ATS metal clutch (twin / triple) instruction manual for Nissan 350Z w/ HR motor

12 pages

ATS Clutch operating instructions

Thank you very much for your purchase of the ATS metal clutch. Please read these instructions before operating the clutch.

Warranty

- If the installation is impossible due to defective or incorrect parts, the proper parts will be supplied by ATS.
- **Once the clutch is installed or used in anyway, there will not be any warranty.**

Warning

- It is extremely important that the flywheel is properly installed since an improperly installed flywheel might cause a serious accident. Always use new bolts of proper length for flywheel assembly. Refer to the service manual for correct tightening torque.
- Clean the splines of input shaft and apply light transmission oil. Do not use heavy grease on the input shaft since grease tends to attract the dust and might cause insufficient clutch disengagement. Minimize the grease application on the hub and release bearing.

Attention

- The installation should be performed by an experienced mechanic at a properly equipped garage.
- ATS clutch should be installed only to the car/transmission specified by each model number.
- A long time half clutch operation will generate too much heat and might cause an engagement problem.
- Use only ATS genuine parts for maintenance and adjustment of the clutch. A big slave cylinder or large pivot, if they are not specified by ATS, might cause a disengagement problem.
- Apply grease on the pull-push conversion parts which contact each other.
- At the end of the installation, please check if you can push the rod of the slave cylinder. Refer to the page 3.

Disclaimer

ATS products are manufactured for racing use. The user shall determine the suitability of our products and assume all the risks and responsibility in connection with their use. Regarding the legality of the products, the local laws vary from state to state. Please check with your local law enforcement.

ACTIVE TRACTION SERVICE

ATS metal clutch installation [general guide]

- Removal of the transmission. Please follow the service manual of the car.
- Clearing of input shaft (main drive gear) - clean the splines of the input shaft. Check any damage or deformation of the splines and if there are, use a new parts.
- For a clutch with casing. If you remove the casing from flywheel, use new bolts for re-assembly. The tightening torque is 1.8 kg-m ±0.1kg-m (13.1 lb-ft)
- **Flywheel assembly**. Please pay the extra attention for the flywheel attachment since the inappropriate flywheel assembly might cause a very serious accident. Use new bolts for the attachment and use the right tightening torque specified by the service manual of the car.

Flywheel tightening torque

Nissan 350Z tightening torque 9.0 kg-m (65 lb-ft)
Skyline GT-R, R32, R33, R34 tightening torque 14.5 -15.5 kg-m (104.9 - 112.1 lb-ft).
Silvia S13, S14, S15 tightening torque 8.5 - 9.5 kg-m (61.5 - 68.7 lb-ft).

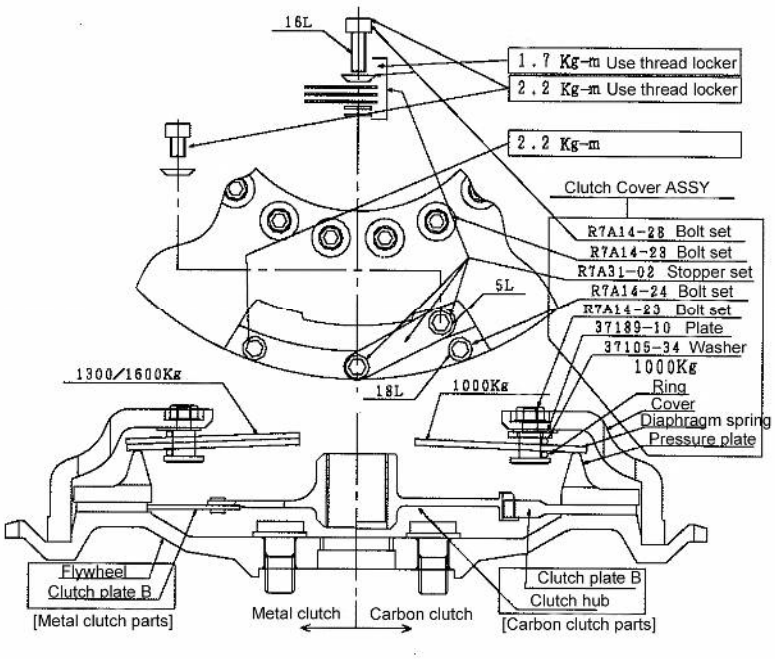
For other cars, use the torque specified by the manufacturer's service manual

- Use the stock clutch release parts. A big slave cylinder, different shape pivot and withdrawal lever (clutch fork) might cause the insufficient disengagement due to the change of clutch stroke
- Set the free travel (pedal play) between clutch pedal and master cylinder and the location of the pedal stopper to the stock specification
- Remove the cover-ASSY, pressure plate, clutch plate A, clutch plate B (friction plate) , from the flywheel. The casing is fixed to the flywheel. **Pressure plate B have the top and bottom sides. It might be a good idea to mark the direction at this point**. Clutch has been assembled in the right direction when it is shipped out form the factory.
- Install the flywheel to the engine
- Sequence of clutch assembly - clutch plate B, clutch plate A, clutch plate B (clutch plate A ===), Pressure plate, and cover ASSY. Please refer to the diagram in the separate sheet.
- Pressure plate assembly. (If the pressure plate is not fixed to the cover) The hook of the pressure plate should face the cover.
- Cover ASSY (tentative tightening) assembly. Tighten the bolt in a diagonal sequence. Do not tighten fully until the disk and bearing are aligned correctly.
- Attach the cover ASSY to the casing lightly and **use a centering tool to match the center of the hub to the center of the crank shaft**. (This process is very important to center the disk / hub on the flywheel)
- With the disk aligned, tighten the mounting bolts. **Tightening torque for cover bolt 1.8 ± 0.1 kg —m**

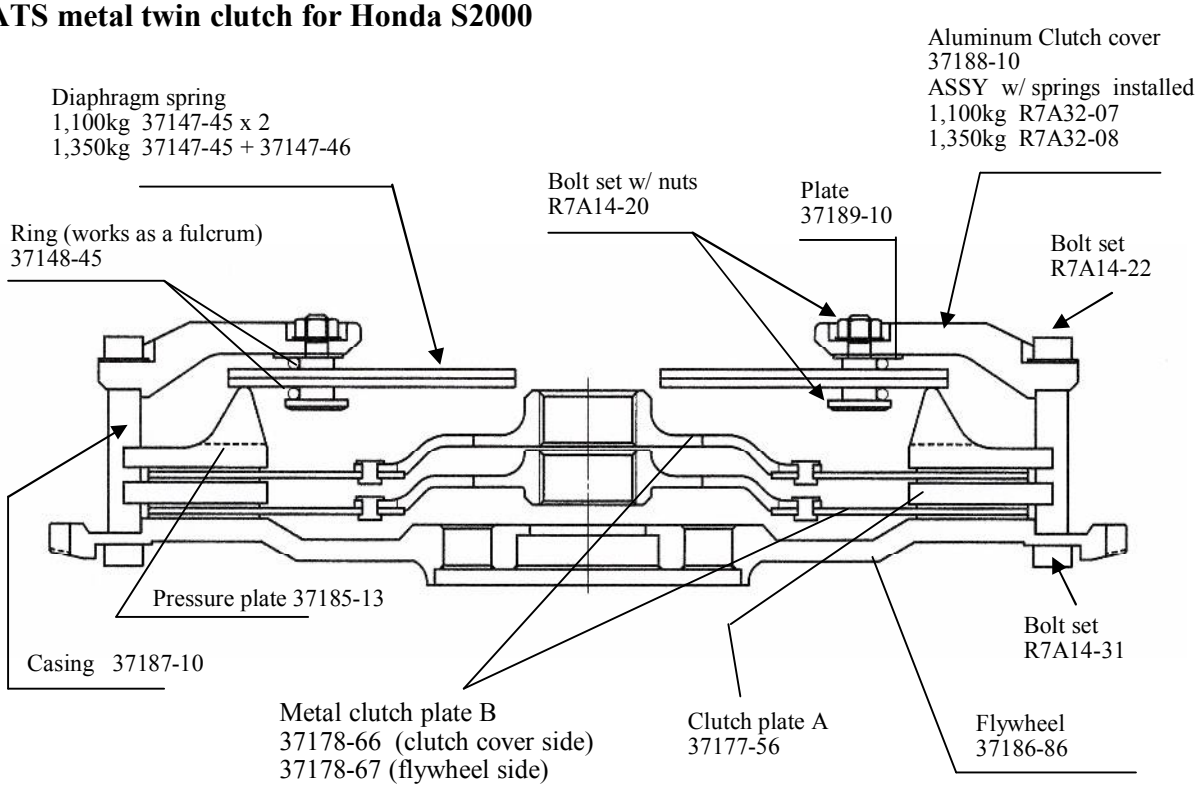
Tightening torque for cover bolt 1.8 ± 0.1 kg —m [13.1 ± 0.7 lb-ft]

- Activation parts assembly By referring to the service manual , follow the proper procedure for your car. Pay enough attention not to damage the splines of input shaft against the clutch plate. . A use a transmission jack is highly recommended.
- Withdrawal lever (clutch fork) location. While the clutch bearing is in contact with diaphragm spring, make sure the clutch fork is almost making a right angle with the mission axis. If the angle is out by more than 5 degrees , a change of the bearing sleeve size might be necessary.
- Air removal (bleeding) from slave cylinder If the assembly involves loosening a bolt on the slave cylinder to relocate or realign the laying piping, air removal (bleeding) becomes necessary.
- If the clutch disengagement point is too close to the floor, adjust the rod which connects the clutch pedal and the master cylinder and make the free play close to zero.

ATS metal / carbon single clutch

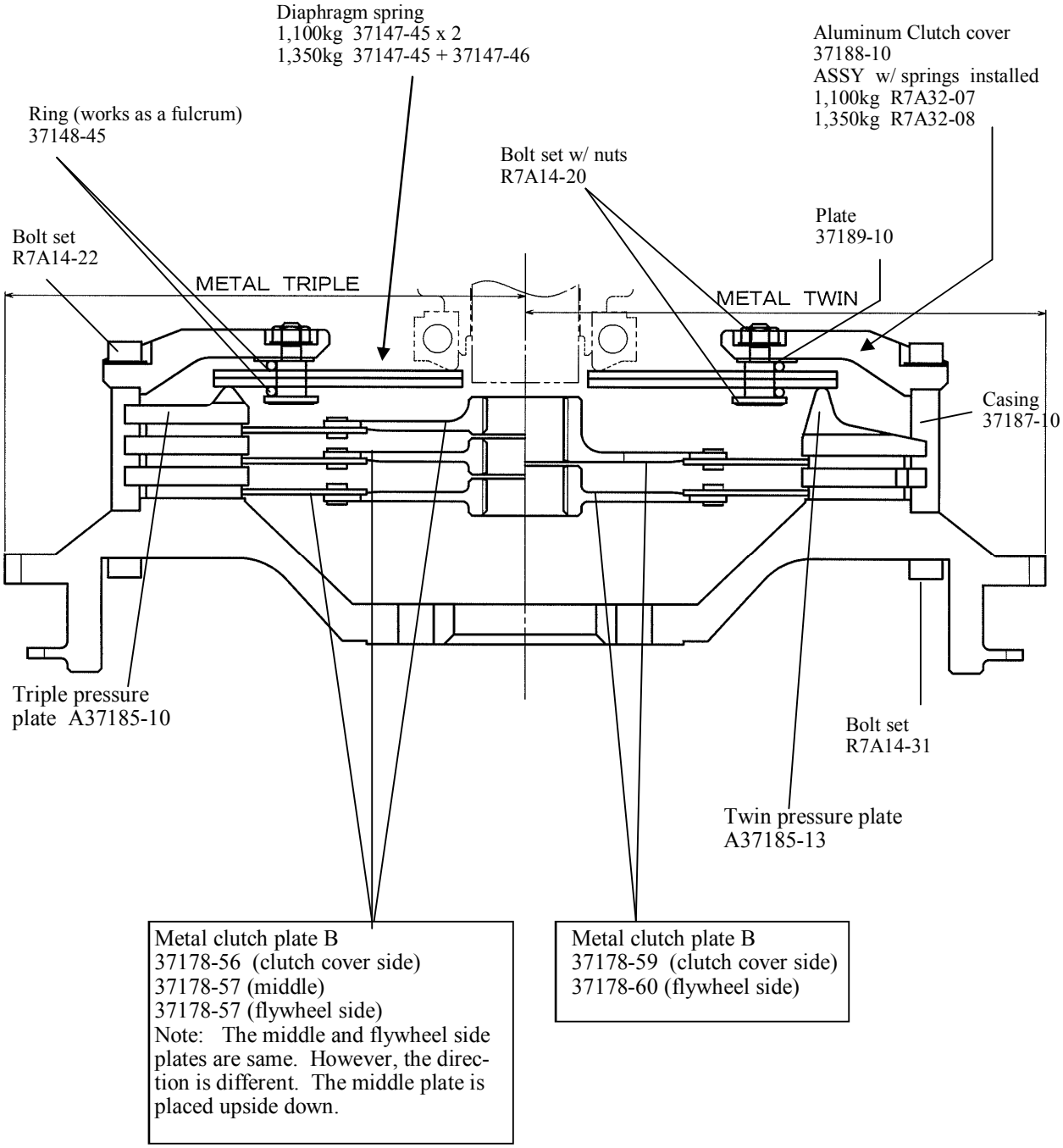


ATS metal twin clutch for Honda S2000



ATS metal twin / triple clutch for Nissan

The diagram below is based on ATS clutch for 350Z HR



ATS carbon single / twin / triple clutch for Nissan

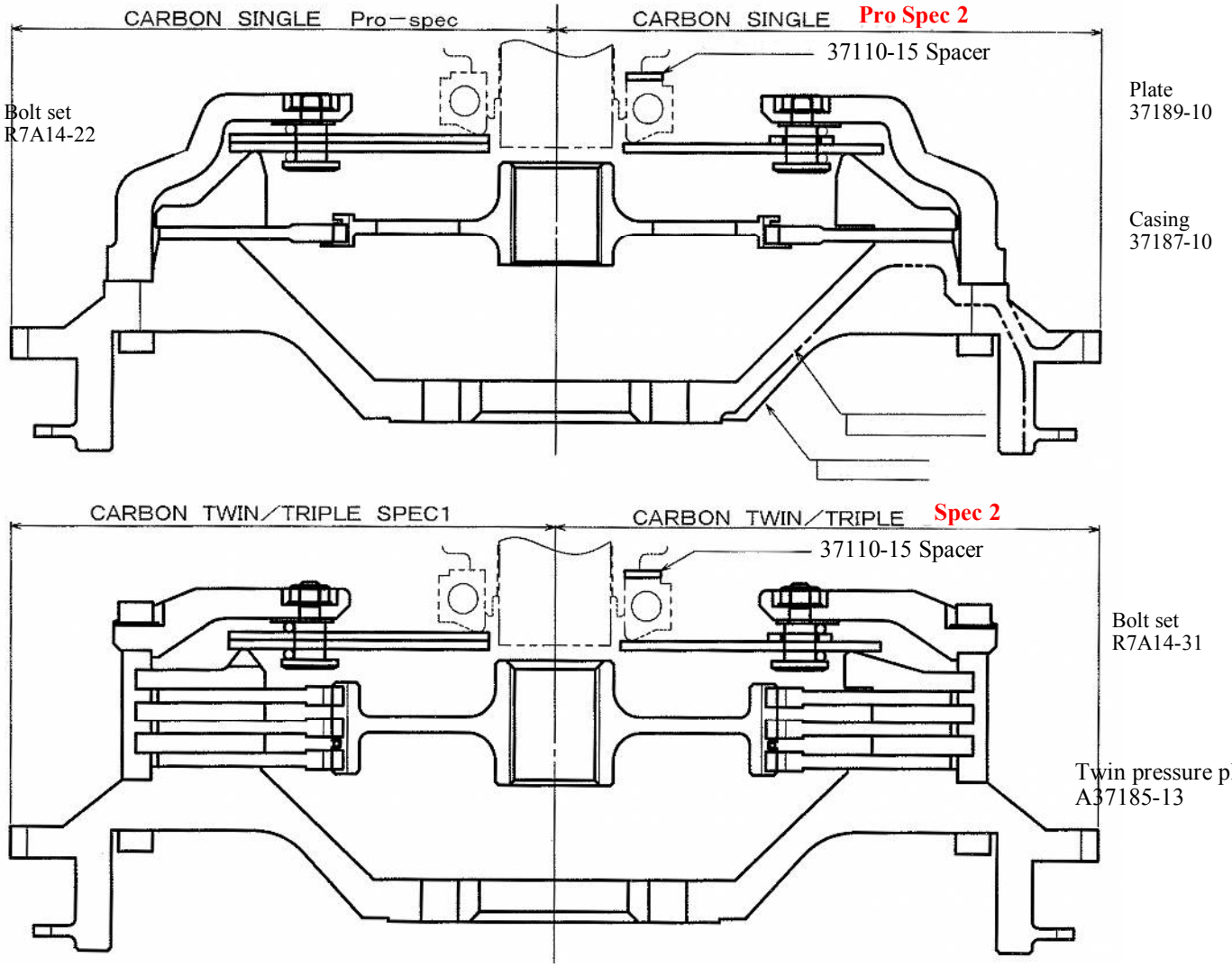
The diagram below is based on ATS carbon clutch for 350Z HR

Ring (works as a fulcrum)
37148-45

Diaphragm spring
1,100kg 37147-45 x 2
1,350kg 37147-45 + 37147-46

Bolt set w/ nuts
R7A14-20

Aluminum Clutch cover
37188-10
ASSY w/ springs installed
1,100kg R7A32-07
1,350kg R7A32-08



Triple pressure
plate A37185-10

Metal clutch plate B
37178-56 (clutch cover side)
37178-57 (middle)
37178-57 (flywheel side)
Note: The middle and flywheel side plates are same. However, the direction is different. The middle plate is placed upside down.

Metal clutch plate B
37178-59 (clutch cover side)
37178-60 (flywheel side)

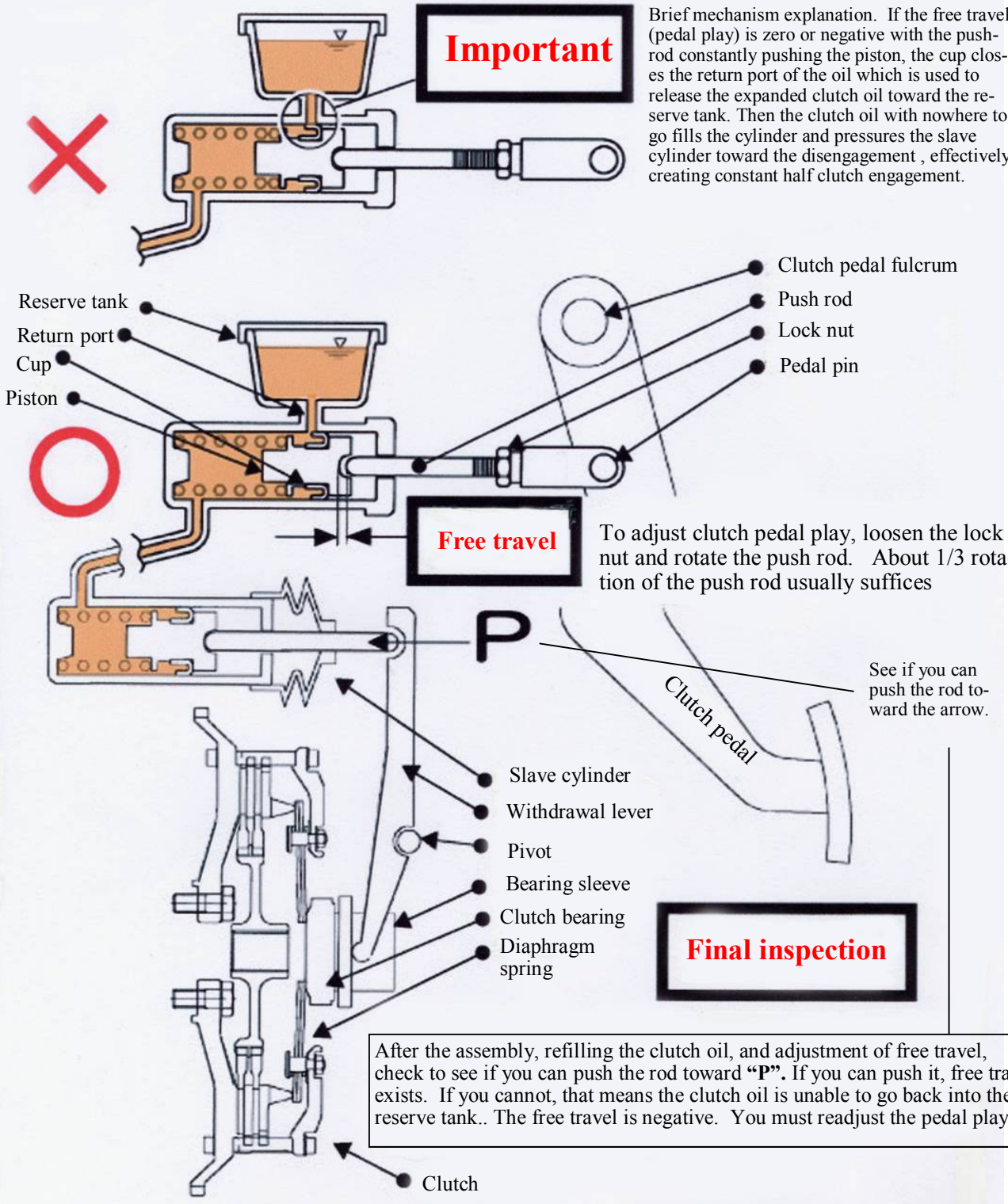
Incorrect adjustment on push-rod and piston behind the clutch pedal could lead to

Increased pedal efforts	Early wear down	Slippage	Malfunction under heat

Refer to the diagram below and adjust the free travel of the pedal correctly

Important

Brief mechanism explanation. If the free travel (pedal play) is zero or negative with the push-rod constantly pushing the piston, the cup closes the return port of the oil which is used to release the expanded clutch oil toward the reserve tank. Then the clutch oil with nowhere to go fills the cylinder and pressures the slave cylinder toward the disengagement , effectively creating constant half clutch engagement.



To adjust clutch pedal play, loosen the lock nut and rotate the push rod. About 1/3 rotation of the push rod usually suffices

See if you can push the rod toward the arrow.

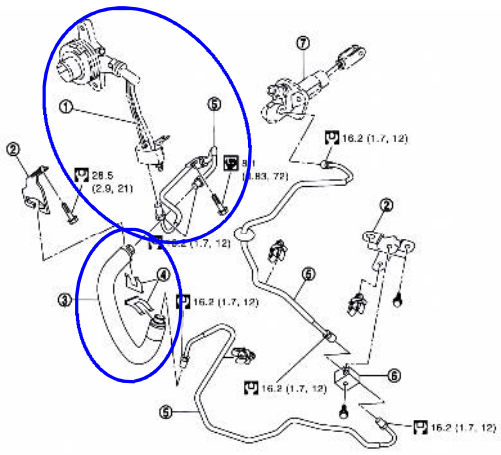
Final inspection

After the assembly, refilling the clutch oil, and adjustment of free travel, check to see if you can push the rod toward **"P".** If you can push it, free travel exists. If you cannot, that means the clutch oil is unable to go back into the reserve tank.. The free travel is negative. You must readjust the pedal play.

350Z (VQ35HR) Clutch Release Mechanism Modification

The stock 350Z CSC (Concentric Slave Cylinder) is not durable enough for performance driving. The placement of the oil line and slave cylinder structure does not enable you enough room for bleeding the air. In order to solve this problem, the ATS Clutch Kit replaces the CSC with a withdrawal lever (clutch fork) system similar to the one used for the 350Z with a DE motor.

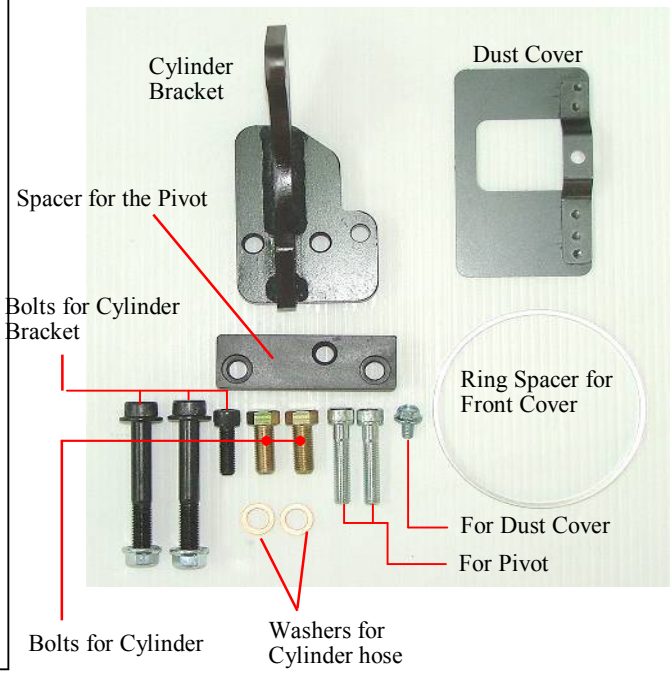
[The stock clutch hose placement is very close to the exhaust pipe, which may cause air bubbles and consequently hamper disengagement of the clutch. As a solution, ATS offers a "Stainless Mesh Hose Set" for greater heat protection. The price of the Stainless Mesh Hose Set R7A56-10 is $ 140 (sold separately).]



The diagram above is a copy of clutch piping page from the Nissan service manual.

* CSC (Concentric Slave Cylinder) will be replaced with Nissan slave cylinder or NISMO slave cylinder provided in the kit. * Clutch hose will also be replaced with the clutch hose provided in the kit. Both are indicated by a blue line.

ATS parts included in the kit



The following Nissan parts included in the clutch kit. With the Nissan slave cylinder w/ 1,100kg clamping , the pedal effort is about 16 ~ 19 kg while with the NISMO cylinder w/ 1,100kg clamping rate, the pedal effort is reduced to 15 ~ 17 kg.

Pars #	Parts name	Quantity
	w/ stock Nissan slave cylinder	
30502-014601	Release bearing	1
30501-01J60	Bearing sleeve	1
30514-01T0A	Sleeve spring	1
30531-01J00	Withdrawal lever (clutch fork)	1
30534-01T01	Fork spring	1
30537-40P01	Pivot	1
32110-CD000	Front cover	1
32112-CD000	Gasket	1
30620-12U0A	Slave cylinder 3/4 inch	1
46356-0E00A	Banjo bolt	1
30855-CD00A	Clutch hose	1
30622-E3400	Return spring	1
31377-12U0B	bolt	3

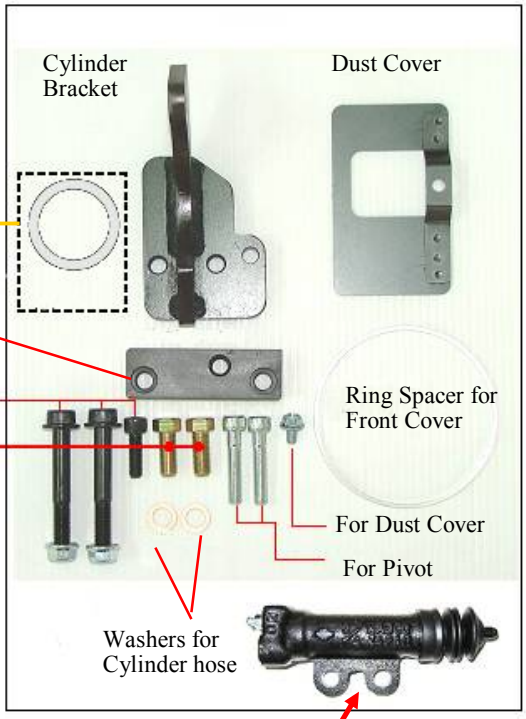
Pars #	Parts name	Quantity
	w/ NISMO slave cylinder	
30502-014601	Release bearing	1
30501-01J60	Bearing sleeve	1
30514-01T0A	Sleeve spring	1
30531-01J00	Withdrawal lever (clutch fork)	1
30534-01T01	Fork spring	1
30537-40P01	Pivot	1
32110-CD000	Front cover	1
32112-CD000	Gasket	1
30620-RSR40	NISMO Slave cylinder 13/16 inch	1
46356-0E00A	Banjo bolt	1
30855-CD00A	Clutch hose	1
30622-VB000	NISMO return spring	1
31377-12U0B	bolt	3

Please disregard this page. This option is not currently offered.

After June 2010, ATS carbon / metal clutch for 350Z HR and 370Z comes with the ATS big slave cylinder to reduce the pedal effort more effectively than NISMO cylinder.

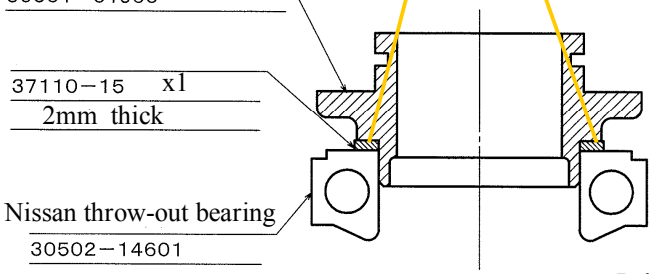
This page applies to the models released after June 2010 with ATS big slave cylinder.

ATS parts included in the kit



Depending on the model (applies to the ATS clutch with a single diaphragm spring), the kit includes this spacer. Please insert it between the bearing and the bearing sleeve.

37110-15 Spacer



Bolts for Cylinder

R7A82-10 ATS big cylinder (30 % pedal effort reduction)

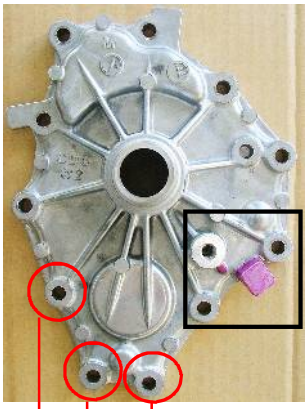
The following Nissan parts are included in the clutch kit. (If they are not included, please purchase them from local Nissan dealer since those are necessary parts for the installation) With the ATS big slave cylinder w/ 1,600kg clamping [prospec II] and w/ 1,100kg & 1,400kg [Spec II}, the pedal effort is about 12 kg which is less than the stock pedal effort of 13.5 kg.

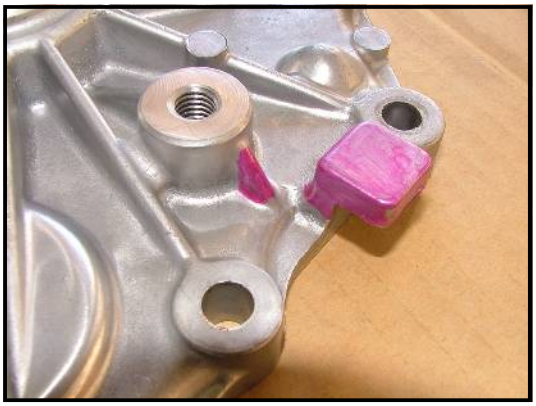
Parts #	Parts name	Quantity
30502-14601	Release bearing	1
30501-01J60	Bearing sleeve	1
30514-01T0A	Sleeve spring	1
30531-01J00	Withdrawal lever (clutch fork)	1
30534-01T01	Fork spring	1
30537-40P01	Pivot	1
32110-CD000	Front cover	1
32112-CD000	Gasket	1
46356-0E00A	Banjo bolt	1
30855-CD00A	Clutch hose	1
31377-12U0B	Bolt	3

ATS big cylinder is not currently offered as an option

August 2015

Modification Process



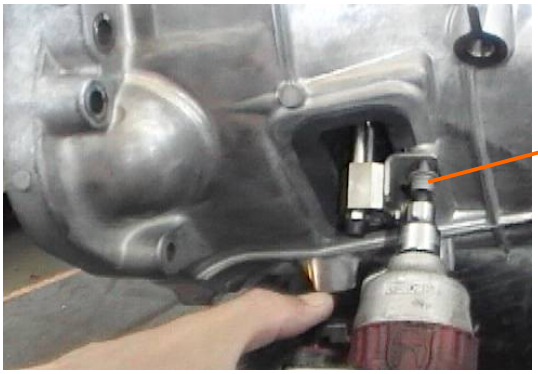


Front Cover Modification

Using a rotary tool (like DREMEL), shave off the two portions indicated in red on the front cover in order to make room for the spacer and the pivot.

This process can be done at ATS factory before shipping at $45

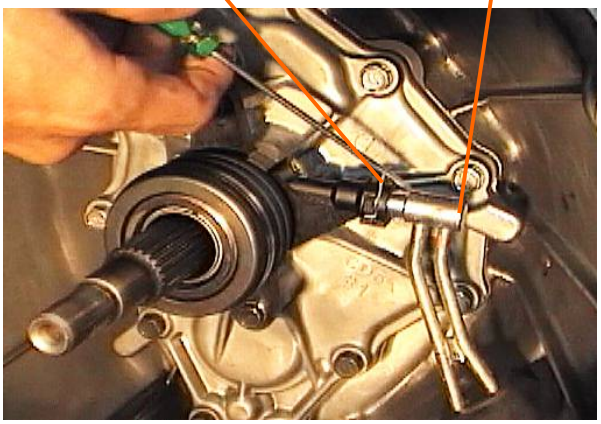
When attaching this front cover (next page), for those three, use the new bolts included (31377-12U0B) with thread locker.



Disconnect the clutch hose from the CSC (Concentric Slave Cylinder) tube and remove transmission assembly from the vehicle. Loosen the bolt which connects the CSC tube to the transmission.

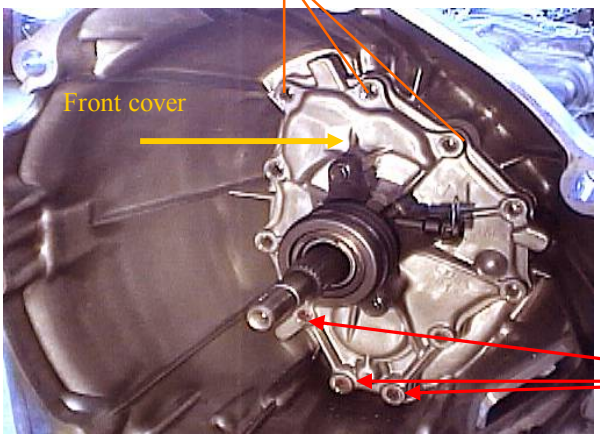
Snap pin (lock pin

CSC tube



Remove the snap pin (lock pin) close to the CSC body and pull out the CSC tube.

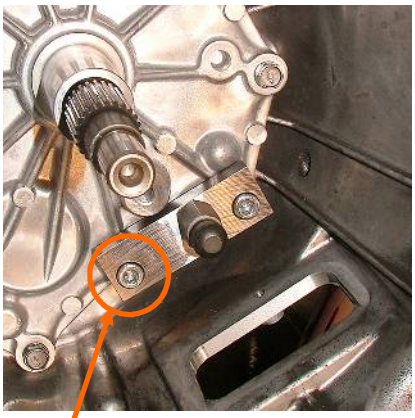
Front cover mounting bolts



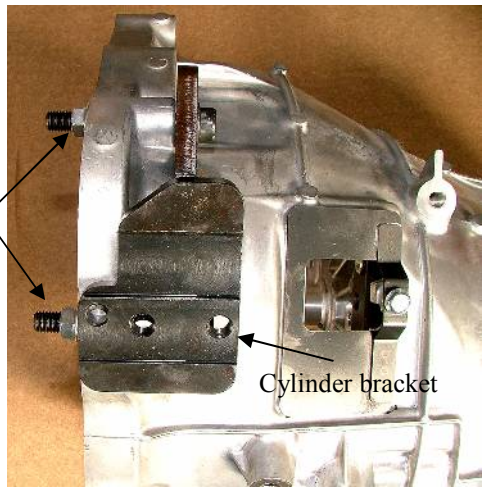
Loosen the front cover mounting bolts and remove the front cover with CSC body attached.

Do not re-use those three bolts. When attaching a new cover, use new ones included in the kit (31377-12U0B) with a thread locker to prevent oil leakage.

Attach the ATS Ring Spacer on the bearing of the main drive gear (main input shaft), then install the modified front cover.



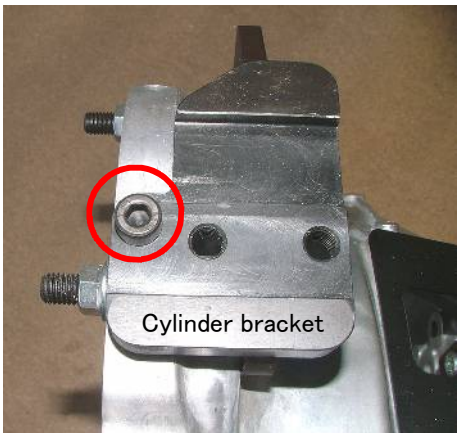
Install the ATS Spacer with the pivot on the front cover. In order to prevent oil leakage, apply thread-locker on the bolt shown by the orange circle on the picture.

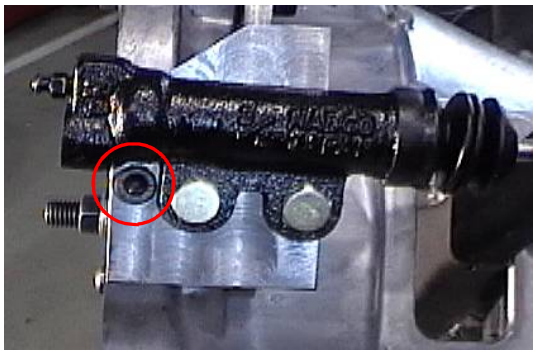


Attach the cylinder bracket on the transmission case with ATS bolts & nuts included in the Kit (temporary tightening). Make sure that the cylinder bracket match perfectly with the surface of the mission case.

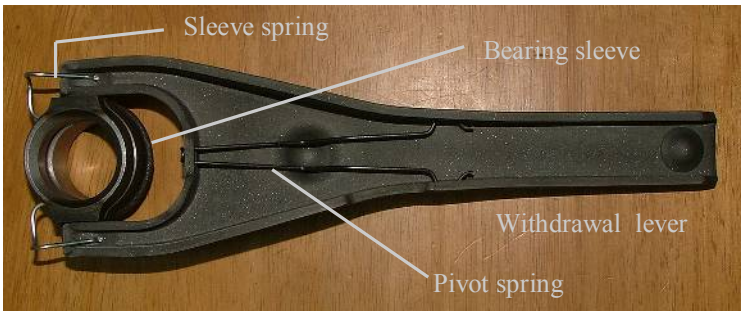
Drill a pilot hole [pre-tap hole] (Ø 6.8) for M8 x pitch 1.25 on the center of the marked hole on the cylinder bracket. [A M10 drill can be used on the hole in the engine side to mark the center by the tip of the drill. Then use a 6.8mm bit to drill a pilot hole] The pilot hole should be deeper than 30mm or can penetrate the transmission case.

Tap a hole for M8 x 1.25.

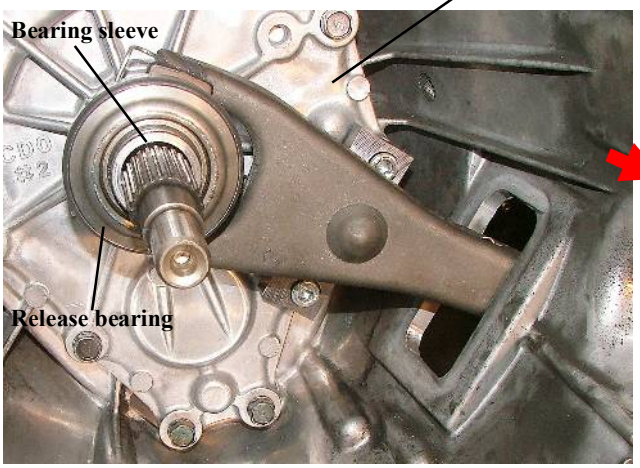




Attach the slave cylinder and tighten the bolts temporally. Make sure the slave cylinder is not touching the bolt (circled by red), and then remove both slave cylinder and cylinder bracket.

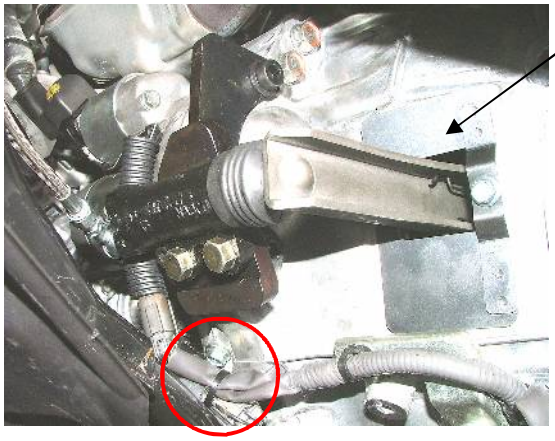


As shown in the picture, install the pivot spring on the withdrawal lever (clutch fork) and attach the bearing sleeve to the lever by using the spring for connecting sleeve.
(pivot spring might be already installed on the clutch fork and the bearing might be already installed on the bearing sleeve at the ATS factory).



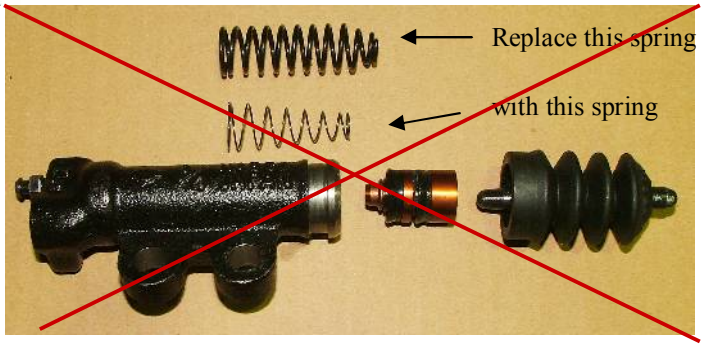
Press the release bearing onto the bearing sleeve. Be sure to apply grease inside the bearing sleeve. Wipe off any excess grease oozing from the sleeve.
Install the withdrawal lever & release bearing on the front cover.

Check the clearance between the withdrawal lever and the lever hole. (please refer to the next page-diagram 1). Then install the dust cover



With a band, secure the piping which was originally attached by a starter mounting bolt.

Attach the transmission to the engine. Install the starter motor and the cylinder bracket.

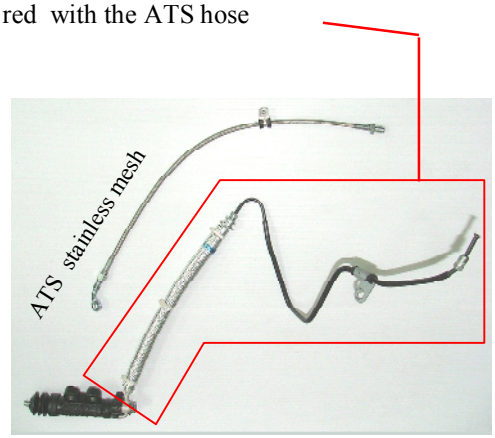


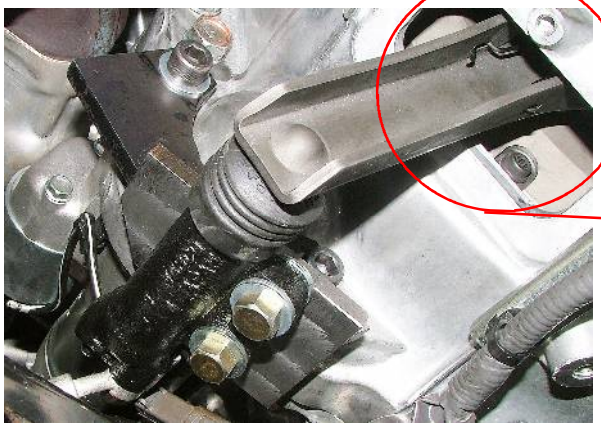
Replace the stock return spring of the slave cylinder with the one with less resistance. (The replacement spring is included in the kit). The weaker spring should significantly extend the life of the release bearing. A proper replacement spring is included based on your choice of the slave cylinder either Nissan or NISMO.

Please disregard if your clutch comes with ATS big cylinder. If you purchase Nissan cylinder from ATS, the spring may already be changed at ATS factory for you.

Remove the clutch hose and replace it 30855-CD00A clutch hose (replacement section is shown in a black circle in the picture).

If you purchased ATS braided clutch hose for superior heat protection, replace the hose shown in the red with the ATS hose





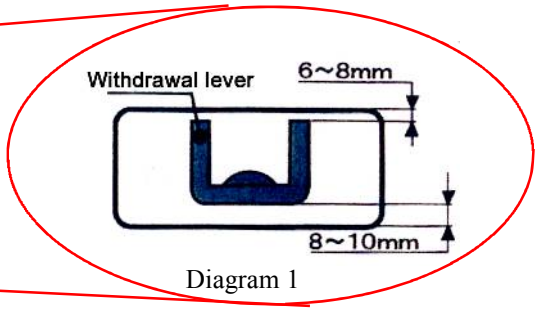


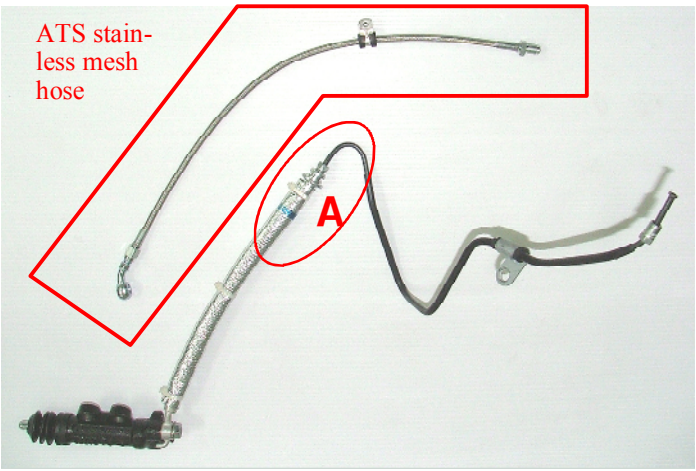
Diagram 1

Install the slave cylinder on the cylinder bracket and tighten the bolts making sure that the axis of the slave cylinder makes a right angle (angle of 90 degrees) with the withdrawal lever.

Secure the withdrawal lever and the slave cylinder by tightening the bolts. Make sure that all the tubes / hoses are connected and bleed the air. **Finish**

R7A56-10 (Optional ATS Stainless Mesh Clutch Hose Set) installation

Note R7A56-10 is designed for ATS metal clutch and it is not interchangeable with the stock clutch hose.



The stock piping (shown as a section A) is placed very close to the exhaust and could cause a clutch disengagement problem. By replacing the stock hose with the ATS mesh hose, the hose can be placed away from the exhaust.

Remove the tire and remove screws and clips for the inner fender. Flip the inner fender to expose the oil block .

Remove the clutch hose and tube.

The backside of the area shown on the red circle are susceptible to heat. Place the hose by avoiding this area as much as possible.

Connect the ATS clutch hose.
Keep the ATS hose as far as possible from the exhaust pipe. Also pay attention not to allow the hose to interfere with any other parts of the vehicle.

Make sure all the tube / hose are connected and bleed the air.