KALAMAZOO

Service Manual and Parts List

MODEL

610 Series

Metal Band Cut-Off Machines

KALAMAZOO

QUALITY AND INNOVATION SINCE 1867

KALAMAZOO SAW, INC.
508 HARRISON STREET • KALAMAZOO, MICHIGAN 49007

Revised May. 1986 KTS - 13

KALAMAZOO 610 BAND SAW MACHINES

Recommended specifications for cutting specific materials with Hard Edge Flexible Back Metal Cutting Band Saw blades.

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MATERIALS	Teeth per Inch	Machine Speed	MATERIALS	Teeth per Inch	Machine Speed
Aluminum Alloys	6-10	3	High Chrome Steels	10-14	2
Aluminum Castings	6-10	3	High Speed Steels	10-14	3
Angle Iron, Light	14	3	I Beams	10-14	3
Angle Iron, Heavy	10	3	Machine Steel	10-14	3
Brass, Sheets-Rods	10-14	3	Malleable Iron	10-14	3
Brass Castings, Soft	10-14	3	Monel Metal	10-14	1
Brass Castings, Hard	10-14	2	Nickel Steel	10-14	1
Bronze	10-14	2	Pipe, Iron Soil	10-14	3
Bakelite	10-14	3	Pipe Steel	10-14	3
Boiler Tubes	10-14	3	Pipe, Galvanized	10-14	2
Cast Iron, Pipe-Solids	6-10	3	Plastics	10-14	3
Channel Iron	6-10	3	Steel, less 50 carbon	10-14	3
Cold Rolled Steel	10-14	3	Steel, over 50 carbon	10-14	2
Copper	10-14	3	Structural Steel	10-14	3
Drill Rod	10-14	2	Tubing, Steel Light	14-18	3
Fibre	10-14	2	Tubing, Seamless Heavy	10-14	3

We suggest 10 teeth for general purpose; 14 teeth for light or thin wall material.

SPEEDS

No. 1.....53 FPM No. 2.....96 FPM

No. 3.....160 FPM

Use lightest possible pressure for every new blade on first cut. Steel with high tensile strength use lowest speed No. 1. Tubing and thin wall material use 3rd speed.

KALAMAZOO Band Saw Machines were designed to cut dry, and do so efficiently.

However, present conditions, demanding all possible time-saving, have led our engineers to recognize that COOLANTS of various types, used for cutting ferrous metals, permit faster cutting speeds PLUS longer blade life, KALAMAZOO totally enclosed construction invites the use of coolants, without unnecessary solution mess.

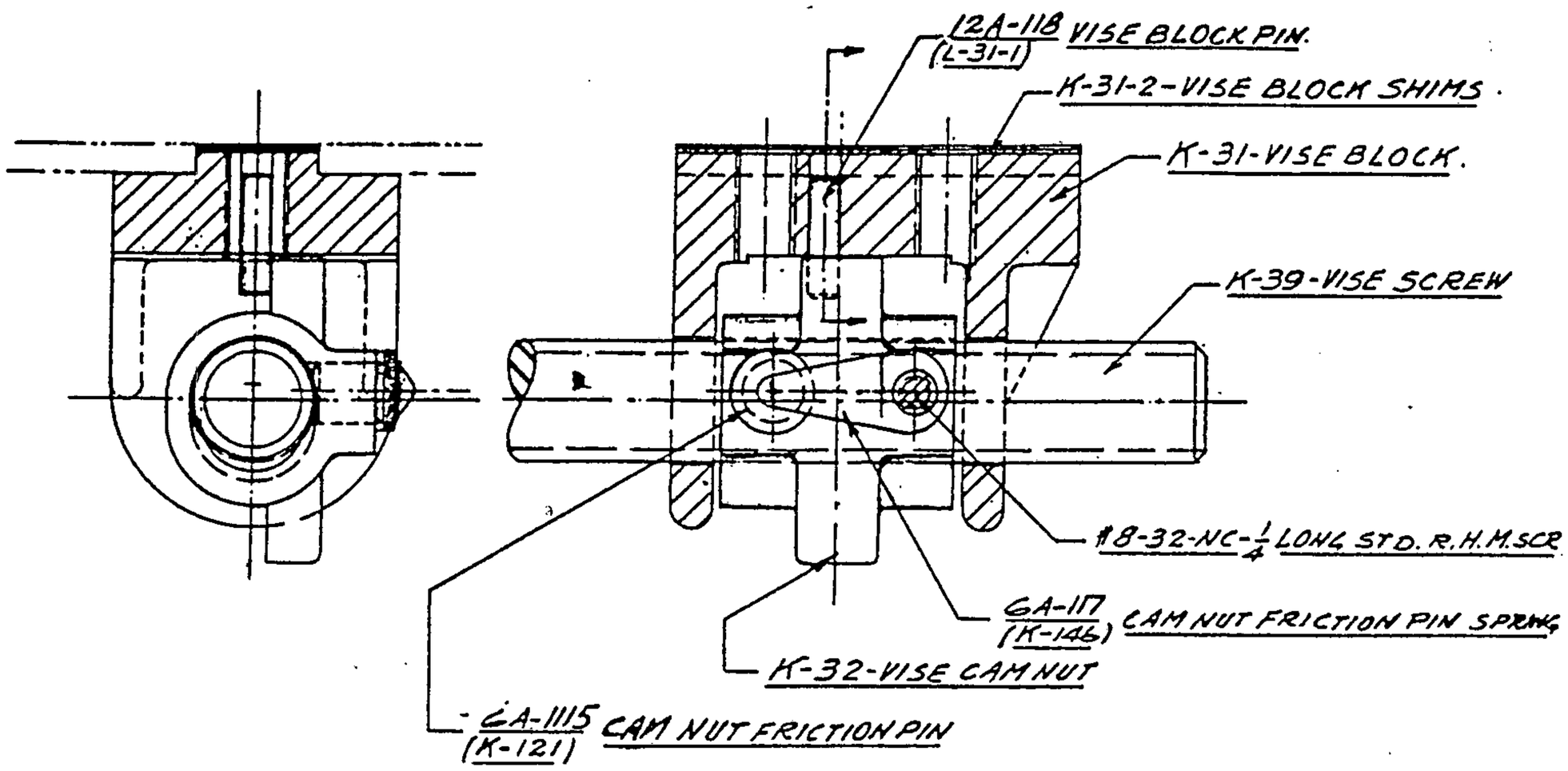
COOLANTS are recommended for production work on Machine and Tool steels and all steel alloys classed as ferrous metals.

We now offer as an accessory, at low extra cost, a coolant system tailored to our machine. ASK US for particulars and prices.

HOW TO OBTAIN GREATER EFFICIENCY AND MAKE BAND BLADES LAST LONGER

Failure	Cause	Suggested Remedy
Teeth stripping	Heavy starting of cut on thin section or corner of material. Forcing of cut when blade is very sharp.	Lower blade into work gently by hand. Start all new blades with hydraulic partially open. After one square inch is cut, add more pressure.
	Teeth too coarse or speed too slow.	Use suggested teeth and speed for given area of materials.
Bias cutting	Front guide not set close enough. Side rollers of guides too open. Straight line; flat bias.	Place front guide roller within 3" to 4" to cut entry. Adjust side guide rollers to snug blade (do not crimp). Equalize wear for the set of teeth. See NOTE below.
Back edge burr	Closed idler wheel "cant." NOTE: With blade tension at "A" blade will run down 1/8" from rim of idler wheel; with added one full turn of tension handle, blade will just contact rim of hand wheel.	Release blade tension; loosen top two hollow head set screws (locking screws). Loosen two cap screws 1/4 turn, farthest from blade tensioning handle. Tighten two cap screws 1/4 turn, nearest blade tensioning handle. Lock top set screws; retension blade.
	Blade tension too light.	Add more blade tension. See NOTE above.
	Front roller guide too far away from cut entry.	Front roller guide should be approximately 3" to 4" away from cut entry.

Failure	Cause	Suggested Remedy
Band breakage	Misalignment of top rollers of guide sets.	Adjust top rollers of guides to share force equally on properly tensioned hand blade.
	Extreme differences in temperature on tensioned band blades.	Re-tension blade at start of each work shift; whether or not tension is released at end of shift.
	Bias cuts.	Equalize wear for set of the blade teeth. See NOTE below
	Forcing of the cutting. CAUTION: Do not swing roller guides to correct bias cuts. See NOTE below.	Use lighter pressure on spring. Turn hand wheel on bottom of spring so that part of pressure is taken off blade. Use 8 lbs. of lift pressure on end of frame.
Loss of teeth-set	Speed too fast; plus forcing.	Reduce speed; use less pressure.
	One or both sets of side guide rollers set too close and crimping the blade.	Adjust each set of side guide rollers; hold blade firm without crimping. Blade must slide up and down between side rollers.
	Only one of the two back edge rollers in contact with blade.	Adjust to have both back edge rollers share alike on pressure (check blade tension).



MOVING VISE BLOCK ASS'Y
6 x 10 MACH.

GUIDE ARMS — The guide arms are used to position the roller guide assemblies and can be moved along the yoke of the machine to desired position. In all cases it is recommended that they be placed as close as possible to the work. Be sure that the guide arms are tight.

BLADE BRUSHES — Each Kalamazoo Machine is equipped with blade brushes (SP44) which fit in a holder which mounts in a bracket attached to the roller guide assemblies. These brushes should be replaced often to insure cleaning the blade and extending blade life. They are easily replaced.

VISE* — The model 610 uses K300. These assemblies use a Bronze Vise Cam K32 with a tumble action which precludes using a control rod. One half backward turn of hand wheel opens the nut and permits moving vise jaw to be repositioned.

The fixed vise jaw of all machines is also adjustable for making cuts up to 45°. To make such changes on the model 610 simply loosen the bolt holding this jaw in place and set to the desired position, tightening the bolt to hold the fixed jaw in place.

BLADE SPEED SELECTION — All Kalamazoo machines permit a selection of three or four blade speeds. The model 610 provides three — 53, 96 and 160 FPM. The later models 816 and 824 provide four speeds — 53, 96, 160 and 266 FPM. The new Models 8C and 1220 provide for the same speeds, i.e. 53, 96, 160 and 266 FPM. On model 610, the motor is mounted on a hinge pin which permits lifting the motor to relieve belt tension. You can easily change the belt to desired speed.

GEAR CASE — The gear case assembly is the most important assembly of your machine and should be properly cared for. A filler hole is provided on each gear case and it is necessary when lubricating your machine to check your gear case to be sure the case is properly lubricated. The filler hole may be found by lifting the cover of your machine and looking behind the drive wheel. It is important to keep the gear case filled with 600W grease or oil.

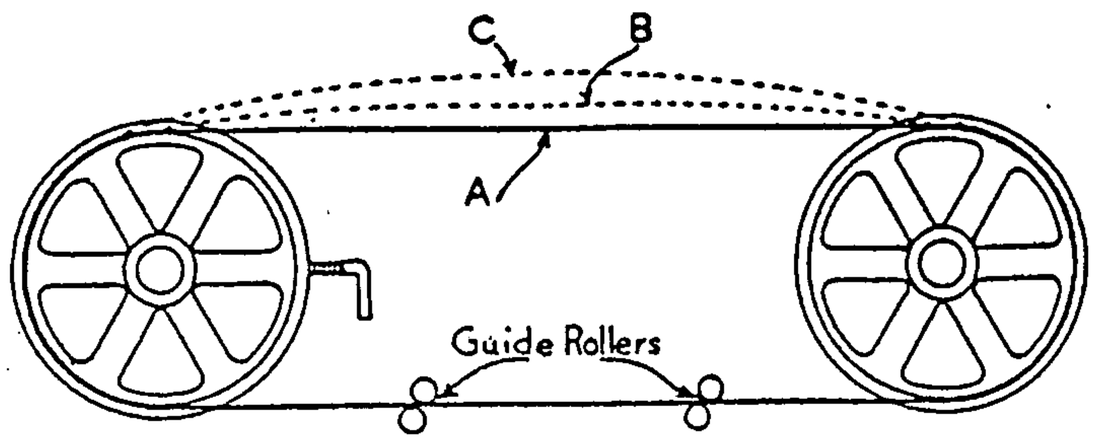
LUBRICATION — Your machine, like any mechanical instrument, will last longer if properly lubricated. The following is important:

A. Keep the gear case full, 600W cylinder oil.
B. Repack idle wheel bearing once a year.
C. Refill the hydraulic cylinder as needed with light oil SAE No. 10.
D. Oil pivot bar once a month with No. 10 oil through oil holes or cups.
E. Oil the threads of blade tension screw.
F. Oil vise screw and moving vise jaw occasionally.
G. DO NOT OIL ROLLER GUIDE BEARINGS.

*See following pages for illustrations.

FURTHER OPERATING INSTRUCTIONS

1. **BLADE INSTALLATION** — Tilt frame; raise covers; place band on wheels, also through guide rollers. Tighten tension screw, making sure back of band is up against shoulder or rim of both band wheels. Next draw tension up so that all slack is out of the blade. **VERY IMPORTANT.** After all slack is out of blade add one full turn of the handle for proper working tension.



NOTE: Band wheels are slightly canted so blade will hug rim of band wheel when correctly tensioned.

2. **CUTTING** — Start motor and lower blade gently by hand into stock before releasing hold. Machine will complete cut and automatically shut off.

3. **FRAME CONTROL** — A hydraulic frame control holds frame suspended and guards against blade breakage by accidental dropping. Close valve before raising frame. Open valve approximately ⅛ turn for cutting ⅛" thick walls; open to approximately ¼ turn for cutting ¼" walls; open to approximately ½ turn for ½" and all larger solids. At approximately ½ or ¾ turn hydraulic is wide open. More turns will not increase the downward speed. (No. 10 oil is used.)

4. **BRUSHES** — Two sets of double opposed brushes are provided on this machine. These are essential to good cutting and should be kept clean. Replace when worn and save blade expense.

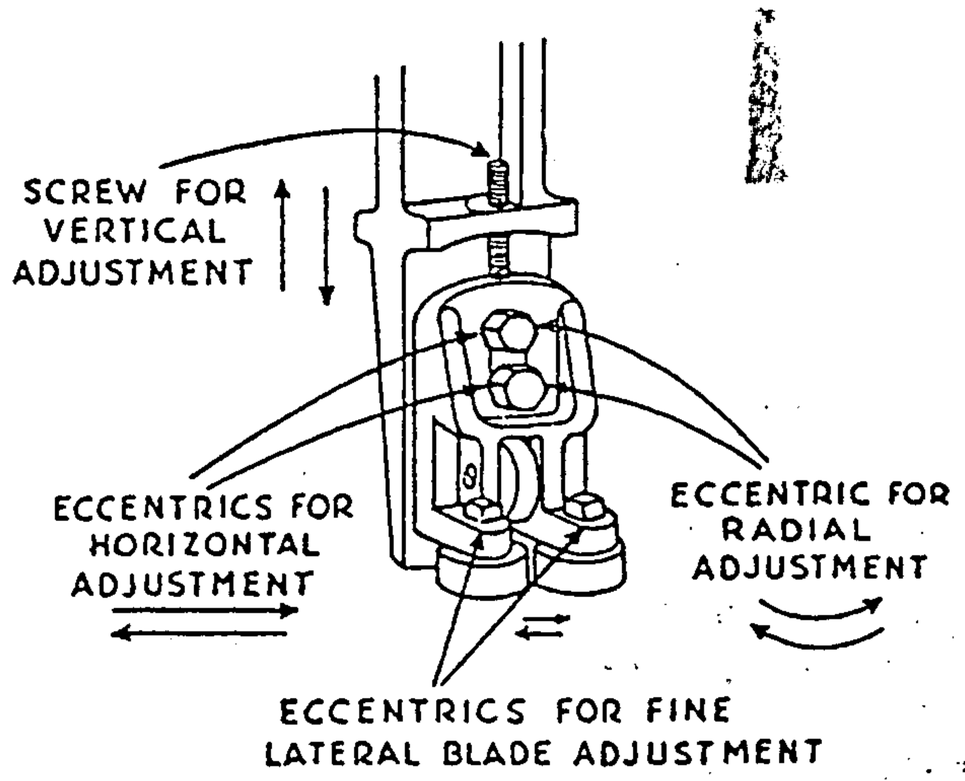
NOTE: Quarter turn for every third band used and when used twice around, or matted flat, discard and replace with new set of brushes. Pinch open end of brush holders together for best cleaning action.

5. **GUIDE ADJUSTMENT** — This machine as it is shipped from the factory is fully adjusted and should require no further adjustment of the roller guides. Guide arms should be kept a distance of approximately 3" from the work. If necessary to change adjustment of side rollers, be sure vise jaws are again squared to blade and side of blade is square to top of machine bed. Caution: Do not oil roller guide bearings.

6. **SPEED CHANGE** — The motor is mounted on a hinged bar. Tension on the belt is released by turning inside handle on bottom screw and changing pulley groove.

7. **VISE** — The vise is quick acting; by turning left the screw is disengaged; by turning right the screw is activated. For cutting on angle up to 45° loosen both cap screws in fixed vise and move forward 2-3 inches and turn to desired angle.

   CAUTION: When returning vise to original position be sure it is again square with side of blade.



8. **SPRING TENSION** — The spring is properly adjusted for tension. For increasing or decreasing tension due to dulling of blades or weakening of spring turn hand wheel at bottom of eye bolt. Only a slight turn is necessary to vary the tension.

9. **SELECTION OF BLADES** — The proper size blade for this machine is 7′ 5" x ½" and they are available in 10, and 14 teeth per inch. For most practical purposes experience will show that 10 and 14 teeth will handle the greatest part of your cutting.

GENERAL — Maintain 8 lbs. lift pressure on end of frame. Keep 1 pint of Mobilgear 634 or equivalent in the gear case at all times.

DO NOT CUT brass, copper, bronze and aluminum with the same blade that is used for steel or cast iron. Separate blades should be used.

Printed in U.S.A.

PREMIERE PRTG. CORP.

OPERATING INSTRUCTIONS

INSTALLATION — Your Kalamazoo Machine has been fully adjusted at the factory and no further adjustment should be necessary. It has been wired in accordance with the red tag hanging on it. Make sure your power source conforms.

BLADE — You have received your machine with a hard edge, hard back, carbon steel blade already mounted. It is ½" wide x .025" thick x 7'-5" long. To change blades, raise head slightly and close hydraulic to hold in position. Remove brushes from brackets on guide arms. Lift both covers and move idle wheel to right by turning blade tension handle counter-clockwise until blade can be lifted off. Place new blade around wheels under flanges and insert between guide rollers. Make sure teeth point to right. Tighten blade enough so that it will not fall off wheels by turning tension handle clockwise. Turn motor on. Tighten blade until all vibration or flutter disappears. Then ADD 1 FULL TURN OF TENSION HANDLE. After installing a new blade and making the first cut, increase the blade tension to the extent of an additional ½ turn of the tension handle. As tension is added the blade travels up the faces of the band wheels until nearly against the flanges because the wheels are slightly canted or tilted. Replace brushes and close covers.

FEED PRESSURE — Feed pressure or head weight may be adjusted with the single extension spring at the rear of the machine. The two knobs at the lower end of the spring extend or shorten the spring. Extending the spring will reduce head weight. Head weight may be determined by hooking a fish or rag scale under the end of the frame and lifting a few inches off the bed. When measured at this point, the head should weigh 8 lbs. for a dry machine and 10 lbs. for a wet machine. When head weight cannot be maintained and no further adjustment of the spring is possible, it should be replaced.

BLADE DRIVE — The motor is mounted on a hinged plate and the amount of belt tension is established by a nut and spring on the tension rod. When the machine is shipped, the hinged plate is fully tightened against the frame. Before using, adjust for proper belt tension by swinging the motor. Use just enough tension to eliminate flutter from the belt. Three blade speeds are provided through step pulleys. Beginning with the smallest step on the motor pulley and progressing to the largest, speeds will be 50, 90 and 155 F.P.M. (see chart for recommended speeds on various materials). To change speeds, push motor forward and change belt.

HYDRAULIC — The hydraulic dash-pot cylinder serves to hold the head in the up position and to control the speed of descent of the head. It can be used to slow the descent of the head when sawing thin wall stock to prevent tearing the stock or stripping teeth from the blade. It does not control feed pressure which is determined by head weight. The control knob for the hydraulic cylinder projects from the end of the bed beside the vise hand wheel. Turning the handle counter-clockwise opens the cylinder and turning it clockwise closes the cylinder. Always keep the cylinder full of light oil.

BLADE GUIDES — The roller bearing guides on all Kalamazoo machines are essentially the same, the only difference being in the position of the top roller bearing on Model 610. It is IMPORTANT to note that the adjustment facilities given in the eccentric axles on this assembly are not to be used to correct any wear on the blade. The roller guide assemblies are correctly adjusted at the factory and it is recommended that careful study of their movements be made before adjustment attempted. It is, however, important to note that the (S52) eccentric bolts which connect the roller guide holder to the guide arm

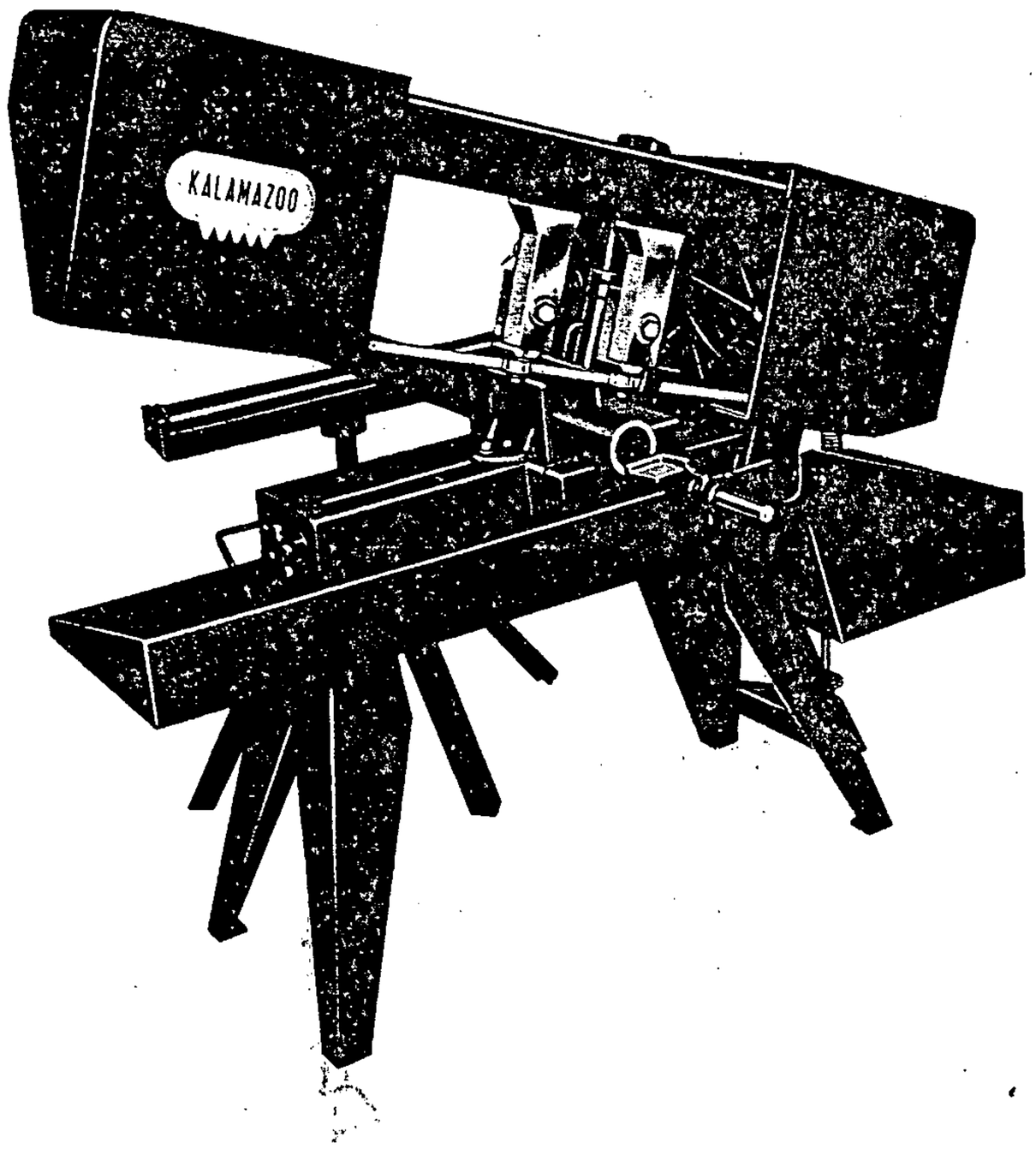
are used to square the blade to the bed and to the fixed vise jaw. To adjust these guides it is suggested that the "F" bearings (side roller) be adjusted first to obtain the correct pressure on the blade. They should be tight enough to permit an up and down movement of the blade, not loose, but snug enough to require a little pressure. Next the squareness of the blade should be obtained by placing a combination square blade, or other parallel bar on the bed and using its end, place vertically against the side of the blade to obtain squareness. Next with the head of a combination square against the bandsaw blade bring the blade of the square horizontally up against the fixed vise jaw to determine the squareness. A loose vise jaw may be the cause of bias cutting. Do not lubricate the guide rollers but keep them clean. When the guides are properly adjusted, crooked cuts can only be caused by a worn out blade or improper feed pressure.

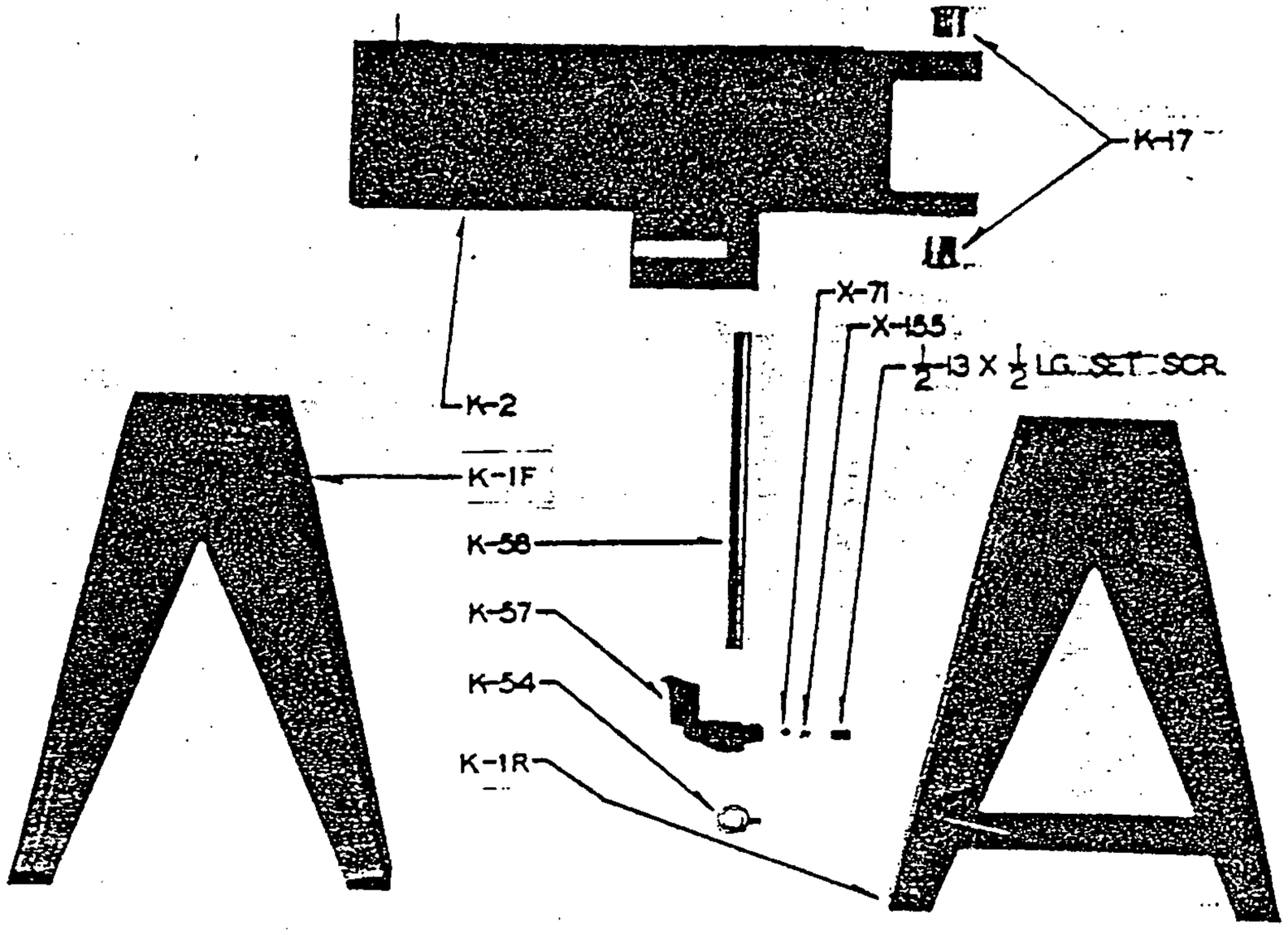
VISE — A quick counter-clockwise turn of vise handwheel will release jaw for easy positioning. Since cutting action is continuous on a horizontal band saw, it is not necessary to clamp work too tight. Overtightening will result in short life of the bronze vise nut.

BLADE BRUSHES — Each Kalamazoo Machine is equipped with blade brushes (SP44) which fit in a holder which mounts in a bracket attached to the roller guide assemblies. These brushes should be replaced often to insure cleaning the blade and extending blade life. They are easily replaced.

LUBRICATION — Only the two oil holes above pivot bar require lubrication, preferably with a light-weight number 10 or 20 oil. The transmission has approximately one pint of Mobilgear 634 in it and requires no further lubrication unless in case of leakage. The gibs and slides on the idle wheel assembly should be kept free of dirt and lightly lubricated with oil or grease occasionally. Re-pack idle wheel bearings once a year.

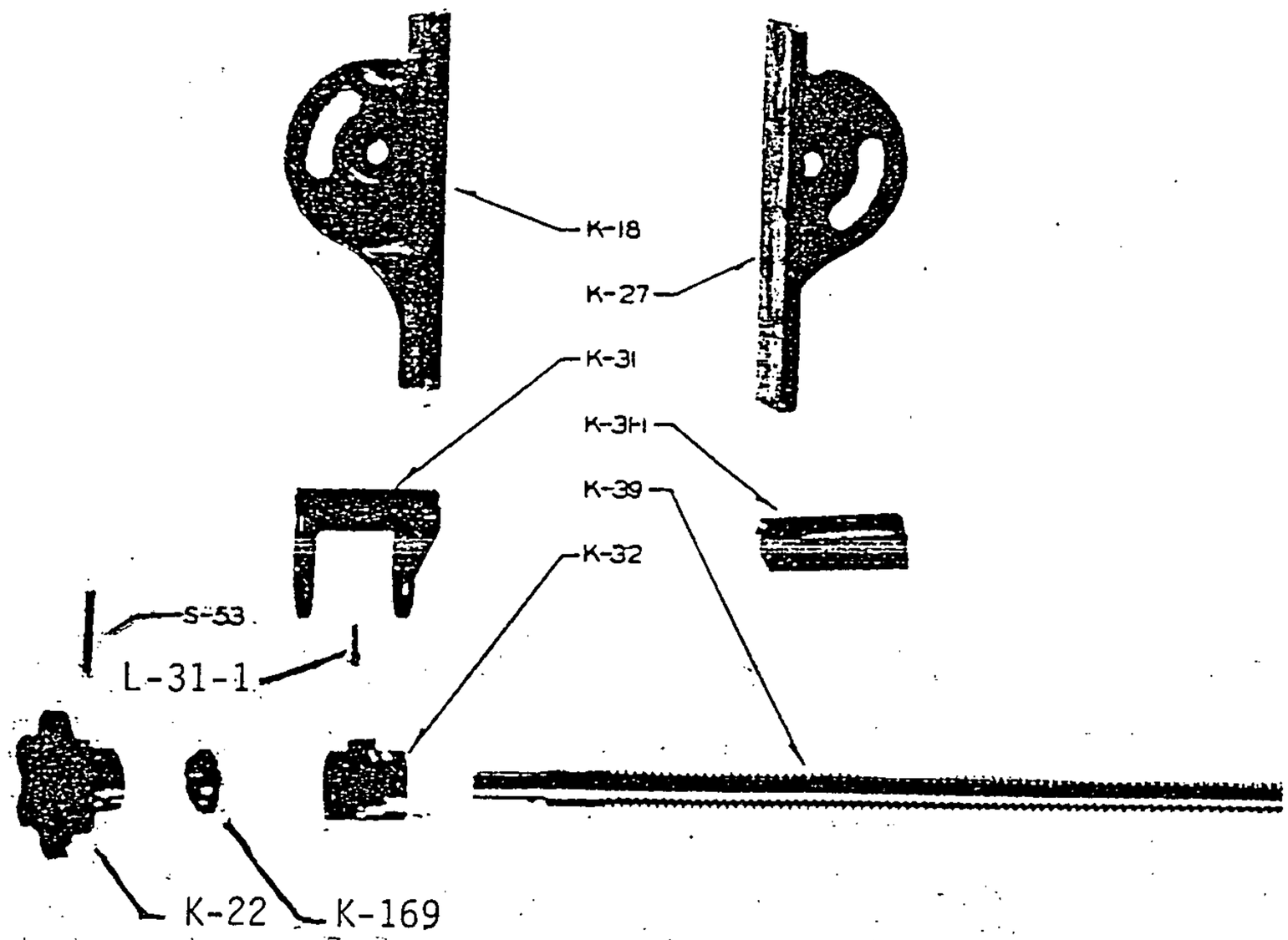
STATE YOUR MACHINE MODEL AND SERIAL NUMBER WHEN ORDERING PARTS



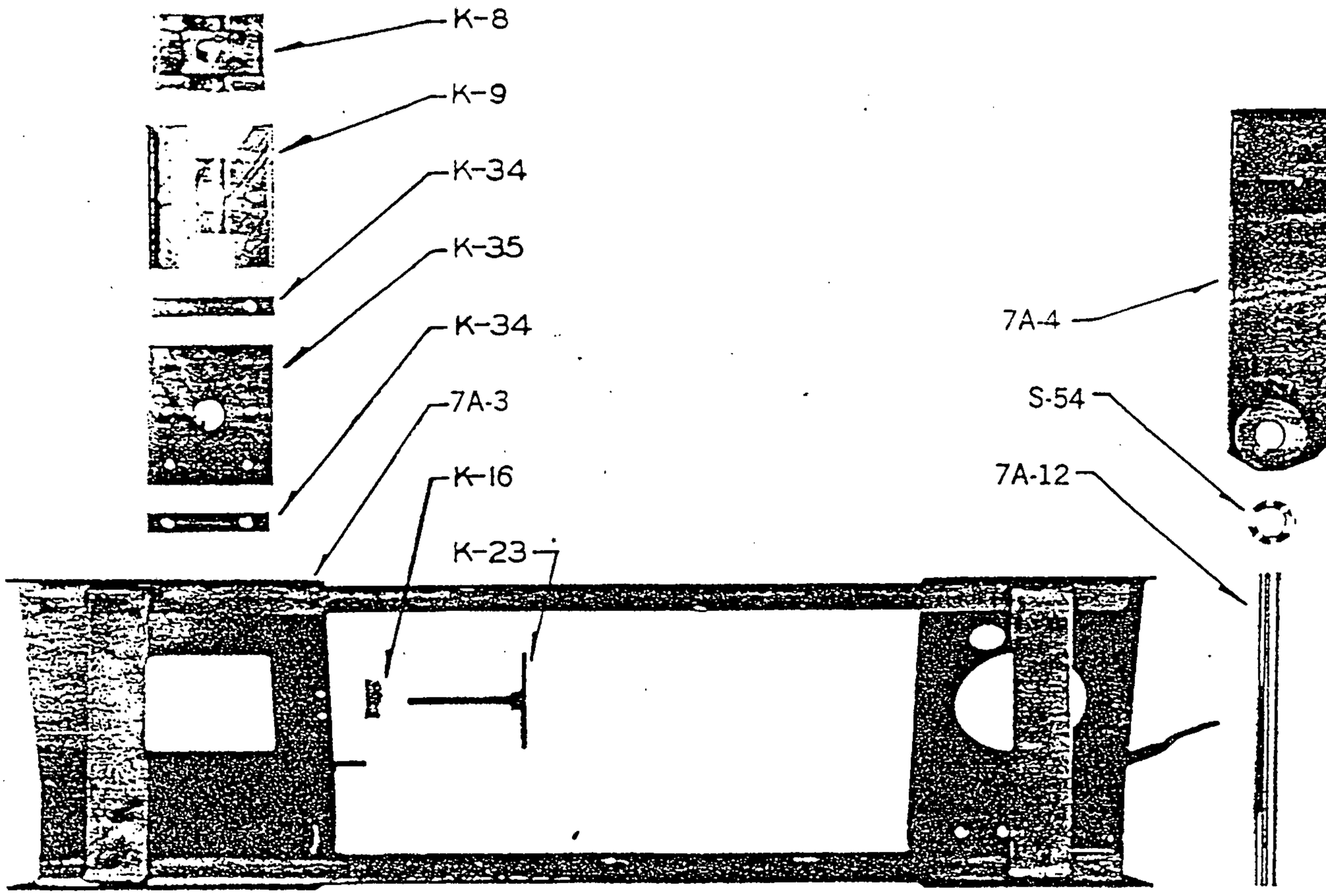


LEGS and BED PARTS

K-2	Bed	K-58	Stock Stop Bar	K-17	Pivot Bar Bushings (2 Req'd)
K-1F	Front Leg	K-57	Stock Stop	X-71	Steel Ball in Stock Stop
K-1R	Rear Leg	K-54	Stock Stop Collar		
		X-155	Retainer Spring		

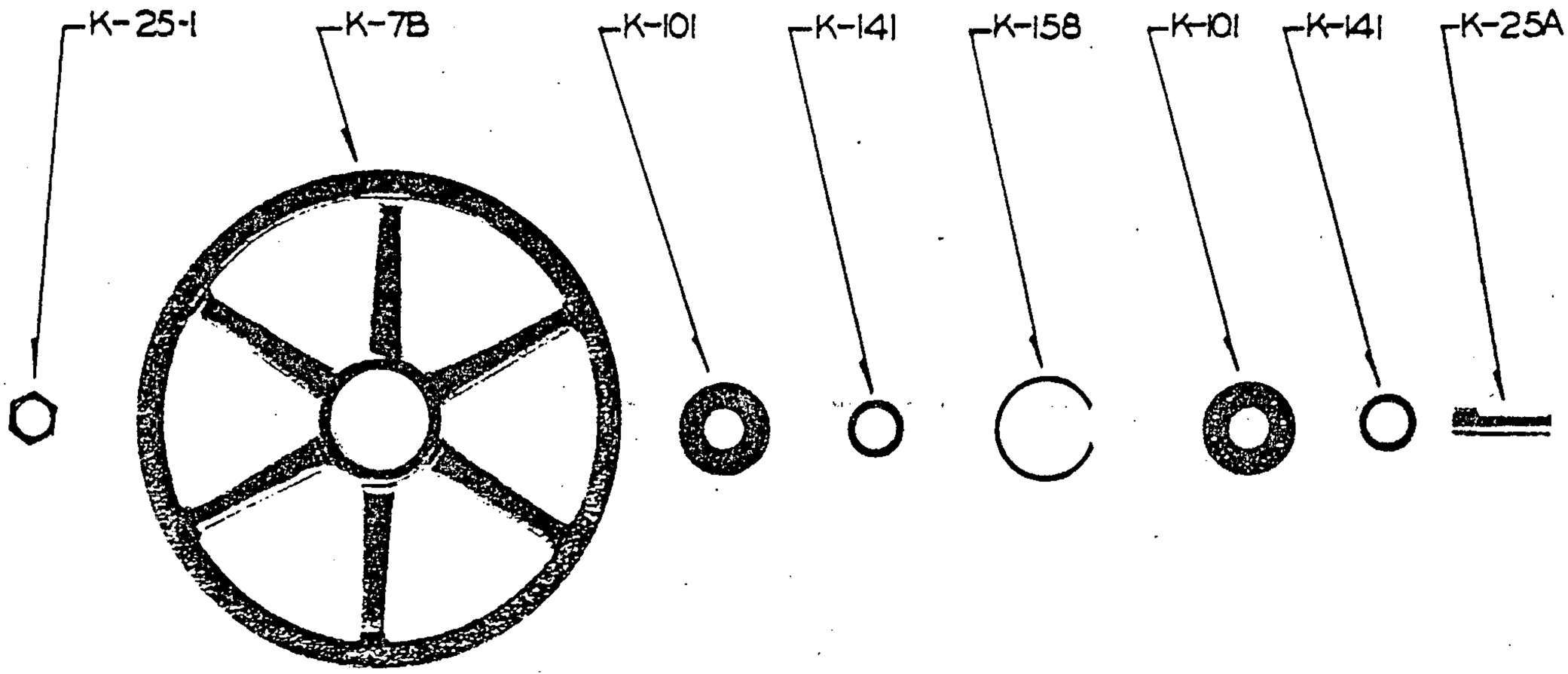


K-300	MOVING VISE BLOCK ASSEMBLY Consisting of:		**MISC. VISE PARTS**	K-27	Moving Vise Jaw
K-31	Vise Block	S-53	1½" Taper Pin No. 3	K-39	Vise Screw
K-32	Vise Cam Nut w/Pin & Spring	K-31-1	Fixed Vise Block	K-22	Vise Screw Handwheel
L-31-1	Vise Block Pin	K-169	Vise Screw Adapter	K-160	Hardened Vise Washers (2 Req'd)
		K-146	Cam Nut Spring		
		K-121	Cam Friction Pin		
		K-18	Fixed Vise Jaw		



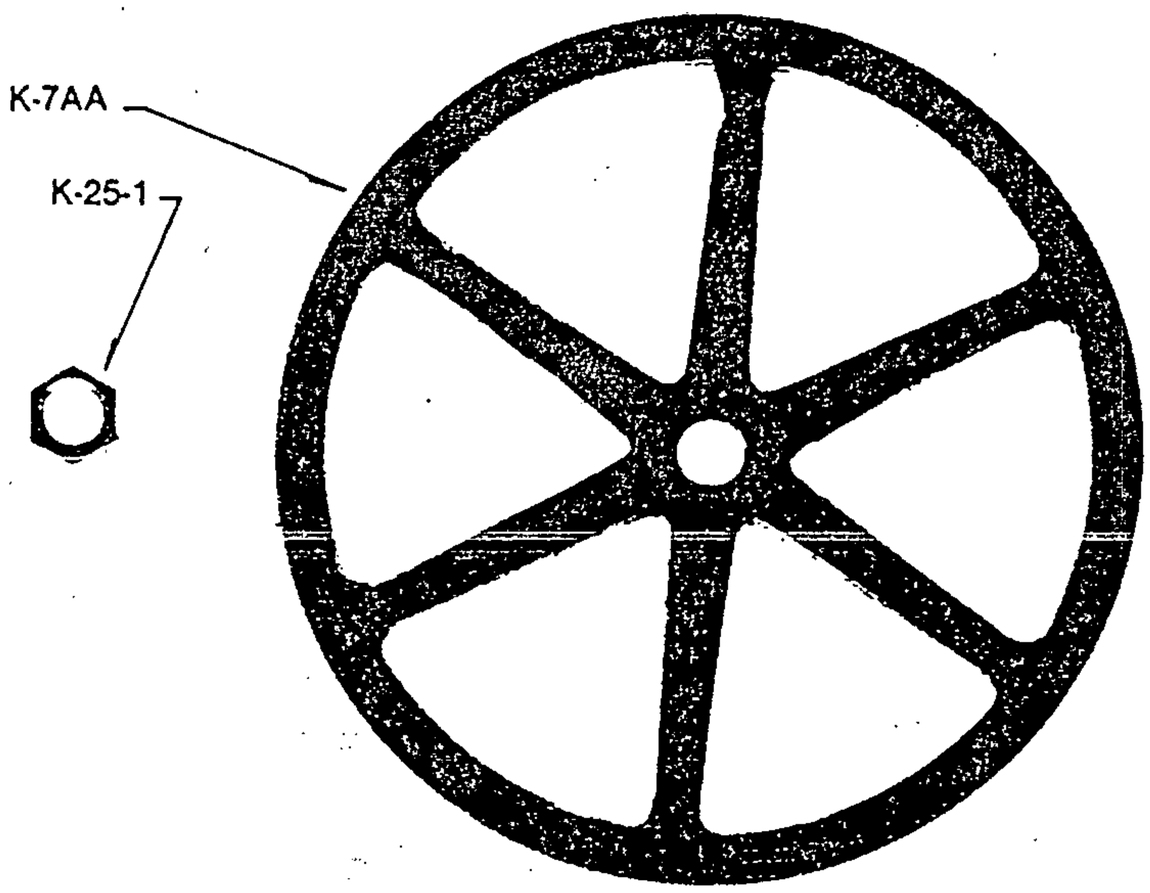
FRAME

7A-3	Frame	K-16	Tension Screw and Frame Rest Bracket	K-34	Slide Block Guide (2 Req'd)
7A-4	Rear Frame Arm (Large)	K-8	Rocker Block	K-35	Slide Block Plate
K-5	Front Frame Arm (Small)	K-9	Slide Block	K-23	Blade Tension Handle, w/Screw
K-12	Pivot Bar				
K-17	Pivot Bar Collars (2 Req'd)				



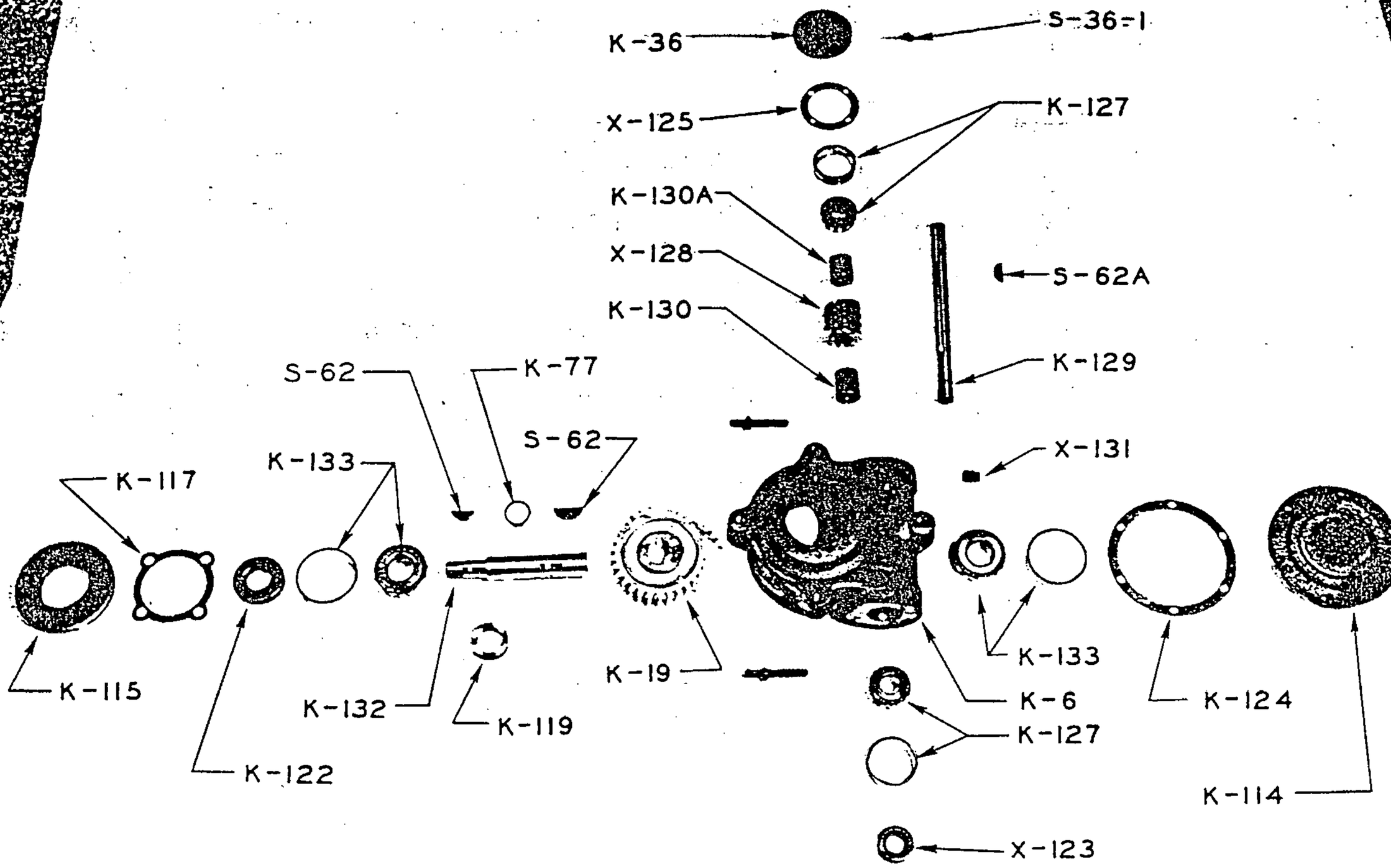
IDLE WHEEL PARTS

K-7B	Idle Wheel	K-141	Idle Wheel Spacer (2 Req'd)	K-101	Idle Wheel Bearings (2 Req'd)
K-25A	Idle Wheel Axle	K-158	Idle Wheel Snap Ring	K-25-1	Idle Wheel Jam Nut



DRIVE WHEEL PARTS

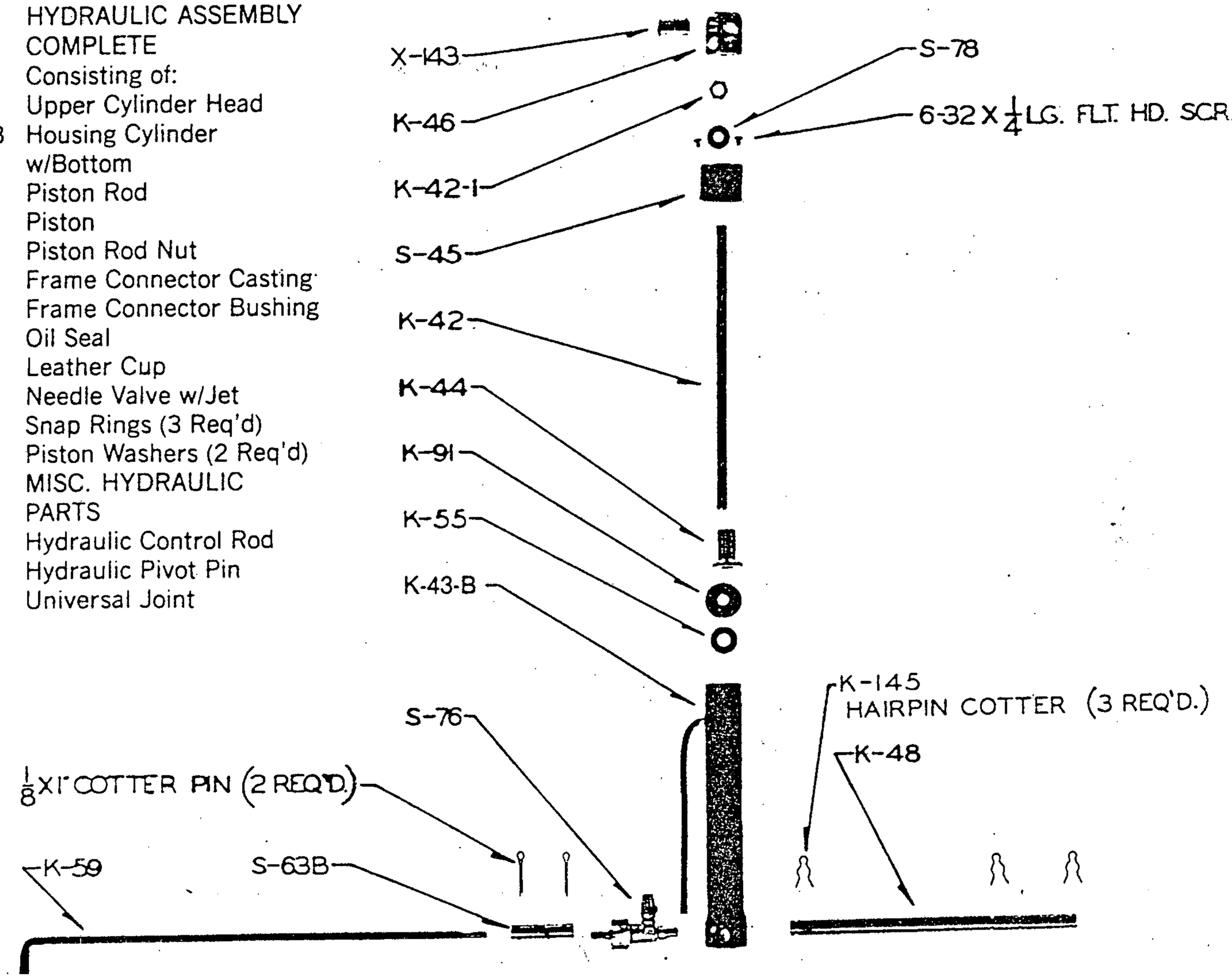
K-7AA Drive Wheel
K-25-1 Drive Wheel Lock Nut
(For Serial 1 thru P8L596)
K-7A Drive Wheel
with 1" Bore

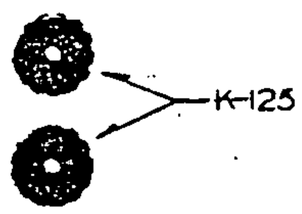


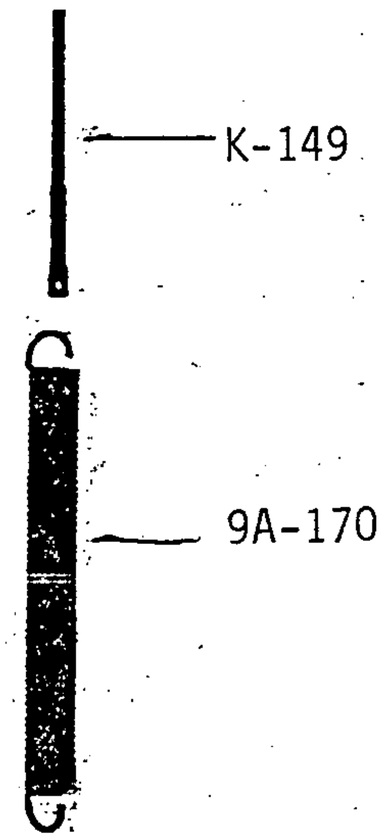
GEAR CASE PARTS

K-500	COMPLETE GEAR CASE ASSEMBLY Consisting of:	X-125	Barrel Shims	K-132	Drive Axle w/Snap Ring
		K-127	Worm Shaft Roller Bearing (2 Req'd)	K-133	Drive Axle Roller Bearing (2 Req'd)
K-6	Main Housing	X-128	Steel Worm	K-119	Drive Axle Spacer
K-19	Bronze Gear	K-129	Worm Shaft	S-62	Drive Shaft Key (No. 15) (2 Req'd)
K-36	Barrel Cover	K-130	Long Spacer — Worm Shaft	S-62A	Worm Shaft Key (No. 19)
K-114	Back Cover	K-130A	Short Spacer — Worm Shaft	K-77	Drive Axle Snap Ring
K-122	Large Oil Seal	X-131	¼" Pipe Plug	S-36-1	Small Oil Cup
X-123	Small Oil Seal (¾")			K-115	Top Oil Seal Cover
K-124	Back Cover Shims			K-117	Oil Seal Cover Shims
				(For Serial 1 thru P8L596 Use K-132A Drive Axle)	

K-601	HYDRAULIC ASSEMBLY COMPLETE
	Consisting of:
S-45	Upper Cylinder Head
K-43-B	Housing Cylinder w/Bottom
K-42	Piston Rod
K-44	Piston
K-42-1	Piston Rod Nut
K-46	Frame Connector Casting
X-143	Frame Connector Bushing
S-78	Oil Seal
K-91	Leather Cup
S-76	Needle Valve w/Jet
K-87	Snap Rings (3 Req'd)
K-55	Piston Washers (2 Req'd)
	MISC. HYDRAULIC PARTS
K-59	Hydraulic Control Rod
K-48	Hydraulic Pivot Pin
S-63B	Universal Joint

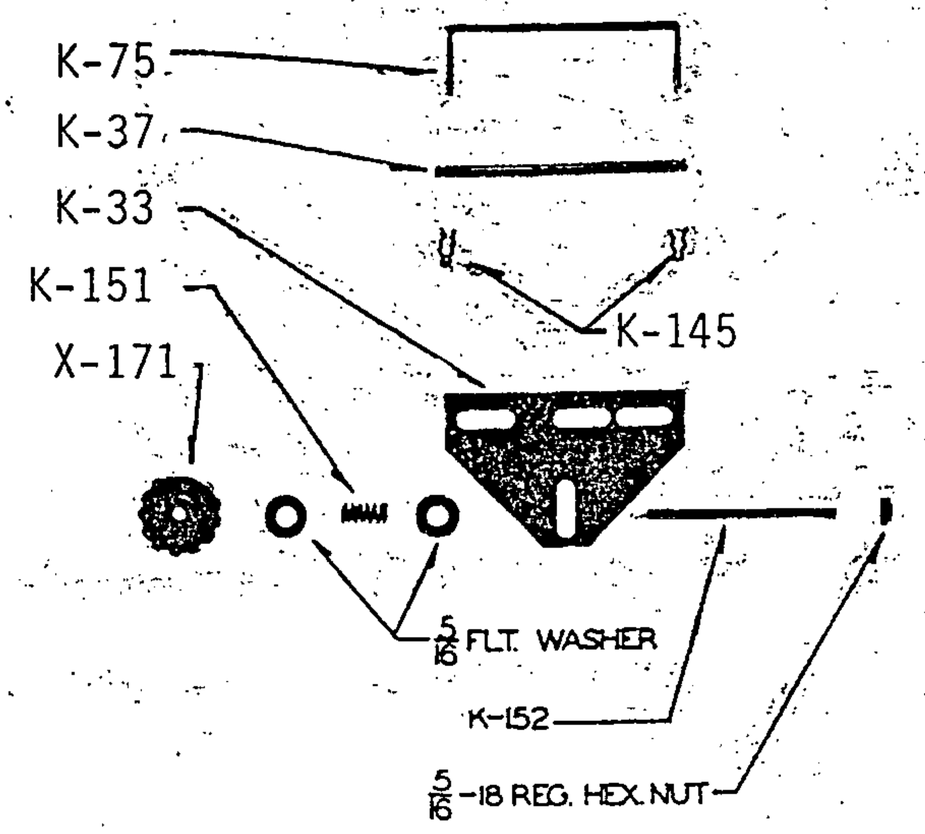






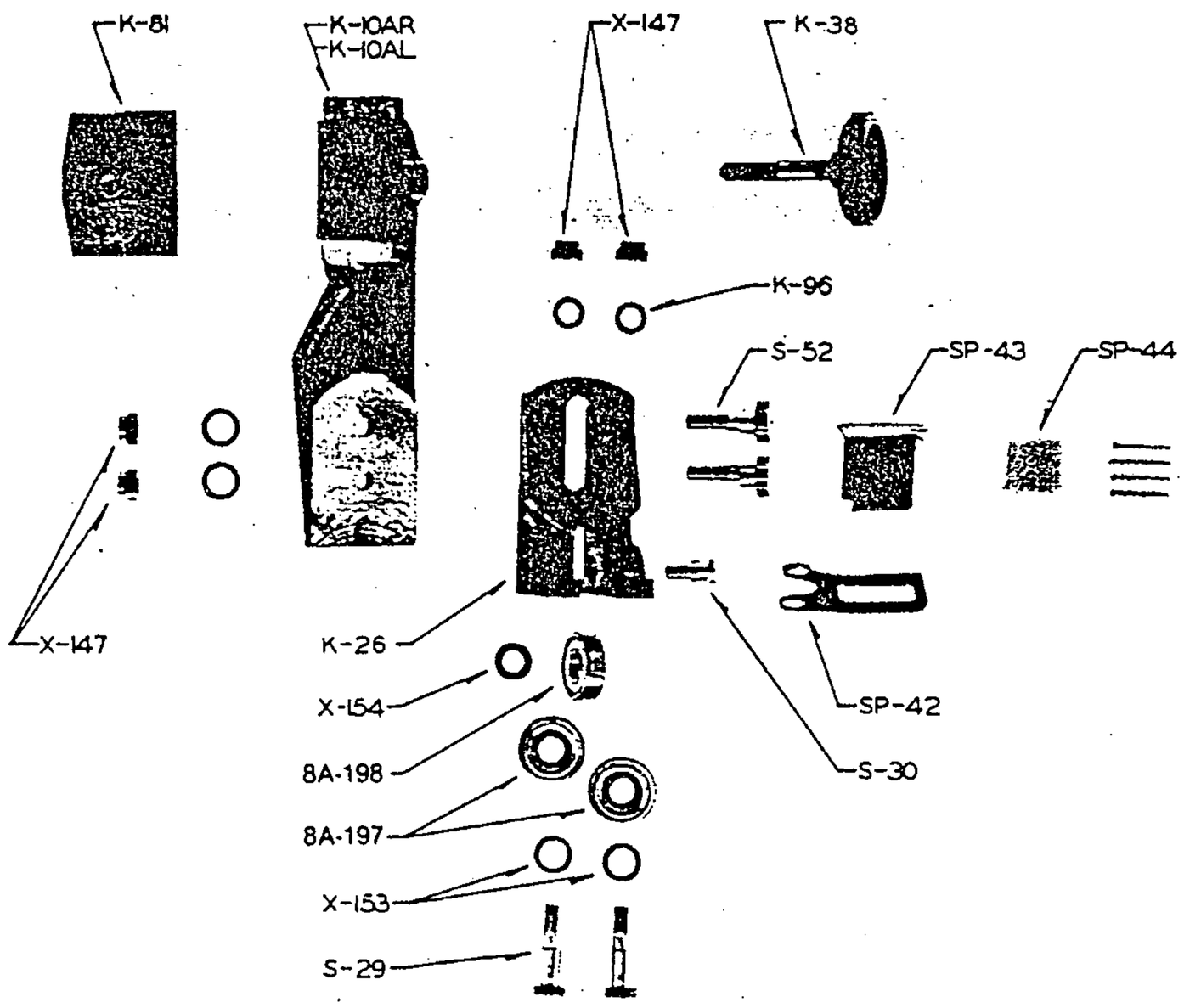
SPRING PARTS

9A-170	Rear Extension Spring
K-149	Extension Spring Bolt (Dry Machine)
K-125	Extension Spring Handwheels (2 Req'd)
KC-149	Extension Spring Bolt (Wet Machine)



MOTOR MOUNTING PARTS

K-33	Motor Plate
K-37	Motor Plate Pivot Bar
K-152	Motor Tension Rod
K-75	Motor Bracket
K-171	Motor Tension Handwheel
X-151	Motor Tension Spring
K-145	Hairpin, Cotter (2 Req'd)



GUIDE ARM PARTS

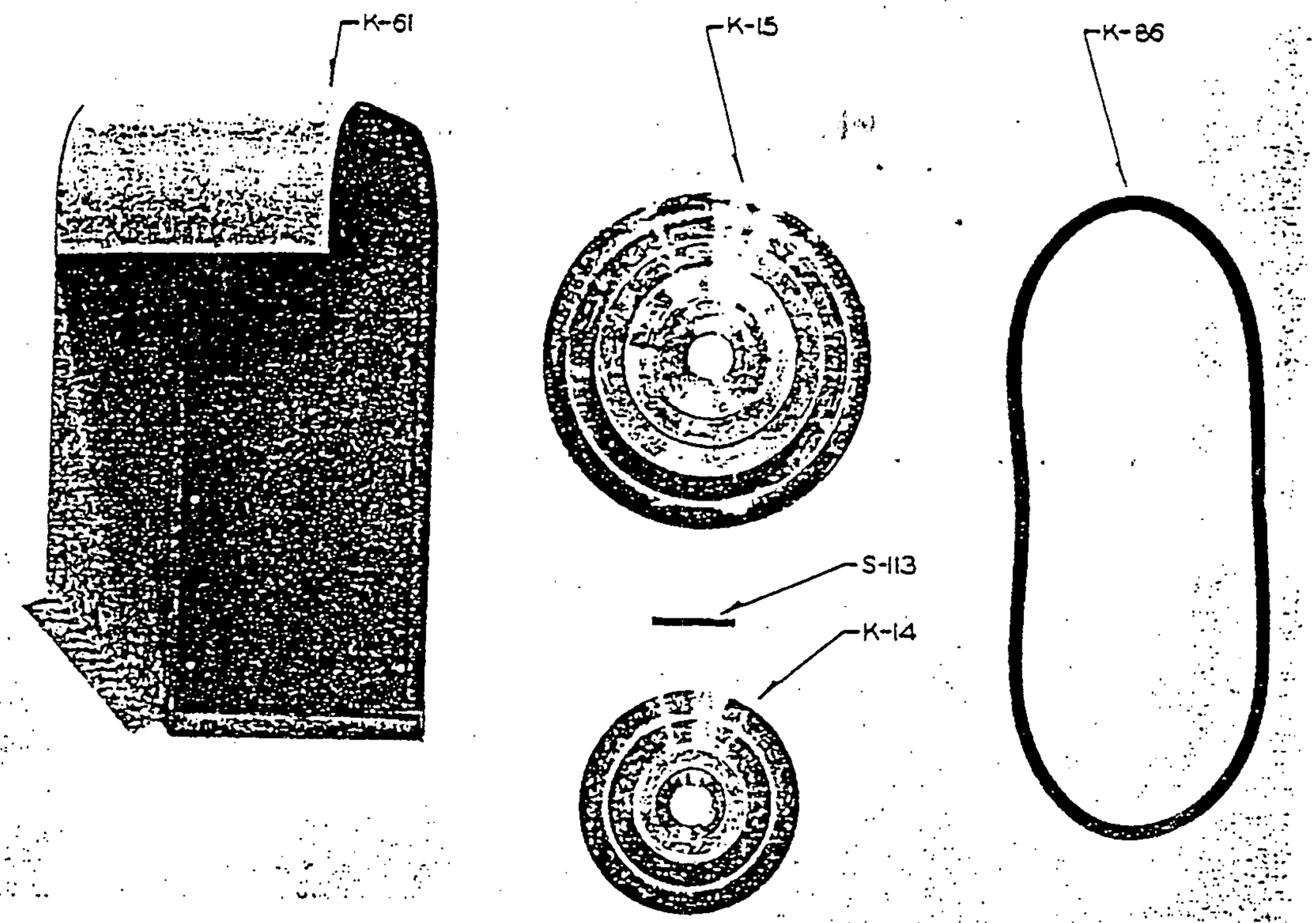
GUIDE ARM ASSEMBLY COMPLETE
(Left Hand or Right Hand)
K-700R or K-700L
Consisting of:

K-10AR or K-10AL	Guide Arm — Right or Left
K-81	Guide Arm Block
K-26	Roller Guide Holder
S-29	Side Roller Eccentric Axles (2 Req'd)
S-30	Top Roller Axle
S-52	Holder Eccentric Screws (2 Req'd)
X-153	Side Roller Washers (2 Req'd)
8A-197	Side Roller Bearings (2 Req'd)
8A-198	Top Roller Bearing
K-38	Guide Arm Tightener
X-147	Self Locking Nuts (4 Req'd)
X-154	Top Roller Washer
K-96	Side Roller Shims (2 Req'd)
SP-43	Brush Holder Only
SP-44	Brush Only

ROLLER GUIDE HOLDER ASSEMBLY
(Left Hand or Right Hand)
K-701
Same as above less Guide Arm, Tightener and Block.

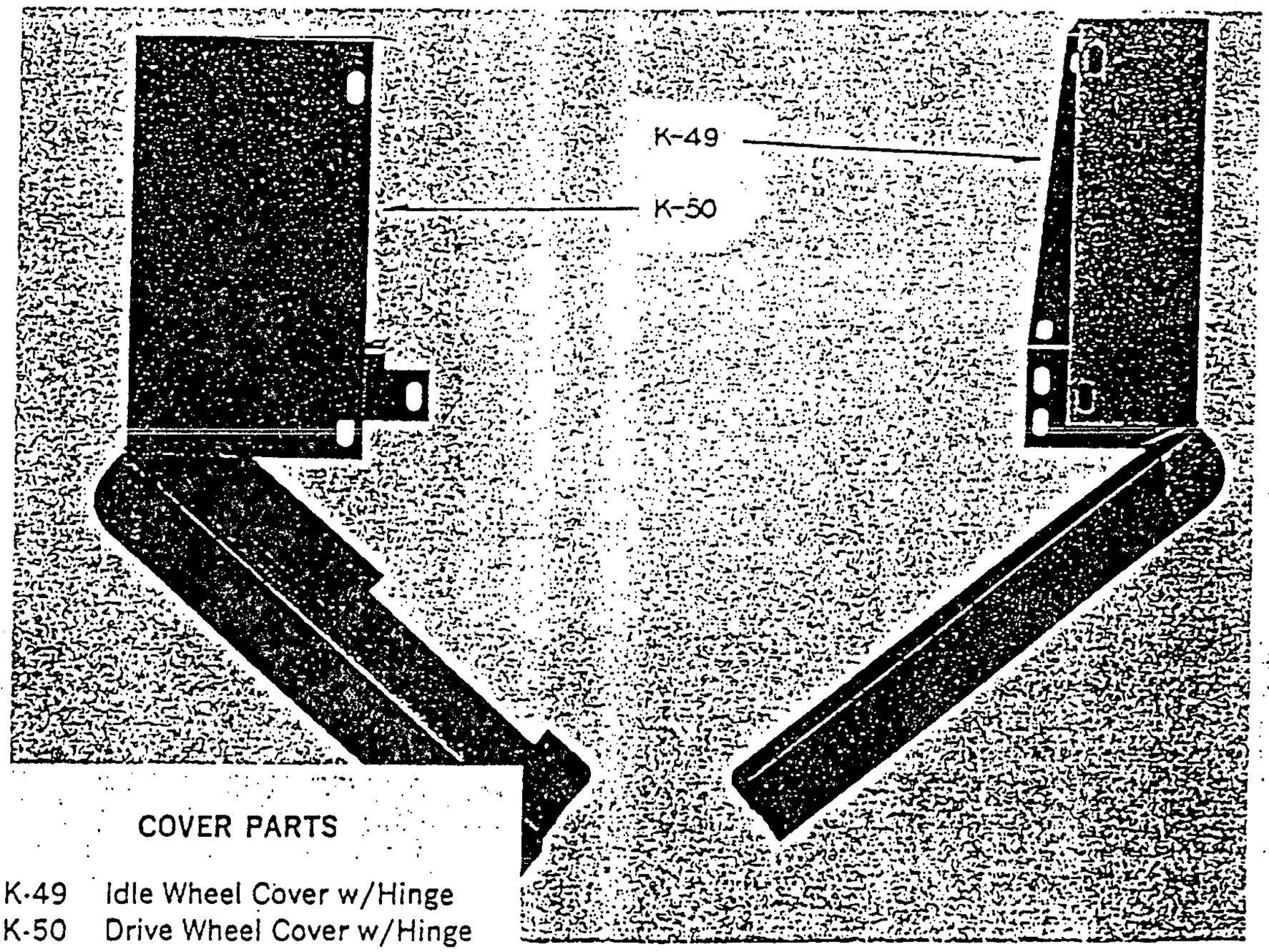
BLADE CLEANING ASSEMBLY COMPLETE
SP-41
Consisting of:

SP-42	Holder Bracket (w/2 ea SP-44 Brushes)
SP-43B	Brush Holder
SP-44	Extra Brush (4 each)



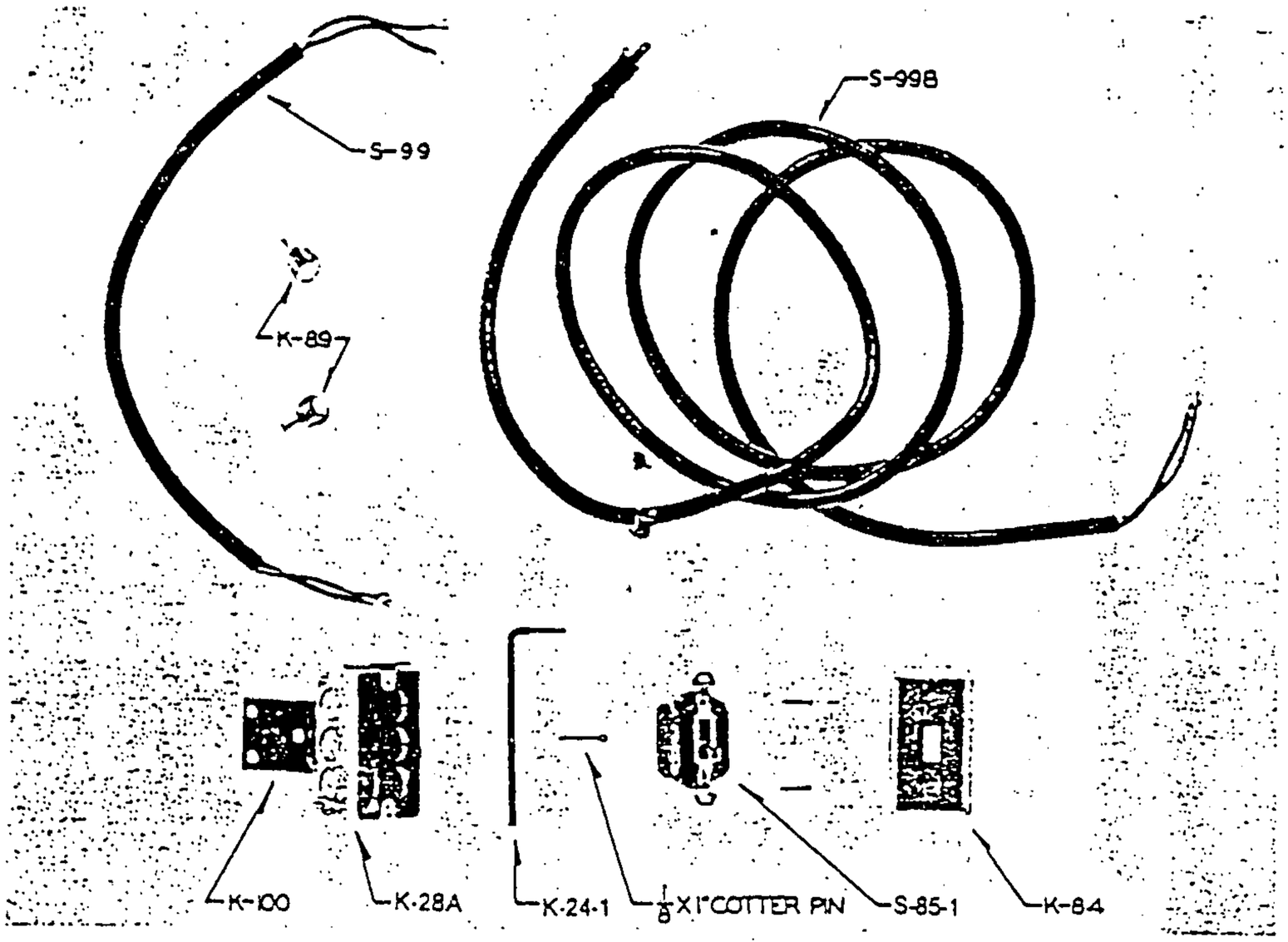
PULLEYS and GUARD PARTS

K-14 Motor Pulley
K-15 Driven Pulley
K-86 V-Belt
S-113 Drive or Driven Pulley Key
K-61 Pulley Guard



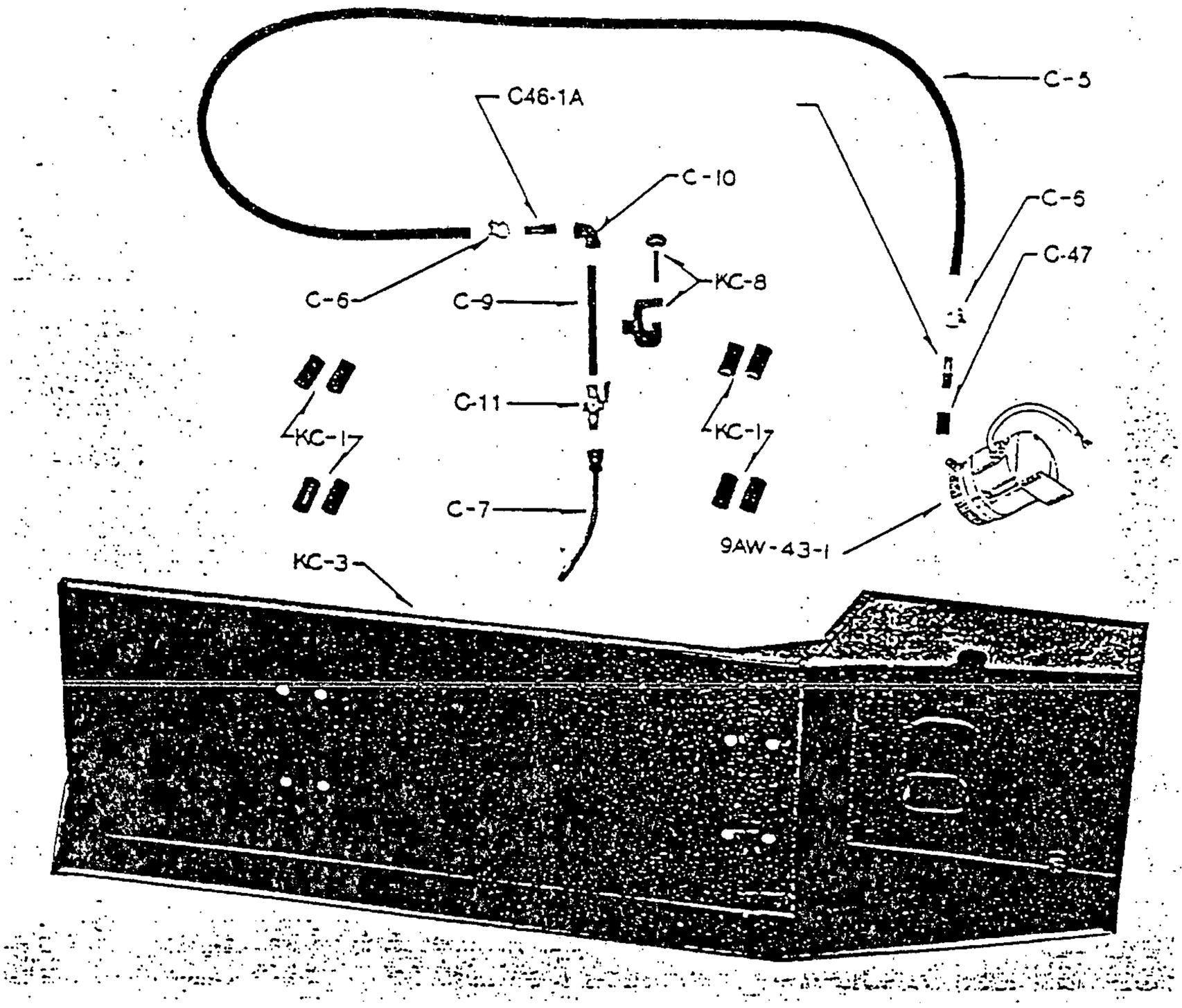
COVER PARTS

K-49 Idle Wheel Cover w/Hinge
K-50 Drive Wheel Cover w/Hinge



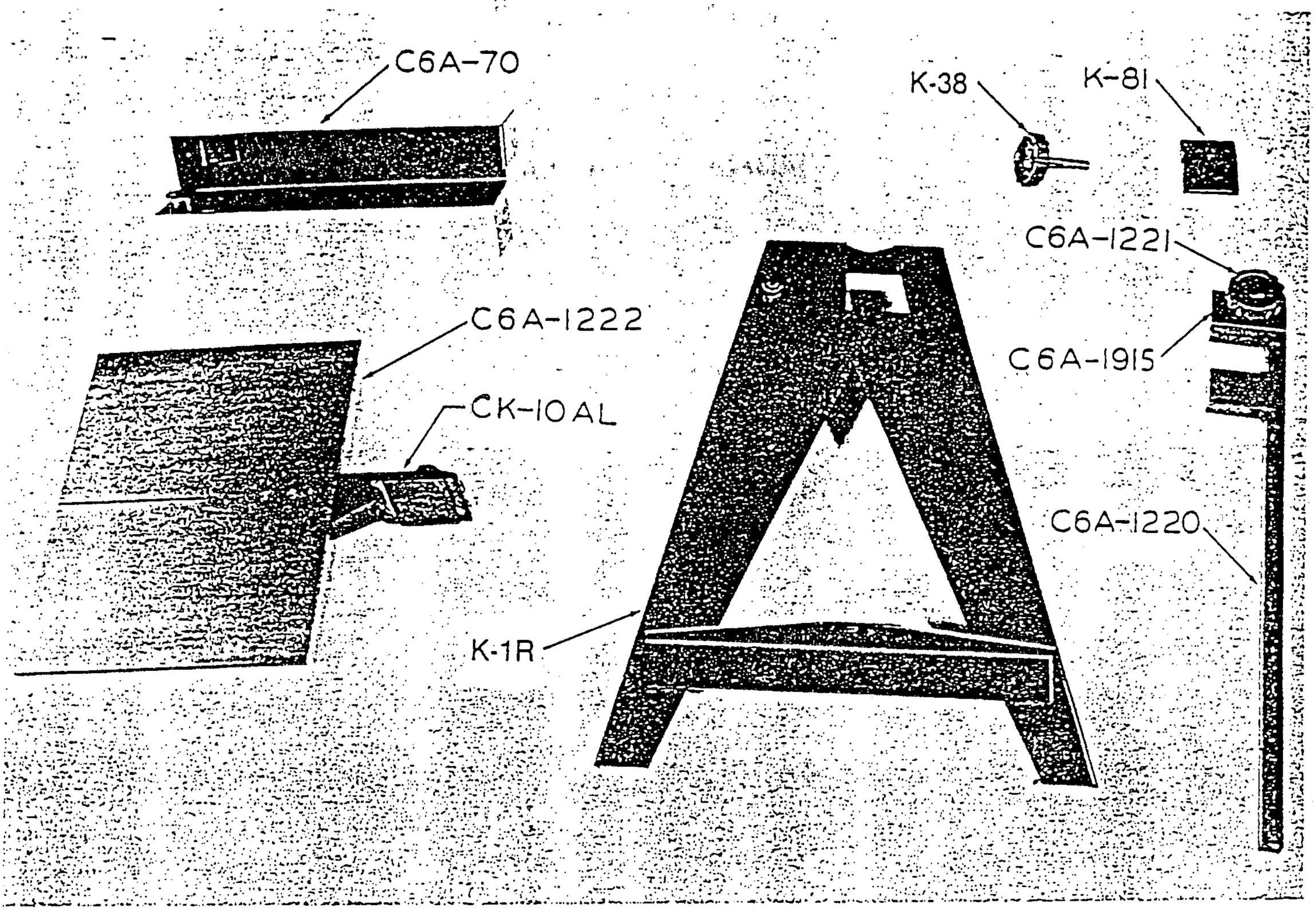
ELECTRICAL PARTS

K-28A	Switch Box
S-85-1	1 Phase Switch
K-84	Switch Box Cover (1 ph)
K-24-1	Switch Shut-off Rod (1 ph)
S-99B	Single Phase Cord Set
S-99	Single Phase Wire
K-100	Switch Box Bracket



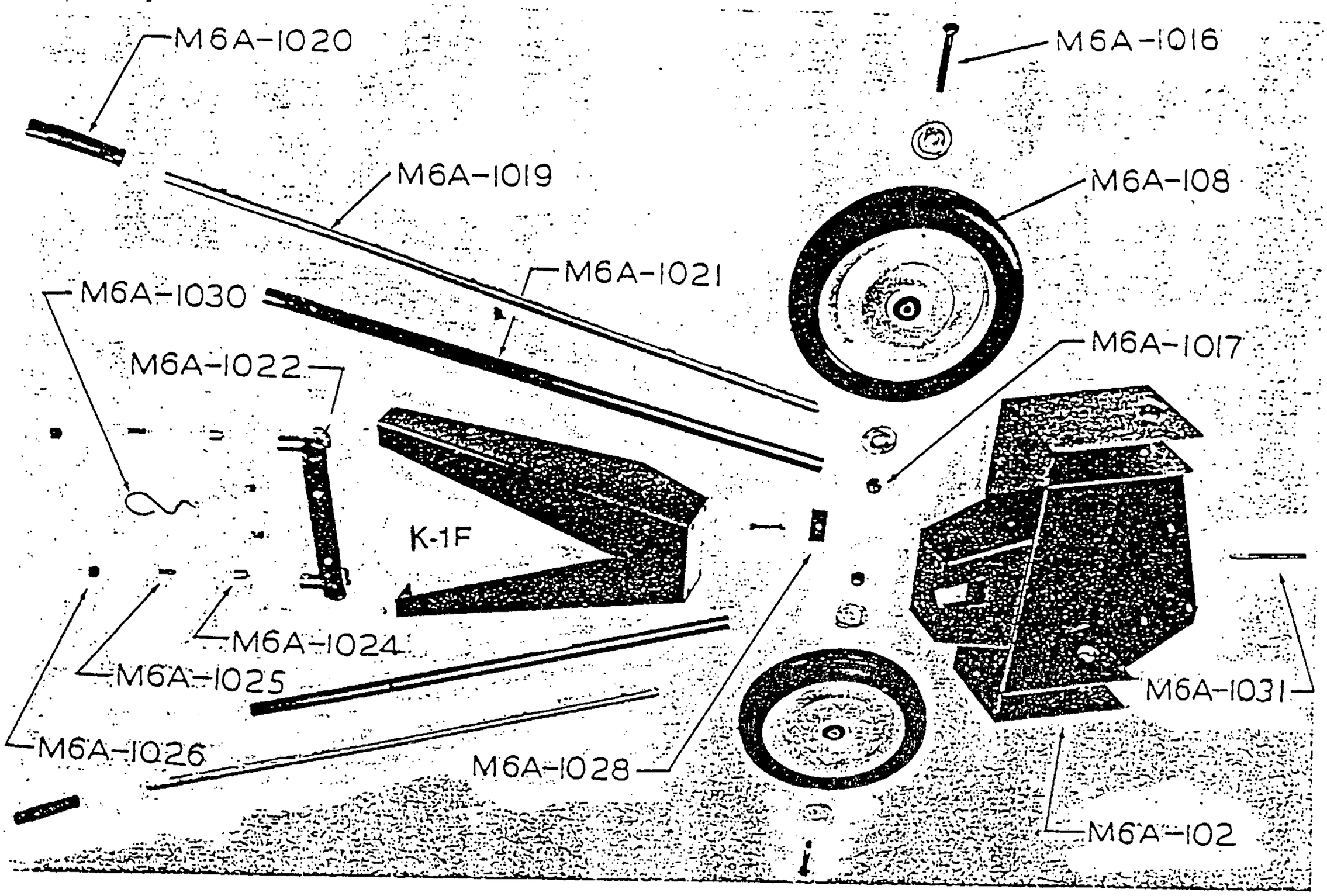
COOLANT PARTS

9AW-43	Coolant Motor and Pump w/Cord	KC-149	Long Spring Hook	C-7	Flexible Nozzle w/Fitting
KC-3	Main Coolant Pan	KC-110	Feed Assembly Consisting of:	KC-8	Valve Clamp w/Tightener
KC-1B	Mounting Block w/Gasket (Set of 8)	C-5	5 ft. of Hose	C-9	¼" x 5" Pipe Nipple
		C-6	Hose Clamps (2 Req'd)	C-10	¼" Pipe Elbow
				C-11	Brass Valve w/Nipple



C610 CONTOUR ATTACHMENT PARTS

C6A-1222	Adjustable Table	C6A-1220	Frame Support Rod
CK-10AL	Table Support Arm	C6A-1915	Frame Support Tightener
K-38	Support Arm Tightener	C6A-1221	Frame Support Tightener Block
K-81	Tightener Block	C6A-70	Blade Guard



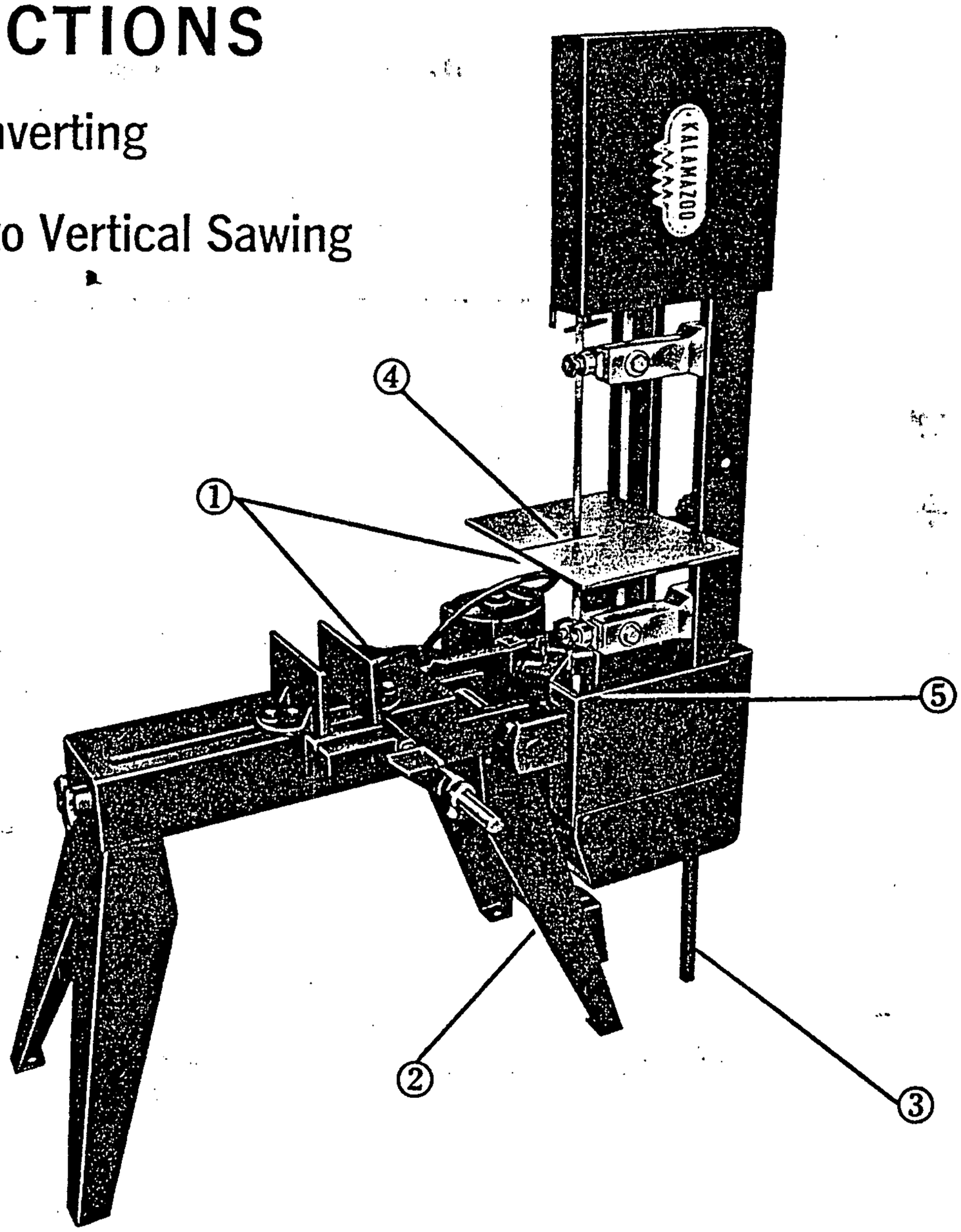
M610 KALAMOBILE PARTS

K-1F	Front Leg
M6A-102	Rear Leg
M6A-108	Rubber Tired Wheel w/Shield (2)
M6A-1016	Wheel Axle (2)
M6A-1017	Wheel Axle Nut (2)
M6A-1019	Handle (2)
M6A-1020	Handle Grip (2)
M6A-1021	Handle Tube (2)
M6A-1022	Tube Bracket w/Bolts and Set Screws
M6A-1024	Tube Bracket Key (2)
M6A-1025	Tube Bracket Spring (2)
M6A-1026	Tube Bracket Screw (2)
M6A-1028	Tube Clamp w/Bolt
M6A-1030	Frame Lock Ring
M6A-1031	Spring Stud

INSTRUCTIONS

for Converting

from Horizontal to Vertical Sawing



REFER TO CORRESPONDING NUMBERS ON THIS SHEET

1. Unbolt hydraulic cylinder from frame at top and allow cylinder to swing down.
2. Unhook spring from extension spring bolt.
3. Install leg. Block on end of leg slips into front channel of frame and is tightened in position with stud which passes through loose steel block. Leg extends through hole in cover.

   Raise frame and adjust leg so its end is resting on the floor when the frame is exactly vertical.
4. Install saw table with blade passing through slot in table. Note that the table arm fastens to frame channel in exactly the same manner as the guide arms are attached. You will find the block into which the stud is screwed already in place within the frame channel between the guide arms.
5. Install blade guard by placing the clips at bottom over edge of frame. Lower saw table so that it rests on flange at top of guard and tighten stud. (Guard not shown)

To reconvert to horizontal position, reverse above procedure, making sure that spring tension is readjusted for 8 lb. frame weight in accordance with standard 610 instruction sheet.

SPECIFICATIONS

	610D	610W	M610D	C610D
CAPACITY				
FLAT	10"	10"	10"	10"
ROUND	6"	6"	6"	6"
THROAT (VERTICAL POSITION)				6"
HEIGHT (VERTICAL POSITION)				6"
MOTOR	½ H.P.	½ H.P.	½ H.P.	½ H.P.
SPEEDS		50, 90, 155 F.P.M.		
FLOOR SPACE	45" x 22"	45" x 22"	45" x 26"	45" x 22"
HEIGHT TO BED	22"	22"	22"	22"
HEIGHT TO TABLE (VERTICAL POSITION)				32¼"
VISE		SWIVEL TO 45°		
BLADE SIZE		½" x 7'-5" x .025"		
NET WEIGHT	184 lb.	212 lb.	226 lb.	200 lb.
SHIPPING WEIGHT	247 lb.	275 lb.	289 lb.	263 lb.

SELECTION OF BAND SAW BLADES

Efficient band sawing depends on many factors: the machine itself, the speed, the material to be cut, its shape and hardness, the selection of the blade, its type and tooth specifications. Below are recommended speed and tooth specifications for cutting materials with Hard Edge Hard Back Metal Cutting Band Saw Blades. Following these recommendations is your guarantee of economical and efficient metal band sawing.

MATERIALS	Teeth per Inch	Machine Speed	MATERIALS	Teeth per Inch	Machine Speed
Aluminum Alloys	6-10	3	High Chrome Steels	10-14	2
Aluminum Castings	6-10	3	High Speed Steels	10-14	3
Angle Iron, Light	14	3	I Beams	10-14	3
Angle Iron, Heavy	10	3	Machine Steel	10-14	3
Brass, Sheets-Rods	10-14	3	Malleable Iron	10-14	3
Brass Castings, Soft	10-14	3	Monel Metal	10-14	1
Brass Castings, Hard	10-14	2	Nickel Steel	10-14	1
Bronze	10-14	2	Pipe, Iron Soil	10-14	3
Bakelite	10-14	3	Pipe Steel	10-14	3
Boiler Tubes	10-14	3	Pipe, Galvanized	10-14	2
Cast Iron, Pipe-Solids	6-10	3	Plastics	10-14	3
Channel Iron	6-10	3	Steel, less 50 carbon	10-14	3
Cold Rolled Steel	10-14	3	Steel, over 50 carbon	10-14	2
Copper	10-14	3	Structural Steel	10-14	3
Drill Rod	10-14	2	Tubing, Steel Light	14-18	3
Fibre	10-14	2	Tubing, Seamless Heavy	10-14	3

We suggest 10 teeth for general purpose; 14 teeth for light or thin wall material.

Your machine when delivered was equipped with a Hard Edge, Hard Back Carbon steel band blade. We recommend it for all general purpose sawing. We stock this blade in 10 and 14 teeth per inch.

If your machine is equipped for wet cutting, use a good grade of soluble oil and mix not thinner than 10:1.

STATE YOUR MACHINE MODEL AND SERIAL NUMBER WHEN ORDERING PARTS

KALAMAZOO

HORIZONTAL BAND SAW
APPLICATIONS MANUAL
7A, 8A, 9A and 13A Series

(also applies to models 610, 816, 824, 8C, and 1220)

Quality and Innovation
Since 1867

KTS INDUSTRIES, INC.
Kalamazoo Saw Division
508 Harrison Street • Kalamazoo, MI 49007-3687
Phone 616/345-2141 Telex 22-4321
Fax 616/345-3932

INDUSTRIAL DISTRIBUTORS

06/88

CONTENTS

When ordering parts be sure to state serial number of your machine.

Replacement parts can be ordered through your local KALAMAZOO Distributor.

KALAMAZOO HORIZONTAL BANDSAW APPLICATIONS MANUAL

INTRODUCTION

The following manual has been prepared to enable the user of the Kalamazoo Horizontal Bandsaw to better understand the machine and receive the maximum benefits from the Kalamazoo Saw.

Periodically the user may encounter sawing problems, and this guide will help solve these problems without expensive waste of "down" time.

Periodic servicing of any machine is necessary, and this guide will help the average service and/or maintenance individual service the saw with a minimum delay, cost, or confusion.

HEREIN YOU WILL FIND:

I. General operating instructions and working explanations of how the controls interact.

II. Trouble shooting guide listing potential problems, causes, and solutions.

III. Adjustments to be made when correcting problems.

IV. Specifications.

OPERATING INSTRUCTIONS

BLADE INSTALLATION - Move idler bandwheel to right until new blade may be placed around wheels under flanges and inserted between guide rollers. Tighten blade until it is just taut and then ADD ONE FULL TURN OF TENSION HANDLE. After about 6 cuts retension the blade.

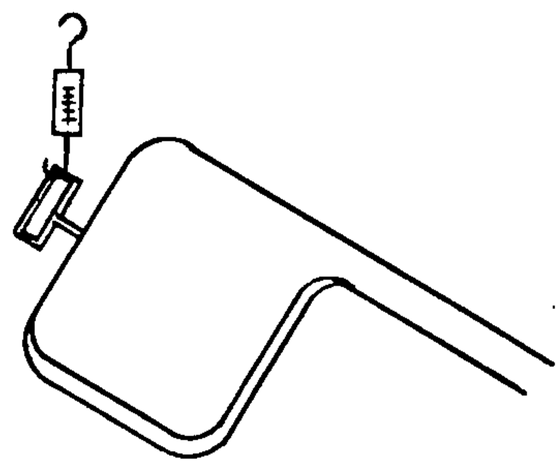
BLADE SELECTION - RAKER SET BLADES ARE RECOMMENDED. Thickness of stock determines number of teeth per inch. Never less than 2-3 should be in contact with the stock if possible and no more than 7. Blades with 8, 10, or 12 TPI are most suitable for all general purpose sawing. Coarser blades produce faster cutting in solid stock and finer blades may be necessary for very thin sections.

BLADE SPEED - The following chart is a guide to blade speed selection and is based on dry cutting. Speed should be increased one step if cutting wet. Speed is indicated as belt position in step pulleys with 1 as lowest speed. Lowest speed is obtained with belt in smallest diameter groove of motor pulley.

MATERIAL	BLADE SPEED			
	Model 7A	Model 8A	Model 9A	Model 13A
Carbon Steel	2	2	2	2
Alloy Steel	2	2	2	2
Tool Steel	1	2	2	2
Stainless Steel	1	2	2	2
Aluminum	3	4	4	4
Brass	2	3	3	3
Structural	2	2	2	2

FEED PRESSURE - Feed pressure or head weight is determined by weighing the head at the blade tension handle (under the corner of the frame on model 7A) with fish or rag scales. (see diagram) It is adjusted with the counter balance springs. (see feed pressure adjustments, sec. 3) The following table shows desirable frame weights for each model. For dry cutting, use lower of weights.

MODEL	FRAME WEIGHT - LBS.
7A	7-10
8A	10-12
9A	10-12
H9A	12-14
13A	8-12



MAKING CUT - Raise head and close hydraulic. Place stock in vise and clamp. Start motor. Open hydraulic slightly and lower head GENTLY to start cut. After blade teeth are fully engaged in cut, open hydraulic full for solid stock. In thin wall stock, control downward travel with hydraulic. Machine will stop automatically at the end of cut.

UNDERSTANDING THE SAWING CONTROLS

FEED PRESSURE

_____ Required to make the saw frame move.
_____ Required for chip removal
_____ Should be "Heavier" on materials with low machinability rating; "lighter" on materials that are more easily machined.
_____ Excessive feed pressure leads to early failure of the blade and/or crooked cuts.
_____ Increases in feed pressure will normally call for corresponding increases in blade speed especially in less hard materials.
_____ Inadequate feed pressure dulls the blade, as it tends to rub rather than cut.
_____ For proper adjustment, see Sec. III.

BLADE SPEED

_____ Controls how quickly the material is being removed.
_____ Must be fast enough or blade teeth will become overloaded.
_____ Should not be too fast or the chip load becomes less than optimum and/or the blade may dull prematurely.
_____ Any increases in blade speed must call for corresponding increases in feed pressure to maximize chip load, especially in less hard materials.

FEED SPEED

_____Controls, (infinitely) how fast the saw frame moves.
_____Should be set so the saw frame moves only as fast as the material is being removed.
_____Should be set for a slow enough approach to the work to avoid damage to the blade upon contact with the work.
_____Can be used to control sawing movement with precision during the thinner portions of light tubing or structurals; helps to avoid plunging.
_____If set too slow chip load will be less than optimum.

CHIP LOAD

_____Careful observation of the chip load is very important when sawing.
_____Chips should be nicely curled.
_____Chips that show excessive tight curling indicate too much feed pressure. Chips that show a lack of any curl indicate feed pressure that is too light.
_____Chips that turn out blue in color indicate too much blade speed and/or too much feed pressure, leading to premature blade failure.

TOUBLE SHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	SOLUTION
Motor will not start	Switch not reset	7A - push button on safe-start plug 8A, 9A, 13A - depress toggle on manual starter
	Low voltage or wrong voltage to saw	Check wiring and voltage requirements
	Coil in manual motor starter "open" burned up	Replace coil or entire switch 8A, 9A, 13A only
	Open circuit in line, cord, or plug	Check all wiring and connections.
Motor will not start and fuses or circuit breaker "blows"	Short in line or plug	Inspect wiring and connections.
	Short in motor wiring or motor leads	Inspect motor leads and connections. Have motor checked.
	Incorrect or faulty fuses or circuit breaker	Install correct fuses or circuit breaker.
Motor overheats, fails to develop full power, or heaters trip out often.	Power line overloaded	Redistribute load on power line.
	Undersized wiring to machine or cord length too long.	Replace with properly sized wiring.
	General overloading of power company's facilities (especially in hot weather)	Request voltage check from the power company.
	Motor overloaded	Reduce the load on the motor.
Coolant motor will not work.	Fuse blown	Replace fuse.
	Transformer burned up	Replace transformer.
	Pump switch faulty.	Check pump switch wiring or replace switch.
	Pump impeller "frozen"	Remove strainer basket beneath the pump and free impeller. Clean out the tank of chips and swarf.

TROUBLE SHOOTING GUIDE CONTINUED

PROBLEM	PROBABLE CAUSE	SOLUTION
Coolant motor will not work-continued	Pump defective or burned out	Replace the pump.
	Coolant low	Add coolant. Pump must be 3/4 submersed at all times.
	Worn belts or pulley	Replace either.
	Feed speed too fast	Slow head descent with hydraulic cylinder.
	Excessive feed pressure	Reduce feed pressure, see pages 17-18.
	Incorrect blade selection	See blade selection chart, page 3.
	Incorrect blade speed	See blade speed selection, page 3.
	Improper belt tension	See that the motor hangs freely to provide correct tension.
Broken blades	Excessive feed pressure	Reduce feed pressure, see pages 17-18.
	Improper tracking	Check tracking & adjust, see pages 11-16.
	Incorrect blade speed	See blade speed selection, page 3.
	Improper guide adjustment/alignment	Adjust guides, see page 16.
	Improper blade tension (too tight or too loose)	Check blade tension, see page 3.
	Incorrect blade selection	See blade selection, see page 3.
	Feed speed too fast	Slow head speed descent with hydraulic cylinder.
	Work piece is not properly clamped in vise	Clamp material securely and make sure it will not move.

TROUBLE SHOOTING GUIDE CONTINUED

PROBLEM	PROBABLE CAUSE	SOLUTION
Broken Blades--continued	Cut off piece binding between blade and stock stop.	Move stock stop out of the way before completing the cut.
	Dry cutting	Use coolant.
	Improper blade weld or anneal	Inspect blade. If breakage is occurring at or very near the weld, problem is with the weld or annealing of the weld.
	Chips and swarf build up on bandwheels	Clean often and check blade cleaning brush.
Teeth strippage	Too many teeth per inch causing overloading of each tooth.	Use a coarser blade.
	Too few teeth per inch	Use a finer tooth blade.
	Excessive feed pressure	Reduce feed pressure, see pages 17-18.
	Blade speed too slow	Increase blade speed one step.
	Cutting rectangular pieces laying flat	Sit pieces up on end.
	Piece not secured properly in vise	Clamp material securely.
	Lack of control of feed speed	Adjust feed speed properly, see page 3.
	Hard spots in stock	Check with your supplier
Crooked cuts	Teeth too fine	Use coarser blade.
	Excessive feed pressure	Reduce feed pressure, see pages 17-18.
	Guides not properly supporting the blade	Check guides and make appropriate adjustments, see page 16.
	Improper blade tension	Review blade tension, see page 3.

TROUBLE SHOOTING GUIDE CONTINUED

PROBLEM	PROBABLE CAUSE	SOLUTION
Crooked cuts -- continued	Guides too far from the workpiece	Move guides closer to the workpiece.
	Blade teeth dull	Change the blade.
	Improper feed speed control	Slow feed speed, see page 3.
	Vise jaws not square with the blade	Loosen vise jaws and set to square with the blade.
	Blade speed too slow	Increase blade speed, see page 3.
	Defective blade	Replace blade.
	Flange worn from bandwheels causing "set" of blades to be flattened on one side.	Replace bandwheels and check tracing, see pages 11-15.
Poor Blade life	Dry cutting	Use a good grade of coolant. Add a coolant attachment to the machine if it does not have one.
	Blade speed too fast	Reduce blade speed.
	Feed speed too slow	Increase speed.
	Blade too coarse	Use a finer tooth blade.
	Material too hard for the blade being used.	Obtain better quality blades.
	Feed pressure too light	Increase feed pressure, see page 3.
Damage to back of blade	Not using a hardback blade	Replace flexible back blade with hardback or weld-edge blade.
	Tracking too hard against the bandwheels	Check and re-cant bandwheels, see pages 11-15.
	Carbide back-up missing on one.	Replace carbide back-up.

TROUBLE SHOOTING GUIDE CONTINUED

PROBLEM	PROBABLE CAUSE	SOLUTION
Increase in cutting time	Dull blade	Replace blade.
	Feed pressure too light	Increase feed pressure, see page 3.
	Wrong blade speed	See blade speed chart, see page 3.
Will not cut	Motor running in wrong direction	Reverse rotation.
	Teeth pointing in wrong direction. Teeth must point in direction of travel	Remove blade and twist inside out.
	Hardened material	Use alloy or weld-edge blades.
Blade comes off the bandwheel	Improper tracking	Check and re-cant bandwheels, see pages 11-15.
	Improper blade tension	Increase blade tension.
Chatter during cut	Blade speed is too fast	Reduce Speed.
	Blade selection incorrect	Change blade, see sawing guide page 3.
	Bandwheels or pulleys loose	Tighten or replace items at fault
	Guide arms too close on small diameter pieces	Moving guide arm to be set 2"-3" from work piece.
Vise will not clamp work	Vise nut not seated	Especially on new machines or new replace ment nuts, a slight tap with a soft mallet will seat the nut and probably eliminate the problem thereafter
	Worn nut	Replace nut. Note: Most wear is caused by over tightening
	Excessive swarf and chips in assembly.	Clean and replace

TROUBLE SHOOTING GUIDE CONTINUED

PROBLEM	PROBABLE CAUSE	SOLUTION
Vise will not clamp work -- continued	Broken or missing pins or spring	Replace nut assembly
	Worn lead screw	Replace lead screw
	Elongated hole in vise block	Replace vise block
Head feed speed problem	Head falls out of control	Replace leather cup and seals or entire hydraulic assembly.
	Cannot shut off hydraulic assembly	Replace leather cup, needle valve or entire assembly.
	Head descent "mushy"	Replenish cylinder with light hydraulic oil through two screws in top of cylinder.
	Oil leakage from hydraulic cylinder	Replace seals or entire assembly.
Head will not come down, or comes down in erratic and jerky manner	Dirty oil in hydraulic assembly or bind at pivot area.	Replace oil in hydraulic assembly, replace needle valve in hydraulic cylinder or replace entire assembly. OR Add oil to pivot oilers, check to see pivot is free and examine adjusting collar assembly between frame and bed to insure that it has not gotten loose and expanded too far. The collar should be snug not tightly bound.
Head bounces during cut	Bad weld in blade	Replace blade
	Teeth missing on blade	Replace blade
	Head weight too light	Add to feed pressure, see page 3.
	Loose pulleys or bandwheels	Tighten or replace faulty items

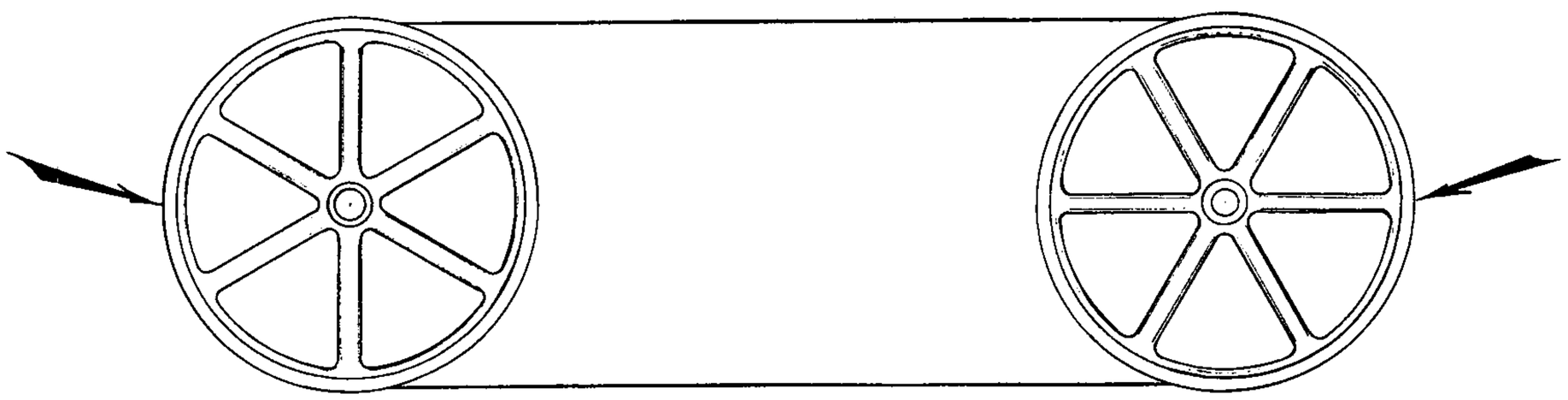
BLADE TRACKING

After properly installing and tensioning the blade you should check to see that it is tracking properly at the points shown in figure 1.

Referring to figure 2B you can see that when the bandwheels are canted properly the blade is running just nicely against the flange.

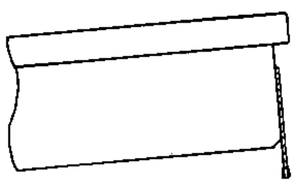
Improper blade tracking results from excessive cant (fig. 2C) or negative cant (fig. 2A). These conditions can be corrected with the adjusting screws on the rocker block (idle wheel end) and the gearbox (drive wheel end).

When it is suspected that tracking is improper, adjustments should be made only after removing the blade guides to make sure that they are not a part of the problem.



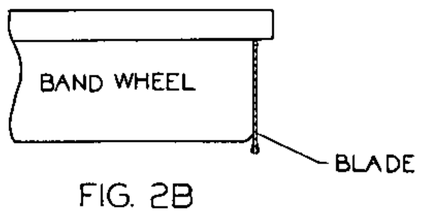
CHECK TRACKING AT ARROWS

FIG. 1



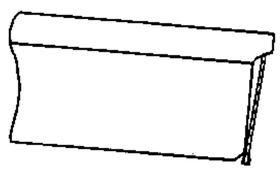
NEGATIVE CANT

FIG. 2A



CORRECT TRACKING

FIG. 2B



EXCESSIVE CANT
& WORN FLANGE

FIG. 2C

DRIVE WHEEL END TRACKING ADJUSTMENT

Note which condition must be corrected.

Remove all tension from the bandwheels.

Locate two hex head bolts under the inside cover, behind the drive wheel (fig. 3). Crack these bolts loose just slightly.

Locate two set screws on the gearcase (fig. 4). Looser the lock nut of each one of these screws, while maintaining set screw position with an allen key.

The Adjustment -

Adjusting for negative cant -

Turn the right hand set screw counterclockwise one fourth turn and tighten lock nut.

Turn the left hand set screw clockwise one fourth turn and tighten the lock nut.

Tighten the hex head bolts.

Tension the blade and check tracking.

Repeat the operation if further adjustment is necessary.

Adjusting for excessive cant -

Turn the left hand set screw counterclockwise one fourth turn and tighten lock nut.

Turn the right hand set screw clockwise one fourth turn and tighten the lock nut.

Tighten the hex head bolts.

Tension the blade and check tracking.

Repeat the operation if further adjustment is necessary.

Note: After correcting drive wheel cant, be sure to check the opposite end wheel also.

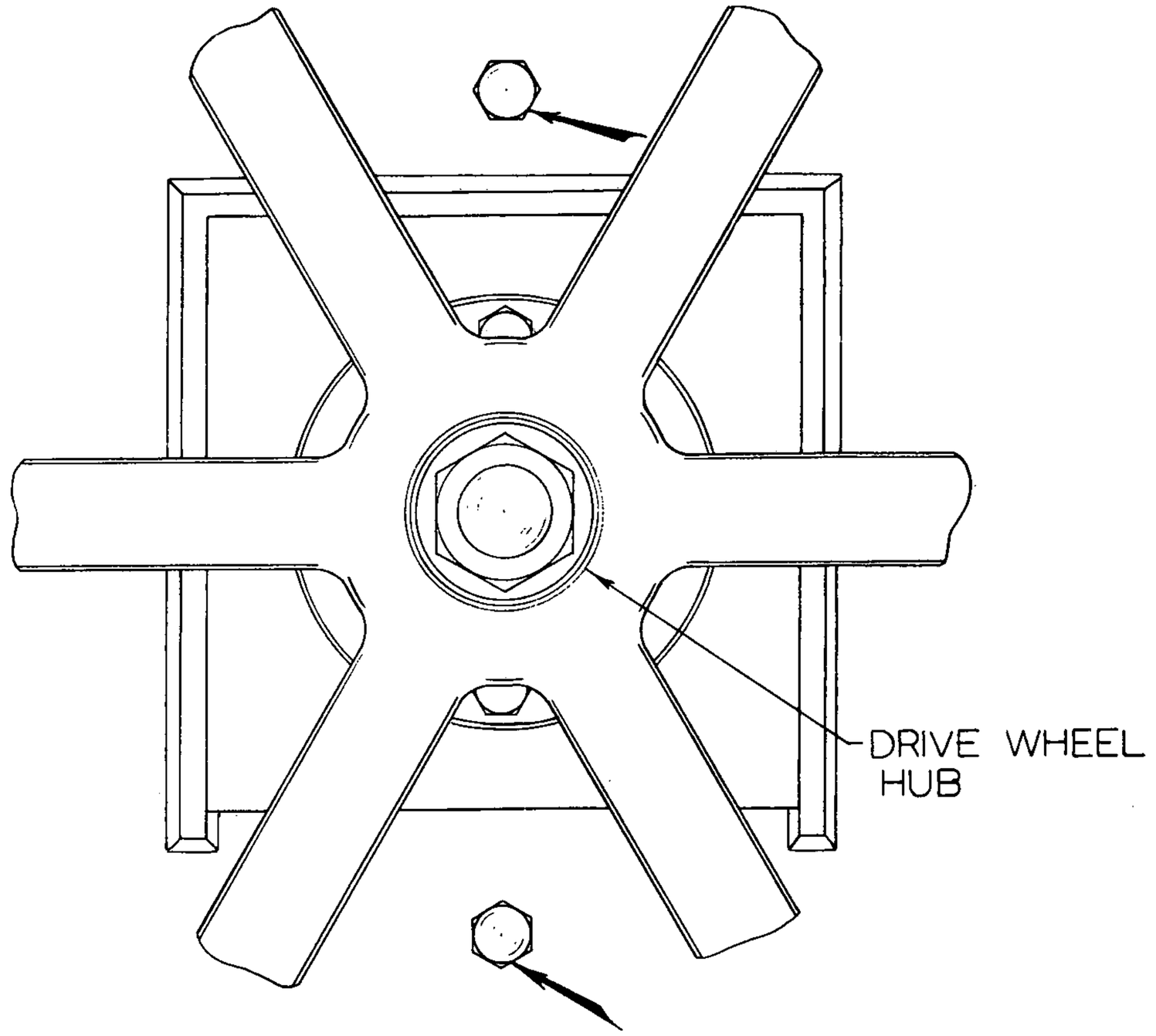

DRIVE WHEEL
HUB

FIG. 3

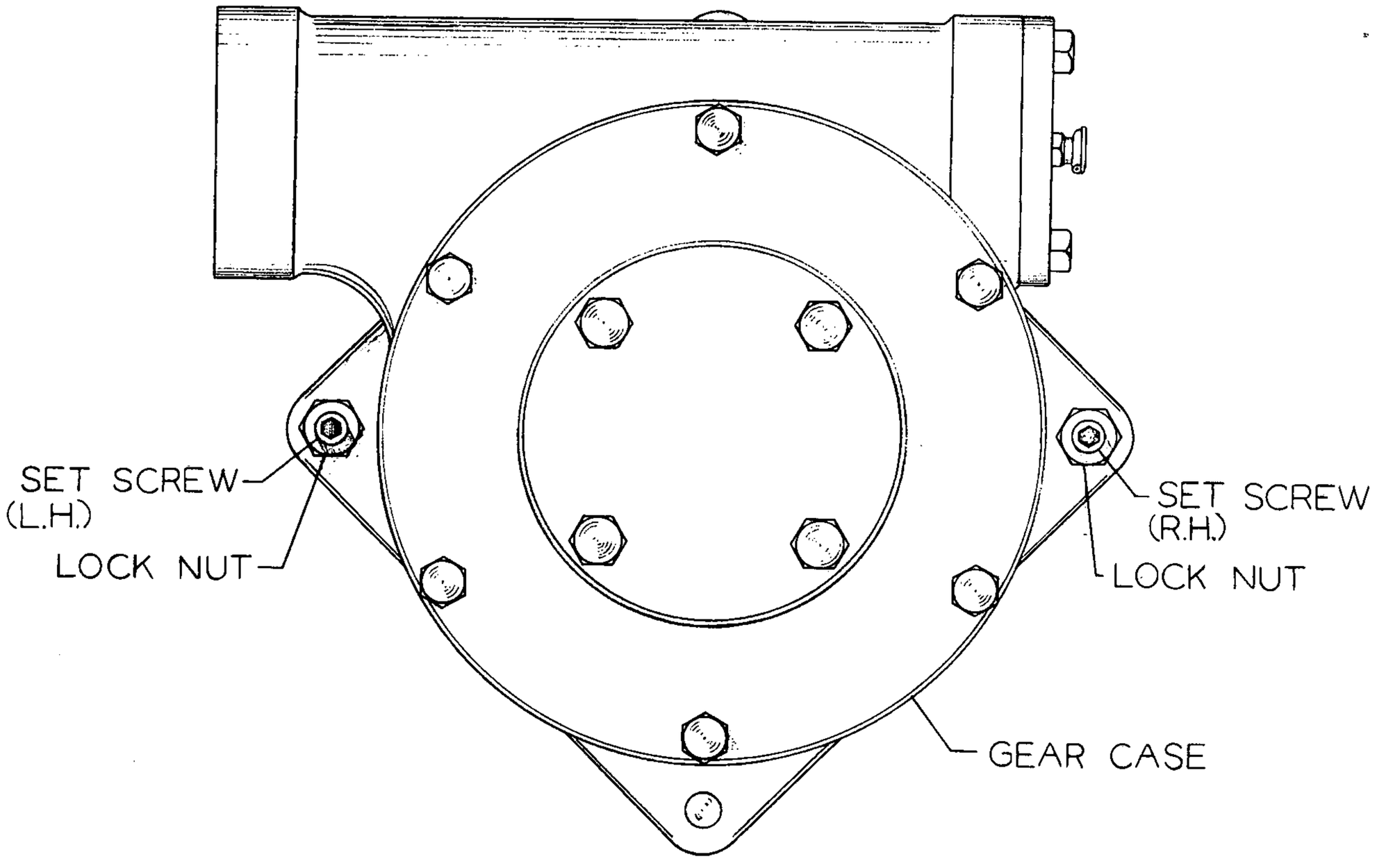

SET SCREW
(L.H.)
LOCK NUT
SET SCREW
(R.H.)
LOCK NUT
GEAR CASE

FIG. 4

Tighten the hex head bolts.

Tension the blade and check tracking.

Repeat the operation if further adjustments are necessary.

Adjustment for excessive cant

Turn the right hand set screw counterclockwise one fourth turn.

Turn the left hand set screw one fourth turn clockwise.

Tighten the hex head bolts.

Tension the blade and check tracking.

Repeat the operation of further adjustments are necessary.

Note: After checking wheel cant be sure to check the opposite end wheel.

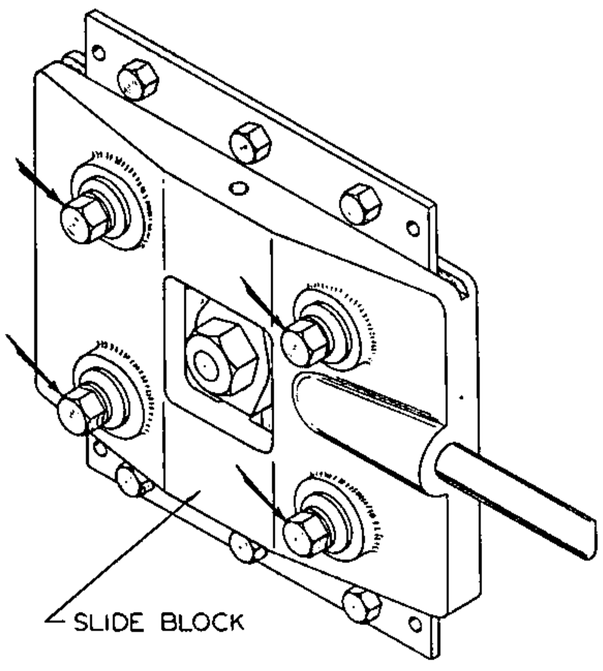


FIG. 6

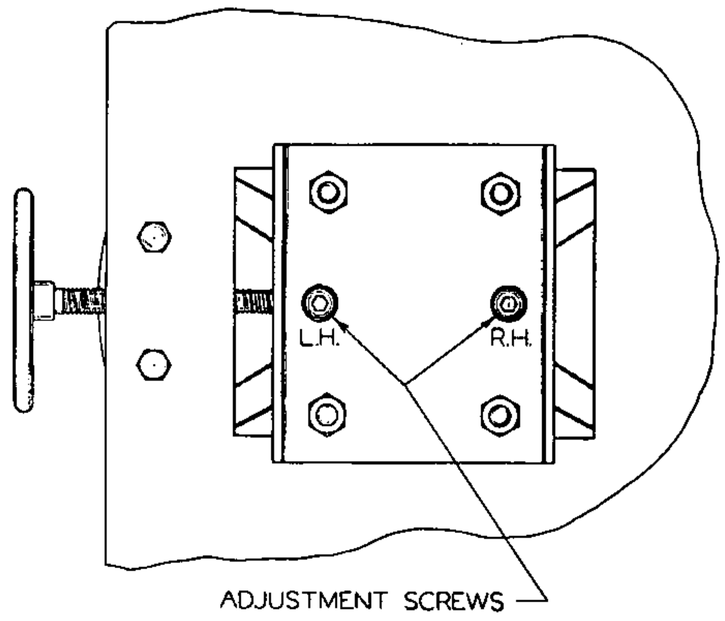


FIG. 5

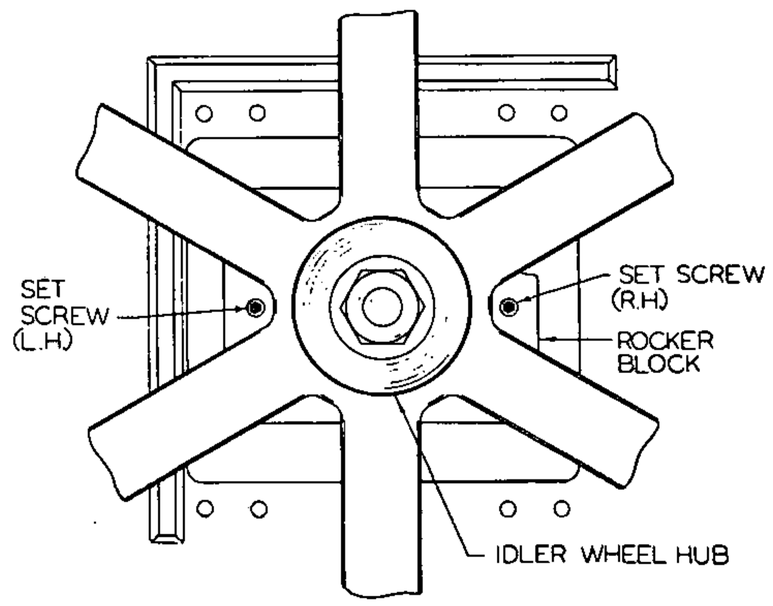


FIG. 7

IDLER WHEEL END ADJUSTMENT

7A Saw

Note which condition must be corrected.

Remove all tension from bandwheels

Locate two socket head screws behind the idler wheel (fig. 5).

Adjusting for negative cant

Turn the left hand screw one fourth turn counterclockwise.

Turn the right hand screw one quarter turn clockwise.

Tension the blade and check tracking.

Repeat the operation if any further adjustment is necessary.

Adjusting for excessive cant

Turn the right hand screw one fourth turn counterclockwise.

Turn the left hand screw one quarter turn clockwise.

Tension the blade and check tracking.

Repeat the operation if any further adjustment is necessary.

8A, 9A, 13A Saws

Note which condition must be corrected.

Remove all tension from the bandwheels.

Locate the four hex head bolts on the slide block (fig. 6), on the underside of the head. Crack these bolts loose just slightly.

Locate two socket head set screws in the rocker block (fig. 7), behind the idler wheel.

Adjustment for negative cant

Turn the left hand set screw counterclockwise one fourth turn.

Turn the right hand set screw clockwise one fourth turn.

BLADE GUIDE INSTALLATION & ADJUSTMENTS

MODELS 7A, 8A, 9A, & 13A

Prior to installing or adjusting the blade guide block assemblies the blade must be in place, properly tensioned and tracking correctly on the bandwheels.

Once the blade guide block assembly is attached to the guide arm there are two adjustments to be made:

1. Vertical adjustment - The guide block should be moved up or down in the slotted hole of the guide arm so that there is approximately 1/64" gap between the top of the blade and the carbide insert on the underside of the guide block. Tighten the hex head bolt to lock the guide block assembly to the guide arm.

2. Roller adjustment - The rear roller is mounted on a fixed spindle and not adjustable. The front roller is mounted on an eccentric spindle which allows it to be move laterally to the blade. Loosen the lock nut and adjust the eccentric in a counter-clockwise direction snugly against the blade. Do not tighten the rollers too tightly against the blade or you will cause undue wear on the rollers and risk damaging the blade.

(See Fig. 8)

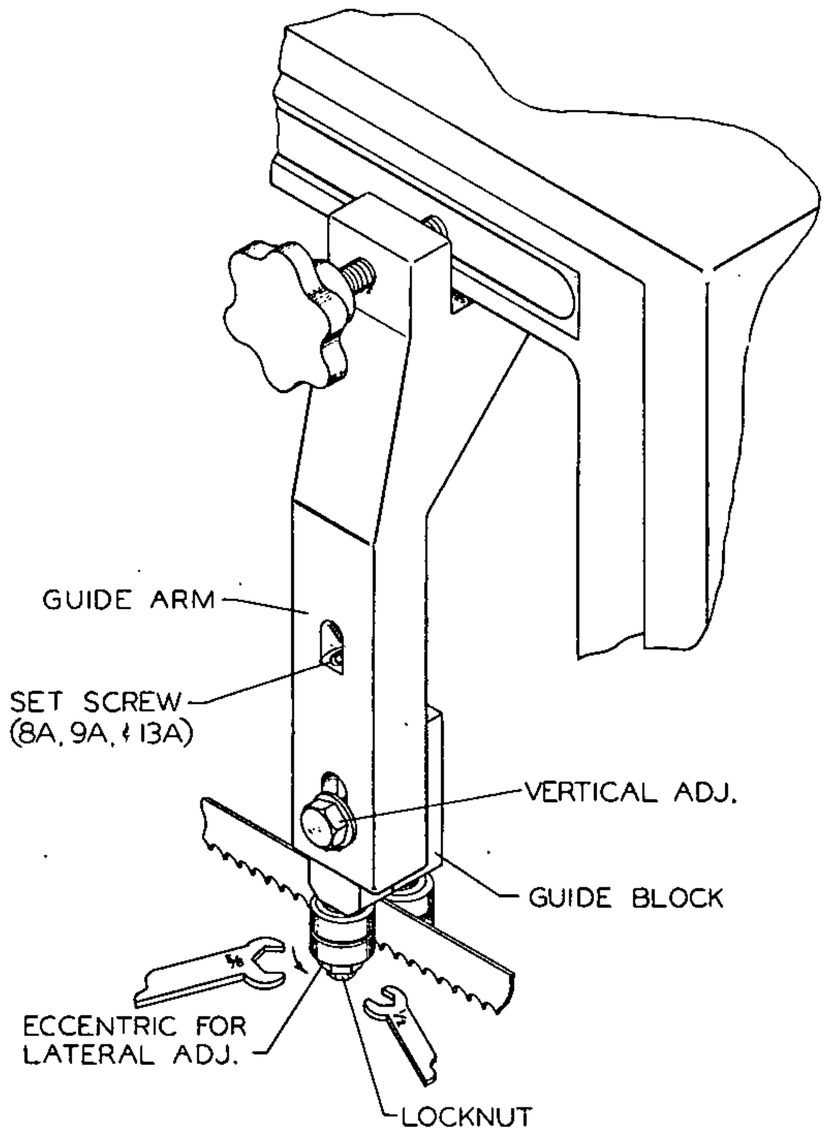


FIG. 8

FEED PRESSURE

13AW (Fig. 9)

Feed pressure or head weight may be adjusted with the extension springs at the rear of the machine. Extending these springs will reduce head weight. The spring is extended by loosening the lock nut and turning the adjusting nut towards the spring. When you have neared the proper range, the fine adjustment knob may be used to insure equal feed pressure throughout the entire range of travel. The saw head must be fully raised for adjusting these springs. Head weight may be determined by first raising the head a few inches above the bed, hooking a fish or rag scale to the blade tension handle at the end of the frame and letting the head drop. For all normal cutting in solid stock it should be approximately 12 - 14 lbs. for a wet cutting machine and 10-12 lbs. when cutting dry. When all adjustment is exhausted, these springs should be replaced.

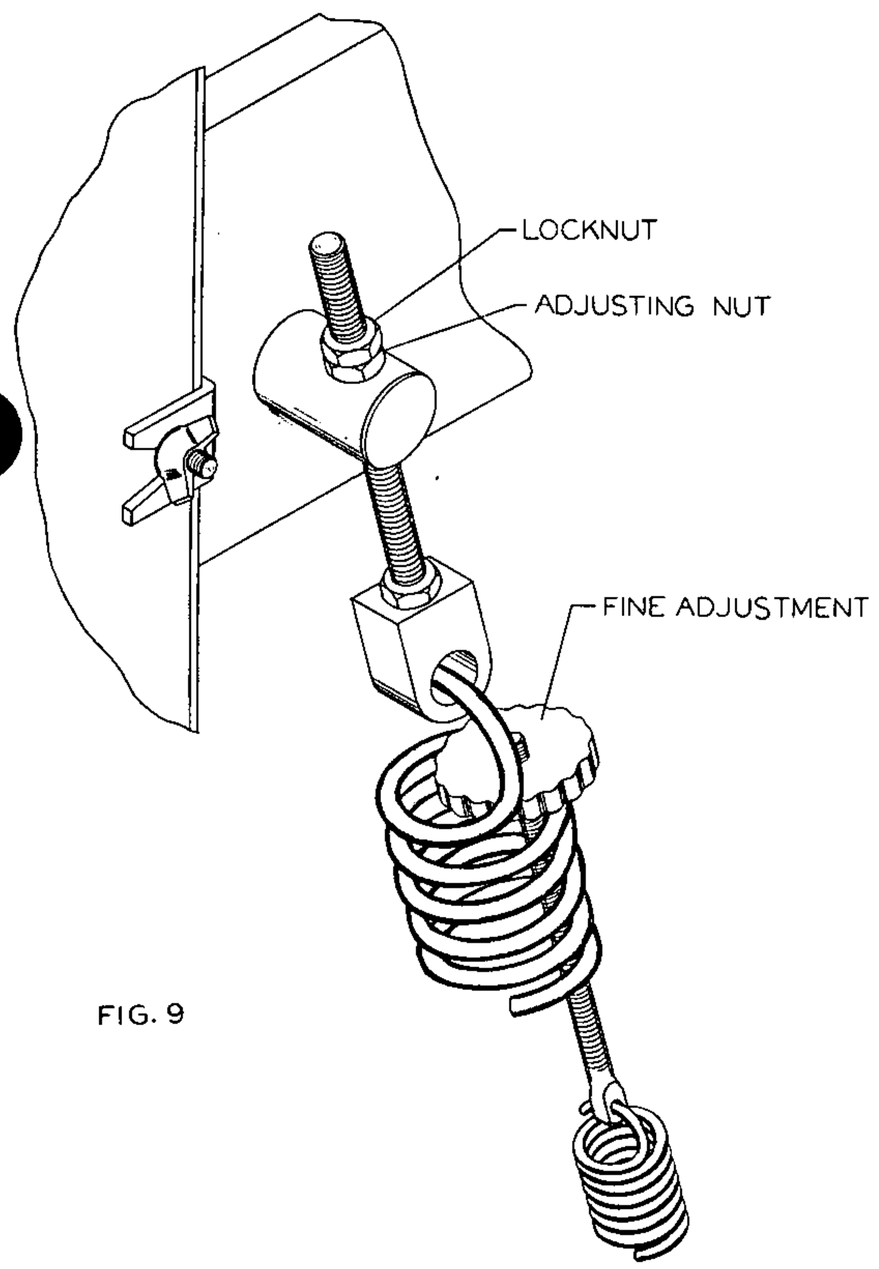


FIG. 9

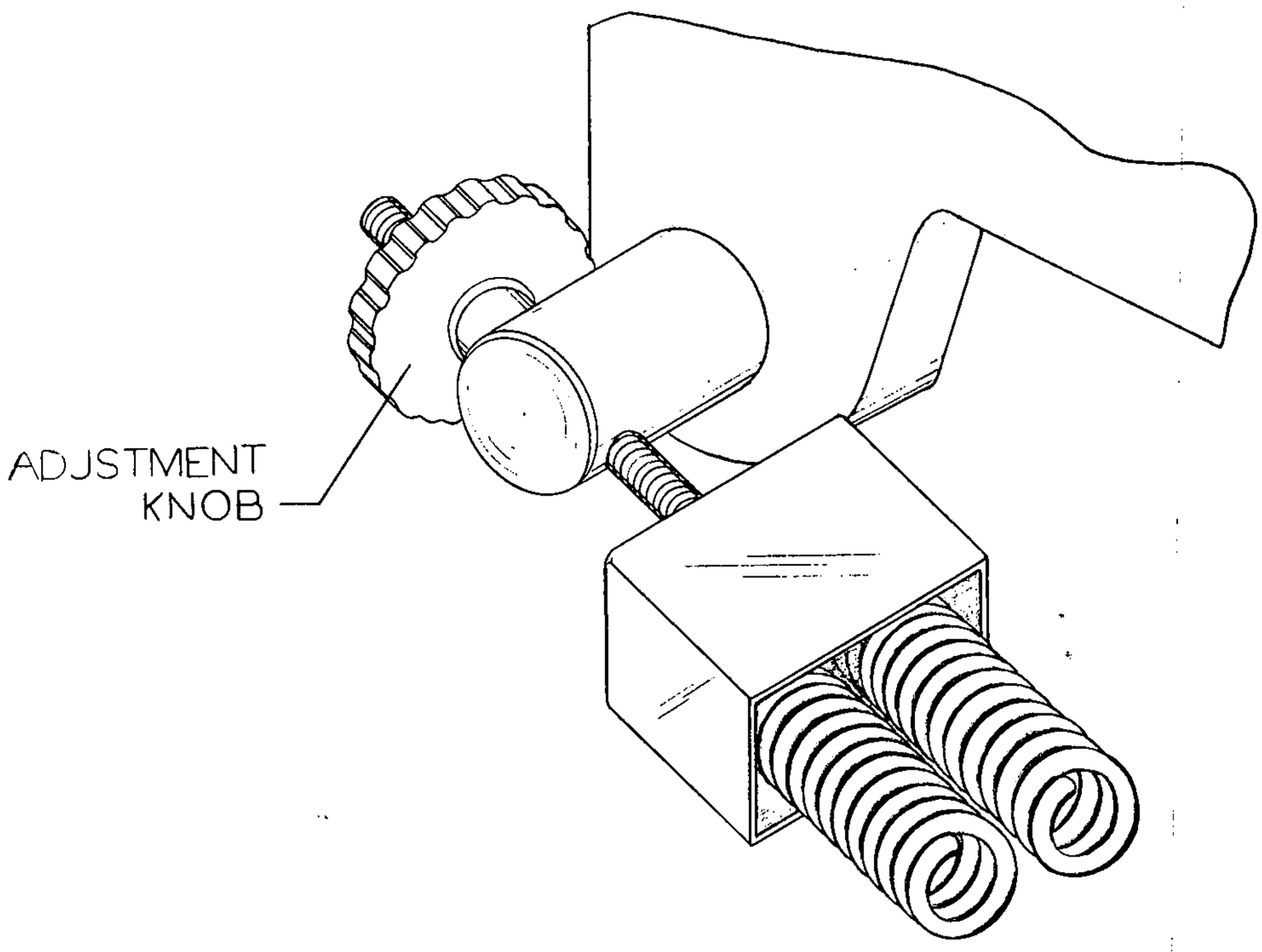


FIG.10

FEED PRESSURE

H9AW (Fig. 10)

Feed pressure or head weight may be adjusted with the two extension springs at the rear of the machine. The two knobs at the top of the springs extend or shorten the springs. Extending the springs will reduce head weight. Head weight may be determined by raising the end of the frame a few inches above the bed, hooking a fish or rag scale to the tension handle at the end of the frame and letting the head drop. For all normal cutting in solid stock it should be approximately 10-12 lbs. Reduce head weight when sawing thin sections. When the head weight can not be maintained and no further adjustment of the springs is possible, the spring should be replaced.

FEED PRESSURE

7AW (Fig. 11)

Feed pressure or head weight may be adjusted with the single extension spring at the rear of the machine. The two knobs at the lower end of the spring extend or shorten the spring. Extending the spring will reduce head weight. Head weight may be determined by raising the end of the frame a few inches off the bed and hooking a fish or rag scale under the end of the frame and letting the head drop. When measured to this point the head should weigh 8 lbs. for a dry machine and 10 lbs. for a wet machine. When head weight can not be maintained and no further adjustment of the spring is possible, it should be replaced.

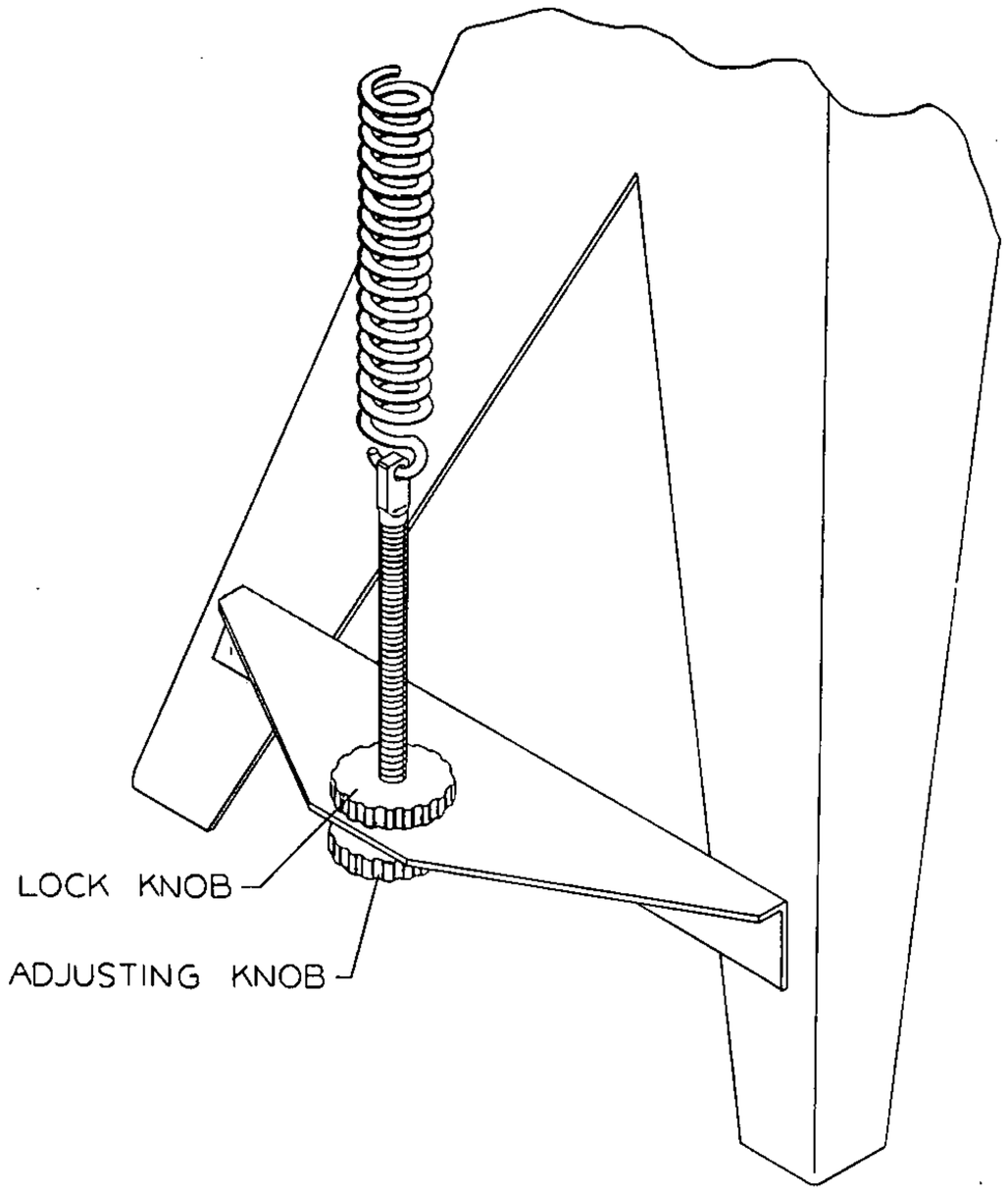


FIG. 11

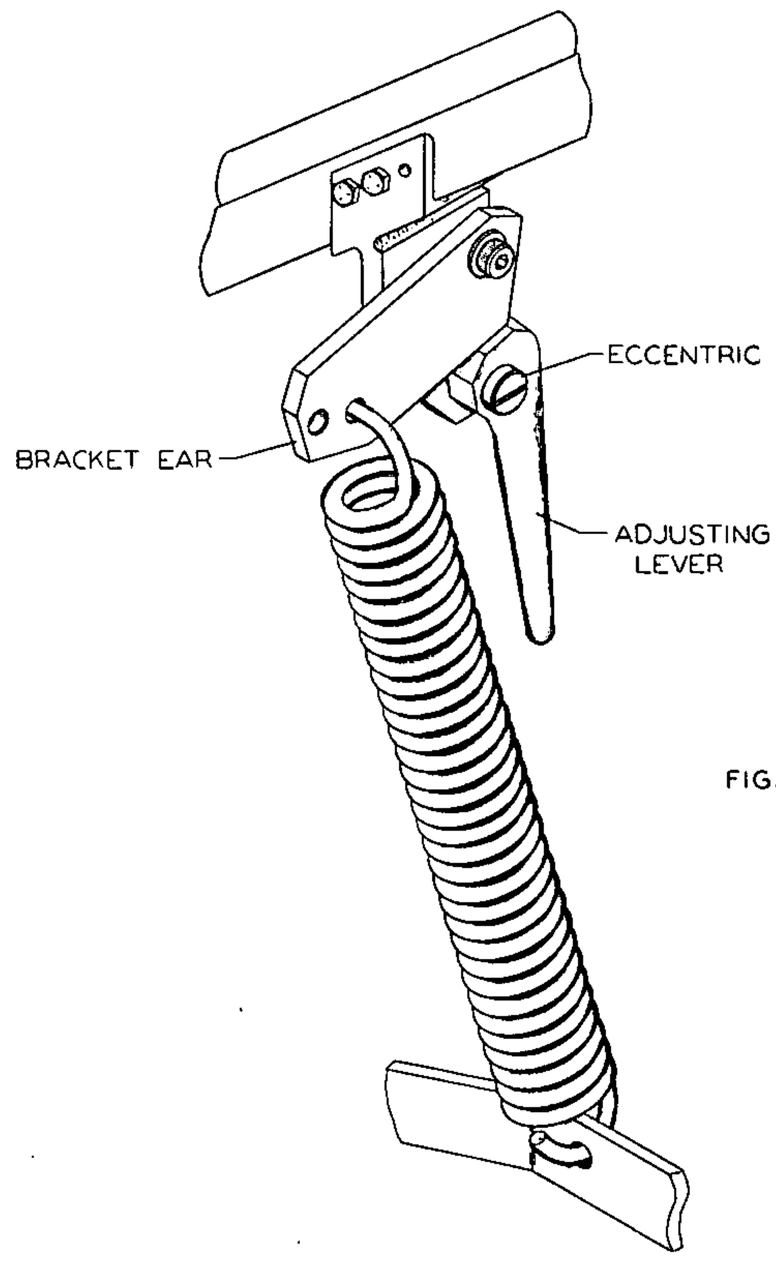


FIG. 12

FEED PRESSURE

H8AW (Fig. 12)

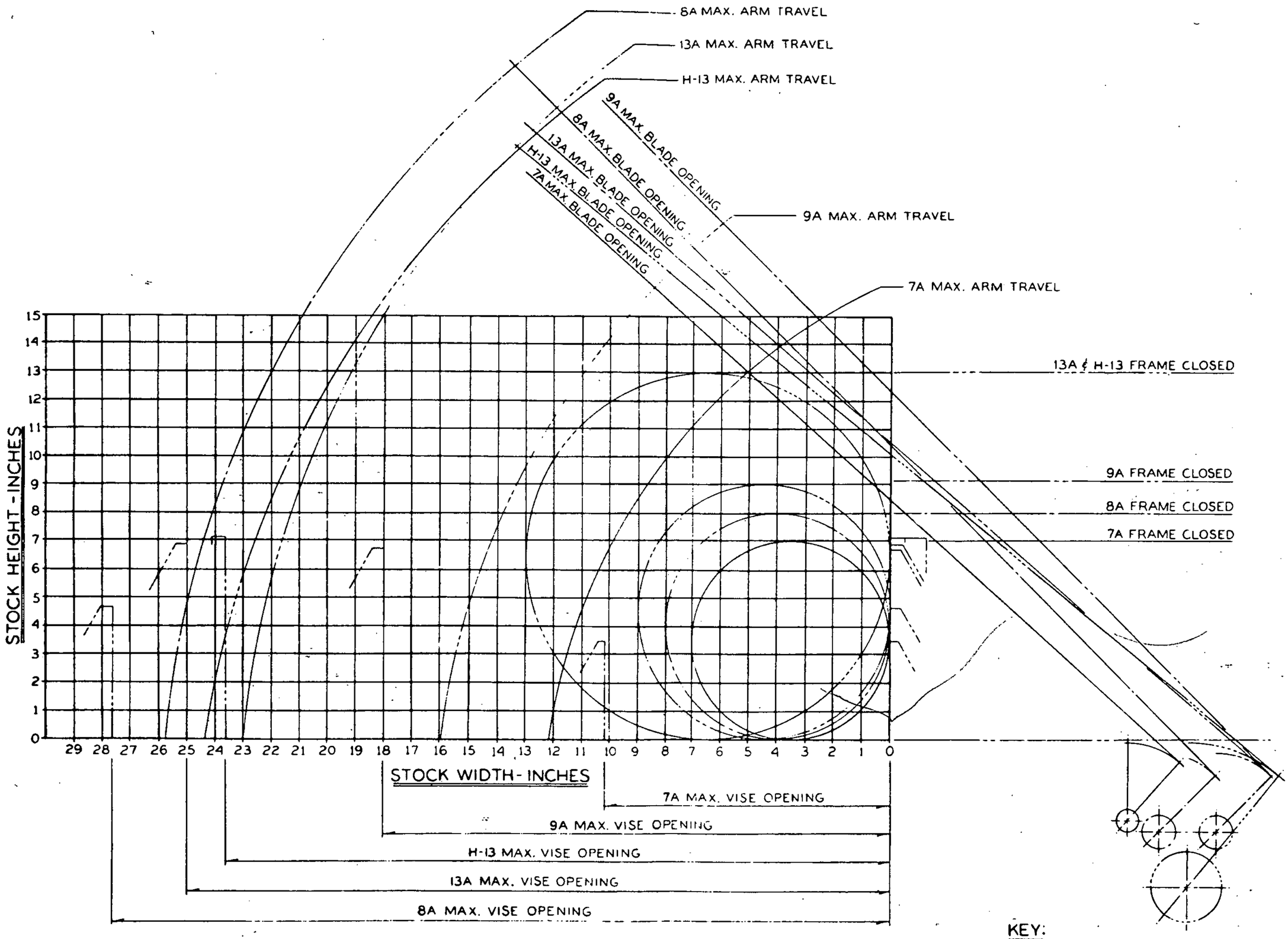
Feed pressure or head weight may be adjusted with the extension spring at the rear of the machine. Extending the spring will reduce head weight. The spring is extended by swinging the cam handle near the top of the spring. The saw head must be fully raised before adjusting cam. Head weight may be determined by raising the end of the frame a few inches above the bed, hooking a fish or rag scale to the blade tension handle at the end of the frame and letting it drop. For all normal cutting in solid stock, it should be approximately 10-12 lbs. for a wet cutting machine and 8-10 lbs. when cutting dry. When all adjustment is exhausted, move the top spring hook to the higher hole. When all adjustment is exhausted there, the spring should be replaced.

APPLICATION	Model No.	Cutting Capacities @ 90°		Vise Opening	Speed Range (FPM)	Motor Horsepower	Blade Width	Shipping Weight (lb.)
		Round	Rectangular					
Light Duty/ Utility	C7AD	7"	7" x 9 3/4"	12"	50, 90, 155	3/4 HP	1/2"	300
	M7AD							320
	M7AW							348
	7AD							290
	7AW							306
	U816	8"	8" x 13 1/2"	16"	50, 95, 160, 275	1 HP	3/4"	650
General Purpose	H8AW	8"	8" x 24"	24"	62 - 390	2 HP	1"	890
	H9AW	9"	9" x 13 1/2"	16"	62 - 390	2 HP	1"	822
	13AW	13"	13" x 19"	20"	65 - 345	2 HP	1"	1152
Semi-Auto	H9A SA	9"	9" x 13 1/2"	16"	62 - 390	2 HP	1"	1100
	13A SA	13"	13" x 19"	20"	65 - 345	2 HP	1"	1420
Auto Feed	AH9AW	9"	9" x 12"	12"	62 - 390	2 HP	1"	1288
	13A-A	12"	12" x 12"	12"	65 - 345	2 HP	1"	1620

specifications

Model Series	Height to Working Surface	Blade Used	Diameter of Blade Wheel	Cutting Capacity @ 45°		Vertical Capacity (h x w)	Standard Electricals*
				Round	Rectangular (h x w)		
7A	22"	1/2" x .025 x 7' x 5"	10"	5"	7" x 5"	(C7AD) 6" x 7"	115/60/1
816	25 1/4"	3/4" x .032" x 10'5"	14"	8"	8" x 8"	(UW-006) 13" x 8"	115/230/60/1 or 208/230/460/575/60/3
8A	25 1/2"	1" x .035" x 12'1"	14"	8"	8" x 12"	NA	
9A	25 1/2"	1" x .035" x 10' 10 1/2"	14"	8"	8" x 8"	NA	
13A	25 1/2"	1" x .035" x 13'11"	18"	12"	13" x 9"	NA	
AHSAW	25 1/2"	1" x .035" x 10'10 1/2"	14"	NA	NA	NA	208/230/460/60/3
13A-A	25 1/2"	1" x .035" x 13'11"	18"	NA	NA	NA	

*Under Voltage and Overload Protection are standard on all models.



MAXIMUM CAPACITY DIAGRAM
HORIZONTAL SAWS
90° CUT