



LARGE WALK BEHIND CONCRETE SAWS – INDUSTRY SUMMARY

This is an attempt to explain the need for the changes we have made to concrete saws.

LIFTING

There are three types of concrete saw currently on the market in the 40HP and above area that we are dealing with. See Link 4 for a general summary of safety issues.

1. Saws that maintain a fixed distance between the front and back wheels.

The Rellock 42HP machine [sold by Traxx] has a fixed distance between the front wheels and the back wheels.

Like all front pivot saws the back of the saw is lifted for turning with the free-wheeling front wheels as a fulcrum.

Because the front wheels don't move back toward the operator in this configuration, the saw gets heavy at the back more quickly. The fulcrum is further from the Centre of Gravity [C of G].

For this reason, I believe, Rellock don't make any saws with bigger heavier motors using this system. Their bigger machines appear to be ride-on saws only. This 42 HP is generally too small for the professional cutter. The Rellock 42 HP machine has a jockey wheel at the back to help lift and turn.

2. Reverse or rear pivot saws.

In this model of Road Saw, the diesel motor is placed over the back drive-wheels and allows the front to be tilted up for turning as you can see. This gives good traction. Because the motor cannot be over the blade there is less weight on the blade and the blade, instead of cutting, can rise-up out of the cut more easily.

This is less of a problem in Melbourne where the concrete is generally softer than it is in Brisbane with the hardest concrete in Australia if not anywhere. We used to use rear pivot saws in the 1980s. They all had the blade spinning in the opposite direction to help hold the blade in the cut. This was banned for safety reasons at some point.

These saws now must down cut and as such would be slow cutting in harder material.

The Merit website specifically advises operators to slow down to prevent their rear pivot saw rising out of the cut.

3. Front Pivot saws

These saws have front wheels that move back automatically when the blade is raised for turning. These are the most common saws on the market and are made by Husqvarna and Diamond Products, the two biggest players in the market.

Because the front wheels move back automatically when the blade is raised for turning, these saws become lighter to lift and it is possible to build larger heavier machines with this configuration.

The body of these saws pivot around the back axle when the saw is raised. This means that the Centre of Gravity [C of G] of the saw moves back toward the operator when

raised.

When the saw is fully lowered there is less weight on the back drive wheels. Down to 20kg in some cases. This can cause lack of traction. There is a tradeoff between lack of traction when lowered and lifting weight when raised for turning.

CoreCut saws (Diamond Products) have good traction but are extremely heavy to turn, for example. Up to 135kg as measured in link 1 above. Operators tend to try and slide these machines around as seen in link 3. This is, however, not always possible.

The biggest selling saw on the market, the Husqvarna 4800, was lighter at 90kg, but in some circumstances had slipping issues. Operators often sit on handles to gain traction. In addition to this, Operators often use a larger blade to finish a cut to full depth so that front of the saw is higher off the ground meaning more traction.

Morley saws have a "Positraction Switch for when traction is a problem". This is basically a limited slip differential.

Because the front wheels move back toward the operator, they must be free-wheel and it is therefore, not possible to build these as a 4-wheel drive or tracked saw.

THE CLEANCUT SOLUTION

LIFTING

Our patented lifting system ensures that the Centre of Gravity (C of G) of our machines moves vertically when the blade is raised for turning. This eliminates the need for a compromise between traction when fully lowered and lift weight when raised for turning. The lift weight can be adjusted to any desired level by simply shifting the front wheels or fulcrum back and forth as needed. This adjustment is made in the factory, guaranteeing a consistent lift weight of 35 to 40 kg at all times. Additionally, the full weight of the saw remains on the drive wheels at all times. Our saws can be constructed with either four-wheel drive or tracks, as the front wheels do not need to retract when the blade is raised.

RUBBER TRACKS

Cleancut saws due to their patented lifting system, are the only saws that can use larger motors but still retain their wheels in a fixed position relative to each other. For this reason, they are the only large machines that can use rubber tracks to prevent slipping and cover any terrain.

We will be adapting one of the machines to take tracks in the next few months and we are hoping it will be able to climb a 150mm kerb, something that would be very useful for concrete cutters.

These saws will also have great drive through the cut as all the weight of the saw will be on the driven track. They will also travel up ramps more safely than wheeled saws.

Reports of saws slip backward down ramps are numerous, usually due to slurry on the wheels etc. One operator recently reported that he ended up in hospital with a broken ankle when a saw slipped back down his loading ramp.

Concrete Cutters all agreed that non-marking rubber tracks could be a great feature if tests go as expected.

CLEAN-UP

Large concrete saws typically require a water feed of about 10 litres per minute to prevent dust generation during cutting, as recommended by Husqvarna. However, operators often reduce this to approximately 6 liters per minute to decrease cleanup and prevent slurry from

entering drains, which leads to significant dust production.

Concrete dust, containing around 30% silica, poses a safety hazard and can damage motors. Cleancut's Slurry Recycling Guard effectively lowers the water feed to roughly 2 liters per minute without causing dust. It recycles water and slurry approximately five times over the blade before disposal.

This patented innovation results in reduced water usage on sites, allowing water tanks on road jobs to last the entire day without frequent refills. Additionally, it minimizes mess as water and slurry are contained within a single line, which can be collected using a vacuum wand connected to the saw, thereby saving labor costs.

HYDRAULIC BLADE DRIVE

Hydraulic blade drives, despite being more costly than belt drives with a gearbox, offer substantial benefits:

- Hydraulics allow for the installation of vibration mounts on the diesel engine, which is not possible with belt drives.
- Due to significant vibration, current concrete saws rarely exceed 1000 hours of operation. This vibration also transfers to the cutting blade, causing increased wear and slower cutting.
- Hydraulic motors and related components can last over 5000 hours with clean and cool oil, significantly extending the lifespan of the saw's body.
- The absence of a gearbox eliminates the need to change blade RPM for different blade sizes. RPM adjustments can be made from the dashboard during cutting, which is a considerable advantage.
- Belt and gearbox systems require stopping the saw, selecting one of the limited gear options, and then restarting the machine.
- Vibration in current saws may also become a safety concern for operators in the future, as recognized by safety authorities.

References.

1. [a65470_4c377dbbedd4473e8b7acb16d5f7b3f0.pdf \(filesusr.com\)](#)
2. [Construction Technology for professional application \(lissmac.com\)](#)
3. <https://www.youtube.com/watch?v=GXHmhCv62OI>
4. [a65470_d42f3d3c5a8b496691f3e09f362c0844.pdf \(filesusr.com\)](#)