

# Operating Parts Manual

Diamond Wheel  
Dressing Machine Model 162

Novatech, Inc.

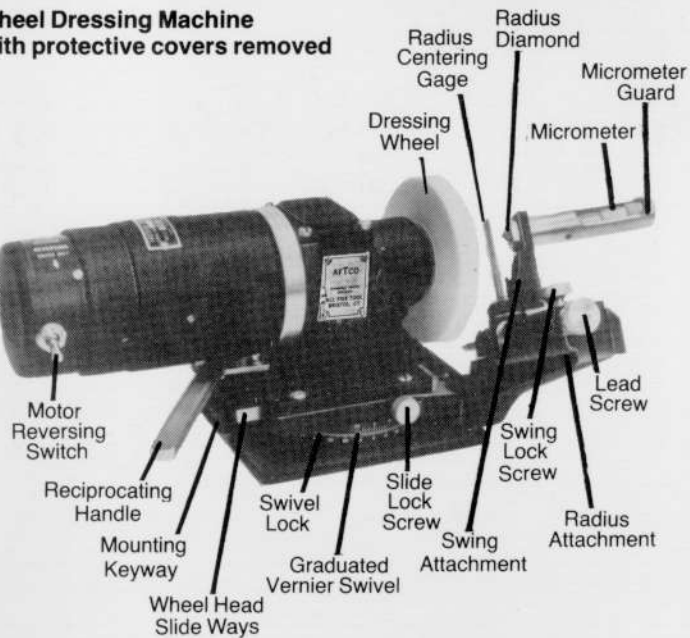
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## Wheel Dressing Machine with protective covers removed



## Features and Specifications

- Motor:** Reversible 115V 60 cycle single phase geared-head  
Option: Reversible 220 V 60 cycle single phase geared head.
- Spindle Mounting:** (1 set) double row ball bearings  
(1 set) single row ball bearings

Sealed Spindle and Gear Housing

**Wheel Head Ways:** ground; lubrication from felt wipers; protected from abrasives by neoprene apron and felt wipers. provided with adjustable gib to compensate for normal wear.

**Swivel Adjustment:** 360° — Graduated 1° with 5' vernier.

**Dressing Wheel:** 4" x 1/2" x 1/2"

**Dressing Wheel Travel over Ways:** 3"

**Swing of Radius Attachment:** 180°

**Dresser Micrometer Adjustment:** .001" increments

**Overall Length:** 10" (approx.)

**Overall Height:** 6" (approx.)

**Base Width:** 5 1/2" (approx.)

**Weight with Radius Attachment:** 21 lbs.

**Shipping Weight:** 32 lbs.

## Function

The All Five Tool Diamond Wheel Dressing Machine provides a fast, efficient method of removing dulled diamond particles and bonding material from the periphery or face of a diamond wheel, with a minimum of diamond loss, leaving a true face, with sharp diamond particles exposed.

Either straight or angle dressing may be performed without removing the diamond wheel from its spindle and at the normal rotational speeds of the grinding machine. With the radius attachment in place, concave and convex radii may be generated and trued with high accuracy and speed. Vitrified metal, resinoid and plastic bonded diamond wheels may be dressed and trued with a minimum removal of diamond material and consequent extension of diamond wheel life.

## Description

The Dressing Machine is a self-contained and portable unit that is mounted directly onto the grinding machine table. The dressing wheel rotates at relatively slow speed, powered by a reversible electric motor through a gear reduction system. The dressing wheel is reciprocated over the face or periphery of the diamond wheel by means of a manually actuated handle and moves over protected ways which are mounted on a swivel base. The swivel base can be set over  $360^\circ$  in increments of  $5'$ , established from a graduated scale and vernier.

The diamond radius attachment has a micrometer adjustment for setting desired radius on the dressing wheel. A carriage is used to swing the cutting head into the dressing wheel. Radii generated on the dressing wheel are the reverse of the shape to be trued on the diamond wheel.

## Mounting

1. Align the dressing machine with the machine table by using the keyway or the edge of the base which is ground parallel to the keyway.
2. Secure the dressing machine to the grinding machine table by  $\frac{1}{2}$ " bolts, standard clamps or on a magnetic chuck.
3. Loosen the swivel lock and swivel to the desired angle. Tighten the swivel lock.

## Straight Dressing

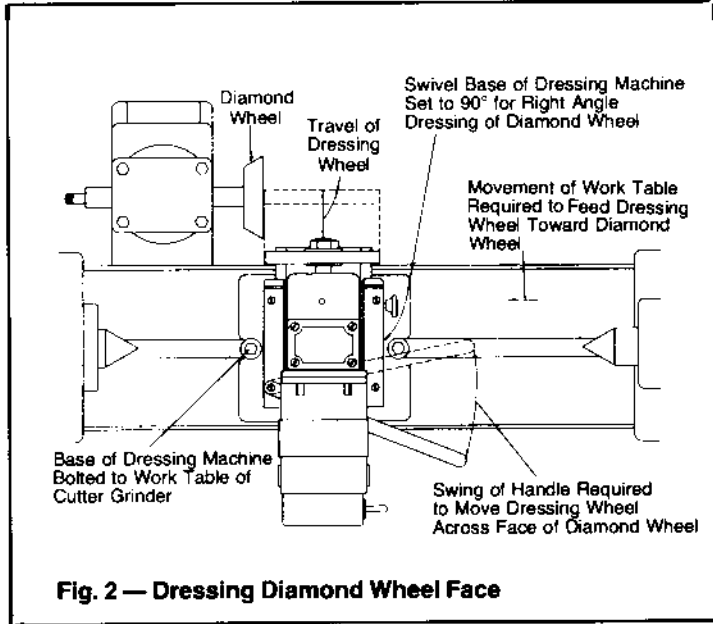
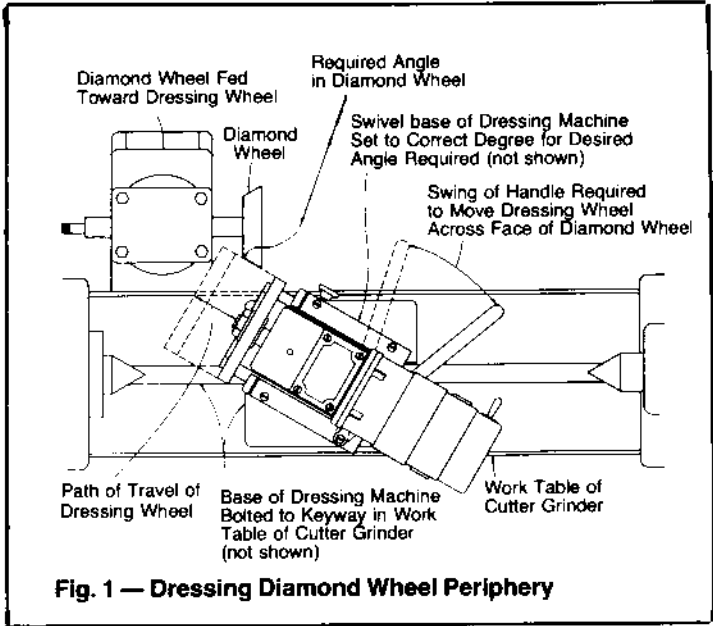
1. Loosen the knurled lock on the front of the ways and check for ease of movement by actuating the reciprocating handle.
2. Bring the diamond wheel close to the dressing wheel and turn both machines ON.
3. Feed the diamond wheel into the dressing wheel while reciprocating the dressing wheel by means of the reciprocating handle.

**Note:** the dressing wheel should be reciprocated with an easy motion of about two seconds per cycle.

**Caution:** The diamond wheel will be cleaned to a new surface with a few passes of the dressing wheel. It is advisable to stop the diamond wheel frequently at first, to examine its surface so as to prevent needless overdressing.

## Angle Dressing

1. Set desired angle using the graduated scale and vernier by loosening the swivel lock, swivelling the machine head and relocking the swivel.
2. Bring the diamond wheel down so that its shaft centerline is in the same vertical plane as the dressing wheel shaft centerline.
3. Dress the diamond wheel as described in straight dressing, and repeat the process if a second angle is required.



## Trueing a Radius

### Setting the Diamond to Zero Radius

1. Secure the radius attachment to the bosses on the ends of the ways by means of the screws provided. The lip along the top edge of the mounting face of the radius attachment should rest on the bosses.
2. Unlock the diamond holder and retract the micrometer. Push the diamond back against the micrometer.
3. Insert the center locating gage in the hole in the base of the radius arm.
4. Extend the diamond to the flat surface of the locating post by means of the micrometer.

**Note:** This action requires the sensitive touch used for micrometer measurement. The diamond is now located at zero radius and the micrometer reading should be noted for setting desired radius.

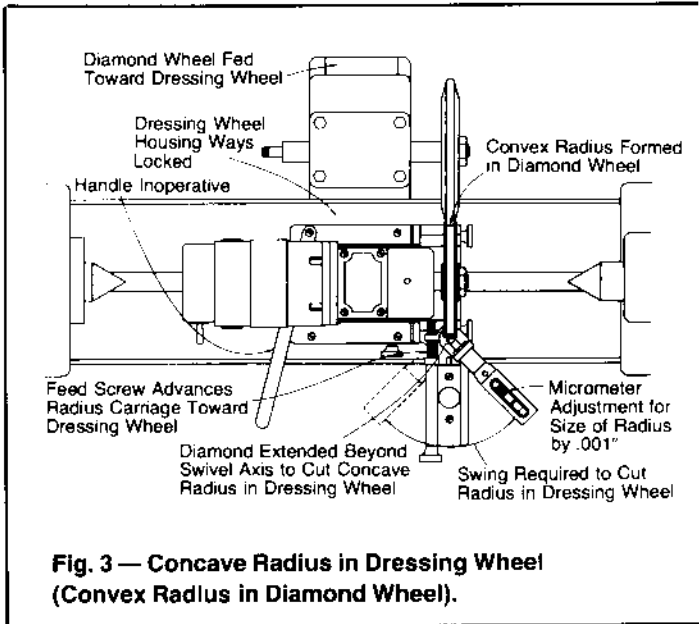
### To Dress a Concave Radius in the Dressing Wheel

(Results in trueing a Convex Radius in the Diamond Wheel)

1. Set the Diamond to Zero Radius as described above.
2. Decrease the micrometer reading by the amount of the desired radius.
3. Release the radius arm set screw lock in the base of the swing attachment to permit free movement.
4. Release the radius arm slide knurled knob and fillister head screws in the cover plate of the slide.
5. Bring the dressing wheel in line with the diamond slide so that the required width of the radius can be cut.
6. Lock the ways of the dressing wheel head by tightening the knurled knob at the front of the ways and turn the power ON.
7. Feed the diamond into the dressing wheel by means of the knurled Lead Screw while swinging the diamond through its arc.
8. When the desired depth of radius has been cut in the dressing wheel, start the diamond wheel and gradually feed it into the dressing wheel until its shape conforms to the radius.

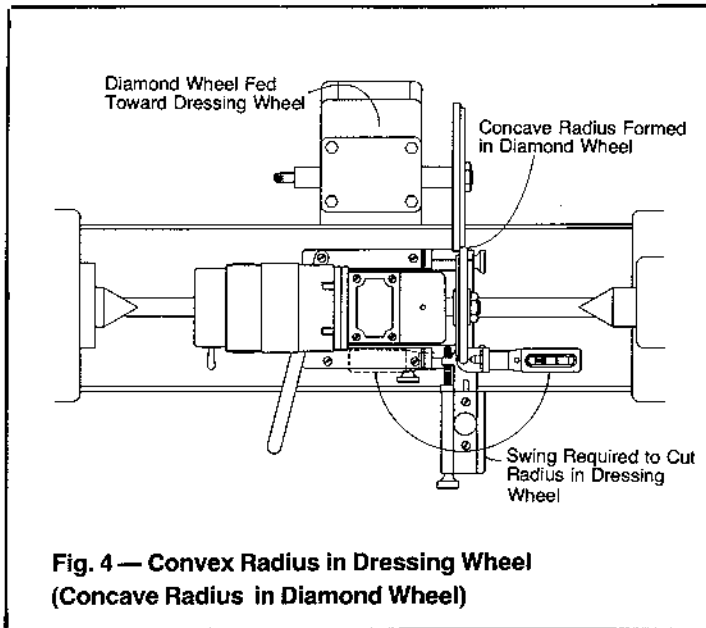
**Note:** When trueing a full radius, repeat the above procedure on each side of the dressing wheel and transfer the radius by contacting both sides of the diamond wheel.

Some materials will be removed from the dressing wheel during the transfer to the diamond wheel necessitating a slight recut of the radius and refeeding into the diamond wheel for desired accuracy. Generally, the radius attachment is used to true existing radii.



**To Dress a Convex Radius in the Dressing Wheel**  
(Results in trueing a Concave Radius in the Diamond Wheel)

1. Set the diamond to zero radius as described on page 4.
2. Increase the micrometer reading the amount of the desired radius and proceed to generate radius as described in steps 3 thru 8 on page 4.



## **Maintenance**

The machine has been carefully engineered for long life with normal use. Unpainted parts are either plated or rustproofed to prevent corrosion. In common with all grinding machines, the use of air blast for cleaning is not recommended.

Accumulated abrasive particles should be brushed off.

### **Lubrication of Motor    Monthly**

Standard light oil should be applied to the rear motor bearing every month or more often if the machine is extensively used. 2 or 3 drops is sufficient.

### **Lubrication of Gears    Yearly**

The cover of the housing should be removed and the oil poured out. Flush with kerosene or light oil and refill with  $\frac{1}{8}$  pint or to the center of the countershaft with SAE 90 Hypoid Gear Oil (Extreme Pressure Lubricant).

The ways should be lubricated by saturating the felt wipers with light oil as needed.

### Cleaning the Ways

Disassemble the way plates #23 and #24 from the machine by removing the cap screws #25 and the handle pivot cap screw #31. Remove the main ways gib #26 and lift the housing from the bed plate. All parts may then be wiped clean. The ways may be smoothed, if necessary, by a fine hand stone. The ways are oiled and assembled in the reverse order of the disassembly procedure. All cap screws should be thoroughly tightened. Care should be taken not to nick the ways or include dirt in the assembly.

### Overhauling

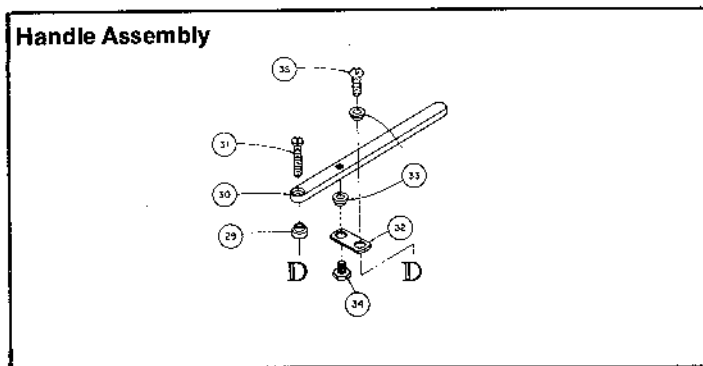
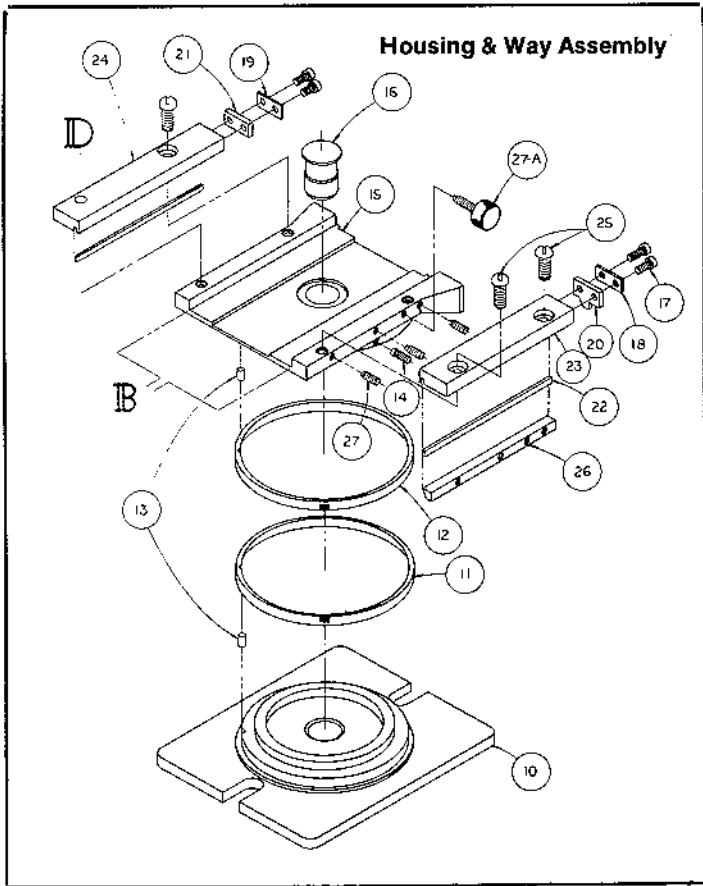
If the ways become worn and excessively loose it is advisable to return the unit to the factory unless competent personnel familiar with the fitting of machine parts have surface grinding equipment available.

Essentially the process consists of removing all the parts of the ways and resurfacing them on a standard surface grinder to new smooth surfaces. Care must be taken to maintain parallelism with the present surfaces and not to remove any more material than necessary, maintaining proper clearance.

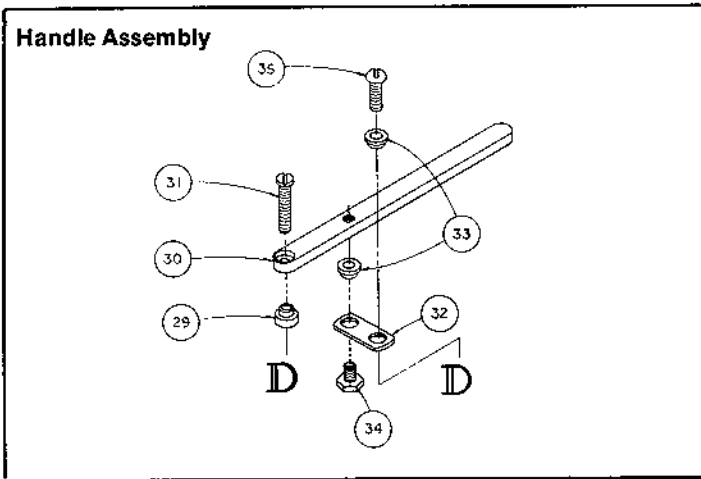
It is recommended that the complete unit be returned to the factory for proper reconditioning.

### Parts List

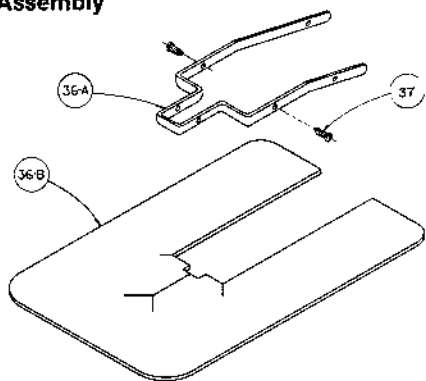
No.	Part Name	No. Req.
10	....Base.....	1
11	....Ring-Angle.....	1
12	....Ring-Vernier.....	1
13	....Dowel-Ring.....	2
14	....Screw-Swivel Pad Lock.....	1
15	....Bed Plate.....	1
16	....Pin-Axis.....	1
17	....Screw-Wiper Cover.....	4
18	....Cover-Front Wiper.....	1
19	....Cover-Back Wiper.....	1
20	....Wiper-Front End.....	1
21	....Wiper-Back End.....	1
22	....Wiper-Side Ways.....	2
23	....Plate Ways-Front.....	1
24	....Plate Ways-Rear.....	1
25	....Screw-Plate Ways.....	3
26	....Gib-Main Ways.....	1
27	....Gib Adj. Screws-Nyloc.....	3
27A	....Lock Screw-Ways.....	1



No.	Part Name	No. Req.
29	Spacer-Handle .....	1
30	Handle .....	1
31	Screw-Handle .....	1
32	Link-Handle .....	1
33	Bushing-Handle Lk. ....	2
34	Cap Screw .....	1
35	Screw-Link .....	1
36	Apron Assembly .....	1
36A	Frame-Apron .....	1
36B	Apron-Rubber .....	1
37	Screw-Self Tapping .....	2
39	Bushing-Rear C'shaft .....	1
40H	Housing .....	1
41	Bushing-Front C'shaft .....	1
42	Countershaft .....	1
44	Gear-Cluster .....	1
44A	Set Screw .....	1
45	Thrust Washer .....	1
46	Expansion Plug .....	1
48H	Washer .....	1
49H	Gear-Driven .....	1
50H	Spacer-Lock .....	1
51	Ball Bearing-Single .....	1
52	Spacer Bearing-Inner .....	1
53	Spacer Bearing-Outer .....	1
54	Ball Bearing-Double .....	1
55	Oil Seal-Wheel Shaft .....	1
56H	Shaft-Wheel .....	1

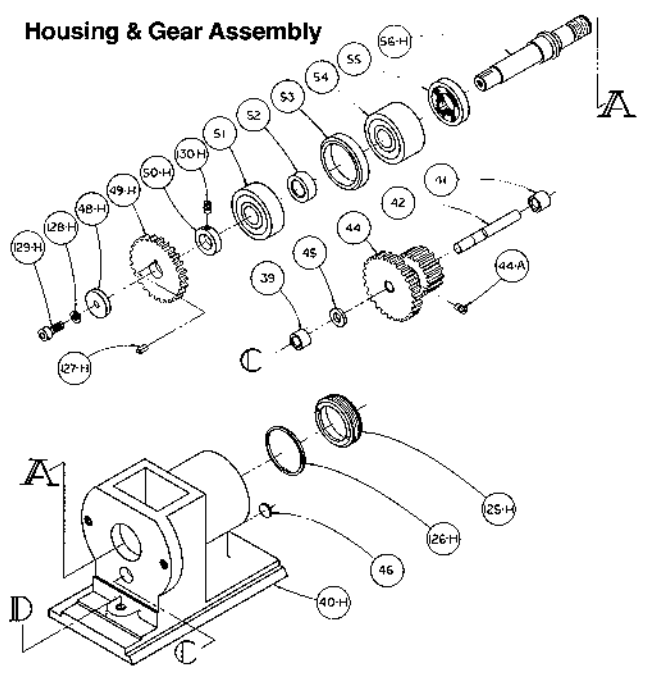


### Apron Assembly

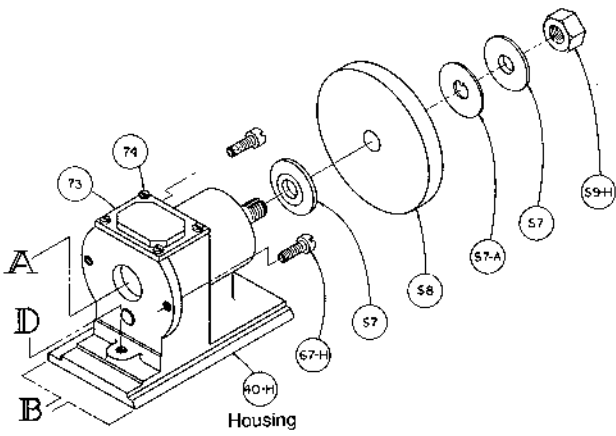


DET (36-B) ATTACHED BY (36-A) & (37) TO  
DET (40-H) AT FINAL ASSEMBLY

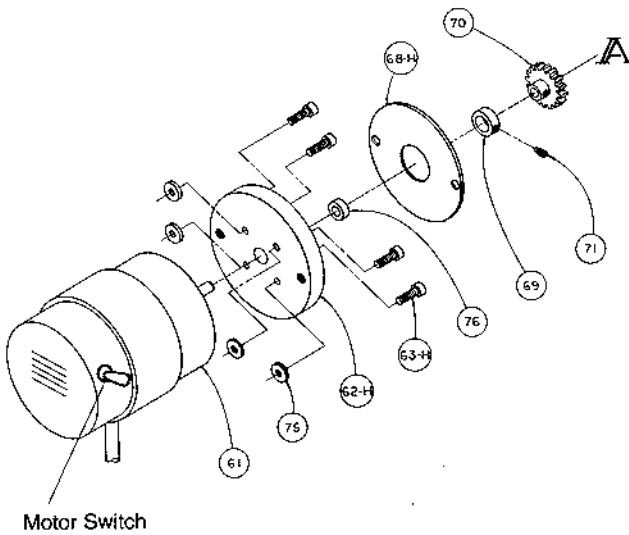
### Housing & Gear Assembly



### Head Assembly

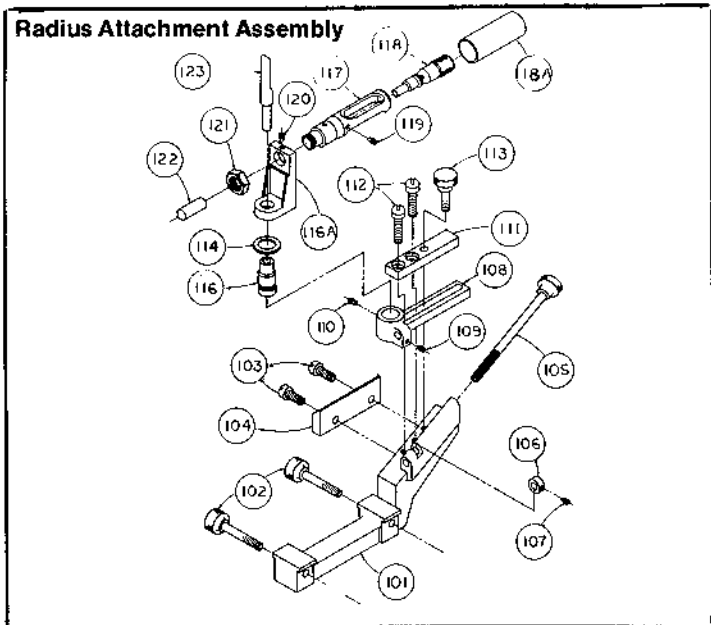


### Motor Assembly



No.	Part Name	No. Req.
57	Washer	2
57A	Key Washer-Wheel Nut	1
58	Grinding Wheel	1
59H	Nut-Wheel Ret'n	1
61	Motor-115 Volt 60 cycle	1
61S	Motor-220 Volt 60 cycle (not shown)	1
61A	Plug Adapter (not shown)	1
62H	Plate-Motor Adapter	1
63H	Screw-Motor Plate	4
67H	Screw-Adapter Plate	2
68H	Gasket-Adapter Plate	1
69	Lock Ring-Pinion Gear	1
70	Pinion Gear	1
71	Screw-Pinion Lock	1
73	Cover-Gear Housing	1
74	Screw-Housing Cover	4
75	Washer-Plate Adapter	4
76	Oil Seal-Motor Shaft	1
77	Screws-Name Plate (not shown)	4
78	Name Plate-Housing (not shown)	1
79	Name Plate-Motor (not shown)	1
80	Case (not shown)	1
81	Manual-Instruction (not shown)	1

No.	Part Name	No. Req.
101	Base-Radius Attach.	1
102	Clamp	2
103	Screw	2
104	Radius-Slide Gib	1
105	Screw-Adjustment	1
106	Collar-Lock	1
107	Allen Set Screw	1
108	Radius Carriage	1
109	Radius Carriage Set Screw	1
110	Retainer Screw	1
111	Radius Slide Cover Plate	1
112	Screw	2
113	Screw-Lock	1
114	Thrust Washer	1
116	Shaft-Radius Arm	1
116A	Radius Arm	1
117	Shield-Micrometer	1
118	Micrometer	1
118A	Dust Guard-Micrometer	1
119	Set Screw	1
120	Set Screw	1
121	Nut-Radius Handle	1
122	Diamond Holder	1



123...Gage (page 16) .....	1
124...Apron-Radius Attachment (not shown).....	1
124A.Screw-Apron (not shown).....	1
124B.Washer-Apron (not shown) .....	1
125H Nut-Bearing Retainer.....	1
126H Snap Ring-Bearing Retainer .....	1
127H Key-Gear.....	1
128H Washer-Lock .....	1
129H Screw-Gear Retaining .....	1
130H Screw-Spacer Lock.....	1

