



GLOBAL

WF 35

Instruction & Parts manual

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Operation Instruction

1. Brief introduction

GC2301 and GC2603 cylinder bed series sewing machine are constructed with single straight needle, needle roller lever thread take-up, precise spiral gear transmission, twice big rotating hook and reverse feeding stitching mechanism. Both models feature stable and beautiful stitching, small force moment, low noise, smooth feeding of multilayer and uneven workpiece. And they are widely used in factories of garments, leathers, suitcases, shoes and caps. The cylinder beds are designed for various curved and rounded articles.

Difference between GC2301 and GC2603:

GC2301 features top&bottom feed, which is consisted of walking presser foot and feed dog. Top and bottom can be either synchronized to avoid slippage of slippy and bulgy workpieces, or differential for sewing of pleats.

GC2603 features compound feed, which is consisted of presser foot, needle and feed dog. This feed mechanism eliminate slippage between layers and can supply smooth sewing of elastic or slippy multilayer workpieces. Another advantage is the presser foot which is very close to the needle, this design make sewing easy for pleats, folds and tubes overseaming.

2. Main specifications

Model Specs	GC2301、GC2603
Max speed	2000 rpm
Presser foot lift	6.5mm by hand >13mm(by knee)
Sewing thickness	8mm for pu(less than 8mm for uneven articles
Needle	DPx17 18 [#] ~24 [#]
Rotating hook	Twice big rotating hook
Motor	370w, 1440 rpm(special Motor for sewing machine)

3. Machine installation and operation preparation

3.1 Machine installation

3.1.1 Location for installation

Machine should always be located on rigid flat floor to ensuring smooth running and little vibration. Rubber mats should be applied under machine stand for smoother running and lower noise.

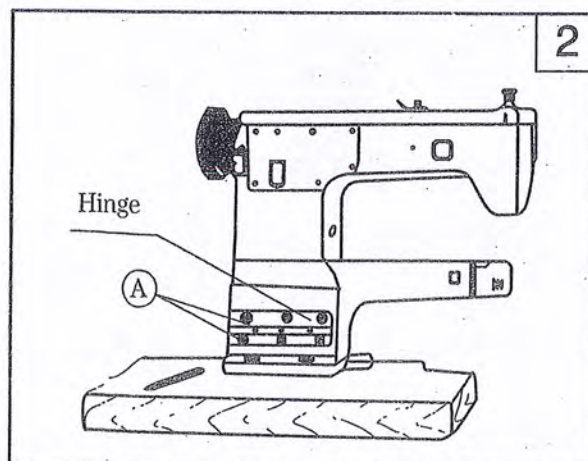
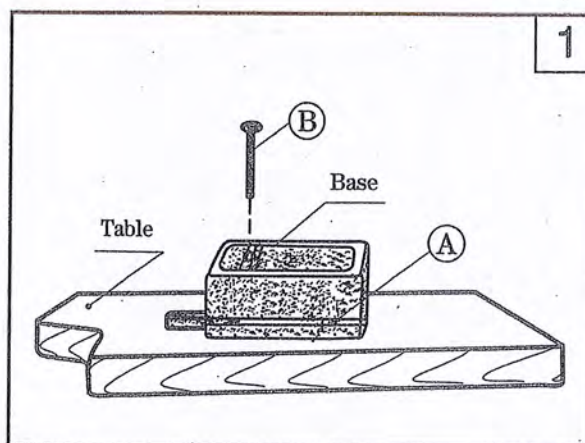
3.1.2 Setting up the machine base

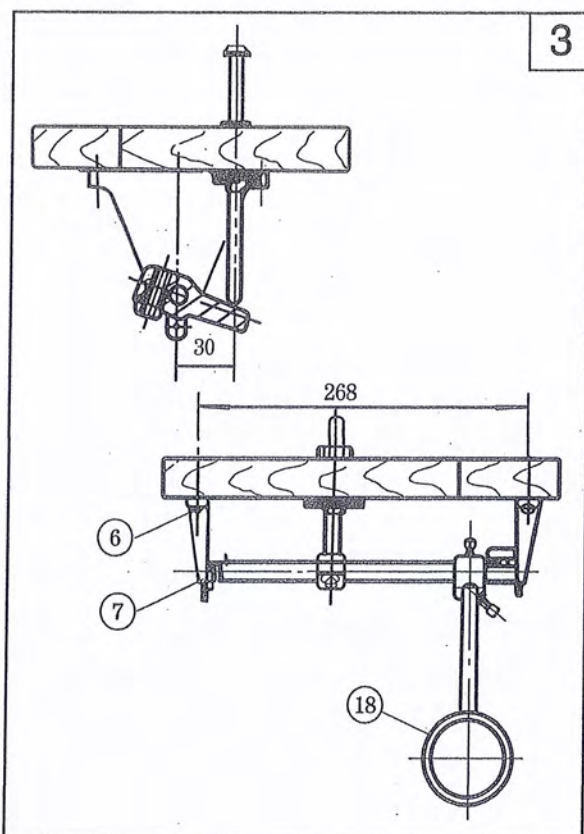
First of all the knee lifter pushing rod sleeve will be set into the table and fastened(see fig on page 44). Insert small oil pan into the bottom of machine base. Match the 4 screw holes in the machine base with the 4 of the table, and then screw with 4 bolts A..

Insert the knee lifter pushing rod B. In to the position hole in the machine base (fig.1).Micro-adjust the base to make rod B move freely in sleeve before fasten the 4 bolts A.

3.1.3 Installing the machine head (fig.2)

Fasten one side of the hinge on machine base. Then place the machine head on base and adjust position to make the 3 screw holes in the machine head fall exactly on the 3 ones in the other side of the hinge. Fasten with 3 bolts A.



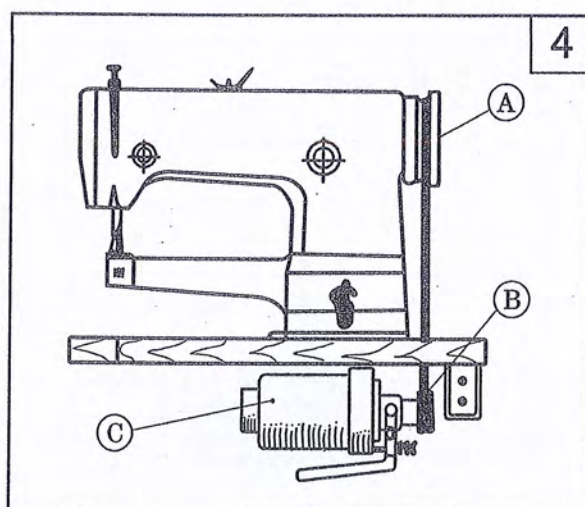


3.1.4 Installing the rockshaft bracket of knee lifter

See illustration on fig.3 and page 43.

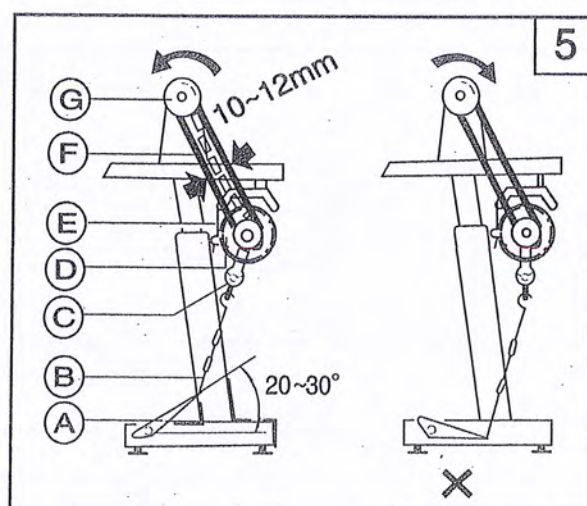
1) Knee lifter handle 18 can be adjusted for a comfort position, slight force and a proper swing angle as per the body of operator.

2) Adjust position of knee lifter assembly as per fig.3, and then fasten rockshaft bracket 7. With screws 6.



3.1.5 Installing the motor (fig.4)

Adjust motor C in horizontal direction to line the balance wheel belt groove with motor wheel groove. Be sure the belt doesn't touch the table.



3.1.6 Connecting the clutch rod with pedal (fig.5)

1) Angle of pedal with floor should be $20^{\circ} \sim 30^{\circ}$

2) Adjust the clutch of the motor so that clutch lever C. And draw bar B. Run in line.

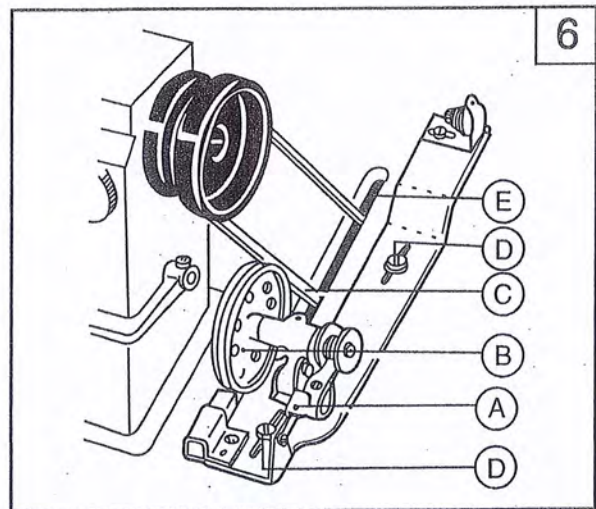
3) The balance wheel should rotate anticlockwise when face the balance wheel, the motor should rotate in the same direction. Motor can run in reverse direction if power supply are overturned

4) Tension of V-belt can be adjusted by change the height of motor.

Proper tension should cause span 10-12mm closer when press with fingers.

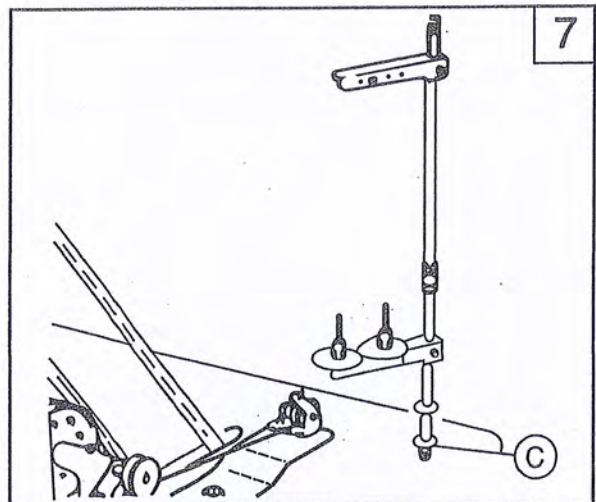
3.1.7 Installing the bobbin winder (fig.6)

Keep the winder pulley B. Align with belt while a clearance in between exist, and make sure they can touch each other when lever A. Is depressed—Thereby the winder pulley can be driven by belt when machine is running. Once again please take notice the bobbin winder should parallel with belt slit E before you fasten the 2 screws D.



3.1.8 Installing the thread stand (fig.7)

The thread stand should be erected on the left rear of the table. Threading should be smooth during sewing, the spool and stand should not be hit when the machine is pull down. Fasten the screw C. After position is okay



3.2 Preparation

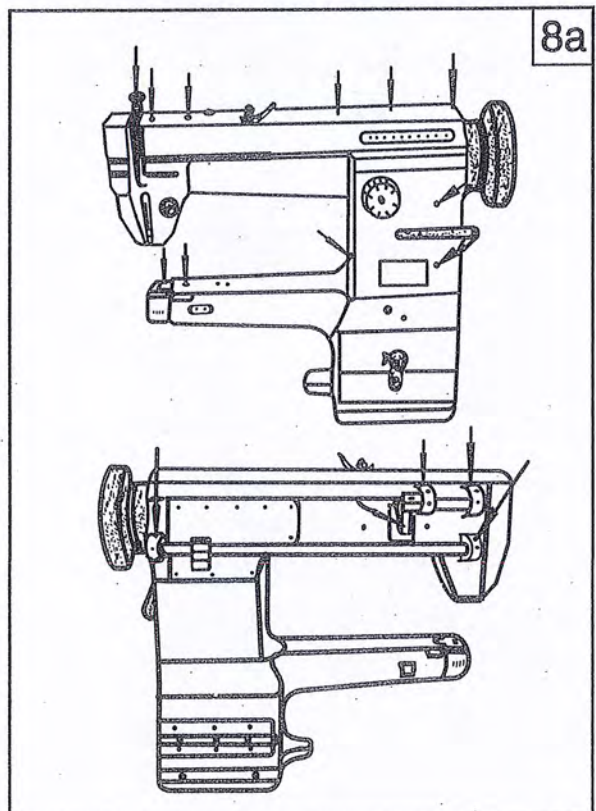
3.2.1 Cleaning the machine

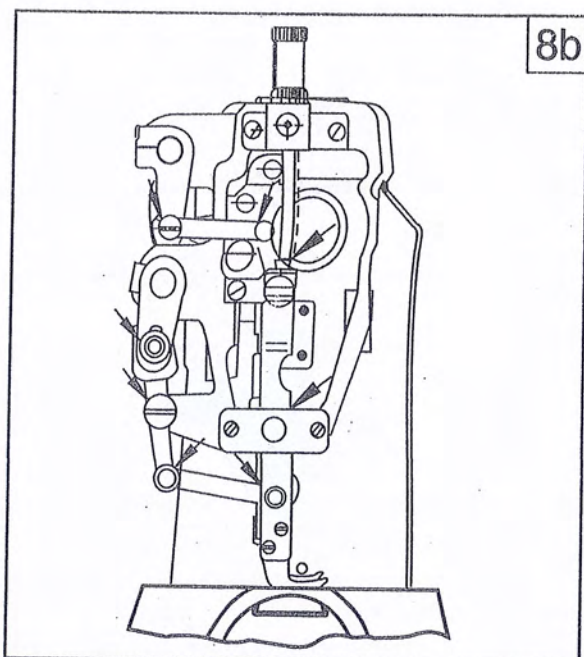
Every machine is oiled and greased to prevent rust before packing in the factory. This may cause grease coagulated and dust gathered on the machine during storage and shipping. So please clean grease and dust with gasoline and clean rags when you open the packing.

3.2.2 Examination

Although the machine is examined and tested carefully before delivery, some parts of the machine may be loosed or deformed by bumps and shakes in shipping. So a though examination is necessary after cleaning.

Turn the balance wheel to check if there be any running obstacle, bumps, other uneven forth or abnormal noise. Any of these should be corrected or solved before running.

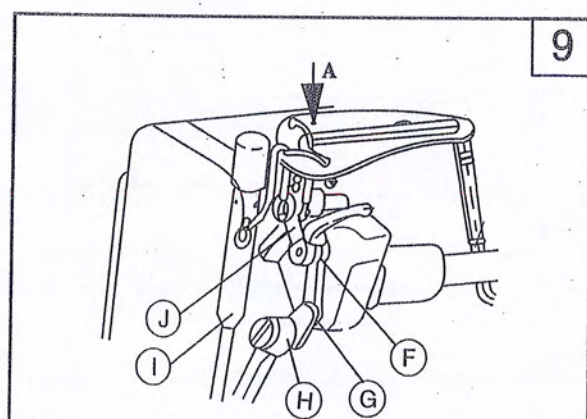
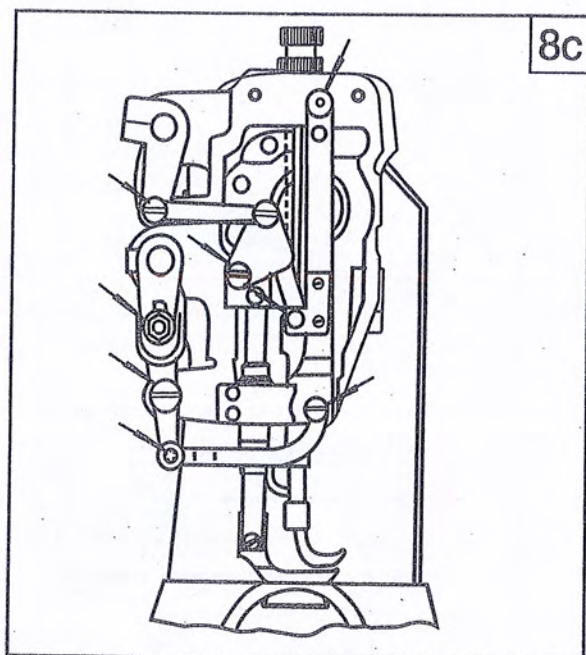




3.2.3 Lubrication

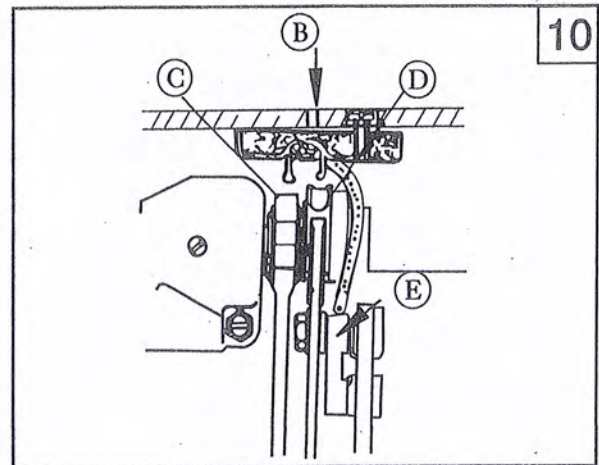
Parts marked by arrows (fig.8) need to be oiled before machine is run.

Oil no less than twice for each shift when the machine continues in operation. Only HA-8 or TJ-7 sewing machine oil should be applied



Oil applied to hole A is distributed to parts F, G, H, I and J through oil wick (fig.9)

Oil applied to hole B is distributed to parts C, D and E through oil wick (fig.10)

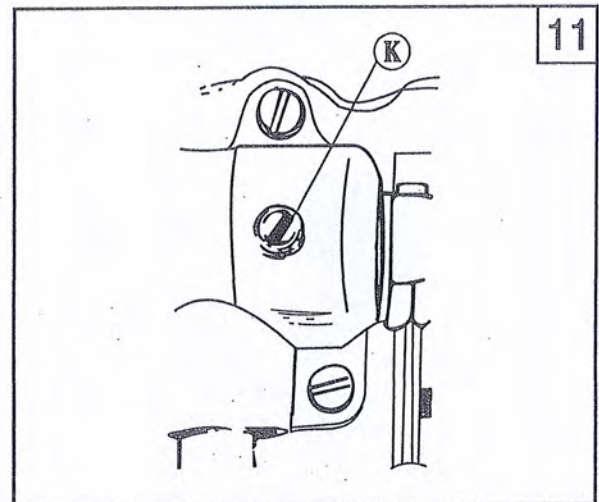


Gear case (fig.11) is filled with fine grease, which will be consumed during operation. Replenishment should be made periodically as follows:

Turn off plug K, add grease into the 2 screw holes, and then insert the plug. If remained grease in gear case is dirty, thorough replenishment should be made.

3.2.4 Trial run

Trial run is required for a brand new machine or a machine laid aside for a long term. Be sure the balance wheel rotates anticlockwise when face the balance wheel. Lift the presser foot, run in a low speed at first to check if everything is okay. Then speed up to 2000 rpm. Double check each part after several minutes' running. If everything is okay, the machine can be put into use.



4. Operation

4.1 Selection of the thread

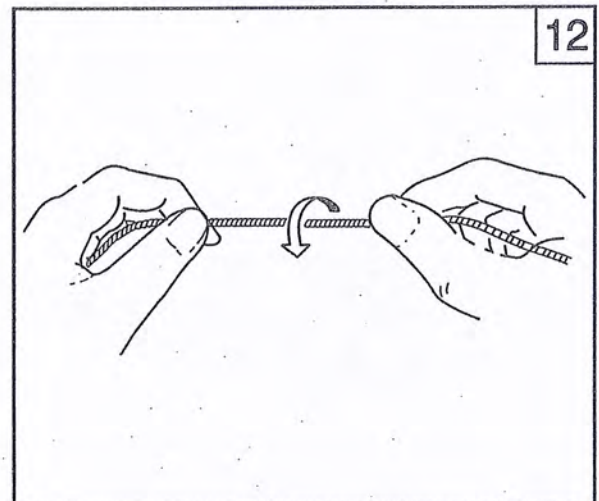
Needle should be applied with left-twisted thread. Bobbin thread can be either left or right twisted.

To identify the twist direction of a thread as follows:

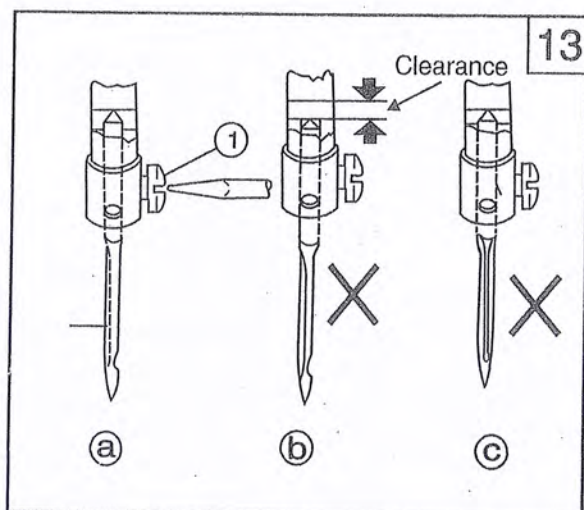
Hold the thread as shows. If the thread turns to be tight, the thread is left-twisted. Otherwise it's right-twisted.

4.2 Match the needle with thread and workpiece

Please use needle DPX17, 18#~24#. Select proper needle size in this range for different workpieces as per table as following.



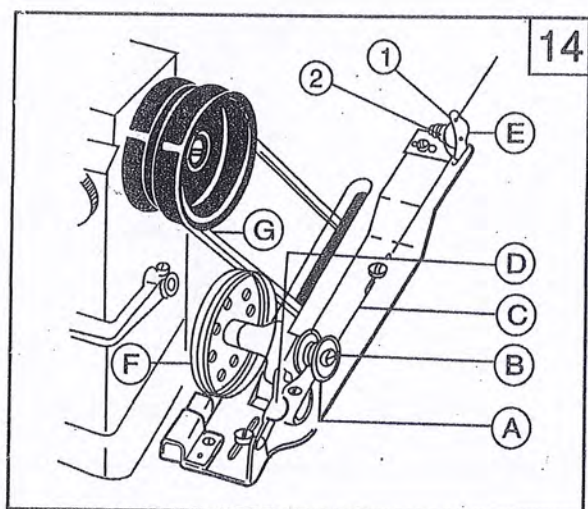
Needle Spec (Nm)	Thread and spec	Workpiece processable
110(18#)	Cotton thread 19.5~14(30#~42#)	Canvas, thick wool fabrics and etc.
120(19#)	Poly thread 14.5~9.5(40#~60#)	PU, leather and denim
125~180(20#~24#)	Poly, Mercerized thread 19.5~9.5(30#~40#)	Thick denim, PU, leather and suitcase



4.3 Installing the needle (fig.13)

Turn the balance wheel until the needle bar at its highest point. Loosen needle setscrew 1. Insert the needle shank completely into the hole in the needle bar, make sure the needle groove turn to left of operator, and tighten the setscrew.

Note: Fig.13(b) incomplete insertion, and Fig.13(c) Wrong direction of needle



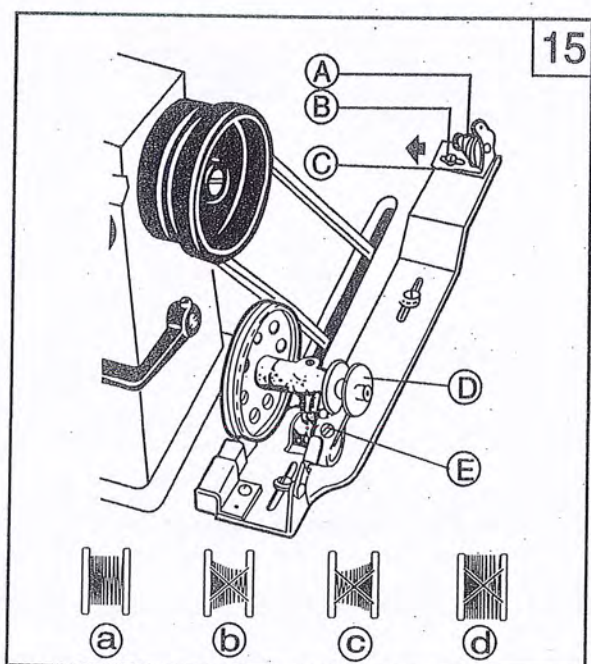
4.4 Winding the bobbin thread

1) Winding instruction (fig.14)

Insert bobbin A. Onto the bobbin winder spindle B.

Pass thread C. From the spool through eye 1 on thread guide E, then pass it between the tension discs 2, wind the thread onto bobbin for several turns. Press stop latch D to lock the winder pulley F on the belt G.

Start the machine to wind the bobbin. The machine will stop by it self when the bobbin is fully wound. Be sure to keep the presser foot lifted when you are winding without sewing.



2) Winding adjustment (fig.15)

The bobbin thread should be neat and tight. If it's not tight enough, adjust the thread tension by turning tension regulating screw A. If it's not neat, adjust the position of thread guide C. As this: Loosen thread guide setscrew B, move the thread guide rightward if thread gather as Fig.15(b). Move leftward if thread gather as fig.15(c). Tighten screw B when thread is wound as fig.15(a).

Note: Strong thread like nylon or polyester should be wound with light tension to prevent the bobbin being destroyed.

Bobbin should not be over filled to prevent from loosening down (fig.15(d)). A perfect winding is 80% get filled. And this can be adjusted by stop latch screw E.

4.5 Threading the needle and drawing the bobbin thread

Threading the needle as bellows:

Raise the needle bar to its highest point, lead the thread from the spool and pass it in the order illustrated in fig.16.

1)Lead the thread from the spool through the right hole in the thread guide 1, then through the two tension discs and pass through the left hole in the thread guide.

2)Then lead to left through the thread retainer 2 as illustrated.

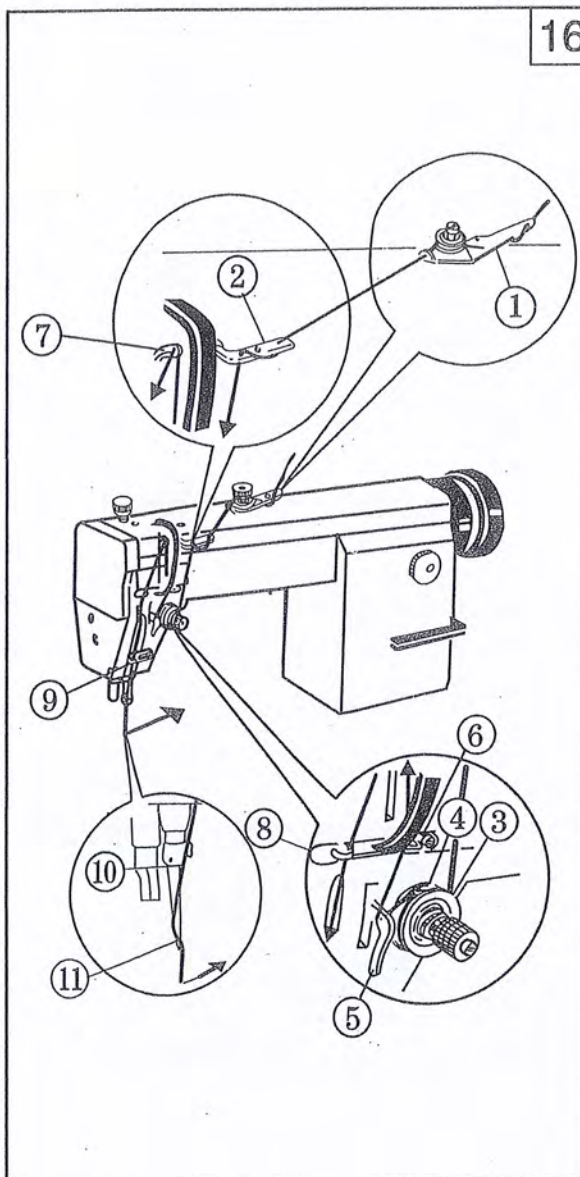
3)Pass down through between two tension discs 3.

4)Then through the hook of thread take-up spring 4. To left pass through thread guide 5 and 6. Then lead through the hole of thread take-up lever 7.

5)Turn down to pass thread guide 8, then the thread guard 9 on the needle bar bushing (lower)(On the machine Model 2603 is the lower thread guard)and needle bar thread guide 10. Then pass the thread from the left thru the eye of needle 11, draw out the thread from the needle eye by about 100mm.

Drawing the bobbin thread as bellows:

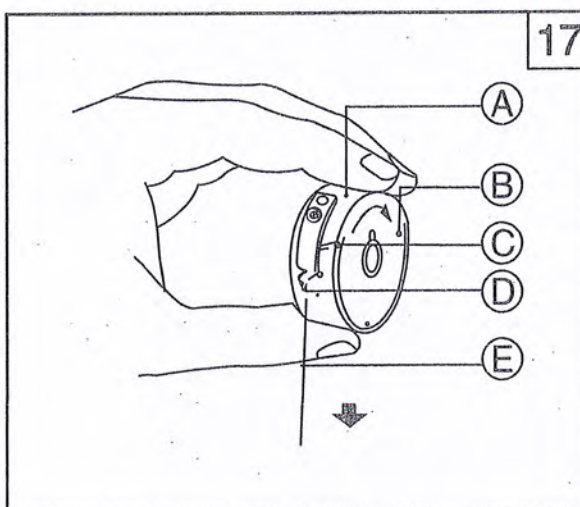
Raise the needle bar to its highest point,hold the needle thread and turn the balance wheel to make needle bar to lowest then highest again. Pull the needle thread then bobbin thread is drawn up. Put both thread under the presser foot.

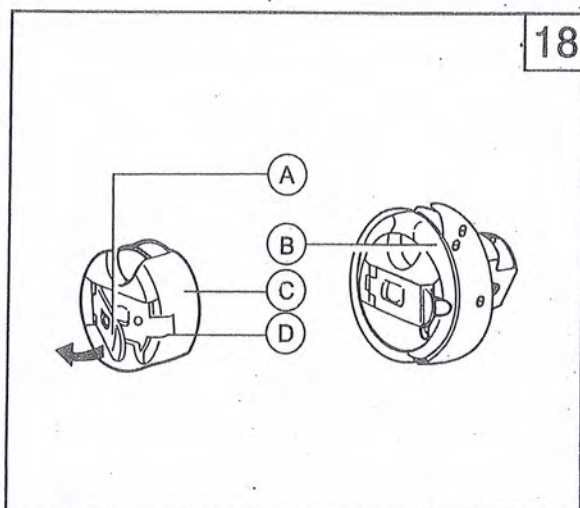


4.6 Inserting the bobbin (fig.17)

Put bobbin B. Into bobbin case, pass thread E thru slit C to lead it underneath the bobbin case tension spring D and out at the notch of the spring, draw out thread about 100mm.

Note: The bobbin case must be rotating clockwise when thread E is drawn. If not, reverse bobbin B.





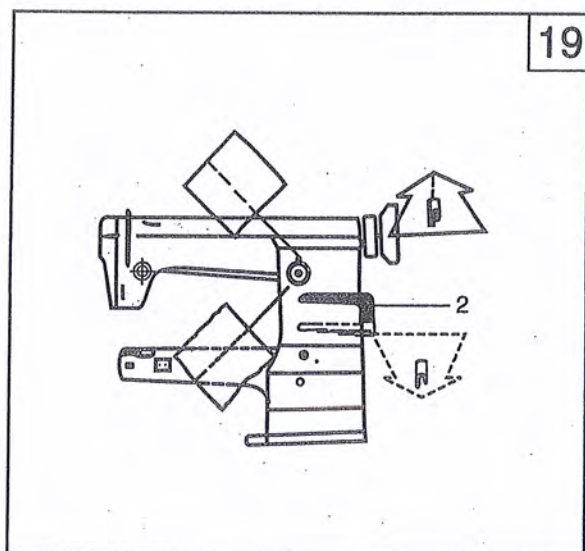
4.7 Inserting and removing the bobbin case (fig. 18)

Insertin

Raise the needle bar to its highest point. Open the hook cover A. Insert bobbin case C into rotating hook B as shown in fig.18. Make sure that the bobbin case latch D is engaged in the position groove of rotation hook spindle.

Removing

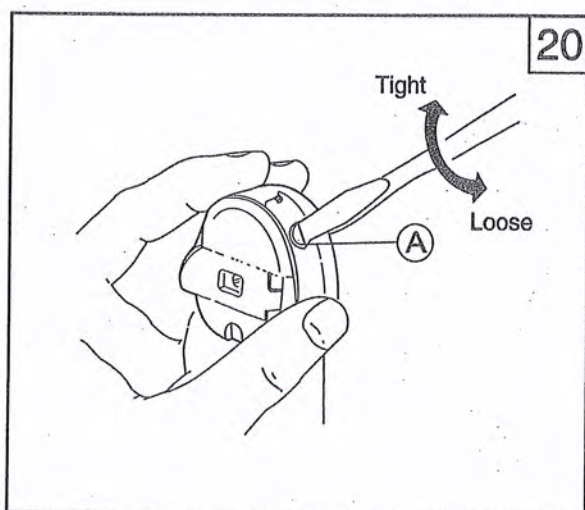
Open the hook cover fully, hold it by ringer carefully to prevent the bobbin from dropping out of the case. Then take out the bobbin.



4.8 Adjusting the stitch length and reverse stitching (fig.19)

Stitch length can be adjusted by regulating dial 1. Turn it anticlockwise to make stitch length bigger, or the reverse for smaller.

Press down reverse lever 2 to get reverse feed stitching. Loose it to shift back to normal feed stocking.



5. Thread tension

Thread tension should change with different workpiece and thread.

In practice, thread tension is examined by stitches obtained.

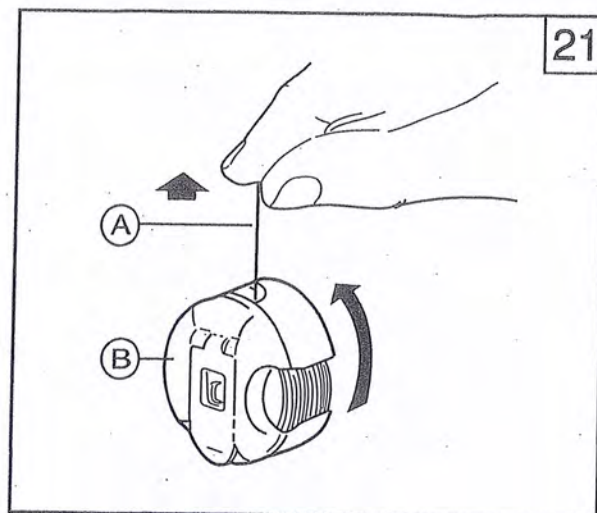
Needle thread tension should be adjusted with reference to the bobbin thread tension, which can be adjusted by turn the rubber screw A. On the bobbin case illustrated in fig.20

Normally the bobbin thread tension can be checked as fig.21 shown.. In case a 14 tex (42s) T/C string is applied as bobbin thread, The proper thread tension should allow bobbin case drop slowly by holding thread to swing up and down.

Needle thread tension can be adjusted by changing tension of the thread take-up spring, stroke of tension spring, tension of tension discs and the position of thread guide. All these adjustments will be described as follow.

5.1 Adjusting the thread take-up spring (fig.22)

The normal tension of the thread take-up spring is approx. 25~30g, and spring stroke is 5~8mm. For sewing light weight workpiece (small stitch length), weak the spring tension and widen the spring stroke. Do opposite for heavy duty sewing.

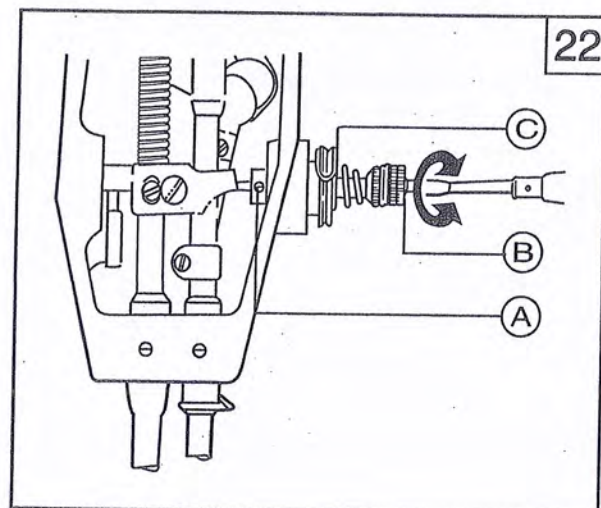


5.1.1 Adjust the tension of thread take-up spring (fig.22)

Loosen tension stud setscrew A. To free tension stud B. Turn B clockwise to enlarge spring tension, the reverse to reduce tension. Fasten setscrew A after adjustment.

Proper spring tension is approx. 45g, which can be obtained as bellows:

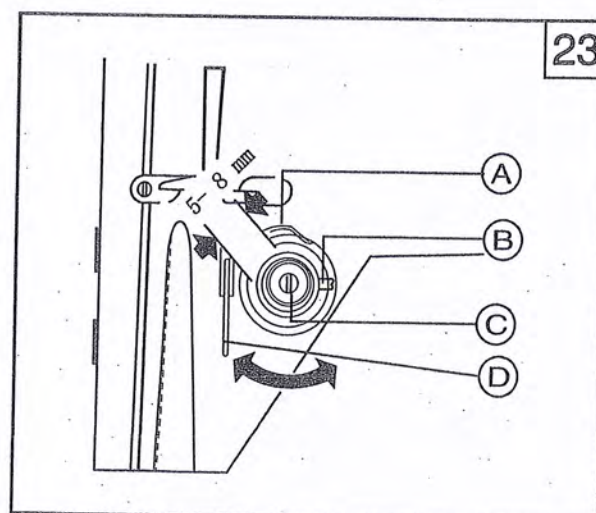
Loosen A first, then turn B anticlockwise to make spring tension zero, Continue to turn B anticlockwise until thread take-up spring C touch edge of th thread take-up spring regulator. Finally turn B. 180 clockwise and tighten setscrew A.



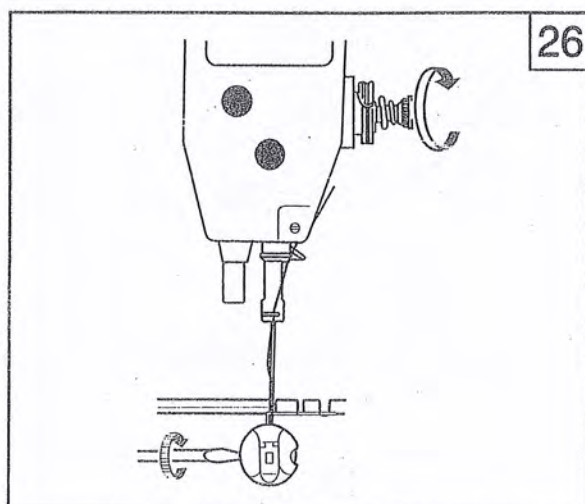
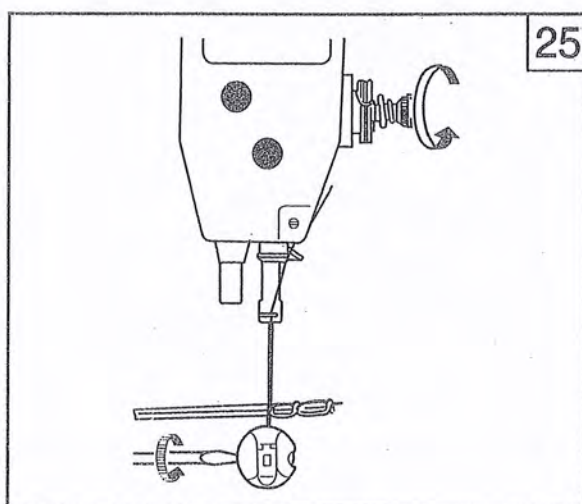
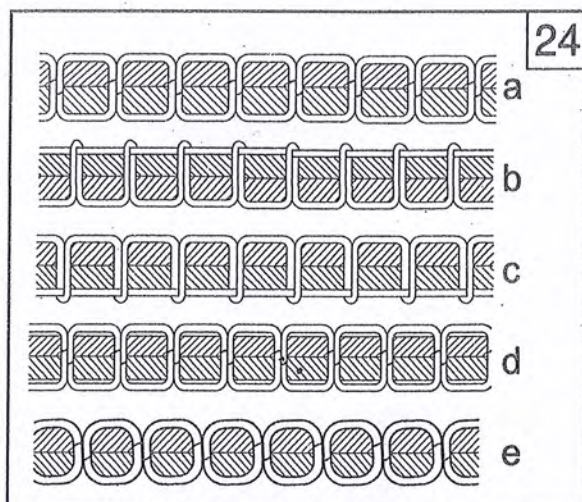
5.1.2 Adjust the stroke of thread take-up spring (fig.23)

Loosen tension stud setscrew A. To free tension stud. Turn tension regulator C clockwise to enlarge spring stroke, the reverse to reduce spring stroke

Normally, the thread take-up spring tension is properly adjusted before delivery, so no need to adjust it unless special workpiece or unusual thread is applied.



	Leftward	Center	Rightward
Thread guide position			
Material	Heavy	Medium	Light



5.2 Adjusting the thread guide

The position of the thread guide affects sewing quality, so it must be adjusted according to the materials to be sewn.

5.3 Adjusting the tension of needle and bobbin thread

Fig.24 shows the various type of stitch forms probably obtained during sewing.

Normal stitch form should be as shown in fig.24a. While abnormal stitches causes crinkle, loose or breakage of stitches which must be adjusted as bellows:

Fig.24b shows the needle thread tension is too strong or the bobbin thread tension too weak. Turn tension stud screw anticlockwise to make needle thread get less tension, or tighten the rubber screw on bobbin case to make the bobbin thread get more tension (fig.25)

Fig.24c shows the needle thread is too weak or the bobbin thread tension too strong. Turn tension stud screw clockwise to make needle thread get more tension, or loosen the rubber screw on bobbin case to make the bobbin thread get less tension (fig.26)

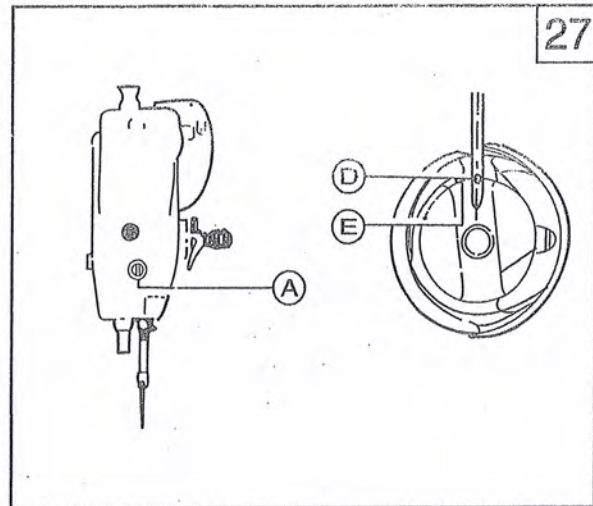
Fig.24d shows both needle and bobbin thread tension too weak, while fig.24e shows both tension too strong. Adjustment can be made with reference to the above means

6. Adjustment of the machine

6.1 Needle-to-hook relation

6.1.1 Adjusting the needle bar height (fig.27)

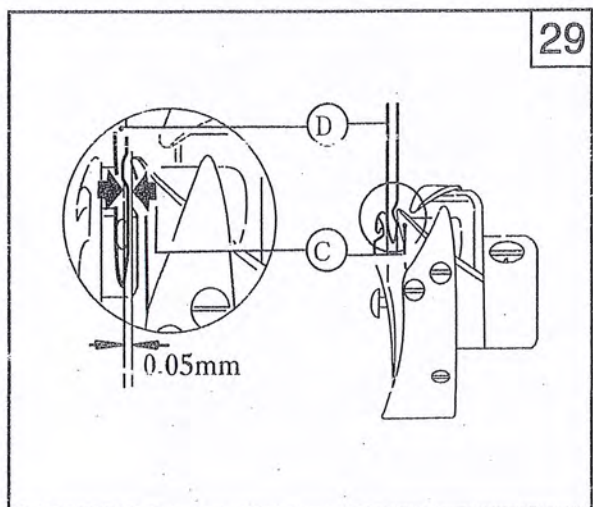
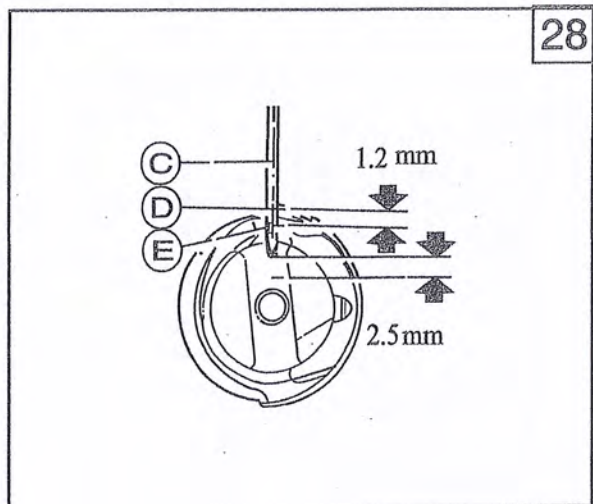
Turn the balance wheel to locate needle bar at lowest position. Remove the rubber plug(GC2301) or face plate (gc2603), then loosen needle bar joint screw A. Move needle bar vertically to make center of needle eye D coincide with inside circumference E of rotating hook. Tighten screw A, put on the rubber plug of the face plate.

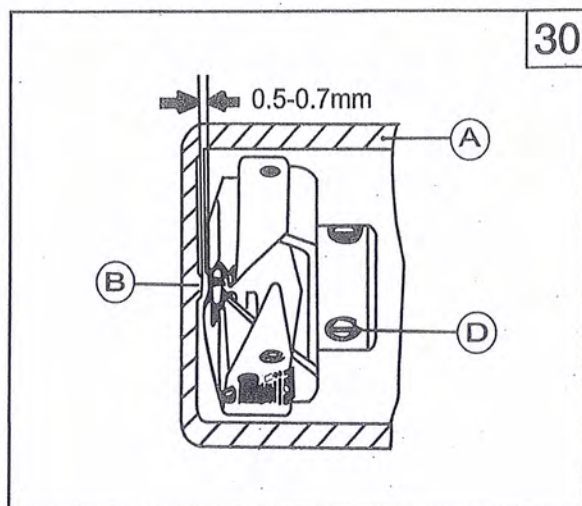


6.1.2 Adjusting the timing between the needle and the hook (fig.28,29)

Turn the balance wheel to make needle B at lowest position then 2.5mm up. At this position, the hook blade D should coincide with needle center C, and blade D is 1.2mm above upper edge of needle eye E. (See fig.28)

When adjusting the timing between needle and hook, make sure notch on lower side of needle D has a clearance about 0.05mm with the hook blade C. (see fig.29)





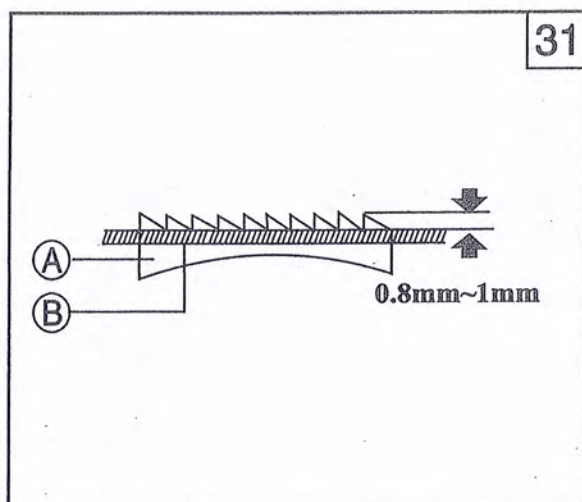
6.1.3 Removing and installing the rotating hook

Lift the presser foot and raise needle bar to its highest position. Remove the sliding ring. The bobbin case, guard ring, throat plate, feed dog, hook position bracket. Turn the balance wheel and loosen the 3 setscrews D of the rotating hook. After this take it out carefully.

Install the rotating hook can be done by reverse sequence.

6.1.4 Adjusting the clearance between hook blade point and hook positioning bracket (fig.30)

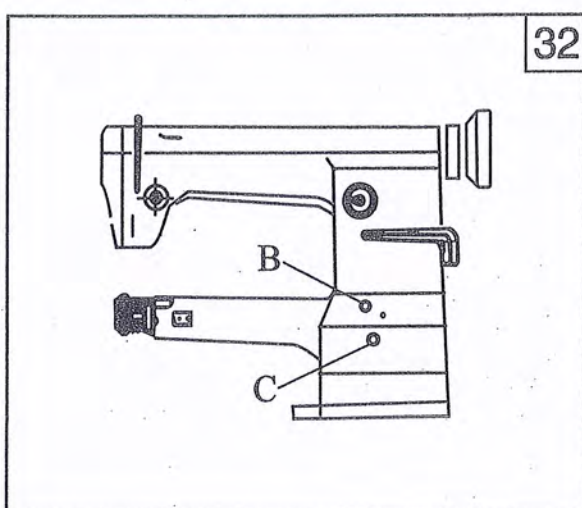
The projecting flange of position bracket A should be engaged in notch B of the rotating hook. And there should be a clearance of 0.5~0.7mm in between.



6.2 Adjusting the feed dog

6.2.1 Adjusting the height of the feed dog

Turn the balance wheel to raise feed dog at highest position above throat plate. The proper height of feed dog above throat plate is 0.8~1.2mm (fig.31)



When adjusting the feed dog, first remove sliding ring, guard ring, needle, and make feed dog raised to highest position. Insert screwdriver into hole B to loose feed rockshaft crank clamping screw slightly and move the feed bar to adjust the height of the feed dog. Tighten clamping screw after proper height of feed dog obtained. (Fig.32)

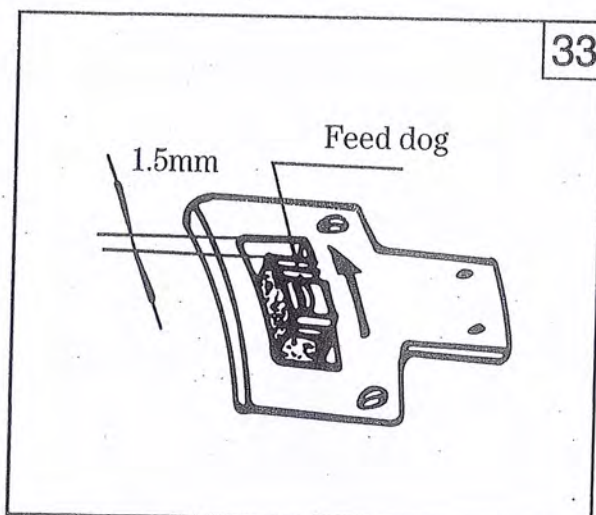
For thick workpiece, proper height of feed dog is 1mm.

6.2.2 Adjusting and Fixing the position of the feed dog

1) Standard position of feed dog should be 1.5mm from the front edge of throat plate groove when the feed dog is fully advanced.

2) To adjust position of the feed dog as this:

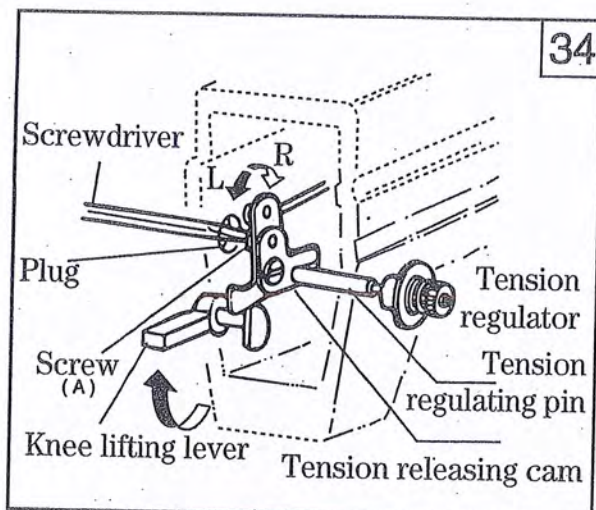
Make the feed dog fully advanced, Insert screwdriver into hole C to loose feed crank clamping screw slightly and move the feed dog to adjust the clearance between the feed dog and edge of plate groove. Tighten clamping screw after adjustment.



6.3 Adjusting the tension releasing mechanism (fig.34)

The tension discs should be pushed apart when the presser foot is lifted. But the open timing of the tension discs can be adjusted by this:

Remove the rubber plug at the rear of the arm, loose screw A of the knee lifting lever (left), Then the tension releasing cam can be moved. Move rightward to defer releasing. Move leftward to faster releasing.



6.4 Adjusting the pressure of presser foot

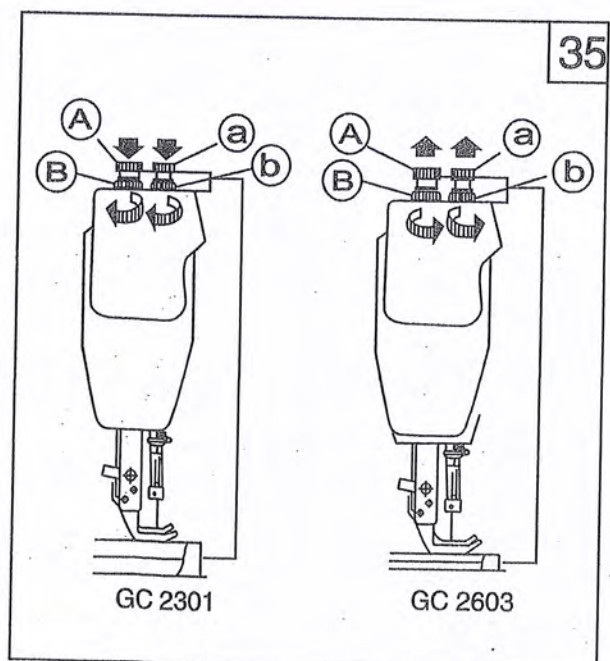
Pressure should be set as per different workpieces by means of bellows:

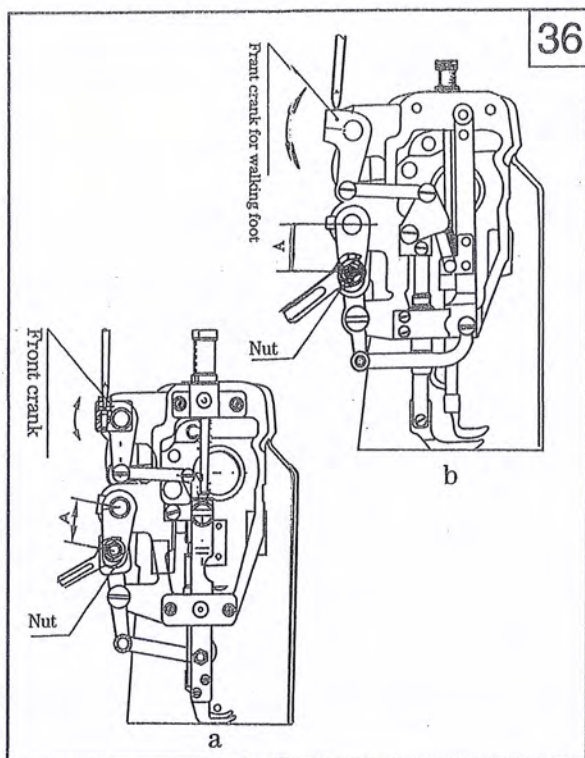
Loosen lock nut B and b first.

Turn pressure regulating screw A and a in directions shown by fig.35 to increase the pressure for thick workpiece.

Turn screw A and a in reverse direction shown in fig.35 to decrease the pressure for light workpiece.

Fasten lock nut B and d.





6.5 Adjusting the top feed mechanism

6.5.1 Gc2301

1) Adjusting the amount of feed

Top feed can be adjusted either synchronized or differential with bottom feed by means of bellows (ref to fig.36a):

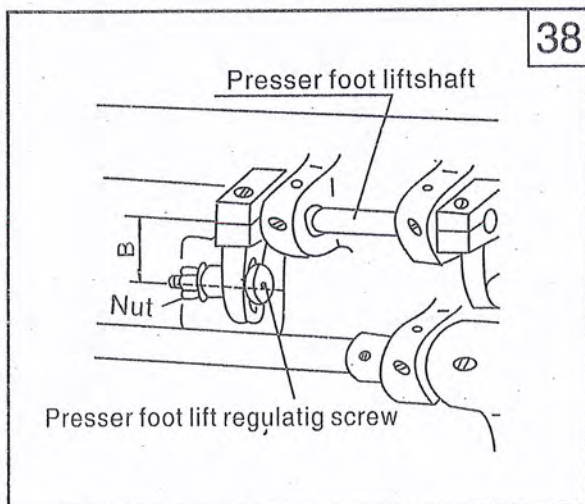
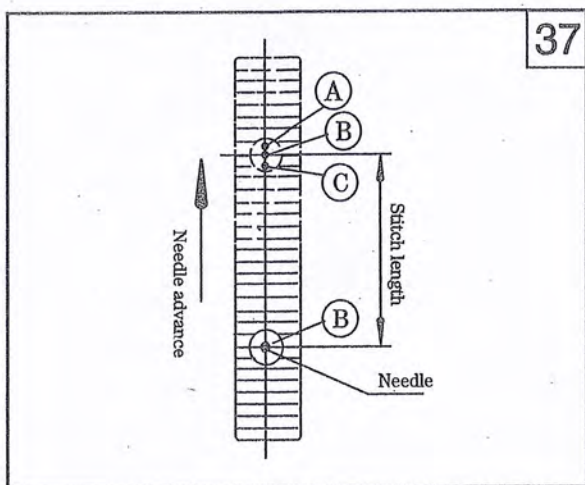
Loose nut to change center gauge A as shown. Increase A to increase top feed amount. Reduce A to decrease top feed amount. Fasten nut after adjustment. Each adjustment need a trial run to meet required synchronized or differential feeding.

2) Adjusting the alternate lift amounts of feet

For medium and heavy materials, walking foot lift amount should be within 5mm, while presser foot about 3mm. The 2 lift amounts can be changed with workpiece or sewing requirements by means of (The sum of the 2 lift amounts should be fixed if the mechanism is not modified) bellows (fig.36A):

Loose the clamping screw in the front crank for presser foot to free the crank. Turn the crank clockwise to increase walking foot lift amount and reduce presser foot lift amount. Turn it anticlockwise to get the opposite.

Tighten the clamping screw after adjustment.



3) Adjusting the total lift amount of the two feet. The total lift amount of the two feet can be adjusted (see fig.38) as per below details:

Loose the nut with a wrench, move the presser foot lift regulating screw to change its distance B with the presser foot lift shaft. Shorten B to get the reverse.

Tighten the nut after adjustment.

5.2 Gc2603

Raise presser feet with presser bar lifter and dial the stitch length to the max. Then turn the balance wheel slowly to check if the needle falls into the center of the hole in the feed log (fig.37). If not, please proceed as per fig.39a-loose screw and turn the shaft to adjust, then tighten the screw.

Keep turning the wheel to make a full stitch. If the needle keeps fall into the center of the hole (Point B in fig.37), the top feed is correct. If needle falls on point A, the feed amount is too big. If it falls on point C, the feed amount is too small. Should either condition occurs; adjustment should be made as follows: Loose nut as shown in fig.36b, change center gauge A to adjust- Wider A to increase feed amount, reduce A to decrease feed amount-Tighten nut after adjustment.

2) Adjusting the alternate lift amounts of feet

For medium and heavy materials, small presser foot lift amount should be within 5mm, presser foot about 3mm. The 2 lift amounts can be changed as per workpiece or sewing requirements by means of (The sum of the 2 lift amounts should be fixed if the mechanism is not modified) belows (fig.36b)

Loose the clamping screw in the front crank for presser foot to free the crank. Turn the crank clockwise to increase small presser foot lift amount and reduce presser foot lift amount. Turn it anticlockwise to get the opposite. Tighten the clamping screw after adjustment.

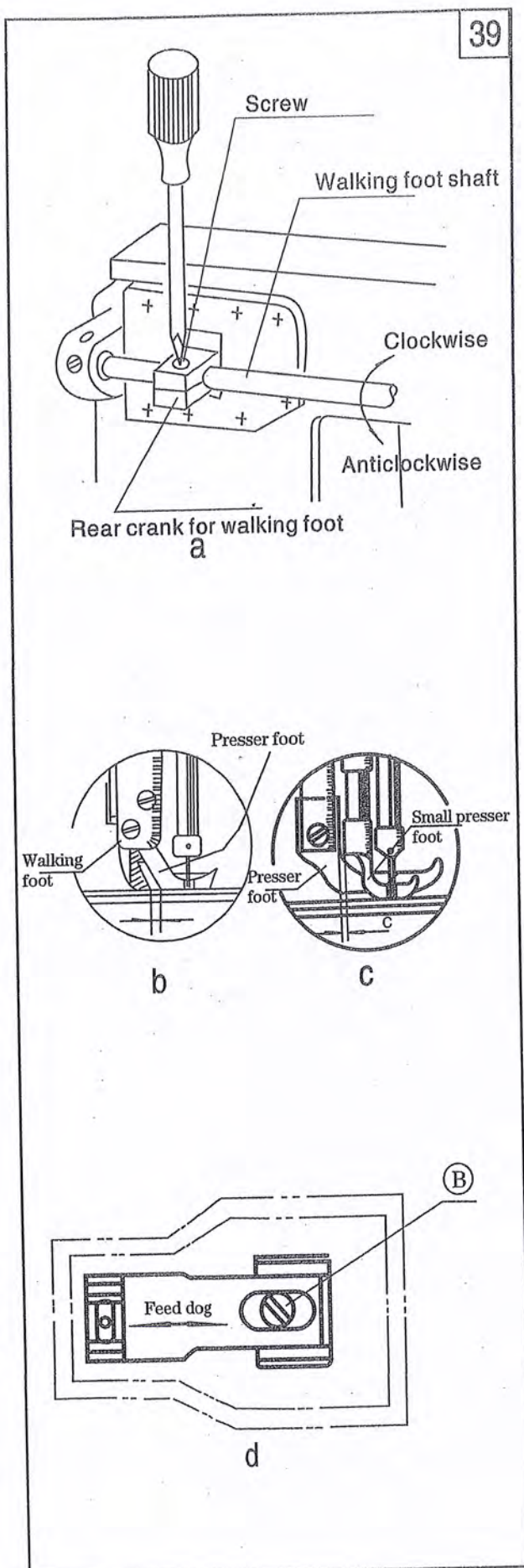
3) Adjusting the total lift amount of the two feet

The total lift amount of the two feet can be adjusted (see fig.38) as per below details:

Loose the nut with a wrench, move the presser foot lift regulating screw to change its distance B with the presser foot lift shaft. Shorten B to increase total lift amount of feet, or to widen B to get the reverse. Tighten the nut after adjustment.

4) Adjusting the clearance between the presser foot and the walking foot

The small presser foot should have a clearance C (fig.39.) About 1.5mm with presser foot to prevent from striking each other during feeding. The clearance C should be adjusted as per fig.39.a when it's too big or small-loose clamping screw in rear crank. Turn the shaft clockwise to increase clearance C. Do the opposite to reduce.



If the needle penetrates right or left into the center point of the hole, adjustment can be made as this: loose setscrew B (fig.39.b) and adjust position of feed dog. Tighten screw B after adjustment.

After above 1),2),3)or4)is made,an inspection should be made as this: Raise feet with presser bar lifter,turn the balance wheel slowly to check if the presser foot and walking foot is hitting other parts. If it is, adjust again.

7. Periodical cleaning

Clean the feed dog, the rotating hook and the bobbin case periodically according to usage by means of this:

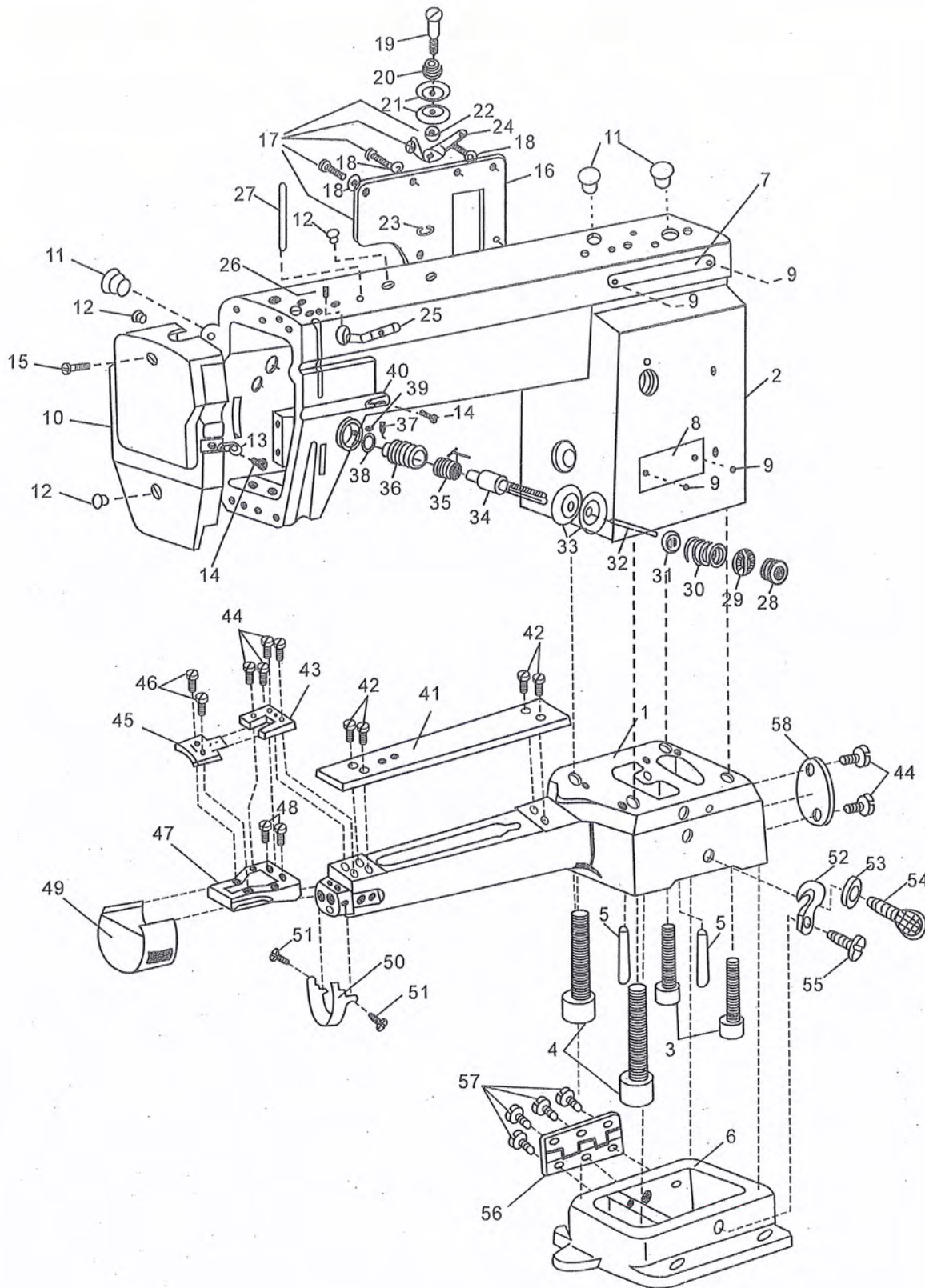
Remove the throat plate, the sliding ring and the bobbin case. Clean off the dust underneath and those clinging to the slit of the feed dog and the rotating hook, then brush bobbin case and rotating hook with soft rag.

8. Troubleshooting

Trouble	Possible causes	Solutions
Needle breakage	① Needle too thin or bent ② Wrong installation of needle ③ Push or pull the materials with hand during sewing ④ Workpiece too heavy or thick	① Change with a suitable needle ② Ref to fig 13 on page 6 ③ Help feeding without pull or push ④ Use proper needle according to the technical specifications
Skip stitch	① Needle bent or needle doesn't fit with the workpiece ② Wrong installation of needle	① Change with a suitable needle ② Ref to fig 13 on page 6
Needle thread breakage	① Wrong needle threading ② Needle thread tension too strong ③ Poor quality thread ④ Needle too thin or too rough	① Ref to fig 16 on page 7 ② Ref to fig 24 on page 10.decrease needle thread tension ③ Change thread ④ Change with suitable needle
Bobbin thread breakage	① Bobbin thread tension too strong ② Loose or uneven bobbin thread ③ Needle hole of throat plate too rough or worn out	① Weaken the bobbin thread tension ② Wind the bobbin again ③ Change the throat plate or polish needle hole with 0# emery cloth
Loose stitch	① Improper adjustment of needle and bobbin thread tension ② Thread take-up spring tension too weak	① Readjust the needle and bobbin thread tension ② Adjust thread take-up spring as per fig 23 on page 9
Puckering	① Workpiece too thin or stitch length too big ② Needle and bobbin thread tension too strong ③ Pressure of presser foot too strong	① Adjust accordingly ② Adjust tension stud' take-up spring and rubber screw on bobbin case ③ Loose pressure regulating screw

Parts Manual

1. GC2301 arm and bed



GC2301 arm and bed

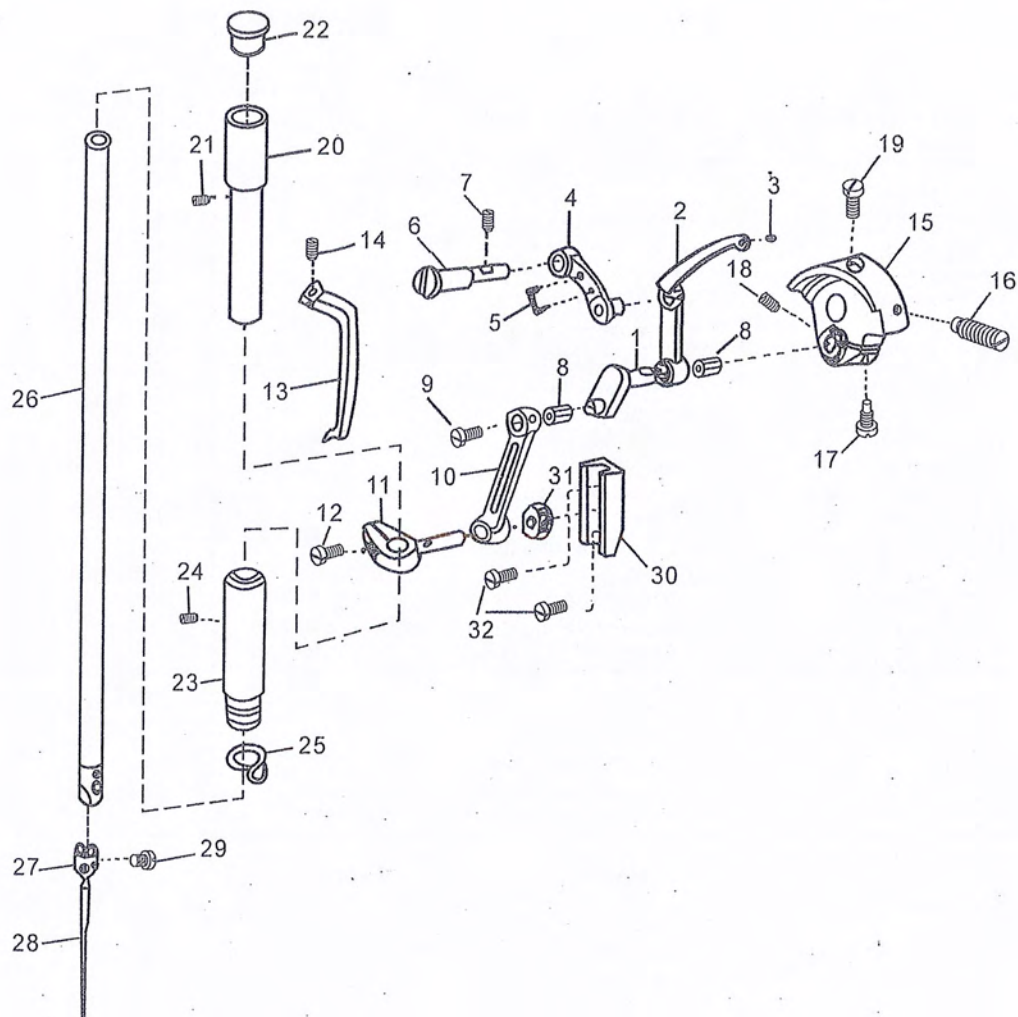
No.	Parts#	Description	Quantity	Remark
1	37T4-402	Cylinder bed	1	
2	39T4-401	Arm	1	
3		Bolt	2	M10× 28 GB70-85
4		Bolt	2	M12× 38 GB70-85
5		Dowel pin	1	6× 38 GB117-66
6	37T4-401	Machine base	1	
7	39T4-402	Model plate	1	
8	33T4-009	Trade mark	1	
9		Trade mark rivet	4	Φ2.5× 5 GB827-86
10	34T4-403a	Face plate	1	
11	22T1-003C 3	Sight widow rubber plug (Φ 19)	1	
		Rubber plug (Φ 19)	1	
12	22T1-004C 4	Face plate rubber plug (Φ 11.8)	1	
		Eccentric screw hole plug (Φ 11.8)	1	
		Knee lift lever (left)screw hole plug (Φ 11.8)	1	
13	22T1-003C 5	Face plate thread guard	1	
14	22T1-003C 6	Face plate thread guard screw	1	
		Thread guard screw	1	
15	22T1-004	Face plate screw	2	
16	34T1-405	Arm back cover	1	
17	22T1-006	Back cover screw	6	
18	22T1-007	Arm back cover screw washer	6	
19	22T1-009E 1	Small tension stud	1	
20	22T1-009E 2	Small tension spring	1	
21	22T1-009E 3	Small tension disc	2	
22	22T -009E 4	Thread guide shim	1	
23		Snap ring	1	GB896-86-3
24	22T1-009E 5	Thread guide plate	1	
25	22T1-010	Thread retainer	1	
26	22T1-011	Thread retainer screw	1	
27	33T4-004	Oil tube	1	
28	22T1-012F2	Tension regulating nut	1	
29	22T1-012F10	Fence	1	
30	33T4-008C1	Tension spring	1	
31	22T1-012F4	Tension regulating disc	1	
32	22T1-012F9	Tension regulating pin	1	
33	22T1-012F5	Tension disc	2	
34	22T1-012F1	Tension stud	1	
35	22T1-012F6	Thread take-up spring	1	
36	22T1-012F7	Thread tension regulator	1	
37	22T1-012F8	Tension stud setscrew	1	
38	22T1-012F11	O ring	1	
39	22T1-013	Thread tension regulator setscrew	1	
40	22T1-014	Thread guide	1	
41	37T4-417	Cylinder cover plate	1	
42	37T4-418	Cylinder cover plate setscrew	6	
43	37T4-415	Throat plate & hook positioning bracket cover	1	
44	37T4-416	Cover setscrew	4	
45	39T4-403	Throat plate	1	
46	37T4-414	Throat plate setscrew	2	
47	37T4-405	Throat plate and hook positioning bracket	1	
48	37T4-406	Setscrew	2	
49	37T4-421	Sliding ring	1	
50	37T4-419	Guard ring	1	
51	37T4-420	Guard ring setscrew	2	
52	37T4-409	Connecting finger	1	
53	39T4-411	Washer	1	
54	37T4-410	Setscrew	1	
55	37T4-412	Screw	1	
56	37T4-407	Hinge	1	
57	37T4-408	Screw	6	
58	37T4-422	Cylinder cover plate	1	

This technical drawing is an exploded view of a mechanical assembly, likely a motor or pump. The components are numbered 1 through 59. The main housing (2) features a front panel (8) and a side panel (10). The internal assembly includes a motor (1) with a shaft (3) and impeller (4). The impeller is connected to a pump body (6) via a coupling (5). The pump body is mounted on a base (56) and is secured by a bracket (57). The motor is connected to a control unit (16) via a cable (17). The control unit is mounted on a base (18) and is secured by a bracket (19). The assembly is also equipped with various fasteners, including screws (11, 12, 13, 14, 15, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 58, 59), washers (20, 21, 22, 23, 24, 25, 26, 27), and seals (13, 14, 15, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 58, 59).

2. GC2603 arm and bed

No.	Parts#	Description	Quantity	Remark
1	37T4-402	Cylinder bed	1	
2	37T4-403-A	Arm	1	
3		Bolt	2	GB/T70.1 M10×35
4		Bolt	2	GB/T70.1 M12×35
5		Dowel pin	1	GB/T117 6×32
6	37T4-401	Machine base	1	
7	37T4-401-A	Model plate	1	
8	33T4-402-A	Trade mark	1	
9		Trade mark rivet	4	GB827 2.5×5
10	35T4-402a	Face plate	1	
11	22T1-003C 3	Sight widow rubber plug (φ 19)	1	
		Rubber plug (φ 19)	2	
12	22T1-003C 4	Face plate rubber plug (φ 11.8)	1	
		Knee lift lever (left)screw hole plug (φ 11.8)	1	
13	22T1-003C 5	Face plate thread guard	2	
14	22T1-003C 6	Face plate thread guard screw	2	
		Thread guard screw	1	
15	22T1-004	Face plate screw	2	
16	34T4-405	Arm back cover	1	
17	22T1-006	Back cover screw	6	
18	22T1-007	Arm back cover screw washer	6	
19	22T1-009E 1	Small tension stud	1	
20	35T4-407	Small tension spring	1	
21	22T1-009E 3	Small tension disc	2	
22	22T1-009E 4	Thread guide shim	1	
23		Snap ring	1	GB896 3
24	22T1-009E 5	Thread guide plate	1	
25	22T1-010	Thread retainer	1	
26	22T1-011	Thread retainer screw	1	
27	33T4-004	Oil tube	1	
28	22T1-012F2	Tension regulating nut	1	
29	22T1-012F10	Fence	1	
30	33T4-008C1	Tension spring	1	
31	22T1-012F4	Tension regulating disc	1	
32	22T1-012F9	Tension regulating pin	1	
33	22T1-012F5	Tension disc	2	
34	22T1-012F1	Tension stud	1	
35	22T1-012F6	Thread take-up spring	1	
36	22T1-012F7	Thread tension regulator	1	
37	22T1-012F8	Tension stud setscrew	1	
38	22T1-013	Thread tension regulator setscorew	1	
39	22T1-014	Thread guide	1	
40	35T4-405	Thread guide	1	
41	37T4-417	Cylinder cover plate	1	
42	37T4-418	Cylinder cover plate setscrew	4	
43	37T4-415	Throat plate & hook positioning bracket cover	1	
44	37T4-416	Cover setscrew	4	
45	37T4-414	Throat plate setscrew	2	
46	37T4-413	Throat plate	1	
47	37T4-421	Sliding ring	1	
48	37T4-405	Throat plate and hook positioning bracket	1	
49	37T4-406	Setscrew	2	
50	37T4-419	Guard ring	1	
51	37T4-420	Guard ring setscrew	2	
52	37T4-409	Connecting finger	1	
53	37T4-411	Washer	1	
54	37T4-410	Setscrew	1	
55	37T4-412	Screw	1	
56	37T4-407	Hinge	1	
57	37T4-408	Screw	6	
58	37T4-422	Cylinder rear cover plate	1	
59	20T4-020	Setscrew	2	

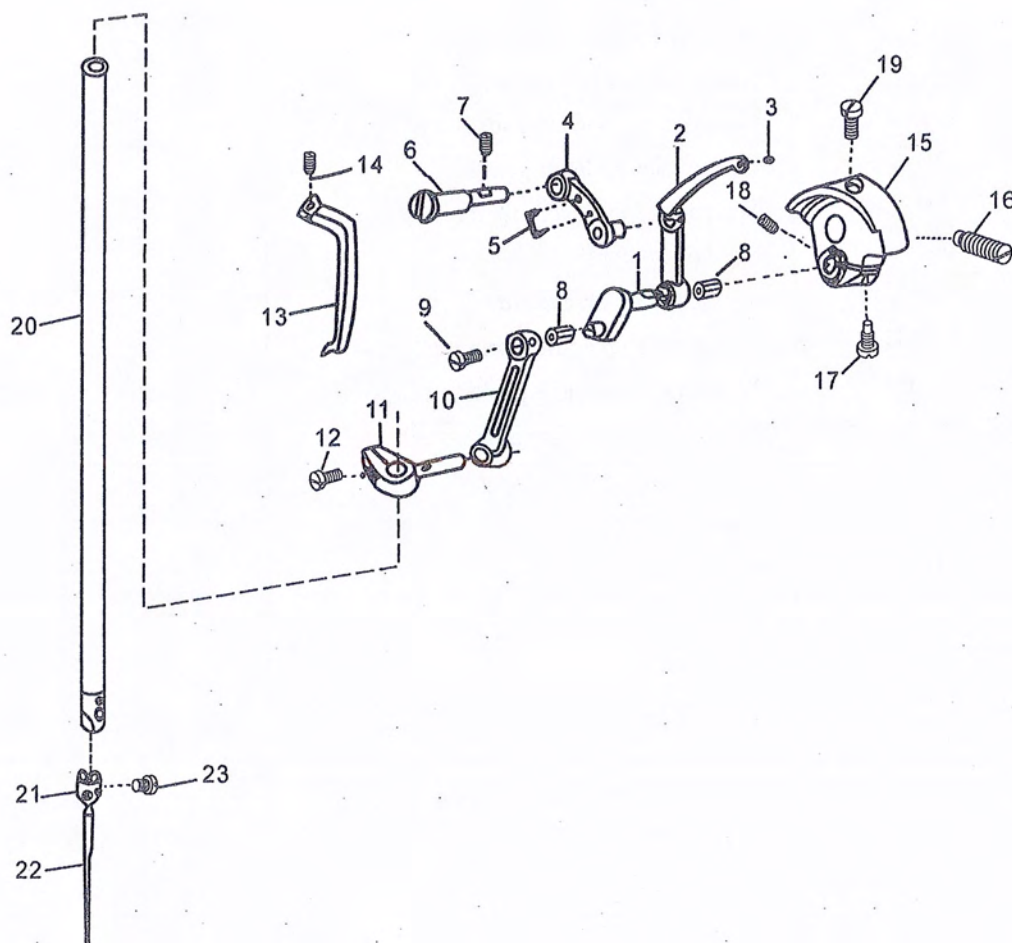
3. GC 2301 needle bar and thread take-up



3. G C 2301 needle bar and thread take-up

No.	Parts#	Description	Quantity	Remark
1	33T1- 001	Thread take-up crank	1	
2	33T1- 004B 1	Thread take-up lever	1	
3	33T1- 004B2	Thread take-up lever eyelet bushing	1	
4	33T1- 003A1	Thread teke-up link	1	
5	33T1- 003A2	Thread take-up link oil wick	1	Φ 2 L= 30
6	33T1- 002	Thread teke-up link hinge pin	1	
7	J0 · 0 · 40	Thread tehe-up link hinge pin	1	
8	19242/8	Needle roller bearing	2	8×12× 8
9	22T2 - 001A6	Needle bar connection rod cap screw (left rotation)	1	
10	33T1 - 014	Needle bar connection rod	1	
11	35T1-101A1	Needle bar connecting stud	1	
12	40T4-411	Needle bar connection stud clamping screw	1	
13	33T4 - 007	Thread take-up lever guard	1	
14	22T2 - 004	Thread take-up lever guard screw	1	
15	33T1 - 006C1	Needle bar crank	1	
16	33T1 - 006C2	Needle bar crank setscrew	1	
17	33T1 - 006C3	Thread take-up crank clamping screw	1	
18	22T2 - 005B3	Thread take-up crank position screw	1	
19	20T2-007- 04 - 01/B2	Needle bar crank clamping screw	1	
20	22T2 - 008	Needle bar bushing (upper)	1	
21	J0 · 0 · 35	Screw	1	
22	22T2 - 011	Rubber plug	1	
23	34T1 - 001	Needle bar bushing (lower)	1	
24	22T2 - 013	Screw	1	
25	33T1 - 016I2	Thread guard of needle bar bushing (lower)	1	
26	33T1 - 017	Needle bar	1	
27	22T2 - 015	Needle bar thread guide	1	
28		Needle	1	Dp×17 18 [#] ~24 [#]
29	22T2 - 017	Needle setscrew	1	
30	33T1 - 012	Needle bar stud sliding block guide	1	
31	33T1 - 013	Needle bar stud sliding block	1	
32	22T2 - 019	Setscrew	2	

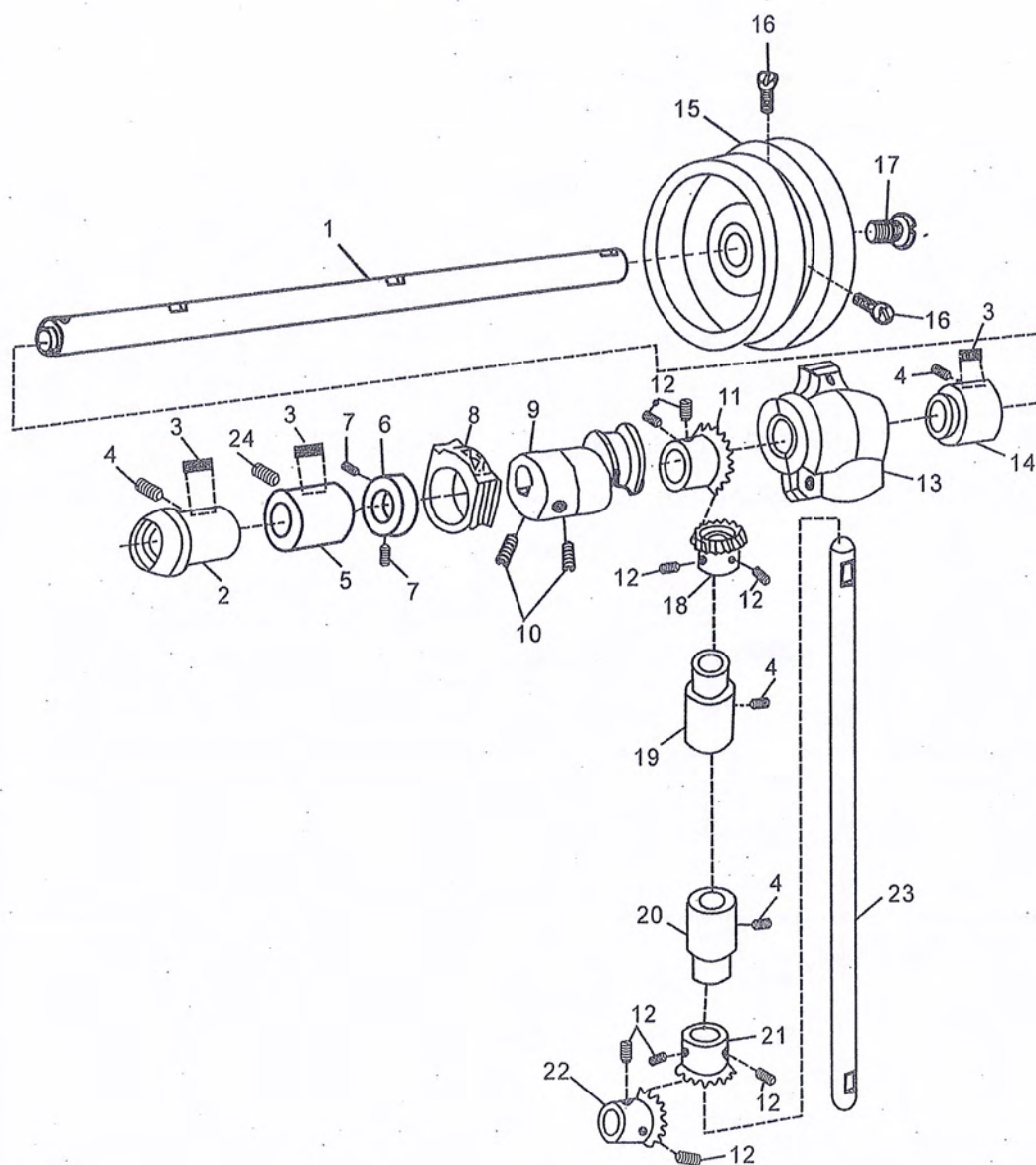
4. G C 2603 needle bar and thread take-up



4. GC 2603 needle bar and thread take-up

No.	Parts#	Description	Quantity	Remark
1	33T1- 001	Thread take-up crank	1	
2	33T1- 004B1	Thread take-up lever	1	
3	33T1- 004B2	Thread take-up lever eyelet bushing	1	
4	33T1- 003A1	Thread teke-up link	1	
5	33T1- 003A2	Thread take-up link oil wick	1	Φ2L=30
6	33T1- 002	Thread teke-up link hinge pin	1	
7	J0.0.5	Thread tehe-up link hinge pin	1	
8	19242/8	Needle roller bearing	2	8× 12× 8
9	22T2 - 001A6	Needle bar connection rod cap screw (left rotation)	1	
10	33T1 - 014	Needle bar connection rod	1	
11	35T1-101A1	Needle bar connecting stud	1	
12	40T4-411	Needle bar connection stud clamping screw	1	
13	33T4 - 007	Thread take-up lever guard	1	
14	22T2 - 004	Thread take-up lever guard screw	1	
15	33T1 - 006C1	Needle bar crank	1	
16	33T1 - 006C2	Needle bar crank setscrew	1	
17	33T1 - 006C3	Thread take-up crank clamping screw	1	
18	22T2 - 005B3	Thread take-up crank position screw	1	
19	20T2-007	Needle bar crank clamping screw	1	
20	35T1-102	Needle bar	1	
21	35T1-103	Needle bar thread guide	1	
22		Needle	1	DP× 17 18#~24#
23	22T2-017	Needle setscrew	1	

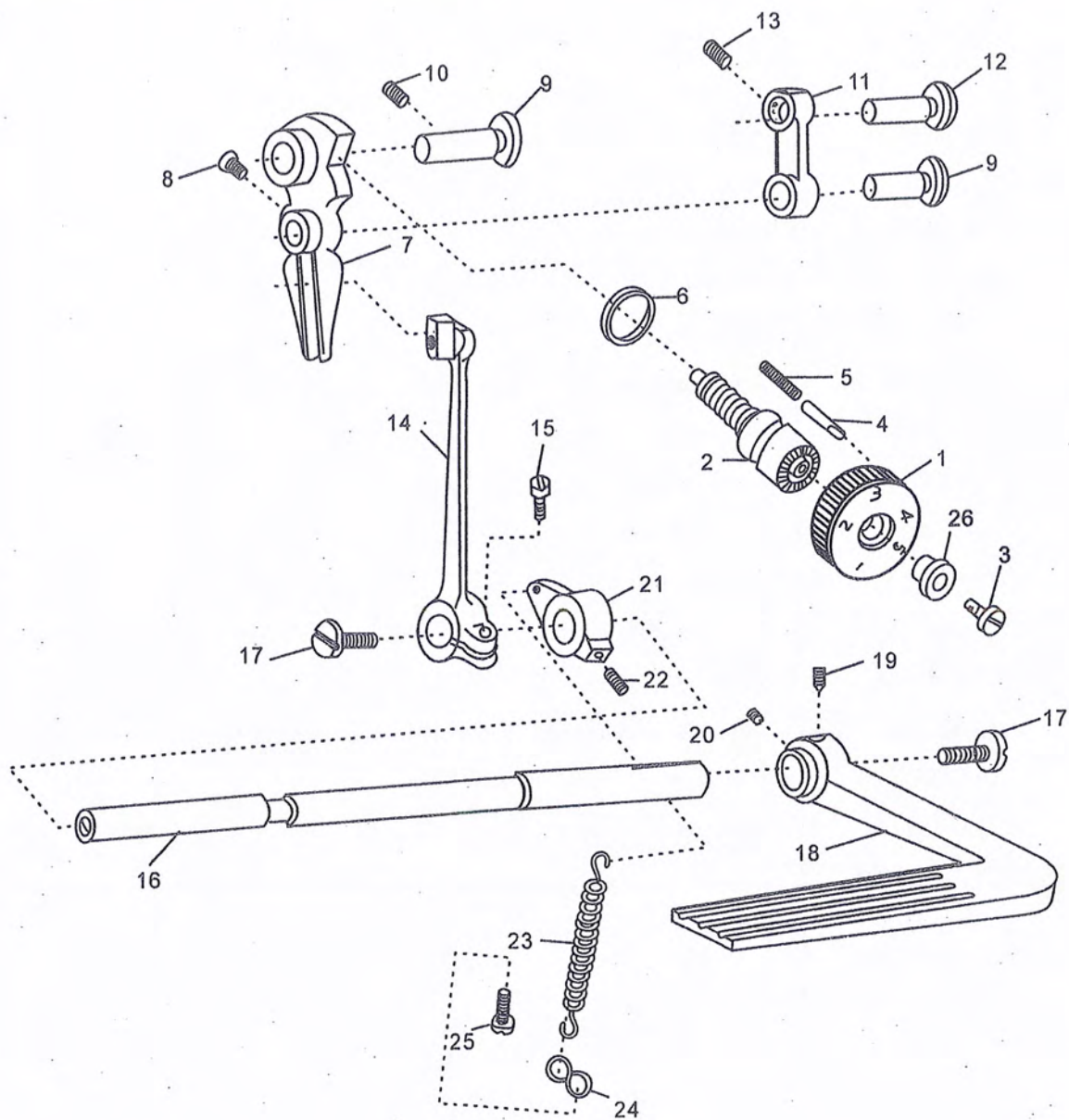
5. Arm shaft and vertical shaft



5.Arm shaft and vertical shaft

No.	Parts#	Description	Quantity	Remark
1	33T1-008	Arm shaft	1	
2	33T1-007D 1	Arm shaft flanged bushing (front)	1	
3	33T1-007D 2	Arm shaft bushing oil felt	3	
4	J0.0.5	Shaft bushing setscrew	4	SM15 / "64×28 / 13
5	33T1-009E 1	Arm shaft bushing (middle)	1	
6	22T3-002B 1	Collar	1	
7	22T3-002B 2	Collar set screw	2	SM1 / "4×40 / 4
8	22T3-009D1a2	Feed fork sliding sleeve	1	
9	37T2-204-A	Feed eccentric	1	
10	22T1-013	Feed eccentric setscrew	2	
11	22T3-010E2a1-2	Arm shaft spiral gear	1	
12	22T2-005B 3	Gear screw	8	SM1 / "4×40 / 7
13	33T1-010F	Spiral gear case	1	
14	33T1-011G1	Arm shaft busing (rear)	1	
15	33T1-024	Balance wheel	1	
16	22T3-007C2	Screw for balance wheel	2	SM15 / "64×28 / 12
17	20T2-004	Screw for arm shaft	1	
18	22T3-010E2a-2	Vertical shaft spiral gear (upper)	1	
19	33T1-025Q1	Vertical shaft bushing (upper)	1	
20	33T1-023P1	Vertical shaft bushing (lower)	1	
21	22T3-010E2b2-2	Vertical shaft spiral gear (lower)	1	
22	22T3-010E2b1-2	Rotating hook shaft spiral gear	1	
23	33T1-026	Vertical shaft	1	
24	J0.0.40	Setscrew of arm shaft bushing (middle)	1	SM15 / "64×28 / 10

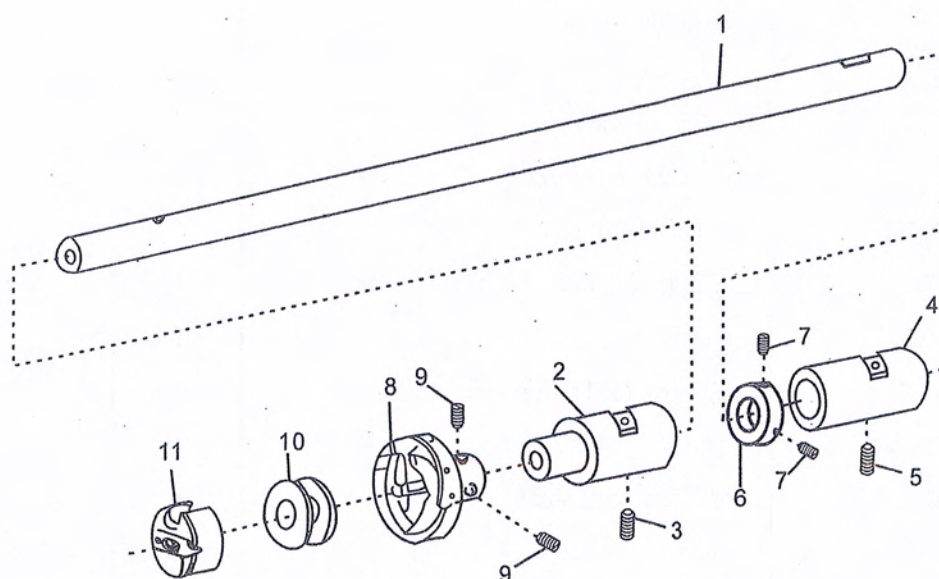
6. Stitch length regulating



6.Stitch length regulating

No.	Parts#	Description	Quantity	Remark
1	33T2-012-1	Stitch length dial	1	O 14×2.4
2	33T2-011	Stitch length adjusting screw	1	
3	22T5-006C 3	Screw	1	
4	22T5-008	Stop pin	1	
5	22T5-009	Spring	1	
6		O ring	1	
7	37T2-203-A	Stitch length adjusting swing bar	1	
8	17T5-010	Setscrew	1	
9	33T2-024-A	Setscrew hinge pin	1	
10	J0.0.40	Swing bar setscrew	1	
11	33T2-025-A	Stitch length link	1	
12	33T2-026-A	Connecting pin	1	
13	22T3-002B2	Screw	1	
14	33T2-019C	Reverse feed swing lever	1	
15	22T6-001A1b	Screw	1	
16	37T2-216	Reverse lever shaft	1	
17	17T5-019	Screw	2	
18	17T5-015	Reverse feed lever	1	
19	17T5-017	Setscrew	1	
20	17T5-016	Screw	1	
21	33T2-021	Reset lever	1	
22	22T2-005B3	Screw	1	
23	33T2-022	Coil spring	1	
24	33T2-023	Set hook for spring	1	
25	61-04-01/B316	Screw	1	
26	36T5-007D4	Screw bushing	1	

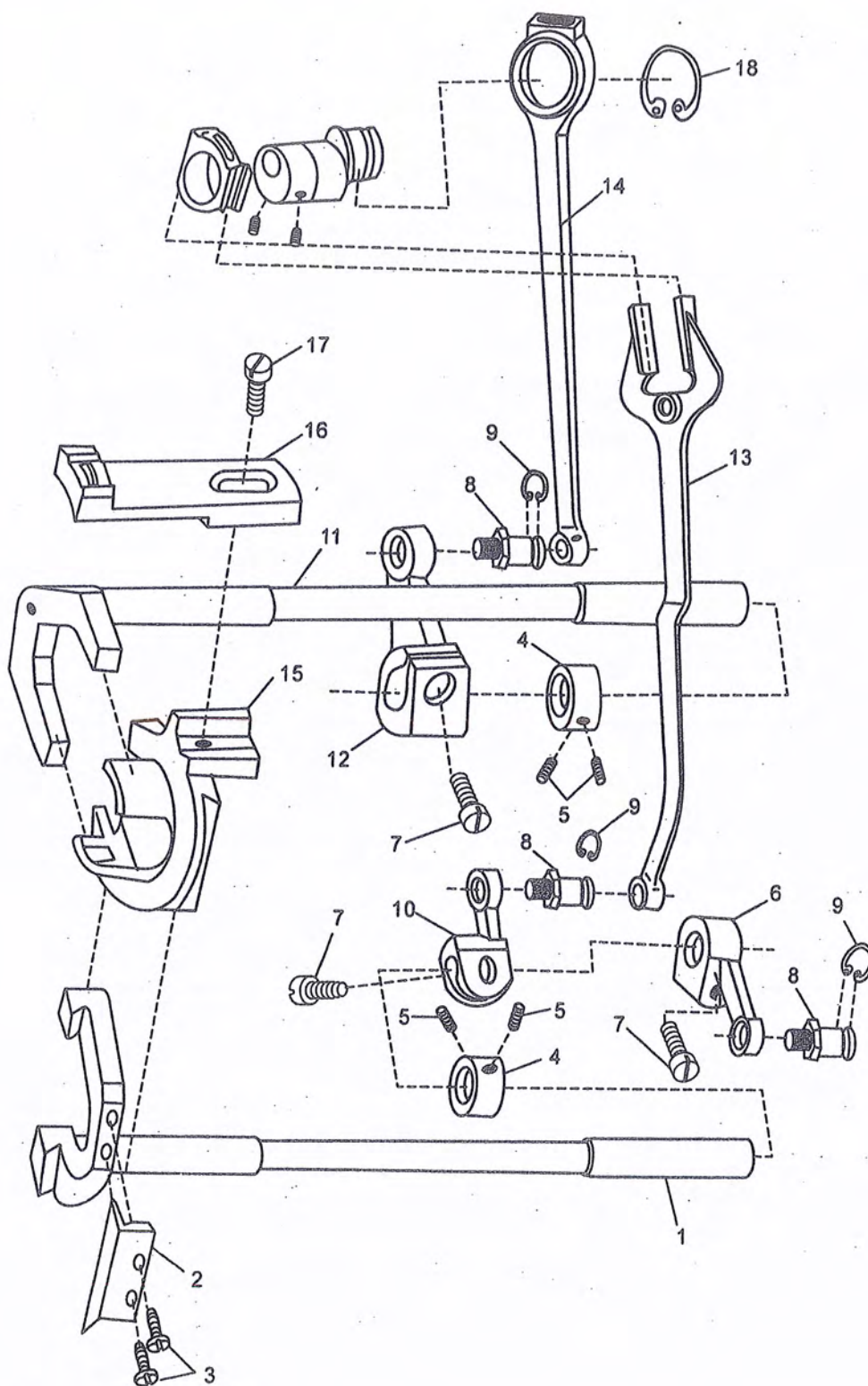
7. Rotating hook and its oscillating shaft



7. Rotating hook and its oscillating shaft

No.	Parts#	Description	Quantity	Remark
1	33T1-020L	Rotating hook shaft	1	
2	37T1-101	Shaft bushing (front)	1	
3	22T1-011	Setscrew	1	
4	37T1-103	Shaft bushing (rear)	1	
5	J0.035	Setscrew	1	
6	37T1-102	Collar	1	
7	22T2-013	Setscrew	2	
8	37T4-104	Rotating hook	1	
9	37T1-104b	Setscrew	3	
10	33T1-027	Bobbin	1	
11	35T1-104	Bobbin case	1	

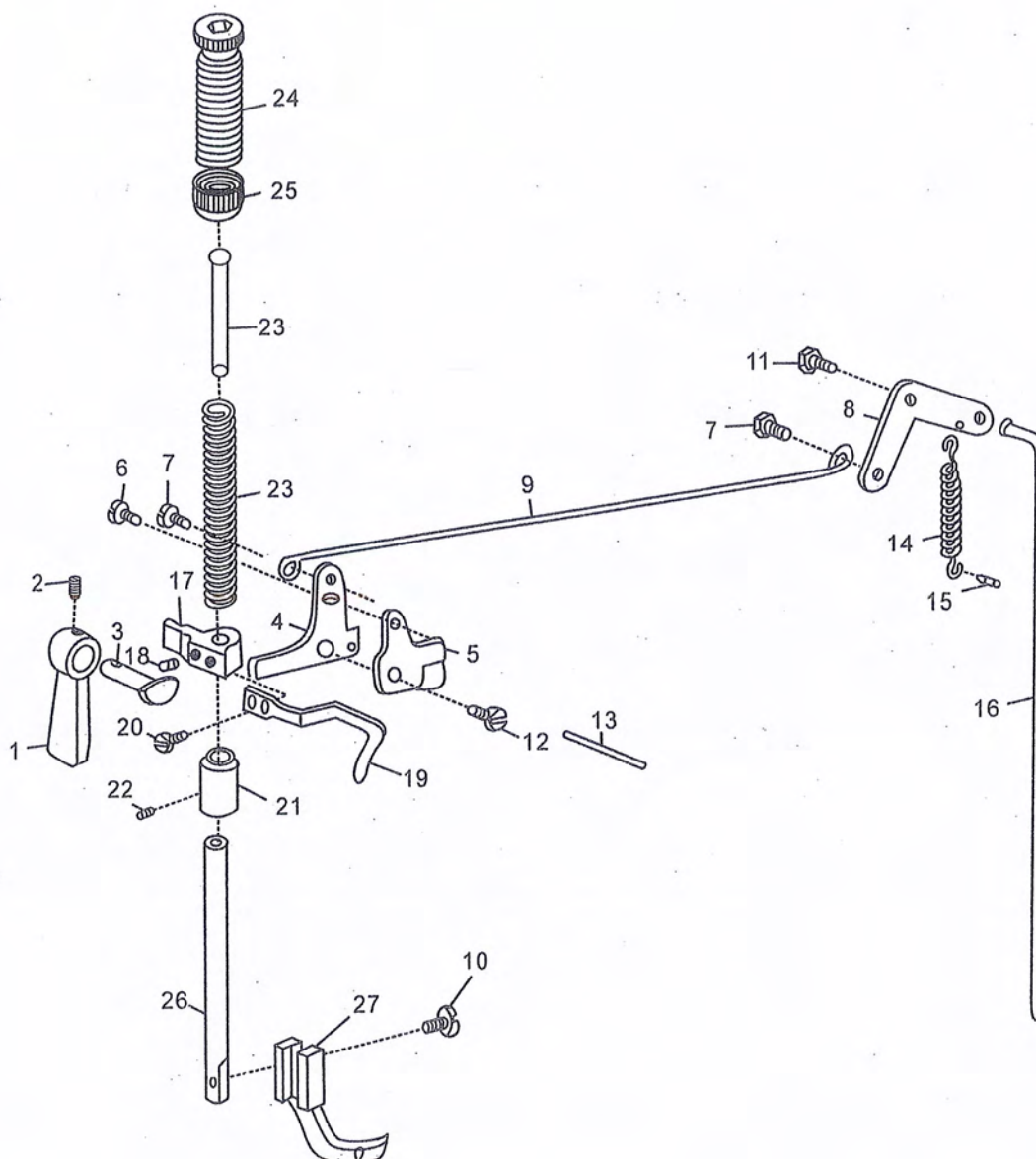
8. Bottom feed mechanism



8.Bottom feed mechanism

No.	Parts#	Description	Quantity	Remark
1	33T2-207	Feed shaft	1	
2	37T2-202	V fence	1	
3	37T2-203	Screw	2	
4	37T2-208	Collar	2	
5	61-04-01/B4/Z1-06	Screw	4	
6	37T2-212	Feed crank	1	
7	37T2-210	Setscrew	3	
8	37T2-213	Connecting stud	3	
9		Snap ring	3	GB896 8
10	37T2-502	Synchronized feed crank	1	
11	37T2-201	Feed dog shaft	1	
12	37T2-209	Feed dog crank	1	
13	37T2-202-A	Feed fork	1	
14	37T2-201-A	Connecting rod	1	
15	37T2-206	Feed dog support	1	
16	37T2-205	Feed dog	1	
17	37T2-204	Screw	1	
18		Collar	1	GB894.1 20

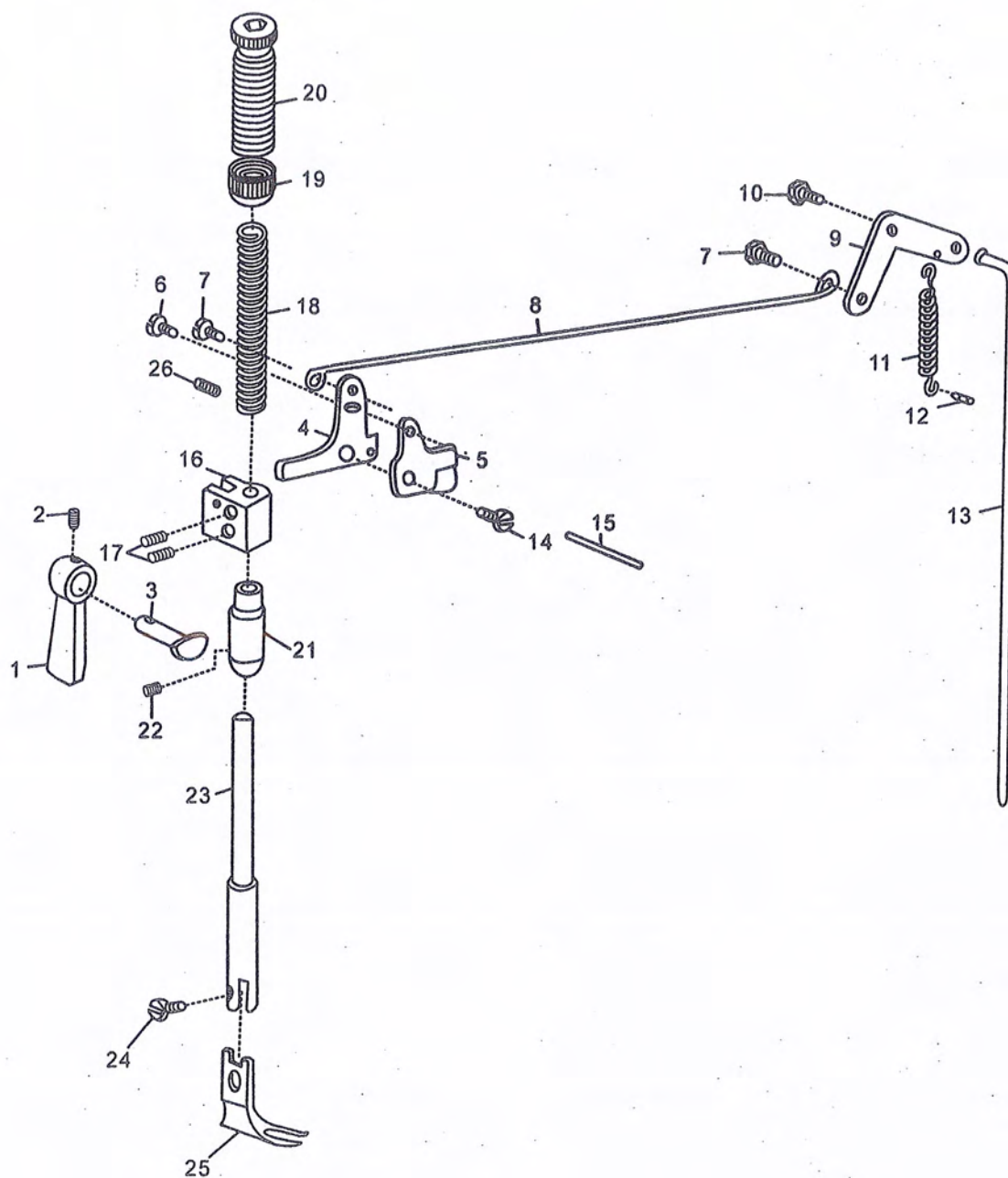
9.GC2301 presser bar and drawing bar



9.GC2301 presser bar and drawing bar

No.	Parts#	Description	Quantity	Remark
1	34T3-304	Presser bar lifter	1	
2	22T7-001A2	Presser bar lifter position screw	1	
3	33T3-004	Presser bar lifting cam	1	
4	22T7-004B 1a	Knee lifter lever (left)	1	
5	22T7-004B 1b	Tension releasing cam	1	
6	22T7-004B1c	Knee lifter lever (left) screw	1	
7	22T7-004B 1c	Screw	2	
8	22T7-004B 1c	Knee lifter lever (right)	1	
9	33T3-004B3	Knee lifter drawing bar	1	
10	22T7-015	Presser foot setscrew	1	
11	22T7-005	Knee lifter lever (right) spring	1	
12	22T7-005(A)	Tension releasing cam screw	1	
13	22T7-006	Tension releasing rod	1	
14	22T7-007C2	Knee lifter lever (right) spring	1	
15	22T7-008	Spring connection pin	1	
16	37T3-301	Knee lifter connecting rod	1	
17	22T7-011D1	Presser bar support	2	
18	22T1-013	Presser bar support screw	1	
19	22T7-016	Thread guide	1	
20	22T2-004	Thread guide setscrew	1	
21	34T3-305	Presser bar bushing	1	
22	22T1-013	Presser bar bushing setscrew	1	
23	34T3 -302	Presser bar spring	1	
24	34T3 -301	Pressure regulating screw	1	
25	22T7-014E2	Pressure regulating screw locknut	1	
26	34T3-303	Presser bar	1	
27	34T3-306	Presser foot	1	

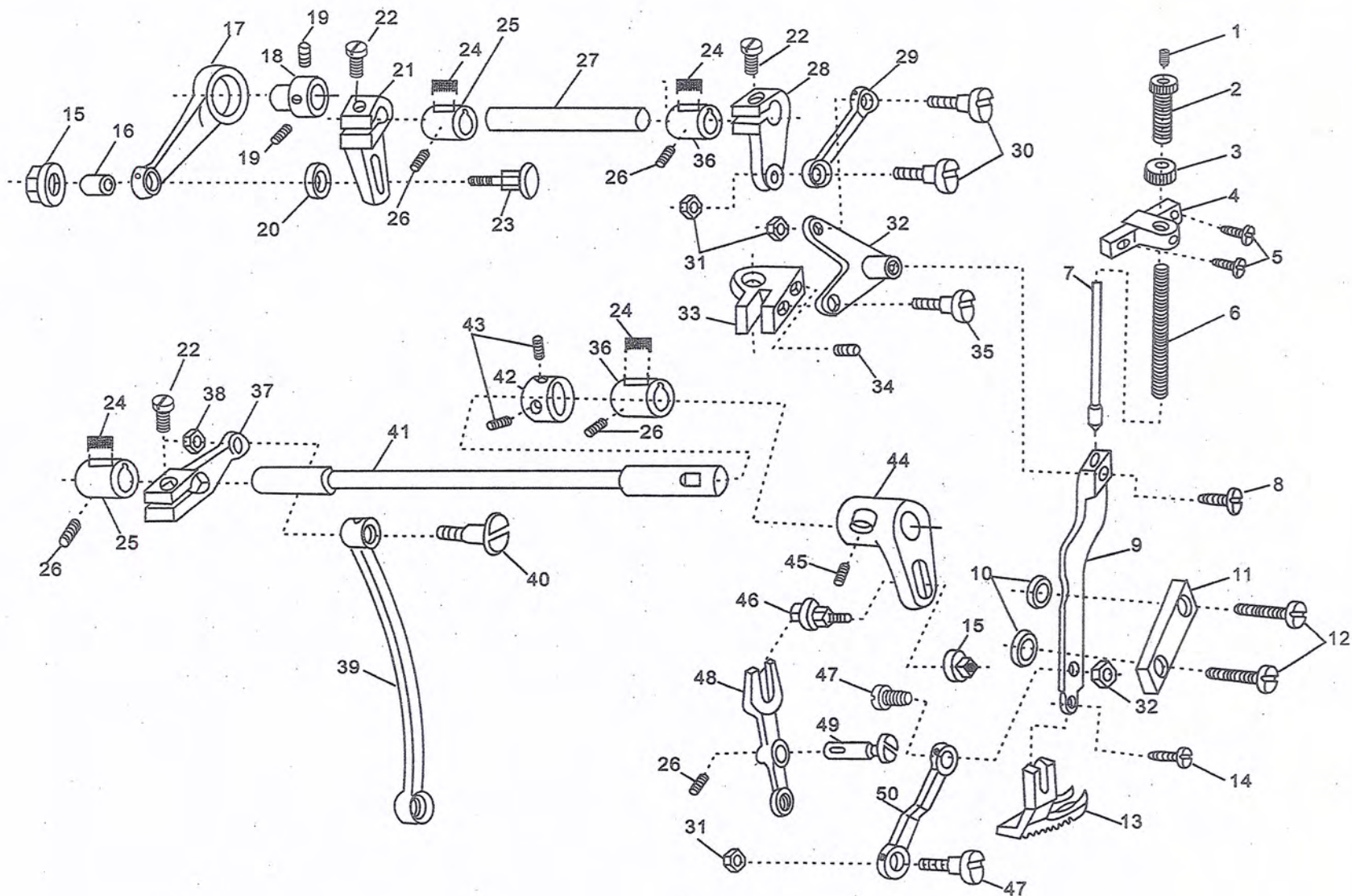
10.GC2603 presser bar and drawing bar



10.GC2603 presser bar and drawing bar

No.	Parts#	Description	Quantity	Remark
1	33T3-003	Presser bar lifter	1	
2	22T1-011	Presser bar lifter position screw	1	
3	33T3-004	Presser bar lifting cam	1	
4	22T7-004B 1a	Knee lifter lever (left)	1	
5	22T7-004B 1b	Tension releasing cam	1	
6	22T7-004B1c	Knee lifter lever (left) screw	1	
7	22T7-004B2	Screw	2	
8	22T7-004B3	Knee lifter drawing bar	1	
9	22T7-007C1	Knee lifter lever (right)	1	
10	22T7-005(B)	Knee lifter lever (right) setscren	1	
11	22T7-007C2	Knee lifter lever (right) spring	1	
12	22T7-008	Spring connecting pin	1	
13	37T3-301	Knee lifter connecting rod	1	
14	22T7-005(A)	Tension releasing cam screw	1	
15	35T3-305	Tension releasin rod	1	
16	35T3-301	Presser bar support	1	
17	JO • 0 • 40	Presser bar support screw	2	
18	34T3-302	Presser bar spring	1	
19	1KT4-002	Pressure regulating screw locknut	1	
20	1KT4-001	Pressure regulating screw	1	
21	34T3-305	Presser bar bushing	1	
22	22T2-013	Pressure bar bushing setscrew	1	
23	35T3-302	Presser bar	1	
24	61-04-01/B316	Presser foot setscrew	1	
25	35T3-304	Presser foot	1	
26	61-04-01/B308	Screw	1	

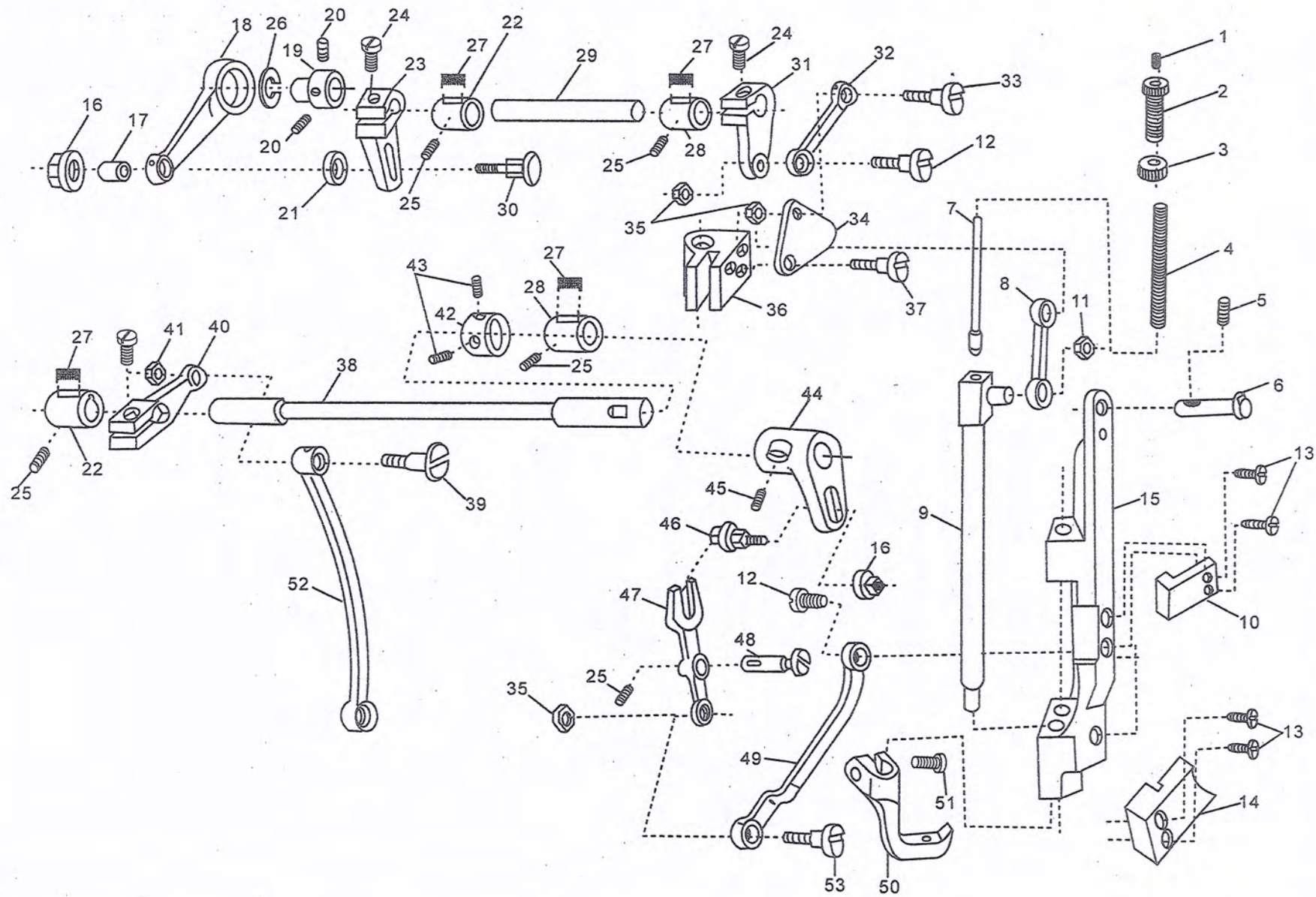
11. GC2301 top feed mechanism



11.GC2301 top feed mechanism

No.	Parts#	Description	Quantity	Remark
1	35T5-501	Oil felt	1	
2	35T5-502	Walking foot pressure regulating screw	1	
3	34T5-503	Pressure regulating screw locknut	1	
4	35T5-504	Pressure regulating screw support	1	
5	01/B504	Setscrew	2	
6	35T5-505	Spring for walking foot pressure regulating bar	1	
7	35T5-506	Walking foot pressure regulating bar	1	
8	34T5-525b	Setscrew	1	
9	34T5-510	Walking foot bar	1	
10	34T5-511	Walking foot guide washer	2	
11	34T5-512	Walking foot guide	1	
12	34T5-525	Walking foot guide setscrew	2	
13	34T5-515	Walking foot	1	
14	22T5-015	Walking foot setscrew	1	
15	34T5-518	Position regulating nut	1	
16	34T5-519	Washer	1	
17	34T5-520	Connecting rod	1	
18	34T5-516	Presser foot eccentric	1	
19	01/B602	Eccentric setscrew	2	
20	34T5-521	Washer	1	
21	34T5-517	Rear crank for walking foot (up & down)	1	
22	34T5-540	Crank setscrew	3	
23	34T5-522	Walking foot up & down regulating screw	1	
24	34T5-536b	Oil felt	4	
25	34T5-536a	Bushing	2	
26	J0 • 0 • 35	Screw	5	
27	34T5-537	Walking foot up and down shaft	1	
28	34T5-535	Front crank for walking foot (up & down)	1	
29	34T5-534	Connecting rod	1	
30	34T5-507	Screw	2	
31	34T5-508	Nut	4	
32	34T5-526	Walking foot up & down lever	1	
33	34T5-528	Presser bar position block	1	
34	01/B308	Screw	1	
35	34T5-527	Screw	1	
36	34T4-538a	Shaft bushing	2	
37	34T5-523	Rear crank for walking foot (swing)	1	
38	61-04-01/B06	Nut	1	
39	34T -524	Connecting rod	1	
40	17T4-002	Screw	1	
41	34T5-539	Walking foot swing shaft	1	
42	34T5-532	Collar	1	
43	22T5 002B2	Collar setscrew	2	
44	34T3-533	Front crank for walking foot (swing)	1	
45	01/B902	Screw	1	
46	34T -513a	Walking foot sliding block	1	
47	34T5-529	Screw	2	
48	34T5-530	Fork bar	1	
49	34T5-514	Fork pin	1	
50	34T5-514	Walking foot connecting rod	1	

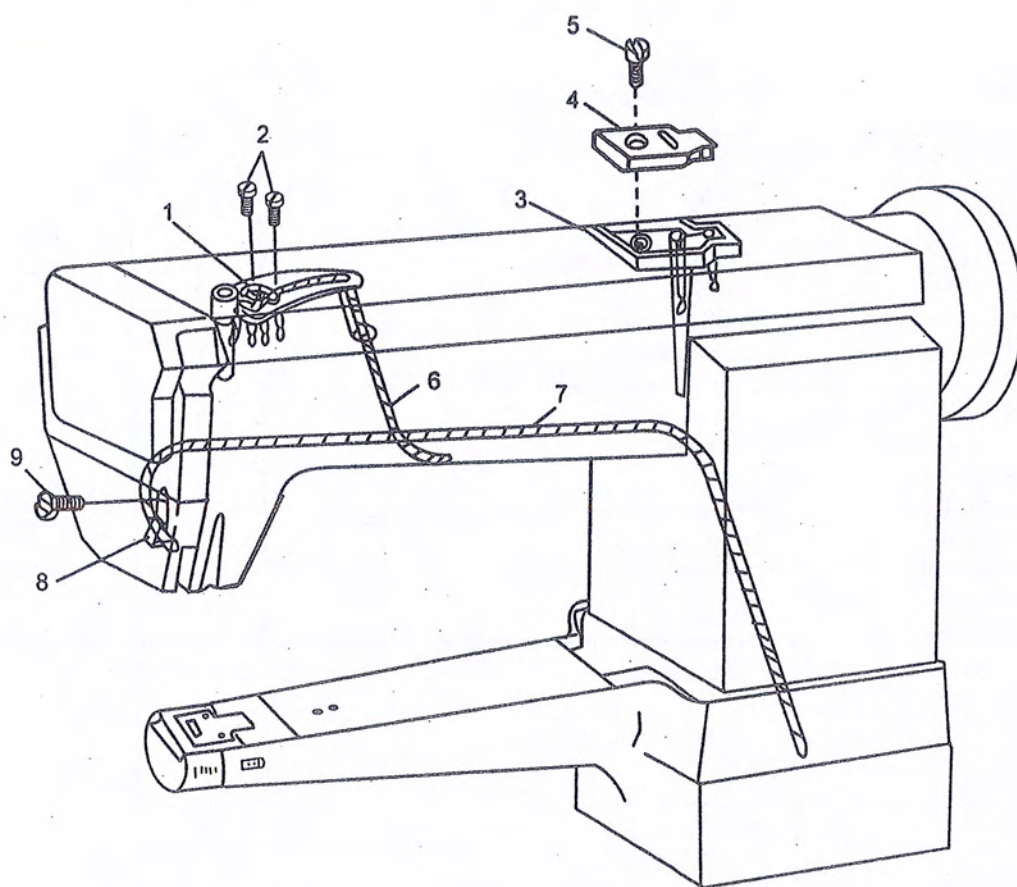
12.GC2603 top feed mechanism



12.GC2603 top feed mechanism

No.	Parts#	Description	Quantity	Remark
1	34T5-501	Oil felt	1	GB894.1 26
2	35T5-503	Small presser foot pressure regulating screw	1	
3	34T5-503	Pressure regulating screw locknut	1	
4	35T5-501	Small presser foot bar spring	1	
5	J0.0.40	Setscrew	1	
6	35T5-504	Needle bar swing shaft	1	
7	35T5-505	Spring bar	1	
8	35T5-507	Connecting rod	1	
9	35T5-509	Small presser foot bar	1	
10	35T5-513	Sliding slot	1	
11	33T1-013	Small presser foot sliding block	1	
12	34T5-507	Screw	2	
13	22T2-019	Screw	4	
14	35T5-511	Needle bar sliding block	1	
15	35T5-510	Needle bar swing stand	1	
16	34T5-518	Nut	2	
17	34T5-519	Washer	1	
18	34T5-520	Connecting rod	1	
19	34T5-516	Presser foot eccentric	1	
20	22T1-013	Screw	2	
21	34T5-521	Washer	1	
22	34T5-538a	Rear bushing	1	
23	34T5-517	Rear crank for presser foot (up & down)	1	
24	34T5-540	Screw	3	
25	61-04-01/B308	Setscrew	5	
26		Washer	1	
27	34T5-536b	Oil felt	4	
28	34T5-536a	Front bushing	1	
29	34T5-537	Presser foot up and down shaft	1	
30	34T5-522	Screw	1	
31	34T5-535	Front crank for presser foot (up & down)	1	
32	34T5-534	Connecting rod	1	
33	34T5-513b	Bolt	1	
34	35T5-506	Presser foot up and down lever	1	
35	34T5-508	Nut	3	
36	35T5-301	Presser bar set block	1	
37	34T5-527	Bolt	1	
38	34T5-539	Needle bar swing shaft	1	
39	17T4-002	Screw	1	
40	34T5-523	Rear crank for needle bar (swing)	1	
41	J0.0.63	Nut	1	
42	34T5-532	Collar	1	
43	22T3-002B 2	Collar setscrew	2	
44	34T5-533	Front crank for needle bar (swing)	1	
45	34T5-541	Screw	1	
46	34T5-531	Needle bar sliding block	1	
47	34T5-529	Fork bar	1	
48	34T5-530	Pin	1	
49	35T5-512	Needle bar swing link	1	
50	35T5-502	Small presser foot	1	
51	22T2-004	Screw	1	
52	37T5-501	Needle bar swing connecting rod	1	
53	34T5-513a	Screw	1	

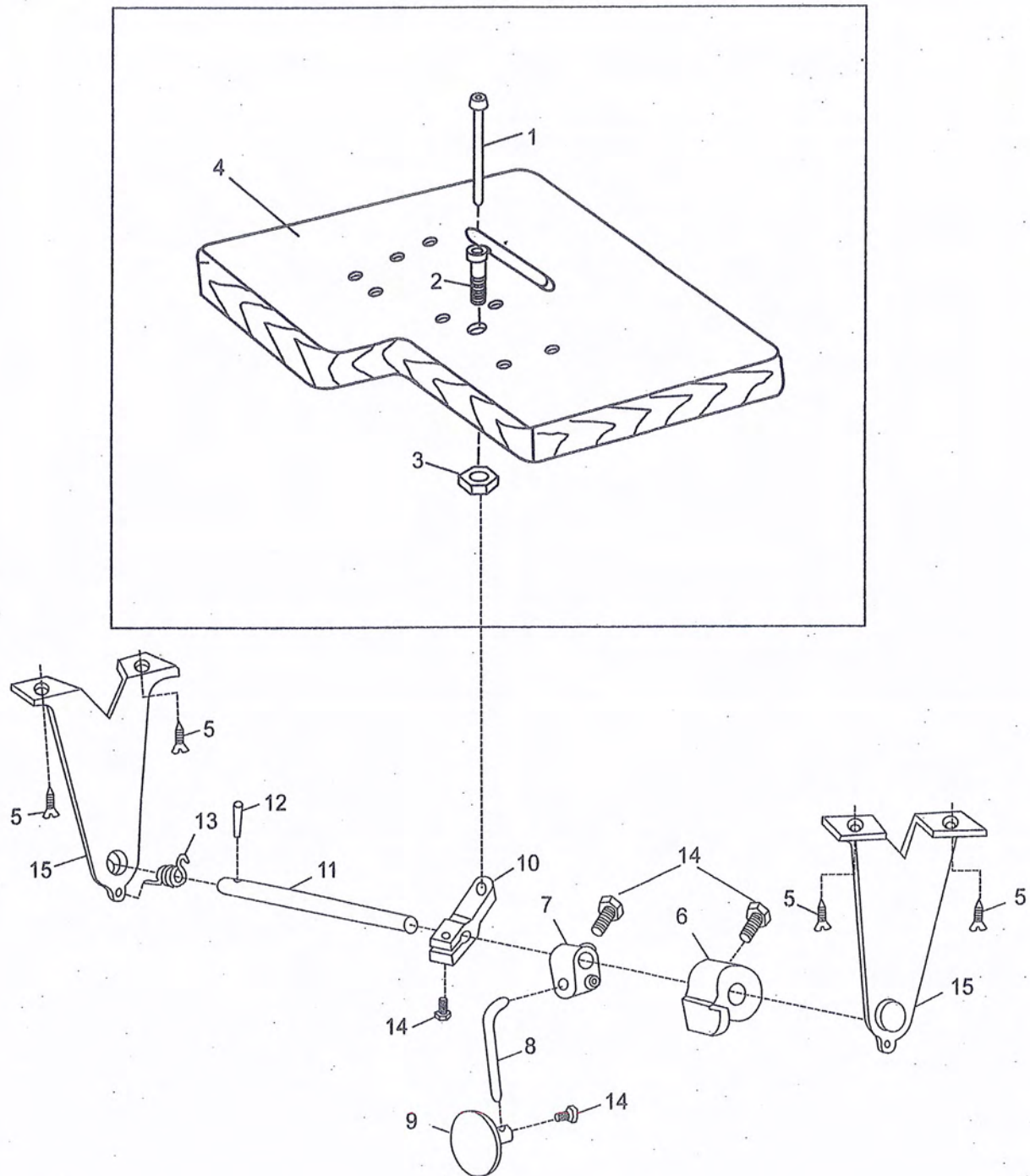
13. Lubrication mechanism



13.Lubrication mechanism

No.	Parts#	Description	Quantity	Remark
1	22T8-011C	Oil wick fixing plate	1	
2	22T8-012	Oil wick fixing plate setscrew	2	
3	33T4-005B1	Small oil box	1	
4	33T4-005B3	Oil pad	1	
5	33T4-005B2	Small oil box setscrew	1	
6	22T8-011C3	Oil wick (from fixing plate)	1	
7		Long oil wick	1	
8	22T8-016	Long oil wick clamp	1	
9	20T4-006	Long oil wick clamp setscrew	1	

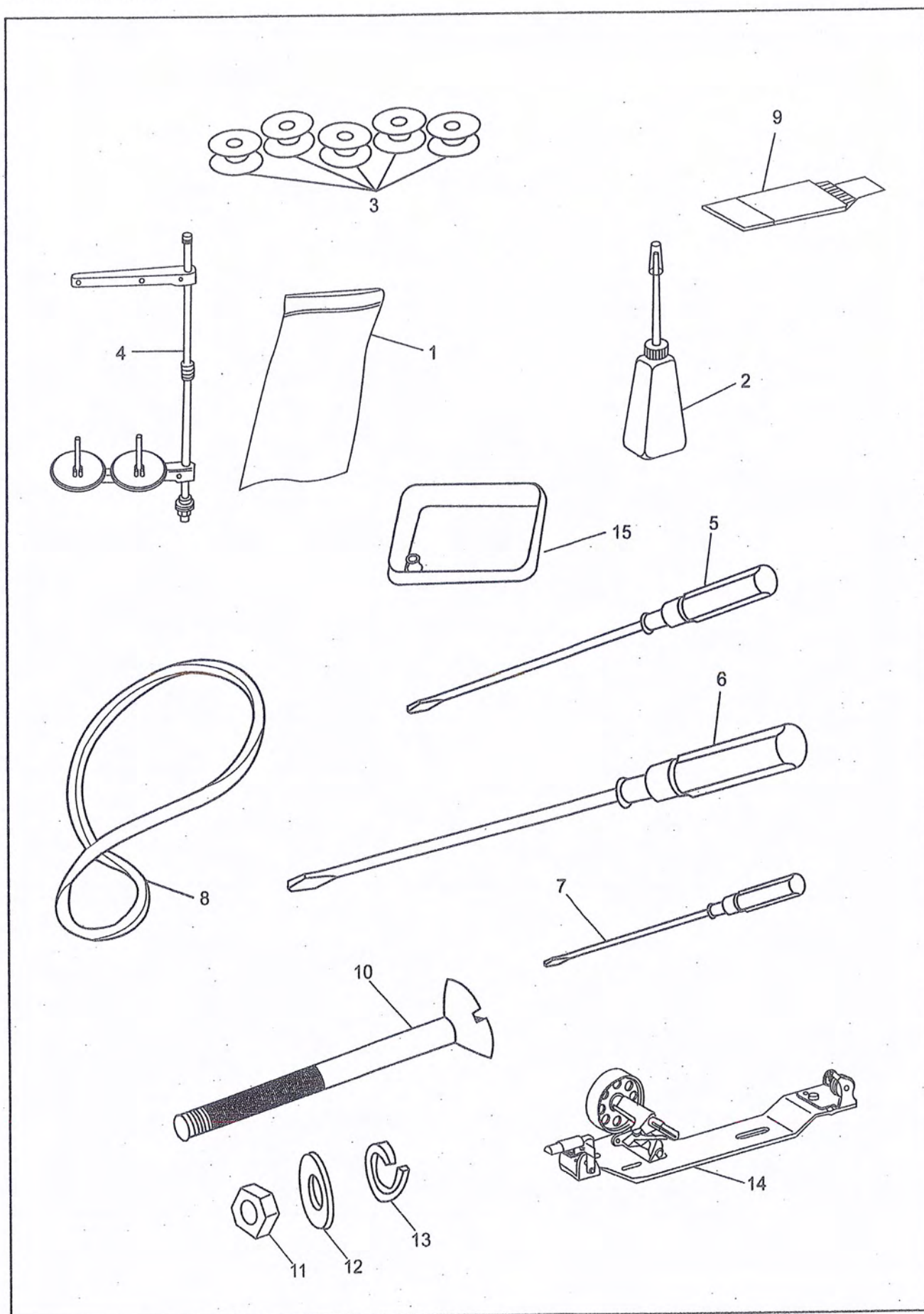
14.Knee lifter mechanism



14.Knee lifter mechanism

No.	Parts#	Description	Quantity	Remark
1	37T6-601	Knee lifter pushing rod	1	GB/T5284 ST4.8×25
2	37T6-602	Knee lifter pushing rod sleeve	1	
3	37T6-603	Hexagon nut	1	
4	37T7-701	Table	1	
5		Setscrew	4	
6	33T5-011E1	Knee lifter shaftstop block	1	GB/T119.13×12
7	33T5-008	Knee lifter joint	1	
8	33T5-009	Knee lifter rod	1	
9	32T5-010F	Knee lifter handle	1	
10	33T5-002	Knee lifter crank	1	
11	33T5-007B1	Knee lifter shaft	1	GB/T5783 M8×12
12		Pin	1	
13	33T5-006	Shaft twist spring	1	
14		Setscrew	4	
15	33T5-005	Knee lifter shaft bracket	2	

15. Accessories



15.Accessories

No.	Parts#	Description	Quantity	Remark
1	33TF - 010	Accessories bag	1	
2	33TF - 011	Small oil pot	1	
3	33T1 - 027	Bobbin	5	
4	33TF-019	Thread stand	1	
5	33TF - 013	Screw driver (middle)	1	
6	33TF - 012	Screw driver (big)	1	
7	33TF - 014	Screw driver (small)	1	
8		V-belt	1	M54
9		Needle	1包	DP×17 23#
10		Screw	4	GB/T68 M8×70
11		Nut	4	GB/T41 M8
12		Washer	4	GB/T96.1 8
13		Washer	4	GB93 8
14	27F - 002	Bobbin winder	1	
15	37T4-425	Small oil pan	1	

