



XR SERIES  
MULTI-PURPOSE  
CNC ROUTER



# XR ROUTER

VERSATILE CNC ROUTER FOR ALL INDUSTRIES



 ***Advanced Robotic Technology***  
THE TRUSTED NAME IN CNC TECHNOLOGY

# IF PRODUCTIVITY IS YOUR GOAL - LET ART SHOW YOU HOW TO ACHIEVE IT.



#### High speed spindles:

- 3.8Kw to 12Kw
- ISO30 taper
- Ceramic bearings
- 4 pole available



#### Auto tool changer:

- 10 tool rack changer
- Optional under deck changer for large tools



#### iCam vision system:

- Align job to material
- Fit cut path to prints
- Trace patterns and templates



#### Rotary 4th axis:

- Machine 3D objects
- Engrave on cylinders



#### C axis support:

- Saws & Knives
- Cutting wheels
- Side boring tools

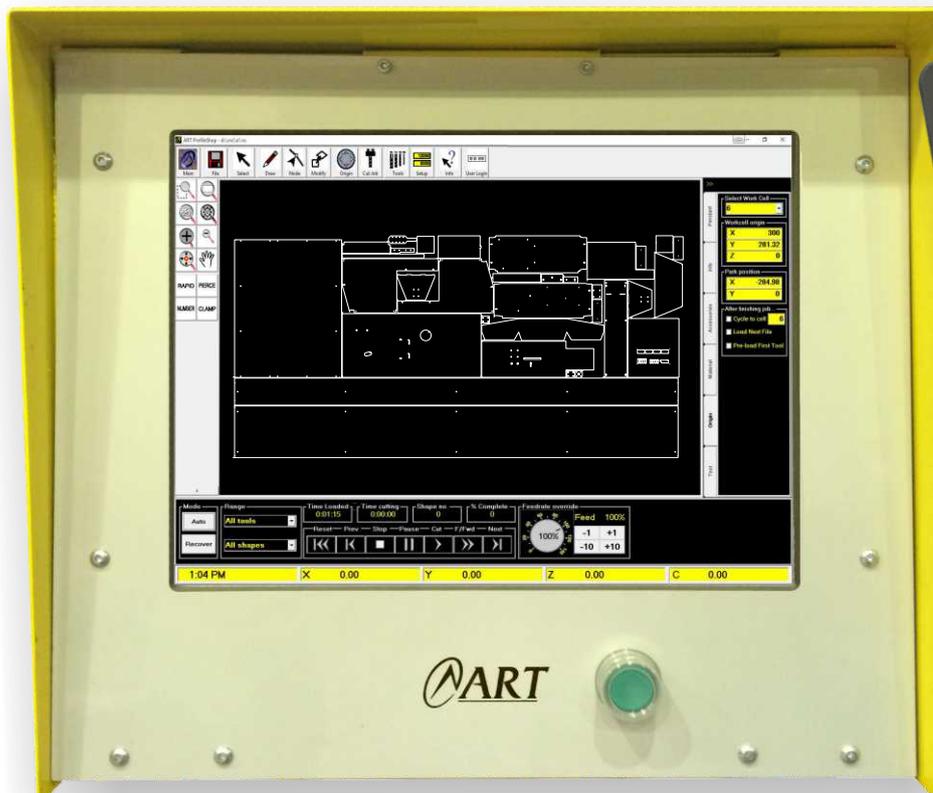
# THIS IS WHAT WE PUT IN.

Over the last two decades, ART's drive to develop new and exciting technologies has led to a range of world-beating developments for the CNC cutting industry. High torque servo drives, integrated lube and swarf extraction, intelligent accessory control, monocoque chassis design, auto sensing drill tools and 4th axis machining are just a few of the developments that increase productivity and performance.

At ART, we are driven to do better every day.

## Intelligent touchscreen controller improves productivity

The advanced ART ProfileShop Touchscreen Controller gives ultimate control over every job. Modify nests on the machine, start, stop, adjust parameters and more with the touch of the finger. ART ProfileShop combines ease of use with advanced features to automate all cutting settings, resulting in optimum cut quality. User log-in enables functions suitable to each operator's capabilities. Our new wireless pendant allows for monitoring of the machine from anywhere in the factory.



ART Touch-Screen Controller with Wireless Remote Pendant makes the XR Router one of the most efficient CNC routers

Here are just a few of the other reasons why an XR Router from Advanced Robotic Technology is the best choice...

### Ease of use

Pendant hand controller gives access to most functions when the operator is away from the main controller. Start, stop, recover, digitise, align plate, change tools, override feed rate and much more. New wireless pendant gives ultimate freedom with over 100 metre range.

### Precision guide ways

German-made linear bearings provide smooth movement to ensure accurate cutting. Wiper seals on all bearing surfaces keep bearings dust free for long service life.

### High torque servo drives

The XR series comes with precision AC servomotors coupled to German-made planetary gearheads and smooth helical rack and pinion drive. High power means fast, agile cutting. AC servo control means accurate positioning without loss of position.

### Comprehensive database

The controller knows all parameters for each tool. It can automatically set all machining parameters such as rpm and feed rates for each material. Specialised tools such as rigid taps can be utilised without the need for special CNC files.

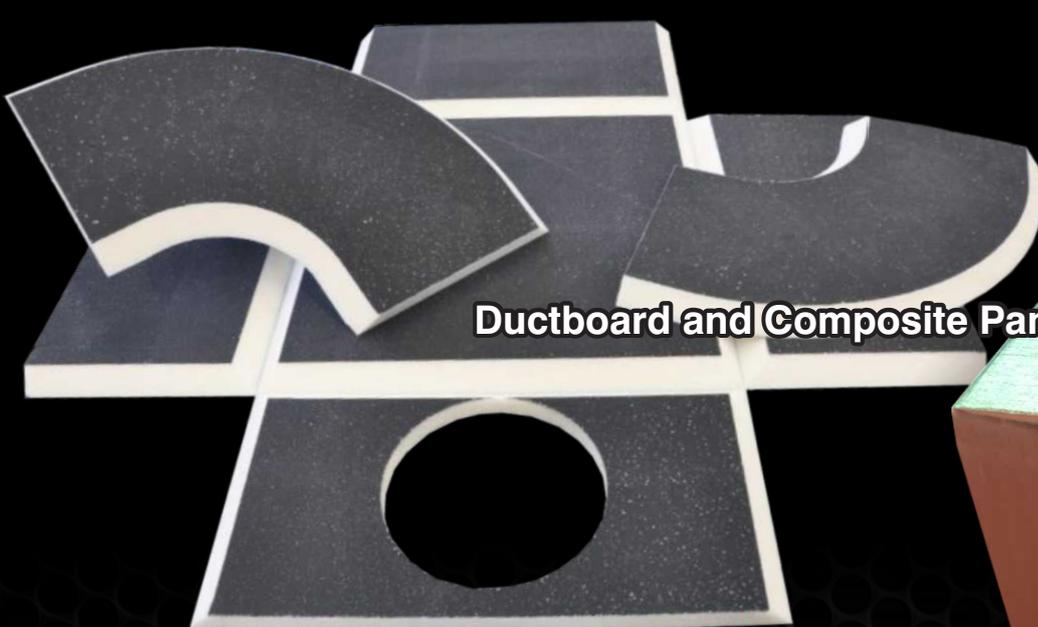
### Large geometry gantry

A fully-welded fabrication provides outstanding stability while maintaining high acceleration. Wide linear bearing spacing provides superior geometry for the cutting head bearings which increases cutting performance under heavy loads.

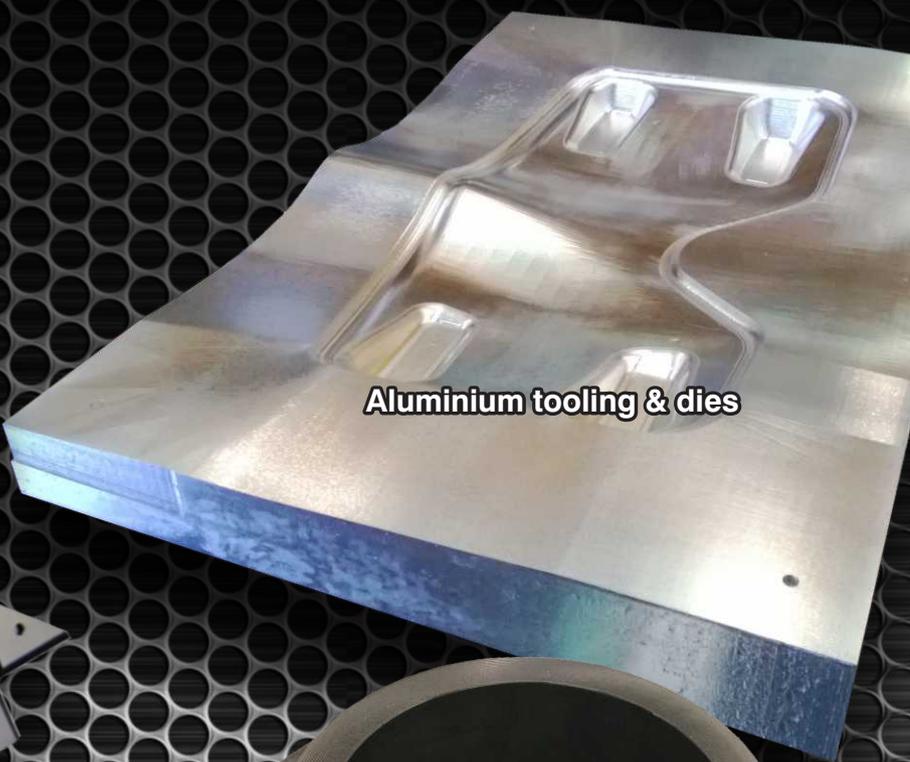
### Heavy duty fabrication:

Fully welded steel construction with heavy duty powder-coated surface. 250mm deep PFC & UB chassis. Close cross beam spacing means excellent vibration dampening. Fully machined chassis for accurate motion

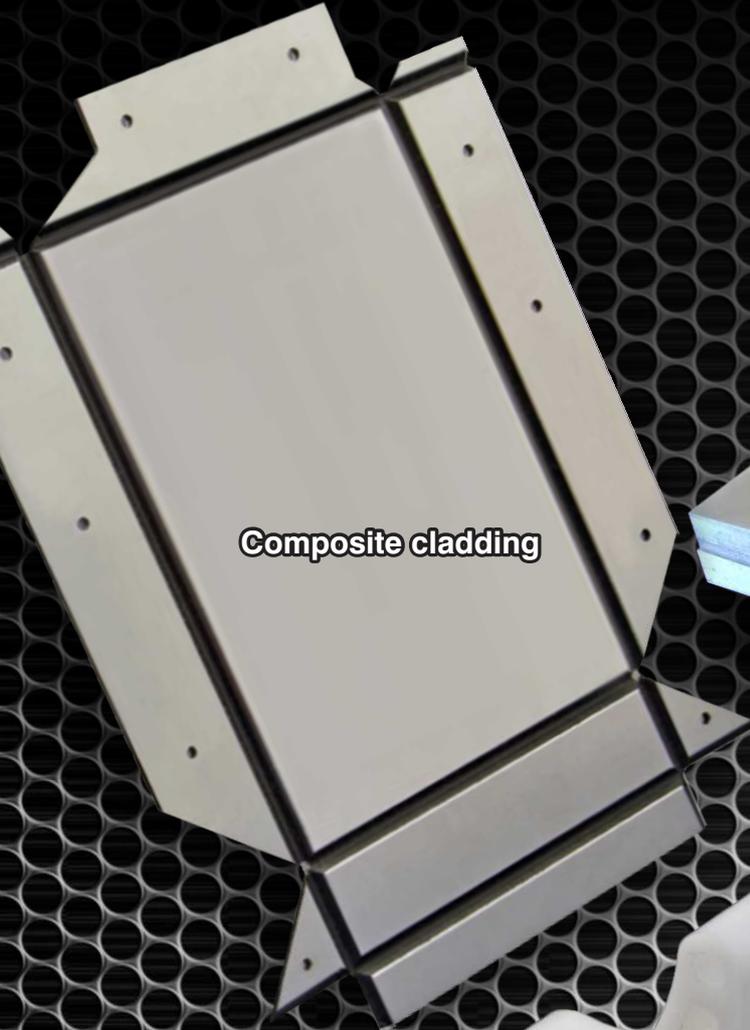




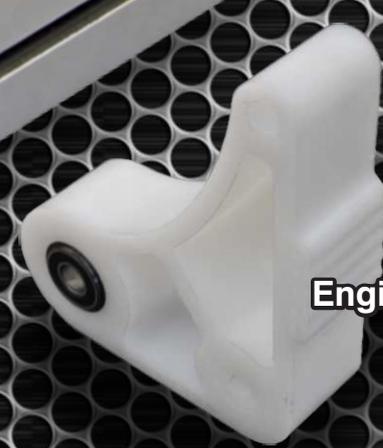
Ductboard and Composite Panels



Aluminium tooling & dies



Composite cladding



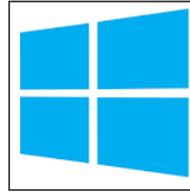
Engineering in Plastics



■ Standard features    □ Optional equipment



■ **Large colour touchscreen controller**  
ProfileShop graphical controller interface makes operation very fast to learn, while enabling a vast array of powerful features that make it one of the most efficient machines to use.



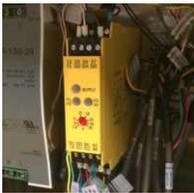
■ **Controller runs Microsoft Windows™**  
This provides excellent compatibility and allows your existing networking professionals to easily integrate the controller into your business network.



■ **Built-in WiFi networking**  
The controller easily connects into your existing WiFi network for downloading job files. Also supports remote access and diagnostics for the ART service team.



□ **Wireless pendant controller**  
Allows the operator to get close to the action for optimal view during manual operations, or even stop the machine remotely from anywhere in the factory. Works in conjunction with touchscreen.



■ **Integrated Safety Circuit**  
Category 4 safety controller interfaces with all safety sensors and switches. Monitors all devices and cuts power to drives and spindle through monitored safety contactors.



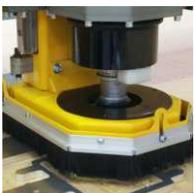
■ **Heavy duty fabrication:**  
Fully welded steel chassis construction using 250mm deep PFC & UB profiles. Close cross beam spacing gives unparalleled stability. Steel is machined for precision linear components.



■ **Heavy duty AC servo drives**  
Coupled with precision planetary gearboxes provide fast positioning. Hardened and ground helical rack and pinion provides smooth motion with excellent edge finish on machining.



■ **High speed spindle**  
Produces 3.8Kw and is fitted with ceramic bearings for 24000RPM operation. Sizes up to 12kw are available on request.



■ **Combination extraction foot**  
Computer controlled foot provides superior extraction, houses lube injectors and allows for air-assisted floating head operations. Steel construction provides a critical safety barrier around the tooling.



□ **Enclosed safety screen** protects operator from safety-critical areas of the machine. Provides for a safe working environment.



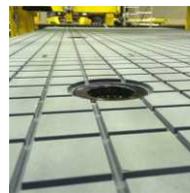
■ **Telescopic Z axis**  
The spindle can retract high above the deck while maintaining extreme rigidity over the full travel. Allows for extra deep cutting due to the ability to lift a long tool above a thick substrate.



■ **High gantry bridge**  
250mm clearance can be achieved for processing deep 3D work such as moulds or processing large extrusions. The XR Router can make full use of this clearance due to the extreme telescopic Z axis travel.



□ **High power vacuum pumps**  
Works hand in hand with a vacuum matrix deck to keep your work securely in place. Several options are available including rotary lobe pumps and side channel blowers to suit application.



□ **Vacuum matrix hold down system**  
Allows flat smooth products to be held down without the need for mechanical clamping. The deck can be ordered as manual, or automatic control of up to 8 zones. T-slot deck also available.



□ **Automatic vacuum sector valves**  
Computer controlled valves are available to control the zones on the vacuum table. The controller automatically detects which vacuum zones the job is over and turns the vacuum on or off in that area.



□ **Industrial dust extraction**  
Industrial quality dust extractors are supplied for optimum health and safety purposes. Large metal ducting provides less drag. Works in conjunction with the heavy duty extraction foot.



□ **10 position tool changer**  
Gantry mounted rack changer allows faster and continuous processing without the need for manual interaction during tool changing.



□ **Under-deck tool changer**  
Holds extra large tooling under the deck and protects them from swarf. Enables auto changing of large aggregates, saws, engravers etc.

■ Standard features    □ Optional equipment



□ **Misting coolant lubricator**  
Dual jets extend tool life dramatically and improve the cut quality in materials such as aluminium and steel. Computer controlled. Pulsing piston pump provides accurate dosing for optimal cutting.



□ **Fast powerful C axis**  
The C axis accessory enables the use of steered tooling such as knives, saws and aggregate tooling. Powered by an AC servo motor it is capable of rotating up to 500RPM. No special software required.



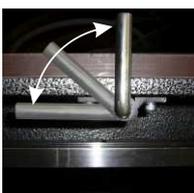
□ **Bar code scanner**  
Just scan the bar code on the nest report and the correct file is loaded into the controller automatically. Reduces human error and automates the process.



□ **Automatic sheet loader**  
Using vacuum lifting cups, the computer controlled sheet loader pulls material onto the cutting deck, then automatically pushes it down and across against the locating pop-up pins.



□ **Sheet unloader/pusher bar**  
Push completed nests or sheets of material off the bed onto an unloading table. Improves productivity. Often used in conjunction with the automatic sheet loader.



□ **Pop-up locating pins**  
Computer controlled locating pins can be used for both manual and automatic sheet loading. The sheet is pushed against the pins which then pop down automatically when cutting begins.



□ **Digitising probe**  
Set a boundary and resolution on the controller and the machine will quickly map the surface contour of any object placed on the table. 3D Cloud point files can then easily be imported into 3D CAD software.



□ **Thread milling**  
Thread milling enables threads of any diameter to be machined into sheet and plate material. Multiple flute thread mills for fast machining, or single tooth cutters for multiple pitch threads with one tool



■ **Cutting and creasing wheels**  
Allows processing of thin materials such as cardboard or fibreglass matting. Many different configurations are available including wheels and blades. Automatic loading. Requires C axis.



□ **Laser pointer**  
Makes setting up the job simple. The precise dot allows the operator to set the origin of the job and align to rotated material. Computer controlled with automatic offset.



□ **ART iCam Vision System**  
Integrated into the ART controller. No extra third party computer system required. Locates registration points and aligns cut paths to suit distorted prints. Also traces patterns or existing parts.



□ **Chuck-style rotary 4th axis**  
Allows for simultaneous 4 axis machining of cylindrical objects. 2 sizes available for small or large applications.



□ **Scissor Lift**  
Works in conjunction with the automatic sheet loader. Load up a whole pallet load of material on the scissor lift to reduce manual handling.



□ **Pen & Marker tools**  
Pen and marker tools are available for automatic part numbering. Particularly useful for identifying items within large nests of similar parts.



□ **Aggregate tooling**  
Available in many configurations including reciprocating saws, chisels, floating engravers, side boring drills and saws. Automatic loading.



□ **Extrusion clamping system**  
Customised clamping jigs are available for machining aluminium and other extrusions. Multiple lengths can be processed in one fixing. Smaller profiles can be cut all the way through for fence posts etc.



□ **Rigid thread tapping**  
Allows the use of thread taps. Machine first drills holes then automatically changes to tapping tool to cut thread. Recommended for plastics and non-ferrous metals. (Requires C axis)



■ **Steered straight and angled knives**  
Allows processing of sheet or foamed materials. Various angles available. Special controller algorithms allow blades to enter material at correct angle. Bi-directional tool paths allow V shaped cuts.



■ **On-site training** is provided as a standard feature. Step by step instruction is given on drawing parts, tool path and nesting, and machine operation. Optional extended training is also available on request for existing or new operators. This ensures that you always have qualified operators on hand.

□ **ART Factory based training** is also available in a classroom style setting at the ART factory. This is often a favourable option because students are not interrupted during training. This results in a better learning experience and can be done prior to machine delivery. As this can be a more cost effective option it is also good for updating existing operator skills or training new staff.

Standard Features	Advantages	Benefits
Touchscreen controller	Simple to learn but very powerful	Start producing product faster
ART ProfileShop software	Graphical editing of nests, tooling and all parameters	Quickly modify and adjust parameters at machine
High speed cutting	Cuts faster than most other cutting processes	Better quality finish in less time
Automatic extraction foot	Collects dust, chips and swarf very efficiently	Health and safety - keeps workshop clean
2 jet misting lubricator	Cools cutter and lubricates for near dry cutting	Increases capacity and extends consumable life
10 tool linear tool changer	Change tools automatically during job	Less human interaction - higher productivity
Top mounted extraction point	Efficiently removes swarf without hose getting in the way	Stops hose getting tangled in spindle
AC brushless servo motors	High power with accurate positioning	Full torque at high speed means faster production
DSP based motion controller	Smooth control and extreme flexibility in control	Increases cut quality and productivity
Helical rack and pinion	Smooth and accurate for high precision and cut quality	No cogging means smoother, quieter motion
Wireless networking	Connects to office network for file transfer	Easy interfacing to existing computer systems
Remote access	Technicians can adjust, diagnose and assist remotely	Get help if you need it - where you need it

Optional features	Advantages	Benefits
Wireless remote controller	Monitor machine progress, remote stop, full control	Convenient, safe and efficient - save time
Laser alignment pointer	Align and rotate job to plate with ease	Less hassle - faster plate loading
Digitising module	Trace patterns and parts and export to CAD	Simplifies migration to CNC from manual patterns
Alignment camera	Automatically aligns cut for Print & Cut applications	Compensates for misaligned or distorted prints
Rotary Axis with 3 jaw chuck	Process cylindrical jobs in full 4 axis	Produce complex round objects
C axis for steered tools	Use knives, cutting & creasing wheels, saws etc.	Allows cutting of many different materials
Larger spindle	Various size spindles available	Size spindle for optimum performance
Cyclone dust extraction unit	Efficiently removes swarf and dust from workshop	Better environment for workers
Twin bag dust extraction unit	Economical removal of swarf and dust from workshop	Protect the environment from dust and swarf
Auto remote start outputs	Control extraction or other accessories automatically	Saves time and electricity
Reciprocating saw	Cut foam, rubber, insulation and textiles	More diverse cutting capabilities
Straight & bevel knives	Cut Ductboard, cardboard, matting and other soft materials	HVAC ducting, block mounting, box prototyping

### Backup and support

Extended warranties, telephone support, remote technical assistance and on-site servicing are all standard features

 **Advanced Robotic Technology**  
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# What makes the XR Router from ART the best choice for your business?

ART is Australia's most trusted CNC manufacturer. We proudly manufacture some of the world's most innovative CNC Router and Plasma Profile Cutting Machines. If you are a manufacturer, you will appreciate the difference that attention to detail along with the determination to be a world leader can bring to a product. Our products can make your business more profitable by increasing productivity, reducing labour and waste while improving product quality.

Advanced Robotic Technology has been perfecting the CNC Router right here in Australia since the 1990's. Each generation of ART machine has been the result of years of painstaking research and development. ART has a philosophy of continuous improvement that is driven directly by feedback from the customer.

Many critical components and design features have been implemented for the express purpose of making the best cnc router possible. Sometimes this means that the cost is a little higher or the build time is a little longer, but the benefits are obvious when performance and return on investment are taken into account.

At ART, we never settle for second best, so we would like to share with you some of the many reasons why the XR Router is just that... The best.

## Brushless AC Servo Positioning Motors

ART initially used stepper motors for approximately 1 year in the 1990's but it quickly became obvious that the limitations of stepper motors were unacceptable for industrial applications. Today, ART use industry standard AC servo motors and controllers. The optimum drive system is chosen to suit each individual application based on required acceleration, torque and accuracy specifications.

- Torque is maintained at 100% until maximum RPM (5000rpm)
- Consume almost zero power when not moving
- Consume only as much power as needed to maintain position when moving
- Practically unlimited sizing options are available
- High speeds and acceleration are possible
- Never lose position during job
- If the job gets tough the servo drives automatically increase power as required
- Machine stops if excessive force encountered (jamming or collision)
- Machine can be re-started after a jam without needing to realign job
- Optional absolute encoders available (maintains position even when power is off)
- Run virtually cold
- Position resolution of up to 1,000,000 encoder positions per rotation provides smooth cutting and very accurate positioning
- Status information is fed back to controller from servo drive. Can be diagnosed or settings modified remotely, even over the internet.
- Inbuilt software filters provide for dampening of vibration giving smoother operation and allowing superior cut quality
- Machine can drive large cutters through hard material at high speeds due to ample power
- Maintaining high feeds improves cutter life due to less friction.
- Maintaining high feeds stops malleable material such as aluminum and plastic melting onto the cutter as the tool is constantly cutting into cool material.



## Low Backlash Planetary Reducers

ART has used all methods of gearing with stepper and servo motors over the years. Extensive experience has shown that the best results are obtained by the use of High Precision/Low Backlash Planetary Gear Reducers

- High precision – less than 5 arc minutes backlash (0.0002 of one revolution)
- Hardened metal gearing
- Oil filled gearbox – lubricated for life of reducer
- Extremely high load capacity
- Various sizes available to match power of servomotor
- Maintains accuracy without adjustment or maintenance
- Rigid setup (No spring loaded tensioners etc.)

### Fully Welded and Machined Steel Chassis

ART have always used a fully welded steel chassis since the very first machine. Numerous years of experience with vibration and the "oil can effect" has led to the super heavy duty construction we see today in ART machines. All external chassis members are fabricated from 250mm hot rolled structural steel PFC channel. All cross members are made from 250mm I beam (UB250) and are spaced at 500mm centers. This provides unparalleled rigidity and stability.

- Extremely rigid. Machine can sit on two diagonal legs without twisting
- 250mm high cross beams will support a bulldozer without sagging
- Close 400mm gaps between cross beams provide excellent support for phenolic deck
- Heavy section dampens vibration very well
- Hot rolled steel sections are stable and do not retain internal stresses in the material
- Joints are welded, effectively fusing the steel together. Will not loosen or flex over time
- Heavy duty powder coating will not chip, rust or peel
- Legs and deck frame are all one piece construction. Installed machines can be repositioned in users factory without need to re-calibrate etc.
- I beams are specifically designed to support heavy weights over large areas without twisting. Top and bottom flanges are 12mm thick solid steel. Allows for very wide machines without need for central legs etc.



### Matrix Vacuum Deck

ART primarily offers phenolic matrix tables for routing composite panels, plastic, timber and light aluminum sheets. T-slot Decks are also offered by ART for heavy duty cutting in aluminum or steel using mechanical clamping as it does not provide an optimum surface for vacuum tables.

Note: Vacuum is technically not a force. Vacuum hold down is achieved by reducing air pressure below the work piece thereby causing the normal atmospheric pressure to push the job down against the deck. The most pressure ever possible is one atmosphere (approximately 14psi), however in practice it is often only possible to achieve about 30% to 60% of this due to inefficiencies of vacuum pumps. A critical factor in making vacuum hold down work is the quality of the seal. Even a small leak will allow atmosphere to enter the vacuum area which will then expand to many times its volume. This severely reduces the ability to hold the job in place.



- Phenolic material is very dense and stable.
- Does not absorb moisture and expand
- Does not expand and contract with hot and cold
- Can be machined to a very precise level surface
- Matrix allows vacuum to spread evenly to all areas of the deck
- Gaskets can be placed in matrix at any position to suit jigs or non-uniform shaped jobs
- Vacuum zones can be designed in any configuration
- Phenolic material can be easily filled with resin and machined to original specs if damaged.
- Smaller sections of deck can be replaced easily if damaged beyond repair.
- 100% sealing between sacrificial material and matrix deck is easily achievable resulting in maximum hold down
- Good sealing means no loss of vacuum
- Phenolic material is dense and dampens vibration resulting in smoother cutting
- Threads can be placed within the matrix for optional mechanical hold down clamping
- T-slots can be placed within the matrix if required

### Computer controlled vacuum valves

ART has developed and used computer controlled vacuum valves for many years. This allows complete automation and requires less operator interaction.

- Can be operated manually via touchscreen or fully automatic
- Controller can automatically switch different zones on and off depending on size of job
- Only areas that require vacuum hold down are open to save vacuum
- Reduces human error
- Large vacuum ports allow efficient flow



## **ProfileShop touch-screen controller**

ART uses a large touch screen controller running advanced graphical software.

This feature is not common on many other machines.

The controller software has been in development by ART since 1998 and combines both ease of use and extensive capabilities.

- Extremely short learning curve
- Operator can visually see job at machine before cutting
- Job can be graphically manipulated without returning to cad computer
  - Shapes can be edited point by point, line converted to arc, arc to line, add / delete points
  - Holes can be resized, moved, copied etc.
- Depths, feed rates etc. can be edited for any part in the job
- Controller can automatically assign cutting parameters based on internal database
- Unlimited tools can be managed by controller
- Parts can be arrayed, copied, rotated, moved, re-sized, deleted at the machine
- Controller can trace parts (digitize) using laser pointer, or optional camera vision system
- Controller allows configuration of automatic vacuum zones
- Controller switches all accessories on and off automatically (does not require special M codes in G-code file)
- Over 100 inputs and 100 outputs available for virtually unlimited accessory control
- Operator can specify PER SHAPE exactly which accessories will come on or off during cutting (for example: turn extraction off when cutting tiny parts so they don't get sucked up)
- Can import STANDARD G-CODE files directly into controller
- Supports multiple formats of G-code for compatibility with other machines
- Job can be re-started at any shape, or any point along any path
- Simple parts can be drawn on touch screen using measurements or free hand
- Controller has auto backup so a job can be half finished in the evening and resumed exactly where it was the next day
- Controller remembers 6 different work cell locations simultaneously. Great for multiple jigs
- Each work cell remembers material origin, size, thickness and rotation
- Work cells can be set to automatically cycle for load/cut/unload production
- Infinite number of work cell configurations can be saved to file for later retrieval (great for jobs that are repeated months apart)
- Job can be aligned (rotated) to material. Important if work piece is very large or heavy.
- Touch screen controller connects to network. Can retrieve files from server or other computer in office
- Controller runs industry standard Microsoft Windows Professional for full network compatibility
- Jobs can be sent to machine from other remote computers
- Connects to network and internet using WI-FI or Ethernet cable
- ART service technicians can connect to machine controller remotely for diagnosis, maintenance and additional operator training/assistance
- Controller communicates with all major components in the machine allowing remote technicians to adjust settings or diagnose issues in servo drives and spindle drives (VFD's)
- Supports Rotary B axis for cylindrical objects (lathe style chuck)
- Supports C axis for steered tools
- Supports Camera vision system
- High speed spindles and drills with full software interacts with full cutting parameters stored in controller for each tool and material combination
- Pen tools (spindle automatically stops when using pen tools in spindle)
- Inkjet print heads
- Bar code readers for use with manufacturing software
- Tool misting lubrication system with automatic control. Controller knows which materials need coolant. Only turns coolant on when in material. Operator can override or control manually also
- Computer controlled foot with auto mode.
- Simultaneous support for all types of automatic tool changers including traveling rack, fixed rack, fixed cup drop in style, under deck pop up changer, manual change and pneumatically engaged fixed tools
- Dust extractors with auto software control of fan on, turn off delay and reverse pulse cleaning cycles
- Vacuum pumps controlled automatically.
- Full software integration of emergency stop circuitry. Tells operator on screen which estop device has triggered. Reset from touchscreen or pendant. Continue job immediately after estop with need to auto home
- On screen display shows status of all accessories
- On screen display and real time override of spindle speed, tool diameter, dwell etc.
- Supports automatic load of next job in queue for continuous operation
- Vacuum valves controlled automatically

### ART Wireless Pendant

The wireless pendant from ART is an additional optional feature to compliment the Touchscreen controller on the ART Router.

The pendant enables remote monitoring when away from the machine. It is possible to stop the machine or override spindle speed and feed-rate from up to a hundred metres away if any problems are encountered such as excessive vibration or noise.

- Works up to one hundred metres from machine
- Operator can monitor machine progress on pendant from elsewhere in factory
- Machine can be stopped remotely in the event of a mishap
- Large rechargeable battery gives full shift without charging
- Menus are in plain English
- Connects to touch screen controller using advanced security based wireless networking protocols to provide safe and secure communication
- Pendant supports the following functions:
  - Select file
  - Jog machine
  - Set origin by laser pointer or tool tip
  - Edit origin by coordinates
  - Align/rotate job
  - Select work cell
  - Step to any shape in job
  - Recover job at any point along any path
  - Load and unload tools
  - Cut whole job or specific tool only
  - Override feed rate
  - Override spindle speed
  - Reset emergency stop messages
  - Special functions can be created and added
  - Many more functions available



### High lift telescopic head

ART uses a unique two stage telescopic Z axis that give an extremely high Z axis lift. This enables the use of very long tools to process thick materials or large hollow sections such as extrusions etc.

- The telescopic Z axis maintains high rigidity over the full travel.
  - Allows extra-long tools
  - Keeps tool holders up high away from dust and contamination
  - Extra deep cutting possible due to the ability to lift a long tool above a thick substrate
  - The incorporated extraction tube means extraction hose is clear of spindle
- Allows the use of extremely long tools
- Allows use of saws and aggregates with integrated gearboxes etc.
- Enables tool changer to sit high in machine away from dust and chips
- Extraction foot is integrated into structure making use of large box Section steel upright to provide extreme rigidity
- Z stroke over 500mm
- Allows jobs to be processed up to full height of gantry clearance
- Extra deep cutting possible due to the ability to lift a long tool above a thick substrate
- Tool head maintains rigidity over full Z axis travel
- Extraction foot can take full impact without flexing or breaking
- Solid extraction foot protects spindle from impact
- Dual misting lubrication nozzles are fitted inside foot to provide cutting lubrication and cooling where it's needed at the tool tip
- Unique design allows for full adjustment in spindle squareness
- Y and Z axis bearings mount back to back so there can be no flex between them. Super rigid design does not depend on stiffness of toolhead plate
- Provides for fixed or floating head configurations



## XR Router Fabricated Gantry

ART uses a complex engineered gantry that is designed to be extremely rigid while maintaining critical acceleration characteristics.

- Large geometry provides exceptional stiffness (390mm high beam)
- Y Bearing rails are spaced widely giving superior support to tool head
- Wide uprights provide stable support.
- 750mm long X Bearing mounts are fabricated from 10mm plate steel to give a wide footprint and therefore a stable gantry.
- No flexible brackets are required due to high precision gear rack and high power servo motors that never slip
- The construction method allows for heavy metal in places where it is required for mounting critical components (such as bearings) while keeping other less critical areas lighter such as the rear section
- Fully powder coated



## Helical Cut Gear rack

Rack and Pinion is one of the most popular methods of converting rotary motion of a motor into linear travel. ART used cross cut gear rack and pinions for many years but changed to helical cut rack and pinion due to the inherent benefits. Helical cut gears have the teeth cut in a spiral fashion.

- Smoother motion
- Quieter
- More teeth in contact at any time
- No chopping action gives smoother cut without vibration
- Higher load capacity
- Hardened and ground teeth on pinion gives long wear

Other benefits of the XR Router from ART

- ART Vision System is integrated into the controller
  - No extra third party computer system required
  - Locates registration points and aligns shifts cut paths
  - Stretches cut paths if desired to suit distorted prints
  - Traces patterns or existing parts
- 3D surface digitising integrated into controller.
  - Ruby tipped stylus probes surface of material
  - Produces cloud point files for exporting into modelling software
  - Adjustable digitising area and resolution
- Powder coating much tougher than enamel paint
- Cutting speeds are 2 to 3 times faster than many machines in the same job
- ART has developed the whole machine in house including the operating system
- Any faults can be quickly diagnosed and corrected by the original programmers
- No waiting for a third party supplier to respond to an issue
- Customised applications are possible
- Rotary axis available for cylindrical jobs – true 4 axis simultaneous cutting (not swapped X or Y axis)
- C axis for all steered tools – real industrial grade CNC aggregate tooling such as saws etc.
- Remote internet access by service department directly to all machine control components

### ART Gantry Mounted Rack Tool Changer

The XR Router uses a rack style tool changer mounted in front of the gantry. The extensive Z axis travel makes this possible. XR Routers also support fixed rack (on deck), pop up rack (under deck), fixed and manual tool changers.

- Mounted close to head for quicker tool change, especially on long machines
- Up to twenty (or more) tools can be fitted on wider machines
- No software limit as to how many tools per job
- Tools up to 250mm long (plus tool holder) can be loaded
- Tools are kept high above cutting deck to minimise dust contaminating the mating surfaces
- Tools can be easily accessed with the lift up cover
- Tool diameters are not restricted by tool changer



### XR Router Gantry Enclosure

ART builds the XR Router with an enclosure, or shroud covering the sides and front of the gantry.

- Keeps operator away from danger points
- Polycarbonate windows allow easy visibility
- Stops common bad practice of operators holding parts down by hand near cutter to stop the part moving during cutting
- Works in conjunction with steel extraction foot to protect against pieces of tool or material being ejected towards operator (spindles run up to 24000rpm)
- Acts as a bumper to push people out of the way in the event of someone getting careless around machine
- Machines set up to run faster than 25 metres per minute are fitted with extra safety sensing devices such as laser scanners as per Australian design rules to avoid impact danger due to collisions

### XR Router integrated extraction foot with air assisted floating option

ART makes the XR Router with an integrated extraction foot. This is part of the toolhead assembly and provides huge benefits over alternatives.

- Rigid 125mm x 75mm upright tube ports the extraction to the top of the head. This means extraction hose is not hanging in front of gantry and getting tangled.
- Extraction foot runs on 4 x 25mm square linear bearings (rated at 2300Kg each bearing). Can handle direct collision without damage.
- Head has hidden pneumatic air cylinder to raise and lower independently of the head
- Head has adjustment knob to limit foot down travel. I.e: to stop foot from scraping on delicate material
- Foot incorporates floating brush mechanism that maintains contact with job. Provides superior extraction over uneven surfaces by maintaining a barrier for expelled chips
- 10mm gap between floating brush and foot creates Venturi effect by forcing air to flow down over job surface and pick up dust and chips out of the grooves as it travels into the extraction tube
- Engineering grade plastic skid plate is provided under foot for jobs that require material to be held down while cutting, or for floating head operations.
- Adjustable stopper allows spindle to ride on the foot for controlled Surface-to-depth cutting (floating head setup)
- Unist high quality pulsing piston pump misting lubricator is incorporated into the head and foot for cutting aluminium etc.
- Integrated 2 jet misting lubrication nozzles built into foot to provide lubrication right at the cutting tool
- Solid steel construction of foot provides protection from expelled cutter fragments in the event of an exploding or shattering cutter.
- Computer controlled pneumatic cylinder inside head raises or lowers foot independently of spindle movement..
- Pneumatic balance cylinder provides up force required for use with floating head setup. Adjustable regulator adjusts between full combined weight of spindle and foot (around 30Kg) pushing down on job for heavy engraving (Timber signs etc.) to minimal weight for engraving at controlled depth in delicate material (electrical mimic panels, Alpolc/Alucabond composite panels etc.)
- Software can adjust between full downforce and light downforce automatically during job
- Software can adjust foot up or down automatically during job
- Software can turn lubrication jets on and off automatically



## REASONS TO BUY AN XR ROUTER FROM ART

### Features...

### ART XR Router    Competitor

Australian Made - Local Support	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Large Friendly Touchscreen	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Qualified Trainers	<input checked="" type="checkbox"/>	<input type="checkbox"/>
All Steel Construction - No sagging/vibration	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AC Servo Motors - No Lost Positions	<input checked="" type="checkbox"/>	<input type="checkbox"/>
High Gantry Clearance 250mm+	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Large Z Axis 600mm+	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Large Diameter Tooling < 100mm	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Extra Long Tooling < 250mm	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Maximum Depth Machining 250mm	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Vacuum Matrix Deck - Even Clamping Force	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Precision Gearboxes - Not belts	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Helical Rack & Pinion - Smooth motion	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Solid Steel Extraction Foot	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wireless Pendant - Remote Monitoring	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Full Time Service Technicians	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Remote Internet Diagnostics	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Modify Job at Machine	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10 Tool Changer	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fastest Cutting	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Full Safety System - Legal Requirement	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### AVAILABLE OPTIONAL EXTRAS

ART iCAM Vision System	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Rotary Axis with Chuck	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C Axis for Steered Tools	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Reciprocating Saw (Heavy Duty)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Steered Knives (Straight & Bevel)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Laser Alignment Tool	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Digitising Function	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Floating Head Option	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Twin Jet Lubrication	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Piston Pump Mister	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Automatic Vacuum Zone Valves	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Remote Start for Extraction, Vac Pump etc.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

 **Advanced Robotic Technology**  
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