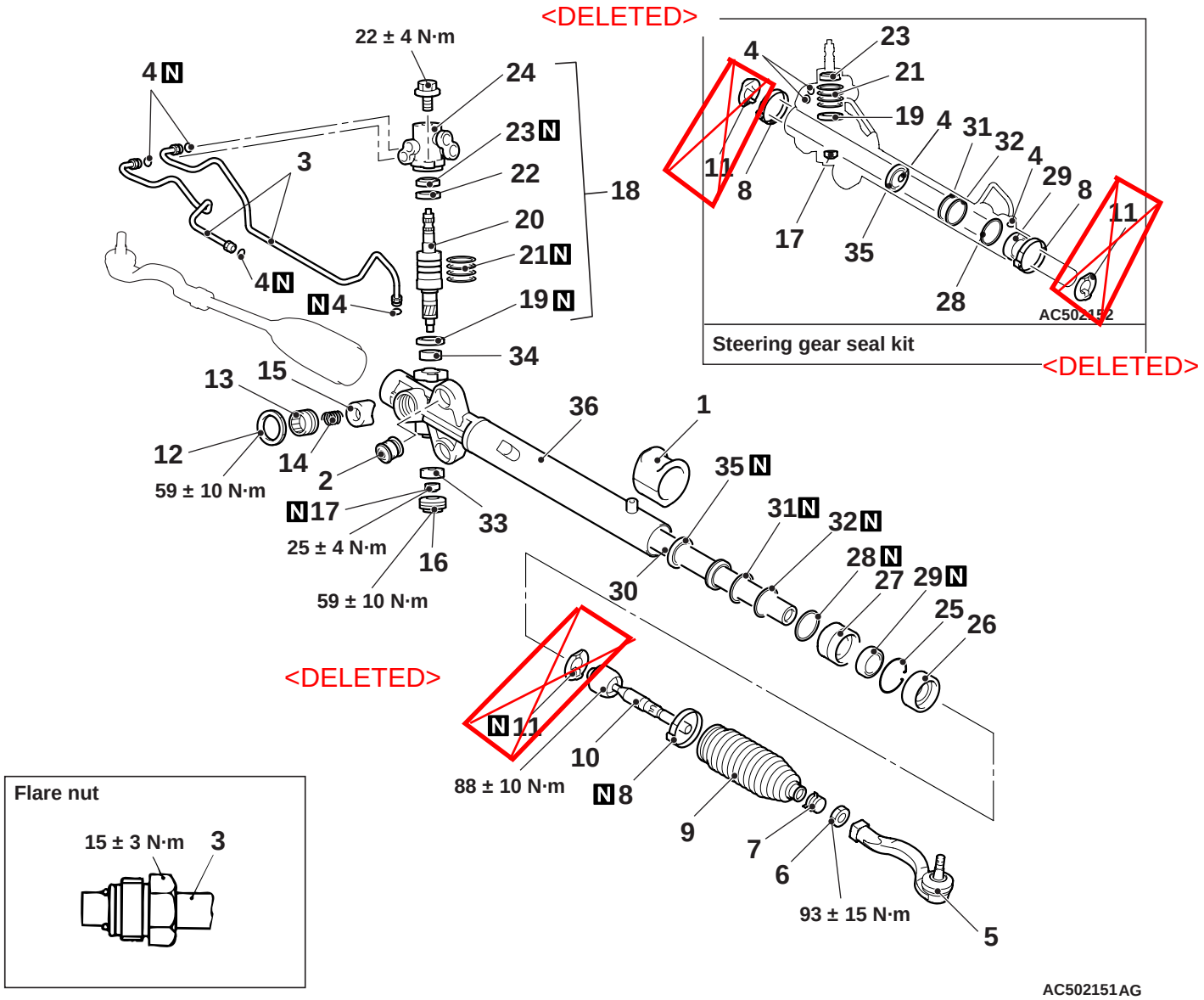
Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

Reference value (A):
- **326mm <2WD (Except High rider)>**

Attached sheet 15 (1/3)

DISASSEMBLY AND REASSEMBLY

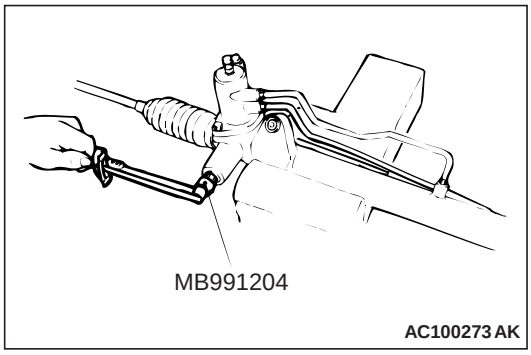
M1372011100665



		Disassembly steps
>>O<<	1.	Gear mounting rubber
	2.	Gear housing mounting bushing
	3.	Feed pipe
	4.	O-ring
>>N<<	5.	Tie rod end
>>N<<	6.	Lock nut
	7.	Clip
>>M<<	8.	Bellows band
	9.	Bellows
~~>>L<<~~	10.	Tie rod <DELETED>
~~>>L<<~~	11.	~~Tab washer~~
>>K<<	•	Total pinion torque adjustment

		Disassembly steps
>>J<<	12.	Lock nut
<<A>> >>J<<	13.	Rack support cover
	14.	Support spring
	15.	Rack support
>>I<<	16.	End plug
	17.	Lock nut
	18.	Valve housing assembly
<<B>> >>H<<	19.	Lower oil seal
<<B>>	20.	Pinion and valve assembly
<<C>> >>G<<	21.	Seal ring
<<D>> >>F<<	22.	Upper bearing
<<D>> >>F<<	23.	Upper oil seal
	24.	Valve housing
<<E>> >>E<<	25.	Circlip

Attached sheet 15 (2/3)

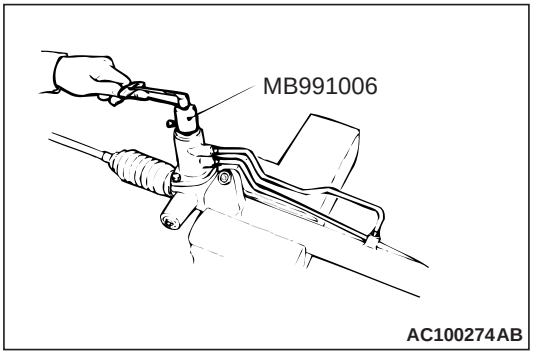


3. Use special tool torque wrench socket (MB991204) to tighten the rack support cover.
4. Use the special tool to hold the rack support cover, and then tighten the lock nut to 59 ± 10 N·m.

>>K<< TOTAL PINION TORQUE ADJUSTMENT

⚠ CAUTION

- **Be sure there is no ratcheting or catching when operating the rack towards the shaft.**
- **Measure the total pinion torque through the whole stroke of the rack.**



1. Using special tool preload socket (MB991006), rotate the pinion shaft at the rate of one rotation in four to six seconds to check the total pinion torque and the change in torque.

   Standard value:
   Total pinion torque: 0.6 – 1.7 N·m
   [Change in torque: 0.4 N·m or less]

⚠ CAUTION

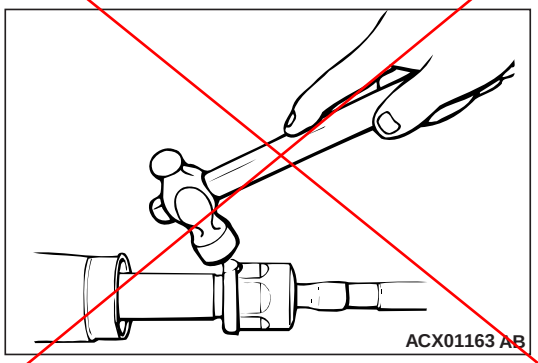
When adjusting, set at the highest value of the standard value range.

NOTE: If the total pinion toque cannot be adjusted to the standard value within the specified return angle, check the rack support cover components and replace any parts if necessary.

2. If the total pinion torque or the change in torque is outside the standard value, move the rack support cover 0 – 30°, and adjust the pinion torque again.

<DELETED>

>>L<< TAB WASHER/TIE ROD INSTALLATION

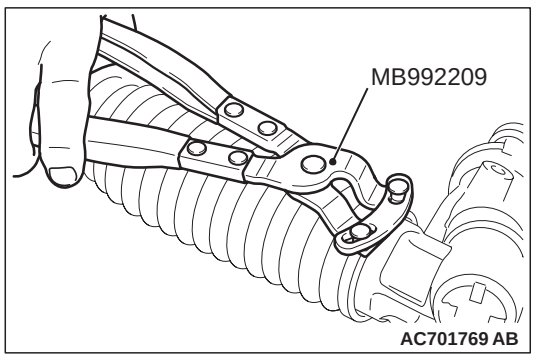


After installing the tie rod to the rack, fold tab washer end (two locations) to tie rod notch.

>>M<< BELLOWS BAND INSTALLATION

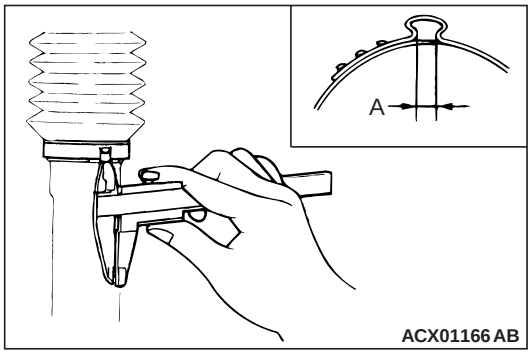
⚠ CAUTION

- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**



Attached sheet 15 (3/3)

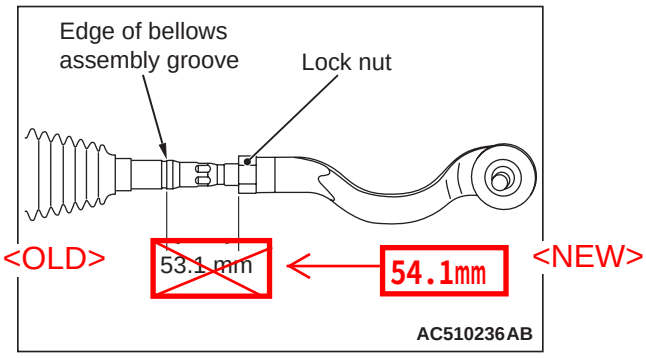
1. Use special tool (MB992209) to crimp the bellows band.



2. Check that crimped width (A) is within the standard value.

Standard value (A): 2.4 – 2.8 mm

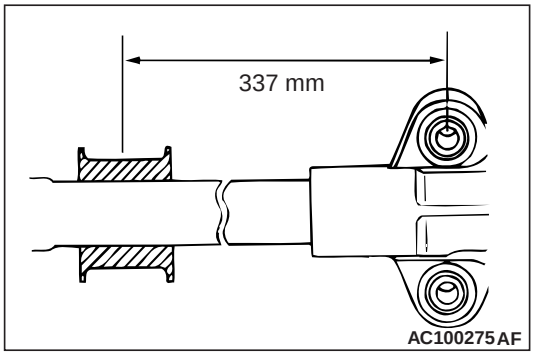
>>N<< TIE ROD END/LOCK NUT INSTALLATION



Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

>>O<< GEAR MOUNTING RUBBER INSTALLATION

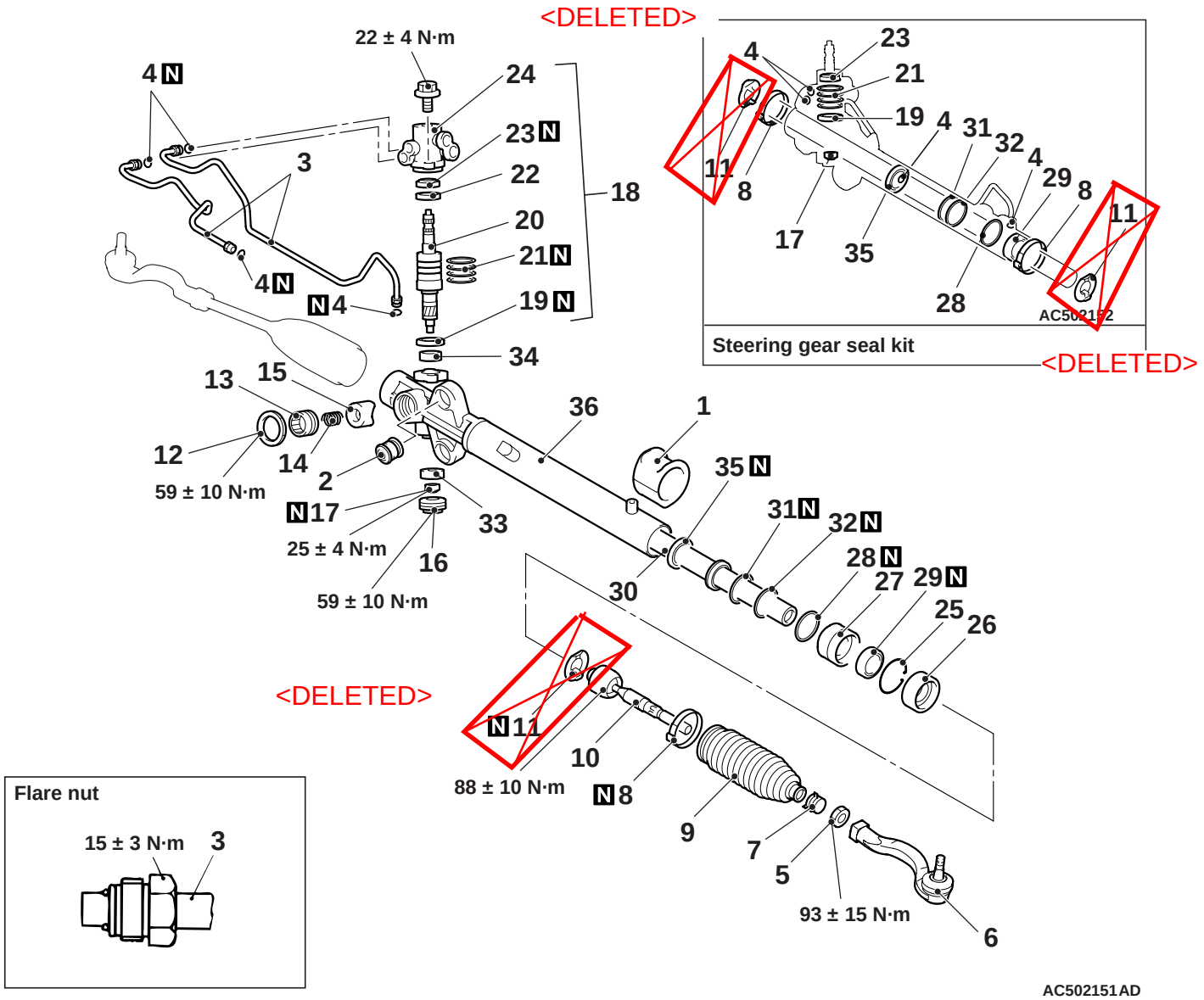


Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

Attached sheet 16 (1/4)

DISASSEMBLY AND REASSEMBLY

M1372011101237



			Disassembly steps
	>>P<<	1.	Gear mounting rubber
		2.	Gear housing mounting bushing
		3.	Feed pipe
		4.	O-ring
	>>O<<	5.	Lock nut
	>>O<<	6.	Tie rod end
		7.	Clip
	>>N<<	8.	Bellows band
		9.	Bellows
<<A>>	>>M<<	10.	Tie rod
<<B>>	>>L<<	11.	Tab washer
	>>K<<	•	Total pinion torque adjustment
	>>J<<	12.	Lock nut
<<C>>	>>J<<	13.	Rack support cover
		14.	Support spring
		15.	Rack support

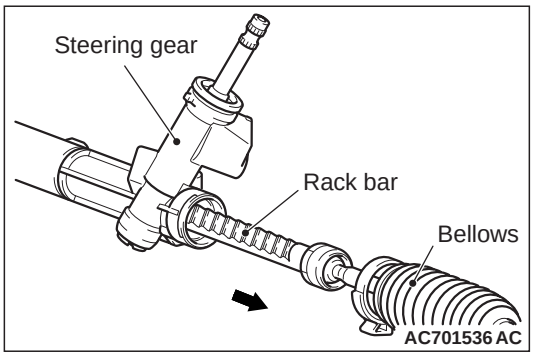
<DELETED>

			Disassembly steps
	>>I<<	16.	End plug
		17.	Lock nut
		18.	Valve housing assembly
<<D>>	>>H<<	19.	Lower oil seal
<<D>>		20.	Pinion and valve assembly
<<E>>	>>G<<	21.	Seal ring
<<F>>	>>F<<	22.	Upper bearing
<<F>>	>>F<<	23.	Upper oil seal
		24.	Valve housing
<<G>	>>E<<	25.	Circlip
<<H>>		26.	Rack stopper
<<H>>	>>D<<	27.	Rack bushing assembly
<<H>>	>>D<<	28.	O-ring
<<H>>	>>D<<	29.	Oil seal
<<H>>	>>C<<	30.	Rack assembly
<<E>>		31.	Seal ring
		32.	O-ring
<<I>>	>>B<<	33.	Lower bearing

Attached sheet 16 (2/4)

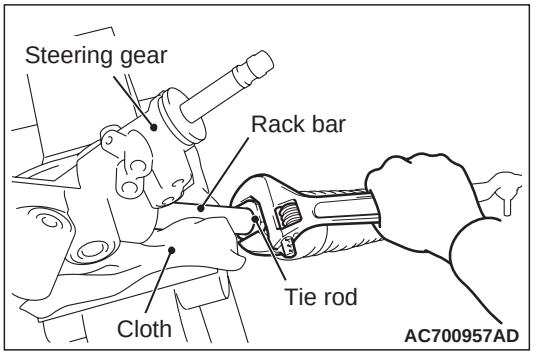
DISASSEMBLY SERVICE POINTS

<<A>> TIE ROD REMOVAL <DELETED>



1. Move the bellows and pull the rack bar toward arrow direction.

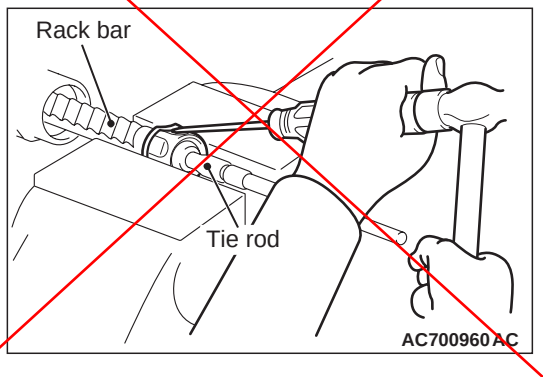
⚠ CAUTION
Do not tighten the vise strongly in order not to damage the rack bar.



2. Wrap rack bar with cloth in order not to damage, and fix the rack bar with a vise.
3. Use the tool to remove the tie rod. <DELETED>

<<B>> TAB WASHER REMOVAL

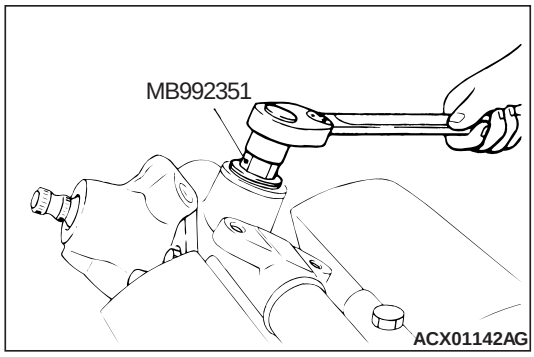
⚠ CAUTION
- **Do not tighten the vise strongly in order not to damage the tie rod.**
- **Do not make an impact to the rack bar.**



1. Fix the tie rod ball joint part with a vise.

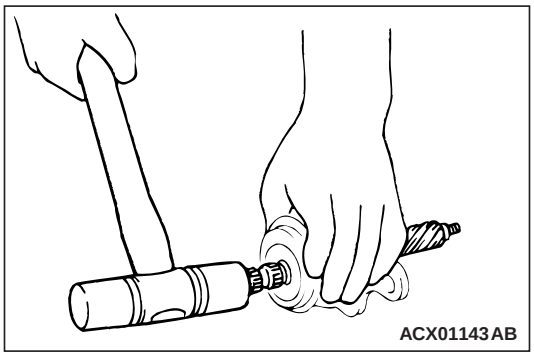
2. Use a screw driver and hammer to lift right and left tab washer caulked edges.

<<C>> RACK SUPPORT COVER REMOVAL



Using special tool torque wrench socket (MB992351), remove the rack support cover from the steering gear.

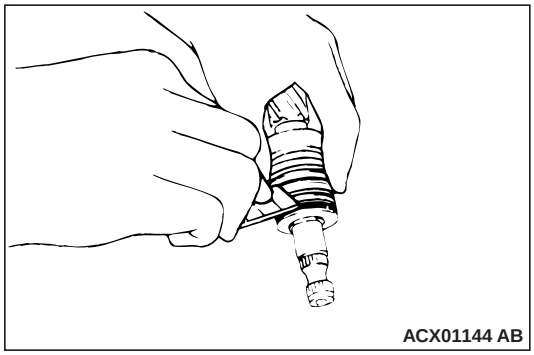
<<D>> LOWER OIL SEAL/PINION AND VALVE ASSEMBLY REMOVAL



Using a plastic hammer, gently tap the pinion to remove it.

<<E>> SEAL RING REMOVAL

⚠ CAUTION
When cutting the seal ring, be careful not to damage the pinion and valve assembly or the rack.

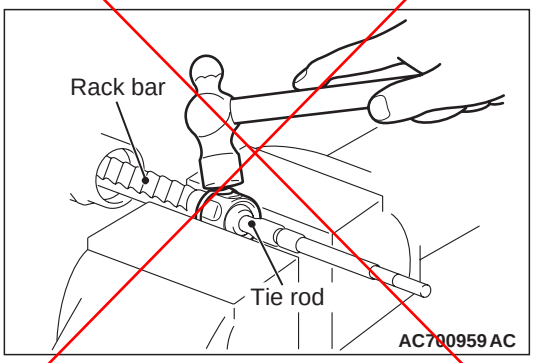


Cut the seal ring and remove it from the pinion and valve assembly or the rack.

>>L<< TAB WASHER INSTALLATION

⚠ CAUTION

- **Do not tighten the vise strongly in order not to damage the tie rod.**
- **Do not make aq impact to the rack bar.**

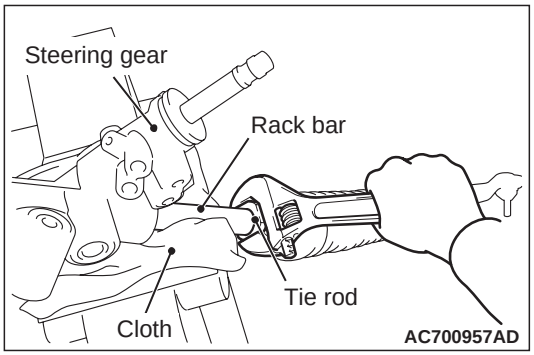


1. Fix the tie rod ball joint part with a vise.
2. Use a hammer to caulk the right and left tab washer at two places.

>>M<< TIE ROD INSTALLATION

⚠ CAUTION

Do not tighten the vise strongly in order not to damage the rack bar.



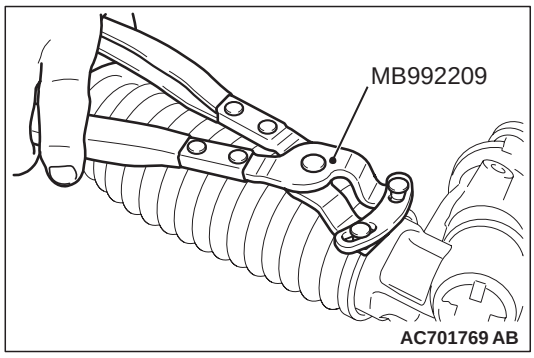
1. Wrap rack bar with cloth in order not to damage, and tix the rack bar with a vise.
2. Use the tool to install the tie rod.

   Tightening torque: 88 ± 10 N·m

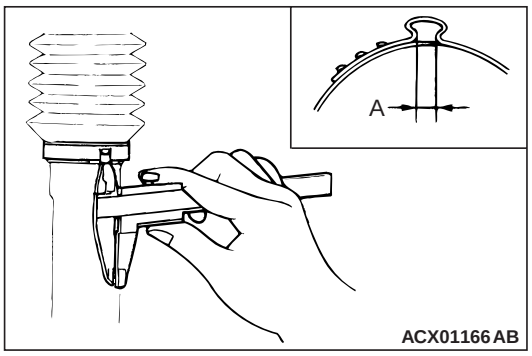
>>N<< BELLOWS BAND INSTALLATION

⚠ CAUTION

- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**



1. Use special tool (MB992209) to crimp the bellows band.

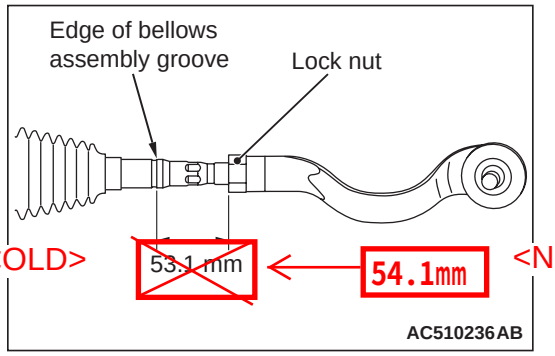


2. Check that crimped width (A) is within the standard value.

   Standard value (A): 2.4 – 2.8 mm

Attached sheet 16 (4/4)

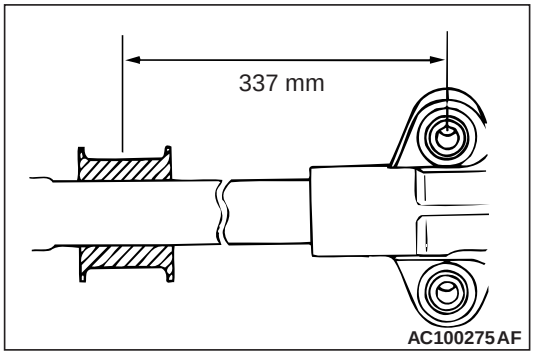
>>O<< TIE ROD END/LOCK NUT INSTALLATION



Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

>>P<< GEAR MOUNTING RUBBER INSTALLATION

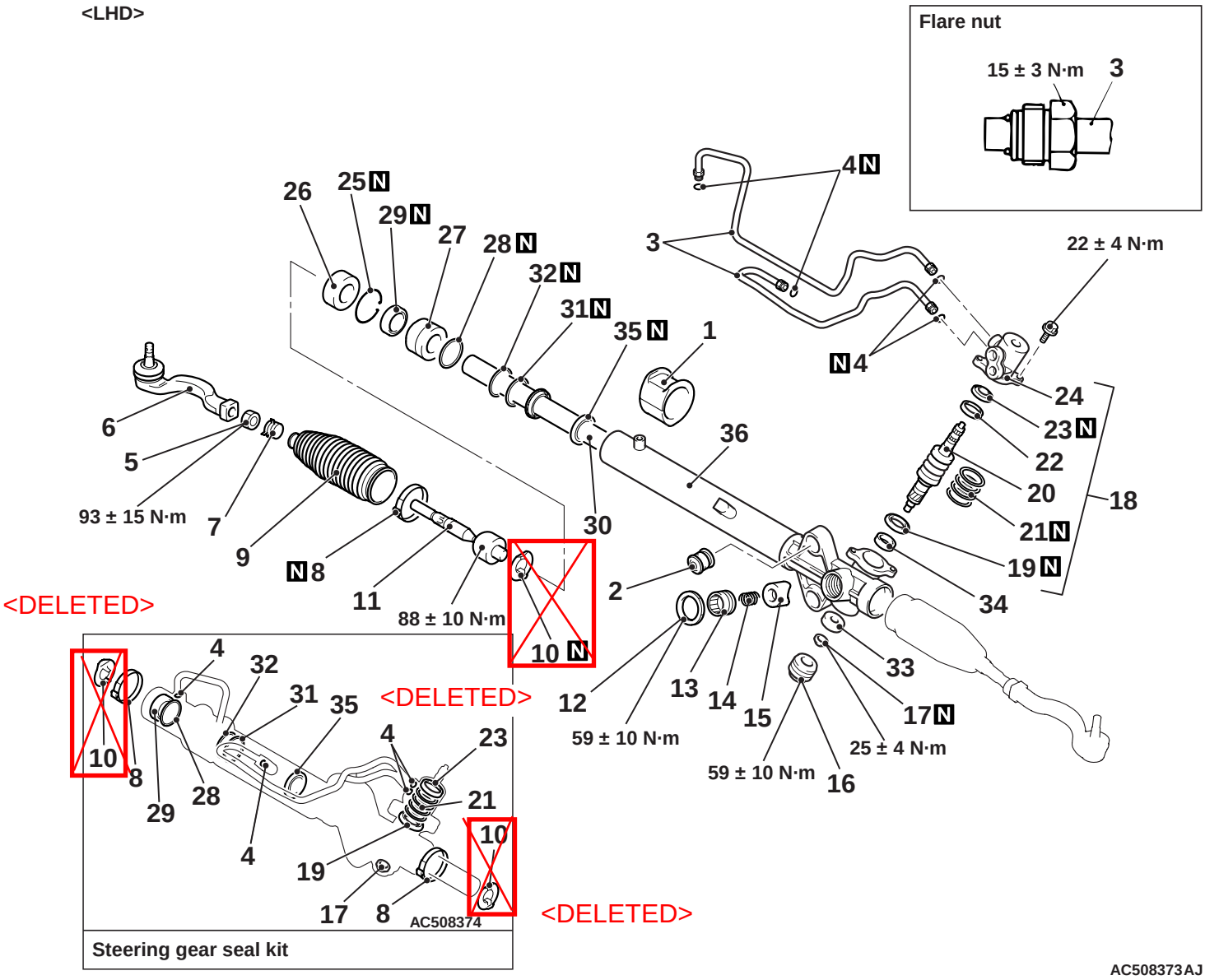


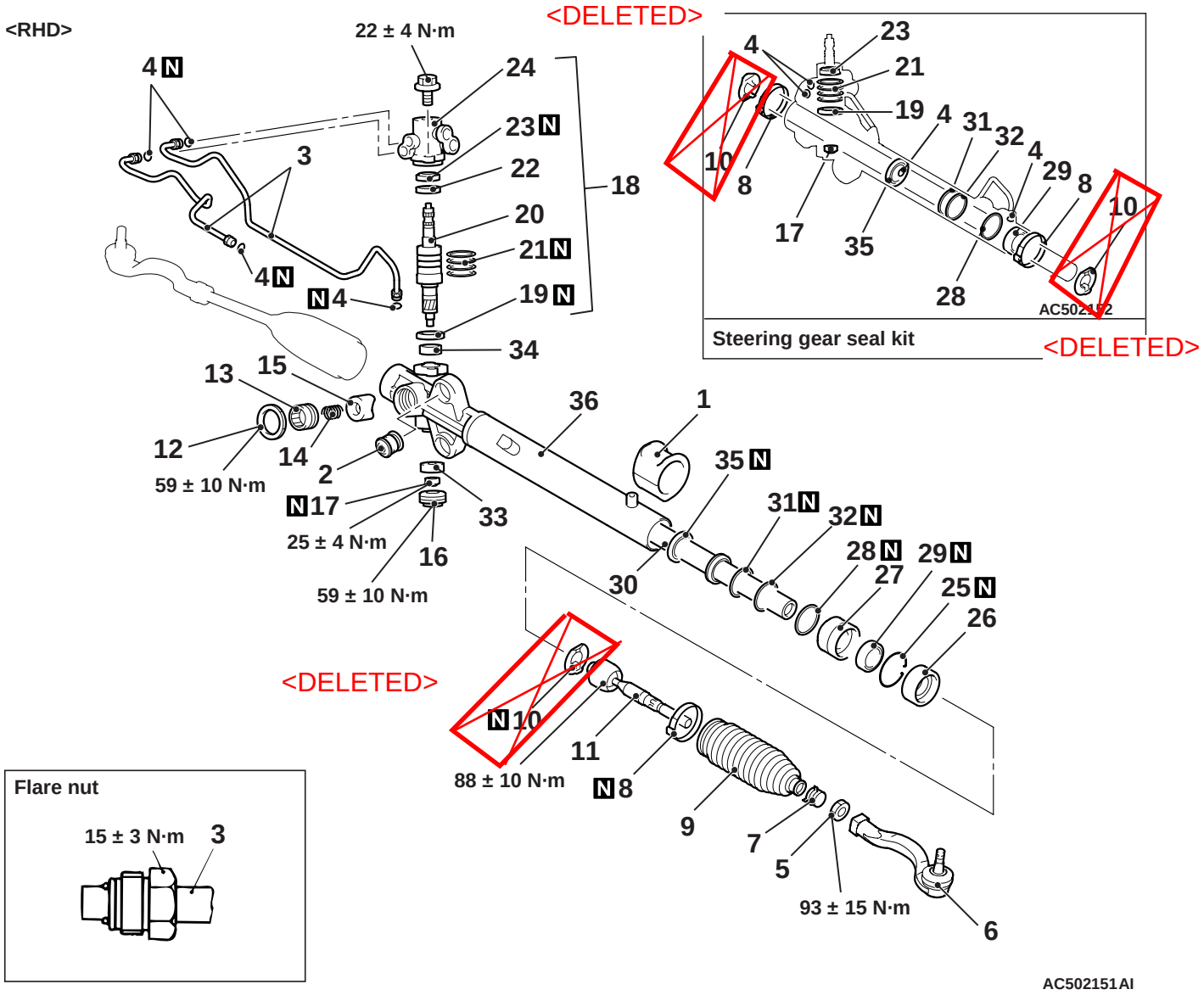
Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

Attached sheet 17 (1/4)

DISASSEMBLY AND REASSEMBLY

M1372011101248





			Disassembly steps
	>>P<<	1.	Gear mounting rubber
		2.	Gear housing mounting bushing
		3.	Feed pipe
		4.	O-ring
	>>O<<	5.	Lock nut
	>>O<<	6.	Tie rod end
		7.	Clip
<DELETED>	>>N<<	8.	Bellows band
		9.	Bellows
~~<<A>>~~	~~>>M<<~~	~~10.~~	~~Tab washer~~
<<B>>	>>L<<	11.	Tie rod
	>>K<<	•	Total pinion torque adjustment
	>>J<<	12.	Lock nut
<<C>>	>>J<<	13.	Rack support cover
		14.	Support spring
		15.	Rack support
	>>I<<	16.	End plug
		17.	Lock nut

			Disassembly steps
		18.	Valve housing assembly
<<D>>	>>H<<	19.	Lower oil seal
<<D>>		20.	Pinion and valve assembly
<<E>>	>>G<<	21.	Seal ring
<<F>>	>>F<<	22.	Upper bearing
<<F>>	>>F<<	23.	Upper oil seal
		24.	Valve housing
<<G>>	>>E<<	25.	Circlip
<<H>>		26.	Rack stopper
<<H>>	>>D<<	27.	Rack bushing assembly
<<H>>	>>D<<	28.	O-ring
<<H>>	>>D<<	29.	Oil seal
<<H>>	>>C<<	30.	Rack assembly
<<E>>		31.	Seal ring
		32.	O-ring
<<I>>	>>B<<	33.	Lower bearing
<<J>>	>>B<<	34.	Needle bearing
<<K>>	>>A<<	35.	Oil seal
		36.	Gear housing

<DELETED>

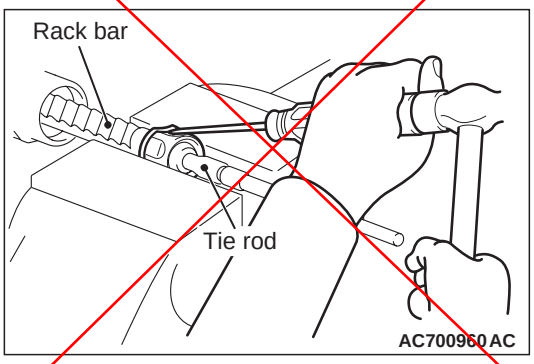
Attached sheet 17 (3/4)

DISASSEMBLY SERVICE POINTS

<<A>> TAB WASHER REMOVAL

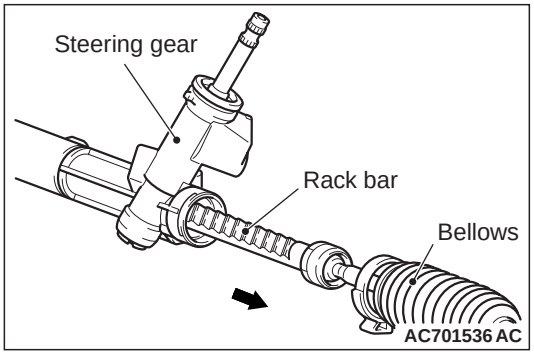
⚠ CAUTION

- **Do not tighten the vise strongly in order not to damage the tie rod.**
- **Do not make an impact to the rack bar.**



1. Fix the tie rod ball joint part with a vise.
2. Use a screw driver and hammer to lift right and left tab washer caulked edges.

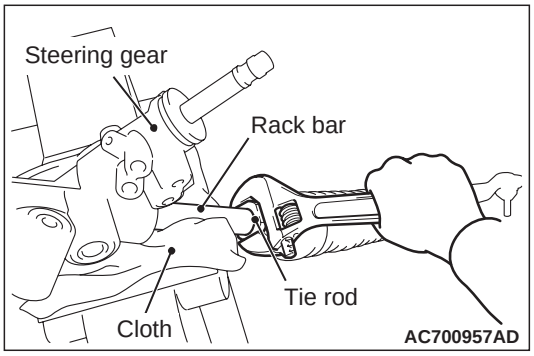
<<B>> TIE ROD REMOVAL



1. Move the bellows and pull the rack bar toward arrow direction.

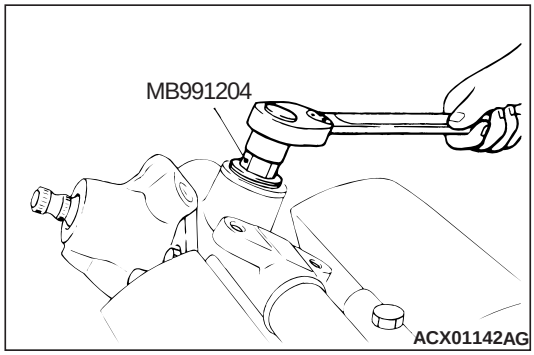
⚠ CAUTION

Do not tighten the vise strongly in order not to damage the rack bar.



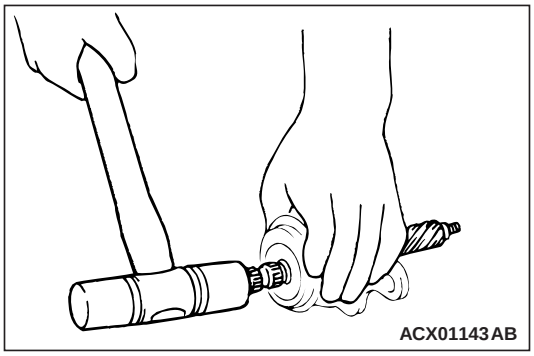
2. Wrap rack bar with cloth in order not to damage, and fix the rack bar with a vise.
3. Use the tool to remove the tie rod.

<<C>> RACK SUPPORT COVER REMOVAL



Using special tool torque wrench socket (MB991204), remove the rack support cover from the steering gear.

<<D>> LOWER OIL SEAL/PINION AND VALVE ASSEMBLY REMOVAL

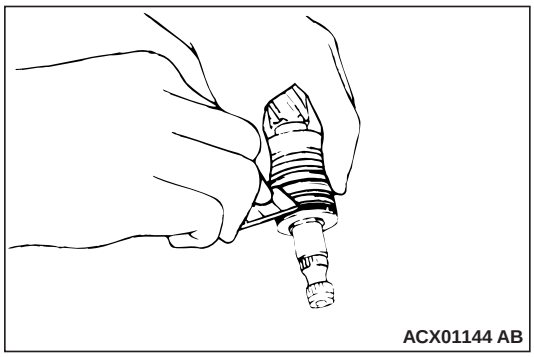


Using a plastic hammer, gently tap the pinion to remove it.

<<E>> SEAL RING REMOVAL

⚠ CAUTION

When cutting the seal ring, be careful not to damage the pinion and valve assembly or the rack.



Cut the seal ring and remove it from the pinion and valve assembly or the rack.

Attached sheet 17 (4/4)

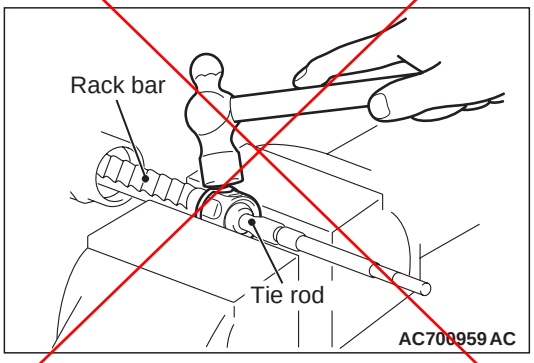
2. Use the tool to install the tie rod.
   Tightening torque: 88 ± 10 N·m

<DELETED>

>>M<< TAB WASHER INSTALLATION

⚠ CAUTION

- **Do not tighten the vise strongly in order not to damage the tie rod.**
- **Do not make an impact to the rack bar.**

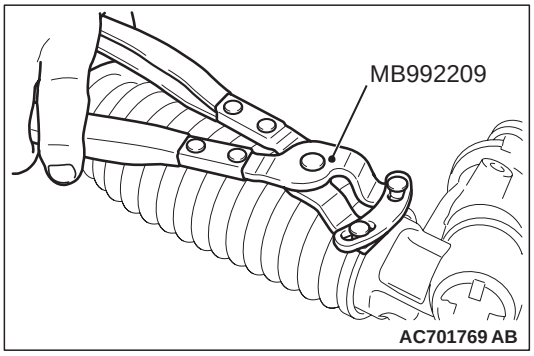


1. Fix the tie rod ball joint part with a vise.
2. Use a hammer to caulk the right and left tab washer at two places.

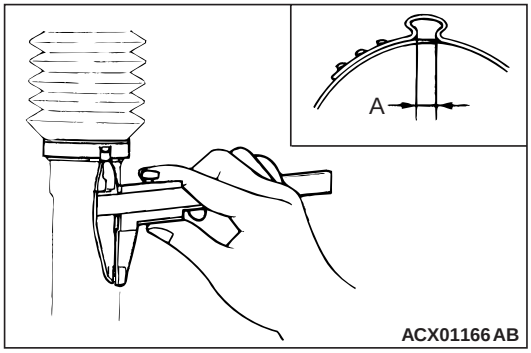
>>N<< BELLOWS BAND INSTALLATION

⚠ CAUTION

- **Hold the rack housing, and use special tool bellows band crimping tool (MB992209) to crimp the bellows band securely.**
- **Crimp the bellows band until special tool (MB992209) touches the stopper.**

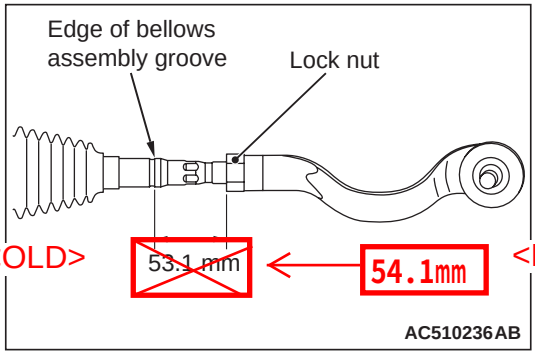


1. Use special tool (MB992209) to crimp the bellows band.



2. Check that crimped width (A) is within the standard value.
   Standard value (A): 2.4 – 2.8 mm

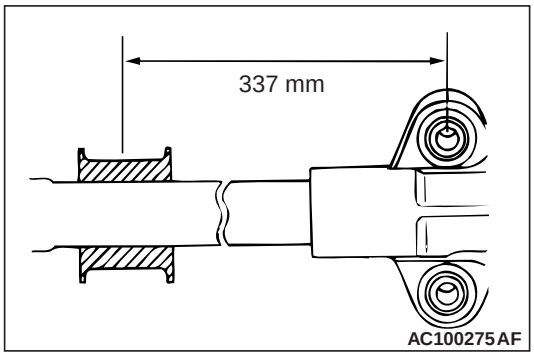
>>O<< TIE ROD END/LOCK NUT INSTALLATION



Screw in the tie rod end to achieve the right and left length as illustrated. Lock with the lock nut.

NOTE: The lock nuts must be tightened securely only after the steering gear is installed to the vehicle and toe-in is adjusted.

>>P<< GEAR MOUNTING RUBBER INSTALLATION

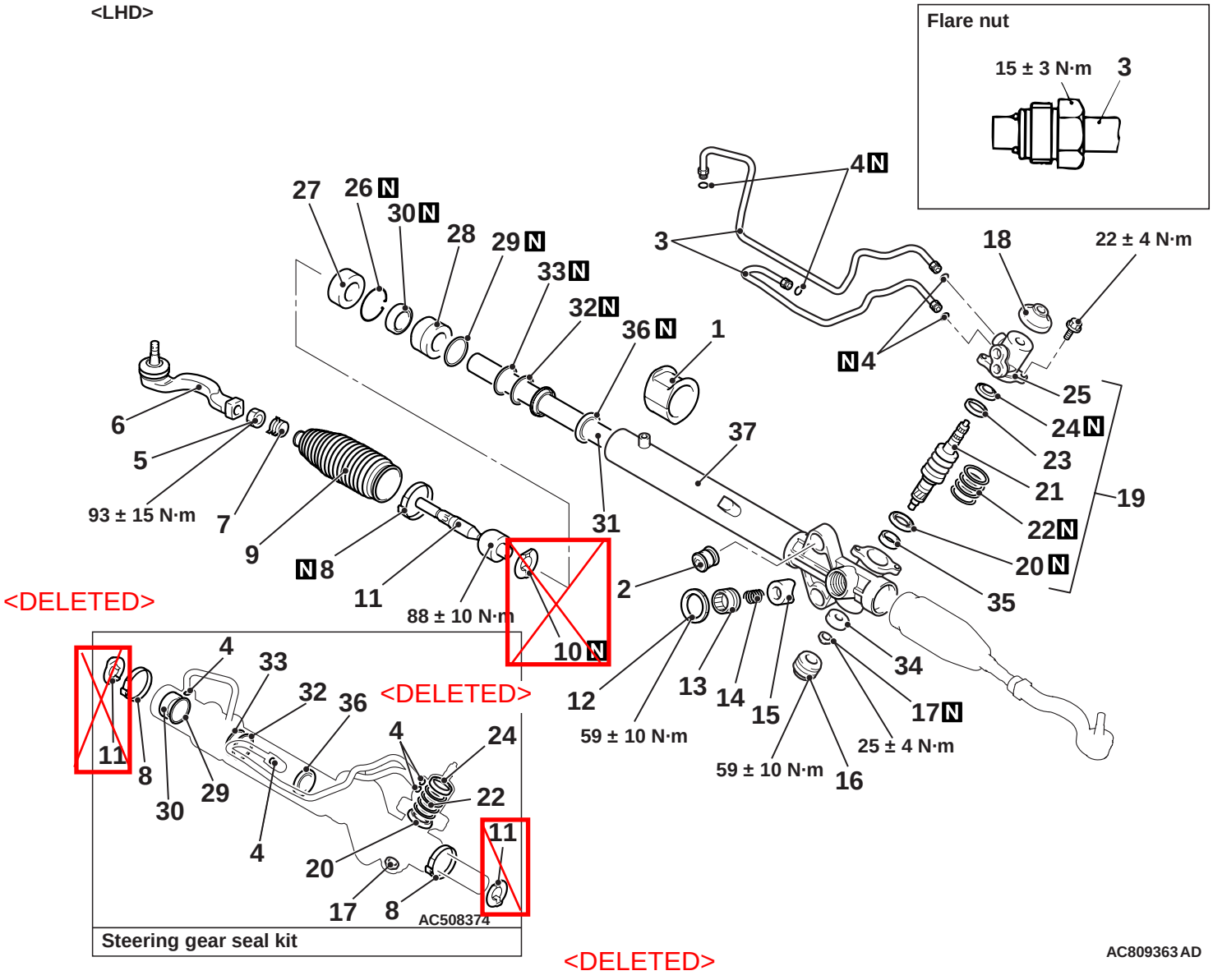


Install the gear mounting rubber to the rack housing so that the distance is as shown in the illustration.

Attached sheet 18 (1/2)

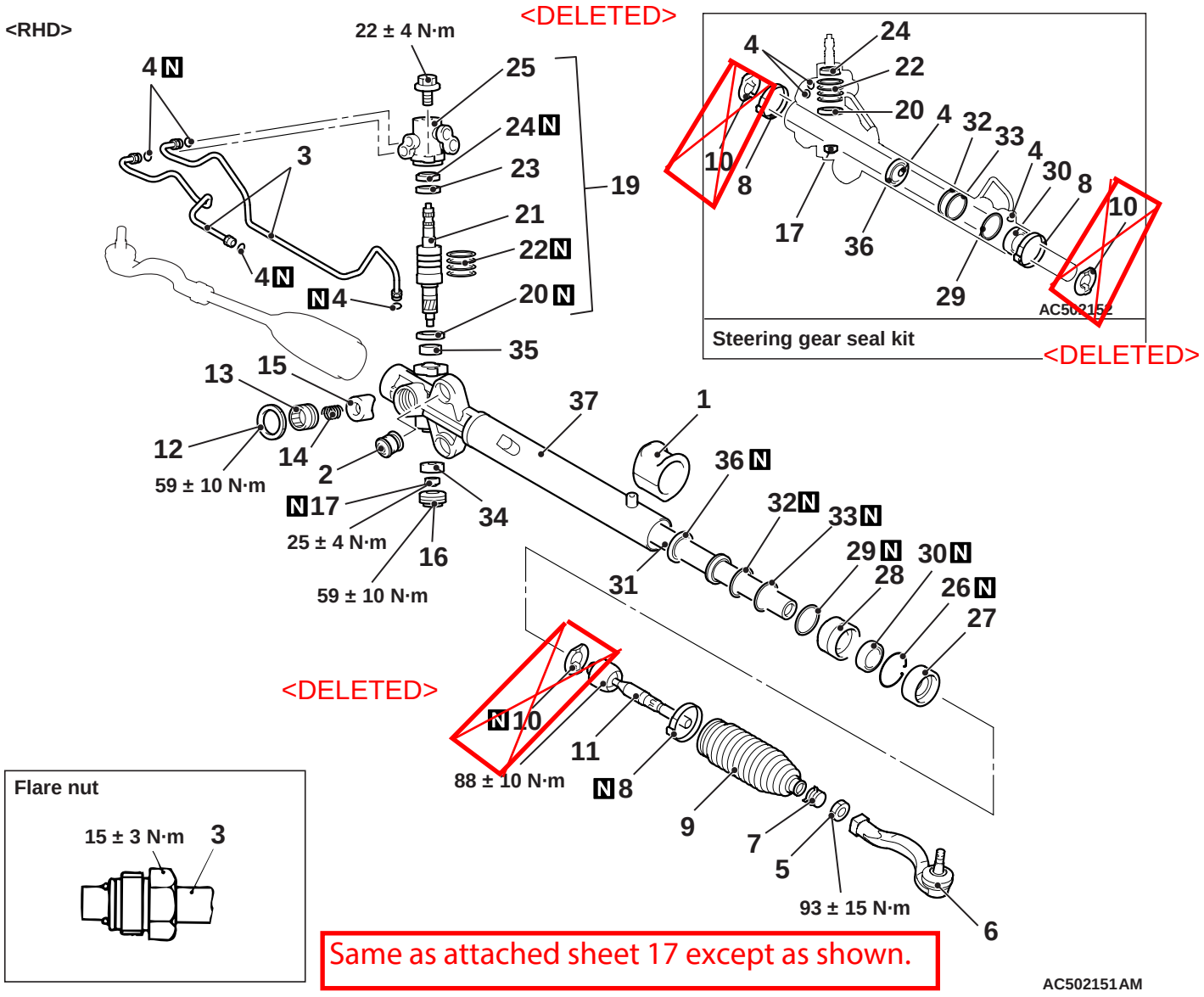
DISASSEMBLY AND REASSEMBLY

M1372011101442



Same as attached sheet 17 except as shown.

Attached sheet 18 (2/2)



			Disassembly steps
	>>P<<	1.	Gear mounting rubber
		2.	Gear housing mounting bushing
		3.	Feed pipe
		4.	O-ring
	>>O<<	5.	Lock nut
	>>O<<	6.	Tie rod end
		7.	Clip
<DELETED>	>>N<<	8.	Bellows band
		9.	Bellows
<<A>>	>>M<<	10.	Tab washer
<<B>>	>>L<<	11.	Tie rod
	>>K<<	•	Total pinion torque adjustment
	>>J<<	12.	Lock nut
<<C>>	>>J<<	13.	Rack support cover
		14.	Support spring
		15.	Rack support
	>>I<<	16.	End plug
		17.	Lock nut

			Disassembly steps
		18.	Dust cover (Vehicles for RUSSIA)
		19.	Valve housing assembly
<<D>>	>>H<<	20.	Lower oil seal
<<D>>		21.	Pinion and valve assembly
<<E>>	>>G<<	22.	Seal ring
<<F>>	>>F<<	23.	Upper bearing
<<F>>	>>F<<	24.	Upper oil seal
		25.	Valve housing
<<G>	>>E<<	26.	Circlip
<<H>>		27.	Rack stopper
<<H>>	>>D<<	28.	Rack bushing assembly
<<H>>	>>D<<	29.	O-ring
<<H>>	>>D<<	30.	Oil seal
<<H>>	>>C<<	31.	Rack assembly
<<E>>		32.	Seal ring
		33.	O-ring
<<I>>	>>B<<	34.	Lower bearing
<<J>>	>>B<<	35.	Needle bearing
<<K>>	>>A<<	36.	Oil seal
		37.	Gear housing