



OPERATING INSTRUCTIONS AND PARTS LIST SERIES 77 DUMORE TOOL POST GRINDER

MODEL NUMBER 8075

The model number of your Series 77 Precision Tool-Post Grinder is identified by the first four digits of the serial number shown on the tool nameplate.

HOW TO ORDER PARTS

All parts listed herein may be ordered from your dealer, from any authorized Dumore service station, or direct from the factory. When ordering repair parts, always give the following information:

1. The part number in this list.
2. The part name in this list.
3. The catalog and serial number of your grinder.

This list is valuable. It will assure your being able to obtain proper parts service at all times. We suggest you file it for future reference.

● OPERATING INSTRUCTIONS ●

SPECIFICATIONS:

Motor -- Induction, single phase, dual voltage 110/220 AC 60 cycles. Also available for 3 phase, 220 volts or 3 phase 440 volts on request. (Check motor nameplate.)

Horsepower -- 1/2 Full Load
Ventilation -- Forced Air
Bearings -- Grease Sealed Ball

Quills:

Type -- Interchangeable, 10 models
Spindle Speeds -- 3,450 to 13,800 RPM. (Varies with quill.)
Grinding Wheel Capacity -- 3/4" to 6". (Varies with quill.)
Internal Grinding Capacity -- Up to 18-3/4" deep. (Varies with quill.)

Mounting -- "T" Bolt

Mounting Dimensions:

Center line of spindle to base -- 1-1/4"
Center line of spindle to center line of mounting post -- 2-7/16"

POWER SUPPLY -- The Series 77 Precision Grinder is normally equipped with a 110/220 volt single phase induction type motor for operation on AC 60 cycle current. This is a dual voltage motor and may be operated on either 110 or 220 volts by changing the lead wires as shown on the

motor nameplate. Make sure voltage on nameplate is the same as that of power supply.

NOTE: Special Series 77 motors are available for 220 volts, 3 phase; 440 volts, 3 phase; DC operation, etc. Special motors may not necessarily be dual voltage units. Check nameplate before putting plug in receptacle.

GROUNDING -- This tool has passed a 1,250 volt ground test but for your protection it should be grounded. The green colored conductor extending from the plug is the ground. To connect it, loosen a cover screw on an outlet box provided the box is properly grounded by means of a metal conduit (BX is acceptable) or grounding wire. Loop wire over screw and tighten as illustrated in Fig. 1.

If box is not grounded, attach ground wire to any permanent ground such as (1) water pipe, (2) a properly grounded conduit, or (3) the ground wire of a grounded supply system.



Fig. 1

THE DUMORE COMPANY, RACINE, WIS.

CAUTION: ALWAYS connect the ground wire **BEFORE** you put the plug in the receptacle. This is for your protection.

The Series 77 Grinder is designed for use on lathes with a 16" to 22" swing. All tool-post grinding is done with the grinding spindle center adjusted to the exact height of the work center. Therefore, the distance from the top of the compound to the center line of the lathe, "X" (Fig. 7) must always be equal to or greater than the

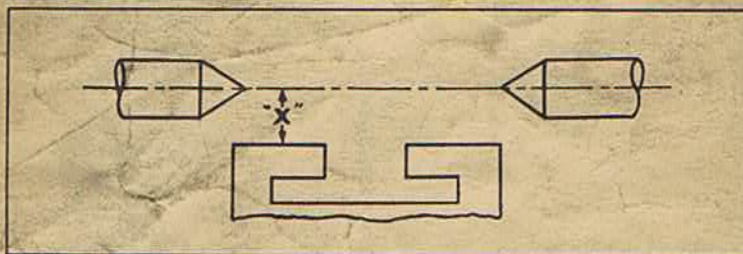


Fig. 7

distance from the base of a grinder frame to center line of spindle (commonly referred to as the minimum mounting distance.) If this condition does not exist, grinder will not fit lathe because the grinding spindle cannot be set at work center. If the grinder is being used on one lathe specifically, a good time-saving idea is to make a metal spacer place to fit between the mounting post base and the base of the grinder frame so the tool automatically lines up with the work center.

SETTING UP ON A LATHE -- Before setting the grinder up on a lathe, mount the workpiece either in a chuck, collet or between centers. The Dumore Series 77 is designed to fit in the T-slot of a lathe compound. To set up, remove the mounting post from the grinder by loosening the lock nut on the right side of the frame and pulling the post free. Insert the T-bolt of the mounting post into the T-slot of the lathe compound and tighten nut at the top as illustrated in Fig. 2.

After the mounting post is tightened, set the lathe compound at any angle listed on the chart, Fig. 8. The starred 60° angle setting seems to be ideal as the feed is set at .001 and the actual cut into the work is .00050" while the reduction in the diameter of the workpiece is .00100". The graduations on a lathe compound dial are in thousands and your work will often call for accuracies of tenths of thousands. This chart will be helpful in determining how much stock is being removed, the actual cut, and approximately what reduction is being made in the diameter of the work.

Slip the grinder over post and lock it at approximate center height of work as in fig. 3. Insert the correct quill into grinder frame and lock in place by tightening quill lock screws. Install pulley on quill and motor, fig. 4, selecting combination for proper wheel speed from grinder nameplate. **Warning: DO NOT EXCEED WHEEL SPEED RECOMMENDATIONS.**

The Series 77 Grinder has manual belt adjustment and the motor can be moved backwards or forwards for proper belt tension when pulley combinations are changed. To adjust, unscrew four saddle base screws, position motor for suitable belt tension and tighten screws. Attach belt hanger to frame and assemble wheel guard (fig. 4) which should always be used on external grinding for the operator's protection.

ANGLE SETTING OF LATHE COMPOUND	FEED ON COMPOUND IN INCHES	ACTUAL CUT TAKEN INTO THE WORK	REDUCTION IN WORK DIAMETER
30°	.001	.00086	.00172
45°	.001	.00070	.00140
*60°	*.001	*.00050	*.00100
70°	.001	.00034	.00068
75°	.001	.000259	.000518
80°	.001	.00017	.00034
84°	.001	.00014	.00028

Fig. 8

After assembling grinding wheel and collars on to the quill, add the belt guard as shown in fig. 6. You are now ready to precision grind.

Next, dress the wheel to make the grinding face parallel with your workpiece. This is done by clamping the diamond dresser to the workpiece or as illustrated in Fig. 9. This is for external grinding. Dressing for internal grinding and facing is described later. Turn the grinder switch on and make a very light pass over the diamond nib using the hand wheel to traverse. Make several passes back and forth over the nib without re-setting depth dial. Since wheels are costly and have to be replaced as they wear down, always take a very light pass over the diamond nib when dressing to conserve wheel life.

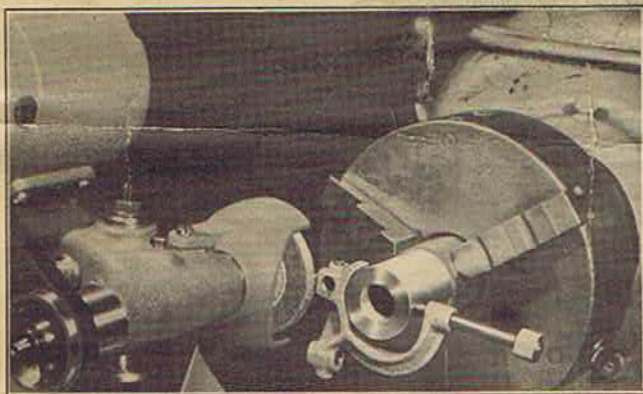


Fig. 9

After removing the dresser, set the work speed of the lathe for approximately 50 rpm which is a normal operating speed and ideal for most grinding conditions. Although this speed is suitable for many operations, the work rpm can be set to meet any requirements. Advance grinder slowly until wheel barely touches surface to be ground. Upon wheel contact with the workpiece, increase the feed on the lathe compound to .001" or any suitable feed selected and engage the traverse mechanism. When grinding to very close tolerances, redress the wheel as outlined above before making the final grind over the stock. Allow the wheel to spark out on this final grind by taking several passes back and forth over the piece, using the hand wheel to traverse the carriage.

SELECTING THE PROPER WHEEL -- Probably no other single factor is more important to achieving good grinding results than the selection of a proper wheel. An ideal wheel is one in which the bond wears away as fast as the wheel grains are dulled. If the grains dull or wear down faster than the bond, the wheel is too hard and

it will glaze. If the bond wears away before the grain, the wheel is too soft, and it will load.

These conditions can be overcome to a certain extent by speed adjustment. If the wheel appears too hard, increase the work speed. If it appears too soft, increase the wheel speed. However, the better solution to the problem is the selection of the proper wheel for the job.

The grain size and grit of a wheel generally determine the type of finish to be obtained. A coarse wheel is desirable for rapid stock removal. The grains deeply anchored in the bond allow greater depth of cut. Also, the greater porosity of a coarse wheel assures a cool cut. While an experienced operator can get a reasonably fine finish with a coarse wheel, a fine finish is easier with a finer grained wheel. On finishing grinds, allow the wheel to cut freely with a minimum feed. Heavy feed or pressure on finish grinds may cause overheating and possibly work distortion.

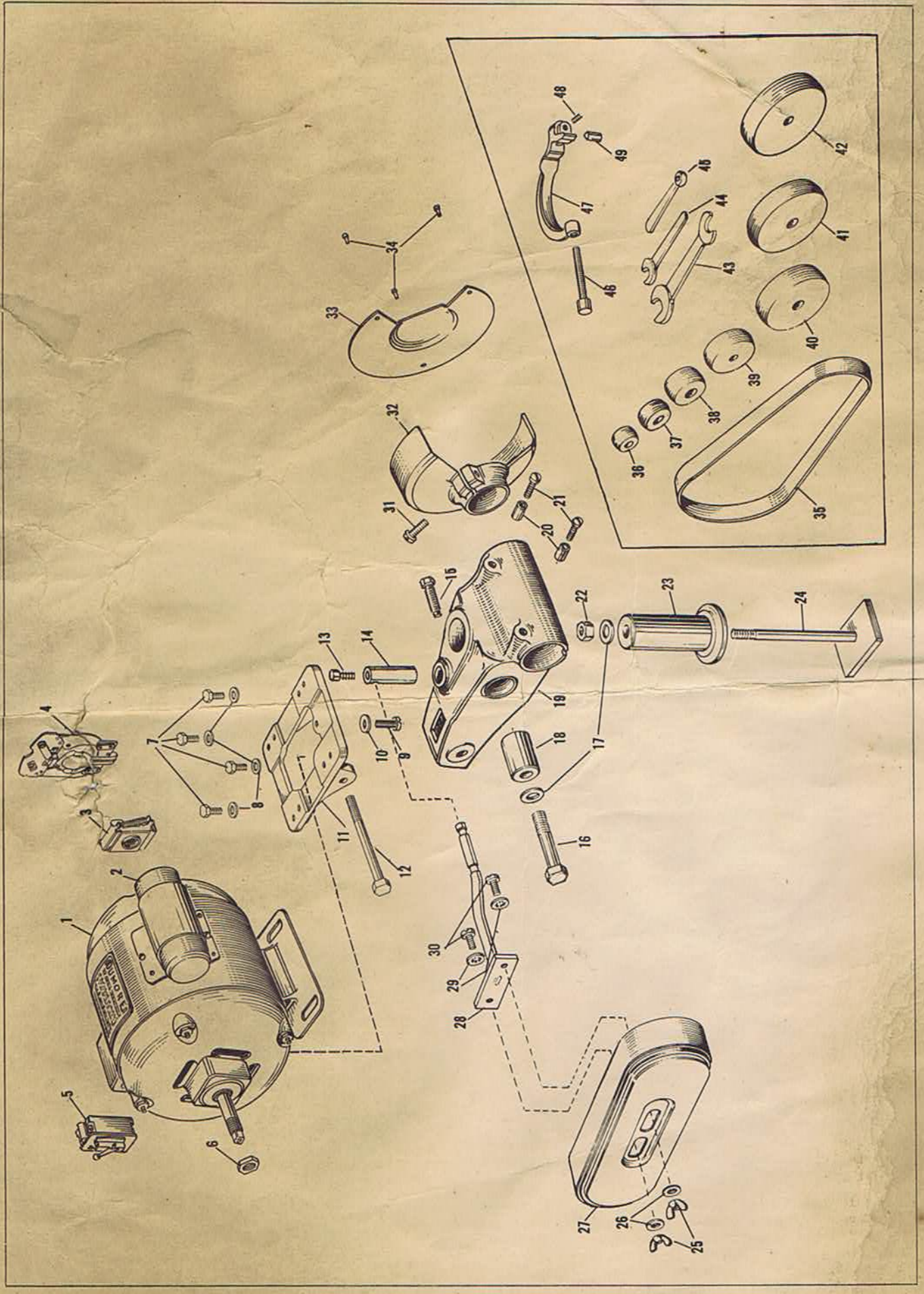
IMPORTANCE OF BALANCED WHEELS -- The selection of a balanced wheel is essential to precision grinding. Unbalanced wheels invariably vibrate and cause chatter marks on the work piece. These vibrations may also eventually cause quill bearing failures. Balanced wheels facilitate grinding to precision tolerance and in many instances prevent unnecessary service costs. Always Use Dumore Balanced Wheels.

Dumore wheels are manufactured to rigid specifications and are carefully balanced at the factory to assure smooth, vibrationless operation. Important for grinding to closer tolerances, also, is the selection of a wheel specifically designed for the material being ground. The Dumore price list makes proper wheel recommendations for most materials. If the material being ground is not listed, Dumore recommendations can be obtained by writing directly to the Company.

INTERNAL GRINDING -- To grind internally, remove the wheel guard, wheel, collars, and quill and insert an internal quill, the selection of which is determined by the depth of the hole to be ground. For more information on internal grinding, see "Selecting the Proper Quill" on page 7. A wheel from 2/3 to 3/4 the diameter of the hole to be ground is recommended. (Fig. 10). All wheels and collars are furnished with quills, and wheels larger than those furnished are not recommended.

DRESSING A WHEEL -- INTERNAL GRINDING -- To dress a wheel for internal grinding, clamp the diamond dresser onto the workpiece or a piece of stock chucked in the lathe. The diamond will normally face away from the operator

(Continued on page 6)



● PARTS LIST ●

All prices F.O.B. Racine, Wisconsin. Subject to change without notice. All orders subject to acceptance by the company at Racine, Wisconsin. Minimum charge on all orders \$1.00. NOTE: Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance value when a tool is ordered "less" certain parts. Ask for quotations on such special tools.

(Index numbers in parts list refer to key numbers in instructions)

INDEX NO.	PART NUMBER	PART NAME	PER UNIT	DESCRIPTION	LIST PRICE EACH
MOTOR					
1	430-0009-209 **	No. 77 motor with cord.	1	110/220 V, 60 cycle, 1 phase. . .	\$72.25
1	430-0010-217 **	No. 77 motor with cord.	1	220 V, 60 cycle, 3 phase.	78.75
2	R 506-0002	Condenser	1	. . . . .	4.50
3	R 751-0032	Centrifugal Switch.	1	. . . . .	2.40
4	R 751-0030	Stationary Switch	1	. . . . .	2.35
5	R 751-0031	Toggle Switch	1	. . . . .	3.75
6	645-0049	Motor Pulley Nut.	1	1/2-20 x .250 High. . . . .	.30
	R 426-0131 *	Ball Bearing.	2	. . . . .	4.55
	854-0002 *	Conduit Box	1	. . . . .	.90
	R 457-9999 *	Brush with Carbon Spring.	2	DC only	1.10
	R 844-0005 *	Condenser Clamp	1	. . . . .	.70
	R 520-0031 *	Terminal Cover.	1	. . . . .	.40
	R 451-9999 *	Brush Holder.	2	with Brush Plug, DC only.	1.70
	R 584-0021 *	Front End Housing	1	. . . . .	3.75
	R 584-0022 *	Rear End Housing.	1	. . . . .	3.75
	R 838-0002 *	Rotor and Shaft with Fan.	1	110/220 volt, 60 cycle, 1 phase . .	33.25
	R 838-0003 *	Rotor Shaft with Fan.	1	220 volt, 60 cycle, 3 phase . . .	36.50
	R 841-0001 *	Stator Complete with Winding. . . .	1	110/220 volt, 60 cycle, 1 phase . .	29.50
	R 841-0003 *	Stator Complete with Winding. . . .	1	220 volt, 60 cycle, 3 phase	32.75
FRAME ASSEMBLY					
7	R 815-1122 **	Motor Mounting Screw.	4	5/16-18 x 5/8" Hex. Hd. . . . .	.05
8	R 766-0118	Mounting Screw Washer	4	.6875 x .328125 x 1/16" Steel . . .	.05
9	R 809-1722 **	Base Lock Screw	1	5/16-18 x 1" Fill. Hd. . . . .	.05
10	R 766-0253 **	Base Screw Washer	1	1.250 x .34375 x .093" Steel. . . .	.05
11	419-0076 **	Motor Base.	1	. . . . .	6.00
12	R 815-4933 **	Saddle Base Screw	1	1/2-20 x 4-1/2" Hex. Hd. . . . .	.20
13	R 815-0922	Belt Guard Post Screw	1	5/16-18 x 1/2" Hex. Hd. . . . .	.05
14	666-0003	Belt Guard Post	1	. . . . .	1.10
15	R 815-2222	Belt Guard Adj. Screw	1	5/16-18 x 1-1/4" Hex. Hd. . . . .	.10
16	R 815-3732	Mounting Post Screw	1	1/2-13 x 2-3/4" Hex. Hd. . . . .	.10
17	R 766-0227	Washer.	2	. . . . .	.05
18	468-0007	Lock Bushing.	1	. . . . .	.80
19	558-0028	Grinder Frame	1	. . . . .	24.40
20	468-0001	Quill Lock Bushing.	2	. . . . .	.20
21	R 809-1718	Quill Clamp Screw	2	1/4-20 x 1" Fill. Hd. . . . .	.05
22	R 645-0047	"T" Bolt Nut.	1	1/2-20 x .3125" High. . . . .	.05
23	668-0011	Mounting Post	1	. . . . .	4.85
24	442-0012	"T" Bolt.	1	. . . . .	2.00
EQUIPMENT					
	572-0002	Belt Guard Assembly (Including)	1	. . . . .	8.65
25	R 645-0020	Wing Nut.	2	5/16-18 . . . . .	.05
26	766-0118	Washer.	2	.6875 x .328125". . . . .	.05
27	571-0005 **	Belt Guard.	1	. . . . .	7.00
28	578-0008	Belt Guard Hanger	1	. . . . .	.80
29	R 769-0013	Washer.	2	Shakeproof #1218. . . . .	.05
30	R 810-1122	Screw	2	5/16-18 x 5/8" Fill. Hd. . . . .	.05

* Because of the simple construction of the induction type motor used on the Series 77 grinder, not all parts listed above are shown in the exploded parts view. Always refer to parts required by identifying part number.

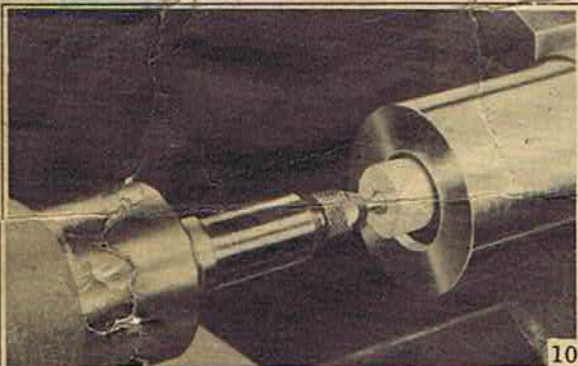
Should your Series 77 grinder be equipped with an odd voltage motor like 220 volts, 60 cycle 3 phase, 115 volts DC or 440 volts, 60 cycle, 3 phase, give correct voltage, model number of grinder and description of part when ordering.

** The Dumore Series 7 Grinder can be converted to a 77 by adding all parts listed above marked with a double asterisk (**) and by adding grinding wheel 774-0126 at \$3.55 which is 6" x 1/2" x .550".

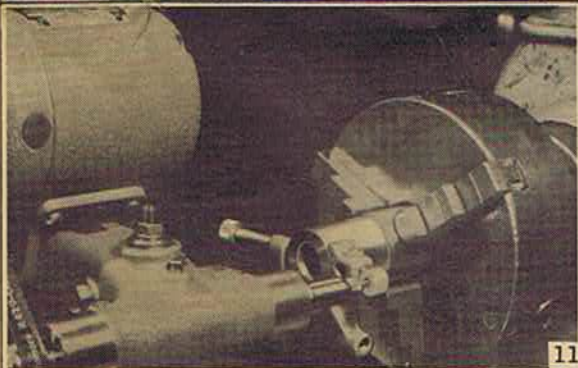
● PARTS LIST ●

INDEX NO.	PART NUMBER	PART NAME	PER UNIT	DESCRIPTION	LIST PRICE EACH
EQUIPMENT (Continued)					
	572-0005 **	Wheel Guard Assembly (Including)	1		\$ 9.35
31	R 809-1722	Lock Screw	1	5/16-18 x 1" Fill. Hd	.05
32	571-0040	Wheel Guard	1		8.45
33	658-0007	Wheel Guard Plate	1		.35
34	R 810-0714	Plate Screw	3	10-32 x 3/8" Fill. Hd	.05
35	R 429-0021 **	Belt	1	30-1/4 x 1-1/8" Flat	3.70
35	R 429-0022 **	Belt	1	32 x 1-1/8" Flat	3.80
36	671-0010	No. 1 Pulley	1	1" dia.	2.40
37	671-0011	No. 2 Pulley	1	1-1/2" dia.	3.25
38	671-0012	No. 3 Pulley	1	2" dia.	3.45
39	671-0013	No. 4 Pulley	1	2-5/8" dia.	4.75
40	671-0014 **	No. 5 Pulley	2	3" dia.	6.95
41	671-0016 **	No. 7 Pulley	1	3-15/32" dia.	8.50
42	671-0015	No. 6 Pulley	1	4" dia.	8.85
43	P 788-0029	Wrench	1	5/8 x 3/4" double end	1.40
44	R 788-0003	Wrench	1	1/2" Single End	.75
45	R 788-0017	Wrench	1	3/8" Box	1.05
	12-120	Diamond Dresser Assembly (Including)	1		9.95
46	699-5002	Clamp Screw	1	5/16-24 x 3-1/2"	.95
47	558-0002	Body	1		3.10
48	R 827-0918	Hdless. Set Cup Pt. Screw	1	1/4-20 x 1/2"	.05
49	R 529-0003	Mounted Diamond	1		6.55
	50-011	No. 0 Dumore Hi-Speed Oil	1	3 oz. Can	.40

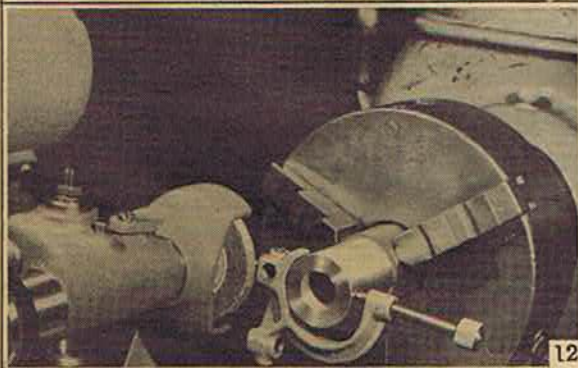
For explanation of reference marks, see page 5.



toward the back of the lathe as illustrated in Fig. 11. With the grinder running, make several very light passes over the nib using the hand wheel to traverse. You now have dressed the wheel face nearest you. Therefore, this face should contact your workpiece when grinding internally as shown in Fig. 10. THE SIDE ON WHICH THE WHEEL IS DRESSED IS ALWAYS THE CONTACT FACE.



FACE GRINDING -- When face grinding, it is necessary to dress the wheel so that the surface contacting the workpiece is bevelled, as shown in Fig. 13. Clamp the diamond dresser onto the workpiece or a piece of stock chucked in the lathe with the diamond nib facing the operator. Remove the nib by loosening the locking set screw and insert the diamond into the right side slot so that it extends about 1/8" beyond the holder and faces to the operator's right as illustrated in Fig. 12. Pass the wheel lightly back and forth over the nib until a suitable bevel for the particular grinding operation is obtained. The grinding operation will determine the amount of bevel required. However, a small bevelled face will break down faster than a wider face and consequently will require re-dressing oftener.



SELECTING THE PROPER QUILL -- Ten interchangeable quills are available at extra cost for the Series 77 Precision Tool-Post Grinder to perform an infinite variety of internal and external grinding operations. The types and sizes of work will determine the quill required. See pages 16 and 17 of catalog 50 packed with this tool for complete quill information.

While external grinding does not present a quill selection problem as grinding of this type is generally done with one external quill, the diameter and depth of the hole to be ground determines the internal quill to be used. On internal grinding the diameter of the wheel should be from 2/3 to 3/4 the diameter of the hole to assure greatest wheel contact possible.



Fig. 13

Because of the maximum rigidity provided by the third bearing, a feature which minimizes vibration on close tolerance work, a three-bearing quill is recommended whenever possible. If a two-bearing internal quill is used, select the shortest possible extension that will do the job. For example, on a hole 3" deep, use a quill with a 3" extension rather than 4" or 5". The shorter the extension, the less tendency there is for vibration and resulting chatter marks.

A definite advantage of the Series 77 Grinder is that it is equipped with a constant speed induction type motor. Therefore, constant wheel speed is maintained under full-load conditions making the 77 grinder ideal for full shift production work and where considerable stock removal is required.

EXTERNAL TYPE



TWO-BEARING INTERNAL TYPE



THREE-BEARING INTERNAL TYPE



INSERT SPINDLE TYPE



Spindle speeds from 3,400 to 13,800 rpm are possible by interchanging pulley combinations. Quills used on the Series 77 Grinder are interchangeable with the 77.

DO NOT USE LARGER THAN RECOMMENDED WHEELS which are furnished with each quill. It is dangerous to exceed specified wheel sizes. Also, larger than recommended wheels overload quill bearings and affect work quality.

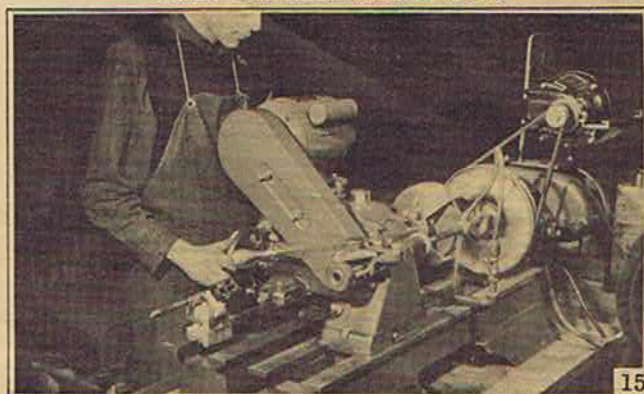
All Dumore quills are designed for horizontal operation. If operated in a vertical position, top bearing will run dry and may be damaged. Quills for vertical operation with special oiling systems are available on request at a little extra cost.

The Series 77 Dumore Precision Tool-Post Grinder is one of the most versatile tools found in any shop. The induction type motor used on the Series 77 offers a distinct advantage as it provides constant speed under load conditions. Consequently, it is an excellent production tool. Mounted on a lathe, it serves as an economical cylinder, internal or external grinder. Furthermore, it easily mounts on a planer, mill, shaper and other machines to operate as a surface grinder on close tolerance high-productive operations saving set-up time and cutting costs.

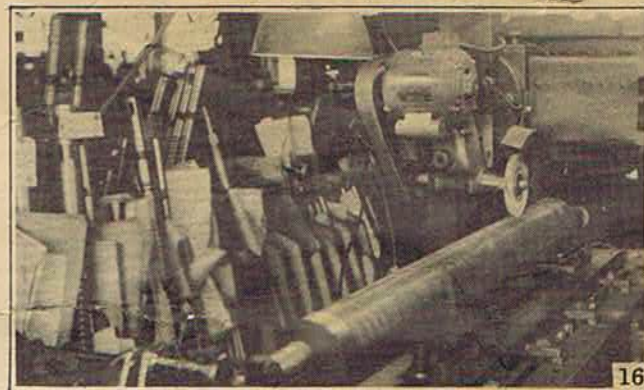
In many instances the Series 77 is bench mounted. Such items as rotary files, etc. are formed from the rough day after day with very little tool maintenance. Often times it is incorporated into a special machine so that a complete operation can be performed without moving the workpiece, thus increasing production.

A few possible 77 grinder set-ups are illustrated on the right.

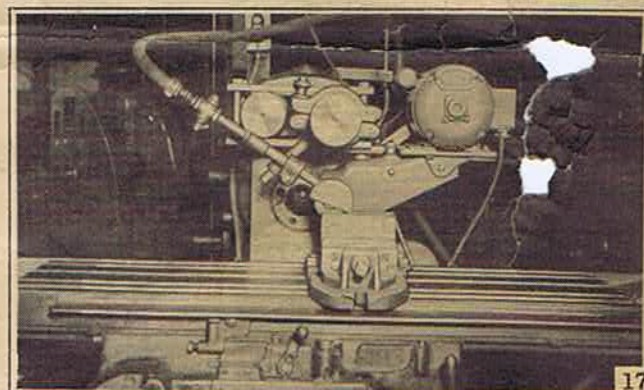
DUMORE'S ALL-ROUND USEFULNESS ECONOMICALLY
ADAPTABLE TO MANY PRODUCTION, TOOL-
ROOM AND MAINTENANCE JOBS



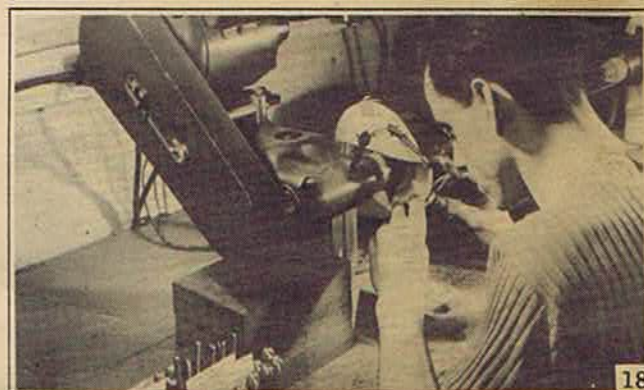
SERIES 77 MOUNTED ON DOUBLE LATHE WAYS
TAKES PLUNGE CUT ON SMALL CRANK SHAFT



MOUNTED ON PLANER SERIES 77 WITH
X QUILL GRINDS BROACH



MOUNTED ON MILLING MACHINE SERIES 77
WITH X QUILL MILLS SLOT IN CASTING



GRINDING ROTARY FILES FROM SOLID
WITH SERIES 77 MOUNTED ON BENCH

MAINTENANCE INSTRUCTIONS

The Dumore Grinder is a precision tool and should be properly cared for to assure finest grinding results and long, trouble-free service.

LUBRICATION -- The motor requires no lubrication. It is equipped with grease-sealed ball bearings that are lubricated for the life of the bearing.

QUILLS -- Dumore quills are precision built -- made with the finest available bearings, steel and component parts by skilled craftsmen. To insure vibrationless, close-tolerance performance, some maintenance is necessary.

Although all quills are properly lubricated before leaving factory test rooms, one tablespoon of No. 0 oil should be added before operating as most of the lubricant may have seeped from the quill by the time it has been put into use. This also applies if quills are used intermittently and stored away for considerable time.

Quills operating on 8 hour duty should receive one teaspoon of Dumore No. 0 oil every 8 hours of use. To oil, remove plug marked "oil" from quill and add lubricant. Replace plug. Correspondingly, less oil is used during shorter operating periods.

The Dumore patented, "Fog of Oil" quill lubricating system throws a fine continuous spray on bearings when grinder is in operation. Oil quills regularly, but do not over oil. Too much causes quills to overheat. Always use Dumore No. 0 oil, which is highly refined,

chemically fortified, and carefully filtered to assure long bearing life and precision operation.

All Dumore quills are equipped with water and dust throwers. When wet grinding, allow the grinder to run for several minutes after coolant has been shut off to throw off all moisture and prevent it from working into quill bearings.

The Dumore patented pre-load spring feature assures free spindle rotation and compensates for any expansion of quill shaft caused by heat at high speeds. Proper pre-load is set at the factory and no further adjustment is necessary. Do not remove sealing wax that seals pre-load plug.

Always use genuine Dumore parts for longer tool life and better performance. They may be ordered through your Dumore distributor or directly from the factory.

STORAGE -- When not in use, keep tool in a clean, dry place. When storing for a long period of time, coat exposed metal parts with a rust-preventive grease.

REPAIR SERVICE -- This grinder is made with the highest quality material and workmanship and if not abused should give long and trouble-free service. If, for any reason, this grinder does not operate satisfactorily after the above precautions have been taken, return it immediately to your nearest Dumore service station or direct to The Dumore Company, Racine, Wisconsin to secure prompt and efficient service with original factory parts and methods.

DUMORE QUALITY

For over 35 years Dumore has manufactured a top quality line of tool-post grinders, hand-grinders, flexible shaft tools, high speed precision and automatic drilling equipment, fractional horsepower motors -- all recognized and accepted by industry as being among the finest made.

In addition to quality, their popularity stems from the fact that they are readily adaptable for numerous difficult production, maintenance, or tool room applications. They often replace expensive special machines required for precision operations and make possible lower tool investments and manufacturing costs -- very important factors in today's highly competitive market.

YOUR DUMORE DISTRIBUTOR -- Your Dumore distributor will be glad to help you solve any difficult problems in production, maintenance, or tool room with Dumore equipment. You will see how hundreds of manufacturers have licked costly production grinding problems with Dumore tool-post grinders mounted on lathes, mills, shapers, and other machines. You will also be interested in the Dumore Automatic Drill Head which has increased production 200 to 300% on small drilling operations which were practically impossible to do on conventional drilling equipment. These and other Dumore tool applications are worth your consideration in lowering costs and increasing production. Take your problems to your Dumore Distributor and let him draw on his many years experience to solve them for you.

GUARANTEE

All Dumore products are thoroughly checked and tested before shipment.

THE DUMORE COMPANY guarantees this product against imperfections in workmanship and material for a period of 90 days after purchase, and will replace without charge any part that proves defective during that period. Guarantee does not apply to parts failing due to ordinary wear, abuse, or accidental damage, and does not apply if the tool has been tampered with in any way. Defective materials in warranty should be returned PREPAID to THE DUMORE COMPANY -- RACINE, WISCONSIN, or to an authorized service station. Order repair and replacement parts directly from your dealer.

THE DUMORE COMPANY, RACINE, WIS.

EXPORT DEPT.—13 EAST 40TH ST., NEW YORK 16, N. Y., U. S. A.