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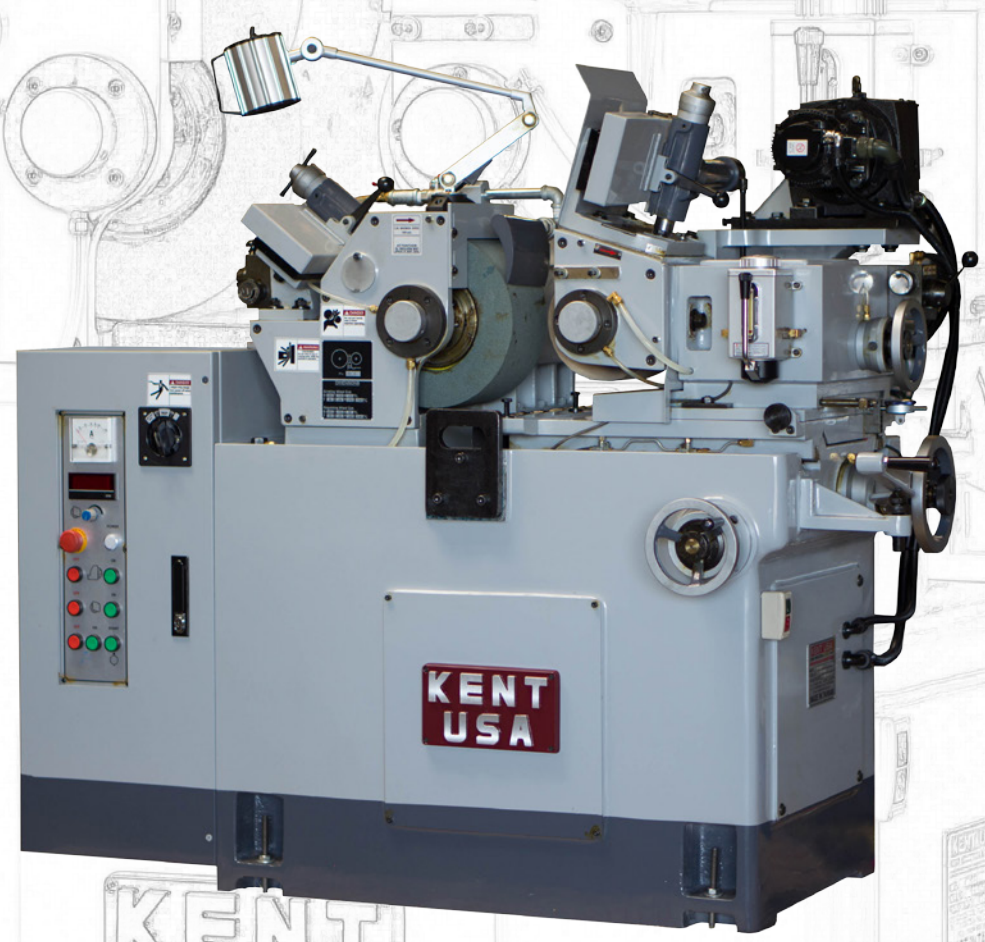
Centerless Grinding Machines

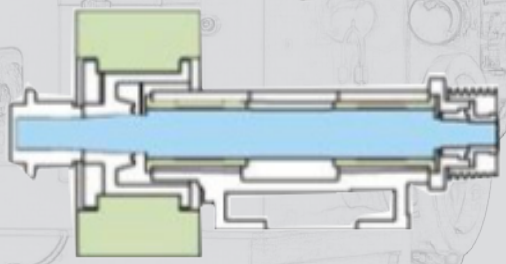


JHC-12 · JHC-18 · JHC-20 · JHC-24S · JHC-CNC

Features

1. Main Structure of Machines
They are cast of high grade FC-30 iron, melted by advanced induction furnace, then cast in resin cores. In order to ensure stability and rigidity, they are heat-treated with normalizing procedure prior to machining.

2. Hyrdostatic Bearings
Precision ground Hydrostatic Bearings: Substantial decrease in heat deformation associated with Hydrodynamic bearings. Minimal friction, lateral displacement and pressure. Extended tool life under heavy cut loads.



Grinding Wheel Spindle: The Grinding Wheel Spindle runs on hydrostatic bearings with a high pressure oil film for added precision under heavy loads. It substantially reduces wear while prolonging spindle trueness. SNCM-210H carbon steel hardened beyond HRC60, yielding high torsion resistance.

3. Semi-Hydraulic Float Bearings
They are made of SNCM-220H Ni-Cr-Mo alloy steel and case-hardened, carbonized, then computerized sub-zero degree treated, to surface hardness over HRC 62 at 0.04" depth. Core hardness is kept at about HRC 25-30 to ensure consistency of high precision grinding operation. Spindles withstand high torsion and have a long and lasting life. They are made of KJ-4 alloy bushing metal with a three point hydraullic cycle system. The semi-hydraullic float spindle is protected by an oil membrane which results in minimal contract friction. This device is specially designed for high speed and heavy load operation.

4. Regulating Wheel Drive
A Japanese servo motor provies control of speeds from 10 to 250RPM and is used for the regulating wheel which can be adjusted to ideal linear speeds. When the diameter of the regulating wheel changes, the same linear speed can still be maintained allowing it to grind the best quality products. The motor is driven by a timing belt to reduce vibration and noise. Since the motor housing and spindle housing are joined together as an intergrated body, once the regulating wheel tilts, the motor also follows. This completely overcomes problems caused by unparallelism and torsion of belt pulleys and the belts.

5. Spindle Oil Circulation
There is a variable vane type oil pump for the hydraulic dressing and enforced spindle oil circulation. The oil tank is located outside of the machine for easy maintenance. Two layers of filter plus a pressure regulator ensure the cleanliness of spindle oil and the consistency of oil film thickness, thus extending the service life of the wheel spindle and the steadiness of accuracy.

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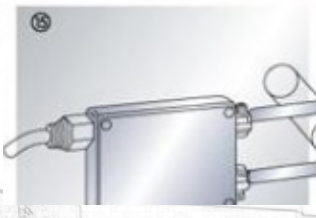
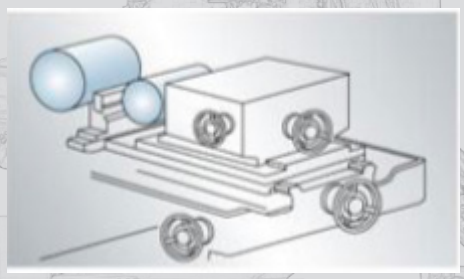
Special Accessories



11. Auto thrufeed taper grinding device
12. Auto infeed forming grinding
13. Wheel balancing arbor
14. Wheel balancing base
15. Off-line gauging, non-contract O.D. measuring system
16. Grinding wheel automatic balancing system
17. Oil cooler
18. Rotary type grinding wheel dressing attachment
19. Jib crane & hook for grinding wheel
20. Grinding balancer for wheels
21. Oil mist / vapour receiver

6. Slide Device

The lower slide consists of two internally mounted V-shaped slides and cuneiform protector to ensure smooth movement, stable operation and prevent the entering of debris or liquid from the working environment. The swivel slides on a dovetail flute and swivels ±5 degrees. There is a fine tuning hand wheel for precise adjustment. The accuracy per calibration is $3.93x10^{-5}$ " in diameter for high precision and easy operation.



7. Wheel Dressing Device

The device is made of FC-30 cast iron and normalized then precisely ground. It is driven by a hydraulic system with a step-less speed regulator for easy and steady dressing. There is a safety handle for emergency purposes. In order to upgrade the straightness and the surface finish on through-feed grinding of long work pieces, please adjust the angle of the dressing device (swivels ±5 degrees). The regulating wheel should be adjusted to resemble a concave barrel to increase contact length while grinding.

8. Grinding Accuracy

- Workpiece: Ø 2 x 20e
- Metal: SUJ-2
- Hardness: HRC-62
- Grinding wheel WA 1000#
- Machine: JHC-18

Cut off = 0.0098"
Traversing Length = 0.4"
Mag = 10000

Ra = 0.02μm	RMS = 0.02μm
RMAx = 0.28μm	Rt = 0.22μm
Rz = 0.24μm	Rtm = 0.20μm

Quality of our machines

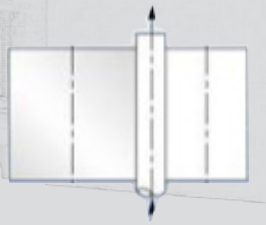
The performance of all our machines is strictly inspected for roundness, straightness and surface roughness on standard work pieces before delivery.

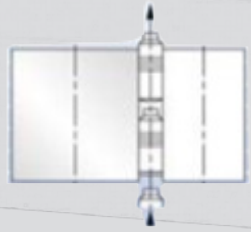
9. Operation Applications

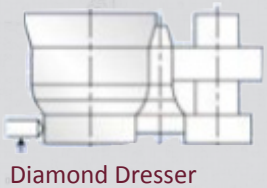
Infeed Grinding


Infeed Grinding

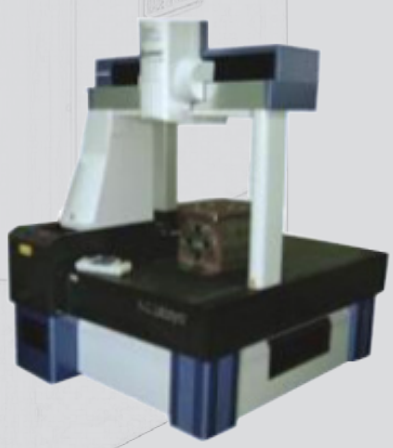
Infeed Grinding


Thrufeed Grinding


Thrufeed Grinding



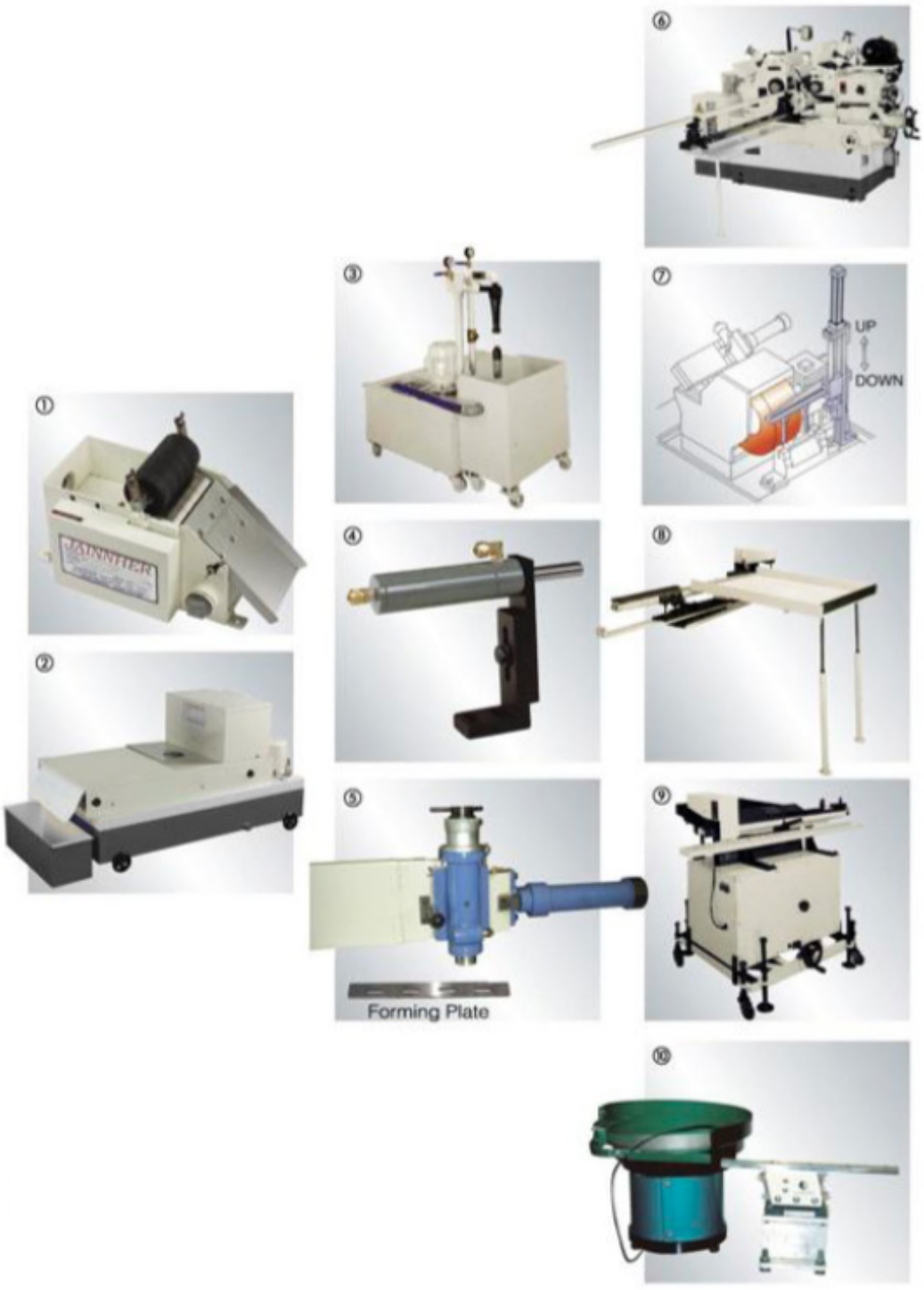
Forming Grinding



CNC Coordinate Measuring Machine

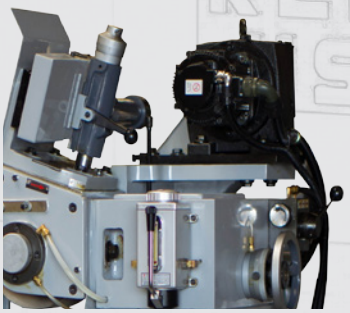
Special Accessories

1. Magnetic separator
2. Paper filter coolant
3. Hydrocyclone coolant filtering unit
4. Work ejector device
5. Forming dressing device
6. Long V-shaped suppoert
7. Manual parts feeder for infeed grinding
8. Automatic receiver for thrufeed grinding
9. Automatic thrufeed device
10. Vibratory parts feeder and striaght line feeder



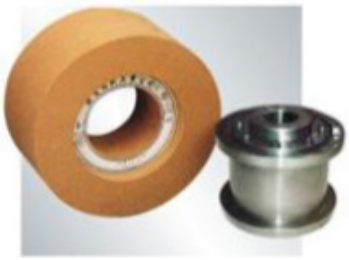
JHC-12

	JHC-12BN	JHC-12S
Grinding Range (Standard Work Rest)	Ø 0.4” - 1”	
Grinding Range (Special Work Rest)	Ø 1” - 1.96”	
Grinding Wheel Size	Ø 12” x 6” x 5”	
Regulating Wheel Size	Ø 8” x 6” x 5”	
Grinding Wheel Speed	1900 RPM	
Regulating Wheel Speed	20-337 RPM (7 steps)	10-300 RPM variable speed
Grinding Wheel Motor	7.5 HP	
Regulating Wheel Motor	1 HP (1200 RPM)	2 HP
Hydraulic Pump Motor	1 HP (1800 RPM)	
Coolant Pump Motor	1/8 HP (3000 RPM)	
Upper Slide Feed Graduation	0.0001” (0.200” per rev)	
Lower Slide Feed Graduation	0.0002” (0.400” per rev)	
Lower Slide Micro Feed	0.01” (Rev) 0.00005” (Gra)	
Dressing Device Graduation	0.05” (Rev) 0.0005” (Gra)	
Regulating Wheel Tilt Angle	+5” ~ -3”	
Regulating Wheel Swivel	±5	
Floor Space (L x W x H)	71” x 55” x 55”	
Net Weight / Gross Weight	3520 lbs / 3850 lbs	
Size of Case (L x W x H)	90” x 43” x 71”	

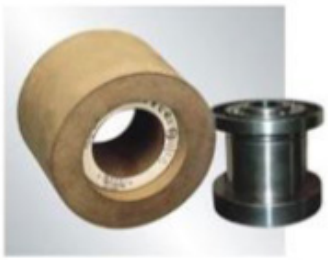


JHC-12S with servo motor for regulating wheel, variable speed.

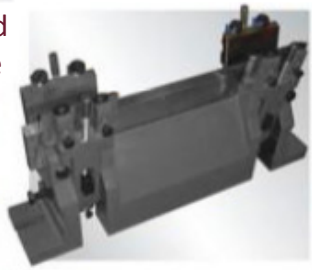
Standard Accessories



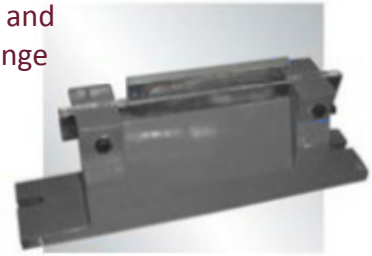
1. Grinding wheel and grinding wheel flange
x 1 set



2. Regulating wheel and regulating wheel flange
x 1 set



3. Thrufeed standard workrest and blade
x 1 set



4. Infeed standard workrest and blade
x 1 set

5. Tool box and tools
x 1 set

6. Work lamp
x 1 set

7. Diamond tool
x 2 pcs

8. Thrufeed safety device
x 1 set

9. Flange extractor
x 1 set

10. Levelling screw and plate
x 1 set

11. Thrufeed process gauge
x 1 set

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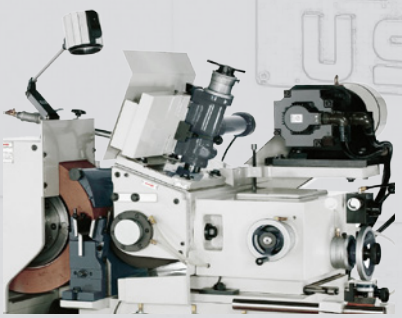
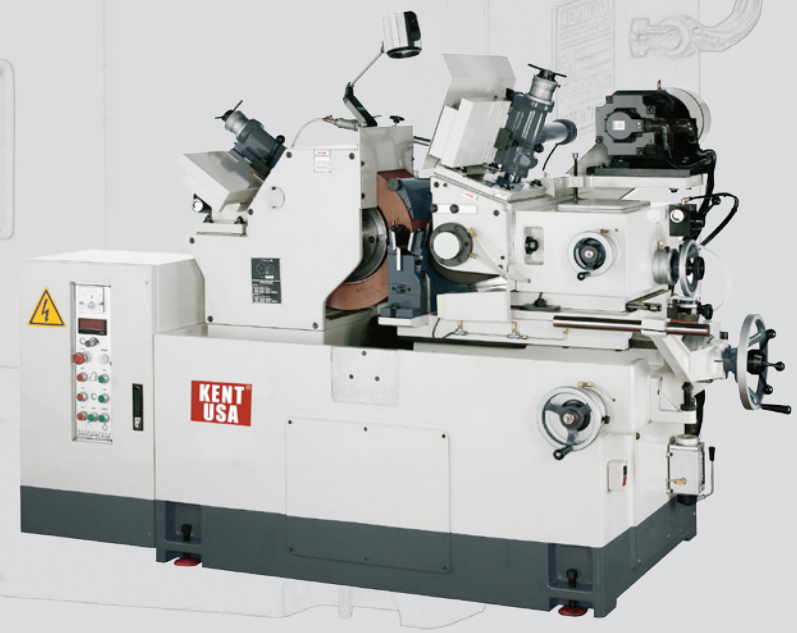
JHC-18

	JHC-18	JHC-18S	JHC-18A	JHC-18AS	JHC-18B	JHC-18BS
Grinding Range (Standard Work Rest)	Ø 0.04" - 2"					
Grinding Range (Standard Work Rest)	Ø 1.5" - 4"					
Grinding Wheel Size	Ø 18" x 8" x 9"		Ø 18" x 10" x 9"		Ø 18" x 12" x 9"	
Regulating Wheel Size	Ø 10" x 8" x 4.4"		Ø 10" x 10" x 4.4"		Ø 10" x 12" x 4.4"	
Grinding Wheel Speed	1200 RPM					
Regulating Wheel Speed	13-316RPM (10 steps)	10-250 RPM variable speed	13-316RPM (10 steps)	10-250RPM variable speed	13-316RPM (10 steps)	10-250RPM variable speed
Grinding Wheel Motor	15 HP		15 HP		20 HP	
Regulating Wheel Motor	2 HP	4 HP Servo Motor	2 HP	4 HP Servo Motor	3 HP	5 HP Servo Motor
Hydraulic Pump Motor	1 HP					
Coolant Pump Motor	1/4 HP		1/2 HP			
Upper Slide Feed Graduation	0.0001" (0.2" per rev)					
Lower Slide Feed Graduation	0.0002" (0.4" per rev)					
Lower Slide Micro Feed	0.00005" (grad) 0.01" (rev)					
Dressing Device Graduation	0.0005" (grad) 0.05" (rev)					
Regulating Wheel Tilt Angle	+5" ~ -3"					
Regulating Wheel Swivel Angle	±5					
Floor Space (L x W x H)	91" x 79" x 60"					
Net weight / Gross weight	6160 lbs / 6820 lbs		2900 kgs / 3200 kgs		3000 kgs / 3300 kgs	
Size of Case (L x W x H)	125" x 55" x 75"					



JHC-18 drive with 10 step variable speed



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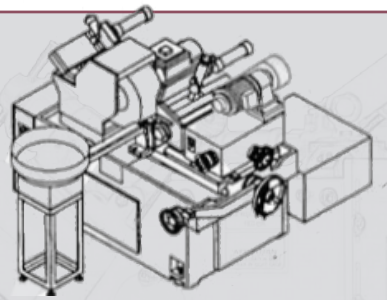
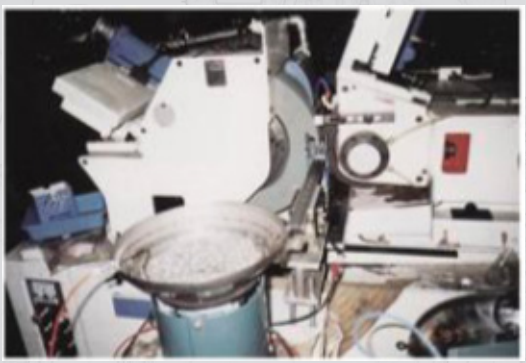
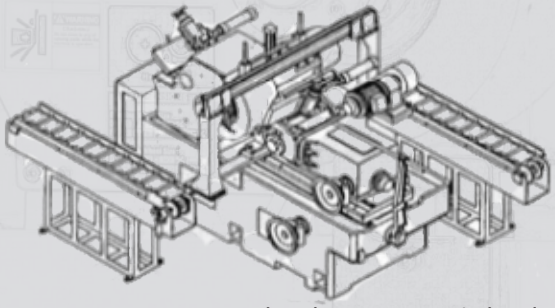
Operation Applications

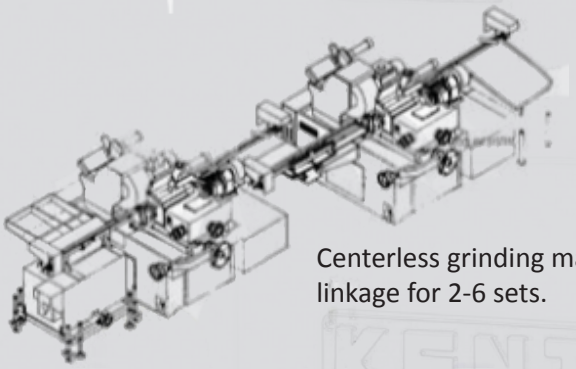


JHC-18S with vibratory parts feeder and straight line feeder

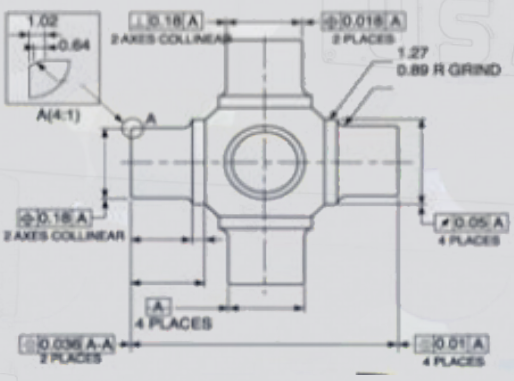




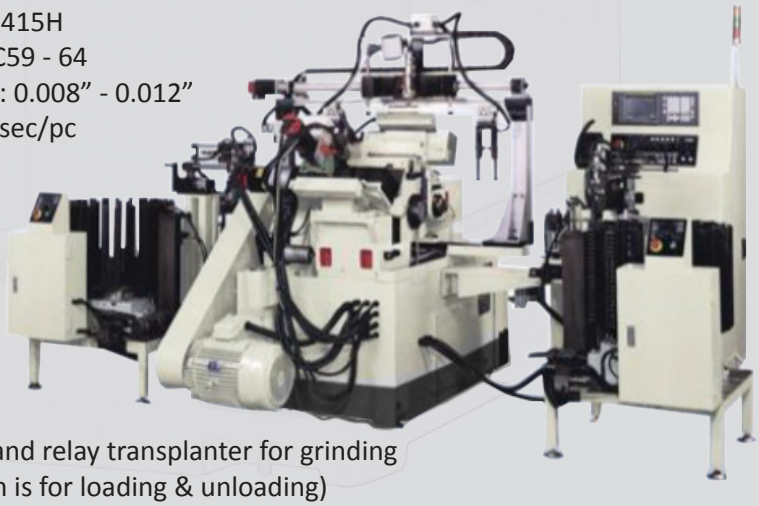
JHC-2412 CNC 4 axes with robot automatic loading and unloading device



Centerless grinding machine with tandem linkage for 2-6 sets.



Material: SCM415H
Hardness: HRC59 - 64
Stock removal: 0.008” - 0.012”
Cycle time: 40sec/pc



JHC-18 CNC 8 axes with robot system and relay transplanter for grinding universal joint kits. (Rotor system is for loading & unloading)

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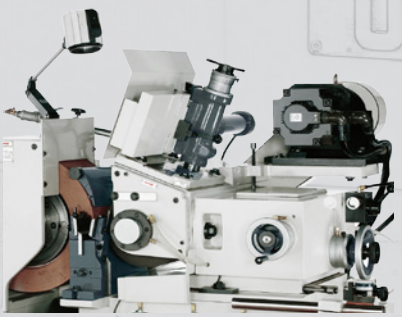
JHC-20

	JHC-20	JHC-20S
Grinding Range (Standard Work Rest)	Ø 0.04” - 2”	
Grinding Range (Special Work Rest)	Ø 1.5” - 4”	
Grinding Wheel Size	Ø 20” x 8” x 12”	
Regulating Wheel Size	Ø 12” x 8” x 5”	
Grinding Wheel Speed	1200 RPM	
Regulating Wheel Speed	13-316 RPM (10 steps)	10-250 RPM variable speed
Grinding Wheel Motor	20 HP	
Regulating Wheel Motor	3 HP	4 HP (Servo Motor)
Hydraulic Pump Motor	1 HP (1800 RPM)	
Coolant Pump Motor	1/4 HP (3600)	
Upper Slide Feed Graduation	0.0001” (0.200” per rev)	
Lower Slide Feed Graduation	0.0002” (0.400” per rev)	
Lower Slide Micro Feed	0.00005” (grad) .01” (rev)	
Dressing Device Graduation	0.0005” (grad) 0.05” (rev)	
Regulating Wheel Tilt Angle	+5” - -3”	
Regulating Wheel Swivel Angle	±5	
Floor Space (L x W x H)	71” x 55” x 55”	
Net Weight / Gross Weight	3200 kgs / 3500 kgs	
Size of Case (L x W x H)	91” x 43” x 71”	



JHC-20 drive with 10 step variable speed

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JHC-18S CNC 9 AXES

JHC-NC

JHC-20-NC-1

JHC-18-NC-2

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JHC-24S

	JHC-2408-150S	JHC-2410-150S	JHC-2412-150S
Grinding Range (Standard Work Rest)	Ø 0.08 in - 2.4”		
Grinding Range (Special Work Rest)	Ø 2 in - 6 in		
Grinding Wheel Size	Ø 24 x 8.1 x 12 in	Ø 24 x 10.01 x 12 in	Ø 24 x 12 x 12 in
Regulating Wheel Size	Ø 12 x 8.1 x 5 in	Ø 12 x 10.01 x 5 in	Ø 12 x 12 x 5 in
Grinding Wheel Speed	1050 RPM		
Regulating Wheel Speed	10-250 RPM variable speed		
Grinding Wheel Motor	20 HP	30 HP	30 HP
Regulating Wheel Motor	4 HP Servo Motor	5 HP Servo Motor	5 HP Servo Motor
Hydraulic Pump Motor	1 HP		
Coolant Pump Motor	1/2 HP		
Regulating Wheel Feed on Handwheel	0.1” (Rev) 0.0004” (Gra)		
Regulating Micro Feed on Handwheel	0.0008” (Rev) $3.93x10^{-5}$” (Gra)		
Table Feed on Handwheel	0.1” (Rev) 0.0004” (Gra)		
Table Micro Feed on Handwheel	0.0008” (Rev) $3.93x10^{-5}$“ (Gra)		
Dressing Handwheel	0.09” (Rev) 0.0004” (Gra)		
Regulating Wheel Tilt Angle	+3” ~ -5”		
Regulating Wheel Swivel Angle	±1”		
Floor Space (L x W x H)	110” x 79” x 65”		
Net Weight / Gross Weight	6500 kgs / 7000 kgs		
Size of Case (L x W x H)	118” x 71” x 77” (machine) | 102” x 55” x 51” (accessory)		

- The Grinding Wheel Spindle runs on hydrostatic bearings, extended tool life and increase accuracy under heavy cut loads.
- Lower Slide is equipped with a heavy bearing, precision linear motion system (slide way system) and C3 Class Ball Screw and a total length of 53.2in.
- Upper Slide is equipped with heavy loading linear motion system and C3 Ball Screw with Fine Tuning and positioning ability up to $3.93x10^{-5}$ in.
- The machine body is designed for both conventional as well as CNC machines. Double Feed axis and Double slides design are easily accomplished with automatic and Computerized Numerical Control (CNC) System. This enables it to eliminate the trouble caused by former single feed axis while CNC and automated.

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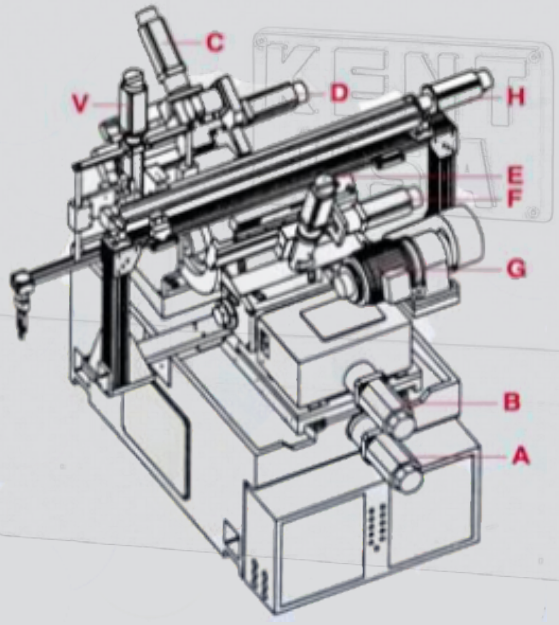
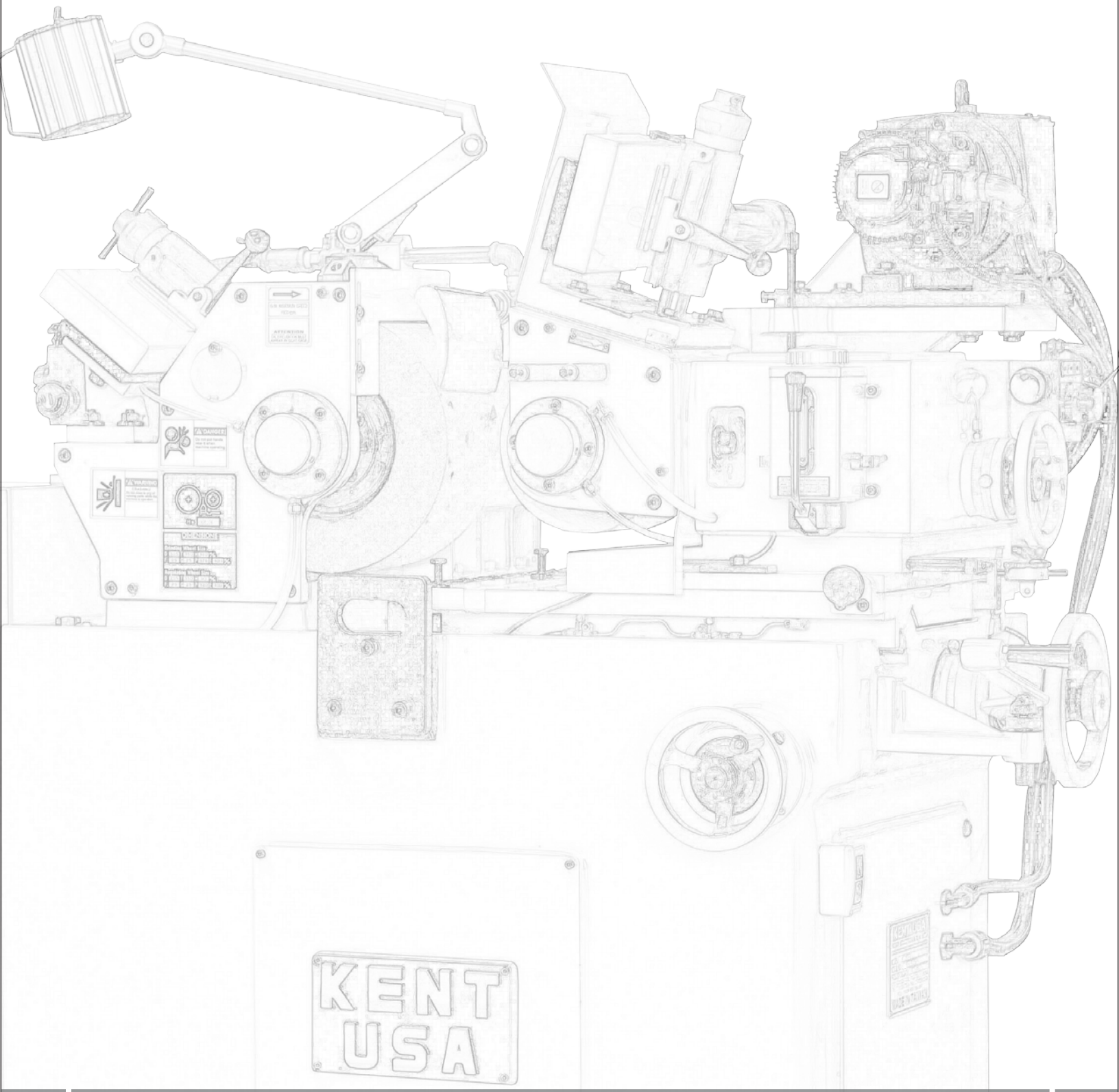
JHC-CNC

The CNC system has servo motor & ball screws in both axes. Consistent, automatic wheels dressing, suitable for precision fine tuning. Accurate, automatic dimensional & servo feed system. Comprehensive, automatic in - process feed units. It is easy to adjust through the CNC control system.

CNC 2 AXES	Name of axis: G-axis, A-axis / G-axis, B-axis Regulating wheel speed control, lower slide or upper slide feeding.
CNC 3 AXES	Name of axis: G-axis, A-axis, B-axis Regulating wheel speed control, lower slide and upper slide feeding.
CNC 4 - 5 AXES	Name of axis: G-axis, A-axis, B-axis, C-axis, E-axis Regulating wheel speed control, lower slide and upper slide feeding. Grinding wheel and regulating wheel dressing.
CNC 6 - 7 AXES	Name of axis: G-axis, A-axis, B-axis, C-axis, D-axis, E-axis, F-axis Regulating wheel speed control, lower slide and upper slide feeding. Grinding wheel and regulating wheel dressing. Dressing attachments cross slide feeding for profile dressing.
CNC 8 - 9 AXES	Name of axis: G-axis, A-axis, B-axis, C-axis, D-axis, E-axis, F-axis, H-axis, V-axis Regulating wheel speed control, lower slide and upper slide feeding. Grinding wheel and regulating wheel dressing. Dressing attachments cross slide feeding for profile dressing. Robot system horizontal axis and vertical axis control.



A. Worktable feed
B. Regulating wheel feed
C. Grinding wheel dressing attachment
D. Grinding wheel dressing cross slide
E. Regulating wheel dressing attachment
F. Regulating wheel dressing cross slide
G. Servo motor for regulating wheel
H. Horizontal travel for robot system
V. Vertical travel for robot system



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