

Borg Warner DG 250M Rebuild

When I started the restoration of my 1955 Commander Coupe it was a driver, the trans worked normally apart from a few minor leaks. After rebuilding the engine and re-finishing the chassis, replacing brake/fuel lines etc, the plan was to re-mount the body and to continue.

With everything freshly painted I kept seeing the small deposits of oil from the trans on the workshop floor and just could not bring myself to keep going without sorting the leaks.

After pulling the trans from the bell housing I stripped and cleaned everything which was made easier as I had previously cleaned and re-painted the case.



Everything cleaned and loosely re-assembled in their main groups awaiting the gasket kit and bearings.

Main component groups clockwise from top left: Rear Oil Pump, Speedo Gear Housing, Low and Forward Servo, Reverse Servo, Valve Block, Extension Case, Main Case, Front Pump, Mainshaft (centre).



Old seals and gaskets
rings and O rings



New seals, gaskets, oil seal

The following pictures and descriptions are of the re assembly after a complete dismantle and clean.

All seals, gaskets, bearings oil seal rings and O rings were lubricated with automatic transmission fluid or petroleum jelly during installation.

Mainshaft Assembly: Low Brake Drum unit



New inner seal piston using Allen



Installing multiple disc clutch

keys (in place of Piston
Installing Pins J-5487)



Retractor, friction, and disc plates laid out ready for installation. (my model has the extra spacer plate and flat disc's, earlier models had dished disc plates without the spacer)



Retractor plate
Disc and Friction plates



Spacer plate
Retractor springs



Installing Retractor spring retaining plate using PVC plumbing pipe (in place of tool J-5478) and Snap ring

Rear Ring Gear



Installing new outer and inner seals



Rear ring gear being installed into Low brake drum



Mainshaft with Planet carrier



Low drum plate being inserted
dowels (x2)

Insert



Snap ring going in drum plate

Reverse freewheel into



Installing the Sun gear

Forward Brake Drum



Layout of components
Forward brake drum

Forward freewheel into



Placing brake drum onto mainshaft
sun gear) then spacer



Thrust washer (bronze face to



Freewheel unit spacer dowel into brake drum spacer dowel



Spacer with slot aligned with



Snap ring inserted

Reverse Drum and Front Carrier unit



Inserting thrust washer (bronze face down)
carrier assembly



Placing on Reverse drum/Front planet



placement (bronze face up)

Front Ring Gear

Thrust washer



Front ring gear placed onto mainshaft

Case Assembly: Brake Bands



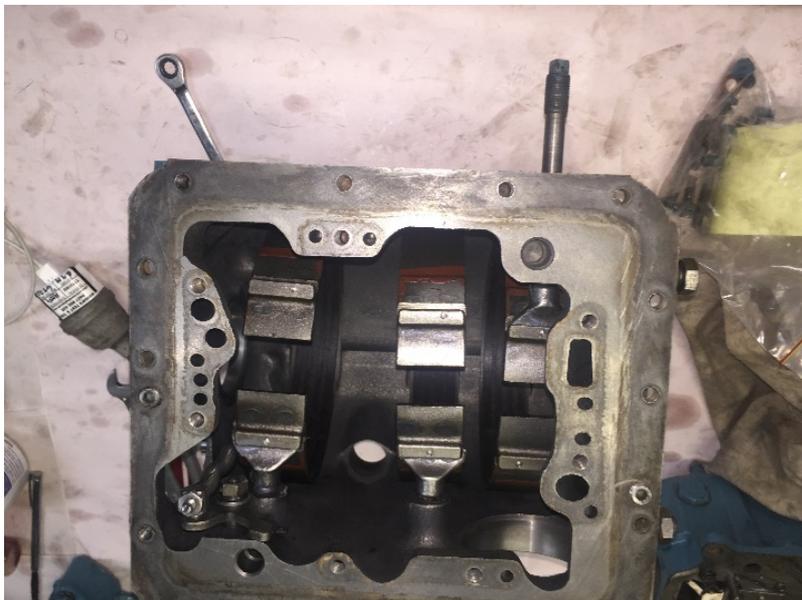
Identify the Reverse brake band (thicker) the other 2 are the forward bands, start with a forward band (note pin orientation)



The second forward band



The reverse band



Bands in place with piston

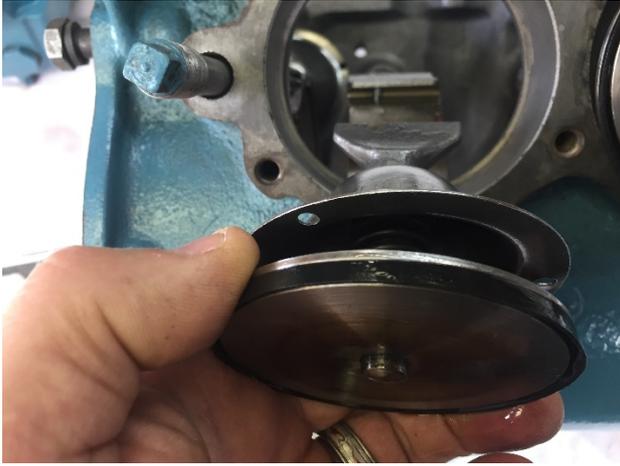
struts

Reverse Servo Unit



Servo components and new seals/gaskets laid out
strut (note notch)

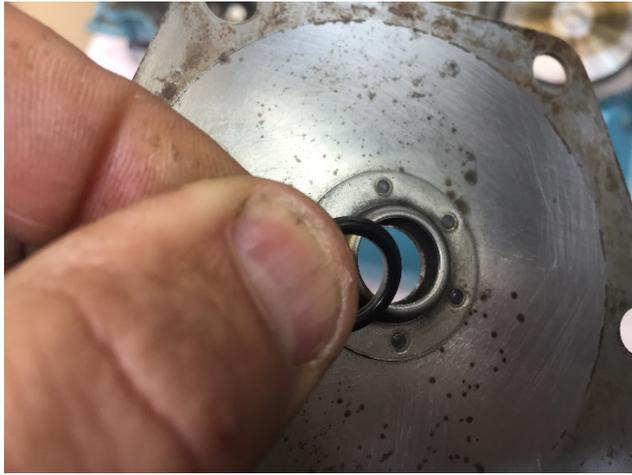
Piston, spring, spring retainer and



New inner piston seal with lip towards piston face



Inner piston in place



New O ring into cylinder plate
torqued down



Cylinder housing in place and

Low and Forward Servo Unit



Servo components ready
in place

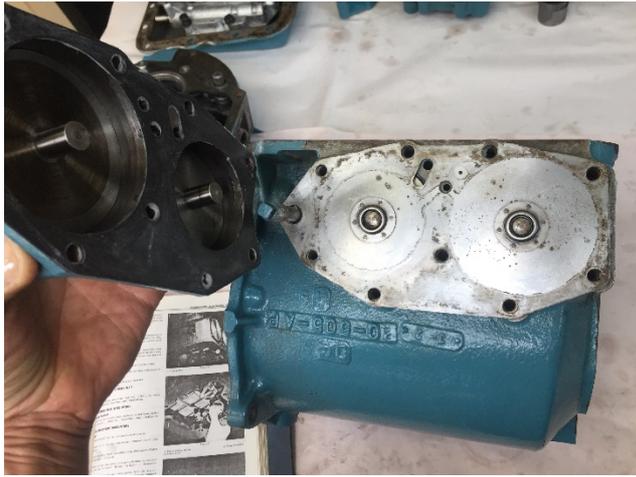
Inner piston spring retainers



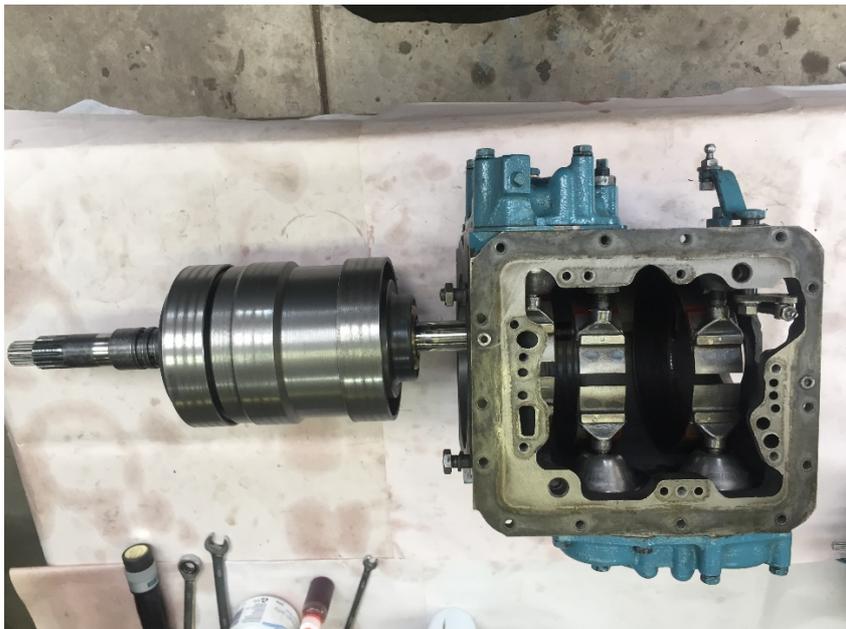
Inner pistons
cylinder housing



Outer pistons inserted into



New gasket and cylinder plate on housing with cylinder housing being installed (note gasket placed on housing) Housing bolts torqued down



into case

Mainshaft being installed

Front Pump Assembly



Front pump with gears installed



New O rings to collector ring



Securing front pump to collector ring



Ready to fit to case



Thrust washer (steel face to pump assembly) passages line up

New gasket on case ensuring oil



Torquing front pump assembly to case (note new seal)

Mainshaft Rear Bearing



before the rear bearing

Install the rear bearing spacer (not shown)

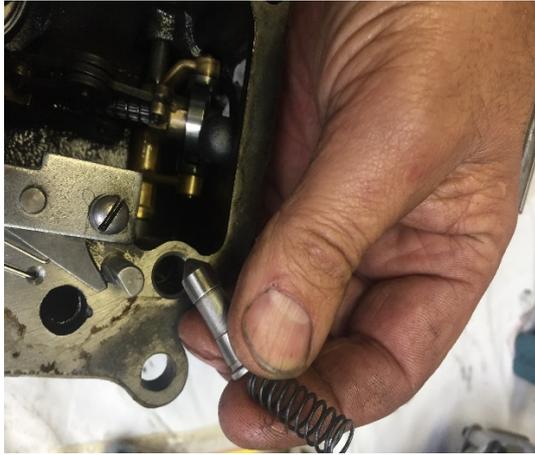


Governor drive gear spacer, Parking brake gear, Governor drive gear and Universal joint flange spacer

Extension Case



Extension case before and after assembly, see pictures following for more details



Governor control detent and spring



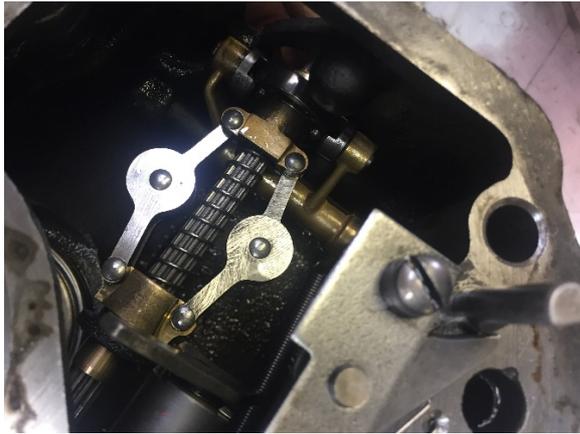
Parking interlock piston and spring



Hydraulic detent piston



Governor valve sleeve with piston



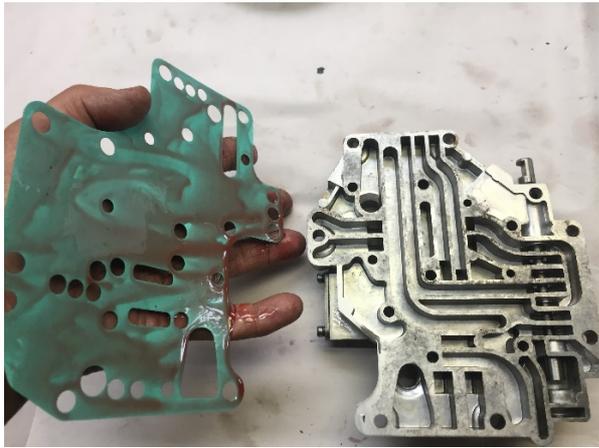
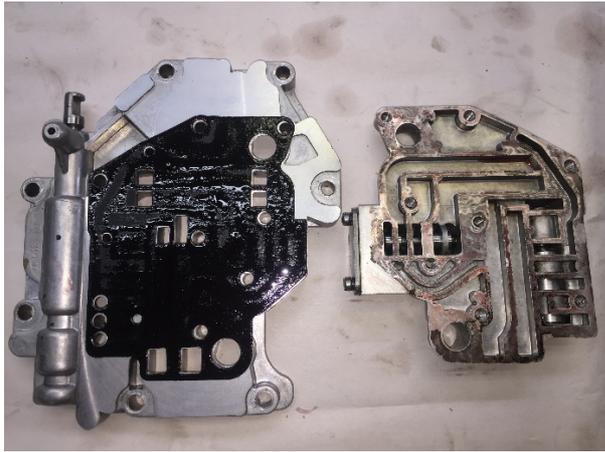
Governor installed
governor end brackets

Checking clearance between

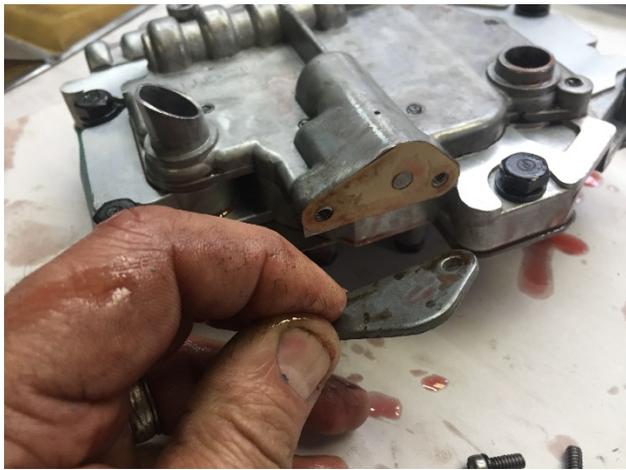


Extension case installed with new seal, speedo gear cover, rear oil pump assembly and anti-creep pressure switch

Valve Block Assembly



Check valves



Assembled valve block with screen fitted

Assembled Unit





Initial band adjustment done as per the manual, and to be re-checked after test drive

Pressure tests to be carried out when fitted onto chassis with drive line (prop shaft, rear axle) installed.

Stuart Cameron