MODEL 398
ROTARY BLADE
GRINDER

ASSEMBLY
&
SERVICE
MANUAL

WARNING

You must thoroughly read and understand this manual before maintaining the equipment, paying particular attention to the Warning & Safety instructions.

SAFETY INSTRUCTIONS

Safety Awareness Symbols are inserted into this manual to alert you to possible ***Safety Hazards***. Whenever you see these symbols, follow their instructions.

The ***Warning Symbol*** identifies special instructions or procedures which, if not correctly followed, could result in personal injury or loss of life.

The ***Caution Symbol*** identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

1. **KEEP GUARDS IN PLACE** and in working order.
2. **REMOVE WRENCHES AND OTHER TOOLS.**
3. **KEEP WORK AREA CLEAN.**
4. **DON'T USE IN DANGEROUS ENVIRONMENT.** Don't use Grinder in damp or wet locations, or expose it to rain. Keep work area well lighted.
5. **KEEP ALL VISITORS AWAY.** All visitors should be kept a safe distance from work area.
6. **MAKE WORK AREA CHILD-PROOF** with padlocks or master switches.
7. **DON'T FORCE THE GRINDER.** It will do the job better and safer if used as specified in this manual.
8. **USE THE RIGHT TOOL.** Don't force the Grinder or an attachment to do a job for which it was not designed.
9. **WEAR PROPER APPAREL.** Wear no loose clothing, gloves, neckties, or jewelry which may get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.
10. **ALWAYS USE SAFETY GLASSES.**
11. **DON'T OVERREACH.** Keep proper footing and balance at all times.
12. **MAINTAIN GRINDER WITH CARE.** Follow instructions in this manual for lubrication and preventive maintenance.
13. **DISCONNECT POWER BEFORE SERVICING,** or when changing the grinding wheel.
14. **REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure the switch is OFF before plugging in the Grinder.
15. **USE RECOMMENDED ACCESSORIES.** Consult the manual for recommended accessories. Using improper accessories may cause risk of personal injury.
16. **CHECK DAMAGED PARTS.** A guard or other part that is damaged or will not perform its intended function should be properly repaired or replaced
17. **NEVER LEAVE GRINDER RUNNING UNATTENDED. TURN POWER OFF.** Do not leave grinder until it comes to a complete stop.
18. **KNOW YOUR EQUIPMENT.** Read the Operators Manual carefully. Learn its application and limitations as well as specific potential hazards.
19. **KEEP ALL SAFETY DECALS CLEAN AND LEGIBLE.** If safety decals become damaged or illegible for any reason, replace immediately. Refer to replacement parts illustrations in Service Manual for the proper location and part numbers of safety decals.
20. **DO NOT OPERATE THE GRINDER WHEN UNDER THE** INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION.

SAFETY INSTRUCTIONS

IMPROPER USE OF GRINDING WHEEL MAY CAUSE BREAKAGE AND SERIOUS INJURY.

Grinding is a safe operation if the few basic rules listed below are followed. These rules are based on material contained in the ANSI B7.1 Safety Code for "Use, Care and Protection of Abrasive Wheels". For your safety, we suggest you benefit from the experience of others and carefully follow these rules.

DO

1. **DO** always **HANDLE AND STORE** wheels in a **CAREFUL** manner.
2. **DO VISUALLY INSPECT** all wheels before mounting for possible damage.
3. **DO CHECK MACHINE SPEED** against the established maximum safe operating speed marked on wheel.
4. **DO CHECK MOUNTING FLANGES** for equal and correct diameter.
5. **DO USE MOUNTING BLOTTERS** when supplied with wheels.
6. **DO** be sure **WORK REST** is properly adjusted.
7. **DO** always **USE A SAFETY GUARD COVERING** at least one-half of the grinding wheel.
8. **DO** allow **NEWLY MOUNTED WHEELS** to run at operating speed, with guard in place, for at least one minute before grinding.
9. **DO** always **WEAR SAFETY GLASSES** or some type of eye protection when grinding.
10. **DO TURN OFF COOLANT** before stopping wheel to avoid creating an out-of-balance condition.

DON'T

1. **DON'T** use a cracked wheel or one that **HAS BEEN DROPPED** or has become damaged.
2. **DON'T FORCE** a wheel onto the machine **OR ALTER** the size of the mounting hole - if wheel won't fit the machine, get one that will.
3. **DON'T** ever **EXCEED MAXIMUM OPERATING SPEED** established for the wheel.
4. **DON'T** use mounting flanges on which the bearing surfaces **ARE NOT CLEAN, FLAT AND FREE OF BURNS.**
5. **DON'T TIGHTEN** the mounting nut **EXCESSIVELY.**
6. **DON'T** grind on the **SIDE OF THE WHEEL** (see Safety Code B7.2 for exception).
7. **DON'T** start the machine until the **WHEEL GUARD IS IN PLACE.**
8. **DON'T JAM** work into the wheel.
9. **DON'T STAND DIRECTLY IN FRONT** of a grinding wheel whenever a grinder is started.
10. **DON'T FORCE GRINDING** so that motor slows noticeably or work gets hot.

AVOID INHALATION OF DUST generated by grinding and cutting operations. Exposure to dust may cause respiratory ailments. Use approved NIOSH or MSHA respirators, safety glasses or face shields, gloves and protective clothing. Provide adequate ventilation to eliminate dust, or to maintain dust level below the Threshold Limit Value for nuisance dust as classified by OSHA.

SAFETY INSTRUCTIONS & TABLE OF CONTENTS

This machine is intended for rotary blade grinding ONLY.
Any use other than this may cause personal injury and void the warranty.

To assure the quality and safety of your machine and to maintain the warranty, you MUST use original equipment, manufacturers replacement parts and have any repair work done by a qualified professional.

ALL operators of this equipment must be thoroughly trained BEFORE operation the equipment.

Do not use compressed air to clean grinding dust from the machine. This dust can cause personal injury as well as damage to the grinder.

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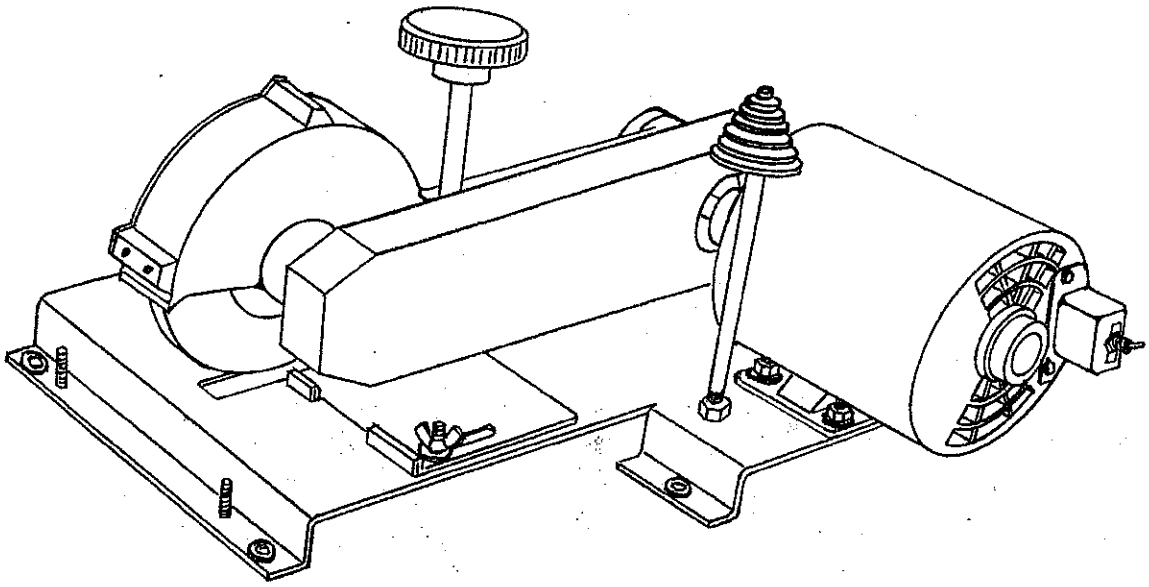


SPECIFICATIONS

Motor	.75 HP 115/220 volt 60/50 Cycle, 1 Phase
Grinding Wheel	6" Diameter x 3/4" Wide - 36 Grit
Maximum Blade Length	Any Length
Sound Level	Greater than 85 Dba when operating.

Arbor Size
Allowed on Blade Balancer.375" to 1.75"

UNPACK THE CARTON

Use care when unpacking. Open box, remove the contents and lay parts out on a table.

Check components against the Parts List on page 11 to insure all parts were shipped and are in working order.

Inspect all items for shipping damage as they are removed from the shipping containers. If you find any damage, notify the carrier's claims agent and do not proceed with unpacking until the damage has been inspected by the agent. Refer also to the "Shipping and Receiving Instructions" packed with the unit.

TORQUE REQUIREMENTS

Throughout this manual we refer to torque requirements as "firmly tighten" or the like. For more specific torque values, refer to the information below.

Bolts Going Into a Nut, or Into a Thread Hole in Steel

Refer to the table at the right.

Bolts Going Into a Thread Hole in Aluminum

Use the Grade 2 values in the table at the right.

Socket-Head Screws

Use the Grade 8 values in the table at the right.

Machine Screws
No. 6 screws: 11 in.-lbs (0.125 kg-m)
No. 8 screws: 20 in.-lbs (0.23 kg-m)
No. 10 screws: 32 in.-lbs (0.37 kg-m)

	GRADE 2  Smooth Head	GRADE 5  3 Marks on Head	GRADE 8  6 Marks on Head
1/4 in. thread	6 ft-lbs (0.8 kg-m)	9 ft-lbs (1.25 kg-m)	13 ft-lbs (1.8 kg-m)
5/16 in. thread	11 ft-lbs (1.5 kg-m)	18 ft-lbs (2.5 kg-m)	28 ft-lbs (3.9 kg-m)
3/8 in. thread	19 ft-lbs (2.6 kg-m)	31 ft-lbs (4.3 kg-m)	46 ft-lbs (6.4 kg-m)
7/16 in. thread	30 ft-lbs (4.1 kg-m)	50 ft-lbs (6.9 kg-m)	75 ft-lbs (10.4 kg-m)
1/2 in. thread	45 ft-lbs (6.2 kg-m)	75 ft-lbs (10.4 kg-m)	115 ft-lbs (15.9 kg-m)

WIRING INSTRUCTIONS

IMPORTANT GROUNDING INSTRUCTIONS

In case of a malfunction or breakdown, grounding reduces the risk of electrical shock by providing a path of least resistance for electrical current.

This Grinder has an electrical cord with an equipment grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded according to all local or other appropriate electrical codes and ordinances.

Before plugging in the Grinder, make sure it will be connected to a supply circuit protected by a properly-sized circuit breaker or fuse. 15 amp minimum for 115V application.

Do not modify the plug provided with the machine; if it will not fit the outlet, have a proper outlet and circuit installed by a qualified electrician.

Always provide a proper electrical ground for your machine. An improper connection can cause a dangerous electrical shock. If you are unsure of the proper electrical grounding procedure, contact a qualified electrician.

115 Volt Model Only. Plug the power cord into a standard grounded receptacle as shown:

FIG. 3

115 VOLT APPLICATION (AS BUILT)

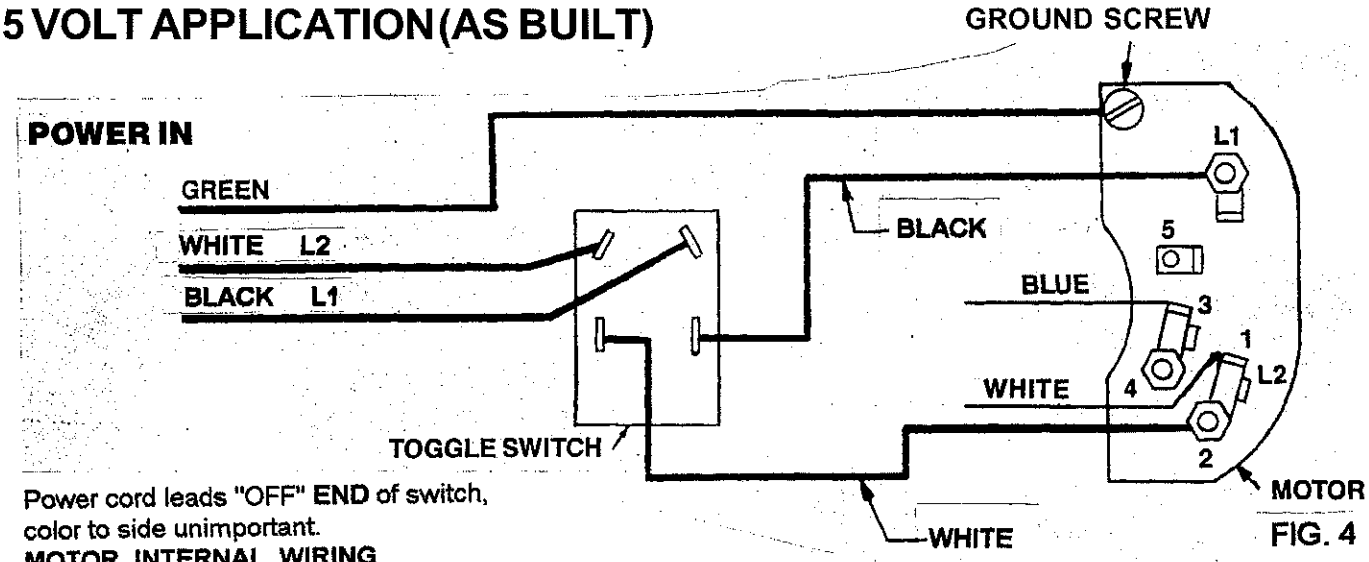


FIG. 4

Power cord leads "OFF" **END** of switch, color to side unimportant.

MOTOR INTERNAL WIRING

ROTATION LEADS	BLACK TO TERMINAL 2
REFERENCE	RED TO TERMINAL 4
VOLTAGE LEADS	WHITE TO TERMINAL 1
As Built **115V**	BLUE TO TERMINAL 3

Motor leads "ON" **END** of switch, side unimportant.

NOTE: Motor rotation is counterclockwise looking at the shaft end of the motor.

220 VOLT CONVERSION

To convert this unit to 220 Volt 1 Phase, cut the plug off of the cord and replace it with the appropriate plug for your locality. For plug and circuit breaker sizing, see motor nameplate ratings. Use only a qualified electrician. Rewire the unit as below:

220 VOLT:

To convert the unit from 115 Volt to 220 Volt, the only change is to move Internal White Wire from Terminal 1 to Terminal 3 and Internal Blue Wire from Terminal 3 to Terminal 5.

NOTE: This motor will correctly operate on 60Hz or 50Hz.

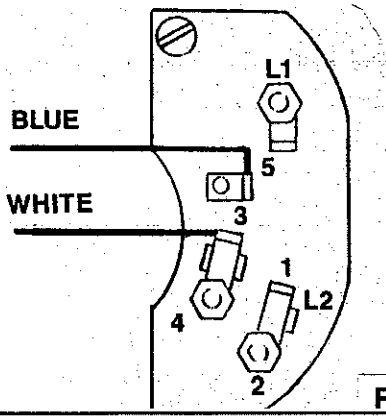


FIG. 5

ASSEMBLY INSTRUCTIONS

TOOLS NEEDED:

7/16" open end wrench, phillips screw driver, and a 3/16" diameter drill bit and drill motor.

NOTE: The numbers in parenthesis (#) represent the number of the part as shown on the Parts List, Page 11.

Install the Blade Balancer Cone (#4) on the Post (#5) as shown in FIG. 1.

Mount Spark deflector (#38) onto Carrier Arm Assembly (#10) as shown in FIG. 1 with two #8-32 Round Head Screws (#35) and two #8 Flat Washers (#36), two #8 Lockwashers (#53) and two Spacers (#55)

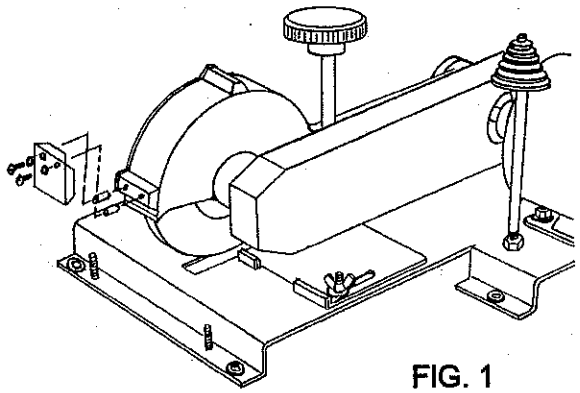


FIG. 1

Mount Grinder securely onto a workbench 36" to 42" high.

The unit should be located flush with the front edge of the bench, preferably at the right hand end (FIG. 2), unless you are going to use extended blade rests. Drill five 3/16" dia. holes at least 1/2" deep into the wood topped work bench using the holes in the base as a guide.

Use the five 1/4" x 1" Long Lag Bolts (#52) provided with the five 1/4 Flatwashers (#54) to bolt the base to the workbench. Tighten only to 50% compression of the rubber grommets.

If you want extended blade rests, your 398 Blade Grinder has been designed so that a standard 2 x 6 piece of lumber can be mounted on each side at whatever length is required. See FIG. 2.

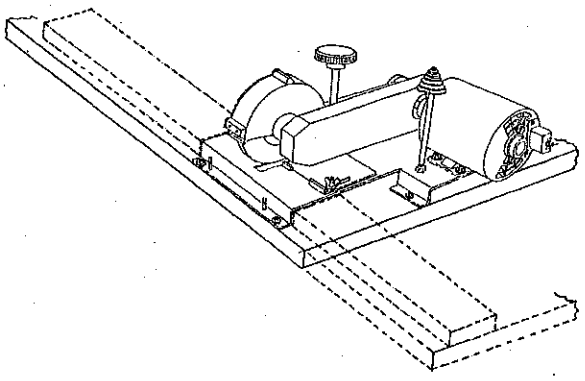


FIG. 2

NOTE: If you have a metal workbench, drill five 5/16" holes in the bench using the holes in the base as a guide. Then purchase five 1/4-20 x 1.00" Long Hex Head Bolts, five 1/4 Flatwashers, five 1/4 Lockwashers and five 1/4-20 Nuts to secure the base to the workbench. Tighten only to 50% compression of the rubber grommets.

PREVENTATIVE MAINTENANCE

NEVER DO ANY PREVENTATIVE MAINTENANCE WHILE THE UNIT IS PLUGGED INTO THE POWER OUTLET. UNPLUG BEFORE SERVICING.

We recommend that you set up a maintenance check list using the following guidelines.

1. **INSPECT THE UNIT MONTHLY FOR LOOSE, WORN OR DAMAGED COMPONENTS.** Repair or replace any found.

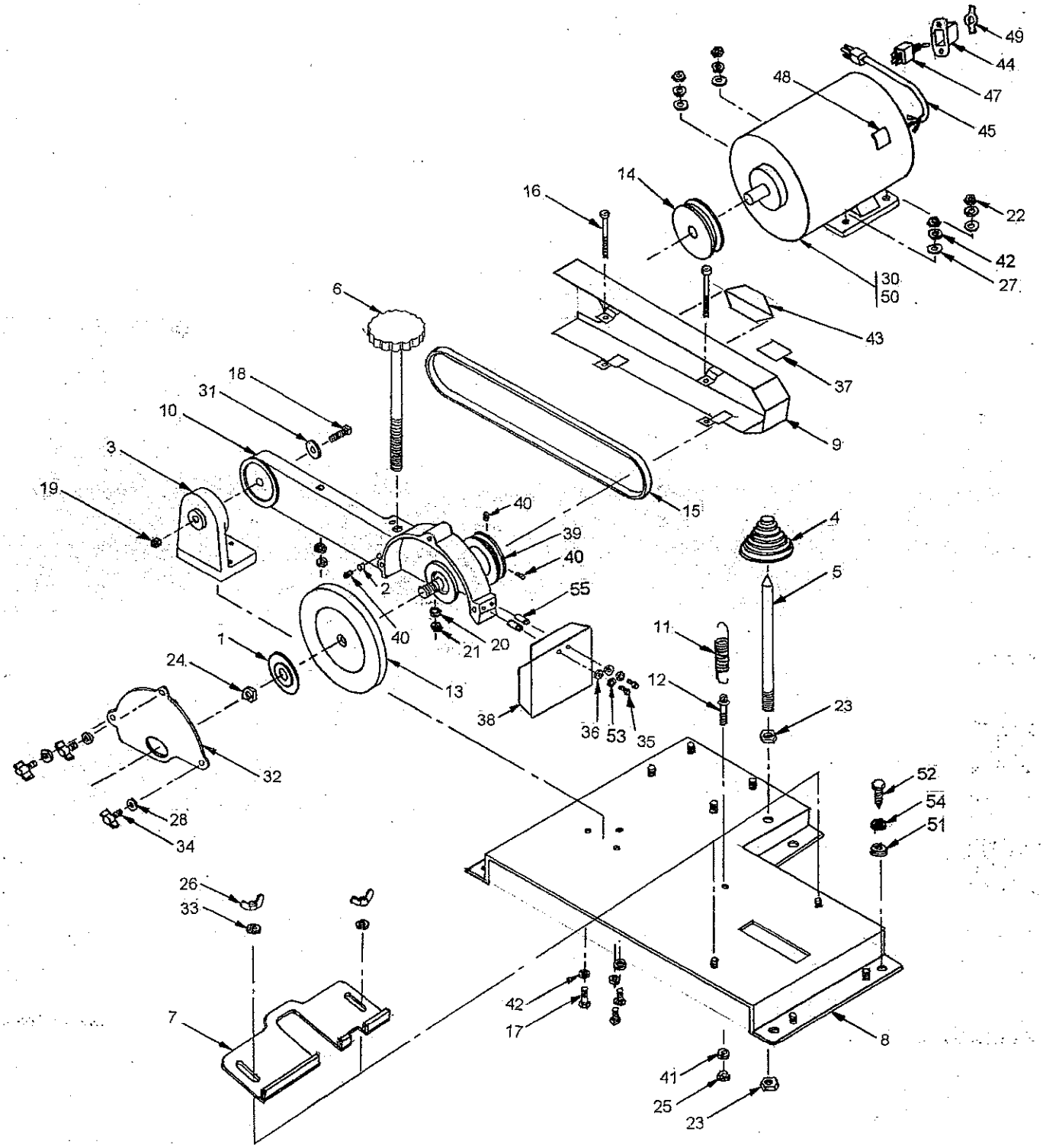
2. **DRAG ON GRINDING WHEEL DEPTH CONTROL STOP -**
   Check drag every 3 months.
   Grinding Wheel Depth Control. To increase drag control, tighten 1/4-20 socket set screw (#40) located on outside of Grinding Head Arm. Increase drag on Depth Adjusting Screw Assembly (#6) to prevent rotation during the grinding operation.

3. **CHECK V-BELT (#15) FOR TENSION -**
   Adjust every 6 months.
   Adjust the "V" belt (#15), as required for proper tension by loosening four motor mounting nuts (#22) and repositioning the motor.
   Inspect the "V: belt for cracks. If cracked, replace the belt.

4. **LUBRICATION OF PIVOT JOINT OF THE CARRIER ARM ASSEMBLY -**
   Lubricate every year.
   Loosen the 3/8" hex cap screw (#18) and nut (#19). Oil or grease the joint between the base (#3) and the carrier arm assembly (#10). Then tighten the hex cap screw (#18) and nut (#19) to the point so that there is no free play in the joint but that it can still pivot.

5. **CHECK BEARING -**
   Annually
   Adjust the grinding wheel to the highest position. With the power plug disconnected, grasp the wheel and try to move it from side to side. If there is excessive free play in the bearing, replace the Carrier Arm Assembly (#10).

EXPLODED VIEW FOR ROTARY BLADE GRINDER



PARTS LIST FOR ROTARY BLADE GRINDER

DIA. NO.	PART NO.	DESCRIPTION
1	3649018	Outer Flange
2	3579109	Plug
3	3989001	Base - Carrier Arm
4	3702274	Blade Balancer Cone
5	**3989029**	**Blade Balancer Post**
6	3989520	Adjusting Screw Assembly
7	3989153	Blade Guide
8	3989551	Base Weldment
9	3989555	Belt Guard Weldment
10	**3989552**	**Carrier Arm Assembly**
11	3709054	Spring
12	3709055	Adjusting Screw
13	3700362	Grinding Wheel
14	3709763	Pulley - 1/2" Bore
15	**3709764**	**"V" Belt**
16	A194402	Rd. Hd. Mach. Screw 10-24 NC x 2-3/4" Long
17	B311001	Hex Cap Screw 5/16-18 NC x 5/8" Long
18	A374001	Hex Cap Screw 3/8-16 NC x 2-1/2" Long
19	J377000	Hex Jam Locknut 3/8-16 NC
20	**K191501**	**Lock Washer #10**
21	J191000	Hex Nut 10-24 NC
22	J311000	Hex Nut 5/16-18 NC
23	J501000	Hex Nut 1/2-13 NC
24	J502100	Hex Jam Nut 1/2-20 NF
25	**J251000**	**Hex Nut 1/4-20 NC**
26	J313000	Wing Nut 5/16-18 NC
27	K310001	Washer 5/16
28	K250001	Washer 1/4
30	3989150	Motor Assembly with Switch 3/4 HP

DIA. NO.	PART NO.	DESCRIPTION
31	**K370001**	**Washer 3/8**
32	3989154	Guard Cover
33	K310101	Washer - Cut 5/16
34	6009598	Tee Knob Assembly
35	B161614	Rd Hd Cap Screw 8-32 NC x 1" Long
36	**K160001**	**Flat Washer #8**
37	3089077	Caution Decal
38	3989160	Spark Deflector
39	3889088	5/8" Bore Pulley
40	C250627	Socket Set Screw 1/4-20 NC x 3/8" Long
41	**K251501**	**Lock Washer**
42	K311501	Lock Washer
43	3709926	Decal
44	3309073	Switch Box
45	3707034	Cord Set
47	**3707070**	**Toggle Switch**
48	3707130	Warning Decal
49	3707316	On/Off Switch Plate
50	3707990	Motor - .75 HP 115/220 60/50 OD
51	3708349	Grommet - Rubber
52	**E251603**	**Lag Bolt 1/4 x 1" Long**
53	K161501	Lock Washer #8
54	3708691	1/4" Flat Washer
55	3989156	Spacer