

MODEL

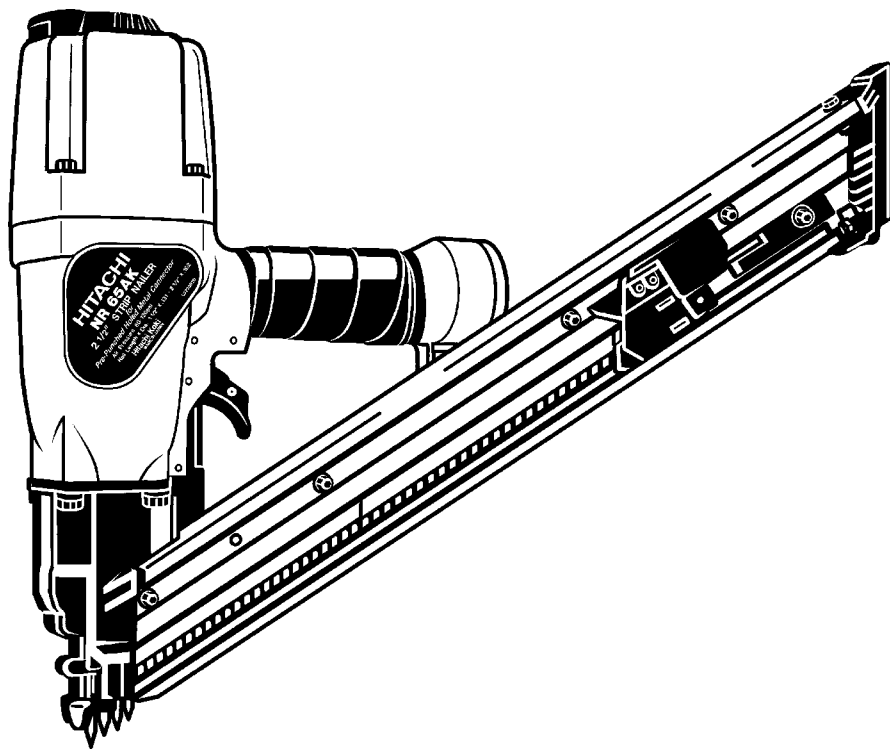
NR 65AK

HITACHI
POWER TOOLS

STRIP NAILER
NR 65AK

TECHNICAL DATA
AND
SERVICE MANUAL

N



LIST No. 1099

Sep. 2001

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

Notice for use

Specifications and parts are subject to change for improvement.

Refer to Hitachi Power Tool Technical News for further information.

REMARK:

Throughout this TECHNICAL DATA AND SERVICE MANUAL, a symbol(s) is(are) used in the place of company name(s) and model name(s) of our competitor(s). The symbol(s) utilized here is(are) as follows:

Symbols Utilized	Competitors	
	Company Name	Model Name
Y	PASLODE	5250/65SPP
R	SENCO	SN60MC

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1. PRODUCT NAME

Hitachi 2-1/2" Strip Nailer, Model NR 65AK

2. MARKETING OBJECTIVE

There is an increasing demand for the metal hardware used for framing work to resist earthquakes and hurricanes. Although competitors have already put their nailers specifically designed for the metal hardware, they do not meet the market requirements sufficiently because they are reputed as "low strength", "trouble-prone", and "large and heavy". The new Model NR 65AK strip nailer clears the above problems and features the following:

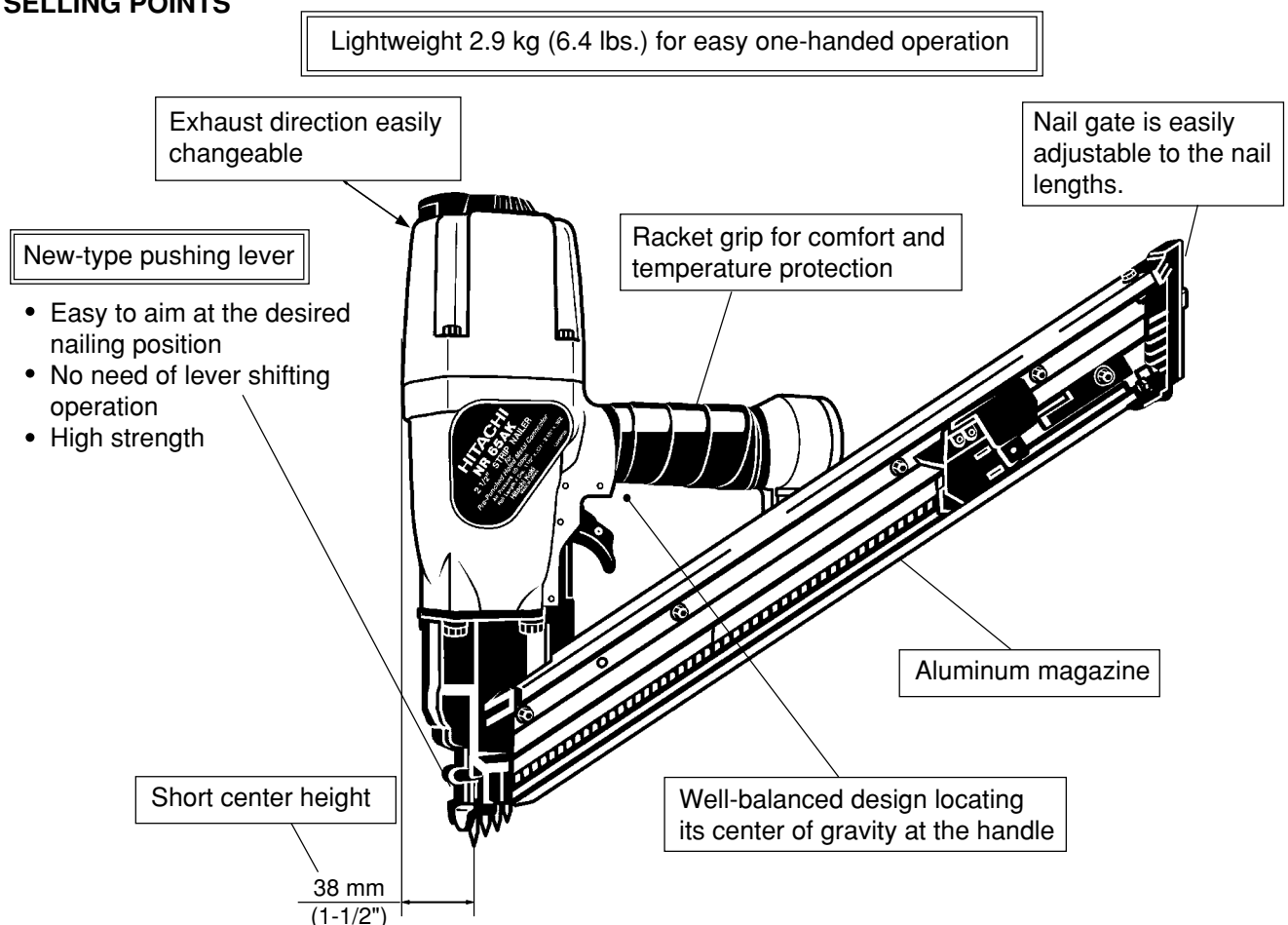
1. Compact and lightweight (2.9 kg)
2. New-type pushing lever is adopted:
 - (1) Easy to aim at the desired nailing position
 - (2) No need of lever shifting operation
 - (3) High strength
3. Easy to drive nails at corners thanks to the short center height
4. Easy to adjust nail lengths

The new nails specifically designed for the Model NR 65AK are also provided (refer to page 3). The Model NR 65AK has already been registered under the trade name of "STRAP TITE" as a strip nailer specifically designed for the metal hardware.

3. APPLICATIONS

Metal hardware with pre-punched holes to wood stud installation only (straps, joint hangers, framing anchors).

4. SELLING POINTS



5. SPECIFICATIONS

5-1. Specifications

Model	NR 65AK
Driving system	Reciprocating piston type
Operating pressure	5.4 – 8.3 bar (5.5 – 8.5 kgf/cm ² , 80 – 120 psi) (Gauge pressure)
Driving speed	2 nails/sec.
Weight	2.9 kg (6.4 lbs.)
Dimensions (Length x Height x Width)	448 mm x 335 mm x 85 mm (17-5/8" x 13-3/16" x 3-3/8")
Nail feed system	Spiral spring
Nail capacity	44 nails (2 strips)
Air consumption	1.8 ltr/cycle at 6.9 bar (1.8 ltr/cycle at 7 kgf/cm ²) (0.063 ft ³ /cycle at 100 psi)
Air inlet	3/8 NPT thread
Packaging	Corrugated cardboard box
Package dimensions (Length x Height x Width)	476 mm x 383 mm x 132 mm (18-3/4" x 15" x 5-7/32")
Standard accessories	Eye protector (Code No. 875769) 1 Hex. bar wrench for M5 screw (Code No. 944459) 1 Hex. bar wrench for M4 screw (Code No. 944458) 1 Hex. bar wrench for M3 screw (Code No. 943277) 1
Optional accessories	Pneumatic tool lubricant (1 oz oil feeder) (Code No. 877153) Pneumatic tool lubricant (4 oz oil feeder) (Code No. 872042) Pneumatic tool lubricant (1 quart can) (Code No. 876212)

5-2. Nail Selection

The Model NR 65AK utilizes heat treated round-head nails collated with paper into bands of 22 pieces. Applicable nail dimensions are shown below. However, it is recommended to use genuine HITACHI nails to ensure satisfactory driving quality.

⚠

WARNING

- Use only genuine HITACHI heat treated nails for this NR 65AK to avoid serious injury from ricocheting nails. The use of any other nails and non-heat treated nails could result in dangerous tool malfunction and/or nail malfunction, causing serious injury.
- Select adequate nail size to meet proper metal hardware requirement needed for application, designed by metal hardware manufacturer and regulated by the applicable building code.

CAUTION: Ensure that nails are as specified in Fig. 1. Other nails will cause jamming of nails and subsequent damage to the nailer.

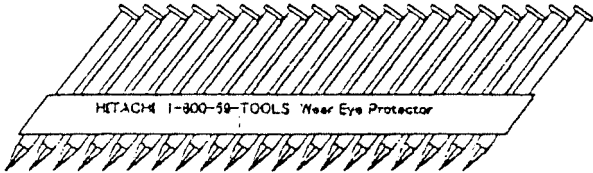


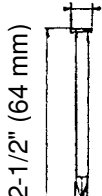

<div><div>Paper-collated strip nails Full-head nails</div><div></div><div>(8d) .131 x 1-1/2" (3.3 x 38 mm) (10d) .148 x 1-1/2" (3.8 x 38 mm) (10d) .148 x 2-1/2" (3.8 x 64 mm) (16d) .162 x 2-1/2" (4.1 x 64 mm)</div></div>	Min.	Max.
	<div><div>280" (7.1 mm)</div><div></div><div>1-1/2" (38 mm)</div><div></div><div>.131" (3.3 mm)</div></div>	<div><div>280" (7.1 mm)</div><div></div><div>2-1/2" (64 mm)</div><div></div><div>.162" (4.1 mm)</div></div>

Fig. 1 Dimensions of nails

5-3. Nail Driving Force

Fig. 2 shows by type of wood and nail the nailer output energy provided by the supply pressure and the nailing energy required for driving the nail flush. Air pressure which exceeds the intersecting point between the nailer output energy and the required nailing energy for driving the nail allows the nail to be fully driven.

For example, when driving a nail of 3.3 mm dia. x 38 mm length (0.131" x 1-1/2") into a workpiece of hemlock with the Model NR 65AK, a pressure of about 5.5 bar (5.7 kgf/cm², 80 psi) allows the nailer to drive the nail flush with the wood surface. A pressure beyond this value causes the nail head to be driven below the wood surface.

Fig. 2 should be used as a reference only because those values vary depending on the type of wood, moisture content, and grain of wood.

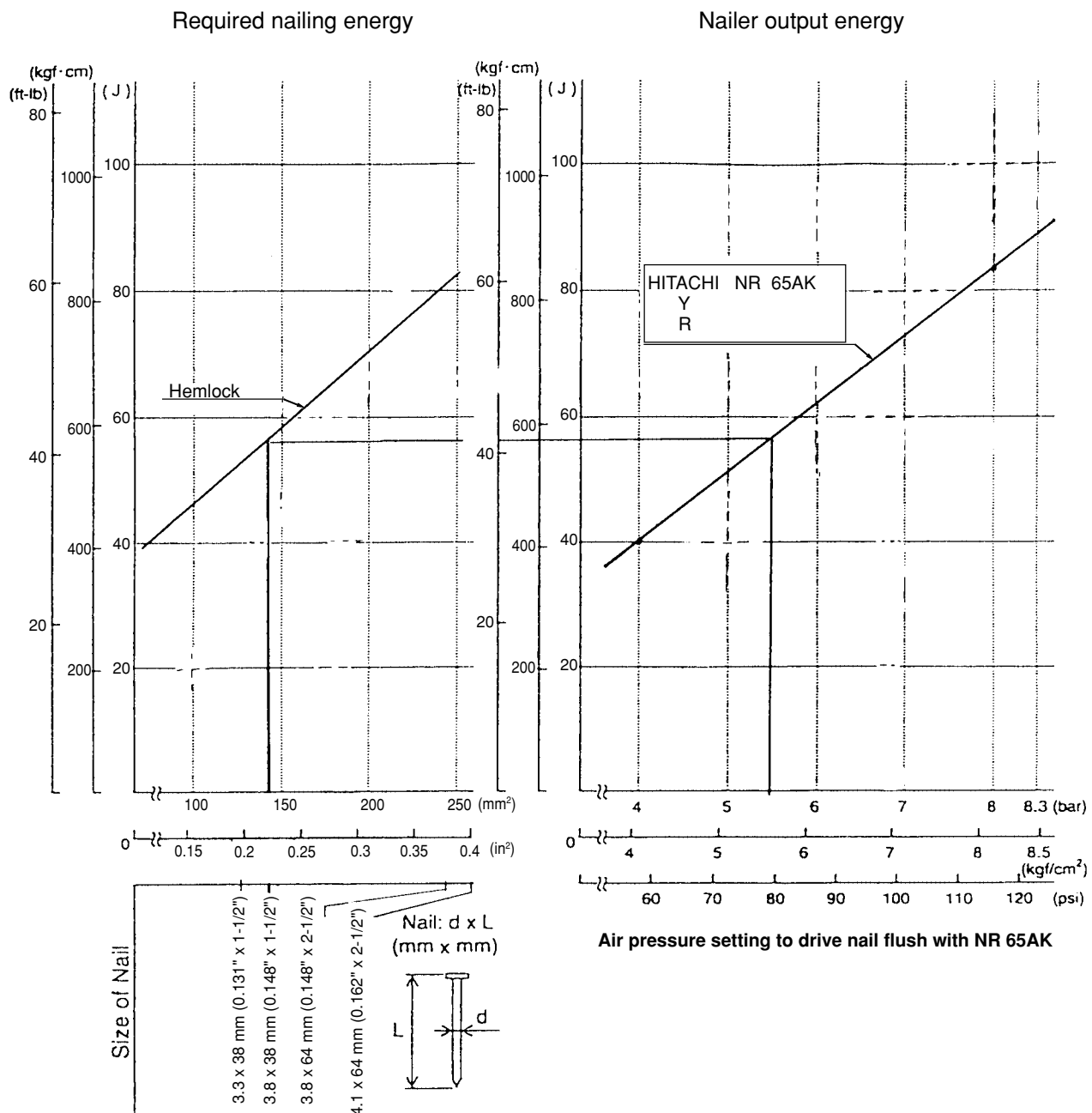
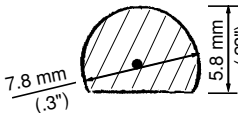
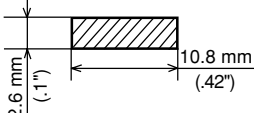
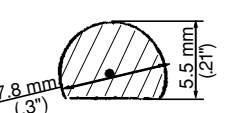


Fig. 2 Required nailing energy and nailer output energy

6. COMPARISONS WITH SIMILAR PRODUCTS

Maker		HITACHI	Y	R
Model name		NR 65AK		
Operating pressure		5.4 – 8.3 bar (5.5 – 8.5 kgf/cm ²) (80 – 120 psi)	5.4 – 8.3 bar (5.5 – 8.5 kgf/cm ²) (80 – 120 psi)	5.4 – 8.3 bar (5.5 – 8.5 kgf/cm ²) (80 – 120 psi)
Weight		2.9 kg (6.4 lbs.)	4.1 kg (9 lbs.)	3.6 kg (7.7 lbs.)
Dimensions (L x H x W)		448 mm x 335 mm x 85 mm (17-5/8" x 13-3/16" x 3-3/8")	465 mm x 346 mm x 114 mm (18-5/16" x 13-5/8" x 4-1/2")	365 mm x 330 mm x 111 mm (14-1/2" x 13" x 4-3/8")
Air consumption at 6.9 bar (7 kgf/cm ² , 100 psi)		1.8 ltr/cycle (0.63 ft ³ /cycle)	2.5 ltr/cycle (0.88 ft ³ /cycle)	2.2 ltr/cycle (0.77 ft ³ /cycle)
Nail capacity		44 nails (2 strips)	44 – 48 nails (2 strips)	30 nails (1 strip)
Magazine type (Material)		Rear loading (Aluminum)	Top loading (Plastic)	Rear loading (Aluminum)
Direction change of exhaust air		Tool-less (360 deg)	None	None
Center height		38 mm (1-1/2")	60 mm (2-3/8")	51 mm (2")
Method of locate		Nail point	Probe	Nail point
Change nail length		Adjust the nail gate	Turn the lever	Change position of the nail rail
The center of gravity		Located at the handle for good balance (Fig. 3)	(Fig. 4)	(Fig. 5)
Driver blade shape				
Handle grip		Racket grip (Comfortable grip)	Rubber (Not elastic)	Rubber (Not elastic)
Applicable nails	Collation	Paper	Paper	Paper
	Head dia.	7.1 mm (.28")	7.1 mm (.28")	7.1 mm (.28")
	Shank dia.	3.3 mm – 4.1 mm (.131" – .162")	3.3 mm – 4.1 mm (.131" – .162")	3.3 mm – 4.1 mm (.131" – .162")
	Length	38 mm – 64 mm (1-1/2" – 2-1/2")	38 mm – 64 mm (1-1/2" – 2-1/2")	38 mm – 64 mm (1-1/2" – 2-1/2")

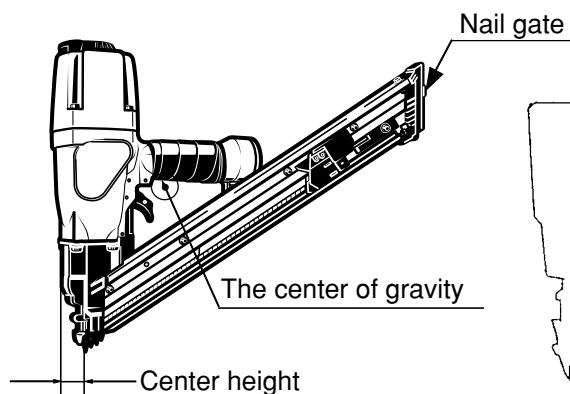


Fig.3

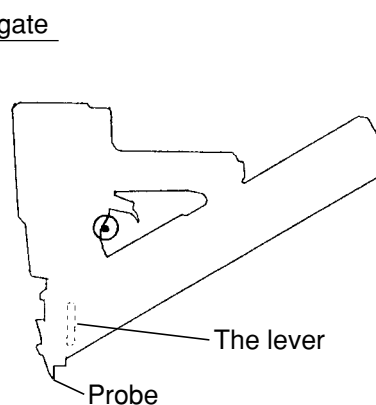


Fig.4

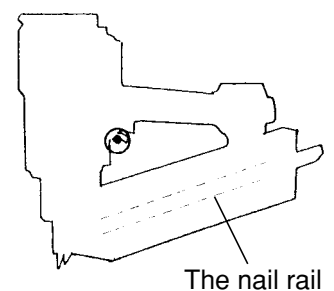


Fig.5

7. PRECAUTIONS IN SALES PROMOTION

In the interest of promoting the safest and most efficient use of the Model NR 65 AK Nailer by all of our customers, it is very important that at the time of sale the salesperson carefully ensures that the buyer seriously recognizes the importance of the contents of the Instruction Manual, and fully understands the meaning of the precautions listed on the Warning Label attached to each tool.

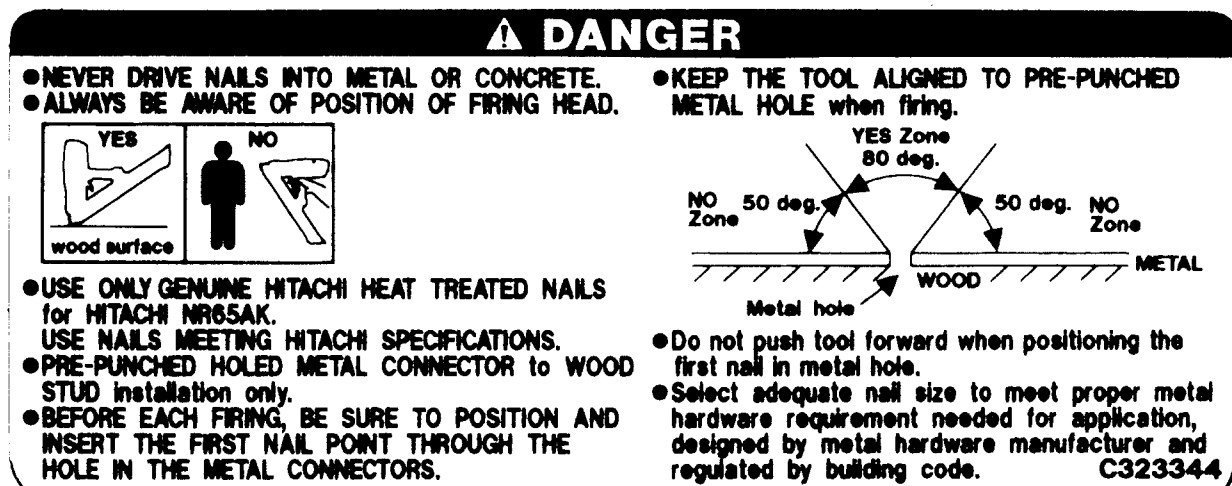
7-1. Instruction Manual

Although every effort is made in each step of the design, manufacture, and inspection to provide protection against safety hazards, the dangers inherent in the use of any pneumatic tool cannot be completely eliminated. Accordingly, general precautions and suggestions for use of pneumatic tools, and specific precautions and suggestions for the use of the pneumatic nailer are listed in the Instruction Manual to enhance the safe, efficient use of the tool by the customer.

Salespersons must be thoroughly familiar with the contents of the Instruction Manual to be able to offer appropriate guidance to the customers during sales promotion.

7-2. Warning Label

Each Model NR 65AK unit is provided with a Warning Label (illustrated below) which lists basic safety precautions in its use. Carefully ensure that customers fully understand and follow these precautions before using the tool.



7-3. Related Laws and Regulations

As nailers and staplers are designed to instantaneously drive nails and staples, there is an ever-present danger of misfiring and subsequent possible serious injury. Accordingly, close attention in handling is absolutely necessary at all times. Carefully ensure that the customer is fully aware of the precautions listed in the Instruction Manual provided with each unit.

While there are no specific safety regulations, there are related items in various general safety regulations with which the salespersons should be familiar in order to properly advise the customer. Please check your national and/or local regulations for applicable items. Some applicable items are outlined below.

The U.S.A:

OSHA	1926.102 Eye and face protection 1926.302 Power-operated hand tools
ANSI SNT-101-1993	Portable, Compressed-Air-Actuated, Fastener Driving Tools-Safety Requirements for

8. MECHANISM AND OPERATION PRINCIPLE

8-1. Mechanism

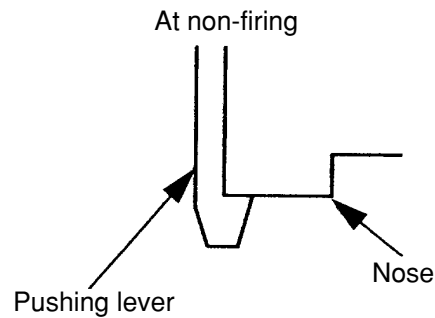
As illustrated in Fig. 6, NR 65AK can be generally divided into four sections:

output section, control valve section, driving section and magazine section. Most of the parts of the above sections except the control valve section have been newly designed for maximum performance in a strip nailer. Features of the main parts are described below.

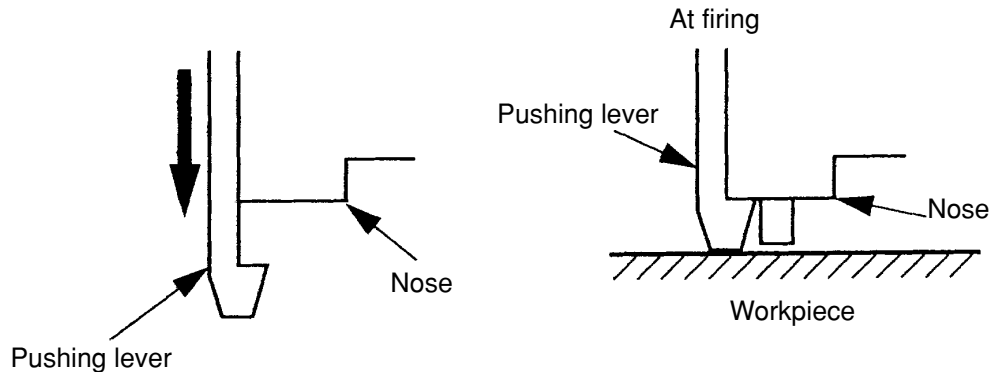
- Output section Most of the parts have been newly designed, though its basic construction is the same as that of the Model NV 45AC. The piston unit employs O-rings at the sliding portion in the same manner as the Model NV 45AC instead of a piston ring.
- Control valve section This section is common to the Models NR 90AC and NV 65AH except for plunger spring (B).
- Driving section All the parts have been newly designed. Especially, three pushing levers are its own characteristics. The plastic guard shielding the pushing levers has been newly designed to keep the pushing levers from contact with dust.
- Magazine section All the parts have been newly designed. The magazine made of aluminum forms two nail head paths with the guide plate. The nail feeder made of plastic has been newly designed.

This tool has a sequential trip mechanism (single shot) for use when precision nail placement is necessary. You must first depress the nail point where you want to drive a nail and then pull the trigger. After the nail is driven, completely release the trigger and lift the tool off the work surface.

This tool is not designed for contact trip operation (bounce fire), and not available for contact trip valve units. And this tool has a new pushing lever (safety) mechanism, this is a different push lever mechanism from another nailers. The position of the pushing lever when the nail feeder is pulled back is shown as below.



When nails are loaded and the trigger is depressed, the pushing lever comes down and when the pushing lever touches the workpiece, a nail is driven.



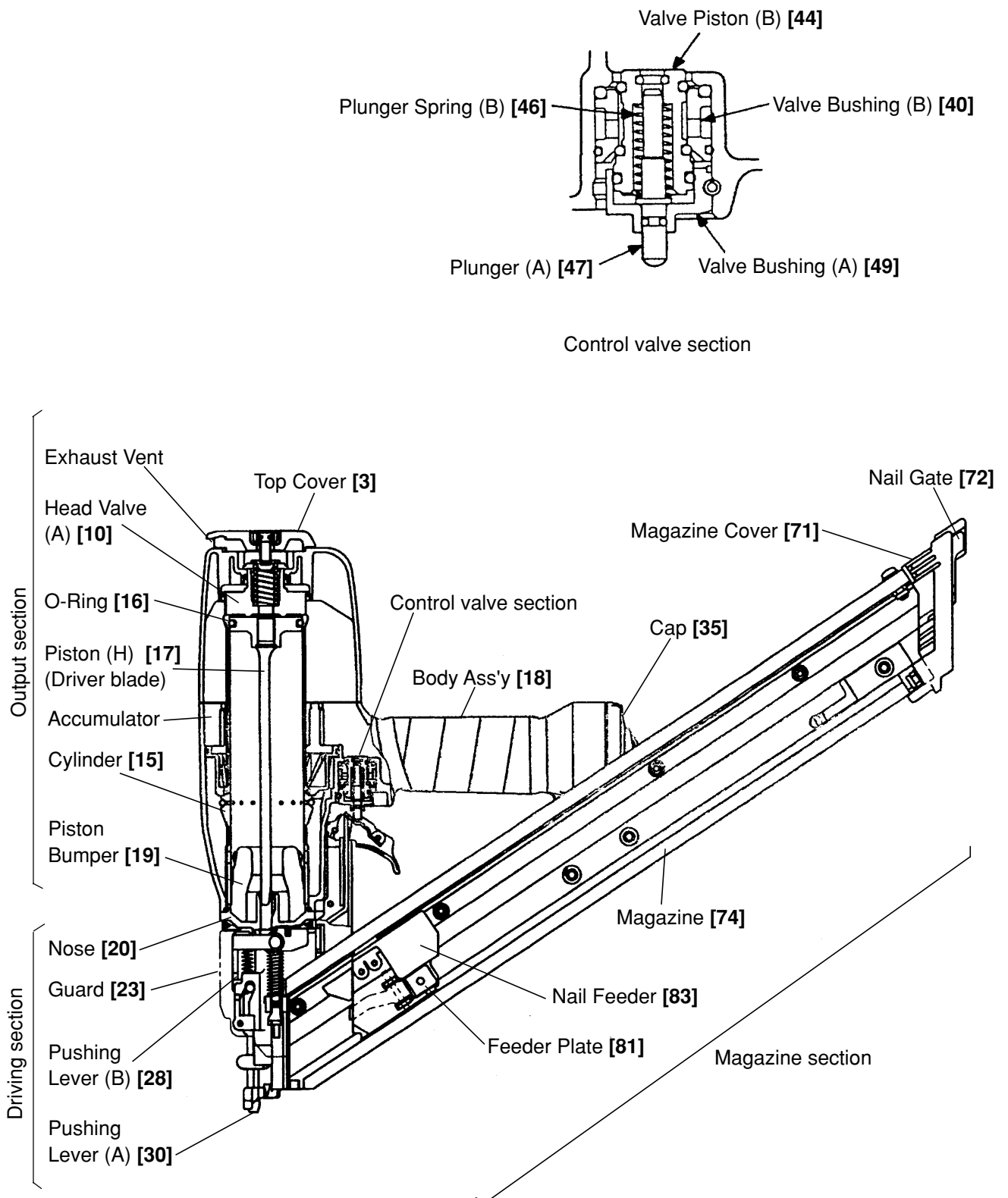


Fig. 6 Construction

8-2. New Mechanism

(1) Pushing lever mechanism

- (a) The tip of Pushing Lever (A) [30] is at the back of the nail point after loading nails in the Magazine [74]. Thus, the nail point can be easily inserted into the hole in the metal connector (Fig. 7).

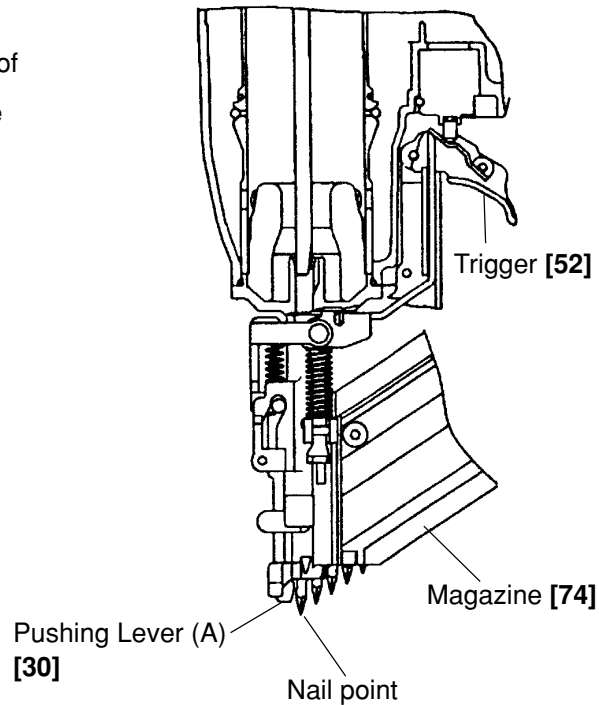


Fig. 7

- (b) After inserting the nail point into the hole in the metal connector, pull the Trigger [52] to make the tip of Pushing Lever (A) [30] contact with the surface of the metal connector. Then the Trigger Arm [50] pushes up Plunger (A) [47] and the nailer is started to drive nails (Fig. 8).

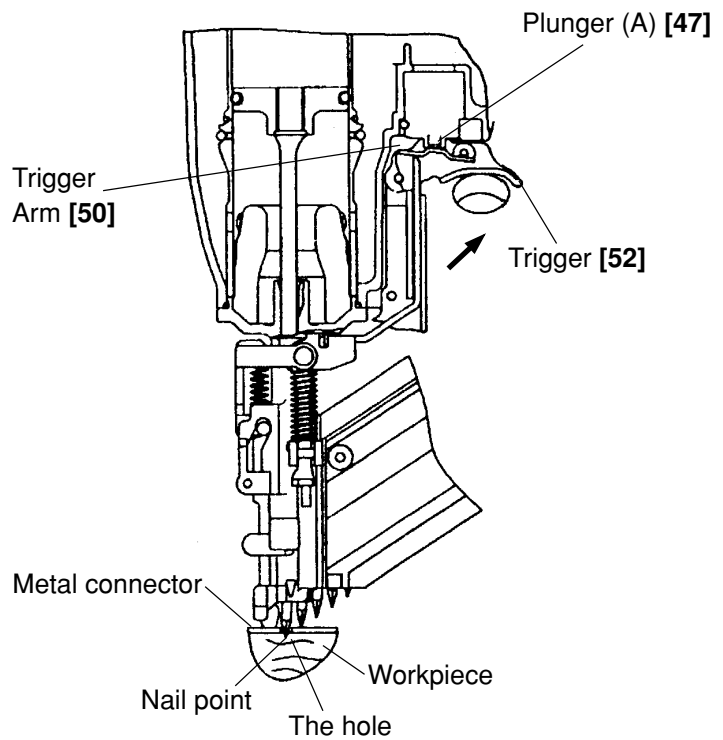


Fig. 8

(c) By pulling the Trigger [52] when there is no workpiece near the nail point, the Trigger Arm [50] pushes up Pushing Lever (C) [24] and at the same time Pushing Levers (A) and (B) [30] and [28] move. At this time, Pushing Lever (B) [28] turns in the direction going far from Pushing Lever (A) [30] through the guide groove of the Nose [20]. Thus Pushing Lever (B) [28] comes off the groove of Pushing Lever (A) [30] (Fig. 9).

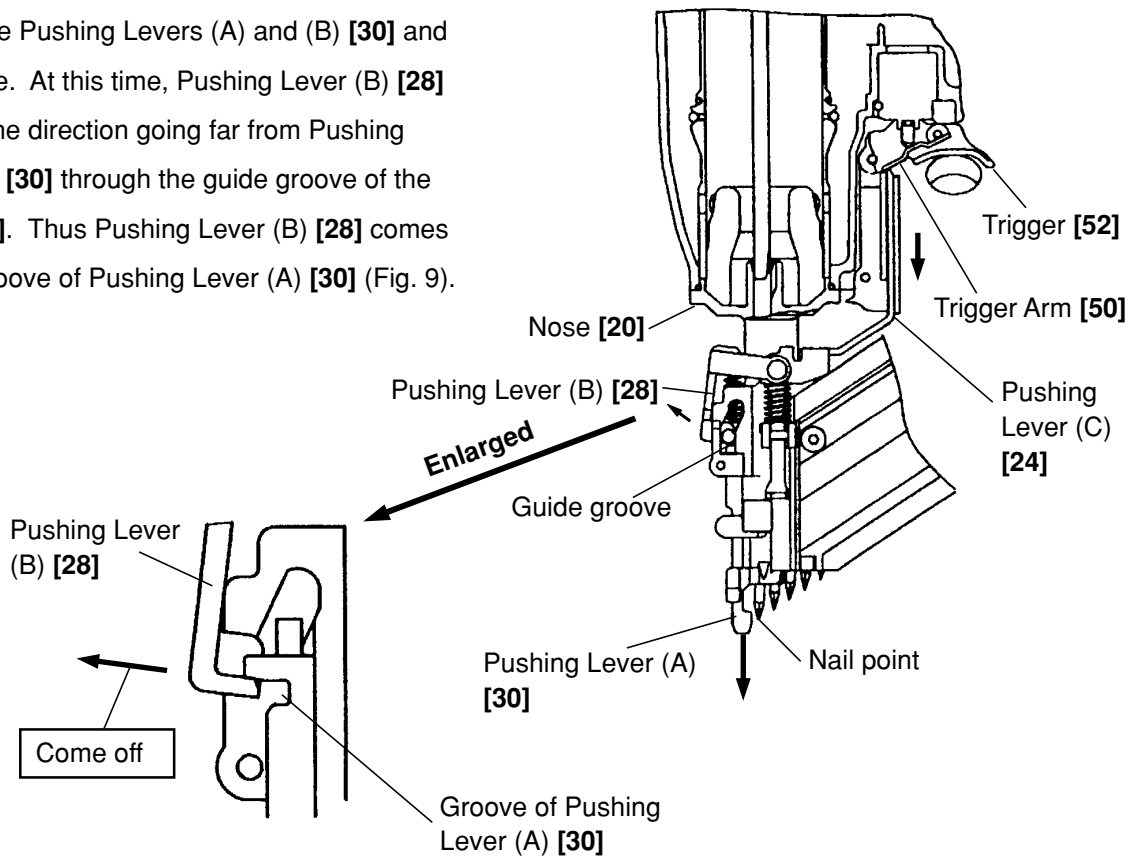


Fig. 9

(d) Push up the tip of Pushing Lever (A) [30]. Then only Pushing Lever (A) [30] moves while Pushing Levers (B) and (C) [28] and [24] do not move. Since Plunger (A) [47] is not pushed up, the nailer does not start (Fig. 10).

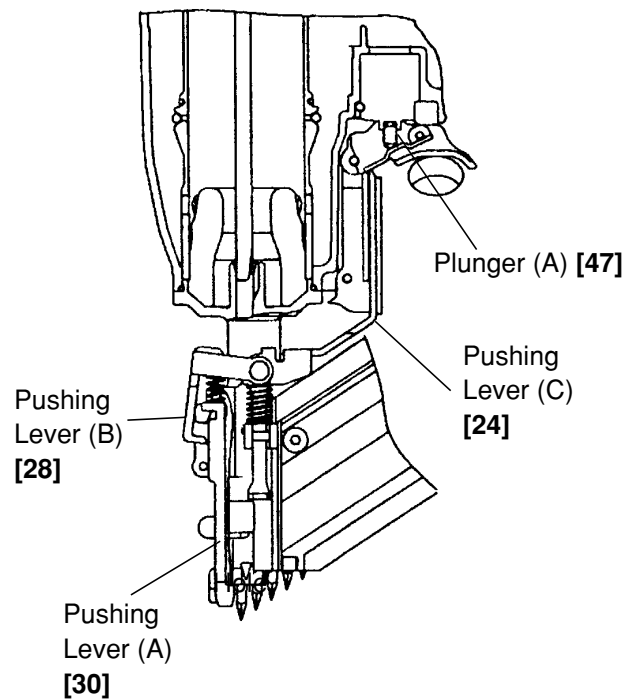


Fig. 10

(2) Lockout feature mechanism

This tool is equipped with a lockout feature that prevents the tool from being activated when there are 4 or less nails in the Magazine [74].

When the number of nails in the Magazine [74] becomes five or less, the Pushing Lever Stopper [80] moves the bent portion of Pushing Lever (C) [24] downward. The status of Pushing Lever (C) [24] at this time is shown in Fig. 10. Thus the nailer does not start even if the Trigger [52] is pulled or the pushing lever is pushed up.

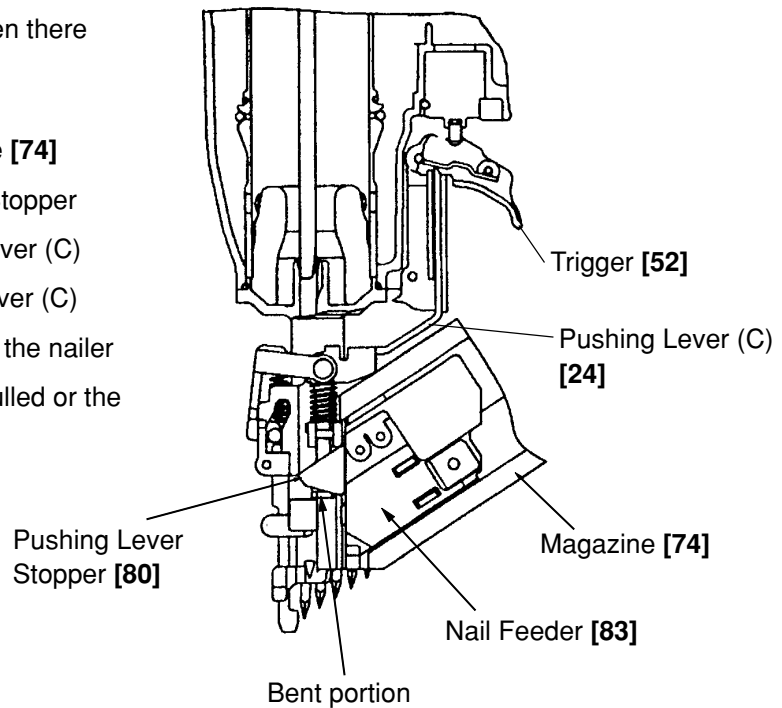


Fig. 11

(3) Nail gate mechanism

(a) When nails are loaded in the Magazine [74], the end of the Shaft [59] is inserted into the groove of the Nail Gate [72] and the Nail Gate [72] cannot move. Therefore, only the nails whose lengths match the position of the Nail Gate [72] can be loaded in the Magazine [74] (Fig. 12).

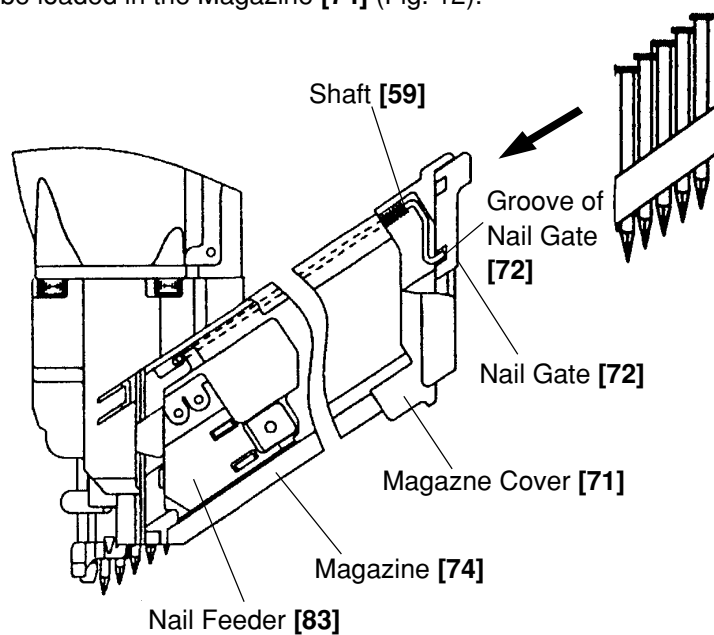


Fig. 12

(b) When no nails are loaded in the Magazine [74]:

By removing all the nails from the Magazine [74], the Nail Feeder [83] pushes the end of the Shaft [59] toward the Nose [20] and the end of the Shaft [59] comes off the groove of the Nail Gate [72]. Thus the Nail Gate [72] can be moved (Fig. 13). Nails of different length can be loaded by moving the Nail Gate [72].

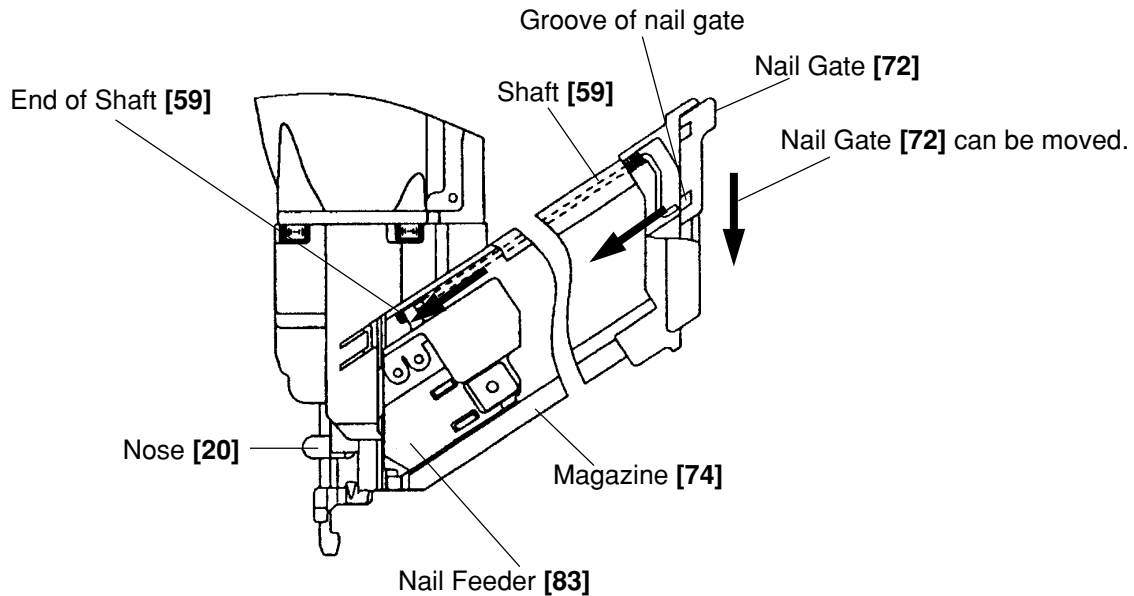
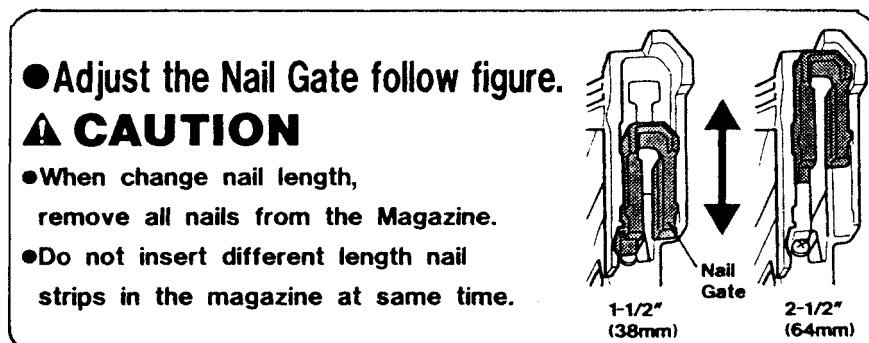



Fig. 13

The following label that lists precautions in the use of the Nail Gate [72] is provided on the Magazine [74]. Ensure that the customers fully understand and follow these precautions before using the tool.




8-3. Operation Principle

(1) Before nailing: (Fig. 14 and Fig. 15)

- 1) When compressed air is fed to the main body, it fills the accumulator ().
- 2) At the same time, the compressed air flows into the valve piston lower chamber of the control valve section and forces Valve Piston (B) [44] upward. Also, the compressed air is fed through the air supply vent and air passage to the head valve chamber. As a result, the Head Valve Spring [8] is pushed down together to seal Head Valve (A) [10] and Cylinder [15].

(2) When nailing: (Fig. 14 and Fig. 15)

- 1) When Pushing Lever (A) [30] and Trigger [52] are operated together and Plunger (A) [47] is pushed upward, the compressed air in the valve piston lower chamber is discharged from the bottom of Plunger (A) [47]. As a result, the compressed air in the accumulator () pushes down Valve Piston (B) [44], blocking the air supply vent and opening the exhaust valve.
- 2) When the exhaust valve opens, the compressed air in the head valve chamber is discharged into the atmosphere through the air passage.
- 3) When the air pressure applied on the bottom surface of Head Valve (A) [10] overcomes the strength of the Head Valve Spring [8], Head Valve (A) [10] is pushed upward. At this time, Head Valve (A) [10] seals the Exhaust Cover [5], blocking the passage to the exhaust vent.
- 4) When Head Valve (A) [10] goes up, the compressed air in the accumulator flows rapidly into the Cylinder [15], forcing Piston (H) [17] downward to strike the nail. When Piston (H) [17] passes the cylinder hole, the compressed air flows into the return air chamber and is accumulated there.

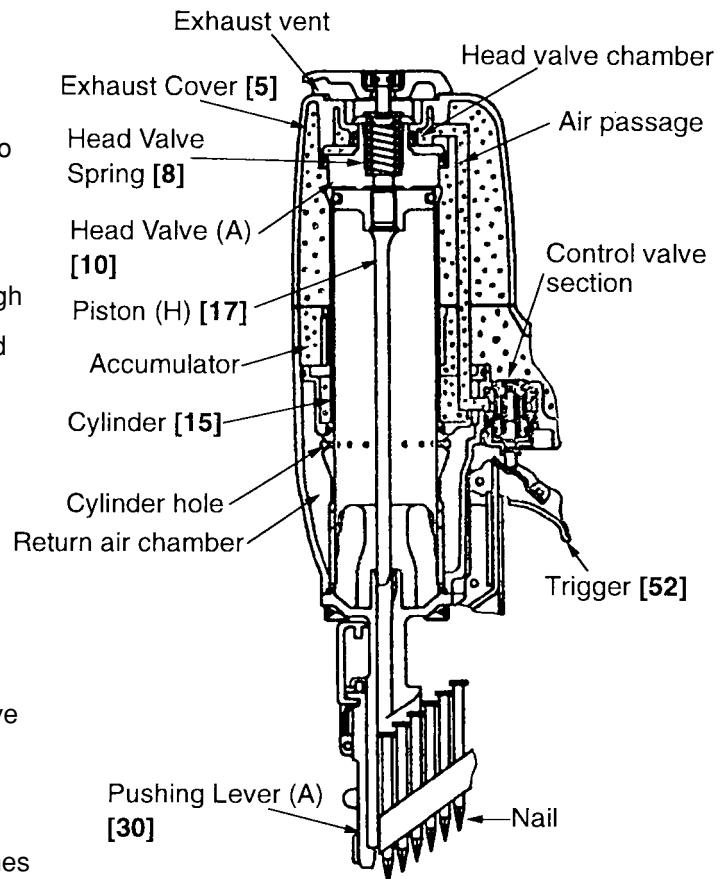


Fig. 14

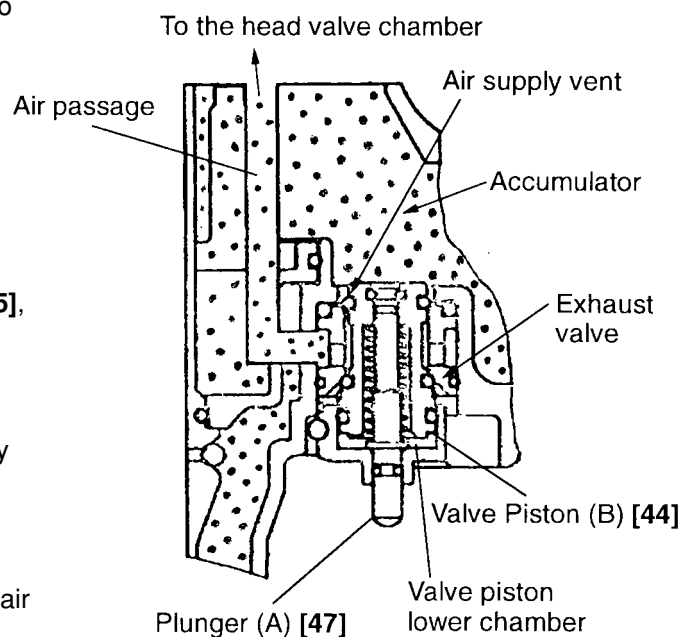


Fig. 15 Control valve section

(3) During return: (Fig. 16 and Fig. 17)

- 1) When either Pushing Lever (A) [30] or Trigger [52] is released, Plunger (A) [47] goes down and the compressed air in the accumulator flows into the valve piston lower chamber.
- 2) As the air pressure in the valve piston lower chamber increases to overcome the air pressure applied on the upper portion of Valve Piston (B) [44], Valve Piston (B) [44] is forced upward. When this occurs, the exhaust valve is closed and the air supply vent is opened.
- 3) When the air supply vent opens, the compressed air in the accumulator (: : :) passes through the air passage and flows into the head valve chamber to push down Head Valve (A) [10]. As a result, Head Valve (A) [10] and Cylinder [15] are sealed and, at the same time, Head Valve (A) [10] and Exhaust Cover [5] are released to open the exhaust vent.
- 4) The compressed air at the upper portion of Piston (H) [17] is discharged into the atmosphere through the exhaust vent. In this way, the air pressure at the upper portion of Piston (H) [17] is reduced, and the greater pressure of the air accumulated in the return air chamber pushes Piston (H) [17] upward.
- 5) If the air pressure at the lower portion of Piston (H) [17] is higher than that of the atmosphere after Piston (H) [17] has fully returned, the excess air pressure is discharged into the atmosphere through the clearance between the Piston Bumper [19] and the driver blade.

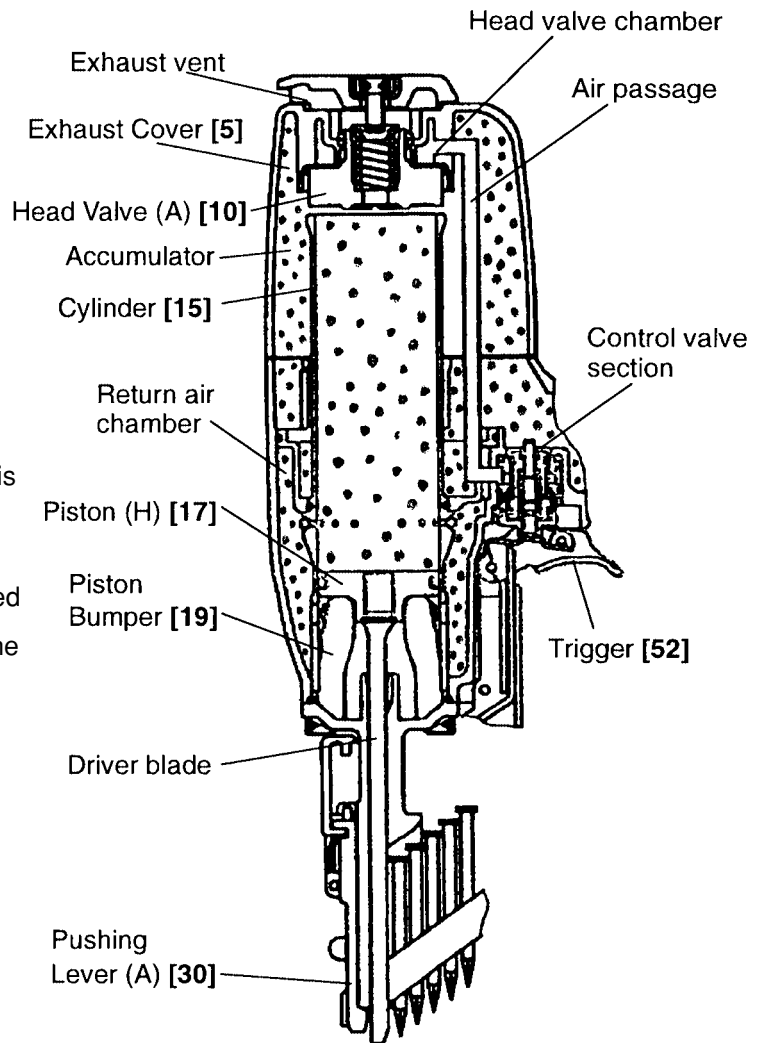


Fig. 16

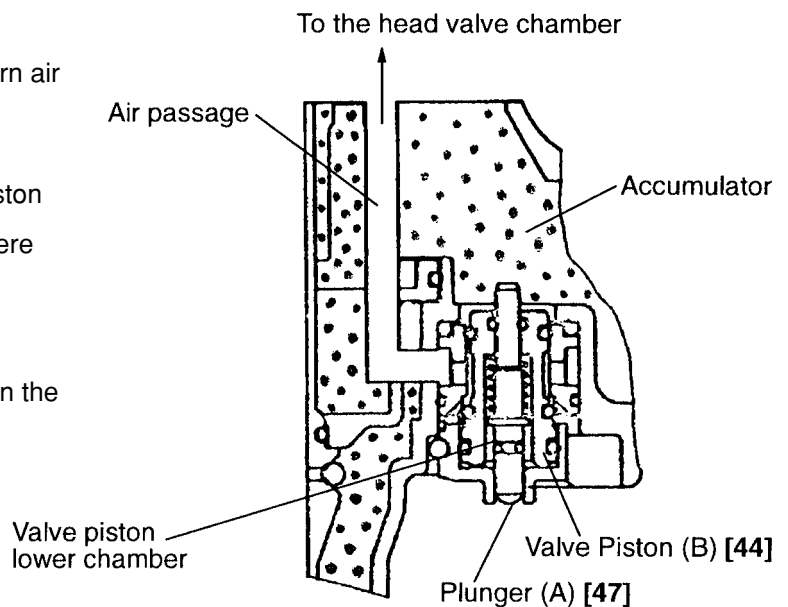


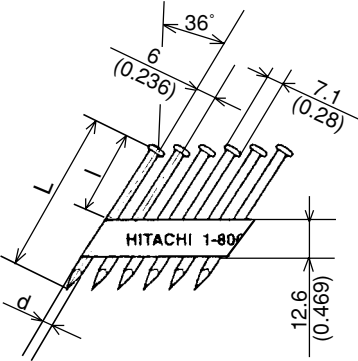
Fig. 17 Control valve section

9. TROUBLESHOOTING GUIDE

9-1. Troubleshooting and Correction

Problem	Possible cause (* : Most-common cause)	Inspection method	Remedy
1) Nails cannot be driven.	<Nails> <ul style="list-style-type: none"> • Magazine is not loaded with specified genuine nails. • Magazine is loaded with abnormal nails (bent nails, large or small round-head nails, abnormal collation, etc.). • Nails or collating band clogs. • Collating band is deformed or torn. 	<ul style="list-style-type: none"> • Check if the magazine is normally loaded with specified nails. 	<ul style="list-style-type: none"> • Use specified nails. • Remove the abnormal nails and load the magazine with normal nails.
	<Magazine section> <ul style="list-style-type: none"> • Magazine is abnormal (deformed or damaged). • Nail feeder is abnormal (deformed or damaged). • Ribbon spring is abnormal (deformed or damaged). • Guide plate is abnormal (deformed, burrs, damaged or fatigued). • Nail rail is abnormal (deformed, burrs, damaged or fatigued). • Adhesive fragments are on the guide plate and the nail rail or they need oil. 	<ul style="list-style-type: none"> • Check if the nail feeder operates smoothly in the magazine. • Check if nails (one strip) move smoothly in the magazine. 	<ul style="list-style-type: none"> • Repair or replace the defective parts. • Remove the adhesive fragments and apply oil to the nail feeder, ribbon spring, guide rail and the nail rail.
	<Driving section: nose, pushing lever> <ul style="list-style-type: none"> • Nail inlet groove of the nose is abnormal (deformed, burrs or damaged). • Adhesive fragments are in the nail inlet groove. 	<ul style="list-style-type: none"> • Check if nails (one strip) are fed smoothly into the nail injection port of the nose. 	<ul style="list-style-type: none"> • Repair or replace the defective part. • Remove the adhesive fragments.
	<ul style="list-style-type: none"> • Pushing lever 	<ul style="list-style-type: none"> • Check the operation of the pushing lever. 	<ul style="list-style-type: none"> • Correct or replace the parts.

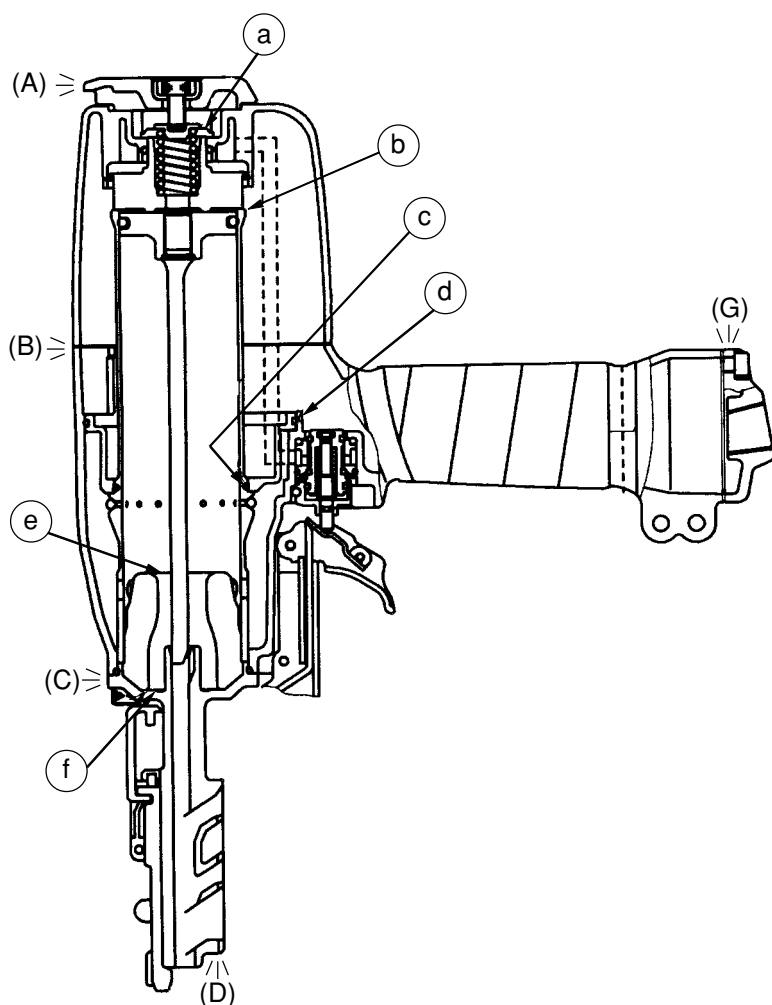
Problem	Possible cause (* : Most-common cause)	Inspection method	Remedy
1) Nails cannot be driven. (continued)	*• Air passage is clogged with broken pieces of piston bumper, etc.		<ul style="list-style-type: none"> • Remove foreign matter. • Replace the piston bumper with new one. • Body ... Remove foreign matter in the return air chamber. • Nose ... Remove foreign matter in the air passage and the feed piston chamber.
2) Nails are driven but bent.	<ul style="list-style-type: none"> • Nails are not completely fed into the injection port. *• Unspecified nails are used. 	<ul style="list-style-type: none"> • See item 1). 	<ul style="list-style-type: none"> • See item 1).
	*• Driver blade is worn.	<ul style="list-style-type: none"> • Check that the driver blade tip is not abnormally worn. 	<ul style="list-style-type: none"> • Replace the part.
	• Workpiece is too hard.	<ul style="list-style-type: none"> • Check if a nail is bent even when driven into soft wood. 	<ul style="list-style-type: none"> • Nailer cannot be used because the material is beyond its applicable range.
3) Nails cannot be driven into the workpiece completely: the heads cannot be made flush.	• Air pressure is too low.		<ul style="list-style-type: none"> • Adjust air pressure to 5.4 – 8.3 bar (5.5 – 8.5 kgf/cm², 80 – 120 psi).
	• Workpiece is too hard.	<ul style="list-style-type: none"> • Check if a nail is bent even when driven into soft wood. 	<ul style="list-style-type: none"> • Nailer cannot be used because the material is beyond its applicable range.
	*• Driver blade is worn.	<ul style="list-style-type: none"> • Perform idle driving to check the driver blade is projected from the nose tip. 	<ul style="list-style-type: none"> • Replace the part.
	<ul style="list-style-type: none"> *• O-ring in the piston is abnormal (worn or damaged). • Cylinder inside surface is abnormal (worn or rough). 	<ul style="list-style-type: none"> • Disassemble the output section and check the O-ring and the inside of the cylinder for abnormality. 	<ul style="list-style-type: none"> • Replace the abnormal part.
	• Cylinder plate or O-ring is abnormal (removed, deformed or damaged).	<ul style="list-style-type: none"> • Disassemble the cylinder plate and check for abnormality. 	<ul style="list-style-type: none"> • Replace the abnormal part.
	• Head valve sliding surface is abnormal (seized or damaged, or lubrication is needed).	<ul style="list-style-type: none"> • Check the sliding surface for abnormality and lubrication. 	<ul style="list-style-type: none"> • Replace the abnormal part. Apply grease.

Problem	Possible cause (* : Most-common cause)	Inspection method	Remedy																				
3) Nails cannot be driven into the workpiece completely: the heads cannot be made flush. (continued)	<Output section:piston, driver blade, etc.> • Air pressure is too low.	• Pull the nail feeder backward and perform idle driving to check that the driver blade is returned.	• Adjust the air pressure to 5.4 – 8.3 bar (5.5 – 8.5 kgf/cm ² , 80 – 120 psi).																				
	*•O-ring in the piston is abnormal (worn or damaged).		• Replace the O-ring.																				
	*•Piston bumper is abnormal.		• Replace the piston bumper.																				
	• O-ring in the cylinder is abnormal (removed, deformed or damaged).		• Reassemble or replace the parts.																				
	• Driver blade is abnormal (deformed, burrs or damaged).		• Correct or replace the part.																				
	• Cylinder inside surface is abnormal (packed with dust, or worn).	• Check that nails can be driven at 5.4 bar (5.5 kgf/cm ² , 80 psi).	• Remove dust and then lubricate. • Replace the part.																				
	• Head valve sliding surface is abnormal (seized or damaged, or lubrication is needed).	• Perform idle driving to check the driving operation.	• Replace the part. • Apply grease.																				
	• Head valve spring is abnormal (fatigued or damaged).	• Perform idle driving to check that the driver blade is not held in the down position.	• Replace the part.																				
	<Control valve section> • Plunger (A), valve piston (B), valve bushing (A) or valve bushing (B) is abnormal (seized or damaged).	• Disassemble the control valve section and check the O-rings.	• Replace the defective part.																				
	• O-ring or sliding surface is worn or needs lubrication.		• Replace the abnormal part. • Apply grease.																				
4) Nails jam.	<Nails> *• Unspecified nails are used. *• Abnormal nails are mixed. *• Nail heads are too large or too small. • Collating paper are abnormal (broken, welding failed, deformed or welding position failed). *• Collating paper are deformed (deformed in collation angle or collation pitch).	• Check if the specified nails are used. Check the nails as follows. 	• Use specified nails. • Remove the abnormal nails and load the nailer with proper nails.																				
<div style="text-align: right;">UNIT: mm (inch)</div> <table border="1"> <thead> <tr> <th>Type</th><th>d</th><th>L</th><th>l</th></tr> </thead> <tbody> <tr> <td>Ⓐ</td><td>3.3 (0.131)</td><td>38 (1-1/2)</td><td>8 (0.315)</td></tr> <tr> <td>Ⓑ</td><td>3.8 (0.148)</td><td>38 (1-1/2)</td><td>8 (0.315)</td></tr> <tr> <td>Ⓒ</td><td>3.8 (0.148)</td><td>64 (2-1/2)</td><td>33.4 (1.315)</td></tr> <tr> <td>Ⓓ</td><td>4.1 (0.162)</td><td>64 (2-1/2)</td><td>33.4 (1.315)</td></tr> </tbody> </table>				Type	d	L	l	Ⓐ	3.3 (0.131)	38 (1-1/2)	8 (0.315)	Ⓑ	3.8 (0.148)	38 (1-1/2)	8 (0.315)	Ⓒ	3.8 (0.148)	64 (2-1/2)	33.4 (1.315)	Ⓓ	4.1 (0.162)	64 (2-1/2)	33.4 (1.315)
Type	d	L	l																				
Ⓐ	3.3 (0.131)	38 (1-1/2)	8 (0.315)																				
Ⓑ	3.8 (0.148)	38 (1-1/2)	8 (0.315)																				
Ⓒ	3.8 (0.148)	64 (2-1/2)	33.4 (1.315)																				
Ⓓ	4.1 (0.162)	64 (2-1/2)	33.4 (1.315)																				

Problem	Possible cause (* : Most-common cause)	Inspection method	Remedy
4) Nails jam. (continued)	<Driver blade is not returned completely.> <ul style="list-style-type: none"> • See item "1) Output section: piston, driver blade, etc." 	<ul style="list-style-type: none"> • Perform idle or actual driving to check if the driver blade is returned completely. 	<ul style="list-style-type: none"> • See item "1) Output section: piston, driver blade, etc."
	<ul style="list-style-type: none"> • Air pressure is too high. 	<ul style="list-style-type: none"> • Nails may be jammed if driven at a high pressure and high speed. Check pressure and driving speed. 	<ul style="list-style-type: none"> • Adjust the air pressure to 4.9 – 8.3 bar (5 – 8.5 kgf/cm², 70 – 120 psi).

9-2. Possible Causes and Corrections of Air Leakage

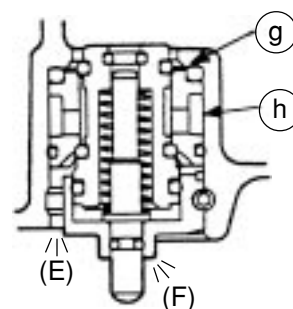
Air leakage repair location



• Repair procedure

- (1) Check the points of the following parts marked by an asterisk for abnormal condition.
- (2) Next, check the seal parts (marked with a double circle) for wear, flaws or damage.
- (3) And then, check other places.

Control valve section



Air leakage points	Possible cause	
	With control valve OFF	With control valve ON
(A) Exhaust port	<ul style="list-style-type: none"> ⊙ Head Valve (A) [10] and Cylinder [15] are abnormal (seal surface of the (b) portion is worn or deformed). ⊙ The O-ring [9] is abnormal (worn, deformed or damaged). • Head Valve (A) [10] is abnormal (worn, deformed or damaged). 	<ul style="list-style-type: none"> ⊙ Head Valve (A) [10] is abnormal ((a) portion is worn, deformed or broken). * The Exhaust Cover [5] is abnormal ((a) portion is deformed or clogged with dust).
(B) Exhaust cover	<ul style="list-style-type: none"> • The Hex. Socket Hd. Bolt M5 x 35 [4] is loose. ⊙ Gasket (B) [6] is damaged. • The seal surface of the Body Ass'y [18] or the Exhaust Cover [5] is abnormal. 	

Air leakage points	Possible cause	
	With control valve OFF	With control valve ON
(C) Nose (I)		<ul style="list-style-type: none"> ⊙ The O-Ring [13] of the Body Ass'y [18] is abnormal (broken or damaged). • The Nylock High Tension Bolt M6 x 20 [21] is loose. • The seal surface of the Body Ass'y [18] or the Nose [20] is abnormal (broken, deformed or scratched).
(D) Nose (II)	<ul style="list-style-type: none"> ⊙ The O-Ring (S-70) [11] of the Cylinder Plate [12] is abnormal (broken or damaged). ⊙ The O-Ring (S-46) [13] of the Cylinder [15] is abnormal (broken or damaged). • The seal surface of the Body Ass'y [18], Cylinder Plate [12] or Cylinder [15] is abnormal (⊙ or ⊕ portion). 	<ul style="list-style-type: none"> ⊙ The Piston Bumper [19] is abnormal (⊕ or ⊖ portion is damaged, deformed or cracked). • Piston (H) [17] is abnormal (driver blade or sealed face is deformed). • The ⊖ surface of the Body Ass'y [18] is deformed.
(E) Control valve (I)	<ul style="list-style-type: none"> ⊙ The O-Ring [45] on Valve Piston (B) [44] is abnormal (worn, broken or damaged). ⊙ The lower O-Ring [42] on Valve Piston (B) [44] is abnormal (worn, broken or damaged). ⊙ The O-Ring (S-18) [41] on Valve Bushing (B) [40] is abnormal (broken or damaged). * The inside surface of the valve chamber of the Body Ass'y [18] is abnormal. 	<ul style="list-style-type: none"> ⊙ The upper O-Ring [42] on Valve Piston (B) [44] is abnormal (worn, broken or damaged). ⊙ The Head Valve O-Ring [39] on Valve Bushing (B) [40] is abnormal (broken or damaged). * The top surface of the valve chamber of the Body Ass'y [18] is abnormal (⊕ portion).
(F) Control valve (II)	<ul style="list-style-type: none"> ⊙ The O-Ring [48] on Plunger (A) [47] is abnormal (worn, broken or damaged). • Valve Bushing (A) [49] is abnormal (sliding surface of Plunger (A) [47] is deformed or scratched). 	<ul style="list-style-type: none"> ⊙ The inside of the O-Ring [43] on Valve Piston (B) [44] is abnormal (worn, broken or damaged). Plunger (A) [47] is abnormal (sliding surface is deformed or scratched).
(G) Cap	<ul style="list-style-type: none"> ⊙ Gasket (B) [34] is damaged. • The Hex. Socket Hd. Bolt M5 x 16 [36] is loose. • Seal surface of the Body Ass'y [18] or the Cap [35] is abnormal (damaged, deformed or flawed). 	

10. DISASSEMBLY AND REASSEMBLY

The items particularly necessary for disassembly and reassembly are described below. The **[Bold]** numbers in the descriptions below correspond to the item numbers in the Parts List and exploded assembly diagram.

[CAUTION]

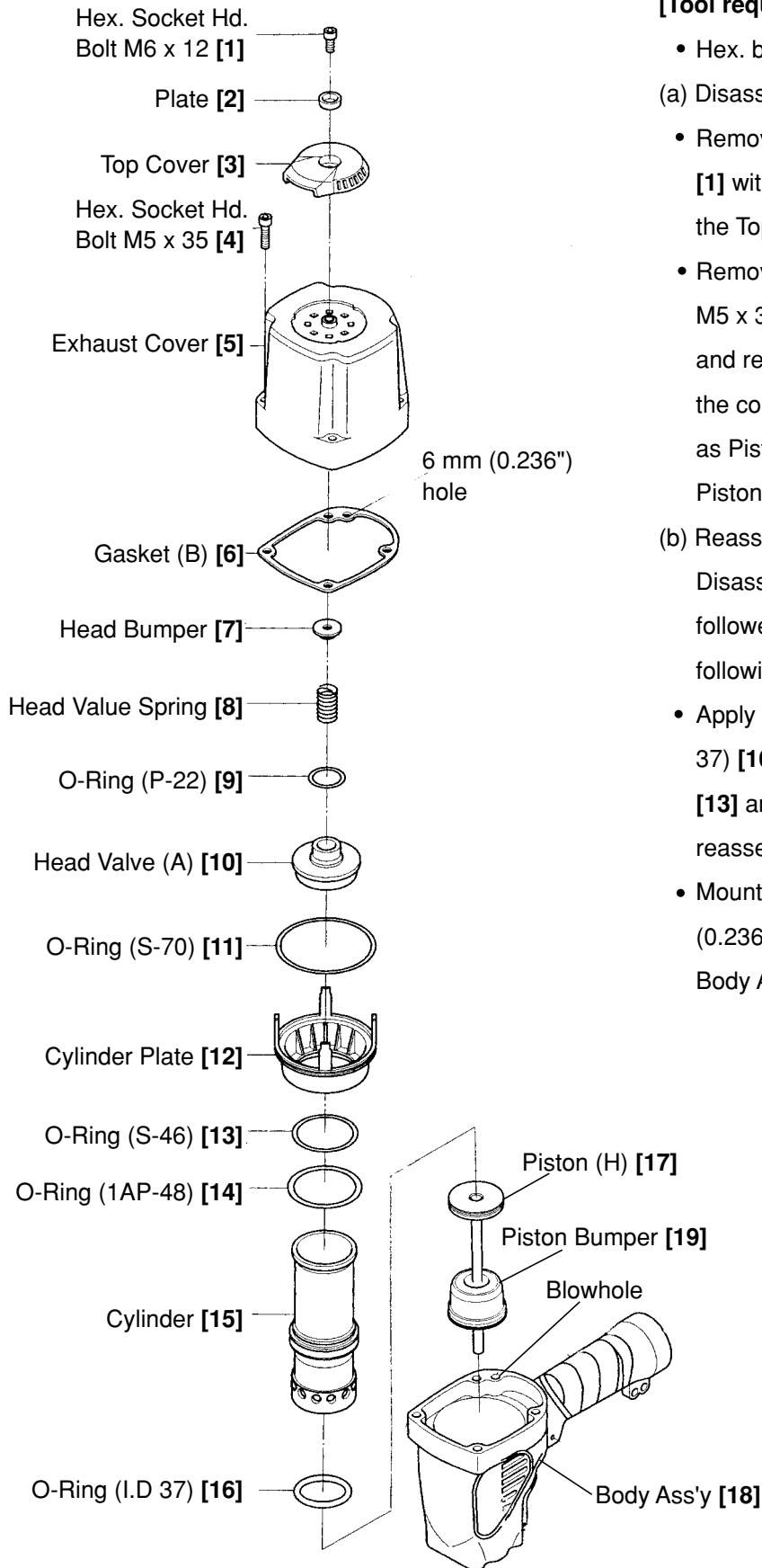
- Before disassembly or reassembly, be sure to disconnect the air hose from the nailer (with your finger released from the trigger) to exhaust all the compressed air and remove all nails.

10-1. General Precautions in Disassembly and Reassembly

- Apply grease (Nippeco SEP-3A, Code No. 930035) to the O-rings and O-rings' sliding portions. When installing the O-rings, be careful not to damage the O-rings and prevent dirt entry.
- Oil required: Hitachi pneumatic tool lubricant
 - 1 oz (30 cc) Oil feeder (Code No. 877153)
 - 4 oz (120 cc) Oil feeder (Code No. 874042)
 - 1 quart (1 ltr) Can (Code No. 876212)
- If Gasket (B) **[6]** is damaged, replace it and check that no air is leaking.
- Be especially careful to prevent the entry of foreign particles into the control valve section.
- Tightening torque for each part

Bolt, screw and cap	Tightening torque N•m (kgf•cm, ft-lbs)
Nylock High Tension Bolt M6 x 20 [21]	16.2 ± 1.5 (165 ± 15, 11.9 ± 1.1)
Hex. Socket Hd. Bolt M6 [1] [31]	9.8 ± 0.78 (100 ± 8, 7.2 ± 0.6)
Hex. Socket Hd. Bolt M6 x 12 [77]	7.8 ± 0.78 (80 ± 8, 5.8 ± 0.6)
Hex. Socket Hd. Bolt M5 x 16 [36]	6.3 ± 0.5 (65 ± 5, 4.7 ± 0.4)
Hex. Socket Hd. Bolt M5 x 35 [4]	8.3 ± 0.5 (85 ± 5, 6.2 ± 0.4)
Machine Screw (W/Washer) M5 [70] [73]	2.0 ± 0.5 (20 ± 5, 1.5 ± 0.4)
Hex. Socket Hd. Bolt M4 [62] [78]	4.4 ± 0.3 (45 ± 3, 3.3 ± 0.2)

10-2. Disassembly and Reassembly of the Output Section (See Fig. 18)



[Tool required]

- Hex. bar wrench (4 mm)

(a) Disassembly

- Remove the Hex. Socket Hd. Bolts M6 x 12 [1] with a hex. bar wrench (5 mm). Then the Top Cover [3] can be removed.
- Remove the four Hex. Socket Hd. Bolts M5 x 35 [4] with a hex. bar wrench (4 mm) and remove the Exhaust Cover [5]. Then the components of the output section such as Piston (H) [17], Cylinder [15] and the Piston Bumper [19] can be removed.

(b) Reassembly

Disassembly procedures should be followed in the reverse order. Note the following points:

- Apply grease to the inside of the O-ring (I.D 37) [16], O-ring (S-70) [11], O-ring (S-46) [13] and the Cylinder [15] before reassembly.
- Mount the Gasket (B) [6] aligning the 6 mm (0.236") dia. hole with the blowhole of the Body Ass'y [18].

Fig. 18 Disassembly and reassembly of the output section

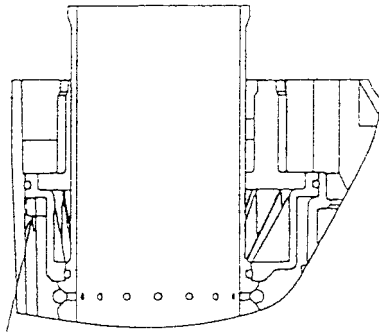


Fig. 19

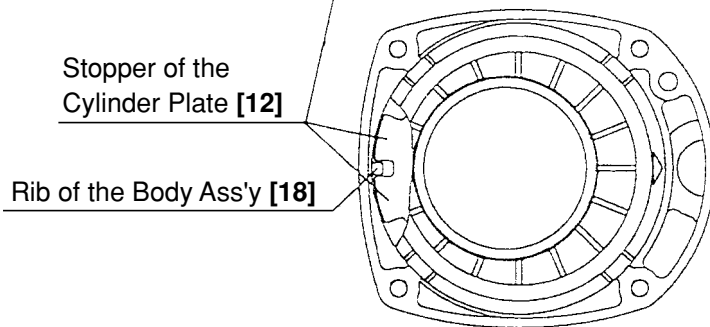


Fig. 20

- Mount the Cylinder Plate [12] to the Cylinder [15] facing the stopper of the Cylinder Plate [12] to the Piston Bumper [19]. When mounting to the Body Ass'y [18], fit the rib of the Body Ass'y [18] into the stopper groove of the Cylinder Plate [12] (Figs. 19 and 20).

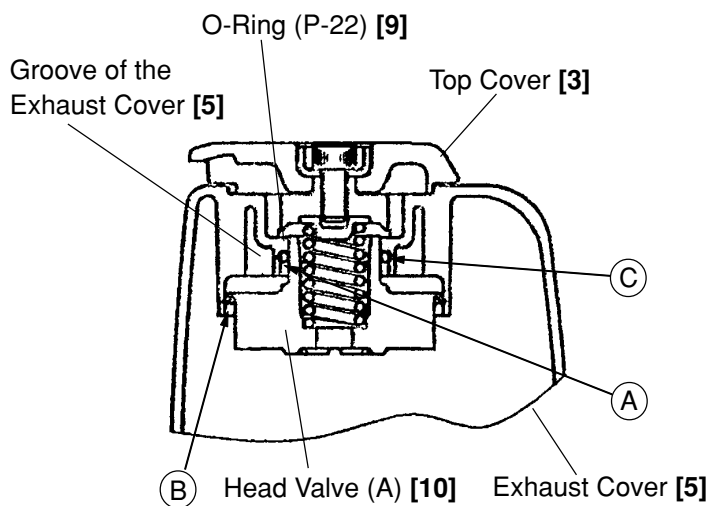


Fig. 21

- Apply grease to the sliding surface (A) of the Exhaust Cover [5] and Head Valve (A) [10] and charge about 0.5 g (0.018 oz) of grease in the groove of the Exhaust Cover [5] (Fig. 21).
- Apply grease to the lip portions (B) and (C) of Head Valve (A) [10] (Fig. 21).
- Apply grease to the O-Ring (P-22) [9]. Mount the O-Ring (P-22) [9] to Head Valve (A) [10], then mount it to the Exhaust Cover [5].

10-3. Disassembly and Reassembly of the Control Valve Section (See Fig. 22)

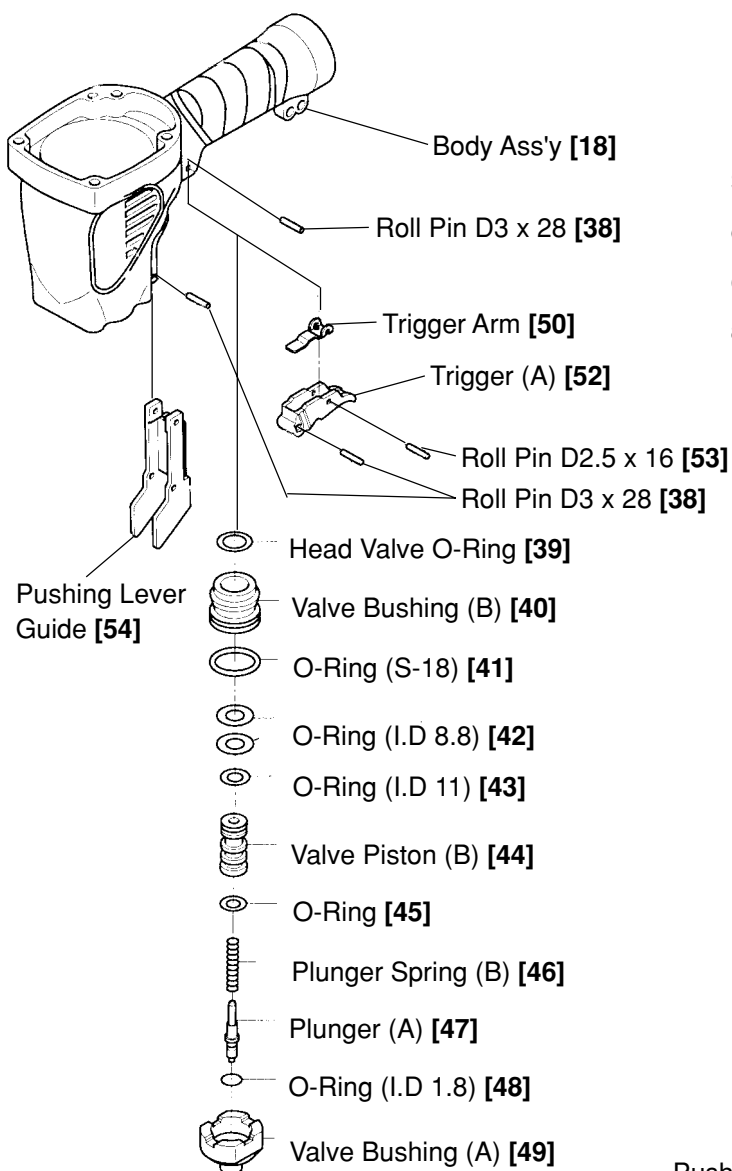


Fig. 22

[Tools required]

- Roll pin puller (3 mm (0.118 ") dia.)

[CAUTIONS]

Since Plunger Spring (B) [46] is specially designed for the Model NR 65AK, it is not common to the other nailers. Do not use another plunger spring for the Model NR 65AK. Plunger Spring (B) [46] is colored silver for identification.

(a) Disassembly

- Pull out the Roll Pin D3 x 28 [38] with the roll pin puller (3 mm (0.118") dia.), remove the Pushing Lever Guide [54], and the Trigger [52] can be removed.
- To remove the Pushing Lever Guide [54] together with the driving section (Pushing Lever (C) [24], the Nose [20], etc.), remove the Trigger [52] while forcing up Pushing Lever (C) [24], as shown in Fig. 22.

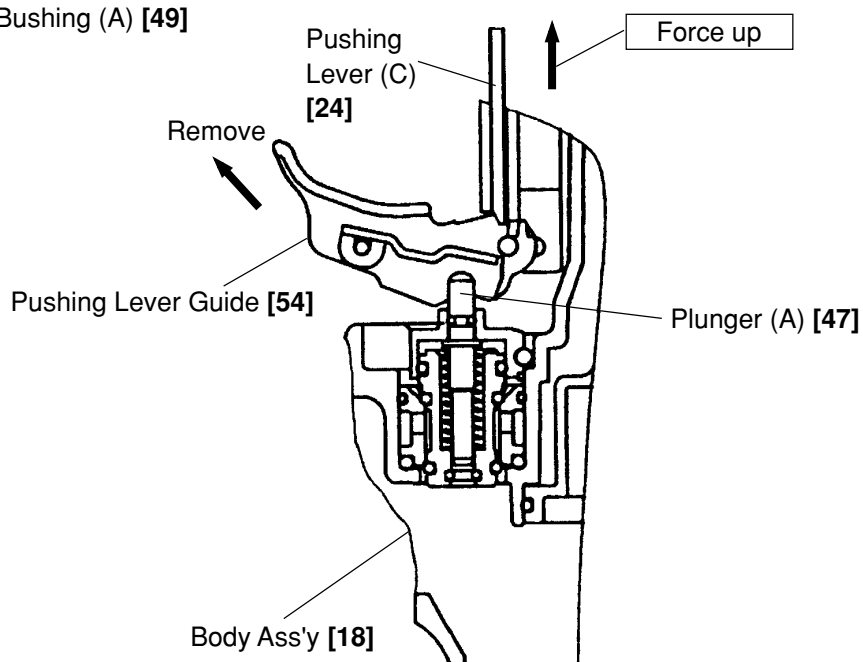


Fig. 23

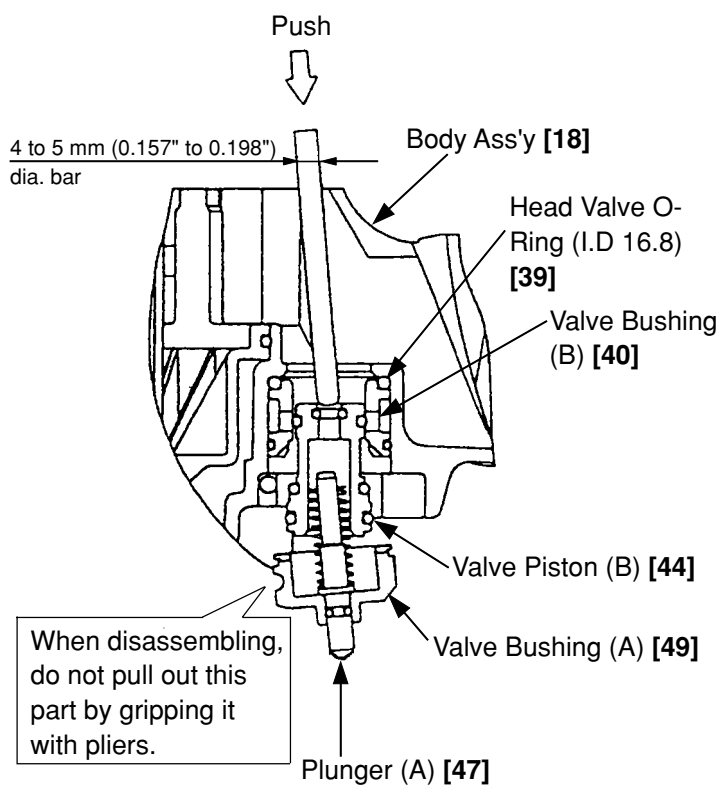


Fig. 24

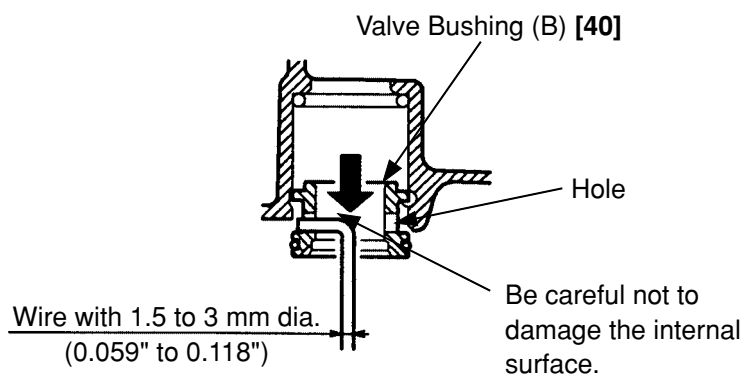


Fig. 25

- Pull out the Roll Pin D3 x 28 [38] with the roll pin puller (3 mm (0.118") dia.), and take out the control valve in the following manner.

- 1) Remove the Exhaust Cover [5] by following the procedure in (1), section 10-2.
- 2) As shown in Fig. 24, put a 4 to 5 mm (0.157 to 0.197") dia. bar in from the upper side of the Body Ass'y [18] and push the top of Valve Piston (B) [44]. Now, the parts forming the control valve can be taken out except Valve Bushing (A) [49] and the Head Valve O-Ring (I.D 16.8) [39].

[CAUTIONS]

- Be careful not to damage Valve Piston (B) [44], Valve Bushings (A) [49] and (B) [40], etc.
- Do not pull out the end of Plunger (A) [47] with pliers.

- 3) To take out Valve Bushing (B) [40], put a 1.5 to 3 mm (0.059" to 0.118") dia. wire with its end hooked into the hole in the bushing and pull it out while being careful not to damage the internal surface of Valve Bushing (B) [40], as shown in Fig. 25.

(b) Reassembly

Disassembly procedures should be followed in the reverse order. Note the following points:

- Be extremely careful to prevent the entry of foreign particles into the control valve section.
- Thoroughly apply grease to the O-Ring (I.D 1.8) [48] on Plunger (A) [47], O-Rings (I.D 11) [43], (S-18) [41] and (S-4) [45] on Valve Piston (B) [44], and the shaft of Plunger (A) [47] as shown in Fig. 26.
- As shown in Fig. 26, install Valve Bushing (A) [49] so that the roll pin groove in Valve Bushing (A) [49] will be aligned with the roll pin hole in the Body Ass'y [18]. First, insert a roll pin puller (3 mm (0.118 ") dia.) into the roll pin hole. Then, upon confirming that the puller passes through the hole, drive in the Roll Pin D3 x 28 [38].

If an attempt is made to drive the roll pin with force when the roll pin groove in Valve Bushing (A) [49] is not aligned with the roll pin hole in the Body Ass'y [18], it will damage the periphery of Valve Bushing (A) [49] and prevent disassembly or reassembly.

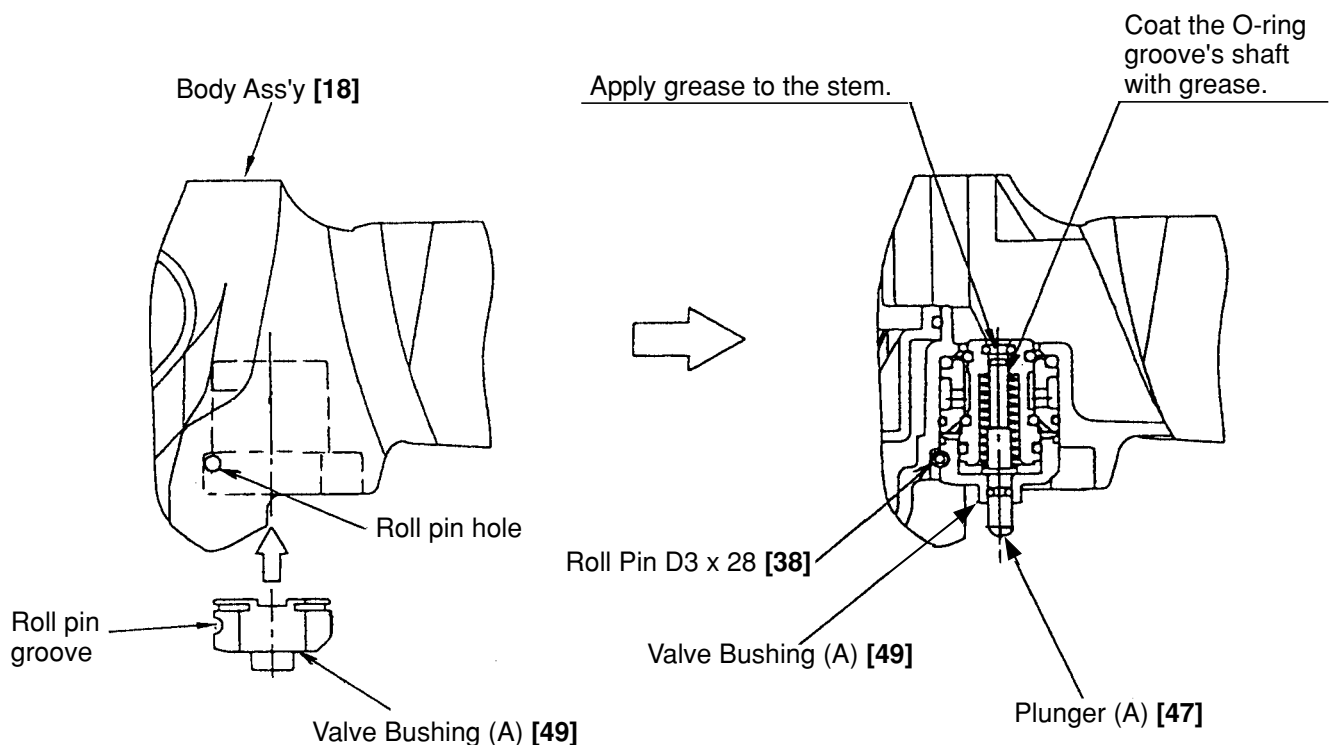


Fig. 26

- After assembling, check that Plunger (A) [47] moves smoothly.

10-4. Disassembly and Reassembly of the Driving Section (See Fig. 27)

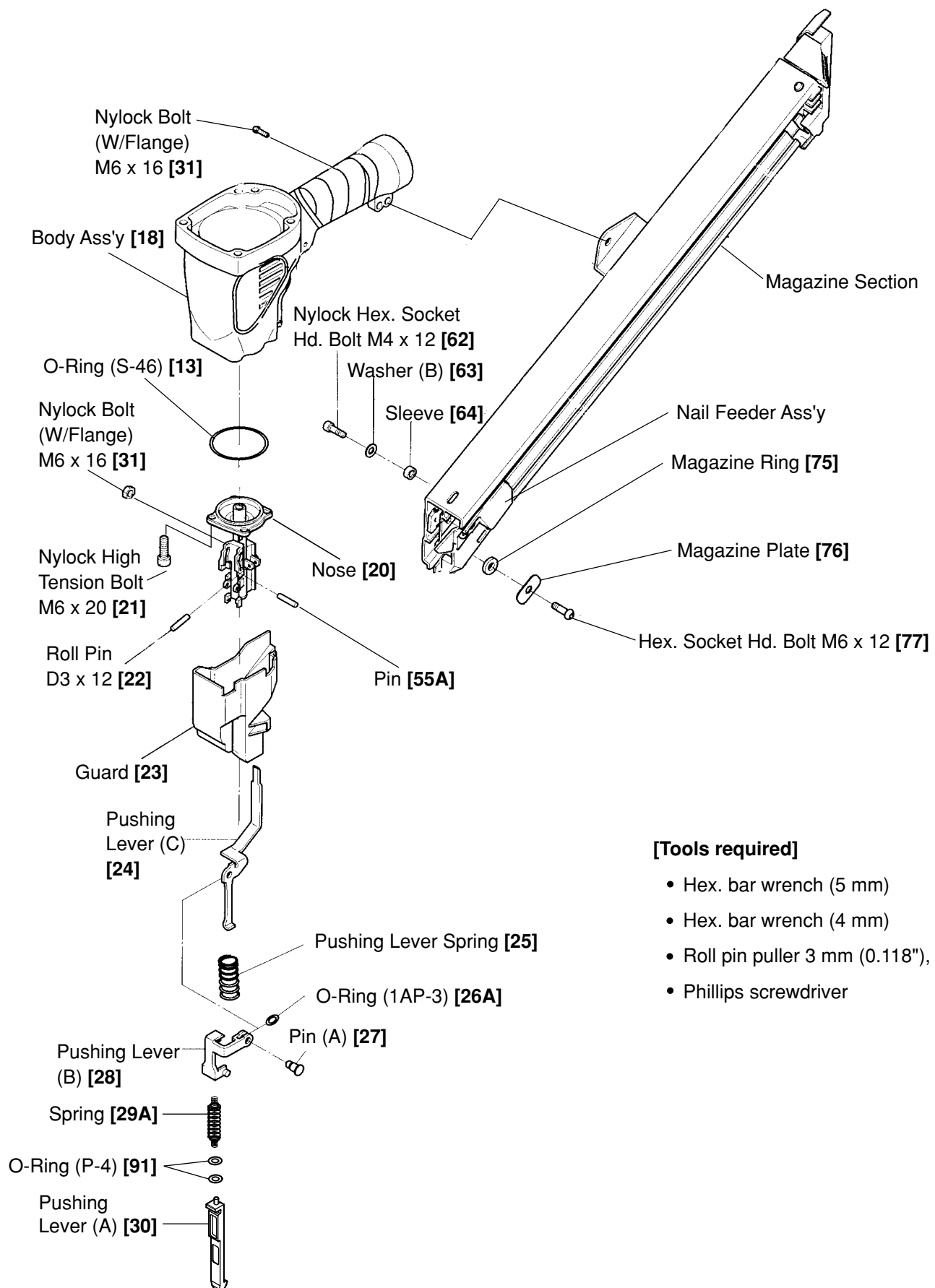


Fig. 27 Disassembly and reassembly of the driving section

(a) Disassembly

- Remove the Hex. Socket Hd. Bolt M6 x 12 [77] and Nylock Bolt (W/Flange) M6 x 16 [31] and take out the magazine section and the Guard [23].
- Remove the Nylock High Tension Bolt M6 x 20 [21] and take out the Nose [20].
- Pull out the Roll Pins D3 x 12 [22] and Pin [55A].

Remove Pin (A) [27] with a phillips screwdriver, then Pushing Lever (A) [30], Pushing Lever (B) [28] and Pushing Lever (C) [24] can be removed.

(b) Reassembly

Disassembly procedures should be followed in the reverse order. Note the following points.

- Apply grease to the O-ring (S-46) [13] and then install it.

- Fit the protrusion of Pushing Lever (B) [28] into the guide groove of the Nose [20] (Fig. 28).

- Fit the tip of Pushing Lever (B) [28] into the groove of Pushing Lever (A) [30] (Fig. 28).

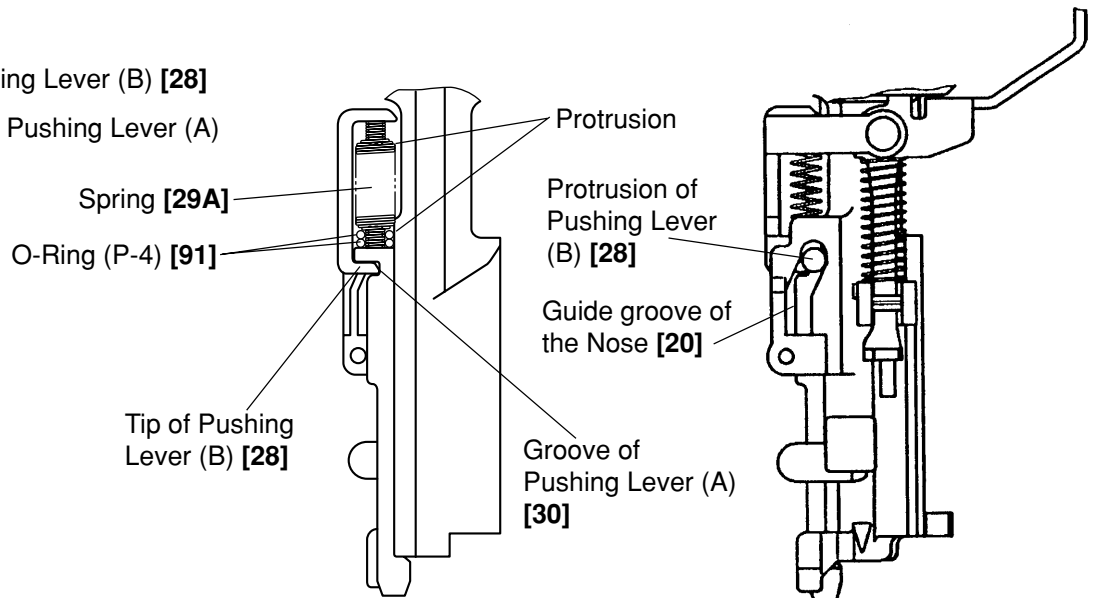


Fig.28

- Mount the Spring [29A] aligning with the protrusions of Pushing Lever (A) [30] and Pushing Lever (B) [28] (Fig. 28).

- After mounting the O-Ring (1AP-3) [26A], adjust the hole positions of Pushing Lever (B) [28] and Pushing Lever (C) [24] and insert Pin (A) [27] (Fig. 29).

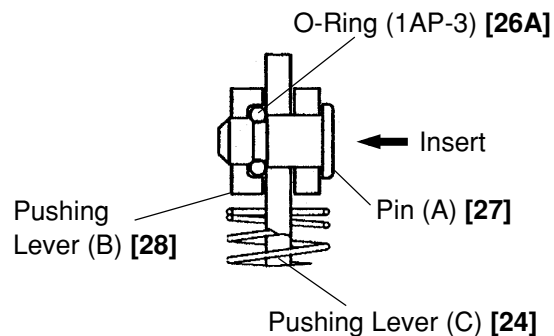


Fig.29

- Mount the Nose [20] to the Body Ass'y [18] inserting Pushing Lever (C) [24] into the hole of the Pushing Lever Guide [54] (Fig. 30).

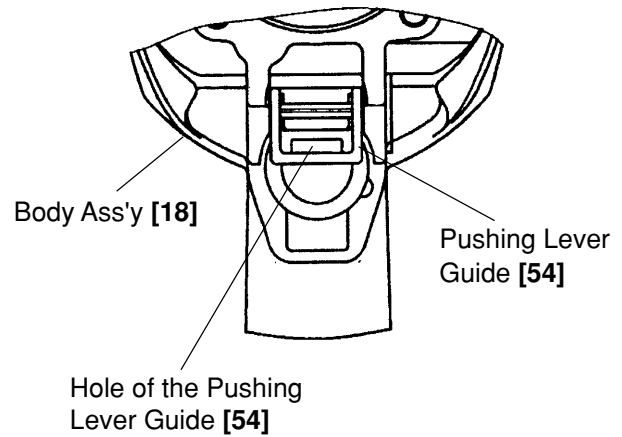


Fig.30

- To mount the magazine section to the Nose [20], insert the Magazine Ring [75] into the Magazine [74] and sandwich it between the Nose [20] and the Magazine Plate [76] then secure them with the Hex. Socket Hd. Bolt M6 x 12 [77] (Fig. 31).
- Insert the Sleeve [64] into the hole of the Guard [23] and put Washer (B) [63] on the Sleeve [64] then secure them with the Nylock Hex. Socket Hd. Bolt M4 x 12 [62] (Fig. 31).

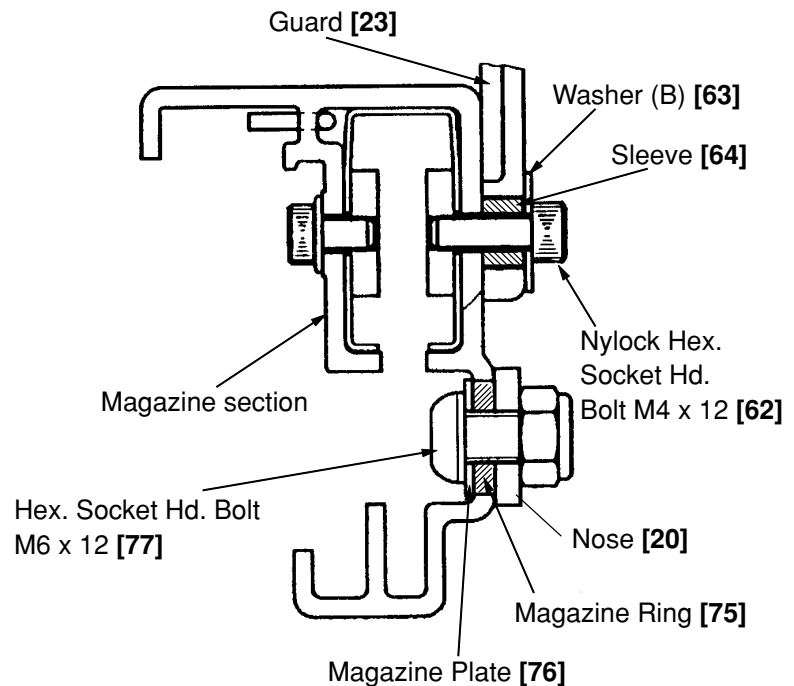


Fig.31

- After reassembly, check that Pushing Lever (A) [30], Pushing Lever (B) [28] and Pushing Lever (C) [24] move smoothly as shown in page 9, and also check that the nail feeder ass'y moves smoothly (Fig. 29).

10-5. Disassembly and Reassembly of the Cap and the Magazine Section

(1) Disassembly and reassembly of the Cap [35] (See Fig. 32.)

[Tool required]

- Hex. bar wrench (4 mm)

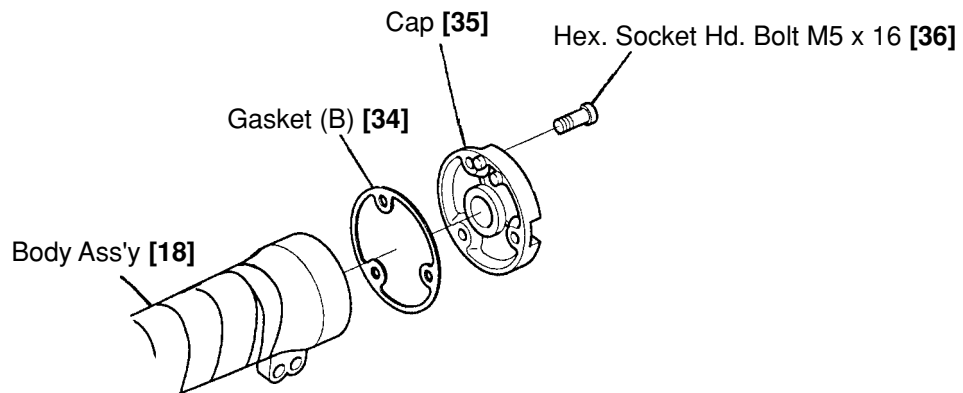


Fig. 32 Disassembly and reassembly of the cap

(a) Disassembly

- Remove the three Hex. Socket Hd. Bolts M5 x 16 [36] with the hex. bar wrench so that the Cap [35] and Gasket (B) [34] can be removed.

(b) Reassembly

- Disassembly procedures should be followed in the reverse order.

(2) Disassembly and reassembly of the nail feeder (See Fig. 33.)

[Tool required]

- Roll pin puller (3 mm (0.118") dia.)

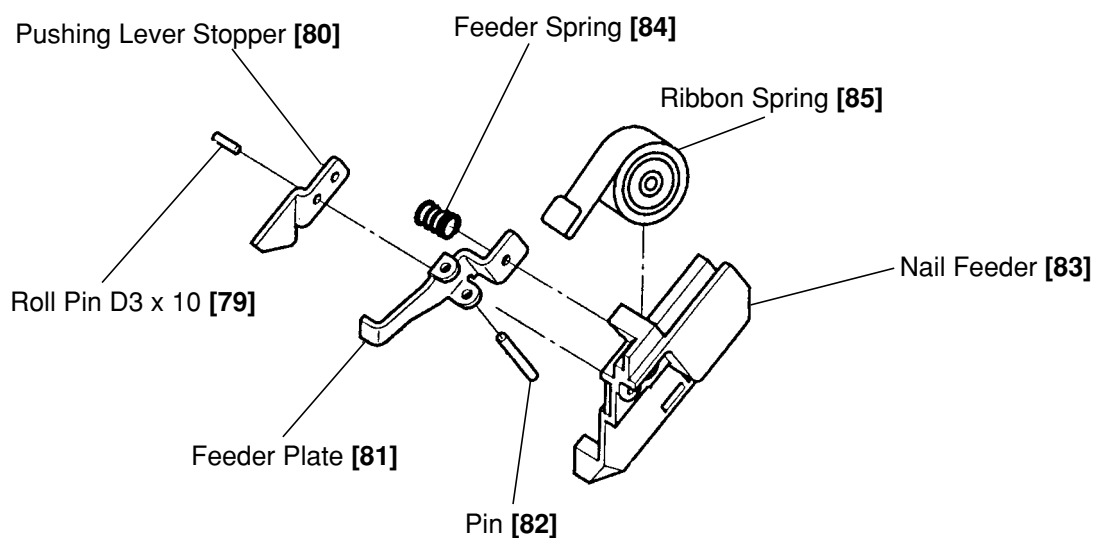


Fig. 33 Disassembly and reassembly of the nail feeder

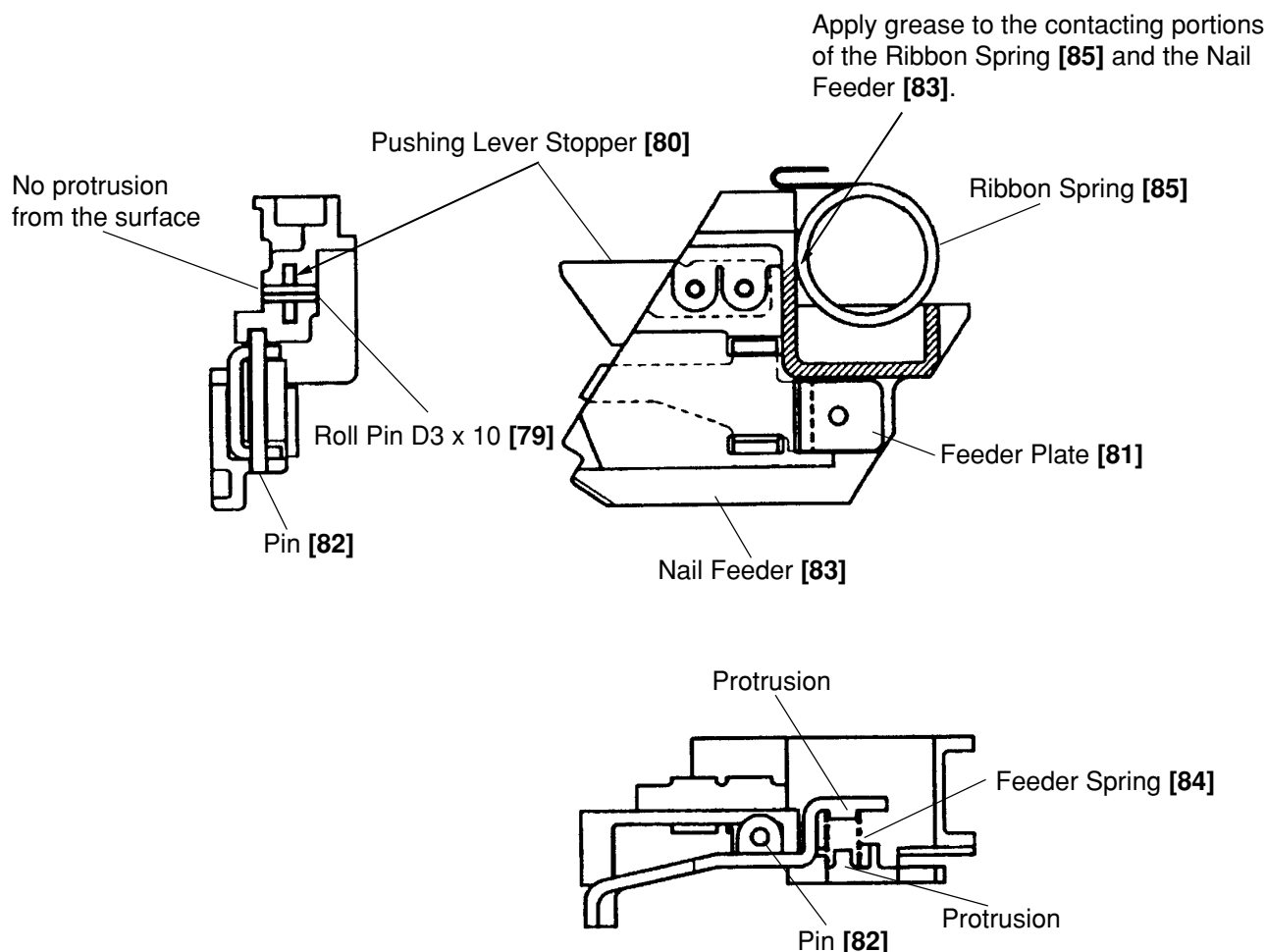


Fig.34

(a) Disassembly

- Remove the Pin [82] so that the Feeder Plate [81] and the Feeder Spring [84] can be removed.
- Pull out the Roll Pins D3 x 10 [79] with a roll pin puller (3 mm (0.118") dia.). The Pushing Lever Stopper [80] can be removed.

(b) Reassembly

Disassembly procedures should be followed in the reverse order. Note the following points.

- After mounting the Feeder Plate [81] to the Nail Feeder [83], mount the Feeder Spring [84] aligning with the protruded portion. Then insert the Pin [82] (Fig. 34).
- Insert the Pushing Lever Stopper [80] into the Nail Feeder [83] and press-fit two Roll Pins D3 x 10 [79] to secure them. Be careful not to protrude the Roll Pins D3 x 10 [79] from the surface (Fig. 34).
- Apply grease to the contacting portions of the Ribbon Spring [85] and the Nail Feeder [83] (Fig. 34).

(3) Disassembly and reassembly of the magazine section (See Fig. 35.)

[Tool required]

- Hex. bar wrench (3 mm, 4 mm)

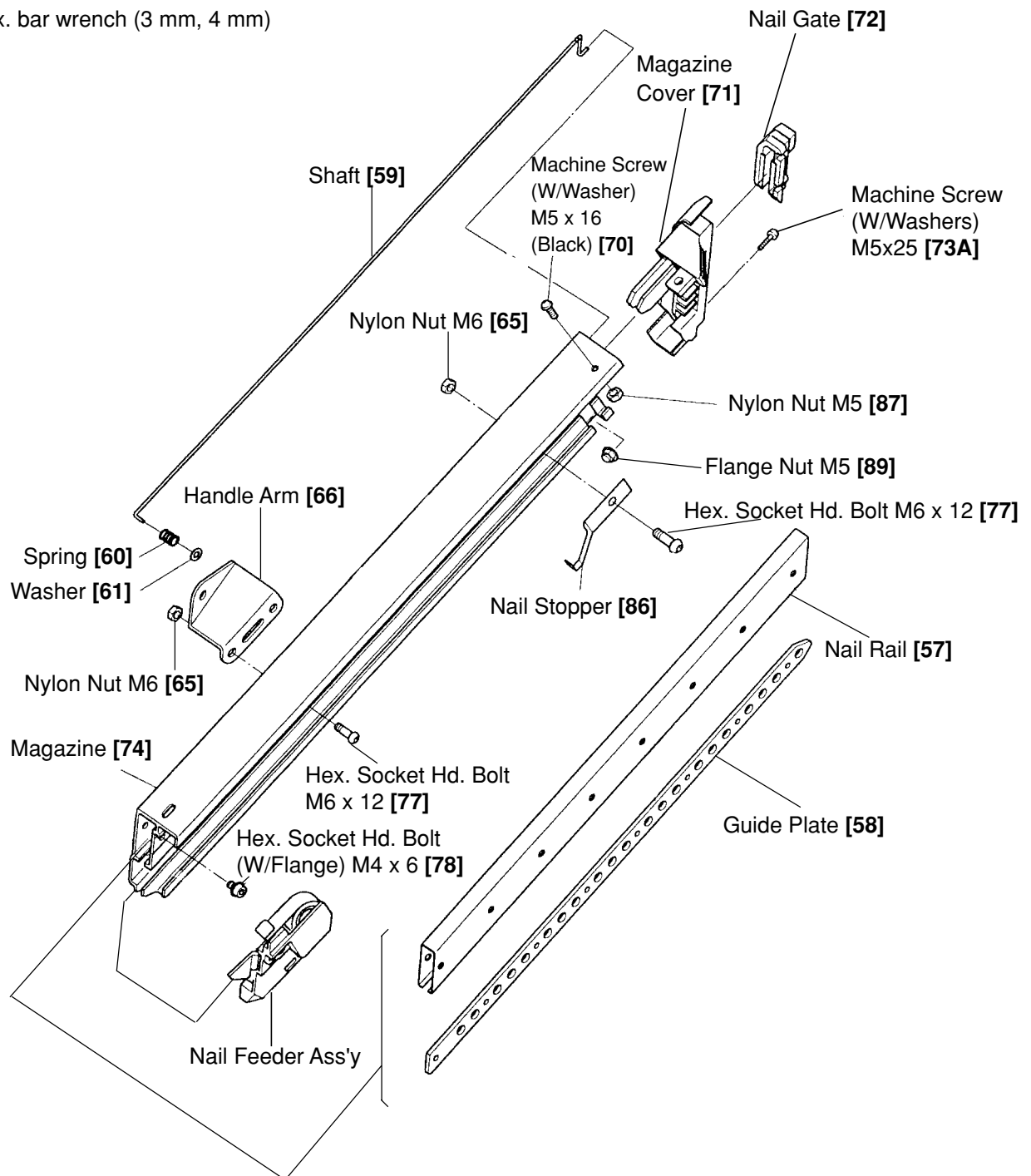


Fig. 35 Disassembly and reassembly of the magazine section

(a) Disassembly

- Loosen the Hex. Socket Hd. Bolt (W/Flange) M4 x 6 [78] and remove the Handle Arm [66] and the Nail Stopper [86].
- Loosen the Machine Screw (W/Washer) M5 x 16 (Black) [70] and the Machine Screw (W/Washers) M5 x 25 (Black) [73A], remove the Magazine Cover [71] and the Nail Gate [72].
- Loosen the seven Hex. Socket Hd. Bolts (W/Flange) M4 x 6 [78]. Now, the Magazine [74] and the nail feeder ass'y and the internal components can be removed.

(b) Reassembly

Disassembly procedures should be followed in the reverse order. Note the following points:

- Hang the hook of the Ribbon Spring [85] on the edge of the Magazine [74] and put the nail feeder ass'y in the Magazine [74]. Then secure the nail feeder ass'y with the pin temporarily (Fig. 36).

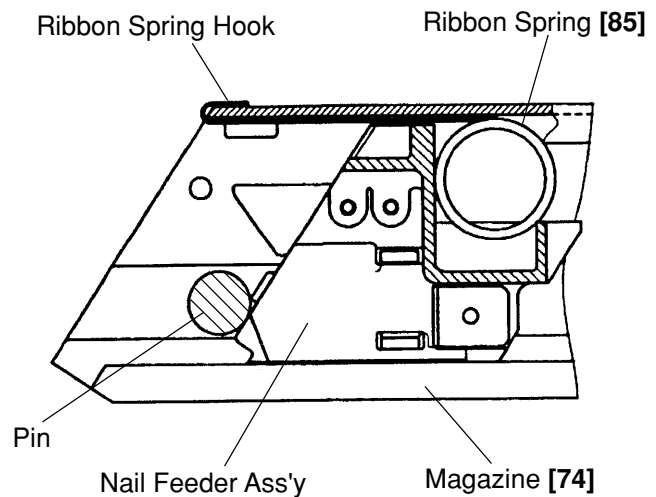


Fig.36

- Mount the Spring [60] and the Washer [61] to the Shaft [59] facing the larger winding diameter side of the Spring [60] to the Washer [61] (Fig. 37).

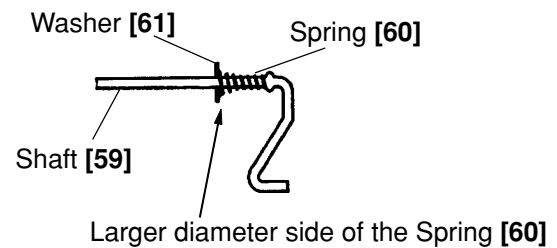


Fig.37

- Insert the Shaft [59] into the Magazine [74] until the end of the Shaft [59] is shown underneath the Ribbon Spring [85]. Mount the Washer [61] at the other end of the Shaft [59] to the end surface of the Magazine [74] (Fig. 38).

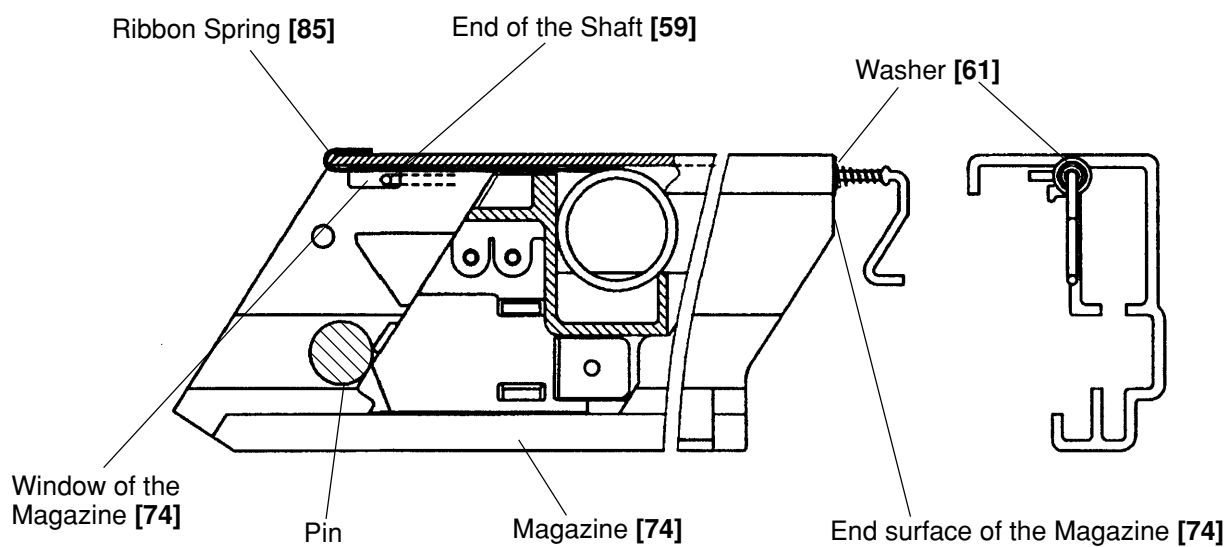


Fig.38

- Insert the Nail Rail [57] and two Guide Plates [58] into the Magazine [74]. Align the holes of the Magazine [74] with the holes of the Nail Rail [57] and the screws of the Guide Plates [58] (Fig. 38) and secure them with seven Hex. Socket Hd. Bolts (W/Flange) M4 x 6 [78] (Fig. 39).

Mount the Hex. Socket Hd. Bolts (W/Flange) M4 x 6 [78] as shown in Fig. 40.

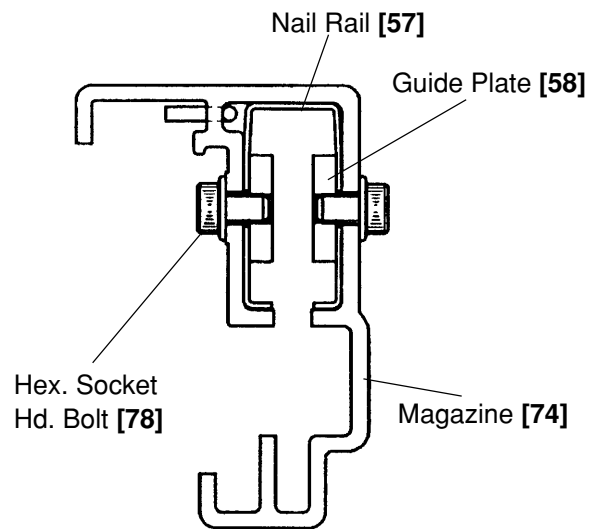


Fig. 39

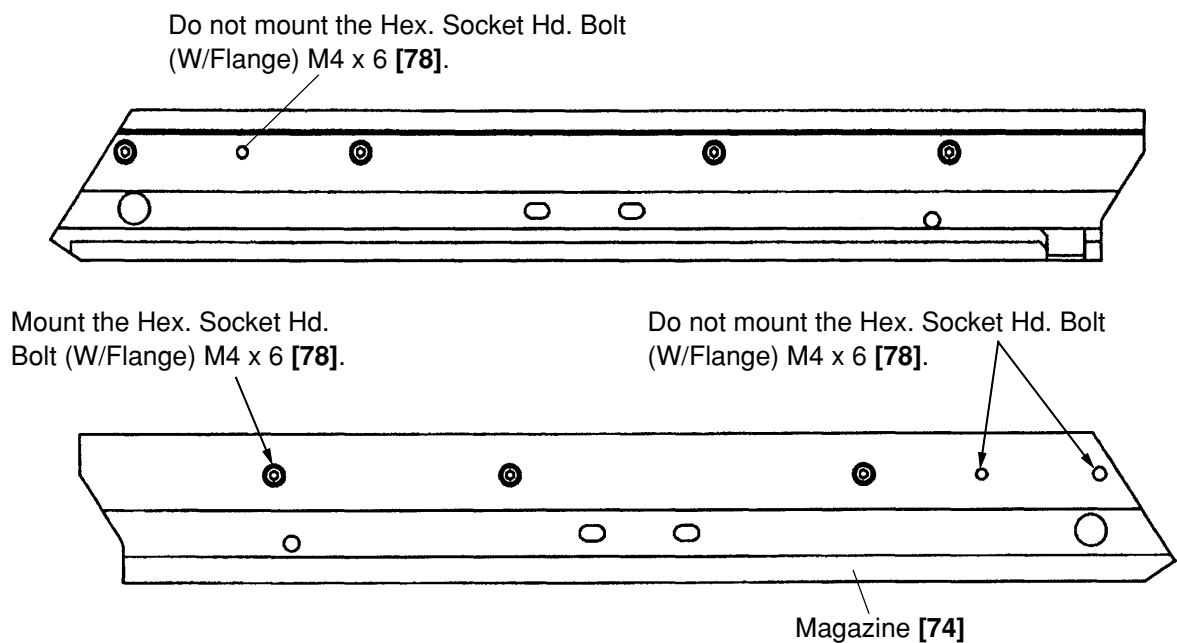


Fig. 40

- To mount the Magazine Cover [71] to the Magazine [74], mount the Nail Gate [72] to the Magazine Cover [71] and insert the Shaft [59] into the hole of the Magazine Cover [71] then secure them with the Machine Screw M5 x 20 [73] and the Machine Screw (W/Washer) M5 x 16 (Black) [70] (Fig. 41).
- After reassembly, check that the Nail Gate [72] can be moved when the nail feeder ass'y is moved to the front, and the Nail Gate [72] cannot be moved when the nail feeder ass'y is moved backward.

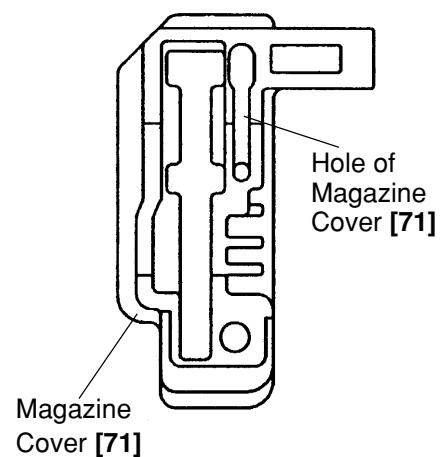


Fig. 41

11. INSPECTION AND CONFIRMATION AFTER REASSEMBLY

- Check that Plunger (A) **[47]** moves smoothly.
- Check that there is no air leakage from each part.
- While driving nails with an air pressure of 4.5 kgf/cm² (63 psi), check that there is no misfiring and bending of nails.
- Recheck the tightening torque of each screw.
- Check that Pushing Lever (A) **[30]** slides smoothly.
- Check that the machine will not operate only by pulling the Trigger **[52]**. Also check that the machine will not operate only by depressing Pushing Lever (A) **[30]**.

12. STANDARD REPAIR TIME (UNIT) SCHEDULES

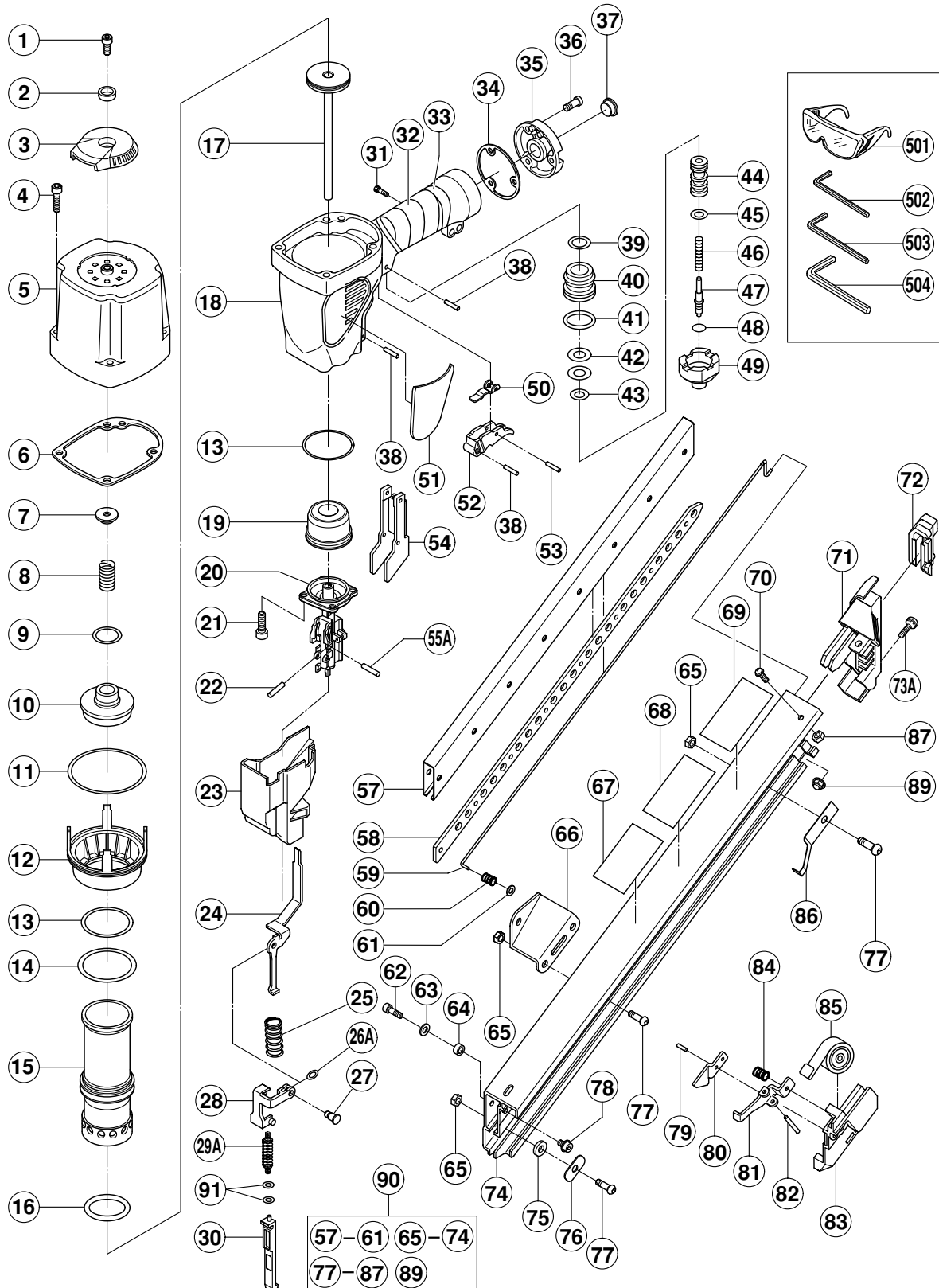
MODEL	Variable		10	20	30	40	50	60 min.
	Fixed							
NR 65AK		Work Flow						
	General Assembly							
		Pushing Lever Guide	Valve Bushing (B)					Body Ass'y
		Pushing Lever Spring	Valve Bushing (A)					
		Plunger Spring	Valve Piston (B)					
		Pushing Lever (C)	Plunger Spring (B)					
		Pushing Lever (B)	Plunger (A)					
		Pushing Lever (A)	Head Valve O-ring					
		O-ring (S-4)	O-ring x 6					
			Piston (H)					
			O-ring					

PNEUMATIC TOOL PARTS LIST

■ STRIP NAILER
Model NR 65AK

2001・9・14

(E2)



PARTS

NR 65AK

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
1	949-657	HEX. SOCKET HD. BOLT M6X12 (10 PCS.)	1		
2	880-515	PLATE	1		
3	880-514	TOP COVER	1		
4	949-822	HEX. SOCKET HD. BOLT M5X35 (10 PCS.)	4		
5	883-451	EXHAUST COVER	1		
6	883-452	GASKET (B)	1		
7	882-914	HEAD BUMPER	1		
8	882-913	HEAD VALVE SPRING	1		
9	876-796	O-RING (P-22)	1		
10	882-912	HEAD VALVE (A)	1		
11	878-863	O-RING (S-70)	1		
12	882-910	CYLINDER PLATE	1		
13	882-874	O-RING (S-46)	2		
14	877-368	O-RING (1AP-48)	1		
15	883-450	CYLINDER	1		
16	883-431	O-RING (I.D 37)	1		
17	883-430	PISTON (H)	1		
18	883-449	BODY ASS'Y	1	INCLUD.32,33	
19	883-432	PISTON BUMPER	1		
20	883-433	NOSE	1		
21	880-675	NYLOCK HIGH TENSION BOLT M6X20	4		
22	949-535	ROLL PIN D3X12 (10 PCS.)	1		
23	883-447	GUARD	1		
24	883-445	PUSHING LEVER (C)	1		
25	883-446	PUSHING LEVER SPRING	1		
26A	873-093	O-RING (1AP-3)	1		
27	883-448	PIN (A)	1		
28	883-444	PUSHING LEVER (B)	1		
29A	883-470	SPRING	1		
30	883-443	PUSHING LEVER (A)	1		
31	880-474	NYLOCK BOLT (W/FLANGE) M6X16	1		
32	881-768	GRIP TAPE (A)	1		
33	880-407	TAPE	2		
34	881-769	GASKET (B)	1		
35	881-949	CAP	1		
36	949-821	HEX. SOCKET HD. BOLT M5X16 (10 PCS.)	3		
37	872-035	DUST CAP	1		
38	949-865	ROLL PIN D3X28 (10 PCS.)	3		
39	877-699	HEAD VALVE O-RING (I.D 16.8)	1		
40	878-881	VALVE BUSHING (B)	1		
41	878-885	O-RING (S-18)	1		
42	878-925	O-RING (I.D 8.8)	2		
43	878-887	O-RING (I.D 11)	1		
44	880-672	VALVE PISTON (B)	1		
45	981-317	O-RING (S-4)	1		
46	883-453	PLUNGER SPRING (B)	1		
47	880-673	PLUNGER (A)	1		
48	878-888	O-RING (I.D 1.8)	1		
49	880-671	VALVE BUSHING (A)	1		
50	883-454	TRIGGER ARM	1		
51		NAME PLATE	1		

PARTS

NR 65AK

[illegible]

STANDARD ACCESSORIES

NR 65AK[illegible]

OPTIONAL ACCESSORIES

[illegible]

MEMO

