

EASTMAN **BRUTE** 627VS

VARIABLE SPEED

IMPORTANT

When ordering parts please specify machine class no. and name. For electrical components also include Voltage, Hertz & R.P.M. from label of your machine.

Some parts in this manual are covered by the following U.S. patents:

Patent No. 4609244

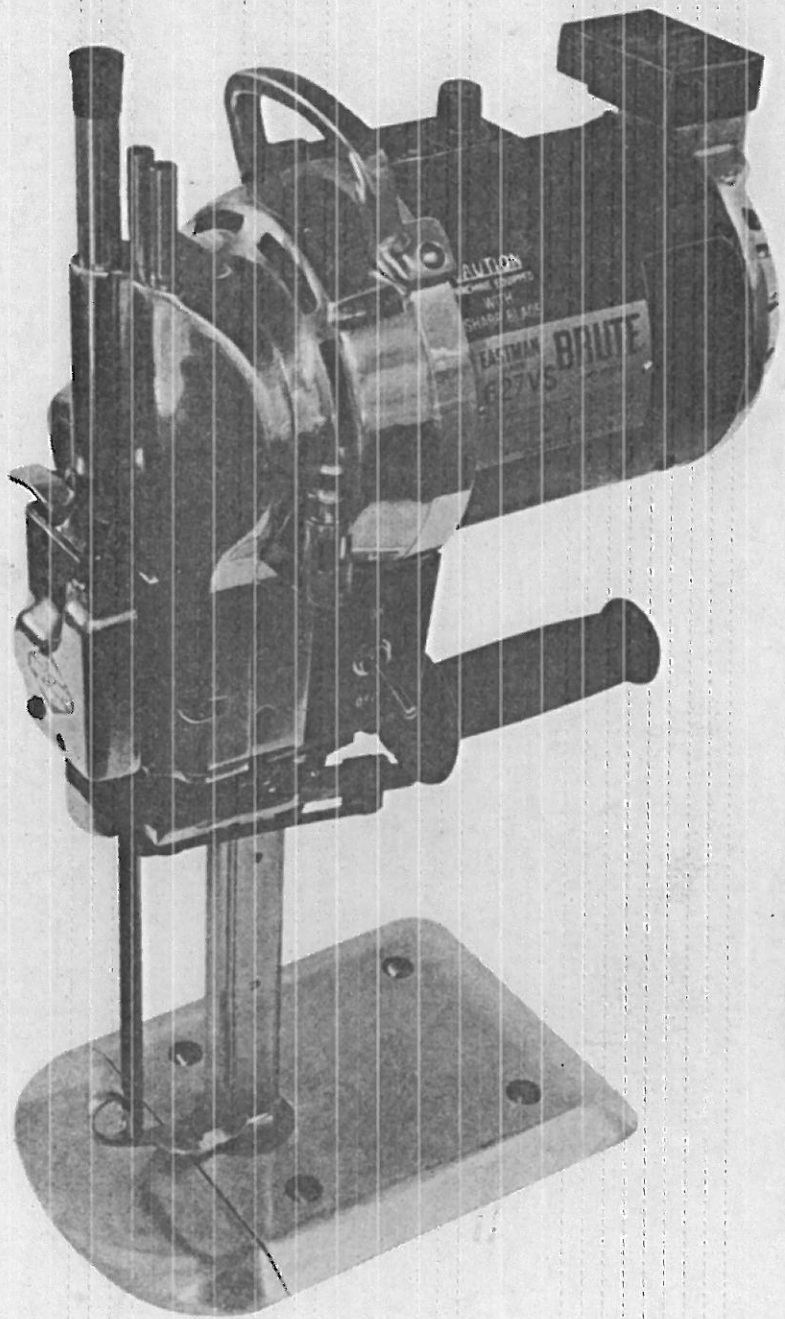
Patent No. 3714742

Patent No. 3775913

Patent No. 3960244

CAUTION

**Machine Equipped
With
Sharp Blade**



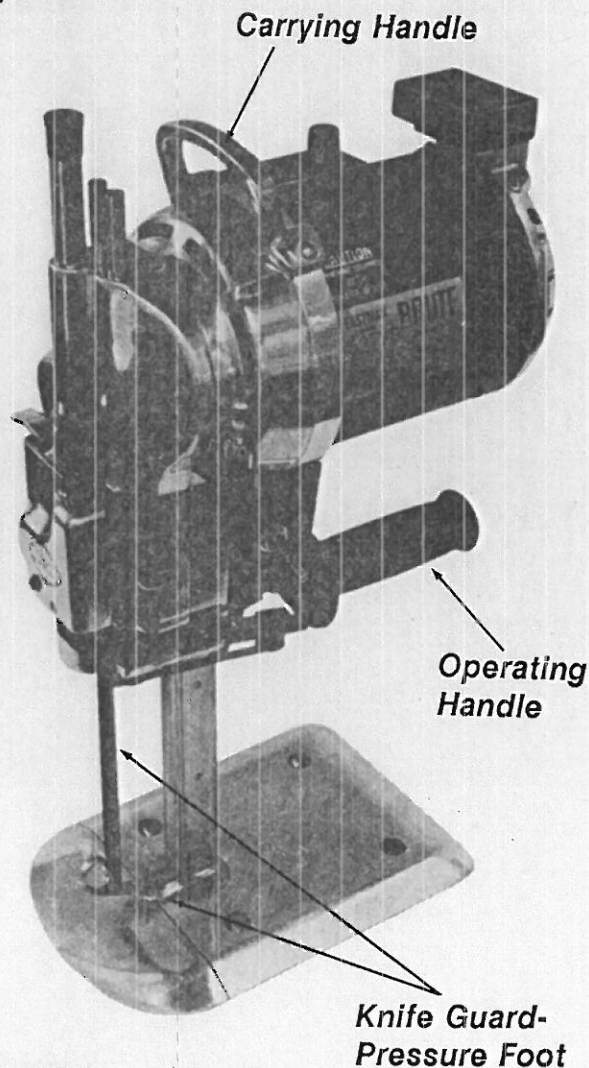
INSTRUCTION BOOK AND PARTS LIST

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COMPANY

779 Washington St. Buffalo, U.S.A. 14203 • (716)856-2200 • Telex 4432018 • Cable EMC0BUF • Fax (716)856-1140

Operation, Lubrication And Care

Before operating machine, read these instructions carefully. Familiarize yourself with all functions and adjustments of this equipment.



IMPORTANT:

Depress bell crank 584C3-16 release lever to return sharpener to locked position before starting.

WARNING:

Do not operate sharpener without knife in machine or the sharpener will be damaged. Do not shut off motor while sharpener is in motion.

The purchaser must instruct all operators on the proper use of the equipment. All standard industrial safety measures and equipment should be provided to protect the operator. Operators must be cautioned that improper use of this equipment can cause bodily injury. If you do not have qualified operators to instruct new persons, contact your Eastman sales representative or write to Eastman Machine factory direct.

WARNING:

This machine is equipped with a sharp knife. Keep hands away from the knife area at all times. Use control levers and handles only when operating or handling machine. When machine is not in operation the KNIFE GUARD/PRESSURE FOOT should be kept lowered (by depressing lever B) to the base plate at all times, except when changing the knife or performing similar maintenance. When making a cut the KNIFE GUARD/PRESSURE FOOT should be raised by handle G only enough to clear the material being cut. When this equipment is not being utilized, the power supply should be disconnected from the machine.

Before starting the motor, be sure that electric supply voltage and current are the same as stamped on the nameplate. Fill oil cup F (see illustration page 3). Make sure the sharpener is in locked position. Push in turning knob A and turn the machine over a few revolutions by hand to see if the knife moves easily. If the knife does not move easily, sharpener is probably in an unlocked position. Use bell crank release lever N to return sharpener to locked position.

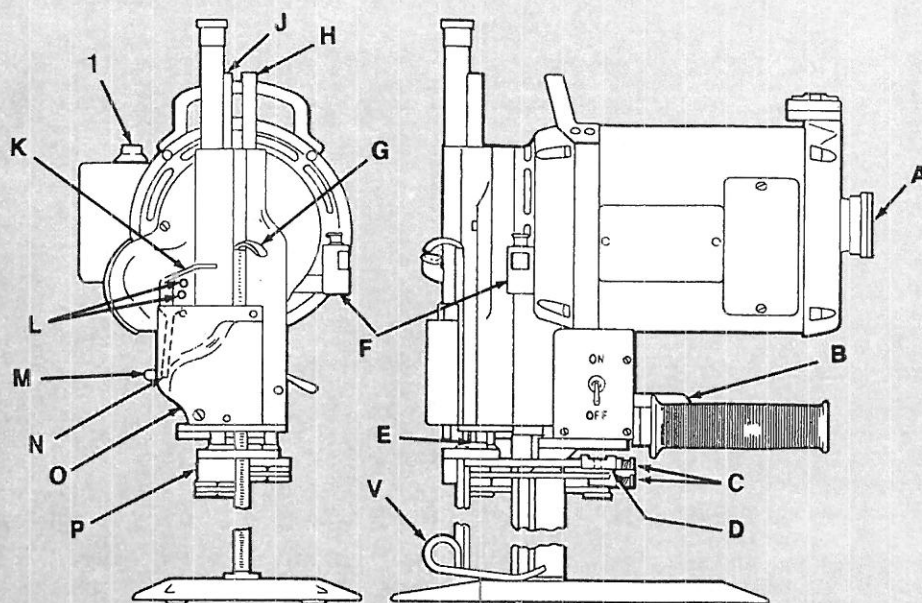
Proceed as follows: Check to see that motor switch is in off position. Connect attachment plug to terminal block on machine. With left hand straddle front of sharpener with fingers and thumb. Press in release lever N to dis-engage sharpener mechanism from motor. With right hand turn on motor switch, allow motor to gather full speed and then release lever N. This will automatically return sharpener to locked position. Knife must be in machine.

The variable speed straight knife ranges in speeds of 1,200 to 4,000 RPM depending on the control setting. The setting, depending on operator preference, can be decreased by turning the speed control knob "1" counter-clockwise to a lower number (0=1,200 rpm) or increase by turning clockwise to a higher number (10=4,000 rpm).

For the first week or two, or after the machine has been idle for any length of time, the motor should be turned on and off a few times before running continuously. This permits the oil to warm up and flow easily into the closely fit moving parts. **IN COLD WEATHER, PLEASE KEEP MACHINE IN WARM PLACE.**

WARNING:

Before performing any of the following procedures, make sure that the attachment plug has been disconnected from power source.



This machine is designed for hand held operation only. Eastman Machine Company does not approve of the use of its machine when employed as part of another machine. Nor does the company assume any responsibility should the machine be modified without prior factory approval or used in such a manner that the operator does not have continuous control over the cutting machine.

CARE OF MACHINE

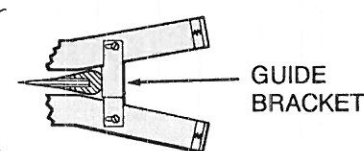
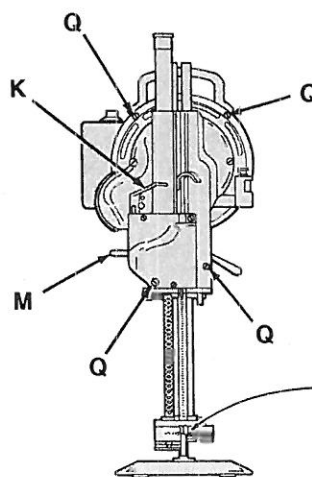
Use air hose or bellows with proper eye shields and blow lint out of motor and sharpener twice a week. Remove cover O and clean out lint around screw mechanism in sharpener once a week. Remove knife and clean knife slides with slot cleaner at least once a day. To prevent undue accumulation of lint, do not oil plate rollers. If rollers stick, remove from plate and wash in cleaning solvent.

TO SHARPEN THE KNIFE

Take the machine out of the lay. Drop KNIFE GUARD/PRESSURE FOOT by means of pressure foot lever B located next to machine operating handle. Press lever K downward with a slow, firm pressure to engage sharpening mechanism. Too fast lever action may cause lever to lock. If this occurs, lift lever M and start over. After a few tries you will feel correct operating pressure.

TO REMOVE SHARPENER

Press lever K approximately halfway down to neutral position and lower the sharpener by hand. Remove guide bracket. Press lever K to a neutral position and raise sharpener to original (top) position. Remove four hold down nuts Q and remove sharpener.



NOTE:

If lever K is pressed too far down (beyond neutral position) it will lock the sharpener bracket. To release, lift lever M and start over.

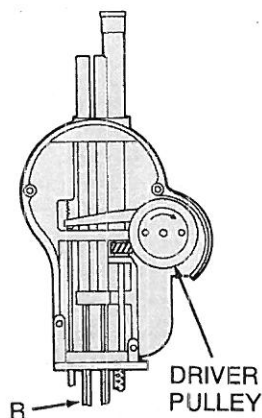
CAUTION:

Do not use sewing machine oil or detergent oil. It is entirely too light for cutting machine lubrication. For best results use specially compounded Eastman 30 weight non-detergent oil. Do not oil Base Plate Rollers.

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TO REPLACE RUBBER DRIVE PULLEY

The sharpener is driven by a rubber driver pulley which must be replaced when it wears down. To replace the rubber driver pulley proceed as follows: Remove sharpener from machine. See instructions page 3. Press lever K to neutral position and lower sharpener until an inch of square shaft R is exposed. Hold square shaft R with wrench. Wrench position on shaft should be as close as possible to sharpener housing. Use spanner wrench to remove driver pulley by turning clockwise as indicated by arrow (pulley has left-hand thread). Reassemble new pulley on sharpener. Reassemble sharpener on machine.



LUBRICATION

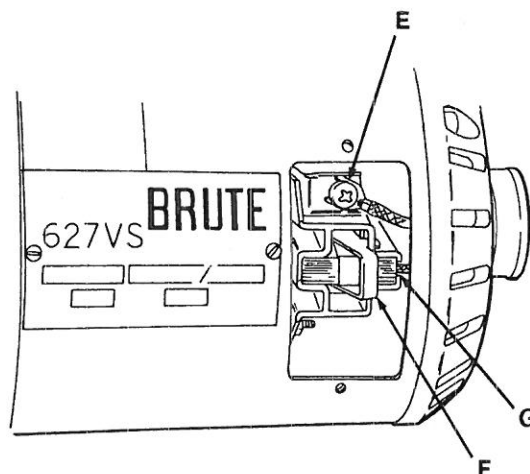
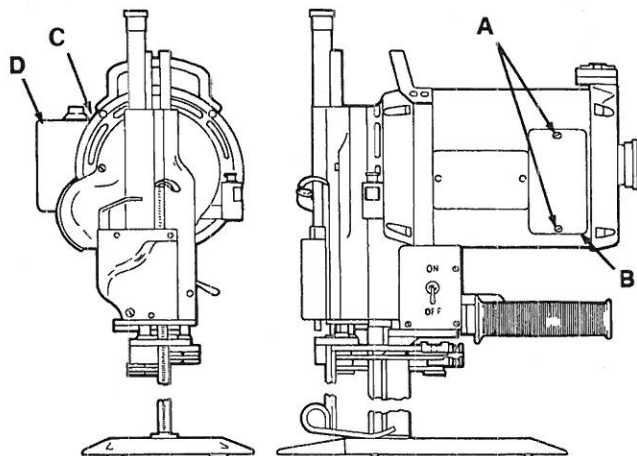
DO NOT USE AN EXCESS AMOUNT OF OIL

Once A Day	Once A Week	Once A Month
Fill oil cup F. Oil 2 places at L. use can with small spout (furnished with machine.)	One drop only to: Tubes at J & H Turning Knob at A Pulley Shaft E Belt Pulleys D	Remove plug at P and insert grease tube. Squeeze an amount about equal to the size of a pea into opening.

Motor Brush Replacement

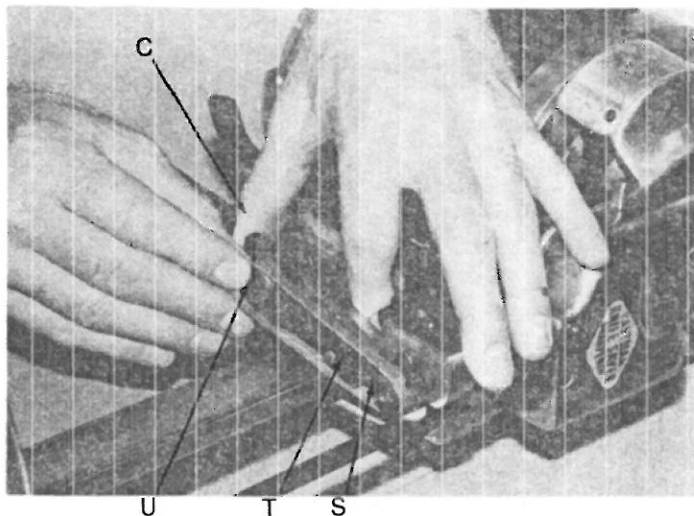
Remove (2) screws A from brush cover B. Remove brush cover and gasket. Remove (4) screws C from speed control cover. Carefully move aside speed control cover and gasket. Movement of parts will be restricted by wires but have adequate length to work without disconnecting. Loosen screw E and remove the motor brush terminal (only) from under the fastener. Remove brush retainer F by pushing in and forward to release and remove. Slide brush and pressure spring out of guides.

Before inserting new brushes, use air hose or bellows with proper eye protection and blow lint and dust out of motor. When inserting new brushes, brush wire must face slot G in brush holder. Place brush terminal under fastener E and secure. Place pressure spring in brush guide with spring unwinding toward center of motor. Insert brush retainer. Secure retainer hooks in guide slots. Replace gasket and brush cove and fasten with (2) screws A. Replace gasket and speed control cover and fasten with (4) screws C.



Belt Sharpener

Adjustment Instructions



WARNING:

Before performing any of the following procedures, make sure that the attachment plug has been disconnected from power source.

TO CHANGE SHARPENER BELTS

Push brackets C inward to release tension and remove worn belts. Place new belt over front pulley S, then between sharpener shoe T and knife and then over rear pulley U. Sharpener belts are available in 4 grits: Rough, Coarse, Medium and Fine. (See page 8).

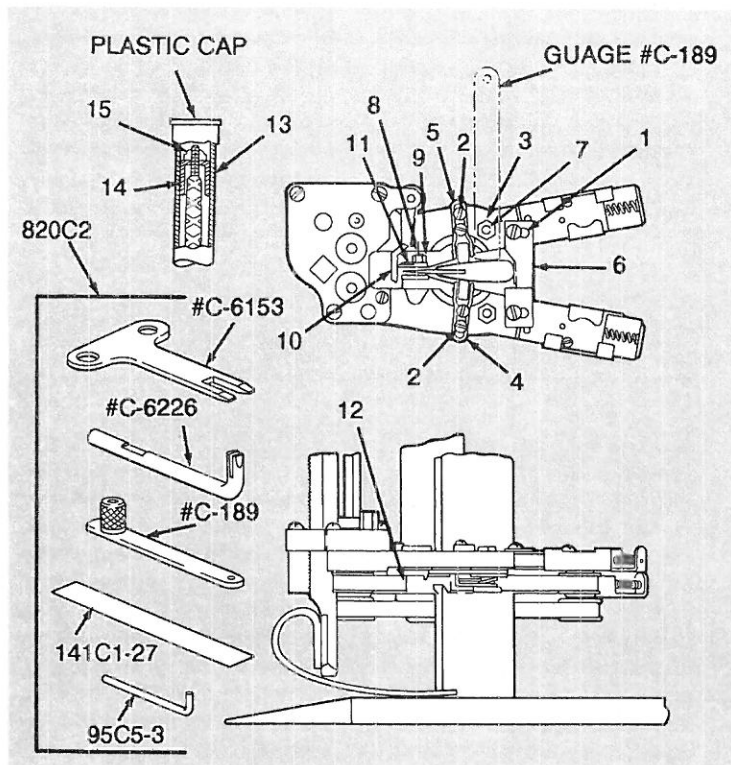
ADJUST STABILIZERS FOR CENTRAL ALIGNMENT

Disengage attachment plug. Depress sharpener lever (K) halfway and lower belt carrier to extreme bottom position. (See page 3) Loosen screws (1) and disengage back guide (6) from contact with standard. Loosen screws (2) and disengage stabilizers (4) and (5). Remove locknut (3). Install Gauge #C-189 on exposed threaded end of pivot screw (7) and press end of gauge against side of standard. Hold this position, engage opposite Stabilizer (4) firmly against side of standard and tighten screws (2). Remove tool #C-189, press positioned stabilizer (4) against side of standard, fasten opposite stabilizer (5) firmly against standard. Replace locknut (7). Reengage back guide (6) in loose contact with back of standard.

CHECK SHARPENER SHOES AND CLAMPING ARM

Shoes should swing in and out freely without excessive up and down play. If adjustment is necessary, loosen locknuts (3), tighten screws (7) as required.

Check Clamping Arm (10) with the belt carrier in the most downward position and the knife in the most upward position. Clamping Arm should hold shoe from moving in. If it fails to do so, serrations on clamping arm are worn or shoe (11) is worn. Parts should be replaced.



CHECK EXTREME DOWN POSITION OF SHARPENER

Correct down position is having the tip of the knife at the center of the belt on shoe (12) when the belt carrier is in the most downward position and the knife is in the most upward position. If the belts are too high, the bottom point of the knife will not sharpen, if the belts are too low, the bottom point of the knife will round off excessively.

If adjustment is necessary, raise belt carrier to up position. Remove plastic cap from tube for screw shaft. Use pin through hole in tube (13) to prevent spacer (14) from turning, remove locknut (15). Turn spacer clockwise with wrench #C-6153 to raise bottom position and counter clockwise to lower position. One turn adjusts $1/32"$. When spacer is adjusted use pin to hold spacer in position, re-assemble and tighten locknut (15). Replace plastic cap.

CHECK STOP SCREW (8) ON SHARPENER SHOE

With new belts on carrier, insert .010 feeler gauge #141C1-27 between stop screw and knife and be sure that clamping arm (10) has been released from Sharpener shoe (11). The gauge should just fill space between screw and knife. If adjustment is necessary, loosen locknut (9) adjust set screw to proper spacing and retighten locknut.

CHECK WIDTH OF BEVEL ON KNIFE

Bevel should be approximately $1/16"$ on both sides. Install new knife and new belts. Color bevel with wax pencil. Run sharpener up and down several times. If adjustment is required: for Flex-Pad shoes insert Tool #C-6226 over the belt guide pad and move free end of tool to the rear to increase the bevel, to the front to decrease the bevel.

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WARNING:

Whenever servicing machine; check tightness of Plate Bolt Nut before resuming cutting operation.

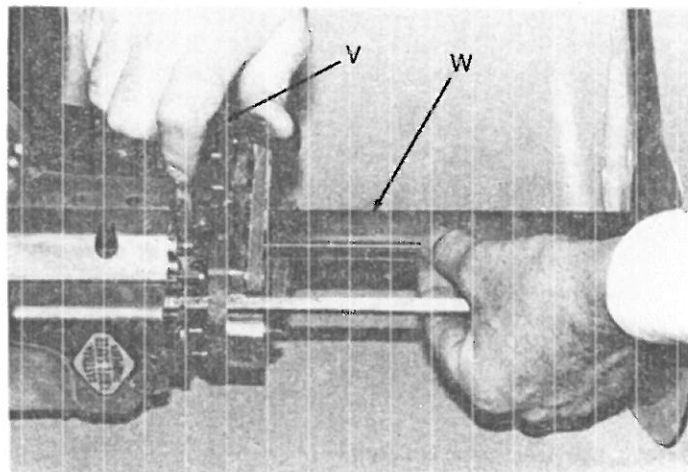
ALL SPECIAL TOOLS FOR SHARPENER ADJUSTMENT CAN BE OBTAINED BY ORDERING TOOL KIT #820C2.

CAUTION:

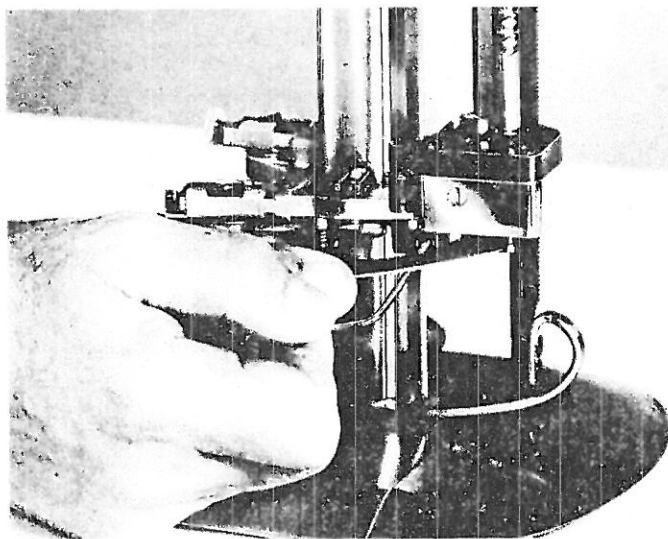
Discard used sharp knives with care.

TO CHANGE THE KNIFE

Make sure sharpener is in locked position. Raise pressure foot to top position by means of pressure foot lever B, located next to machine operating handle. Lay machine on table as shown. Press in turning knob A and turn knife to bottom position. Insert T-handle knife bolt wrench V as shown and loosen knife lockbolt. Remove knife through bottom of standard W. After removing knife, clean knife slot in standard with slot cleaner. Insert new knife in knife slot. Be sure to set knife tightly up against knife lockbolt and at the same time hold the bottom of the knife against the back of the slot in the standard when tightening knife lockbolt. After tightening knife lockbolt, check to see if knife runs freely in standard by rotating turning knob. Install new sharpener belts and operate sharpener three or four times before starting to cut.



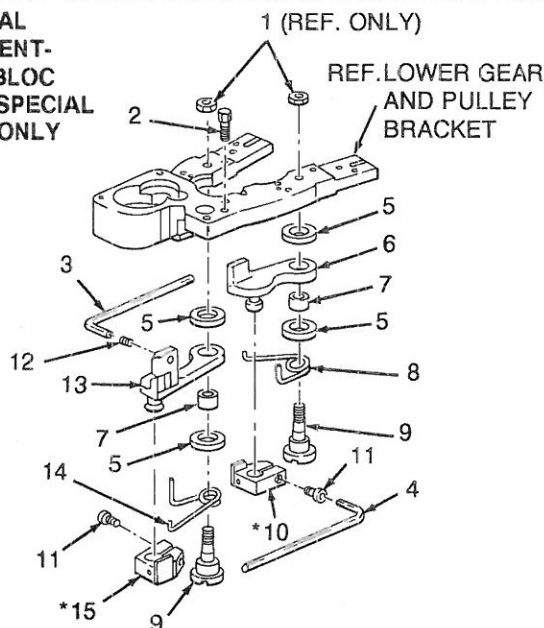
BEVEL-BLOC® Sharpener Shoes

**TO ADJUST BEVEL BLOC SHOES**

Eastman's exclusive patented adjustable Bevel-Bloc sharpener shoes make it possible to grind any desired bevel on the knife edge. The knife edge bevel on your new machine is factory set to handle all normal fabrics and should not be changed. Normally an acceptable bevel is 1/16" wide. If necessary to adjust the bevel on the knife edge to a different length proceed as follows:

Refer to diagram on page 3 and lower the knife to the bottom of the stroke with machine turning knob A. Lower the sharpener by hand, by holding the sharpener operating lever K halfway down to its neutral position. To change cutting bevel on knife, pull sharpener belt down to expose setscrew on Bevel-Bloc. Insert Allen Wrench 95C5-5 into setscrew and loosen slightly. For longer bevel on knife edge, move key and bloc to the rear; for shorter bevel, to the front. Re-tighten setscrew. Adjust Bevel-Blocs on both shoes. After adjustment of Bevel-Blocs, return sharpener to top (locked) position. Check stop screws on sharpener shoes for correct setting as outlined in instructions on page 5. Color mark front sides of knife edge with marking ink or wax pencil. Turn on power and run sharpener down and up several times and then check bevel on both sides of knife. Readjust if necessary.

**OPTIONAL
EQUIPMENT-
BEVEL BLOC
SHOES SPECIAL
ORDER ONLY**



* - Items Sold In Pairs With Kits Only

820C1-39 Bevel Bloc Replacement Kit

ITEM	PART NO.	DESCRIPTION	QTY.
2	20C6-22	Screw Adjust	1
4	95C5-5	Wrench Allen	1
*10	766C1	Bevel Bloc Assembly R.H.	1
11	308C10-1	Screw, 6/32 x 5/16 Socket Head Cap	2
*15	766C1-1	Bevel Bloc Assembly L.H.	1

715C1-16 Lower Gear Bracket Assembly with Bevel Bloc Shoes (5"-10" Knife)

715C1-18 Lower Gear Bracket Assembly with Bevel Bloc Shoes (11 1/2"-13" Knife)

820C1-40 BEVEL BLOC CONVERSION KIT

ITEM	PART NO.	DESCRIPTION	QTY.
1	4C2-63	L.H. Nut (REF. ONLY)	2
2	20C6-22	Screw Adjust	1
3	95C5-3	Wrench Allen	1
4	95C5-5	Wrench Allen	1
5	12C15-93	Washer Shoe	4
6	103C2-35	Shoe Sharpener R.H.	1
7	21C14-7	Bushing Shoe	2
8	34C10-146	Spring Shoe R.H.	1
9	20C12-153	Screw Sharpener Shoe	2
*10	766C1	Bevel Bloc Assembly R.H.	1
11	308C10-1	Screw 6/32 x 5/16 Socket Head Cap	2
12	20C13-63	Set screw	1
13	103C2-36	Shoe Sharpener L.H.	1
14	34C10-145	Spring Shoe L.H.	1
*15	766C1-1	Bevel Bloc Assembly L.H.	1

743C3 Bevel Bloc & Shoe Assembly Kit R.H.

Parts Include Items 6, *10 and 11.

743C3-1 Bevel Bloc & Shoe Assembly Kit L.H.

Parts Include Items 12, 13, 11 and *15.

TO FREE FROZEN GUIDES

Remove sharpener from machine as explained on page 3. Remove knife. Loosen screws (1) and remove connecting rod (2). Insert drift pin in hole (3) in crank and tap with light hammer in direction of arrow. This will loosen crank. Remove crank. Remove screws and oil tube cover (4). Remove screws (5) and remove oil tube (6). Remove crosshead (7) from guides. Use a fiber of brass rod against the bottom of crosshead and drive crosshead out through the top of the guides.

NOTE:

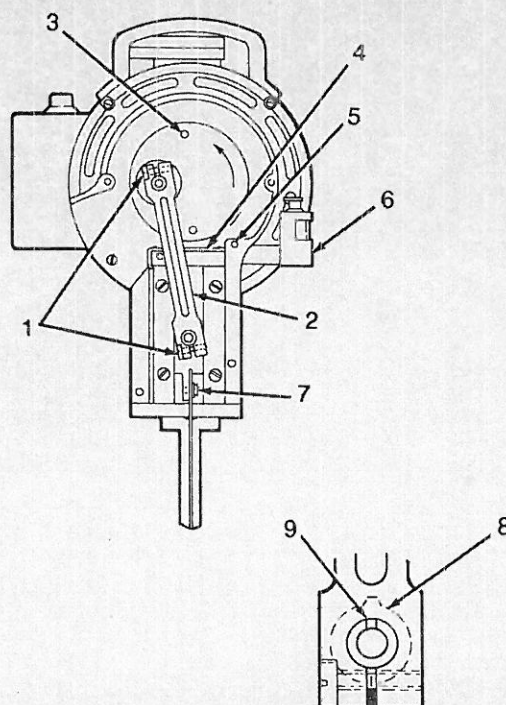
If wrist pin is frozen in crosshead, drive wrist pin out of crosshead with soft punch. Polish wrist pin and hole in crosshead with fine emery cloth.

Hone rough spot on bearing surface of crosshead against a flat oilstone until smooth. Examine guides. If any evidence of high spot, remove with scraper and clean. Oil bearing surface of guides. Insert crosshead and reassemble machine. Be sure washer (8) is in a place between connecting rod and crosshead.

CAUTION:

Wrist pin must be installed with notch (9) at top center. Otherwise flow of oil to wrist pin bearing will be cut off.

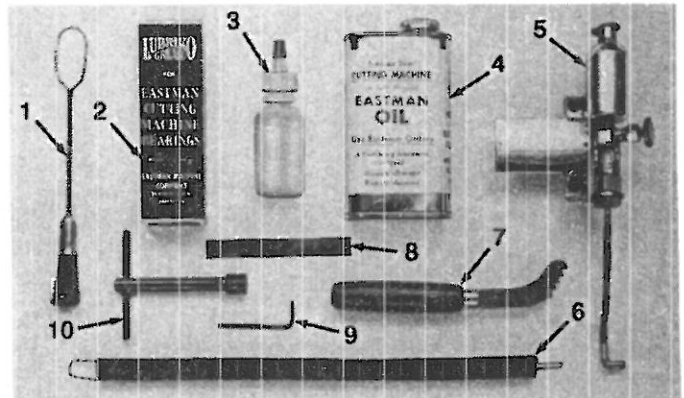
Run machine for approximately one-half hour, oiling guides frequently before putting machine back into production.



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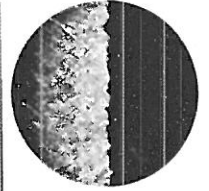
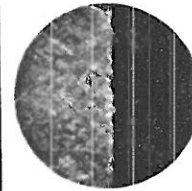
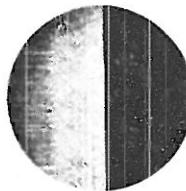
Maintenance Supplies

ITEM	PART NO.	DESCRIPTION	QTY.
1	36C6	Sharpener Cleaning Brush	1
2	242C2-2	Eastman Bearing Grease	1
3	162C2	Eastman Oil	1
4	242C1	1/2 Pint Eastman Oil (Optional)	1
5	607C1-33	Knife Slide Oiling Devise (Optional)	1
6	34C9-9	Trolley Spring (Optional)	1
7	81C1-2	Slot Cleaner	1
8	141C1-27	Feeler Gauge For Shoe Setscrew	1
9	95C5-3	Allen Wrench For Shoe Setscrew	1
10	529C1-8	Knife Bolt Wrench	1



EASTMAN'S FOUR ABRASIVE BELT GRITS OFFER AN EDGE FOR EVERY FABRIC

For increased cutting efficiency, Eastman offers four different edges as produced by four different abrasive belts. These belt grits are available in convenient color-coded boxes for easy identification.



FINE BELT FINE EDGE

Since thru synthetics and blends, for knitted or loosely woven cloths, and for silks, high pile fabrics, quilting, etc.
BLUE
181C2-5

MEDIUM BELT MEDIUM EDGE

Shears thru the general run of rayons, cottons, light woolens, tropicals, suitings and similar materials.
GREEN
181C2-2

COARSE BELT COARSE EDGE

For heavier weight variations of the "medium" materials at left, and for tightly woven cloths, pocketing, light denims, over-coatings and light leatherette and rubberized fabrics.
RED
181C2-1

ROUGH BELT ROUGH EDGE

The edge that practically SAWS thru heavily denims coated fabrics, treated canvas, simulated heavier leathers, etc.- where the going gets tough!
BLACK
181C2-6



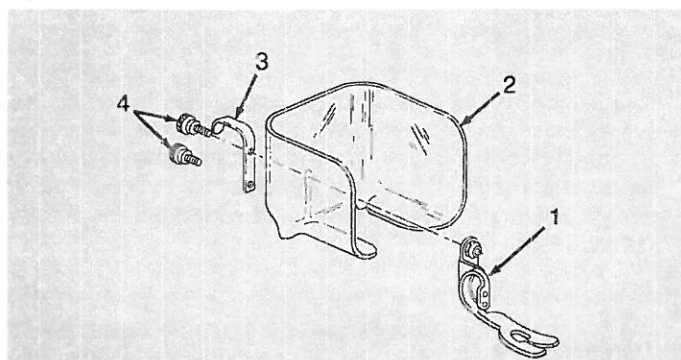
250X micro-photos show four different edges as produced by EASTMAN'S four abrasive belt grits above.
...ONE JUST RIGHT FOR THE FABRIC YOU'RE CUTTING!

SPECIAL PERFORMANCE BELTS: Electrostatically Coated

FINE BELT
BLUE
181C2-5SP

MEDIUM BELT
GREEN
181C2-SP

COARSE BELT
RED
181C2-1SP



644C1-160

PLASTIC KNIFE GUARD ASSEMBLY

Eastman Machine Company does not recommend the use of additional guarding implements. However at the request of customers only, a lucite guard can be made available as shown in the following illustration.

ITEM	PART NO.	DESCRIPTION	QTY.
1	731C1-5	Pressure Foot (with Bracket)	1
2	25C4-158	Plastic Knife Guard	1
3	22C3-6	Lift Handle	1
4	20C7-16	Thumb Screw	2

WAVE KNIVES REQUIRE SPECIAL SHOES AND RELATED PARTS LISTED BELOW

743C1-27	L.H. SHOE	743C1-26	R.H. SHOE
34C10-47	L.H. SPRING	34C10-57	R.H. SPRING
20C12-57	SCREW (For shoe)	20C12-57	SCREW (For Shoe)

WHEN USING THESE SPECIAL SHOES THE FOLLOWING
PARTS MUST BE REMOVED FROM THE LOWER GEAR
BRACKET

35C7-28	CLAMPING ARM (Page 21)
34C10-123	SPRING (See Page 21)
20C12-143	SCREW (See Page 21)

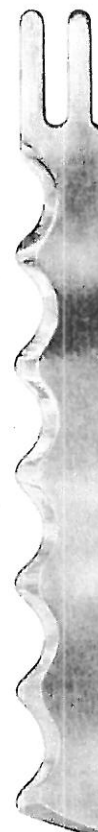
SEE PAGE 19 FOR SLOW SPEED DRIVE NOTE

**FOR
BEST
RESULTS
USE
ONLY
GENUINE
EASTMAN
KNIVES**

The guarantee
covering your
Variable Speed
Straight Knife
is not valid
if knives other
than those
manufactured
by Eastman
are used.



STRAIGHT
KNIFE



WAVE
KNIFE

STRAIGHT KNIFE SELECTION CHART

CARBON STEEL				HIGH SPEED STEEL					SPECIAL PROCESS
Knife Size	STRAIGHT FRONT	SAW TOOTH	WAVE EDGE	STRAIGHT FRONT	ROUND TIP	ANGLE TIP	SAW TOOTH	WAVE EDGE	STRAIGHT FRONT
5	80C5	80C5-14	80C5-19	80C5HS	80C5HS-R	80C5-36HS	80C5-14HS	80C5-19HS	80C5SP
6	80C6	80C6-14	80C6-19	80C6HS	80C6HS-R	80C6-36HS	80C6-14HS	80C6-19HS	80C6SP
7	80C7	80C7-14	80C7-19	80C7HS	80C7HS-R	80C7-36HS		80C7-19HS	80C7SP
8	80C8	80C8-7	80C8-19	80C8HS	80C8HS-R	80C8-36HS		80C8-19HS	80C8SP
9	80C9		80C9-19	80C9HS	80C9HS-R	80C9-36HS		80C9-19HS	80C9SP
10	80C10		80C10-19	80C10HS	80C10HS-R	80C10-36HS		80C10-19HS	80C10SP
11 1/2	80C11 1/2			80C11 1/2HS	80C11 1/2HS-R	80C11 1/2-36HS		80C11 1/2-19HS	80C11 1/2SP
13	80C13			80C13HS	80C13HS-R				80C13SP

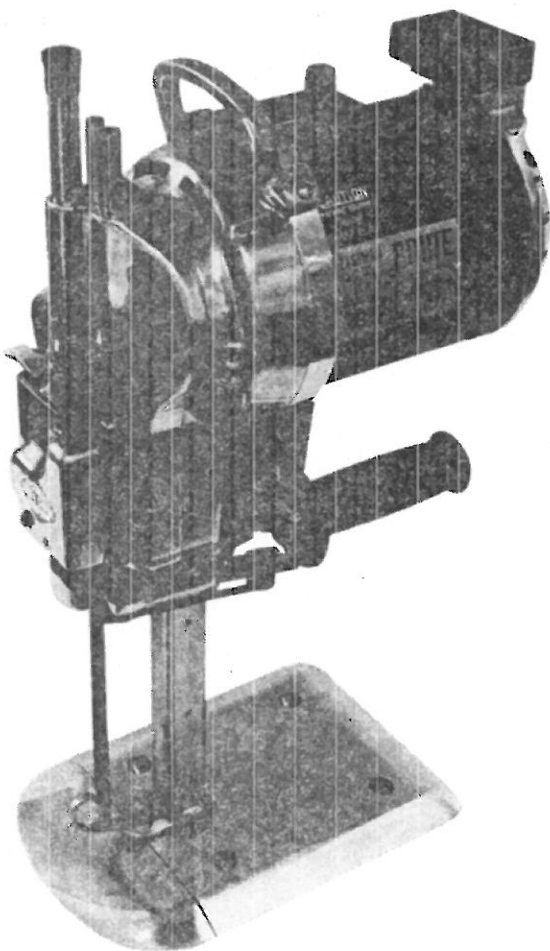
80C6-47HS 6" High Speed Wave Special Grooved Knives for Micro Fog Machine

80C7-47HS 7" High Speed Wave Special Grooved Knives for Micro Fog Machine

Teflon coated knives available. Order by adding "T" to end of knife number.

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Illustrated Parts List



Your Eastman Straight Knife has been carefully designed to provide many hours of trouble free operation. The comprehensive exploded parts illustrations have been carefully prepared to enable you to easily order replacement parts, as required. Replacement parts for this machine may be ordered thru your nearest Eastman representative or directly from the Eastman factory.

IMPORTANT: Always specify machine class number and serial number when ordering parts for faster more efficient service.

Index

EXPLODED PARTS ILLUSTRATIONS

The exploded parts illustrations and parts lists in this section have been divided into major assemblies as follows:

MOTOR ASSEMBLY

See pages 12 and 13.

FRONT BEARING HOUSING ASSEMBLY

See pages 14 and 15.

SHARPENER HOUSING ASSEMBLY

Front View see pages 16 and 17.

Rear View see pages 18 and 19.

LOWER GEAR BRACKET ASSEMBLY

See pages 20 and 21.

NOTE: Four different abrasive belt grits (designed to provide you with a selection of edges) may be ordered for this machine. See page 8 of this manual for more information.

STANDARD AND BASE PLATE ASSEMBLY

See pages 22 and 23.

NOTE: Knife slide and standard height indicated on pages 22 and 23 are based on the length of knife and do not refer to physical dimensions. e.g. a 6" knife slide accommodates a 6" knife. Ordering information and part numbers for knives may be found on page 9.

FASTENERS REQUIRED TO ASSEMBLE MAJOR COMPONENTS

ITEM	PART NO.	DESCRIPTION	QTY.
1	4C1-99	Sharpener Hold Down Nut	3
2	4C1-150	Sharpener Hold Down Nut	1
3	20C13-96	Standard To Bearing Screw	4
4	24C4	Plate Bolt	1
5	4C2-2	Plate Bolt Nut	1

NOTE: Please specify model and serial number of machine when ordering parts.
Item numbers are for reference only.
Please specify PART NUMBERS when ordering replacement parts.

SHARPENER
HOUSING ASSEMBLY
(FRONT VIEW)
SEE PAGES 16 AND 17

SHARPENER
HOUSING ASSEMBLY
(REAR VIEW)
SEE PAGES 18 AND 19

MOTOR ASSEMBLY
SEE PAGES 12 AND 13

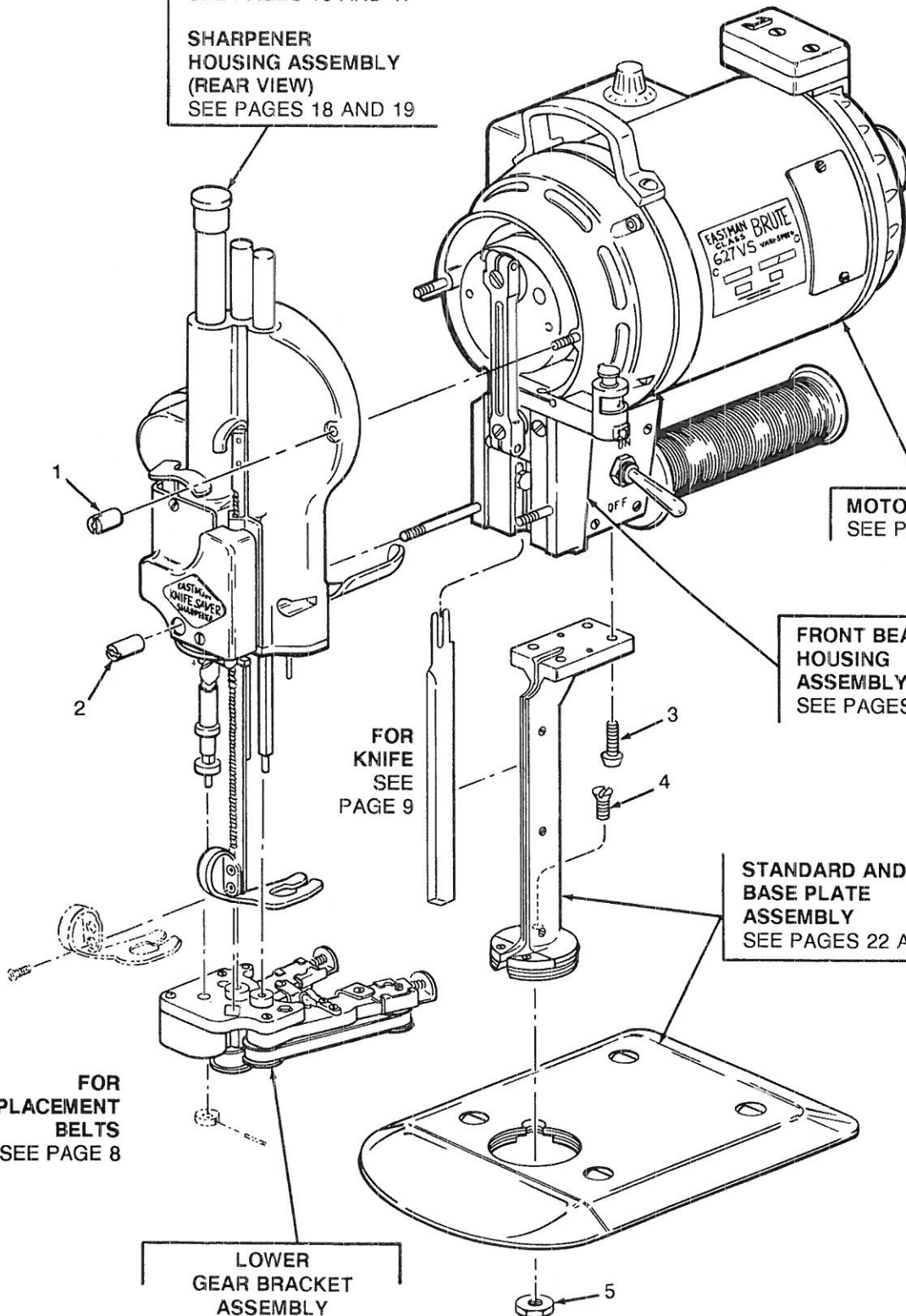
FRONT BEARING
HOUSING
ASSEMBLY
SEE PAGES 14 AND 15

FOR
KNIFE
SEE
PAGE 9

STANDARD AND
BASE PLATE
ASSEMBLY
SEE PAGES 22 AND 23

FOR
REPLACEMENT
BELTS
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LOWER
GEAR BRACKET
ASSEMBLY
SEE PAGES 20 AND 21

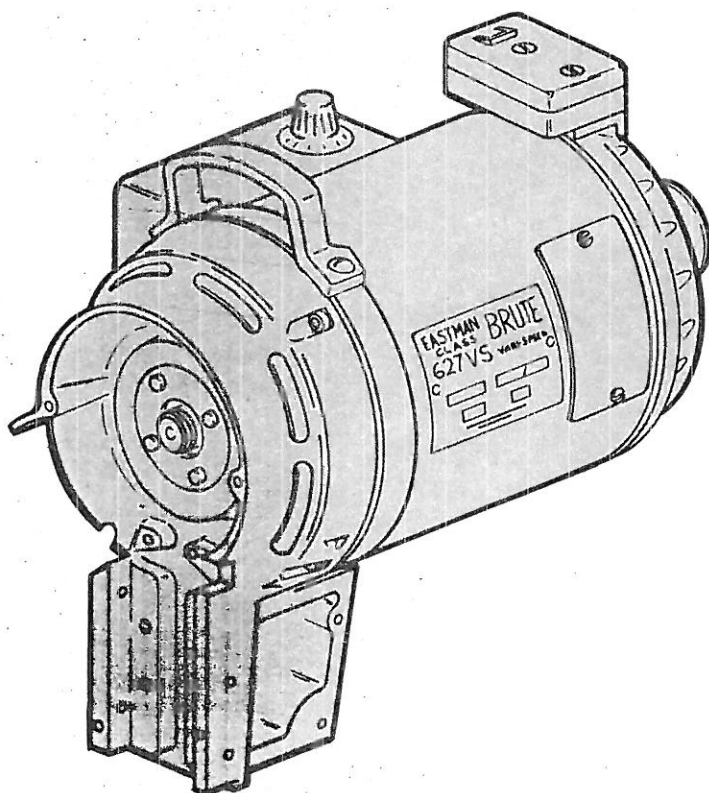


Variable Speed Motor Assembly

Illustrated Parts List

576C1-677 (220/90V)

576C1-668 (110/90V)



ITEM	PART NO.	DESCRIPTION	QTY.
1	104C1-6	Dial Indicator	1
2	830C1-73	Speed Control Board (110/90V)	1
3	830C1-75	Speed Control Board (220/90V)	1
4	830C1-74	Speed Control Board (220/180V)	1
5	20C12-173	Screw, Thread Forming	4
6	53C11-158	Cover, Speed Control	1
7	20C12-178	Screw, 10-32 x 1/4 Round Head	3
8	8C15-11	Insulation, Cover	1
9	8C15-10	Insulation, Brush-Cover	1
10	576C1-676	Motor Assembly	1
11	207C1	Grommet	1
12	20C12-174	Screw, Brush Cover	2
13	53C11-156	Brush Cover	1
14	8C15-9	Brush Insulation	1
15	190C1-12	Armature (90V) (STD)	1
16	190C1-14	Armature (180V)	1
17	614C1-32	Motor Fan	1
18	29C6-165	Motor Adaptor	1
	29C6-176	Motor Adaptor (Micro Fog only)	1
19	536C1-68	Front Bearing Housing Assembly	1
20	308C15-5	Screw, 10-32 x 3/4 Socket Head Cap	4
21	12C1-49	Washer, Lock	4
22	20C12-175	Screw, Adapter	4
23	22C1-40	Handle, Carrying	1
24	300C14-6	Screw, 10-32 x 5/8 Round Head	2
25	305C10-1	Screw, 6-32 x 1/4 Grounding	1
26	12C1-32	Washer, Lock	1
27	62C10-83	Terminal Block Bracket	1
28	302C15-3	Screw, 10-32 x 1/2 Flat Head	2
29	13C1-9	Turn Knob	1
30	34C1-51	Spring	1
31	303C10-205	Screw, 6-32 x 5/16 Oval Head	3
32	53C7-44	Rear Cover	1
33	18C6-16	Ring, Snap	1
34	4C1-145	Locknut, Rotor Shaft	1
35	4C2-87	Nut, Clutch	1
36	55C4-143	Spacer, Clutch Nut	1
37	90C6-46	Ball Bearing	1
38	12C1-12	Washer, Loading Spring	1
39	308C15-8	Screw, 10-32 x 2 1/2 Socket Head Cap	4
40	90C1-166	Rear Bearing Housing	1
41	20C12-176	Screw, Brush Holder	4
42	12C1-23	Washer, Lock Internal Tooth	4
43	50C11-43	Clamp	2
44	830C1-55	Brush Holder Assembly	1
45	708C1-17	Brush	2
46	34C1-61	Brush Spring	2
47	71C3-51	Brush Retainer Clip	2
48	234C01-109	Resistor, In-line	1

NOTE:

Please specify model and serial number of machine when ordering parts.
Item numbers are for reference only.
Please specify PART NUMBERS when ordering replacement parts.

WARNING:

Terminal Block must be grounded. Attach ground wire to ground terminal "E" on terminal Block.

