

SECTION 12

PARTS LIST

MAIN FRAME, BUSHINGS, AND HEAD OIL SIPHON.....12-1

MAIN FRAME, MISC. COVERS, NEEDLE TENSION PARTS, THROAT
PLATE, TENSION DISC SOLENOIDS.....12-4

UPPER SHAFT, PRESSER BAR, NEEDLE BAR, FOOT LIFTER,
HEAD OILER & OIL SIPHON HEAD TUBE.....12-7

FEED DRIVING & STITCH REGULATING MECHANISM.....12-10

ROTATING HOOK ASSEMBLY & HOOK OILING PARTS.....12-12

THREAD WIPER, CUTTING CYLINDER, TENSION RELEASE SOLENOID,
MOUNTING BRACKET, BOBBIN CASE HOLDER, POSITIONING FINGER,
AND KNIFE ASSEMBLY.....12-14

PNEUMATIC ASSEMBLY.....12-15

AIR FILTER, REGULATOR & LUBRICATOR, CLAMP DISCONNECT FITTINGS,
TUBING, TRIMMER SOLENOID, SOLENOID REPAIR KIT.....12-16

CLAMP PLATE ASSEMBLY.....12-18

CAM PLATE ASSEMBLY.....12-20

CARRIAGE ASSEMBLY.....12-21

ELECTRIC CLUTCH & CLAMP RETURN MOTOR ASSEMBLY.....12-23

TRANSMISSION AND IDLER PULLEY ASSEMBLY.....12-25

BOBBIN WINDER ASSEMBLY.....12-27

CONTROL BOX ASSEMBLY.....12-28

TABLE ASSEMBLY.....12-30

CLAMP INTERLOCK SWITCH, LITE ASSEMBLY, TREADLE SWITCH ASSEM-
BLY, MAIN POWER SWITCH BOX ASSEMBLY & SAFETY SWITCH ASSEMBLY.....12-32

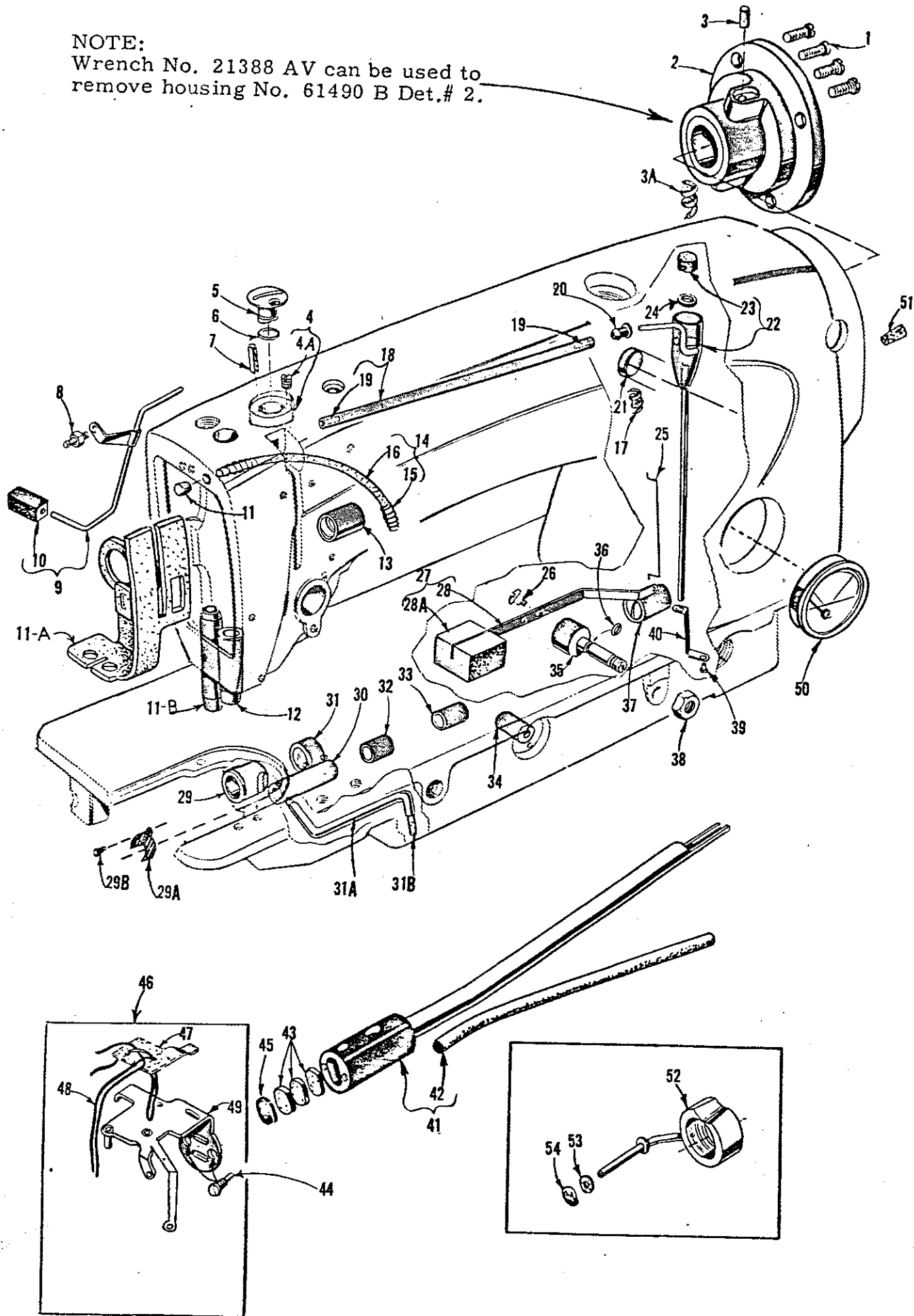
PHOTOCELL ASSEMBLY, COVERS, BELT GUARD, THREAD STAND
ASSEMBLY, AND LEG EXTENSION ASSEMBLY.....12-34

QUICK STOP MOTOR, SYNCHRONIZER, & CONTROL PANEL.....12-36

MACHINE CABLES & WIRING HARNESSSES.....12-37

SUGGESTED MINIMUM SPARE PARTS LIST.....12-38

NOTE:
Wrench No. 21388 AV can be used to
remove housing No. 61490 B Det.# 2.



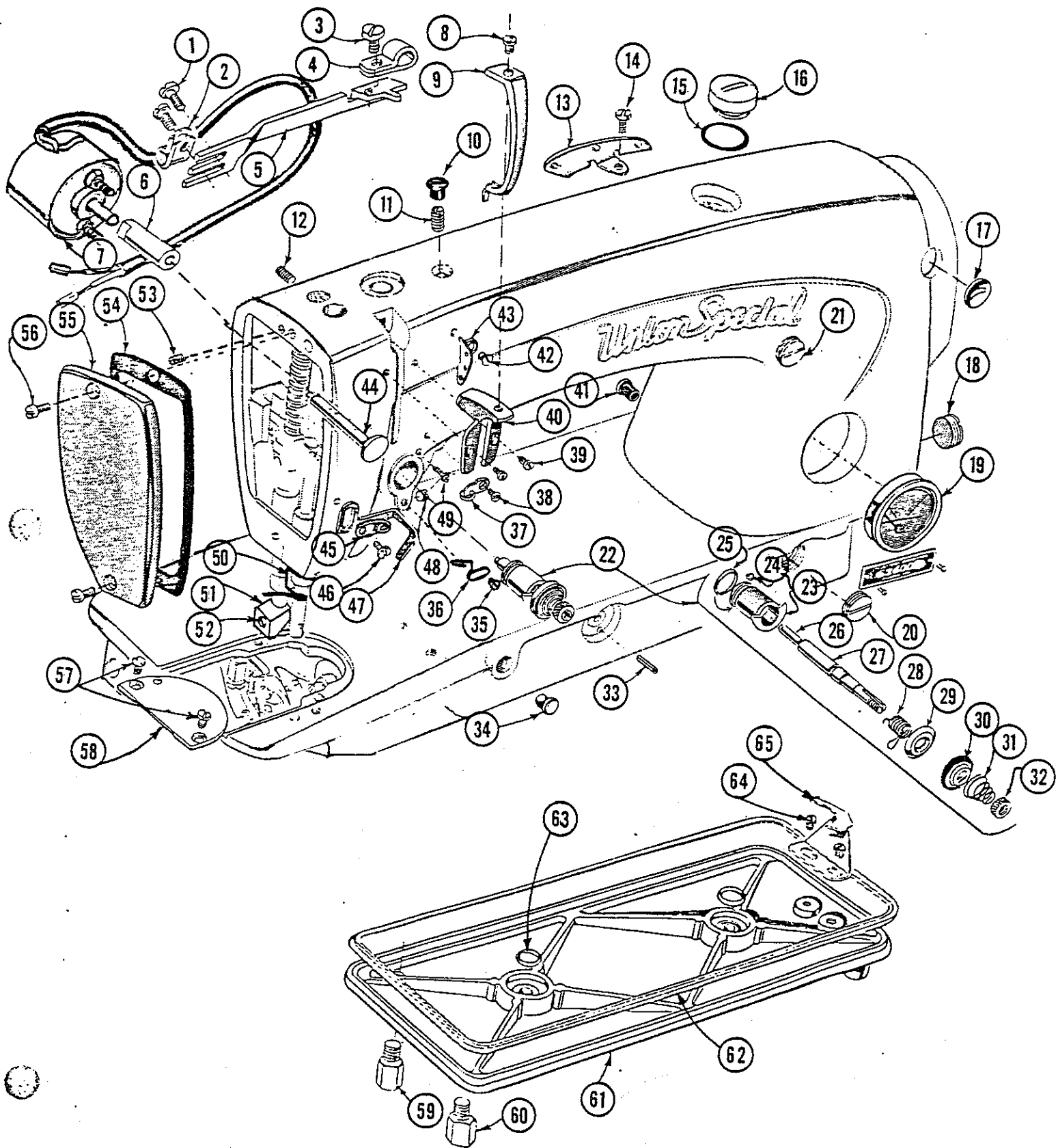
MAIN FRAME, BUSHINGS, AND HEAD OIL SIPHON

REF. NO.	PART NO.	DESCRIPTION	AMT. REQ.
1	22569 B	Screw	4
2	61490 B	Main shaft bearing housing	1
3	666-200	Oil felt	1
3A	666-221	Oil wick	1
4	50-982 Blk.	Head oil bushing, not used on new machines	1
4A	79077	Screw, not used on new machines	1
5	61493 C	Head flow oil control stud, not used on new machines	1
6	660-254	Oil retainer ring, not used on new machines	1
7	666-198	Oil wick, not used on new machines	1
8	61494 L	Stud	1
9	61494 S	Oil siphon head tube	1
10	666-214	Oil felt	1
11	C067 B	Plug	1
11A	666-231	Felt	1
11B	63454	Presser bar bushing	1
12	61454	Needle bar bushing, lower	1
13	61490 D	Upper main shaft bushing, left	1
14	61471 F	Take-up lever hood oil diverting wick & spring	1
15	61471 D	Spring	1
16	666-194	Roll felt	1
17	666-238	Bed oil drain hole felt	1
18	63994 B	Oil siphon connecting tube	1
19	56393 U	Oil tube	2
*20	61494 N	Retaining grommet	1
21	61293 N	Bed plug	1
*22	63494 D	Head oil siphon assembly	1
23	666-237	Felt disc	1
24	6042 A	Washer (use only on siphon with c'sunk bottom)	1
25	61494 H	Oil gauge connecting link	1
26	21629 A	Screw	1
27	63494 C	Oil gauge float assembly	1
28	61494 E	Oil gauge float lever	1
28A	61494 D	Oil gauge float	1
29	61432 C	Feed driving shaft bushing, left	1
29A	63432 E	Oil shield	1
29B	18-768	Drive screw	1
30	61441	Hook shaft bushing, left	1
31	61432 E	Feed driving shaft oil retaining bushing, left	1
31A	63493	Hook shaft bushing oil tube	1
31B	666-212	Oil felt	1
32	61441 A	Hook shaft bushing, right	1
33	61496 P	Hook oil control shaft bushing	1
34	61496 S	Hook oiling control adjusting bushing	1
35	61494 F	Float lever pivot stud	1
36	660-221	"O" ring	1
37	61432 B	Feed driving shaft bushing, right	1
38	11635 B	Nut	1
*39	22564	Screw	1
*40	63494	Siphon primer position bracket	1
41	61493 A	Head oil supply line	1

*Replaced by Ref. Nos. 52, 53 and 54 on new machines.

MAIN FRAME, BUSHINGS, AND HEAD OIL SIPHON, CONTD.

<u>REF.</u> <u>NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u> <u>REQ.</u>
42	666-109	Oil wick	1
43	666-261	Felt pad, for No. 61493 A	3
44	22784 K	Screw, for No. 63493 H	2
45	666-262	Felt, for No. 61493 A	1
46	63493 HA	Head oiler assembly	1
47	666-191	Oil distributing felt	1
48	WI-30	Oil wick, 15 inches long	1
49	27-534 Blk.	Oil shut-off bracket	1
50	63494 K	Oil gauge	1
51	C067 B	Cork plug	1
52	63493 J	Oil siphon assembly	1
53	666-273	Felt disc	1
54	660-456	Push-on fastener	1

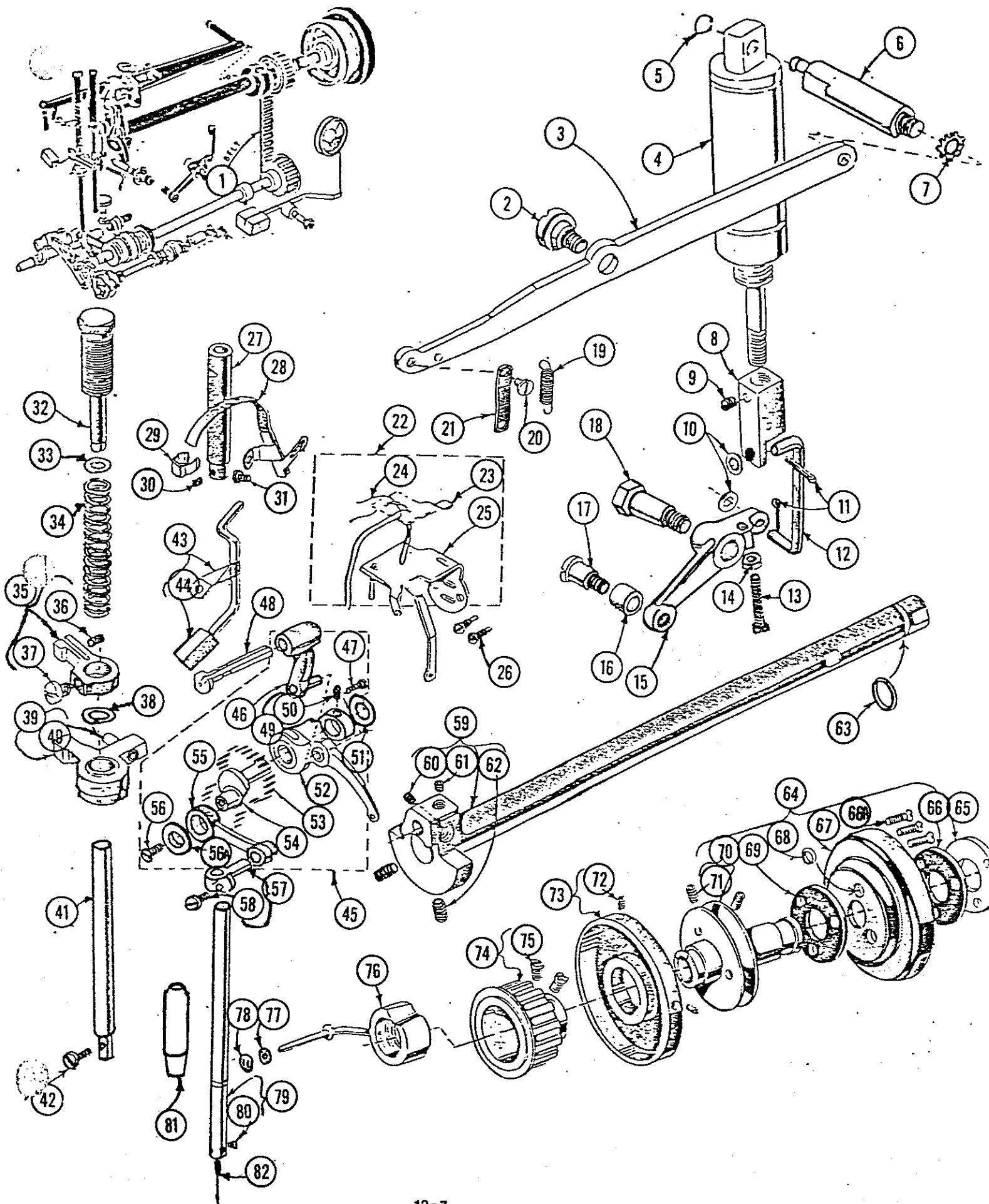


MAIN FRAME, MISCELLANEOUS COVERS,
NEEDLE TENSION PARTS, THROAT PLATE,
TENSION DISC SOLENOID

REF. NO.	PART NO.	DESCRIPTION	AMT. REQ.
1	376 A	Screw for synchronizer bracket	2
2	660-352	Cable clamp	1
3	J87 J	Screw	1
4	660-356	Cable clamp	1
5	63495 R	Synchronizer bracket	1
6	63492 E	Bushing	1
7	660-360	Rotary solenoid	1
8	22564 B	Screw	1
9	63451	Take-up shield	1
10	63494 B	Plug, plastic	1
11	22815	Screw	1
12	22894 E	Screw	1
13	61470 D	Frame thread eyelet	1
14	22570 A	Screw	1
15	63494 A	Gasket	1
16	22733 D	Plug screw	1
17	61449 T	Stitch length indicator	1
18	22539 P	Plug screw	1
19	63494 K	Oil gauge	1
20	22539 P	Plug screw	1
21	22539 P	Plug screw	1
22	29475 BM	Tension assembly	1
23	61492 E	Tension post socket	1
24	22560 G	Set screw	1
25	660-269 A	"Quad" Ring	1
26	61492 G	Tension release pin	1
27	61492 F	Tension post	1
28	63453	Check spring	1
29	109	Tension disc	1
30	29475 BN	Tension release washer soldered to disc	1
31	61392 F-9	Tension spring	1
32	61292 C	Tension nut	1
33	660-219 A	Roll pin	1
34	63494 B	Plug, plastic	1
35	HS24 C	Screw	1
36	63492	Tension post eyelet	1
37	61470 C	Thread guide	1
38	22766	Screw	1
39	22562	Screw	2
40	61471 B	Take-up lever hood	1
41	63494 R	Plug, Plastic	1
42	22805	Screw	1
43	61471 A	Frame thread eyelet	1
44	63492 D	Tension release plunger pin	1
45	63470 A	Upper thread eyelet	1
46	222 D	Screw	1
47	63970 A	Needle thread pull-up belt (goose neck)	1
48	22597 E	Set screw	1
49	22863 B	Stop screw	1
50	63470 B	Needle bar bushing thread guide	1
51	RM-3350	Clamp block	1

MAIN FRAME, MISCELLANEOUS COVERS, NEEDLE TENSION PARTS, THROAT PLATE, TENSION
DISC SOLENOID, CONTD.

<u>REF.</u>	<u>NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>AMT.</u>
				<u>REQ.</u>
	52	22585 A	Screw	1
	53	96	Screw	1
	54	63482 A	Gasket	1
	55	61482 G	Head cover	1
	56	22516	Screw	1
	57	RM-3494	Throat plate screw	2
	58A	RM-2385 D	Throat plate	1
	58B	RM-4300	Throat plate with eyelet for anti-flagging	1
	59	22571 G	Plug screw	1
	60	22841 L	Stud screw	1
	61	63982 C	Bottom cover	1
	62	61482 J	Gasket	1
	63	660-204	"O" ring	2
	64	22570	Screw	2
	65	61494 R	Oil distributing plate	1

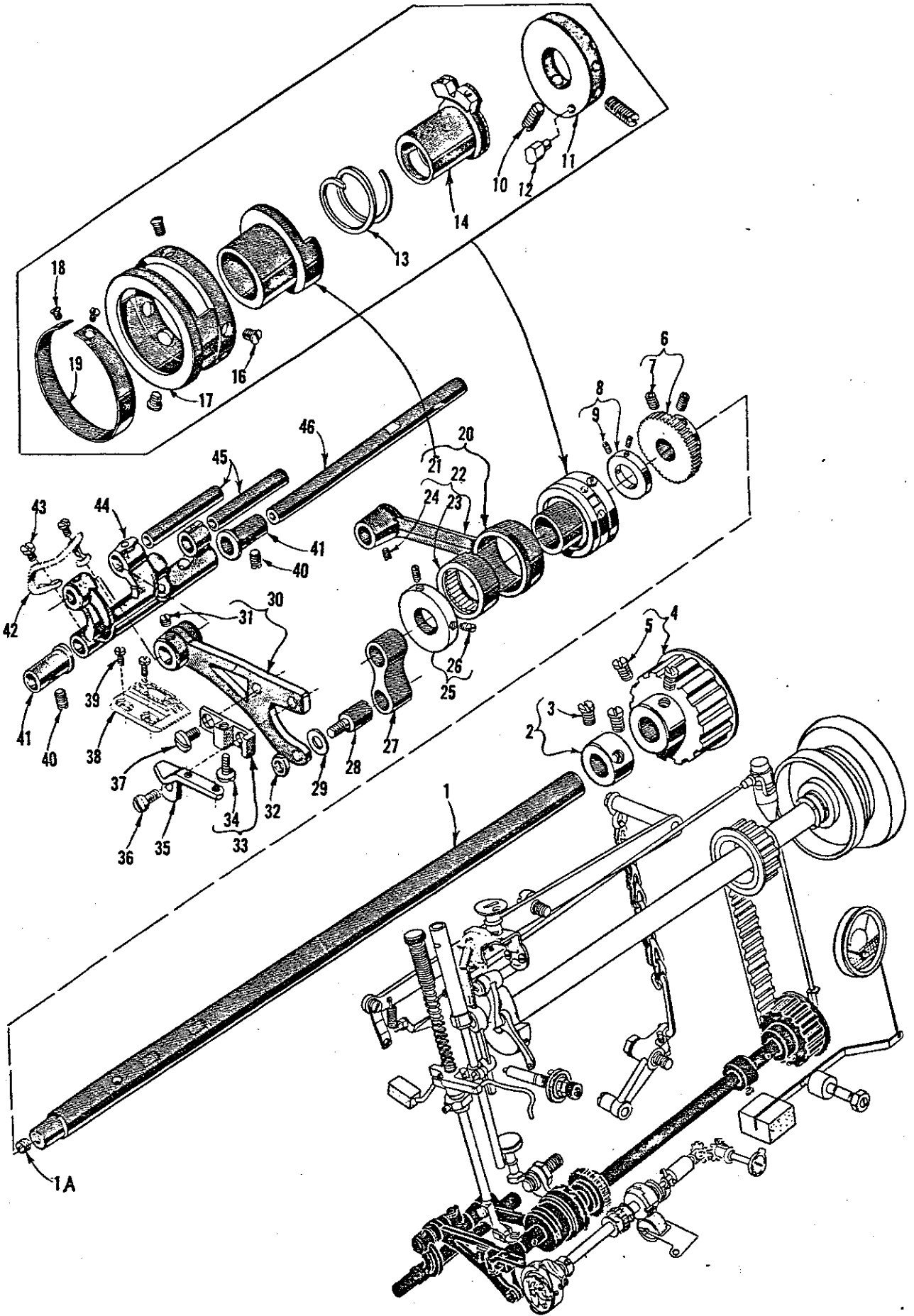


UPPER SHAFT, PRESSER BAR, NEEDLE BAR,
FOOT LIFTER, HEAD OILER AND OIL SIPHON HEAD TUBE

REF. NO.	PART NO.	DESCRIPTION	AMT. REQ.
1	61460 B	Feed driving belt	1
2	22890 A	Screw LH thread	1
3	63466 A	Lifter lever	1
4	660-397	Air cylinder	1
5	660-245	Retaining ring	1
6	63468 B	Extension stud	1
7	652 B-20	Lock washer	1
8	63468 A	Clevis	1
9	22894 W	Set screw	1
10	53634 C	Washer	2
11	660-142	Cotter pin	2
12	63468 C	Air cylinder link	1
13	22874 F	Screw	1
14	9937	Nut	1
15	61468 F	Lifter lever bell crank	1
16	61468 E	Bell crank roller	1
17	22712 G	Screw	1
18	22817 A	Screw	1
19	15872 F	Lifter lever spring	1
20	22758 B	Screw	1
21	61467	Lifter lever link	1
22	63493 HA	Head oiler assembly	1
23	666-191	Oil distribution felt	1
24	WI-30	Oil wick, 15 in.	1
25	27-876 Blk.	Oil shut-off bracket	1
26	22784 K	Screw	2
27	61454 A	Upper needle bar bushing	1
28	63453 C	Oil shield diverting felt	1
29	61454 B	Felt holding spring clip	1
30	666-186	Oil felt	1
31	22564	Screw	1
32	RM-3401	Pressure spring regulator	1
33	61256 G	Washer	1
34	61356	Presser spring	1
35	63459 A	Presser guide	1
36	73 C	Set screw	1
37	22570	Screw	1
38	61457 M	Spring washer	1
39	63458 L	Presser bar connection	1
40	660-219	Roll pin	1
41	63457 J	Presser bar	1
42	22585 A	Screw	1
43	63494 S	Oil siphon head tube	1
44	666-214	Oil felt	1
45	29486 U	Take-up lever and needle bar link assembly	1
46	63451 A	Take-up lever link	1
47	22784 E	Screw	1
48	63451 B	Take-up lever pin	1
49	460	Collar	1
50	88	Screw	1
51	61351 C	Thrust washer	1
52	61451	Take-up lever	1
53	61451 D-626	Needle bearing, .0626 in. dia.	38

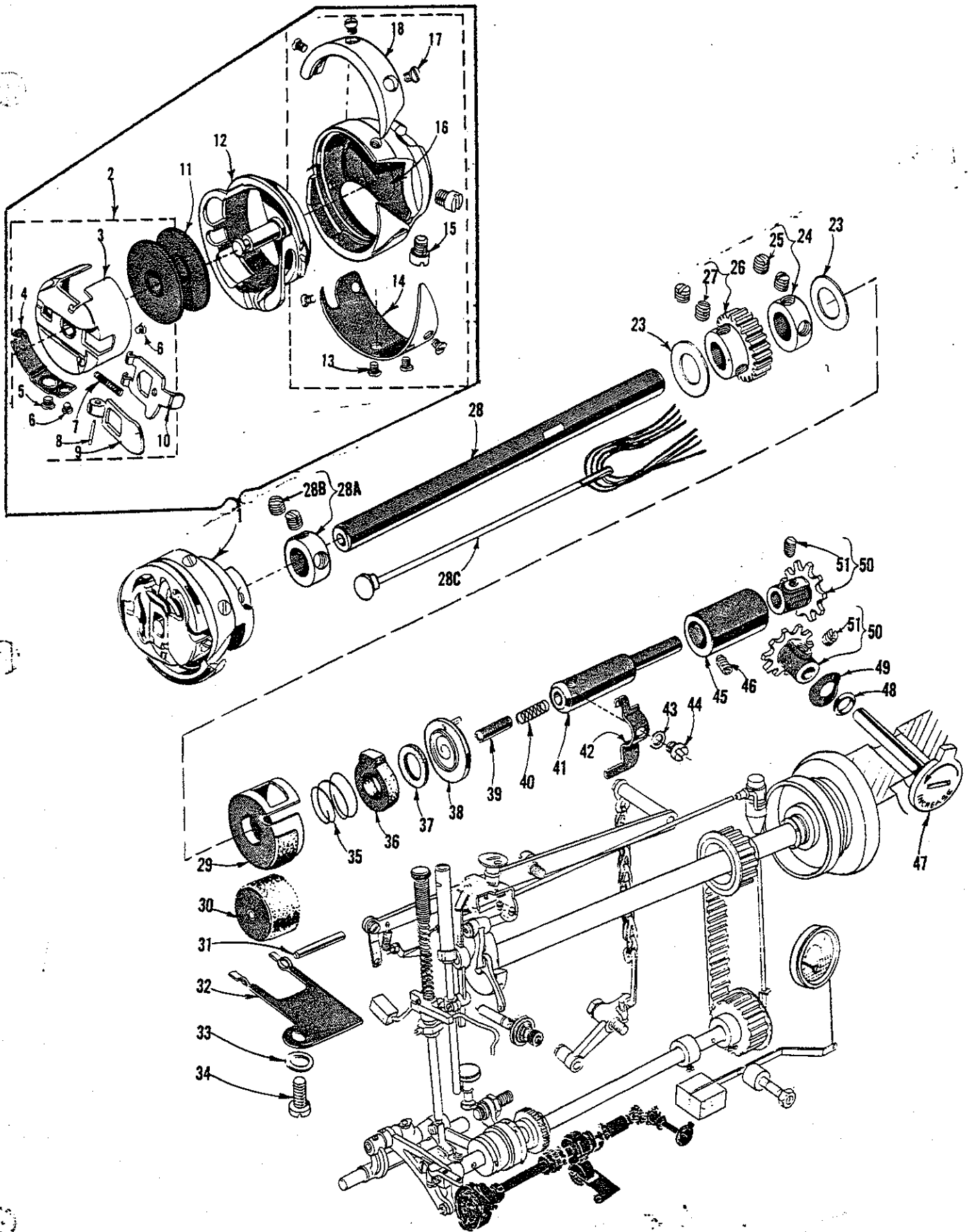
UPPER SHAFT, PRESSER BAR, NEEDLE BAR, FOOT LIFTER, HEAD OILER AND OIL SIPHON
HEAD TUBE, CONTD.

<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>AMT. REQ.</u>
54	63452 B	Take-up lever crank pin marked "K"	1
55	63455 A	Needle bar link	1
56	22757 D	Screw	1
56A	63455	Thrust Washer	1
57	61255	Needle bar connection	1
58	22562 B	Screw	1
59	29475 AN	Main shaft assembly	1
60	22894 U	Spot screw	1
61	22894 W	Set screw	1
62	22894 V	Set screw	2
63	660-269	"Quad" ring	1
64	63421 A	Handwheel assembly	1
65	61321 L	Retainer plate	1
66	61421 E	Handwheel isolator	1
66A	22574 C	Screw	3
67	61421 C	Handwheel	1
68	660-254 D	Isolator washer	3
69	61421 E	Handwheel isolator	1
70	63421 C	Pulley	1
71	22894 V	Set Screw	2
72	22565 C	Set Screw	2
73	61421 F	Stitch length indicator	1
74	61420	Main shaft driving sprocket	1
75	22884	Set screw	2
76	63493 J	Oil siphon assembly	1
77	666-273	Felt disc	1
78	660-456	Push-on fastener	1
79	63417 A	Needle bar	1
80	22768 A	Screw	1
81	63454	Lower needle bar bushing	1
82	185 GKS 100/040	Needle (Round Point)	100
	185 GLS 100/040	Needle (Thin Ball Point)	100
	180 SXS 100/040	Needle (for double knit or hard to sew material)	100



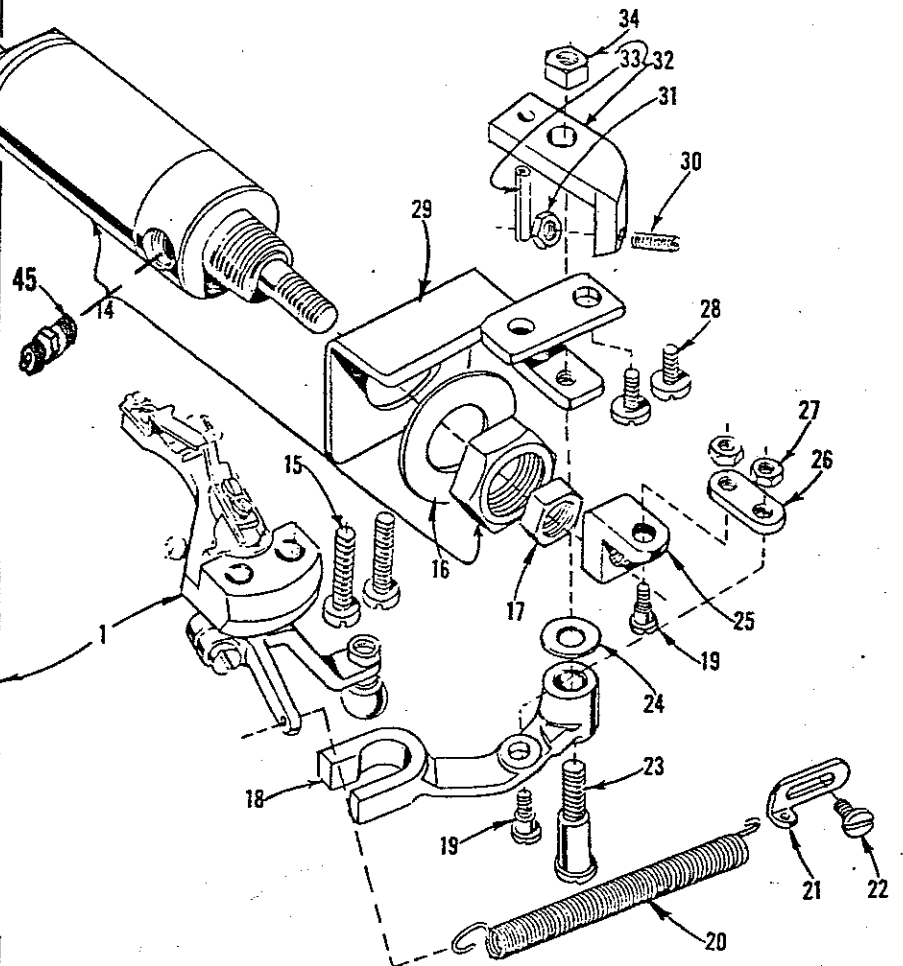
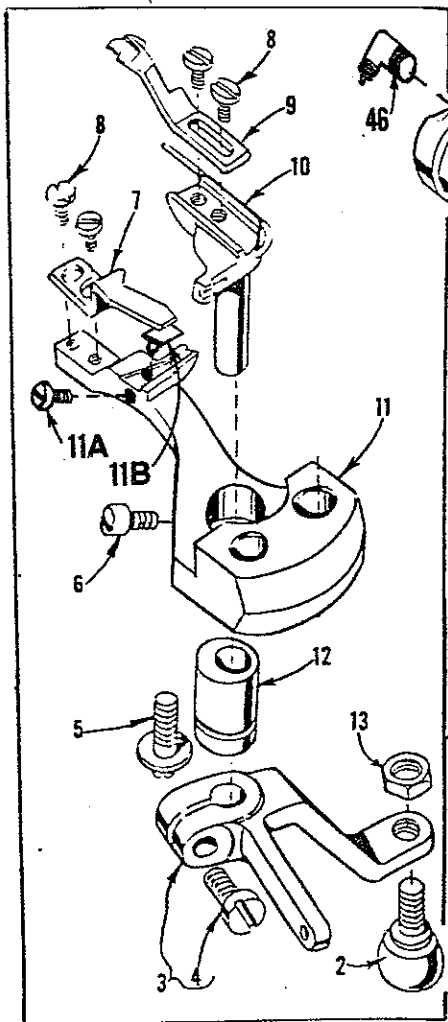
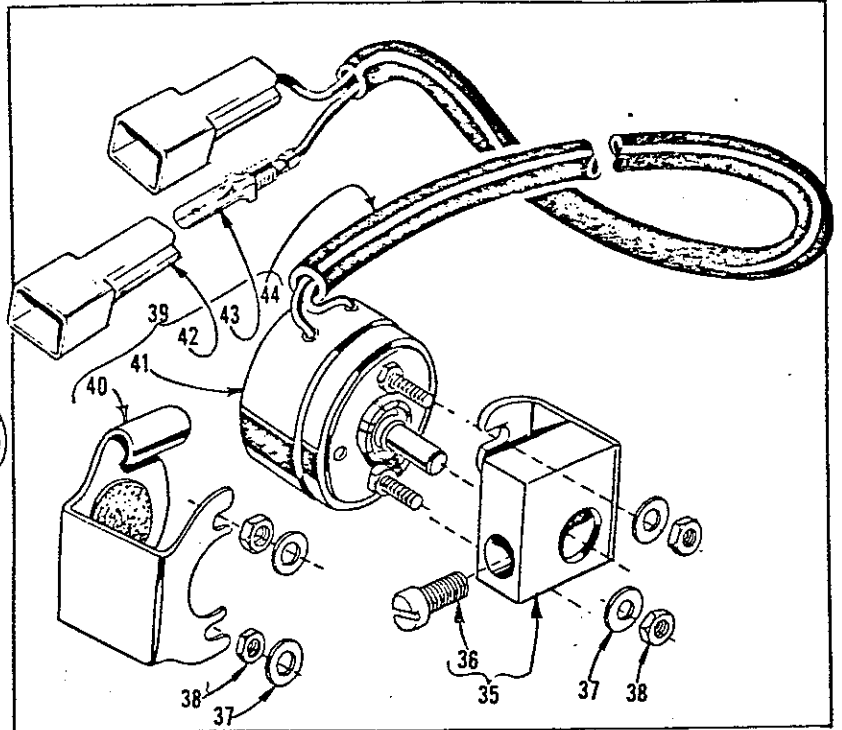
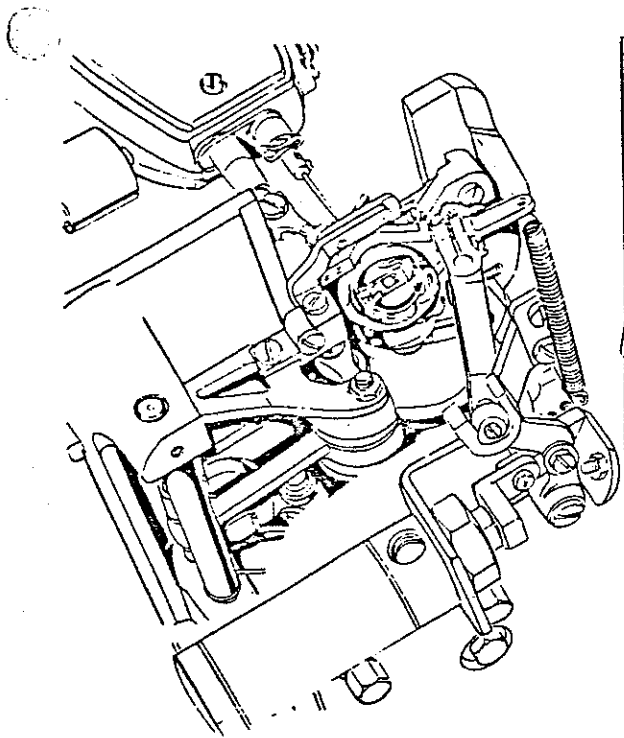
FEED DRIVING AND STITCH REGULATING MECHANISM

REF. NO.	PART NO.	DESCRIPTION	AMT. REQ.
1	61432 H	Feed driving shaft	1
1A	22586	Screw	1
2	61360 G	Thrust collar	1
3	22884	Screw	2
4	61460 A	Feed driving shaft sprocket	1
5	22653 D-6	Screw	2
6	63443	Hook shaft driving gear	1
7	22894 C	Set screw	2
8	61432 J	Collar	1
9	73 C	Set screw	2
10	719	Screw	2
11	61437 A	Feed driving eccentric timing collar	1
12	61437 B	Feed driving eccentric pivot pin	1
13	61449 B	Stitch regulating eccentric thrust spring	1
14	61449 S	Stitch regulating eccentric	1
16	22564 H	Screw	3
17	61437 L	Feed drive eccentric retainer housing	1
18	22716 A	Screw	2
19	61437 M	Retainer housing spring cover	1
20	29126 DD	Feed driving eccentric & connecting rod assembly	1
21	61437 K	Feed drive eccentric	1
22	61438 B	Feed driving eccentric connecting rod	1
23	660-225	Needle bearing	1
24	88	Set screw	1
25	61437 N	Feed driving eccentric thrust collar	1
26	12935 A	Set screw	2
27	63433 A	Feed lift link	1
28	22845 K	Feed lift link stud	1
29	61434 G	Washer	1
30	63434 C	Feed bar	1
31	89	Set screw	1
32	15037 A	Nut	1
33	61439 A	Feed dog holder support	1
34	22775 A	Screw	1
35	61439	Feed dog holder	1
36	22528	Screw	1
37	88 D	Screw	1
40	22894 J	Screw	2
41	61336 U	Feed rocker shaft bushing	2
42	61336 Y	Feed rocker oil wick	1
43	90	Screw	2
44	61236	Feed rocker	1
45	63435 A	Feed bar shaft	2
46	61236 G	Feed rocker shaft	1



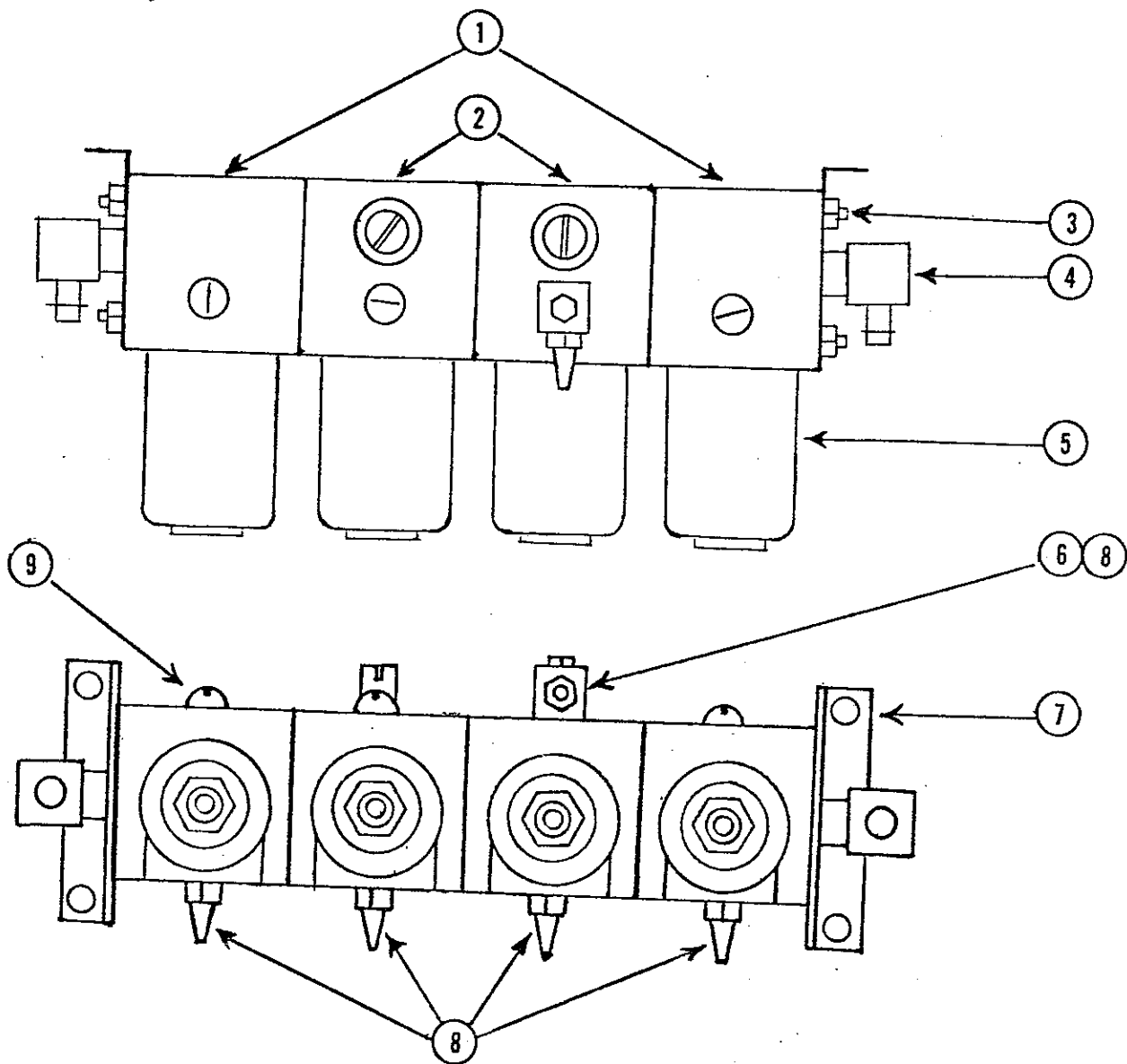
ROTATING HOOK ASSEMBLY AND HOOK OILING PARTS

REF. NO.	PART NO.	DESCRIPTION	AMT. REQ.
1	29474 AA	Rotating hook assembly	1
2	63913 A	Bobbin case assembly	1
3	63913	Bobbin case	1
4	61414 C	Bobbin case tension spring	1
5	22716 B	Tension regulating screw	1
6	22564 E	Screw	2
7	61216 N	Bobbin case latch spring	1
8	61216	Bobbin case latch hinge pin	1
9	61415 A	Bobbin case latch lever	1
10	61415	Bobbin case latch	1
11	61212	Bobbin	1
12	63414 DE	Bobbin case holder	1
13	22716 A	Screw	4
14	63410	Hook thread deflector	1
15	22569 H	Screw	2
16	63408	Hook	1
17	22716 H	Screw	3
18	61411 A	Hook thread retainer	1
19-22		Numbers omitted	-
23	61351 C	Thrust washer	2
24	12865	Thrust collar	1
25	88	Screw	2
26	61444	Hook shaft pinion	1
27	89	Screw	2
28	61440	Hook shaft	1
28A	63432	Thrust collar	1
28B	HA73 B	Set screw	2
28C	61496 V	Hook shaft wick insert assembly	1
29	63496	Metering cup	1
30	61496 E	Hook oil feed roller	1
31	61496 G	Pivot pin	1
32	61496 F	Retaining spring	1
33	53678 N	Washer	1
34	22516 B	Screw	1
35	61496 J	Air seal spring	1
36	666-181	Oil supply felt	1
37	666-182	Air seal felt	1
38	61496 C	Pump disc	1
39	61496 D	Pump disc pivot pin	1
40	35857 R	Spring	1
41	61496 L	Hook oil control shaft	1
42	61496 K	Hook oil control finger	1
43	27-527 Blk.	Washer	1
44	22819	Screw	1
45	61496 P	Hook oil control shaft bushing	1
46	22894 R	Set screw, for No. 61496 P	1
47	61496 N	Oil control adjusting shaft	1
48	660-221	Oil seal ring	1
49	39198 D	Spring washer	1
50	61496 M	Oil control cog	2
51	22743	Set screw	1



THREAD WIPER, CUTTING CYLINDER, TENSION RELEASE
SOLENOID, MOUNTING BRACKET, BOBBIN CASE HOLDER,
POSITIONING FINGER AND KNIFE ASSEMBLY

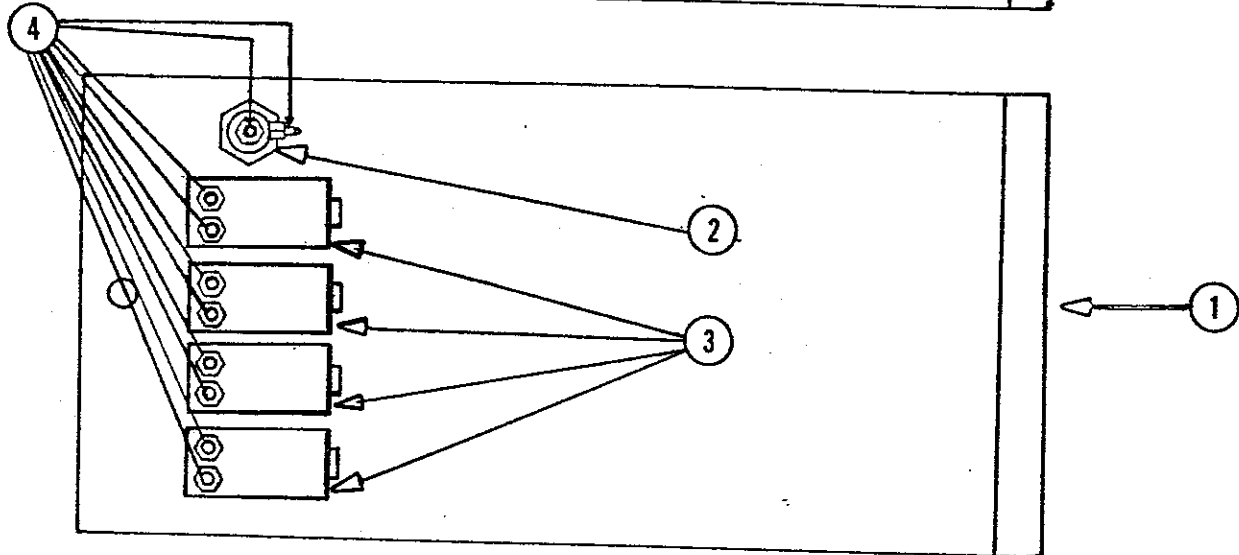
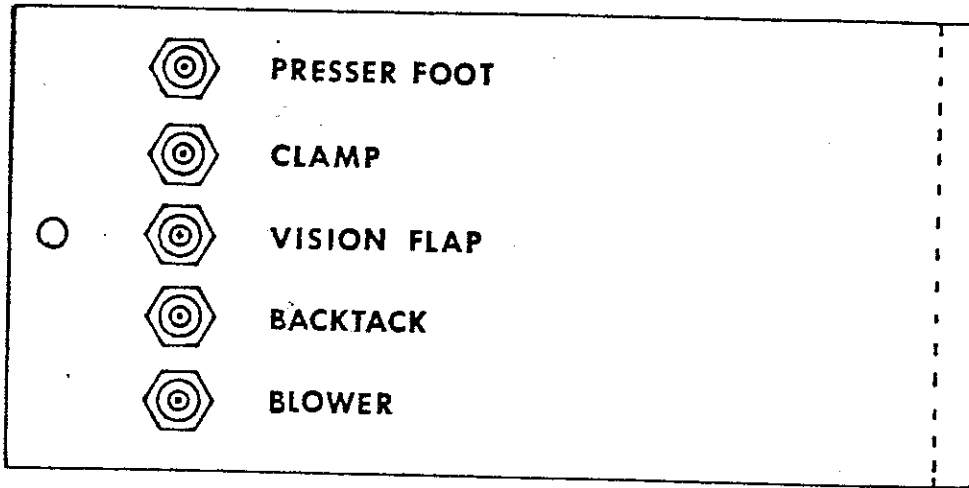
REF. NO.	PART NO.	DESCRIPTION	AMT. REQ.
1	29475BR	Bobbin case holder positioning finger & knife assembly	1
2	706 A	Ball stud	1
3	63495 J	Pivot release lever	1
4	22585	Screw	1
5	22863 D	Screw	1
6	77	Screw	1
7	G61470 KX	Upper knife, marked "AF"	1
8	73 A	Screw, for knives	4
9	G61449 KX	Finger knife & thread holder, marked "AE"	1
10	63471 B	Lower knife carrier, marked "E"	1
11	63414 B	Positioning finger, marked "A"	1
11A	73 A	Screw	1
11B	63411	Bobbin thread retainer	1
12	G61441 KX	Eccentric bushing	1
13	907	Nut	1
14	671 A-3	Knife air cylinder	1
15	22874	Screw, for positioning finger & knife assembly	2
16	652 S-40	Washer	1
17	21233 FB	Nut	1
18	63495 N	Knife driving lever	1
19	22760 C	Screw	2
20	63495 B	Knife return spring	1
21	63495 E	Return spring positioner	1
22	22585 A	Screw, for return spring positioner	1
23	22777 A	Screw, for knife driving lever	1
24	61434 G	Washer	1
25	671 G-1	Clevis, for knife air cylinder	1
26	63495 L	Link	1
27	41071 G	Nut	2
28	22585 B	Screw, for mounting bracket	2
29	63495 K	Mounting bracket	1
30	22575	Screw	1
31	41071 G	Nut	1
32	63495 M	Cylinder stop	1
33	660-219 N	Roll pin	1
34	18	Nut	1
35	63470 T	Thread wiper solenoid mounting bracket	1
36	22596 D	Set screw	1
37	660-113	Washer, brass	4
38	651 J-12	Nut	4
39	29480 FM	Rotary tension release solenoid assembly	1
40	63458 H	Rotary solenoid cover	1
41	660-360	Rotary solenoid	1
42	670 G-18	Female connector sleeve, green	2
43	670 G-23	Male wire terminal	2
44	660-347	Solenoid lead cover	1
45	660-400	Male connector	1
46	660-401	Male elbow	1



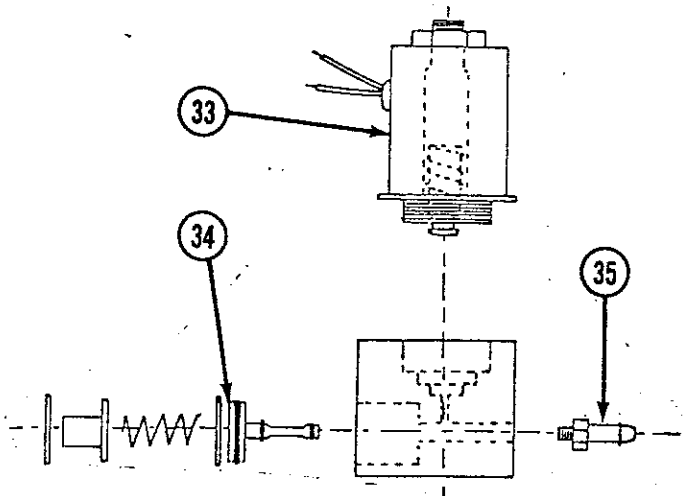
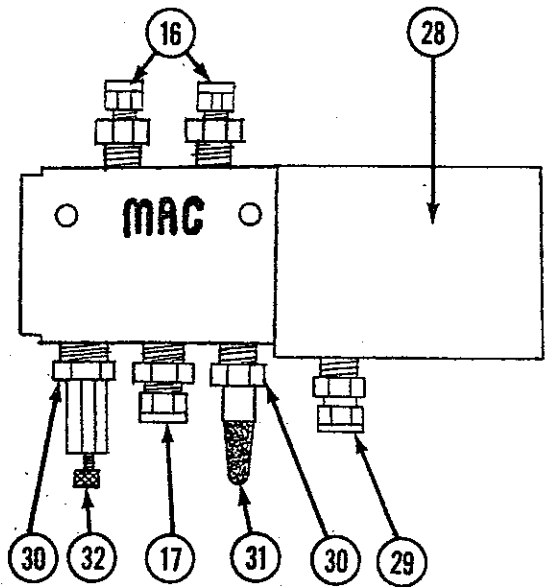
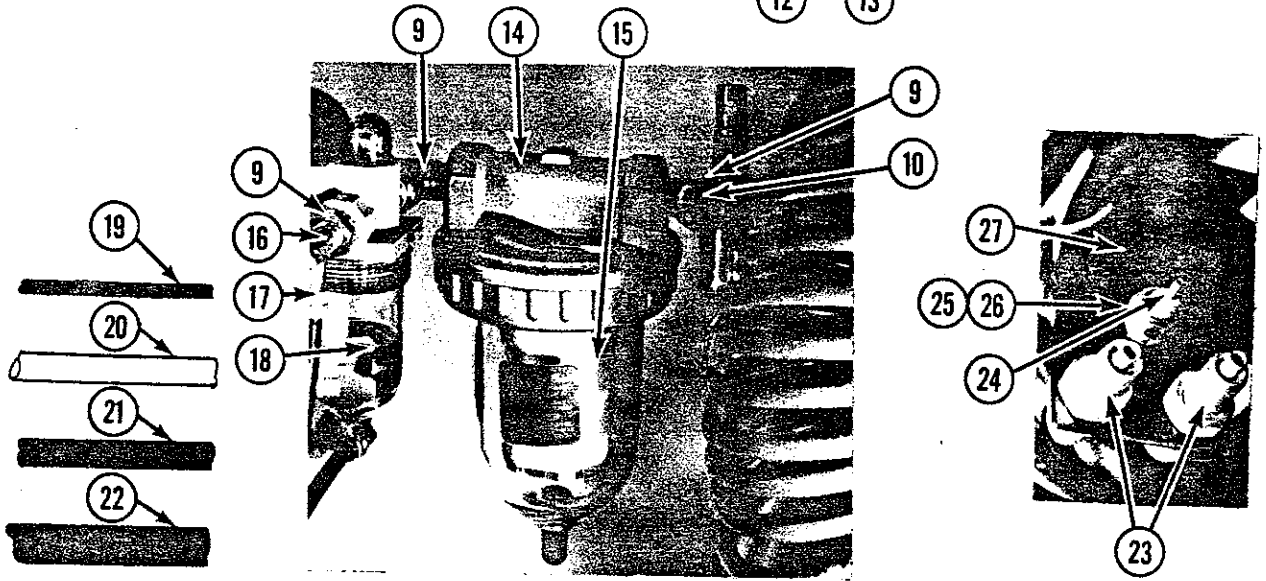
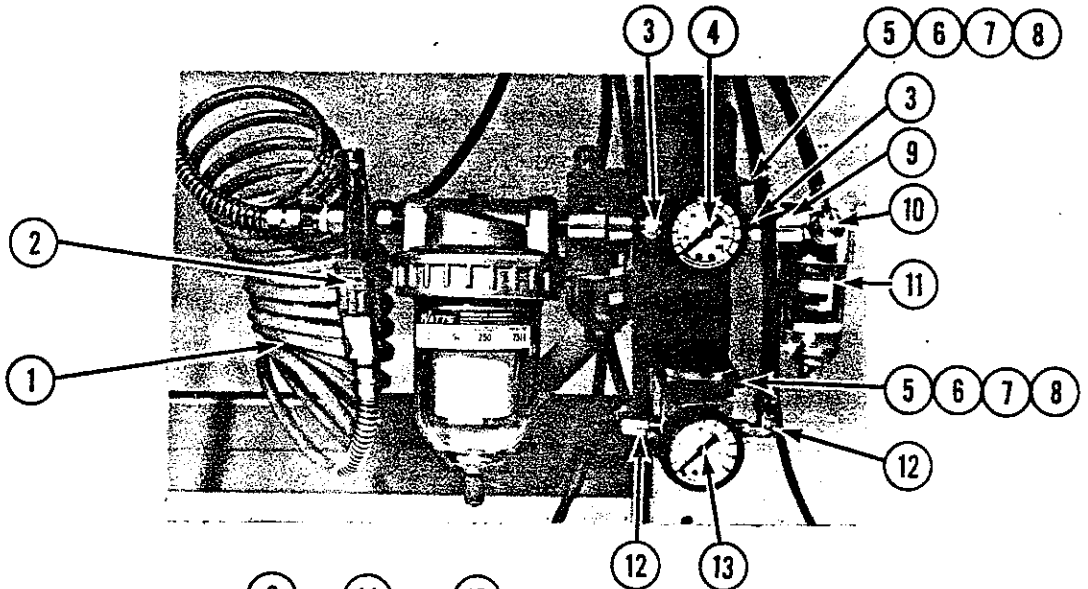
671-84 SOLENOID ASSEMBLY, COMPLETE

<u>REF. NO.</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	671-67 A	3-Way valve assembly	2
2	671-67 B	4-Way valve assembly	2
3	RM-4396-2	#10-32 x 5" Lg. threaded rod	2
	651 H	#10-32 Hex nut	4
4	RM-3728-1	1/8 N.P.T. Fitting	2
5	RM-4184-1	153 V. Solenoid & Operator	4
6	RM-3633-1	Swivel fitting	1
7	AS47-406	Valve assembly bracket	2
8	671 F-4	Barb fitting	5
9	671 F-76	Plug & Gasket	3

PNEUMATIC PANEL

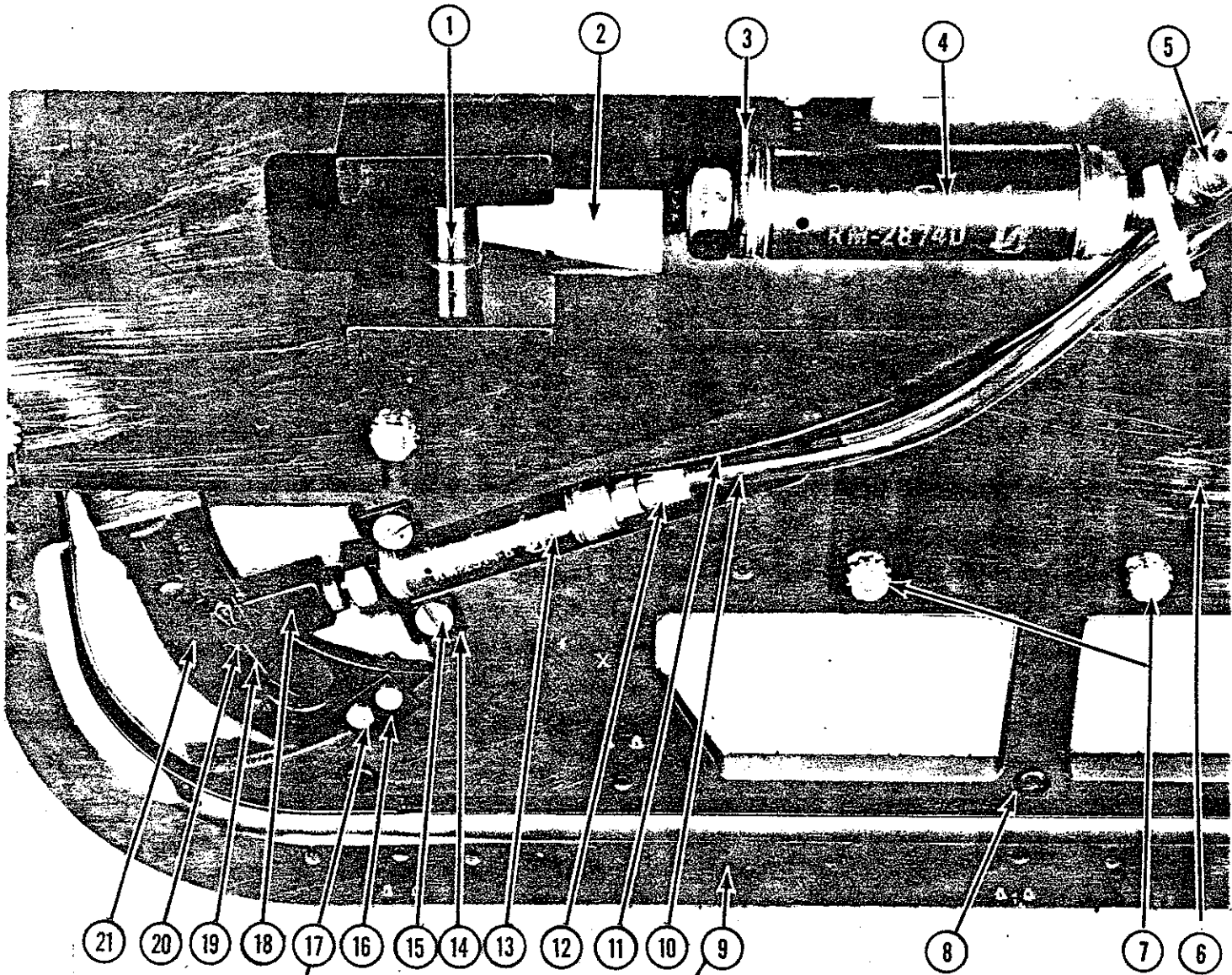


<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	RM-4371	PNEUMATIC PANEL	1
2	671-34	NEEDLE VALVE	1
3	671-35	FLOW CONTROL VALVE	4
4	671F-4	BARB FITTING	10



AIR FILTER, REGULATOR & LUBRICATOR, CLAMP DISCONNECT FITTINGS,
TUBING, TRIMMER SOLENOID, SOLENOID REPAIR KIT

REF. NO.	PART NUMBER	DESCRIPTION	QTY. REQ.
1	671 B-14	Coiled Hose w/two 1/4 fittings	1
2	RM-3685	Blow gun	1
3	671 F-7	Hex nipple 1/4	2
4	671 D-7	Regulator and gauge	1
5	39583 A	Regulator mounting bracket	2
6	651 B-24	Nut for 39583 A	2
7	652-24	Washer for 39583 A	4
8	22603	Screw for 39583 A	2
9	671 F-13	Run tee 1/4	4
10	671 F-9	Male elbow 1/4 P, 1/4 T	2
11	671 D-5	Filter assembly with auto drain	1
12	671 F-10	Male elbow 3/8 P - 1/4 T	2
13	671 D-14	Regulator and gauge	1
14	RM-3312-1	Filter assembly	1
15	RM-3312-2	Filter element	1
16	671 F-8	Male connector 1/4 P - 1/4 T	3
17	660-375	Male connector 3/8 T - 1/4 P	2
18	671 D-7	Lubricator	1
19	RM-2980 B	1/16 inch tubing	Specify Length
20	H0103	1/4 Poly-flo tubing, natural	" "
21	RM-2950 B	1/4 Poly-flo tubing, black	" "
22	671 B-18	3/8 Poly-flo tubing, black	" "
23	RM-3263 D	Bulkhead fitting 1/4 T, 1/4 P	2
24	RM-3464	1/16 tube fitting	1
25	RM-3465	10-32, 1/8 adaptor	1
26	RM-3266-1	Female connector	1
27	RM-2715 D	Fitting bracket	1
28	671-9	4-way valve	1
29	660-400	Male connector 1/4 T, 1/8 P	1
30	671 F-6	Reducing bushing 1/8-1/4	2
31	660-403	Muffler	1
32	671-34	Regulator	1
33	RM-4184	Valve operator assy.	1
34	RM-4186	4-way valve operator assy.	1
35	671 F-4	Barbed fitting w/gasket	1

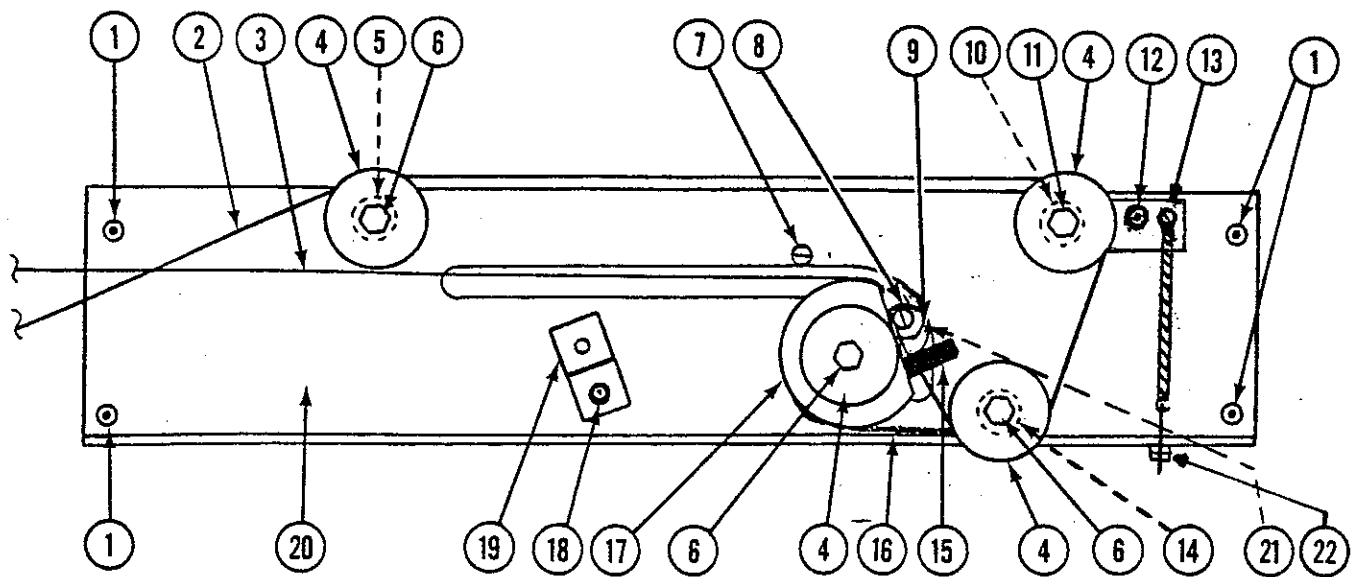


CLAMP PLATE ASSEMBLY

<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	478-12	Bearing	2
	RM-3437-1	Dowel pin 251 x 1-1/4	1
2	RM-3674	Lift wedge clevis	1
	RM-3675	Lift wedge pivot screw	1
	RM-3676	Lift wedge	1
	RM-3211-1	1/4-28 H.J.N.	1
	RM-3512-1	Rubber grommet	1
3	94	180-40 x 1/4 Fil.H.S.	1
	RM-2747-4	No. 10 L.W.	2
4	RM-2874 D	Single Acting Cylinder	2
5	660-401	Male elbow	1
6	RM-3423	Clamp plate support	1
7	RM-3046 D	10-32 x 5/16 H.H. Sems	1
8	RM-2736 A	6-32 x 1/4 B.H.S.	5
9	RM-2606 D	Clamp plate	6
10	HO-103	1/4 Tubing	1
11	RM-2980 B	1/8 Tubing	1
12	671 F-4	Hose fitting	1
	RM-3730	Hose Clamp	1
13	RM-2974 B	Cylinder	1
14	RM-2612 D	Cylinder mounting bracket	1
15	RM-3492-1	6-32 x 1/4 F.H.S.	2
16	RM-2615 D	Vision flap guide	2
17	22561	124-30 x 9/64 Fil.H.S.	4
18	RM-2531 D	Vision plate clevis	1
	671 H	10-32 hex nut	1
19	660-142	1/16 x 1/2 cotter pin	1
20	RM-3054 B	3/16 x 19/32 clevis pin	1
21	RM-2608 D	Vision flap	1
22	RM-2618 D	Vision flap pivot	1
23	RM-3492-1	6-32 x 1/4 F.H.S.	2
24	RM-3305-2	1/8 cable clamp	1
	RM-2736 A	6-32 x 1/4 B.H.S.	1
25	RM-3436	Vision flap rubber strip assy.	1
26	RM-3377	Outer curve rubber strip assy.	1
27	RM-3187-1	6-32 x 3/16 R.H.S.	5
28	RM-3333	Outer rubber strip assy.	1
29	RM-3446	Inner rubber strip assy.	1
30	RM-3080 D	Garment stop	2
	RM-2081 D	Garment stop bracket	2
	22772 A	Shoulder screw	2
	RM-3289-5	10-32 x 3/8 mounting screw	2
	RM-3293-6	#10 flat washer	2

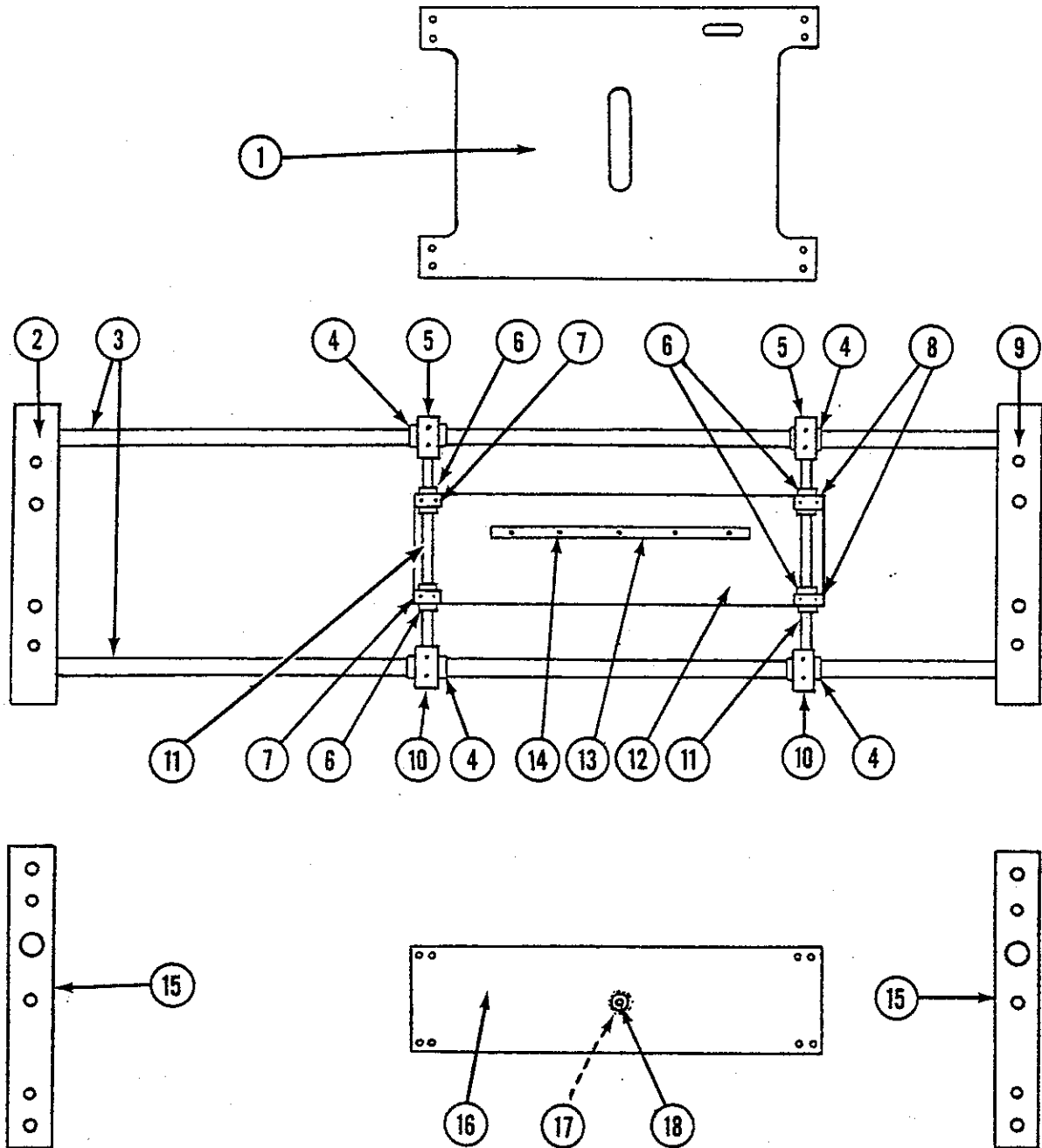
Spcfy Length
" "

CAM PLATE ASSEMBLY



<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	22652 D-12	1/4-20 x 3/4 S.H.S.	4
	RM-3068 D	1/4 Washer	4
	652 C-16	1/4 Lock washer	4
2	RM-3857	Return wire rope assy. (60" long)	1
3	RM-3856	Left hand wire rope assy. 931-1/4" long)	1
4	RM-2518 D	Tracking pulley	4
5	RM-2474-2	Pulley mounting spacer (5/8" long)	1
6	RM-3438-1	5/16-18 x 1-1/2 H.H.S.	3
7	22799 T	.182-40 x 1-1/8 Screw pin	1
8	RM-3289-5	10-32 x 3/8 B.H.S.	1
	RM-3293-6	10 Flat washer	1
9	RM-3858	Brass cable pivot	2
	22651 CB-4	10-32 x 1/4 S.S.S.	2
10	RM-2474-1	1/2" Pulley mounting spacer	1
11	RM-3438-4	5/16-18 x 1-1/4 H.H.S.	1
12	22652 D-12	1/4-20 x 3/4 S.C.S.	1
	RM-3901-2	Bearing	1
	RM-3293-1	1/4 Flat Washer	1
	RM-3993-1	1/4 H.S.L.W.	1
13	RM-2519	Tension pulley bracket	1
14	RM-2682 D	Idler pulley spacer	1
15	RM-3650	Cam pulley screw pin	1
	RM-3258 D	Bumper for screw pin	1
16	RM-2693 d	Cam pulley return spring	1
	22617 J-24	6-32 x 3/8 Fil.H.S.	1
17	RM-2514 D	Cam pulley	1
	RM-3293-2	5/16 Flat wahser	5
18	RM-3068 D	Washer	1
	22652 D-8	1/4-20 x 1/2 S.H.S.	1
19	RM-2650 D	Top cover support	1
20	RM-3561	Cam plate	1
21	RM-2541 D	Cam roller	1
22	AS-4-65	Tension adjusting rod	1
	AS-4-689	Spring	1
	39557 E	Nut	2

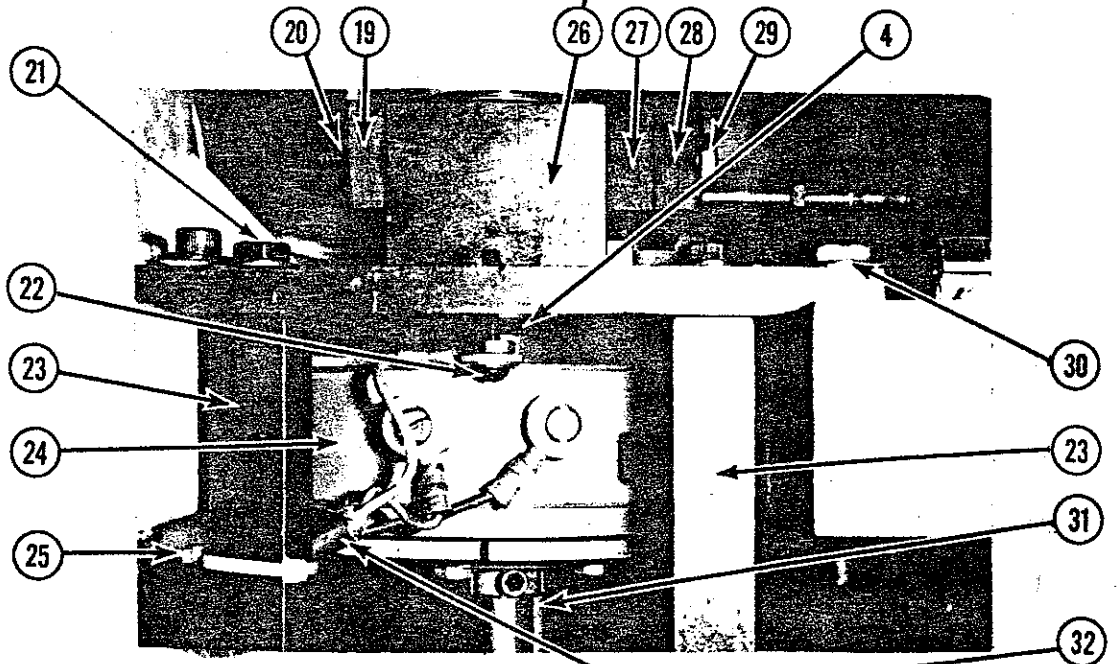
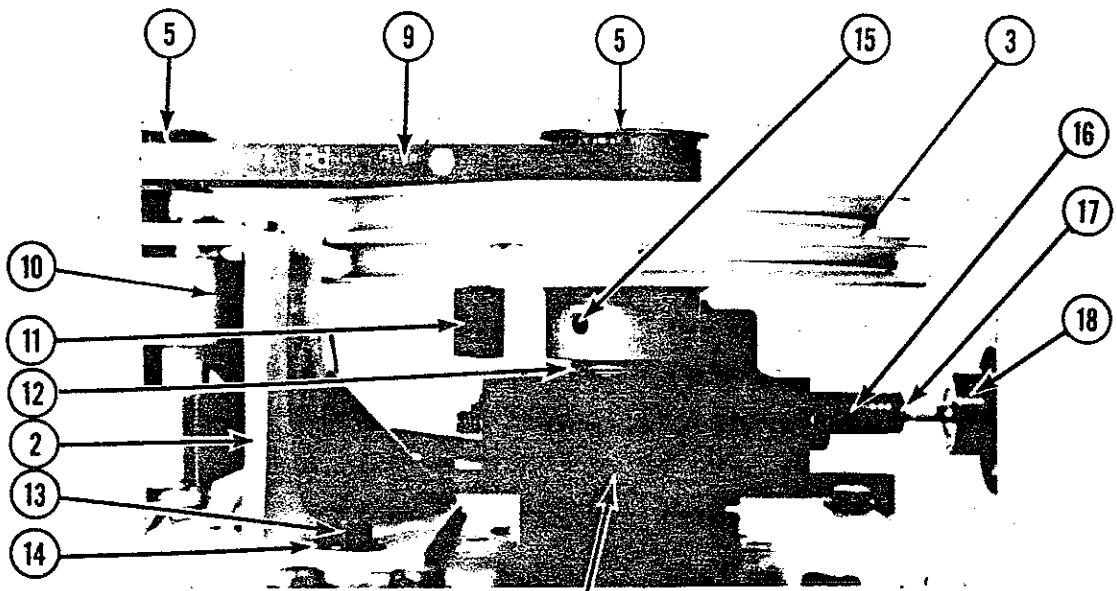
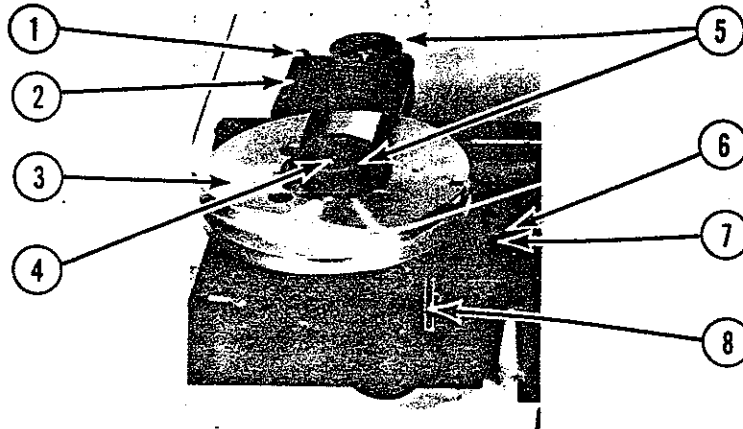
CARRIAGE ASSEMBLY



CARRIAGE ASSEMBLY

<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	RM-2626 D	Main carriage plate (top)	1
	RM-2813-2	8-32 x 5/16 B.H.S.	8
	RM-2747-6	#8 lockwasher	8
2	RM-2784 D	Left hand cam plate block	1
	SC9	1/4-20 x 2-1/2 H.H.S.	2
	RM-3293-1	1/4 flatwasher	2
3	RM-3123 D	1/2 Dia. shaft	2
4	RM-3126 D	1/2 ball bushing	4
	RM-3129 D	1/2 ball bush retaining ring	8
5	RM-2529 D	Rear linear carriage block (Enlarged slot for bearing)	2
	RM-2813-2	8-32 x 5/16 B.H.S.	4
	RM-2747-6	#8 lockwasher	4
6	RM-3124 D	1/4 ball bushing	4
	RM-3128 D	1/4 ball bushing retaining ring	8
7	RM-2534 D	Left carriage block	2
	RM-2798-1	8-32 x 1/2 F.H.S.S.	8
8	RM-2524 D	Right carriage block (Enlarged slot for bearing)	2
	RM-2798-1	8-32 x 1/2 F.H.S.S.	8
9	RM-2508 D	Right hand cam plate block	1
	SC9	1/4-20 x 2-1/2 H.H.S.	2
	RM-3293-1	1/4 flatwasher	2
10	RM-2528 D	Front linear carriage block	2
	RM-2813-2	8-32 x 5/16 B.H.S.	4
	RM-2747-6	#8 lockwasher	4
11	RM-3122 D	1/4 Dia. shaft	2
12	RM-3425	Carriage bottom plate	1
13	RM-2607 D	Clamp plate support hinge	1
14	RM-2879-2	Pop rivet	10
	RM-3523-1	Burr washer	10
15	RM-2547 D	Lower cam plate block	2
	22640 H-144	1/4-20 x 2-1/4 H.H.S.	6
	RM-3293-1	1/4 flatwasher	6
	652 C-16	1/4 lockwasher	6
	RM-2548 D	Washer plate	2
16	RM-2512 D	Carriage top plate	1
17	RM-2747-3	3/8 lockwasher	1
	671 B-24	3/8-16 nut	1
18	RM-2539 D	Cable pivot stud	1

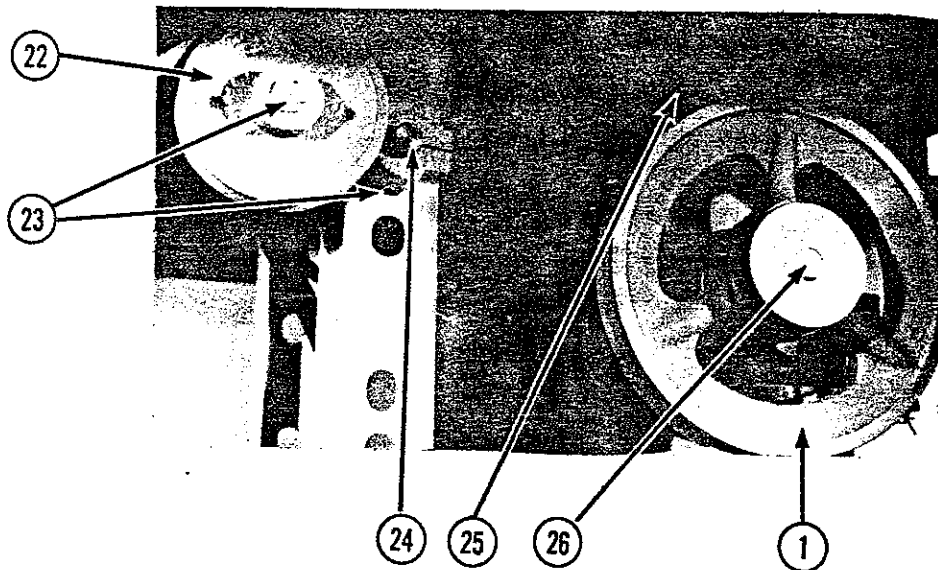
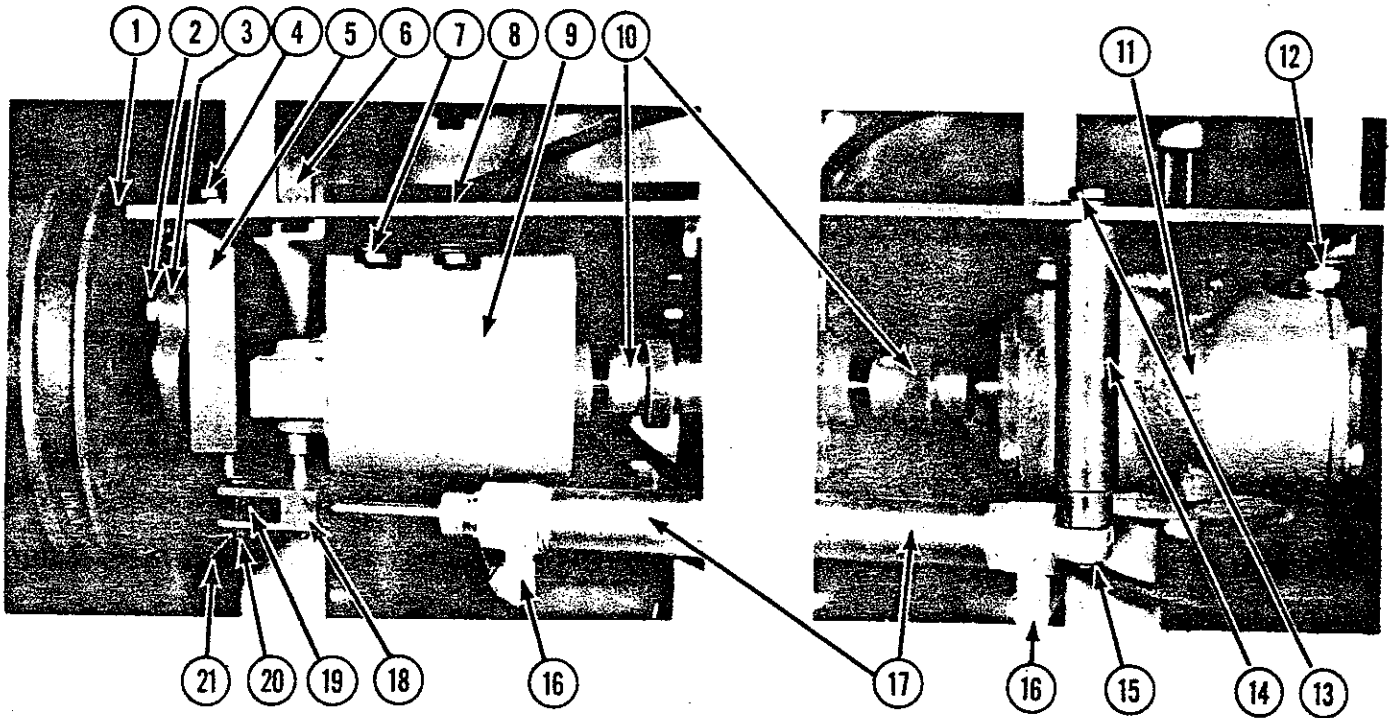
ELECTRIC CLUTCH & CLAMP RETURN
MOTOR ASSEMBLY



ELECTRIC CLUTCH & CLAMP RETURN
MOTOR ASSEMBLY

<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	651 H	10-32 Hex nut	4
	RM-3293-6	#10 Flatwasher	4
2	RM-2522	Return motor mounting bracket	1
3	RM-3562	Drive pulley	1
4	RM-2507	Drive shaft	1
	RM-3259 D	Shaft key	1
5	RM-3542-1	Timing belt pulley	2
6	670 B-54	Leaf switch	1
	RM-3855 d	Switch enclosure	1
7	RM-2805-1	6-32 x 1-1/4 B.H.S.	2
	53678 N	#6 Flat washer	4
	RM-2747-2	#6 Lock washer	2
	RM-2791-2	#6 Hex nut	2
8	RM-3544	Switch mounting bracket	1
	RM-3545	Adj. stop & switch block	1
	RM-3306-3	10-32 x 3/8 S.H.S.	2
	RM-3293-6	#10 Flat washer	2
9	RM-3557-1	Timing belt 3/8 x 15	1
10	RM-3521	Carriage return motor	1
	670 E-175	Return motor cable	1
11	RM-3257 D	Screw pin bumper	1
12	RM-2998-1	Thrust bearing 5/8	1
	RM-3239-2	Thrust washer 5/8	2
13	22652 D-8	1/4-20 x 1/2 S.H.S.	2
14	RM-3293-1	1/4 Flat washer	2
15	22650 CD-6	1/4-20 x 3/8 S.S.S.	2
16	RM-2557 D	Stop adjustment rod	1
17	RM-3211-1	1/4-28 Hex nut	1
18	RM-3846 D	Threaded shaft knob	1
19	RM-2554 D	Adjustable stop support rear	1
20	RM-2954 b	Snap ring	1
21	SC-4	1/4-20 x 5/8 H.H.S.	3
22	RM-2813-5	8-32 x 5/8 B.H.S.	1
	RM-2747-6	#8 Lock washer	2
	RM-2791-1	8-32 Hex nut	1
23	RM-3330	Gear box support spacer	5
24	RM-2847 DA	Electric clutch	1
25	RM-2871 B	Cable tie	1
26	RM-3329	Pulley support	1
27	RM-2553 D	Stop support spacer	1
28	RM-2555 D	Adjustable stop support front	1
29	RM-3162-4	1/4-20 x 3-1/2 H.H.S.	2
	652 c-16	1/4 Flat washer	2
30	22640 H-144	1/4-20 x 2-1/4 H.H.S.	6
	652 C-16	1/4 Flat washer	12
	RM-2791-3	1/4-20 Hex nut	6
31	RM-3413	Shaft key	1
32	RM-3601	Clutch cable assembly	1
	670 G-69	Termination package	1

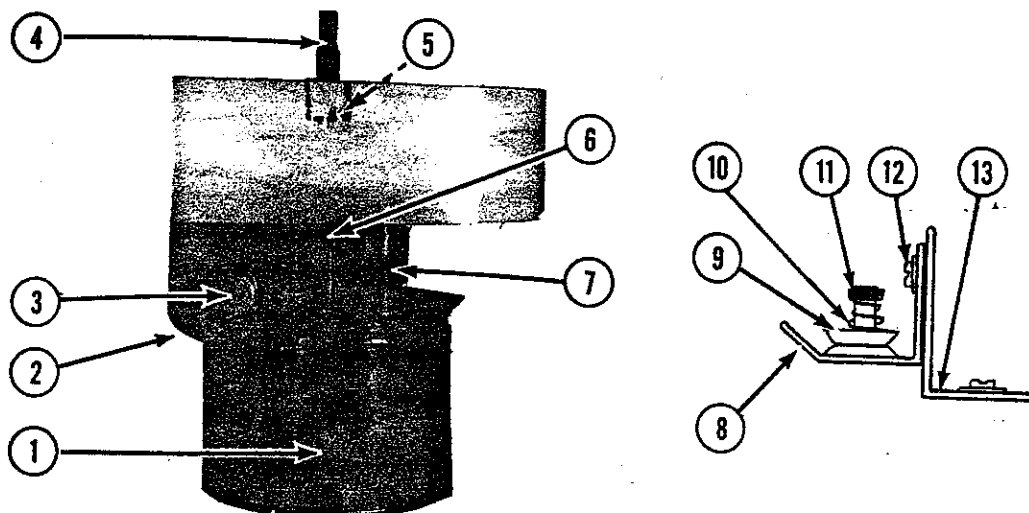
TRANSMISSION AND IDLER PULLEY ASSEMBLY



TRANSMISSION AND IDLER PULLEY ASSEMBLY

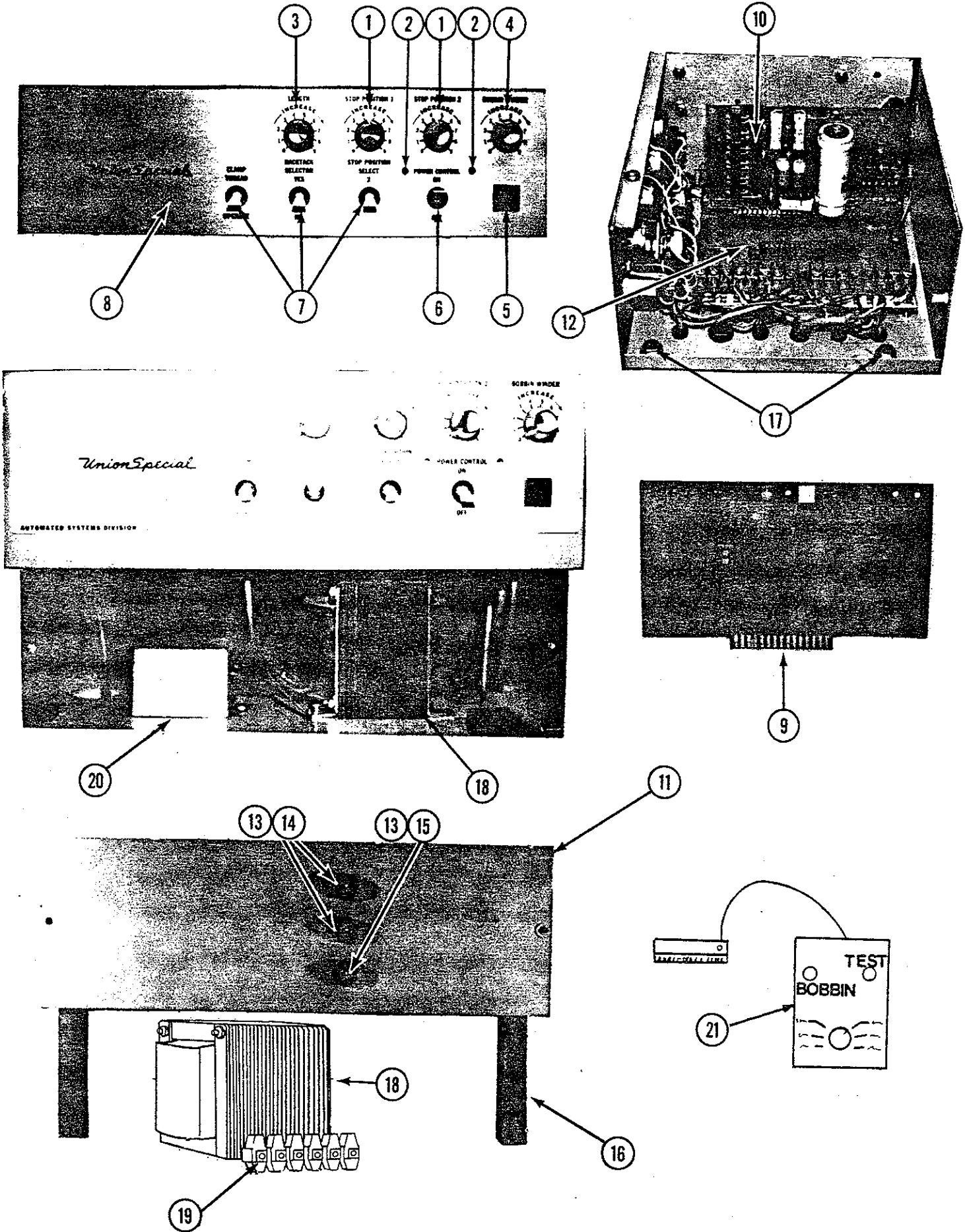
<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	RM-2838 D	6" Dia. pulley	1
	22650 CD-4	1/4-20 x 1/4 S.S.S.	1
2	SC-4	1/4-20 x 5/8 H.H.S.	2
	RM-3293-1	1/4 Flatwasher	2
3	RM-3407-1	Flange bearing	1
4	RM-3162-1	1/4-20 x 5/8 H.H.S.	2
	RM-3293-1	1/4 Flatwasher	2
	RM-3993-1	1/4 Lockwasher	2
5	RM-2568	Bearing support	1
6	RM-3330	Gear box support spacer	5
7	RM-2521	Drive mechanism mounting plate	1
8	RM-3162-1	1/4-20 x 5/8 H.H.S.	4
	RM-3293-1	1/4 Flatwasher	4
	RM-3993-1	1/4 Lockwasher	4
9	RM-3522	Zero-Max transmission	1
10	RM-5144	Flexible coupling 1/2 x 3/8	1
11	RM-3520	Speed reducer	1
12	SC-4	1/4-20 x 5/8 H.H.S.	4
	RM-3293-1	1/4 Flatwasher	4
	RM-3993-1	1/4 Lockwasher	4
13	RM-3293-1	1/4 Flatwasher	1
	RM-3162-1	1/4-20 x 5/8	1
14	RM-2565	Reversing cylinder mounting pivot	1
15	RM-3144-1	"E" ring 1/4	1
16	660-401	Male elbow	1
	RM-2997 D	Air tubing	Spec. Length
17	RM-3535	Double acting cylinder	1
18	RM-2558	Reversing clevis	1
	RM-3211-1	1/4-28 nut	1
19	RM-2559	Reversing lever	1
20	RM-2994 C	1/4 x 3/4 clevis pin	1
21	660-142	1/16 x 1/2 cotter pin	1
22	RM-3600	Idler pulley	1
23	RM-3599	Collar, shaft, fitting, & bracket	1
24	RM-3598	Idler mounting stud	1
	RM-3293-4	1/2 Flatwasher	1
	21818 B	1/2-13 nut	1
25	21262 H-450	V belt 1/2 x 45	1
26	RM-2520	Input shaft	1
	RM-3413	Shaft key	1

BOBBIN WINDER ASSEMBLY



<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	RM-3417	Bobbin motor assembly	1
	RM-3603	Bobbin motor cable assembly	1
2	99578 B	Bracket for bobbin switch	1
	SC472	Screw	2
3	998-264	Pushbutton switch	1
	RM-3604	Bobbin switch cable assembly	1
4	61377 J	Pulley shaft	1
5	RM-3285-3	Snap bushing	1
6	RM-3419-1	Shaft coupling 1/4	1
7	RM-3404	Bobbin motor mounting studs	2
	RM-2813-3	8-32 x 3/8 B.H.S.	2
	RM-3293-5	#8 Flatwasher	2
	RM-2747-6	#8 Lockwasher	2
8	61477 C	Tension bracket	1
9	109	Tension disc	2
10	61392 F-14	Tension spring	1
11	61292 C	Tension nut	1
12	RM-2813-3	8-32 x 3/8 B.H.S.	1
	RM-3293-5	No. 8 Flatwasher	1
13	RM-3416	Tension assembly bracket	1
	RM-2787-1	Screw	1
	RM-3293-1	1/4 Flatwasher	1

CONTROL BOX ASSEMBLY



CONTROL BOX ASSEMBLY

<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	RM-3088-7	50K Pot (stop position)	2
	RM-3443	Knob	2
2	RM-3088-3	100K Pot (stop position piggy back)	2
	RM-3653	Potentiometer bracket	2
3	RM-3088-8	Pot 500K (backtack length)	1
	RM-3443	Knob	1
4	RM-3088-4	Pot 350K (bobbin winder)	1
	RM-3443	Knob	1
5	RM-2749 A	Pilot light	1
6	RM-3376	Switch DPST (power control)	1
7	RM-3627	Switch DPDT	3
8	RM-4309	Control panel	1
9	RM-3619 U	Logic board	1
	BA-137	Conductive bag (for handling & shipment)	1
10	RM-3897	Power board	1
11	RM-3577	Control box base	1
	RM-3579	Control box cover (not pictured)	1
	RM-3289-5	10-32 x 3/8 B.H.S.	4
12	RM-3618 A	Mother board	1
	RM-3623-1	Spacer	5
	RM-2736 A	6-32 x 1/4 B.H.S.	10
13	RM-2737 A	Fuse holder	3
14	RM-3048-3	.3 Amp fuse	2
15	RM-3048-4	3 Amp fuse	1
16	RM-3573	Control box mounting post	4
	RM-3575	Control box side shroud (not pictured)	1
	RM-4371	Pneumatic Panel	1
	RM-3574	Control box F/R shroud (not pictured)	2
	RM-3289-7	10-32 x 1/4 B.H.S.	4
17	RM-3162-6	1/4-20 x 1/2 H.H.S.	4
	RM-3293-1	1/4 Flatwasher	4
18	RM-3612	Step down transformer	1
	RM-3289-1	10-32 x 2 B.H.S.	2
	RM-3293-6	#10 Flatwasher	4
	RM-2747-4	#10 Flatwasher	1
	651 H	10-32 Nut	2
19	RM-3613	Terminal block	1
	RM-3154 D	6 x 1-1/2 wood screw	2
20	670-6	Line filter	1
	RM-2724 A	Butt splice	2
	660-193	Ground terminal	1
21	RM-4311	Diagnostic box	1

TABLE ASSEMBLY

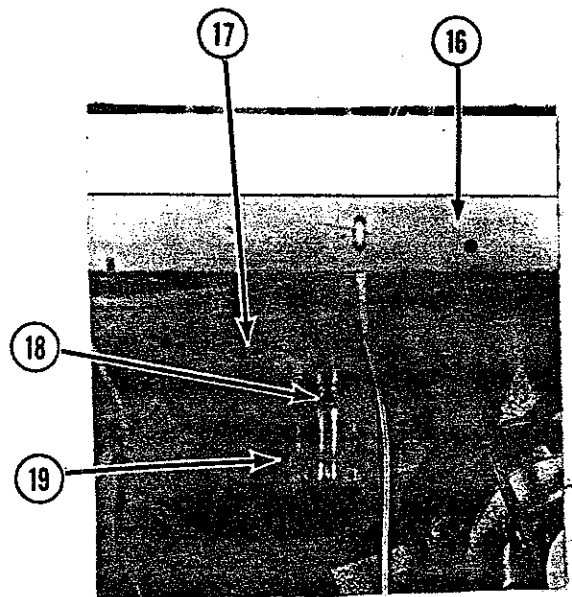
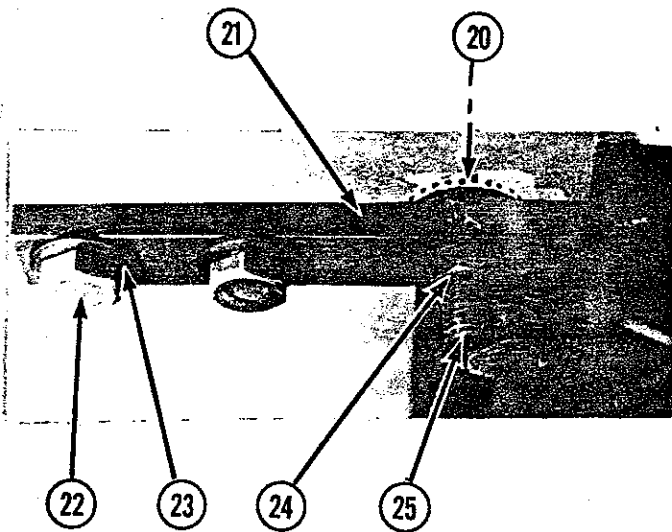
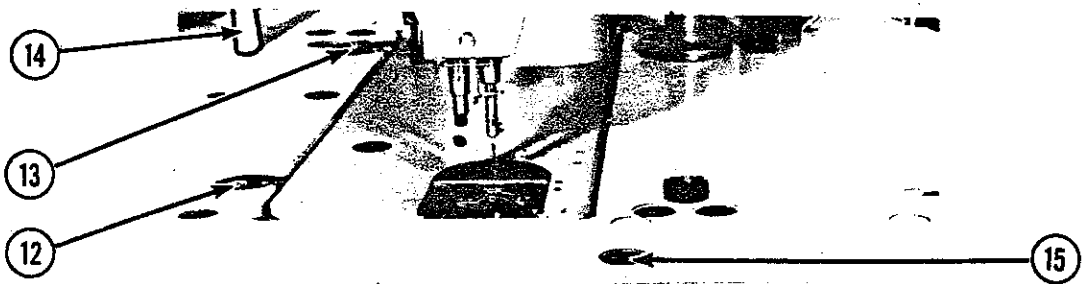
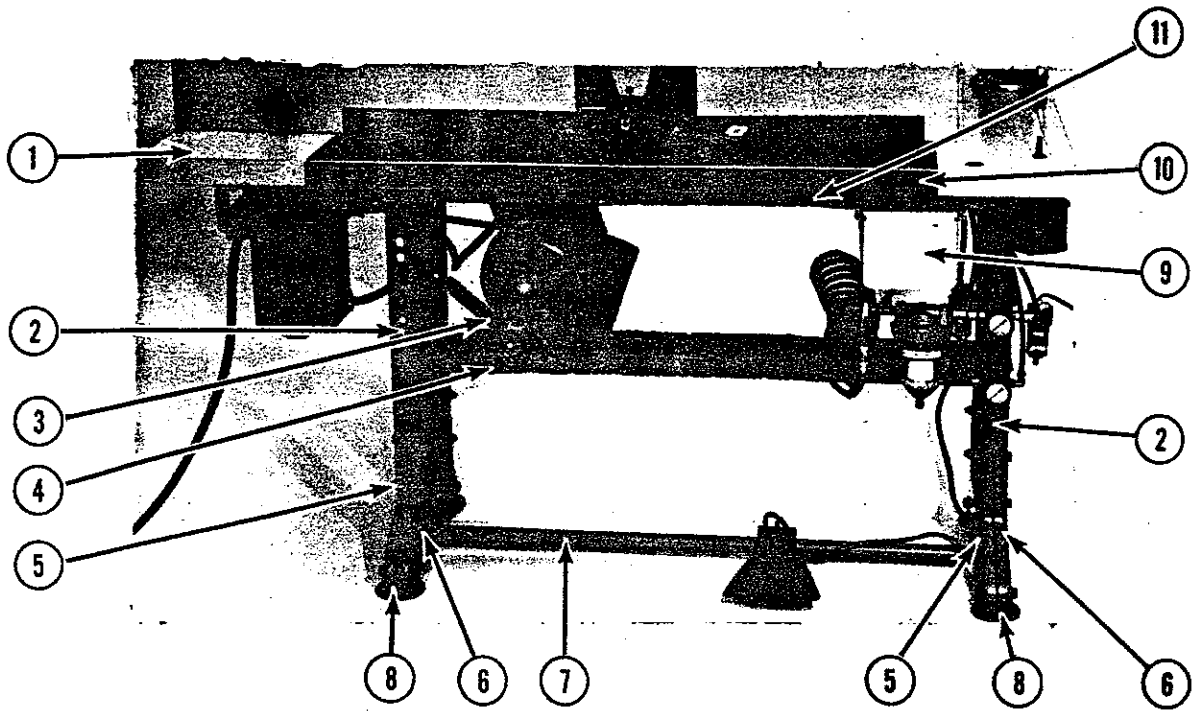
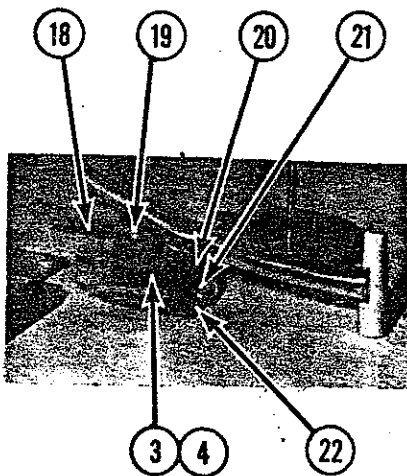
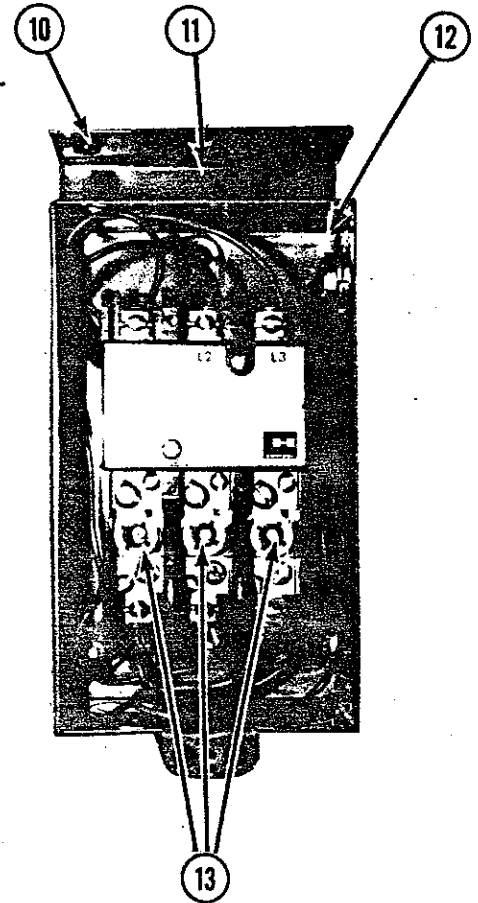
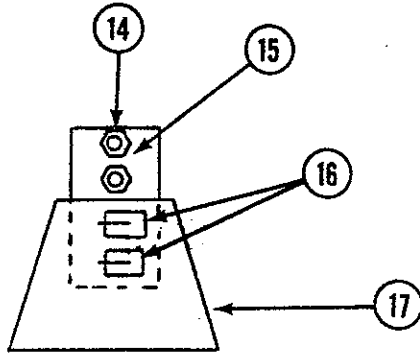
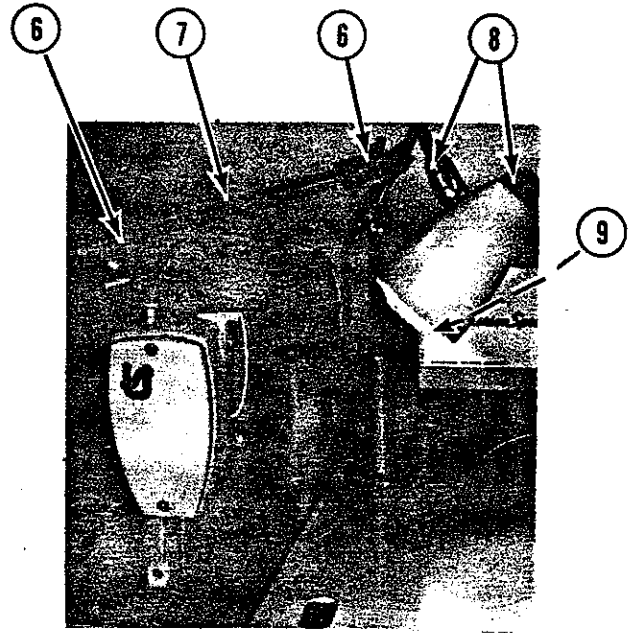
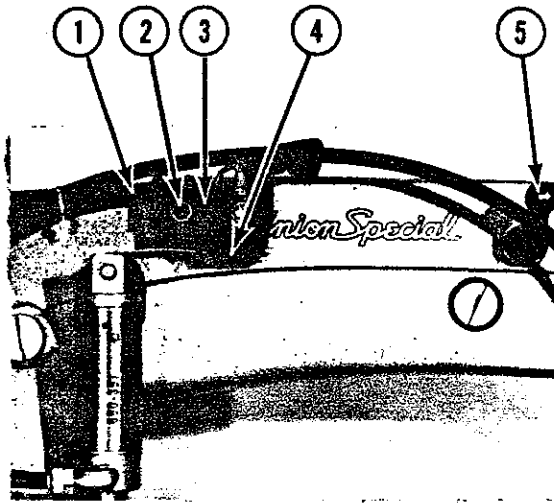


TABLE ASSEMBLY

<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	21371 Z-A-54	Table top assembly	1
2	21371 UR	Top leg assembly	2
	22603	3/8-16 x 1/2 H.H.S.	4
	RM-3293-3	3/8 Flatwasher	4
3	RM-3342	Angle brace	2
4	21371 UM	Back brace	1
	22603	3/8-16 x 1/2 H.H.S.	6
	RM-3211-3	3/8-16 nut	6
	652 L-24	Washer	12
5	21371 WE	Left hand side plate	2
6	21371 WF	Right hand side plate	2
	22640 M-144	3/8-16 x 2-1/4 H.H.S.	8
	RM-3211-3	3/8-16 nut	8
	652 L-24	Washer	16
7	21371 UL	Treadle pipe	1
	22640 M-144	3/8 x 16 x 2-1/4 H.H.S.	2
	652 L-24	Washer	4
	051-214 BLK	Spacer	2
8	21371 UK	Feet	4
	22640 M-144	3/8-16 x 2-1/4 H.H.S.	4
	RM-3211-3	3/8-16 nut	4
	652 L-24	Washer	8
9	21371 Q	Drawer assembly	1
	AS-4-665	Spacers	4
	RM-3154 D	6 x 1-1/2 woodscrew	4
10	RM-3402	Stainless table top	1
	RM-3289-1	10-32 x 2 B.H.S.	2
	RM-3621-1	Tee nut 10-32	2
11	21371 ZC	Front angle	1
12	61374	Hinge plate	2
	22846 Q-16	Woodscrew	1
13	63470 AB	Machine positioner	1
	63474 A	Spring	1
	63474 D	Isolator	1
	SC-331	Woodscrew	1
14	61378	Rest pin	1
15	21371 CT	Cap nut	19
	22640 M-96	Screw	19
16	21371 ZB	Rear angle	1
17	21393 AB	Oil drip pan	1
	SC-329 A	Wood screw	3
	RM-3293-6	#10 flatwasher	3
18	666-166	Oil jar	1
19	21393 L	Clamp spring	1
20	61376 H	Leveler pad	4
21	63439 AN	Leveler support	4
22	22640 M-96	Screw	8
23	652 L-24	Washer	8
24	651 B-24	Nut	4
25	21371 ZD	Leveler	4

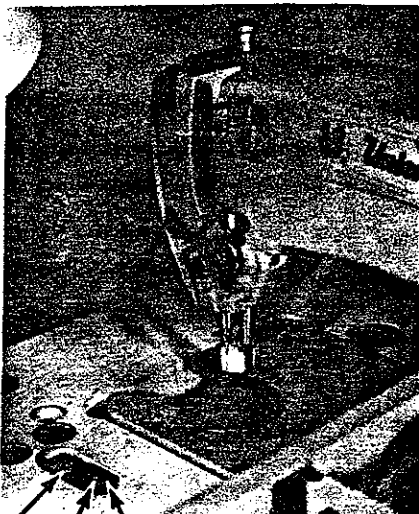
CLAMP INTERLOCK SWITCH, LITE ASSEMBLY,
 TREADLE SWITCH ASSEMBLY, MAIN POWER SWITCH
 BOX ASSEMBLY, AND SAFETY SWITCH ASSEMBLY



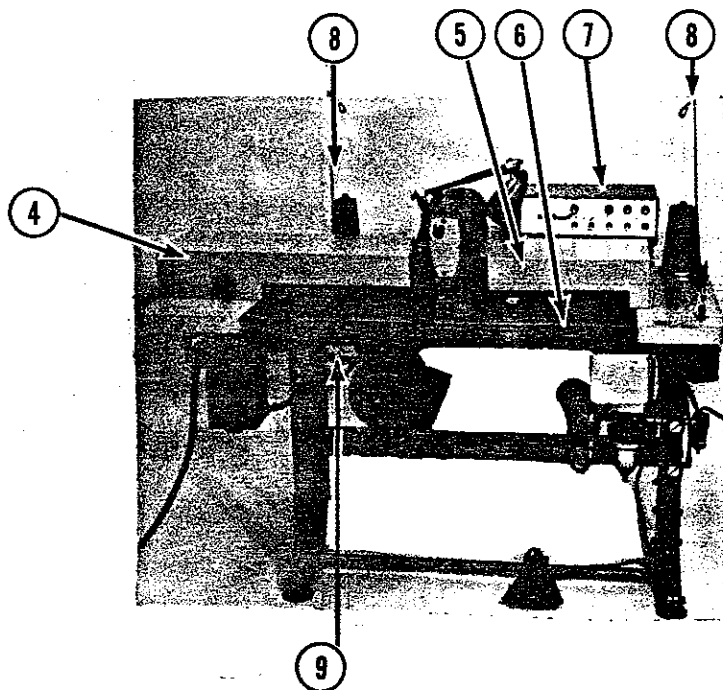
CLAMP INTERLOCK SWITCH, LIGHT ASSEMBLY
TREADLE SWITCH ASSEMBLY, MAIN POWER SWITCH
BOX ASSEMBLY, AND SAFETY SWITCH ASSEMBLY

<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	670 E-295	Clamp interlock & motor control cable assy	1
2	RM-3557	Switch spacer	2
	RM-2805-1	6-32 x 1-1/4 B.H.S.	2
	RM-2747-2	#6 Lockwasher	2
	53678 N	#6 Flatwasher	2
3	RM-2855 D	Switch enclosure	3
4	RM-3127 D	Leaf switch	3
5	21233 EY	Attaching elbow	1
	21233 FC	Nut	1
	21233 FA	Lockwasher	1
6	21233 JT	Swivel clamp assembly	2
7	21233 JP	Support rod	1
8	RM-3490	Light fixture	1
	SC-329 A	Wood screw	3
9	21233 HJ	Light bulb	1
10	RM-2787-1	Wood screw	2
	RM-3293-1	1/4 Flatwasher	2
11	RM-3592	Switch box mounting bracket	1
12	RM-3661	Switch box	1
13	RM-3149-15	(H-1025 Position D) Heater coil for 3 Ph., 220 V., 60 Hz.	3
	RM-3149-13	(H-1028 Position D) Heater coil for 3 Ph., 220 V., 50 Hz.	3
	RM-3149-2	(H-1020 Position D) Heater coil for 3 Ph., 380 V., 50 Hz.	3
	RM-3149-16	(H-1021 Position D) Heater coil for L1 for 3 Ph., 440 V., 50 Hz.	1
	RM-3149-7	(H-1022 Position B) Heater coil for L2 & L3 for 3 Ph., 440 V., 50 Hz.	2
14	RM-3460	1-3/8 "U" bolt	2
	RM-3211-3	3/8-16 nut	2
15	RM-3450	Switch plate	1
16	670 B-1	Switch	2
17	RM-3525	Start switch treadle plate	1
	RM-2813-7	8-32 x 3/16 B.H.S.	2
18	RM-3711	Carriage tube guide	1
	RM-4187	Tubing	1
19	AS22-91	Screw	2
	53678 N	#6 Flatwasher	2
20	RM-3610	Safety switch cable (2 con.)	1
21	RM-3609	Safety switch cable (3 con.)	1
22	RM-6002	Switch spacer	1
	RM-3154 D	6 x 1-1/2 Wood screw	2

PHOTOCELL ASSEMBLY, COVERS, BELT GUARD,
THREAD STAND ASSEMBLY, AND LEG EXTENSION ASSEMBLY



- ①
- ②
- ③



PHOTOCELL ASSEMBLY, COVERS, BELT GUARD,
THREAD STAND ASSEMBLY, AND LEG EXTENSION ASSEMBLY

<u>REF. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	RM-3403	Photocell bracket	1
	RM-3289-3	10-32 x 1-1/2 B.H.S.	1
	RM-3293-6	#10 Flatwasher	1
	670 E-294	Photocell cable assembly	1
2	RM-3432	Photocell	1
3	RM-3461	Photocell clamp	1
	RM-3462-1	5-40 x 3/16 F.H.S.	1
4	RM-3616	Left cover	1
	660-112	Cabinet catch	2
	RM-2813-1	8-32 x 1/4 B.H.S.	4
	RM-2791-1	8-32 nut	4
5	RM-3343	Right cover	1
	670 E-289	Switch & cable assembly	1
	660-112	Cabinet catch	2
	RM-2813-1	8-32 x 1/4 B.H.S.	4
	RM-2791-1	8-32 nut	4
6	RM-3402	Stainless steel table	1
7	RM-3579	Control box cover	1
8	RM-3617	Single spool thread stand	2
	SC 305	Wood screw	4
9	RM-3645	Belt guard (not pictured)	1
	RM-3289-2	10-32 x 5/8 B.H.S.	4

(For leg extension and knee switch parts, refer to page 2-5)

QUICK STOP MOTOR, SYNCHRONIZER & CONTROL PANEL

<u>REF. NO.</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	670 H-31	Motor complete 220/380 volt	1
	670 H-32	Motor complete 440 volts	1
2	RM-4174	Double groove pulley (60 Hz)	1
	RM-4175	Double groove pulley (50 Hz)	1
	RM-4191	Pulley nut	1
3	21262 H-450	V-belt 1/4 x 45	1
4	21261 M-410	3/8 x 41 V-belt (60 Hz)	1
	21261 M-420	3/8 x 42 V-belt (50 Hz)	1
5	998-324	Synchronizer complete	1
6	RM-4372	Motor control panel	1

MACHINE CABLES AND WIRING HARNESES

670 E-125 Switch box to Quick motor cable assy.
670 E-175 Return motor and switch cable assy.
670 E-289 Emergency stop switch and cable assy.
670 E-290 Emergency stop switch extension cable assy.
670 E-293 Quick motor clutch cable assy.
670 E-294 Photocell eye cable assy.
670 E-295 Clamp interlock & motor control cable assy.
670 E-296 Control panel and solenoid wiring harness
RM-3489 Quick motor light fixture cable
RM-3601 Electric clutch cable assy.
RM-3603 Bobbin motor cable assy.
RM-3604 Bobbin start switch cable assy.
RM-3609 Safety switch cable 3 wire assy.
RM-3610 Safety switch cable 2 wire assy.
RM-3611 Foot switch cable assy.
RM-3614 Switch box to control box cable assy.

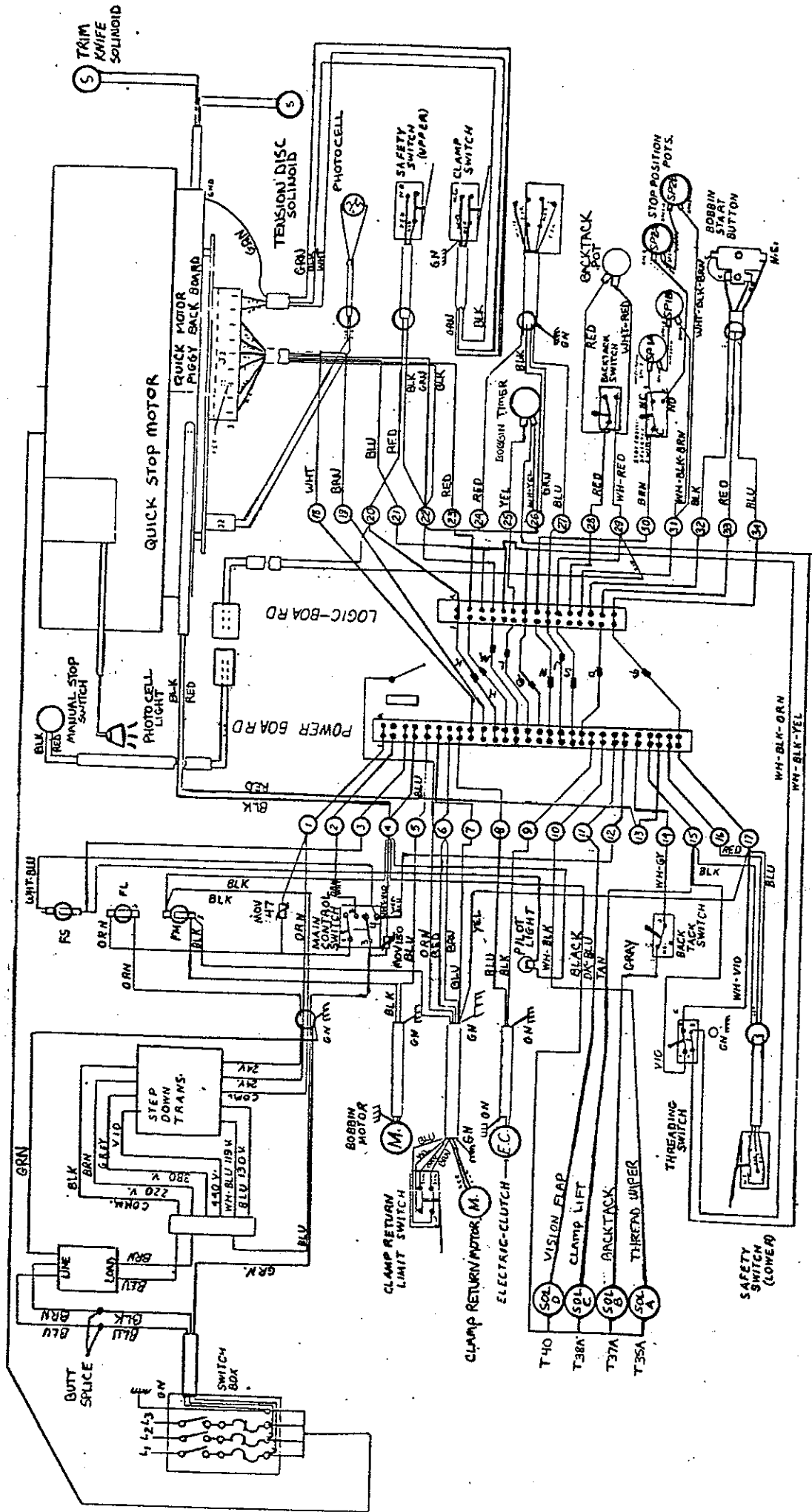
SUGGESTED MINIMUM SPARE PARTS LIST

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>MINIMUM QTY PER MACHINE</u>
RM-3312-2	Air filter element	1
RM-3377	Outer curved rubber strip assembly	2
RM-3333	Outer rubber strip assembly	2
RM-3436	Vision flap rubber strip assembly	2
RM-3446	Inner rubber strip assembly	2
RM-3432	Photo cell	1
RM-3127 D	Micro switch	1
RM-3856	Left hand wire rope	1
RM-3857	Return wire rope	1
RM-4186	4-Way valve repair kit	1
G61470 KX	Upper Knife	1
G61449 KX	Lower Knife	1
RM-4184	Valve operator assembly	1
RM-2852 B	Flow control valve	1
RM-3557-1	Timing belt	1
RM-3611	Start switch	1
RM-3048-4	3.0 Amp fuse	4
RM-3048-3	0.3 Amp fuse	10
RM-3619 U	Logic board	1
RM-3897	Power Board	1
22768 A	Needle bar screw	1
670 B-54	Leaf switch	1
63913 A	Bobbin case	1
63411	Bobbin thread retainer	1

SECTION 13

DIAGRAMS

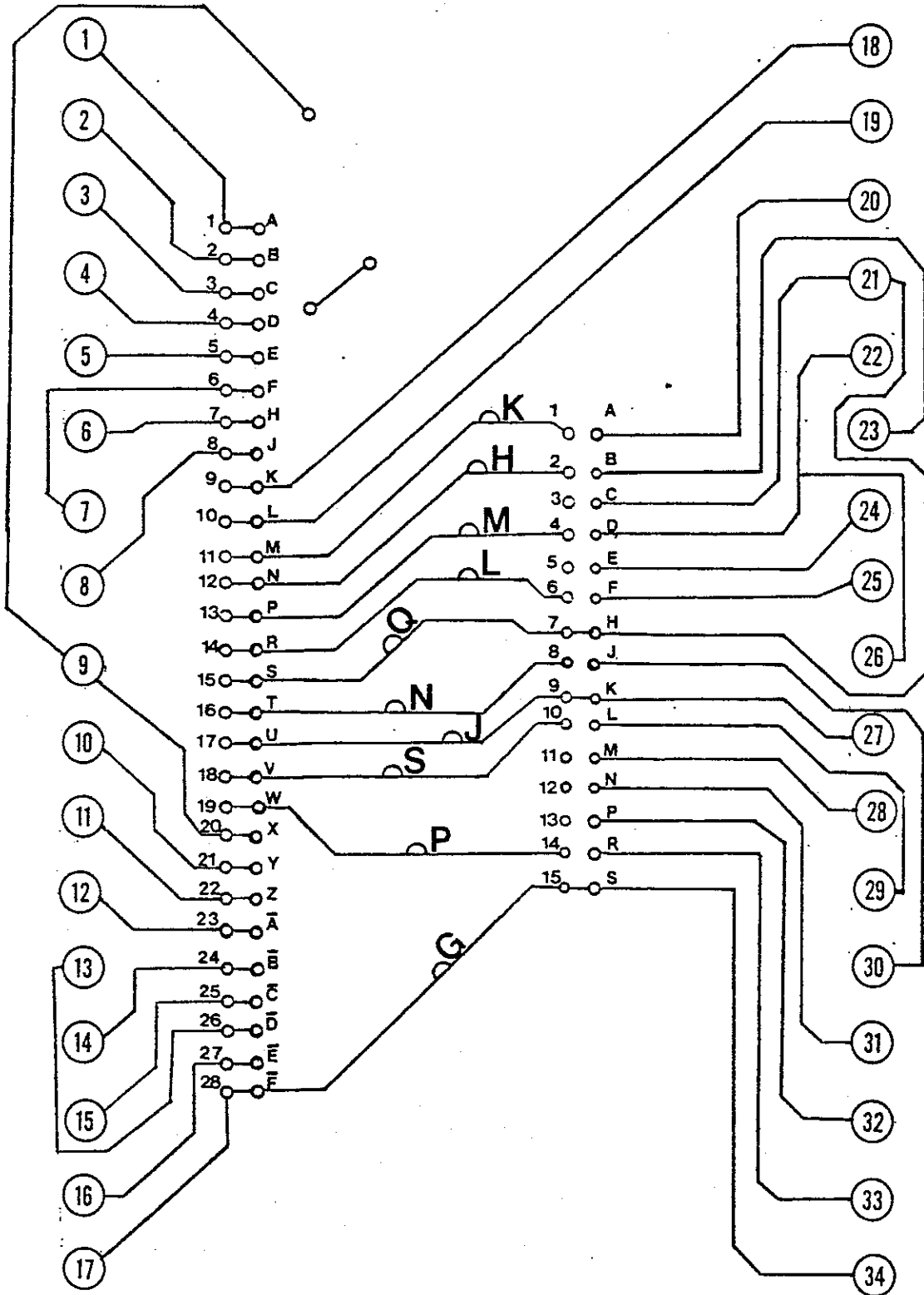
ELECTRICAL WIRING DIAGRAM 13-1
PNEUMATIC DIAGRAM 13-2
THREADING DIAGRAM 13-3



E-4 WIRING DIAGRAM

RM 3618A

MOTHER BOARD



E-4 RM-3618 A - MOTHER BOARD

<u>TERMINAL NUMBER</u>	<u>COLOR</u>	<u>FUNCTION</u>
1	Orange	24 V. - From transformer
	White/Black/Orange	To (MOV 24 V) then orange to Control Power Sw.
2	White/Orange	To Control Power switch
3	White/Blue/Black	To (FS) Fuse for Solenoids
4	White/Violet	To (MOV 115 V) then Blue to Control Power Sw.
	White/Red/Black	To Pilot Light
	Black	To Quick Stop motor control panel
	Black	Common for Solenoids
	Black	To (FM) fuse for bobbin & return motors
5	Blue	To Bobbin Motor
6	Red	To Clamp return motor
	Brown	To Clamp return switch
7	Blue	To Clamp return switch
8	Blue	To Electric clutch
9	Black	To Electric clutch
10	White/Black	To Thread wiper solenoid (A)
11	Dark Blue	To Vision flap solenoid (D)
12	White/Blue	To Control power switch
13	Red	To Quick Stop motor control panel
14	White/Gray	To Backtack switch, then to solenoid (B)
15	Tan	To Clamp lift/presser bar solenoid (C)
	Violet	To Threading switch
	Black	To Lower safety switch
16	Red	To Lower safety switch
17	Blue	To Lower safety switch
	White/Violet	To Threading switch
	Yellow	To Clamp return switch
18	White	To Quick Stop control panel
19	Brown	To Quick Stop control panel
20	Red	To Upper safety switch
	Red	To Manual stop switch
21	Blue	To Quick Stop control panel
22	Black	To Upper safety switch
	Black	To Quick Stop control panel
	Green	To Quick Stop control panel
23	Red	To Quick Stop control panel
24	Red	To foot switch 2
25	Yellow	To Bobbin timer potentiometer
26	White/Yellow	To Bobbin timer potentiometer
	Black	To Foot switch 2
	Brown	To Foot switch 1
27	Blue	To Foot switch 1
28	Red	To Backtack length potentiometer
29	White/Red	To Backtack length potentiometer
	Black	To Manual stop switch
30	Brown	To Stop position selector switch
31	White/Black/Brown	To Stop potentiometers 1 & 2
32	Black	To Bobbin start switch (N.C.)
33	Red	To Bobbin start switch (N.O.)
34	Blue	To Bobbin start switch (Common)

PNEUMATIC DIAGRAM

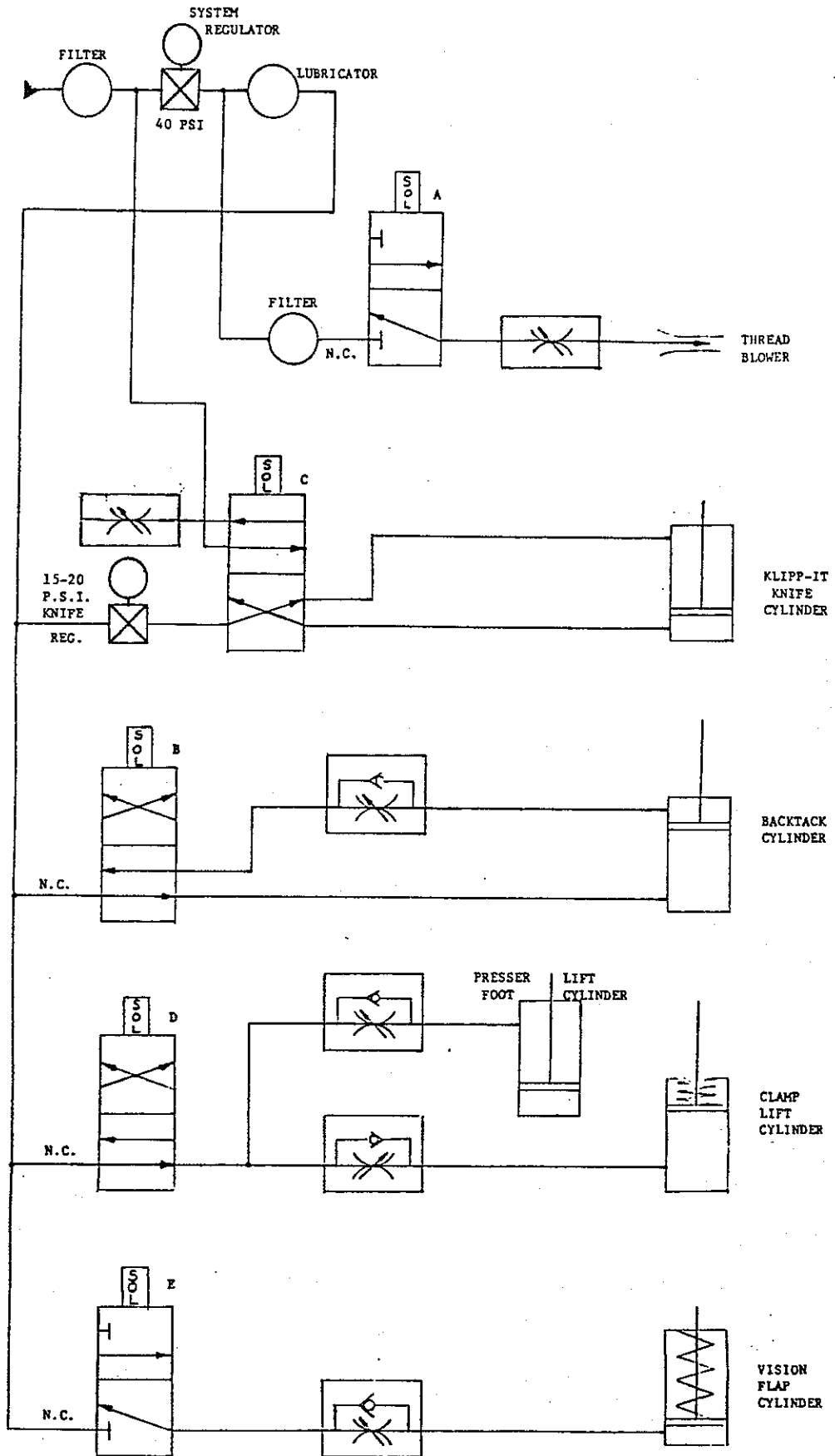
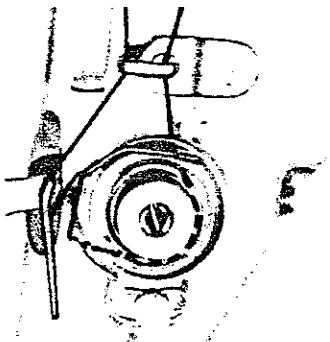
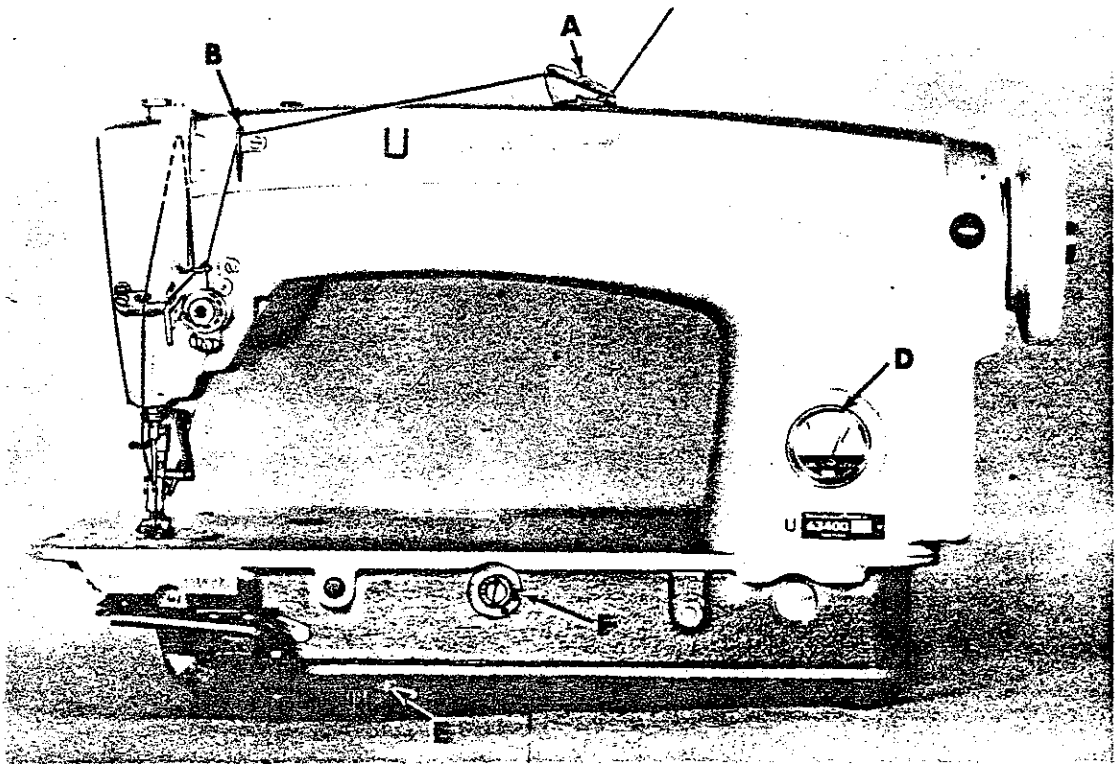
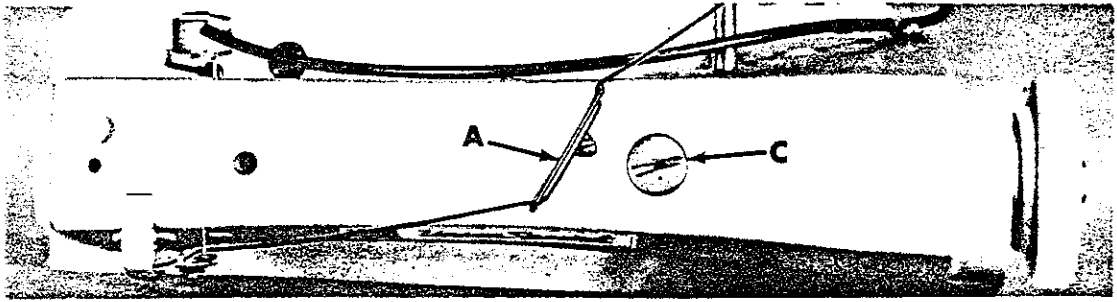


DIAGRAM IS WITH MACHINE
IN REST POSITION, AIR
CONNECTED, AND MAIN
POWER SWITCH ON



SECTION 14

TROUBLESHOOTING GUIDE

A. INTRODUCTION TO TROUBLESHOOTING 14-1

B. HANDLING PRINTED CIRCUIT BOARDS 14-1

C. TROUBLESHOOTING GUIDE 14-3

TROUBLESHOOTING GUIDE

A. INTRODUCTION TO TROUBLESHOOTING

If there is a machine malfunction, the first thing the technician should do is refer to "TROUBLESHOOTING GUIDE" Section C. This guide tells the technician which sub-systems are involved. If the "CURE" for the malfunction is more than just a setting, the technician should then refer to "SUB-SYSTEM MALFUNCTION" Section 15 for detailed instructions.

The following points MUST be observed when using the troubleshooting procedure:

- Check for the obvious things first.
- Replace wires to their correct terminals after performing checks.
- Do not short wires and test points to each other or to ground (metal chassis).
- Do not make continuity checks with power ON.
- Bad connections between circuit boards and their connectors may cause malfunctions similar in nature to those caused by defective circuit board. Be sure to check for good electrical contact between circuit boards and their connectors.
- Never plug in new circuit boards without first determining the cause of the malfunction. A new board installed with a shorted component, such as a solenoid, could damage the new circuit board.
- Try to understand the equipment and problem before troubleshooting it.
- Referring to timing chart will give you a clue as to what is or is not turning on at the proper time.

- Use the wiring diagram when looking for shorts, loose connections, broken wires, and making continuity checks. Understanding the wiring diagram could save quite a bit of time in troubleshooting.

- Remember, a continuity check may not indicate a loose connection that may occur only while the machine is operating. The technician's knowledge and understanding of the equipment comes into play in this case.

B. HANDLING PRINTED CIRCUIT BOARDS

Great care must be exercised in handling the LOGIC board. The Logic board contains components which are extremely susceptible to damage caused by static electricity. Internal protective circuits will protect the board against static while it is plugged into its connector. The Logic board components are NOT protected when the circuit board is removed from its connector. For this reason, precautions must be taken to minimize accidental damage of the Logic board components.

Remove the circuit board as follows:

1. Remove the electrically conductive bag attached to the Electric Control Box. If bag is misplaced, prepare a piece of aluminum foil about 4 inches (100 mm) longer and wider than logic board.
2. Making sure both Main and Control Power switches are OFF, grasp the sides of the board (as you would a phonograph record) and slide board up out of its connector. Do not touch components or the male connector on the Logic board.
3. Place board into bag (or wrap in aluminum foil).
4. The Logic Board is now ready to be shipped, handled, or stored.

5. If circuit board is to be shipped, use crushed paper for filler in shipping box. Be careful not to bend or crush circuit board components.

6. To install circuit boards, reverse above procedure making sure board is held only by its edges and all power is OFF.

C. TROUBLESHOOTING GUIDE

<u>CONDITION</u>	<u>CAUSES</u>	<u>CURES</u>
1. Machine does not sew first few stitches; thread pulls out of needle, thread breaks.	a. Needle thread too short after trimming. Thread should be at least 1-1/4 inch (932mm) long from needle eye to end of thread.	Dull or improper setting of trim knives (refer to pg. 9-4). Too many eyelets threaded. The more threading eyelets threaded, the more tension on the thread during trimming. Tension disc solenoid too far away from opening pin (refer to pg. 9-8).
	b. Bobbin thread retaining spring not holding bobbin thread tight enough.	Adjust bobbin thread retaining spring (refer to pg. 9-7).
	c. Flagging of material.	Throat plate needle hole too large (replace throat plate). Clamp rubber condition or adjustment incorrect (refer to pg. 8-2).
	d. Needle thread take-up not properly positioned.	Adjust "up" band on synchronizer (refer to pg. 10-5)
	e. No enough slow sew stitches.	Increase slow sew timer (refer to pg. 6-3).
2. Stitch length varies.	Loose drive or transmission "V" belt.	Tighten "V" belts.
	Backtack cylinder and Zero-Max lever not properly adjusted.	Adjust cylinder and lever (refer to pg. 8-8).
	Loose screws on clamp drive pulley, Zero-Max coupling, electric clutch or clamp cable pulley.	Tighten screws.
	Electric clutch out of alignment.	Align electric clutch (refer to pg. 8-9).
	Low voltage to electric clutch.	See "Machine Runs but Clamp does not Move or Moves Erratically" pg. 15-13.

CONDITION	CAUSES	CURES
2. Stitch length varies, contd.	Zero-Max output shaft does not move smoothly.	Replace Zero-Max.
	Not enough pressure on presser bar and clamp.	Check presser bar adjustment. Check for bind in presser bar. Check system pressure 45-55 PSI.
3. Skipped stitches	Bad needle or needle not placed properly in needle bar.	Replace needle making sure the long groove faces directly to the front of the unit and the butt of the needle bottoms out in the needle bar.
	Needle hole in throat plate too large.	Replace throat plate, RM-2385D or RM-4300.
	Hook point set further than .004 inch from needle, hook timing not correct.	Reset hook (refer to pg. 9-1).
	Needle bar height not correct.	Reset clamp rubbers (refer to pg. 8-2).
	Needle slot in clamp greater than 1/8 inch.	Reset clamp rubbers (refer to pg. 8-2).
	Clamp rubbers worn or missing rubber.	Replace clamp rubber assembly.
	Needle slot in clamp not aligned properly to needle.	Reset needle/clamp alignment (refer to pg. 8-3).
	Excessive play between needle bar and its bushing.	Replace needle bar, upper needle bar bushing and lower needle bar bushing.
Excessive hook shaft end play.	Remove end play (refer to pg. 18 of 121M Catalog).	
4. Thread breakage.	Burr on needle.	Replace needle.
	Cut or burr in take-up eyelet, check spring.	Remove burr or replace part as needed.
	Buff in needle hole of throat plate.	Replace throat plate RM-2385 D or RM-4300.
	Damaged hook point.	Repair or replace hook, #29474 AA.

CONDITION	CAUSES	CURES
4. Thread break- age.	Burr on needle slot of clamp.	File off burr and polish clamp.
	Buff on positioning finger or trim knife carrier.	Polish burr.
	Needle rubbing clamp.	Align needle to needle slot on clamp (refer to pg. 2-2).
	Burr on hook deflector plate caused by trim knife.	Remove burr, reset synchronizer and knife out position (refer to pg. 10-5 & 9-4).
	Needle bar too low on bottom of stroke.	Reset needle bar height to timing lines (refer to pg. 9-1).
5. Both threads not cut during trimming.	Knife does not open at all or slightly opens.	Check knife air pressure, 18 PSI.
		Check for binds in knife mechanism.
	Lower knife not closing.	Check knife solenoid connections. Make continuity check.
		Check for binds in knife mechanism. Check knife solenoid flow control valve (refer to pg. 7-2).
	Knives not set properly.	Reset knives (refer to pg. 9-4).
	Lower knife not opening far enough.	Reset stop screw and check knife cylinder stroke (refer to pg. 9-4).
	Lower knife not set properly on its carrier.	Reset lower knife (refer to pg. 9-4).
	Clamp lift delay not long enough.	Reset delay (refer to pg. 6-3).

CONDITION	CAUSES	CURES
6. Needle thread not cut but bobbin thread cut during trimming.	Spring retainer wire not contacting bobbin case holder when lower knife is extended to open position.	Bend spring retainer wire to suit (refer to pg. 9-6).
	Broken spring retainer wire.	Solder new 63450 B spring retainer wire to knife carrier.
	Lower knife not opening far enough.	Reset stop screw and check knife cylinder stroke (refer to pg. 9-4).
	Lower knife not set properly on its carrier.	Reset lower knife (pg. 9-4).
	Clamp lift delay not long enough.	Reset delay (refer to pg. 6-3).
	Needle hole in throat plate too large.	Replace throat plate RM-2385 D or RM-4300.
	Synchronizer not set properly.	Reset synchronizer (refer to pg. 10-5).
7. Bobbin thread not cut but needle thread cut.	Bobbin case improperly threaded.	Thread according to pg. 4-3.
	Needle hole in throat plate is too large.	Replace throat plate, RM-2385 D or RM-4300.
8. Needle thread tears and leaves random lengths of starting tail.	Tension discs not opening far enough.	Reset tension disc solenoid (refer to pg. 9-7).
	Knife return speed too fast.	Reset knife speed (refer to pg. 7-2).
	Lower knife thread pick-up notch sharp.	Round edge or remove burr.
9. Needle breakage.	Thick or metal zipper teeth not removed at start of zipper.	Remove zipper teeth.
	Misplaced pant hook.	Relocate hook for hook & eye.
	Needle hitting pant hook.	Increase fly seam margin.

CONDITION	CAUSE	CURE
9. Needle breakage, contd.	Stitch length too long.	Stitch length must not be longer than 10 SPI.
	Unit sews off the waistband and breaks needle on backtacking.	Reset stop position potentiometer so that unit stops before end of waistband.
	Needle hitting clamp.	Align needle slot to needle (refer to pg. 8-3).
	Needle not centered in throat plate.	Center throat plate.
	Stitch length varies.	Refer to item 2.
	Improper hook setting.	Reset hook.
10. Unit sews to end of clamp.	Photocell light moved.	Reset photocell light and photocell sensitivity (refer to pg. 6-1).
	Photocell light bulb not on.	Replace light bulb, check light switch, check light fuse on motor.
	Photocell covered by stainless steel table top or tape, material, etc.	Center table top so hole is over photocell. Remove material covering photocell.
11. Clamp lowers but unit will not start when foot switch is pressed.	Photocell sensitivity not adjusted.	Reset photocell light and photocell sensitivity (refer to pg. 6-1).
	Clamp protect micro-switch on sewing head out of adjustment.	Bend down micro-switch lever.
	Clamp foot switch out of adjustment.	Remove foot switch cover and press micro-switches. If okay, bend levers so that micro-switch engages when pedal is pressed.
	Clamp limit switch is closed.	Free switch lever.
12. Stopping variation (more than 1 stitch) at waistband.	Photocell sensitivity out of adjustment.	Reset photocell light and sensitivity (refer to pg. 6-1).

CONDITION	CAUSE	CURE
12. Stopping variation (more than 1 inch) at waistband, Contd.	Photozell light intensity varies.	Photozell light switch contacts should be cleaned. Photozell light bulb not screwed into socket far enough for good contact.
	Cracked or faulty photozell.	Replace RM-3433-2 photozell.
	Stopping potentiometer contacts dirty.	Turn adjusting knob back and forth to clean contacts.
13. Clamp lifts prematurely and machine trims before selected stop location causing needle bar to hit clamp (usually on thick material).	Clamp protect switch on sewing head out of adjustment.	Bend switch lever to make better contact when clamp is down.
14. Unit positions very slowly (less than 190 RPM).	Refer to page 10-4 Positioning Speed Adjustment	

SECTION 15

SUB-SYSTEM MALFUNCTIONS

CONTROL POWER PILOT LIGHT MALFUNCTION

- A. PILOT LAMP DOES NOT LIGHT WHEN MAIN POWER AND CONTROL POWER SWITCHES ARE ON.....15-1

STARTING MALFUNCTION

- A. CLAMP GOES DOWN WITH FOOT SWITCH IN FIRST POSITION BUT MACHINE DOES NOT START WHEN FOOT SWITCH IS ACTUATED TO SECOND POSITION.....15-5

CLAMP MALFUNCTION

- A. CLAMP DOES NOT GO DOWN WHEN FOOT SWITCH IS ACTUATED TO FIRST STEP.....15-9
- B. CLAMP GOES DOWN WHEN CONTROL POWER SWITCH IS TURNED ON.....15-11
- C. MACHINE RUNS BUT CLAMP DOES NOT MOVE OR MOVES ERRATICALLY.....15-13

CLAMP RETURN MALFUNCTION

- A. CLAMP DOES NOT RETURN TO HOME POSITION.....15-17
- B. CLAMP RETURNS TOO SLOWLY OR HESITATES DURING RETURN....15-20

BOBBIN WINDER MALFUNCTION

- A. BOBBIN WINDER DOES NOT OPERATE.....15-22
- B. BOBBIN WINDER MOTOR DOES NOT TURN OFF OR TIME CANNOT BE ADJUSTED.....15-24

PHOTOCELL MALFUNCTION

- A. PHOTOCELL CANNOT BE CALIBRATED.....15-26

VISION FLAP MALFUNCTION

- A. VISION FLAP DOES NOT OPERATE.....15-29

THREAD WIPER MALFUNCTION

- A. NO AIR TO THREAD WIPER BLOWER.....15-31

BACKTACK MALFUNCTION

- A. MACHINE DOES NOT BACKTACK OR DOES NOT STOP BACKTACKING, OR MACHINE STOPS, THEN TACKS FORWARD WHEN SET TO BACKTACK.....15-32

STOPPING MALFUNCTION

- A. MACHINE STOP POSITION VARIES, STOPS BEFORE OR BEYOND PRESELECTED POSITION ON GARMENT.....15-34

QUICK MOTOR MALFUNCTIONS

- A. MACHINE SEWS ONLY AT POSITIONING SPEED, NO HIGH SPEED.....15-37
- B. UNIT DOES NOT SLOW SEW AT START OF SEWING (CLAMP GOES DOWN, SLIGHT PAUSE, THEN HIGH SPEED).....15-39
- C. MOTOR RUNS BUT CLUTCH DOES NOT ENGAGE (CLAMP GOES DOWN, NO SEWING, CLAMP DOES NOT MOVE AND WILL REMAIN DOWN UNTIL EMERGENCY STOP BUTTON IS PRESSED).....15-41
- D. MOTOR DOES NOT GO INTO MEDIUM SPEED.....15-41
- E. MACHINE CONTINUES TO POSITION DURING CLAMP RETURN.....15-41
- F. MACHINE POSITIONS UP AT END OF CYCLE BUT TRIM KNIFE AND/OR TENSION DISC SOLENOIDS DO NOT ACTIVATE.....15-42
- G. MACHINE SEWS SLOWER THAN NORMAL HIGH SPEED, GRADUALLY GOES FROM SLOW TO HIGH SPEED, OR VARIES IN SPEED.....15-42

SUB-SYSTEM MALFUNCTIONS

CONTROL POWER PILOT LAMP MALFUNCTION

A. PILOT LAMP DOES NOT LIGHT WHEN MAIN POWER AND CONTROL POWER SWITCHES ARE ON

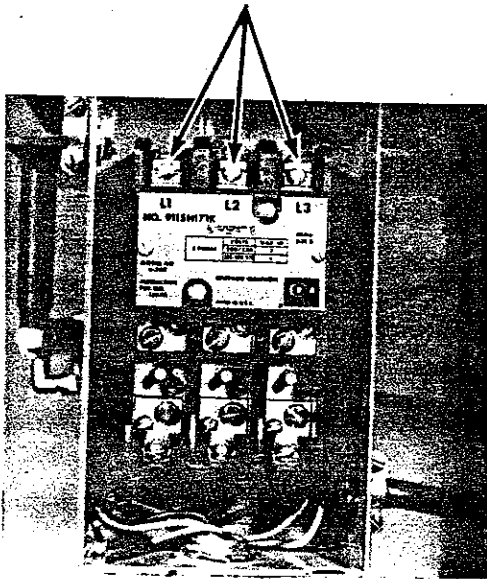
1. Turn ON Main and Control Power switches.
2. Place a 10 inch (25.4 cm) piece of test material under clamp and press foot pedal all the way down to second position. Machine should sew.

If machine sews, go to step 3.

If machine Does Not sew -

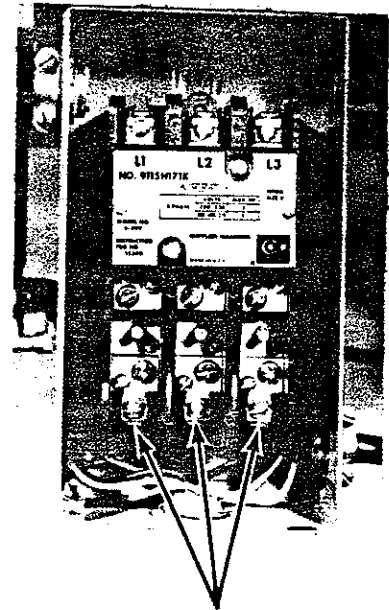
a. Remove switch box cover and get an AC voltmeter capable of measuring 440 volts.

b. Connect voltmeter leads from L1 to L2, then L2 to L3, and then L1 to L3 terminals on supply side of main power switch. All readings should be the same.



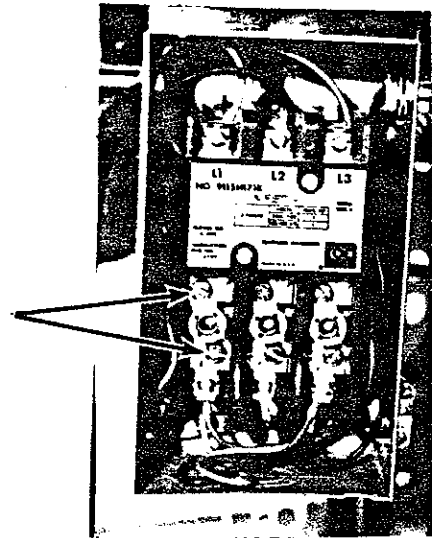
If all three readings are not the same, notify electrician.

c. With Main Power switch ON, connect the voltmeter leads from L1 to L2, L2 to L3, and L1 to L3 terminals on heater coil side of switch. All voltages should be the same.



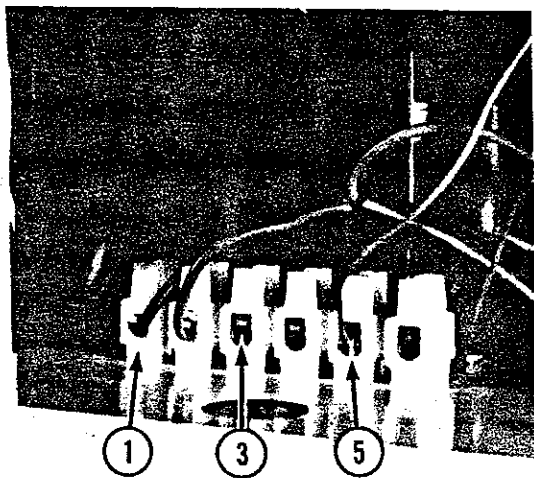
- If voltages are the same, go to step d.

- If voltages are not the same, turn OFF Control and Main power switches and check for continuity across heater coils.



Replace any heater coil that does not read continuity. If problem still exists, replace switch box.

d. Remove rear cover from lower section of control box and turn ON Main and Control Power switches.



e. If input leads are connected between:

1 and 2 on transformer, voltage should read 220 V (supply voltage)

1 and 3 on transformer, voltage should read 380 V (supply voltage)

1 and 4 on transformer, voltage should read 440 V (supply voltage)

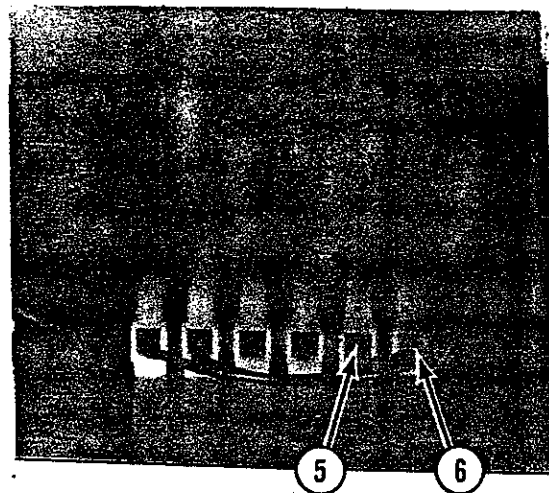
If no voltage is measured, check wiring from transformer to Main Power switch box (refer to wiring diagram).

f. Check voltage from terminal with light blue wire on transformer.

- Terminal 1 to terminal 5 - approximately 115 Volts, AC

- Terminal 1 to Terminal 6 - approximately 125 Volts, AC

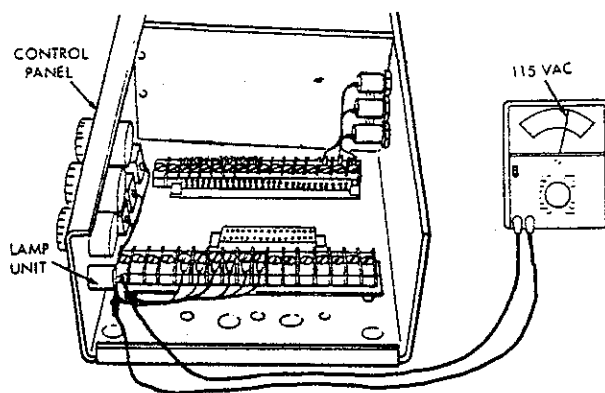
NOTE: If supply voltage is at or above nominal, use terminal 5. If supply voltage is below nominal, use terminal 6 for blue wire.



If voltage is not present, check transformer wiring (refer to wiring diagram). If wiring is correct, replace RM-3612 transformer.

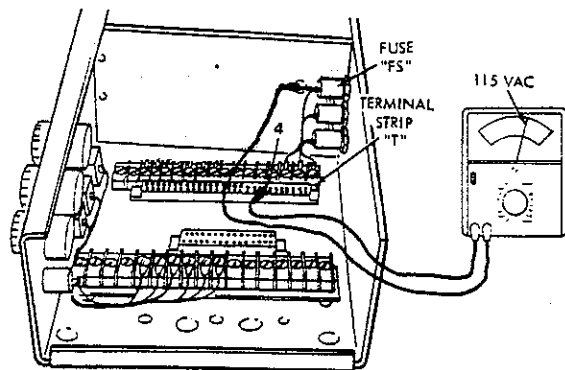
3. If unit operates properly (paragraph 2), set voltmeter to read 115 volt AC range. Remove top cover from control box.

4. Connect voltmeter leads across lamp unit terminals with MAIN POWER and CONTROL POWER switches on. Voltmeter should read 115 volts AC.

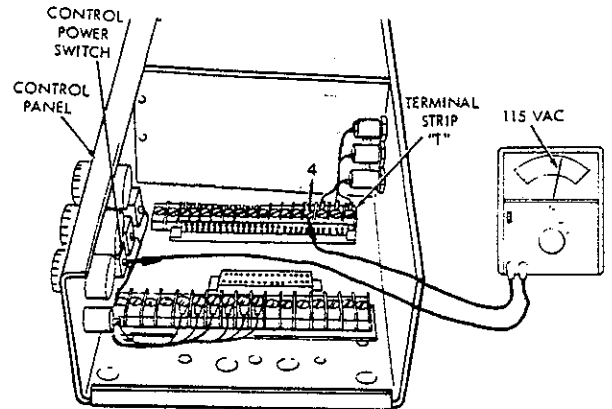


5. If voltmeter reads 115 volts AC, replace lamp unit.

6. If 115 volts AC is not present at lamp unit terminals, connect voltmeter leads between terminal 4 of terminal strip "T" and input side of fuse "FS." Voltmeter should read 115 volts AC.

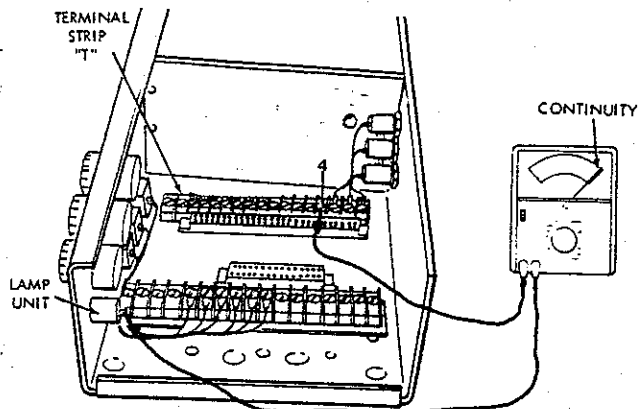


9. If system power checks good, connect one lead of voltmeter to terminal 4 of terminal strip "T" and connect other lead to output side of CONTROL POWER switch on high voltage circuit.



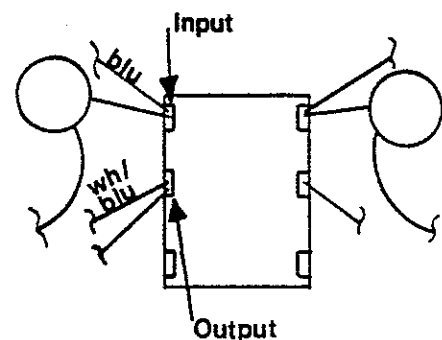
7. If voltmeter reads 115 volts AC, set CONTROL POWER switch to OFF position and remove fuses "FS" and "FM." Get ohmmeter.

8. Check continuity of lamp unit leads from terminal 4 of terminal strip "T" to return side of lamp unit, and from input terminal of fuse holder "FS" to lamp unit input terminal.



10. Operate CONTROL POWER switch while observing voltmeter indication. Voltmeter should read 115 volts AC when switch is in ON position and zero when switch is in OFF position.

11. If power is not present at output side of CONTROL POWER switch, connect one lead of voltmeter to terminal 4 of terminal strip "T" and connect other lead to input side of CONTROL POWER switch. Voltmeter should read 115 volts AC.



12. If power is present at input side of CONTROL POWER switch, replace switch RM-3376.

13. If power is not present at input side of CONTROL POWER switch, transformer is defective.

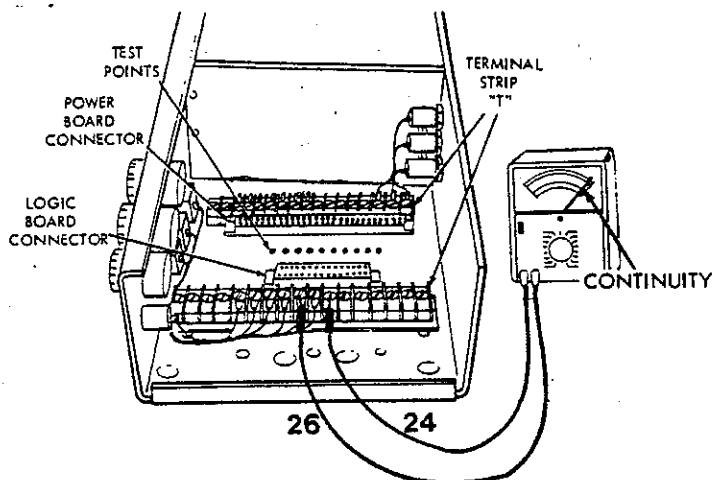
STARTING MALFUNCTION

A. CLAMP GOES DOWN WITH FOOT SWITCH IN FIRST POSITION BUT MACHINE DOES NOT START WHEN FOOT SWITCH IS ACTUATED TO SECOND POSITION

1. Turn OFF Control and Main Power switches. Remove Control Box Cover and remove Logic Board RM-3619 U observing the proper circuit board handling procedure on page 14-1.

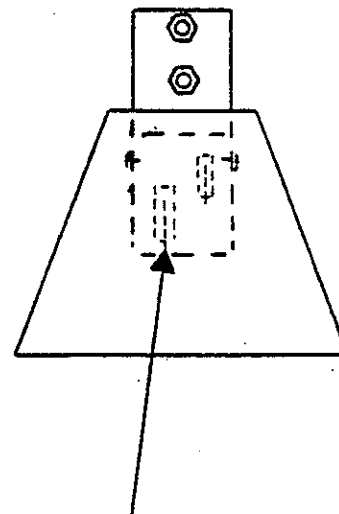
2. Using an ohmmeter set on Rx1, place meter leads on terminals 24 and 26 of mother board. Meter should read infinite ohms.

Depress the foot switch to the second position and ohmmeter should read approximately 0 ohms resistance.



If ohmmeter DOES read approximately 0 ohms when foot switch is depressed in the second position, go to step 6.

3. If ohmmeter does NOT read approximately 0 ohms when foot switch is depressed in the second position, remove foot switch cover.



4. With meter leads still connected to terminals 24 and 26, depress the lower left hand micro-switch. Ohmmeter should read approximately 0 ohms when switch is depressed.

If ohmmeter DOES read approximately 0 ohms when foot switch is depressed, go to step 6.

5. If ohmmeter does NOT read approximately 0 ohms when foot switch is depressed:

a. Check for broken wire from terminals 24 and 26 to micro-switch.

b. If wiring is good, micro-switch 670 B-1 is defective and must be replaced.

6. Check adjustment of micro-switch for foot switch 1 position and foot switch 2 position. Foot switch 1 must actuate before foot switch 2. To check:

a. Make sure foot switch cover is on foot switch and moves freely on its hinge screws.

b. Connect meter leads to terminals 26 and 27 to check when foot switch 1 activates and 24 and 26 for foot switch 2.

c. Slowly depress foot switch until 0 ohms is just read on ohmmeter with leads connected to terminals 26 and 27. With foot switch in this position, ohmmeter should read Infinite ohms on terminals 24 and 26. If not, remove foot switch cover and carefully bend actuator lever of foot switch 2 micro switch.

d. Bend foot switch actuators until:

Foot switch 1 reads 0 ohms with foot switch depressed half-way down; foot switch 2 reads 0 ohms only when foot switch is fully depressed.

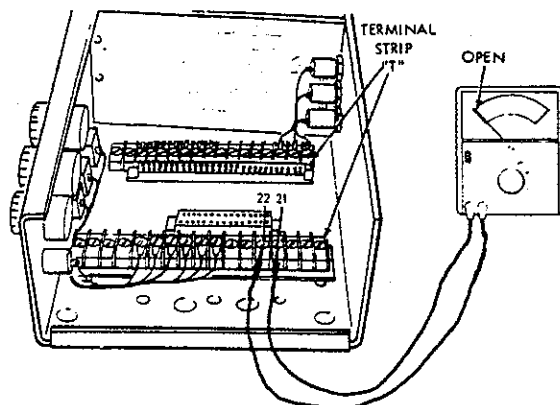
7. If foot switch checks good and machine will still not start when foot switch is fully depressed, remove air supply to unit. Clamp should go down and Presser Bar Lift Cylinder should extend. If Presser Bar Lift Cylinder does NOT EXTEND and presser clamp block does not contact clamp:

a. Check Presser Bar Lift Flow Control adjustment.

b. Check for kink in air line to cylinder.

c. Check for bind in cylinder and lift mechanism.

8. With Control and Main Power switches OFF, make sure Clamp Switch is in OPERATE position. Set ohmmeter on R_{x1} scale and place meter leads on terminals 21 and 22 of mother board.



Ohmmeter should read approximately Infinite ohms resistance.

If ohmmeter reads Infinite ohms, go to step 13.

9. If ohmmeter does NOT read Infinite ohms, remove black wire from terminal 21 and blue wire from terminal 22. Connect ohmmeter leads to the wires removed and ohmmeter should read Infinite ohms.

- If ohmmeter reads Infinite ohms, go to step 11.

10. If ohmmeter does NOT read Infinite ohms:

a. Move Clamp Interlock Micro-Switch lever up toward switch. If ohmmeter reads Infinite after switch lever is moved, bend micro-switch actuating lever down and check for infinite ohms.

b. Check removed blue and black wires for short.

c. If switch cannot be adjusted and switch wiring checks good, Clamp Interlock Switch RM-3127 D is defective and must be replaced.

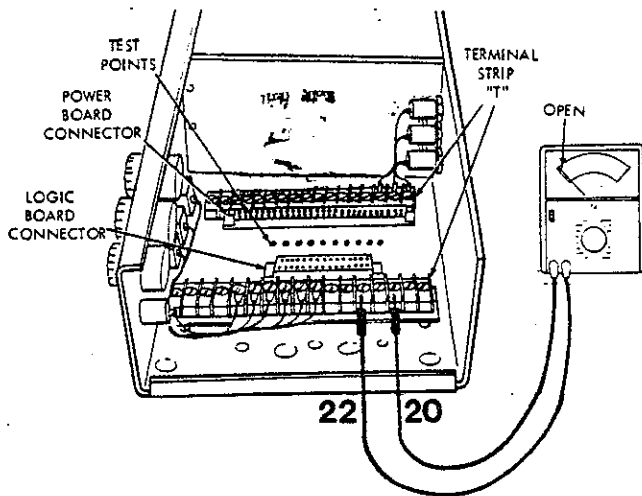
11. Remove the White/Black/Orange wire from terminal 21 on mother board and connect one lead of ohmmeter to wire removed. With ohmmeter set on R_{x1}, connect other meter lead to terminal 26. Ohmmeter should read Infinite ohms. If ohmmeter does NOT read infinite ohms:

a. Check for short from White/Black/Orange wire to Threading Switch on Control Panel.

b. If wiring checks good, Threading Switch RM-3627 is defective and must be replaced.

12. Connect all wires removed back to proper terminals on mother board.

13. With Clamp in Home position and all power off, set ohmmeter on Rx1 scale. Connect ohmmeter leads to terminals 20 and 22 on Mother Board. Meter should read infinite ohms.

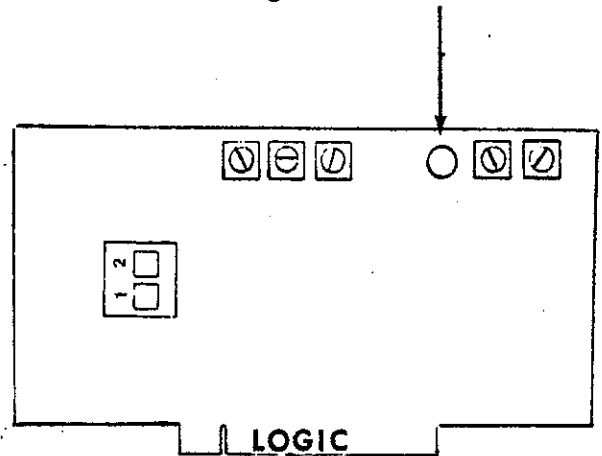


If meter reads infinite ohms, go to step 15.

14. If meter reads approximately 0 ohms with emergency stop button pressed in and approximately 9.0 K ohms with the bottom switch in the out position:

- a. Check Upper Safety Switch actuation lever to make sure it is not jammed or bent in the in position.
- b. Check for short in Red and Black wires from terminals 20 and 22 to Upper Safety Switch.
- c. Check Emergency Stop Switch and wiring from terminals 20 and 29 on the mother board. Meter should read infinite ohms with switch in the out position and 0 ohms in the IN position.

15. Reconnect all wires removed from terminals and install Logic Board. Connect air supply to unit and turn ON Main and Control Power switches. With Control Box Cover removed, observe red light (LED) on Logic Board.



16. Load a dummy piece of material into machine and press foot switch to second position. The Red light MUST be on for machine to sew.

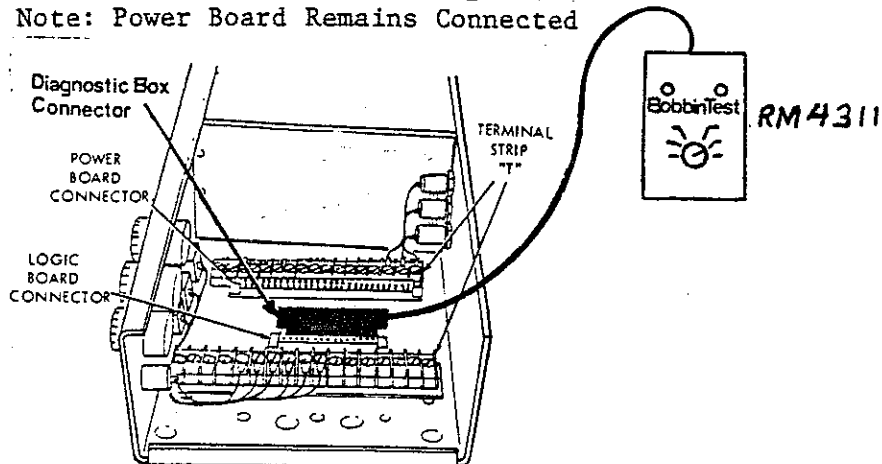
- If Red light is ON but machine does not start, go to step 18.

17. If Red light does NOT turn on:

- a. Check Photocell Sensitivity Adjustment (refer to page 6-1).
- b. If Photocell cannot be adjusted, refer to "Photocell cannot be Calibrated", page 15-26

18. Turn OFF Control and Main Power switches and remove Logic Board. Plug connector of Fly Seamer Diagnostics Box into Logic Board connector socket on RM-3618-A Mother Board.

Note: Power Board Remains Connected



19. Turn ON Main and Control Power switches. Remove needle and bobbin case from sewing head. Place a scrap piece of material under Clamp. Place rotary selector switch on Diagnostics Box to the "Fast Sew" position. Push "Test" button on Diagnostics Box. Clamp should lower, presser bar should lower, vision flap should extend, electric clutch should engage, and machine should sew at high speed.

- If ALL of the above functions OCCUR, Logic Board RM-3619 U is defective and must be replaced.

- If none or only some of the above functions occur, Power Board RM-3897 is defective and must be replaced.

NOTE: A poor connection between a circuit board and the plug-in connector on the RM-3618 A Mother Board will produce the same symptom as a faulty circuit board. Before replacing circuit boards, turn off all power and clean circuit board and mother board connectors. Check for continuity between terminal strip and connectors on mother board using diagram on page 13-1B.

CLAMP MALFUNCTION

A. CLAMP DOES NOT GO DOWN WHEN FOOT SWITCH IS ACTUATED TO FIRST STEP

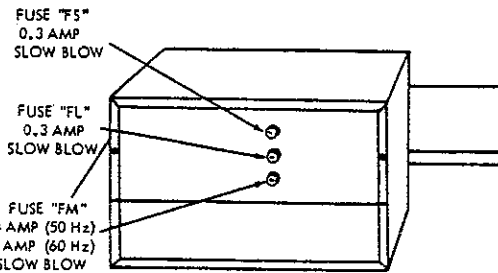
Check system pressure for 45 to 55 P.S.I.

1. Turn ON Main and Control Power switches and place Clamp Thread switch in "THREAD" position. Clamp should go down. Turn OFF Control and Main Power switches after test.

- If clamp goes DOWN, go to step 11.

2. If clamp does NOT go down, remove fuse "FS" from rear of control box and check condition of fuse with ohmmeter.

- If fuse is NOT blown, go to step 6.



3. If fuse IS blown, replace fuse with new RM-3048-3 (.3 Amp) fuse. Remove control box cover and remove Power Board.

4. Turn ON Main and Control power switches and wait 1 minute. Turn OFF Control and Main power switches and check FS fuse.

- If fuse does NOT blow with power board removed, install power board, turn ON Main and Control power switches, and place Clamp Thread switch in Thread position and depress foot switch. If fuse blows ONLY after Power Board is INSTALLED, replace power board RM-3897.

5. If fuse does NOT blow after replacement and system operates normally, operate equipment for a few cycles. If fuse does not blow, return unit to service.

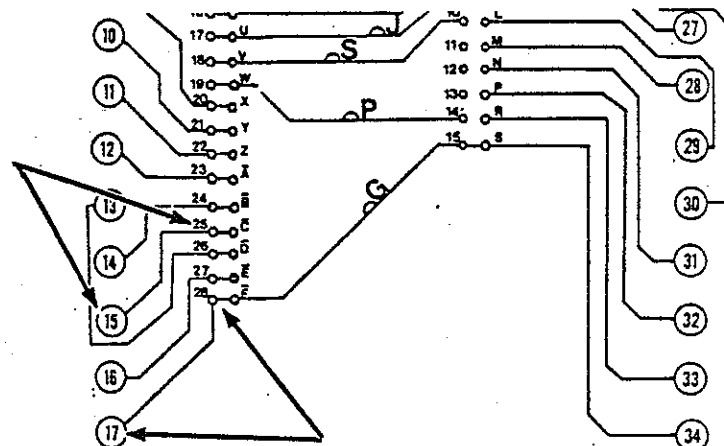
6. Using an AC voltmeter on the 120 or higher scale, check for approximately 115 VAC at terminals 3 and 4. If voltage is between 100 to 130 volts, check for shorted wires from Control Power switch to mother board (refer to wiring diagram, page 13-1). If voltage is not between 100 and 130 VAC, replace transformer or wiring from transformer.

7. With Main and Control Power switches ON, remove Control Box cover. Obtain voltmeter and set meter to the 100 Volt D.C. scale or equivalent to measure approximately 50 V.D.C. Place Clamp Thread switch in "OPERATE" position and connect (+) probe of voltmeter to terminal 15 and connect (-) probe to terminal 17 on Mother Board RM-3618 A. Voltmeter should read approximately 50 ((+)5volts) volts D.C.

- If 50 volts IS present, go to step 9.

8. If voltmeter does NOT read approximately 50 V.D.C., turn OFF Control and Main Power switches and remove Power Board RM-3897. Using an ohmmeter, check for continuity between:

<u>TERMINAL STRIP</u>	<u>POWER BOARD CONNECTOR</u>
15	25
17	28

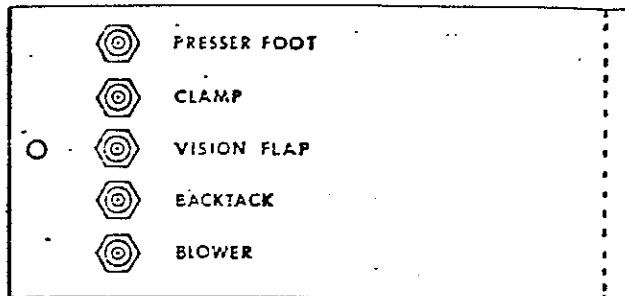


- If continuity IS present between terminal strip and power board connector, Power Board RM-3897 is defective and must be replaced.

- If continuity is NOT present between terminal strip and power board connector, repair or replace Mother Board RM-3618 A.

9. If input power is OKAY, remove air hoses from clamp and presser foot flow control valves. With hoses removed, air should come from both flow control valves at fittings from which hoses were removed and clamp should lower.

PNEUMATIC PANEL



- If clamp does not lower, check for mechanical bind in clamp lift cylinder RM-2874 D and lift wedge, RM-3676.

10. With Main and Control Power switches ON, place Clamp Thread switch in THREAD position. Air should turn OFF at both flow control valves.

- If air turns OFF, check for pinched air tubing to clamp cylinder or mechanical bind in clamp lift mechanism.

- If air does NOT turn off, check or replace solenoid coil and plunger assembly RM-4184, and 4-way valve pilot RM-4186.

11. If clamp goes down when Clamp Thread switch is in THREAD position but NOT when Foot Switch is activated, turn OFF Control Power, remove fuse "FL" from rear of control box, and check condition of fuse with ohmmeter.

- If fuse is NOT blown, go to step 13.

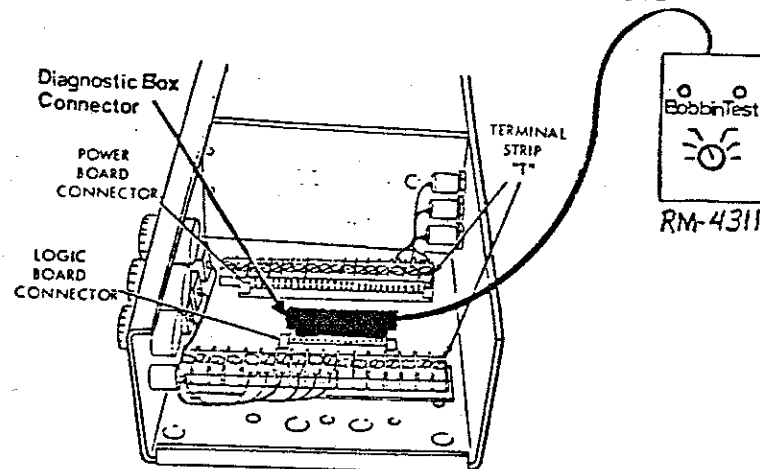
12. If fuse IS blown, replace fuse with new RM-3048-3 (.3 Amp) fuse. If fuse blows again, check for short in wiring from transformer to fuse and control power switch. If wiring and transformer are okay, replace power board RM-3897.

13. If fuse was not blown and clamp goes down when Clamp Thread switch is in THREAD position, turn OFF Control and Main Power switches.

14. Remove control box cover and remove Logic Board RM-3619 U from machine, observing the proper handling procedure (page 14-1).

15. Plug connector of Fly Seamer Diagnostics Box into logic board connector socket on Mother Board, RM-3618 A. Place rotary selector switch on Diagnostics Box in the CLAMP position. Turn ON Main and Control Power switches. With clamp Thread switch on machine control panel in the OPERATE position, push the TEST button and clamp should go down.

Note: Power Board Remains Connected



- If Clamp goes DOWN, go to step 18.

16. If Clamp does NOT go down, turn OFF Control and Main power switches. Obtain an ohmmeter and check continuity between terminal strip 15 on Mother Board and terminal 38 on solenoid terminal strip. If no continuity, check for poor crimp connection or break in tan wire.

17. If continuity IS present, power board RM-3897 is defective and must be replaced.

18. Turn OFF Control and Main Power switches and set meter to Rxl ohms. Connect ohmmeter leads to terminal 26 and 27 on Mother Board.

19. With Power OFF, press foot switch to first position. Ohmmeter should read 0 ohms.

- If meter does NOT read 0 ohms, check foot switch wiring, foot switch micro-switch 670 B-1 for make or break action, position of micro-switch lever.

20. If meter READS 0 ohms and switch has make or break action, Logic Board RM-3619 U is defective and must be replaced. Refer to page 14-1 for proper handling of Logic Board.

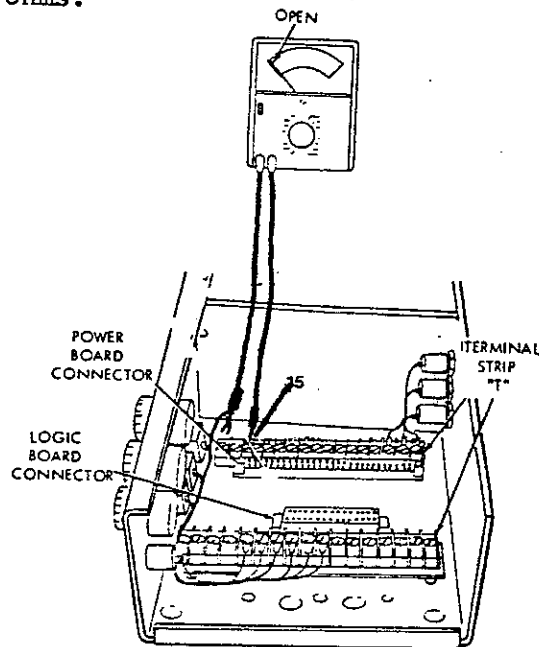
B. CLAMP GOES DOWN WHEN CONTROL POWER SWITCH IS TURNED ON

Check System Pressure for 45 to 55 P.S.I. Make sure Clamp Thread switch is in OPERATE position.

1. Turn OFF Control and Main Power switches. Clamp should lift with switch in OFF position.

- If Clamp does NOT lift with power OFF, go to step 7.

2. If Clamp LIFTS with power OFF, remove the White/Violet wire from terminal 17. Place one probe of an ohmmeter on the White/Violet wire and the other probe on terminal 15 of solenoid terminal strip. When Clamp Thread switch is in the OPERATE position, ohmmeter should read INFINITE. When Clamp Thread switch is in the THREAD position, ohmmeter should read 0 Ohms.



If ohmmeter does NOT read INFINITE in the OPERATE position, RM-3627 Thread Switch is defective and must be replaced. Reconnect White/Violet wire to terminal 17.

3. Remove BLUE wire from terminal 17. Place one probe of an ohmmeter on the Blue wire and the other probe on terminal 15. Ohmmeter should read INFINITE. When Lower Safety Micro-Switch lever is pressed in, meter should read 0 Ohms.

If ohmmeter does NOT read INFINITE when the Lower Safety is NOT depressed, RM-3127 D Lower Safety Micro-Switch or wiring to switch is defective and must be replaced. (Refer to page 13-1 for wiring diagram.)

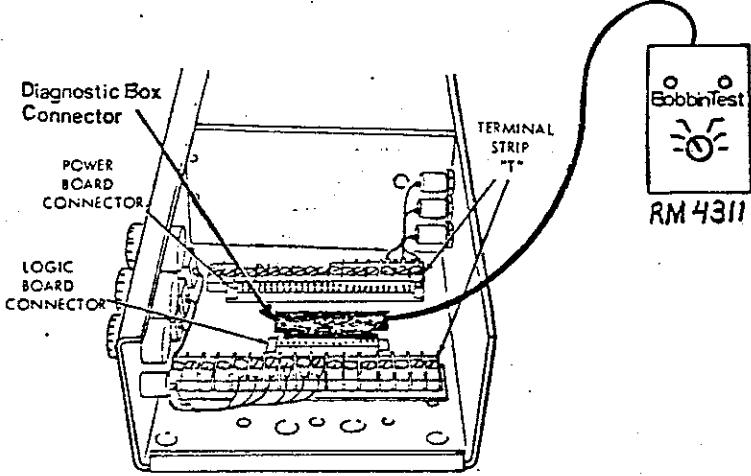
4. Reconnect Blue wire to terminal 17. Remove Blue wire from terminal 27 and connect one probe of an ohmmeter to the Blue wire. Place other probe of ohmmeter on terminal 26. Ohmmeter should read INFINITE. Press foot switch to the first position and meter should read 0 Ohms.

- If ohmmeter does NOT read INFINITE when Foot Switch is NOT depressed, the first position foot switch 670 B-1 or wiring from foot switch is defective and must be replaced.

5. Reconnect the blue wire to terminal 27 and remove Logic Board RM-3619 U from machine observing the proper handling procedure (page 14-1).

6. Connect plug of Fly Seamer Diagnostics Box into the logic board socket on Mother Board RM-3618 A. Place rotary selector switch on Diagnostics Box in the CLAMP position. Place Clamp Thread switch in the OPERATE position and turn ON Main and Control power switches. Push the TEST button on the Diagnostics Box and Clamp should go down. Clamp should go up when Test button is released.

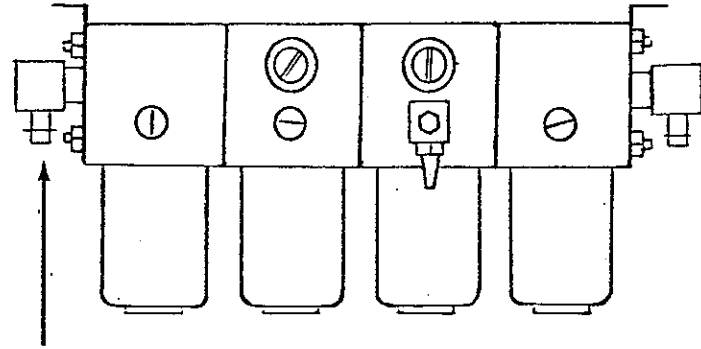
Note: Power Board Remains Connected



- If Clamp goes UP and DOWN with Test Button, Logic Board RM-3619 U is defective and must be replaced.

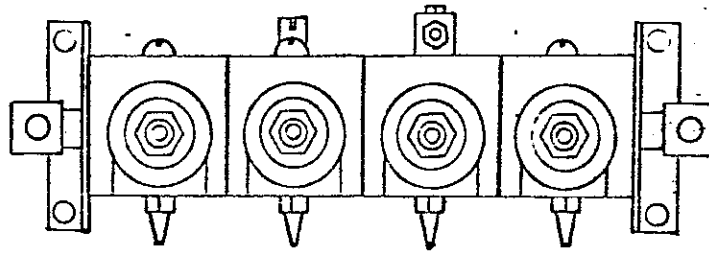
- If Clamp REMAINS DOWN when test button is RELEASED, Power Board RM-3897 is defective and must be replaced.

7. Remove air supply hose from front side of solenoid and check for a constant stream of high pressure air from removed air hose.



- If NO or LITTLE air comes from air tube, check air tube for leak or kink, check system air regulator for blockage.

8. If a strong stream of air IS present, reconnect air supply hose to solenoid bank. Remove air hose from out port of clamp solenoid and check for constant stream of high pressure air from solenoid port.



- If NO or LITTLE air comes from clamp solenoid port, check clamp solenoid manifold block for blockage, check or replace RM-4184 solenoid plunger, check or replace RM-4186 solenoid pilot.

9. If a strong stream of air IS present, reconnect air hose to clamp solenoid. Remove air hose from Clamp Lift Flow Control valve and again high pressure air should be present.

- If high pressure air is NOT present, check adjustment and/or replace Clamp Lift Flow Control Valve 671-35. Also check air tube from Clamp solenoid to Flow Control Valve.

10. If high pressure air IS present, reconnect air hose to flow control valve and locate in-line connector mounted to underside of tableboard. Remove 1/4 inch black tubing from the connector closest to the front of the machine. Air should blow from black tubing.

- If NO air is present, check for kink or leak in tubing from Clamp Flow Control Valve.

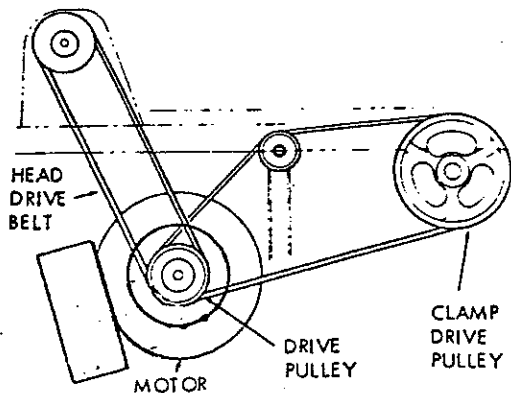
11. If air IS present, reconnect air hose and remove air hose from clamp lift cylinder.

- If air IS present, check clamp lift cylinder and mechanism for bind.

-If air is NOT present, check for leak or kink in air hose from connector to clamp cylinder.

C. MACHINE RUNS BUT CLAMP DOES NOT MOVE OR MOVES ERRATICALLY

1. Turn ON Main and Control Power switches. Remove needle and bobbin and sew a dummy sample, observing the Clamp Drive Pulley.



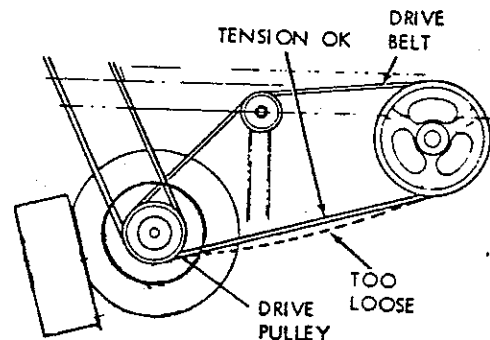
Clamp Drive Pulley should rotate.

NOTE: To stop machine, turn OFF Air Supply, then Control Power Switch.

-If Clamp Drive Pulley does NOT rotate, check V belt for proper tension. belt should be tight enough so that idler pulley cannot be turned by hand when unit is in rest position. If belt tension is correct, go to step 2.

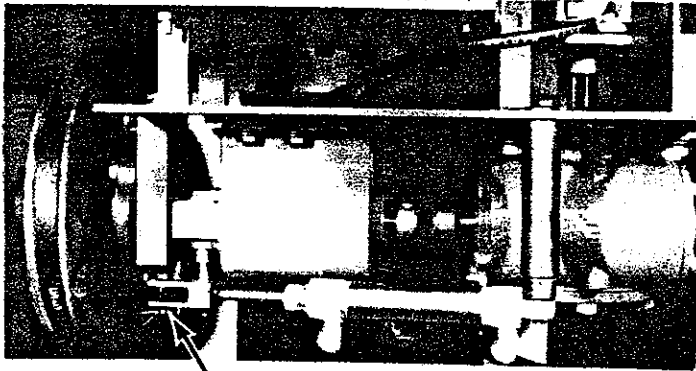
2. If Clamp Drive Pulley ROTATES, turn OFF Control and Main Power switches. Loosen idler pulley and remove V belt from Clamp Drive Pulley.

3. Rotate Clamp Drive Pulley by hand. Check for slippage of Clamp Drive Pulley or shaft, Clamp Pulley set screw may be loose.



4. Check for slippage of flange bearing collar on Clamp Drive Pulley Shaft and Input Shaft of Transmission. Set screws may be loose.

5. Remove Cotter Pin and Clevis pin from backtack air cylinder. While turning Clamp Drive Pulley counter-clockwise, move transmission reversing lever back and forth. Output shaft of transmission should rotate and change direction of rotation when reversing lever is moved back and forth.



- If output shaft of transmission does NOT rotate in two directions, transmission RM-3522 is defective and must be replaced.

- If output shaft of transmission ROTATES in two directions, check backtack adjustment (refer to page 8-8, paragraph K, for adjusting instructions).

6. With air supply connected, turn ON Main and Control Power switches. Backtack air cylinder should be fully extended. Press foot switch to start machine and observe backtack air cylinder. Backtack air cylinder should be extended during high speed sewing. Note: If Backtack Start Selector switch on Logic Board is in the right hand position, backtack cylinder will retract at the start for about one second and then extend.

NOTE: Since Clamp Drive V belt is removed, clamp will not move during running. To stop machine, turn OFF air supply, then Control Power switch.

- If Backtack air cylinder EXTENDS, go to step 10.

7. If Backtack air cylinder does NOT extend, turn off Control Power switch. Note: Main air supply should be ON during testing.

- If Backtack cylinder does NOT extend with Control Power off: Check air line to cylinder for kink or air leak; check Backtack air cylinder RM-3535 for leak or bind; check Backtack solenoid (C) pilot RM-4186 for leak or bind; replace Backtack solenoid coil and plunger RM-4184.

8. If Backtack air cylinder EXTENDS only with Control Power OFF, turn off Main Power switch and remove RM-3619 U Logic Board (see "Handling Printed Circuit Boards" page 14-1).

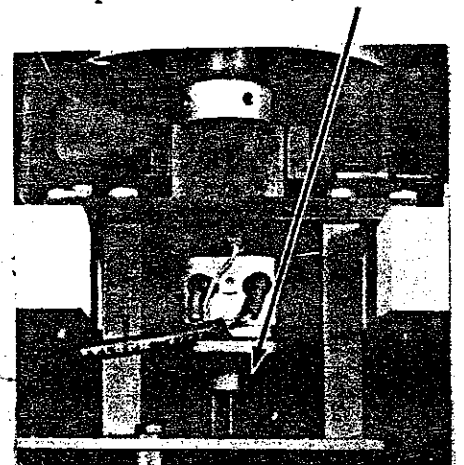
9. Turn ON Main and Control Power switches.

- If Backtack air cylinder EXTENDS, Logic Board RM-3619 U is defective and must be replaced.

- If Backtack air cylinder RETRACTS when Control Power switch is ON, RM-3897 Power Board is defective and must be replaced.

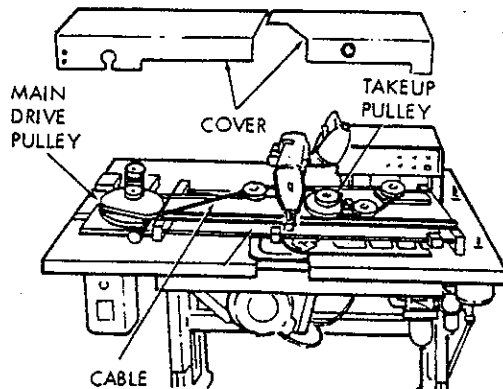
10. Turn OFF Control Power Switch. Rotate Clamp Drive Pulley counter-clockwise and observe the input and output shafts of the Gear Reducer for slippage.

- If slippage is present, tighten set screws on input collar and Electric Clutch plate collar.



- If input shaft rotates but output shaft of Gear Reducer does NOT rotate, replace Gear Reducer RM-3520.

11. Remove both painted covers from table top and make sure Control Power is OFF and Air Supply is ON. Turn Main Drive Pulley clockwise and counterclockwise and check:



a. Cable condition, routing, and tension adjustment (see "Cable Tension Adjustment" page 8-5).

b. Free movement of all five cable pulleys.

- If carriage moves freely and cables and pulleys are correct, go to step 15.

12. If carriage jams or binds, remove cables from cable pivot and move clamp checking for bind or jam in carriage assembly.

- If carriage moves freely, go to step 13.

- If carriage jams or binds, check:

a. Both 1/2 and 1/4 inch carriage shafts for straightness.

b. Carriage bearings for proper fit.

c. Rear carriage bearing blocks to clear sewing head.

d. Bottom of carriage must have clearance with stainless steel table RM-3402. If not, check sewing head height adjustment (page 2-1).

e. Cable pivot bearing fit in "J" slot of cam plate RM-3561.

13. Rotate Main Drive Pulley clockwise and counterclockwise and check for slippage of Main Drive Pulley and Electric Clutch on Drive Shaft. If slippage is present, tighten set screws on Main Drive Pulley and Electric Clutch.

14. If Main Drive Pulley cannot be turned, check Clamp Return Motor for bind. Remove Electric Clutch and check for bind. (Refer to "Electric Clutch and Gear Box Adjustment" page 8-9 for proper settings.)

15. Remove rubber terminal covers from Electric Clutch terminals. Set voltmeter on 125 volts DC or equivalent. Place the (-) meter probe on electric clutch terminal with Black wire connected. Place the (+) meter probe on electric clutch terminal with Blue wire connected. Turn ON Control Power switch and voltmeter should read 70 to 90 volts DC.

- If 70 to 90 volts DC IS present, either Electric Clutch RM-2847 DA gap is not adjusted properly (page 8-9) or Electric Clutch is defective and must be replaced.

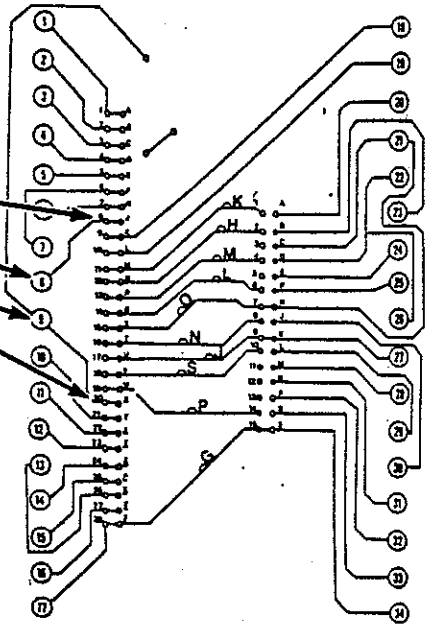
16. If 0 voltage is present, check for 70 to 90 V.D.C. at terminal 8 (+) and 9 (-).

- If voltage is present at terminals 8 and 9 but not at clutch terminals, check for broken wire from clutch to terminal strip 8 and 9.

17. If 0 voltage is present at terminals 8 and 9, turn OFF Control and Main Power switches. Using an ohmmeter, check for continuity between:

<u>TERMINAL STRIP</u>	<u>POWER BOARD CONNECTOR</u>
8	8
9	20

RM 3618A MOTHER BOARD



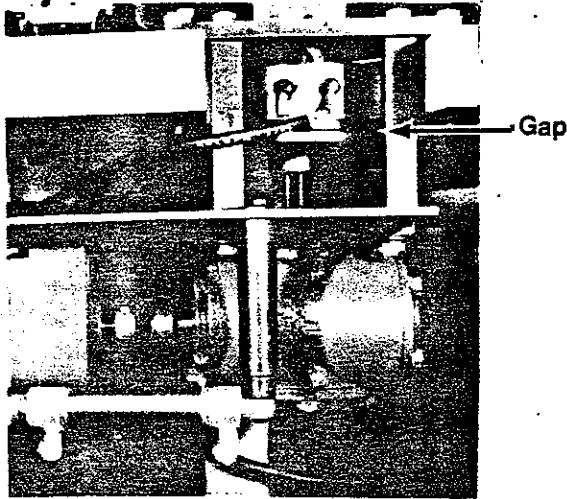
- If continuity IS present between terminal strip and power board connector, Power Board RM-3897 is defective and must be replaced.

- If continuity is NOT present between terminal strip and power board connector, repair or replace Mother Board RM-3618 A.

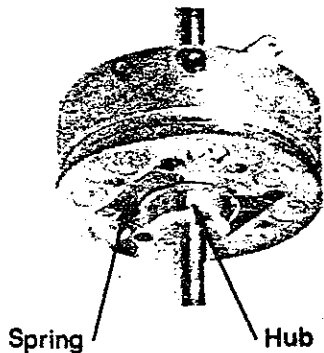
CLAMP RETURN MALFUNCTION

A. CLAMP DOES NOT RETURN TO HOME POSITION

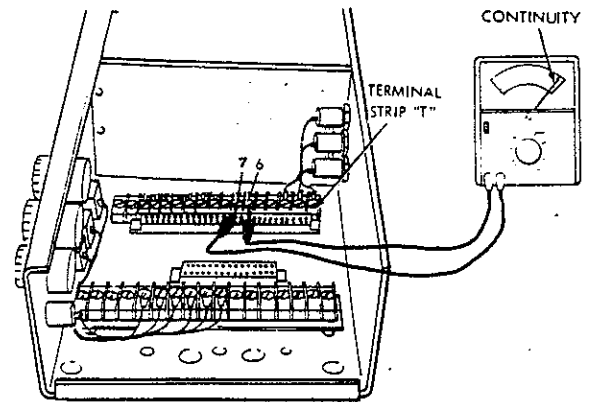
1. Turn OFF Control Power switch. Check for .030 to .050 inch clearance between Clutch Plate and Electric Clutch (refer to page 8-10, item 12 for adjustment).



2. Move Clutch Plate up against Electric Clutch and release. Clutch plate should lower when released. If clutch plate does not lower, check clutch plate spring for proper action and check for bind on clutch plate hub.



3. Connect ohmmeter leads to clamp return limit switch terminals 6 and 7 on terminal strip.



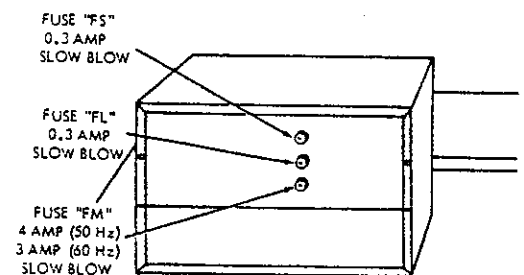
4. With switch in unactuated position (clamp not in home position), ohmmeter should read continuity.

5. Manually actuate clamp return limit switch while observing ohmmeter reading. Ohmmeter reading should go from continuity to open when switch is actuated; if not, replace switch 670 B-54.

6. If clamp return limit switch checks good, set CONTROL POWER switch to ON position and press bobbin winder start button. Bobbin winder motor should run.

If bobbin winder motor runs after start button is pressed, go to step 10.

7. If bobbin winder motor is found to be inoperative, check fuse "FM".



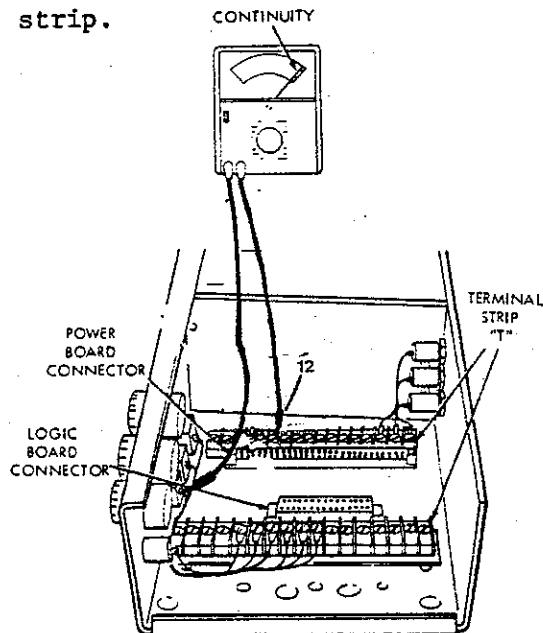
If fuse "FM" is blown, replace "FM" 3 Amp fuse (RM-3048-4) and operate machine. If fuse blows after running machine, replace fuse and go to step 15. If fuse does not blow after running, press Bobbin Winder button. If fuse does not blow, place machine back into operation. If fuse blows only when Bobbin Winder button is pressed, refer to page "Bobbin Winder Motor does not Operate."

8. If both motors are inoperative and fuse is not blown, turn power off. Get an ohmmeter.

9. Check continuity of wiring common to both motors as follows:

a. Check continuity of black lead from fuse "FM" to clamp return motor.

b. Check continuity of lead from White/Blue wire of CONTROL POWER switch to terminal 12 on terminal strip.



10. Get AC voltmeter capable of reading in 135 volt range. Move clamp to its extreme left position. Connect meter leads to terminals 4 and 6. Turn ON Main and Control Power switches and meter should read 100 to 130 volts AC.

If voltmeter reads 0, go to step 12.

If voltmeter reads less than 100 volts, change to the high voltage tap on the Control Transformer (refer to page 2-3 for connecting instructions).

11. If Clamp Return Motor power is correct:

a. Check for proper clamp cable routing and tension (refer to page 8-5).

b. Turn OFF Control Power switch and check for bind in carriage mechanism.

c. Check for proper end play between double groove drive pulley and Electric Clutch (refer to page 8-10, item 11).

12. Turn OFF Control and Main Power switches. Remove the Black wire from terminal 21 and the Blue wire from terminal 22. Connect ohmmeter leads to the removed Black and Blue wires. With the air supply connected to unit and the clamp in the UP position, the ohmmeter should read ZERO ohms. Remove the air supply to the unit and when the clamp is in the DOWN position, the ohmmeter should read INFINITE ohms.

- If readings are CORRECT, go to step 14.

13. If meter readings are INCORRECT:

a. Check for short, broken wire and proper crimp on terminals from Black and Blue wire to the Clamp Interlock switch.

b. Replace Clamp Interlock switch, RM-3127 D.

14. Connect Black wire to terminal 21 and Blue wire to terminal 22.

15. With Control and Main power switches OFF, remove Logic Board from machine. Refer to page 14-1 "B. Handling Printed Circuit Boards" to prevent damaging Logic Board through improper handling.

16. Get ohmmeter and set on Rx1 ohm range. With Control and Main Power off, unplug the two wires to the Clamp Return Motor. Connect ohmmeter leads to the Clamp Return Motor.



Unplug

Ohmmeter should read approximately 12 ohms.

- If ohmmeter reads 12 ohms, go to step 18.

17. If Ohmmeter reads 0 or Infinite ohms, replace Clamp Return Motor, RM-3521.

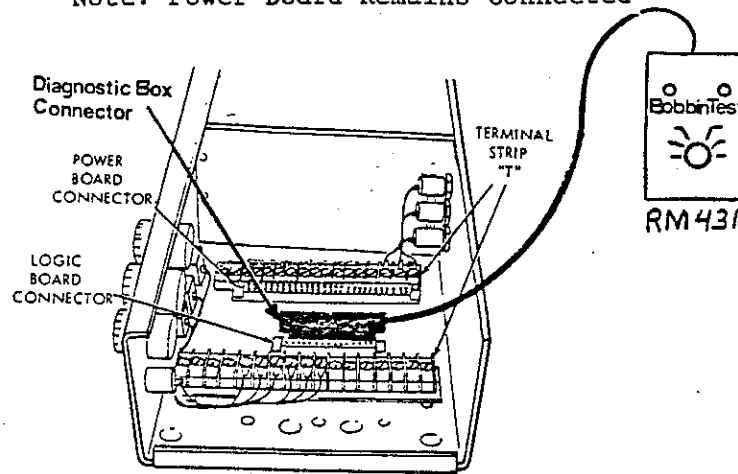
18. Check motor wiring for short or broken wire from:

a. Black wire removed from motor to FM fuse holder and terminal 4 should read continuity.

b. Red wire removed from motor to terminal 6.

19. If Motor and Motor Wiring check good, plug connector of Fly Seamer Diagnostics Box into Logic Board connector socket on RM-3618 A Mother Board.

Note: Power Board Remains Connected



20. With air supply connected to machine, move Clamp Carriage Assembly to its extreme left position. Turn ON Main and Control power switches and Clamp should return to its home position.

- If Clamp RETURNS to home position, RM-3619 U Logic Board is defective and must be replaced.

NOTE: Turn OFF Control and Main power switches before replacing circuit boards.

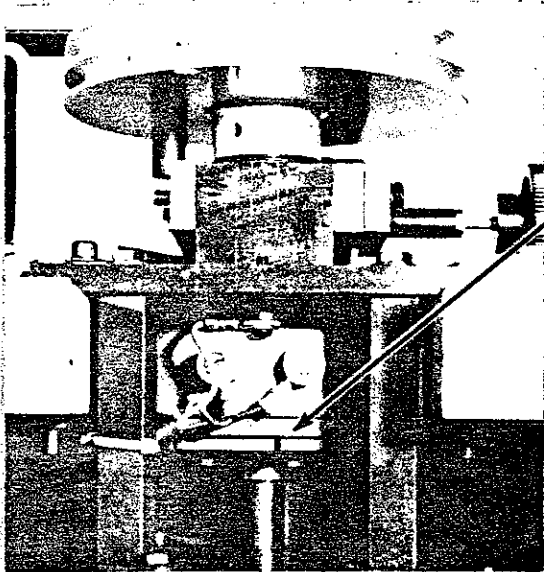
21. If Clamp does NOT return to home position, RM-3897 Power Board is defective and must be replaced.

NOTE: Before installing replacement Power Board, check if "FM" fuse is blown. A faulty Power Board could cause fuse "FM" to blow. If "FM" fuse is blown, replace both the "FM" fuse and the RM-3897 Power Board.

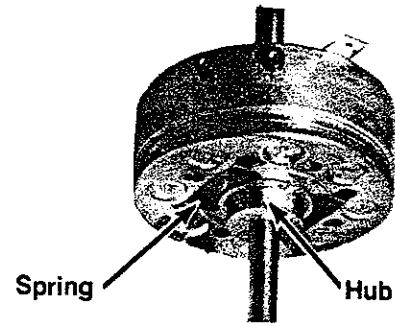
NOTE: A poor connection between a circuit board and the plug-in connector on the RM-3618 A Mother Board will produce the same symptom as a faulty circuit board. Before replacing circuit boards, turn off all power and clean circuit board and mother board connectors. Check continuity between terminal strip and connectors on mother board using diagram on page 13-1B.

B. CLAMP RETURNS TOO SLOWLY OR HESITATES DURING RETURN

1. Turn OFF Control Power switch. Check for .030 to .050 inch clearance between Clutch Plate and Electric Clutch (refer to page 8-10, item 12 for adjustment).



2. Move Clutch Plate up against Electric Clutch and release. Clutch Plate should lower when released. If clutch plate does not lower, check clutch plate spring for proper action and check for bind on clutch plate hub.



3. If there is proper clearance between Electric Clutch and Clutch Plate, manually rotate Clamp Drive Pulley. Clamp Carriage should move freely in both directions.

- If Clamp moves FREELY, go to step 5.

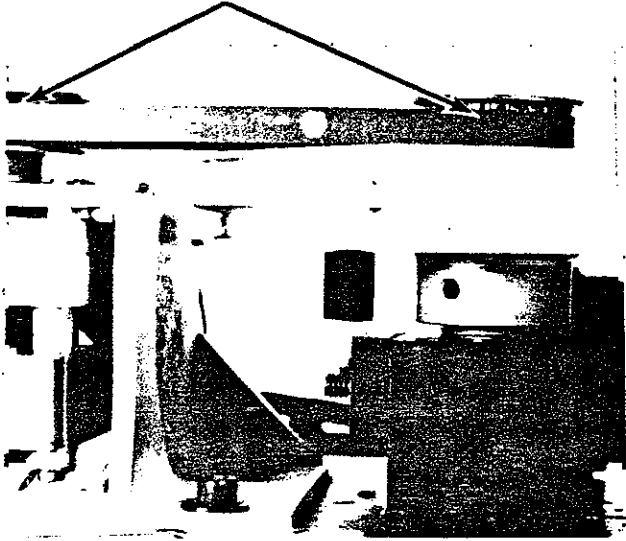
4. If Clamp does NOT move freely:

a. Check for proper Clamp Cable routing and tension (refer to page 8-6).

b. Check for proper tension on clamp return motor timing belt. There should be some slack in timing belt.

c. Check both plastic timing belt pulleys for alignment, condition and tightness of securing screws.

InLine



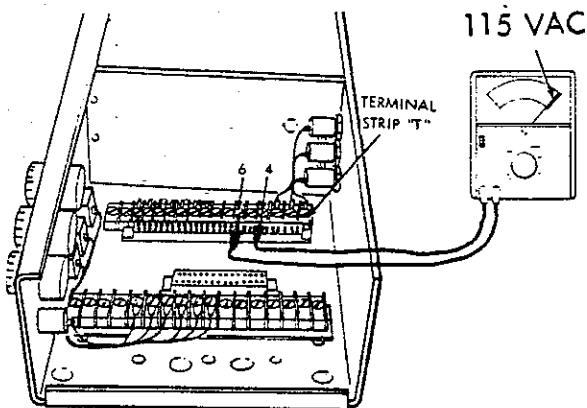
6. If Clamp Return Motor power is CORRECT, Clamp Return Motor RM-3512 is defective and must be replaced.

d. Check for bind in Clamp Carriage mechanism.

e. Check for proper end play between double groove Drive Pulley and Electric Clutch (refer to page 8-10, item 11).

5. Get AC voltmeter capable of reading in the 135 volt range. Move Clamp to its extreme left position. Connect meter leads to terminals 4 and 6. Turn ON Main and Control Power switches and meter should read 110 to 130 volts AC.

Note: Circuit Boards Remain Connected



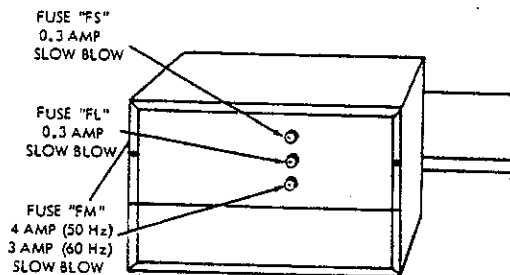
If voltmeter reads 100 volts or less, change to the high voltage tap on the Control Transformer (refer to page 2-3 for connecting instructions).

BOBBIN WINDER MALFUNCTION

A. BOBBIN WINDER MOTOR DOES NOT OPERATE

Note: Make sure Bobbin Winder Shaft is free of thread and there is proper clearance of shaft with hole in table-board. Make sure motor shaft and coupling set screws are tight.

1. Remove fuse holder "FM" on rear of control box and check for a blown fuse.



- If fuse "FM" checks good, go to step 4.

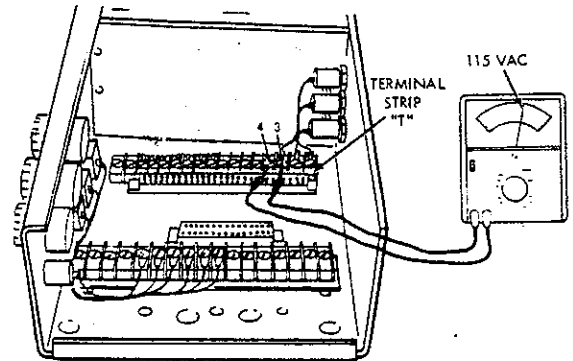
2. If fuse "FM" is BLOWN, replace "FM" (RM-3048-4) and operate machine.

If fuse blows only when machine operates, go to page "Clamp Does Not Return to Home Position" steps 15-21.

3. If fuse blows only when Bobbin Winder Motor Start Button is depressed, go to step 13.

4. If fuse "FM" checks good, remove control box cover and get voltmeter capable of reading 135 volt AC range.

5. Turn ON Main and Control Power switches and connect voltmeter leads to terminals 3 and 4 on Mother Board. Voltmeter should read 100 to 130 volts AC.



- If voltage is 100 volts or LESS:

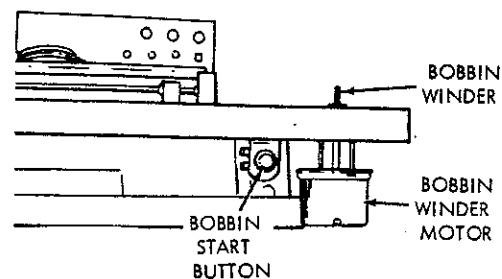
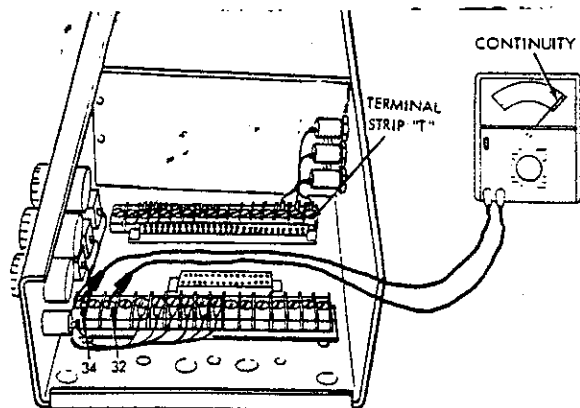
a. Check for proper 3 phase supply voltage to machine.

b. Check for proper wire connection on step down transformer (refer to page 2-3).

c. Turn off Control and Main Power switches and check for shorts or broken wire to and from step-down transformer RM-3612 (refer to Wiring Diagram on page 13-1).

6. If 100 to 130 volts AC is present, turn OFF Control and Main Power switches. Remove Logic and Power Boards from mother board observing the proper handling procedure on page 14-1.

7. Connect ohmmeter leads between terminals 32 and 34 on mother board. Ohmmeter should read continuity with bobbin start button in unactuated position.



8. Press start button while observing ohmmeter indication. Ohmmeter indication should go from continuity to open when start button is depressed.

9. Remove lead from terminal 32 and connect it to terminal 33. Ohmmeter should read open with start button in unactuated position.

10. Press start button while observing ohmmeter reading. Ohmmeter indication should go from open to continuity when start button is pressed.

- If proper indications are read on ohmmeter in steps 7 through 10, go to step 13.

11. If proper indications are NOT read on ohmmeter in steps 7 through 10, check bobbin start switch wiring from terminals 32, 33, and 34 to bobbin start switch for short or broken wire.

12. If Bobbin Start Button wiring checks good, Bobbin Start Button 998-264 is defective and must be replaced.

13. Turn OFF Control and Main Power switches. Unplug in-line connectors on two wires to Bobbin Winder Motor. Using an ohmmeter set on Rx1 scale, place meter leads on Bobbin Winder Motor connectors.

Ohmmeter should read approximately 50 ohms.

- If ohmmeter reads approximately 50 ohms, go to step 15.

14. If ohmmeter reads 0 or Infinite ohms, Bobbin Winder Motor RM-3417 is defective and must be replaced. Check for proper crimping of slide-on connectors to motor wires before replacing motor.

15. Check for short or broken wire from:

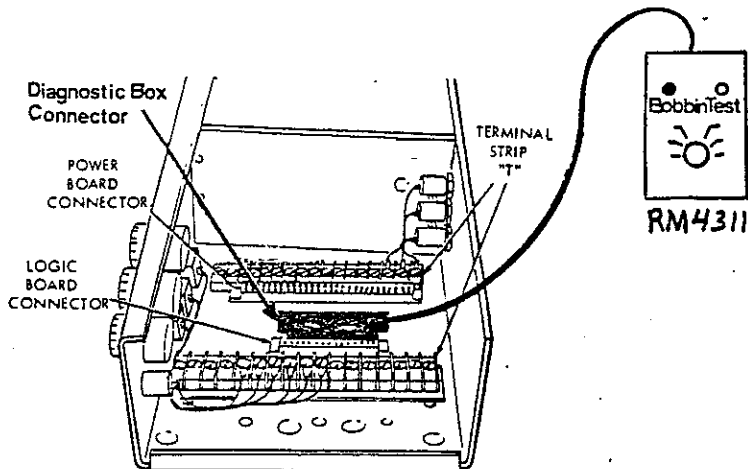
a. Slide-on connector of Black wire to FM fuseholder to terminal 4 of mother board.

b. Slide-on connector of Blue wire to terminal 5 on mother board.

c. Check for proper crimping of slide on connector to wire.

16. Make sure Control and Main Power switches are OFF. With Power Board installed, Logic Board should be removed from machine (observing the proper handling procedure on page 14-1). Plug Connector of Fly Seamer Diagnostics Box into Logic Board connector socket on RM-3618 A Mother Board.

Note: Power Board Remains Connected



17. Make sure fuse "FM" is still good. Replace fuse "FM" if found to be blown.

18. Turn ON Main and Control Power switches. Push the button marked "BOBBIN" on the Diagnostics Box. The Bobbin Winder Motor should operate as long as test button is depressed.

If Bobbin Winder motor OPERATES when button is depressed, Logic Board RM-3619 U is defective and must be replaced.

19. If Bobbin Winder Motor does NOT operate with Diagnostics Box or if fuse FM still blows, Power Board RM-3897 is defective and must be replaced.

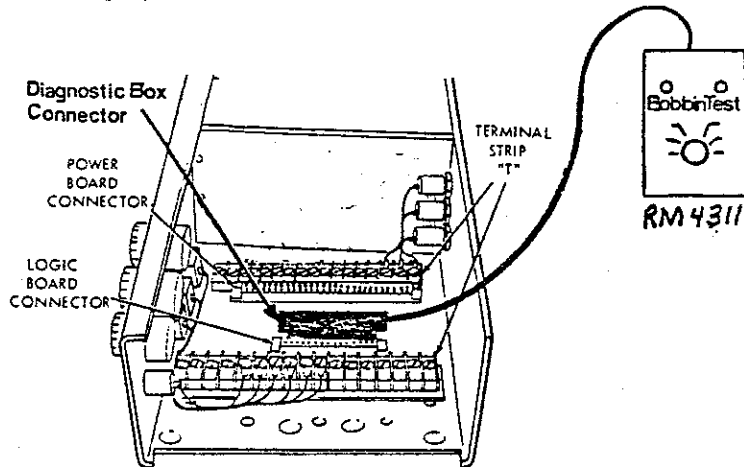
NOTE: A poor connection between a circuit board and the plug-in connector on the (RM-3618 A) Mother Board will produce the same symptom as a faulty circuit board. Before replacing circuit boards, turn off all power and clean circuit board and mother board connectors. Check for continuity between terminal strip and connectors on mother board using diagram on page 13-1B.

B. BOBBIN WINDER MOTOR DOES NOT TURN OFF OR ON TIME CANNOT BE ADJUSTED

1. Turn OFF Control and Main Power switches. Remove Logic Board RM-3619 U from machine observing the proper handling procedure on page 14-1.

2. Plug Connector of Fly Seamer Diagnostics Box into Logic Board connector socket on RM-3618 A Mother Board.

Note: Power Board Remains Connected



3. Turn ON Main and Control Power switches. Push the button marked "BOBBIN" on the Diagnostics Box. The Bobbin Winder Motor should operate when the Bobbin button is depressed and should turn off immediately after button is released.

- If Bobbin Winder Motor does NOT turn OFF immediately after BOBBIN button is released on Diagnostics Box, Power Board RM-3897 is defective and must be replaced.

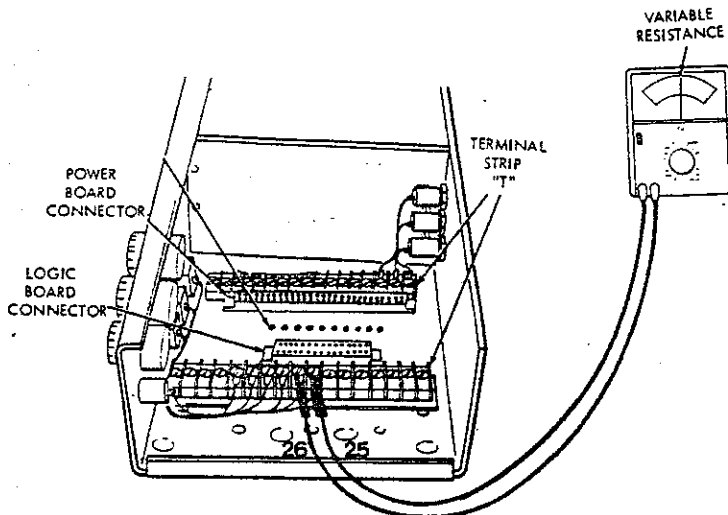
4. If Bobbin Winder Motor TURNS OFF immediately after Bobbin button is released on Diagnostics Box, turn off Control and Main Power switches.

5. With Logic Board still removed from machine and Power off, get ohmmeter and set at Rx1K ohms. Place meter leads on terminals 25 and 26. Observe ohmmeter reading while turning Bobbin Winder Control knob on Control Panel from 0 to 9. Ohmmeter should read approximately 0 ohms with the control on 0 and approximately 350 K ohms with control on 9.

b. Bobbin Winder Control Potentiometer RM-3088-4 is defective and must be replaced.

6. If ohmmeter readings correspond with Bobbin Winder Control, then Logic Board RM-3619 U is defective and must be replaced.

NOTE: A poor connection between a circuit board and the plug-in connector on the RM-3618 A Mother Board will produce the same symptom as a faulty circuit board. Before replacing circuit boards, turn off all power and clean circuit board and mother board connectors. Check for continuity between terminal strip and connectors on mother board using diagram on page 13-1B.



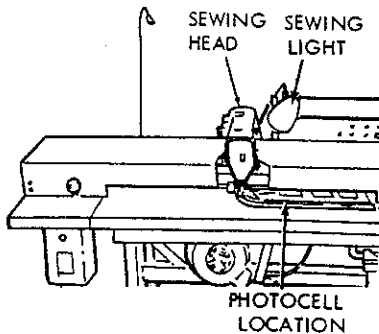
If ohmmeter readings do NOT correspond with Bobbin Winder Control:

a. Check for short or broken wire from terminals 25 and 26 to the Bobbin Winder Control Potentiometer.

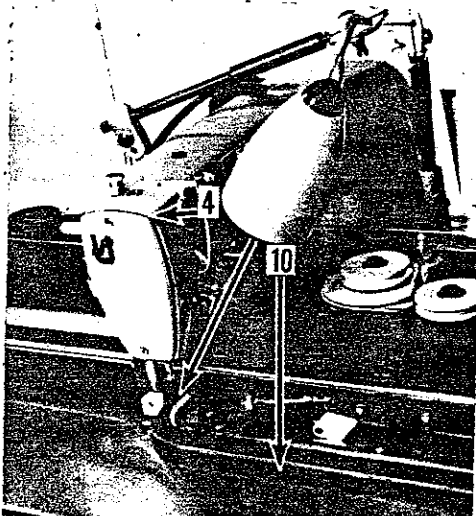
PHOTOCELL MALFUNCTION

A. PHOTOCELL CANNOT BE CALIBRATED

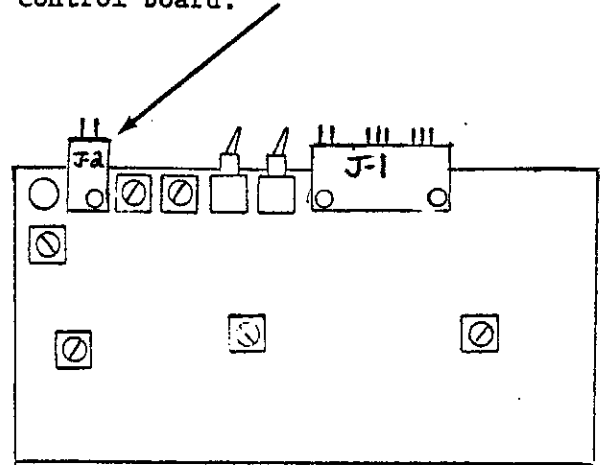
1. Make sure Stainless Steel table top photocell hole lines up with photocell. None of the photocell should be covered by stainless steel table top. If any part of table top covers photocell, loosen photocell bracket screw from bottom of table board and reposition bracket.



2. Turn ON Main Power switch ONLY. Adjust Photocell Light 4 inches to the right of the sewing head and 9-10 inches above the table top. Direct the light to shine in the NEEDLE area.



3. Remove grey plastic Quick Stop motor control box cover and disconnect J2 connector on RM-4372 motor control board.



4. Set ohmmeter on Rx1K and connect meter leads to J2 female plug.

5. Move the CLAMP to LEFT end of its travel EXPOSING THE PHOTOCELL.

6. With photocell exposed, ohmmeter should read from 1000 (1K) to 2000 (2K) ohms. If ohmmeter reading is within the 1000 to 2000 ohm range, go to step 11.

7. If ohmmeter reading is LESS than 1000 ohms, direct photocell light toward needle area. The resistance reading increases with more light and decreases with less light. If ohmmeter reads MORE than 2000 ohms, direct photocell light toward photocell until meter reading is within the 1000 to 2000 ohm range.

NOTE: If photocell light must shine directly on photocell to obtain the proper range, it is a good indication that photocell light bulb should be changed or light switch contacts are dirty.

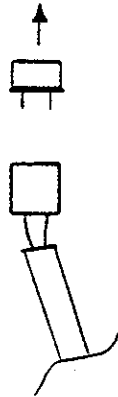
8. If ohmmeter reads 0 ohms:

a. Check for short from photocell connector to J2.

b. If wiring and connector check good, photocell RM-3432 is defective and must be replaced.

9. To replace photocell:

- a. Remove Stainless Steel table top.
- b. Remove screw holding photocell clamp and remove photocell clamp.
- c. Pull photocell out, holding its connector.



10. If ohmmeter reading is GREATER than 2000 ohms with photocell uncovered and photocell light location cannot correct reading:

- a. Check for proper crimp of J2 plug connectors.
- b. Check for break from J2 plug to photocell connector.
- c. Check for proper connection between photocell and plug-in connector, 670 E-294.
- d. If photocell wiring and connector check good, photocell RM-3432 is defective and must be replaced.

11. Cover photocell completely with a coin and meter should read Infinite ohms.

- If meter does NOT read Infinite ohms, photocell RM-3432 is defective and must be replaced.

12. If meter reading changes from 1000 to 2000 ohms (photocell uncovered) to Infinite ohms covered, connect RED and Black wires to their proper mother board terminals.

13. Check Photocell light for changes in light intensity during operation. If photocell light intensity is consistent go to step 13.

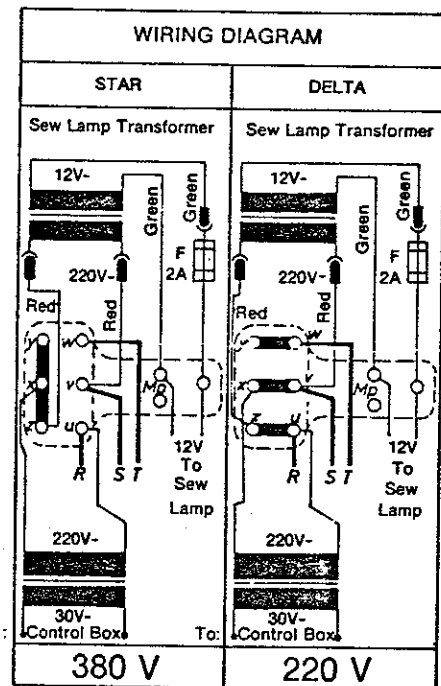
14. If Photocell light intensity varies or if light flickers:

a. Change Photocell light bulb, 21233 HJ.

b. Check Photocell light switch for poor connection. Light intensity should not change when slightly tapping switch.

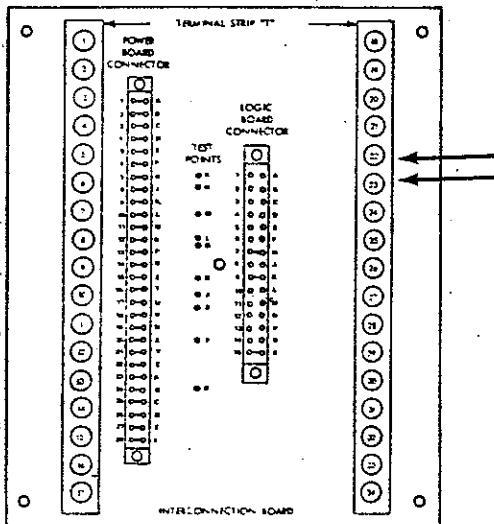
c. Check for proper crimping of slide on connectors to photocell light cable wires.

d. Check wiring and connections from Quick Stop transformer and fuse to photocell light.



15. Reconnect J2 to Quick Stop motor control panel. Make sure MEDIUM SPEED TEST switch is in the RUN position. In the test position, the switch prevents the photocell signal received in the Quick Stop motor control panel from being sent to the logic board.

16. Remove the Control Box cover exposing the logic, power, and mother boards. Remove the Red wire from terminal 22 and the Black wire from terminal 23 of mother board.



17. Make sure clamp is still to the left and the Main Power switch is on. With ohmmeter still set at Rx1K, connect meter leads to the Red and Black wires removed from terminals 22 and 23.

18. Ohmmeter should read between 1K and 2K ohms UNCOVERED and between 2K and 3K ohms COVERED.

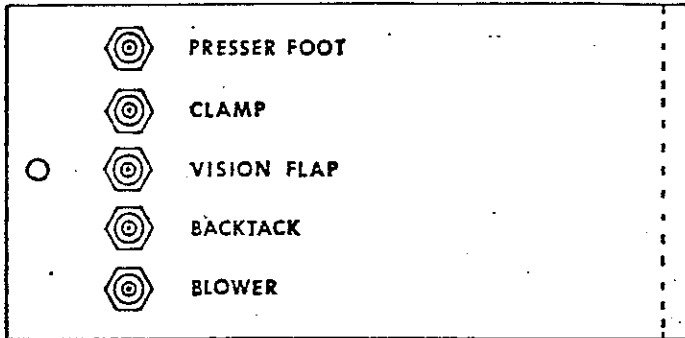
- If ohmmeter READINGS ARE GOOD, Logic Board RM-3619 U is defective and must be replaced..

NOTE: A poor connection between a circuit board and the plug-in connector on the RM-3618 A mother board will produce the same symptom as a faulty circuit board. Before replacing circuit boards, turn off all power and clean circuit board and mother board connectors. Check for continuity between terminal strip and connectors on mother board using diagram on page 13-1B.

VISION FLAP MALFUNCTION

A. VISION FLAP DOES NOT OPERATE

1. Remove air line at outlet side of vision flap air flow control valve. Turn ON Main and Control Power switch.



2. Operate foot switch to first step while observing flow control valve air outlet fitting. Air should be released from valve outlet when foot switch is operated.

IF AIR SUPPLY IS NOT PRESENT, go to step 4.

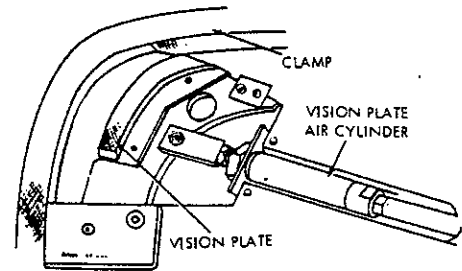
3. IF AIR SUPPLY IS PRESENT:

a. Check for mechanical bind on vision flap pivot. Pivot bracket screws may be loose or grease may be needed on pivot pin.

b. Check for mechanical bind between vision flap and clamp or clamp rubber strip.

c. Check for nick on vision flap cylinder shaft or bind in cylinder.

d. Check condition and adjustment of vision flap mounting cylinder.

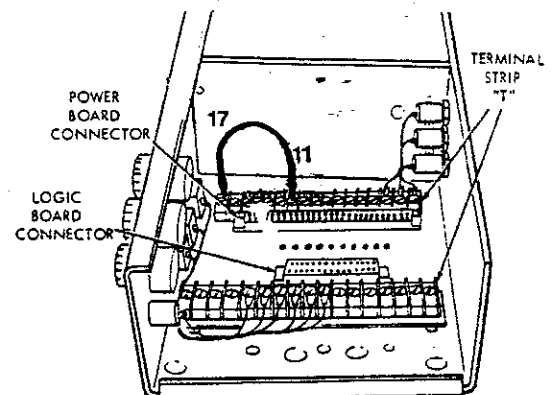


e. Check for leak or kink in air tube from solenoid to vision flap cylinder.

f. Check flow control valve. Free Flow must be in the direction of the vision flap cylinder.

4. With Main and Control Power switches ON, place one end of jumper wire on terminal 17 on mother board, RM-3618 A.

Note: Power Board Remains Connected



5. Momentarily touch other end of jumper wire to terminal 11 of terminal strip. Air should turn on.

- IF VISION FLAP AIR TURNS ON, go to step 7.

6. IF VISION FLAP AIR DOES NOT TURN ON:

a. Check Vision Flap solenoid wiring for broken wires or loose connections (refer to wiring diagram, page 13-1).

b. Replace vision flap solenoid (use repair kit RM-4184).

7. Remove jumper wire and turn OFF Control and Main Power switches.

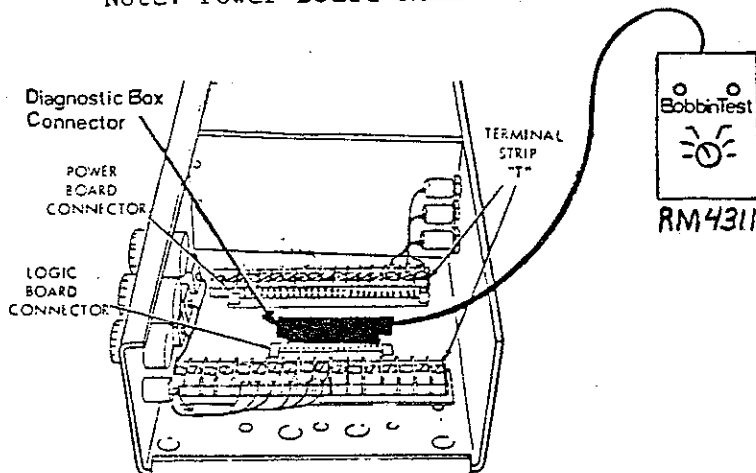
8. Remove Logic circuit board from machine observing the proper handling method (refer to page 14-1).

9. Plug diagnostic board connector into logic board connector on mother board. Turn ON Main and Control Power switches.

WARNING: Turn OFF Control and Main Power switches before replacing circuit boards.

Note: A poor connection between a circuit board and the plug-in connector on the RM-3618 mother board will produce the same symptom as a faulty circuit board. Before replacing circuit boards, turn off all power and clean circuit board and mother board connectors. Check for continuity between terminal strip and connectors on mother board using diagram on page 13-1B.

Note: Power Board Remains Connected



10. Turn selector switch on diagnostic board to "CLAMP" and press the "Test" button. Vision Flap air should turn on and clamp should lower.

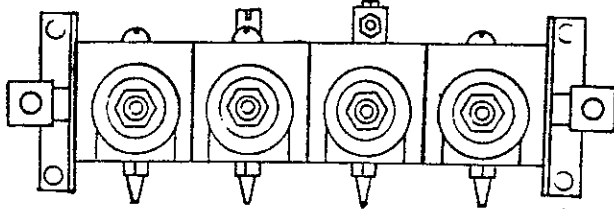
a. IF VISION FLAP AIR TURNS ON, Logic Board is defective and must be replaced.

b. IF VISION FLAP AIR DOES NOT TURN ON, Power Board or connectors are defective and must be replaced.

THREAD WIPER MALFUNCTION

A. NO AIR TO THREAD WIPER BLOWER

1. Remove Control Box cover and disconnect the air hose from the Thread Wiper Blower solenoid. Turn ON Main and Control Power switch.

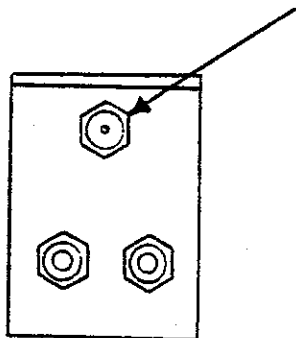


2. Depress foot switch to the first position and check for presence of air at Thread Wiper solenoid valve.

- If NO air is present at Thread Wiper solenoid valve, go to step 6.

3. If air IS present at solenoid valve:

a. Check for kink or leak in air hose from Therad Wiper Blower flow control to in-line connector mounted to underside of table board.



b. Check for kink or leak in 1/8 inch air hose from in-line connector to end of wiper blower tubing on clamp assembly. Make sure tubing is not under outer curve rubber clamp assembly.

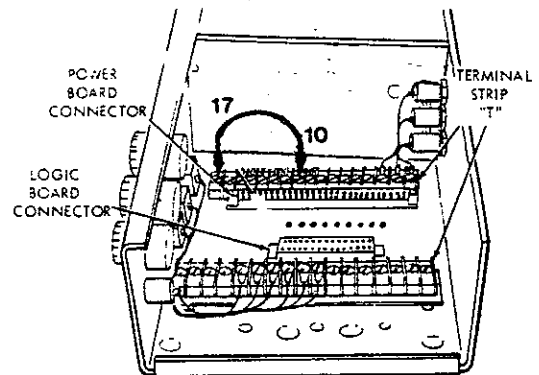
4. Turn knob on Thread Wiper flow control valve fully counterclockwise (open) and depress foot switch to first position.

- If air is now present at flow control valve, reconnect air hose. Problem was improper adjustment of flow control valve.

5. If air is still not present, remove flow control and check for presence of air at the removed air hose when foot switch is depressed. If air is present, 671-34 flow control valve is defective.

6. If no air is present, reconnect tubing to flow control and in-line connector. Place a jumper wire from terminal 17 to terminal 10 on RM-3618A mother board. Thread wiper blower air should turn on.

NOTE: Circuit boards remain connected.



If Thread Wiper Blower air turns ON, go to step 8.

7. If Thread Wiper Blower air does NOT turn on:

a. Check for break in White/Black wire from terminal 10 of mother board to the terminal of the wiper solenoid. Check for proper crimping of terminals to White/Black wire.

b. If White/Black wire checks good, Thread Wiper Blower solenoid valve operator assembly RM-4184 or wiring to coil is defective.

8. Turn OFF Control and Main Power switches and remove jumper wire. Remove Logic Board RM-3629 U from mother board, observing the proper circuit board handling procedure on page 14-1. Plug Fly Seamer diagnostic box connector into Logic Board connector on mother board.

9. Turn ON Main and Control Power switches and move rotary switch on Diagnostics Box to the "Air Blow" position. Push "Test" button on Diagnostic Box and Thread Wiper Blower air should turn on.

- If Thread Wiper Blower turns ON, Logic Board RM-3619 U is defective and must be replaced.

- If Thread Wiper Blower does NOT turn on, Power Board RM-3897 is defective and must be replaced.

NOTE: A poor connection between a circuit board and the plug-in connector on RM-3618 A mother board will produce the same symptom as a faulty circuit board. Before replacing circuit boards, turn off all power and clean circuit board and mother board connectors. Check for continuity between terminal strip and connector on mother board using diagram on page 13-1B.

BACKTACK MALFUNCTION

A. MACHINE DOES NOT BACKTACK OR DOES NOT STOP BACKTACKING, OR MACHINE STOPS, THEN TACKS FORWARD WHEN SET TO BACKTACK

NOTE: Check for proper system pressure 45 to 55 P.S.I.

1. Check setting of backtack controls. BACKTACK switch should be set to YES position and potentiometer should not be in full counterclockwise setting.

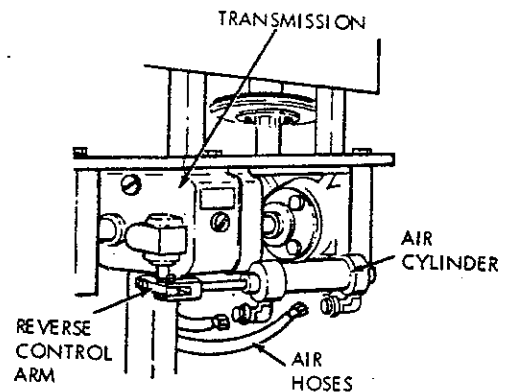
2. If either control is not properly set, reset control and recheck equipment. If machine operates properly, there are no defects in equipment.

3. If control settings are correct, remove cover from control box. Get a jumper wire with insulated ends and turn ON Main and Control Power switches.

4. Place one end of the jumper wire on terminal 17 of mother board. Place the end of the jumper wire on connectors of the backtack solenoid. Backtack cylinder should retract when jump is made and extend when released.

- If Backtack cylinder RETRACTS, go to step 9.

5. If Backtack cylinder does NOT retract, turn OFF Control and Main Power switches and disconnect air supply to machine. Manually move Backtack air cylinder in and out checking for binds in cylinder or Zero-Max transmission.



6. If bind is present, adjust Zero-Max transmission reversing lever height and travel (refer to page 8-7). If bind is still present after adjusting lever, remove clevis pin and move transmission lever and backtack cylinder shaft separately to trace bind.

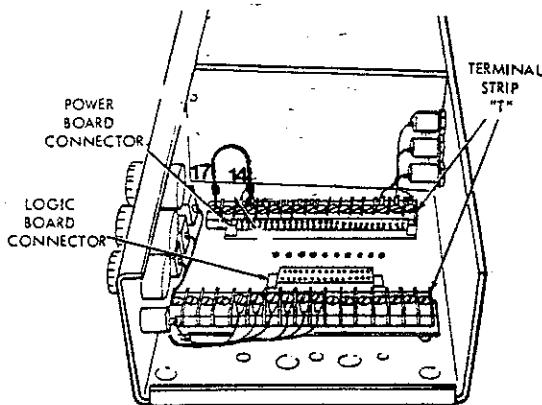
If bind is felt in Zero-Max transmission, replace RM-3522 transmission. If bind is felt in cylinder, replace RM-3535 cylinder.

7. If no bind is felt in transmission and cylinder assembly, check for leak or kink in air lines from backtack solenoid to backtack cylinder.

8. If air tubing to backtack cylinder checks good, check or replace backtack solenoid pilot valve RM-4186 and coil with plunger RM-4186.

9. If backtack cylinder retracts in step 4, remove jumper wire from solenoid connectors and jump from terminal 17 to 14 on mother board. Backtack cylinder should retract when terminals are jumped.

NOTE: Circuit boards remain connected.



- If Backtack cylinder RETRACTS, go to step 11.

10. If Backtack cylinder does NOT retract with 14 and 17 jumped:

a. Make sure Backtack Selector switch on control panel is in "YES" position.

b. Check for broken wire from terminal 14 to Backtack Selector switch and to solenoid connectors. Check for proper crimping of terminal connectors to wires.

c. If switch wiring checks good, Backtack Selector switch RM-3627 is defective and must be replaced.

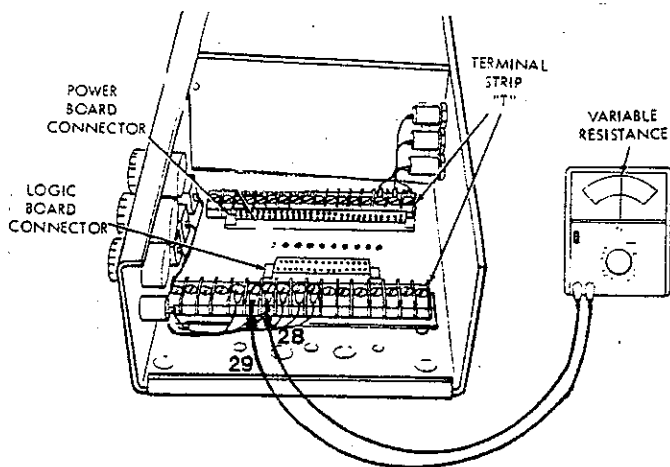
11. Turn OFF Control and Main power switch and remove jumper wires. Remove Logic Board RM-3629 U from mother board observing the proper circuit board handling procedure on page 14-1.

12. Plug connector of Fly Seamer Diagnostics box into Logic connector of mother board, RM-3628 A. Move Rotary Selector switch on Diagnostics Box to the "Backtack" position. Turn ON Main and Control Power switches (Main air supply connected). Push "Test" button on Diagnostics Box and backtack air cylinder should retract.

If Backtack air cylinder RETRACTS, go to step 14.

13. If Backtack air cylinder does NOT retract, Power Board RM-3897 is defective and must be replaced (see Step 17 before replacing circuit board).

14. Turn OFF Control and Main Power switches and get an ohmmeter. Set ohmmeter on Rx1K and connect meter leads to terminals 28 and 29 of mother board. With Backtack Selector switch in "YES" position, ohmmeter should read approximately 0 ohms when Backtack length adjustment is at 0 (fully counterclockwise). Turn Backtack length adjustment knob clockwise and resistance reading should increase. When adjustment knob is at 9 (full clockwise) ohmmeter should read approximately 500 K ohms.



- If Ohmmeter readings are CORRECT, go to step 16.

15. If ohmmeter readings are NOT correct:

- a. Check for proper crimping of terminal connector to red wire on terminal 28 and White/Red wire on terminal 29.
- b. Check for short or break in wiring from terminals 28 and 29 to Backtack Selector switch to Backtack length potentiometer.
- c. Check Backtack Selector switch for proper make or break action.
- d. If all above checks good, replace Backtack length potentiometer RM-3088-8.

16. If ohmmeter readings are CORRECT, Logic Board RM-3619 U is defective and must be replaced.

17. NOTE: A poor connection between a circuit board and the plug-in connector on the RM-3628 A mother board will produce the same symptom as a faulty circuit board. Before replacing circuit boards, turn off all power and clean circuit board and mother board connectors. Check for continuity between terminal strip and connectors on mother board using diagram 13-1B.

STOPPING MALFUNCTION

A. MACHINE STOP POSITION VARIES, STOPS BEFORE OR BEYOND PRE-SELECTED POSITION ON GARMENT

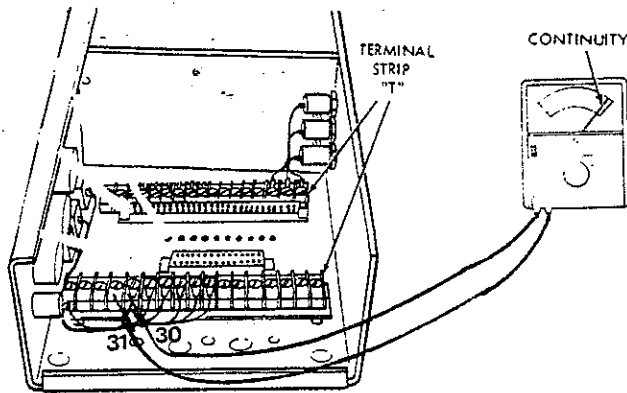
1. Check location of Photocell Light and calibrate photocell sensitivity (refer to pg. 6-1).

NOTE: If machine does not start after adjusting photocell sensitivity, re-adjust sensitivity until unit starts. If unit will then not stop, try adjusting potentiometer B (page 6-1). If photocell cannot be calibrated, refer to "Photocell Malfunction" page 15-26.

2. If Photocell is adjusted properly and photocell light intensity is consistent and does not flicker, turn OFF Control and Main Power switches.

3. Remove control box cover and remove Logic Board observing the proper handling procedure described on page 14-1. Set ohmmeter on RX 10K or appropriate scale to read 150 K ohms. Place ohmmeter probes on terminals 30 and 31 of mother board. Turn both coarse adjustment potentiometers (adjusted by screwdriver through access hole in control panel) and fine adjustment potentiometers (Stop Position 1 and Stop Position 2) full counterclockwise. Ohmmeter should read 0 ohms when selector switch is in number 1 position and 34K in number 2 position.

If ohmmeter reads okay, go to step 6.



4. If ohmmeter reads Infinite ohms with selector switch in number 1 and 2 position:

- a. Check for break in brown wire from terminal 30 to selector switch.
- b. Check for proper crimp of spade terminal to brown wire.
- c. Check for proper solder connection of brown wire to selector switch.
- d. Replace selector switch RM-3627.

5. If ohmmeter reads Infinite ohms with selector switch in one position but Zero ohms in the other position:

- a. Check for break in White/Black/Brown wire from terminal 31 to potentiometer.
- b. Check for proper crimp of spade terminal to White/Black/Brown wire.
- c. Check for proper solder connections of wire to stop potentiometers and selector switch.
- d. Check for proper function of selector switch RM-3627.

6. If ohmmeter reads 0 ohms, place selector switch in Position 1. With meter leads connected to terminals 30 and 31, turn coarse potentiometer 1 full clockwise. Meter reading should increase as potentiometer is turned from 0 to approximately 100 K Ohms ($\pm 10\%$). Turn Stop Position 1 potentiometer clockwise and meter should read approx. 150 K Ohms ($\pm 10\%$).

7. Place selector switch to position 2. With meter leads on terminals 30 & 31, a meter reading of 34K Ohms should be read. Turn coarse potentiometer fully clockwise. Meter reading should increase to a reading of 134K ohms ($\pm 10\%$). Turn stop position 2 potentiometer fully clockwise and meter should read approximately 185 K Ohms ($\pm 10\%$).

If steps 6 and 7 are not correct:

- a. Check for proper solder connections to selector switch and potentiometer.
- b. Make sure wire terminals of potentiometers do NOT make contact with the metal chassis of the control box causing a short.
- c. Check for shorts or broken wire from selector switch to potentiometers.
- d. Check selector switch for proper switching without affecting resistance (caused by poor internal contacts).
- e. Check potentiometers for proper action. Internal contacts may be dirty or worn causing inconsistent resistance from potentiometer.
- f. Check resistor on stop position potentiometer #2. This should read 34K Ohms ($\pm 10\%$).

8. If potentiometers and selector switch check good, disconnect ohmmeter leads. Sew a dummy sample and inspect stitch length for any variation. Remove the two black connectors to the Quick Stop drive motor cylinder and run another dummy sample observing the clamp movement. If clamp moves smoothly and stitch length is consistent, go to step 10. Reconnect black connectors to Drive Motor.

9. If stitch length varies or clamp does not move smoothly, go to Troubleshooting page 15-13 "C. Machine Runs but Clamp does not Move or Moves Erratically."

10. Sew another dummy sample and observe the high speed of the machine. If machine speed does NOT vary, go to step 11.

- If High Speed VARIES, go to Troubleshooting, Page 15-42 "G. Machine Sews Slower than Normal High Speed, Gradually Goes from Slow to High Speed, or Varies in Speed."

11. Turn OFF Control and Main Power switches. Remove Logic Board RM-3619 U from machine observing the proper handling procedure on page 14-1.

12. Plug Connector of Fly Seamer Diagnostics Box into Logic Board connector socket on RM-3628 A Mother Board.

NOTE: Power Board remains connected.

13. Turn ON Main and Control Power switches and move rotary switch on Diagnostics Box to the "Fast Sew" position. Place a dummy sample under clamp and push "Test" button. Clamp will lower and machine will sew at high speed. Release "Test" button and machine should immediately stop, position, and trim.

- If machine stops immediately, go to step 15.

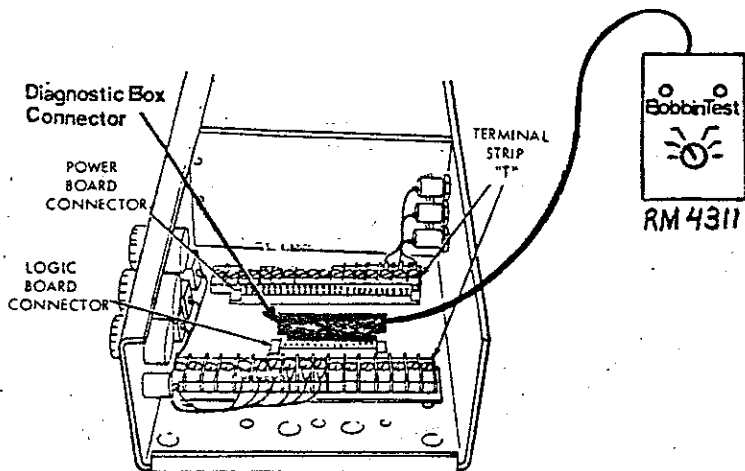
14. Turn ON Main and Control Power switches. Place Clamp Thread Switch in THREAD position. Connect one end of a jumper wire to terminal strip 17 and the other end of the jumper wire to terminal strip 13. Machine will sew at high speed. Remove jumper wire and machine should stop immediately.

- If machine stops IMMEDIATELY, power board RM-3897 is defective and must be replaced.

15. If no fault is found and machine continues to vary in stopping, Logic Board RM-3619 U is defective and must be replaced.

NOTE: A poor connection between a circuit board and the plug-in connector on the RM-3618 A Mother Board will produce the same symptom as a

faulty circuit board. Before replacing circuit boards, turn off all power and clean circuit board and mother board connectors. Check for continuity between terminal strip and connectors on mother board using diagram on page 13-1B.



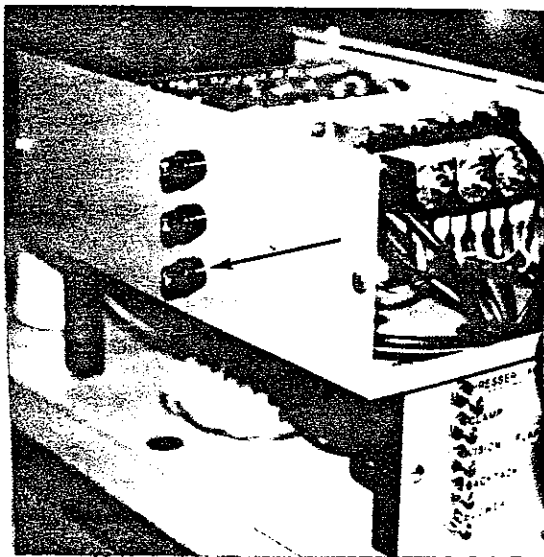
QUICK MOTOR MALFUNCTIONS

A. MACHINE SEWS ONLY AT POSITIONING SPEED, NO HIGH SPEED

NOTE: Make sure black quick disconnect connectors are connected.

1. Place a piece of scrap material under clamp and disconnect air supply.

2. Turn ON Main and Control Power switches. Remove control box cover, exposing the mother board terminal strips. Remove bobbin case, needle, and unthread machine. Remove FM fuse from back of control box.



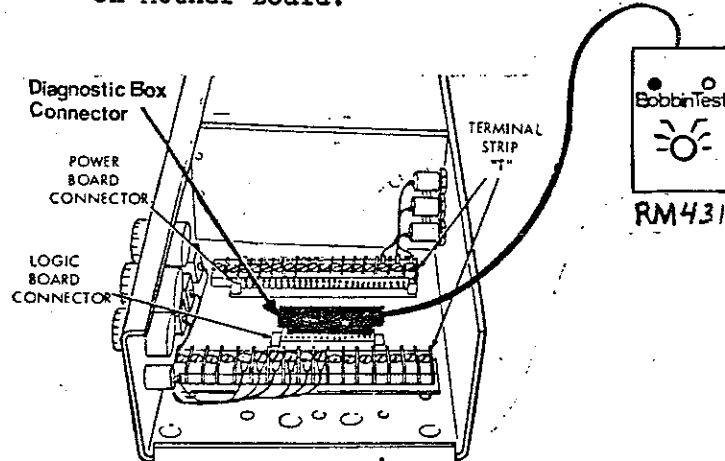
3. To energize high speed sewing, connect one end of jumper wire to terminal 17 of mother board. Connect other end of jumper wire to terminal 13 and motor will run at high speed. Note: Clamp will start to move just through curve of clamp and then stop because clamp return switch will de-energize electric clutch.

4. Disconnect jumper wires and turn OFF Control and Main Power switches. Install FM fuse.

- If motor does NOT go into HIGH SPEED, go to step 5.

- If motor DOES GO INTO HIGH SPEED:

a. With power OFF, remove Logic Board RM-3619 U from mother board observing the proper circuit board handling procedure on page 14-1. Plug Fly Seamer Diagnostic Box connector into Logic Board connector on Mother Board.

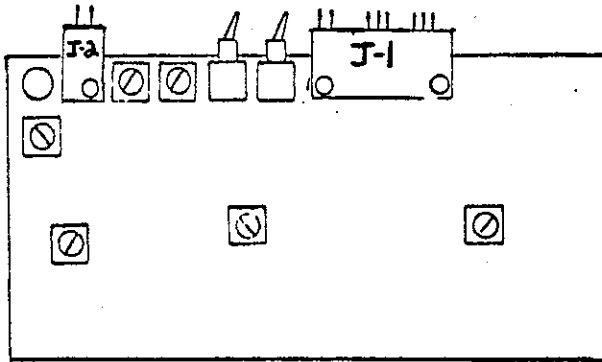


b. Turn ON Main and Control Power switches and move rotary switch on Diagnostics Box to the "Fast Sew" position. Push "Test" button on Diagnostics Box and clamp should lower and machine should sew at high speed.

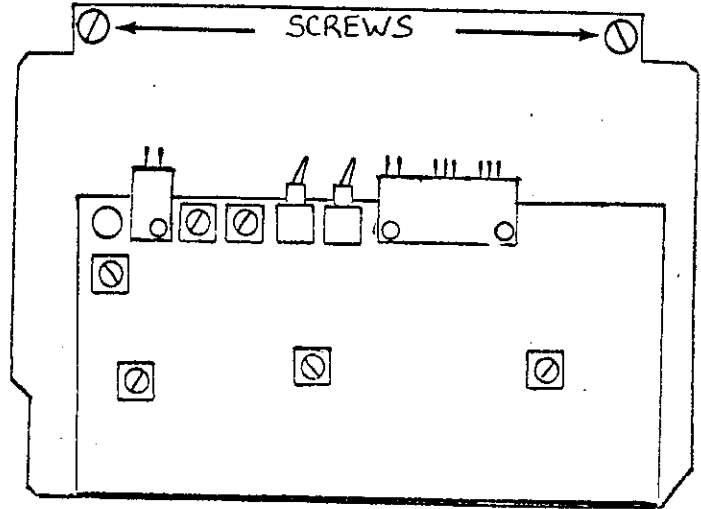
- If machine sews at high speed, Logic Board RM-3619 U is defective and must be replaced.
- If machine does NOT sew at high speed, Power Board RM-3897 is defective and must be replaced.

NOTE: A poor connection between a circuit board and the plug-in connector on the RM-3618 A mother board will produce the same symptom as a faulty circuit board. Before replacing circuit boards, turn off all power and clean circuit board and mother board connectors. Check for continuity between terminal strip and connector on mother board using diagram on page 13-1B.

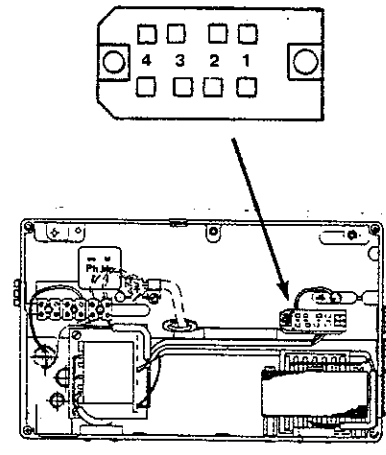
5. Check plug for synchronizer or clutch/brake for proper insertion.
6. With power off, remove all plugs to the motor control panel and tension discs and knife solenoids. Remove grey plastic cover by removing 4 screws. Disconnect J1 and J2 connectors.



7. Unscrew top left and right screws holding circuit board to box. Tilt back circuit board several inches, lift up and remove from machine.



8. Connect ohmmeter to the bottom sockets 3 and 4 of the Quick Stop motor control panel connector.



9. Turn ON Main and Control power switches. In the REST position, the ohmmeter should read INFINITE ohms resistance.
10. Connect one end of jumper wire to terminal 17 and the other end to terminal 13 of mother board. With 13 and 17 jumped, ohmmeter should read 0 ohms resistance.

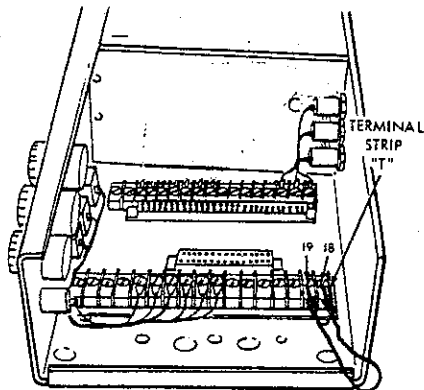
-If ohmmeter reads 0 ohms resistance, RM-4372 motor control panel is defective and must be replaced.

-If ohmmeter reads INFINITE ohms with 13 and 17 jumped:

- a. Turn OFF Control and Main Power switches.
- b. Check for proper crimp connections of black plastic disconnects.
- c. Check wiring from terminals 4 and 13 to relay board and bottom sockets 3 and 4 of motor control board connector.
- d. If wiring checks good, replace relay board.

B. UNIT DOES NOT SEW AT START OF SEWING. (CLAMP GOES DOWN, SLIGHT PAUSE, THEN HIGH SPEED)

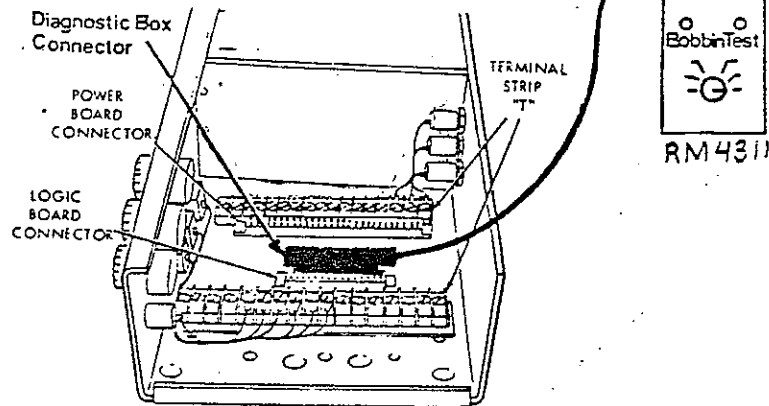
1. Turn ON Main Power Switch ONLY (no Control Power) and disconnect air supply to machine to lower clamp mechanism. Remove Control Box cover.
2. Using a jumper wire, jump terminals 18 and 19 on Mother Board. Motor should run at slow speed.



JUMP

-If Motor does NOT run at slow speed, go to step 7.

3. If Motor RUNS at slow speed, remove jumper wires and turn OFF Main Power switch.
4. With all power OFF, remove RM-3619 U Logic Board from machine, observing the proper handling procedure (page 14-1).
5. Plug connector of Fly Seamer Diagnostics Box into Logic board connector on Mother Board RM-3618A. Place rotary selector switch on Diagnostics Box in the "Slow Sew" position.



NOTE: Power Board remains connected.

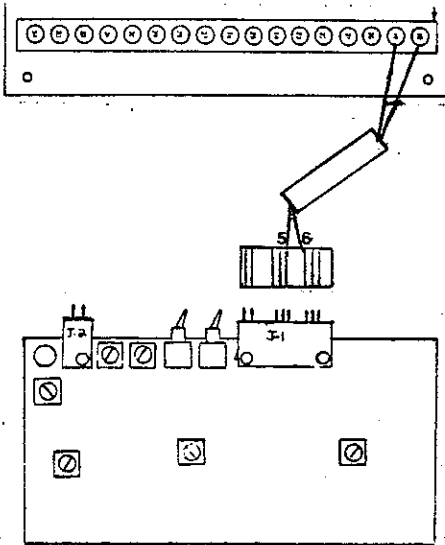
6. Turn ON Main and Control Power switches and connect air supply to unit. Push the TEST button on the Diagnostics Box and machine should sew slowly.

-If machine SEWS slowly, Logic Board RM-3619 U is defective and must be replaced.

-If machine does NOT sew slowly, Power Board RM-3897 is defective and must be replaced.

NOTE: A poor connection between a circuit board and the plug-in connector on the RM-3618 A mother board will produce the same symptom as a faulty circuit board. Before replacing circuit boards, turn off all power and clean circuit board and mother board connectors. Check for continuity between terminal strip and connector on mother board using diagram on page 13-1B.

7. Check wiring from terminals 18 and 19 on Mother Board to J-1 connector on Quick Stop Motor Control Panel for broken wire or loose connection.



8. Check for proper positioning and high speed adjustments (refer to page).

9. Check for proper operation of synchronizer.

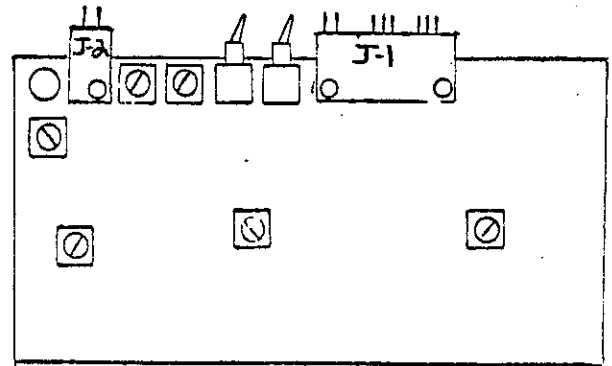
10. If everything checks good, replace RM-4372 Motor Control Panel.

11. To remove motor control panel RM-3272 for replacement:

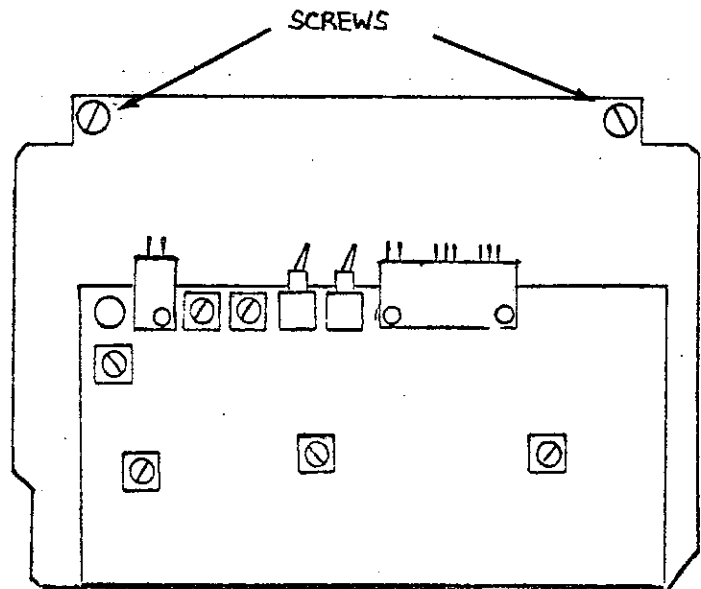
a. Turn OFF Control and Main Power switches.

b. Remove all plugs to the motor control panel. Disconnect Tension Disc (green) and Knife (white) connectors.

c. Remove grey plastic cover by removing 4 screws. Disconnect J1 and J2 connectors.



d. Unscrew top left and right screws holding circuit board to box. Tilt back circuit board several inches, lift up and remove from machine.



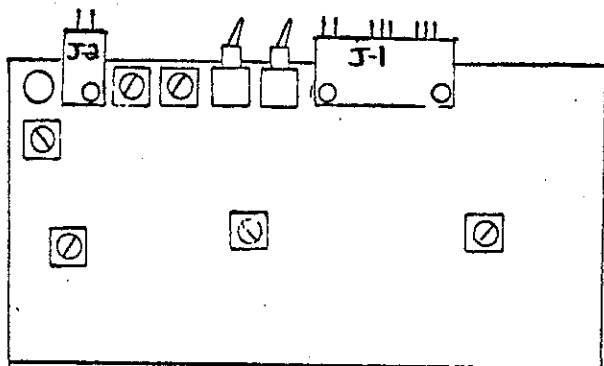
C. MOTOR RUNS BUT CLUTCH DOES NOT ENGAGE. (Clamp goes down, no sewing, clamp does not move and will remain down until emergency stop button is pressed.)

1. Check for proper insertion of plug for synchronizer or clutch/brake.

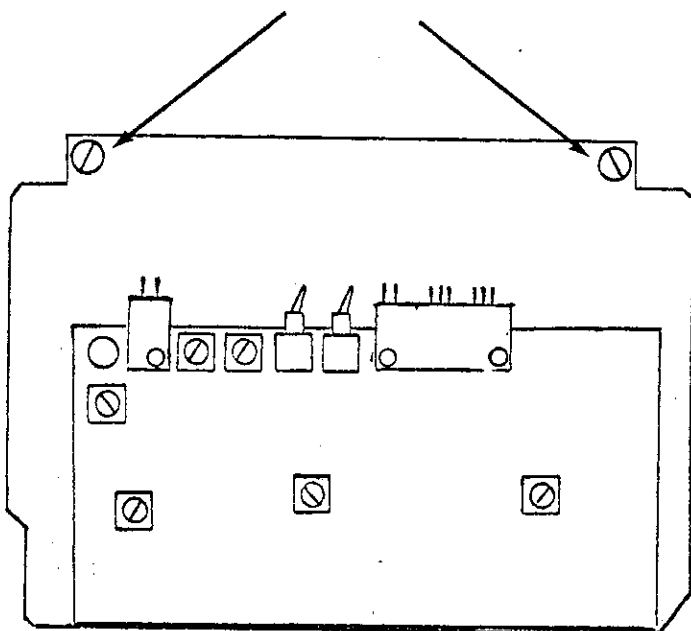
D. MOTOR DOES NOT GO INTO MEDIUM SPEED

1. Remove Motor Control Box Cover and make sure Medium Speed ON/OFF switch is in the ON position (away from operator).
2. Check medium speed adjustment and medium speed delay adjustment (refer to page 10-2).
3. If medium speed is still not present, replace RM-4372 motor control panel.
4. To remove motor control panel RM-4372 for replacement:

- a. Turn OFF Control and Main power switches.
- b. Remove all plugs to the motor control panel. Disconnect Tension Disc (Green) and Knife (white) connectors.
- c. Remove grey plastic cover by removing 4 screws. Disconnect J1 and J2 connectors.

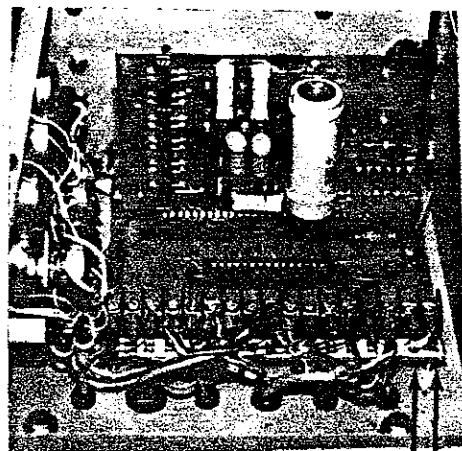


d. Unscrew top left and right screws holding circuit board to box. Tilt back circuit board several inches, lift up and remove from machine.



E. MACHINE CONTINUES TO POSITION DURING CLAMP RETURN

1. Turn OFF CONTROL and MAIN Power switches and DISCONNECT AIR supply to machine to lower clamp mechanism. Remove Control Box cover.
2. Remove terminals 18 and 19 on Mother Board.



3. Turn ON MAIN POWER switch ONLY and touch the two spade connector ends of the wires removed together. Motor should run at slow speed. Separate wires and motor should stop.

- If MOTOR STOPS after wires are separated, power board RM-3897 is defective and must be replaced.

NOTE: A poor connection between a circuit board and the plug-in connector on the RM-3618 A Mother Board will produce the same symptom as a faulty circuit board. Before replacing circuit boards, turn off all power and clean circuit board and mother board connectors. Check for continuity between terminal strip and connectors on mother board using diagram on page 13-1B.

- If MOTOR CONTINUES TO RUN,

a. Check positioning speed. Positioning speed should be 195 RPM and never above 200 RPM. If adjustment is necessary, refer to page 10-4.

2. Check motor speed adjustments, Section 10.

3. Faulty control panel RM-4372.

4. Faulty synchronizer, 998-324.

F. MACHINE POSITIONS UP AT END OF CYCLE
BUT TRIM KNIFE AND/OR TENSION DISC
SOLENOIDS DO NOT ACTIVATE

1. Problem most likely Quick Motor panel (RM-4372).

2. Check connections from Quick Panel to the solenoids.

3. Check synchronizer adjustments, refer to page 10-5.

G. MACHINE SEWS SLOWER THAN NORMAL
HIGH SPEED, GRADUALLY GOES FROM
SLOW TO HIGH SPEED, OR VARIES IN
SPEED

1. Check for a load or a bind in the sewing head, pulleys, and drive belts. Also check belt tension.



Union Special[®]
INDUSTRIAL SEWING MACHINES

UNION SPECIAL maintains sales and service facilities throughout the world. These offices will aid you in the selection of the right sewing equipment for your particular operation. Union Special representatives and service men are factory trained and are able to serve your needs promptly and efficiently. Whatever your location, there is a Union Special Representative to serve you. Check with him today.

ATLANTA, GA.

BOSTON, MASS.

CHICAGO, ILL.

DALLAS, TEXAS

LOS ANGELES, CAL.

NEW YORK, N. Y.

PHILADELPHIA, PA.

MONTREAL, CANADA

TORONTO, CANADA

BRUSSELS, BELGIUM

LEICESTER, ENGLAND

LONDON, ENGLAND

PARIS, FRANCE

STUTT GART, GERMANY

Representatives and distributors in all important industrial cities throughout the world.

Union Special[®]
CORPORATION

400 N. FRANKLIN ST., CHICAGO, ILL. 60610