

IMPORTANT

TECHNICAL INFORMATION

GUIDE



Attention:

The installation of this product must be performed by a qualified mechanic or one who is considered to be mechanically inclined. It is highly recommended to follow the guidelines within the factory service manual along with this information guide.

CLUTCH
MASTERS

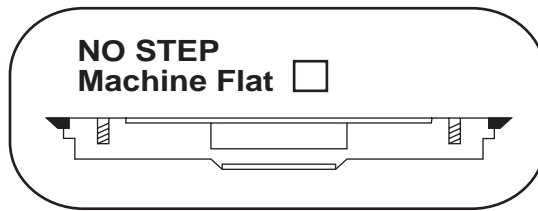
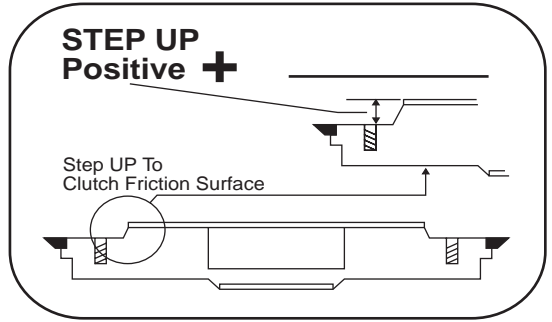
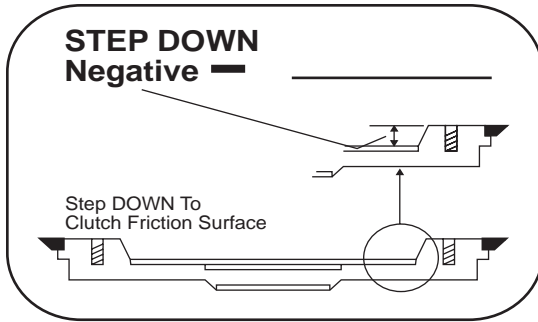
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Clutch Masters thanks you for your purchase of this performance clutch and/or flywheel assembly. To ENSURE maximum performance, the following procedures in this guide should be executed.

FLYWHEEL RESURFACING GUIDE

Flywheel resurfaced to proper specification. This will prevent the likelihood of chatter and/or slippage. Resurfacing the flywheel to the proper specification will also help ensure smooth clutch engagement and maintain proper clamping force. The correct “step” specification must be maintained when resurfacing the flywheel. Failure to resurface the flywheel will invalidate WARRANTY.



Inspect engine rear main oil seal for leaks. Replace if necessary to prevent premature failure of clutch assembly due to oil soak. Pack inside of new release bearing collar with high-temp grease and wipe off excess after bearing is installed over the transmission collar to prevent any contamination of the clutch disc.

Clean flywheel and pressure plate surface and remove all grease, oil, or dirt prior to assembling clutch onto flywheel.

Align clutch disc (pressure plate side up) with proper alignment tool. Slowly tighten bolts in a cross pattern and torque to factory specifications.

A break-in period of 500 miles is strongly recommended. These 500 stop and go miles will allow the friction material to properly mate with the flywheel and pressure plate surface. Proper break-in will substantially increase the performance and life expectancy of your assembly.

Follow the above-mentioned procedures and enjoy this awesome High Performance clutch assembly from CLUTCH MASTERS.

CLUTCH INSTALLATION GUIDELINES

1. Carefully evaluate the cause of your previous clutch failure to determine if the contributing factor(s) need attention before the new clutch is installed.
2. Flywheel must be replaced or machined to the specs indicated by the supplied Flywheel Step card. Inspect dowel pins (if applicable) to make sure they are straight and smooth, (It is a good idea to pre-fit the cover over the dowel pins before final assembly).
3. Before fitting, inspect the clutch for any damage, which may have occurred during the shipping process. Clean (degrease) bell housing and remove all dust and debris. Study the drivetrain components before disassembly by making notes and/or taking pictures to ensure proper re-installation.
4. Test fit the disc onto the input shaft ensuring that it will slide freely. If the disc does not slide freely it may be necessary to clean the splines of the input shaft as well as file any burrs from the splines on the disc. **DO NOT FORCE THE DISC ONTO THE SHAFT, CONTACT US IF YOU HAVE ANY FITMENT ISSUES!**
5. Very lightly grease the input shaft splines with high melting point grease or a dry graphite lubricant. Lack of lubrication may cause disengagement problems.
6. Inspect clutch release fork and pivot point for cracks or wear (it is highly recommended to replace these items if they show any signs of wear).
7. Inspect the release bearing quill/retainer for any signs of wear (it is highly recommended to replace this item if it shows any signs of wear). Note: New release bearing collar should be properly lubricated and a light coat of grease applied to the outside diameter of the quill/retainer tube.
8. Assemble the clutch cover and disc making sure the disc is facing in the correct direction (note "Flywheel Side" or "Pressure Plate Side" stickers on the disc), bolt the assembly to the flywheel using the supplied alignment tool while ensuring that the flywheel dowels are aligned to the cover. Tighten and torque down the bolts in a diagonal pattern. Never use air (impact) tools to install a clutch cover assembly.
9. Refit gearbox using proper jack/apparatus to support the weight. Do not force the input shaft into the disc as this would result in a bent disc causing disengagement failure.
10. Perform any clutch adjustments to vehicle manufacturer specifications (inspect clutch cables and/or hydraulics for damage or leaks). Note: It may be necessary to reset the clutch master cylinder push rod to obtain desired pedal release position.
11. With a newly fitted clutch it is always a good idea to allow 500 miles of normal stop and go driving to ensure proper break-in. Note: High performance clutches utilize different friction materials that may cause slight clutch shudder and a compromise of drivability.

CLUTCH SYSTEM BLEEDING INSTRUCTIONS

If, during the course of the installation, you introduced air into the clutch system, the system must be bled before attempting to drive the vehicle. The following procedure is the only way to ensure that all air is bled from the system. Because the bleeder is approximately 4" above the clutch slave cylinder, you will not be using the bleeder. The process you will be using is known as vacuum bleeding.

What you will need:

- Vacuum source with gauge capable of pulling 25-30" Hg
- Rubber stopper at least 1.5" diameter at the large end
- Fitting to connect vacuum source to rubber stopper.
- A small can of new Dot3 brake fluid
- A catch can between the vacuum source and rubber stopper

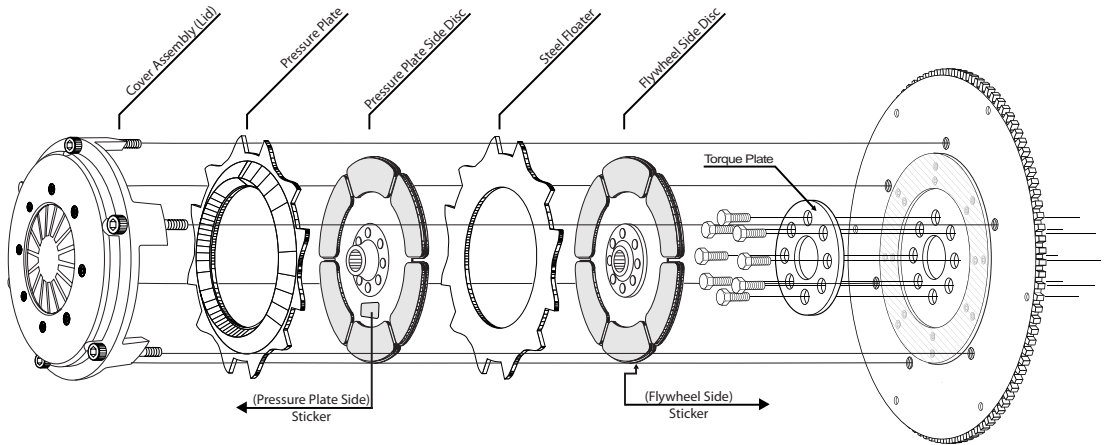
Remove the cap from the brake master cylinder (the brakes and clutch use the same reservoir). Place the rubber stopper (hooked to the vacuum source) over the opening in the master cylinder. While holding the stopper flush against the opening, begin to pull a vacuum in the system until the stopper is sealed. Continue to pull a vacuum to about 25-28" Hg. Get inside the vehicle and rapidly pump the clutch pedal 25 – 30 times, making sure that the pedal is allowed to return to the full up position each time. At this time, you should be able to see a column of fluid in the hose between the stopper and the catch can. There should be bubbles coming up through the column of fluid. If not, repeat the process of pumping the clutch pedal rapidly (rapid pumping of the pedal breaks up the air so that it can be pulled out of the system).

Depending on how much air you have in the system, you may need to pull a vacuum 3 or 4 times before you get all of the air out. Also, it is not uncommon for air to move overnight requiring a bleed the next day. When done, replenish the fluid in the reservoir.

NOTE: Each time you are done pulling a vacuum, you must pump up both the clutch and brake pedals. It is easier to pump up the brake pedal with the engine running. Failure to pump up both pedals following a vacuum pull can result in serious injury or death.

TWIN DISC INSTALLATION INSTRUCTIONS

- Twin Disc components should be assembled in the cover, then placed on the flywheel.
- Floater plates have teeth on the O.D.
- Clutch discs have teeth on the I.D.
- When assembling the clutch, the pressure plate should be nearest the spring with the flat side facing the floater plates and discs.
- Clutch discs should be alternated with pressure/floater plates. Refer to the diagram below.
- Once the clutch has been bedded in, mating surfaces must stay matched and not be swapped.
- Use an alignment tool to make sure that the discs are centered and aligned.
- The transmission must slide in and must not be drawn in by tightening the bolts.
- Torque Cover Assembly bolts to 22-24 ft/lbs using blue locktight.



TWIN DISC ADJUSTMENT INFORMATION

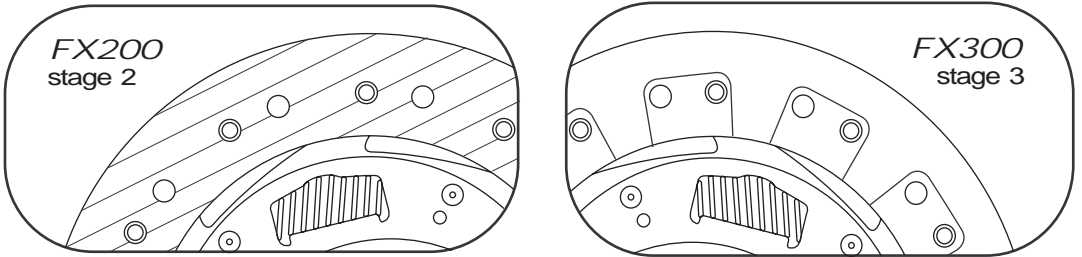
In some cases special adjustment of the master cylinder push rod and/or adding a clutch pedal stop is required to ensure that the clutch release-bearing fork does not over extend, contacting the pressure plate cover during operation.

After installation you should manually test the clutch for proper adjustment and clearance before starting the engine.

KEVLAR BREAK-IN PERIOD

MINIMUM 500 REQUIRED BREAK-IN MILES!

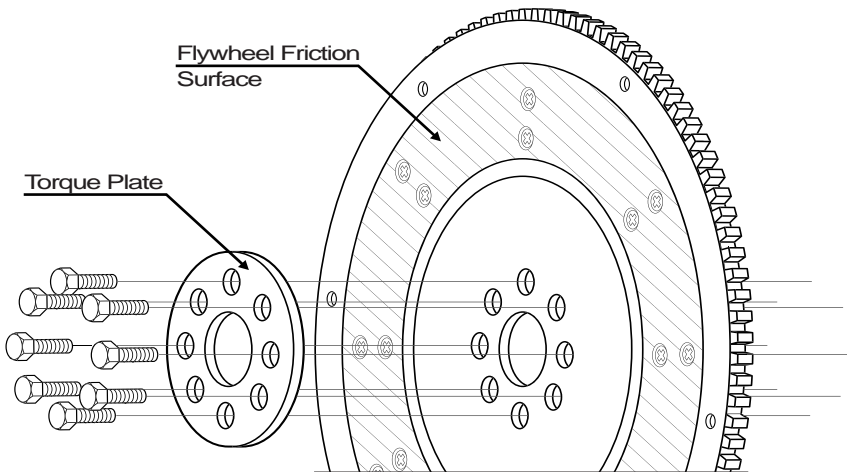
To allow the friction material to properly seat to the flywheel and pressure plate, Kevlar clutches require a minimum break-in period of 500 miles of normal stop-and-go driving (no full throttle shifting or compression braking) before full abuse can be initiated.



TORQUE PLATE INSTALLATION

Clutch Masters' aluminum flywheels come complete with a steel torque plate to protect the aluminum surface of the flywheel from the crank bolts when torqued down. The torque plate should ONLY be placed on the front (pressure plate) side of the flywheel, it is not a shim.

After installation of a performance clutch and/or flywheel, you should manually test the clutch for proper adjustment and clearance before starting the engine.



UNIVERSAL RELEASE BEARING

MOUNTING

- 1) Slide hydraulic throw-out bearing over the stock throw-out-bearing retainer.
- 2) Secure fittings & hydraulic lines from interfering with moving parts.
- 3) Check hydraulic release bearing for clearance. If bearing interferes with any part of transmission, contact Clutch Masters for further installation instructions.

BLEEDING

- 1) Use ONLY DOT 3 or DOT 4 compatible brake fluid.
 - The maximum master cylinder stroke is 1.0".
- 2) Make sure that the master cylinder reservoir remains full of brake fluid during the bleeding operation.
- 3) Attach hydraulic lines
- 4) Fill the reservoir with brake fluid.
- 5) Bleed the master cylinder and the release bearing to ensure no air is in the lines.

PEDAL STOP

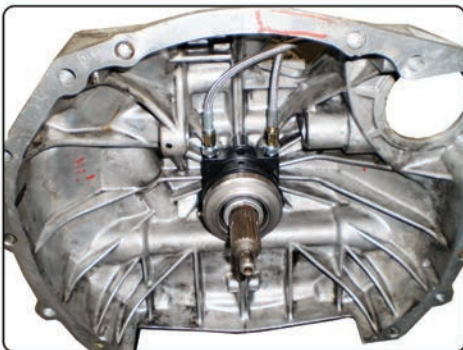
- 1) Install a rigid pedal stop to allow near full stroke of the pedal.
 - Install a pedal stop to prevent over-stroking the clutch.
 - The best place for a pedal stop is at the pedal face.
- 2) Slowly apply pressure to the pedal while applying torque to the clutch by trying to rotate the driveshaft.
- 3) Set the pedal stop near the point where the release is felt.
- 4) Adjust the pedal stop to allow apx. ¼" more of pedal travel at the pedal face past the initial release point.

MAINTENANCE

- 1) Check the bearing by spinning it by hand. It should spin smoothly.
- 2) Check the fittings for leaks.
- 3) Check for leaks around the piston.
- 4) Remove the piston and check for dirt, debris or burrs.

Parts can be lubed with brake fluid or water soluble rubber grease.

**** DO NOT USE PETROLEUM GREASE, LITHIUM GREASE OR MINERAL SPIRITS.**

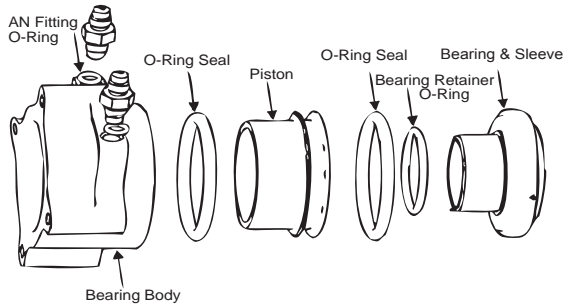


REBUILD INSTRUCTIONS

FLOATING HYDRAULIC RACE & EVO BEARINGS

DISASSEMBLY:

1. Remove the spiral-lock retaineing ring, keeping it covered so that the spring does not fly out.
2. Remove the spring without scratching the piston.
3. Remove the piston, bearing and sleeve.
5. Remove lines and AN fittings.
6. Carefully remove the seals.



INSPECTION:

1. Clean parts with soap and water and inspect all sealing surfaces for signs of wear and damage.
2. Replace damaged components.

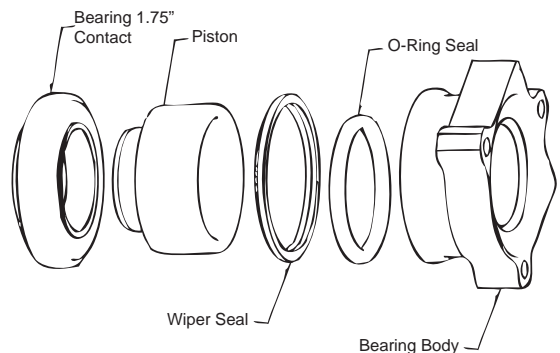
RE-ASSEMBLY:

1. Lubricate and install the new seals, taking care not to roll or over-stretch them.
2. Install the piston, ensuring that it sits squarely, and press with a twisting motion.
3. Install the spring with the large diameter down.
4. Place the retaining washer onto the spring and depressing to install the retaining ring.
5. Slowly release the load on the washer then install the bearing and sleeve assembly.
6. Attach AN fittings and lines, then bleed the release bearing.

TRI-LITE & UNIVERSAL RELEASE BEARINGS

DISASSEMBLY:

1. Remove the piston amd bearing assembly.
2. Remove the wiper seal.
3. Remove the AN-3 fittings and blow compressed air through the lines to remove the main seal.
5. Remove lines and other AN fittings.
6. Remove the fitting seals. (Tri-Light Only)



INSPECTION:

1. Clean parts with soap and water and inspect all sealing surfaces for signs of wear and damage.
2. Replace damaged components.

RE-ASSEMBLY:

1. Lubricate the new main seal and fitting seals.
2. Install the main seal using the piston to ensure that the seal sits squarely.
3. Install the fitting seals (Tri-Lite Only) onto the AN fittings.
4. Attach AN fittings and lines.
5. Install the new wiper seal.
6. Carefully install the piston then bleed the release bearing.

CLUTCH FORK WEAR POTENTIAL

It has become evident that clutch forks will wear over time causing poor disengagement of the clutch system and possible clutch failure.

The clutch fork may wear down at the point of contact with the throw out bearing as seen in the picture below. If you are experiencing any disengagement problems it is recommended to have your mechanic inspect the clutch fork for wear. If any wear is present you must replace the fork immediately.

