

## Geartronics paddleshift hardware & wiring installation

Installation of the paddleshift system is straightforward, but there are several important points that must be adhered to:

### Mechanical installation

1. The compressor can be mounted in any position in the vehicle and in any orientation. The length of the hose between the compressor and the air accumulator is unimportant, but when choosing a mounting location, please ensure that the air filter is not subject to water ingress as this will damage the compressor
2. The air accumulator can be mounted either upright or on its side. The accumulator should ideally be mounted close to the pneumatic valves and the hose between the two kept as short as possible. However, hose lengths of up to 2m have not resulted in any significant loss of performance.
3. The pneumatic valves **MUST** be positioned as close as possible to the gearbox actuator. The hoses between the valves and actuator must be no longer than 500mm. We recommend the use of Goodridge 600 dash-4 hose. Large bore hoses must not be used, as they will lead to a serious reduction in performance.
4. When mounting the valves, you must choose a location that is away from the exhaust system, or fit a suitable heat shield. The valves should be AV (anti-vibration) mounted if possible.
5. The gearbox actuator **MUST** be positioned so that it forms an angle of 90° with the shift lever when in the rest position. The actuator rod-end must be attached to the lever so that almost all the available stroke is used. The standard actuator has a total stroke of 30mm ( $\pm 15\text{mm}$ ) and we recommend that the actuator is allowed to move  $\pm 14\text{mm}$  when the shift lever is at the full extent of its travel. This will allow some adjustment at the rod-end.
6. The mechanical throttle blipper should be installed so that the full 12mm stroke gives a throttle opening of approximately 25-30%. Extreme care should be taken to ensure that the throttle mechanism is not allowed to jam due to the blipper installation. Care should also be taken to ensure that the throttle cable can't become dislocated when the blipper operates. The stroke of the blipper can be reduced by the use of internal shims, but it is also recommended that the blipper mounting is made adjustable.
7. The hose between the throttle blipper and the valves should be as short as possible. We normally recommend Goodridge 600 dash-4 hose, but if the length exceeds 1m then it is advisable to reduce the hose diameter to dash-3 to maintain blipper speed.
8. The neutral/interlock button should be mounted on the steering wheel wherever possible. The button is necessary for selecting 1<sup>st</sup>, neutral and reverse gears.

## Wiring installation

1. All wiring should be to the highest standard. We recommend the use of 22awg Raychem spec-55 wire for all connections except the compressor, which should be made using 16awg. Heat-shrink sleeve should be Raychem DR25 or of similar high-performance.
2. The compressor MUST use a separate ground wire connected to the chassis or directly to the battery negative terminal. Do not connect the compressor ground to sensor grounds except at the battery.
3. It is important that the GCU shares the same power supply as the engine ECU. In other words, both systems should power up simultaneously.
4. The 12v supply to the pneumatic valves and compressor relay should also be connected to the same GCU & ECU supply.
5. Sensor connections should use screened wire if possible, especially the gear position sensor. All screens should be connected to chassis ground at the GCU end only. Do not connect screens at both ends!
6. The pressure sensor requires a 12v supply on the red wire. The blue wire is ground and the yellow wire is the signal. Incorrect wiring of the pressure sensor will cause it to fail.
7. The gear position sensor requires a 5v supply on the red wire. The black wire is ground and the white or yellow wire is the signal. Twin output sensors have a white and yellow output.
8. The throttle position input can be connected to the existing sensor. It is advisable to include the sensor ground wire, but leave disconnected. Some ECU's use isolated grounds, and connection to chassis ground will result in sensor errors.
9. All switched inputs are active when switched to ground.
10. The connection between the GCU to the ignition coils (pins 10,11,23 & 24) is only necessary if the engine ECU can't provide the required shift-cut strategy.
11. All wire joints should be made by suitable crimped splices within the loom – do not crimp multiple wires into the GCU contacts, as this is likely to result in wire breakages.