

Towing

Important: Should the vehicle have to be towed, the transfer box must be placed in neutral. It is not sufficient to place only the gearbox in neutral - see Warning, para 95.

OPERATION

127. The drive is taken to either directional bevel gear as desired. The double-helical gear splined to the right-hand end of the mainshaft is meshed with a mating gear on the differential assembly in the lower half of the box. This gear causes the small differential pinions to revolve, with the differential casing thereby driving the differential gears and, at the same time, making provision for the vehicle cornering. Halfshafts connect the differential gears with the output pinions which in turn transmit the drive to the four bevel gears and thence to the propeller shafts through tracta joints. The transfer box speed ratio is 1.35:1, both FORWARD and REVERSE.

Para. 95 The gearbox is fitted with a pressure lubrication system, the pump for which is driven from the input shaft to the gearbox. If the vehicle is towed with the transfer box engaged and the engine not running, some parts of the gearbox will be running without lubrication. When the vehicle is being towed, it is most important that the gearbox made completely free by engaging neutral in the transfer box (the gears in the transfer box are lubricated by splash). It is not sufficient only to place the pre-selector gearbox in neutral.

If you are going to flat tow the Ferret, put the gearbox in neutral, **and** the transfer case in neutral. Travel no more than 15 miles at 15 miles per hour. Ideally go much less: minimal speed and minimal distance. From EMER V623, para. 56: **To ensure that the transfer box remains in neutral lash the forward-reverse control lever in the central position.**

The reason is simple. Although the gears will turn, they are not being sufficiently lubricated - if at all - by the gearbox oil pump (pressure lubrication) and so the central bushes will wear out as the output shaft revolves on these stationary input shaft bushes. If you have to go further than 15 miles, take the sun gears out, but the Ferret *must* stand for an hour to let the bushes cool down.

Ideally, the Ferret must be low-loaded any distance. If you need to tow it further, you remove the sun wheels from those wheels on the road, so on a front lift, you remove them from rear wheels. This stops the transmission driving back through to the transfer box. You are still advised to stop frequently. The weak link is the hub planet carrier. When Ferrets were in service more of these failed than bevel boxes. REME had regular instructions to check the security of the wheel hubs and the gears in the wet axles.

Using one Ferret to tow-start another Ferret

On the vehicle to be towed

- Apply the parking brake (It is possible for the vehicle to move when the engine is started, owing to the thickness of the oil in the gearbox and fluid flywheel when cold).
- Check the forward/reverse lever is in the correct position.
- Move the Gear selector through all gears and pump the Gear Change Pedal six times in each gear.
- Select neutral with the gear selector lever, depress and release the Gear Change Pedal (GCP).
- Switch on the ignition. Check the oil pressure (amber), main indicator (red) lights glow - and the fuel gauge registers.

Engage second gear on the vehicle to be towed. Return the gear selector lever to the neutral position.

Engage the lowest (first) gear on the towing vehicle

Ease off the parking brakes in both vehicles and commence towing.

As soon as the engine fires in the towed vehicle, engage neutral gear by depressing and releasing the GCP.

If the carburettor starting device control has been pulled out to enrich the mixture, return this to the 'fully in' position. The risk on these very old vehicles is that the carburettor can be stuck in a rich mixture position if the cable is stiff or is impeded in its sheath. The advice is to try and start in temperate climates without using the choke starting device.

Do not continue towing if the engine does not start readily.