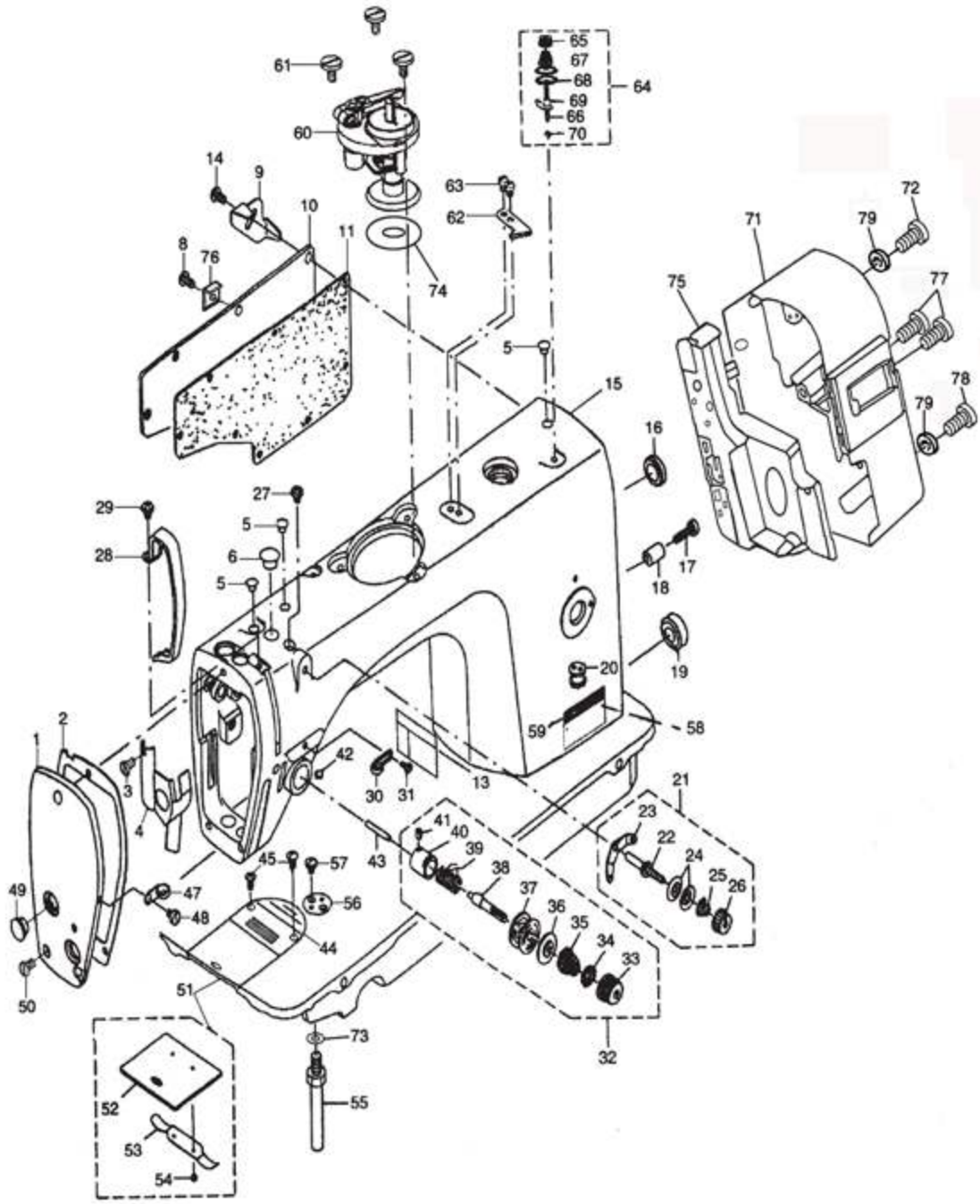
TYPICAL

GC6870 SERIES

SINGLE NEEDLE DIRECT DRIVE LOCK
STITCHER WITH THREAD TRIMMER
INSTRUCTION BOOK
PARTS CATALOGUE

XI'AN TYPICAL INDUSTRIES CO.,LTD.

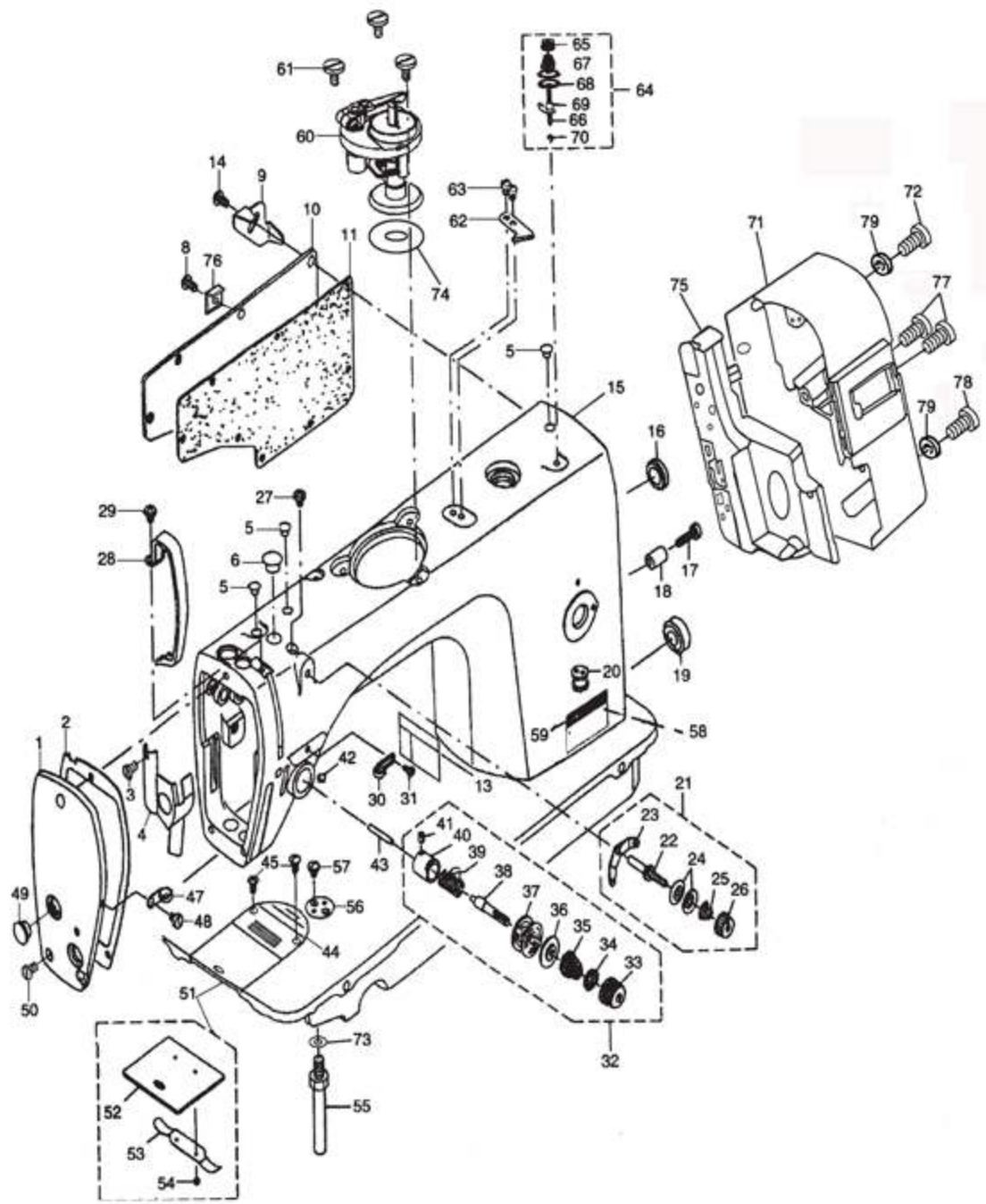
1.ACHINE FRAME & MISCELLANEOUS COVER COMPONENTS



1. MACHINE FRAME & MISCELLANEOUS COVER COMPONENTS

No.	Ref.No.	Description	Qt.		Note
			M	H	
1	262120003	Face plate	1	1	
2	262100001	Face plate gasket	1	1	
3	262100002	Screw 1/8x44 L=4	1	1	
4	262100004	Arm oil shield asm.	1	1	
5	262100005	Rubber plug	3	3	
6	262100006	Rubber plug	1	1	
8	262100008	Screw 3/16x28 L=9	3	3	Not available with 6870A
9	262100010	Cord holder	1	1	Not available with 6870A
10	262120005	Side plate	1	1	
11	262100011	Gasket	1	1	
13	QT0000044	Safety label	1	1	
14	262100012	Screw 3/16x28 L=14	11	11	6870A Qt.14
15	262110000	Machine cover	1	1	
16	262100013	Rubber plug	1	1	
17	262100014	Screw 3/16x28 L=18	1	1	
18	262100015	Reverse feed lever stopper	1	1	
19	262100016	Rubber plug	1	1	
20	262100017	Magnet cord rubber	1	1	
21	262120000	Thread tension asm.	1	1	
22	262120012	Thread tension post	1	1	
23	262120013	Thread tension guide	1	1	
24	262120014	Thread tension disk	2	2	
25	262120015	Thread tension spring	1	1	
26	262120016	Thread tension nut	1	1	
27	262100027	Screw 3/16x28 L=6	1	1	
28	262120007	Thread take–up lever cover	1	1	
29	262100018	Screw 3/16x28 L=6	1	1	
30	262100019	Arm thread guide right	1	1	
31	262100020	Screw 11/64x40 L=6	1	1	
32	262130000	Thread tension asm.	1		
	262A13000	Thread tension asm.		1	
33	262130001	Tension nut	1	1	
34	262130002	Rotating stopper	1	1	
35	262130003	Tension spring	1	1	
36	262130009	Thread tension disk presser	1	1	
37	262130004	Thread tension disk	2	2	
38	262130005	Tension post	1	1	
39	262130006	Take–up spring	1	1	
40	262130007	Tension post socket	1	1	
41	262130008	Screw 9/64x40 L=5.5	1	1	
42	262100021	Screw 15/64x28 L=7	1	1	
43	262100039	Tension releasing	1	1	
44	262100023	Throat plate	1		
	262A10001	Throat plate		1	
45	262100024	Screw 11/64x40 L=6	2	2	

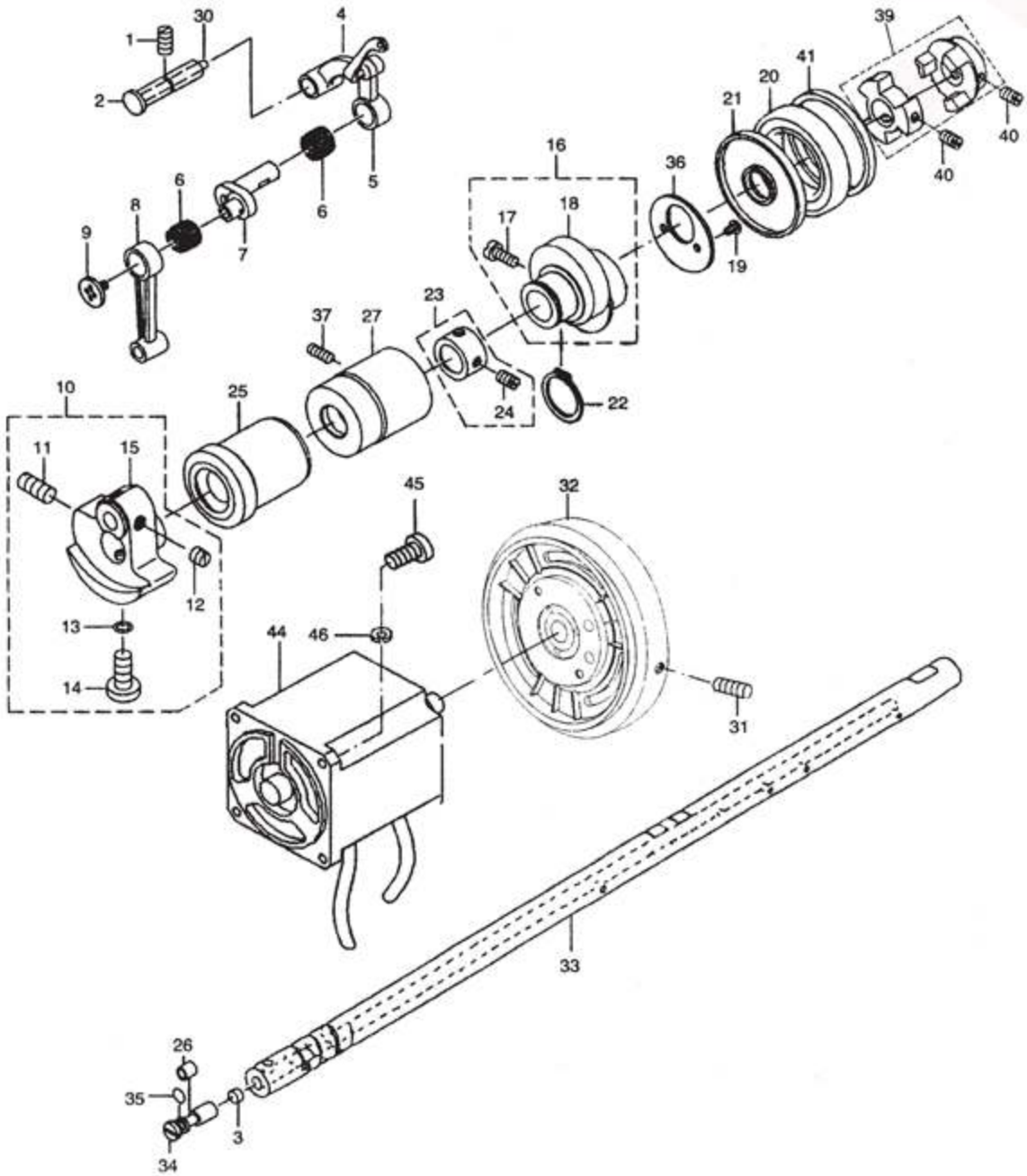
1. MACHINE FRAME & MISCELLANEOUS COVER COMPONENTS



1. MACHINE FRAME & MISCELLANEOUS COVER COMPONENTS

No.	Ref.No.	Description	Qt.		Note
			M	H	
47	262100025	Arm thread guide left	1	1	
48	262100020	Screw 11/64x40 L=6	1	1	
49	262100040	Ribber plug	2	2	
50	262100008	Screw 3/16x28 L=9	3	3	
51	262140000	Slide plate asm.	1	1	
52	262140001	Slide plate	1	1	
53	262140002	Bed slide spring	1	1	
54	262140003	Screw 3/32x56 L=2.2	2	2	
55	048100005	Bed screw stud	4	4	
56	262100031	Ruler stopper	1	1	
57	262100032	Screw 11/64x40 L=6	2	2	
58	BXF8899009	Pole	2	2	
59	198000020	Model plate	1		
	198000021	Model plate		1	
60	262150000	Bobbin base	1	1	
61	262100033	Screw	3	3	
62	262100035	Knife	1	1	
63	262100036	Knife screw	2	2	
64	262160000	Thread tension asm.	1	1	
65	262160001	Tension nut	1	1	
66	262160002	Tension post	1	1	
67	262160003	Tension spring	1	1	
68	262160004	Thread tension disk presser	2	2	
69	262160005	Thread tension guide	1	1	
70	262160006	Tension nut	1	1	
71	262120004	Motor cover	1	1	For 6870
	268G10002	Motor cover	1	1	For 6870A
72	262100037	Screw	3	3	Not available with 6870A
73	262100030	Spring washer	2	2	
74	262100034	Oil seal	1	1	
75	268G12000	Controller assembly	1		
	268G13000	Controller assembly		1	
76	262100009	Cord holder	1	1	Not available with 6870A
77	S150209176	Screw GB70.1–2000M5×25	3	3	For 6870A
78	S150209177	Screw GB70.1–2000M5×35	1	1	For 6870A
79	S150607009	Washer	2	2	For 6870A
80	268G10004	Cord holder	1	1	For 6870A
81	268G10005	Cord holder	1	1	For 6870A

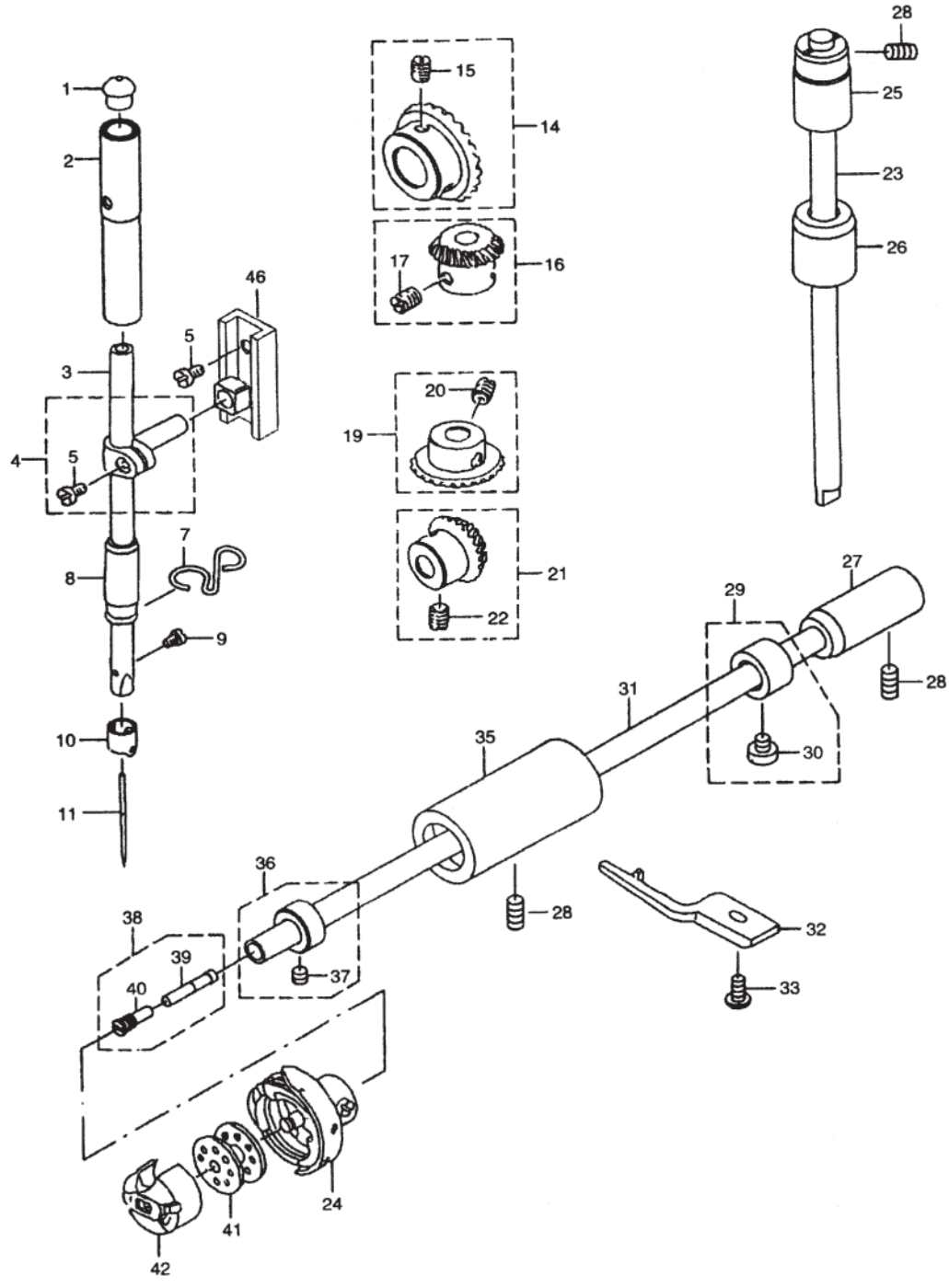
2. MAIN SHAFT & THREAD–UP LEVER COMPONENTS



2. MAIN SHAFT & THREAD–UP LEVER COMPONENTS

No.	Ref.No.	Description	Qt.		Note
			M	H	
1	262200001	Screw 15/64x28 L=10.5	1	1	
2	262210001	Thread take–up crank shaft	1		
	262A21001	Thread take–up crank shaft		1	
3	262190013	Roller felt	1	1	
4	262210002	Thread take–up lever	1		
	262A21002	Thread take–up lever		1	
5	262210003	Thread take–up lever asm.	1		
	262A21003	Thread take–up lever asm.		1	
6	262160005	Needle bearing	2	2	
7	262210004	Needle bar crank	1		
	262A21004	Needle bar crank		1	
8	262210005	Needle bar crank rod	1		
	262A21005	Needle bar crank rod		1	
9	262210006	Left screw 9/64x40 L=4.8	1		
	262A21006	Left screw 9/64x40 L=4.8		1	
10	262220000	Counter weight asm.	1	1	
11	262200033	Screw 9/23x28 L=16	1	1	
12	262200030	Screw 1/4x40 L=6	2	2	
13	262200031	Rubber ring	1	1	
14	262200032	Screw 9/23x28 L=15.5	1	1	
15	262200029	Counter weight	1	1	
16	262230000	Feed drive eccentric cam asm.	1	1	
17	262230001	Screw 1/4x40 L=11	2	2	
18	262230002	Feed drive eccentric cam	1	1	
19	262200002	Left screw 9/64x40 L=6	2	2	
20	262200003	Needle bearing	1	1	
21	262200004	Oil seal	1	1	
22	262200005	Snap ring	1	1	
23	262240000	Thrust collar asm.	1	1	
24	262220002	Screw 1/4x40 L=6	2	2	
25	262200006	Main shaft front bushing asm.	1	1	
26	262200007	Oil adjusting collar	1	1	
27	262200008	Bushing,intermediate	1	1	
30	262120009	Thread take–up crank shaft felt	1	1	
31	262200011	Screw 15/64x28 L=10	1	1	
32	262120007	Hand wheel	1	1	For 6870
	268G12007	Hand wheel	1	1	For 6870A
33	262200012	Main shaft	1	1	
34	262180014	Oil amount adjusting pin	1	1	
35	262170015	Rubber ring	1	1	
36	262160016	Thrust collar	1	1	
37	022100013	Screw	1	1	
39	268130000	Coupling assy	1	1	
40	262120020	Screw	6	6	
41	262110021	Needle bearing plate	1	1	
44	262120002	Motor asm.	1		For 6870
	262A22000	Motor asm.		1	For 6870
	268G21000	Motor asm.	1		For 6870A
	268G22000	Motor asm.		1	For 6870A
45	26200024	Screw	4	4	
46	26200025	Washer	4	4	
47	26200026	Spring washer	4	4	

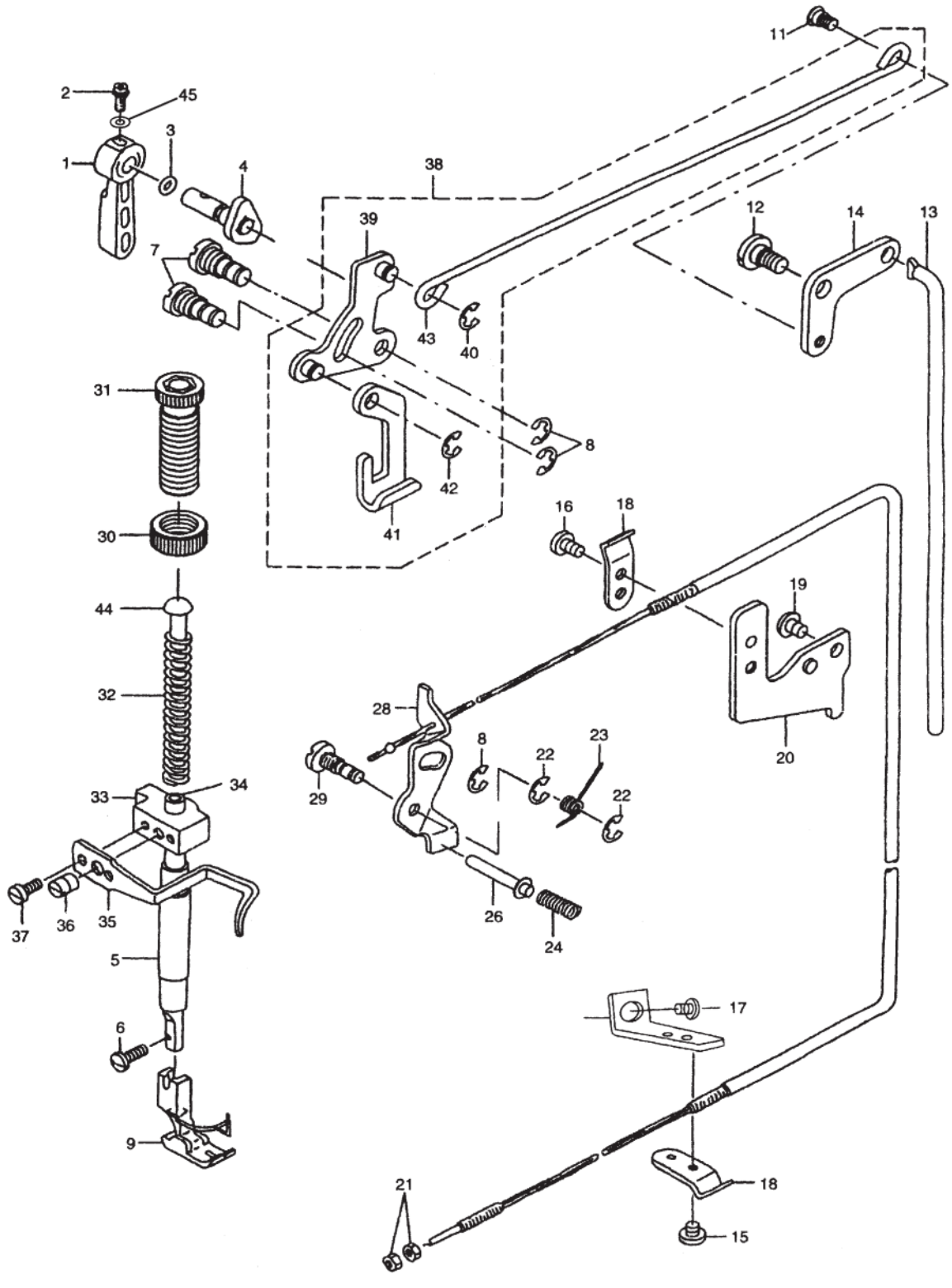
3. NEEDLE BAR UPRIGHT SHAFT & HOOK DRIVING SHAFT COMPONENTS



3. NEEDLE BAR UPRIGHT SHAFT & HOOK DRIVING SHAFT COMPONENTS

No.	Ref.No.	Description	Qt.		Note
			M	H	
1	262300001	Cap	1	1	
2	262300002	Needle bar bushing upper	1	1	
3	262300003	Needle bar	1		
	262A30001	Needle bar		1	
4	262310000	Needle rod holder asm.	1		
	262A31000	Needle rod holder asm.		1	
5	262310001	Screw 9/64x40 L=7.5	1	1	
6	262300004	Slide block	1	1	
7	262300005	Needle bar thread guide	1	1	
8	262300006	Needle bar bushing,lower	1		
	262A30002	Needle bar bushing,lower		1	
9	262300007	Screw 1/8x44 L=4.8	1	1	
10	262300008	Needle bar thread guide	1		
	048200004	Needle bar thread guide		1	
11	S150901001	Needle DBX 1 # 14	1		
	S150901002	Needle DBX 1 # 14		1	
14	Z0A180891	Gear asm.	1	1	
15	022220003	Screw 1/4x40 L=8	2	2	
16	Z0A180892	Pinion asm.	1	1	
17	022220003	Screw 1/4x40 L=8	2	2	
19	Z0A180885	Gear asm.	1	1	
20	022220003	Screw 1/4x40 L=8	2	2	
21	Z0A180886	Pinion asm.	1	1	
22	022220003	Screw 1/4x40 L=8	2	2	
23	262300009	Upright shaft	1	1	
24	165410000	Hook asm.	1		
	165420000	Hook asm.		1	
25	262120010	Upright shaft bushing, upper	1	1	
26	262300010	Upright shaft bushing, lower	1	1	
27	262120009	Bushing rear	1	1	
28	262100021	Screw 3/16x28 L=7	3	3	
29	262340000	Thrust collar asm.	2	1	
30	262340002	Screw 11/64x40 L=5	1	2	
31	262300011	Lower shaft	1	1	
32	262300012	Bobbin case holder	1	1	
33	022640003	Screw 11/64x40 L=9.5	1	1	
35	262300015	Lower shaft front metal	1	1	
36	262540000	Thrust collar asm	2	1	
37	262340002	Screw 11/64x40 L=3.5	1	2	
38	262360000	Oil seal screw asm.	1	1	
39	262360001	Oil wick	1	1	
40	262360002	Oil seal screw	1	1	
41	036400006	Bobbin	1	1	
42	165440000	Bobbin case	1	1	
46	262300018	Slide block base	1	1	
47	022200019	Screw	2	2	

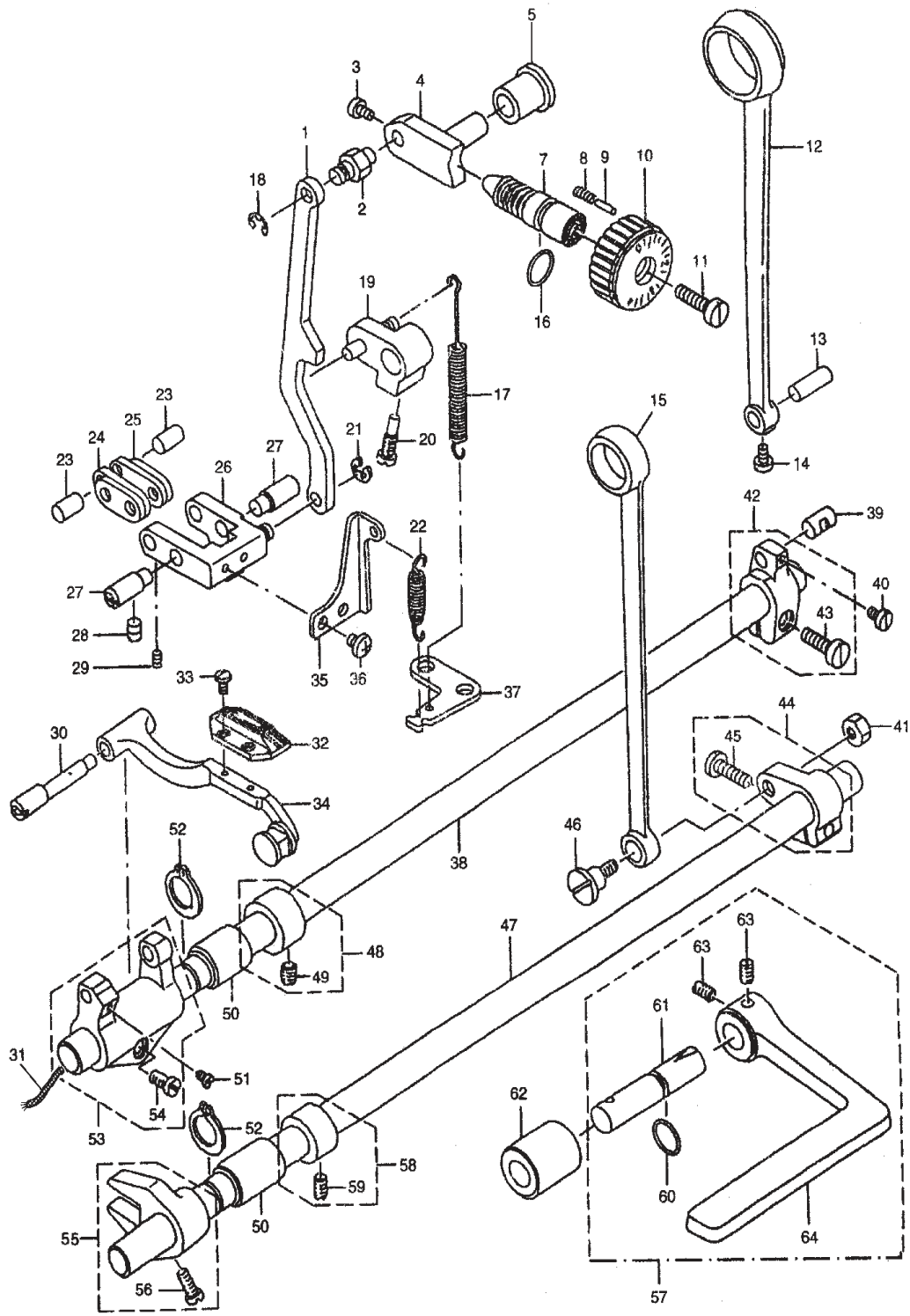
4. HAND LIFTER COMPONENTS



4. HAND LIFTER COMPONENTS

No.	Ref.No.	Description	Qt.		Note
			M	H	
1	262400001	Hand lifter	1	1	
2	262400002	Screw 9/64×40L=10	1	1	
3	262400004	Rubber ring	1	1	
4	262400005	Hand lifter cam asm	1	1	
5	262400006	Presser bar bushing lower	1	1	
6	262400012	Screw 9/64×40L=8	1	1	
7	262400007	Link shaft	2	2	
8	262400009	E–ring 5	3	3	
9	262400010	Presser foot asm	1		
	262A40001	Presser foot asm		1	
11	262400014	Hinge screw	1	1	
12	262400015	Hinge screw	1	1	
13	262400016	Knee lifter connecting rod	1	1	
14	262400017	Lifter lever link	1	1	
16	262400018	Screw 11/64×40L=5	1	1	
17	262400019	Screw 15/64×28L=14.5	1	1	
18	102.04–18	Wire holder	2	2	
19	262400020	Screw 3/16×28L=6	1	1	
20	262400023	Wire holder bracket, upper	1	1	
21	262400032	Nut 3/16×32	2	2	
22	262400024	E–ring 5	2	2	
23	262400025	Tension release return spring	1	1	
24	262400026	Thread release pin spring	1	1	
26	262400028	Tension release supporting pin	1	1	
28	262400031	Thread tension release wire	1	1	
29	262400033	Tension release shaft	1	1	
30	022750001––J	Presser adjusting screw nut	1	1	
31	022750002––J	Presser spring regulator	1	1	
32	230100021	Presser adjusting spring	1		
	BX97549909	Presser adjusting spring		1	
33	262400035	Presser bar guide bracket	1	1	
34	262400036	Presser bar	1	1	
35	262400037	Presser bar thread guide	1	1	
36	262400038	Screw 1/4×40L=8	1	1	
37	262400039	Screw 9/64×40L=8	2	2	
38	262410000	Knee lifter cross rod asm	1	1	
39	262410001	Hand lifter link	1	1	
40	262410002	E–ring 5	2	2	
41	262410003	Lifting lever	1	1	
43	262410005	Knee lifting cross rod	1	1	
44	262400046	Presser guide bar	1	1	
45	262400003	Washer	1	1	

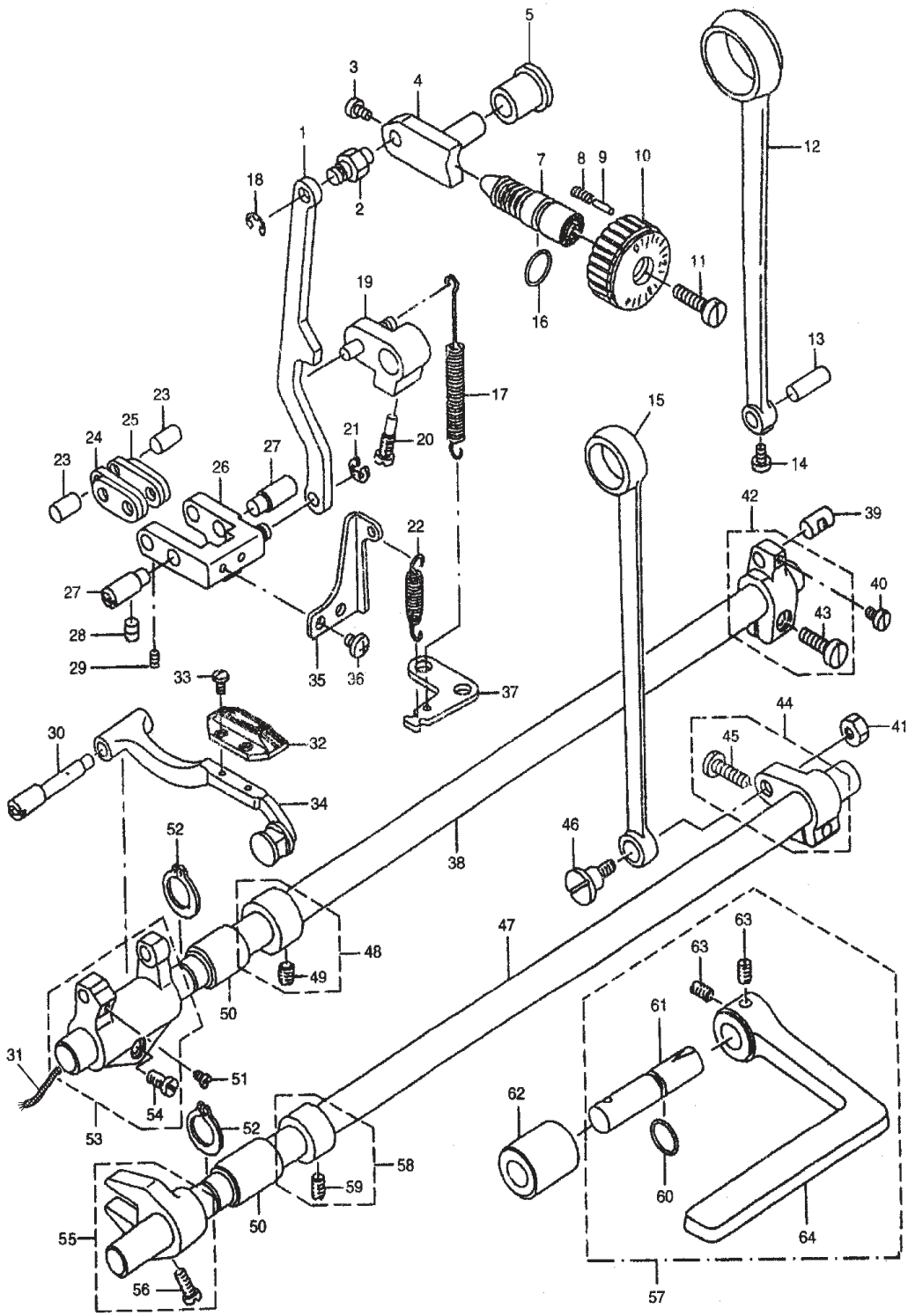
5. FEED MECHANISM COMPONENTS



5. FEED MECHANISM COMPONENTS

No.	Ref.No.	Description	Qt.		Note
			M	H	
1	262500001	Feed adjust rod	1	1	
2	262500002	Feed regulator pin	1	1	
3	262100036	Screw 9/64*40L=6	2	2	
4	262500004	Feed regulator	1	1	
5	262500007	Feed regulator bushing	1	1	
7	262500008	Feed regulator screw	1	1	
8	262500009	Spring	1	1	
9	262500010	Feed adjust pin	1	1	
10	262500011	Feed dial	1		
	262A50002	Feed dial		1	
11	262500012	Screw3/16*28L=18	1	1	
12	262500013	Rocker shaft connecting rob	1	1	
13	262500014	Walking foot long pin	1	1	
14	262500015	Screw 9/64*40L=4	1	1	
15	262500016	Connecting rod	1	1	
16	262500017	Rubber ring	1	1	
17	262500018	Feed reverse spring	1	1	
18	262500019	E-ring 5	1	1	
19	262500020	Feed reverse arm asm	1	1	
20	262500021	Screw	11	11	
21	262500022	E-ring 5	1	1	
22	262500023	Spring	1	1	
23	262500024	Walking foot short pin	2	2	
24	262500025	Connecting link long pin	2	2	
25	262500026	Connecting link short pin	2	2	
26	262500027	Feed adjust link asm	1	1	
27	262500028	Adjusting link fulcrum shaft	2	2	
28	262200001	Screw 15/64*28L=7	2	2	
29	262500015	Screw 9/64*40L=4	2	2	
30	262510002	Feed bar shaft	1	1	
31	W180101039	Oil wick	1	1	
32	262500033	Feed dog 1	1		
	262A50001	Feed dog 1		1	
33	262500034	Screw 1/8*44L=6	2	2	
34	262510000	Feed bar asm	1	1	
35	262500038	Adjusting link spring guide	1	1	
36	262500039	Screw 1/8*44L=5	2	2	
37	262500040	Feed spring hood	1	1	
38	262500041	Feed rocker shaft	1	1	
39	262500042	Walking foot middle pin	1	1	
40	262100036	Screw 9/64*40L=6	1	1	
41	262500044	Nut 9/32*28	1	1	
42	262520000	Feed rocker shaft crank asm	1		
	262A52000	Feed rocker shaft crank asm		1	
43	262520001	Screw 3/16*28L=15.5	1	1	
44	262530000	Lifting rocker asm	1	1	
45	262520001	Screw 3/16*28l=14	1	1	
46	262500045	Hinge screw	1	1	

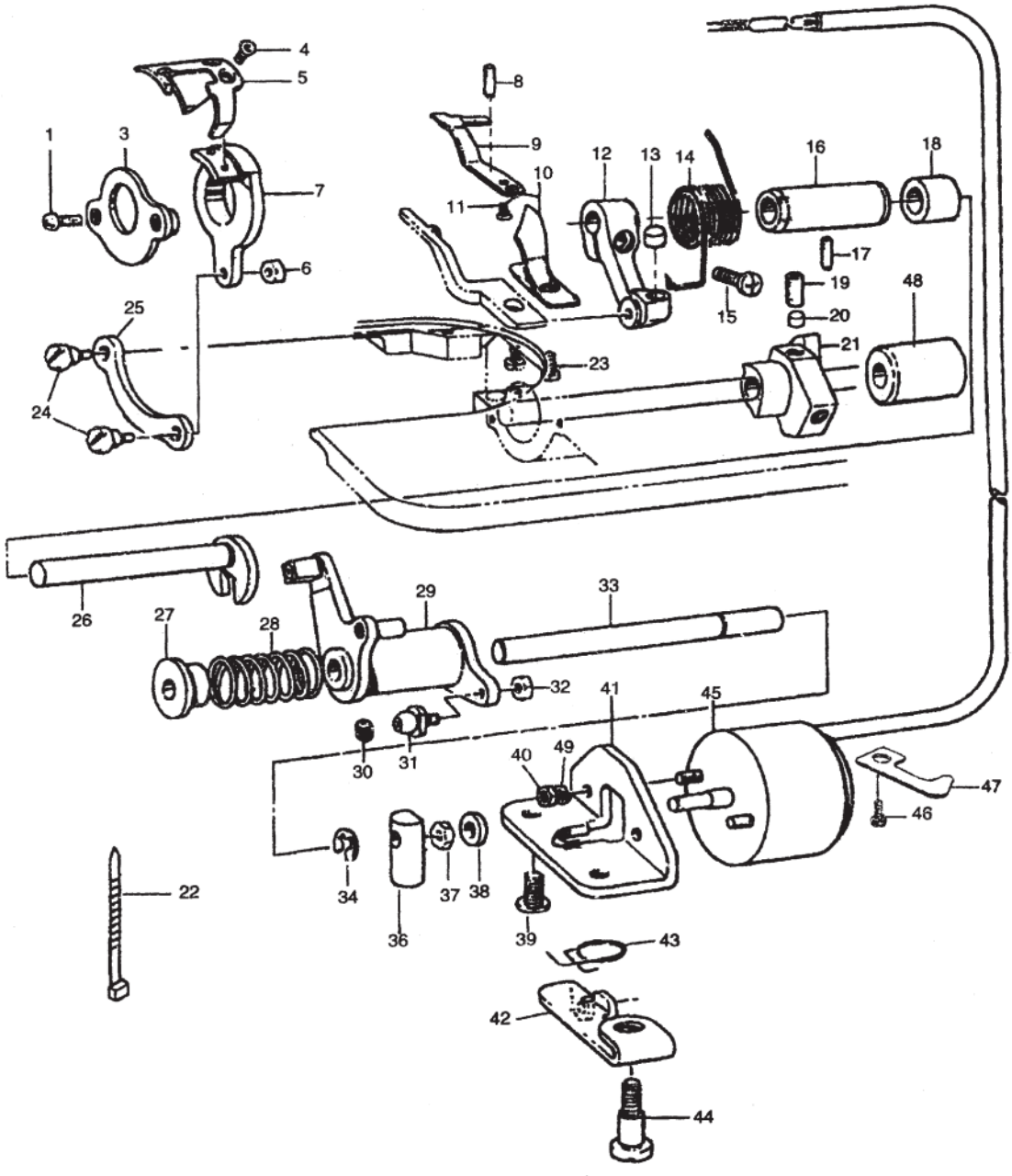
5. FEED MECHANISM COMPONENTS



5. FEED MECHANISM COMPONENTS

No.	Ref.No.	Description	Qt.		Note
			M	H	
47	262500046	Feed driving shaft	1	1	
48	262550000	Thrust collar asm.	1	1	
49	262220002	Screw 1/4x40 L=6	1	1	
50	262500047	Feed rocker shaft bushing	2	2	
51	262500035	Screw 11/64x40 L=7	2	2	
52	262500048	Retaining ring	2	2	
53	262510000	Feed bar crank asm.	1	1	
54	262220001	Screw 3/16x28 L=14	1	1	
55	262510004	Driving shaft crank asm.	1	1	
56	262500036	Screw 11/64x40 L=10.5	1	1	
58	262550000	Thrust collar asm.	1	1	
59	262220002	Screw 1/4x40 L=6	2	2	
60	262500049	Rubber ring	1	1	
61	262500050	Feed reverse shaft	1	1	
62	262500007	Feed lever metal	1	1	
63	022100013	Screw 1/4x40 L=8.5	2	2	
64	262120005	Reverse feed control lever	1	1	

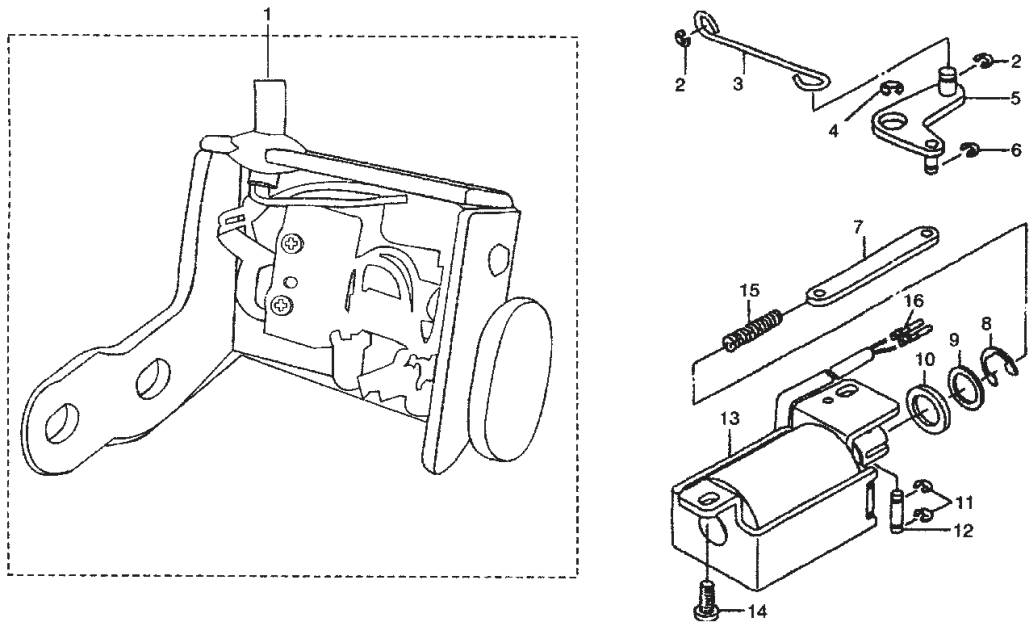
6. THREAD TRIMMER COMPONENTS



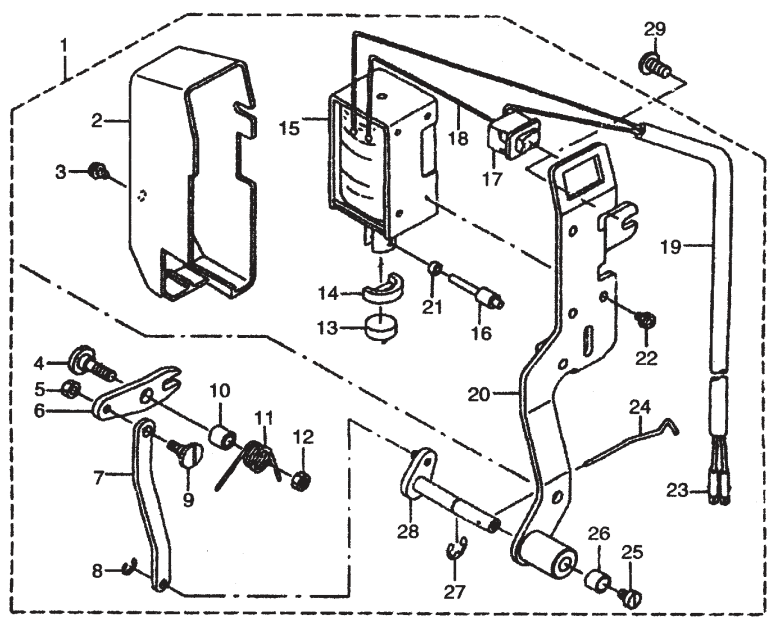
6. THREAD TRIMMER COMPONENTS

No.	Ref.No.	Description	Qt.		Note
			M	H	
1	262600001	Screw SM11/64×40L=12	1	1	
3	262600003	Partiality shank asm	1	1	
4	262100004	Screw	2	2	
5	262600005	Motorial knife	1		
	262A60001	Motorial knife		1	
6	262600006	Nut SM11/64×40	1	1	
7	262600007	Knife bracket	1	1	
8	262600008	Screw	1	1	
9	262600009	Secant knife	1	1	
10	262600010	Protect needle patch	1	1	
11	262600011	Screw SM9/64×40=4	1	1	
12	262610001	Thread shear rock arm	1	1	
13	262610002	Positioning block	1	1	
14	262600012	Spring	1	1	
15	262600013	Screw SM3/16×32L=14	2	2	
16	262600014	Thread shear cam rock arm assy	1	1	
17	262600015	Screw SM11/64×40	1	1	
18	262600016	Short bush	1	1	
19	262600017	Screw SM1/4×40L=10	1	1	
20	262600018	Pole	2	2	
21	262600019	Thread shear cam	1	1	
22	262600020	Bale band	1	1	
23	262610002	Screw SM9/64×40L=5	1	1	
24	262600021	Screw SM11/64×40L=5.5	2	2	
25	262600022	Knife shaft connecting rod	1	1	
26	262600023	Thread shear rock arm shaft	1	1	
27	262600024	Spring cover	1	1	
28	262600025	Spring	1	1	
29	262610000	Thread shear rock arm shaft	1	1	
30	262610003	Screw SM11/64×40	1	1	
31	262610004	Rool shaft assy	1	1	
32	1262610005	Nut	1	1	
33	262600028	Thread shear shaft	1	1	
34	262600029	Retaining ring	1	1	
36	262620002	Magnetic plug pin	1	1	
37	262620003	Nut SM1/4×40	1	1	
38	262620004	Washer	1	1	
39	262620005	Screw	1	1	
40	262620006	Nut M4	2	2	
41	262620007	Magnetic plug cushion mat	1	1	
42	262600033	Thread loose seat	1	1	
43	262600034	Spring	1	1	
44	262600035	Screw SM1/4×28L=13	1	1	
45	262620008	Magnetic plug	1	1	For 6870
	268G61001	Magnetic plug	1	1	For 6870A
46	262600030	Screw SM1/4×28L=14.5	1	1	
47	262600031	Electrical plug breacker washer	1	1	
48	262600032	Bushing, lower shaft	1	1	
49	262620009	Washer 4.5×8×0.5	2	2	

7. AUTOMATIC REVERSE FEED COMPONENTS



8. WIPER COMPONENTS



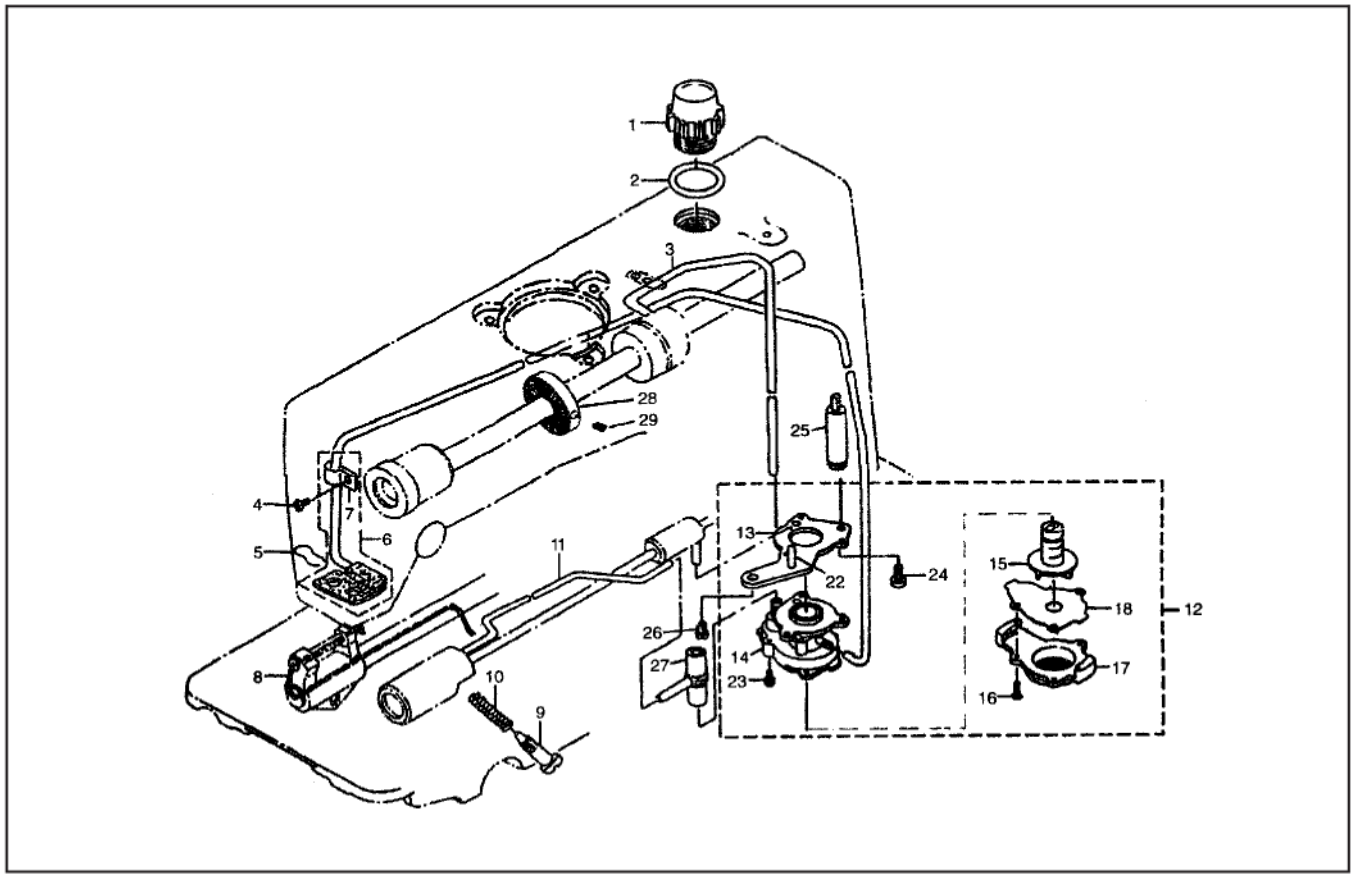
7. AUTOMATIC REVERSE FEED COMPONENTS

No.	Ref.No.	Description	Qt.		Note
			M	H	
1	262700001	Reverse feed switch asm.	1	1	For 6870
	268G73000	Reverse feed switch asm.	1	1	For 6870A
2	262700002	E-ring 5	2	2	
3	262700003	Reverse feed connecting shaft	1	1	
4	262700004	E-ring 9	1	1	
5	262700005	Connecting arm asm	1	1	
6	262700008	E-ring 4	1	1	
7	262710002	Reverse feed connecting link	1	1	
8	262710003	E-ring 20	1	1	
9	262710004	Washer 16*24*2.6	1	1	
10	262710005	Rubber plunger	1	1	
11	262710006	E-ring 4	2	2	
12	262710007	Plunger arm pin	1	1	
13	262910001	Reverse feed magnet asm	1	1	For 6870
	268G71000	Reverse feed magnet asm	1	1	For 6870A
14	262700011	Screw 15/64*28L=12	2	2	
15	262710008	Screw 3/16*28L=9	1	1	
16	262710009	Plunger spring	1	1	

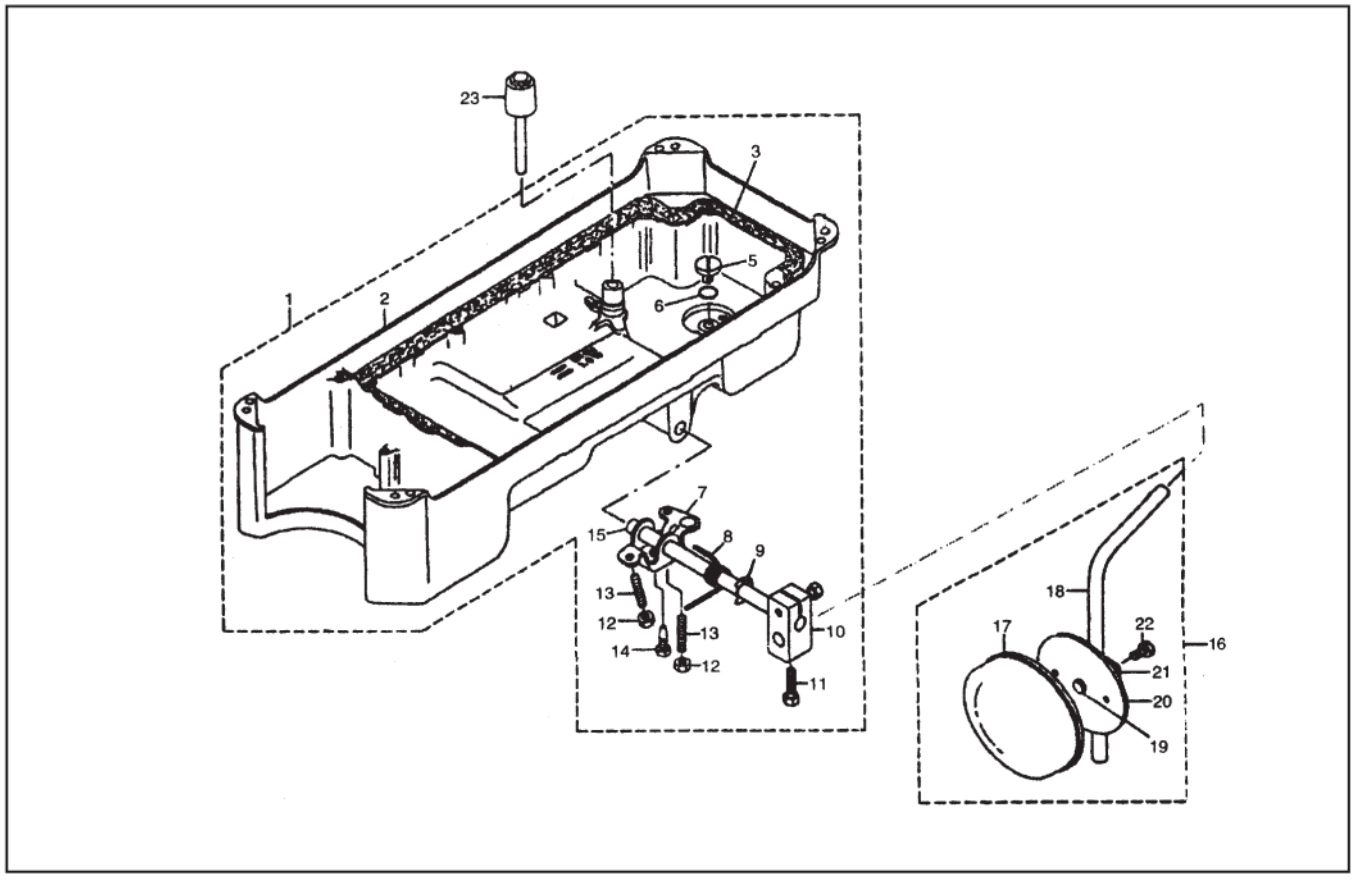
8. WIPER COMPONENTS

No.	Ref.No.	Description	Qt.		Note
			M	H	
1	262720000	Wiper asm	1	1	For 6870
	268G72000	Wiper asm	1	1	For 6870A
2	262720001	Wiper cover	1	1	
3	262720002	Screw M3	1	1	
4	262720003	Hinge screw	1	1	
5	262720004	Nut 9/64*40	1	1	
6	262720005	Wiper link A	1	1	
7	262720006	Wiper link B	1	1	
8	262720007	E-ring	1	1	
9	262720008	Wiper link B，hinge screw	1	1	
10	262720009	Wiper hinge screw collar	1	1	
11	262720010	Wiper spring	1	1	
12	262720011	Nut 11/64*40	1	1	
13	262720012	Wiper rubber A	1	1	
14	262720013	Wiper rubber B	1	1	
15	262720014	Wiper solenoid	1	1	For 6870
	268G72014	Wiper solenoid	1	1	For 6870A
16	262720015	Wiper solenoid shaft	1	1	
17	262720016	Power switch	1	1	
18	262720017	Electric wire	1	1	
19	262720018	2-core cabtyre cord	1	1	
20	262720019	Wiper base asm	1	1	
21	262720020	Wiper link collar	1	1	
22	262720021	Screw	3	3	
23	262720022	pin contact	2	2	
24	262720023	Wiper	1	1	
25	262720024	Screw 9/64*40L=5	1	1	
26	262720025	Wiper collar	1	1	
27	262720026	E-ring	1	1	
28	262720027	Wiper driving shaft asm	1	1	
29	262700012	Screw 3/16*28L=9	2	2	

9.OIL LUBRICATION COMPONENTS



10. OIL RESERVOIR COMPONENTS



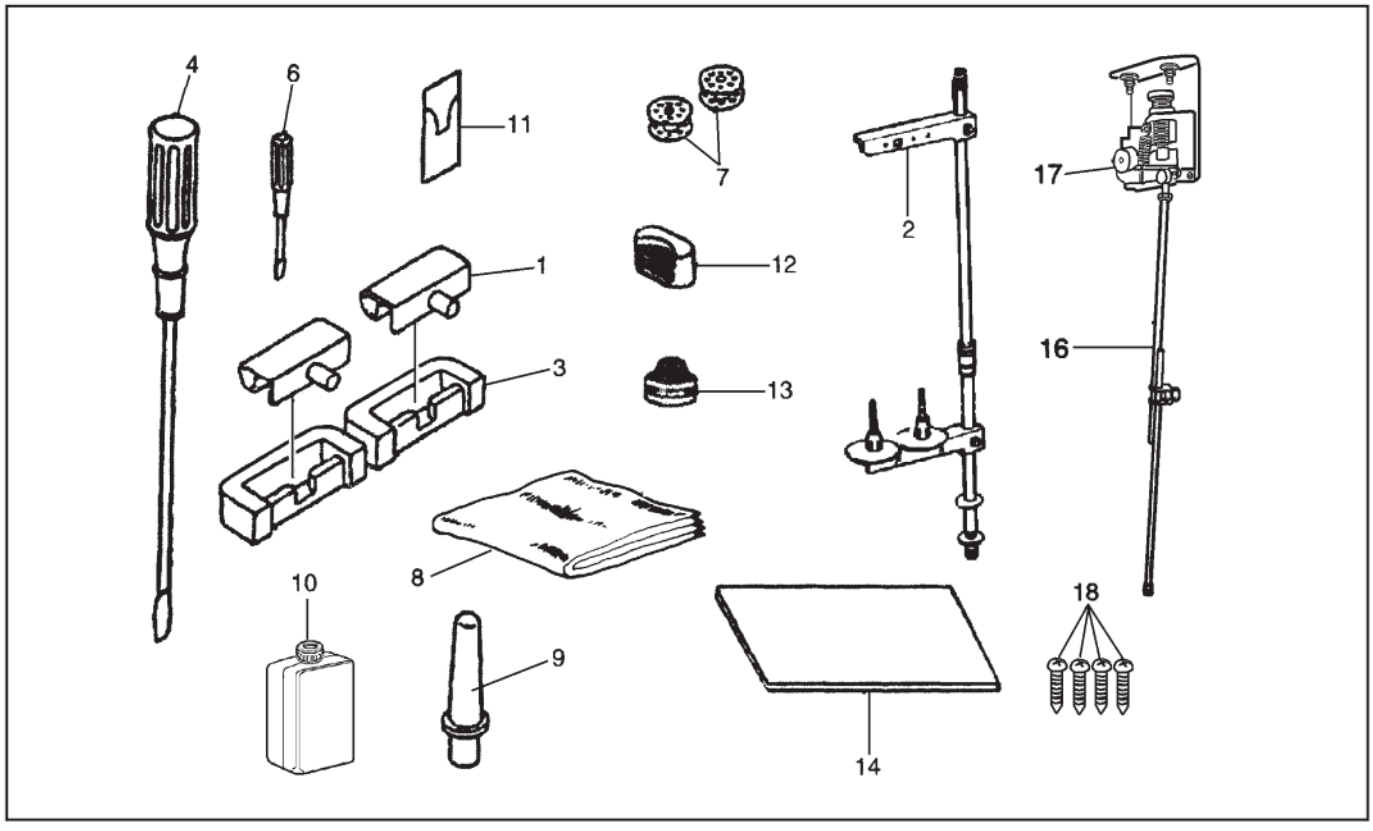
9. OIL LUBRICATION COMPONENTS

No.	Ref.No.	Description	Qt.		Note
			M	H	
1	262800001	Oil sight window	1	1	
2	262800002	Rubber ring	1	1	
3	262800003	Main shaft oil tube	1	1	
4	262100018	Screw 3/16 × 28L=6	1	1	
5	262800005	Oil felt presser	1	1	
6	262810000	Oil return tube asm	1	1	
7	262800006	Holder	1	1	
8	W180101039	Oil wick	1	1	
9	262800007	Oil adjusting screw	1	1	
10	262800008	Spring	1	1	
11	262800009	Oil tube	1	1	
12	262820000	Lubricating oil pump asm	1	1	
13	262800010	Oil pump installing base	1	1	
14	262800011	Oil pump	1	1	
15	262800012	Oil pump impeller	1	1	
16	262800013	Screw D=3 L=10	3	3	
17	262800014	Lubricating oil pump cover	1	1	
18	262800015	Oil pump impeller cover	1	1	
22	262800019	Hook driving shaft oil tube	1	1	
23	262800020	Screw M3 L=8	3	3	
24	262800021	Screw 11/64 × 40L=9.5	1	1	
25	262800022	Oil pump support, large	1	1	
26	262800023	Screw 15/64 × 28L=12	1	1	
27	262800024	Rubber joint	1	1	
28	262800025	Bobbin pulley	1	1	
29	262800026	Screw	2	2	

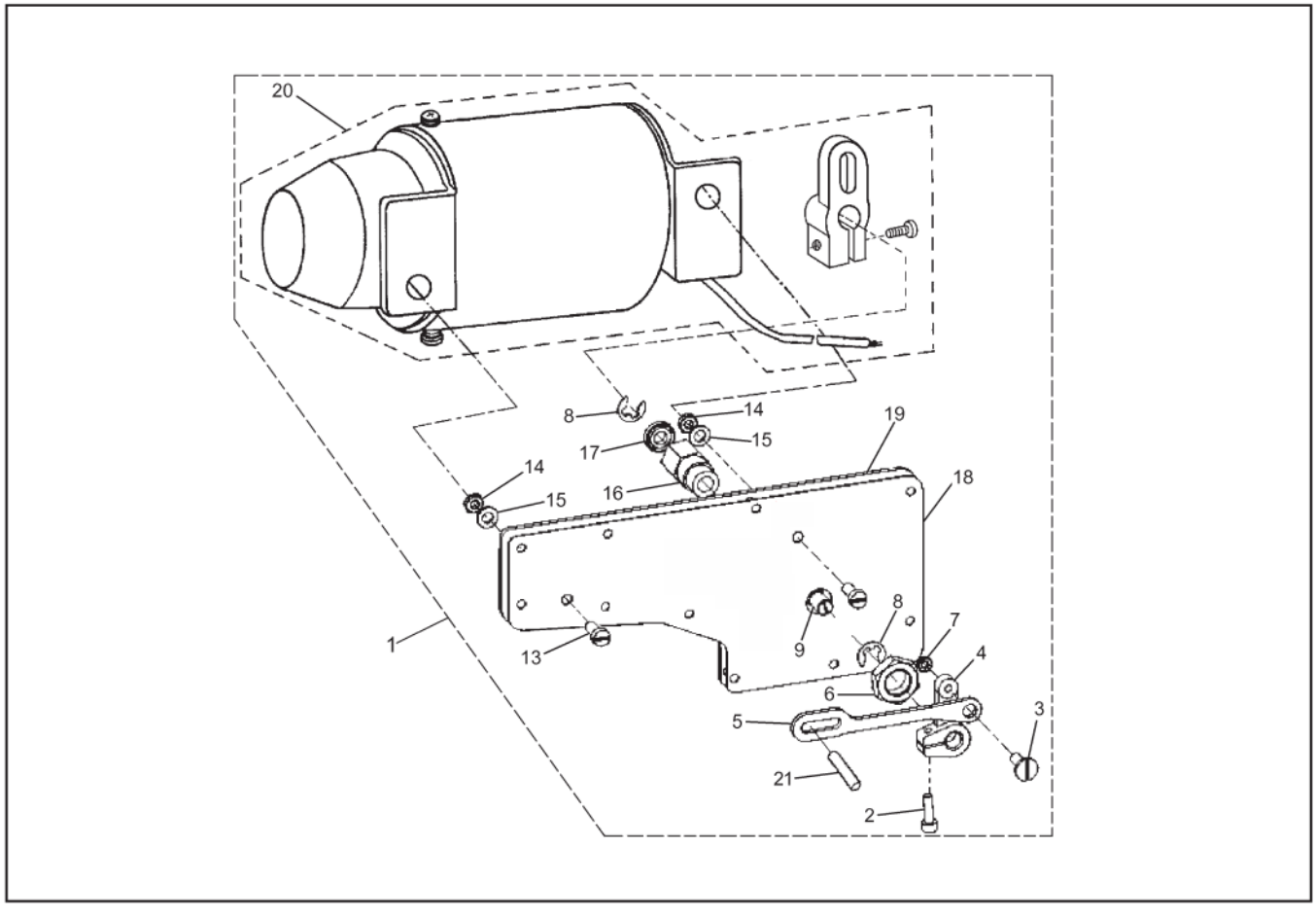
10. OIL RESERVOIR COMPONENTS

No.	Ref.No.	Description	Qt.		Note
			M	H	
1	262910000	Oil reservoir asm	1	1	
2	262910001	Oil reservoir	1	1	
3	262910002	Oil reservoir gasket	1	1	
5	262910004	Screw 5/16 × 24L=7	1	1	
6	262910005	Rubber ring	1	1	
7	262910006	Knee lifting rotating arm	1	1	
8	262910007	Spring	1	1	
9	262910008	E–ring 10	1	1	
10	262910009	Vertical shaft fitting arm	1	1	
11	262910010	Screw	2	2	
12	262910011	Nut M6	2	2	
13	262910012	Screw M6L=30	2	2	
14	262910013	Screw M6L=17.5	1	1	
15	262910014	Knee press cross shaft	1	1	
16	262910015	Knee pan plate asm	1	1	
17	262910016	Knee pan plate cover	1	1	
18	262910017	Knee pan upright shaft	1	1	
19	262910018	Knee pan plate rubber	1	1	
20	262910019	Knee pan plate	1	1	
21	262910020	Knee pan plate support	1	1	
22	262910021	Screw M6L=12	1	1	
23	262910022	Knee lifter push rod	1	1	

11. ACCESSORIES



6870 SERIES BACK FOOT LIFTER PARTS(OPTIONAL PARTS)



11.ACCESSORIES

No.	Ref.No.	Description	Qt.		Note
			M	H	
1	262910023	Machine hinge plate asm	2	2	
2	GXJ–2	Thread spool asm	1	1	
3	262910024	Machine hinge plate	2	2	
4	262910025	Screw driver，large	1	1	
6	262910026	Screw driver，small	1	1	
7	036400006	Bobbin	3	3	
8	W060302058	Macgube head cover	1	1	
9	262910028	Macgube rest cove	1	1	
10	W060302014	Oil reservoir asm	1	1	
11	S150901001	Needle DB*1#14	1		
	S150901002	Needle DB*1#14		1	
12	262910029	Quakeproof washer A	1	1	
13	262910027	Quakeproof washer B	1	1	
14	W050305080	Instruction book	1	1	
15	262100007	Thread guide rod	1	1	
16	268G92002	Pull rod	1	1	For 6870A
17	268G92001	Speed governor	1	1	For 6870A
18	268G92003	Screw	4	4	For 6870A

6870 SERIES BACK FOOT LIFTER PARTS(OPTIONAL PARTS)

No.	Ref.No.	Description	Qt.		Note
			M	H	
1	268E10000	Back foot lifter assy	1	1	For 6870
	268H10000	Back foot lifter assy	1	1	For 6870A
2	268E11016	Screw	1	1	
3	268E11008	Screw	1	1	
4	268E11007	Crank	1	1	
5	268E11009	Connecting rod	1	1	
6	268E11005	Nut	1	1	
7	268E11017	Nut	1	1	
8	268E11015	Check ring	2	2	
9	268E11004	Shaft	1	1	
13	268E11018	Screw	2	2	
14	268E11014	Nut	2	2	
15	268E11013	Gasket	2	2	
16	268E11002	Bushing	1	1	
17	268E11003	Oil seal	1	1	
18	268E11001	Side plate	1	1	
19	268E11006	Washer	1	1	
20	268E12000	P–foot lifter solenoid assy	1	1	For 6870
	268E22000	P–foot lifter solenoid assy	1	1	For 6870A
21	262E10003	Pin	1	1	

IMPORTANT SAFETY INSTRUCTIONS

To get the most out of the many functions of this machine and operate it in safety,it is necessary to use this machine correctly. Please read this instruction Manual carefully before use. When hope you will enjoy the use of your machine for a long time。Please remember to keep this manual in a safe place。

1. Observe the basic safety measures,including,but not limited to the following ones ,whenever you use the machine。
2. Read all the instructions,including,but not limited to this instruction Manual before you use the machine。In addition, keep this instruction Manual so that you may read it at anytime when necessary。
3. Use the machine after it has been ascertained that it conforms with safety rules/standards valid in your county。
4. All safety devices must be in position when the machine is ready for word or in operation。
   The operation without the specified safety devices is not allowed。
5. This machine shall be operated by appropriately–trained operators。
6. For your personal protection,We recommend that wear safety glasses。
7. For the following, turn off the power switch or disconnect the power plug of the machine from the receptacle。
7–1 For threading needle(s),looper,spreader etc.And replacing bobbin.
7–2 For replacing part (s) of needle, presser foot,throat plate,looper,spreader,feed dog,needle guard, folder,cloth guide etc.
7–3 For repair work.
7–4 When leaving the working place or when the working place is unattended.
8. If you should allow oil, grease,etc,used with the machine and devices to come in contact with your eyes or skin or swallow any of such liquid by mistake, immediately wash the contacted areas and consult a medical doctor.
9. Tampering with the live parts and devices, regardless of whether the machine is powered, is prohibited.
10. Repair, remodeling and adjustment works nust only be done by appropriately trained technicians or specially skilled personnel. Only spare parts designated by can be used for repairs.
11. General maintenance and inspection woks have to be done by appropriately trained personnel.
12. Repair and maintenance works of electrical components shall be conducted by qualified electric technicians or under the audit and guidance of specially skilled personnel.
   Whenver you find a failure of any electrical components, immediately stop the machine.
13. Before making repair and maintenance works on the machine equipped with pneumatic parts such as an air cylinder, the air compressor has to be detached from the machine and the compressed air supply has to be cut off. Existing residual air pressure after disconnecting the air compressor from the machine has to be expelled. Exceptions to this are only adjustments and performance checks done by appropriately trained technicians or specially skilled personnel.
14. Periodically clean the machine throughout the period of use.
15. Grounding the machine is always necessary for the normal operation of the machine. The machine has to be operated in an environment that is free from strong noise sources such as high–freauency welder.
16. An appropriate power plug has to be attached to the machine by electric technicians. Power plug has to be commected to a grounded receptacle.
17. The machine is only allowed to be used for the purpose intended. Other used are not allowed.
18. Remodel or modify the machine in accordance with the safely rules/standards while taking all the effective safety measures. Assumes no responsibility for damage by remodeling or modification of the macine.
19. Warning hints are marked with the two shown symbols.

 Danger of injury to operator or service staff.

 Items requiring special attention.

FOR SAFE OPERATION

 DANGER	1. To avoid electrical shock hazards, neither open the cover of the electrical box for the motor nor touch the components mounted inside the electrical box.
 CAUTION	1. To avoid personal injury, never operate the machine with any of the belt cover, Finger guard or safety devices removed. 2. To prevent possible personal injuriescaused by being caught in the machine. Keep your fingers, head and clothes away from the hand wheel, V belt and the motor while the machine is operation. In addition, place nothing around them. 3. To avoid personal injury, never put your hand under the needle when you turn "ON" the power switch or operate the machine. 4. To avoid personal injury, never put your fingers into the thread take–up cover while the machine is in operation. 5. The hook rotates at a high speed while the machine is in operation. To prevent possible injury to hands, be sure to beep your hands away from the vicinity of the hook during operation. In addition, be sure to turn OFF the power to the machine when replacing the bobbin. 6. To avoid possible personal injuries, be careful not to allow your fingers in the machine when tilting/raising the machine head. 7. To avoid possible accidents because of abrupt start of the machine, turn OFF the power to the machine when tilting the machine head. 8. If your machine is equipped with a servo–motor, the motor does not produce noise while the machine is at rest. To avoid possible accidents due to abrupt start of the machine, be sure to turn OFF the power to the machine. 9. To avoid electrical shock hazards, never operate the sewing machine with the ground wire for the power supply removed. 10. To prevent possible accidents because of electric shock or damaged electrical components(s), turn OFF the power switch in prior to the connection/disconnection of the power plug.

BEFORE OPERATION

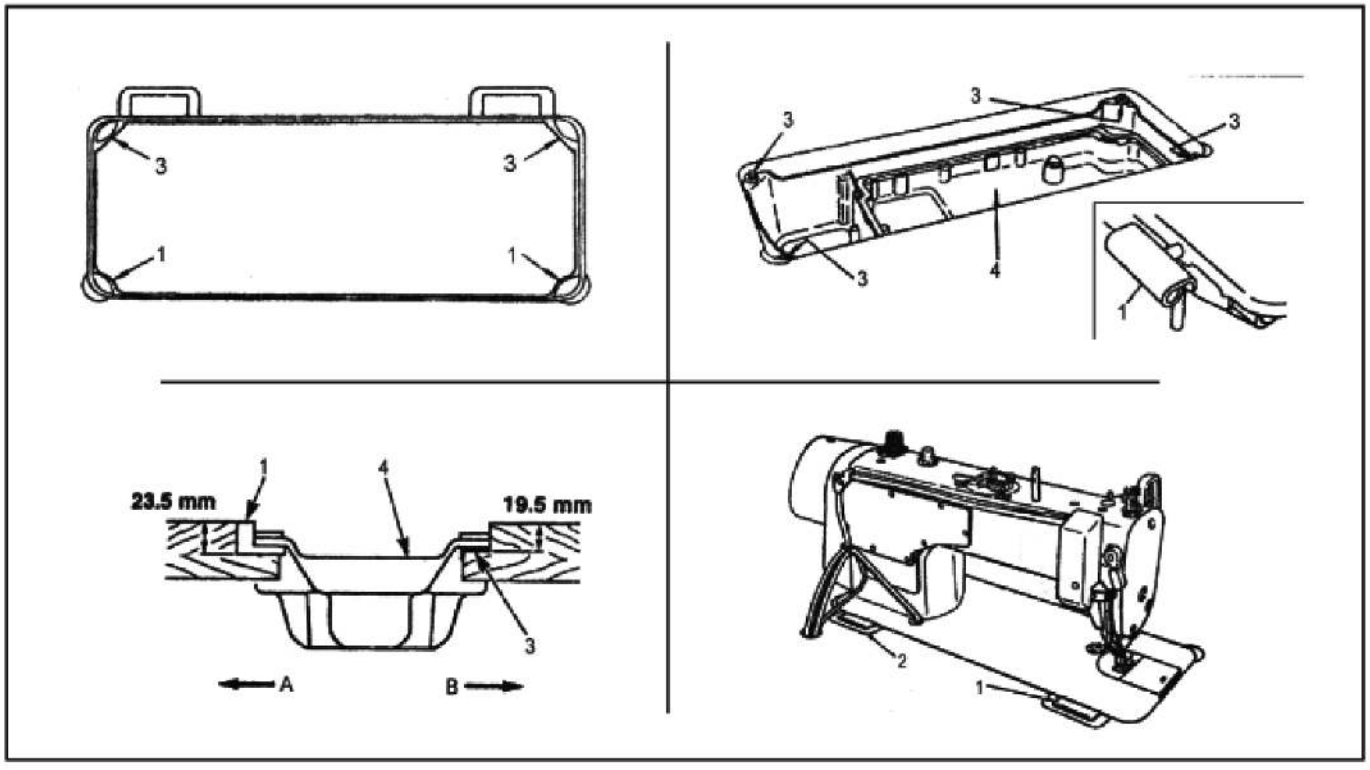
 CAUTION: To avoid malfunction and damage of the machine, confirm the following.

* Before you put the machine into operation for the first time after the set up, clean it thoroughly.
* Remove all dust gathering during transportation and oil it well.
* Confirm that the power plug has been properly connected to the power supply.
* Never use the machine in the state where the voltage type is different from the designated one.
*The direction of rotation of the sewing machine is counterclockwise as observed from the hand wheel side. Be careful not to rotate it in reverse direction.

1. SPECIFICATION

Application	general fabrics, light-weight and medium-weight materials	
Sewing speed	Max.4000rpm(light-weight)	3000rpm(weight materials)
Max. Stitch length	4mm(light-weight)	5mm(weight materials)
Needle	DB×1 #9~#16	DP×5 #18~#22
Presser foot lift	10mm(standard)	13mm(Max.)
Lubricating oil	18# sewing machine oil	
Noise	Workplace-related noise at sewing speed n=4500min-1 ; LPA≤83dB(A) Noise measurement according to DIN 45635-48-A-1	

2. INSTALLATION



(1)Installing the under cover

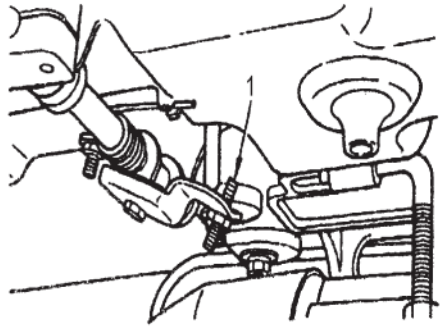
1)The oil pan should rest on the four corners of the machine table groove.

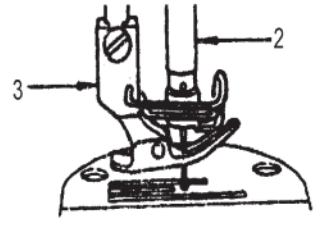
2)Fix two rubber seats 1 on side A (operator's side)using nails 2 as illustrated above. Fix two cushion seats 3 on side B (hinged side)using a rubber-based adhesive. Then place oil pan 4 on the fixed seats.

3)Fit hinge 1 into the opening in the machine bed,and fit the machine head to table rubber hinge 2 before placing the machine head on cushions 3 on the four corners.

3. ADJUSTING THE HEIGHT OF THE KNEE LIFTER

Warning
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



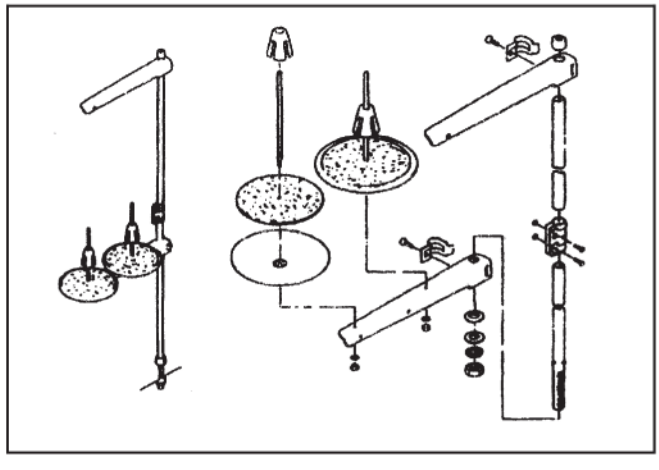


1)The standard height of the presser foot lifted using the knee lifter is 10mm.

2)You can adjust the presser foot lift up to 13mm using knee lifter adjust screw 1.(Max. 9mm for A type)

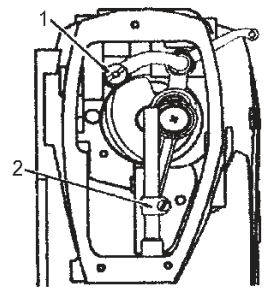
3)When you have adjusted the presser foot lift to over 10mm,be sure that the bottom end of needle bar 2 in its lowest position does not hit presser foot 3.

4.INSTALLING THE THREAD STAND



5. LIPIN

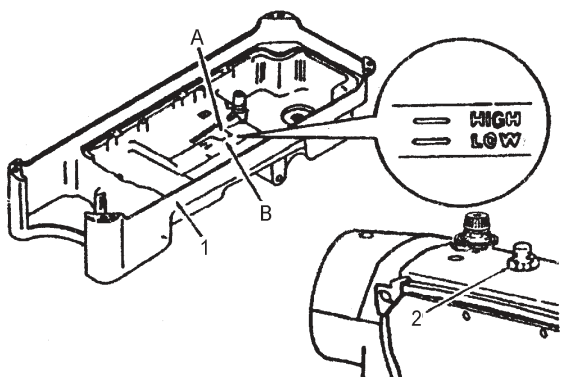
WARNING: Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



1) Full pore of the thread take–up crank shaft 1 with lipin before disassembly small screw of the thread take–up crank shaft 1.
2) Disassembly small screw before Disassembly the nee–dle rod holder ASM, then full pore of the needle bar connection ASM 2 with lipin

6. LUBRICATION

WARNING:
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



Information on lubrication

1) Fill oil pan 1 with Machine Oil up to HIGH mark A.
2) When the oil level lowers below LOW mark B, refill the oil pan with the specified oil.
3) When you operate the machine after lubrication, you will see splashing oil through oil sight window 2 if the lubrication is adequate.
4) Note that the amount of the splashing oil is unrelated to the amount of the lubricating oil.

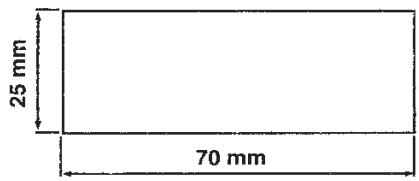
Caution

When you first operate your machine after setup or after an extended period of disuse, run your machine at 3000 to 3500 rpm. For about 10 minutes for the purpose of break–in.

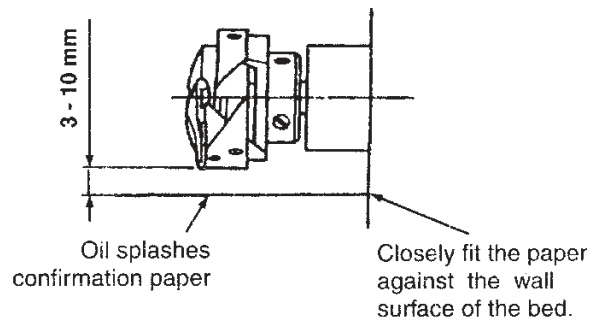
7. ADJUSTING THE AMOUNT OF OIL (OIL SPLASHES) IN THE HOOK

WARNING:
Be extremely careful about the operation of the machine since the amount of oil has to be checked by turning the hook at a high speed.

① Amount of oil (oil splashes) confirmation paper



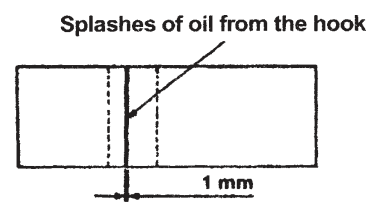
② Position to confirm the amount of oil (oil splashes)



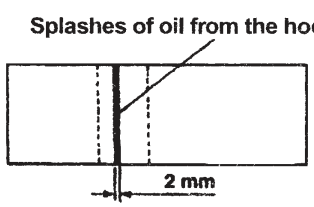
* When carrying out the procedure described below in 2, remove the slide plate and take extreme caution not to allow your fingers to come in contact with the hook.

1) If the machine has not been sufficiently warmed up for operation, make the machine run idle for approxi mately three minutes. (Moderate intermittent operation)
2) Place the amount of oil (oil splashes) confirmation paper under the hook while the sewing machine is in operation.
3) Confirm the height of the oil surface in the oil reservoir is within the range between “HIGH”and “LOW”.
4) Confirmation of the amount of oil should be completed in five seconds.(Check the period of time with a watch.)

*Sample showing the appropriate amount of oil



Appropriate amount of oil (small)

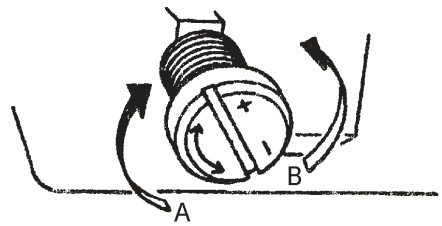


Appropriate amount of oil (large)

1) The amount of oil shown in the samples on the left should be finely adjusted in accordance with sewing processes. Be careful not to excessively in-crease/decrease the amount of oil in the hook.(If the amount of oil is too small, the hook will be seized (the hook will be hot).If the amount of oil is too much, the sewing product may be stained with oil.)

2) Adjust the amount of oil in the hook so that the oil amount (oil splashes) should not change while checking the oil amount three times (on the three sheets of paper)

* Adjusting the amount of oil

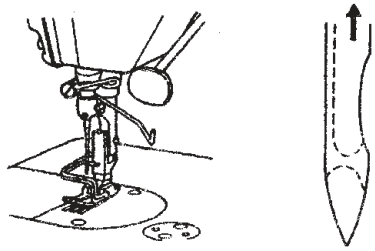


1) Turning the oil amount adjustment screw attached on the hook driving shaft front bushing in the "+" direction (in direction A) will increase the amount of oil (oil spots) in the hook, or in the "–" direction (in direction B) will decrease it.

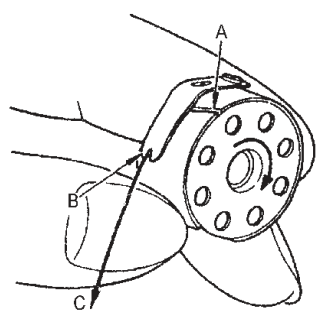
2) After the amount of oil in the hook has been properly adjusted with the oil amount adjustment screw , make the sewing machine run idle for approximately 30 seconds to check the amount of oil in the hook.

8. ATTACHING THE NEEDLE

WARNING: Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



9. SETTING THE BOBBIN INTO THE BOBBIN CASE



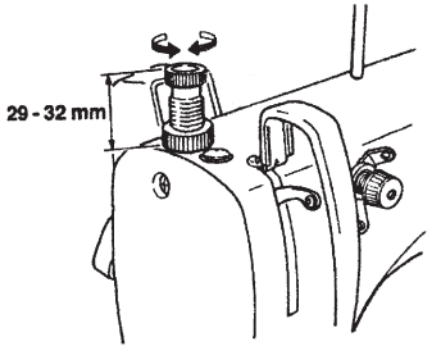
1) Pass the thread through thread slit A ,and pull the thread in direction B.

By so doing, the thread will pass under the tension spring and come out from notch B.

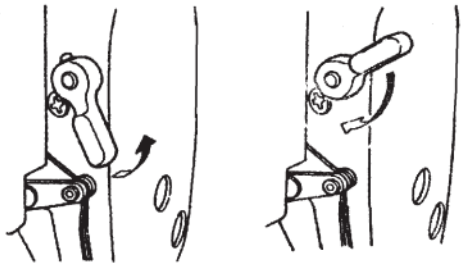
2) Check that the bobbin rotates in the direction of the arrow when thread C is pulled.

10. ADJUSTING THE STITCH LENGTH

11.PRESSER FOOT PRESSURE

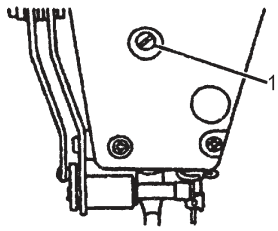


12.HAND LIFTER



13. ADJUSTING THE HEIGHT OF THE PRESSER BAR

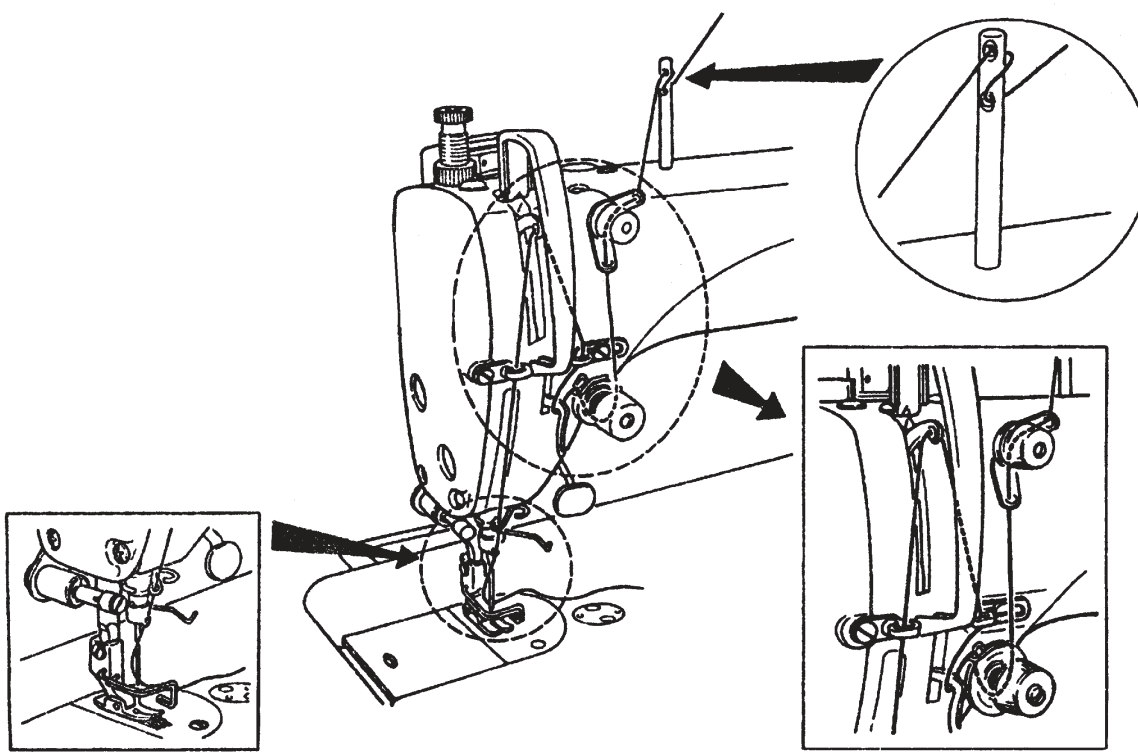
Warning
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



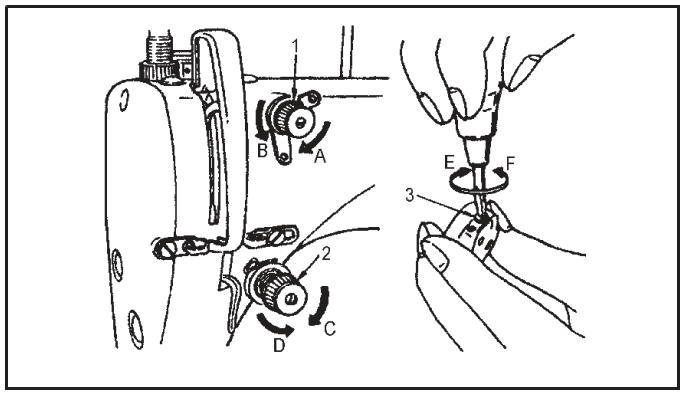
1) Loosen setscrew 1, and adjust the presser bar height or the angle of the presser foot.
2) After adjustment, securely tighten the setscrew 1.

14.THREADING THE MACHINE HEAD

Warning
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



15. THREAD TENSION



(1)Adjusting the needle thread tension

1)As you turn thread tension No.1 nut 1 clockwise(in direction A),the thread remaining on the needle after thread trimming will be shorter.

2)As you turn nut 1 counterclockwise(in direction B),the thread length will be longer.

3)As you turn thread tension No.2 nut 2 clockwise(in direction C),the needle thread tension will be increased.

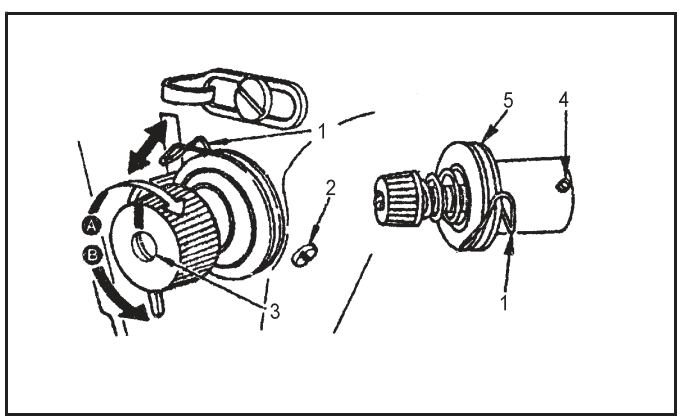
4)As you turn nut 2 counterclockwise(in direction D),the needle thread tension will be decreased.

(2)Adjusting the bobbin thread tension

1)As you turn tension adjust screw 3 clockwise(in direction E),the bobbin thread tension will be increased.

2)As you turn screw 3 counterclockwise(in direction F),the bobbin thread tension will be decreased.

16. THREAD TAKE–UP SPRING



(1)Changing the stroke of thread take–up spring 1

1)loosen setscrew 2

2)As you turn tension post 3 clockwise(in direction A),the stroke of the thread take–up spring will be increased.

3)As you turn the knob counterclockwise(in direction B),the stroke will be decreased.

(2)Changing the pressure of thread take–up spring 1

1)Loosen setscrew 2,and remove thread tension (asm)5.

2)Loosen setscrew 4.

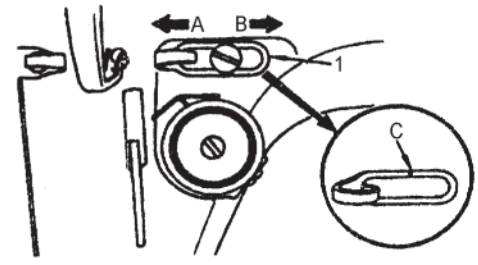
3)As you turn tension post 3 clockwise(in direction A),the pressure will be increased.

4)As you turn the post 3 counterclockwise(in direction B),the pressure will be decreased.

17.ADJUSTING THE THREAD TAKE–UP STROKE

Warning Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

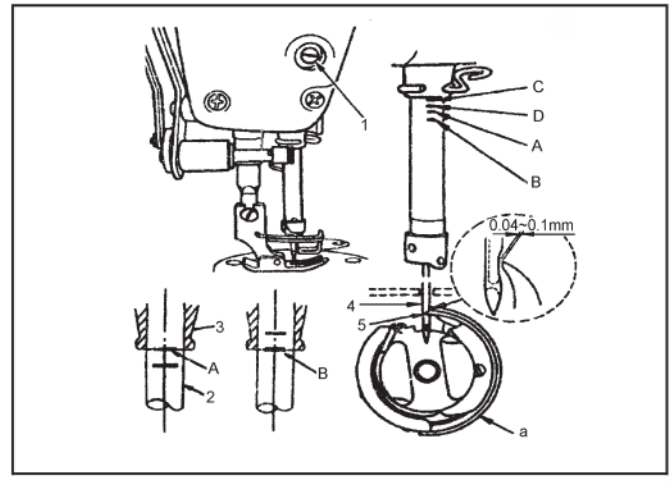
1)When sewing heavy –weight materials,move thread guide 1 to the left (in direction A)to increase the
length of thread pulled out by the thread take–up.
2)When sewing light–weight materials,move thread guide 1 to the right(in direction B)to decrease the
length of thread pulled out by the thread take–up
3)Normally,thread guide 1 is positioned in a way that marker line C is aligned with the center of the screw.



18. NEEDLE–TO–HOOK RELATIONSHIP

Warning To avoid possible personal injury due to abrupt of the machine,turn off the power to the machine and check to be sure that the motor has totally stopped rotating in prior.

(1)Adjust the timing between the needle and the hook as follows:
1)turn the hand wheel to bright the needle bar down to the lowest point of its stroke,and loosen setscrew 1.
(Adjusting the needle bar height)
2) (For a DB needle)Align marker line A on needle bar 2 with the bottom end of needle bar lower bushing 3
,then tighten setscrew 1.
(For a DA needle)Align marker line C on needle bar 2 with the bottom end of needle bar lower bushing 3
,then tighten setscrew 1.



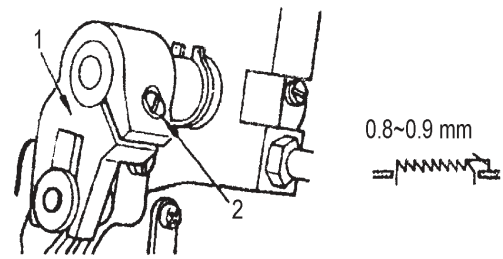
(Adjusting position of the hook a)
3)(For a DB needle)Loosen the three hook setscrew,turn the hand wheel and align marker line B on ascending needle bar with the bottom end of needle bar lower bushing 3.
(For a DA needle)Loosen the three hook setscrew,turn the hand wheel and align marker line D on ascending needle bar with the bottom end of needle bar lower bushing 3.
4)After making the adjustment mentioned in the above steps,align hook blade point 5 with the center of needle 4. Provide a clearance of 0.04mm to 01.mm(reference value)between the needle and the hook, then securely tighten setscrew in the hook.

Caution
If the clearance between the blade point of hook and the needle is smaller than the specified value,the blade point of hook will be damaged. If the clearance is larger,stitch skipping will result.

19.HEIGHT OF THE FEED DOG

Warning Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

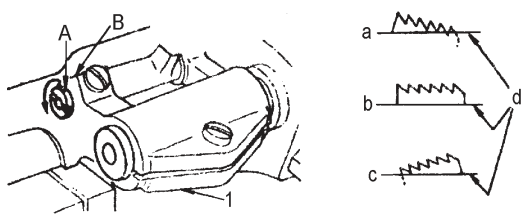
To adjust the height of the feed dog:
① Loosen screw 2 of crank 1.
② Move the feed bar up or down to make adjustment.
③ Securely tighten screw 2.



Caution If the clamping pressure is insufficient, the motion of the forked portion becomes heavy.

20. TILT OF THE FEED DOG

Warning Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



a Front up
b Standard
c Front down
d Throat plate

1) The standard tilt (horizontal) of the feed dog is obtained when marker dot A on the feed bar shaft is aligneg with marker dot B on feed rocker 1. (the marker dot B inclines forward the feed rocker sthart by 90°,as standard).
2) To tilt the feed dog with its front up in order to prevent puckering , loosen the setscrew , and turn the feed bar shaft 90°in the direction of the arrow , using a screwdriver.
3) To tilt the feed dog with its front down in order to prevent uneven material feed , turn the feed bar shaft 90°in the opposite direction from the arrow .(The standard tilt for .)

Caution Whenever the feed dog tilt is adjusted , the feed dog height will be changed . So , it is necessary to check the height after tilt adjustment.

21. ADJUSTING THE FEED TIMING

WARNING: To avoid possible personal injury due to abrupt start of the machine , turn off the power to the machine and check to be sure that the motor has totally stopped rotating in prior.

1) Loosen screws 2 and 3 in feed eccentric cam 1 , move the fee eccentric cam in the direction of the ar–

rowor opposite of the arrow , and firmly tighten the screws.

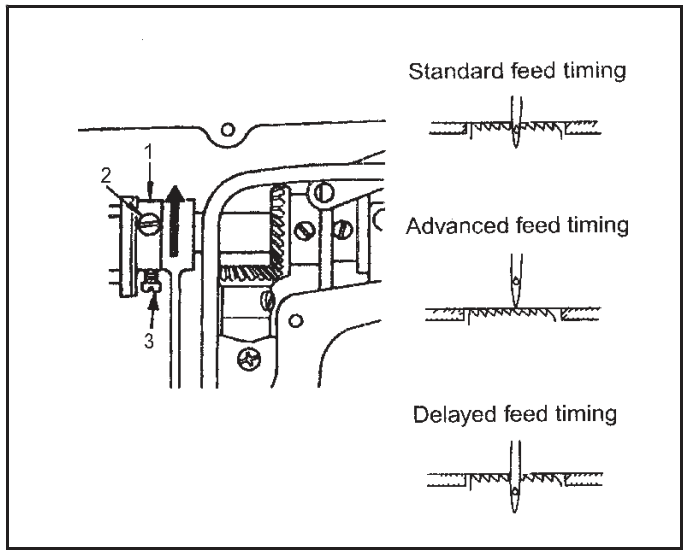
2) For the standard adjustment , adjust so that the top surface of feed dog and the top end of needle eyelet

are flush with the top surface of throat plate when the feed dog descends below the throat plate .

3) To advance the feed timing in order to prevent unevent material feed , move the feed eccentric cam in

the direction of the arrow.

4) To delay the feed timing in order to increase stitch tightness , move the feed eccentric cam in the oppo– site , direction from the arrow.



Caution

Caution

Be careful not to move the feed eccentric cam too far , or else needle breakage may result.

22.PEDAL PRESSURE AND PEDAL STROKE

WARNING:
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

(1) Adjusting the pressure required to depress the front part of the pedal

1) This pressure can be changed by changing mounting of pedaling pressure adjust spring 1 .

2) The pressure decreases when you hook the spring on the left side.

3) The pressure increases when you hook the spring on the right side.

(2) Adjusting the pressure required to depresss the back part of the pedal

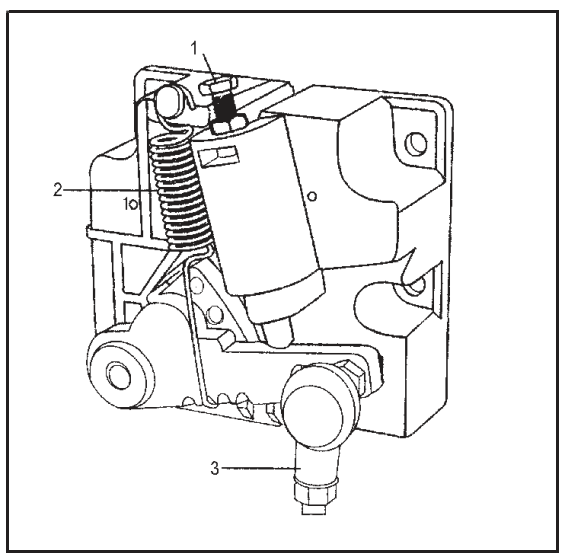
1) The pressure can be adjusted using regulaor screw 2.

2) The pressure increases as you turn the regulator screw in.

3) The pressure decreases as you turn the screw out.

(3) Adjusting the pedal stroke

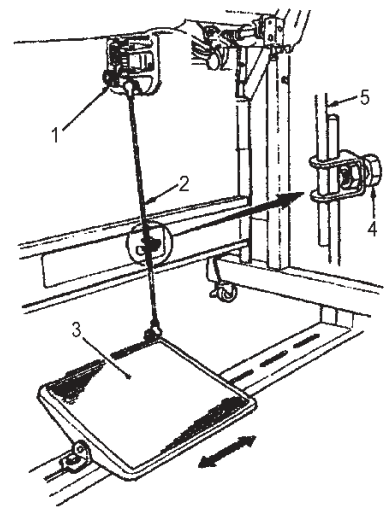
1) The pedal stroke increases when you insert connecting rod 3 into the right hole.



23. ADJUSTMENT OF THE PEDAL

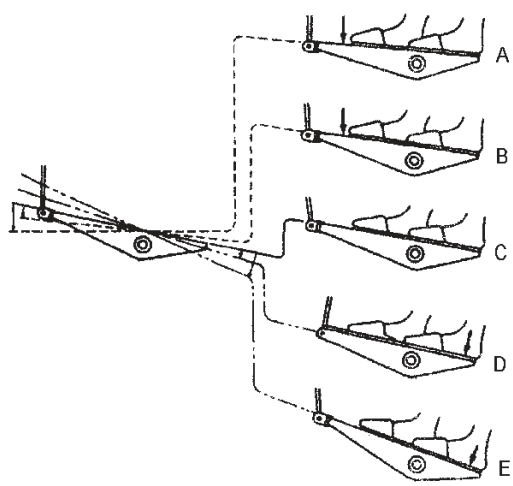
WARNING:
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

(1) Installing the connecting rod
1) Move pedal 3 to the right or left as illustrated by the arrow so that motor control lever 1 and conn ecting rod 2 are straightened.
(2) Adjusting the pedal angle
1) The pedal tilt can be freely adjusted by changing the length of the connecting rod.
2) Loosen adjust screw 4, and adjust the length of connecting rod 5.

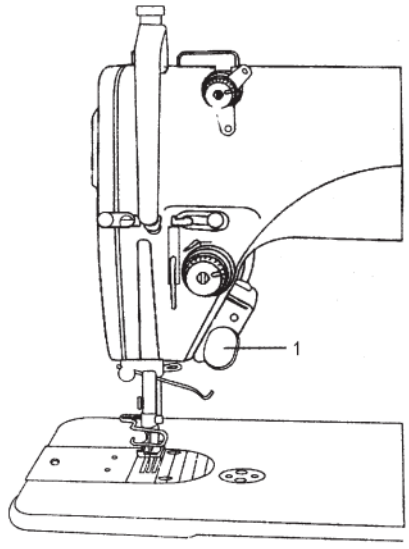


24. PEDAL OPERATION

The pedal is operated in the following four steps:
1) The machine runs at low sewing speed when you lightly depress the front part of the pedal.B
2) The machine runs at high sewing speed when you further depress the front part of the pedal.A
(If the automatic reverse feed stitching has been preset, the machine runs at high speed after it completes reverse feed stitching)
3) The machine stops (with its needle up or down) when you reset the pedal to its original position.C
4) The machine trims threads when you fully depress the back part of pedal.E
*If your machine is provided with the Auto–lifter an addition step is given between the machine stop and thread trimming step. The presser foot goes up when lightly depress the back part of the pedal D, and if you further depress the back part, the thread trimmer is actuated.



25. ONE–TOUCH TYPE REVERSE FEED STITCHING MECHANISM



How to operate

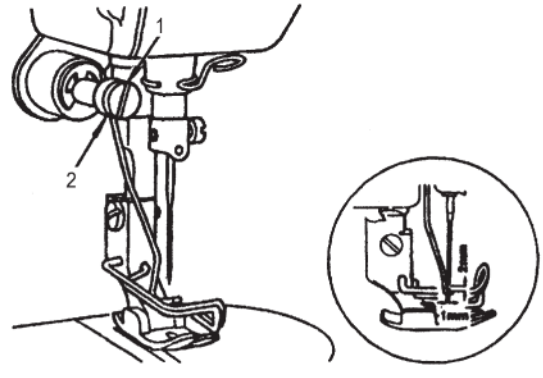
1) The moment switch lever 1 is pressed , the machine performs reverse feed stitching.
2) The machine performs reverse feed stitching as long as the switch lever is held pressed.
3) The machine resumes normal feed stitching the moment the switch lever is released.

WARNING

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

26. WIPER

WARNING:
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



Positioning the wiper

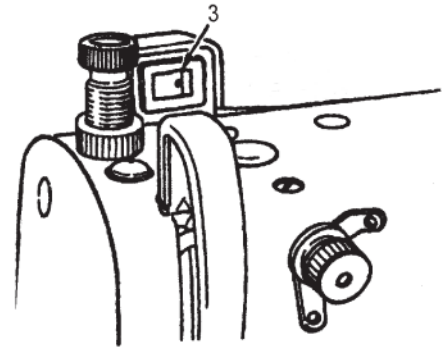
Adjust the position of the wiper according to the thickness of the material sewn.

The adjustment procedure is as follows:

1) Adjust the distance between the flat part of the wiper and the center of the needle to 1mm.

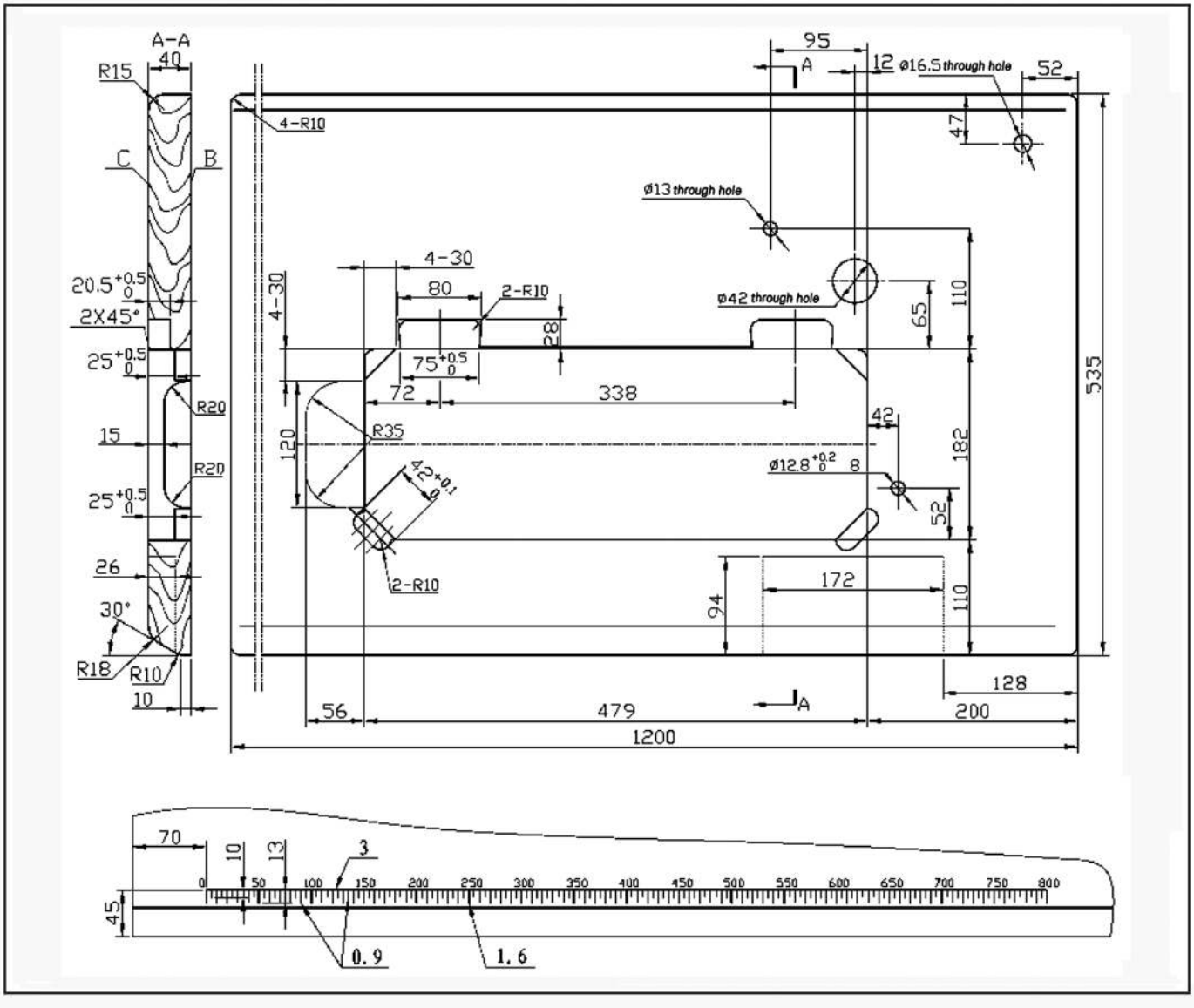
Tighten wiper adjust screw 1 so that the wiper is pressed and fixed by wiper collar 2.

2) When the wiper is unnecessary, turn wiper switch 3 OFF.



27.Table processing diagram

The top of the table should be 40 mm in thickness and should be strong enough to hold the weight and with–stand the vibration of the sewing machine.
Drill holes as indicated in the illustration below.



6870A Operation Panel Instruction

1. Operation Panel Instruction

Operation Panel is divided with two areas（See Fig1-1）：LCD display areas and key words area.

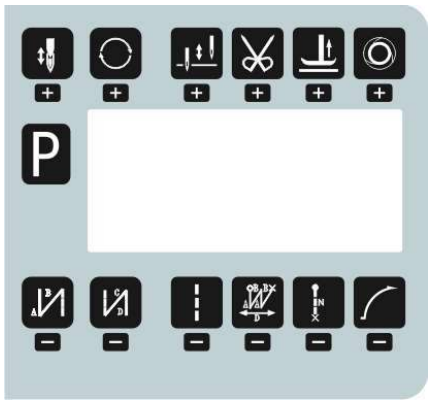


Fig.1-1

The LCD display areas are position in middle of the whole operation panel. It including pattern, sewing mode, start/end back tacking, and foot lifter, stop-needles and trimming, and slow start operation set. The operation system automatically power on that HMI will a self-test, then all icons will flash once in the LCD display areas and only display the current settings of the system, the other did not choose that the icon will not be lighted, see figure 1-2.

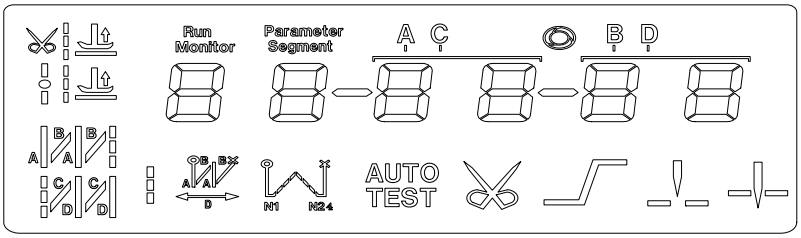


Fig.1-2

Operator panel for each key explanation see the table 1.

Table 1: Following form is the instruction of each key：

No	Appearance	Description
1		Function key：Major operation to determine and confirm working, and work with other key to set a higher level of the parameter.
2		Start back tacking key：Every effective press the key once; round with single start back tacking, double start back tacking, four start back tacking and close start back tacking. The current status is displayed on the left of LCD. Detailed see "2.1.2 before and after sewing settings instruction.
3		End back tacking key：Every effective press the key once; round with single end back tacking, double end back tacking, four end back tacking and close end back tacking. The current status is displayed on the left of LCD. Detailed see "2.1.2 before and after sewing settings instruction.
4		Free sewing mode key：Every effective pushed the key once; the system selects free sewing mode. The free sewing status is displayed below LCD. Detailed see "2.1.1 model sets of sewing."
5		W sewing mode key：Every effective pushed the key once; the system selects W sewing mode. The W sewing status is displayed below LCD screen. Detailed see "2.1.1 model sets of sewing."

No	Appearance	Description
6		Multi-segment sewing mode key: Every effective pushed the key once; the system selects multi-segment sewing mode, pressed P key into the number of the needled setting. The multi-segment sewing status is displayed below LCD. Detailed see "2.1.1 model sets of sewing."
7		Soft start key: Select soft start function. It will show soft start status on top of LCD screen.
8		Stop position key：Select up/down stop position. The up/down stop position is displayed on top of LCD screen. Detailed see "2.1.7 stop position set. [Note: automatic trimming back, the system is always on the up of needle position.]
9		Cycle key：Switch parameter position when change parameter；
10		Stitch compensation key：Start stitch compensation if press, stop stitch compensation if loose.
11		Trimming key：Select/Cancel automatic trimming. The trimming status is displayed on top of LCD screen. Detailed see "2.1.5 trimming set.
12		Press foot lifting key: Every effective pushed the key once; round with trimming after press foot lifting, sewing end press foot lifting and manual press foot lifting. The current status is displayed on top of LCD screen. Detailed see "2.1.4 press foot lifting set.
13		One-Shot-Sewing key： Select/Cancel one-Shot-Sewing, it is effective only into multi-segment sewing mode, when chose one-shot sewing, one-shot foot pedal can complete one needle of multi-segment sewing；The one-shot-sewing status is displayed on top of LCD screen. Detailed see "2.1.6 trigger set.

2. Optional User Mode

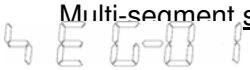
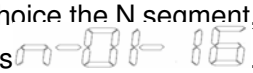
2.1 Operator Mode

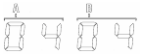
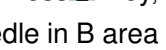
In this mode, various sewing modes are available after technical parameters settings. As the default setting, the system enters this mode when it starts. Under this mode, such basic functions as normal sewing work and modes change can be realized but no change inside parameters and setting.

Note: During working, if long time without press button, HMI will change to idle status automatically, and will cancel the operation before.

2.1.1 Sewing Mode Setup：

Free sewing mode: Presskey, free sewing mode icon is lightened in LCD area. LCD ------ indicates free sewing mode has been selected; it is ready just step the pedal for operation.

Multi-segment sewing mode: Press key, constant-stitch sewing icon is lightened in LCD area. LCD  is multi-segment sewing status。Use keys and keys to choice the N segment, and press key to entry multi-segment sewing stitch number of each segment setup status  . You may use keys and keys to choice the need to modify number of segment, use keys and keys to modify number of needle in multi-segment sewing stitch setup status.

W sewing mode：Press key, constant-stitch sewing icon is lightened in LCD area. LCD  is W sewing setup status. You may use keys and keys to choice needle in A area and set rang 1-99 stitches; use keys and keys to choice needle in B area and set rang 1-99 stitches. Press key, can be used to choice A B D segment, LCD  , use keys and keys to choice needle in B area and set rang 1-99 stitches.

2.1.2 Start/end back tacking setup：

Step 1: Press key

Start back tacking has following four modes:

- None start back tacking
- Single start back tacking
- Double start back tacking
- Four start back tacking

Step 2: Stop pressing to confirm, then this back tacking mode has been selected.

Step 3: Change the corresponding parameters A values by using keys and keys and B values by using keys and keys. The value range is 1-99 stitches. It set pin number to be completed before star back tacking.

Note: End back tacking setting method is similar with start back tacking setting method basically, except the key.

2.1.3 Soft start setup:

Press key, entry into soft start status. If choice soft starts, the icon is lightened in LCD areas. Press this key again to exit soft start status, the icon will off.

2.1.4 Press foot lifting key:

Press key, entry into foot lifting status, total four different status, no automatic foot lifting、automatic foot lifting after trimming)、automatic foot lifting if stop during sewing ( )、automatic foot lifting if trimming and stop during sewing. Use key to choice foot lifting setup status and stop press key to confirm. Foot lifting had compiled.

2.1.5 Trimming key:

If press key entry into press trimming status, select/non-select trimming. Press key repeat, the icon is lightened/ disappeared in LCD area. Whether it choice trimming that the icon is lightened or disappeared.

2.1.6 One-Shot-Sewing key

Use key: select/non-select one-shot-sewing statues. The icon will light if select one-shot-sewing in LCD areas, press will disappear.

2.1.7 Stop position key

Use key: select up/down stop position. Press key repeat, between up /down stop position to switch. Choose need to stop position and stop press key to confirm. Stop position had compiled.

2.1.8 Stitch compensation key

Use key: press this key to start stitch compensation. Compensation half needle or a half needle due to the press time. If you keep press that compensation needle always until release button.

2.2 Technician Mode

In this mode, technical parameters corresponding to various functions can be adjusted or reset according to practical needs so that the system may run in the best condition. Parameters setting under technician mode:

Step 1: Under operator mode, press key and key, the LCD will display PD 0000, and then set the password 0000 to enter technician mode.

Step 2: Use keys and keys to input the password, and then press key. If the password is correct then enter technician mode, the LCD will display 00 0200 ,otherwise, it will return to operator mode.

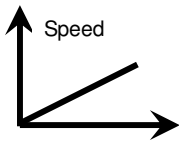
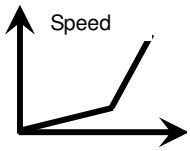
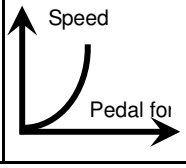
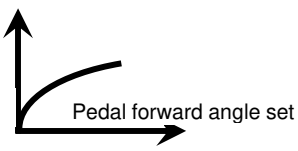
Step 3: Change technician parameters by keys and keys. The parameters are shown in table 2.

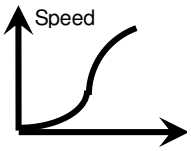
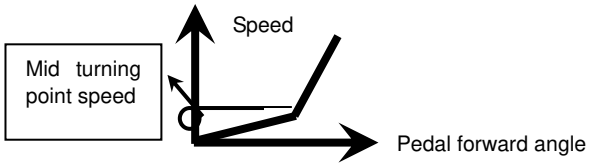
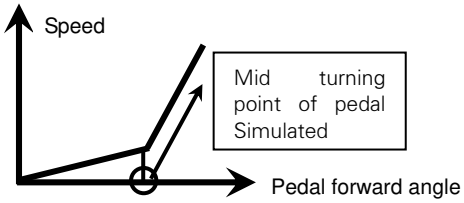
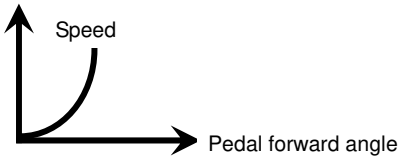
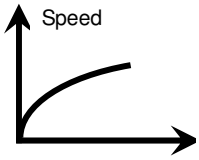
Step 4: Parameters values can be changed by keys and keys

Step 5: Under technician mode, press key, the panel will return to operator mode.

Table 2: Technician mode parameter:

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
speed	0	0	200	100 ~800	Minimum sewing speed
		1	3500	200 ~5000	Maximum sewing speed
		2	3000	200 ~5000	Maximum constant sewing speed
		3	3000	200 ~5000	Maximum manual back tacking speed

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		4	200	100 ~800	Stitch compensation speed
		5	250	100 ~500	Trimming speed
		6	0	0 ／1	Soft start Mode setup: 0：Soft start only after trimming 1：Soft start after both trimming and stop
		7	2	1 ~9	Soft start stitch number
		8	200	100 ~800	Soft start speed
		9	20	1 ~20	System accelerate sensitivity （Direct drive transmission can be set up to a large value ；belt transmission don't set large value or too much noise and vibration. This parameter do not affect the electrical）
		A	20	1 ~20	System decelerate sensitivity （Direct drive transmission can be set up to a large value ；belt transmission don't set large value or too much noise and vibration. This parameter do not affect the electrical ）
Back tacking setup	1	0	1800	200 ~2200	Start back tacking speed
		1	1800	200 ~2200	End back tacking speed
		2	1800	200 ~2200	Continuous back tacking speed
		3	24	0 ~70	Start back tacking stitch compensation 1
		4	20	0 ~70	Start back tacking stitch compensation 2
		5	24	0 ~70	End back tracking stitch compensation 1
		6	20	0 ~70	End back tracking stitch compensation 2
Pedal	3	0	0	0 /1 / 2 / 3	Pedal Curve mode setup: 0：Auto Calculated liner Curve（According to the highest speed automatic computation） 
					1： Two segment liner Curve. (You shall be free to set slow start after fast or fast start after slow, the parameters "31" and "32" cooperate with use ） 
					2： Arithmetic Curve （ the parameters [33] cooperate with use）  

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
					3：S curve（the operate control is very well, slow start after fast ） 
	3	1	3000	200 ~4000	Two segment controls the speed slope：mid turning point speed RPM（two segment of turning point speed），the parameter[30] set to 1 effective。 
		2	800	0 ~1024	Two segment controls the speed slope： mid turning point of pedal Simulated value，the parameter[30] set to 1 effective, the value is between[38] 
		3	2	1 /2	Arithmetic Curve supplementary parameter： the parameter[30] set to 2 effective, 1：Square（the low speed control is very well, slow start after fast）；  2：Square root（Responding speed is fast, fast start after slow）； 
		4	90	0 ~1024	Pedal trimming position set, See 2-1. （the value is not higher than the parameter [30]）
		5	300	0 ~1024	Press foot lifting, See 2-1. （the value is between[34]and[36].）
		6	419	0 ~1024	Pedal back mid position，see 2-1. （the value is between[35]and[37].）

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		7	510	0 ~1024	Pedal step upon running position，see 2-1. （the value is between[36]and[38]）
		8	578	0 ~1024	Pedal low speed running position（upper）,see 2-1 （the value is between[37]and[39]）
		9	962	0 ~1024	Pedal simulation the largest of value, see 2-1 （the value is not lower than the parameter [38]）
		A	100	0 ~800	Pedal press foot lifting confirm time
custom setup	4	0	1	0／1	Run to up needle position after Power on： 0: no action 1: action
		1	1	0／1	Automatically reinforcing functions chose ： （the machine head is not automatically reinforcing functions, the best way is prohibit） 0：prohibit 1：allow
		2	0	0／1	Back to sewing by hand when the function mode selection: 0：Juki mode. In sewing or in the end of the action 1：Brother mode. It acts only in sewing.
		3	0	0／1／2／3	Special Running Mode setup： 0：operator select 1：simple sewing mode 2：calculate initial angle of motor (do not uninstall strap) 3：calculate motor/machine head run rate mode (synchronizer, do not uninstall strap)
		4	0	0—31	Torque boost up at low speed : 0：no action 1~31：31 levels Torque boost up
		5	1	0／1	Stop pin mode： 0：Constant speed tackle mode (in the belt transmission, Parking is not precision) 1：back pull mode（PMX）
		6	100	0 ~800	Command button to fill half-needle time
		7	150	0 ~800	Command button to fill a needle time
Operation	6	1	0	0／1／2	Translating Parameter 0：no action 1：Download parameters(the panel will parameter from panel to controller) 2：Upload parameters (the panel will parameter from controller to panel)

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		2	0	1, 2, XXXX	Restore storage parameter(Only restore parameters to operators, and vendors and maintenance) Belt flat 1000/ Direct drive flat 2000
		3	0	1, 2	Backup current parameter as user parameter for restore (restore)
		Note: Above such “6x "parameter to operate is not saved.			

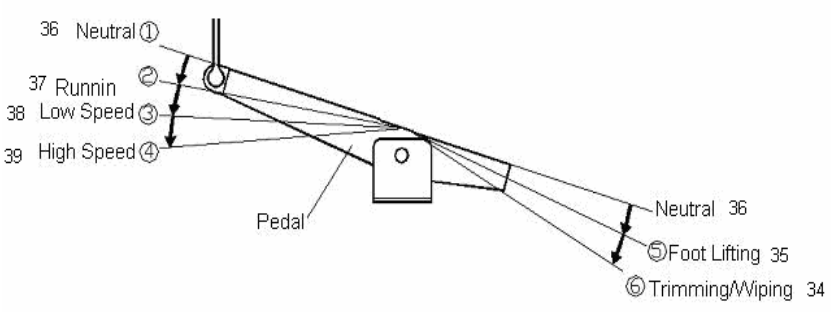


Fig2-1 Pedal action parameter the position of the diagram

2.3 Administrator Mode

In this mode, various solenoid parameters set can be regulated according to the practical need so that the servo system can normally run on every sewing machine. Parameters setting under technician mode:

Step 1: Under operator mode, press P and keys to enter administrator mode in LCD PD 0000, and then set the password 0000 to enter administrator mode.

Step 2: The password is entered using keys and keys, then press P key. If the password is correct then enter administrator mode, the LCD will display 00 0000 , or return to the operator mode.

Step 3: Change administrator parameters index by keys and keys under administrator mode. The details of administrator parameters are shown in table3.

Step 4: Parameters values can be changed by keys and keys.Under administrator mode, press P key, the panel will return to operator mode.

Table 3: Administrator mode parameter：

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
Trimming mode	0	2	1	0／1／2／3	Mode selection for trimming sequence. 0: According to the parameters 【 03】 set angles is trimming, until up position delayed【 06】time off. 1: According to the parameters【 03】set angles is trimming, until【04】set angles off. 2: According to the parameters【 03】set angles is trimming, it delayed 【06】off. 3: Down position signal delayed the parameter 【05】set angles is trimming, it delayed 【06】 off.
		3	10	5 -359	The start angles of trimming (relative down position of angle)

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		4	120	10 -359	The end angles of trimming（relative down position of angle, Need to greater than the system of parameters【03】）
		5	10	1 -999	Trimming start delay time T1（ms）
		6	60	1 -999	Trimming end delay time T2（ms）
Tension release 、Wiper and Clamp mode	1	0	0	0／1／2／3／4	Mode selection for tension-release sequence: 0: According to the parameters [11] set angles is tension release, until up position delayed [14] time off. 1: According to the parameters【11】set angles is tension release, until【12】set angles off. 2: According to the parameters【11】set angles is tension release, it delayed 【14】off. 3: Down position signal delayed the parameter【13】set angles is trimming, it delayed 【14】off. 4: Up position signal delayed the parameter【13】set angles is trimming, it delayed 【14】off.
		1	25	5 -359	The start angles of tension release(relative down position of angle)
		2	350	10 -359	The end angles of tension release（relative down position of angle, Need to greater than the system of parameters【11】）
		3	1	1 - 999	Tension release solenoid start delay timeT1（ms）
		4	10	1 - 999	Tension release solenoid up position delay time T2（ms）
		5	1	0／1	selection for Wiper function 0: off 1: on
		6	10	1 - 999	Clamp /Wiper delay time ms
		7	70	1 - 9999	Clamp /Wiper holding time ms
		8	50	1 - 999	Clamp /Wiper revert time ms
		9	0	0／1	Thread Clamp function： 0: off 1: on
		A	70	0 - 359	Clamp start angle
		B	140	0 - 359	Clamp end angle
Stop mode	3	1	0	0／1	The automatic test mode selection ： 0: order stitches 1: order time
		2	300	0 ~1000	The safety SW alarm confirm time ms（the same way does not distinguish between direct-drive safety SW and flat lock trim of protection SW）

	Parameter High byte	Parameter Low byte	Default	Rang	Comment
		3	50	0 ~1000	The safety SW restore confirm time ms
		4	0	0／1	Motor rotation direction setup： 1: Forward 0: Reverse
Machine head parameter	4	0	1000	0 - 9999	motor/machine head run rate: 0.001 (if automatic calculation of motor/machine head run rate has done, the Parameter value in control box maybe different with that in HMI)
		2	0	0 - 359	Up needle position adjusted angle(compare to up position sensor position excursion)
		3	175	0 - 359	Down needle position mechanical angle
		4	200	0 - 800	Press down delay time(ms)

2.4 Monitor mode

During HMI idle, Press P key, then press ✂ key, entry monitor mode. Use ↓ ↑ keys and ↓ ↑ keys to switch to watch the parameters. About the monitor parameter, please refer the sheet 4, HMI will back to idle if no wheel or no press the key in regulates time.

Table 4: monitor mode parameter

	Parameter High byte	Parameter Low byte	Unit	Comment
Monitor status	1	0		Counter stitches
		1		Counter trimming
	2	0	V	DC Bus Voltage
		1	RPM	Motor speed
		2	0.01A	One phase current
		3	degree	Initial angle
		4	degree	Mechanical angle
		5	——	Sampling value of pedal voltage
		6	0.001	Motor/machine head run ratio
		7	hour	Motor total run time
		8	——	Sampling value of potentiometer at Machine head
	3	0 - 7	——	History Error Code Recorder 8

2.5 Wrong warning mode

If the HMI detects something wrong from controller, it will jump automatically to warning mode, and show error code by 8-segment.see Err00 。During wrong warning mode, the user can set technician parameter change, administrator parameter and HMI parameter self-change or monitor mode. Exit these modes not back to idle but back to wrong warning mode. It will return normal status after fixing error and resetting power.

2.6 Safety switch warning mode

If HMI test safety switch warning, it will jump automatically to safety switch warning mode, see ArN-UP . During wrong safety switch warning mode, the user can set technician parameter, administrator parameter and HMI parameter self-change or monitor mode. Exit these modes not back to idle but back to wrong warning mode.

3. Operation after control system installation：

1、After control system installation, one ‘automatic calculate motor/machine head run rate’ need work. (because of machining precision, different plant have different effective radius of engine hand-wheel, even direct drive do not have 1:1“motor/machine head run rate”)。Entry technician parameter No.43, setup this parameter as 3. Press pedal forward, system work with middle speed about 10cycles and stop, the result of calculation save in control box. Then restore technician parameter No.43 to 0.

If can confirmation the value of “motor/machine head run rate”，can setup administration parameter No.40 directly. Real “motor/machine head run rate” in control box can read by monitor parameter No.26.

2、New control system in the needle position stop no longer rely on sensor signal to determine the down-stop needle, but by administration parameter No.43, this parameter confirms the mechanical angle from down needle position to up needle position. Current mechanical angle can read by monitor parameter No.24, mechanical angle of up needle position is 0.（After power on , control system will work at least one time by up needle position to revise mechanical angle, for example: Round to up needle position. Value of “motor/machine head run rate” will effect the calculation of mechanical angle. Suggest adjust down needle position after confirm right “motor/machine head run rate”.

3、New control design used to 5 solenoid drive output. Each drive output can setup its function freely. Before use please confirm if the administrator 6x parameter setup the function of each driver output same as the connection with solenoid; and confirm administrator 7x 8x parameter, otherwise perhaps happen solenoid power not enough. （the default parameter is according to normal solenoid connection）

4. Control system restores storage parameter

4.1 Restore storage parameter for factory of control

Step 1: Under operator mode, press P and keys, LCD PD 0000; and then set the password 0000 to enter technician mode.

Step 2: The password is entered using keys and keys, then press P key. If the password is correct, enter into the technician mode, or return to the technician mode.

Step 3: Change technician parameters index to【62】by keys and keys under technician mode. Restore storage parameter for factory of control can be changed by keys and keys, Usually it's four bit.

Step 4: the parameter confirms correct, press P key until the red light of HMI are bright or buzz produces a long loud, release P key, HMI and the whole system restore storage parameter.

4.2 Restore default user’s own parameter

The parameter【63】of HMI can be used to set the customer’s own parameters, following methods of operation ：

Step 1: Under operator mode, press P and keys, LCD PD 0000; and then set the password 0000 to enter operation mode.

Step 2: The password is entered using keys and keys, then press P key. If the password is correct, enter into the operator mode, or return to the operator mode.

Step 3: Change technician parameters index to【62】by keys and keys under technician mode. Restore storage parameter for factory of control can be changed by keys and keys, Usually it's four bit.

Note: when it set 1, the follow-up to the user to customize the parameter is used 1; when it set 2, the follow-up to the user to customize the parameter is used 2.

Step 4: the parameter confirms correct, press P key until the red light of HMI are bright or buzz produces a long loud, release P key, HMI and the whole system restore storage parameter.

When the parameter cause to the control system error, the user can restore the custom of the

parameters, the methods of operation as “4.1 Restore storage parameter for factory of control” .The parameter 【62】 is changed 1or 2, Press P key keep 5 second again, the system will restore the user to customize storage parameter.

Note：

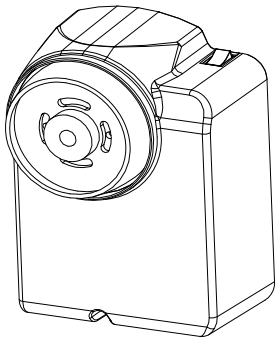
1. After power on, HMI 50 only download operator mode parameter, but not technician and administrator parameter. If all parameter is needed, technician parameter 61 can used to download all current working parameter of HMI 50.

2. If restore other parameter of HMI50 storage, technician 62 can be used to make it current working parameter, and download initiative.

3. After single parameter modification, HMI will download the value that is different with old value of parameter.

4. Recover default parameters, the system the best in the clear once again.

6870A Controller Instruction



Preface

⚠	CAUTION	Please read this manual carefully, also with related manual for the machinery before use the controller. For installing and operating the controller properly and safely, qualified personnel are required.

This product is designed for specified sewing machines and must not be used for other purposes.

If you have any problem or any comment, please feel free to contact us.

Safety Instruction

1) All the instruction marked with sign ⚠ must be absolutely observed or executed; otherwise, personal injuries or risk to the machine might occur.
2) This product should be installed and operated by persons with appropriate training only.
3) Before connecting power supply cords to power sources, it's necessary to make sure that the power voltage is in the range indicated on the product name plate.
4) Make sure to move your feet away from the pedals while power on.
5) ⚠Turn off the power and remove plug prior to the following operations:
   - ■ Connecting or disconnecting any connectors on the control box；
   - ■ Repairing or doing any mechanical adjustment；
   - ■ Threading needle or raising the machine arm；
   - ■ Machine is out of work.
6) Make sure to fasten all the fasteners firmly in the control boxes prior to the operation of the system.
7) Allow an interval of at least 30 seconds before repapering the system after power off.
8) Repairs and maintenance work may be carried out by special trained electronic technicians.
9) All the replacement parts for repairing must be provided or approved by the manufacturer.
10) The controller must be firmly connected to a properly grounded outlet.
11) Note the earthing installation.

⚠	CAUTION	Be sure to connect the controller to a properly grounded outlet. If the grounding connection is not secured, you may run a high risk of receiving a serious electric shock, and the controller may operate abnormally.

1、Product Introduction

1.1 Overview

These Series Digital AC Servo System consist of motor and controller which are mounted on the same bracket. The system can execute needle-down (or needle-up) position with external synchronizer. Employing a switch-mode power supply for the sensitive control circuitry, the system can operate over a much wider voltage range. It has the following advantages installed easy, large torque, small size, low-noise, high-efficiency, small

shake and high-precision speed control. Side-mount connectors make the connection more reliable and reduce the malfunction caused by oil leakage.

1.2 Specification

Controller Type	AHE58-55
Max. Sewing Speed（r/min）	5000
Voltage Range	AC （220±44） V 50/60HZ
Output Power	550W
Max. Torque	3Nm
Environment	0℃ ～ 40℃
The motor way of transmission	Direct drive

2. Installation Instructions

2.1 Controller Installation

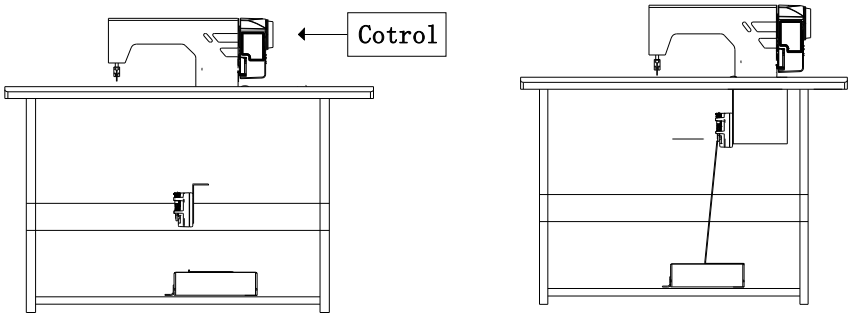


Fig.2-3

2.2 Controller shape dimension

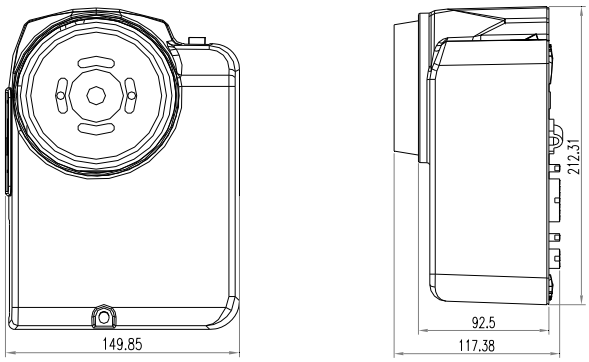


Fig.2-4

3. Power Connection and Grounding

Ground wire (Green/yellow) must be grounded. Use the correct connector and extension wire when connecting ground wire to Earth and secure it tightly (see Fig.3-1).

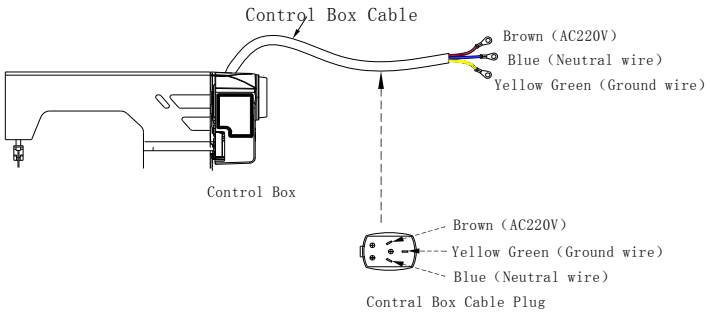


Fig. 3-1

⚠	CAUTION	Ensure all power cord, signal wire and grounding wire not be pressed by other matter or over-twisted ,and not be too close to belt and belt wheel, keep 3cm-distance for safety.

A 1Φ/220V power from a 3Φ/380V Power source Connection (See Fig.3-2):

⚠	CAUTION	If the system have no Neutral point, then this servo motor is not suitable for this connection.

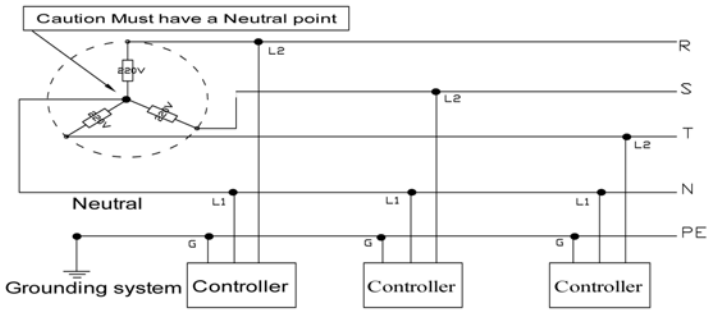


Fig. 3-2

4. Definition of controller interface

Connections between control box and other accessories are illustrated in Fig.4-1. Plug these connectors into the corresponding sockets in control box.

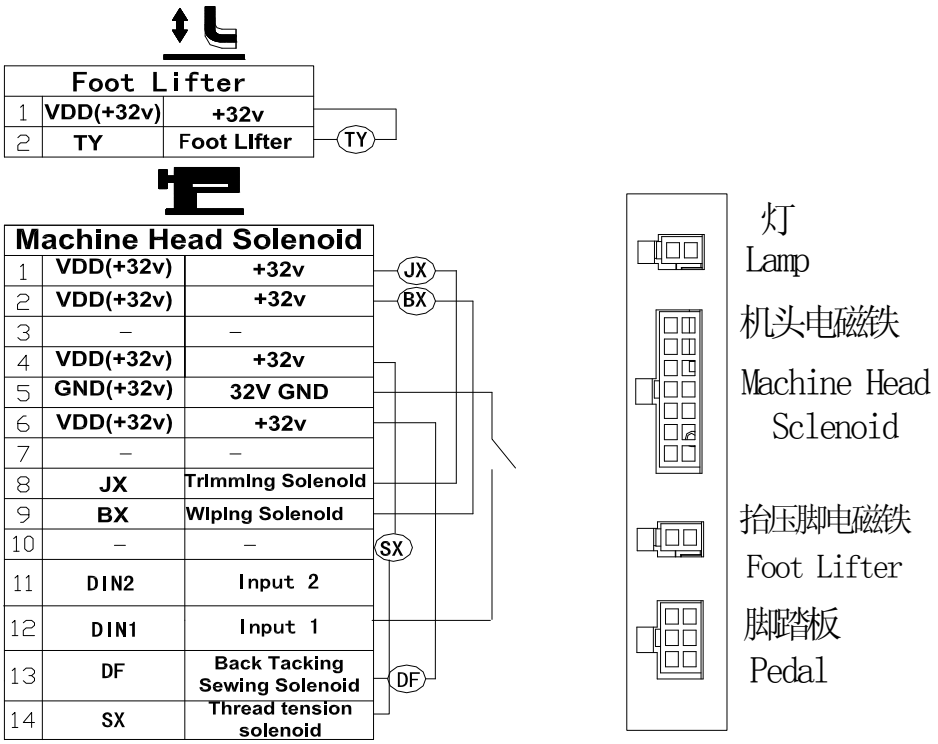


Fig. 4-1 controller link

⚠	CAUTION	Please check if all connectors match or not, pins are found right definition or not.

5. Recovery processing and maintenance

error code	meaning	solution
01	hardware overflow	Turn off the system power, restart after 30 seconds, if the controller still does not work, please replace it and inform the manufacturer.
02	software overflow	
03	system under-voltage	Disconnect the controller power and check if the input voltage is too low (lower than 176V). If yes, please restart the controller when the normal voltage is resumed. If the controller still does not work when the voltage is at normal level, please replace the controller and inform the manufacturer.
04	over-voltage when the machine is off	Disconnect the controller power and check if the input voltage is too high (higher than 264V). If yes, please restart the controller when the normal voltage is resumed. If the controller still does not work when the voltage is at normal level, please replace the controller and inform the manufacturer.
05	over-voltage in operation	
06	solenoid circuit failure	Turn off the system power, check if the solenoid is connected correctly and if it is loose or damaged. If yes, replace it in time. Restart the system upon making sure everything is in good order. If it still does not work, seek technical support.
07	electrical current checking circuit failure	Turn off the system power, restart after 30 seconds to see if it works well. If not, try several more times. If such failure happens frequently, seek technical support.
08	locked motor roller	Disconnect the controller power, check if the motor input plug is off, loose or damaged, or if there is something twined on the machine head. After checking and correction, if the system still does not work, please replace the controller and inform the manufacturer.
09	brake circuit failure	Turn off the system power, check if the white brake resistance plug on the power board is loose or dropped off, fasten it and restart the system. If it still does not work, please replace the controller and inform the manufacturer.
10	HMI communication failure	Check if the connecting line between control panel and controller is off, loose or broken, restore it and restart the system. If it still does not work, please replace the controller and inform the manufacturer.
11	machine head needle positioning failure	Check if the connection line between machine head synchronizer and controller is loose or not, restore it and restart the system. If it still does not work, please replace the controller and inform the manufacturer.
12	motor original angle checking failure	Please try 2 to 3 more times after power down, if it still does not work, please replace the controller and inform the manufacturer.
13	Motor HALL failure	Turn off the system power, check if the motor sensor plug is loose or dropped off, restore it and restart the system. If it still does not work, please replace the controller and inform the manufacturer.
14	DSP Read/Write EEPROM failure	Try another time after power down, if it still does not work, please replace the controller and inform the manufacturer.

15	Motor over-speed protection	Turn off the system power, turn on again in 30 seconds to see if it works. If not, try several more times, if such failure happens frequently, please change the controller and inform the manufacturer.
16	Motor reversion	Turn off the system power, restart the system after 30 seconds, if it still does not work, please replace the controller and inform the manufacturer.
17	HMI51 Read/Write EEPROM failure	Turn off the system power, restart the system after 30 seconds, if it still does not work, please replace the controller and inform the manufacturer.
18	Motor overload	Turn off the system power, restart the system after 30 seconds, if it still does not work, please replace the controller and inform the manufacturer.

● Besides adjusting stitch,please laypeople don´t debug or maintaine.

● Parts are subject to changes in design without prior notice.

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