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Product Range

- Centerless Grinder
- NC Centerless Grinder
- CNC Centerless Grinder
- High Speed Centerless Grinder
- Precision Universal Cylindrical Grinder
- NC Universal Cylindrical Grinder
- CNC Universal Cylindrical Grinder
- CNC Vertical Composite Grinder
- NC Internal Grinder
- CNC Internal Grinder
- Surface Grinder



PALMARY MACHINERY CO., LTD.

No.77, Gongye Rd., Dali Dist., Taichung City 41280, Taiwan.
TEL: +886-4-2492-9799
FAX: +886-4-2492-9499
Email: palmay@grinding.com.tw
<http://www.grinding.com.tw>

THAILAND:

PALMARY MACHINERY CO., LTD.

200 MOO 1 KHAERAI, KRATUMBAN,
SAMUTSAKORN THAILAND 74110
TEL: +66-34-476225~6 FAX: +66-34-849516



CHINA:

SHANGYU DAIKINKO SEIKI CO., LTD.

No.288, Yongxiang Road, Economic Development Zone,
Shangyu City, Zhejiang province, China
TEL: +86-575-82186081~3 FAX: +86-575-82186085
<http://www.daiinko.com>
Email: daikingseiki@yahoo.com.cn



HIGH PRECISION CENTERLESS GRINDER SERIES



Precise, Perfect and Excellent

PALMARY Centerless Grinders Set New Standards...

“ The concept behind PALMARY is to design and manufacture the centerless grinder that provides the best possible quality. No matter whether for machine rigidity, stability, heavy machining capability, accuracy or humanified operations, every machine fully reflects PALMARY's tradition of "Care of Every Detail". ”

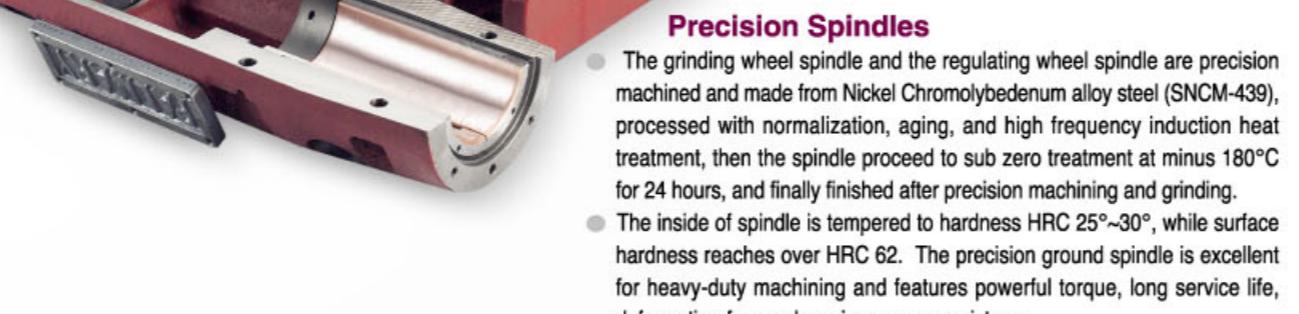


Rigid Machine Structure

- The machine structure is manufactured from high quality Meehanite cast iron, heat treated and stress relieved before machining.
- Slideways are high frequency hardened and precision ground. Maximum material stability for deformation-free and outstanding wear resistance.



Example of Grinding Workpieces



Precision Spindles

- The grinding wheel spindle and the regulating wheel spindle are precision machined and made from Nickel Chromolybdenum alloy steel (SNCM-439), processed with normalization, aging, and high frequency induction heat treatment, then the spindle proceed to sub zero treatment at minus 180°C for 24 hours, and finally finished after precision machining and grinding.
- The inside of spindle is tempered to hardness HRC 25°~30°, while surface hardness reaches over HRC 62. The precision ground spindle is excellent for heavy-duty machining and features powerful torque, long service life, deformation-free and maximum wear resistance.

Slide Table

- Upper slide swiveling is easy and accurate to adjust for making the machine suitable for infeeding grinding. Also, it allows grinding for a varied diameter of workpieces. The Upper slide with +5° ~ -5° swiveling allows taper grinding by using infeed grinding mode.
- With thrufeed grinding, the Upper slide provides a surface contact adjustment between the workpiece and grinding wheel. Swiveling adjustment range is +5° ~ -3°.
- Dovetailed slideway on the upper slide features smooth and accurate feeding and is lubricated by a centralized lubricator.
- The bottom slide moves on "A" shaped and double-wedged ways. The slideways are hardened and precision ground. They feature smooth movement and properly protected to prevent dust from entering. Micrometric feed adjustment unit is 0.001 mm to meet high accuracy requirements for all workpieces.



PALMARY
Committed to Excellence

“ Stable, Precise, Internationally Recognized Quality ”

The structure of the PALMARY centerless grinder is thoroughly analyzed and designed by our R&D engineers. They conduct a deep structure analysis of the stress/strain relationship, assuring lifetime deformation-free performance. Each machine from PALMARY presents the outstanding accuracy as you have come to expect. That is why PALMARY's centerless grinders are fully recognized by worldwide customers. ”

Feed Screw

- The feed screw is manufactured from Nickel Chromolybdenum alloy steel (SNCM-4). It is also normalized, high frequency hardened treated and precision ground.
- Specially-designed adjustable nut features easy adjustment, high feeding accuracy, smooth motion and excellent wear resistance.

PALMARY Centerless Grinders Performance- Exceeding Your Expectations!

“ If you are serious about grinding accuracy and efficiency, the centerless grinders from PALMARY will meet your stringent challenges. No matter if you choose an economic model, a servo-controlled model, or NC-controlled model, each one is quality constructed throughout for delivering the operational performance that you expect. Also, you will agree with that: "This is a True Grinding Performer". ” ”



Automatic Unloading Equipment for Thrufeed Grinding (Optional)

- Designed for automatic unloading for round tube and bar stock, this equipment can avoid workpiece surface scratching. It is also suitable for online operation while performing two to three grinding processes. The conveyor is easy to adjust. Equipped with a parts tray for convenient parts collection after grinding.



Loading and Unloading Equipment for Infeed Grinding (Optional)

- It employs a robot arm to pick workpieces from the tray and place them into the machine for grinding. The other robot arm picks the finished workpieces and places them on the collection tray. This equipment provides a fully automatic grinding operation that saves labor while enormously upgrading production efficiency.

Lubrication System

- The automatic lubricator provides lubrication to the grinding wheel spindle.
- All slideways are lubricated by a centralized lubrication system, ensuring proper lubrication and feeding accuracy.



Features and Construction



Automatic Loading Equipment for Thrufeed Grinding (Optional)

- Suitable for automatic loading operation for round tube and bar stock.
- Equipped with a storage tray for automatic workpiece infeed.
- It eliminates manual workpiece infeed while enormously increasing total efficiency.



Pressure Switch

- When starting the grinding wheel and regulating wheel spindle, this pressure switch allows starting only when oil enters into bearings thereby providing safety protection for the spindle bearings.



Hydraulic Cooling Device

- The lubrication system for bearings on grinding wheel spindle, regulating wheel spindle and hydraulic system are driven by the same hydraulic pump. A cooling fan is equipped for effectively reducing oil temperature.

Dresser for Grinding Wheel and Regulating Wheel

- Dresser structure is manufactured from alloy cast iron and is heat treated for wear resistance.
- Hydraulically operated dressing motion.
- Variable dressing speed.
- Dresser stand for regulating wheel can be adjusted to suit workpiece requirements, assuring high cylindrical accuracy.

PC-24S / 2410S / 2412S

- High peripheral speed of grinding wheel up to 3,000 M/min provides increased efficiency and for good parts surface finish.
- Hydraulically operated dressing for grinding wheel and regulating wheel.
- Regulating wheel speeds are variable, ranging from 15 ~ 300 rpm.
- Dresser stand is manufactured from special alloy for excellent wear resistance.
- Regulating wheel head and work rest swivel simultaneously providing added convenience for cylindricity accuracy adjustment.



SPECIFICATIONS

	PC-24S	PC-2410S	PC-2412S
Grinding Wheel			
Standard grinding range (dia.)	Ø1~Ø100 mm	Ø1~Ø100 mm	Ø1~Ø100 mm
Grinding wheel size (O.D. x Width x I.D.)	Ø610 x 205 x Ø304.8 mm	Ø610 x 255 x Ø304.8 mm	Ø610 x 305 x Ø355.6 mm
Grinding wheel motor	30 HP x 4 P	30 HP x 4 P	30 HP x 4 P
Grinding wheel speed	1400 R.P.M.	1400 R.P.M.	1400 R.P.M.
Regulating Wheel			
Regulating wheel speed (Ininitely variable)	15~300 R.P.M.	15~300 R.P.M.	15~300 R.P.M.
Regulating wheel size (O.D. x Width x I.D.)	Ø305 x 205 x Ø127 mm	Ø305 x 255 x Ø127 mm	Ø330 x 305 x Ø127 mm
Regulating wheel motor	5 KW servo motor	5 KW servo motor	5 KW servo motor
Regulating wheel tilt angle	-2° ~ +5°	-2° ~ +5°	-2° ~ +5°
Regulating wheel swivel angle	±3°	±3°	±3°
Drive Motors			
Hydraulic pump motor	0.75 kw	0.75 kw	0.75 kw
Coolant pump motor	1/2 HP	1/2 HP	1 HP
Machine Dimensions	2610 x 1900 x 1650 mm	2610 x 1900 x 1650 mm	2810 x 2100 x 1650 mm
Net weight	4500 kgs	4800 kgs	6000 kgs
Gross weight	4850 kgs	5150 kgs	6400 kgs

High Precision
Centerless Grinder
Economic Series

PC-12 / 18 / 1810 / 20

- Grinding wheel and regulating wheel spindles are 3-point supported for greatly upgrading machining stability.
- Highly rigid spindle construction makes the machine ideal for heavy duty and precision grinding.
- The grinding wheel and regulating wheel spindles are mounted on class KJ4 special alloy bearings, ensuring outstanding stability and accuracy.



SPECIFICATIONS	PC-12	PC-18	PC-1810	PC-20
Grinding Wheel				
Standard grinding range (Dia.)	Ø1~Ø40 mm	Ø1~Ø80 mm	Ø1~Ø80 mm	Ø1~Ø80 mm
Capacity increases with special arrangement	Ø30~Ø60 mm	Ø40~Ø150 mm	Ø40~Ø150 mm	Ø40~Ø150 mm
Grinding wheel size (O.D. x width x I.D.)	Ø305 x 150 x Ø120	Ø455 x 205 x Ø228.6	Ø455 x 255 x Ø228.6	Ø510 x 205 x Ø304.8
Grinding wheel speed	1900 R.P.M.	1260 R.P.M.	1260 R.P.M.	1200 R.P.M.
Grinding wheel motor	7-1/2 HP x 4P	15 HP x 4P	15 HP x 4P	20 HP x 4P
Regulating Wheel				
Regulating wheel size (O.D. x width x I.D.)	Ø205 x 150 x Ø90	Ø255 x 205 x Ø111.2	Ø255 x 255 x Ø111.2	Ø305 x 205 x Ø127
Regulating wheel speed	20~337 R.P.M. (10 steps)	13~308 R.P.M. (10 steps)	13~308 R.P.M. (10 steps)	13~308 R.P.M. (10 steps)
Regulating wheel motor	1 HP x 6P	2 HP x 6P	2 HP x 6P	3 HP x 6P
Regulating wheel tilt angle	+5°~3°	+5°~3°	+5°~3°	+5°~3°
Regulating wheel swivel angle	±5°	±5°	±5°	±5°
Handwheel Graduation				
Upper slide feed graduation	4 mm/rev. 0.025 mm/graduation	3.5 mm/rev. 0.05 mm/graduation	3.5 mm/rev. 0.05 mm/graduation	3.5 mm/rev. 0.05 mm/graduation
Upper slide micro-feed graduation	0.1 mm/rev. 0.001 mm/graduation			
Lower slide feed graduation	7 mm/rev. 0.05 mm/graduation	9 mm/rev. 0.05 mm/graduation	9 mm/rev. 0.05 mm/graduation	9 mm/rev. 0.05 mm/graduation
Lower slide micro-feed graduation	0.2 mm/rev. 0.001 mm/graduation			
Trimming device graduation	1.25 mm/rev. 0.01 mm/graduation	2 mm/rev. 0.01 mm/graduation	2 mm/rev. 0.01 mm/graduation	2 mm/rev. 0.01 mm/graduation
Drive Motors				
Hydraulic pump motor	1 HP x 4P			
Coolant pump motor	1/8 HP x 2P	1/4 HP x 2P	1/4 HP x 2P	1/4 HP x 2P
Machine Dimensions	1750 x 1050 x 1400 mm	2200 x 1840 x 1530 mm	2200 x 1840 x 1530 mm	2200 x 1900 x 1530 mm
Net weight	1650 kgs	2900 kgs	3000 kgs	3700 kgs
Gross weight	1900 kgs	3200 kgs	3300 kgs	4000 kgs

High Precision
Centerless Grinder
Economic Servo Series

PC-12S / 18S / 1810S / 1812S / 20S

- Regulating wheel is driven by servomotor.
- Low speed; high torque output.
- Easy to operate and adjust.



SPECIFICATIONS	PC-12S	PC-18S	PC-1810S	PC-1812S	PC-20S
Grinding Wheel					
Standard grinding range (Dia.)	Ø1~Ø40 mm	Ø1~Ø80 mm	Ø1~Ø80 mm	Ø1~Ø80 mm	Ø1~Ø80 mm
Capacity increases with special arrangement	Ø30~Ø60 mm	Ø40~Ø150 mm	Ø40~Ø150 mm	Ø40~Ø150 mm	Ø40~Ø150 mm
Grinding wheel size (O.D. x width x I.D.)	Ø305 x 150 x Ø120	Ø455 x 205 x Ø228.6	Ø455 x 305 x Ø228.6	Ø510 x 205 x Ø304.8	Ø510 x 205 x Ø304.8
Grinding wheel speed	1900 R.P.M.	1260 R.P.M.	1260 R.P.M.	1200 R.P.M.	1200 R.P.M.
Grinding wheel motor	7-1/2 HP x 4P	15 HP x 4P	15 HP x 4P	20 HP x 4P	20 HP x 4P
Regulating Wheel					
Regulating wheel size (O.D. x width x I.D.)	Ø205 x 150 x Ø90	Ø255 x 205 x Ø111.2	Ø255 x 305 x Ø111.2	Ø305 x 205 x Ø127	Ø305 x 205 x Ø127
Regulating wheel speed	10~330 R.P.M. (Variable)	10~300 R.P.M. (Variable)	10~300 R.P.M. (Variable)	10~300 R.P.M. (Variable)	10~300 R.P.M. (Variable)
Regulating wheel motor	1.5 KW servo motor	2.0 KW servo motor	3.5 KW servo motor	5 KW servo motor	5 KW servo motor
Regulating wheel tilt angle	+5°~3°	+5°~3°	+5°~3°	+5°~3°	+5°~3°
Regulating wheel swivel angle	±5°	±5°	±5°	±5°	±5°
Handwheel Graduation					
Upper slide feed graduation	4 mm/rev. 0.025 mm/graduation	3.5 mm/rev. 0.05 mm/graduation	3.5 mm/rev. 0.05 mm/graduation	3.5 mm/rev. 0.05 mm/graduation	3.5 mm/rev. 0.05 mm/graduation
Upper slide micro-feed graduation	0.1 mm/rev. 0.001 mm/graduation				
Lower slide feed graduation	7 mm/rev. 0.05 mm/graduation	9 mm/rev. 0.05 mm/graduation			
Lower slide micro-feed graduation	0.2 mm/rev. 0.001 mm/graduation				
Trimming device graduation	1.25 mm/rev. 0.01 mm/graduation	2 mm/rev. 0.01 mm/graduation	2 mm/rev. 0.01 mm/graduation	2 mm/rev. 0.01 mm/graduation	2 mm/rev. 0.01 mm/graduation
Drive Motors					
Hydraulic pump motor	1 HP x 4P				
Coolant pump motor	1/4 HP x 2P				
Machine Dimensions	1750 x 1050 x 1400 mm	2200 x 1840 x 1530 mm	2200 x 1840 x 1530 mm	2200 x 1900 x 1530 mm	2200 x 1900 x 1530 mm
Net weight	1650 kgs	2900 kgs	3000 kgs	3700 kgs	4000 kgs
Gross weight	1900 kgs	3200 kgs	3300 kgs	4000 kgs	4000 kgs

High Precision
Centerless Grinder
NC Servo Series

- Equipped with a touch-sensing screen with teach-in operational control.
- Easy to adjust sizes. Easy to learn and understand without need of program editing.
- PLC controls oil temperature to reduce errors to minimum.
- Servo control for feeding mechanism with accurate micrometric feed adjustment.
- Variable speed for regulating wheel spindle.
- Available to equip with automatic dressing and compensation function. (optional accessory)



SPECIFICATIONS	PC-12S-NC	PC-18S-NC	PC-1810S-NC	PC-1812S-NC	PC-20S-NC
Grinding Wheel					
Standard grinding range (Dia.)	Ø1~Ø40 mm	Ø1~Ø80 mm	Ø1~Ø80 mm	Ø1~Ø80 mm	Ø1~Ø80 mm
Capacity increases with special arrangement	Ø30~Ø60 mm	Ø40~Ø150 mm	Ø40~Ø150 mm	Ø40~Ø150 mm	Ø40~Ø150 mm
Grinding wheel size (O.D. x width x I.D.)	Ø305 x 150 x Ø120	Ø455 x 205 x Ø228.6	Ø455 x 305 x Ø228.6	Ø510 x 205 x Ø304.8	Ø510 x 205 x Ø304.8
Grinding wheel speed	1900 R.P.M.	1260 R.P.M.	1260 R.P.M.	1200 R.P.M.	1200 R.P.M.
Grinding wheel motor	7-1/2 HP x 4P	15 HP x 4P	15 HP x 4P	20 HP x 4P	20 HP x 4P
Regulating Wheel					
Regulating wheel size (O.D. x width x I.D.)	Ø205 x 150 x Ø90	Ø255 x 205 x Ø111.2	Ø255 x 305 x Ø111.2	Ø305 x 205 x Ø127	Ø305 x 205 x Ø127
Regulating wheel speed	10~300 R.P.M. (variable)				
Regulating wheel motor	3.0 KW servomotor	3.5 KW servomotor	3.5 KW servomotor	3.5 KW servomotor	3.5 KW servomotor
Regulating wheel tilt angle	+5°~3°	+5°~3°	+5°~3°	+5°~3°	+5°~3°
Regulating wheel swivel angle	±5°	±5°	±5°	±5°	±5°
Handwheel Graduation					
Upper slide feed graduation	4 mm/rev. 0.025 mm/graduation	3.5 mm/rev. 0.05 mm/graduation	3.5 mm/rev. 0.05 mm/graduation	3.5 mm/rev. 0.05 mm/graduation	3.5 mm/rev. 0.05 mm/graduation
Upper slide micro-feed graduation	0.1 mm/rev. 0.001 mm/graduation				
Lower slide feed graduation	7 mm/rev. 0.05 mm/graduation	9 mm/rev. 0.05 mm/graduation			
Lower slide micro-feed graduation	0.2 mm/rev. 0.001 mm/graduation				
Trimming device graduation	1.25 mm/rev. 0.01 mm/graduation	2 mm/rev. 0.01 mm/graduation	2 mm/rev. 0.01 mm/graduation	2 mm/rev. 0.01 mm/graduation	2 mm/rev. 0.01 mm/graduation
Drive Motors					
Hydraulic pump motor	1 HP x 4P				
Coolant pump motor	1/4 HP x 2P				
Machine Dimensions	1750 x 1050 x 1400 mm	2200 x 1840 x 1530 mm	2200 x 1840 x 1530 mm	2200 x 1900 x 1530 mm	2200 x 1900 x 1530 mm
Net weight	1650 kgs	3000 kgs	3400 kgs	3700 kgs	3500 kgs
Gross weight	1900 kgs	3200 kgs	3300 kgs	4000 kgs	3600 kgs

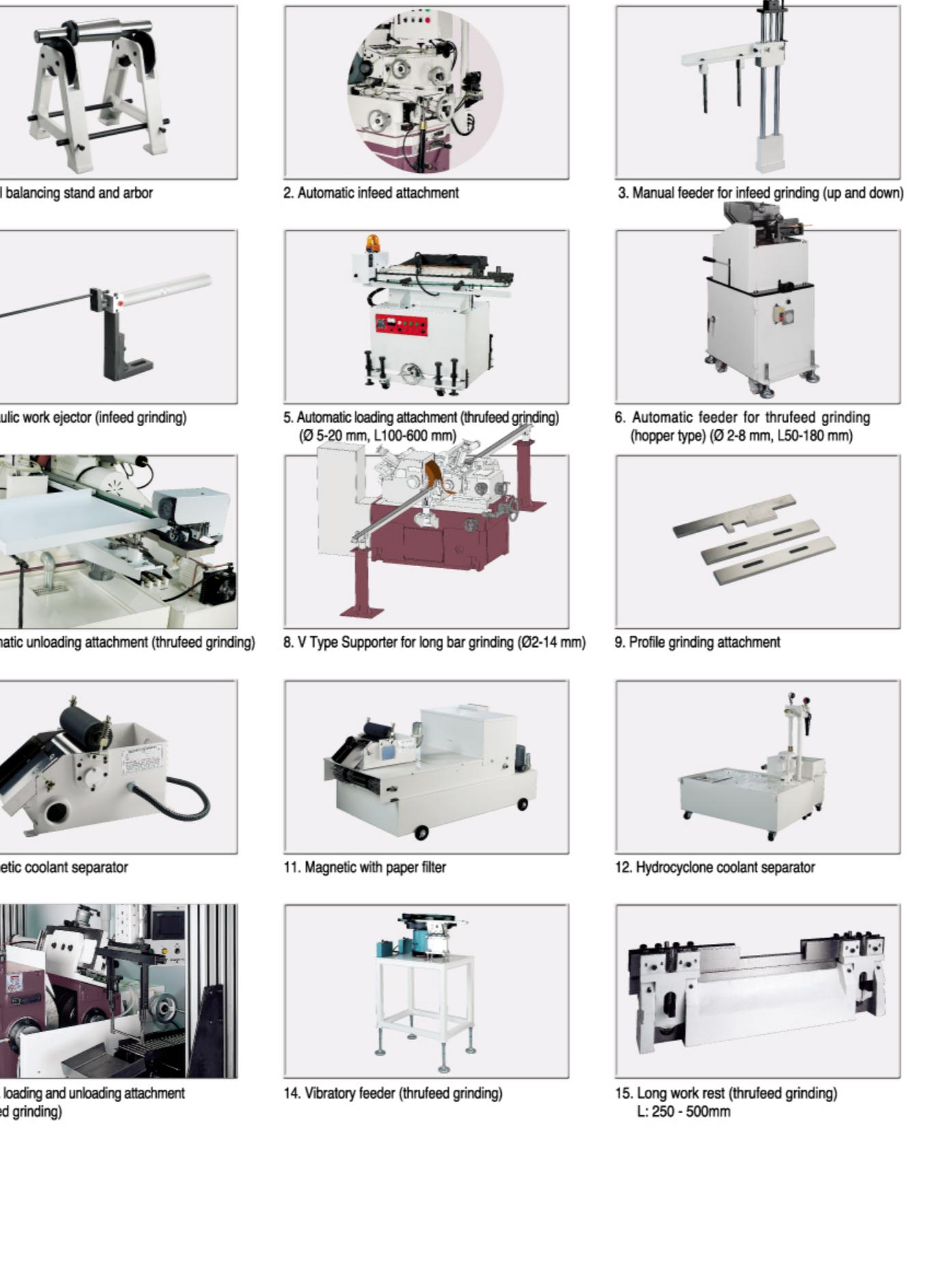
Thrufeed Carbide Blade & Infeed Carbide Blade Reference List

Workpiece	Carbide Blade Thickness	Workpiece	Carbide Blade Thickness
	12 / 18		12
Ø1.5 - 2.5m/m	t=1 m/m	Ø8.1 - 10 m/m	t=6 m/m for Ø10
Ø2.6 - 4.0m/m	t=2 m/m	Ø10.1 - 16 m/m	t=8 m/m for Ø16
Ø4.1 - 5.0m/m	t=3 m/m	Ø12 - 20 m/m	t=8 m/m for Ø20
Ø5.1 - 7m/m	t=4 m/m	Ø15 - 30 m/m	t=13 m/m for Ø30
Ø7.1 - 8m/m	t=5 m/m	Ø25 - 50 m/m	t=20 m/m for Ø40

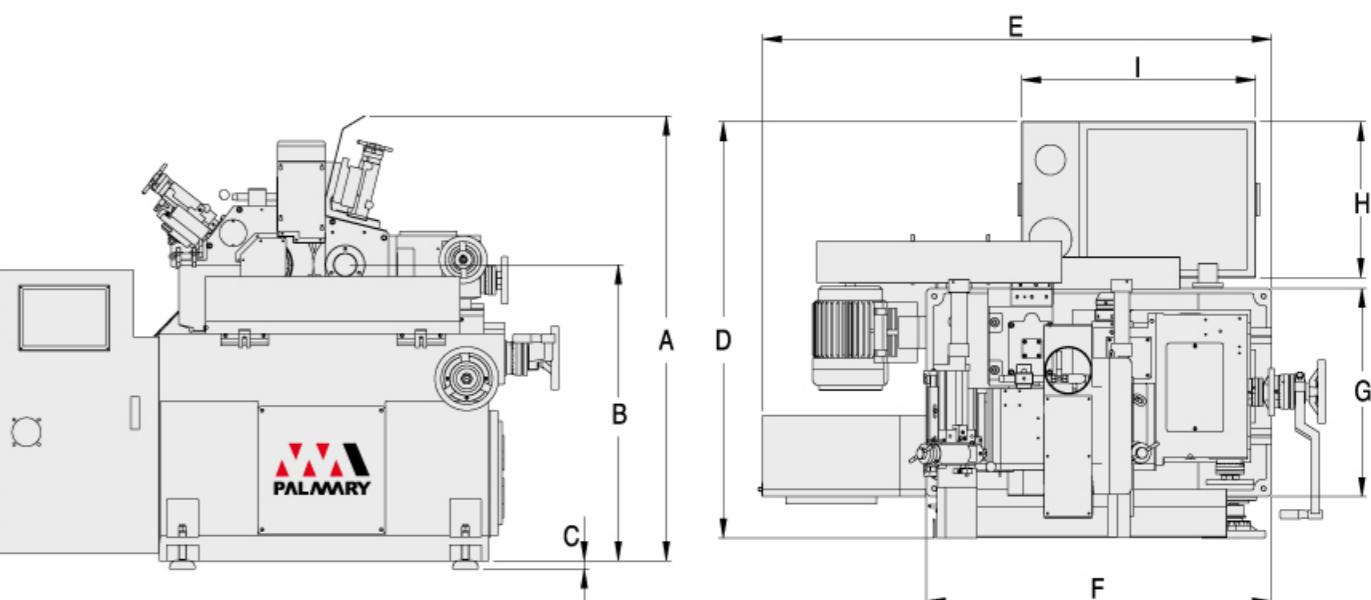
Standard Accessories



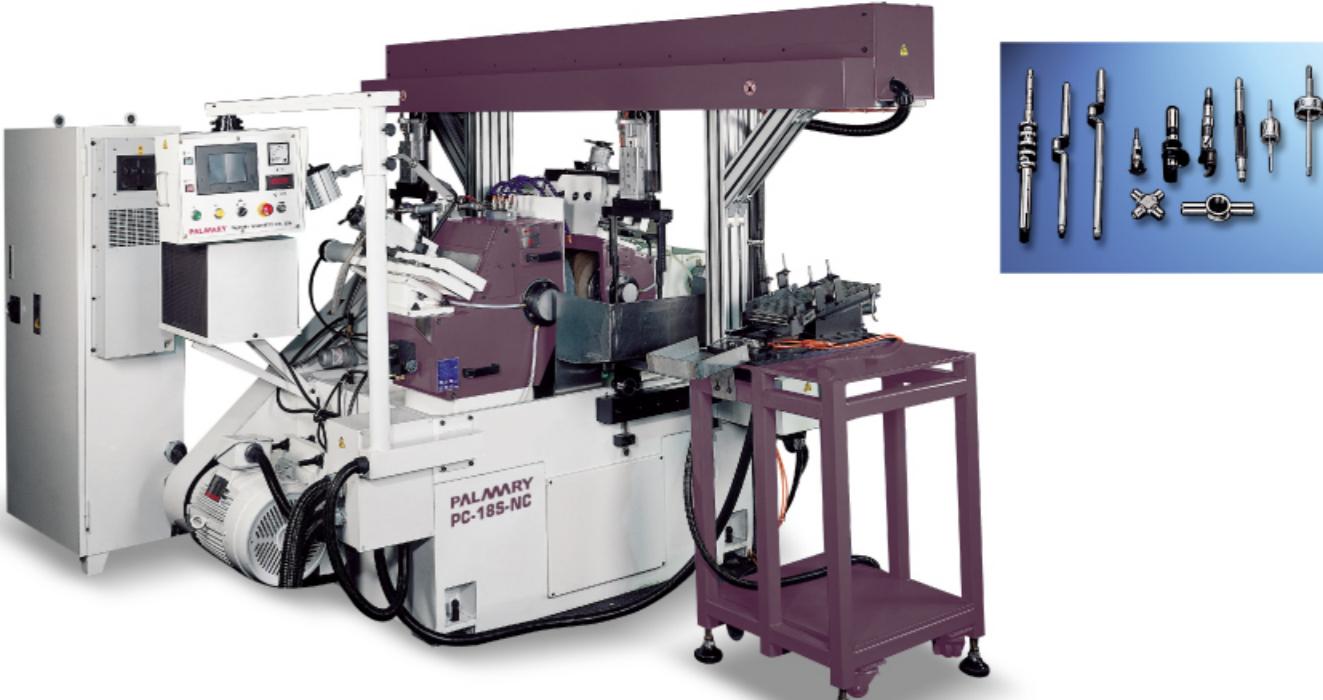
Optional Accessories



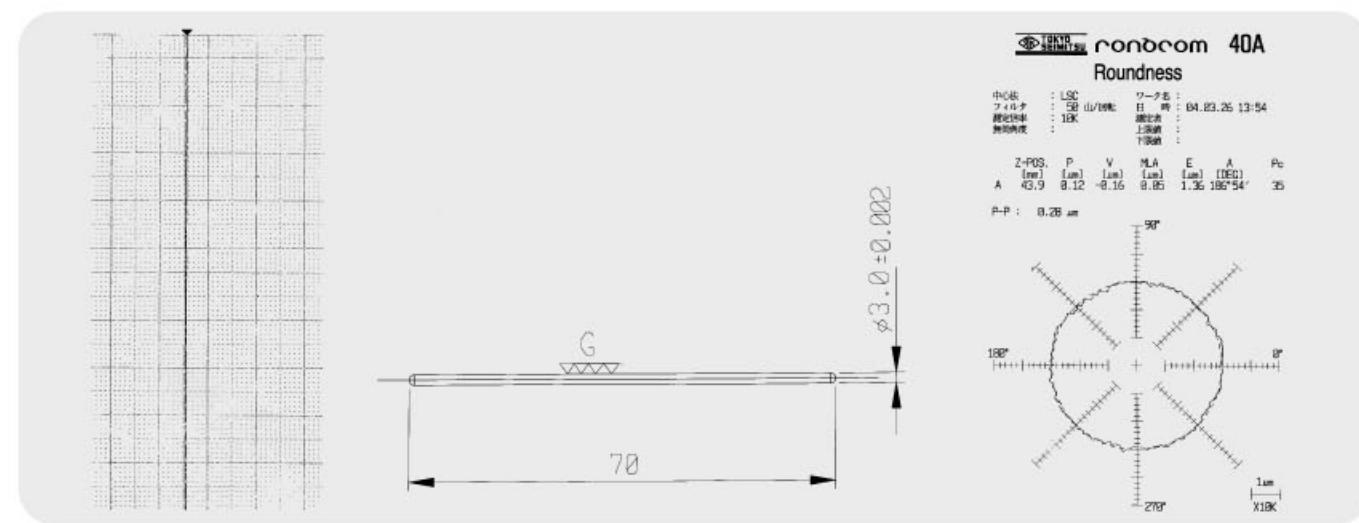
Dimensions and Floor Occupation



Model	A	B	C	D	E	F	G	H	I
12	1400	931	25	1310	1785	1085	660	490	735
18/1810	1515	988	25	1785	2265	1450	925	800	1200
1812/20	1580	990	25	1900	2530	1930	810	800	1200
24/2410	1690	990	25	2210	2930	1930	810	1220	875
2412	1690	990	25	2080	2880	1975	940	695	1010

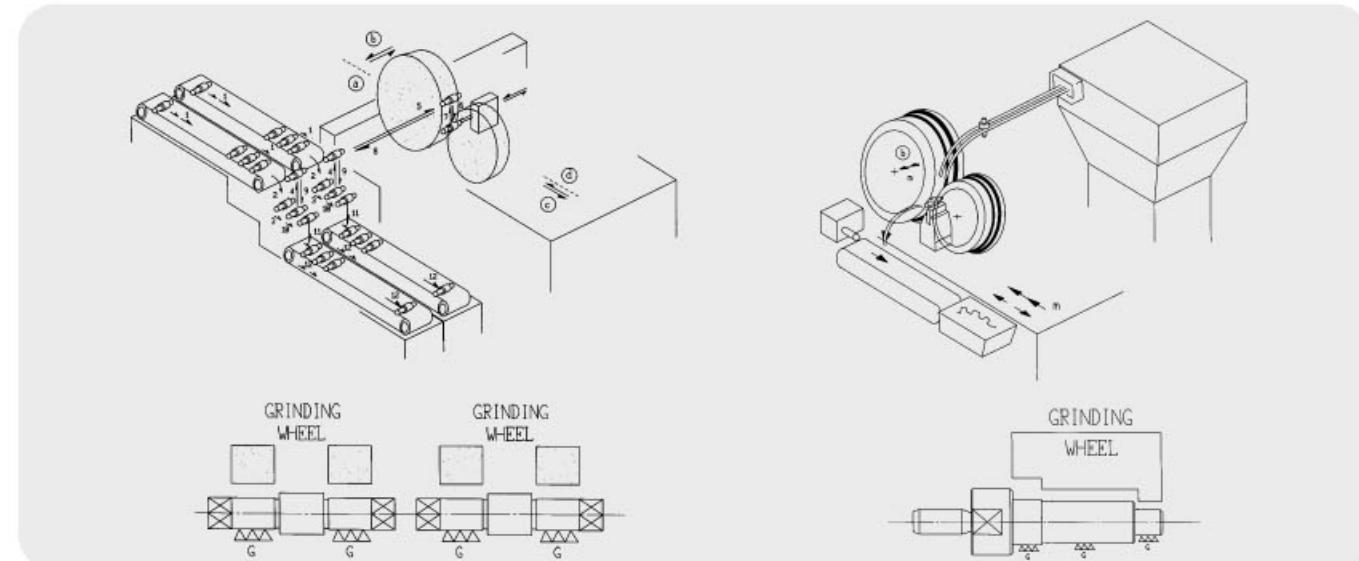


PC-18S-NC is equipped with double-side automatic loading and unloading equipment for infeed grinding.



● Work sample	Motor shaft
● Grinding wheel	GC100KV
● Peripheral speed	2,000 M/min
● Workpiece material	SUS430
● Roundness	0.2 μ m (stock removal 0.15)
● Cylindricity	0.3 μ m
● Stock Removal	
▲ 1st rough	0.15
▲ 2nd fine	0.025
▲ 3rd finish	0.02
● Feed Speed	
Feed Speed	2.6 M/min
Surface Finish	Ra = 0.029 μ m Rz = 0.220 μ m Rmax = 0.300 μ m

Automation Process



● Work sample	gear shaft
● Material	SCM415
● Grinding wheel	38A60L
● Peripheral speed	2,000 M/min
● Regulating wheel	A120R
● Regulating wheel speed	21 rpm
● Cycle time	15 sec. (including loading time of 2.5 sec.)
● Stock removal	0.09 mm/dia.
● Roundness	0.6 μ
● Cylindricity	1.0 μ
● Surface finish	0.15 Ra
● Work sample	shaft
● Material	S45C
● Grinding wheel	WA60L
● Peripheral speed	2,000 M/min
● Regulating wheel	A120R
● Regulating wheel speed	30 rpm
● Cycle time	18 sec. (including loading time of 2.5 sec.)
● Stock removal	0.25 mm/dia.
● Roundness	1.0 μ
● Cylindricity	1.3 μ
● Surface finish	0.20 Ra



Rigorous Quality Inspection

- PALMARY's Q.C. department is fully equipped with comprehensive high precision inspection instruments, providing in-process and final product inspection. These precision instruments enable us to achieve the highest quality level. PALMARY centerless grinders are fully satisfied to each customer around the world. This achievement results from our tradition of "Insisting on Quality".

