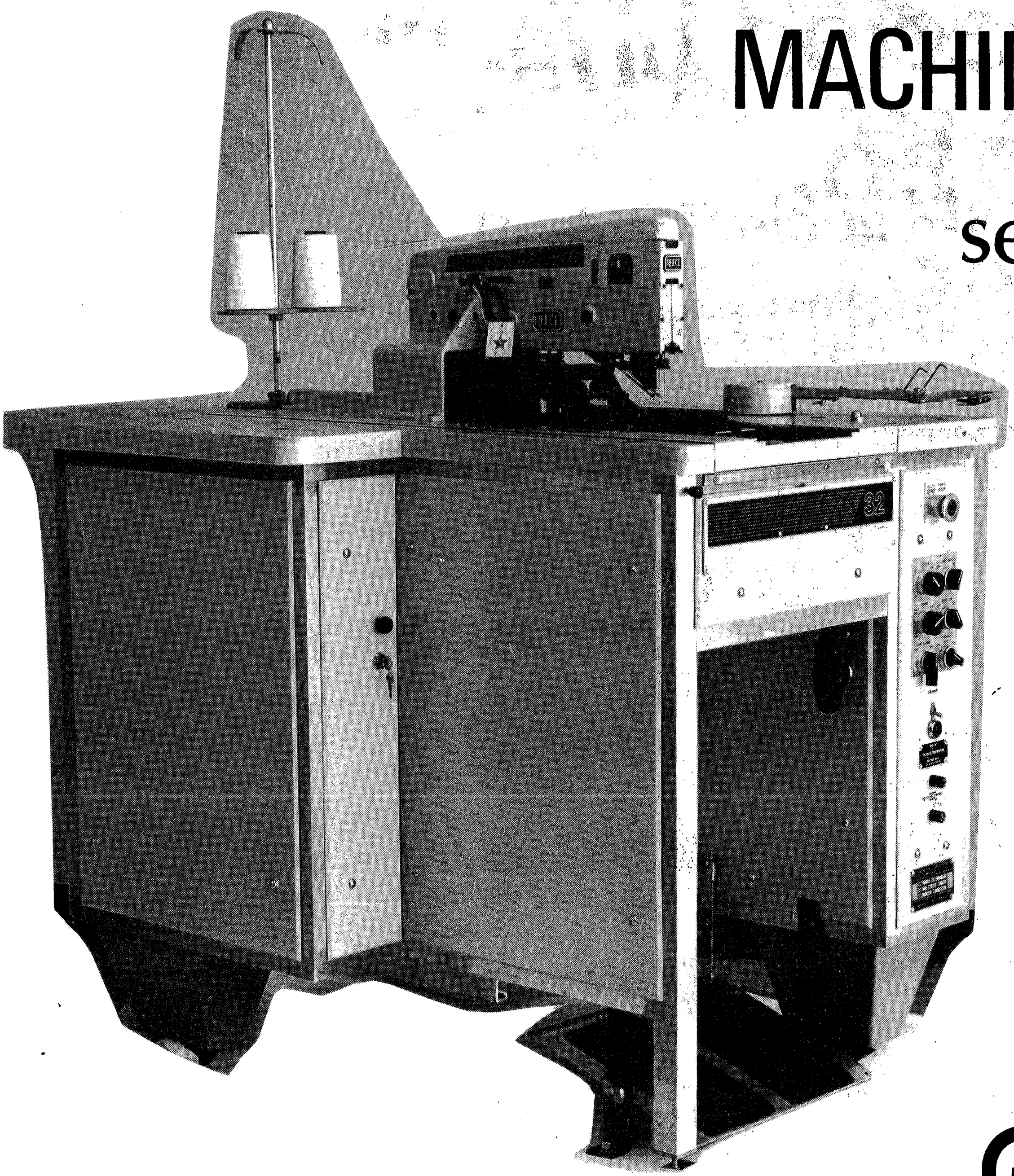
SERVICE MANUAL

POCKET WELTING MACHINE

series 32



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No safeguard, safety applicance, or device attached to or forming an integral part of this machine shall be removed or made ineffective except for the purpose of making immediate repairs or adjustments.

Any such safeguard, safety appliance, or device removed or made ineffective during the repair or adjustment of such machine shall be replaced immediately upon completion of such repair or adjustment.

No machine shall be operated until such repairs or adjustments have been made and the machine is in good working condition.

Safety glasses should be worn when operating the machine.

DECEMBER 1989

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Gorham Industrial Park
Gorham, Maine 04038

"Precision and Quality Since 1881"

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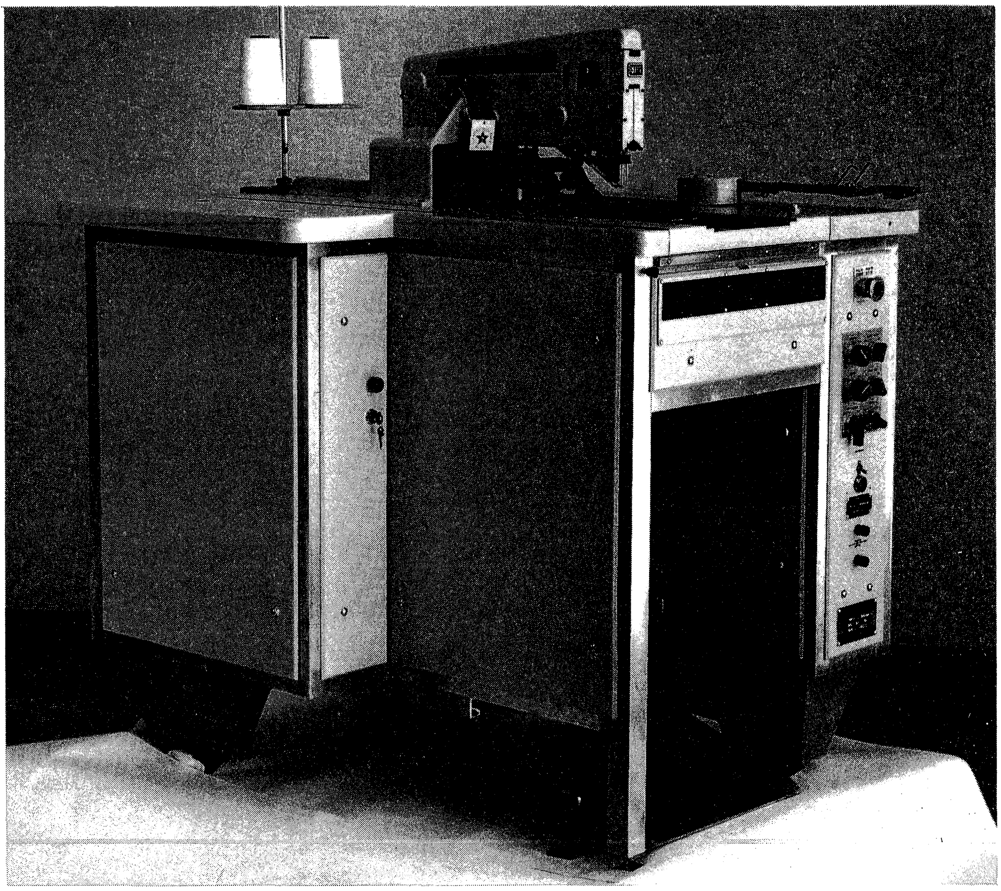
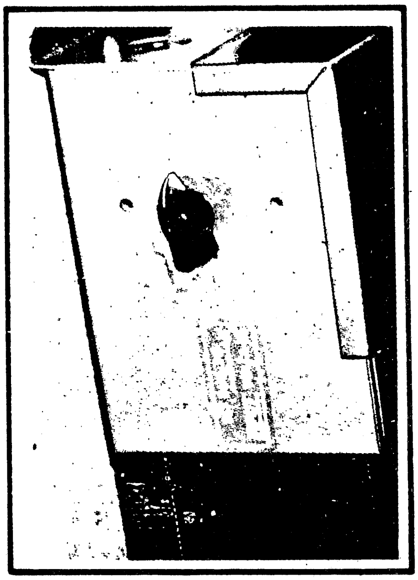


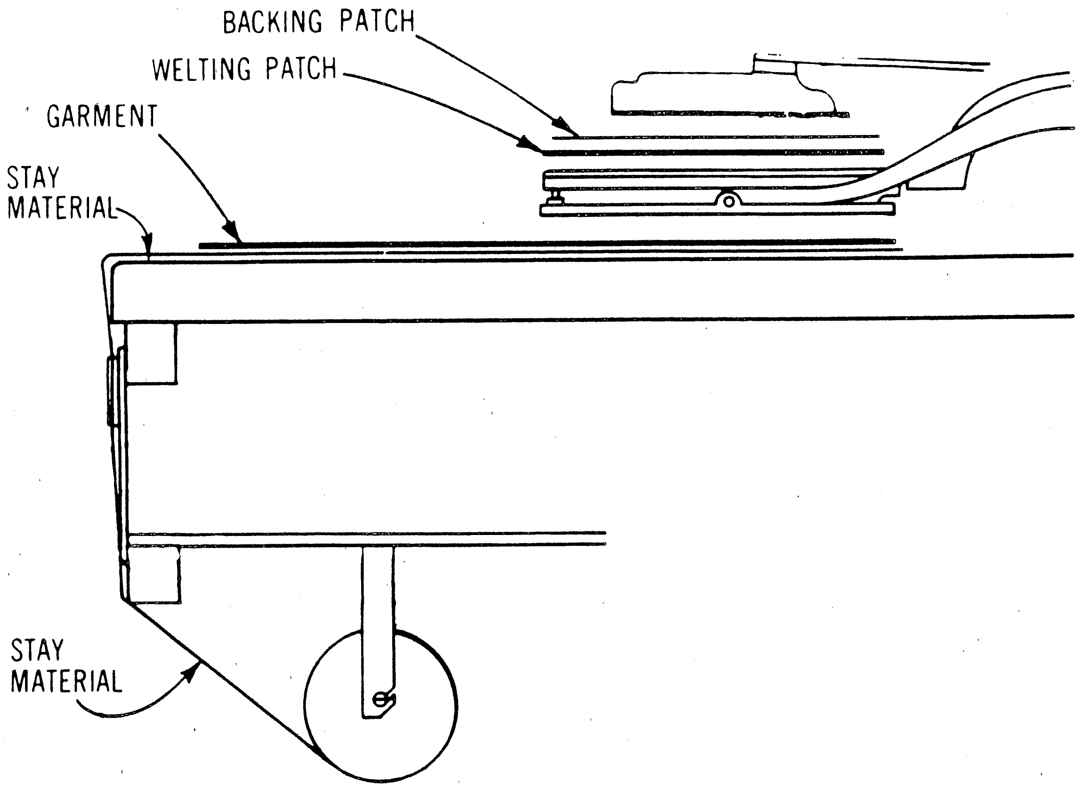
TROUSER MODEL

COAT MODEL ALSO AVAILABLE

SETTING LINE VOLTAGE



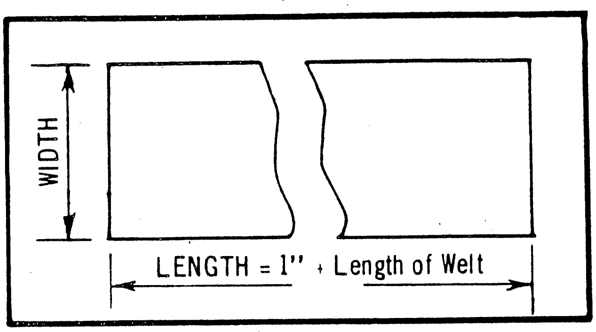
Before connecting the machine to an available outlet, accurately check incoming line voltage with a voltmeter and set dial of Adjustable Transformer to the closest setting corresponding to the incoming line voltage.



Welting material consists of Welting Patch (garment material), Backing Patch (Pellon L-35) and Stay Material (cotton Silesia). For widths of welting material, refer to chart on Page A3.

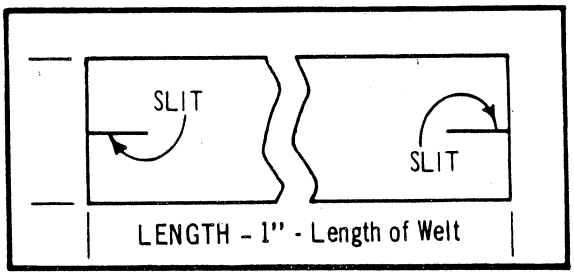
WELTING PATCH-(Garment Material)

Welting patch length is one inch longer than actual welt. To produce the best effect, patches for horizontal welts should be cut crosswise to selvage except where stripes in the material are over 1/4 of an inch in width. For vertical or diagonal welts, patches should be cut parallel to the selvage.



BACKING PATCH(Pellon)*

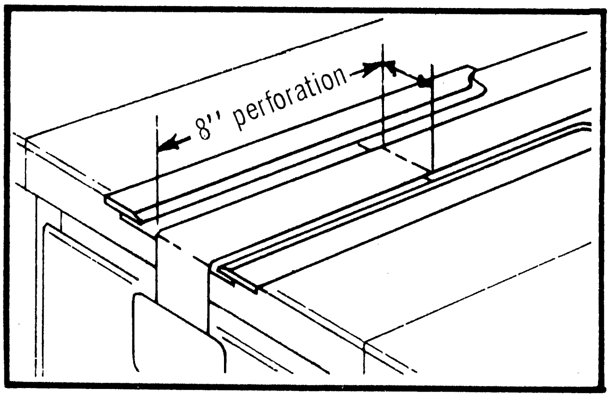
Backing Patch length is the same as Welting Patch, one inch longer than the welt. For double welting use patches with 1/4 of an inch end slits. For single welting and knits, use patches without end slits.



* Pellon L-35 backing material is recommended. This material may be cut in your own plant or may be obtained precut from the Pellon Corp., N.Y., N.Y. Specify Reece Welting black or white, length, width and with or without end slits.

STAY MATERIAL

Stay Material is used for pockets on coats and coat linings. The pocket bag is used in place of the stay material in making trouser pockets. Stay material should be (cotton Silesia) with sizing. This material is available in rolls of various widths (refer to chart) with perforations every eight inches. The perforations aid in allowing the operator to separate the stay material while the machine is sewing. Ask your Reece Representative for name and address of suppliers.



WELTING MATERIAL WIDTHS

SIZE	WELTING PATCH	BACKING PATCH	STAY MATERIAL
3/8"	2-1/2" to 2-3/4"	2-1/2" 2" for Trouser Application	2"
7/16"	2-1/2" to 2-3/4"	2-1/2" 2" for Trouser Application	2"
1/2"	2-3/4" to 3"	2-1/2" 2" for Trouser Application	2"
5/8"	3-1/4" to 3-1/2"	3-1/4"	3"
3/4" Overlapping Welt	4" to 4-1/4" 5-1/4" to 5-1/2"	3-1/2" 5"	2" - 3" 2" - 3-1/2"
7/8" Single Welt	4-1/4" to 4-1/2"	3-3/4" 4"	3" 3-1/2"

APPLICATIONS

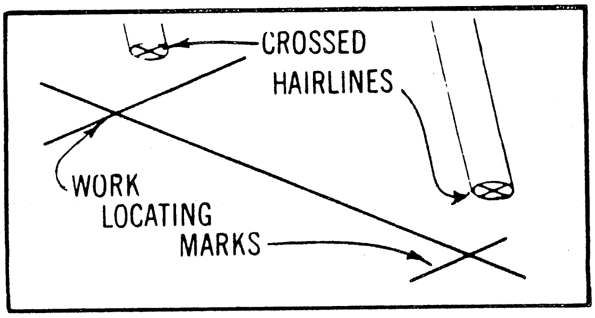
These lanterns were specifically designed to facilitate work location and increase positioning accuracy. They project light slots on the garment which accurately fix the location for positioning work-locating marks, such as drilled holes, which can be applied to garment on the cutting table.

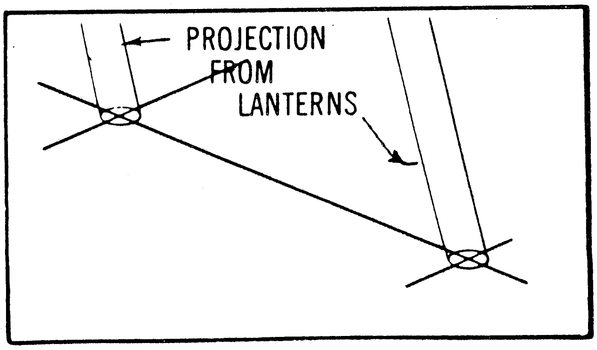
Other types of work-locating marks can, of course, also be utilized; such as darts, seams, slits, chalk marks, etc.

In the production of double-welt sack coat pockets, for example, utilizing drilled holes for locating marks, the forward lantern should be positioned so that when the forward hole is located in the hairline cross-point, it will accurately establish the starting point on every garment. The rear hole will provide accurate pocket alignment as long as it falls anywhere along the vertical light slots of the rear lantern. Thus, the same hole-drilling pattern may be used on double-welt work for all sizes since pocket length is controlled by the Series 32 machine.

Caution should be exercised to avoid drilling holes in the tab areas of the welt as drilling may shred or so reduce a tab area that no effective tab can be formed.

In single-welt work, the rear hole should be accurately located also since it becomes the starting point on alternate pocket operations.





MAINTENANCE & ADJUSTMENTS

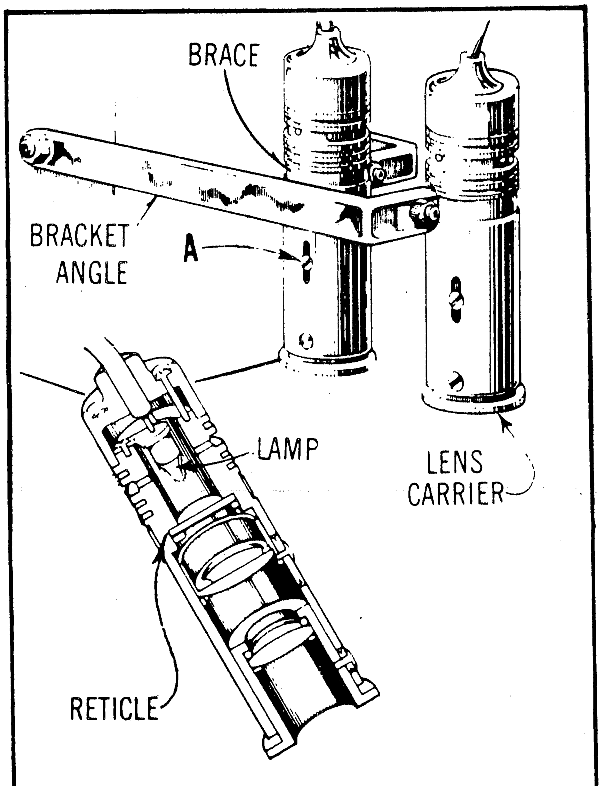
1. To focus light slots, move lens carriers secured by screws (A).

2. Vary lantern bracket angle and bend if necessary so that folding brushes do not obstruct lantern projection when clamp foot is raised.

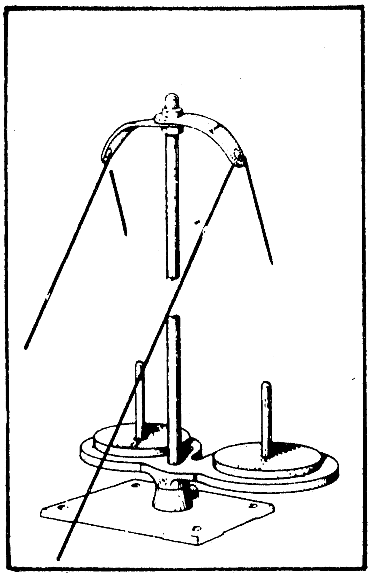
3. To square light slots with the work, loosen brace and rotate light as necessary.

4. Lamp should be centered over the reticle to centralize reticle in projection, and to obtain maximum intensity.

NOTE: Observe that on some materials the light slots are clearer as the garment is being moved into position, than when the garment rests in position. Therefore, while setting lanterns, use a material on which the light slots are clearly visible in rest position. The materials used in production need not be used when setting lanterns.

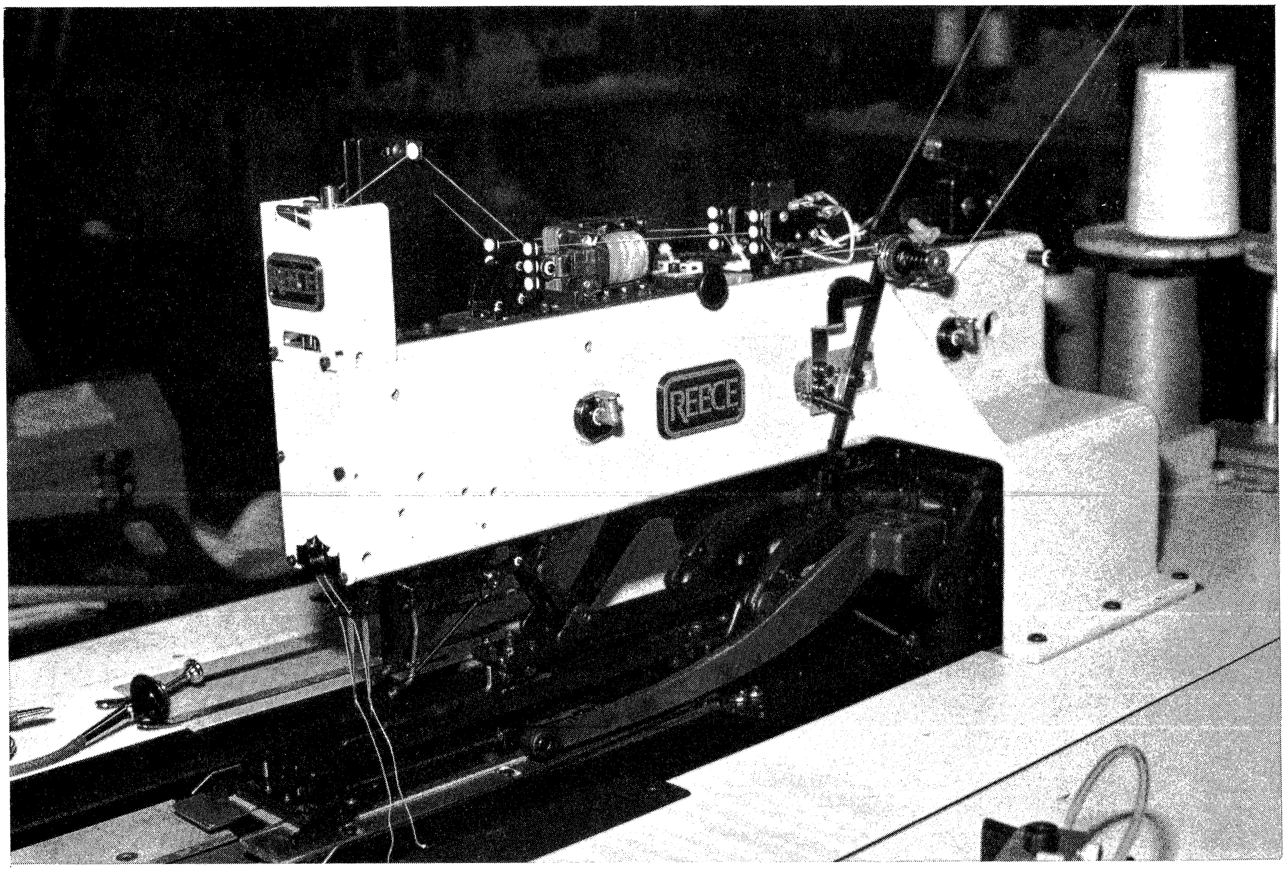


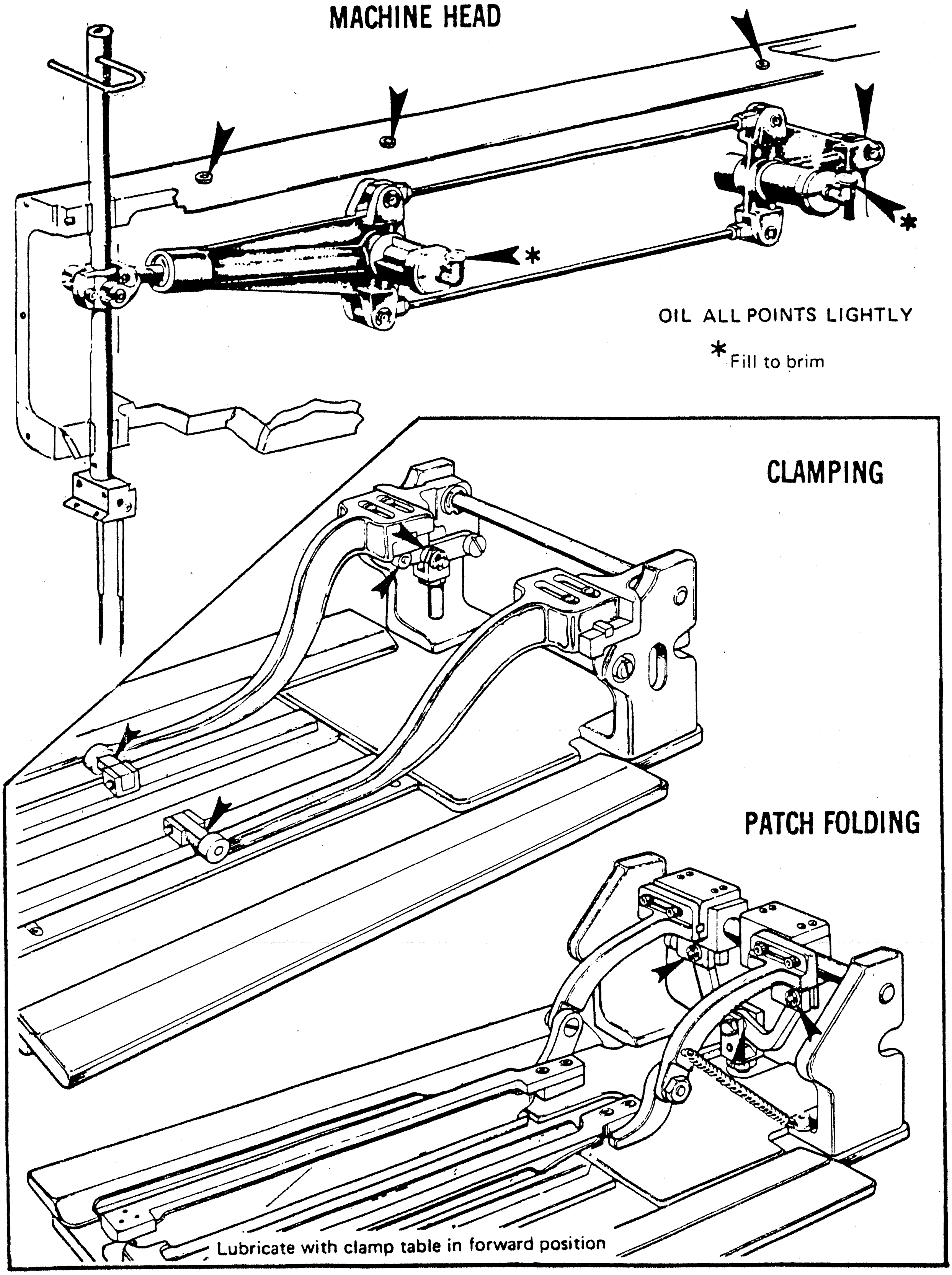
Drill hole lanterns placed under Bedplate cast a fluorescent glow through the garment to illuminate the drill hole as the garment passes over the bedplate opening.



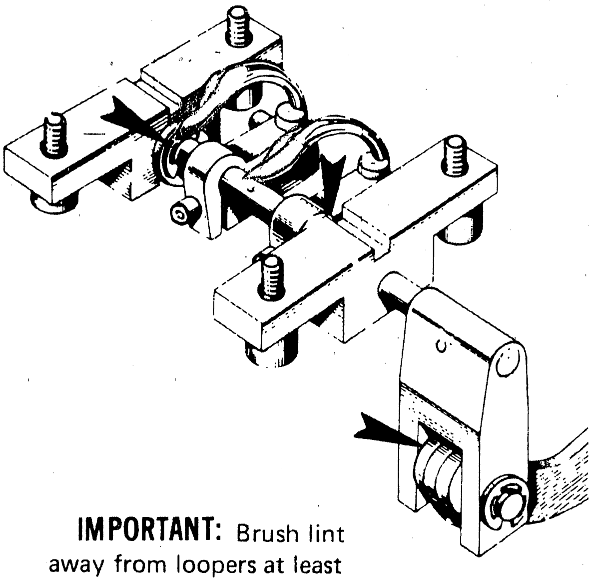
Thread color should be a basic shade to match the garment material, but it need not be an exact match.

Thread both needles from left to right.




MACHINE HEAD
OIL ALL POINTS LIGHTLY
* Fill to brim
CLAMPING
PATCH FOLDING
Lubricate with clamp table in forward position

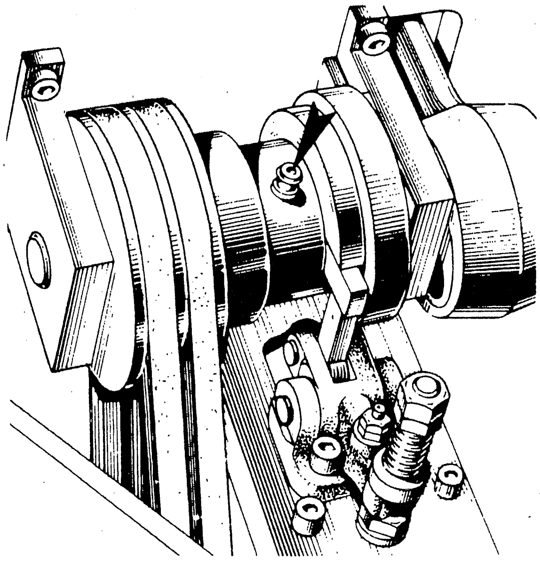
LOOPERS



IMPORTANT: Brush lint away from loopers at least twice daily

CLUTCH

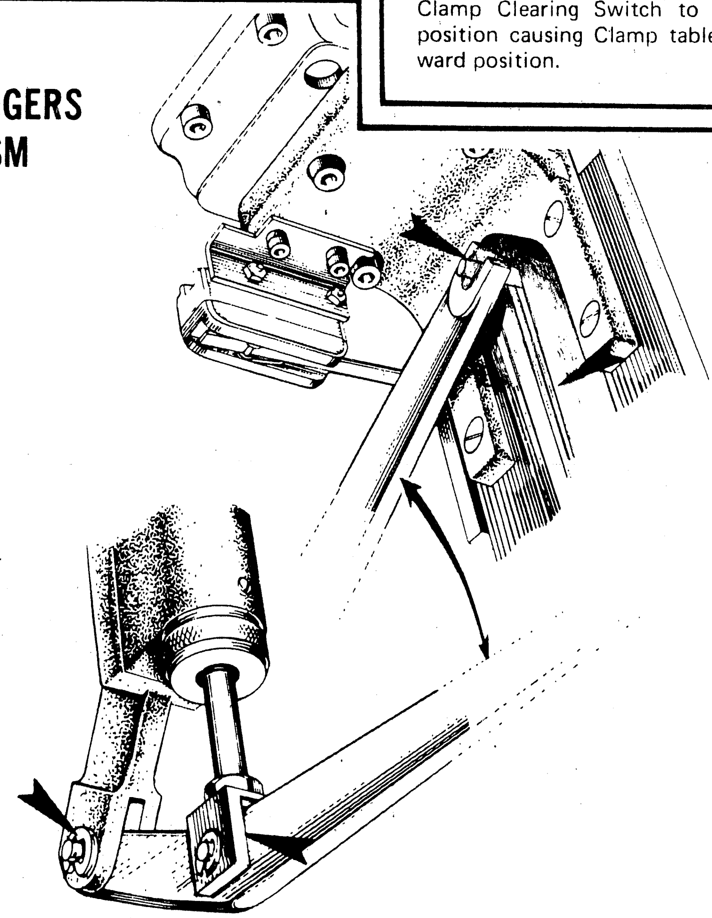
Lubricate weekly or when squeal develops in the Clutch



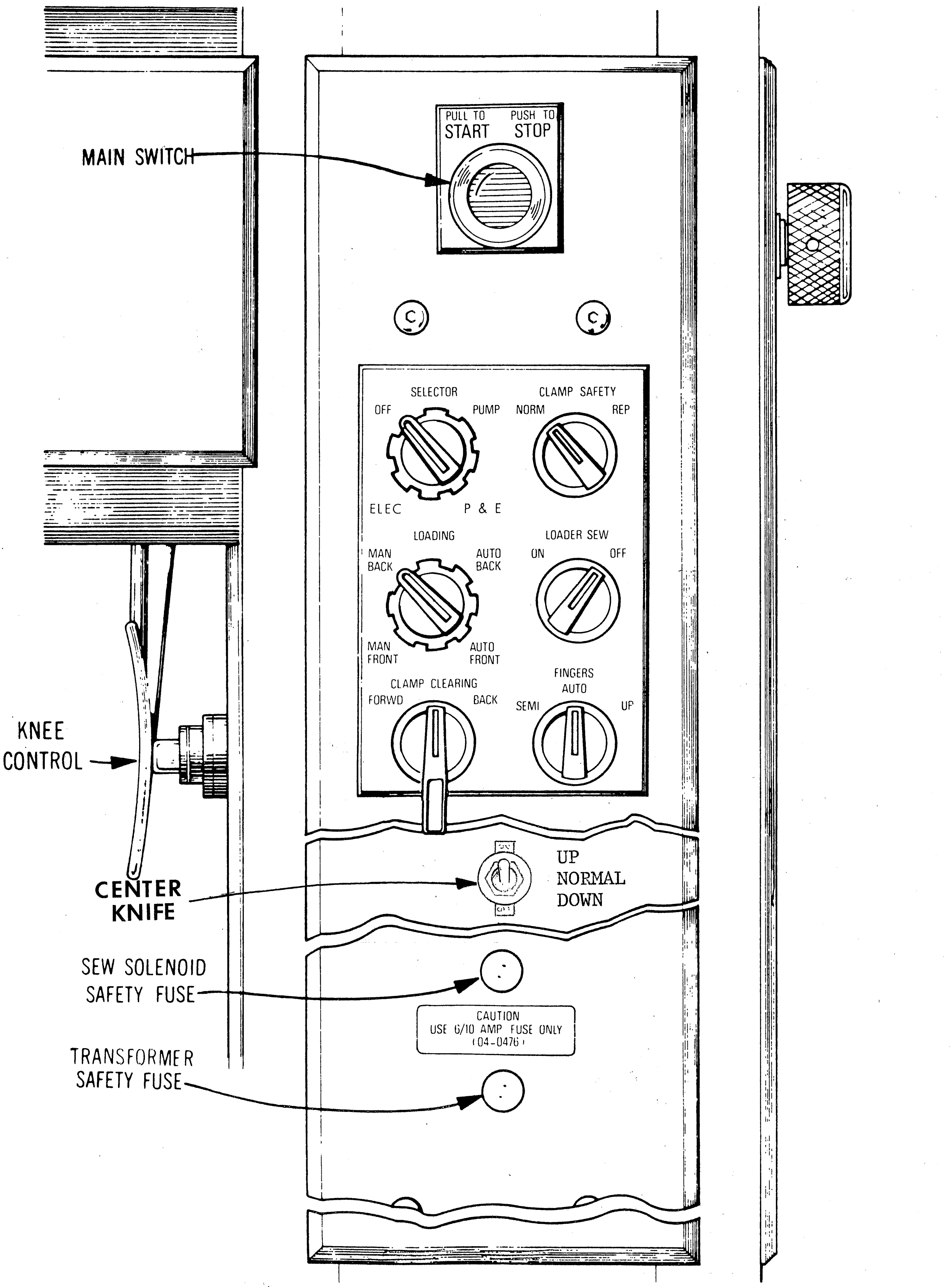
Apply grease to fitting until it begins to come out from sides of Clutch Bearing.

NOTE: To easily reach grease fitting, turn Clamp Clearing Switch to "Forwd" (forward) position causing Clamp table to move to its forward position.

TURNING FINGERS MECHANISM



CONTROL PANEL



MAIN SWITCH (Start/Stop)

To start machine -- pull out.

To stop machine -- push in.

KNEE CONTROL

To manually activate Sewing Cycle with Loading Switch in "Man Front" or "Man Back" position

To manually activate Tab Knives with the Fingers Switch in "Semi" position

To manually activate Loader Motor for repair purposes.

SELECTOR SWITCH

OFF POSITION ___ With Main Switch pulled out, the pump, motor and electricity are turned off, but the table light remains on.

PUMP POSITION __Electricity is off while pump and motor remain on. This position is used for repairing machine and to turn off Sewing Cycle in event of thread breakage.

P & E POSITION_ Pump is operating and all electrical components are set to operation. This is the position for regular machine operation.

ELEC POSITION ___ Electricity is on. Pump and Motor are off. Used for unlocking drive shaft. This is also used by servicemen for repairing and checking switches.

CLAMP SAFETY SWITCH

NORM POSITION ________ Clamp arms function normally.

REP POSITION __________ Used when repairing welts. Prevents clamp foot from raising and prevents machine from sewing.

LOADING SWITCH

MAN BACK POSITION _______ Used when loading material in the Back position. Also for manual operation of clamping, patch folding and sewing.

MAN FRONT POSITION ______ Used when loading material in the Front position. Also for manual operation of clamping, patch folding and sewing.

AUTO FRONT POSITION ____ Used in this position for Automatic Front Loading.

NOTE: Clamp Clearing switch will not operate when switch in in this position. To use Clamp Clearing switch for clearing trapped air from hydraulic lines, first set this switch to "MAN FRONT" or "MAN BACK". Also set Fingers switch to "SEMI". With switches set as indicated, air is cleared from lines by alternately turning Clamp Clearing switch between its "FORWARD" and "BACK" positions.

AUTO BACK POSITION — Not recommended.

LOADER SEW SWITCH

ON POSITION _________ Functions only when machine is in automatic position. Machine will sew automatically when activated.

OFF POSITION ________ Machine will not sew automatically.

CLAMP CLEARING SWITCH

FORW POSITION ______ Clamp table moves to the forward position.

BACK POSITION ______ Clamp table moves to the back position.

FINGERS SWITCH

SEMI POSITION_ Tab Knives will not rise until Knee Switch is activated. This position should be used until the operator becomes proficient in operating the machine.

AUTO POSITION_ Tab Knives will rise and retract automatically following the sewing cycle.

UP POSITION ________ Tab Knives stay in the "UP" position at the end of the sewing cycle. Used when replacing Tab Knives.

CAUTION: Never turn machine off when Tab Knives are being held in the UP position. Damage to the Brush Blades and/or the Tab Knives may result.

CENTER KNIFE SWITCH

NORMAL___Center Knife will fire upward to cut material (comes on only during sew cycle). This is the position for regular machine operation.

UP_______Center Knife will immediately fire upward and remain activated. This position is useful for servicing the Center Knife.

DOWN_____Center Knife will immediately fire downward and remain deactivated.

A10 POSITIONS OF CONTROL PANEL SWITCHES FOR VARIOUS OPERATING PROCEDURES

OPERATING PROCEDURES	CONTROL PANEL SWITCHES							REMARKS
	Start Stop	Selector	Clamp Safety	Loading	Loader Sew	Clamp Clearing	Fingers	
Manual Front Loading	Start	P & E	Normal	Manual Front	On or Off	Center	Auto. or Semi.	Clamp Arms will raise auto. at end of cycle if Fingers Sw. is on "Auto or Semi."
Manual Back Loading	Start	P & E	Normal	Manual Back	On or Off	Center	Auto. or Semi.	Clamp Arms will not raise auto. at cycle end if Fingers switch is on Auto or Semi.
Automatic Front Loading	Start	P & E	Normal	Auto. Front	On	Center	Auto.	Operate the clamp to back position by pedal. Auto. cycle starts when pedal is released.
Auto. Back Loading	NOT RECOMMENDED							
To clear machine of air in hydraulic system	Start	P & E	Normal or Repair	Manual Front or Back	On or Off	Forward and Back	Semi.	Operate clamp clearing switch forward and back. Machine cannot be cleared in auto. position.
To operate patch loader arm manually for aligning, etc.	Start	P & E	Repair	Manual Front or Back	On or Off	Center	Any Position	Clamp all the way back. Depress knee switch to start. Release knee switch to stop.
To release drive shaft to operate manually	Start	E	Normal	Manual Front or Back	On or Off	Center	Any Position	Clamp all the way back. Depress knee switch.
To lock shaft	Start	E	Repair	Manual Front or Back	On or Off	Center	Any Position	Turn handwheel to lock.
To make repairs due to thread breaking, etc.	Start	P & E	Repair	Any Position	On or Off	Center	Any Position	Remove patch when clamp is forward. Operate clamp to back position and insert new patch. Return clamp safety switch to normal.
To raise fingers for changing tab knives	Start	P & E	Normal or Repair	Any Position	On or Off	Center	Up	Clamp all the way forward.
To return fingers to down position.	Start	P & E	Normal or Repair	Any Position	On or Off	Center	Auto. or Semi.	

OPERATING INSTRUCTIONS

MACHINE WARM-UP

1. Pull out Main Switch and turn Selector switch to "P & E", ten minutes before starting regular operation.
2. Set Fingers Switch to "Semi" position.
3. Turn Clamp Clearing Switch alternately from "Forward" to "Back" position, several times to clear air from hydraulic lines.
4. Sew and examine a welt on scrap material before starting regular work.

OPERATING PROCEDURES

MANUAL-BACK LOADING

1. Fully depress pedal and hold. This will raise the clamp foot and send the clamp table to its back (sewing) position.
2. Position stay or pocketing material.
3. Position garment over stay material.
4. Raise pedal slightly until clamp drops but folding brushes remain open and patch guide is in up position.
5. Place welt and welt backing material on brush folders and under patch guide.
6. Raise pedal all the way to fold welting material.
7. If threads are not retrieved by thread pick-up fingers, draw the thread forward with tweezers hold with light tension — release as machine starts to sew.
8. Press Knee Switch to start sewing.
9. Set Fingers Switch to Semi position and press Knee Switch again for cutting tabs.

   Note: To set machine for Automatic tab cutting, refer to Control Panel page. Finger Switch, Automatic position.
10. To extract material, depress pedal until clamp foot rises.

MANUAL-FRONT LOADING

1. Clamp foot is automatically held in raised position and Clamp table will remain in its forward position.
2. Position stay or pocketing material.
3. Position garment over stay material.
4. Depressing and holding pedal all the way down, will cause clamp foot to drop and Clamp table to travel to its back (sewing) position.
5. With pedal depressed, folding brushes remaining opened and patch guide remaining in its up position, place welt and welt backing material on brush folders and under patch guide.
6. Raise pedal all the way to fold welting material.
7. If threads are not retrieved by thread pick-up fingers, with tweezers or similar device, draw them forward and hold with light tension -- release as machine starts to sew.
8. Press Knee Switch to sew.
9. Set Fingers Switch to Semi position and press Knee Switch again for cutting tabs.

   Note: To set machine for Automatic tab cutting, refer to Control Panel page, Fingers Switch, Automatic position.
10. Upon descent of turning fingers, clampfoot will automatically rise, allowing material to be removed.

AUTOMATIC FRONT LOADING POSITION

With the machine in the normal stop position (clamp table forward, clamp foot raised, the welt and welt backing material placed in the patch tray.)

1. Trouser pocketing is placed under clamp foot.

2. Trouser leg is placed under clamp foot.

3. Pedal is momentarily depressed, lowering the clamp foot, sending the clamp table to its back position, and activating the automatic cycle.

   Upon actuation of the Automatic circuit, the operator should pick up the welt patch and patch backing to insert in patch tray for the next sewing cycle. The operator should also have sufficient time to pick up the trouser pocket for the next sewing cycle and as soon as the trouser is ejected, be ready to position the pocketing.

4. When the clamp table reaches its back position, the patch loader will load the welt and welt backing onto the folding brushes.

5. As the automatic patch loader is returning to its rest position, the machine will automatically start sewing.

   If the welt patch is not properly loaded into the folding brushes, pressing the pedal will prevent the machine from starting to sew.

   If the machine does not start sewing, the patch loader arm will continue to oscillate. CAUTION – Do not shut machine power off by pushing in Main Switch. Doing so will cause clamp table to move to its forward position and may cause damage to the patch loader.

   If machine does not start sewing, depressing pedal will stop the patch loader arm from oscillating. Then turn loading switch to its Manual-Front position. Turn machine off.

6. The automatic patch loader will stop when the patch loading arm reaches its rest position.

7. Upon the automatic completion of the sewing and turning fingers cycles, the clamp foot will rise and the actuation of the air ejectors will remove the trousers from the machine.

8. The trouser pocket for the next cycle should be held and readied for positioning as soon as the work is ejected.

After Step #3, the machine functions are completely automatic providing for increased production by allowing the operator to prepare for the next cycle while the machine is producing the welt.

PROCEDURE FOR RESEWING A WELT

MANUAL FRONT- MANUAL BACK

1. Prevent Turning Fingers from rising:

   If the Fingers Switch is set on "Auto", quickly pressing the Knee Switch before sewing cycle is completed, will prevent Turning Fingers from rising. Turning Selector Switch to "Pump" will stop the sewing cycle and will also prevent the Turning Fingers from rising.

2. Prevent Clamps from rising:

   When Clamp Table reaches the forward position, set Clamp Safety to "Rep" (repair) position. This will prevent Clamp Foot from rising and losing position of garment, and will also open sewing circuit as a safety feature when rethreading the machine.

3. Remove incompleted Patch and Patch Backing . . . If Selector Switch was used to prevent the Turning Fingers from rising it should now be turned back to the "P & E" position.

4. Depress pedal to return clamp table to its back (Start Sewing) position.

5. Rethread Machine.

6. Insert new Patch and Patch Backing material.

7. Set Clamp Safety Switch to "Norm" and resume production of welt.

AUTOMATIC PATCH LOADING

1. Prevent Turning Fingers from rising . . .same as No. 1 above.

2. Set Loading Switch to "Man Front".

3. Prevent Clamps from rising . . . same as No. 2 above.

4. Remove incompleted Patch and Patch backing . . . same as No. 3 above.

5. Insert new Patch and Patch Backing material in Patch Tray.

6. Depress pedal to return clamp table to its back "Start Sewing" position.

7. Rethread Needle.

8. Depress and hold pedal to open patch folders.

9. Set Clamp Safety Switch to "Norm" position.

10. Set Loading Switch to "Auto Front" position.

11. Release pedal and resume production of welt.

NOTES

ELECTRICAL TROUBLESHOOTING & REPAIR

BASIC TROUBLESHOOTING PROCEDURES

Check that Control Panel Switches are set for the desired Operation Procedure. See Page A10. Determine which function is not operating.

Determining whether Electrical, Hydraulic or Mechanical System or a combination of these systems are at fault.

If involved solenoid is not operating when trying to activate function, the cause of malfunction may be electrical. Refer to Electrical Trouble-shooting Section and check the involved circuit.

If involved Solenoid is operating, the cause may be hydraulic. If determined that pump pressure exists, the trouble is then mechanical. Refer to the Mechanical & Hydraulic Section.

IMPORTANT: If solenoids do not operate, attempt to actuate them manually. If plunger snaps into place and it is determined that the solenoid is energized, the trouble is then mechanical. Refer to the Hydraulic & Mechanical Section.

INTRODUCTION TO ELECTRICAL TROUBLESHOOTING & REPAIR

GENERAL APPROACH

The general approach to isolation of faults in the Reece Series 32 Welting Machine is to identify the circuit in which a malfunction occurs, and to identify the faulty component which is causing the malfunction.

The electrical circuits are grouped functionally, but not physically, according to the function they perform. Each major function is performed by a hydraulic or electrical circuit which is actuated by an electrical solenoid. Movement and timing of the functional parts are initiated by switches placed to be actuated in the desired operational sequence.

The ten major functions that are performed in the Reece series 32 Welting machine are illustrated by wiring diagrams. The actual circuits are shown in the wiring schematic on fold out III

The circuits are isolated by the functions they perform as follows:

1. Clamp Circuit
2. Clamp Table Circuit
3. Patch Folding Circuit
4. Patch Loader Motor Circuit
5. Sew/Center Dense Circuit
6. End Dense Circuit
7. Stop Circuit
8. Thread Pickup Circuit
9. Tab Fingers Circuit
10. Unloader Circuit
11. Center Knife Circuit

Examination of the ten wiring diagrams can provide a basic understanding of their electrical functions. The electrical functions are presented in the normal operational sequence of the machine. When a function cannot be produced in normal operation, one of the components (or more) in that particular wiring diagram can be faulty.

For example, if the clamp will not raise when it should, look in the Clamp Circuit. If the turning fingers will not raise (or lower) look in the Turning Fingers diagram. The same approach should be taken for each apparent failure to function.

A procedure for testing the circuits to locate a faulty component is presented in the troubleshooting charts. This procedure is keyed to the diagrams and sequential steps by the following code:

For testing malfunctions that are general to the whole machine, the letter G followed by a sequential number identifies the procedural step, G1, G2, G3, etc.

For tests applicable to a particular circuit, the procedural step is identified by a number, from 1 to 10, indicating the circuit being tested in accordance with the list of diagrams above, followed by a sequential letter for each step. The test procedure steps in the Clamp Circuit are 1A, 1B, 1C, etc., and in the Turning Fingers Circuit they are 9A, 9B, 9C, etc. In the End Dense Circuit, the steps are numbered 6A, 6B, 6C, etc.

If a voltage check is specified, the step number is enclosed in a circle 3D, to indicate that power is on; if a resistance or continuity check is specified, the step number will be enclosed in a square $\boxed{4G}$ indicating that power is off. Procedures for making voltage and resistance checks are given in paragraphs following.

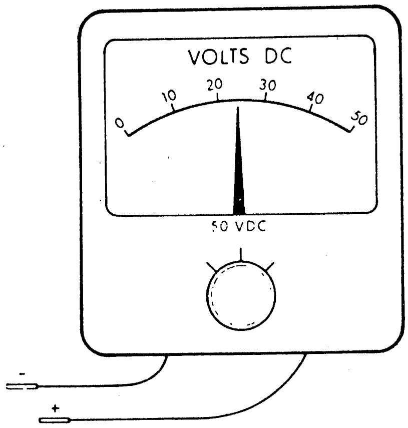
Wherever these step numbers are noted, they refer to the same step and the same procedure. Those appearing on the wiring diagrams correspond to the same numbers on the pictorial diagrams. On the barrier terminal blocks, the left side is Y, numbered 1Y through 20Y, and the right side is Z, numbered 1Z through 20Z. The circuit board plug terminals are the test points and are numbered from TP1 through TP35 (The letters following these numbers are color codes.)

WIRE COLOR CODE

W	=	White
Y	=	Yellow
O	=	Orange
R	=	Red
P	=	Pink
V	=	Violet
BL	=	Blue
G	=	Green
GY	=	Gray
BR	=	Brown
BK	=	Black

VOLTAGE CHECKS

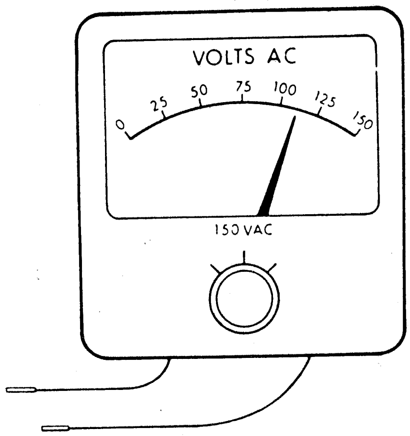
All dc voltage checks in the Reece Series 32 Welting Machine are made with respect to ground. Any standard multimeter or vacuum tube voltmeter can be used, having scales that cover the 24 volt dc and 115 volt ac ranges. It is suggested that a meter with a 50 or 60 volt dc scale and a 150 volt ac scale be used. This brings normal readings to midscale where they are most accurate and easy to read.



The safest practice in making voltage checks is to make the ground connection, either with an alligator clip lead or the white test jack from 14Z, with the power turned off. Then turn on the power and set up the condition specified in the troubleshooting chart. When the condition has been set up, touch the positive (red) probe to the specified test point or the specified terminal of the barrier terminal block.

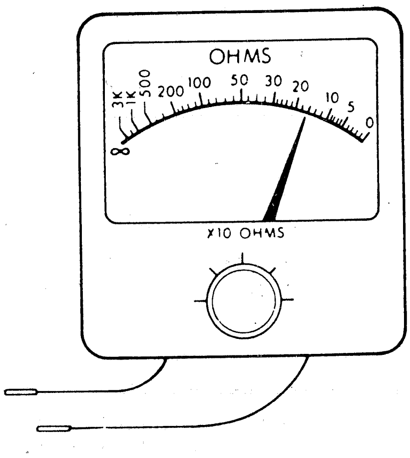
When measuring 24 volts dc, all voltages are positive with respect to ground, so the meter should be set to a dc scale, with the negative probe connected to ground; otherwise the pointer will deflect in the wrong direction and rest hard against the stop.

When checking the 115 volt ac circuits, use extreme caution as the line voltage can be dangerous. Polarity does not have to be observed when measuring ac; the black and red probes are interchangeable. Normal operating voltage can vary from 115 to 125 volts ac.



CONTINUITY CHECKS

Continuity checks are made with power off and the meter on the ohms scale. The x10 scale is recommended for all resistance and continuity checks in the Reece Series 32 Welting Machine. Much of the cir-



cuitry consists of switches and the path of electrical continuity can be traced through closed contacts which cannot be seen in the switch. When a switch, or series of switches is closed, an electrical path is present in the circuit. Continuity is indicated by a reading (with the power off) of zero ohms, since there is no resistance in the path. (One or two ohms would be considered negligible.) If a switch is not closed when it should be, a reading of infinite resistance is obtained (infinity ∞ on the meter) which is in fact the resistance of the air gap presented by the open switch. When a switch is known to be in the closed position and electrical continuity is not present, the switch is not closing properly and should be replaced. When a switch is known to be in the open position and continuity is present, then the contacts are sticking together creating an undesired closed (or short) circuit. In this case also, the switch should be replaced.

The resistance of most of the solenoids used in the Reece Series 32 Welting Machine is approximately 80 ohms. Any other reading indicates a faulty coil (except for a ±5 ohm deviation). When making resistance readings, however, be sure that other elements are not included in the circuit. In the SEW/CENTER DENSE circuit for instance, there are two solenoids in parallel (one an 80 ohm coil and the other a 30 ohm coil), and when both are included in the measurement, the measurement reads approximately 25 ohms.

In the STOP circuit if the reading includes the safety lamp, the lamp filament will add resistance to the reading. Follow the troubleshooting charts carefully when checking the circuit. If a reading is in doubt, disconnect one side of the element to avoid a parallel circuit measurement.

ALTERNATE TEST POINTS

The test points that are indicated in the troubleshooting chart procedural steps are shown on the wiring diagrams to give a clear understanding of what is being measured in a circuit. In some cases, there are additional test points where the same measurement can be made. In these cases the alternate test points in the circuits are at the same electrical point but a different physical point due to the wire routing and connections. Making the same tests at the alternate points can be useful to reveal breaks in the wires, short circuits, or loose connections.

For this reason, with each wiring diagram there is also a table of main and alternate test points. The alternate test points can be used whenever it is necessary or desirable to isolate troubles in the wiring circuits. When the alternate test point specified is a wire nut, be especially careful to trace the wire correctly from the main test point specified. Do not make checks at the alternate test points unless they are necessary. The location of the wire nuts can be determined by the abbreviations used as follows:

WNC	-	Wire nut in cabinet
WNH	-	Wire nut in head
WNJB	-	Wire nut in junction box

NOTES

G. GENERAL TROUBLESHOOTING CHART

SYMPTOM	MACHINE CONDITIONS	TEST-REMEDY
Electrical circuit and motor dead	MAIN SWITCH — Pull to Start SELECTOR — P & E	G1 Circuit breakers open. Close or replace.
Same as above	MAIN SWITCH — Push to Stop SELECTOR — P & E	G2 Set meter to the X10 ohms scale and check for continuity between 14Y/16Y and 17Y/19Y. If a reading is obtained (one or two ohms) the 8 amp fuse is good. If meter reads to infinity (00), replace fuse.
115 volt ac circuit dead (probable short circuit)	MAIN SWITCH — Pull to Start SELECTOR — P & E	G3 Set voltmeter to the 150 volt ac scale. Check between 16Y and 19Y. If 115 volts is present, the transformer is good. Perform step G4 NOTE: If a short circuit is present, isolate by removing fuse, Part No. 05-0058 from large transformer. If the short circuit is still present, it is in the motor, high voltage side of the adjustable transformer, main switch, selector switch or circuit board. If short circuit is not discovered there, it can be either in the machine wiring to solenoids or in the front panel components.
24 volt dc circuit dead	Same as above	G4 Check 24 volts Circuit fuse before making this test. Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z. Connect the positive probe to 2Z. Voltage should read 24 volts dc. If no voltage is present, replace transformer Part No. 04-0271.
24 volts dc not available. (possible short circuit)	MAIN SWITCH — Pull to Start SELECTOR — P & E	G5 Check lower fuse on front panel. If blown, replace and test for short circuit as in G6

SYMPTOM	MACHINE CONDITIONS	TEST-REMEDY
24 volts dc not available – possible short circuit. (continued)	MAIN SWITCH Push to Stop Check to make certain that the fuse is a 6/10 ampere fuse, Part No. 04-0476.	G6 Check for short circuit in 24 volt system by the following procedure: (1) Insert new Transformer Safety 6/10 amp. fuse (04-0476) (2) Remove Control Circuit Board (3) Disconnect red wire from large capacitor (22,000 uf) (4) Disconnect one red wire coming from the 24 volt Transformer at the Diode Bride Rectifier. (5) Connect a 24 volt test lamp in series between the red wire, just disconnected and the rectifier terminal from which it has just been removed. (Use Lamp, 04-0253-0-380 mounted in Lamp Holder, 04-0252-0-008 for 24 Volt test lamp) (6) Pull Main Switch to On, and Selector Switch to "E" or "P & E". If 24 volt test lamp lights, there is a short circuit in the 24 volt system. Make a continuity check through all switches and wiring until the short is located. Make a visual check in the area of the Clamp Table Forward switch and also where the machine harness goes through the table frame. Move the harness to help locate possible chafed-wire shorts.

1. CLAMPING CIRCUIT

GENERAL DESCRIPTION

The clamp circuit raises the clamp or lowers it during the operating cycle (1) while the clamp table is in the front or back position, (2) at the beginning of the cycle for loading and (3) at the end of the cycle for ejection. In the MAN BACK and AUTO BACK loading modes of operation, depressing Clamp Switch (pedal) will raise the clamp for loading.

In the MAN FRONT, AUTO FRONT, and AUTO BACK loading modes of operation, the clamp can be raised and held in the raised position in three different ways:

(1) Set control panel FINGERS switch to SEMI and press knee actuator. The fingers will raise, closing the Fingers Down switch and will then come down closing the Auto Clamp Up switch and raising the clamp.

(2) Set control panel FINGERS switch to UP and then to AUTO or SEMI. The same will happen as in (1).

(3) With the LOADING switch set on MAN FRONT, set the control panel FINGERS switch to AUTO and set the control panel CLAMP CLEARING switch to BACK, then FORWD. Clamp will move back and then forward; the fingers will raise and then go down; the clamp will raise automatically as the Clamp table reaches the forward position.

The clamp can be lowered to its normal, clamp down position by depressing Clamp Switch (pedal) (on MAN FRONT and AUTO FRONT).

The CLAMPING CIRCUIT wiring diagram shows the circuit elements that are involved in operation of the clamp to move it up or down at various points in the operating sequence. A malfunction is indicated by failure of the clamp to respond properly to the switch controls. This diagram will serve as an aid in isolating the cause of a malfunction to one of the elements represented in the wiring diagram. Procedure for correction of any malfunction is given following the circuit description.

CIRCUIT DESCRIPTION

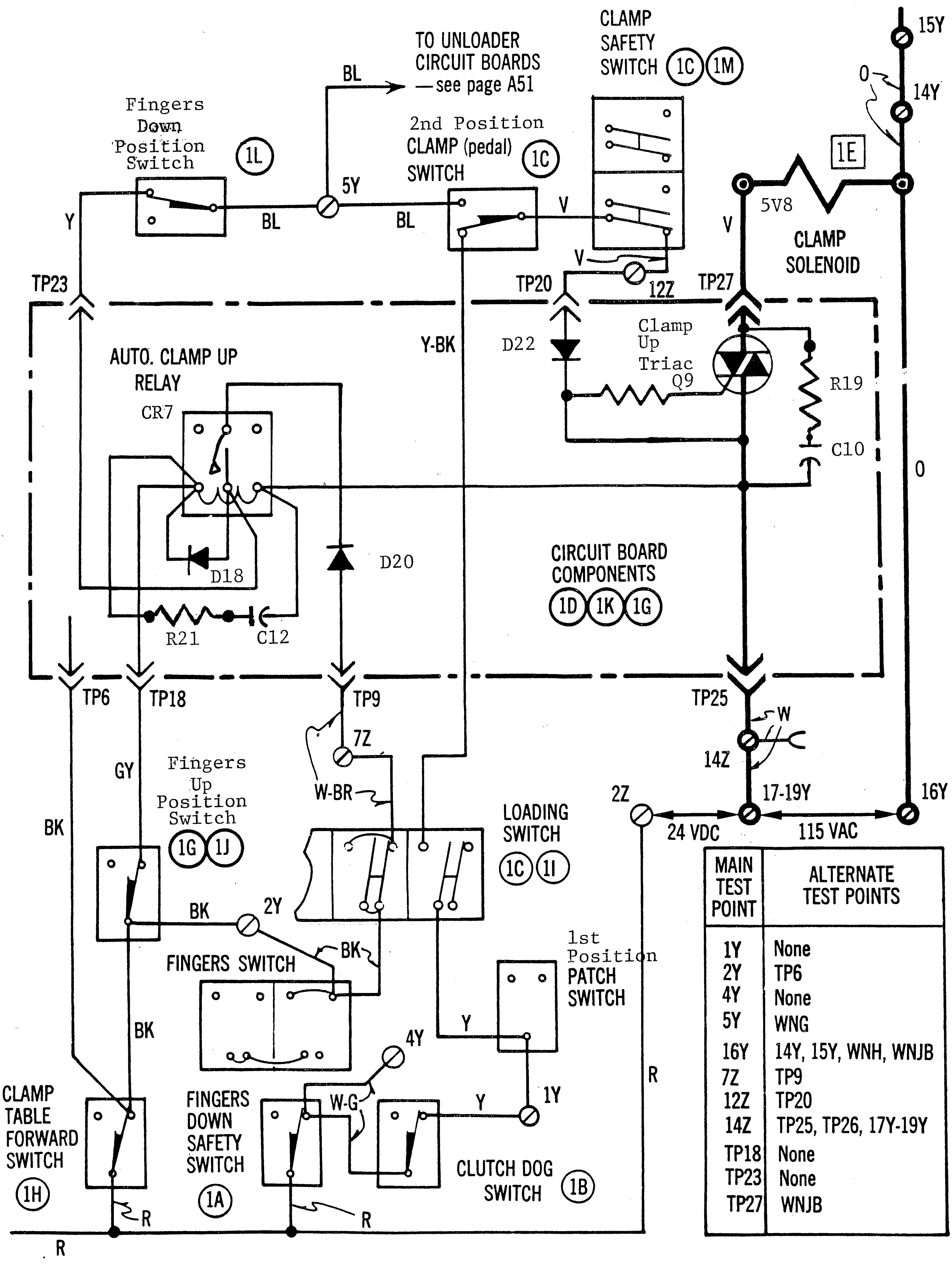
The clamping solenoid is energized when the 115 volt ac circuit is completed through triac Q9. The triac conducts the 115 volts ac when 24 volts dc is applied to its gate terminal.

LOADING switch in MAN BACK or AUTO BACK: The 24 volts dc that triggers triac Q9 into conduction is available through the CLAMP SAFETY switch (NORM position), Clamp Switch (pedal) (depressed), LOADING switch, Clutch Dog switch, and Fingers Down Safety switch.

LOADING switch MAN FRONT, AUTO FRONT or BACK: In these positions, the clamp will raise automatically as the turning fingers return to the down position. The 24 volts dc is available through Auto Clamp Up relay CR7. As the turning fingers rise and actuate the Fingers Down switch, relay CR7 is closed. Voltage is then available through Clamp Table Forward switch, LOADING switch, and the contacts of relay CR7. As the turning fingers return to the down position, the Auto Clamp Up switch is actuated making voltage available through the Auto Clamp Up switch, the Clamp Switch (pedal) (in the normal, not actuated position), the Clamp Safety switch to triac Q9.

The 24 volts dc on the CR7 contacts is also returned to the CR7 coil through blocking diode D18 which acts as a holding circuit to keep the coil energized and the contacts closed. This will hold the clamp in the up position until the circuit is broken by actuation of Clamp Switch (pedal). Releasing this Clamp switch will allow clamp to raise again. The holding circuit will break when the table forward switch is deactuated.

1. CLAMP CIRCUIT WIRING DIAGRAM



MAIN TEST POINT	ALTERNATE TEST POINTS
1Y	None
2Y	TP6
4Y	None
5Y	WNG
16Y	14Y, 15Y, WNH, WNJB
7Z	TP9
12Z	TP20
14Z	TP25, TP26, 17Y-19Y
TP18	None
TP23	None
TP27	WNJB

SYMPTOM	MACHINE CONDITIONS		TEST-REMEDY
Clamp will not raise.	MAIN SWITCH __ Pull to Start SELECTOR ____ P & E LOADING _____ MAN BACK	1A	Check with voltmeter on the 50 volt dc scale. Connect negative probe to ground or 14Z and the positive probe to 4Y. If a 24 volt dc reading is obtained, the Fingers Down Safety switch is good. If not, replace switch.
Same as above	Same as above	1B	Connect negative probe to ground or 14Z and positive probe to 1Y. If 24 volts dc is obtained, the Clutch Dog switch is good. If not, replace switch.
Same as above	Same as above, also: Close Clamp switch (pedal)	1C	With the voltmeter on the 50 volt dc scale, connect the negative probe to 14Z and the positive probe to 12Z. If a 24 volt dc reading is obtained, this will indicate that the LOADING switch, the CLAMP SAFETY switch, and the Clamp switch (pedal) are good. If no voltage is indicated make a continuity check through each switch and replace the faulty one.
Same as above	Same as above	1D	Set the voltmeter to the 150 volt ac scale, and check the voltage between 16Y and TP27. It should read 115 volts, ac. If it does, it indicates that the components on the circuit board are good. Perform next step.
Same as above	MAIN SWITCH __ Push to Stop	1E	Set the meter to the X10 ohms scale, and check between 16Y and TP27. The reading should be approximately 80 ohms. If it is not, replace the clamp solenoid.
Clamp goes up at wrong time.	MAIN SWITCH __ Pull to Start CLAMP TABLE __ Back SELECTOR _____ ELEC	1F	Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z, and the positive probe to 5Y. If voltage is present trouble is in one or both of the UNLOADING circuit boards or the automatic clamp-up circuit. Replace faulty board.
Clamp tends to jump up before fingers rise.	MAIN SWITCH __ Pull to Start CLAMP TABLE __ Forward FINGERS ______ SEMI* SELECTOR _____ P & E LOADING ______ MAN FRONT *Do not allow fingers to raise and activate the auto clamp up circuit.	1G	Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 5Y. If no voltage reading is obtained, the Auto Clamp Up relay (RL7) and the Fingers Down switch are good. If 24 volts dc is present, the circuit board or the Fingers Down switch is bad. Make a continuity check through the switch and, if bad, replace. If the switch is good, replace the circuit board.

1. CLAMP CIRCUIT TROUBLESHOOTING CHART

Clamp will not raise automatically when it should.	MAIN SWITCH____ Pull to Start SELECTOR______ P & E CLAMP TABLE___ Forward LOADING_______ MAN FRONT	1H	Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 2Y. If a 24 volt dc reading is obtained, the Clamp Table Forward switch is good. If not, replace switch.
Same as above	Same as above	1I	Set the voltmeter to the 50 volt dc scale. Connect the negative probe to 14Z and the positive probe to 7Z. If a 24 volt dc reading is obtained the LOADING switch is good. If not, replace switch.
Same as above	Same as above, also:____________ FINGERS UP	1J	Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to TP18. If a 24 volt dc reading is obtained, the Fingers Down switch is good. If not, replace switch.
Same as above	Same as above, also:____________ FINGERS SEMI or AUTO	1K	Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to TP23. If a 24 volt dc reading is obtained, the circuit board components and the FINGERS DOWN switch are good. If not, check switch and then replace board if necessary.
Same as above	Same as above	1L	Set the voltmeter to the 50 volt dc scale. Connect the negative probe to 14Z and the positive probe to 5Y. If a 24 volt dc reading is obtained, the Auto Clamp-Up switch is good. If not, replace switch.
Same as above	Same as above, also:____________ CLAMP SAFETY NORM	1M	Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 12Z. If a 24 volt dc reading is obtained, the CLAMP SAFETY switch is good. If not, replace the switch.
Same as above	Same as above		Repeat steps 1D and 1E

2. CLAMP TABLE CONTROL CIRCUIT

GENERAL DESCRIPTION

The function of the Clamp Table control circuit is to move the clamp table to the back position for start of the sew function. The Clamp Table can be moved to the back position in two ways:

(1) By turning the CLAMP CLEARING switch on the front panel to the BACK position. (LOADING switch must be in the MAN FRONT or MAN BACK position.)

(2) By closing Clamp Table Back (pedal) switch.

In each case, the Clamp Table is returned to the forward position by breaking the holding circuit. In the first case this is done by turning the CLAMP CLEARING switch to FORWD and in the second case, the holding circuit is broken when the sew cycle starts, by deactuation of the Clutch Dog switch.

CIRCUIT DESCRIPTION

The CLAMP TABLE solenoid operates on 115 volts ac when its circuit is completed through Clamp Table triac Q5. Triac Q5 will conduct the 115 volts ac when 24 volts dc is applied to its gate terminal. The 24 volts dc is applied directly to the gate terminal of Q5 and to the coil and contacts of Clamp Table Back relay (CR5) when Clamp Table Back switch is closed. This 24 volts dc comes through the Fingers Down Safety switch when the fingers are down and the switch is closed.

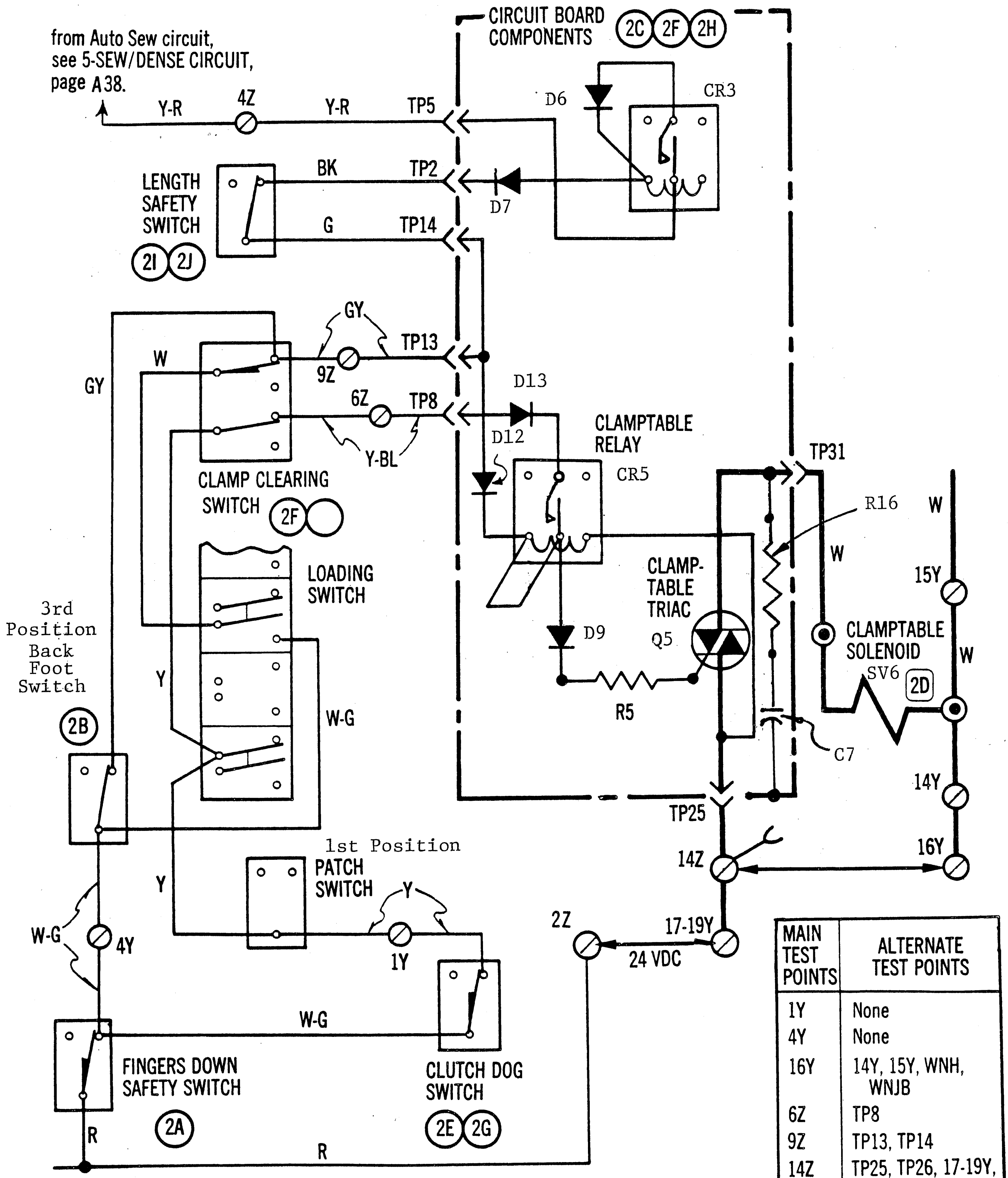
When the CR5 coil is energized, the contacts close and allow 24 volts dc through blocking diode D13 which is a holding circuit that keeps the coil energized and the triac gated and holds the Clamp Table in the back position. This circuit is completed through the CLAMP CLEARING switch, the Clutch Dog switch (which is closed when the machine is not sewing) and the Fingers Down Safety switch.

When the CLAMP CLEARING switch is set to the BACK position, it will provide a path for 24 volts dc to the CR5 coil. The 24 volts dc will be available through the Fingers Down Safety switch, Clutch Dog switch and the CLAMP CLEARING switch to the CR5 coil.

When the Clamp Table is not in the forward position, 24 volts dc is available to the CR5 coil to hold it back until the circuit is opened by the Clutch Dog switch or CLAMP CLEARING switch when actuated manually to the FORWD position.

The Length Safety switch will close and hold the Clamp Table back in an oscillating condition whenever the sewing circuit does not function properly. This will prevent oversewing of the pocket.

2. CLAMPTABLE CIRCUIT WIRING DIAGRAM



MAIN TEST POINTS	ALTERNATE TEST POINTS
1Y	None
4Y	None
16Y	14Y, 15Y, WNH, WNJB
6Z	TP8
9Z	TP13, TP14
14Z	TP25, TP26, 17-19Y, FRAME
TP2	None
TP31	WNJB

SYMPTOM	MACHINE CONDITIONS		TEST-REMEDY
Clamp Table will not go to back position.	MAIN SWITCH ____ Pull to Start SELECTOR ____ P & E LOADING ____ MAN FRONT or MAN BACK	2A	Set the voltmeter to 50 volts dc. Connect the negative probe to ground or 14Z and the positive probe to 4Y. If a 24 volt dc reading is obtained, the Fingers Down Safety switch is good. If not, replace switch.
Same as above	Same as above, also: Close Clamp Table, Back Switch (pedal)	2B	With the voltmeter set to the 50 volts dc scale, connect the negative probe to ground or 14Z and the positive probe to 9Z. If a 24 volt dc reading is obtained, Clamp Table, Back Switch (pedal) is good. If not, replace switch.
Same as above	Same as above	2C	Set voltmeter to the 150 volt ac scale. Connect one probe to 16Y and the other probe to TP31. If a reading of 115 volts ac is obtained, the circuit board components are good. If not, replace circuit board.
Same as above	MAIN SWITCH ____ Push to Stop	2D	Set the meter to the X10 ohms scale. Connect the probes to 16Y and TP31. The meter should read approximately 80 ohms. If it does not, replace the clamp table solenoid.
Clamp Table will not stay back.	MAIN SWITCH ____ Pull to Start SELECTOR ____ P & E LOADING ____ MAN FRONT or MAN BACK	2E	Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 1Y. If a 24 volt dc reading is obtained, the Clutch Dog switch is good. If not, replace switch.
Same as above	Same as above	2F	With the negative probe still connected to 14Z, connect the positive probe to 6Z. A 24 volt dc reading indicates that the CLAMP CLEARING switch is good. If this reading is not obtained, replace the switch. Check at Alternate TP8. A 24 volt dc reading indicates circuit board is good. If not replace circuit board.

2. CLAMP TABLE TROUBLESHOOTING CHART

SYMPTOM	MACHINE CONDITIONS	TEST-REMEDY
Clamp Table will not feed forward while sewing.	MAIN SWITCH ____ Pull to Start SELECTOR ________ P & E CLAMP TABLE ____ Back LOADING ________ MAN BACK Close and release knee switch.	(2G) Connect the negative probe to ground or 14Z and the positive probe to 1Y. If no voltage reading is obtained, the Clutch Dog switch is good. If a voltage reading is obtained, replace the switch. NOTE: If clamp table will not feed forward while sewing, connect the negative probe to ground or 14Z and the positive probe to 9Z. If a 24 volt dc reading is obtained, either Clamp Table, Back Switch (pedal) or the Length Safety switch are faulty. Make a continuity check through each, and replace faulty switch.
Same as above	Same as above	(2H) Set the voltmeter to the 150 volt ac scale. Connect one probe to 16Y and the other probe to TP31. If 115 volts ac is present, replace the circuit board.
Length Safety not returning table	MAIN SWITCH ____ Pull to Start CLAMP TABLE ____ Back LOADING ____ ____ MAN BACK SELECTOR ________ ELEC Actuate knee switch to energize start sewing solenoid.	(2I) Set voltmeter to 50 volt dc scale. Connect the negative probe to ground or 14Z, and the positive probe to 9Z. Manually close the Length Safety Switch. A reading of 24 volts dc should be obtained. If voltage is not present, reset the Length Safety switch actuator block.
Same as above	Same as above	(2J) Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to TP2. If a 24 volt dc reading is obtained, check the Sew/Center Dense Circuit (5).
Clamp Table returns to back position at end of sewing cycle.	(Reference only)	Check adjustment of Length Safety switch in relation to Length switch. (Refer to Switch Adjustment Section.)

3. PATCH FOLDING CIRCUIT

GENERAL DESCRIPTION

The function of the Patch Folding circuit is to open the patch folder (brushes) for patch loading. The patch folder may be opened when the Clamp Table is in the AUTO FRONT or AUTO BACK position. The patch folder (brushes) can be opened in any of the following ways:

(1) With the Clamp Table in the back position, closing Patch Switch (pedal) will open the patch folder (brushes).

(2) Whenever the Clamp Table moves forward and the Clamp Table Forward switch closes, the patch folder (brushes) will open.

(3) Whenever the LOADING switch is in the AUTO FRONT position, and the Clamp Table moves to the back position, the patch folder (brushes) will stay open until the patch is automatically inserted; and will then close when the Patch Loader switch is actuated.

CIRCUIT DESCRIPTION

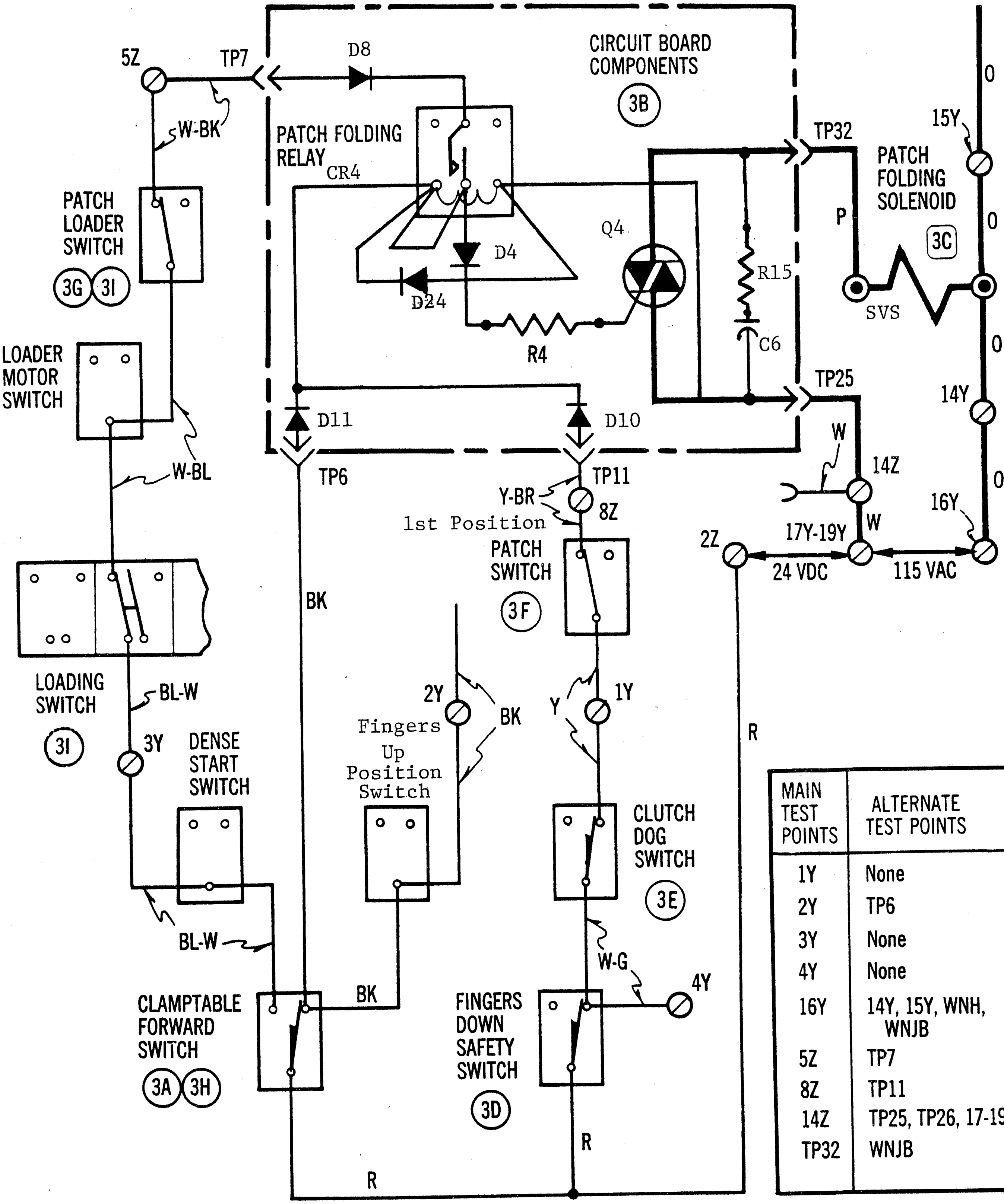
The patch solenoid is energized by 115 vôlts ac when its 115 volt circuit is completed through triac Q4 The triac conducts the 115 volts ac when 24 volts dc is applied to its gate terminal. The 24 volts dc to operate the triac may be received through three different paths depending upon the functional operation of the machine.

Whenever the Clamp Table moves forward, and closes Clamp Table Forward switch, 24 volts dc is supplied directly through blocking diode D11 to the Q4 gate terminal. With the LOADING switch in the AUTO FRONT position, a holding circuit is set up through Patch switch (pedal) by energizing relay CR4. and closing the relay contacts, making a holding circuit through the Clamp Table Forward switch (deactivated), Patch Loader switch and CR4 relay. The patch folder (brushes) will remain open until the patch loader arm actuates the patch loader switch, or when the Table Clamp Forward switch is deactivated.

The 24 volts dc for the holding circuit is supplied through the Table Forward switch in the back position, the LOADING switch in AUTO position, the Patch Loader switch in the normally closed position, and blocking diode D8.

Whenever Clamp Table is back, and the Fingers Down Safety switch is closed, the 24 volts to energize to CR4 coil and triac Q4 will be supplied when Patch Switch (pedal) is closed, and the patch folder (brushes) will open.

3. PATCH FOLDING CIRCUIT WIRING DIAGRAM



MAIN TEST POINTS	ALTERNATE TEST POINTS
1Y	None
2Y	TP6
3Y	None
4Y	None
16Y	14Y, 15Y, WNH, WNJB
5Z	TP7
8Z	TP11
14Z	TP25, TP26, 17-19Y
TP32	WNJB

SYMPTOM	MACHINE CONDITIONS	TEST-REMEDY
Patch folders not open in front position	MAIN SWITCH ____ Pull to Start SELECTOR ____ P & E	3A Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 2Y. If a 24 volt dc reading is obtained, the Clamp Table Forward switch is good., If not, replace switch.
Same as above	Same as above	3B Set voltmeter to the 150 volt ac scale. Connect one probe to 16Y and the other probe to TP32. If the meter reads 115 volts ac, the circuit board components are good. If not, replace circuit board.
Same as above	MAIN SWITCH ____ Push to Stop	3C Set the meter to the X10 ohms scale. Connect the probes between 16Y and TP32. The meter should read approximately 80 ohms. If it does not, replace the patch folding solenoid.
Patch folders will not open when Patch switch (pedal) is closed.	MAIN SWITCH ____ Pull to Start CLAMP TABLE ____ Back SELECTOR ____ P & E	3D Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 4Y. If a 24 volt dc reading is obtained, the Fingers Down Safety switch is good. If not, replace switch.
Same as above	Same as above	3E Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 1Y. If a 24 volt dc reading is obtained, the Clutch Dog switch is good. If not, replace switch.
Same as above	Same as above, also: LOADING ____ MAN FRONT or MAN BACK Patch switch ____ Closed	3F Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 8Z. If a 24 volt dc reading is obtained, the Patch switch (pedal) is good. If not, replace switch.

3. PATCH FOLDING CIRCUIT TROUBLESHOOTING CHART

SYMPTOM	MACHINE CONDITIONS	TEST-REMEDY
Patch folders will not close when loader arm goes in.	MAIN SWITCH __ Pull to Start CLAMP TABLE __ Back SELECTOR ____ ELEC LOADING ____ AUTO FRONT	3G Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z, and the positive probe to 5Z. The meter should read 24 volts dc until the loader arm goes all the way in. At this point the circuit should open. If it does not, reset the Patch Loader switch.
Patch folders will not stay open on AUTO cycle.	MAIN SWITCH __ Pull to Start SELECTOR ____ P & E LOADING ____ AUTO FRONT	3H Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 3Y. If a 24 volt dc reading is obtained, the Table Forward switch is good. If not, replace switch.
Same as above	Same as above CLAMP TABLE Back	3I Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 5Z. If a 24 volt dc reading is obtained, the LOADING switch and the Patch Loader switch are good. If not, replace faulty switch. Check for 24 volts dc at Alternate TP7. If 24 volts dc is present, replace circuit board.

4. AUTOMATIC PATCH LOADING CIRCUIT

GENERAL DESCRIPTION

The automatic patch loader motor circuit is an automatic feature of the Reece Series 32 Welting Machine which allows automatic feeding of patches for increased production speed. It operates with the LOADING switch set to AUTO FRONT or AUTO BACK positions, for normal operation. It can be operated in the MAN FRONT and MAN BACK position of the LOADING switch for the purpose of adjusting the position of the drive.

It is actuated to start when the Automatic Patch Loader (auto) Start switch (APL Motor Start-auto Switch) is closed; which happens when the Clamp table is all the way back. When the loading arm swings into position to load a patch, it closes the Patch Loader switch, which breaks the patch open holding circuit and closes the patch folder (brushes). Position of the arm is controlled by an eccentric cam on the loader motor. The arm then reverses direction and starts back. On the way back it actuates the Auto Sewing switch and starts the machine sewing. When the arm reaches the rest position it opens the Loader Motor switch which breaks the circuit to the motor and stops it.

For adjustment purposes, the loader motor can be operated with the Control panel LOADING switch in the MAN FRONT or MAN BACK positions. The CLAMP SAFETY switch is in the REP position and the motor is actuated by the knee control. The arm moves only while the knee control is pressed, and it can be actuated in small increments by repeated pressing of the knee switch.

CIRCUIT DESCRIPTION

The Patch Loader Motor operates on 115 volts ac when its circuit is completed through triac Q7. Triac Q7 conducts 115 volts ac when 24 volts dc is applied to its gate terminal.

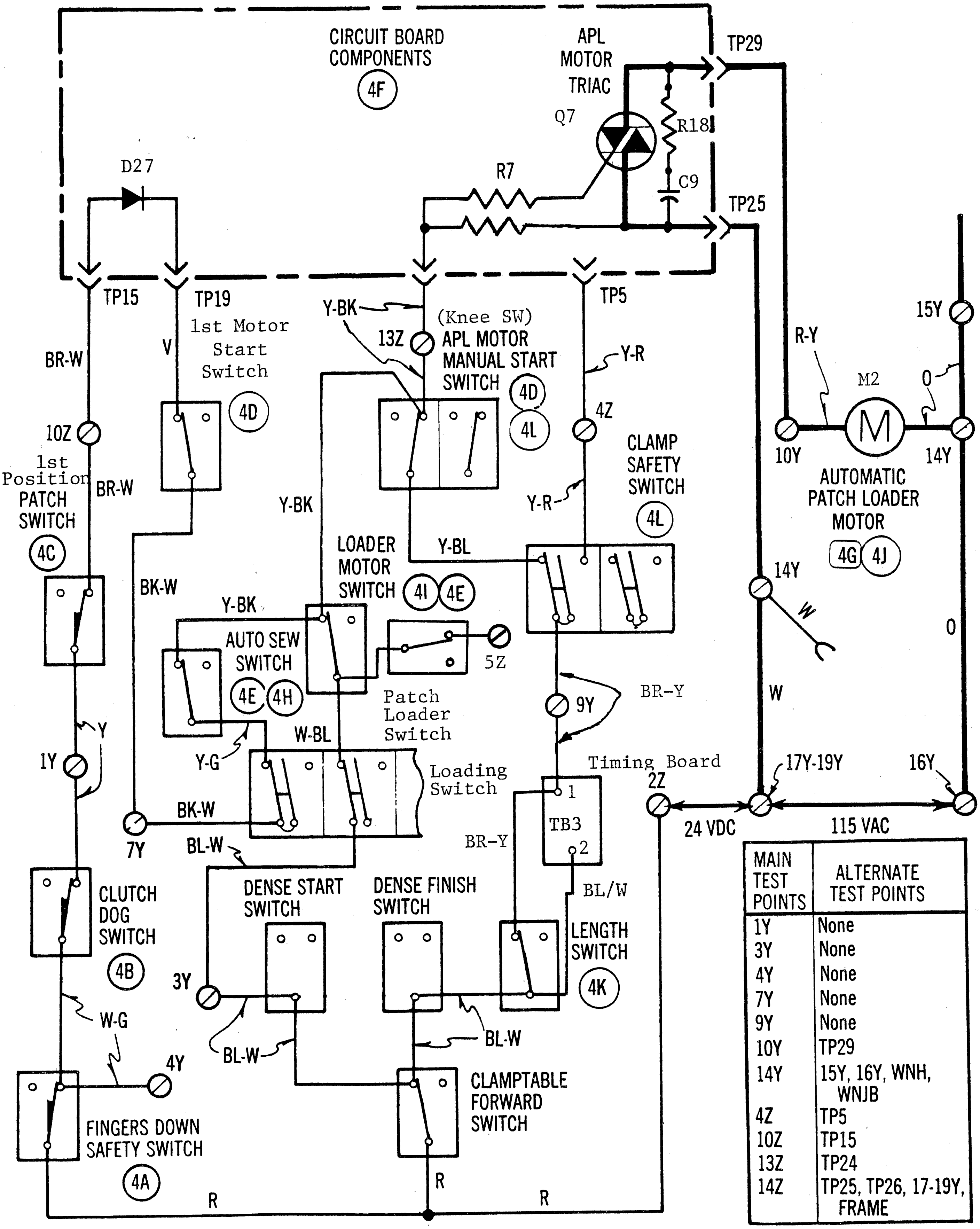
In normal operation of the patch loader motor, the Control Panel LOADING Switch is set to AUTO FRONT. When the Clamp Table goes back, it actuates the APL Motor Start (auto) switch to start the loader motor. The 24 volts dc is then supplied through the Fingers Down Safety Switch, the Clutch Dog Switch, and Patch Switch (pedal) which is in the normally closed position. As shown in the wiring diagram, the 24 volts dc then goes through blocking diode D27, and APL Motor Auto Start Switch) and LOADING Switch Contacts A, through the Auto Sewing switch (in the normally closed position, and then to the gate terminal of the triac.)

In automatic operation, Patch Switch (pedal) acts as a *safety switch* to stop an automatic cycle in the event that a patch is not loaded properly, and if depressed before Auto Sewing switch is actuated.

The Patch Loader motor holding circuit is made by supplying 24 volts dc from the Clamp Table Forward switch through Control panel LOADING switch contacts. B, and the Loader Motor switch, to the triac. The circuit is broken when the arm actuates the Loader Motor switch back at the rest position.

When the loader motor is operated with the LOADING switch in the MAN FRONT or MAN BACK position, pressing the knee Control completes a path through the CLAMP SAFETY switch (in the REP position) from the Length and Clamp Table Forward switches.

4. AUTOMATIC PATCH LOADING CIRCUIT WIRING DIAGRAM



MAIN TEST POINTS	ALTERNATE TEST POINTS
1Y	None
3Y	None
4Y	None
7Y	None
9Y	None
10Y	TP29
14Y	15Y, 16Y, WNH, WNJB
4Z	TP5
10Z	TP15
13Z	TP24
14Z	TP25, TP26, 17-19Y, FRAME

SYMPTOM	MACHINE CONDITIONS	TEST-REMEDY
Patch Loader will not start.	MAIN SWITCH ____ Pull to Start SELECTOR ____ P & E CLAMP TABLE ____ Back LOADING ____ AUTO FRONT	4A Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z, and the positive probe to 4Y. If a 24 volt dc reading is obtained, the Fingers Down Safety switch is good. If not, replace switch.
Same as above	Same as above	4B Connect the negative probe to ground or 14Z, and the positive probe to 1Y. If a 24 volt dc reading is obtained, the Clutch Dog switch is good. If not, replace switch.
Same as above	Same as above	4C Connect the negative probe to ground or 14Z, and the positive probe to 10Z. If a 24 volt dc reading is obtained, the Patch switch (pedal) is good. If not, replace switch.
Same as above	Same as above	4D Connect the negative probe to ground or 14Z, and the positive probe to 7Y. If a 24 volt dc reading is obtained, the APL Motor (auto) Start switch is good. If not, replace switch.
Same as above	Same as above	4E Connect the negative probe to ground or 14Z, and the positive probe to 13Z. If a 24 volt dc reading is obtained, the Loader Motor switch and the Auto Sewing switch are both good. If not, replace faulty switch. (The Auto Sewing switch would most probably be the faulty one.
Same as above	Same as above	4F Set the voltmeter to the 150 volt ac scale. Connect the probes to 14Y and 10Y. If a reading of 115 volts ac is obtained, the circuit board components are good. If not, replace board.
Same as above	MAIN SWITCH ____ Push to Stop	4G Set the meter to the X10 ohms scale. Connect the probes to 14Y and 10Y. If a reading of approximately 10 ohms is obtained, the Patch Loader Motor is good. If not, replace motor.

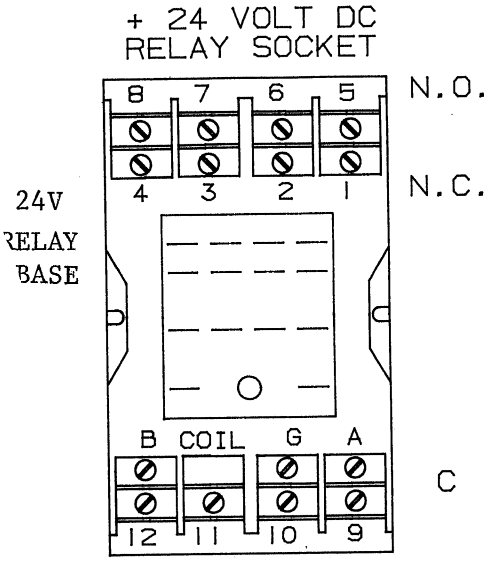
4. AUTOMATIC PATCH LOADING CIRCUIT TROUBLESHOOTING

SYMPTOM	MACHINE CONDITIONS	TEST-REMEDY
Machine Starts sewing when loader arm goes in.	MAIN SWITCH ___ Pull to Start CLAMP TABLE ___ Back SELECTOR ______ ELEC LOADING ______ AUTO FRONT	4H VISUAL CHECK. Roller lever on Automatic Sew switch is closing when arm goes in. Readjust switch (See page A58.) Also check Patch Folding Safety switch.
Patch Loader Motor does not stop when machine is sewing.	MAIN SWITCH ___ Pull to Start SELECTOR ______ P & E LOADING ______ AUTO FRONT LOADER SEW ___ ON Remove patch tray arm. CLAMP TABLE __ Back Sewing circuit energized	4I Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 13Z. The 24 volt dc circuit should be broken when the Loader Motor switch is actuated. If it is not, replace the Loader Motor switch.
Same as above	Same as above	4J VISUAL CHECK. Check motor brake to see that motor does not coast beyond the opening of Loader Motor switch.
Machine fails to sew after Patch Loader Motor Circuit is checked.	(Reference only)	See Sew/Center Dense Circuit Troubleshooting Chart page A39.
Patch loader will not start in MANUAL operation for maintenance adjustments.	MAIN SWITCH ___ Pull to Start SELECTOR ______ P & E LOADING ______ MAN FRONT CLAMP SAFETY _ REP CLAMP TABLE ___ Back Knee switch ___ Closed	4K Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 9Y. If a 24 volt dc reading is obtained, the Length switch is good. If not, replace switch.
Same as above	Same as above	4L Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 13Z. If a 24 volt dc reading is obtained, the APL Motor Manual Start Switch and CLAMP SAFETY switch are good. If not, replace faulty switch.

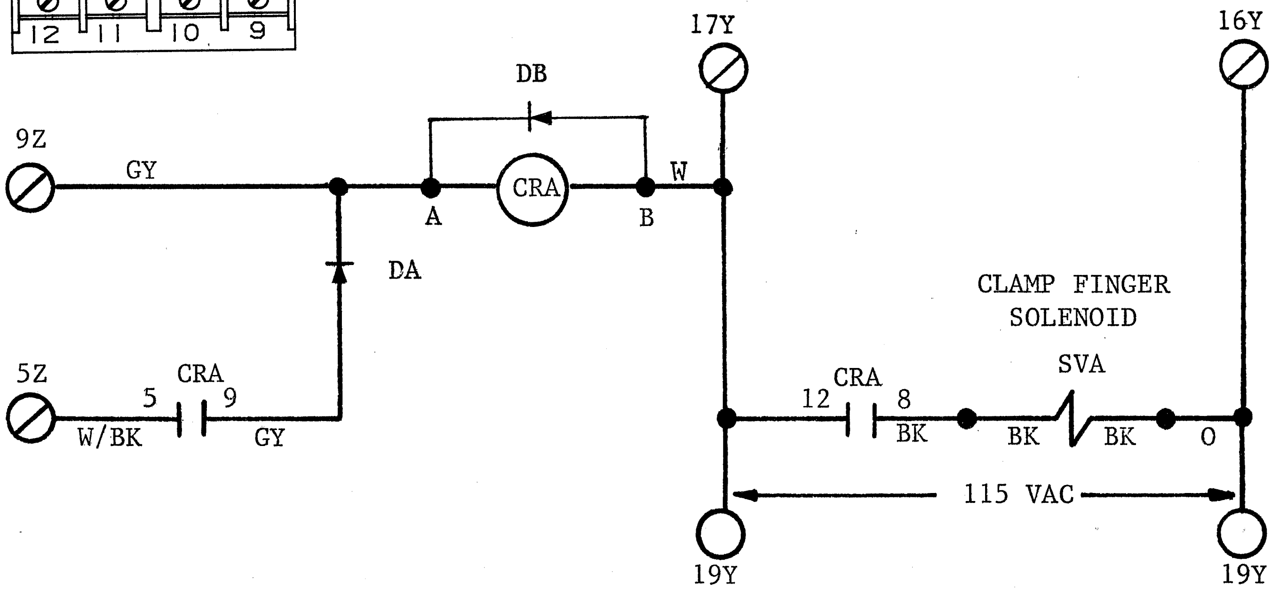
4.A. CLAMP FINGERS (PART OF PATCH LOADER) (OPTION)

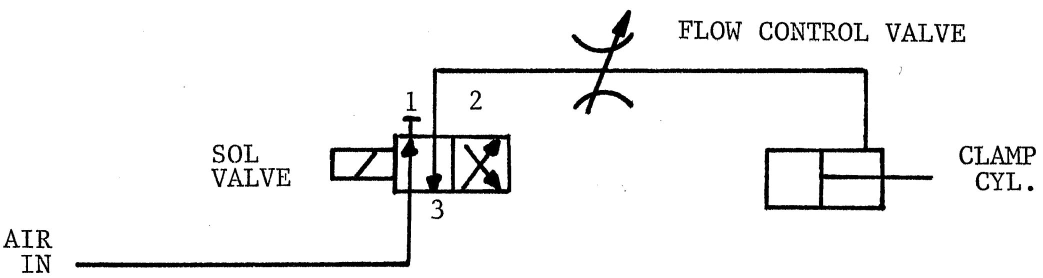
GENERAL DESCRIPTION

Clamp fingers actuate to hold the welting patch and pellon in position while the loader arm swings into position. To vary the speed of the clamp fingers, a flow control valve is located in the electrical panel.



The clamp fingers on the patch loader are closed when SVA is energized. The clamp fingers solenoid (SVA) operatest on 115 volts ac when its circuit is completed by the closing of CRA's contacts. 24 volts dc is supplied to CRA through the fingers down safety switch, S17 (limit switch-closed) and the 3rd position back foot switch, S18 (pedal). This will also send the table back. If loading switch, S4 (selector switch) is in auto back or auto front, then the clamp fingers will stay down (energized) until patch loader switch, S25 (limit switch) is opened. At this point, 24 volts dc will be removed from CRA causing CRA contacts to open and SVS to de-energize.





NOTES

5. SEW/CENTER DENSE CIRCUIT

GENERAL DESCRIPTION

The sew circuit starts the sewing function and operates the machine in sew mode until length and timing switches shifts operation back to the normal stop condition. The center dense circuit operates with the sew circuit to control the normal density of the stitches. The End circuit operates at the beginning and end of the sew cycle to provide increased stitch density. The sew function is started manually by the actuation of the knee control, and is started automatically when Auto Sewing switch is closed by movement of the loader arm.

CIRCUIT DESCRIPTION

The start sewing and center dense solenoids are energized at the same time when the 115 volt ac circuit is completed through sew/center dense triac Q2. A 0.6 ampere safety fuse in series between the triac and coil protects the start sewing solenoid from current overload. This circuit is wired to operate in conjunction with the stop circuit so that it is always controlled by either sew or stop.

The sew/stop relay CR2 is a double contact relay which remains normally in a closed (stop) position whenever the sew circuit is not completed. In this condition, 24 volts dc is always applied to keep the stop solenoid energized and prevent sewing.

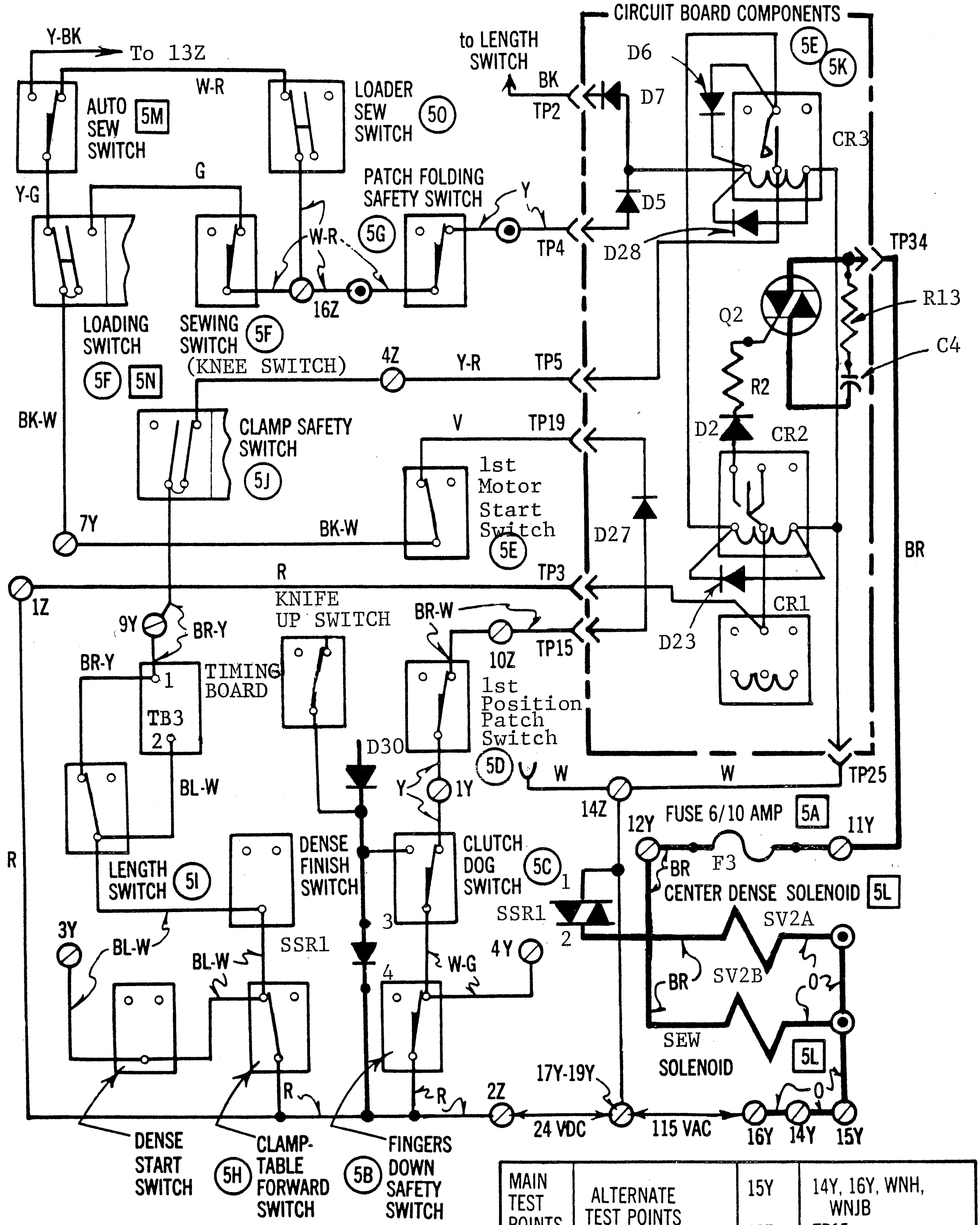
Sewing is initiated by the knee control or Auto Sewing switch when Clamp table is in BACK position and there are no safety circuits open to prevent operation of triac Q2.

The sew solenoid is energized when the 24 volts dc is shifted from the stop circuit to the sew circuit by shifting of the CR2 contacts from the stop position to the sew position. The CR2 coil is energized when the contacts of CR3 are closed. CR3 is closed when 24 vdc is applied to its coil through the Fingers Down Safety switch, the Clutch Dog switch, Patch switch (pedal), APL Motor (auto) Start Switch and the LOADING switch. From this point the voltage path depends on the position of the LOADING switch. In the AUTO positions voltage is available through the Auto Sewing switch, the Loader Sew switch, the Patch Folding Safety switch, and diode D5 to the coil of CR3. In the MAN positions, voltage is available through the Knee Sewing switch, the Patch Folding Safety switch, and diode D5 to the coil of CR3.

When the coil is energized, a holding circuit is made by providing 24 volts dc from Clamp Table Forward switch through the Length, Timing, and CLAMP SAFETY switches to the contacts of CR3. The 24 volts dc from the CR3 contacts is also returned, through diode D6, to the coil of CR3 as a holding voltage.

A path for 24 volts dc is also provided through diode D7 to Clamp table control circuit to hold table back while sewing as long as the Length Safety switch remains closed. This prevents oversewing of the pocket in the event the Length or Timing switch fails to stop the sewing and the Length Safety switch is actuated.

5. SEW/CENTER DENSE CIRCUIT WIRING DIAGRAM



MAIN TEST POINTS	ALTERNATE TEST POINTS	15Y	14Y, 16Y, WNH, WNJB
1Y	None	10Z	TP15
3Y	None	14Z	TP25, TP26, 17-19Y, FRAME
4Y	None	16Z	WNJB
7Y	None	4Z	TP5
9Y	None	TP2	None
11Y	TP34	TP4	WNJB
12Y	WNJB	TP19	None

5. SEW/CENTER DENSE CIRCUIT TROUBLESHOOTING CHART

SYMPTOM	MACHINE CONDITIONS	TEST-REMEDY
Machine fails to sew in manual positions	MAIN SWITCH ___ Push to Stop	5A Set meter on X10 ohms scale and check for continuity between 11Y and 12Y. If a reading is obtained (one or two ohms) the 0.6 ampere fuse is good. If meter reads infinity (∞), replace fuse.
Same as above	MAIN SWITCH ___ Pull to Start SELECTOR ___ P & E CLAMP TABLE ___ Back LOADING ___ MAN BACK or MAN FRONT CLAMP SAFETY ___ Normal	5B Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 4Y. If a 24 volt dc reading is obtained, the Fingers Down Safety switch is good. If not, replace switch.
Same as above	Same as above	5C Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 1Y. If a 24 volt dc reading is obtained, the Clutch Dog switch is good. If not, replace switch
Same as above	Same as above	5D Connect the negative probe to ground or 14Z and the positive probe to 10Z. If a 24 volt dc reading is obtained, the Patch switch (pedal) is good. If not, replace switch.
Same as above	Same as above	5E Connect the negative probe to ground or 14Z and the positive probe to TP19. If a 24 volt dc reading is obtained, diode SR1 is good. If not, replace the circuit board. Connect the positive probe to 7Y. If 24 volts dc is still not present, replace the APL Motor Auto Start switch.
Same as above	Same as above, also: Close Knee switch	5F Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z, and the positive probe to 16Z. If a 24 volt dc reading is obtained, the LOADING switch and sewing switch are good. If not, replace first one switch, then the other if necessary and recheck.
Same as above	Same as above	5G Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to TP4. If a 24 volt dc reading is obtained, the Patch Folding Safety Switch is good. If not, replace switch.
Same as above	Same as above, also;	5H Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 3Y. If a 24 volt dc reading is obtained, the Clamp Table Forward switch is good. If not, replace switch.

5. SEW/CENTER DENSE CIRCUIT TROUBLESHOOTING CHART

Same as above	Same as above	5I	Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 9Y. If a 24 volt dc reading is obtained, the Length switch is good. If not, replace switch.
Same as above	Same as above	5J	Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 4Z. If a 24 volt dc reading is obtained, the Clamp Safety switch is good. If not, replace the switch.
Same as above	Same as above, also: Press Knee Control	5K	Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to TP2. If a 24 volt dc reading is obtained, the circuit board components are good. If not, replace circuit board.
Same as above	MAIN SWITCH — Push to Stop	5L	Set the meter to the X10 ohms scale. Connect the probes between 15Y and 12Y. The meter should read approximately 25 ohms. If it does both Center Dense and Start Sewing solenoids are good. If the meter reads approximately 80 ohms, replace the Start Sewing solenoid. If the meter reads 30 ohms, replace the center dense solenoid.
Machine fails to sew in Auto positions.	MAIN SWITCH — Push to Stop Close Auto Sewing switch Open switch.	5M	Set meter to the X10 ohms scale. Make a continuity check through terminals (from yellow wire with green stripe to white wire with red stripe). If continuity is present, the switch is good in closed position. Repeat between yellow wire with green stripe to yellow wire with black stripe. If continuity is present Auto Sewing switch is good in normal position. If continuity is not present in both positions replace Auto Sewing switch.
Machine fails to sew in Auto positions.	MAIN SWITCH — Push to Stop LOADING —— AUTO FRONT	5N	Set meter to the X10 ohms scale. Make continuity check through terminals of the LOADING switch at the black/white striped wire and the yellow/green striped wire. If continuity is present, the LOADING switch is good. If not, replace switch.
Same as above	MAIN SWITCH — Pull to Start LOADING —— AUTO FRONT CLAMP TABLE — Back Auto Sewing Switch — Closed LOADER SEW — ON	5O	Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 16Z. If a 24 volt dc reading is obtained, the LOADER SEW panel switch is good. If not, replace switch.
Machine starts sewing when loader arm goes in.	(Reference only)		See Patch Loader Motor Circuit 4.
Machine fails to sew and Patch Loader keeps running.	(Reference only)		See Patch Loader Motor Circuit 4. IF MACHINE FAILS TO STOP SEWING, REFER TO STOP CIRCUIT 7.

6. END DENSE CIRCUIT

GENERAL DESCRIPTION

The function of the end dense circuit is to change the stitching at the start and at the end of the stitching cycle (ends of the pocket) from normal density (center group long stitches) to end density fine stitches. This is accomplished by energizing the end dense solenoid at the start of the stitching cycle and just before it reaches the end and stops sewing. This solenoid operates to control the density of the stitch at the beginning and end of the sewing cycle, by alternately operating through the Dense Start and Dense Finish switches for time controlled durations.

CIRCUIT DESCRIPTION

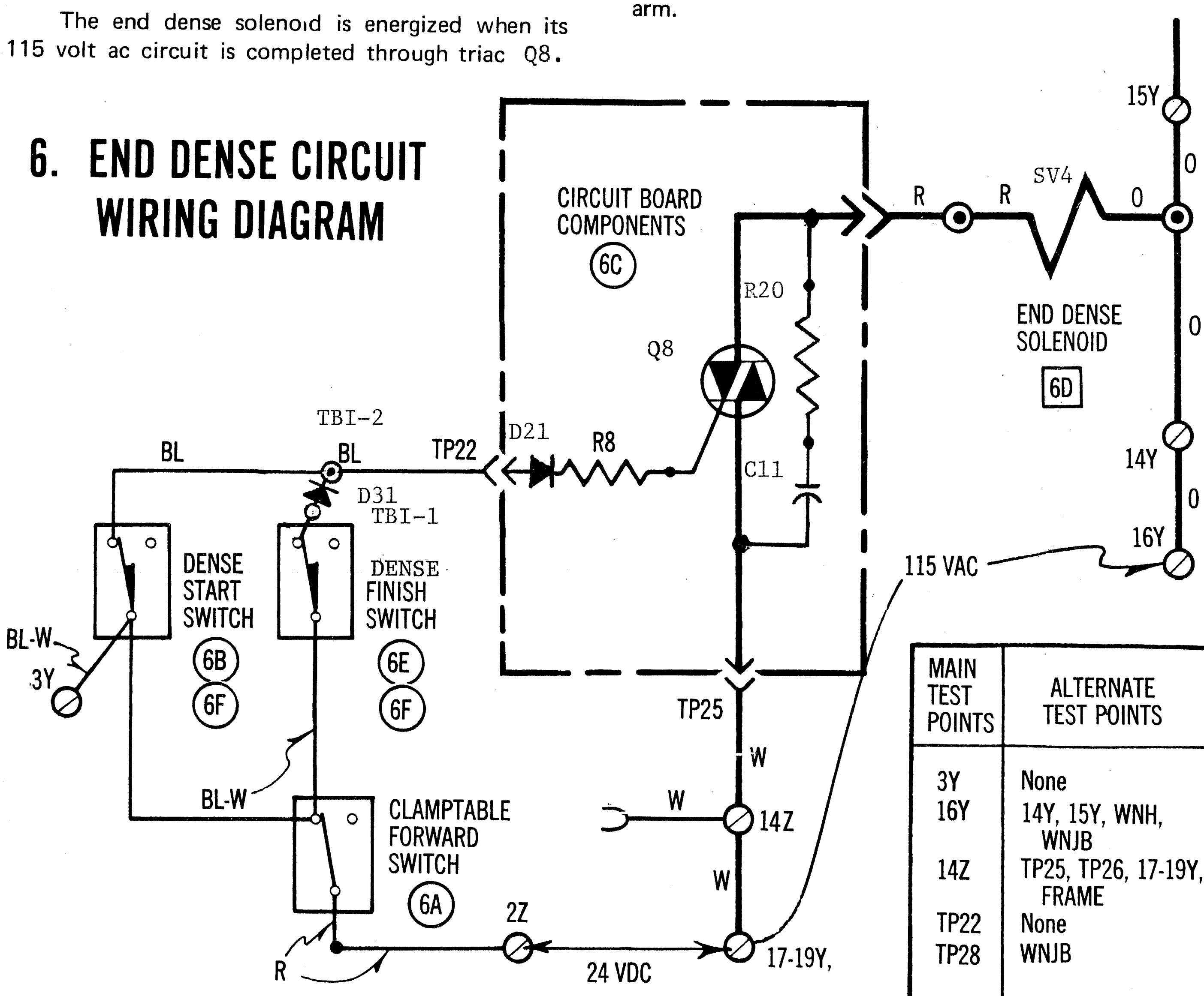
The end dense solenoid is energized when its 115 volt ac circuit is completed through triac Q8.

Triac Q8 conducts the 115 volts ac when 24 volts dc is applied to its gate terminal.

The dense start circuit directs 24 volts dc to triac Q8 through the Clamp Table Forward and Dense Start switches when the Clamp table is in the back position. The Dense Start switch is actuated when the clamp table travels forward a short distance in a sewing cycle and opens the dense start circuit, thereby de-energizing the end dense solenoid.

The Dense Finish switch is actuated at the end of the pocket sewing cycle. It is ganged with the Length switch and actuated by the same lever when a block set on a roller bracket passes over the switch arm.

6. END DENSE CIRCUIT WIRING DIAGRAM



MAIN TEST POINTS	ALTERNATE TEST POINTS
3Y	None
16Y	14Y, 15Y, WNH, WNJB
14Z	TP25, TP26, 17-19Y, FRAME
TP22	None
TP28	WNJB

6. END DENSE CIRCUIT - TROUBLESHOOTING CHART

SYMPTOM	MACHINE CONDITIONS		TEST-REMEDY
No End Dense at start	MAIN SWITCH ____ Pull to Start SELECTOR ________ P & E CLAMP TABLE ____ Back	6A	Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z, and the positive probe to 3Y. If a 24 volt dc reading is obtained, the Clamp Table Forward switch is good. If not, replace switch.
Same as above	Same as above	6B	Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to TP22. If a 24 volt dc reading is obtained, the Dense Start Switch is good. If not, replace the switch.
Same as above	Same as above	6C	Set the voltmeter to the 150 volt ac scale. Connect the probes to 16Y and TP28. If a 115 volt reading is obtained, the circuit board components are good. If not, replace the circuit board.
Same as above	MAIN SWITCH ____ Push to Stop	6D	Set the meter to the X10 ohms scale. Connect the probes to 16Y and TP28. The meter should read approximately 80 ohms. If it does not, replace the end dense solenoid.
No End Dense at finish.	MAIN SWITCH ____ Pull to Start CLAMP TABLE ____ Back SELECTOR ________ ELEC Pull Clamp Table forward one half inch.	6E	Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to TP22. Close the Dense Finish switch by hand. The meter should read 24 volts dc. If it does not, reset the Dense Finish switch.
Dense stitch through whole cycle.	Same as above	6F	Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to TP22. If a 24 volt dc reading is obtained, make a continuity check through the Dense Start and Dense Finish switches and replace faulty switch. (Continuity through either switch in this check indicates sticking contacts.)

7. STOP SEWING CIRCUIT

CIRCUIT DESCRIPTION

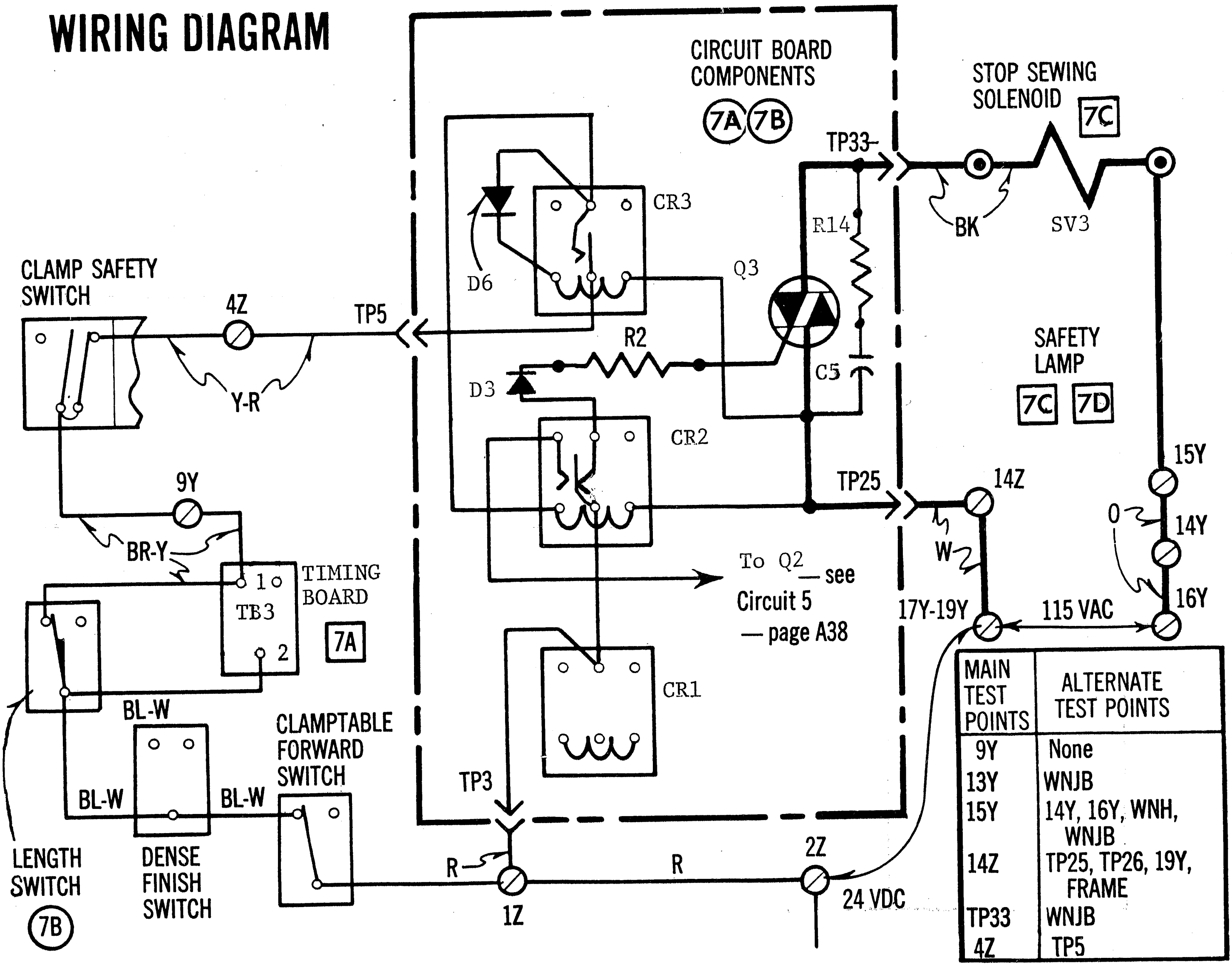
The stop sewing circuit operates in conjunction with the sew circuit. Whenever stop sewing solenoid is energized, the machine will not sew.

GENERAL DESCRIPTION

The stop solenoid is energized when the 115 volt ac circuit is completed through triac Q3. Triac Q3 conducts 115 volts ac to complete the circuit when 24 volts dc is applied to its gate terminal, which takes place when the sew/stop relay (CR2) contacts are in the normal stop position (CR2 coil not energized).

The sew relay, CR3, contacts remain closed, and the sew circuit functions when 24 volts dc is received through clamp safety, Timing, and Clamp Table Forward Switches. When machine is sewing, a holding circuit is provided through the Length, Timing, and Clamp Safety switches, Sew Relay CR3, and Diode D6 to the coil of Relay CR2 to stop sewing. The Length switch opens one leg of the 24 volt dc circuit, and the timing switch controls the final stopping. When these switches are open, the sew relay contacts will open, reestablishing the stop relay condition in which the contacts are closed to conduct 24 volts dc to triac Q3 thereby energizing the stop solenoid.

7. STOP SEWING CIRCUIT WIRING DIAGRAM



MAIN TEST POINTS	ALTERNATE TEST POINTS
9Y	None
13Y	WNJB
15Y	14Y, 16Y, WNH, WNJB
14Z	TP25, TP26, 19Y, FRAME
TP33	WNJB
4Z	TP5

A46 7. STOP SEWING CIRCUIT TROUBLESHOOTING CHART

SYMPTOM	MACHINE CONDITIONS	TEST-REMEDY
Machine will not stop sewing	MAIN SWITCH ____ Pull to Start CLAMP TABLE ____ Back LOADING ____ MAN BACK SELECTOR ____ ELEC Knee control actuated (Energize sewing circuit by depressing knee control momentarily.)	7A Set the voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 9Y. The meter should read 24 volts dc. This circuit must be broken when Length switch is held open; then the voltmeter reading will drop to zero. If circuit is broken and start sewing solenoid is still energized, replace the main circuit board. If voltage stays at +24 volts dc, check prox. sensor and cam settings. If prox. and cam settings are correct, refer to timing adjustment section; replace timing P.C. board located behind main circuit board and below thread pick-up board.
Same as above	MAIN SWITCH ____ Pull to Start (Not sewing)	7B Set the voltmeter to the 150 volt ac scale. Connect the probes between 15Y and TP33. If a reading of 115 volts ac is obtained, the circuit board components are good. If not, replace the circuit board.
Same as above	MAIN SWITCH ____ Push to Stop	7C Set the meter to the X10 ohms scale. Connect the probes between 13Y and TP33. If a reading of approximately 30 ohms is obtained the stop sewing solenoid is good. If not, replace solenoid.
Same as above	Same as above	7D Check for continuity through bulb between 15Y and 13Y. Meter should read approximately 10 ohms. If not, replace with good bulb.

8. THREAD PICKUP CIRCUIT

GENERAL DESCRIPTION

The function of the thread pickup circuit is to operate the thread pickup fingers when sewing stops but before the thread is trimmed. The thread pickup switch is momentarily actuated by overthrow of the clutch dog stop motion as soon as the stop solenoid is energized. When the pickup fingers operate, they pick up the ends of thread after each sewing cycle in readiness for the next sewing cycle.

CIRCUIT DESCRIPTION

The thread pickup solenoid is energized by 115 volts ac when its circuit is completed through triac Q1. Triac Q1 conducts the 115 volts ac when 24 volts dc is applied to its gate terminal. The table back solenoid is energized by 115 volts ac when its circuit is completed through relay CRC to ground. This sends the table back during thread pickup finger extension.

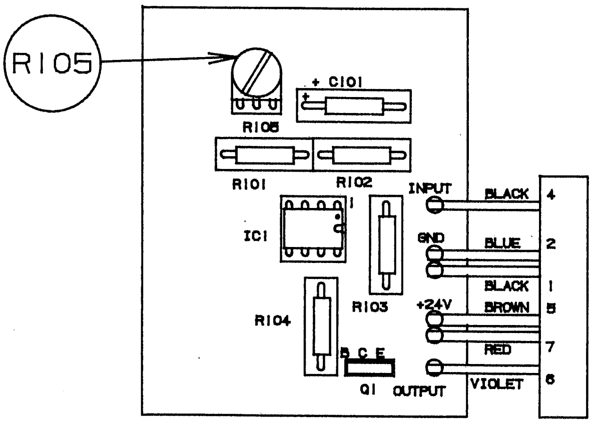
The thread pickup sensor triggers a timer on the prox. thread pickup board. Adjusting R105 (see below) on the board clockwise will increase the length of time the thread pickup fingers will stay down. Adjustment counterclockwise will decrease the amount of time. This P.C. board, through relay CRC, will send the table towards the rear during thread pickup finger extension.

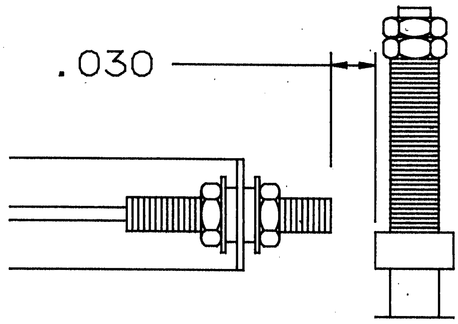
If a problem with the thread pickup operation is encountered, observe the sequence of operation and determine the area of probable cause using the troubleshooting chart below.

THREAD PICKUP TROUBLESHOOTING CHART

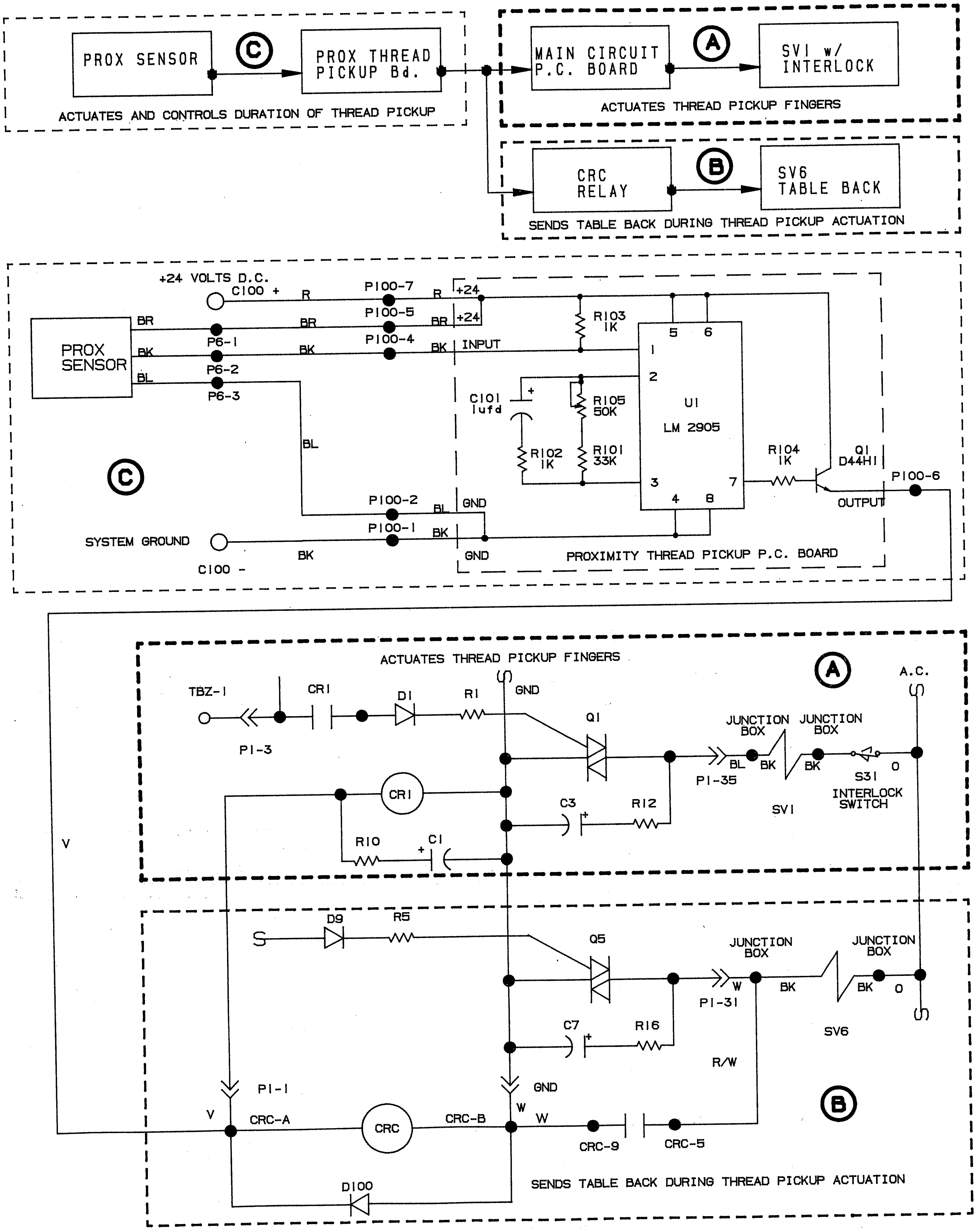
SYMPTOM	AREA OF PROBABLE CAUSE *
1. Thread pickup does not fire, Table goes back.	A 1. Main circuit board or connector. 2. SV1 w/ interlock. 3. Related wiring.
2. Table does not go back, Thread pickup fires OK.	B 1. CRC relay or socket. 2. SV6. 3. Related wiring.
3. Thread pickup does not fire, Table does not go back.	C 1. Proximity sensor. 2. Prox thread pickup board. 3. Related wiring.

* REFER TO THREAD PICKUP OPERATION DIAGRAM - NEXT PAGE





8. THREAD PICKUP CIRCUIT - WIRING DIAGRAM



9. TAB KNIFE FINGERS CIRCUIT

GENERAL DESCRIPTION

The knife fingers rise through the center cut in the material, cutting tabs at the ends of the sewn pocket. The fingers can be actuated to move up in three ways:

(1) Semi-automatically, when the knee control is pressed, the fingers will rise and return to the down position.

(2) Automatically, at the end of a sew cycle, the fingers will rise and return to the down position.

(3) By turning the control panel FINGERS switch to the UP position. The fingers will rise.

If it is desired to raise the fingers to change the blades, this can be done by setting the control panel FINGERS switch to UP. They can be lowered again by turning the front panel FINGERS switch back to SEMI or AUTO.

CIRCUIT DESCRIPTION

The knife fingers solenoid is energized when the 115 volt ac circuit is completed through triac Q6. The triac conducts the 115 volts ac when 24 volts dc is applied to its gate terminal.

When the knife fingers are raised by setting the front panel FINGERS switch to AUTO, the voltage is available through the same path as in the SEMI position. The knife fingers will raise automatically when the Fingers Up switch is actuated.

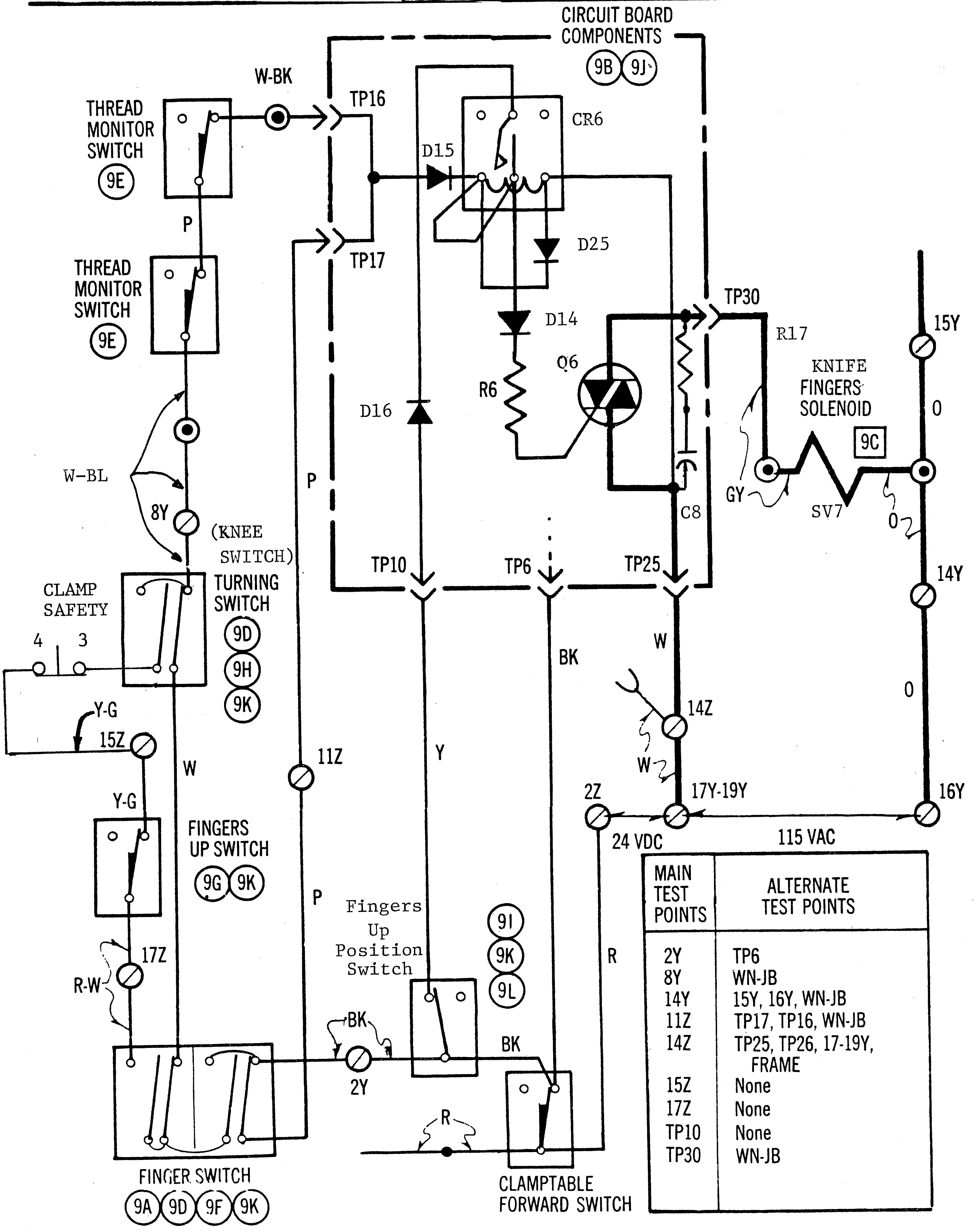
When the Fingers Up switch is actuated, the knife fingers will stay in the raised position through means of a holding circuit provided through the Fingers Down switch.

When the contacts of relay CR6 are closed, a holding circuit is provided to the coil of relay CR6 through the Fingers Down switch.

When the knife fingers are raised by setting the front panel FINGERS switch to the UP position, the 24 volts dc is applied directly to the triac and the coil of the fingers up relay (CR6) through the Clamp Table Forward switch, if the table is in the forward position.

When the knife fingers are raised by setting the front panel FINGERS switch to the SEMI position, with the clamp table all the way forward, 24 voltage is applied to triac Q6 through the Clamp Table Forward, FINGERS, Turning and the Thread Monitor switches to relay CR6.

A50 TAB KNIVES CIRCUIT WIRING DIAGRAM



MAIN TEST POINTS	ALTERNATE TEST POINTS
2Y	TP6
8Y	WN-JB
14Y	15Y, 16Y, WN-JB
11Z	TP17, TP16, WN-JB
14Z	TP25, TP26, 17-19Y, FRAME
15Z	None
17Z	None
TP10	None
TP30	WN-JB

SYMPTOM	MACHINE CONDITIONS	TEST-REMEDY
Knife fingers will not raise in FINGERS UP position.	MAIN SWITCH ____ Pull to Start SELECTOR ____ P & E CLAMP TABLE ____ Forward FINGERS ____ UP	(9A) Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 11Z. If a 24 volt dc reading is obtained, the FINGERS switch is good in the UP position. If not, replace switch.
Same as above	Same as above	(9B) Set voltmeter to the 150 volt ac scale. Connect the probes to 16Y and TP30. If a reading of 115 volts ac is obtained, the circuit board components are good. If not, replace circuit board.
Same as above	MAIN SWITCH ____ Push to Stop	9C Set the meter to the X10 ohms scale. Connect the probes to 14Y and TP30. If a reading of approximately 80 ohms is obtained, the fingers solenoid is good. If not, replace solenoid.
Knife Fingers will not rise in FINGERS SEMI position.	MAIN SWITCH ____ Pull to Start SELECTOR ____ P & E CLAMP TABLE ____ Forward FINGERS ____ SEMI Press Knee control	(9D) Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 8Y. If a reading of 24 volts dc is obtained, the FINGERS switch is good in the SEMI position, and the knife switch (Knee) contacts are good. If no reading is obtained, check each switch and replace the faulty one.
Same as above	Same as above, also: Close thread monitor switches	(9E) Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 11Z. If a 24 volt dc reading is obtained, the Thread Monitor switches are good. If not, replace faulty switch. Repeat steps (9A), (9B) and 9C
Knife fingers will not rise automatically in FINGERS AUTO position.	MAIN SWITCH ____ Pull to Start SELECTOR ____ P & E FINGERS ____ AUTO	(9F) Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 17Z. If a reading of 24 volts dc is obtained, the FINGERS switch is good in the AUTO position.

SYMPTOM	MACHINE CONDITIONS	TEST-REMEDY
Same as above	Same as above, also: Close Fingers Up switch	9G Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 15Z. If a reading of 24 volts dc is obtained, the Fingers Up switch is good. If not, replace switch. NOTE: Table Forward switch must close while Fingers Up switch is actuated. See Switch Adjustments.
Same as above	Same as above	9H Set voltmeter to the 50 volt ac scale. Connect the negative probe to ground or 14Z and the positive probe to 8Y. If a reading of 24 volts dc is obtained, the Knee (Knife) Switch is good. If not, replace switch. Repeat steps 9A, 9B, 9C and 9E
Knife Fingers start to go up, but will not go up all the way.	MAIN SWITCH ____ Pull to Start SELECTOR ________ P & E FINGERS ________ SEMI Depress Knee switch momentarily.	9I Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to TP10. If a reading of 24 volts dc is obtained, the Fingers Down switch is good. If not, replace switch.
Same as above	Same as above	9J Set voltmeter to the 150 volt ac scale. Connect the probes to 14Y and TP30. If a reading of 115 volts ac is obtained, the circuit board components are good. If not, replace circuit board.
Knife Fingers will not go down.	MAIN SWITCH ____ Pull to Start SELECTOR ________ P & E CLAMP TABLE ____ Forward Fingers raised by malfunction.	9K Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 11Z. If a reading of 24 volts dc is obtained, check the Fingers Down switch, the FINGERS (panel) switch in the UP position, the Fingers Up switch, and the Knee (Knife) Switch. Replace faulty switch.
Knife fingers vibrate in UP position.	Malfunction	9L Check for short in Knife Fingers circuit in area of Fingers Down switch.

10. UNLOADER CIRCUIT

GENERAL DESCRIPTION

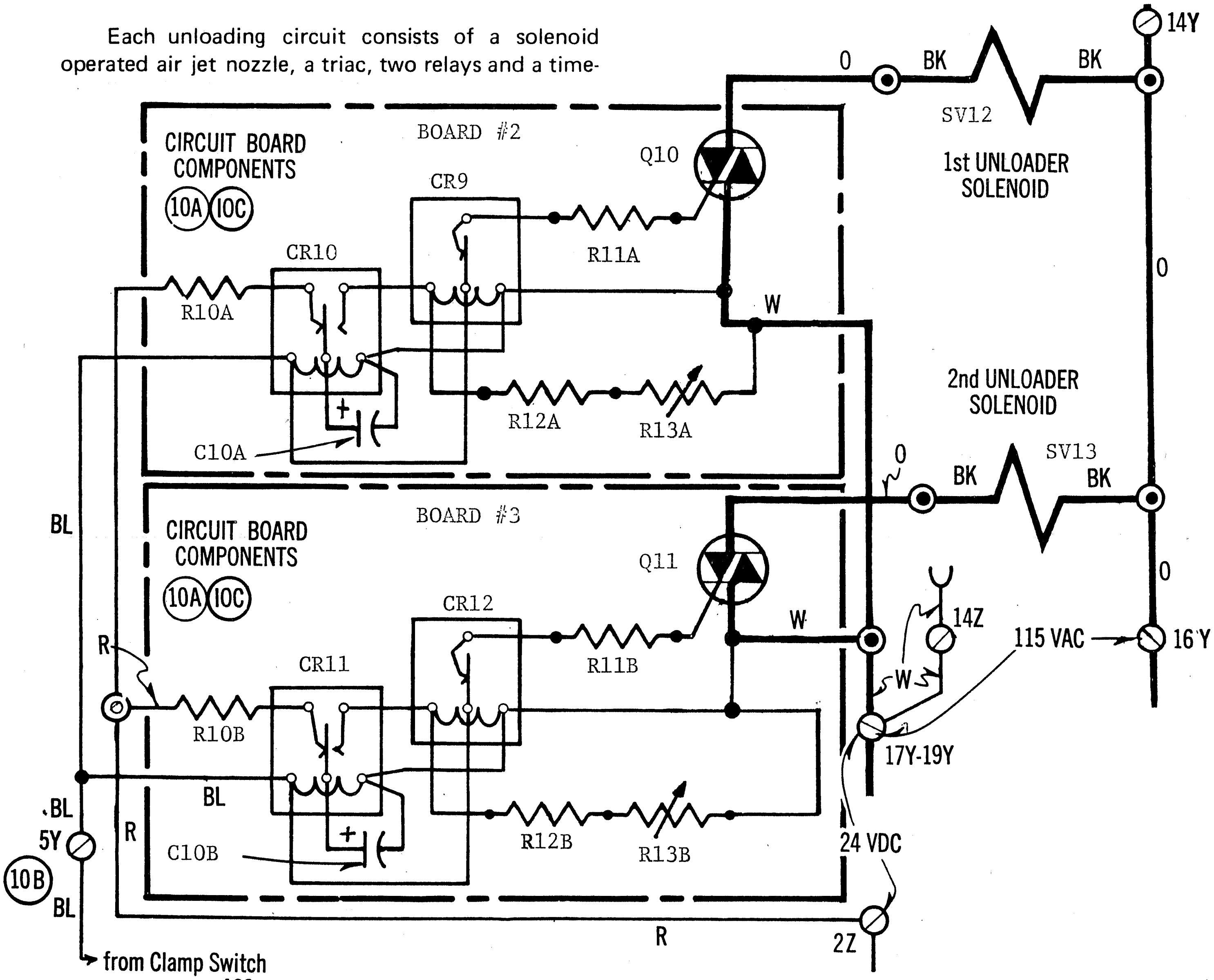
The unloader circuit operates in conjunction with the Automatic Clamp up control circuit. When the clamp raises automatically, the auto clamp up relay (CR7) remains energized, holding the clamp up and supplying 24 volts dc to actuate the air jet nozzle of the unloading circuit. There are two identical circuits which operate simultaneously for a controlled length of time. One air jet nozzle is mounted on the machine top surface to the right of the clamp table and blows the completed material out to the left. The other air jet nozzle is mounted above material holder and blows the completed material down to a hanging position.

CIRCUIT DESCRIPTION

Each unloading circuit consists of a solenoid operated air jet nozzle, a triac, two relays and a time-constant controlled capacitor which supplies the voltage to energize the holding relay for the correct duration of time. The unloader operates whenever the clamp table is in the forward position and the clamp arms are raised automatically.

Twenty-four volts dc is available through the contacts of relay CR7 and the Auto Clamp Up switch to Unloader triac Q10, through the control components on the unloader circuit board.

The length of time the air solenoid is energized is varied through the potentiometer. Normal adjustment is to have as short a blast as possible on the right hand nozzle and a slightly longer blast on left hand nozzle.



from Clamp Switch
—see page A22

10. UNLOADER CIRCUIT TROUBLESHOOTING CHART

SYMPTOM	MACHINE CONDITIONS	TEST-REMEDY
No air blast for material removal	MAIN SWITCH ______ Pull to Start SELECTOR ______ P & E CLAMP TABLE ______ Back CLAMP ______ Up	10A Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 2Z. If a 24 volt dc reading is obtained, power supply is good and voltage is available to the unloader circuit charging capacitor.
Same as above	Send knifefingers up and down. This will operate clamp up.	10B Set voltmeter to the 50 volt dc scale. Connect the negative probe to ground or 14Z and the positive probe to 5Y. If a 24 volt dc reading is not obtained, see Clamp Circuit 1.
Same as above	Same as above	10C Set voltmeter to the 150 volt ac scale. Disconnect the orange (O) wire from the unloader circuit board to the solenoid valves. Connect the leads between 16Y and the orange (O) wire from the board and check for 115 volts ac when the clamp goes up. If voltage is present and no air blast, replace solenoid valve. If no voltage is present, replace unloader circuit board. If air does not turn off, replace unloader circuit board.

11. CENTER KNIFE UP/DOWN

GENERAL DESCRIPTION

When the center knife 3-position switch (S33) is in the 'normal' position, the center knife will operate normally during the center dense portion of the sew cycle. The center knife can also be held in the 'up' or 'down' position by selecting these settings manually with the switch.

CIRCUIT DESCRIPTION

During 'normal' operation, the center knife is activated up into the cutting area when +24V dc is supplied to solenoid SV11. The 24 volts for this function is provided through the clutch dog switch (S16) and the knife up switch (S32). The center knife will be deactivated back down out of the cutting area when +24V dc is supplied to solenoid SV10 through switch S12 at the beginning of dense finish sewing. In this position, the center knife switch is essentially not in the circuit.

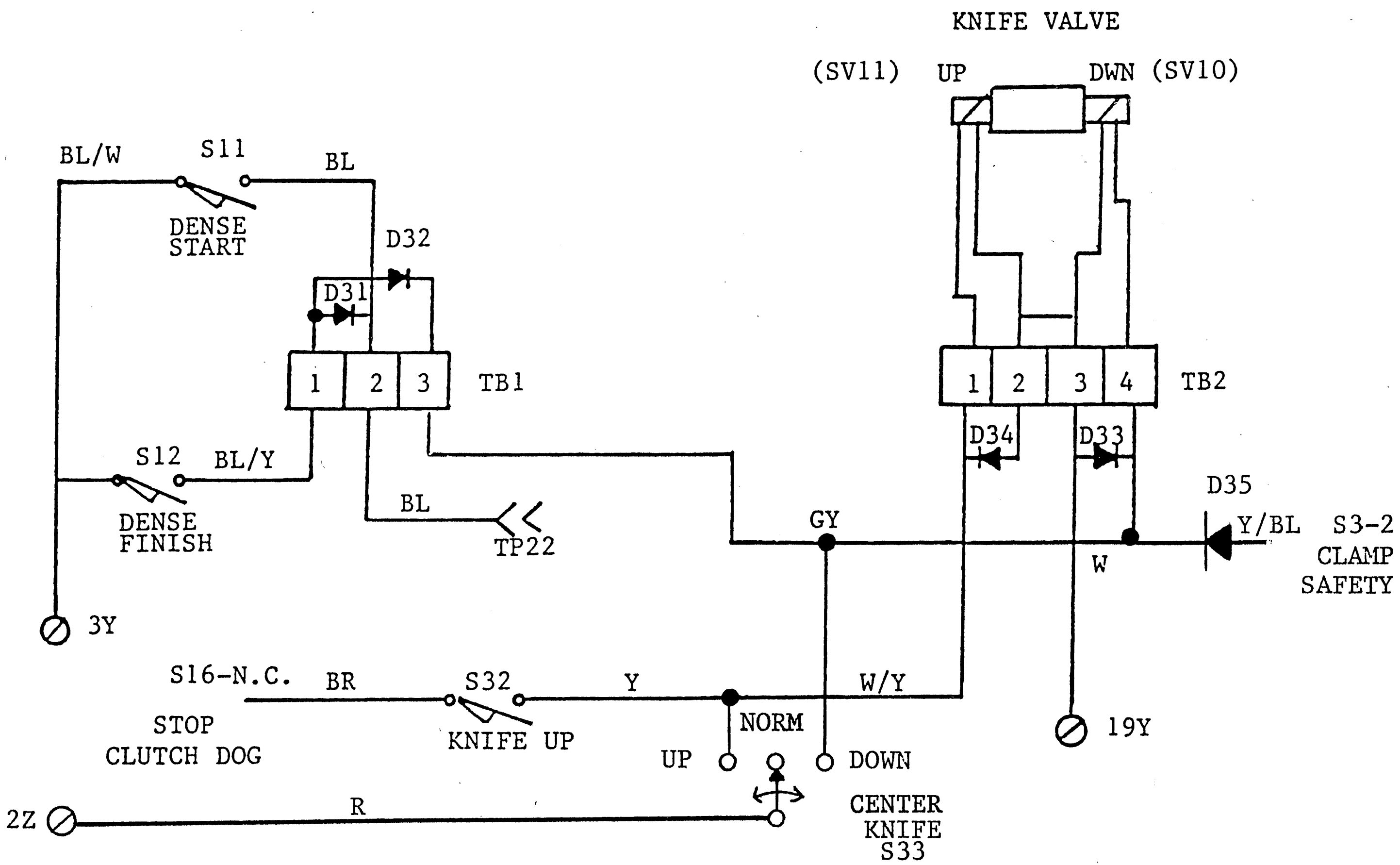
Shifting Center Knife Up - Into Cutting Area:

The 24 volts is supplied directly through the center knife switch to the knife up solenoid (SV11) when the 'up' function is selected.

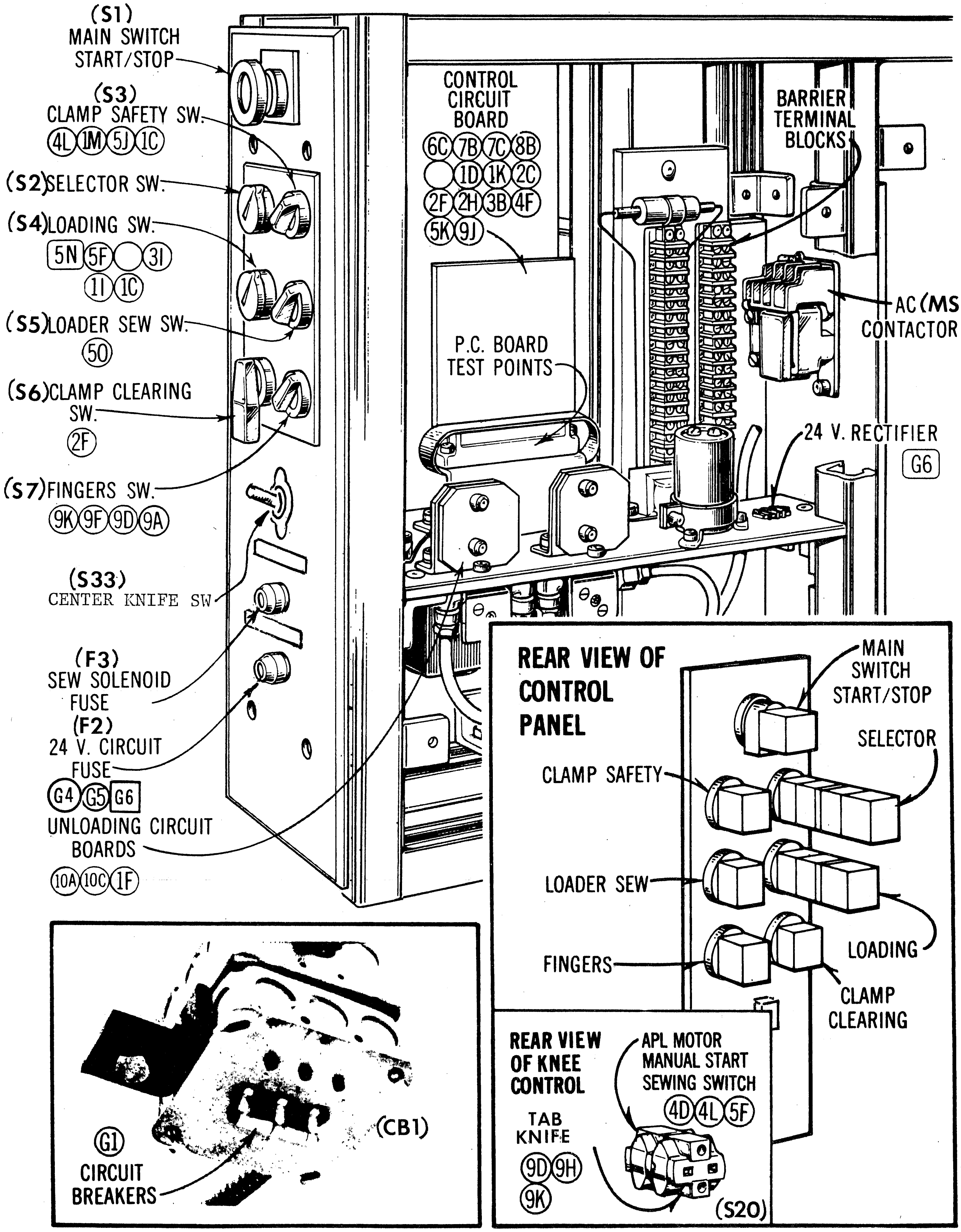
Shifting Center Knife Down - Out Of Cutting Area:

The 24 volts is supplied directly through the center knife switch to the knife down solenoid (SV10) when the 'down' function is selected.

NOTE: Set air regulator at 50 PSI; also there are two potentiometers on the solenoid valve; if adjustment is made to either one, keep the centerknife action set so that it will come up and down softly. If set to come down hard, it may cause the end dense to disappear.



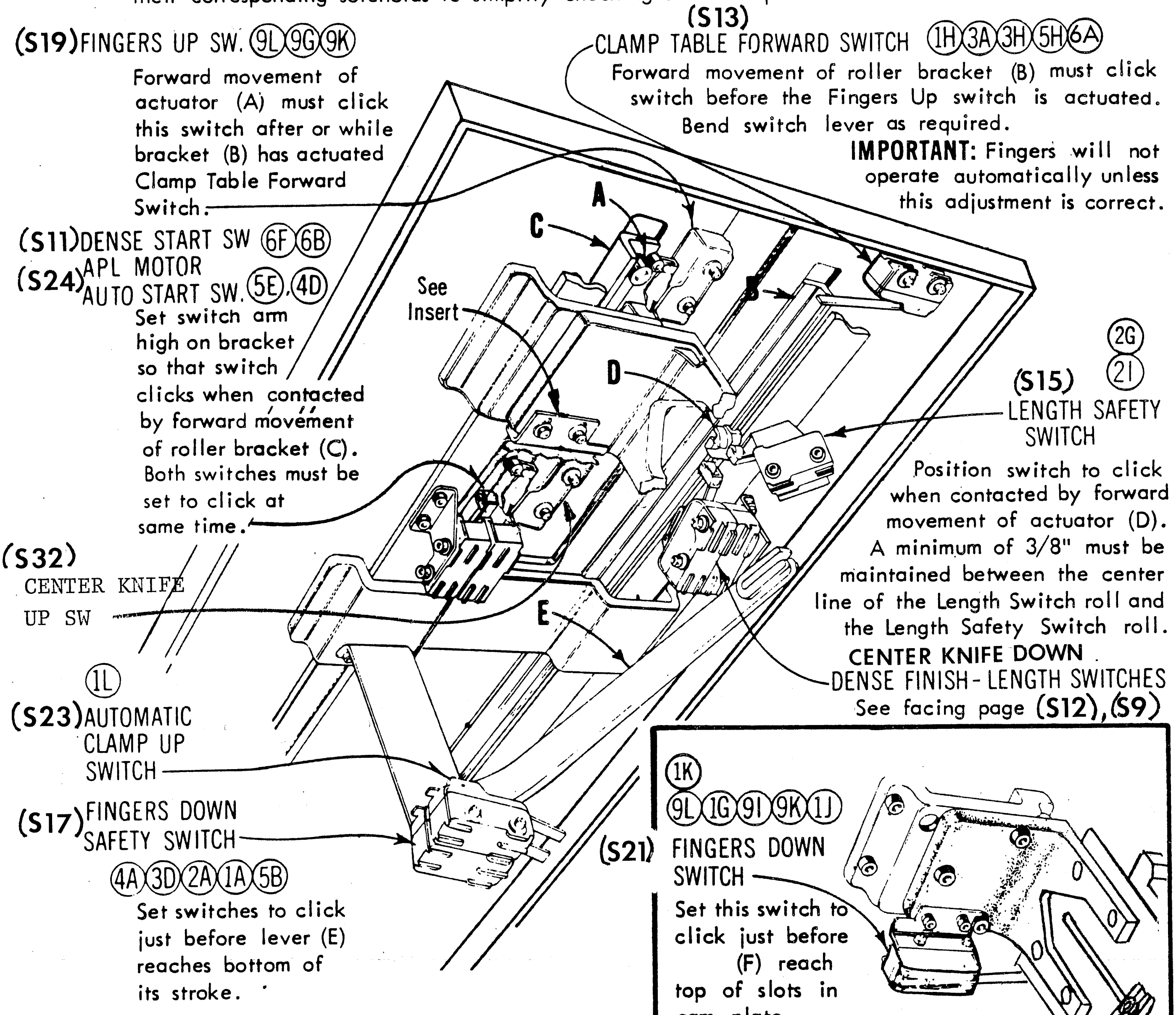
NOTES

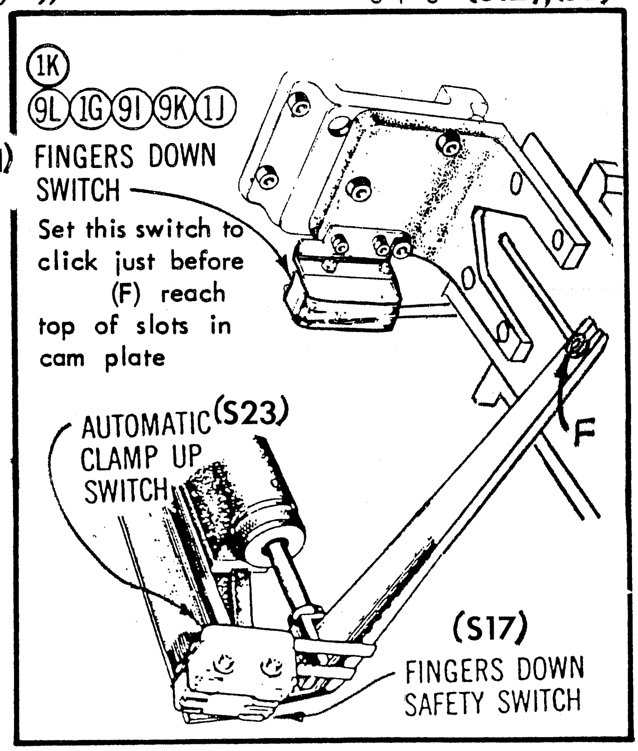


(S1) MAIN SWITCH START/STOP
(S3) CLAMP SAFETY SW.
4L 1M 5J 1C
(S2) SELECTOR SW.
(S4) LOADING SW.
5N 5F 3I
1I 1C
(S5) LOADER SEW SW.
5O
(S6) CLAMP CLEARING SW.
2F
(S7) FINGERS SW.
9K 9F 9D 9A
(S33) CENTER KNIFE SW
(F3) SEW SOLENOID FUSE
(F2) 24 V. CIRCUIT FUSE
G4 G5 G6
UNLOADING CIRCUIT BOARDS
10A 10C 1F
CONTROL CIRCUIT BOARD
6C 7B 7C 8B
1D 1K 2C
2F 2H 3B 4F
5K 9J
P.C. BOARD TEST POINTS
BARRIER TERMINAL BLOCKS
AC (MS1) CONTACTOR
24 V. RECTIFIER
G6
REAR VIEW OF CONTROL PANEL
MAIN SWITCH START/STOP
SELECTOR
CLAMP SAFETY
LOADER SEW
LOADING
FINGERS
CLAMP CLEARING
G1
CIRCUIT BREAKERS
(CB1)
REAR VIEW OF KNEE CONTROL
APL MOTOR MANUAL START SEWING SWITCH
4D 4L 5F
TAB KNIFE
9D 9H
9K
(S20)

ELECTRICAL COMPONENTS-SETTINGS AND ADJUSTMENTS

Before adjusting switches, pull Main (Stop/Start) Switch out and send Clamp Table to its back position by turning Clamp Clearing Switch to Back. Set Selector Switch to "Elec.". Energize Sewing cycle by pressing Knee Control. This will eliminate clamp table feed pressure and permit the Clamp Table to be moved forward manually. It will also enable switches to actuate their corresponding solenoids to simplify checking switch adjustments.





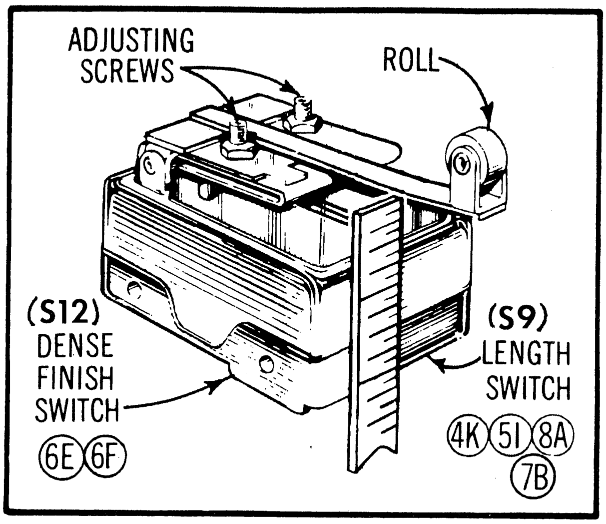
IMPORTANT: Switches click twice -- once when the lever is depressed and again when the lever is released. The click points can be heard at close range or may be felt by placing a finger lightly on the fulcrum point of the switch lever.

NOTE: All adjustments refer to the first click of the switch.

DENSE FINISH & LENGTH SWITCH

"OFF THE MACHINE" ADJUSTMENTS – Holding a scale against front of switch unit, check the click points of both switches as follows:

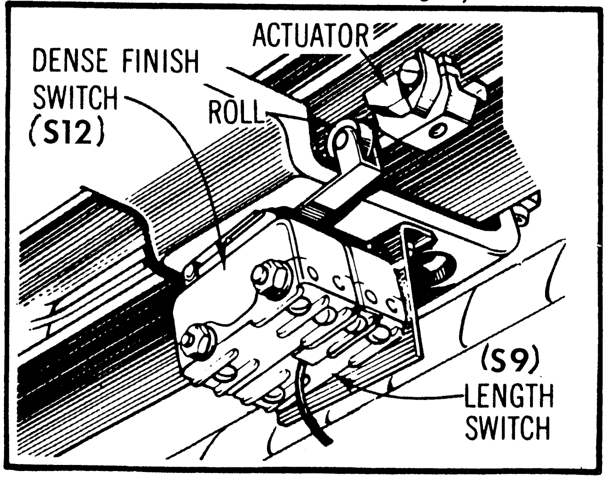
When switch unit lever is depressed 1/16" the Dense Finish switch must click. When lever is further depressed an additional 3/32", the Length switch must click. This unit is pre-set for this timing, but if realignment is necessary, do so by means of the adjusting screws.



"ON THE MACHINE" ADJUSTMENTS – Install the switch unit on machine to the following settings:

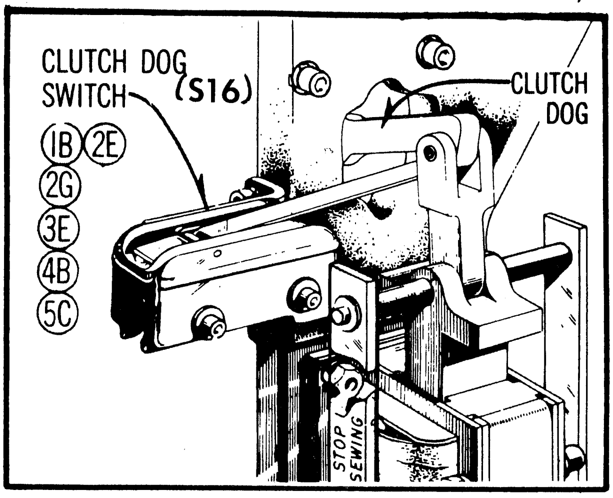
It must be high enough on its bracket so that the forward movement of actuator clicks both switches, and the roll remains in contact with the actuator as long as possible. See Thread Pickup switch adjustment.

Do not set too high or the clamp circuit will be broken when the clamp table travels back to "start sewing" position, causing the clamp to fall momentarily. When adjustment is correct, there will be five or six dense stitches before stopping at the end of the sewing cycle.



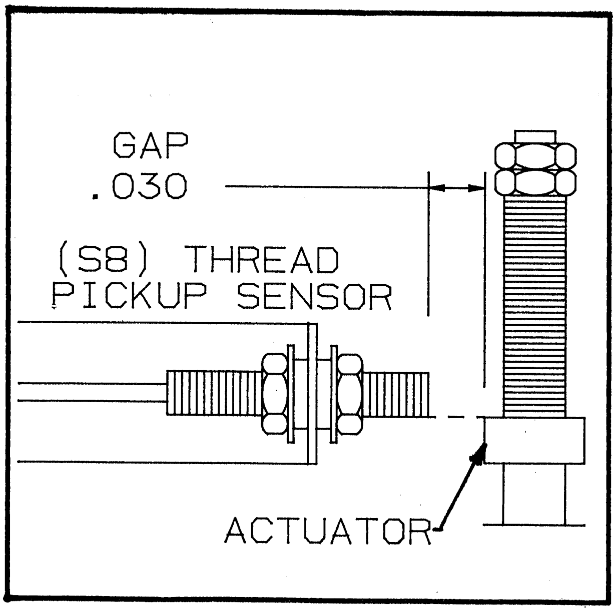
CLUTCH DOG SWITCH

Set switch to click within 1/8" movement of clutch dog. This adjustment can only be made when clamp table is in the rear position, stop motion is locked, and the clutch solenoid is raised manually.



THREAD PICK-UP SENSOR

The overthrow of the stop motion is sufficient to momentarily actuate this sensor. The sensor will trigger the timing I.C. on the thread pick-up board when the actuator first passes in front of the sensor and then returns to its home position. To test the sensor, place a screwdriver in front of the sensor. The thread pick-up function will not operate until you remove the screwdriver from in front of the sensor. This removal of the steel actuator will cause thread pick-up to function. Adjust the gap between the face of the sensor and the side of the actuator to .030" (.050" max.). Make sure that the bottom of the sensor is level with the top of the actuator.



TIMING SWITCH

The clutch dog (bumper) must be 'triggered' at the correct moment to engage the clutch release dog without 'fly-over'. See Page A96, Clutch Dog (Bumper) Adjustment. Accurate adjustment of both timing sensor and cam is essential to stop the sewing at the correct time. Adjust proximity sensor height for proper clearance between the face of the sensor and the large diameter of the cam. The sensor should be centrally located with the width of the cam, not touching the cam at any point during cam rotation, and be no further away from the cam than .030" maximum.

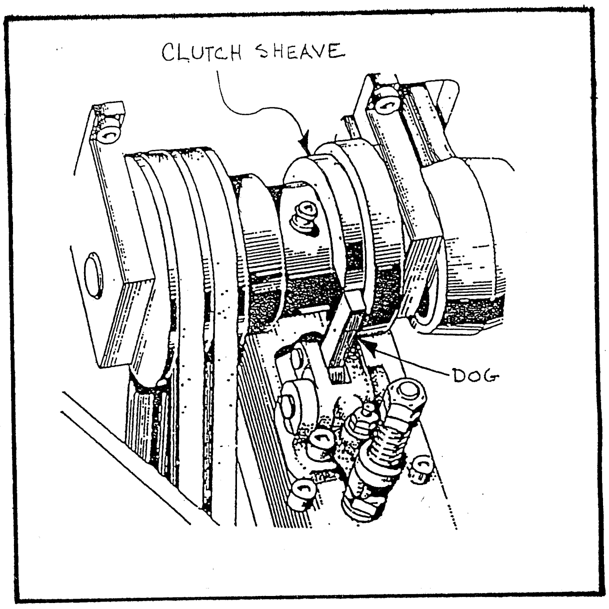
Before starting adjustment of cam, set the control panel in the following position:

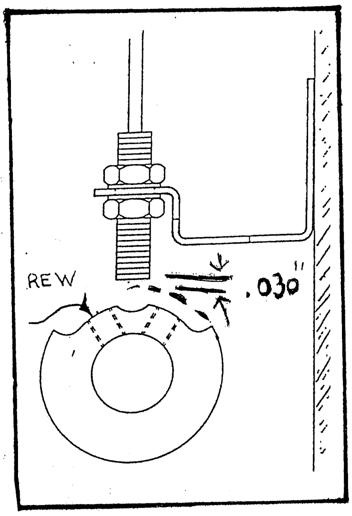
Main	Pull to Start
Selector	P & E
Clamp Safety	Normal
Loading	Man. Front to Back
Loader	Any Position
Clamp Clearing	Center *
Fingers	Any Position

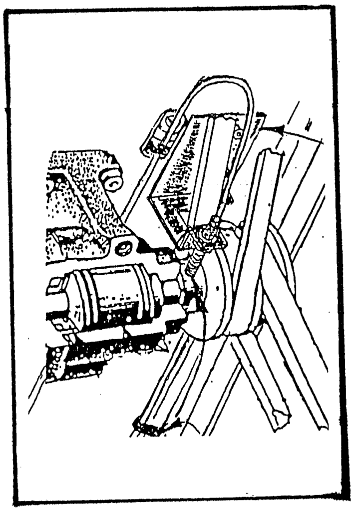
Press pedal to send clamp table to its back position (* or by clamp clearing switch). Now, move selector switch from P & E position to elec. position and press knee control to release drive shaft. Turn the clamp safety switch to the repair position. Rotate the drive shaft until the leading edge of the clutch sheave is lined up with the top of the "dog". With the drive shaft in this position, rotate the timing cam until the alignment groove is located directly under the proximity sensor. Lock the cam in place with the front set screw. Rotate the drive shaft and lock down the second set screw of the timing cam.

<u>To Test Timing Cam Setting</u>: Return the clamp safety switch to the normal position. Actuate the knee switch. Rotate the drive shaft 90 degrees. Hold the length switch closed and rotate the drive shaft until the stop solenoid is energized. Verify that the "clutch release dog" has travelled past the top of the "dog".

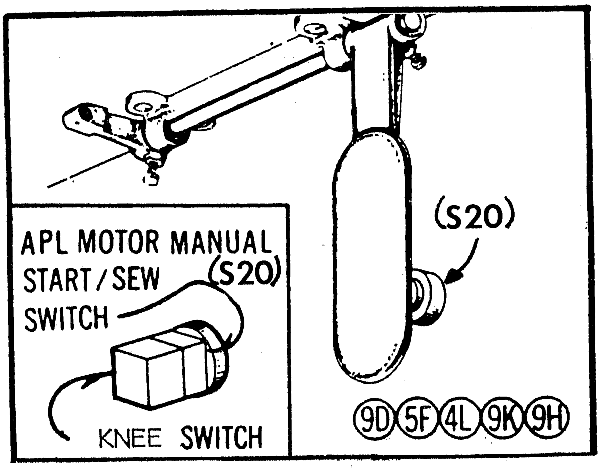
NOTE: The cable coming out of the proximity sensor should not have a sharp bend or be pulled tight. A smooth arc is required for proper operation of the proximity sensor assembly.





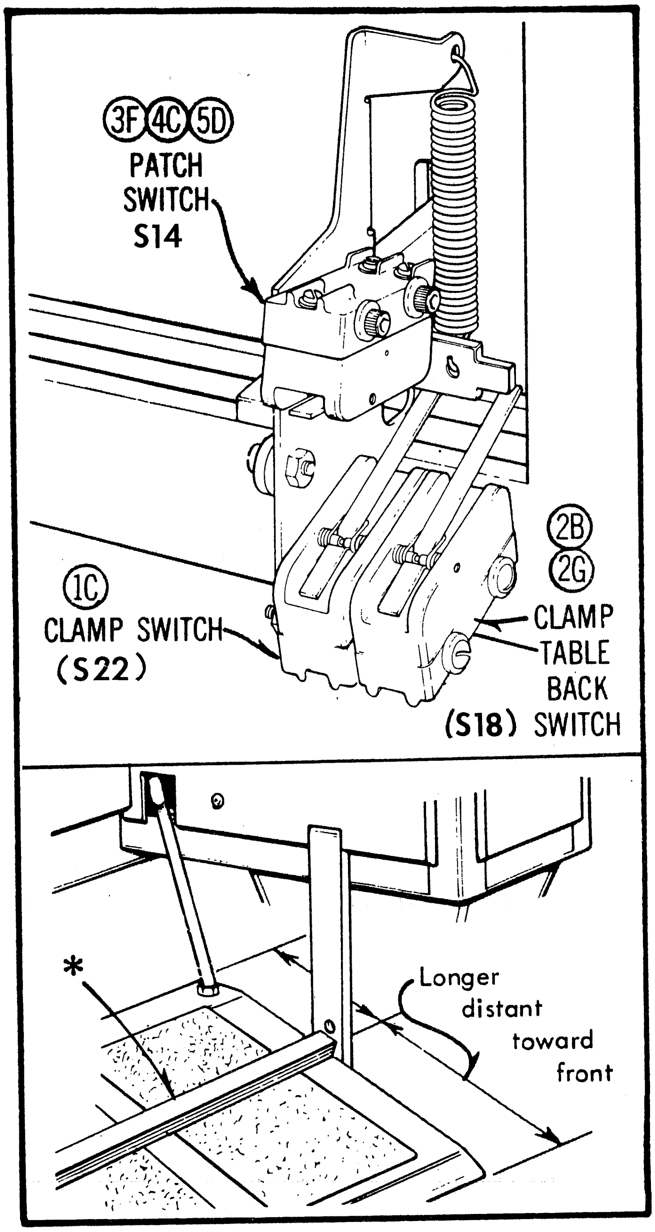


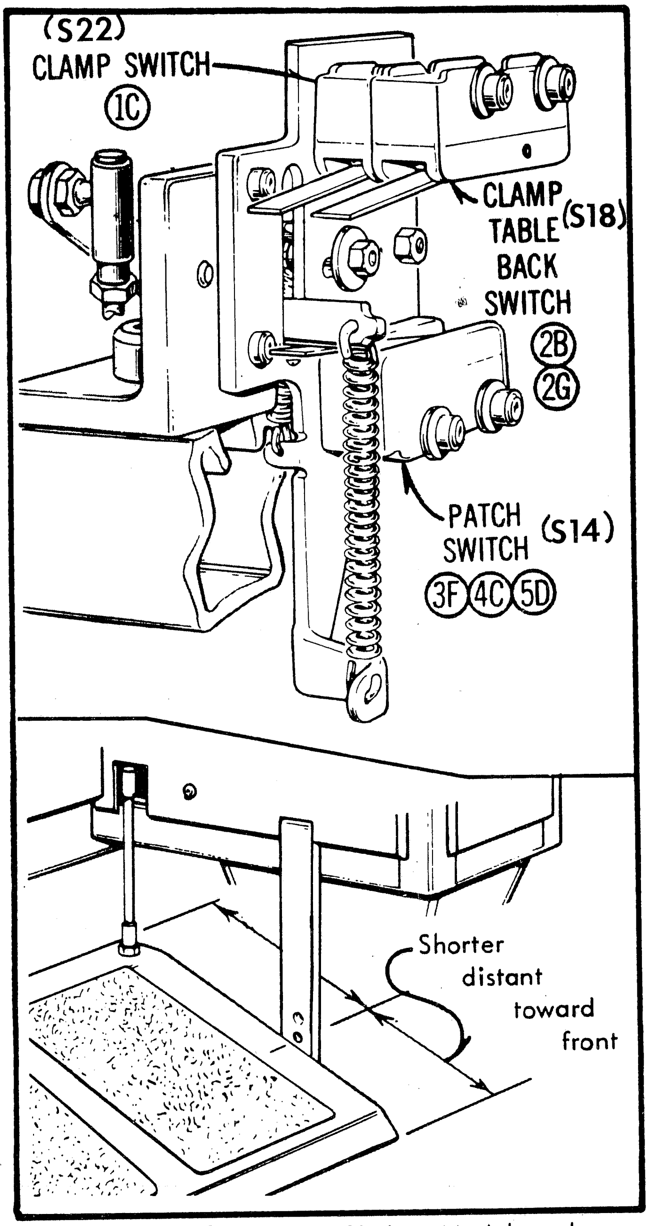
KNEE CONTROL



PEDAL SWITCHES

STANDING **SITTING**



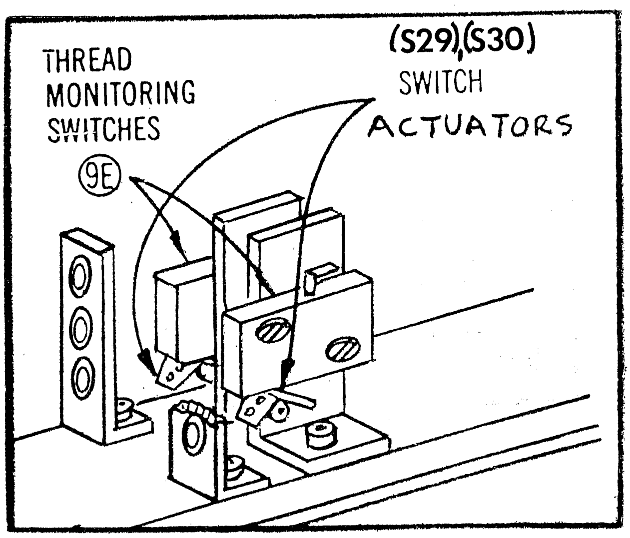


* Footrest - Option on Sitting Models only

THREAD MONITORING SWITCHES

These switches are wired in series across the knife Fingers circuit. If thread breaks, the opening of either of these switches will keep the knife fingers from raising, thus allowing the operator to make repairs.

TO ADJUST: Set switches on bracket to assure activation when threads are taut at the end of the sewing cycle.

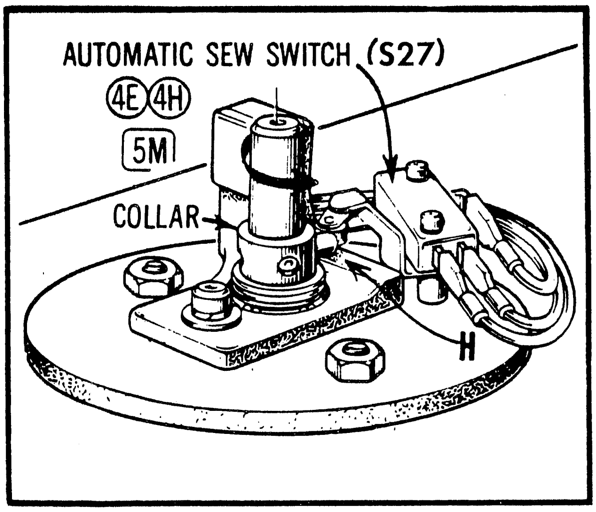


AUTOMATIC SEW SWITCH

As the patch loader is returning to its rest position, after loading patches, screw (H) actuates Automatic Sew switch, which starts the sewing cycle. Settings must be so that switch clicks when patch loader arm is traveling in the direction of arrow, and patch tray is clear of patch folding mechanism.

TO ADJUST: Set patch loader arm to meet above conditions by loosening collar. Rotate and set collar to actuate Automatic Sew switch when patch loader arm is at above described position.

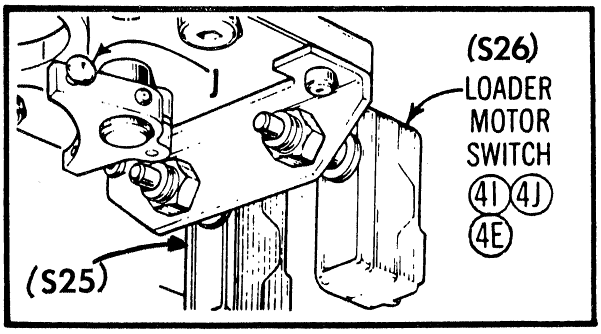
CAUTION: The Automatic Sew switch is set in a fixed position and is not adjustable.



LOADER MOTOR SWITCH

When the patch loader arm returns to its rest position, screw (J) actuates the loader motor switch, which in turn stops the loader motor. In combination with the braking mechanism and this switch, the patch loader arm must come to a complete stop as soon as this switch is actuated.

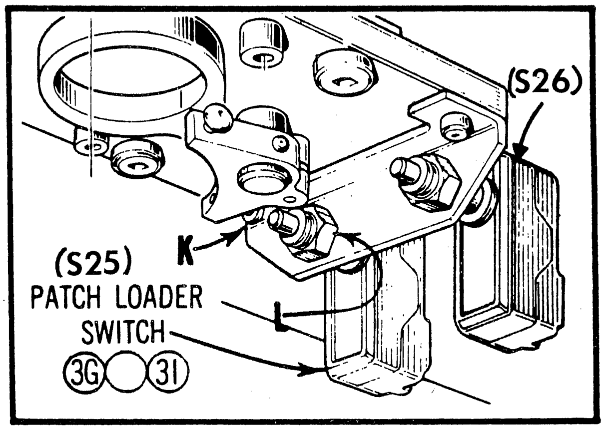
TO ADJUST: With patch loader arm in rest position, adjust screw (J) to click Loader Motor switch. After switch clicks, check that there is 1/16" additional travel of patch loader arm. This is to assure that the switch remains actuated in order to prevent the premature starting of the loader motor.



PATCH LOADER SWITCH

When patch loader arm reaches loading position, screw (K) will actuate Patch Loader switch, causing the patch folding brushes to close. This switch has a strong internal spring which is very effective in preventing deflection when the patch loader arm contacts stop.

TO ADJUST: Position screw (K) so that it causes the Patch Loader switch to click when the patch tray is in loading position. **IMPORTANT:** Check that switch plunger has 1/64" additional travel after patch loader arm has reached its loading position. This added movement is necessary to prevent jamming plunger into body of switch. If necessary, loosen nut (L) and reposition the switch on bracket to obtain 1/64" movement.



PATCH FOLDING SAFETY SWITCH

This switch is connected in series with the Sew/Center Dense Circuit. It is actuated by the closing of the Folding Brushes when the Clamp Table is in or approaching its rear position. Its function is to prevent sewing from starting until the Brush Blades are between the needle slots and sides of the Patch Guide.

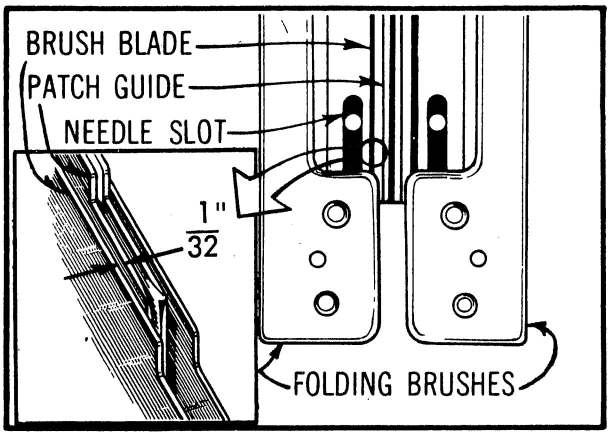
TO ADJUST: The following procedure is for obtaining the proper timing of switch actuation in relation to the position of the Brush Blades.

1. Operate Clamp Table to its back position allowing Clamp Arms to drop and Folding Brushes to remain open, while keeping Pedal depressed.

2. Stop flow of oil to Patch Folding Cylinder by turning Patch Folding metering screw (see page 61) until Brushes remain open when the Pedal is released.

3. Turn Patch Folding metering screw out, which will cause Folding Brushes to slowly close. Listen for actuation (click) of switch.

4. Click of switch must occur when Brush Blades are approximately 1/32 of an inch from the sides of the Patch Guide. This adjustment may vary slightly depending on the thickness of the material being used.

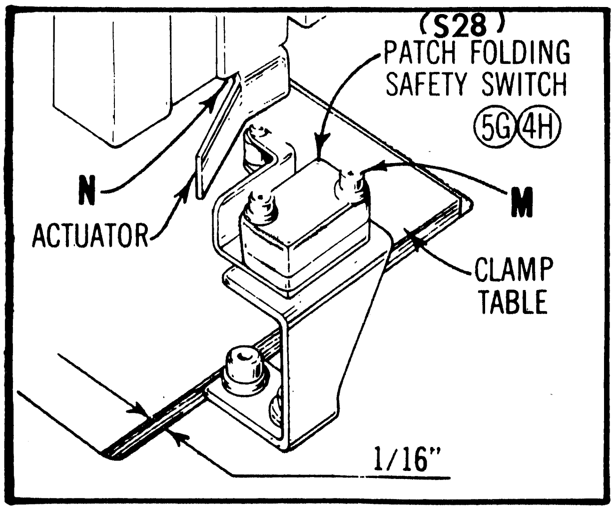


When making these adjustments or replacing a switch, the Pump and Motor must be turned OFF.

Proceed as follows:-

1. Send Clamp Table to its forward position.
2. Set Selector Switch to ELEC. position.
3. Turn Clamp Clearing Switch to BACK position. Clamp Table will not move because of position of Selector Switch but the Clamp Table Travel Solenoid will be energized permitting manual movement of the Clamp Table.
4. Manually close Folding Brushes.
5. Holding Folding Brushes close, manually move Clamp Table to rear position.
6. Switch should actuate (click) when Clamp Table is 1/16 of an inch from its extreme rear position.

   TO ADJUST: Set switch position on Bracket by means of screws (M). Obtain back and forth setting of actuator by means of screw (N).



PATCH LOADER MOTOR BRAKING

When making the following adjustments, set the Control Panel switches as follows:

Main	Pull to Start
Selector.	P & E
Clamp Safety . . .	Repair
Loading	Man. Front
Loader Sew. . . .	Off
Clamp Clearing . .	Center
Fingers	Any Position

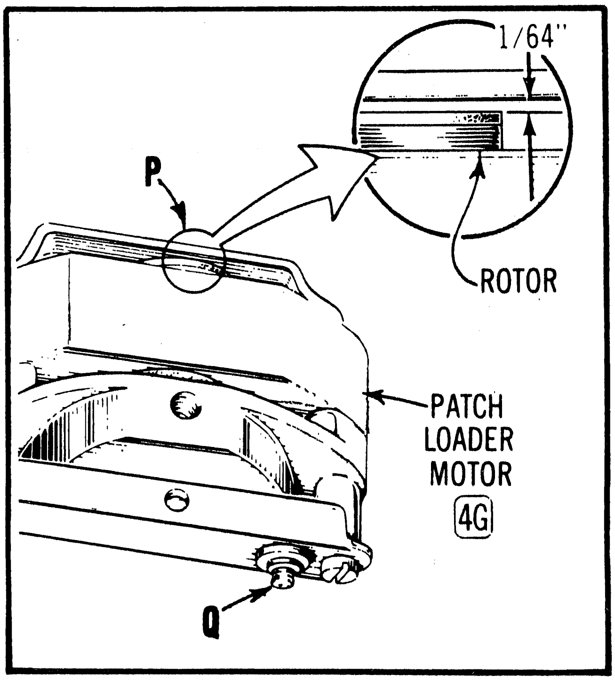
Braking is used to instantly stop the rotor as soon as the motor has been de-energized. This prevents overthrow of the Patch Loader Arm when reaching its rest position.

With Clamp Table all the way back, momentarily press Knee Switch. Release as soon as the Patch Loader Arm has travelled a short distance. If there is any overthrow or "gliding" of the Patch Loader Arm after the Knee Switch is released, adjust Patch Loader Motor Braking.

TO ADJUST:

1. Remove oil cups and motor cover.
2. Press and release the Knee Switch while observing action of rotor at point (P).
3. If there is overthrow, turn the adjusting screw (Q) clockwise for more braking action. The downward movement of the rotor should be approximately 1/64 of an inch when the Patch Loader Motor is energized.

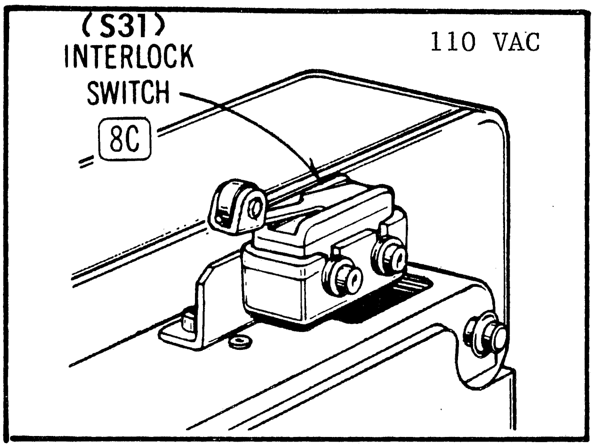
CAUTION: Excessive braking will cause the Patch Loader Motor to overheat and binding may occur.



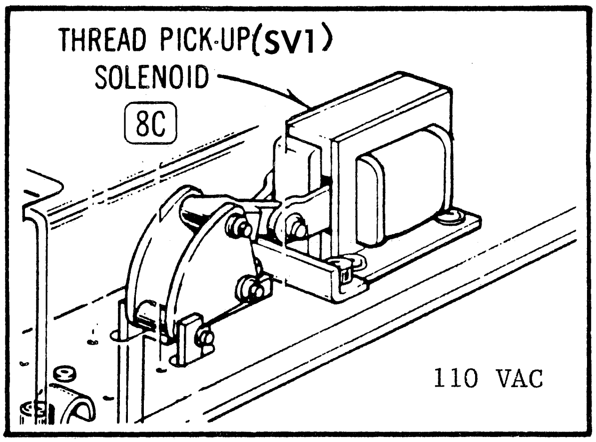
INTERLOCK SWITCH

This switch is wired in series with Thread Pick-up Circuit. Its purpose is to prevent the actuation of the Thread Pick-up Solenoid if the machine head cover is not completely closed.

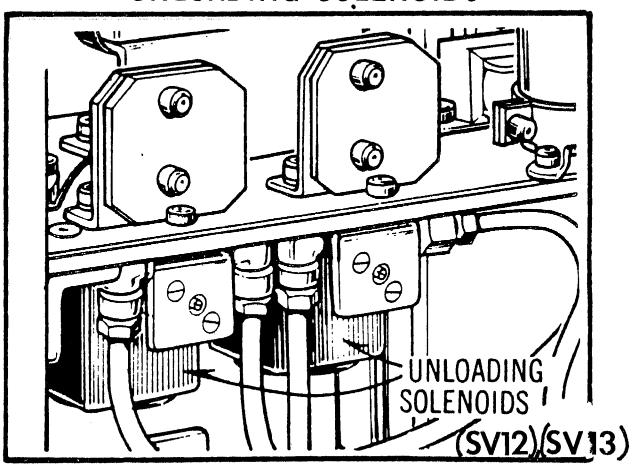
TO ADJUST: Switch should be set on its bracket to "click" open as soon as machine head cover is raised.



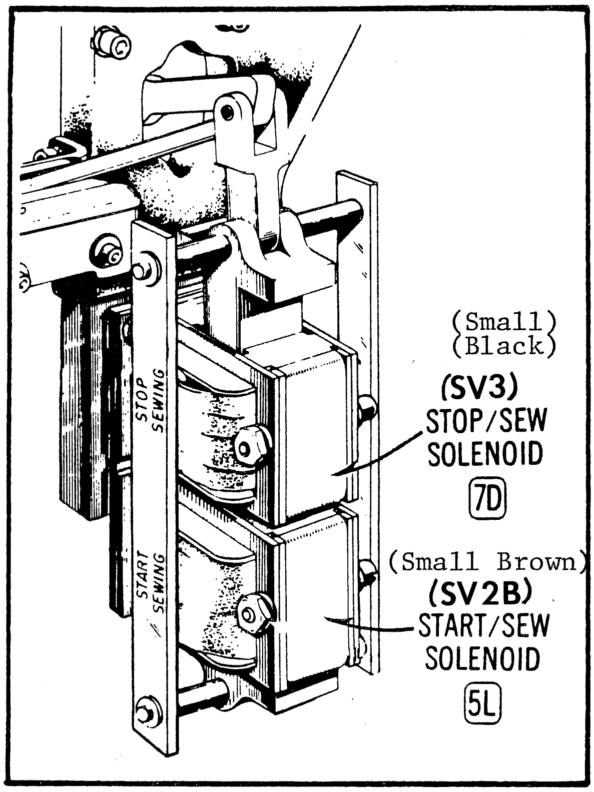
THREAD PICK-UP SOLENOID



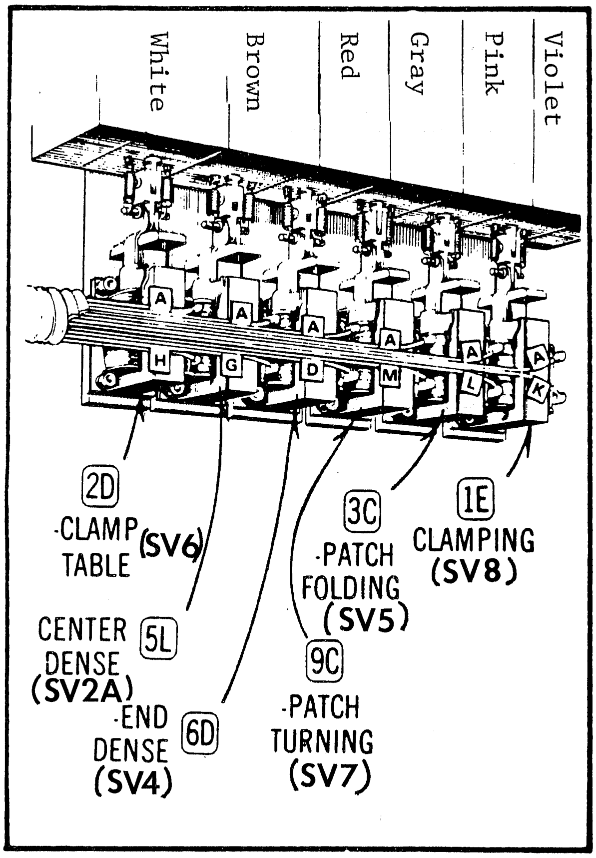
UNLOADING SOLENOIDS



STOP/START SOLENOID



MANIFOLD SOLENOIDS



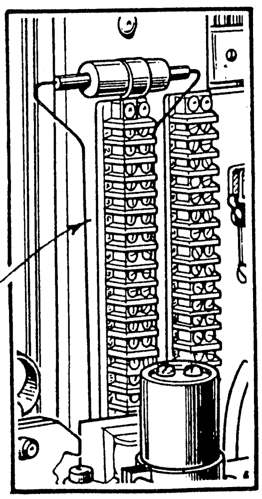
BARRIER TERMINAL BLOCKS WIRE CONNECTIONS AND TEST POINTS

TBY

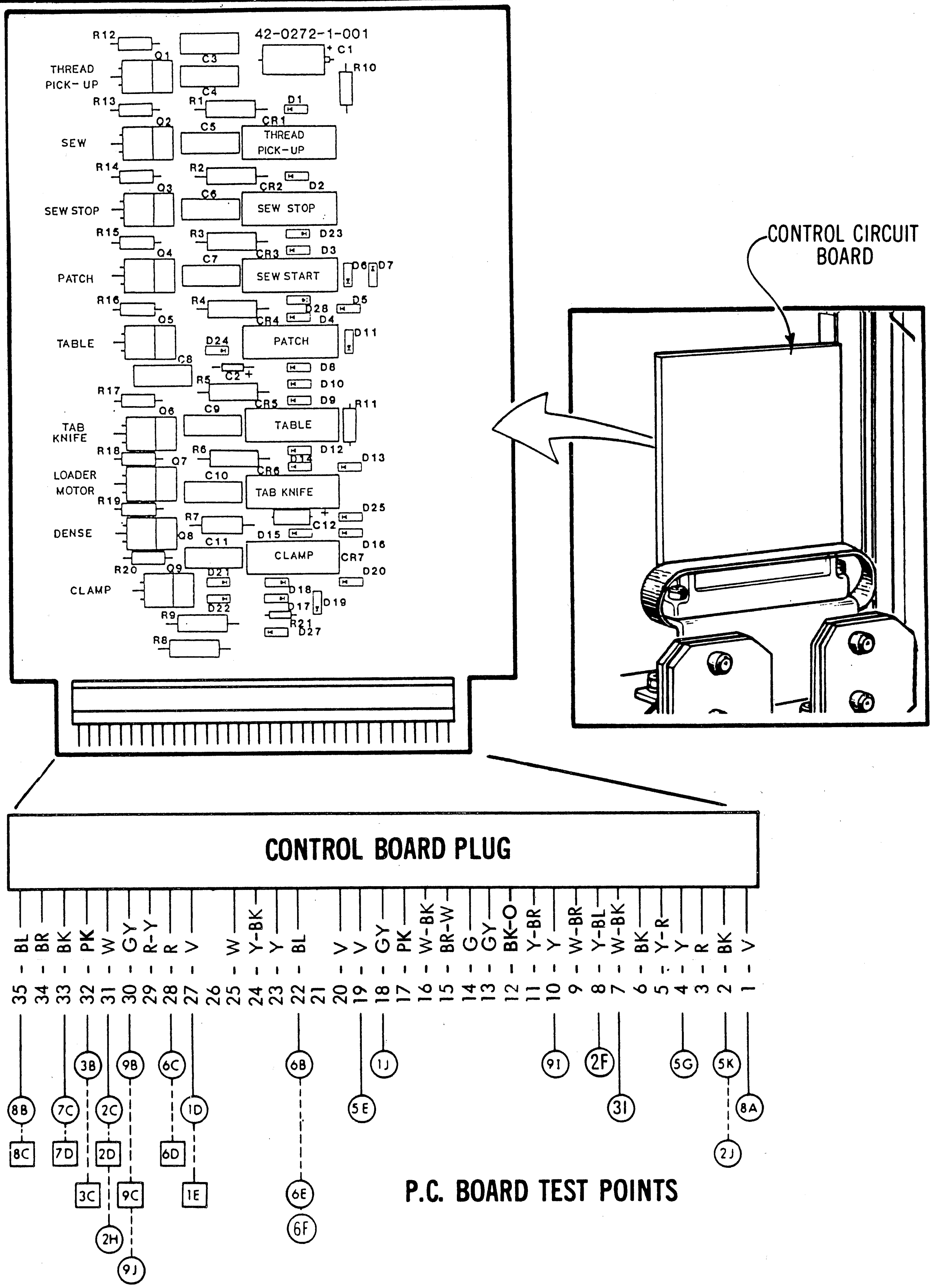
CLUTCH DOG (S16)	1	Y (2)	CLAMP CLR (S6-1)
TABLE FWD (S13)	2	BK (2)	FINGERS (S7-8)
TABLE FWD (S13)	3	BL/W,O (3)	LOADING (S4-1)
FINGERS DWN (S17)	4	W/G (2)	3rd POS. FT.SW.
2nd POS CLAMP (S22)	5	BL (3)	FINGERS DWN (S23)
	6	BK/O (1)	P1-12
LOADING (S4-5)	7	BK/W (2)	1st MTR STRAT (S24)
KNEE SW (S20-2)	8	W/BL (2)	THREAD MONITOR
TIMING SW (S10)	9	BR/Y (2)	CLAMP SAFETY
P1-29	10	R/Y (1)	PATCH LDR MTR (M2)
P1-34	11	BR (2)	FUSE (SEW)
FUSE (SEW)	12	BR (2)	SV2B (SEW)
	13	OPEN	
PATCH LDR MTR (M2)	14	O (2)	120 VAC
	15	O (1)	120 VAC
120 VAC	16	O (1)	120 VAC FUSE (F2)
24 VAC TXFMR	17	W (3)	GND
R100	18	W (2)	GND
	19	W (2)	GND
120 VAC	20	BK (2)	24 VAC

TBZ

+24 VOLTS	1	R (2)	+24 VOLTS
+24 VOLTS	2	R (3)	+24 VOLTS
1st MTR START (S24)	3	BK/R	
CLAMP SAFETY (S3-4)	4	Y/R (2)	P1-5
PATCH LDR (S25)	5	W/BK (3)	P1-7
CLAMP CLEARING (S6-2)	6	Y/BL (2)	P1-8
LOADING SW.(S4-3)	7	W/BR (2)	P1-9
1st POS. PATCH (S14)	8	Y/BR (2)	P1-11
3rd POS. FOOT SW. (S18)	9	G (2)	P1-13
1st POS. PATCH (S14)	10	BR/W (1)	P1-15
FINGERS (S7-7)	11	P (2)	P1-17
CLAMP SAFETY (S3-7)	12	V (2)	P1-20
KNEE SW. S20-4)	13	Y/BK (1)	P1-24
	14	W (2)	GROUND
FINGERS UP (S19)	15	Y/G (2)	KNEE SW. (S20-1)
LOADER/SEW (S5-4)	16	W/R (1)	PATCH FOLD: SAFETY (S2
FINGERS (S7-2)	17	R/W (3)	FINGERS UP (S19)
	18	BK/Y (2)	STOP/START (S1-4)
	19	G (2)	2.5 VAC
	20	G (2)	2.5 VAC

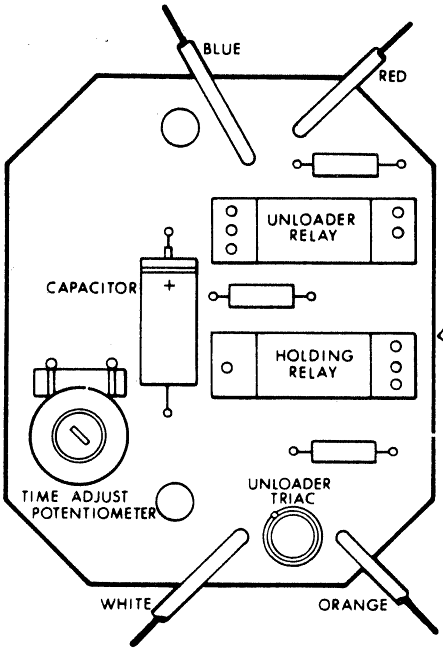


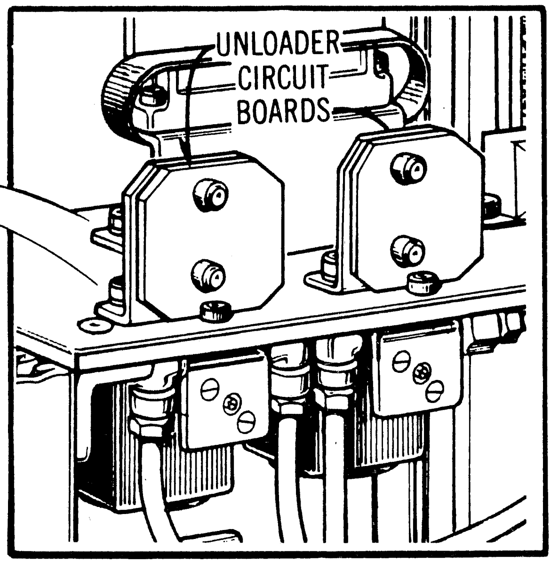
A66 CONTROL CIRCUIT BOARD WIRE CONNECTIONS AND TEST POINTS



P.C. BOARD TEST POINTS

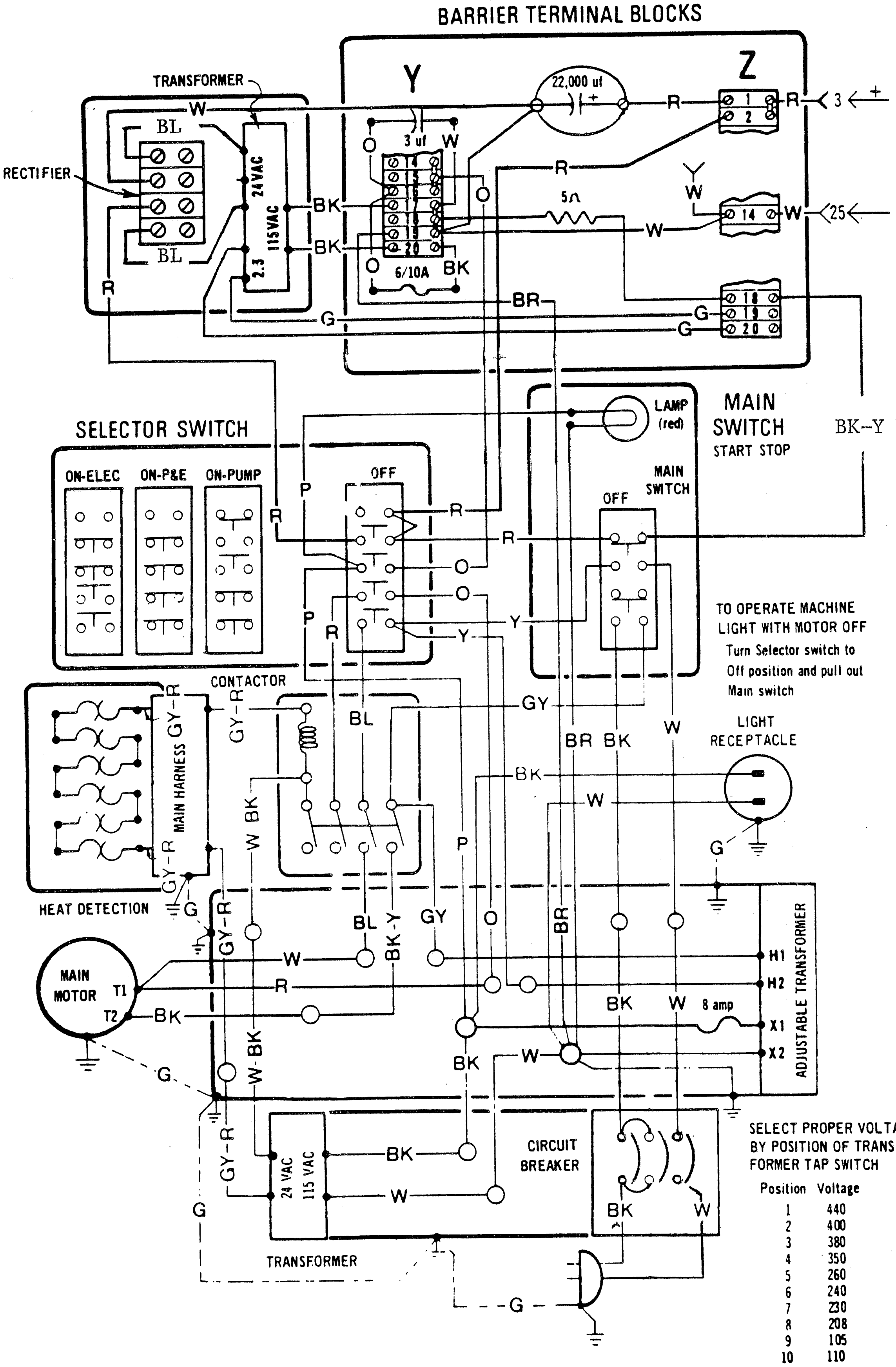
UNLOADER CIRCUIT BOARDS (2USED)





A68 SINGLE PHASE POWER SUPPLY WIRING DIAGRAM

100-400 VOLTS 50-60 CYCLE (HERTZ)



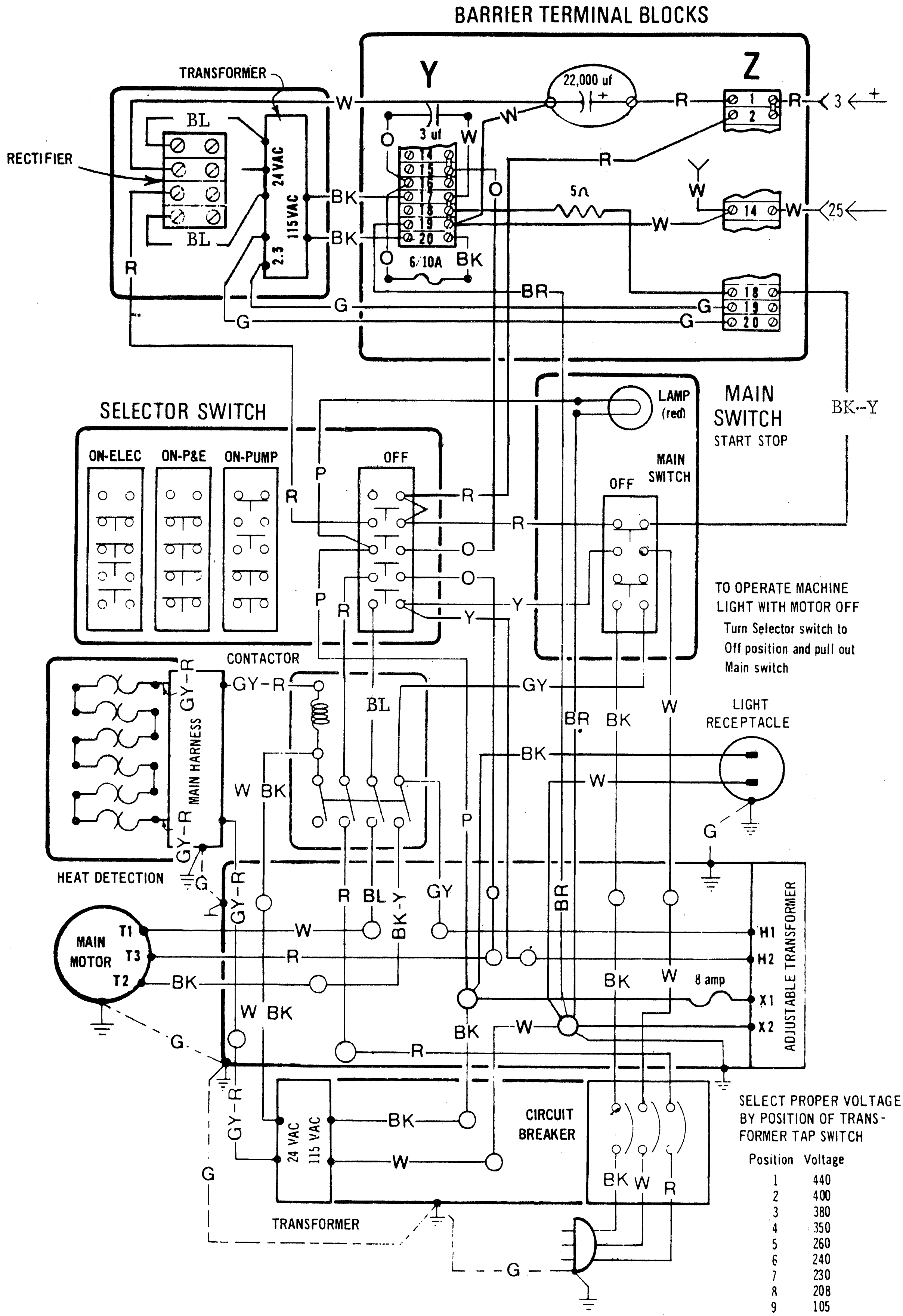
TO OPERATE MACHINE LIGHT WITH MOTOR OFF
Turn Selector switch to Off position and pull out Main switch

SELECT PROPER VOLTAGE BY POSITION OF TRANS-FORMER TAP SWITCH

Position	Voltage
1	440
2	400
3	380
4	350
5	260
6	240
7	230
8	208
9	105
10	110

MULTIPLE PHASE POWER SUPPLY WIRING DIAGRAM A69

100-400 VOLTS 50-60 CYCLE (HERTZ)



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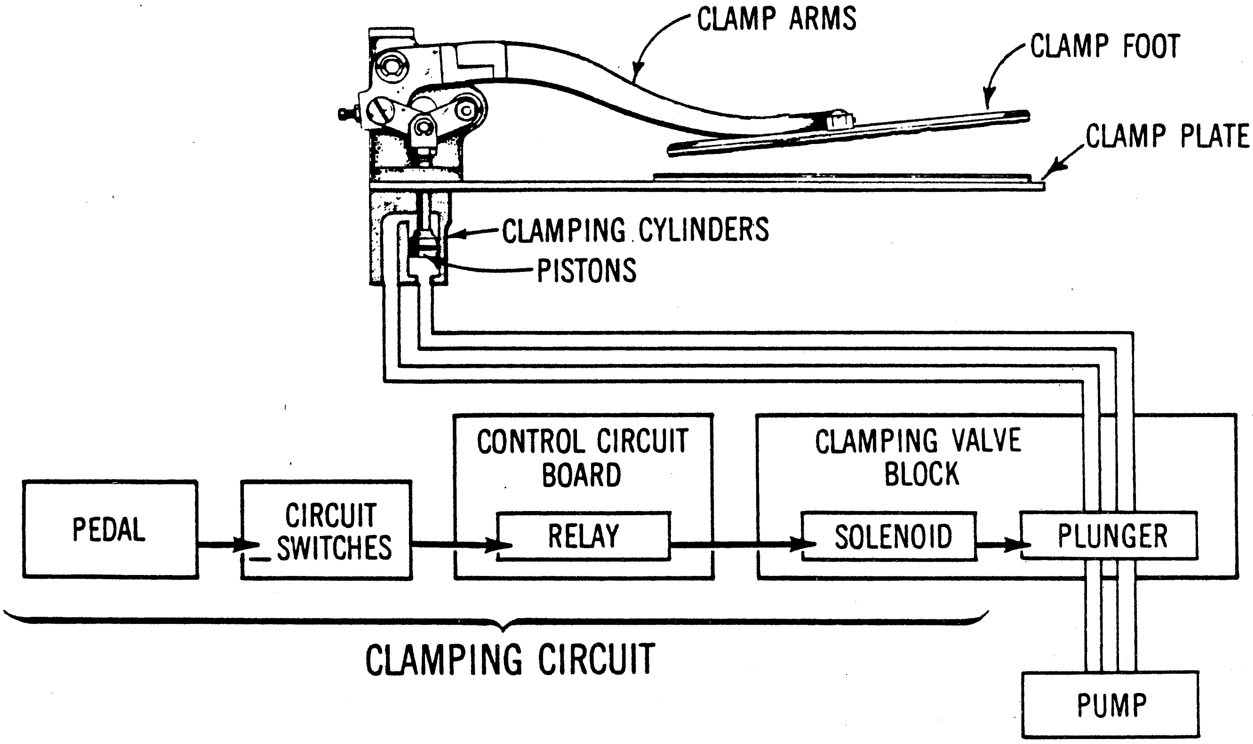
Position	Voltage
1	440
2	400
3	380
4	350
5	260
6	240
7	230
8	208
9	105
10	110

NOTES

CLAMPING

Raising and lowering of the Clamp is hydraulically powered and electrically operated by manually actuating the pedal. With Main Switch pulled out to "START" and control panel switches set for desired operating procedure, hydraulic oil flows from pump through the Clamping Valve Block to the bottom of Clamping Cylinders, pushing pistons up, which in turn causes Clamp to move to its down position. When the pedal is partly depressed, the Clamping Circuit activates the Clamping Solenoid. This causes the plunger in Clamping Valve Block to shift the flow of oil to the top of Clamping Cylinders, pushing pistons down which in turn causes Clamp to rise to its up position.

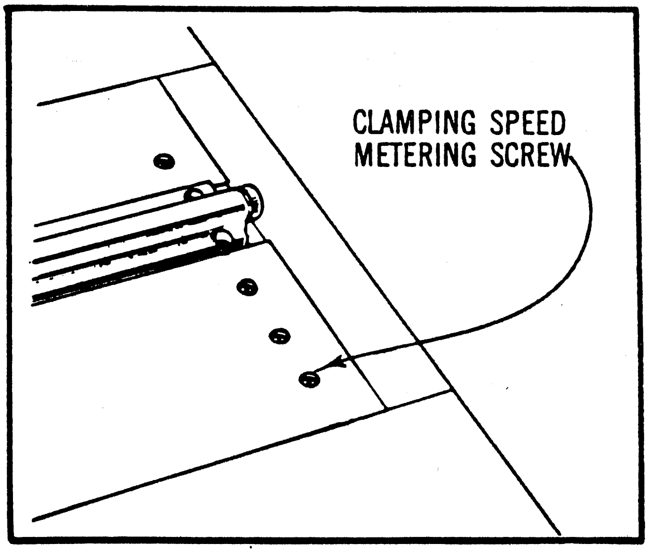


MAINTENANCE AND ADJUSTMENTS

CLAMPING SPEED

Clamping speed is adjusted by varying the flow of hydraulic oil to the Clamping Cylinders by means of the Clamping Speed Metering Screw.

TO ADJUST: To slow clamping action, turn Clamping Speed Metering Screw in (clockwise). Turning metering screw out (counterclockwise) will produce a faster clamping action.



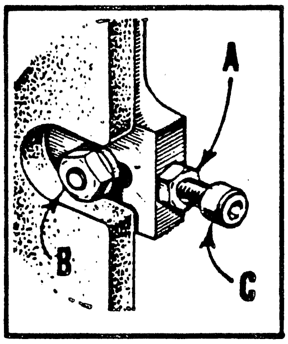
CLAMP PRESSURE

Adjustments should be made with no material under the clamp. Both clamp arms must be adjusted at the same time.

1. Release all clamping pressure by loosening the nuts (A & B) and then backing off screw (C). Pull Main Switch to "START" and tighten nut (B).

2. Operating Clamp with power "ON", check that levers (E) are in alignment when Clamp is in the down position. This alignment is correct when center of pin (D) is 1-3/4" above clamp plate.

   TO ADJUST: Loosen nut (G) and turn piston rod (H) in or out of clevis (F) until this alignment is correct. For minor correction, turn piston rod (H) with small pliers. For a greater adjustment, remove fittings under the Clamp Cylinder and turn piston rod from bottom by screwdriver pressing upward while making this adjustment.



3. Apply clamping pressure by turning screw (C) inward until it bottoms, then one-half turn further. Tighten nut (A).

4. Check that Clamp holds material firmly at all points. If slippage occurs under either side of the clamp foot, increase pressure on that side by turning screw (C) slightly further inward, but not so far that the front of the clamp foot is raised. If tipping occurs, release the pressure of screw (C) the minimum necessary on the side that is low to restore to a level position.

TROUBLESHOOTING

CLAMP FAILS TO HOLD THE WORK

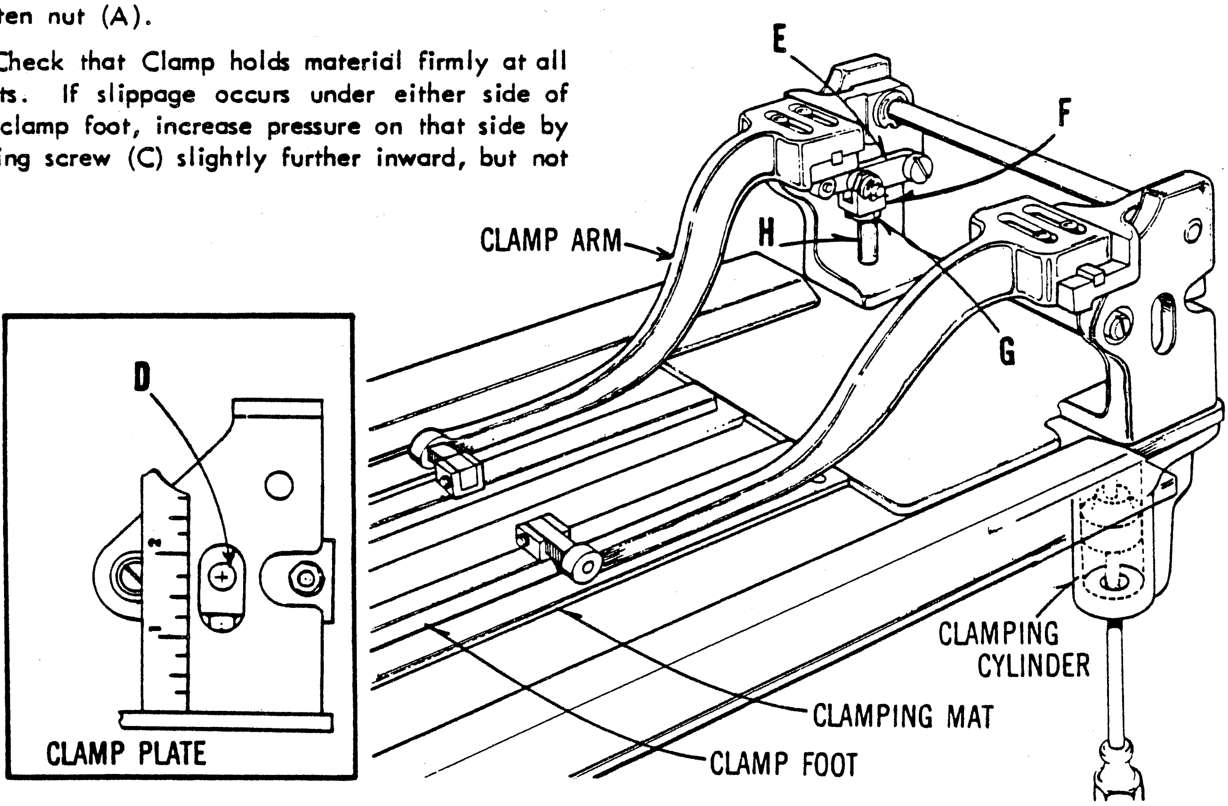
Check pads of clamping mats. Replace if worn. Check rubber soles of clamp foot. Replace if worn. Check and readjust clamping pressure if necessary. If lack of pressure persists, replace "O" rings in the clamping cylinders.

CLAMP FAILS TO RESPOND TO PEDAL CONTROL

Check clamping speed adjustment. If sluggishness persists, replace "O" rings in clamping cylinders.

CLAMP OPERATES SLUGGISHLY

Check that Control Panel is set fo, desired operating procedure. Check clamp pressure adjustments for binding. If trouble still persists, recheck the Clamping Circuit.



CLAMP TABLE TRAVEL

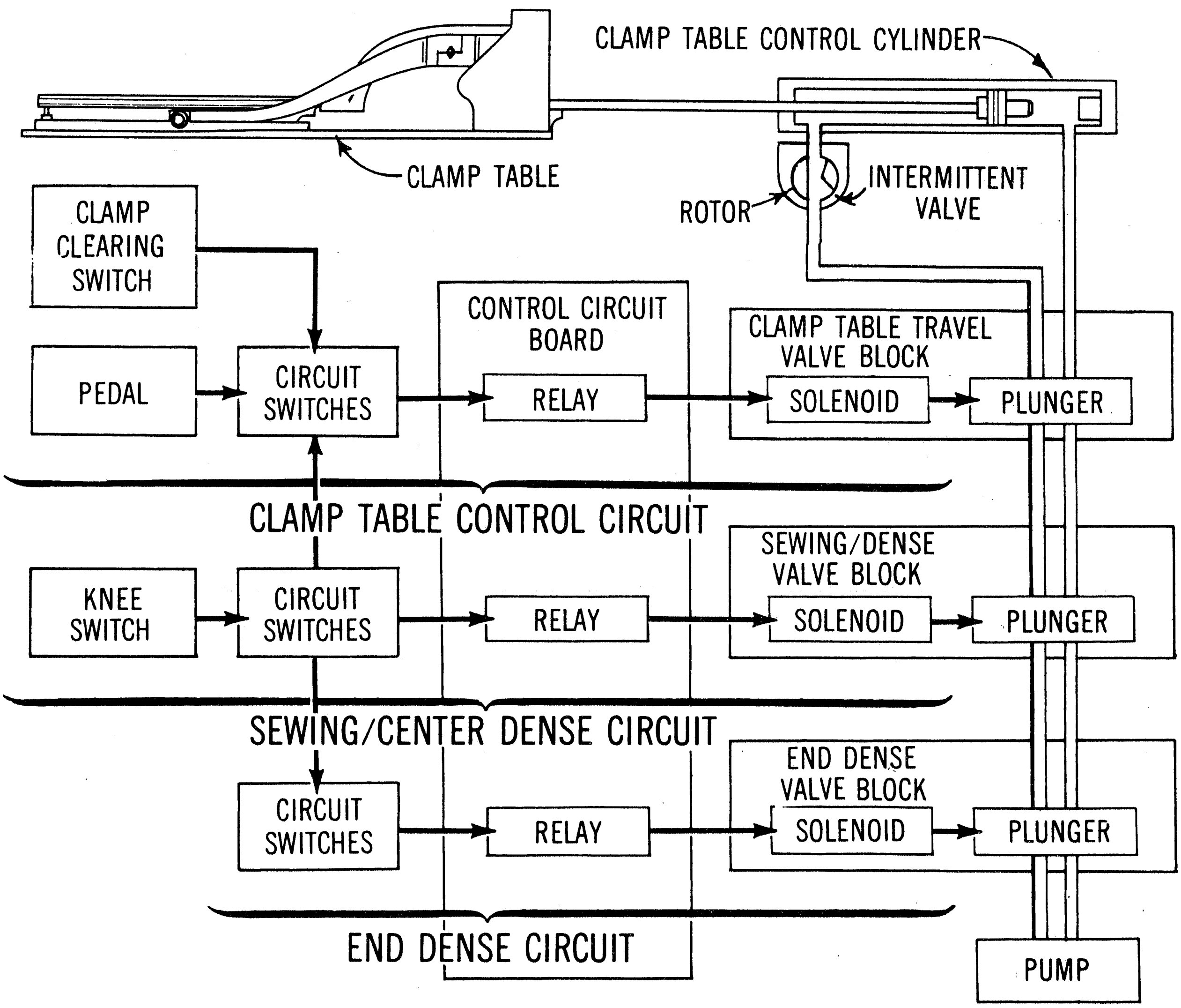
Clamp Table and Intermittent Feeding are hydraulically powered and electrically operated as follows:

CLAMP CLEARING-BACK (not sewing)

When the Clamp Table is in its forward position, Clamp Clearing Switch operates the Clamp Table Control Circuit to energize Clamp Table Solenoid. This establishes a holding circuit to continue energizing the solenoid, and lowers the Clamp Table Plunger, directing oil to the front of the Clamp Table Control Cylinder. This action moves the Clamp Table back and maintains this position until the holding circuit is broken. (Described in the following paragraphs.) Sew/Center Dense Valve Block and End Dense Valve Block are fully open at this time allowing free flow of oil for fast movement of the Clamp Table.

CLAMP CLEARING-FORWARD (not sewing)

When the Clamp Table is in its back position, moving Clamp Clearing Switch to "FORWARD" breaks the holding circuit. This deenergizes the clamp table solenoid shifting plunger of the Clamp Table Control Valve Block up so that oil from the pump is directed to the rear of Clamp Table Control Cylinder, causing the Clamp Table to move to its forward position. Sewing/Center Dense and End Dense Valve Blocks are still fully opened, allowing for fast movement of Clamp Table.



INTERMITTENT CLAMP TABLE FORWARD TRAVEL AND STITCH DENSITY

With the Clamp Table in its back position, the Knee Switch (sewing) is pressed, breaking the Clamp Table holding circuit by deenergizing the Clamp Table solenoid thus raising the plunger of the Clamp Table Valve Block. This allows oil from front of Clamp Table Control Cylinder to exhaust through the Intermittent Valve.

The Clutch is also engaged when the Knee Switch is pressed. This causes the rotor of the Intermittent Valve to turn with the drive shaft regulating the bleed-out of oil from the front side of the piston of Clamp Table Control Cylinder. This action allows the Clamp Table to travel forward only when needles are out of the work. At the end of the sewing cycle, both Sew/Dense and End Dense plungers rise and the rotor of the Intermittent Valve stops. This provides fast final Clamp Table travel to its forward position.

The End Dense Solenoid is energized and deenergized twice during the sewing cycle -- for short periods at the beginning and end of the sewing cycle. This provides for closer stitch density required at each end of the welting. The Sew/Center Dense Solenoid is energized throughout the cycle and regulates stitching density at the center of the welting when the End Dense Solenoid is not energized.

MAINTENANCE AND ADJUSTMENTS

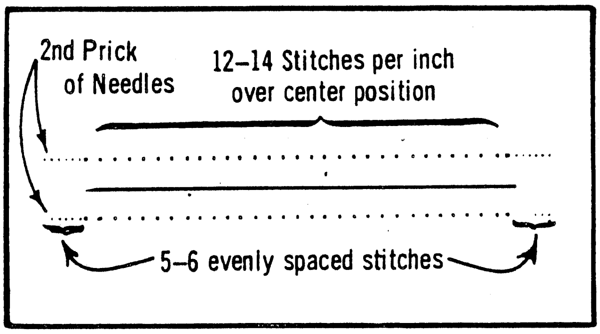
PRICKING-IN TEST

If stitch spacing is in doubt or a skip of the first stitch persists despite correct adjustment of the related sewing elements, it would be wise to make a "pricking-in" test as follows:

1. Install "pricking" needles prepared from #950 class needles shortened to 1-9/16" overall and sharpen to a point.

2. Place a sheet of strong paper under clamp and operate machine through its sewing cycle.

Observe that pattern of stitch spacing conforms to diagram, if not correct pattern.



STITCH DENSITY AND CLAMP TABLE TRAVEL SPEED

These adjustments must be made in the following order with the machine at normal operating temperature.

CLAMP TABLE TRAVEL SPEED (not sewing)

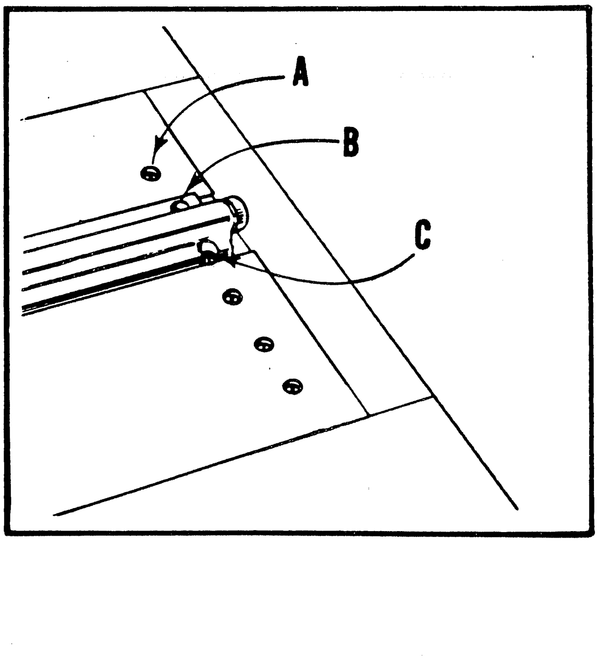
Clamp Table should operate at moderate speed. Turn meter screw (A) out (counterclockwise) for faster travel. Turn in (clockwise) for slower travel.

CENTER STITCH DENSITY

Recommended density is 12 to 14 stitches per inch. Turning metering screw (B) in (clockwise) for more stitches. Turn out (counterclockwise) for fewer stitches.

END STITCH DENSITY

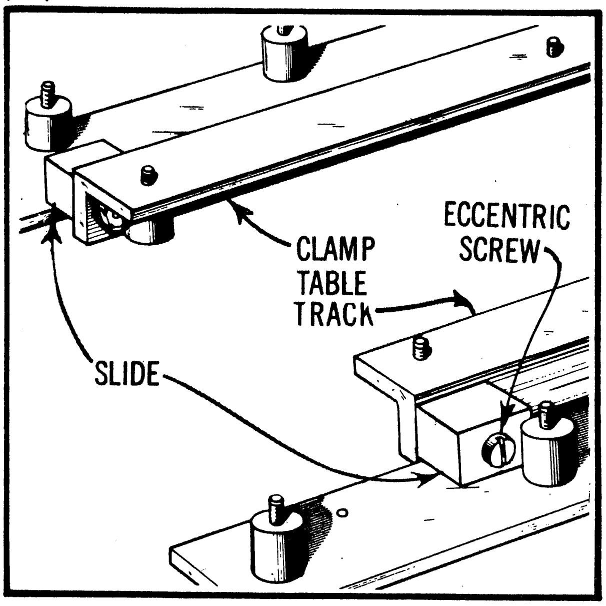
Recommended density is 22 to 24 stitches per inch. Turn metering screw (C) in (clockwise) for more stitches. Turn out (counterclockwise) for fewer stitches.



CLAMP TABLE SLIDES

Slides which ride on Clamp Table Tracks should be adjusted to raise the Clamp Table sufficiently to prevent rubbing against the Bedplate.

TO ADJUST: Set slides by turning eccentric screws to set the Clamp Table to obtain the proper clearance.



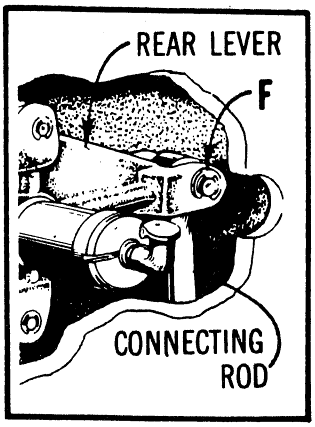
INTERMITTENT VALVE

Adhere to the following procedure when removing or installing the Intermittent Valve.

TO DISASSEMBLE

1. Remove Timing Switch Bracket (D). Do not disturb setting by removing switch from bracket.

2. With Drive Shaft in "Locked" Position, remove Rollpin (K).

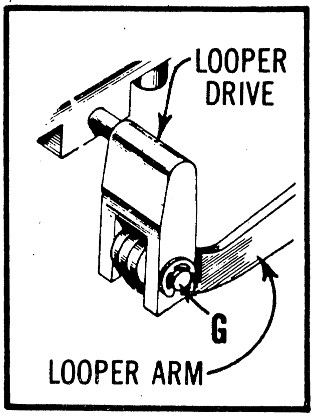


3. Disconnect both of the hydraulic tubes from the Intermittent Valve.

4. Disconnect Pin (F) from Connecting Rod.

5. Disconnect Pin (G) allowing Looper Arm to hang free.

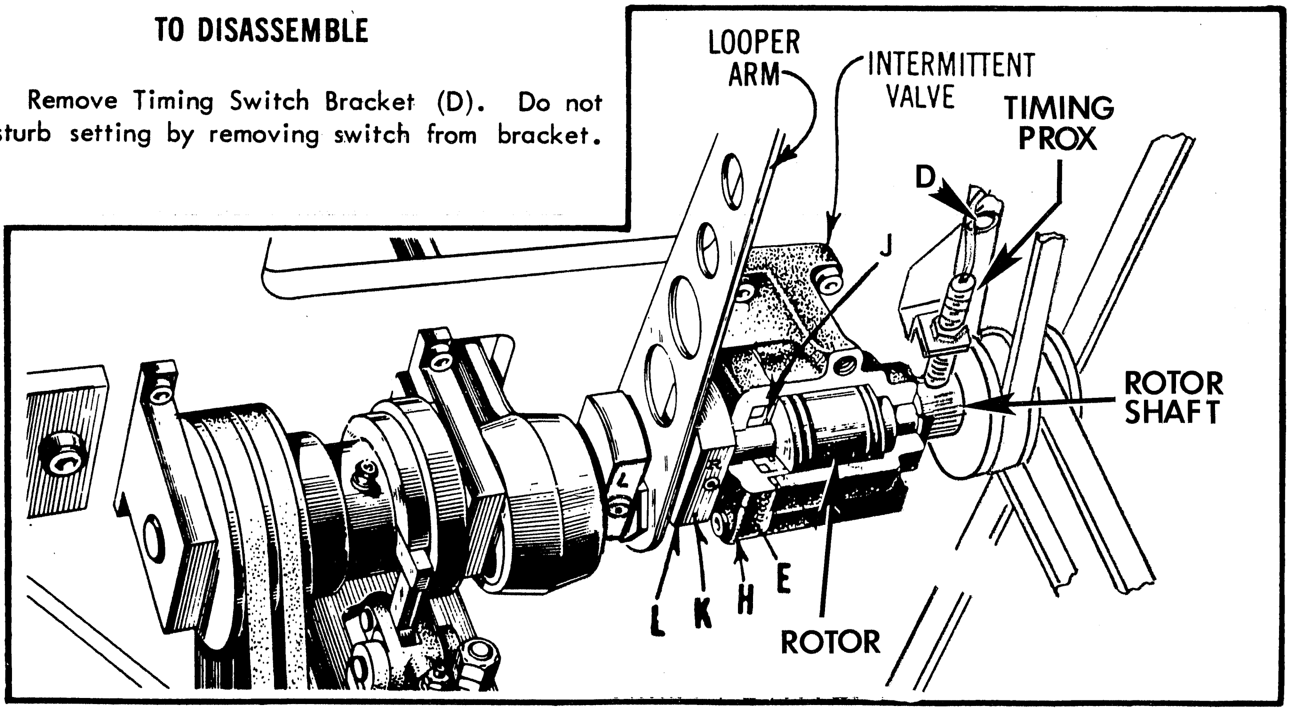
6. Remove (4) screws holding the intermittent Valve to Bedplate.



7. Intermittent Valve can now be removed from Drive Shaft by turning the valve down toward the front of machine and pulling to the right.

8. Remove Rollpin (E) and crank Block (L) from Intermittent Valve.

9. Before removing End Cover (H) and Rotor, eliminate all sharp edges on Rotor Shaft and wipe clean to avoid damage to Oil Seals (J).



TO REASSEMBLE

1. Before reassembling the Intermittent Valve, clean and remove any sharp edges from replacement parts in order to avoid damage to Oil Seals. Also check that Cover Gasket and all Oil Seals are all in good condition.

2. Replace Crank Block (L) and Rollpin (E).

3. Replace Intermittent Valve on Drive Shaft and attach valve to Bedplate. Do not tighten screw at this time.

4. Replace Rollpin (K).

5. Connect the Looper Arm to Looper Drive with Pin (G).

6. Attach the Connecting Rod to the Rear Lever with Pin (F).

7. Rotate Drive Shaft to allow the Intermittent Valve to center itself. Tighten all screws.

8. Attach hydraulic tubes to Intermittent Valve.

9. Reassemble Timing Switch Bracket (D) on Bedplate. If necessary, check Timing Switch setting (Page A 56).

TROUBLE SHOOTING

CLAMP TABLE FAILS TO TRAVEL

Check for mechanical obstructions to Clamp Table movement.

Check for broken piston rod of Clamp Table Travel Cylinder Assembly.

Check Clamp Table Control Circuit.

Check Drive Shaft. If Drive Shaft has been disassembled, Intermittent Valve may be 180 degrees out of time, which is cutting off oil supply to Clamp Table Travel Cylinder. See Drive Shaft Assembly.

CLAMP TABLE TRAVEL SLOWLY OR IRREGULARLY

Clear air from hydraulic system by turning the Clamp Clearing Switch from FORWARD to BACK positions several times.

Detach Clamp Table from piston rod and check that Clamp Table moves freely by manual operation.

Check End Density, Center Density and Clamp Table Travel metering screws and, if necessary, readjust.

Check Clamp Table Control Circuit and Stitch Density Circuit.

If trouble persists, replace all Quad and "O" Rings in Clamp Table Travel Cylinder.

CLAMP TABLE MAKES LONG FEED STROKE AT LAST STITCH

Check adjustments of the Stop Motion and the Timing Switch.

See that Oil Check in Center Density Manifold Block is properly placed. Oil check moves to slow plunger on its return to the "UP" position.

NOTE: The plungers in the manifold valve blocks are not completely interchangeable. In order to avoid possible confusion, remove and replace plungers one at a time.

CLAMP TABLE CONTINUOUOUSLY TRAVELS BETWEEN FORWARD AND BACKWARD POSITION AND SEWING WILL NOT STOP

Check adjustments of the Length Switch and the Timing Switch.

Check that the Length Switch is actuated before the Length Safety Switch.

CLAMP ARMS CHATTER WHEN CLAMP TABLE IS OPERATED BY CLAMP CLEARING SWITCH

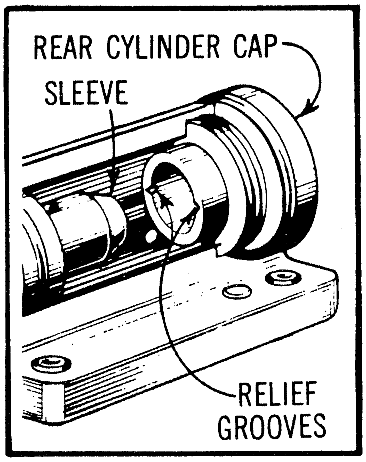
Check for broken or weak springs on solenoid at Clamp Table Manifold Valve Block.

Check Clamp Table Control Circuit.

FIRST STITCH SKIPS DUE TO SLOW STARTING OF CLAMP TABLE

1. A partial vacuum created between Sleeve and Rear Cylinder Cap may delay the initial sewing travel of the Feed Piston.

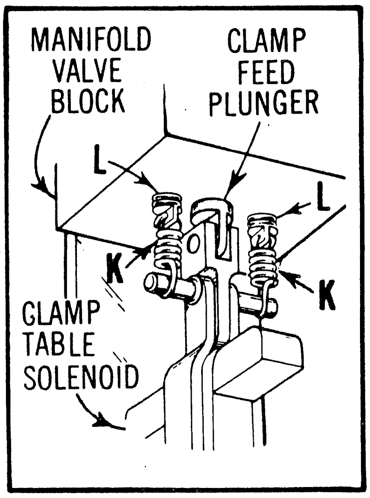
TO ADJUST:
Check that, as the Clamp Table is returning to the "start/sew" position, there is no hesitation in the Clamp Table Travel during the last inch of rearward travel. Any hesitation noted at this point indicates that the fit of the Sleeve into the Cap is too tight causing a similar hesitation when the Sleeve starts forward out of the Cap. Using a small three cornered file, cut two light relief grooves lengthwise and opposite each other in the inside diameter of the cap opening. The grooves should not exceed .015 inches in depth. If the grooves are cut too deeply, a pounding action will result each time the Clamp Table is sent back because the cushion of oil, between the Sleeve and the Cap, will dissipate too quickly.



Any evidence of shine marks on the sleeve, should be removed with emery cloth as this indicates high spots which may cause sticking.

2. Too little tension on the Clamp Table Solenoid Springs (K) or a sticking "O" Ring on the Clamp Feed Plunger can create a hesitation in the initial clamp forward feed.

TO ADJUST:
In addition to using a new "O" Ring on the plunger, the tension of the Solenoid Springs (K) can be increased by screwing Spring Anchors (L) farther into Manifold Valve Block to speed up release of Clamp Table Solenoid.



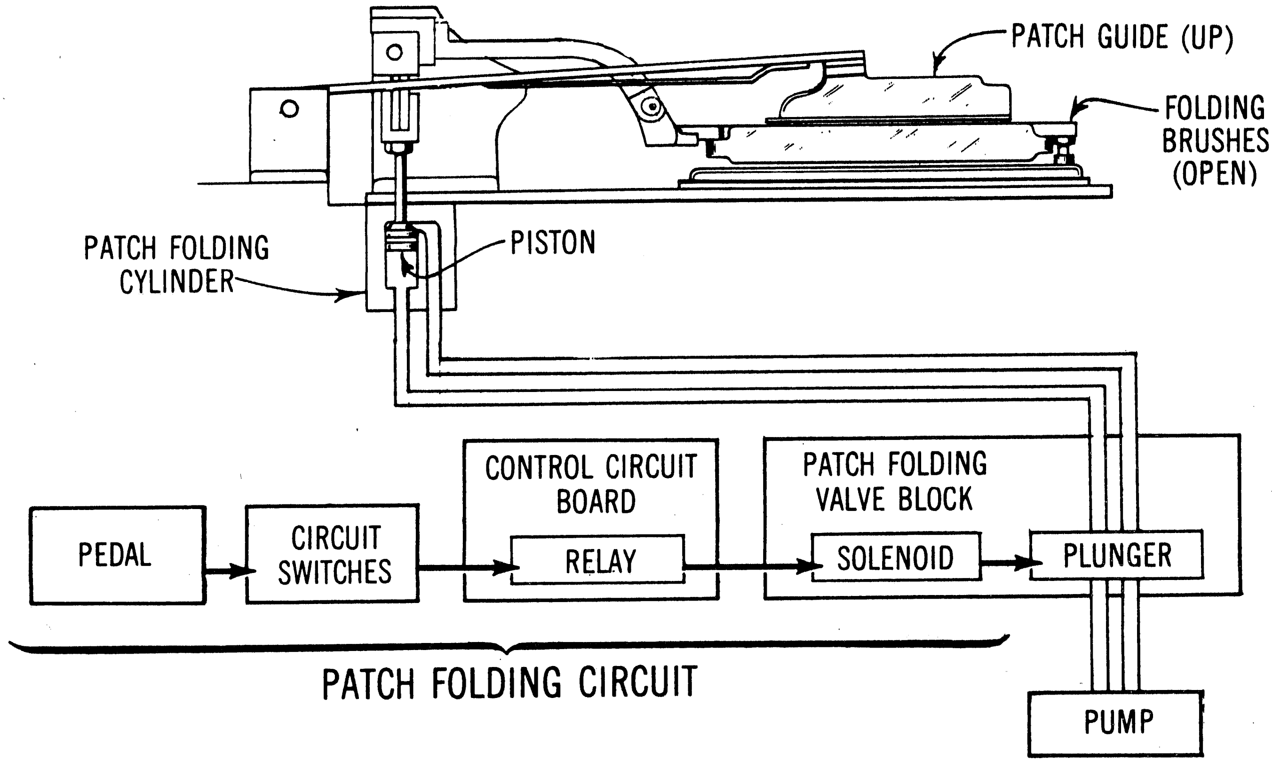
3. The setting of the Clutch Dog Switch is critical in that the Clamp Table Back Holding Circuit must be broken as quickly as possible after the Start-Sew Solenoid is energized.

TO ADJUST: Check this adjustment by referring to the Electrical Components Section under the Clutch Dog Switch.

NOTES

PATCH FOLDING

Patch Folding is hydraulically powered and electrically operated. Operating the pedal controls the electrical circuit which energizes the solenoid of the Patch Folding Circuit. This solenoid controls a manifold plunger which shifts the flow of oil to the Patch Folding Cylinder. When solenoid is de-energized, plunger movement causes oil to flow to top of the Patch Folding Cylinder. This pushes piston down to lower the Patch Guide and to close the Patch Folders. Energizing the Solenoid and the resulting valve movement, directs oil to the bottom of the Patch Folding Cylinder. This pushes the piston up to raise the Patch Guide and open the Patch Folders.

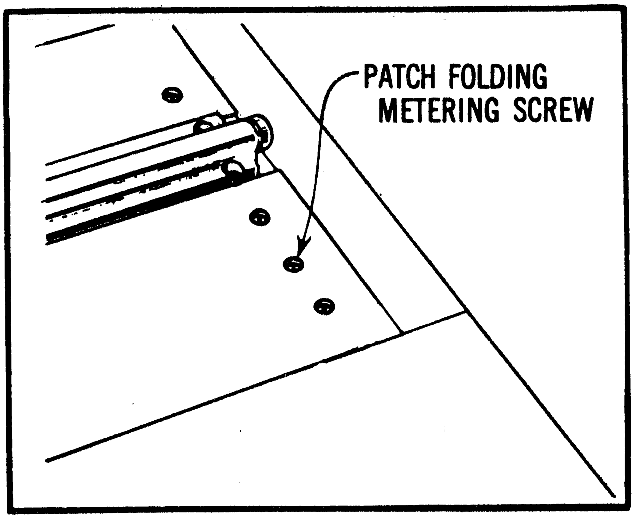


MAINTENANCE AND ADJUSTMENTS

PATCH FOLDING SPEED

Speed of Patch Guide and Patch Folders is adjusted by varying the flow of hydraulic oil to the Patch Folding Cylinder by means of the Patch Folding Metering Screw.

TO ADJUST: Turning Patch Folding Metering Screw in (clockwise) slows movement. Turning this metering screw out (counterclockwise) produces a faster patch folding action.



PATCH GUIDES

IMPORTANT: THE PATCH GUIDE IS FACTORY POSITIONED FOR EXACT CENTRALIZATION. DO NOT CHANGE LOCATION OF THE HINGE BRACKETS

ELIMINATION OF SIDE PLAY

If play exists between the Patch Guide and the Patch Guide Arm, tighten screws (A) sufficiently for slight restraining of the Patch Guide. If play exists between the Patch Guide Arm and Hinge Brackets, loosen only one Hinge Bracket and, while pressing brackets together, retighten screws (B). As long as one Hinge Bracket remains fixed, Patch Guide Arm will remain centralized.

LEVELING OF PATCH GUIDE

The bottom surface of the Patch Guide should rest flat on the top surface of the Throat Plate. For front to back alignment, adjust by screw (C). For crosswise alignment, adjustment is made by bending Patch Guide Arm as needed.

PATCH GUIDE/THROAT PLATE ALIGNMENT

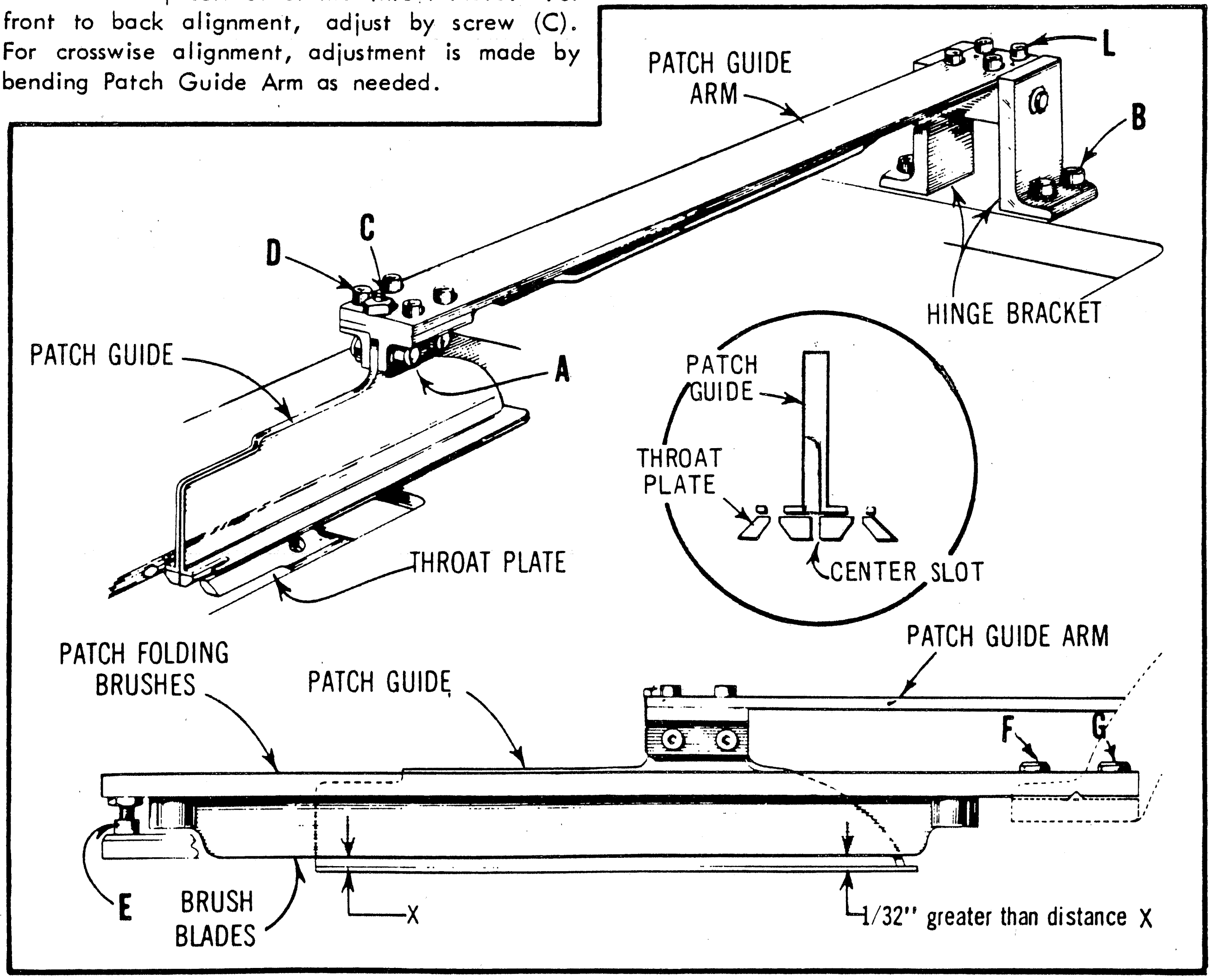
Align Patch Guide by screws (D) so that needle slots are in line with needle slots of Throat Plate. If Patch Guide cannot be aligned by screws (D) then reposition entire Patch Guide Arms by means of screws (L), then adjust Patch Guide by means of screws (D).

PATCH FOLDING BRUSHES

The Patch Folding Brushes must be adjusted to fold the Welting and Backing Material snugly into the corners of Patch Guide.
The material must also fit evenly against entire length of Patch Guide.

PRELIMINARY CHECK POINTS

Check Patch Guide adjustment. Patch Folding Brush Blades must be correct for the weight of welting material. Refer to Foldout I, "Corresponding Replacement Parts for Reece Series 32 Welting Machine at the rear of this Manual.



VERTICAL ADJUSTMENTS

Adjust the front edge of the Brush Blades to the lowest level that will fold the Welting and Backing Material snugly into the corners of the Patch Guide.

TO ADJUST: Obtain this setting by means of screws (E).

Rear end of Brush Blades must then be set 1/32" higher than the front edge of Brush Blades.

TO ADJUST: Combination of loosening and tightening screws (F & G) will vary height of rear end of Brush Blades. To raise rear end, loosen screw (G) and tighten (F). To lower, loosen screw (F) and tighten (G).

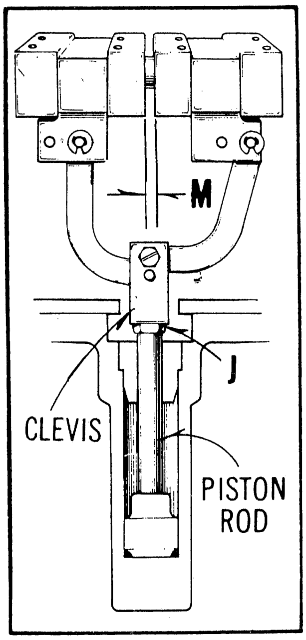
HORIZONTAL ADJUSTMENTS

The Brush Blades must close parallel to the Patch Guide and with clearance on each side of the Patch Guide equal to the thickness of Welting and Backing Material. To assure accurate performance, it is essential that the correct relationship exists between the Patch Folding Arms, Slide Blocks, Slide Bracket and Clevis. Refer to Foldout II at the rear of this manual so that proper settings are established before performing the following adjustments.

TO ADJUST: After proper settings are obtained, it may still be necessary to re-establish parallel relationship between Brush Blades and Patch Guide by means of screws (F).

Further adjustment for more or less clearance between Patch Guide and Brush Blades can be obtained by turning Piston Rod in or out of Clevis.

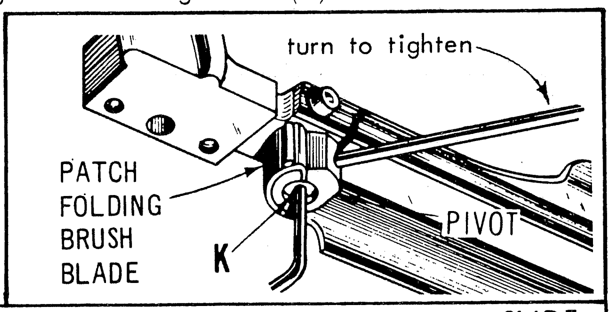
TO ADJUST: Loosen Nut (J) and using a pair of pliers (03-0123 ignition pliers) turn Piston Rod in or out of Clevis. Keep pliers close to Nut (J) when making adjustment. Clearance (M) varies with Patch Guide setting used when Patch Folding Brush Arms are in the closed position.

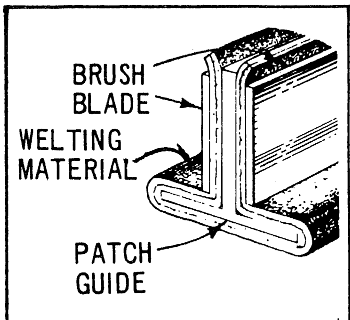


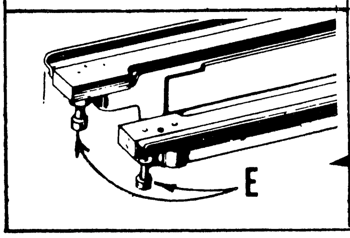
IMPORTANT: Patch Folding Brushes must not deflect Patch Guide when Welting and Backing material is being folded. If this occurs, uneven welting or needle breakage may result.

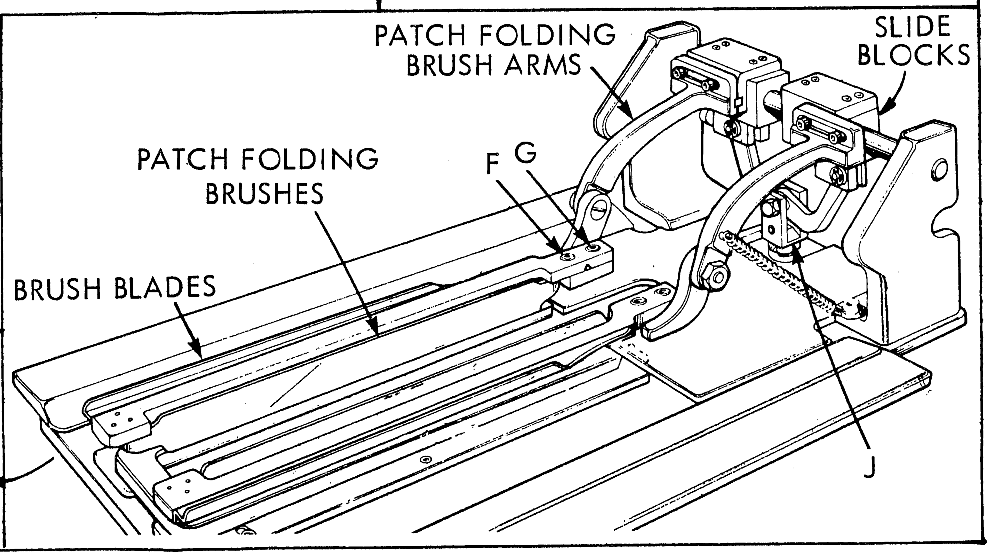
INSTALLATION OF PATCH FOLDING BRUSH BLADES

Install Patch Folding Brush Blades by loosening screws (K) at both ends of Patch Folding Brush. Install Brush Blade to full depth of slot in Pivot. Tighten screw (K) at one end of Brush. Then placing hex wrench in Pivot at the other end of Brush turn to draw the Brush Blade taut. Finally tighten remaining screw (K).









TROUBLESHOOTING

WELTING AND BACKING PATCHES ARE NOT PROPERLY FOLDED

Check the Patch Guide and Patch Folding Brushes Adjustments.
Check information on pages 7-9.

PATCH GUIDE AND PATCH FOLDERS DO NOT OPERATE AT DESIRED SPEED

Check Patch Folding Adjustments. If sluggishness persists at maximum speed (metering screw all the way out), check oil level in pump. If sluggishness still persists, replace "O" rings in the Patch Folding Cylinder.

PATCH FOLDERS FAIL TO RESPOND TO PEDAL CONTROL

Check the following points:

That the Control Panel is set for the desired operating procedure.

Oil in pump is at proper level.

No binding or interference exists in the Patch Guide or Patch Folding mechanism.

Recheck Patch Guide and Patch Folding Brushes adjustment.

If trouble still persists, recheck the Patch Folding circuit.

WELTING PATCH DOES NOT TRAVEL PROPERLY ALONG PATCH GUIDE

Check Patch Guide Adjustments.

Check condition of Patch Guide. There should be no nicks or scratches that would prevent the Welting Patch from sliding off the Patch Guide. The tail end of the Patch Guide must be smooth and have sufficeint radius to allow the forming of the Welt and also to allow the Welt to travel smoothly on to the Patch Guide.

When using material that is slippery and difficult to hold (i.e., lining material), small pads of adhesive-backed urethane foam should be placed on the Brush Blades. Check that the pads do not extend beyond the length of the Patch Guide.

AUTOMATIC PATCH LOADING

Automatic Patch Loading is electrically controlled and operated.

With Control Panel Switches set for the desired operating procedure and with Patch Tray loaded with Welting and Backing Material, pressing the Pedal will start the following automatic sequence:

Clamp will lower on Stay and Work Material.

Clamp Table will travel to its rear position.

Automatic Patch Loader will load Welting and Backing Material into position.

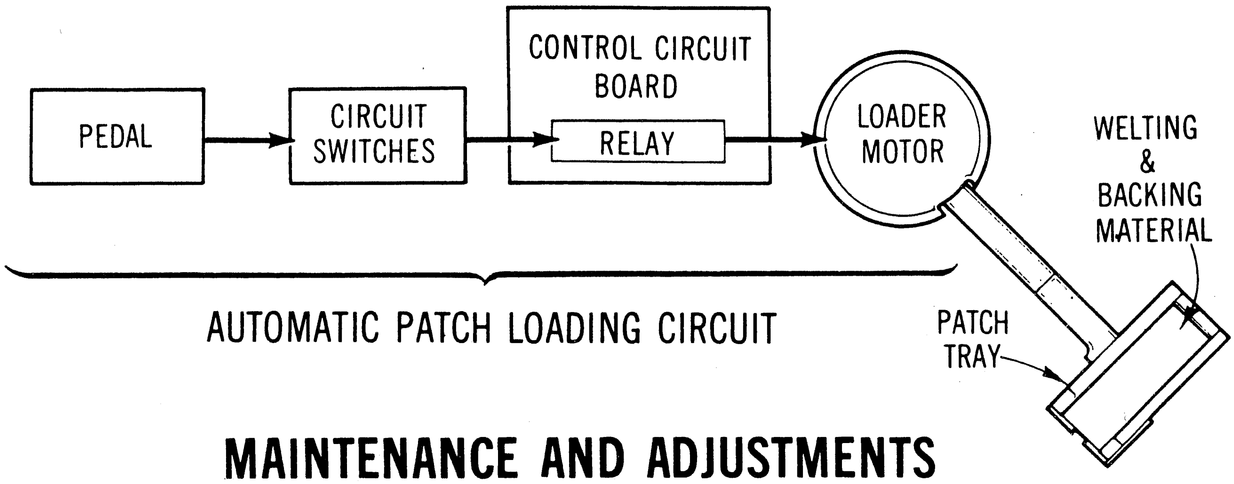
Patch Folders will fold Welting and Backing Material around Patch Guide.

Patch Tray will return to its rest position.

Sewing and Center Cutting will be completed.

Patches will be turned and Tabs cut.

Upon completion of the Sewing and Turning, the Clamp will rise and the Work is removed.



AUTOMATIC PATCH LOADING CIRCUIT

MAINTENANCE AND ADJUSTMENTS

PATCH LOADER AND STOP

For proper Loading and Folding of the Welting and Backing Patches, the following conditions must be met:

1. Smooth and uninterrupted movement of the Patch Loader Arm.
2. The Arm should not be deflected or bind as it contacts the Stop.
3. Sides of the Patch Tray should be parallel with the sides of the Patch Guide.
4. A 1/2" clearance between the Needles and the inside edge of Back Block when Patch Tray is in loading position.
5. Patch Guide must be centered in the opening of the patch tray.

In order to make these adjustments, the Automatic Patch Loader should be set to operate manually.

Set the Control Panel Switches as follows:

Main	Pull to Start
Selector	P & E
Clamp Safety	Rep.
Loading	Man. Front
Loader Sew.......	Off
Clamp Clearing ...	Center
Fingers	Semi

ADJUSTMENT PROCEDURES

1. Return Clamp Table to its back position.
2. Loosen Stop by means of Screw (A).
3. Locate extreme forward movement of Loader Arm by operating Knee Control. Operate the Knee Control several times to determine its most forward point.
4. With the Patch Loader in this position, set the Loader Arm so that sides of Patch Tray are parallel with side of Patch Guide.
5. Set Stop to lightly contact the Loader Arm while Arm is in loading position. Operate Patch Loader several times at this setting, checking that no bounce or binding exists as the Loader Arm makes contact with the Stop.
6. With the Loader Arm held against Stop (Spring Clip 03-0193 may be used for this purpose) set inside edge of Back Block of Patch Tray 1/2" from needles.

   TO ADJUST: Loosen screws (E) to obtain this setting. This 1/2" setting can also be obtained by loosening nuts (C) and repositioning entire Patch Loader Motor Assembly.

While making these adjustments, maintain the parallel relationship between the Patch Guide and the sides of the Patch Tray. After obtaining the adjustments, operate the Automatic Patch Loader several times to check that no binding exists.

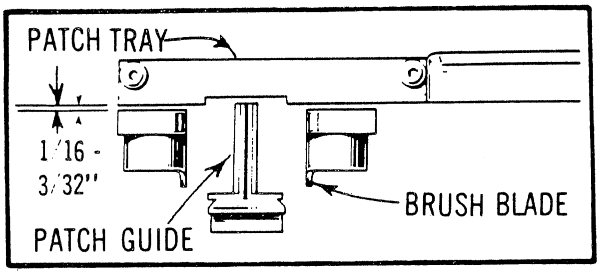
PATCH GUIDE AND PATCH TRAY ALIGNMENT

Patch Guide must be centered between Left and Right Tray Plates of Patch Tray.

TO ADJUST: Loosen screws (D) and set Adjusting Slide to obtain proper setting.

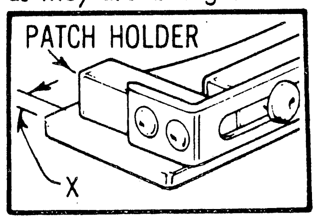
Clearance between underside of Patch Tray and top of brushes should be approximately 1/16" to 3/32".

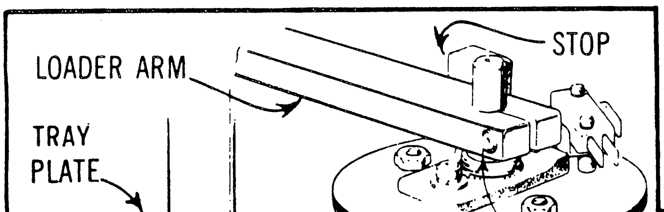
TO ADJUST: Loosen screw (B) to raise or lower Loader Arm. Take care not to lose previous Loader Arm and Stop adjustment.

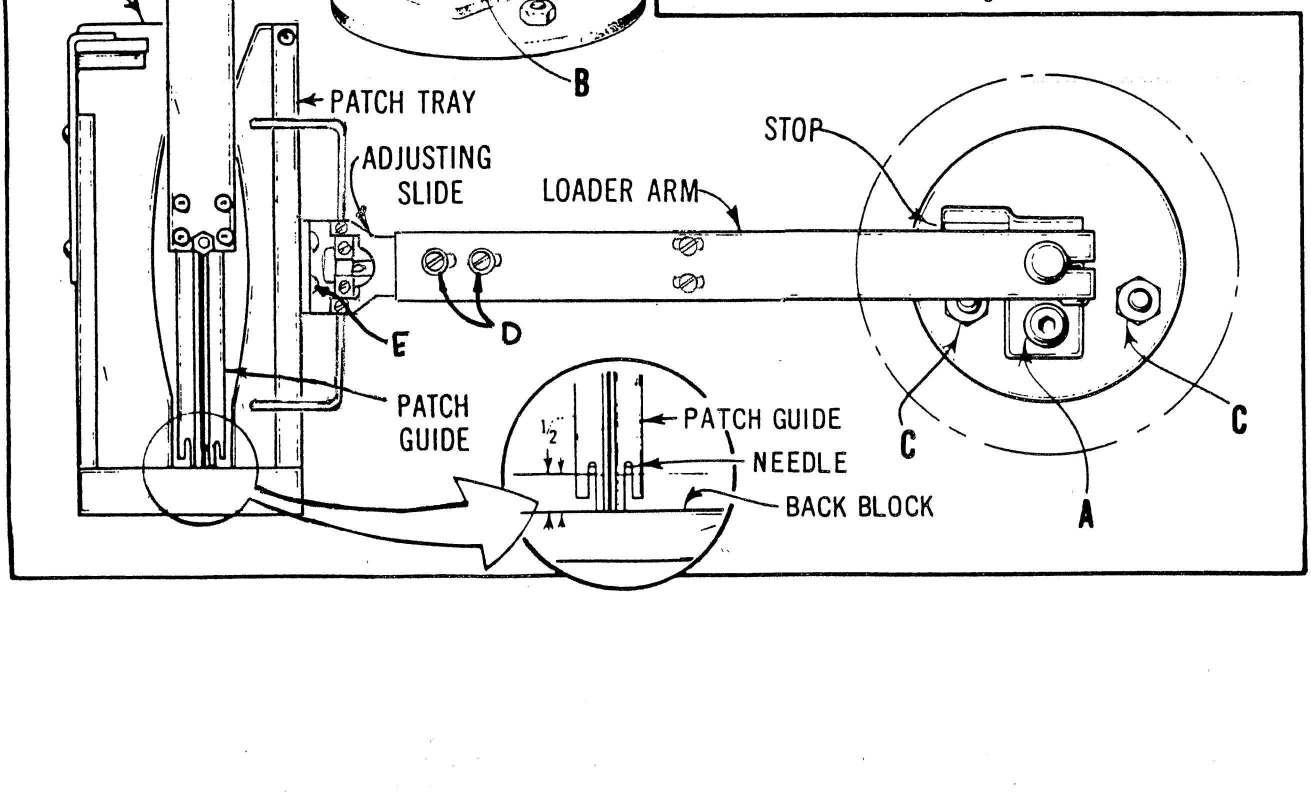


PATCH HOLDER

Patch Holder is used to keep the Welting and Backing Patches in place as they are being carried to the loading position. The distance (X) from the Patch Holder and front edge of Left Tray Plate should be slightly more than the thickness of the Welting and Backing Patches. This is to allow easy insertion of Welting and Backing material and also to prevent interference with Patch Folding.







TROUBLESHOOTING

MACHINE WILL NOT SEW AND LOADER ARM CONTINUES TO OSCILLATE

Automatic Sew Switch is not actuating when Loader Arm returns to its rest position. (See page A62)

WELTING PATCHES ARE NOT BEING SQUARELY FOLDED

Check that Patch Guide and Patch Tray are parallel when Loader Arm is in Loading Position. (See page A84.)

AUTOMATIC PATCH LOADER BINDS OR REMAINS IN LOADING POSITION

Incorrect relationship between the Stop and Patch Loader Arm. (See page A84.)

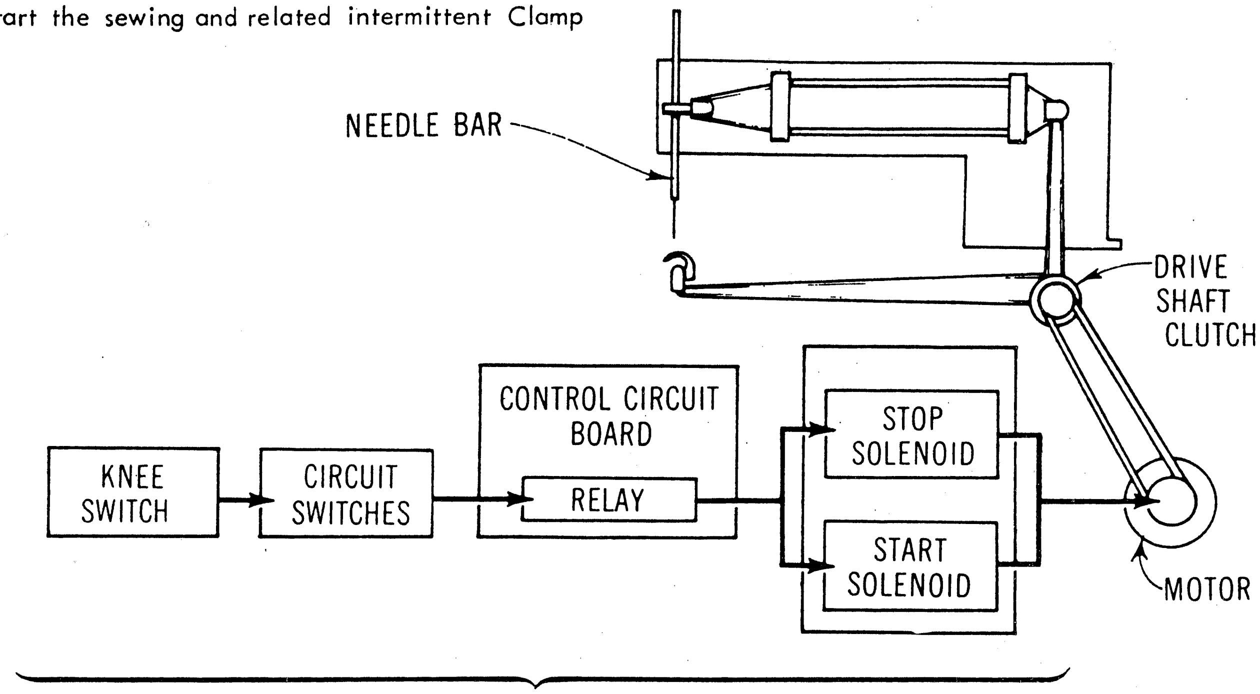
PATCH LOADER ARM MOVES BACKWARDS BEFORE STARTING FORWARD TO LOADING POSITION

Loader Motor Switch is being actuated prematurely (i.e., before Loader Arm has reached rest position). (See page A62)

CAUTION: Do not disconnect power source or push Main Switch in to stop machine while the Loader Arm is in Loading position. Damage to the Loader Arm and Loader Motor may result as Clamp Table travels forward.

SEWING

The Sewing Mechanism is belt driven and electrically operated. When the Knee Switch is pressed, the Sew/Center Dense Circuit actuates the Start Sewing Solenoid, engaging the Drive Shaft Clutch to start the sewing and related intermittent Clamp Table Travel. Sewing then continues until the circuit automatically actuates the Stop Sewing Solenoid, disengaging the Clutch and latching the Stop Motion with the Needle Bar in its Up position.



SEWING/CENTER DENSE CIRCUIT

MAINTENANCE AND ADJUSTMENTS

THREAD TENSION

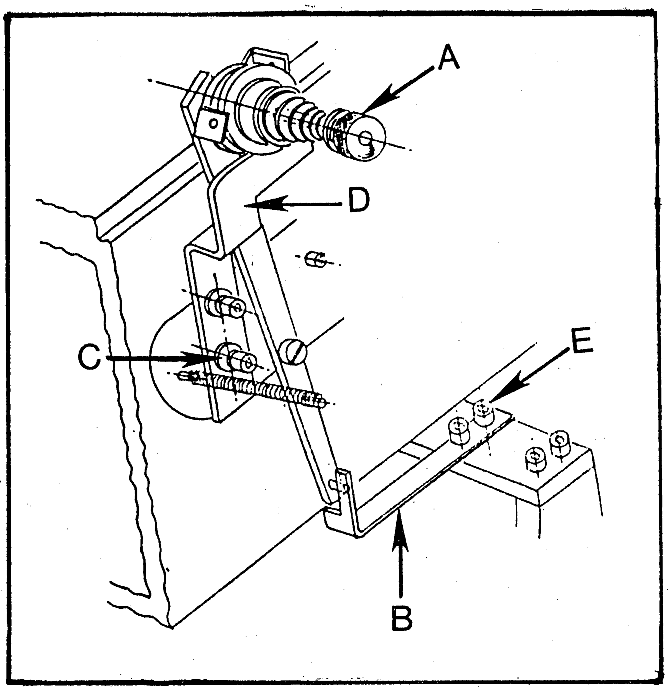
Adjust tensions (A) for mimimum tightness that will firmly set stitching.

STARTING THREAD

For more starting thread, loosen screws (E) and move actuator (B) backward; for less starting thread, move the actuator forward.

THREAD RELEASE FOR FIRST STITCH

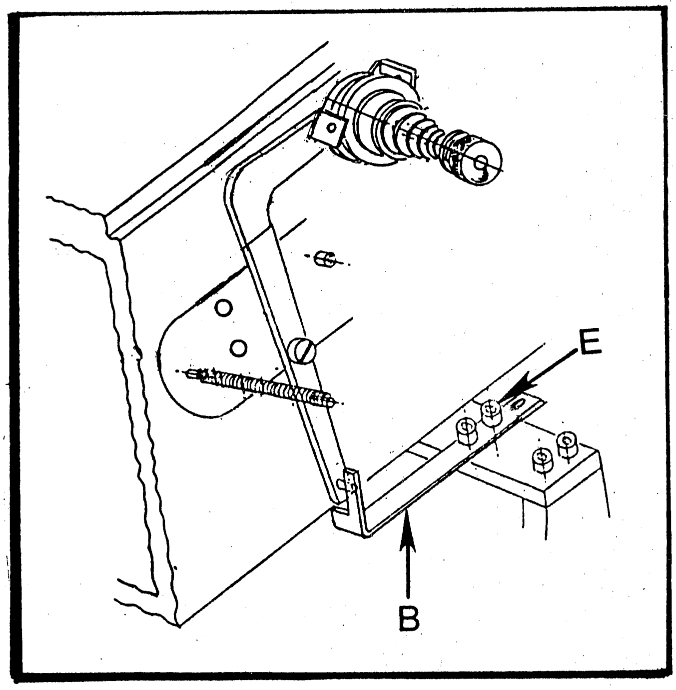
Tension bar (D) should just open the tension discs when the clamp table reaches the extreme backward position, and remain in that position until closed by the movement of the table starting its sewing cycle. Adjustment is made by loosening screws (C) and moving tension bar (D) up or down.



NEW STYLE THREAD DRAW-OFF

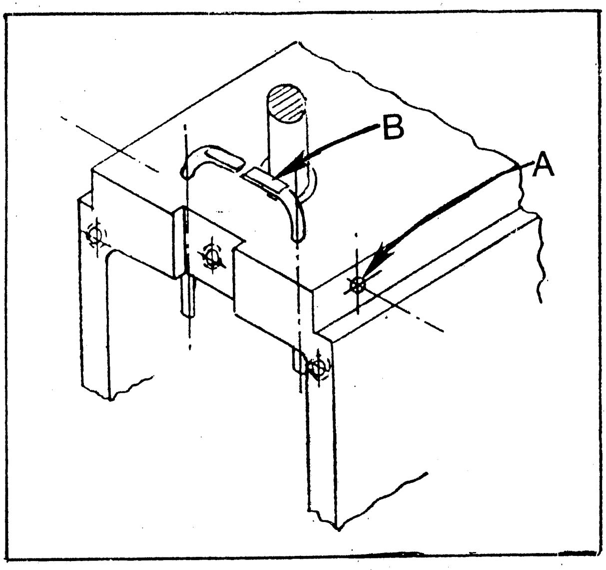
STARTING THREAD

For more starting thread, loosen screws (E) and move actuator (B) backward; for less starting thread, move the actuator forward.



THREAD LOOP SIZE

The proper size of the thread loop for average sewing conditions is just big enough for the looper to go into. Too large a loop may result in the loop turning over towards the front and the looper missing the loop causing skipping.



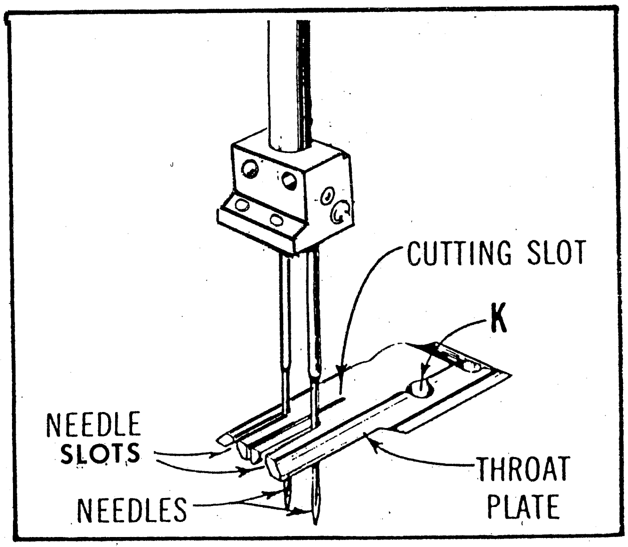
To adjust: Loosen set screw (A) and raise or lower loop wire (B) as required. Raising the looper wire increases loop size. Lowering the loop wire decreases loop size.

NEEDLES TO THROAT PLATE

Throat plate should be positioned so that the needles enter the needle holes with clearance on both sides of the hole and a slight clearance at the rear.

To adjust:

With Clamp Table in its rear position, Clamp Safety Switch set to NORM, depress Pedal halfway to open Folding Brushes and set Selector Switch to ELEC. This will leave Folding Brushes open, allowing for removal of the Patch Guide. Manually operate sewing* and observe Needles in the Throat Plate holes. If adjustment is required loosen screws (K) and tap the Throat Plate into the required position. Tighten all screws and replace Patch Guide.



*In order to operate sewing manually, first remove wire from Normal Open pole of Patch Safety Switch and connect it to Normal Closed pole of same switch. Now, by pressing the knee switch, the Drive Shaft will be released, permitting manual sewing operation.

IMPORTANT: Be sure to return wire after adjustments are made and before returning to normal operation.

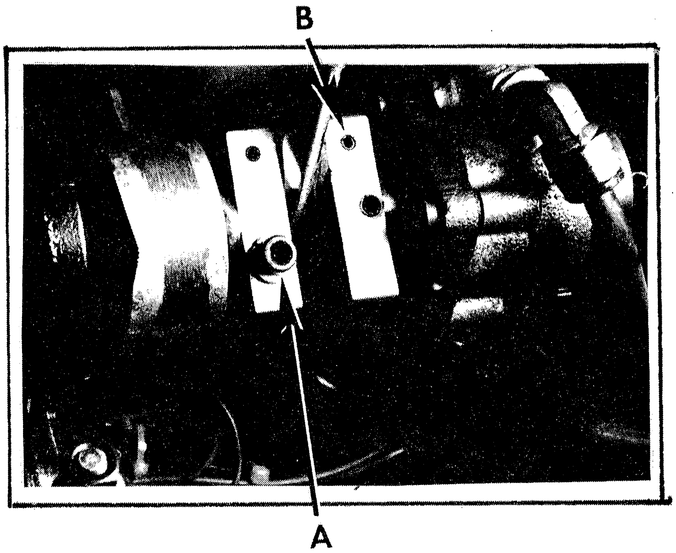
NEEDLE AND LOOPER SYNCHRONIZATION

Eccentric Setting:

The eccentric should be set such that when the Needle Bar is at the bottom of its stroke, the Looper assembly (loopers and holders) are at the maximum rearward position.

To adjust:

Position Needle Bar at the bottom of its stroke. Loosen socket head cap screw (A) on the looper crank assembly (B). While preventing the Stop Motion V-belt drive from rotating, turn the looper crank assembly in a direction that will place the looper assembly at its maximum rearward position. Tighten screw.

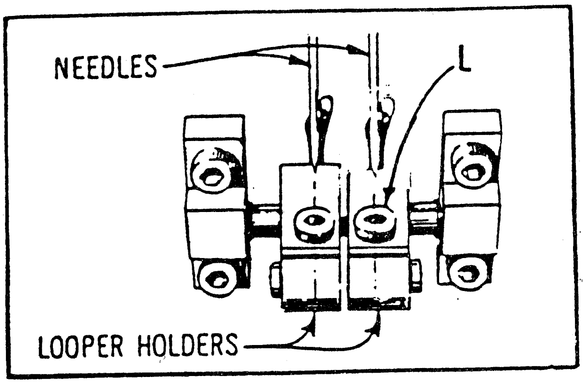


LOOPER HOLDER ALIGNMENT

Looperr Holders should be positioned with the center of screws (L) in line with the Needles.

To adjust:

Loosen screws (L) and position as required. See sketch.

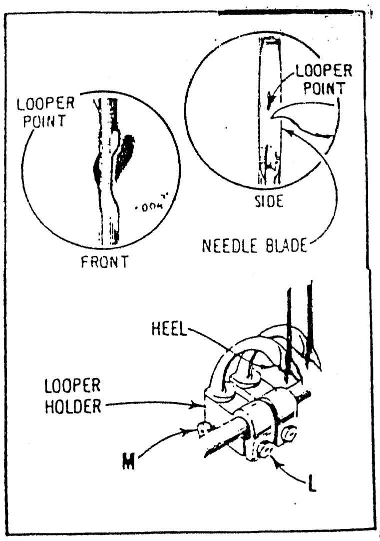


LOOPER SETTING TO NEEDLE BLADE

When the Needle Bar has risen from the bottom of its stroke, the Looper points should be central with the Needle Blades and just clearing their sides.

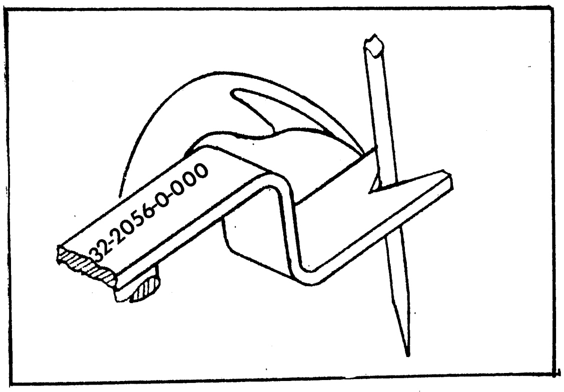
To adjust:

Rotate handwheel until the Looper points are central with the Needle Blades. Loosen screws (M) and adjust Loopers to just clear the inner sides of the Needles. Needles should pass as close as possible to the heel of Loopers without deflection.



LOOPER HOLDER SETTING TO NEEDLE

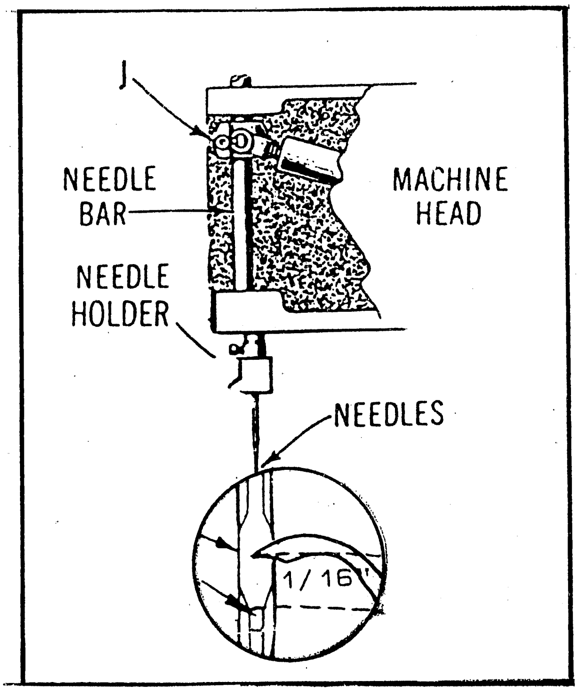
With the Needle Bar at the bottom of its stroke and the Loopers in their rearward position, the Looper points should be .100" from the centerline of the Needles.



To adjust:

Use Looper Gage (32-2056-0-000) to check clearance. NOTE: Needle goes in center of V on gage. While maintaining this position and without disturbing the sidewise location of the Looper Holders, loosen screw (L) and position Looper Points to the edge of the Looper gage by moving the Looper Holders.

NEEDLE BAR HEIGHT SETTING



Turn handwheel in operating direction until looper point is in line with the center line of the needle. Setting is 1/16" from the top of the needle's eye and the bottom surface of Looper (see insert). If adjustment is required, loosen screw (J) and move needle bar carefully up or down. Check to see if the needles center in the needle holes or Throat Plate; retighten screw (J).

LOOPER HEEL TO NEEDLE SETTING

As the needle passes by the heel of the looper on the up stroke and down stroke, it should pass as closely as possible to the heel within deflecting.

To Adjust:

Repeat eccentric setting procedure and looper holder setting to needle procedure.

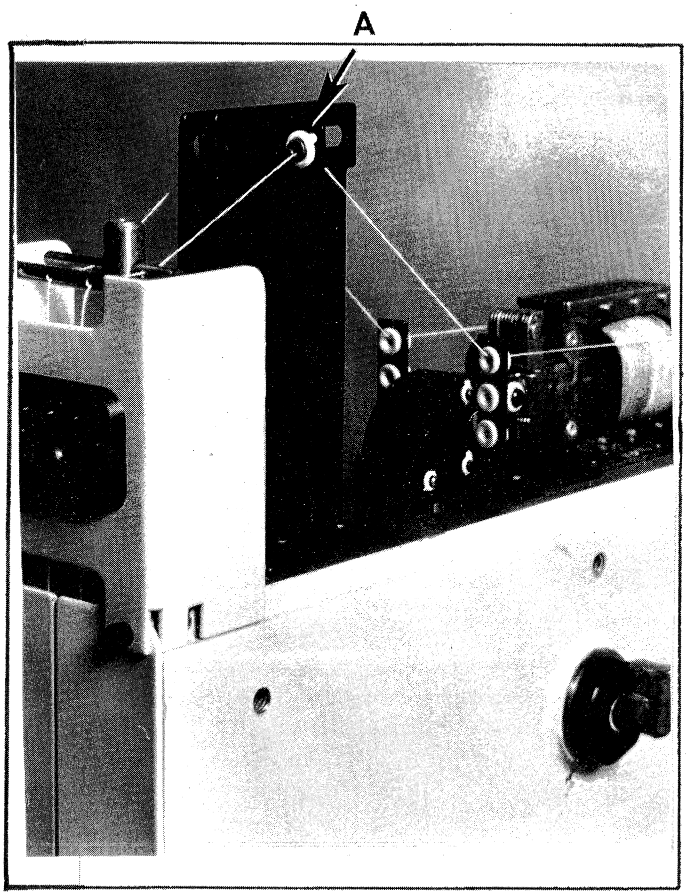
ADJUSTING THREAD TAKE-UP EYELETS

The function of the eyelets (A) are to give a looser stitch or tighter stitch depending on the type of thread being used.

To Adjust:

Loosen nut and move eyelet to the rear of the machine for a tighter stitch and forward for a looser stitch.

NOTE: It is recommended to set the thread tensions as loose as possible.



NOTES

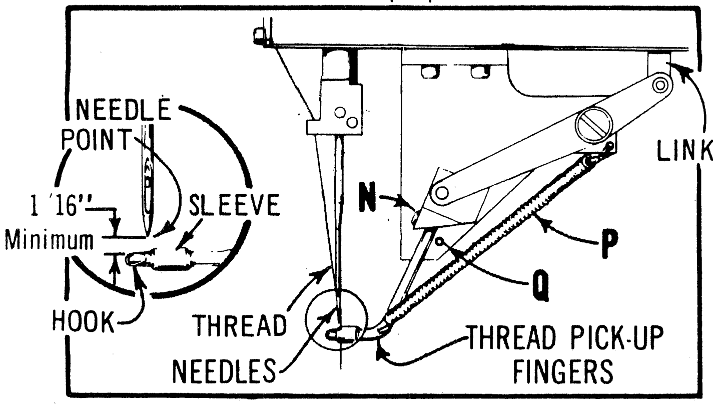
THREAD PICK-UP FINGERS

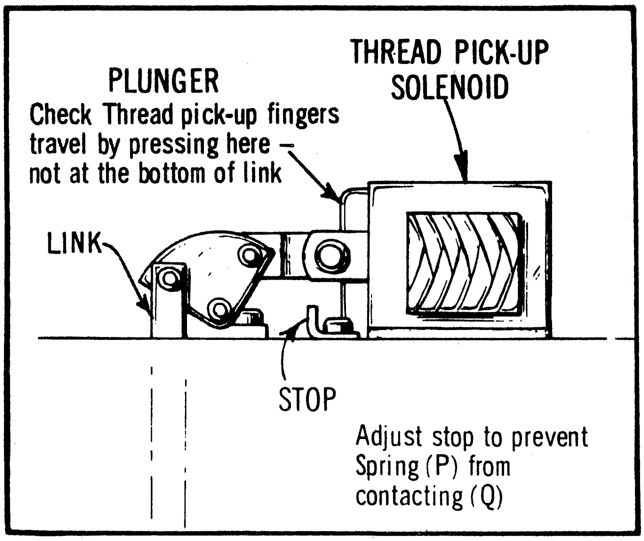
When the Thread Pickup Solenoid is momentarily energized, the Pickup Fingers are designed to pass just beneath and just beyond the Needles, grasping the still taut thread before trimming occurs.

TO ADJUST: Press the Thread Pickup Solenoid plunger by finger pressure until it bottoms. The Thread Pickup Fingers should then be in a position shown in insert. Set screws (N) are provided to align the center of the hooks with the needle points.

Soft plastic Sleeves are installed over the Thread Pickup Fingers.

TO ADJUST: Move the Sleeve backward or forward to obtain the proper thread tension.

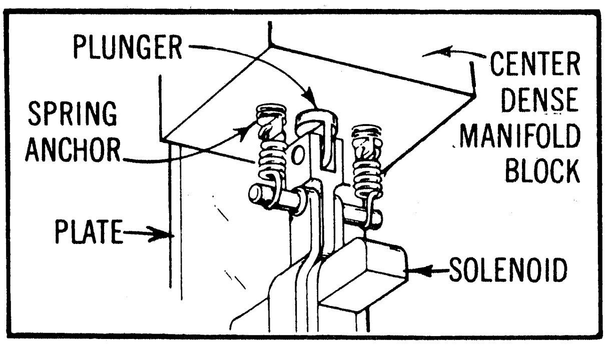




TIMING CENTER DENSE SOLENOID

If the preceding adjustments are correct, but the Thread Pickup Fingers are operating after Thread is trimmed, check the Center Dense Solenoid. Plunger must return to "up" position very slowly.

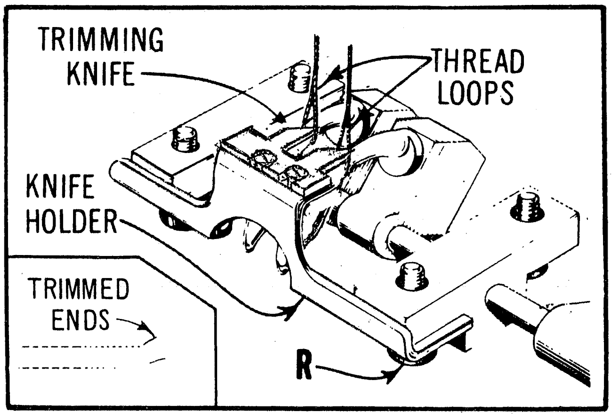
TO ADJUST: Back off Spring Anchors two full turns and recheck plunger action. If plunger still returns too quickly, air may be trapped in the Manifold Block. While the machine is actually sewing, loosen and quickly retighten the two screws holding Plate. Repeat this procedure until all air is bled from the system and the plunger "returns" slowly.



THREAD TRIMMING

Thread Trimming takes place as the Clamp Table moves forward at the end of the sewing cycle. This movement brings the inside legs of the Thread Loops into contact with the Trimming Knife, cutting the thread as shown. The trimmed ends should be approximately 1/2" long as shown in insert.

IMPORTANT: Never operate with a dull knife that breaks the thread close to the last stitch as this may result in a raveling back of the stitching.



SHARPENING TRIMMING KNIFE

Loosen screws (R) and remove Knife Holder and stone Trimming Knife to a keen edge, maintaining the bevel on the underside of the edge. (It is not necessary to remove Knife from Holder.) Reset the Knife Holder, keeping the Knife as close as possible to the Loopers without touching them and tighten screws (R) securely.

ROCKER ROD TAKE UP

Take-up on Rocker Rods is accomplished by rotating the Front Shaft (Eccentric). Tighten rods by turning front shaft so that arrow moves toward the front of machine. Loosen rods by turning front shaft so that arrow points to rear.

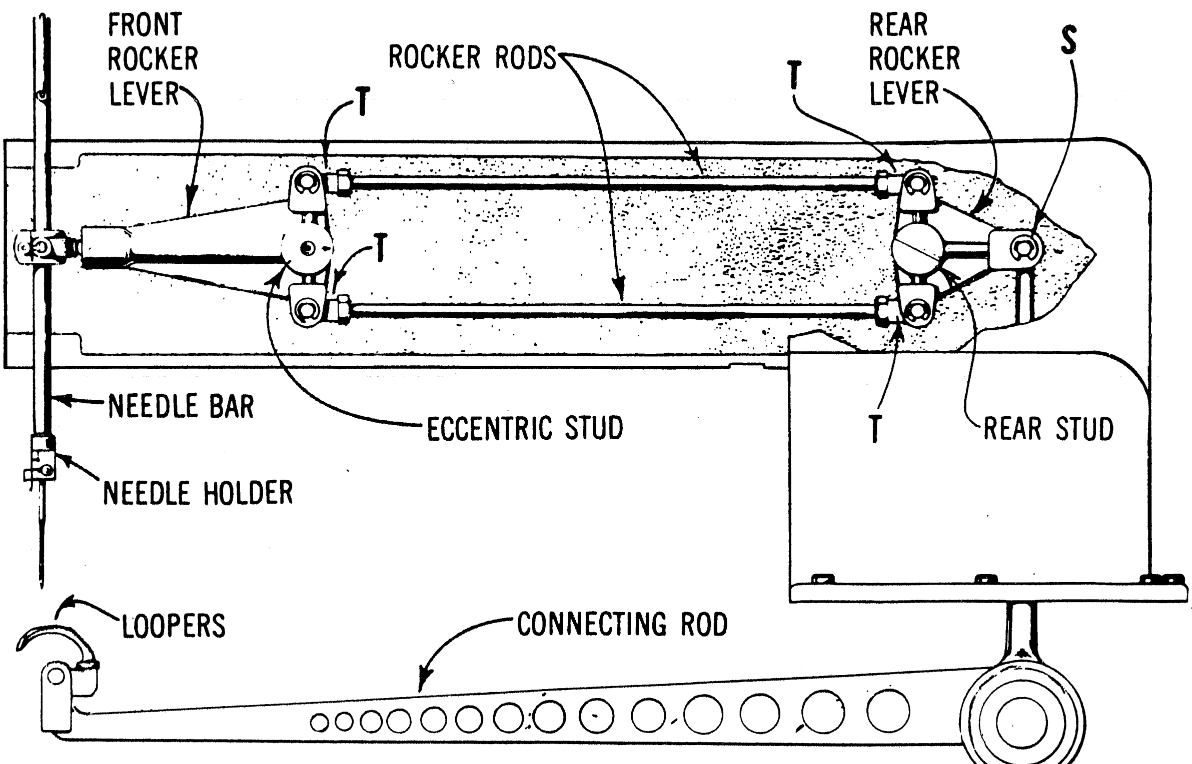
TO ADJUST: First remove the Needle Holder, Pin (S) and loosen nut on front shaft. Turn shaft toward rear of machine until Needle Bar moves up and down freely. Now move arrow toward the front until a slight dragging effect is obtained in the movement of the needle bar. Secure front shaft in this position. If arrow is turned entirely to its forward position, and this setting cannot be obtained, Rocker Rods will have to be readjusted or replaced.

ROCKER ROD REPLACEMENT

While in most cases only one of the Rocker Rods will actually require replacement, change both Rocker Rods, accompanying connectors and nuts at the same time.

TO ADJUST: Turn arrow on Front Shaft to point toward rear of machine. Remove Needle Bar, Front Shaft, Rear Shaft and Pin (S). Be careful not to lose the small key in the Front Shaft. Withdraw the Rocker Rod assembly. Before disassembling, set new rods to exactly match old rod setting. Remove old rods from Front and Rear Rocker Levers and reassemble with the new Rocker Rods.

Reinstall Rocker Rod Assembly with arrow of Front Shaft pointing to the rear of machine. Adjust for Rocker Rod take-up as previously described.



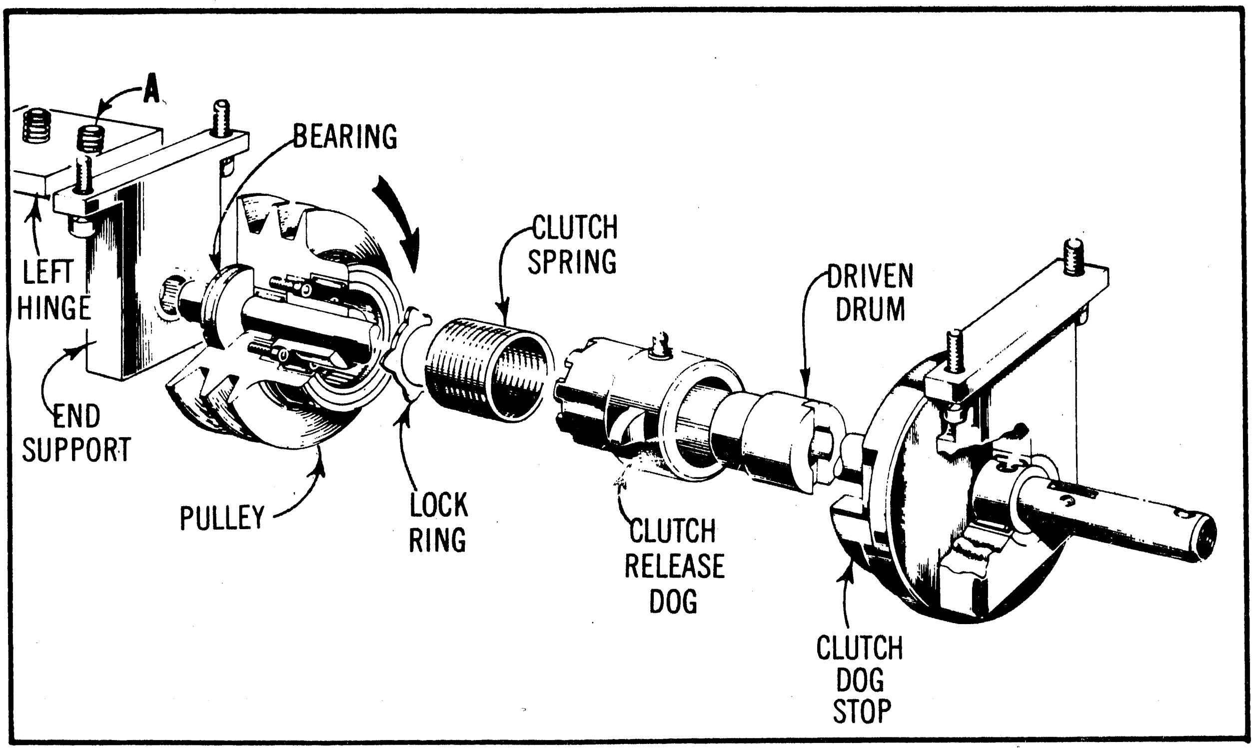
REMOVAL OF CLUTCH SPRING

1. With machine in Stop position, remove Needle Holder and Upper Belts from Motor Pulley.

2. Remove screw (A) from Left Hinge, also remove End Support and Bearing. Then remove Pulley by turning it in direction of arrow while withdrawing Pulley.

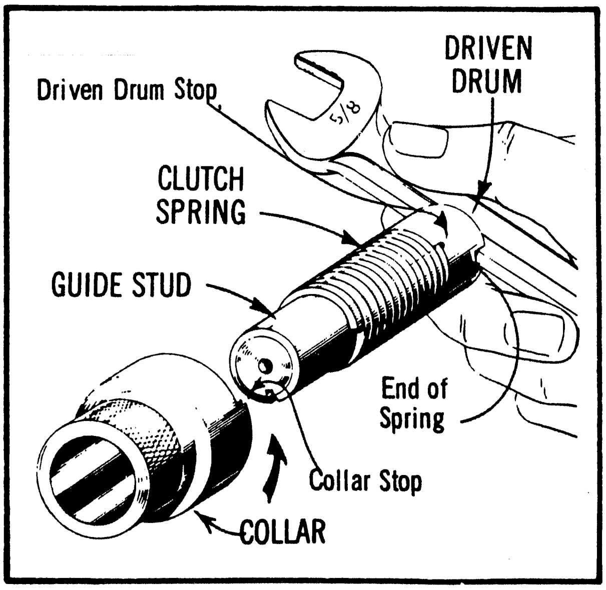
3. Unlatch Stop Motion.

4. Remove Lock Ring, Clutch Spring, Clutch release Dog, and Driven Drum. To remove Clutch Spring, it may be necessary to pry the Clutch Dog outward with a screwdriver inserted between the Clutch Release Dog and Clutch Dog Stop.



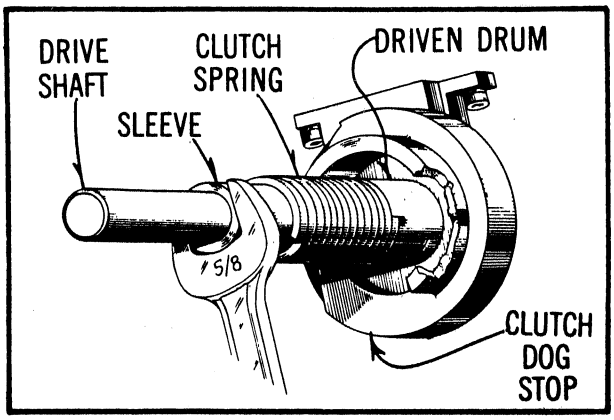
INSTALLATION OF CLUTCH SPRING

1. Start Spring on Guide Stud of Loading Tool. Then position Spring and Guide Stud in Collar of Loading Tool with end of Spring engaged in the Collar Stop.



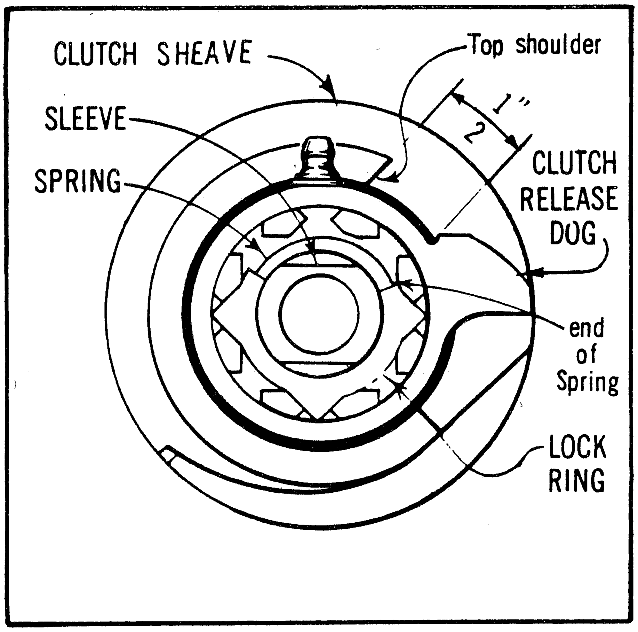
2. Start Spring on Driven Drum using the handle of a 5/8 inch wrench. Turn Collar in direction of arrow and press Spring toward Driven Drum until other end of Spring engages Driven Drum Stop.

3. Remove the Guide Stud and place the Spring and Driven Drum on the Drive Shaft. Engage the



Driven Drum in the Clutch Sheave. Insert the Sleeve of Loading Tool on Drive Shaft and start into Spring. Once started, hold Sleeve with 5/8 inch wrench while turning Drive Shaft by means of Handwheel until the Sleeve is fully engaged in the Spring.

4. Remove the assembled unit (Sleeve, Spring and Driven Drum) and install the Clutch Release Dog. Reinstall the assembled unit so that the Driven Drum is engaged in the Clutch Sheave and the end of the Spring faces toward you. Then position the Clutch Release Dog with the top of the Dog approximately 1/2 inch from the top shoulder of the Clutch Sheave. Seat the Spring by tapping it lightly with the small end of the loading tool Collar. Install the Lock Ring against the Spring so that it engages the splines of the Clutch Release Dog. Thick end of Ring is up against the end of Spring.



5. Holding the Lock Ring in place (use a 3/4 inch Wrench so that it bears against the two ends of Lock Ring), lock up machine and remove Sleeve of Loading Tool by turning it counterclockwise.

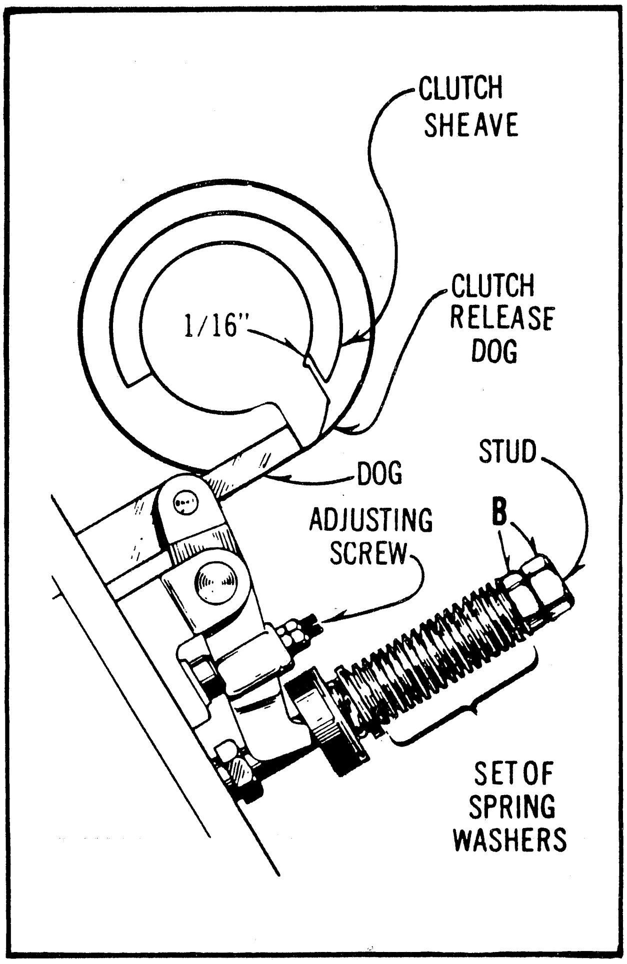
6. Replace Pulley slowly until contact is made, then snap it into place with pressure.

STOP MOTION

CLUTCH DOG ADJUSTMENTS

There should be approximately 1/16 inch clearance between the Clutch Release Dog and Clutch Dog Sheave.

TO ADJUST: With machine in Stop Position, turn Adjusting Screw until this 1/16 inch clearance is established. Tighten Nuts (B) together until the surface of the outer nut is flush with the end of Stud. This establishes the correct pressure on the set of Spring Washers.



TROUBLESHOOTING

SEWING FAILS TO START OR STOP AT PROPER TIME

Check Stop Motion adjustment, See page A96.
Check Sew/Center Dense Circuit, See page A39.

GENERAL SKIPPING OR OTHER STITCHING TROUBLES

Check Maintemance and Adjustments of Sewing Section, See pages A87 - A91.

OCCASIONAL SKIPPING

Air in hydraulic lines may be causing erratic Clamp Table Travel. Clear air from hydraulic system by turning the Clamp Clearing Switch from FORWARD to BACK position several times. If air continues to build up excessively in the hydraulic system, check for oil leakage and eliminate any that exists. Also, check that hydraulic oil in pump is at the proper level.

Failure to lock the first stitch, when not related to incorrect sewing adjustment (see pages A87 - A91) may be caused by hesitation in the Clamp Table Travel Cylinder as it starts its forward motion. Refer to Clamp Table Travel Trouble-shooting (see pages A76 - A77) for causes and corrections of this condition.

LAST STITCH IS LONG INSTEAD OF SHORT

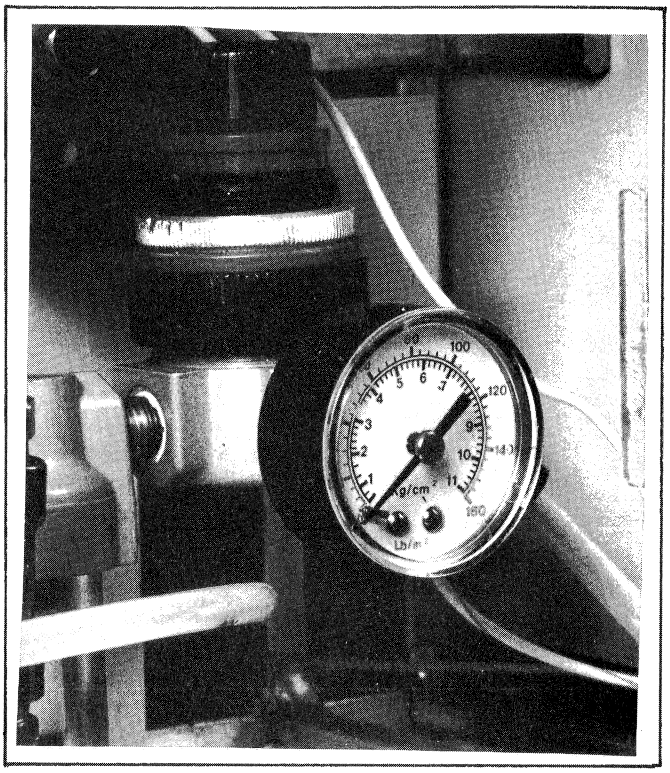
If thread is breaking at the last stitch instead of being cut to proper length by the Trimming Knife, and sharpening does not correct the situation, use a stronger thread. Also, check that Thread Tensions are not excessive (See page A93).

LAST STITCH NOT PROPERLY LOCKED

Check Stop Motion adjustment (See page A96).
Check Timing Switch adjustment (See page A60).
Make sure that Oil Check is functioning properly in the Center Dense Manifold Block.
The function of this Oil Check is to slow the action of the plunger when returning to its "Up" position.

CENTER CUTTING

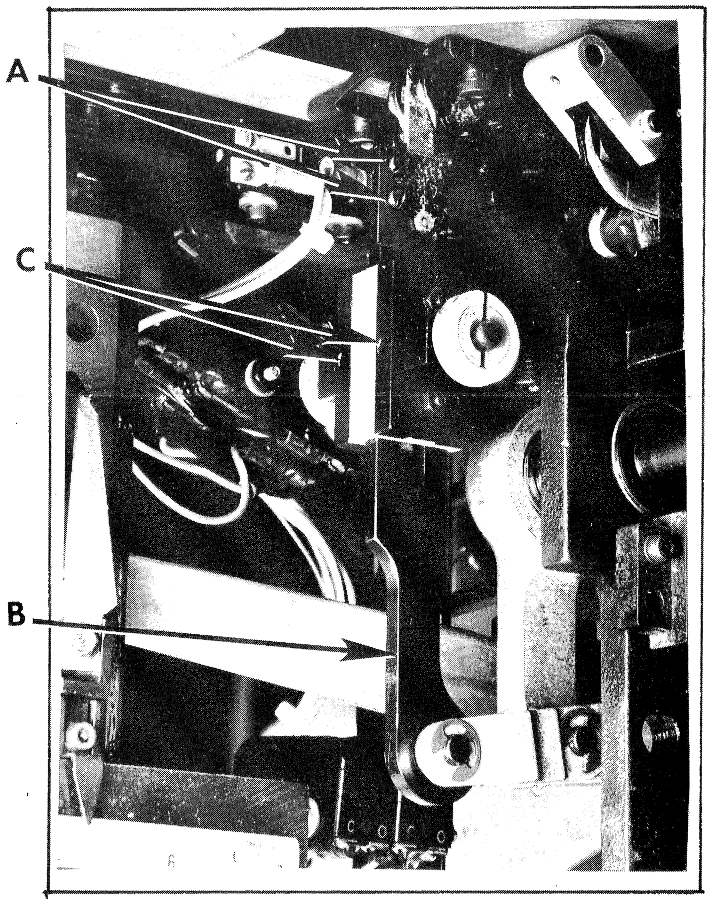
Normally, a center knife should be be replace approximately every 5000 pockets depending upon the material being cut. Within that period, the knife may require resharpening; this can be done by using a fine grade of oil stone. As the knife begins to dull, a pronounced pounding noise will be heard or a ragged center cut will be made. A supply of sharpened or new knives should be kept available for ready replacement.



To replace a center knife, first disconnect the air pressure; now loosen the two screws (A) which hold the center knife in place; at this time, raise the knife up through the throat plate, then down again. To replace a knife, place the knife up into the throat plate, then down between the clamp plate and the center knife holder, all the way to the stop screw.

CENTER KNIFE TO THROAT PLATE SETTING

While the air is still disconnected, push the knife holder (B) up so that the center knife passes up through the throat plate; it must not deflect more than .002" and must pass flush with the cutting edge of the throat plate. The cutting edge of the throat plate is the right side of the center slot when facing the machine.



To adjust:

With the clamp table in the rear position:

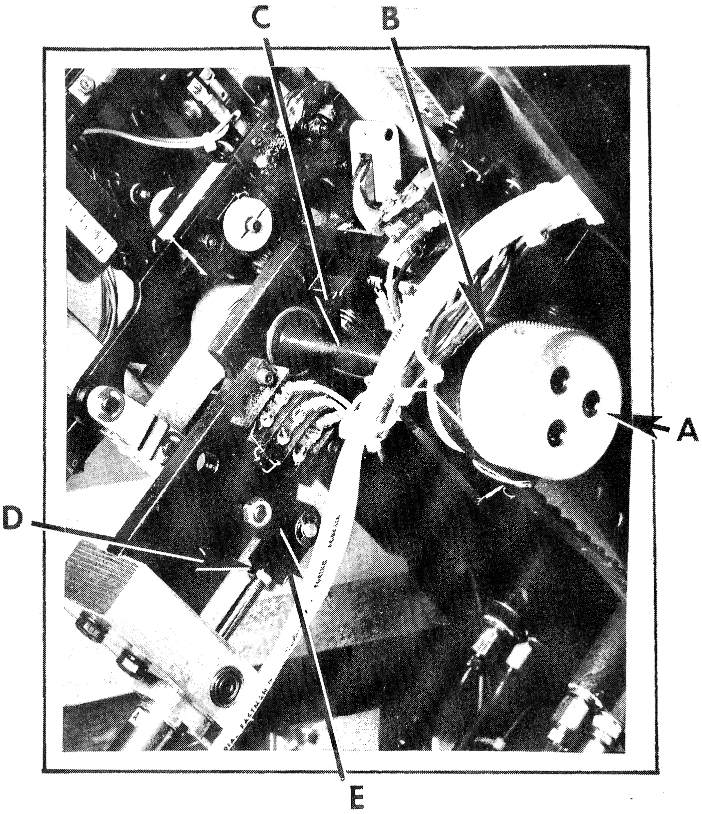
1. Manually move center knife up through throat plate.
2. Loosen set screws (C) on bearing blocks and adjust centerknife sideways until knife passes through the throat plate with no gap or deflection between knife and throat plate; tighten set screws (C). At this point, the center knife should be able to cut a single strand of thread.

CENTER KNIFE TIMING

The knife should be timed with the needle bar such that when the needle bar is coming down, the center knife is coming down.

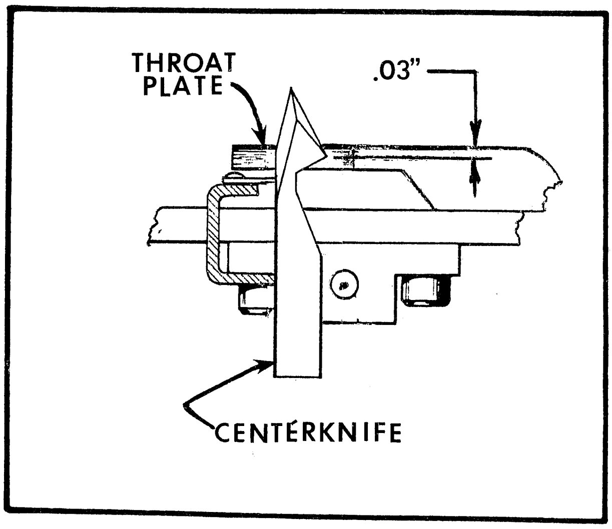
To adjust:

With the clamp table in the rear position and the main switch pushed pushed into OFF and the air supply is disconnected, remove the 3 screws on the handwheel (A) on knife drive shaft; now loosen the 2 screws on the drive pulley (B). You can now pull the drive pulley off the drive shaft (C), rotate the drive shaft in a position that the center knife is all the way up, ready to descend into the throat plate. Replace the drive pulley and belt, tighten the 2 set screws and replace handwheel and 3 screws.



CENTER KNIFE HEIGHT SETTING

When the center knife is in the cutting position, it should be adjusted so the knife point at the leading edge is 1/32 (.03") below the top surface of the throat plate at bottom of stroke. See sketch.

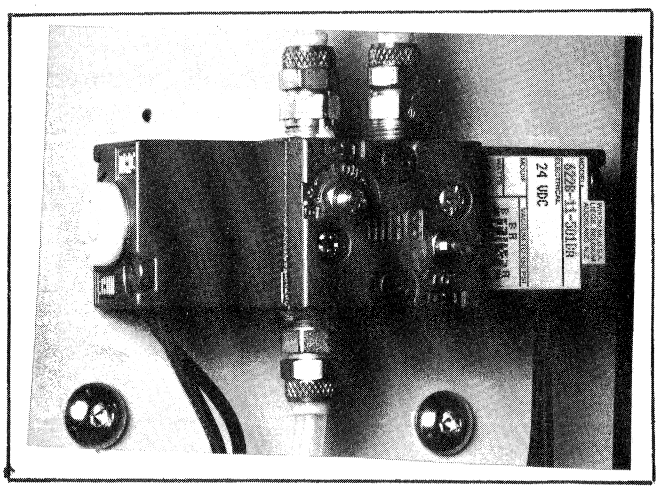


To adjust:

With the clamp table in the rear position and the power and air off, manually push knife holder up into cutting position; at this time, push the start/stop solenoid link up to engage the machine. Now rotate the handwheel until centerknife is at the bottom of its stroke; loosen hex nut (D) on air cylinder rod clevis and screw rod into clevis (E) to raise the knife and out to lower knife.

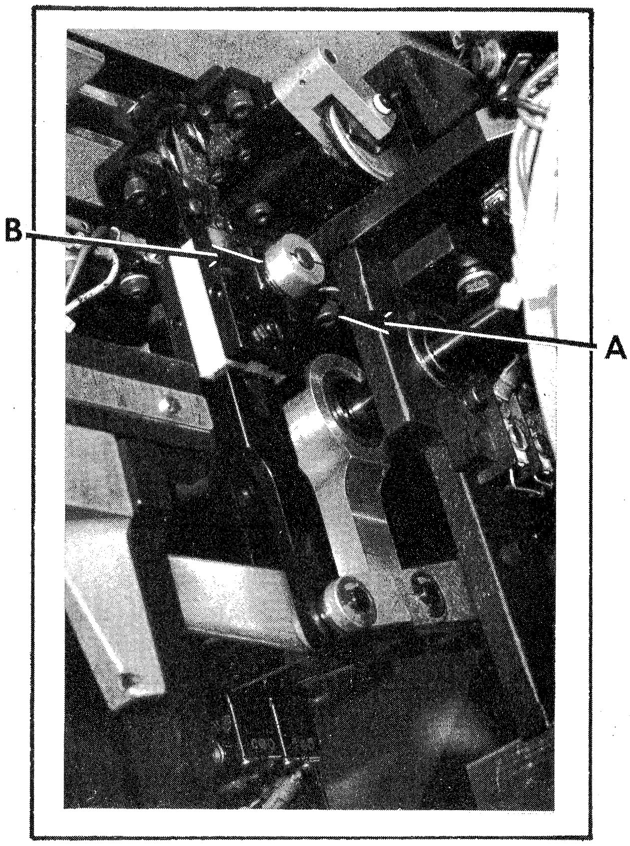
CENTER KNIFE FINISH CUT

This adjustment should be made prior to setting the center knife startcut. The center cut should stop cutting approximately 3/16" before the end of sew. The finish end dense limit switch fires the solenoid valve; this valve is located on the right side of the machine behind the second panel.



CENTER KNIFE FINISH CUT (Cont'd)

As soon as end dense switch is fired, the solenoid valve sends air to the cylinder and this pulls the center knife down from its cutting position. Once this adjustment is made, it will not require re-adjustment when changing welt lengths.



To adjust:

Loosen the socket head cap screws (A) holding the centerknife pivot block (B) and slide it towards the front of the machine to decrease center cut length and towards the rear of the machine to increase center cut length.

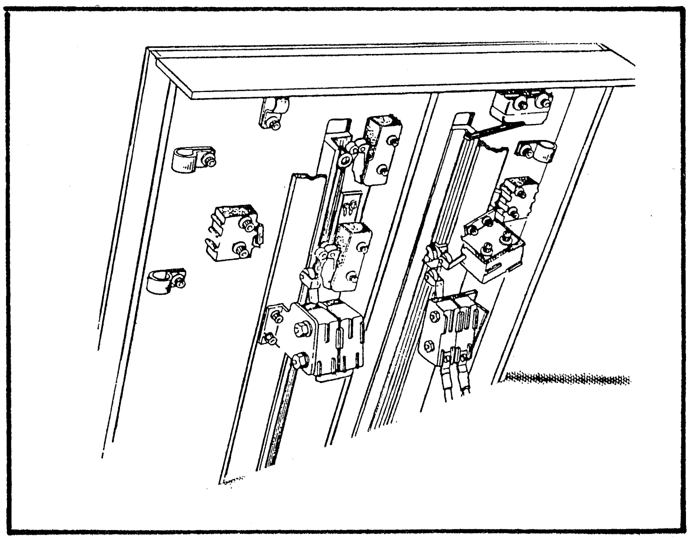
"Caution": Positioning the pivot block too far forward may result in interference with the thread trim bracket. It may become necessary to readjust the centerknife to the throat plate if the above adjustment is made.

CENTERKNIFE START CUT

This adjustment is made after setting the finish cut position. The center cut should start approximately 3/16" after sew. The Knife UP limit switch fires the solenoid valve which drives the knife up through the material into cutting position.

To adjust:

Loosen the two socket head cap screws (C) that hold the knife up limit switch (D) to the bedplate. Sliding switch towards front of the machine increases center cut length and towards the rear of the machine decreases center cut. NOTE: Keep bracket/switch lined up with the inner edge of the bedplate to assure proper contact with the actuator.



TAB CUTTING

Tab Cutting is hydraulically operated and electrically controlled by the Fingers Switch of the Control Panel as follows:

SEMI-AUTOMATIC (SEMI) POSITION

When the Clamp Table reaches its forward position, pressing Knee Switch closes the **tab knife** Circuit to energize the Solenoid.

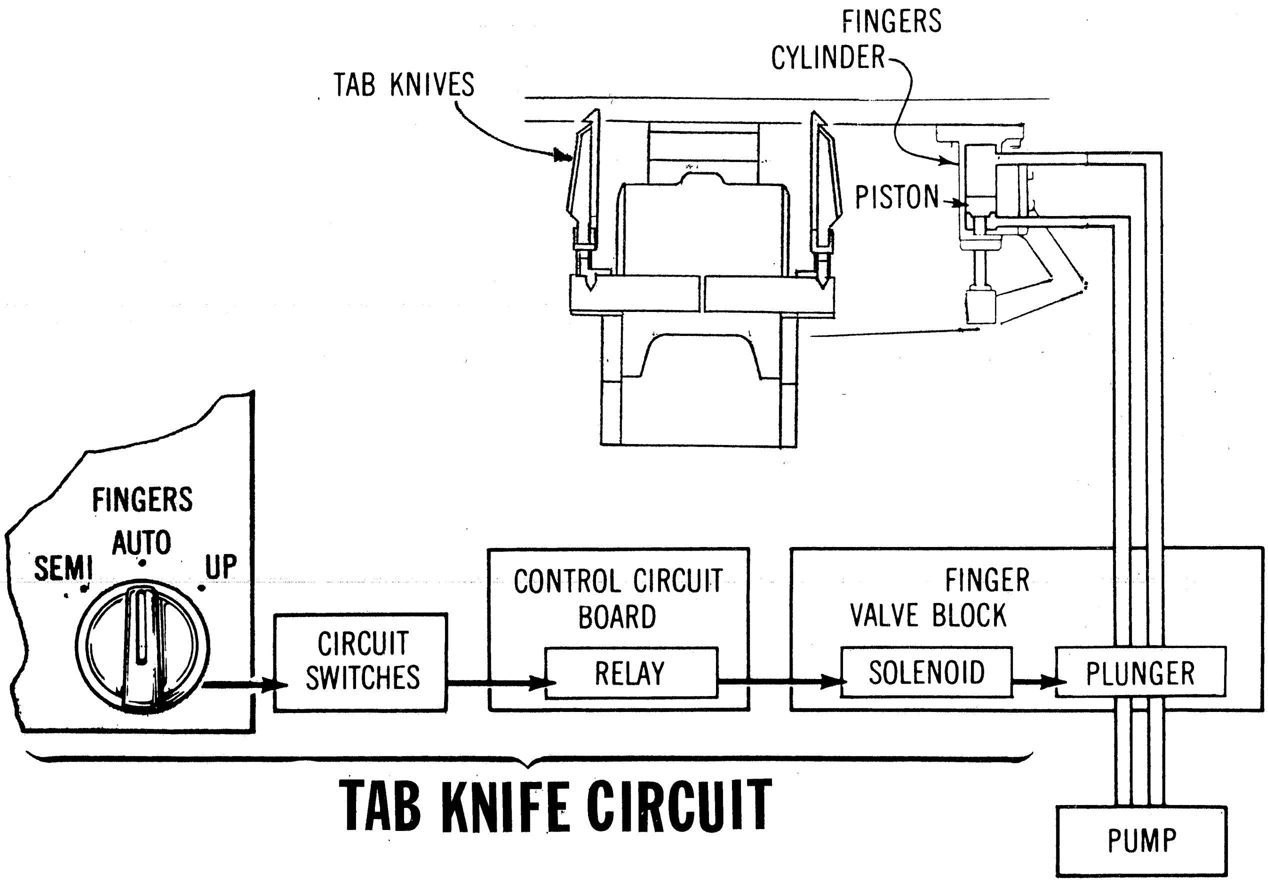
This raises the plunger in the Manifold Valve Block, directing hydraulic fluid from the Pump to the bottom of the **Tab Knife** Cylinder, moving the **Tab Knives up**. When the piston reaches the top of its stroke, the circuit automatically de-energizes the Solenoid. This lowers the plunger of the Manifold Valve Block, which in turn directs hydraulic fluid to the top of the **Tab Knife Cylinder**, moving the piston **down**.

AUTOMATIC (AUTO) POSITION

When the Clamp Table reaches forward position, the circuit automatically energizes the Solenoid to operate the Fingers the same as described for Semi-Automatic.

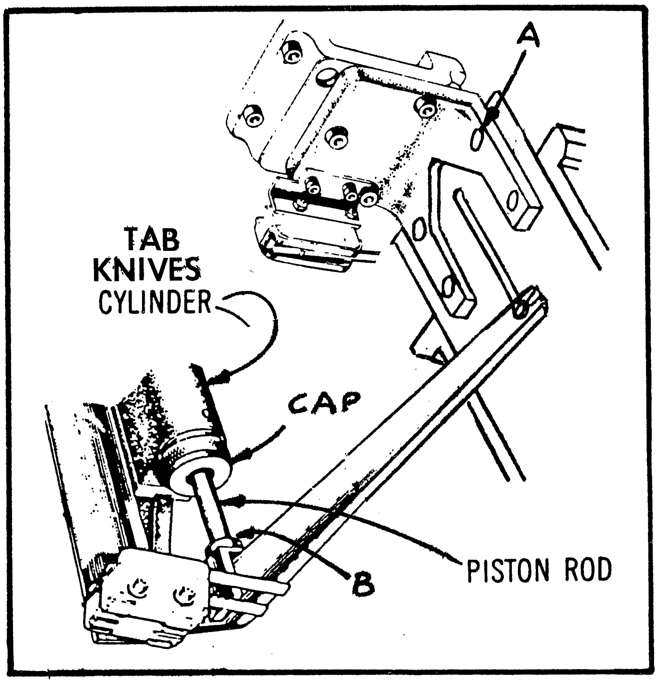
FINGERS REMAIN UP (UP) POSITION

This position is provided for changing the Tab Knives. Operation is the same as Semi-Automatic Position, except that Fingers will remain Up as long as the Fingers Switch is set at the "Up" position.



TAB KNIFE CIRCUIT

MAINTENANCE AND ADJUSTMENTS



Tab Knives may be operated manually by releasing hydraulic pressure to Tab Knives Cylinder. First, bring Clamp Table to its "all the way forward" position and then set Selector Switch to its "E" (Electric only) position. Tab Knives may now be operated manually.

IMPORTANT: Clamp Table must be kept in its "all the way forward" position when manually operating the Tab Knives. Clamp Table has a tendency to slide back as the Tab Knives are being manually operated. This could trap the Tab Knives in the Up position. To prevent this, Clamp Table must be manually or otherwise kept from sliding back. A convenient way to assure that Clamp Table does not move is to place the 11/16 inch by 3/4 inch open end wrench (03-0086) between the Machine Head and Clamp Table, when the Clamp Table is all the way forward.

To remove the entire Tab Knife Mechanism without disturbing the existing setting, remove screws (A).

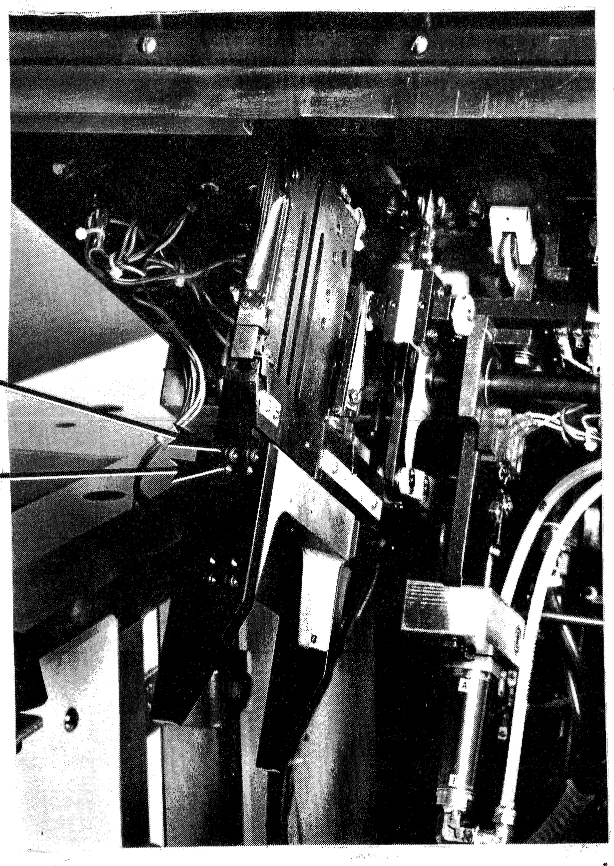
Tab Cutting should be accurately centered with respect to the two rows of stitches and the center cut. To establish and maintain this position, adjustments should be made in the following order:

PLAY IN TAB KNIVES ASSEMBLY

Tab Knives should operate with minimum side or end play.

TO ADJUST: Loosen screws (C) and back off screws (D) about 1/8 inch turn. Then retighten screws (C) and check for play. Repeat this adjustment until play is eliminated without binding the movement of the Tab Knives. If side play remains after end play has been eliminated, replace Guide Plates and any other worn parts.

C
D

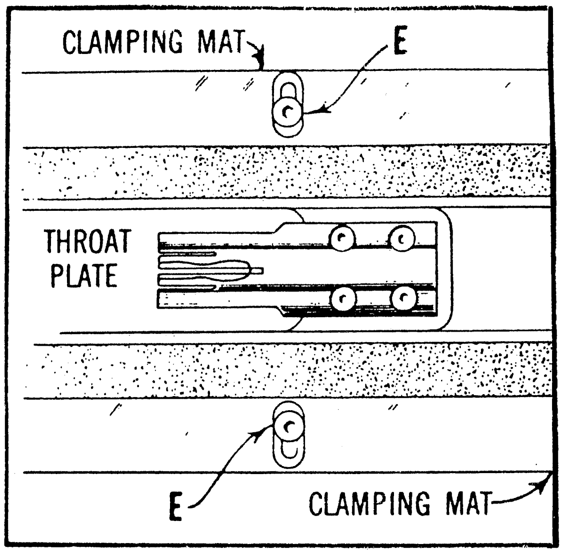


CLAMPING MATS

Inner edges of Clamping Mats must be parallel and equidistant from the sides of the Throat Plate. For thin material the mats should just clear the sides of the Throat Plate. For heavier materials, the mats should be set further apart.

To Adjust:

Loosen screws (E) and set the Clamping Mats the required distance from the Throat Plate.

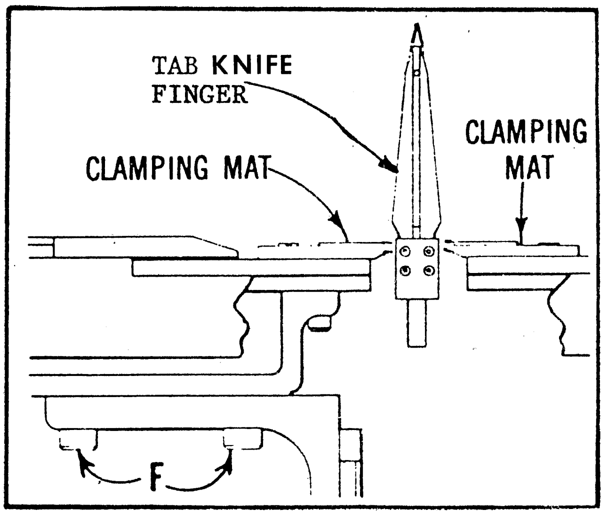


CENTERING OF TAB KNIFE ASSEMBLY

Lower ends of Tab Knives should be centrally located between the Clamping Mats when the Tab Knives are at their top stroke.

To Adjust:

Loosen screws (F) and position Tab Knife Assembly as required.

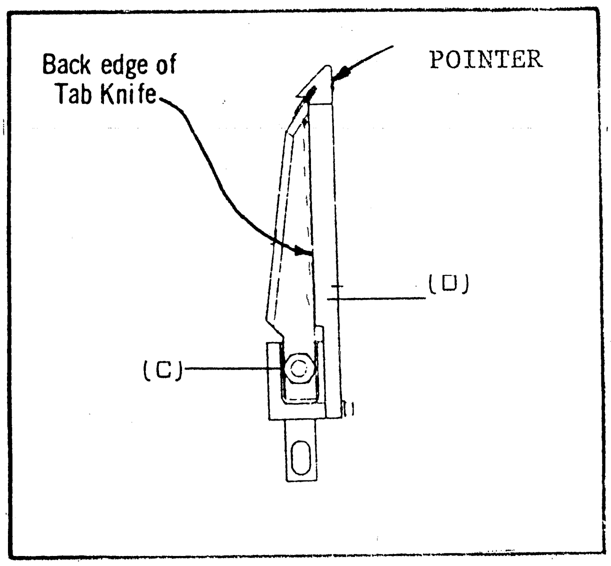


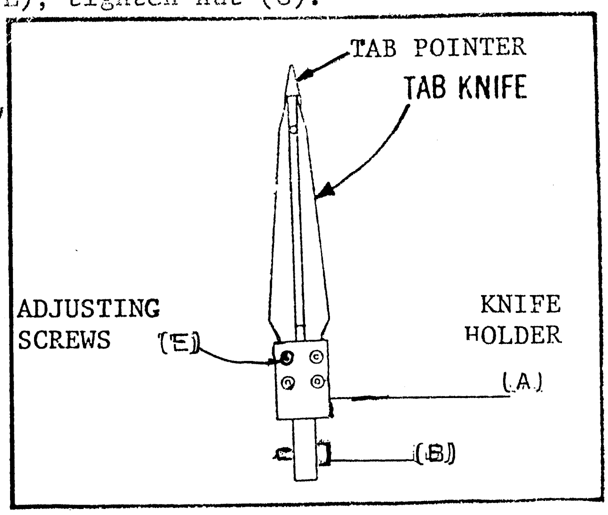
INSTALLING NEW TAB KNIVES

Remove Knife Holder (A) by removing screw (B). Remove Nut and Washer (C).

To install new knives, tilt knife up into the Knife Pointer (D) and down over the threaded screw; replace washer and nut.

After sewing and cutting, a check should be made to ensure that the Tab Knives are central to the two rows of stitching; if fine tuning is required, loosen nut (C) and adjust set screws (E); tighten nut (C).





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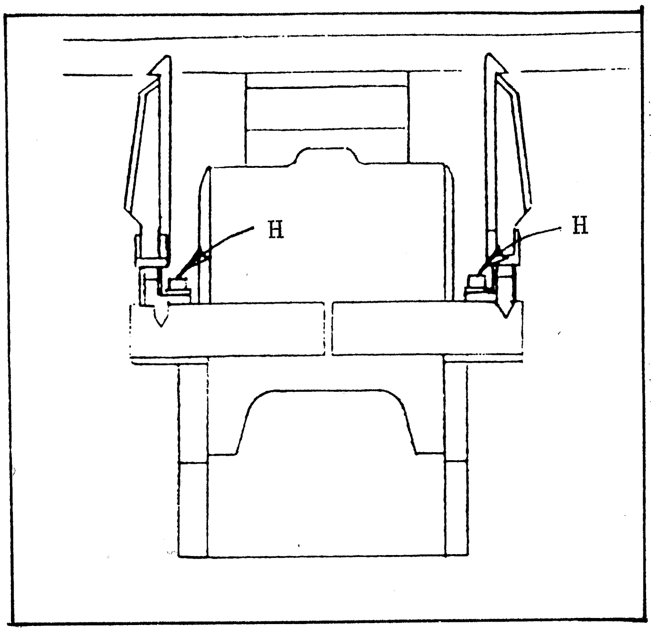
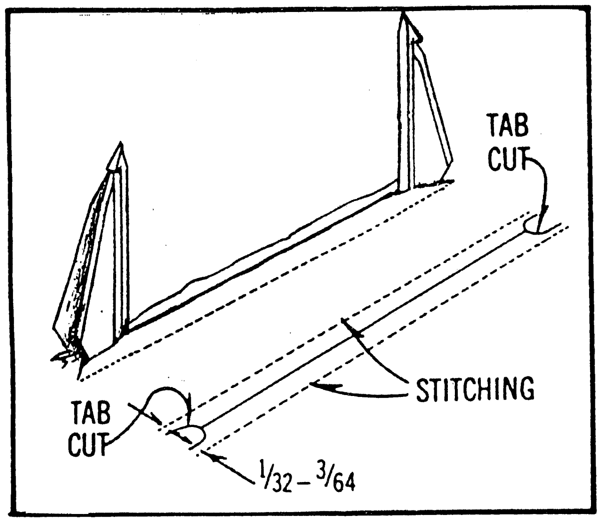


HORIZONTAL ADJUSTMENTS

Front and rear Tab Knives should be positioned so that Tab Cuts are exactly even with ends of stitching and also equidistant from sides of Stitching. Side clearance between Tab Knives and stitching must be 1/32 inch to 3/64 inch.

TO ADJUST: Sew test pattern on firm fabric without patch material to show location of knife cuts. Endwise adjustments of Tab Knives are made by means of screws (H). Sidewise adjustments are made by means of screws (F) (Shown on previous page).



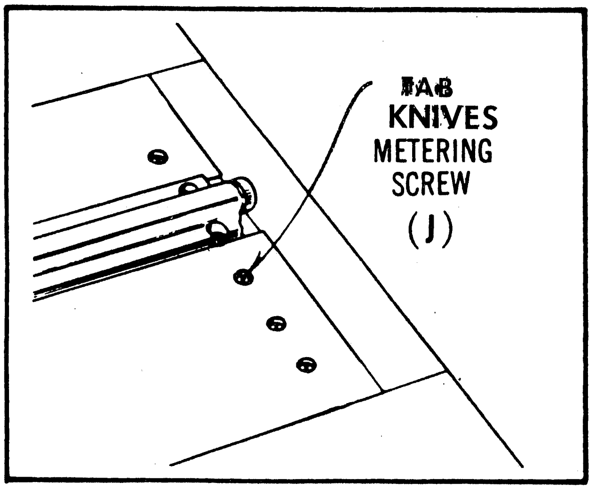
6. TEST ON PRODUCTION MATERIAL

The preceding adjustments are standard for most fabrics and materials. If materials are very thin, slippery or stretchy, compensating adjustments may be needed as covered in the Trouble Shooting section.

7. TAB KNIVES SPEED ADJUSTMENT

Tab Knives may operate at any reasonable speed that does not jar or strain the mechanism.

TO ADJUST: Turn Tab Knives Metering Screw outward for faster speed, or inward for slower speed.



TROUBLESHOOTING

TAB KNIVES FAIL TO OPERATE

Check for mechanical obstructions or binding in Tab Knife Assembly.

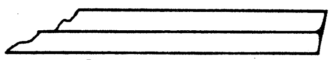
Back off and readjust Metering Screw (J).

Check Tab Knife Circuit.

KNIVES STICK ON DOWN STROKE

If Tab Knives lack power, replace all "O" Rings in Tab Knife Cylinder Assembly.

ENDS OF WELTS NOT SQUARE

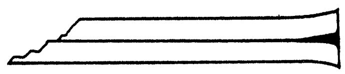


Tab Knives dull or unequally positioned.
Replace Knives, setting back edges flush with back surfaces of Knives.

Rows of stitching uneven at ends. Check that needles are straight and that there is no skipping of stitches when the sewing starts.

Knives bent or not properly centered. Re-adjust as required.

CORNERS OF WELTS OPEN



Tab Knives cutting too far. Adjust Knives.

Clamping Mats set too close, causing material to clog and tear at the corners. Readjust as required.

SHORT TABS

Tab Knives cutting too short. Replace Knives if dull. Otherwise, adjust positions of Knives.

Center cut too long. Adjust Center Knife.

STITCHES SHOWING ON FRONT OF WELT

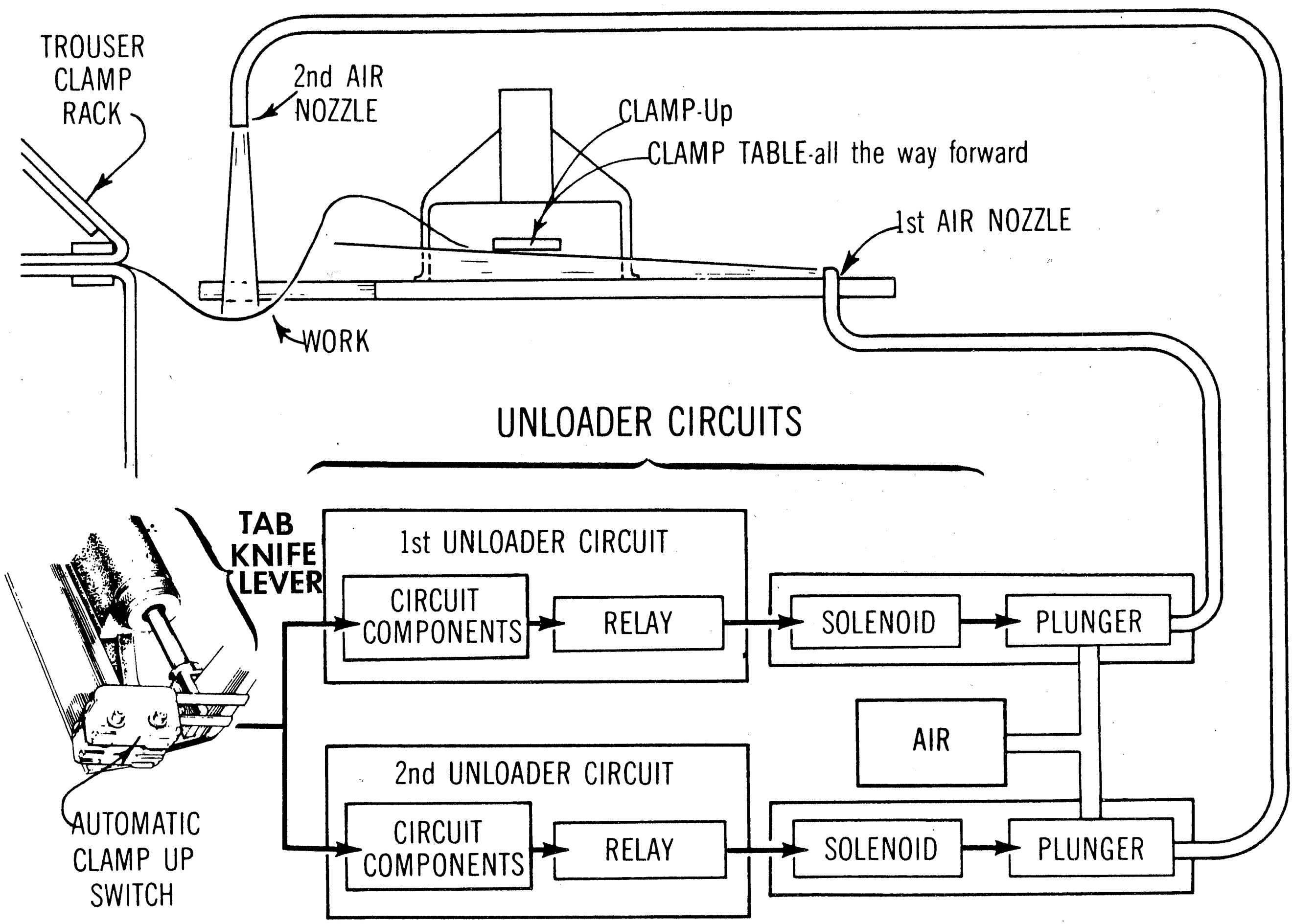
One stitch will be slightly exposed at each corner of the pocket welt, but side stitching should be well concealed. If not, tensions are too loose or Clamping Mats are set too close together. The thread should be approximately the same color as the garment material.

NOTES

UNLOADING

The Work Unloader consisting of two air nozzles, is designed to remove the work from under the clamp and onto the Trouser Clamp Rack at the completion of the welt. It is electrically controlled by two Unloader Circuits.

Set Loader Switch for "Auto Front, Auto Back or Manual Front" and the Finger Switch for "Auto". At the completion of the Welt (Clamp Table forward and Clamp up) the downward action of the Tab Knife Lever will close the Automatic Clamp Up Switch which in turn will activate the Unloader Circuits.



MAINTENANCE AND ADJUSTMENTS

The Unloader requires an air supply of between 90 and 100 p.s.i.

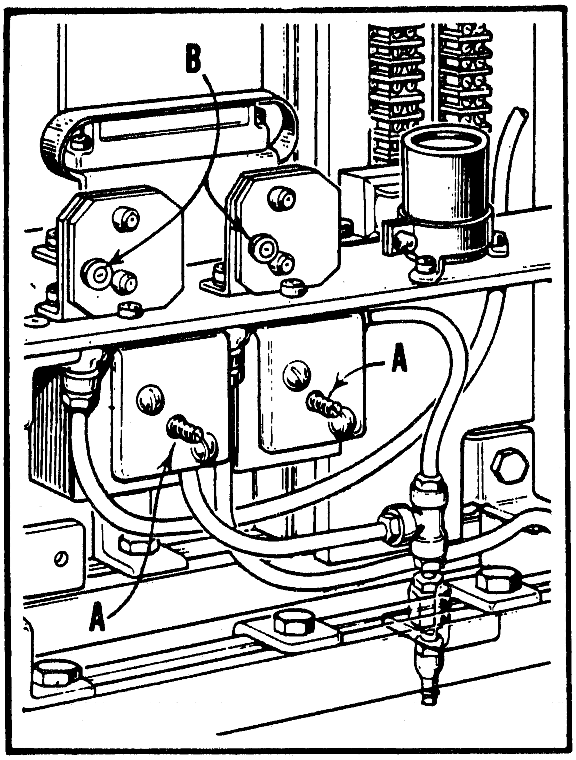
The two Unloader solenoids must be set for maximum air flow.

TO ADJUST: Turn screws (A) all the way out to obtain the greatest air flow. (Normally, once established, these settings need not be changed.)

The ideal condition for the air jets is to have them set for the shortest possible duration needed to carry the work away from the machine. Air remaining on after the work is removed, is unnecessary and only delays operator from starting the next welt.

Also, the second jet should be set to last slightly longer than the first jet. This is to assure that work will be completely carried onto the Trouser Clamp Rack.

TO ADJUST: Duration of air jets is set by turning adjusting slots (B) of potentiometers. Turning counterclockwise increases duration of air jets. Turning clockwise decreases the duration.



TROUBLESHOOTING

NO AIR PASSING THROUGH UNLOADER

Check Air Supply.

Check adjustments on Unloader solenoids.

Check that the Automatic Clamp Up switch is being actuated by the downward movement of the Tab Knife Lever.

WORK NOT BEING COMPLETELY EJECTED

Check for mechanical obstructions.

Check solenoids for maximum air flow.

Check that Adjustable Potentiometers are set to provide sufficient time for air to eject work.

Check that Adjustable Potentiometers are set to allow Second Jet to remain on longer than First Jet.

AIR JETS REMAINING ON TOO LONG

Check that Adjustable Potentiometers are set for shortest possible duration.