

MODEL VH 650

1. ASSEMBLY/DISASSEMBLY GUIDE:

As mentioned above, the Type VH-650 can be said to consist of four major sections : the Output Section, the Valve Section, the Nail Feeder Section, and the Magazine Section. The descriptions below explain important points in the disassembly and assembly of these sections. The circled numbers in the descriptions correspond to the part numbers in the Parts Price List.

CAUTION: Assembly/disassembly should be performed only after the hose is removed from the nailer and any compressed air remaining in the nailer is completely discharged.

1-1. Output Section:

A. Piston Damper (27), Packing (A) (29), etc.

Tools Required:

- ϕ 3 Roll Pin Remover
- 5 mm Hexagonal Bar Spanner (for M6 bolt)
- 4 mm Hexagonal Bar Spanner (for M5 bolt)

(1) Disassembly:

- By removing the ϕ 3 x 30 Roll Pin (25), taking out the M5 x 30 Hexagon Socket Hd. Bolt (65) retaining the Magazine (81), the four M6 x 20 Hexagon Socket Hd.

Bolts ⑦③, retaining the Tail Cover ③⑥, the Piston Damper ②⑦, Damper Ring ②⑧, Cylinder Damper ②⑥, and Packing (A) ②⑨, can be removed. (see Fig. 9)
(Please note that the M6 x 20 Hexagon Socket Hd. Bolts can be easily removed if the Nail Guide ⑨② is left open.)

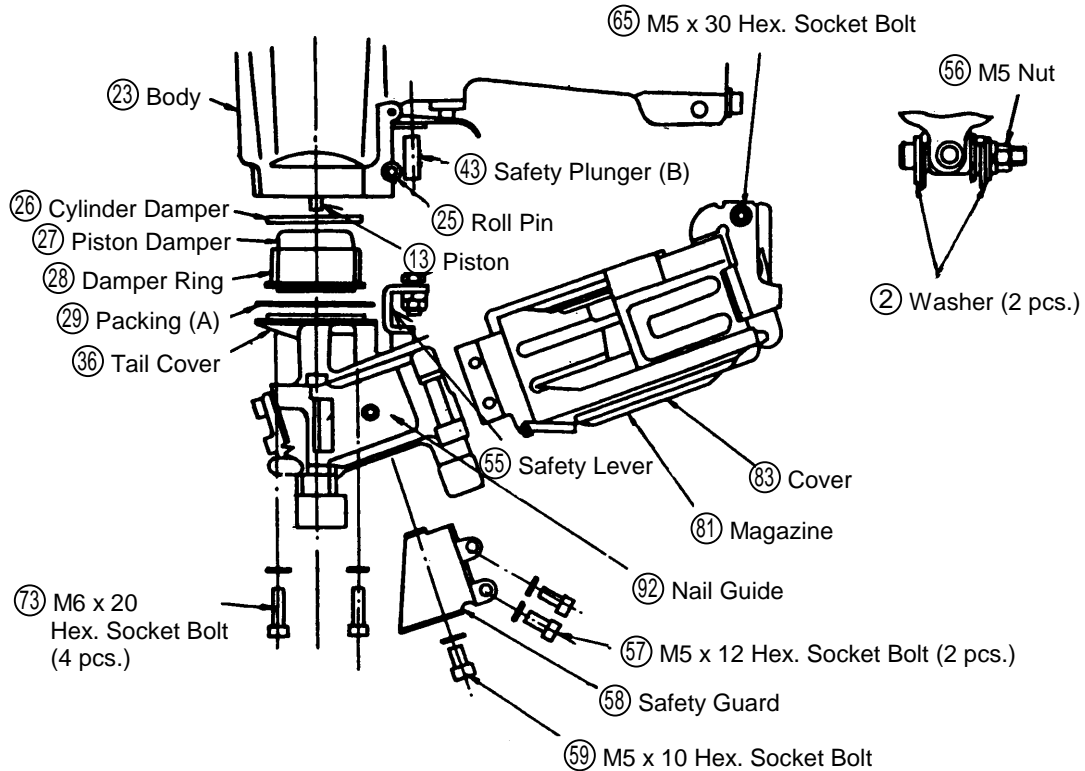


Fig. 9 Piston damper, Packing (A)-disassembly/reassembly

(2) Assembly:

Assembly can be accomplished by following the disassembly procedures in reverse. However, special attention should be given to the following items:

- Ensure that the Piston Ass'y ①③ is positioned so its semicircular groove faces toward the Magazine ⑧① (see Fig. 10 below).
- As Safety Plunger (B) ④③, may drop out during disassembly, ensure it is properly assembled.
- Ensure that the air vent on Packing (A) ②⑨ is properly aligned with the air vent on the Tail Cover ③⑥.
- Assembly can be more easily accomplished if the two M5 x 12 Hexagon Socket Hd. Bolts ⑤⑦ which connect

the Tail Cover (36) and Magazine (81) are loosened.

- Assemble the Body (23), Tail Cover (36), and Magazine (81) in the following sequence:

- (a) Loosely assemble the Body (23) and Tail Cover (36) with the four M6 x 20 Hexagon Socket Hd. Bolts (73).
- (b) After assembling the Safety Lever Ass'y (55), loosely assemble the Magazine (81) to the Tail Cover (36) with the two M5 x 12 Hexagon Socket Hd. Bolts (57).
- (c) Finally, assemble the Magazine (81) to the Body (23) with the M5 x 30 Hexagon Socket Hd. Bolt (65), tightening it to rated torque.
- (d) In the sequence of (b) (a) (c), ensure that all bolts are securely tightened to rated torque.

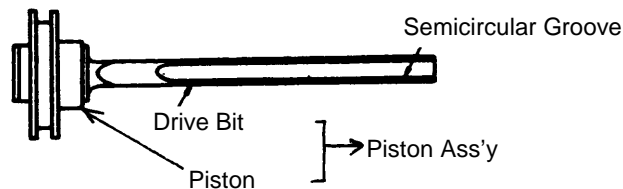


Fig. 10 Semi-circle groove of piston ass'y

B. Cylinder (18), Piston Ass'y (13), etc.:

Tools Required:

- 5 mm Hexagon Bar
- Spanner (for M6 bolt)

(1) Disassembly:

- By removing the four M6 x 25 Hexagon Socket Hd. Bolts (4) and taking off the Exhaust Cover Ass'y (6) and Cylinder Plate (16), Packing (B) (7), the Cylinder (18), and the Piston Ass'y (13) can be removed. (see Fig. 11)

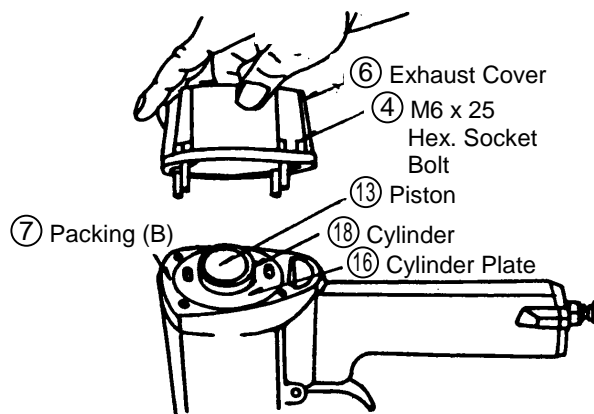


Fig. 11 Disassembly of Upper Part of main body

- If it is difficult to remove the Cylinder Plate (16), insert two of the M6 x 25 Hexagon Socket Hd. Bolts (4) part way into the matching M6 holes on the Cylinder Plate, and pull upwards while turning. (see Fig. 12)

The Cylinder Spring (20) and other components which constitute the Output Section (see Fig. 13) can then be removed.

- Should it be difficult to remove the Cylinder (18), first remove the Tail Cover (36), and push the Cylinder upwards and out from below.

(2) Assembly:

Assembly can be accomplished by following the disassembly procedures in reverse. During assembly, ensure that the semicircular groove on the Piston Ass'y (13) faces toward the Magazine (81) (as described above), and that the air vent on Packing (B) (7) is properly aligned with the air vent on the Body (23).

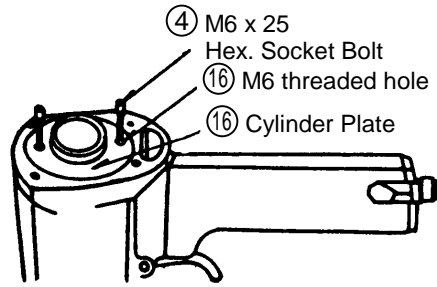
C. Head Cap Ass'y (11) and Valve Rubber Ass'y (10):

Tools Required:

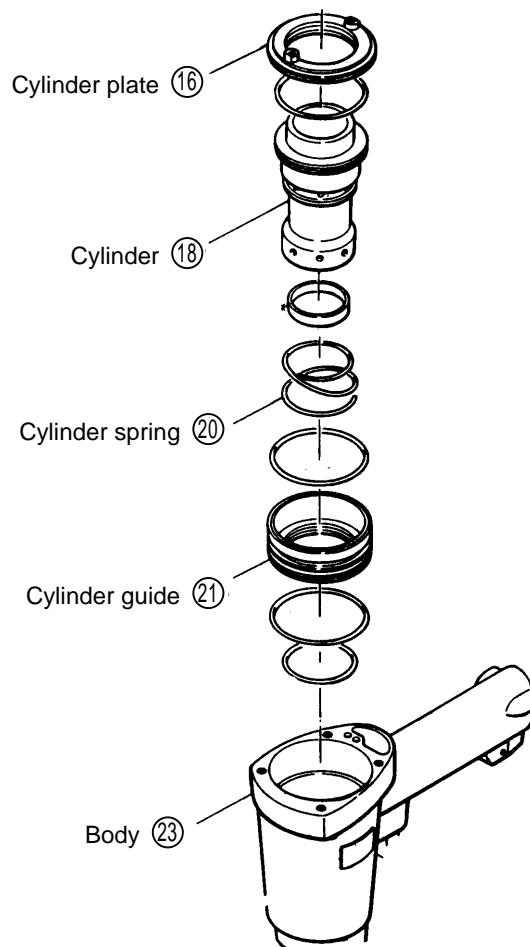
- 4 mm Hexagon Bar Spanner (for M5 bolt)

(1) Disassembly:

- Remove the Exhaust Cover Ass'y (as described above).



**Fig. 12 Removal of
Cylinder plate**



**Fig. 13 Main body output
disassembly**

- Take out the two M5 x 35 Hexagon Socket Hd. Bolts ① and remove the Head Cap Ass'y ⑪, Valve Rubber Ass'y ⑩, and Packing (C) ⑧. (see Fig. 14)

(2) Assembly:

- Assembly can be accomplished by following the disassembly procedures in reverse. During assembly, be very careful not to damage the O-Rings.

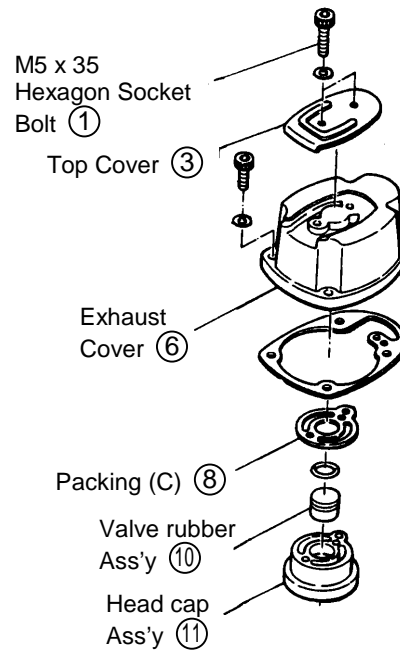


Fig. 14 Disassembly of main body, upper parts

1-2. Valve Section:

A. Trigger Valve Bushing and Safety Valve Bushing:

Tools Required:

- ϕ 3 Roll Pin Remover
- Minus-Hd. Screwdriver

(1) Disassembly:

- Remove the Magazine ⑧① section and Tail Cover ③⑥ section as described in section 1-1 above.
- Take out the two ϕ 3 x 30 Roll Pins ②⑤.
- Remove the Trigger ④②, Trigger Plunger ④⑨, and Safety Plunger (B) ④③. (see Fig. 15)
- Insert the minus-hd. screwdriver into the groove of the Trigger Valve Bushing ④⑧, and loosen it by turning it counterclockwise, being careful not to damage the groove. (see Fig. 15)
- After the Trigger Valve Bushing ④⑧ has been loosened, the Safety Valve Bushing ④⑩ and Trigger Valve Bushing ④⑧

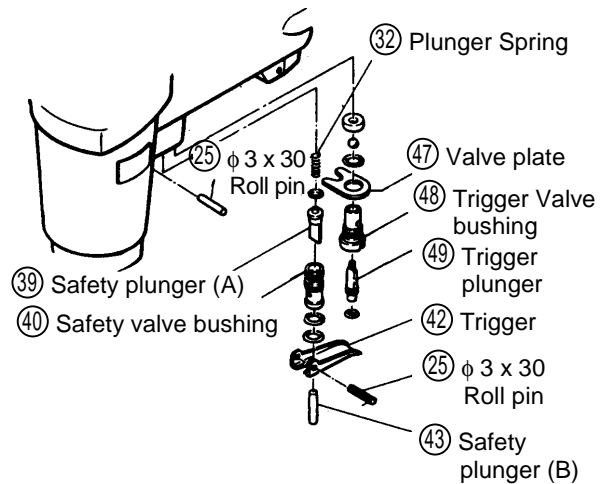


Fig. 15 Disassembly of Valve

can be removed by pulling the Safety Valve Bushing (40).
(see Fig. 15)

(2) Assembly:

- Assembly can be accomplished by following the disassembly procedures in reverse. During assembly, be very careful not to twist the Plunger Spring (37), or damaged the external O-Rings.

B. Adjustment of the Safety Assembly (55)
(see Fig. 16)

- (1) The Safety Ass'y (55) can be adjusted by loosening the M5 Nut (56) and turning the Safety Bolt (54).

- (2) Perform adjustment to a point where the pressure of Safety Plunger (B) (43) pushing up Safety Plunger (A) (39) can be felt when the Safety Ass'y (55) is raised. At this point, the lower end of the Tail Cover (36) should be separated from the lower end of the Safety Ass'y (55) by $3 \text{ mm} \pm 0.5 \text{ mm}$ ($0.118'' \pm 0.020''$).

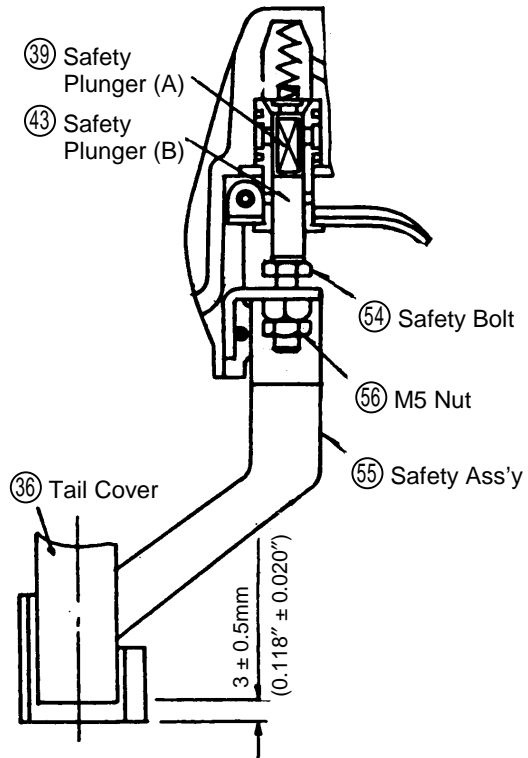


Fig. 16 Safety assembly adjustment

1-3. Nail Feeder Section:

A. Nail Guide (92) (see Fig. 17):

Tools Required:

- $\phi 3$ Roll Pin Puller
- M3 Spanner

(1) Disassembly:

- Remove the $\phi 2 \times 15$ Split Cotter Pin (86) from the Tail

Cover (36), take out the Nail Guide (85), and remove the Nail Guide Ass'y (92).

- Loosen the M3 Nylon Nut (93), and remove the Stopper Bolt (90) and the two Thrust Washers (91).
- Take out the ϕ 3 x 30 Roll Pin (25), and remove the Main Nail Stopper (74), Sub Nail Stopper (75), Main Stopper Spring (76), and Sub Stopper Spring (77).
- To disassemble the Guide Lock (79), pull out the ϕ 3 x 10 Roll Pin (31), and remove the Guide Lock (79) and the Spring (80).

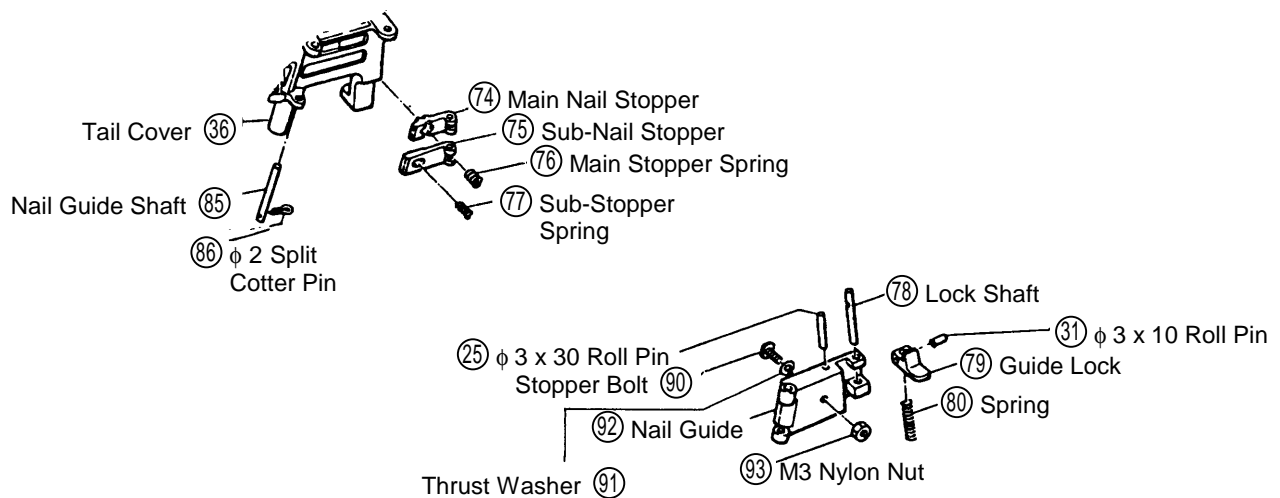


Fig. 17 Disassembly and Reassembly of Nail Guide

(2) Assembly:

Assembly can be accomplished by following the disassembly procedures in reverse. However, special attention should be given to the following items:

- Carefully clean any plastic particles or dust from the groove on the Nail Guide (92) prior to assembly.
- When re-inserting the ϕ 3 x 30 Roll Pin (25), first temporarily tighten the Stopper Bolt (90) to hold the Main Stopper Spring (76) and Sub Stopper Spring (77) in position. This will facilitate assembly.

- With the Thrust Washers (91), perform adjustment so that the protrusion of the Sub Nail Stopper (75) is within $2.3 \text{ mm} \pm 0.5 \text{ mm}$ ($0.09'' \pm 0.020''$), as illustrated in Fig. 18.

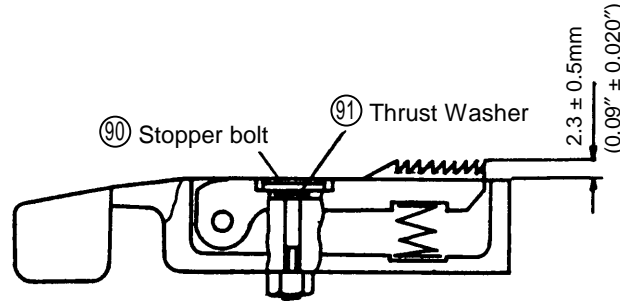


Fig. 18 Assembly of Sub-nail stopper section

B. Safety Ass'y (55)

By removing the $\phi 3 \times 30$ Roll Pin (25) as described in section 1-2, and then removing the Safety Guard (58), the Safety Ass'y (55) and the Safety Spring (53) can be removed.

C. Feed Piston (70), Main Feeder (34), and Sub Feeder (35):

Tools Required:

- $\phi 2.5$ and $\phi 3$ Roll Pin Removers
- 4 mm Hexagon Bar Spanner (for M5 bolt)

(1) Disassembly:

- Disassemble the Tail Cover (36) from the Body (23) as described in section 1-1, and remove the Magazine (83) and the Safety Ass'y (48). (see Fig. 19)

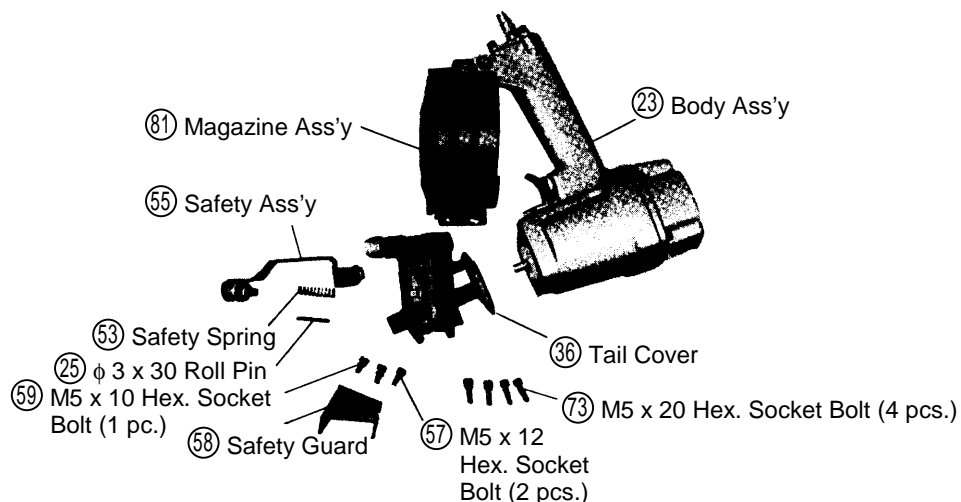


Fig. 19 Tail Cover Disassembly

- Take out the ϕ 2.5 x 10 Roll Pin from the Feed Piston (70), loosen the two M5 x 12 Hexagon Socket Hd. Bolts (57), and remove the Feed Piston Cover (67) and Packing (E) (68). (see Fig. 20)
- Pressing the Feed Piston (70) with a finger (as indicated by arrow mark (1) in Fig. 20), turn the Feeder (35) 1/4 turn (arrow mark (2)), and pull out the Feeder Shaft (33) (arrow mark (3)). The Feed Piston (70), Feed Spring (72), Main Feeder (34), Main Feeder Spring (30), and Sub Feeder (35) can then be removed. (see Fig. 20)

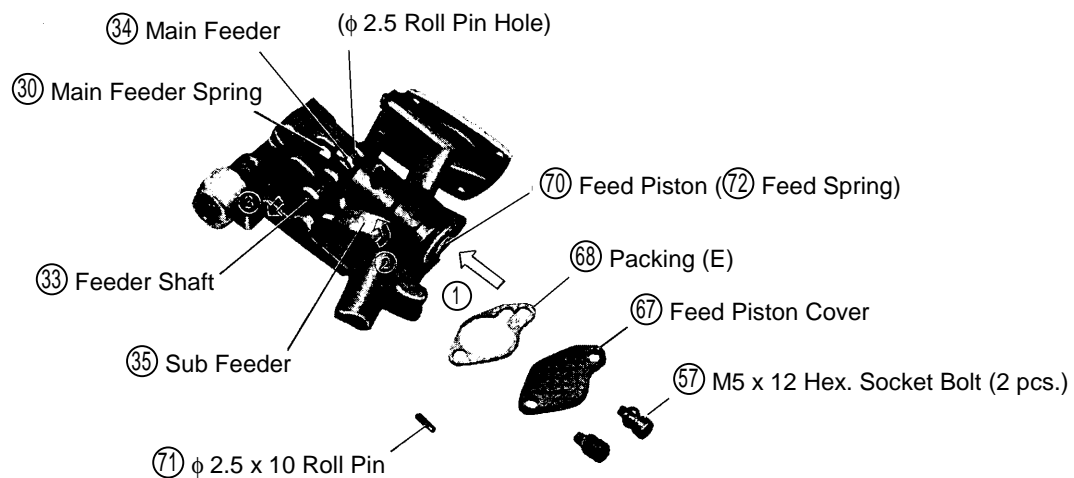


Fig. 20 Feed Piston Disassembly

- Take out the ϕ 3 x 10 Roll Pin (31) from the Feeder Shaft (33), and disassemble the Feeder Shaft (33), Sub Feeder (35), and Sub Feeder Spring (32). (see Fig. 21)

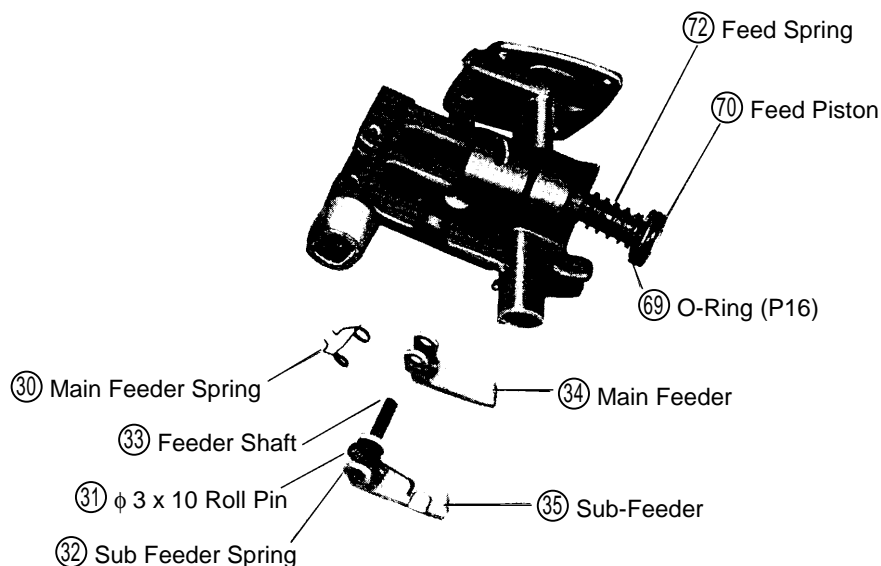


Fig 21 Feed Piston, Main Feeder, and Sub-Feeder Disassembly

(2) Assembly:

Assembly can be accomplished by following the disassembly procedures in reverse. However, special attention should be given to the following items:

- Ensure that the Sub Feeder (35) and the Feeder Shaft (33) are assembled so that the groove on the shaft is on the right-hand side as illustrated in

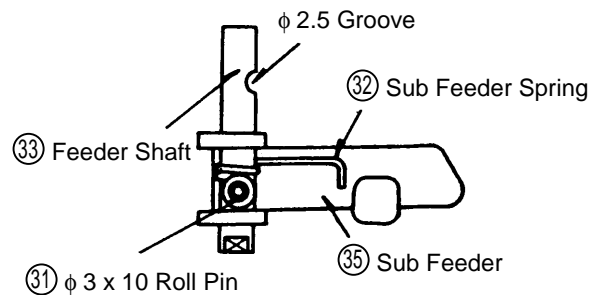


Fig. 22 Sub-feeder assembly

- In assembling the Feed Piston section, first put the Feed Spring (72) onto the Feed Piston (70), ensuring that the O-Ring (R16) (69) is properly fitted to the O-Ring groove on the Piston. Next, while pressing the Feed Piston (70) in with a finger as illustrated Fig. 23, insert the Main Feeder (34) from below, and set the Main Feeder Spring (30).

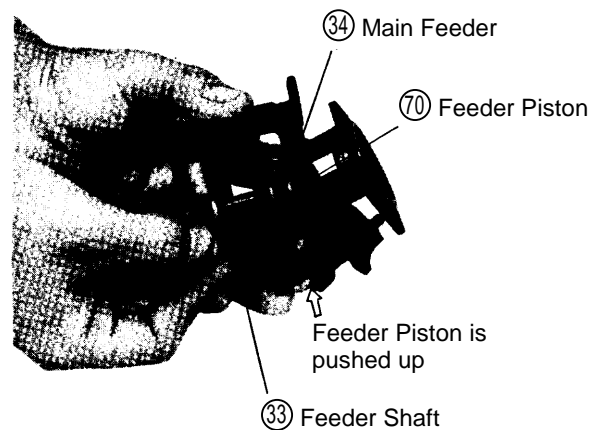


Fig. 23 Feed piston assembly

Finally, align the

ϕ 2.5 groove on the Feeder Shaft (33) with the ϕ 2.5 hole in the Feed Piston (70), and insert the ϕ 2.5 x 10 Roll Pin (71).

At this time, ensure that the Main Feeder Spring (30) spring hook section securely catches on the foot of the Main Feeder (34), as illustrated in Fig. 24.

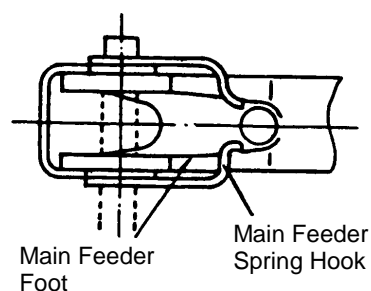


Fig. 24 Installing Main feeder spring

- For assembly of the Body (23) and Magazine (81), please refer to section 1-1.

1-4. Magazine Section:

Tools Required:

- 5 mm Hexagon Bar Spanner

(1) Disassembly:

- As described in section 1-1, remove the M5 x 30 Hexagon Socket Hd. Bolt (65), the two M5 x 12 Hexagon Socket Hd. Bolts (57), and the M5 x 10 Hexagon Socket Hd. Bolts (59), and take off the Magazine Ass'y (81).
- Open the cover, remove the M5 Hexagon Socket Round Hd. Screw (84), and disassemble the Washer (64), Nail Holder (83), and Holder Spring (82).
- Remove the M5 x 25 Hexagon Socket Hd. Bolt (66), push out the Magazine Stopper (61) from below, and disassemble the Magazine Stopper (61), Magazine Lock Spring (60), and the Collar (62). (see Fig. 25)

(2) Assembly:

Assembly can be accomplished by following the disassembly procedures in reverse.

CAUTION: The Magazine Lock Spring (60) must be inserted into the Magazine Stopper (61) from above.

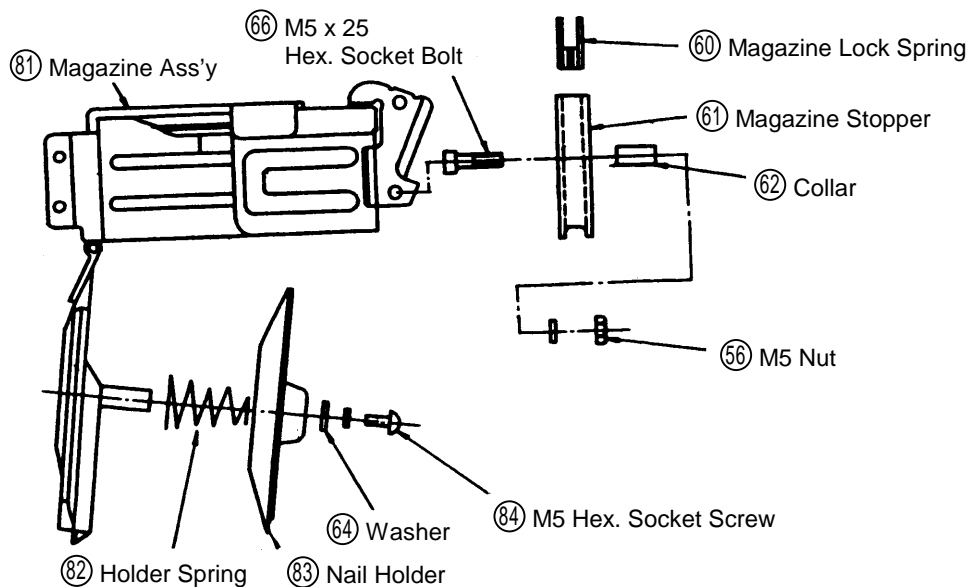


Fig. 25 Magazine ass'y disassembly

1-5. Assembly Precautions:

- The O-Rings and their associated parts should be carefully lubricated. Hitachi Electric Tool Grease or Hitachi Motor Grease is recommended. When fitting the O-Rings, particular attention should be exercised to avoid damaging the O-Rings and allowing dirt and dust from entering the assembly.
- Damaged, worn, or deformed packings should be replaced, and the assembly should be checked for air leaks.
- Ensure that no foreign matter is allowed to enter the Valve Section.
- The sliding portions of the Nail Feeder should be lubricated with grease or accessory oil.
- The table below lists the appropriate tightening torque for various bolts, nuts and screws.

Table 8

Type of Screw	Tightening Torque
M6 Hex. Socket Bolt	100 ± 8 kg-cm (7.2 ± 0.6 ft. lb)
M5 Hex. Socket Bolt	65 ± 5 kg-cm (4.7 ± 0.4 ft. lb)
M5 Hex. Socket Screw	43 ± 3 kg-cm (3.1 ± 0.2 ft. lb)
M5 Nut	35 ± 3 kg-cm (2.5 ± 0.2 ft. lb)
M3 Nylon Nut	9 ± 0.7 kg-cm (0.7 ± 0.05 ft. lb)

1-6. Checks After Assembly:

- Manually check the Main Feeder, Sub Feeder, Main Nail Stopper, and Sub Nail Stopper to ensure they are properly assembled and function correctly.
- Check each component for air leaks.
- Check for reliable performance of the Feed Piston under pneumatic pressure of 3 kg/cm² (43 psi). (Perform this check with the Nail Guide open and with idling operation.)
- Nailing operation at 4 kg/cm² (60 psi) should not result in idling operation or bending of the nails.
- Check the tightening torque of all nuts, bolts and screws.