ROBOTS

We are seeing more and more robots being used for machining and cutting applications than ever before. Industry experts predict this trend will increase exponentially as manufacturers realise the importance of how cost effective and beneficial Robots can be for the success of their business in the future.

Industrial Robots were never designed to be used for CNC machining processes. As a rule Robots are not as accurate as CNC Machines however their disadvantage in accuracy is balanced by their flexibility and large comparative working envelope. There is of course a cost saving which is making Robots more and more attractive when compared to CNC equivalents.

Traditionally on CNC Machines if the parts are large, they are split into multiple pieces that fit on the machines and reassembled after cutting. Alternatively, shops will remove machine panels and doors to mount the portion of the work piece that needs cutting on the machine, while the rest of the part hangs out or over the sides.

Robotic machining cells can work on whole parts in single setups because the cells do not have exactly defined work areas as CNC machines do. Parts can rest on a shop floor or they can be clamped to workholding tables and as long as the setup is within the robot's reach, they can be machined. This working envelope can be extended by using external Axis rotary tables, and in some instances, the robot's reach can extend to 25m using a robot on a linear track.

The current ideal application for a robotic machining cell is one that involves large, complex parts to be machined using 4- or 5-axis toolpaths from offline CADCAM software. Materials best suited for this are objects that are made of soft materials such as EPS Foam, plastics, fibreglass, carbon-fibre composites and prototyping resin board.

When it comes to machining metals, there are two factors that hold back most robots: accuracy and torque. Today's robots, on average, are accurate to about 0.1mm. Although most metal parts require precision machining, there are applications in which robot accuracy is acceptable, such as rough machining parts to prepare them for finish cutting on CNC machine tools.

We would not recommend using robots for machining metal if a good surface finish is required. However trimming and de-burring applications easily achieve good results.

It is not uncommon for a Robot with an integrated Rotary turntable to machine a 2x2x2m block of material
**CADCAM**

With recent advancements in CAM software it is now possible to control robot movements with complete confidence. Software packages can accurately simulate every aspect of the machining process and warn of any collisions, singularities, axis limits so that the user knows before even turning the robot on whether the part will be cut successfully or not.

Because the toolpath is fully simulated offline there is infinite ways of changing and adjusting your work to suit time critical projects while the robot is currently performing a different machining operation.

The processes can be fully automated to incorporate toolchange routines and even automatic tool calibration.

It should also be noted that some CAD-CAM programs can run to many thousands of lines depending on the resolution used. This is because when it comes to curves the CAD-CAM software will usually split the curve into many short linear movements. This in turn can mean that there is a lot of program data to be fed into the robot. In these cases we recommend an ABB S4C controller (or later) fitted with an Ethernet board. This allows the connection of a PC to "drip feed" programs into the controller essentially allowing infinite program size.

Although Robot manufacturers are all pretty much similar in their products and capabilities, we recommend ABB robots for their robust construction and ease of use. (Plus we have a large sock of them)

Here at CNC Robotics have sourced as much info as possible to help our customers understand the difference between Robotic Machining and CNC's so they can make an informed decision on whether this application is right for their business.
## COSTING MENU

### First Choose your ROBOT

<table>
<thead>
<tr>
<th>Robot</th>
<th>Controller</th>
<th>Reach</th>
<th>Payload</th>
<th>Pos Accuracy</th>
<th>Axis Res</th>
<th>Weight</th>
<th>Year</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABB IRB 6400 USED S4C</td>
<td>2.4m</td>
<td>120kg</td>
<td>0.2mm</td>
<td>0.01deg</td>
<td>2200kg</td>
<td>1997</td>
<td>£10,000</td>
<td></td>
</tr>
<tr>
<td>ABB IRB 6600 USED IRC5</td>
<td>2.55m</td>
<td>175kg</td>
<td>0.08mm</td>
<td>0.003deg</td>
<td>1700kg</td>
<td>2002-11</td>
<td>£25,500</td>
<td></td>
</tr>
<tr>
<td>ABB IRB 6660 NEW IRC5</td>
<td>1.9m</td>
<td>205kg</td>
<td>0.06mm</td>
<td>0.001deg</td>
<td>1800kg</td>
<td>current</td>
<td>£55,250</td>
<td></td>
</tr>
<tr>
<td>KUKA KR150 KRC2</td>
<td>2.7m</td>
<td>150kg</td>
<td>0.06mm</td>
<td>0.001deg</td>
<td>1085kg</td>
<td>2000</td>
<td>£20,000</td>
<td></td>
</tr>
<tr>
<td>KUKA KR100-2HA KRC2-05</td>
<td>2.6m</td>
<td>100kg</td>
<td>0.05mm</td>
<td>0.001deg</td>
<td>1200kg</td>
<td>2008</td>
<td>£35,000</td>
<td></td>
</tr>
<tr>
<td>KUKA KR210 Quantex KRC4</td>
<td>2.7m</td>
<td>210kg</td>
<td>0.06mm</td>
<td>0.001deg</td>
<td>1085kg</td>
<td>current</td>
<td>£44,500</td>
<td></td>
</tr>
</tbody>
</table>

### Add additional Axis if required

<table>
<thead>
<tr>
<th>External Axis</th>
<th>Size</th>
<th>Payload</th>
<th>New</th>
<th>Used</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotary Table 150</td>
<td>500x500mm</td>
<td>150Kg</td>
<td>Yes</td>
<td></td>
<td>£9,900</td>
</tr>
<tr>
<td>Rotary Table 500</td>
<td>500x500mm</td>
<td>500Kg</td>
<td>Yes</td>
<td></td>
<td>£16,800</td>
</tr>
<tr>
<td>Rotary Table 1000</td>
<td>500x500mm</td>
<td>2000Kg</td>
<td>Yes</td>
<td></td>
<td>£30,200</td>
</tr>
<tr>
<td>Rotary Table 5000</td>
<td>1mx1m</td>
<td>5000Kg</td>
<td>Yes</td>
<td></td>
<td>£39,250</td>
</tr>
<tr>
<td>Linear Track</td>
<td>7m</td>
<td>2500kg</td>
<td>Yes</td>
<td></td>
<td>£23,300</td>
</tr>
</tbody>
</table>

### Choose your spindle

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Spindle</th>
<th>Application</th>
<th>Power</th>
<th>Cone</th>
<th>Max rpm</th>
<th>KIT inc Inv</th>
<th>Auto TC</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bornemann</td>
<td>444</td>
<td>EPS Foam etc</td>
<td>4.4Kw</td>
<td>Hollow tool</td>
<td>12000</td>
<td>Yes</td>
<td>No</td>
<td>£6,900</td>
</tr>
<tr>
<td>HSD</td>
<td>ES915R</td>
<td>Soft materials/wood</td>
<td>4Kw</td>
<td>ISO30</td>
<td>24000</td>
<td>Yes</td>
<td>Yes</td>
<td>£8,900</td>
</tr>
<tr>
<td>HSD</td>
<td>ES929R</td>
<td>Wood, Composites</td>
<td>7.5Kw</td>
<td>ISO30</td>
<td>24000</td>
<td>Yes</td>
<td>Yes</td>
<td>£9,900</td>
</tr>
<tr>
<td>HSD</td>
<td>ES794R</td>
<td>Stone, Marble</td>
<td>6Kw</td>
<td>ISO40</td>
<td>12000</td>
<td>Yes</td>
<td>Yes</td>
<td>£13,000</td>
</tr>
<tr>
<td>HSD</td>
<td>ES793R</td>
<td>Stone ,Marble</td>
<td>15Kw</td>
<td>HSK</td>
<td>12000</td>
<td>Yes</td>
<td>Yes</td>
<td>£18,000</td>
</tr>
</tbody>
</table>

### Optional extras

<table>
<thead>
<tr>
<th>Item</th>
<th>Manufacturer</th>
<th>Spec</th>
<th>Details</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMI</td>
<td>Mitsubishi</td>
<td>5&quot; Touchscreen</td>
<td>Emulates Teach pendant including PLC</td>
<td>£3,500</td>
</tr>
<tr>
<td>Vacuum</td>
<td>Becker</td>
<td>VTL250</td>
<td>7.5Kw vacuum pump for fixing parts to table/fixture</td>
<td>£9,500</td>
</tr>
<tr>
<td>Compressor</td>
<td>Renner</td>
<td>Screw Compressor</td>
<td>10 Bar Screw Compressor with integrated dryer</td>
<td>£11,000</td>
</tr>
<tr>
<td>Tool Calibrator</td>
<td>Sygmund</td>
<td>Auto tool calibration</td>
<td>Automated Tool length, wear and damage detection</td>
<td>£4,000</td>
</tr>
<tr>
<td>Tool Rack</td>
<td>CNCR</td>
<td>6 Station Tool Rack</td>
<td>PTFE grippers (comes complete with toolholders )</td>
<td>£1,000</td>
</tr>
<tr>
<td>2D Table</td>
<td>CNCR</td>
<td>2mx1m Table</td>
<td>Steel Box Frame with Phenolic Ply Top (no &quot;T&quot; slots)</td>
<td>£750</td>
</tr>
</tbody>
</table>

### Guarding and Security (typical cell requires 10 panels)

<table>
<thead>
<tr>
<th>Item</th>
<th>Spec</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>Mesh style standard guarding 2.4mx1m... Mesh holes 25x25mm 10g wire</td>
<td>£3,500</td>
</tr>
<tr>
<td>Poly</td>
<td>Shatterproof 6mm Clear Polycarbonate sheet with extruded alu surround</td>
<td>£4,500</td>
</tr>
<tr>
<td>Standard Gate</td>
<td>Door style access Gate 2.4mx1m (hinged)</td>
<td>£350</td>
</tr>
<tr>
<td>Sliding Gate</td>
<td>Tracked sliding gate (size to order in standard 2.4mx1m panels)</td>
<td>£500</td>
</tr>
<tr>
<td>Trojan gate lock</td>
<td>Security interlock disables robot when gate is opened</td>
<td>£100</td>
</tr>
<tr>
<td>Fortress Interlock</td>
<td>Keyed Secrity Interlock System (enhanced security with keyed access)</td>
<td>£750</td>
</tr>
</tbody>
</table>
Integration, Delivery and Installation

<table>
<thead>
<tr>
<th>Item</th>
<th>Spec</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNCR cost</td>
<td>Cost based on full turnkey integration of your system inc testing at our workshop</td>
<td>£9,500</td>
</tr>
<tr>
<td></td>
<td>Day rates for other integration, maintenance and servicing (+Travel and accommodation per day)</td>
<td>£500</td>
</tr>
<tr>
<td>Installation UK</td>
<td>Delivery and Installation, commisioning and On Site Robot training ....Anywhere in UK (4-5 days)</td>
<td>£3,575</td>
</tr>
<tr>
<td>Installation EU</td>
<td>Delivery and Installation, commisioning and On Site Robot training ....Anywhere in EU (4-5 days)</td>
<td>£6,075</td>
</tr>
<tr>
<td>Installation World</td>
<td>Installation, commisioning and On Site Robot training ....Anywhere Rest of World (typical 4-5 days)</td>
<td>£7,000</td>
</tr>
<tr>
<td></td>
<td>(You will need to arrange transport of container to site from nearest local Port)</td>
<td></td>
</tr>
</tbody>
</table>

*ALL Customers need to provide local lifting equipment to unload and position robot at site*

3D Scanning

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Model</th>
<th>3D point accuracy</th>
<th>Data ac spe</th>
<th>Range</th>
<th>weight</th>
<th>laser</th>
<th>Texture</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artec</td>
<td>S</td>
<td>0.05mm</td>
<td>500,000 p/s</td>
<td>150-250mm</td>
<td>1.6Kg</td>
<td>No (Flash)</td>
<td>No</td>
<td>£9,500</td>
</tr>
<tr>
<td>Artec</td>
<td>M</td>
<td>0.1mm</td>
<td>500,000 p/s</td>
<td>400-1000mm</td>
<td>1.9Kg</td>
<td>No (Flash)</td>
<td>No</td>
<td>£9,500</td>
</tr>
<tr>
<td>Artec</td>
<td>L</td>
<td>0.2mm</td>
<td>500,000 p/s</td>
<td>800-1600mm</td>
<td>2.3Kg</td>
<td>No (Flash)</td>
<td>No</td>
<td>£12,000</td>
</tr>
<tr>
<td>Artec</td>
<td>EVA</td>
<td>0.1mm</td>
<td>288,000 p/s</td>
<td>400-1000mm</td>
<td>0.85Kg</td>
<td>No (Flash)</td>
<td>Yes</td>
<td>£13,000</td>
</tr>
</tbody>
</table>

Software*

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>5 Axis</th>
<th>Collision Detection</th>
<th>Singularity</th>
<th>3D Simulation</th>
<th>NC Translator</th>
<th>Training</th>
<th>Support</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delcam</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes 5 Days</td>
<td>Yes</td>
<td>90 day Trial</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>If purchased with our Robot Package within trial 90 day trial period</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>£14,500</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Limited to trimming, drilling and 2D toolpaths with some 3D machining...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>£7,500</td>
</tr>
</tbody>
</table>

These offers currently only apply to our UK customers
Any international customers would need to talk to their local Delcam office or re-seller for software cost, training and ongoing support.

*Our Robots will work with any Offline programming software, however we recommend using Delcam PM Robot*

Example costings highlighted in ORANGE above are for our recommended starter system. Cost £29,975 hardware only. This is for traditional "teach & learn" programming ONLINE.

We do not advise using OLD robots for Offline Programming

Our Pricelist and Integration costs are a guide price and may vary depending on your requirements and ammount of work required.
ABB IRB 6400

It is modular in construction and has 120kg capacity and 2.4m reach as standard
The IRB 6400 arm and controller are both protected to IP54
with the wrist getting additional protection to IP55 this means that the robot is well suited to industrial environments.

These "Used" robots are reconditioned and get fully serviced and tested before we ship them.
These Robots although old still provide good toolpath repeating capabilities when taught ONLINE.
We would not recommend this robot for accurate Offline programming.

<table>
<thead>
<tr>
<th>Robot</th>
<th>ABB IRB 6400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of manufacture</td>
<td>1997</td>
</tr>
<tr>
<td>Reach</td>
<td>2.4m</td>
</tr>
<tr>
<td>Payload</td>
<td>120kg</td>
</tr>
<tr>
<td>Positional Accuracy</td>
<td>0.2mm</td>
</tr>
<tr>
<td>Axis Resolution</td>
<td>0.01 deg</td>
</tr>
<tr>
<td>Controller</td>
<td>S4C</td>
</tr>
<tr>
<td>Weight</td>
<td>2200kg</td>
</tr>
</tbody>
</table>
ABB IRB 6600

The robot arm uses epicyclic (planetary) gearboxes for the major axis and is both simple and reliable.

**Increased path performance:** IRB 6600 runs the second generation of TrueMove and QuickMove.

**Easier installation & easy maintenance:** Almost 400 kg lower weight simplifies installation
Several new features, such as simplified fork lift pockets and more space in the robot foot.

These "Nearly New" robots are reconditioned and get fully serviced and tested before we ship them.

<table>
<thead>
<tr>
<th><strong>Robot</strong></th>
<th><strong>ABB IRB 6600</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of manufacture</td>
<td>2002- current</td>
</tr>
<tr>
<td>Reach</td>
<td>2.55m</td>
</tr>
<tr>
<td>Payload</td>
<td>175kg</td>
</tr>
<tr>
<td>Positional Accuracy</td>
<td>0.08mm</td>
</tr>
<tr>
<td>Axis Resolution</td>
<td>0.001-0.005 deg</td>
</tr>
<tr>
<td>Controller</td>
<td>S4C</td>
</tr>
<tr>
<td>Weight</td>
<td>1700kg</td>
</tr>
</tbody>
</table>
ABB IRB 6660

Designed for foundry applications, the ABB IRB 6660 is an industrial workhorse. It is optimal for finishing and pre-machining applications and delivers high productivity in a short cycle time. The robot arm uses epicyclic (planetary) gearboxes for the major axis and is both simple and reliable. They have an excellent reputation for reliability and capability and as such are the industry standard.

IRB 6660 uses second generation of TrueMove & QuickMove. This gives more accurate motions of up to +/-0.06mm. Easier installation & easy maintenance: Almost 400 kg lower weight simplifies installation.

These New robots are specifically built and calibrated to order by ABB.

<table>
<thead>
<tr>
<th>Robot</th>
<th>ABB IRB 6660</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of manufacture</td>
<td>Current</td>
</tr>
<tr>
<td>Reach</td>
<td>1.9m</td>
</tr>
<tr>
<td>Payload</td>
<td>205kg</td>
</tr>
<tr>
<td>Positional Accuracy</td>
<td>0.06mm</td>
</tr>
<tr>
<td>Axis Resolution</td>
<td>0.001-0.005 deg</td>
</tr>
<tr>
<td>Controller</td>
<td>IRC5</td>
</tr>
<tr>
<td>Weight</td>
<td>1800kg</td>
</tr>
</tbody>
</table>
KUKA KR150

High speed and maximum output: the high installed motor capacity and high-torque gear units in all axes make this highly dynamic and extremely powerful. These Robots although old still provide good toolpath repeating capabilities when taught ONLINE. We would not recommend this robot for accurate Offline programming.

Robot: KUKA KR150
Year of manufacture: 2000
Reach: 2.7m
Payload: 150kg
Positional Accuracy: 0.06mm
Axis Resolution: 0.001 deg
Controller: KRC2
Weight: 1245kg
KUKA KR100 HA

Utmost precision ensures maximum process quality: with special gear units, absolutely accurate calibration and high mechanical stiffness, the KR 100 HA offers impressively high positioning accuracy. Increase your output: the KR 100 HA belongs to the 2000 Series and therefore has particularly powerful motors, guaranteeing outstanding dynamic performance. In combination with the high orientation velocities of the wrist axes, this results in improved path characteristics and a substantial increase in the output of your system.

Robot
KUKA KR100 HA
Year of manufacture
2008
Reach
2033mm
Payload
100kg
Positional Accuracy
0.05mm
Axis Resolution
0.001-0.005 deg
Controller
KRC2-05
Weight
1200kg
More streamlined, stronger, faster and considerably more versatile: that’s the new KUKA QUANTEC robot.

Optimal process results: the stiffer mechanical system, improved motion characteristics, shorter cycle times and increased path accuracy ensure top performance.

Simple, intuitive operator control via touch panel with context-sensitive floating windows

Separate jog keys for direct control of eight axes / external axes – without switching

Efficient programming with 6D mouse and ergonomic keypad in touch panel

Brand NEW robots Brand New Technology...

### KUKA KR210 Quantec

#### Technical Specifications

- **Year of manufacture**: 2012
- **Reach**: 2.7m
- **Payload**: 210kg
- **Positional Accuracy**: 0.06mm
- **Axis Resolution**: 0.001 deg
- **Controller**: KRC4
- **Weight**: 1085kg
Rotary Table 150

This rotary table is actually an end of arm Axis 6 Motor and Gearbox Assembly from another ABB IRB6400. Uniquely we calibrate these motors as turntables and synchronise them with the robot controller. We do this by adding an additional set of drive units and control modules to the top of a standard control cabinet. This "Double" cabinet comes pre-wired and set up for external axis control.

Weight: 50Kg  
Load Capacity: 200-250 Kg  
Indexing Accuracy: 0.01 deg (36 Arc sec)  
Table size: 500x500mm  
(Aluminium "T" Slot table top)

Rotary Table 500

ABB 7th Axis Rotary Table
Specifically designed for external rotary applications with robots.

Choices of motor and drive units
These large diameter precision ground bearings provide medium loading capacities.

Weight: 100Kg  
Load Capacity: 500 Kg  
Indexing Accuracy: 0.01 deg (36 Arc sec)  
Table size: 500mm dia
Rotary Table 1000

Horizontally mounted full CNC rotary table
Perfectly suited to any large rotary application.
This product has been recently re-designed updated
The backbone of the all new PH rotary tables are the recently incorporated wire race bearings. These large diameter precision ground bearings provide the high loading characteristics and enable the table to accommodate extreme moment loads.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>240Kg</td>
</tr>
<tr>
<td>Load Capacity</td>
<td>1000 Kg</td>
</tr>
<tr>
<td>Indexing Accuracy</td>
<td>0.00138 deg (5 arc secs)</td>
</tr>
<tr>
<td>Table size</td>
<td>450mm dia</td>
</tr>
</tbody>
</table>
Rotary Table 2000

Horizontally mounted full CNC rotary table
Perfectly suited to any large rotary application.
This product has been recently re-designed updated
The backbone of the all new PH rotary tables are the recently incorporated wire race bearings. These large diameter precision ground bearings provide the high loading characteristics and enable the table to accommodate extreme moment loads.

Weight  600Kg
Load Capacity 2000 Kg
Indexing Accu 0.001 deg (3.6 arc secs)
Table size  600mm dia
Rotary Table 6000

Horizontally mounted full CNC rotary table
Perfectly suited to any large rotary application.
This product has been recently re-designed updated
The backbone of the all new PH rotary tables are the recently incorporated wire race bearings.
These large diameter precision ground bearings provide the high loading characteristics and enable the table to accommodate extreme moment loads.

Weight 1550Kg
Load Capacity 6000 Kg
Indexing Accuracy 0.001 deg (3.6 arc secs)
Table size 1000mm dia
Linear track 7m

These Linear track come in standard sizes of 5 or 7 meter. They can easily carry the full 2200kg IRB 6400 robot and its payload across the entire length. This is particularly useful when wanting to machine LARGE areas, and really opens up the working envelope of the Robot. The boatbuilding or full car prototyping industries would benefit from this system. We rarely see these in the used market and new versions are approx double the cost. We have one of these in stock currently and when its gone its gone.

Weight: 2400Kg
Load Capacity: 3000 Kg
Length: 7m
Robot working range up to 11m x 2.5m (either side)
Inverter and pneumatics

All of our spindles come complete with Inverter and Pneumatics cabinet as part of our spindle KIT

HSD DF Digital Inverter

Features
Braking resistance protection
Thermal Protection
Automatic boost
Slip compensation
Spindle Fault Detection
Anti-clockwise rotation control
Removeable ControlPanel

CF Chainflex and energy chain and hosing with
Spindle Mounting Bracket included

Pneumatic Control Cabinet

TECHNICAL SPECIFICATIONS
Air Service Unit
Regulator
Coelescing Filter
Tool Release Solenoids
Air Pressure Switch
Spindle Cooling Control
Superflex Hosing for all Air connections
SPINDLE

Bornemann 444

TECHNICAL SPECIFICATIONS
Power 4.4 kW
voltage: 3x400 V AC
frequency: 200 Hz
Max Rpm 12,000
Weight 25 Kg
Unique hollow spindle for extraction through tool

Comes complete with Inverter, Mounting Bracket and Cabling

Applications..

Soft Materials such as Polystyrene, High Density Foam, Modelling Foam, Plastics (will also machine wood and composites with tool holder attachment)

Effective continuous suction milling extracts the waste material through the tool and spindle assembly
The use of these hollow tools reduces machining times by up to 50%
And may increase productivity by 100%

Tool sizes range from:
20mm dia - 60mm dia
200mm long - 500mm long
With easily changeable tips from flat/ball/radiused/bevelled
SPINDLE

ES915R

TECHNICAL SPECIFICATIONS
Power 3.8kw
Tool Blocking Automatic with pneumatic piston ISO30
Nose Short Nose
Rated Voltage 380V
Poles 2
Bearings Front Ceramic
Bearings Rear Ceramic
Bearings lubrication Long Life lubricated
Max Rpm 24000,00
Weight 21 Kg
Forced Air Cooling

Comes complete with Inverter, Pneumatics Cabinet, Mounting Bracket and Cabling

Applications..

Soft Materials such as Polystyrene, High Density Foam, Modelling Foam, Plastics.
SPINDLE

ES929R

TECHNICAL SPECIFICATIONS

Power 7.5kw
Tool Blocking Automatic with pneumatic piston ISO30 (HSK F63 if required)
Nose Short Nose
Rated Voltage 380V
Poles 4
Bearings Front Ceramic
Bearings Rear Ceramic
Bearings lubrication Long Life lubricated
Max Rpm 24000,00
Weight 26,00Kg
Forced Air Cooling

Comes complete with Inverter, Pneumatics Cabinet, Mounting Bracket and Cabling

Applications..

Harder materials such as Wood, Aluminium, Composites, Resins.
SPINDLE

ES794R

TECHNICAL SPECIFICATIONS

Power 6kw
Tool Blocking Automatic with pneumatic piston ISO40
(HSK if required)
Nose Short Nose
Rated Voltage 380V
Poles 6
Bearings Front Ceramic
Bearings Rear Steel
Bearings lubrication Long Life lubricated
Max Rpm 12,000
Weight 42 Kg
Liquid Cooling

Comes complete with Inverter, Pneumatics Cabinet, Mounting Bracket, Cabling and Coolant pump

Applications..

Light to Medium applications on Hard Materials such as Stone, Marble, Concrete, Granite etc
**SPINDLE**

**ES793R**

**TECHNICAL SPECIFICATIONS**

- Power 15kw
- Tool Blocking Automatic with pneumatic piston HSK
- Nose Short Nose
- Ratered Voltage 380V
- Poles 4
- Bearings Front Ceramic
- Bearings Rear Ceramic
- Bearings lubrication Long Life lubricated
- Max Rpm 20,000
- Weight 42 Kg
- Liquid Cooling

Comes complete with Inverter, Pneumatics Cabinet, Mounting Bracket, Cabling and Coolant pump

**Applications..**

Harder materials such as Wood, Aluminium, Composites, Resins.
HMI

5" Colour Touchscreen.

Teach Pendant emulation for Automatic Mode control

Functionality includes.
Load
Un-load
Spindle start/stop
Speed/feedrate control
E-Stop

Mitsubishi PLC
Vacuum and Compression

Becker Vacuum Pump

Model: VTLF250
Watts: 7.5kw
Horsepower: 10
Max Vac: 25in.Hg
Size: 610mm x 1315mm x 530mm
Weight: 392 Kg
Noise: 81 dBA

100% oil-less rotary vane vacuum pump
Designed to operate on a continuous basis

Renner Screw Compressor

Model: RSK7.5
Watts: 7.5kw
Horsepower: 10
BAR: 10
CFM: 173
Size: 567mm x 1115mm x 900mm
Weight: 220 Kg
Noise: 63 dBA

Integrated refrigeration dryer
Always dry air and high air quality
Required for spindle cooling and toolchange
Tool Calibration and Rack

Sigmund Tool Calibration
Automated TCP calulator
Detects Tool Length
Updates tool length and orientation to software and robot
Detects Tool Wear and Tear or Broken Tools
30,000 laser beam accuracy to 50 microns in 1 sec

Toolrack
Our standard toolrack has 6 positions
With custom designed PTFE gripper to ensure positive tool holding
We can incorporate as many positions you require
Including dust lids etc upon request

All toolracks come with toolholders appropriate to the spindle
(collets and tooling extra)
2D Table and Guarding

2D TABLE
2m x 1m
Steel box tube construction
Phenolic Ply Top 25mm
Suitable for light/medium weight parts
Can be drilled for fixture points

Mesh Guarding
Industry Standard mesh panels 2.4 x 1m
Steel box tube construction
Mesh size 25 x 25mm
Powder coated black/yellow
Can be drilled for fixture points
 Comes with Standard Gate or Sliding Gate option

Polycarbonate Guarding
Shatterproof Polycarbonate panels 2.4 x 1m
Extruded Aluminium construction
Clear
Maximum Visibility of working cell
Can be drilled for fixture points
 Comes with Standard Gate or Sliding Gate option
Security Interlocks

**Trojan**
Strong and versatile, can be used in most applications
self-ejecting tamper resistant actuator, only operates when mounted to the guard
Four possible actuator entry points, easy to install
CE Marked for all applicable directives

**Fortress Interlock (keyed access)**
heavy duty applications
Additional arrangements like actuators/operators, catches,
internal release functions, trapped key functions and deadlocks available
CE Marked for all applicable directives
3D Scanning

**Artec S**
This model has various uses
scanning an intricate design of a small marble ornament
to digitizing toy action figures for reproduction.
It is light weight and held like a regular video camera.
3D point accuracy, up to 0.05 mm
Working distance 0.15 – 0.25 m

**Artec M**
perfectly suited to be used in reverse engineering such as scanning parts to be milled on a CNC machine
With a sturdy casing, accuracy of up to 0.1mm and 0.5mm resolution
it is also the right solution for a design studio, medicine, and quality control.
Data acquisition speed, up to 500'000 points/s
Video frame rate, up to 15 fps
Working distance 0.4 – 1 m
**Artec L**
This scanner has a large field of view, which enables the user to digitize large objects quickly. It can be walked around the object, or mounted on a tripod and have the object spin in front of it.
Moreover, because the scanner is hand-held and portable, it is ideal for Also you can easily combine several large scanners into a single bundle in Artec Studio software which comes free with the scanner.
Working with more than one scanner at a time, enables the previously prohibitively expensive full body scanning, to be quick, easy and affordable.
Working distance 0.8 – 1.6 m
3D point accuracy, up to 0.2 mm

All our scanners come with Software, case and training included in the cost
Artec Eva

Artec Eva 3D scanner is the latest addition to Artec's the model line-up
This scanner is the ideal choice for those that need to receive a quick, textured and accurate scan.
Eva doesn't require markers or calibration. It captures objects quickly in high resolution and vibrant color,
which allows for almost unlimited applications.
Artec™ Eva 3D Scanner is similar to a video camera which captures in 3D
The scanner captures up to 16 frames per second. These frames are aligned automatically in real-time,
which make scanning easy and fast.
Texture can be exported only in WRML and OBJ formats
CNC Robotics Integration

If I bought your system what do I pay you to do?
We do not hide our costs as we believe every customer should get what they pay for.

As part of our integration, we do the following
Clean, repair, recondition and re-paint
Install new parts where required
Integrate External axis drive units encoders and wiring
Configure and Calibrate the Robot for accuracy
Assemble Spindle Hardware
Construct Pnumatics sytem
Calibrate and set-up spindle control and inverror
Install software for front end control logic
Install HMI,PLC and external control modules
Configure Sygmund and Tool calibration
Pre-assemble and test guarding and interlocks
Set home, safe and toolrack positions
Configure and Test complete system
Dis-assemble and pack for shipping
Load for transportation
Unload at your premises.
Install, configure, commission and test.
Provide on-site Robot training (2days)

All our systems come with 12month warranty

NB..Due to the nature of used robots accuracies quoted are as new and may differ from robot to robot
Shipping

We ship internationally to anywhere in the world
All of our systems fit easily into a 20ft Container.
We can ship, deliver and install at almost any destination globally.

We tend to use road freight for our UK and EU customers
And use container/sea freight for international shipping.
We can cost for air freight if absolutely neccessary.

Our engineers dont mind earning air miles either and we can fully install
and commission our systems anywhere in the world

We require you to provide adequate lifting equipment at site to unload the robot
and position it.
Delcam 5 Axis Powermill
and Robot interface

Programming the multi-axis control systems for robots has traditionally been a complex and laborious task. Robots can be programmed using teach-and-learn methods, but these require a lot of fine tuning to achieve the perfect path! The PowerMILL Robot Interface lets you program robots with up to 8 axes as easily as you could program a 5-axis NC machine. Accurate 3D simulation shows exactly how your robot will behave, bringing complete peace-of-mind.

Advantages

- Manufactures large parts more easily
- Great freedom of movement
- Works in hostile environments such as stone, composites, nuclear
- Adaptability, mobility
- Full robot programming and simulation in a single application
- Supports popular robots: KUKA, ABB, Fanuc, Motoman, Staubli
- Low cost manufacturing alternative to machine tools
- Programs as easily as a 5-axis machine tool
- Wide range of robot options from 3 to 8 axes, linear and rotary
- Manual axis adjustment to avoid ‘singularities’

Applications

- Sculpting in stone and wood
- Modelling in foam and resin
- Trimming and deburring of all types of materials
- Plasma cutting
- Laser cutting
- Spot and continuous arc-welding
- Laser cladding
- Turbine and jet blade repair
- Non-destructive measurement of complex 3D parts
- Painting