

CE



TYPICAL

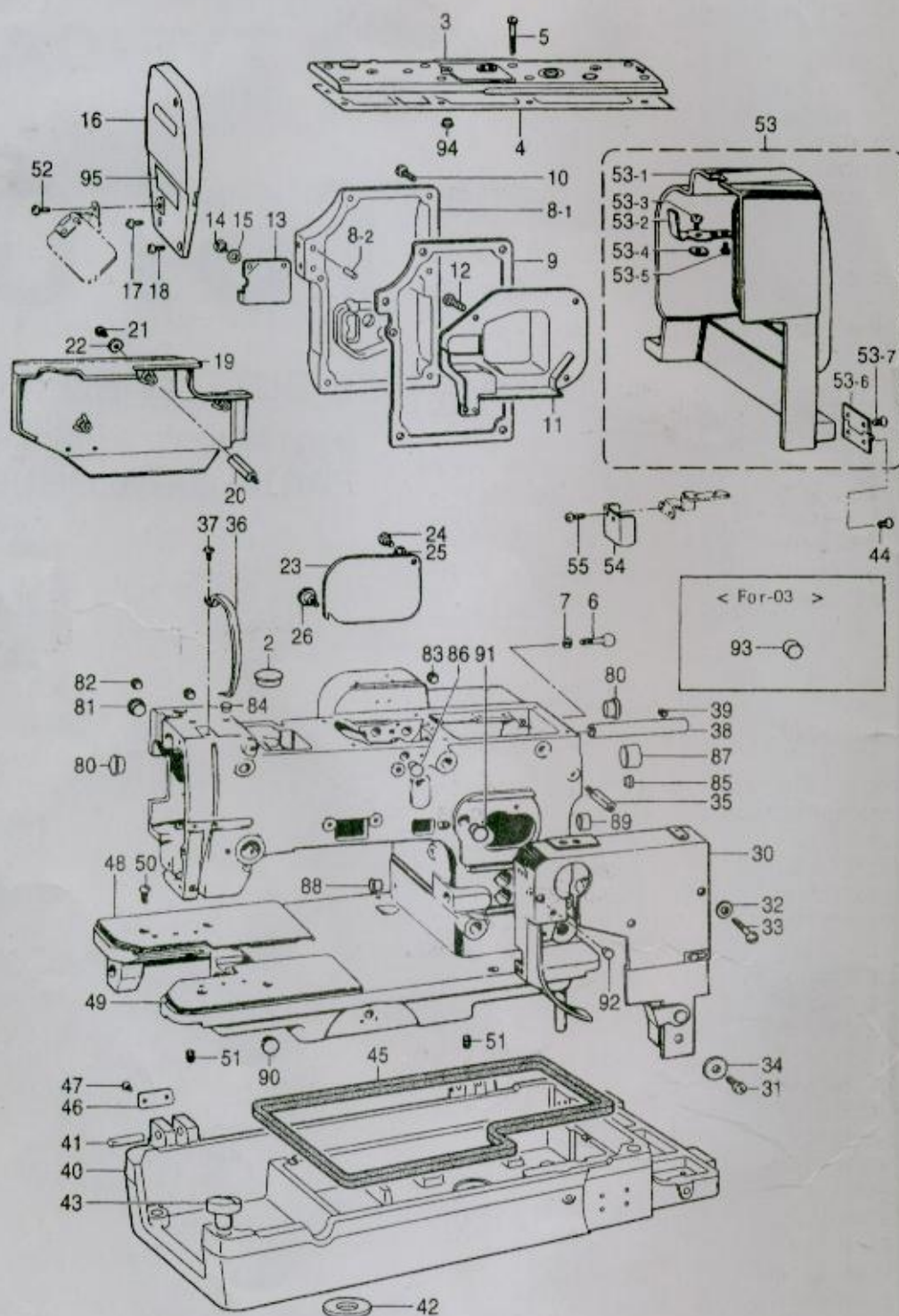
GT670

LOOKSTITCH BUTTON HOLER

INSTRUCTION BOOK
PARTS CATALOGUE

XI'AN TYPICAL INDUSTRIES CO., LTD.

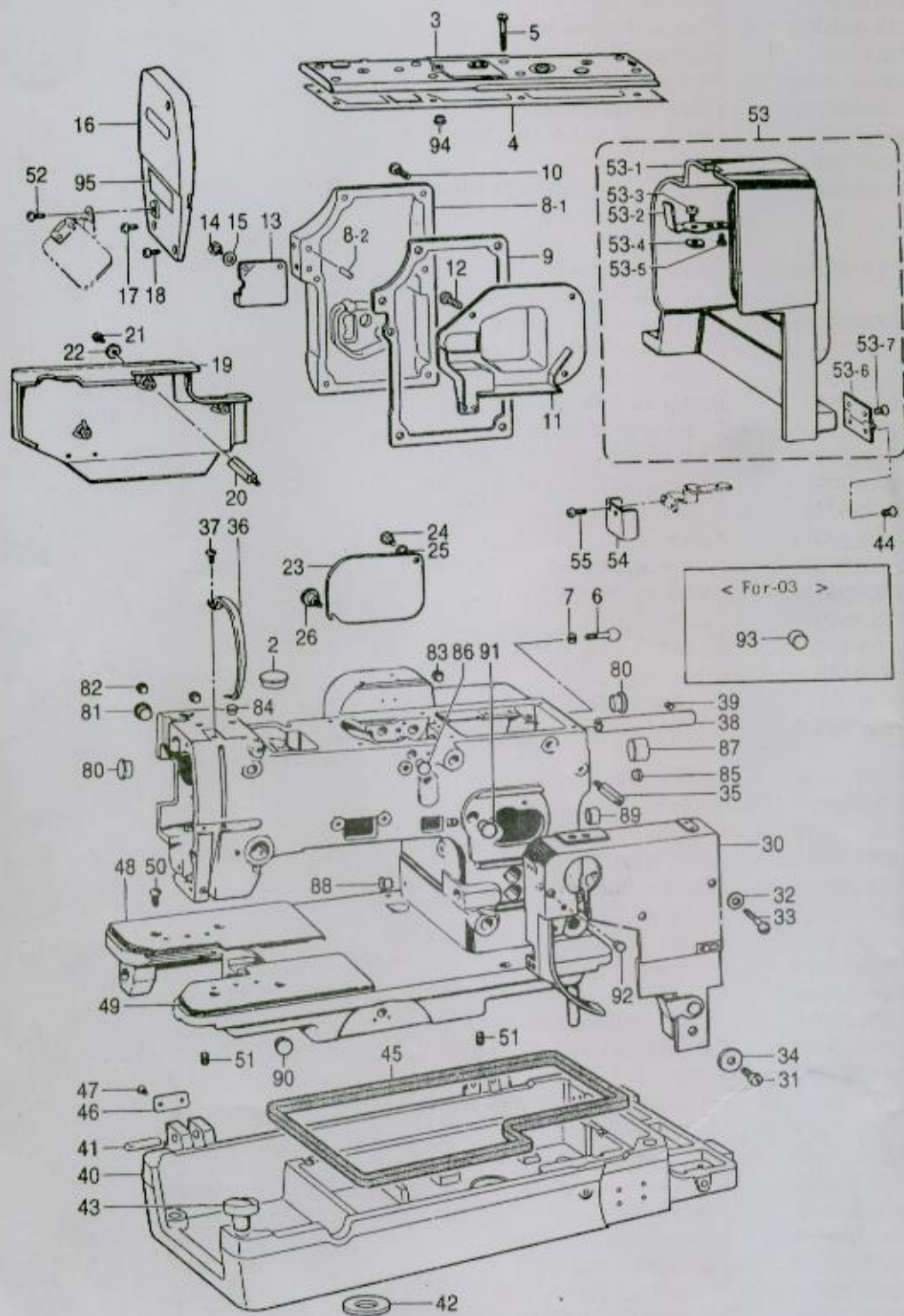
A. Machine body



A. Machine body

No.	Ret.	Description	Ot.
2	BX54735000	Rubber cap, 27.5	2
3	BX54732001	Top cover	1
4	BX54729000	Packing, top cover	1
5	B048399098	Screw, pan SM4.76 - 32 x 10	8
6	B969862009	Spring holder	1
7	B905876007	Nut SM4.37	1
8	BX54676009	Sub shaft cover assy	1
8-1	BX54733001	Sub shaft cover	1
8-2	B959857009	5 x 16 shaft	1
9	BX54609000	Packing, sub shaft cover	1
10	B048349498	Screw, pan SM5.95 - 28 x 16	6
11	BX54734000	Cover, oil rejecter	1
12	B040430298	Screw, bind SM3.57 - 40 x 8	4
		< For " -01, -02 & -04">	
13	BX54736909	Adjust window cover	1
		< For " -03">	
13	BX54184909	Adjust window cover, B	1
14	B903789007	Shoulder screw, SM4.76	1
15	B903093008	Washer, wave spring 6.45	1
16	BX78133901	Face plate	1
17	B048429698	Screw, pan SM4.37 - 40 x 14	2
18	B048429098	Screw, pan SM4.37 - 40 x 10	1
19	BX78131801	Side cover, frame	1
20	B969848059	Stud	3
21	B048429698	Screw, pan SM4.37 - 40 x 14	3
22	B085420978	Washer, plain S 4.37	3
		< For " -01, -02 & -04">	
23	B969847806	Gear case cover	1
		< For " -03">	
23	B963808806	Gear case cover	1
24	B903789007	Shoulder screw, SM4.76	1
25	B903093008	Washer, wave spring 6.45	1
26	B981124009	Screw	1
30	BX78126001	Cam cover	1
31	B900466005	Screw, SM4.37	1
32	B085420978	Washer, plain S 4.37	2
33	BX79202009	Screw, pan SM4.37 - 40 x 25	2
34	B994448007	Washer	1
35	B969843009	Stud	1
36	BX77009901	Cover, T/take-up lever	1
37	B048430598	Screw, pan SM3.57 - 40 x 5	1
38	B969392009	Pipe	1
39	B096340488	Set screw, socket SM5.95	1
40	BX54720909	Bed base	1
41	B969853009	Pin, dowel	2
42	BX54728000	Bed base cushion	4
43	B969852009	Bed cushion	2
44	B903879008	Screw, flat SM4.76	4
45	B996363009	Oil pan packing	2
46	B968798009	Head hook plate	2
47	B048420398	Screw, pan SM4.73 - 40 x 7	4

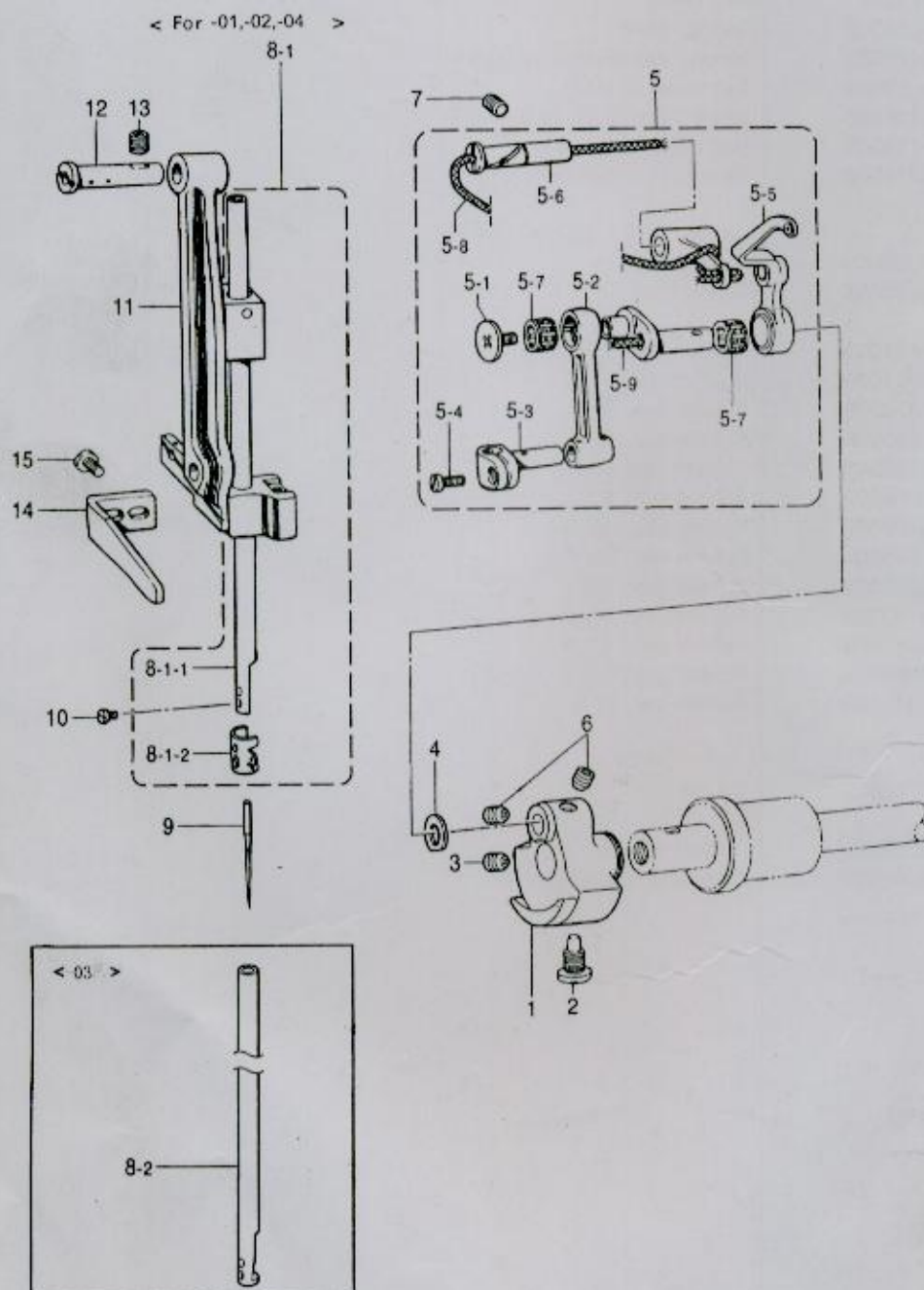
A. Machine body



A. Mechine body

No.	Ret.	Description	Ot.
		< For " -01 & -02 ">	
48	B967368959	Bed cover, L	1
49	B967369959	Bed cover, R	1
50	B040420398	Screw, bind SM4. 37 - 40 x 7	4
51	B096340488	Set screw, socket SM5. 95	2
52	B048390494	Screw, pan SM4. 76 - 32 x 6	1
53	B927258001	Belt cover assy	1
53 - 1	BX78132001	Belt cover	1
53 - 2	B969864009	Spring, plate	1
53 - 3	B048420598	Screw, pan SM4. 37 - 40 x 5	2
53 - 4	B969863009	Belt cover stopper	1
53 - 5	B048420598	Screw, pan SM4. 37 - 40 x 5	1
53 - 6	B903738009	Belt cover hinge assy	2
53 - 7	B903879008	Screw, flat SM4. 76	4
		< For " -01, -02 & -04 ">	
54	BX77006009	Cover	1
55	B048430698	Screw, pan SM3. 57 - 40 x 4	2
80	B906661009	Rubber cap, 15. 5	2
81	B906661009	Rubber cap, 15. 5	1
82	B906650909	Rubber cap, 8	1
83	B906650909	Rubber cap, 8	1
84	B906650909	Rubber cap, 8	1
85	B906650909	Rubber cap, 8	1
86	B906289009	Rubber cap, 10. 5	1
87	B906659909	Rubber cap, 23. 9	1
88	B952673009	Rubber cap, 10	1
89	BX00797009	Rubber cap, 16. 8	1
90	B906661009	Rubber cap, 15. 5	1
91	BX66090009	Rubber cap, 11. 5	1
92	B960783009	Rubber cap, 6. 3	1
		< For " -03 ">	
93	B965768009	Oil cap	1
94	B906650909	Rubber cap, 8	1
95	BX51008009	Threading diagram	1

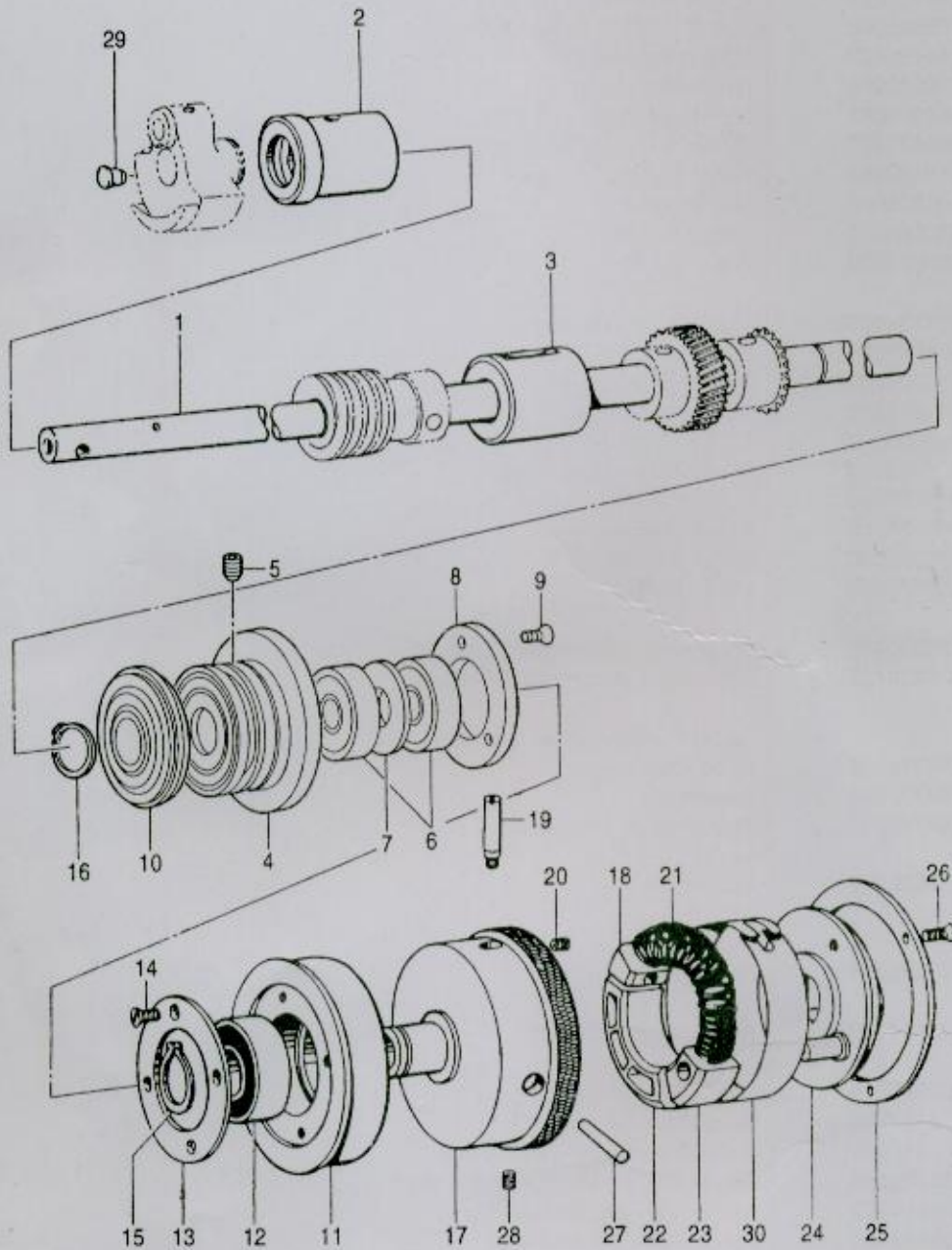
B. Needle bar and thread take – up mechanism



B. Needle bar and thread take – up mechanism

No.	Ret.	Description	Ot.
1	BX54778009	Thread take – up crank	1
2	B900850009	Screw, SM7. 14	1
3	B096330488	Set screw, socket (CP) SM6.35	1
4	B990743009	Washer, plain special 8	1
		< For " – 01, – 02 & – 04">	
5	BX54727809	Thread take – up lever assy	1
5 – 1	B965645009	Screw, SM3. 57 – 40 x 6 L	1
5 – 2	BX54725009	Needle barcrank rod	1
5 – 3	B999873009	Needle bar clamp	1
5 – 4	B960006009	Screw, SM3. 57 – 40 x 7	1
5 – 5	BX50971009	Thread take – up lever assy	1
5 – 6	BX58167009	Support shaft	1
5 – 7	B994375000	Needle bearing	2
5 – 8	BX50968000	Wick, 3 x 290	1
5 – 9	B960670009	Wick, L = 40	1
		< For " – 03">	
5	BX51734009	Thread take – up lever set	1
5 – 1	B965645009	Screw, SM3. 57 – 40 x 6 L	1
5 – 2	BX54725009	Needle barcrank rod	1
5 – 3	B999873009	Needle bar clamp	1
5 – 4	B960006009	Screw, SM3. 57 – 40 x 7	1
5 – 5	BX78123009	Thread take – up lever assy	1
5 – 6	BX58167009	Support shaft	1
5 – 7	B994375000	Needle bearing	2
5 – 8	BX50968000	Wick, 3 x 290	1
5 – 9	B960670009	Wick, L = 40	1
6	B096330488	Set screw, socket (CP) SM6.35	2
7	B096330488	Set screw, socket (CP) SM6.35	1
		< For " – 01, – 02 & – 04">	
8 – 1	BX54779009	Needle bar assy	1
8 – 1 – 1	BX54777009	Needle bar	1
8 – 1 – 2	BX54776009	Thread guide, needle bar	1
		< For " – 03">	
8 – 2	B952225809	Needle bar	1
		< For " – 02">	
9	B903695099	Needle, DP x 5 (#11)	1
		< For " – 01, – 03 & – 04">	
9	B903695096	Needle, DP x 5 (#14)	1
10	B960557908	Set screw, SM3. 18	1
11	BX54187909	N – bar bracket assy	1
12	B969815009	Support stud, ; N – bar bracket	1
13	B096330488	Set screw, socket (CP) SM6.35	1
14	B969814009	Guide, ; N – bar bracket	1
15	B040429098	Screw, bind SM4. 37 x 10	2

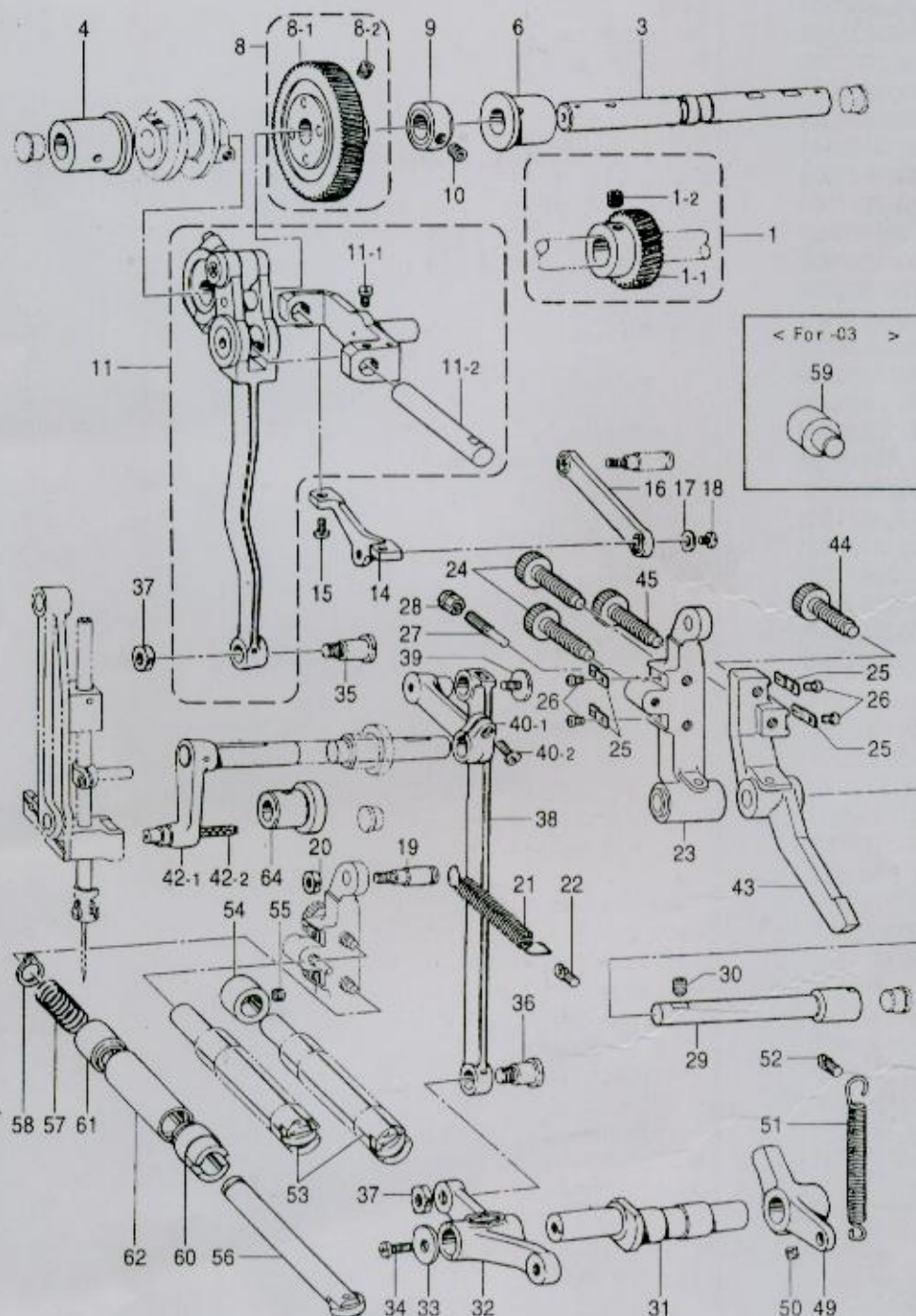
C. upper shaft mechanism



C. upper shaft mechanism

No.	Ret.	Description	Ot.
1	BX54772009	Upper shaft	1
2	B969838009	Bush, F ; U - shaft	1
3	B969837900	Bush, M ; U - shaft	1
4	BX54723000	Ball bearing case	1
5	B096320488	Set screw, socket (CP) SM6.35	1
6	B038480840	Ball bearing, 6202VVC2	2
7	B969835009	Collar	1
8	B969834009	Ball bearing cap, S	1
9	B908267006	Screw, flat SM3.57	3
10	B969833000	Oil rejector	1
11	B969832009	Idle pulley	1
12	B038400540	Ball bearing, 6005VV	1
13	B969831009	Ball bearing cap, L	1
14	B908267006	Screw, flat SM3.57	4
15	B062850968	Retaining ring, external C25	1
16	B062950968	Retaining ring, external C15	1
17	B969820009	Pulley	1
18	B969829009	Slide block	1
19	B969828009	Shaft	1
20	B097430398	Set screw, (CP) SM3.57	1
21	B969827009	Spring	1
22	BX76378000	Spring holder	1
23	B969825009	Slide block, ; P - stop cam	1
24	B969824009	Stop cam assy	1
25	B969821009	Cap, ; stop cam	1
26	B993762009	Screw, flat SM3.57	3
27	B968813009	Pin, taper	1
28	B096330488	Set screw, socket (CP) SM6.35	1
29	B999245009	Cap, 6	1
30	B968359009	Spring cover	1

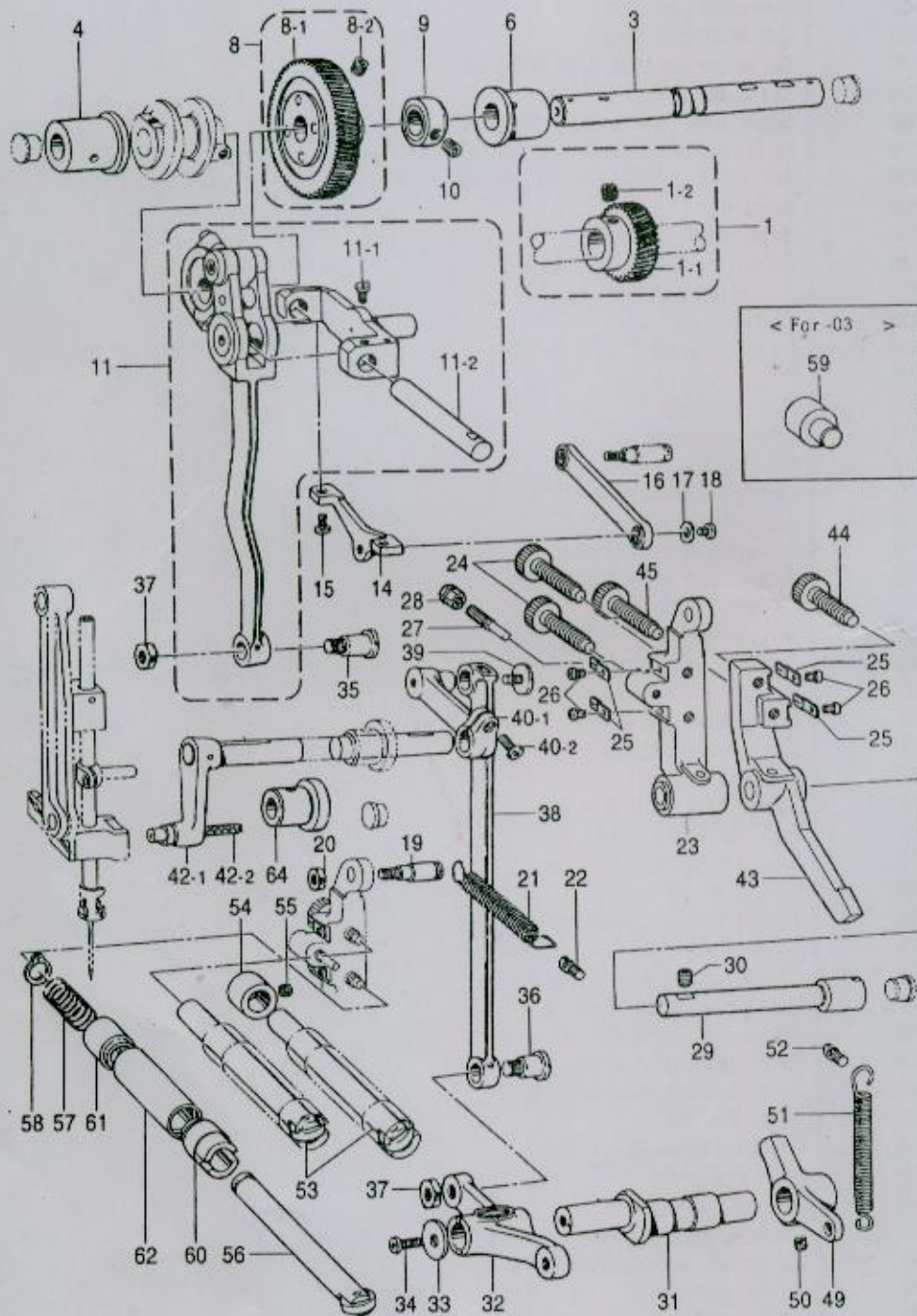
D. Zigzag mechanism



D. Zigzag mechanism

No.	Ret.	Description	Ot.
1	B927308059	Reduction gear assy	1
1 - 1	B969701009	Reduction gear	1
1 - 2	B096330488	Set screw, socket (CP) SM6.35	2
3	B969790009	Sub shaft	1
4	B969799000	Bush, F ; S - shaft	1
6	B969798000	Bush, B ; S - shaft	1
8	B927307059	Sub shaft gear set	1
8 - 1	B969797909	Sub shaft gear assy	1
8 - 2	B096330488	Set screw, socket (CP) SM6.35	2
9	BX54109009	Set screw collar, S - shaft	1
10	B096330488	Set screw, socket (CP) SM6.35	2
11	B963109009	Zigzag adjusting cam assy	1
11 - 1	B980110009	Set screw, (CP) SM4.37 - 40 x 8	1
11 - 2	B969784009	Rod pin	1
14	B969782080	Shaft, regurator link	1
15	B048420398	Screw, pan SM4.73 - 40 x 7	2
16	B969781009	Zigzag regurator link assy	1
17	B908303008	Washer, plain 4	1
18	B048430498	Screw, pan SM3.57 - 40 x 6	1
19	B969778009	Pin	1
20	B904522007	Nut, SM5.95	1
21	B969777009	Spring, extension	1
22	B969776009	Spring hook	1
23	BX54760009	Zigzag adjusting lever	1
24	B951104009	Adjusting screw	2
25	B952179009	Adjusting screw presser	4
26	B048420598	Screw, pan SM4.37 - 40 x 5	4
27	BX54681009	Stopper, ADJ - lever	1
28	B959102009	Nut, SM5.95	1
29	BX54771009	Shaft, Z - adjusting lever	1
30	B096340488	Set screw, socket SM5.95	1
31	B969769009	Zigzag eccentric shaft	1
32	B969768050	Zigzag eccentric shaft link	1
33	B961015009	Washer, plain 6	1
34	B048349898	Screw, pan SM5.95 - 28 x 12	1
35	B969766009	Shoulder screw, SM7.94	1
36	B969765009	Shoulder screw, SM7.94	1
37	B607722008	Nut, SM7.94	2
38	B969764009	Zigzag connecting rod	1
39	B900599007	Screw, SM4.76	1
40	B927364009	Z - connecting lever assy, A	1
40 - 1	B969763009	Zigzag connecting lever, A	1
40 - 2	B048399698	Screw, pan SM4.76 - 32 x 14	1
42	BX54103009	Z - connecting lever set, B	1
42 - 1	B969762909	Z - connecting lever assy, B	1
42 - 2	BX54104000	Wick, 2 x 155	1
43	BX54769009	Changing lever, Z - position	1
44	B952170009	Adjusting screw	1
45	B951104009	Adjusting screw	1
49	B969753000	Changing lever stopper	1
50	B096340488	Set screw, socket SM5.95	2
51	B969752009	Spring, extension	1
52	B969776009	Spring hook	1
		< For " -01, -02 & -04" >	
53	B969751009	Zigzag connecting shaft	2
		< For " -03" >	
53	B969751009	Zigzag connecting shaft	1
54	B969759009	Set screw collar	1

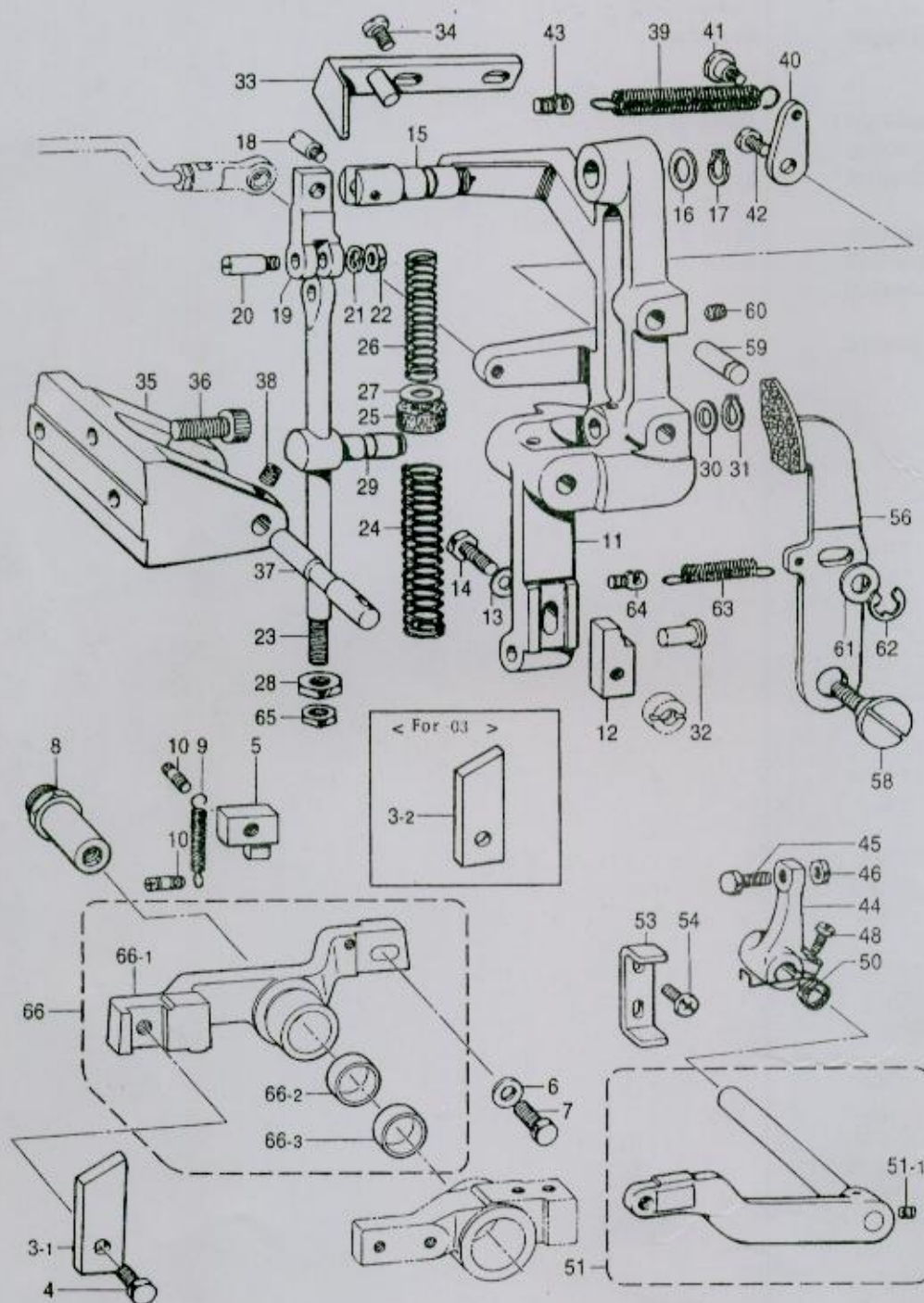
D. Zigzag mechanism



D. Zigzag mechanism

No.	Ret.	Description	Ot.
55	B096330488	Set screw, socket (CP) SM6.35	1
56	B969451009	Bar tack connecting shaft	1
57	B969747009	Spring, compression	1
58	B062990968	Retaining ring, external C11	1
< For " -03" >			
59	B965766009	Stud shaft	1
< For " -01, -02 & -04" >			
60	B969394000	Bush, R	3
61	B969745000	Bush, L	3
62	B969744009	Collar	3
< For " -03" >			
60	B969394000	Bush, R	2
61	B969745000	Bush, L	2
62	B969744009	Collar	2
64	B963955000	Bush	1

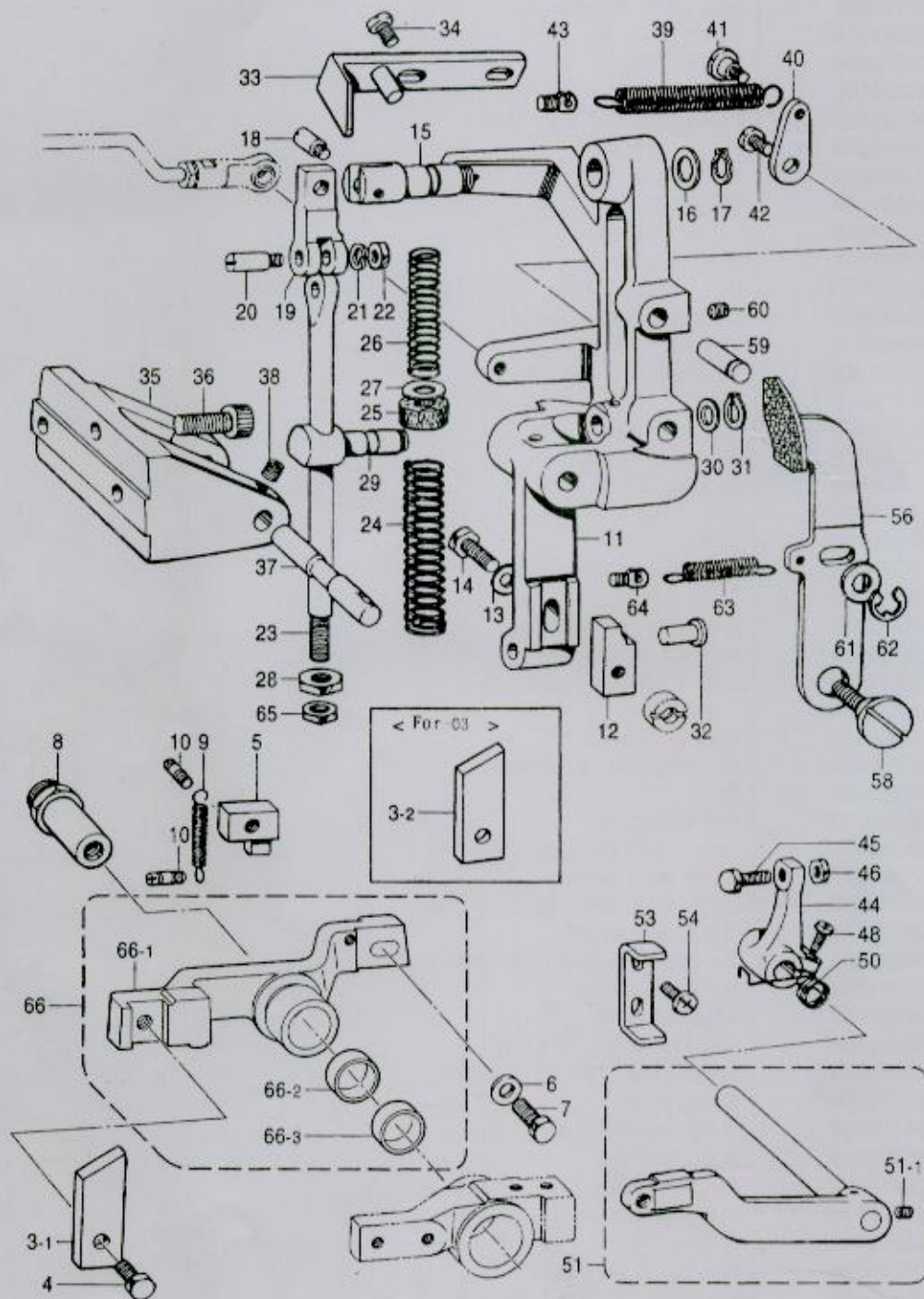
E. Clutch mechanism



E. Clutch mechanism

No.	Ret.	Description	Qt.
3 - 1	B969563009	< For " -01, -02 & -04" > Stop cam segment, B	1
3 - 2	B965668009	< For " -03" > Stop cam segment, B	1
4	B093349698	Bolt, SM5. 95 x 14	1
5	B969562009	Clutch claw, A	1
6	B992375008	Washer, plain	1
7	B093329698	Bolt, SM6. 35 x 14	1
8	B969492009	Emergency stop lever shaft	1
9	B969561009	Spring, extension	1
10	B969550009	Spring hook	2
11	B964069008	Clutch lever	1
12	B969557009	Clutch claw, B	1
13	B992375008	Washer, plain	1
14	B093328598	Bolt, SM6. 35 x 25	1
15	B968443909	Clutch stopper support	1
16	B085900978	Washer, plain S 10	1
17	B062900968	Retaining ring, external C10	1
18	B995566009	Support shaft, C - stopper	1
19	B995565009	Clutch stopper	1
20	B995564009	Stud, C - stopper	1
21	B082050860	Washer, spring 2 - 5	1
22	B089390808	Nut, 2 SM4. 76	1
23	B969556009	Spring shaft	1
24	B963471009	Spring, C ; compression	1
25	B995550009	Felt	1
26	B995559009	Spring, B ; compression	1
27	B085900978	Washer, plain S 10	1
28	B089240808	Nut, 2 SM9. 52	1
29	B995558009	Shaft clamp	1
30	B085900978	Washer, plain S 10	1
31	B062900968	Retaining ring, external C10	1
32	B989555009	Pin	1
33	B969554909	Belt shifter, U	1
34	B048349098	Screw, pan SM5. 95 - 28 x 10	2
35	B969553957	Clutch lever bracket	1
36	BX54699009	bolt, socket M8 x 25	3
37	B969552009	Clutch lever shaft	1
38	B096330488	Set screw, socket (CP) SM6. 35	1
39	B969551909	Spring, extention	1
40	B995552008	Adjusting plate	1
41	B995551008	Shoulder screw, SM4. 76	1
42	B048349098	Screw, pan SM5. 95 - 28 x 10	1
43	B969776009	Spring hook	1
44	B964155006	Clutch starting lever	1
45	B995525009	Bolt, SM7. 94	1
46	B958113009	Nut, SM7. 94	1
48	B048399698	Screw, pan SM4. 76 - 32 x 14	2
50	BX52011009	Spring	1
51	B950572006	Starting lift lever assy	1
51 - 1	B096330488	Set screw, socket (CP) SM6. 35	1
53	B969546009	Starting lever stopper	1
54	B048349898	Screw, pan SM5. 95 - 28 x 12	2
56	B968355089	Brake lever assy	1
58	B969157009	Shoulder screw, SM7. 14	1
59	B968896009	Brake lever pin	1
60	B096340488	Set screw, socket SM5. 95	1
61	B903957008	Washer	1
62	B062030768	Retaining ring, E7	1

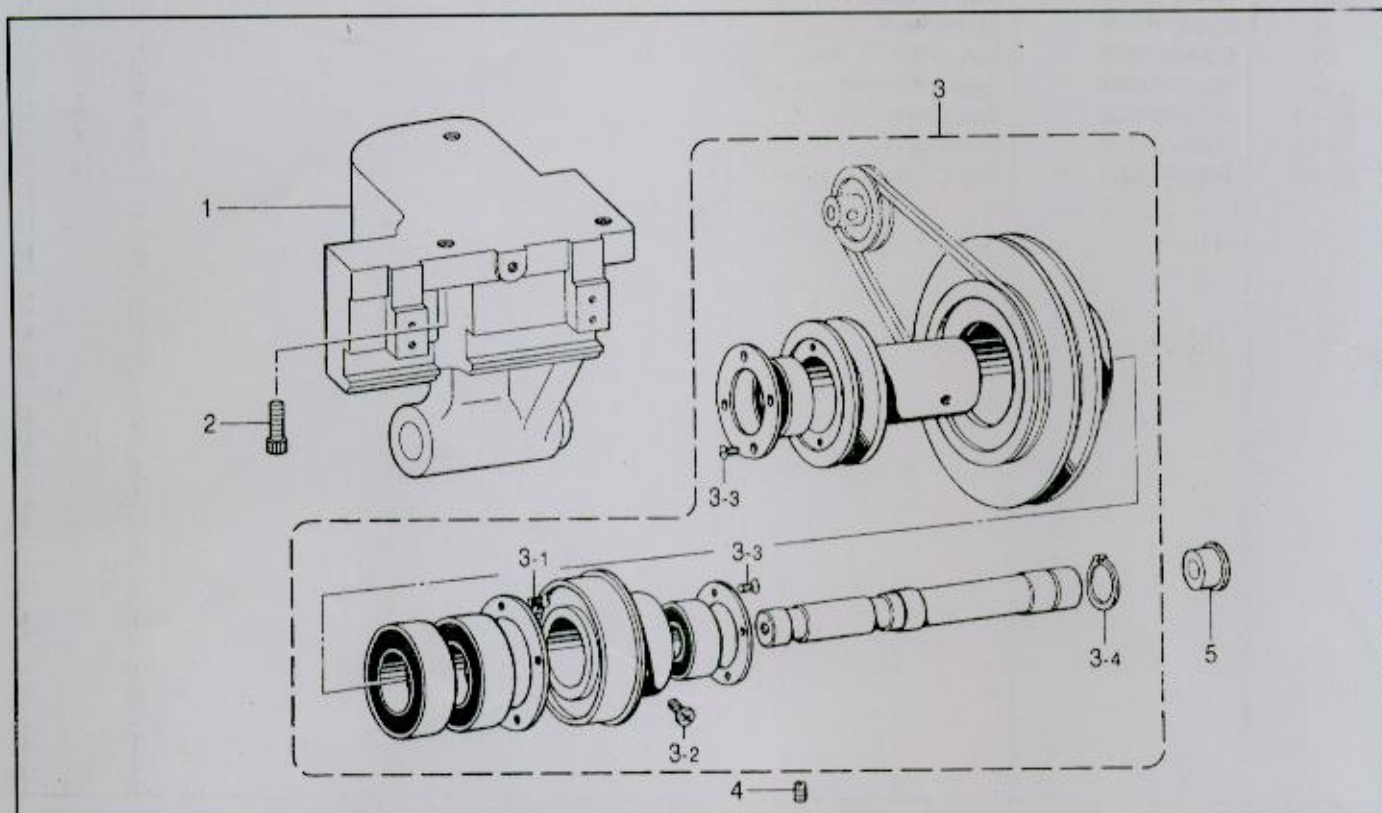
E. Clutch mechanism



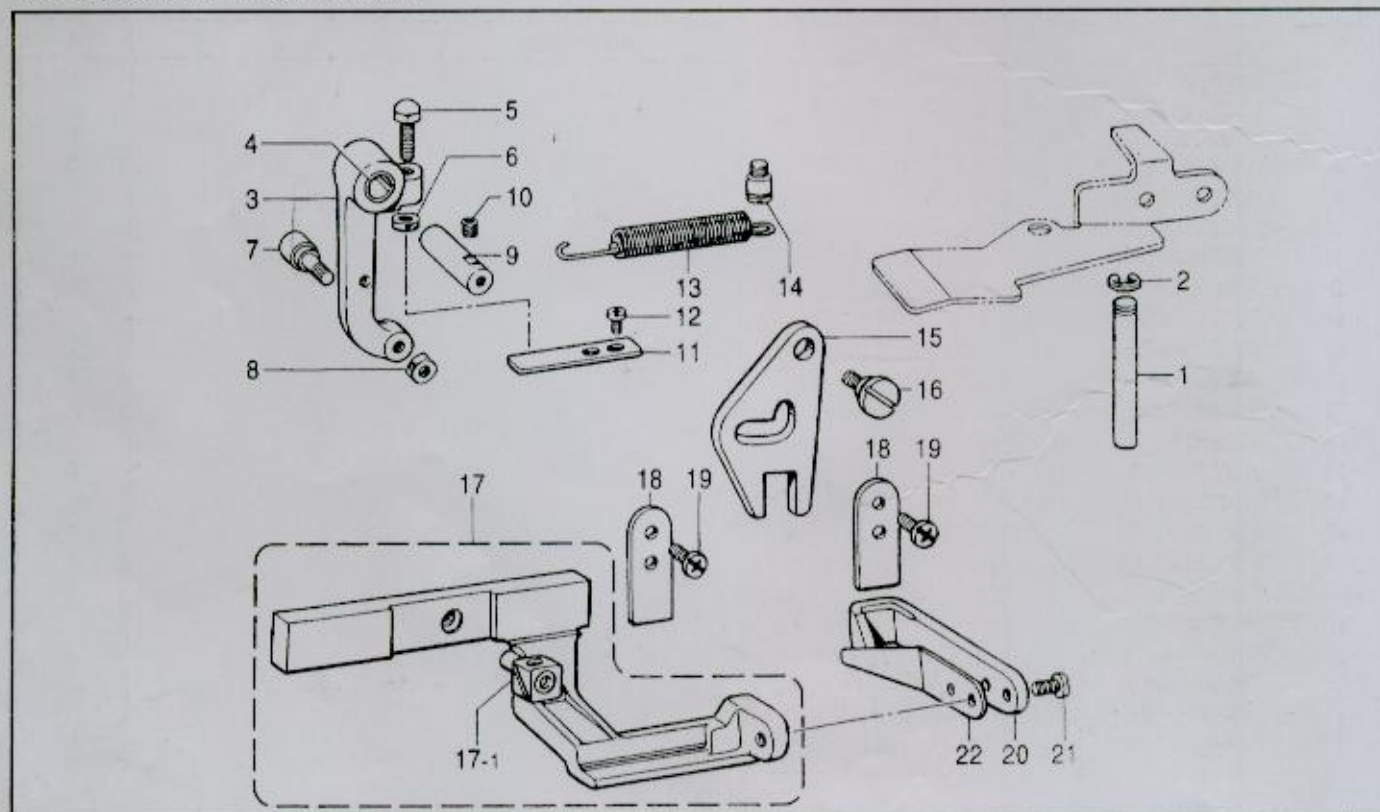
E. Clutch mechanism

No.	Ret.	Description	Ot.
63	B968339009	Spring, extension	1
64	B969776009	Spring hook	1
65	B900035006	Nut, SM9. 52	1
66	B929302009	Stop lever assy	1
66 - 1	B969564009	Stop lever	1
66 - 2	B968738900	Bushing	1
66 - 3	B968737000	Bush, DU	1

F. Power transmitter



G. Belt shift mechanism



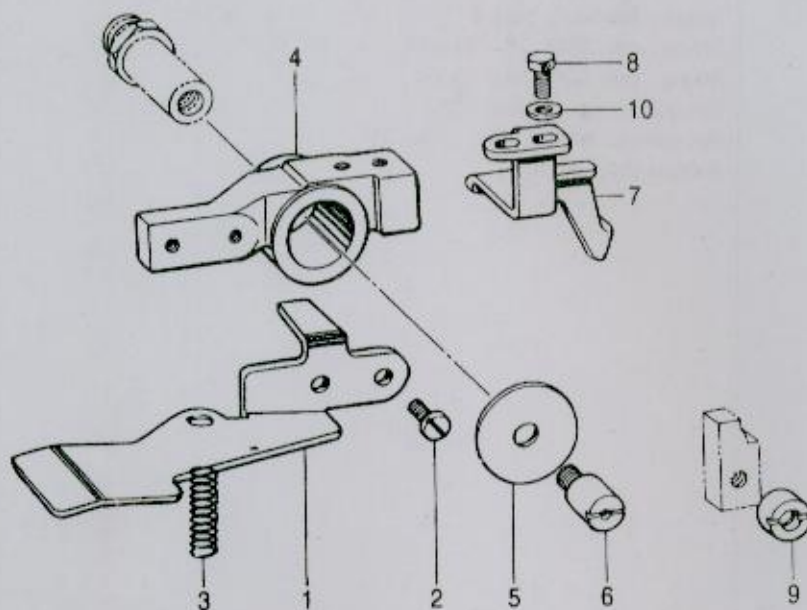
F. Power transmitter

No.	Ret.	Description	Ot.
1	BX54731009	Transmitter base	1
2	B092028588	Bolt, socket M8 x 25	3
3	B969544609	Transmitter assy	1
3-1	BX09415009	Screw, flat SM3. 18 x 8	4
3-2	B048399698	Screw, pan SM4. 76 - 32 x 14	2
3-3	B048440398	Screw, pan SM3. 18 - 40 x 7	8
3-4	B062800968	Retaining ring, external C20	1
4	B096329078	Set screw, socket (CP) SM6. 35	2
5	B999173009	Rubber cap, 15. 5	1

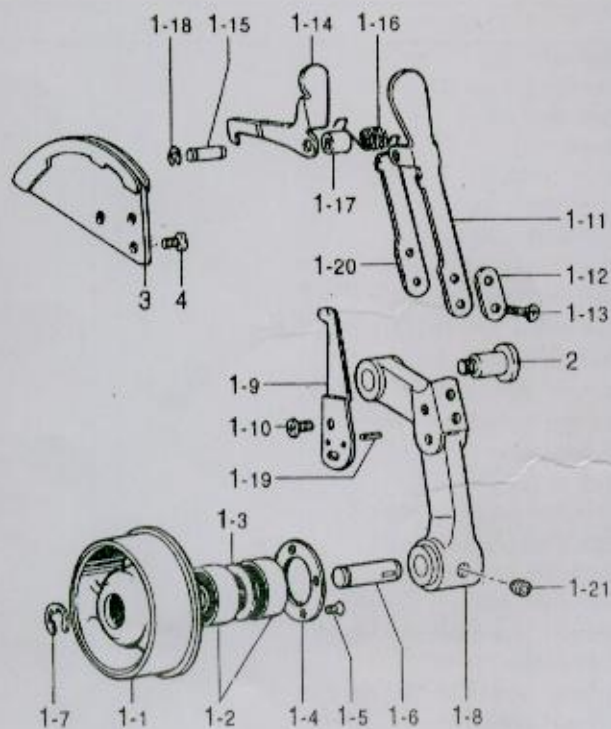
G. Belt shift mechanism

No.	Ret.	Description	Ot.
1	B969536009	Belt shift bar	1
2	B062030768	Retaining ring, E7	1
3	B969535009	Belt shift lever	1
4	B968737000	Bush, DU	2
5	B995525009	Bolt, SM7. 94	1
6	B958113009	Nut, SM7. 94	1
7	B969534009	Belt shift roller assy	1
8	B089350908	Nut, 1 SM5. 56 - 32	1
9	B969531009	Belt shift lever stud	1
10	B096330488	Set screw socket (CP) SM6. 35	1
11	B969520009	Belt shift lever stopper	1
12	B048420298	Screw, pan SM4. 37 - 40 x 8	2
13	B969529009	Spring, extension	1
14	B969638008	Spring hook	1
15	B969528009	Belt shift cam	1
16	B969527909	Shoulder screw, SM6. 35	1
17	B969526009	Belt shift bracket assy	1
17-1	B969524909	Belt shift slide block assy	1
18	B969522009	Belt shift guide	2
19	B048420298	Screw, pan SM4. 37 - 40 x 8	4
20	B969521009	Belt shifter, D	1
21	B048399098	Screw, pan SM4. 76 - 32 x 10	2
22	B965179009	Spring, plate	1

H. Emergency stop mechanism



J. Tension pulley mechanism



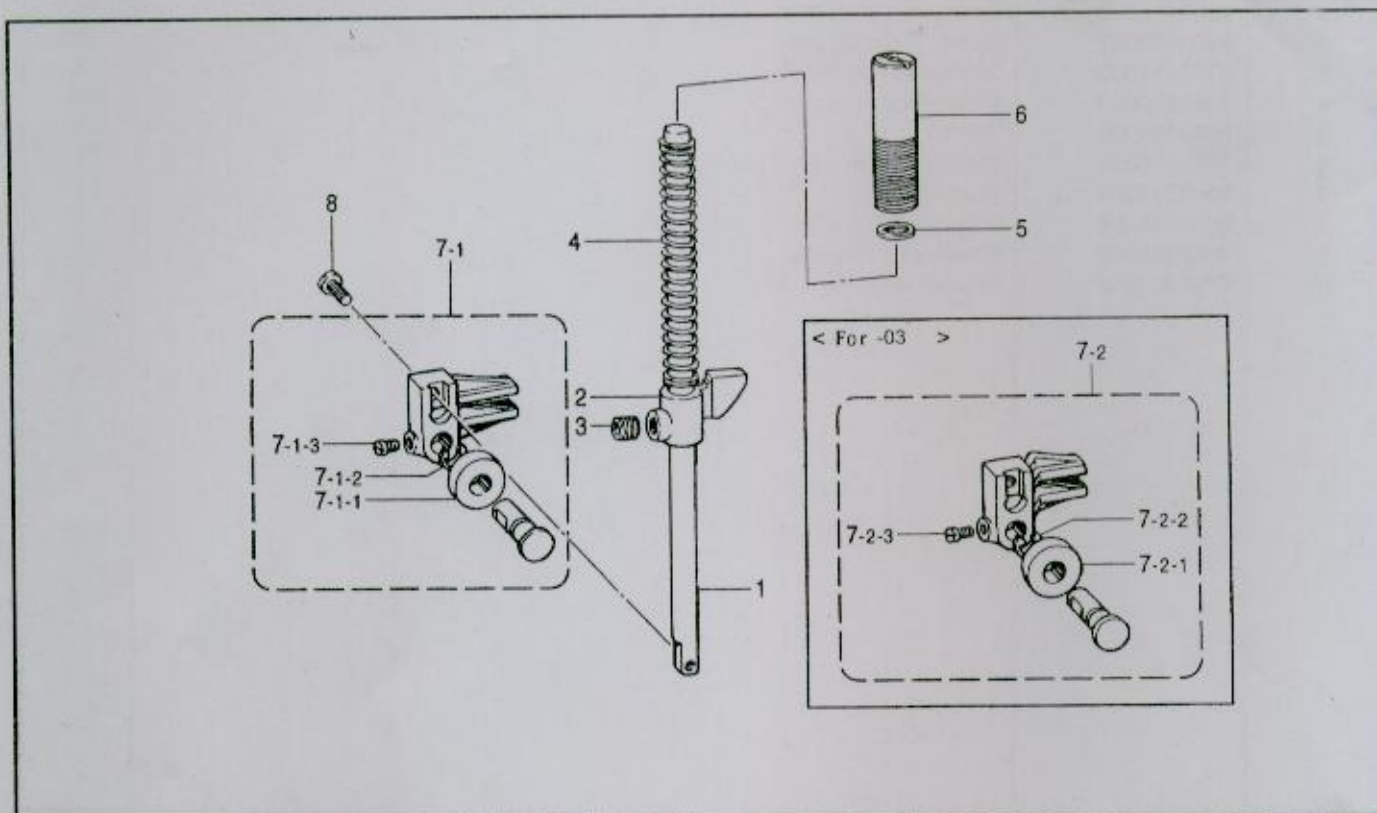
H. Emergency stop mechanism

No.	Ret.	Description	Ot.
1	B969412009	Emergency stop lever	1
2	B903603007	Screw, SM4. 37 x 9	2
3	B969411009	Spring, compression	1
4	B969300909	Emergency stop lever	1
5	B969309009	Washer	1
6	B969308009	Presser screw, ; stop - lever	1
7	B969307009	Holding plate	1
8	B093429098	Bolt, SM4. 37 x 10	2
9	B969306009	Emergency stop joint	1
10	B085420878	Washer, plain M 4. 37	2

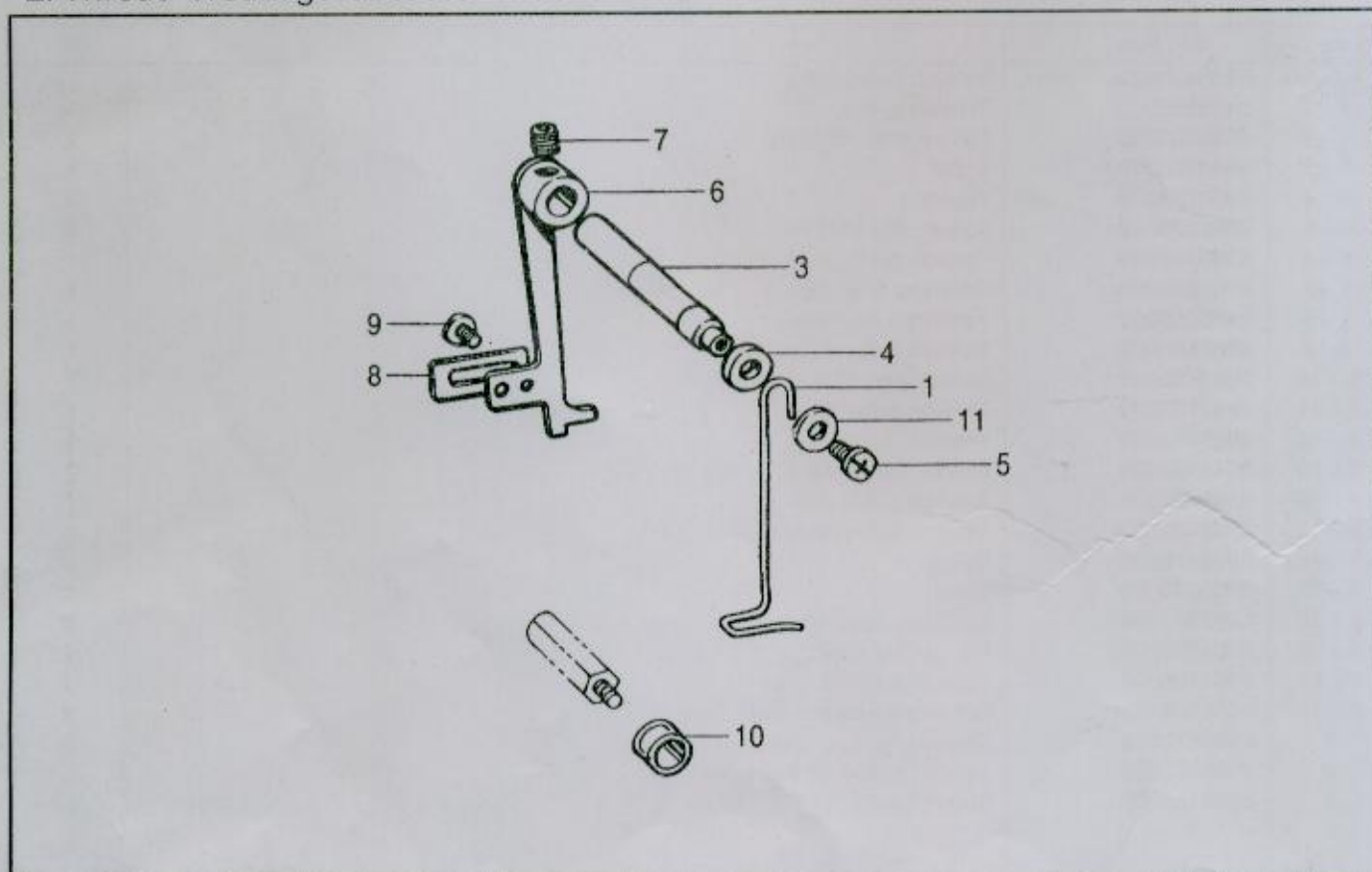
J. Tension pulley mechanism

No.	Ret.	Description	Ot.
1	B969489909	Tension pulley assy	1
1-1	BX76359000	Tension pulley	1
1-2	B038400060	Ball bearing, 6000DD	2
1-3	B968768000	Collar	1
1-4	B969794009	Washer	1
1-5	B990925008	Screw, flat SM3. 18	4
1-6	B969487909	Tension pulley shaft	1
1-7	B062010768	Retaining ring, E9	1
1-8	BXF0065009	Tension pulley arm	1
1-9	B969485009	Tension pulley indicator	1
1-10	B048430498	Screw, pan SM3. 57 - 40 x 6	2
1-11	B967193009	Tension pulley lever	1
1-12	B969483009	Washer	1
1-13	B048439898	Screw, pan SM3. 57 - 40 x 12	2
1-14	B969482009	Tension pulley claw	1
1-15	B969481009	Tension pulley claw stud	1
1-16	B969470009	Spring	1
1-17	B969479009	Collar	1
1-18	B062070768	Retaining ring, E3	2
1-19	B063850268	Pin, spring roll AW2.5	2
1-20	B967196009	Tension lever, S	1
1-21	B096320488	Set screw, socket (CP) SM6.35	2
2	B969478909	Shoulder screw, SM7.94	1
3	B969477009	Tension pulley ratchet assy	1
4	B048420298	Screw, pan SM4. 37 - 40 x 8	3

K. Presser foot mechanism



L. Thread breakage detector mechanism



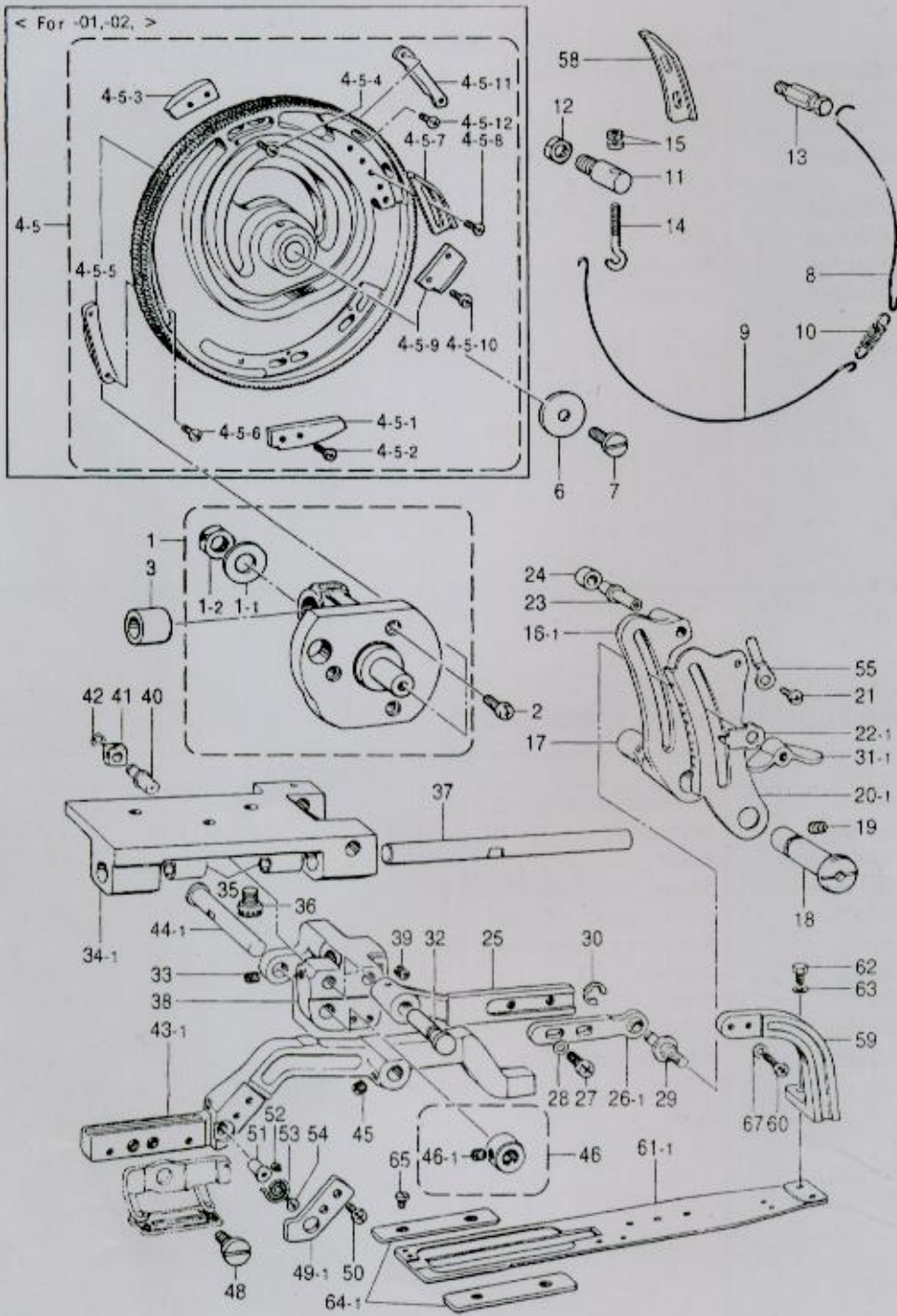
K. Presser foot mechanism

No.	Ret.	Description	Ot.
1	B969661009	Presser bar	1
2	BX76377009	Guide bracket, ; P - bar	1
3	B096330488	Set screw, socket (CP) SM6.35	1
4	B969659009	Spring, L	1
5	B900829009	Washer, plain	1
6	B969656001	Adjust screw	1
< For " -01, -02 & -04">			
7 - 1	B969655809	Presser bar roller assy	1
7 - 1 - 1	B954231009	Roller, 7 x 17	1
7 - 1 - 2	B062040768	Retaining ring, E6	1
7 - 1 - 3	B900744008	Set screw, (FT) SM4.37 x 5	1
< For " -03">			
7 - 2	B965733809	Presser bar roller assy	1
7 - 2 - 1	B954220009	Roller, 7 x 14	1
7 - 2 - 2	B062040768	Retaining ring, E6	1
7 - 2 - 3	B900744008	Set screw, (FT) SM4.37 x 5	1
8	B048429098	Screw, pan SM4.37 - 40 x 10	1

L. Thread breakage detector mechanism

No.	Ret.	Description	Ot.
1	B969496009	Tr. breakage perceiving wire	1
3	B969494009	Lever shaft	1
4	B969493009	Collar	1
5	B040430498	Screw, bind SM3.57 - 40 x 6	1
6	B969491009	Fixeing plate, ; C - bar	1
7	B096340488	Set screw, socket SM5.95	1
8	B969480009	Balancer	1
9	B909439008	Screw, SM4.37	1
10	B964857000	Tube, L5	1
11	B085750778	Washer, plain L 3.5	1

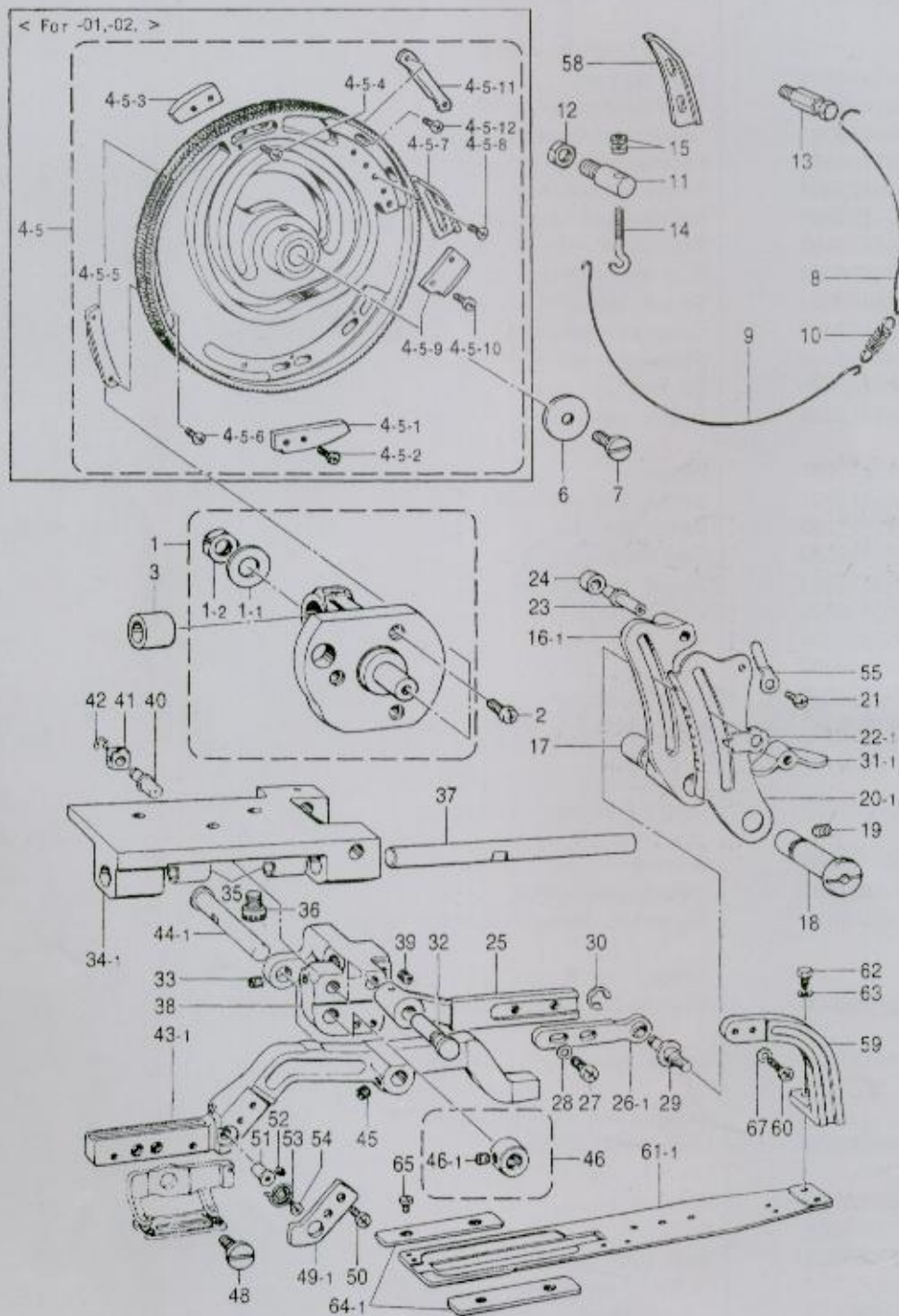
M1. Feed mechanism



M1. Feed mechanism

No.	Ret.	Description	Qt.
1	BX54768009	Feed cam shaft assy	1
1 - 1	B085100878	Washer, plain M 12. 70	1
1 - 2	B089190708	Nut, 3 SM12. 70	1
2	B048349898	Screw, pan SM5. 95 - 28 x 12	3
3	B969606000	Bush, ; C - shaft bracket	1
		< For " - 01 & - 02 ">	
4 - 5	BX61914909	Feed cam set	1
4 - 5 - 1	BX60497009	T - release cam segment, F	1
4 - 5 - 2	B048429098	Screw, pan SM4. 37 - 40 x 10	2
4 - 5 - 3	B967166909	Tension release cam segment, B	1
4 - 5 - 4	B048429898	Screw, pan SM4. 37 - 40 x 12	2
4 - 5 - 5	B969665909	Bar tack cam segment	1
4 - 5 - 6	B048429898	Screw, pan SM4. 37 - 40 x 12	2
4 - 5 - 7	B969664009	Stop cam segment, A ; large	1
4 - 5 - 8	B048429098	Screw, pan SM4. 37 - 40 x 10	2
4 - 5 - 9	B969662809	Cutter cam segment	1
4 - 5 - 10	B048429098	Screw, pan SM4. 37 - 40 x 10	2
4 - 5 - 11	BX60496009	Bar tack cam segment, F	1
4 - 5 - 12	B048429838	Screw, pan SM4. 37 - 40 x 12	2
6	B969600001	Washer	1
7	B969602001	Screw, SM5. 95 (left)	1
8	B969601009	Cam brake wire, A	1
9	B969690009	Cam brake wire, B	1
10	B969699009	Spring, extension	1
11	BX54766009	Wire hook, A	1
12	B904963008	Nut, SM7. 94	1
13	BX54765009	Wire hook, B	1
14	B960163008	Adjusting screw	1
15	B089600908	Nut, 1 M4	2
		< For " - 01, - 02 & - 03 ">	
16 - 1	B967371006	Length feed adjusting lever	1
17	B968738900	Bushing	2
18	B969693001	Adjusting lever shaft	1
19	B096349070	Set screw, socket (CP) SM5. 95 x 10	1
		< For " - 01 & - 02 ">	
20 - 1	B967360009	Stitch length control plate	1
21	B048430498	Screw, pan SM3. 57 - 40 x 6	1
		< For " - 01, - 02 & - 03 ">	
22 - 1	B969691009	Length feed indicator	1
23	B969680009	Roller shaft	1
24	B903550008	Roller	1
25	B969689006	Feed lever, A	1
		< For " - 01 & - 02 ">	
26 - 1	B969688009	Feed lever assy, B	1
27	B048349098	Screw, pan SM5. 95 - 28 x 10	2
28	B992375008	Washer, plain	2
29	B963165009	Joint stud	1
30	B062050768	Retaining ring, E5	1

M1. Feed mechanism

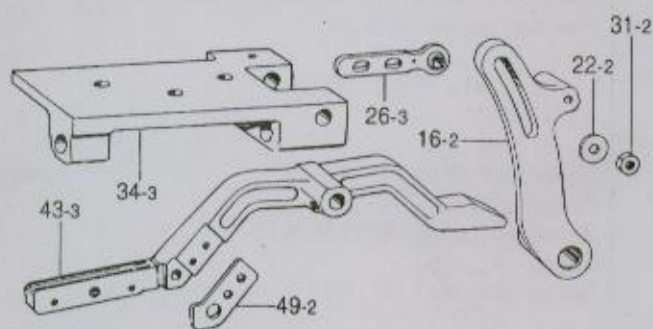
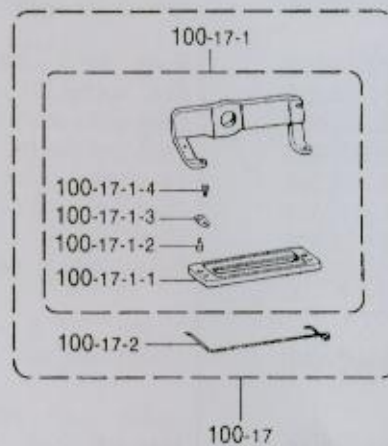
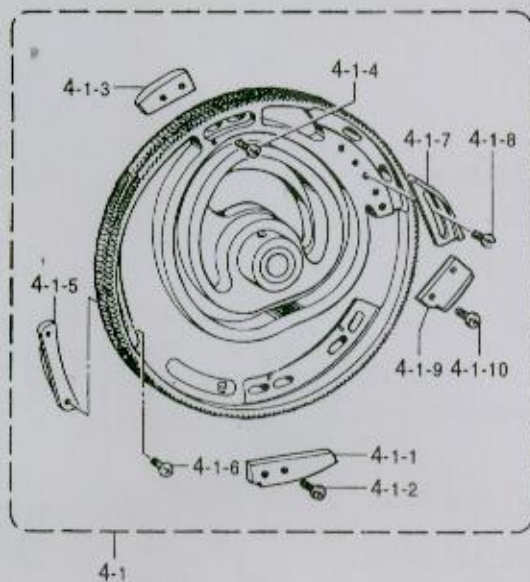


M1. Feed mechanism

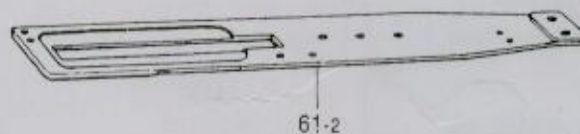
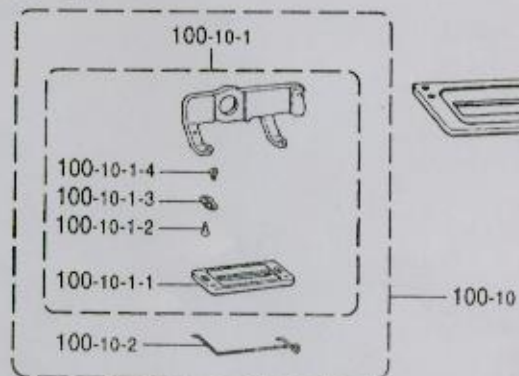
No.	Ret.	Description	Qt.
31 - 1	B992848908	< For ~ -01 , -02 & -03 ~> Nut, wing SM5.95	1
32	B969684909	Feed lever A shaft	1
33	B096330488	Set screw, socket (CP) SM6.35	1
34 - 1	B969683006	< For ~ -01 & -02 ~> Feed guide shaft bracket	1
35	B968736900	Bush, dry : L = 20	2
36	BX54698009	Bolt, socket 8 x 14	3
37	B969681009	Feed guide shaft	1
38	B969670006	Feed arm bracket	1
39	B096330488	Set screw, socket (CP) SM6.35	1
40	B969679009	Feed arm fulcrum shaft	1
41	B992895909	Slide block, F - bar	1
42	B062060768	Retaining ring, E4	1
43 - 1	B969677006	< For ~ -01 & -02 ~> Length feed arm	1
44 - 1	B969676009	< For ~ -01, -02 & -04 ~> Feed arm shaft	1
45	B096330488	Set screw, socket (CP) SM6.35	1
46	BX07306009	Set screw collar assy	1
46 - 1	B096330478	Set screw, socket (CP) SM6.35 x 6	2
48	B969671009	Shoulder screw, SM6.35	1
49 - 1	B969660009	< For ~ -01, -02 & -03 ~> Guide plate	1
50	B048420498	Screw, pan SM4.37 - 40 x 6	2
51	B969669009	Spring shaft	1
52	B096420688	Set screw, socket (CP) SM4.37	1
53	B969668009	Spring	1
54	B048440698	Screw, pan Sm3.18 - 40 x 4	1
55	B966569009	< For ~ -01, -02 & -03 ~> Stopper	1
58	B968376009	< For ~ -01 & -02 ~small hole> Stop cam segment, AS	1
59	B967372006	< For ~ -01, -02 & -03 ~> Lower feed arm	1
60	B048428098	Screw, pan Sm4.37 - 40 x 20	2
61 - 1	B965862009	< For ~ -01 ~> Length feed plate	1
62	B093429098	Bolt, SM4.37 x 10	2
63	B900465007	Washer	2
64 - 1	B967367009	< For ~ -01 & -02 ~> Lentgh feed plate guide	2
65	B904542007	< For ~ -01, -02 & -04 ~> Screw, SM3.57	4
67	B900465007	Washer	2

M2. Feed mechanism(-02. -04)

< For -04 >



< For -02 >

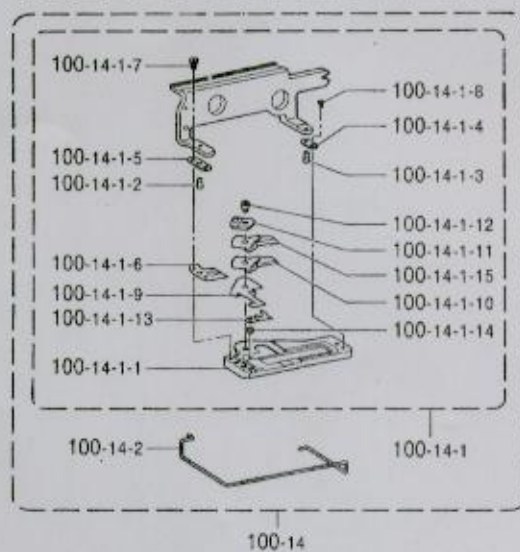
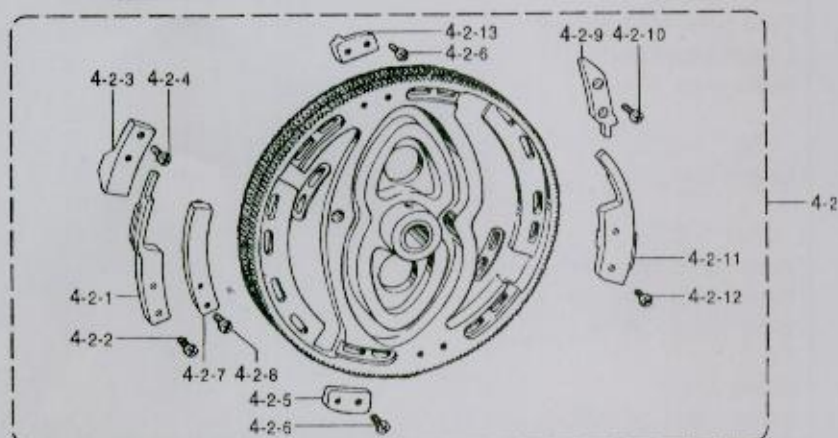
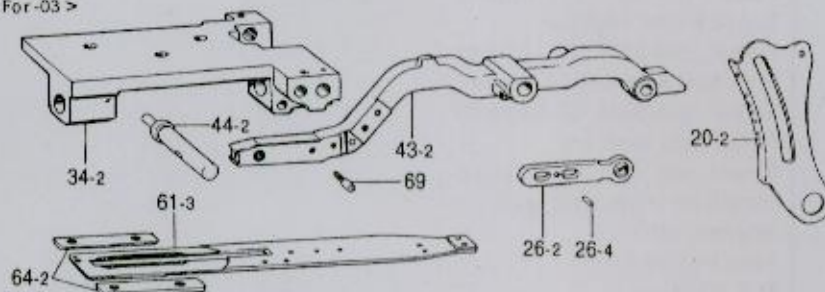


M2. Feed mechanism (-02. -04)

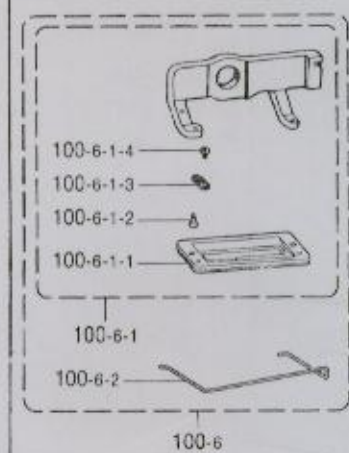
No.	Ret.	Description	Qt.
		< For " -04" >	
4 -1	BX61918909	Feed cam set	1
4 -1 -1	B967167909	Tension release cam segment, F	1
4 -1 -2	B048429098	Screw, pan SM4.37 -40 x10	2
4 -1 -3	B967166909	Tension release cam segment, B	1
4 -1 -4	B048429898	Screw, pan SM4.37 -40 x12	2
4 -1 -5	B969665909	Bar tack cam segment	2
4 -1 -6	B048429898	Screw, pan SM4.37 -40 x12	4
4 -1 -7	B969664009	Stop cam segment, A ; large	1
4 -1 -8	B048429098	Screw, pan SM4.37 -40 x10	2
4 -1 -9	B969662809	Cutter cam segment	1
4 -1 -10	B048429098	Screw, pan SM4.37 -40 x10	2
16 -2	B963881006	Length feed adjusting lever	1
22 -2	B085040778	Washer, plain L 6	1
26 -3	B963171009	Feed lever assy, B	1
31 -2	B904522007	Nut, SM5.95	1
34 -3	B959527006	Feed guide shaft bracket	1
43 -3	B963882006	Length feed arm	1
49 -2	B963878009	Guide plate	1
		< For " -02" >	
61 -2	B966483009	Length feed plate	1
		< For " -02" >	
100 -10	BX73991009	Work clamp assy, 25 -K -F	1
100 -10 -1	B950342009	Work clamp assy, 25 -K	1
100-10-1-1	B966470009	Work clamp, 25 -K	1
100-10-1-2	B966614009	Pin	2
100-10-1-3	B966303009	Spring, plate	2
100-10-1-4	B903606009	Screw, SM1.98 -64 x2	2
100 -10 -2	B950548000	Finger guard, M	1
		< For " -04" >	
100 -17	BX73967009	Work clamp assy, 50 -F	1
100 -17 -1	B950344009	Work clamp assy, 50	1
100-17-1-1	B963870009	Work clamp, 50	1
100-17-1-2	B966614009	Pin	2
100-17-1-3	B903609009	Spring, plate	2
100-17-1-4	B903606009	Screw, SM1.98 -64 x2	2
100 -17 -2	B950546000	Finger guard, LL	1

M3. Feed mechanism(-01. -03)

< For -03 >



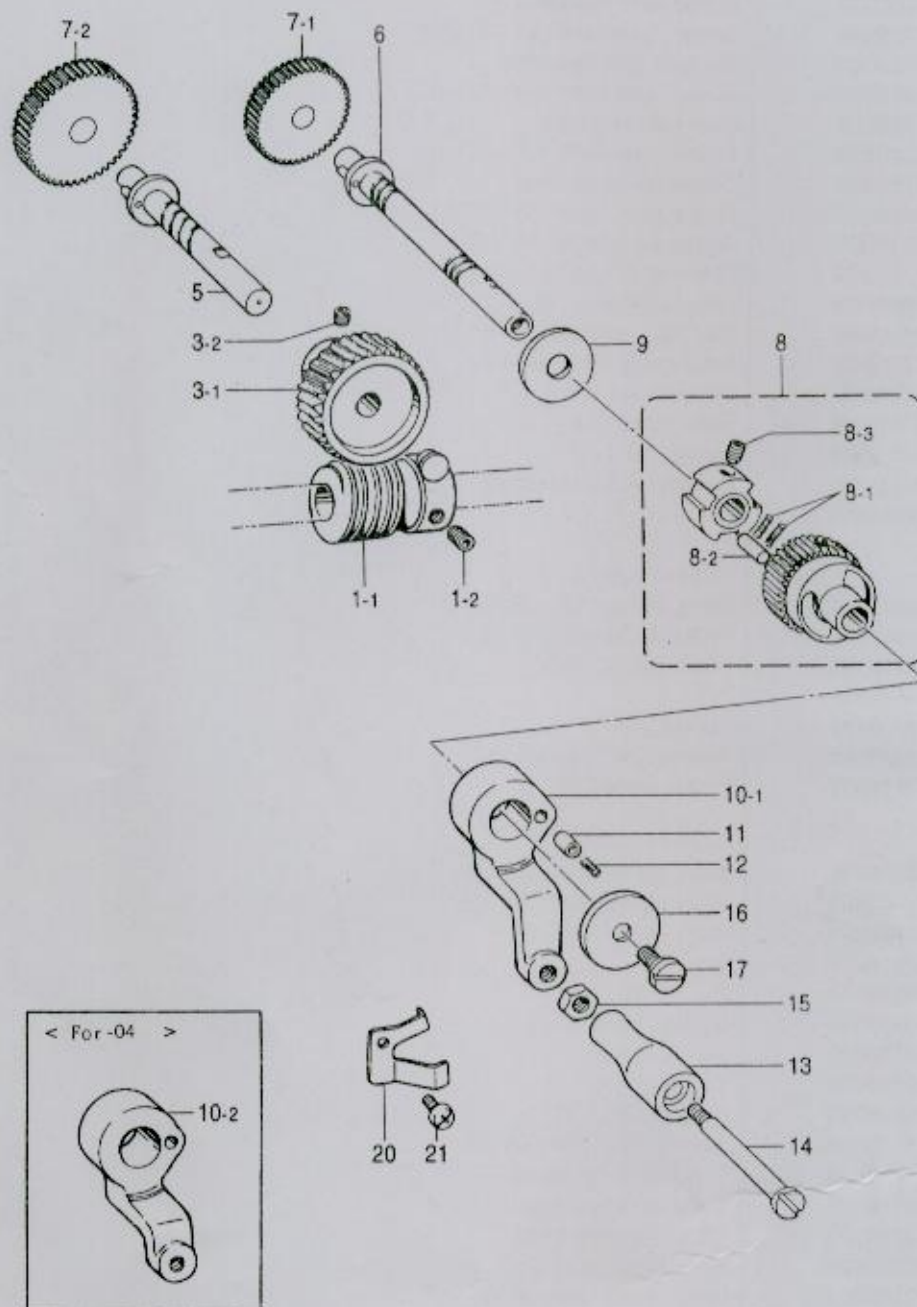
< For -01 >



M3. Feed mechanism(-01. -03)

No.	Ret.	Description	Ot.
4-2	BX61917809	Feed cam set	1
4-2-1	B965762909	Push cam segment	2
4-2-2	B048429898	Screw, pan SM4.37-40 x12	4
4-2-3	B964772009	Zigzag cam segment, B	2
4-2-4	B048429898	Screw, pan SM4.37-40 x12	4
4-2-5	B965750009	Zigzag cam segment, F	1
4-2-6	B048429098	Screw, pan SM4.37-40 x10	4
4-2-7	B965759009	Bar tack cam segment	2
4-2-8	B048420298	Screw, pan SM4.37-40 x8	4
4-2-9	B965758009	Stop cam segment	1
4-2-10	B048420298	Screw, pan SM4.37-40 x8	2
4-2-11	B965757909	Cutter cam segment	1
4-2-12	B048429098	Screw, pan SM4.37-40 x10	2
4-2-13	B964970009	Zigzag cam segment, FB	1
20-2	B965751009	Stitch length control plate	1
26-2	B965665009	Feed lever assy, B	1
26-4	B063600268	Pin, spring roll AW4 x8	1
34-2	B965756006	Feed guide shaft bracket	1
43-2	B965754006	Length feed arm	1
44-2	B965755009	Feed arm shaft	1
61-3	B965753009	Length feed plate	1
64-2	B965752009	Length feed plate guide	2
69	B995980009	Pin	1
< For "-01">			
100-6	BX52701009	Work clamp assy, 25RS-F	1
100-6-1	BX75347009	Work clamp assy, 25RS	1
100-6-1-1	B951348009	Work clamp, 25RS	1
100-6-1-2	B966614009	Pin	2
100-6-1-3	B903609009	Spring, plate	2
100-6-1-4	B903606009	Screw, SM1.98-64 x2	2
100-6-2	B950548000	Finger guard, M	1
< For "-03">			
100-14	BX73989909	Work clamp assy, 25-4-F	1
100-14-1	B950330909	Work clamp assy, 25-4	1
100-14-1-1	BXF0117009	Work clamp, 25-4	1
100-14-1-2	B966614009	Pin	1
100-14-1-3	B964076009	Pin	1
100-14-1-4	B903609009	Spring, plate	1
100-14-1-5	B965745009	Spring, plate	1
100-14-1-6	BXF0114009	Thread holder	1
100-14-1-7	B999905009	Screw, SM2.38	2
100-14-1-8	B903606009	Screw, SM1.98-64 x2	1
100-14-1-9	BXF0113009	Fixed knife, gimp Tr.	1
100-14-1-10	BXF0115009	Gimp trimmer movable knife	1
100-14-1-11	BXF9094009	Gimp trimming crank	1
100-14-1-12	B965730909	Shoulder screw, SM3.57	1
100-14-1-13	BXF0112009	Gimp detach lever assy	1
100-14-1-14	BXF9009009	G-detach lever shoulder screw	1
100-14-1-15	BXF0116009	U-thread loop spreading plate	1
100-14-2	B950544000	Finger guard, M	1

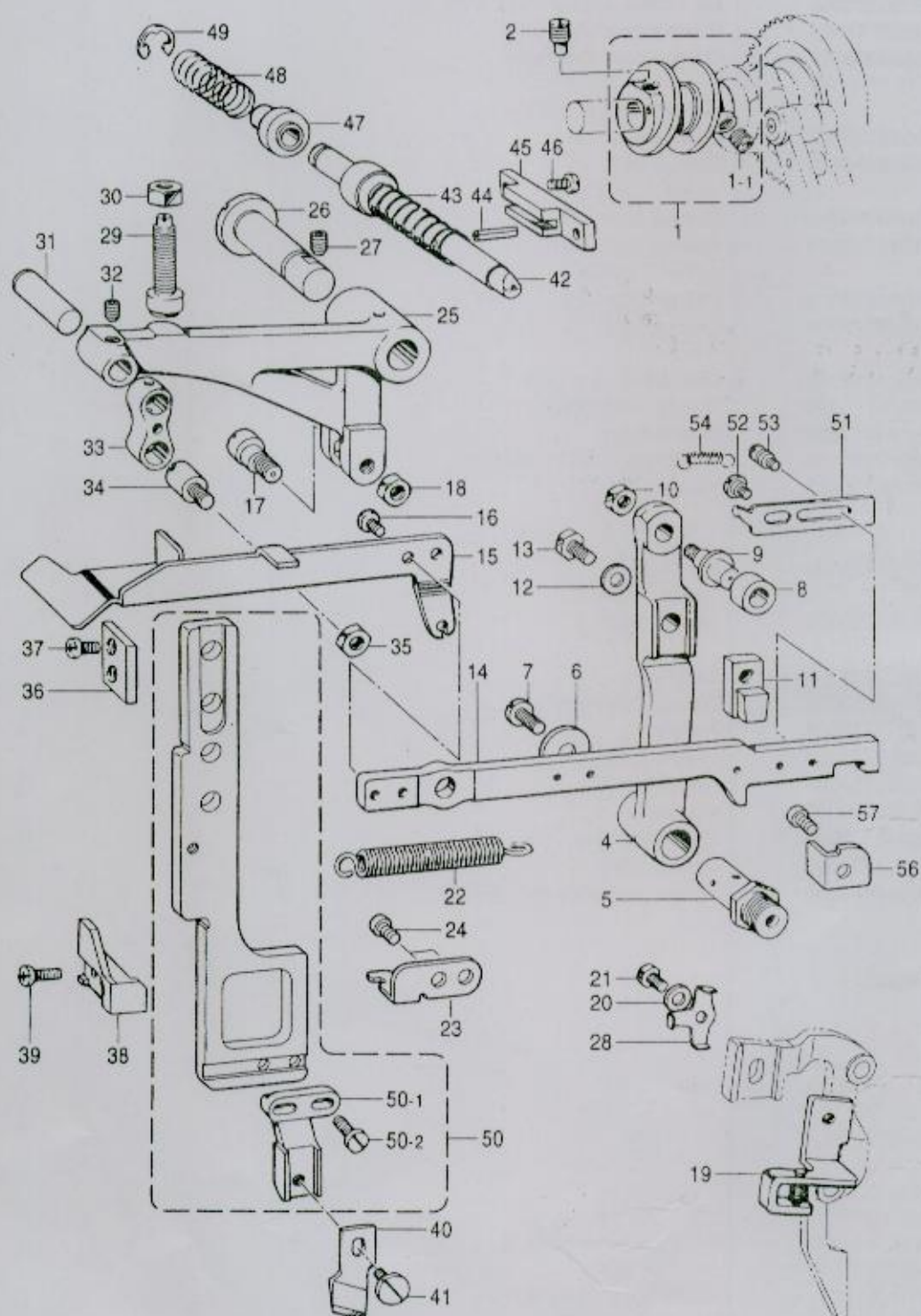
N. Feed cam mechanism



N. Feed cam mechanism

No.	Ret.	Description	Qt.
1	B927306009	Worm assy	1
1-1	B969743009	Worm	1
1-2	B096330488	Set screw, socket (CP) SM6.35	2
3	B927305009	Worm wheel assy	1
3-1	B969742000	Worm wheel	1
3-2	B096330488	Set screw, socket (CP) SM6.35	2
5	B969741809	Worm wheel shaft assy	1
6	B969396909	Change gear shaft assy	1
		< For " -01 & -03">	
7-1	B969732000	Change gear, 34	1
7-2	B969728000	Change gear, 42	1
		< For " -02">	
7-1	B969736000	Change gear, 26	1
7-2	B969724000	Change gear, 50	1
		< For " -04">	
7-1	B969733000	Change gear, 32	1
7-2	B969727000	Change gear, 44	1
8	B969721009	Free wheel cam assy	1
8-1	B969718009	Spring, compression	6
8-2	B969717009	Needle roller	3
8-3	B096340488	Set screw, socket SM5.95	2
9	B969716009	Washer	1
		< For " -01, -02 & -03">	
10-1	B781139009	Handle lever	1
		< For " -04">	
10-2	B781129009	Handle lever, 5	1
11	B969714009	Clutch pin	1
12	B969713009	Spring, compression	1
13	B969712001	Handle	1
14	B969711009	Handle shaft	1
15	B950554009	Nut, SM6.35	1
16	B969600001	Washer	1
17	B968308009	Shoulder screw, SM5.56	1
20	B963793009	Spring, plate	1
21	B048420598	Screw, pan SM4.37 - 40 x 5	1

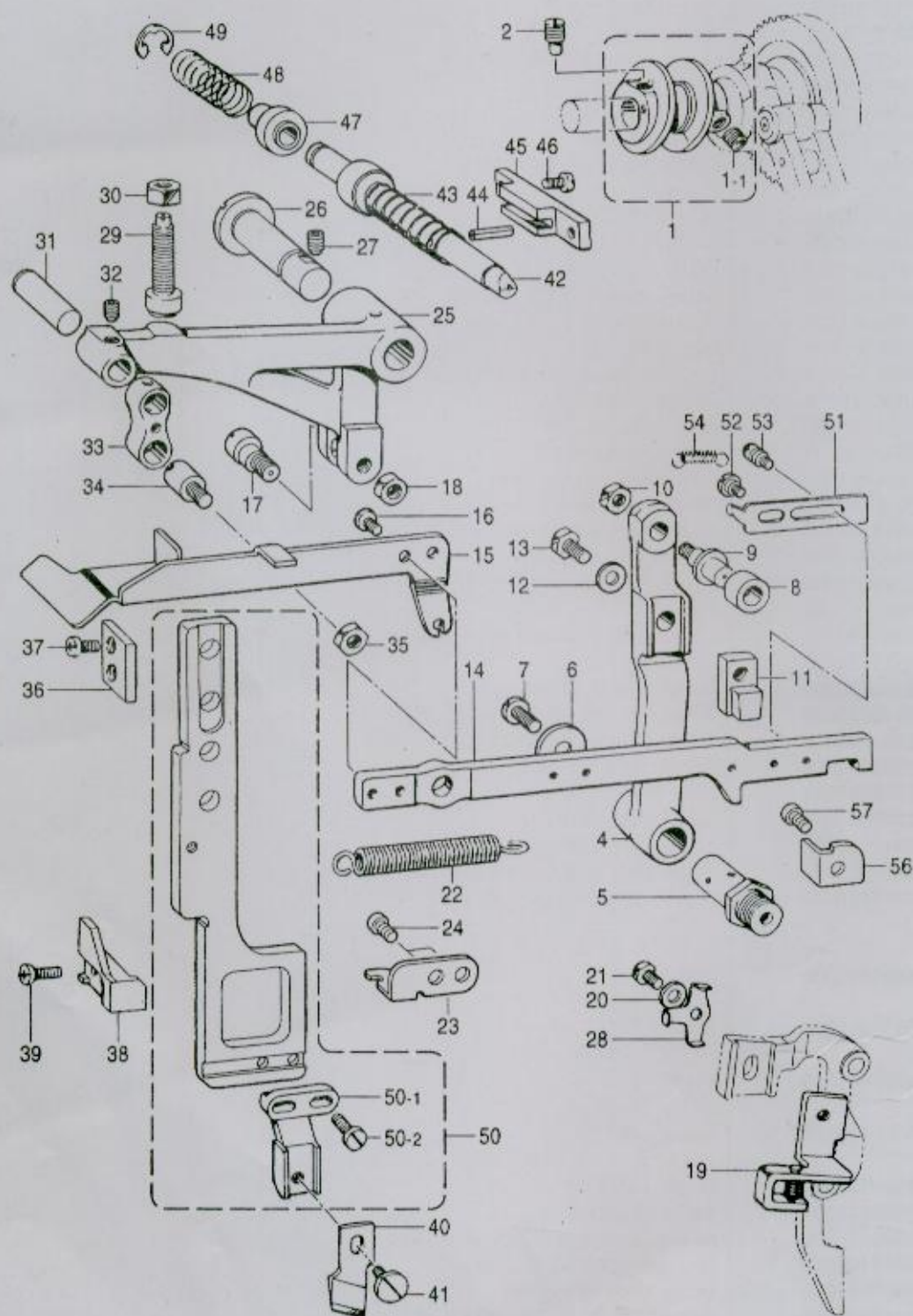
P. Cutter mechanism



P. Cutter mechanism

No.	Ret.	Description	Ot.
1	B929850009	Cutter cam w/screw	1
1 - 1	B096330488	Set screw, socket (CP) SM6.35	1
2	B969393009	Cutter cam set screw	1
4	B969648009	Cutter connecting lever	1
5	B969647009	Lever shaft	1
6	B961015009	Washer, plain 6	1
7	B048349898	Screw, pan SM5.95 - 28 x 12	1
8	B969646909	Roller	1
9	B969645009	Roller shaft	1
10	B904522007	Nut, SM5.95	1
11	B969644009	Slide block, ; C - connecting	1
12	B901217008	Washer	1
13	B093338098	Bolt, SM6.35 x 20	1
14	B969643009	Cutter lever	1
15	BX78111009	Cutter stop lever	2
16	B048420298	Screw, pan SM4.37 - 40 x 8	1
17	B969641009	Stud screw	1
18	B990366008	Nut, SM6.35	1
19	B967165009	C - lever support plate assy	1
20	B085040978	Washer, plain S 6	1
21	B093359698	Bolt, Sm5.56 x 14	1
22	B969639009	Spring, extension	1
23	BX54764009	Spring hook, cutter lever	2
24	B048420298	Screw, pan SM4.37 - 40 x 8	1
25	B969637989	Cutter base lifter lever	1
26	B969693001	Adjusting lever shaft	1
27	B096320488	Set screw, socket (CP) SM6.35	1
28	B967183009	Washer	1
29	B969629009	C - base lifter stopper w/rubber	1
30	B958112009	Nut, SM9.52	1
31	B969636909	Cutter driving link stud, A	1
32	B096330488	Set screw, socket (CP) SM6.35	1
33	B969635009	Cutter base connecting link	1
34	B969634009	Knife driving link stud, B	1
35	B950557007	Nut, SM5.95	1
36	B969632009	Cutter base guide, U	2
37	B048420398	Screw, pan SM4.73 - 40 x 7	1
38	B969631059	Cutter base guide, D	2
39	B048429698	Screw, pan SM4.37 - 40 x 4	
40	B903800009	<For " -01"> Cutter, 1/2	1
40	B903806009	<For " -02"> Cutter, 7/16	1
40	B903805009	<For " -03"> Cutter, 5/8	1
40	B963169009	<For " -04"> Cutter, 48	1
41	B995507009	Screw, SM4.37	1
42	B969626009	Cutter clutch bar	1
43	B969625009	Spring, a ; compression	1
44	B063709268	Pin, spring roll AW3	1
45	B969624009	Cutter clutch bar guide	2
46	B048430298	Screw, pan SM3.57 - 40 x 8	1
47	B969623009	Cutter clutch	1
48	B969622009	Spring, B ; compression	1
49	B062020768	Retaining ring, E8	1
50	BX54189009	Cutter bracket assy	1
50 - 1	B969620009	Cutter holder	1
50 - 2	B903603007	Screw, SM4.37 x 9	2

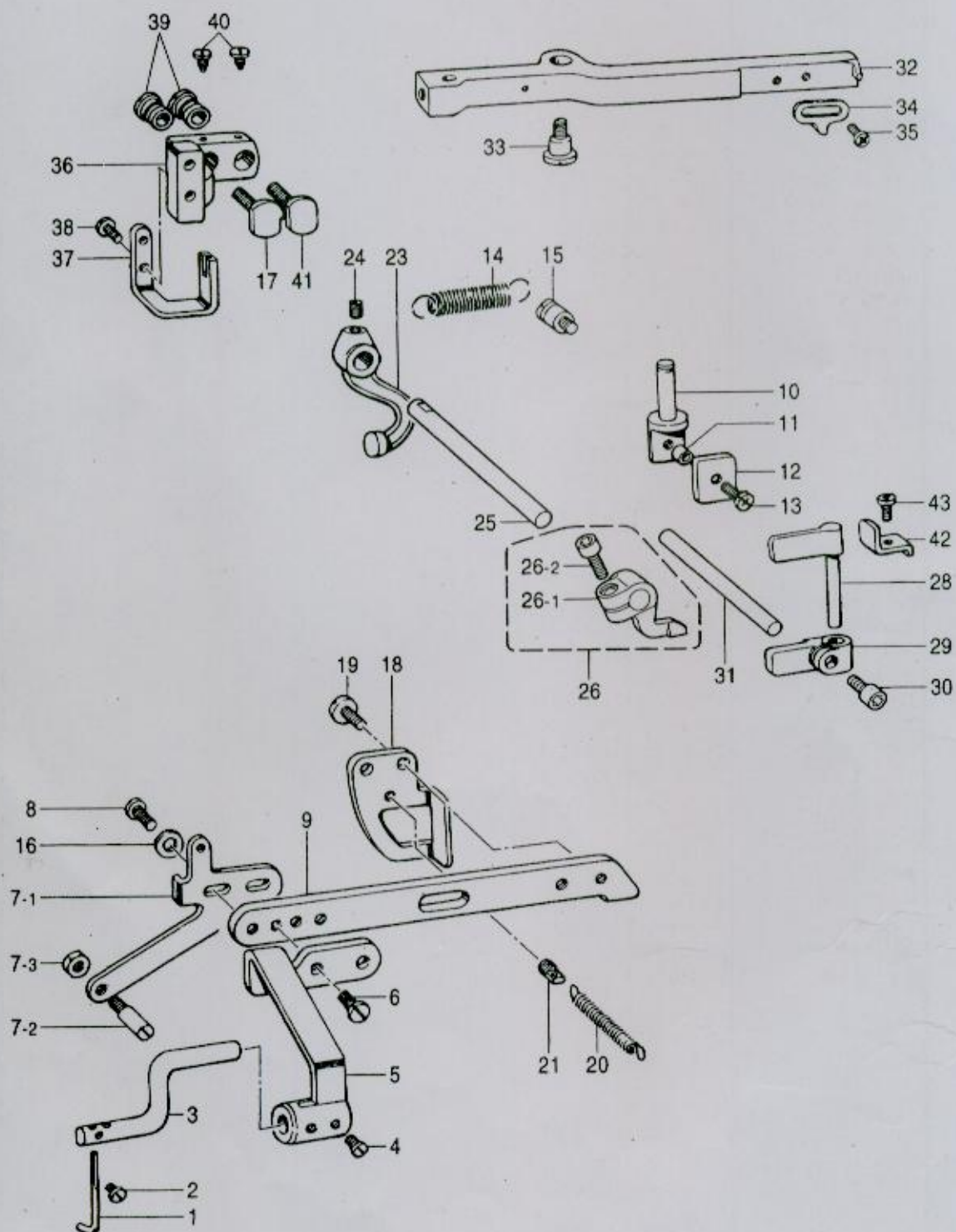
P. Cutter mechanism



P. Cutter mechanism

No.	Ret.	Description	Ot.
51	B968331009	Clutch, ; C - slide block	1
52	B998966009	Shoulder screw, M3. 57	2
53	B903984009	Spring hook	1
54	B980310009	Spring, extension	1
56	BX54679009	Lever support plate	1
57	B048420298	Screw, pan SM4, 37 - 40 x 8	1

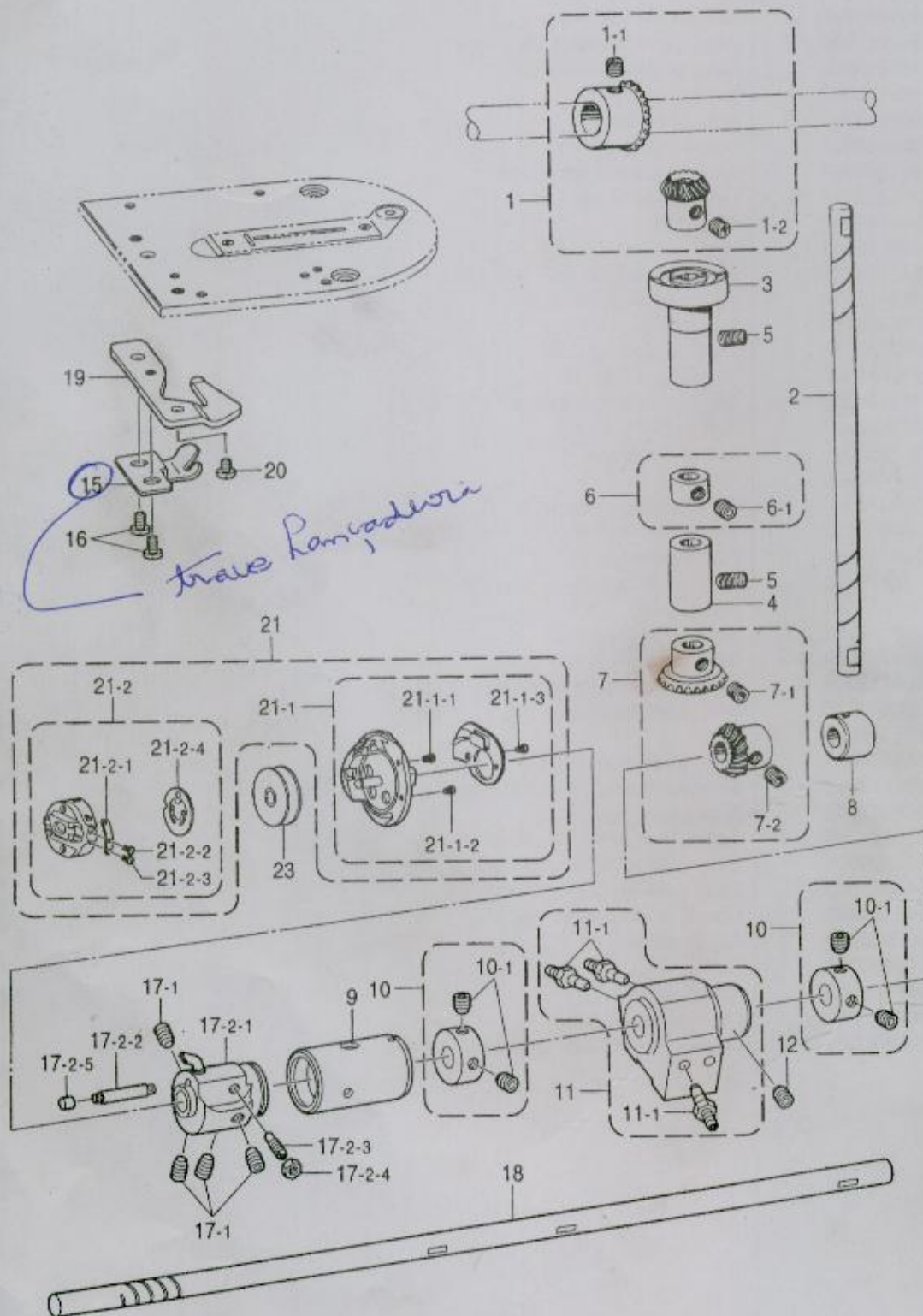
Q. Gimp guide mechanism(-03)



Q. Gimp guide mechanism (-03)

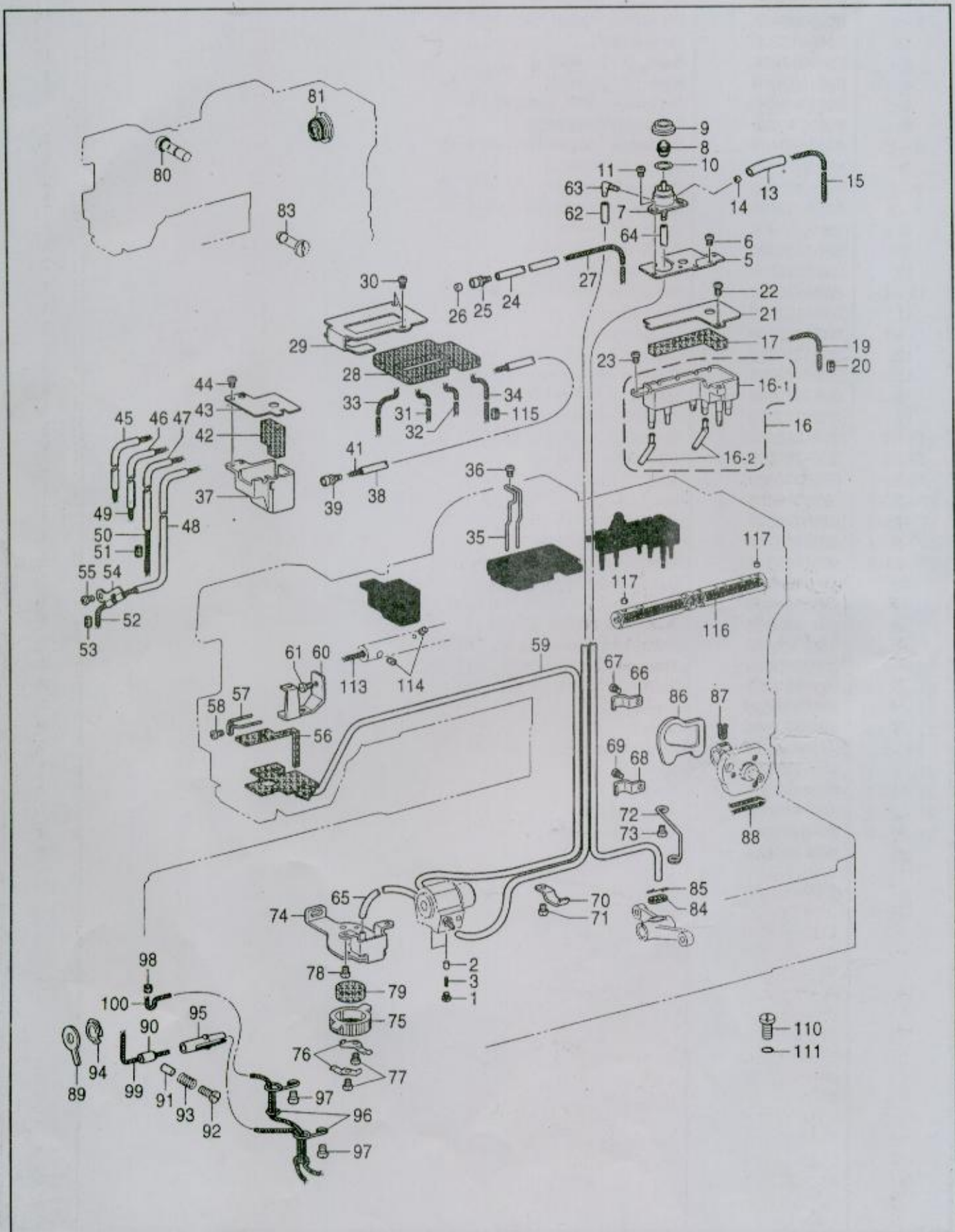
No.	Ret.	Description	Ot.
1	B965720009	Gimp guide pipe	1
2	B999667007	Set screw, SM3. 57	1
3	B965729009	Gimp guide bar	1
4	B900744008	Set screw, (FT) SM4. 37 x 5	2
5	B965728009	Gimp guide bar support	1
6	B903603007	Screw, SM4. 37 x 9	2
7	B965727909	Gimp guide changing plate assy	1
7 - 1	B963352009	Gimp guide changing plate	1
7 - 2	B969506009	Support stud	1
7 - 3	B990949006	Nut, SM4. 76	1
8	B903603007	Screw, SM4. 37 x 9	2
9	B965726009	Gimp guide connecting rod	1
10	B965725009	Gimp guide hinge	1
11	B965724009	Hinge roller	1
12	B965723009	Hinge washer	1
13	B048399898	Screw, pan SM4. 76 - 32 x 12	1
14	B965418009	Spring, extension	1
15	B965722009	Spring hook	1
16	B085420878	Washer, plain M 4. 37	2
17	B964794009	Adjusting screw, L	1
18	B965718009	Gimp guide pushing plate	1
19	B903603007	Screw, SM4. 37 x 9	2
20	B964159009	Spring, extension	1
21	B903460009	Spring hook, D	1
23	B965716009	Gimp guide pushing lever, A	1
24	B096330488	Set screw, socket (CP) SM6. 35	1
25	B965715009	Pushing lever shaft	1
26	B928670009	Gimp guide push lever assy, B	1
26 - 1	B959092909	Lever, B	1
26 - 2	B092609888	Bolt, socket M4 x 12	1
28	B965713009	Gimp guide zigzag lever, A	1
29	B965712909	Gimp guide zigzag lever, B	1
30	B092600278	Bolt, socket M4 x 8	1
31	B965711009	Shaft	1
32	B965600001	Gimp guide transfer lever	1
33	B995617008	Shoulder screw, SM5. 95	1
34	B965609009	Zigzag lever stopper	1
35	B048420298	Screw, pan SM4. 37 - 40 x 8	2
36	B965608006	Gimp guide position bracket	1
37	B965607009	Gimp guide positioner	1
38	B040430498	Screw, bind SM3. 57 - 40 x 6	2
39	B965606009	Adjust screw support	2
40	B908250008	Screw, SM3. 57	2
41	B965605009	Adjust screw	1
42	B965604009	Lever support	1
43	B048430298	Screw, pan SM3. 57 - 40 x 8	1

R. Vertical shaft and lower shaft mechanism



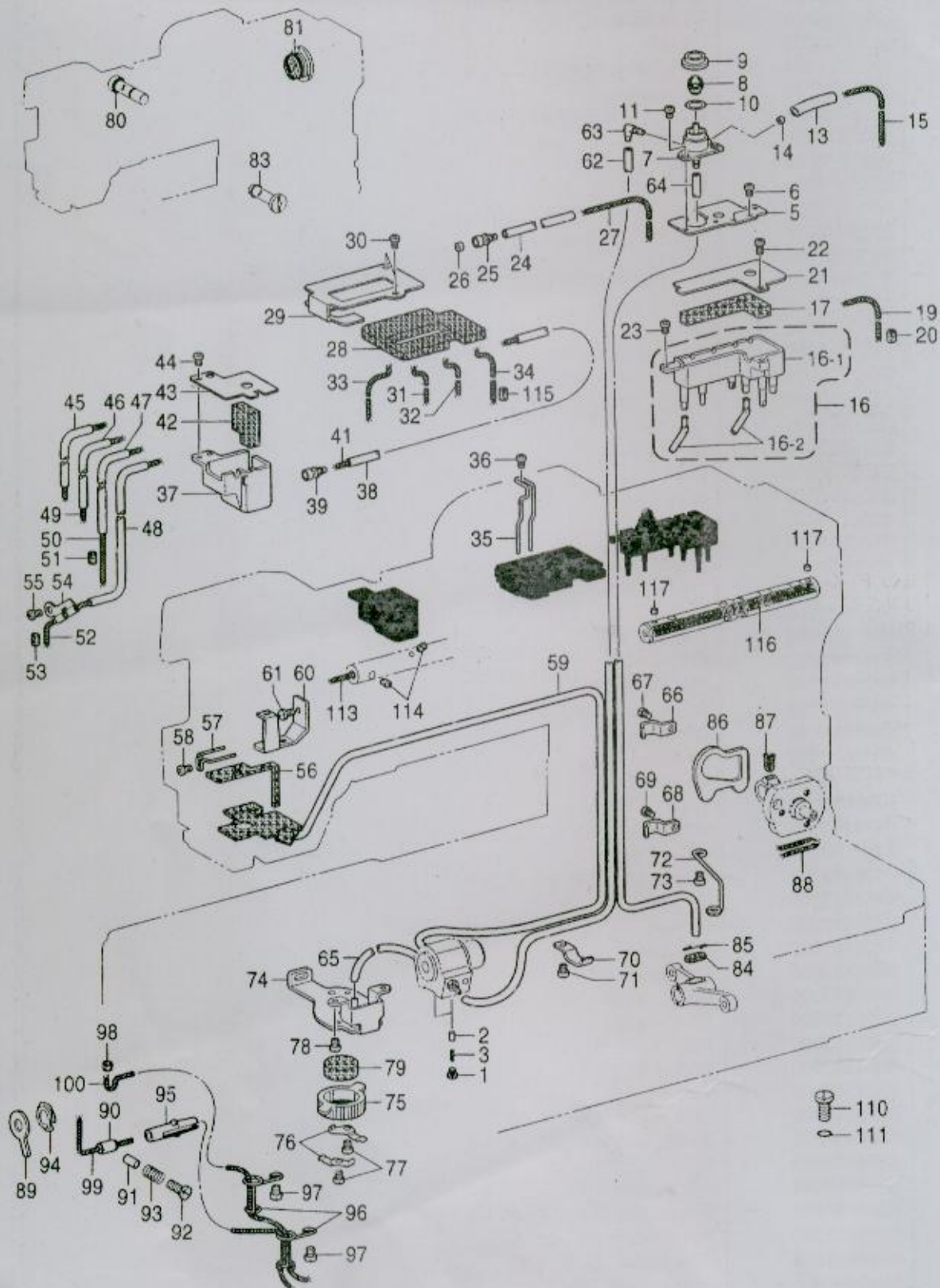
R. Vertical shaft and lower shaft mechanism

No.	Ret.	Description	Ot.
1	B929018009	Bevel gear assy, U	1
1-1	B096330488	Set screw, socket (CP) SM6.35	2
1-2	B096330488	Set screw, socket (CP) SM6.35	2
2	B969813909	Vertical shaft	1
3	B969812000	Bush, U ; V-shaft	1
4	B901802009	Bush, D ; V-shaft	1
5	B097349690	Set screw, (CP) SM5.95 x 14	2
6	B927283009	Set screw collar assy	1
6-1	B096330488	Set screw, socket (CP) SM6.35	2
7	B929017909	Bevel gear assy, D	1
7-1	B096330488	Set screw, socket (CP) SM6.35	2
7-2	B096330488	Set screw, socket (CP) SM6.35	2
8	B969707000	Bush, B ; L-shaft	1
9	BX54750009	Bush, R-hook shaft	1
10	B927283009	Set screw collar assy	2
10-1	B096330488	Set screw, socket (CP) SM6.35	4
11	BX54102009	Bush assy, M	1
11-1	BX72375009	Oil feeding pipe	3
12	B097339690	Set screw, (CP) SM6.35	1
15	BX54763009	B-case holderposition bracket	1
16	B040420398	Screw, bind SM4.37-40 x 7	2
17	BX54722009	Rotary hook joint set	1
17-1	B096340488	Set screw, socket SM5.95	4
17-2	BX54721009	Joint assy, R-hook	1
17-2-1	BX54710009	Joint, R-hook	1
17-2-2	BX54718000	Felt	1
17-2-3	BX54719009	Set screw, SM3.18	1
17-2-4	B089440704	Nut, 3 SM3.18-40	1
17-2-5	B951909000	Rubber cap, 3.4	1
18	BX54759009	Lower shaft	1
19	BX54190009	Support, B-C holder P bracket	1
20	B040420598	Screw, bind SM4.37-40 x 5	1
21	BXF9364009	Rotary hook assy w/box, BX54183	1
21-1	BXF9363009	Rotary hook assy w/box, BX54182	1
21-1-1	B927584009	Screw	2
21-1-2	BX50874009	Screw	1
21-1-3	B927512009	Screw	1
21-2	BX50873009	Bobbin case assy	1
21-2-1	BX01633009	Spring	1
21-2-2	B920389009	Screw	1
21-2-3	B927503009	Adjusting screw	1
21-2-4	BX50871009	Spring, anti-spin	1
23	B951952059	Bobbin	1



S. Lubrication

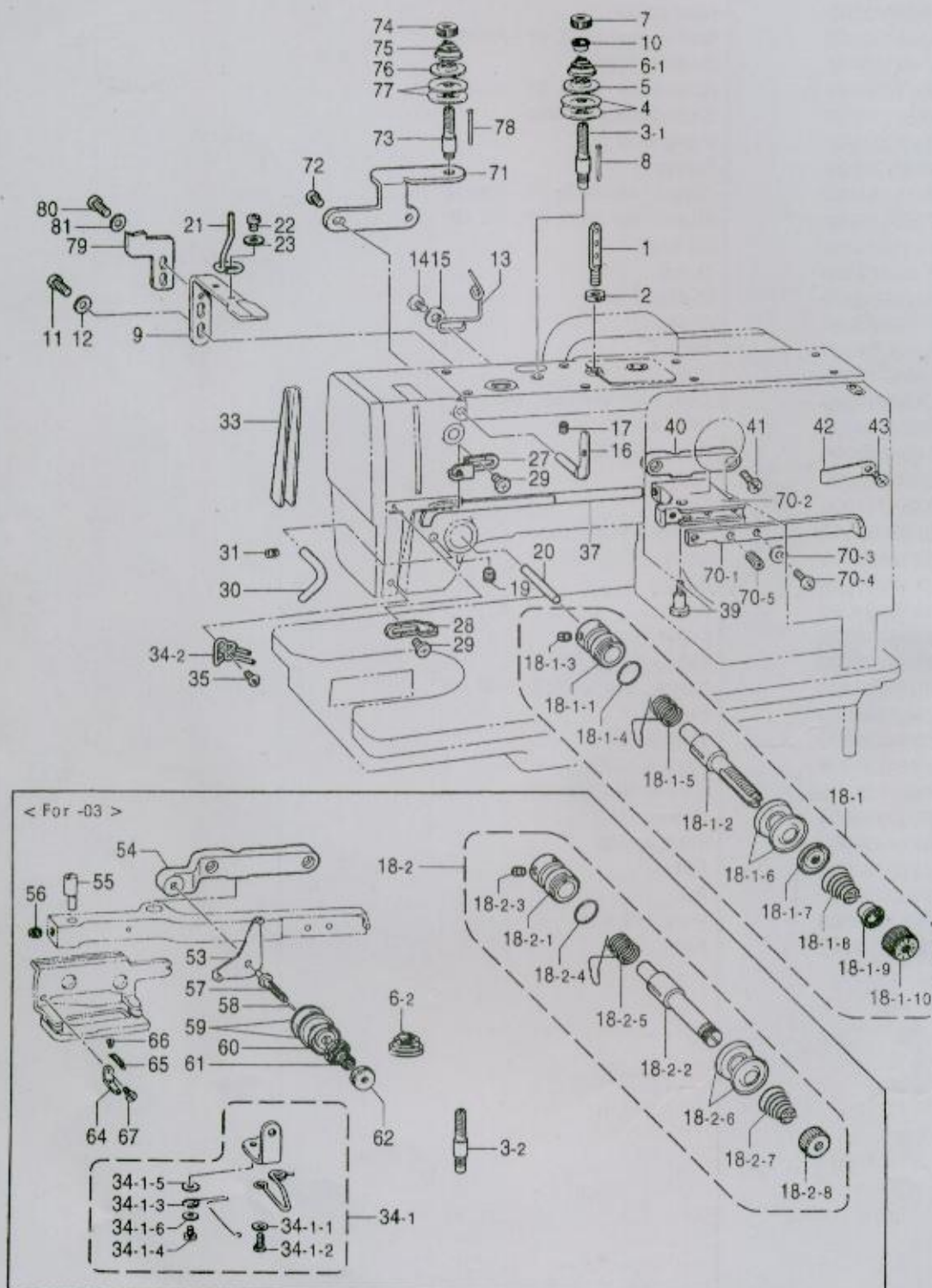
No.	Ret.	Description	Ot.
1	B998643008	Screw, SM6.35 x5	2
2	B966235009	Plunger	2
3	BX58346009	Spring, compression	2
5	BX54754009	Support plate, oil terminal	1
6	B048420298	Screw, pan SM4.37 - 40 x8	2
7	BX54755900	Oil terminal	1
8	BX50589000	Oil cap	1
9	BX50572009	Oil window support	1
10	BX50580000	Packing	1
11	B040420598	Screw, bind Sm4.37 - 40 x5	2
13	BX51877000	Oil tube	1
14	BX51878000	Collar	1
15	BX51876000	Wick 4 x350	1
16	BX54675000	Terminal tank assy	1
16 - 1	BX54745000	Terminal tank	1
16 - 2	BX54751000	Oil pipe	2
17	BX54714000	Terminal tank felt	1
19	BX54672000	Wick 3 x120	1
20	B957186009	Felt	1
21	BX54740009	Terminal tank cover	1
22	B040429498	Screw, bind Sm4.37 - 40 x16	1
23	B040420398	Screw, bind SM4.37 - 40 x7	1
24	BX54671000	Oil tube	1
25	BX54199000	Oil joint S	1
26	BX59080000	Collar	1
27	BX54660000	Wick 2 x320	1
28	BX54716000	worm fert	1
29	BX54756009	Support plate, felt	1
30	B048420298	Screw, pan SM4.37 - 40 x8	2
31	BX54669000	Wick 4 x30	1
32	BX54669000	Wick 4 x30	1
33	BX54667000	Wick 4 x300	1
34	BX52922000	Wick 3 x200	1
35	BX54715009	Pipe support	1
36	B048420298	Screw, pan SM4.37 - 40 x8	1
37	BX54758000	Oil tank	1
38	BX54673000	Oil tube	1
39	BX54199000	Oil joint S	1
41	BX52923000	Wick 2 x610	1
42	BX54717000	Oil tank felt	1
43	BX54757009	Oil tank cover	1
44	B048420298	Screw, pan SM4.37 - 40 x8	2
45	BX54663000	Oil tube	1
46	BX54662000	Oil tube	1
47	BX54661000	Oil tube	1
48	BX54650000	Oil tube	1
49	BX51867000	Wick 3 x280	1
50	BX54238000	Wick 4 x200	1
51	B957186009	Felt	1
52	BX54237000	Wick 4 x230	1
53	BX81300000	Felt	1
54	BX54748009	Wick holder plate	1
55	B048430598	Screw, pan SM3.57 - 40 x5	1
56	BX52932000	Felt	1
57	BX54198009	Felt support	1
58	B048430598	Screw, pan SM3.57 - 40 x5	1
59	BX54712000	Pump tube assy	1
60	B969421809	Wick holder, D	1
61	B903691008	Screw, SM4.37	1
62	BX54236000	Oil tube	1
63	BX54753000	Oil joint L	1



S. Lubrication

No.	Ret.	Description	Ot.
64	BX54234000	Oil tube	1
65	BX54233000	Oil tube	1
66	B968842009	Cord holder, L	1
67	B048430598	Screw, pan SM3. 57 - 40 x 5	1
68	B962648009	Cord holder 3N	1
69	B048430598	Screw, pan SM3. 57 - 40 x 5	1
70	B968842009	Cord holder, L	1
71	B048430498	Screw, pan SM3. 57 - 40 x 6	1
72	B994135009	Oil tube support	1
73	B048430498	Screw, pan SM3. 57 - 40 x 6	1
74	BX54226009	Setting bracket, filter	1
75	B966238909	Pump filter	2
76	B966236009	Spring	2
77	B048430498	Screw, pan SM3. 57 - 40 x 6	2
78	B048430498	Screw, pan SM3. 57 - 40 x 6	1
79	BX54225000	Oil filter	1
80	B969413000	O ring	1
81	B029066070	O ring, P44	1
83	B969413000	O ring	1
84	B993512009	Felt	1
85	B994315000	Clip	1
86	BX54600000	Cam shaft bracket cover	2
87	BX51989000	Wick 4 x 11	1
88	BX54220000	Wick 4 x 110	1
89	BX50878000	Felt	1
90	BX54747000	Coller	1
91	BX03632000	Rubber presser	1
92	BX56369009	Screw, SM6. 35	1
93	BX50877009	Spring	1
94	BX50999000	Spring	1
95	BX54746000	Coller stopper	2
96	BX50751009	Tube support, D	2
97	B048420498	Screw, pan SM4. 37 - 40 x 6	1
98	BX50554000	Felt	1
99	BX54232000	Wick 2 x 240	1
100	BX54231000	Wick 4 x 220	1
110	B960592009	Screw, SM7. 94 x 10	1
111	B029003030	O ring, P7	1
113	BX54192000	Wick 4 x 92	1
114	BX85782009	Felt	4
115	B903961009	Felt	1
116	BX51778000	Wick, 42 x 60	1
117	B957186009	Felt	2

T. Threading mechanism



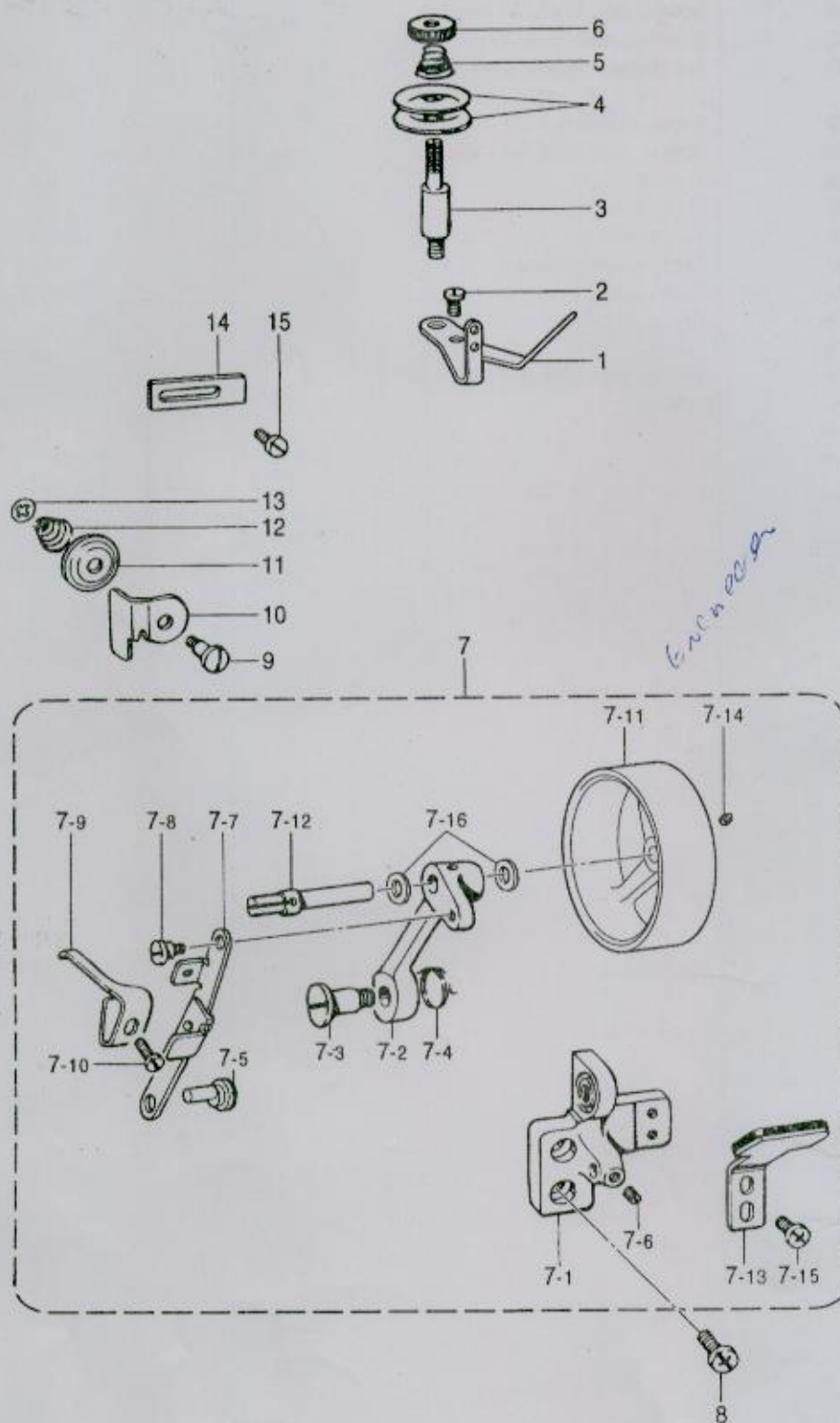
T. Threading mechanism

No.	Ret.	Description	Ot.
1	BX54743009	Threading bar, U	1
2	B950557007	Nut, SM5.95	1
3-1	BX51773009	< For " -01, -02 & -04"> Tension stud	1
3-2	B903408009	< For " -03"> Tension stud	1
4	B965664009	Tension disc	2
5	B951205009	Tension disc presser	1
6-1	BX51724009	< For " -01, -02 & -04"> Spring, tension	1
6-2	B993895009	< For " -03"> Spring, tension	1
7	B900974009	Nut, tension	1
8	B903498009	Pin	1
9	B965437909	Upper thread release plate	1
10	BX70546000	< For " -01, -02 & -04"> Washer	1
11	B048429098	Screw, pan SM4.37 -4010	2
12	B900465007	Washer, plain M4.37	2
13	BX54607009	Upper thread guide	1
14	B900466005	Screw, SM4.37	1
15	B085420878	Washer, plain M 4.37	1
16	B965149009	Thread retainer	1
17	B096420488	Set screw, socket (CP) SM4.37	1
18-1	BX59928909	< For " -01, -02 & -04"> Tension stud bracket assy	1
18-1-1	BX50710909	Tension stud bracket	1
18-1-2	BX50719009	Tension stud, L	1
18-1-3	B900608006	Set screw, SM3.57	1
18-1-4	B029096230	O ring, S14	1
18-1-5	B965591009	Thread take-up spring	1
18-1-6	B965664009	Tension disc	2
18-1-7	B951205009	Tension disc presser	1
18-1-8	B951889009	Tension spring	1
18-1-9	BX70546000	Washer	1
18-1-10	BX79078009	Tension nut	1
18-2	BXF0093009	< For " -03"> Tension stud bracket assy	1
18-2-1	BX50710909	Tension stud bracket	1
18-2-2	B965673009	Tension stud	1
18-2-3	B900608006	Set screw, SM3.57	1
18-2-4	B029096230	O ring, S14	1
18-2-5	B965591009	Thread take-up spring	1
18-2-6	B965664009	Tension disc	2
18-2-7	B995152009	Tension spring, UL	1
18-2-8	B900974009	Tension nut	1
19	BX55135009	Set screw socket SM5.95	1
20	B900600000	< For " -01, -02 & -04"> Tension release pin	1

T. Threading mechanism

No.	Ret.	Description	Ot.
		< For " -01, -02 & -04">	
70	BX75443009	U - thread release lever assy	1
70 -1	BX76350009	Upper thread release lever	1
70 -2	BX76361009	U - thread release lever support	1
70 -3	B048420298	Screw, pan SM4. 37 - 40 x8	2
70 -4	B085420978	Washer, plain S 4. 37	2
70 -5	B096340488	Set screw, socket SM5. 95	1
71	BX54744009	Tension base	1
72	B048420498	Screw, pan SM4. 37 - 40 x6	2
73	BX64590009	Tension stud	1
74	B900974009	Tension nut	1
75	B903404009	Tension spring, H	1
76	B951205009	Tension disc presser	1
77	B965664009	Tension disc	2
78	BX64599009	Pin	1
79	BX64598009	Cam	1
80	B048429098	Screw, pan SM4. 37 - 40 x10	1
81	B900465007	Washer	1

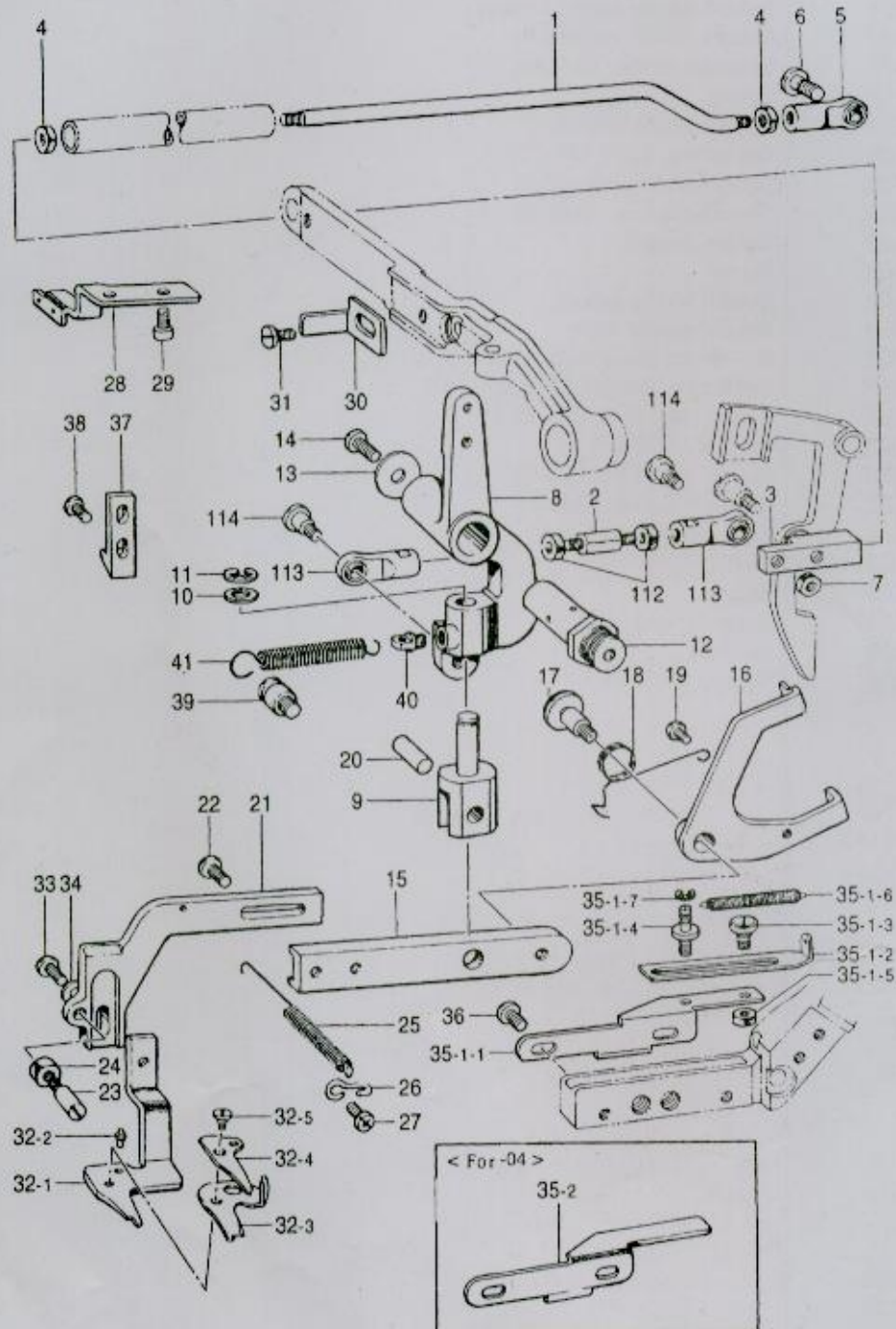
U. Bobbin winder mechanism



U. Bobbin winder mechanism

No.	Ret.	Description	Qt.
1	B969400009	Bobbin winder thread guide	1
2	B903603007	Screw, SM4. 37 x 9	1
3	B903432909	Tension stud	1
4	B903420009	Tension disc	2
5	B903429009	Tension spring	1
6	B903428009	Bobbin winder tension nut	1
7	B969409006	Bobbin winder assy	1
7-1	B969408006	Bobbin winder wheel bracket	1
7-2	B969407006	Bobbin winder wheel arm	1
7-3	B969406009	Shoulder screw, SM6. 35	1
7-4	B968851009	Spring	1
7-5	B969405009	Bobbin winder link stud	1
7-6	B097431698	Set screw, (CP) SM3. 57	1
7-7	B929041009	Bobbin winder link assy	1
7-8	B900451009	Shoulder screw, SM3. 18	1
7-9	B969402009	Bobbin presser	1
7-10	B503968008	Screw	1
7-11	B969401006	Bobbin winder wheel	1
7-12	B969490009	Bobbin winder shaft	1
7-13	B969499009	B - winder brake rubber assy	1
7-14	B096420688	Set screw, socket (CP) SM4. 37	1
7-15	B048420398	Screw, pan SM4. 37 - 40 x 7	2
7-16	B968399009	Washer, VFS 6. 5	2
8	B048349898	Screw, pan SM5. 95 - 28 x 12	2
9	B992346008	Shoulder screw, SM4. 37	1
10	B964912009	Knife, T - nipper	1
11	B964911009	Disc	1
12	B966505000	Spring	1
13	B964800009	Retaining ring, CS4	1
14	B969480009	Balancer	1
15	B909439008	Screw, SM4. 37	1

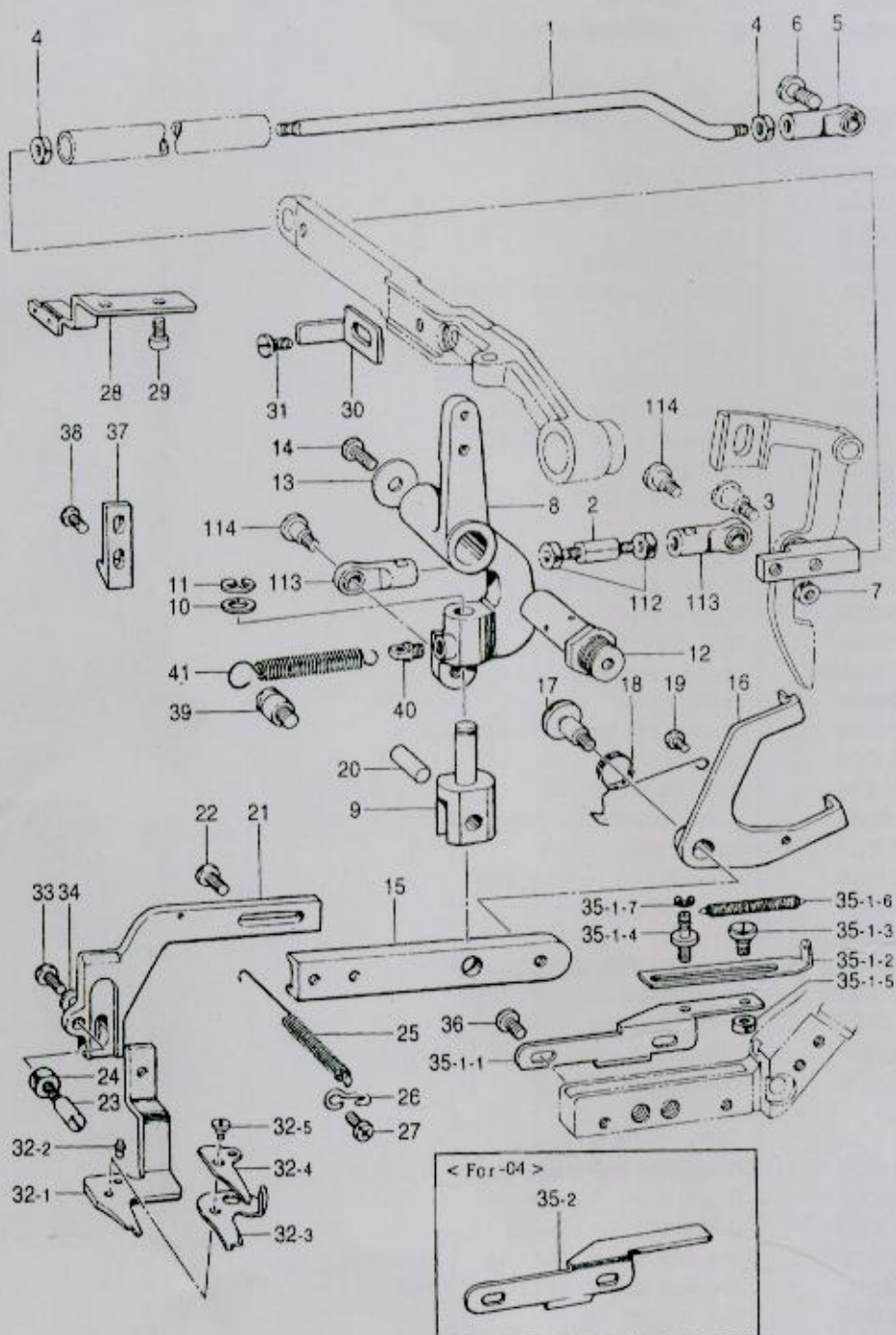
V1. Upper thread trimmer mechanism



V1. Upper thread trimmer mechanism

No.	Ret.	Description	Qt.
1	B969621009	T – trimmer connecting rod, L	1
2	B969610009	T – trimmer connecting rod, S	1
3	B969619009	T – trimmer connecting rod joint	1
4	B900088005	Nut, SM5. 95	2
5	B969618009	Joint assy	1
6	B969616009	Shoulder screw, SM5. 95 – 28	1
7	B900088005	NUT, SM5. 95	1
8	B963545009	U – thread trimmer lever support	1
		< For " – 01, – 02 & – 04">	
9	B969614059	Upper thread trimmer hinge	1
10	B900829009	Washer, plain	1
11	B062040768	Retaining ring, E6	1
12	B969647009	Lever shaft	1
13	B961015009	Washer, plain 6	1
14	B048349898	Screw, pan SM5. 95 – 28 x 12	1
		< For " – 01, – 02 & – 04">	
15	B969613009	Upper thread trimmer lever, L	1
16	B965112009	Thread trimmer driving plate	1
17	B969611009	Shoulder screw, SM4. 76	1
18	B969500009	Spring, torsion	1
19	B048430698	Screw, pan SM3. 57 – 40 x 4	1
20	B969509009	Pin	1
21	B969508009	Upper thread trimmer lever, S	1
22	B903603007	Screw, SM4. 37 x 9	2
23	B969506009	Support stud	1
24	B990949004	Nut, SM4. 76	1
25	B969505009	Spring, extension	1
26	B969504009	Spring hook	1
27	B048420398	Screw, pan SM4. 37 – 40 x 7	1
28	BX77007009	Stopper plate	1
29	B092600278	Bolt, socket M4 x 8	2
30	B969502909	U – thread trimmer detach plate	1
31	B903603007	Screw, SM4. 37 x 9	1
32	B969501909	Upper thread trimmer assy	1
32 – 1	B969590909	Upper thread trimmer, D	1
32 – 2	B969599009	Pin	1
32 – 3	B969598909	Upper thread trimmer, middle	1
32 – 4	B969597009	Upper thread trimmer, upper	1
32 – 5	B969596009	Shoulder screw, SM3. 18	1
33	B048390298	Screw, pan SM4. 76 – 32 x 8	1
34	B085390878	Washer, plain M4. 76	1
		< For " – 01 & – 02">	
35 – 1	B965111909	Thread trimmer guide assy	1
35 – 1 – 1	B969595009	Thread trimmer guide	1
35 – 1 – 2	B964000009	Thread trimmer support	1
35 – 1 – 3	B964009009	Shoulder screw, SM3. 18	1
35 – 1 – 4	B964008909	Shoulder screw, SM3. 18	1
35 – 1 – 5	B089440908	Nut, 1 SM3. 18	2
35 – 1 – 6	B992758009	Spring, extension	1
35 – 1 – 7	B062080768	Retaining ring, E2	1
		< For " – 04">	
35 – 2	B963552009	Thread trimmer guide	1
		< For " – 01, – 02 & – 04">	
36	B048420398	Screw, pan SM4. 37 – 40 x 7	2

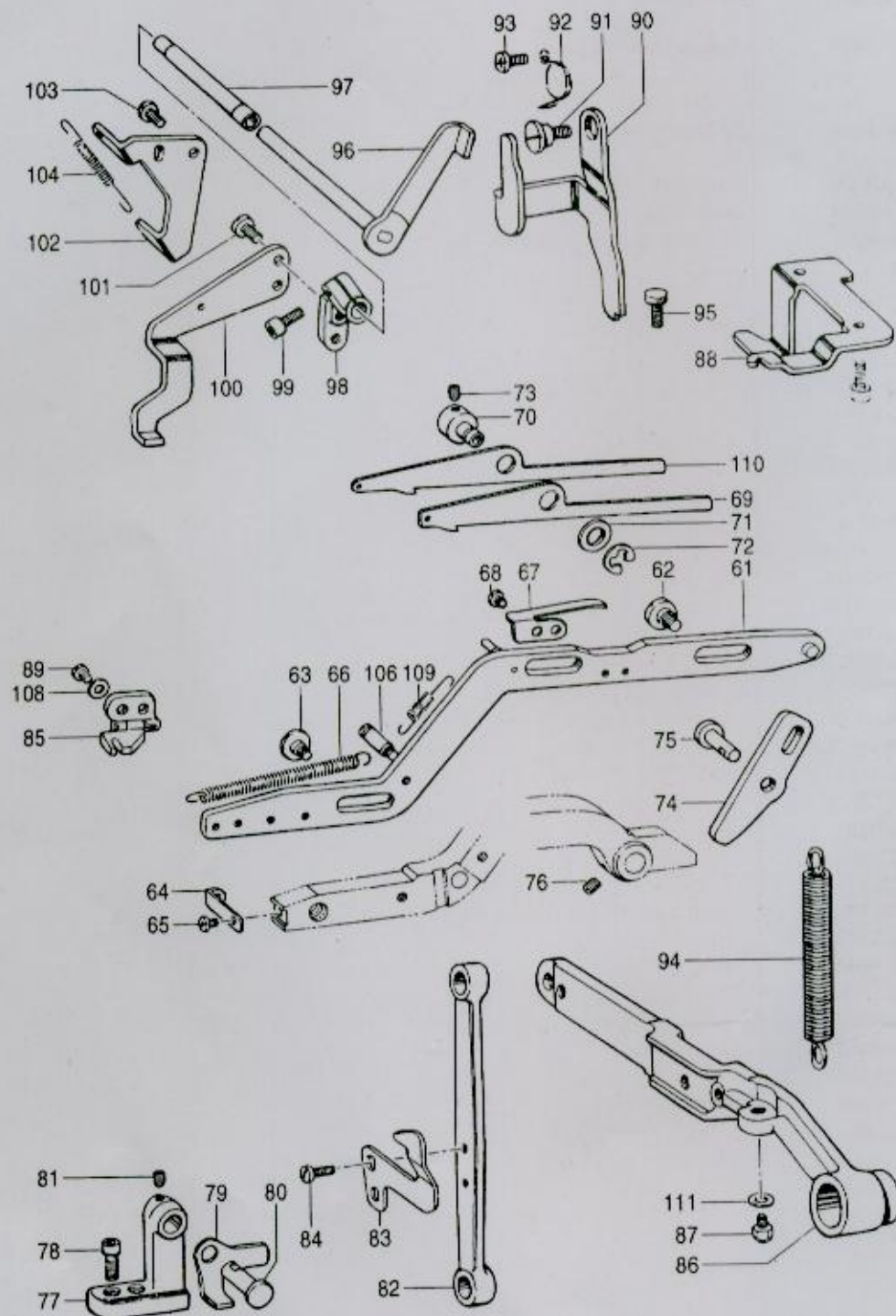
V1. Upper thread trimmer mechanism



V1. Upper thread trimmer mechanism

No.	Ret.	Description	Ot.
37	BX76374009	< For " -01 & -04"> Upper thread trimming cam	1
38	B048429098	Screw, pan SM4. 37 -40 x10	2
39	B969638008	< For " -01 & -04"> Spring hook	1
40	B903471009	Spring hook, U	1
41	B969593909	< For " -01, -02 & -04"> Spring, extension	1
112	B900088005	Nut, SM5. 95	2
113	B969618009	Joint assy	2
114	B969616009	Shoulder screw, SM5. 95 - 28	2

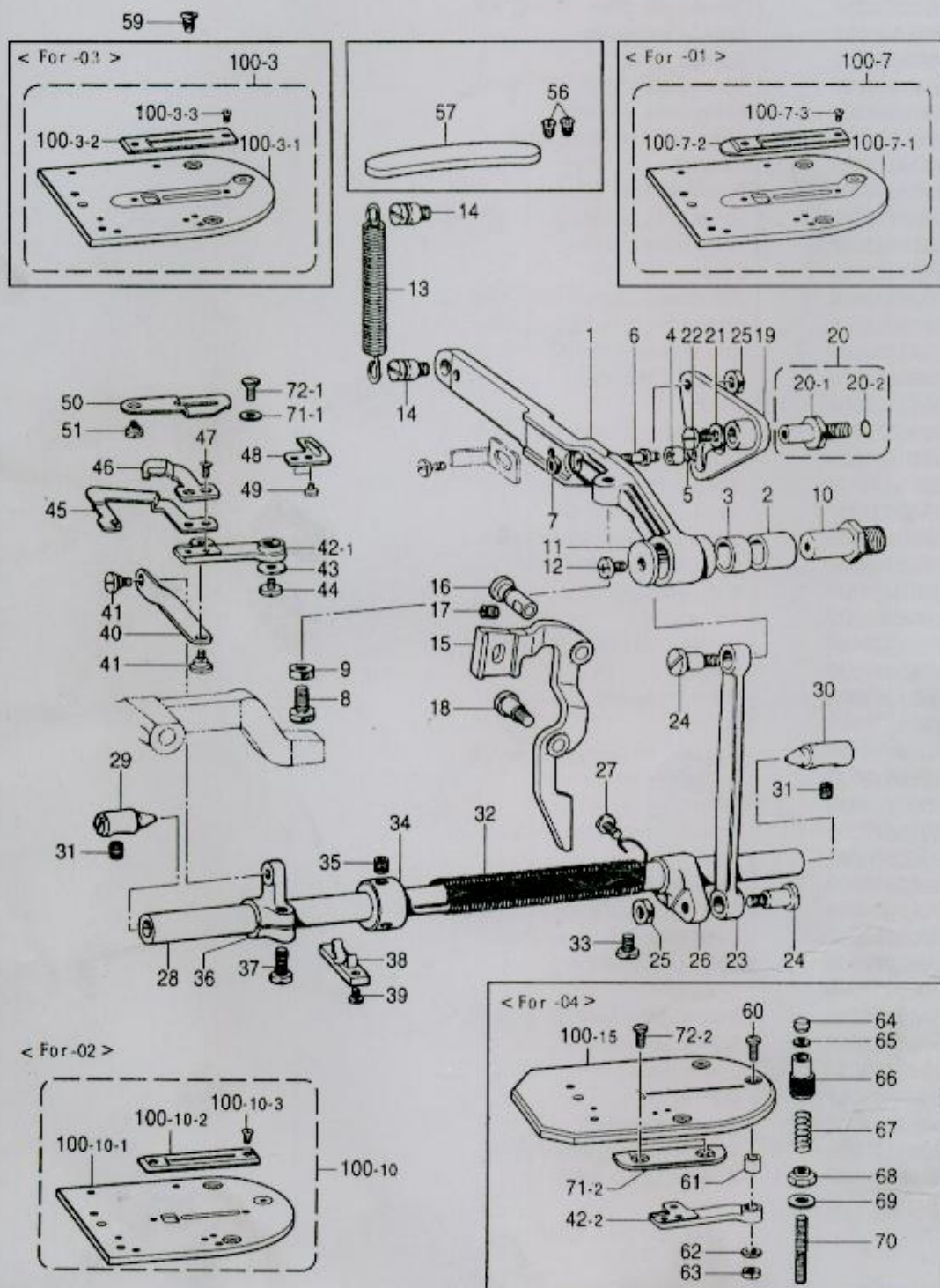
V2. Upper thread trimmer mechanism (-03)



V2. Upper thread trimmer mechanism(-03)

No.	Ret.	Description	Ot.
61	B965603009	Gimp trimming connector assy	1
62	B992866009	Shoulder screw, SM5.95	2
63	B994355009	Shoulder screw, SM4.37	1
64	B965699009	Spring hook	1
65	B048420598	Screw, pan SM4.37 - 40 x 5	1
66	B965698009	Spring, extension	1
67	B965697009	Spring, plate	1
68	B040440598	Screw, bind SM3.18 - 40 x 5	2
69	B965695009	Gimp knife set plate	1
70	B965694009	Gimp knife set plate stud	1
71	B900913008	Washer	1
72	B062040768	Retaining ring, E6	1
73	B096420688	Set screw, socket (CP) SM4.37	1
74	B965693009	Gimp trimming arm	1
75	B967322909	Stud	1
76	B096330488	Set screw, socket (CP) SM6.35	1
77	B965692006	Gimp trimmer pulling bracket	1
78	B092609488	Bolt, socket M4 x 16	2
79	B965691009	Gimp trimming link	1
80	B967322909	Stud	1
81	B096420688	Set screw, socket (CP) SM4.37	1
82	B965680009	L - thread trimmer driving rod	1
83	B965689009	Gimp pulling plate	1
84	B903603007	Screw, SM4.37 x 9	2
85	B965378009	Gimp trimming bracket assy	1
86	B965684006	Clamping foot lifter lever	1
87	B965683009	Bolt, SM7.94	1
88	B965682909	Stopper	1
89	B048420498	Screw, pan SM4.37 - 40 x 6	2
90	B965681009	Stopper	1
91	B994355009	Shoulder screw, SM4.37	1
92	B965670009	Spring	1
93	B048420498	Screw, pan SM4.37 - 40 x 6	1
94	B965679009	Spring, extension	1
95	B093429098	Bolt, SM4.37 x 10	1
96	B965677009	Thread trimmer detach lever	1
97	B965676009	Bush	1
98	B965675009	Detach lever holder	1
99	B092600278	Bolt, socket M4 x 8	1
100	B965696009	Gimp trimming detach lever	1
101	B900466005	Screw, SM4.37	2
102	B965674009	Stopper	1
103	B040430298	Screw, bind SM3.57 - 40 x 8	2
104	B997213009	Spring, extension	1
106	B903453009	Spring hook	1
108	B900465007	Washer	2
109	B997213009	Spring, extension	1
110	B965127009	Gimp trimming safety plate	1
111	B085020978	Washer, plain S 8	2

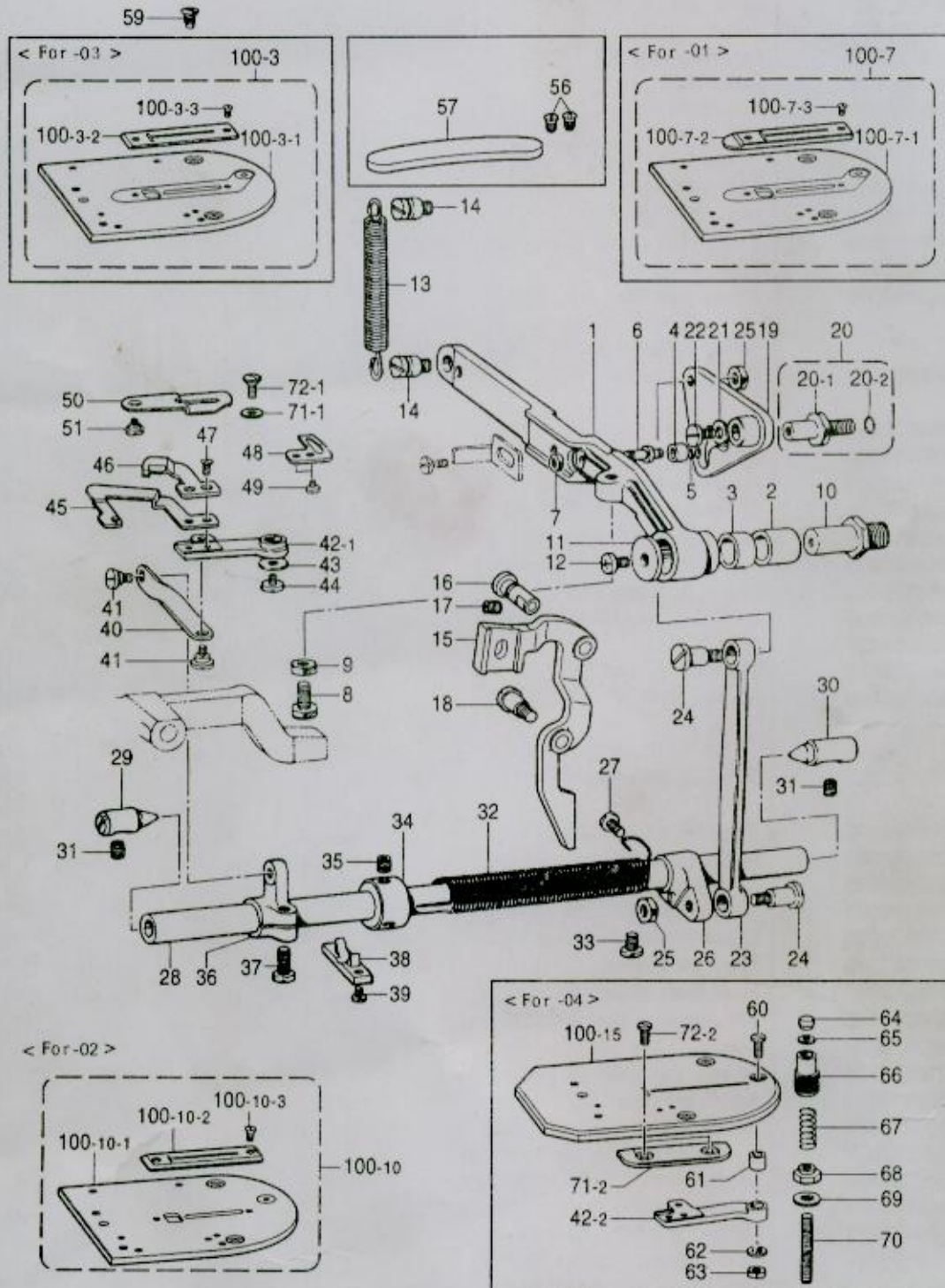
W. Lower thread trimmer mechanism



W. Lower thread trimmer mechanism

No.	Ret.	Description	Qt.
1	B969592006	< For " -01, -02 & -04" > Lower thread trimmer lever	1
2	B968738900	Bushing	1
3	B968737000	Bush, DU	1
4	B903366009	Roller	1
5	B062070768	Retaining ring, E3	1
6	B969591009	Roller shaft	1
7	B990949006	Nut, SM4.76	1
8	B995525009	< For " -01, -02 & -04" > Bolt, SM7.94	1
9	B958113009	Nut, SM7.94	1
10	B969580009	L - thread trimmer lever shaft	1
11	B961015009	Washer, plain 6	1
12	B048349098	Screw, pan SM5.95 - 28 x 10	1
13	B969589009	< For " -01, -02 & -04" > Spring, extension	1
14	B969638008	Spring hook	2
15	BX54737909	Stopper	1
16	B967322909	Lever stopper shaft	1
17	B096340488	Set screw, socket SM5.95	1
18	B995617008	Shoulder screw, SM5.95	1
19	B969587009	L - T trimmer driving cam assy	1
20	BX54606009	Driving cam shaft assy	1
20 - 1	B969584909	L - T trimmer driving cam stud	1
20 - 2	B029004430	O ring, PW6	1
21	B085050878	Washer, plain M 5	1
22	B904481008	Screw, SM4.37	1
23	B969583009	< For " -01, -02 & -04" > Thread trimmer driving rod	1
24	B969582009	Shoulder screw, SM6.35	2
25	B950554009	Nut, SM6.35	2
26	B969581000	L - thread trimmer shaft arm, A	1
27	B048429898	Screw, pan SM4.37 - 40 x 12	1
28	B969570009	Lower thread trimmer shaft	1
29	B906263009	Feed shaft center, L	1
30	B906262009	Feed shaft center, R	1
31	B096340488	Set screw, socket SM5.95	2
32	B969579009	Spring	1
33	B048349898	Screw, pan SM5.95 - 28 x 12	1
34	B969578959	Set screw collar	1
35	B096330488	Set screw, socket (CP) SM6.35	2
36	B969577059	L - thread trimmer shaft arm, B	1
37	B048359498	Screw, pan SM5.56 - 32 x 16	1
38	B969565009	L - thread trimmer shaft plate	1
39	B048430498	Screw, pan SM3.57 - 40 x 6	2
40	BX54106009	Lower thread trimmer link	1
41	B969575009	Shoulder screw, SM4.76	2
42 - 1	B969573009	< For " -01, -02 & -03" > Lower thread trimmer set arm	1
42 - 2	B963875009	< For " -04" > Lower thread trimmer set arm	1

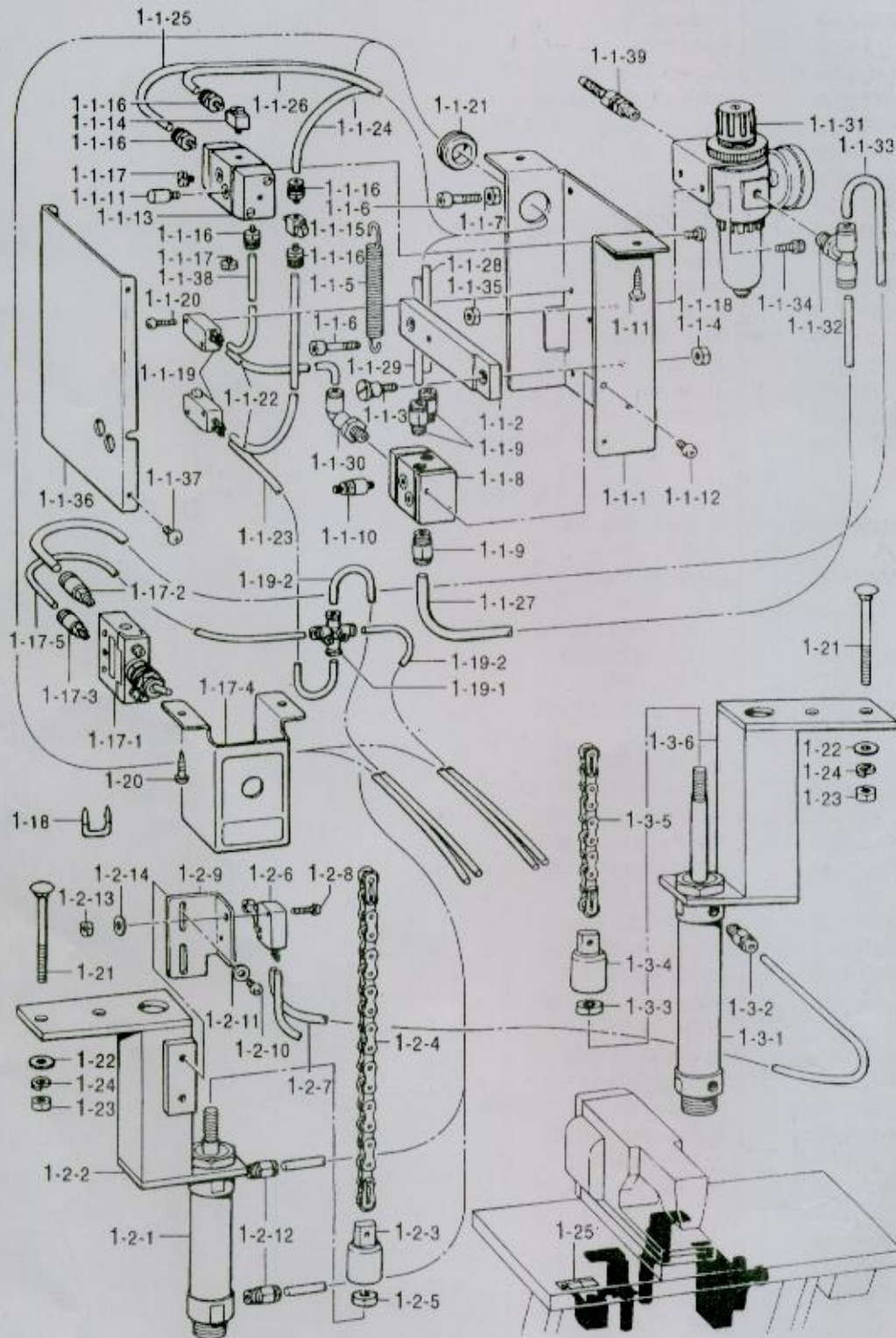
W. Lower thread trimmer mechanism



W. Lower thread trimmer mechanism

No.	Ret.	Description	Ot.
43	B598341009	Washer	1
44	B905659009	Screw, SM3. 57	1
45	BX54742009	L - thread release lever assy	1
46	BX54730009	Movable knife	1
47	B969568009	Screw 3. 18	2
48	BX54193009	Fixed knife	1
49	B969566009	Screw, SM3. 18 - 40 x 3	2
50	BX54739009	Lower thread releaser	1
51	B968680009	Shoulder screw, SM3. 18	1
59	B904481008	Screw, SM4. 37	2
60	B905155008	Screw, flat SM4. 37 - 40 x 11. 8	1
61	B963874009	Roller	1
62	BX90802007	Spacer, movable knife T = 0. 6	1
63	B908539007	Nut, SM4. 37	1
64	B964099009	Cushion	1
65	BX98441009	Washer	1
66	B967716009	Lever stopper	1
67	B960459009	Spring, compression	1
68	B960450009	Adjust nut	1
69	B085020978	Washer, plain S 8	1
70	B960461009	Set screw, SM7. 94	1
		< For " - 01, - 02 & - 03 " >	
71 - 1	B084050974	Washer, plain S 5	2
		< For " - 04 " >	
71 - 2	BX52378009	Guide, N - plate, - 5	1
		< For " - 01, - 02 & - 03 " >	
72 - 1	B998359007	Screw, SM3. 57 x 7	2
		< For " - 04 " >	
72 - 2	B900853090	Screw, SM3. 57 x 6	2
		< For " - 01 " >	
100 - 7	BX52823009	Needle plate assy - 2S	1
100 - 7 - 1	BX52704009	Base plate assy - 2	1
100 - 7 - 2	BX75350009	Needle plate, 1. 4S	1
100 - 7 - 3	B999037009	Screw, flat SM2. 38	2
		< For " - 02 " >	
100 - 10	BX52810009	Needle plate assy - 3	1
100 - 10 - 1	BX52703009	Base plate assy - 3	1
100 - 10 - 2	B966475009	Needle plate, 1. 2	1
100 - 10 - 3	B999037009	Screw, flat SM2. 38	2
		< For " - 03 " >	
100 - 3	BX52827009	Needle plate assy - 2	1
100 - 3 - 1	BX52704009	Base plate assy - 2	1
100 - 3 - 2	B965864009	Needle plate, O	1
100 - 3 - 3	B965863009	Screw, flat SM2. 38	2
		< For " - 04 " >	
100 - 15	BX54603009	Needle plate 50	1
		"Option parts"	
56	B999037009	Screw, flat SM2. 38	2
57	B954498009	Plastic plate	1

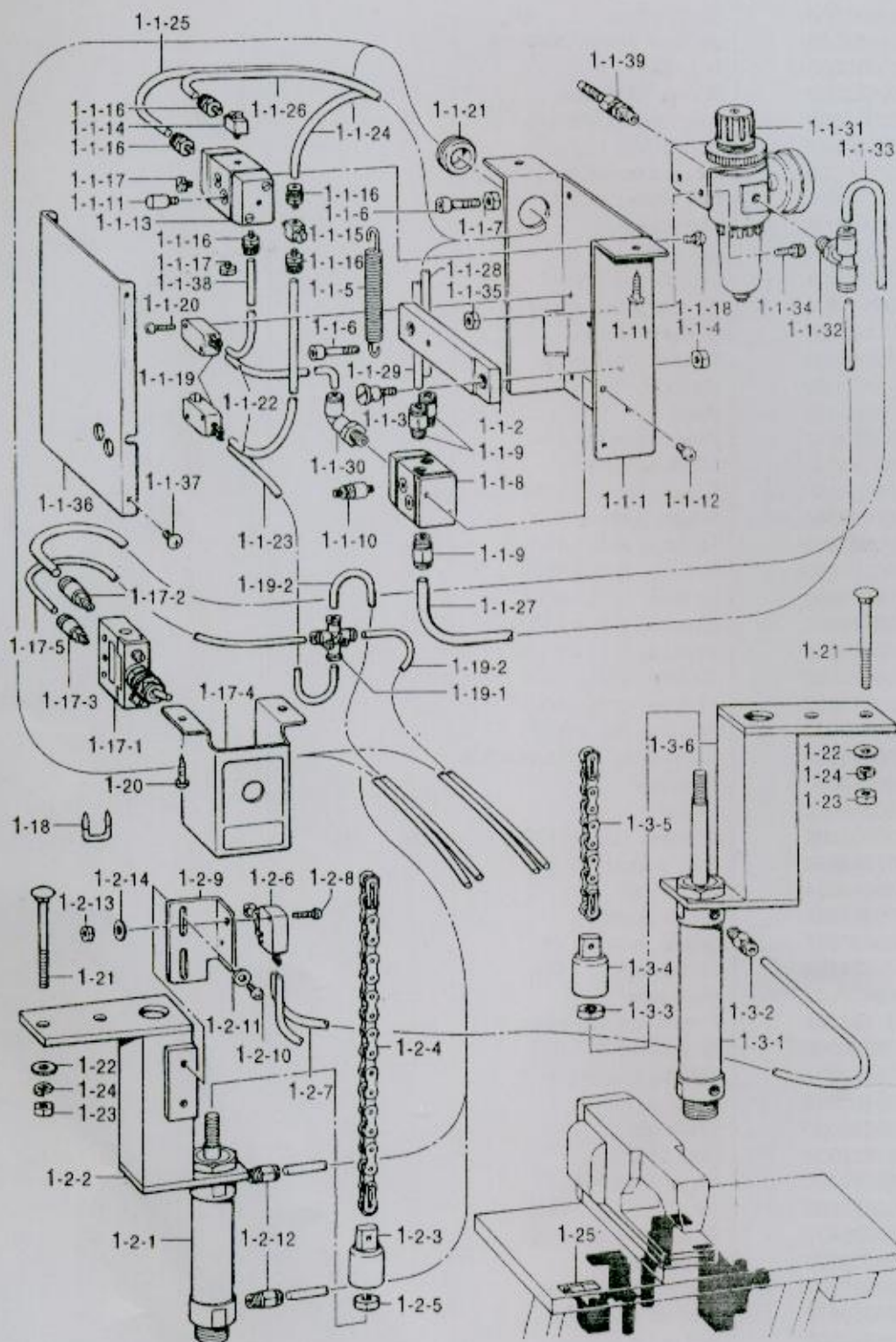
X1. Attachment set (Pneumatic one – pedal device)



X1. Attachment set (Pneumatic one – pedal device)

No.	Ret.	Description	Ot.
1	BX54683901	A – T one pedal device 818	1
1 – 1	BX09593901	Switch box assy	1
1 – 1 – 1	BX09592001	Switch box	1
1 – 1 – 2	BX09591009	Switch lever	1
1 – 1 – 3	B965624009	shoulder screw, SM7. 14	1
1 – 1 – 4	B900010006	Nut, SM7. 14	1
1 – 1 – 5	BX09580009	Spring, extension	1
1 – 1 – 6	B092507088	Bolt, socket M5 x30	2
1 – 1 – 7	B089500907	Nut, 1 M5	2
1 – 1 – 8	BX09589000	Air operate valve, S	1
1 – 1 – 9	BX09588000	Half union	3
1 – 1 – 10	B957842009	Throttle valve	2
1 – 1 – 11	B957841009	Silencer	1
1 – 1 – 12	B008600207	Screw, pan M4 x8	2
1 – 1 – 13	BX09587000	Air operate valve, W	1
1 – 1 – 14	B952452000	Universal elbow	1
1 – 1 – 15	BX09586000	T – joint, ; universal	1
1 – 1 – 16	B952440000	Nipple	5
1 – 1 – 17	BX09585000	Plug	2
1 – 1 – 18	B008600207	Screw, pan M4 x8	2
1 – 1 – 19	BX09584000	Micro valve, S	2
1 – 1 – 20	B008709407	Screw, pan M3 x16	4
1 – 1 – 21	BX09583000	Rubble bush, L	1
1 – 1 – 22	BX09582000	Air tube, A (L =160)	2
1 – 1 – 23	BX09581900	Air tube, B (L =700)	1
1 – 1 – 24	BX09579000	Air tube, D (L =600)	1
1 – 1 – 25	BX09578000	Air tube, E (L =1700)	1
1 – 1 – 26	BX09577000	Air tube, F (L =1700)	1
1 – 1 – 27	BX09576000	Air tube, G (L =200)	1
1 – 1 – 28	BX09575000	Air tube, H (L =600)	1
1 – 1 – 29	BX09574000	Air tube, I (L =600)	1
1 – 1 – 30	BX06101000	Elbow union, ; KQL04 – 01S	1
1 – 1 – 31	BX09560000	Regulator	1
1 – 1 – 32	BX86596000	T – joint	1
1 – 1 – 33	BX86592000	Air tube, ; 0604N120W (L =1200)	1
1 – 1 – 34	B092049888	Bolt, socket M6 x12	2
1 – 1 – 35	B089040804	Nut, 2 M6	2
1 – 1 – 36	BX09567001	Switch cover	1
1 – 1 – 37	B008600207	Screw, pan M4 x8	4
1 – 1 – 38	BX09571000	Air tube, K (L =45)	1
1 – 1 – 39	B960432009	Hose joint	1
1 – 2	BX81252001	Presser cylinder assy, 4	1
1 – 2 – 1	BX79206000	Air cylinder 25 – 50A	1
1 – 2 – 2	BX79207001	Cylinder bracket, P	1
1 – 2 – 3	BX09563009	Joint	1
1 – 2 – 4	BX09536000	17P chain	1
1 – 2 – 5	B961622009	Nut, M10	1
1 – 2 – 6	BX09562000	Micro valve, SR	1
1 – 2 – 7	BX09573000	Air tube, J (L =500)	1
1 – 2 – 8	B008709407	Screw, pan M3 x16	2
1 – 2 – 9	BX86535009	Switch plate	1
1 – 2 – 10	B008600207	Screw, pan M4 x8	2
1 – 2 – 11	B085060877	Washer, plain M4	2
1 – 2 – 12	BX09588000	Half union	2
1 – 2 – 13	B089700907	Nut, 1 M3	1
1 – 2 – 14	B085070775	Washer, plain L 3	1

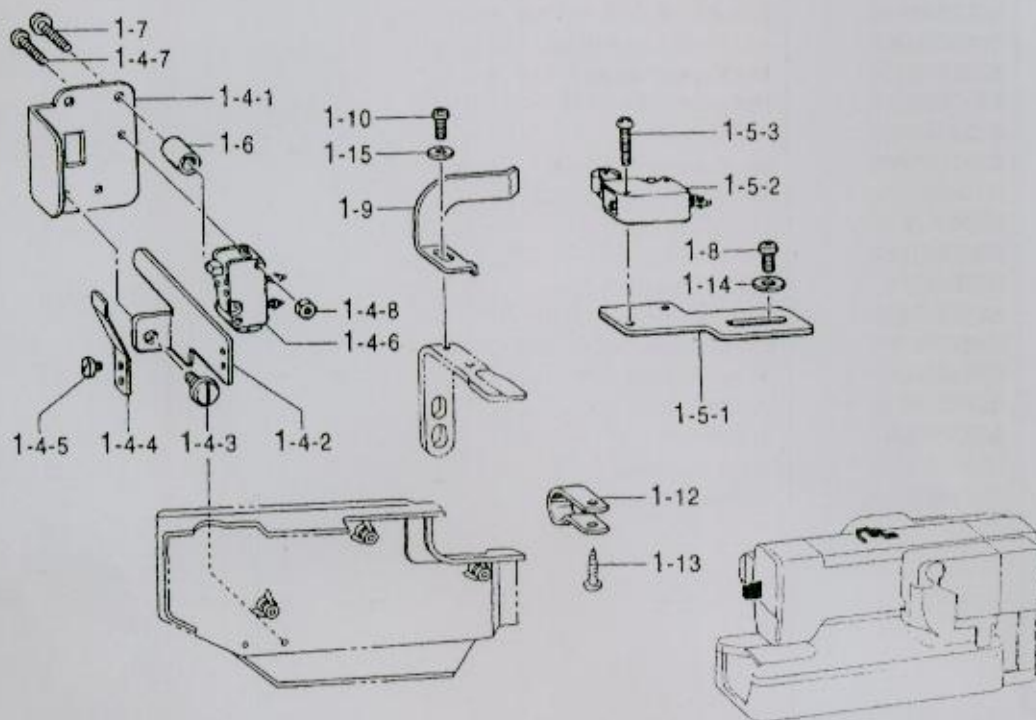
X1. Attachment set (Pneumatic one – pedal device)



X1. Attachment set(Pneumatic one – pedal device)

No.	Ret.	Description	Ot.
1 - 3	BX81251901	Starting cylinder assy	1
1 - 3 - 1	BX09559900	Air cylinder, 25 - 50T	1
1 - 3 - 2	BX06190000	Half union, KQH04 - 01S	1
1 - 3 - 3	B961622009	Nut, M10	1
1 - 3 - 4	BX09563009	Joint	1
1 - 3 - 5	BX00320000	9P - chain	1
1 - 3 - 6	BX81240001	Cylinder bracket, S	1
1 - 11	B079557808	Wood screw, round M5. 5 x 32	2
1 - 17	BX86595009	A - T one pedal device SW assy	1
1 - 17 - 1	BX86594000	Mechanical valve	1
1 - 17 - 2	BX96965000	Half union, 06 - M5	1
1 - 17 - 3	BX06105000	Half union	1
1 - 17 - 4	BX86593009	Air - type switch panel	1
1 - 17 - 5	BX09570000	Air tube, C (L = 1700)	1
1 - 18	B800910009	Staple	5
1 - 19	BX86591000	Cross joint assy	1
1 - 19 - 1	BX86580000	Cross joint, 04 - Q	1
1 - 19 - 2	BX09570000	Air tube, C (L = 1700)	2
1 - 20	B909992009	Wood screw, round M4. 5 x 20	2
1 - 21	B991355009	Bolt, M6 x 60	4
1 - 22	B085040776	Washer, plain L 6	4
1 - 23	B089040904	Nut, 1 M6	4
1 - 24	B082040868	Washer, spring 2 - 6	4
1 - 25	BX79965009	Table sheet, 814	1

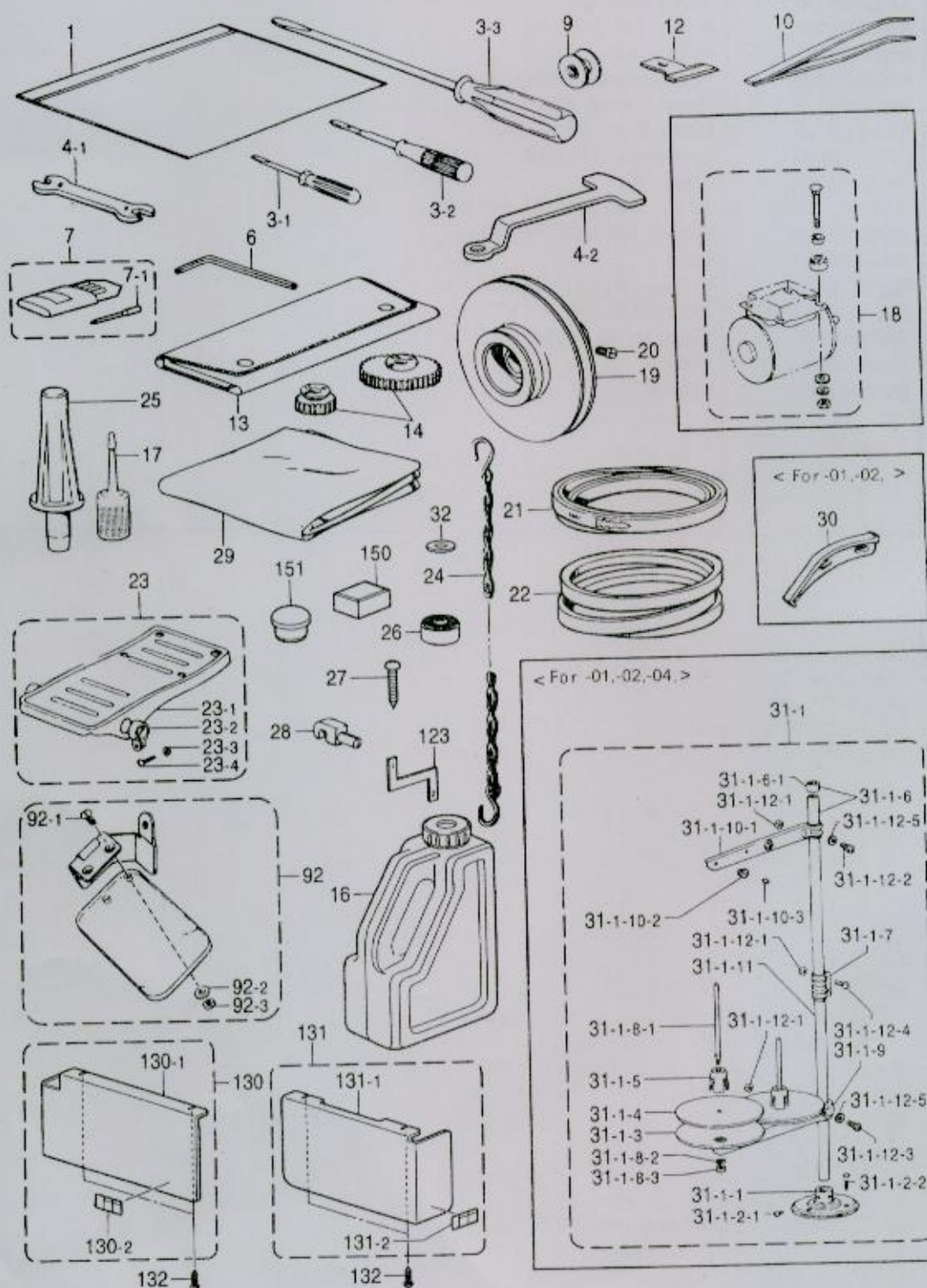
X2. Attachment set (Pneumatic one – pedal device)



X2. Attachment set (Pneumatic one – pedal device)

No.	Ret.	Description	Ot.
1 – 4	BX77096001	Sensor switch 7 assy	1
1 – 4 – 1	BX77099001	Sensor base 7	1
1 – 4 – 2	BX77098009	Reset lever	1
1 – 4 – 3	B997370009	Shoulder screw SM4. 37	1
1 – 4 – 4	BX09533009	Spring, plate 4	1
1 – 4 – 5	B990895008	Screw SM3. 57	2
1 – 4 – 6	BX09553000	Micro valve, D	1
1 – 4 – 7	B008709407	Screw, pan M3 x 16	2
1 – 4 – 8	B089700907	Nut, 1 M3	2
1 – 5	BX09520009	Home position switch assy	1
1 – 5 – 1	BX09529009	Home position plate	1
1 – 5 – 2	BX09562000	Micro valve, SR	1
1 – 5 – 3	B048709605	Screw, pan M3 x 14	2
1 – 6	BX09532009	Collar, A	2
1 – 7	B048429498	Screw, pan SM4. 37 – 40 x 16	2
1 – 8	B048430498	Screw, pan SM3. 57 – 40 x 6	2
1 – 9	BX54684009	Dog	1
1 – 10	B048420498	Screw, pan SM4. 37 – 40 x 6	1
1 – 12	B585446000	Cord holder, 6N	2
1 – 13	B079699706	Wood screw, round M4. 1 x 13	2
1 – 14	B905949007	Washer	2
1 – 15	B900465007	Washer	1

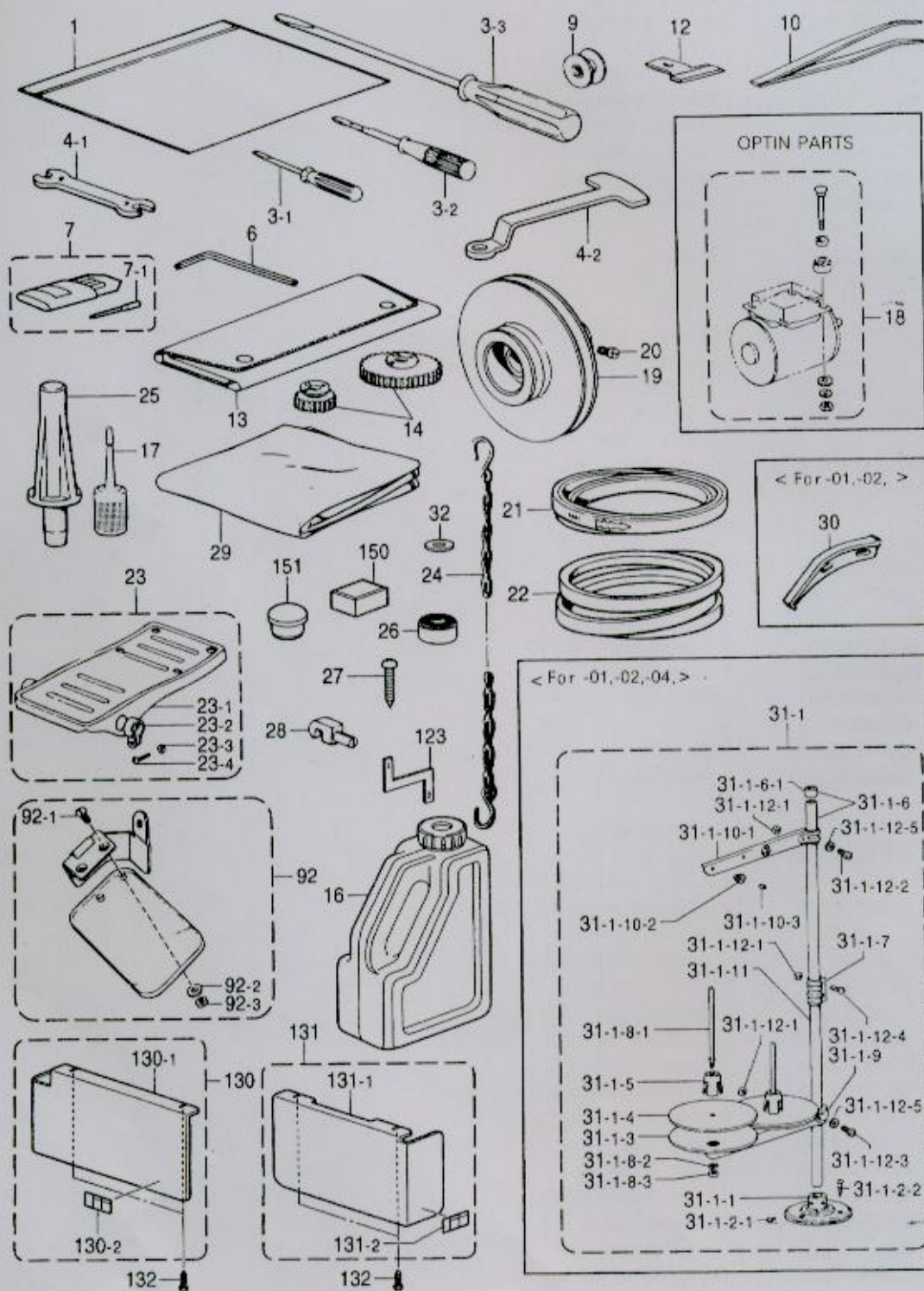
Z1. Accessories



Z1. Accessories

No.	Ret.	Description	Ot.
1	B988119009	Accessory bag	1
3-1	B968667009	Screw driver, 1.9 x 52	1
3-2	B992273009	Screw driver, 3.4 x 70	1
3-3	B909538909	Screw driver, 5.5 x 190	1
4-1	B900223009	Wrench, 8 x 9	1
4-2	B958345009	Offset wrench 10	1
6	B968389009	Allen wrench 3	1
		< For " -02">	
7	BXF9358099	Needle 4 piece assy, B903695	1
7-1	B903695099	Needle, DP x 5 (#11)	4
	*	< For " -01, -03 & -04">	
7	BXF9358096	Needle 4 piece assy, B903695	1
7-1	B903695096	Needle, DP x 5 (#14)	4
	*		
9	B951952059	Bobbin	3
10	B993644000	Pincette	1
12	*	Cutter	1
13	B968365008	Change gear case	1
14	*	Change gear	1
16	BX55447009	Oil tank assy	1
17	BX04309000	Poly oiler assy	1
19		Motor pulley	1
20	B905037009	Set screw, SM5.95	2
21	B969399900	Belt, flat	1
22		Belt, VM; white	1
23	B994925809	Pedal assy	2
23-1	B993673901	Foot lifter pedal	2
23-2	B994094009	Pedal stopper	4
23-3	B089600904	Nut, 1 M4	4
23-4	B048609604	Screw, pan M4 x 14	4
24	B961863009	Chain assy	2
25	BX94020001	Head rest	1
26	B964856009	Collar	4
27	B977920005	Wood screw, round M6, 2 x 38	4
28	B969854009	Head hinge	2
		< For Export>	
29	B966884009	Head cover	1
		< For " -01 & -02">	
30	B968376009	Stop cam segment, AS	1
		< For " -01, -02 & -04">	
31-1	BX08349701	Cotton stand assy, 2	1
31-1-1	B950921901	Cotton stand bracket	1
31-1-2	BX08337009	C - stand bracket & screw set	1
31-1-2-1	B048040204	Screw, pan M6 x 8	2
31-1-2-2	B079658804	Wood screw, round M4.5 x 22	3
31-1-3	BX59827009	Spool stand base	2
31-1-4	B950928000	Spool mat	2
31-1-5	BX59828009	Spool cushion	2
31-1-6	BX60471009	Column pipe w/cap	1
31-1-6-1	B950936000	Column cap	1
31-1-7	B950937007	column joint	1
31-1-8	BX89312009	Spool & screw set	2
31-1-8-1	B950931008	Spool shaft, B	2
31-1-8-2	B082050864	Washer, spring 2-5	2
31-1-8-3	B089500904	Nut, 1 M5	2

Z1. Accessories

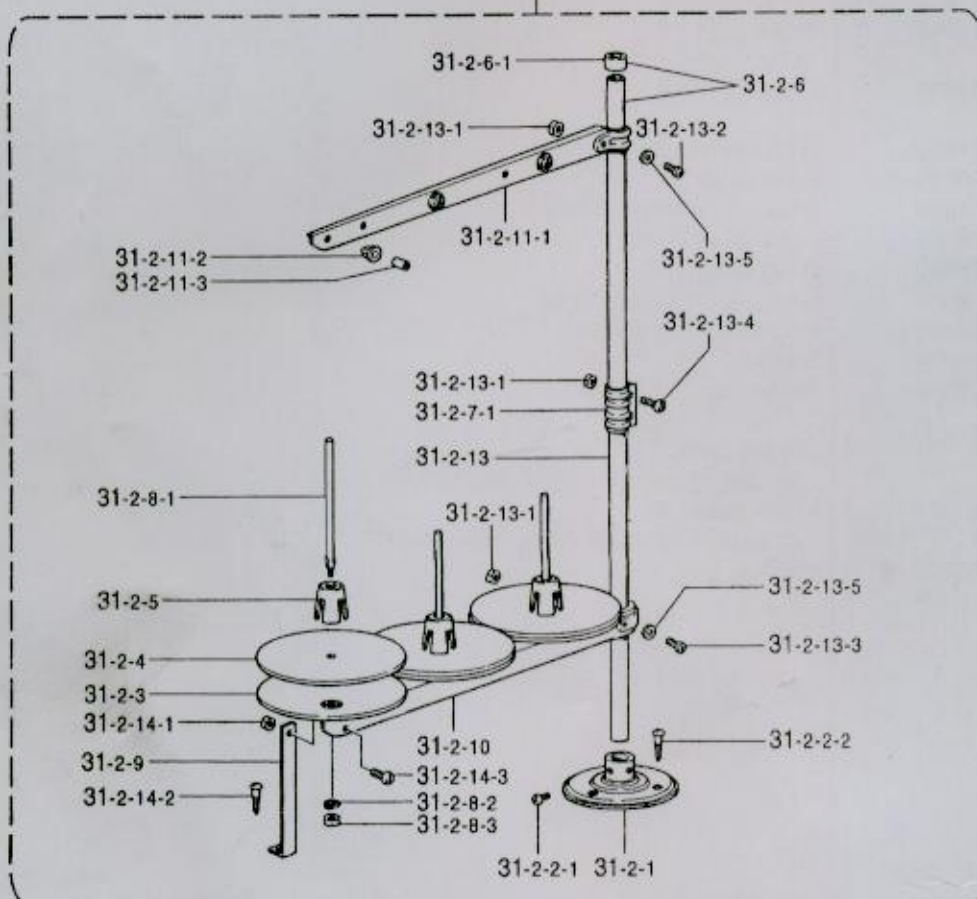
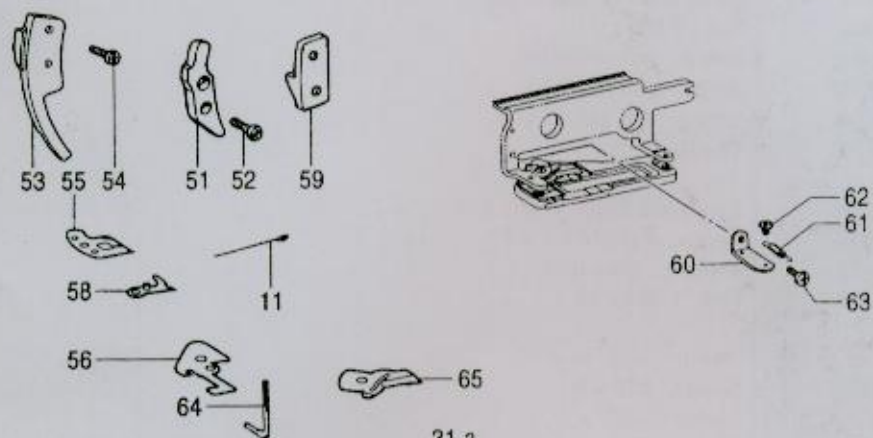


Z1. Accessories

No.	Ret.	Description	Ot.
31 - 1 - 9	BX08332008	Spool holder, 2	1
31 - 1 - 10	BX08324008	Thread hanger assy, 2	1
31-1-10-1	BX08323008	Thread hanger, 2	1
31-1-10-2	B950927000	Thread hanger base	2
31-1-10-3	B968110009	Thread bush	2
31 - 1 - 11	B950938007	Column pipe	1
31 - 1 - 12	BX60469009	Spool shaft & screw set, A	1
31-1-12-1	B089500904	Nut, 1 M5	4
31-1-12-2	B048509604	Screw, pan M5 x 14	1
31-1-12-3	B048509604	Screw, pan M5 x 14	1
31-1-12-4	B048509604	Screw, pan M5 x 14	2
31-1-12-5	B084050974	Washer, plain S 5	2
92	BX73999009	Eye guard assy	1
92 - 1	BX09300009	Screw, flat SM3. 1 x 87	2
92 - 2	B085070878	Washer, plain M 3	2
92 - 3	B089440908	Nut, 1 SM3. 18	2
		< For " -01" >	
123	BX78117909	Gauge, 818 - 2	1
		< For " -02" >	
123	BX78116909	Gauge, 818 - 3	1
		< For " -03" >	
123	BX78115909	Gauge, 818 - 4	1
		< For " -04" >	
123	BX78114909	Gauge, 818 - 5	1
130	BX72477909	Pulley cover L assy	1
130 - 1	BX72479009	Pulley cover, L	1
130 - 2	BXF0316009	Label, entanglement 3 lang	1
131	BX72476909	Pulley cover R assy	1
131 - 1	BX72478009	Pulley cover, R	1
131 - 2	BXF0316009	Label, entanglement 3 lang	2
132	B078688007	Wood screw, round M4. 1 x 20	4
150	B998585000	Magnet	1
151	B993176009	Rubber cap, 13. 5	2
		"Option parts"	
		< In case of using the 50HZ 3600rpm. >	
18	BX77067009	Motor spacer set	1
		< In case of using the 50HZ 3200rpm. >	
32	BX76207009	Washer, plain 8	4

Z2. Accessories

(For - 03)

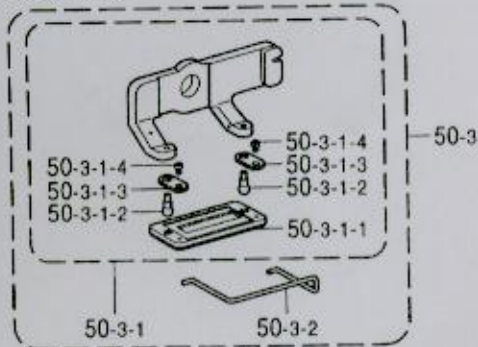


Z2. Accessories

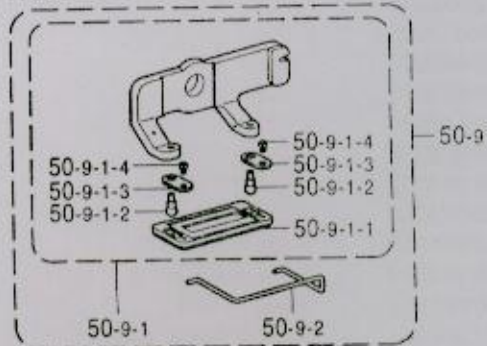
No.	Ret.	Description	Ot.
		< For " -03" >	
11	B999503000	Threader	1
31 - 2	BX08345701	Cotton stand assy, 3	1
31 - 2 - 1	B950921901	Cotton stand bracket	1
31 - 2 - 2	BX08337009	C - stand bradctet & screw set	1
31 - 2 - 2 - 1	B048040204	Screw, pan M6 x 8	2
31 - 2 - 2 - 2	B079658804	Wood screw, round M4.5 x 22	3
31 - 2 - 3	BX59827009	Spool stand base	3
31 - 2 - 4	B950928000	Spool mat	3
31 - 2 - 5	BX59828009	Spool cushion	3
31 - 2 - 6	BX60471009	Column pipe w/cap	1
31 - 2 - 6 - 1	B950936000	Column cap	1
31 - 2 - 7	B950937007	Column joint	1
31 - 2 - 8	BX89312009	Spool & screw set	3
31 - 2 - 8 - 1	B950931008	Spool shaft, B	3
31 - 2 - 8 - 2	B082050864	Washer, spring 2 - 5	3
31 - 2 - 8 - 3	B089500904	Nut, 1 M5	3
31 - 2 - 9	B950922001	Spool holder support, A	1
31 - 2 - 10	BX08331001	Spool holder, 3	1
31 - 2 - 11	BX08322001	Thread hanger assy, 3	1
31-2-11-1	BX08321001	Thread hanger, 3	1
31-2-11-2	B950927000	Thread hanger base	3
31-2-11-3	B968110009	Thread bush	3
31 - 2 - 12	B950938007	Column pipe	1
31 - 2 - 13	BX60469009	Spool shaft & screw set, A	1
31-2-13-1	B089500904	Nut, 1 M5	4
31-2-13-2	B048509604	Screw, pan M5 x 14	1
31-2-13-3	BX51179009	Screw, pan M5 x 32	1
31-2-13-4	B048509604	Screw, pan M5 x 14	2
31-2-13-5	B084050974	Washer, plain S5	2
31 - 2 - 14	BX60466009	Holder joint & screw set	1
31-2-14-1	B089500904	Nut, 1 M5	1
31-2-14-2	B796588004	Wood screw, round M4.52 x 2	1
31-2-14-3	B048509004	Screw, pan M5 x 10	1
51	B965758009	Stop cam segment	1
52	B048420298	Screw, pan SM74.37 - 40 x 8	2
53	B965757909	Cutter cam segment	1
54	B048429098	Screw, pan SM4.37 - 40 x 10	2
55	BXF0114009	Thread holder	1
56	BXF0113009	Fised knife, gimp Tr.	1
58	BXF0112009	Gimp detach lever assy	1
59	B965750009	Zigzag cam segment, F	1
60	B965119009	Gimp stopper	1
61	B599019009	Spring, extension	1
62	B988339059	Screw, SM2.38	2
63	B048440698	Screw, pan SM3.18 - 40 x 4	1
64	B965720009	Gimp guide pipe	1
65	BXF0116009	U - thread loop spreading plate	1

Z3. Accessories

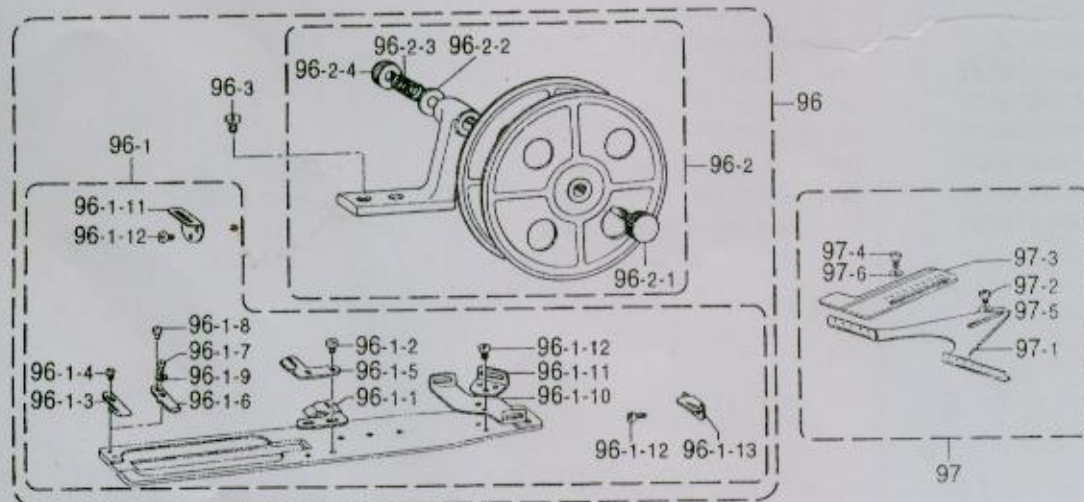
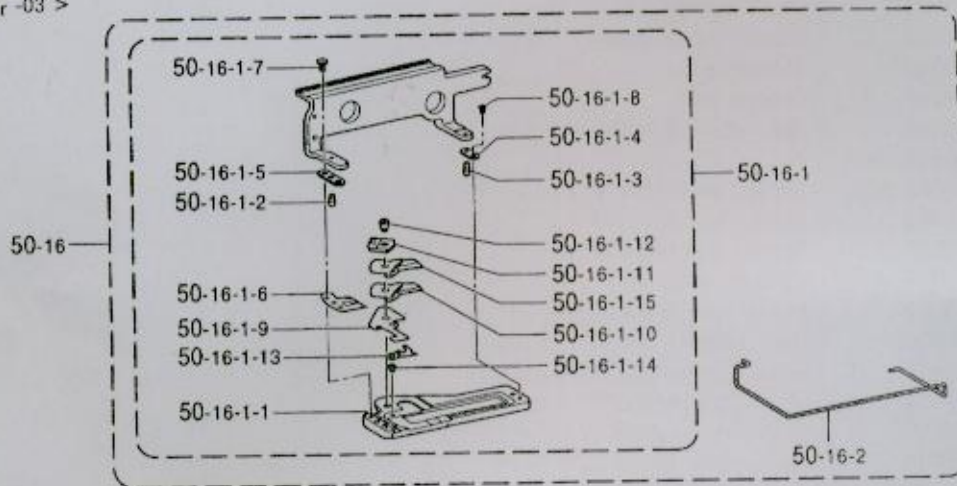
< For -01 >



< For -02 >



< For -03 >



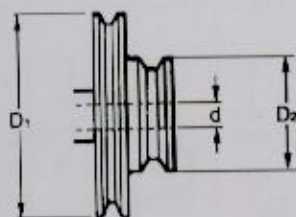
Z3. Accessories

No.	Ret.	Description	Ot.
50 - 3	BX52702009	< For " -01" > work clamp assy, 16RS - F	1
50 - 3 - 1	BX75348009	Work clamp assy, 16RS	1
50 - 3 - 1 - 1	B951349009	Word clamp, 16RS	1
50 - 3 - 1 - 2	B966614009	Pin	2
50 - 3 - 1 - 3	B903609009	Spring, plate	2
50 - 3 - 1 - 4	B903606009	Screw, SM1.98 - 64 x 2	2
50 - 3 - 2	B950549000	Finger guard, S < For " -02" >	1
50 - 9	BX73984009	Work clamp assy, 16 - K W/F - G	1
50 - 9 - 1	B950343009	Work clamp assy, 16 - 3	1
50 - 9 - 1 - 1	B965974009	Work clamp, S - K	1
50 - 9 - 1 - 2	B966614009	Pin	2
50 - 9 - 1 - 3	B966303009	Spring, plate	2
50 - 9 - 1 - 4	B903606009	Screw, SM1.98 - 64 x 2	2
50 - 9 - 2	B950549000	Finger guard, S < For " -03" >	1
50 - 16	BX73988909	Work clamp assy, 32 W/F - G	1
50 - 16 - 1	B950339909	Work clamp assy, 32 - 4	1
50 - 16 - 1 - 1	BXF9092009	Work clamp, 32 - 4	1
50 - 16 - 1 - 2	B966614009	Pin	1
50 - 16 - 1 - 3	B964076009	Pin	1
50 - 16 - 1 - 4	B903609009	Spring, plate	1
50 - 16 - 1 - 5	B965745009	Spring, plate	1
50 - 16 - 1 - 6	BXF0114009	Thread holder	1
50 - 16 - 1 - 7	B999905009	Screw, SM2.38	2
50 - 16 - 1 - 8	B903606009	Screw, SM1.98 - 64 x 2	2
50 - 16 - 1 - 9	BXF0113009	Fixed knife, gimp Tr.	1
50 - 16 - 1 - 10	BXF0115009	Gimp trimmer movable knife	1
50 - 16 - 1 - 11	BXF9094009	Gimp trimming crank	1
50 - 16 - 1 - 12	B965730909	Shoulder screw, SM3.57	1
50 - 16 - 1 - 13	BXF0112009	Gimp detach lever assy	1
50 - 16 - 1 - 14	BXF9009009	G - detach lever shoulder screw	1
50 - 16 - 1 - 15	BXF0116009	U - thread loop spreading plate	1
50 - 16 - 2	B950543000	Finger guard, L "Option parts"	1
96	BX85438001	Tape guard winder assy	1
96 - 1	BX85439009	Tape guard assy	1
96 - 1 - 1	B966112009	Tape guard, B	1
96 - 1 - 2	B905822008	Screw, SM2.38	2
96 - 1 - 3	B966113009	Tape guard, A	1
96 - 1 - 4	B988339059	Screw, SM2.38	2
96 - 1 - 5	B966111009	Tape guide, C	1
96 - 1 - 6	B966482009	Tape guard, F	1
96 - 1 - 7	B988339059	Screw, SM2.38	1
96 - 1 - 8	B905130009	Screw, SM2.38	1
96 - 1 - 9	B990043009	Collar	1
96 - 1 - 10	B967361009	Tape guide, lower	1
96 - 1 - 11	B967362009	Tape guide, upper	2
96 - 1 - 12	B048440698	Screw, pan SM3.18 - 40 x 4	6
96 - 1 - 13	B965669009	Tape guide	1
96 - 2	B967343908	Tape winder assy	1
96 - 2 - 1	B967120009	Screw	1
96 - 2 - 2	B902616009	Washer	1
96 - 2 - 3	B902615009	Spring, compression	1
96 - 2 - 4	B900974009	Tension nut	1
96 - 3	B903603007	Screw, SM4.37 x 9	2
97	BX79217009	Ruller assy	1
97 - 1	B969305009	Ruller	1
97 - 2	B048420598	Screw, pan SM4.37 - 40 x 5	2
97 - 3	B963954009	Ruller	1
97 - 4	B048420598	Screw, pan SM4.37 - 40 x 5	2
97 - 5	B994448007	Washer	2
97 - 6	B085420878	Washer, plain M 4.37	2

Sp1. Different parts list

			-01	-02	-03	-04
Z1 -7	Needle DP x5	4	B903695096 (#14)	B903695099 (#11)	B903695096 (#14)	
Z1 -12	Cutter, 5/8	1	B903805009	←	←	
Z1 -12	Cutter, 3/8	1	B901273009	←	←	
Z1 -12	Cutter, 3/4	1	B903803009	←	←	
Z1 -12	Cutter, 1	1	B903890009	←	←	
Z1 -12	Cutter, 48	2				B963169009
Z1 -14	Change gear, 28	1				B969735000
Z1 -14	Change gear, 48	1				B969725000
Z1 -14	Change gear, 30	1	B969734000	←		B969734000
Z1 -14	Change gear, 46	1	B969726000	←		B969726000
Z1 -14	Change gear, 34	1		B969732000		B969732000
Z1 -14	Change gear, 42	1		B969728000		B969728000
Z1 -14	Change gear, 32	1			B969733000	
Z1 -14	Change gear, 44	1			B969727000	
Z1 -14	Change gear, 38	2	B969720000		B969720000	
Z1 -14	Change gear, 36	1	B969731000	←	←	
Z1 -14	Change gear, 40	1	B969729000	←	←	

Sp2. Motor pulley and V – belt selection



Machine speed (rpm)	Frequency	Motor pulley			High speed V – belt		Low speed V – belt	
		Outside diameter	Core	Parts code	Mark	Parts code	Mark	Parts code
3,600	50Hz	D1 = 187.5	d = 14	BX77003 – 008	M44	BX92303 – 966	M41	BX92303 – 969
		D2 = 79	d = 15.88	BX77002 – 008				
	60Hz	D1 = 152.8	d = 14	BX79979 – 008	M42	BX92303 – 968	M40	BX92303 – 960
		D2 = 56	d = 15.88	BX77001 – 008				
3,200	50Hz	D1 = 160	d = 14	B969303 – 008	M43	BX92303 – 967	M42	BX92303 – 968
		D2 = 81	d = 15.88	B965329 – 008				
	60Hz	D1 = 134.2	d = 14	B969301 – 008	M41	BX92303 – 969	M41	BX92303 – 969
		D2 = 69.5	d = 15.88	B965320 – 008				
3,000	50Hz	D1 = 152.8	d = 14	BX68059 – 008	M42	BX92303 – 968	M41	BX92303 – 969
		D2 = 73.4	d = 15.88	BX68058 – 008				
	60Hz	D1 = 127.6	d = 14	BX77856 – 008	M40	BX92303 – 960	M40	BX92303 – 960
		D2 = 62.2	d = 15.88	BX77855 – 008				
2,800	50Hz	D1 = 134.2	d = 14	B969301 – 008	M41	BX92303 – 969	M41	BX92303 – 969
		D2 = 69.5	d = 15.88	B965320 – 008				
	60Hz	D1 = 119.5	d = 14	B967210 – 008	M41	BX92303 – 969	M40	BX92303 – 960
		D2 = 69.5	d = 15.88	B965328 – 008				
			d = 19.05	B951279 – 008				

* For 3,600 rpm in 50HZ areas, use the motor spacer set (BX77067 – 009).

* In the case of 3,200 rpm in 50HZ areas, when the clearance between the edge of the motor pulley and the undersurface of the table is small, use four pieces of the washer plain 8 (BX76207 – 009, thickness: 4mm).

Ga1. Gauge parts list

Change gear

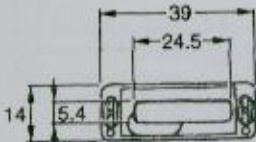
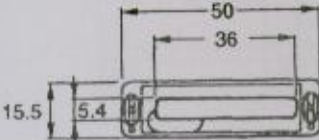
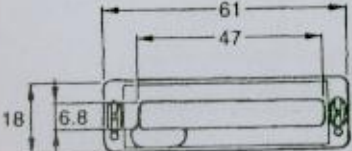
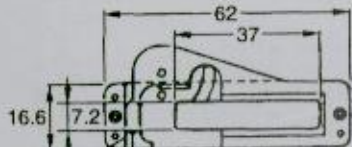
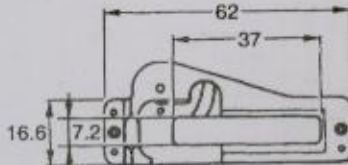
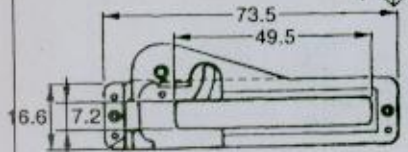
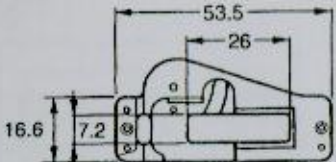
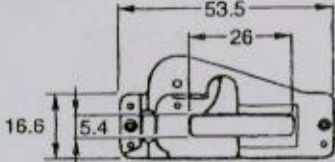
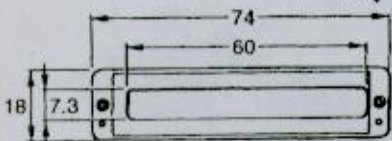
Number of stitches	Change gear (Left – side)		Change gear (Right – side)		Number of stitches	Change gear (Left – side)		Change gear (Right – side)	
	Mark	Parts code	Mark	Parts code		Mark	Parts code	Mark	Parts code
360	54	B969722 – 000	22	B969738 – 009	133	36	B969731 – 000	40	B969729 – 000
319	52	B969723 – 000	24	B969737 – 009	126	35	BX01716 – 000	41	BX01715 – 000
283	50	B969724 – 000	26	B969736 – 000	119	34	B969732 – 000	42	B969728 – 000
252	48	B969725 – 000	28	B969735 – 000	107	32	B969733 – 000	44	B969727 – 000
226	46	B969726 – 000	30	B969734 – 000	96	30	B969734 – 000	46	B969726 – 000
203	44	B969727 – 000	32	B969733 – 000	86	28	B969735 – 000	48	B969725 – 000
182	42	B969728 – 000	34	B969732 – 000	77	26	B969736 – 000	50	B969724 – 000
164	40	B969729 – 000	36	B969731 – 000	68	24	B939737 – 009	52	B969723 – 000
147	38	B969720 – 000	38	B969720 – 000	60	22	B969738 – 009	54	B969722 – 000

Ga2. Gauge parts List
Cutter

B901273-009 9.5 19 34.5 3/8	B903806-009 11.1 19 34.5 7/16	B903800-009 12.7 19 34.5 1/2	BX07832-009 14.3 19 34.5 9/16	B903805-009 15.9 19 34.5 5/8	BX85469-009 17.5 19 34.1 11.5 11/16
B903803-009 19.1 19 34.5 11 3/4	BX85468-009 20.6 19 34.1 11.1 13/16	B90127-009 22.2 19 34.5 11 7/8	B903890-009 25.4 19 34.5 10.5 1	B959273-009 9.5 19 28 3/8	B959272-009 11.1 19 28 7/16
B959271-009 12.7 19 28 1/2	BX07831-009 14.3 19 28 9/16	B959260-009 15.9 19 28 5/8	B95969-009 19.1 19 28 4.5 3/4	B957760-009 22.2 19 28 4.5 7/8	B951388-009 25.4 19 28 4 1
BX70816-009 28.6 18 34.5 29	B967320-009 32 18 34.5 32	B963123-009 44.5 18 34.5 45			
B963169-009 48 18 34.5 48	B963877-009 50 18 34.5 50				

Ga3. Gauge parts list

- ※1. Work clamp assy, W/F - G
- ※2. Work clamp assy
- ※3. Finger guard
- ※4. Work clamp

< For " -01" >		
※1 BX73985 - 009(16mm)	※1 BX73986 - 009(16mm)	※1 BX73993 - 009(25mm)
※2 B950347 - 009(16mm)	※2 B963998 - 009(16mm)	※2 B950346 - 009(25mm)
※3 B950549 - 000	※3 B950549 - 000	※3 B950548 - 000
※4 B965964 - 009(With rubber)	※4 B963997 - 009	※4 B966612 - 009(With rubber)
※3 	※3 	※3 
※4 	※4 	※4 
< For " -01" >		
※1 B73983 - 009(25mm)	※1 BX73992 - 009(32mm)	
※2 B966617 - 009(25mm)	※2 B950345 - 009(32mm)	
※3 B950548 - 000	※3 B950547 - 000	
※4 B966616 - 009	※4 B966535 - 001(With rubber)	
※3 	※3 	※3 
※4 	※4 	※4 
< For " -01" >		
※1BX52702 - 009(16mm)	※1BX52701 - 009(25mm)	※1BX52790 - 009(32mm)
※2BX75348 - 009(16mm)	※2BX75347 - 009(25mm)	※2BX75346 - 009(32mm)
※3B950549 - 000	※3B950548 - 000	※3B950547 - 002
※4B951349 - 009	※4B951348 - 009(With rubber)	※4B951347 - 009(With rubber)
※3 	※3 	※3 
※4 	※4 	※4 

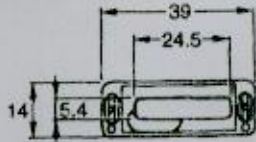
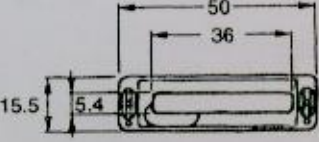
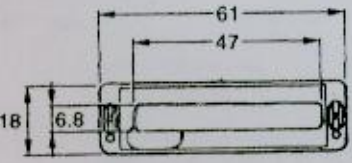
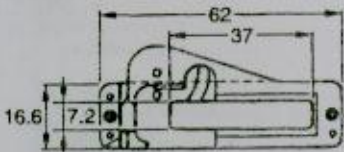
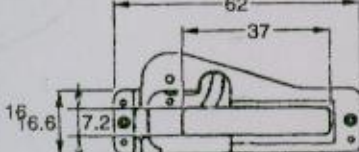
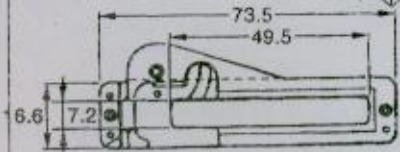
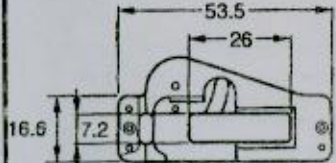
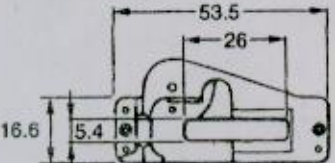
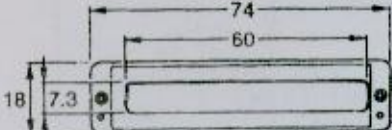
Ga4. Guage parts list

※1. Work clamp assy, W/F-G

※2. Work clamp assy

※3. Finger guard

※4. Work clamp

< For " -02" >		
※1 BX73984 -009(16mm)	※1 BX73991 -009(25mm)	※1 BX73980 -009(32mm)
※2 B950343 -009(16mm)	※2 B950342 -009(25mm)	※2 B950341 -009(32mm)
※3 B950549 -000	※3 B950548 -000	※3 B950547 -000
※4 B965974 -009(With rubber)	※4 B966470 -009(With rubber)	※4 B966478 -009(With rubber)
		
※4 	※4 	※4 
		
< For " -03" >		
※1 BX73989 -909(25mm)	※1 BX73982 -909(25mm)	※1 BX73988 -909(32mm)
※2 B950330 -909(25mm)	※2 B963391 -909(25mm)	※2 B950339 -909(32mm)
※3 B950544 -000	※3 B950544 -000	※3 B950543 -000
※4 BXF0117 -009	※4 BXF9093 -009(With rubber)	※4 BXF9092 -009
		
※4 	※4 	※4 
		
< For " -03" > (Light-weight materials)		< For " -04" >
※1 BX73981 -909(16mm)	※1 BX73970 -909(16mm)	※1 BX73987 -009(50mm)
※2 B963389 -809(16mm)	※2 B959490 -809(16mm)	※2 B950366 -009(50mm)
※3 B950545 -000	※3 B950545 -000	※3 B950546 -000
※4 BXF9080 -009(With rubber)	※4 BXF9091 -009	※4 B963870 -009
※3 	※3 	※3 
※4 	※4 	※4 
		

Ga5. Gauge parts list

※1. Needle plate assy

※2. Base plate assy

※3. Needle

< For " -01, -03" >			
※1 BX52829 -009	※1 BX52828 -009	※1 BX52827 -009	※1 BX52826 -009
※2 B52704 -009	※2 BX52704 -009	※2 BX52704 -009	※2 BX52704 -009
※ B963797 -009	※3 B959497 -009	※3 B965864 -009	※3 B962795 -009
※3	※3	※3	※3

< For " -01, -03" >			
※1 BX52825 -009	※1 BX52824 -009	※1 BX52823 -009	※1 BX52822 -009
※2 B52704 -009	※2 BX52704 -009	※2 BX52704 -009	※2 BX52704 -009
※3 B959268 -009	※3 BX75351 -009	※3 BX75340 -009	※3 BX75349 -009
※3	※3	※3	※3

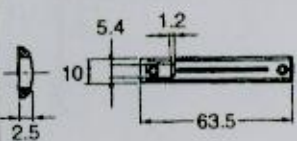
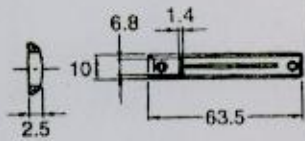
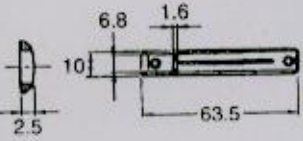
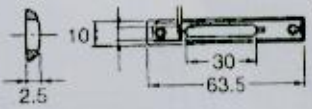
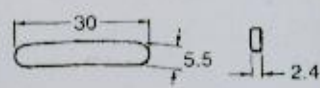
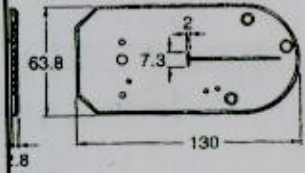
< For " -01, -03" >	
※1 BX52821 -009	
※2 BX52704 -009	
※3 BX75117 -009	
※3	※3

Ga5. Gauge parts list

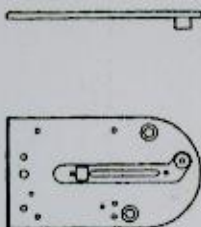
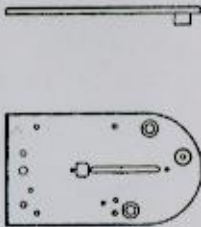
※1. Needle plate assy

※2. Base plate assy

※3. Needle

< For " -02" >			
※1 BX52810 -009	※1 BX52819 -009	※1 BX52818 -009	※1 BX52817 -009
※2 BX52703 -009	※2 BX52703 -009	※2 BX52703 -009	※2 BX52703 -009
※3 B966475 -009	※3 B966473 -009	※3 B966471 -009	※3 B954499 -009
※3	※3	※3	※3
			 Plastic plate B151843-001 
< For " -04" >			
无			
无			
3 BX54603 -009			
※3			
			

※2Base plate assy

< For " -01, -03" >	< For " -02" >
BX52704 -009	BX52703 -009
	

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	1-2-8	62	B096329078	4	18		31-2-13-5	72						
	1-4-7	66	B093429098	8	20	B082050860	21	14	B048430698	55	4			
B008600207	1-1-12	62		62	26	B082050864	31-1-8-2	68		34-1-4	47			
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	1-1-37	62	B093359698	21	34	B082040868	1-24	64	B048430598	37	2			
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B097349690	5	40	B093328598	14	14		31-2-14-2	72		69	44			
B097339690	12	40	B092049888	1-1-34	62	B079557808	1-11	64		43	47			
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	13	6	B089440704	17-2-4	40	B062800968	3-4	18		97	44			
	28	8	B089390808	22	14	B062850968	15	8		22	47			
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Thank you very much for buying a our company's machine. Before using your new machine, please read the safety instructions below and the explanations given in the instruction manual.

With industrial sewing, it is normal to carry out work while positioned directly in front of moving parts such as the needle and thread take – up lever, and consequently there is always a danger of injury that can be caused by these parts. Follow the instructions from training personnel and instructors restructors regarding safe and correct operation before operating the machine so that you will know how to use it correctly.

SAFETY INSTRUCTIONS

1. Safety indications and their meanings

This instruction manual and the indications and symbols that are used on the machine itself are provided in order to ensure safe operation of this machine and to prevent accidents and injury to yourself or other people.

The meanings of these indications and symbols are given below.

Indications



WARNING

The instructions which follow this term indicate situations where failure to follow the instructions can result in severe injury or death.



CAUTION

The instructions which follow this term indicate situations where failure to follow the instructions could cause injury when using the machine or physical damage to equipment and surroundings.

Symbols



----- This symbol () indicates something that you should be careful of. The picture inside the triangle indicates the nature of the caution that must be taken.

(For example, the symbol at left means "beware of injury".)



----- This symbol () indicates something that you must not do.



----- This symbol () indicates something that you must do. The picture inside the circle indicates the nature of the thing that must be done.

(For example, the symbol at left means "you must make the ground connection".)

2. Note on safety

WARNING



Do not put your hand into any openings near the belt, as your hands could get caught in the belt, and serious injury could result.



CAUTION

Environmental requirements



Use the sewing machine in an area which is free from sources of strong electrical noise such as high-frequency welders. Sources of strong electrical noise may cause problems with correct operation.



Any fluctuations in the power supply voltage should be within +10% of the rated voltage for the machine. Voltage fluctuations which are greater than this may cause problems with correct operation.



The power supply capacity should be greater than the requirements for the sewing machine's electrical consumption.

Insufficient power supply capacity may cause problems with correct operation.



The pneumatic delivery capability should be greater than the requirements for the sewing machine's total air consumption.

Insufficient pneumatic delivery capability may cause problems with correct operation.



The ambient temperature should be within the range of 5°C to 35°C during use.

Temperatures which are lower or higher than this may cause problems with correct operation.



The relative humidity should be within the range of 45% to 85% during use, and no dew formation should occur in any devices.

Excessively dry or humid environments and dew formation may cause problems with correct operation.



Avoid exposure to direct sunlight during use.

Exposure to direct sunlight may cause problems with correct operation.



In the event of an electrical storm, turn off the power and disconnect the power cord from the wall outlet.

Lightning may cause problems with correct operation.

Installation



Machine installation should only be carried out by a qualified technician.



Contact your Brother dealer or a qualified electrician for any electrical work that may need to be done.



The sewing machine weighs more than 40 kg. The installation should be carried out by two or more people.



Do not connect the power cord until installation is complete, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.



Hold the machine head with both hands when tilting it back or returning it to its original position. Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.



Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.



All cords should be secured at least 25 mm away from any moving parts. Furthermore, do not excessively bend the cords or secure them too firmly with staples, otherwise there is the danger that fire or electric shocks could occur.



Install the belt covers to the machine head and motor.



If using a work table which has casters, the casters should be secured in such a way so that they cannot move.



Be sure to wear protective goggles and gloves when handling the lubricating oil, so that no oil gets into your eyes or onto your skin, otherwise inflammation can result.

Furthermore, do not drink the oil under any circumstances, as it can cause vomiting and diarrhoea.

Keep the oil out of the reach of children.

CAUTION

Sewing

-  This sewing machine should only be used by operators who have received the necessary training in safe use beforehand.
-  The sewing machine should not be used for any applications other than sewing.
-  Be sure to wear protective goggles when using the machine.
If goggles are not worn, there is the danger that if a needle breaks, parts of the broken needle may enter your eyes and injury may result.
-  Turn off the power switch at the following times, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.
 - When threading the needle
 - When replacing the bobbin and needle
 - When not using the machine and when leaving the machine unattended

* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
-  If using a work table which has casters, the casters should be secured in such a way so that they cannot move.
-  Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.
-  Do not touch any of the moving parts or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.
-  If an error occurs in machine, or if abnormal noises or smells are noticed, immediately turn off the power switch. Then contact your nearest dealer or a qualified technician.
-  If the machine develops a problem, contact your nearest dealer or a qualified technician.

Cleaning

-  Turn off the power switch before carrying out cleaning, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.

* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
-  Be sure to wear protective goggles and gloves when handling the lubricating oil, so that no oil gets into your eyes or onto your skin, otherwise inflammation can result.
Furthermore, do not drink the oil under any circumstances, as it can cause vomiting and diarrhoea. Keep the oil out of the reach of children.

Maintenance and inspection

-  Maintenance and inspection of the sewing machine should only be carried out by a qualified technician.
-  Ask your dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.

Turn off the power switch and disconnect the power cord from the wall outlet at the following times, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.
 - When carrying out inspection, adjustment and maintenance
 - When replacing consumable parts such as the rotary hook and knife

* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
-  Disconnect the air hoses from the air supply and wait for the needle on the pressure gauge to drop to "0" before carrying out inspection, adjustment and repair of any parts which use pneumatic equipment.
-  If the power switch and air need to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.
-  Hold the machine head with both hands when tilting it back or returning it to its original position.
Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.
-  Use only the proper replacement parts as specified by our company.
-  If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.
-  Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

3. Warning labels

The following warning labels appear on the sewing machine.

Please follow the instructions on the labels at all times when using the machine. If the labels have been removed or are difficult to read, please contact your nearest dealer.

1



Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.

2

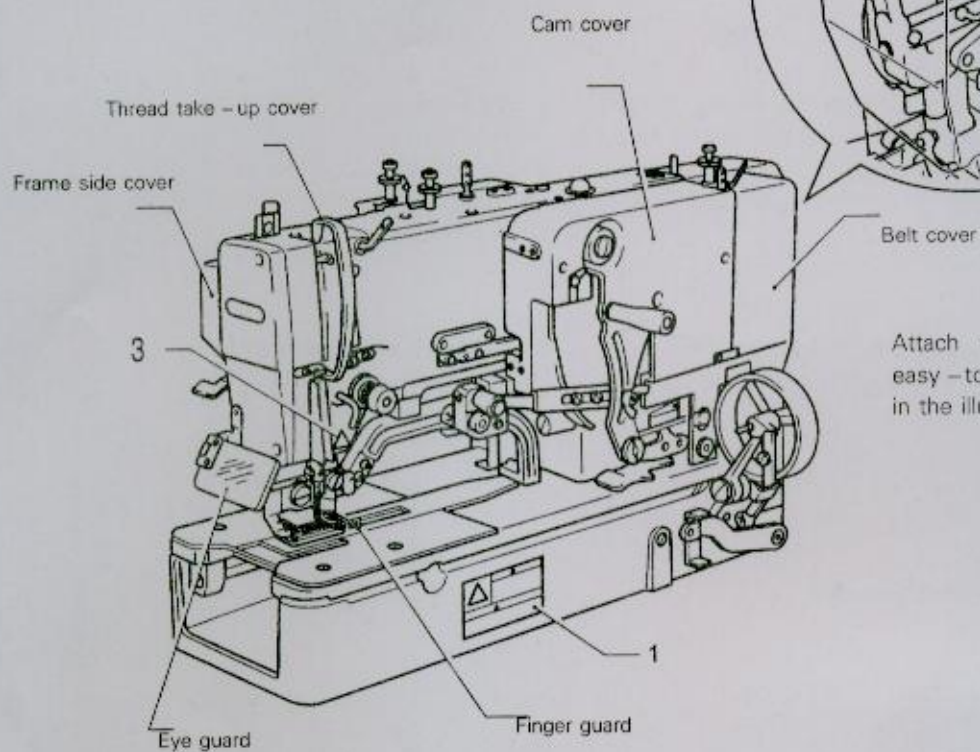
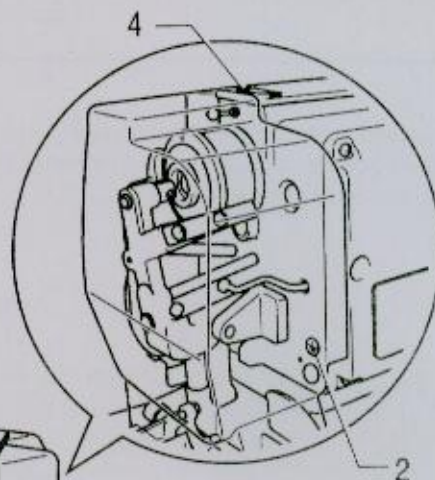
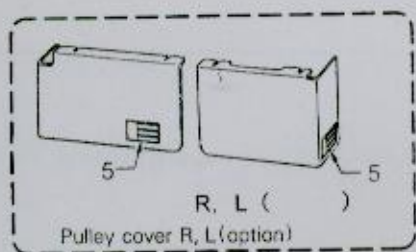


Do not touch the knife or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.

3

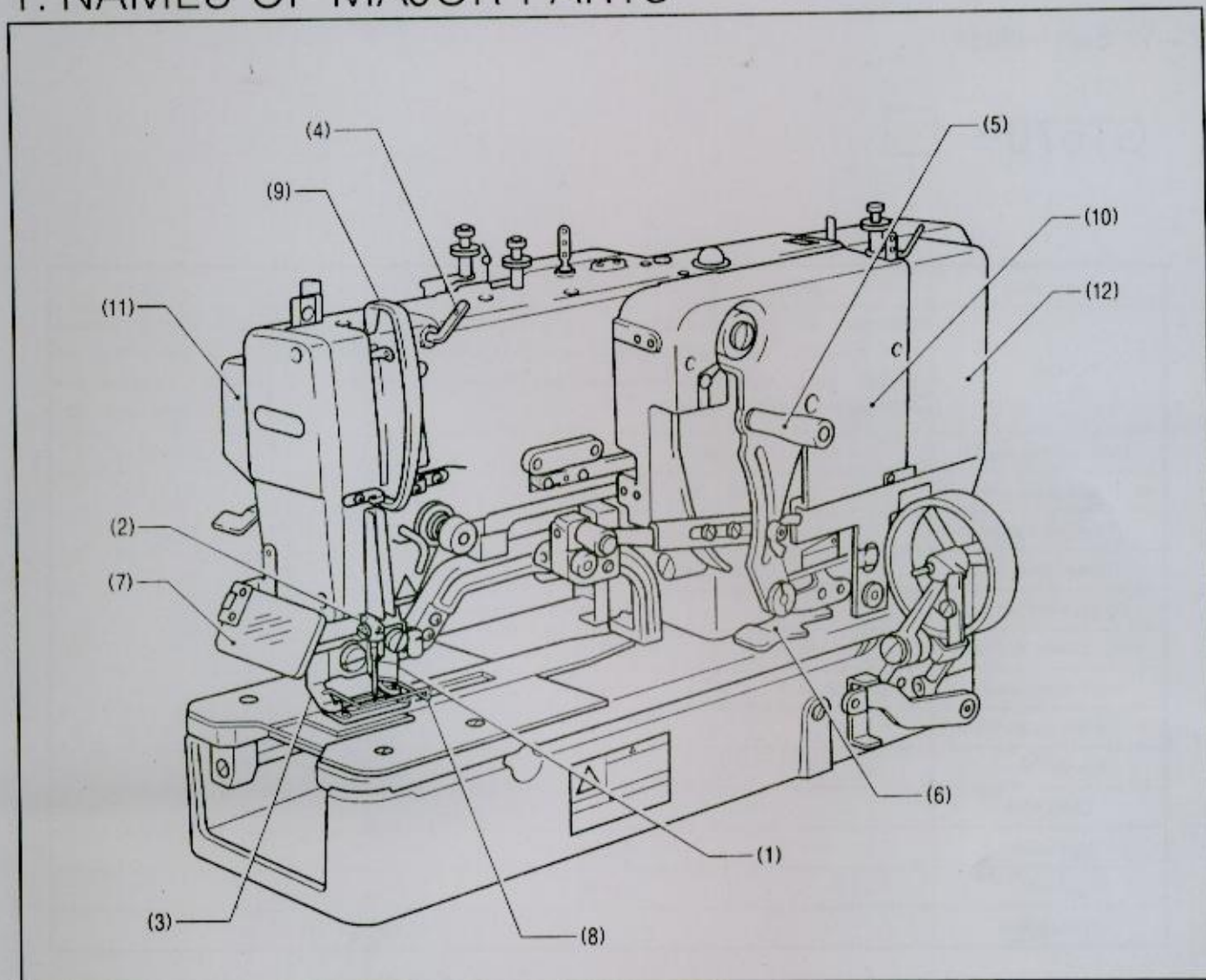


Direction of operation



Attach warning label 6 in an easy-to-see position as shown in the illustration.

1. NAMES OF MAJOR PARTS



(1) Cutter
(4) Thread retainer

(2) Needle bar
(5) Handle

(3) Work clamp
(6) Emergency stop lever

Safety devices

(7) Eye guard
(10) Cam cover

(8) Finger guard
(11) Frame side cover

(9) Thread take - up cover
(12) Belt cover

2. SPECIFICATIONS

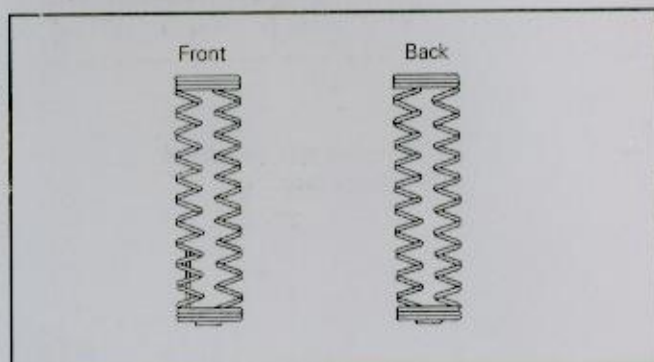
2-1. Sub-class

GT670— ☐

Sub - class	-01	-02	-03	-04
Use	Buttonholes for clothing such as dress shirts, blouses, work clothes and women's clothes.	Buttonholes for knitted garments such as knitted underwear, sweaters and jerseys.	Buttonholes for stretch materials such as knitted wear and cardigans.	Buttonholes for clothing such as work clothes and women's clothes. Belt holes for child seats, etc.
Max. sewing speed	3,600rpm		3,200rpm	2,800rpm
No. of stitches per buttonhole	60 - 360		147 - 360	60 - 360
Feed mechanism	Upper and lower feed			Upper feed
Buttonhole length	6.5 - 32mm		9.5 - 32mm	32 - 48mm
Buttonhole width	2 - 6mm			
Max. sewing thickness	4mm	3.5mm	6mm	5mm
Work clamp height	12mm	11.5mm	12mm	12mm
Needle bar stroke	36.5mm			
Needle DP x 5	#14	#11	#14	
Lubrication	Automatic			
Tape winder	Option			
Ruler	Option			
Gimp guide			Standard equipment	

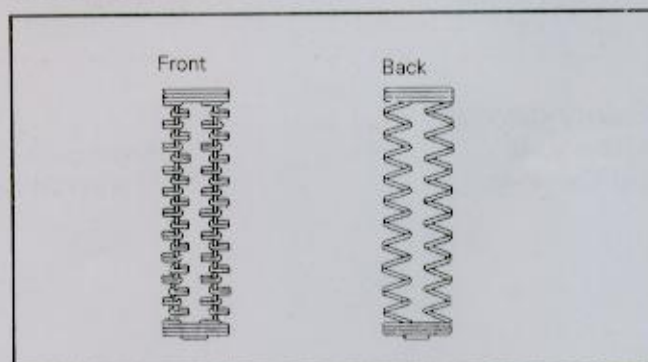
2-2. Stitch patterns

Whip stitch (plain stitch)



The stitch pattern shown at left in which the upper thread moves over the top and the lower thread moves over the bottom of the material in a zigzag pattern is called a "whip" stitch. This pattern is identical to the zigzag pattern of a lock stitch zigzag machine.

Purl stitch (seal stitch)



The stitch pattern shown at left in which the upper needle thread tension is high and the upper needle follows a straight line through the seam center while the lower thread moves left to right and intertwines with the upper thread is called a "purl" stitch.

2-3. Motor

⚠ CAUTION



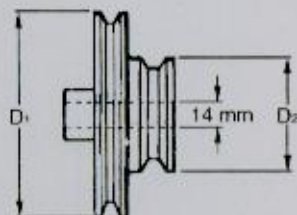
Install the pulley covers (sold separately) to the motor.

- Use the applicable motor shown in the table at right.
- Refer to the instruction manual for the motor for details on installing and using the motor.

Power	Motor
Single - phase	4 - pole, 400W motor
Three - phase	4 - pole, 400W motor

<Motor pulley and V - belt>

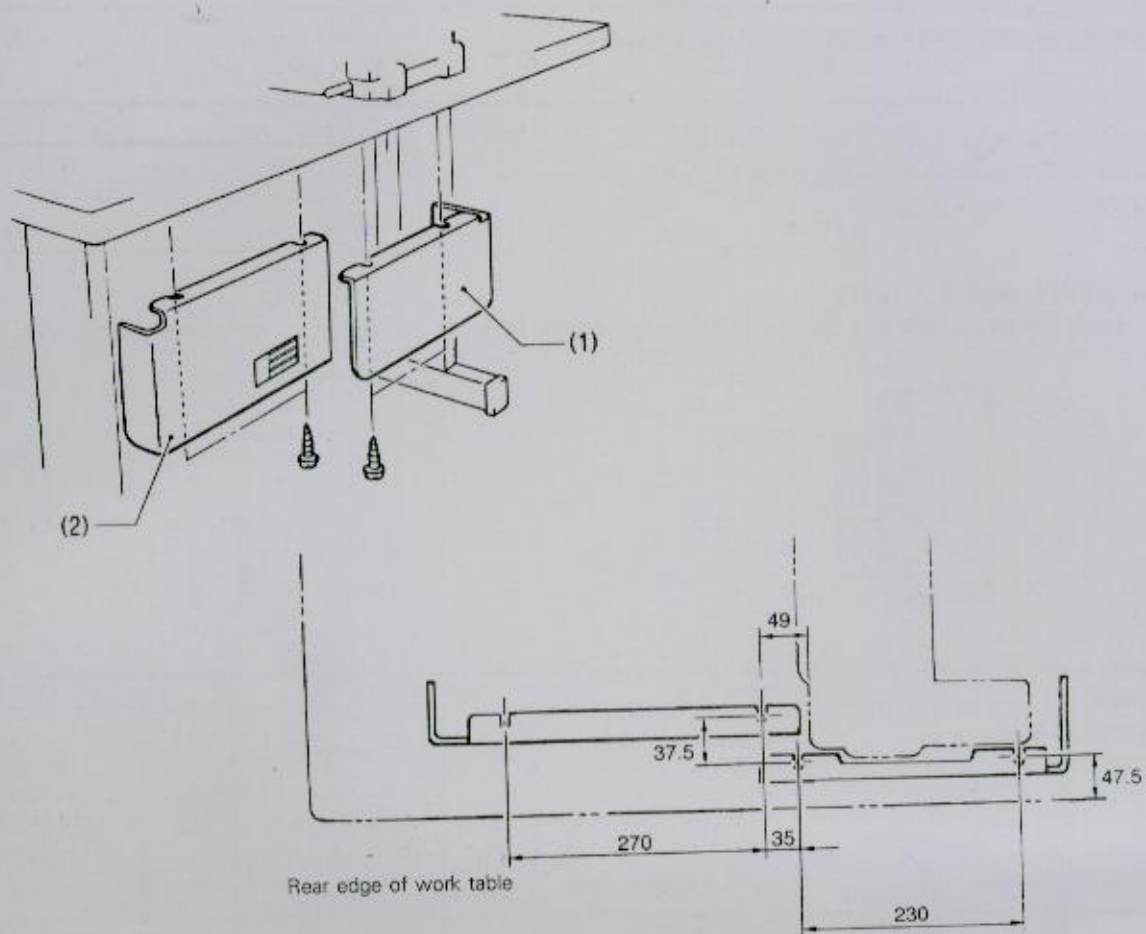
Select the correct motor pulley and V - belt by referring to the table below to suit the power frequency of your area.



Sewing speed (rpm)	Frequency	Motor pulley		High speed V - belt		Low speed V - belt	
		Outside diameter (mm)	Part code	Mark	Part code	Mark	Part code
3,600	50Hz	D1 = 187.5 D2 = 79	BX77003 - 008	M44	BX92303 - 966	M41	BX92303 - 969
	60Hz	D1 = 152.8 D2 = 56	BX79979 - 008	M42	BX92303 - 968	M40	BX92303 - 960
3,200	50Hz	D1 = 160 D2 = 81	B969303 - 008	M43	BX92303 - 967	M42	BX92303 - 968
	60Hz	D1 = 134.2 D2 = 69.5	B969301 - 008	M41	BX92303 - 969	M41	BX92303 - 969
3,000	50Hz	D1 = 152.8 D2 = 73.4	BX68059 - 008	M42	BX92303 - 968	M41	BX92303 - 969
	60Hz	D1 = 127.6 D2 = 62.2	BX77856 - 008	M40	BX92303 - 960	M40	BX92303 - 960
2,800	50Hz	D1 = 134.2 D2 = 69.5	B969301 - 008	M41	BX92303 - 969	M41	BX92303 - 969

* For 3,600 rpm in 50HZ areas, use the motor spacer set (BX77067 - 009)

<Installing the pulley cover (option)>



Install pulley cover L(1) and pulley cover R(2) to the work table with wood screws in the positions shown in the illustration.

3. INSTALLATION

⚠ CAUTION

- 

Machine installation should only be carried out by a qualified technician.
- 

Contact your dealer or a qualified electrician for any electrical work that may need to be done.
- 

The sewing machine weighs more than 40kg.
- 

The installation should be carried out by two or more people.
- 

Do not connect the power cord until installation is complete, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.
- 

Refer to the instruction manual for the motor for details on installing and using the motor.
- 

All cords should be secured at least 25mm away from any moving parts. Furthermore, do not excessively bend the cords or secure them too firmly with staples, otherwise there is the danger that fire or electric shocks could occur.
- 
- 

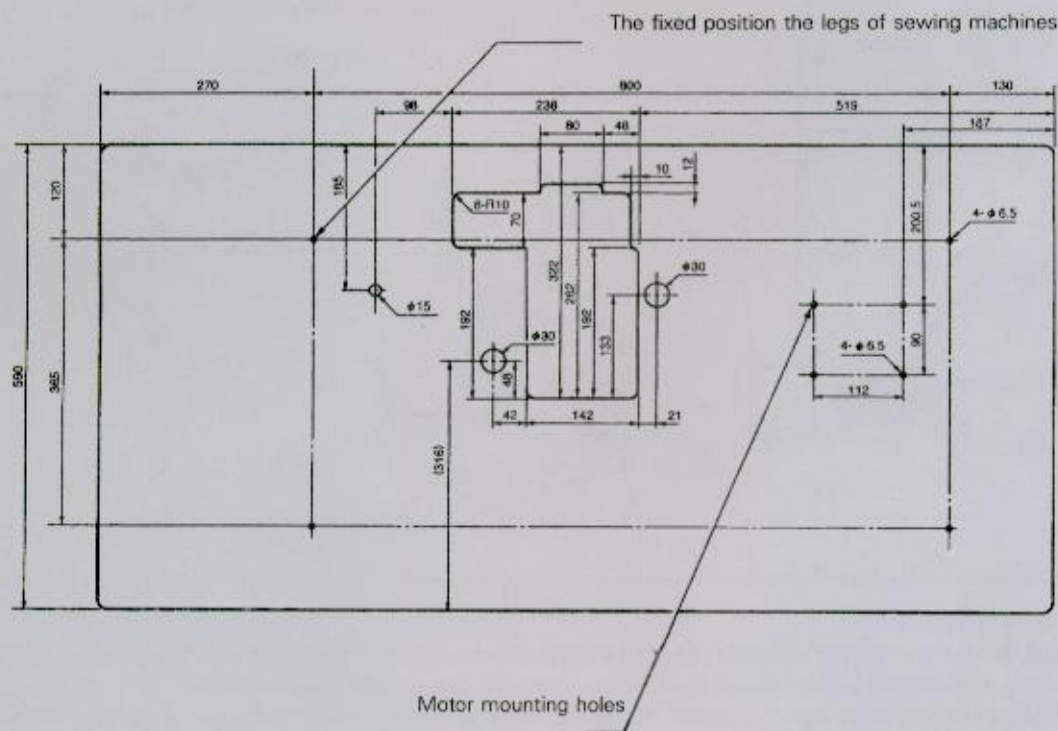
Install the belt covers to the machine head and motor.

3-1. Table processing diagram

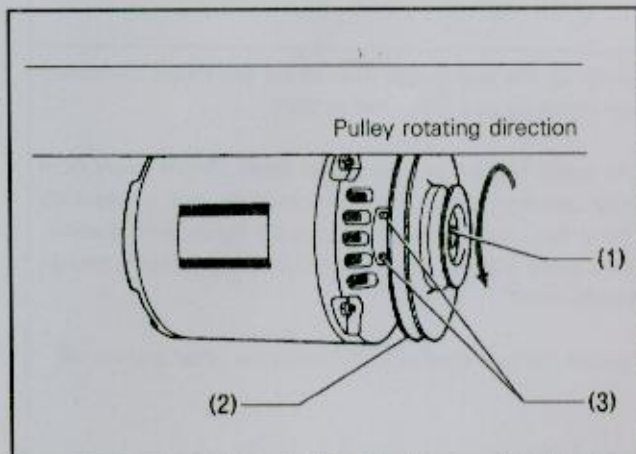
The top of the table should be 40 mm in thickness and should be strong enough to hold the weight and withstand the vibration of the sewing machine.

Drill holes as indicated in the illustration below.

* The table center line is the same as the machine center line.



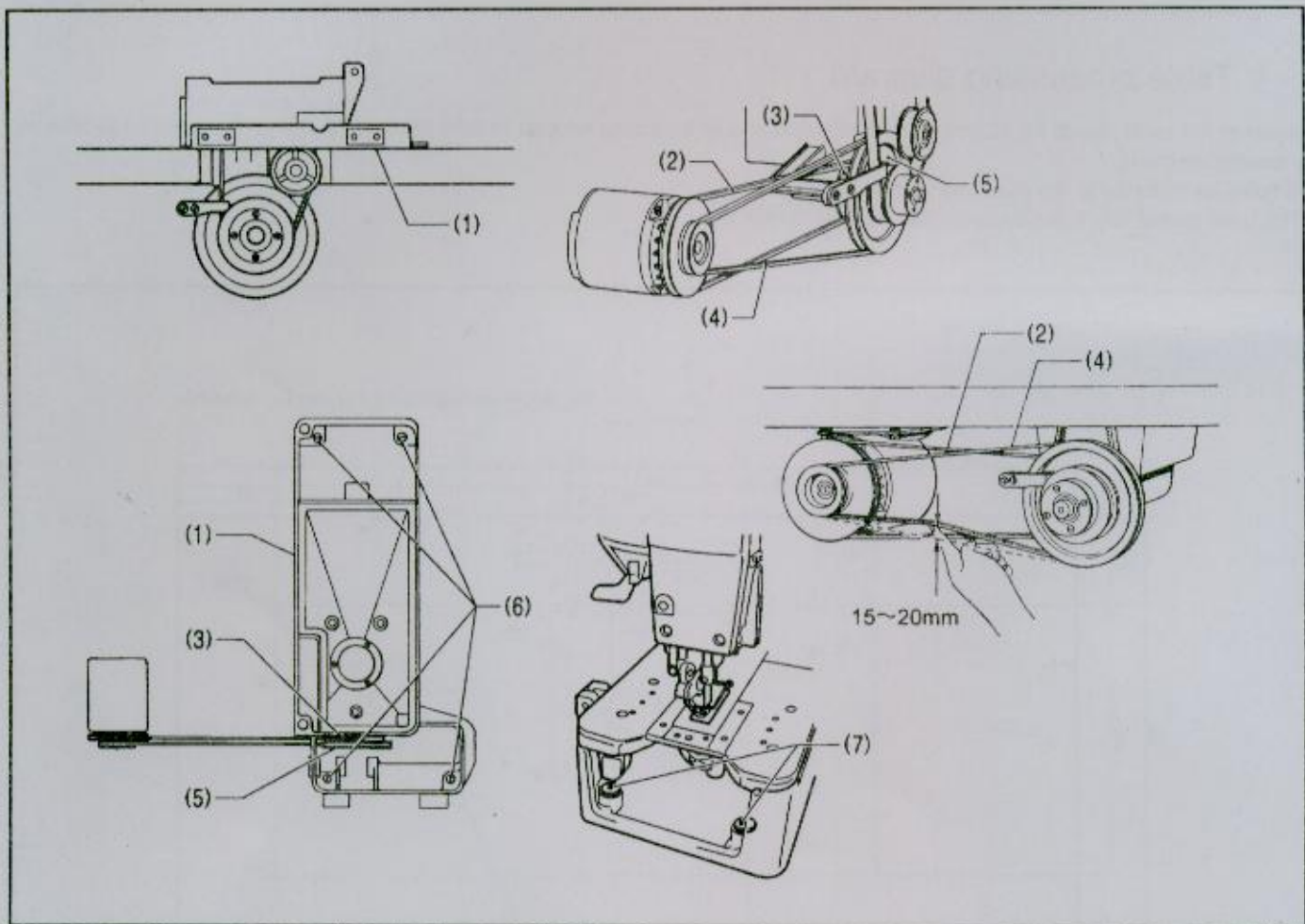
3-2. Installing the motor pulley



Slide the motor pulley (2) onto the motor shaft (1), check that the screw holes in the motor pulley match the screw seats on the motor shaft, and then tighten the set screws (3) securely.

* Check to be sure that the direction of operation of the motor is correct.

3-3. Installing the bed base



1. Place the bed base (1) on the table.

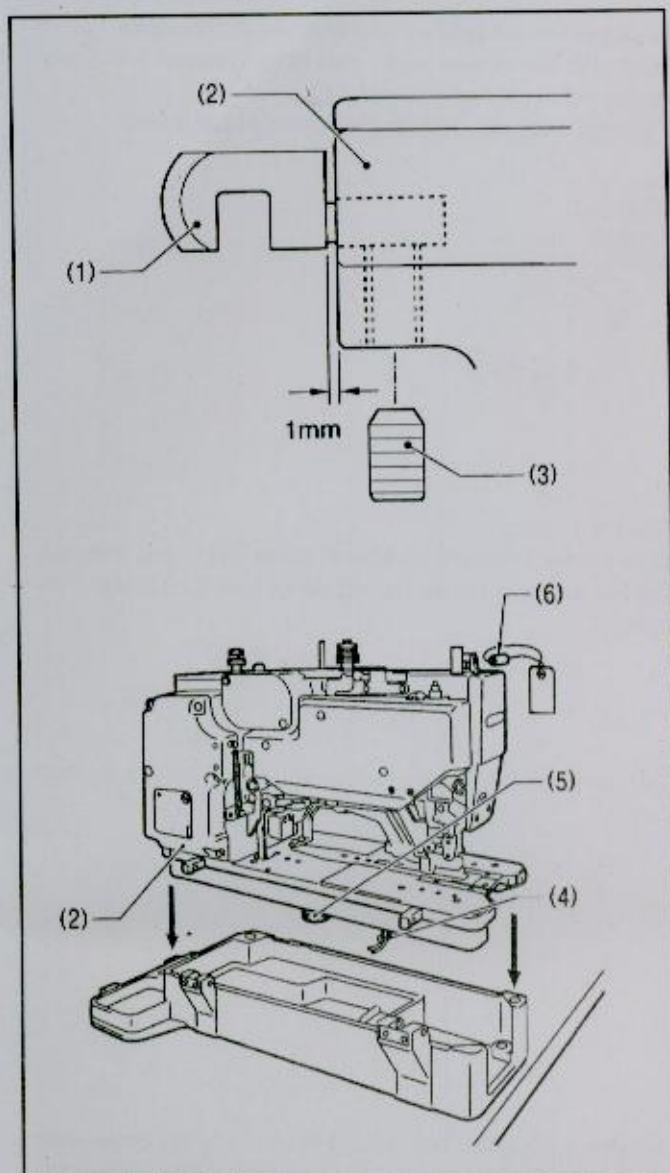
2. Place the V-belt (2) around the high-speed pulley (3) and the larger-diameter groove of the motor pulley, and then place the V-belt (4) around the low-speed pulley (5) and the smaller-diameter groove of the motor pulley.

3. Install the bed base (1) to the table with the screws (6) so that there is 15-20 mm of deflection in each of the V-belts (2) and (4) when they are pressed at the midway point with a force of 10 N.

* The motor pulley, the high-speed pulley (3) and the low-speed pulley (5) should be aligned in a straight line at this time.

4. Install the two rubber caps (7).

3-4. Installing the machine head



1. Insert the head hinges(1) into the machine head(2), and then tighten the screws(3).

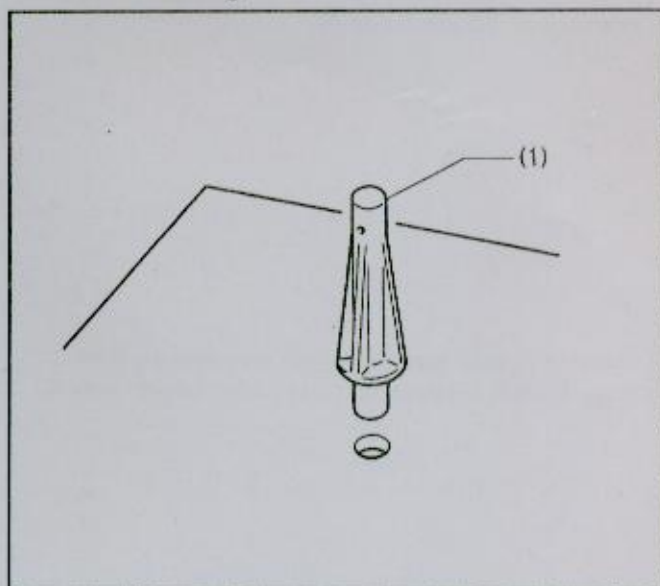
2. Place the machine head (2) on the bed base.

Note:

Make sure that the wick support (4) and the pump filter (5) do not touch the bed base.

3. Remove the stopper (6) at top cutter bracket.

3-5. Installing the head rest

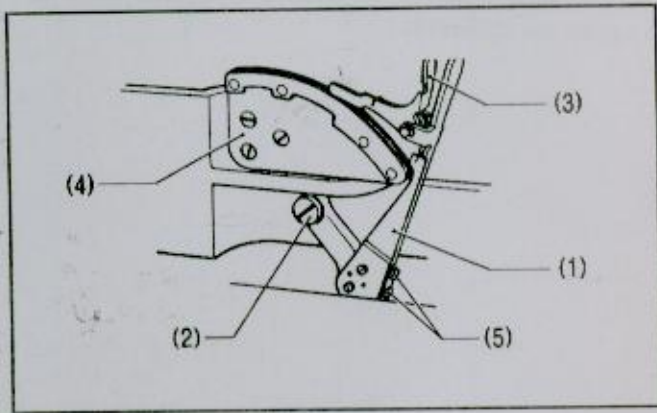


Tap the head rest (1) into the table hole.

Note:

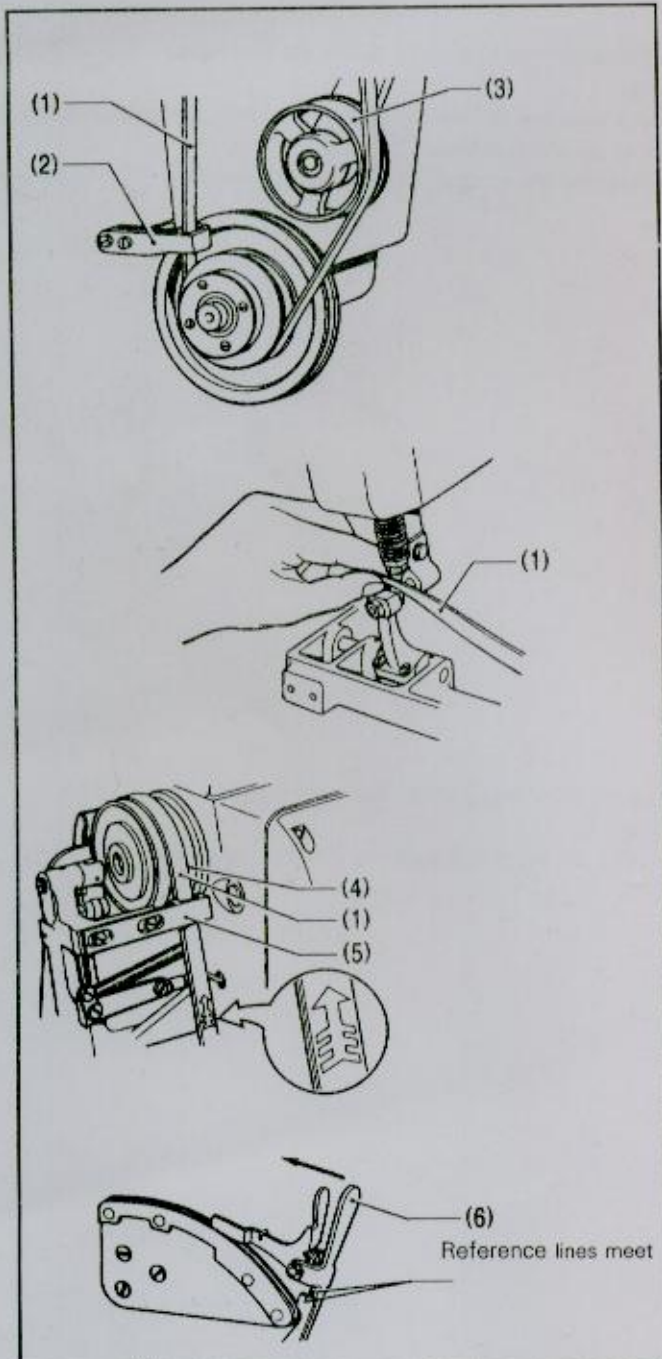
Tap the head rest securely into the table hole.

3-6. Installing the tension pulley assembly



1. Install the tension pulley assembly (1) with the screw (2).
2. Check that the tension pulley claw (3) is engaged with the tension pulley ratchet assembly (4).
3. If it is not engaged, loosen the screw (5) and adjust.

3-7. Setting the flat belt



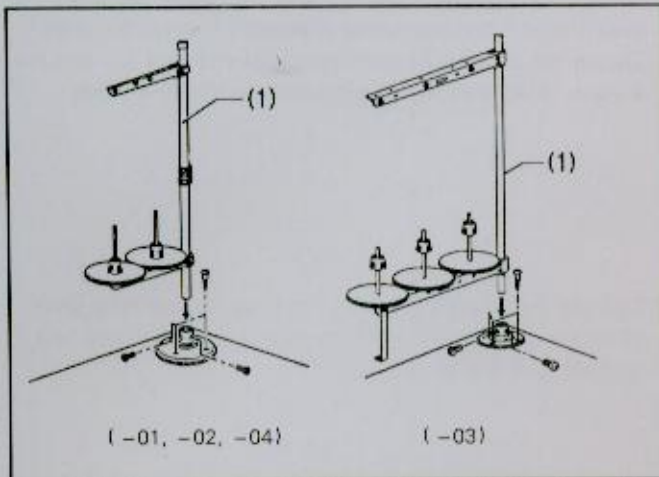
1. Raise the clutch.
2. Pass the flat belt (1) through belt guide D (2), and then put the belt around the low-speed pulley and the tension pulley (3).

3. Pull the flat belt (1) out of the opening in the back of the bed base.

4. While pressing down on the flat belt (1) with the arrow mark on the outside, turn the pulley (4) and place the flat belt (1) onto belt shifter U (5).
5. Push the emergency stop lever and insert the clutch stopper into the stop cam. Move the flat belt (1) to the inner side of the idle pulley (4).

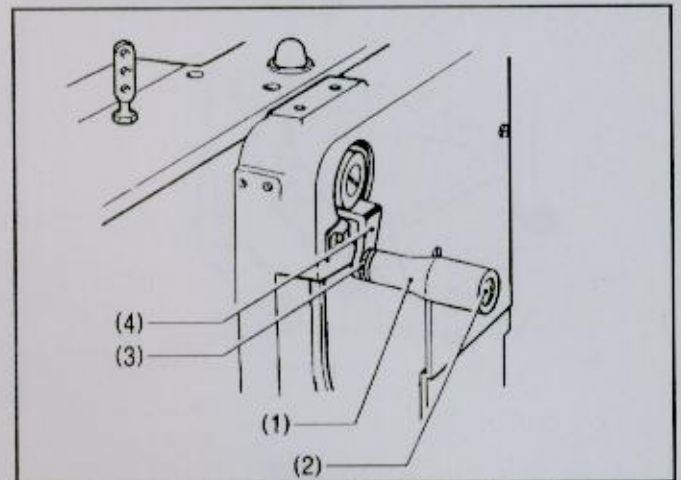
6. Push the tension lever (6) to align the reference lines.
* If the flat belt (1) is too tight, return the tension lever (6).

3-8. Installing the cotton stand



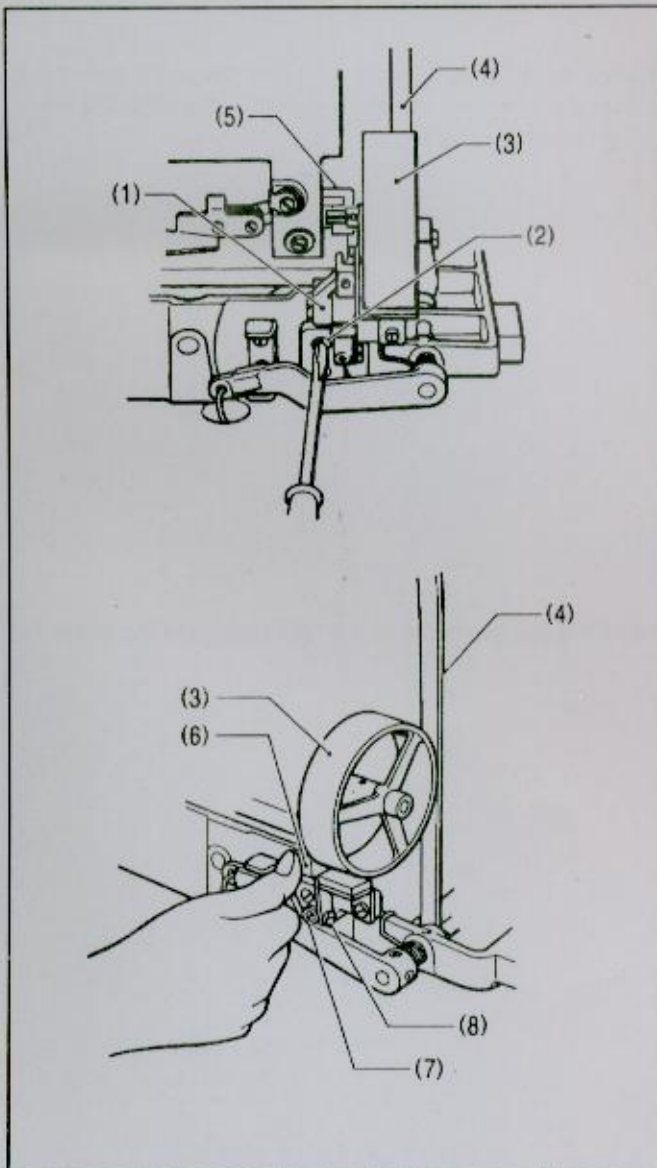
Assemble the cotton stand (1) while referring to the cotton stand instruction manual, and then install the cotton stand(1) to the far right corner of the work table.

3-9. Installing the handle



Slide the handle(1) onto the handle shaft(2), and then fasten the handle(1) to the handle lever(4) with the nut(3).

3-10. Installing the bobbin winder

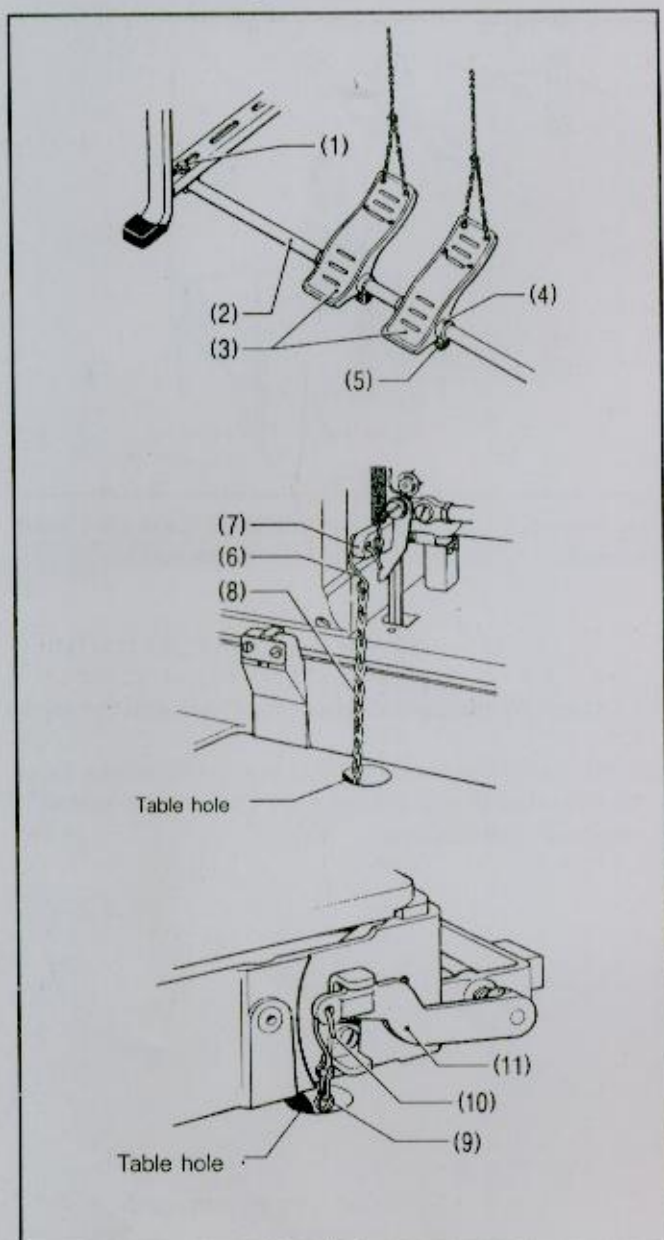


1. Install the bobbin winder(1) to the bed base with the screw (2).

* Install so that the bobbin winder(3) is exactly parallel to the flat bed(4), and so that it does not touch the emergency stop lever(5) at this time.

2. Loosen the screw(7) and adjust the bobbin winder link shaft (8) by turning it so that when bobbin winder link A(6) is pressed, the bobbin winder pulley(3) will lightly touch the flat belt(4).

3 - 11. Installing the treadle and chain

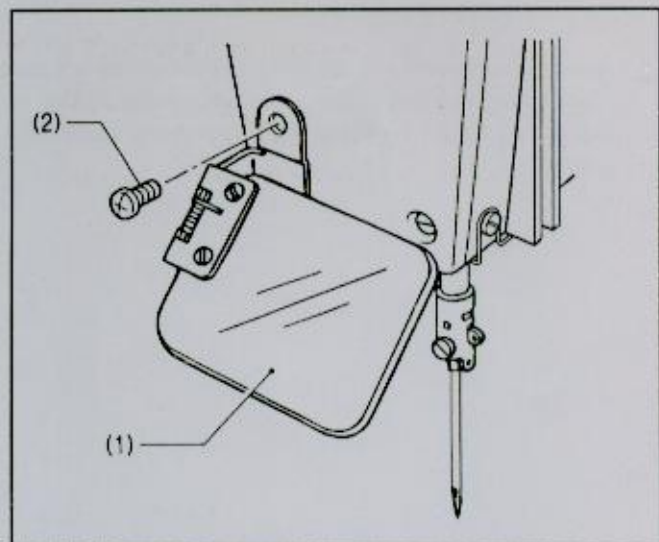


1. Loosen the hexagonal bolt (1), and then place the two pedals (3) and the four pedal stoppers (4) onto the shaft.
2. Secure the pedals (3) with the pedal stoppers (4) and the screws (5) so they operate smoothly without any play.

3. Connect the chain hook (6) to the presser bar lifter lever (7). Pass the chain (8) through the hole in the table and connect it to the left treadle.

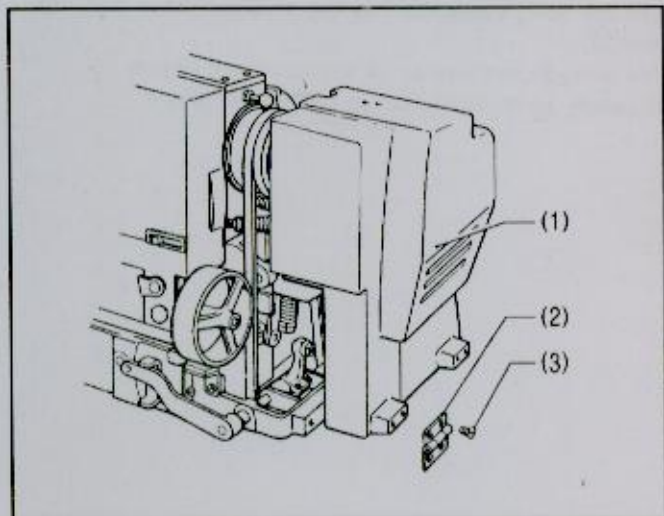
4. Hook the other chain hook (10) onto the clutch lever (11). Pass the chain (9) through the hole in the table and hook it on the right treadle.

3 - 12. Installing the eye guard



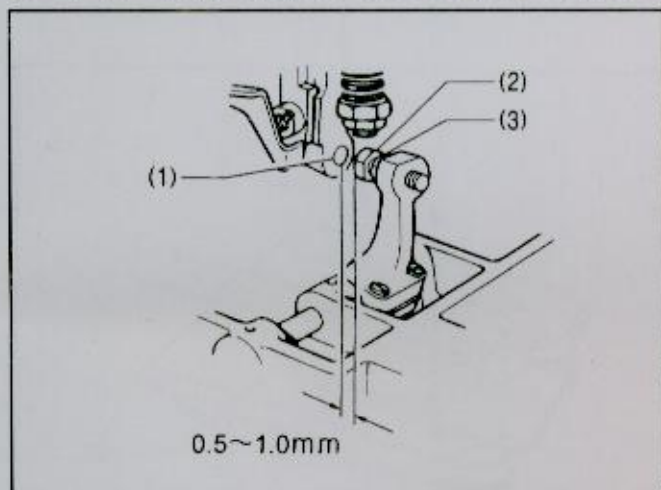
- Install the eye guard (1) to the face plate with the screw (2)

3 - 13. Installing the belt cover



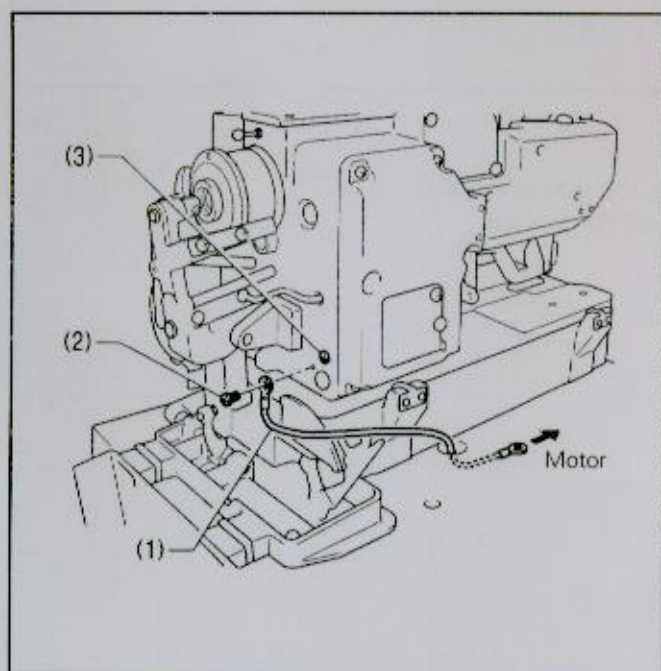
Fasten the belt cover (1) to the back of the bed with the belt cover hinges (2) and the screws (3).

3 - 14. Clearance of the clutch start lever



Loosen the nut (1) and turn the bolt (2) to adjust the clearance between the clutch lever pin (3) and the bolt (2) to 0.5 to 1.0 mm at the machine stop position.

3 - 15. Ground Wire Connections



Connect the ground wire to the sewing machine head and motor.

(Use the correct type of ground wire)

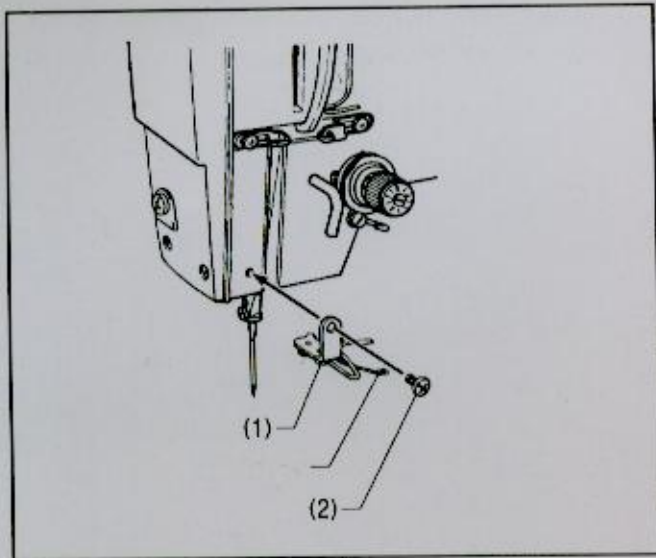
1. Secure the ground wire (1) to the sewing machine head with the screw (2).

(The attachment location is indicated by a ground symbol (3).)

2. Pass the ground wire (1) through the hole in the table.

3. Connect the ground wire (1) to the motor in accordance with the instructions in the instruction manual for the motor.

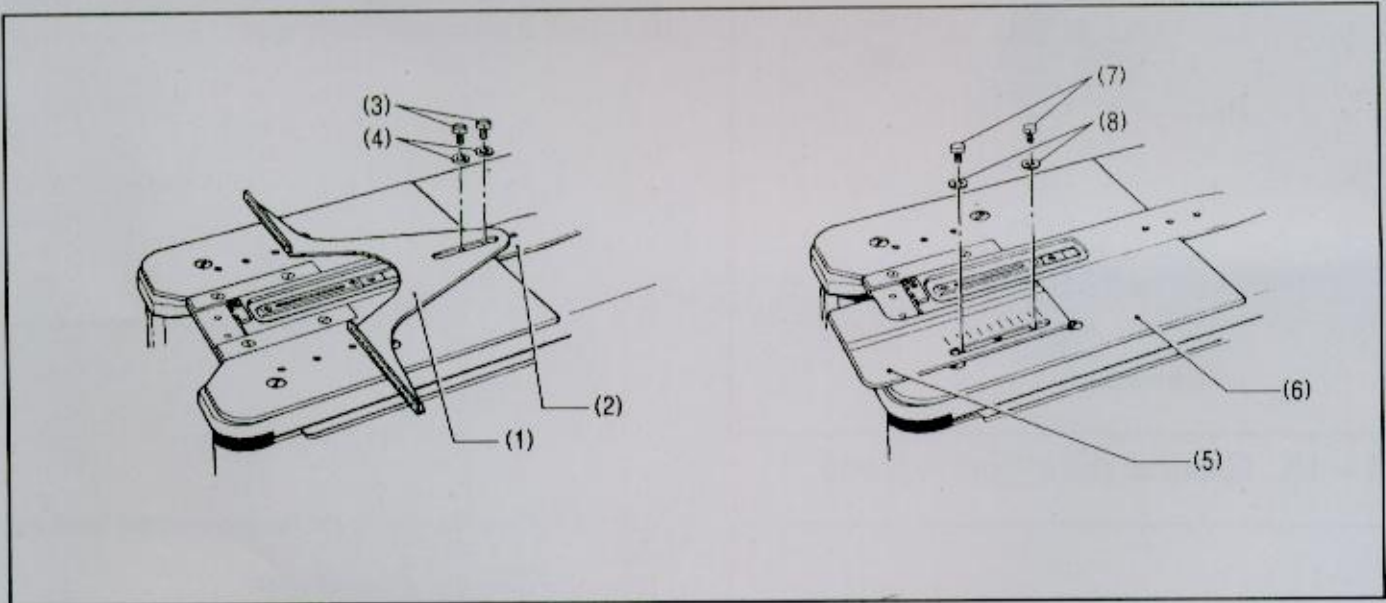
3 - 16. Installing the sub - tension (sub - class - 03)



Install the sub - tension (1) to the machine head with the screw (2).

* The strength and position of the spring are already adjusted, so be careful not to bend or remove it.

3 - 17. Installing the rulers (option)



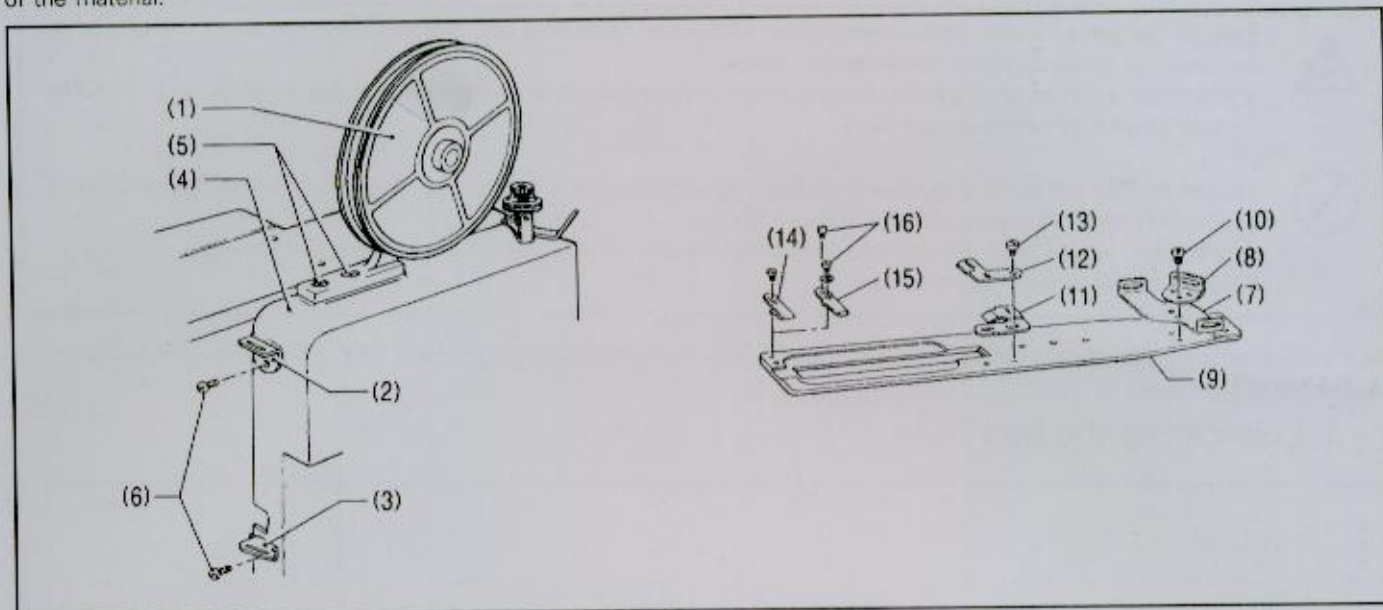
1. Install the ruler (1) to the length feed plate (2) with the two screws (3) and the two washers (4).

2. Install the ruler (5) to the bed cover (6) with the two screws (7) and the two washers (8).

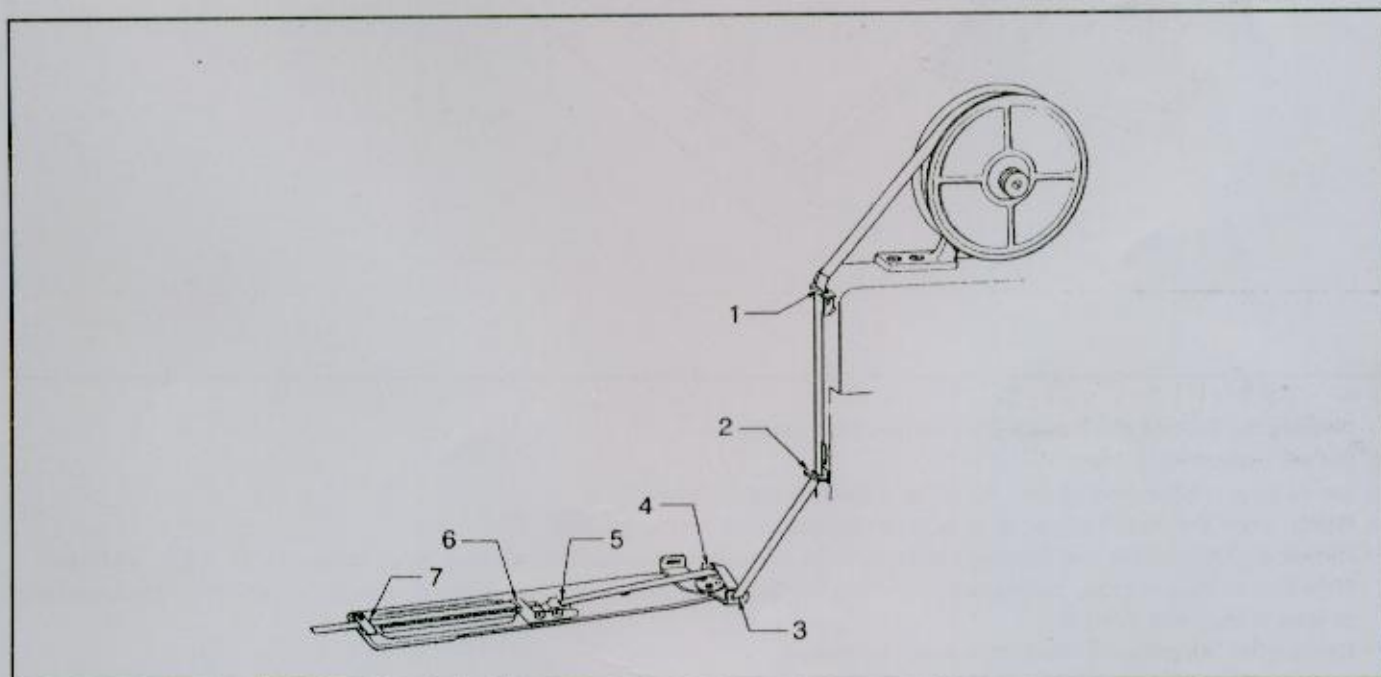
* For sub - class - 04, install the ruler directly to the top of the bed.

3-18. Installing the tape winder and the tape guard for sub-classes -01, -02 and -03 (option)

If using stretch material such as woolen and knitted wear, stronger buttonholes can be obtained if you attach tape to the underside of the material.



1. Install the tape winder (1), the upper tape guide (2) and the tape guide (3) to the cam cover with the screws (5), (6).
2. Install the lower tape guide (7) and the upper tape guide (8) to the length feed plate (9) with the screws (10).
3. Install the tape guard B (11) and the tape guard C (12) to the length feed plate (9) with the screws (13).
4. Install tape guard A (14) (for sub-class -2) or tape guard F (15) (for sub-classes -02 and -03) to the length feed plate (9) with the screws (16).



5. Pass the tape through as shown in the illustration above.

4. LUBRICATION

⚠ CAUTION



Turn off the power switch before carrying out lubrication, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.

* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.

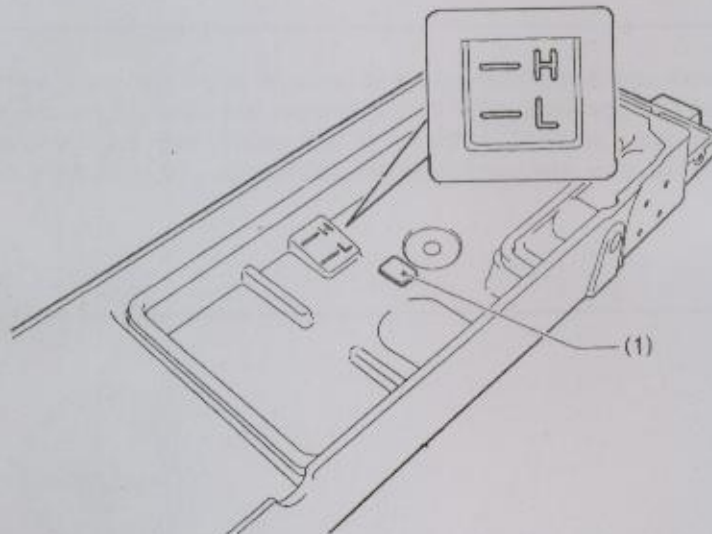


Be sure to wear protective goggles and gloves when handling the lubricating oil, so that no oil gets into your eyes or onto your skin, otherwise inflammation can result.

Furthermore, do not drink the oil under any circumstances, as they can cause vomiting and diarrhoea. Keep the oil out of the reach of children.

The sewing machine should always be lubricated and the oil supply replenished before it is used for the first time, and also after long periods of non-use.

4-1. Lubricating the bed base



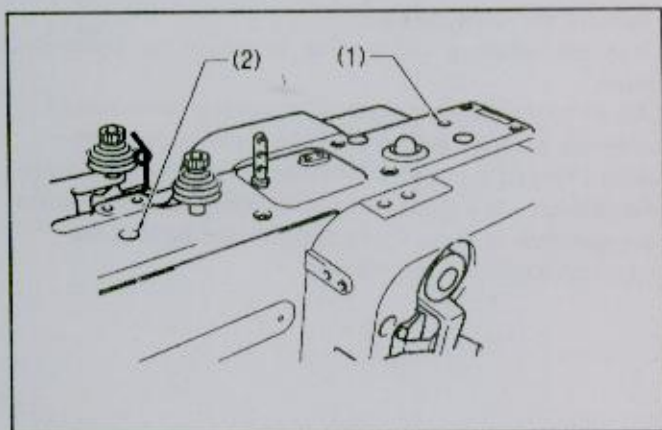
1. Remove the flat belt and tilt back the machine head gently.
2. Set the magnet (1) in place.
3. Slowly pour in lubricating oil until the oil level reaches the "H" mark.

4. Gently return the machine head to its original position and reset the flat belt.

* Periodically tilt back the machine head and check the lubricating oil level. If the oil level drops below the "L" mark, add more lubricating oil. Furthermore, periodically check that the lubricating oil level appears in the oil window in the arm. If the lubricating oil level is low, add more oil.

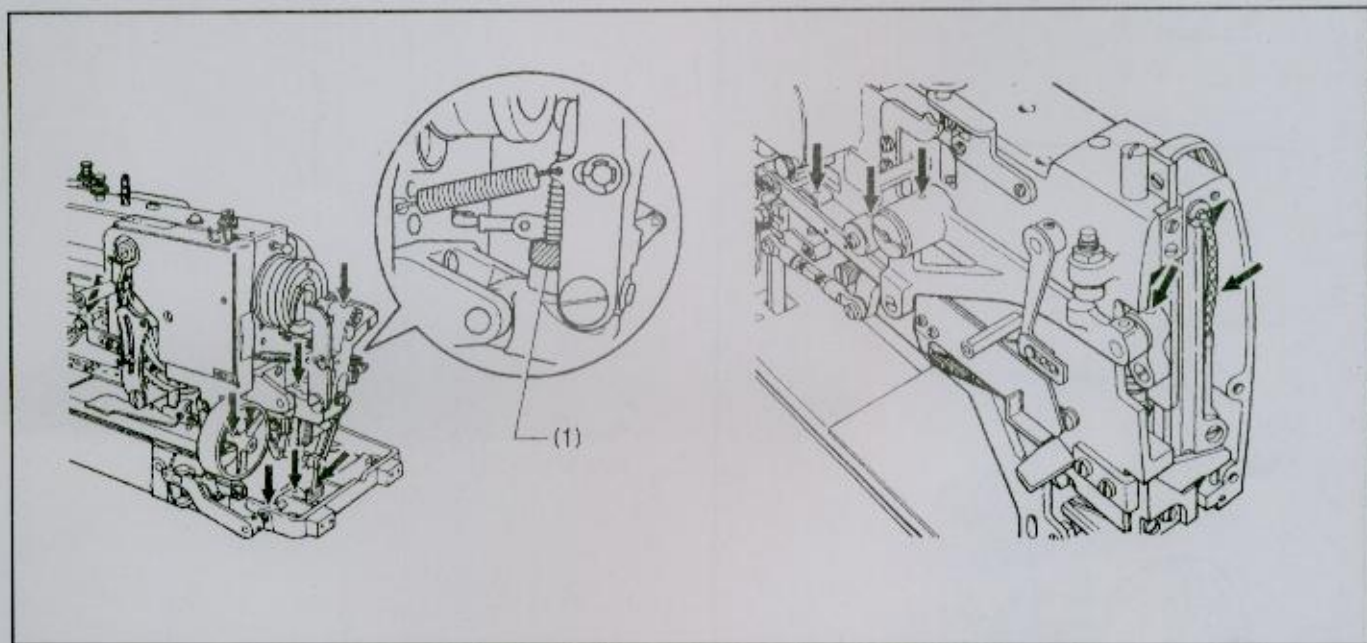
* Replace the lubricating oil about once every six months.

4-2. Lubricating the arm

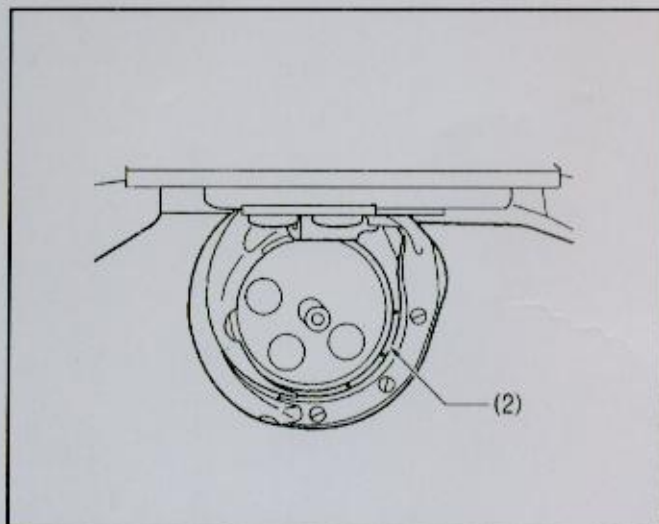


Add about 10 drops of oil to the lubricating hole (1) and about 4-5 drops of oil to the lubricating hole (2) in the top of the arm.

4-3. Oiling

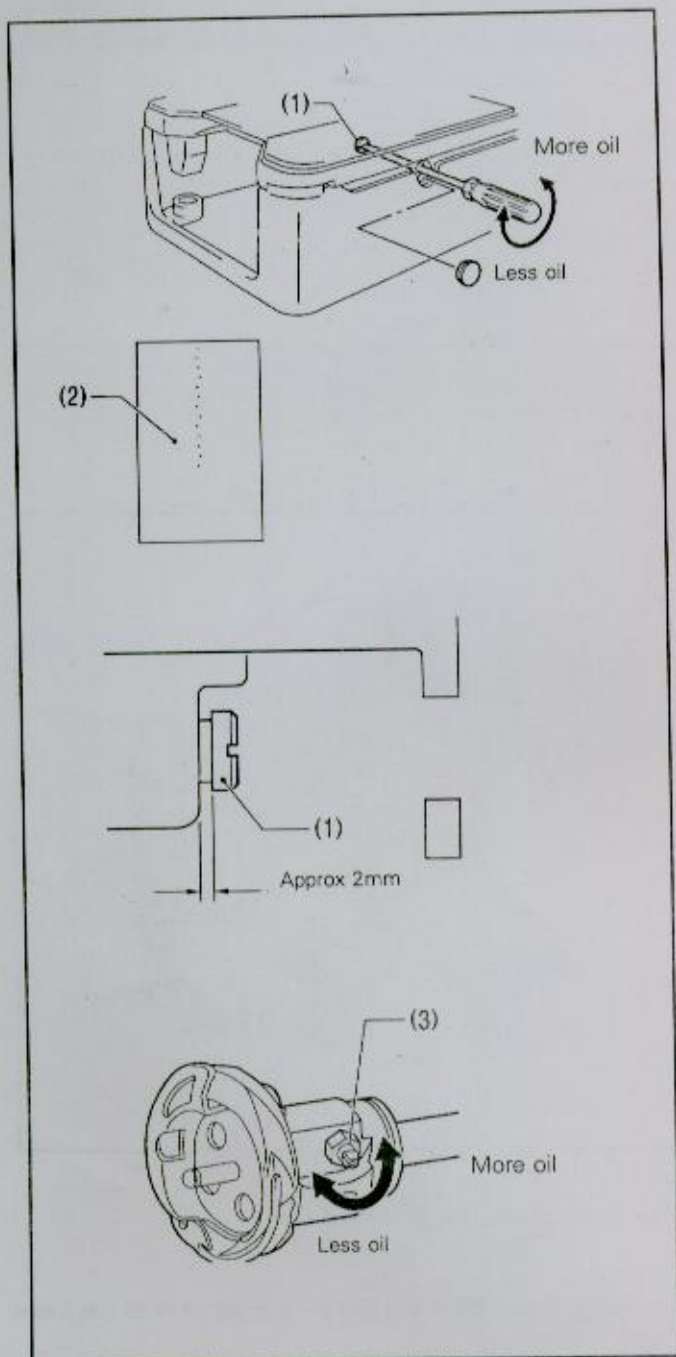


1. Remove the face plate, the frame side cover and the belt cover.
2. Apply about 1-2 drops of oil to each of the places indicated by arrows and to the sliding surfaces.
3. Apply oil to the felt (1) until it is lightly moistened.



4. Remove the bobbin and add 2-3 drops of oil to the rotary hook race (2).

4-4. Adjusting the rotary hook lubrication amount



1. Remove the rubber stopper.

2. Turn the adjusting screw (1) to adjust the lubrication amount.

* Adjust so that approximately 10 drops of oil are released when the sewing machine is run for three cycles to sew about 119 stitches. Use Kraft paper (2) or similar to catch the oil drops. As a guide, the optimum setting is when there is a clearance of about 2 mm between the head of the adjusting screw (1) and the bed.

* Fine adjustments can then be made using the rotary hook joint screw (3).

5. CORRECT USE

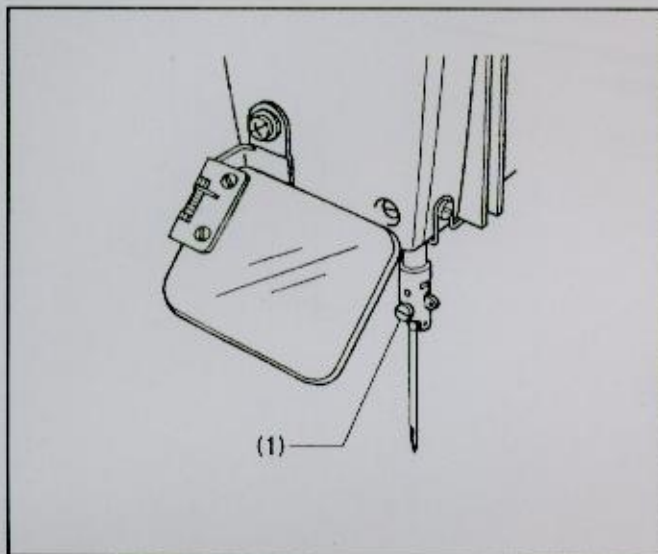
5 - 1. Installing the needle

CAUTION



Turn off the power switch before installing the needle, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.

* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.



Use a DP * 5 needle.

1. Loosen the screw (1).
2. Insert the needle in a straight line as far as it will go, making sure that the long groove on the needle is toward the front, and then securely tighten the screw (1).

5 - 2. Threading the upper thread and gimp

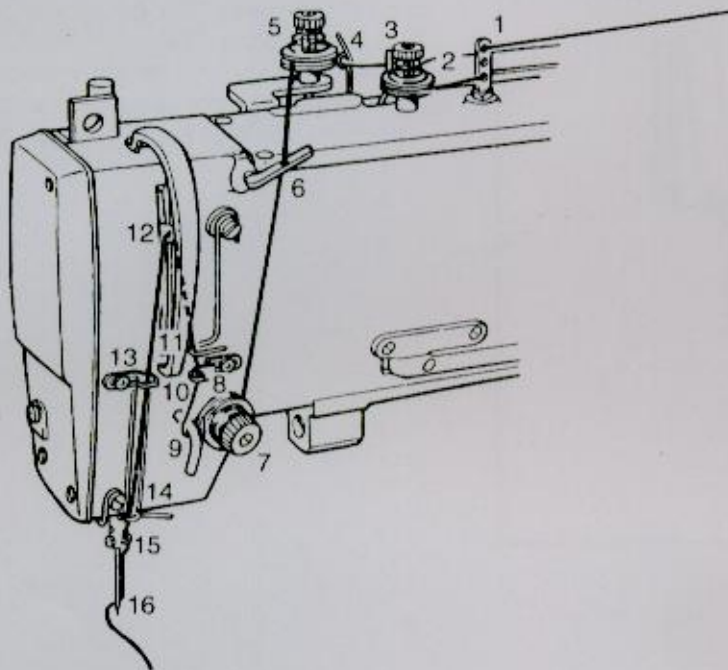
⚠ CAUTION



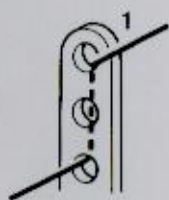
Turn off the power switch before threading the upper thread, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.

* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.

Sub-classes -01, -02 and -04>

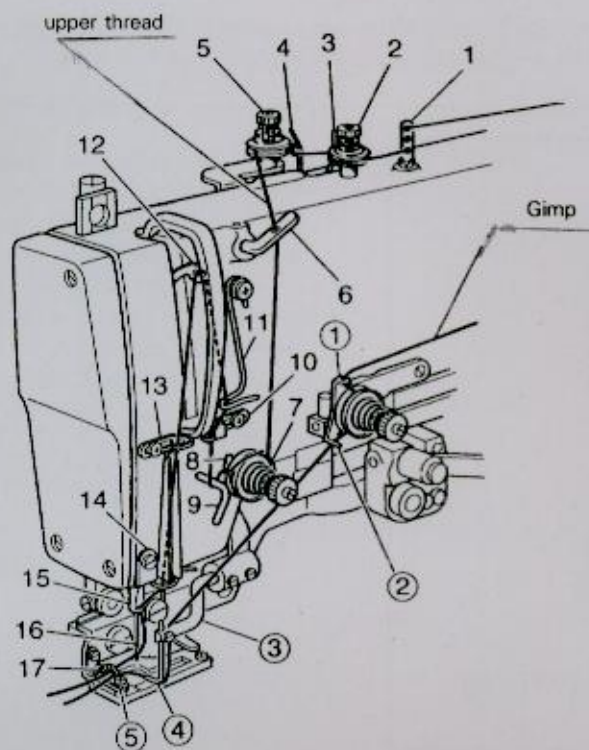


For cotton thread and spun thread



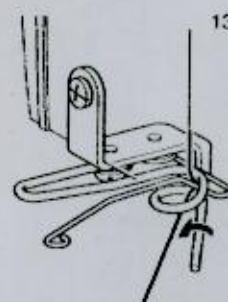
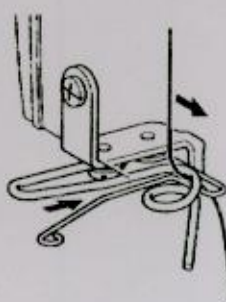
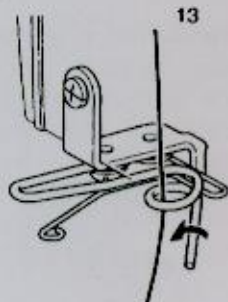
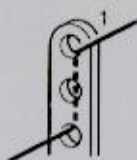
For synthetic thread





For cotton thread and spun thread

For synthetic thread

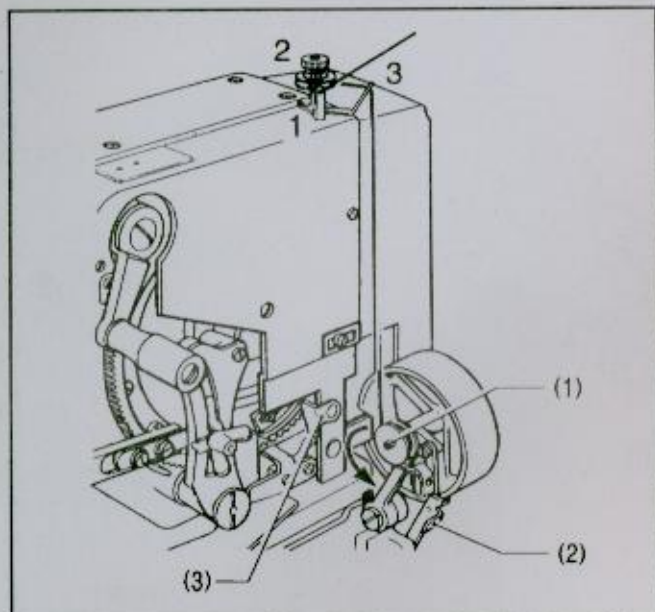


5-3. Winding the lower thread

CAUTION



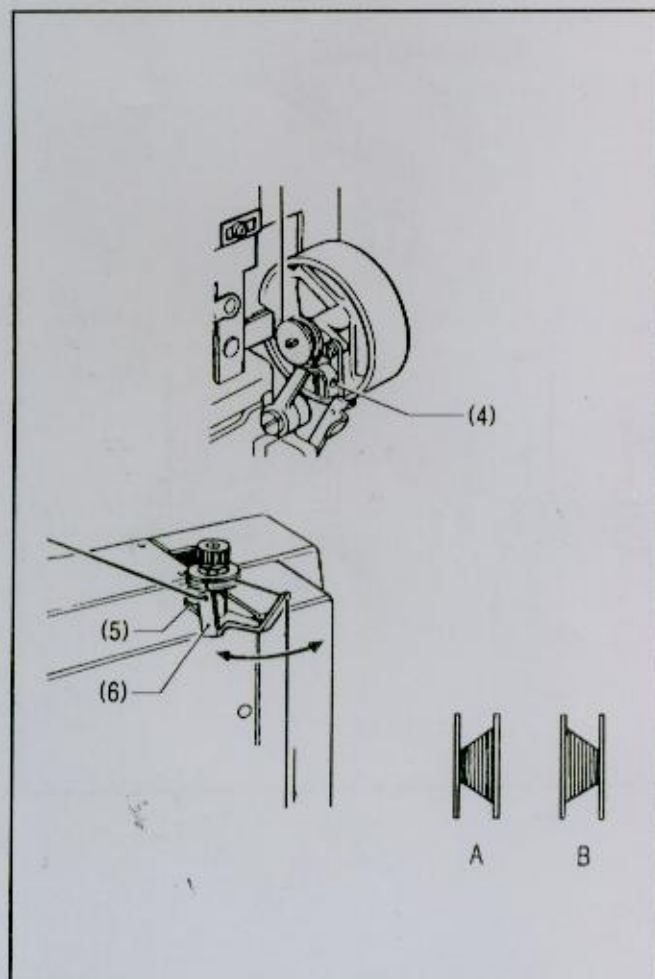
Do not touch any of the moving parts or press any objects against the machine while winding the lower thread, as this may result in personal injury or damage to the machine.



1. Place the bobbin onto the bobbin winder shaft (1).
2. Thread the thread as shown in the illustration and then wind the thread several times around the bobbin in the direction indicated by the arrow.
3. Turn on the power switch.
4. Press and release the bobbin winder link (2). The thread will then be wound on.
5. When a set amount (80% of bobbin capacity) is wound on, the bobbin winder link (2) will return to its original position.
6. Remove the bobbin and cut the thread with the thread cutter (3).

Adjusting the bobbin winding amount

Loosen the screw (4) and adjust the bobbin winder link (3).



If the thread winds onto the bobbin unevenly

Loosen the screw (5) and move the bobbin winder thread guide (6) to the left and right to adjust.

* For case A, move the bobbin winder thread guide (6) to the left, and for case B, move it to the right.

* If this adjustment does not stop the thread from winding unevenly, check the installation position of the bobbin winder assembly. (Refer to "3-10. Installing the bobbin winder".)

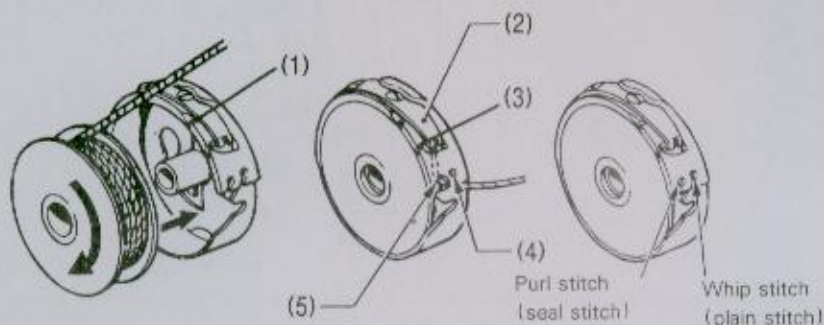
5 -4. Thread the bobbin case

CAUTION



Turn off the power switch before removing or inserting the bobbin case, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.

* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.

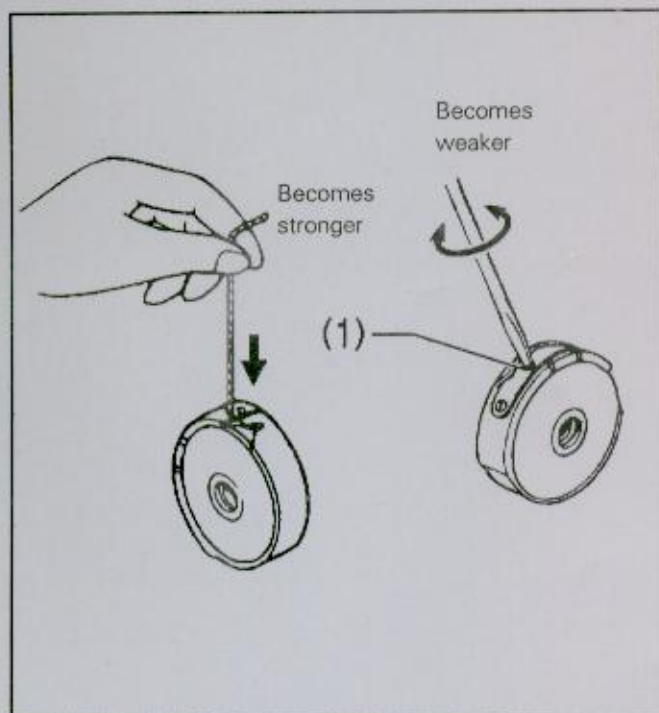


1. Insert the bobbin into the bobbin case as shown in the illustration.
2. Pass the thread through the slot (1) and then under the tension spring (2) and through the slot (3).
3. When sewing whip stitches, pull approximately 40 mm of thread out from the thread hole (4), and when sewing purl stitches, pull approximately 40 mm of thread out from the thread hole (5).

5 -5. Thread tension

Thread tension vary with sewing conditions. Refer to the following when selecting suitable tensions.

5 -5 -1. Lower thread tension



Whip stitch (plain stitch)

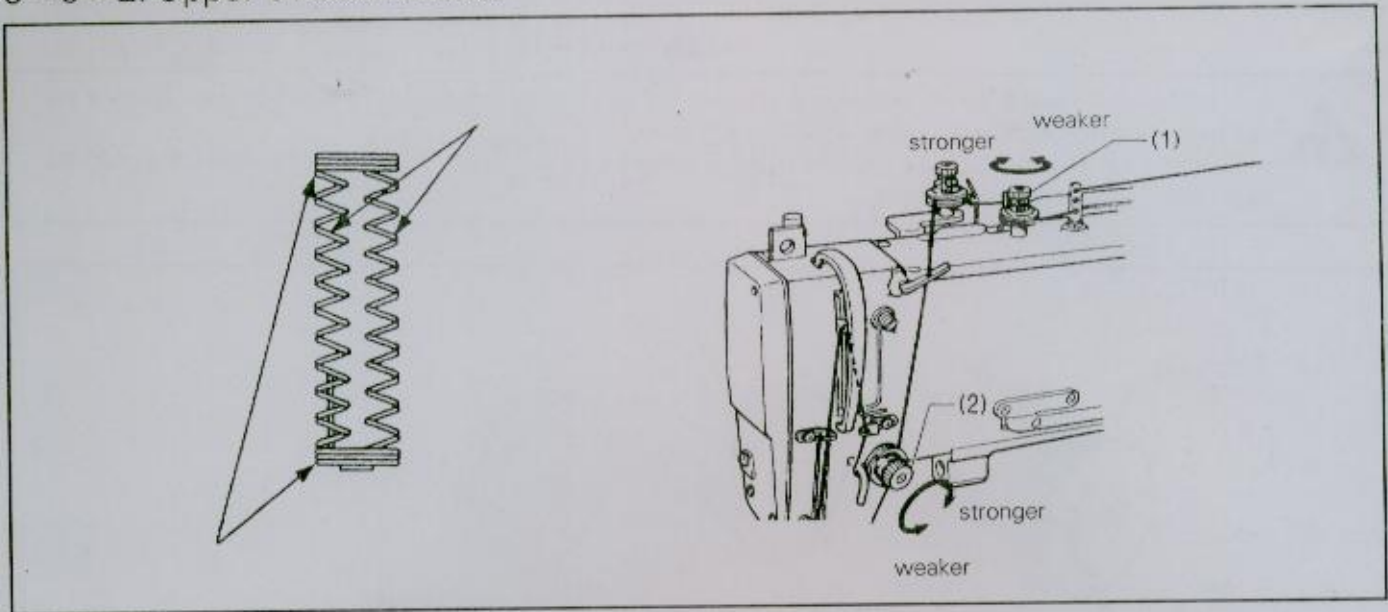
Adjust by turning the adjusting screw (1) until the bobbin case drops when it is shaken slightly (0.15 - 0.25 N) while the thread end coming out of the bobbin case is held.

Purl stitch (seal stitch)

Adjust by turning the adjusting screw (1) until the bobbin case drops gently by its own weight (0.05 - 0.15 N) while the thread end coming out of the bobbin case is held.

* The brake spring in the bobbin case reduces bobbin racing.

5-5-2. Upper thread tension



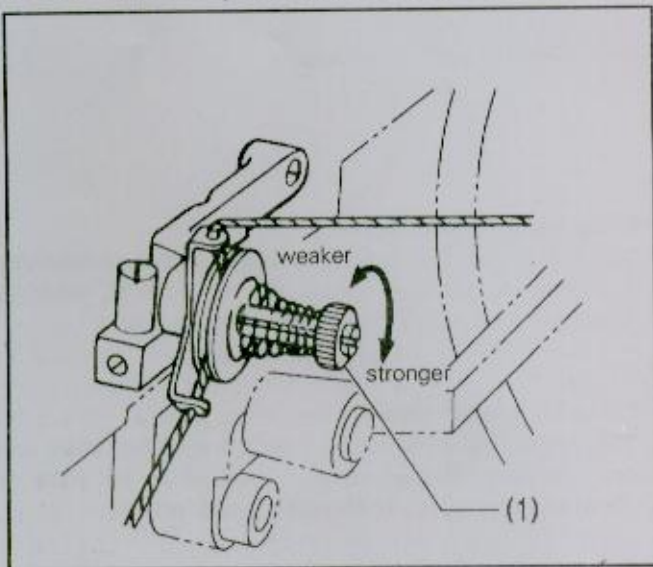
Main tension adjustment

After turning the handle one full revolution, depress the right pedal, and then turn the tension nut (1) to adjust the thread tension for bar tacking A.

Sub-tension adjustment

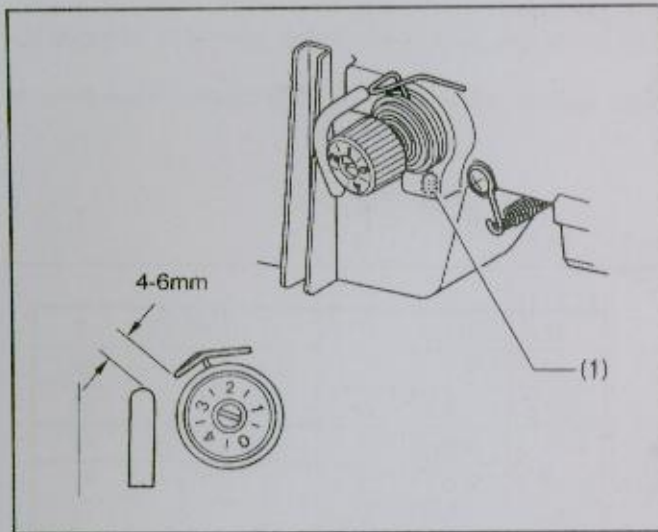
After turning the handle one full revolution, turn the tension nut (2) to adjust the thread tension for zigzag stitches B. * Decrease the tension for whip stitches and increase the tension for purl stitches.

5-5-3. Gimp tension (sub-class -03)



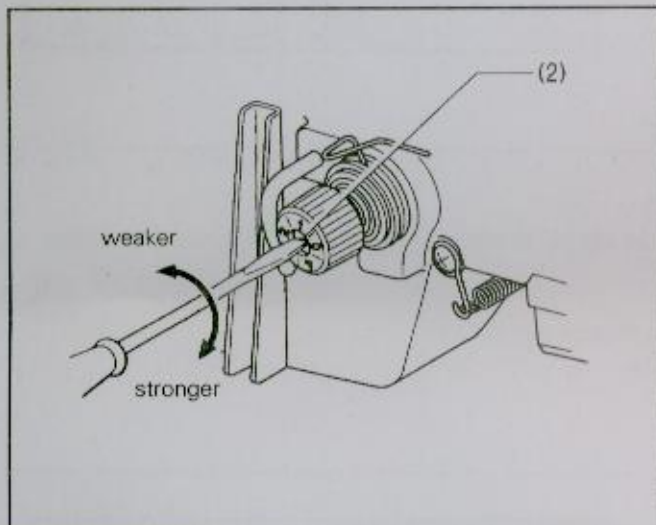
Adjust the gimp tension by turning the thread tension nut (1)

5-5-4. Thread take-up spring height



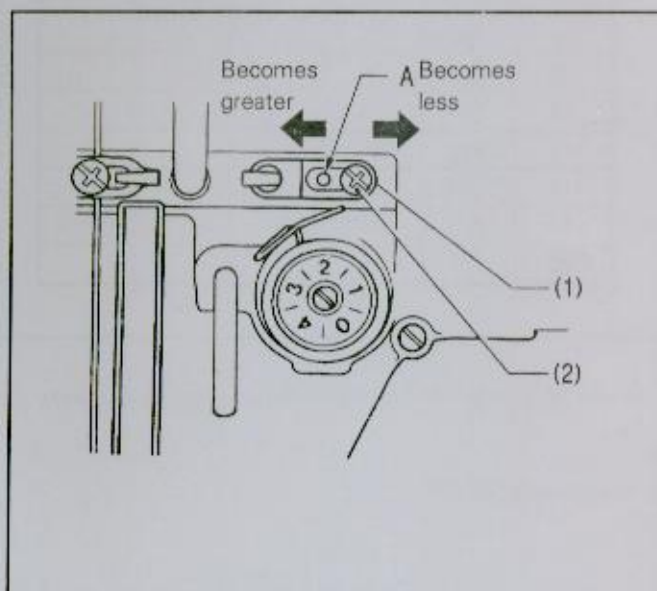
Loosen the set screw (1), and turn the entire thread tension adjuster to adjust the thread take-up spring height to between 4-6 mm in accordance with the material to be sewn.
* After making this adjustment, be sure to check the tension of the sub-tension. (Refer to "8-15-2. Sub-tension adjustment".)

5-5-5. Thread take-up spring tension



Turn the thread tension stud (2) to adjust the thread take-up spring tension to between approximately 0.10-0.20 N in accordance with the material to be sewn.

5-5-6. Adjusting arm thread guide



The standard position of the arm thread guide (1) is when the screw (2) is positioned at the far right of the slot. Loosen the screw (2), and then move the arm thread guide (1) to adjust it in accordance with the material and thread being used.

* Move the arm thread guide (1) to the right to reduce the thread take-up amount. Then re-tighten the screw (2) in screw hole A, and move the arm thread guide (1) to the left to increase the thread take-up amount.

5 - 6. Changing the number of stitches

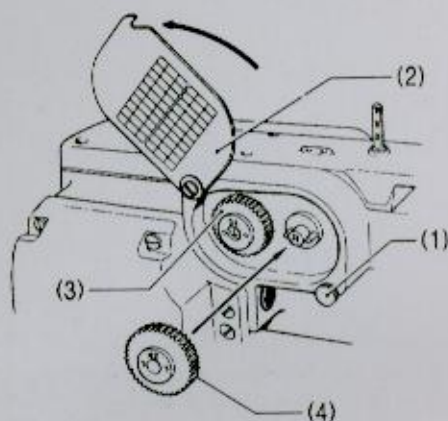
Select the number of stitches based on the size of the buttonholes to be sewn.

Any of the numbers of stitches shown in the table below (which appears on the gear case cover) can be selected by changing the change gear combination.

For sub - class - 3 the number of stitches shown is for automatic double sewing, if only using for single sewing, the number of stitches will be half that shown for double sewing.

5 - 6 - 1. Change gear replacement

<Sub - classes - 01, - 02 and - 04>

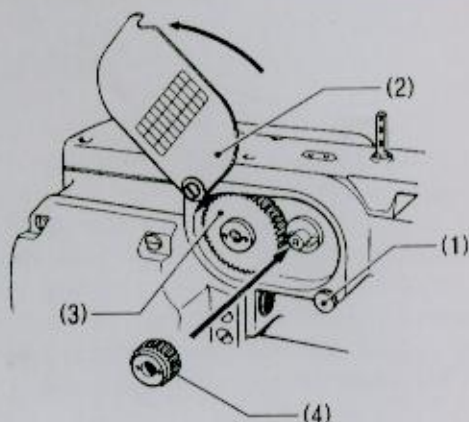


L	STITCH	R	L	STITCH	R
54	360	22	38	147	38
52	319	24	36	133	40
51	300	25	34	119	42
50	283	26	32	107	44
48	252	28	30	96	46
46	226	30	28	86	48
44	203	32	26	77	50
42	182	34	24	68	52
40	164	36	22	60	54

Example: selecting 119 stitches

1. Fine the entry for 119 stitches in the above table, and use gears 34 and 42 as the left and right change gears respectively.
2. Loosen the thumb screw (1) and raise the gear case cover (2).
3. Fit change gear 34 (3) onto shaft L.
4. Fit change gear 42 (4) onto shaft R in such a way that it engages change gear 34 (3).
5. After replacing the gears, be sure to close the gear case cover (2).

<Sub - class - 03>

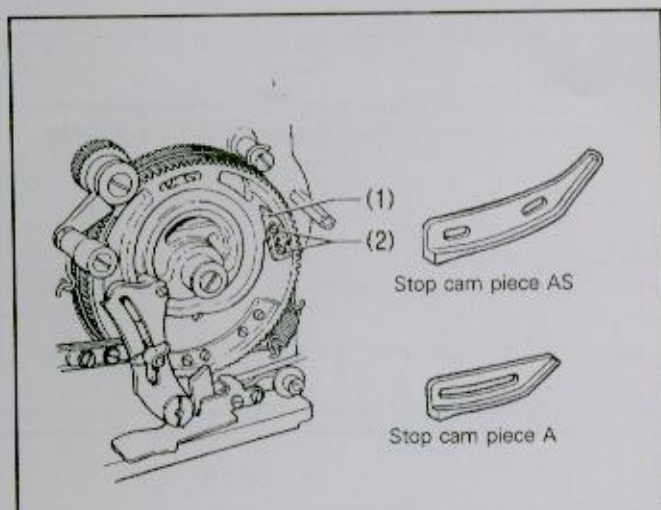


L	STITCH	R	L	STITCH	R
54	360	22	38	147	38
52	319	24			
51	300	25			
50	283	26			
48	252	28			
46	226	30			
44	203	32			
42	182	34			
40	164	36			

Example: selecting 226 stitches

1. Fine the entry for 226 stitches in the above table, and use gears 46 and 30 as the left and right change gears respectively.
2. Loosen the thumb screw (1) and raise the gear case cover (2).
3. Fit change gear 46 (3) onto shaft L.
4. Fit change gear 30 (4) onto shaft R in such a way that it engages change gear 46 (3).
5. After replacing the gears, be sure to close the gear case cover (2).

5-6-2. Stop cam replacement (sub-classes -01, -02 and -04)



1. Remove the cam cover.

Note:

Take care to avoid getting your fingers or clothes caught in the feed cam while the cam cover is removed.

2. Turn the handle until the stop cam piece (1) comes to a point where it can be easily taken off.

3. Loosen the screws (2) and replace the stop cam piece (1).

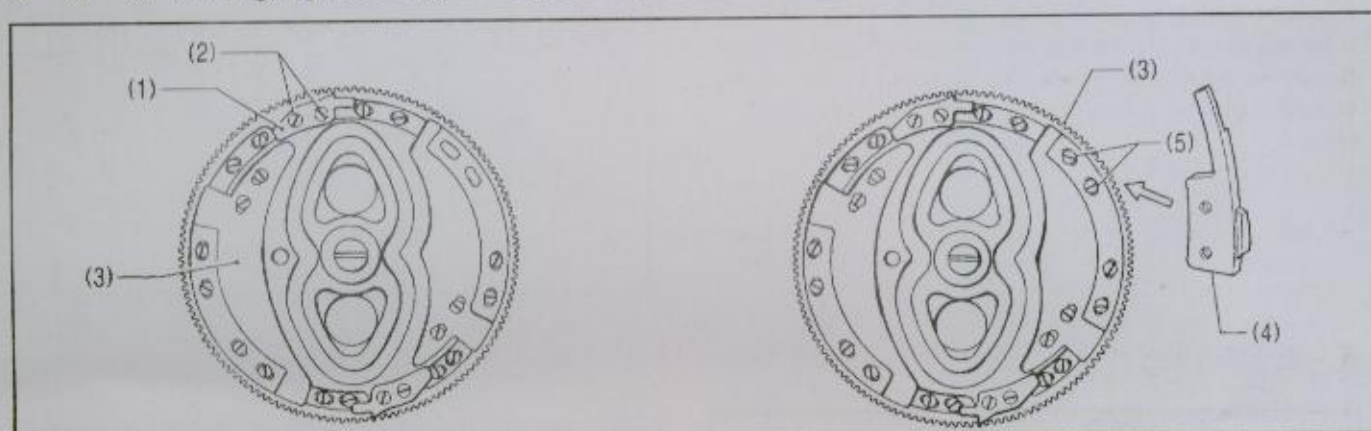
* If the number of stitches is 96 or less, use stop cam piece AS.

* If the number of stitches is 107 or more, use stop cam piece A.

Note:

If you do not use the stop cam piece that is suitable for the number of stitches being sewn, the sewing machine may vibrate and the clutch may engage during high-speed sewing, and this may cause damage to parts.

5-6-3. Changing to single-cycle operation (sub-class -03)



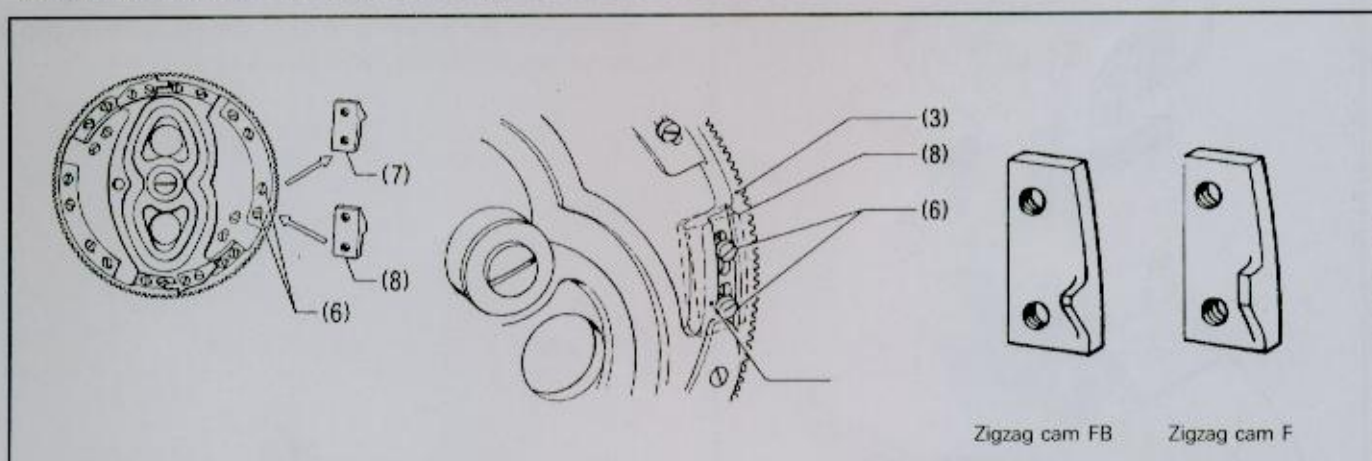
1. Remove the cam cover.

Note:

Take care to avoid getting your fingers or clothes caught in the feed cam while the cam cover is removed.

2. Install the stop cam (1) to the feed cam (3) with the screws (2).

3. Install the cutter cam (4) to the back of the feed cam (3) with the screws (5).



4. Remove the set screws (6) and zigzag cam FB (7) from the back of the feed cam (3), and install zigzag cam F (8). At this time, tighten zigzag cam F (8) so that the mid point between the set screws (6) is aligned with the index mark on the feed cam (3).

5. Re-install the cam cover.

Note:

Zigzag cam F (8) and zigzag cam FB (7) look similar to each other, so be careful not to confuse them.

6. SEWING

⚠ CAUTION



Turn off the power switch at the following times, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.

- When threading the needle
- When replacing the bobbin and needle
- When not using the machine and when leaving the machine unattended

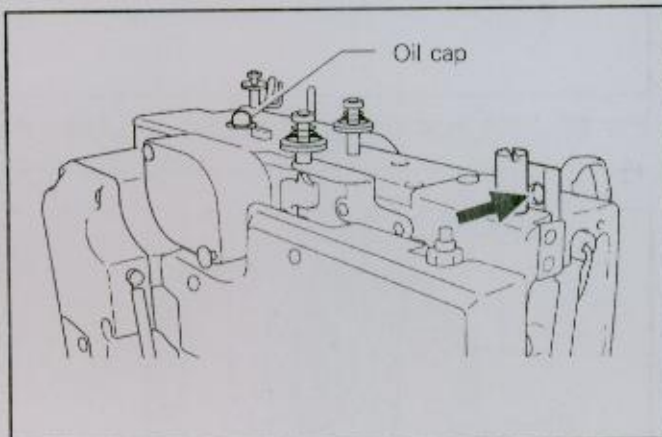
* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.



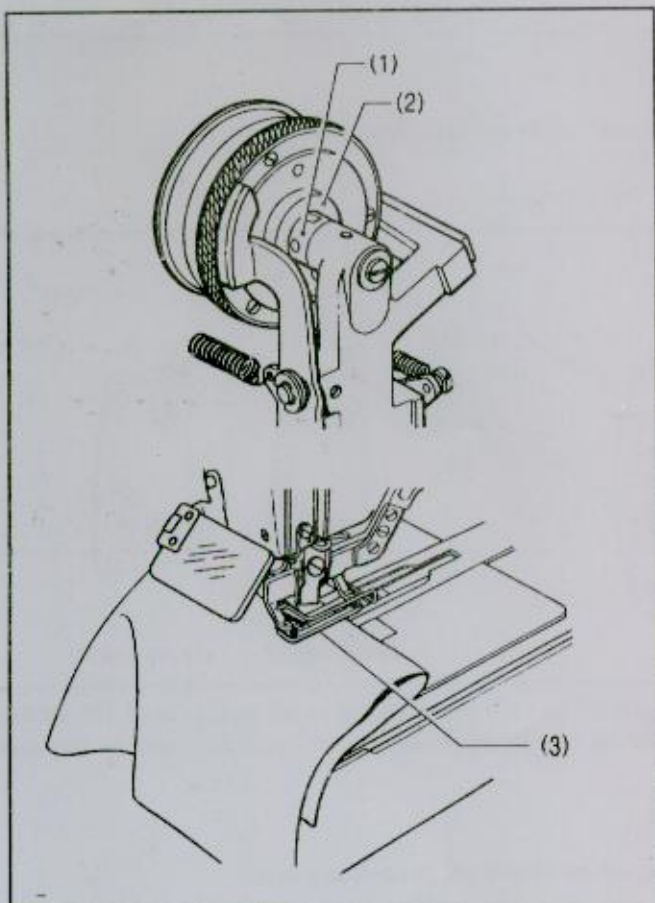
Do not touch any of the moving parts or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.

Note:

- The feed arm can move, so be careful of the clearance.
- When using the machine, check that the oil is visible through the oil cap. If it cannot be seen, problems such as seizure of the mechanism may occur.
- Do not operate the sewing machine while fingers or other objects are inserted into the place indicated by the arrow, otherwise injury or problems with machine operation may result.

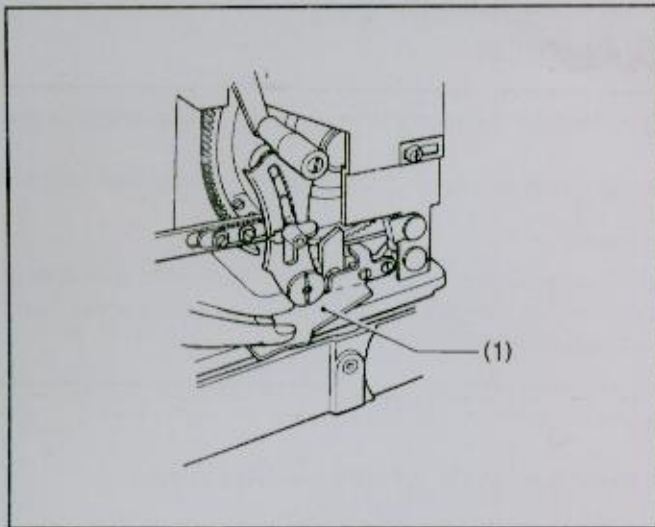


6 - 1. Sewing



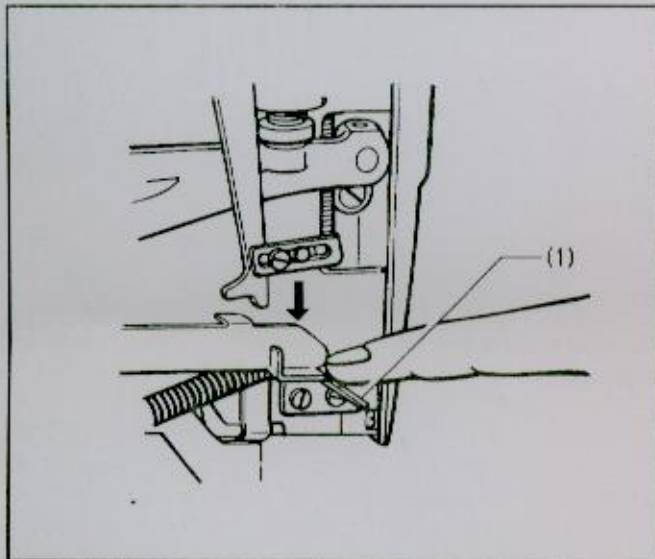
1. Make sure that the clutch stopper (1) is in the stop cam (2).
2. Turn on the power switch.
3. Depress the left treadle. (The work clamp (3) will rise.) Place the material under the work clamp, and then release the left treadle. (The work clamp (3) will be lowered.)
4. Depress the right treadle to start the machine. When the machine starts running, release the right treadle. (The machine will sew a fixed number of stitches and then stop.)
5. Depress the left treadle and take out the material.

6 -2. Using the emergency stop lever



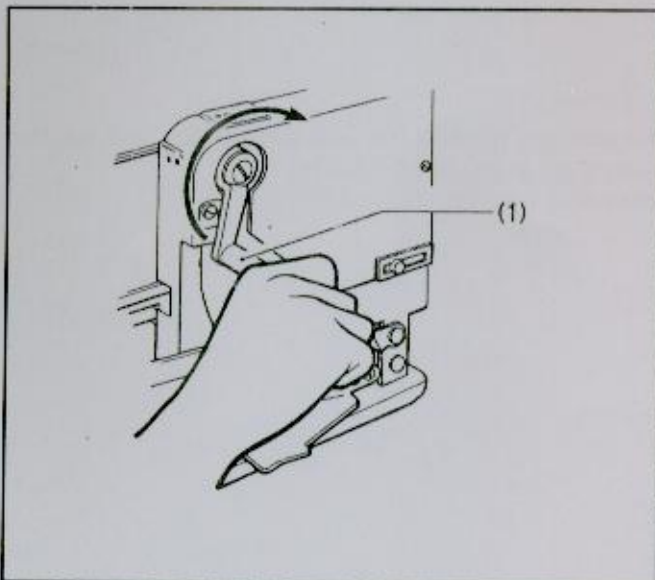
The machine will slow down when the emergency stop lever (1) is depressed, and the machine will stop when the lever is then released.

6 -3. Using the thread breakage detection lever



Lightly depress the thread breakage detection lever (1) until the machine stops. The thread cutter should not descend even after the machine stops.

6 -4. Using the handle



Turn the handle (1) after confirming that the needle is not in the workpiece.

7. MAINTENANCE

⚠ CAUTION



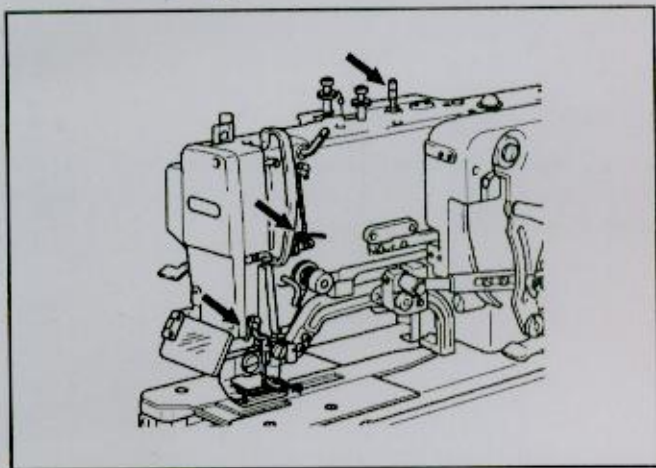
Turn off the power switch before carrying out cleaning, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.

* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.

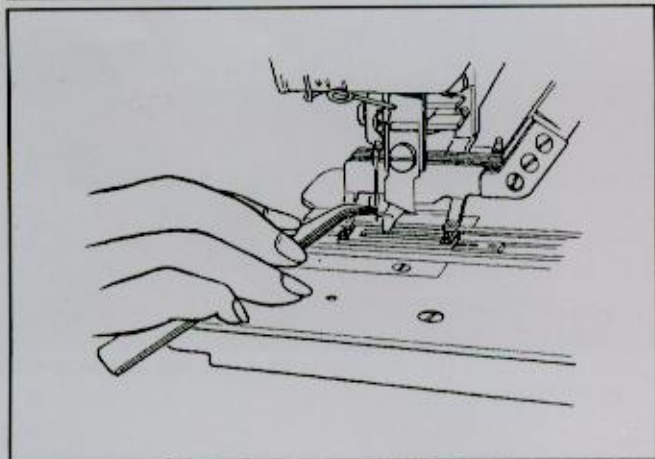


Be sure to wear protective goggles and gloves when handling the lubricating oil, so that no oil gets into your eyes or onto your skin, otherwise inflammation can result. Furthermore, do not drink the oil under any circumstances, as it can cause vomiting and diarrhoea. Keep the oil out of the reach of children.

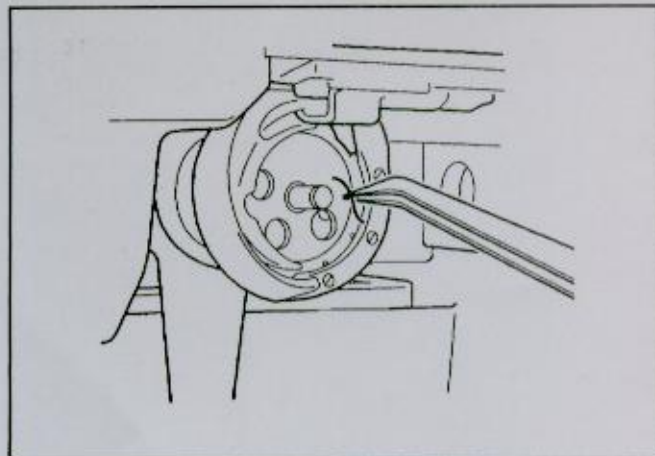
7 - 1. Cleaning



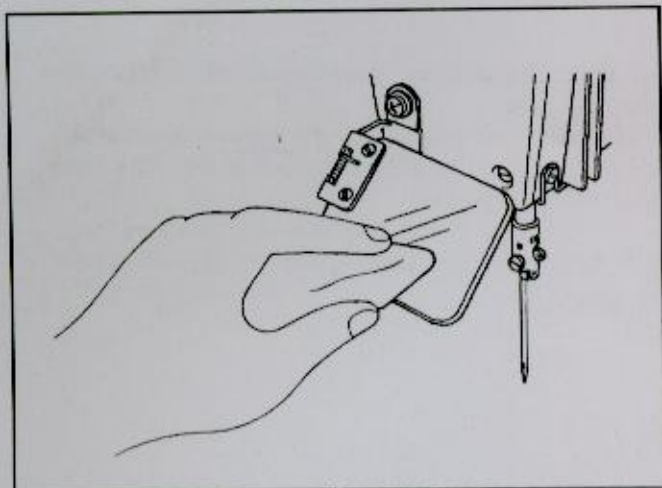
Remove lint and dust from the thread passages.



Remove lint and dust from around the work clamp, cutter and scissors.



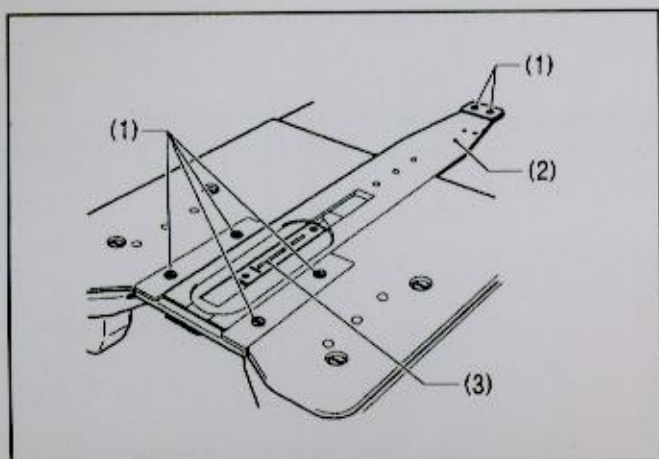
Remove the bobbin case, and remove dust and lint from around the shuttle and fixed knife. Also wipe the bobbin to remove oil.



Wipe the eye guard clean with a soft cloth.

Note:

Do not use solvents such as kerosene or thinner to clean the eye guard.

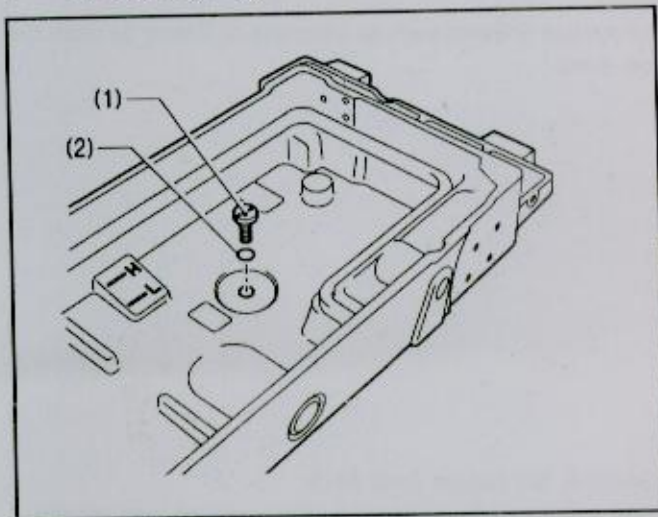


Cleaning the length feed plate

Clean the length feed plate if foreign materials such as shavings start getting onto the material.

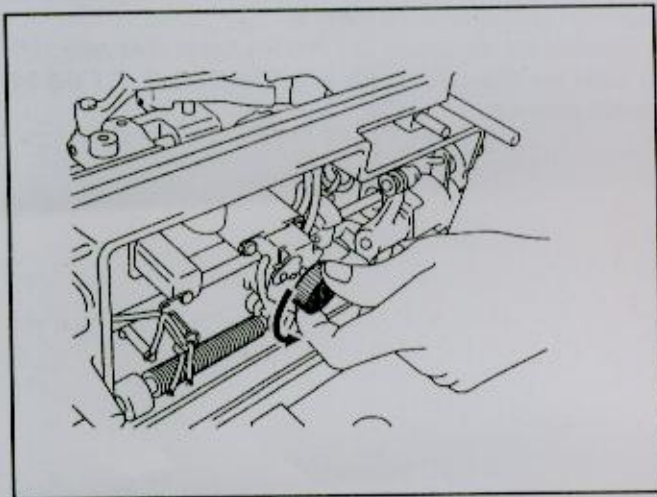
1. Remove the six screws (1) and the length feed plate (2).
2. Clean the underside of the length feed plate (2) and the needle plate (3).

7-2. Changing the lubrication oil



The oil should be replaced approximately once every six months.

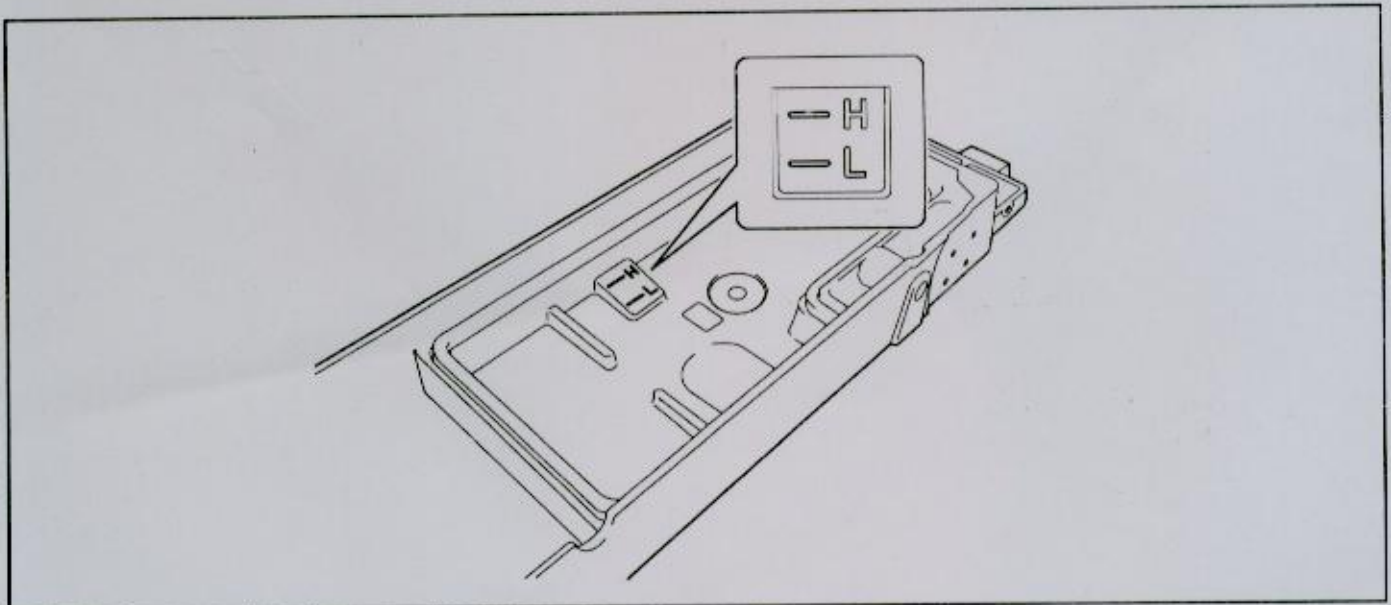
1. Remove the flat belt and tilt back the machine head gently.
2. Place the oil tank against the underside of the table, and then remove the screw (1).
3. After the lubricating oil has been drained, make sure that the O-ring (2) is in the correct position, and then tighten the screw (1).



Cleaning the oil filter (every three months)

Screw the pump filter to remove it, and then remove the oil filter and clean it.

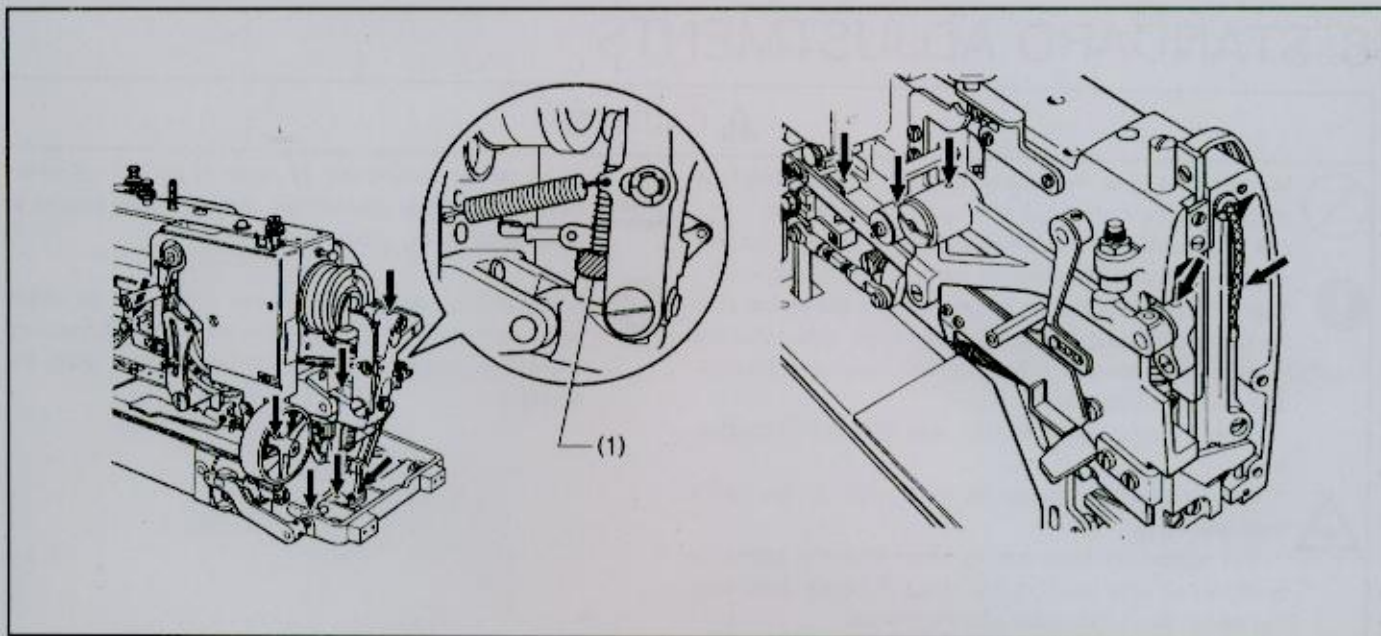
7-3. Lubrication



Use only the lubricating oil specified by our company

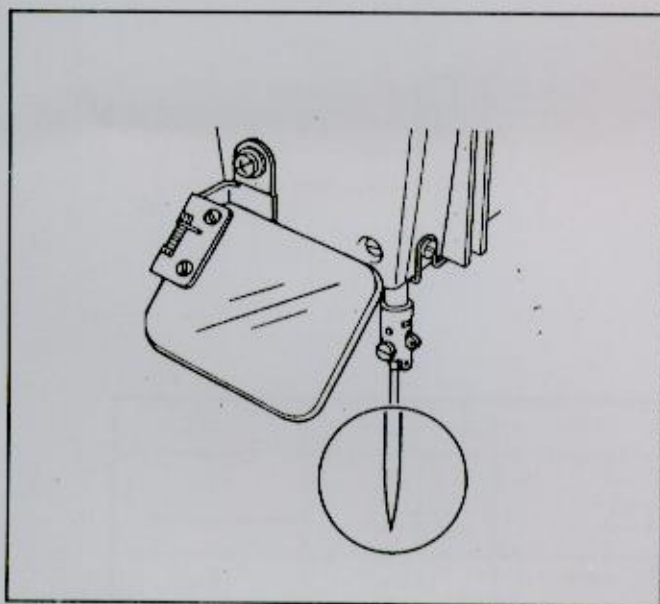
1. Tilt back the machine head and check the lubricating oil level. If the oil level drops below the "L" mark, add more lubricating oil.
2. Check that the lubricating oil level appears in the oil window in the arm. If the lubricating oil level is low, add more oil.

* Replace the lubricating oil about once every six months.



Apply about 1 – 2 drops of oil to the places indicated by the arrows about once a week. Also apply oil to the felt (1) until it is lightly moistened.

7 – 4. Checking the needle



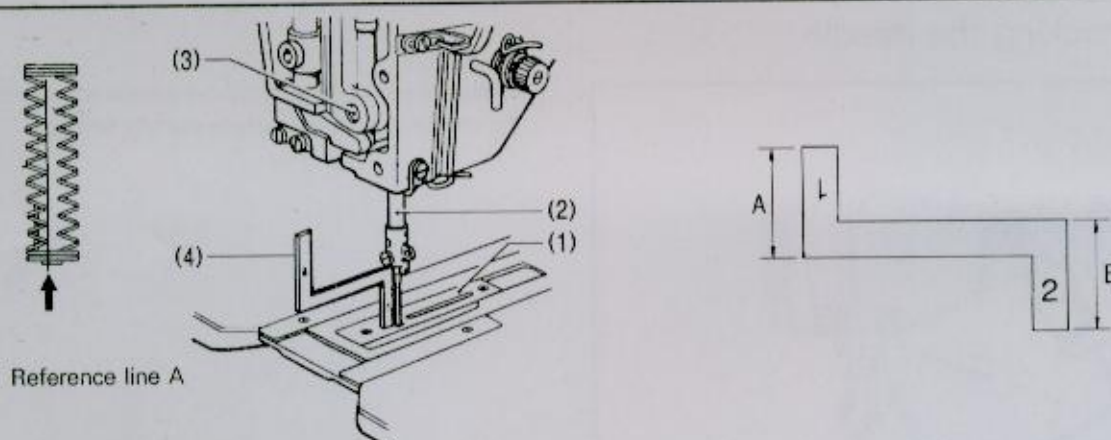
Always check that the tip of the needle is not broken and also the needle is not bent before starting sewing.

8. STANDARD ADJUSTMENTS

⚠ CAUTION

- ⊘ Maintenance and inspection of the sewing machine should only be carried out by a qualified technician. Ask your dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.
- ! Turn off the power switch and disconnect the power cord from the wall outlet at the following times, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.
- When carrying out inspection, adjustment and maintenance.
 - When replacing consumable parts such as the rotary hook and knife.
 - The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.
- ⚠ If the power switch and air need to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.
- ! If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.

8-1. Adjusting the needle bar height



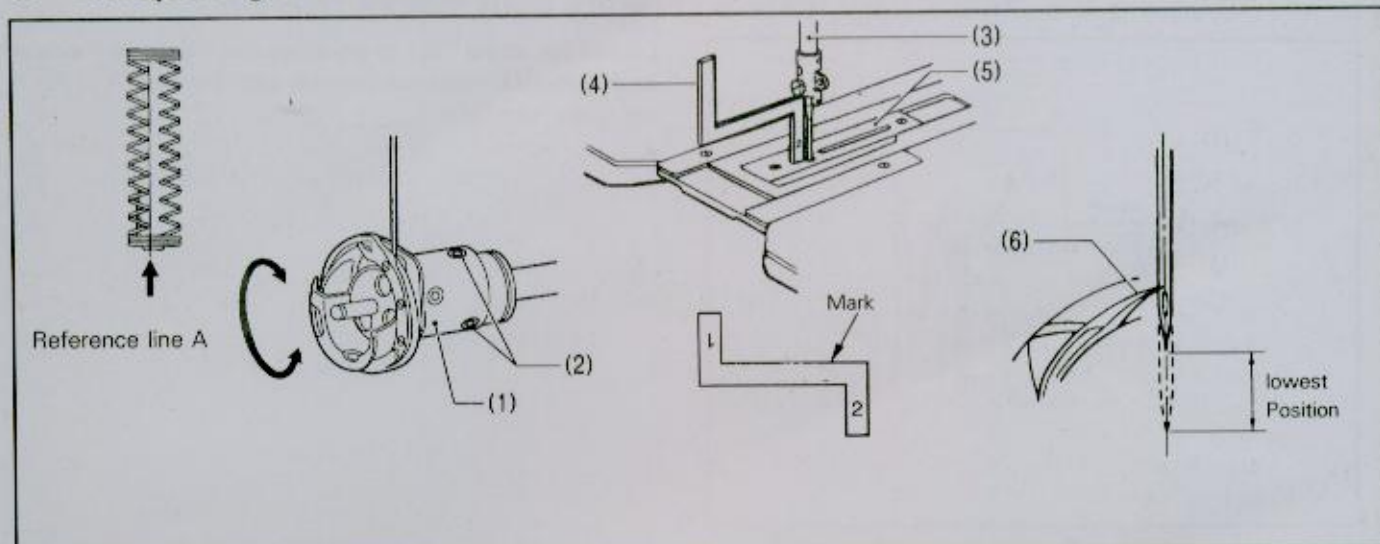
Sub-class	-01	-02	-03	-04
Needle plate shape	Standard needle plate	Optional needle plate		
Distance A (mm)	13.5	14.2	11.7	13.4
Distance B (mm)	16	16.7	15.2	16.4
Part code	BX97515-809	BX78117-909	BX78116-009	BX78115-909

This adjustment should be carried out at reference line A.

1. Set the needle bar (2) to its lowest position when the needle drops to the center of the needle hole in the needle plate (1).
2. Remove the face plate, and loosen the screw (3) of the needle bar clamp.
3. Insert the "1" part of the gauge (4) between the needle plate (1) and the lower edge of the needle bar (2), and touch the needle bar against the gauge.
4. Tighten the screw (3), and re-install the face plate.

* Five different gauges are available for different sub-classes. Check that you are using the correct gauge.

8-2. Adjusting the needle bar lift amount



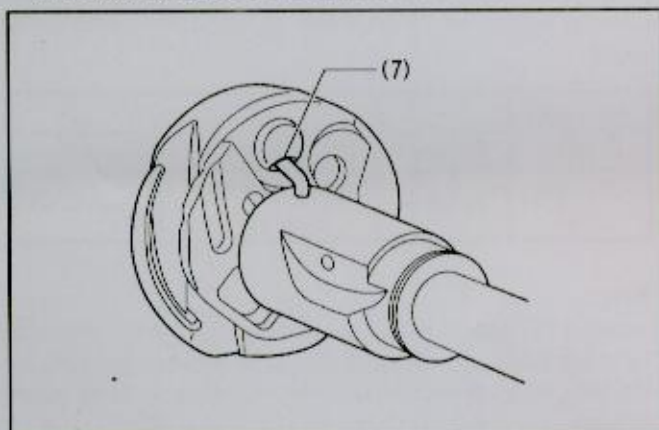
This adjustment should be carried out at reference line A.

1. Loosen the two screws (2) of the rotary hook joint (1).

2. Turn the pulley in the regular direction of rotation (toward the front) so that the needle bar (3) just begins to rise from its lowest position.

3. Insert the "2" part of the gauge (4) between the needle plate (5) and the lower edge of the needle bar (3), and then align the rotary hook point (6) with the center of the needle when the needle bar contacts the gauge.

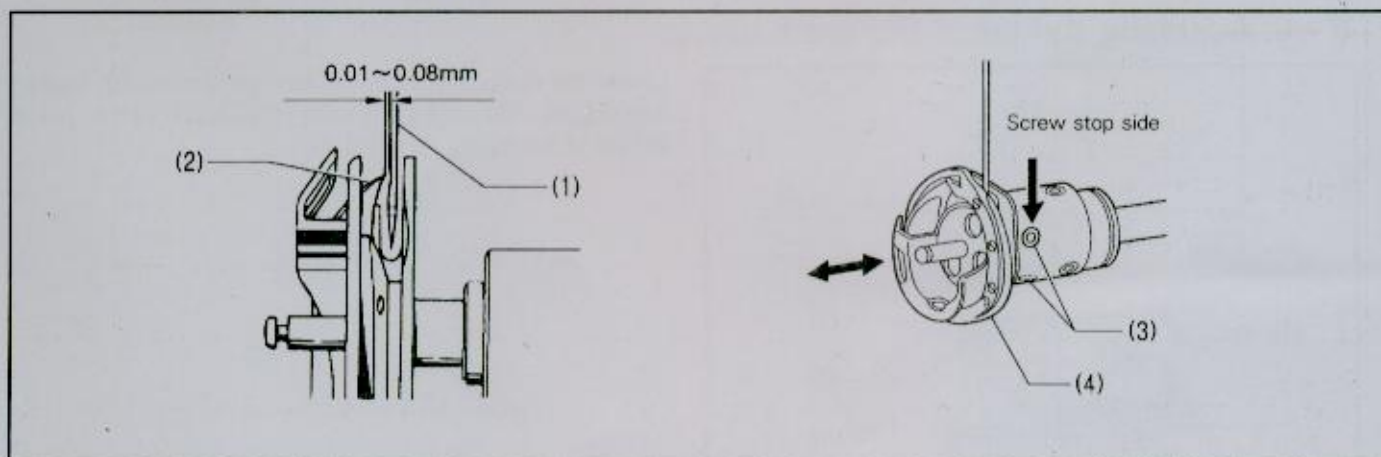
* Five different gauges are available for different sub-classes. Check that you are using the correct gauge.



Note:

When installing the rotary hook joint, install using the set screw so that the oil inlets in the rotary hook and rotary hook joint (7) are aligned.

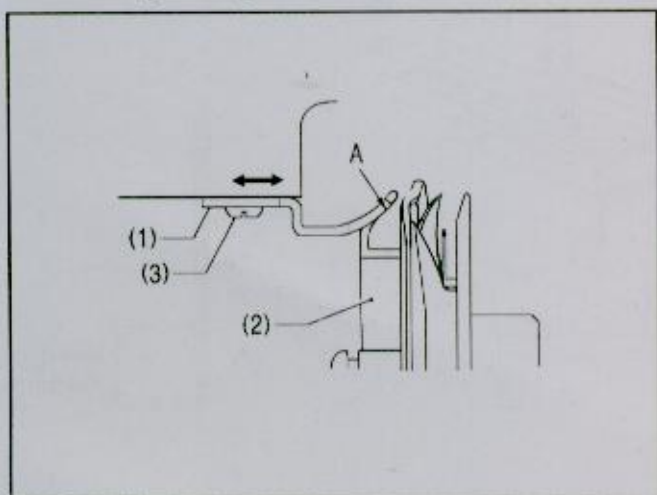
8-3. Adjusting the clearance between needle and hook point



Loosen the screws (3) and move the rotary hook (4) forward or back until there is a clearance of 0.01 to 0.08 mm between the needle (1) and the hook point (2).

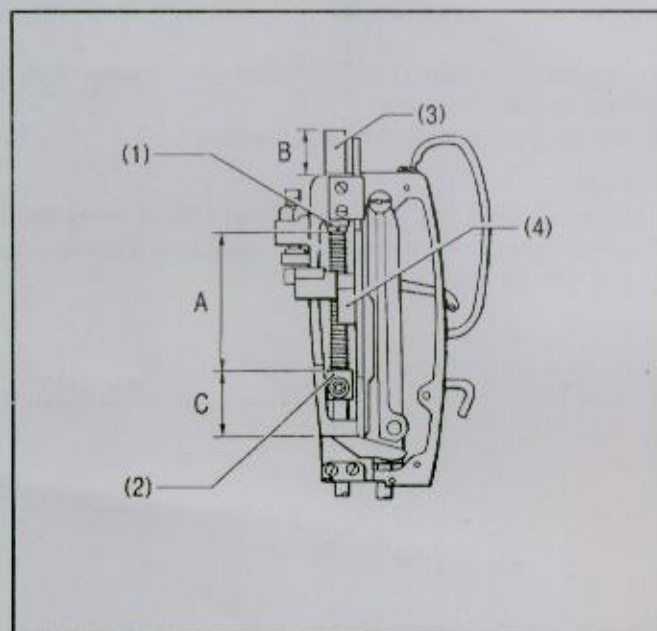
* When tightening the set screws (3), tighten the one on the screw stop side first.

8-4. Adjusting the inner rotary hook and rotary hook holder overlap



Loosen the screw (3) to adjust so that the tip of the rotary hook holder (1) does not protrude past the edge A of the inner rotary hook (2).

8-5. Adjusting the presser pressure



Adjust the distance (A) between the bottom of the washer (1) and the top of the presser bar guide bracket (2) and the distance (B) between the top of the arm and the top of the presser bar adjusting screw (3) as follows.

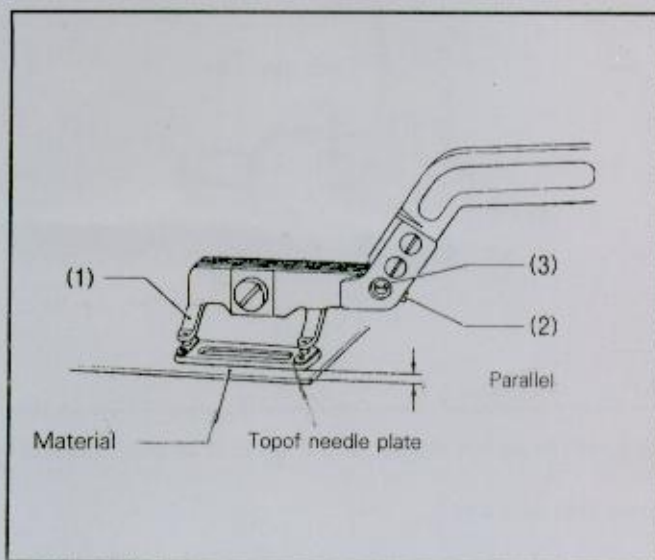
Move the presser bar guide bracket (2) and the presser bar adjusting screw (3) up and down to adjust the presser pressure.

Sub - class	A	B	C
-01	88.4mm	36.0mm	Approx. 29.5mm
-02, -03, -04	73.0mm	Approx. 26.0mm (Tightened)	Approx. 34.5mm

Note:

Distance (C) should not be greater than 34.5 mm, otherwise the presser bar guide bracket (2) and the cutter operating link (5) may obstruct each other when the cutter is at its lowest position.

8-6. Adjusting the tilt of the work clamp

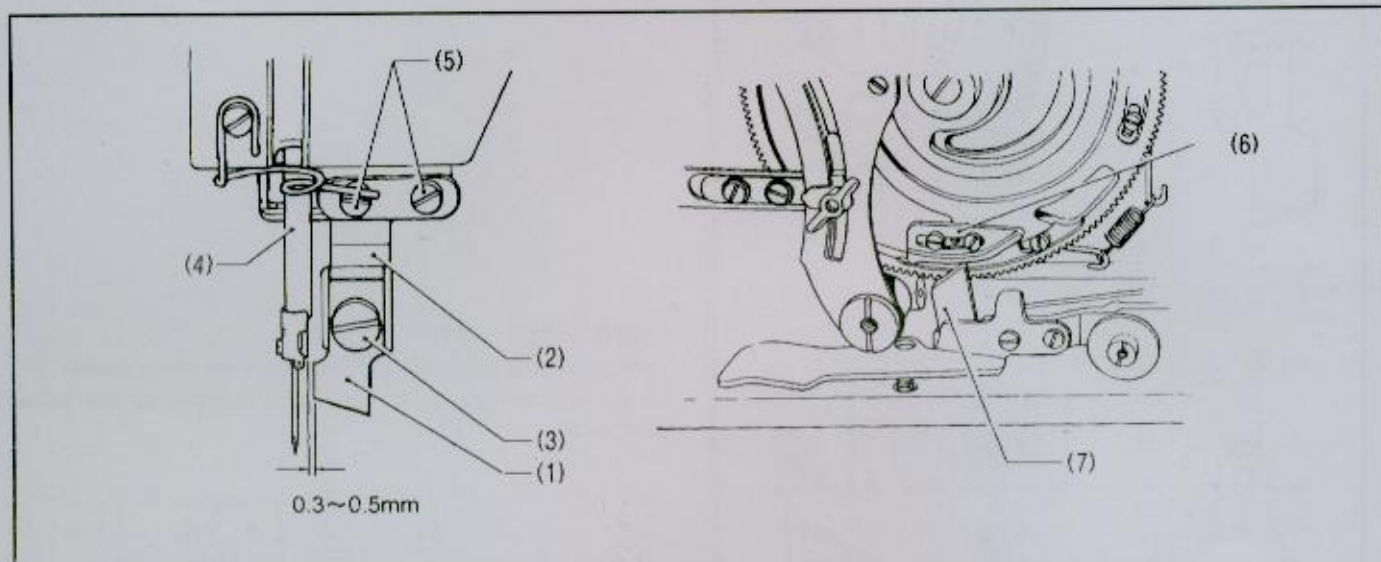


Loosen the screw (2), and then turn the work clamp support spring shaft (3) until the bottom of the work clamp (1) is parallel to the top of the workpiece.

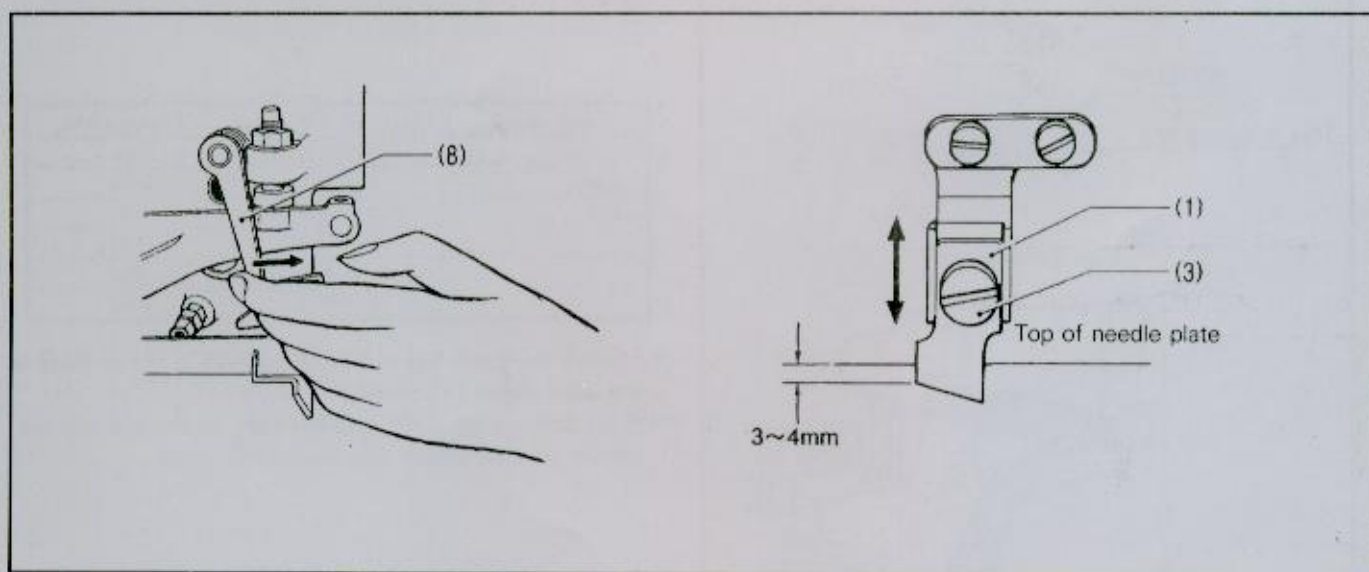
8-7. Adjusting the cutter installation

Note:

- Be extremely careful when handling the cutter.
- Take care to avoid getting your fingers or clothes caught in the feed cam while the cam cover is removed.



1. Provisionally tighten the cutter (1) to the cutter holder (2) with the screw (3).
2. Turn the machine pulley by hand until the needle bar (4) is nearly at its lowest position.
3. Loosen the screw (5), and then move the cutter holder (2) forward or back until the clearance between the cutter (1) and the needle bar (4) is 0.3 - 0.5mm.
4. Turn the machine pulley by hand until the needle bar (4) comes up nearly to its highest position.
5. Remove the cam cover.
6. Turn the handle until stop cam piece B (7) rides on the center of the stop cam piece (6).
7. Re-install the cam cover.

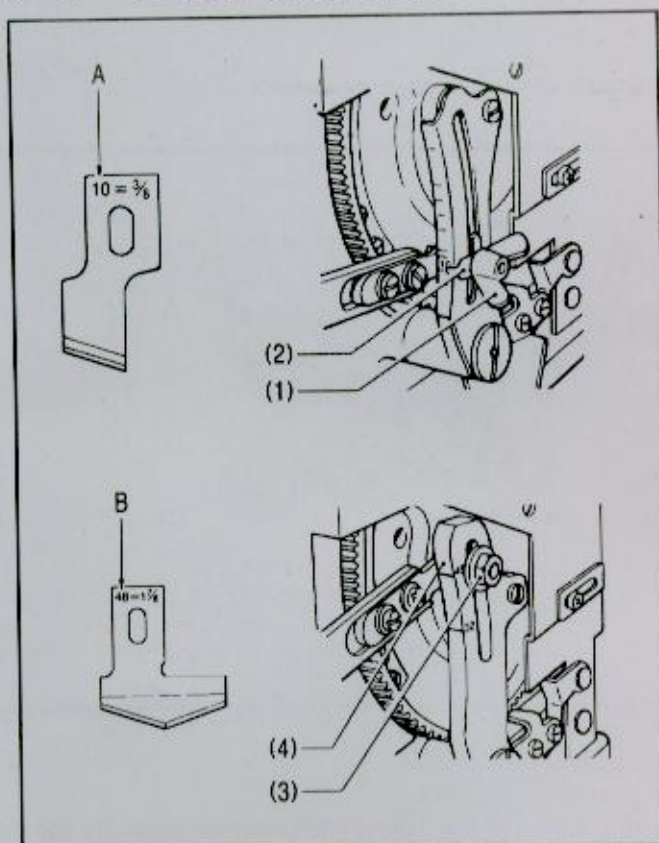


8. Keep the cutter lock arm (8) pulled with one hand, and turn the machine pulley with the other hand until the cutter (1) drops to its lowest position.
9. Loosen the screw (3) and adjust so that the blade edge enters 3 - 4 mm deep from the top of the needle plate.
10. Turn the machine pulley by hand until the clutch automatically engages (stop position).

Note:

After turning the machine pulley by hand, be sure to use the emergency stop lever to insert the clutch stopper into the stop cam before starting the sewing machine.

8-7-1. Feed adjustment



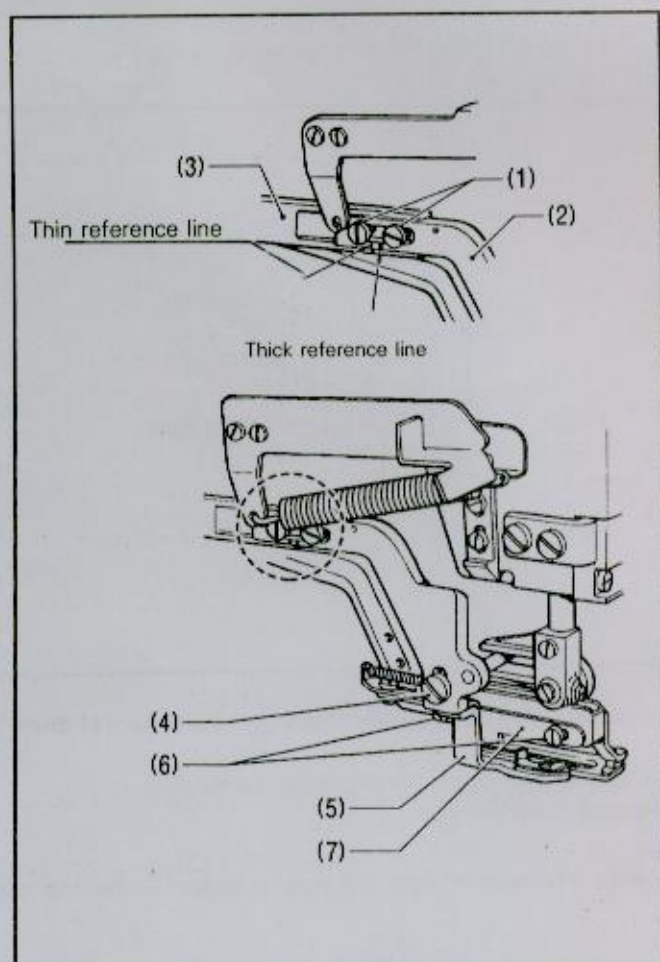
<Sub - classes -01, -02 and -03>

Loosen the adjusting nut (1) and move the pointer (2) to the line directly under the same number as the cutter number A.

<Sub - class -04>

Loosen the adjusting nut (3) and move the index marker (4) to the line directly under the same number as the cutter number B.

8-8. Adjusting the upper thread scissors (sub - classes -01, -02 and -04)



1. Loosen the screws (1), and then align the thin reference line or the thick reference line upper thread trimmer lever S (2) with the reference line on upper thread trimmer lever L (3), using the table below as a reference.

Sub - class	Thickness of material	Reference line
-01	Less than 3mm	Thin
	3 ~ 4mm	Thick
-02	Less than 3mm	Thin
	3 ~ 3.5mm	Thick
-04	Less than 3mm	Thin
	3 ~ 5mm	Thick

2. Loosen the screw (4) and install scissors D (5) as close to the work clamp as possible.

* If the scissors are positioned too high, the thread end will remain on the material after the thread is cut.

Adjusting the upper thread scissors opening timing

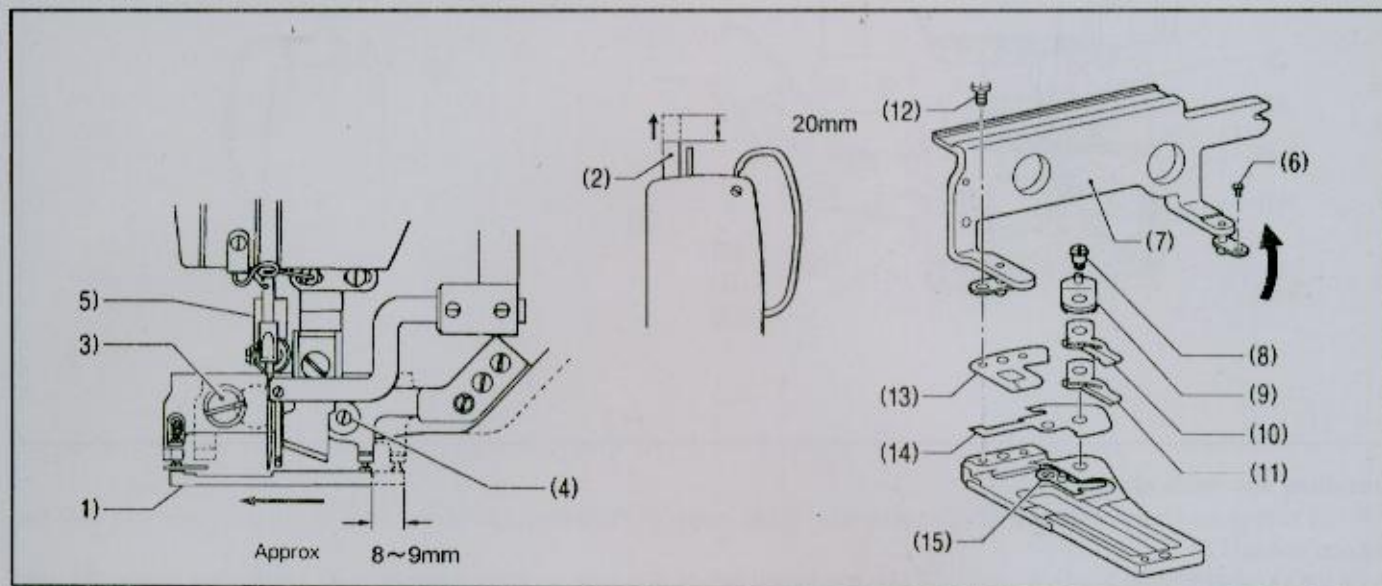
If the thread end is not sewn into stitches, it is because the scissors open either too early or too late.

Loosen the screws (6), and then move the thread trimmer guide (7) forward or back to adjust the opening timing.

* If the thread trimmer guide (7) is moved forward, the upper thread scissors open earlier, and if it is moved back, they open later.

8-9. Adjusting the gimp trimming knife(sub-class -03)

8-9-1. Replacing the gimp trimming knife



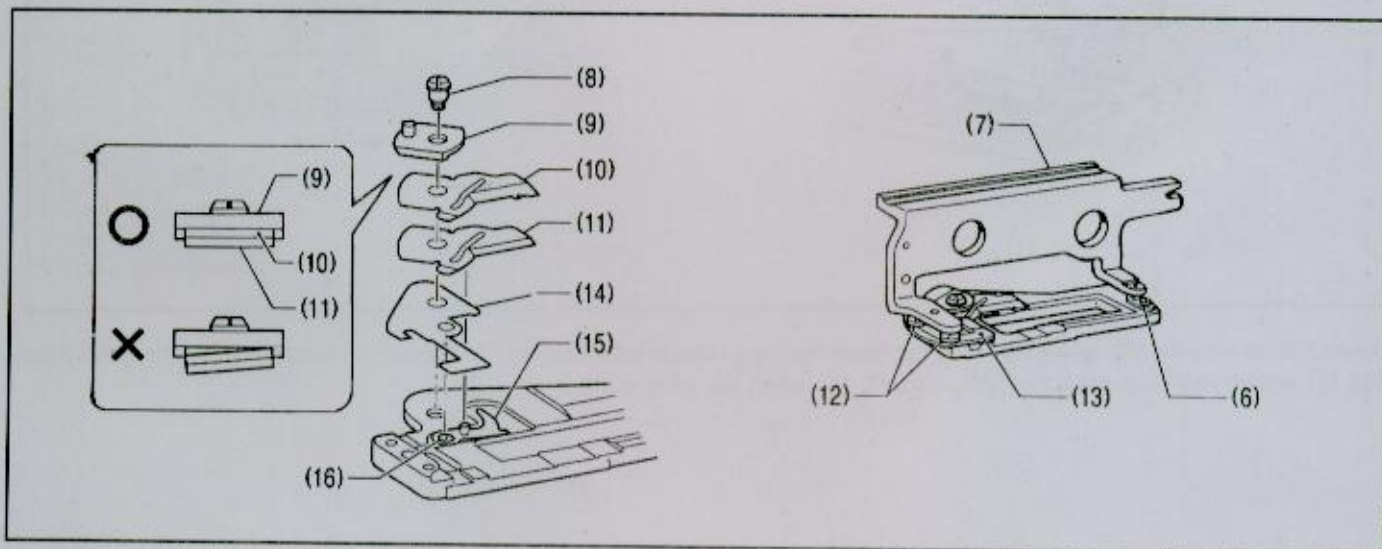
Removing the work clamp assembly

1. While the machine is stopped, turn the handle until the work clamp (1) advances about 8 to 9 mm toward you.
2. Loosen the stopper bar (2) by about 20 mm.
3. Remove the screw (3) and the pin (4).
4. Hold the presses bar roller bracket assembly (5) up by hand, and remove the work clamp(1).

Removing the gimp trimming knives

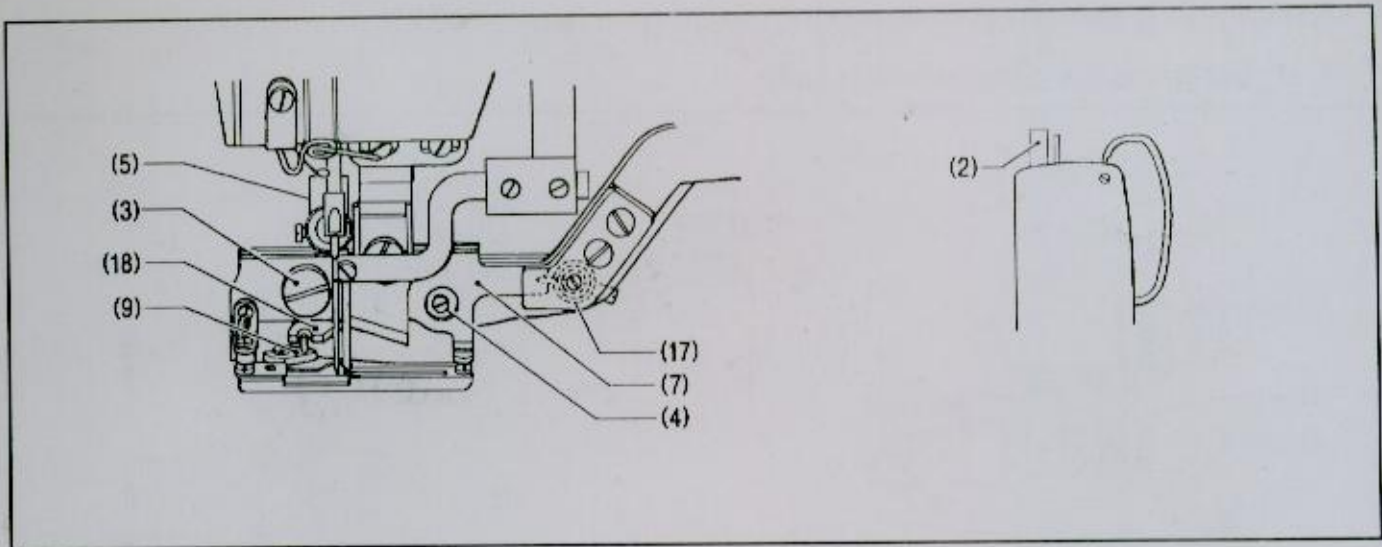
1. Remove the set screw (6), and then turn the work clamp supporter (7) 90 degrees.
2. Remove the screw (8), the gimp trimming crank (9), the upper thread retainer plate (10) and the gimp trimming knife (11).
3. Remove the set screw (12), the thread presser (13) and the gimp fixed knife (14).

* The gimp guide lever (15) can easily come off at this time, so make sure that it stays in place.



Installing the gimp trimming knives

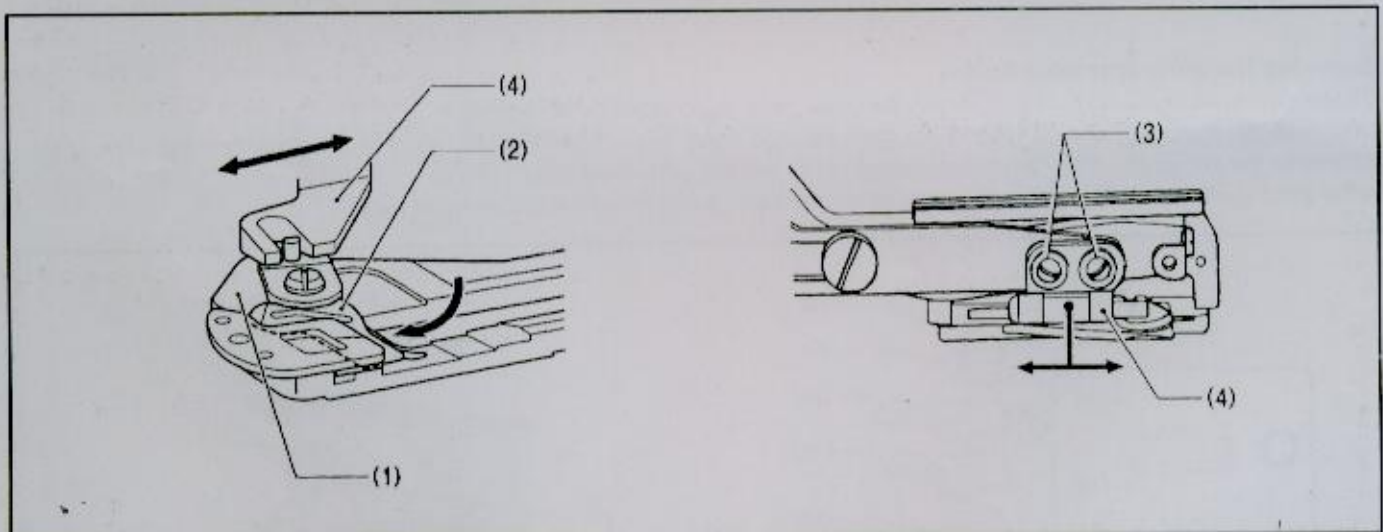
1. Place the gimp fixed knife (14) onto the screw (16).
2. Place the pin of the gimp guide lever (15) into the groove between the gimp movable knife (11) and the upper thread retainer plate (10), and then tighten the screw (8) to secure it together with the gimp trimming crank (9).
- * Be careful not to tighten the screw (8) if the gimp movable knife (11) and the upper thread retainer plate (10) are not correctly aligned with the gimp trimming crank (9). Also check that the parts move smoothly.
3. Tighten the thread presser (13) and the clamping foot supporter (7) with the screws (12).
4. Turn the work clamp supporter (7) back 90 degrees and tighten it with the set screw (6).



Installing the work clamp

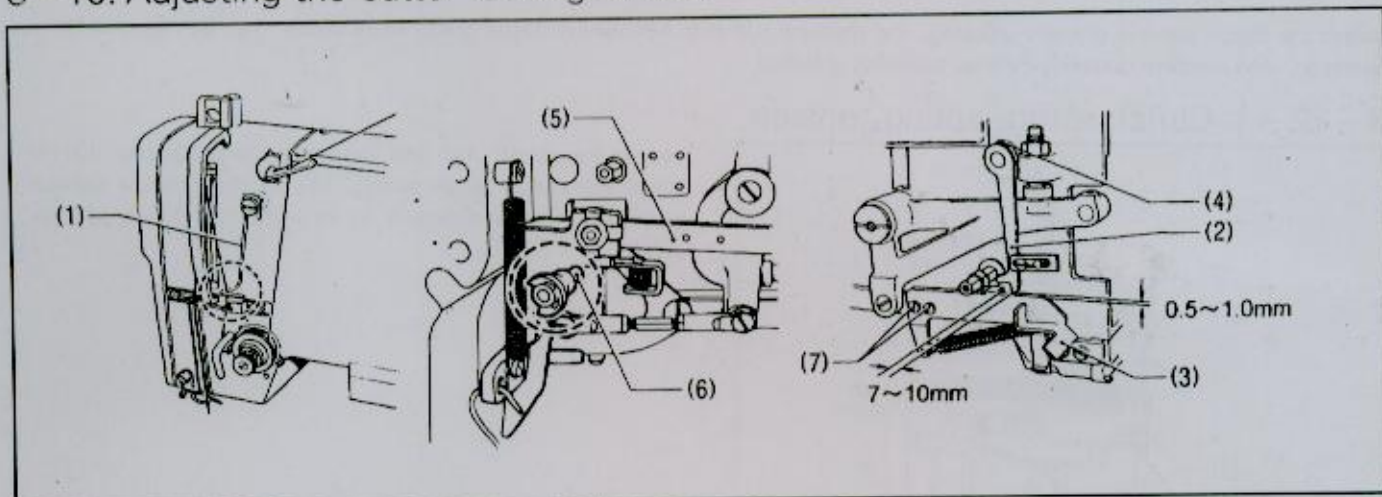
1. While raising the presser bar roller bracket assembly (5) by hand, fit the forked part of the work clamp supporter (7) over the support spring (17).
2. Fit the pin on the gimp trimming crank (9) into the forked part of the gimp trimming bracket (18), tighten the screw (3), and install the pin (4).
3. Tighten the stopper bar (2) fully.
4. Turn the feed handle to the machine stop position.

8-9-2. Adjusting the engagement of the gimp trimming knife



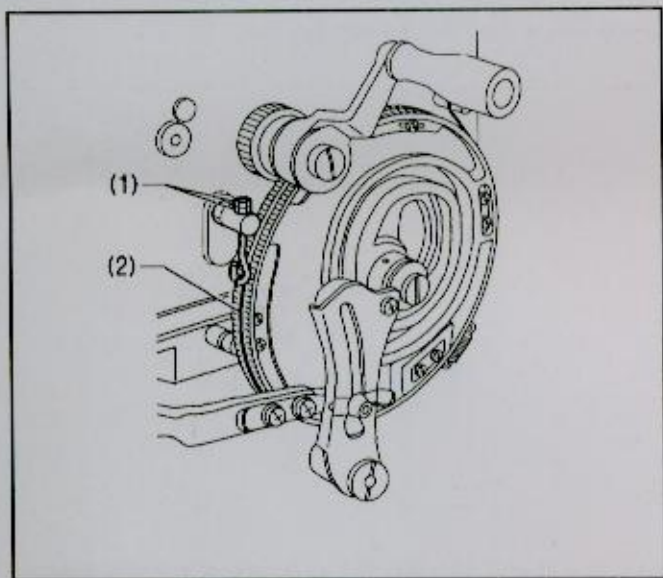
Loosen the set screws (3), and then move the gimp trimming bracket assembly (4) forward or backward so that the gimp fixed knife (1) will be parallel to the gimp trimming knife (2) when the gimp is cut.

8 - 10. Adjusting the cutter locking device



1. Loosen the screw (4) and adjust the clearance between the cutter lock arm (2) and the cutter lock lever (3) to 7 to 10 mm when that part of the upper thread which is at the tip of the thread breakage sensor (1) is taut.
2. Loosen the screw (7) and adjust the clearance between the cutter lock arm (2) and the cutter lock lever (3) to 0.5 - 1.0 mm when the cutter lever (5) shifts onto the cutter clutch bar (6).

8 - 11. Adjusting the cam brake



If the number of stitches has been reduced, overrunning of the feed cam may occur when the sewing machine stops. To avoid this, loosen the two nuts (1) and adjust the cam brake.

* If the cam brake wire (2) is tightened, the braking force becomes stronger, and when it is loosened, the braking force becomes weaker.

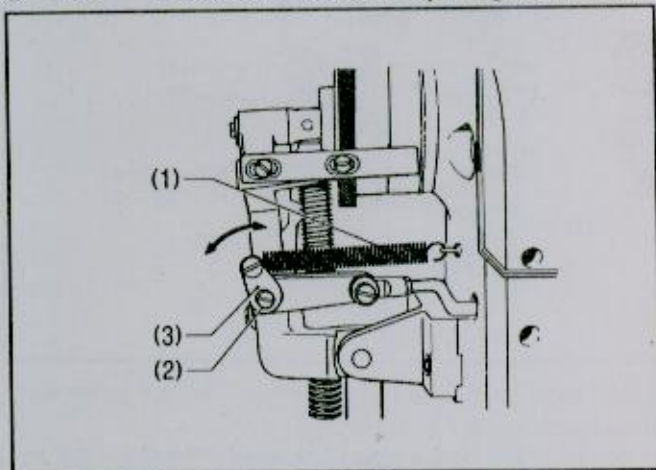
Note:

Take care to avoid getting your fingers or clothes caught in the feed cam while the cam cover is removed.

8-12. Adjusting the clutch brake

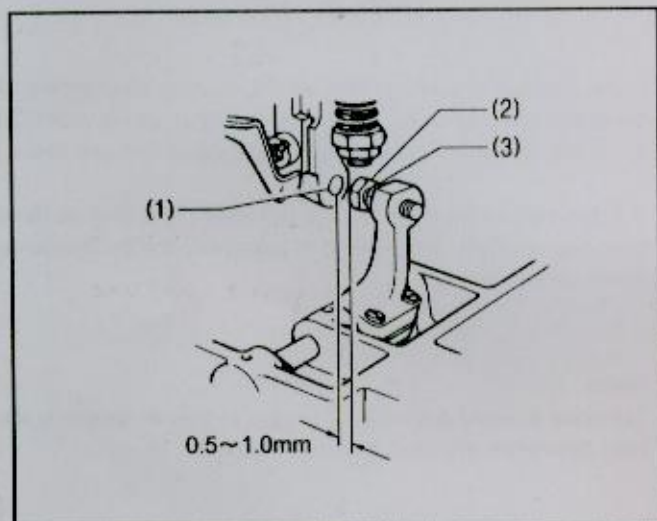
Unless the clutch brake is properly adjusted, the machine will stop half way or fail to start, extra power may be required for operation, and machine durability may be adversely affected.

8-12-1. Clutch return spring tension



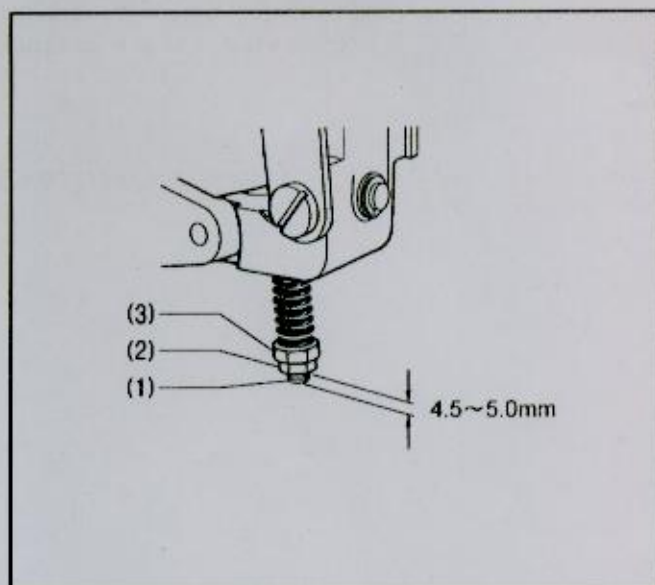
Loosen the screw (2) and move the spring adjuster (3) to adjust the clutch return spring (1) to the weakest tension possible which is sufficient to stop the clutch stopper securely.

8-12-2. Clearance of the clutch start lever



Loosen the nut (1) and turn the bolt (2) to adjust the clearance between the clutch lever pin (3) and the bolt (2) to 0.5 to 1.0 mm at the machine stop position.

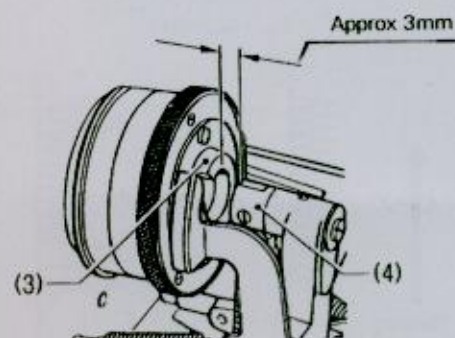
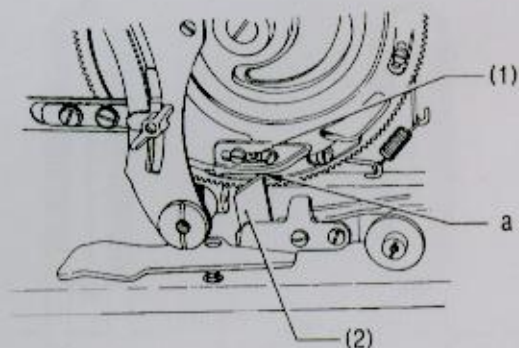
8-12-3. Stop spring tension



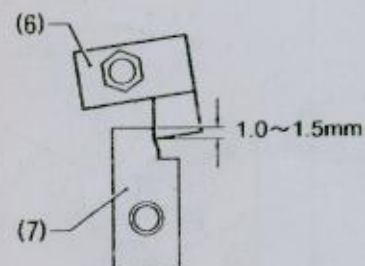
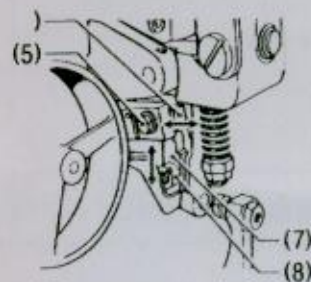
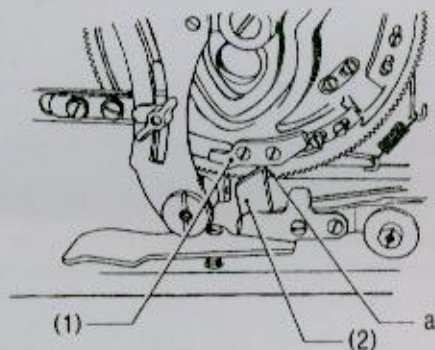
Turn nuts (3) and (2) until the lower end of the stop spring shaft (1) is protruding 4.5 to 5.0 mm from the bottom of the nut (2).

8-12-4. Adjusting the clutch pawl

(-01, -02, -04)



(-03)



Clutch pawl A adjustment

Loosen the bolt (5) and move clutch pawl A (6) to the left or right to adjust so that the distance between the top of the stop cam (3) and the clutch stopper (4) is approximately 3 mm when the point of stop cam piece B (2) comes to part a of stop cam piece A (1).

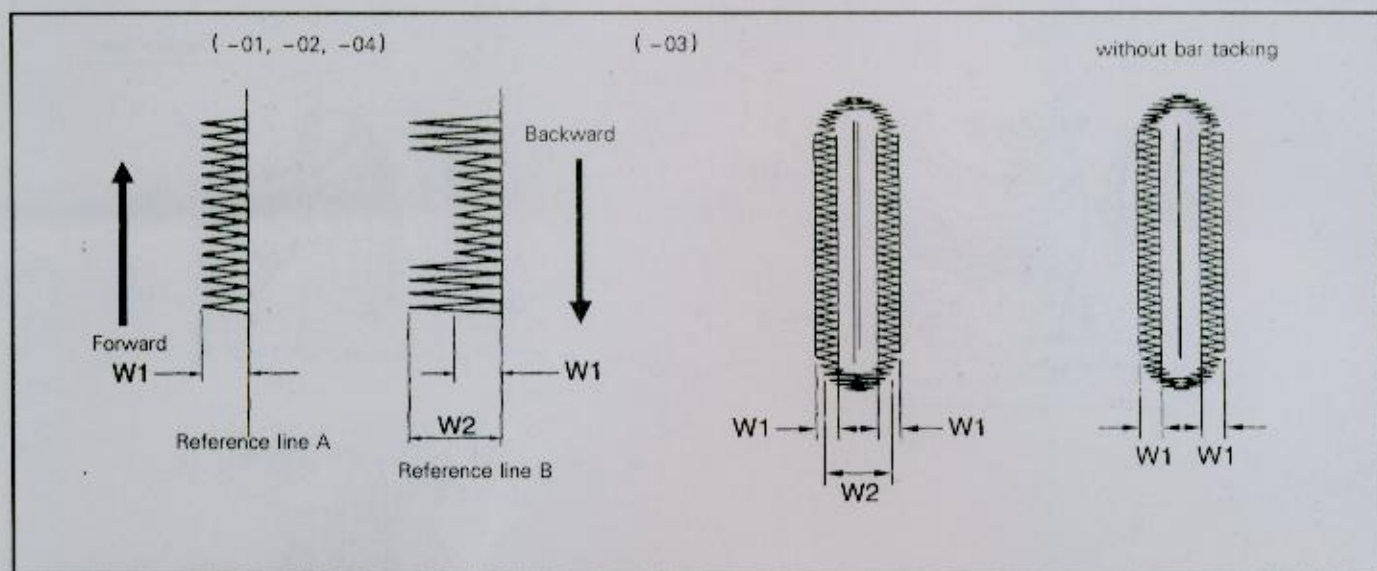
Clutch pawl B adjustment

Loosen the bolt (8) and move the clutch pawl B (7) up or down so that the clutch pawl B (7) engages clutch pawl A (6) by 1.0 to 1.5 mm when the point of stop cam piece B (2) comes to part a of stop cam piece A (1).

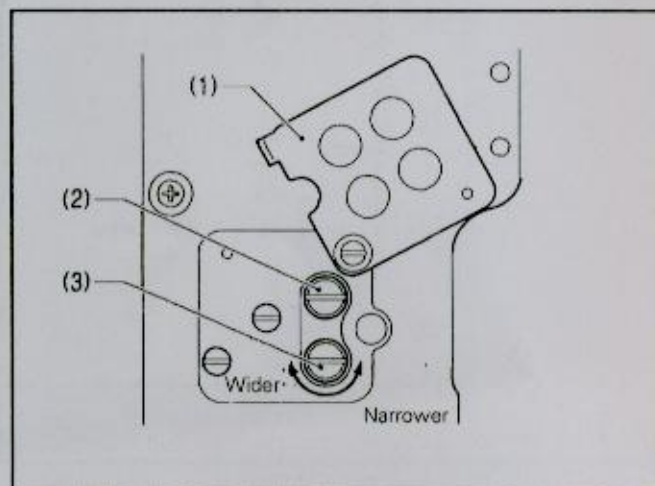
8 – 13 Adjusting the buttonhole stitch width and reference position

On both up and down strokes, this machine uses the right side as the reference line for zigzagging the needle left.

For sub – class – 4, a better finish for gimp sewing can be obtained by increasing the bar tacking width. Buttonholes can be finished with only zigzag stitches without bar tacking.



8 – 13 – 1. Buttonhole stitch width

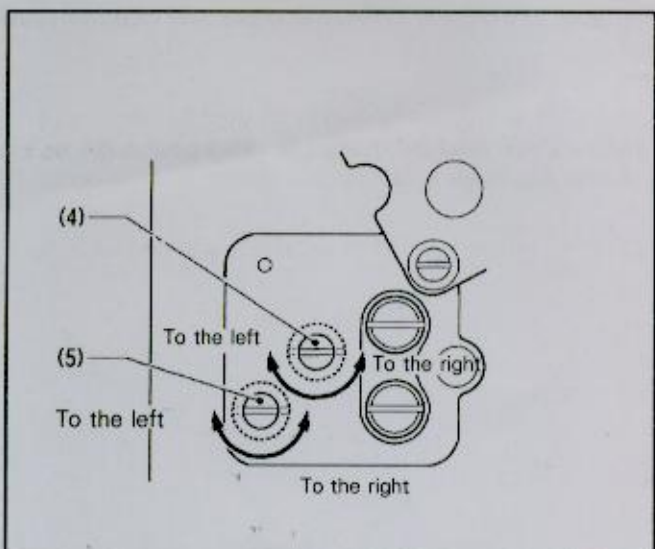


1. Open the cover (1).
2. Adjust zigzag stitch which W1 with the adjusting screw (2) (adjusting screw (3) for sub – class – 4), and bar tacking width W2 with the adjusting screw (3) (adjusting screw (2) for sub – class – 4).

* The zigzag stitch width increases as the screw is turned to the right, and decreases as the screw is turned to the left for both adjusting screws.



8 – 13 – 2. Reference position



Reference line A

Turn the screw (4) to the right to move the reference line A toward the left.

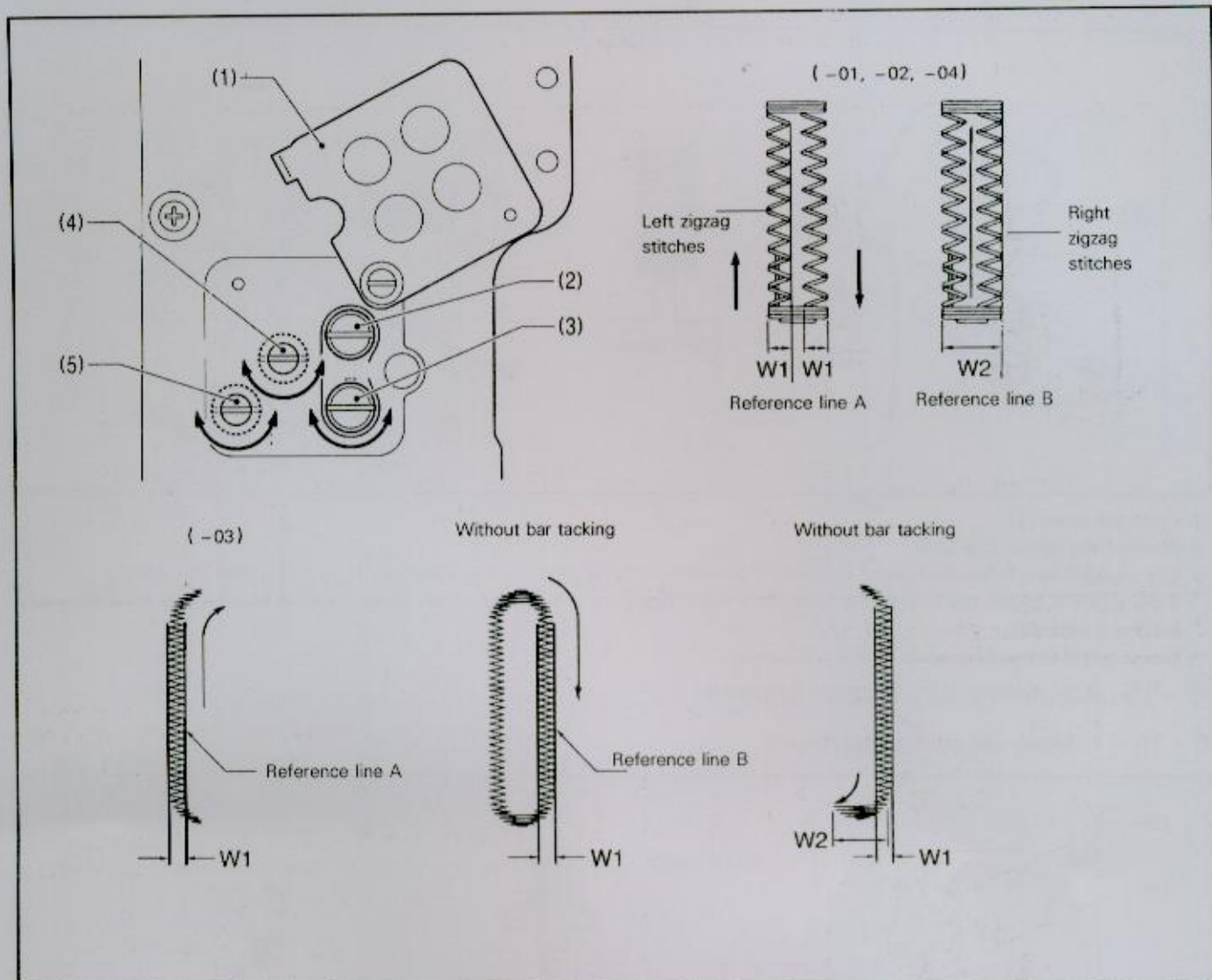


Reference line B

Turn the screw (5) to the right to move the reference line B



<Follow the procedure below when changing the stitch width and stitch reference position>



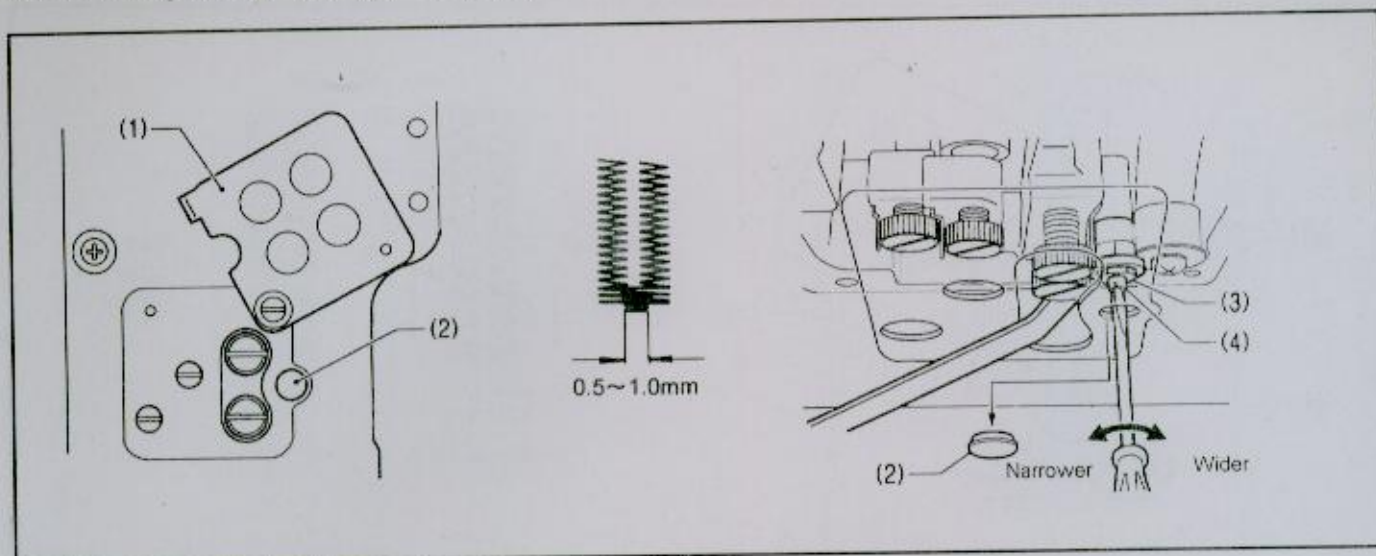
1. Open the cover (1).
2. Adjust the reference line A with the adjusting screw (4) so that the left zigzag stitches will not be cut when the cutter drops.
3. Adjust zigzag stitch width W1 with the adjusting screw (2) (adjusting screw (3) for sub-class -03).
4. Adjust the reference line B with the adjusting screw (5) so that the right zigzag stitches will not be cut when the cutter drops.
5. Adjust bar tacking width W2 with the adjusting screw (3) (adjusting screw (2) for sub-class -03).
- * The bar tacking width varies with manual turning and high-speed operation due to different thread tensions. Adjust it by actually sewing.
6. Close the cover (1) after adjustment.

* The needle swing width is adjustable in excess of the work clamp width. If the bar tacking width is adjusted to more than 4 mm, or if a reference line is moved, turn the machine pulley by hand and make sure that the needle will not touch the work clamp when sewing forward or backward.

Note:

After turning the machine pulley by hand, be sure to use the emergency stop lever to insert the clutch stopper into the stop cam. Then you may start the machine.

8 - 14. Adjusting the bar tacking width for sub - classes -01, -02 and -04



1. Open the cover (1)

2. Remove the rubber cap (2).

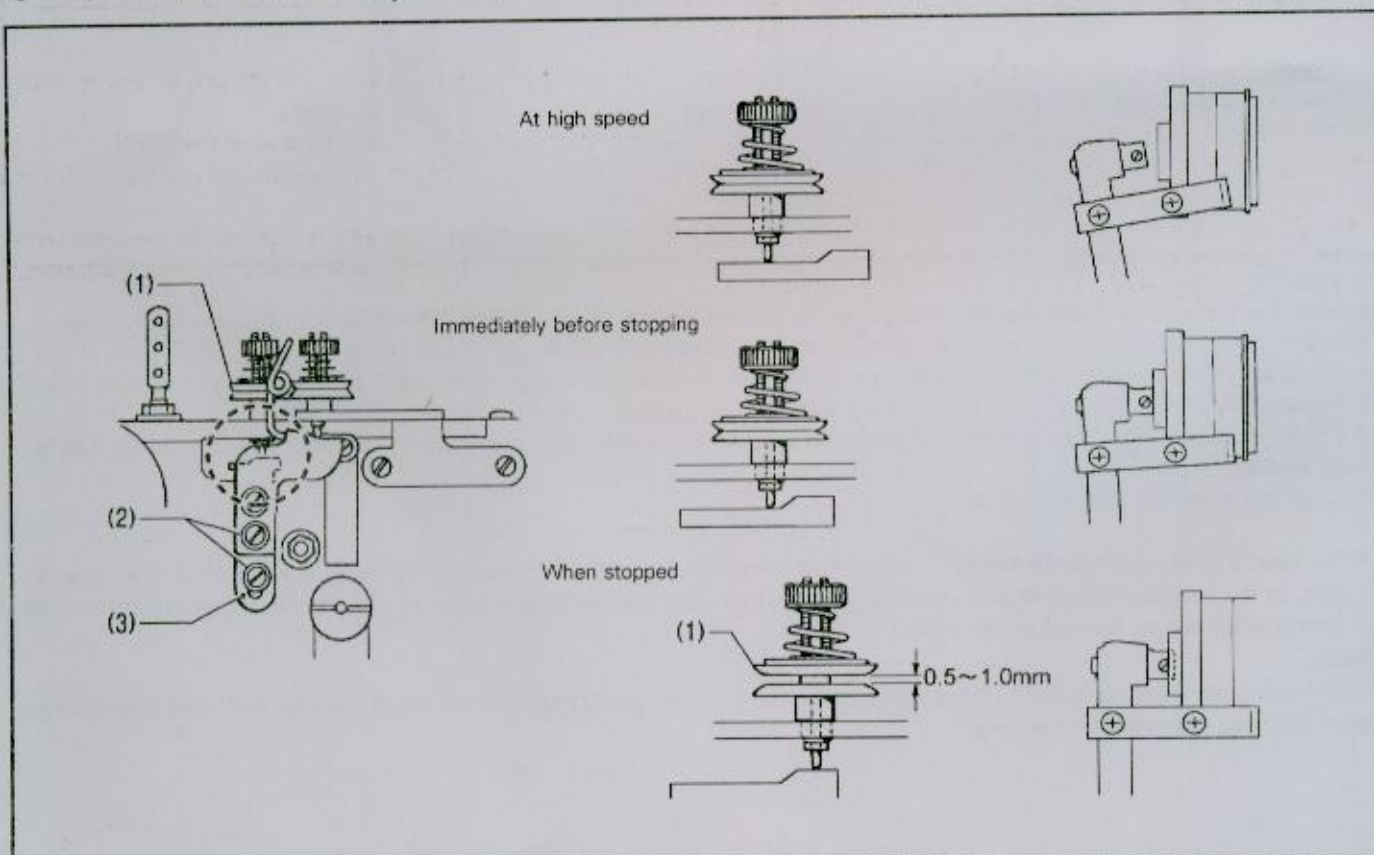
3. Use an Allen key to loosen the nut (3), and then use a screwdriver to turn the screw (4) to turn adjust the width.

* If the screw is turned clockwise, the bar tacking width becomes wider, and if the screw is turned counterclockwise, the width becomes narrower.

* The standard bar tacking width is 0.5 - 1.0 mm.

8 - 15. Adjusting the thread tension

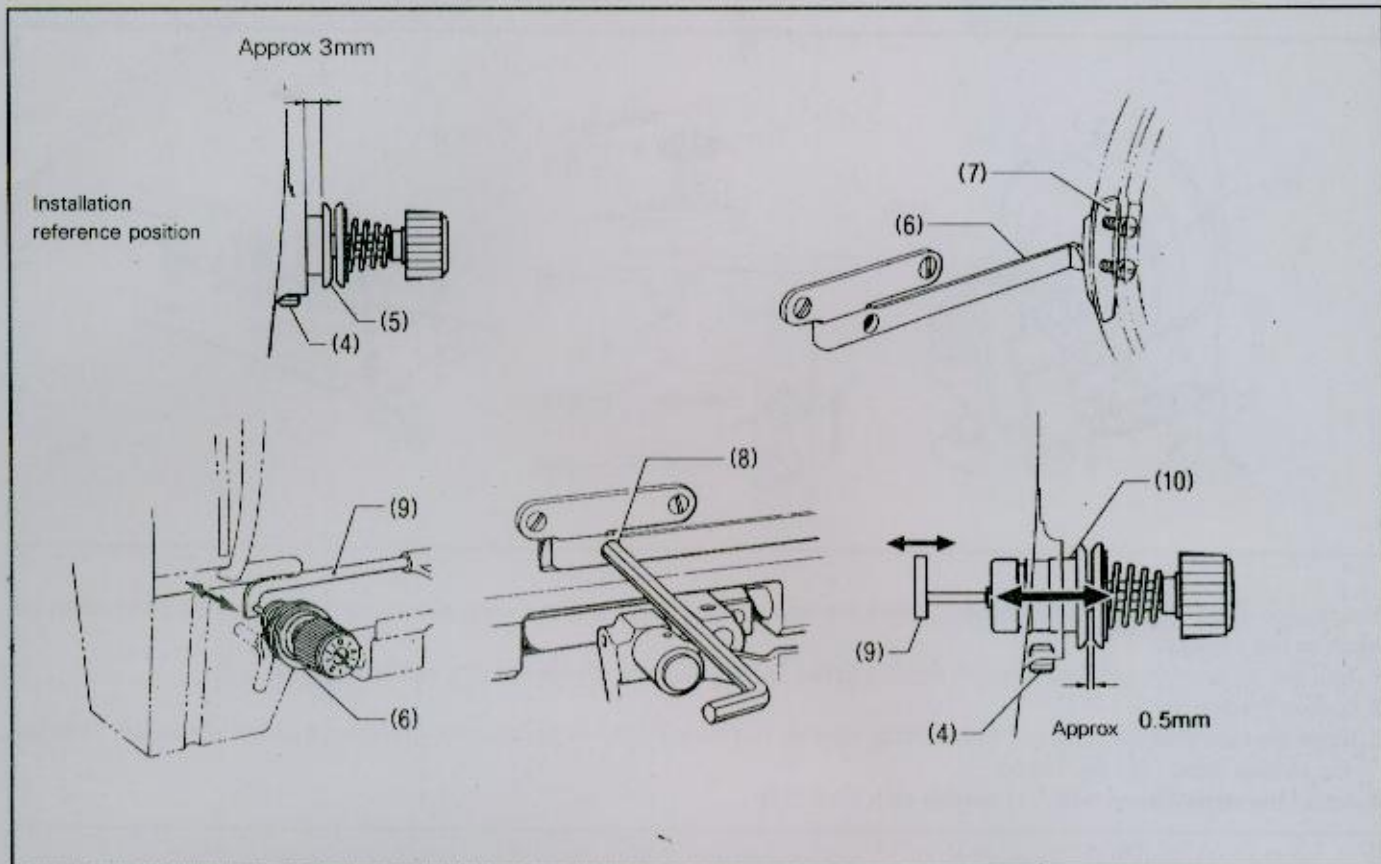
8 - 15 - 1. Main tension adjustment



The tension discs (1) are closed during high - speed sewing and immediately before sewing stops, and they open when the sewing machine stops. Loosen the two screws (2) and move the upper thread release plate (3) up, down or to the left or right to adjust.

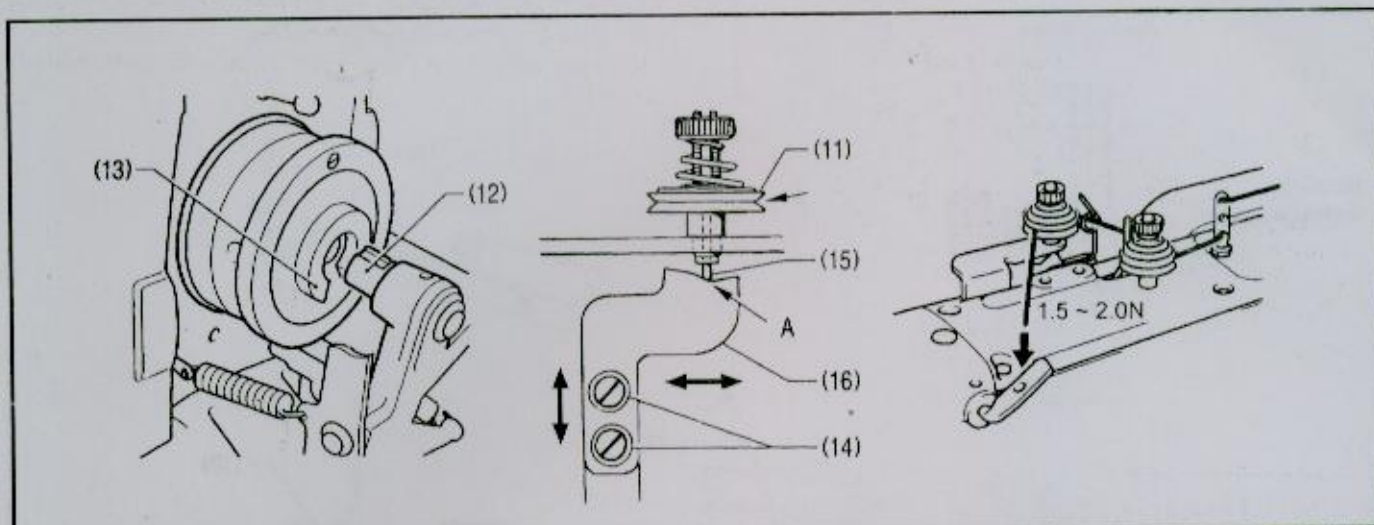
* After making this adjustment, be sure to carry out the adjustment in "8 - 15 - 3. Upper thread fastening adjustment".

8-15-2. Sub-tension adjustment



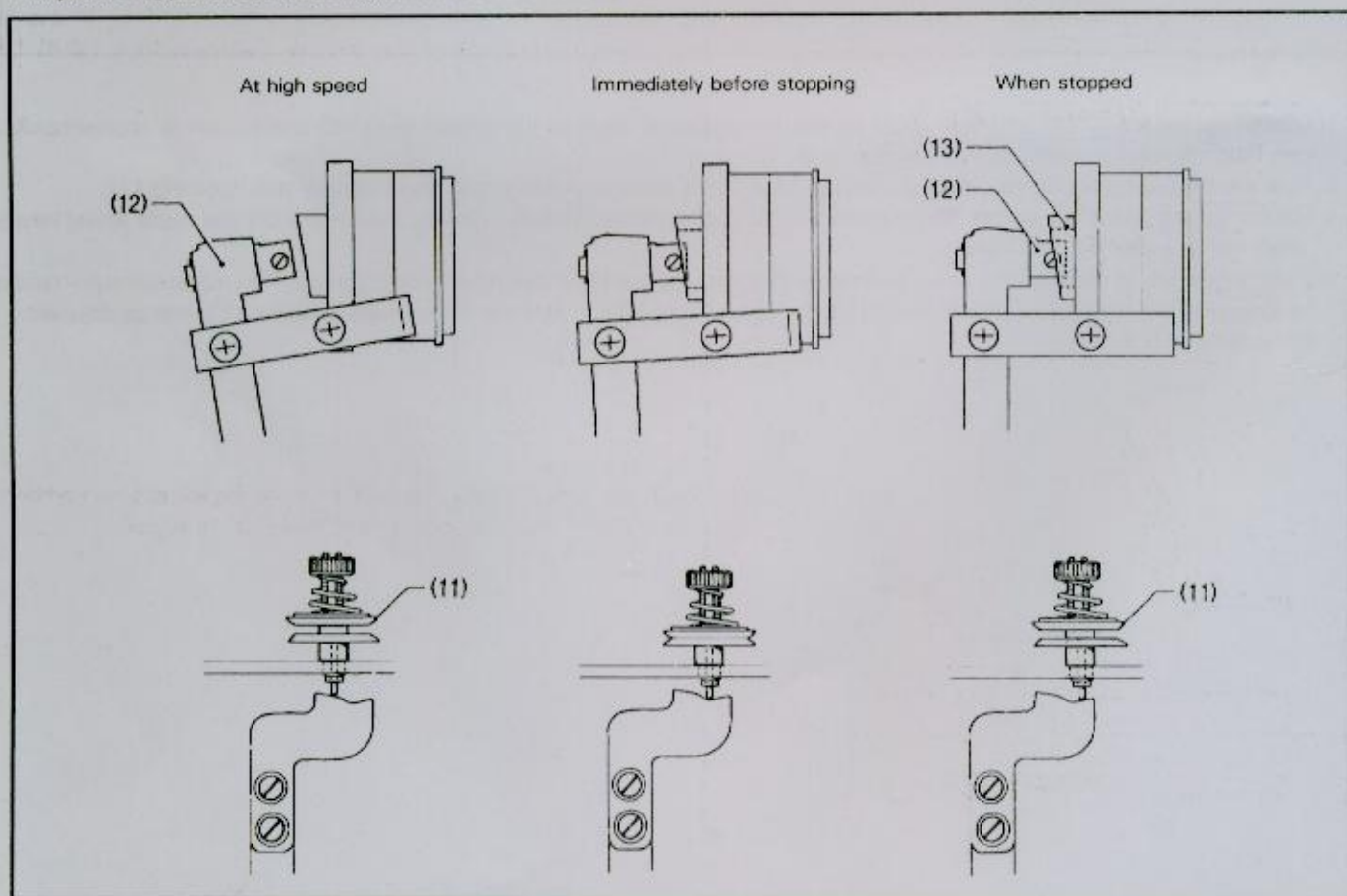
1. Loosen the set screw (4), and then adjust so that the clearance between the tension discs (5) and the arm is approximately 3 mm (sub-tension installation reference position).
 2. Turn the feed cam until the upper thread release lever (6) is positioned above the thread release cam segment (7).
 3. Loosen the set screw (8) so that the tension discs (5) open by approximately 0.5 mm, and then move the upper thread release shaft (9) to adjust the sub-tension.
- * If you would like to make further fine adjustments after carrying out the above adjustment, you can also adjust the sub-tension by loosening the set screw (4) and moving the tension bracket (10) in and out. (The tension bracket (10) can be adjusted horizontally by 0.5 mm.)

8-15-3. Upper thread fastening adjustment



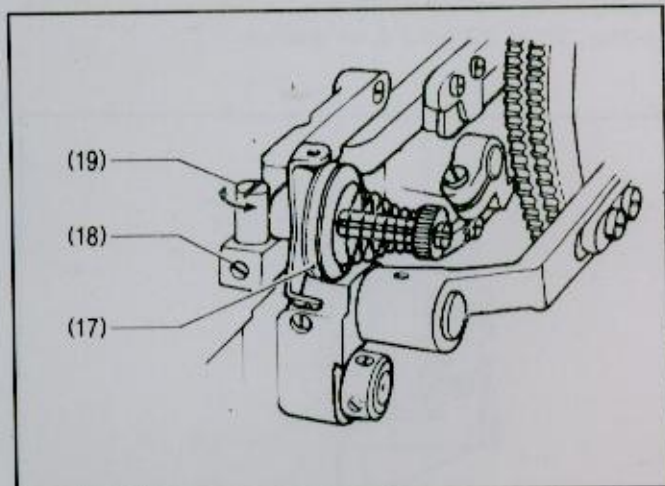
The tension discs (11) close immediately before the sewing machine stops, and open during high-speed sewing and when the machine has stopped.

1. Turn the upper shaft pulley so that the clutch stopper (12) is touching the lowest part of the stop cam (13).
2. Loosen the two screws (14).
3. Move the cam (16) up, down or to the left or right so that the pin (15) is positioned in the lowest part A of the cam (16) and the tension discs (11) are closed.
4. Adjust the upper thread fastening tension to 1.5 ~ 2.0 N.



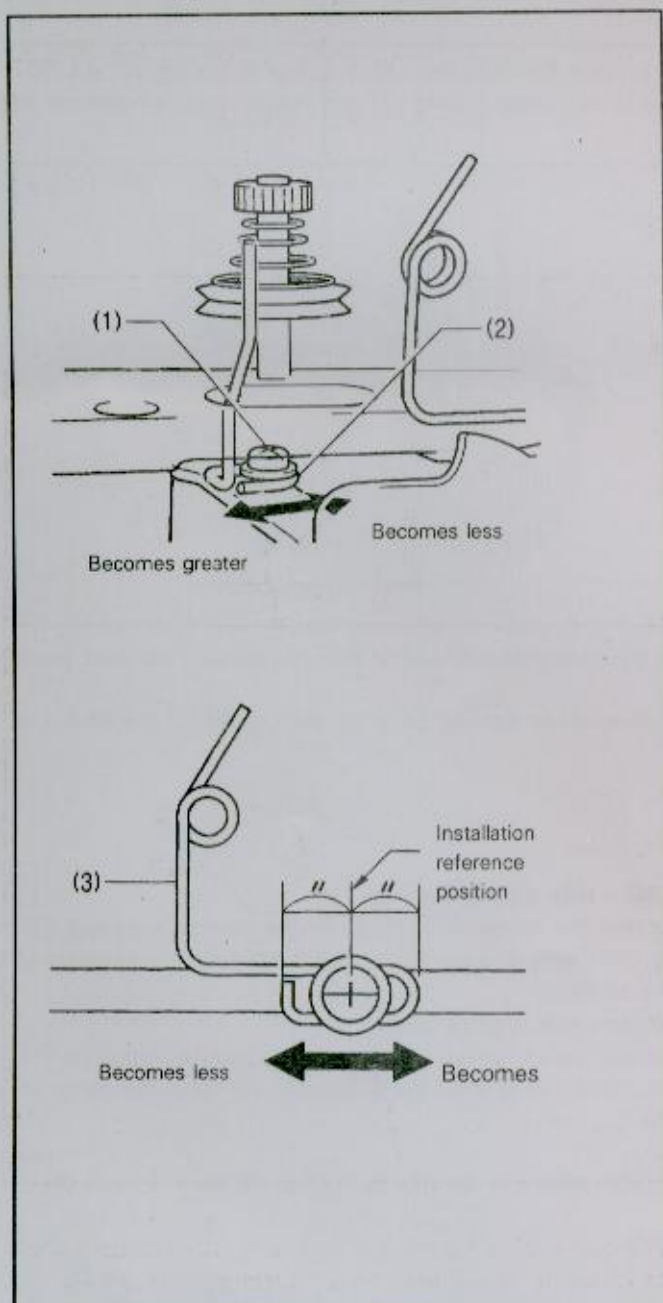
5. Check that the tension discs (11) are fully open when the clutch stopper (12) is set into the stop cam (13) (stopped), and also when the clutch stopper (12) starts moving (high speed). If this is not the case, repeat the adjustments in steps 1-4.

8-15-4. Adjusting the gimp tension regulator (sub-class -03)



The upper tension discs (17) tighten during high speed sewing, and rise as the machine stops. Loosen the stop screw (18) and adjust using the gimp release pin (19).

8-16. Upper thread take-up adjustment



Loosen the screw (1), and then move the thread holder (2) in the direction of the arrow to adjust.

* The upper thread take-up amount is set to 9 mm at the time of shipment from the factory. If you would like to change the upper thread take-up amount to 6 mm or less, turn the thread holder (12) 180 and then install it.

Note:

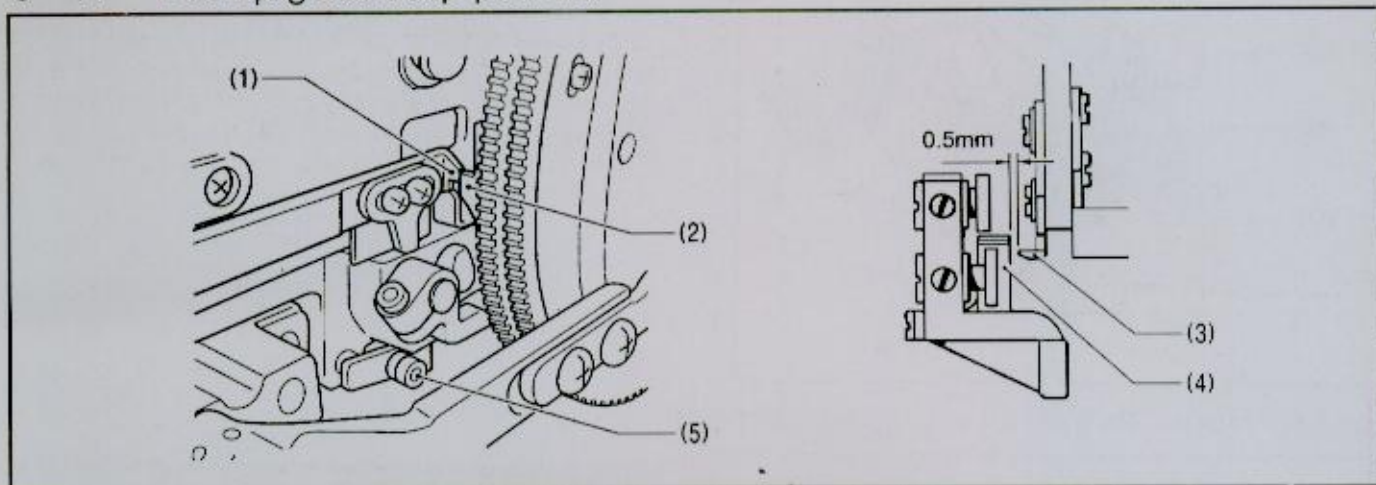
If the upper thread take-up amount is too small, the upper thread may pull out or the bobbin thread may lift up (the ends of the bobbin thread may become visible from the top of the material).

If you would like to change the upper thread take-up amount further, move the upper thread guide (3) to adjust.

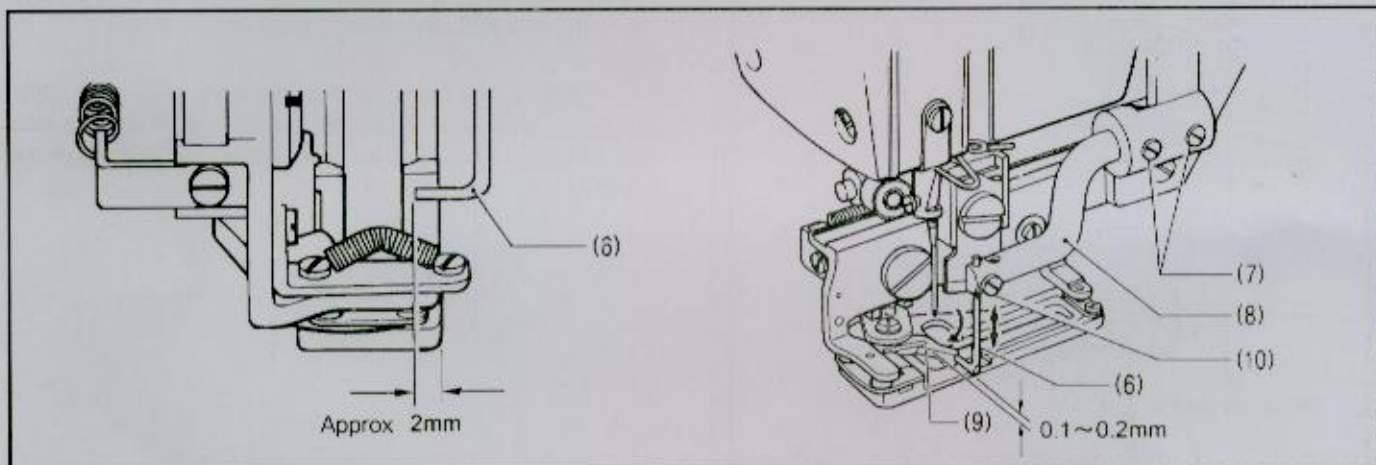
8-17. Adjusting the gimp guide position (sub-class -03)

Gimp sewing performance may drop if the buttonhole length, needle zigzag width, etc. are adjusted. If the distance between the needle and gimp guide is not correct, the needle may break. In such a case, adjust the gimp guide position.

8-17-1. Gimp guide stop position



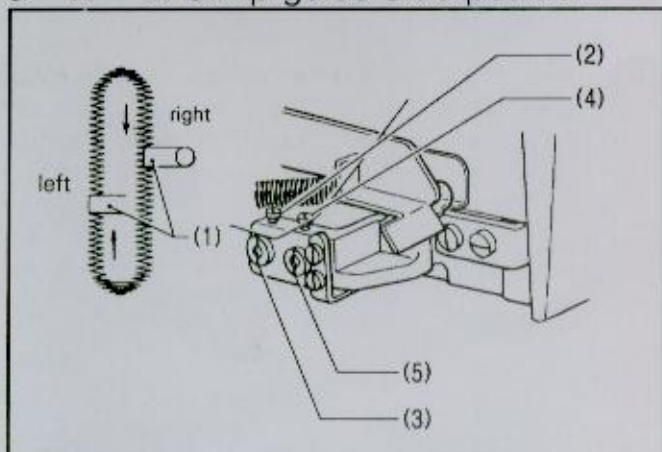
1. At the sewing machine stopping position (when the end of the gimp guide transfer lever (1) is on top of the zigzag cam (2)), loosen the bolt (5) and adjust so that the clearance between the gimp guide changing plate (3) and the gimp guide positioner (4) is 0.5 mm.



2. Loosen the stop screw (7) and turn the gimp guide bar (8) so that the gimp guide (6) will be about 2 mm over the work clamp when the machine stops.

3. Loosen the stop screw (10) and raise or lower the gimp guide (6) to adjust so that the tip of the gimp guide (6) will be 0.1 to 0.2 mm from the gimp trimming knife (9).

8-17-2. Gimp guide side position



Left-side zigzag sewing

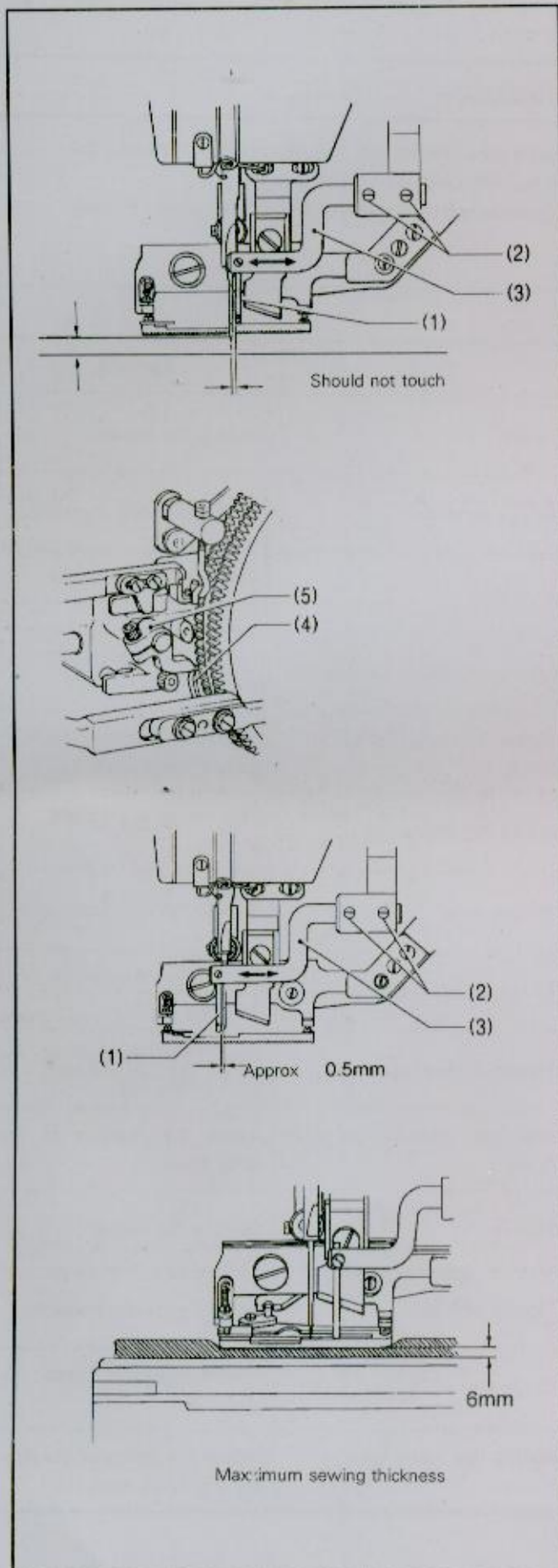
Loosen the set screw (2) and turn the position supporter (3) so that the tip of the gimp guide (1) will be at the left edge of the stitches.

Right-side zigzag sewing

Loosen the set screw (4) and turn the position supporter (5) so that the tip of the gimp guide (1) will be at the center of the stitches.

* After adjusting, be sure to retighten screws (2) and (4).

8-17-3. Gimp guide longitudinal position



Left - side zigzag sewing

1. With the sewing machine stopped, raise the cloth presser 6 mm, and then turn the handle to the left zigzag sewing position.
2. Check that the gimp guide (1) and the needle are not touching each other. If they are touching, loosen the set screw (2) and move the gimp guide bar (3) forward or back so that the gimp guide (1) and the needle do not touch.
3. Turn the handle and check that the gimp guide (1) does not touch the needle.

Right - side zigzag sewing

Turn the handle until gimp guide push lever B (5) disengages from the push cam (4), and then loosen the set screw (2) and move the gimp guide bar (3) forward or backward until there is a clearance of about 0.5 mm between the gimp guide (1) and the needle.

Note:

Use material with a thickness that does not exceed 6 mm. If the material thickness exceeds 6 mm, the needle bar and the gimp guide may touch each other. When sewing heavy materials, check that the material thickness is 6 mm or less.

9. Troubleshooting

CAUTION



Turn off the power switch and disconnect the power cord before carrying out troubleshooting, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.

* The motor will keep turning even after the power is switched off as a result of the motor's inertia. Wait until the motor stops fully before starting work.

Problem	Cause	Check	Remedy
Upper thread breaks	Needle bent or blunt.	Needle	Replace the needle
	Needle is incorrectly installed.	Needle position	Install the needle correctly.
	Threading is incorrect.	Threading	Thread the upper thread correctly.
	Upper thread tension is too strong.	Main and auxiliary tension	Adjust to an appropriate tension.
	Needle and rotary hook timing is incorrect.	Needle and rotary hook timing	Adjust the timing of the needle and rotary hook.
Lower thread breaks	Lower thread tension is too strong.	Lower thread tension	Adjust to an appropriate tension.
	Oil and lint stick around the bobbin case.	Bobbin case	Remove lint and wipe off oil.
Gimp is not sewn on	Gimp tension is too strong.	Gimp tension disc	Adjust to an appropriate tension.
	Height of the gimp guide is wrong.	Height of gimp guide	Adjust the position of the gimp guide.
	Sideways position of the gimp guide is wrong.	Sideways position of gimp guide	Adjust the position of the gimp guide.
Skipped stitches	Needle bent or blunt.	Needle	Replace the needle.
	Needle is incorrectly installed.	Needle position	Install the needle correctly.
	Threading is incorrect.	Threading	Thread the upper thread correctly.
	Needle and rotary hook timing is incorrect.	Needle and rotary hook timing	Adjust the timing of the needle and rotary hook.

Problem	Cause	Check	Remedy
Poor thread tightening	Lower thread tension is too strong.	Lower thread tension	Adjust to an appropriate tension.
	Upper thread is not tight.	Upper thread tension	Adjust to an appropriate tension.
	Lower thread is not tight.	Lower thread tension	Adjust to an appropriate tension.
	Bobbin case threading is incorrect.	Bobbin case threading	Thread the bobbin correctly to match the sewing.
Needle breaks	Needle is incorrectly installed	Needle position	Install the needle correctly.
	Needle and rotary hook timing is incorrect.	Needle and rotary hook timing	Adjust the timing of the needle and rotary hook.
	Stitch width is incorrect.	Needle swing	Adjust the stitch width and stitch reference position.
	Gimp guide contacts needle.	Sideways position of gimp guide	Adjust the position of the gimp guide.
Gimp guide breaks	Gimp guide contacts needle bar.	Materials thickness	Use materials which are less than 6 mm thick.
	Gimp guide contacts needle.	Sideways position of gimp guide	Adjust the position of the gimp guide.
	Gimp guide contacts gimp trimming knife.	Height of gimp guide	Adjust the position of the gimp guide.
Thread end remains at start of sewing	Upper thread scissors position is too high.	Height of scissors D	Adjust the position of the upper thread scissors.
	Upper thread fastening is incorrect.	Upper thread fastening cam position	Adjust the position of the upper thread fastening cam.
	Upper thread fastening tension is too weak.	Upper thread fastening tension	Adjust the upper thread fastening tension.

- Besides adjusting stitch, please laypeople don't debug or maintaine.
- Parts are subject to changes in design without prior notice.

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