QUAKELOGIC

QL-AquaForge 6031

Industrial CNC Waterjet Cutting System

The **QL-AquaForge 6031** is a heavy-duty, industrial CNC waterjet cutting system engineered for continuous operation in municipal and industrial machine shop environments. Built to withstand the demands of high-volume production, this system delivers precision cutting, operational reliability, and long-term durability that modern fabrication facilities require.

Designed to meet **all mandatory requirements** of U.S. public-sector procurement specifications, the QL-AquaForge 6031 combines cutting-edge technology with proven industrial design principles. From structural steel fabrication to precision component manufacturing, this system provides the performance and versatility that procurement engineers and facilities managers demand.

Industrial-Grade Performance

Built for continuous-duty operation in demanding production environments

≥60,000 PSI Cutting Power

High-pressure capability for cutting virtually any material

Cantilever Architecture

Maximum accessibility for material loading and maintenance

Fully Compliant

Meets all U.S. government and municipal technical requirements

MACHINE STRUCTURE

Rigid Structure & Precision Motion Control

1

Cantilever-Style Architecture

The **cantilever-style machine architecture** provides unrestricted material loading access and simplified maintenance procedures. Unlike bridge-style systems, the cantilever design eliminates obstructions over the cutting area, allowing operators to load oversized materials and access components without navigating around structural elements.

Heavy-duty steel construction features a **two-piece design** that separates the catcher tank assembly from the motion system. This configuration isolates vibration, enhances structural rigidity, and simplifies long-term maintenance by allowing independent service of each subsystem.

2

Precision Motion System

A **positively engaged drive system** on all axes ensures accurate, repeatable motion control throughout the cutting envelope. Precision ball screws or rack-and-pinion drives deliver consistent positioning accuracy, while industrial servo motors provide smooth acceleration and deceleration profiles that optimize cutting quality.

3

Cutting Envelope & Speed

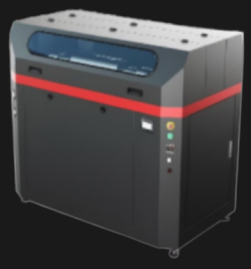
- **Minimum cutting envelope:** 2000 × 3100 mm (78.7" × 122")
- High-speed CNC motion system meeting or exceeding industrial cutting speed requirements
- Precision positioning suitable for tight-tolerance fabrication
- Optimized for continuous abrasive waterjet operation

The system's high-speed motion capabilities enable efficient production while maintaining precision positioning and repeatability for demanding applications in aerospace, automotive, and architectural metalwork.

System Components and Included Accessories

The proposed CNC waterjet cutting system is delivered as a complete, integrated solution including all major machine assemblies, subsystems, and accessories required by the solicitation. The system configuration shown includes the following core elements:

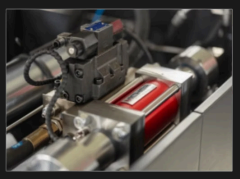
- Cantilever-style CNC waterjet machine structure with integrated cutting table and catcher tank
- Industrial high-pressure intensifier pump designed for continuous-duty operation
- CNC-controlled abrasive cutting head with programmable Z-axis motion and water-only cutting capability
- Single-piece high-pressure plumbing and continuous abrasive delivery system
- PC-based CNC control system with touchscreen operator interface and required software functionality
- Integrated diagnostic monitoring, safety systems, and laser-based material alignment
- Standard tool kits, accessories, and documentation necessary for commissioning and operation



High-Pressure Intensifier Pump Unit
Industrial-grade intensifier pump designed for continuous-duty waterjet operation, providing stable high-pressure performance suitable for demanding cutting applications.

Integrated Diagnostics and Monitoring Components
Industrial sensors and electrical monitoring elements enabling real-time system diagnostics, condition monitoring, and automated protection functions during operation.

Enclosed Heavy-Duty Pump Construction
Rigid, enclosed steel housing designed to support safe, reliable operation in industrial and municipal fabrication environments while reducing vibration and simplifying maintenance.



Hydraulic and Servo-Controlled Pressure Regulation System
Precision hydraulic and servo valve components providing accurate pressure control, smooth operation, and long-term reliability for high-pressure waterjet cutting.

HIGH-PRESSURE SYSTEMS

Pump Technology & Cutting Head Configuration

Industrial Intensifier Pump System

The heart of the QL-AquaForge 6031 is its industrial **intensifier pump rated at ≥60,000 PSI**, delivering the extreme pressures required for cutting hardened steel, titanium, composites, and other challenging materials. This hydraulically-driven intensifier design provides consistent pressure delivery with minimal pulsation, ensuring smooth cut surfaces and extended consumable life.

- Pump power exceeding **30 HP minimum requirement** for sustained cutting performance
- Continuous-duty design with integrated diagnostics and protection systems
- Real-time pressure and performance monitoring with automated alerts
- High-efficiency operation reduces energy consumption and operating costs

Advanced 3-Axis Cutting Head

The fully CNC-controlled **3-axis abrasive cutting head** provides exceptional versatility for complex cutting operations. Programmable **Z-axis travel exceeding 8 inches** accommodates varying material thicknesses and allows automatic height adjustment during cutting, maintaining optimal standoff distance for consistent cut quality.

- **Water-only cutting head included** for pure waterjet applications without abrasive
- **Single-piece high-pressure whip** configuration eliminates potential leak points
- Abrasive feed line configured at **45-degree orientation** for optimal mixing efficiency
- Quick-change nozzle assembly minimizes downtime during consumable replacement

This dual-head configuration enables operators to quickly switch between abrasive cutting for metals and composites, and pure waterjet cutting for softer materials like rubber, foam, and food products—maximizing system utilization and return on investment.

CONTROL SYSTEMS

Abrasive Delivery, Software & CNC Controls

Continuous-Fill Abrasive System

The **continuous-fill abrasive hopper with ≥900 lb capacity** ensures uninterrupted production during extended cutting operations. Gravity-fed abrasive delivery provides consistent flow rates for uniform cutting performance, while the large capacity minimizes refilling frequency—critical for high-volume production environments and lights-out manufacturing.

The system includes an **initial supply of abrasive garnet** as required by specification, allowing immediate commissioning and production startup. Precision metering controls optimize abrasive consumption, reducing operating costs while maintaining superior cut quality across diverse materials and thicknesses.

Windows-Based CNC Control Platform

The **Windows-based CNC control system** features an intuitive touchscreen interface that simplifies programming and operation. The **graphical programming environment eliminates G-code requirements**, allowing operators to create complex cutting paths through visual tools and CAD file import—no specialized programming knowledge needed.

- Integrated nesting algorithms maximize material utilization and reduce waste
- Cut restart capability recovers from interruptions without material loss
- Built-in diagnostics monitor system health and predict maintenance requirements
- Automatic cut-time estimation and cost-per-part calculation for accurate quoting

Native support for **all required CAD, image, and file formats** including DXF, DWG, IGES, and common vector graphics ensures seamless integration with existing design workflows and eliminates file conversion headaches.

SAFETY & SUPPORT

Safety Systems, Installation & Comprehensive Support

01

Integrated Safety Systems

Industrial safety features designed specifically for high-pressure waterjet environments protect operators and equipment

02

Emergency Stop Functions

Multiple e-stop locations and controlled operating modes ensure immediate response to any safety concern

03

Laser Edge Finder

Precise material alignment using non-camera laser technology for accurate part positioning

Turnkey Delivery & Installation Package

Delivery

FOB Destination, Freight Prepaid to your facility

Professional rigging and placement in your designated machine shop location

Installation & Training

Complete **installation, commissioning, and system calibration** by factory-trained technicians

Two (2) days of on-site operator training covering programming, operation, maintenance, and troubleshooting

Warranty & Documentation

Comprehensive warranty on parts and labor meeting all solicitation requirements

Complete operation, maintenance, and safety documentation provided in print and digital formats

The QL-AquaForge 6031 is designed and manufactured to meet all mandatory technical specifications for U.S. municipal and public-sector procurement, including Buy American Act requirements where applicable. Complete compliance documentation available upon request.

Advancing Precision Waterjet Cutting with QuakeLogic

Empowering municipal machine shops, engineering laboratories, and industrial fabrication environments, **QuakeLogic Inc.** delivers **industrial-grade CNC waterjet cutting solutions** engineered for precision, reliability, and long-term operational performance.

Connect with QuakeLogic – Your Partner in Industrial CNC Waterjet Solutions

Corporate Headquarters

QUAKELOGIC INC.

4010 Foothills Blvd. Suite 103/194

Roseville, CA 95747

Factory/Warehouse:

2008 Opportunity Dr. Suite 130
Roseville, CA 95678

Executive Support Line

+1 (916) 899-0391

Direct access for advanced technical consultations and priority instrument support. Available Monday - Friday, 9 AM - 5 PM PST

Strategic Inquiries

sales@quakelogic.net

For strategic collaborations, enterprise-level instrumentation solutions, and comprehensive technical inquiries.

Our Unwavering Commitment to Operational Excellence

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Providing responsive technical support, calibration guidance, and complete after-sales assistance for every system delivered.

Explore Our Complete Product Portfolio

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Discover how **QuakeLogic Inc.**'s industrial CNC waterjet cutting solutions can modernize machine shop workflows, improve cutting accuracy, and support **reliable, repeatable production** in municipal, industrial, and applied manufacturing environments.

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