





LANCER EVOLUTION X
SUPER TRACTION REAR L.S.D. ASSEMBLY
RA166619K1


INSTALLATION AND HANDLING INSTRUCTIONS


Thank you for purchasing the RALLIART product.
 Read this publication carefully to ensure correct installation and use of the product with proper knowledge of it.
 Keep this publication near at hand for reference when maintenance is required.

Attention

● The following symbols are used in this publication for your particular attention.

 Warning	and	 Caution	are particularly important precautions to ensure safety in the installation and handling of the product.
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 **Warning ...** Precautions to be observed for safety. Failure to follow given instructions could lead to serious injury or death.

 **Caution ...** Precautions to be observed for safety. Failure to follow given instructions could lead to injury or accident.

 **Advice ...** Instructions to be followed for proper installation.

- Failure to follow instructions given in this publication during installation not only prevents the product from working as it should but may lead to trouble with the vehicle. Be sure to follow all given instructions and install the product properly.
- RALLIART is not responsible for any defects or difficulties caused by or resulting from the installation of this product.
- Defects that may be directly or indirectly caused to the vehicle equipped with this product are NOT covered in any way by Mitsubishi Motors Corporation's warranty for its product.

To the dealer	<ul style="list-style-type: none"> ● Be sure that the customer receives this publication.
To the customer	<ul style="list-style-type: none"> ● Read handling instructions carefully before use. ● Keep this publication neat at hand (in the glove compartment, for example) for reference in case of need.

To the Customer

■ Handling Instructions

Caution

1. Do not use this product for any other purposes than intended.
2. Do not modify this product in any way.
3. Never use or install this product on any other vehicle than specified. Otherwise, damage or accident could be caused.
4. This product cannot be installed in combination with any other product. Be sure to use it in the kit.
5. Check the vehicle as required to ensure that this product is always in normal condition including the installed state.
6. After this product is installed, when the vehicle develops any abnormality during driving, stop it immediately and have it checked, and repaired as necessary, at an appropriate service shop. Otherwise damage to the vehicle or accident may result.
7. If this product fails to function as it should due to deterioration, damage or for any other reason, replace it without delay.
8. Being a mechanical (multi-disc) type L.S.D., this product may cause squeals of driving wheels and chattering noises of gears in the differential during normal cornering.
9. Depending on measuring conditions, data shown in this publication may be found different from measured values.
10. This product is designed for competition use. This product may deteriorate sooner than its standard counterpart.
11. When participating in a competition with this product installed, it is the entrant's responsibility to confirm that the installation of this product conforms to the technical rules of the competition.

■ Applicable Model

Model name	Type	Classification	T/M	Part No.
LANCER EVOLUTION X (RS)	CZ4A	SNDFZ	5FM/T	RA166619K1

* This product cannot be installed to the vehicle with S-AYC.

Precautions for Installation

Caution

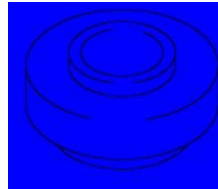
1. To ensure safety, always turn the ignition switch to OFF and apply the parking brake securely.
2. When jacking up, make sure that the vehicle is firmly supported with rigid racks.
3. To avoid possible deformation, be sure to apply rigid racks to the vehicle at designated places.
4. Be careful not to damage the front under cover and rear differential carrier assembly.

Advice

5. This publication only describes the main points in installation work. For specific installation procedures, backlash adjustment, etc., refer to the relevant workshop manual issued by Mitsubishi Motors Corporation.
6. Be sure to tighten the fasteners to their specified torques.

Special Tools (Make the following tools ready for use.)

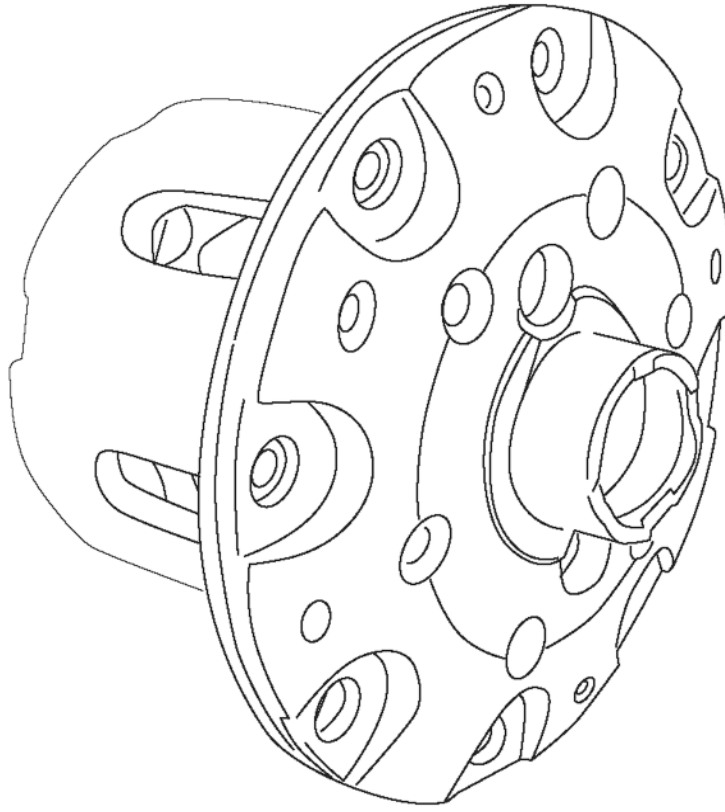
Bearing puller



Bearing inner race installer
(MB990728 or equivalent)

Components (Make sure that all of the following components were included in the kit.)

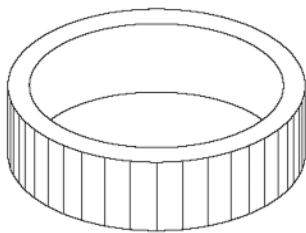
(1) Super traction rear L.S.D.: 1



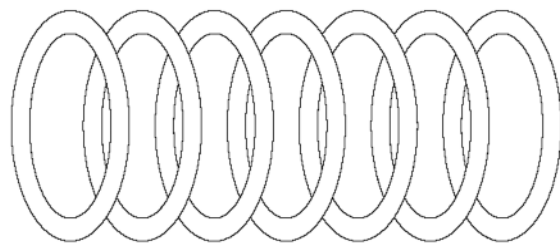
Required Parts (Necessary for installation)

Mitsubishi genuine parts

Differential side bearing (MB393957): 2



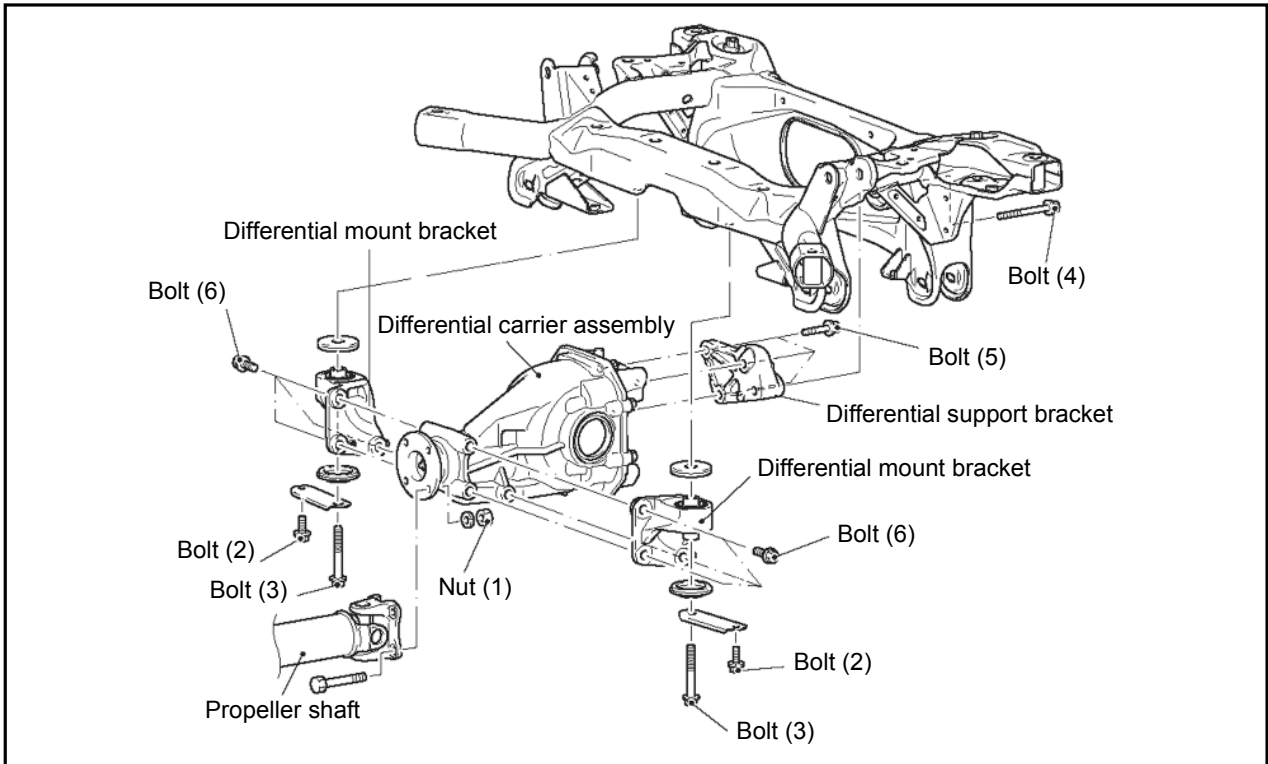
Spacer set (MR357058): 1 set



Installation Procedures

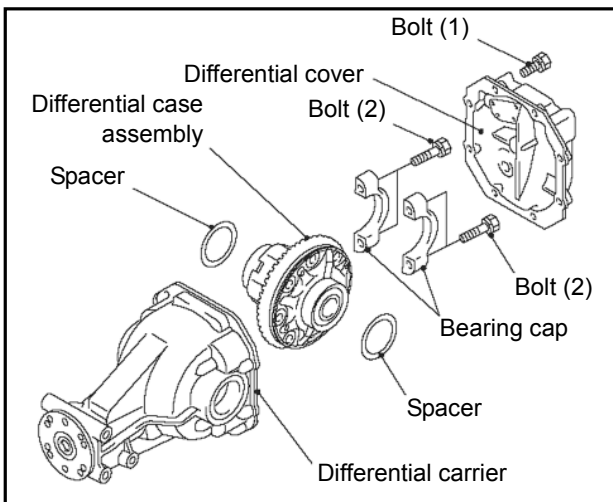
1. Removing the rear differential carrier assembly

Before removing the rear differential carrier assembly, drain the differential oil and remove the rear lower arm, rear stabilizer, rear drive shaft, etc.



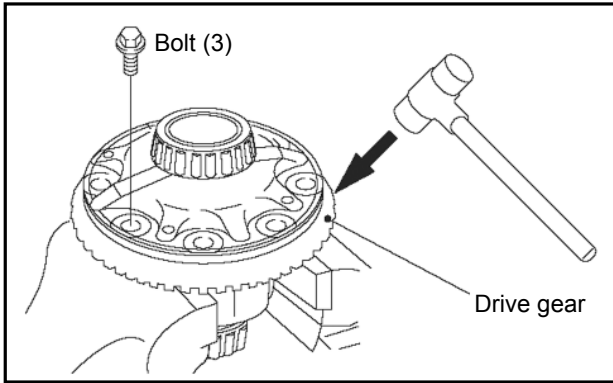
- 1) Remove the nuts (1) and disconnect the differential carrier assembly from the propeller shaft.
- 2) Remove the bolts (2), bolts (3) and bolts (4) to remove the differential carrier assembly.
- 3) Remove the bolts (5) to remove the differential support bracket.
- 4) Remove the bolts (6) to remove the differential mount brackets.

2. Disassembling the rear differential carrier assembly



- 1) Remove the bolts (1) to remove the differential cover.
- 2) Remove the bolts (2) to remove the bearing caps.
- 3) Take out the differential case assembly from the differential carrier.

Installation Procedures

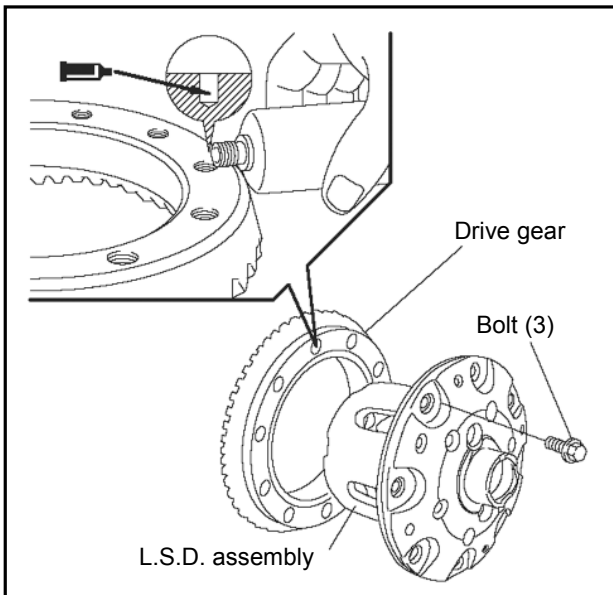


- 4) Remove the bolts (3). Remove the drive gear from the differential case assembly by tapping the gear with a plastic hammer.

Advice

Keep the removed drive gear and bolts (3) as they will be reused.

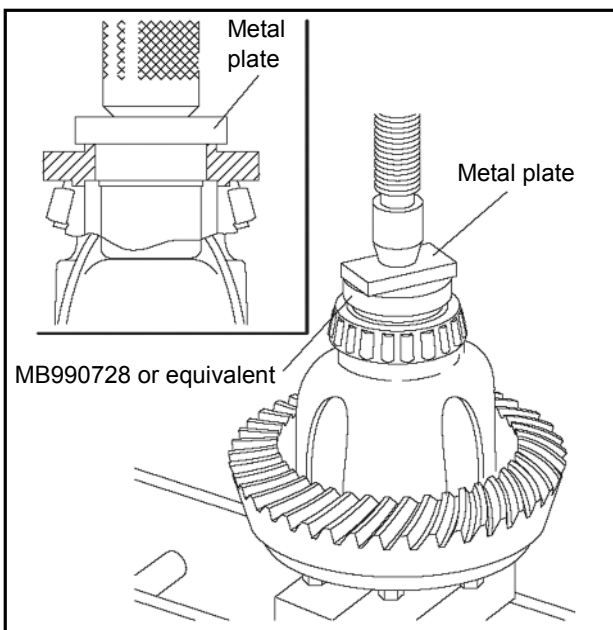
3. Installing the drive gear to the super traction rear L.S.D. assembly



- 1) Remove residual adhesive from the bolt holes in the drive gear using a tap, then clear the holes with compressed air.
- 2) Apply anaerobic adhesive into the bolt holes in the drive gear and install the drive gear to the L.S.D. assembly by tightening the bolts (3) to the specified torque.

Advice

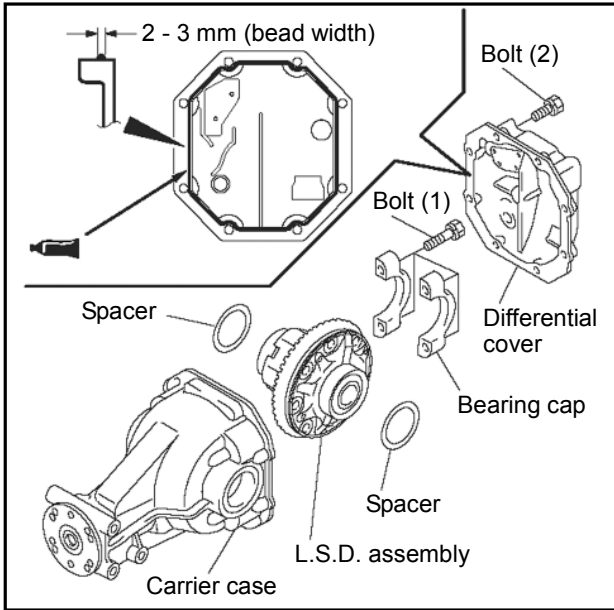
- Tightening torque
Bolt (3): 84 ± 4 N·m
- Anaerobic adhesive
Three Bond 1303, Loctite 648, or equivalent



- 3) Using the special tool, press-fit the differential side bearing inner race to the L.S.D. assembly.

Installation Procedures

4. Assembling the rear differential carrier assembly

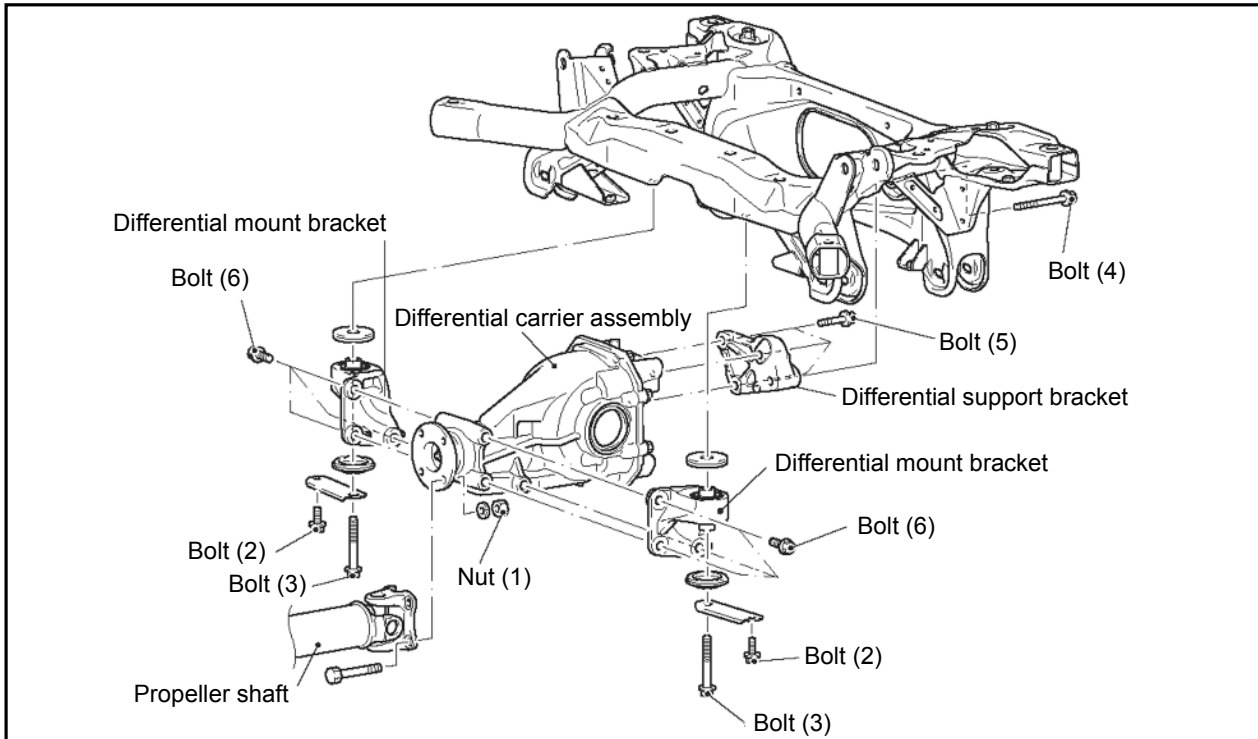


- 1) Fit the side bearing outer race to the L.S.D. assembly. Select appropriate backlash adjusting spacers in accordance with the procedure in the workshop manual issued by Mitsubishi Motors and fit them to the L.S.D. assembly. Then, install the L.S.D. assembly in the differential carrier.
- 2) Align the alignment marks on the bearing caps and the differential carrier, secure them with the bolts (1).
- 3) With an uniform bead of semi-dry sealant applied to its entire periphery as shown, attach the differential cover to the carrier case and secure them together with the bolts (2).

Advice

- Tightening torque
Bolt (1): 37 ± 2 N·m
Bolt (2): 48 ± 6 N·m
- Recommended sealant: ThreeBond 1216 or equivalent

5. Reinstalling the rear differential carrier assembly

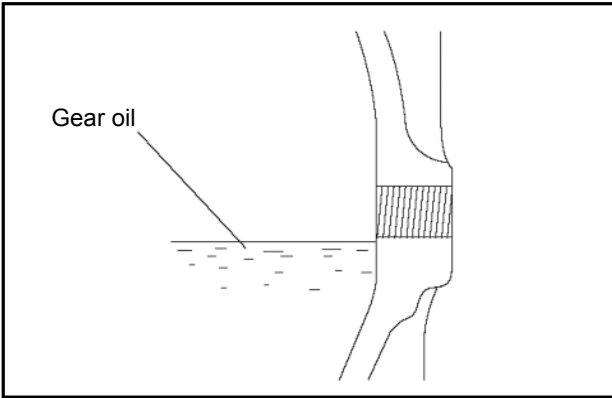


- 1) Reinstall the rear differential carrier assembly to the vehicle in the reverse sequence of removal.

Advice

- Tightening torque
Nut (1): 54 ± 5 N·m Bolt (3): 110 ± 11 N·m Bolt (5): 95 ± 14 N·m
Bolt (2): 11 ± 3 N·m Bolt (4): 110 ± 11 N·m Bolt (6): 95 ± 14 N·m
- Bolt (4) is applied with friction factor stabilizer. Check the bolt for scratches, remove dust and dirt from its bearing surface and threads, and tighten it firmly to the specified torque.

Installation Procedures



- 2) Fill the specified gear oil up to the lower edge of the filler plug hole of the differential carrier assembly as shown. Install the filler plug and tighten it to the specified torque.

Advice

- Specified gear oil:
Mitsubishi genuine DiaQueen LSD gear oil
- Tightening torque
Filler plug: 49 ± 9 N·m (5.0 kgfm)

Supplementary Instructions

■ Oil Replacement Interval after Installing This Product

Item	Interval	Quantity (dm ³)	Specified Oil
Differential oil	Every 20,000 km	0.55	Mitsubishi genuine DiaQueen LSD gear oil

Advice

- This oil replacement interval is a rough estimate. Depending on the operating condition, the oil may deteriorate more quickly. To be on the safe side, earlier change is recommended.

MEMO

OVERHAUL INSTRUCTIONS

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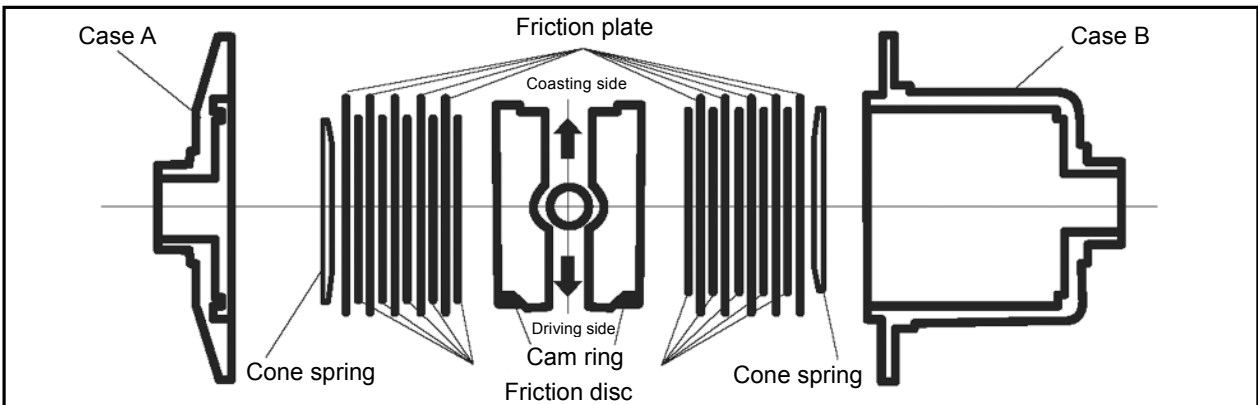
Information

[Component Parts of Rear L.S.D. Assembly]

No.	Part name	Q'ty	Service parts availability	Remarks
1	Case A	1	—	
2	Case B	1	—	
3	Side gear	2	—	
4	Pinion gear	4	—	
5	Pinion shaft	1	—	
6	Friction plate	10	O	Outer pawl
7	Friction disc	10	O	Inner pawl
8	Cam ring set	1	O	55°/35° – 55°/55°
9	Cone spring	2	O	T=1.8 mm
10	Bolt	4	—	Tightening torque: 14.7 N·m

[Installation Condition of Rear L.S.D Assembly]

1. Assembling sequence and direction of friction discs and plates



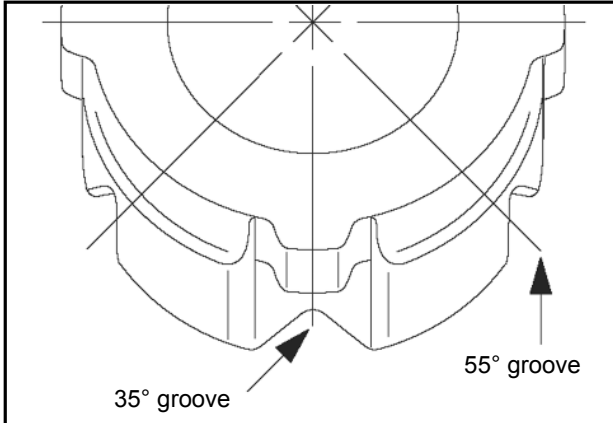
Advice

- Subsequent explanations are based on the assembling sequence and direction shown above.

Information

2. Installation of pinion shaft to cam rings

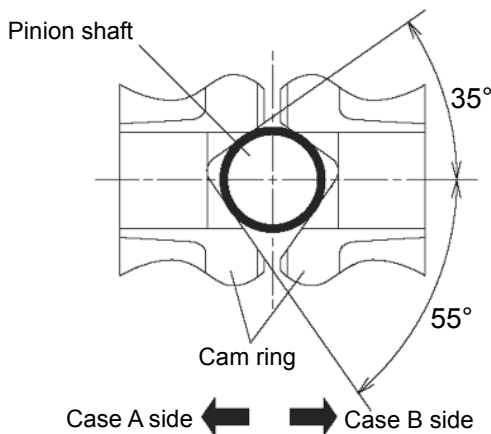
The cam rings are provided with two types of grooves: one has 35° angle (1.8-way) and the other has 55° angle (2-way) at the coasting side.



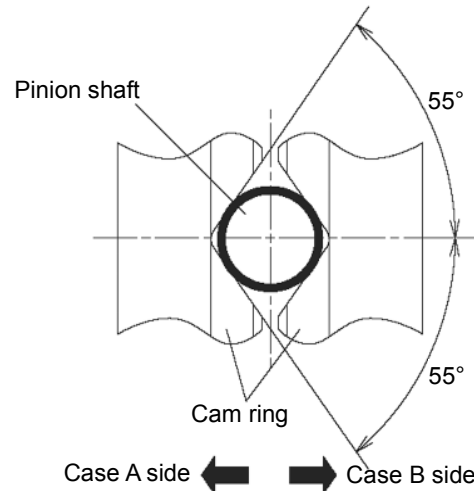
Caution

To avoid possible damage to the L.S.D., the pinion shaft should be installed to the cam rings with their mutual contact surfaces fitted to each other as shown.

When shaft is installed using 35° groove
(1.8-way)



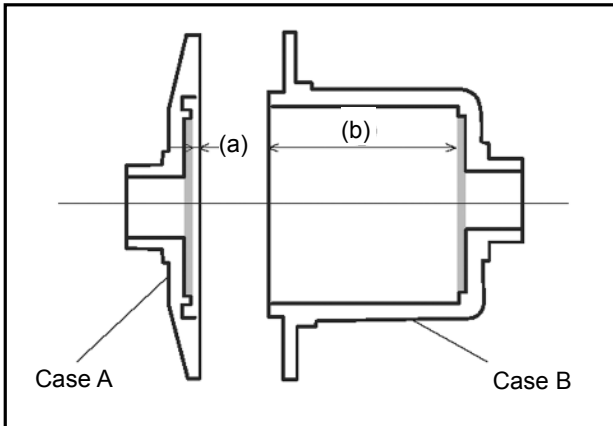
When shaft is installed using 55° groove
(2-way)



Information

3. Adjustment

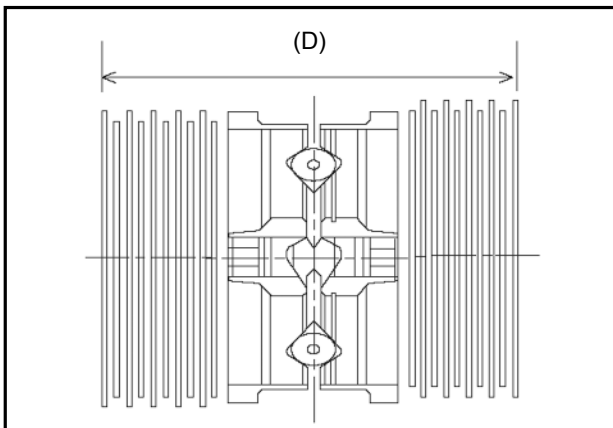
- 1) Before assembling the L.S.D. assembly, adjust the gap (S) in the differential case within specification. The gap (S) is obtained from the case depth (A) and the inner plate assembly height (D).



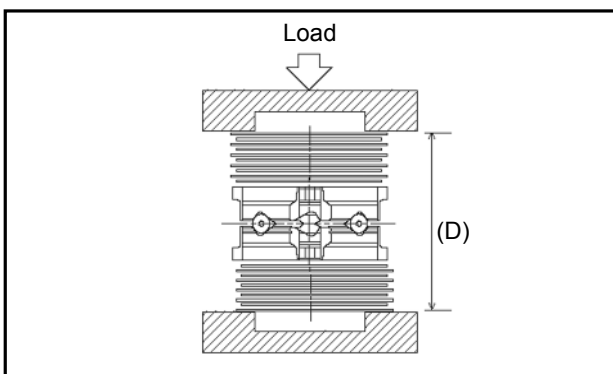
- 2) Measurement of case depth (A)
Measure the depths of the case A and case B and calculate the case depth (A) as follows.
 $(A) = (b) - (a)$

Advice

- Cone spring fitting depth is excluded from the measurement.



- 3) Measurement of inner plate assembly height (D)
Assemble the friction plates and discs, cam rings, pinion shaft, pinion gears and side gears. Then measure the inner plate assembly height (D) using a micrometer.



Advice

- The inner plate assembly height (D) should be measured with inner plates fully pressed against each other from both sides.
- The parts are cleaned enough before the measurement.
- The cam rings must be fitted to the pinion shaft in the correct direction.

- 4) Calculation of clearance

The clearance (S) is obtained from the case depth (A) and inner plate assembly height (D) as follows.
 $(S) = (A) - (D)$

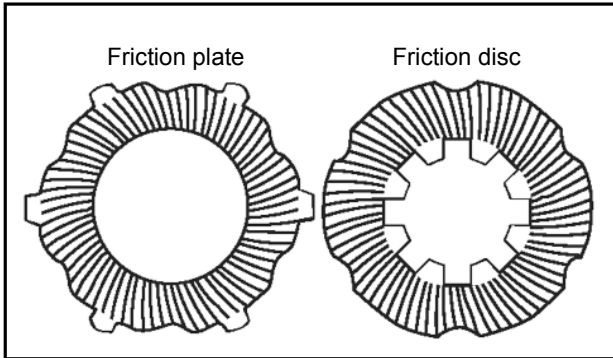
Advice

- Specified clearance (S): 0.4 to 0.6 mm

Information

5) Adjustment of clearance

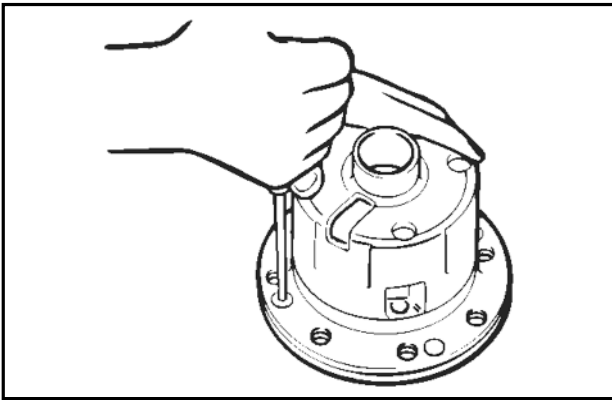
If the clearance is out of specification, select the friction plates of appropriate thicknesses and adjust the clearance within the standard value.



Advice

- Friction plate thickness
RACZ4203K1: 1.6 mm
RACZ4203K2: 1.8 mm
- Friction disc thickness
RACZ4202K1: 1.6 mm

4. Reassembling the l.s.d. assembly



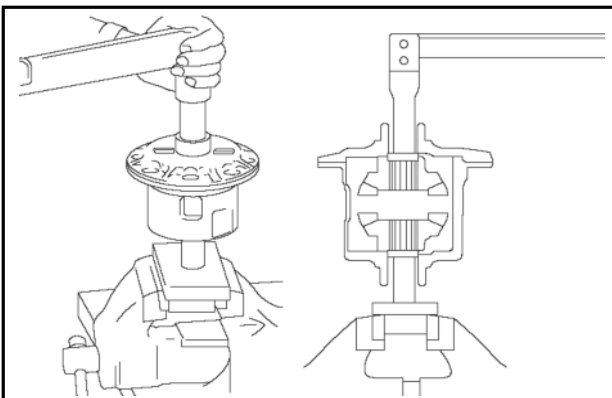
Reassemble the L.S.D. assembly.

Advice

- Bolt tightening torque: 14.7 N·m

5. Cam angle and initial torque at the time of delivery

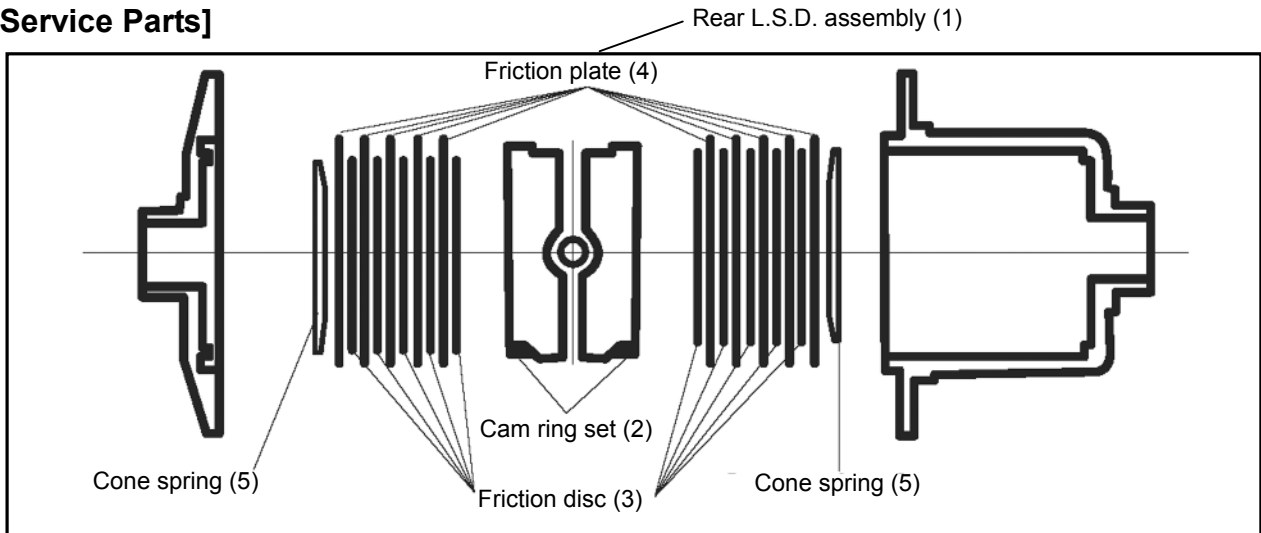
Cam angle	Initial torque
55°/55° (Driving side/coasting side)	Approx. 120 N·m



* The initial torque given above is the value when mounted on the vehicle. If measured as shown in the drawing, the value should be a half of the above.

Information

[Service Parts]



No.	Part name	RALLIART part No.	Remarks
1	Rear L.S.D. assembly	RA166619K1	55°/55° – 55°/35°
2	Cam ring set (set of LH and RH cam rings)	RACZ4205S1	55°/55° – 55°/35°
3	Friction disc	RACZ4202K1	Inner pawl (T = 1.6 mm)
4	Friction plate	RACZ4203K1	Outer pawl (T = 1.6 mm)
		RACZ4203K2	Outer pawl (T = 1.8 mm)
5	Cone spring	RACZ4204K1	T = 1.8 mm