



THE DUMORE COMPANY
1300 SEVENTEENTH STREET
RACINE, WISCONSIN, U. S. A.

PRECISION ELECTRICAL TOOLS & MOTORS



SERIES 44
TOOL POST GRINDER

**OPERATING INSTRUCTIONS
AND PARTS LIST**

MODEL NUMBER 8171

Model Number is first 4 digits of Serial Number on name plate

INSTRUCTIONS FOR ORDERING 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

Filing this list for future reference will assure you obtaining proper parts for service.

OPERATING INSTRUCTIONS

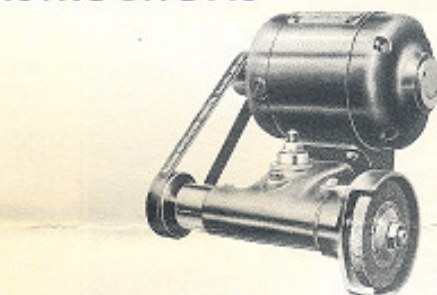
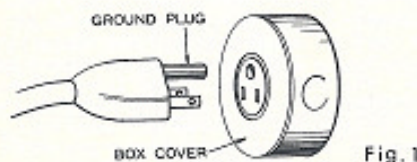
Specifications

MOTOR --- 1/4 H.P. (full load) Series Universal
Spindle Speed --- 6,600 to 38,500 RPM
Grinding Wheel Capacity --- 1/8" to 3" Dia.,
Internal Grinding Capacity - 3/4" Dia. to 3" Deep
1/8" Dia. to 1" Deep
Mounting --- Tee Bolt
Center line of spindle to base --- 25/32"
Center line of spindle to center line of --- 1-3/16"
mounting post
Automatic Belt Adjustment

Electrical

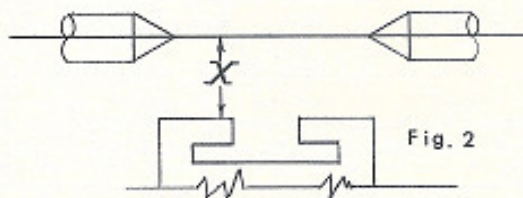
POWER SUPPLY -- The Series 44 Tool Post Grinder is equipped with a high speed universal type motor which operates either on AC or DC current, 0 to 60 cycles.

GROUNDING -- This tool post grinder has passed a 1250 volt ground test. In line with the latest requirements set forth by the Underwriters' Laboratories and the National Electrical Code on Safety, this Series 44 Tool Post Grinder is equipped with a three prong grounding plug. We strongly recommend that suitable grounded outlets be provided to receive this plug. The larger prong in this plug is connected through the power cord to the grinder motor housing. When the plug is inserted in a properly grounded receptacle, it will protect the user from shock should the insulation fail for any reason.



Mounting

The Series 44 Tool Post Grinder is designed for use on lathes with an 8" to 13" 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. 2) must always be equal to or greater than the 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 plate to fit between the mounting post base and the base of the grinder frame so the tool automatically lines up with the work center.



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Fig. 3

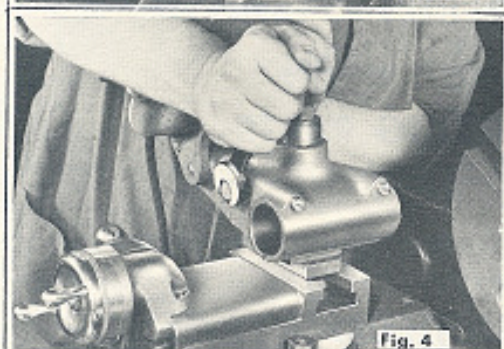


Fig. 4

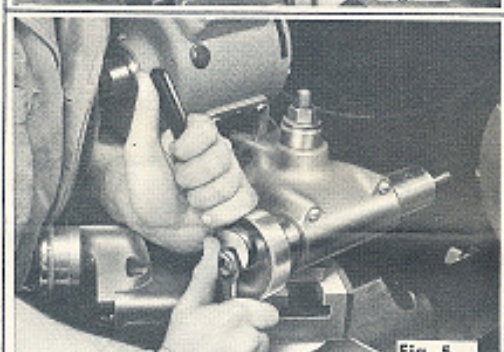


Fig. 5

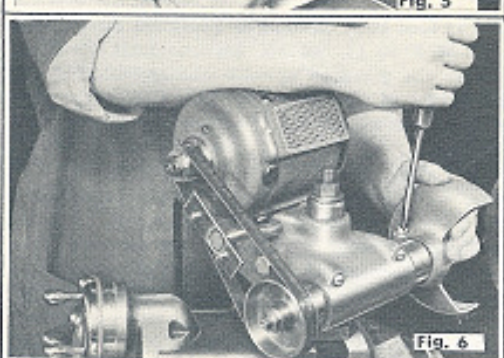


Fig. 6

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 44 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. 3.

After the mounting post is tightened, set the lathe compound at any angle listed on the chart, Fig. 7. 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 .0010". 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.

Next, slip the grinder onto the mounting post and position the tool so that the spindle is parallel to the workpiece. Set the center line of the spindle at the approximate center line of the workpiece and tighten the lock nut, Fig. 4.

Select the proper pulleys for the wheel size to be used and install pulleys on motor and quill as shown in Fig. 5. Check the motor nameplate for proper pulley recommendations for each wheel size. **WARNING: DO NOT EXCEED WHEEL SPEED RECOMMENDATIONS.** The wheel guard is assembled to the grinder by slipping it over the quill and tightening the screw as illustrated in Fig. 6.

Internal grinding utilizes the collet chuck which screws onto the threaded wheel end of the spindle after the wheel and collars have been removed. Mounted wheels with 1/8" shanks can be used by inserting shank in chuck and tightening sleeve securely. Wheel size should be from 2/3 to 3/4 the size of hole being ground, Fig. 10.

The Series 44 Grinder has automatic belt adjustment by means of a tension spring. Since the motor pivots on a tension shaft, the belt can be assembled by pushing the motor forward and slipping the belt over the pulleys. By releasing the motor, the belt automatically becomes taut.

Next, dress the wheel to make the grinding face parallel with the workpiece. This is done by clamping the diamond dresser to the workpiece as illustrated in Fig. 8. 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 resetting 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 the wheel.

Lathe Compound Angle Setting	Compound Feed In Inches	Actual Cut Into Work	Reduction In Work Diameter
30°	.001	.00086	.00172
45°	.001	.00070	.00140
* 60°	.001	.00050	.00100
70°	.001	.00034	.00068
75°	.001	.00026	.00052
80°	.001	.00017	.00034
84°	.001	.00014	.00028

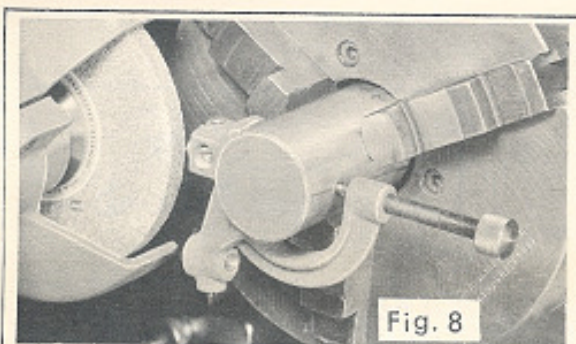


Fig. 8

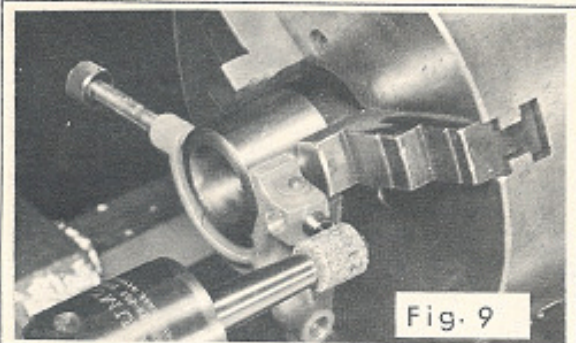


Fig. 9

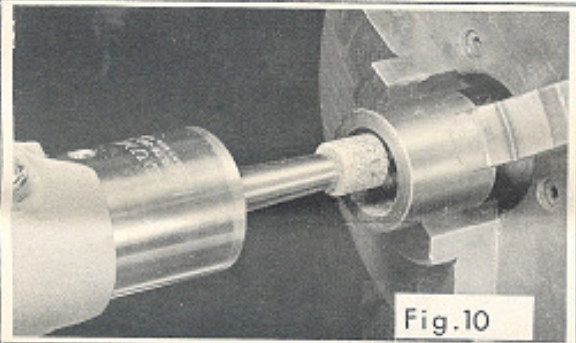


Fig. 10

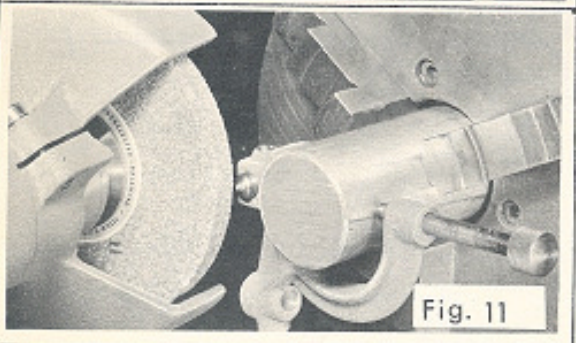


Fig. 11

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.

Occasionally, when grinding the full length of a piece mounted between lathe centers, the grinder must be positioned to allow pulley end to clear tail stock. To do this, loosen mounting post lock screw (36), and turn wheel end in toward workpiece sufficiently to clear tail stock with pulley. Lock grinder in position and dress wheel face parallel with work piece.

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 determines 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. Balanced wheels facilitate grinding to precision tolerances and in many instances prevent unnecessary service costs. Always Use Dumore Balanced Wheels.

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 toward the back of the lathe as illustrated in Fig. 9. With the grinder running, make several very light passes over the nib using the hand wheel to traverse. The dressed 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. 12. 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. 11. 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 redressing oftener.

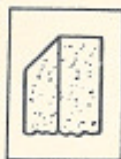
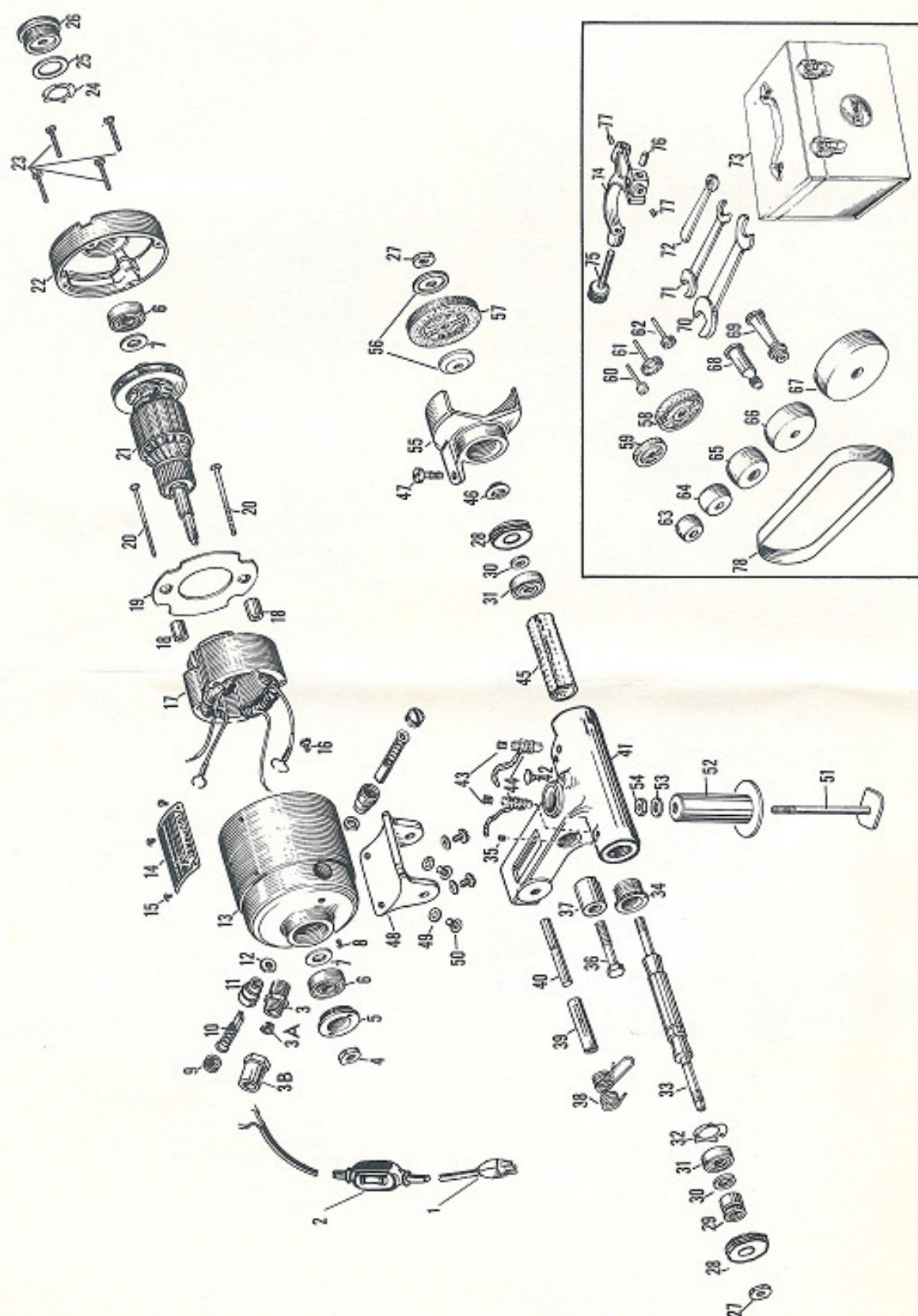


Fig. 12



PARTS LIST

INDEX NO.	PART NUMBER	PART NAME	REQ.
		MOTOR ASSEMBLY	
1	517-0124	Cord Assembly 115 Volts	1
2	517-0148	Cord Assembly 230 Volts	1
2	R-751-0038	Feed Through Switch	1
3	R-496-0005	Cord Guard Body	1
3A	R-720-0063	Cord Guard Sleeve	1
3B	R-475-0051	Cord Guard Cap	1
4	645-0035	Pulley Nut 3/8-24 Thread L.H.	1
5	476-0013	Bearing Cap (Brush End)	1
6	R-426-0125	Ball Bearing	2
7	771-0012	Strip Washer	2
8	R-827-0713	Headless Set Screw 10-24 x 3/8 Long	2
9	R-456-0060	Brush Plug	2
10	R-457-0622	Carbon Brush Assembly	2
11	451-0056	Brush Holder	2
12	766-0356-026	Brush Holder Washer	2
13	589-0318	Brush End Housing	1
14	643-0634	Name Plate	1
15	R-808-0001	Name Plate Screw	4
16	R-821-0309	Ground Screw 6-32 x 3/16 Brass	1
17	548-0214-270	Field Assembly 115 Volts	1
	548-0214-278	Field Assembly 230 Volts	1
18	729-0029	Field Spacer	2
19	414-0001	Baffle	1
20	R-812-3913	Field Screw 10-24 x 3" Long	2
21	408-0030-210	Armature Assembly 115 Volts	1
	408-0030-218	Armature Assembly 230 Volts	1
22	599-0098	Plain End Housing	1
23	R-810-1911	Housing Screw 8-32 x 1-1/4 Long	4
24	R-734-0019	Flat Spring	1
25	766-0344	Shim Washer	As Req.
26	476-0014	Bearing Cap (Plain End)	1
	430-0041-210	Complete Motor Assembly 115 Volts	
	430-0041-218	Complete Motor Assembly 230 Volts	
		Grinder Frame Assembly With Spindle	
27	645-0036	Nut 3/8-24 Thread R.H.	2
28	476-0078	Bearing Cap	2
29	729-0035	Spacer	1
30	766-0068	Thrust Washer	2
31	R-426-0031	Ball Bearing	2
32	R-734-0039	Flat Spring	2
33	732-0131	Spindle	1
34	697-0011	Adjusting Screw	1
35	456-0016	Lock Plug	1
36	R-815-2527	Hex. Head Screw 3/8-24 x 1-3/4 Long	1
37	468-0004	Lock Bushing	1
38	R-735-0035	Coil Spring	1
39	646-0038	Tension Tube	1
40	702-0028	Tension Shaft	1
41	558-0030	Frame	1
42	R-649-0010	Oiler	1
43	456-0002	Oil Plug	2
44	779-0004	Oil Wick Assembly	2
45	R-646-0009	Felt Oil Tube	1
46	757-0008	Dust Thrower	1
	555-0022	Complete Grinder Frame Assembly	

PARTS LIST

MISCELLANEOUS PARTS

47	R-809-1318	Wheel Guard Screw 1/4-20 x 3/4 Long	1
48	694-0006	Motor Saddle	1
49	R-769-0010	Shakeproof Lock Washer for 1/4" Screw	4
50	R-819-0918	Screw 1/4-20 x 1/2 Long	4
51	442-0011	Tee Bolt	1
52	668-0008	Mounting Post	1
53	R-766-0147	Washer	1
54	R-645-0031	Hex. Nut 3/8-24 Thread	1
55	571-0046	Wheel Guard	1
56	502-0002	Wheel Collar	2
57	774-0073	Grinding Wheel 3 x 3/8 x .375 Hole	1
58	774-0047	Grinding Wheel 2 x 3/8 x .375 Hole	1
59	774-0024	Grinding Wheel 1-1/4 x 1/4 x .250 Hole	1
60	W-160	Mounted Wheel 1/4 x 1/4 x 1/8 Mandrel	1
61	W-200	Mounted Wheel 3/4 x 1/8 x 1/8 Mandrel	1
62	W-183	Mounted Wheel 1/2 x 1/4 x 1/8 Mandrel	1
63	671-0001	Pulley No. 1	1
64	671-0002	Pulley No. 2	1
65	671-0003	Pulley No. 3	1
66	671-0004	Pulley No. 4	1
67	671-0005	Pulley No. 5	1
68	487-0014	Chuck Assembly 1/8" Capacity	1
69	421-0012	Wheel Arbor With Collars And Lock Nut	1
70	R-788-0028	Wrench 9/16 x 5/8 Openings	1
71	R-788-0009	Wrench 3/8 x 7/16 Openings	1
72	R-788-0001	Wrench 1/4 Box	1
73	R-479-0035	Steel Carrying Case	1

Cat. No. 5-110 DIAMOND DRESSER ASSEMBLY COMPOSED OF THE FOLLOWING 4 PARTS:

74	558-0001	Body	1
75	699-5001	Clamp Screw	1
76	R-529-0001	Mounted Diamond 1/4 Carat	1
77	R-827-0718	Screw 1/4-20 x 3/8 Long	2
78	R-429-0008	Belt	1
	Cat. No. 50-011	Dumore No. 0 Spindle Oil	1
	R-884-0117	Parts List and Operating Instructions	

TROUBLE	CAUSE	REMEDY
Vibration.	Faulty lathe -- loose bearings	Readjustment of lathe.
Vibration.	Vibration of floor.	Shore up floor. Install lathe in more favorable location.
Vibration accompanied by excessive wheel wear and inaccuracy.	Inaccurate dressing.	Re-dress wheel. Make sure to dress parallel to work. Dress wheel face on side it contacts work.
Tapered work. Rapid wheel wear. Wheel loading.	Wheel too soft.	Change to harder wheel. Dress wheel oftener. Decrease work speed. Increase wheel speed.
Chatter	Bumpy belt--variation in thickness.	Change to new belt--preferably supplied by manufacturer.
Chatter, burning of work, wheel glazing.	Wheel too hard.	Change to softer wheel or increase work speed or decrease wheel speed.
Long regularly spaced chatter marks.	Unbalanced wheel.	Change to balanced wheel.
Chatter not traceable to other causes.	May be due to worn bearings or generally inadequate maintenance of grinder.	Complete maintenance check of grinder by manufacturer if practical.

Precision tolerances are only possible when utmost care is exercised in the operation and set-up of this tool. Occasionally external factors impede the path to precision. To assist you in detecting most of these factors, the above chart on work troubles, causes, and remedies has been prepared.

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.

The spindle requires from 25 to 50 drops of Dumore Spindle Oil (50-011) every 10 hours of operation. The oil is added to the Gits snap cap oiler located on the grinder frame in front of the tool post. Although all spindles are oiled before leaving the factory, add 25 to 50 drops of Spindle Oil before operating the grinder to lubricate bearings in the event most of the oil has seeped through while in storage. Also, oil as above, if the grinder has not been in use for some time.

BRUSHES -- Normal brush life varies from 500 to 2,000 hours depending on the severity and continuity of service. Inspect brushes periodically and wipe clean before returning them to their respective brush holders if they are long enough for additional use. Each brush should

be returned to its exact position as before removal to prevent changes in the brush seating. Brushes should be replaced when worn to a 1/4" length.

Whenever brushes are replaced, the commutator should be turned down and undercut. New brushes on a badly worn commutator will spark excessively, giving very little wear and will have to be replaced again shortly. When brushes need replacement and the commutator is being turned down and undercut, disassemble the motor and clean it of all grit and grease.

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.

GUARANTEE

All Dumore products are thoroughly checked and tested before shipment.

THE DUMORE COMPANY guarantees this product against imperfections in workmanship and material for 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.

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