RESHAPING EFFICIENCY

The PCS BHB

The PCS BHB is the ultimate machine. No other machine on the market offers a solution with as much emphasis on brute force, rigidity and capability. With options ranging from, but not limited to, high speed drilling, tapping, boring, countersinking, milling, dj_kc &mvw' cutting, 100% duty cycle plasma cutting, plasma & dj_kc &mvw' beveling ngnc autting, plate printing & marking or any combination, all with precision motion control on a 100% dry or wet cutting table - you're possibilities are endless!

WHO IS PROFILE CUTTING SYSTEMS?

Profile Cutting Systems (PCS) was established in 1989 by three highly experienced electronic and mechanical technicians, with a combined total of 100 years expertise in manufacture, service and use of gas cutting, plasma cutting and drilling machines. Now the company is a leading manufacturer of the most advanced profile cutting machines. The 550+ PCS machines can be found on every highly populated continent excluding South America. The departments within PCS and partnered sales agents consist of the only the best personnel in the industry. The PCS research and development team is continually designing and developing new and innovative solutions such as the patented PCS Zero Offset Plasma Bevel Head, PCS Automatic Plate Feed, PCS TurboGas, the PCS BHB series with a 60HP Single Spindle Drill and a 24 tool Automatic Tool Changer.

Partners

KALIBURN PLASMA CUTTING INNOVATION

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PCS Profile Cutting Systems

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PCS BHB

The machine carriage is an all welded construction with a wholly fabricated beam that utilizes several design characteristics used within the aerospace industry. Supporting the fabricated beam are ultra solid modular side supports. The drilling process is driven by a 60HP Digital AC Servo motor. Connected to the motor is a BT50 or Cat50 spindle that can handle up to 1395 FT/LB (1890NM) of torque. The drill assembly is supported on linear rails with the vertical motion also driven by a Digital AC Servo Motor. To ensure that the steel plate remains stationery the BHB utilizes a fabricated clamping mechanism which is control by an additional Digital AC Servo motor capable of producing up to 3.3 Ton (3.0 tonnes) of force. To reduce machine downtime the BHB utilizes as standard a 24 Pot Automatic Tool Changer which has a tool change time of 2.5 seconds.

To ensure ultra smooth operation the side supports run on extra-reinforced fabricated rails with a machined billet running surface and vertically adjustable base plates which are adjusted on site to provide a ridged and finely tweaked level running surface. With extra powerful state of the art Digital AC dual drive system and integrated active rail cleaning system, the PCS BHB will perform to the strictest of tolerances for decades to come in a highly demanding industrial environment. As several clients have already confirmed, if you are looking to drastically reduce the lead time on projects that require high speed drilling, cutting and plate edge preparation then the BHB will provide results that cannot be matched. Furthermore one client has stated that, "the PCS BHB has drastically reduced job completion times, from 8 hours to only 2 hours."

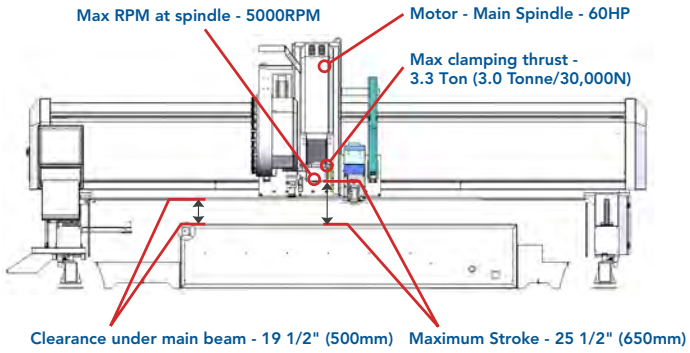

Fig. 1 - PCS BHB Front View

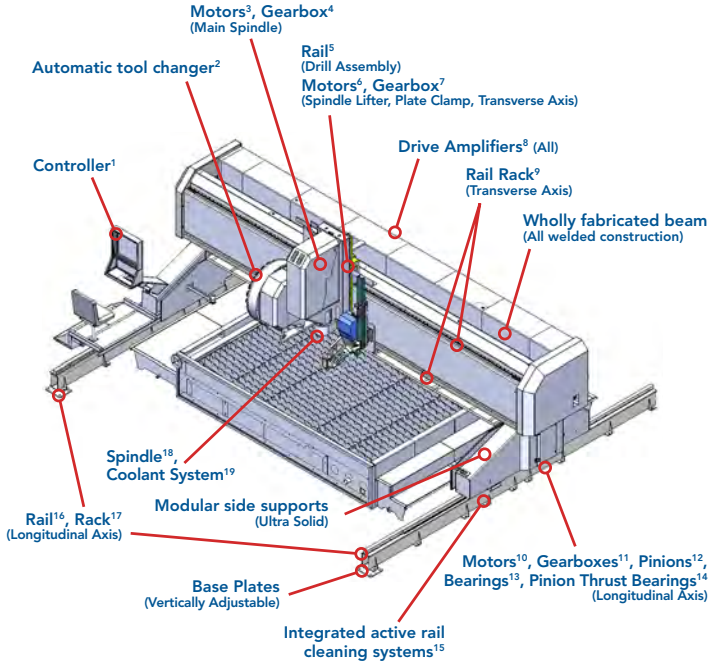

Fig. 2 - PCS BHB Parts Breakdown

Machine Dimensions

Effective cutting width	Upto 27' (8.25m)
Effective cutting length	Infinite
Overall machine height	10' (3.0m)

Drive System and Controller

Controller[1]		Burny 10 LCD Plus with Custom PCS Apps 24" Glass touch screen, Windows 8 embedded, 4GB DDR3 RAM, 128GB SSD, SERCOS, remote diagnostics Network ready
Drive Amplifiers	**Longitudinal & Transverse[8]**	Independent 3-Axis (X, XX & Y) AC digital Rexroth IndraDrive amplifiers. SERCOS comms.
	Main Spindle[8]	75HP (56kW) Digital Rexroth IndraDrive.
	Plate Clamp[8]	AC Digital Rexroth IndraDrive amplifiers.
Motors	**Longitudinal Axis[10]**	32FT/LB (43.5Nm) max torque Bosch Rexroth AC servo motor
	Transverse Axis[6]	32FT/LB max torque Rexroth AC servo motor
	Main Spindle[3]	60HP Bosch Rexroth AC servo motor
	Spindle Lifter[6]	53FT/LB (70Nm) max torque Rexroth AC servo
	Plate Clamp[6]	53FT/LB (70Nm) max torque Rexroth AC servo
	Bevel Axis (optional)	2x 1.2HP (0.90kW) AC, 1.3FT/LB (1.8Nm) max torque Rexroth servo motor 1x 2.5HP (1.86kW) AC, 6.0FT/LB (8.1Nm) max torqueRexroth servo motor
Gearbox	**Longitudinal Axis[11]**	Extra Heavy Duty Planetary Gearboxes <7 arcmin
	Transverse Axis[7]	Planetary 16:1 Backlash <7 arcmin
	Main Spindle[4]	Belt Reduction
	Spindle Lifter[7]	Ballscrew, Belt Reduction
	Plate Clamp[7]	Ballscrew, Belt Reduction
	Bevel Axis (optional)	Planetary grease packed 1x 50:1 <9 arcmin 1x 5:1 <6 arcmin

Standard Drilling Operation

Spindle[18]	Custom PCS 8" (200mm) dia.
Max spindle load	1395 FT/LB (1890Nm)
Max clamping thrust	3.3 Ton (3.0 Tonne/30,000N)
Max RPM at spindle	5000rpm
Max drilled hole diameter	4 1/3" (110mm)
Max tool diameter in tool changer	4 1/3" (110mm), 5" (130mm) with adjacent pockets empty.
Maximum stroke	25 1/2" (650mm)
Clearance under main beam	19 1/2" (500mm)
Material thickness	Up to 12" (300mm)
Coolant system[19]	Through Tool Minimum Quantity Lubricant with High Pressure Air Blast - As Standard Through tool flood coolant - Optional
Spindle taper	BT50 or CAT50
Automatic tool changer[2]	DETA 24 tool ATC – 2.5sec tool change
Drilling time - 2" hole, 4" plate	~ 26 Seconds

Recommended Plasma Cutting Operation

Power Source	Kaliburn *Spirit II* Plasma System(s)
Output Current	100 - 400 amp
Plasma Torch Lifter System	INOVA Torch Height Control System
Cutting Capacity	.036" - 2" (1 - 50 mm) - Max capacity 3" (75mm)

Standard Flame (Oxy) Cutting Operation

Number of torches	Up to 10
Cutting capacity	Up to 12" (300mm)
Hi-speed pre-heat	As standard
Fast pierce with auto retract	As standard
Flame (Oxy) torch lifter system	Soft PLC controlled as standard

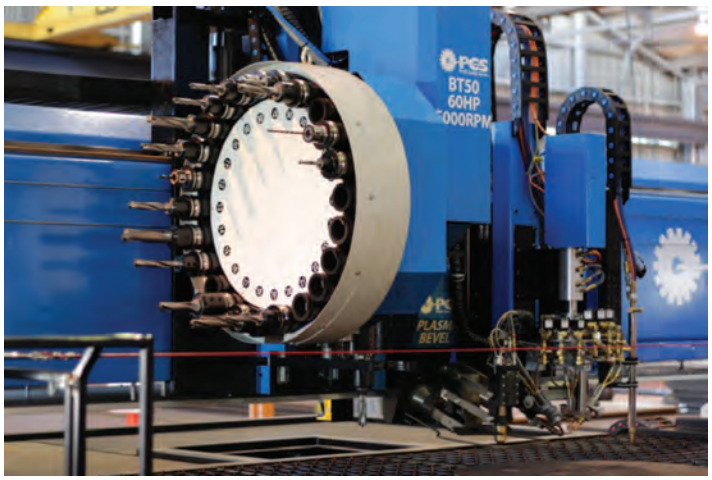

Fig. 3 - Automatic Tool Changer

Fig. 4 - PCS BHB Rear

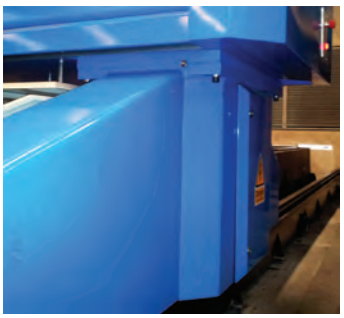

Fig. 5 - Modular Side Support

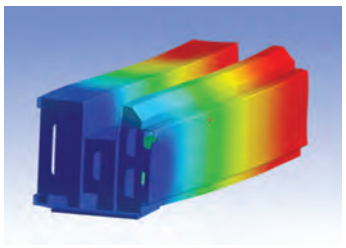

Fig. 6 - Stress Test (Main Beam)

The BHB has been developed and refined on the most advanced computer modeling programs to ensure deflection is minimised

Fig. 7 - Cut Sample

Machine Travel

Traverse speed		800 ipm (20m/min) - Safety Limited
Profiling speed		Up to 800 ipm (20m/min)
Max acceleration		3'/s/s (0.9 m/s/s)
Machine accuracy on axis		.006"/3' (0.15mm/m)
Machine repeatability on axis		.004" (0.1mm)
Rack – Longitudinal axis[17]		Helical Mod 3.0 Precision ground Rack has an accuracy of 0.0045"/3' (0.1mm/m) Material: S45C (C45) Steel
Rail – Longitudinal axis[16]		2 2/5" (60mm) machined hardened billet
Rail/Rack – Transverse axis[9]		Upper: 1 2/5" (35mm) Rexroth precision ground linear roller rail and helical rack. Lower: 1 2/5" (35mm) Rexroth precision ground linear Roller rail lower.
Rail – Drill assembly[5]		1 2/5" (35MM) Rexroth Linear Roller Rail
Pinions	**Longitudinal axis[12]**	Helical Mod 3.0. Custom Precision ground Material: S45C (C45) Steel
	Transverse axis	Helical Mod 3.0. Rexroth Precision ground
Pinion thrust bearings[14]		As Standard
Cable carrier		Enclosed Cable carrier standard. Floor mounted
Bearings[13]		Linear Roller bearings on transverse axis and drill assembly. High quality, readily available bearings used throughout
Integrated active rail cleaning system[15]		As standard

Standard Safety Features

Machine protection	Heat shields standard
E-Stop	Independent Emergency-Stop circuit
End Limits	Software controlled with redundant mechanical limit switches

Customizations

- Customized cutting width
- Infinite length
- On-Board Swarf extraction system
- Multiple gantries on common rail
- Plasma cutting
- PCS Zero Offset Plasma Bevel
- Independent torch station select
- Stud welding
- Steel Grate plasma cutting
- Rotary pipe cutting axis
- Flame (Oxy) bevel
- Up to 10 flame (Oxy) torches
- Extra hi-flow gas manifold
- Auto igniters
- Plate cooling rings
- Through tool MQL with high pressure air blast.
- Through tool flood coolant
- Any custom requests
- Paint marking
- Pin marking
- Powder marking
- PCS TurboGas - Automatic gas control for flame (Oxy) cutting
- PCS IntuitiveGas - Automatic height control for flame (Oxy) cutting
- On Table plate stock database
- Job reporting interface for managers
- Advanced maintenance logger
- Travelling dross bin
- Digitally zoned fume extraction
- Automatic plate alignment
- Automatic plate feed
- Extra safety devices
- Operators chair
- Operator safety shield
- Wireless pendant
- PCS designed & manufactured wet or dry cutting tables

Fig. 9 - Cut Sample with Flood Coolant.
Oil covered surface can be avoided with MQL

PCS
Profile Cutting Systems

THINGS TO LOOK OUT FOR

Good quality, Durable Rack, Rail and Pinions?

Many cheaper machines utilize smaller or less durable components which work great at first, however these machines are destined to suffer premature wear. Any mechanical backlash or abnormality will guarantee poor quality cutting minute. Furthermore premature wear will result in excessive stress on other components such as motors, belts and drive amplifiers. Many managers have found the initial CapEx advantage of a cheap machine is quickly eroded by the loss of clients seeking better quality cutting and excessive maintenance callouts. Acknowledged managers that consider Arc On Efficiency when determining ROI will always purchase a PCS machine.

Dealing with High-Frequency Electrical Interference?

The plasma cutting process produces extreme levels of high-frequency electrical interference. PCS's extensive two decades of plasma experience and close relationships with component manufacturers has resulted in premeditated methods to screen, protect and select electrical components. Even the slightest penetration of high-frequency electrical interference can lead too difficult to detect intermittent errors which reduce the cutting quality and productivity.

Installation Charges?

PCS provides installation included with any PCS BHB quotation. Installation costs can equate to thousands of dollars. Many other boutique machines require installation by a third party where by any abnormality in the installation process will ultimately be charged to the end user.

Engineering and Test Capability?

PCS employ only the very best personnel. In particular, staffs within the mechanical and electrical engineering departments are required to have exceptional qualifications while utilizing cutting edge computer engineering packages. In the design stage, all of the PCS machine models are rigorously tested and calculated through advanced computer modeling. This stage permits both major and fine mechanical adjustments that result in increased longevity achieved by very few manufacturers. Once an unparalleled result is achieved a prototype is produced and put through the harshest of tests, and amendments are made. The final result is a benchmarked machine model that can operate exactly as stated in our quotations with no hidden surprises.

Support?

When buying from PCS you are dealing directly with the manufacturer. PCS stocks an immense array of spare parts and consumables to ensure that machine downtime is kept to a minimum should a breakdown or natural disaster occur. Equally important, PCS directly provides exceptional knowledge and advice. What down time can you expect for any breakdowns and how will this affect your corporate image? Can you trust the machine manufacturer to provide spare parts for years to come?

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