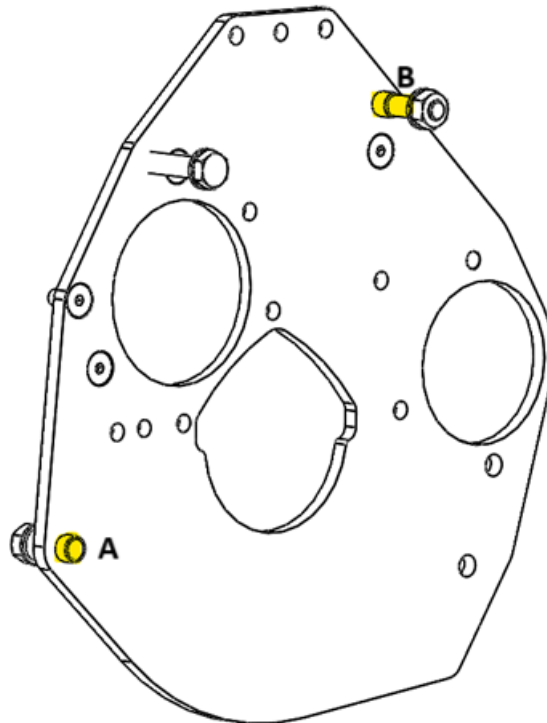


# A-SERIES TO G13B GEARBOX

Read thoroughly prior to assembly. This document provides a guide to prepare a Midget or Sprite A-Series engine and Suzuki G13B gearbox for installation using a Barratt Engineering conversion kit.

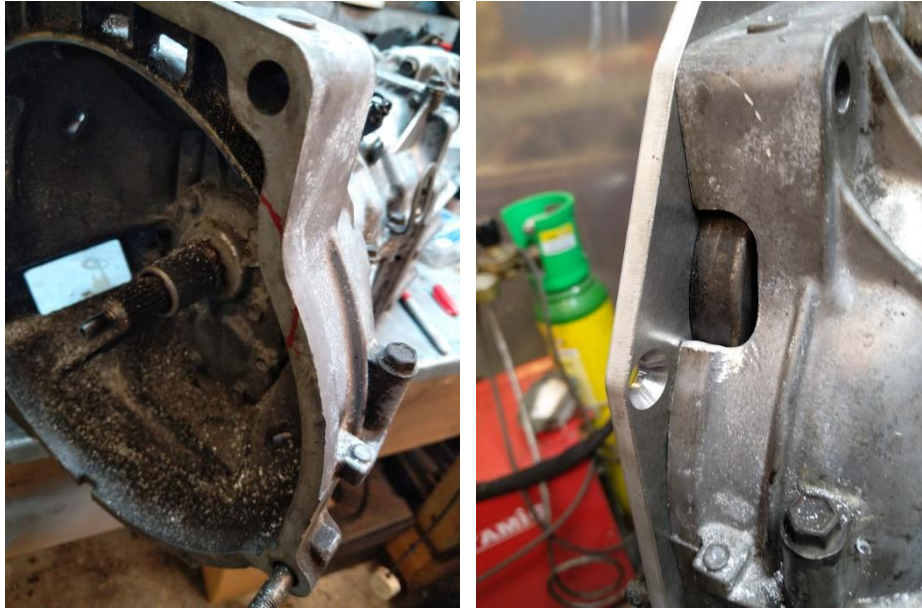
## GEARBOX PREPARATION

1. Trial fit prop shaft in tail housing and ensure it slides and rotates freely.
2. Trial fit spigot bearing on input shaft and check it spins freely.
3. Fit the engine backplate to the gearbox, locating on the ring dowel (A) and stud (B)



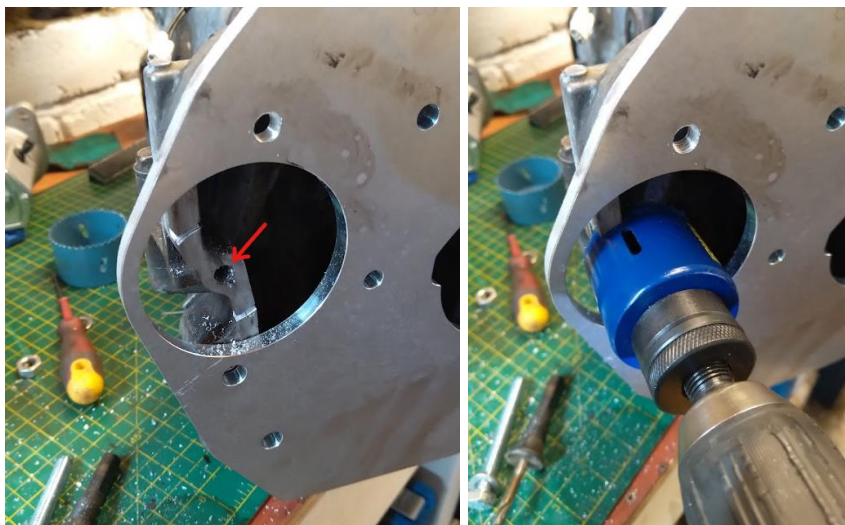
**FIGURE 1**

4. Mark the position of the oil pump cover plate on the bellhousing of the gearbox and remove material to make clearance.



**FIGURE 2: OIL PUMP COVER CLEARANCE**

5. Pick the starter motor and pull the pinion gear out to its full extension. Lock the pinion gear at full extension and note the distance from the mounting face.



**FIGURE 3: STARTER MOTOR CLEARANCE**

6. Using the M8 hole in the bellhousing as a guide, clearance for the starter motor and pinion can be made using hole saws. Ensure that the pinion is free to spin when fully extended

**In all areas where material has been removed it is advised that sharp edges and corners are avoided to reduce the risk of cracking and stress concentration in the casting. Corners are best formed by drilling with a 10mm diameter bit or larger.**

7. Fit the R7ME Rear Mount Kit, following **BETD0001**.
8. Fit the R7ME Gear Shift Mechanism, following **BETD0001**.
9. Fit the new clutch release bearing.

10. Replace or modify the reversing light switch harness to suit the vehicle, as required.



*FIGURE 4: REVERSE LIGHT SWITCH*

## ENGINE PREPARATION

1. Remove the engine and gearbox from the car.
2. Split the engine from the gearbox.
3. Remove the clutch and flywheel assembly.
4. Remove the backplate and oil pump cover.
5. Clean the back of the engine and remove any traces of gasket or sealant.
6. Fit the new engine backplate with backplate gasket (AEG554) and original oil pump cover
  - i. If an aftermarket oil seal conversion has been fitted special care must be taken to ensure it is not interfering with the backplate. If necessary refer to the manufactures' instructions.
7. Secure using 4x 5/16-UNFX3/4" countersunk screws and original fasteners.
8. Trial fit the flywheel onto the crankshaft
  - i. To avoid clearance issues with the clutch the two crankshaft locating dowels must not protrude above the flywheel face.
  - ii. When fitting to a 1275cc engine one of the crankshaft locating dowels will require grinding to allow the countersunk mounting screw to seat home in the flywheel.



**FIGURE 5: GRIND DOWEL FOR CLEARANCE**

- iii. Ensure the flywheel is properly seating against the end of the crankshaft.
9. Fit the crankshaft bolts and torque to 55Nm using a 17/32" tool.
10. Fit the clutch assembly using a suitable alignment tool.
  - i. The clutch disc must be assembled with the raised centre section facing towards the gearbox.

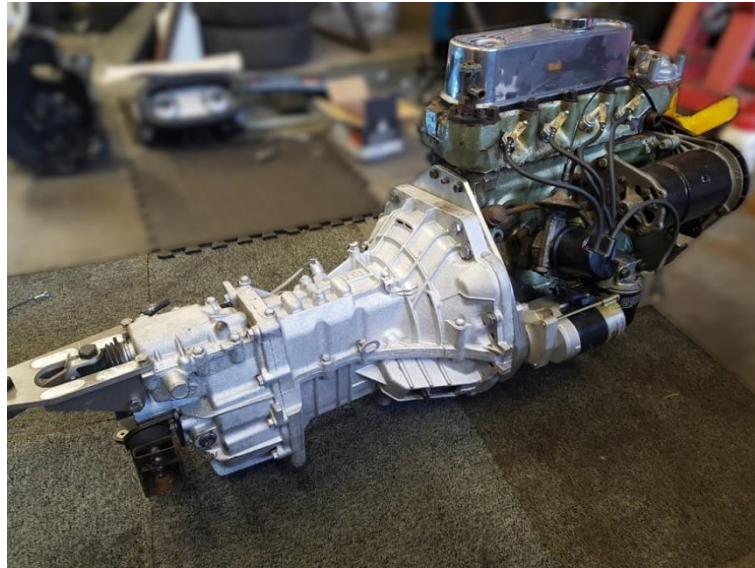
- ii. Ensure the clutch cover is properly located on the 3x locating dowel pins.
- iii. Torque the 6x M8X16 bolts (00238) to 30Nm.



*FIGURE 6: COMPLETE CLUTCH ASSEMBLY*

## ASSEMBLY

1. Lift the gearbox and mate with the engine, keeping the input shaft in line with the crankshaft. It may be necessary to rotate the 'box slightly to align the input shaft splines with the clutch disc.
2. Bolt the gearbox to the back plate and fit the starter motor. If the starter motor fouls the bodywork it can be spaced forward using the plate supplied with the kit



*FIGURE 7: COMPLETE ASSEMBLY*

## PRE-INSTALLATION CHECKS

Before installing the engine and gearbox back into the vehicle it is advised that the following checks are made:

- All gears can be selected
- Clutch fork has free play and the release bearing is not binding
- Clutch cable fits in the release arm
- Engine and gearbox turn smoothly
- Starter motor is able to operate without the pinion catching on the bellhousing
- The fill and drain plugs in the gearbox are not seized
- All instructions and checked
- All fasteners are spanner-checked for tightness and fit
- Gear stick has been removed
- The transmission tunnel is free from obstructions
- Brake and fuel lines are properly routed and not positioned such that they may interfere with or may be damaged by the gearbox on assembly

## INSTALLATION

1. Installation into the car is no different to refitting a standard engine and gearbox.
2. We recommend fitting the propshaft prior to installing the engine and gearbox, but not bolting it to the differential. This way the yoke can be installed into the gearbox before the assembly is fully home and access becomes harder.
3. Only with the gearbox installed and the propshaft fitted can the gearbox be filled with oil.  
Refer to **BETD0006** for gearbox data and lubricant requirements  
Refer to **BETD0015** for a drill template for the oil fill

## ADDITIONAL INSTRUCTIONS AND DOCUMENTATION

- **BETD0001** R7ME FITTING KIT
- **BETD0004** Clutch Cable Conversion, Early
- **BETD0005** Clutch Cable Conversion, Late
- **BETD0006** Suzuki R7ME Reference Data
- **BETD0013** Digital Speedometer Installation
- **BETD0015** Oil fill template