

# CHEVALIER®

## FCG-610

### UNIVERSAL TOOL & CUTTER GRINDER



# FCG-6

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## FEATURES

## UNIVERSAL TOOL & C

- Compact & rigid design for precise and safe operation.
- Steel balls in longitudinal travel for smooth movement.
- Large easy to read dials.
- Air bearing fixture (B90-C2AH)
- Air quill made of heat treated alloys, chrome plated, ground and lapped.
- Precision built and fitted with high grade castings and aluminum alloy throughout.
- Forward / Reverse switch.
- Rapid mounting of grinding attachments.
- Worm and worm gear for wheelhead angle adjustment.
- Precision acme screw for 160mm(6 5/16")vertical adjustment of wheelhead
- Worm and worm gear for 360 degree column adjustment.
- Adjustable limit switches on longitudinal travel.
- Backlash adjustment for leadscrew nut on crossfeed.
- Universal grinding accomplished with various wheels-flaring cup, saucer wheel or diamond wheel.

NOTE: End mill and 5C collet are not standard accessories.



## APPLICATION EXAMPLES



Sharpening side milling cutter held on **B90-C2SH** fixture with a **B90-AA01-B90-AA15** arbor, **B90-C2R1** plain tooth rest is indexed against index disc.



Sharpening gear hob held on **B90-AB01** / **AB04** arbor, **B90-C2R2** plain tooth rest is indexed against index disc.



Sharpening drill tap held on **B90-2104** working head.



Note: Machine shown

Sharpening side milling cutter held on **B90-AB01-AB04** arbor, **B90-C2R2** plain tooth rest is indexed against index disc.



A straight shank end mill being sharpened, held on **B90-C2AH** fixture with 5C collet.



Sharpening circular saw blade held on **B90-C1SG** attachment.



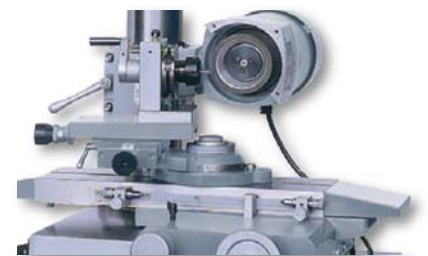
Sharpening a ball radius end mill held on **B90-C1RG** attachment.



Sharpening turning tool set-up on **B90-C2LH** fixture



Sharpening face milling cutter being held in the **B90-C2SF** fixture with a **B90-AA25** arbor, cutter is indexed with **B90-C2R1** univ. tooth rest, and wheel is Diamond cup wheel.



Engraving, radius and end mill grinder held on **B90-C3RG** fixture



## CUTTER GRINDER

### MACHINE CONSTRUCTION



**FCG-610**

shown with optional accessories



**FCG-610 is driven by steel rollers**



**B90-2104**  
6-JAW WORKING HEAD for sharpening drill (dia. 3-32mm" (1/4"-1 1/4")) & tap (2/3/4/6 flute)



**B90-C3RG**  
ER collet dividing punch grinder attachment



**B90-C2AH**  
End mill grinder. Air bearing fixture 5C, 5C collet taper



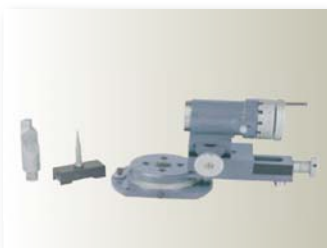
**B90-C2T12**  
TAILSTOCK (Left & Right)



**B90-C2SH**  
SENSITIVE WORK HEAD B&S TAPER NO.11 with **B90-AK24** index disc



**B90-C2LH**  
WORK HOLDING FIXTURE



**B90-C1RG**  
RADIUS ATTACHMENT



**B90-C2R1**  
UNIVERSAL TOOTH REST with **B90-C2R1-1a** or **b** Micro tooth rest and **B90-C2R1-2a** or **b** Micro tooth rest (a=metric, b=inch)



**B90-C2SF**  
SENSITIVE WORK HEAD NT#50 TAPER with **B90-AK24** index disc



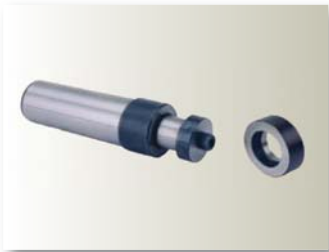
**B90-C1SG**  
CIRCULAR SAW BLADE GRINDING ATTACHMENT (Max. to 508mm(20") dia)



**B90-AF01B**  
(to be used with **B90-C2SH**) 4" Adjustable 3-jaw Chuck mounted on B&S NO.11 taper arbor which will fit all fixtures with B&S NO.11 spindle.

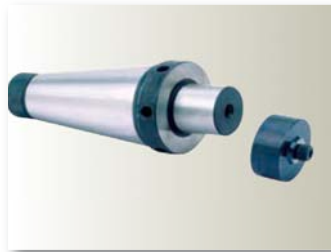


**B90-C2R2**  
PLAIN TOOTH REST



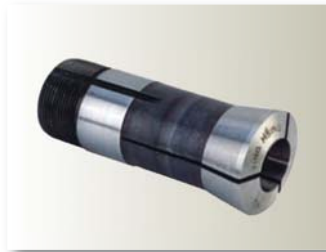
**ARBORS** (to be used with **B90-C2SH**) Shell End Mill and Cutter Arbor B&S NO.11 Taper O.D. specially designed to sharpen O.D. And Face of Shell Type Milling Cutters.

Part NO.	Dia. (inch)
<b>B90-AA01</b>	1/2 Arbor
<b>B90-AA02</b>	5/8 Arbor
<b>B90-AA03</b>	3/4 Arbor
<b>B90-AA04</b>	7/8 Arbor
<b>B90-AA05</b>	1 Arbor
<b>B90-AA06</b>	1 1/4 Arbor
<b>B90-AA07</b>	1 1/2 Arbor
Part NO.	Dia. (inch)
<b>B90-AA10</b>	13 Arbor
<b>B90-AA11</b>	16 Arbor
<b>B90-AA12</b>	22 Arbor
<b>B90-AA13</b>	27 Arbor
<b>B90-AA14</b>	32 Arbor
<b>B90-AA15</b>	40 Arbor



**ARBOR** (to be used with C2SF) Sharpening Face Milling Cutters Arbors NT#50 Taper O.D.(see picture above)

Part NO.	Dia. (inch)
<b>B90-AA20</b>	1 1/2
<b>B90-AA21</b>	2
Part NO.	Dia. (mm)
<b>B90-AA25</b>	40
<b>B90-AA26</b>	60



**5C COLLET**

5C Collets to fit AC01 Collet Sleeve and **B90-C2AH** Air Bearing Fixture.

**B90-5CI:** 3/16", 8/8", 1/2", 5/8", 3/4", 7/8", 1"(7pcs.)

**B90-5CM:** 6, 8, 10, 12, 16, 20, 25mm(7pcs.)



**COLLET FIXTURE**

**B90-AC01A** for changing **B90-C2SH** from B&S NO.11 Taper to accept 5C collet.



**CUTTER AND HOB GRINDING**

**ARBOR**(to be used with tailstock) arbors available:

**B90-AB01** 1/2" Arbor\*

**B90-AB02** 1" Arbor\*

**B90-AB03** 13mm Arbor\*

**B90-AB04** 27mm Arbor\*

\*with Taper Collet for Index Disc

**B90-AB05** 3/4" Sleeve must be put in B90-AB01

**B90-AB06** 7/8" Sleeve must be put in B90-AB01

**B90-AB07** 1 1/4" Sleeve must be put in

B90-AB02

**B90-AB08** 1 1/2" Sleeve must be put in B90-AB02

**B90-AB09** 2" Sleeve must be put in B90-AB02

**B90-AB10** 16mm Sleeve must be put in B90-AB03

**B90-AB011** 22mm Sleeve must be put in B90-AB03

**B90-AB012** 32mm Sleeve must be put in B90-AB04

**B90-AB013** 40mm Sleeve must be put in B90-AB04



**STRAIGHT SLEEVES**

5C Collet Taper O.D. set-up on B90-AC01 Collet Sleeve and B90-C2AH Air Bearing Fixture Spindle.

**B90-AC25** 1 1/4" I.D.

**B90-A45** 1 1/2" I.D.

**B90-A51** 50mm I.D.

**B90-AC28** 40mm I.D.

**B90-AC26** 32mm I.D.

**B90-A46** 2" I.D.



**TAPER ARBOR**

5C Collet Taper O.D. set-up on **B90-AC01** Collet Sleeve and **B90-C2AH** Air Bearing Fixture Spindle.

**B90-AC27** J6 Taper O.D.



**INDEX DISCS**

**B90-AK24-60** Index Discs to fit **B90-C2SH & B90-C2SF** Sensitive Work Head including **B90-AK24** to **AK60** for 24, 30, 32, 34, 36, 40, 42, 44, 46, 48, and 60 divisions. Special Index Discs with any number divisions will be furnished on request.



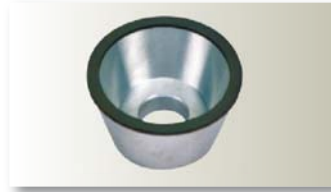
**TAPER SLEEVES**

5C Collet Taper O.D. set-up on **B90-AC01** Collet Sleeve and **B90-C2AH** Air Bearing Fixture Spindle.

**B90-AC07** NO.3 MT Taper I.D.

**B90-AC08** NO.2 MT Taper I.D.

**B90-AC09** NO.1 MT Taper I.D.



**DIAMOND CUP WHEEL**

**B90-AW101:** 150x10x2x31.75mm (6"x26/64"x5/64"x1 1/4")

**B90-AW102:** 100x5x3x31.75mm (4"x13/64"x7/64"x1 1/4")

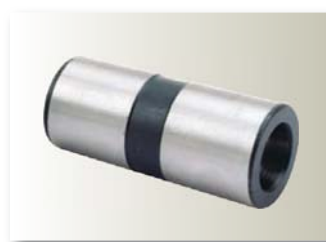


**GRINDING WHEEL**

**B90-AW10:**Saucer wheel 150x13x31.75mm (6"x1/2"x1 1/4")

**B90-AW15:**Cupwheel 125x50x31.75mm (5"x4"x1 1/4")

**5112-70640605:**Straight wheel 150x13x31.75mm (6"x1/2"x1 1/4")



**TAPER SLEEVES**

(to be used with **B90-C2SH**) B&S NO.11 Taper O.D. These sleeves can be used on all types of Cutters with Taper Shanks.

**B90-AC20** 4MT I.D.

**B90-AC21** 3MT I.D.

**B90-AC22** 2MT I.D.

**B90-AC23** 1MT I.D.

1. Cup wheel 2 pcs
2. Saucer wheel guard
3. Adjusting tools
4. 5C collet 1 set(7pcs)  
**B90-5CI:** 3/16", 8/8", 1/2", 5/8", 3/4", 7/8"  
1"(7pcs.)
- B90-5CM:** 6, 8, 10, 12, 16, 20, 25mm(7pcs.)
5. **B90-C2D1** DIAMOND DRESSER



DIAMOND DRESSER



5C collet set

**OTHER OPT. ACCESSORIES**

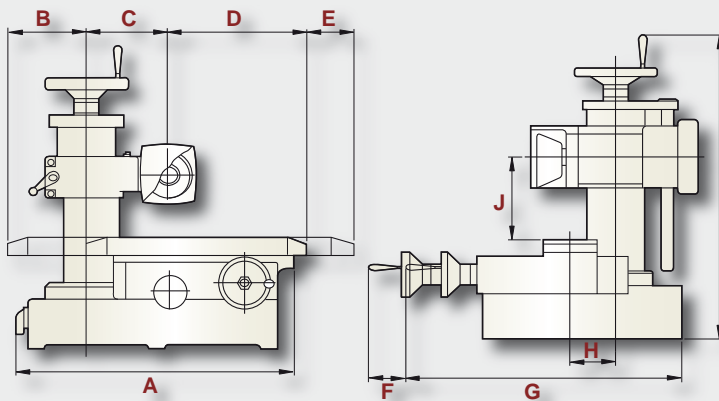
1. **B90-TA02**  
TAPER ATTACHMENT



2. **5100-50850520**  
SFRAIGHT WHEEL FOR  
**B90-2104**  
125x50x31.75mm(5"x2"x1 1/4")



3. **2100-C3412000**  
MACHINE FLOOR STAND

**DIMENSIONAL DRAWINGS**

ITEM	DIMENSION	ITEM	DIMENSION
A	550mm(21 1/2'')	G	540mm(21 1/4'')
B	220mm(8 1/2'')	H	max: 283mm(11 1/8'') min: 133mm(5 1/4'')
C	190mm(7 1/2'')	I	645mm(25 13/32'')
D	461mm(18'')	J	max: 280mm(11'') min: 85mm(3 11/32'')
E	40mm(1 1/2'')		
F	150mm(6'')		

**SPECIFICATION**

Description	FCG-610
Distance between tailstocks	250mm (10'')
Swing over table	205mm (8'')
Longitudinal travel of table	250mm (10'')
Cross travel of saddle	160mm (6 5/16'')
Working table area	133mm x 470mm (5 1/4'' x 18 1/2'')
Dimension of T-Slot	11.1125mm x 20mm x 8mm (7/16'' x 25/32'' x 5/16'')V
Vertical adjustment of wheel head	190mm (7 1/2'')
Swivel adjustment of column	360°
Vertical tilting range of wheel head	360°
Diameter of wheel(I.D. 1 1/4'')	Saucer Wheel 152mm (6'') Flaring Cup 127mm (5'')
Speed of wheel Speed of wheel	50Hz, 2850RPM 60Hz, 3450RPM
Motor	1/3HP, 1ph/110-220V 1/3HP, 3ph/220V
Net weight	125kg ( 275 lbs)
Packing Dimension (L x W x H) (Without Stand)	762mm x 686mm x 762mm (30'' x 27'' x 30'')
Noise level	below 80(dB)A

※ Note: The manufacturer reserves the right to modify the design, specifications, mechanisms... etc. of the machine without prior notice. All the specifications shown above are just for reference.

## GRINDING ATTACHMENT SELECTIONS

GRINDING	APPLICATION RANGE	ACCESSORIES
1. B90-C2AH	END MILLS (Not suitable for tapered end mills)	5C Collet (Metric: 6~5mm, Inch:3/16''-1'') . B90-AC07/AC08/AC09: Taper Sleeve . B90-AC25/AC26/AC28: 5C Straight Sleeve . B90-AW15: Cup Wheel
2. B90-C1RG	PRIMARY AND SECONDARY RELIEF ANGLES OF END MILLS	5C Collet (Metric: 6~5mm, Inch:3/16''-1'') . B90-AC07/AC08/AC09: Taper Sleeve . B90-AC25/AC26/AC28: 5C Straight Sleeve . B90-AW15: Cup Wheel . Center Gauge, Horizontal Gauge
3. B90-C2LH	TURNING TOOLS	B90-AW101/AW102: Diamond Wheel . B90-AW15: Cup Wheel
4. B90-C2SH	RELIEF ANGLE OF SIDE MILLING CUTTERS	B90-AA10-AA15: Arbors(Metric: 13-40mm) . B90-AA01-AA07: Arbors(Inch: 1/2''~1 1/2'') . B90-AK24-AK60: Index Disc . B90-AC20-AC30: Taper Sleeve . B90-AC01A: Collet Fixture B90-AC07/AC08/AC09: 5C Collet (Metric: 6-25mm, Inch: 3/16''-1'') Taper Sleeve . B90-AC25/AC26/AC28: 5C Straight Sleeve . B90-AW101/AW102: Diamond Wheel
5. B90-C2SF	RELIEF ANGLE OF SURFACE MILLING CUTTERS	B90-AA25: Arbor(Metric: 40mm) . B90-AA26: Arbor(Metric: 60mm) . B90-AA20: Arbor(Inch: 1 1/2'') . B90-AA21: Arbor(Inch: 2'') . B90-AK24-AK60: Index Disc . B90-AW101/AW102: Diamond Grinding Wheel
6. B90-C2T12	RELIEF ANGLE OF SIDE MILLING CUTTERS AND GEAR (Inner diameter 13~40mm(1/2''~2''))	B90-AB01-AB13 . Cutter & Hob Grinding Arbor . B90-AK24-AK60: Index Disc . B90-C2R2: Plain Tooth Rest . B90-AW10: Disc Wheel (For Gear Rolling Tool) . CS270000: Lengthened Wheel Flange . B90-AW15: Cup Wheel(For Side Cutter)
7. B90-C1SG	RELIEF ANGLE OF SAW BLADES Maximum outer diameter 500mm(20'')	B90-C2R1: Universal Tooth Rest . B90-AW10: Disc Wheel . CS270000: Lengthened Wheel Flange
8. B90-2104	DRILLS (Diameter 6~32mm(1/4''~1 1/4'')) and TAPS (2/3/4/6 Flutes)	B90-2104 includes 1pc MT3 Sleeve, 6pcs Centers, 1pc 6-Jaw Head, 1pc Straight Wheel 5100-50850520(125 x 50 x 31.75mm(5'' x 4'' x 1 1/4'')) & 1pc Cam (optional) 2100-0338500 for right hand thread.

Cat.: 2116-000/A00 / R000048428 / 20050708 / 1000 DTP Design: VIVI / FALCON MACHINE TOOLS CO., LTD.



Manual Grinders
CNC Profile Grinders
Linear Motor CNC Profile Grinder
VMC (Various Sizes)
VMC w. turntable
CNC VTL w. Double Turret
CNC VTL
Slant Bed CNC Lathes
Teach-in Lathes

Grinder

VMC

Vertical Lathe

Lathe

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