

# **COBRA**

## **Class 18**

### **Industrial Sewing Machine**

### **Instruction & Parts Manual**

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## **1. PRECAUTIONS BEFORE STARTING OPERATION**

### **1) Safety Precautions:**

- (1) When turning the power on, keep your hands and fingers away from the area around/under the needle and the area around the balance wheel.
- (2) Power must be turned off when the machine is not in use, or when the operator leaves the seat.
- (3) Power must be turned off when tilting the machine head, installing or removing the "V" belt, adjusting the machine, or when replacing.
- (4) Avoid placing fingers, hairs, bars etc., near the balance wheel, "V" belt, bobbin winder balance wheel, or motor when the machine is in operation.
- (5) Do not insert fingers into the thread take-up cover, under/around the needle, or balance wheel when the machine is in operation.
- (6) If a belt cover, finger guard, eye guard are installed, do not operate the machine without these safety devices.

### **2) Precautions before Starting Operation:**

- (1) If the machine's oil pan has an oil sump, never operate the machine before filling it.
- (2) If the machine is lubricated by a drop oiler, never operate the machine before lubricating.
- (3) When a new sewing machine is first turned on, verify the rotational direction of the balance wheel with the power on. (The balance wheel should rotate counter-clockwise when viewed from the balance wheel)
- (4) Verify the voltage and (single or three) phase with those given on the machine nameplate.

### **3) Precautions for Operating Conditions:**

- (1) Avoid using the machine at abnormally high temperature (35°C or higher) or low temperature (5°C or lower)
  - (2) Avoid using the machine in dusty conditions.
-

### 3. PREPARATION AND LUBRICATION

#### 1) Cleaning the machine

Before leaving the factory, the machine parts are coated with rust-preventive grease, which may be hardened and contaminated by dust during storage and shipment. This grease must be removed with gasoline.

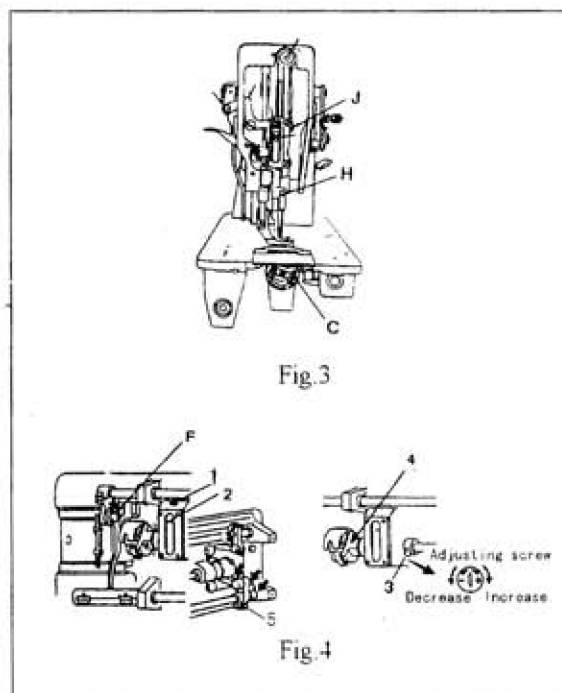
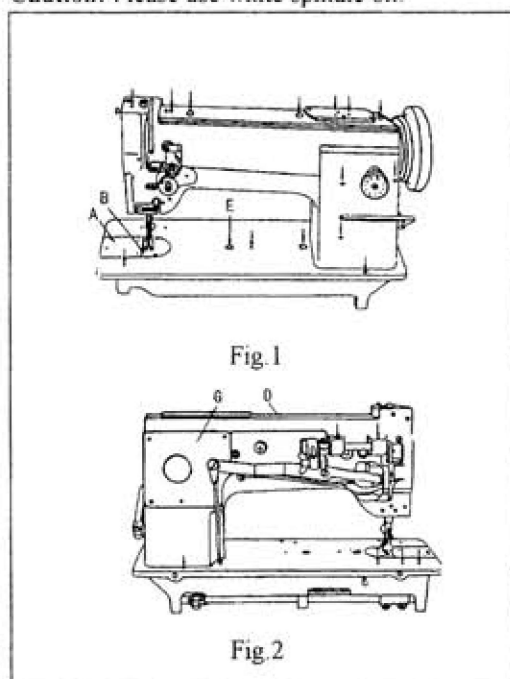
#### 2) Examination

Though every machine is confirmed by strict inspection and test before leaving the factory, the machine parts may be loose or deformed after long distance transportation with jolt. A thorough examination must be performed after cleaning the machine. Turn the balance wheel to see if there is running obstruction, parts collision, uneven resistance or abnormal noise. If these exist, adjustment must be made accordingly before run-in operation.

#### 3) Oiling (Fig.1, 2, 3, 4)

Please do not operate the machine before lubricating well. The points with arrow in the fig are oil positions.

**Caution:** Please use white spindle oil.



Lubrication of rotating hook (Fig.4)

Add the oil from the oil hole 1 until to the position 2.

Adjusting the lubrication (Fig.4)

Oil adjusting screw 3 can adjust the lubrication of the rotating hook: Turn oil-adjusting screw 3 clockwise to increase oil and turn oil-adjusting screw 3 counter-clockwise to decrease oil.

### 4. REPLACE NEEDLES (Fig.5)

1) Turn the balance wheel to lift needle bar 1 to the upper end of its stroke.

2) Loosen needle clamp screw 2. While keeping the long groove of the needle leftward fully insert the needle shank up to the bottom of the needle socket.

**Caution:** The direction of the long groove should be left.

3) Then tighten needle clamp screw 2.

## 5. WINDING (Fig.6)

1) Put the bobbin 3 on the bobbin winder shaft as far as it will go.

2) Bring the thread forward toward the bobbin and wind from below in clockwise direction several times around the bobbin.

4) Push the lever 4 toward other side so that the winding wheel and "V" belt will engage and then start the machine.

5) The winding wheel will automatically be free from "V" belt and stop after the bobbin is filled with thread.

## 6. WINDING ADJUSTMENT (Fig.6)

1) When the wound thread layer does not present a cylindrical shape, loosen set screw 5 of bobbin winder tension bracket and slide bracket leftward or rightward. After adequately positioning the bracket, tighten set screw 5.

2) Do not overfill the bobbin. The optimum length of thread will fill about 80% of bobbin capacity. This can be adjusted by adjusting screw 6 of bobbin winder stop latch.

3) Adjusting of the winding tension: The winding tension can be adjusted by tension screw 7.

## 7. REMOVING AND INSERTING THE BOBBIN

1) Turn the balance wheel to lift needle bar 1 to the upper end of its stroke. Place the feed dog at this side in its travel turning the balance wheel, and open the slide plate A. (Fig.1)

2) Open on the drip pan, and then open the hinged latch with left thumb and index finger. And pull bobbin case and bobbin from rotary hook. While the latch is held open, the bobbin will be retained in the bobbin case. Release of the latch and turning of the open side of the bobbin case downward will cause the bobbin to drop out.

3) Hold the bobbin between the thumb and forefinger of your right hand and pull out a length of about 5 cm of thread. Holding the bobbin case in your left hand turn the open side up and place the threaded bobbin into it. (Fig.7)

4) With the right hand guide the thread into the slot in the edge of the bobbin case. Then pull the thread to the left, under tension spring 1 (Fig.7) and into the delivery eye. In order to keep the bobbin from dropping out of the case when it is turned with the open side down, always keep the hinged latch at the front of the bobbin

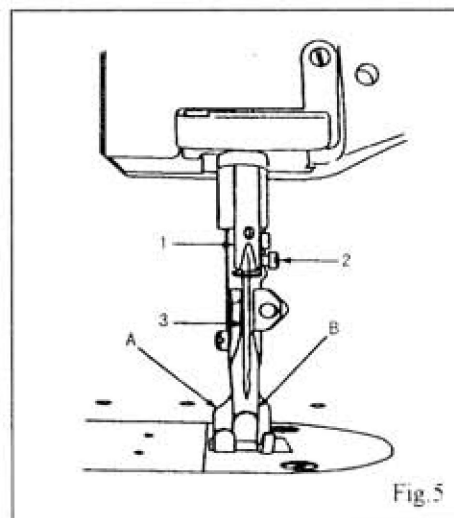


Fig.5

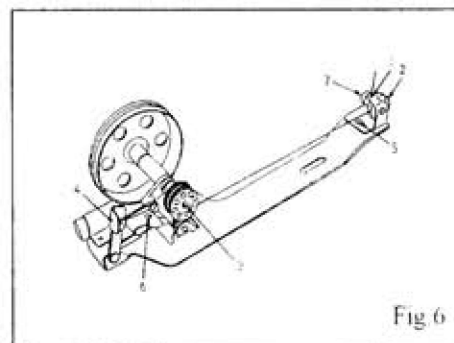


Fig.6

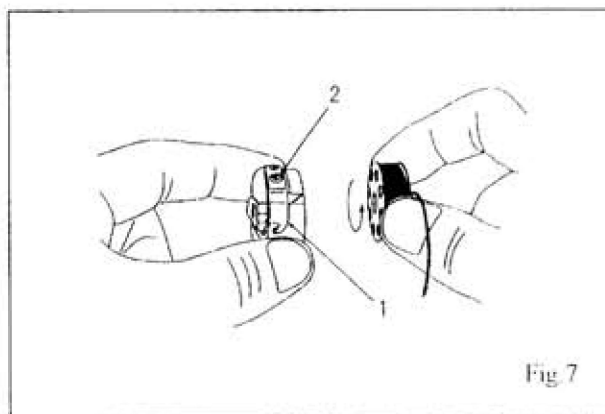


Fig.7

case open.

5) Take the threaded bobbin case by the latch and place it on the center stud of the bobbin case holder. Release latch and press bobbin case on to center stud until the latch catches the undercut thereon with a click that can be heard. Permit about 5 cm of bobbin thread to hang down freely. Be sure to push the slide plate to the right before starting to sew.

## 8. THREADING (Fig.8)

1) Raise the needle bar to its highest point and lead the thread from the thread stand the following order. From the thread stand lead the thread from back to front through the lower guide hole in pin 1 on top of the machine arm, then again from right to left through the upper guide hole in this pin. Pass thread in weaving fashion through the three holes in guide 2, and from right to left over and between the tension disc 3. Now pull thread downward and from right to left beneath and around thread controller 4, continue to pull thread upward against the pressure of the wire spring into the fork 5, in the thread controller. Guide upward through the point of controller discs 6, and thread guide 7, and from right to left through the eye in take-up lever 8, down through thread guide 7, again and then through 9, 10, 11 and from left to right through the eye of the needle 12.

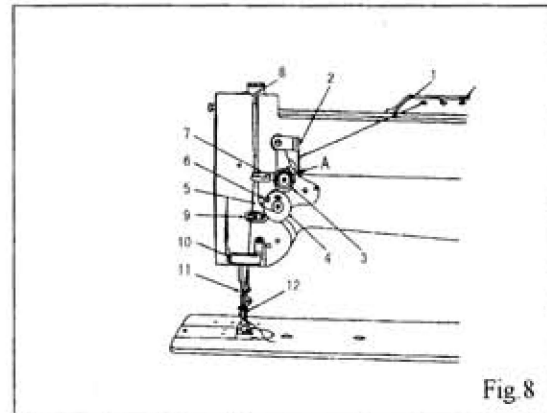


Fig.8

2) After the above threading, hold the end of thread with your left hand, and turn the balance wheel with your right hand so that bobbin thread may be picked up by needle thread. And put their ends of thread back through under the presser foot for starting operation.

## 9. REGULATING THE THREAD TENSIONS

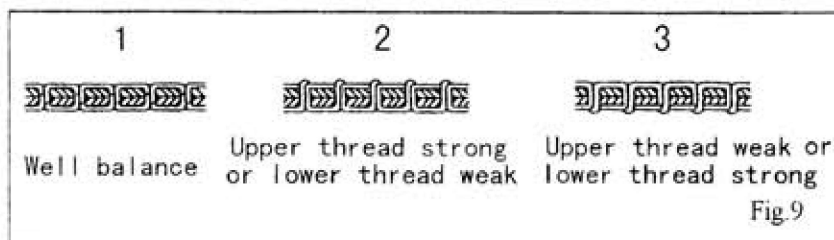
For ordinary stitching, the tension of the upper and the lower threads should be equal so as to lock both threads in the center of the material. (1 Fig.9) If the tension on either thread is stronger than on the other, imperfect stitching will be the result. If the tension on the upper thread is greater than that on the lower thread, it will lie straight along the upper surface of the material. (2 Fig.9) If the tension on the lower thread is greater than that on the upper thread, the lower thread will lie straight along the underside of the material. (3 Fig.9)

1) Tension of the upper (needle) thread:

Before adjusting the tension of the upper (needle) thread, be certain that the presser foot is let down but not in lifted position. To adjust tension, turn serrated nut (A Fig.8) on tension device to clockwise to increase tension, while turning it to counter-clockwise to decrease it.

2) Tension of the lower (bobbin) thread: (Fig.7)

The lower (bobbin) thread tension is controlled by the larger screw (2 Fig.7) near the end of the spring at the outside of the bobbin case. Turning this screw to clockwise to increase the thread tension, while turning it to counter-clockwise to decrease it.



## 10. ADJUSTMENT OF THE PRESSURE ON THE MATERIAL

The pressure of the presser feet is adjusted by the screw D (Fig.2) with screwdriver. To increase the pressure, turn the screw to clockwise and to counter-clockwise to decrease it.

## 11. ADJUSTING THE LIFT OF THE ALTERNATING PRESSER FEET

(Fig.10)

The thickness of the material should control the height of the lift of the alternating presser feet. The lift should be just enough for clearance of the material.

1) With normal adjustment both feed lift to equal height: To later lift, loosen the wing nut A and move the link and stud assembly along the slot-move up to raise the feeding presser foot and push down to lower this foot. Tighten wing nut upon completion of adjustment. However, some materials may require unequal height of lift.

2) When altering the lift of the lifting presser foot (A Fig.5) unequally against that of the vibrating presser foot (B Fig.5) or vice versa, see the instructions " ADJUSTING THE HEIGHT OF THE PRESSER FEET "

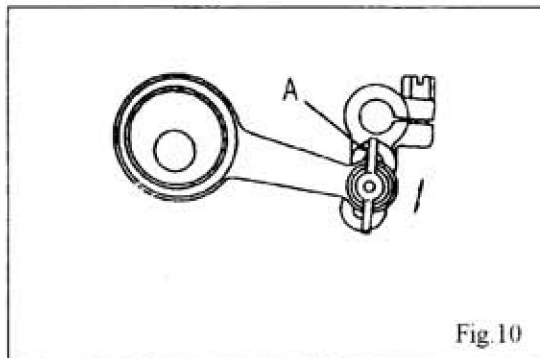


Fig.10

## 12. STITCH LENGTH ADJUSTMENTS

### AND REVERSING LEVER (Fig.11)

Stitch length can be set by turning the detail 2. Numeric figures on the dial show the stitch length in mm. The desired numeric figure on the dial should be set at just above, while depressing the reversing lever 1 slightly.

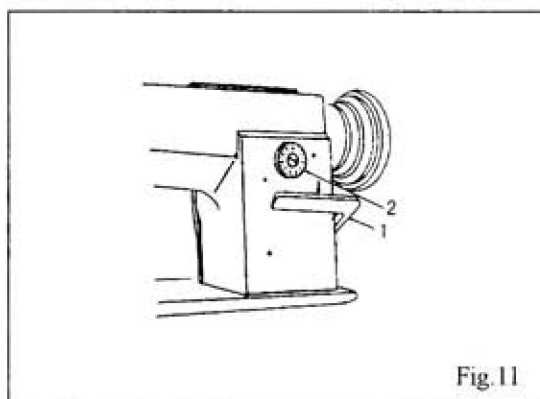


Fig.11

## 13. ADJUSTING THE HEIGHT OF THE FEED DOG (Fig.12)

The maximum height of the feed dog (1 Fig.12) from the surface of the needle plate (2 Fig.12) is normally 1 mm.

1) Lay down the machine head toward the other side, and turn the balance wheel so as to raise the feed dog to it highest point.

2) Loosen bell crank screw F (Fig.4) and adjust the height of the feed dog by raising or lowering it.

3) Securely tighten the screw upon completion of adjustment.

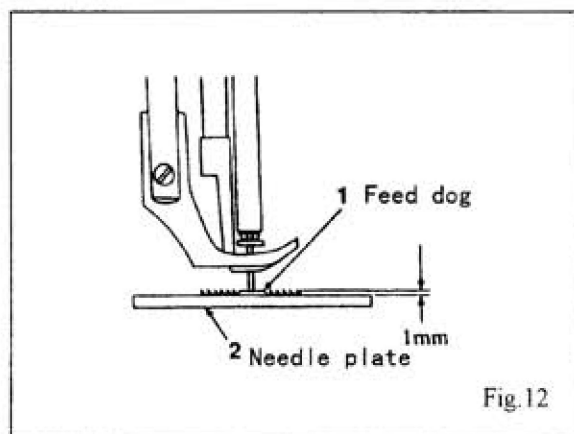
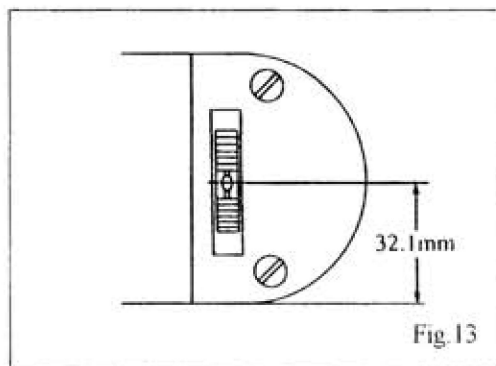


Fig.12

## 14. RELATIVE POSITION OF THE FEED DOG TO NEEDLE PLATE

(Fig.13)

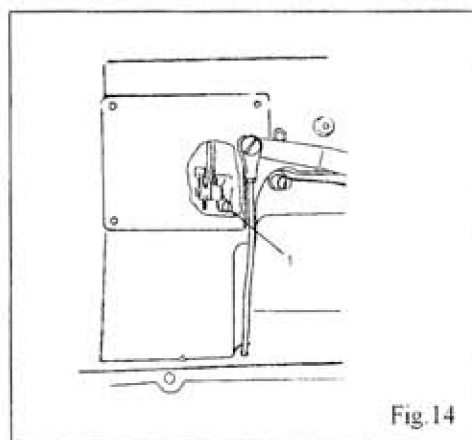
- 1) Set the stitch length at minimum.
- 2) Turn the balance wheel so as to raise the feed dog to its highest point.
- 3) Lay down the machine head toward the other side and loosen the screw 5 (Fig.4).
- 4) Adjust to be 32.1 mm from the edge of the needle plate to the center of the needle hole on the feed dog. (Fig.13)
- 5) Securely tighten the screw.



## 15. THE POSITION OF THE NEEDLE AND THE NEEDLE HOLE OF THE FEED DOG

Turning the balance wheel to lower slowly the needle bar, check whether the needle descends to the center of the needle hole of the feeder or not. (Please check again the needle is perfect one.)

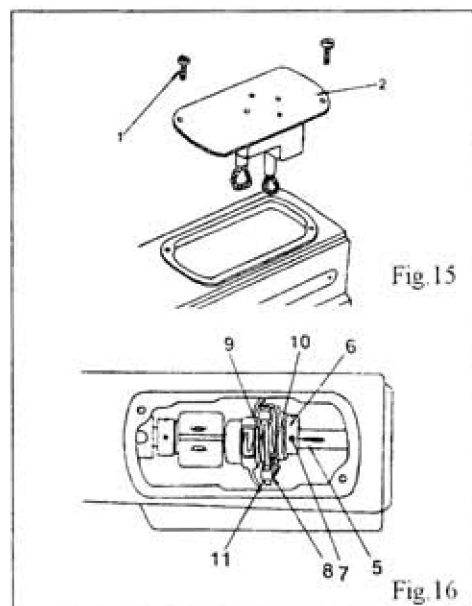
- 1) Remove the cover G (Fig.2) and loosen the screw 1 (Fig.14) slightly.
- 2) Holding the bottom of the needle bar rock frame H (Fig.3), move it as may be required to get the correct position to the feed dog.
- 3) Tighten the screw and close the cover.



## 16. TIMING THE NEEDLE WITH FEED DOG (Fig.15, Fig.16)

It is important that the timing relationship between the needle on its downward stroke and the feed dog movement is maintained at all times. When the scarf of the needle on the downward stroke reaches the top surface of the feed dog, the feed dog movement must start. When adjustment is required, use the following procedure to change the position of cam

- 1) Loosen the screw 1 for cover plate 2 and then remove the cover plate 2.
- 2) Normally put the arrow mark 7 of the cam 6 on the V ditch 5 of arm shaft. Then tighten the cam screw.
- 3) Turn the balance wheel to the needle at 1 mm up from its lowest point.
- 4) Pushing the stitch length regulating lever up and down, turn the cam 6 and set this at the point both the needle and the feed dog rest. After positioning completed, tighten the each screw securely





## 17. ADJUSTING THE HEIGHT OF THE NEEDLE BAR (Fig.17)

When the needle bar is at its highest point, normally the measurement between the surface of the needle plate and the upper end of the needle eye is 22.3 mm.

You can also adjust this at its lowest point. In this case, normally the measurement between the surface of the needle plate and the upper end of the needle eye is 11 mm. To adjust this, loosen the screw J (Fig.3) and raise or lower the needle bar as may be required. Then, tighten the screw upon completion of adjustment.

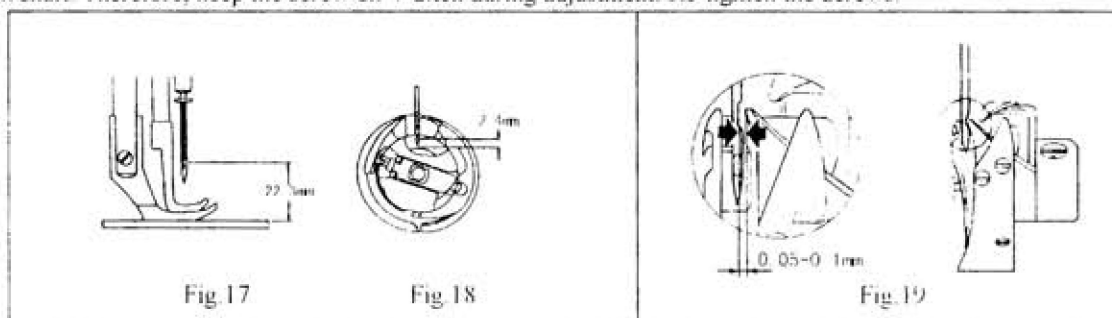
NOTE: These measurements are approximate standard, accordingly, following final adjustments "TIMING BETWEEN THE HOOK AND THE NEEDLE" are recommended.

## 18. TIMING BETWEEN THE HOOK AND THE NEEDLE (Fig.18, Fig.19)

After setting the needle bar height, set stitch length to minimum, turn the balance wheel toward you until the needle bar reaches its lowest point. Continue turning and allow the needle bar to raise about 2 mm while on its upward stroke. With needle bar in this position, the point of the sewing hook should be at the center of the needle, and normally, the measurement between the hook point and the upper end of the needle eye should be 2.4 mm, further the clearance between the hook point and the needle hollow should be about 0.05 to 0.1 mm.

1) If the sewing hook should not be timed correctly, loosen the three set screws. Turn the hook shaft to align the hook point with the center of the needle. Re-tighten the three set screws and re-check the timing of the sewing hook.

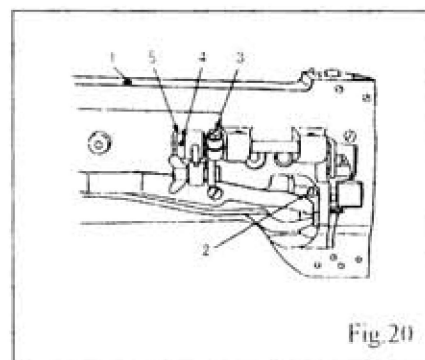
2) To adjust the clearance between the hook point and the needle hollow, loosen the two screws and move the hook to the right or to the left as may require. Please note one of the two screws is placed on the V ditch of hook shaft. Therefore, keep the screw on V ditch during adjustment. Re-tighten the screws.



## 19. ADJUSTING THE HEIGHT OF THE PRESSER FEET (Fig.20)

1) Adjustment by the presser bar lifter: Loosen the screw 1 sufficiently, raise the presser bar lifter and loosen the set screw 2. Move the lifting presser foot up or down as may be required so as to get the correct height and tighten the screws.

2) Adjusting the lift of alternating presser feet: If the height of the lifting presser foot changes, the momentums of the lifting and vibrating presser foot vary, thus the height of the vibrating presser foot must be adjusted. To adjust this, lower the presser bar lifter, holding the vibrating presser foot B (Fig. 6) and loosen the hexagon screw 3 and move the presser foot up or down as may be required. After setting the position, tighten the screw.



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## 20. TIMING OF THE VIBRATING PRESSER FOOT

This is the normal timing when turn the balance wheel toward you, after lowering the presser bar lifter, the vibrating presser foot should reach the feed dog earlier than the needle eye comes to, and when the needle raises, the vibrating presser foot should leave the feed dog after the needle eye has left the feeder. This is due the reason that the vibrating presser foot must tightly hold the goods while the needle is passing the goods for avoiding irregular stitches. To adjust this, set the lift of the alternating presser feet to equal, loosen the two screws 4 (Fig.20) and adjust the rotating position of the cam 5 (Fig.20) faster or slower as may be desired, and tighten the screws.

## 21. ADJUSTMENT OF THE CLEARANCE BETWEEN FEED FORKED

### CONNECTION AND FEED FORK COLLAR (Fig.15, Fig.16)

Incorrect clearance between the fork 8 of feed forked connection and feed fork collar 9 will bring irregular stitch length or overheating, etc. To adjust this, open the cover plate. Remove the cover plate and the oil reservoir. To increase the clearance, loosen the screw and turn the screw to left or counter-clockwise. This adjustment should be done with turning the balance wheel toward you to get correct clearance. Upon completion of adjustment, tighten the screw which is loosened to touch the feed fork.

## 22.ADJUSTING THE THREAD CONTROLLER SPRING (Fig.21)

Normally, the thread controller spring 1 should hold slack of the upper thread until the needle reaches to the goods, and it should pause while raising of the needle and passing of the upper thread through the bobbin case.

1) For more controller action on the thread: Loosen the stop screw 2, move the stop to the right (For less action, move to the left). Tighten the screw.

2) To adjust the tension spring: Loosen the serrated nut 4 and the screw 5. Turn the tension stud 6 slightly to the left to strengthen the tension (to lighten the tension, turn to the right) with a screwdriver. Tighten the screw and nut upon completion of adjustment.

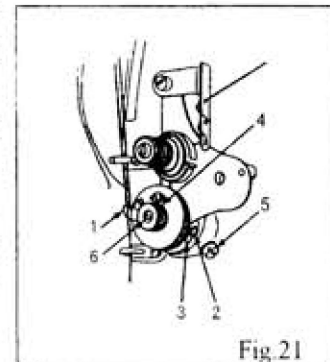
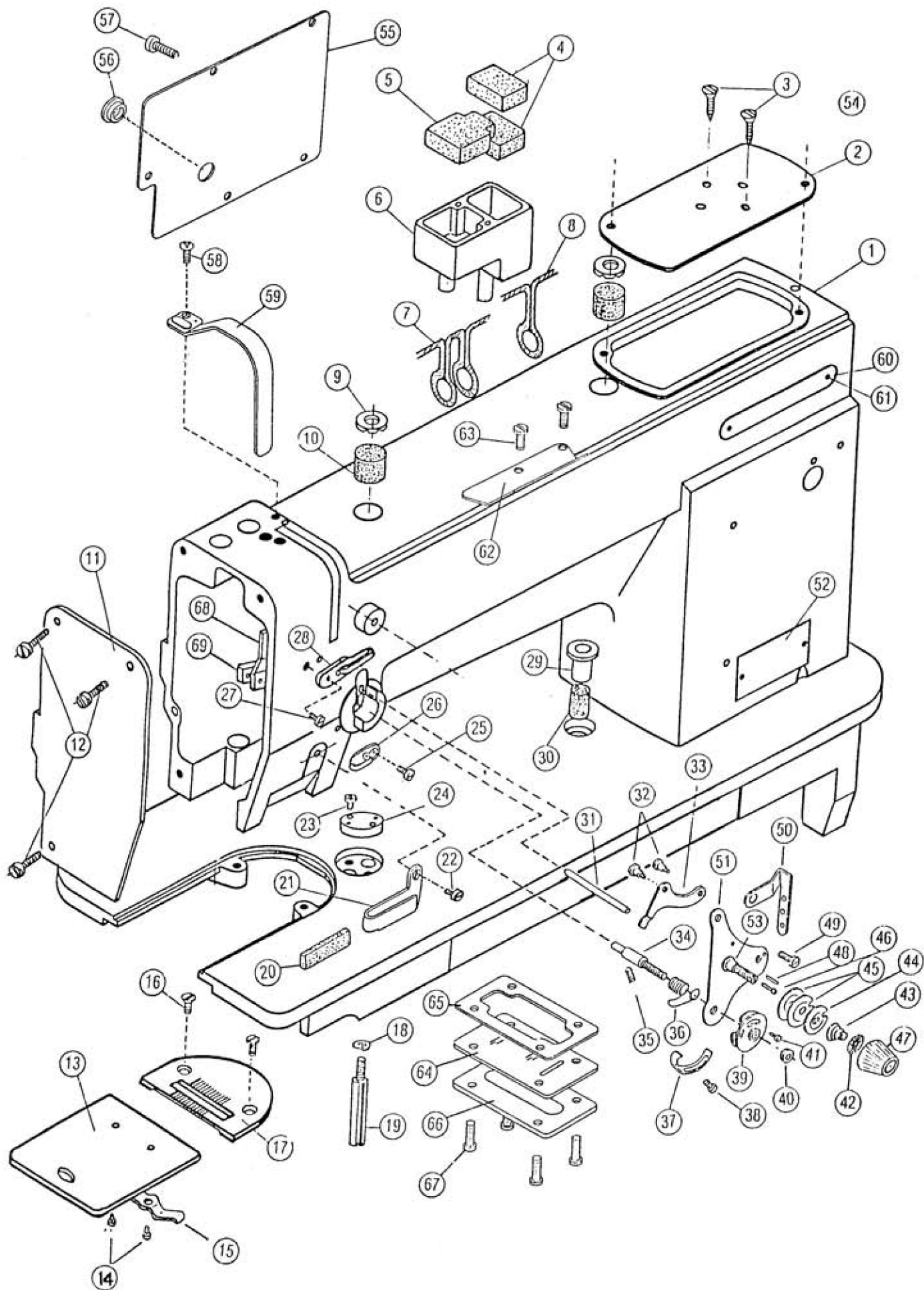


Fig 21



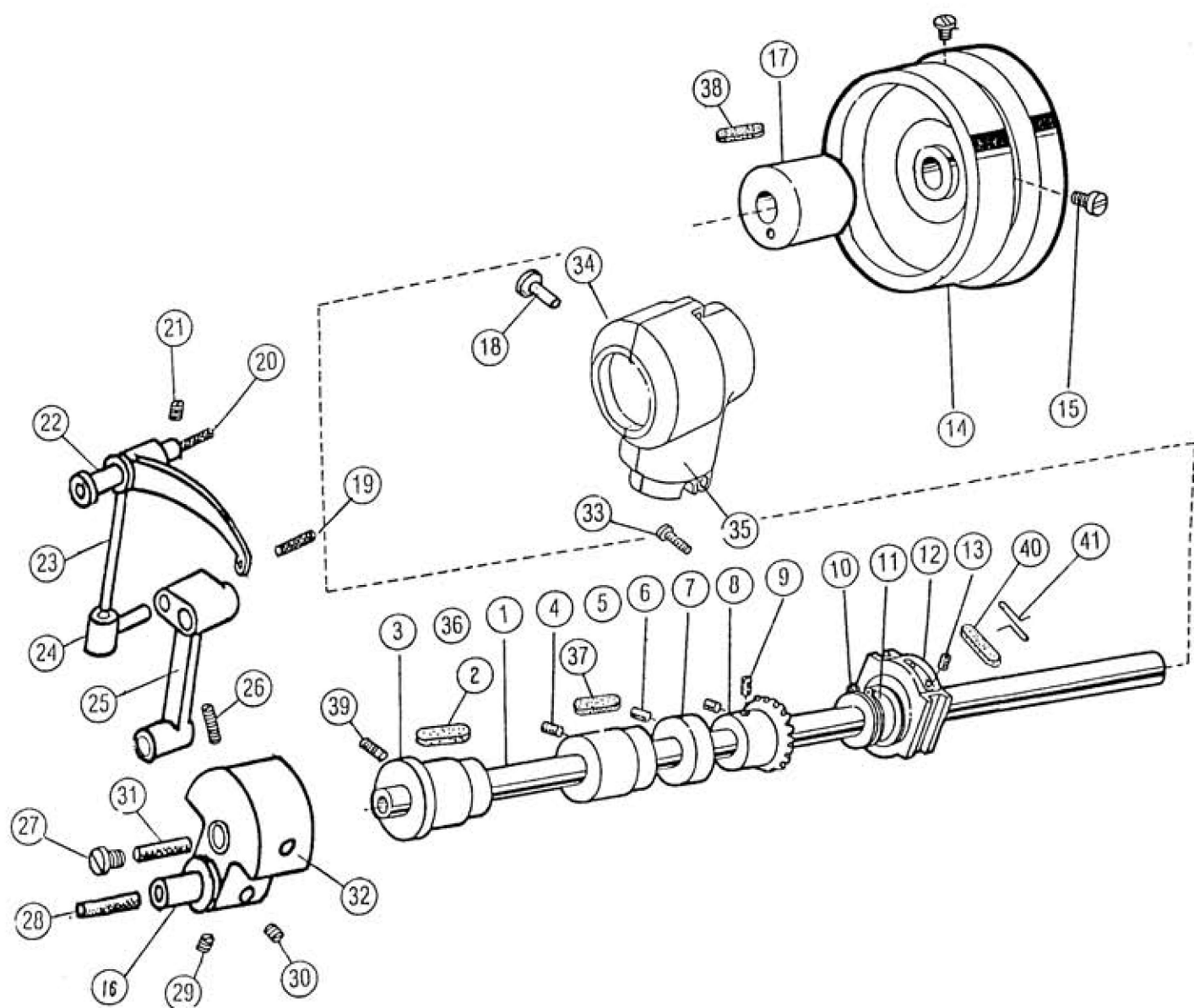
## A: ARM BED AND THEIR ACCESSORIES



## A: ARM BED AND THEIR ACCESSORIES

Fig.No.	Part No.	Name of part	quantity
A01	31H1-001A1a2	arm Assy	1
A02	31H1-012H1	arm cap	1
A03	GB847-76	wood screw	2
A04	20H12-017E	oiling felt	1
A05	20H12-017C	oiling felt	2
A06	20H12-017B	oil tank	1
A07	20H12-017D	oil wick	1
A08	20H12-017D	oil wick	1
A09	24H9-001	oil cap	1
A10	24H9-002	oiling felt	1
A11	31H1-003C1	face plate	1
A12	72T1-017	face plate set screw	2
A13	22T1-021G1	bed slide	1
A14	22T1-021G3	set screw for bed slide spring	2
A15	22T1-021G2	bed slide spring	1
A16	20H1-005	set screw for needle plate	2
A17	31H1-009	needle plate	1
A18	GB93-76	spring washer	1
A19	20H1-006A3	leg	1
A20	31H1-005E2	felt for thread guide	1
A21	31H1-005E1	thread guide (lower)	1
A22	73T2-007	set screw for thread guide	1
A23	72T1-013	cloth guide plate screw	2
A24	20H1-004	cloth guide plate	1
A25	22T1-003C6	thread guide (middle) screw	1
A26	22T1-003C5	thread guide (middle)	1
A27	24H1-008	thread guide (up) screw	1
A28	24H1-007	thread guide (up)	1
A29	20H12-009	oil cap	1
A30	20H12-008	oiling felt	2
A31	31H6-023	tension release lever rod	1
A32	25H2-001A10	tension release lever screw	2
A33	31H1-008F4	tension release lever	1
A34	25H2-001A2	thread controller stud	1
A35	72T1-008	tension stud screw	1
A36	31H1-008F2	thread controller spring	1
A37	32H1-018D8a19	thread controller spring stop	1
A38	32H1-018D8a11	set screw for spring stop	1
A39	25H2-001A4	thread controller disc	1
A40	25H2-001A8	tension thumb nut	1
A41	31H1-008F3	thread controller disc screw	1
A42	22T1-012F10	stop disc	1
A43	74T1-004D	tension release spring	1
A44	25H2-001A7	tension release washer	1
A45	25H2-001A6	thread disc	2
A46	25H2-001A12b	tension release plunger	1
A47	72T1-007F1	thumb nut	1
A48	25H2-001A1b	tension bracket pin	1
A49	82T2-003C1a6	set screw for tension bracket	1
A50	31H1-007	thread retainer	1
A51	31H1-008F1a1	tension bracket	1
A52	31H1-002B1	the name of machine	1
A53	25H2-001A2	tension stud	1
A54	72T1-017	set screw for tank	2
A55	31H1-004D1	arm side cover	1
A56	20H1-001	rubber plug	1
A57	72T1-017	set screw for arm side cover	5
A58	72T1-016	set screw for thread take-up guard	1
A59	31H1-006	thread take-up guard	1
A60	24H1-001B2	brand	1
A61	GB827-86	rivet	6
A62	24H1-010	thread guide	1
A63	82T1-006	set screw for thread guide	2
A64	20H12-018	oil window	1
A65	20H12-019	sealing washer	1
A66	20H12-020	gland	1
A67	72T1-017	set screw for gland	5
A68	24H1-005	oil guard	1
A69	24H1-006	plate for oil guard	1

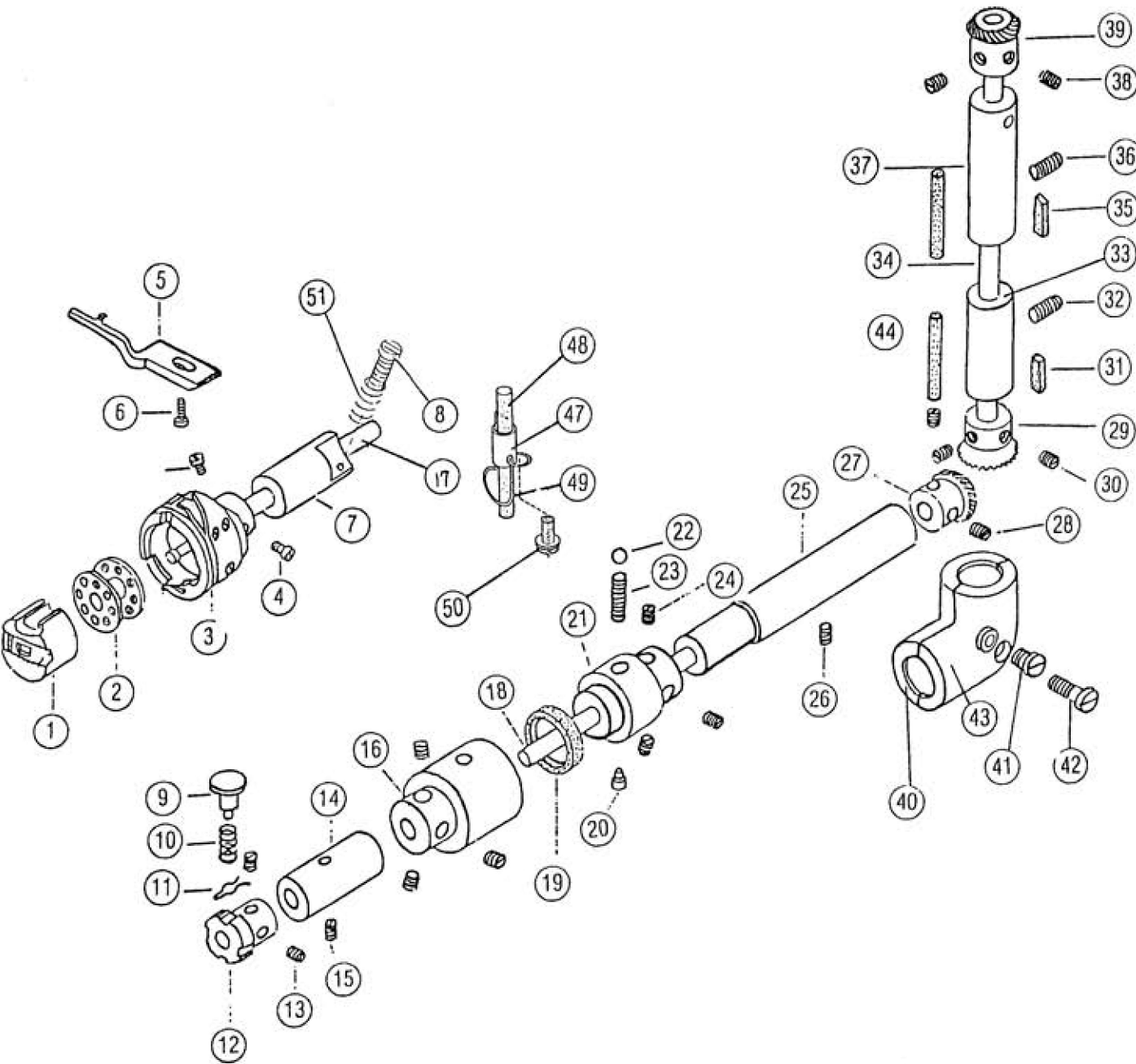
## B: ARM SHAFT, TAKE UP LEVER



**B: ARM SHAFT, TAKE UP LEVER**

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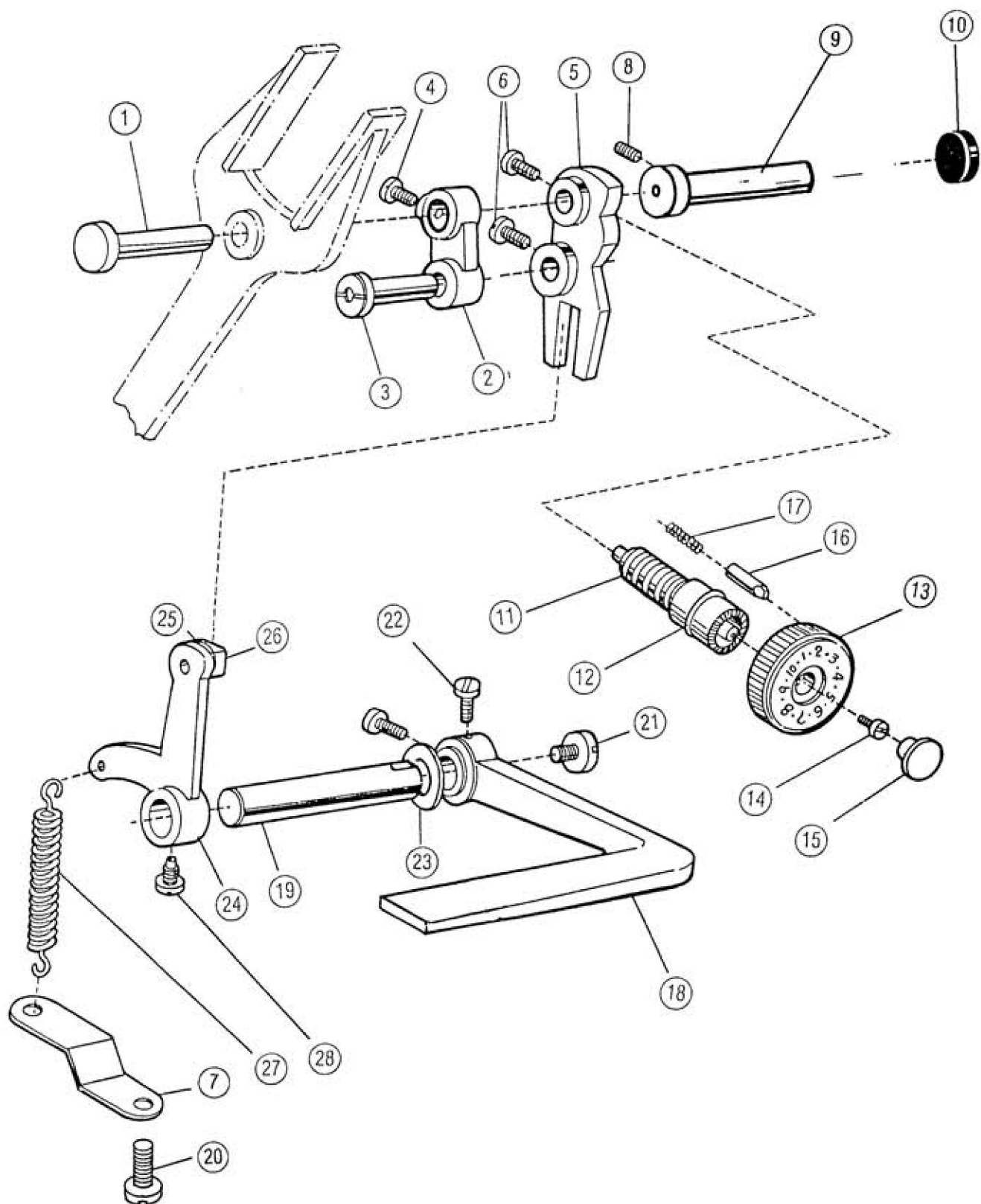
C: ARM SHAFT (UPRIGHT), LOWER SHAFT



### C: ARM SHAFT (UPRIGHT), LOWER SHAFT

[illegible]

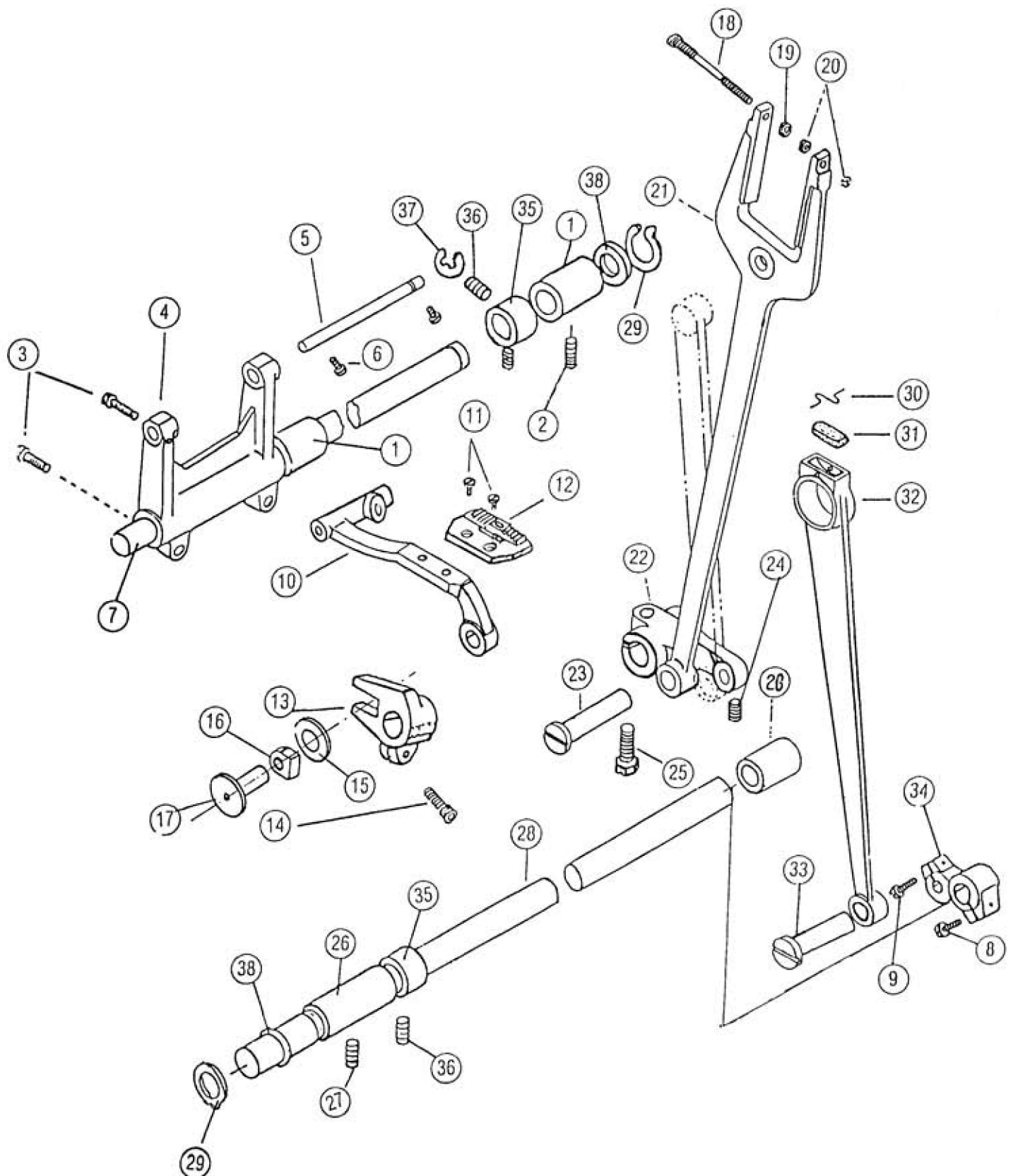
## D: STITCH LENGTH REGULATING MECHANISM



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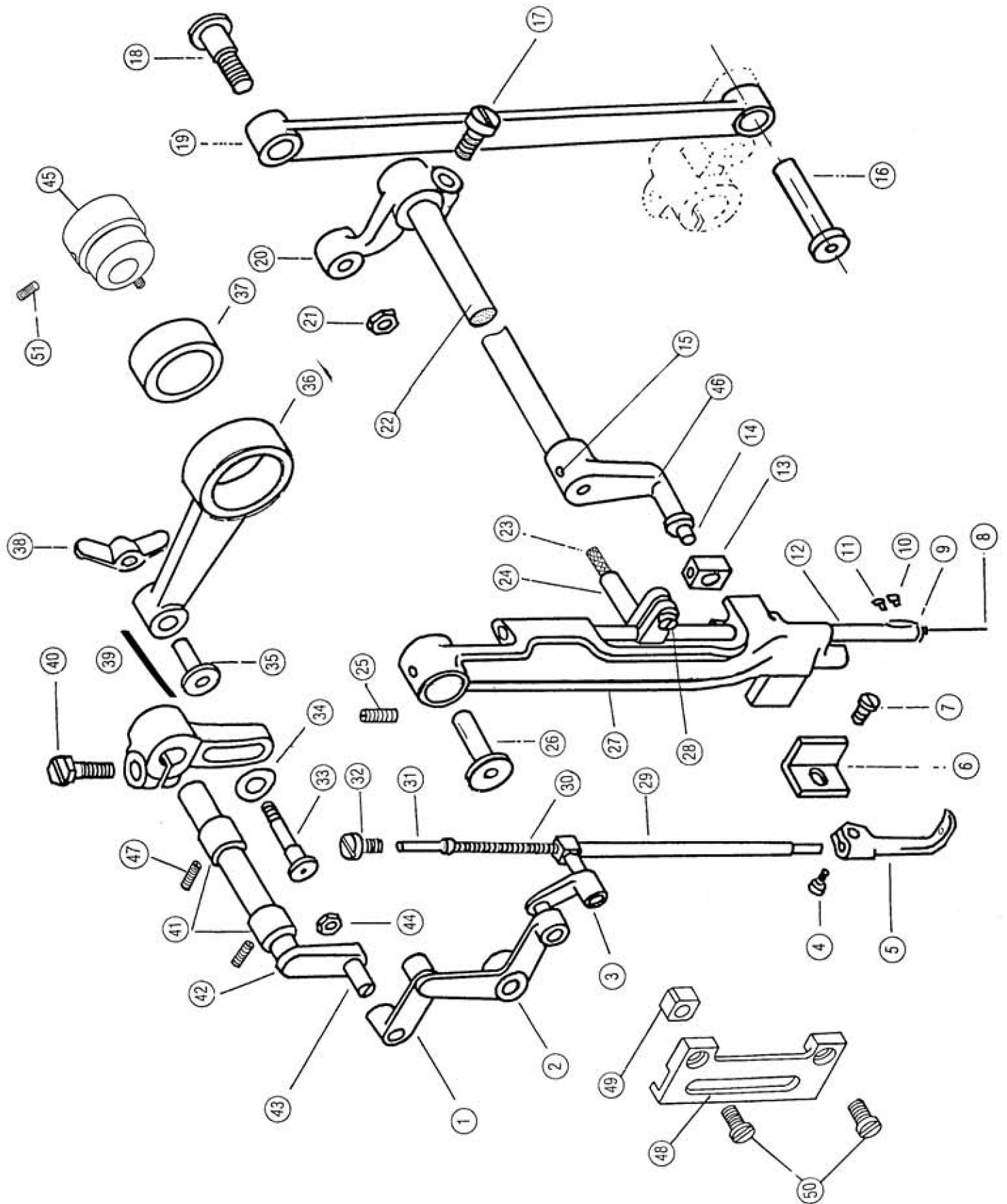
## E: LOWER FEEDING MECHANISM



### E: LOWER FEEDING MECHANISM

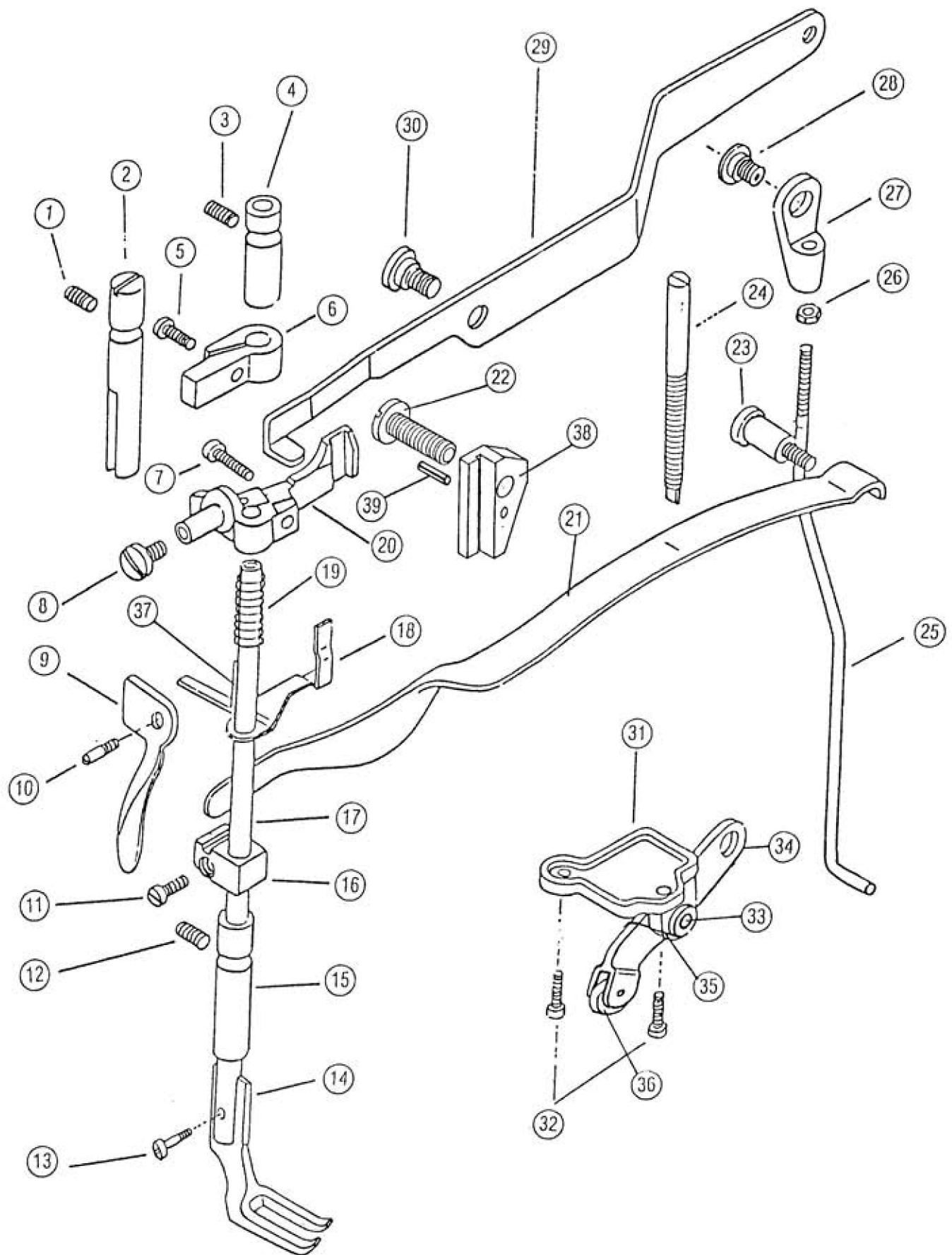
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## F: NEEDLE BAR, FEEDING MECHANISM



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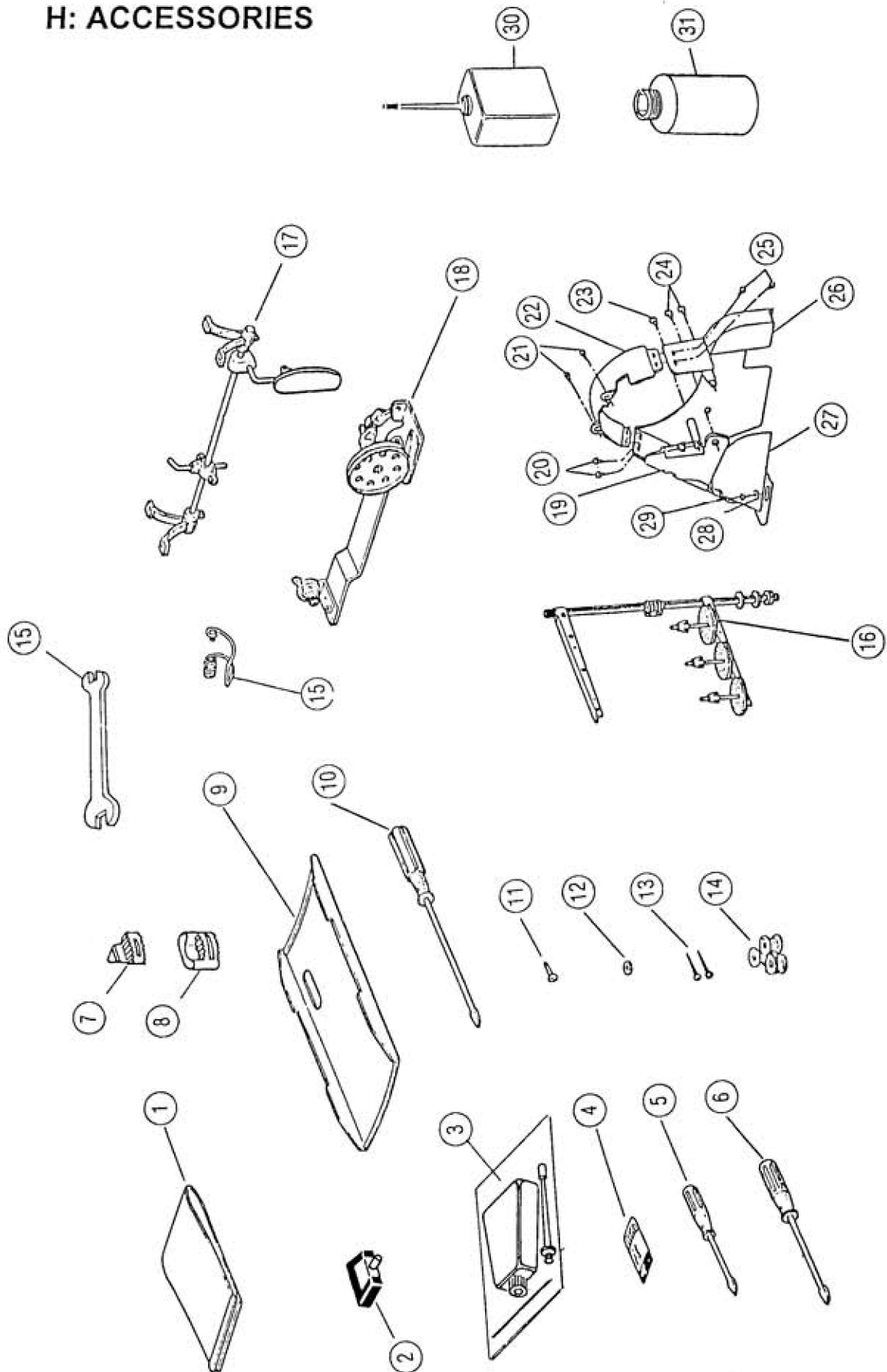
## G: PRESSER BAR



[illegible]

Fig.No.	Part No.	Name of part	quantity
G01	22T2-002	set screw for presser bar position guide	1
G02	31H6-002	presser bar position guide	1
G03	22T2-002	set screw for presser bar bushing (upper)	1
G04	31H1-001A4	presser bar bushing (upper)	1
G05	22T8-012	pinch screw for presser bar position guide bracke	1
G06	31H6-003A2	presser bar position guide bracket	1
G07	31H6-004B1	screw for presser bar lifting bracket	1
G08	31H6-004B2	set screw for lifting bell crank	1
G09	31H6-007	presser bar lifter	1
G10	31H6-008	screw for presser bar lifter	1
G11	24H8-001A3d	pinch screw for presser bar spring bracket	1
G12	22T2-002	set screw for presser bar bushing (lower)	1
G13	31H6-012	pinch screw for lifting presser foot	1
G14	31H6-011	lifting presser foot	1
G15	31H1-001A6	presser bushing (lower)	1
G16	31H6-010C1	presser bar spring bracket	1
G17	31H6-009	presser bar	1
G18	31H6-006A1	tension release slide	1
G19	31H6-005	tension release spring	1
G20	31H6-004B3	presser bar lifting bracket	1
G21	31H6-015	presser bar spring (flat)	1
G22	31H6-022	set screw for presser bar lifting bracket guide	1
G23	31H6-017	presser bar spring supporting screw	1
G24	31H6-016	presser bar spring regulating screw	1
G25	31H6-024	knee lifter lifting lever connecting rod	1
G26	20H8-016	knee lifter lifting lever connecting rod nut	1
G27	20H8-015	knee lifter lifting lever connecting rod joint	1
G28	20H8-014	set screw for knee lifter lifting lever connectin	1
G29	31H6-014	knee lifter lifting lever	1
G30	31H6-013	set screw for knee lifter lifting lever	1
G31	31H5-025A1	knee lifter bell crank base	1
G32	20H8-020	set screw for knee lifter bell crank complete	1
G33	GB119-86	pin	1
G34	31H5-025A2	knee lifter bell crank	1
G35	20H8-019	spring for knee lifter bell crank	1
G36	20H8-018D	roller	1
G37	31H6-006A2	guide for tension release slide	1
G38	31H6-021	presser bar lifting bracket guide	1
G39	GB879-86	spring pin	1

## H: ACCESSORIES



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[illegible]