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Long Range Gear Transmission/Transfer Case Installation Instructions

Long Range Gear takes great pride in their transmission and transfer case units and strives to provide the best products possible for our customers. However, even the best transmission will fail with improper installation, so pay attention below for the successful replacement of your new transmission or transfer case.

- FOLLOW YOUR VEHICLE FACTORY SERVICE MANUAL FOR REPLACEMENT OF UNIT
- Deviations from factory service manual instructions will be outlined here
- Fluid recommendations/capacities –

NV4500- Amsoil Synchronesh or Redline MT-85- 5qts without coolers

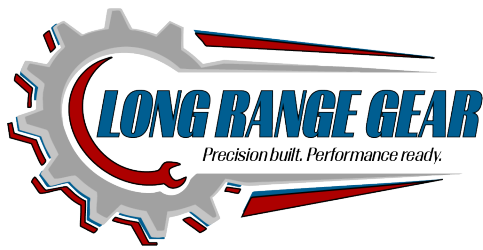
NV5600- Amsoil Synchronesh or Redline MTL, Pennzoil/Valvoline Synchronesh are acceptable alternatives- 6qts without coolers

G56- Amsoil Synchronesh or Redline MTL, Pennzoil/Valvoline Synchronesh are acceptable alternatives - 7 qts without coolers

If coolers are being used on any transmission, install the coolers and fill the transmission to the capacity at the fill port, then plug the fill port and fill one additional quart through the shift tower hole. This prevents excessive fluid level, cavitation, and potential seeping from the rear seal.

Transfer cases- Synthetic ATF of any brand, either ATF+4, “global” ATF, or any other factory designated fluid for that unit is acceptable. Fill to the fill port as required in your factory service manual

- Detection of fluid leaks are the responsibility of the customer/installer/end user. After heat cycles and use, fluid leaks ****CAN**** occur, though rare. It is the responsibility of the customer/installer/end user to monitor the transmission and immediately stop using the transmission if leaks are detected. Report any leaks to Long Range Gear immediately. If it is determined that the leak requires a warranty return for repair or replacement, Long Range Gear will cover the repairs as outlined in our warranty policy. Failure to monitor



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or detect leaks, failure to stop using the transmission immediately, and failure to report the leak to Long Range Gear will void the warranty. Long Range Gear will NOT warranty ANY transmission or transfer case suffering from damage resulting from low oil/oil starvation, which is immediately evident upon inspection in almost every case.

-PTO cover leaks are considered end user maintenance and can be resealed by the customer/installer/end user without affecting the warranty. Long Range Gear simply requires an email to Andrew@LRGdiesel.com notifying of the repair and a photo of the end result repair in order to maintain warranty status. This does not change the requirement of the customer to maintain fluid level in the transmission.

- If you have an NV4500 or NV5600 using a shift tower spacer, you must apply RTV sealant between the transmission and metal portion of the spacer to complete the seal. If you do not apply the sealant, the transmission will leak a substantial amount during use and will likely result in damage not covered by the warranty policy. Stock style rubber spacers will seal the top of the spacer to the shift tower by itself as designed. The lower portion is the only one needing sealant. If you are using a billet shift tower spacer, use sealant on the bottom, and LRG can provide a small gasket for the top of the spacer to seal against the shift tower.
- It is highly recommended, but not required, for customers with aftermarket clutch kits using sealed ball bearing pilot bearings to apply a small amount of Loctite 609, 620, or equivalent retaining compound to the snout of the transmission where the input inserts into the bearing. This will prevent the haft spinning inside of the bearing and damaging the input shaft.
- It is highly recommended, but not required, for customers to replace their aftermarket clutch pilot bearings with an Axis 1635-2RS bearing available on our website, www.LRGdiesel.com
- DO NOT apply any grease or other lubrication, including moly dry-film lubricants, to the input shaft or splines of the input shaft. Clean any grease or lubricant off of the clutch hubs if any is present when re-using a clutch with a rebuilt transmission
- Before making an insurance claim for shift quality, you must ensure that you are experiencing complete clutch disengagement by adjusting your hydraulic system/clutch linkage. Customers who fail to complete this step, and submit their transmission for warranty, will be billed for labor and parts if no damage or cause evidence is observed inside the transmission. Please be diligent in exhausting all options before we start the warranty process. Long Range Gear will dedicate sufficient time to assist with



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troubleshooting and diagnostics over the phone to any customer experiencing these problems. Please call the main line for this assistance.

- Transfer case/2wd output leaks- If your transmission is a 2wd unit or for any transfer cases, your rear seal and bushing will be brand new quality components. Many customers experience a continued drip from these output seals even after they are new. This is a clear indication that your driveshaft yoke is worn and allowing excessive fluid bypass causing a leak. Sometimes this is not immediately noticeable. You can use a straight edge to see if there are slight deviations on your yoke, but a fresh yoke ,bushing as seal, installed and used together, will almost always seal the output completely. Replacement of the yoke is required before initiating a warranty claim for this condition.

BREAK IN PROCEDURES

Your Long Range Gear transmission or transfer case will be shipped, delivered, or otherwise given back to you **WITHOUT FLUID**. The only liquid present inside your transmission or transfer case will be small amounts of assembly lubricants for initial startup. Because of this we recommend the following;

- Fill the transmission as described in the fluid recommendation section.
- Start the vehicle after completing a double check of all steps in the factory service manual. Release the clutch, which will allow the transmission components to begin spinning at engine idle RPM. Allow the truck to idle for 1-2 minutes, then shut off the vehicle for 5 minutes. This allows the gears to splash oil throughout the entire transmission and allow fluid to creep into the bearings and moving parts.
- During the 5 minute wait, get under the truck and inspect the transmission for any leaks. Check front, rear, left, right, high and low for any fluid residue. If any are observed, attempt to trouble shoot the cause and contact Long Range Gear if needed.
- After the 5 minute wait, you can start the truck again and take the vehicle for an initial drive- for this drive, use slow shifts, light throttle, and generally “drive like a grandpa” to avoid stressing new parts. Please do not immediately leave on a 5 hour road trip with no heat cycle, you are asking for trouble and Long Range Gear is not responsible for any recovery or emergency fees relating to failure stemming from this decision. It is imperative that you put at least a few (meaning 3-5) heat cycles into the transmission and monitor it closely during this time for any leaks that may develop. “Heat cycles” means allowing the transmission to get up to temperature



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- and then stop and allow the transmission to cool. Please note that the transmission will not heat up as fast as the engine and using the engine temp gauge as a guide for this will not be accurate. Expansion and contraction must occur to ensure no leaks will result. After the heat cycles are completed, if no leaks are observed, the transmission is ready for use.
- If we have not made ourselves clear enough that monitoring for leaks is absolutely mandatory, please consider this another directive to monitor the transmission for leaks during this heat cycle break in period.
 - Avoid towing for 1000 miles if possible, allowing gears to lap themselves together.
 - Complete a fluid change at around 1500 miles if there has been significant city driving with lots of shifting. Extend this period to 2500 if the majority of the mileage is highway with less shifting. Please note that there will be synchronizer material and other deposits from break-in present in the oil, this is not cause for concern and is to be expected. If you believe the oil appears problematic in any way, please call us at Long Range Gear to discuss and please include photos to Andrew@LRGdiesel.com
 - During the break-in period and up to 5,000 miles sometimes the shift quality will improve but it isn't uncommon for a bit of notchy shifting or some stiffness perceived from the driver's seat in the beginning. Please keep in mind that there are A LOT of new parts in your transmission and they all have to lap together and begin wearing to each other for smooth operation. Depending on what new parts, and how many new parts were needed, this break in period can be prolonged until everything is smoothed. Keep this in mind as you use your new transmission.
 - Please keep in mind that your clutch and hydraulic system play critical roles in shift quality. South Bend dual disc clutch users will never experience the full potential of the transmission, as they are a very poor design as far as shift quality is concerned. Stock hydraulics are likely needing replacement by now, and parts-store hydraulics almost never shift cleanly from our experience. We suggest the upgraded hydraulics from Valair, KY Clutch, or even South Bend. This also allows you to have some adjustability.
 - Pivot Ball washer- ah yes, the ol' pivot ball washer discussion. Despite the fact that the internet swears the pivot ball washers with dual disc clutches will cause your truck to explode in a ball of fire, at Long Range Gear we firmly believe that the pivot ball washer should be left in for shift quality. We have found no instance where the washer causes bind up, which is the reason clutch manufacturers tell you to remove it. The dual disc clutch kits normally come with bent forks to compensate and the



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- washer discussion is no longer valid. However, most clutch manufacturers state that the washer can void your warranty, so this decision should not be taken lightly. If we know you are using a dual disc clutch, we will remove the washer when we install your pivot ball. If you choose to use one, you can put a washer back in. LRG will send you a washer if you request one, free of charge.
- If you experience any problems, please contact Long Range Gear immediately and we will work with you and support you however necessary. Please keep in mind when experiencing a problem that was caused by improper usage, negligence or otherwise caused by the end user/installer are almost always evident upon disassembly and inspection. Long Range Gear values its relationship with its customers and we will bend over backwards for you, but we expect integrity from our customers to achieve this. If you believe that you may have made a mistake in some way resulting in damage to your transmission or transfer case, please be upfront and honest about what happened. We will not judge as mistakes do happen to even the best of us. We will make sure that you won't regret being honest with us about whatever may have occurred, as we will make sure to take care you and will never attempt to profit off a bad situation. Lying to us will likely result in little to no help at all beyond what is legally required in that case. We vow to support honest, hardworking American men and women to the fullest extent.