



# MODEL      NV 90AB

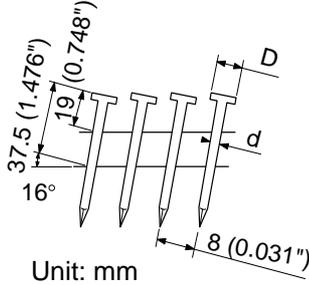
## 1. TROUBLESHOOTING GUIDE

### 1-1. Failures, Possible Causes and Countermeasures

Failure	Possible causes (* indicates main causes)	How to check	Countermeasures
<b>(1)</b> No nail is ejected.	<b>&lt;&lt; Nails &gt;&gt;</b> <ul style="list-style-type: none"> <li>○ Incorrect nails are loaded.</li> <li>○ Abnormal nails are loaded (bent, oversized heads, incorrectly connected, etc.)</li> <li>○ Jammed by nails or broken pieces of collating material.</li> <li>○ Collating material is deformed or cut.</li> </ul>	<ul style="list-style-type: none"> <li>○ Check if designated nails are loaded.</li> </ul>	<ul style="list-style-type: none"> <li>○ Use designated nails.</li> <li>○ Remove abnormal nails and load normal nails.</li> </ul>
	<b>&lt;&lt; Driving Section: Nose, feeder, feed piston, etc. &gt;&gt;</b> <ul style="list-style-type: none"> <li>○ Feed piston slide resistance is excessive.</li> <li>○ The inner nail-guide surface of the nose is abnormal (deformed, burred, damaged).</li> <li>○ Defective feed spring or main feeder (broken or yielded)</li> <li>○ Defective feeder (broken or damaged)</li> </ul>	<ul style="list-style-type: none"> <li>○ Remove the feed piston and check the feed piston sliding surface in the nose.</li> </ul>	<ul style="list-style-type: none"> <li>○ Apply grease.</li> <li>○ Remove surface defects with abrasive paper.</li> <li>○ Replace defective parts.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Nails are not correctly loaded in the groove of the nose.</li> </ul>	<ul style="list-style-type: none"> <li>○ Check the nail feeder section for abnormalities (burring, deformation, damage, wear, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>○ Remove burrs.</li> <li>○ Repair deformed portions.</li> <li>○ Replace defective parts.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Nails are not correctly loaded in the groove of the nose.</li> </ul>	<ul style="list-style-type: none"> <li>○ Check if nails are correctly loaded in the groove of the nose.</li> </ul>	<ul style="list-style-type: none"> <li>○ Correctly load nails in the groove of the nose.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Depleted lubricant or foreign matter in the pawl groove sliding surface of the nose</li> </ul>	<ul style="list-style-type: none"> <li>○ Open nail guide, carry out idle driving, and check the operation of the feeder.</li> </ul>	<ul style="list-style-type: none"> <li>○ After removing foreign matter, lubricate.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Air pressure is too low.</li> </ul>		<ul style="list-style-type: none"> <li>○ Adjust air pressure to correct level.</li> </ul>
	<ul style="list-style-type: none"> <li>* The air passage is blocked (broken pieces of the piston bumper, etc.).</li> <li>* The feed piston chamber is clogged with broken pieces of the piston bumper or other foreign matter.</li> </ul>		<ul style="list-style-type: none"> <li>○ Remove foreign matter.</li> <li>○ Replace piston bumper.</li> <li>● Body....Remove foreign matter from return air chamber.</li> <li>● Nose....Remove foreign matter from air passage and feed piston chamber.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Air leakage from between the body and nose</li> </ul>		<ul style="list-style-type: none"> <li>○ Tighten screws. Inspect gasket.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Worn or deformed O-ring</li> </ul>		<ul style="list-style-type: none"> <li>○ Inspect O-rings.</li> </ul>
	<ul style="list-style-type: none"> <li>○ Depleted lubricant on O-rings</li> </ul>		<ul style="list-style-type: none"> <li>○ Lubricate with grease or oil.</li> </ul>

Failure	Possible causes (* indicates main causes)	How to check	Countermeasures
<b>(1)</b> No nail is ejected. (Continued)	<b>&lt;&lt; Nail guide unit &gt;&gt;</b> ○ The inner nail-guide surface of the nail guide is abnormal (deformed, burred, damaged.)	○ Check the nail guide for abnormalities (burring, deformation, damage, etc.).	○ Repair/replace defective parts.
	○ Depleted lubricant or foreign matter in the inner grooved portion of the nail guide * Abnormal spring (disconnected, damaged, yielded) ○ Abnormal ridged portion of pawl on the nail stopper (damaged, worn, burring, etc.)	○ Check the movement of nail stopper (A) and nail stopper (B).	○ After removing foreign matter, lubricate. ○ Replace defective parts.
	<b>&lt;&lt; Magazine section &gt;&gt;</b> <b>&lt;&lt; Pushing lever (A) &gt;&gt;</b> ○ Magazine	○ Check if nails are entangled within the magazine. ○ Check if a nail is caught in the magazine. ○ Check the height of the nail holder.	○ Straighten out nails and reload. ○ Remove burrs and deformed portions. ○ Replace defective parts. ○ Adjust the height of the nail holder.
	○ Pushing lever (A)	○ Check pushing lever (A) movement.	○ Repair/replace defective parts.
	<b>&lt;&lt; Driving unit: Piston, driver blade, etc. &gt;&gt;</b> ○ Air pressure is too low.	○ Open the nail guide, perform idle operation, and check if the driver blade returns properly.	○ Adjust air pressure to correct level.
	* Worn piston ring		○ Replace piston ring.
	* Defective piston bumper		○ Replace piston bumper.
	○ Defective O-ring inside cylinder (disconnected, deformed, damaged)		○ Reassemble or replace. ○ Replace, if necessary.
	○ Defective driver blade (deformed, burring, damaged)		○ Repair or replace.
	○ Inner surface of cylinder is abnormal (foreign matter, worn, etc.).	○ Check if nailing is normal with air pressure of 4.9 bar (5 kgf/cm <sup>2</sup> , 70 psi).	○ After removing foreign matter, lubricate.
○ Sliding surface of head valve is abnormal (scratched, damaged, depleted lubricant)	○ Perform idle operation and check if movement is normal.	○ Replace defective parts. ○ Apply grease.	
○ Defective head valve rubber (disconnected, damaged)	○ Perform idle operation and check if the driver blade remains in the lowered position.	○ Replace defective parts.	
○ Defective head valve spring (yielded, damaged)			

Failure	Possible causes (* indicates main causes)	How to check	Countermeasures
<b>(1)</b> No nail is ejected. (Continued)	<< <b>Control valve section</b> >> ○ Defective plunger (A), valve piston (B), valve bushing (A), or valve bushing (B) (scratched, damaged)	○ Perform idle operation and check if driver blade remains in lowered position.	○ Replace defective parts.
	○ Worn O-ring	○ Disassemble control valve section and check O-ring	
<b>(2)</b> Driven nail is bent.	* Adjuster is improperly adjusted for short nails.	○ Turn the adjuster, push up the pushing lever, and check if the distance between the tip end of the ejector port in the nose and the end surface of the pushing lever is excessive.	○ Reduce air pressure.
	○ Nails are not fed fully to the driving port. ○ Incorrect nails are used.	○ Refer to "Failure" item <b>(1)</b> .	○ Refer to "Failure" item <b>(1)</b> .
	* Worn driver blade	○ Check if the end of the driver blade is excessively worn.	○ Replace.
	○ Workpiece material is excessively hard.	○ Check if nails are bent when driven into softer wood.	○ Material is not within tool specifications; stop operation.
<b>(3)</b> Driven nails do not fully penetrate workpiece (heads protrude).	○ Adjuster is not properly adjusted.	○ Set adjuster to maximum (fully in "sink" direction) and test drive a nail.	○ Set adjuster to optimum position.
	○ Air pressure is too low.	○ Check pressure gauge.	○ Adjust air pressure to proper level.
	○ Workpiece material is excessively hard.	○ Check if a nail does not fully penetrate even when driven into soft wood.	○ Material is not within tool specifications; stop operation.
	* Driver blade	○ Perform idle operation and check if driver blade protrudes beyond the tip end of the nose.	○ Replace driver blade.
	* Defective piston ring (worn, damaged) ○ Inner surface of cylinder is abnormal (worn, scratched).	○ Disassemble driving unit and inspect inner and outer surfaces of O-ring and cylinder.	○ Replace defective parts.
	○ Defective exhaust valve rubber (worn, damaged, cracked seal surface)	○ Disassemble and inspect exhaust valve rubber unit.	○ Replace.
	○ Abnormal slide surface of head valve (scratched, damaged, depleted lubricant)	○ Check if slide surface is damaged or needs lubrication.	○ Replace defective parts. ○ Apply grease.

Failure	Possible causes (* indicates main causes)	How to check	Countermeasures
<b>(4)</b> Jammed nails	<p><b>&lt;&lt; Nails &gt;&gt;</b></p> <ul style="list-style-type: none"> <li>○ Incorrect nails are being used.</li> <li>* Abnormal nails in coil</li> <li>○ Abnormal coil wire (broken, improper weld, deformed, improper weld position)</li> <li>* Deformed wire collating of wire-collated nails (coil angle, coil pitch, etc., deformed)</li> <li>* Nail heads are too small in diameter.</li> </ul>	<ul style="list-style-type: none"> <li>○ Check if specified nails are being used.</li> <li>○ Check coil referring to figures below.</li> </ul> <p>(Wire-collated nails)</p>  <p>Unit: mm</p>	<ul style="list-style-type: none"> <li>○ Use specified nails. Replace abnormal nails and reload.</li> </ul>

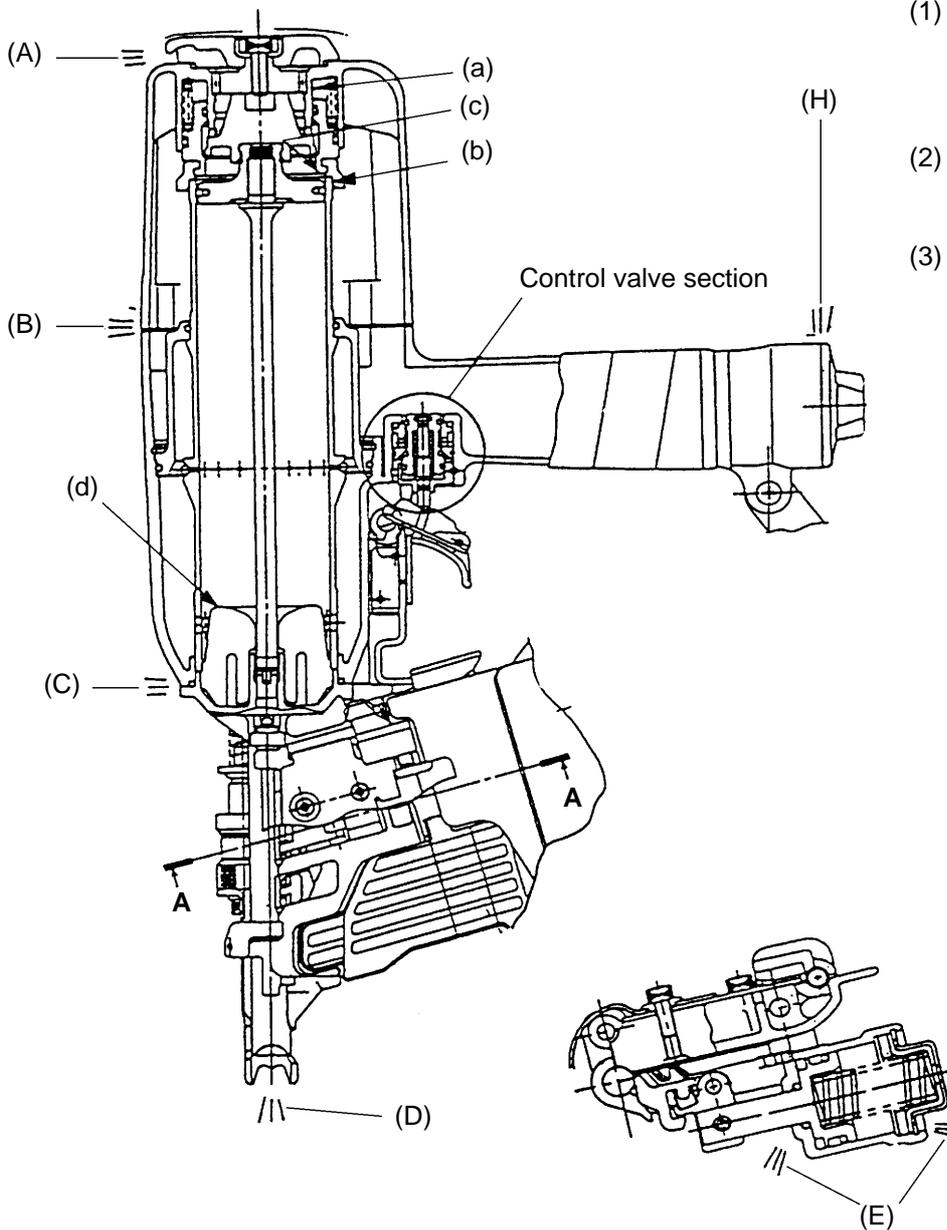
Dimension d	2.5 (0.098")	2.8 (0.110")	3.0 (0.118")	3.1 (0.122")
Dimension D	6.0 (0.236")	6.0 (0.236")	6.1 (0.240")	7.0 – 7.5 (0.276" – 0.295")
Dimension d	3.2 (0.126")	2.8 – 3.3 (0.110" – 0.130")	3.3 – 3.4 (0.130" – 0.134")	3.8 (0.150")
Dimension D	7.0 – 7.5 (0.276" – 0.295")	6.8 – 7.2 (0.268" – 0.283")	7.9 (0.311")	7.9 (0.311")

<p><b>&lt;&lt; Main body: Nail feeding is incomplete &gt;&gt;</b></p> <ul style="list-style-type: none"> <li>○ Feeder is worn/slide surface is abnormal.</li> <li>○ Nose inner nail-guide surface and/or feeder slide surface are abnormal (deformed, warped, damaged).</li> <li>○ Abnormal feed spring and/or main feeder spring (damaged, yielded, disconnected)</li> </ul>	<ul style="list-style-type: none"> <li>○ Open nail guide and check feeder pawl positions.</li> </ul>	<ul style="list-style-type: none"> <li>○ Replace defective parts.</li> </ul>
<p><b>&lt;&lt; Main body: Abnormal nail guide unit&gt;&gt;</b> Refer to the section <b>&lt;&lt; Nail guide unit &gt;&gt;</b> in "Failure" item <b>(1)</b>.</p>		
<p><b>&lt;&lt; Driver blade does not fully return&gt;&gt;</b> Refer to the section <b>&lt;&lt; Output unit: Piston, driver blade etc. &gt;&gt;</b> in "Failure" item <b>(1)</b>.</p>	<ul style="list-style-type: none"> <li>○ Perform idle operation or nailing operation, and check if driver blade returns fully.</li> </ul>	<ul style="list-style-type: none"> <li>○ Refer to the section <b>&lt;&lt; Driving unit: Piston, driver blade, etc. &gt;&gt;</b> in "Failure" item <b>(1)</b>.</li> </ul>
<ul style="list-style-type: none"> <li>○ Air pressure is too high.</li> </ul>	<ul style="list-style-type: none"> <li>○ If nailing is performed at excessively high pressure and/or high nailing speed, the machine may become jammed with nails. Accordingly, particular attention should be given to air pressure and nailing speed.</li> </ul>	<ul style="list-style-type: none"> <li>○ Reduce air pressure less than 8-3 bar (8.5 kgf/cm<sup>2</sup>, 120 psi).</li> </ul>

Failure	Possible causes (* indicates main causes)	How to check	Countermeasures
<b>(5)</b> Single nailing is not possible.	<ul style="list-style-type: none"> <li>* O-ring plunger (A) is worn.</li> <li>* O-ring of valve piston (B) is worn.</li> <li>○ Abnormal plunger-slide surface on the valve piston (B) (scratched, deformed)</li> <li>○ Abnormal plunger (A), trigger (A) plate and/or pushing lever (B) (worn, deformed)</li> <li>○ The single shot/continuous shot change knob is positioned incorrectly.</li> </ul>	<ul style="list-style-type: none"> <li>○ Disassemble the control valve section and check the O-rings on plunger (A) and valve piston (B).</li> <li>○ Check each part for abnormalities (wear, damage, deformation, etc.).</li> <li>○ Check where the single shot/continuous shot change knob is positioned.</li> </ul>	<ul style="list-style-type: none"> <li>○ Replace defective parts.</li> <li>○ Set the single shot/continuous shot change knob to a correct position.</li> </ul>

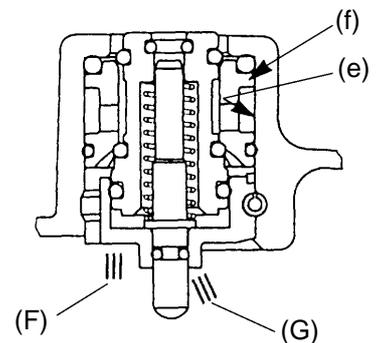
## 1-2. Possible Causes and Countermeasures for Air Leakage

### Air leakage repair areas



### Inspection priorities

- (1) First check the items that are marked by an asterisk (\*) in the table below.
  - (2) Next, check the items that are marked with a dot (•).
  - (3) Finally, check the items that are marked with a circle (○).
- (The numbers in **[bold]** correspond to the item numbers in the Parts List and the exploded assembly diagrams.)



Control valve section

Cross section A – A

Air leak part	Causes	
	When control valve is OFF	When control valve is ON
(A) Exhaust vent	<ul style="list-style-type: none"> <li>• The O-Ring [8] of the Head Valve [9] is abnormal, or sliding surface (a) is worn, deformed or scratched.</li> <li>• The Head Valve Rubber [11] is abnormal, or the portion (b) of sliding surface of the Cylinder [17] is worn or scratched.</li> </ul>	<ul style="list-style-type: none"> <li>• The Exhaust Valve Rubber [12] is abnormal, or the portion (c) of sliding surface of the Head Valve [9] is worn or scratched.</li> </ul>
(B) Exhaust cover	<ul style="list-style-type: none"> <li>◦ The Hex. Socket Hd. Bolts M6 x 35 [4] are loose.</li> <li>• Gasket is damaged.</li> <li>◦ Defective sealed surface between the Exhaust Cover [5] and the Body Ass'y [23].</li> </ul>	/
(C) Nose [28] (1)	/	<ul style="list-style-type: none"> <li>• The O-Rings [10] and [26] within the Body Ass'y [23] and their mounting grooves are abnormal (split, scratched).</li> <li>◦ The Nylock High Tension Bolts M7 x 20 [29] are loose.</li> </ul>
(D) Nose [28] (2)	<ul style="list-style-type: none"> <li>◦ The O-Ring [10] and the Cylinder O-Ring [15] on the Cylinder Plate [14] are abnormal (split, scratched).</li> </ul>	<ul style="list-style-type: none"> <li>• The Piston Bumper [25] is abnormal [portion (d) is damaged, deformed or cracked].</li> <li>◦ Piston (H) [20] is abnormal (deformed driver blade, deformed sealing surface).</li> </ul>
(E) Feed piston	/	<ul style="list-style-type: none"> <li>• The O-Ring [70] of the Feed Piston [69] is abnormal (worm, split, scratched), or its sliding surface within the Nose [28] is worn, deformed or scratched.</li> <li>• The O-Ring [68] of the Nose [28] is abnormal (worn, split or scratched), or the Feed Piston [69] sliding surface is worn, deformed or scratched.</li> </ul>
(F) Control valve section (1)	<ul style="list-style-type: none"> <li>• The O-Ring [62] of Valve Piston (B) [60] is abnormal (worn, split or scratched).</li> <li>• The O-Ring [61] (lower side) of Valve Piston (B) [60] is abnormal (worn, split or scratched).</li> <li>• The O-Ring (S-18) [58] of Valve Bushing (B) [57] is abnormal (split, scratched).</li> </ul> <p>* The inner surface of the valve chamber [portion (e)] of the Body Ass'y [23] is abnormal.</p>	<ul style="list-style-type: none"> <li>• The O-Ring [61] (upper side) of Valve Piston (B) [60] is abnormal (worn, split or scratched).</li> <li>• The Head Valve O-Ring [56] of Valve Bushing (B) [57] is abnormal (split, scratched).</li> </ul> <p>* The upper surface [portion (f)] of the valve chamber in the Body Ass'y [23] is abnormal.</p>

Air leak part	Causes	
	When control valve is OFF	When control valve is ON
(G) Control valve section (2)	<ul style="list-style-type: none"> <li>• The O-Ring [65] of Plunger (A) [64] is abnormal (worn, split, scratched).</li> <li>◦ Valve Bushing (A) [66] is abnormal. (Plunger sliding surface is deformed or scratched.)</li> </ul>	<ul style="list-style-type: none"> <li>• The O-Ring [59] (upper side) of Valve Piston (B) [60] is abnormal (worn, split, scratched).</li> <li>◦ Valve Piston (B) [60] is abnormal. (Plunger sliding surface is deformed or scratched.)</li> </ul>
(H) Cap	<ul style="list-style-type: none"> <li>◦ The Cap [48] is loose.</li> <li>• The O-Ring [47] is abnormal (worn, split, scratched).</li> <li>◦ The seal surface between the Body Ass'y [23] and the Cap [48] is abnormal (damaged, deformed, scratched).</li> </ul>	

## 2. DISASSEMBLY AND REASSEMBLY

The structure of the Model NV 90AB can be generally divided into four sections: the output section, the control valve section, the driving section and the magazine section.

The following describes procedures considered essential for proper disassembly and reassembly.

The numbers in **[bold]** correspond to the item numbers in the Parts List and the exploded assembly diagrams.

### 2-1. General Precautions in Disassembly and Reassembly

- Prior to disassembly/reassembly, ensure without fail that the air hose is disconnected from the nailer and all nails are removed.
- Apply grease [Nippeco SEP-3A (Code No. 930-035) or Multemp PS No. 2 (Code No. 939536)] to the O-rings and the O-ring sliding surfaces. When reassembling O-rings, be particularly careful not to damage them or permit them to become soiled with dust or other foreign matter.
- Applicable oil: Hitachi Pneumatic Tool Lubricant
  - 1 oz (30 cc) Oil feeder (Code No. 877153)
  - 4 oz (120 cc) Oil feeder (Code No. 874042)
  - 1 quard (1 liter) Can (Code No. 876212)
- Apply grease or attached oil to the sliding portions of the driving section.
- If gasket is damaged, replace it and ensure that there is no air leakage after reassembly.
- Be particularly careful not to allow dust or other foreign matter to enter the valve section.
- Specified tightening torque for fastening bolts and other components are as follows:

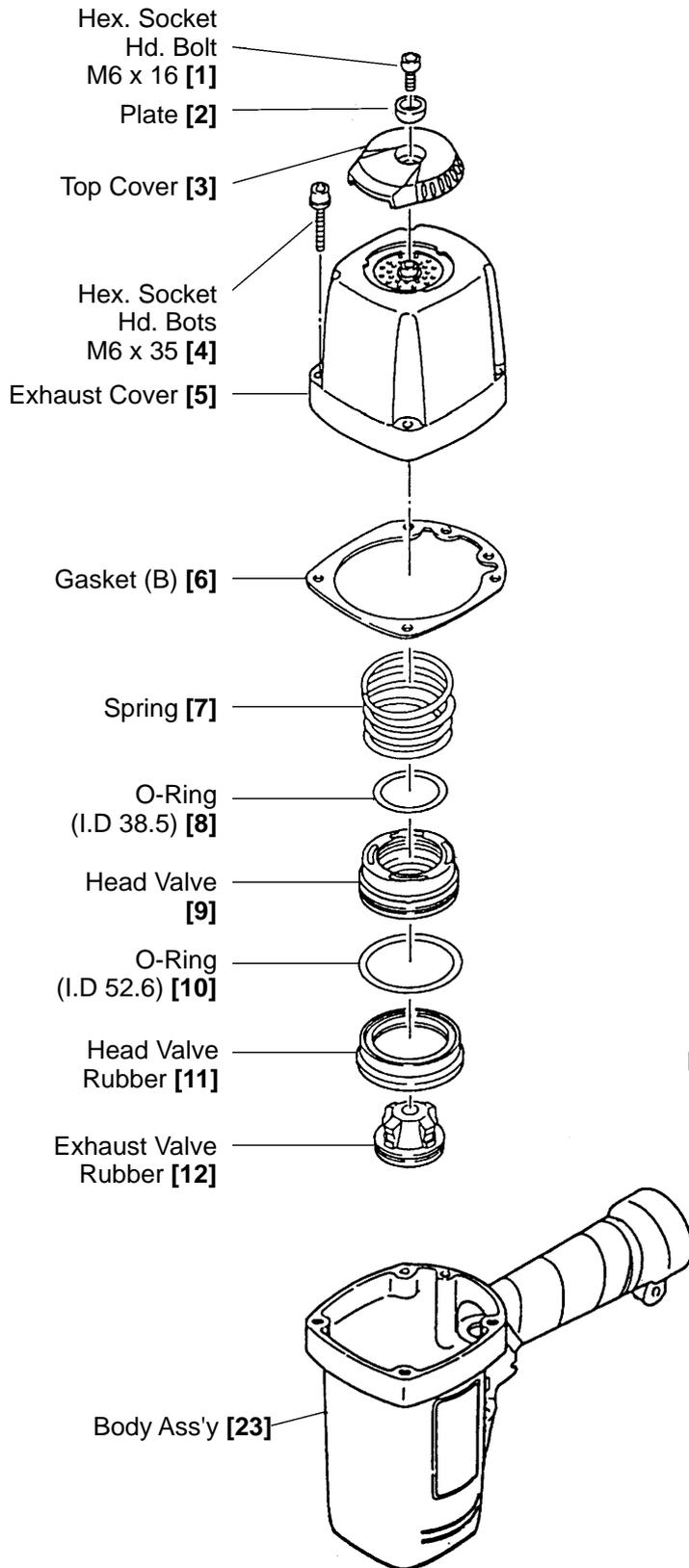
Bolt, screw and cap	Tightening torque [N·m (kgf·cm, ft·lb)]
Nylock High Tension Bolt M7 <b>[29]</b>	19.6 ± 1.0 (200 ± 10, 14.5 ± 0.8)
Hex. Socket Hd. Bolts M6 <b>[1] [4] [43]</b>	12.7 ± 0.8 (130 ± 8, 9.4 ± 0.6)
Hex. Socket Hd. Bolt M5 <b>[105]</b>	8.3 ± 0.5 (85 ± 5, 6.1 ± 0.4)
Nylock Hex. Socket Hd. Bolt M4 <b>[99]</b>	4.4 ± 0.3 (45 ± 3, 3.2 ± 0.2)
Machine Screw M5 <b>[50]</b>	3.4 ± 0.3 (35 ± 3, 2.5 ± 0.2)
Machine Screw M4 <b>[89]</b>	0.5 – 1.0 (5 – 10, 0.36 – 0.72)
Cap <b>[48]</b>	24.5 ± 4.9 (250 ± 50, 18.0 ± 3.6)

- Before replacing the Piston Bumper **[25]**, make sure that nothing, such as broken pieces of the old Pistom Bumper **[25]**, are stuffed in the air passages of the Body Ass'y **[23]**, the Nose **[28]** or the feed piston chamber.

## 2-2. Disassembly and Reassembly of the Output Section

### (1) Disassembly and reassembly of the Exhaust Cover [5], the Head Valve [9] and the Exhaust Valve Rubber [12]

(See Fig. 1.)



#### (a) Disassembly

- Remove the four Hex. Socket Hd. Bolts M6 x 35 [4] with a hex. bar wrench. The entire Exhaust Cover [5] unit can then be taken apart from the Body Ass'y [23].
- Remove the Hex. Socket Hd. Bolt M6 x 16 [1] with a hex. bar wrench. The Plate [2] and the Top Cover [3] can then be taken apart.
- Insert a 4 – 4.8 mm (0.157" – 0.189") dia. rod into a hole of the Exhaust Cover [5] as indicated in Fig. 2 and gently hammer out the Exhaust Valve Rubber [12] with a hammer. The component parts of the exhaust cover unit can then be taken out.

#### (Note)

Avoid using a sharp tipped rod or a rod smaller than 4 mm dia. (0.157") to protect the Exhaust Valve Rubber [12] from scratches.

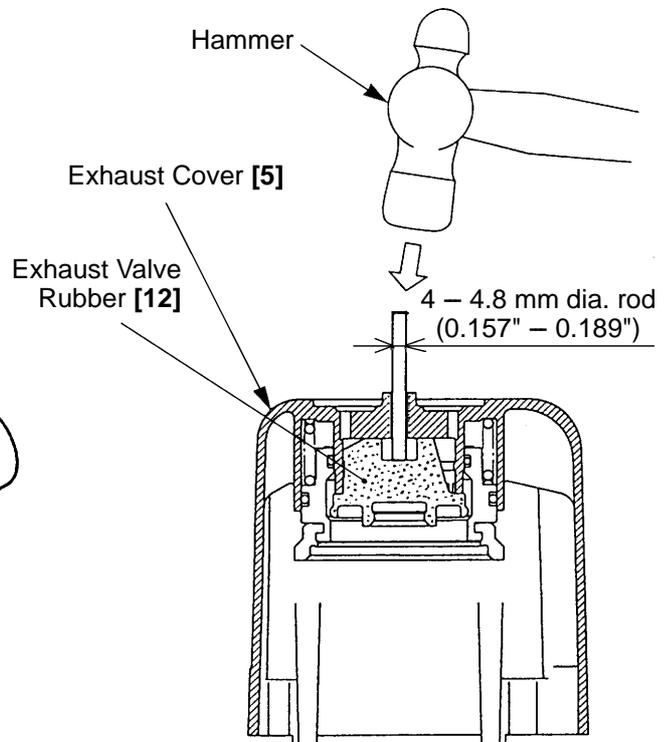
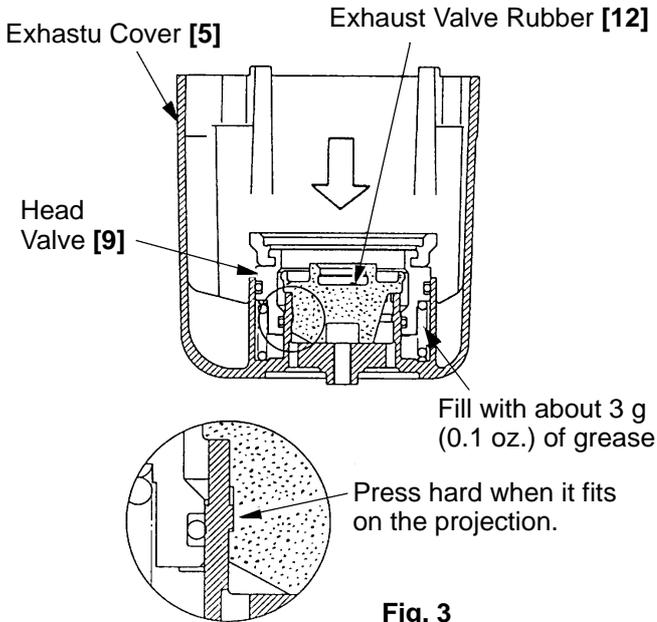


Fig. 2

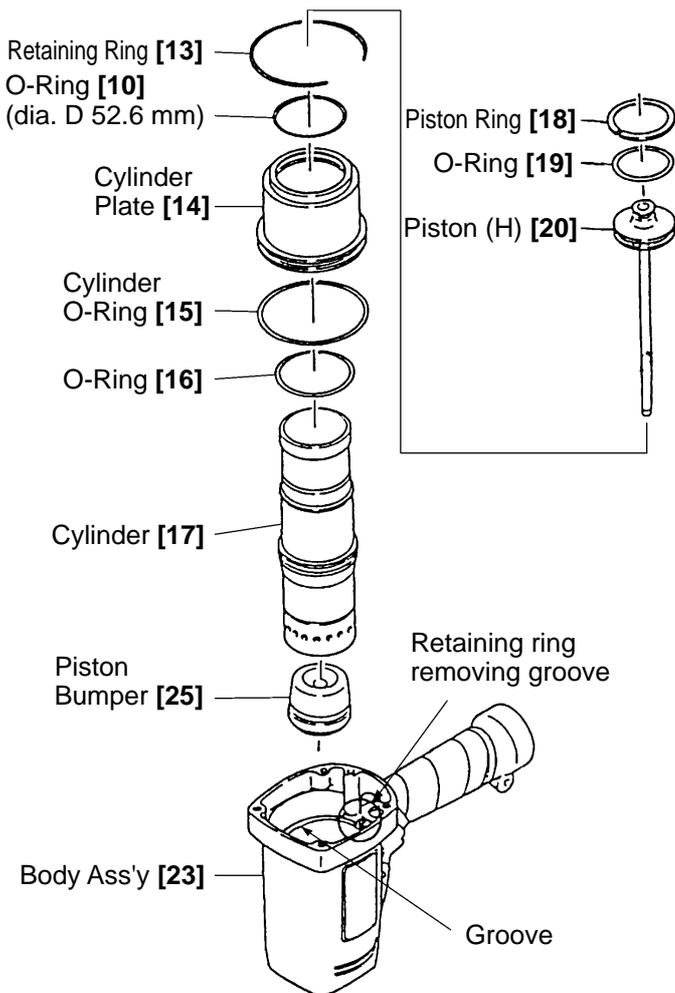
Fig. 1 Disassembly and reassembly of exhaust cover head valve, exhaust valve rubber, etc.



**Fig. 3**

(2) Disassembly and reassembly of the Cylinder [17], Piston (H) [20] and the Piston Bumper [25], etc.

(See Fig. 4)



**Fig. 4 Disassembly and reassembly of the cylinder, piston, etc.**

(b) Reassembly

Proceed in reverse to the disassembly procedure, while taking care to observe the following procedures.

- Fill in about 3 g (0.1 oz.) of grease in the sliding area of the Head Valve [9] inside the Exhaust Cover [5], and coat the O-rings with enough grease.
- Press hard on the Exhaust Valve Rubber [12] so that it fits on the projection at the Exhaust Cover [5] as indicated in Fig. 3.

(Tool required)

- Flat-blade screwdriver

(a) Disassembly

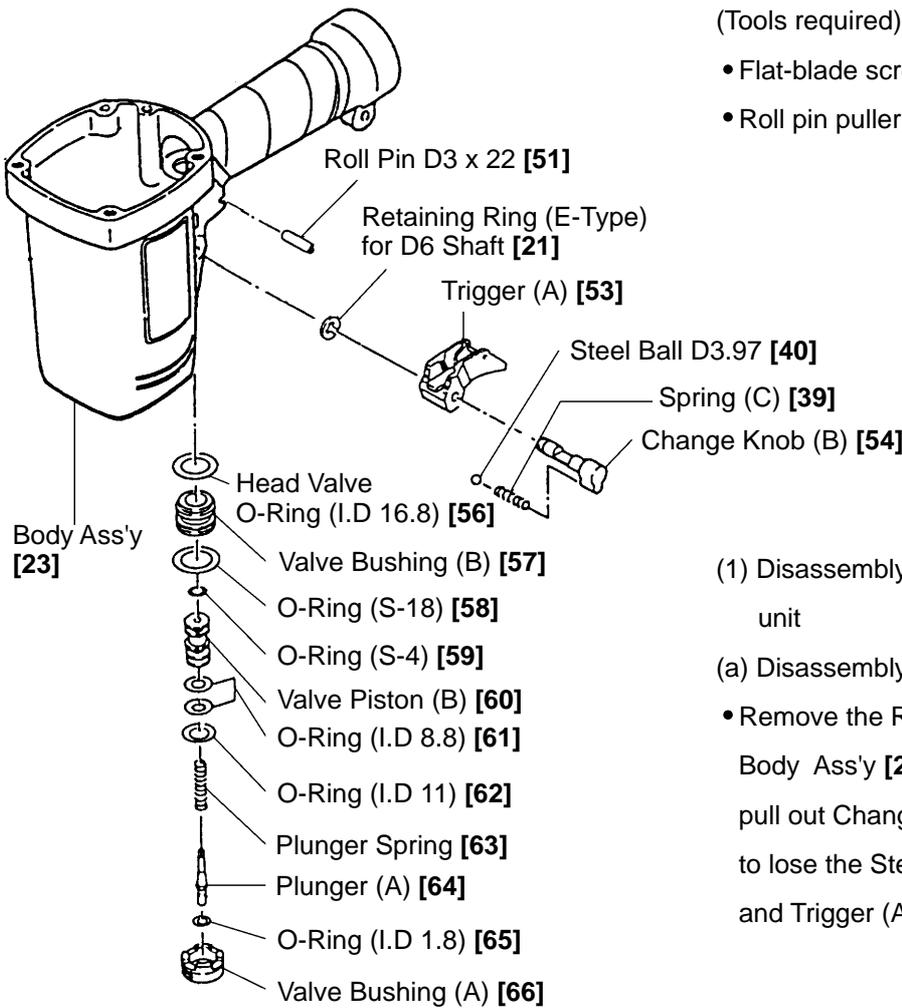
- Remove the Exhaust Cover [5] as indicated in (1) as above, insert a flat-blade screwdriver into the retainer ring removing groove of the Body Ass'y [23] and remove the Retaining Ring [13]. The Cylinder [17], the Cylinder Plate [14], Piston (H) [20] and the Piston Bumper [25] can then be taken out.

(b) Reassembly

Proceed in reverse to the disassembly procedure, while taking care to observe the following procedures.

- Apply the lubricant (Shell Tonna Oil T32) to the inside of the Piston Ring [18], the O-ring [19] and the Cylinder [17].
- Apply grease to the O-Ring (I.D 52.6) [10] and the Cylinder O-Ring [15] and install them.
- Install the Cylinder [17] and push in the Cylinder Plate [14] until the Retaining Ring [13] completely fits in the groove of the Body Ass'y [23].
- When fitting the Retaining Ring [13] in the groove of the Body Ass'y [23], take care not to allow the opening of the Retaining Ring [13] to be aligned with the retaining ring removing groove.

### 2-3. Disassembly and Reassembly of the Control Valve Section



(Tools required)

- Flat-blade screwdriver
- Roll pin puller (removal tool) [3 mm (0.118" dia.)]

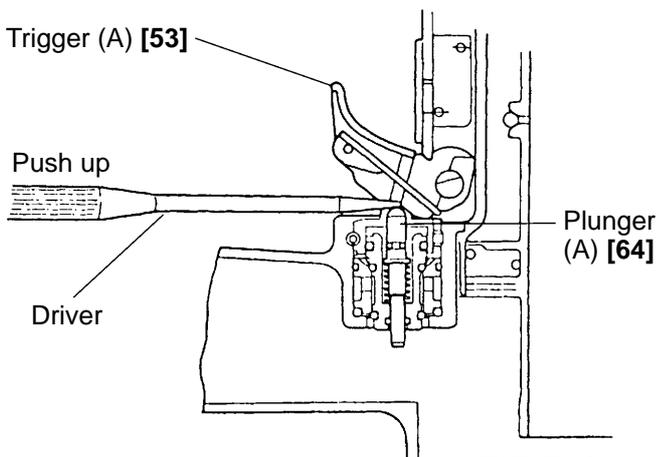
Don't lose when these are disassembled.

(1) Disassembly and reassembly of the control valve unit

(a) Disassembly

- Remove the Retaining Ring (E-Type) [21] from the Body Ass'y [23] with a flat-blade screwdriver and pull out Change Knob (B) [54] while taking care not to lose the Steel Ball D3.97 [40]. Spring (C) [39] and Trigger (A) [53] can now be taken apart.

**Fig. 5 Disassembly and reassembly of the control valve section**



- When removing Trigger (A) [53] with the nail feed unit (Pushing Lever (B) [37], the Nose [28], etc.) kept installed on it, remove Trigger (A) [53] while pressing down Plunger (A) [64] with a flat-blade screwdriver or a similar tool.

**Fig. 6**

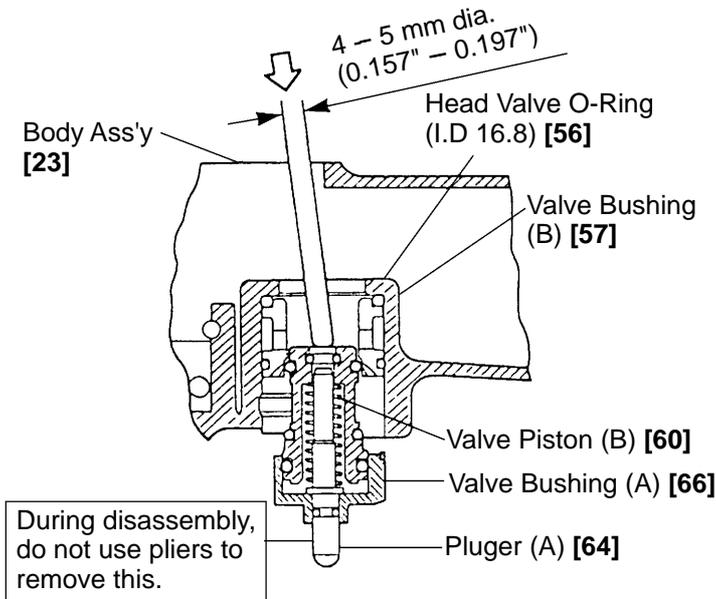


Fig. 7

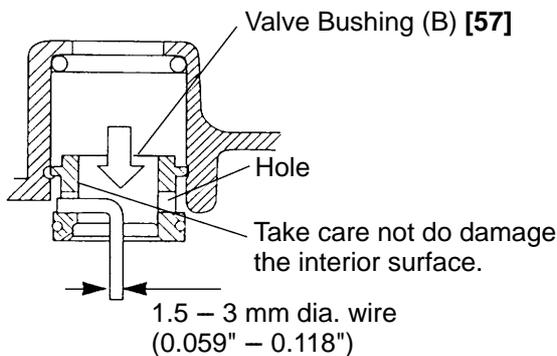


Fig. 8

- Pull out the Roll Pin D3 x 22 [51] with the roll pin puller [3 mm (0.118") dia.] and remove the control valve as indicated below.

- (1) Remove the Exhaust Cover [5] as shown in item 2.2.(1).
- (2) Insert a 4 – 5 mm (0.15" – 0.197") dia. rod from the top of the Body Ass'y [23] as indicated in Fig. 7 and press the top surface of Valve Piston (B) [60]. The parts constituting the control valve can now be removed except for Valve Bushing (B) [57] and the Head Valve O-Ring (I.D 16.8) [56].

**(Note)**

- Exercise care not to damage Valve Piston (B) [60] and Valve Bushings (A) [66] and (B) [57].
  - Do not draw out the tip end of Plunger (A) [64] with pliers or a similar tool.
- (3) Remove Valve Bushing (B) [57] as indicated in Fig. 8 by pulling it out with a 1.5 mm (0.059") to 3 mm (0.118") dia. wire bent at its tip and hooked into the hole of the bushing, while taking care to protect the bushing's interior surface from damaging.

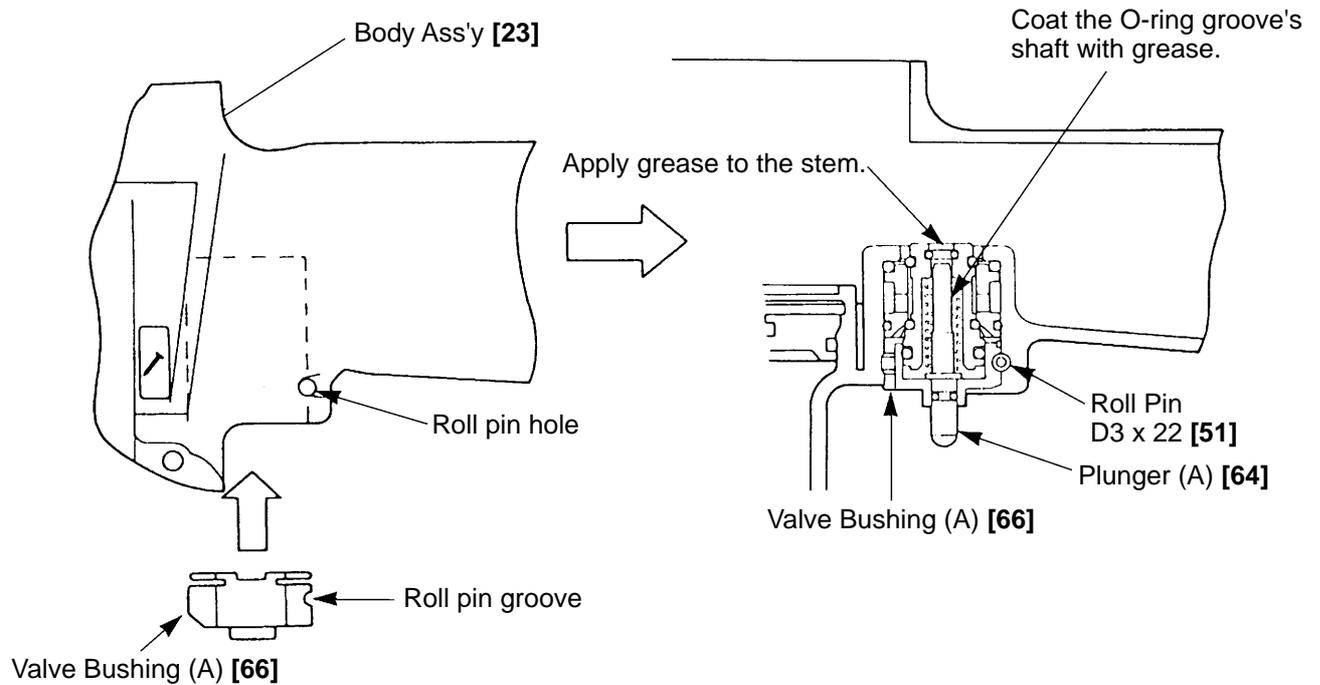
**(b) Reassembly**

Proceed in reverse to the disassembly procedure, while taking care to observe the following procedures.

- Be very careful not to let any foreign substance enter the control valve section.
- Apply sufficient grease to the O-Ring [I.D 1.8 mm] [65] of Plunger (A) [64], the O-Rings [59], [61], [62] on Valve Piston (B) [60] and the stem of Plunger (A) [64] as shown in Fig. 9.
- Install Valve Bushing (A) [66] so that a roll pin groove of Valve Bushing (A) [66] is in alignment with the roll pin hole of the Body Ass'y [23] as indicated in Fig. 9. Then first insert a roll pin driver [3 mm (0.118") dia.] into the roll pin hole and hammer in the Roll Pin D3 x 22 [51] after making sure that it can pass through the groove and hole.

**[CAUTION]**

If the roll pin is forcibly hammered in with Valve Bushing (A) [66] roll pin groove out of alignment with the Body Ass'y [23] roll pin hole, the circumferential part of Valve Bushing (A) [66] will be damaged, making subsequent disassembly and reassembly impossible.

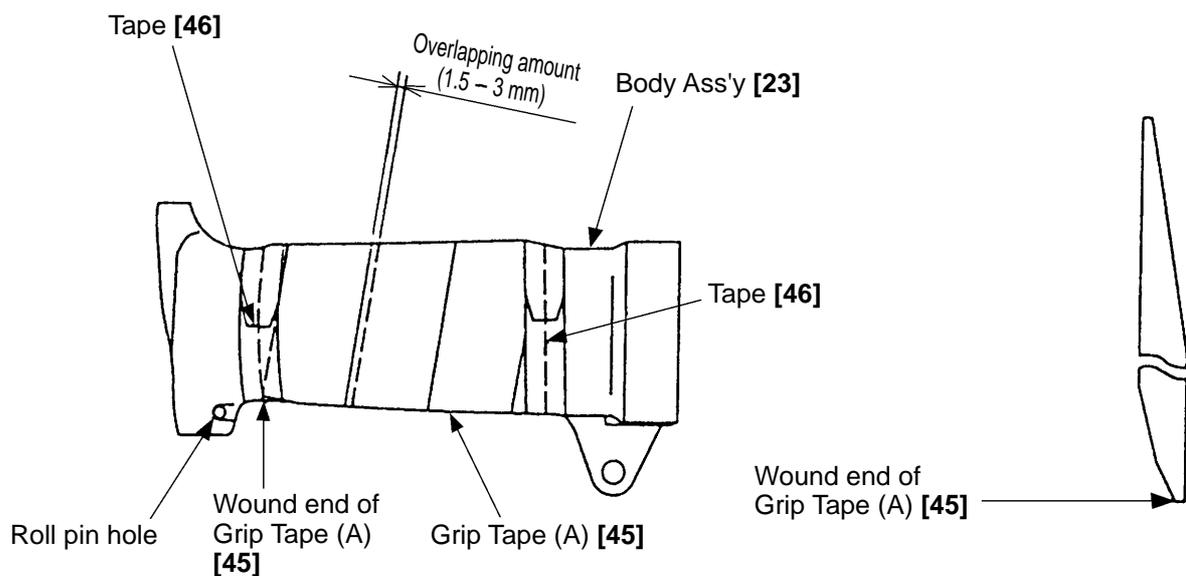


**Fig. 9**

After assembly, make sure that Plunger (A) [64] moves smoothly.

**(2) Winding Grip Tape (A) [45] and the Tape [46]**

Grip Tape (A) [45] and the Tape [46] are self-adhesive. Peel the backing sheets off Grip Tape (A) [45] and the Tape [46] before adhering them to the Body Ass'y [23]. First, adhere the end of Grip Tape (A) [45] near the roll pin hole of the Body Ass'y [23], and start to wind it around the Body Ass'y [23]. When the winding is completed, fix both wound ends of Grip Tape (A) [45] by winding the Tape [46] (Fig. 10). Be careful that Grip Tape (A) [45] and the Tape [46] cannot be peeled off once they are adhered.



**Fig. 10**

## 2-4. Disassembly and Reassembly of the Driving Section

(Tools required)

- Roll pin puller (removal tool) [3 mm (0.118") dia. and 4 mm (0.154") dia.]
- 5 mm Hex. bar wrench
- Philips head screwdriver
- Retaining ring puller for C-type hole

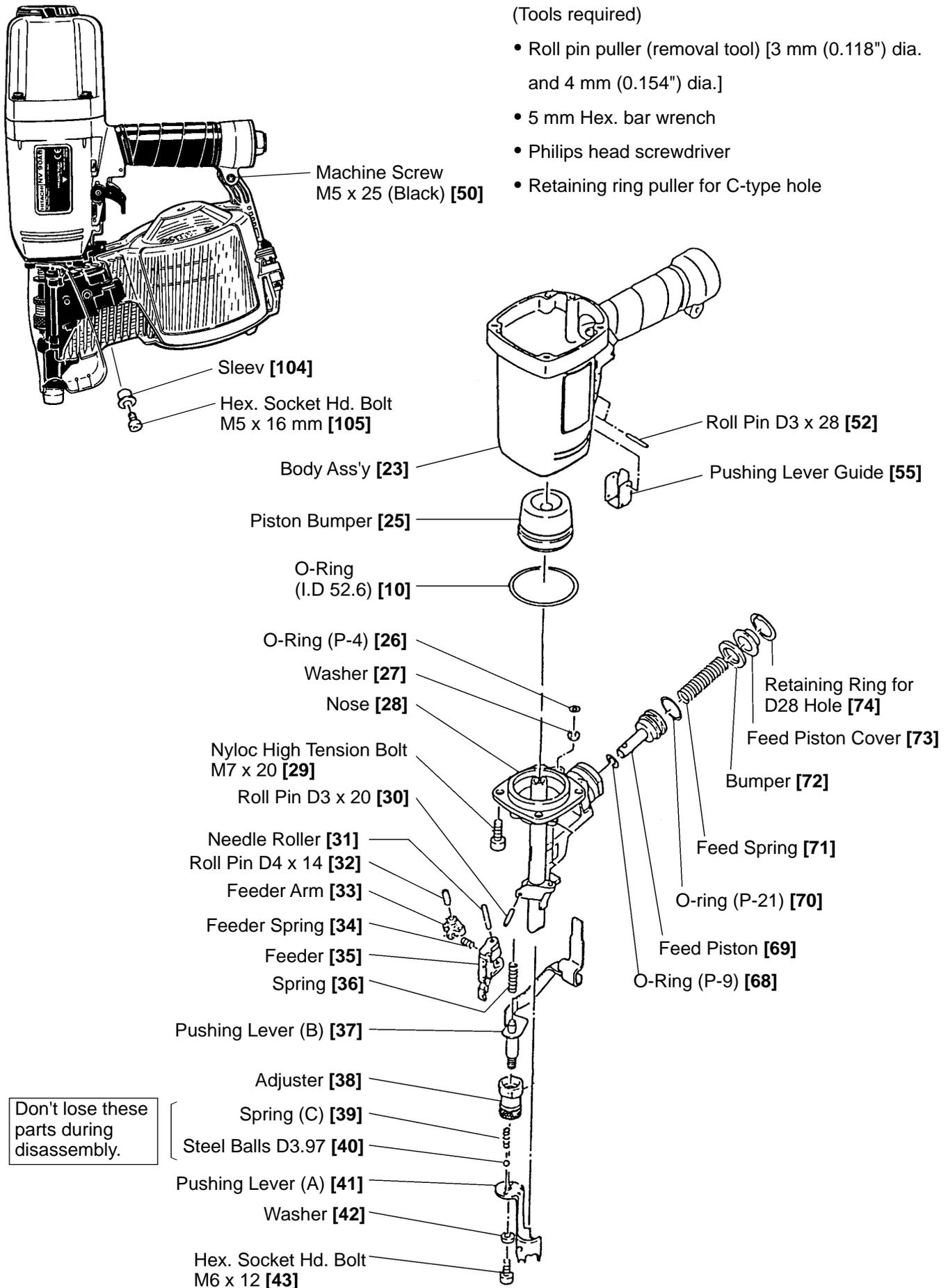


Fig. 11 Disassembly and reassembly of the driving section

(1) Disassembly and reassembly of Pushing Levers (A) [41] and (B) [37], the Spring [36], etc. (See Fig. 11)

(a) Disassembly

- Remove the Machine Screw M5 x 25 (black) [50] and the Hex. Socket Hd. Bolt M5 x 16 [105], and take the Magazine Ass'y [90] apart.
- Pull out the Roll Pin D3 x 28 [52].
- After pulling out the Roll Pin D3 x 20 [30], Pushing Lever (B) [37], Pushing Lever (A) [41] and the Pushing Lever Guide [55] can be removed.
- Remove the Hex. Socket Bolt M6 x 12 [43]. The Adjuster [38] and Pushing Lever (A) [41] can then be removed.

(b) Reassembly

Proceed in reverse to the disassembly procedure, while taking care to observe the following procedures.

- Install Spring (C) [39] after applying grease to it.
- After reassembly, make sure that the pushing lever components and the Adjuster [38] move smoothly.

(2) Disassembly and reassembly of the Feeder [35], the Feed Piston [69], the Nose [28], etc. (See Fig. 11)

(a) Disassembly

- Remove the magazine section and the pushing lever components from the driving section as indicated in item 2-4. (1).
- Remove the Retaining Ring for D28 Hole [74], and the Feed Piston Cover [73], the Bumper [72] and the Feed Spring [71] can then be taken apart.
- Pull out the Roll Pin D4 x 14 [32]. The Feed Piston [69] and the Feeder Arm [33] can then be removed.
- Pull out the Needle Roller [31]. The Feeder Arm [33] and the Feeder [35] can then be removed.
- Remove the Nylock High Tension Bolts M7 x 20 [29] securing the Nose [28]. The Nose [28] can then be removed from the Body Ass'y [23].

(b) Reassembly

Proceed in reverse to the disassembly procedure, while taking care to observe the following procedures.

- Carefully clean the inside of air passage of the Body Ass'y [23] and the Nose [28] and the inside of the feed piston chamber with a clean rag before reassembly, as anything like broken pieces of the Piston Bumper [25] clogged in such spaces may make the motion of the the Feed Piston [69] dull.
- Apply grease to O-Rings [10] and [26] before reassembly.
- Move the O-Ring (P-21) [70] on the Feed Piston [69] to the right as indicated in Fig. 13, and fill the groove with grease. Note, however, that too much grease on the surface A in Fig. 13 makes the motion of the Feed Piston [69] sluggish (particularly in a lower air pressure).
- Apply grease to the Feed Piston [69], O-ring sliding area of the Nose [28] and the O-Ring (P-9) [68] before reassembly.

- Make sure that the Retaining Ring for D28 Hole [74] is completely received in the Nose [28] groove.
- Push in the Roll Pin D4 x 14 [32] with its split end facing the Magazine [86] as indicated in Fig. 13.

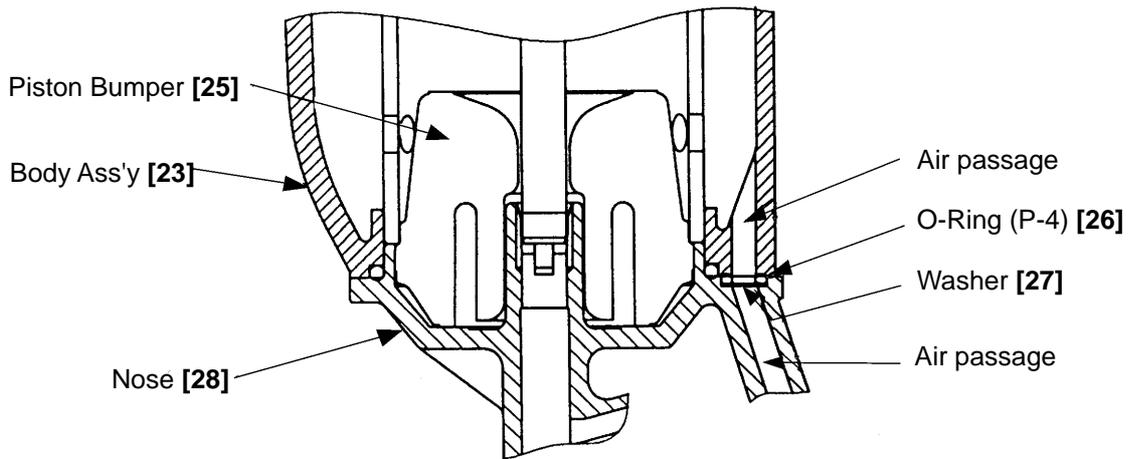


Fig. 12

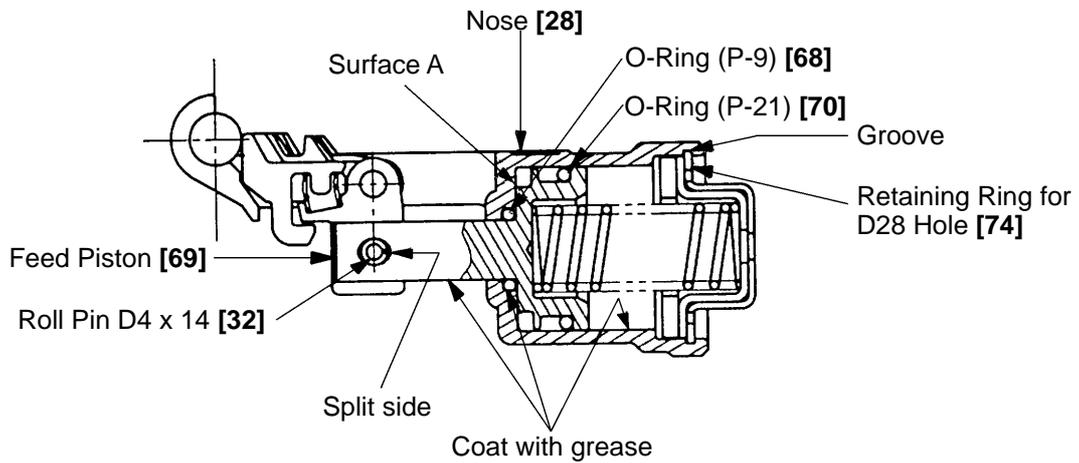
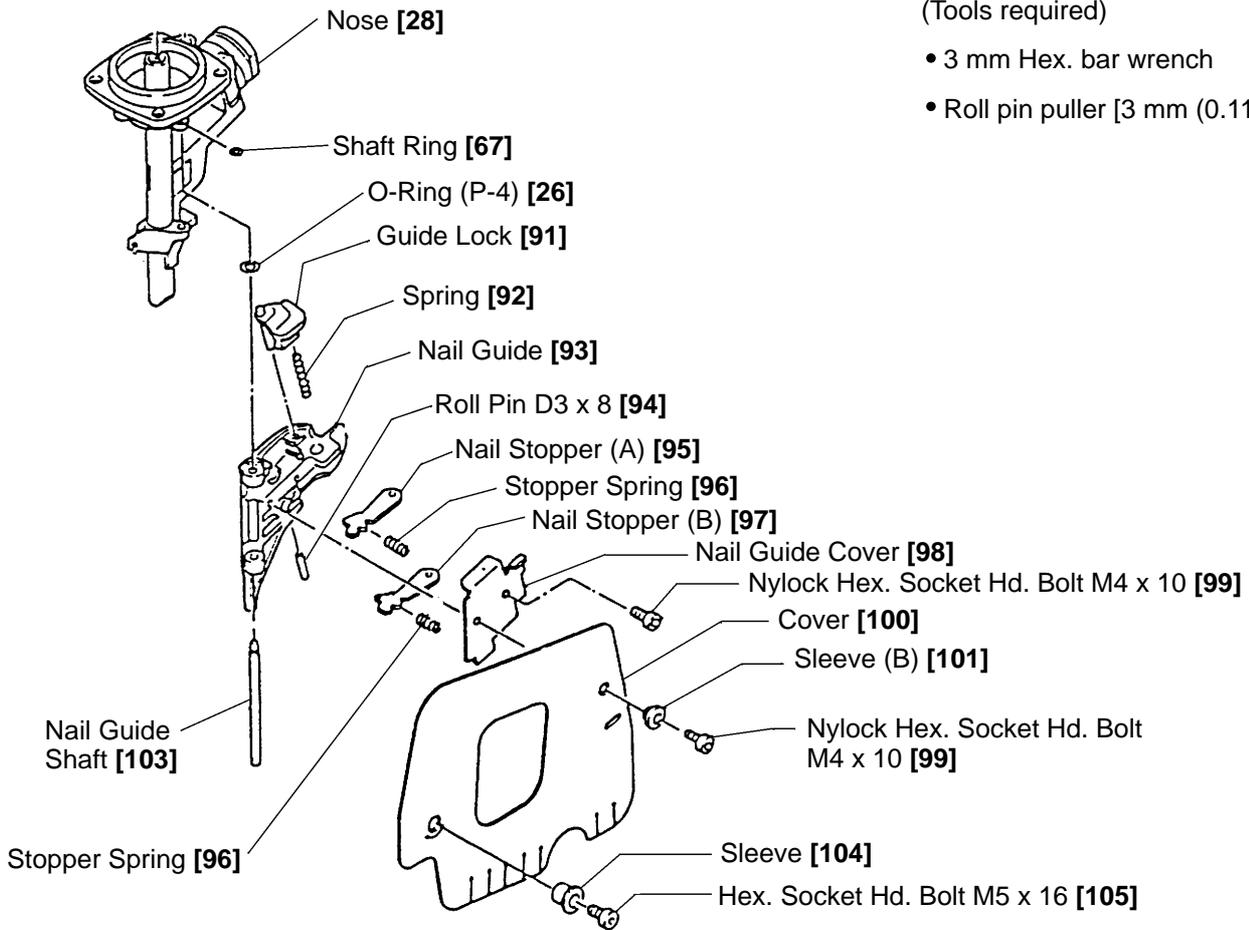


Fig. 13

When replacing the Piston Bumper [25], make sure that the air passage on the Body Ass'y [23] and the Nose [28] leading to the Feed Piston [69] are not blocked with the broken pieces of the Piston Bumper [25] before reassembly.

(3) Disassembly and reassembly of the Nail Guide [93] (See Fig. 14)



(Tools required)

- 3 mm Hex. bar wrench
- Roll pin puller [3 mm (0.118" dia.)]

**Fig. 14 Disassembly and reassembly of the nail guide**

(a) Disassembly

- Remove the Nail Guide Shaft [103] from the Nose [28]. The nail guide section can be then removed.
- Remove the two Nylock Hex. Socket Hd. Bolts M4 x 10 [99] and the Hex. Socket Hd. Bolt M5 x 16 [105] with a 3 mm hex. bar wrench. The Cover [100], the Nail Guide Cover [98], the Guide Lock [91] and Nail Stopper (A) [95] can then be removed.
- Pull out the Roll Pin D3 x 8 [94] with a roll pin puller. Nail Stopper (B) [97] can then be removed.

(b) Reassembly

Proceed in reverse to the disassembly procedure, while taking care to observe the following procedures.

- Carefully clean the dust deposited in the hook groove of the Nail Guide [93] before reassembly.
- After reassembly, push Nail Stopper (A) [95] and Nail Stopper (B) [97] with a finger to make sure of their smooth resuming their initial position.

## 2-5. Disassembly and Reassembly of the Magazine Section

(Tools required)

- Phillips screwdriver
- Flat-blade screwdriver

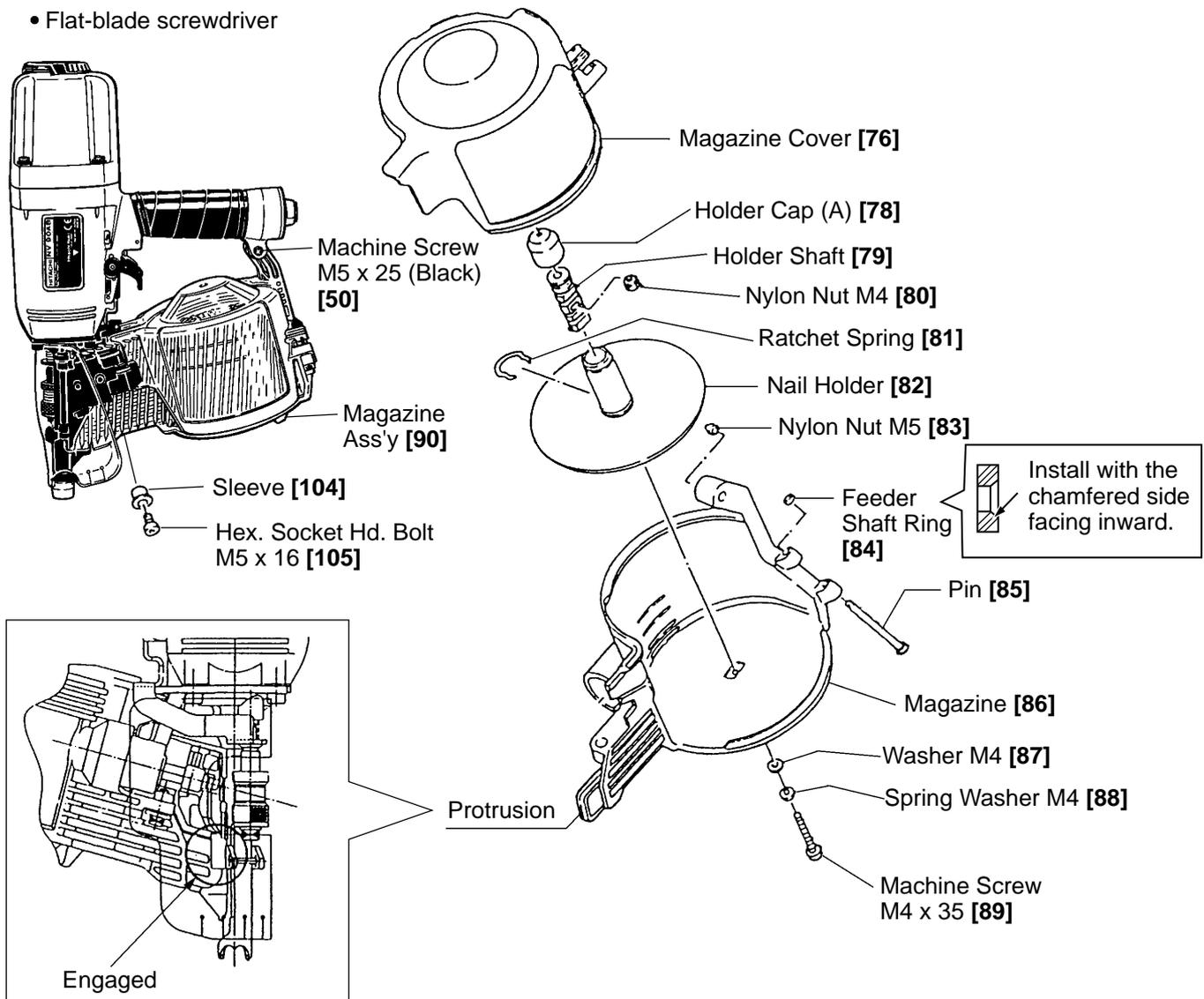


Fig. 15 Disassembly and reassembly of the magazine section

(1) Disassembly and reassembly of the Magazine Ass'y [90] (See Fig. 15)

(a) Disassembly

Remove the Machine Screw M5 x 25 (Black) [50] from the Body Ass'y [23], and remove the Hex. Socket Hd. Bolt M5 x 16 [105] and the Sleeve [104] from under the Nose [28]. The Magazine Ass'y [90] can then be removed.

(b) Reassembly

Proceed in reverse to the disassembly procedure, while taking care to observe the following procedures

- Mount the Feeder Shaft Ring [84] facing the chamfered side inward as shown in Fig. 15.
- Engage the protrusion of the Magazine [86] with the Nose [28].

(2) Disassembly and reassembly of the Holder Shaft [79], Nail Holder [82] and others (See Fig. 15)

(a) Disassembly

- Open the Magazine Ass'y [90] and remove the Machine Screw M4 x 35 [89]. The Holder Shaft [79], the Nail Holder [82] and others can be then removed.
- Insert the blade of a flat-blade screwdriver into the clearance between the Nail Holder [82] and Holder Cap (A) [78] to remove Holder Cap (A) [78]. The Holder Shaft [79] can then be removed.

(b) Reassembly

- Proceed in reverse to the disassembly procedure.

## 2-6. Disassembly and Reassembly of the Cap (See Fig. 16)

(Tool required)

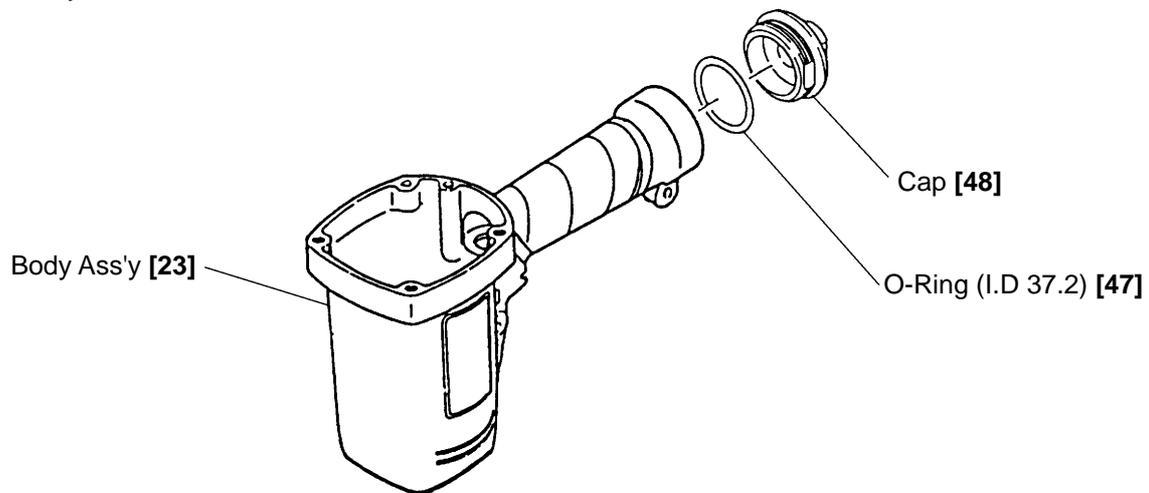
- 23 mm Wrench

(1) Disassembly

- Since the Cap [48] is integral with the M42 mm screw, it can be removed by turning it with a wrench holding its dihedral width.

(2) Reassembly

- Proceed in reverse to the disassembly procedure. Apply grease to the O-Ring (I.D 37.2) [47] before reassembly.



**Fig. 16 Disassembly and reassembly of the cap**

### 3. INSPECTION AND CONFIRMATION AFTER REASSEMBLY

- Plunger (A) [64] moves smoothly.
- Pushing lever (A) [41] moves smoothly.
- Nail Stopper (A) [95] and Nail Stopper (B) [97] securely resume their position when pressed down with a finger.
- There is no air leakage at any part.
- The main body is not brought into operation by simply pulling Trigger (A) [53] with Change Knob (B) [54] set to continuous and simple nailing, and simply operate by pushing the Pushing Lever (A) [41].
- The Feed Piston [69] reliably moves under the air pressure of 4.9 bar (5 kgf/cm<sup>2</sup>, 7 psi). (Open the Nail Guide [93] and drive it with no nail loaded).

**(Note)**

Perform test-nailing with the Adjuster [38] turned fully clockwise (as viewed from the Nose [28]) until it stops.

- The tightening torque of the screws is all correct.

#### 4. STANDARD REPAIR TIME (UNIT) SCHEDULES

MODEL	Variable		10	20	30	40	50	60 min.	
	Fixed								
NV 90AB		Work Flow							
				Exhaust Cover Head Valve Rubber O-Ring Head Valve					
						Cylinder Plate Cylinder Guide Cylinder Cylinder O-Ring			
		General Assembly							Body Ass'y
		Fixed Costs Others: 20 min.			Trigger Plunger O-Ring Plunger (A) Plunger Spring Valve Piston				
					Piston O-Ring Piston Ring				
			Feed Spring						
					Piston Bumper Exhaust Valve Rubber				
							Tail Cover Ass'y Magazine Ass'y		
					Adjustment (Cylinder, Body and Valve)				