

WHAT IS IN A TRACTION LIFT?

Traction lifts are one of the most common systems for large lifts and elevators but how do traction lifts work?

It is vital that you know how your lift works so you can spot potential problems and make sure you are getting the best from your lift.

Traction lifts are referred to as all sorts of things, including cable lifts, counterweight lifts or rope lifts. The main components of a traction lift are:

- cables or ropes
- a **sheave**, or pulley
- counterweight
- motor

Some traction lifts also have gears between the motor and sheave (geared lift), others will just connect the motor directly to the sheave (gearless lift).

The cables/ropes are usually a multi-strand steel material for security, meaning that if one of the strands breaks, the cable still holds the lift car up.

Generally, the running machinery is held in a separate room, called a Machine Room. When looking at Traction Lifts it is important to remember that you need to have space for the machine room (though this is clearly shown in most drawings). There are 'MRL' (Machine Room Less) traction lifts though.

HOW DO TRACTION LIFTS WORK?

Traction lifts are a simple system. A **motor** is attached to a **sheave** (a toothed pulley), with a rope or **cable** looped over it. The rope is attached at one end to the lift car, and on the other end to a **counterweight**.

When the lift is called to a floor, the motor turns the sheave. This motor can move in both directions – one moving the lift car up, the other moving it down.

As the lift car rises, the counterweight lowers – and vice versa. The counterweight means there is less strain on the motor and the whole system, meaning that less power is required to move the lift car up or down. This is similar to a see-saw – if there is only one person on the see-saw it takes far more energy to get to the top, whereas the balance between two people makes it easier.

Most lifts will also have an Overspeed Governor, which monitors the speed of the lift. It is usually linked to the rails in the shaft and can stop the lift car without cables if required.

PROS & CONS OF TRACTION LIFTS

When choosing a type of lift system, you need to weigh up the options and see which works best for you. Here's some simple pros and cons to help you start, but it is important to apply these to your specific set up and see what the best option for you is.

PROS

Traction lifts are more efficient and reliable than a hydraulic lift as there are far fewer mechanical operations and no fluid systems which can have faults. They also require less space than a hydraulic lift, which requires a large amount of oil stored in a reserve.

Traction lifts are slightly faster than hydraulic lifts – making them a better choice for very high buildings.

Safety systems in a traction lift are designed specifically to prevent 'dead drops' and injury through mechanical failure or cables breaking.

CONS

If you opt for a traction lift with a machine room, these can take up a lot of valuable space (but often you can get a machine room less option that means less space is required).

Traction lifts do tend to be more expensive than hydraulic lifts, though this is due to the extra speed and energy efficiency you get.

The classic idea of a 'dead drop' – the cables snapping and the lift car falling – is really a myth, but it is possible for cables to snap, which is not possible with hydraulic systems.

Whatever type of lift you go for; GES are always on hand to help. Just get in touch with us for support, information and advice.

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