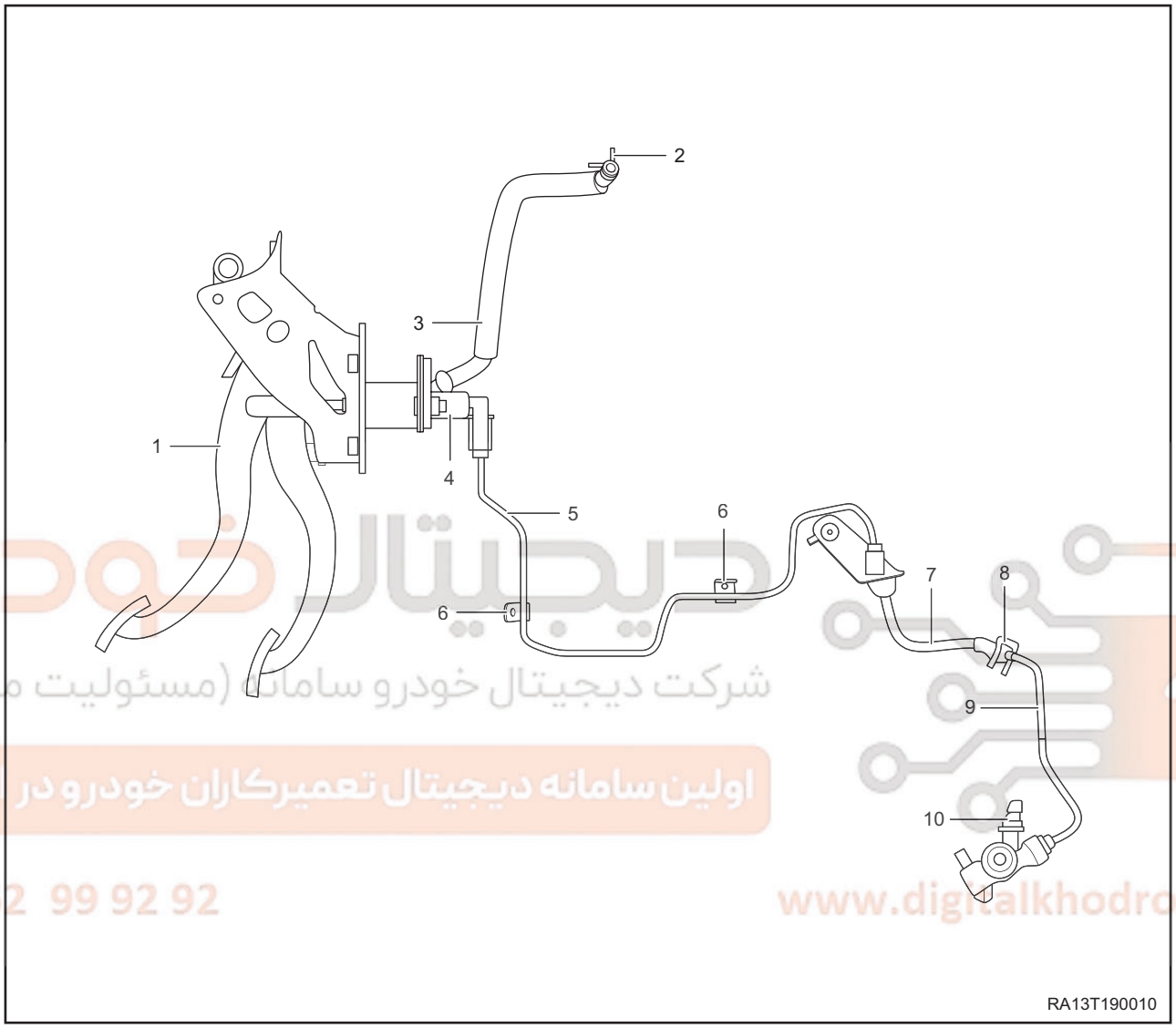
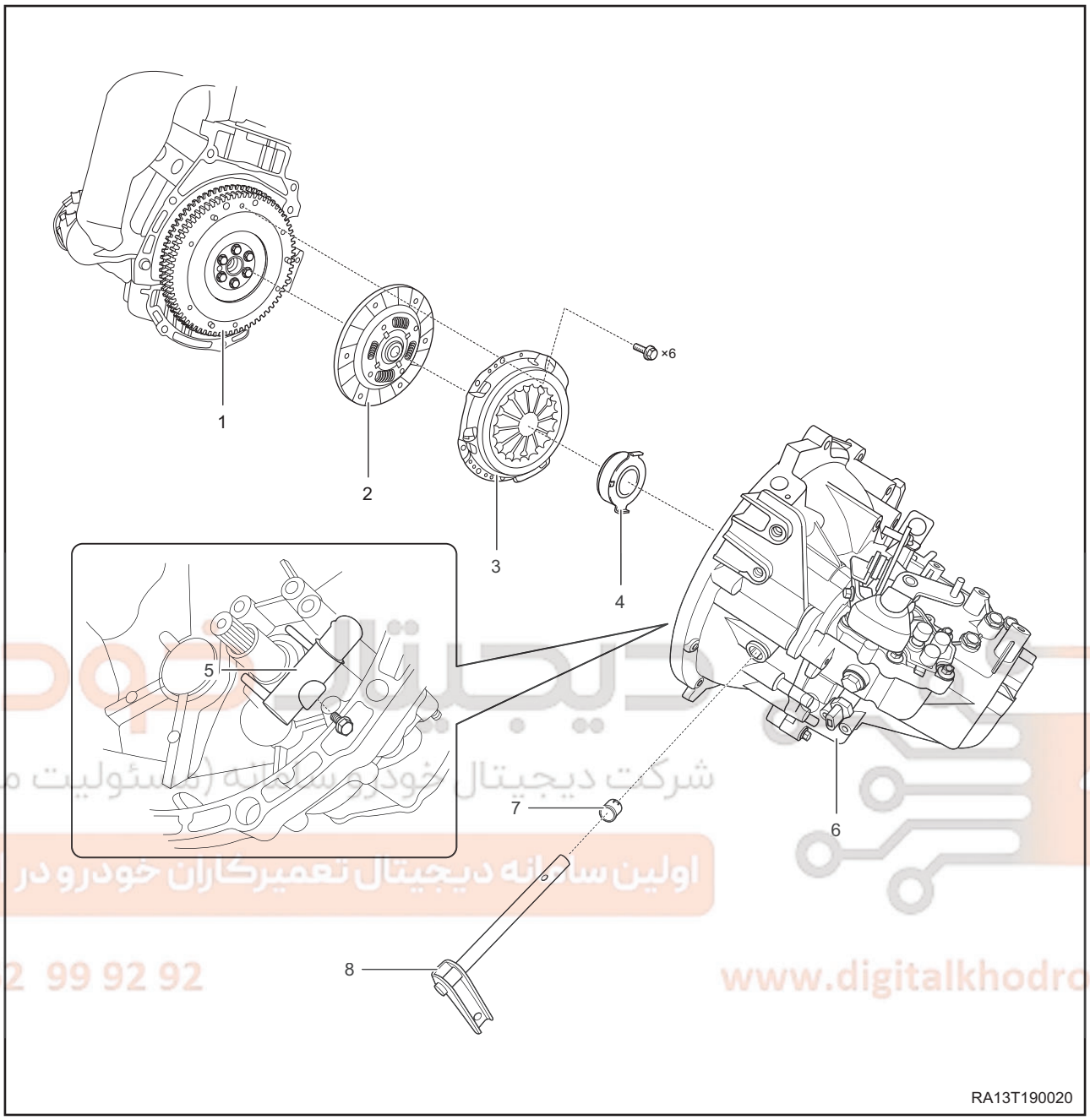
CLUTCH

GENERAL INFORMATION

Description



1 - Front Clutch Pedal Assembly	2 - Elastic Clamp
3 - Master Cylinder Inlet Hose	4 - Clutch Master Cylinder Assembly
5 - Clutch Pipe I	6 - Single Pipe Clamp
7 - Hose Assembly II	8 - Holding Spring
9 - Clutch Pipe Assembly II	10 - Clutch Release Cylinder Assembly



1 - Flywheel	2 - Clutch Driven Disc
3 - Clutch Pressure Plate	4 - Release Bearing
5 - Clutch Fork	6 - Return Spring
7 - Wear Bushing	8 - Clutch Arm

Operation

Hydraulic Clutch System: It mainly consists of clutch pedal, clutch master cylinder, clutch release cylinder, clutch hydraulic line, etc. When depressing clutch pedal, clutch master cylinder generates pressure, and transmits it to the release bearing that is fitted with pressure plate diaphragm spring. As external force is applied, release bearing squeezes diaphragm spring release finger inward until it reaches fulcrum. This operation moves pressure plate backward, thus releasing the clamping force from clutch driven disc. Clutch Master Cylinder Assembly: It consists of piston, cylinder block, push rod and hydraulic line. When depressing pedal, push rod pushes the piston in master cylinder so that fluid in the hydraulic line is drained into release cylinder.

Specifications

Torque Specifications

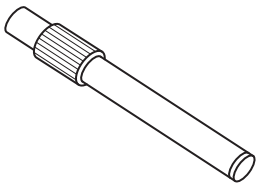
Description	Torque (N·m)
Clutch Pedal Fixing Nut	25 ± 3
Clutch Pressure Plate	23 ± 2
Release Fork Fixing Bolt	32 ± 3
Clutch Master Cylinder Fixing Nut	25 ± 3
Hose Assembly II Bracket	10 ± 2
Clutch Pipe I	18 ± 2
Clutch Pipe Assembly II	18 ± 2
Clutch Release Cylinder Assembly	25 ± 3

Clutch Driven Disc Specifications

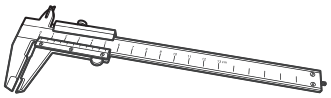
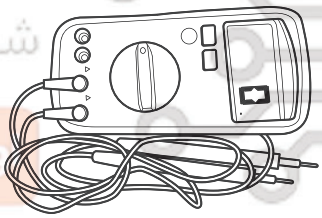
Measurement Item	Specification (mm)
Clutch Driven Disc Standard Thickness	7.6 ± 0.3
Minimum rivet depth	0.8

Tools

Special Tool

Clutch Pressure Plate Installer	 RCH0000018

General Tools

Vernier Caliper	 RCH0000019
Digital Multimeter	 RCH0000002

DIAGNOSIS & TESTING

Problem Symptoms Table

HINT:
Use symptoms table below to help determine cause of problem. Check each suspected area in sequence. Repair or adjust faulty components, or replace as necessary.

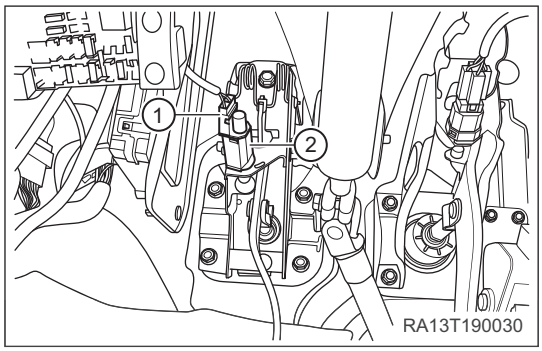
Symptom	Possible Cause	Recommended Repair Method
Clutch chatters	Engine mounting (loose)	Tighten bracket
	Clutch driven disc (oily)	Clean or replace
	Clutch driven disc (worn)	Replace
	Clutch driven disc torsion spring (damaged)	Replace
	Clutch driven disc (glazed)	Replace
	Diaphragm spring tip (out of alignment)	Replace
Clutch is noisy	Clutch release bearing (worn, dirty or damaged)	Clean or replace
	Clutch driven disc torsion spring (damaged)	Replace
Clutch slips	Clutch pedal free play (out of adjustment)	Replace
	Clutch driven disc (oily)	Clean or replace
	Clutch driven disc (worn)	Replace
	Diaphragm spring (damaged)	Replace
	Pressure plate (distorted)	Replace
	Flywheel (distorted)	Replace
Clutch disengages incompletely	Clutch driven disc (improperly installed)	Adjustment
	Clutch driven disc runout (excessive)	Clean or replace
	Clutch driven disc lining (broken)	Replace
	Clutch driven disc (dirty or burned)	Clean or replace
	Clutch driven disc (oily)	Clean or replace
	Clutch pedal free play (out of adjustment)	Replace

ON-VEHICLE SERVICE

Clutch Switch

Removal

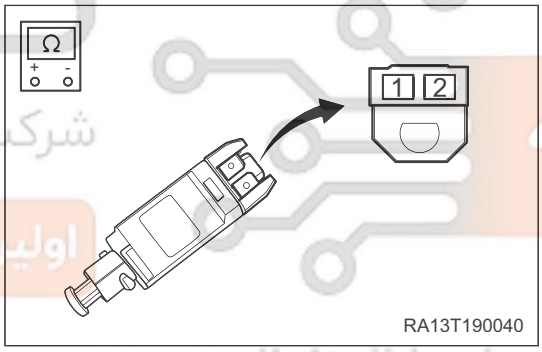
1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the clutch switch.
   a. Disconnect clutch switch connector (1) and remove clutch switch (2).



Inspection

Check for continuity between terminals when clutch switch is turned on or off.

Switch Position	Specified Condition
ON (not pushed)	Continuity
OFF (pushed)	No continuity



Installation

Installation is in the reverse order of removal.

Clutch Master Cylinder Assembly

Removal

⚠ WARNING

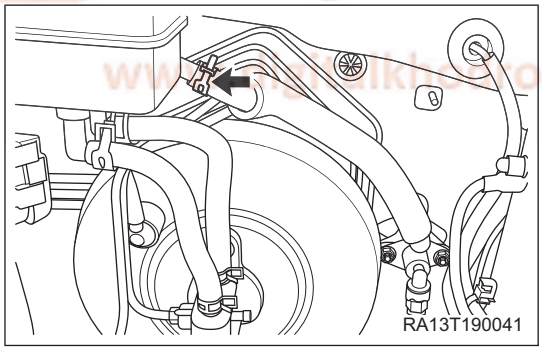
- Brake fluid in master cylinder is harmful to your skin, so be sure to wear protective gloves before operation.
- Once brake fluid contacts with your skin, wash it off with water immediately.

CAUTION

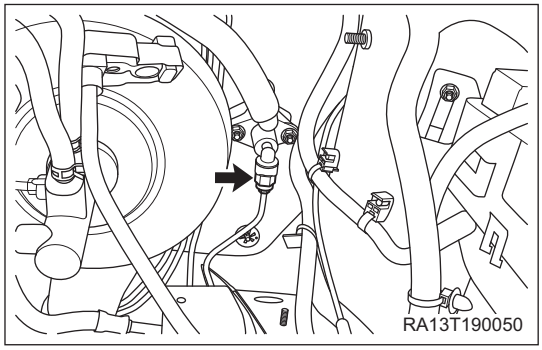
- Be careful when removing clutch master cylinder from engine compartment. Incorrect operation may damage hydraulic line, also cause clutch to separate improperly.
- DO NOT allow brake fluid to spray onto body surface. Brake fluid may damage painted surface. If any brake fluid adheres to painted surface, wash it off with water immediately.

1. Disconnect the negative battery cable.
2. Drain the brake fluid .

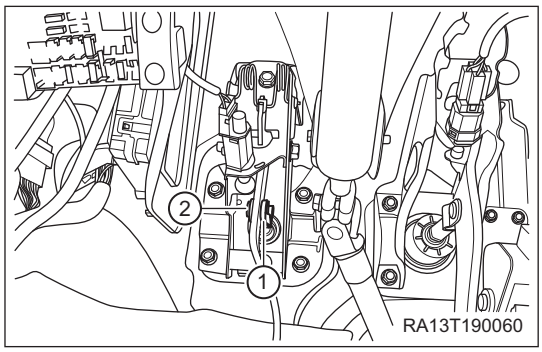
   HINT:
   Collect brake fluid with a container.
3. Remove the battery.
4. Remove the battery tray (See page 16-9).
5. Remove the battery tray bracket.
6. Remove the clutch master cylinder.
   a. Disconnect the master cylinder inlet hose (arrow).



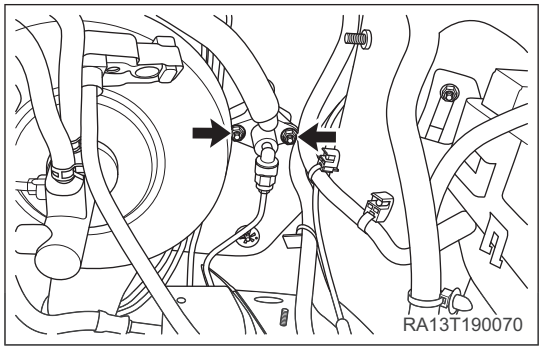
   b. Remove coupling bolt (arrow) between clutch pipe I and clutch master cylinder.
   (Tightening torque: 18 ± 2 N·m)



c. Remove cotter pin stopper plate (1), pull out center pin (2), and remove clutch master cylinder push rod from clutch pedal.



d. Remove 2 fixing nuts (arrow) from clutch master cylinder.
(Tightening torque: 25 ± 3 N·m)



Installation

Installation is in the reverse order of removal.

⚠ WARNING

- Connect hose mark straight line end to reservoir outlet joint with straight line mark in Z farward direction, and tighten it with elastic clamp (AQ60115). Connect hose end with cross mark to master cylinder inlet joint and tighten it with elastic clamp (AQ60115). The cross mark should be in Z forward direction and aligned with master cylinder parting line.
- Add brake fluid to "MAX".
- Perform bleeding procedure for hydraulic clutch and check brake fluid for leakage after installation.

Master Cylinder Inlet Pipe

Removal

WARNING

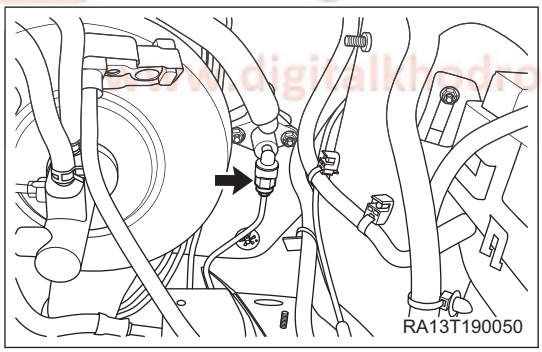
- Brake fluid in master cylinder is harmful to your skin, so be sure to wear protective gloves before operation.
- Once brake fluid contacts with your skin, wash it off with water immediately.

CAUTION

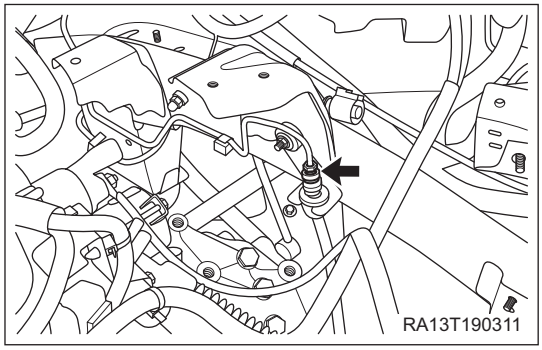
- Be careful when removing clutch master cylinder from engine compartment. Incorrect operation may damage hydraulic line, also cause clutch to separate improperly.
- DO NOT allow brake fluid to spray onto body surface. Brake fluid may damage painted surface. If any brake fluid adheres to painted surface, wash it off with water immediately.

1. Disconnect the negative battery cable.
2. Drain the brake fluid .

   HINT:
   Collect brake fluid with a container.
3. Remove the battery.
4. Remove the battery tray (See page 16-9).
5. Remove the battery tray bracket.
6. Remove the clutch pipe I.
   a. Remove coupling bolt (arrow) between clutch pipe I and clutch master cylinder.
      (Tightening torque: 18 ± 2 N·m)

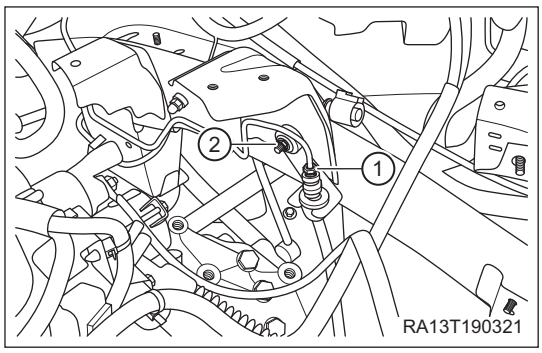


   b. Remove coupling bolt (arrow) between clutch pipe I and hose assembly II.
      (Tightening torque: 18 ± 2 N·m)

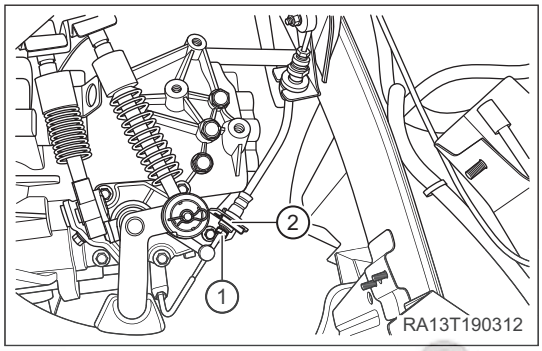


   c. Remove pipe from single pipe clamp.

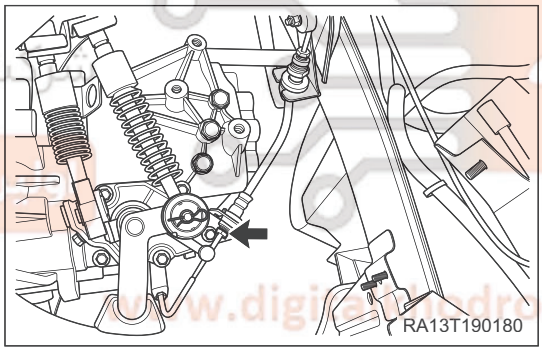
7. Remove the clutch hose assembly II.
   a. Remove coupling bolt (1) between clutch pipe I and hose assembly II.
      (Tightening torque: 18 ± 2 N·m)
      Remove fixing nut (2) from clutch hose assembly II bracket.
      (Tightening torque: 10 ± 2 N·m)



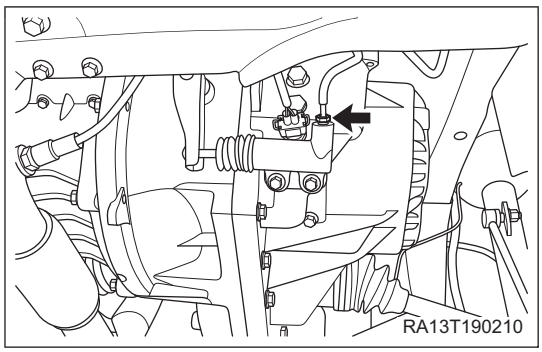
   b. Remove coupling bolt (1) between clutch hose II and pipe II.
   c. Remove holding spring (2) from clutch hose II, and remove hose II from hole of transmission hose fixing bracket.



   d. Remove the clutch hose II.
8. Remove the clutch pipe assembly II.
   a. Remove coupling bolt (arrow) between clutch pipe II and hose assembly II.
      (Tightening torque: 18 ± 2 N·m)



   b. Remove coupling bolt (arrow) between clutch pipe assembly II and release cylinder.
      (Tightening torque: 18 ± 2 N·m)



   c. Remove the clutch pipe II.

Installation

Installation is in the reverse order of removal.

⚠ WARNING

- Make sure to align master cylinder inlet pipe with installation hole, and retighten bolt to specified value. Perform bleeding procedure for hydraulic clutch and check system line for leakage after installation.
- When installing fixing bracket to hose assembly II, make sure to insert hose bracket into battery mounting bracket anti-rotating hole.

Clutch Release Cylinder Assembly

Removal

WARNING

- Brake fluid in release cylinder is harmful to your skin, so be sure to wear protective gloves before operation.
- Once brake fluid contacts with your skin, wash it off with water immediately.

CAUTION

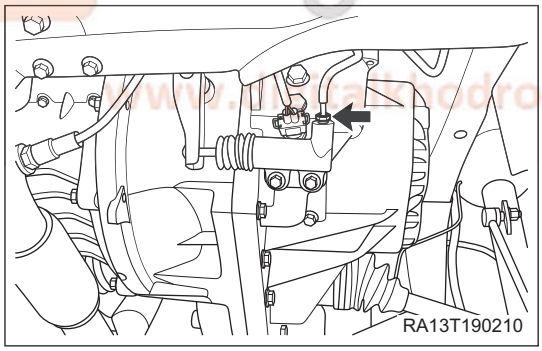
- Collect brake fluid with a container when repairing.
- After replacing release cylinder, it is necessary to make sure that fluid level in brake reservoir is always close to "MAX" mark.
- DO NOT allow brake fluid to spray onto body surface. Brake fluid may damage the painted surfaces. If any brake fluid adheres to painted surface, wash it off with water immediately.

1. Raise vehicle with a lift.

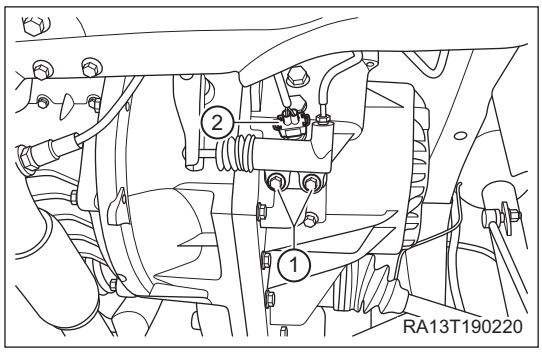
CAUTION

- Be sure to wear necessary safety equipment to prevent accidents.
- Check if safety lock of lift is locked when repairing under the vehicle.

2. Remove coupling bolt (arrow) between clutch pipe assembly II and release cylinder.
   (Tightening torque: 18 ± 2 N·m)



3. Remove fixing bolt (1) between clutch release cylinder and transmission.
   Disconnect the clutch release cylinder connector (2).
   (Tightening torque: 25 ± 3 N·m)



4. Remove the clutch release cylinder.

Installation

Installation is in the reverse order of removal.

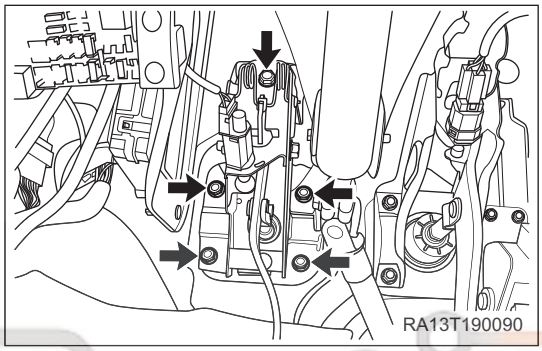
CAUTION

- Connect pipe joint of pipe assembly II to clutch release cylinder assembly, retighten it after installation.
- Make sure to align push rod of clutch release cylinder assembly with hole in transmission release fork, and tighten bolt to specified value. Perform bleeding procedure for hydraulic clutch and check system line for leakage after installation.

Clutch Pedal

Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove instrument panel lower left protector (See page 46-12).
4. Remove fixing nut from clutch master cylinder.
5. Remove the clutch pedal.
   a. Disconnect clutch pedal and clutch master cylinder push rod (See page 19-10).
   b. Remove the clutch switch (See page 19-8).
   c. Remove 5 fixing nuts (arrow) from clutch.
   (Tightening torque: 25 ± 3 N·m)



6. Remove the clutch pedal.

Installation

Installation is in the reverse order of removal.

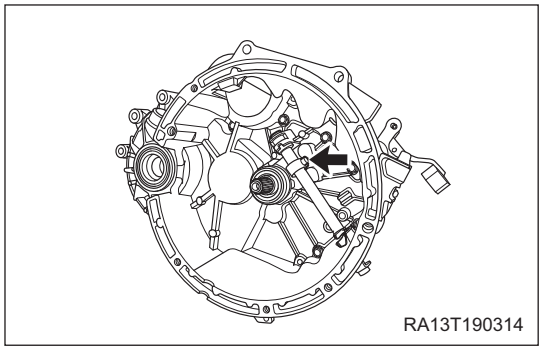
CAUTION

- Be sure to tighten nuts to specified value.
- Check fluid level in reservoir after installation.

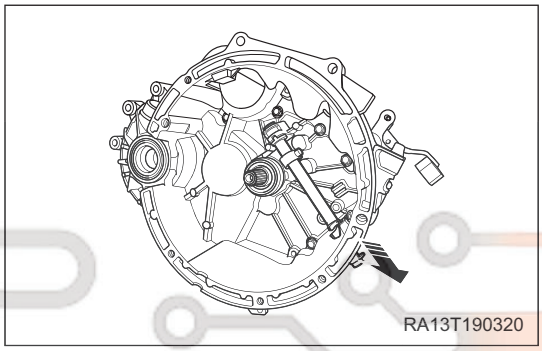
Clutch Unit

Removal

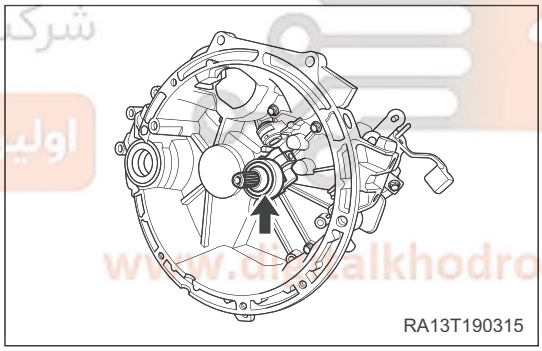
1. Remove the transmission assembly (See page 17-20).
2. Remove the release fork fixing bolt (arrow).


RA13T190314

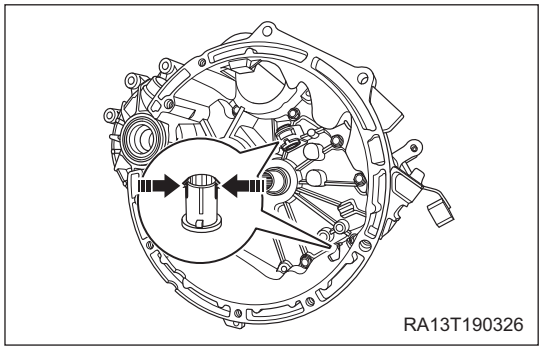
3. Pull out the clutch arm (arrow).


RA13T190320

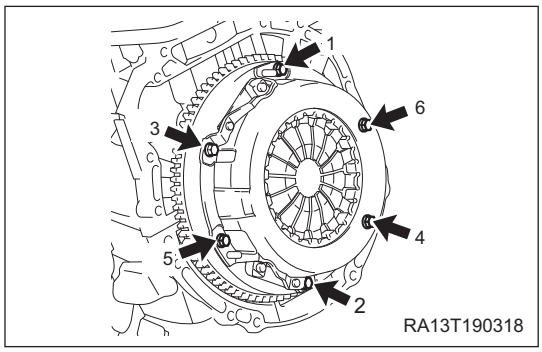
4. Remove clutch fork and release bearing.


RA13T190315

5. Remove the wear bushing.


RA13T190326

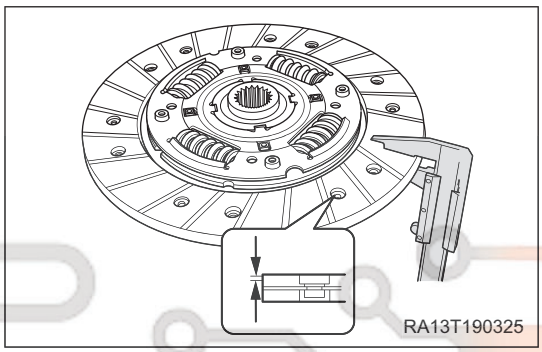
6. Remove the clutch pressure plate bolts (arrow).



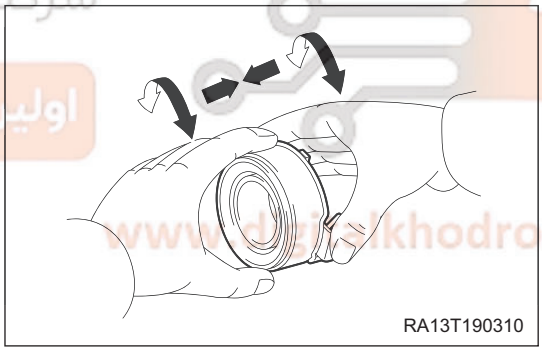
7. Remove clutch pressure plate and clutch driven disc.

Inspection

1. Check the clutch driven disc.
   a. Visually check clutch driven disc for dirt or glazing. Clean or replace clutch driven disc as necessary.
   b. Use a vernier caliper to measure thickness of clutch driven disc.
      Standard thickness: 7.3 ± 0.3 mm
      Minimum rivet depth: 0.8 mm
   If result is not as specified, replace the clutch driven disc.



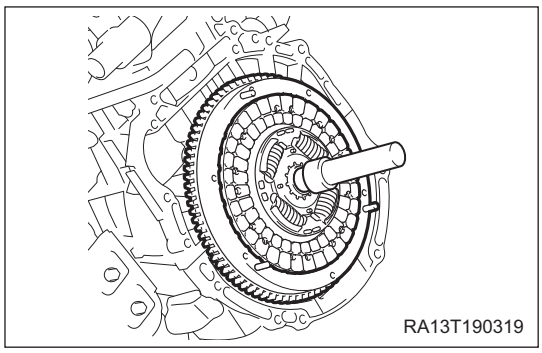
2. Check the clutch release bearing assembly.
   a. Visually check surface of release bearing for dirt, glazing or damage. Clean or replace release bearing assembly as necessary.
   b. Check that bearing operates smoothly by rotating the sliding part of bearing (the side contacting with clutch).
   Replace release bearing assembly if necessary.



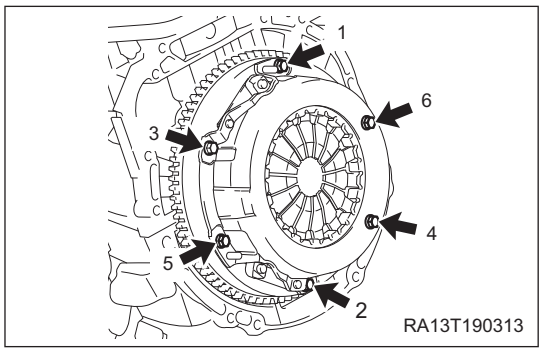
19

Installation

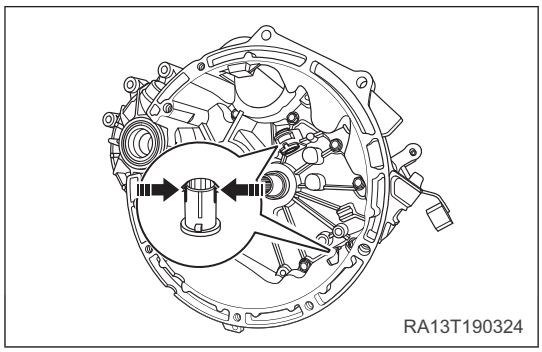
1. Insert a special tool into clutch driven disc, and insert it into flywheel.



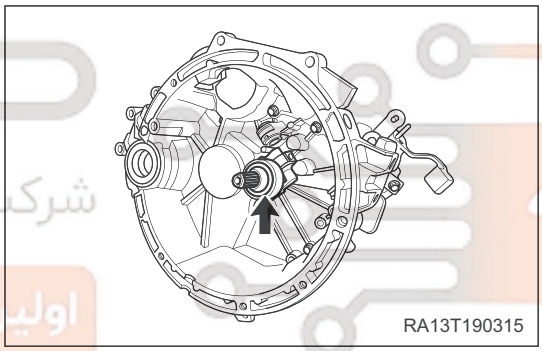
2. Install clutch pressure plate and tighten bolts in order shown in illustration.
   (Tightening torque: 23 ± 2 N·m)



3. Install the wear bushing.



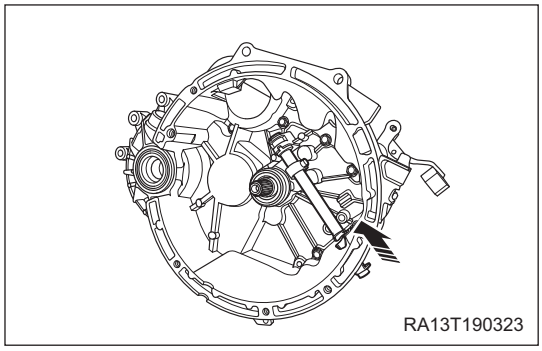
4. Install clutch fork and release bearing.



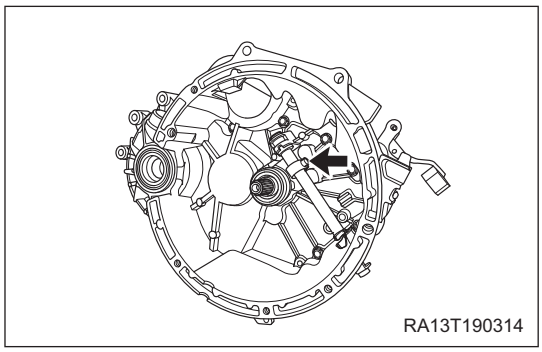
CAUTION

- Secure clutch fork in place, without being reversed.
- During installation, apply an appropriate amount grease to release bearing inner race.

5. Insert the clutch arm (arrow).



6. Install the release fork fixing bolt (arrow).
   (Tightening torque: 25 ± 3 N·m)



Bleeding Hydraulic Clutch

WARNING

- Brake fluid is harmful to your skin, so be sure to wear protective gloves before operation.
- Once brake fluid contacts with your skin, wash it off with water immediately.

CAUTION

- Collect brake fluid with a container.
- DO NOT allow brake fluid to spray onto body surface. Brake fluid may damage painted surface. If any brake fluid adheres to painted surface, wash it off with water immediately.
- Only use brake fluid recommended by Chery Automobile Co., Ltd, otherwise the lines may be subjected to a severe corrosion.
- Brake fluid type should be DOT4.

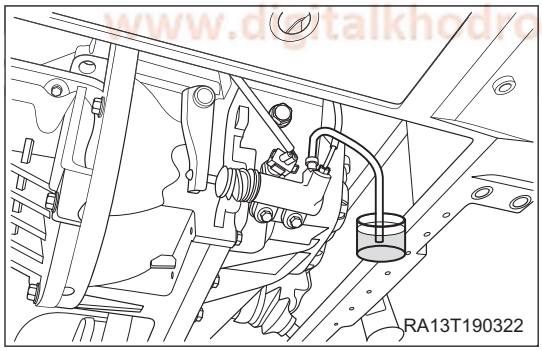
HINT:
An assistant will be required to assist when bleeding hydraulic clutch.

1. Turn off all electrical equipment and the ignition switch.
2. Check fluid level in brake master cylinder, add DOT4 brake fluid as necessary and keep the cap open.

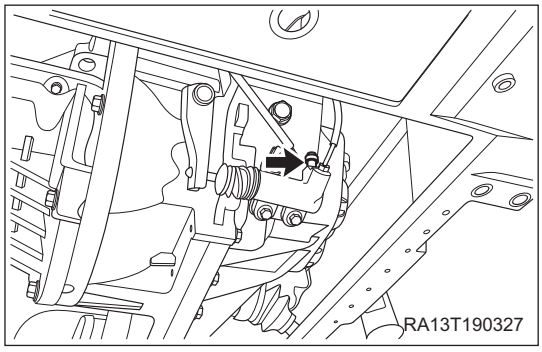
CAUTION

- Make sure that there is sufficient brake fluid in reservoir before bleeding.

3. Raise vehicle with a lift.
4. Remove discharge port protective cap and connect a clear plastic hose to bleeder screw, and submerge the end of hose into clear container that is full of new brake fluid.


RA13T190322

5. Release the discharge port.


RA13T190327

6. Depress clutch pedal until brake fluid is drained from discharge port.

ENVIRONMENTAL PROTECTION

- A container to collect brake fluid.

7. Depress clutch pedal and tighten discharge port.
8. Depress clutch pedal until there is pressure in clutch system.
9. Depress clutch pedal, then loosen discharge port and bleed air from fluid in brake master cylinder.
10. Repeat steps 6 to 9 for several times, until there is no air in hydraulic clutch system any more.

CAUTION

- Never drain brake fluid while bleeding hydraulic clutch.
- During bleeding, make sure brake fluid level is always at "MAX" mark.

11. Tighten discharge port, then remove discharge hose and replace discharge port dust cover.
12. Check brake fluid, and add DOT4 brake fluid to "MAX" as necessary, then tighten reservoir cap.
13. Inspect the clutch pedal stroke. If clutch pedal stroke is excessive or condition does not improve, it indicates that some air is still kept in system. Bleed clutch again as necessary.
14. Test vehicle and make sure clutch operates normally and depressing feel is good.