

# Rush Machinery, Inc.

## Specification- *Model 132C* series Drill & Tool Grinders

### I. Operational Features

#### A. Drill & Tool Size Capacities

1. Drill Diameter Range: 0.080" (2 mm) to 1-1/4" (32 mm)
2. Tool Shanks: Straight Shanks: .080" (2mm) to 1-1/4" (32mm)  
Morse Taper Shanks: to #4
3. Maximum Drill Length: 14" (356mm); 22" (559mm) with optional spindle extension (P/N SP32). For most drills less than 3/4" (19mm) diameter, almost any length can be accommodated. Drills over 3/4" (19mm) diameter and over 22" (559mm) long can be ground, in some cases. Contact Rush Machinery regarding specific applications.
4. Maximum Diameter of Tools Other than Drills: 2-1/2" (63mm), with a maximum shank diameter of 1-1/4" (32mm).
5. Maximum Length of Tools Other than Drills: 5" (127mm) excluding the tool shank.

#### B. Basic Drill & Tool Sharpening Capabilities

1. Drill Sharpening (right or left hand) *Note: For all left hand tools, optional cams are required.*
  - a) Point Angle Range: 40 to 180+ degrees
  - b) Number of Flutes- 2, 3 & 4
  - c) Flute Types - spiral (slow, standard & fast) and parabolic
  - d) Shank Types - Straight and Morse Taper Nos. 1\*, 2, 3 & 4  
(\* *Optional* rear steady available).
  - e) Point Types - conventional, split point, lip corrected, web thinned, spiral point\*, sheet metal\*, double angle, 4-facet, flat bottom, structural steel\* & plastic point. (\* *Optional* cam required, see para. II.D.8.)
  - f) Step and subland - sharpen point and step
2. Countersink Sharpening (evenly spaced flutes only)  
Number of Flutes- 1, 2, 3, 4, 5\*, 6\* (\* *Optional* cam required)
3. Tap Sharpening
  - a) Sharpens the tap chamfer
  - b) Straight flutes (for high spiral taps- bottoming chamfer only)
  - c) Number of Flutes- 2, 3, 4, 5\*, 6\*, 7\*, & 8\* (\* *Optional* cam required)
4. Reamer Sharpening
  - a) Sharpens the reamer chamfer
  - b) Number of flutes- 4, 5\*, 6\*, 7\*, 8\* & 10\* (\* *Optional* cam required)
5. End Mill and Counterbore sharpening
  - a) Number of Flutes (End Sharpening)
    - (1) Center cutting- 2 & 3
    - (2) Non-center cutting- 4
  - b) On end-grind - Primary, secondary and gash in one setup.
  - c) End Mill O.D. Grinding (any number of flutes) with *optional: Air Bearing Grinding Attachment* (P/N AB32)
6. Spin and Index grinding

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- a) Spin Grind- straight (i.e. drill shanks and pilots), chamfer (adjustable angle) & square end.
- b) Index grind flats- with integral 12 position indexing plate.
7. Grind most tool materials (i.e. high speed steel , cobalt high speed steel and tungsten carbide) with the use of the properly selected grinding wheels.

#### **II. Construction Features**

##### **A. Grinding Spindle Assembly**

1. Wheel Spindle shaft- hardened and ground steel with a standard tapered end for wheel hub mounting (taper- 3" per foot).
2. Sealed and permanently lubricated ball bearings
3. Spindle Housing material - cast iron
4. Spindle motor- ½ H.P., Totally Enclosed Fan Cooled (TEFC), 3450 rpm, 1 phase, 115 volts and 60 Hz.  
*Options-* 3 phase system, 230/400/460V, 50/60 Hz  
1 HP, TEFC motor (P/N MS04).
5. Starter switch- for single phase motor is a manual switch with overload protection. *Optional-* The Magnetic starter system is used for a 3 phase motor and has overload protection; 115V. output control transformer and a push button on/off station.
6. Coupling, motor/spindle shaft- keyed, self-aligning splined elastomer type.
7. Protective grinding wheel shroud with hinged cover for easy access
  - a) Steel construction
  - b) Has provision for mounting the *optional* - Overhead Rush "Easy Dress" Wheel Dresser (P/N WD01- See *optional* list in para. III)
8. Grinding Wheels
  - a) Standard - Main wheel: 7" diameter by 1-1/4" wide aluminum oxide & ceramic blend with 1-1/4" bore
  - b) *Optional-* Ceramic/aluminum oxide, CBN and diamond wheels of various types - See Rush Price List or contact Rush Machinery for details.

##### **B. Cross Slides (X & Y directions)**

1. Cast iron
2. Spindle assembly mounts on the cross-slides.
3. Dovetail ways with adjustable tapered gib on each slide
4. Both slides are equipped with Acme screws and bronze nuts
5. An adjustable stop is mounted on the traverse ways to ensure a repeatable centering position during point splitting and other operations. Stop can be quickly disengaged, when not in use.
6. The traverse slide has a calibrated dial with crank. Dial calibrations are to 0.002"
7. In-feed slide has a calibrated dial with crank. Dial calibrations are to 0.001"  
*Note: Optional-* Millimeter dial calibrations (6. & 7. above) available.
8. Metal and accordion type dust covers protect the ways.

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#### C. Machine base

1. Cast iron
2. Provides mounting for the cross-slides and the workhead

#### D. Work head

1. Machined cast aluminum- main body and gear cover with cast iron work head base.
2. Work holding Chuck 4-3/8" (111 mm) O.D.- self centering, with 6 precision and hardened steel jaws with holding length of 2-3/8" (60 mm), Meehanite body and hardened steel scroll plate, chuck work holding diameter range- 0.080" (2.0 mm) to 1.260" (32 mm).
3. Chuck spindle- hollow, hardened and ground with 1.50" (38mm) diameter bore. Spindle provides 12 index slots for index grinding.
4. Chuck spindle and cam rotation drive uses machined gears in a covered housing. Drive source is a hand crank, or geared-head air motor.
5. The work head has a tilting adjustment, 0 to 15 degrees, which allows grinding above the wheel centerline for the proper angle for point splitting, web thinning and end mill end grinding and other applications.
6. The spindle bearing is a large diameter precision rotary-linear ball bearing which provides anti-frictional motion in both rotational and linear directions.
7. The spindle and cam rotational drive system uses hardened and ground gear shafts with radial and thrust anti-friction needle bearings. Gear ratio/s between the cam and workhead spindle rotation are 2:1 for even number of flutes and 1:1 for odd number of flutes.
8. Cam action- provides controlled spindle forward/back axial motion for a variety of grinding requirements including grinding *left hand* (LH) & *right hand* (RH) tools.
  - a) All cams are surface hardened.
  - b) Cam followers are ball bearing roller type
  - c) Cams can be changed in 5 to 10 seconds without tools.
  - d) Cams available:

P/N	Standard Cams	P/N	Optional Cams
C04	#4- RH 2-flute drills & taps	C14S	#14S- RH 2-flute structural steel point
C06	#6- RH 2-flute step & subland drills	C15	#15- LH 8-flute reamers & taps

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C08	#8- RH 4-flute drills & taps	C16	#16- RH 8-flute reamers & taps
C22	#22- RH <i>single-flute</i> countersinks	C17	#17- LH 10-flute reamers
C24	#24- RH 3-flute countersinks, core drills & taps	C18	#18- RH 10-flute reamers
		C21	#21- LH <i>single-flute</i> countersinks
		C22F	#22F- RH 1-flute Ford-style countersinks
	<b>Optional Cams</b>	C23	#23- LH 3-flute taps, countersinks & core drills
C01	#1- LH 2-flute drills & taps		
C05	#5- LH 2-flute step & subland drills	C24A	#24A- RH 3-flute <u>high relief</u> for larger taps (5/8" diam. & up)
C07	#7- LH 4-flute drills & taps		
C08A	#8A- RH 4-flute high relief for taps 1" diam. & up	C25	#25- LH 5-flute taps, c'sinks & reamers
		C26	#26- RH 5-flute taps, c'sinks & reamers
C09	#9- LH 6-flute straight taps & reamers	C26A	#26A- RH 5-flute high relief for larger Taps
C10	#10- RH 6-flute straight taps & reamers		
C10A	#10A- RH 6-flute for larger taps	C27	#27- LH 7-flute taps & reamers
C12	#12- RH 2-flute self-centering spiral pt.	C28	#28- RH 7-flute taps & reamers
C14	#14- RH 2-flute sheet metal, fish tail & Brad point		

#### 9. Rear Steady Rest

- a) Provides centering support for drills with Morse tapers and larger diameter straight shank drills in the spindle bore.
- b) Rear Steady Rest
  - (1) Morse Taper- Standard: MT #2, #3, & #4 *Optional*: MT # 1 (P/N 32MT01)
  - (2) Straight shanks- *Optional*: Recommended for drills over 3/4" (19 mm) diameter (P/N RS32)

#### Model configurations:

- a) Model 132C Manual Bench Top mount machine
- b) Model 132C Manual model, mounted on an enclosed cabinet stand base.
- c) Model 132C Manual model, cabinet mounted with flood coolant
- d) Model 132CS- semiautomatic machine, same configuration as the Model in b or c above, with the addition of a chuck rotation pneumatic drive system consisting of an adjustable speed gear head air motor, through a timing belt, as the drive source, a hand knob for small quick chuck position adjustments, an air lubricator, pressure regulator and filter, speed control valve, 4-way valve (for forward, reverse and stop control).

#### E. Flood Coolant System- *Optional*

1. Consists of: tank, motor-pump, shutoff valve, check valve, flexible feed line with nozzle, associated pipe, fittings and flexible supply and return hoses.
2. Tank- rectangular, 10 gallon capacity, has a removable strainer basket and a two part tank to allow settling of grinding residue.
3. Motor-pump
  - a) Motor 1/8 HP. Delivers up to 6 gallons per minute.

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b) Pump runs only when the grinding spindle motor is activated via separate auxiliary contacts in the spindle control.

F. Cabinet- Machine Stand with enclosed storage - *Optional* (*Note*: standard with 132CS and flood coolant option).

1. Material - 12 Ga. sheet steel
2. Dimensions- 30" (762 mm) high, 30" (762 mm) deep and 28" - 23" (710 mm - 584 mm) (tapered) width.
3. Continuous hinged door with latch knob for storage area.
4. Cabinet top with 2" (50 mm) high sides serves as coolant tray with a drain tube connection at the rear.
5. Four floor mount feet each with a 13/32" (10.3 mm) hole.
6. Included are the following supplementary items
  - a) Padded tool/work tray (6" [152 mm] x 12" [305 mm]), which clip mounts anywhere along the coolant collector top lip.
  - b) Flat vertical mount splash shield (7" [178 mm] high" x 16" [406 mm] long), which clip mounts along the coolant collector top lip. *Note*: Supplied only with coolant system option.
  - c) Curved splash shield with a magnetic mount. *Note*: Supplied only with coolant system option.

G. Standard Work Light

1. Maximum 100 watts incandescent lamp @ 115 V.
2. Goose neck- 24" long for adequate maneuverability.
3. Cool lamp shade construction
4. *Optional*- Attached inspection magnifier (2X mag.) for standard work light. (P/N MG02)
5. *Optional*- High Intensity Halogen work light (P/N HL02) plus an *optional* attached 2.5X inspection magnifier (P/N MG01).

H. Machine Weights & Dimensions

1. Crated Dimensions:     37" (94cm) wide  
                                  37" (94cm) deep  
                                  28" (71cm) high (benchtop)  
                                  64" (163cm) high (with cabinet)
2. Weights: Manual Benchtop:     240lbs (109kg) net  
                                          330lbs (150kg) crated  
                  Manual with Cabinet:     345lbs (157kg) net  
                                          465lbs (211kg) crated  
                  Semi-automatic:         370lbs (168kg) net  
                                          490lbs (223kg) crated

3. Maximum Dimensions (full extension of travels):  
   132C with cabinet: 43" wide x 36" deep x 50" high  
   132C benchtop: 43" wide x 36" deep x 22" high

III. ***Optional*** Equipment- Items available to mount on or compliment these machines.

A. Air Bearing End Mill Grinding Attachment (P/N AB32) *Note*: Air Bearing Fixture

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Specification is available.

- B. Mounted Overhead Wheel Dresser "Easy Dress" (P/N WD01)- designed for simple one hand operation. *Note:* Information sheet on the Wheel Dresser is available.
- C. Halogen Hi Intensity Work Light (P/N HL02) has an *optional* mounted Inspection Magnifier with 2.5 X magnification (P/N MG01).
- D. Precision Wheel Balancer (P/N WB01) with tapered wheel hub supporting mandrel.
- E. Spindle Extension (P/N SP32)- supports extra long drills, from 14" to 22" OAL.
- F. Rear Steady for Straight Shank Drills (P/N RS32) - for drills over ¾" dia.