

# **GLOBAL**

## **NF 331 SERIES**

**NF 331                      NF 331-LH**  
**NF 331/AUT              NF 331-LH/AUT**

**HIGH SPEED NEEDLE BAR FEED  
LOCKSTITCH MACHINE**

# **INSTRUCTION MANUAL SPARE PARTS LIST**

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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:

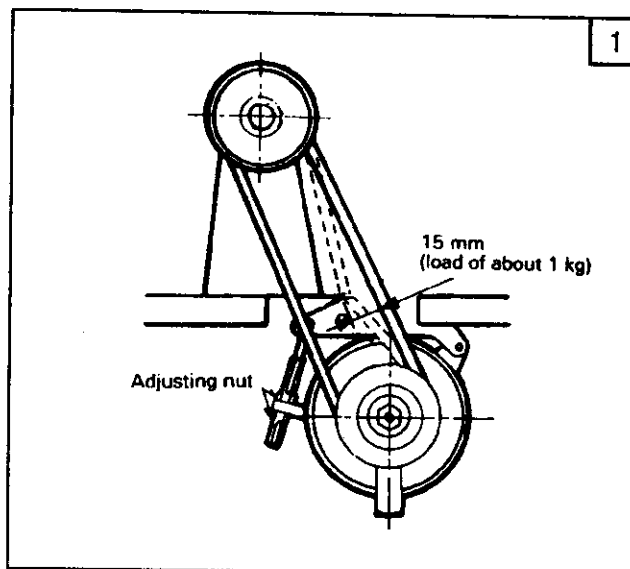
- (1) Avoid using the machine at abnormally high temperature (35°C or higher) or low temperature (5°C or lower) .
- (2) Avoid using the machine in dusty conditions.

# 2. MAIN SPECIFICATIONS

| Item                | NF 331                |       | NF331-LH | NF331/AUT                                  | NF331-LH/AUT |
|---------------------|-----------------------|-------|----------|--|--------------|
| Material            | Light-Medium heavy    |       | Heavy    | Light-Medium heavy                         | Heavy        |
| Max.sewing speed    | 5000rpm               |       | 3000rpm  | 5000rpm                                    | 3000rpm      |
| Max.Stitch length   | 4 mm                  |       | 5 mm     | 4 mm                                       | 5 mm         |
| Needle bar stroke   | 31.8 mm               |       | 35 mm    | 31.8 mm                                    | 35 mm        |
| Needle              | DB×1#14               |       | DP×5 #22 | DB×1 #14                                   | DP×5 #22     |
| Presser             | By hand               | 5 mm  |          |  |              |
|                     | By knee               | 11 mm |          |  |              |
| Touchback mechanism |                       |       |          | ●  |              |
| Lubrication         | AUTOMATIC             |       |          |  |              |
| Trimming mechanism  |                       |       |          | ●  |              |
| Reversing mechanism |                       |       |          | ●  |              |
| Rotating hook       | Auto lubrication hook |       | Big hook | Auto lubrication hook<br>(Thread trimming) | Big hook     |
| Motor               | 370W clutch motor     |       |          | Speed adj. Motor                           |              |

### 3. INSTALLING THE BELT (Fig.1)

- 1) Use a V-belt for sewing machine use, type M
- 2) To adjust the belt tension, change the motor height by turning the tension adjust nuts so that the belt sinks about 15 mm when depressed by hand at the center of the belt span. If the tension is too low, the speed may not be consistent in the low or medium range, or the needle may not stop in the proper position. If the tension is too high, the motor bearings will deteriorate more rapidly.



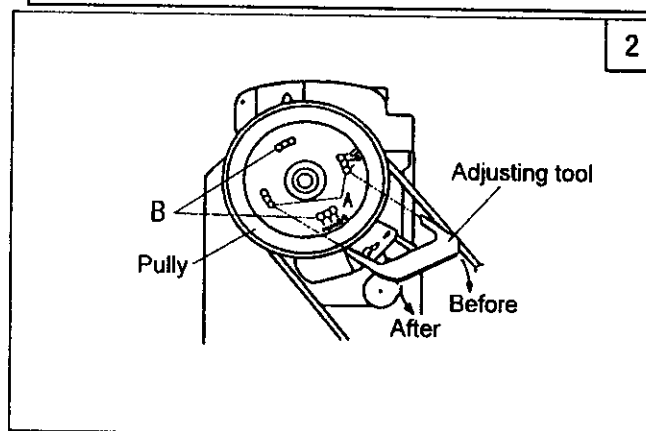
### 4. ADJUSTMENT OF NEEDLE BAR

#### STOP POSITION (Fig. 2, 3)

##### 1) Adjusting of "Up" position

When the pedal is kicked down by heel, the machine stops at "UP" position. If the marks deviate larger than 3 mm adjust as follows:

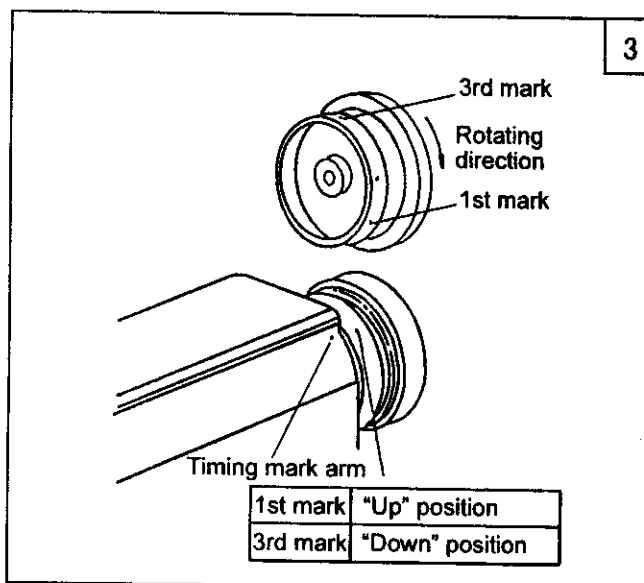
- (1) Disconnect the plug (12 pins) of cable from the machine head.
- (2) Run the machine and stop at "UP" position.
- (3) While holding the balance wheel insert the "adjusting tool" in the hole A, then remove the tool.



##### 2) Adjusting of "DOWN" position

Set the machine stops at "DOWN" position. When the pedal is kicked down by hell, the machine stops as "DOWN" position. If the marks deviate larger than 3 mm adjust as follows:

- (1) Disconnect the plug (12 pins) of cable from the machine head.
- (2) Run the machine and stop at "DOWN" position.
- (3) While holding the balance wheel insert the "adjusting tool" in the hole B, then remove the tool.



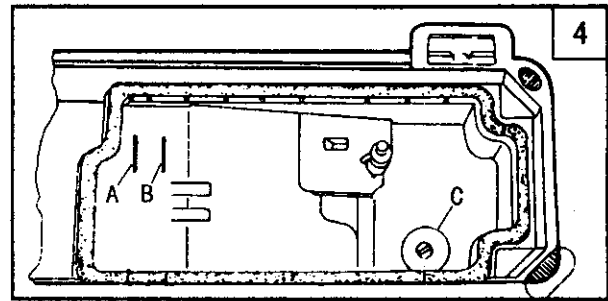
- 3) Confirm the stop operation then the plug (12 pins) coming from the machine head into the receptacle.

## 5. LUBRICATION (Fig.4)

Pour oil up to position A of the oil tank.

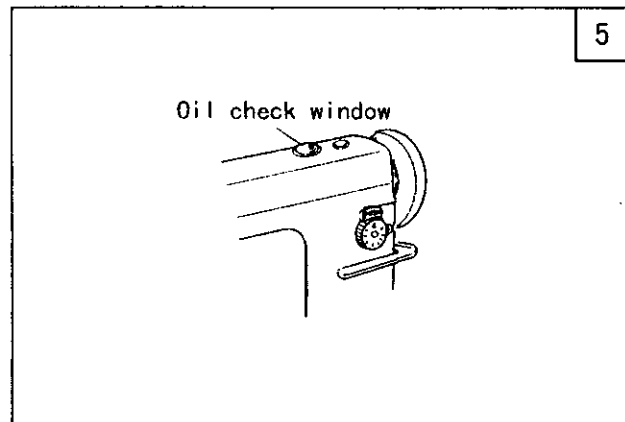
During operation, check the oil level periodically, and in cases where the oil level is below position B replenish the oil supply up to position A.

Use white spindle oil.



## 6. CONDITION OF OIL LUBRICATION (Fig.5)

While operating the machine, check the condition of oil lubrication through the oil check window.



## 7. LUBRICATION ADJUSTMENT

(Fig.6)

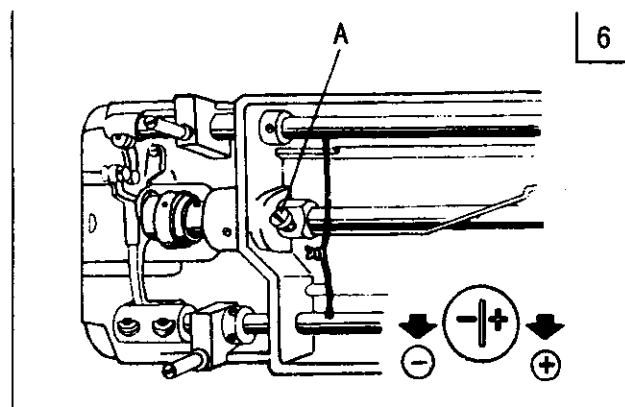
Adjusting the lubrication of rotating hook.

Oil adjusting screw (A) can adjust the lubrication of the rotating hook as follows:

(1) Turn oil-adjusting screw (A) clockwise to increase oil and turn oil-adjusting screw (A) counter-clockwise to decrease oil.

(2) Oil adjusting screw (A) adjusts oil amount within 5 turns. When oil-adjusting screw (A) is fully tightened, oil amount is maximum.

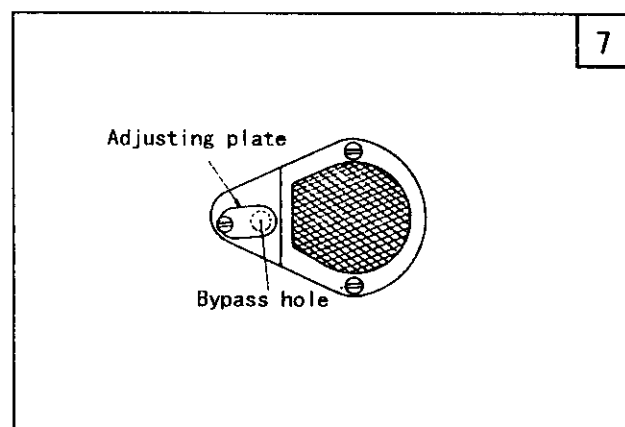
(3) Readjustment depends on temperature, sewing speed and the like. In practice, oil amount can be judged as follows: remove the throat plate and place a piece of paper on instead, run the machine for about 20 seconds, then check the oil splashed on the paper.



## 8. ADJUSTMENT OF OIL PUMP

(Fig.7)

The standard adjustment is as follows: The adjusting plate keeps the bypass hole fully closed. To decrease splashing, open the bypass hole appropriately.



## 9. REGULAR CLEANING (Fig.8)

### 1) Cleaning feed dog

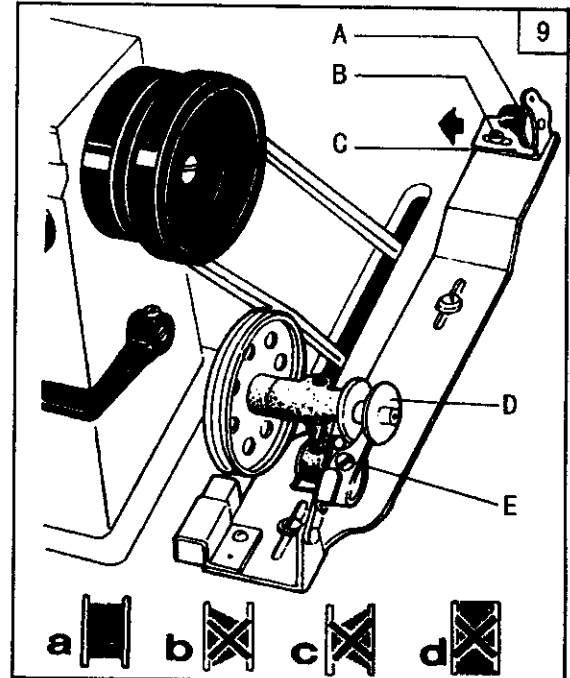
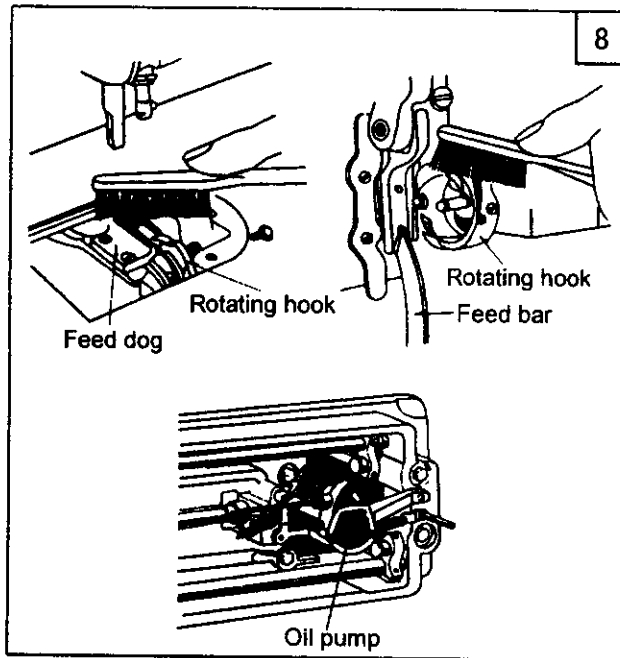
Remove the throat plate and clear off the dust and lint between feed dog tooth slots.

### 2) Cleaning rotating hook

Swing out the machine head and clean the hook. Wipe the bobbin case with soft cloth.

### 3) Cleaning oil pump, screen

Swing out the machine head and clear off the dust and dirt on oil pump screen.



## 10. WINDING ADJUSTMENT (Fig.9)

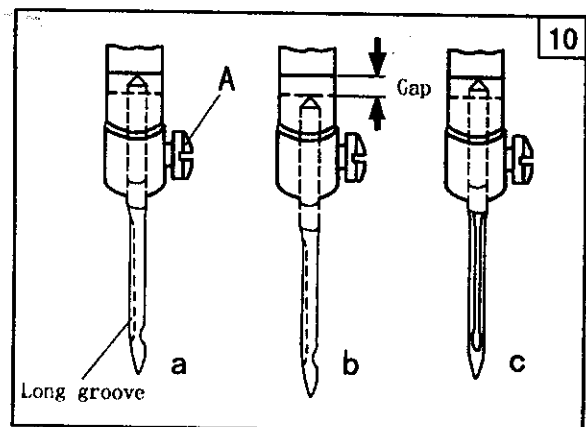
1) The wound bobbin thread should be neat and tight, if not, adjust the winding tension by turning tension stud nut (A) of bobbin winder tension bracket.

**Note:** nylon or polyester thread should be wound with little tension; otherwise, bobbin (D) might break or deform.

2) When the wound thread layer does not present a cylindrical shape as shown in Fig.9 (a), loosen set screw (B) of bobbin winder tension bracket and slide bracket (C) leftward or rightward. If thread is wound as shown in Fig.9 (b), move the bracket rightward, but if thread is wound as shown in Fig.9 (c), move the bracket leftward.

After adequately positioning the bracket, tighten set screw (B).

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



## 11. REPLACE NEEDLES (Fig.10)

Turn the balance wheel to lift needle bar to the upper end of its stroke. Loosen needle clamp screw (A). While keeping the long groove of the needle leftward fully insert the needle shank up to the bottom of the needle

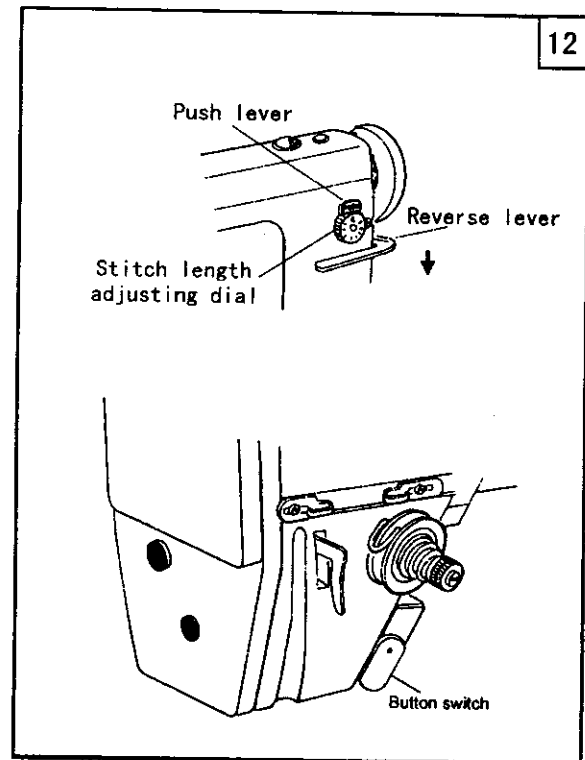
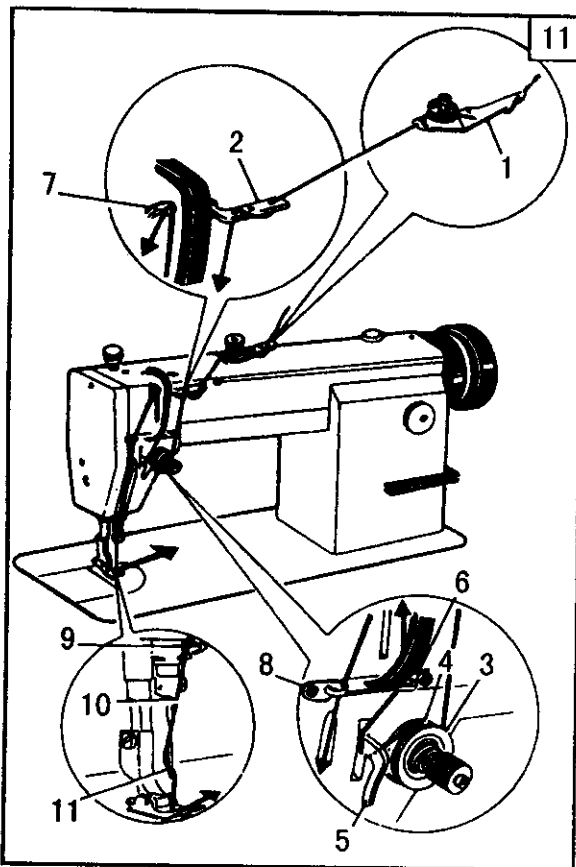
socket. Then tighten needle clamp screw (A).

Note: Fig. (b): insufficient insertion.

Fig. (c): wrong direction of long groove.

## 12. THREADING (Fig.11)

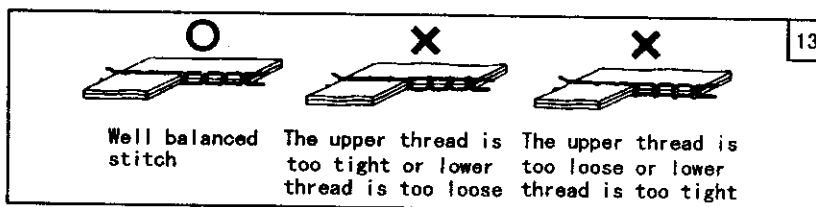
To thread the needle thread, raise needle bar to the upper end of its stroke, lead the thread from spool and perform threading as shown in Fig.3. To draw the bobbin thread, hold the end of the needle thread and turn the balance wheel to lower the needle bar and then to lift it to its highest position. Pull the needle thread and the bobbin thread is drawn up. Put the ends of needle thread and bobbin thread frontward under presser foot.



## 13. SET STITCH LENGTH AND REVERSE FEEDING (Fig.12)

- 1) To change the stitch length, rotate the stitch length adjusting dial while pressing the push lever.
- 2) Pressing the reverse lever to reverse stitching.
- 3) The button switch can be pressed to perform reverse stitching.
- 4) Normally, set the button switch as illustrated by the solid lines. To reverse stitching, press the button switch.

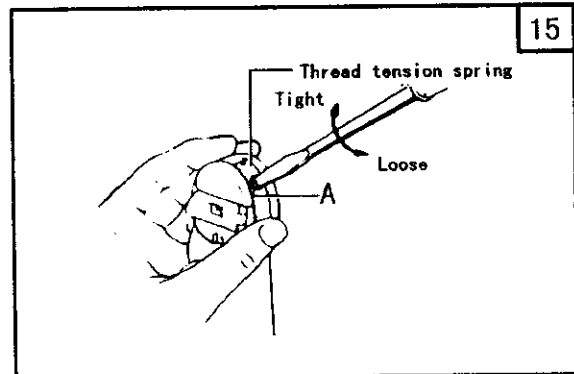
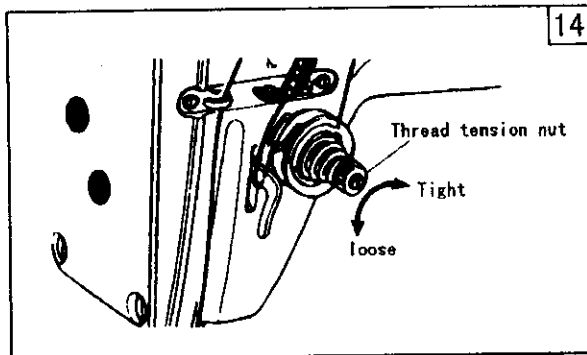
## 14. ADJUSTING THE THREAD TENSION (Fig.13)





## 15. UPPER THREAD TENSION (Fig.14)

- 1) The upper thread can be adjusted based on the lower thread tension.
- 2) Adjustment can be done by rotating the thread tension nut. For special fabric sewing with special thread, the desired tension can be obtained by adjusting the strength and operating range of thread take-up spring.



## 16. LOWER THREAD TENSION

(Fig.15)

- 1) The lower thread tension can be adjusted by rotating screw A.

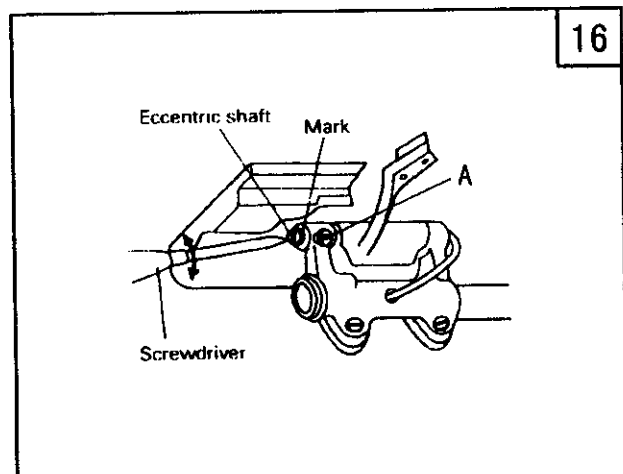
## 17. ADJUSTMENT OF FEED DOG

### INCLINATION (Fig.16)

The feed dog has been set to standard (horizontally). If necessary, adjust the inclination according to the material to be sewn as follows:

- 1) Slightly loosen screw A located in the feed rock shaft crank.
- 2) Using a screwdriver. While pressing the groove located in the eccentric shaft by using a screwdriver, rotate the eccentric shaft clockwise (to lift the front end) or counter-clockwise (to lower the rear end).
- 3) When adjustment is completed, tighten screw A.

| Position of mark on the eccentric shaft | Feed dog          |
|---|-------------------|
| Horizontal                              | Standard          |
| Up                                      | Front up (MAX.)   |
| Down                                    | Front down (MAX.) |



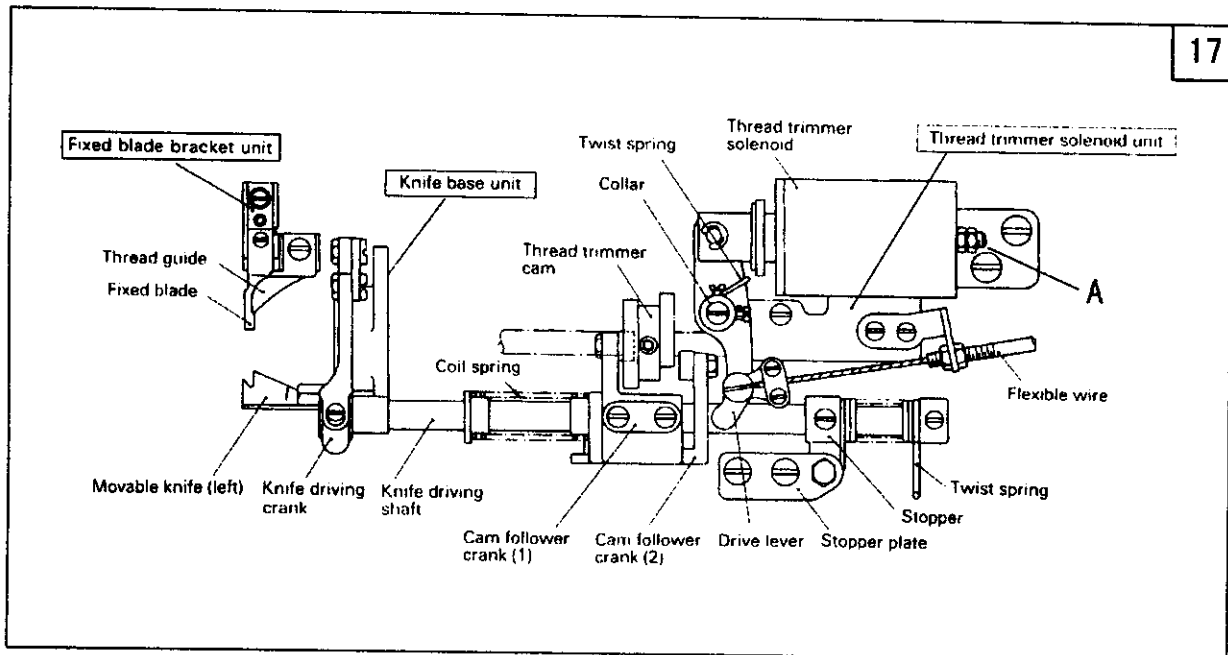
## 18. ADJUSTMENT OF THREAD

### TRIMMER MECHANISM

- 1) Thread trimmer mechanism as shown Fig.17

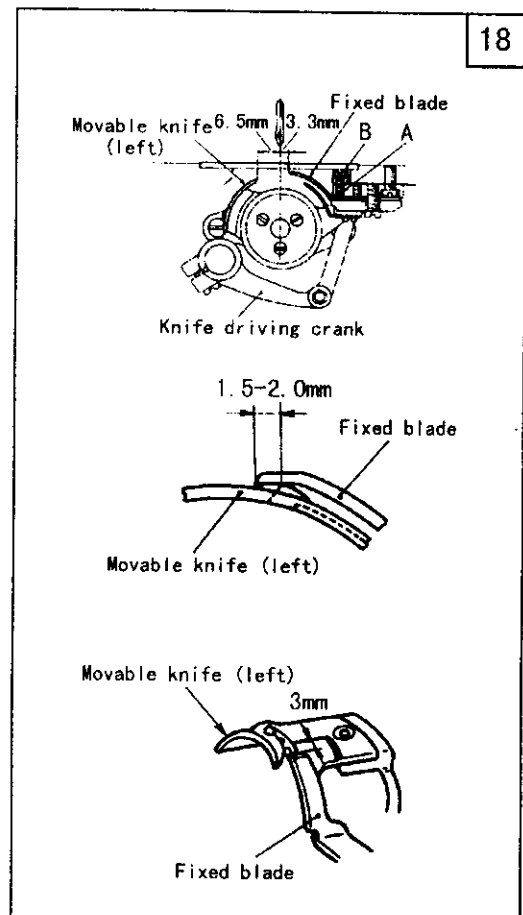
Operation stroke of the thread trimmer solenoid

- (1) Standard operation stroke is 6.0 mm.
- (2) This stroke can be adjusted by using nut A.



2) Adjustment of knife engagement (Fig 18)

- (1) Position of movable knife (left) and fixed blade. See the illustration. The standard distances from the needle center are 6.5 mm ( LH are 7.5mm) and 3.3 mm ( LH are 5mm) from the movable knife (left) and fixed blade respectively.
- (2) Adjustment of knife engagement. With the solenoid activated, turn on the machine. This rotates the thread trimming cam which rotates the movable knife (left). When the movable knife (left) has moved to its farthest distance, the standard engagement of the blade is 1.5-2.0 mm.
- (3) Adjustment of knife engaging pressure. If a thread is poorly cut, particularly when it is thick, slightly increase the engaging pressure. This should solve the problem. The engaging pressure can be adjusted in this way: Loosen lock nut B, and adjust it by using adjusting screw A.



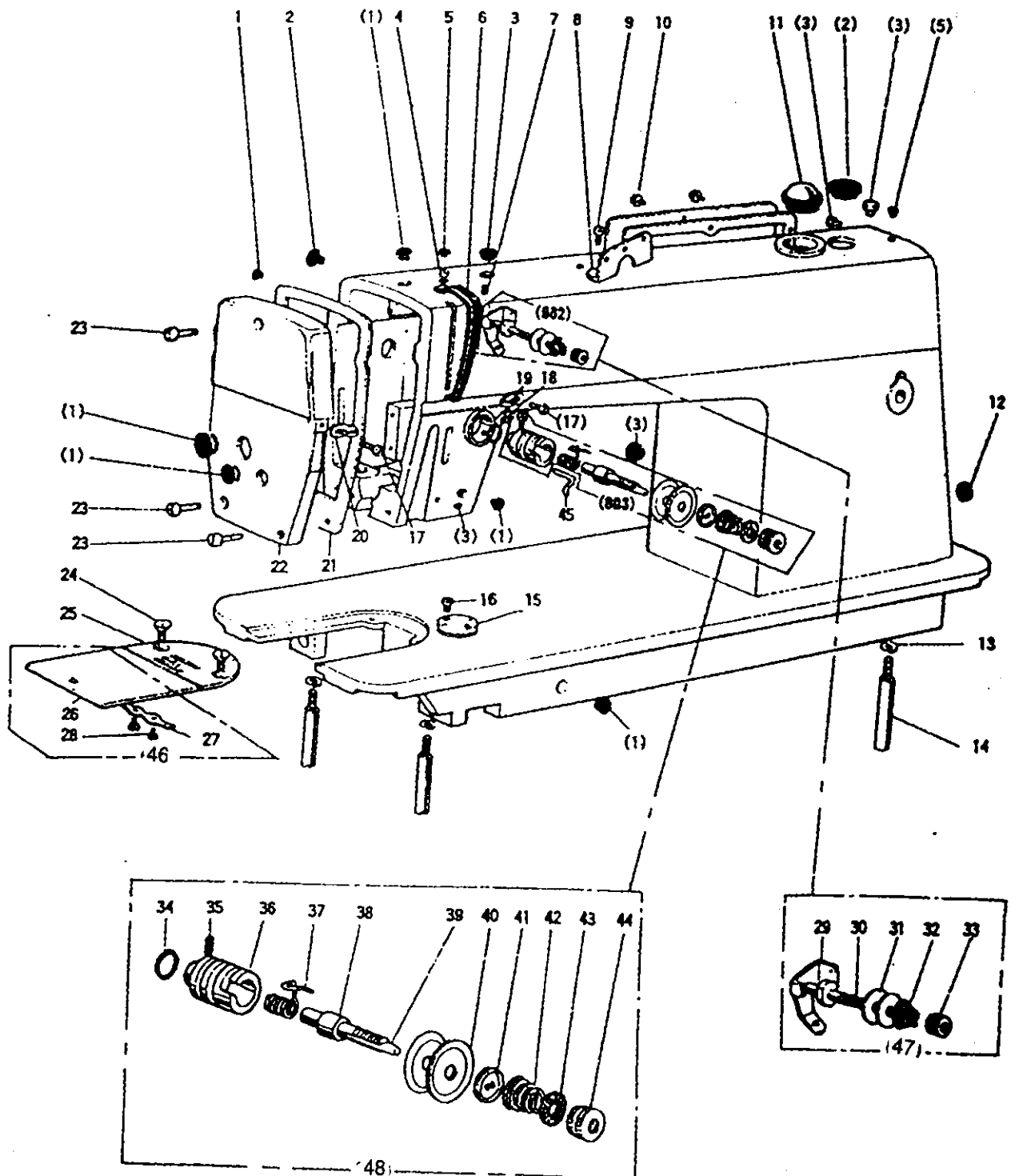


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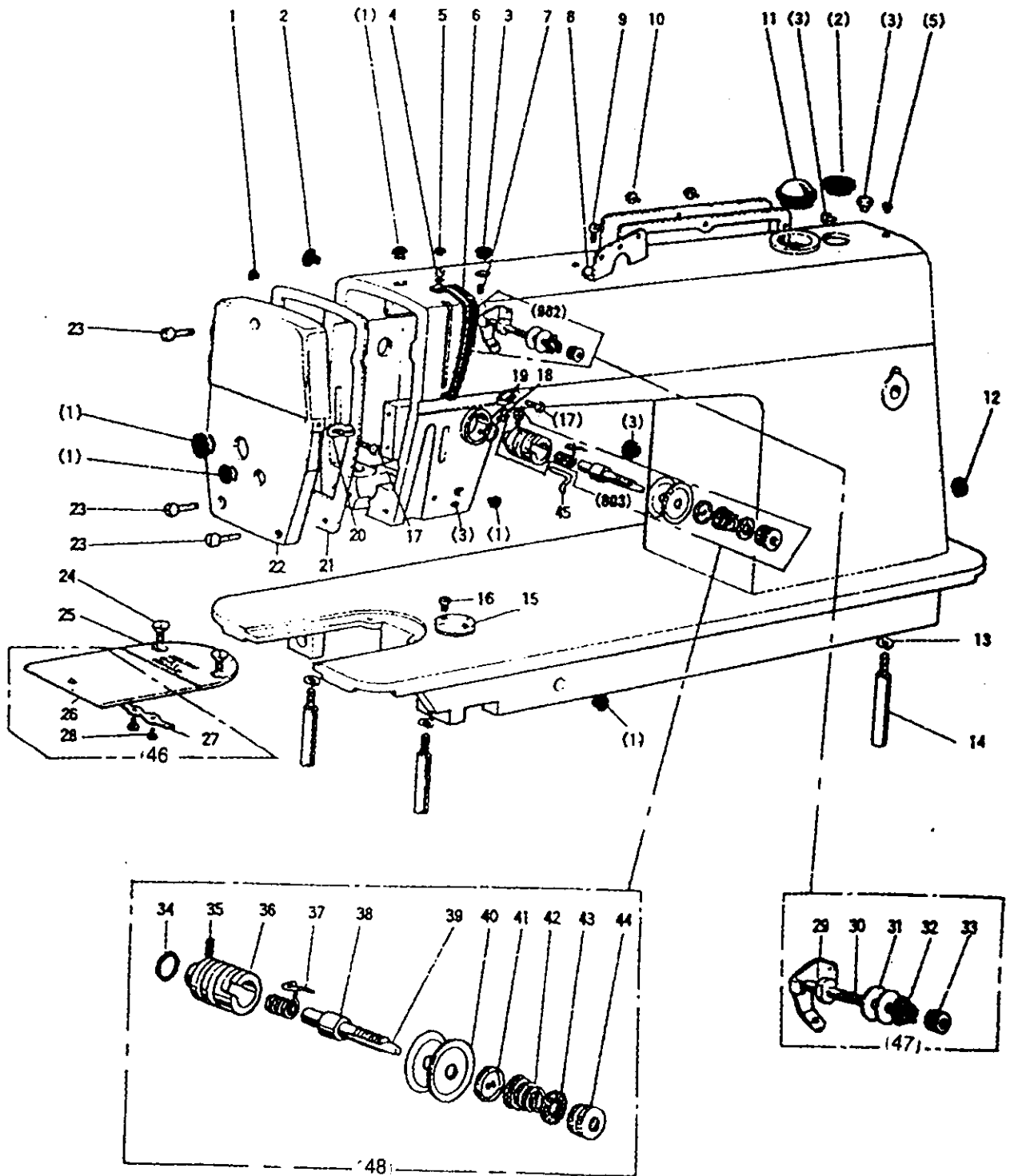
# 1. ARM BED AND ITS ACCESSORIES



## A.ARM BED AND ITS ACCESSORIES

| Fig. No. | Part No.   | Description                      | NF 331 | NF 331/AUT |  | NF 331-LH |  | NF331-LH/AUT | Remarks            |
|----------|------------|----------------------------------|--------|------------|--|-----------|--|--------------|--------------------|
| A01      | HA307B0674 | Rubber plug                      | 6      | 6          |  | 6         |  | 6            |                    |
| A02      | HA307B0673 | Rubber plug                      | 2      | 2          |  | 2         |  | 2            |                    |
| A03      | HA300B2090 | Rubber plug                      | 5      | 5          |  | 5         |  | 5            |                    |
| A04      | HA300C2030 | Screw                            | 1      | 1          |  | 1         |  | 1            | SM11/64 (40) × 8   |
| A05      | HA300B2110 | Rubber plug                      | 2      | 2          |  | 2         |  | 2            |                    |
| A06      | HA300C2020 | Thread take-up cover             | 1      | 1          |  | 1         |  | 1            |                    |
| A07      | HA100B2110 | Screw                            | 1      | 1          |  | 1         |  | 1            | SM11/64 (40) × 5.5 |
| A08      | HA700B2050 | Thread guide                     | 1      | 1          |  | 1         |  | 1            |                    |
| A09      | HA700B2060 | Screw                            | 1      | 1          |  | 1         |  | 1            | SM11/64 (40) × 8   |
| A10      | HA300B2170 | Screw                            | 6      | 2          |  | 2         |  | 2            | SM11/64 (40) × 9   |
| A11      | HA309B0069 | Oil check window                 | 1      |            |  | 1         |  |              |                    |
| A11      | H1210B0067 | Oil check window                 |        | 1          |  |           |  | 1            |                    |
| A12      | HA300B2100 | Rubber plug                      | 1      | 1          |  | 1         |  | 1            |                    |
| A13      | H005008060 | Spring washer                    | 2      | 2          |  | 2         |  | 2            | GB/T93 6           |
| A14      | HA100B2220 | Leg                              | 3      | 3          |  | 3         |  | 3            |                    |
| A15      | HA300B2140 | Cloth guide plate                | 1      | 1          |  | 1         |  | 1            |                    |
| A16      | HA300B2130 | Screw                            | 2      | 2          |  | 2         |  | 2            |                    |
| A17      | HA106B0676 | Screw                            | 2      | 2          |  | 2         |  | 2            | SM9/64 (40) × 6    |
| A18      | HA300B2080 | Screw                            | 1      | 1          |  | 1         |  | 1            | SM15/64 (28) × 6.8 |
| A19      | HA100B2140 | Thread guide                     | 1      | 1          |  | 1         |  | 1            |                    |
| A20      | HA106B0675 | Thread guide                     | 1      | 1          |  | 1         |  | 1            |                    |
| A21      | H3010B0682 | Face plate gasket                | 1      |            |  | 1         |  |              |                    |
| A21      | H5729B8001 | Face plate gasket                |        | 1          |  |           |  | 1            |                    |
| A22      | H3010B0681 | Face plate                       | 1      |            |  | 1         |  |              |                    |
| A22      | H5912B8001 | Face plate                       |        | 1          |  |           |  | 1            |                    |
| A23      | HA300B2160 | Screw                            | 3      | 3          |  | 3         |  | 3            | SM11/64 (40) × 4.5 |
| A24      | HA300B2190 | Screw                            | 2      | 2          |  | 2         |  | 2            | SM11/64 (40) × 10  |
| A25      | H3000B2120 | Needle plate                     | 1      | 1          |  |           |  |              |                    |
| A25      | H7704B8001 | Needle plate                     |        |            |  | 1         |  | 1            |                    |
| A26      | HA124B0711 | Slide plate                      | 1      | 1          |  | 1         |  | 1            |                    |
| A27      | HA124B0712 | Plate spring of slide plate      | 1      | 1          |  | 1         |  | 1            |                    |
| A28      | HA124B0713 | Screw                            | 2      | 2          |  | 2         |  | 2            | SM3/32 (56) × 2.2  |
| A29      | HA710B0674 | Slide plate                      | 1      | 1          |  | 1         |  | 1            |                    |
| A30      | HA710B0673 | Pre-tension stud                 | 1      | 1          |  | 1         |  | 1            |                    |
| A31      | HA112B0693 | Thread tension disc              | 2      | 2          |  | 2         |  | 2            |                    |
| A32      | HA710B0672 | Pre-tension spring               | 1      | 1          |  | 1         |  | 1            |                    |
| A33      | HA710B0671 | Nut                              | 1      | 1          |  | 1         |  | 1            |                    |
| A34      | HA115B7011 | O-ring                           | 1      | 1          |  | 1         |  | 1            |                    |
| A35      | HA115B7078 | Screw                            | 1      | 1          |  | 1         |  | 1            | SM9/64 (40) × 6    |
| A36      | HA310B0703 | Thread tension regulator bushing | 1      | 1          |  | 1         |  | 1            |                    |
| A37      | HA115B7076 | Thread take-up spring            | 1      | 1          |  |           |  |              |                    |
| A37      | HA505B0672 | Thread take-up spring            |        |            |  | 1         |  | 1            |                    |
| A38      | HA115B7071 | Thread tension stud              | 1      | 1          |  | 1         |  | 1            |                    |

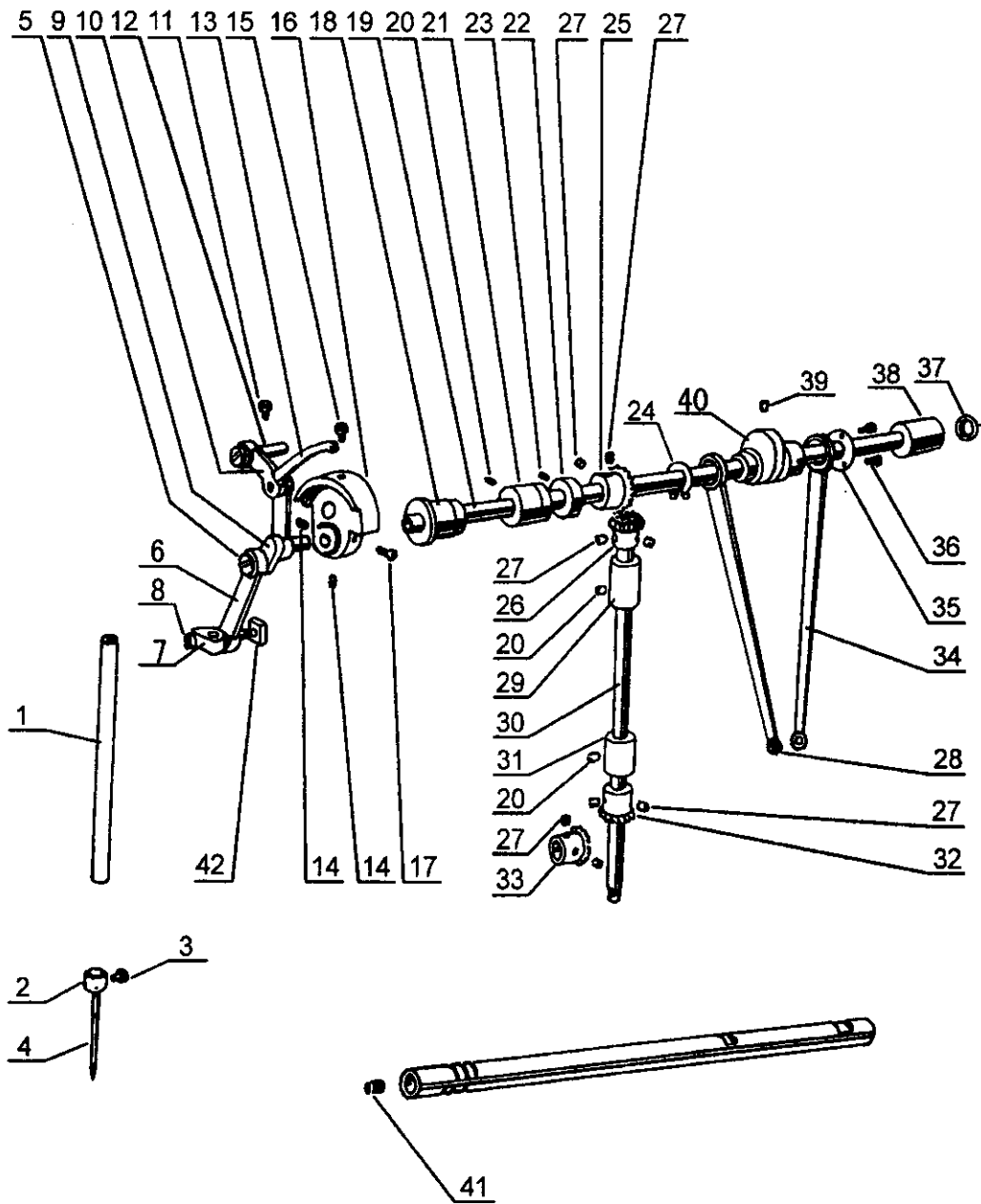
# 1. ARM BED AND ITS ACCESSORIES



## A.ARM BED AND IT'S ACCESSORIES

| Fig. No. | Part No.   | Description                   | NF 331 | NF 331/AUT |  | NF 331-LH |  | NF331-LH/AUT | Remarks |
|----------|------------|-------------------------------|--------|------------|--|-----------|--|--------------|---------|
|          |            |                               |        |            |  |           |  |              |         |
| A39      | HA115B0709 | Thread tension releasing pin  | 1      | 1          |  | 1         |  | 1            |         |
| A40      | HA310B0705 | Thread tension disc           | 2      | 2          |  | 2         |  | 2            |         |
| A41      | HA310B0702 | Thread tension releasing disc | 1      | 1          |  | 1         |  | 1            |         |
| A42      | HA115B0703 | Thread tension spring         | 1      |            |  |           |  |              |         |
| A42      | H3013B0701 | Thread tension spring         |        | 1          |  |           |  |              |         |
| A42      | HA505B0671 | Thread tension spring         |        |            |  | 1         |  | 1            |         |
| A43      | HA115B7010 | Thumb nut revolution stopper  | 1      | 1          |  | 1         |  | 1            |         |
| A44      | HA310B0701 | Thumb nut                     | 1      | 1          |  | 1         |  | 1            |         |
| A45      | H3000B2130 | Thread guide                  | 1      | 1          |  | 1         |  | 1            |         |
| A46      | HA124B0071 | Slide plate assy              | 1      | 1          |  | 1         |  | 1            |         |
| A47      | HA710B0067 | Pre-tension assy              | 1      | 1          |  | 1         |  | 1            |         |
| A48      | H3013B0070 | Thread tension regulator assy | 1      | 1          |  |           |  |              |         |
| A48      | HA505B0067 | Thread tension regulator assy |        |            |  | 1         |  | 1            |         |

# B.UP SHAFT MECHANISM



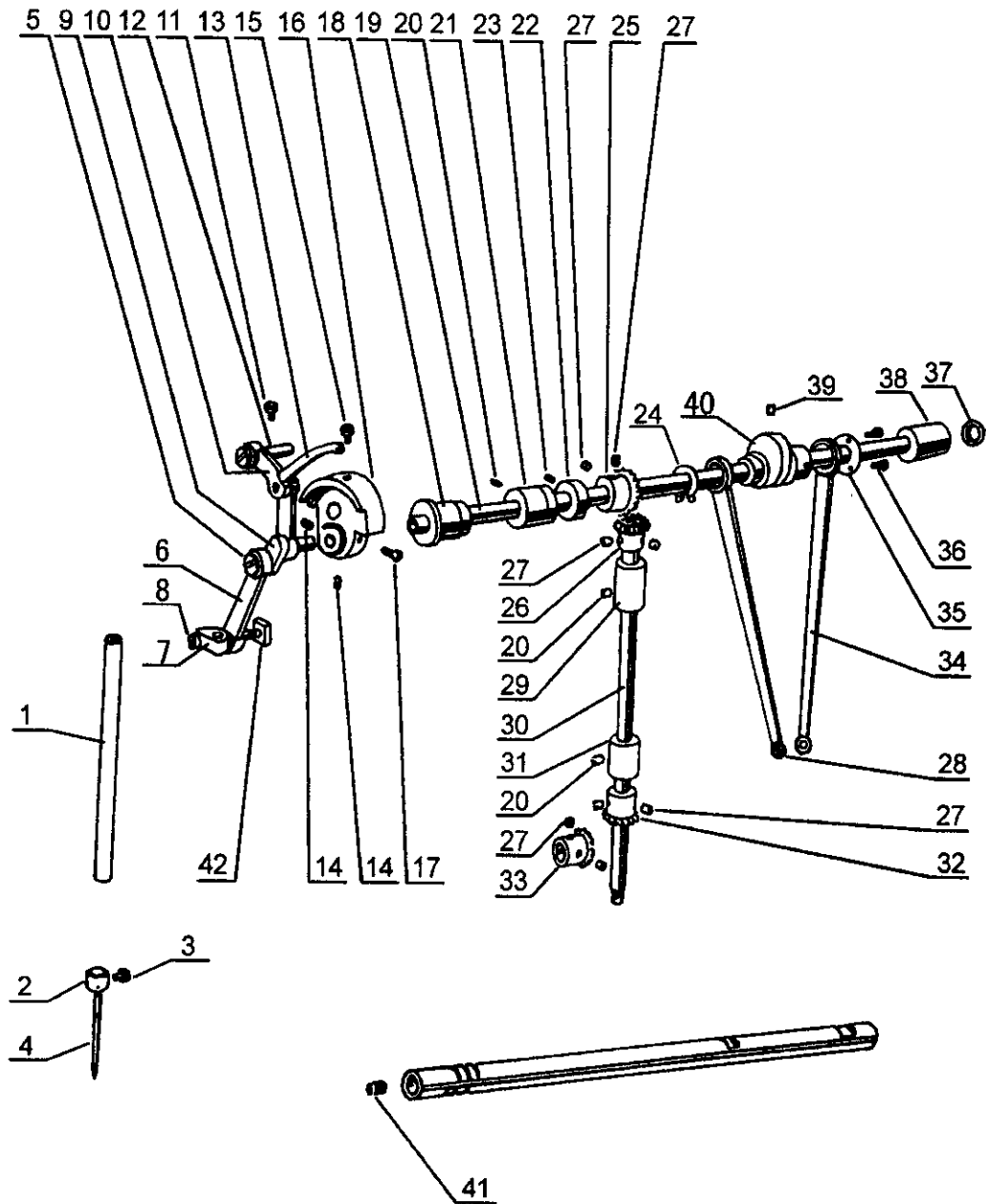


## B.UP SHAFT MECHANISM

| Fig. No. | Part No.   | Description                          |        |            |           |              | Remarks          |
|----------|------------|--------------------------------------|--------|------------|-----------|--------------|------------------|
|          |            |                                      | NF 331 | NF 331/AUT | NF 331-LH | NF331-LH/AUT |                  |
| B01      | HA705G0066 | Needle bar                           | 1      | 1          | 1         | 1            |                  |
| B02      | H3000C2010 | Thread guide                         | 1      | 1          | 1         | 1            |                  |
| B03      | HA100C2170 | Set screw                            | 1      | 1          | 1         | 1            | SM1/8(44) × 4.5  |
| B04      | HA100C2160 | Needle                               | 1      | 1          |           |              |                  |
| B04      | H1000C2010 | Needle                               |        |            |           |              |                  |
| B04      | HA500C2040 | Needle                               |        |            | 1         | 1            |                  |
| B05      | HA104C0656 | Screw                                | 1      | 1          | 1         | 1            |                  |
| B06      | HA104C0072 | Needle bar link assy                 | 1      | 1          |           |              |                  |
| B06      | HA304C0653 | Needle bar link                      |        |            | 1         | 1            |                  |
| B07      | HA104C0658 | Needle bar adaptor                   | 1      | 1          |           |              |                  |
| B08      | H2204C0651 | Set screw                            | 1      | 1          |           |              |                  |
| B08      | HA104C0659 | Set screw                            |        |            | 1         | 1            |                  |
| B09      | HA104C0654 | Thread take-up crank                 | 1      | 1          |           |              |                  |
| B09      | HA504C0651 | Thread take-up crank                 |        |            | 1         | 1            |                  |
| B10      | HA104C0652 | Thread take up lever link            | 1      | 1          |           |              |                  |
| B10      | HA304C0012 | Thread take-up lever link            |        |            | 1         | 1            |                  |
| B11      | HA7311C606 | Set screw                            | 1      | 1          | 1         | 1            |                  |
| B12      | HA104C0653 | Hinge pin                            | 1      | 1          | 1         | 1            |                  |
| B13      | HA1111C104 | Thread take-up lever                 | 1      | 1          |           |              |                  |
| B13      | HA3111C104 | Thread take-up lever                 |        |            |           |              |                  |
| B13      | H1111C104  | Thread take-up lever                 |        |            | 1         |              |                  |
| B13      | HA604C0011 | Thread take-up lever                 |        |            |           | 1            |                  |
| B14      | HA307C0662 | Set screw                            | 2      | 2          | 2         | 2            |                  |
| B15      | HA100C2070 | Set screw                            | 1      | 1          | 1         | 1            |                  |
| B16      | HA108C0661 | Needle bar crank                     | 1      | 1          |           |              |                  |
| B16      | HA307C0661 | Needle bar crank                     |        |            | 1         | 1            |                  |
| B17      | HA100C2060 | Set screw                            | 1      | 1          | 1         | 1            |                  |
| B18      | HA100D2030 | Arm shaft bushing(left)              | 1      |            | 1         |              |                  |
| B18      | H5904C8001 | Arm shaft bushing(left)              |        | 1          |           | 1            |                  |
| B19      | H3005C0065 | Arm shaft assy.                      | 1      | 1          | 1         | 1            |                  |
| B20      | HA100C2020 | Set screw                            | 4      | 4          | 4         | 4            | SM15/64(28) × 10 |
| B21      | HA100D2040 | Arm shaft bushing(middle)            | 1      | 1          | 1         | 1            |                  |
| B22      | HA108G0066 | Collar for arm shaft assy.           | 1      | 1          | 1         | 1            |                  |
| B23      | HA105D0662 | Set screw                            | 2      | 2          | 2         | 2            | SM1/4(40) × 4    |
| B24      | HA112D3012 | Stop ring                            | 1      | 1          | 1         | 1            |                  |
| B25      | HA113D2112 | Bevel gear for arm shaft             | 1      | 1          | 1         | 1            |                  |
| B26      | HA113D2122 | Bevel gear for vertical shaft(upper) | 1      | 1          | 1         | 1            |                  |
| B27      | HA108C0663 | Set screw                            | 8      | 8          | 8         | 8            | SM1/4(40) × 7    |
| B28      | HA112D3013 | Crank rod for feed rock shaft        | 1      | 1          | 1         | 1            |                  |
| B29      | HA100D2110 | Vertical shaft bushing(upper)        | 1      | 1          | 1         | 1            |                  |
| B30      | HA113D0691 | Vertical shaft                       | 1      | 1          | 1         | 1            |                  |
| B31      | HA100D2110 | Vertical shaft bushing(lower)        | 1      | 1          | 1         | 1            |                  |
| B32      | HA113D2222 | Bevel gear for vertical shaft(lower) | 1      | 1          | 1         | 1            |                  |

# B.UP SHAFT MECHANISM

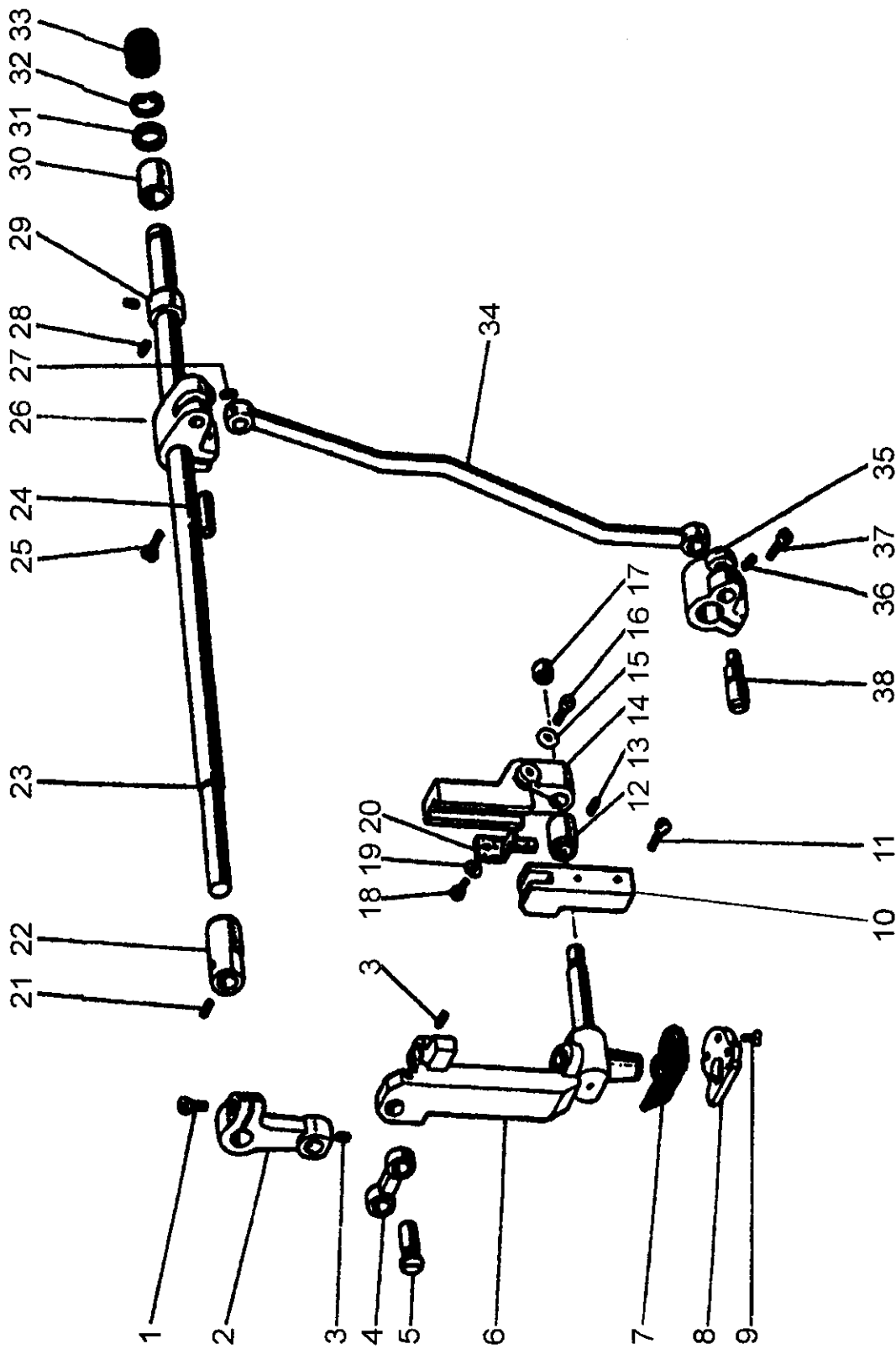
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## B.UP SHAFT MECHANISM

| Fig. No. | Part No.   | Description                     |        |            |           |              | Remarks         |
|----------|------------|---------------------------------|--------|------------|-----------|--------------|-----------------|
|          |            |                                 | NF 331 | NF 331/AUT | NF 331-LH | NF331-LH/AUT |                 |
| B33      | HA113D2212 | Bevel gear for hook shaft       | 1      | 1          | 1         | 1            | SM9/64 (40) × 7 |
| B34      | HA7311C506 | Crank rod for feed rock shaft   | 1      | 1          | 1         | 1            |                 |
| B35      | H30211C406 | Washer                          | 1      | 1          | 1         | 1            |                 |
| B36      | HA7311C306 | Set screw                       | 3      | 3          | 3         | 3            |                 |
| B37      | HA306D0066 | Oil seal                        | 1      | 1          | 1         | 1            |                 |
| B38      | HA300D2020 | Arm shaft bushing(right)        | 1      | 1          | 1         | 1            |                 |
| B39      | H2000H2020 | Set screw                       | 2      | 2          |           |              |                 |
| B39      | HA100C2020 | Set screw                       |        |            | 2         | 2            |                 |
| B40      | H30211C106 | Feed and feed lifting eccentric | 1      | 1          | 1         | 1            |                 |
| B41      | HA104D0652 | Rubber plug(Φ7.4×10)            | 2      | 2          | 2         | 2            |                 |
| B42      | HA100C2200 | Slide block                     | 1      | 1          | 1         | 1            |                 |

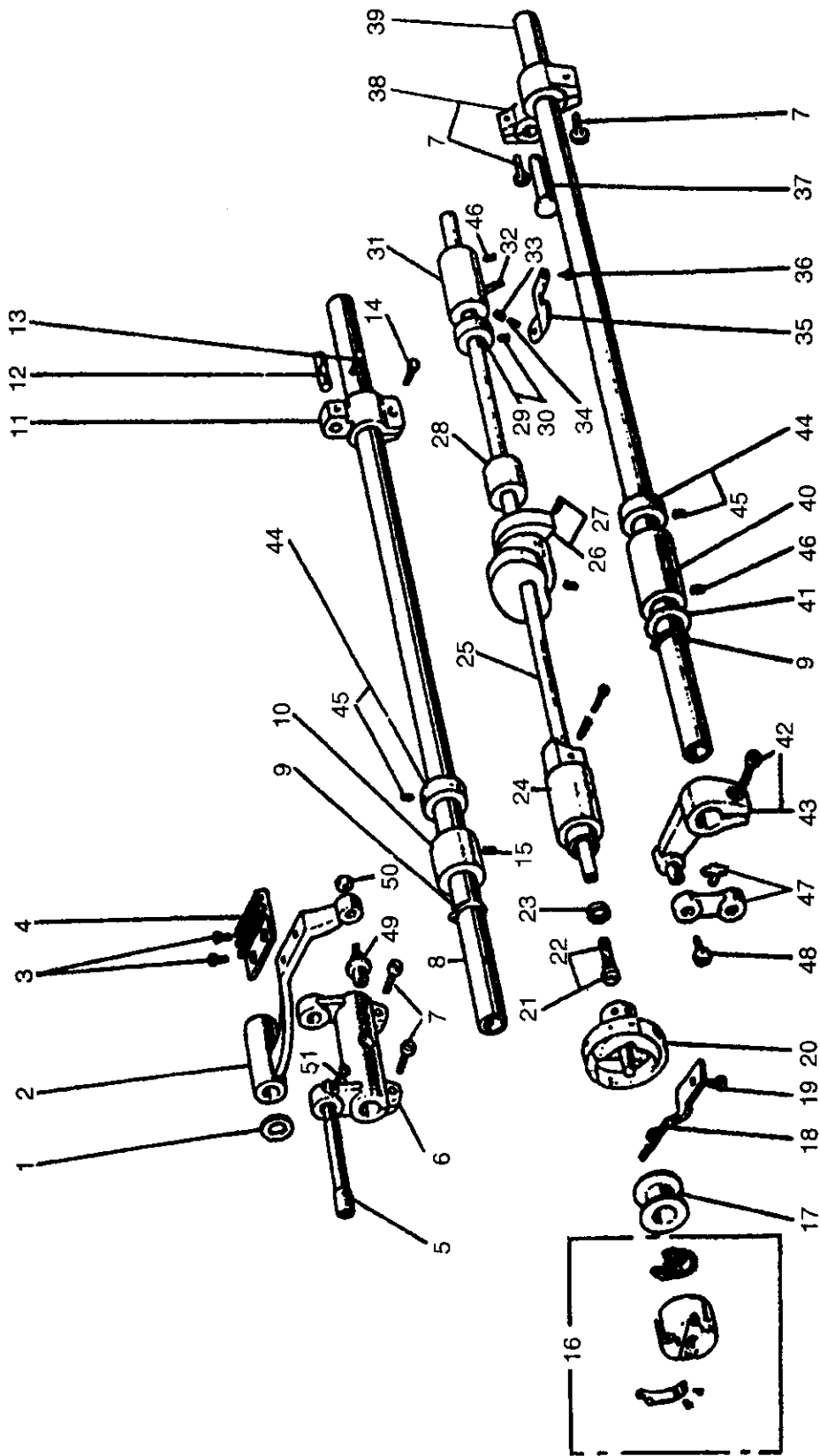
# C.FEEDING NEEDLE MECHANISM



## C.FEEDING NEEDLE MECHANISM

| Fig. No. | Part No.   | Description                      |        |            |           |              | Remarks            |
|----------|------------|----------------------------------|--------|------------|-----------|--------------|--------------------|
|          |            |                                  | NF 331 | NF 331/AUT | NF 331-LH | NF331-LH/AUT |                    |
| C01      | HA304G0656 | Screw                            | 1      | 1          | 1         | 1            | SM3/16(28) × 15    |
| C02      | H3012D0691 | Lever                            | 1      | 1          | 1         | 1            |                    |
| C03      | HA100B2110 | Set screw                        | 2      | 2          | 2         | 2            | SM11/64(40) × 5.5  |
| C04      | H3012D0693 | Link                             | 1      | 1          | 1         | 1            |                    |
| C05      | H3012D0692 | Set pin                          | 1      | 1          | 1         | 1            |                    |
| C06      | H3013D5011 | Needle bar supportor assy.       | 1      |            |           |              |                    |
| C06      | H5904D7101 | Needle bar supportor assy.       |        | 1          |           |              |                    |
| C06      | H7605D7101 | Needle bar supportor assy.       |        |            | 1         |              |                    |
| C06      | HD904D7101 | Needle bar supportor assy.       |        |            |           | 1            |                    |
| C07      | H3000D2120 | Gasket                           | 1      | 1          | 1         | 1            |                    |
| C08      | H3000D2150 | Fitting plate                    | 1      | 1          | 1         | 1            |                    |
| C09      | H3000D2160 | Screw                            | 3      | 3          | 3         | 3            | SM9/64(40) × 4.5   |
| C10      | H3000D2170 | Guide bracket                    | 1      | 1          | 1         | 1            |                    |
| C11      | HA300C2030 | Screw                            | 2      | 2          | 2         | 2            | SM11/64(40) × 8    |
| C12      | H3000D2020 | Bushing                          | 1      | 1          | 1         | 1            |                    |
| C13      | H3000D2030 | Set screw                        | 1      | 1          | 1         | 1            | SM11/64(40) × 4.35 |
| C14      | H30612D113 | Needle bar connecting link guide | 1      | 1          | 1         | 1            |                    |
| C15      | H005005050 | Washer                           | 1      | 1          | 1         | 1            |                    |
| C16      | HA304G0656 | Screw                            | 1      | 1          | 1         | 1            | SM3/16(28) × 15    |
| C17      | H3000D2110 | Needle bearing                   | 1      | 1          | 1         | 1            |                    |
| C18      | HA104G0654 | Screw                            | 1      | 1          | 1         | 1            | SM1/8(44) × 6      |
| C19      | H005004030 | Washer                           | 1      | 1          | 1         | 1            |                    |
| C20      | H3000D2130 | Felt                             | 1      | 1          | 1         | 1            |                    |
| C21      | HA100B2110 | Set screw                        | 2      | 2          | 2         | 2            | SM11/64(40) × 5.5  |
| C22      | H3010D0672 | Bushing                          | 1      | 1          | 1         | 1            |                    |
| C23      | H3010D0671 | Needle feed rock shaft           | 1      | 1          | 1         | 1            |                    |
| C24      | H3009D0662 | Pin                              | 1      | 1          | 1         | 1            |                    |
| C25      | HA104G0012 | Screw                            | 1      | 1          | 1         | 1            | SM3/16(28) × 12    |
| C26      | H3009D0661 | Lever                            | 1      | 1          | 1         | 1            |                    |
| C27      | HA100B2110 | Set screw                        | 1      | 1          | 1         | 1            | SM11/64(40) × 5.5  |
| C28      | HA105D0662 | Set screw                        | 2      | 2          | 2         | 2            |                    |
| C29      | H3011D0681 | Collar                           | 1      | 1          | 1         | 1            | SM1/4(40) × 4      |
| C30      | H3010D0673 | Bushing                          | 1      | 1          | 1         | 1            |                    |
| C31      | H3010D0674 | Washer                           | 1      | 1          | 1         | 1            |                    |
| C32      | H007009150 | Retaining ring                   | 1      | 1          | 1         | 1            |                    |
| C33      | H3000B2110 | Rubber plug                      | 1      | 1          | 1         | 1            |                    |
| C34      | H3000D2050 | Link                             | 1      | 1          | 1         | 1            |                    |
| C35      | H3004D0651 | Needle feed driving lever        | 1      | 1          | 1         | 1            |                    |
| C36      | HA304G0656 | Set screw                        | 1      | 1          | 1         | 1            | SM3/16(28) × 15    |
| C37      | H30611D713 | Screw                            | 1      | 1          | 1         | 1            |                    |
| C38      | H3000D2040 | Eccentric pin                    | 1      | 1          | 1         | 1            | SM1/8(44) × 3.9    |

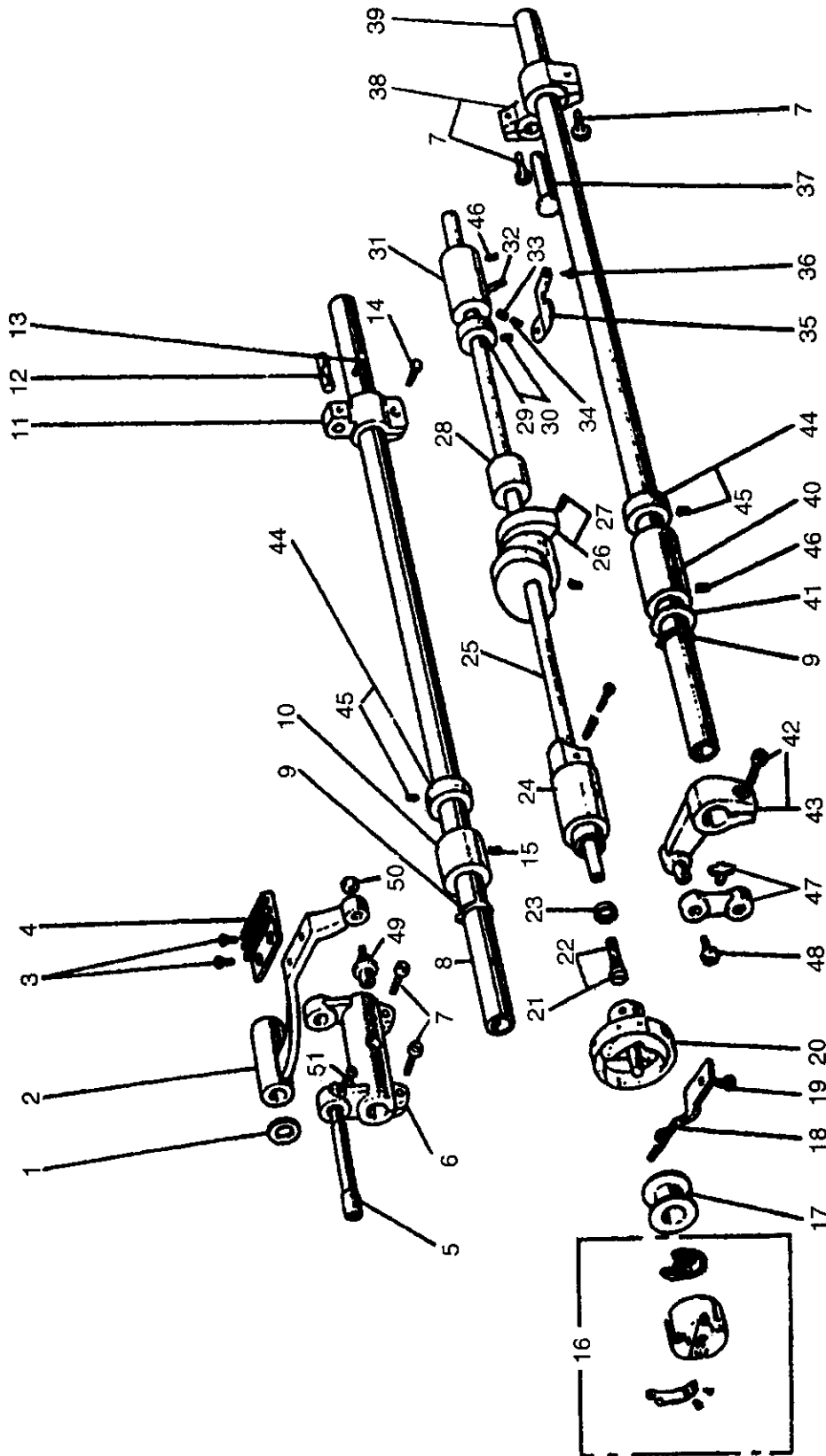
# D. ROTATING HOOK SHAFT MECHANISM



## D.ROTATING HOOK SHAFT MECHANISM

| Fig. No. | Part No.   | Description                      |        |            |           |              | Remarks           |
|----------|------------|----------------------------------|--------|------------|-----------|--------------|-------------------|
|          |            |                                  | NF 331 | NF 331/AUT | NF 331-LH | NF331-LH/AUT |                   |
| D01      | HA104G0656 | Washer                           | 1      | 1          |           |              |                   |
| D02      | H3006E2011 | Feed bar assy.                   | 1      | 1          |           |              |                   |
| D02      | HA705J0031 | Feed bar assy.                   |        |            | 1         | 1            |                   |
| D03      | HA104G0654 | Screw                            | 2      | 2          | 2         | 2            | SM1/8(44) × 6     |
| D04      | H3000E2040 | Feed dog                         | 1      | 1          |           |              |                   |
| D04      | H7704E8001 | Feed dog                         |        |            | 1         | 1            |                   |
| D05      | HA705J0654 | Shaft for feed bar(eccentric)    | 1      | 1          | 1         | 1            |                   |
| D06      | HA104G0011 | Feed rock shaft crank            | 1      | 1          | 1         | 1            |                   |
| D07      | HA104G0012 | Screw                            | 4      | 4          | 4         | 4            | SM3/16(28) × 12   |
| D08      | HA300G2050 | Feed rock shaft.                 | 1      | 1          | 1         | 1            |                   |
| D09      | H007009150 | Stop ring                        | 2      | 2          | 2         | 2            |                   |
| D10      | HA100G2040 | Feed rock shaft bushing          | 1      | 1          | 1         | 1            |                   |
| D11      | HA7311C706 | Feed rock shaft crank(right)     | 1      | 1          | 1         | 1            |                   |
| D12      | HA706C11B2 | Feed rock shaft crank pin        | 1      | 1          | 1         | 1            |                   |
| D13      | HA7311C806 | Screw                            | 2      | 2          | 2         | 2            | SM11/64(40) × 7   |
| D14      | HA7311C606 | Screw                            | 1      | 1          | 1         | 1            | SM11/64(40) × 12  |
| D15      | HA305E0662 | Set screw                        | 1      | 1          | 1         | 1            | SM15/64(28) × 4.5 |
| D16      | H3005E0066 | Bobbin case                      | 1      | 1          |           |              |                   |
| D16      | HA805E0066 | Bobbin case                      |        |            | 1         | 1            |                   |
| D17      | HA700E2060 | Bobbin                           | 1      | 1          |           |              |                   |
| D17      | HA100E2170 | Bobbin                           |        |            |           |              |                   |
| D17      | H1100E2010 | Bobbin                           |        |            | 1         | 1            |                   |
| D18      | HA300E2050 | Rotating hook positioner         | 1      | 1          |           |              |                   |
| D18      | H7707E8001 | Rotating hook positioner         |        |            | 1         | 1            |                   |
| D18      | HA500E2020 | Rotating hook positioner         |        |            |           |              |                   |
| D19      | HA100E2150 | Screw                            | 1      | 1          | 1         | 1            | SM11/64(40) × 10  |
| D20      | H3004E0065 | Rotating hook complete           | 1      | 1          |           |              |                   |
| D20      | HA606E0066 | Rotating hook complete           |        |            | 1         |              |                   |
| D20      | HA804E0065 | Rotating hook complete           |        |            |           |              |                   |
| D20      | HA906E0066 | Rotating hook complete           |        |            |           | 1            |                   |
| D21      | HA104E0011 | Filter assy.                     | 1      | 1          |           |              |                   |
| D21      | H1005E7101 | Filter assy.                     |        |            | 1         | 1            |                   |
| D22      | HA1111E204 | Filter                           | 1      | 1          |           |              |                   |
| D22      | H1006E8001 | Wick                             |        |            | 1         | 1            |                   |
| D23      | HA700E2030 | Oil seal for rotating hook shaft | 1      | 1          | 1         | 1            |                   |
| D24      | HA704B0654 | Hook shaft bushing(left)         | 1      | 1          | 1         | 1            |                   |
| D25      | HA304E0065 | Rotating hook shaft assy.        | 1      |            |           |              |                   |
| D25      | H1004E7101 | Rotating hook shaft assy.        |        |            |           |              |                   |
| D25      | H1106E7101 | Rotating hook shaft assy.        |        |            | 1         | 1            |                   |
| D25      | HA704E65   | Rotating hook shaft assy.        |        | 1          |           |              |                   |
| D26      | HA710E0691 | Thread trimming eccentric        |        | 1          |           | 1            |                   |
| D27      | HA710E0692 | Set screw                        |        | 2          |           | 2            | SM1/4(40) × 10    |
| D28      | HA704B0653 | Hook shaft bushing(middle)       |        | 1          |           | 1            |                   |

# D. ROTATING HOOK SHAFT MECHANISM

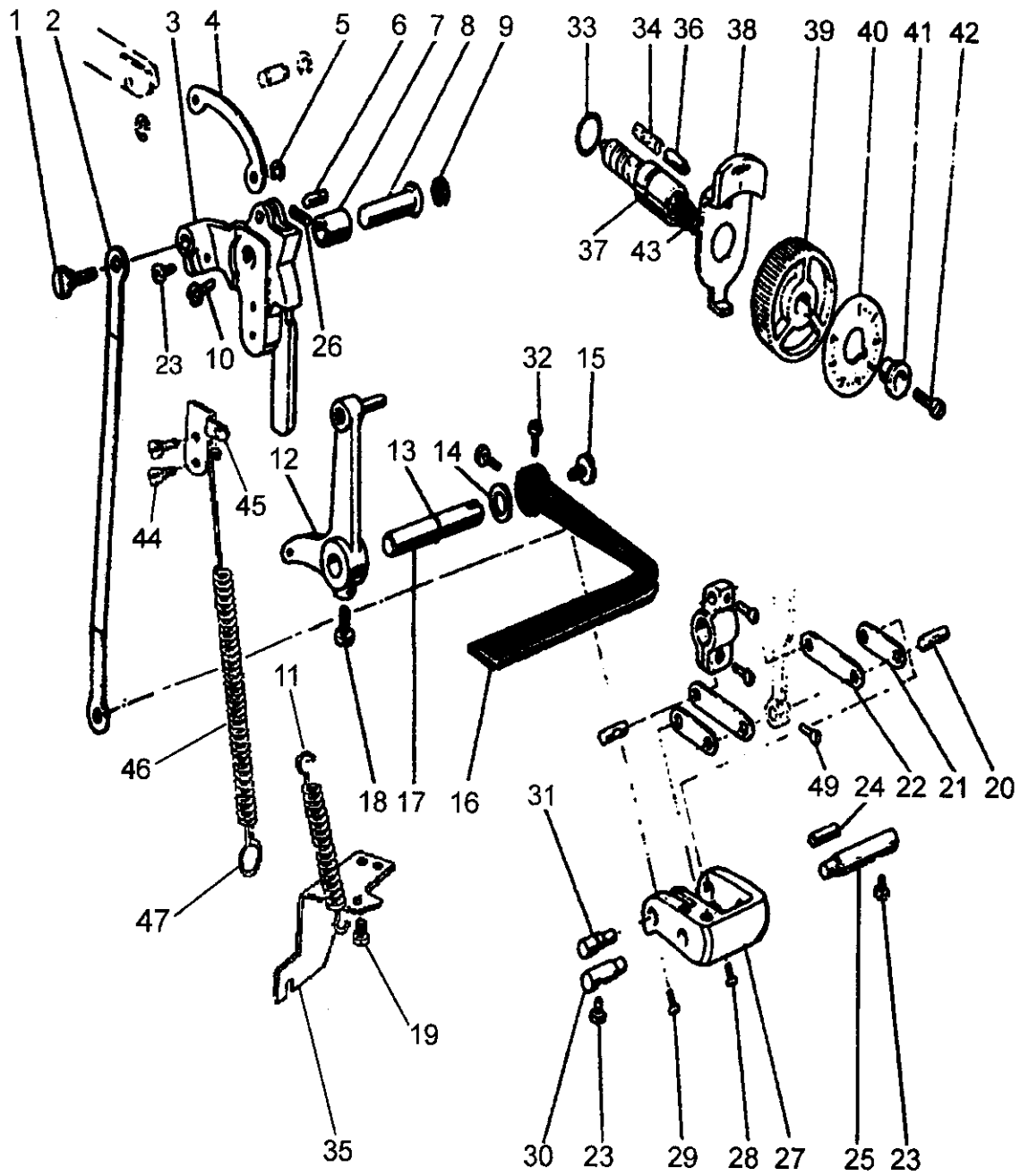




## D.LOWER SHAFT MECHANISM

| Fig. No. | Part No.   | Description                          |        |            |           |               |  |   | Remarks           |
|----------|------------|--------------------------------------|--------|------------|-----------|---------------|--|---|-------------------|
|          |            |                                      | NF 331 | NF 331/AUT | NF 331-LH | NF 331-LH/AUT |  |   |                   |
| D29      | HA305E0066 | Collar for rotating hook shaft       | 1      | 1          |           | 1             |  | 1 |                   |
| D30      | HA305E0662 | Set screw                            | 1      | 1          |           | 1             |  | 1 | SM15/64(28) × 4.5 |
| D31      | HA311E0671 | Hook shaft bushing(right)            | 1      | 1          |           | 1             |  | 1 |                   |
| D32      | HA110E0672 | Oil pipe for hook shaft bushing      | 1      | 1          |           | 1             |  | 1 |                   |
| D33      | HA300E2100 | Plunger                              | 1      | 1          |           | 1             |  | 1 |                   |
| D34      | HA300E2110 | Plunger spring                       | 1      | 1          |           | 1             |  | 1 |                   |
| D35      | HA300E2040 | Guide plate                          | 1      | 1          |           | 1             |  | 1 |                   |
| D36      | HA104F0654 | Set screw                            | 1      | 1          |           | 1             |  | 1 | SM15/64(28) × 10  |
| D37      | HA100G2070 | Hinge pin                            | 1      | 1          |           | 1             |  | 1 |                   |
| D38      | HA306G0067 | Feed lifting rock shaft crank(right) | 1      | 1          |           | 1             |  | 1 |                   |
| D39      | HA305G0663 | Feed lifting rock shaft              | 1      | 1          |           |               |  |   |                   |
| D39      | HA704K0652 | Feed lifting rock shaft              |        |            |           | 1             |  | 1 |                   |
| D40      | HA100G2120 | Bushing                              | 1      | 1          |           | 1             |  | 1 |                   |
| D41      | HA100G2130 | Washer                               | 1      | 1          |           | 1             |  | 1 |                   |
| D42      | HA111G0683 | Set screw                            | 1      | 1          |           | 1             |  | 1 | SM11/64(40) × 12  |
| D43      | H3009E0068 | Feed lifting rock shaft crank(left)  | 1      | 1          |           |               |  |   |                   |
| D43      | H1204D0651 | Feed lifting rock shaft crank(left)  |        |            |           | 1             |  | 1 |                   |
| D44      | HA108G0066 | Collar for feed lifting rock shaft   | 1      | 1          |           | 1             |  | 1 |                   |
| D45      | HA105D0662 | Set screw                            | 1      | 2          |           | 2             |  | 2 | SM1/4(40) × 4     |
| D46      | HA100C2020 | Set screw                            | 1      | 4          |           | 4             |  | 4 | SM15/64(28) × 10  |
| D47      | HA112G0070 | Link assy.                           | 1      | 2          |           |               |  |   |                   |
| D48      | HA100G2100 | Screw                                | 1      | 1          |           |               |  |   | SM9/64(40) × 6.5  |
| D49      | HA104G0659 | Stud screw                           | 1      | 1          |           |               |  |   |                   |
| D49      | HA305G1012 | Stud screw                           |        |            |           | 1             |  | 1 |                   |
| D50      | HA104G0658 | Nut                                  | 1      | 1          |           |               |  |   | SM3/16(32)        |
| D50      | HA310G3011 | Slide block                          |        |            |           | 1             |  | 1 |                   |
| D51      | HA300C2030 | Screw                                | 1      | 1          |           | 1             |  | 1 | SM11/64(40) × 8   |

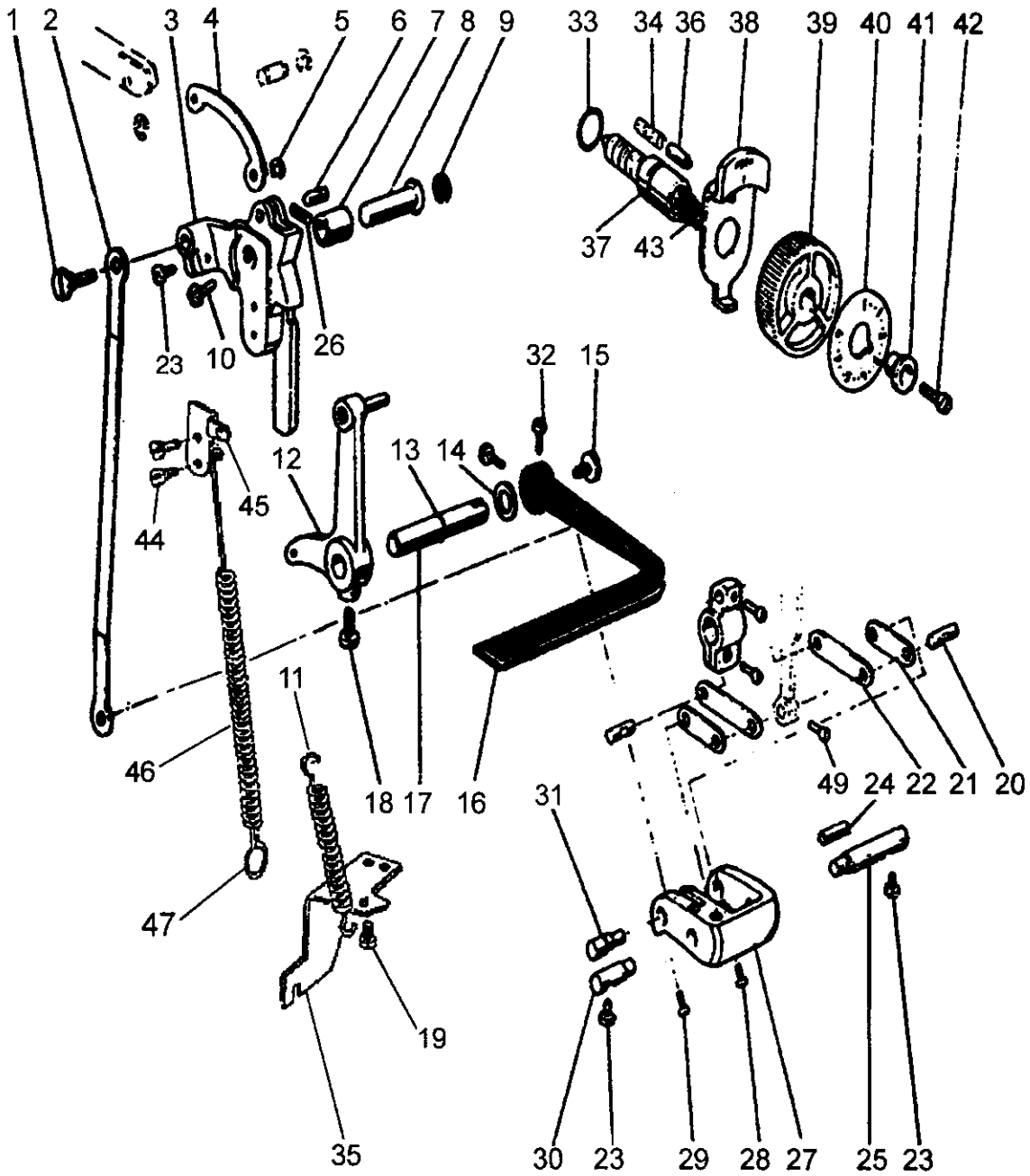
# E. STITCH LENGTH REGULATOR MECHANISM



## E.STITCH LENGTH REGULATOR MECHANISM

| Fig. No. | Part No.   | Description                        | NF 331 | NF 331/AUT | NF 331-LH | NF331-LH/AUT | Remarks            |
|----------|------------|------------------------------------|--------|------------|-----------|--------------|--------------------|
| E01      | H1204E0652 | Connecting rod stud                | 1      |            |           |              |                    |
| E01      | H3000F2070 | Connecting rod stud                |        | 1          | 1         | 1            |                    |
| E02      | HA7311C406 | Feed rock regulator connecting rod | 1      |            |           |              |                    |
| E02      | H3000F2010 | Feed rock regulator connecting rod |        | 1          | 1         | 1            |                    |
| E03      | H1204E0651 | Feed regulator                     | 1      |            |           |              |                    |
| E03      | H3005F0651 | Feed regulator                     |        | 1          |           | 1            |                    |
| E03      | H7705F8001 | Feed regulator                     |        |            | 1         |              |                    |
| E04      | H3000F2090 | Link                               |        | 1          |           | 1            |                    |
| E05      | H007013050 | Retaining ring E type              | 1      | 1          | 1         | 1            |                    |
| E06      | H2204D0652 | Link stud                          |        | 1          |           | 1            |                    |
| E07      | HA704B0655 | Bushing for feed regulator         | 1      | 1          | 1         | 1            |                    |
| E08      | HA100F2040 | Connecting rod stud                | 1      | 1          | 1         | 1            |                    |
| E09      | HA700B2120 | Rubber plug                        | 1      | 1          | 1         | 1            |                    |
| E10      | HA113F0684 | Screw                              | 1      | 1          | 1         | 1            | SM15/64(28) × 8.5  |
| E11      | HA115F0692 | Coil spring                        | 1      |            | 1         |              |                    |
| E11      | H3009F0663 | Coil spring                        |        | 1          |           | 1            |                    |
| E12      | HA115F0069 | Reverse sewing crank assy.         | 1      |            | 1         |              |                    |
| E12      | H3009F0066 | Reverse sewing crank assy.         |        | 1          |           | 1            |                    |
| E13      | HA113F3022 | O-ring                             | 1      | 1          | 1         | 1            |                    |
| E14      | HA100F2110 | Spring washer                      | 1      | 1          | 1         | 1            |                    |
| E15      | HA113F0683 | Screw                              | 1      | 1          | 1         | 1            | SM3/16(28) × 6.5   |
| E16      | HA309F0671 | Feed reversing lever               | 1      | 1          | 1         | 1            |                    |
| E17      | HA113F3021 | Feed reversing lever shaft         | 1      |            | 1         |              |                    |
| E17      | H3008F0671 | Feed reversing lever shaft         |        | 1          |           | 1            |                    |
| E18      | HA100F2130 | Screw                              | 1      |            | 1         |              | SM15/64(28)        |
| E19      | HA800F2020 | Screw                              |        | 1          |           | 1            | SM15/64(28) × 13.5 |
| E20      | HA706C11B1 | Link stud                          | 1      | 1          | 1         | 1            |                    |
| E21      | HA706C1191 | Link                               | 2      | 2          | 2         | 2            |                    |
| E22      | HA706C1192 | Link                               | 2      | 2          | 2         | 2            |                    |
| E23      | HA111G0683 | Screw                              | 3      | 3          | 3         | 3            | SM11/64(40) × 12   |
| E24      | HA7311CE06 | Link stud                          | 1      | 1          | 1         | 1            |                    |
| E25      | HA700C2040 | Feed regulator shaft               | 1      | 1          | 1         | 1            |                    |
| E26      | HA113F0684 | Set screw                          | 2      | 2          | 2         | 2            | SM15/64(28) × 10   |
| E27      | HA7311CG06 | Stitch length adjusting crank      | 1      | 1          | 1         | 1            |                    |
| E28      | HA7311CD06 | Screw                              | 1      | 1          | 1         | 1            | SM9/64(40) × 8.5   |
| E29      | HA7311CC06 | Screw                              | 1      | 1          | 1         | 1            | SM9/64(40) × 6.5   |
| E30      | HA700C2050 | Feed regulator shaft(left)         | 1      | 1          | 1         | 1            |                    |
| E31      | HA7311CF06 | Link stud                          | 1      |            | 1         |              |                    |
| E31      | H3000F2080 | Link stud                          |        | 1          |           | 1            |                    |
| E32      | HA104F0654 | Screw                              | 2      | 2          | 2         | 2            | SM15/64(28) × 10   |
| E33      | HA109F0674 | O-ring                             | 1      | 1          | 1         | 1            |                    |
| E34      | HA100F2090 | Coil spring                        | 1      | 1          | 1         | 1            |                    |
| E35      | H3000F2030 | Spring holder                      |        | 1          |           | 1            |                    |

# E.STITCH LENGTH REGULATOR MECHANISM

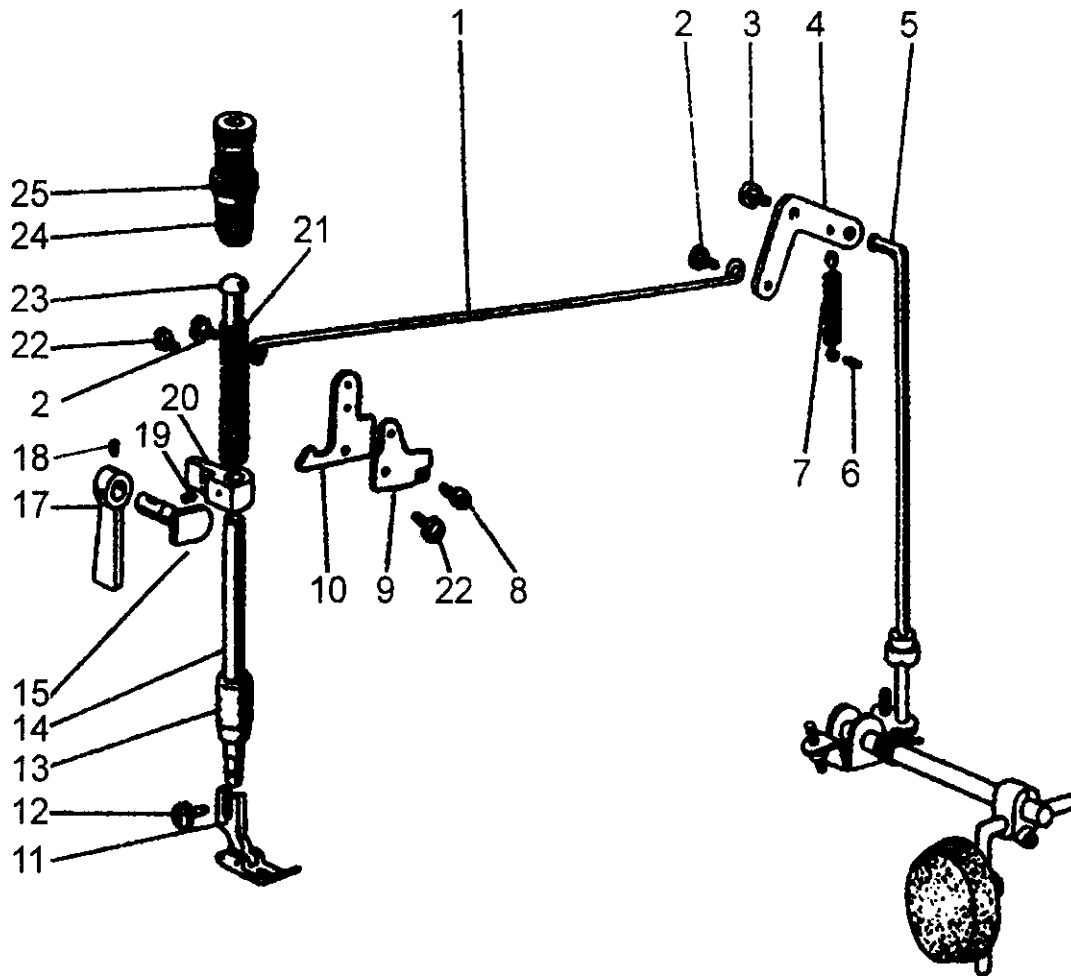


## E.STITCH LENGTH REGULATOR MECHANISM

| Fig. No. | Part No.   | Description                    | NF 331 | NF 331/AUT | NF 331-LH | NF331-LH/AUT | Remarks         |
|----------|------------|--------------------------------|--------|------------|-----------|--------------|-----------------|
| E35      | HA100F2140 | Spring holder                  | 1      |            | 1         |              |                 |
| E36      | HA700F2030 | Stopper pin                    | 1      | 1          | 1         | 1            |                 |
| E37      | HA720F0681 | Screw bar                      | 1      | 1          | 1         | 1            |                 |
| E38      | HA720F0683 | Stopper pin releasing lever    | 1      | 1          | 1         | 1            |                 |
| E39      | HA7421F120 | Dial                           | 1      | 1          | 1         | 1            |                 |
| E40      | HA720F0684 | Stitch length indicating plate | 1      | 1          |           |              |                 |
| E40      | HD520F8001 | Stitch length indicating plate |        |            | 1         | 1            |                 |
| E41      | HA720F0685 | Bushing                        | 1      | 1          | 1         | 1            |                 |
| E42      | HA720F0686 | Screw                          | 1      | 1          | 1         | 1            |                 |
| E43      | HA720F0687 | Coil spring                    | 1      | 1          | 1         | 1            |                 |
| E44      | HA100C2190 | Screw                          |        | 2          |           | 2            | SM9/64 (40) × 8 |
| E45      | H2600E2020 | Spring holder                  |        | 1          |           | 1            |                 |
| E46      | HA806C0674 | Coil spring                    |        | 1          |           | 1            |                 |
| E47      | HA806C0675 | Coil spring pothook            |        | 1          |           | 1            |                 |

# F.PRESSER FOOT MECHANISM

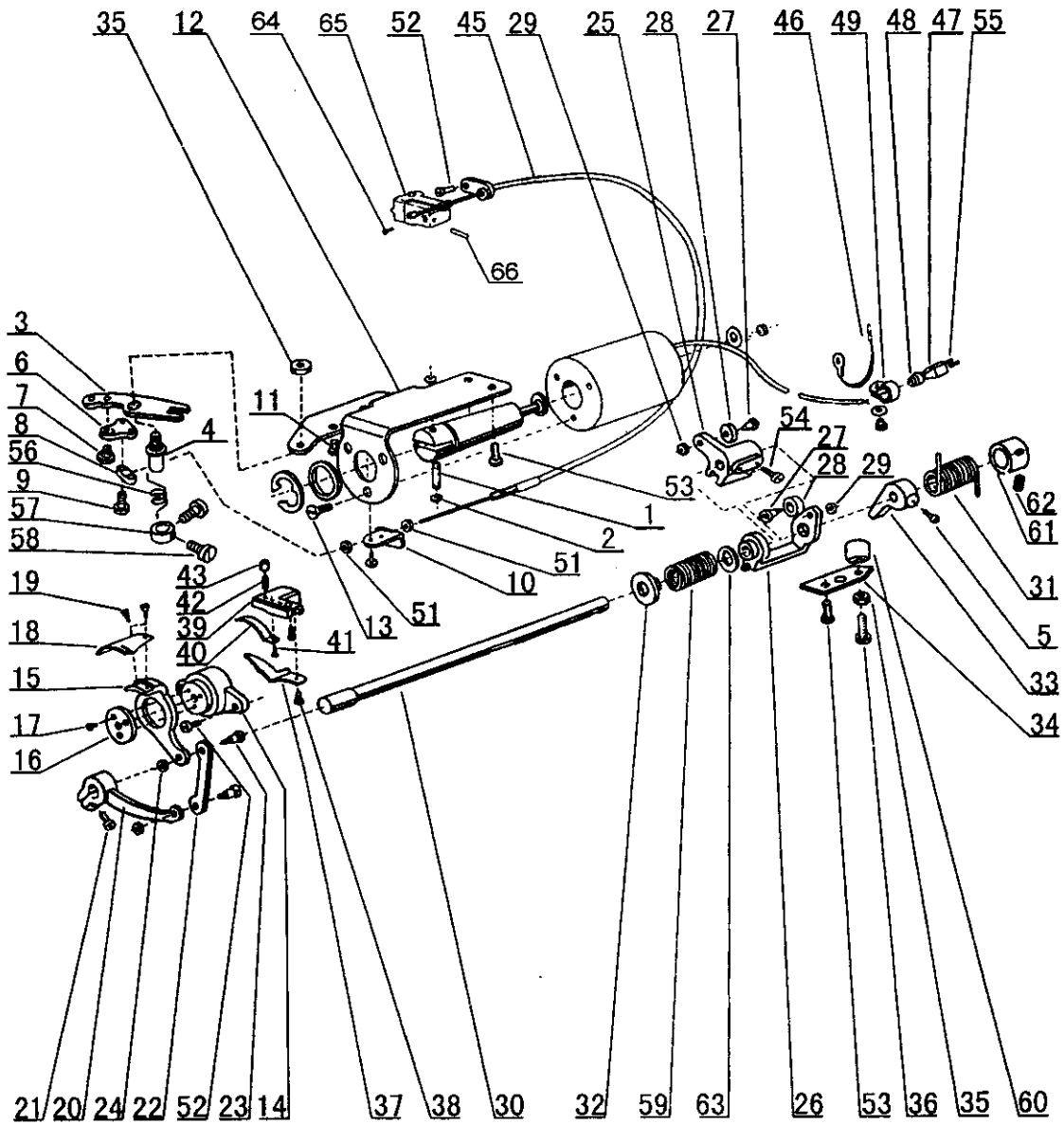
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## F.PRESSER FOOT MECHANISM

| Fig. No. | Part No.   | Description                         |        |            |           |              | Remarks             |
|----------|------------|-------------------------------------|--------|------------|-----------|--------------|---------------------|
|          |            |                                     | NF 331 | NF 331/AUT | NF 331-LH | NF331-LH/AUT |                     |
| F01      | HA107H0663 | Knee lifter rod                     | 1      | 1          | 1         | 1            |                     |
| F02      | HA107H0662 | Hinged screw                        | 2      | 2          | 2         | 2            | SM3/16 (28) × 3.5   |
| F03      | HA100H2050 | Stud bolt                           | 1      | 1          | 1         | 1            | SM15/64 (28) × 13.5 |
| F04      | HA306H0067 | Knee lifter lever (right)           | 1      | 1          | 1         | 1            |                     |
| F05      | HA306H0671 | Knee lifter connecting rod          | 1      | 1          | 1         | 1            |                     |
| F06      | HA100H2080 | Spring hook                         | 1      | 1          | 1         | 1            |                     |
| F07      | HA110H0672 | Spring for knee lifter lever        | 1      | 1          | 1         | 1            |                     |
| F08      | HA100H2050 | Stud bolt                           | 1      | 1          | 1         | 1            | SM15/64 (28) × 13.5 |
| F09      | HA305H6611 | Tension releasing cam               | 1      | 1          | 1         | 1            |                     |
| F10      | HA7311I106 | Knee lifter lever (left)            | 1      | 1          | 1         | 1            |                     |
| F11      | H3005G0066 | Presser foot assy.                  | 1      | 1          | 1         |              |                     |
| F11      | H7704G7101 | Presser foot assy.                  |        |            |           | 1            |                     |
| F12      | HA100H2150 | Screw                               | 1      | 1          | 1         | 1            | SM9/64 (40) × 11    |
| F13      | HA704B0651 | Bushing for presser bar             | 1      | 1          | 1         | 1            |                     |
| F14      | HA300H2110 | Presser bar                         | 1      | 1          | 1         | 1            |                     |
| F15      | HA705I0661 | Presser bar lifting cam with O-ring | 1      | 1          | 1         | 1            |                     |
| F16      | HA300H2080 | O-ring                              | 1      | 1          | 1         | 1            |                     |
| F17      | HA704I0652 | Presser bar lifter with screw       | 1      | 1          | 1         | 1            |                     |
| F18      | HA100B2110 | Set screw                           | 1      | 1          | 1         | 1            | SM11/64 (40) × 5.5  |
| F19      | HA3411D308 | Set screw                           | 1      | 1          | 1         | 1            | SM15/64 (28) × 7    |
| F20      | H3004G0651 | Presser bar guide bracket           | 1      | 1          | 1         | 1            |                     |
| F21      | HA300H2050 | Presser spring                      | 1      | 1          |           |              |                     |
| F21      | HA100H2130 | Presser spring                      |        |            | 1         | 1            |                     |
| F22      | HA107H0662 | Screw                               | 1      | 1          | 1         | 1            | SM3/16 (28) × 3.5   |
| F23      | HA100H2120 | Presser spring guide                | 1      | 1          | 1         | 1            |                     |
| F24      | HA309H0681 | Thumb screw                         | 1      | 1          | 1         | 1            |                     |
| F25      | HA117H0692 | Thumb nut                           | 1      | 1          | 1         | 1            |                     |

# G.KNIFE ACTUATING MECHANISM

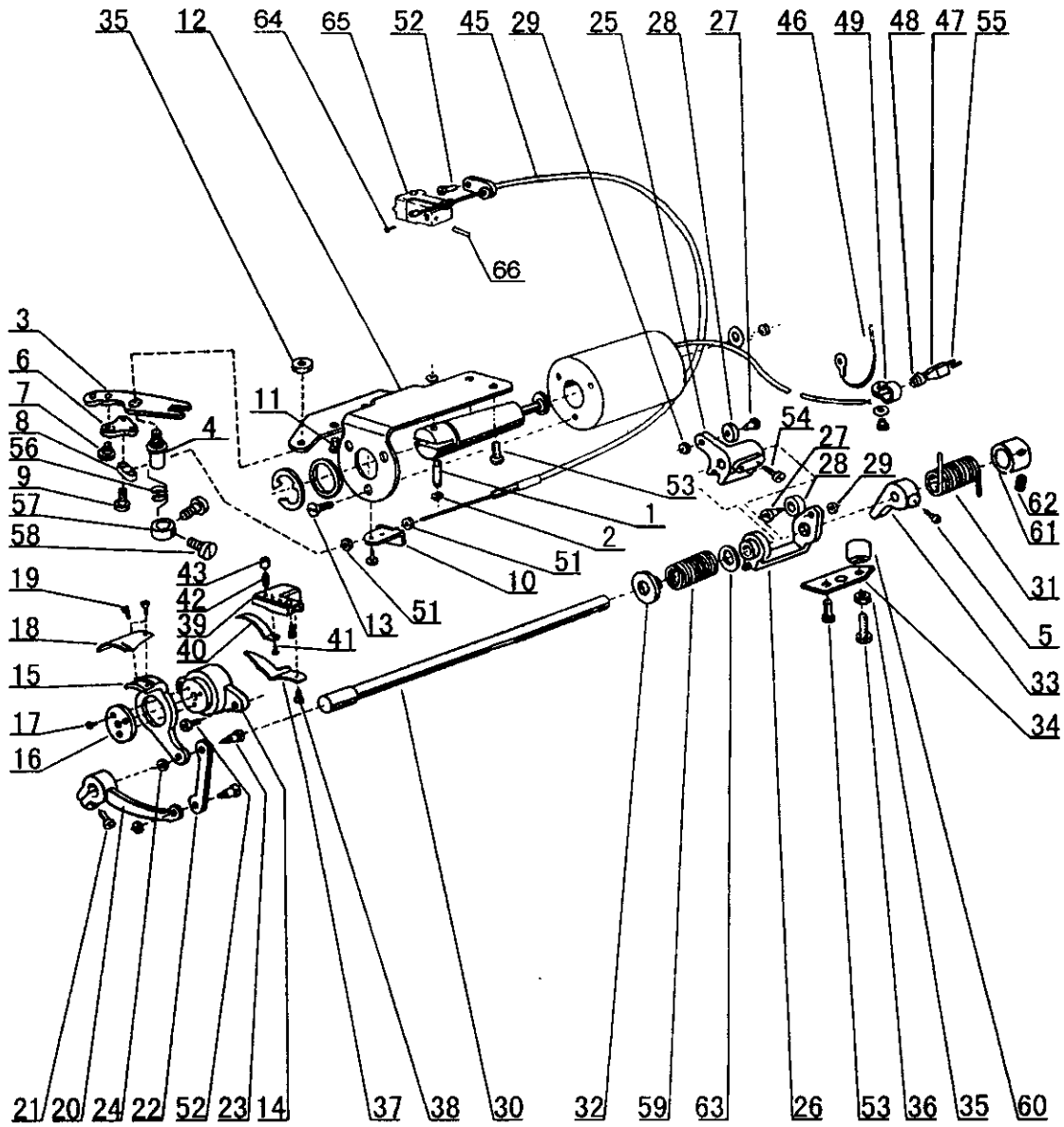




## G.KNIFE ACTUATING MECHANISM

| Fig. No. | Part No.   | Description                  |        |            |           |              | Remarks |                     |
|----------|------------|------------------------------|--------|------------|-----------|--------------|---------|---------------------|
|          |            |                              | NF 331 | NF 331/AUT | NF 331-LH | NF331-LH/AUT |         |                     |
| G01      | HA712N0692 | Link stud                    |        | 1          |           |              | 1       |                     |
| G02      | H007013040 | Retaining ring-E type        |        | 2          |           |              | 2       |                     |
| G03      | HA712N0698 | Thread trimmer driving lever |        | 1          |           |              | 1       |                     |
| G04      | HA712N0695 | Stud screw                   |        | 1          |           |              | 1       |                     |
| G05      | HA113F0684 | Set screw                    |        | 2          |           |              | 2       | SM15/64 (28) × 8.5  |
| G06      | HA712N6910 | Flexible wire holder         |        | 1          |           |              | 1       |                     |
| G07      | HA712N0699 | Stud screw                   |        | 1          |           |              | 1       | SM11/64 (40) × 4    |
| G08      | HA712N6911 | Flexible wire presser        |        | 1          |           |              | 1       |                     |
| G09      | HA712N6912 | Screw                        |        | 2          |           |              | 2       | SM1/8 (44) × 7      |
| G10      | HA712N6913 | Holder                       |        | 1          |           |              | 1       |                     |
| G11      | HA100E2150 | Screw                        |        | 1          |           |              | 1       | SM11/64 (40) × 10   |
| G12      | HA7511N212 | Solenoid breaket             |        | 1          |           |              | 1       |                     |
| G13      | HS90011406 | Screw                        |        | 3          |           |              | 3       | M4 × 6              |
| G14      | HA704N1111 | Knife holding bracket saddle |        | 1          |           |              | 1       |                     |
| G15      | HA704N1112 | Knife base (left)            |        | 1          |           |              |         |                     |
| G15      | 211H205    | Knife base (left)            |        |            |           |              | 1       |                     |
| G16      | HA704N1113 | Thrust collar                |        | 1          |           |              |         |                     |
| G16      | 211H305    | Thrust collar                |        |            |           |              | 1       |                     |
| G17      | HA704N1114 | Screw                        |        | 3          |           |              |         | SM1/8 (44) × 5.2    |
| G17      | 211H405    | Screw                        |        |            |           |              | 3       |                     |
| G18      | HA7111N804 | Movable knife (left)         |        | 1          |           |              |         |                     |
| G18      | HA9111N204 | Movable knife (left)         |        |            |           |              | 1       |                     |
| G19      | HA7111N704 | Screw                        |        | 2          |           |              | 2       | SM11/64 (40) × 5.5  |
| G20      | HA7111N604 | Knife driving crank          |        | 1          |           |              | 1       |                     |
| G21      | HA719B7011 | Screw                        |        | 1          |           |              | 1       | SM11/64 (40) × 11.4 |
| G22      | HA7111N404 | Link                         |        | 1          |           |              | 1       |                     |
| G23      | HA7111N204 | Stud screw                   |        | 2          |           |              | 2       | SM11/64 (40) × 6.2  |
| G24      | HA7111N304 | Nut                          |        | 2          |           |              | 2       | SM11/64 (40)        |
| G25      | HA7211N106 | Cam follower crank1          |        | 1          |           |              | 1       |                     |
| G26      | HA7211N206 | Cam follower crank2          |        | 1          |           |              | 1       |                     |
| G27      | HA7221N206 | Roller stud                  |        | 1          |           |              | 1       |                     |
| G28      | HA7221N106 | Roller                       |        | 1          |           |              | 1       |                     |
| G29      | HA706N0663 | Nut                          |        | 1          |           |              | 1       | SM3/16 (28)         |
| G30      | HA700N0020 | Knife driving shaft          |        | 1          |           |              |         |                     |
| G30      | HA900N0020 | Knife driving shaft          |        |            |           |              | 1       |                     |
| G31      | HA700N0110 | Coil spring                  |        | 1          |           |              | 1       |                     |
| G32      | HA700N0050 | Bushing                      |        | 1          |           |              | 1       |                     |
| G33      | HA709N0671 | Stopper lever                |        | 1          |           |              |         |                     |
| G33      | HA906N0661 | Stopper lever                |        |            |           |              | 1       |                     |
| G34      | HA710N0682 | Lever stopper plate          |        | 1          |           |              | 1       |                     |
| G35      | HA710N0683 | Nut                          |        | 2          |           |              | 2       |                     |
| G36      | HA7411N110 | Bolt                         |        | 1          |           |              | 1       | SM15/64 (28) × 23   |
| G37      | HA7121N404 | Fixed blade                  |        | 1          |           |              | 1       |                     |

# G.KNIFE ACTUATING MECHANISM

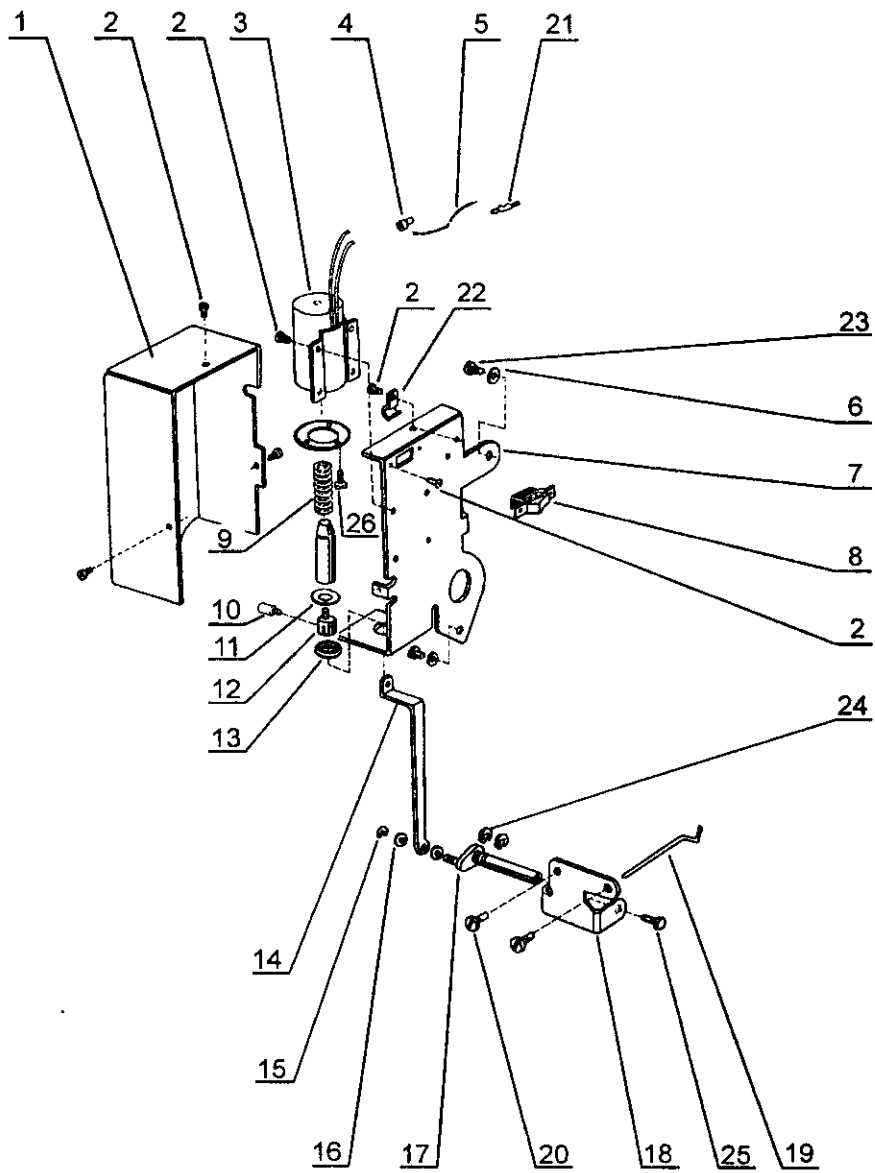


## G.KNIFE ACTUATING MECHANISM

| Fig. No. | Part No.   | Description                            |        |            |           |              | Remarks |                   |
|----------|------------|--|--------|------------|-----------|--------------|---------|-------------------|
|          |            |  | NF 331 | NF 331/AUT | NF 331-LH | NF331-LH/AUT |         |                   |
| G38      | HA7311CH06 | Screw                                  |        | 1          |           |              | 1       | SM9/64 (40) × 8   |
| G39      | HA7121N104 | Bracket for fixed blade                |        | 1          |           |              | 1       |                   |
| G40      | H3000H2030 | Fixed blade                            |        | 1          |           |              |         |                   |
| G40      | H22121H104 | Fixed blade                            |        |            |           |              | 1       |                   |
| G41      | HA7121N304 | Screw                                  |        | 1          |           |              | 1       | SM9/64 (40) × 5   |
| G42      | HA7121N604 | Screw                                  |        | 1          |           |              | 1       | SM9/64 (40) × 8.5 |
| G43      | HA7121N704 | Nut                                    |        | 1          |           |              | 1       | SM9/64 (40)       |
| G45      | HA713N0070 | Flexible wire                          |        | 1          |           |              | 1       |                   |
| G46      | HA705Q0065 | Ground wire assy.                      |        | 1          |           |              | 1       |                   |
| G47      | HA700Q0010 | Nylon connectoe oil seal               |        | 1          |           |              | 1       |                   |
| G48      | HA70400657 | Connector cap                          |        | 1          |           |              | 1       |                   |
| G49      | HA708P0668 | Cord holder                            |        | 1          |           |              | 1       |                   |
| G50      | HA300B2170 | Screw                                  |        | 1          |           |              | 1       | SM11/64 (40) × 9  |
| G51      | H003002050 | Nut                                    |        | 2          |           |              | 2       |                   |
| G52      | HA300C2030 | Screw                                  |        | 6          |           |              | 6       | SM11/64 (40) × 8  |
| G53      | HA700N0080 | Screw                                  |        | 4          |           |              | 4       | SM15/64 (28) × 12 |
| G54      | HA113F0684 | Set screw                              |        | 2          |           |              | 2       |                   |
| G55      | HA7641B319 | Terminal pin                           |        | 2          |           |              | 2       |                   |
| G56      | HA712N0697 | Trimming lever spring                  |        | 1          |           |              | 1       |                   |
| G57      | HA712N0696 | Spring support collar                  |        | 1          |           |              | 1       |                   |
| G58      | HA7311CC06 | Screw                                  |        | 2          |           |              | 2       | SM9/64 (40) × 6.5 |
| G59      | HA700N0040 | Coil spring                            |        | 1          |           |              | 1       |                   |
| G60      | HA7411N210 | Washer                                 |        | 1          |           |              | 1       |                   |
| G61      | HA715N0711 | Collar                                 |        | 1          |           |              | 1       |                   |
| G62      | HA105D0662 | Set screw                              |        | 1          |           |              | 1       | SM1/4 (40) × 4    |
| G63      | HA706N0664 | Bushing                                |        | 1          |           |              | 1       |                   |
| G64      | HA7311C606 | Screw                                  |        | 2          |           |              | 2       | SM11/64 (40) × 12 |
| G65      | H5904H7101 | Thread tension releasing bracket assy. |        | 1          |           |              | 1       |                   |
| G65      | H3600G2010 | Thread tension releasing bracket       | 1      |            |           | 1            |         |                   |
| G66      | HA100H2060 | Thread tension releasing pin           | 1      |            |           | 1            |         |                   |
| G66      | H3000H2060 | Thread tension releasing pin           |        | 1          |           |              | 1       |                   |

# H.WIPER MECHANISM

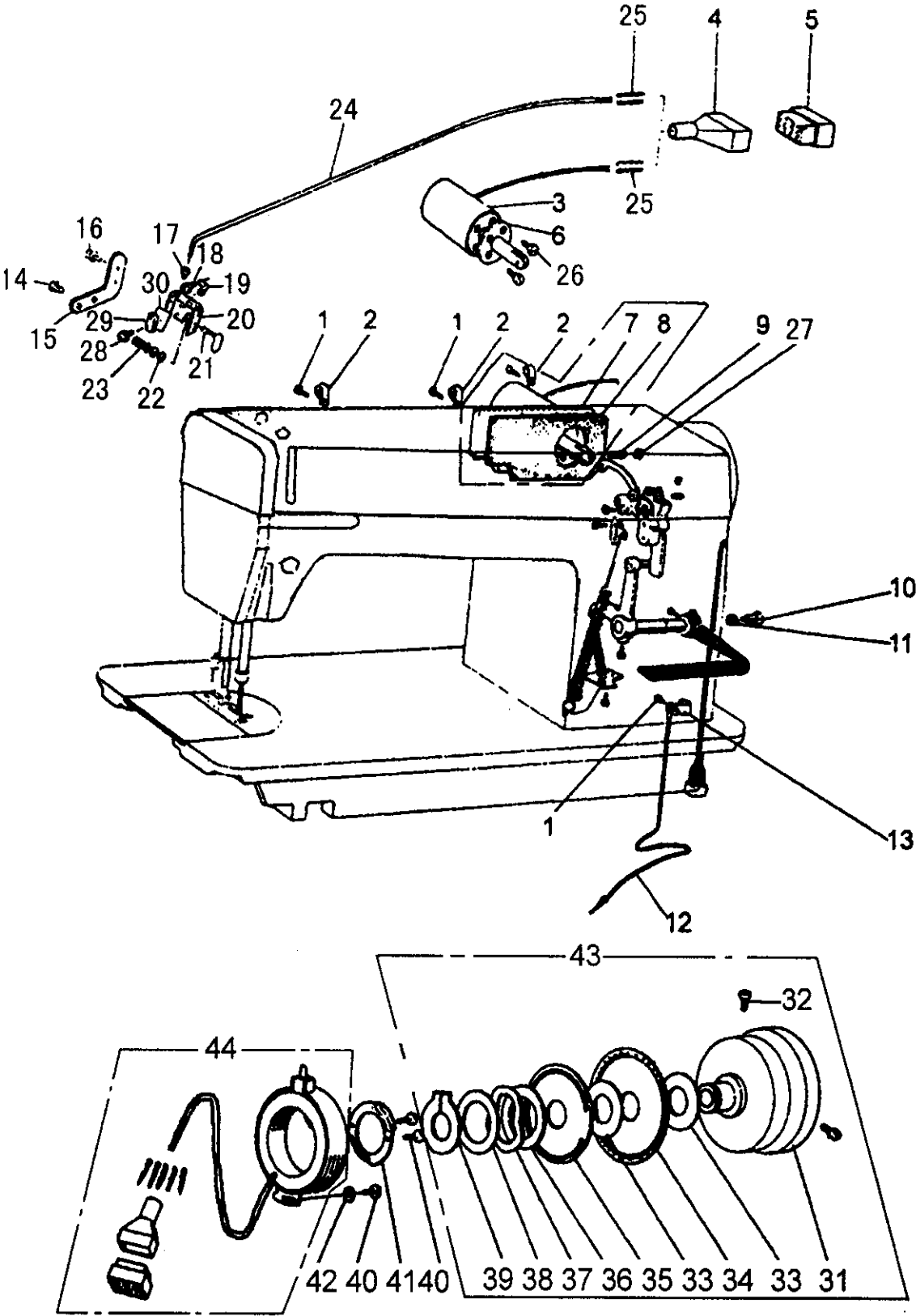
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## H.WIPER MECHANISM

| Fig. No. | Part No.   | Description                    |        |            |           |              | Remarks |
|----------|------------|--------------------------------|--------|------------|-----------|--------------|---------|
|          |            |                                | NF 331 | NF 331/AUT | NF 331-LH | NF331-LH/AUT |         |
| H01      | H3000I2040 | Solenoid cover for wiper mech. |        | 1          |           |              |         |
| H02      | HA708P0669 | Screw                          |        | 10         |           |              |         |
| H03      | HA7221P108 | Thread wiper solenoid assy.    |        | 1          |           |              |         |
| H04      | HA708P6610 | Connecting                     |        | 1          |           |              |         |
| H05      | HA708P1011 | Vinyl cap-tire cable assy.     |        | 1          |           |              |         |
| H06      | HA700P0010 | Washer                         |        | 2          |           |              |         |
| H07      | HA708P0667 | Solenoid bracket               |        | 1          |           |              |         |
| H08      | HA708P0665 | Thread wiper switch            |        | 1          |           |              |         |
| H09      | HA708P0663 | Coil spring                    |        | 1          |           |              |         |
| H10      | HA700P0030 | Plunger pin                    |        | 1          |           |              |         |
| H11      | HA7221P308 | Washer                         |        | 1          |           |              |         |
| H12      | HA7221P408 | Screw                          |        | 1          |           |              |         |
| H13      | HA708P0664 | Rubber cushion                 |        | 1          |           |              |         |
| H14      | HA705P0654 | Thread wiper connecting rod    |        | 1          |           |              |         |
| H15      | H007013025 | Retaining ring-E type          |        | 1          |           |              |         |
| H16      | HA705P0655 | Washer                         |        | 2          |           |              |         |
| H17      | HA7121P105 | Wiper shaft                    |        | 1          |           |              |         |
| H18      | HA705P0651 | Thread wiper brachet           |        | 1          |           |              |         |
| H19      | H3000I2020 | Thread wiper                   |        | 1          |           |              |         |
| H20      | HA700B2030 | Screw                          |        | 2          |           |              |         |
| H21      | HA7641B319 | Terminal pin                   |        | 2          |           |              |         |
| H22      | HA700P0060 | Cord holder                    |        | 1          |           |              |         |
| H23      | HA104F0654 | Screw                          |        | 2          |           |              |         |
| H24      | H007013040 | Retaining ring-E type          |        | 2          |           |              |         |
| H25      | HA104G0654 | Screw                          |        | 1          |           |              |         |
| H26      | HA7221P508 | Screw                          |        | 3          |           |              |         |

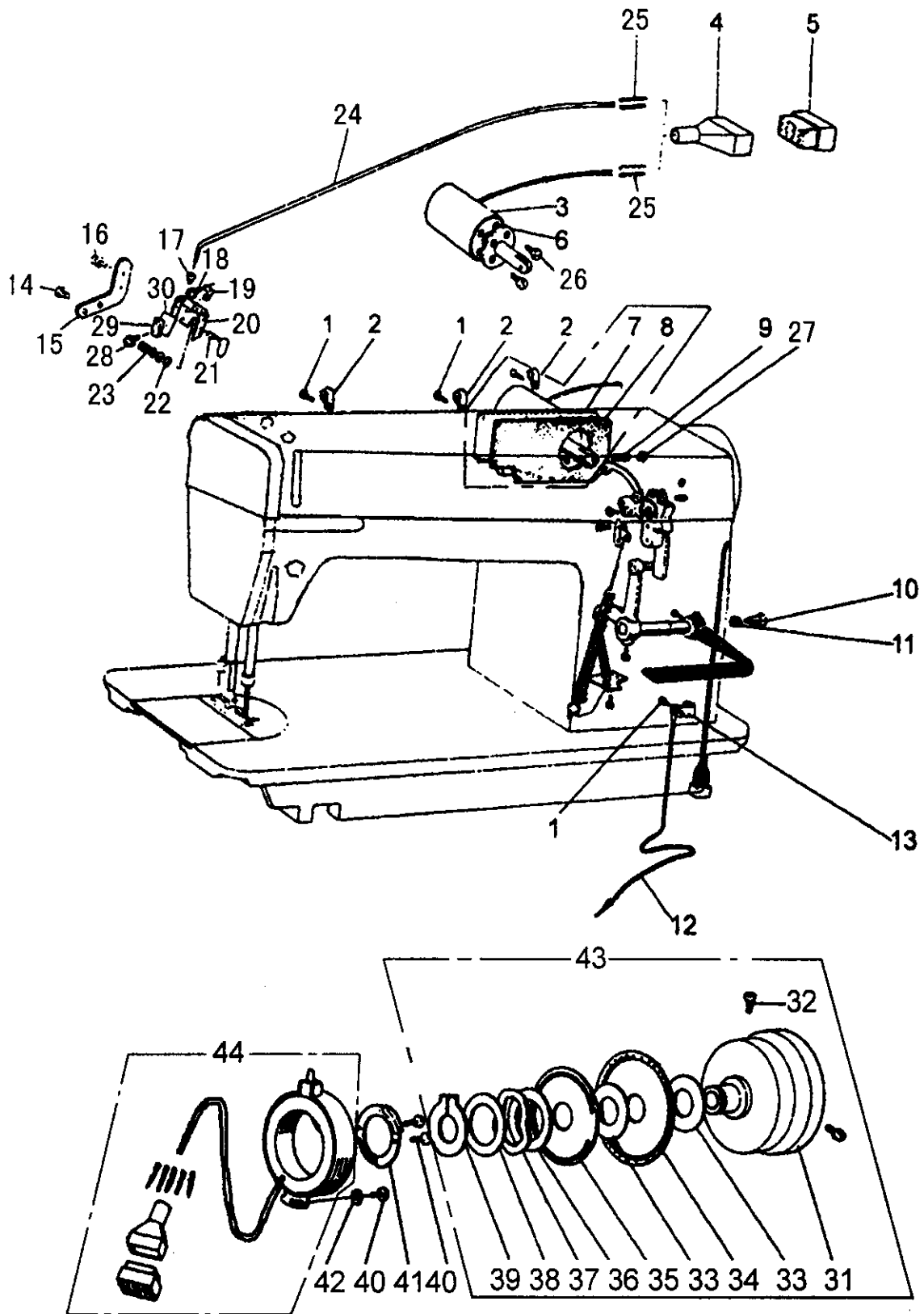
I.TOUCH BACK MECHANISM



# I.TOUCH BACK MECHANISM

| Fig. No. | Part No.   | Description                   |        |            |           |              | Remarks |                  |
|----------|------------|-------------------------------|--------|------------|-----------|--------------|---------|------------------|
|          |            |                               | NF 331 | NF 331/AUT | NF 331-LH | NF331-LH/AUT |         |                  |
| I01      | HA300B2170 | Screw assy.                   |        | 4          |           |              | 4       | SM11/64 (40) × 9 |
| I02      | HA700Q0030 | Cord holder                   |        | 3          |           |              | 3       |                  |
| I03      | H2206I0673 | Arm side cover solenoid assy. |        | 1          |           |              | 1       |                  |
| I04      | HA712Q0693 | Connector cap                 |        | 1          |           |              | 1       |                  |
| I05      | HA700Q0010 | Nylon connector               |        | 1          |           |              | 1       |                  |
| I06      | H2206I0672 | Gascket for solenoid oil seal |        | 1          |           |              | 1       |                  |
| I07      | HA108B0681 | Arm side cover                | 1      |            | 1         |              |         |                  |
| I07      | H2609E0671 | Arm side cover                |        | 1          |           |              | 1       |                  |
| I08      | HA108B0682 | Gascket for arm side cover    | 1      |            | 1         |              |         |                  |
| I08      | H2609E0672 | Gascket for arm side cover    |        | 1          |           |              | 1       |                  |
| I09      | HA712N0692 | Link stud                     |        | 1          |           |              | 1       |                  |
| I10      | H2204G0651 | Stud screw                    |        | 1          |           |              | 1       | SM15/64 (28) × 7 |
| I11      | H2204G0652 | Rubber cushion                |        | 1          |           |              | 1       |                  |
| I12      | HA705Q0065 | Ground wire assy.             |        | 1          |           |              | 1       |                  |
| I13      | HA700Q0050 | Cord holder                   |        | 1          |           |              | 1       |                  |
| I14      | HA300B2170 | Screw                         |        | 2          |           |              | 2       | SM11/64(40) × 9  |
| I15      | H5911J8001 | Touch switch plate            |        | 1          |           |              | 1       |                  |
| I16      | HA7221P508 | Screw                         |        | 2          |           |              | 2       | M3 × 5           |
| I17      | HA70400657 | Rubber busher                 |        | 1          |           |              | 1       |                  |
| I18      | HA70400659 | Screw                         |        | 1          |           |              | 1       | M2 × 4           |
| I19      | HA70400654 | Spring                        |        | 1          |           |              | 1       |                  |
| I20      | H2205I0661 | Switch plate                  |        | 1          |           |              | 1       |                  |
| I21      | HA70400021 | Switch assy.                  |        | 1          |           |              | 1       |                  |
| I22      | H007013030 | Retaining ring-E type         |        | 2          |           |              | 2       | GB/T896 3        |
| I23      | HA70400653 | Spring                        |        | 1          |           |              | 1       |                  |
| I24      | HA7641B319 | Cable assy.                   |        | 3          |           |              | 3       |                  |
| I25      | HA7641B319 | Terminal pin                  |        | 5          |           |              | 5       |                  |
| I26      | HA300C2030 | Screw                         |        | 4          |           |              | 4       | SM11/64(40) × 8  |
| I27      | H007013040 | Retaining ring-E type         |        | 1          |           |              | 1       |                  |
| I28      | HA70406510 | Screw                         |        | 2          |           |              | 2       | M2 × 8           |
| I29      | HA70400655 | Switch                        |        | 1          |           |              | 1       |                  |
| I30      | HA70400658 | Insulating plate              |        | 2          |           |              | 2       |                  |
| I31      | HA307D0067 | Pulley                        | 1      |            | 1         |              |         |                  |
| I31      | HA710R0065 | Pulley                        |        | 1          |           |              | 1       |                  |
| I32      | HA110D0672 | Set screw                     | 2      | 2          | 2         |              | 2       |                  |
| I33      | HA700R0030 | Spacer1                       |        | 2          |           |              | 2       |                  |
| I34      | HA700R0010 | Speed command disc1           |        | 1          |           |              | 1       |                  |
| I35      | HA700R0020 | Spacer2                       |        | 1          |           |              | 1       |                  |
| I36      | HA700R0040 | Speed command disc2           |        | 1          |           |              | 1       |                  |
| I37      | HA700R0050 | Supporter spring              |        | 1          |           |              | 1       |                  |
| I38      | HA700R0060 | Washer                        |        | 1          |           |              | 1       |                  |
| I39      | H007009300 | Retaining ring-C type         |        | 1          |           |              | 1       |                  |
| I40      | HA300C2030 | Screw                         |        | 3          |           |              | 3       | SM11/64(40) × 8  |

# I.TOUCH BACK MECHANISM

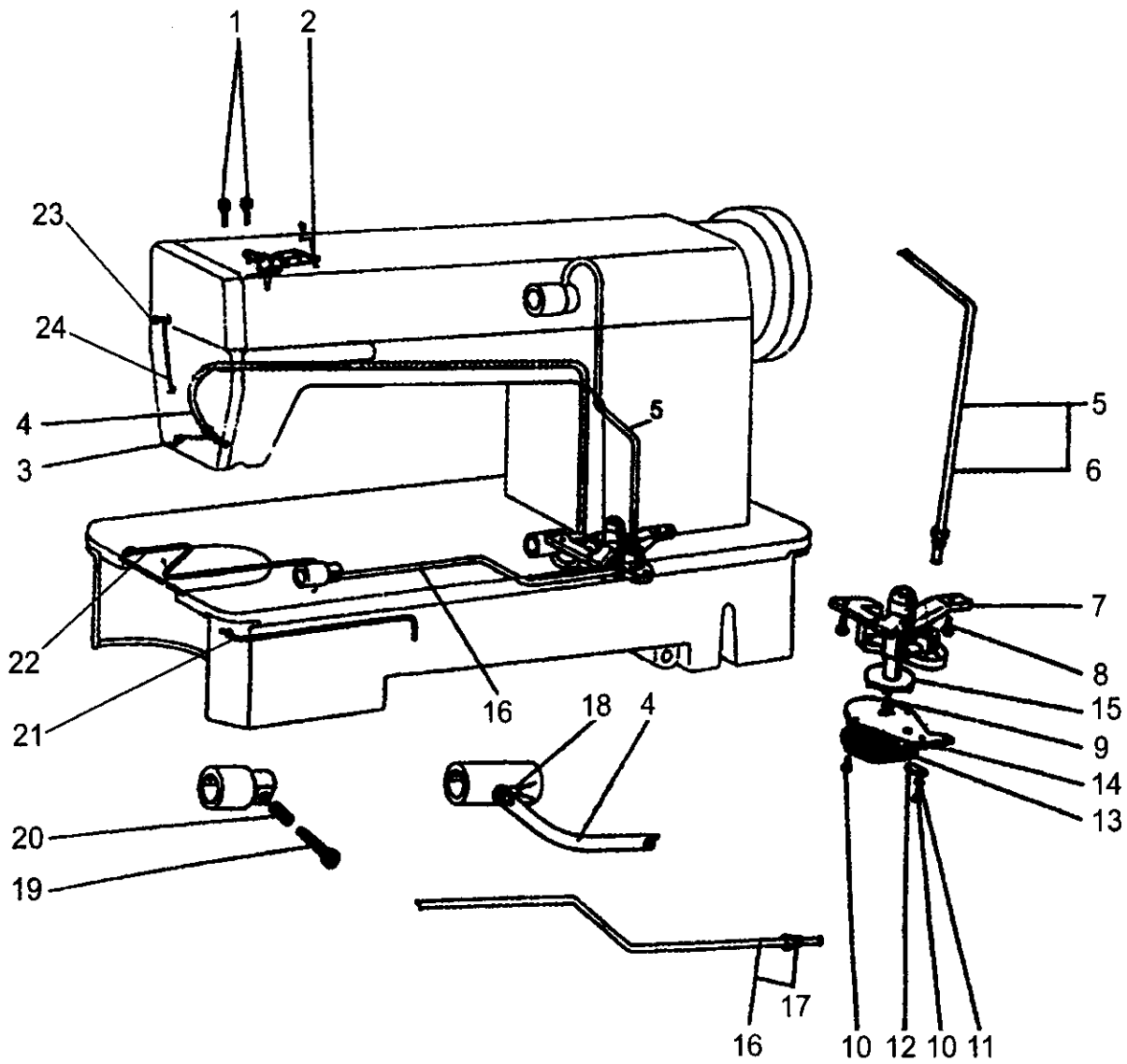




# I.TOUCH BACK MECHANISM

| Fig. No. | Part No.   | Description                |        |            |           |              | Remarks |  |
|----------|------------|----------------------------|--------|------------|-----------|--------------|---------|--|
|          |            |                            | NF 331 | NF 331/AUT | NF 331-LH | NF331-LH/AUT |         |  |
| I41      | HA703R0066 | Detector bracket supporter |        | 1          |           |              | 1       |  |
| I42      | HA703R0067 | Washer                     |        | 1          |           |              | 1       |  |
| I43      | HA700R0000 | Pulley assy.               |        | 1          |           |              | 1       |  |
| I44      | HA703R0065 | Detector bracket assy.     |        | 1          |           |              | 1       |  |

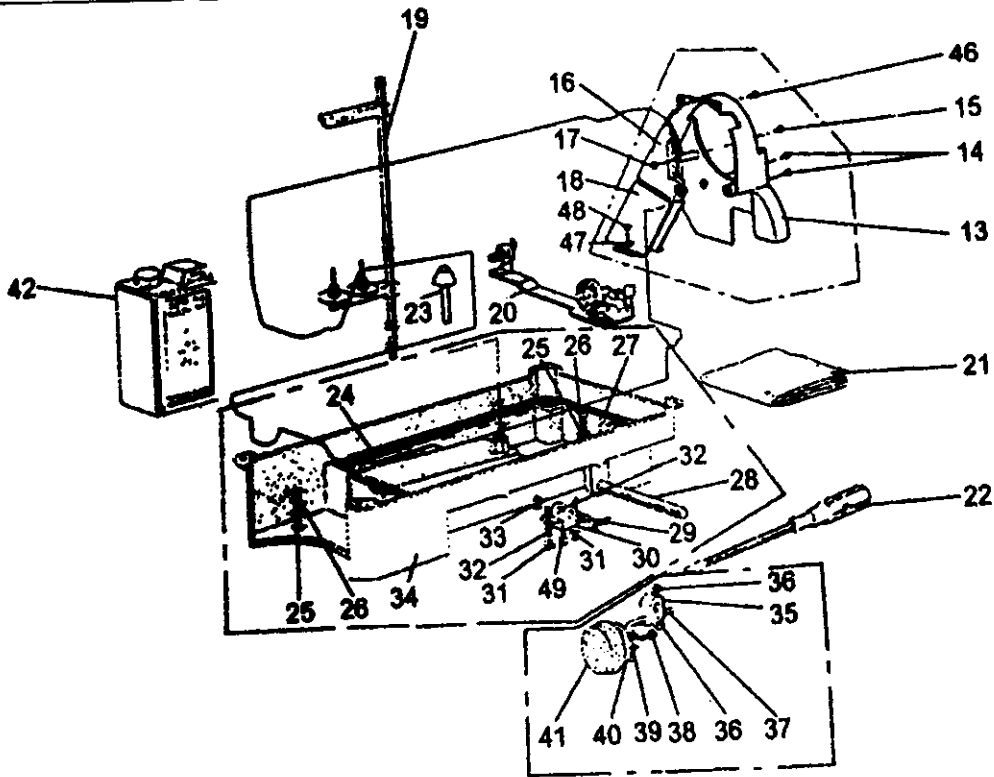
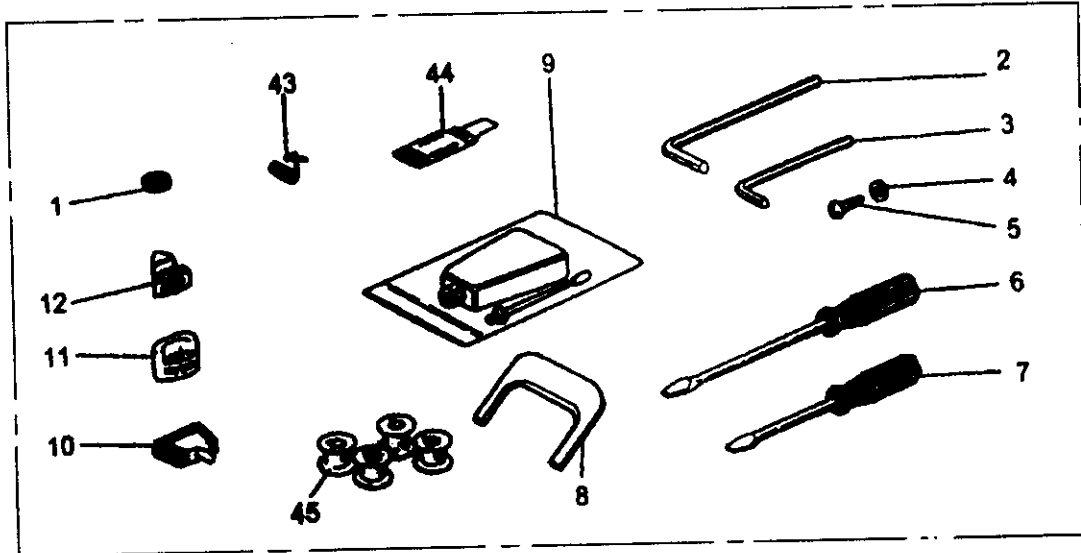
# J.OIL LUBRICATION MECHANISM



# J.OIL LUBRICATION MECHANISM

| Fig. No. | Part No.   | Description                  |        |            |           |               |  |   | Remarks           |
|----------|------------|------------------------------|--------|------------|-----------|---------------|--|---|-------------------|
|          |            |                              | NF 331 | NF 331/AUT | NF 331-LH | NF 331-LH/AUT |  |   |                   |
| J01      | HA100H2150 | Screw                        | 2      | 2          |           | 2             |  | 2 | SM9/64 (40) × 11  |
| J02      | H3004L0065 | Oil wick fitting plate assy. | 1      | 1          |           | 1             |  | 1 |                   |
| J03      | H3000L0020 | Oil filter holder            | 1      | 1          |           | 1             |  | 1 |                   |
| J04      | H3006L0065 | Oil return tube assy.        | 1      | 1          |           | 1             |  | 1 |                   |
| J05      | HA116I0068 | Upper shaft oil tube assy.   | 1      | 1          |           | 1             |  | 1 |                   |
| J06      | HA116I0682 | Oil tube lock bushing        | 1      | 1          |           | 1             |  | 1 |                   |
| J07      | HA100I2010 | Oil pump                     | 1      | 1          |           | 1             |  | 1 |                   |
| J08      | HA100I2090 | Screw                        | 3      | 3          |           | 3             |  | 3 | SM11/64 (40) × 13 |
| J09      | HA100I2030 | Screw                        | 1      | 1          |           | 1             |  | 1 | SM1/8 (44) × 6.5  |
| J10      | HA100I2040 | Screw                        | 3      | 3          |           | 3             |  | 3 | SM1/8 (44) × 13   |
| J11      | HA100I2050 | Spring washer                | 1      | 1          |           | 1             |  | 1 |                   |
| J12      | HA100I2070 | Oil adjusting plate          | 1      | 1          |           | 1             |  | 1 |                   |
| J13      | HA111I0065 | Oil pump filter              | 1      | 1          |           | 1             |  | 1 |                   |
| J14      | HA700L0030 | Oil pump impeller cover      | 1      | 1          |           | 1             |  | 1 |                   |
| J15      | HA100I2020 | Oil pump impeller            | 1      | 1          |           | 1             |  | 1 |                   |
| J16      | HA707L0065 | Lower shaft oil tube assy.   | 1      | 1          |           | 1             |  | 1 |                   |
| J17      | HA113I0661 | Oil tube lock bushing        | 1      | 1          |           | 1             |  | 1 |                   |
| J18      | HA300I2030 | Oil return tube clip         | 1      | 1          |           | 1             |  | 1 |                   |
| J19      | HA300E2030 | Oil adjusting screw          | 1      | 1          |           | 1             |  | 1 | SM15/64 (28) × 12 |
| J20      | HA100E2060 | Oil adjusting spring         | 1      | 1          |           | 1             |  | 1 |                   |
| J21      | HA305G0664 | Oil wick                     | 1      | 1          |           | 1             |  | 1 |                   |
| J22      | H3000E2050 | Oil wick                     | 1      | 1          |           | 1             |  | 1 |                   |
| J23      | HA300C2030 | Screw                        | 1      | 1          |           | 1             |  | 1 | SM11/64 (40) × 8  |
| J24      | H3000L0030 | Oil pipe holder              | 1      | 1          |           | 1             |  | 1 |                   |

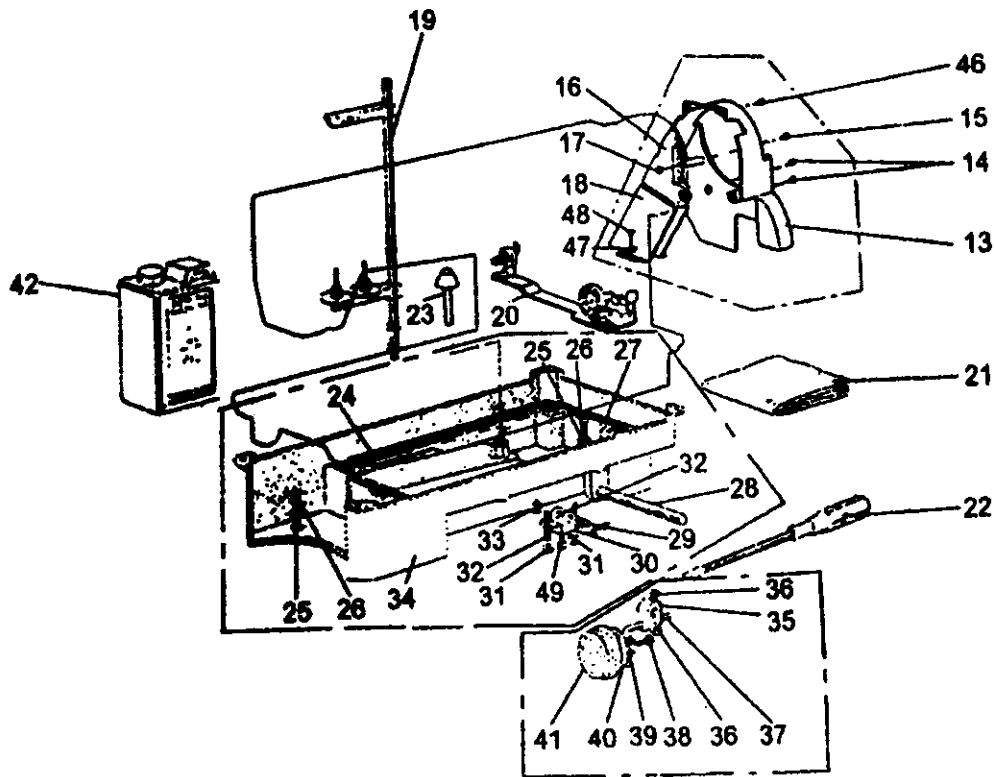
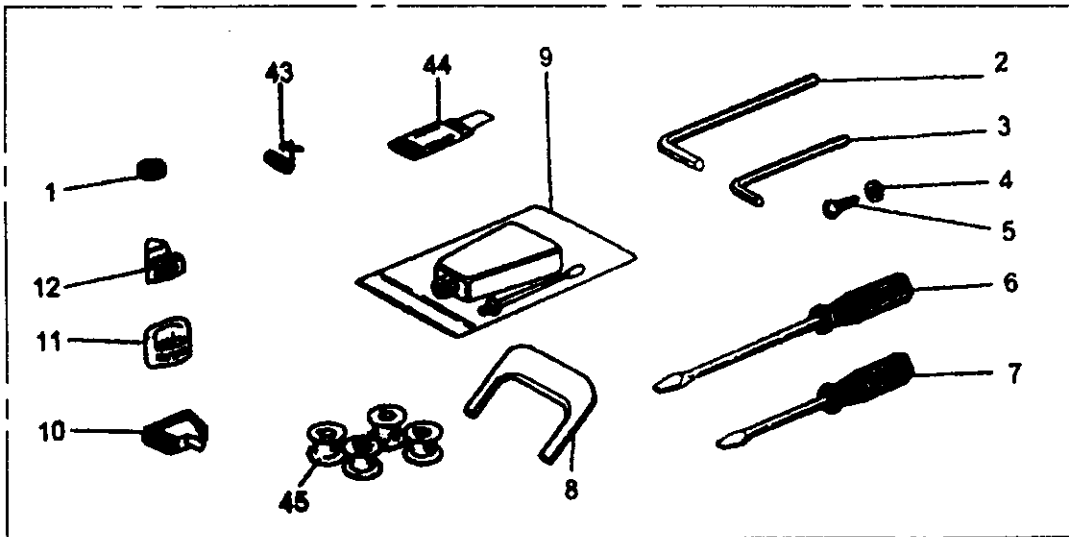
# K.ACCESSORIES



## K.ACCESSORIES

| Fig. No. | Part No.   | Description                        |        |            |           |               | NF331-LH/AUT | Remarks           |
|----------|------------|------------------------------------|--------|------------|-----------|---------------|--------------|-------------------|
|          |            |                                    | NF 331 | NF 331/AUT | NF 331-LH | NF 331-LH/AUT |              |                   |
| K01      | HA100J2120 | Magnet block                       | 1      | 1          |           | 1             | 1            |                   |
| K02      |            | Hexagon socket screw key 3         | 1      | 1          |           | 1             | 1            |                   |
| K03      | HA704S0653 | Hexagon socket screw key 2         | 1      | 1          |           | 1             | 1            |                   |
| K04      | HA300J2230 | Washer                             | 2      | 2          |           | 2             | 2            |                   |
| K05      | H801045200 | Wood screw                         | 2      | 2          |           | 2             | 2            |                   |
| K06      | HA300J2200 | Screw driver (Size M)              | 1      | 1          |           | 1             | 1            |                   |
| K07      | HA300J2210 | Screw driver (Size S)              | 1      | 1          |           | 1             | 1            |                   |
| K08      | HA704S0654 | Speed command disc adjusting plate |        | 1          |           |               | 1            |                   |
| K09      | HA100J2110 | Oil with oiler                     | 1      | 1          |           | 1             | 1            |                   |
| K10      | HA307J0067 | Hinge with rubber cushion          | 1      | 1          |           | 1             | 1            |                   |
| K11      | HA300J2050 | Head cushion (large)               | 2      | 2          |           | 2             | 2            |                   |
| K12      | HA300J2060 | Head cushion (small)               | 2      | 2          |           | 2             | 2            |                   |
| K13      | HA305J0666 | Belt cover                         | 1      | 1          |           | 1             | 1            |                   |
| K14      | HA300J2280 | Set screw                          | 2      | 2          |           | 2             | 2            | SM15/64 (28) × 8  |
| K15      | HA300J2250 | Screw                              | 1      | 1          |           | 1             | 1            | M4 × 12.5         |
| K16      | HA305J0662 | Belt cover complete                | 1      | 1          |           | 1             | 1            |                   |
| K17      | H003002040 | Nut                                | 1      | 1          |           | 1             | 1            | M4                |
| K18      | HA305J0665 | Belt cover                         | 1      | 1          |           | 1             | 1            |                   |
| K19      | HA707S0068 | Thread stand complete              | 1      | 1          |           | 1             | 1            |                   |
| K20      | HA706S0067 | Robbin winder complete             | 1      | 1          |           | 1             | 1            |                   |
| K21      | HA300J2190 | Head cover                         | 1      | 1          |           | 1             | 1            |                   |
| K22      | HA300J2130 | Screw driver (Size L)              | 1      | 1          |           | 1             | 1            |                   |
| K23      | HA106J0661 | Knee lifter lifting rod            | 1      | 1          |           | 1             | 1            |                   |
| K24      | HA104J0654 | Gasket for oil reservoir (small)   | 1      | 1          |           | 1             | 1            |                   |
| K25      | HA104J0653 | Seal washer                        | 2      | 2          |           | 2             | 2            |                   |
| K26      | HA104J0652 | Oil drain screw                    | 2      | 2          |           | 2             | 2            | SM5/16 (28) × 10  |
| K27      | HA104J0655 | Gasket for oil reservoir (large)   | 1      | 1          |           | 1             | 1            |                   |
| K28      | HA300J2160 | Knee lifter shaft                  | 1      | 1          |           | 1             | 1            |                   |
| K29      | HA104J0657 | Knee lifter spring                 | 1      | 1          |           | 1             | 1            |                   |
| K30      | HA104J0658 | Knee lifter                        | 1      | 1          |           | 1             | 1            |                   |
| K31      | HA104J6510 | Nut                                | 2      | 2          |           | 2             | 2            | SM5/16 (28)       |
| K32      | HA104J0659 | Set screw                          | 2      | 2          |           | 2             | 2            | SM15/64 (28) × 28 |
| K33      | H007013090 | E-type ring                        | 1      | 1          |           | 1             | 1            |                   |
| K34      | HA304J0651 | Oil reservoir                      | 1      | 1          |           | 1             | 1            |                   |
| K35      | HA106J0663 | Knee lifter coupling joint         | 1      | 1          |           | 1             | 1            |                   |
| K36      | HA300J2180 | Bolt                               | 2      | 2          |           | 2             | 2            | SM5/16 (18) × 16  |
| K37      | HA106J0662 | Knee lifter bell crank             | 1      | 1          |           | 1             | 1            |                   |
| K38      | HA106J0667 | Screw                              | 1      | 1          |           | 1             | 1            | SM15/64 (28) × 8  |
| K39      | HA106J0666 | Gasket for knee lifter plate       | 1      | 1          |           | 1             | 1            |                   |
| K40      | HA106J0665 | Knee lifter plate                  | 1      | 1          |           | 1             | 1            |                   |
| K41      | HA106J0668 | Pad for knee plate                 | 1      | 1          |           | 1             | 1            |                   |
| K42      | HA300J2170 | Oil tank                           | 1      | 1          |           | 1             | 1            |                   |
| K43      | HA115B0706 | Thread take-up spring              | 1      | 1          |           | 1             | 1            |                   |

# K.ACCESSORIES



# K.ACCESSORIES

| Fig. No. | Part No.   | Description | NF 331 | NF 331/AUT |  | NF 331-LH |   | NF331-LH/AUT | Remarks          |
|----------|------------|-------------|--------|------------|--|-----------|---|--------------|------------------|
| K44      | HA300J2310 | Needle      | 4      | 4          |  |           |   |              | SM11/64 (40) × 8 |
| K44      | H1000C2010 | Needle      |        |            |  |           |   |              |                  |
| K44      | HA500C2040 | Needle      |        |            |  | 4         | 4 |              |                  |
| K45      | HA700E2060 | Bobbin      | 3      | 3          |  |           |   |              |                  |
| K45      | HA100E2170 | Bobbin      |        |            |  |           |   |              |                  |
| K45      | H2604D8001 | Bobbin      |        |            |  |           |   |              |                  |
| K45      | H1100E2010 | Bobbin      |        |            |  | 3         | 3 |              |                  |
| K46      | HA300B2170 | Screw       | 2      | 2          |  | 2         | 2 |              |                  |
| K47      | HA300J2230 | Washer      | 2      | 2          |  | 2         | 2 |              |                  |
| K48      | H801045200 | Wood screw  | 2      | 2          |  | 2         | 2 |              |                  |

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