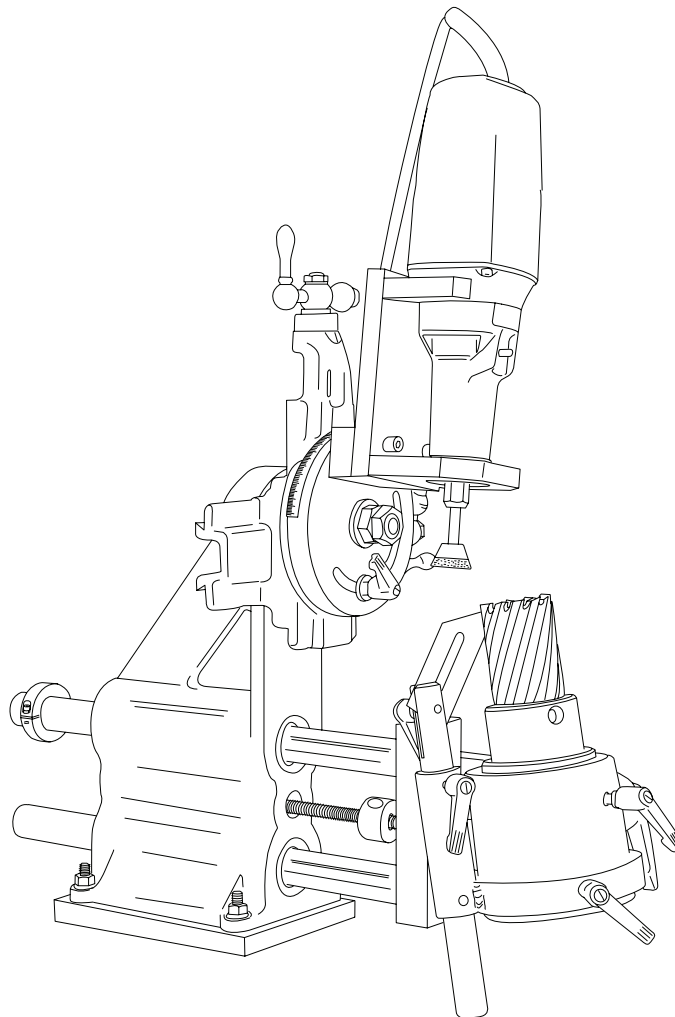




MODELS 10950 & 10950A SHARPENING MACHINE

OPERATOR'S MANUAL



For Use with "12,000-Series", RotaLoc™
& RotaLoc Plus™ Cutters

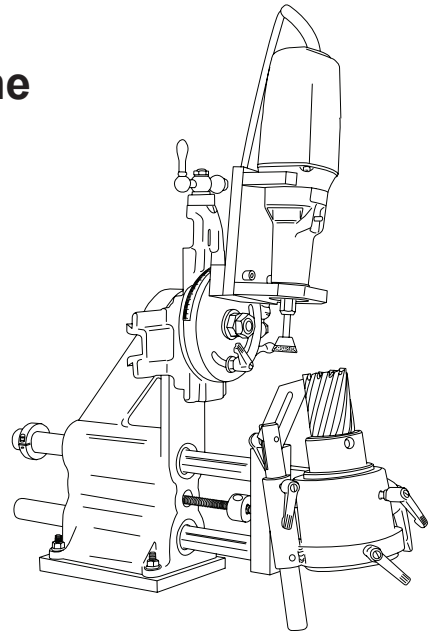
HOUGEN®

Model 10950 & 10950A Sharpening Machine

Welcome to Hougen

Congratulations on your purchase of the Hougen Sharpening Machine. It is specifically designed to resharpen Hougen Annular Cutting Tools quickly and efficiently. Through constant innovation and development, Hougen is committed to provide you with hole-producing tools and products to help you be more productive.

Before attempting to operate your new Sharpening Machine, please read all instructions first. These include the Operator's Manual, Resharpener Companion, Safety and Warning labels on the unit itself, and the Grinder Motor manual. With proper use, care, and maintenance, your model will provide you with years of effective resharpening performance. Once again, thank you for selecting our product and welcome to Hougen.



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Commercial / Industrial Limited Warranty

Hougen Manufacturing, Incorporated warrants its Portable Magnetic Drills, Electro-hydraulic Hole Punchers, and Tornado II Paint Shaker for one (1) year and other products for ninety (90) days from date of purchase against defects due to faulty material or workmanship and will repair or replace (at its option) without charge any items returned. This warranty is void if the item has been damaged by accident or unreasonable use, neglect, improper service, or other causes not arising out of defects in material or workmanship. No other expressed warranty is given or authorized. Hougen Manufacturing, Inc. disclaims any implied warranty of MERCHANTABILITY or FITNESS for any period beyond the expressed warranty and shall not be liable for incidental or consequential damages. Some states do not allow exclusions of incidental or consequential damages or limitation on how long an implied warranty lasts and, if the law of such a state governs your purchase, the above exclusion and limitation may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

To obtain warranty service, return the item(s), transportation prepaid, to your nearest Factory Authorized Warranty Repair Center or to Hougen Manufacturing, Inc., 3001 Hougen Drive, Swartz Creek, Michigan 48473.

Hougen Drills (Hougen Cutters) are warranted against manufacturing defects only. Subject to Hougen Manufacturing inspection.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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UNPACKING YOUR NEW SHARPENING MACHINE

1. Open shipping carton and remove the literature and hardware packages.
2. **Read and Follow All Instructions** before attempting to operate your new Sharpening Machine.
3. Complete and mail the Product Registration Card now. It is important that Hougen Manufacturing, Inc. have a record of product ownership.
4. Your new sharpening machine comes in four packages and requires a minimum amount of assembly. Remove the four packages from the shipping carton and store the shipping carton in case of a needed repair, you'll have the shipping carton available to repackage the unit.
5. The four components of your sharpening machine are as follows:
 - a) Frame assembly
 - b) Motor assembly
 - c) Chuck assembly
 - d) Hardware package which includes all the necessary items to utilize your new machine, including four mounting bolts to attach your machine to a bench top or optional stand assembly Hougen part #04118
6. Remove all packing and securing material from the machine.
7. Your Sharpening Machine was factory adjusted prior to shipping. Check to make sure all adjustment screws are snug and have not vibrated loose in transit.
8. Your new Sharpening Machine comes complete with a 3/4" Hougen shank tool holder (P/N 04049) This holder fits all 3/4" shank "12,000-Series" Hougen Cutters. An optional tool holder that fits RotaLoc™ and RotaLoc Plus™ cutters is also available. Hougen P/N (04147)
9. Reread Safety Warnings listed in the Operator's Manual and on the machine to avoid injury. Follow all operating procedures.

Important Safety Instructions



Read and follow operator's manual. Check and comply with all applicable federal, state, local, and company safety standards. If you cannot locate your operator's manual, call or write to Hougen Mfg., Inc. for additional FREE copy.



Unplug from power when changing tools or servicing machine. Keep fingers away from grinding area during operation. Never place fingers in grinding area or on grinding wheel during operation. Never use damaged or broken grinding tools.



Any tool can shatter. Eye protection must be worn by all people using this machine and by people in the vicinity of the machine during use. Do not use grinding wheels rated below 26,500 R.P.M.



Do not use machine in damp area or where it may become wet.



A clean dust mask should be worn during resharpenering to prevent inhaling of metal particles.

BENCH / STAND SUPPORT FOR YOUR NEW SHARPENING MACHINE

Your new Model Sharpening Machine may be mounted to a bench-top with a thickness of 5/8" to 3/4" using the socket head cap screws provided. If your bench top thickness is not in this range, alternate screws must be used to properly secure the machine. **WARNING: Do not attempt to operate the machine without properly securing it to a Bench Top or Stand.**

1. Remove the chuck assembly from its packaging and install it into the linear bearing in the main housing. Attach the pivot arm to the chuck assembly. Finger tighten the adjustable handle. **(DO NOT OVER TIGHTEN)**
2. Remove the motor assembly from its packaging and install the motor into the top bracket with the motor locking pin facing you. Slip the motor into the bottom bracket and push firmly into place. Tighten the top motor bracket screw with the hex wrench provided after you have ensured the motor is firmly mounted in the lower bracket. **(DO NOT OVER TIGHTEN)**
3. Your sharpening machine was factory adjusted prior to shipping. Check and make sure all adjustable handles are secure and did not vibrate loose during shipment.

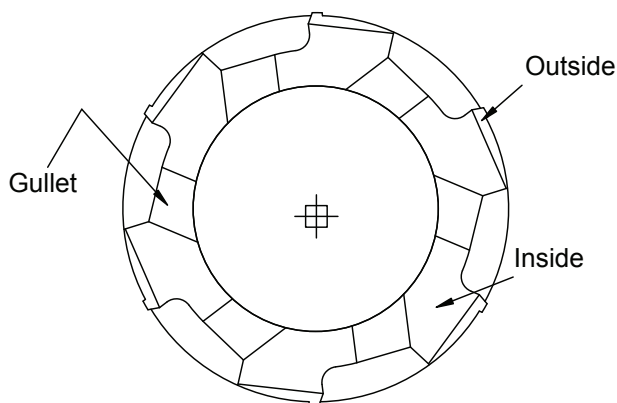
SETTING UP YOUR MACHINE

1. Position the template on the bench in the desired area of machine location. The front of the housing should be placed no further than 2-1/2" from the bench or table edge. Take note of the intended clearances to be provided for in the location of the machine as illustrated on the template.
2. Mark the hole location centerpoint for each of the four bolt holes.
3. Drill each hole to provide clearance for a 5/16" socket head cap screw 11/32" (.343) drill size recommended.
4. Mount your Model 10950 by inserting and tightening the four 5/16-18 x 1-1/4 screws and hex nuts from the bottom surface of the bench. For the optional stand assembly Hougen part number (04118), contact Hougen Customer Service.

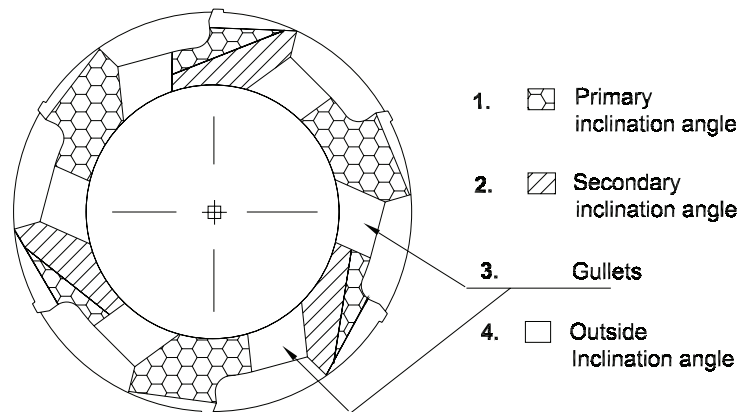
INTRODUCTION

When re-sharpening a Hougen Cutter you are dealing with the two surfaces on the end of each cutting tooth. (Does not include 7/8" diameter cutters and up, which have 3 surfaces.) The larger of the two surfaces is a compound angle comprised of an inner inclination angle and an end clearance angle. The smaller outer surface is a compound angle comprised of an outer inclination angle and an end clearance angle. Due to continuing refinements in Hougen cutter geometry, various combinations of inclination and clearance angles have been used. When resharping, it is important that the existing geometry of a particular cutter that you are resharping be used as a guideline to establish the angular settings on your resharping machine. Refer to the geometry section of this manual for drawings and specifications.

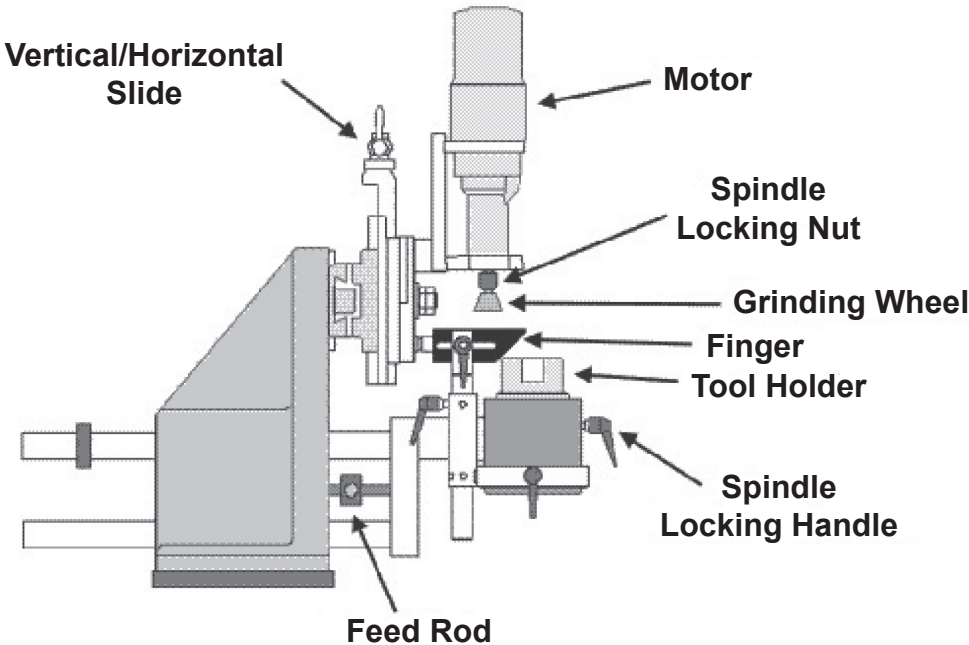
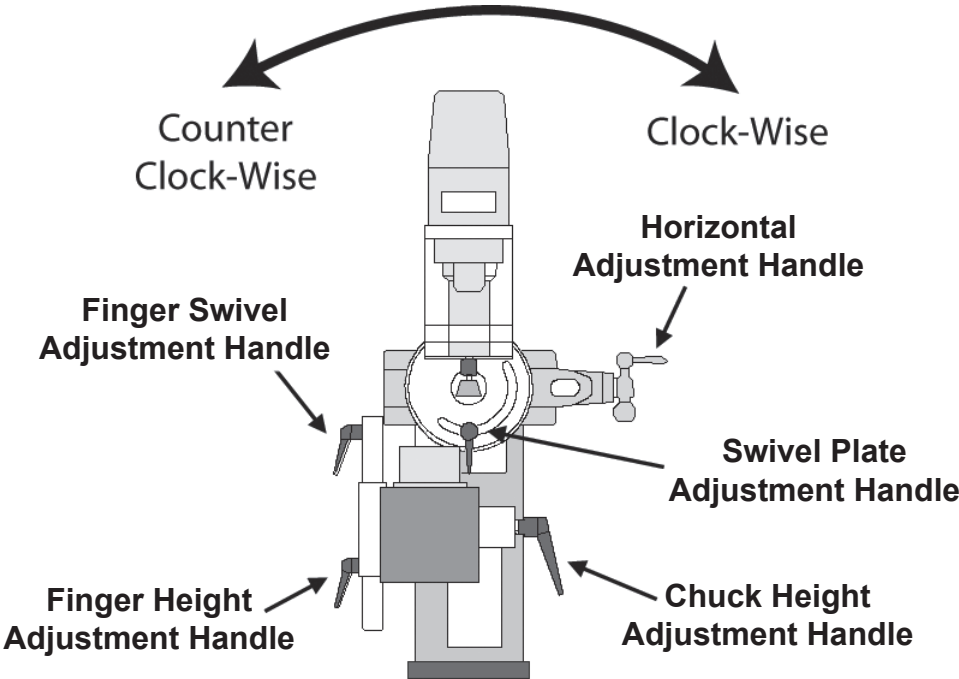
"12,000-SERIES" up to 13/16" (21mm)



**"12,000-SERIES" 7/8" (22mm)
DIAMETER AND ABOVE**



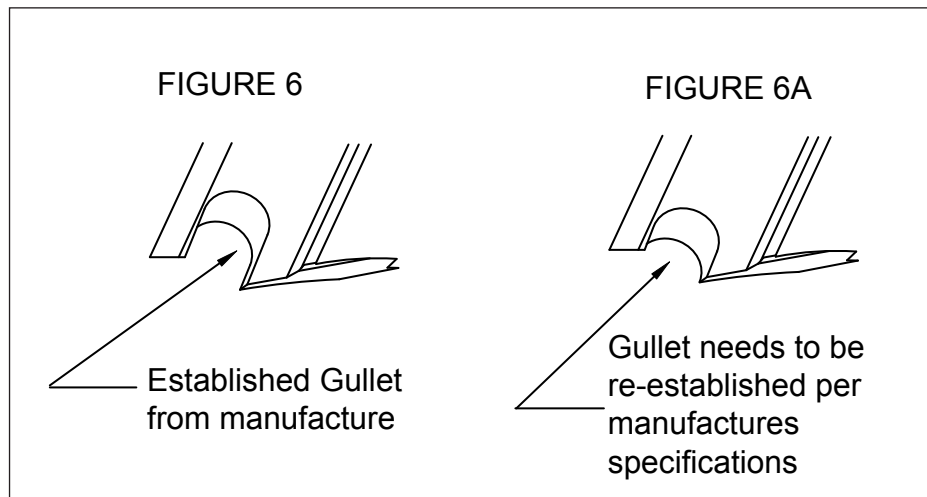
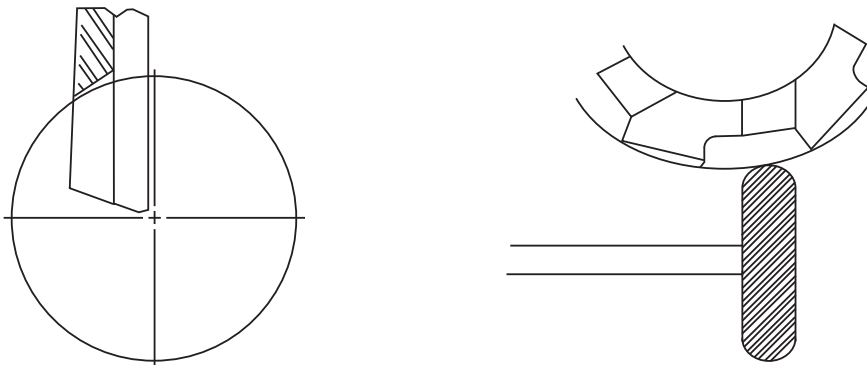
SHARPENING MACHINE PARTS



GULLETS

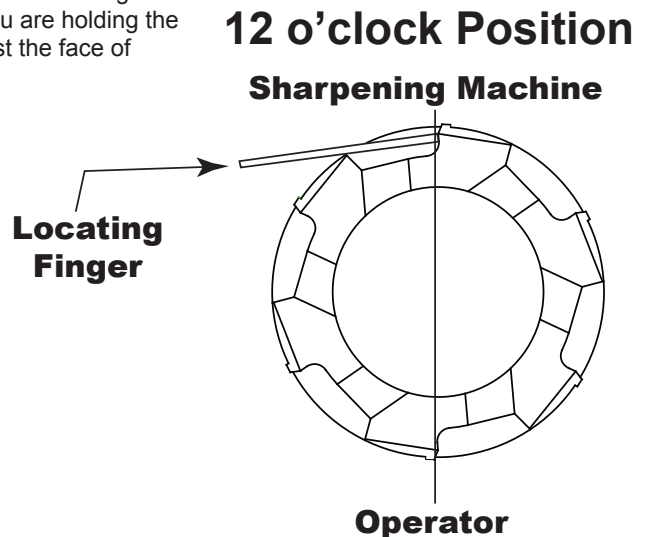
The gullets DO NOT need to be done every time you sharpen.

1. Figure 6 shows the gullet as it manufactured. With repeated sharpening the gullet depth will get shorter. Regrinding of the gullet is not necessary until gullet depth diminishes to that which is shown in Figure 6A. If the gullets reach the point as shown in Figure 6A, the gullets will need to be re-established. This is accomplished by taking multiple passes in the gullet until the proper gullet depth is achieved.
2. Gullets are cut in roughly the 12:00 o'clock position. (See next page)
3. Swing the motor assembly clockwise to match the appropriate gullet rake angle. This setting depends on the size of the cutter you are working on.
4. Keep inner teeth slightly ahead of center. Gullets should line up between the 11:00 and 12:00 o'clock position to the operator.
5. Slide the cutter into position, adjusting the vertical and horizontal slides as you do. Rotate the cutter so that the rake angle matches the backside of the gullet wheel. Once you have accomplished this, lock the tool holder into position. Set the locating finger into the flute of the tooth that is being ground, keeping the point of the finger as close to the end of the cutter without interfering with the operation of the grinding wheel. Now, back off the spindle locking handle that you locked the cutter into position with. Index the cutter a few teeth to make sure the rake angle is correct. Upon verification of the rake angle, turn on your motor and grind the face of each tooth, rotating the cutter back and forth slightly.



PRIMARY INCLINATION

1. Inner inclination angles are cut in the twelve o'clock position.
2. Loosen handle and rotate locating finger out of position so as not to interfere with the initial setup procedure.
3. If your tool holder has been removed, you need to install your tool holder. To change holders, loosen spindle-locking handle on the front of the chuck housing, remove the holder, insert the new holder and tighten the handle. (DO NOT OVER TIGHTEN)
4. Install the cup-grinding wheel (part #03983) into the spindle of the grinding motor. While holding the motor locking pin tighten the spindle-locking nut with the wrench provided. (DO NOT OVERTIGHTEN)
5. Install the cutter to be sharpened into the holder, aligning the flat on the cutter shank with the set screw and tighten.
6. Loosen the swivel plate adjustment screw, and tilt the swivel plate and motor clockwise to set the end clearance angle. Re-tighten the adjustment screw.
7. Loosen the spindle locking handle and rotate the cutter to the twelve o'clock position as shown. Position the locating finger into the flute against the face of the tooth to be ground. Set the tip of the locating finger as close to the end of the cutter without interfering with the operation of the grinding wheel. Make sure the side of the locating finger rides against the relief of the tooth that is counterclockwise from the tooth you are grinding. This ensures each tooth will be indexed to an exact location. Back the spindle-locking handle out until the holder turns freely.
8. Raise the motor/swivel plate so the grinding wheel is clear of the cutter. Loosen the adjusting handle, make sure the edge of the wheel extends into the inside diameter of the cutter far enough to cover the tooth that is being ground. The centerline of the tooth and the centerline of the grinding wheel should be basically centered for proper grinding. Prior to grinding, occasionally use the dressing stick (part #10747) along the face of the grinding wheel while it is running. This is done to remove any glaze on a new wheel and remove minute particles embedded in the Borazon wheel from previous grindings.
9. Adjust the chuck assembly to manufactures specifications by loosening Handle and rotating the assembly forward or back as required. Re-tighten after setting the appropriate angle.
10. Adjust the motor downward to a point just above the tooth to be ground to make sure that the plane of the wheel matches both the clearance angle and inclination angle. Fine adjustment may be required either in the chuck or the motor assembly and should be done at this point. In addition, check to make sure that the wheel does not come in contact with other teeth. The button thread nut on the feed adjustment rod should be positioned at this time. Turn the nut for fine adjustment push the button in and slide the adjusting nut along the adjustment rod for larger adjustments.
11. Turn on your grinding motor and while you are holding the tool holder, pass the cutter under the grinding wheel, while gradually adjusting the head downwards. Stop when contact occurs between tool and wheel. Make one pass on each tooth to ensure even tooth height. Multiple passes on a tooth without indexing results in thermal expansion of the area being ground, which can result in damage to the cutter. When you index from tooth to tooth, ensure that you are holding the tool holder firmly and that you have the tip of the finger against the face of the tooth that you are grinding.
12. Grind only .002" or .003" (.05mm or .08mm) at a time until all inner surfaces exhibit no wear (cleanly ground surface). Too heavy of a cut can cause excess heat to be generated, and could damage the cutter or grinding wheel. Make the finish grind until few sparks appear. Keep light and even pressure of the tool against the locating finger.



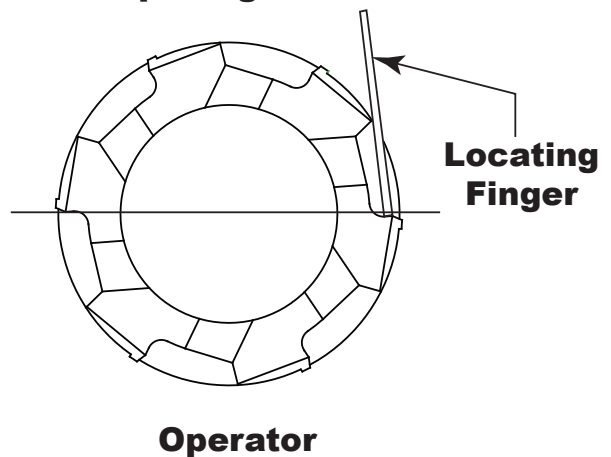
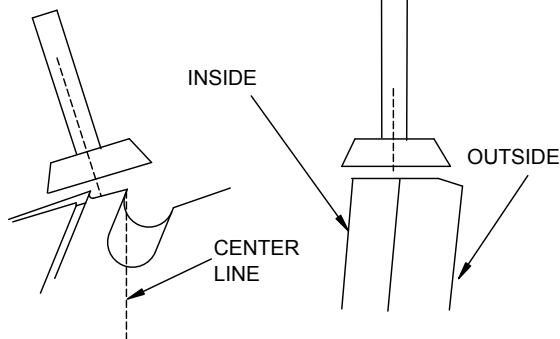
OUTSIDE INCLINATION ANGLE

1. The outer inclination angle is ground in the 3:00 o'clock position.
2. Position the locating finger into the flute against the face of the tooth to be ground. Set the tip of the finger as close to the end of the cutter without interfering with the operation of the grinding wheel. Make sure the side of the finger rides against the relief of tooth that is counterclockwise from the tooth that you are grinding. This ensures each tooth will be indexed to an exact location.
3. Tilt the chuck housing forward to set the end clearance angle. (Refer to the manufactures specifications for the correct clearance angle)
4. Loosen the adjusting handle on the swivel plate and swing the motor/swivel plate assembly to match the outer inclination angle. (Refer to the manufactures specifications for the correct angle setting) Re-tighten the adjusting handle.
5. Slide the chuck with cutter to the grinding wheel and set the button thread nut on the adjustment rod for proper position. You don't want the cutter touching the adjacent teeth.
6. Adjust the vertical and horizontal slides to bring the cutter close to the tooth to be ground. Make sure the plane of the wheel matches the outside inclination. Refer to the manufactures specifications for the correct angle. Grind the outside inclination in .002" or .003" (.05mm or .08mm) increments until the correct dimension is achieved. Note the line made by the intersection of the outer and inner inclination angles. This must be approximately 5 degrees inside the line tangent to the cutting path at the cutting edge. Fine adjustment of this can be accomplished by readjusting the locating finger to rotate the cutter, thereby moving the tooth ahead or behind of center. Once you have established the proper positioning cut all outside inclination angles on all teeth.

3 o'clock Position

Sharpening Machine

FIGURE 3A



STANDARD MACHINE SETTINGS FOR "12,000-SERIES" & ROTALOC PLUS HOUGEN CUTTERS
--

DIAMETERS UP TO AND INCLUDING 13/16"

GULLETS

- A) Chuck setting 0 degrees
- B) Motor/Swivel plate 16-23 degrees up from horizontal or 67-74 degrees on your scale
- C) Tooth position 12:00 o'clock

INSIDE INCLINATION

- A) Chuck setting: 25 degrees forward toward frame
- B) Motor/Swivel plate 10-14 degrees clockwise from vertical
- C) Tooth position 12:00 o'clock

OUTSIDE INCLINATION

- A) Chuck setting: 12-16 degrees forward toward frame
- B) Motor/Swivel plate 35 degrees clockwise from vertical
- C) Tooth position 3:00 o'clock

DIAMETERS 7/8" AND LARGER

GULLETS

- A) Chuck setting 0 degrees
- B) Motor/Swivel plate 22 degrees from horizontal or 68 degrees on scale
- C) Tooth setting 12:00 o'clock

INSIDE INCLINATION

(Primary)

(Secondary)

- | | |
|---|---------------------------------|
| A) Chuck setting 15 degrees forward toward frame | 30 degrees forward toward frame |
| B) Motor/Swivel plate 10 - 14 degrees clockwise | 10-14 degrees |
| C) Alternate tooth grind down of .007" (.18mm) | |
| D) Tooth position 12:00 o'clock | 12:00 o'clock |

OUTSIDE INCLINATION

- A) Chuck setting 12-16 degrees forward toward frame
- B) Motor/Swivel plate 20 degrees clockwise
- C) Alternate tooth grind down of .007" (.18mm)
- D) Tooth position 3:00 o'clock

- B) Motor setting 25 degrees clockwise from vertical
- C) Tooth position 3:00 o'clock

STANDARD MACHINE SETTINGS FOR "12,000-SERIES" & ROTALOC HOUGEN CUTTERS

Gullets

- A) Chuck setting 0 degrees
- B) Motor setting 16-23 degrees from horizontal or 67-74 on scale
- C) Tooth position 12:00 o'clock position

INSIDE INCLINATION

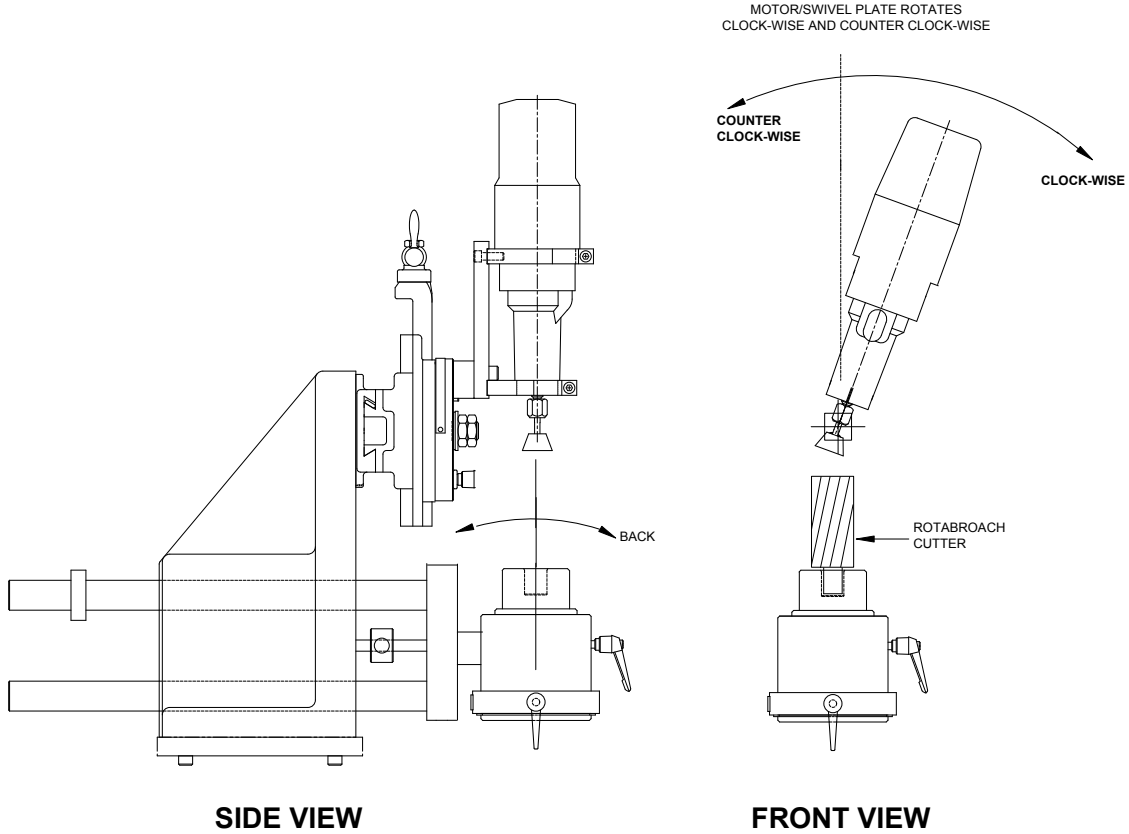
- A) Chuck setting 12 degrees foward
- B) Motor/Swivel 6 degrees clockwise
- C) Tooth position 3:00 o'clock

OUTSIDE INCLINATION

- A) Chuck setting 12 to 16 forward toward frame
- B) Motor setting 25 degrees clockwise from vertical
- C) Tooth position 3:00 o'clock

The Sharpening Machine can not sharpen Industrial Cutters

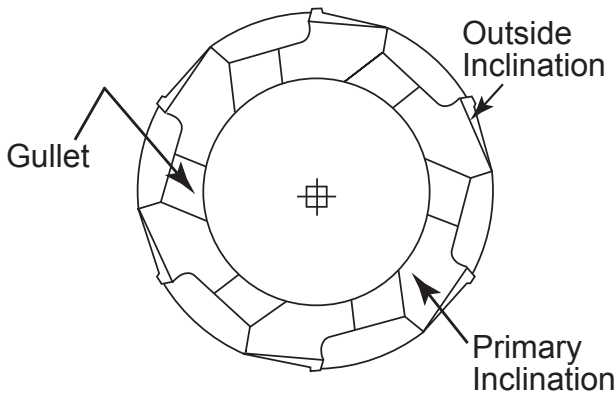
COMPONENT LAYOUT FOR BASIC OPERATION



REGRINDING ORDERS

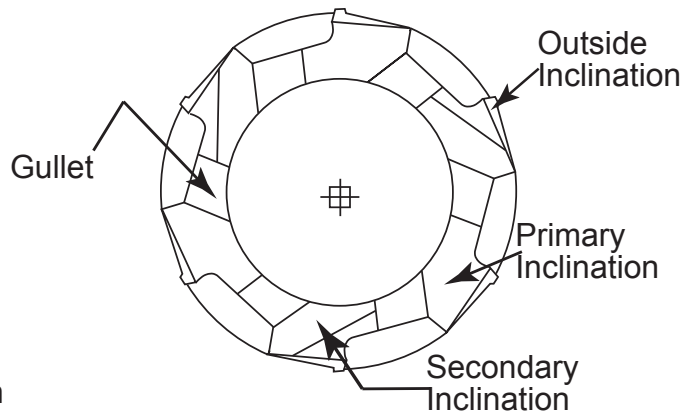
"12,000-SERIES" up to 13/16" (21mm)

"12,000-SERIES" 7/8" (22mm) DIAMETER
AND ABOVE (Hougen-Edge Geometry)



Regrinding Order

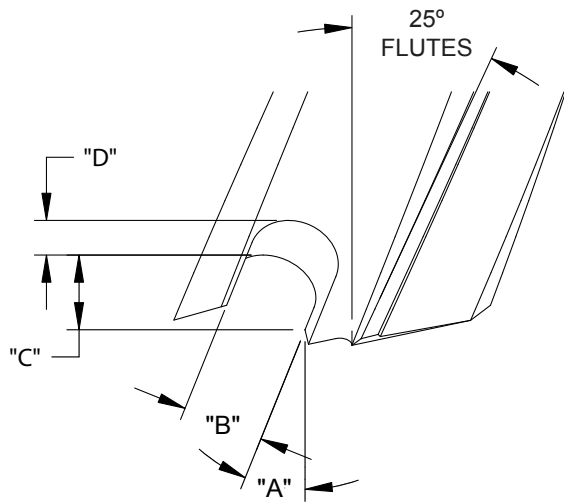
1. Gullets (if needed)
2. Primary Inclination Angle
3. Outside Inclination Angle



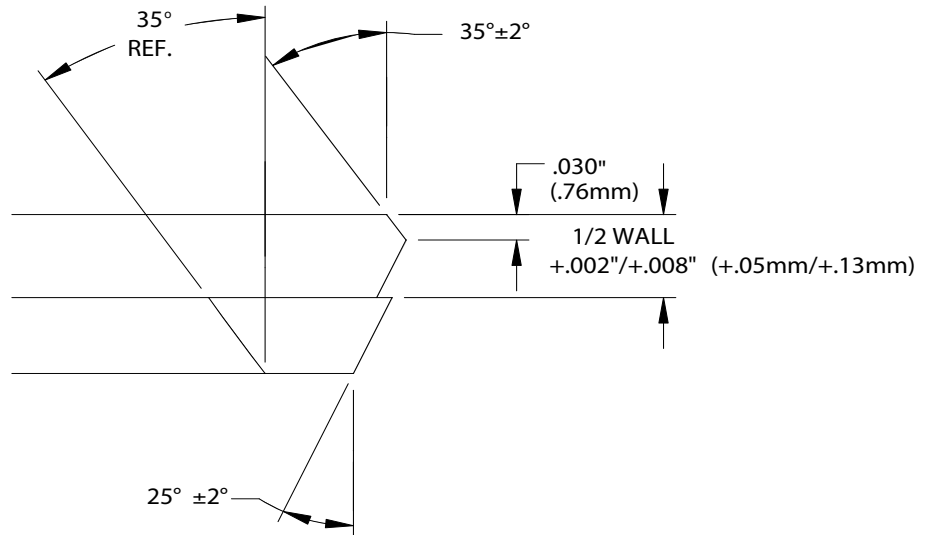
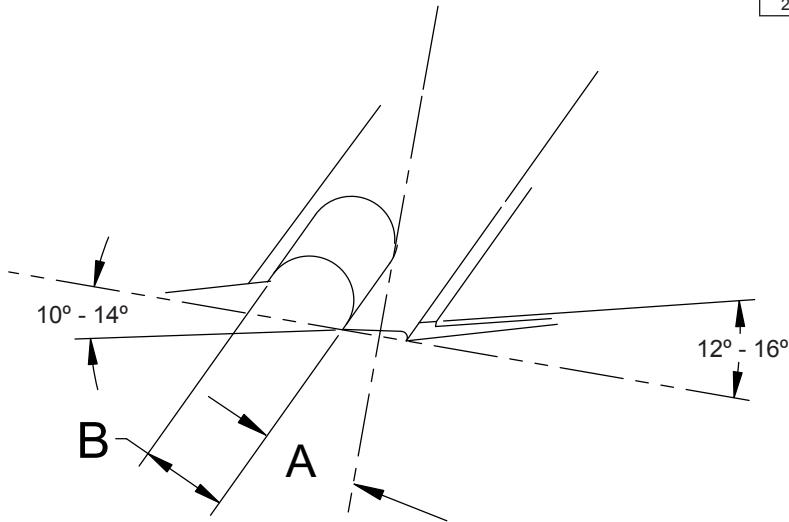
Regrinding Order

1. Gullets (if needed)
2. Primary Inclination Angle
3. Secondary Inclination Angle
4. Outside Inclination Angle

"12,000-SERIES" Cutters up to 13/16" (21mm)



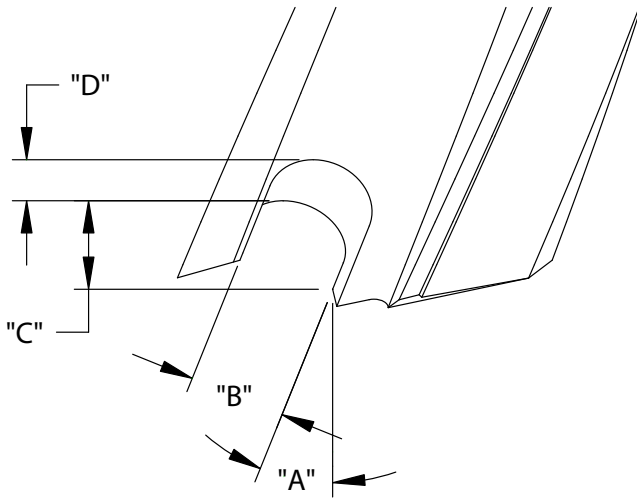
CUTTER SIZE	A ⁺⁰ / ₋₁	B ^{±.015} / _{±.38mm}	NUMBER FLUTES	C ^{+ .010} / _{/ -.005} ^{+ .25mm} / _{/ -.13mm}	D ^{±.010} / _{±.25mm}		
7/16	16	.080" (2.03mm)	3	.075" (1.90mm)	.040" (1.02mm)		
12mm							
1/2	17	.080" (2.03mm)			.045" (1.14mm)		
13mm							
17/32	18	.100" (2.54mm)			4	.095" (2.41mm)	.050" (1.27mm)
14mm							
9/16							
15mm							
5/8			19	.125" (3.18mm)	4	.105" (2.67mm)	.060" (1.52mm)
16mm							
21/32							
17mm							
11/16							
18mm							
19mm							
3/4	19	.125" (3.18mm)	4	.105" (2.67mm)	.060" (1.52mm)		
25/32							
20mm							
13/16							
21mm							



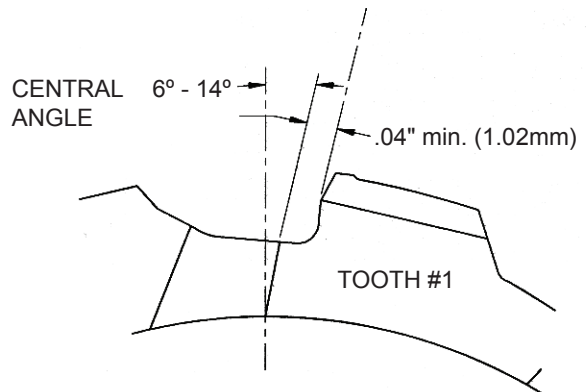
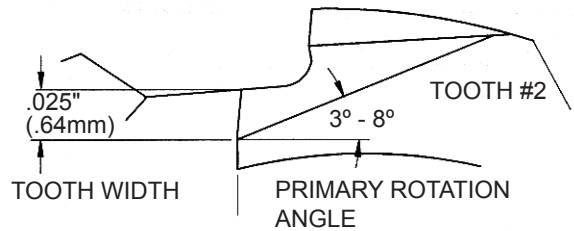
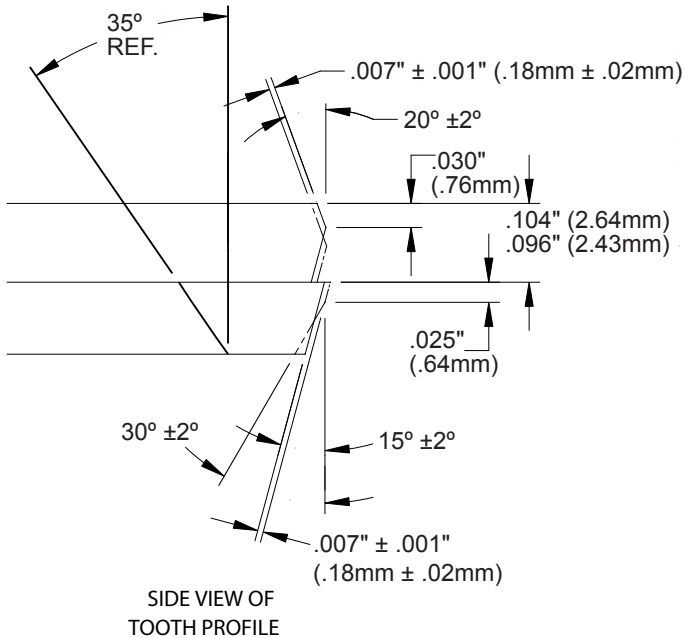
SIDE VIEW OF
TOOTH PROFILE

"12,000-SERIES" Cutters 7/8" Diameter and Above (Hougen-Edge™ Geometry)

Tooth height between "high" and "low" teeth will vary by $.007" \pm .001"$ (.18mm \pm .02mm)



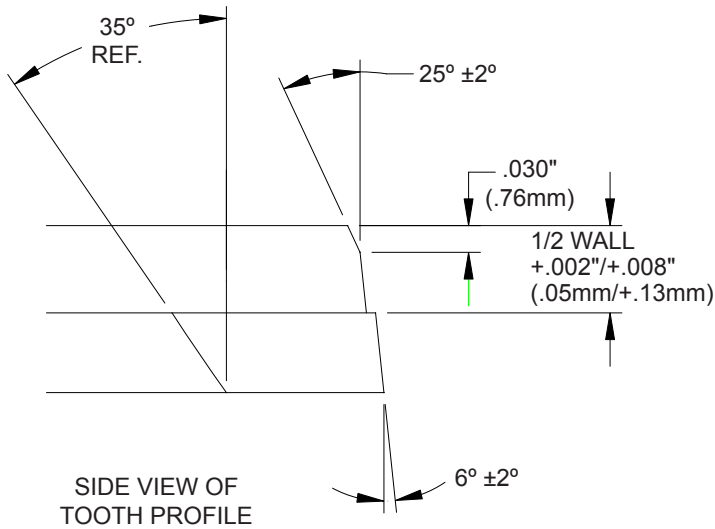
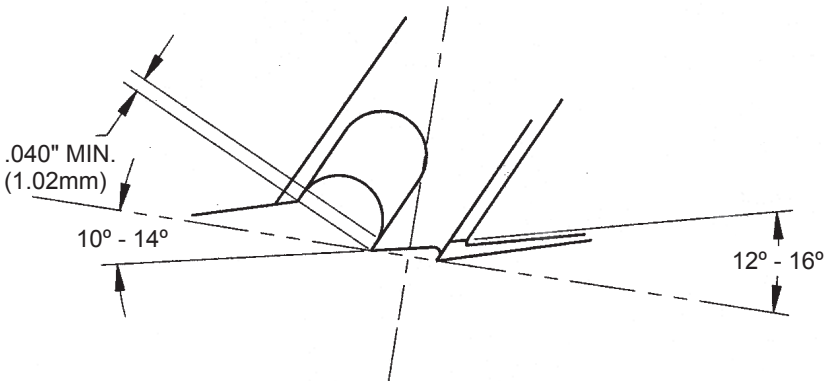
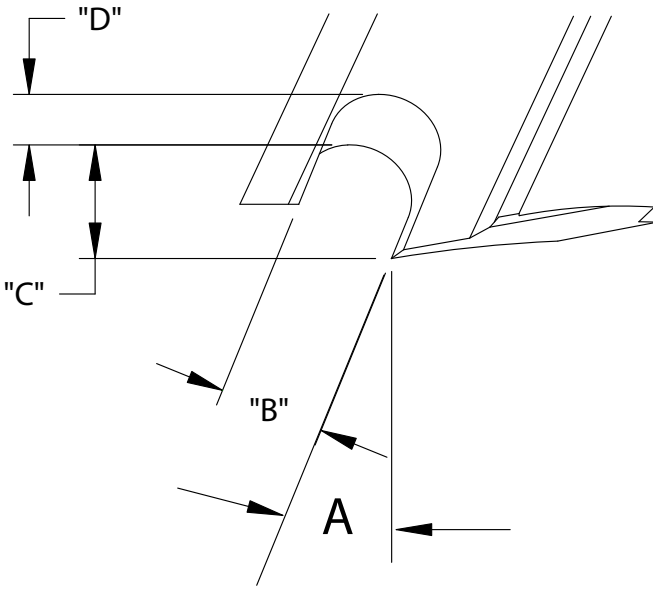
CUTTER SIZE	A $^{+0^{\circ}}_{-1^{\circ}}$	B $^{\pm .015^{\circ}}_{\pm .38mm}$	NUMBER FLUTES	C $^{+.010^{\circ} / -.005^{\circ}}_{+.25mm / -.13mm}$	D $^{\pm .010^{\circ}}_{\pm .25mm}$	
22mm	20	.125 (3.18mm)	6	.105 (2.67mm)		
7/8						
23mm						
15/16						
24mm						
25mm	21	.150" (3.81mm)	6	.125" (3.18mm)	.060 (1.52mm)	
1						
26mm						
1-1/16						
27mm						
28mm						
1-1/8						
29mm						
30mm						
1-3/16						
31mm						
1-1/4						
32mm						
33mm						
1-5/16						
34mm	22	.150" (3.81mm)	8	.125" (3.18mm)	.060" (1.52mm)	
1-3/8						
1-7/16						
1-1/2						
1-9/16						
1-5/8						
1-11/16						
1-3/4						
1-13/16		10	.188" (4.78mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-7/8						
1-15/16						
2						
2-1/16						
2-1/8						
2-3/16						
2-1/4						
2-5/16						
2-3/8						



STACK CUT GEOMETRY

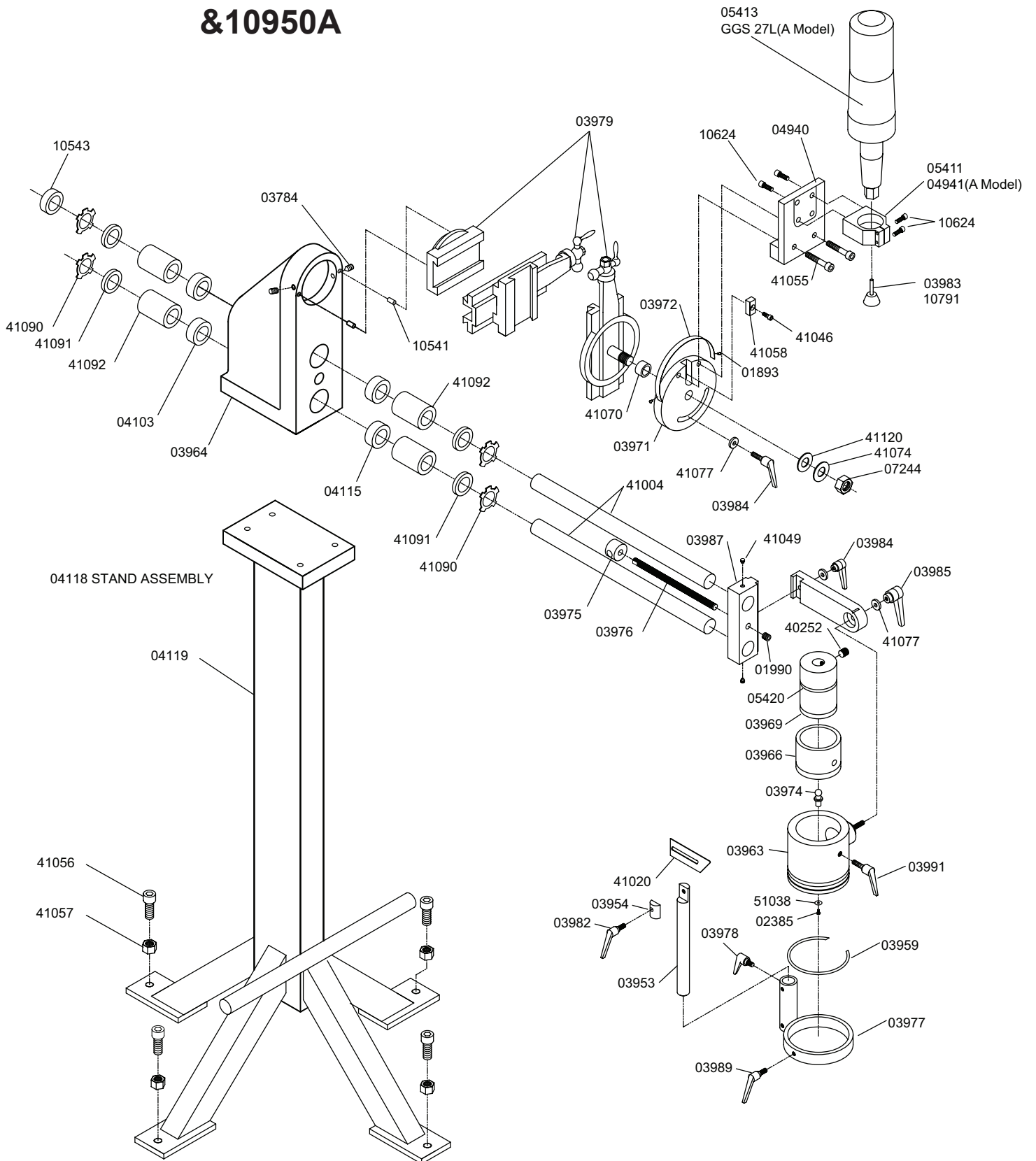
TOOTH HEIGHT

MAXIMUM ACCUMULATIVE TOOTH HEIGHT VARIATION ~ .002" (.04mm) T.I.R. WITH MAXIMUM TOOTH TO TOOTH VARIATION OF .001" (.02mm)



CUTTER SIZE	A ^{+0°} / _{-1°}	B ^{±.015°} / _{±.38mm}	NUMBER FLUTES	C ^{+.010° / -.005°} / _{+.25mm/-.13mm}	D ^{±.010°} / _{±.25mm}
7/16	16	.080" (2.03mm)	3	.075" (1.90mm)	.040" (1.02mm)
12mm					
1/2	17	.080" (2.03mm)	3	.075" (1.90mm)	.045" (1.14mm)
13mm					
17/32	18	.080" (2.03mm)	4	.095" (2.41mm)	.050" (1.27mm)
14mm					
9/16	19	.100" (2.54mm)	4	.095" (2.41mm)	.060" (1.52mm)
15mm					
5/8	20	.125" (3.18mm)	6	.105" (2.66mm)	.060" (1.52mm)
16mm					
21/32	21	.125" (3.18mm)	6	.105" (2.66mm)	.060" (1.52mm)
17mm					
11/16	22	.150" (3.81mm)	8	.125" (3.17mm)	.060" (1.52mm)
18mm					
19mm	23	.150" (3.81mm)	8	.125" (3.17mm)	.060" (1.52mm)
3/4					
25/32	24	.150" (3.81mm)	10	.140" (3.56mm)	.060" (1.52mm)
20mm					
13/16	25	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
21mm					
22mm	26	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
7/8					
23mm	27	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
15/16					
24mm	28	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
25mm					
1	29	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
26mm					
26mm	30	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-1/16					
27mm	31	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
28mm					
28mm	32	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-1/8					
29mm	33	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
30mm					
30mm	34	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-3/16					
31mm	35	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-1/4					
32mm	36	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
33mm					
1-5/16	37	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
34mm					
34mm	38	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-3/8					
35mm	39	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
36mm					
36mm	40	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-7/16					
37mm	41	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
38mm					
38mm	42	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-1/2					
39mm	43	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
39mm					
1-9/16	44	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
40mm					
40mm	45	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
41mm					
41mm	46	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-5/8					
42mm	47	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-11/16					
1-11/16	48	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
43mm					
44mm	49	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-3/4					
45mm	50	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
46mm					
46mm	51	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-13/16					
47mm	52	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-7/8					
48mm	53	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
49mm					
49mm	54	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
1-15/16					
50mm	55	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
50mm					
2	56	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
51mm					
51mm	57	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
52mm					
2-1/16	58	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
2-1/8					
2-1/8	59	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
2-3/16					
2-1/4	60	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
2-5/16					
2-5/16	61	.188" (4.77mm)	10	.140" (3.56mm)	.060" (1.52mm)
2-3/8					

SHARPENING MACHINE MODELS 10950 & 10950A



PARTS LIST

Part #	Description	Qty
01893	Screw - Drive #2 x 3/16 Stainless	2
01990	Screw SOC Set 3/8-16 x 1/4 Cup	1
02385	Screw BHC #6-32 x 1/4	1
03784	Screw SOC Set 5/15-18 x 1/2 Cup	2
03953	Rod Finger	1
03954	Clamp - Finger Rod	1
03959	Retaining Ring	1
03963	Housing Assy - Chuck	1
03964	Housing - Main	1
03966	Bronze Bushing	1
03969	Holder Tool - 3/4 Hougén Shank	1
03970	Pivot Arm	1
03971	Swivel Plate	1
03972	Scale 40-0-120	1
03974	Ball - Tooling	1
03975	Quick Adjusting Nut	1
03976	Feed Adjustment Rod	1
03977	Finger Bracket	1
03978	Adjustment Handle	1
03979	Slide - 2 Axis	1
03982	Adjustment Handle	1
03983	Borazon Cup Wheel	1
03984	Adjustment Handle	2
03985	Adjustment Handle	1
03987	Plate Assy Rod w/ Inserts	1
03989	Handle Assy	1
03991	Handle Assy	1
04103	Spacer - Plastic	2

Part #	Description	Qty
04115	Wick Oil	2
04940	Motor Base Plate	1
04941	Motor Bracket (A Model)	1
05411	Motor Plate - Upper	1
05413	Motor Assembly	1
05420	Ring-Retaining for 2-1/4 OD	1
07244	Nut-Jam 5/8-18 w/Nylon Insert	1
10541	Dowel Pin - 1/4 Dia x 1/2 Lg	2
10543	Collar - Shaft 1" Bore	1
10624	Screw SHC 1/4-20 x 3/4	6
10791	Whl Brz Grd 1" Dia	1
40252	Screw SOC Set 7/16-14	1
41004	Bar Guide 1" Dia	2
41020	Locating Finger	1
41046	Screw SHC #10-32 x 1/2	1
41049	Screw Set 1/4-20 x 1/4 Half Dog	2
41055	Screw SHC 5/16-18 x 1-3/4	2
41058	Key 1/2 x 1/2	1
41074	Washer 5/8	1
41077	Washer HD 11/16 x 1/4 x 1/8	3
41090	Retaining Ring	4
41091	Seal 1" ID	4
41092	Brng-BI 1" ID	4
41103	Wick Oil	4
41120	Washer Rubber	1
51038	Washer Flat #6	1
GG5 27L	Bosch Motor (A Model)	1

HOUGEN AUTHORIZED WARRANTY REPAIR CENTERS

ACC Machinery Co., Inc.
747 Grand Avenue
Phoenix AZ 85007
602-258-7330

Fastenal Services Co.
4025 Finch Rd.
Modesto CA 95357
209-548-5000

Kenbil Service Center
2900 Adams St #B-14
Riverside CA 92504
951-689-6633

Caltool Industrial
470 Hester Street
San Leandro CA 94577
510-729-0600

Aviation Industrial Supply
3900 Ulster Street
Denver CO 80207
303-355-2391

Jossam Tool Repair
411 Burnham Street
East Hartford CT 06108
860-290-9044

Colony Hardware Supply
15 Stiles Street
New Haven CT 06512
203-466-5252

Fastenal Services Co.
6445 Fulton Industrial Blvd.
Atlanta GA 30336
404-346-9138

Idaho Tool & Equip
452 Caldwell
Nampa ID 83651
208-465-7533

Fastenal Services Co.
5851 Guion Road
Indianapolis IN 46254
317-280-2502

Fastenal Services Co.
9911 Woodend Road
Edwardsville KS 66111
913-422-8221

Allied Sales & Services
1508 River Oaks Rd West
Jefferson LA 70123
504-734-9566

N.H. Bragg & Sons
90 Perry Road
Bangor ME 04401
207-947-8611

Hougen Manufacturing
3001 Hougen Drive
Swartz Creek MI 48473
810-635-7111

Westbrook Engineering
23501 Mound Road
Warren MI 48091
586-759-3100

Fastenal Services Co.
4730 N. Service Drive
Winona MN 55987
507-453-8280

Ceekay Repair Center
5835 Manchester Ave
St. Louis MO 63110
314-644-3500

Mid-South Welding Supply
505 51st. Ave
Meridian MS 39307
601-483-9331

Fastenal Services Co.
4110 Premier Dr. #102
High Point NC 27265
336-841-6555

A&A Industrial Supplies
251 Meacham Ave
Elmont NY 11003
516-437-0114

Awisco NY Corp
55-16 43rd Ave.
Maspeth NY 11378
718-786-7788

Hanes Supply Repair Center
10 Cairn Street
Rochester NY 14611
716-826-2636

Ace Tool Repair
2201 Wantagh Ave.
Wantagh NY 11793
516-783-8899

Awisco NY Corp.
20c Gleam Street
West Babylon NY 11704
631-643-1308

Cincinnati Electrical Repair
2023 Elm Street
Cincinnati OH 45210
513-621-2183

Pennsylvania Tool Sales
625 Bev Road
Youngstown OH 44512
330-758-0845

Wilbanks Repair Center
5532 S. 94th East Ave.
Tulsa OK 74145
918-627-8445

Quimby Welding Repair
7926 NE Killingsworth St
Portland OR 97209
503-221-1100

Fastenal Services Co.
1225 Mid Valley Drive
Jessup PA 18434
570-307-6555

Boyer Machinery
2280 Wyandotte Road
Willow Grove PA 19090
215-657-2242

Fastenal Services Co.
1432 Macarthur Drive
Carrollton TX 75007
972-446-4389

Arcmaster Repair Center
301 Woodrow Ave.
Forth Worth TX 76105
817-531-8101

Arcet Equipment Co.
3416 Odd Fellows Road
Lynchburg VA 24501
434-847-1234

American Equip Services
22418 72nd Ave. South
Kent WA 98032
253-395-9947

Fastenal Services Co.
9725 47th. Ave SW
Lakewood WA 98489
253-983-0015

CANADA

Celetic Ind. Tool & Repair
5736-103 A Street
Edmonton Alberta
Canada T6H 3J5
780-431-0970

Power Tool Clinic
#105 19835-56 Ave.
Langley British Columbia
Canada V3A 3Y1
604-530-3550

Anchor Products
1810 Dublin Ave.
Winnipeg Manitoba
Canada R3H 0H3
204-633-0064

Hougen Canada
309 Nash Road North
Hamilton Ontario
Canada L8H 7P4
905-573-9088

Outiltech Orleans, Inc.
4975 Rue Rideau Local 180
Quebec City Quebec
Canada G2E 5H5
418-877-7776

Brunswick Ind. Supply
136 Savoie Dr.
Moncton New Brunswick
Canada E1C 8H5
506-859-1303

Industrial Power Tool
8, 4115 64 Avenue
Calgary, Alberta
Canada T2C 2C8
403-261-0780

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