

QUAKELOGIC

ABRASIVE WATERJET CUTTING SYSTEM

Five-axis abrasive waterjet cutting system for metals, stone, glass, ceramics, composites & plastics.



QL-HydroCut Pro
4020x5

QL-HYDROCUT PRO 4020X5

ABRASIVE WATERJET CUTTING SYSTEM



precision cutting of virtually any material. Cold-state cutting produces no heat-affected zone, no thermal distortion, and no loss of material properties, while five-axis taper compensation delivers flat, square, and beveled cut surfaces with minimal kerf.

- **Cuts virtually any material** – metals, stainless, aluminum, titanium, stone, ceramics, glass, composites, and plastics from thin gauge to thick plate.
- **50 HP hydraulic intensifier pump** delivering up to 60,900 PSI (420 MPa) for fast, continuous-duty cutting with no pressure “dead-zone” fluctuation.
- **Five-axis taper-compensation head** (Tilt-A-Jet equivalent) with $\pm 45^\circ$ bevel capability eliminates taper and tailing.
- **Complete turnkey delivery** – FOB Destination freight, installation, commissioning, three days onsite training, documentation, and two-year warranty.

WHAT'S INCLUDED »

- QL-HydroCut Pro 4020x5 Cutting System
- 157.5 × 78.7 in CNC Cutting Table
- 50 HP High-Pressure Intensifier Pump
- Five-Axis Taper-Compensation Head
- Programmable Motorized Z-Axis
- Rapid Water Level Control System
- Bulk Automatic Abrasive Delivery
- Variable-Speed Solids Removal System
- Closed-Loop Laminar Settling System
- Laser Feature Finder & Optical Locator
- Terrain-Following Height Control
- QL-WaterJet CNC Software (Unlimited)
- Pump & Nozzle Spare Kits
- 2,200 lb Garnet Abrasive
- Install, Commissioning & 3-Day Training
- Manuals, Documentation & Support

KEY FEATURES

- Gantry split-type platform with pyramid-style weight distribution keeps the machine rock-solid and vibration-free at high traverse speeds.
- 50 HP hydraulic intensifier pump with air-cooled independent circulation delivers constant 60,000 PSI-class output for consistent cut quality.
- Five-axis taper-compensation head eliminates taper and tailing, producing flat, precise, square cut surfaces on thick and thin materials alike.
- Non-contact laser height measurement and cross-positioning give high-precision workpiece detection without marking the surface — ideal for 3D and irregular parts.
- Intelligent CNC control with automatic nesting, toolpath generation, taper compensation, and material parameter libraries maximizes yield and throughput.
- Integrated soft-water treatment and closed-loop laminar settling cut nozzle wear, scaling, and consumable cost while extending component life.
- One-piece formed aluminum-alloy crossbeam, precision ball-screw drives, and closed-loop AC servos ensure rigidity, accuracy, and long service life.
- Fully enclosed drag chains, dust-proof folding X-axis seal, and full-surround protective structure extend equipment life in harsh cutting environments.
- Bulk automatic abrasive delivery and variable-speed solids removal enable hours of continuous, unattended production.
- Delivered factory-new as a complete turnkey solution — ready for Government, university, and industrial use on 208/480 VAC power.

PRODUCT FEATURES

CUTTING CAPABILITY

Metals, Stainless & Aluminum · Titanium · Stone, Granite & Marble · Ceramics · Glass · Composites · Plastics · Thin Gauge to Thick Plate · Cold Cutting (No HAZ) · Straight & ±45° Bevel

MACHINE

Gantry Split-Type Platform · 5-Axis Motion Control · Programmable Motorized Z-Axis · Rapid Automatic Water Level Control · One-Piece Aluminum Crossbeam · Precision Ball-Screw Drive · Closed-Loop AC Servos

HIGH-PRESSURE SYSTEM

50 HP Hydraulic Intensifier Pump · Up to 60,900 PSI · Air-Cooled Oil Cooler · >1,000 hrs Between Service · Up to 85% Operating Efficiency

SOFTWARE & CONTROL

QL-WaterJet 5-Axis CNC · CAD/CAM Import & Auto Toolpath · Automatic Nesting & Taper Compensation · Material Parameter Database · Dry-Run Simulation · Unlimited Seats · Lifetime Updates

POSITIONING & SENSING

Laser Height Measurement (0.0004 in) · Terrain-Following Height Control · Laser Cross Positioning (IP67) · 20 MP Visual Assistance System

FLUID & ABRASIVE HANDLING

Bulk Automatic Abrasive Delivery · Pneumatic Abrasive Control Valve · Integrated Soft-Water System · Closed-Loop Laminar Settling · Variable-Speed Solids Removal

ELECTRICAL & LANGUAGES

208 / 230 / 460 / 480 VAC, Three-Phase, 60 Hz · Optional 380 / 400 / 415 VAC, Three-Phase, 50 Hz (international) · Factory-configured · English or Customized

For more information about the QL-HydroCut Pro 4020x5, please contact QuakeLogic Inc.

SYSTEM SPECIFICATIONS

CUTTING TABLE & MOTION SYSTEM

PARAMETER	SPECIFICATION
Platform Structure	Gantry Split Type
Working Envelope (X × Y)	157.5 × 78.7 in (4,000 × 2,000 mm)
Z-Axis Travel	5.9 in (150 mm), programmable motorized
Cutting Accuracy	±0.004 in (±0.1 mm)
Positioning Accuracy	±0.002 in / 19.7 in (±0.05 mm / 500 mm)
Repeat Positioning Accuracy	±0.001 in / 19.7 in (±0.03 mm / 500 mm)
Maximum Traverse (Idle) Speed	354 in/min (9,000 mm/min)
Water Tank Height	29.5 in (750 mm)
Water Tank Load Capacity	102 lb/ft ² (500 kg/m ²)
Drive System	Precision ball-screw, closed-loop AC servo
Crossbeam	One-piece formed aluminum alloy

HIGH-PRESSURE INTENSIFIER PUMP

PARAMETER	SPECIFICATION
Pump Type	Hydraulic intensifier, air-cooled circulation
Motor Power	50 HP (37 kW)
Rated Pressure	Up to 60,900 PSI (420 MPa)
Working Pressure Range	7,200–55,000 PSI (50–380 MPa)
Boosting Ratio	1 : 20
Maximum Stroke Rate	92 strokes/min
HP Water Line / Max Nozzle	3/8 in / 0.012 in (0.3 mm)
Max Oil Pump Pressure / Flow	4,500 PSI (31 MPa) / 31.4 gpm (119 L/min)
Service Interval	>1,000 operating hours; up to 85% efficiency
Oil Cooler Capacity	47,800 BTU/hr (14 kW) @ 95°F (35°C)
Weight / Dimensions (L × W × H)	2,756 lb / 74.8 × 53.1 × 43.3 in (1,900 × 1,350 × 1,100 mm)

FIVE-AXIS TAPER-COMPENSATION CUTTING HEAD (TILT-A-JET EQUIVALENT)

PARAMETER	SPECIFICATION
Head Type	Five-axis taper-compensation cutting head
Rotation Radius	10.2 in (258 mm)
Maximum Bevel (Flat Plate)	45°
A-Axis / C-Axis Rotation	±90° / ±540°
Feedback	Absolute-encoder servo (no homing required)
Taper Control	Active taper compensation

CONTROL, SENSING & FLUID HANDLING

CNC CONTROL SYSTEM

PARAMETER	SPECIFICATION
Platform	QL-WaterJet 5-Axis CNC
Industrial PC	Quad-core, 4 GB / 128 GB
Operating System	Windows 11(64-bit)
Axes	2- to 5-axis synchronous
Supported Formats	DXF, DWG(CAD/CAM import)
Automatic Nesting	Included (sorting, lead-in, bridge)
Toolpath Optimization	Automatic
Material Database	Included
Dry-Run Simulation	Included
Taper Compensation	Automatic
Licenses / Updates	Unlimited seats / lifetime

POSITIONING & SENSING

PARAMETER	SPECIFICATION
Laser Height Measurement	Array / trajectory scanning
Measuring Range	±0.59 in (±15 mm)
Detection Accuracy	0.0004 in (0.01 mm)
Max Scan Speed	197 in/min (5 m/min)
Laser Cross Positioning	Red visible light, IP67
Visual Assistance Camera	20 MP, 11.5 ft (3.5 m) mount
Photo Positioning	±0.04-0.08 in (±1-2 mm)
Field of View	157.5 × 78.7 in (4,000 × 2,000 mm)

ABRASIVE, WATER & SOLIDS HANDLING

PARAMETER	SPECIFICATION	PARAMETER	SPECIFICATION
Abrasive Delivery	Bulk automatic feeder, 600 lb	Water Softening	Integrated ion-exchange
Abrasive Control Valve	Pneumatic, 6-gear, 0.26 gal (1 L)	Softener Throughput	264 gph (1,000 L/H)
Garnet Abrasive Supplied	2,200 lb	Settling System	Closed-loop laminar
Solids Removal	Sedimentation-bag, variable speed	Max Pumping Flow	92 gpm (350 L/min)
Max Particle Size	0.13 in (3.2 mm)	Solids Capacity	106 gal (400 L)

CUTTING CAPABILITY BY MATERIAL

CAPABILITY	METALS & ALLOYS	STONE & CERAMIC	GLASS	COMPOSITES	PLASTICS
Precision Straight Cutting	✓	✓	✓	✓	✓
5-Axis Bevel / Taper Cut (±45°)	✓	✓	✓	✓	✓
Cold Cutting – No Heat-Affected Zone	✓	✓	✓	✓	✓
Thin Gauge to Thick Plate	✓	✓	✓	✓	✓
Fine Detail & Inlay Work	✓	✓	✓	✓	✓

INSTALLATION & ENGINEERING

OVERALL DIMENSIONS & WEIGHTS

COMPONENT	DIMENSIONS / WEIGHT
Cutting Envelope (Table)	157.5 × 78.7 in (4,000 × 2,000 mm)
Water Tank Height	29.5 in (750 mm)
Intensifier Pump (L×W×H)	74.8 × 53.1 × 43.3 in (1,900 × 1,350 × 1,100 mm)
Intensifier Pump Weight	2,756 lb (1,250 kg)
Oil Cooler Unit (L×W×H)	29.5 × 30.9 × 51.2 in (750 × 785 × 1,300 mm)
Oil Cooler Weight	463 lb (210 kg)
Overall Machine Footprint	Per certified GA drawing †
Total Installed Weight	Per certified GA drawing †

FACILITY REQUIREMENTS

UTILITY	REQUIREMENT
Electrical Power	208–480 VAC, 3-phase, 60 Hz; sized for 50 HP (37 kW) pump & auxiliaries
Water Supply	Cold municipal water, 22–87 PSI (0.15–0.6 MPa), up to 264 gph (1,000 L/H)
Compressed Air	Clean, dry shop air, 29–44 PSI (0.2–0.3 MPa)
Drain	Floor / wastewater drain adjacent to closed-loop settling tank

† Overall machine footprint and total installed weight are confirmed on the certified general-arrangement (GA) drawing issued at order.

ENGINEERING HIGHLIGHTS

- One-piece formed aluminum crossbeam
- Precision ball-screw drive
- Closed-loop AC servo system
- Fully enclosed drag chain
- Integrated wiring design
- Full-surround protective structure

WHY QL-HYDROCUT PRO 4020X5

- ✓ 50 HP intensifier pump
- ✓ Up to 60,900 PSI
- ✓ Five-axis taper compensation
- ✓ Unlimited software licenses
- ✓ Lifetime software updates
- ✓ Factory Acceptance Testing (FAT)
- ✓ Turnkey installation
- ✓ Three-day onsite training
- ✓ ISO 9001 / 14001 / 45001
- ✓ MIL-STD-130 IUID

TECHNICAL SPECIFICATIONS

SPECIFICATION	DESCRIPTION
Product	QL-HydroCut Pro 4020x5 Abrasive Waterjet Cutting System
Cutting Envelope	157.5 × 78.7 in (4,000 × 2,000 mm)
Platform	Gantry Split Type, 5-Axis
High-Pressure Pump	50 HP Hydraulic Intensifier
Operating Pressure	Up to 60,900 PSI (420 MPa)
Cutting Head	5-Axis Taper Compensation, ±45° Bevel
CNC Software	QL-WaterJet, Unlimited Seats, Lifetime Updates
Height Control	Terrain-Following, Laser (0.0004 in / 0.01 mm)
Abrasive Delivery	Bulk Automatic Feeder
Water Treatment	Integrated Soft-Water + Closed-Loop Settling
Electrical	208 / 230 / 460 / 480 VAC, 3-Phase, 60 Hz (opt. 380 / 400 / 415 VAC, 50 Hz); factory-configured
Equipment Condition	Factory-New
Delivery Terms / Schedule	FOB Destination / 30 Days ARO
Installation	Turnkey Install, Startup & Commissioning
Training	3 Days Onsite Operator & Maintenance
Warranty	Two-Year Limited Warranty
Compliance	MIL-STD-130 IUID · ISO 9001 / 14001 / 45001

WARRANTY & SUPPORT

The QL-HydroCut Pro 4020x5 is backed by a two-year limited warranty covering parts and labor on the complete system — the intensifier pump, five-axis cutting head, motion and CNC control, servo drives, and QL-WaterJet software. Normal wear items and consumables are excluded.

- Lifetime technical support
- Remote diagnostics & troubleshooting
- Spare-parts support
- Lifetime software updates

QUALITY & COMPLIANCE

QuakeLogic Inc. is a California-based engineering and technology company delivering CNC waterjet, fabrication, and turnkey engineering systems to Federal, defense, research, university, and industrial customers. Every system is built factory-new, factory acceptance tested (FAT), and configured to the customer's requirements. QuakeLogic maintains ISO 9001, ISO 14001, and ISO 45001 certification, and supplies each unit with a MIL-STD-130 IUID identification plate.

**Corporate
Headquarters:**

QUAKELOGIC INC.

2008 Opportunity Dr. Suite 130
Roseville, CA 95678, USA

Monday – Friday
9:00 AM – 5:00 PM (PST/PDT)

Contact Us:

For product information,
quotations, technical support, or
partnership opportunities, our
team is ready to assist you with
professional, timely service.

Phone:

+1(916)899-0391

Email:

sales@quakelogic.net

Website:

products.quakelogic.net

About QuakeLogic:

- QuakeLogic Inc. is a California-based engineering and technology company providing innovative, reliable, and high-quality solutions to customers worldwide.

Our Commitment

- At QuakeLogic, we are committed to quality, innovation, and customer satisfaction — building lasting partnerships through reliable solutions and dependable support.

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