

**mazda**



Vitesse

**MGB Gearbox Conversion Kit**

Fitting Instructions

## KIT CONTENTS

- Mazda MX-5 5 Speed Transmission:
  - Vitesse Gearbox Case
  - Vitesse Bellhousing
  - Vitesse Machined Front Plate
  - Modified rear case to accept Mazda mechanical Speedo Drive
- Mazda MX-5 OE Clutch Friction Plate
- Mazda MX-5 OE Shift Lever
- Concentric Slave Cylinder Assembly and associated pipework
- Prop Shaft
- Spigot Bush with OE needle roller bearing assembly
- Speedo Drive Cable
- Gearbox Rear Mount Bracket Assembly and Isolator
- All required fixings- see next page



## FIXINGS

- The gearbox, bellhousing, concentric slave cylinder assembly and speedo drive are all pre-assembled, ensuring that the installation to your vehicle is as straightforward as possible.
- The following fixings are all that is required to fit the Vitesse kit to your vehicle:
  1. 4X M8x25mm HEX HEAD FLANGED BOLTS
  2. 13X M8 FLANGED NUTS
  3. 7X M8X75mm HEX HEAD FLANGED BOLTS
  4. 3X M6X12mm DOMED CAP SCREWS
  5. 1X BANJO BOLT
  6. 2X COPPER WASHERS





# Vitesse



## VEHICLE AND WORKSHOP PREPARATION

- Ensure you have a clean, safe working environment with enough room around your vehicle.
- We strongly recommend the use of a vehicle lift and an engine hoist with a ratchet winch, so the angle of inclination can be adjusted when removing / refitting the engine and gearbox assembly.
- Use a torque wrench to ensure all fixings are torqued correctly.



# Vitesse



## DISASSEMBLY

1. Remove bonnet to aid engine bay access.
2. Drain coolant.
3. Remove alternator.
4. Disconnect choke and throttle cable.
5. Disconnect fuel line from carbs.
6. Loosen all engine mount bolts.
7. Disconnect heater matrix feed from engine block.

## LIFT VEHICLE

8. Remove exhaust system.
9. Remove prop shaft.
10. Remove slave cylinder and speedo cable from gearbox.
11. Disconnect starter motor harness.
12. Remove gearbox isolator bolts from crossmember. Leave crossmember fitted to chassis for now to support gearbox.

## LOWER VEHICLE

13. Remove gear lever and gaiter.
14. Remove starter motor bolts.

15. Remove distributor cap to allow for more clearance.
16. Fit engine hoist to lifting points on head.
17. Lift engine and gearbox, and remove starter motor when possible.
18. Lift engine and gearbox further and remove from vehicle.
19. Drain clutch lines and remove from master cylinder.
20. Remove gearbox rear bracket / crossmember from vehicle. Your conversion kit does not use this mounting point so the four crossmember mounting bolts can be refitted to retain the plates within the chassis rail.
21. Clean up rear crossmember in preparation for gearbox installation.

## ENGINE AND GEARBOX

1. Remove gearbox from engine.
2. Remove clutch cover and clutch disc from flywheel.
3. Remove spigot bush from crank using a slide hammer, or by carefully chiselling it out and removing all swarf.
4. Clean up engine back plate in preparation for gearbox refit.

It is highly recommended that the flywheel and clutch cover are inspected at this point, and a new (or re-ground) flywheel and new clutch cover sourced and fitted if necessary.



## ASSEMBLY

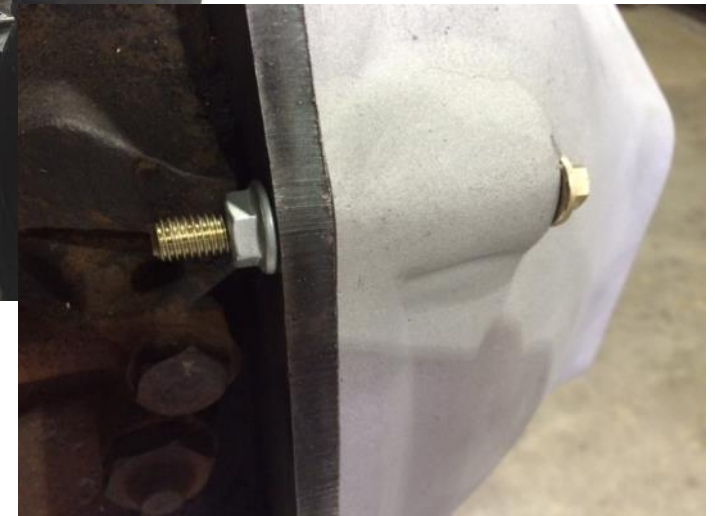
### ENGINE AND GEARBOX

The transmission is delivered fully assembled, with the concentric slave cylinder assembly, speedo drive and rear bracket and isolator assembly fitted and ready to be installed to the engine.

1. Fit Spigot Bush assembly in to crank with mallet. Knurled section should be a tight fit in to the crank.
2. Assemble the clutch cover and new friction plate to flywheel, preferably using a Mazda clutch alignment tool to ensure correct positioning.
3. Fit gearbox to engine using:
  - 7x M8x75mm HEX HEAD FLANGED BOLTS
  - 7x M8 FLANGED NUTS

This is a two-person job. Fit the fixings as shown, with the flanged nuts on the engine side.

Fit and hand-tighten the top-right and bottom-left nuts & bolts first to ensure alignment of the rest of the fixings (these are the locators), then fit remaining fixings and torque all to 25lb/ft.



## ASSEMBLY

### ENGINE AND GEARBOX

4. Lift engine and gearbox assembly in to vehicle. Ensure rear gearbox bracket is lifted over rear body crossmember.
5. Loosely fit one bolt and nut through each engine mount point to ensure it is safe. Then lift gearbox up to allow for rear mount top plate to slide under gearbox rear mount and studs can be passed through isolator holes. Use the following to secure mount plate to isolator:
  - 2x M8 FLANGED NUTS- Torque to 25lb/ft.
6. Fit Prop Shaft slip yoke in to gearbox using a little gearbox oil to lubricate yoke and bush. Fit prop shaft flange to differential, replacing fixings if originals are in poor condition.
7. Due to MGB tunnel variations, we have allowed for some float on the rear mounting. There should be 5-8mm clearance between the prop shaft front knuckle and the transmission tunnel wall. Ensure this measurement is taken at the closest point, and then secure position by fitting the lower cup bracket to crossmember. This then allows sufficient clearance for the gear lever to pass through the standard aperture.





## ASSEMBLY

### ENGINE AND GEARBOX

8. Fit rear mount fixings in rotation:
  - 4x M8x25mm HEX HEAD FLANGED BOLTS at 30lb/ft
  - 4x M8 FLANGED NUTS
9. Fit shift lever from inside vehicle using the fixings below. Ensure collar is aligned to recess in shift joint as shown, and points forwards. Ensure all gears can be selected and there is no clash to tunnel aperture. If there is a clash, the rear mount needs to be moved across, maintaining some prop clearance to the tunnel wall.
  - 3x M6x12mm DOMED CAP SCREWS at 10lb/ft
10. Remove engine mount bolts and lift engine to allow for starter motor refit. Lower engine back on to mounts and fit all mount fixings.
11. Refit alternator.
12. Refit oil cooler pipes and front mounting plate.
13. Refit coolant pipes
14. Refit fuel line, throttle cable and choke.





## ASSEMBLY

### ENGINE AND GEARBOX

15. Refit radiator.
16. Remove access hatch behind clutch master cylinder and remove clutch pipe.
17. Fit new clutch pipe to master cylinder with supplied new banjo bolt and copper washers. Use supplied cable ties to retain pipe and keep clear of bonnet hinge.
18. Fill master cylinder with DOT4 brake/ clutch fluid.

### 19. CLUTCH BLEEDING

- Use an 8mm spanner to undo the bleed pipe  $\frac{1}{4}$  of a turn.
- Depress the clutch pedal fully.
- Tighten bleed pipe
- Release clutch pedal

Repeat until resistance is felt through the clutch pedal.

This may take a number of cycles and you must keep an eye on the clutch fluid level in the master cylinder throughout the process to ensure air is not pulled through the system.



## ASSEMBLY

### ENGINE AND GEARBOX

15. Fit speedo cable to speedo drive on gearbox and thread through the bulkhead to the speedometer. The cable is long enough for you to ensure as smooth a path as possible. Use the grommet from the old cable to protect the new one as it passes through the bulkhead.
16. Fit gaiter and surround to shift lever.
17. Fit shift knob to shift lever.
18. Test drive vehicle and enjoy!

### NOTE:

The speedometer will need to be re-calibrated to suit the new gearbox. We recommend Speedy Cables ([www.speedycables.com](http://www.speedycables.com)) for this work.

