

MACHINE SPECIFICATIONS

MODEL RSJ 400L ROBOTIC SAWJET – SINGLE WORKTABLE HIGH PERFORMANCE SAWJET

Northwood NW M-900 High Performance Robotic Saw + Robotic Waterjet Combination



FANUC M900iB/400L Foundry Robot
881 lbs payload capacity
Foundry Pro M-900iB/400L R-30iB B-Cabinet Haptic

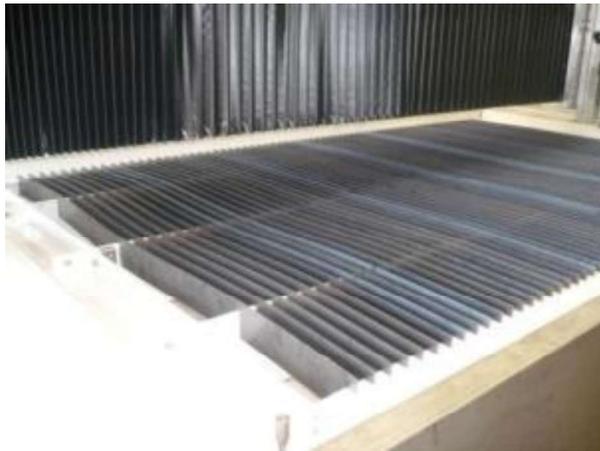


CATCH TANK

100% Water Containment in Tanks – Sides of Tanks are above slabs being cut – water is raised in tanks to submerge slabs while cutting, so not adding water to tanks constantly – water is not running over sides onto floor or onto rails.

The worktable consists of a series of replaceable metallic strips that support material during the cutting process. Base for table surface includes a tank collector that contains water.

One (1) independent ballast in tank to raise water level so that slabs are cut submerged for maximum blade cooling + quiet waterjet operation.



EFFICIENT DESIGN

Northwood has developed a very clean design. All water is contained in the machine no excess splash on the floor. This also means excellent containment of wiring thru enclosed power tracks. A Heavy Duty Waterproof Industrial Paint Process and Stainless Steel on all unpainted parts.

The machine is extremely rigid and easy to operate.

BETTER IN EVERY WAY...

Smart Saw Feed Function®
Instant, digital torque feedback to dynamically adjust machine speed to match material.

High-Performance Metered Garnet Feed
STANDARD

FANUC Closed Loop Servo Control
STANDARD

Lexan Barrier System with Safety Light Curtains
STANDARD

All-Stainless Saw Guarding and Flood
STANDARD

Premium Long-Life Coil Support Systems
STANDARD

Industrial PC Touchscreen
STANDARD

Pre-loaded Slat System with Slat Levelers
STANDARD

Pedestal Leveling With MAX Footing
STANDARD

StoneVision™ 3.0
Northwood Invented the SawJet Process and Software years ago - and remains the Industry Leader in PRODUCTIVITY!

Barcode System
STANDARD

Tank Levelers
STANDARD

Tank Clean-Outs
STANDARD

RSJ-400L-DUAL
- Dual-Tank System Shown
- Single-Tank Available

Northwood
Machine Manufacturing Company
www.northwoodmachine.com



NW-M900 Robotic Sawjet – features Low Tank Technology with 270° of operator accessibility. Full Operator Access to Front and Side of SawJET Low Tank worktable increases efficiency through ease of loading/unloading.



M-900iB/400L Six Axis Mechanical Unit (400 kg Maximum Payload, Floor Mounted, 3.704 m Reach) with:

- Forklift Pockets
- 7 m Robot Connection Cable
- J1 axis range selection (adjustable hardstop)
- 2 User air lines with 2 inlet ports at base and 2 outlet ports at J3
- EE Connector at J3 with 8 inputs, 8 outputs, HBK, +24 VDC, 0VDC
- 2-D iRVision Camera Cable with a connector at the base and at J3
- ASi Connector at J3 with 24 pins for user interface (24 VDC rated)
- Note: ASi can be used for one of the following options
 - iRVision 3DL
 - Force Sensor
 - User interface
- J1 cover Included
- J2 & J3 covers Included
- J456 cover Included
- SDLP ASi connector covers for J1 and J3 Included
- Camera connection covers for J1 and J3 Included
- SDLP Kit Included (See Link for more Details)
- Two part Epoxy paint
- IP 67 for wrist and J3 arm
- IP 66 for drive train
- IP 56 for Robot body
- ISO Wrist Flange

NRTL Approved R-30i B B-Cabinet Controller with:

- 2 Slot Backplane
- Main CPU Board with:
 - Multi-processor architecture (MAIN, COMM & PMC Processor)
 - MEMORY:64 Mb DRAM , 64 Mb FROM & 2 Mb SRAM
 - 6-axis Control PCB
 - 2 10BaseT Ethernet Ports
 - 1 iRVision (GigE) Camera Port
 - 1 iRVision Analog Camera Port
 - 2 Mini Slots (supports Devicenet, PROFIBUS, CC Link, Aux Axis, ARC Link, FL-net plug-in cards)
 - 1 Wide Mini Slot (supports PC104 or Line Tracking or Profinet plug-in card)
 - 1 PCMCIA Memory Card Slot
 - 1 USB Port 2.0 (accessible from the controller door)
 - 1 Learning Vibration Control (LVC) & RS-232 Port
- Controller Power Supply
- 6 Channel Servo Amplifier
- Power Transformer for 380 - 480 V AC
- NRTL breaker 10.5kVA/13kVA/380-575V 30A SCCR(Based on UL489):50kA(AC480V),18kA(AC600Y)
- RIA-compliant E-Stop unit
- Hour Meter
- 8 Safety Inputs & 8 Safety Outputs
- Integrated Operator Panel (Includes: T1-Auto Mode Switch, ESTOP, Cycle Start & Fault RESET Push Buttons, Indicator Lights)
- RIA-compliant Color Haptici Pendant with Touch Panel & USB Port 2.0
- 10M Teach Pendant Cable



Product Documentation CD:

Includes R-30iB HandlingTool Software (V8.x), M-900iA Mechanical Unit, and R-30iB Controller Documentation.

- System Software Reference, KAREL Reference
- R-30iB HandlingTool Software Installation, Setup and Operations
- R-30iB Controller Maintenance
- Mechanical Unit Operator Manual
- Error Codes

Network I/O

Ethernet/IP Adapter Software

Details: The Ethernet/IP Adapter Software option provides an Ethernet I/O interface between a FANUC Robot and some Rockwell (Allen Bradley) PLCs with EIP Scanner Option (eg. ControlLogix, CompactLogix). The Adapter option is like a slave and it requires a scanner in the I/O network to initiate communication. The Adapter option cannot drive physical devices such as EIP compatible relays or solenoids. Robots with the Adapter option cannot communicate with other robots with Adapter option. This option only allows communication of discrete I/O status over Ethernet. Ethernet/IP uses Allen Bradley protocol and compatible with Ethernet I/O of Rockwell PLC. EIP option supports explicit messaging in server mode.

Motion Package

Details: The Motion Package includes the Motion Interface, Constant Path, Singularity Avoidance, ADV-CP Speed Control, ADV-CP Path Control, and Collision Guard. The Motion Interface option is used for motion optimization including cycle time optimization, path optimization, small shape optimization, RV life optimization, and power consumption optimization. Constant Path is a motion control option that allows the robot to maintain the same path regardless of static or dynamic speed override changes. The Singularity Avoidance option allows the robot to work around singularity points automatically. Robot singularity can cause regional structure degeneracy or wrist degeneracy depending on the structure of a robot. The Advanced Constant Path package consists functions for easy teaching and cycle time reduction. Collision Guard provides a highly sensitive method to detect that the robot has collided with an object and then stops the robot immediately.

- ADV-CP Path Control

Details: Advanced Constant Path allows you to define a path and to adjust motion speed easily.

- ADV-CP Speed Control

Details: Advanced Constant Path allows you to define a path and to adjust motion speed easily.

- Constant Path

Details: Constant Path is a motion control option that allows the robot to maintain the same path regardless of static or dynamic speed override changes. A path that has been taught and tested at a low speed override will be maintained when the program is executed at 100% override.



- Collision Guard Pack

Details: Collision Guard provides a highly sensitive method to detect that the robot has collided with an object and then stops the robot immediately. This helps to minimize the potential for damage to the end-of-arm tooling and robot. Collision Guard is effective for both program and jog motion.

- Motion Interface

Details: The Motion Interface option is used for motion optimization including cycle time optimization, path optimization, small shape optimization, reducer life optimization, and power consumption optimization. The motion interface allows the robot to communicate with the Motion PRO software on a PC. MotionPRO must be loaded on a PC and connected to the robot via Ethernet to collect robot data and optimize cycle time or robot path.

- Singularity Avoidance

Details: The Singularity Avoidance option allows the robot to work around singularity points automatically. Robot singularity can cause regional structure degeneracy or wrist degeneracy depending on the structure of a robot. This option is recommended to prevent cable winding issues related to a robot moving through singularity points during linear motion.

DCS Position & Speed Check

Details: Dual Check Safety (DCS) Position & Speed Check monitors the position data and speed of motors with two independent CPUs in the robot controller. These functions can detect position and speed errors immediately and shut down the motor power by two independent channels. Safety data and processes are cross-checked by two CPUs. Self-diagnosis of safety hardware and software is executed periodically to prevent potential failure accumulation. No external sensors are needed to monitor speed and position; built-in servo motor sensors are used for this function. (Use external electrical circuits to use safety inputs or safety outputs.) Used with HandlingTool V8.10 or later, and includes DCS visualization on the iPendant. Excluded axes are: Servo gun axes, Independent axes, and Continuous turn axes.

ASCII Program Loader

Details: ASCII Program Loader loads teach pendant programs that are saved as ASCII files (.LS) directly onto the robot. ASCII teach pendant programs can be stored offline and manipulated without the specialized software required for handling binary programs. You can use general purpose text editors to:

- Archive programs offline for code reuse in the same or different robots.
- Examine human-readable hardcopy programs away from a robot.
- Edit programs away from a robot.
- Generate programs using standard text-based scripting tools such as Perl.
- Use less expensive robot simulators than those limited to binary support.



WATERJET INTENSIFIER

Northwood uses KMT waterjet systems, *the #1 builder in the world* of High-Pressure Waterjet Cutting Systems:

- KMT uses an 8” stroke vs. competitor’s 6” stroke = 25% fewer pressure spikes allowing for longer component life
- KMT uses a bolted Hydraulic Assembly vs. competitor’s tie-rod design = maintenance much easier and quicker on KMT system.
- KMT does not require hydraulic accumulator. Competitor requires hydraulic accumulator to mask hydraulic signal and requires maintenance & tuning for various pressures.
- KMT topworks elevation are at a comfortable height. Competitor’s intensifier topworks are elevated which makes it difficult to perform maintenance tasks.
- KMT has separate, easily maintained external filter. Competitor’s high pressure filtration internal to attenuator requires disassembly for maintenance.



KMT Streamline™ SL-VI

40 HP (230v 3phase)

60,000 psi Maximum pressure range

Hyperlife™ (patent pending) plunger seal and ceramic plunger technology

Cartridge-type hydraulic seal for quick change out

Patented “Quick Plunger Removal” without disassembly of hydraulic cylinder

The rapid growth in the stone and tile industry can be attributed in part to the rapid advancement in [KMT waterjet cutting technology](#). This technology has made stone, tile, and [marble cutting](#) easier without restrictions. By closely nesting raw materials and a reduced small kerf width to cut the materials, the stone and tile industry is able to maximize performance by cutting any shape or size and create a better yield.

[Waterjets](#) are perfect for creating corporate logos in decorative designs on walls or inlaid into floors, countertop parts, faucet and sink holes as well as a smoother radius off sharp edges of slabs cut with saws. Most of the interior designers specify the use of [water jet](#) cutting because to the intricate patterns and inlays in the hotels on the strip in Las Vegas, Nevada.

KMT Waterjet Systems is the leading global manufacturer of waterjet cutting systems to the stone and tile industry.



Intensifier Voltage Requirement

40HP: 230 volt 3-Phase (175 AMPS) or 480 volt 3-Phase (90 AMPS) – Customer to Select

WATERJET CUTTING NOZZLE

KMT Waterjet IDE™ II Abrasive Waterjet Cutting Head

KMT Waterjet IDE™ II (Integrated Diamond Eductor) Abrasive Water jet Cutting Head Provides Breakthrough Simplicity and Performance!

[KMT Waterjet Systems](#), the Global Leader in innovative water jet technology introduces the most advanced and simplistic cutting nozzle in the water jet industry. The KMT IDE II Abrasive cutting head for cutting steel, stainless steel, titanium, aluminum, stone, tile, marble, brass, glass and much more. Actually, water jets don't know what it can't cut!

Finally! A water jet abrasive cutting nozzle with the fewest possible parts making performance simple and reliable. Now, the only pieces which need to be replaced are the focusing tubes and head body. Each [KMT Waterjet IDE™ II](#) has a permanently perfect mounted diamond and mixing chamber and each includes the removable abrasive inlet, focusing tube retaining nut, retaining ring and high pressure filter element.



BULK ABRASIVE TRANSFER SYSTEM

500 lb. capacity
Top Loading
Filling port is locked by internal air pressure



GARNET METERING SYSTEM WITH FLOW SENSOR

One (1) Feedline Abrasive Metering System allow for programmatic control of the garnet rate through the CNC. This means the programmer is capable of adjusting the garnet flow for different types of materials as required.



HIGH-PERFORMANCE CNC SMARTSAW WITH SERVOTILT

SawJET™ Sawing Head

- 360 Degree programmable Saw Head
- Direct-Drive High-Torque Smart Saw maintains constant torque.
- 16" (406 mm) diameter blade which provides more stability in saw cuts with less blade deflection + cuts more linear inches reducing waterjet usage and expense. Blades are affordable.
- Automatic *Z-Axis Blade Oscillation* for plunge cutting without blade deflection and de-tensioning for improved accuracy and blade life
- SmartSaw™ Monitoring System - Amperage Load of Saw Motor is monitored continuously – Feed speed is automatically increased and decreased as load rises or falls. Maximum load is programmable. Allows for Faster Programmed Feed speeds without Operator intervention.

High-Torque SmartSaw™

SERVOTILT PROGRAMMABLE MITER SAW

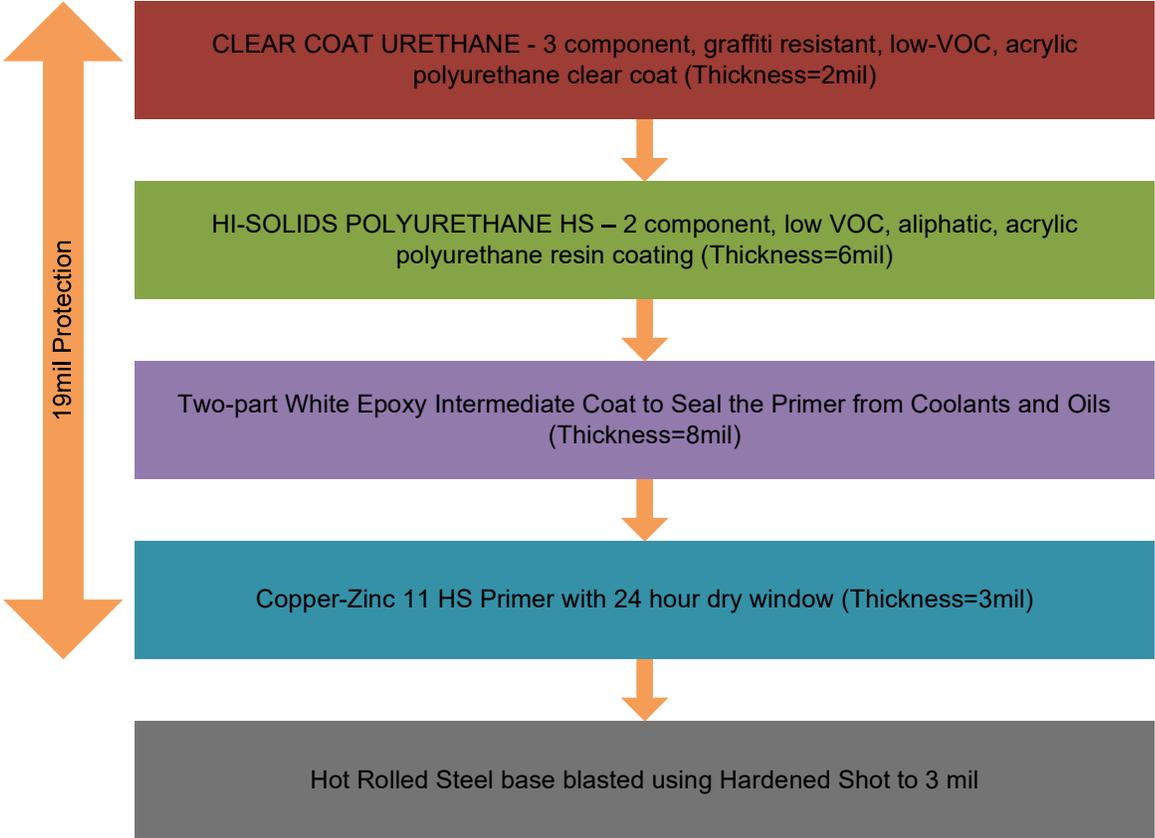
ServoTilt offers fully programmable *miter saw cutting*. Able to miter cut at any unique angle to provide flexibility not only for countertops, but also fireplace surrounds and other unique miter applications.



PAINT SPECIFICATION

Anti-Corrosion Primer with Sherwin Williams “Polane” Strobe White Finish Coat.

Paint Process



WEIGHT

Approximate Weight 15,000lbs
Recommended Lift/Fork Truck Capacity 15,000lbs.

AIR REQUIREMENTS

110 psi 45cfm. Air must be clean dry air.

WATER REQUIREMENTS

45 psi @ 10 gpm grey for optional blade cooling.
2gpm fresh “softened” water for KMT cutting
5gpm grey for KMT cooling

MACHINE ELECTRICAL

Machine Voltage: 480 volt 3-Phase (60 AMPS)
Intensifier Voltage: See above specification in Waterjet Intensifier Section.

Plant wiring required: (1) 480 volt 3-Phase brought to the main panel.

FOUNDATION REQUIREMENT

A 96% soil compaction beneath a 6” minimum, reinforce, 3000” PSI isolated concrete slab.

SAFETY & MAINTENANCE

The machine operator is protected by a series of safety features including a remote emergency stop, and axis over-travel detection. All electrical components are housed in a sealed, air-conditioned cabinet to prevent dust and humidity damage. Breakers are provided for all electrical circuits. Included are an operating manual, electrical schematics, maintenance manual, and parts list.

