

AQUA CUTTER 750V
Hydrodemolition robot

Revolutionary efficiency



AQUAJET



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Aqua Cutter 750V is our new “Mean Machine” with breakthrough technology in performance and efficiency. The precision is refined and controlled down to every single sequence and every single millisecond of the hydrodemolition process. The new patented Infinity system together with the next generation Evolution control system brings out the best possible results from the machine, making you and your new robot an unbeatable team.

The Aqua Cutter 750V features Aquajet’s revolutionary patented Infinity oscillation system and the next generation Evolution Control System that automatically calculates optimal settings for oscillation. The new oscillation moves the water jet in an infinity pattern, removing more concrete in a single pass while reducing shadowing, eliminating the risk of pipe holes and providing an ideal bonding surface.

A new level of performance

The 750V also offers a new level of performance with Aquajet’s Precision Drive. This technology provides highly accurate hydraulic movements, eliminating the inconsistencies that would compromise the result. Automatic speed-controlled throttle, that automatically adapts RPMs to the load, improves the sustainability and leads to lower fuel consumption and emissions. Which, together with the oscillation pattern, results in a constant, low noise that is less disruptive and meets strict requirements in noise-sensitive environments.

In addition, the Evolution 3.0 control system incorporates several safety and efficiency features to maximize performance, such as remote start and stop of the diesel engine through radio remote control and an automatic main switch that triggers an automatic machine shut down if there’s no activity for a certain amount of time. It also uses a visual status light to show the state of the machine with different colors.

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Evolution 3.0 control system

The latest Evolution 3.0 control system is yet another step up for computerized robotic management for advanced operations and is adapted to work seamlessly with the new Aqua Cutter 750 and the Infinity oscillation. With several new functions, such as remote start and stop, power saving functions, automatic calculation of the Infinity oscillation system and a number of other safety features, the latest Evolution 3.0 takes your work to another level.

The Aqua Cutter evolution 3.0 control system's display is interactive and shows with graphics how the settings will affect operation. The system can be set to basic mode for normal operation and fast set-up or advanced mode for the most demanding tasks. It also enables you to program geometrical figures such as circles, triangles, squares and rhomboids. You can operate at different depths in the same overpass.

Infinity oscillation menu

The oscillation menu is now adapted to automatically calculate the optimal settings for the Infinity oscillation system and displays performance factor in colors for each segment during each single oscillation stroke, as well as calculated performance factor in percent.

Automatic functions

With an even more extensive alarm list, historic alarms are viewed in clear text with alarm color, date and severity on the display. The system also automatically tracks service schedules, informing the operator when it's time for service and keeping downtime to a minimum. Except for the first installation, no calibration is needed thanks to absolute encoders. There's also the same sensor for roller, lance and hoist, reducing stocked spare parts needed. The system has an integrated speed sensor, just like the Ergo, which guarantees accuracy even when operating without sensors. It's also fully compatible with the Ergo system.

Inclination sensor

New safety improvements to the system were also added, such as an inclination sensor, for when using the AquaJet connected control, that shuts off auto and high-pressure water if the machine tips over. The sensor also displays the inclination of the machine in both axes and warns the operation when inclination is too high.

Safety improvements

Another safety innovation is the visual status light on the robot, which reflects the status of the machine with different colors, and the automatic main switch, a power saving function that shuts down the robot if there's no activity for a certain time. There is also a remote start and stop function on the radio remote control, making it possible for the operator to start and stop the robot at a safe distance. The radio remote control also features other improvements, such as a color display where all automatic functions can be adjusted and Li Ion batteries for extra-long battery life.

EDS – Equal Distance System

All of our Aqua Cutter robots feature our patented EDS system, short for Equal Distance System. The EDS keeps a preset distance from the nozzle to the concrete surface, regardless of the attack angle of the water jet. This is a major advantage. Standard systems without EDS make the water jet lose a lot of power before it hits the concrete.

Speed zones / 3D zones

Use of speed zones enhances the possibility of even more accurate removal, and removal of different depths in the same overpass. These zones can also be used to control the lance angle and oscillation. The 3D zones work like our patented shape function; cuts a figure but in depth. You can use them for removal of complex structures and uneven concrete. They also have the ability to create geometrical shapes.

Geometrical shapes

All products with the Evolution control system have the ability to cut geometrical shapes, such as circles, triangles, squares and rhomboids. You can program your shape of choice on the display or draw on the surface and use the robot's teach-in system. Speed zones and 3D zones can be combined with geometrical shapes. For example, you can create a circle with an inclined bottom or a rhomboid on several levels.

Smart lance control

All Aqua Cutter robots with the Evolution control system have the patented Smart lance software. With the software you get access to advantages that no other robot offers. The smart lance control automatically calculates and coordinates the complete operating process and optimizes the removal from the operator's selection. All you have to do is set a few parameters. The pattern of the oscillation can be changed in different steps and wavelengths. You can also set a fixed wavelength. Program for multiple oscillation patterns, lance angles and removal depths in the same overpass. All movements are precise and smooth. In other words – better lance control and increased lifetime of mechanical parts.



Infinity oscillation system

Infinity oscillation is a revolutionary technological advancement for concrete repair through hydrodemolition. The Infinity oscillation is an Aquajet patented innovation that makes the concrete removal process more efficient and with a much smoother surface as a result.

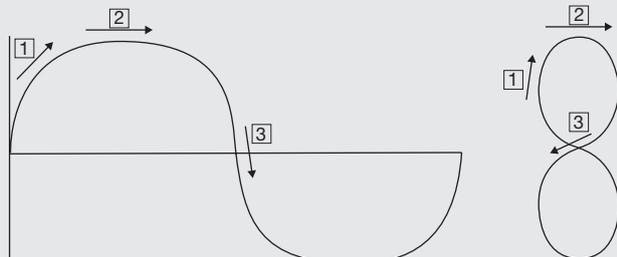
The principle of hydrodemolition is to pressurize and widen existing pores and micro cracks in the weakened concrete structure using high-pressure water penetration. The high-pressure water is pushed through the nozzle of a lance, producing a water jet that penetrates the pores and builds up a pressure that causes the concrete to explode/separate. If the jet is standing still on the surface it is basically not removing any concrete at all, it will just dig a narrow hole. In order for the water jet to remove bad concrete over a larger area, the lance must move at a constant speed, relative to the surface, at all time. Both if the jet moves too slow, and also if it moves too fast, the performance decreases. This is why a rotating tool removes less m^3/h than an oscillating nozzle.

Standard oscillation

To create that movement, an oscillating technique is usually used. Which means that the lance moves like a pendulum at the same time as the nozzle slides forward over the surface, hanging in a traverse. The pattern that's created looks like a sine wave. With this technology however, an undesirable effect is that the speed of the lance over the surface becomes uneven in practice. The reason for this is that the lance will turn on its oscillation cycle and slow down the speed to zero before it turns the other direction. Therefore, the speed is no longer constant and will result in different cutting depths inside each oscillation stroke and in worst case pipe holes.

Infinity oscillation

Our solution to the problem is the Infinity oscillation. By letting the lance move in a dual circular motion, instead of just a pendulum movement, while it oscillates, the shape of the infinity sign arises ... or the figure eight. This movement of the lance makes the speed of the oscillation constant across the surface throughout the cycle, eliminating the effect of pipe holes.



Benefits with the Infinity

- » No pipe holes
- » Higher performance
- » Adjustable stroke both directions
- » Primary 0-110mm
- » Secondary 0-50mm
- » Easy access to stroke adjustment
- » Center bolt lance
- » Lower high-pressure hose mounting point creates less stress on the hose
- » Compact and simple design

When the roller is moving, the Infinity motion will add surface speed at 2 and subtract surface speed at 3. This will make a pattern looking more like a rounded square wave. Correct matched, the surface speed at 1,2 and 3 will be constant. The surface speed is an algorithm of roller speed, oscillation speed, oscillation stroke and infinity stroke. It is a quite delicate task to match, but don't worry, the new Evolution 3.0 control system takes care of all these calculations automatically and makes sure that the surface speed is constant.

Better effect

The effect of the Infinity oscillation is a much smoother surface with significantly steeper and more even sides of the cut compared to the standard oscillation lance. Also, the speed of concrete removal is higher compared to previous technology thanks to the constant surface speed. And the difference gets bigger with each new traverse. Another interesting effect of the Infinity oscillation is the sound. Since the water jet continuously hits new material at the same speed, the pulsating sound is a lot less significant. The new sound is more constant. Or infinite. A sign of efficiency, as the hydrodemolition process is ongoing all the time without interruption.



AQUA CUTTER 750V

Facts



Facts

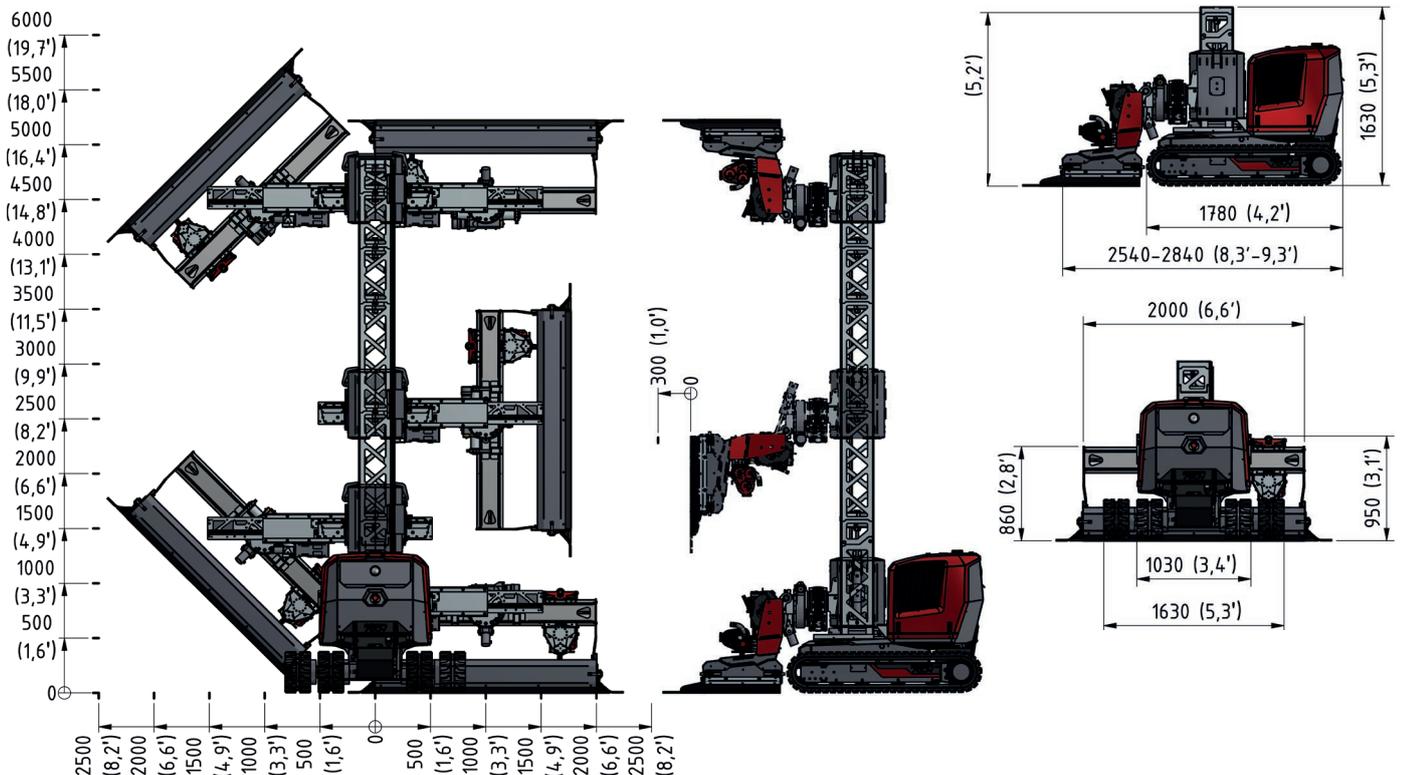
Total weight	2340 kg (5159 lb)
Length	2,57-2,87 m (8,4-9,4 ft)
Min. width	1,03 m (3,4 ft)
Track width	1,03-1,63 m (3,4-5,4 ft)
Min. height	1,3/1,6 m (4,2/5,2 ft)
Operating height	5 m (16,4 ft)
Side reach	2 m (6,6 ft)
Lance angle	± 45°
Working width	0-2,45 m (0-8,0 ft)
Working width extended	0-4,45 m (0-14,6 ft)
Drive source	Diesel engine 18kW / 1200-2600 rpm

Easy service

The innovative design provides unrivalled ease of access for all maintenance jobs. This means less downtime for maintenance and more time for actual work.

Pop the hood

The unique gullwing hood and the foldable back cover of our Aqua Cutter 710/750 robot offer total access for both daily maintenance, such as checking oil levels, and regular service, such as oil and filter changes.



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