

# **RIVTEC 235 (Air-Grip 4H)**

*Industrial Super Heavy Duty*

***Pneumatic-Hydraulic Installation Tool  
With Forged Aluminum Alloy Oil Cylinder***

**Install various Nose Assemblies to set Lockbolts,  
Structural and Standard/Commercial Blind Rivets**

## **OPERATION MANUAL**



TÜVRheinland  
CERTIFIED

*Original Instructions*

*Nose Assembly not included*

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## 1. INTENDED USE

1. This pneumatic-hydraulic installation tool is designed to be driven by the appropriate compressed air pressure for quickly fastening the work pieces together firmly with a suitable size lockbolt, or with a structural blind rivet on one-side work. The work pieces to be fastened are various, such as metals, concrete, wood, plastic, leather, canvas and more. The Forged Aluminum Alloy Hydraulic Cylinder has super strength and excellent durability. The applications are widely used in the production and repairs of aircraft, automobiles & vehicles, boats, building construction, electric/electronic appliances, etc.
2. This pneumatic-hydraulic installation tool is designed and produced primarily for the professional users, the non-professional users must read the operation manual thoroughly, and consult the manufacturer, authorized local agent or distributor for real understanding. A half hour long hands-on training session with qualified personnel is essential and strongly recommended before using this tool.

## 2. GLOSSARY OF TERMS AND SYMBOLS



: **READ MANUAL** carefully prior to using this tool.



: **HEARING PROTECTION IS REQUIRED** when using this tool.



: **EYE PROTECTION IS REQUIRED** when using this tool.



: **HAND PROTECTION IS REQUIRED** when using this tool.

## 3. SAFETY PRECAUTIONS

### 3.1 SAFETY PRECAUTIONS

1. For multiple hazards, read and understand the safety instructions before installing, operating, repairing, maintaining, changing accessories, or working near the assembly power tool. Failure to do so can result in serious bodily injury.
2. Only qualified and trained operators should install, adjust or use the assembly power tool.
3. Do not modify this assembly power tool. Modifications can reduce the effectiveness of safety measures and increase the risks to the operator.
4. Do not discard the safety instructions; give them to the operator for reference at any time .
5. Do not use the assembly power tool if it has been damaged.
6. Tool shall be inspected periodically to verify that the ratings and markings required, by this part of ISO 11148 are legibly marked on the tool, and that listed in this manual. The employer/user shall contact the manufacturer to obtain replacement marking labels when necessary.

### **3.2 PROJECTILE HAZARDS**

1. Disconnect the assembly power tool from the energy source when changing parts or accessories.
2. Be aware that failure of the work pieces or accessories or even of the parts itself can generate high-velocity projectiles.
3. Always wear impact-resistant eye protection during operation of the tool. The grade of protection required should be assessed for each use.
4. The risks to others should also be assessed at any time.
5. Ensure that the work pieces are securely fixed.
6. Check that the means of protection from ejection of fastener and/or stem is in place and is operative.
7. There is possibly forcible ejection of installation mandrels from the front of the assembly power tool.

### **3.3 OPERATING HAZARDS**

1. Use of the tool can expose the operator's hands to hazards, including crushing, impacts, cuts and abrasions and heat. Wear suitable gloves to protect hands.
2. Operators and maintenance personnel shall be physically able to handle the bulk, weight and power of the tool.
3. Hold the tool correctly; be ready to counteract normal or sudden movements and have both hands available.
4. Maintain a balanced body position and secure footing.
5. Release the start-and-stop device in the case of an interruption of the energy supply.
6. Use only oils and lubricants recommended by the manufacturer.
7. Avoid unsuitable postures, as it is likely for these positions not to allow counteracting of normal or unexpected movement of the tool.
8. If the assembly power tool is fixed to a suspension device, make sure that the fixation is secure.
9. Beware of the risk of crushing or pinching if nose equipment is not fitted.

### **3.4 REPETITIVE MOTIONS HAZARDS**

1. When using an assembly power tool, the operator can experience discomfort in the hands, arms, shoulders, neck or other parts of the body.
2. While using an assembly power tool, the operator should adopt a comfortable posture whilst maintaining a secure footing and avoiding awkward or off-balance postures. The operator should change posture during extended tasks; this can help avoid discomfort and fatigue.
3. If the operator experiences symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensations or stiffness, these warning signs should not be ignored. The operator should tell the employer and consult a qualified health professional.

### **3.5 PART AND ACCESSORY HAZARDS**

1. Disconnect the assembly power tool from the energy supply before changing the part or accessory.
2. Use only sizes and types of part, accessories and consumables that are recommended by the manufacturer of assembly power tool; do not use other types or sizes of accessories, parts or consumables.

### **3.6 WORKPLACE HAZARDS**

1. Slips, trips and falls are major causes of workplace injury. Be aware of slippery surfaces caused by use of the tool and aware of trip hazards caused by the air line or hydraulic hose.
2. Proceed with care in unfamiliar surroundings. There can be hidden hazards, such as electricity or other utility lines.
3. The assembly power tool is not intended for use in potentially explosive atmospheres and is not insulated against contact with electric power.
4. Ensure that there are no electrical cables, gas pipes, etc., which can cause a hazard if damaged by use of the tool.

### **3.7 NOISE HAZARDS**

1. Exposure to high noise levels can cause permanent, disabling hearing loss and other problems, such as tinnitus (ringing, buzzing, whistling or humming in the ears). Therefore, risk assessment and the implementation of appropriate controls for these hazards are essential.
2. Appropriate controls to reduce the risk may include actions such as damping materials to prevent work pieces from "ringing".
3. Use hearing protection in accordance with employer's instructions and as required by occupational health and safety regulations.
4. Operate and maintain the assembly power tool for mechanical fasteners as recommended in the instruction handbook, to prevent an unnecessary increase in the noise level.
5. Select, maintain and replace the consumable/part as recommended in the instruction handbook, to prevent an unnecessary increase in noise.
6. If the power tool has a silencer, always ensure that it is in place and in good working order when the power tool is being operated.

### 3.8 VIBRATION HAZARDS

1. Exposure to vibration can cause disabling damage to the nerves and blood supply of the hands and arms.
2. Wear warm clothing when working in cold conditions and keep your hands warm and dry.
3. If you experience numbness, tingling, pain or whitening of the skin in your fingers or hands, stop using the assembly power tool, tell your employer and consult a physician.
4. Support the weight of the tool in a stand, tensioner or balancer, because a lighter grip can then be used to support the tool.

### 3.9 SAFETY INSTRUCTIONS FOR PNEUMATIC/PNEUMATIC-HYDRAULIC POWER TOOLS

1. Air under pressure can cause severe injury:
  - (1) Always shut off air supply, drain hose of air pressure, disconnect tool from air supply when not in use, before changing parts, accessories or when making repairs;
  - (2) Never direct aim at yourself or anyone else.
2. Whipping hoses can cause severe injury. Always check for damaged or loose hoses and fittings.
3. Cold air shall be directed away from hands.
4. Whenever universal twist couplings (claw couplings) are used, lock pins shall be installed, and Whip Check Safety Cables shall be used to safeguard against possible hose-to-tool or hose-to-hose connection failure.
5. Do not exceed the maximum air pressure stated on the tool.
6. Never carry an air tool by the hose.
7. The limitations of environmental conditions on Tool are the temperature 0 - 40 °C (32 - 104 °F), and Tool can not be used in the water.
8. Tool weight over 2.0 kg or 4.4 lb is suggested to be supported by two hands, one hand to hold handle grip and the other hand to support the bottom of Tool, whilst lifting or operating Tool.



## 4. SAFETY INSTRUCTIONS

1. The tool must be checked and maintained in a safe working condition at all times.
2. Do not use the tool outside the intent of design and use.
3. Do not dismantle the tool without prior reference to this manual.
4. Any modification to the tool and tool parts shall be prohibited.
5. Always use original spare parts to ensure safe operation and satisfactory performance.
6. Be sure to disconnect the tool from air supply before attempting to adjust, change nose assembly or dismantle tool's parts.
7. For safety work, the operator and other persons in the vicinity are always required to wear the safety goggles to protect against spent pin or mandrel ejection.
8. Be sure to adopt a firm footing or stable position before and during operating the tool.
9. Do not point the tool towards any person(s) or operator.
10. Do not operate the tool without firmly installing the nose assembly, adapter (2), retaining nut (1) and the pintail deflector (16).
11. Do not operate the tool without firmly locking the oil screw plug & sealing washer (7 & 6), noise silencer lock nut (22), valve end cap (42), air cylinder end cap (49) and air inlet end cap (51).
12. Be sure to install the correct and recommended nose assembly for perfect installation of lockbolt or structural blind rivet.
13. The Operating Air Pressure shall not exceed 7.0 bar or 100 psi.
14. Excessive priming of hydraulic oil in the tool should be avoided.
15. After setting each lockbolt, to insert the next same size lockbolt's pin into the anvil insert of nose assembly, and the spent pin is therefore pushed out of tool through the pintail deflector (16).  
After setting each blind rivet, the spent mandrel can be cleared out of tool through the pintail deflector (16) by tilting nose assembly upwards. So that the spent pins or spent mandrels shall be not jammed in the tool after setting the next lockbolt or blind rivet.
16. Take care to ensure the pin's/mandrel's sharp end and spent pins/mandrels are not to create any hazards.
17. Ensure that noise silencer (21) and vent holes do not become blocked or covered, and that air hose is always in good condition.
18. Always keep the tool and grip (55) dry and clean for the best possible grip and operation.
19. Take care to avoid entanglement of loose clothes, ties, long hair, cleaning rags, etc. in the moving parts of the tool.
20. When carrying the tool from place to place, always keep hands away from the trigger (25) to avoid inadvertent start up.
21. Take care to use the tool. Do not drop the tool. Do not use the tool as a hammer or other uses that will damage and wear the tool.
22. The tool should be examined at regular intervals for function and damage. Any questions regarding the correct operation of tool and operator safety should consult the manufacturer, authorized local agent or distributor.

## 5. FEATURES

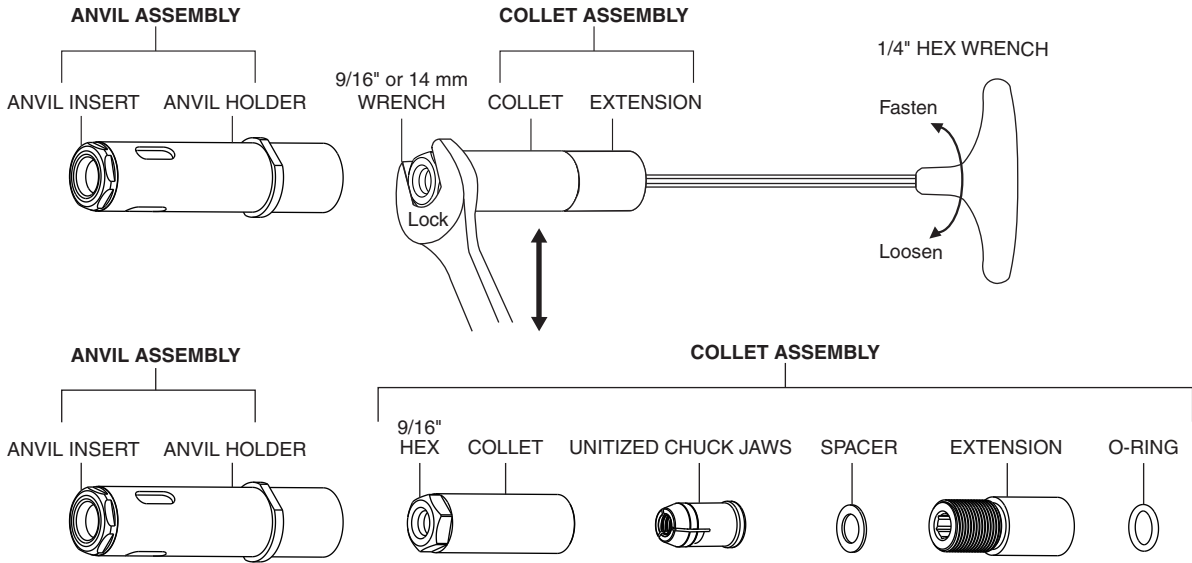
1. This pneumatic-hydraulic installation tool features super powerful traction force 5,280 lbf at 90 psi or 23,500 N at 6.2 bar compressed air pressure, and to be equipped with interchangeable Nose Assemblies for setting various 3/16" & 1/4" or 4.8 & 6.4 mm lockbolts, such as HUCK® C6L® and Magna-Grip®; and for setting various 3/16" & 1/4" or 4.8 & 6.4 mm Structural blind rivets, such as HUCK® Magna-Lok®, Magna-Bulb®, HuckLok® and Auto-Bulb®. Also, to equip with SR-64™ various 5/32", 3/16", 1/4" or 4.0, 4.8, 6.0 & 6.4 mm HSS (High Strength Structural) blind rivets, Structural and Standard/Commercial blind rivets simply by exchanging different Nosepieces (Anvil Inserts). The Nose Assembly is not included.
2. Smart **ergonomically design handle** to offer balanced and comfortable operation.
3. Innovative **Shock-Reducer Design™** to minimize hand fatigue.
4. Innovative **Noise Silencer Design™** for working pleasure.
5. Patented **Rivet Size Hole Gauge Design™** to eliminate choosing wrong size blind rivet and working nosepiece.
6. Smart **Twin Air Inlets** to meet individual operating hobby, such as the right-handed operators or left-handed operators.
7. Convenient **Oil Refill Hole Design™** for quickly refilling the shortage of hydraulic oil.
8. **Pintail Deflector** to protect operator's eyes.
9. **Oil Cylinder Body** are made of super strength **forged aluminum alloy** and Air Cylinder Body are made of high strength aluminum alloy, the inner walls all have **wear-resistant mirror finish** for durability.
10. **Oil Piston Rod and Air Piston Rod** all have **hard chrome plating** and **wear-resistant mirror finish** for speedy motion.
11. **Forged Aluminum Alloy Oil Cylinder with titanium color finish** and **Powder Coating finish on Aluminum Alloy Air Cylinder** for valuable looking and better scratch-resistance. Laser Logo to add Tool value.
12. **PAHs-Free (non-toxic to hand skin) Soft Plastic Hand Grip** for comfortable and safe operation.

## 6. SPECIFICATIONS

1. **Traction Force:** 5,280 lbf at 90 psi or 23,500 N at 6.2 bar compressed air pressure
  2. **Stroke:** 0.728" or 18.5 mm
  3. **Working Compressed Air Pressure:** 85 - 100 psi or 6.0 - 7.0 bar
  4. **Air Consumption:** Approx. 0.2 cuft per lockbolt/rivet or 5.7 liters per lockbolt/rivet
  5. **Hydraulic Oil, ISO VG-32 or VG-46:** Approx. 40 ml
  6. **Working Temperature:** 32 - 104 °F or 0 - 40 °C
  7. **Noise Level:** Sound Pressure Level, L<sub>PA</sub>: 74.9dB(A)  
Uncertainty: K<sub>PA</sub>= 3.0 dB  
Sound Power Level, L<sub>WA</sub>: 85.9dB(A)  
Uncertainty: K<sub>WA</sub>= 3.0 dB
  8. **Vibration:**  
Hand-arm vibration value: Less than 2.5 m/s<sup>2</sup>  
Uncertainty : K = 1.5 m/s<sup>2</sup>
  9. **Air Inlet:** 1/4" PT or 1/4" NPT or other specified thread
  10. **Hose Size:** Inner diameter 3/8" or 10 mm
  11. **Net Weight:** Approx. 5.58 lb or 2.53 kg
  12. **Standard Parts:** Pintail Deflector (16), 1 Service Tool (52), Hydraulic Oil Injector (53, without Oil), Hydraulic Oil Bottle (54, without Oil), 360° Double Swivel Air Fitting (56)
  13. **Riveting Capacity for HUCK® Lockbolts:**
    - C6L® : 3/16" (4.8 mm), 1/4" (6.4 mm)
    - Magna-Grip® : 3/16" (4.8 mm), 1/4" (6.4 mm)
  14. **Riveting Capacity for HUCK® Structural Blind Rivets:**
    - Magna-Lok® : 3/16" (4.8 mm), 1/4" (6.4 mm)
    - Magna-Bulb® : 3/16" (4.8 mm), 1/4" (6.4 mm), 5/16" (8.0 mm)
    - HuckLok® : 3/16" (4.8 mm), 1/4" (6.4 mm)
    - Auto-Bulb® : 3/16" (4.8 mm), 1/4" (6.4 mm)
    - Magna-Tite® : 3/16" (4.8 mm), 1/4" (6.4 mm)
- Remarks:**
- This Tool is recommended to install the HUCK® Nose Assemblies.
  - This Tool is not recommended for high volume installation of C6L® 1/4" (6.4 mm) stainless steel lockbolt.
  - HUCK®, C6L®, Magna-Grip®, Magna-Lok®, Magna-Bulb®, HuckLok®, Auto-Bulb® and Magna-Tite® are the registered trade marks of HUCK®.
15. **Riveting Capacity for various Structural and Standard/Commercial Blind Rivets:**  
RIVTEC® Universal Nose Assembly 64™ (SR-64™): 5/32" (4.0 mm), 3/16" (4.8 mm) & 1/4" (6.4 mm) Structural Blind Rivets such as HUCK® various Structural Blind Rivets, AVDEL® Monobolt®, Interlock®, Hemlok®; and 5/32" (4.0 mm), 3/16" (4.8 mm) & 1/4" (6.4 mm) HSS (High Strength Structural) Blind Rivets, 5/32", 3/16" & 1/4" or 4.0, 4.8, 6.0 & 6.4 mm
- Remarks:**
- SR-64™ can set various Structural and Standard/Commercial Blind Rivets simply exchanging different Nosepieces (Anvil Inserts).
  - AVDEL®, Monobolt®, Interlock® and Hemlok® are the registered trade marks of AVDEL®.
  - The Mandrel diameter of HSS (High Strength Structural) Blind Rivets is approximate 0.25 mm or 0.01" bigger than that of Standard/Commercial Blind Rivets. Use HSS Nosepieces to set HSS Blind Rivets.

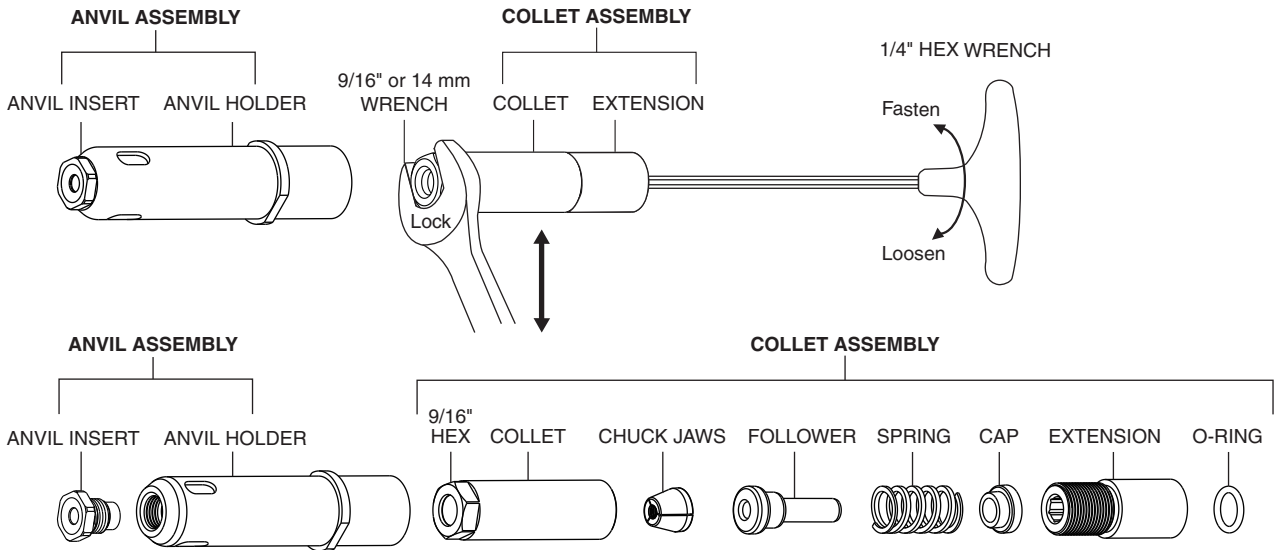
**HUCK® Lockbolt Nose Assembly**

HUCK® 99-3003 Nose Assembly can set: C6L® 3/16" (4.8 mm)  
 HUCK® 99-3006 Nose Assembly can set: C6L® 1/4" (6.4 mm)  
 HUCK® 99-3201 Nose Assembly can set: Magna-Grip® 3/16" (4.8 mm)  
 HUCK® 99-3204 Nose Assembly can set: Magna-Grip® 1/4" (6.4 mm)



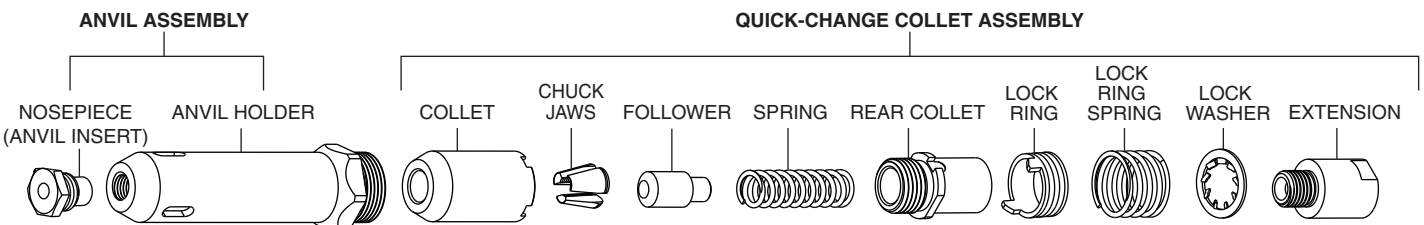
**HUCK® Structural Blind Rivet Nose Assembly**

HUCK® 99-3303 Nose Assembly can set:  
 Magna-Lok®, Magna-Bulb®, HuckLok®, Auto-Bulb® 3/16" (4.8 mm)  
 HUCK® 99-3305 Nose Assembly can set:  
 Magna-Lok®, Magna-Bulb®, HuckLok®, Auto-Bulb® 1/4" (6.4 mm)  
 HUCK® 99-3487-6MT Nose Assembly can set: Magna-Tite® 3/16" (4.8 mm)  
 HUCK® 99-3487-8MT Nose Assembly can set: Magna-Tite® 1/4" (6.4 mm)



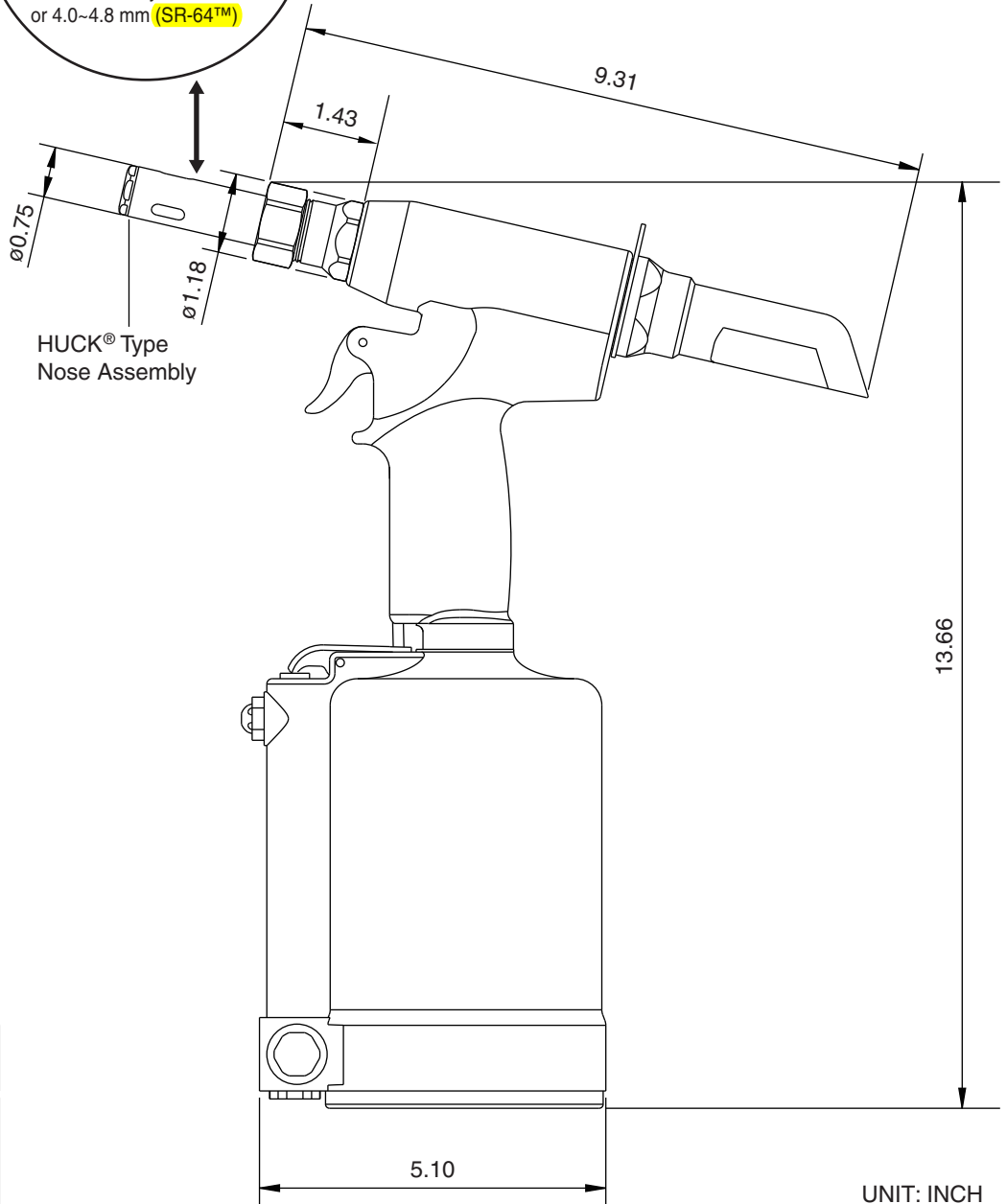
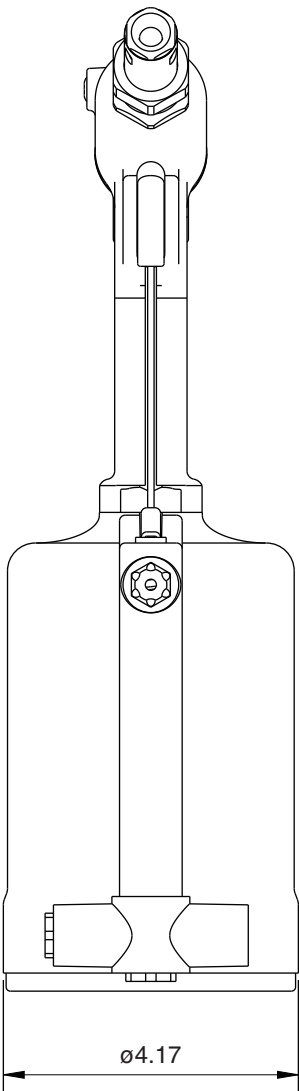
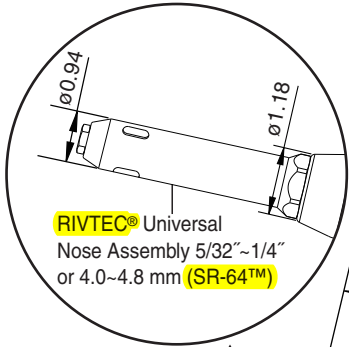
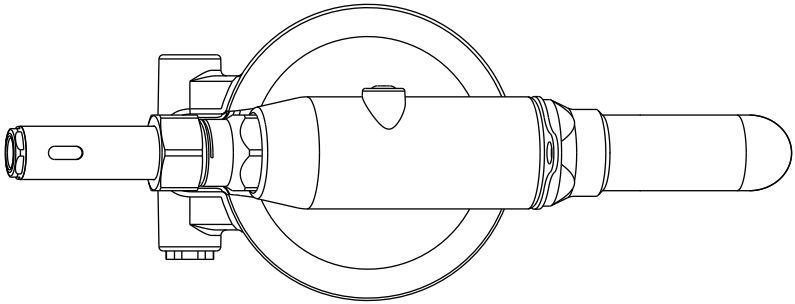
**RIVTEC® Universal Blind Rivet Nose Assembly 5/32" ~ 1/4" (SR-64™), with Quick-Change Collet Assembly**

RIVTEC® Universal Nose Assembly 5/32"~1/4" or 4.0~6.4 mm (SR-64™) can set:  
 1) Various 5/32" (4.0 mm), 3/16" (4.8 mm) & 1/4" (6.4 mm) Structural Blind Rivets  
 2) Various 5/32", 3/16" & 1/4" or 4.0, 4.8, 6.0 & 6.4 mm Standard/Commercial Blind Rivets



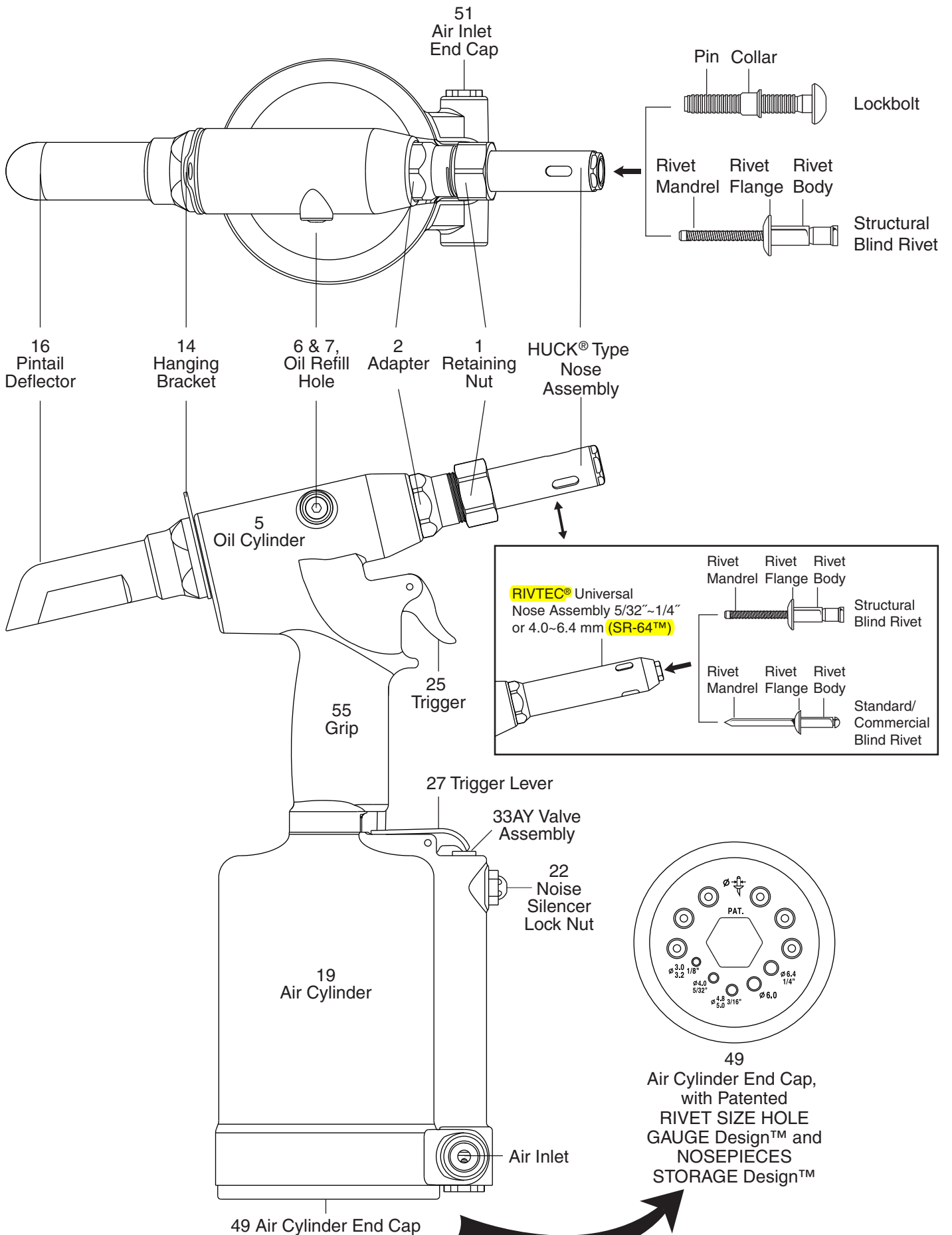
**7. DIMENSIONS**

Nose Assembly not included



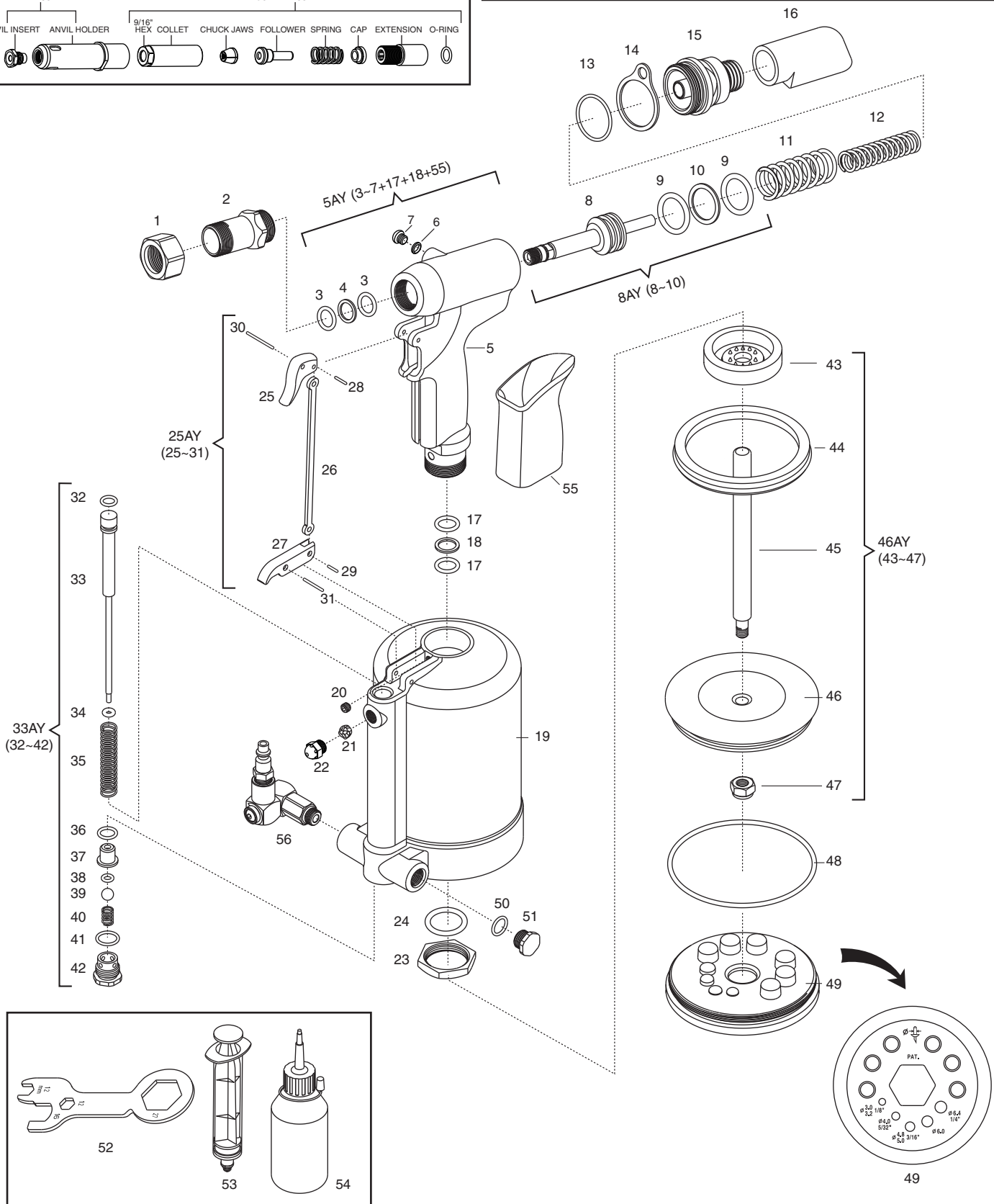
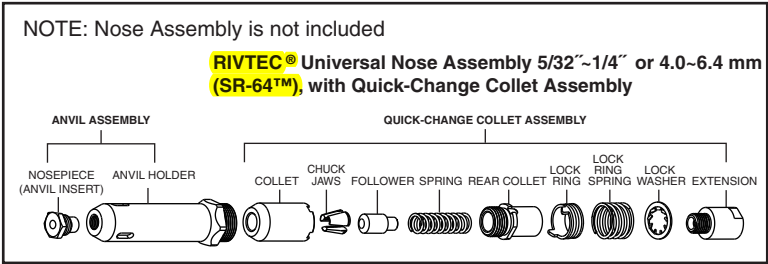
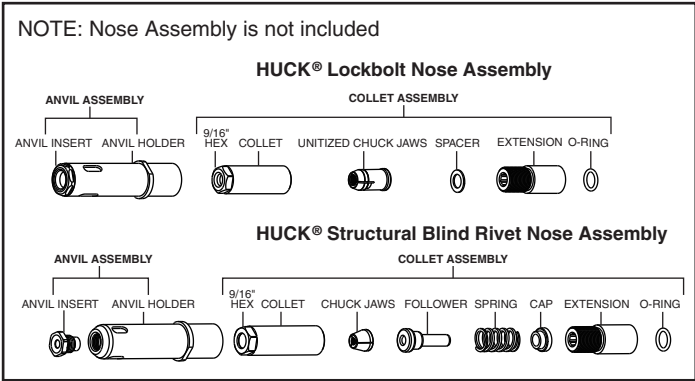
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## 8. MAIN PARTS





# 9. PARTS LIST



## 9. PARTS LIST

NO.	PART NO.	PART NAME	NO.	PART NO.	PART NAME
1	AG4H-01	Retaining Nut	• 30	AG4H-30	Trigger Pin
2	AG4H-02	Adapter	• 31	AG4H-31	Lever Pin
• 3	AG4H-03	Oil Cylinder O-ring, Front Part	25AY	AG4H-25AY	Trigger Assembly (25~31)
• 4	AG4H-04	Oil Cylinder Back-up Ring, Front Part	• 32	AG4H-32	Valve Pusher Upper O-ring
5	AG4H-05	Oil Cylinder Frame	33	AG4H-33	Valve Pusher
• 6	AG4H-06	Sealing Washer	• 34	AG4H-34	Valve Pusher Lower O-ring
• 7	AG4H-07	Oil Screw Plug	• 35	AG4H-35	Valve Pusher Spring
5AY	AG4H-5AY	Oil Cylinder Assembly (3~7+17+18+55)	• 36	AG4H-36	Valve Sleeve O-ring
• 8	AG4H-08	Oil Piston	37	AG4H-37	Valve Sleeve
• 9	AG4H-09	Oil Piston O-ring	• 38	AG4H-38	Valve Ball O-ring
• 10	AG4H-10	Oil Piston Back-up Ring	• 39	AG4H-39	Valve Ball
8AY	AG4H-8AY	Oil Piston Assembly (8~10)	• 40	AG4H-40	Valve Spring
• 11	AG4H-11	Large Return Spring	• 41	AG4H-41	Valve End Cap O-ring
• 12	AG4H-12	Small Return Spring	42	AG4H-42	Valve End Cap
• 13	AG4H-13	Hanging Bracket O-ring	33AY	AG4H-33AY	Valve Assembly (32~42)
14	AG4H-14	Hanging Bracket	• 43	AG4H-43	Buffer Ring
15	AG4H-15	Oil Cylinder End Cap	• 44	AG4H-44	Air Piston Ring
• 16	AG4H-16	Pintail Deflector	• 45	AG4H-45	Air Piston Rod
• 17	AG4H-17	Oil Cylinder O-Ring, Lower Part	46	AG4H-46	Air Piston
• 18	AG4H-18	Oil Cylinder Back-Up Ring, Lower Part	• 47	AG4H-47	Air Piston Lock Nut
19	AG4H-19	Air Cylinder	46AY	AG4H-46AY	Air Piston Assembly (43~47)
• 20	AG4H-20	Positioning Screw	• 48	AG4H-48	Air Cylinder End Cap O-ring
• 21	AG4H-21	Noise Silencer	49	AG4H-49	Air Cylinder End Cap
22	AG4H-22	Noise Silencer Lock Nut	• 50	AG4H-50	Air Inlet End Cap O-ring
• 23	AG4H-23	Oil Cylinder Lock Nut	51	AG4H-51	Air Inlet End Cap
• 24	AG4H-24	Lock Nut O-Ring	• 52	AG4H-52	Wrench 2712
25	AG4H-25	Trigger	• 53	AG4H-53	Hydraulic Oil Injector (without Oil)
• 26	AG4H-26	Trigger Link	• 54	AG4H-54	Hydraulic Oil Bottle (without Oil)
• 27	AG4H-27	Trigger Lever	• 55	AG4H-55	Grip
• 28	AG4H-28	Upper Link Pin	• 56	AG4H-56	360° Double Swivel Air Fitting
• 29	AG4H-29	Lower Link Pin	• 57	AG4H-57	SR-64™ Universal Nose Assembly 5/32"~1/4"

**REMARKS:** 1) • Means wear parts.

2) Order Example: AG4H-03 Oil Cylinder O-ring, 6 pcs.

3) Part No. AG4H-52 Wrench 2712: For Part No. AG4H-01 Retaining Nut, AG4H-02 Adapter and AG4H-49 Air Cylinder End Cap.

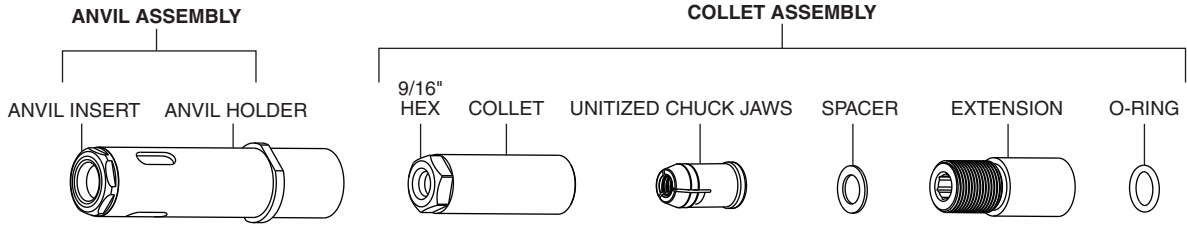
4) Part No. AG4H-23 Oil Cylinder Lock Nut needs to replace a new one after repeatedly fastening 3 ~ 4 times.

5) Part No. AG4H-24 Lock Nut O-Ring needs to replace a new one when dismantling Part No. AG4H-23 Oil Cylinder Lock Nut.

6) Part No. AG4H-57 SR-64™ RIVTEC® UNIVERSAL NOSE ASSEMBLY 5/32"~1/4" or 4.0~6.4 mm is an optional part.

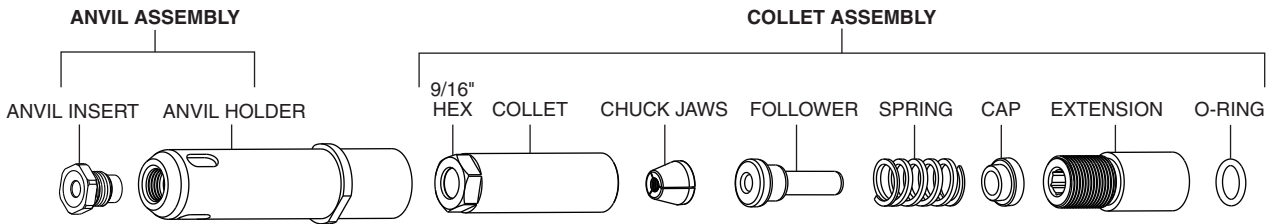
## 9. PARTS LIST

### HUCK® Lockbolt Nose Assembly



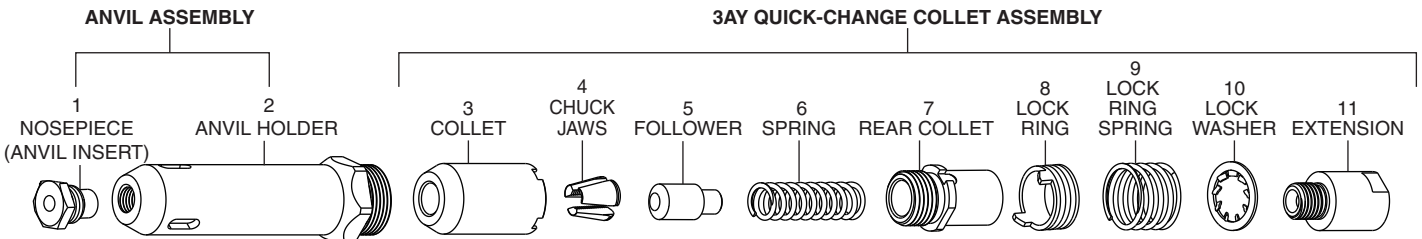
HUCK® NOSE ASSEMBLY NO.	LOCKBOLT NAME & SIZE	HUCK® NOSE ASSEMBLY NO.	LOCKBOLT NAME & SIZE
99-3003	C6L® 3/16" (4.8 mm)	99-3204	Magna-Grip® 1/4" (6.4 mm)
99-3006	C6L® 1/4" (6.4 mm)	99-3464	Hucktainer® 3/8" (10 mm)
99-3201	Magna-Grip® 3/16" (4.8 mm)		

### HUCK® Structural Blind Rivet Nose Assembly



HUCK® NOSE ASSEMBLY NO.	STRUCTURAL BLIND RIVET NAME & SIZE
99-3303	Magna-Lok®, Magna-Bulb®, HuckLok®, Auto-Bulb® 3/16" (4.8 mm)
99-3305	Magna-Lok®, Magna-Bulb®, HuckLok®, Auto-Bulb® 1/4" (6.4 mm)
99-3487-6MT	Magna-Tite® 3/16" (4.8 mm)
99-3487-8MT	Magna-Tite® 1/4" (6.4 mm)

### RIVTEC® Universal Blind Rivet Nose Assembly 5/32"~1/4" or 4.0~6.4 mm (SR-64™), with Quick-Change Collet Assembly



RIVTEC® NOSE ASSEMBLY NO.	STRUCTURAL & STANDARD/COMMERCIAL BLIND RIVET SIZES
RIVTEC® UNIVERSAL NOSE ASSEMBLY 5/32"~1/4" or 4.0~6.4 mm (SR-64™)	5/32" (4.0 mm), 3/16" (4.8 mm) & 1/4" (6.4 mm) Structural Blind Rivets such as HUCK® various Structural Blind Rivets, AVDEL® Monobolt®, Interlock®, Hemlok®; and 5/32", 3/16" & 1/4" or 4.0, 4.8, 6.0 & 6.4 mm Standard/Commercial Blind Rivets.

NO.	PART NO.	PART NAME	NO.	PART NO.	PART NAME
1A-40	SR64-1A40	Standard Nosepiece (Anvil Insert), Flat Face, 5/32" or 4.0 mm	2	SR64-2	Anvil Holder (Head)
1A-48	SR64-1A48	Standard Nosepiece (Anvil Insert), Flat Face, 3/16" or 4.8 mm	3	SR64-3	Collet (Front Jaw Case), Quick-Change Type
1A-60	SR64-1A60	Standard Nosepiece (Anvil Insert), Flat Face, 6.0 mm	4	SR64-4	Chuck Jaws, 3-PC Type
1A-64	SR64-1A64	Standard Nosepiece (Anvil Insert), Flat Face, 1/4" or 6.4 mm	5	SR64-5	Follower (Jaw Pusher), for 3-PC Jaws
1B-48DF	SR64-1B48DF	Structural Nosepiece (Anvil Insert), Dent Face, 3/16" or 4.8 mm	6	SR64-6	Spring (Jaw Pusher Spring)
1B-64DF	SR64-1B64DF	Structural Nosepiece (Anvil Insert), Dent Face, 1/4" or 6.4 mm	7	SR64-7	Rear Collet (Rear Jaw Case), Quick-Change Type
1C-48	SR64-1C48	Monobolt® 6 Nosepiece (Anvil Insert), Protruding Rim, 3/16" or 4.8 mm	8	SR64-8	Lock Ring, Quick-Change Type
1C-64	SR64-1C64	Monobolt® 8 Nosepiece (Anvil Insert), Protruding Rim, 1/4" or 6.4 mm	9	SR64-9	Lock Ring Spring, Quick-Change Type
1D-64	SR64-1D64	T-Rivet™ 8 Nosepiece (Anvil Insert), Protruding Tip, 1/4" or 6.4 mm	10	SR64-10	Lock Washer
1E-40	SR64-1E40	HSS Nosepiece (Anvil Insert), Flat Face, 5/32" or 4.0 mm	11	SR64-11	Extension
1E-48	SR64-1E48	HSS Nosepiece (Anvil Insert), Flat Face, 3/16" or 4.8 mm	3AY	SR64-3AY	QUICK-CHANGE COLLET ASSEMBLY
1E-64	SR64-1E64	HSS Nosepiece (Anvil Insert), Flat Face, 1/4" or 6.4 mm	12	SR64-12	Plastic Sleeve Box (For loading all SR-64™ Parts)

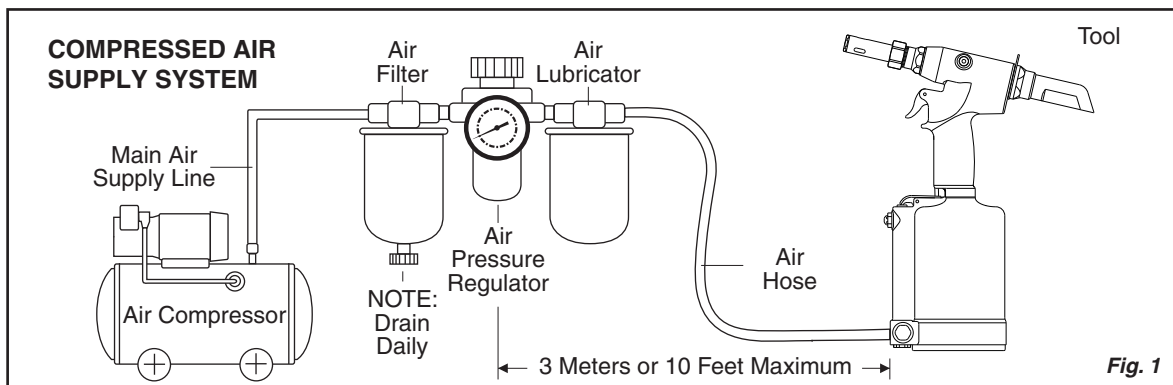
## 10. OPERATION INSTRUCTIONS

### 10.1 SETTING AND TESTING

1. This pneumatic-hydraulic installation tool is well assembled and tested before delivery; however, the necessary setting and testing are still strongly suggested before operating tool. Carefully read this **OPERATION INSTRUCTIONS 10.2 - 10.5** to check the setting of tool, follow the **10.6 OPERATION PROCEDURE** to do the pilot test before operating tool.
2. The compressed air pressure should be in the suggested working range. The nose assembly size, lockbolt size, structural blind rivet size and work pieces' hole diameter must be well matched; the pilot test can verify the fastening work is correct or not.

### 10.2 COMPRESSED AIR SUPPLY SYSTEM (Fig.1)

1. This pneumatic-hydraulic installation tool is operated with compressed air at an optimum air pressure of 90 psi or 6.2 bar.
2. This pneumatic-hydraulic installation tool is recommended to connect with COMPRESSED AIR SUPPLY SYSTEM (Fig. 1) including air compressor, main air supply line, air preparation unit (air filter, air pressure regulator with gauge, air lubricator) and air hose. These should be fitted within 3 meters or 10 feet from air pressure regulator to the tool to ensure maximum tool life and minimum tool maintenance.
3. The air pressure regulator is used to adjust the operating air pressure not to exceed the maximum operating air pressure 100 psi or 7.0 bar.
4. The air hose should resist a minimum 150% of maximum operating air pressure (100 psi or 7.0 bar) produced in the COMPRESSED AIR SUPPLY SYSTEM, that is to resist the highest air pressure 145 psi or 10 bar. The air hose should be oil resistant, and have an abrasion resistant exterior. The air hose must have a minimum inner diameter of 3/8" or 10 mm. Be sure to expel the accumulated dirt and water from air pipeline before connecting air hose to the tool.



### 10.3 PRINCIPLE OF OPERATION

1. This pneumatic-hydraulic installation tool is designed to quickly fasten the work pieces together firmly with a suitable size lockbolt or blind rivet by depressing the trigger (25) to suck the compressed air into the air cylinder (19), to activate the air piston assembly (46AY) upwards, to drive hydraulic oil, to force the oil piston assembly (8AY) backwards, to drive the collet assembly backwards to deform collar or rivet body and break off the pin or rivet mandrel with the minimum vibration, eventually the work pieces are fastened together firmly. Above fastening process is completed in one second.
2. After setting lockbolt or blind rivet, release the trigger (25) to stop the fastening work, the powerful return springs (11 & 12) push the oil piston assembly (8AY) and collet assembly forwards to drive hydraulic oil and to release spent pin or spent mandrel, to push the air piston assembly (46AY) downwards to the original position, the air is therefore expelled from the air cylinder (19) to the air exhaust through the noise silencer (21) with low noise. The fastening cycle is completed, and the tool is ready for setting the next lockbolt or blind rivet.

When inserting the next same size lockbolt's pin into the anvil insert of nose assembly, the spent pin is therefore pushed out of tool through the pintail deflector (16).

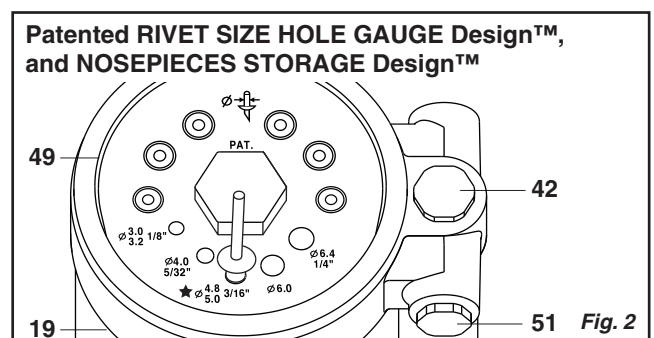
While the spent mandrel of blind rivet can be cleared out of tool through the pintail deflector (16) by tilting nose assembly upwards.

So that the spent pins or spent mandrels shall be not jammed in the tool after setting the next lockbolt or blind rivet.

### 10.4 EXCHANGE NOSE ASSEMBLY

1. Disconnect the tool from the compressed air supply system.
2. Choose the correct size nose assembly as the new working nose assembly.

**NOTE:** The patented RIVET SIZE HOLE GAUGE Design™ at the bottom of air cylinder end cap (49) provides a great assistance for checking the rivet body diameter of the blind rivet to be fastened. Insert rivet body into the holes to find out the matched size (for example ★Ø3/16" or 4.8 mm) marked beside the hole gauge, then choose the matched size nose assembly (for example ★Ø3/16" or 4.8 mm) as the working nose assembly, so as to avoid the spent mandrel being stuck in tool after setting blind rivet (Fig. 2).



- Use wrench 2712 (52) 27 mm to unscrew the retaining nut (1), take out the anvil assembly, and then use same wrench (52) 27 mm to unscrew the adapter (2) from the oil cylinder (5).
- See Fig. 3**, use a wrench 10 mm to lock the crosscut planes of oil piston (8) and a wrench 9/16" or 14 mm to unscrew the front hex part of collet, the collet and extension along with o-ring are separated from the threaded part of oil piston (8). Now the replaced nose assembly is dismantled, check and replace the worn o-ring.
- For exchanging HUCK® Type Nose Assembly**

**See Fig. 3**, choose the new nose assembly, check to ensure a good o-ring is put in the rear end of extension, use a wrench 10 mm to lock the crosscut planes of the oil piston (8) in the oil cylinder (5) and a wrench 9/16" or 14 mm to fasten the front hex part of collet together with the extension and o-ring back to the threaded part of oil piston (8) firmly. Fasten adapter (2) back to the oil cylinder (5), put back anvil assembly onto the fastened collet assembly, finally use wrench 2712 (52) 27 mm to fasten retaining nut (1) back to adapter (2) firmly. Now the new working nose assembly is ready for setting the matched size lockbolt or structural blind rivet.

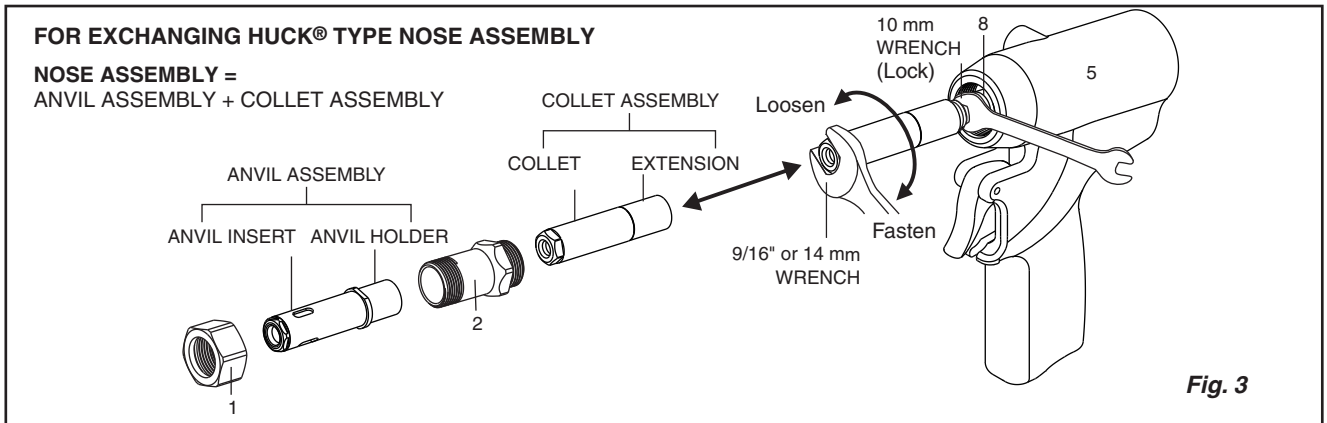


Fig. 3

- For exchanging to RIVTEC® Universal Nose Assembly 5/32"~1/4" or 4.0~6.4 mm (SR-64™)**

**See Fig. 4**, choose a new **RIVTEC® Universal Nose Assembly 5/32"~1/4" or 4.0~6.4 mm (SR-64™)**, take out the inside quick-change collet assembly from the anvil holder, use a wrench 16 mm and a wrench 10 mm to fasten the quick-change collet assembly to the oil piston (8) in the oil cylinder (5) firmly, finally use a wrench 12 mm or 14 mm to fasten the chosen size nosepiece (Anvil Insert) to the anvil holder and the wrench 2712 (52) 27 mm to fasten anvil holder back to the oil cylinder (5). Now the new working nose assembly **SR-64™** is ready for setting the matched size structural or standard/commercial blind **NOTE: Do not need to install the retaining nut (1) and adapter (2) when installing RIVTEC® Universal Nose Assembly 5/32"~1/4" or 4.0~6.4 mm (SR-64™).**

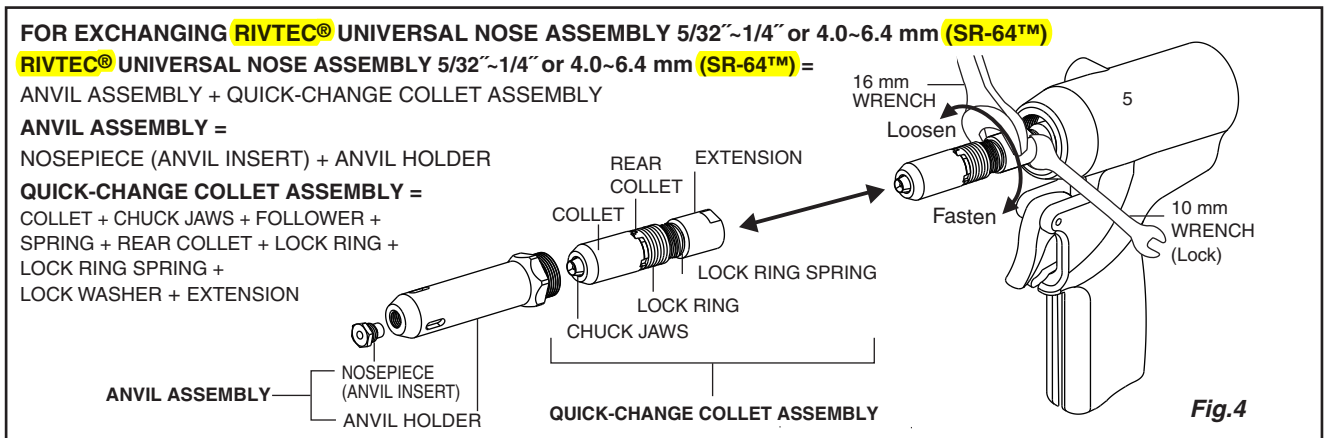


Fig.4

- Connect the tool to the compressed air supply system. It is suggested to depress the trigger (25) twice to adjust the inner parts of nose assembly to the normal position, now the pin of lockbolt or mandrel of blind rivet should be inserted into the working nose assembly smoothly.

## 10.5 SUSPENSION DEVICE

The hanging bracket (14) is designed for hanging the tool to the suspension device of assembly line to decrease the physical strain placed on the operator by the weight of tool.

## 10.6 OPERATING PROCEDURE

- Make sure that the pintail deflector (16) is fitted by pushing to the oil cylinder end cap (15) firmly.
- Ensure that the correct working nose assembly suitable for the prepared hole of work pieces is fitted to the adapter (2) and the retaining nut (1) is locked firmly.
- Connect the tool to the compressed air supply system.
- For setting lockbolt:**

Insert the pin of lockbolt into the prepared hole of work pieces to be fastened, put the collar onto the pin at the tool operating side, and then insert the pin into the anvil insert of working nose assembly completely.

#### 4. **For setting blind rivet:**

Insert the mandrel of structural or standard/commercial blind rivet into the nosepiece (anvil Insert) of nose assembly, and then completely insert the rivet body of blind rivet into the prepared hole of work pieces to be fastened.

- Lightly depress the trigger (25) to break off the pin or mandrel, the collar or rivet body is deformed to fasten the work pieces together firmly at the same time. If more than one triggering is required, release trigger (25) and move tool to make anvil insert of nose assembly touch collar or rivet flange, and then depress the trigger (25) again to break off the pin or mandrel.
- Release the trigger (25) and move the working nose assembly from the fastened work pieces, the fastening cycle is completed, and the tool is ready for setting next same size lockbolt or blind rivet.
- When inserting the next same size pin of lockbolt into the anvil insert of nose assembly, the spent pin is therefore pushed out of tool through the pintail deflector (16).

While the spent mandrel of structural or standard/commercial blind rivet can be cleared out of tool through the pintail deflector (16) by tilting nose assembly upwards.

## 11. MAINTENANCE

### [ WARNING ]

Always disconnect the tool from the COMPRESSED AIR SUPPLY SYSTEM before maintaining the tool.

#### 11.1 DAILY CHECKS

- If no air lubricator is fitted on the compressed air supply system, it is suggested to pour a few drops of the thin lubricating oil into the air inlet fitting of tool before daily operation. If the tool is in continuous use, the air inlet fitting should be lubricated every two or three hours.
- Check for air leaks. If damaged, replace the air hoses and air couplings.
- If there is no air filter on the compressed air supply system, bleed the air line to clear the accumulated dirt or water before connecting the air hose to tool. If there is an air filter, drain it.
- Carefully check and firmly tighten the retaining nut (1) with the nose assembly, adapter (2), oil screw plug (7), oil cylinder end cap (15), noise silencer lock nut (22), valve end cap (42), air cylinder end cap (49), air inlet end cap (51) and air inlet fitting before daily operation.
- Check to empty the spent pin or mandrel by inserting a smaller diameter long bar into anvil insert of nose assembly. Be sure to fit the pintail deflector (16) to the oil cylinder end cap (15) firmly.
- Check to ensure the trigger (25) operation is normal.

#### 11.2 WEEKLY CHECKS

- Dismantle nose assembly to clean and check the inside parts with special attention to follow the instructions of 11.7. If the inside parts get worn out, replace them.

**NOTE:** If the tool is operated frequently, it is suggested to clean and check nose assembly daily.

- Unscrew the noise silencer lock nut (22) and take out the noise silencer (21) to clean it. See 11.5 for detailed operation.
- Check the oil leaks and the air leaks in the compressed air supply system.

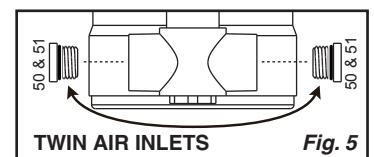
#### 11.3 EMPTY THE SPENT PIN OR SPENT MANDREL

When inserting the next same size pin of lockbolt into the anvil insert of nose assembly, the spent pin is therefore pushed out of tool through the pintail deflector (16). While the spent mandrel of blind rivet can be cleared out of tool through the pintail deflector (16) by tilting the nose assembly upwards.

If necessary, the spent pin or spent mandrel also can be ejected by inserting a smaller diameter long bar into anvil insert of nose assembly.

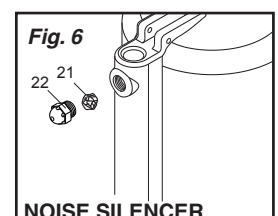
#### 11.4 EXCHANGE THE AIR INLET FITTING TO THE TWIN AIR INLETS (Fig. 5)

- The Twin Air Inlets Design offers to meet individual operating hobby, such as the right-handed operators or left-handed operators.
- Disconnect the tool from the compressed air supply system.
- Use the wrench 2712 (52) 16 mm to unscrew the air inlet end cap (51) along with the o-ring (50), and then install the air inlet fitting to the preferable air inlet.
- Fasten the air inlet end cap (51) along with the o-ring (50) to the vacant air inlet firmly.



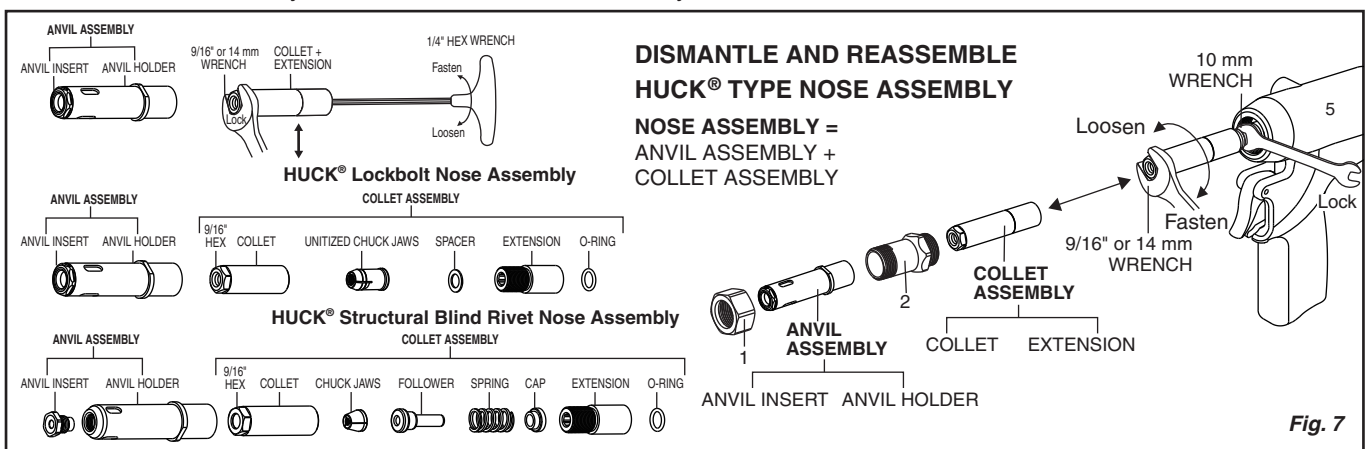
#### 11.5 CLEAN AND REPLACE THE NOISE SILENCER (Fig. 6)

- Disconnect the tool from the compressed air supply system.
- Use a wrench 9/16" or 14 mm to unscrew the noise silencer lock nut (22), take out the noise silencer (21) and clean it. If the noise silencer (21) is blocked or covered badly, can replace it with a small piece of \*3M scouring pad. \*3M is a trademark of the 3M Company.
- Reverse the above step to reassemble these two parts. Ensure that the noise silencer lock nut (22) is fastened firmly.



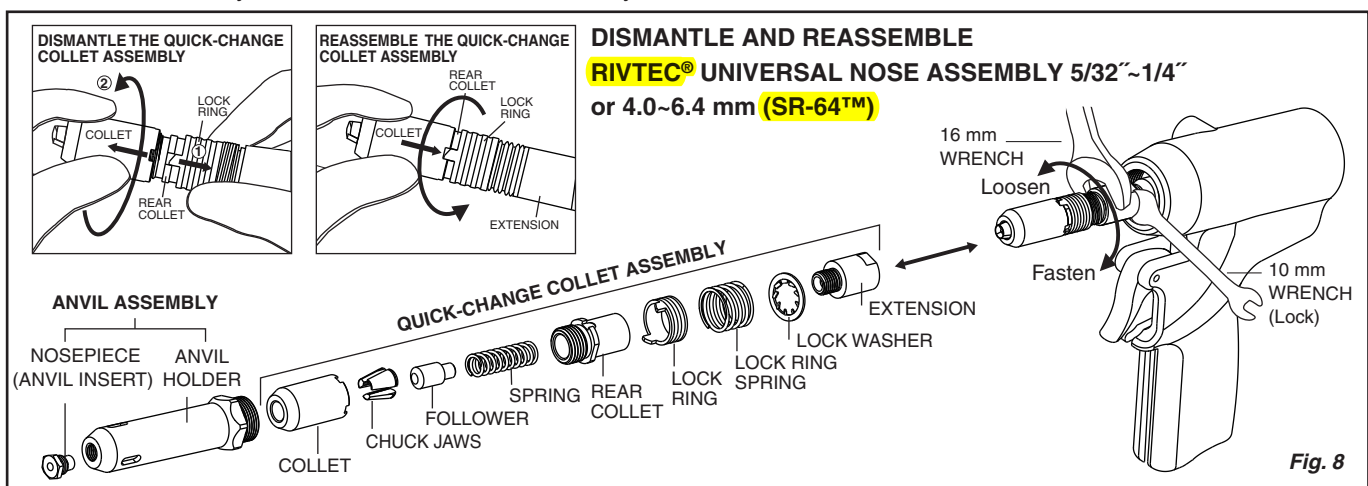
## 11.6 CHECK, CLEAN AND REPLACE THE INNER PARTS OF THE NOSE ASSEMBLY (Fig. 7 & Fig. 8)

1. **Disconnect the tool from the compressed air supply system.**
2. Use wrench 2712 (52) 27 mm to unscrew the retaining nut (1), take out the anvil assembly, and use same wrench (52) 27 mm to unscrew the adapter (2) from the oil cylinder (5).
3. **For HUCK® Type Nose Assembly**  
**See Fig. 7**, use a wrench 10 mm to lock the crosscut planes of oil piston (8) in the oil cylinder (5) and a wrench 9/16" or 14 mm to unscrew the front hex part of collet, the collet and extension with an o-ring are separated from the threaded part of oil piston (8). Check and replace the worn o-ring. Finally use a wrench 9/16" or 14 mm to lock the front hex part of collet and insert a hex wrench 1/4" into the rear end of extension to separate collet from extension. Take out the unitized chuck jaws and spacer (for lockbolt nose assembly) or the chuck jaws, follower, spring and cap (for structural blind rivet nose assembly), clean them and replace the worn parts.
4. Reverse to reassemble nose assembly: Install unitized chuck jaws and spacer (for lockbolt nose assembly) or the chuck jaws, follower, spring and cap (for structural blind rivet nose assembly) into collet, use a wrench 9/16" or 14 mm to lock the front hex part of collet and insert a hex wrench 1/4" into the rear end of extension to fasten the collet and extension together firmly. Place the o-ring in the rear end of extension, use a wrench 10 mm to lock the crosscut planes of the oil piston (8), then use a wrench 9/16" or 14 mm to fasten the front hex part of collet together with the extension and o-ring back to the threaded part of oil piston (8) firmly. Use wrench 2712 (52) 27 mm to fasten adapter (2) back to the oil cylinder (5) firmly, put back anvil assembly onto the reassembled collet and extension, finally use wrench 2712 (52) 27 mm to fasten retaining nut (1) back to adapter (2) firmly. Now the nose assembly has been reassembled and is ready to set next lockbolt or structural blind rivet.



3. **For RIVTEC® Universal Nose Assembly 5/32"~1/4" or 4.0~6.4 mm (SR-64™) with Quick-Change Collet Assembly**

- See Fig. 8**, use the wrench 2712 (52) 27 mm to unscrew the anvil assembly from the oil cylinder (5), **dismantle the quick-change collet assembly by hand as per the following steps: Pull back the lock ring to let the tenons of lock ring separate from the slots of collet, hold the lock ring and turn the collet counterclockwise to separate the collet from the rear collet.** **WARNING: Operator must put on gloves during operation to avoid hurting fingers.** Finally dismantle the rear collet, lock ring, lock spring and lock washer from the extension by two 16 mm wrenches. Take out the chuck jaws, follower and spring from the collet. Thoroughly clean all dismantled parts and rear collet, and lubricating chuck jaws with thin lubricating oil to prolong the operation life of chuck jaws. Check and replace the worn parts.
4. Firstly install the extension with oil piston (8) firmly, reassemble the lock washer, put the lock ring and lock ring spring back onto rear collet adjacent to the lock washer, then fasten rear collet to extension firmly. Put the spring into the rear collet, then insert the rear part of follower into the front hole of spring, and carefully put the chuck jaws into the collet (Fig. 9), finally use a hand to fasten the collet and rear collet together firmly by turning the quick-change type collet clockwise all the way until the slots of collet accept the tenons of lock ring with 3 ~ 4 click sounds, the collet can not move backward any more and the collet is fastened with the rear collet firmly. Use wrench 2712 (52) 27 mm to fasten anvil assembly back to oil cylinder (5) firmly. Now the nose assembly has been reassembled and is ready to set structural or standard/commercial blind rivet.



5. Connect the tool to the compressed air supply system. It is suggested to depress the trigger (25) twice to adjust the inner parts of nose assembly to the normal position, now the pin of lockbolt or mandrel of blind rivet should be inserted into the working nose assembly smoothly.

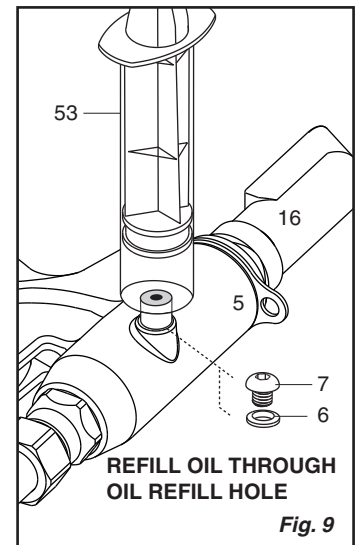
### 11.7 REFILL HYDRAULIC OIL THROUGH THE OIL REFILL HOLE (Fig. 9)

When the shortage of hydraulic oil causes the decrease of stroke, the normal stroke can be recovered by filling the hydraulic oil into the oil refill hole on the side of oil cylinder (5).

#### [ WARNING ]

- Always wear the safety goggles during operation.
- The hydraulic oil is suggested to use ISO VG-32 or VG-46 that are popular in market.
- Be sure to disconnect the tool from the compressed air supply system before unscrewing the oil screw plug (7).
- Make sure to tighten the oil screw plug (7) firmly after refilling oil.

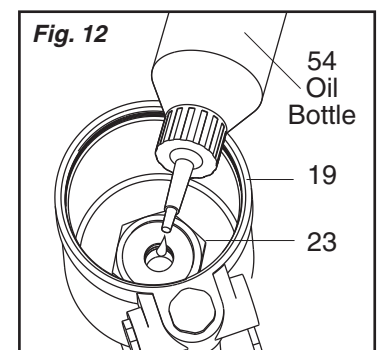
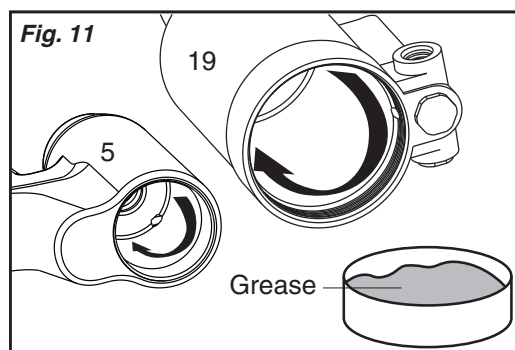
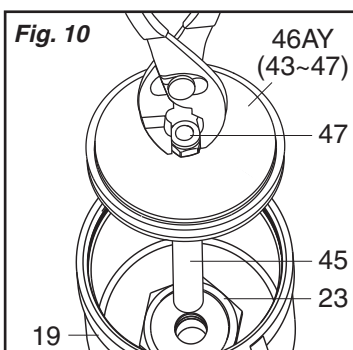
1. Connect the tool to the compressed air supply system, depress the trigger (25) twice to move the inner oil piston assembly (8AY) and air piston assembly (46AY).
2. **Disconnect the tool from the compressed air supply system.**
3. Push the piston of the hydraulic oil injector (53) forwards to the end, and then immerse the fitting of hydraulic oil injector (53) in the new hydraulic oil and slowly pull the piston backwards to suck the new hydraulic oil around 25 ml into the hydraulic oil injector (53). **Make sure that the hydraulic oil injector (53) contains no air bubbles in the oil.**
4. Lay the Tool flat and let **Oil Refill Hole** upward. Carefully unscrew the oil screw plug (7) and remove the sealing washer (6).
5. Gently rotate to screw the fitting of hydraulic oil injector (53) into the oil refill hole of oil cylinder (5) firmly.
6. **Depress the piston of hydraulic oil injector (53) forwards to inject oil until the piston can not move further.**
7. Gently unscrew to remove the fitting of hydraulic oil injector (53) from the oil refill hole of oil cylinder (5). Wipe away the spilt oil, if any.
8. **Restore the sealing washer (6), and carefully tighten the oil screw plug (7) firmly.**
9. Reconnect the tool to the compressed air supply system and depress the trigger (25) twice. Now the normal stroke is recovered.



### 11.8 REPLACE THE HYDRAULIC OIL ONLY

- After considerable times of operation, the hydraulic oil should be replaced.
- The hydraulic oil is suggested to use ISO VG-32 or VG-46 that are popular in market.

1. **Disconnect the tool from the compressed air supply system.**
2. Use the wrench 2712 (52) 27 mm to unscrew the air cylinder end cap (49) & o-ring (48), and use a pair of pliers to clamp the air piston lock nut (47) and slowly pull out the air piston assembly (46AY) in a straight line (Fig. 10). **Be careful not to scratch the air piston rod (45) and the inner wall of air cylinder (19). Drain the dirty hydraulic oil out of the tool through the air cylinder (19).**
3. Clean and grease the inner wall of air cylinder (19) (Fig. 11) also clean and grease the air piston ring (44).
4. **Put the tool upside-down, and use the oil bottle (54) loaded with new hydraulic oil to refill into the oil cylinder (5) through the air cylinder (19) until oil is flushed with the upper oil cylinder o-ring (17) (Fig. 12). Make sure not to overfill oil, and rest for a while until the oil stops releasing air bubbles.**
5. Use a pair of pliers to clamp the air piston lock nut (47) and slowly plug the air piston assembly (46AY) in a straight line into the oil cylinder (5) through the oil cylinder lock nut (23) (Fig. 10). Then, depress the air piston assembly (46AY) 2 ~ 3 times. Repeat above steps to check again the oil level, and add a little hydraulic oil if necessary, but not too much oil. Finally reassemble the air cylinder end cap (49) & o-ring (48) with the wrench 2712 (52) 27 mm.





## 11.9 REPLACE THE OIL CYLINDER, AIR CYLINDER, O-RINGS, BACK-UP RINGS, RETURN SPRINGS AND HYDRAULIC OIL TOGETHER

- After considerable times of operation, oil cylinder (5) and air cylinder (19) as well as their o-rings and back-up rings, return springs (11 & 12), also the hydraulic oil should be replaced.
- The hydraulic oil is suggested to use ISO VG-32 or VG-46 that is popular in market.

1. **Disconnect the tool from the compressed air supply system.**
2. **For HUCK® Type Nose Assembly**  
Use wrench 2712 (52) 27 mm to unscrew the retaining nut (1), take out the anvil assembly, and then use same wrench (52) 27 mm to unscrew the adapter (2) from the oil cylinder (5).
3. **See Fig. 3**, use a wrench 10 mm to lock the crosscut planes of oil piston and a wrench 9/16" or 14 mm to unscrew the front part of collet, the collet assembly along with o-ring are separated from the threaded part of oil piston (8). Now the replaced nose assembly is dismantled, check and replace the worn o-ring.
2. **For RIVTEC® Universal Nose Assembly 5/32"~1/4" or 4.0~6.4 mm (SR-64™) with Quick-Change Collet Assembly**  
Use the wrench 2712 (52) 27 mm to unscrew the anvil assembly from the oil cylinder (5).
3. **See Fig. 4**, use two wrenches 16 mm to unscrew collet assembly from the threaded part of oil piston (8). Now the replaced nose assembly is dismantled.
4. Use the wrench 2712 (52) 27 mm to unscrew the air cylinder end cap (49) & o-ring (48), and use a pair of pliers to clamp the air piston lock nut (47) and slowly pull out the air piston assembly (46AY) in a straight line (Fig. 10). **Be careful not to scratch the air piston rod (45) and the inner wall of air cylinder (19). Drain the dirty hydraulic oil out of the tool through the air cylinder (19).**
5. **Check and replace the worn buffer ring (43), air piston ring (44), and air cylinder end cap o-ring (48). Also check and replace the worn or scratched air piston rod (45) and the damaged air piston lock nut (47), finally and lock it (47) firmly.**
6. **Use a long stem socket wrench 35 mm to unscrew the oil cylinder lock nut (23) along with a lock nut o-ring (24), and then use a suitable diameter pin carefully to punch out the lever pin (31) to separate the trigger lever (27) from air cylinder (19). Carefully use a hex wrench 3 mm to unscrew the positioning screw (20), and then vertically pull the oil cylinder (5) out of the air cylinder (19) with care, the lock nut o-ring (24) is jumped out from the thread of oil cylinder (5). Check and replace the worn or scratched air cylinder (19) on the inner wall. NOTE: The oil cylinder lock nut (23) should be replaced after repeated fastening 3 ~ 4 times. The lock nut o-ring (24) should be replaced each time after dismantling oil cylinder lock nut (23).**
7. Pull out the pintail deflector (16), use a wrench 32 mm to dismantle the oil cylinder end cap (15), remove hanging bracket o-ring (13) and hanging bracket (14), take out the large & small return springs (11 & 12), and slowly press the threaded end of oil piston (8) to take out the oil piston assembly (8AY) from the rear end of oil cylinder (5). Pay special attention to dismantle the oil cylinder (5), do not let the strong force of large & small return springs (11 & 12) jump out to hurt people. Be careful not to scratch the rod of oil piston (8) and the inner wall of oil cylinder (5).
8. Check and replace the worn oil cylinder o-rings (3) and oil cylinder back-up ring (4) in the front part of oil cylinder (5), and the worn oil cylinder o-rings (17) and oil cylinder back-up ring (18) in the lower part of oil cylinder (5), as well as the worn oil piston o-rings (9) and oil piston back-up ring (10). Check and replace the worn or scratched oil piston rod (8) and oil cylinder (5). Also check and replace the weak or broken large & small return springs (11 & 12). Finally check and replace the worn hanging bracket o-ring (13) and the damaged pintail deflector (16).
9. Clean and grease around the inner walls of oil cylinder (5) and air cylinder (19) (Fig. 11), and around the the oil piston o-ring (9) and air piston ring (44).
10. Reverse above steps to reassemble the oil piston assembly (8AY) and large & small return springs (11 & 12), hanging bracket (14) and hanging bracket o-ring (13), and the pintail deflector (16). Pay special attention to the strong force of large & small return springs (11 & 12) which might jump out to hurt people.
11. Reverse above steps to reassemble the oil cylinder (5) and air cylinder (19) together by aligning and using a hex wrench 3 mm to fasten the positioning screw (20) carefully, put a new lock nut o-ring (24) onto the thread of oil cylinder (5) and carefully move it (24) down to touch the top of air cylinder (19), and then fasten the oil cylinder lock nut (23) firmly with a long stem socket wrench 35 mm. Finally reassemble the trigger lever (27) back to the air cylinder (19) by punching the lever pin (31) into the original pin holes carefully.
12. Put the tool upside-down, and use the oil bottle (54) loaded with new hydraulic oil to refill into the oil cylinder (5) through the air cylinder (19) until the oil is flushed with the upper oil cylinder o-rings (17) (Fig. 12). Make sure not to overfill oil, and rest for a while until the oil stops releasing air bubbles.
13. Use a pair of pliers to clamp the air piston lock nut (47) and slowly plug the air piston assembly (46AY) in a straight line into the oil cylinder (5) through the oil cylinder lock nut (23) of air cylinder (19) (Fig. 10), then depress the air piston assembly (46AY) 2 ~ 3 times. Finally, use a wrench 2712 (52) 27 mm to reassemble the air cylinder end cap (49) & o-ring (48).

14. **For HUCK® Type Nose Assembly**

**See Fig. 7**, check to ensure a good o-ring is put in the rear end of extension, use a wrench 10 mm to lock the crosscut planes of the oil piston (8) and a wrench 9/16" or 14 mm to fasten the front hex part of collet along with extension and o-ring back to the threaded part of oil piston (8) firmly. Use wrench 2712 (52) 27 mm to fasten adapter (2) back to the oil cylinder (5) firmly, put back anvil assembly onto the reassembled collet assembly, finally use wrench 2712 (52) 27 mm to fasten retaining nut (1) back to adapter (2) firmly. Now the working nose assembly is ready for setting the matched size lockbolt or structural blind rivet.

14. **For RIVTEC® Universal Nose Assembly 5/32"~1/4" or 4.0~6.4 mm (SR-64™) with Quick-Change Collet Assembly**

**See Fig. 8**, use two wrenches 16 mm to fasten collet assembly back to the threaded part of oil piston (8) firmly. Finally use the wrench 2712 (52) 27 mm to fasten the anvil assembly back to the oil cylinder (5) firmly. Now the working nose assembly is ready for setting the matched size structural or standard/commercial blind rivet.

15. Ensure that the oil cylinder end cap (15) is fastened firmly, the retaining nut (1) and adapter (2) are all fastened firmly, and the pintail deflector (16) is well fitted.

**11.10 DISMANTLE AND REPLACE THE PARTS OF THE TRIGGER ASSEMBLY (25AY) AND THE ASSEMBLY (33AY) (Fig. 11)**

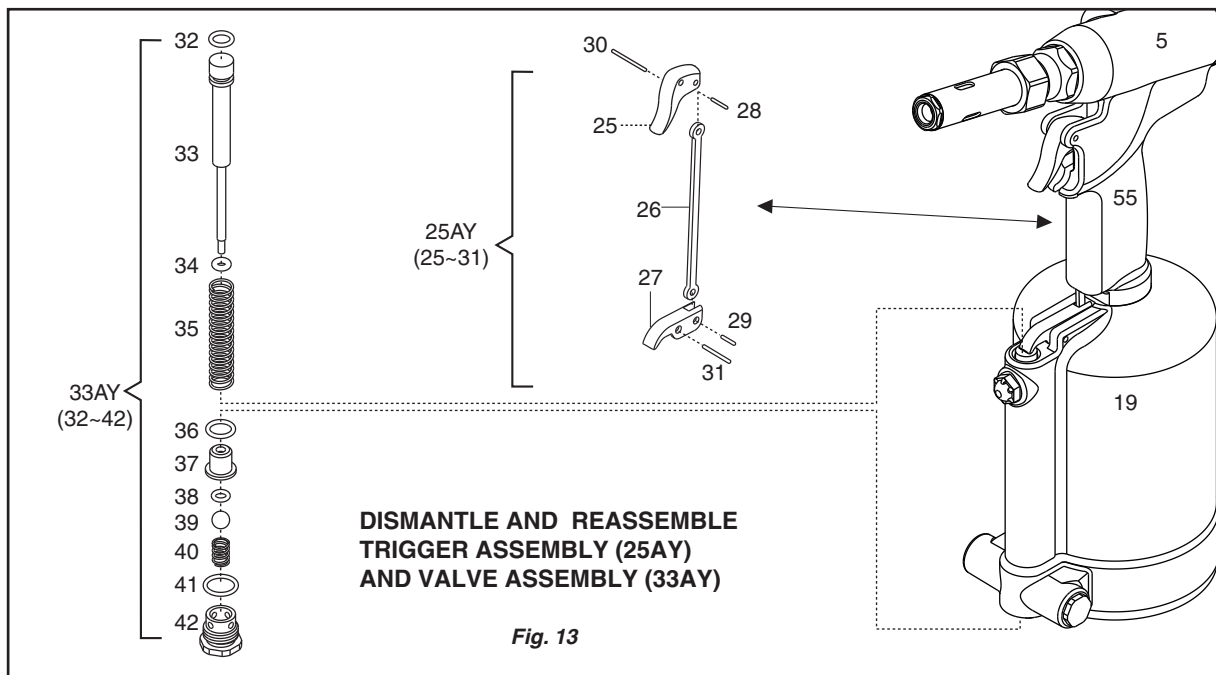
1. **Disconnect the tool from the compressed air supply system.**

2. Firstly use a suitable diameter pin carefully to punch out the lever pin (31) to separate the trigger lever (27) from air cylinder (19), and use a suitable diameter pin carefully to punch out the trigger pin (30) to separate trigger (25) from oil cylinder (5), and then to punch out the lower link pin (29) to separate trigger link (26) from trigger lever (27). Finally, pull out the trigger (25) connected with trigger link (26) and upper link pin (28) from the front upper side of grip (55). Check and replace any worn parts of the trigger assembly (25AY).

3. Dismantle the valve assembly (33AY) by unscrewing valve end cap (42), and carefully take out valve assembly (33AY) from two ends. Check and replace any worn parts of the valve assembly (33AY), such as o-rings (32, 34, 36, 38, 41), springs (35, 40), etc.

4. Reverse above steps, firstly reassemble the valve assembly (33AY), and then to reassemble the trigger assembly (25AY) by plugging the trigger (25) connected with trigger link (26) and upper link pin (28) into the front upper side of grip (55), and punch the trigger pin (30) into the original pin holes of oil cylinder (5) and trigger (25), then carefully punch the lower link pin (29) into the original pin holes of trigger link (26) and trigger lever (27).

5. Finally, reassemble the trigger lever (27) back to the air cylinder (19) by punching the lever pin (31) into the original pin holes of air cylinder (19) and trigger lever (27) carefully. Now the reassembly process is completed.



## 12. TROUBLESHOOTING

### 12.1A MALFUNCTION: The Lockbolt Pin fails to insert into the Anvil Insert of Working Nose Assembly

Possible Causes:	Solutions:
Wrong size Working Nose Assembly	Change a correct size Working Nose Assembly
Loose Working Nose Assembly	Fasten Retaining Nut (1) to tighten Working Nose Assembly
Dust accumulated in Anvil Insert and Anvil Holder	Clean Anvil Insert and Anvil Holder
Worn Anvil Assembly	Replace a new Anvil Assembly
Loose Adapter (2)	Tighten Adapter (2)
Loose Collet and Extension	Tighten Collet and Extension
Improper assembly of Unitized Chuck Jaws and Spacer	Reassemble Unitized Chuck Jaws and Spacer
Dust accumulated in Collet and Extension	Clean Collet and Extension
Dust accumulated in Unitized Chuck Jaws and Spacer	Clean Unitized Chuck Jaws and Spacer
Worn Unitized Chuck Jaws and Spacer	Replace new Unitized Chuck Jaws and Spacer
Weak or broken Return Springs (11 & 12)	Replace new Return Springs (11 & 12)
Air Piston Assembly (46AY) stuck in Air Cylinder (19)	See below 12.6 Solutions
Spent Pins jammed in the Tool	Clean to eject Spent Pins

### 12.1B MALFUNCTION: The Blind Rivet Mandrel fails to insert into the Nosepiece (Anvil Insert) of Working Nose Assembly

Possible Causes:	Solutions:
Wrong size Working Nose Assembly	Change a correct size Working Nose Assembly
Wrong size Working Nosepiece (Anvil Insert)	Change a correct size Working Nosepiece (Anvil Insert)
Loose Working Nose Assembly	Fasten Retaining Nut (1) to tighten Working Nose Assembly
Dust accumulated in Nosepiece (Anvil Insert) and Anvil Holder	Clean Nosepiece (Anvil Insert) and Anvil Holder
Worn Nosepiece (Anvil Insert)	Replace a new Nosepiece (Anvil Insert)
Loose Adapter (2) or Anvil Holder	Tighten Adapter (2) or Anvil Holder
Loose Collet and Extension	Tighten Collet and Extension
Improper assembly of Chuck Jaws, Follower, Spring, and Cap	Reassemble Chuck Jaws, Follower, Spring, and Cap
Dust accumulated in Collet and Extension	Clean Collet and Extension
Dust accumulated in Chuck Jaws, Follower, Spring, and Cap	Clean Chuck Jaws, Follower, Spring, and Cap
Worn Follower or Cap	Replace a new Follower or a new Cap
Weak or broken Spring	Replace a new Spring
Weak or broken Return Springs (11 & 12)	Replace new Return Springs (11 & 12)
Air Piston Assembly (46AY) stuck in Air Cylinder (19)	See below 12.6 Solutions
Spent rivet mandrels jammed in the Tool	Clean to eject Spent rivet mandrels

### 12.2A MALFUNCTION: Tool fails to bite or break Lockbolt Pin

Possible Causes:	Solutions:
Wrong size Working Nose Assembly	Change a correct size Working Nose Assembly
Dust accumulated in Unitized Chuck Jaws and Spacer	Clean Unitized Chuck Jaws and Spacer
Worn or broken Unitized Chuck Jaws and Follower	Replace Unitized Chuck Jaws and Follower
Loose Collet and Extension	Tighten Collet and Extension
Dust accumulated in Collet and Extension	Clean Collet and Extension
Loose Adapter (2)	Tighten Adapter (2)
Dust accumulated in Adapter (2)	Clean the inside of Adapter (2)
Low Air Pressure or Air Pressure lost	Check Compressed Air Supply System, adjust Air Pressure to in specification, check Air Cylinder (19) leak and replace it if necessary, clean Air Cylinder (19) inside, clean or replace Air Piston Ring (44) and O-Rings (48, 50)
Hydraulic Oil Pressure lost	Insufficient Oil and refill Oil, check Oil Cylinder (5) leak and replace it if necessary, replace all O-Rings (3, 9, 17, 13) and Back-Up Rings (4, 10, 18)
Exceed Tool's Capacity	Use more powerful Tool

### 12.2B MALFUNCTION: Tool fails to bite or break Blind Rivet Mandrel

Possible Causes:	Solutions:
Wrong size Working Nose Assembly	Change a correct size Working Nose Assembly
Wrong size Working Nosepiece (Anvil Insert)	Change a correct size Working Nosepiece (Anvil Insert)
Dust accumulated in Chuck Jaws, Follower, Spring and Cap	Clean Chuck Jaws, Follower, Spring and Cap
Worn or broken Chuck Jaws and Follower	Replace new Chuck Jaws and Follower
Weak or broken Spring	Replace a new Spring
Loose Collet and Extension	Tighten Collet and Extension
Dust accumulated in Collet and Extension	Clean Collet and Extension
Loose Adapter (2) or Anvil Holder	Tighten Adapter (2) or Anvil Holder
Dust accumulated in Adapter (2)	Clean the inside of Adapter (2)
Low Air Pressure or Air Pressure lost	Check Compressed Air Supply System, adjust Air Pressure to in specification, check Air Cylinder (19) leak and replace it if necessary, clean Air Cylinder (19) inside, clean or replace Air Piston Ring (44) and O-Rings (48, 50)
Hydraulic Oil Pressure lost	Insufficient Oil and refill Oil, check Oil Cylinder (5) leak and replace it if necessary, replace all O-Rings (3, 9, 17, 13) and Back-Up Rings (4, 10, 18)
Exceed Tool's Capacity	Use more powerful Tool

### 12.3A MALFUNCTION: Spent Pin cannot be ejected after setting Lockbolt

Possible Causes:	Solutions:
Wrong size Working Nose Assembly	Change a correct size Nose Assembly
Dust accumulated in Unitized Chuck Jaws and Spacer	Clean Unitized Chuck Jaws and Spacer
Spent Mandrels jammed in Tool	Clean to eject Spent Mandrels
Air Piston Assembly (46AY) stuck in Air Cylinder (19) and fails to return to its normal position	See below 12.6 Solutions

### 12.3B MALFUNCTION: Spent Mandrel cannot be ejected after setting Blind Rivet

Possible Causes:	Solutions:
Wrong size Working Nose Assembly	Change a correct size Working Nose Assembly
Wrong size Working Nosepiece (Anvil Insert)	Change a correct size Working Nosepiece (Anvil Insert)
Dust accumulated in Chuck Jaws, Follower, Spring and Cap	Clean Chuck Jaws, Follower, Spring and Cap
Spent Mandrels jammed in Tool	Clean to eject Spent Mandrels
Air Piston Assembly (46AY) stuck in Air Cylinder (19) and fails to return to its normal position	See below 12.6 Solutions

### 12.4A MALFUNCTION: Slow Cycle for Tool setting Lockbolts

Possible Causes:	Solutions:
Low Air Pressure	Check Compressed Air Supply System, adjust Air Pressure to in specification, check Air Cylinder (19) leak and replace it if necessary, clean Air Cylinder (19) inside, clean or replace Air Piston Ring (44) and O-Rings (48, 50)
Dust accumulated in Unitized Chuck Jaws and Spacer	Clean Unitized Chuck Jaws and Spacer
Dust accumulated in Adapter (2)	Clean the inside of Adapter (2)

### 12.4B MALFUNCTION: Slow Cycle for Tool setting Blind Rivets

Possible Causes:	Solutions:
Low Air Pressure	Check Compressed Air Supply System, adjust Air Pressure to in specification, check Air Cylinder (19) leak and replace it if necessary, clean Air Cylinder (19) inside, clean or replace Air Piston Ring (44) and O-Rings (48, 50)
Dust accumulated in Chuck Jaws, Follower, Spring and Cap	Dust accumulated in Chuck Jaws, Follower, Spring and Cap
Dust accumulated in Adapter (2) or Anvil Holder	Clean the inside of Adapter (2) or Anvil Holder

**12.5A MALFUNCTION: No operation after triggering (Stroke lost), or more than one operation of Trigger (25) to fasten Lockbolt (Stroke decreased)**

Possible Causes:	Solutions:
Wrong Grip Range of Lockbolt Pin	Change a correct Grip Range of Lockbolt Pin to match work pieces' thickness. It is nothing to do with Stroke of Tool
Low Air Pressure	Check Compressed Air Supply System, adjust Air Pressure to in specification, check Air Cylinder (19) leak and replace it if necessary, clean Air Cylinder (19) inside, clean or replace Air Piston Ring (44) and O-Rings (48, 50)
Improper assembly of Unitized Chuck Jaws and Spacer	Reassemble Unitized Chuck Jaws and Spacer
Dust accumulated in Collet and Extension	Clean Collet and Extension
Dust accumulated in Unitized Chuck Jaws and Spacer	Clean Unitized Chuck Jaws and Spacer
Worn or broken Unitized Chuck Jaws and Spacer	Replace new Unitized Chuck Jaws and Spacer
Insufficient Hydraulic Oil leads to Stroke decreased	Refill Hydraulic Oil, see 11.7 Solutions
Air bubbles in Hydraulic Oil	Suck air bubbles from Oil Refill Hole by Hydraulic Oil Injector (53), or bleed Oil from Air Cylinder (19), and refill New Hydraulic Oil
Oil Cylinder (5) leaks	See below 12.7 solutions
Improper assembly of Valve Assembly (33AY)	Reassemble Valve Assembly (33AY)
Worn O-Rings in Valve Assembly (33AY)	Replace all O-Rings (32, 34, 36, 38, 41)

**12.5B MALFUNCTION: No operation after triggering (Stroke lost), or more than one operation of Trigger (25) to fasten Blind Rivet (Stroke decreased)**

Possible Causes:	Solutions:
Too long Rivet Body of Blind Rivet	Change a correct Rivet Body length to match work pieces' thickness. It is nothing to do with Stroke of Tool
Low Air Pressure	Check Compressed Air Supply System, adjust Air Pressure to in specification, check Air Cylinder (19) leak and replace it if necessary, clean Air Cylinder (19) inside, clean or replace Air Piston Ring (44) and O-Rings (48, 50)
Improper assembly of Chuck Jaws, Follower, Spring, and Cap	Reassemble Chuck Jaws, Follower, Spring, and Cap
Dust accumulated in Collet and Extension	Clean Collet and Extension
Dust accumulated in Chuck Jaws, Follower, Spring, and Cap	Clean Chuck Jaws, Follower, Spring, and Cap
Worn or broken Chuck Jaws, Follower, Spring, and Cap	Replace new Chuck Jaws, Follower, Spring, and Cap
Insufficient Hydraulic Oil leads to Stroke decreased	Refill Hydraulic Oil, see 11.7 Solutions
Air bubbles in Hydraulic Oil	Suck air bubbles from Oil Refill Hole by Hydraulic Oil Injector (53), or bleed Oil from Air Cylinder (19), and refill New Hydraulic Oil
Oil Cylinder (5) leaks	See below 12.7 solutions
Improper assembly of Valve Assembly (33AY)	Reassemble Valve Assembly (33AY)
Worn O-Rings in Valve Assembly (33AY)	Replace all O-Rings (32, 34, 36, 38, 41)

**12.6 MALFUNCTION: Slow operation or no operation of Air Piston Assembly (46AY) in Air Cylinder (19)**

	Solutions:
Improper assembly of Valve Assembly (33AY)	Reassemble Valve Assembly (33AY)
Worn O-Rings in Valve Assembly (33AY)	Replace all O-Rings (32, 34, 36, 38, 41)
Improper assembly of Air Piston Assembly (46AY)	Reassemble Air Piston Assembly (46AY)
Worn Air Piston Ring (44) and Buffer Ring (43)	Replace Air Piston Ring (44) and Buffer Ring (43)
Low Air Pressure	Check Compressed Air Supply System, adjust Air Pressure to in specification, check Air Cylinder (19) leak and replace it if necessary, clean Air Cylinder (19) inside, clean or replace Air Piston Ring (44) and O-Rings (48, 50)
Noise Silencer (21) blocks air exhaust	Clean or replace a new Noise Silencer (21)
Weak or broken Return Springs (11 & 12)	Replace new Return Springs (11 & 12)

### 12.7 MALFUNCTION: Oil Cylinder (5) leaks Hydraulic Oil

Possible Causes:	Solutions:
Oil Cylinder (5) damaged	Replace a new Oil Cylinder (5)
Improper assembly of O-Rings (3, 9, 17, 13) and Back-Up Rings (4, 10, 18) in front & rear ends of Oil Cylinder (5)	Reassemble O-Rings (3, 9, 17, 13) and Back-Up Rings (4, 10, 18) in front & rear ends of Oil Cylinder (5)
Worn O-Rings (3, 9, 17, 13) and Back-Up Rings (4, 10, 18) in front & rear ends of Oil Cylinder (5)	Replace new O-Rings (3, 9, 17, 13) and Back-Up Rings (4, 10, 18) in front & rear ends of Oil Cylinder (5)

### 12.8 MALFUNCTION: Air Cylinder (19) and Noise Silencer (21) leak Hydraulic Oil

Possible Causes:	Solutions:
Improper assembly of O-Rings (17) and Back-Up Ring (18) in lower end of Oil Cylinder (5)	Reassemble O-Rings (17) and Back-Up Ring (18) in lower end of Oil Cylinder (5)
Worn O-Rings (17) and Back-Up Ring (18) in lower end of Oil Cylinder (5)	Replace new O-Rings (17) and Back-Up Ring (18) in lower end of Oil Cylinder (5)
Worn Oil Piston Lock Nut O-Ring (24)	Replace new Oil Piston Lock Nut O-Ring (24)

### 12.9 MALFUNCTION: Valve Assembly (33AY) and Noise Silencer (21) leak Air

Possible Causes:	Solutions:
Improper assembly of Valve Assembly (33AY)	Reassemble Valve Assembly (33AY), and depress trigger (25) several times
Worn O-Rings (32, 34, 36, 38, 41) in Valve Assembly (33AY)	Replace new O-Rings (32, 34, 36, 38, 41) in Valve Assembly (33AY)
Weak Springs (35, 40) in Valve Assembly (33AY)	Replace new Springs (35, 40) in Valve Assembly (33AY)

### 12.10 MALFUNCTION: Air Inlet and Air Inlet Fitting leak Air

Possible Causes:	Solutions:
Wrong thread size of Air Inlet Fitting	Change correct thread size of Air Inlet Fitting
Air Inlet thread damaged	Tap Air Inlet thread and wrap Tape Seal around male thread of Air Inlet Fitting

## 13. DISPOSAL

The disposal of tool and hydraulic oil shall be in accordance with local environmental regulations.

## 14. PATENTS

USA 8,650,731      Germany 20 2010 008 658.2      Australia 099203542  
Russia 102549      Taiwan M 385417      中国 实用新型专利 ZL 2010 2 0148358.6

**15. EC DECLARATION OF CONFORMITY**



**EC DECLARATION OF CONFORMITY**

**We: Karat Industrial Corporation**

**54, Wu Chyuan 7th Road, Wu Gu District, New Taipei City 24890, Taiwan**

**declare in sole responsibility that the equipment**

**Equipment : PNEUMATIC-HYDRAULIC RIVET TOOL**

**Model/ Serial No. : AR-180, AR-180G, AR-180S, AR-180SG, AR-210, ARV-210, AR-211, ARV-211, AR-212, ARV-212, Air-Grip 2 AR-102, Air-Grip 2, AR-102, Air-Grip 2V ARV-102, Air-Grip 2V, ARV-102, Air-Grip 3 AR-260, Air-Grip 3, AR-260, Air-Grip 3V ARV-260, Air-Grip 3V, ARV-260, Air-Grip 3S AR-240, Air-Grip 3S, AR-240, Air-Grip 3SV ARV-240, Air-Grip 3SV, ARV-240, Air-Grip 4 AR-230, Air-Grip 4, AR-230, Air-Grip 4V ARV-230, Air-Grip 4V, ARV-230, Air-Grip 4H AH-250, Air-Grip 4H, AH-250**

**to which this declaration applies, complies with these normative documents:**

- **Machinery Directive: 2006/42/EC**

**and conforms to the following EN standards,**

- **EN ISO 12100: 2010**
- **EN ISO 11148-1:2011**

**Authorized representative established within the EU (if applicable):**

**Company Name:**

**Company Address:**

**Person responsible for compiling the technical file established within the EU:**

**Name, Surname:**

**Address:**

**Note** : This declaration becomes invalid, if technical or operational modifications are introduced without the manufacturers consent.

*David Chang*  
Mr. David Chang / General Manager



January 2020, Taiwan