

## A Guide to converting your garage



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## Foundations

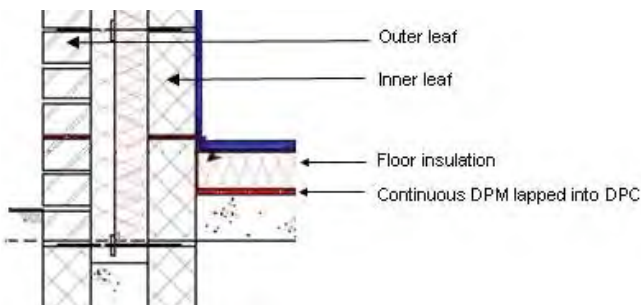
A suitable foundation will be required for the new infill wall. This can be provided by either:

- 1) A new foundation excavated to a depth of at least 1 metre or to the same depth as the existing garage foundations whichever is deeper, or
- 2) 2 no 100mmx140mm pre-stressed concrete lintels may be used to span the opening of a single garage door, with the ends cut into the brickwork piers or sitting on the existing pier foundations. However, if a stud inner leaf is constructed (as detailed below) only 1 no pre-stressed concrete lintel to support the outer leaf will be required.

## New Front Wall

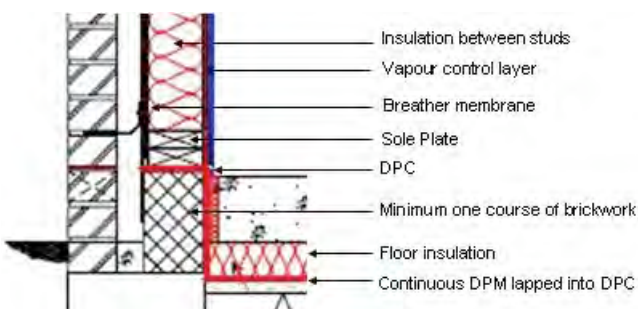
### Masonry cavity wall

Where the outer leaf is brickwork and the inner leaf is blockwork then a 100mm cavity fully filled with mineral wool insulation is sufficient. A damp proof course must be provided in both leaves at least 150mm above the external ground level, or at least at the same level as the existing DPC in the dwelling. The internal floor DPM must be linked into the inner leaf DPC.



### Masonry outer with stud inner construction

The outer leaf should be constructed as above and the inner leaf timber studs should be built off at least one course of bricks with a 50mm cavity. 100mm of rigid polyisocyanurate (PIR) insulation fixed between the vertical timber studwork is sufficient. On the face of the inner leaf a vapour control layer must be provided between the studs and plasterboard.



## Existing Wall

### Treatment to a single skin wall exposed on the outside

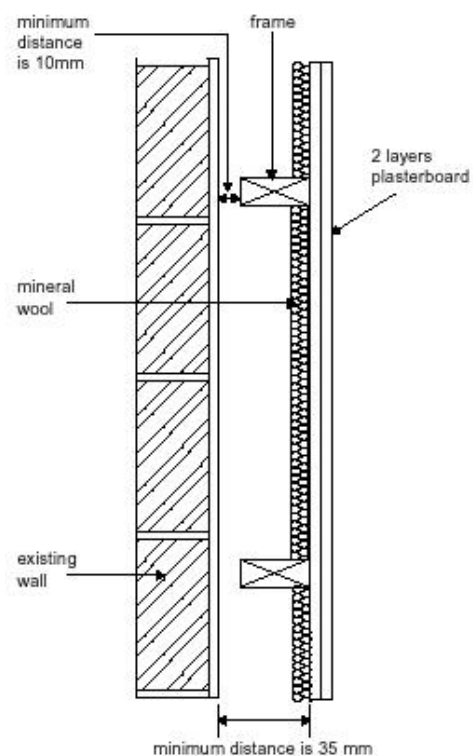
A new insulated independent stud partition will need to be constructed that is at least 50mm away from the wall itself and constructed off at least one course of bricks. A DPC lapped with the new DPM to the floor should be provided between the courses of brick and the stud partition. Typically this partition will need to be insulated with approximately 100mm of PIR insulation. A vapour control layer must be provided on the warm side of the insulation.

### Treatment to a cavity wall

If the wall has an existing insulated cavity that is at least 50mm wide then no further insulation is required. However, if it is not insulated then it will need to be upgraded with either pumped cavity fill insulation or 65mm PIR insulation fitted internally.

### Treatment to a single skin party wall

If the wall forms part of a party wall additional treatments will be required to limit the passage of sound. A 15mm sand/cement render coat will need to be applied directly to the wall and a new stud partition constructed that stands 10mm away from the wall itself. The partition will need to be lined with two layers of plasterboard with at least 35mm of mineral wool provided between the studs; however an additional 50mm PIR insulation and a vapour control layer will be required across the face of the studs if the area the other side of the wall is unheated.



## Floor

The existing concrete floor should be thoroughly cleaned and covered with a 1200g membrane that is joined to the new and existing DPC. Where the membrane is joined to an existing DPC, bitumen paint may be used to join the two layers together. The new floor should be insulated but the amount of insulation depends on the floor construction that is to be used:

### Timber battens on existing concrete slab

90mm PIR insulation between the battens. A vapour control layer should be provided on top of the insulation. This can either be an additional 1200g membrane or the joints of the foil backed insulation can be taped.

### Floor finish – screed or chipboard over insulation

90mm PIR insulation. The insulation manufacturers recommend the use of a vapour control layer (such as a 1200 gauge DPM) between the insulation and floor finish. The screed should be a minimum of 65mm thick and be reinforced with an anti-crack mesh.

## Roof / Ceiling

### Traditional pitched roof

The roof should be insulated with a minimum of 170mm mineral wool insulation laid across the ceiling joists and a further 100mm laid between the joists. The roof should be cross ventilated at the eaves with an opening equivalent to a 10mm continuous strip. Proprietary ventilators should be used to prevent insect entry.

### Flat cold roof

The roof should be insulated with a minimum of 150mm PIR insulation between the joists. The roof should be ventilated at opposite sides equivalent to a continuous strip of 25mm with a 50mm void above the insulation. The method of providing ventilation to a flat roof will depend upon the direction of the roof joists. If the joists run across the garage it is not easy to ventilate both ends, and a warm roof construction should be considered.

### Flat warm roof

In this construction the insulation is positioned above the flat roof decking and NOT between the flat roof joists. If this method is used an approved roofing system should be used and you should seek advice from the manufacturer. Quilt insulation is not suitable for this type of construction.

## Window / Door Openings

A vertical DPC should be provided around the openings, sited between the front brickwork and the return of the inner skin. Preferably this should be fixed to the back of the window frame. The DPC may also be part of the system used to reduce thermal bridging around the window opening (i.e. a proprietary plastic extruded cavity closer filled with insulation).

Should the new window be provided between the original 225mm brickwork piers, the inside jambs of the window should be covered with plasterboard with integral insulation bonded to it. This can be fixed using a "dot and dab" technique. Similarly the existing lintel should be treated in the same manner.

A wooden or uPVC framed window or glazed door should achieve a U-value of at least 1.6W/m<sup>2</sup>K (or a WER Band C or better). Glazing fitted to windows less than 800mm from floor level and all doors including sidelights below 1500mm should be toughened.

## Means of Escape

If the new room leads into another room, the opening sash in the new window should be sized such that it is suitable for means of escape, having an unobstructed area of at least 0.33m<sup>2</sup> and a minimum dimension of 450mm.

Furthermore, in a three-storey dwelling the protected staircase will have to be maintained and if the new room leads onto the hallway then a suitable FD20 door will be required.

## Smoke Detection

Where the new room formed by the garage conversion does not have an EXTERNAL door a suitable mains interlinked fire alarm system will need to be fitted in the hallway and landings at each floor level.

## Ventilation

Room ventilation should be provided as follows:

Room type	Rapid ventilation (e.g. opening window)	Background (trickle) ventilation	Extract Ventilation
Habitable room	1/20th of floor area	5000mm <sup>2</sup>	N/A
Kitchen	No minimum size	2500mm <sup>2</sup>	30l/s adjacent to hob 60l/s elsewhere
Utility room	No minimum size	2500mm <sup>2</sup>	30l/s
Bathroom	No minimum size	2500mm <sup>2</sup>	15l/s

The background ventilation may be provided by trickle ventilation within the window or by other means such as an air brick.

## Lighting

Light fittings should be low energy. Fluorescent tubes, compact fluorescent lamps or LED lighting are adequate; however a traditional tungsten bayonet or Edison screw type bulb will not be adequate.

## Note

**It is not always possible to be precise in the advice we give regarding garage conversions as individual circumstances vary. The above details provide only a selection of the more common alternative means of achieving compliance with the Building Regulations and other solutions may be suitable.**

**Your Building Control Surveyor will be pleased to advise you on your individual circumstances.**

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