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PERFORMANCE

High Performance TORQUE CONVERTER Parts

Instructions

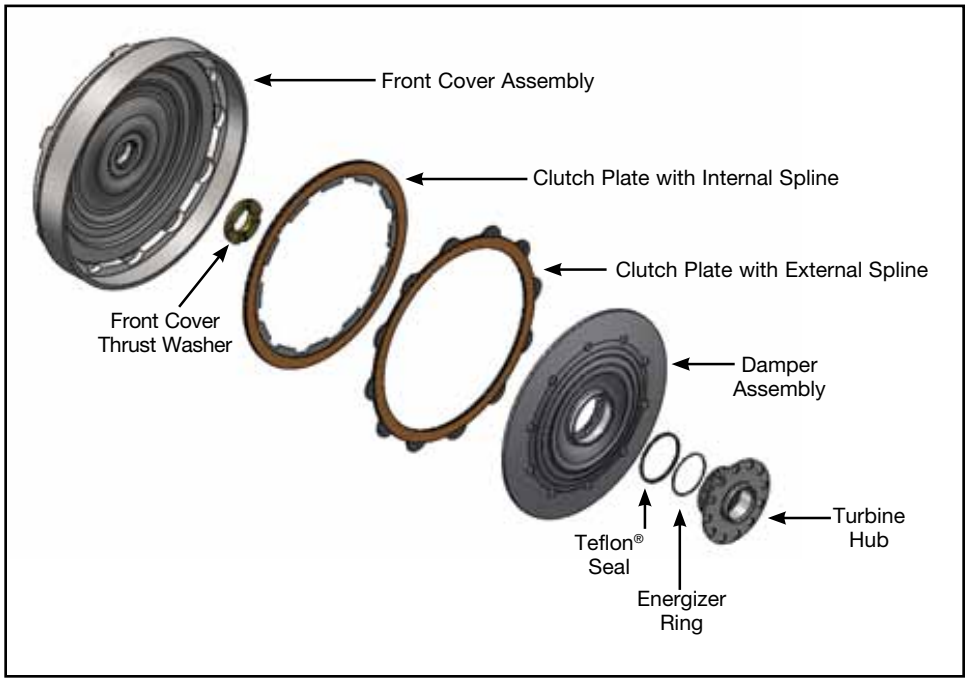
Allison® 1000/2000/2400

Multi-Plate Converter Clutch Kit

Part No. AL-RK-1

- Turbine Hub
- Teflon® Seal
- Energizer Ring
- Clutch Plate with Internal Splines
- Clutch Plate with External Splines
- Front Cover Thrust Washer
- Front Cover Assembly
- Set Damper Assembly:
  - Clutch Piston
  - Outer Damper Springs (10)
  - Inner Damper Springs (10)
  - Spring End Caps (20)
  - Drive Plates (2)
  - Damper Ring Gear
  - Spring Retainer
  - Clutch Hub
  - Damper Rivets (10)

Patent No. 7,770,704



This kit combines the OEM fluid coupling (impeller, stator and turbine) with all-new front cover, clutch plates, piston damper assembly and turbine hub to boost the converter capacity. The lock-up clutch is not a salvaged OEM clutch, it is a new and unique design. The lock-up clutch damper can be tuned to work with engines ranging from stock up to 1,250 ft-lb of torque.

1. Impeller Assembly

a. Clean and inspect the OEM impeller.

b. If the blades are loose, either repair by brazing/welding or find a different impeller.

c. Replace OEM impeller hub:

- Pre-2006 Cores: Replace the OEM impeller hub with **AL-90-2G** or the modified version **AL-90-3G**. This allows the later **AL-N-1** enclosed impeller stator bearing to be used with the **AL-WA-2** bearing adapter to update the early problematic open bearing and race.
- 2006-Later Cores: Replace the OEM impeller hub with **AL-90-4G** if needed.

2. Stator Assembly

a. Disassemble the OEM stator assembly.

b. If the vehicle has a significantly higher amount of torque than the original configuration, it is necessary to reduce the K-factor and torque multiplication, otherwise the stall speed will be too high and the excessive transmission input torque can cause serious transmission and driveline damage. The K-factor and torque multiplication rate can be changed by modifying the OEM stator.

c. Clean and inspect the stator.

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Stator assembly *continued...*

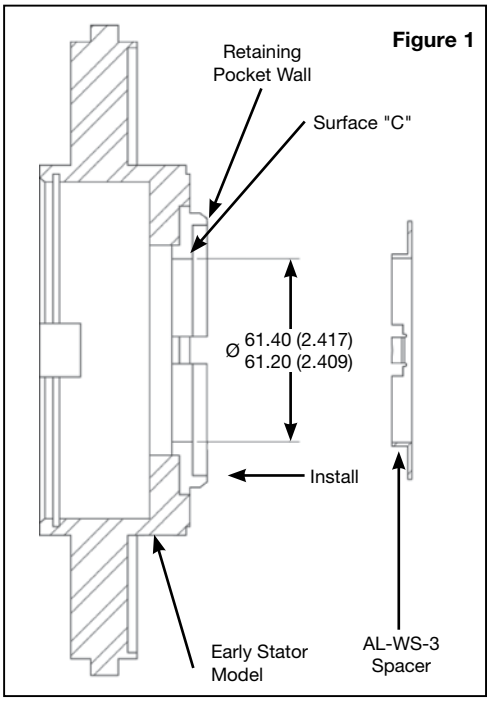
d. No machining is required for 2006-later core. For 2006-earlier cores, the stator is machined as follows (**Figure 1**):

- Remove retaining pocket wall by machining flush with surface "C"
- Machine the stator ID to 61.40-61.20mm (2.417"-2.409") to accept **AL-WS-3**. Remove any burrs.

NOTE: When installing stamped version **AL-WS-3**, ensure the bearing spacer is seated flat on the mating machined stator mounting surface. Due to die-cast stator slot variations, it may be necessary to rotate the bearing spacer into adjacent slots until spacer tabs fit freely and bearing surface is flat.

e. Replace the rolls, springs, races and bearings.

Figure 1



3. Turbine Assembly

a. Remove the OEM rivets and separate the turbine hub from the turbine.

b. Clean and inspect the turbine. If any blades are loose, repair by brazing/welding or find a different turbine to use.

c. Install the new turbine hub from the stator side and install new rivets. Weld the turbine hub in on high torque applications for extra security.

d. Install the energizer ring (O-ring) into the groove on the turbine hub, then the Teflon® ring in the same groove. Install the radial lip seal in the counterbore inside the bushing journal.

4. Measure and set the clutch release clearance.

The clutch release clearance should be measured and adjsuted as necessary.

a. Measure from the piston stop of the turbine hub to the thrust face of the washer (**Measurement "A"** in **Figure 2**).

b. Place the clutch plates and piston into the front cover (**Figure 3**). Measure from the inner lip of the piston to the thrust face of the front cover (**Measurement "B"** in **Figure 3**). The difference between the two measurements (A minus B) is the amount of clutch release clearance. It is recommended to set clutch release clearance between .040"-.060".

Figure 2

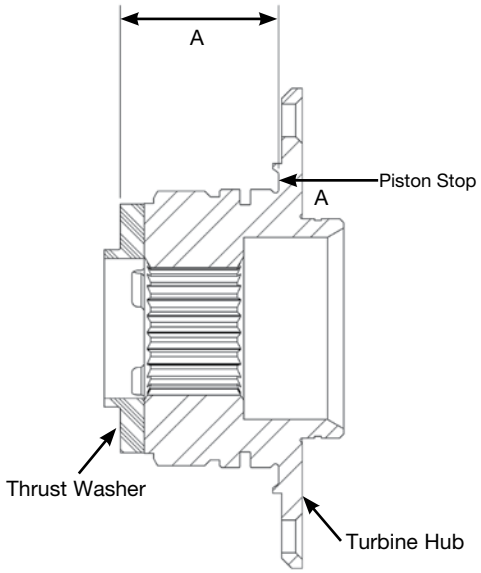
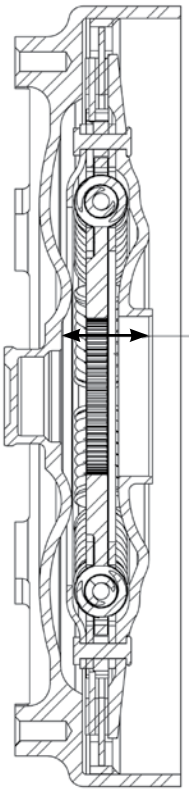


Figure 3



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Measure and set the clutch release clearance *continued...*

c. If there is too much clutch release clearance, machine the thrust surface of the front cover by the amount that you want to reduce the clutch release clearance (**Figure 4**). Make sure to maintain a RA 16 micro-inches surface finish and keep the thrust surface parallel to the mounting pads within .002". If you want to increase the amount of clutch release clearance, machine the lockup surface of the front cover by the amount you want to increase the travel. Make sure to keep the surface finish better than RA 20 micro-inches and parallel to the mounting pads within .003".

d. After machining the front cover, re-measure A and B measurements and verify clutch release clearance.

5. Piston Damper Assembly

The piston/damper unit (**Figure 5**) comes unassembled so it can be tuned to match the amount of engine torque. The damper can be tuned to work with engines producing 625 ft-lb up to 1,250 ft-lb of torque.

a. Place the piston with the lock-up surface facing up. Stack up in this order: drive plate, ring gear with the counter bore facing up, clutch hub with the neck of the hub face up (see **Figures 5** and **6**), and the second drive plate. Make sure to line up the rivet holes and spring pockets. (It might be helpful to use a pair of long .25" bolts to aid lining up the rivet holes.)

b. Install the number of springs required as per chart with end caps in the spring pockets.

NOTE: Always use an even number of springs and place the springs in a symmetrical pattern (in other words always have a nested pair 180° opposite another nested pair and have just an outer spring 180° from another outer spring). This will prevent binding of the damper and imbalance of unit.

c. Once the springs are installed in the pockets, place the spring retainer onto the assembly.

d. Install the 10 rivets from the turbine side of the piston all the way through all the components and then peen the heads.

NOTE: Use of a sealant or threadlocking compound is recommended between the base of the rivet and piston to ensure hydraulic integrity.

Figure 4

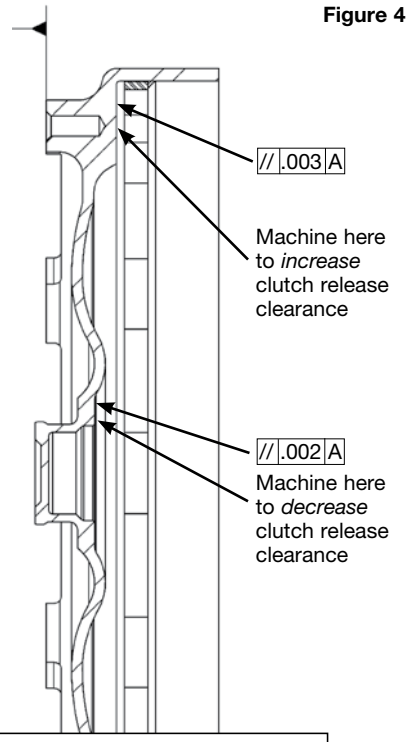


Figure 6

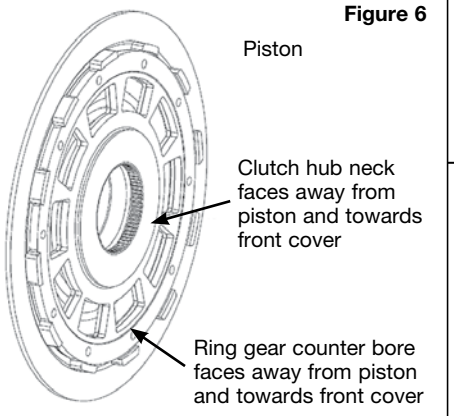
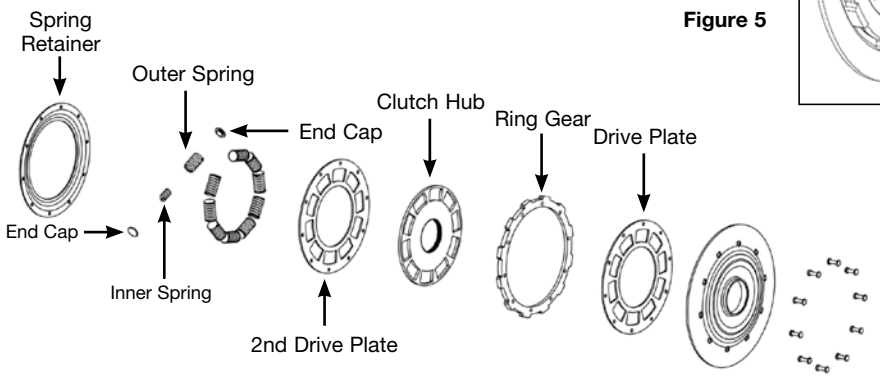


Figure 5



Peak Engine Torque	# of Outer Springs	# of Inner Springs
625 ft-lb	10	0
750 ft-lb	10	2
875 ft-lb	10	4
1,000 ft-lb	10	6
1,125 ft-lb	10	8
1,250 ft-lb	10	10

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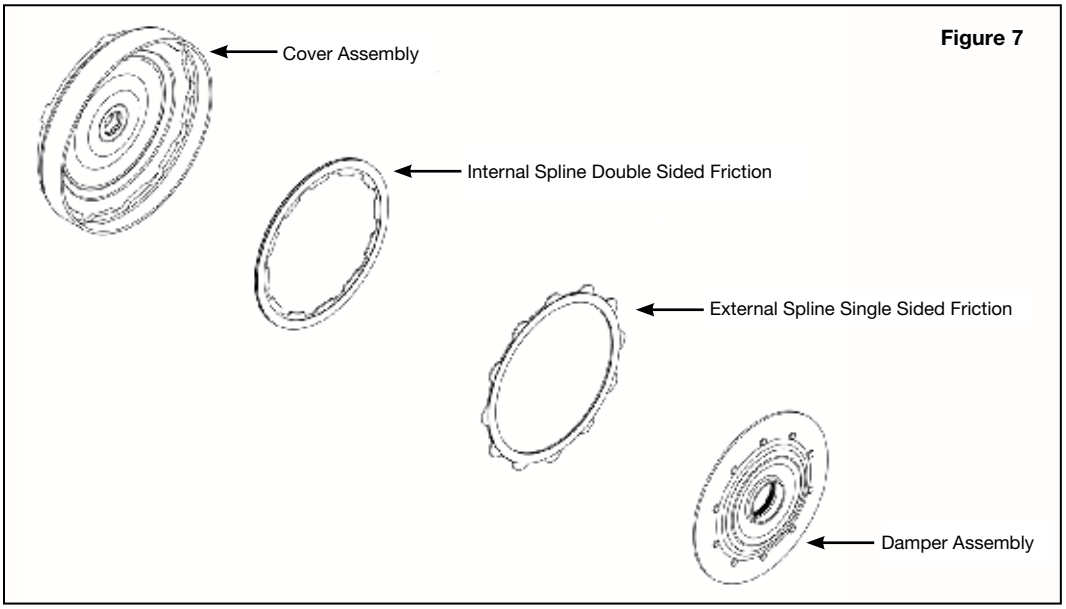

Figure 7

6. Final Assembly

a. Drop the internally splined (dual friction) clutch plate into the front cover (**Figure** 7).

b. With the steel side towards the cover and the friction side towards the piston, install the externally splined (single friction) clutch plate into the front cover, rotating to engage the splines (**Figure** 7).

c. Install the piston and rotate it to engage the internally splined clutch plate.

d. From this point on, assemble the converter as normal.

NOTE: Remember that 2006-earlier cores need to be converted to use the **AL-N-1** and **AL-N-2** enclosed stator bearings. 2006-Later cores use the **AL-N-1** and **AL-N-2** enclosed stator bearings.

e. Internal endplay should be between zero and .010" after welding. The stator should be able to turn freely.

f. Pressure check the unit.

g. Balance finished unit.