

CCD/2 CNC machine



The CCD2 is the smallest in a range of CNC machines for drilling and routing of PCBs and other materials. All our CNC units can be used for 'Isolation Routing' where the unwanted copper to produce a PCB is removed mechanically rather than chemically etched. The CCD2 is the smallest and most affordable unit but it still has a processing area of 270mm x 320mm.

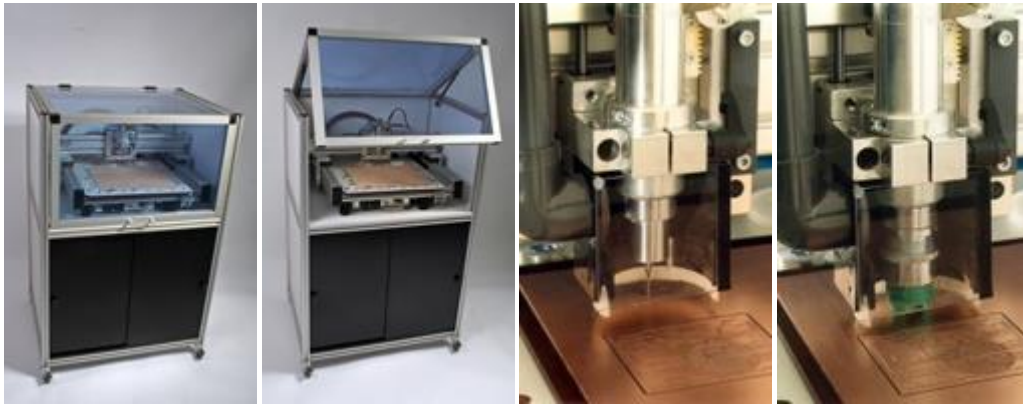
All CNC machines are complete with drill (Drill Pro) and profile routing software (ROUTEPRO 2008). For Isolation Routing the IsoCam or IsoCam Pro software is also needed. This special piece of software uses the data from the GERBER files to generate the corresponding outline shape. [Click here](#) for a comparison table of the differences between IsoCam and IsoCam Pro. You can also get more information on IsoCam from our [downloads page](#). All the CNC machines include a Kavo high frequency spindle (60,000 rpm) and software controlled Z-Axis for optimum processing. All machines accept industry standard tools. Floor standing or bench top enclosures are available the larger of which has an inbuilt storage cabinet and lockable wheels.

Special Features :

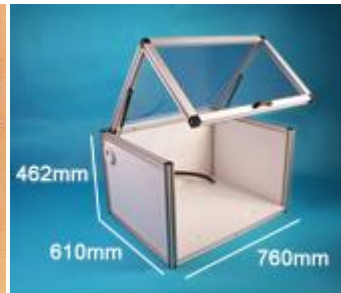
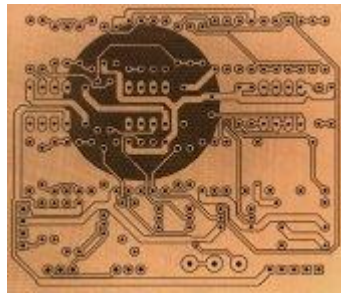
- Rigid and flat construction with low moving weights and high quality bearings for high-speed positioning.
- Machine bed with universal fixture system, suitable for both clamps and ref. Pins.
- KaVo high speed , 60,000 rpm spindle motor, 150 W, including 1/8" (3.175 mm) chuck.
- Heavy duty stepper motor on Z-axis for true milling capability and correct tool speed.
- Standard travel area: 320 x 270 x 30 mm, Sizes (mechanics) approx:70 x 55 x 30 cm³ (WxDxH)
- Easy semi-automatic tool change, simultaneously 15 out of 99 tools per job.
- Smallest drill diameter: 0.3mm. Drill speed: 5 hits/s (= 18 000 holes per hour)
- Integral depth limiting device for (isolation) milling and engraving on uneven surfaces
- Driver software for Excellon, Sieb & Meyer or HP/GL data
- All machine parameters software controlled and configurable, including Z axis
- Step definition: 1 mil (= 0,0254 mm), precision +/- 1 step.
- Maximum speed per axis: 93 mm/s (= 5.6 m/min)
- Sizes (mechanics) approx: 70 x 55 x 30 cm³ (W x D x H)

- Required desktop size: approx. 80 x 80 cm. Weight: approx. 23 kg

Technical details are subject to change without notice



CCD/2 Floor Standing Enclosure



700-005-2 CCD/2
Bench Top Enclosure

Order Code	Description
700-001	CCD/2 CNC WITH ROUTEPRO
700-002	IsoCam Isolation Routing Software
700-002-P	ISOCAM PRO ISOLATION ROUTING SOFTWARE
700-005-3	CCD/2 Floor Standing Enclosure
700-005-2	CCD/2 Bench Top Enclosure

ACCESSORIES

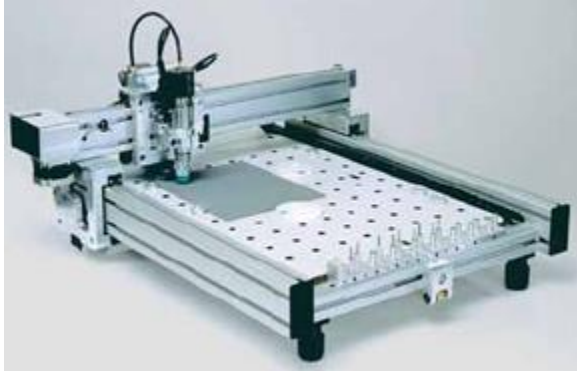
Order Code	Description
700-013-8	CNC 60 degree ROUTER FOR ISOLATION MILLING
700-013-15	CNC 90 DEGREE ROUTER FOR ISOLATION MILLING

DRILL ENTRY / EXIT BOARD

MDF drill exit board for precision drilling with a CNC drilling machine.

Order Code	Description
700-015-1	270 x 325 x 4mm MDF BACKING BOARD

2. CCD Production Centre



For a larger working area than the CCD2 the standard CCD is available in Manual or Automatic Tool Change versions. The maximum working area is approximately 324 X 495 mm. These high speed, accurate machines will drill PCBs, manufacture isolation routed prototype boards, and engrave a whole range of substrates including aluminium.



For PCBs the machine will accept the drilling files created by most CAD software packages and will drill several boards in a stack. As with the CCD2 it is also possible to produce prototype PCBs without the use of etching chemicals, the method of production known as isolation routing. The software IsoCam or IsoCam Pro uses the data from the GERBER files to generate the corresponding outline shape. [Click here](#) for a comparison table of differences between IsoCam and IsoCam Pro.

The whole operation can be performed 'real time' in Windows. The high speed and precision of

these machines, together with a range of specifically designed sophisticated features (e.g. mechanical depth limitation) make this method of production highly accurate and efficient.

Special Features :

- Accuracy $\pm 0.001''$, Repeatability $\pm 0.0004''$
- Machine bed with universal fixture system, suitable for both clamps and ref. pins
- KaVo high speed spindle motor, 150 Watt, including 1 / 8" (3.175 mm) chuck
- Software controlled spindle speed up to 60000 rpm
- Heavy duty stepper motor on Z-axis for true milling capability and correct tool speed
- Standard travel area: 325 x 495 x 30 mm 3 (max. available 500 x 600 x 45 mm 3)
- Semi or fully automatic tool change (ATC) options available. Compressor required for ATC machine.
- Smallest drill diameter: 0.3 mm
- Integral depth limiting device for (isolation) milling and engraving on uneven surfaces
- Stand alone control unit (19" rack) connects to all standard PC's with 1 free serial port
- Driver software for Excellon, Sieb&Meyer or HP/GL data.
- All machine parameters software controlled and configurable
- Video and Screen Attachment (optional) available for inspection and digitising (with Teach software).
- Paste Dispenser (optional) available for solder paste and other dispensing applications.
- Enclosure (optional). A floor standing enclosure with storage facility and lockable wheels.
- IsoCam (optional) Isolation Routing software. A sophisticated software package which along with its many editing facilities enables Gerber files to be manipulated to a suitable format for 'Isolation Routing'. A Windows Black Box should be purchased with this software.
- Step definition: 1 mil (=0.0254 mm), precision +/- 1 step
- Maximum speed per axis: 93 mm/s (=5.6 m/min) Drill speed: 5 hits/s (=18000 holes per hour)
- Power supply: 220-240 V, 50 Hz, approx. 250 VA.
- Required desktop size: approx. 120 x 80 cm 2 Weight: approx. 32 kg

Order Code	Description
700-008	AUTO TOOL CNC WITH ROUTEPRO
700-010-5	Compressor for Auto Tool change CNC Machine
700-013	MANUAL TOOL CNC WITH ROUTEPRO
700-002	IsoCam Isolation Routing Software
700-002-P	ISOCAM PRO ISOLATION ROUTING SOFTWARE
700-013-4	Floor Standing Enclosure for Manual & Auto CNC
700-013-8	CNC 60 degree ROUTER FOR ISOLATION MILLING
700-013-15	CNC 90 DEGREE ROUTER FOR ISOLATION MILLING

Order drill bits with collars for use on the Auto Tool Change CNC.

IsoCam & IsoCam Pro comparison table

ISOCAM	Standard	Pro
Gerber input / output (standard/extended)	YES	YES
HPGL input / output	YES	YES
Excellon output for milling data	NO	YES
DXF input / output	NO	YES
Bitmap input / output	NO	YES
Drill input / output	YES	YES
G-code output	YES	YES
ARC optimize	NO	YES
Scaling	NO	YES
Scale - auto-rotate bitmap	NO	YES
Auto detect drill holes in bitmap	NO	YES
Save job file	YES	YES
Create milling data	YES	YES
Create milling data using two tools	YES	YES
Create milling data for selected object	NO	YES
Undo / Redo	YES	YES
Max number of layers	32	64
Units : Mils / mm / Inch / HPGL	YES	YES
Design rules checker	YES	YES
Show milling direction	NO	YES
Change milling direction	NO	YES
Change starting point of milling chain	NO	YES
Select whole milling chain	NO	YES
Create solder mask	NO	YES
Snap to nearest endpoint	YES	YES
Auto synchronize layers	YES	YES
Add fixing holes	YES	YES
Create rub outs	YES	YES
Create board cuts	YES	YES
Mirror-function	YES	YES
Powerfill zoom function	YES	YES
Add objects	YES	YES
Select complete net	NO	YES

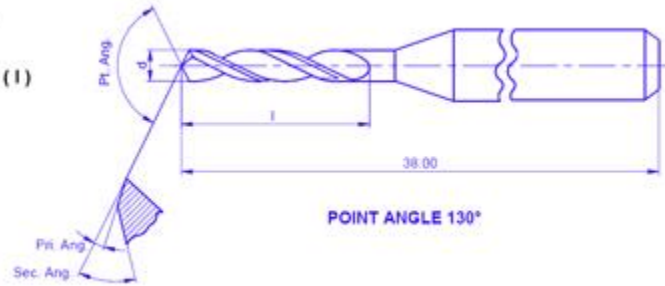
Option Drill Bits & Routers

Carbide Drill Bits & Routers

1/8" Turbo Shank

Common Shank DIA 1/8" (3.175mm)

Ød	Flute length (l)
0.5 - 0.65mm	7.0mm
0.7 - 3.175mm	10.5mm



High grade solid carbide PCB drills, 1/8th inch turbo shank. Solid carbide drills remain sharp for much longer than steel drills when drilling epoxy glass PCB laminates such as Microtrak and should be used at high speed to produce good quality holes and avoid breakage. These drill bits can be fitted with drill collars for use with CNC drills.

Order Code	Description
13-111001-1	Carbide drill 0.40mm 1/8" shank
13-111003-1	Carbide drill 0.50mm 1/8" shank
13-111004-1	Carbide drill 0.55mm 1/8" shank
13-111005-1	Carbide drill 0.60mm 1/8" shank
13-111006-1	Carbide drill 0.65mm 1/8" shank
13-111007-1	Carbide drill 0.70mm 1/8" shank
13-111008-1	Carbide drill 0.75mm 1/8" shank
13-111009-1	Carbide drill 0.80mm 1/8" shank
13-111010-1	Carbide drill 0.85mm 1/8" shank
13-111011-1	Carbide drill 0.90mm 1/8" shank

13-111012-1Carbide drill 0.95mm 1/8" shank
13-111013-1Carbide drill 1.00mm 1/8" shank
13-111014-1Carbide drill 1.05mm 1/8" shank
13-111015-1Carbide drill 1.10mm 1/8" shank
13-111016-1Carbide drill 1.15mm 1/8" shank
13-111017-1Carbide drill 1.20mm 1/8" shank
13-111018-1Carbide drill 1.25mm 1/8" shank
13-111019-1Carbide drill 1.30mm 1/8" shank
13-111020-1Carbide drill 1.35mm 1/8" shank
13-111021-1Carbide drill 1.40mm 1/8" shank
13-111022-1Carbide drill 1.45mm 1/8" shank
13-111023-1Carbide drill 1.50mm 1/8" shank
13-111024-1Carbide drill 1.55mm 1/8" shank
13-111025-1Carbide drill 1.60mm 1/8" shank
13-111026-1Carbide drill 1.65mm 1/8" shank
13-111027-1Carbide drill 1.70mm 1/8" shank
13-111028-1Carbide drill 1.75mm 1/8" shank
13-111029-1Carbide drill 1.80mm 1/8" shank
13-111030-1Carbide drill 1.85mm 1/8" shank
13-111031-1Carbide drill 1.90mm 1/8" shank
13-111032-1Carbide drill 1.95mm 1/8" shank
13-111033-1Carbide drill 2.00mm 1/8" shank
13-111058 Carbide drill 2.05mm 1/8" shank
13-111034-1Carbide drill 2.10mm 1/8" shank

13-111059 Carbide drill 2.15mm 1/8" shank
13-111035-1 Carbide drill 2.20mm 1/8" shank
13-111060 Carbide drill 2.25mm 1/8" shank
13-111036-1 Carbide drill 2.30mm 1/8" shank
13-111061 Carbide drill 2.35mm 1/8" shank
13-111037-1 Carbide drill 2.40mm 1/8" shank
13-111062 Carbide drill 2.45mm 1/8" shank
13-111038-1 Carbide drill 2.50mm 1/8" shank
13-111063 Carbide drill 2.55mm 1/8" shank
13-111039-1 Carbide drill 2.60mm 1/8" shank
13-111064 Carbide drill 2.65mm 1/8" shank
13-111040-1 Carbide drill 2.70mm 1/8" shank
13-111041-1 Carbide drill 2.80mm 1/8" shank
13-111066 Carbide drill 2.85mm 1/8" shank
13-111042-1 Carbide drill 2.90mm 1/8" shank
13-111067 Carbide drill 2.95mm 1/8" shank
13-111043-1 Carbide drill 3.00mm 1/8" shank
13-111068 Carbide drill 3.05mm 1/8" shank
13-111069 Carbide drill 3.10mm 1/8" shank
13-111070 Carbide drill 3.15mm 1/8" shank
13-111057 Carbide drill 3.175mm 1/8" shank

MM Reground Carbide Drills

High quality pre-used tungsten carbide drill bits which have been reground to be as sharp as new. A consider-able saving on new bit prices. All are 'type B' with 1/8" (3.175mm) shank. Supplied in packs of 10.

Order Code	Description
68-1006	REGROUND CARBIDE DRILL 0.6MM PK OF 10
68-1007	REGROUND CARBIDE DRILL 0.7MM PK OF 10
68-1008	REGROUND CARBIDE DRILL 0.8MM PK OF 10
68-1085	REGROUND CARBIDE DRILL 0.85MM PK OF 10
68-1009	REGROUND CARBIDE DRILL 0.9MM PK OF 10
68-1100	REGROUND CARBIDE DRILL 1.0MM PK OF 10
68-1105	REGROUND CARBIDE DRILL 1.05MM PK OF 10
68-1110	REGROUND CARBIDE DRILL 1.1MM PK OF 10
68-1115	REGROUND CARBIDE DRILL 1.15MM PK OF 10
68-1125	REGROUND CARBIDE DRILL 1.25MM PK OF 10
68-1300	REGROUND CARBIDE DRILL 1.3MM PK OF 10
68-1400	REGROUND CARBIDE DRILL 1.40MM PK OF 10
68-1500	REGROUND CARBIDE DRILL 1.50MM PK OF 10
68-1600	REGROUND CARBIDE DRILL 1.6MM PK OF 10

SC/FT Chip Breaker Routers



Tungsten Carbide printed circuit board routers with 1 / 8" (3.175mm) shank. The special geometry offers exceptional swarf removal, reduces radial load significantly and produces a very fine surface finish. Total length 38mm. Some popular sizes are offered below although other sizes from 0.8mm to 3.175mm are also available.

Order Code	Description
13-111155	SC/FT Chip Breaker Router 0.5mm
13-111156	SC/FT CHIP Breaker Router 0.60mm
13-111160	SC/FT Chip Breaker Router 0.8mm
13-111161	SC/FT Chip Breaker Router 1.0mm
13-111162	SC/FT Chip Breaker Router 1.2mm
13-111163	SC/FT Chip Breaker Router 1.5mm
13-111164	SC/FT Chip Breaker Router 2.0mm
13-111165	SC/FT Chip Breaker Router 2.5mm
13-111166	SC/FT Chip Breaker Router 3.0mm

RP Series Routers



Tungsten Carbide routers with 1 / 8" (3.175mm) shank for plastics and large rub outs of copper laminates. Total length 38mm.

Order Code	Description
13-111180	RP Series Router 0.8mm

13-111181 RP Series Router 1.0mm

13-111182 RP Series Router 1.2mm

13-111183 RP Series Router 1.5mm

13-111184 RP Series Router 2.0mm

13-111185 RP Series Router 2.5mm

13-111186 RP Series Router 3.0mm

1/8th Drill Collar

Order the appropriate number of collars at the same time as your B Series drills or routers. These drill collars can be pre-fitted to any of the B series, MM drills or Routers all of which have a 1/8th (3.175mm shank). They should be used with any tool on a CNC machine.

Order CodeDescription

700-013-3 LABOUR CHARGE FOR FITTING COLLAR TO DRILL/ROUTER