

### Distribution of Needle Swing

SET THE SELECTOR DIAL AT S AND STITCH WIDTH CONTROL KNOB 4. BRING NEEDLE TO THE LOWEST POSITION. LOOSEN SET SCREWS (1) SLIGHTLY, INSERT THE ECCENTRIC TOOL (4) INTO THE HOLE (5) AND SLIDE THE ZIGZAG CAM FOLLOWER (3) IN THE DIRECTION INDICATED BY THE ARROW BY TURNING THE ECCENTRIC TOOL UNTIL YOU CAN OBTAIN EQUAL CLEARANCE BETWEEN THE NEEDLE AND THE EDGE OF THE NEEDLE SLOT AT BOTH LEFT AND RIGHT NEEDLE POSITIONS. TIGHTEN THE SCREWS SECURELY AFTER ADJUSTMENT.

Straight Stitch Position	Attachment Dimension	Zigzag Bite	Foot Control
Left	Super High Bar	7.0	6814 EXCEPT 18130 and

\*Left Needle Position is also referred to as "S" position. 18131 and 6817

### Presser Foot Height

DROP FEED DOG. PRESS DOWN PRESSURE REGULATOR TO THE MAXIMUM PRESSURE. LOWER PRESSER FOOT LEVER. LOOSEN THUMB SCREW AND BE SURE PRESSER FOOT IS SEATED PROPERLY. TIGHTEN THUMB SCREW.

IF ADJUSTMENT IS NECESSARY, RAISE PRESSER FOOT LEVER AND LOOSEN SCREWS ON PRESSER BAR HOLDER. ADJUST THE HEIGHT OF PRESSER FOOT FROM NEEDLE PLATE AS SPECIFIED. CONFIRM THE HEIGHT OF PRESSER FOOT BY A COMPLETE TURN OF THE HAND-WHEEL. TIGHTEN THE SCREWS SECURELY AFTER ADJUSTMENT.

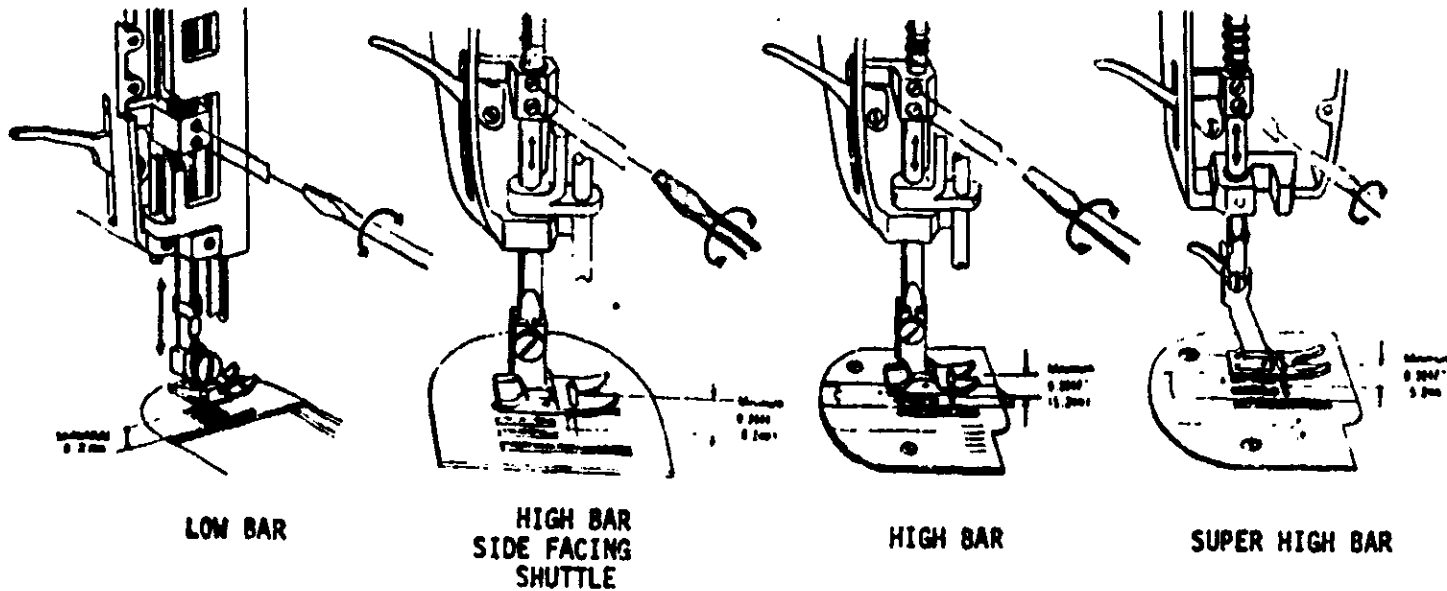


FIGURE A-1

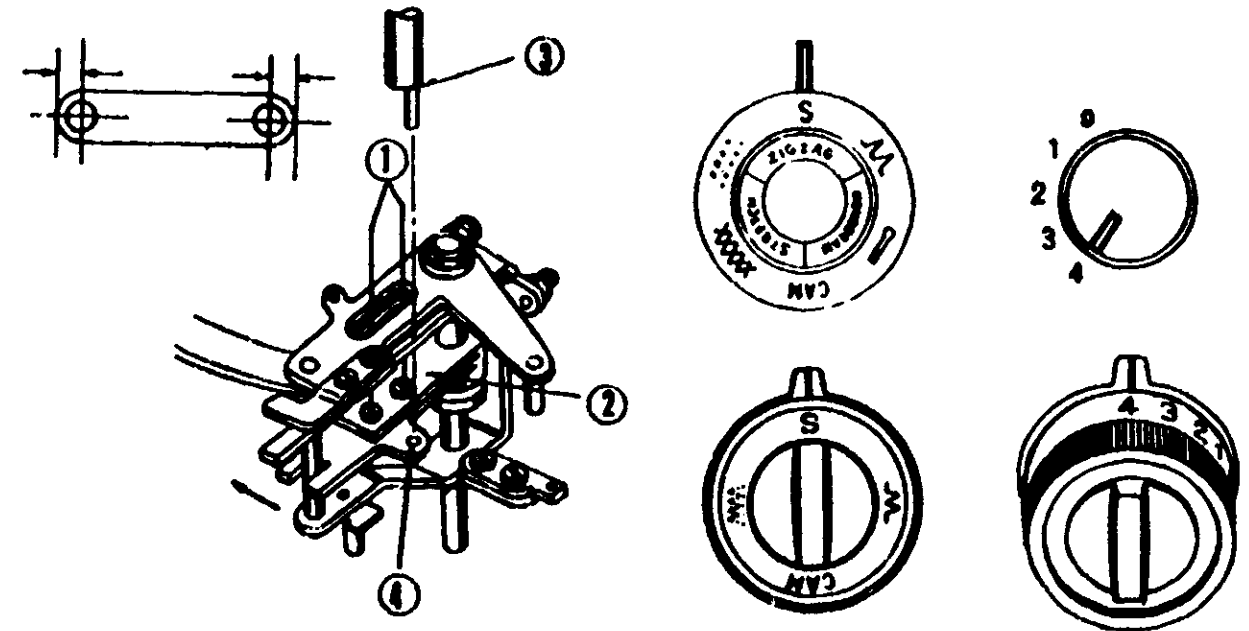


FIGURE C-7

### Needle Position

Set stitch width control at 0. Prepare the needle plate for straight stitching by reversing or sliding the center plate (See Figures 1 & 2) or place the needle plate insert for straight stitch onto the needle plate (See Figure 3). Turning handwheel, check and see if the needle goes through the needle hole at its center. If not, loosen nut (1) and adjust needle position by slightly turning the eccentric roller pin (2). Tighten the nut securely after adjustment.

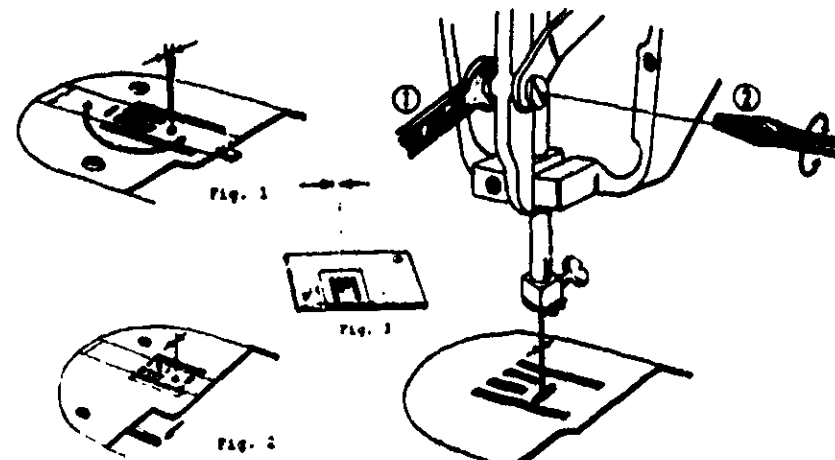


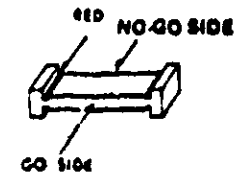
FIGURE D-8

### Feed Dog Height

FOR FRONT FACING SHUTTLE MODELS, PLACE GAUGE AT POSITION AS ILLUSTRATED WITH THE NO-GO-SIDE OF THE GAUGE FACING THE NEEDLE PLATE. LOWER PRESSER FOOT. WHILE TURNING THE HANDWHEEL SLOWLY BY HAND, THE GAUGE SHOULD BE MOVED BY THE FEEDDOG TEETH. IF NOT, FEEDDOG TEETH ARE TOO LOW. THEN PLACE THE GAUGE UP-SIDE-DOWN WITH THE GO-SIDE FACING THE NEEDLE PLATE. REPEAT THE SAME PROCEDURE. THE GAUGE SHOULD NOT BE MOVED. IF THE GAUGE IS MOVED, THE FEEDDOG TEETH ARE TOO HIGH.

IN CHART FORM IT LOOKS LIKE THIS:

Feeddog Height Gauge	Go-Side (Facing Needle Plate)	No-Go-Side (Facing Needle Plate)
Correct	Not Moving	Moving
Low	Not Moving	Moving
High	Moving	Moving



IF ADJUSTMENTS ARE NECESSARY, LOOSEN SCREW (1) ON DROP FEED CENTER BLOCK AND ADJUST THE FEEDDOG HEIGHT AS SPECIFIED. TIGHTEN THE SCREW SECURELY AFTER ADJUSTMENT.

**CAUTION:** FOR SIDE FACING SHUTTLE MODEL BE SURE THE GAUGE IS PLACED ON THE SURFACE OF NEEDLE PLATE. BE SURE ONE END IS NOT RESTING ON THE HANDHOLE COVER PLATE.

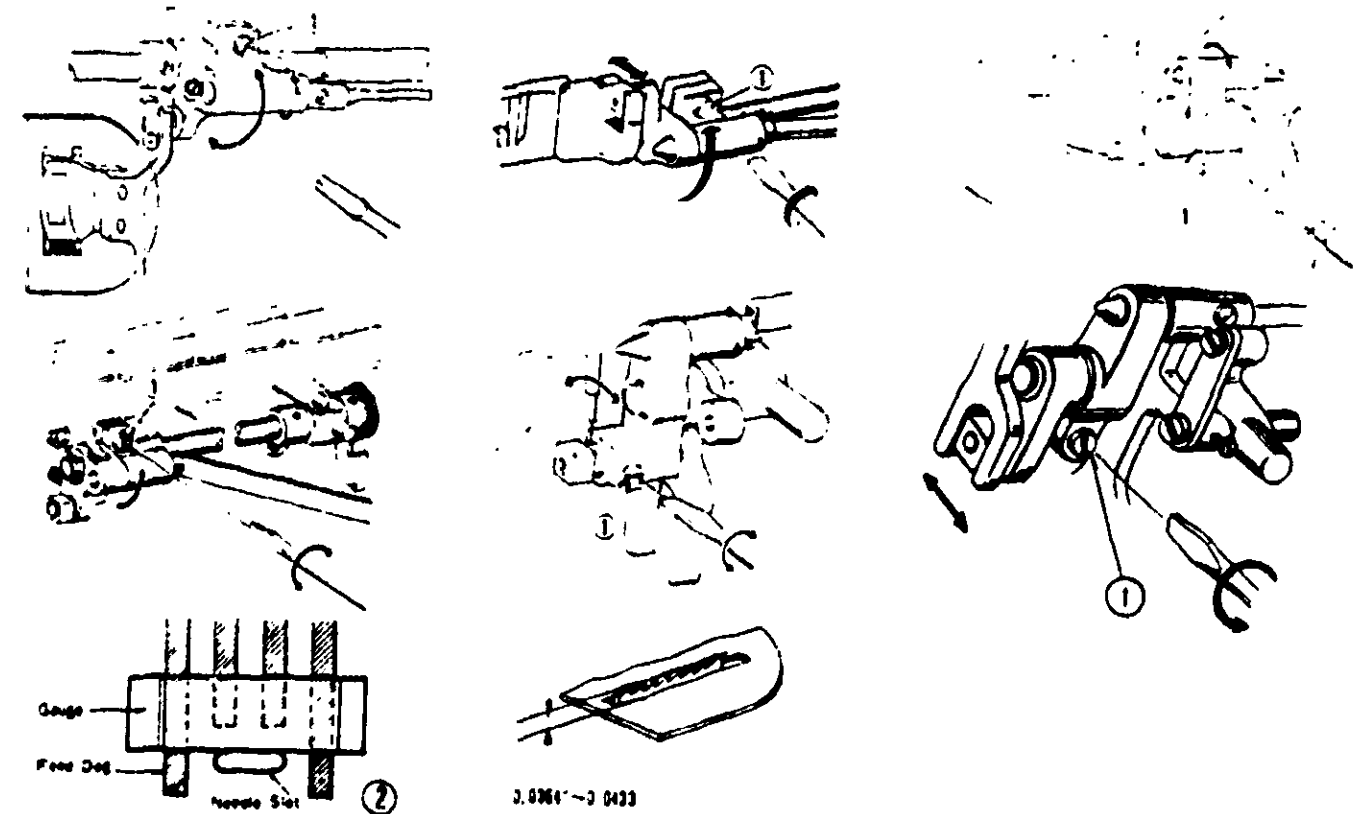
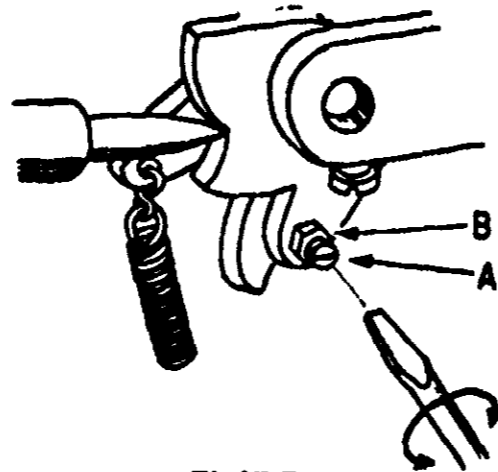


FIGURE E-1

**Needle Timing to Shuttle  
Needle Bar Height**  
(INSTRUCTION FOR RADIAL TIMING GAUGE)

**Zero-Feeding**

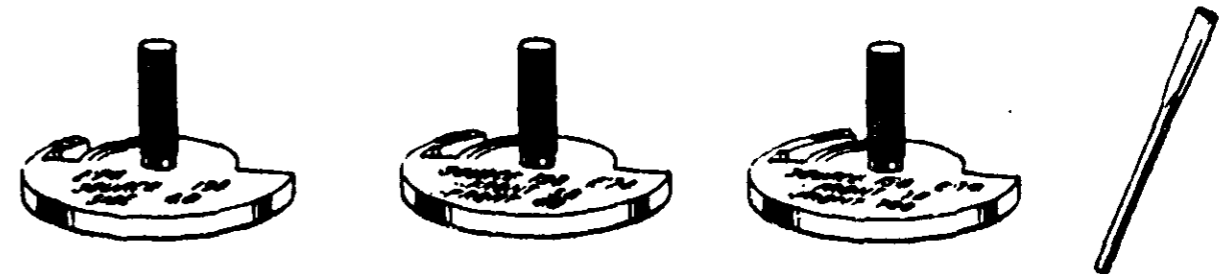
SET STITCH LENGTH CONTROL AT "0". TURNING HANDWHEEL CHECK TO SEE IF THE FEED DOG MOVES HORIZONTALLY. AT THIS POSITION THE FEED DOG SHOULD NOT MOVE. IF FEED DOG MOVES, LOOSEN THE NUT (B) HOLDING THE SET SCREW (A), AND TURN THE SET SCREW EITHER WAY. TIGHTEN SECURELY AFTER ADJUSTMENT.



**FIGURE F-9**

USE GAUGE	SOURCE 158	• FRONT 7.0	§ FRONT 7.0D	SOURCE 158	• FRONT 5.8	§ FRONT 4.8	SOURCE 158	§ FRONT 4.8	SOURCE 158
USE MARK	• FRONT 7.0	§ FRONT 7.0D		• FRONT 5.8		§ FRONT 4.0			SIDE 4.8
	180	825	13141	17530	182	18280	850	340	All Side
	181	18030	18180	17560	181	18000	10200	341	Face Shuttle
	182	18031	19130	17580	182	18001	10300	342	Models
	183	17010	19131	17570	880	18010	10301	520	
	820	17011	19140	17571	880	18011	10302	521	
	821	17012	19141	17572	880	18012	10304	522	
	822	17030	19142	17740	980	18020	10400	523	
	823	17031		17741	12110	18021	10401	540	
	824	17032			12310	18210	10402	541	
	17000	17033			13060	18250	10480	542	
	17001	17511			13180	18410	10500	880	
	17480	17540			13170	18490	10501	881	
	17510	18011			13180	18510	10800	882	
	18010	18020			13190	18520	18530	900	
		18021			13200	18640		901	
		18022			13201	18800		902	
		18023			13250	17200		903	
		18024			13380	17300		904	
		18030 X			13470	17310		905	
		18031 X			13471	17500		18000	
		18032 X			13570	17501			
		18033 X			13571	17520			
		18034 X			14000	17800			
		18120 X			14001	18310			
		18121 X			14002	18311			
		18121 X			14003	18400			
		18140			14100	18410			
					14101	18411			
					14300	18412			
					14301	18480			
					14310	18481			
					14311	18470			
					15140	18471			
					15180				
					15180				

The radial timing gauges and test pins, as illustrated below, are available through Department 208, Chicago only. The kit is identified as #89859



### Needle Clearance to Shuttle

The clearance "a," "b," "c," and the angle "d" are very critical points in relation to the needle timing to shuttle. However, these points are visually determined by using the Radial Timing Gauges.

**NOTE:**

No adjustment is allowed for "Dimension C" for the front-facing shuttle models. For adjustment for side-shuttle models, please refer to Figure G-3.

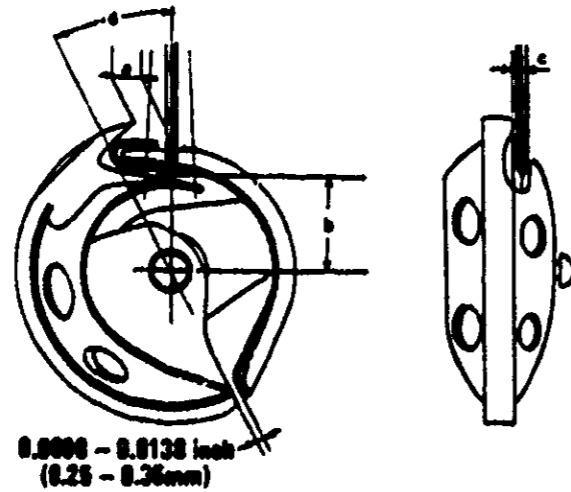


FIGURE G-2

### Zigzag Synchronization

Set stitch width control at maximum. Turning the handwheel, check and see if the needle side motion on the standard plane (0.0294 inch above the upper surface of the needle plate) at both needle positions

come within the engineering limit of 0.0138 inch. If not, loosen set screw (2) on the worm gear either direction. Tighten the screw (2) securely after adjustment.

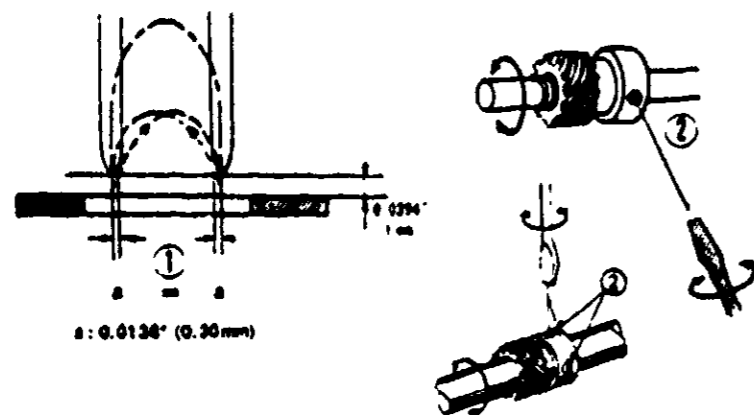


FIGURE H-1

### Straight Stitch Position

SET STITCH WIDTH CONTROL AT THE RED "S". CHECK TO SEE IF NEEDLE SWINGS BY MOVING THE ZIGZAG GUIDE BASE IN EITHER DIRECTION AS SHOWN. NEEDLE SHOULD NOT SWING. IF ADJUSTMENT IS NECESSARY, LOOSEN SCREW (1), PRESS THE ZIGZAG GUIDE BAR DOWNWARD SLIGHTLY AND THEN TIGHTEN SCREW (1). NOTE THAT THE ZIGZAG WIDTH ARM MUST BE KEPT IN POSITION STEADILY.

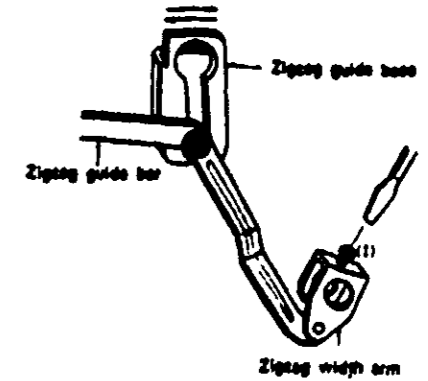


FIGURE I-6

### Automatic Reverse Stitching Stretch Stitch

Place the No. 20 metal cam in the machine. Set the special stitch dial at 8, stitch length control at 6, stitch width control at 4 and the special stitch variegator at the white dot. Place a piece of folded paper over the feed dogs. Check and see if the forward and reverse stitches are equal by zig zag stitching on the paper. If the pitch of the stitch in reverse stitching is shorter than in forward, set the variegator at the white dot and loosen screw (A) on the variegator cam. Turn the variegator to the red dot and loosen screw (B), holding the cam with the left hand. Adjust the cam position in the direction (C). If the pitch is longer, adjust the cam position in the direction of (E). Tighten screws A and B securely after adjustment.

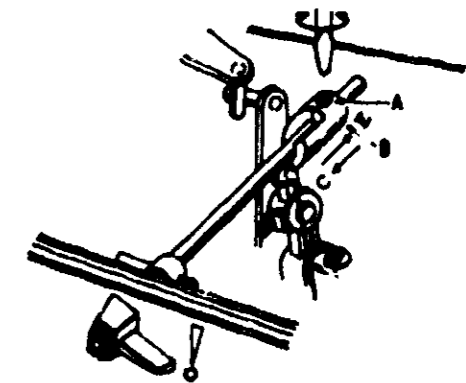
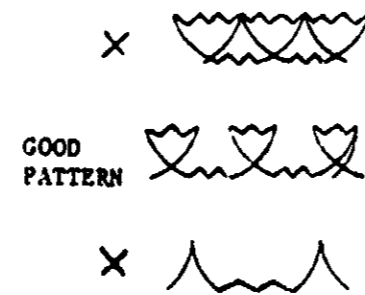
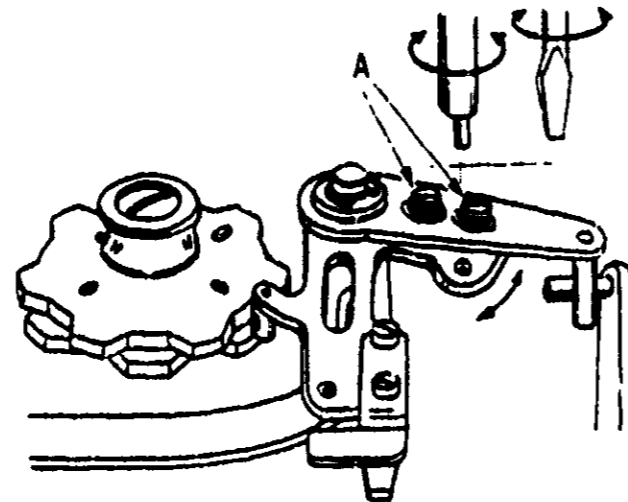


FIGURE J-13

**Automatic Mechanism  
Cam and Cam Follower Mechanism**

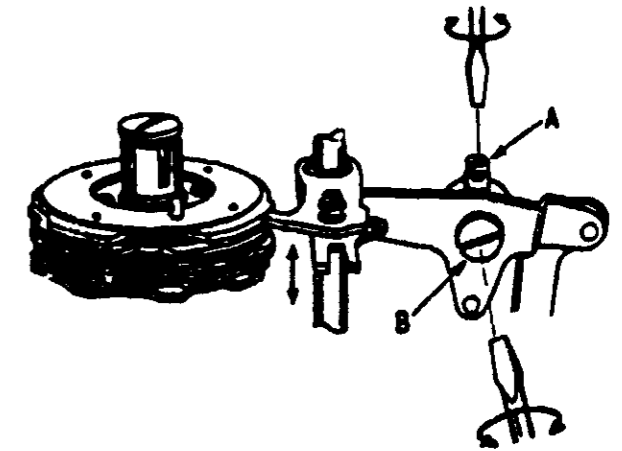
Set zigzag width control at 4, special stitch dial at CAM, stitch length control at 6 and special stitch variegator dial at M. Place #21 pattern cam into the machine and observe for correct pattern. If incorrect adjust the machine in the following way. Loosen 2 set screws (A), insert eccentric tool into the hole. Turn the tool either direction to move the plate (C) as illustrated above. Tighten the screw (A) securely after adjustment.



**FIGURE K-13**

**Cam Selector Guide Plate Setting**

Set the stitch length dial at 6 and the special stitch dial at CAM. See if the cam follower aligns with a cam as illustrated. If not, align by loosening screw (A) and turning the eccentric screw slightly in either direction. Tighten screw (A) securely after adjustment.



**FIGURE M-4**