

PRECISION LAPPING/POLISHING MACHINES



字环数控机床股份有限公司 YUHUAN CNC MACHINE TOOL CO., LTD.

ABOUT US

YUHUAN CNC MACHINE TOOL CO., LTD is a public National High-tech Enterprise (Stock No.: 002903) specialized in the R&D, manufacturing and sales of precision & high-efficient CNC machine tools.

Our company has been accredited as the Provincial Engineering Research Center of Precision CNC Machine Tools, the Provincial Enterprise Technology Center and Academician Workstation. Through years of self-innovation and development, YUHUAN has built up its own core technology competence, ensuring high-standard quality management with ISO 9001:2008 certification. Representing the high-end CNC machine tools, our product's technology has pioneered domestically and reached the international advanced level.

The products we manufacture mainly include CNC Double Disc Surface Grinding Machine, CNC Lapping/Polishing Machine and Intelligent Equipment, which are widely applied in the key areas of national economy, like automotive, IT electronics, military industry, aerospace, ship building, bearings, seals and home appliances. Today, we have spread our market footprints all over China and other countries such as India, America, Brazil, Russia, Portugal, Vietnam and Kenya.

In the principle of "Accomplishing Cutting-edge Manufacturing, Revitalizing National Industry", YUHUAN is dedicated to becoming a global leader in the industry of CNC machine tools and intelligent equipment manufacturing.

PRECISION VERTICAL DOUBLE SURFACE LAPPING/POLISHING MACHINE

YHM77110

MAIN FUNCTION >>>

It is used for the lapping/polishing of double surfaces of metal parts, such as valve plate and wearing plate, as well as laminated non-metal parts of hard & brittle materials like silicon, ceramic, sapphire, etc.

MAIN FEATURES >>>

- The machine adopts compact size design and gantry structure with high rigidity and stability.
- Maximum pressure can reach up to 1200 Kg, double oil cylinder with electric hydraulic proportional valve to control pressure precisely.
- The axis speeds of sun wheel, inner gear ring, upper plate and lower plate can be regulated independently, and the overall speed can match up.
- The upper plate adopts special stainless steel with strong corrosion and deformation resistance. Temp control system is installed inside the upper and lower plates to control the surface temperatures.



MAIN SPECIFICATIONS >>>

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Item/Model	Unit	YHM77110
Upper plate size (OD×ID×T)	mm	Φ1070×Φ495×Φ45
Lower plate size (OD×ID×T)	mm	Φ1070×Φ495×Φ45
Pin gear wheels		7pcs ; ОDФ327.5mm , Tooth No. 64
Min thickness of workpiece	mm	0.8
Max size of workpiece	mm	Ф280 (diagnol)
Workpiece accuracy	mm	Flatness & parallelism ≤ 0.006 mm (Single workpiece) Flatness & parallelism ≤ 0.008 mm (whole plate)
Surface roughness	μm	Ra0.15µm (lapped), Ra0.05µm(polished)
Lower plate speed	rpm	10-80 (stepless)
Upper plate speed	rpm	8-50 (rated speed)
Lower plate motor		15Kw,rated speed1440rpm
Upper plate motor		11Kw,rated speed1440rpm
Overall dimension (L×W×H)	mm	2500×2000×3000
Total weight	kg	9000

SINGLE SURFACE LAPPING/ POLISHING MACHINES YH2M8192/8192 || /8195

MAIN FUNCTION >>>

This series of products are used for precision lapping/polishing of double surfaces of metal parts, such as valve plate, wearing plate, rigid seal ring, cylinder piston ring and oil pump blade, as well as laminated non-metal parts of hard & brittle materials like silicon, germanium, quartz, glass, ceramic, sapphire, gallium arsenide, ferrite, lithium niobate, etc.

MAIN FEATURES >>>

- All the axles of holding plate, lower plate and upper plate are held up by Tapered Roller Bearing & Deep Groove Ball Bearing, ensuring the machine's high accuracy of rotation.
- ◆ The elevation of the gear ring is realized through cam mechanism driven by air cylinder.
- PLC control system, flexible and reliable. Touch screen as HMI to display real time status of the machine, friendly and informative.
- The models of 8436B, 8432E and 13B-9L are driven by two motors, 8432C is driven by three motors, while the 18B is driven by four motors.
- The machine is equipped with main cylinder locking device for easy & safe locking of the upper plate.



MAIN SPECIFICATIONS >>>

Item/Model	Unit	YH2M8432C	YH2M13B-9L	YH2M 8432E	YH2M8436B	YH2M18B	
Lapping plate size (OD×ID×T)	mm	Ф1070хФ495х45	Ф978хФ558х45	Ф1070хФ495х45	Ф1140хФ375х45	Ф1280хФ449х50	
Planetary wheel		P=15.875 Z=64	DP=12 Z=108	P=16.842 Z=60	P=15.875 Z=84	P=21.053 Z=71	
Number of planetary wheel	n	3 ≤ n ≤ 7	3 ≤ n ≤ 9	3 ≤ n ≤ 7	3 ≤ n ≤ 5	3 ≤ n ≤ 5	
Max size of workpiece	mm	Ф280(diagnol)	Ф180(diagnol)	Ф280(diagnol)	Ф360(diagnol)	Φ420(diagnol)	
Min thickness of workpiece	mm	0.4 0.6					
Flatness of lapped workpiece	mm	0.006 (Ф100)					
Flatness of polished workpiece	mm	0.008 (Ф100)					
Surface roughness of lapped workpiece	μm	Ra0.15					
Surface roughness of polished workpiece	μm	Ra0.05					
Overall dimension (L×W×H)	mm	1640×1440×2700	1650x1300x2650	1510*1450*2650	1800x1500x2650	2200×1750×2690	
Total weight	Kg	3500	2600	3200	3000	5000	

MAIN FUNCTION >>>

It is used for the lapping/polishing of single surface of metal parts, such as valve plate, piston ring and oil pump blade, as well as laminated non-metal parts of hard & brittle materials like glass, ceramic, sapphire, etc.

MAIN FEATURES >>>

- It is a three or four-station water-cooled single surface lapping/polishing machine with auto dressing disc. The lower end of the work-piece is lapped/polished by the lapping compound, and the water circulation system is adopted for the cooling of the lapping plate to ensure long-time reliable operation of the machine.
- The machine can save up to 100 program settings of different processing technical parameters, which drastically improves the work efficiency of the machine and reduces the laboral workload.
- The machine is equipped with precision pressure relief valve, and the system itself can accurately control the lapping pressure for the work-piece.
- PLC is adopted for flexible & reliable control. Touch screen as friendly & informative HMI to display alarms and real-time status of the machine.
- All control components are powered by 24V power source, and the PLC is powered by isolated transformer, which reduces the interference of external grid and improves the safety of the machine.
- Peristaltic pump is equipped for accurate control of the flow of lapping fluid as per different work-pieces to achieve better lapping effect.

MAIN SPECIFICATIONS >>>

Item/Model	Unit	YH2M8192	YH2M8192 Π	YH2M8195
Lapping plate size (OD×T)	mm	Ф914×35	Ф914×35	Ф952×35
Working ring size (OD×ID×T)	mm	Ф410×Ф368×60(3pcs)	Ф410×Ф368×60(3pcs)	Ф400×Ф375×60(4pcs)
Max size of work-piece	mm	Ф300	Ф300	Ф320
Max flatness of lapped/polished workpiece	um		0.005(Ф80)/0.008(Ф80)	
Max surface roughness of lapped/polished workpiece	um		Ra0.15/Ra0.05	
Lapping plate speed	rpm		5 ~ 90 rpm(stepless)	
Lapping plate motor		7.5KW , rated speed : 1450rpm	7.5KW , rated speed : 1450rpm	11KW , rated speed : 1450rpm
Air cylinder stroke (bore×stroke)	piece	Ф100×400(3pcs)	Ф80×450(3pcs)	Ф80×450(4pcs)
No. of working rings	piece	3	3	4
Overall dimensions (L*W*H)	mm	1570×1725×2250	1600×1625×2150	1500×2200×2250
Total weight	kg	2000	2500	2800

YH2M8169

MAIN FUNCTION >>>

It is used for fine polishing of 3D or complex surface of nonmagnetic materials like glass, ceramics, sapphire, alum alloy, stainless steel, etc.

MAIN FEATURES >>>

- Cantilever beam structure.
- Upper plate use collector slip ring for information exchange of manipulators.
- Workpiece carrier equipped 6 flexible manipulators in revolving movement.
- Manipulator adopts servo motor and 2 axis precision linkage for movement.
- The intensity and line direction of magnetization is controlled by program to ensure field stability and even polishing.
- Temperature controlling system controls the field, fluids and other heating parts as per feedback of sensor.



MAIN SPECIFICATIONS >>>

Item/Model	Unit	YH2M8169
No. of Stations	pcs	6
Max size of workpiece	mm	165(diagnol) *40 (height)
Size of polishing basin	mm	Ф630
Upper plate speed	rpm	3-85
Workpiece speed	rpm	3-62
Swing angle of robot arm	۰	-5°—12°
Upper plate motor	kw	3
Robot arm swing motor	kw	0.4
Robot arm rotate motor	kw	0.1
Overall dimensions	mm	1800*2800*2600
Total weight	kg	2800

3D CURVED SURFACE POLISHING MACHINES

YH2M81116A/81118

MAIN FUNCTION >>>

It is mainly used for polishing the flat and 2.5D or 3D arc surface of metal material like Aluminum alloy, stainless steel, as well as other non-metallic material like glass and ceramics.

MAIN FEATURES >>>

- The workpiece plate of this machine is designed with revolution and rotation functions at the same time, meanwhile the elevation of the polishing plate is driven by servo motor and ball screws. Thus, a higher productivity and qualification rate is achieved.
- The machine's workpiece plate and polishing plate are controlled separately by servo motors with stepless speed regulating to meet the requirements of different polishing process. Meanwhile the pressing of the polishing plate is achieved through displacement of the ball screw in linear guideway driven by servomotor, ensuring steady pressure and polishing accuracy.
- Anti-corrosion materials such as stainless steel or aluminum alloy are adopted for all the parts that are in contact with the polishing liquid such as flume, case panel and collection basin.
- ◆ The machine vacuum system is equipped with digital vacuum pressure gauge for real-time pressure monitoring, in case the falling of workpiece due to low pressure.
- Machine is equipped with vacuum air & liquid separating device for automatic draining.
- The machine adopts HMI (15 inch touch screen) with PLC for flexible & reliable control and informative display.

MAIN SPECIFICATIONS >>>

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Item/Model	Unit	YH2M81116A	YH2M81118
Size of work plate (OD×T)	mm	Ф400×25 (AL)	Ф400×25 (AL)
No. of work plate	pcs	5	8
Max size of workpiece	mm	360	360
Polishing plate size (OD)	mm	Ф1135	Ф1135
Work plate rotation speed	rpm	2 ~ 45 (stepless)	2 ~ 45 (stepless)
Work plate revolution speed	rpm	1 ~ 12 (stepless)	auto switch, no revolution during polishing
Polishing plate speed	rpm	2 ~ 90(stepless)	2 ~ 90(stepless)
Polishing plate moving stroke	mm	350	350
Overall dimensions (L×W×H)	mm	1900×1500×2800	2430*1935*2575
Auto loading/unloading		No	Yes
Total weight	kg	2800	4050

CNC SINGLE SURFACE POLISHING MACHINE

MAIN FUNCTION >>>

It is used for shaping & polishing of multi-edges (2.5D and 3D sides) of non-metal and metal frames and plates like glasses, ceramics, sapphire, aluminum alloy and stainless steel.

MAIN FEATURES >>>

- It is applied to polish the rims of parts, and multi-pieces can be processed each time.
- Under the control of PLC, the profile of the work-piece is followed & pressed closely automatically. The polishing heads from left & right polish the work-piece at the same time, achieving excellent polishing result.
- Both the polishing heads move up & down in linear motions synchronically through screw rod driven by servo motor, ensuring evenly polish of the work-piece with no grains.
- PLC is adopted for flexible & reliable control. Touch screen as friendly & informative HMI to display alarms and real-time status of the machine.
- All control components are powered by 24V power source, and the PLC is powered by isolated transformer, which reduces the interference of external grid and improves the safety of the machine.



MAIN SPECIFICATIONS >>>

Item/Model	Unit	YH2M4130E
Polishing head size (OD*H)	mm	Ф290*235
Max size of work-piece	mm	300 (diagnol, edge length ≥ 60)
Max height of clamped work-pieces	mm	180
Revolving speed of polishing head	rpm	50-1500
Revolving speed of work-piece	rpm	0.5-3
Polishing head elevating speed	mm/ min	5-350
Polishing head motor	kw	3
Workpiece rotation motor	kw	1.5
Polishing head elevating motor	kw	0.4
Polishing head moving motor	kw	0.4
No. of polishing heads	piece	2
Total weight	kg	2500
Overall dimensions (L*W*H)	mm	1800×1250×2150

MAIN FUNCTION >>>

It is used for single surface polishing of various parts, especially the complex features on flat surfaces.

MAIN FEATURES >>>

- The machine is numerical controlled with auto circulating polishing function. Various shapes of parts can be polished by just changing the numerical programme.
- It is a four-station single surface polishing machine. The workpiece is clamped to the station by fixture. The rotation of the workpiece is driven by the servo motor.
- The design of the upper polishing head or spindle ensures high gyration Precision and less vibration.
- The workpiece moves in the direction of X & Y axis to complete polishing of complex surfaces.
- The machine adopts enclosed design with computer stimulation and infinite element, ensuring the stability and rigidity in operation.



MAIN SPECIFICATIONS >>>

Item/Model	Unit	YH2M8108
Polishing head size (OD*H)	mm	Ф45-Ф80
Max size of work-piece (diagnol)	mm	Ф260
Surface roughness of workpiece	um	Ra0.05
polishing head speed	rpm	50-2000
workpiece rotation speed	rpm	3-60
Elevating speed of polishing head	rpm	2000
Polishing head motor		0.8 kW, rated speed 1400 rpm
Workpiece rotation motor		1.3 kW, rated speed 1500 rpm
No. of polishing heads	piece	4
Total weight	kg	4500
Overall dimensions (L*W*H)	mm	2370×2150×2450

PRECISION VERTICAL DOUBLE SURFACE LAPPING/POLISHING MACHINE YH2M8432D

MAIN FUNCTION >>>

It is used for polishing of 3D concave surfaces of materials like glass and ceramic.

MAIN FEATURES >>>

- It is a double-station polishing machine with 2 sets of polishing heads (12 heads per set). The small polishing heads polish the concave surfaces of the workpiece, while the big polishing heads polish the main flat surface of the workpiece.
- The machine is equipped with robot arms for auto loading/ unloading, realizing non-stop operation process.
- Enclosed design for environment protection and safety.
- ◆ The whole machine adopts the same control and drive system with excellent synchronism and conformity.



MAIN SPECIFICATIONS >>>

Item/Model	Unit	YH2M8608A
Max size of workpiece	mm	267 (diagnol)
No. of polishing heads	pcs	12
No. of polishing heads	pcs	12
Polishing head speed	rpm	100-1500
No. of workpieces processed one time	pcs	12
Polishing efficiency	min/plate	20-24 (100-120S/pc)
Workstation size	mm	1220×280
Loading/unloading mode		Automatic
Cooling		Circulation cooling
Filtration accuracy	um	6
Total weight	kg	3000
Overall dimension	mm	2080×1800×2400

MAIN FUNCTION >>>

It is used for lapping/polishing the double surfaces of flat non-metal parts of hard & brittle materials like glass, ceramic, sapphire, etc.

MAIN FEATURES >>>

- The machine adopts compact size design and gantry structure with high rigidity and stability.
- Maximum pressure can reach up to 500 Kgf, double oil cylinder with electric hydraulic proportional valve to control pressure precisely.
- It adopts elevation of outer gear ring. And the sun wheel, inner gear ring, upper plate and lower plate are driven by motors
- The upper plate adopts special stainless steel with strong corrosion and deformation resistance. Temp control system is installed inside the upper and lower plates to control the surface temperatures.
- * PLC is adopted for flexible & reliable control. Touch screen as friendly & informative HMI to display alarms and real-time status of the machine.
- ◆ The machine is equipped with main cylinder locking device for easy & safe locking of the upper plate.



MAIN SPECIFICATIONS >>>

Item/Model	Unit	YH2M8432D
Upper plate size (OD×ID×T)	mm	Ф1185×Ф620×Ф45
Lower plate size (OD×ID×T)	mm	Ф1185×Ф620×Ф45
Min thickness of workpiece	mm	0.6
Max size of workpiece	mm	290 (diagnol)
Workpiece accuracy	mm	Flatness & parallelism ≤ 0.005 mm (Single workpiece) Flatness & parallelism ≤ 0.008mm (whole plate)
Workpiece surface roughness	μm	Ra0.15µm (lapped), Ra0.05µm(polished)
Lower plate speed	rpm	5-50 (stepless)
Upper plate speed	rpm	5-40 (stepless)
Sun wheel speed	rpm	2-22 (stepless)
Overall dimension (L×W×H)	mm	2000×1600×2800
Total weight	kg	3500

MAIN FUNCTION >>>

It is widely applied for polishing of 2.5D & 3D curved surface of metal and non-metallic parts like glass, ceramic, etc.

MAIN FEATURES >>>

- It adopts consecutive polishing method to raise the producing efficiency & percent of product.
- It has 3 sets of workstation upper plate systems separately driven by servo motor, each set of upper plate is guided by precision straight guide sleeve, and it is controlled by air cylinder to elevate and compress, which realizes automatic pressure compensation during the producing process.
- The machine adopts 4 non-stop stations structure, realizing non-stop loading and offloading during the producing process.
 Each station is driven by independent motor, and coordinates with upper plate to realize different process design.
- Big workstation plate is driven by gear motor which realize accurate stop, and it is equipped with high strength locating dowel pinto to make sure work station transfer accurately and stably.
- It adopts vacuum absorption method with vacuum inspection system.



MAIN FUNCTION >>>

It is designed for polishing of 2.5D & 3D curved surface of materials like glass, zirconia, metal and non-metallic parts, etc.

MAIN FEATURES >>>

- It adopts unique polishing technology, which achieves higher productivity and qualification rate.
- Upper plates(A,C) (B,D) are controlled independently.
 Lower plate and 6 stations are controlled coordinately.
 Thus, the control system is easy to operate and rotating speed can be adjusted, which realizes higher productivity and qualification rate.
- The equipment adopts high strength casting bracket, and gantry structure with high rigidity and stability.
- It adopts vacuum absorption method with vacuum inspection system.



MAIN SPECIFICATIONS >>>

Item/Model	Unit	YH2M8690
Upper plate (OD)	mm	3×Ф920
Lower plate (OD)	mm	12× Φ 420
Min thickness of workpiece	mm	0.5
Max size of workpiece	mm	Ф360 (diagonal)
Lower plate spin speed	rpm	5-40rpm (Stepless)
Lower plate rotation speed	rpm	2-10rpm (Stepless)
Upper plate speed	rpm	50-280rpm(Stepless)
Lower plate motor	Kw	KAF57 1.5Kw
Upper plate motor	Kw	FAF67 5.5Kw
Overall Dimensions (L x W x H)	mm	2600x2600x2700
Weight	kg	5000

MAIN SPECIFICATIONS >>>

Item/Model	Unit	YH2M8650
Upper plate (OD)	mm	4×Φ500
Lower plate (OD)	mm	6×Φ420
Min thickness of workpieces	mm	0.5
Max size of workpieces	mm	Ф360(diagonal)
Lower plate spin speed	rpm	10-50(stepless)
Lower plate rotation speed	rpm	5-28(stepless)
Upper plate speed	rpm	50-350(stepless)
Lower plate motor	Kw	5.5
Upper plate motor	Kw	4x3
Overall Dimension (L x W x H)	mm	1850x1500x2600
Weight	kg	2600

YH2M8590

MAIN FUNCTION >>>

It is designed for polishing of 2.5D & 3D curved surface of materials like glass, zirconia, metal and non-metallic parts, etc.

MAIN FEATURES >>>

- It adopts unique polishing technology, which achieves higher productivity and qualification rate.
- The machine is designed by double workstations vacuum adsorption method with 4 workpiece plates respectively .it has A&B two work stations. Each station is equipped with four workpiece plates. The workpiece in A station is flipped 180 degrees after installation, corresponding to the lower polishing disc.When A station is working, the workpieces in B station can be loaded or offloaded, and turnover. Thus, consecutive polishing is achieved.
- The machine adopts lower pressure servo motor control, the pressure is controlled and adjusted by feedback current of the motor converter, which realizes that pressure can be controlled precisely and automatic complement, getting a stable pressure to make sure the precision.
- It adopts vacuum absorption method with vacuum inspection system.



MAIN SPECIFICATIONS >>>

Item/Model	Unit	YH2M81120
Upper plate (OD)	mm	8×Ф500
Lower plate (OD)	mm	Ф1200
Min thickness of workpieces	mm	0.5
Max size of workpieces	mm	Φ360 (diagonal)
Lower plate spinspeed	rpm	10-90 (Stepless)
Upper plate speed	rpm	5-30
Lower plate motor	Kw	11
Upper plate motor	Kw	4×0.75
Overall Dimension (L x W x H)	mm	2240×1650×2000
Weight	kg	2000

MAIN FUNCTION >>>

MULTIPLE SPINDLE CNC POLISHING MACHINE

It is designed for polishing of 3D curved surface, side surface and finish polish of materials like glass, ceramics, aluminium alloy, sapphire, etc.

MAIN FEATURES >>>

- It is five-axis CNC polishing machine, that adopts unique polishing technology.
- Five worktation work synchronously and process five same workpieces at the same time. The machine adopts multiple motion trial technology by planetary motion, which realizes high quality products with well-distributed surface, high uniformity and qualification rate.
- The machine adopts CNC control system. It is driven by precious motor with G code according to the outline of products, sandpaper polishes the workpieces. Five workpieces can be polished at the same time. Four workstation replace workpieces
- It adopts vacuum absorption method with vacuum inspection system.



MAIN SPECIFICATIONS >>>

Item/Model	Unit	YH2M8590
Polishing head diameter (OD)	mm	20×φ50
Workstation size	mm	190X200
Workpiece size	mm	Min : 45×60mm Max : <190mm(diagonal) downward inclined radian angle < 18°
Polishing head speed	rpm	50 ~ 800
X moving stroke	mm	250
Y moving stroke	mm	450
Z moving stroke	mm	350
A moving stroke		-1°~ 361°
C moving stroke		-30° ~ 390°
Rotary station distance	mm	192
Overall Dimensions (L x W x H)	mm	2050x2250 x 2500
Weight	kg	3000

DEVELOPMENT HISTORY >>>

"Provincial Engineering Research Center of High Efficient & Precision Equipment for Difficult-to-machine Materials" co-founded with Hunan University Workshops of Yuhuan Intelligence accomplished for operation

2018

Listed as public company, stock No.: 002903 China first digital workshop of CNC precision grinding machine established

2017

Subsidiary Yuhuan Intelligence certified as National High-tech Enterprise YH2M8169 3D Magnetic Polishing Machine launched, reached international advanced level YH2M8169 3D Magnetic Polishing Machine selected as 2016 Hunan Top 10 Innovative Manufacturing Achievements

2016

Academicians Workstation founded

China First Provincial CNC Precision Grinding Machine Engineering Research Center founded YHM77110 launched into the market. The machine precision, high-pressure stability and polishing plate temp control reached the international advanced level.

2015

Awarded as China Top 10 Quality Machine Tool Company Awarded as Hunan Top 10 Quality Machine Tool Company 2013

2012

Completed shareholding reform Awarded as "2012 China Top 10 Innovative Machine Tool Company"

O 2010

Undertake "Key Project of Sci-tech SME Innovation Fund" of Ministry of Technology

Awarded as China Excellent Mechanical & Industrial Enterprise Listed as Hunan Top 100 enterprises of Strategic Emerging Industry

2007

Awarded as Hunan High-tech Enterprise Awarded as Provincial Enterprise Tech Center

O 2004

Company founded

Doctor student research base founded







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