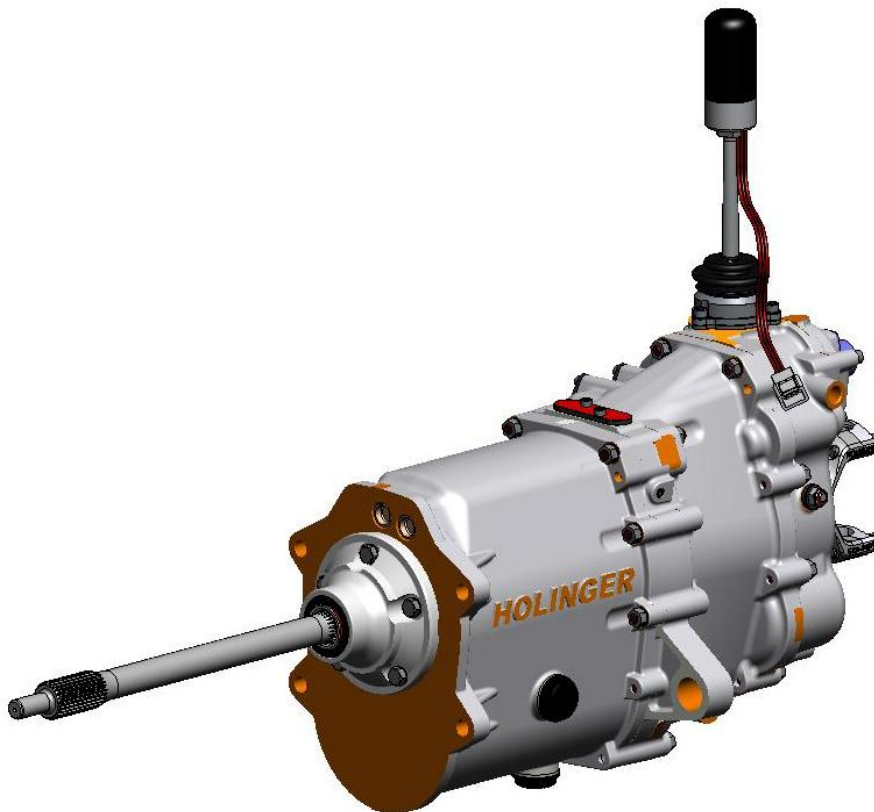


HOLINGER
ENGINEERING
Racecar Gearbox Manufacturers

HOLINGER RD6-S GEARBOX MANUAL



FOREWORD

The Holinger RD6-S is a sequential-shift dog-change gearbox primarily designed for use in front-engine, rear-wheel-drive race cars. The gearbox is fitted with 6 forward gears and a reverse gear. Shifting is performed via an integral gear-lever or a remotely actuated shift-rod.

FEATURES:

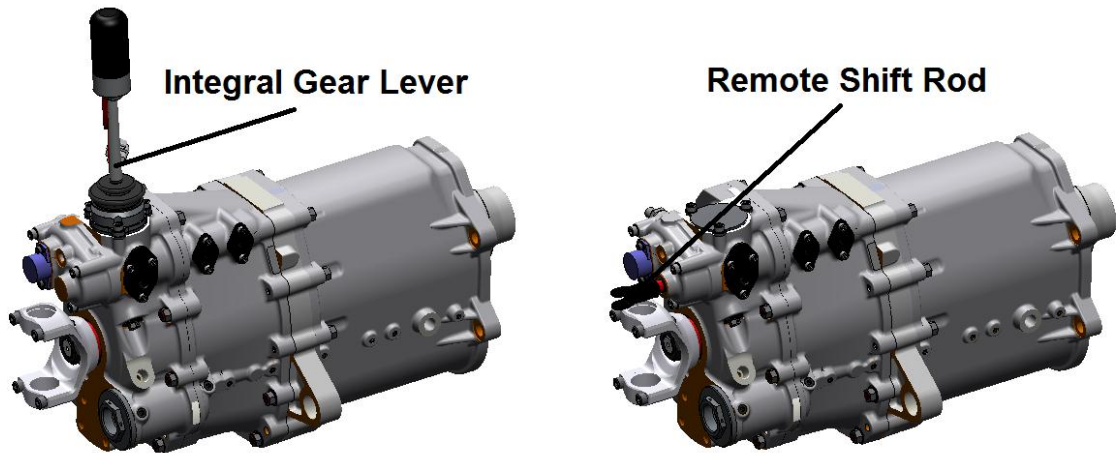
- Torque rating for endurance events is 880Nm (650ft.lb).
- All forward gears are profile ground for increased efficiency and durability.
- 5-Speed versions are also available upon request.
- The internal lubrication system consists of a magnetic / paper element filter, an oil pump with provision for an external oil cooler and an integral spray bar to feed cooled oil directly onto the gears.
- All gears are removable from shafts with an extensive range of ratios available.
- Input is via a removable quill-shaft which can be customised to suit individual requirements.
- Output is via a fixed flange or slip yoke which can be customised to suit individual requirements.
- A gear position sensor is supplied for interfacing with an electronic dash display. Alternatively a stand-alone gear indicator display is available for cars not fitted with an electronic dash.
- The selector forks are manufactured from high tensile, nitrided steel.
- Case hardened nickel chrome steel is used for all gears and shafts.
- Casings are sandcast Aluminium alloy, heat treated to T6 specifications.
- O-ring seals are used on all joint faces.
- Gearbox weight is 39kg (86lbs)

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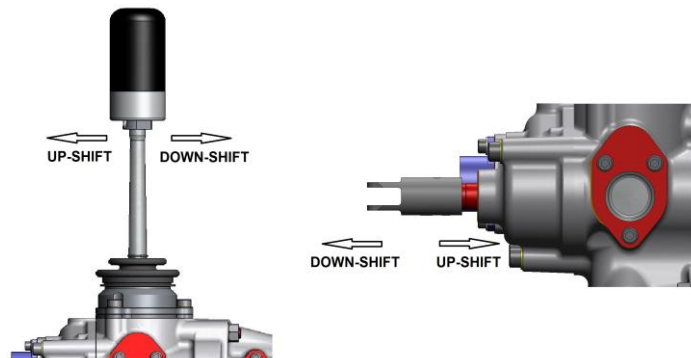
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CHANGING GEARS

Changing gears with a Holinger RD6-S is performed via an integral Gear Lever, or a remote Shift Rod:



NOTE: With a remote-shift version the driver must use a remotely mounted “gear lever” system. Typically this gear lever would be floor mounted inside of the car, and attached to the gearbox via a cable or mechanical linkages.



Shifting between gears is achieved by moving the gear lever forward and backward in a straight line. One movement in either direction corresponds to one gear change, in sequence from Reverse-Neutral- 1st-2nd-3rd-4th-5th-6th and back.

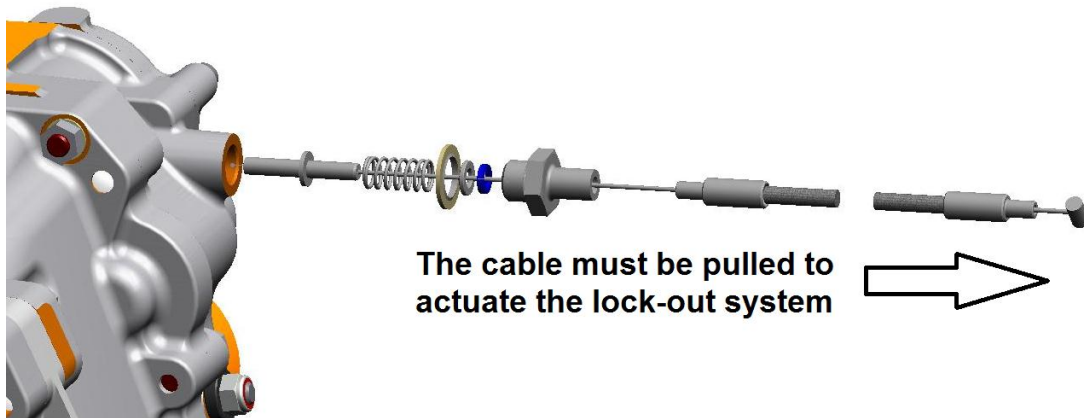
To avoid selecting Neutral or Reverse at an unwanted time, a Lock-Out system has been incorporated.

Integral Gear Lever:

To shift from 1st Gear into Neutral, push the gear lever all the way to the left and then push forward once. From this position the driver can select Reverse Gear with a single down-change or 1st gear with a single up-change as per normal.

Remote Shift Versions:

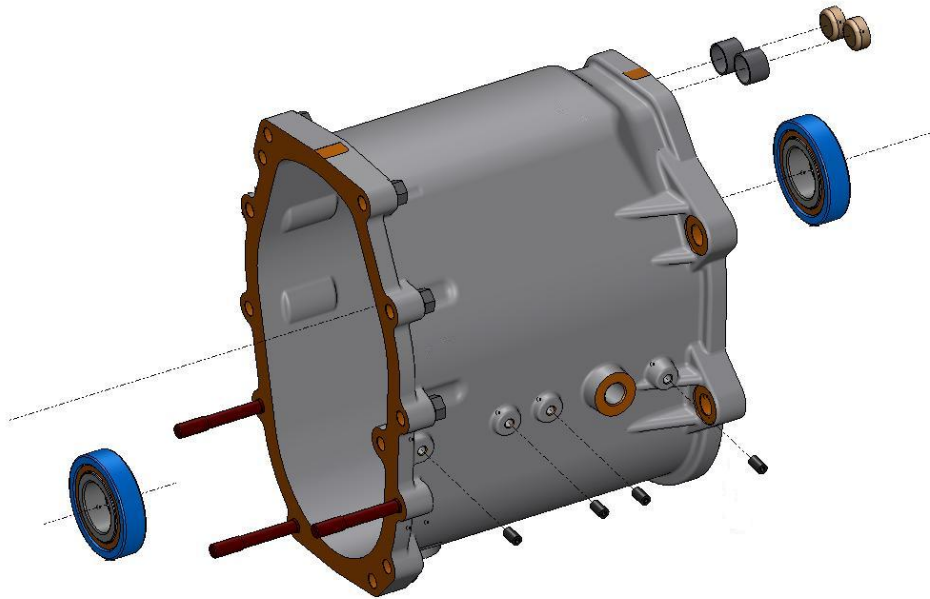
On remote shift versions provision exists for a cable operated Lock-Out system. To engage Neutral when in 1st gear, the Lock-Out system must be actuated while the driver simultaneously shifts “down” once more. From this position the driver can then select Reverse Gear with a single down-change or 1st gear with a single up-change as per normal.



SUB ASSEMBLIES

NOTE: Ensure all parts are thoroughly cleaned before commencing any work. All threads that are to be secured with Loctite, should first be sprayed with 7471 Loctite Primer.

Main Case



Insert two *120-1612DU* Bushes in through the front of the Main Case. Tap them into place until they seat against the shoulder.

NOTE: Take care not to distort the bushes when they seat. Check that a selector rod can slide freely through the fitted bushes.

Blank the holes with 18mm Welch Plugs. Tap them into place until they are just below the front face.

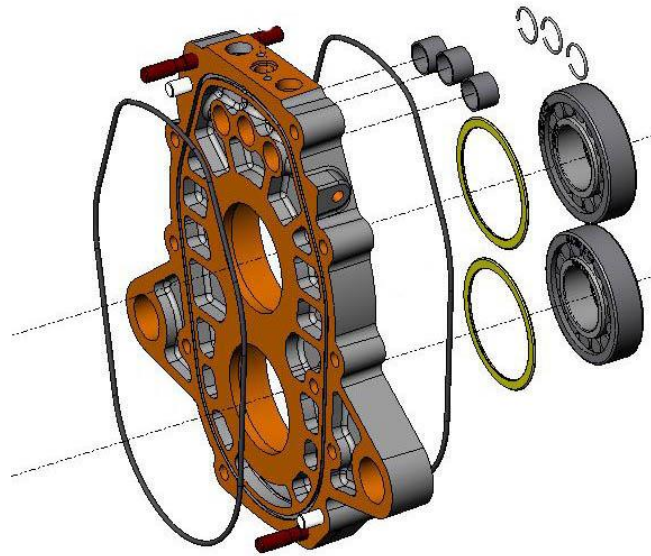
Insert three M8x70mm Studs into the rear of the case securing with Loctite 263 (red). 54mm should be left protruding.

Warm the case until the two *104-357217NJ (NJ207 E C3)* Bearings will slide into place. The Input Shaft Bearing (open hole) should be placed roughly 6.5mm from the front face. The Layshaft Bearing (blind hole) should be placed all the way home.

NOTE: Ensure the bearing inner-races are kept with their respective outer-races.

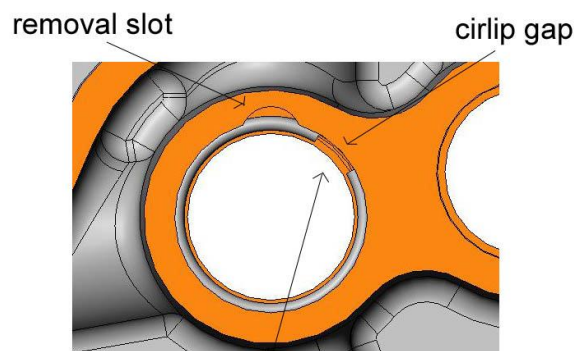
Insert four M6x10mm Grub Screws into the spray bar pilot holes. Seal these with Loctite 263 (red).

Sandwich Plate



Insert three *120-1612DU* Bushes in through the front of the Sandwich Plate. Tap them into place until they bottom out in their holes.

Retain the bushes with *RD6-025* Circlips. Place the circlips in a position that allows easy removal as the following diagram illustrates:

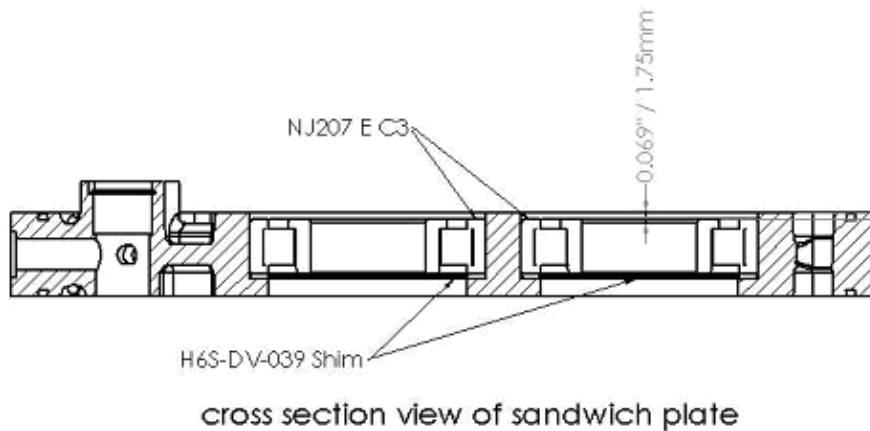


The gap is placed just past the slot to enable easy removal

Insert two M8x83mm Studs in opposing corners of the sandwich plate and secure with Loctite 263 (red). Equal amounts should protrude either side.

Tap two 8x50mm Dowels into place with a nylon faced mallet in opposing corners of the Sandwich Plate. Equal amounts should protrude either side. Lubricate the dowels with some grease before inserting.

The two 104-357217NJ (NJ207 E C3) Bearings installed in the Sandwich Plate must be set to a specified depth. H6S-DV-039 Shims should be ground for both bearings to achieve the dimension in the following diagram:



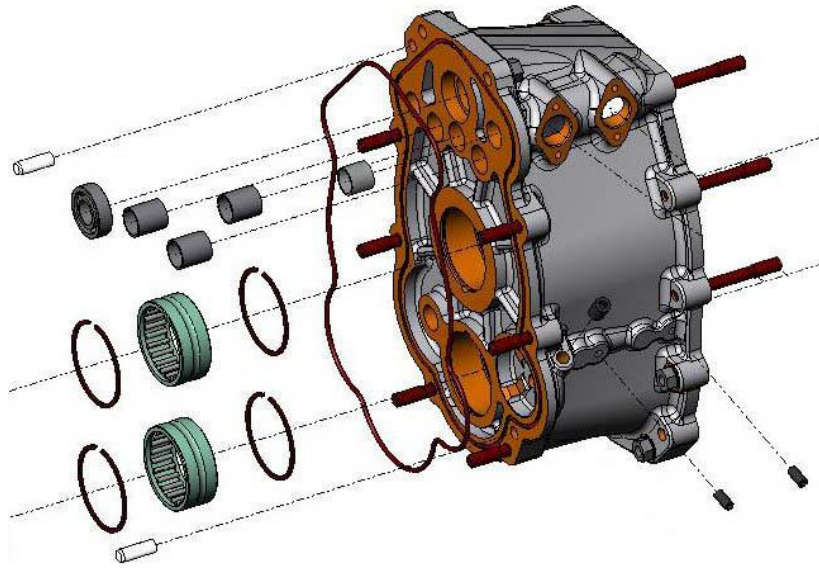
NOTE: Measure the distance between the Sandwich Plate and the INNER-RACE of the Bearing.

Warm the Sandwich Plate and place the Bearings into the bores, with the correct shims installed underneath. When the plate has cooled ensure the bearings are seated properly using a press on the Outer-Race.

NOTE: Ensure the bearings inner-races are kept with their respective outer-race.

Place O-rings 132-BS171 in the grooves in both sides of the Sandwich Plate.

Rear Case



Insert three *120-1620DU* Bushes in through the rear of the case. Tap them into place so the two outer bushes sit just below the rear surface, while the middle bush should be flush with the internal surface. Then insert one *120-1515DU* Bush into the upper right corner of the case, until it is flush with the rear surface.

Place two *140-52 (BR52)* Circlips into the inner side of the bearing bores.

NOTE: Place the circlips in a position to allow easy removal.

Warm the case until the two *108-425220 (NK 42/20)* bearings can be placed easily into their bores. Retain the bearings with the second set of circlips. Also place the *103-153209 (6002)* bearing into its bore located in the top portion of the Rear Case.

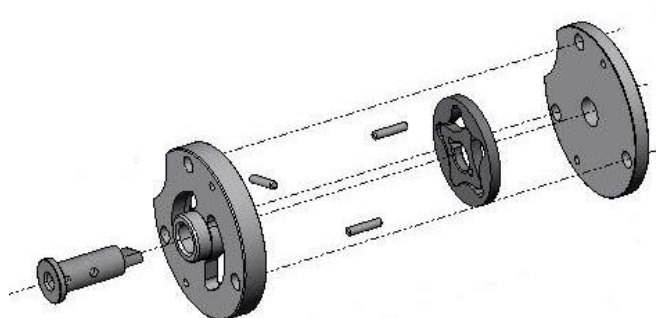
Insert five M8x70mm Studs into the front of the case and secure with Loctite 263 (red). 54mm should be left protruding. Then insert six M8x42.5mm Studs into the rear of the case and secure with Loctite 263 (red). 28mm should be left protruding.

Insert two 8x25mm Dowels into opposing corners of the Rear Case, roughly 10mm should be left protruding. Lubricate the dowels with grease before inserting.

Insert two M6x10mm Grubs Screws into the spray bar pilot holes, and a 7/16X 3/8 UNF plug into the oil gallery pilot hole. Seal these with Loctite 263 (red).

Place a *132-BS175* O-ring into the groove on the back on the rear case.

Oil Pump

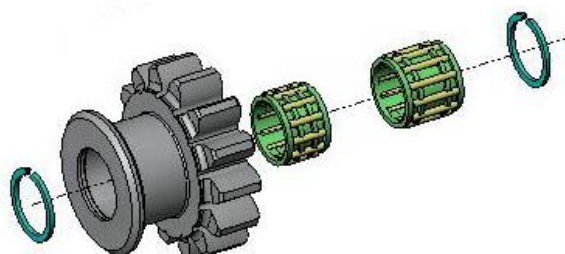


Insert the *RD6-020* Oil Pump Spindle into the *RD6-022* Pump Housing, then place a 3x15.8mm roll through the exposed hole in the spindle.

Lower the *J6S-077* Oil Pump into position. Place two 3x13.8mm rolls into the locating holes either side of the housing, and drop the *RD6-021* Top Cover over the assembly.

NOTE: Generously lubricate the pump with oil before installing it in the gearbox.

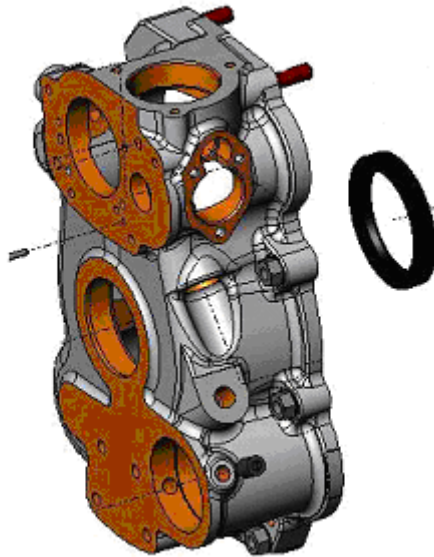
Reverse Idler



Insert a *140-20 (BR20)* Circlip into one side of the *RD6-130* Reverse Idler. Place both bearings *106-162013* and *106-162017* into the bore of the gear and retain them with a second circlip.

NOTE: Place the *106-162017* Bearing under the teeth of the gear.

Selector Housing



Slip Yoke Version only:

Press the *H6S-DV-049* Tail Shaft Bush into the back of the housing and the *H6S-DV-048* Seal into place behind it.

All Selector Housings:

Insert a 3x12mm Roll Pin into the rear of the housing. Knock the pin to a depth that enables the Camshaft Detent Plunger (*H6S-SEQ-014*) to be located correctly but slide freely ~ 1.5mm into the detent plunger bore.

Lubricate and place the Oil Pump assembly into the base of the casting and secure with M6x20mm Cap Screws. Retain the screws with lock wire.

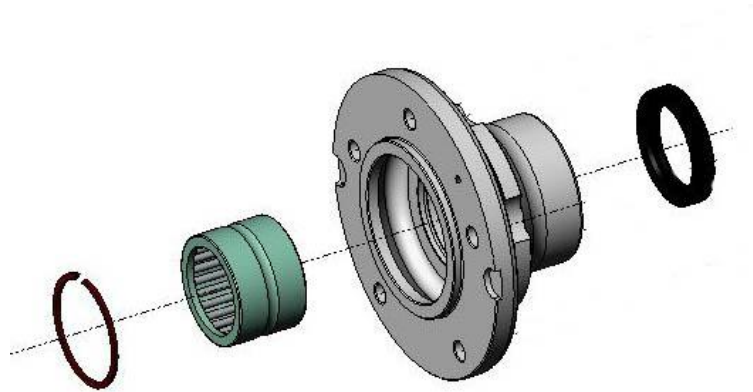
Lubricate the *130-425507* Lip Seal with grease and push it home into the rear of the case.

Fit two M8x39mm Studs into the top of the casting and secure with Loctite 263 (red). 23mm should be left protruding.

Finally seal the oil gallery pilot hole with a 7/16 UNF X 3/8 plug, retained with Loctite 263 (red).

TIP: The camshaft is not to be fitted yet, as it is required for an adjustment procedure detailed in the Gearbox Assembly section.

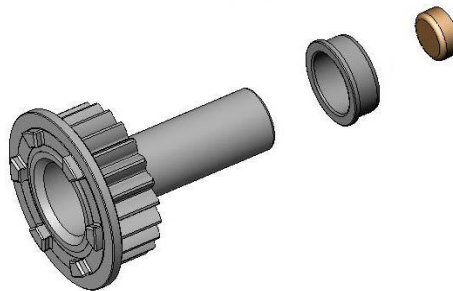
Front Cover



Warm the *H6S-DV-064* Front Cover until the *108-354530 (NK35/50)* Bearing slides into position. Retain the bearing with a *140-45 (BR45)* Circlip. Ensure the position of the circlip allows for easy removal.

Lubricate the *130-354707* Lip Seal with grease and push it into place, in the front of the cover.

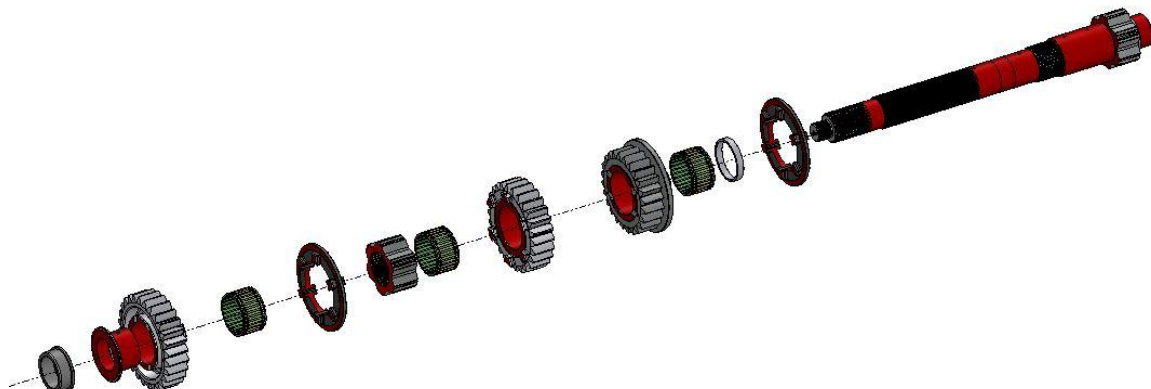
Input Shaft



Tap a 20mm Welsh plug into the centre of the input shaft.

Then press the inner-race of the *104-357217NJ (NJ207 E C3)* Input Shaft bearing onto the shaft.

Mainshaft



Start by sliding the Bearing Spacer and Needle Rollers up against the integral hub. Generously lubricate them with gear oil. The spacer must be beneath the integral dog on 5th gear (6th gear if an overdrive gearbox).

Place 5th (6th if O.D.) gear onto the shaft with the dogs facing the Selector Hub. Then place 4th gear (3rd gear if O.D.) onto the shaft, with the dogs facing towards the rear of the shaft.

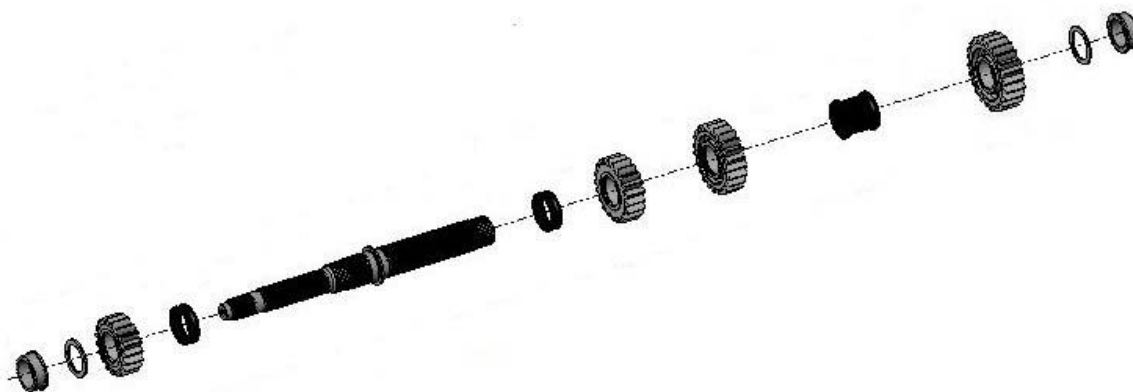
Slide an *HTA-022* Selector Hub onto the shaft, and then slide an *RD6-069* Selector Ring over the hub.

Place a Needle Roller Bearing onto an *RD6-159* Bearing Sleeve then 3rd gear (4th gear if O.D.), with the dogs facing away from the sleeves shoulder. Then fit this to the Mainshaft.

The matched-pair inner-race of the *104-357217NJ (NJ207 E C3)* Bearing from the Sandwich Plate now needs to be pressed onto the shaft up against the *RD6-159* Sleeve.

NOTE: When the bearing is pressed home, check all gears have between 0.007"-0.010" (0.18mm-0.25mm) end-float.

Layshaft



Begin by sliding an *HTA-057* Spacer, the 3rd Spline-Gear (4th gear if O.D.), and the *HTA-075* Spacer onto the rear of the Layshaft as shown in the left side of the diagram.

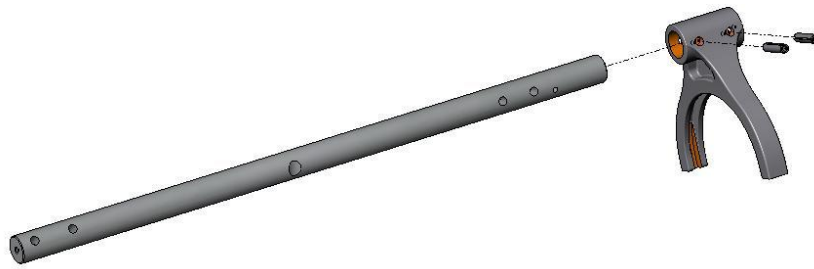
Now press the matched-pair inner-race from the Sandwich Plate bearing *104-357217NJ (NJ207 E C3)* onto the shaft. Check the shoulder side of the bearing race is adjacent to the Spacer (*HTA-075*).

Now assemble the forward part of the shaft by sliding another *HTA-057* Spacer on, followed by the 4th and 5th (3rd and 6th if O.D.) Spline-Gears respectively. Then fit the *HTA-018* spacer, followed by the Drop-Gear.

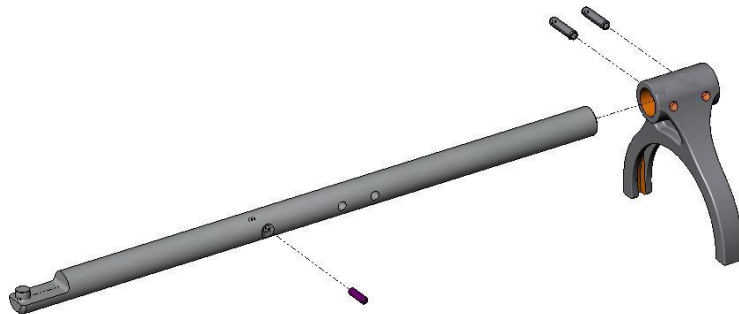
An *H6S-DV-044* **set-up shim** roughly 0.080"-0.085" (2mm-2.15mm) wide should be placed in-between the Drop-Gear and the bearing inner-race. The original shim will suffice if the gearbox is used. The *104-357217NJ (NJ207 E C3)* Bearing Inner-Race is a neat sliding fit.

NOTE: The *HTA-075* Spacer and the *H6S-DV-044* Shim have identical dimensions, except for their thickness. The HTA spacer is fixed at 0.110" (2.794mm), whereas the H6S-DV Shims thickness is varied to adjust shaft end-float.

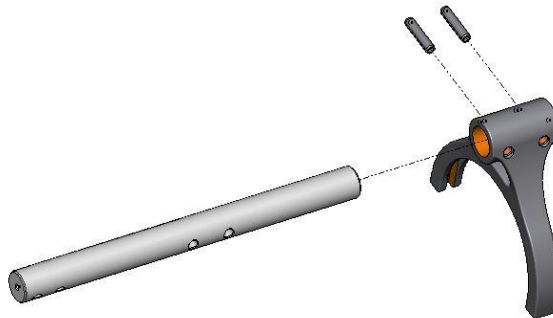
Selector Rods/Forks



Place the 5th/6th Fork (*HTA-025*) on the *RD6-074* Selector Rod as shown.



Place the 3rd/4th Fork (*HTA-025*) on the *RD6-072* Selector Rod as shown, then slide the *RD6-024* Interlock Pin into the small hole with grease.



Place 1st/2nd Fork (*HTA-025*) on *RD6-073* Selector Rod as shown.

Secure the Forks onto the Selector Rods with 5x22mm Roll Pins.

NOTE: Roll pins are a single use item. Use only Holinger supplied Roll Pins.

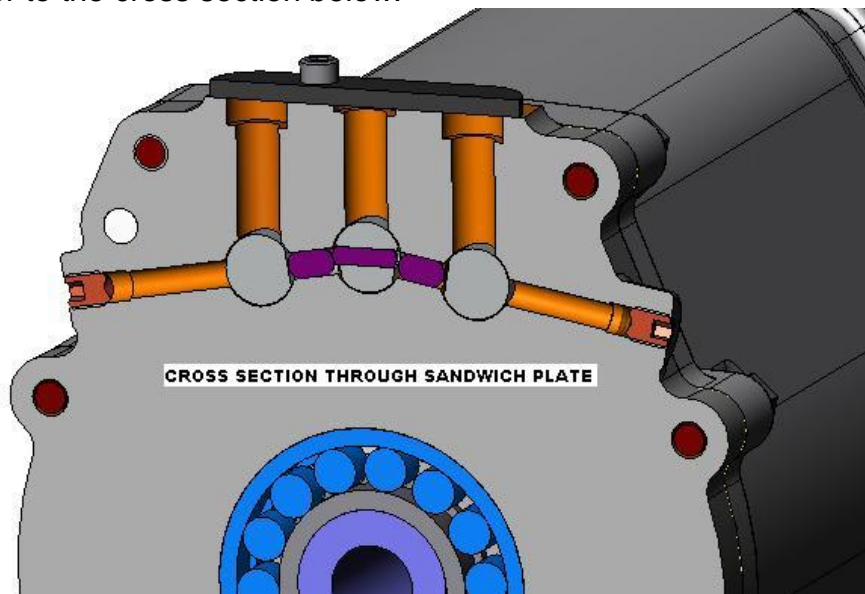
GEARBOX ASSEMBLY

NOTE: Ensure all parts are thoroughly cleaned before commencing any work. All threads that are to be secured with Loctite, should first be sprayed with 7471 Loctite Primer.

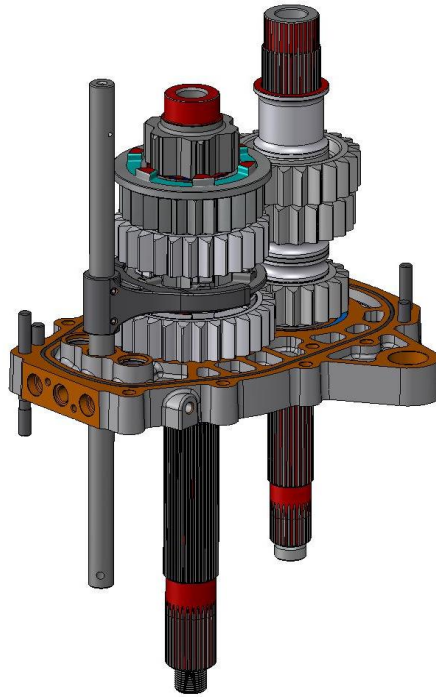
Assembly of the 4th – 6th Gear Train and setting shaft End-Float

Place the Sandwich Plate onto an assembly fixture.

Slide the two RD6-023 Interlock Plungers into the small holes in the Sandwich Plate. Refer to the cross section below:

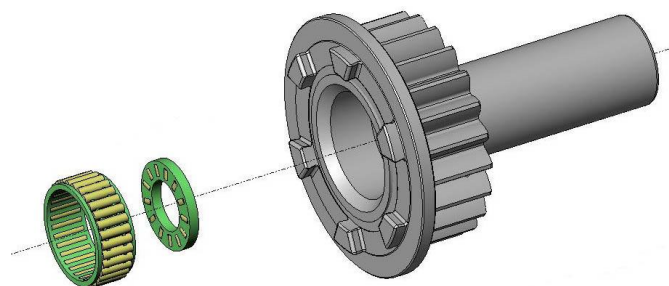


Check the Interlock Pin *RD6-024* is fitted in the 3rd/4th Selector Rod. Then install the Mainshaft, together with the 3rd/4th Selector Fork/Rod and the Layshaft as per the diagram. Move the 3rd/4th Fork and Rod into its neutral position so that the Interlock Plungers allow 5th/6th to be fitted.

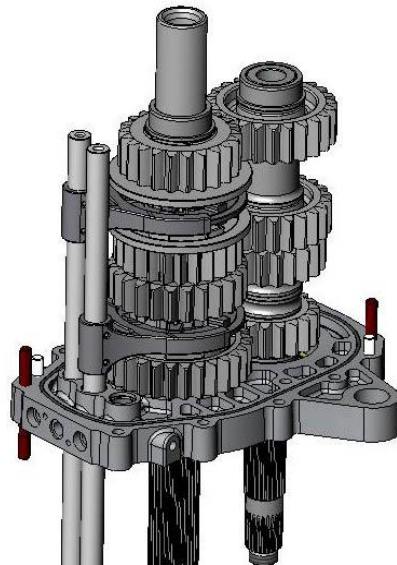


Then fit the 5th/6th Selector Ring and Selector Fork/Rod.

Place a *112-2035* Thrust Bearing and *106-354216* Needle Roller into the Input Shaft as shown, and lubricate generously with gear oil:



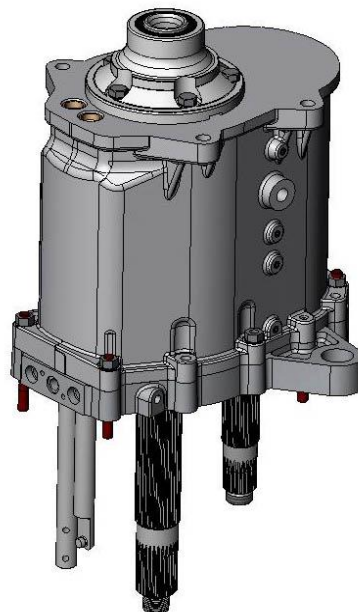
Place the Input Shaft on top of the Mainshaft assembly. Then fit the Drop-Gear to the Layshaft, followed by the *H6S-DV-044* Shim and the layshaft bearing inner-race. According to the following diagram:



Grease the dowels, and place the Main Case over this assembly. Make sure the Selector Rods can travel freely and the Shafts turn easily.

Secure the Main Case with M8 nuts and washers. Clamp the case home in at least six evenly spaced positions.

Install a set-up *H6S-DV-040* Shim, 0.105"-0.110" (2.7mm-2.8mm) thick, on top of the input shaft bearing and then bolt the Front Cover in place.



Use a dial indicator check the *End Float* on the shafts:

NOTE: The set-up shim thickness is intended to always give end float and should be considerably thinner than the final shim.



Grind and fit new shims to set the end float between 0.003"-0.005" (0.075mm-0.13mm) for both the Mainshaft and Layshaft.

Holinger Engineering can provide shims ground to your required thickness.

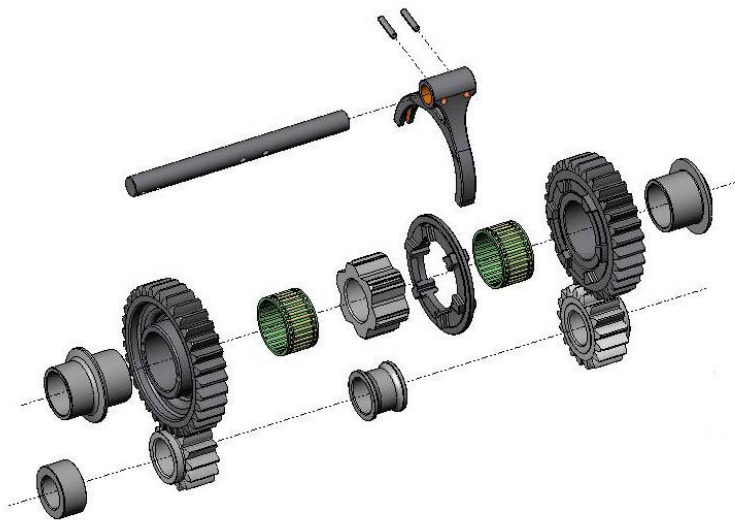
Mainshaft shim: H6S-DV-040

Layshaft Shim: H6S-DV-044

Upon reassembly, apply some sealant to the threads of the M8 bolts of the Front Cover.

Install the GRA-6N-060 Spring Plate on top of the Sandwich Plate, with sealant.

Assembly of the 1st – 2nd Gear Train

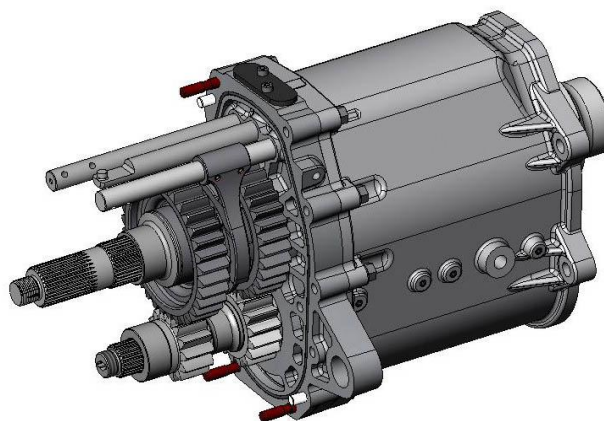


Place 106-424727 Needle Rollers onto the two remaining Bearing Sleeves, *RD6-160* and *RD6-161*. Lubricate with them gear oil and place the 1st Dog-Gear (2nd if O.D.) onto the *RD6-161* Sleeve, and the 2nd Dog-Gear (1st if O.D.) onto the *RD6-160* Sleeve.

Slide the *RD6-160* Sleeve/Gear onto the Mainshaft, to seat against the roller bearing inner race. Then slide the corresponding Spline-Gear onto the Layshaft, so they are in mesh.

Next slide the *HTA-023* Selector Hub onto the Mainshaft, with the 1st/2nd Selector Ring, and Fork/Rod. Then slide the *HTA-017* spacer onto the Layshaft.

Fit the *RD6-161* Sleeve/Gear onto the Mainshaft and the corresponding Spline-Gear into mesh with the Dog-Gear, then the *GRA-6N-010* Inner-Race onto the Layshaft.



TIP: Visually check the gear tooth backlash to be 0.008" (0.2mm), also check the gear end float to be 0.009"-0.012"

Now install the Rear Case, lubricating the dowels with some grease. Secure the case with M8 nuts and wave-washers. Check the Selector Rods can travel freely and the shafts turn easily.

Assembly of the selector mechanism

Slide the Mainshaft Reverse Gear *RD6-131* up against the *RD6-161* Bearing Sleeve, with the leads on the gear teeth facing towards the back of the gearbox.

Fixed Flange Version: Slide the *RD6-037* Spacer up against the Reverse Gear.

Slide the Layshaft Reverse Gear *RD6-132* onto the Layshaft, again with the leads facing toward the rear of the gearbox. Secure this gear with the *HTA-038* Nut.

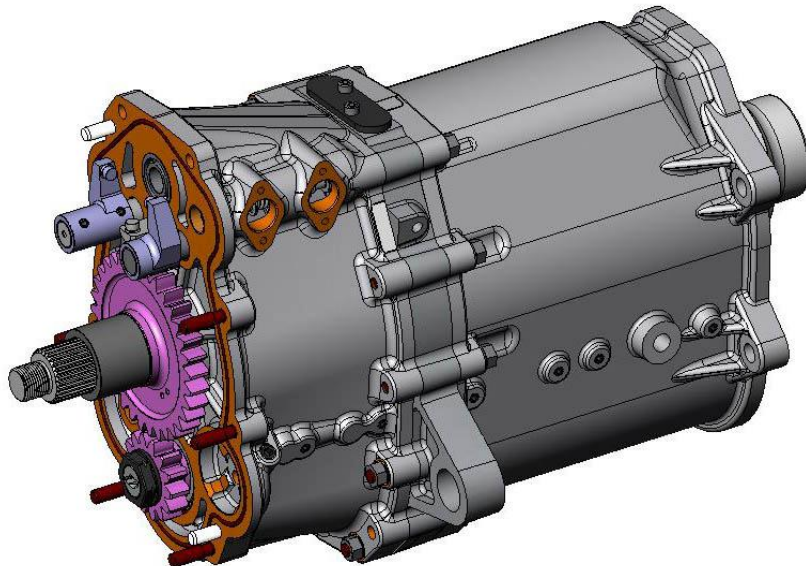
NOTE: The HTA-038 Layshaft Nut is left-hand threaded.

The tightening torque is 80Ftlb (110 Nm). Retain with Loctite 263 (red).

TIP: Select two gears at once to stop the shafts from turning. Fit the RD6-016 Spindle and the RD6-130 Reverse Idler temporarily and also select 4th Gear.

Slip Yoke Version: The Mainshaft Nut H6S-DV-004 can be secured with Loctite 263 (red). Tighten to 80 lbs/ft (110 N/m). *Lock-wire the nut to the reverse gear.* This nut is right-hand threaded.

The 1st/2nd and 5th/6th Cam Followers can now be attached to the Selector Rods with 5x22mm Roll Pins.

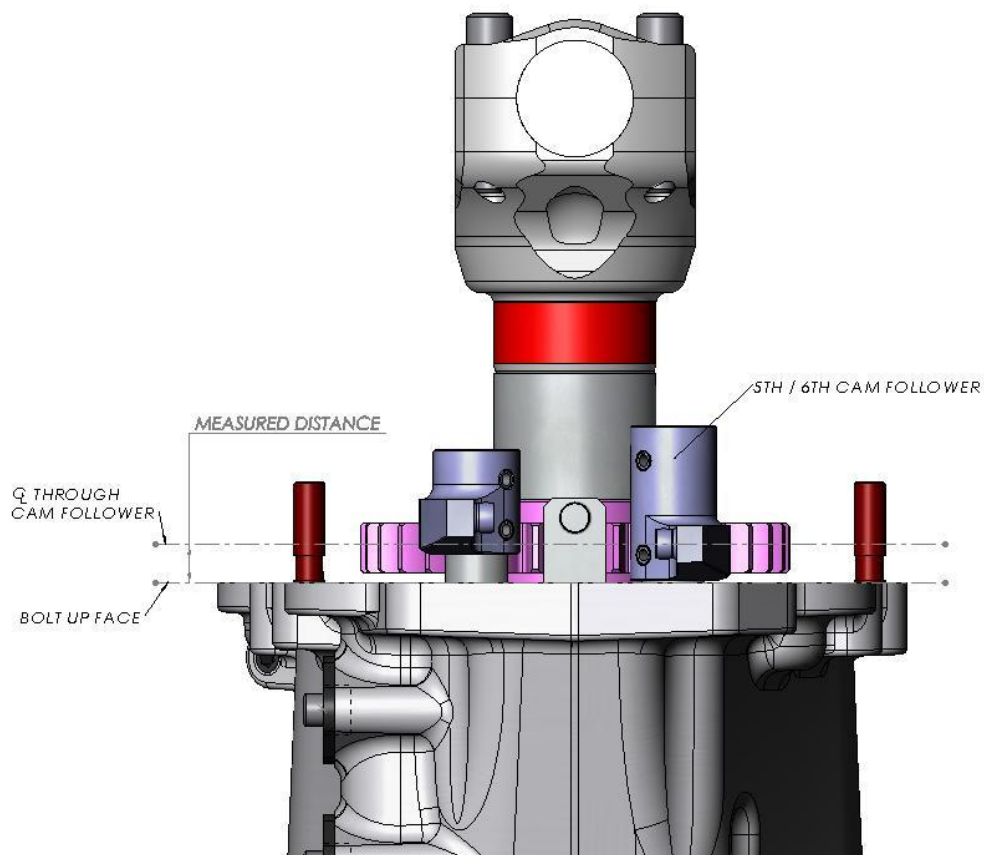


Setting the Camshaft position

If the gearbox is new or you are changing the Camshaft you must set/adjust its position. To calculate the size for the shims, take the following measurements:

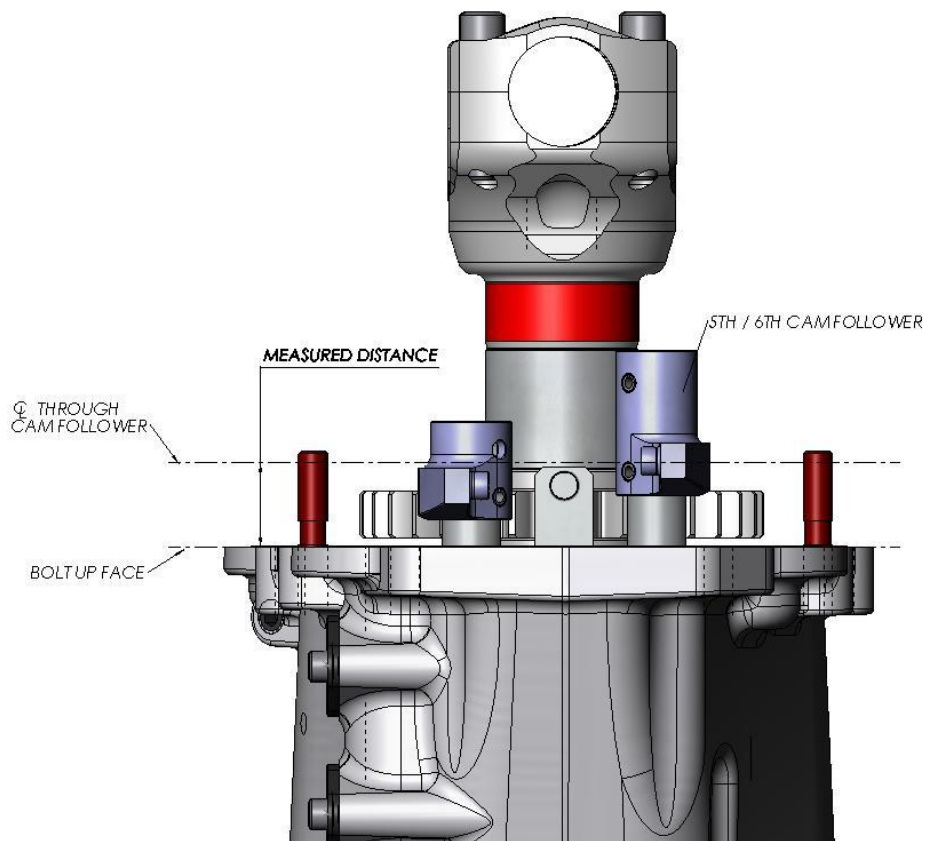
1. Measure the Mean Rod Position (MRP) – The MRP is the overall average position of the three Selector Rods, which is their position when in neutral. Measure this using a CMM, Height Gauge or similar.

Start by measuring the distance between the bolt up face on the Rear Case, and the middle position of one of the Cam Followers in gear. The following diagram illustrates this:



In this diagram the gearbox is engaged in 6th Gear (5th if O.D.). The required measurement is the distance between the centrelines. The rear flange has been installed to make sure the gear train is clamped in the correct position

Then measure the same cam follower in the opposing gear:



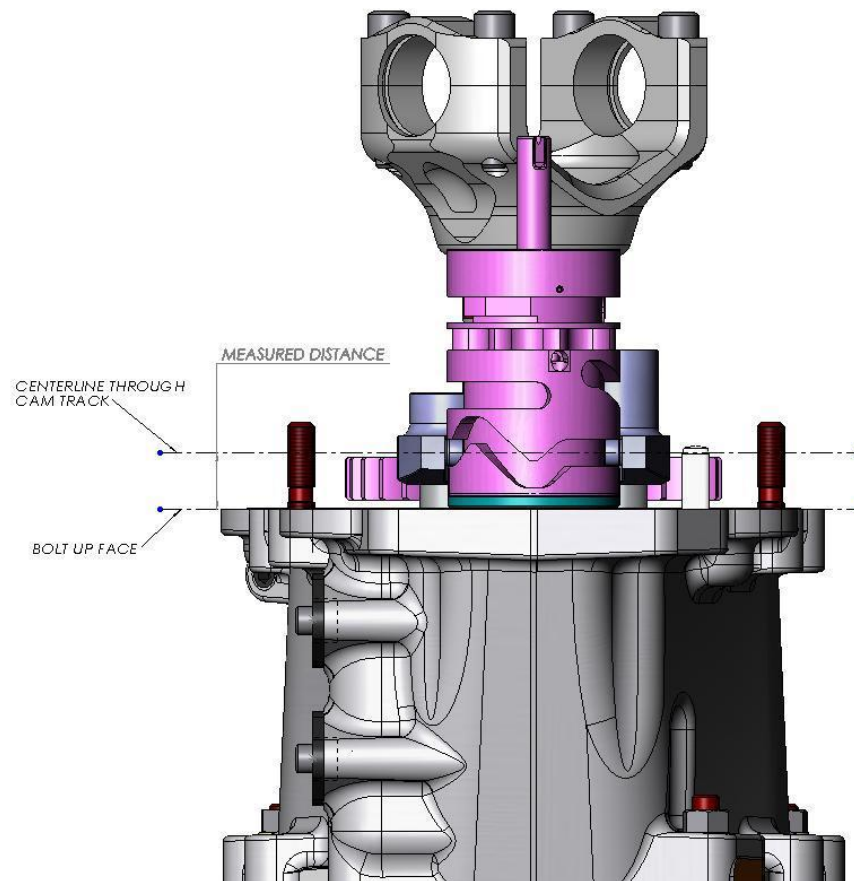
In this diagram 5th Gear is selected (6th if O.D.). The required measurement is again between the centrelines.

Once you have measured the position of the Cam Follower with respect to the bolt up face in both gears, you can calculate the average position for that Cam Follower.

Take these measurements for all three Cam-Followers and find the overall average, which is the Mean Rod Position (MRP).

2. Measure the Cam Track Position (CTP). The CTP is the distance from the bolt up face to the middle of the main selector track in the Camshaft.

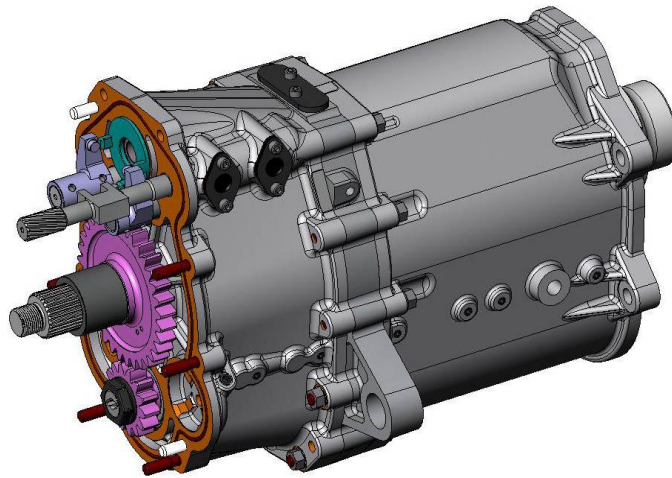
An RD6-070 set-up shim should be in place when taking this measurement.



Measure the distance from the bolt up face to the centre of the cam track, which has been illustrated with the centrelines.

3. By changing the Camshaft Shim, adjust the CTP so that it matches the MRP.

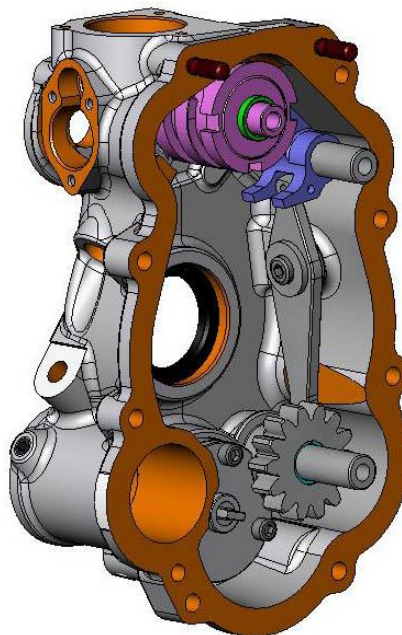
Next install the *RD6-067* Spiral Actuator, *H6S-SEQ-017* Centralizing Stops with sealant and the *RD6-075* Camshaft Blocking Plate behind the Cam-Followers.



Complete the Selector Housing sub-assembly by fitting the Camshaft into the Selector Housing, with the *RD6-016* Spindles, *RD6-063* Reverse Cam-Follower, *RD6-134* Reverse Lever, Pivot, and Washers (*GRA-6N-027, 28, 29*) and the Reverse Idler Gear, *RD6-130*.

NOTE: The reverse lever pivot is not symmetrical, and should have the machined 'dot' facing the interior of the gearbox.

TIP: Use sealant under the *GRA-6N-029* washer and nyloc-nut.

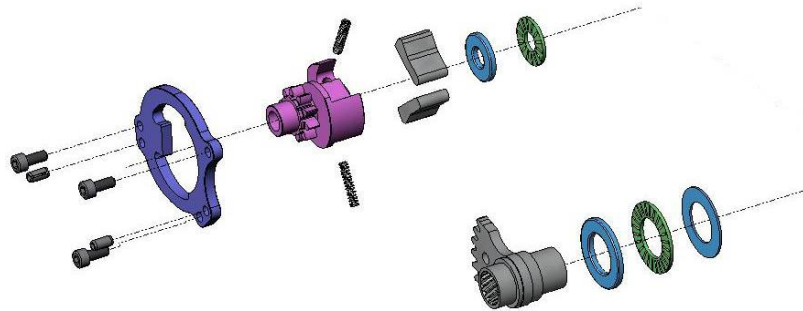


The Selector Housing can now be attached to the rest of the gearbox and secured with M8 Nuts/Washers.

NOTE: Before installing the Selector Housing check the Camshaft is in the neutral position, align the oil pump drive spindle with the slot in the back of the Layshaft and fit the Camshaft Shim with the large chamfer facing the Camshaft.

Now install the ratchet mechanism onto the back of the Selector Housing:

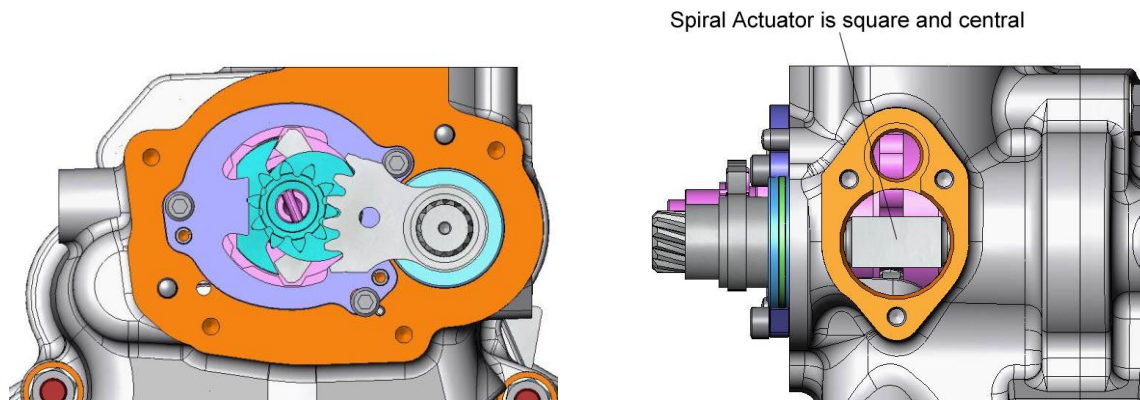
The RD6-066 Stop Plate, H6S-SEQ-031 Pawl Carrier, Z-092 Pawls, Z-093 Springs, Thrust Bearings and Washers and also the H6S-SEQ-004 Gear Change Quadrant, Thrust Bearings and Washers.



Secure the Stop Plate screws with Loctite 263 (red).

TIP: The washer 111-1035 has a large chamfer in the bore on only one side and it must face the shoulder radius on the Quadrant H6S-SEQ-004.

NOTE: The mechanism must be timed:

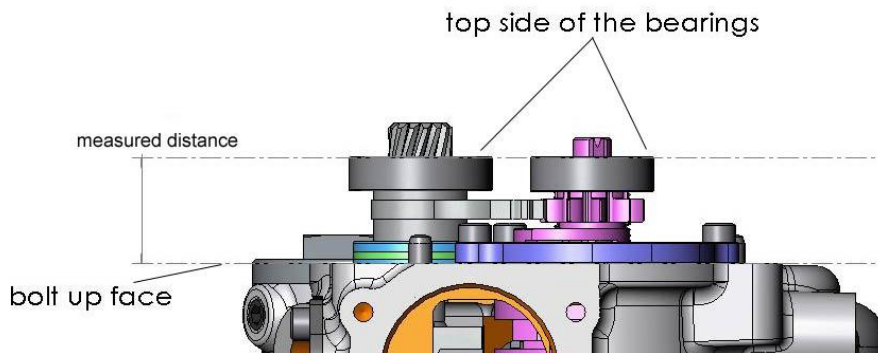


The Spiral Actuator needs to be in the following position, square and central in the middle of the guide block bore.

Now insert the *H6S-SEQ-005* Guide Block, with sealant; *H6S-SEQ-015* Neutral Lock-Out Plunger, and the *H6S-SEQ-026* Plunger Spring (In Remote Shift Versions install only the Guide Block) .



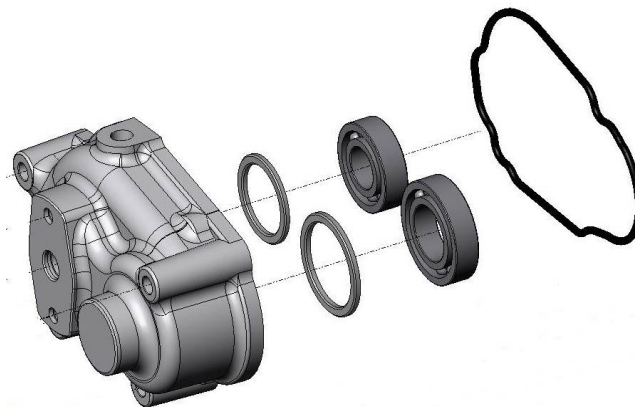
Adjust the shims in the *RD6-078* (*RD6-091* for Remote Shift Versions) Switch Case if parts are changed or if the Camshaft Shim is adjusted:



Measure the distance from the bolt up face to the top side of each bearing. The bores in the switch case have a depth of 1.154" (29.3mm) from the bolt up face. Grind shims to allow 0.002" (0.05mm) end-float on each bearing.

TIP: Warm the switch case to fit / remove the bearings.

NOTE: On Remote-Shift versions, it is also necessary to install a 133-131903 seal into the rear of the case behind the Spiral Actuator bearing.

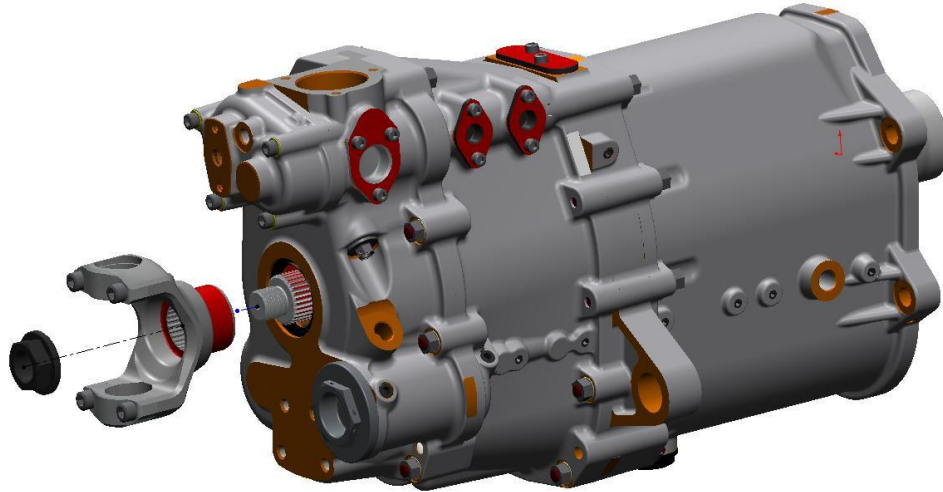


Place the o-ring in its groove and fit the Switch Case to the gearbox. Secure with M6 cap screws.

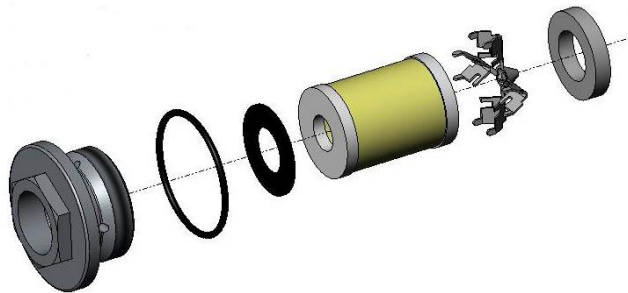
Fixed Flange Version:

The rear flange can now be installed and the nut tightened to 150 lbs-ft (200 N-m) securing with Loctite 263 (red).

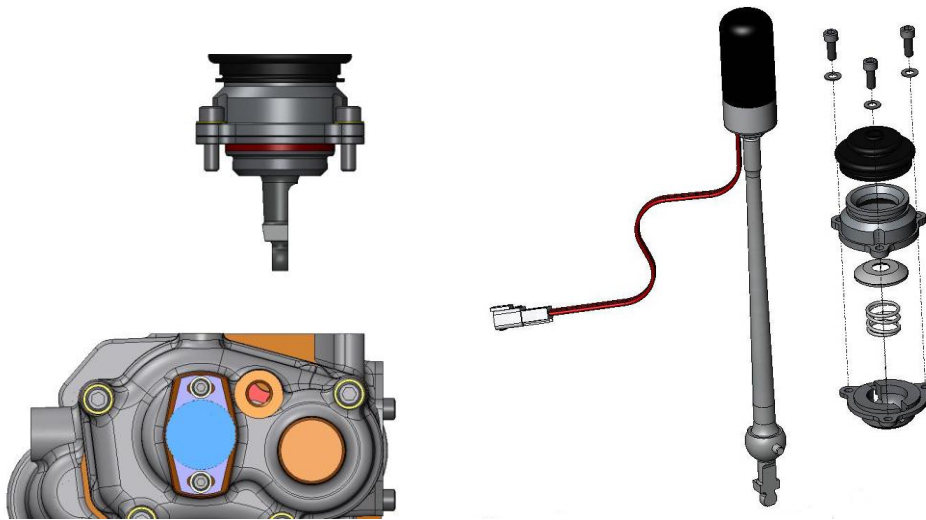
TIP: Use a brace bolted to the flange by the four 5/16UNF bolts to restrain the shaft.



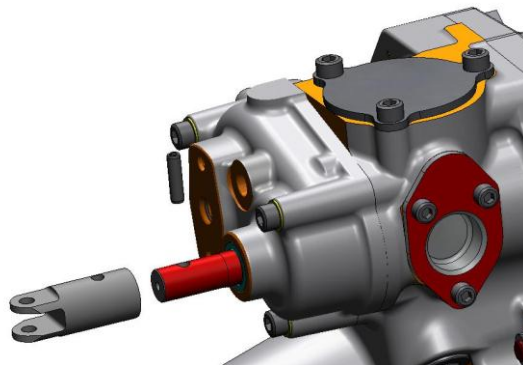
Place the Oil Filter assembly into the rear of the selector housing. Tighten the cap to 45 lbs-ft (60 N-m).



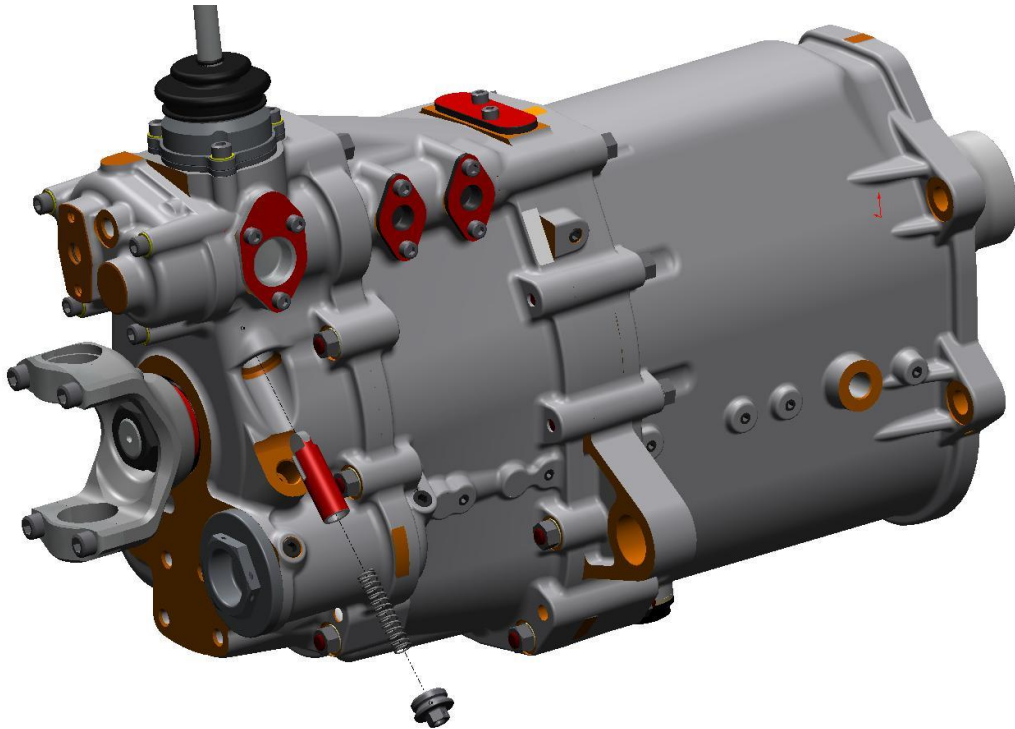
Fit the Gear Lever, Cup, Cap, Washer (*H6S-013, 014, 030/RD6-082*), Boot and Spring (*GRA-083, 098*). The angled face of the gearlever must face the camshaft.



NOTE: If the gearbox is a remote-shift version, ignore the last step and install the *H6S-142* Selector Housing Cover and secure with *M6x12mm* Cap Screws and sealant. Then install the Remote Clevis *H6S-SEQR-017* securing with a 5x19mm Roll Pin.

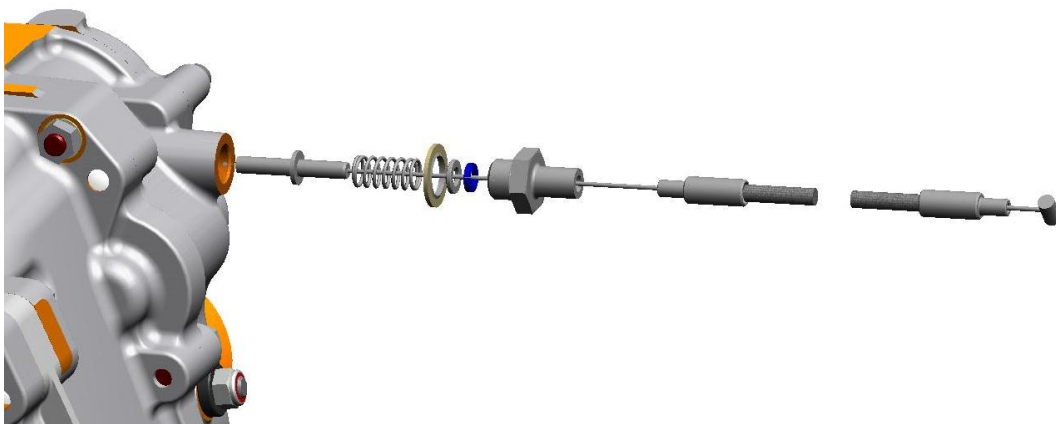


The Detent Plunger (*H6S-SEQ-014*), Detent Spring (*H6S-027*) and Plug (*RD6-122*) must now be installed and secured using Loctite 243 (blue). Tighten to 15FtLb (20Nm).



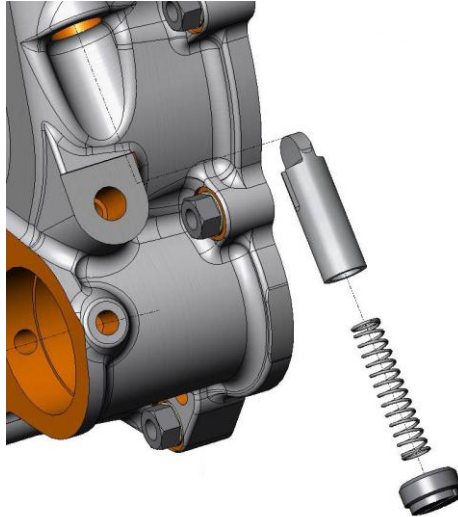
Shift back and forward between all the gears (to go from 1st to Neutral, push the Gear Lever all the way to the left and push forward), including reverse. Check the Gear Lever centralises properly and the gears engage in the correct sequence: R-N-1-2-3-4-5-6.

NOTE: On Remote Shift Versions the Reverse Lockout Plunger (*HDB-029*) must be installed with its associated components.



NOTE FOR GEARBOXES MANUFACTURED BEFORE 2009:

On older gearboxes a *GRA-061* Plug is used in place of the *RD6-122*, and this must be set to the appropriate depth.



Do this by first inserting the plunger and spring, and then wind the plug into a depth that still exposes several threads. Use Loctite 243 (blue) on the plug.

Pull the gear lever backwards twice to engage 2nd Gear, and then forward once to engage 1st again (you may need to turn the input shaft to do this).

Shift between 1st and 2nd Gear, by pushing forward once and then back once, repeatedly. You may need to turn the input shaft a small amount initially, but should be able to simply go backwards and forwards once the dogs are lined up.

Screw the *GRA-061* plug deeper into the selector housing until you cannot change gears smoothly. Find the point where shifting is still smooth and un-wind the plug one full turn. The plunger depth is now set.

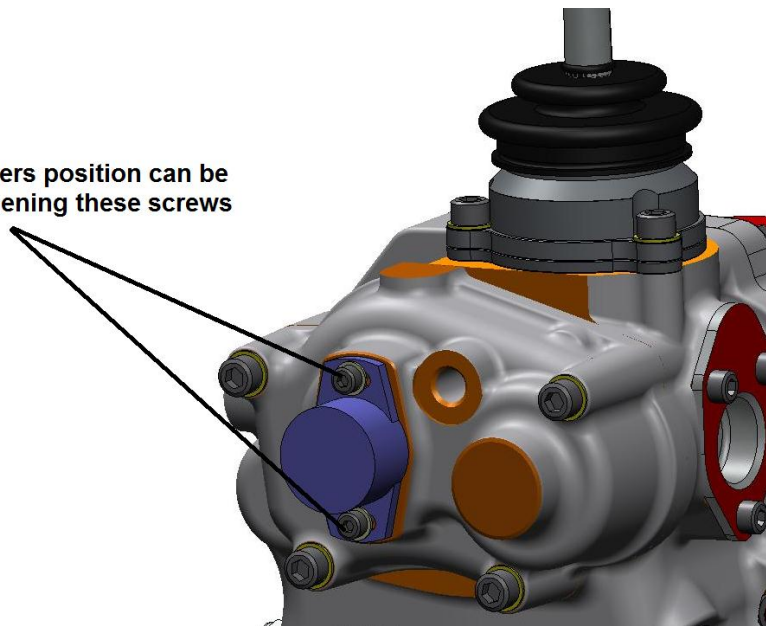
Gear Position Potentiometer Installation/Setup

Finally place the Gearbox in 2nd or 3rd Gear and install the *PCS-050* Gear Position Potentiometer into the back of the switch case.

NOTE: Be sure to insert the sealing o-ring (132-092.0) first and roughly align the dot on the potentiometers spindle with the red wire in its body.

Plug in the dash mounted gear indicator, supply 12 Volts and shift through all the gears. If the display reads incorrectly, it will require adjustment by rotating the potentiometer body on the gearbox.

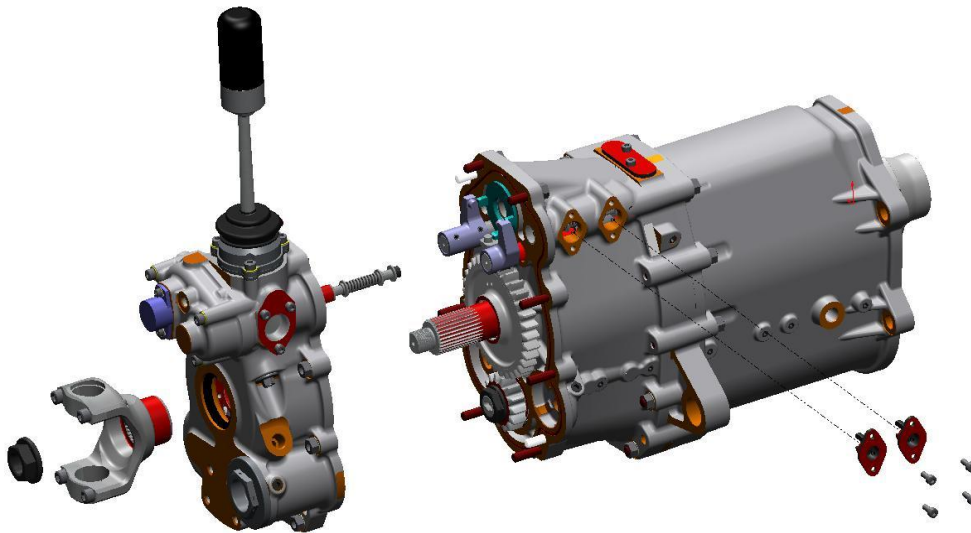
The potentiometers position can be adjusted by loosening these screws



GEARBOX DISASSEMBLY

The RD6-S can be dismantled as a reversal of the assembly process.

For rapid disassembly, the selector mechanism can be removed as a unit and later disassembled independently. See below:



NOTE: Select neutral before starting any of the below procedures. This aligns the cam loading slots with the Cam Followers.

Start by removing the Mainshaft Nut and Flange OR Slip Yoke if fitted. Then remove the two Spiral Actuator Centralising Stops (*H6S-SEQ-017*) on the right side. Remove the M8 Nuts/Washers and slide the housing off separating it from the Rear Case.

Remove the Blocking Plate (*RD6-075*) from behind the Cam Followers.

TIP: Locate the Camshaft Shim, as it could remain in either sub-assembly.

Remove the Layshaft Nut (*HTA-038*).

NOTE: The black layshaft nut *HTA-038* is left-hand threaded.

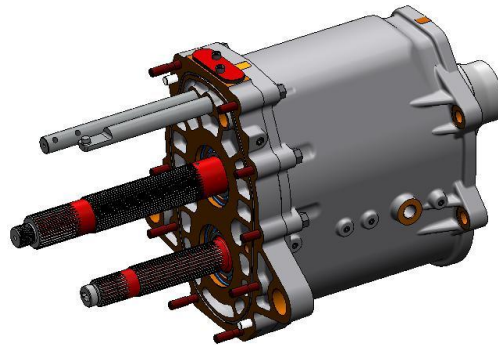
TIP: To prevent the shafts from turning, use the Reverse Idler and Spindle from the selector housing subassembly. Engage Reverse and a forward gear together.

On Slip Yoke versions the Mainshaft Nut adjacent to Reverse Gear should now be removed. It is right-hand threaded.

Slide the Reverse Gears and Spacer (*H6S-DV-011*, *HTA-036*, *RD6-037-fixed flange only*) off their respective shafts, and remove the Cam Followers (*RD6-064*, *065*) from the Selector Rods.

Then separate the Rear Case from the Sandwich Plate by removing the M8 nuts/washers, which will expose the 1st and 2nd gear train.

1st and 2nd Gears along with their respective Sleeves, Spacer, Hub, Fork and Selector Ring will slide off the shafts by hand.



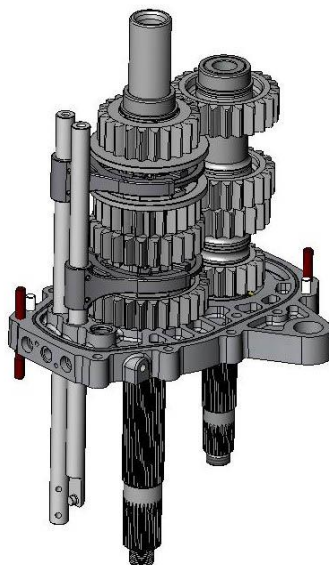
Next remove the Front Cover, which is held on by five M8 bolts.

Locate the End-Float Shim (*H6S-DV-040*) from in front of the input bearing.

Remove the remaining M8 nuts at the Sandwich Plate and remove the Main Case.

Once the 4th-6th gear train is exposed it can be removed from the Sandwich Plate.

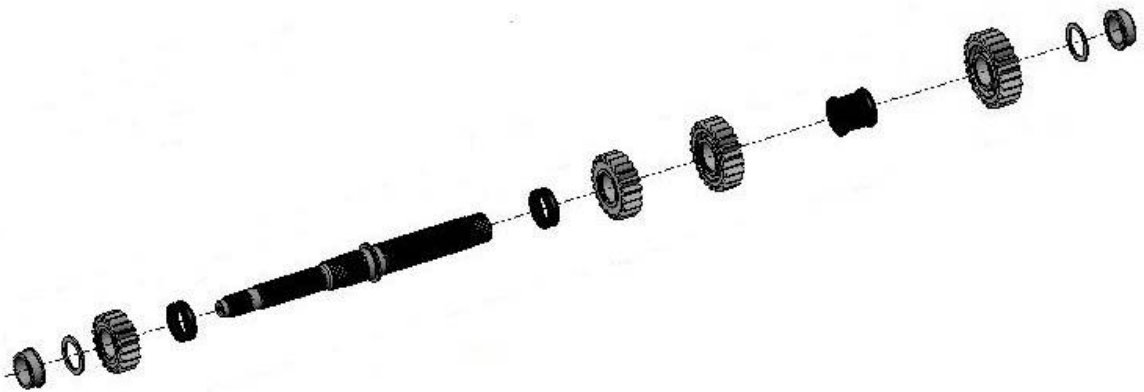
NOTE: The roller bearing inner races are not interchangeable with one another.



Layshaft Subassembly:

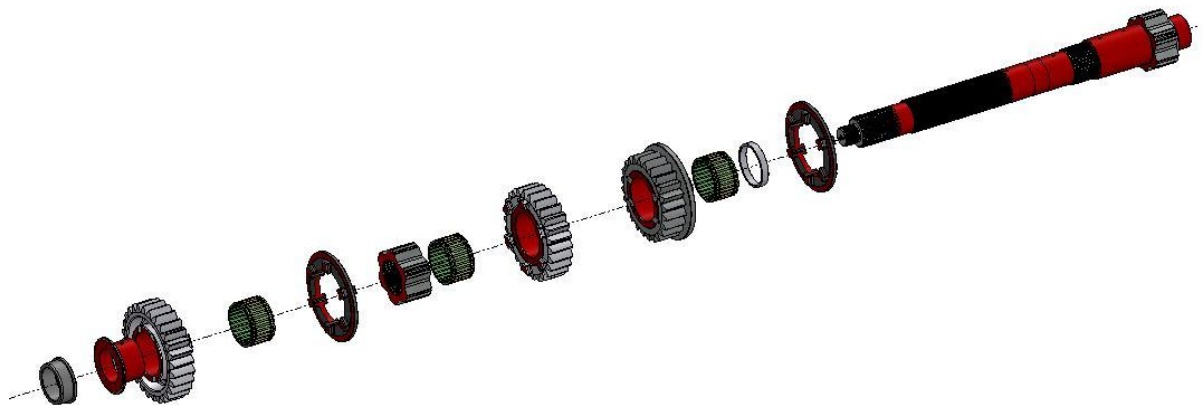
The forward section of the layshaft can be disassembled, by sliding the Bearing Race, Gears and Spacers off by hand (104-357217NJ (NJ207 E C3), HTA-012, HTA-013, HTA-018 and HTA-057).

The bearing inner-race from the middle of shaft should be removed with a press. Allowing the removal of 3rd Gear (4th if O.D.) and two spacers (HTA-013, HTA-075, HTA-057).



Mainshaft Subassembly:

To dismantle the Mainshaft, the 104-357217NJ (NJ207 E C3) inner-race must be removed. It is safe to use a press, resting against 3rd Gear (4th if overdrive) to press the shaft through the bearing. You can then remove the Gears, Sleeve, Hub, and Selector Ring (H6S-DV-008's, HTA-019, 022, RD6-069).

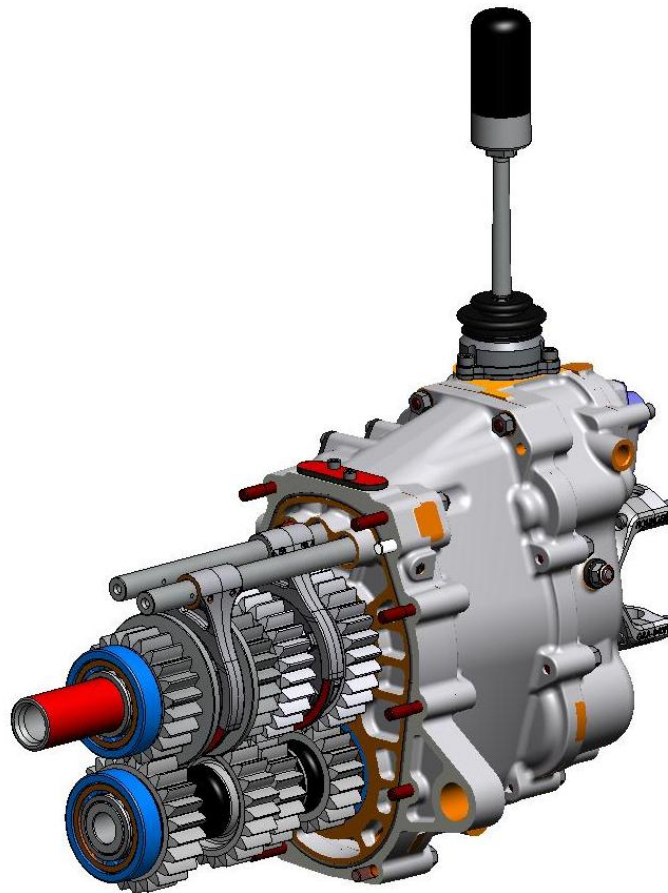


Thoroughly clean and inspect all parts.

4th – 6th Partial Disassembly

If you wish to only inspect the front gear train or change the Drop-Gears, you can remove the Main Case before any other part of the gearbox. The M8 nuts and washers holding the Rear Case/Sandwich Plate/Main Case together need to be removed, then the Main Case can be tapped off to expose the forward gear train.

NOTE: The two studs located next to the locating dowels are threaded into the sandwich plate. Here you should remove the nuts/washers on the main case side only.



MAINSHAFT / LAYSHAFT BEARING END-FLOAT

0.003"-0.005" (0.08mm-0.12mm)

TORQUE SETTINGS

Mainshaft Nut (Fixed Flange)	150 lbs-ft (205 N-m)
Mainshaft Nut (Slip Yoke)	80 lbs-ft (110 N-m)
Layshaft Nut (LH Thread)	80 lbs-ft (110 N-m)
Drain and Filler plugs	60 lbs-ft (80 N-m)
Filter Cap	45 lbs-ft (60 N-m)
Front Cover bolts/M8 Nuts	20 lbs-ft (27 N-m)
RD6-122 Detent Plunger Cap	15 lbs-ft (20 N-m)
M6 capscrews	12 lbs-ft (16 N-m)
M5 capscrews	7 lbs-ft (9.5 N-m)

LUBRICATION

The extreme pressure additives in Limited Slip Differential oil have proven to aid gear life.

We recommend, fully synthetic LSD oil, with an API GL 5 or higher rating and heavier viscosity range, typically 85w-140. 75w-90 is also acceptable.

NOTE: Some Shockproof oils are not suitable for use in gearboxes with an oil pump, paper element filter, galleries, and spray bar etc. such as the RD6.

The Holinger RD6 requires approximately 1.8 litres of gear oil, not including the oil lines and cooler:- *The Oil Filler Plug located on the left hand side of the gearbox can also be used as an oil level check-hole. The oil level may change after running due to the filter/galleries filling up and should be re-checked to ensure it is correct.*

The gear oil and filter should be inspected regularly to quickly evaluate the gearbox condition. If oil condition looks overly metallic in appearance, further inspection of the gearbox should be conducted.