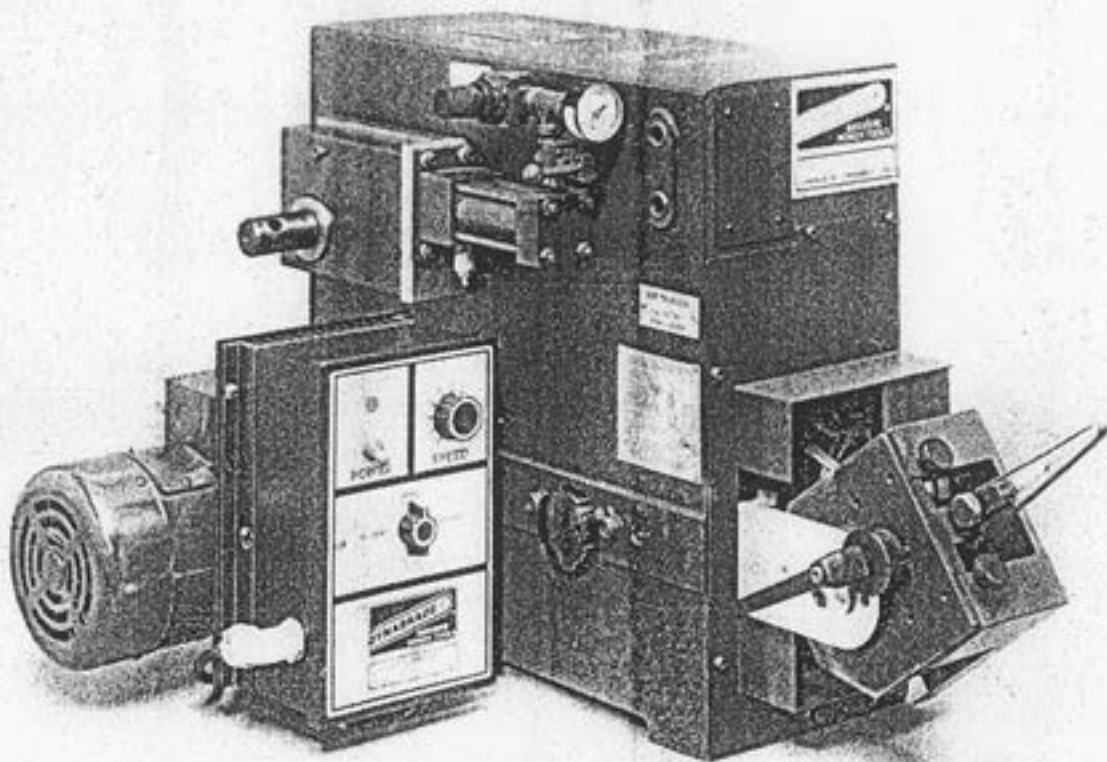




VirtuBelter™
TURBINE BLADE GRINDER

MANUAL



Model 65036

(Model 65403 same as 65036 only with a 1 HP 220V Motor)

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VIRTUBRADE
INSTRUCTION MANUAL
MODEL 65036-VARIABLE SPEED
TURBINE BLADE GRINDER
MADE IN U.S.A.

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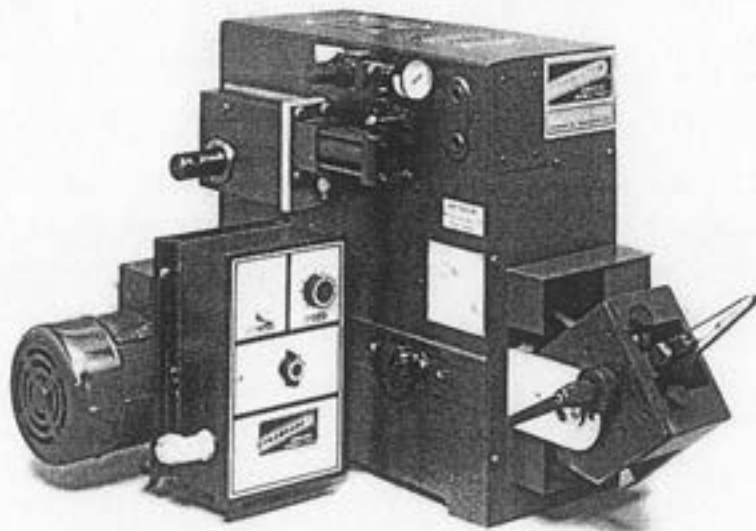
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VIRTUBELTER™ TURBINE BLADE GRINDER



THE MACHINE AS SHOW, IS STANDARD AS A 1 HP OF 2 HP VARIABLE SPEED GRINDER. THE GRINDER USES ABRASIVE BELTS FROM 1/4" WIDE TO 2" WIDE X 72" LONG.

THE MACHINE FRAME IS RUGGED CAST ALUMINUM. THE DRIVE PULLEY IS URETHANE COVERED TO PREVENT BELT SLIPPING AND IS MOUNTED DIRECTLY TO THE MOTOR SHAFT. THE TENSIONING ROLL IS ALUMINUM, STRADDLE MOUNTED ON SEALED BALL BEARINGS. THE MACHINE IS FULLY GUARDED WITH A HINGED BELT CHANGE DOOR.

THE BASIC MACHINE IS SELF-CONTAINED AND "READY-TO-RUN" WITH ADJUSTABLE CONTACT ARM, AIR TENSION ASSEMBLY, REVERSING SWITCH, AND VARIABLE SPEED DRIVE.

MACHINE SPECIFICATIONS

MODEL NUMBER	ABRASIVE BELT SIZE	SFPM	MOTOR HP	VOLTS	PHASE	HERTZ
65036	1/2 TO 2"W	600-4000	1 HP	115	1	60

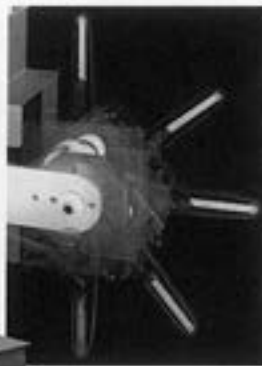
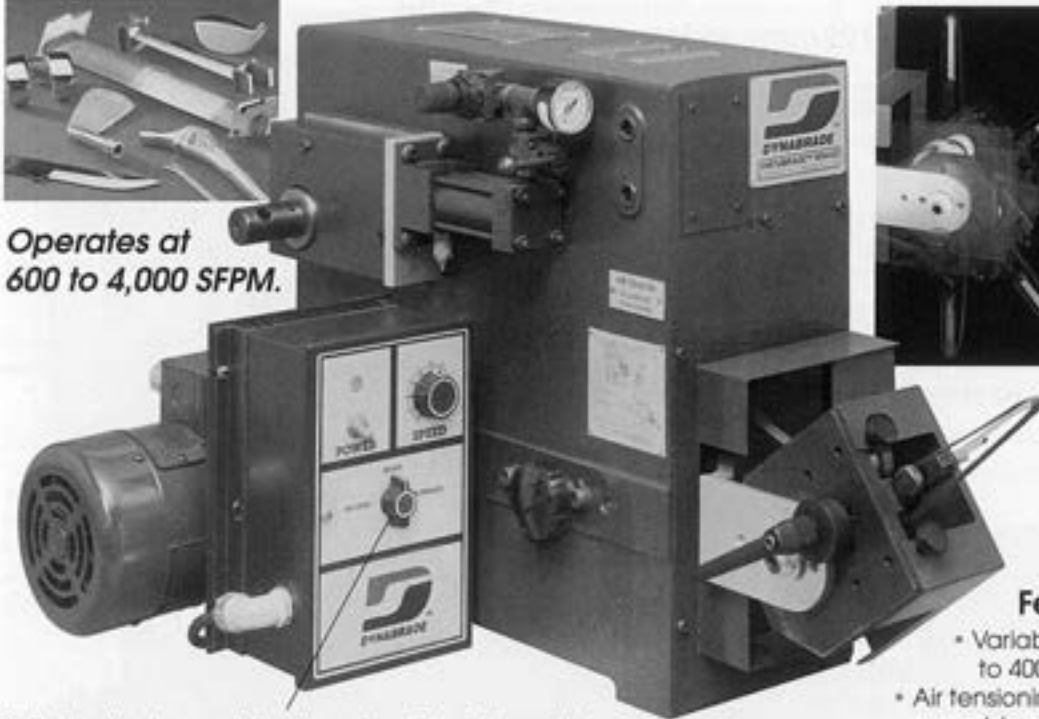
Utility Grinder

For cutlery, golf clubs, turbine blades, prostheses and more.

Abrasive Capacity:
1/2" (13mm) to 2" (51 mm)
wide x 72" (183cm) long belts.



Operates at
600 to 4,000 SFPM.



Pivot mount assembly adjusts 180° in any position.

Operator can easily adjust to control work height and vantage point.

Model 65036

- 1 Hp (746 W), 115 volt, 1 phase, 60 Hz motor.

Model 65403

- 1 Hp (746 W), 220 volt, 1 phase, 50/60 Hz motor.

Features

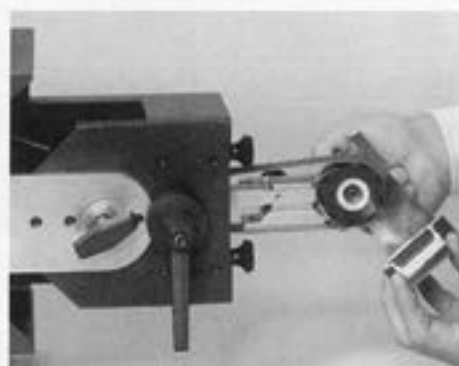
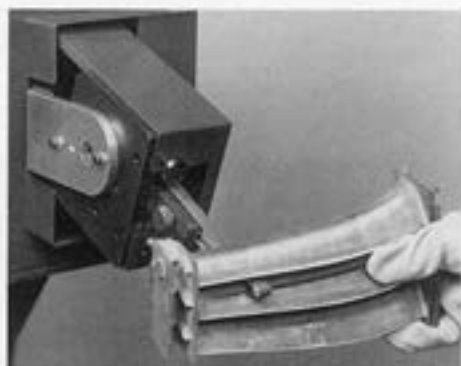
- Variable speed drive operates at 600 to 4000 SFPM (183 to 1219 SMPM).
- Air tensioning, adjustable pivot mount assembly and belt reversing switch.
- Choose from dozens of contact arms used for various applications common to many industries.

Belt direction is reversible with a simple flip of the switch.

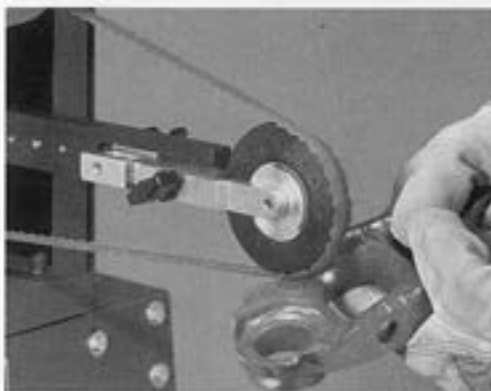
Always start the machine at low speed. This will prevent belt slippage.

Machine Number	Width Inch (mm)	Length Inch (mm)	Height Inch (mm)	Weight Pounds (kg)	Abrasive Belt Size Inch (mm)	Electrical Specifications	SFPM (SMPM)
65036	20" (508)	29" (737)	19" (483)	150 lbs. (68.03)	1/2" to 2" (13-51) W x 72" (1830) L	115 Volt, 1 Phase, 60 Hz	600-4,000 (183-1,219)
65403	20" (508)	29" (737)	19" (483)	150 lbs. (68.03)	1/2" to 2" (13-51) W x 72" (1830) L	220 Volt, 1 Phase, 50/60 Hz	600-4,000 (183-1,219)

With the pivot mount assembly in an angle-down position, a cluster of turbine blades are deburred using the offset design of V-11341 40 duro neoprene, optional contact arm.

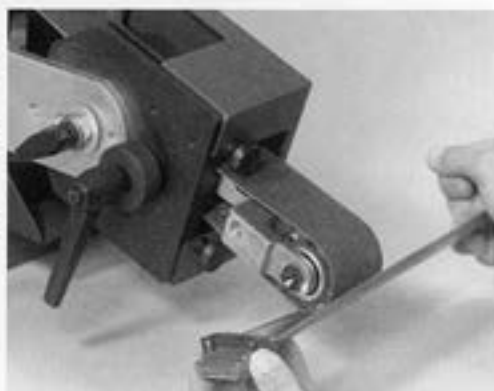


The 67039 optional contact arm blends, polishes and finishes using a 1" (25mm) wide x 72" (183cm) long abrasive belt.



V-11682 contact arm for grinding and flashing removal, using 1/2" (13mm) or 1" (25mm) wide x 72" (183cm) long belts. Arm can mount to pivot assembly or 65465 Adapter Assembly as shown here.

The machine accepts 1/2" (13mm) up to 2" (51 mm) wide x 72" (183cm) long abrasive belts. Use the V-11670 with a 2" (51 mm) wide belt to blend a single turbine blade.



For additional contact arms see page 13. For abrasives see page 15.

Optional Contact Arms & Workstand

A wide variety of contact wheels and wheel assemblies are available.

67171 Cutlery Contact Arm Assembly

- Raised platen provides adequate clearance for finger guard or handle when sharpening knife blades, scissors, etc.



Raised Platen Design



Belt Size: 2" wide.

67121 Contact Wheel: 4" dia. x 2" wide 50 duro smooth rubber.

11839 Platen: 2" wide x 2-1/2" long, cork base with rubber face.



Vacuum suction scoop included.

65116 Desk-Style Support
Height: 22" (56 cm)
Width: 16" (41 cm)
Length: 32" (81 cm)

65116 Desk-Style Support

- Heavy steel weldment structure supports grinder at work height for operator working in a sitting position. Has 3" (76 mm) dia. outlet for vacuum hose (order 97907 Vacuum Hose separately, specify length).

Utility Grinder Contact Arm Assemblies

Ideal finishing and blending of fabricated metal, turbine blades, surgical implants, golf clubs, firearms, medical/dental instruments, cutlery, sport equipment or metal requiring a fine finish.

V-11220, V-11300, V-11301, V-11341 "Polish Turbine Blades"

Offset design and miniature contact wheels. 2" strap polish in offset area; polish turbine blades or other contours. 45 PSI max.



Belt Sizes: V-11220 uses 5/8" or 3/4" wide. All others use 1/2" wide.

Contact wheels on each above arm:

11220: 5/16" dia. x 5/8" W. steel (11352). 11300: 1/4" dia. x 3/8" W. steel (11332). 11301: 5/16" dia. x 3/8" W. steel (11068). 11341: 5/16" dia. x 3/8" W. rubber (11342).

65467 Unique "Split Wheel" Design



Belt Size: 2" wide x 72" long.
Contact Wheel: 5/8" diameter x 2" wide
Face Material: 45 durometer neoprene, flat.

"Split Wheel" design contact arm allows operator to grind up against workpiece shoulders without arm interference. With 65570 Back-Up Roll (shown here mounted) for use when strap grinding or polishing to give the abrasive belt extra support.

V-11204 "Unique Offset Design"

Makes strap polishing easy!



Belt Sizes: 1/8", 1/4", 5/16" or 1/2" wide.

11080 Contact Wheel: 1" dia. x 3/8" wide, radiused rubber.

No Platen: Due to offset design.

V-11337

• Enter channels as narrow as 9/16".



Belt Size: 1/2" wide.

11076 Contact Wheel: 7/16" dia. x 3/8" wide, steel.

11027 Platen: 1/2" wide.

V-11312

• Grind on contact wheel or platen.



Belt Sizes: 1/2" wide.

11078 Contact Wheel: 5/8" dia. x 3/8" wide, radiused rubber.

Two 11025 Platens: 1/2" wide.

For steel platens order V-11325.

67049, 67050, 67051



Belt Sizes: 3/4" wide for 67050 and 67051, 1" wide for 67049.
Contact Wheels: 2" diameters x 5/8" wide (67051), 3/4" wide (67050) 1" wide (67049), all are serrated urethane.

V-11663

• Grind, deburr, and polish over Dynapad platen.
• 7-1/2" reach.



Belt Size: 1" wide.
11616 Contact Wheel: 1" dia. x 1" wide 80 duro smooth rubber.
Platen: 1" wide x 2-1/2" long.

V-11287

• Grind on wheel or platen; 5-1/4" reach.



Belt Size: 5/8" or 3/4" wide.
11282 Contact Wheel: 3/4" dia. x 5/8" wide, rubber.
11109 Platen: 3/4" wide.

V-11677

• Grind, blend, polish welds using slack of belt.
• 7" workable reach.



Belt Size: 1" wide.
11620 Contact Wheel: 4" dia. x 1" wide 40 duro smooth rubber, 80 duro available. **Platen:** None.

V-11684

• Polish contours without gouging workpiece.
• 7" workable reach.



Belt Size: 1" wide.
11642 Contact Wheel: 4" dia. x 5/8" wide 40 duro serrated rubber (60, 80, 90 duro urethane wheels avail.). **Platen:** None.

See page 13 for additional contact arm assemblies and inch to millimeter conversion chart.

ELECTRICAL WIRING AND CONTROLS

THIS MACHINE IS BUILT TO RIGID DYNABRADE STANDARDS. ALL ELECTRICAL PARTS USED ON THIS MACHINE ARE RECOGNIZED BY UNDERWRITER LABORATORIES (U.L.) AND CANADIAN STANDARDS ASSOCIATION (C.S.A.).

THE TURBINE BLADE GRINDER IS SUPPLIED WITH MOTOR SPEED CONTROL IN A NEMA 12 ENCLOSURE, AND A P.M., D.C. MOTOR. THE CONTROL IS FURNISHED WITH AN ON-OFF SWITCH, FORWARD-REVERSE SWITCH AND SPEED CONTROL. INTERNAL FUSES PROTECTS THE CONTROL AND MOTOR. A REVERSING SWITCH IS PROVIDED TO ENABLE OPERATOR TO CONTROL BELT DIRECTION DEPENDING ON GRINDING APPLICATION. THE MACHINE IS COMPLETE WITH A POWER CORD FOR CONNECTION TO CUSTOMERS ELECTRICAL OUTLET. THE 1 HORSEPOWER MODEL 65036 IS WIRED FOR 115V/1 PH/60 HZ ELECTRICAL POWER.

ELECTRICAL WIRING

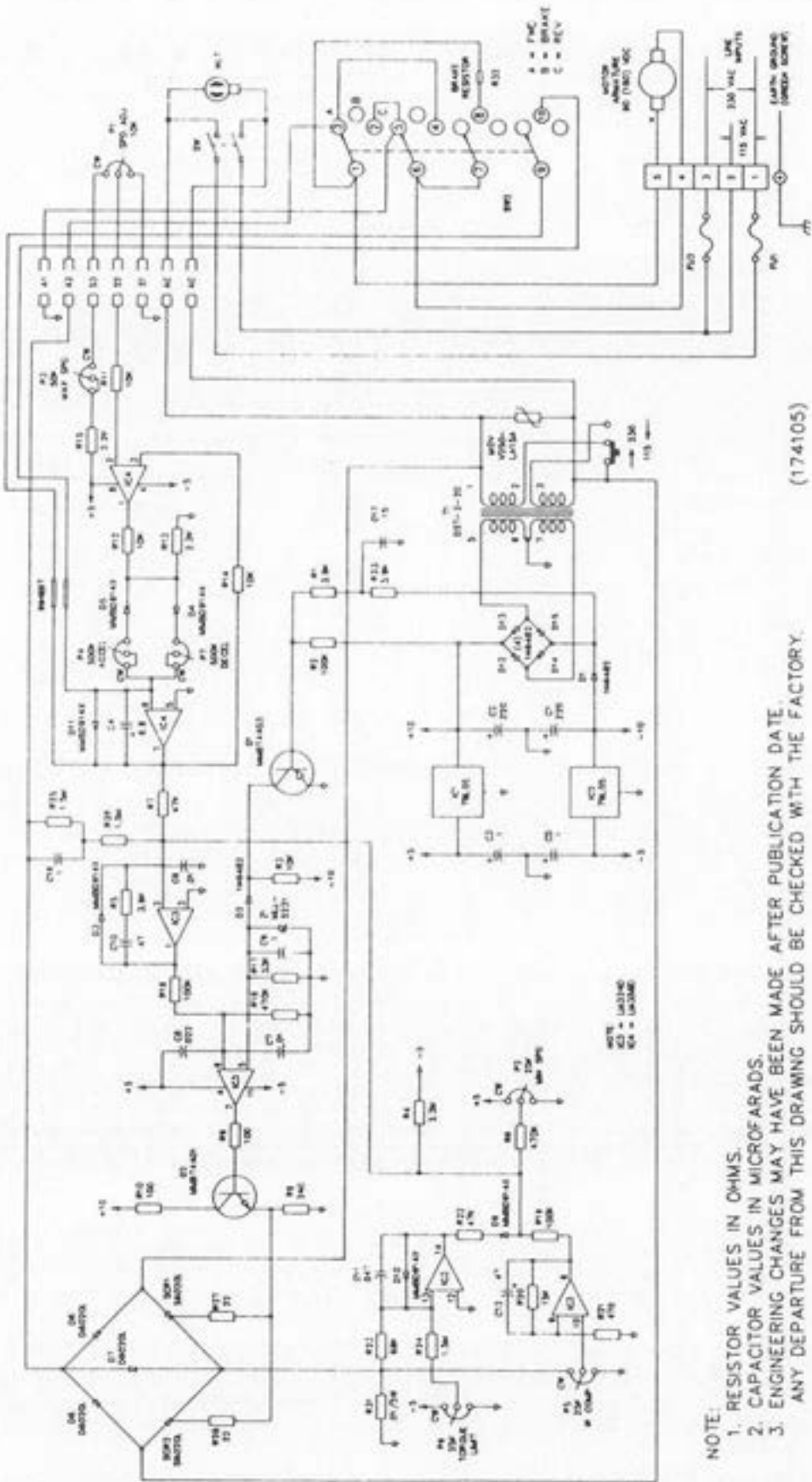
DETERMINE THAT MACHINE IS ADEQUATELY GROUNDED BEFORE CONNECTING POWER, IN ACCORDANCE WITH LOCAL ELECTRICAL WIRING CODES.

DETERMINE THAT THE POWER SUPPLY IS THE CORRECT VOLTAGE, PHASE AND FREQUENCY ACCORDING TO DATA ON MACHINE NAMETAG.

THE TOOL SHOULD BE CONNECTED TO A GROUND, METAL, PERMANENT WIRING SYSTEM, OR TO A SYSTEM HAVING EQUIPMENT-GROUNDING CONDUCTOR, IN ACCORDANCE WITH LOCAL ELECTRICAL WIRING CODES, AND ORDINANCES. SEE SCHEMATIC ON FOLLOWING PAGE.

NOTE

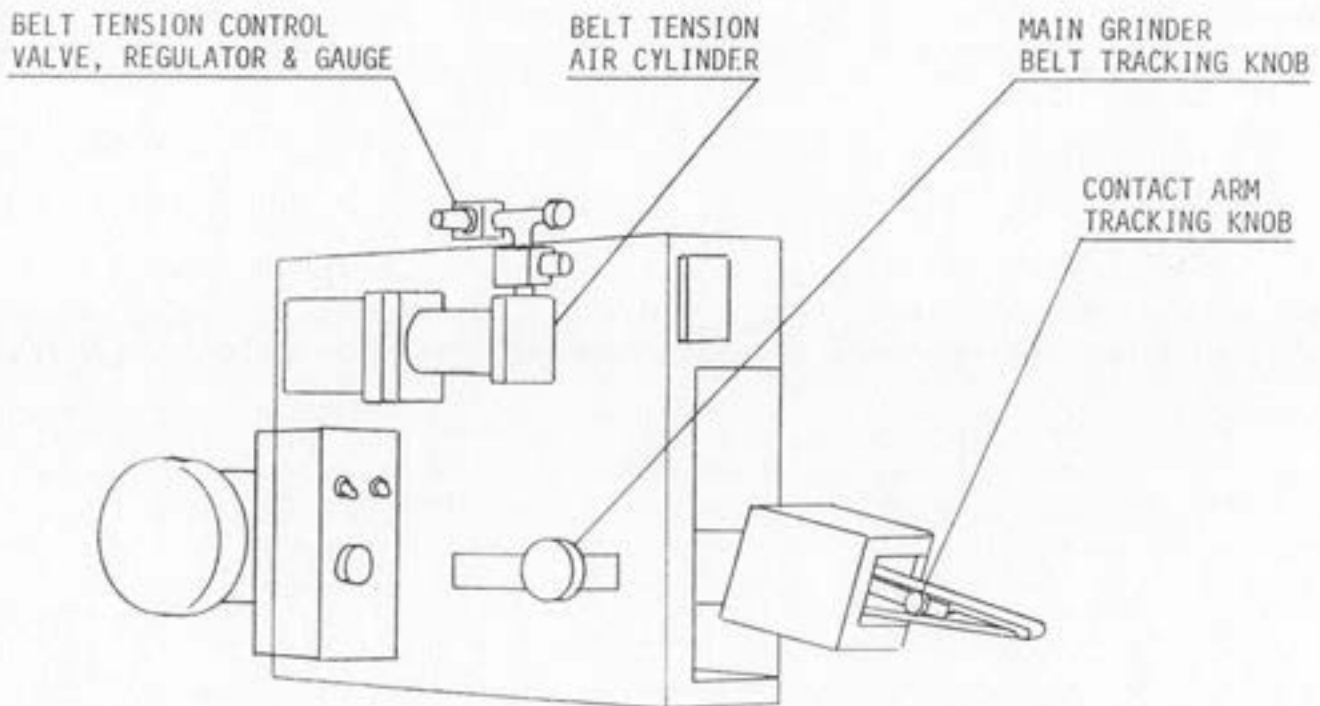
CHECK WITH A QUALIFIED ELECTRICIAN IF THE GROUNDING INSTRUCTIONS ARE NOT COMPLETELY UNDERSTOOD, OR IF IN DOUBT AS TO WHETHER THE TOOL IS PROPERLY GROUNDED.



NOTE:
 1. RESISTOR VALUES IN OHMS.
 2. CAPACITOR VALUES IN MICROFARADS.
 3. ENGINEERING CHANGES MAY HAVE BEEN MADE AFTER PUBLICATION DATE.
 ANY DEPARTURE FROM THIS DRAWING SHOULD BE CHECKED WITH THE FACTORY.

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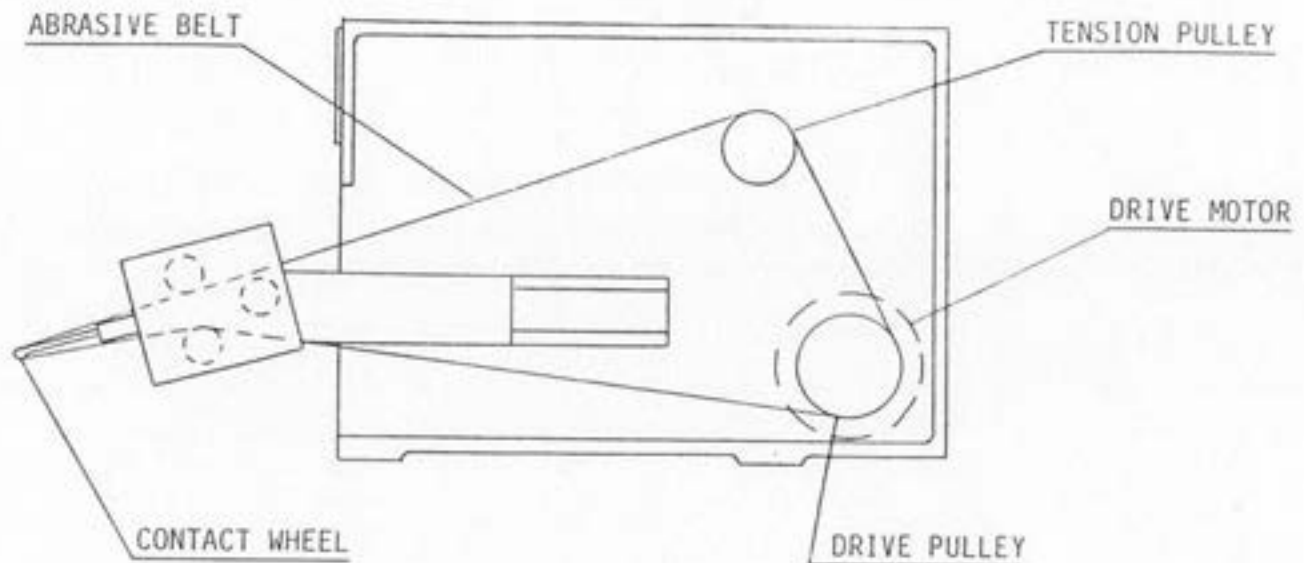
MACHINE ADJUSTMENTS



ALL MODELS INCORPORATE THE SAME ADJUSTMENT FEATURES, BELT TRACKING AND BELT TENSION. BY TURNING THE MAIN GRINDER TRACKING KNOB CLOCKWISE, THE ABRASIVE BELT WILL MOVE TO THE RIGHT AND REMAIN IN THIS POSITION. CORRESPONDINGLY, TURNING THE KNOB COUNTERCLOCKWISE, THE BELT WILL MOVE TO THE LEFT. THIS FEATURE ALLOWS THE OPERATOR TO CENTER THE BELT ON THE CONTACT WHEEL. ONCE THE MAIN ADJUSTMENT IS COMPLETED, THE CONTACT ARM TRACKING KNOB IS USED FOR TRIMMING.

AIR TENSIONING OF THE ABRASIVE BELT PROVIDES OPTIMUM BELT LIFE AND PERFORMANCE AND MAKES BELT CHANGING EASIER. AMOUNT OF AIR PRESSURE IS DEPENDENT ON MANY VARIABLES AND AS SUCH NO FIRM CHARTS CAN BE MADE. SUGGESTED PRESSURE IS 40 PSI FOR 1/2" WIDE BELTS. ADJUST REGULATOR UNTIL GAUGE READING IS AT DESIRED POSITION. THE LEVER ON THE CONTROL VALVE IS MANUALLY OPERATED TO EITHER APPLY PRESSURE FOR GRINDING, OR REMOVE PRESSURE FOR BELT CHANGE.

DRIVE PULLEY



THE DRIVE PULLEY IS URETHANE COVERED TO PREVENT BELT SLIPPAGE UNDER HEAVY GRINDING LOADS. BEING COATED, THE PULLEY IS SUBJECT TO WEAR AND WITH ABUSE WILL WEAR OUT VERY QUICKLY. UNDER NORMAL OPERATING CONDITIONS, THE PULLEY WILL GIVE MANY YEARS OF SATISFACTORY PERFORMANCE. IN THE EVENT THAT THE PULLEY DOES WEAR OUT, REPLACEMENT IS QUITE SIMPLE. (SEE FOLLOWING PAGE FOR PROCEDURE.)

THE DRIVE PULLEY IS CROWNED TO PROVIDE TRACKING STABILITY AND IN THE EVENT THAT THE CROWN WEARS OUT, SIMPLY REMOVE THE PULLEY AND ADD A 2 DEGREE CROWN TO EACH SIDE FROM THE CENTER AND REPLACE.

DRIVE PULLEY REPLACEMENT

REFER TO FINAL ASSEMBLY DRAWING #65445, SHEET #2, SECTION C-C.

1. DISCONNECT ELECTRIC POWER.
2. REMOVE ABRASIVE BELT GUARD DOOR AND BELT.
3. REMOVE SET SCREW IN PULLEY HUB.
4. REMOVE DRIVE PULLEY.
5. INSTALL NEW PULLEY IN REVERSE MANNER.
6. ASSEMBLE WITH FACE OF PULLEY IN-LINE WITH EDGE OF IDLER & TENSION PULLEYS.
7. RECONNECT POWER AND TURN MOTOR ON WITHOUT ABRASIVE BELT TO CHECK FOR VIBRATION.
8. CHECK BELT TRACKING, AS THE NEW PULLEY MAY CHANGE BELT POSITION SLIGHTLY.

ABRASIVE BELTS

THE MACHINE AJUSTMENTS FOR PROPER TENSIONING AND TRACKING HAVE BEEN DESCRIBED PREVIOUSLY. THE SELECTION OF THE PROPER BELT IS GOVERNED BY MANY VARIABLE, AND AS SUCH, NO HARD AND FAST RULE APPLIES. THE FOLLOWING RECOMMENDATIONS ARE MADE ONLY AS A STARTING POINT.

MATERIAL	ABRASIVE	GRAIN SIZE		BELT SPEED (SFPM)
		ROUGHING	FINISHING	
ALUMINUM & BRASS	SILICON CARBIDE	36-80	120-240	4100-5400
COPPER	SILCON CARBIDE	60-80	120-240	2700
CAST IRON	SILICON CARBIDE	24-36	60-80	2700-4100
SOFT STEEL	ALUMINUM OXIDE	36-60	120-180	4100-5400
HARD STEEL	ALUMINUM OXIDE	40-80	120-180	4100-5400
STAINLESS STEEL	SILICON CARBIDE	36-80	120-240	2700-4100
TITANIUM	SILICON CARBIDE	60-80	120-240	2050

THE ABRASIVE BELT SHOULD BE INSTALLED WITH THE DIRECTIONAL ARROW ON INSIDE OF BELT POINTING IN THE DIRECTION OF THE BELT TRAVEL. SOME BELTS, DEPENDING ON THE TYPE OF JOINT, CAN BE RUN IN EITHER DIRECTION.

THE MACHINES DESCRIBED IN THIS MANUAL ARE DESIGNED PRIMARILY FOR DEBURRING CHAMFERING, POLISHING, AND FINISHING CONTOURS WITH VARIOUS SIZE CONTACT ARMS. THE MACHINE IS CAPABLE OF A HIGH DEGREE OF PRECISION GRINDING WITH PROPER BELT SPEED AND GRIT.

MAINTENANCE

THE GRINDERS DESCRIBED IN THIS MANUAL HAVE BEEN DESIGNED TO BE MAINTENANCE-FREE. ALL BEARINGS AND MOVING PARTS ARE SEALED AND LUBRICATED FOR LIFE. ELECTRIC MOTOR MAINTENANCE SHOULD BE PERFORMED AS RECOMMENDED BY THE MOTOR MANUFACTURER.

GOOD HOUSEKEEPING IS ESSENTIAL TO INSURING LONG LIFE OF ANY MACHINE TOOL. BY KEEPING THE MACHINE CLEAN AND VISUALLY INSPECTING FOR ANY WEAR, THE MACHINE WILL GIVE MANY YEARS OF QUALITY SERVICE.

PERIODICALLY INSPECT THE IDLER ROLLS, AND DRIVE PULLEY FOR ANY SIGNS OF WEAR. REPAIRING OR REPLACING WORN PARTS EARLY ENOUGH WILL PREVENT OTHER PARTS FROM BECOMING DAMAGED.

TROUBLE SHOOTING

TROUBLE	CAUSE	REMEDY
MOTOR WILL NOT START	POWER NOT CONNECTED OPEN LINE FUSE BLOWN DRIVE PULLEY LOCKED	CHECK CONNECTION CHECK POWER SOURCE REPLACE FUSE REMOVE ABRASIVE BELT AND TEST MOTOR. CHECK FOR OBSTRUCTIONS AROUND PULLEY. CHECK MOTOR FAN FOR OBSTRUCTION.
MOTOR VIBRATES	LOOSE MOTOR MOUNTING LOOSE DRIVE PULLEY DEFECTIVE NEOPRENE COVER DRIVE PULLEY	TIGHTEN MOUNTING BOLTS TIGHTEN PULLEY MOUNTING REPLACE DRIVE PULLEY
MOTOR OVERHEATS	EXCESSIVE GRINDING PRESSURE STALLS MOTOR	CHECK CAUSE OF OVERLOAD
IDLER ROLLS OVERHEAT	EXCESSIVE BELT TENSION	REDUCE BELT TENSION
BELT DOES NOT TRACK	LOW BELT TENSION PRESSURE DEFECTIVE OR WORN CROWN ON DRIVE PULLEY	INCREASE AIR LINE PRESSURE REPLACE DRIVE PULLEY OR RECROWN
BELT "THUMP" DURING GRINDING	LOOSE CONTACT ARM DEFECTIVE BELT JOINT	TIGHTEN MOUNTING SCREWS USE DIFFERENT TYPE BELT JOINT OR REPLACE BELT
WHEEL WEAR	EXCESSIVE GRIND PRESSURE WRONG HARDNESS	REDUCE FORCE AGAINST BELT CHANGE WHEEL DUROMETER

SAFETY

1. ALWAYS WEAR IMPACT-RESISTANT PROTECTIVE GLASSES AND FULL FACE SHIELD WHEN INVOLVED IN OR NEAR GRINDING OPERATIONS (SEE ANSI STANDARD Z87.1).
2. ALWAYS OBSERVE SAFETY RECOMMENDATIONS AS NOTED IN MACHINE MOUNTED NOTICES. NEVER RUN AN ABRASIVE BELT OR ANY UNFAMILIAR MACHINE WITHOUT FIRST READING AND FOLLOWING INSTRUCTION MANUAL.
3. PERIODICALLY INSPECT FOR SAFE OPERATING CONDITIONS OF ABRASIVE BELT, IDLER ROLLS, DRIVE PULLEY, AND ELECTRICAL POWER CONNECTION. NEVER OPERATE THIS MACHINE WITHOUT THE BELT GUARD IN PLACE.
4. BE CERTAIN THAT MACHINE IS ADEQUATELY GROUNDED BEFORE OPERATING.

THE FOLLOWING SAFETY RULES APPLY WHEN CONTACT WHEEL GRINDING

5. NEVER USE AN ABRASIVE BELT THAT IS NARROWER THAN THE CONTACT WHEEL, AS THE UNCOVERED WHEEL FACE WILL CAUSE SNAGGING OF THE WORKPIECE.
6. ALWAYS USE AN UPWARD STROKE OF THE WORKPIECE AGAINST THE ABRASIVE BELT AND ALWAYS USE THE GRIND AREA BELOW THE CENTERLINE OF THE CONTACT WHEEL.

!!! WARNING !!!

THERE IS A POTENTIAL COMBUSTION HAZARD IF FERROUS AND NON-FERROUS GRINDING DUST IS MIXED. DO NOT GRIND MATERIALS OF DIFFERENT TYPES WITHOUT THOROUGHLY CLEANING GRINDING RESIDUE FROM INSIDE MACHINE.

REPAIRS

THE FOLLOWING REPAIR PROCEDURES ARE TO BE PERFORMED ONLY BY A COMPETENT, TRAINED, MAINTENANCE MECHANIC, USING PROPER TOOLS TO INSURE THAT THE REPAIR WILL RESULT IN A QUALITY, TROUBLE-FREE CONDITION.

ANY REPAIR MADE TO THE MACHINE DURING THE WARRANTY PERIOD WILL VOID THE WARRANTY, UNLESS SUCH REPAIR HAS BEEN AUTHORIZED IN WRITING BY DYNABRADE, INC.

ALL REPAIRS ARE TO BE MADE ONLY AFTER ELECTRICAL POWER HAS BEEN DISCONNECTED FROM MACHINE AND PROPER SAFETY PRECAUTIONS ARE TAKEN TO PREVENT ACCIDENTAL RECONNECTION OF POWER.

REFER TO "FINAL ASSEMBLY" DRAWING #65445 FOR ITEM NUMBERS AND SECTIONAL VIEWS OF VARIOUS PARTS OF THE MACHINE.

DRIVE PULLEY

DRIVE PULLEY REPAIR/REPLACEMENT IS DESCRIBED IN SECTION "DRIVE PULLEY."

PIVOT SUPPORT

REFER TO SECTION B-B. UNSCREW TRACKING ADJUSTING SCREW AND KNOB (ITEMS 33 AND 34). REMOVE (3) CAP SCREWS (ITEM 42) AND REMOVE PIVOT BAR AND PIVOT SUPPORT (ITEMS 15 AND 16). THE PIVOT PIN (ITEM 54) IS PRESSED INTO THE SUPPORT-CASTING AND THE BUSHING (ITEM 25) IS PRESSED INTO THE PIVOT BAR. THE UNIT CAN NOW BE DISASSEMBLED. BE CAREFUL NOT TO LOSE THE SPRING AND PIVOT NUT WHEN REMOVING UNIT.

TENSION PULLEY

REFER TO SECTION E-E. REMOVE (2) CAP SCREWS (ITEM 38) AND SUPPORT BRACKET (ITEM 11). LOOSEN SET SCREW (ITEM 49) AND REMOVE PULLEY AND SHAFT UNIT. SLIDE PULLEY AND BEARINGS OFF OF SHAFT (ITEM 10). BEARINGS CAN NOW BE PRESSED OUT OF PULLEY. ASSEMBLE IN REVERSE ORDER.

TENSION PIVOT SHAFT

REFER TO SECTION D-D. REMOVE (2) CAP SCREWS (ITEM 46) AND COVER (ITEM 12). REMOVE LOCK NUT (ITEM 51) AND LOOSEN SET SCREW (ITEM 49) IN PIVOT PLATE (ITEM 8). SHAFT AND GEAR UNIT CAN NOW BE REMOVED FROM HOUSING. TAKE CARE TO SUPPORT TENSION PULLEY UNIT WHILE RETRACTING PIVOT SHAFT. GEAR (ITEM 26) CAN BE REMOVED FROM SHAFT (ITEM 9) BY REMOVING SPRING PIN (ITEM 53) AND LEVER (ITEM 32). ASSEMBLE IN REVERSE ORDER TAKING CARE TO TIGHTEN LOCK NUT (ITEM 51) ONLY ENOUGH TO ELIMINATE END-PLAY IN SHAFT AGAINST BUSHING SHOULDERS. OVERTIGHTENING THE LOCK NUT WILL BIND-UP THE SHAFT AND WILL NOT ALLOW PROPER BELT TENSION.

TENSION RACK

REFER TO SECTION A-A. REMOVE (2) CAP SCREWS (ITEM 46) AND COVER (ITEM 12). UNSCREW TENSION SHAFT (ITEM 4) AND REMOVE (2) CAP SCREWS (ITEM 40) TO FREE RACK GUIDE (ITEM 7) AND RACK (ITEM 6). ASSEMBLE IN REVERSE ORDER. ADJUST POSITION OF RACK GUIDE TO MINIMIZE GEAR BACKLASH WITHOUT BINDING AND SECURE IN PLACE.

ADJUSTABLE CONTACT ARM ASSEMBLY #65454

THIS ASSEMBLY IS USED PRIMARILY IN APPLICATIONS WHERE VARIOUS WORK POSITIONS ARE REQUIRED, SUCH AS IN GRINDING AND POLISHING TURBINE BLADES. THE ASSEMBLY, WITH VARIOUS CONTACT ARMS WILL ACCEPT ABRASIVE BELTS FROM 1/4" WIDE TO 2" WIDE X 72" LONG DEPENDING ON ARM USED.

THE CONTACT ARM #11312 IS SUPPLIED AS STANDARD EQUIPMENT AND COMES WITH A 3/8" WIDE X 5/8" DIAMETER RUBBER CONTACT WHEEL, FOR USING 1/2" WIDE X 72" LONG ABRASIVE BELTS.

ALSO INCLUDED IN THIS ASSEMBLY IS ADAPTER #65123. THIS ADAPTER MUST BE USED TO MOUNT ALL DYNAFIL[®] CONTACT ARMS. WITH THIS ADAPTER REMOVED, VARIOUS DYNABELT[®] CONTACT ARMS CAN BE MOUNTED WITH CLAMP KNOB INSERTED THRU PIVOT SHAFT HOLE.

REFER TO ASSEMBLY DRAWING AND BILL OF MATERIAL #65454 FOR ANY REPAIR AND MAINTENANCE WORK, AND TO BECOME FAMILIAR WITH ARM CONSTRUCTION AND OPERATION. THE ABRASIVE BELT IS INSTALLED BY "THREADING" THE BELT OVER THE CONTACT WHEEL AND THEN OVER THE TENSION ROLLS WITH THE ABRASIVE GRAIN AGAINST THE ROLLS. THE BELT IS WRAPPED OVER THE DRIVE PULLEY AND THE MAIN AIR TENSIONED PULLEY. THE AIR VALVE IS MANUALLY OPERATED TO TIGHTEN BELT AND PRESSURE ADJUSTED TO APPROXIMATELY 40 PSI FOR 1/2" WIDE BELT. THE ARM POSITION IS ADJUSTED BY LOOSENING PIVOTAL CLAMP KNOB, ROTATING THE ARM TO DESIRED POSITION, AND TIGHTENING CLAMP KNOB. THE ARM WILL OPERATE IN ANY POSITION TO SUIT THE GRINDING APPLICATION.

START MOTOR WITH START/STOP SWITCH, AND HAVING REVERSING SWITCH IN EITHER RUN DIRECTION. MAIN TRACKING ADJUSTMENT ON SIDE OF GRINDER IS USED TO CENTER BELT AND MAKE ARM SQUARE TO DRIVE PULLEY. THE CONTACT ARM TRACKING KNOB IS THEN USED FOR TRIMMING, CHECK TRACKING IN BOTH BELT DIRECTIONS AND INSTALL GUARD BEFORE OPERATING.

!!! WARNING !!!

DO NOT ATTEMPT TO ADJUST ARM POSITION WHILE ABRASIVE BELT IS RUNNING.
DO NOT OPERATE THIS ASSEMBLY UNLESS BELT GUARD IS IN PLACE.

#65454 ADJUSTABLE ARM ASSEMBLY WARRANTY

THE TENSION ROLL (ITEM #4) IS SUBJECT TO WEAR DUE TO THE ABRASIVE GRAIN OF THE BELT BEING IN CONTACT WITH THE ROLL SURFACE. THE ROLL MATERIAL HAS BEEN DESIGNED TO RESIST ABRASIVE WEAR BUT THE LIFE EXPECTANCY OF THE ROLL CANNOT BE GUARANTEED, AND AS SUCH THE ROLL IS WARRANTED FOR 90 DAYS.

THERE IS NO MAINTENANCE REQUIRED ON THIS ASSEMBLY AS THE ONLY MOVING PARTS ARE THE TENSION ROLL AND BALL BEARING. BEARING OR ROLL REPLACEMENT IS MADE BY REMOVING THE SHOULDER BOLT, ROLLER AND SPACER ASSEMBLY. THE NEW BEARINGS ARE PRESSED INTO THE ROLL AND INSTALLED IN REVERSE ORDER. BE CERTAIN THAT THE NYLON SPACERS ARE INSTALLED ON SHOULDER BOLT ON OUTSIDE OF EACH BEARING.

NOTE: #65129 TENSION ROLL ASSEMBLY MAY BE ORDERED FOR REPLACING WORN ROLLER, AND INCLUDES ROLL, BEARING, RETAINING RINGS, SPACERS AND MOUNTING SCREW. THIS ROLL IS GROOVED FOR USING 1/4" TO 3/4" WIDE BELTS, WITH RETAINING RINGS INSTALLED IN THE GROOVES. TO USE ABRASIVE BELTS 1" TO 2" WIDE, SIMPLY REMOVE THE TWO RETAINING RINGS FROM ALL THREE ROLLS WITH PLIERS FURNISHED WITH ARM ASSEMBLY. (PLIERS--DYNABRADE PART NO. 97781, RETAINING RINGS--DYNABRADE PART NO. 97439.)

ASSEMBLY DRAWINGS

TURBINE BLADE GRINDER

Tension Roll Assembly is Redesigned on Dynabrade Turbine Blade Grinder

Purpose of tension Roll Assembly:

There are three tension roll assemblies on the patented adjustable arm of the Turbine Blade Grinder. Together, these three "rollers" provide abrasive belt control and aid in belt tracking.

Why we Redesigned the Tension Roll Assembly:

The new Tension Roll Assembly (65428) has been developed as a direct replacement for Tension Roll Assembly (65129), used in machine manufacture prior to June 1, 1991. The new design will lessen customer costs for the normally wearable parts over which the belt travels. With the former 65129 assembly, the belt traveled over a 65131 Tension Roll. With the new 65428 Assembly, the belt will travel over a smaller 66134 Tension Roll Center, which is less cost to replace than the former 65131 Tension Roll. This will result in overall customer savings over the lifetime of the Turbine Blade Grinder.

What to do:

If a customer requires a 65131 Tension Roll, he should order the following parts to update the machine:

- One 66134 Tension Roll Center.
- Two 66125 Tension Roll Caps.

These parts plus the remaining hardware from the former 65129 Assembly (with the exception of 97439 Snap Rings) make up the new 65428 Assembly.

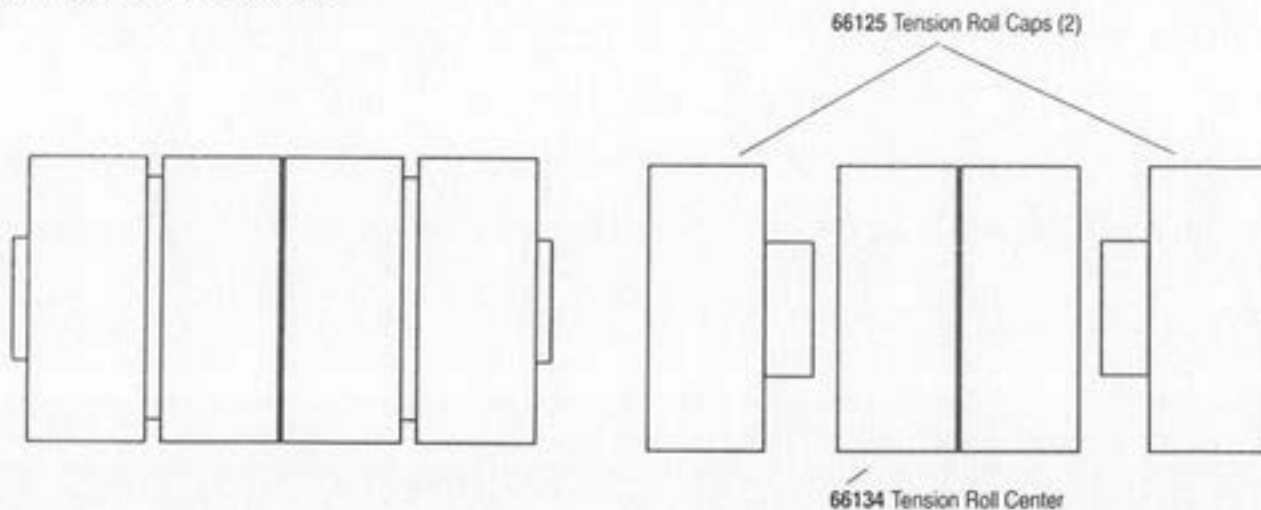
Cost Savings:

After roll assemblies have become updated, a customer will normally, on occasion, be required to replace the 66134 Tension Roll Center when the crown wears and belt tracking becomes difficult. Presently, the new tension roll center is priced 42% less than the former 65131 Tension Roll. Also, there is a risk of bearing damage in the new design caused by repeated removal and installation. The two roll caps, bearings included, simply slide into the tension roll center.

Quality:

The 66134 Tension Roll Center is oil-hardened tool steel, hardened and tempered to R/C 57-62.

Bill of Material Reference:



Former Tension Roll Assembly:

(Prior to June 1, 1991) includes:

- 65131 One piece tension roll
- 97439 Snap Ring (2) omitted in new assembly
- 50722 Bearing
- 97140 Shoulder Screw
- 97329 Spacer
- 97319 Wavy Spring Washer

New 65428 Tension Roll Assembly:

(After June 1, 1991) includes:

- 66134 Tension Roll Center
- 66125 Tension Roll Caps (2) > Replaces original 66131 Tension Roll
- 50722 Bearing
- 97140 Shoulder Screw
- 97329 Spacer
- 97319 Wavy Spring Washer

Visit our new Web Site via Industry.Net MROP On-Line: <http://www.dynabrade.com>

E-Mail: DynaTalk@aol.com



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PRINTED IN USA

FLOOR STAND #66031

REFER TO ASSEMBLY DRAWING 66031 FOR ITEM NUMBER CALLOUT. THE FOLLOWING LIST SHOWS THE ITEM NUMBER AND THE PART NUMBER TO BE USED FOR ORDERING REPLACEMENT PARTS.

ITEM #	PART #	DESCRIPTION	QUANTITY
1	66061	STAND TOP	1
2	66067	SUPPORT LEG	4
3	97779	LEVELING FOOT	4
4	95158	HEX HEAD SCREW (1/4-20x3/4)	24
5	95166	FLAT WASHER (1/4)	48
6	95167	LOCK WASHER (1/4)	24
7	95186	HEX NUT (1/4-20)	24
8	97216	HEX NUT (5/16-18)	8
9	97216	HEX NUT (5/16-18)	4
10	95042	LOCK WASHER (5/16)	4
11	95036	HEX HEAD SCREW (5/16-18x1 1/4)	4

ASSEMBLY INSTRUCTION

POSITION STAND TOP ON TABLE OR FLOOR WITH LIPS UP. PLACE EACH LEG ON INSIDE OF LIPS AND INSTALL HARDWARE TO SECURE EACH LEG. NOTE: INSTALL SCREW WITH FLAT WASHER (ITEM 4&5) FROM OUTSIDE OF LIPS ON STAND TOP. INSTALL FLAT WASHER, LOCK WASHER, AND NUT (ITEMS 5,6 &7) ON SIDE OF LEGS AND TIGHTEN. USE ALL HARDWARE FURNISHED. INSTALL LEVELING FOOT AND NUT (ITEMS 3 & 8) IN BOTTOM FLANGE OF EACH LEG. TURN STAND OVER ONTO FEET AND MOUNT GRINDER TO STAND TOP WITH HARDWARE (ITEM 9,10 & 11). ADJUST LEVELING FEET TO ELIMINATE ANY ROCKING.

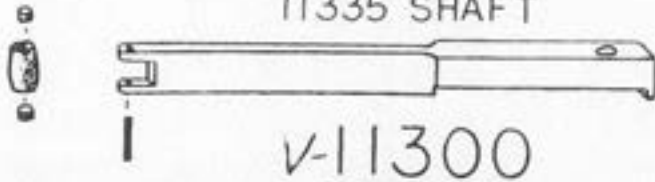
TURBINE BLADE GRINDER

CONTACT ARM ASSEMBLIES

11334 BEARING (2)

11333 CONTACT WHEEL

11335 SHAFT



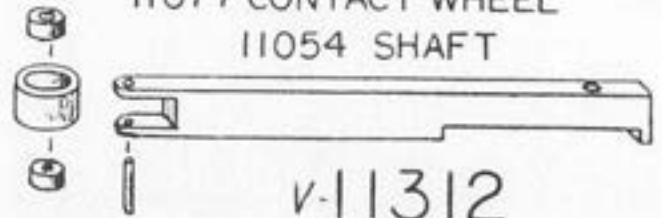
✓-11300

CONTACT WHEEL ASSEMBLY 11332

11052 BEARING (2)

11077 CONTACT WHEEL

11054 SHAFT



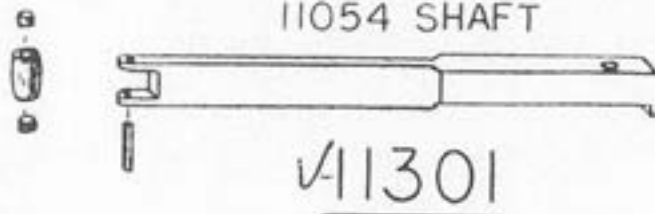
✓-11312

CONTACT WHEEL ASSEMBLY 11078

11051 BEARING (2)

11067 CONTACT WHEEL

11054 SHAFT



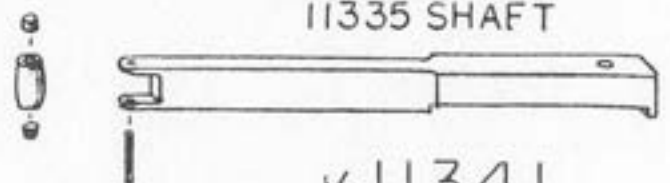
✓11301

CONTACT WHEEL ASSEMBLY 11068

11334 BEARING (2)

11343 CONTACT WHEEL

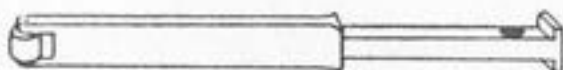
11335 SHAFT



✓-11341

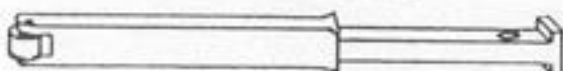
CONTACT WHEEL ASSEMBLY 11346

65534



SAME AS CONTACT ARM 11300
EXCEPT ARM IS REVERSIBLE

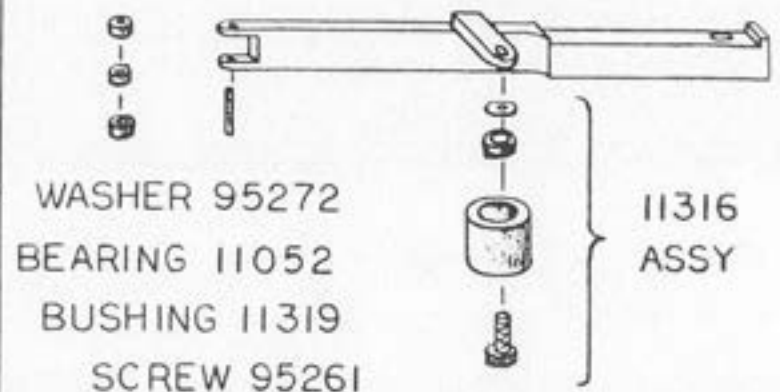
65544



SAME AS CONTACT ARM 11301
EXCEPT ARM IS REVERSIBLE

11051 BEARINGS (3)

11054 SHAFT



WASHER 95272

BEARING 11052

BUSHING 11319

SCREW 95261

11316
ASSY

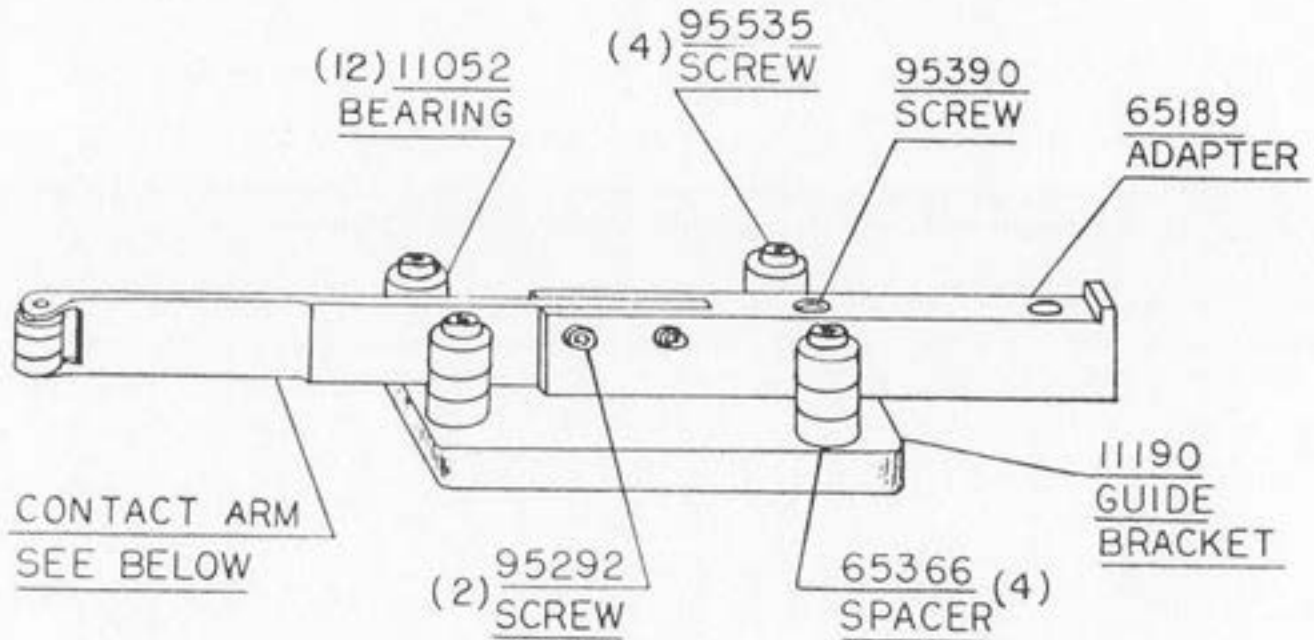
65188

ALL ABOVE CONTACT ARMS USE
" " " "

TURBINE BLADE GRINDER

CONTACT ARM ASSEMBLIES

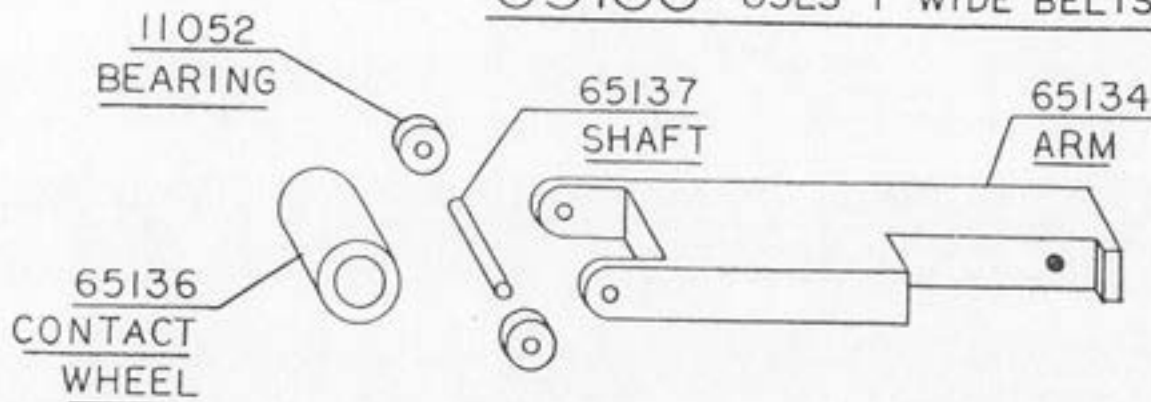
65190 MINI ARM ADAPTER ASSEMBLY



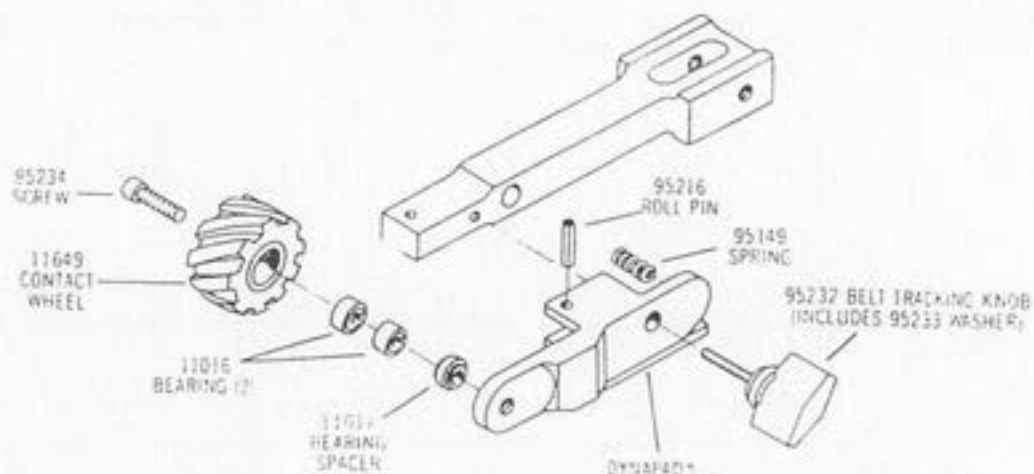
NOTE MINI ARM ASSEMBLY USES 1/2" WIDE BELTS

CONTACT ARM	REACH	BELT LENGTH
65367	1-1/2"	72"
65368	4-1/2"	78"

65133 - USES 1" WIDE BELTS



OPTIONAL CONTACT ARM ASSEMBLIES



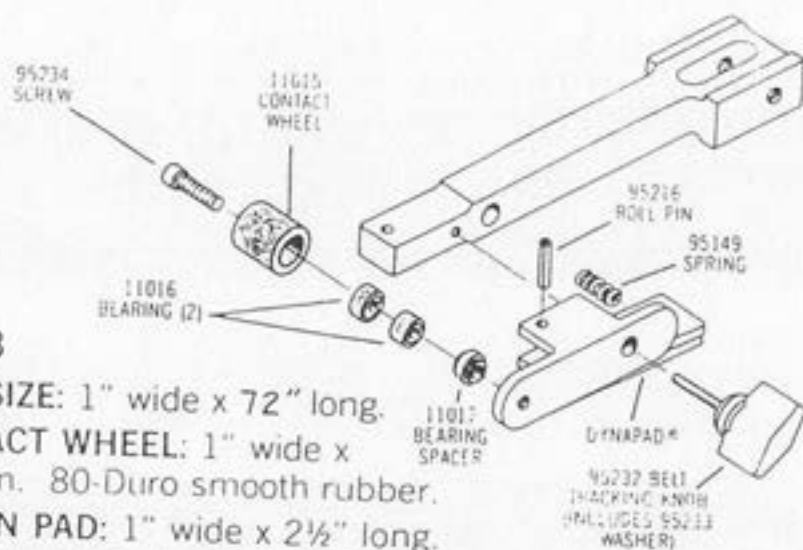
V-11681

BELT SIZE: 1" wide x 72" long.

CONTACT WHEEL: 1" wide x 2" diam
70-Duro standard serrated urethane.
(Other wheels may be substituted,
see chart on next page.)

PLATEN PAD: 1" wide x 2½" long.

Shaded parts indicate
11650 Contact Wheel Assembly.



V-11663

BELT SIZE: 1" wide x 72" long.

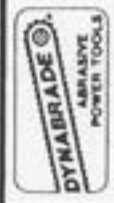
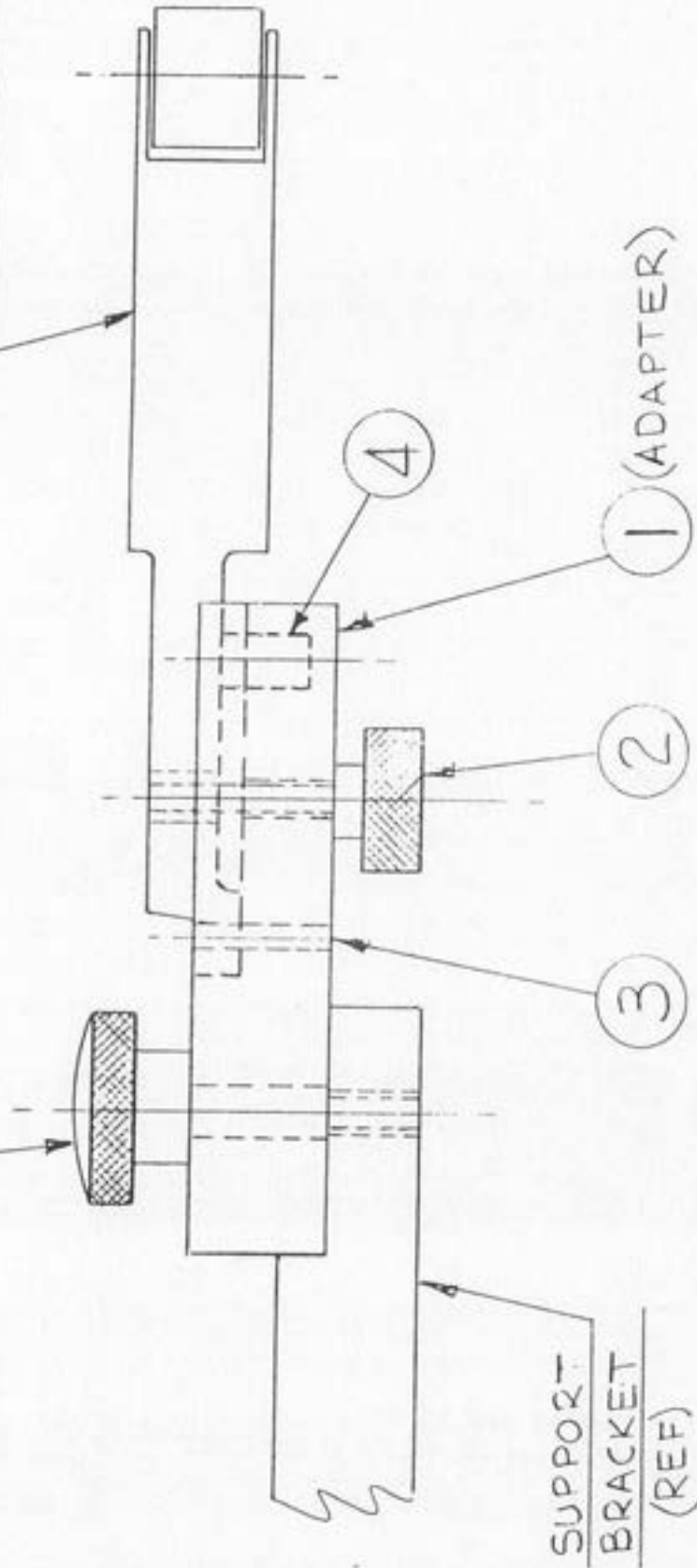
CONTACT WHEEL: 1" wide x
1" diam. 80-Duro smooth rubber.

PLATEN PAD: 1" wide x 2½" long.

Shaded parts indicate 11616 Contact Wheel Assembly

CLAMP KNOB FOR
ADAPTER (REF)

DYNAFILE II
CONTACT ARM (REF)



DYNABRADE, INC.

TITLE
ADAPTER ASSY

SHEET
1 of 1

DRAWING
NUMBER
65123

MATERIAL

TOLERANCES
EXCEPT AS NOTED

- 1 ±
- .01 ±
- .005 ±
- .001 ±
- ANGLES ±

DRAWN
M. LAMB

APPROVED

DATE
9-10-85

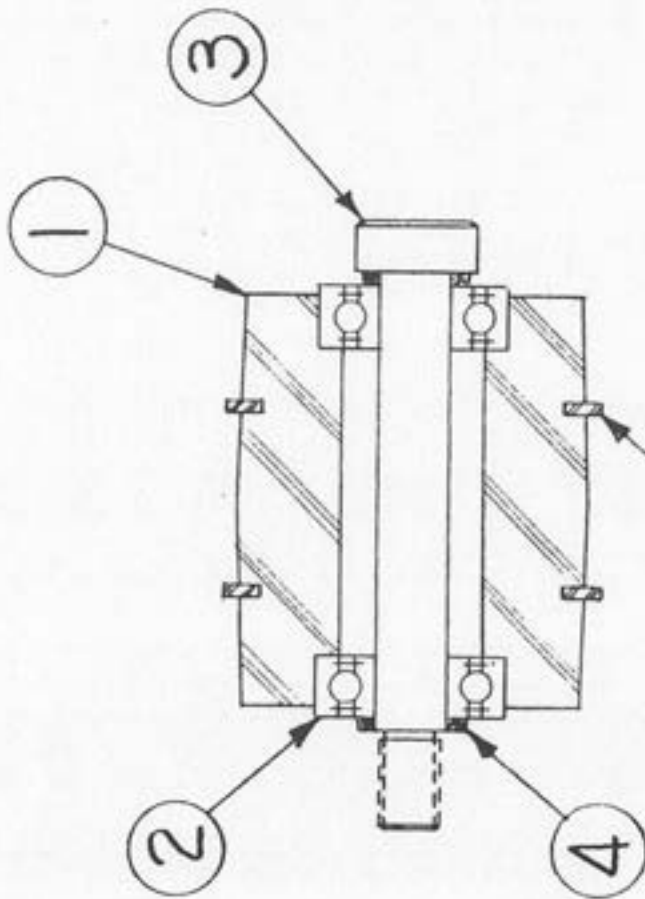
DATE

SCALE
FULL

DESCRIPTION/DATE

SYM

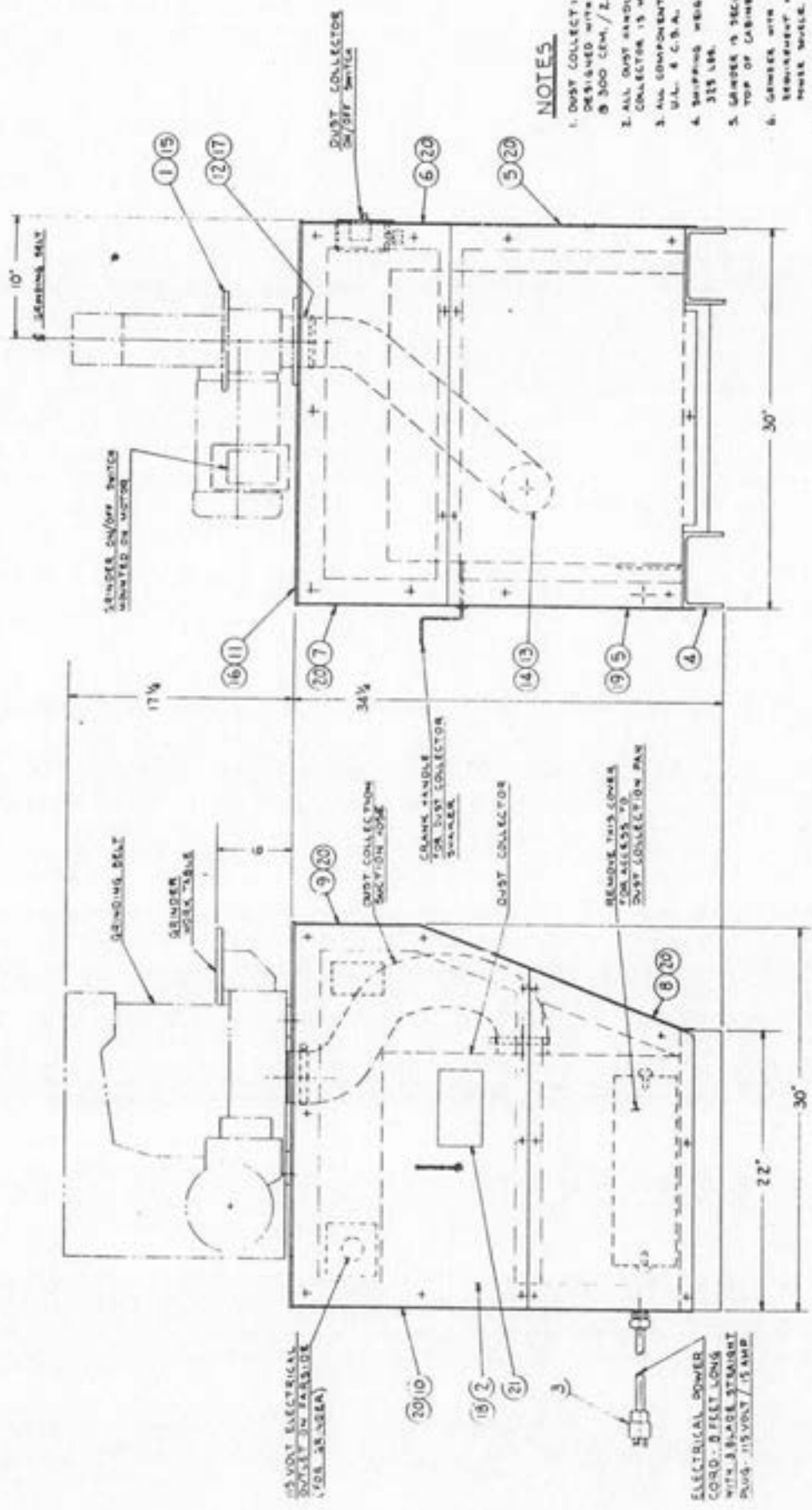
RETURN NUMBER



5 RINGS REQUIRED FOR
BELT WIDTHS 1/4" THRU 3/4"

REMOVE RINGS FOR 1" THRU 2"
WIDE BELTS

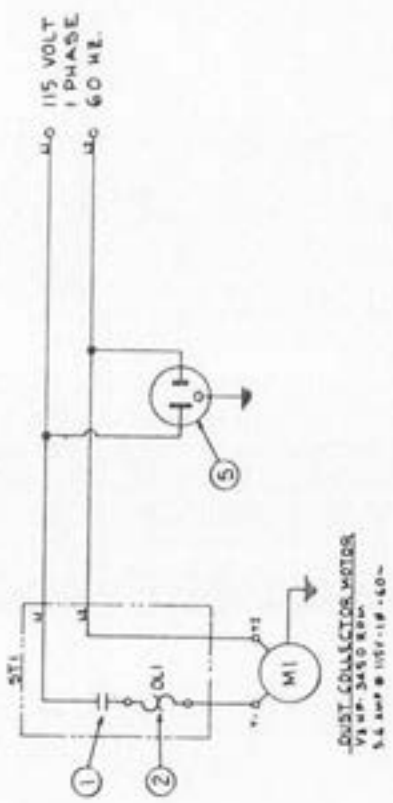
REVISION RECORD		MATERIAL		DATE	
SYM	DESCRIPTION/DATE	DRAWN	DATE	APPROVED	DATE
A	ADDED ITEM AS M.LAMB 5/28/81	M.LAMB	11-5-86		
TOLERANCES EXCEPT AS NOTED		SCALE FULL			
.1 ±					
.01 ±					
.003 ±					
.0010 ±					
ANGLES ±					
DYNABRADE AGGRESSIVE POWER TOOLS					
DYNABRADE, INC.		TITLE			
		TENSION ROLL ASSY			
		SHEET	DRAWING NUMBER		
		1 OF 1	65129		



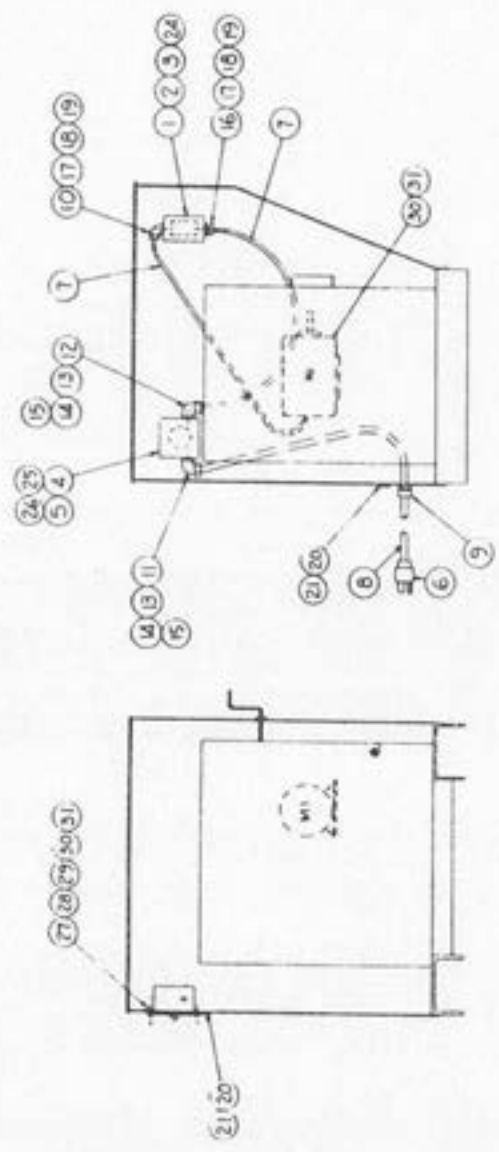
NOTES

1. DUST COLLECTION SYSTEM IS DESIGNED WITH 4" SUCTION HOSE @ 300 CFM / 2.50" W.G.
2. ALL DUST HANDLING DUCTING AND COLLECTOR IS METALLIC.
3. ALL COMPONENTS USED ARE U.S.A. & C.B.A. APPROVED.
4. SHIPPING WEIGHT - WITH GRINDER 315 LBS.
5. GRINDER IS SECURELY BOLTED TO TOP OF CABINET.
6. GRINDER WITH 1000W" ELECTRICAL REQUIREMENT MUST HAVE SEPARATE THREE PHASE.

DYNABRADE, INC.	
MODEL NO.	65150
DRY GRINDING SYSTEM	
DATE	11-8-84

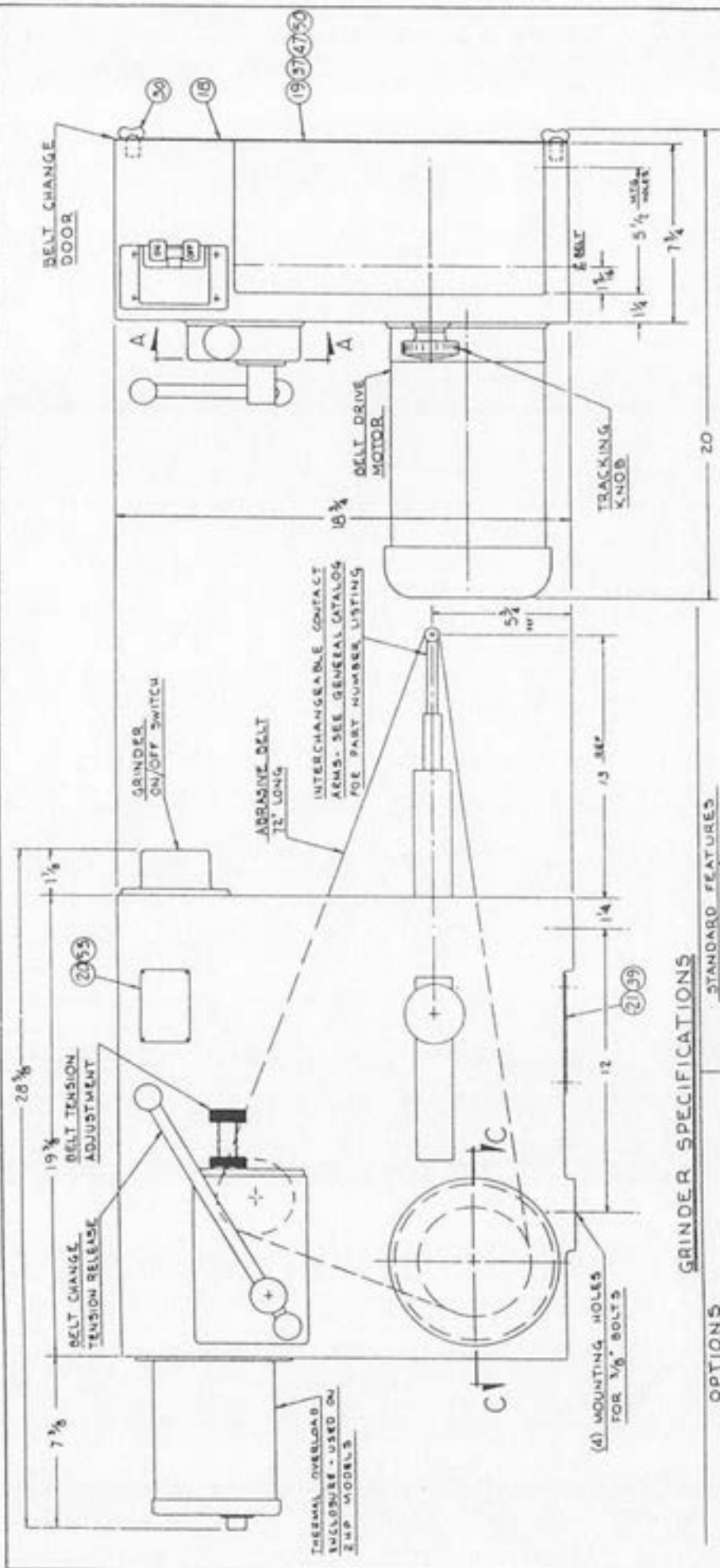


ELECTRICAL SCHEMATIC



ELECTRICAL ASSEMBLY

DYNABRADE	
DESIGNER	W. J. HARRIS
CHK'D BY	W. J. HARRIS
DATE	11-1-53
ELECTRICAL ASSEMBLY	
NO.	65152



GRINDER SPECIFICATIONS

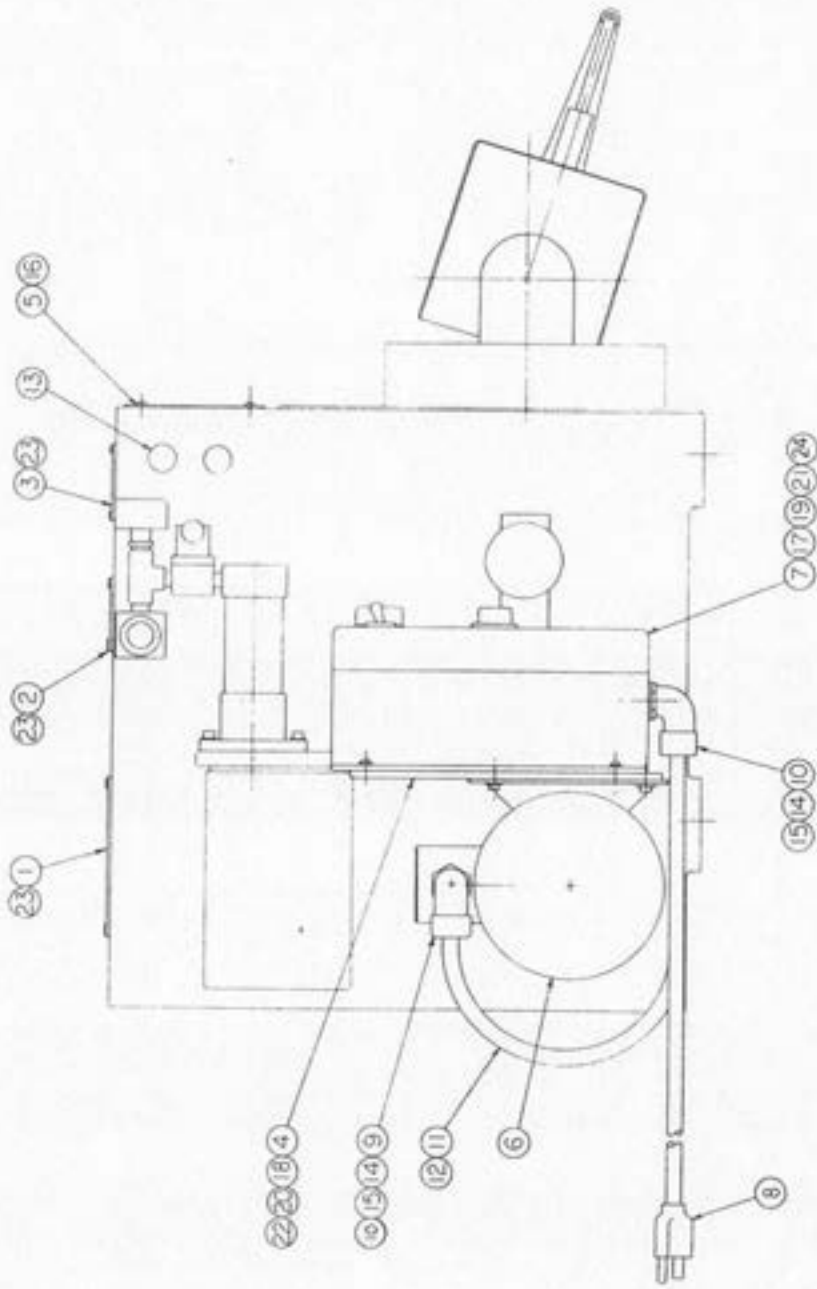
STANDARD FEATURES
 MODELS: 1-72 (1HP)
 2-72 (2HP)
 1 HP MODEL: 115V/1PH/60HZ - FURNISHED WITH THERMAL OVERLOAD MOTOR PROTECTION
 2 HP MODEL: 230V/3PH/60HZ - THERMAL OVERLOAD PROTECTION IN NEMA 12 ENCLOSURE
 BELT SPEEDS: 2050, 2700, 4100, 5400 SFPM
 BELT SIZE: $\frac{1}{4}$ " TO 2" WIDE x 72" LONG
 O.S.H.A. GUARDING IS STANDARD

OPTIONS:
 MAGNETIC STARTER/OVERLOAD ASSEMBLY
 FLOOR STAND PEDestal - STEEL WELDMENT
 DUST COLLECTOR SYSTEM - SELF CONTAINED WORKBENCH TYPE CABINET WITH HOSES, HOLES, AND ELECTRICAL GAUGER BOLTS TO CABINET TOP (33" x 40" FLOOR AREA)
 AIR TENSION ASSEMBLY (WITH REGULATOR AND HAUG VALVE)
 DESK STYLE GRINDER SUPPORT; MULT-IM MULTIM SCOP, DUST COLLECTOR CONNECTION, WELDED STEEL SUPPORT
 VARIOUS INTERCHANGEABLE CONTACT ARMS

ELECTRICS: ALL ELECTRICAL COMPONENTS ARE U.L. & C.S.A. RECOGNIZED. MOTOR START/STOP SWITCH IS NEMA 4 ENCLOSURE OVERLOAD RELAY IS NEMA 12 ENCLOSURE ON 2 HP MODEL.
 GRINDER IS READY TO RUN, LESS CONTACT WHEEL. SEE GENERAL CATALOG FOR AVAILABLE CONTACT ARMS. SHIPPING WEIGHT 130 LB.

STANDARD	1-72	2-72	STANDARD
MODEL	1-72	2-72	GENERAL ASSEMBLY
REV	1	1	L-1 = 65445

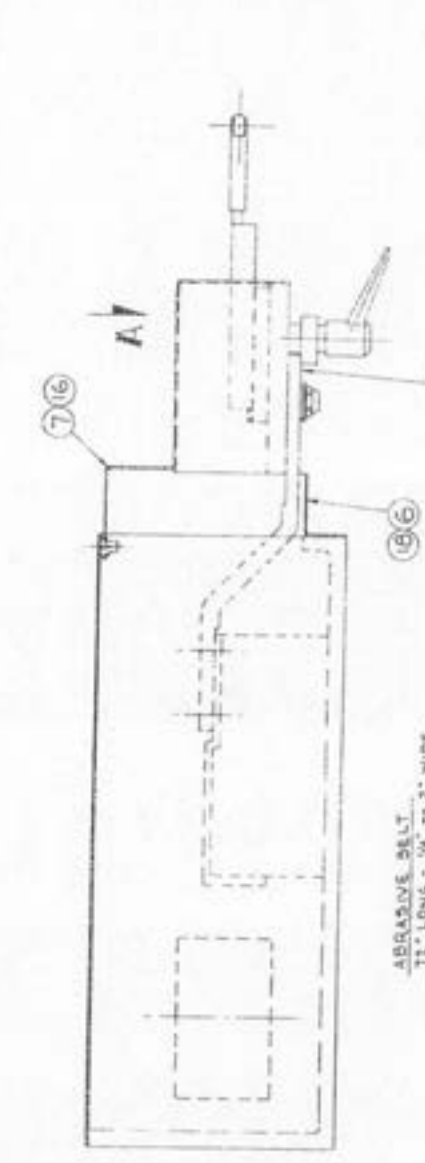
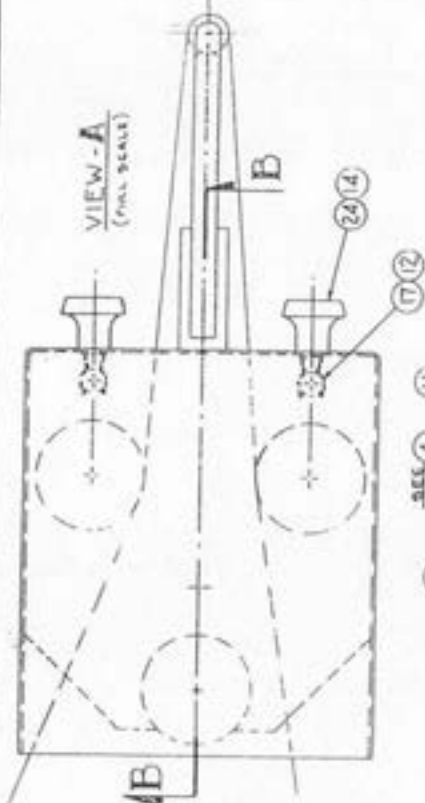
DATE	REV	BY	CHKD



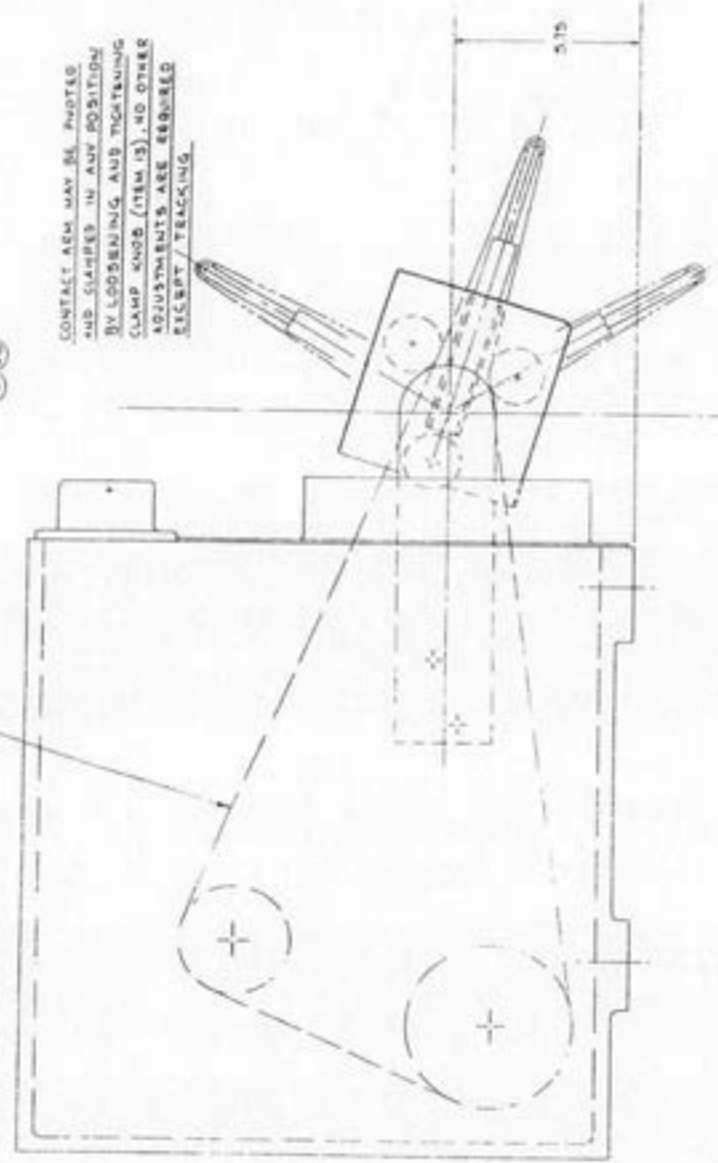
NOTES:

1. ITEM ⑤ D.C. MOTOR IS: 1 HP / 90 VDC.
PERM MAG./56C./TEFC./2500 RPM
2. ITEM ⑦ SCR, CONTROLLER IS:
NEMA 4/12 ENCLOSURE WITH
ON/OFF SWITCH/SPEED CONTROL/FUSE
FORWARD/REVERSE CONTROL
3. GRINDER SPEED IS ADJUSTABLE
FROM 600 TO 4000 S.F.P.M.
4. POWER REQUIRED: 115 VAC /
1 PH / 50/60 HZ / 13 F.LAMPS

DYNABRAGE, INC.	
ELECTRIC ASSEMBLY	
REV	65440

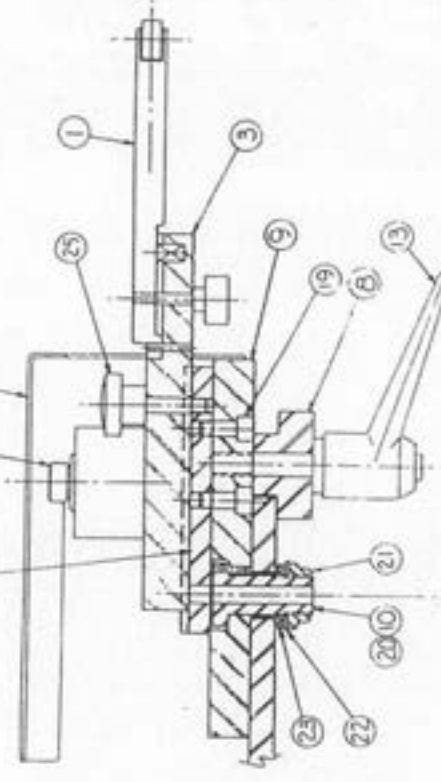


ABRASIVE BELT
 11" LONG - 1/4" TO 2" WIDE



CONTACT ARM MAY BE PIVOTED
 AND CLAMPED IN ANY POSITION
 BY LOOSENING AND TIGHTENING
 CLAMP KNOB (ITEM 15). NO OTHER
 ADJUSTMENTS ARE REQUIRED
 EXCEPT TRACKING.

SEE
 NOTE 4



SECTION B-B

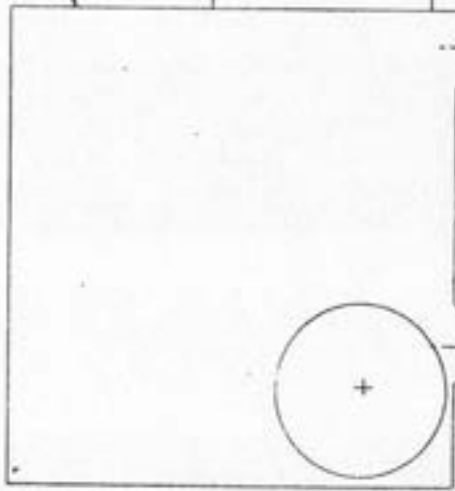
NOTE:

TENSION ROLLS (ITEM #4) HAVE RINGS TO
 USE ABRASIVE BELTS 1/4" TO 3/4" WIDE
 FOR USING BELTS FROM 1" TO 2" WIDE, REMOVE
 RINGS AND RETURNING RING RINGS NUMBERED (ITEM #17)

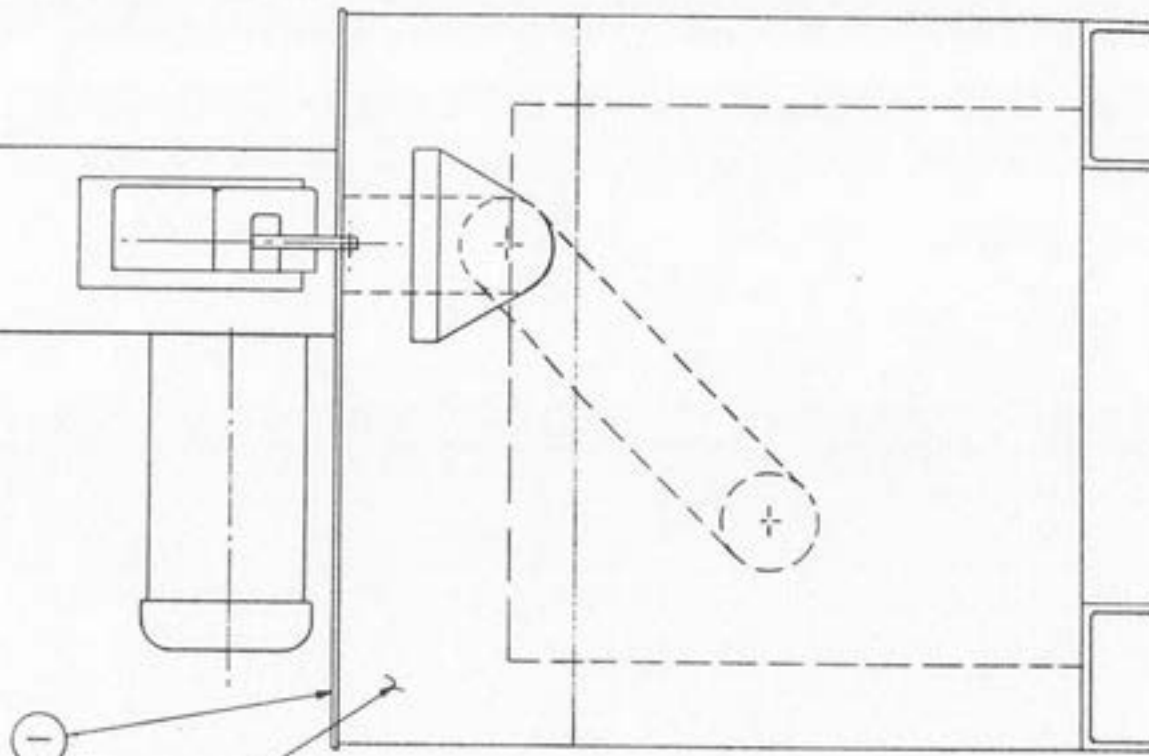
CLAMP KNOB (15)
 FOR MOUNTING
 DYNABELT ARM

MODEL	DYNABRADE, INC.
DATE	11/1/51
BY	UNAPPLICABLE
APPROVED	ADJUSTABLE ARM ASSY
SCALE	1:1 = 65454

VIRTUBELTER
GRINDER



- ①
- ②
- ③
- ④
- ⑤
- ⑥
- ⑦
- ⑧
- ⑨



DUST COLLECTOR



DYNABRADE, INC.

SEE BOM

DRY GRINDING SYSTEM

1.1 65461

REV. 3-58

1/4

GRINDER
(NOT INCLUDED WITH STAND)

9 10 11

4 5 6 7

2 MOUNT LEGS ON INSIDE
LIPS OF STAND TOP

1

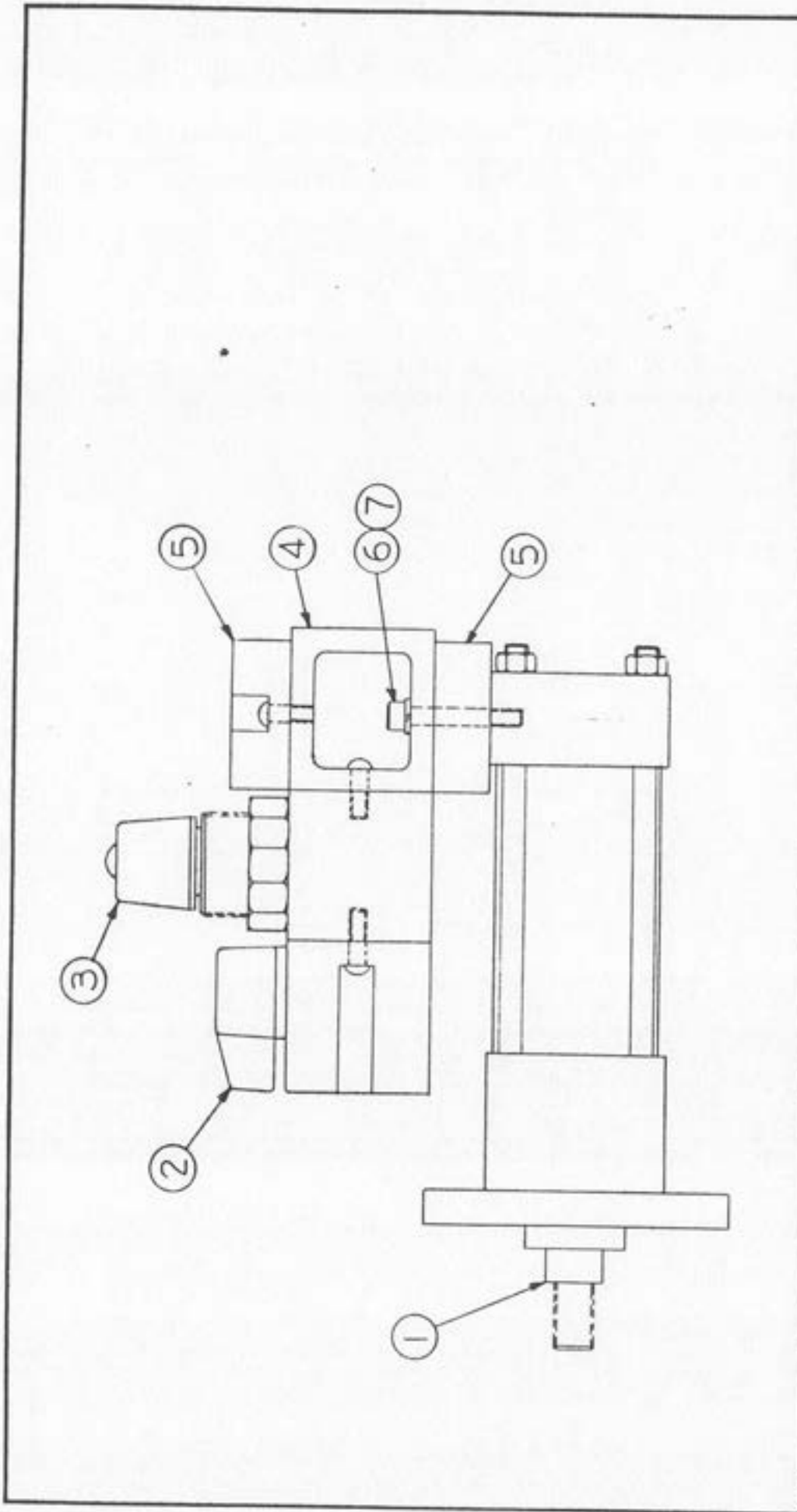
12

3 8

OPTIONAL
CASTER
AVAILABLE

NOTICE
CUSTOMER MUST ASSEMBLE
ALL ITEMS AS SHOWN

SEE B.O.M.	DYNABRADE, INC.
1-3-87	FLOOR STAND ASSY.
1/4	J.L. = 66031



SEE B.O.M.		DYNABRADE, INC.	
M.L.A.M.B. 5-27-68		TENSION CYLINDER ASSY	
REV. 1		L.I.I. 97894	
PART NO.		REV.	
QUANTITY		DATE	
DRAWN BY		CHECKED BY	
APPROVED BY		DATE	
SCALE		FULL	
SHEET NO.		NO.	
TOTAL SHEETS		NO.	

BILL OF MATERIALS

TURBINE BLADE GRINDER



DYNABRADE, INC.

TONAWANDA, N.Y.

BILL OF MATERIALS

NAME DRY GRINDING SYSTEM

DWG NO. 65150

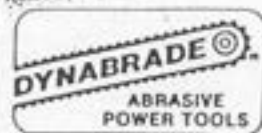
MODEL VIRTUPLATEN
VIRTUBELTER

SHT 1
OF 1

BY M. Lamb
DATE 3-14-85

ITEM	PART NO.	DESCRIPTION	REF	QTY REQD
1	-	BELT GRINDER		REF
2	65165	DUST COLLECTOR		1
3	65152	ELECTRIC ASSEMBLY		1
4	65153	FRAME WELDMENT		1
5	65154	COVER-SIDE LOWER		2
6	65155	COVER-RIGHT UPPER		1
7	65156	COVER-LEFT UPPER		1
8	65157	COVER-FRONT LOWER		1
9	65158	COVER-FRONT UPPER		1
10	65159	COVER-REAR		1
11	65160	TOP COVER		1
12	65101	SUCTION NOZZLE		1
13	97900	HOSE		4FT.
14	97901	HOSE CLAMP		2
15	97082	CAP SCREW		4
16	95378	FLAT HEAD SCREW		9
17	95335	CAP SCREW		4
18	97031	CAP SCREW		4
19	97150	THUMBSCREW		6
20	95247	CAP SCREW		44
21	65162	NAMETAG-MAINTENANCE		1
22	95442	DRIVE PIN		8
23	65166	NAMETAGE-CAUTION		1

REVISIONS	DESCRIPTION		DWG NO. 65150



DYNABRADE, INC.
TONAWANDA, N.Y.

BILL OF MATERIALS

NAME ELECTRIC ASSEMBLY

DWG NO. 65152

MODEL DRY GRIND SYSTEM

SHT OF 1 2

BY M. Lamb
DATE 3-14-85

ITEM	PART NO.	DESCRIPTION	REF	QTY REQD
1	98101	STARTER		1
2	98200	THERMAL OVERLOAD		1
3	65163	SWITCH BOX		1
4	65164	RECEPTACLE BOX		1
5	98604	RECEPTACLE		1
6	98600	PLUG		1
7	98401	CORD (#16-3)		8FT.
8	98400	CORD (#12-3)		12FT.
9	98707	CORD CONNECTOR		1
10	98710	CORD ELBOW		1
11	98716	CORD ELBOW		1
12	98715	CORD ELBOW		1
13	98762	BUSHING		2
14	98752	SEAL RING		2
15	98747	LOCKNUT		2
16	98701	CORD CONNECTOR		1
17	98751	SEAL RING		2
18	98746	LOCKNUT		2
19	98761	BUSHING		2
20	98421	MARKER (115V)		2
21	98425	MARKER (1PH)		2
22	98608	TERMINAL		4
23	98607	TERMINAL		2
24	98900	MOUNTING SCREW		6
25	97157	ROUND HD. SCREW		2
26	97210	HEX NUT		2
27	97160	ROUND HD. SCREW		8
28	97212	HEX NUT		4

REVISIONS
DESCRIPTION

DWG NO. 65152



DYNABRADE, INC.
TONAWANDA, N.Y.

BILL OF MATERIALS

NAME VARIABLE SPEED ELECTRICAL ASSEMBLY

DWG NO. 65440

MODEL TURBINE BLADE GRINDER

SHT 1 OF 1

BY MIKE LAMB
DATE 10/8/87

ITEM	PART NO.	DESCRIPTION	REF	QTY REQD
1	65059	ELECTRIC NAMEPLATE		1
2	65061	MARKER - (CAUTION)		1
3	65062	MARKER - (CAUTION)		1
4	65197	SUPPORT PLATE		1
5	65198	COVER PLATE		1
6	98020	D.C. MOTOR		1
7	98114	S.C.R. CONTROL		1
8	98418	POWER CORD		1
9	98609	TERMINAL		1
10	98709	ELBOW		3
11	98610	TERMINAL		6
12	98614	WIRE NUT		2
13	98784	PLUG		2
14	98751	SEALING RING		3
15	98746	LOCKNUT		3
16	95437	CAP SCREW		4
17	95168	CAP SCREW		4
18	95492	CAP SCREW		4
19	95363	FLAT WASHER		4
20	95183	FLAT WASHER		4
21	95265	LOCK WASHER		4
22	95042	LOCK WASHER		4
23	97401	DRIVE PIN		12
24	65199	SPEED CHART		1

REVISIONS		DWG NO.
SYM DESCRIPTION		



DYNABRADE, INC.

TONAWANDA, N.Y.

BILL OF MATERIALS

NAME	GENERAL ASSEMBLY	DWG NO.	65445
MODEL	1x72/2x72 VIRTUBELTER	SHT OF	1 3
		BY	M. LAMB
		DATE	9-22-86

ITEM	PART NO.	DESCRIPTION	REF	QTY REQD
1	65446	MAIN FRAME		1
2	65070	BUMPER SUPPORT		1
3	65074	TENSION ROLL		1
4	65077	ADJUSTING SCREW		1
5	65078	SCREW SUPPORT		1
6	65079	RACK		1
7	65080	RACK GUIDE		1
8	65081	PIVOT PLATE		1
9	65082	PIVOT SHAFT		1
10	65083	SHAFT-TENSION ROLL		1
11	65084	SUPPORT-TENSION SHAFT		1
12	65091	COVER-ADJUSTING SCREW		1
13	65092	HUB-RELEASE LEVER		1
14	65095	BUSHING		1
15	65555	PIVOT SUPPORT		1
16	65482	PIVOT BAR		1
17	65484	PIVOT NUT		1
18	65485	DOOR-BELT CHANGE		1
19	65486	HINGE-DOOR		1
20	65487	TAG-ADJUSTMENTS		1
21	65094	HOLE COVER		1
22				
23	97500	BALL BEARING		2
24	97531	BUSHING		2
25	97555	BUSHING		1
26	97650	GEAR		1
27	97474	SPRING		1
28	97750	SPRING		1

REVISIONS
DESCRIPTION
SYM

DWG NO. 65445



DYNABRADE, INC.

TONAWANDA, N.Y.

BILL OF MATERIALS

NAME GENERAL ASSEMBLY

DWG NO. 65445

MODEL 1x72/2x72 VIRTUBELTER

SHT 2 OF 3 BY M. LAMB DATE 9-22-86

ITEM	PART NO.	DESCRIPTION	REF	QTY REQD
29	97449	KEY		2
30	97760	DOOR LATCH		2
31	97700	BALL		2
32	97701	STUD		1
33	97720	STUD		1
34	97714	KNOB		1
35	97769	BUMPER		1
36	97315	SPACER		2
37	95018	CAP SCREW		6
38	95150	CAP SCREW		2
39	95247	CAP SCREW		7
40	97025	CAP SCREW		5
41	95335	CAP SCREW		2
42	95475	CAP SCREW		3
43	95328	CAP SCREW		2
44	97311	FLAT WASHER		1
45	95044	LOCK WASHER		7
46	95167	LOCK WASHER		9
47	97301	LOCK WASHER		6
48	97330	WASHER		1
49	95202	SET SCREW		3
50	97212	HEX NUT		3
51	97236	LOCKNUT		1
52	97740	LOCKNUT		1
53	97403	PIN		1
54	97427	PIN		1
55	97401	DRIVE PIN		4
56				

REVISIONS
SYM DESCRIPTION

DWG NO. 65445



DYNABRADE, INC.
TONAWANDA, N.Y.

BILL OF MATERIALS

ADJUSTABLE ARM ASSEMBLY	DWG NO. 65454
NAME DYNAFIL/DYNABELTER	BY M. LAMB
MODEL VIRTUBELTER 1x72/2x72/3x72	DATE 10-14-86
SHT 1 OF 1	

ITEM	PART NO.	DESCRIPTION	REF	QTY REQD
1	V11312	CONTACT ARM 3/8W x 5/8D		1
2	65122	ADAPTER		1
3	65123	ADAPTER ASSEMBLY		1
4	65129	TENSION ROLL ASSEMBLY		3
5	65500	SUPPORT ARM		1
6	65573	GUARD (FRAME)		1
7	65572	GUARD (DOOR)		1
8	65503	CLAMP HUB		1
9	65504	PIVOT PLATE		1
10	65505	PIVOT SHAFT		1
11	65551	BELT GUARD		1
12	97772	CLIP		2
13	97741	CLAMP KNOB		1
14	95178	CAP SCREW		2
15	95314	CLAMP KNOB		1
16	95335	CAP SCREW		2
17	95504	SHOULDER SCREW		2
18	97003	CAP SCREW		6
19	97014	CAP SCREW		2
20	95240	PIN		1
21	97236	LOCK NUT		1
22	97311	FLAT WASHER		1
23	97537	BUSHING		1
24	97733	KNOB		2
25	97773	KNOB-CLAMP		1
26	95475	CAP SCREW		2
27	97781	PLIERS - RETAINING RING		1

REV. 10/11/86
SYM DESCRIPTION

DWG NO. 65454

LIMITED WARRANTY

A. WARRANTY: Leeson Electric Corporation warrants that their products will be free from defects in material and workmanship for a period of one (1) year from date of shipment thereof. Within the warranty period Leeson Electric will repair or replace such products which are returned to Leeson Electric or to the nearest Branch Office, with shipping charges prepaid. At our option, all return shipments are F.O.B. Leeson Electric or its Branch Office. This warranty will not apply to any product which has been subjected to misuse, negligence; or misapplied; or repaired by unauthorized persons; or improperly installed. Leeson is not responsible for removal, installation or any other incidental expenses incurred in shipping the products to or from the repair point.

B. DISCLAIMER: The provisions of paragraph 'A' are Leeson's sole obligation and exclude all other warranties of MERCHANTABILITY or use express or implied. We further disclaim any responsibility whatsoever to the customer or to any other person for injury to person, or damage to or loss of property of value, caused by any product which has been subjected to misuse, negligence or accident; or misapplied; or modified or repaired by unauthorized persons; or improperly installed.

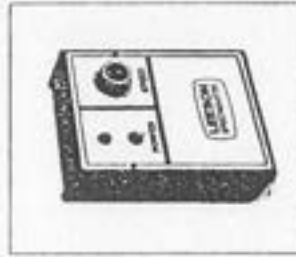
C. LIMITATION of LIABILITY: In the event of any claim for breach of any of Leeson's obligations, whether express or implied, and particularly in the event of any claim of a breach of the warranty contained in paragraph 'A', or of any other warranties, express or implied, or claim of liability, which might, despite paragraph 'B', be decided against us by any lawful authority, Leeson Electric shall under no circumstances be liable for any consequential damages, losses or expenses arising in connection with the use of, or inability to use, our product for any purpose whatsoever. An adjustment made under the warranty does not void the warranty, nor does it imply an extension of the original one (1) year warranty period. Products serviced and/or parts replaced on a no charge basis during the warranty period carry the unexpired portion of the original warranty only.

If for any reason any of the foregoing provisions shall be ineffective, the Company's liability for damages arising out of its manufacture or sale of equipment, or use thereof, whether such liability is based on warranty, contract, negligence, strict liability in tort or otherwise, shall not in any event exceed the full purchase price of such equipment.

Any action against the Company based upon any liability or obligation arising hereunder or under any law applicable to the sale of equipment or the use thereof, must be commenced within one year after the cause of such action arises.



DC MOTOR ADJUSTABLE SPEED CONTROL INSTALLATION AND OPERATIONS INSTRUCTIONS



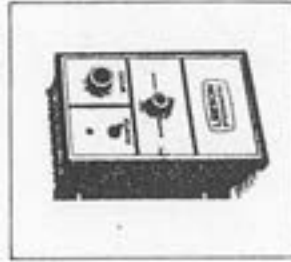
CASED NEMA 1
Undirectional
Catalog No. 174307



CASED NEMA 1
Reversing
Catalog No. 174308



CASED NEMA 4/12
Undirectional
Catalog No. 174100



CASED NEMA 4/12
Reversing
Catalog No. 174105



CHASSIS
Catalog No. 174311

THIS BOOK COVERS CASED CONTROL CATALOG NUMBERS
174100, 174105, 174307 and 174308

SECTION 1 - GENERAL INFORMATION

The SpeedMaster™ Catalog Numbers 174100, 174105, 174307, and 174308 are versatile adjustable speed controls that operate DC PM (permanent magnet field) motors 1/4 thru 2 horsepower. They have a user selectable dual voltage input of 115 or 230 VAC, 50/60 Hertz.

The 174100 and 174105 are mounted in a NEMA 4/12 enclosure. With an input voltage of 115 VAC they will operate 90 VDC PM motors 1/4 thru 1 horsepower and with an input voltage of 230 VAC they will operate 180 VDC PM motors 1/2 thru 2 horsepower. The front cover of the 174100 contains the speed control knob, OFF/ON toggle switch and pilot light. The front cover of the 174105 contains the same items plus a rotary forward/dynamic brake/reverse switch. Case is 16 gauge steel, totally enclosed with black finish and has a black anodized aluminum heat sink with slotted mounting ears for wall mounting. Two 1/2" conduit knock-outs are provided on the end of the case.

The 174307 and 174308 are mounted in a NEMA 1 enclosure. With an input voltage of 115 VAC they will operate 90 VDC PM motors 1/4 thru 1/2 horsepower and when installed on heat sink Catalog Number 174316 they will operate 90 VDC PM motors 3/4 thru 1 horsepower. With an input voltage of 230 VAC they will operate 180 VDC PM motors 1/2 thru 1 horsepower and when installed on heat sink Catalog Number 174316 they will operate 180 VDC PM motors 1-1/2 thru 2 horsepower. The front panel of the 174307 contains the speed control knob, OFF/ON toggle switch and pilot light. The front panel of the 174308 contains the same items plus RUN/BRAKE and FORWARD/REVERSE toggle switches. Base of case is 1/8" black anodized aluminum and cover is .062" black anodized aluminum. There are three keyholes on the back of the case for bench or wall mounting and two holes on the end for 1/2" conduit.

In a typical application better than 1% base speed regulation is provided with the help of temperature, line voltage, and I.R. compensation. The nominal speed ranges for PM motors are 80:1 for motors with a nameplate speed of 2400 RPM and 60:1 for motors with a nameplate speed of 1800 RPM. The controls have adjustable linear acceleration, adjustable linear deceleration, and adjustable current limit (torque).

[1]

INSTALLATION and OPERATING INSTRUCTIONS FOR CATALOG NUMBERS 174100, 174105, 174307, AND 174308 SPEEDMASTER™

ADJUSTABLE SPEED CONTROLS for PERMANENT MAGNET FIELD MOTORS

1/4 thru 1 HP 90VDC & 1/2 thru 2 HP 180VDC

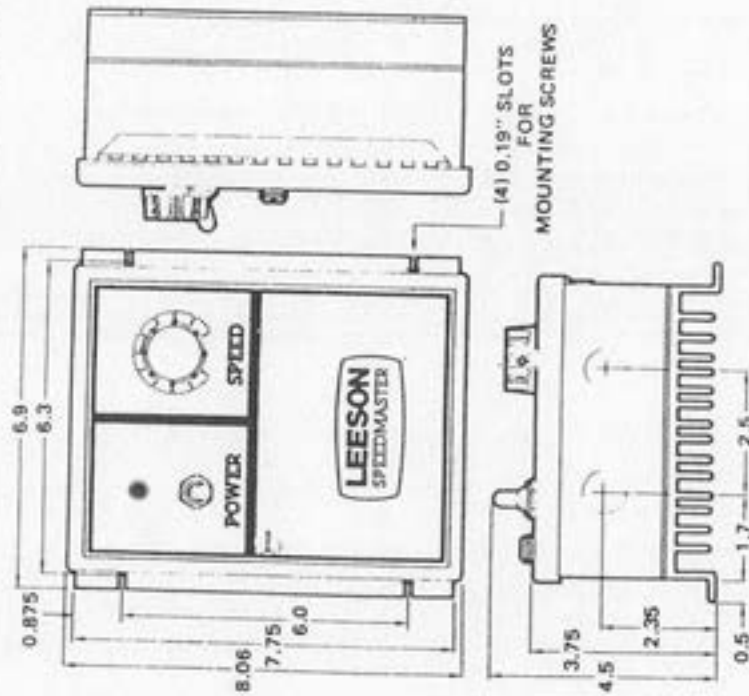
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Disclaimer	Inside Back Cover
Warranty	Outside Back Cover

They also have adjustable I.R. compensation, a maximum speed adjustment to limit high speed operation and a minimum speed adjustment to set the minimum starting speed.

FEATURES

- * 1% BASE SPEED REGULATION (Typical Application)
- * MAXIMUM SPEED ADJUSTMENT * MINIMUM SPEED ADJUSTMENT
- * LINE STARTING and STOPPING * LINE VOLTAGE COMPENSATION
- * FULL WAVE ARMATURE SUPPLY
- * 1.37 ARMATURE FORM FACTOR * ADJUSTABLE CURRENT LIMITING
- * ADJUSTABLE ACCELERATION * ADJUSTABLE DECELERATION
- * ADJUSTABLE I.R. COMP. * TEMPERATURE COMPENSATION



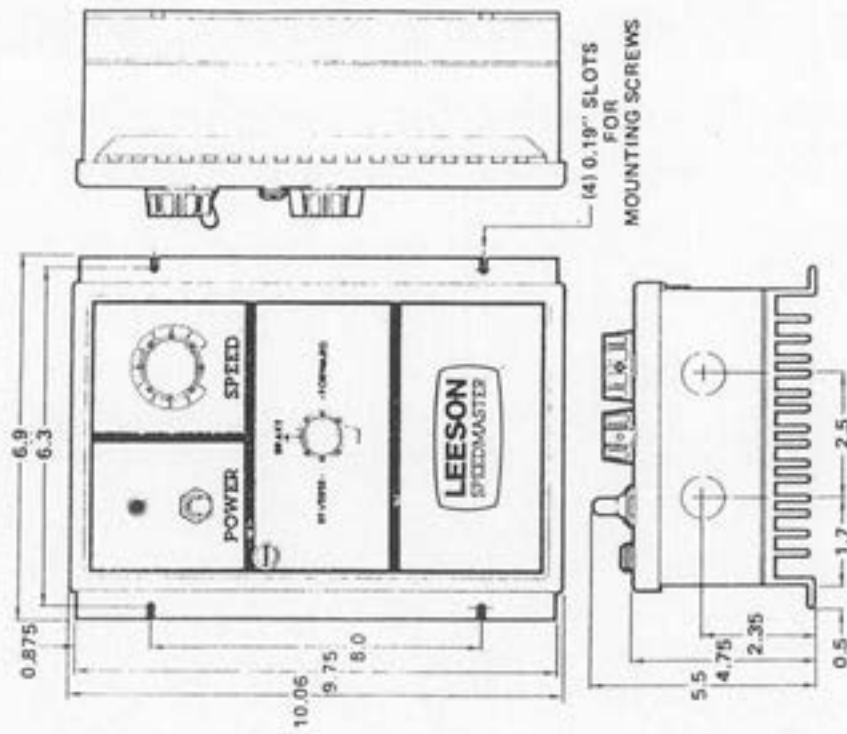
All Dimensions in Inches

Figure 1-1 - CATALOG NUMBER 174100 MOUNTING DIMENSIONS

SPECIFICATIONS

INPUT VOLTAGE	115 VAC, 50/60 Hertz Single Phase
MAXIMUM INPUT CURRENT	
CATALOG NUMBERS 174100 and 174105	13 Amperes
CATALOG NUMBERS 174307 and 174308	8 (13+) Amperes
OUTPUT ARMATURE VOLTAGE	0-90 VDC
OUTPUT ARMATURE CURRENT	
CATALOG NUMBERS 174100 and 174105	10 Amperes
CATALOG NUMBERS 174307 and 174308	5 (10+) Amperes

† When mounted on heat sink Catalog Number 174316



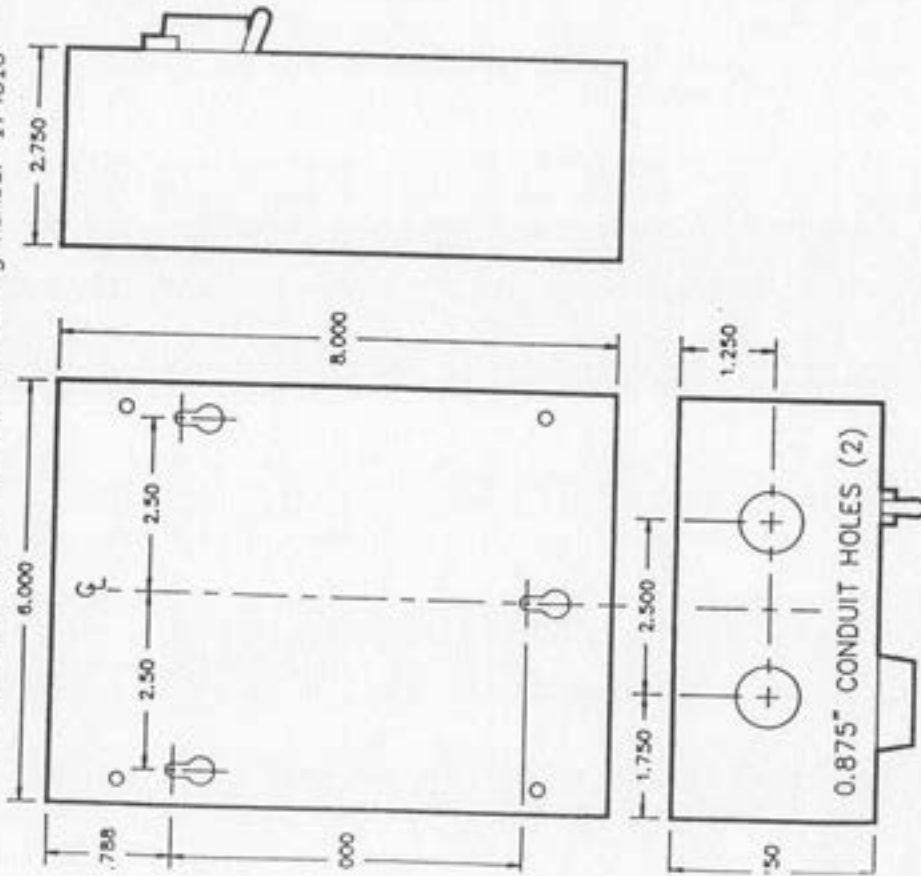
All Dimensions in Inches

Figure 1-2 - CATALOG NUMBER 174105 MOUNTING DIMENSIONS

SPECIFICATIONS (Continued)

INPUT VOLTAGE	230 VAC, 50/60 Hertz Single Phase
MAXIMUM INPUT CURRENT	
CATALOG NUMBERS 174100 and 174105	13 Amperes
CATALOG NUMBERS 174307 and 174308	8 (13†) Amperes
OUTPUT ARMATURE VOLTAGE	0-180 VDC
OUTPUT ARMATURE CURRENT	
CATALOG NUMBERS 174100 and 174105	10 Amperes
CATALOG NUMBERS 174307 and 174308	5 (10†) Amperes

† When mounted on heat sink Catalog Number 174316

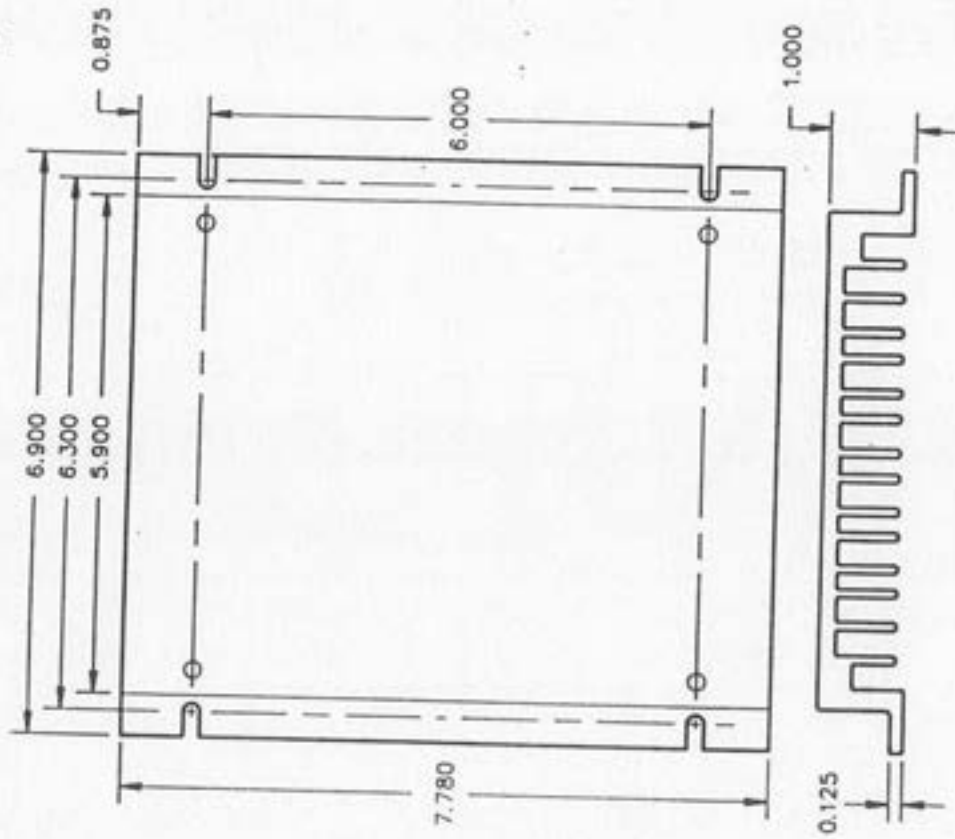


All Dimensions in Inches

Figure 1-3 - CAT. NO. 174307 AND 174308 MOUNTING DIMENSIONS

SPECIFICATIONS (Continued)

APPROXIMATE WEIGHT	
CONTROL CATALOG NUMBER 174100	5 Pounds
CONTROL CATALOG NUMBER 174105	6.5 Pounds
CONTROL CATALOG NUMBER 174307	2.4 Pounds
CONTROL CATALOG NUMBER 174308	2.6 Pounds
HEATSINK CATALOG NUMBER 174316	1.75 Pounds
AMBIENT TEMPERATURE RANGE	10° thru 40° Centigrade



All Dimensions in Inches

Figure 1-4 - HEAT SINK CAT. NO. 174316 MOUNTING DIMENSIONS

1. To locate the keyholes and the terminal strip, remove the two screws from top of the control front panel by turning them counter-clockwise. Grasp the front cover and lift it straight up.

2. Install the mounting screws in the three keyholes.

3. Install conduit hardware at the 1/2 inch conduit holes and connect external wiring to the terminal block as shown in Figures 6-1 and 6-3 on pages 17 & 18 and pages 21 & 22.

4. The controls, as shipped from the factory, have been set for 230 VAC input (slide switch is in the 230V position and the MAX SPEED trim pot is in the #2 position). To set the controls for 115 VAC input, set the slide switch to the 15V position and set the MAX SPEED trim pot to the #1 position by aligning the white dot on the trim pot with the white diagonal line below the #1 on the PC board (refer to figure 4-1 on page 13). This setting is only an approximation for the motor nameplate speed. If the motor, at no load, is running slower than nameplate speed adjust the trim pot CW until the motor is running at nameplate speed. If the motor is running faster than nameplate speed adjust the trim pot CCW until the motor is running at nameplate speed. For more detailed instructions, please refer to Section 4, Calibration Information.

5. Verify that the voltage select switch is set for the correct voltage before applying power.

6. Grasp the front cover and replace it, being careful not to pinch any wiring between the front cover and the case.

7. Replace the two screws on the front cover and turn them clockwise until "tight" to secure the front panel.

8. Set the ON/OFF toggle switch to the OFF position.

SPEEDMASTER™ CATALOG NUMBER 174316 HEATSINK

The capacity of the Catalog Number 174307 and 174308 speed controls can be increased to operate up to a 10 ampere load by mounting the controls to Heat Sink Number 174316. The heat sink is provided with the appropriate mounting holes or the controls and is supplied with four self-tapping mounting screws. This assembly can also be either vertically or horizontally mounted.

1. To locate the mounting holes for the heat sink, remove the two screws from top of the control front panel by turning them counter-clockwise. Grasp the front cover and lift it straight up.

2. Install the self-tapping mounting screws in the four holes in the corners of the case.

4. Grasp the front cover and replace it, being careful not to pinch any wiring between the front cover and the case.

5. Replace the two screws on the front cover and turn them clockwise until "tight" to secure the front panel.

SECTION 3 - OPERATING INSTRUCTIONS

SPEEDMASTER™ CATALOG NUMBERS 174100 AND 174307

1. Set the speed adjust knob to "0" (full CCW).

2. Apply correct AC power.

3. Set the ON/OFF toggle switch to the ON position.

4. Turn the speed adjust knob CW to the desired speed.

5. Motor may be started and stopped at any speed setting with the ON/OFF toggle switch. When switched OFF, the motor will coast to a stop.

SPEEDMASTER™ CATALOG NUMBER 174105

1. Set the FWD/BRAKE/REV switch to the BRAKE position.

2. Apply correct AC power.

3. Set the speed adjust knob to "0" (full CCW).

4. Set the ON/OFF toggle switch to the ON position and leave it on continuously.

5. Set the FWD/BRAKE/REV switch to the desired direction of rotation.

6. Turn speed adjust knob CW to the desired speed.

7. Motor may be started and stopped at any speed setting with the FWD/BRAKE/REV switch. When placed in the BRAKE position the motor is dynamically braked to a stop. Motor may be started and stopped with the ON/OFF toggle switch but

when switch off will coast to a stop.

8. To reverse the motor direction, first stop the motor by setting the FWD/BRAKE/REV switch to the BRAKE position, then set the FWD/BRAKE/REV switch to the desired direction of rotation.

SPEEDMASTER™ CATALOG NUMBER 174308

1. Set the RUN/BRAKE switch to the BRAKE position.
2. Set the speed adjust knob to "0" (full CCW).
3. Apply correct AC power.
4. Set the ON/OFF toggle switch to the ON position and leave it on continuously.
5. Set the FORWARD/REVERSE switch to the desired direction of rotation.
6. Set the RUN/BRAKE switch to the RUN position.
7. Turn speed adjust knob CW to the desired speed.
8. Motor may be started and stopped at any speed setting with the RUN/BRAKE switch. When placed in the BRAKE position the motor is dynamically braked to a stop. Motor may be started and stopped with the ON/OFF toggle switch but when switched off will coast to a stop.
9. To reverse the motor direction, first stop the motor by setting the RUN/BRAKE switch to the BRAKE position, then set the FORWARD/REVERSE switch to the desired direction of rotation.

IMPORTANT: Do NOT change the FORWARD/REVERSE switch setting while the motor is still running. Plug reversing the motor (not allowing the motor to come to a stop before reversing) will cause excessively high currents to flow in the armature circuit, which can damage the control and/or motor and is not recommended.

SECTION 4 - CALIBRATION INFORMATION

SAFETY WARNING: Dangerous voltages exist on the printed circuit board. Contact with components and/or printed circuitry could cause serious injury or fatality. Please refer to and follow the Safety Warnings on page 6.

IMPORTANT: A non-metallic screwdriver should be used when adjusting the trim pots to avoid any possibility of the screwdriver's blade contacting live circuitry and shorting the circuitry or allowing contact with any dangerous or fatal voltages.

ACCELERATION RATE, DECELERATION RATE, MAXIMUM SPEED, MINIMUM SPEED, TORQUE (CURRENT LIMITING), and IR COMP (REGULATION)

Six potentiometers, located on the control PC board, are provided for adjustment of the acceleration rate, deceleration rate, maximum speed, minimum speed, limit of output current (motor torque), and regulation of the motor.

1. ACCEL. (ADJUSTABLE ACCELERATION) - This provides a method for controlling the time of motor acceleration from zero to preset speed. Acceleration is linear and is adjustable from 0.2 thru 8 seconds to full speed.
2. DECEL. (ADJUSTABLE DECELERATION) - This provides a method for controlling the time of motor deceleration from preset speed to zero. Deceleration is linear and can be extended from normal coast down time up to 8 seconds, depending on load and inertia.
3. MAX SPEED - With the speed adjust knob set to maximum (full CW) this feature allows the motor speed to be adjusted to a minimum of 45 to 65% depending on the MIN SPEED setting to a maximum of 105% of motor nameplate rated speed when the control is operated at 115 VAC. When the control is operated at 230 VAC the motor speed can be adjusted to a minimum of 25 to 36% depending on the MIN SPEED setting to a maximum of 105% of motor nameplate speed.

4. MIN SPEED - This feature is provided to allow the motor speed to be adjusted between 0 to 20% of motor nameplate rated speed when the speed adjust knob is set at minimum.

5. TORQUE (CURRENT LIMITING) - This is provided for protection against excessive armature current and should be adjusted to approximately 120% of full load motor current. Control is factory adjusted for a 1 horsepower, 180 VDC motor. Turning the trim pot CCW reduces the armature current. Note: Adjusting this trim pot CW to give armature currents higher than factory setting could cause damage to PC board components in case of motor overload or stall.

6. I.R. COMP. (SPEED REGULATION) - Regulation is obtained by circuitry that raises the armature voltage to maintain speed when increased loading tends to slow the motor down.

STANDARD CALIBRATION for SPEEDMASTER™ CONTROLS
 CATALOG NUMBER 174100, 174105, 174307, AND 174308

These controls have been factory calibrated for use with a 1/2 horsepower, 180 VDC motor and no further adjustments should be necessary unless a different horsepower and/or voltage motor is used. Also, since the controls were calibrated using a speed adjust pot (P1) of exactly 10K (10,000) Ohms and pots shipped with the controls have a tolerance of ±5%, the maximum speed could be higher or lower than shown in the catalog listing. If the maximum or minimum speeds are not satisfactory, if controls have been repaired, or if the user wants to make any changes, the procedures listed below could be followed.

1. Disconnect the power line.
2. Set the speed adjust potentiometer (P1) to full CW.
3. Set the MAX SPEED (Maximum Speed) trim pot to full CCW refer to Figure 4-1 shown on next page).
4. Set the MIN SPEED (Minimum Speed) trim pot to full CCW refer to Figure 4-1 shown on next page).
5. Set the DECEL. (Adjustable Deceleration) trim pot to full CCW (refer to Figure 4-1 shown on next page).
6. Set the ACCEL. (Adjustable Acceleration) trim pot to full CCW (refer to Figure 4-1 shown on next page).
7. Set the IR COMP. (Speed Regulation) trim pot to full CW (refer to Figure 4-1 shown on next page).
8. Set the TORQUE (Current Limiting) trim pot to full CW refer to Figure 4-1 shown on next page).
9. Connect a DC voltmeter, 0-200 volts minimum scale, across the armature and a DC ammeter, 0-15 amps minimum scale, in series with the armature (refer to Figure 4-2 shown on page 14).
10. Heed and follow the SAFETY WARNING at the beginning of this section (page 11).

11. With no load on the motor, apply input voltage in accordance with voltage select switch setting.

12. Adjust the MAX SPEED (maximum speed) trim pot CW until the motor is running at nameplate speed (approximately 90 VDC with 115 VAC input and 180 VDC with 230 VAC input).

13. Set the speed adjust knob to "0" (full CCW). Adjust the MIN SPEED (minimum speed) trim pot CW until the motor begins to run, then slowly back off until the motor stops. If the MIN SPEED trim pot is adjusted to have the motor run at a given speed when the speed adjust knob is set at "0", it may be necessary to readjust the MAX SPEED trim pot after setting the minimum speed because of interaction between the two trim pots.

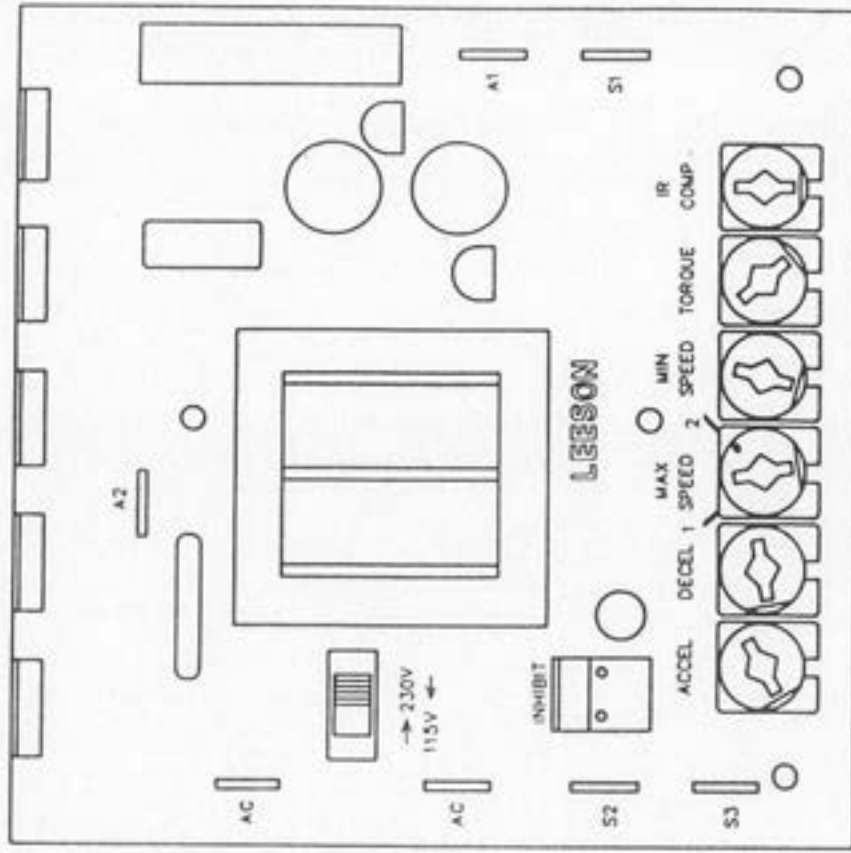


Figure 4-1 - VOLTAGE SELECT SWITCH AND TRIM POT LOCATIONS

SECTION 5 - TROUBLESHOOTING

The printed circuit board in this control is built utilizing surface mount technology and is not considered to be field repairable. However, not all problems originate from the printed circuit board and a trained service technician, by following the below listed procedure, can troubleshoot and solve some problems.

Before proceeding check the following:

1. Be sure the power line is the same voltage as that set by the voltage select switch on the control.
2. Check the motor nameplate for the correct armature voltage. With 230 VAC input the motor should have a 180 VDC armature and with 115 VAC input the motor should have a 90 VDC armature.
3. Check to see that the line fuse(s) are the correct value (15 Amperes normal blow) and not blown. They are contained in two fuse holders that are mounted inside the control case next to the printed circuit board. When the controls are operated on 115 VAC only one fuse is in the circuit and when operated on 230 VAC both fuses are in the circuit. **SAFETY WARNING:** When changing these fuses the power line MUST be disconnected from the control to prevent contact with dangerous voltages which could cause serious injury or fatality.

I. - Heed and follow the SAFETY WARNING at the beginning of Section 4 on pages 10 and 11.

II. - Set speed control pot, P1, at zero on the dial, place the FWD/BRAKE/REV switch in the BRAKE position (Cat. No. 174105 only), place the RUN/BRAKE switch in the BRAKE position (Cat. No. 174308 only), and then place the ON/OFF toggle switch into the ON position.

A. If pilot light, NLT, on the panel does not go on, check:

1. AC voltage at power line supply point.
2. AC voltage on both sides of the ON/OFF toggle switch.

14. Set the speed adjust knob for approximately 200 RPM. Apply full load to the motor and adjust the I.R. COMP. Speed Regulation) trim pot CW until the motor speed returns to 200 RPM.

15. Set the TORQUE (Current Limiting) trim pot full CCW. Set the speed knob to "100" (full CW). Stall the motor and slowly adjust the TORQUE trim pot CW until the armature current is 120% of name plate current.

16. Set the speed adjust knob to "0" (full CCW) and remove stall from motor.

17. ACCEL. (Adjustable Acceleration) and DECEL. (Adjustable deceleration) trim pots being fully CCW provide the most rapid acceleration and deceleration possible. To lengthen either of these settings, turn the appropriate trim pot CW.

18. Calibration is now completed.

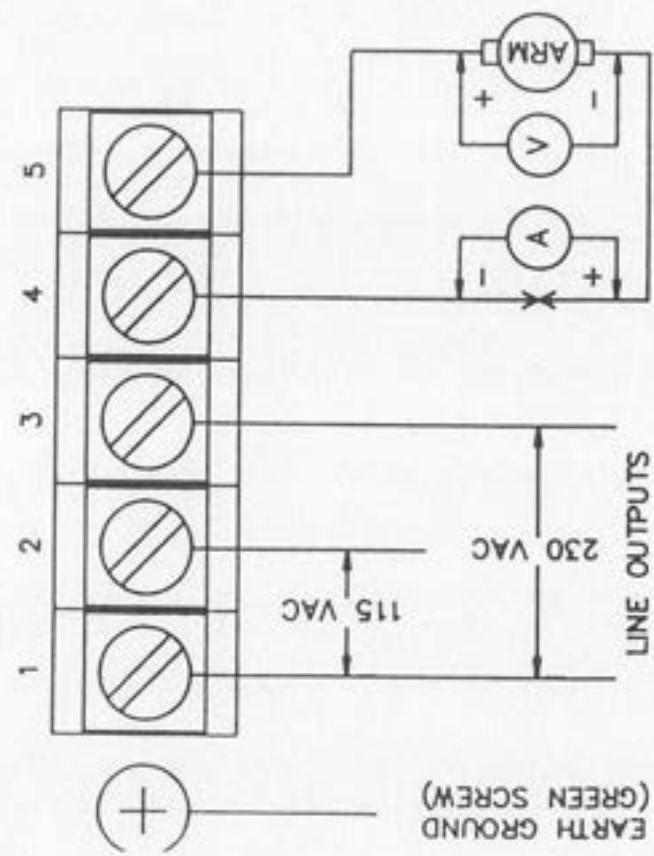


Figure 4-2 - VOLTMETER and AMMETER CONNECTIONS

SECTION 5 - TROUBLESHOOTING (Continued)

III. If line fuse blows:

- A. Motor may be overloaded. Disconnect power from control and disconnect load from motor. Then apply power and motor should run at full speed without blowing fuse(s).
- B. Motor armature or motor cable may be shorted or grounded. Disconnect the motor cable. An ohmmeter reading on the motor cable armature connections should read approximately 2 to 15 ohms, depending on motor used. A reading from either side of the armature connections to the motor frame should show open (use high ohm scale).

IV. If line fuse does not blow, but motor will not run:

- A. Speed adjust potentiometer, P1, may be open.
- B. Torque trim pot may be turned full CCW.

V. - If motor runs at high speed regardless of speed control potentiometer setting:

- A. Speed adjust potentiometer, P1, may be open.

DISCLAIMER

The information and technical data in this manual are subject to change without notice. Leeson Electric Corporation and its Divisions make no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Leeson Electric Corporation and its Divisions assume no responsibility for any errors that may appear in this manual and make no commitment to update or to keep current the information in this manual.

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