

# Aqua Rail Systems 3.0

EXPANDS HYDRODEMOLITION REACH AND FLEXIBILITY





# **CUTTING-EDGE HYDRODEMOLITION EQUIPMENT**



# Introducing Aqua Rail Systems 3.0

# - EXPANDS HYDRODEMOLITION REACH AND FLEXIBILITY

The Aqua Rail System 3.0 is a versatile, multi-modular solution for hydrodemolition in tough environments. Designed for configurability, it adapts to project needs, ensuring the right setup every time. Its scalability allows reconfiguration for future tasks, saving time and costs. With adjustable power options and support legs, it guarantees precision and stability on any surface.

The Aqua Rail Systems 3.0 is more than just a rail—it's a multi-modular system designed to make it easier to deploy hydrodemolition work in even the toughest environments.

It's a system designed for configurability, which allows contractors to purchase a system tailored specifically to their project needs, ensuring the right configuration for each job.

The true value, however, lies in its reusability and scalability. If a future project requires different specifications, the system can be reconfigured or expanded with additional components. This

flexibility reduces the need for entirely new setups, saving both time and resources, while keeping contractors prepared for any challenge that comes their way.

This is one of Aqua Rail Systems 3.0 strengths, the fact that the system can be powered by and built in multiple different ways and combinations. Contractors can easily change power source or adjust the support legs to exact heights or angles, ensuring stability and optimal positioning for their hydrodemolition project, regardless of the surface or environment.

# Aqua Rail Systems 3.0

AQUA SPINE 3.0 / ERGO CLIMBER 3.0 / SUPPORT SYSTEMS 3.0

The Aqua Rail Systems 3.0 is a complete solution and includes several new and improved products - such as the Aqua Spine 3.0, Ergo climber 3.0 and the Support system that support the rail systems in all imaginable situations.



# Compatibility

**EVOLUTION 3.0 CONTROL SYSTEM** 

- Power the system with a Power Control Unit (Aqua Cutter 3.0 models or Ergo Controller.) •
- Choose a rail system: Aqua Spine 3.0 or Ergo Climber 3.0.
- Select a power head based on the rail system: Infinity Power Head, Rotolance, Circular, or Ergo options.
- Support systems (Heavy, Light, or Scaffolding) can be combined as needed.



Ergo Climber 3.0

• Ergo Power Head

Ergo Rotolance

- Aqua Cutter PCM 450
- Ergo Controller

Support System

Scaffoldings

# **Reaction forces**

# **AQUA RAIL SYSTEMS 3.0**

The system can handle different reaction forces depending on the chosen robot or rail system configuration. Each setup ensures optimal performance based on project requirements and support system selection.

### **REACTION FORCES - AQUA RAIL SYSTEM 3.0**

- Aqua Spine 3.0 + Infinity Power Head 750 = 3000N Rail/Beam: 6000 x 2000 mm (19,7 ft x 6,6 ft), Support System Heavy.
- Aqua Spine 3.0 + Infinity Power Head 450 = 1600N Rail/Beam: 6000 x 2000 mm (19,7 ft x 6,6 ft), Support System Heavy.
- Aqua Spine 3.0 + Ergo Power Head = 1000N Rail/Beam: 6000 x 2000 mm (19,7 ft x 6,6 ft), Support System Light.
- Aqua Spine 3.0 + Aqua Spine Circular Power Head = 2000N Rail/Radius: 6000 x ø2000 mm (19,7 ft x ø6,6 ft)
- Aqua Spine 3.0 + Aqua Centralizer = 2000N Rail/Radius: 6000 x ø2000 mm (19,7 ft x ø6,6 ft)
- Aqua Spine 3.0 + Ergo Circular Power Head = 1000N Rail/Radius: 6000 x ø1000 mm (19,7 ft x ø3,3 ft) Depending on setup.
- Aqua Spine 3.0 + Ergo Centralizer = 1000N Rail/Radius: 6000 x ø1000 mm (19,7 ft x ø3,3 ft) Depending on setup.
- Ergo Climber 3.0 = 1000N Rail/Beam: 2000 x 2000 mm (6,6 ft x 6,6 ft)

**RAIL SYSTEM** 

# **AQUA SPINE - RAIL INFORMATION**

### Lightweight design

The weight has been reduced from 52 kg (115 lbs) to 39 kg (86 lbs) for a 2-meter Aqua Spine rail section.

- 2,0 m (6,6 ft) = 39 kg (86 lbs)
- 1,0 m (3,3 ft) = 22 kg (48.5 lbs)
- 0.5 m (1,6 ft) = 14 kg (31 lbs)
- 0.25 m (0,8 ft) = 10 kg (22 lbs)

### Enhanced performance

Improved strength with approximately 60% better load capacity and 50% better torque resistance.

### Modular and scalable

Traversable mounts and brackets enable the construction of infinitely long rail setups.

# Effortless assembly

Sections are secured with a single M20x170 screw and feature an innovative "puzzle" design for seamless connections.

# HOIST INFORMATION

### **Reduced weight**

Weight reduced from 46 kg to 28 kg for improved handling.

### Quick attachment

- Easily attaches to the rail with minimal effort.
- Features fast and easy tool attachment capabilities.





HYDRODEMOLITION SYSTEM

BRACKETS FOR ROLLER BEAMS

Designed to securely attach the roller beam to the Aqua Spine system.

Aqua Cutter 750V Roller Beam Supports reaction forces up to 3000N.

Aqua Cutter 450 Roller Beam Supports reaction forces up to 1600 N.

# Ergo Roller Beam

Handles reaction forces up to 1000N.





Attachment for the Ergo Roller beam

HYDRODEMOLITION SYSTEM

# **RINGS / RADIUSES UP TO 2000N**

Designed for work in tunnels or on pillars, easily attached to the Aqua Spine system.

### Aqua Centralizer

Designed for pipe and tunnel systems.

- ø1,0 m (3,3 ft) ring = ø1,5-2,0 m (4,9-6,5 ft)
- ø1,5 m (4,9 ft) ring = ø1.9-2,5 m (6,2-8,2 ft)
- ø 2,0 m (6,5 ft) ring = ø2,4-3,0m (7.9-9,8 ft)

# Aqua Spine Circular Power Head

Designed for work on pillars and columns.

- ø1,0 m (3,3 ft) ring = ø0,1-0,7 m (0,3-2,3 ft)
- ø1,5 m (4,9 ft) ring = ø0,6-1,2 m (2,0-3,9 ft)
- ø 2,0 m (6,5 ft) ring = ø1,1-1,7 m (3,6-5,6 ft)

## Hydraulic Pillar Clamp

Designed to securely anchor the system around pillars or columns.

### Manual Pillar Clamp

Designed to securely anchor the system around pillars or columns.

Aqua Centralizer Aqua Spine Circular Power Head

HYDRODEMOLITION SYSTEM

# **RINGS / RADIUSES UP TO 1000N**

Designed for work in tunnels or on pillars, easily attached to the Aqua Spine system.

- Custom-built with selectable radius and arc length.
- Combinable mount for both internal/external work on curved surfaces, with CC 80mm standard holes.

### Ergo Power Head / Ergo Rotolance

For hydrodemolition and surface preparation on curved surface.

### Ergo Centralizer

Designed for pipe and tunnel systems.

Working diameter:

 Ø0,7 m (2,3 ft) ring = Ø1,0m (3,3 ft) up to Ø4,0 m (13 ft) ring = Ø4,3 m (14,1 ft)

# Ergo Circular Power Head

Designed for work on pillars and columns.

### Working diameter:

 Ø0,7 m (2,3 ft) ring = Ø0,4 m (1,3 ft) up to Ø4,0 m (13 ft) ring = Ø3,7 m (12,1 ft)

SUPPORT SYSTEM

Aquajet's new Support System is designed to deliver even more flexibility and stability when working with the Aqua Spine 3.0 or the Ergo, offering a customizable solution that adapts to the specific demands of each job.

The system consists of support legs, brackets and joints that are easily adjustable in both height and angle, and can be assembled to allow the Aqua Spine to rotate 360 degrees — either manually or hydraulically. The Support System uses interchangeable CC80 hole pattern and M16 screws, enabling quick reconfiguration from one project to the next.

## Support System Light

- Standard scaffolding pipes, ø48 mm.
- Handles reaction forces up to 1000N.
- Comes in a version that includes a tilt function with positioning gear.

## Support System Heavy

- Handles reaction forces up to 3000N.
- Comes in a version that includes a tilt function with positioning gear.

# Both systems can be combined.



# SUPPORT LEG SYSTEM

- Standard CC 80 mm holes.
- M16x100 screws.

# Gable mount HeavySupport legs HeavyCross mount HeavyCenter mount LightTilt mountImage: Stress of the stress of the

HYDRODEMOLITION SYSTEM

## **NEW TENSION SCREW**

- Handles curved scaffold tubes down to a radius of 300 mm.
- Handles pipe diameter 45-55 mm.
- Fixed clamping dimension 60 mm.







HYDRODEMOLITION SYSTEM

# CURVED SCAFFOLDING PIPES

- Tunnels down to ø1500 mm.
- Pillars down to ø320 mm.



Tunnel diameter (mm)	Angle of protractor	Height adjustment (mm)
1460-1750	45°	330-425
1750-2500	30°-45°	330-335
2500-3700	20°-30°	330-335
3700-7100	10°-20°	330-335
> 7100	0°-10°	330-335



Pillar diameter (mm)	Angle of protractor	Height adjustment (mm)
320-450	80°-90°	365-375
450-600	70°-80°	375-385
600-800	60°-70°	385-390
800-1050	50°-60°	390-395
1050- <1150	45°-50°	395-400
*	*	*
1150-1300	40°-45°	380-385
1300-1900	30°-40°	385-390
1900-3100	20°-30°	390-395
3100-6500	10°-20°	390-395
>6500	0°-10°	390-395



SUPPORT SYSTEM

# SUPPORT SYSTEM SCAFFOLDING

The new Support System for scaffolding setups enables the construction of infinitely long frames using traversable mounts, allowing the Ergo Climber 3.0 to pass over without obstruction. All components are designed to work seamlessly with Aquajet's aluminum pipes.

Pipe specifications: Ø48.3 mm x 4.0 mm (Ø1.9 in x 0.16 in) / NPS 1.5 / DN40



# **TRAVERSABLE MOUNTS**

Mounts that allow the Ergo Climbers to pass over without hindrance.

- Supplement to standard mounts.
- Possibility to build an infinitely long frame.



# **Possible setups**

AQUA RAIL SYSTEMS 3.0

The Aqua Rail Systems 3.0 is a complete multi-modular solution and the different setups and combinations possible are basically endless.

# FLAT SURFACE SETUPS

Hydrodemolition work on flat surfaces, such as a wall, roof, under a bridge or similar, can easily be done with either the Aqua Spine or Ergo climber solution. It all depends on what type of flat surface work has to be done.



**Support System Scaffolding** with the Ergo Climber 3.0 is designed to withstand reaction forces of up to 1000N. Featuring traversable mounts, this setup allows Ergo Climbers to move seamlessly past the support legs, ensuring smooth and efficient operation.



A flat surface setup with the heavy version of the Support System. This setup handles greater reaction forces (up to 3000N) with ease, perfect for setups with the Aqua Cutter 750V Power Head. This versatile system can be easily mounted on horizontal, vertical, or overhead surfaces, ensuring stability and efficiency in various applications.



The new Aqua Spine 3.0 with the **Light version of the Support system**, perfect for work with the Ergo Power head and handles reaction forces up to 1000N. The support legs are light, adjustable and easily attached to any horizontal, vertical or overhead surface.



# **Possible setups**

**AQUA RAIL SYSTEMS 3.0** 

# CIRCULAR OR CURVED SETUPS

For circular hydrodemolition projects, such as pillars and tunnels, there are several setup options. You can use the Aqua Spine or Ergo Climbers as a base, combined with the Circular Power Head for pillars and columns or a Centralizer, which is specifically designed for work inside pipes and tunnels. For curved or circular surfaces, a curved roller beam or curved scaffolding pipes provide additional flexibility, ensuring precise and efficient operation.

> The Circular Power Head is compatible with both the Aqua Spine 3.0 and the Ergo. Designed for working on pillars and similar structures, it seamlessly attaches to the Aqua Rail system and is available in multiple ring sizes. For added versatility, the Power Head can be mounted on either the inside or outside of the ring, depending on project requirements.



A pipe setup with an Ergo Climber combination.



For circular Hydrodemolition, such as pillars and tunnels, the Aqua Spine 3.0 with a curved roller beam makes usually challenging applications seamless. Or why not use the Ergo Climbers on curved scaffolding pipes?





The Aqua Rail System 3.0 is a complete solution and includes the Aqua Spine 3.0, Ergo climber 3.0 and Support elements for all imaginable situations.



The updated Ergo Climber 3.0 attaches and moves along standard or curved scaffolding pipes. The new light Support System with traversable joints, that allow the Ergo Climbers to pass over without hindrance, makes it easier than ever to perform powerful Hydrodemolition work.









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Lined hydrodemolition Heavy system 750

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LINED HYDRODEMOLITION, LIGHT SYSTEM, ERGO

# **Super Lance System**



# **Dual and Triple nozzles**



### \* Nozzle < 0,9 mm = 102xxx + 21154

Detnr	Ant.	Ben	ämning / T	itel	Material	D	imension	Anm	/ Ritn.nr
Konstr.	Ritad	Kontr.	Godk.	Skala	Generell tolerans	Generell y	<ul> <li>Vyplacering</li> </ul>	Ytbehandling	
	SE			1:5	ISO 2768/13920	jämnhet, R	a =10		
Dubbel och trippeldysa 3000bar				1					
AQUAJET					Art.nr	2023-10-05			
			Övers Dual	sikt and tripple	nozzle			Ritn.nr	73003 B

SPECIFICATIONS

Size	AQUA SPINE 3.0			
Length	6000mm (19,7 ft)	With 3x2,0m spine rail		
Width	2000mm (78,7 in)	With 2,0m Roller beam		
Height	1300mm (51,2 in)	With 45° EDS Power Head		
Max working width	3,0m (0-9,8 ft)			
Min width	530mm (20,9 in)	Or same as Roller beam		
Min clearance height standard	1300mm (51,2 in)	With 45° EDS Power Head		
Max length between supports	6.0 m (19,7 ft)	Longer setup possible with mid supports.		
Spine rail sections	0,25/0,5/1,0/2,0			
Roller beam lengths	2,0m (6,6 ft)	Special size and configuration on request		
Roller beam extensions	0,25/0,5/1,0 (0,8/1,6/3,3ft)			
Lance angle	±45°	With 45° EDS Power Head		
Oscillation step 1	0-14,5° / 0-110mm (0-4,33 in)	With 45° EDS Power Head		
Oscillation step 2	0-6,5° / 0-50mm (0-1,97 in)	With 45° EDS Power Head		
Oscillation step 3	N/A	With 45° EDS Power Head		
Weight				
Total weight	425 kg (937 lb)	Complete 6,0x2,0m system with power head		
45° EDS Power Head	100 kg (220 lb)			
Triple Spine rail section (2.0m)	40kg (88,2 lb)			
Operation				
Max reaction force	2500 N	See reaction force diagrams		
Max water depth continious	1m (3,3 ft)	Only fresh water		
Max water depth intermittent	10m (33 ft)	Only fresh water		
Gears				
Hoist gear oil type	ISO VG320-460	Syntetic		
Hoist gear oil volume	0,81			
Hydraulic hose extensions				
Max hose extension length	20m (66 ft)			
Max hose extension length larger hose diameter	60m (197 ft)			
Max hose extension length with Rotolance	10m (33 ft)			
Min hydraulic oil operation temp	20°C			
N.B. all speeds will be significant reduced when using hydraulic hose extensions				

# Aqua Circular Power Head 3.0 SPECIFICATIONS

Size	Circular Power Head 3.0 Aqua Spine			
Working diameter with ø1,0m ring	ø0,1-0,7m (0,3-2,3 ft)			
Working diameter with ø1,5m ring	ø0,6-1,2m (2,0-3,9 ft)			
Working diameter with ø2,0m ring	ø1,1-1,7m (3,6-5,6 ft)			
Lance angle	±25°	Preset		
Oscillation step 1	5° / 26mm (1,0 in)			
Oscillation step 2	9° / 48mm (2,0 in)			
Oscillation step 3	14° / 74mm (2,5 in)			
Lance adjustment in-out	300mm (11,8 in)	To cover different pipe diameter		
Offset distance, turnplate / lance	984 mm			
Size Spine				
Length	6000mm (19,7 ft)	With 3x2,0m spine rail		
Max length between supports	6.0 m (19,7 ft)	Longer setup possible with mid supports.		
Spine rail sections	0,25/0,5/1,0/2,0			
Weight				
CPH hose package	8 kg (18 lb)			
Power Head	54 kg (119 lb)			
Power Head hose package	14 kg (31 lb)			
ø1,0m ring	100 kg (220 lb)			
Total weight with ø1,0m ring	176 kg (388 lb)			
ø1,5m ring	120 kg (265 lb)			
Total weight with ø1,5m ring	196 kg (432 lb)			
ø2,0m ring	150 kg (331 lb)			
Total weight with ø2,0m ring	226 kg (498 lb)			
Triple Spine rail section (2.0m)	40kg (88,2 lb)			
Operation				
Max reaction force	2000 N	See reaction force diagrams		
Roller speed AUTO	25 m/min			
Max water depth continious	1m (3,3 ft)	Only fresh water		
Max water depth intermittent	10m (33 ft)	Only fresh water		
Hydraulic				
Max hydraulic pressure	200 bar (2900 psi)			
Max hydraulic flow	16 l/min (4.2 gpm)			
Hydraulic oil type	ISO VG32	Mineral		
Gears				
Hoist gear oil type	ISO VG320-460	Syntetic		
Hoist gear oil volume	0,08			

# Aqua Centralizer 3.0 SPECIFICATIONS

Size	Aqua Centralizer 3.0				
Working diameter with ø1,0m ring	ø1,5-2,0m (4,9-6,5 ft)				
Working diameter with ø1,5m ring	ø1.9-2,5m (6,2-8,2 ft)				
Working diameter with ø2,0m ring	ø2,4-3,0m (7.9-9,8 ft)				
Max length between supports leg	6,0 m (6,6 ft)				
Spine rail sections	0,25/0,5/1,0/2,0				
Max length on Spine rail outside	1m (3,3 ft)	Spine rail mounted outside support leg with only supported on one side			
Lance angle	±25°				
Oscillation step 1	5° / 26mm (1,0 in)				
Oscillation step 2	9° / 48mm (2,0 in)				
Oscillation step 3	14° / 74mm (2,5 in)				
Lance adjustment in-out	300mm (11,8 in)	To cover different pipe diameter			
Weight					
Total weight	485 kg (1070 lb)	With ring ø1,5m (4,9 ft) and 3x2m Spine			
Total weight	655 kg (1444 lb	Complete with all rings and 3x2m Spine			
Operation					
Max reaction force	2000 N	See reaction force diagrams			
Roller speed AUTO	25 m/min (82 ft/min)				
Max water depth continious	1m (3,3 ft)	Only fresh water			
Max water depth intermittent	10m (33 ft)	Only fresh water			
Hydraulic					
Max hydraulic pressure	160 bar				
Operational hydraulic pressure	110 bar				
Max hydraulic flow total	16 l/min (4,2 gpm)				
Hydraulic oil type	ISO VG32	Mineral			
Operation oil temp	20-75° C				
Gears					
Hoist gear oil type	ISO VG320-460	Syntetic			
Hoist gear oil volume	0,08				

# SPECIFICATIONS

Size	ERGO CLIMBER 3.0				
Working width, linear beam	0-2,0 m (0-6,6 ft)	@ 1000N reaction force			
Working diameter, Ergo centralizer 360°	ø1,0-4,3m (3,3-14,1 ft)	Varies depending on accessories and assembly. See manual.			
Working diameter, Ergo Circular Power Head 360°	ø0,4-3,7m (1,3-12,1 ft)	Varies depending on accessories and assembly. See manual.			
Min width	500 mm (19,7 in)				
Min clearance height	320-500 mm (12,6-19,7 in)	Depending on bracket type			
Max length between supports	2.0 m (6,6 ft)	Longer setup possible with mid supports. See manual.			
Roller beam lengths	0,25/0,5m/1,0m (0,8/1,6/3,3 ft)				
Lance angle	±45°				
Oscillation step 1	8° / 22mm (0,9 in)				
Oscillation step 2	14° / 42mm (1,7 in)				
Scaffolding pipe	ø48,3mm x 4,0mm (ø1,9 in x 0.16 in / NPS 1,5 / DN40)	Min/max ø40-ø55mm (1.6-2,2 in)			
Transport boxes	1100x355x400 mm (43,3x14,0x15,7 in)				
Weight					
Total weight	110 kg (242 lb)	Dual spine complete 2x2 m system Triple spine complete 2x6m system			
Ergo Power Head	23 kg (51 lb) / 37 kg (82 lb)	Without / With hydraulic hoses			
Ergo Climber	22 kg (49 lb)				
Roller beam (1,0m)	9,5 kg (21 lb)				
Ergo Spine Roller	28 kg (62 lb)				
Operation					
Max reaction force Ergo Power head	1000 N	See reaction force diagrams			
Max water depth continious	1m (3,3 ft)	Only roller, fresh water			
Max water depth intermittent	10m (33 ft)	Only roller, fresh water			
Parallel drive	±2%				
Min radius scaffolding pipe (standard)	2000mm				
Min radius scaffolding pipe (extended)	300mm	Extended tensioning link bolt			
Gears					
Hoist gear oil type	ISO VG320-460	Syntetic			
Hoist gear oil volume	0,08				
Gear housing oil type	ISO VG320-460	Syntetic			
Gear housing oil volume	2x 0,04 l				
Hydraulic hose extensions					
Max hose extension length	50 m (164 ft)				
Max hose extension length	100m (328 ft)	With larger hose extensions			
Min hydraulic oil operation temp	20°C				

N.B. all speeds will be significant reduced when using hydraulic hose extensions ISC sensing system will also react slower

# **AQUAJET EQUIPMENT**

For more information about Aquajet's full range of hydrodemolition equipment, please visit our website at www.aquajet.se.



Hydrodemolition robots



Aqua Rail Systems



Hydrodemolition high-pressure pumps



Wastewater treatment system





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