

Installation Instructions & Conditions of Sale

Thank you for purchasing a Modern Driveline clutch set. Each clutch set has been tested as a unit and releases within factory specifications or quicker than factory specifications depending on clutch model. Please follow the below “installation” instructions. The “set-up” of a throw-out bearing is dependent on the type of clutch actuation system. If you have purchased a clutch actuation system (linkage, cable or hydraulic) from MDL, those instructions will perform release checks prior to driving the vehicle. It is recommended the installer drive the vehicle after installation to ensure the clutch operates properly.

By purchasing this product, Installers and end-users agree to the following terms and conditions:

- 1) The flywheel must meet acceptable limits of run-out, cleanliness and usable condition (zero to mild/light surface imperfections). Refer to the MDL “Before you install your transmission” document for further assistance on this issue.
- 2) The flywheel must be conditioned for Kevlar surfaces. This finish is a swirl finish or crosshatch pattern typically done by a rotary cutter at a resurfacing shop. A record groove style cut is acceptable but will take longer to break in.
- 3) In the event of an installation issue please contact MDL before returning or altering parts.
- 4) In the event of an operating issue, you must contact MDL for technical assistance before removing the clutch.
- 5) Never apply any lubricants to the splines of the transmission input shaft, alignment tool, or clutch disk splines (hub). Any lubricants or anti-seize applied in these areas will cause the disk to immediately fail.
- 6) Never allow the weight of the transmission to hang on any clutch disk – it will bend or crack the marcel plate fins, compromising the disk running true or integrity as a whole and the disk will have to be replaced.

Installation Instructions

Always wear ANSI approved eye protection and proper gloves when working with solvents.

The installation instructions for all single-disk MDL clutches are the same. Specific *break-in* procedures below will apply by clutch disk material type.

- Handle all clutch disks with care – no greasy fingers, do not drop. Clean gloves are recommended.
 - The location of alignment tool and bearings (as applicable) in the box will be under the foam supporting the pressure plate.
- 1) Do not clean any new clutch disk. Disk will be supplied from MDL debris free. Clean all metal friction surfaces with solvent to remove machining oils and grease and allow to dry. Wipe off remaining solvent residue from metal surfaces.
 - 2) Remove all debris/glue from the end of the crank and install the pilot bearing or pilot bushing into the crank. Contact only the outer edges of the pilot with any installation tools. The pilot must install parallel to the end of the crank. Standard bushings will be flat with the end of the crank, extended pilot bushings and pilot bearings may be taller than the end of the crank.
 - 3) Before positioning the clutch disk verify the alignment tool will go into the pilot without drag. It should also not be loose (wrong size). Verify the alignment tool pilot tip is the same size as the transmission going into the vehicle. Position the clutch disk (wear clean gloves) on the splines of the transmission input shaft. The disk needs to engage the splines 100% and slide freely without wobble. This also validates the splines of the input shaft are not twisted.
 - 4) For exposed needle roller bearings **ONLY**, apply a small amount of wheel bearing grease into the exposed rollers. Bushings, and bearings with an inner race do not require any grease or any other forms of lubricant.
 - 5) Position the alignment tool and clutch disk (wear clean gloves) into the pilot. Be sure the friction surface of the clutch disk **IS** contacting the flywheel. If it is not contacting the flywheel there is an interference that must be corrected, or the clutch disk is installed backwards.

- Before installing the pressure plate, install the pressure plate bolts in the correct hole pattern on the flywheel. All bolts should thread in easily by hand. If your pressure plate does not align on pins... the pressure plate bolts must be shouldered.
- The proper procedure for tightening pressure plate bolts is in a crossing star pattern no more than one full turn at a time.

6) Install the pressure plate with pressure plate bolts and start with all bolts snug by hand. Before you start to tighten the pressure plate bolts... lift slightly on the alignment tool to center the disk. Torque to specifications listed below. Torque values vary by pressure plate bolt size and the material of the flywheel. Note: you may incrementally check for free-movement of the alignment tool as you tighten the bolts.

- **Torque values**

All stated values are “dry”, or anti-seize, or liquid loc-tite. If you use a torquing lubricant such as ARP brand reduce values by 20%. Do verify all lock-washers are fully compressed when torqued (as applicable), pressure plate bolts are seated, pressure plate makes contact with the flywheel.

MDL recommends medium strength loc-tite in all applications.

- Steel flywheel with 5/16-18 bolts - 18 ft/lbs
- Alum flywheel with 5/16-18 bolts - 15 ft/lbs
- Steel flywheel with 3/8-16 bolts - 33 ft/lbs
- Alum flywheel with 3/8-16 bolts - 25 ft/lbs
- Steel flywheel with 8mm bolts - 23 ft/lbs
- Alum flywheel with 8mm bolts - 19 ft/lbs
- Steel flywheel with 10mm bolts - 37 ft/lbs
- Alum flywheel with 10mm bolts - 24 ft/lbs

7) Remove the alignment tool. If the disk is properly aligned the tool will remove easily and not have to “pop” out. If it is harder to remove than a light pull with one finger the disk will need to be re-aligned. Repeat the prior step.

- The below installation steps only apply to a clutch set that will use a throw-out bearing (release bearing) supplied with the kit. Installation of a clutch set that uses a hydraulic release bearing (HRB) also known as a concentric slave cylinder (CSC) will not use the following installation steps. Proceed to the break-in procedure.

- 8) Fit-check the mechanical or cable-style throw-out bearing onto the guide tube surrounding the input shaft on the transmission. It should slide easily all the way up and down the shaft with light clearance.
- 9) Remove the bearing and grease the recess pocket (groove – it is not very deep) with graphite grease. The grease does not need to be any taller than the surfaces that slide on the guide tube. Apply the same grease sparingly to the riding surfaces of the clutch fork fulcrum/pivot and throw-out bearing riding surfaces.
 - You have now completed the installation steps related the MDL clutch assembly. Proceed to the break-in procedure.

Break-in Procedure

The break-in procedure varies by friction disk materials. The break-in procedure induces heat cycles which will condition the flywheel, pressure plate, and friction surfaces. Do not “test the limits” of your horsepower/torque during this time. Normal driving and clutch release are mandatory; no WOT or “excessive” slipping of the clutch is allowed. It is important to follow the break-in procedure and *then* perform the stall test and rolling test. Do not try to perform the stall test or rolling test until the break-in procedure has been completed.

Read all break-in procedures below to understand limits and expectations of *your* clutch set.

- At any time during this procedure if the clutch disk slips you must allow the clutch to cool down for a minimum of one hour before proceeding.
- **Organic ONLY Friction Surfaces – both sides of disk are organic material**

These break-in (bed) relatively quickly and easily, like a set of brake pads. Organic friction materials may have small high spots which will need to be knocked-down to achieve a uniform surface.

We recommend 300 miles (1 tank of gas) of stop-and-go (city) driving. Highway miles do not count for heat cycles and break-in.

- **Kevlar ONLY Friction Surfaces – both sides of disk are Kevlar material**

A Kevlar material is initially soft to the touch and becomes hard and brown (not black) when properly broke in. Cleanliness is very important for this material. Kevlar is great for reducing “shock-loading” of the transmission gears because it is a soft-lock material, not a grab-n-go material. These break-in (bed) much slower than organic clutches. Kevlar materials must be conditioned without burning for optimum performance. This takes more time & more heat cycles. Some initial slipping may occur during normal driving. If you do have a “momentary” (less than 1 second) slip during acceleration it is okay to continue driving. This means you have enough power in the engine to cause slip. If this happens occasionally during the break-in period it will not affect the outcome of the break-in. Do not allow the disk to slip for more than 5 seconds or greater than 2000 rpm difference between slip and no-slip rpm. This extended slip time will require the clutch to cool down. Do not use any cruise control devices or use the vehicle for towing until the stall test and rolling test have proven successful.

We recommend 800-1000 miles (3 tanks of gas) of stop-and-go (city) driving. Highway miles do not count for heat cycles and break-in.

- **Metallic and Cerametallic and Ceramic ONLY Friction Surfaces – both sides of disk are metallic material**

These break-in (bed) very quickly. Just a few cycles to create conditioned surfaces is all it takes. Metallic surfaces have significant more “bite” than any other material type. They also typically will not be a smooth take-off from a stop so be prepared to step on the throttle. These should not slip at all under normal driving

We still recommend 300 miles (1 tank of gas) of stop-and-go (city) driving. Highway miles do not count for heat cycles and break-in.

- **Multi-Friction Surfaces – dis-similar materials on opposites sides of disk**

We recommend adhering to the break-in procedure above that has the longest break-in time for the friction materials you have. For example if you have organic or metallic on one side and Kevlar on the opposite side... use the Kevlar break-in procedure.

Stall Test

The stall test is a performance test of the clutch. This test assumes the rest of the vehicle is mechanically sound. You may want to inspect for torn engine mounts, missing hardware, bad u-joints, battery tie-down, fluid caps installed, no other “open containers” that could spill, and properly performing brakes before beginning this test. Expect a violent response with this test (shaking of the vehicle).

- At any time during this procedure if the clutch disk slips you must allow the clutch to cool down for a minimum of one hour before proceeding.
- 1) With the engine at operating temperature and clutch cold (not overheated from use) with ALL tires on the ground... apply the emergency brake or block the tires.
 - 2) Press and hold the clutch pedal down with your left foot and put the transmission in 3rd gear.
 - 3) Apply your right foot on brake and gas pedal and bring the engine RPM up to 2000 rpm.
 - 4) Side-step the clutch pedal (as if you were doing a drag race launch).
 - 5) The expected result is the engine will immediately stall-out, indicating the clutch is broke-in.
 - 6) Should the clutch continue to slip or slip slowly to a stall... immediately release the gas pedal. The clutch is not broke-in. Continue with the break-in procedure.
 - 7) If there is concern of clutch malfunction, please contact us for a consultation.

Rolling Test

The Rolling test checks function of the clutch under load. This is when you can start having fun providing the test is successful.

- At any time during this procedure if the clutch disk slips you must allow the clutch to cool down for a minimum of one hour before proceeding.
- 1) In second gear, typically done on freeway on-ramp, run vehicle to the middle of the power curve of the engine then shift into next highest gear and throttle hard. Look for how much slip at this point. There should be no slip.
This test should be completed before reaching 55 mph.
 - 2) Should the clutch slip or slip slowly... immediately release the gas pedal. The clutch is not broke-in. Continue with the break-in procedure.
 - 3) If the clutch does not slip at all... you have successfully broke-in your clutch.

Congratulations! You are ready to play.

Dyno Test

This test checks the vehicle's performance. Where the power meets the pavement, also known as Rear Wheel Horsepower (RWHP) this is your bragging rights! This test is performed by a shop that offers this service using a dynamometer. You do not have to perform this test, it is optional. The shop will determine the best way to perform this test.

- At any time during this procedure if the clutch disk slip you must allow the clutch to cool down for a minimum of one hour before proceeding.

For tech support, please contact
Modern Driveline at 208-453-9800
8am to 5pm MST
or tech@moderndriveline.com

Modern Driveline, Inc (MDL) warrants its clutch products to be free from defects in materials and workmanship under normal use and service as hereinafter provided, for twelve months after installation in a vehicle. MDL's obligation under this warranty is limited to providing, at no charge, a replacement for any part of such clutch product that fails within the terms of this warranty. MDL will not be responsible for the cost of labor related to the installation of the replacement part.

In order to obtain warranty service, the entire clutch assembly, including, the clutch cover assembly, the clutch driven disc, and the release bearing along with proof of flywheel resurfacing or flywheel replacement, must be returned to MDL with proof of purchase, work order, full particulars as to the type of use, application, and length of service of the failed part. All returns must include proof that the flywheel was either replaced or resurfaced.

This warranty does not cover failure or malfunctions resulting from use for high performance or racing purposes, accidents, improper application or installation, modification, alteration, improper servicing, tampering, normal wear and tear or abuse. MDL shall not be responsible for incidental or consequential damages and its liability shall be limited to the amount paid for the product.