HKS MotorSport

HKS×ORC METAL CLUTCH TRIPLE 2JZ-GTE

INSTALLATION MANUAL

HKS×ORC METAL CLUTCH	26012-RT001
TYPE : TRIPLE	
TOYOTA SUPRA (JZA80) 2JZ-GTE	4 957266 701232

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改訂No.	発行日	品番
MS-1-1	2020/3/12	E31200-T00030-00

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Thank you for purchasing HKS × ORC clutch kit.

Please read this manual prior to installation.

※ This clutch kit is identical to ORC item, part number ORC-1000F-01T.

● NOTICE ●

- This manual explains correct installation and use of the product. Please read this manual prior to installation.
- Details of this manual that require special caution are marked in bold.
- Please keep this installation manual while using the product.
- This manual should be passed to the user of the product.

● SAFETY PRECAUTIONS ●

The following precautions for use of this product are to prevent possible accider

 WARNING	Indicates risk of serious injury and/or possible death.
 CAUTION	Indicates risk of serious injury and/or possible property damage (i.e. vehicle damage from use of this product).

警告

1. HKS is not responsible for any failures, accidents and/or damages happened due to use of the parts other than stated in the part list. In case if the part is not specified by the manual, use only part specified by vehicle manufacturer.

2. Do not modify product parts. HKS is not responsible for any failures, accidents and/or damages happened due to modification of product parts. HKS is also not responsible for any inconvenience or losses (telephone, taxi, tow, accommodation, salary compensation, compensation for loss of business opportunities) due to inability to use vehicle.

注意

1. This manual assumes that you have all necessary equipment and professional knowledge to safely perform operations necessary to install the transmission. Please perform installation on at an accredited/designated workshop only.
2. Do not install the product on vehicle other than specified in this manual.
3. After installation, drivability of the vehicle may be affected. Please be extra careful especially when starting to move. Avoid quick actions until you are used to the vehicle behavior.
4. If you notice any irregularities in a vehicle operation (vibrations, smell, sound and/or clutch operation problems), stop the vehicle immediately and consult with your specialist. Do not drive a faulty vehicle.

注意 This product is for competition applications only, HKS is not responsible for any claims regarding this product. The specifications and price of the product are a subject to change without prior notice.

● BEFORE INSTALLATION ●

警告 **HKS × ORC Clutch Kit should be installed only on a specified vehicle. Perform installation according to this manual. For any unspecified procedures consult with vehicle service manual or to HKS.**

警告 1. Before installation read this manual.

注意 2. Carefully remove parts required for the installation and store them in a clean, not dusty environment.

注意 3. Carefully disconnect and store connectors, wire couplings, etc.

注意 4. Mark all temporarily removed parts to avoid any error during the installation later.

警告 5. Disconnect negative terminal of the battery before beginning installation to prevent electrical damage and/or shock.

注意 6. Position jack/rigid rack/lift at the location specified by vehicle manufacturer.

警告 7. Make sure to complete an examination of the vehicle after the installation.

● INSTALLATION PROCEDURES ●

① TRANSMISSION REMOVAL

1. Remove battery, air cleaner, shiftlinkage and speed sensor.
2. Remove clutch release cylinder and release arm.
3. Remove reverse lamp switch and neutral switch wiring.
4. Remove muffler and front pipe.
5. Remove propeller shaft.
6. Remove starter motor.
7. Remove two engine mounts and members (front and rear).
8. Use Transmission jack to remove transmission from the vehicle.
9. Remove clutch and flywheel.
10. Follow the reverse order to perform installation.

※ SAFETY PRECAUTIONS

■ Use factory clutch release parts. (Clutch Fork, Release Cylinder, Pivot, etc.)
All the tests of the product were done using a factory vehicle. Please be aware that If other than factory parts are used, issues disconnecting clutch, slippage may occure.

■ Check the spline for twists, dents, or other damage. Replace with new parts if necessary.

■ Before starting the installation process, check crankshaft side or flywheel side factory pilot bearing and replace with new part if necessary.

② CLUTCH INSTALLATION

2-1. BEFORE INSTALLING CLUTCH

警告 ● Be careful when handling the product and taking it out of the package as it heavy. Strong shock or impact if product is dropped may cause product failure or issues during installation.

● Loosen 9 bolts of clutch cover, and disassemble clutch kit. **(See Fig. 1)**

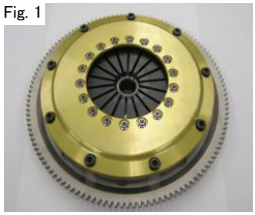
警告 **Do not loosen bolt or nut of the connect shaft located at the back of flywheel.**

注意 **※ Bolts were fully tightened for inspecting before shipment. Do not loosen all bolts at once, separate the process in several goes. After loosening the bolts, clean items with a blow of air, etc.**

● Make sure that each part is clean and degrease friction parts.

警告 **※ Do not degrease release bearing side. Removing grease from bearing may lead to damage and cause an accident.**

Fig. 1



⚠注意 ● Use a wire brush to clean the spline of the main drive shaft. Check the spline for twists, dents, or other damage. Replace with new parts if necessary.

⚠注意 ● Check the the spline of clutch disk assy for twists, dents or other damage. Check if it can be smoothly installed on a driveshaft. (See Fig. 2) If it can't be smoothly installed, it may cause issues during clutch operation, such as change of connecting point.

Fig. 2

⚠注意 ● Applying grease to the main drive shaft. (See Fig. 3)
Apply a small amount of ORC clutch grease (supplied with the clutch kit) to the entire circumference of the spline section of the main drive shaft, and then wipe off the grease with your finger leaving grease remaining in the spline grooves. After applying the grease, pass the clutch disk through the spline of the main drive shaft several times and wipe off any excessive grease. Please note that if the amount of grease is too large, grease may be scattered by the centrifugal force on the friction surface of the clutch disc, causing slippage or seizure.

Fig. 3

2-2. FLYWHEEL ASSY INSTALLATION

⚠警告 ● Replace pilot bearing (push) with new one. Reuse only after checking for wear and damage, as it may cause issues during clutch operation, such as change of connecting point.

Fig. 4

⚠警告 ● Use only new flywheel bolts for installation.
With exception of a few models, use factory flywheel bolts.
For vehicles that do not use factory flywheel bolts, use bolts provided with the product. See a provided list of vehicle that use specially provided bolts.

⚠注意 ● Thoroughly clean flywheel bolts and holes with degreaser prior to installation.

⚠警告 ※ **When attaching the flywheel to the crankshaft, make sure that the flywheel mounting bolts do not bottom out.**

⚠警告 ● **Do not tighten all bolts at once, separate the process in several goes and evenly tighten all bolts. (See Fig. 4)**
Fully tighten flywheel bolts, refer to provided table for tightening torque.

⚠注意 ※ **When installing ORC-1000F Series Clutch on Nissan RB Engine, the bolt head on the back of the flywheel may partially interfere with the engine rear plate due to the deformation of the engine rear plate or excessive protrusion of the engine side gasket. If interference is found, fix the engine rear plate or replace it with a new one, and install the flywheel with the engine gasket protruding properly.**
Please note that ORC-1000F type clutch is not available for engine rear plate part number 30411-21U00.

注意 For vehicles below prepare a factory pilot bearing and install on flywheel on vehicle side.

・01H, HD0101: Honda B16A(B), B18C engine vehicles
・TT1213：Subaru FA20 engine vehicles（86 / BRZ）

Special Flywheel Bolts

	ORC Clutch Series			
ORC Clutch Model	309(209) Series	409 Series	559, 659 Series	1000F Series
01N, NS0101	N/A	Factory ※1	Factory ※1	Factory ※1
02N, NS0207	N/A	Factory ※1	Factory ※1	Factory ※1
02N5, NS0210	N/A	Factory ※1	Factory ※1	N/A
03N, NS0309	N/A	Factory ※1	●	N/A
04N, NS0406	N/A	N/A	Factory ※1	N/A
06N, NS0613	N/A	Factory ※1	Factory ※1	N/A
NS0714	N/A	●	●	N/A
NS0911	N/A	N/A	Factory ※1	N/A
NS1012	Factory ※1	N/A	N/A	N/A
01T, TT0101 ※2	N/A	N/A	●	●
02T, TT0202 ※2	N/A	●	●	●
03T, TT0303 ※2	N/A	●	N/A	N/A
05T, TT0305 ※2	●	N/A	●	N/A
08T, TT0809 ※2	●	N/A	N/A	N/A
09T(1,2), TT0407 ※2	●	N/A	N/A	N/A
13T, TT0406 ※2	Factory ※1	N/A	N/A	N/A
14T, TT0608 ※2	Factory ※1	N/A	N/A	N/A
15T, TT0710 ※2	●	N/A	N/A	N/A
TT1213 ※2	Factory ※1	N/A	Factory ※1	N/A
01H, HD0101	Factory ※1	N/A	N/A	N/A
02H, HD0202	Factory ※1	N/A	N/A	N/A
05H, HD0505	Factory ※1	N/A	N/A	N/A
01Z, MZ0101	N/A	※3	●	※3
02Z, MZ0204	Factory ※1	N/A	N/A	N/A
05Z, MZ0303	※3	N/A	N/A	N/A

警告 In the list above items marked with「●」require use of flywheel bolt included with product. Do not use any other bolt.

注意 **※1** Use factory flywheel bolt of the vehicle.

注意 **※2** For Toyota flywheel bolt apply adhesive 1324 (Toyota Factory Part Number: V9350-0014) to thread before mounting. Be careful as without doing so, engine oil may come out.

注意 **※3** Installation on Mazda FC3S, FD3S, SE3P require purchase of counterweight and bolts (6 pcs) separately.

Mazda factory counterweight
FC3S Early models（Chassis №0～20,000）
N327－11－521A
FC3S Early Models（Chassis number: after20,000 ）
N351－11－521
SE3P（RX－8）
N3Z2－11－52X
Bolt
8051－27－235 ×6pcs

Flywheel bolt tightening torque

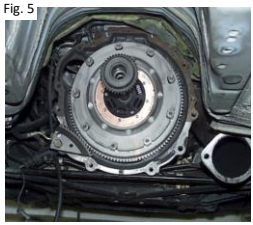
Make	Engine Model	Tightening Torque N・m(kgfm)
Nissan	RB26DETT、RB25DE(T)、RB20DE(T)	142.1～151.9 (14.5～15.5)
	VG30DE(TT)、SR20DE(T)、VQ35DE、CA18DE(T)	83.3～93.1 (8.5～9.5)
	VQ35HR、VQ37VHR	83.3～93.1 (8.5～9.5)
	L20、L24	137.2～156.8 (14～16)
	A12～15	78.4～88.2 (8.0～9.0)
Toyota	1JZ-GE(GTE)、2JZ-GE(GTE)	117.6 (12.0)
	3S-GE(GTE)　※Bolt provided with Clutch Kit	107.8 (11.0)
	3S-GE　※SXE10用Bolt provided with Clutch Kit	107.8 (11.0)
	4E-FTE	88.2 (9.0)
	4A-GE	75 (7.65)
	4A-GE、1ZZ-FE、2ZZ-GE　※Bolt provided with Clutch K	78.4 (8.0)
	FA20	85 (8.7)
Honda	B16A、B16B、B18C	102.9 (10.5)
	K20A	122.5 (12.5)
	F20C	127 (13.0)
Mazda	13BT、13B-MSP	Bolt provided with flywheel 83.3～98.0 (8.5～1
		Counterweight nut 392～490 (40～50)
	B6-ZE、BP-ZE	96.1～102.9 (9.8～10.5)
Subaru	FA20	85 (8.7)

注意　Refer to manufacturer service manual for tightening torque of factory flywheel bolt.

2-3. CLUTCH DISK ASSY, MID PLATE, PRESSURE PLATE ASSEMBLY

警告 ● **After tightening the flywheel to crankshaft use clutch alignment tool with splines to center clutch disk, then install a clutch cover Assy. (See Fig. 5)**

Fig. 5



警告 ※ **Failure to center clutch disk will lead to difficulties during transmission installation and may lead to clutch disk damage.**

I. FOR SINGLE PLATE CLUTCH

注意 ● When installing clutch disk follow the marking that indicate cover side and install it in direction towards clutch cover side.

注意 ● When installing pressure place follow the marking that indicate cover side and install it in direction towards clutch cover side.

II. FOR TWIN PLATE CLUTCH

注意 ● When installing clutch disk Assy, make sure to follow the correct order. Clutch disks are marked with number **#1** going to flywheel side and **#2** going to clutch cover side. Install both clutch disk in direction with number marking side toward the clutch cover. Make sure to install both clutch disk without the rivets overlapping.

注意 ● When installing midplate follow the marking that indicate cover side and install it in direction towards clutch cover side.

注意 ● When installing pressure plate, follow the marking that indicate cover side and install it in direction towards clutch cover side.

注意 ● Direction of clutch disk differ depending on vehicle model. Refer to parts diagram for details.

III. FOR TRIPPLE PLATE CLUTCH

注意 ● Install clutch disk in the order of **#1**, **#2**, **#3** starting from flywheel. All products are identical and don't have a specified direction of installation.

注意 ● Install drive hub with shorter and wider spline side set towards the flywheel and the protruding outer between clutch disc **#1** and **#2**.

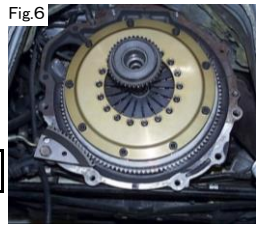
注意 ● When installing midplate follow the marking that indicate cover side and install it in direction towards clutch cover side.

注意 ● When installing pressure plate, follow the marking that indicate cover side and install it in direction towards clutch cover side.

2-4. Installation of Clutch Cover Assy.

注意 ● Tighten the bolts of clutch cover.
Please apply thread locking adhesive to the screws.→ Medium strength is necessary.
Recommend: LOCKTITE 242
Please use calibrated torque wrench and operate according to the manual.

Fig.6



注意 **Tightening Torque of cover bolt 39. 2Nm (4. 0kgfm)**

警告 ● **Please tighten 9 bolts in diagonal pattern several times and do not tighten at once. While tightening bolts, please confirm the main drive shaft or centering bar can be slipping smoothly with the pilot bearing.**

警告 ※ **If the main drive shaft or centering bar and pilot bearing can not slip smoothly, please loosen all bolts and align the clutch disk to the center position by using clutch alignment tool set. (See Fig.6) If the clutch disk is not in center position, it's hard to install transmission and it will also cause the distortion of clutch disk.**

NOTE Pivot must be replaced by new one for installing 409 HP, 659 Series and 1000F-SPL series clutch (HP was printed beside the ORC Logo of clutch cover) on Nissan vehicle.

2-5. Installation of Sleeve Assy.

注意 ● Please apply the ORC clutch grease (provided in clutch kit) to the whole inner surface of sleeve Assy. Moreover, apply grease to the side of front nose and insert the sleeve Assy. Finally, please wipe off the excessive grease. (See Fig.7)

Fig.7

警告 ※ **Do not degrease the bearing of sleeve Assy.** It will cause the grease leaking from the bearing.

2-6. Installation of Adaptor kit Assy.(parts for modifying operation)

注意 ● Installation manual of adaptor kit is included in the box. Please follow it and install carefully. In addition, please apply the grease to the adaptor kit regularly. Adaptor kit is a disposable item. Please replace it when clutch operation getting worse by dust or friction.

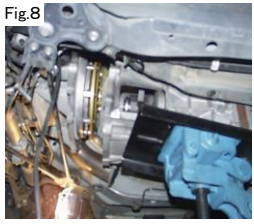
2-7. Caution for installing transmission

注意 ● Please clean the release fork and other housing parts. And make sure there are no damage or distortion.

警告 ● Please install the transmission referring to the factory service manual.

警告 ※ Do not force the front of a main drive shaft in a clutch disk.
This may cause distortion or damage to the clutch disk. Make sure the main drive shaft facing toward to the spline boss convex side of the disk clutch and insert transmission smoothly while rotating the flywheel.
(See Fig.8)

Fig.8



2-8. Check the stroke amount of release cylinder

⚠警告 ● Make sure stroke amount of release cylinder is correct. Please adjust the amount according to the maintenance manual and follow our recommendation in the following chart and do not exceed the limit. Adjusting over or less will not utilize the full performance and it could be the reason causing clutch drag.

Amount of adjusting stroke of release cylinder

ORC Product ID	Vehicle	Release bearing			Cylinder stroke amount [mm]	
		Type	Outer diameter	Contact diameter	Recommend	Max
01N、NS0101	R32、R33	A	φ67	φ44	15.2	15.7
		B	φ74	φ54	13.8	14.3
02N、NS0207	PS13、S14	A	φ67	φ44	15.2	15.7
		B	φ74	φ54	13.8	14.3
02N5、NS0210	S15	A	φ67	φ44	15.2	15.7
03N、NS0309	S13 (CA18)	A	φ67	φ44	15.2	15.7
04N、NS0406	Z32	A	φ67	φ44	15.2	15.7
06N、NS0613	Z33 (VQ35DE)	B	φ74	φ54	13.8	14.3
NS0714 ※1	Z34 (VQ37HR)	–	–	φ48	7.5	7.8
NS0911	C10、S30 (L20～)	A	φ67	φ44	15.2	15.7
NS1012 ※2	B110、B310 (A12～)	A	φ67	φ44	26.9	27.9
01T、TT0101	JZA80 (2JZ)	B	φ74	φ54	17.9	18.5
02T、TT0202	JZA70 etc.(1JZ)	B	φ74	φ54	17.9	18.5
03T、TT0303	SW20、ST205 etc.	A	φ67	φ44	13.0	13.5
03T、TT0305	SXE10	A	φ67	φ44	13.0	13.5
08T、TT0809	ZZT231	A	φ67	φ44	12.9	13.3
09T(1,2)、TT0407	AE92、AE101、AE111	A	φ67	φ44	12.9	13.3
13T、TT0406	AE86	A	φ67	φ44	12.5	13.0
14T、TT0608	EP82, EP91	A	φ67	φ44	13.7	14.2
15T、TT0710	ZZW30	A	φ67	φ44	12.9	13.3
TT1213	86 / BRZ	A	φ67	φ44	13.1	13.6
01H、HD0101	EK4, EK9,DC2	A	φ67	φ44	12.3	12.8
02H、HD0202	AP1	B	φ74	φ54	12.7	13.2
05H、HD0505	DC5	A	φ67	φ44	13.0	13.4
01Z、MZ0101	FC3S	A	φ67	φ44	15.4	16.0
02Z、MZ0204	NA(6,8)、NB(6,8)	A	φ67	φ44	14.3	14.8
05Z、MZ0303	SE3P (RX-8)	C	φ81	φ62	12.7	13.2

※1 Special bearing adaptor is installed on Z34 genuine release system.
Stroke amount is determined by movement amount of bearing adaptor.

※2 Stroke amount is determined by movement amount of the wire connected to the release fork.

③ About release bearing, sleeve and pivot

3-1. Release bearing

Please use the release bearing which is included in the special sleeve Assy. Please confirm the release bearing type with the chart above and purchase required parts for replacement.

3-2. Sleeve

Clutches for Nissan vehicle are installed with Nissan genuine clutch sleeve. (except for some model)
Please check the following chart for replacement.

12mm : 30501-A3800、30501-A3804	22mm : 30501-S0160、30501-S0164
14mm : 30501-N1601、30501-N1604	24mm : 30501-0H600、30501-K0404
16mm : 30501-U0200、30501-02C74	26mm : 30501-K0510、30501-K0514
18mm : 30501-A6801、30501-S0284	28mm : 30501-N1600、30501-1C104
20mm : 30501-B6000、30501-B6064	30mm : 30501-N8470、30501-N8474

3-3. Caution for 409 HP, 659 Series and 1000F-SPL series clutch on Nissan vehicle.

注意 ● Pivot has to be replaced with new genuine parts for installing 659(D) and 1000F-SPL series clutch on Nissan vehicle.(except for R34)

注意 ● After installed the clutch, please replace the pivot and release bearing with new genuine parts every 30,000 km.

注意 ● Without the treatments as noted above, there is a high risk a clutch will be broken.

3-4. Caution for VQ35HR and VQ37VHR release system

注意 ● Genuine release system (body-concentric) 306A1-JK40D has to be replaced every 30,000 km after installed ORC clutch.

3-5. Caution for Nissan A type release

注意 ● Please prepare the genuine sleeve 30501-H8560 separately and match the height of engine back plate with provided spacer (3.0mm or 4.5mm).
Without back plate: Without spacer. Press-fit release bearing into sleeve.(30501-H8560)
Back plate 3.0mm: Press-fit release bearing into sleeve(30501-H8560) with a 3.0mm spacer.
Back plate 4.5mm: Press-fit release bearing into sleeve(30501-H8560) with a 4.5mm spacer.

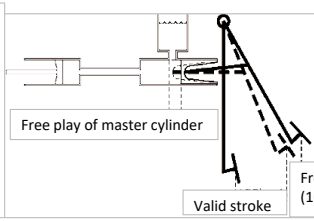
● To Adjust the Stroke of Clutch Release Cylinder ●

Clutch disengaging/engaging point differs depending on amount of stroke of clutch release cylinder. If clutch has any issues, adjust free play and clutch pedal stroke by referring to the recommended stroke of the clutch release cylinder as written in the instructions.

1. Action of Entire Clutch Release Cylinder

Stroke of a clutch release cylinder is determined by action of both clutch pedal and piston of master cylinder.

There is some free play in clutch pedal when it is pushed down. This is when piston of master cylinder is positioned in front of the aisle of reservoir tank. This is called invalid stroke section, which fluid runs into reservoir tank and the clutch release cylinder does not make any action.
Then when the pedal is pushed down further, the aisle of reservoir tank is shut and the clutch release cylinder starts to move. From this point to where the pedal stops in the very back, is called valid stroke section.

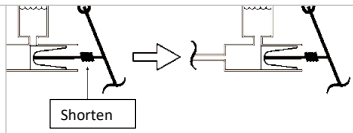


2. Adjusting Free Play Free

Free play is essential to clutch hydraulic system. Please make sure if there is enough free play after installing clutch.
For inspection, it is OK if the rod of clutch release cylinder can be pushed by hand. The ideal amount of free play is 10-15mm of clutch pedal stroke. To judge the amount of free play, push the clutch pedal to the point where piston of clutch release cylinder starts to move, and at the same time measure its amount with a ruler.

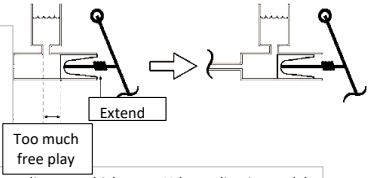
2-1. When Free Play is Lacking

Without free play, expanded fluid cannot flow out and this moves the piston of clutch release cylinder. This causes abnormal crimp force and results in slip of clutch and/or disengagement/engagement point to be higher.
When these symptoms are seen, check the amount of free play and if it is lacking or there is none, shorten the rod of master cylinder to adjust.
Make sure that the rod of clutch release cylinder can be pushed back by hand after adjustment.



2-2. When Free Play is Excessive

When free play is excessive, the amount of valid stroke is reduced and this causes poor disengagement and/or disengagement/engagement point to be lower.
When these symptoms are seen, check the amount of free play and if it is too long, extend the rod of master cylinder to adjust.
Make sure that the rod of clutch release cylinder can be pushed back by hand after adjustment.

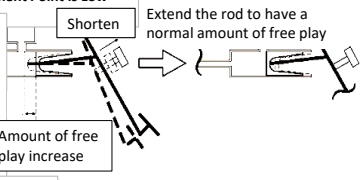


3. Adjusting Clutch Pedal Stroke

Clutch pedal stroke may vary depending on vehicle type. When adjusting pedal stroke, check stroke of clutch release cylinder at the same time.

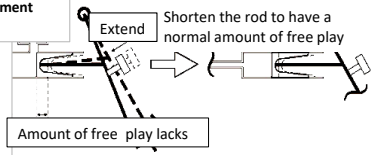
3-1. When Poor Disengagement Occurs and/ or Disengagement/engagement Point is Low

First, adjust free play. If these symptoms are still seen, shorten the stopper and extend the length of the entire pedal stroke (the amount may vary depending on vehicle type, however rough standard would be 125 - 145mm). Since free play is too much at this rate, extend the rod of master cylinder to have a normal amount of free play. This increases valid stroke and improves symptoms. Make sure that the rod of clutch release cylinder can be pushed back by hand after adjustment.

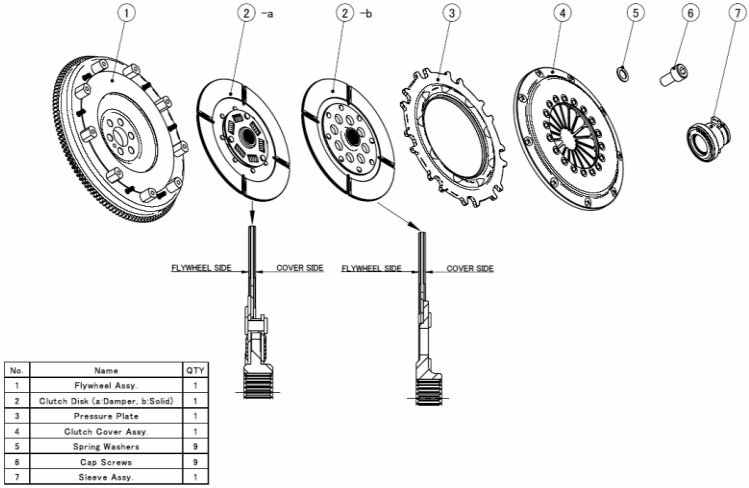


3-2. When Poor Disengagement Occurs and/or Disengagement/engagement position is higher

First, adjust free play. If these symptoms are still seen, extend the stopper and shorten the length of the entire pedal stroke. Since free play is not enough at this rate, shorten the rod of master cylinder to have a normal amount of free play. This reduces valid stroke and improves symptoms. Make sure that the rod of clutch release cylinder can be pushed back by hand after adjustment.

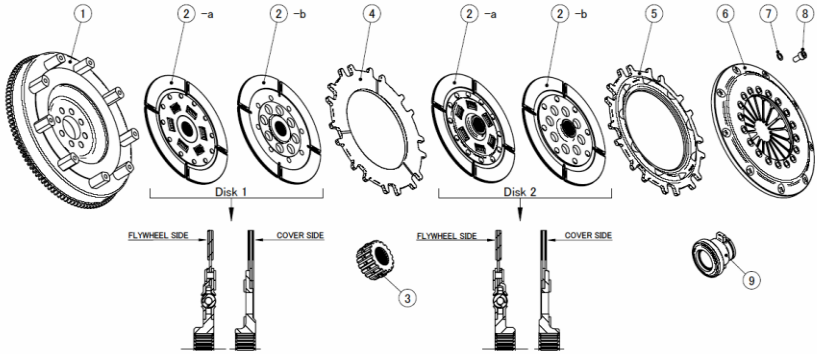


● HKS × ORC Parts Diagram ●



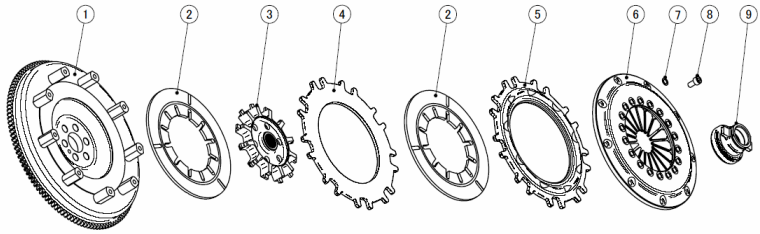
No.	Name	QTY
1	Flywheel Assy.	1
2	Clutch Disk (a:Damper, b:Solid)	1
3	Pressure Plate	1
4	Clutch Cover Assy.	1
5	Spring Washers	9
6	Cap Screws	9
7	Sleeve Assy.	1

309,409 series Parts Diagram



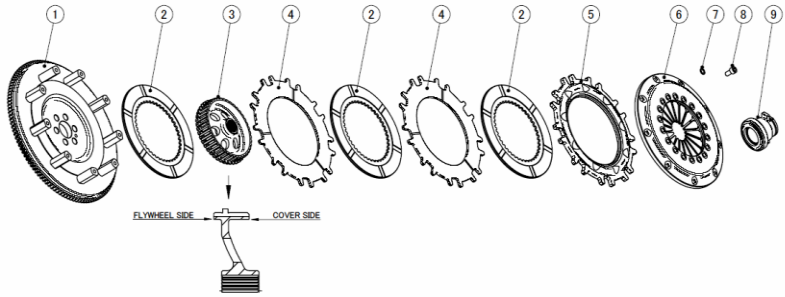
No.	Name	QTY
1	Flywheel Assy.	1
2	Clutch Disk (a:Damper, b:Solid)	2
3	Center Bos	(1)
4	Mid Plate	1
5	Pressure Plate	1
6	Clutch Cover Assy.	1
7	Spring Washers	9
8	Cap Screws	9
9	Sleeve Assy.	(1)

559,659 series Parts Diagram



No.	Name	QTY
1	Flywheel Assy.	1
2	Clutch Disk	2
3	Hub	1
4	Mid Plate	1
5	Pressure Plate	1
6	Clutch Cover Assy.	1
7	Spring Washers	9
8	Cap Screws	9
9	Sleeve Assy.	(1)

559CC,659CC series Parts Diagram



No.	Name	QTY
1	Flywheel Assy.	1
2	Clutch Disk	3
3	Hub	1
4	Mid Plate	2
5	Pressure Plate	1
6	Clutch Cover Assy.	1
7	Spring Washers	9
8	Cap Screws	9
9	Sleeve Assy.	(1)

1000F series Parts Diagram

● MEMO ●

●SAFETY PRECAUTIONS●

注意 ● After installation, driving carefully and gently is necessary. (drive for approximately 500 km in city) Aggressive driving before friction surface fully contacted with the mating surface will cause burning partly, judder or short life.

警告 ● Please replace the release bearing during overhauling clutch. Please also check the position and abrasion between clutch disk and pressure plate. Replacement is necessary if uneven wear is noticed (approximately 0.1mm worn). If the diaphragm springs of clutch cover Assy have damages or deterioration, please replace the clutch cover Assy. Without such replacement, performance will not be granted.

注意 ● Feeling of engaging clutch in starting from standstill will be changed after running-in. It is normal due to hard facing process when the friction surface fully contacted with the mating surface. Depending on clutch control of start, it is normal if subtle noise or juddering occurred.

注意 ● Please overhaul the clutch every race during drag race (400m or etc.). The life cycle of clutch will be extremely shorter than normal.

注意 ● Due to the clutch design, the multiple disc clutch may cause a rattle noise when disengaged. It is normal.

注意 ● Due to the features of our metal clutch, feeling of control half clutch will be affected depending on the pedal position changing after installation. It is recommended to re-adjust the stroke after running-in.

※ Adjustment push-rod for R32, R33, S13, S14 and S15 is necessary. (Sold separately)

注意 ● If using half clutch a lot, the clutch set will get high temperature and creates expansion or deformation which causes disengagement problems temporarily or permanently. Please do not drive until cooling down.

注意 ● High torque capacity clutch has a lightweight design compared to stock and may have rattle sound from transmission could be heard. Especially for the high torque engine, the rattle sound will be louder than normal in the power band. Using high viscosity transmission fluids can reduce the sound, but it's impossible to remove it completely as the cause is mechanical.

注意 ● This clutch system is designed only for racing purposes, therefore pedal effort is slightly heavier and start is more difficult than stock and requires a lot of practice. Please note that before driving.

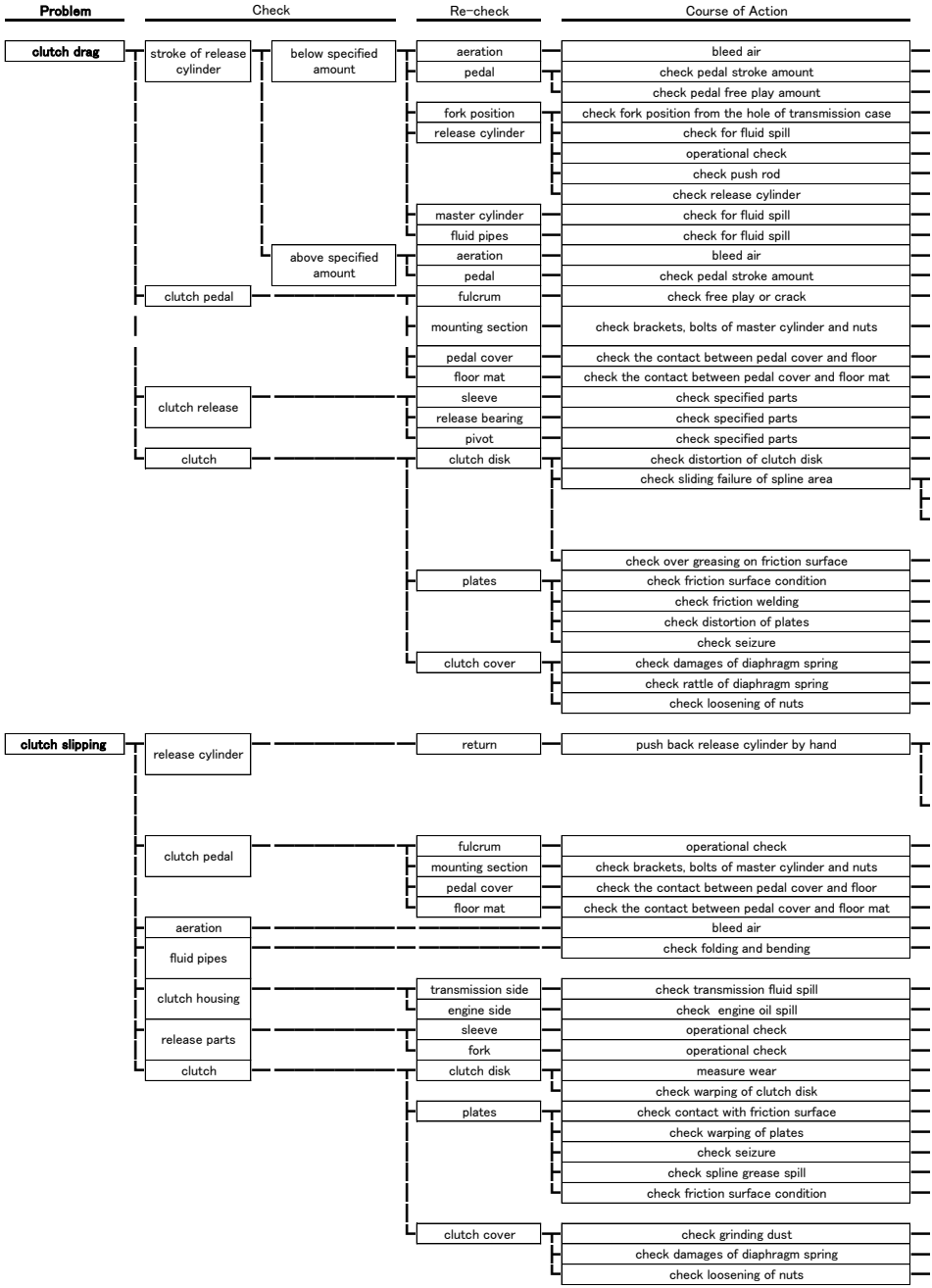
警告 ● Please don't use half clutch in high rpm for a long time. The life cycle will be extremely shorter than normal.

※ In use of Carbon Clutch

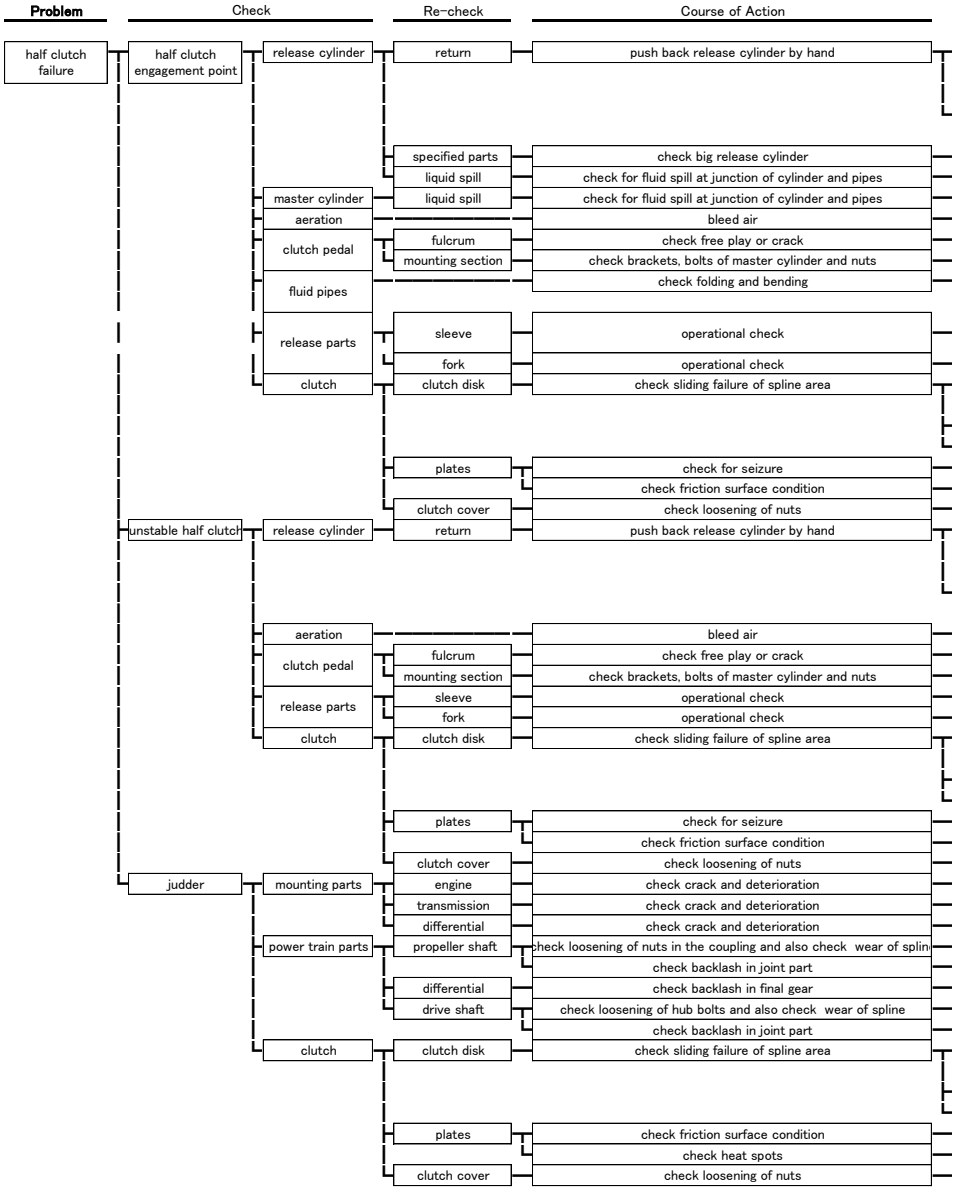
注意 ● **About running-in**
Running-in is necessary after installation. (drive 1,000km in city)
Sometimes high torque will cause clutch slipping before new clutch disk fully contacted. Please don't drive in high torque during running-in. Aggressive driving before friction surface fully contacted with the mating surface will cause burning partly, judder or short life.

注意 ● **About warming up**
Carbon clutch is easy for half clutch control and the friction coefficient is low at low temperature, such as driving in city. Therefore, clutch slipping usually happens in sudden acceleration at low temperature. Please warm up the clutch by driving in city at least 30 minutes for sudden acceleration, circuit driving or other auto racing purpose.

● TROUBLE SHOOTING ●



Results	Possible Causes	Solution
air came out	pressure loss due to aeration	bleed air according to manual
low	pressure loss due to less pedal stroke amount	adjust pedal stroke more than specified amount
large	pressure loss due to large free play amount	adjust free play amount properly
deep	bad connection between fork and transmission case	replace with specified sleeve or pivot
yes	pressure loss due to liquid spill or aeration	replace or overhaul release cylinder
malfunction	pressure loss due to malfunction	replace or overhaul release cylinder
free play	pressure loss due to free play	adjust the length of adjustable push rod or sleeve
big release	pressure loss due to big release cylinder	replace with specified release cylinder
yes	pressure loss due to liquid spill or aeration	replace or overhaul master cylinder
yes	pressure loss due to liquid spill or aeration	replace or overhaul fluid pipes
air came out	over pressure due to aeration	bleed air according to manual
large	over pressure due to large pedal stroke amount	adjust pedal stroke less than specified amount
yes	pressure loss due to free play or crack in fulcrum	replace or overhaul parts around clutch pedal
loosening or drop out	pressure loss due to low pressure force of master cylinder	tighten bolts and clutch pedal again
yes	pressure loss due to less pedal stroke	remove pedal cover
yes	pressure loss due to less pedal stroke	remove floor mat
not specified	loss or over pressure due to unmatched size of sleeve	replace with specified sleeve
not specified	loss or over pressure due to unmatched size of release bearing	replace with specified release bearing
not specified	loss or over pressure due to unmatched size of pivot	replace with specified pivot
yes	release return failure due to distortion	replace clutch disk
scratches and dents	release return failure due to sliding failure of spline area	replace clutch disk
less spline	release return failure due to sliding failure of spline area	replace clutch disk
less grease or no grease	release return failure due to sliding failure of spline area	apply grease
yes	clutch failure due to over greasing	clean and wipe off excess grease
mirror-like finish	sticky clutch due to mirror-like finish	resurface or warm up clutch disk
yes	release return failure due to friction welding	replace plates
yes	release return failure due to distortion	replace plates
yes	release return failure due to seizure	replace plates
yes	release return failure due to damages of diaphragm spring	replace clutch cover
yes	pressure loss due to abrasion in fulcrum	replace clutch cover
yes	pressure loss due to clutch cover is not fully hammered	tighten according to manual
irreversible stiff	pressure loss due to improper position of master cylinder	adjust pedal according to manual
	return failure due to release cylinder defect	replace release cylinder
	hooked due to improper release cylinder installation angle	adjust cylinder to correct angle with fork
hooked feeling	return failure due to uneven wear of release cylinder	overhaul or replace release cylinder
	hooked due to improper release cylinder installation angle	adjust cylinder to correct angle with fork
hooked feeling	unstable pressure due to clutch pedal return failure	overhaul or replace parts nearby clutch pedal
loosening or drop out	unstable pressure due to master cylinder return failure	tighten bolts nearby clutch pedal
yes	unstable pressure due to pedal return failure	remove pedal cover
yes	unstable pressure due to pedal return failure	remove floor mat
air came out	always pressured due to expansion of aerated air	bleed air according to manual
yes	always pressured due to folding and bending	overhaul or replace clutch fluid pipes
yes	torque loss due to transmission fluid spill	overhaul clutch and fix transmission fluid spill
yes	torque loss due to engine oil spill	overhaul clutch and fix engine oil spill
stiff	hydraulics fail due to sleeve return failure	replace sleeve and sleeve guide, apply grease
stiff	hydraulics fail due to fork return failure	replace fork and pivot, apply grease
over 1mm	torque loss due to low pressure force	replace clutch disk
present	torque loss due to partial contact	replace clutch disk
partially	torque loss due to partial contact	running-in required
present	torque loss due to partial contact	replace plates
yes	torque loss due to sliding failure of plates	replace plates
yes	torque loss due to spline grease spill	overhaul clutch and apply spline grease
completely discolored	low μ of clutch disk due to overheat	replace clutch disk and plates
	low load of diaphragm spring due to overheat	replace clutch cover
yes	pressure loss due to grinding dust	replace or overhaul clutch cover
yes	pressure loss due to damages of diaphragm spring	replace or overhaul clutch cover
yes	pressure loss due to clutch cover is not fully alligned	tighten according to manual


Problem
Check
Re-check
Course of Action
half clutch failure
half clutch engagement point
release cylinder
return
push back release cylinder by hand
specified parts
check big release cylinder
liquid spill
check for fluid spill at junction of cylinder and pipes
master cylinder
liquid spill
check for fluid spill at junction of cylinder and pipes
aeration
bleed air
clutch pedal
fulcrum
check free play or crack
mounting section
check brackets, bolts of master cylinder and nuts
fluid pipes
check folding and bending
release parts
sleeve
operational check
fork
operational check
clutch
clutch disk
check sliding failure of spline area
plates
check for seizure
check friction surface condition
clutch cover
check loosening of nuts
unstable half clutch
release cylinder
return
push back release cylinder by hand
aeration
bleed air
clutch pedal
fulcrum
check free play or crack
mounting section
check brackets, bolts of master cylinder and nuts
release parts
sleeve
operational check
fork
operational check
clutch
clutch disk
check sliding failure of spline area
plates
check for seizure
check friction surface condition
clutch cover
check loosening of nuts
judder
mounting parts
engine
check crack and deterioration
transmission
check crack and deterioration
differential
check crack and deterioration
power train parts
propeller shaft
check loosening of nuts in the coupling and also check wear of splin
check backlash in joint part
differential
check backlash in final gear
drive shaft
check loosening of hub bolts and also check wear of spline
check backlash in joint part
clutch
clutch disk
check sliding failure of spline area
plates
check friction surface condition
check heat spots
clutch cover
check loosening of nuts

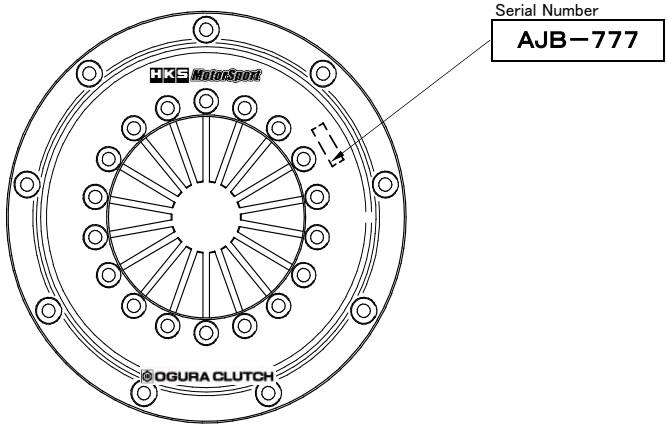
Results	Possible Causes	Solution
irreversible stiff	unstable pressure due to improper position of master cylinder piston	adjust pedal according to manual
	unstable pressure due to release cylinder defect	replace release cylinder
	hooked due to improper release cylinder installation angle	adjust cylinder to correct angle with fork
hooked feeling	unstable pressure due to uneven wear of release cylinder	replace release cylinder
	hooked due to improper release cylinder installation angle	adjust cylinder to correct angle with fork
yes	failure due to unmatched size of release bearing	replace with specified release cylinder
yes	unstable operation due to liquid spill	overhaul or replace release cylinder
yes	unstable operation due to liquid spill	overhaul or replace master cylinder
air came out	unstable operation due to aeration	bleed air according to manual
yes	unstable pressure or return failure due to free play or crack	overhaul or replace parts nearby clutch pedal
loosening or drop out	unstable pressure due to master cylinder return failure	tighten bolts nearby clutch pedal again
yes	unstable pressure due to folding and bending	overhaul or replace clutch fluid pipes
stiff	unstable pressure due to sleeve return failure	replace sleeve and sleeve guide, apply grease
stiff	unstable pressure due to fork return failure	replace sleeve and sleeve guide, apply grease
grease dry-out grease uncoated	unstable clutch engagement due to sliding failure of spline area	apply grease
scratches and dents	unstable clutch engagement due to sliding failure of spline area	replace clutch disk
fretting wear of spline	unstable clutch engagement due to sliding failure of spline area	replace clutch disk
yes	unstable clutch engagement due to sliding failure of plates	replace plates
mirror-like finish	unstable torque due to flat surface	resurface or warm up clutch disk
yes	unstable clutch engagement due to clutch cover alignment	tighten according to manual
irreversible stiff	unstable pressure due to improper position of master cylinder piston	adjust pedal according to manual
	unstable pressure due to release cylinder defect	replace release cylinder
	hooked due to improper release cylinder installation angle	adjust cylinder to correct angle with fork
hooked feeling	unstable pressure due to uneven wear of release cylinder	replace release cylinder
	hooked due to improper release cylinder installation angle	adjust cylinder to correct angle with fork
air came out	unstable operation due to aeration	bleed air according to manual
yes	unstable pressure or return failure due to free play or crack	overhaul or replace parts nearby clutch pedal
loosening or drop out	unstable pressure due to master cylinder return failure	tighten bolts and nuts nearby clutch pedal again
stiff	unstable pressure due to sleeve return failure	replace sleeve and sleeve guide, apply grease
stiff	unstable pressure due to fork return failure	replace sleeve and sleeve guide, apply grease
grease dry-out grease uncoated	unstable clutch engagement due to sliding failure of spline area	apply grease
scratches and dents	unstable clutch engagement due to sliding failure of spline area	replace clutch disk
fretting wear of spline	unstable clutch engagement due to sliding failure of spline area	replace clutch disk
yes	unstable clutch engagement due to sliding failure of plates	replace plates
mirror-like finish	sudden torque due to flat surface	resurface or warm up clutch disk
yes	unstable clutch engagement due to clutch cover alignment	tighten according to manual
yes	judder occurred due to large vibration	replace mounting parts
yes	judder occurred due to large vibration	replace mounting parts
yes	judder occurred due to large vibration	replace mounting parts
yes	judder occurred due to too much backlash in powertrain	tighten bolts in coupling or replace propeller shaft
yes	judder occurred due to too much backlash in powertrain	replace propeller shaft
too much	judder occurred due to too much backlash in powertrain	adjust amounts of backlash
yes	judder occurred due to too much backlash in powertrain	tighten hub bolts or replace drive shaft
yes	judder occurred due to too much backlash in powertrain	replace drive shaft
grease dry-out grease uncoated	intermittent clutch engagement due to sliding failure of plates	apply grease
scratches and dents	intermittent clutch engagement due to sliding failure of plates	replace clutch disk
fretting wear of spline	judder occurred due to too much backlash in powertrain	replace clutch disk
mirror-like finish	sudden torque due to flat surface	resurface or warm up clutch disk
yes	judder occurred due to heat spots	replace plates or running-in or warm up clutch disk
yes	unstable clutch engagement due to clutch cover alignment	tighten according to manual

● CONFIRMATION AND STORAGE OF SERIAL NUMBER ●

Thank you very much for purchasing our clutch.

Serial Number is printed on the clutch cover. (see Fig. below)

Serial Number is necessary for overhaul. Please memo the serial number in advance.



Serial Number
Vehicle
Date of Purchase
SHOP NAME ADDRESS TELEPHONE

If you have questions about HKS products, please access "Support" page from URL below for further information.

https://www.hks-power.co.jp/