

**BATo AR-230**  
*Industrial Heavy-Duty*  
**PNEUMATIC-HYDRAULIC RIVET TOOL**  
*With Forged Aluminum and*  
*Quick-Change Jaw Case Assembly*

**OPERATION MANUAL**



TÜVRheinland  
CERTIFIED

*Original Instructions*

## 5. FEATURES

1. This pneumatic-hydraulic rivet tool features **powerful traction force** 23,500 N at 6.2 bar or 5,180 lbf at 90 psi compressed air pressure, and equips with interchangeable **4 or 3 standard nosepieces with size mark** for setting 4.0 ~ 6.4 mm or 5/32" ~ 1/4" commercial blind rivets in all materials (aluminum, copper, steel and stainless steel), and with 3 Structural **\*HSS Nosepieces for setting** 4.0, 4.8, 6.4 mm or 5/32", 3/16", 1/4" High Strength Structural (HSS) Blind Rivet. This pneumatic-hydraulic rivet tool can set 4.0, 4.8/5.0, 6.4 mm or 5/32", 3/16", 1/4" structural blind rivets in all materials. The optional 4.8/5.0, 6.4 mm or 3/16", 1/4" Structural **\*Monobolt Nosepieces are available on request**.
2. Innovative **Quick-Change Type Jaw Case System** for fast cleaning or replacing inside parts (Jaws, Jaw Pusher, etc.) just by hand without any wrenches.
3. Durable 3-PC Type Jaws and Jaw Pusher offer longer operation life.
4. Innovative **Shock-Reducer Design™** to minimize hand fatigue.
5. Innovative **Noise Silencer Design™** for working pleasure.
6. Patented **Rivet Size Hole Gauge Design™** to eliminate choosing wrong size blind rivet and working nosepiece.
7. Smart **Nosepieces Storage Design™** to avoid losing nosepieces.
8. Smart **Twin Air Inlets** to meet individual operating hobby, such as the right-handed operators or left-handed operators.
9. Convenient **Oil Refill Hole Design™** for quickly refilling the shortage of hydraulic oil.
10. New **Spent Mandrel Container** for visible check, and to protect operator's eyes and keep working places clean.
11. **Oil Cylinder Body** are made of **super strength forged aluminum alloy** and Air Cylinder Body are made of high strength aluminum alloy, **inner walls all have wear-resistant mirror finish** for durability.
12. **Oil Piston Rod** and **Air Piston Rod** all have **hard chrome plating and wear-resistant mirror finish** for speedy motion.
13. High grade **Steel Alloy Key Parts** (Jaws, Jaw Cases, etc.) with advanced heat treatment for strength and durability.
14. **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.
15. **PAHs-Free (non-toxic to hand skin) Soft Plastic Hand Grip** for comfortable and safe operation for comfortable and safe operation.

## 6. SPECIFICATIONS

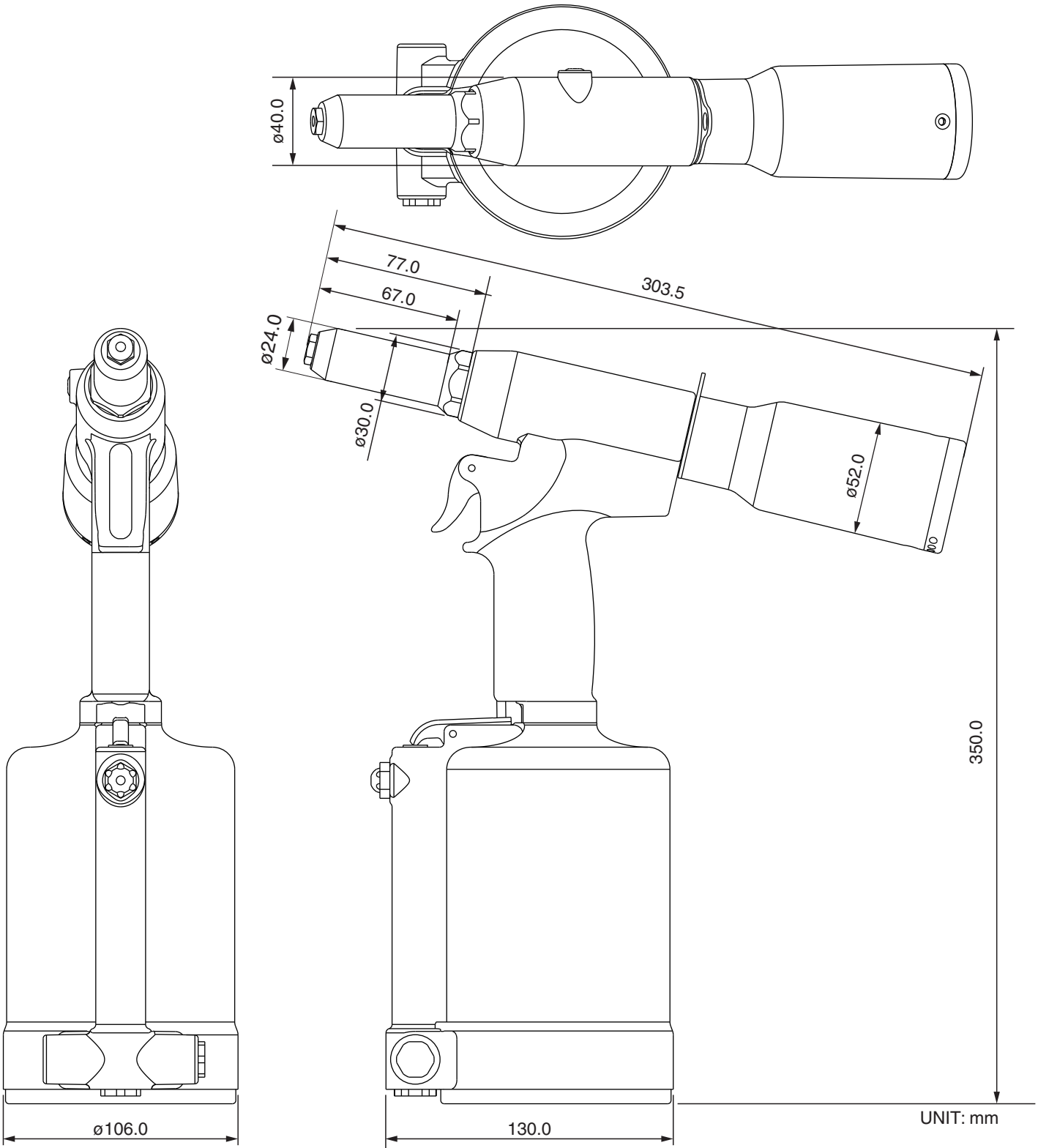
1. **Traction Force:** 23,500 N at 6.2 bar or 5,280 lbf at 90 psi compressed air pressure
2. **Stroke:** 18.5 mm or 0.728"
3. **Working Compressed Air Pressure:** 6.0 - 7.0 bar or 85 - 100 psi
4. **Air Consumption:** Approx. 5.7 liters per rivet or 0.2 cuft per rivet.
5. **Hydraulic Oil, ISO VG-32 or VG-46:** Approx. 40 ml
6. **Working Temperature:** 0 - 40 °C or 32 - 104 °F.
7. **Noise Level:**  
Sound Pressure Level,  $L_{PA}$ : 70.9dB(A)  
Uncertainty:  $K_{PA}$ = 3.0 dB  
Sound Power Level,  $L_{WA}$ : 81.9dB(A)  
Uncertainty:  $K_{WA}$ = 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 10 mm or 3/8"
11. **Net Weight:** Approx. 2.6 kg or 5.73 lb
12. **Standard Parts:** 4 or 3 Standard Nosepieces (1A, 1B, 1C, 1D, or 1A, 1B, 1D), 3 HSS Nosepieces (1E, 1F, 1G) , Spent Mandrel Container (27), Brush (64), 2 Service Tools (65, 66), Hydraulic Oil Injector (68, without Oil), Hydraulic Oil Bottle (67, without Oil)
13. **Optional Parts:** \*Monobolt Nosepiece 4.8/5.0 mm or 3/16" (1H), \*Monobolt Nosepiece 6.4 mm or 1/4" (1K),
14. **RIVETING CAPACITY:**

Rivet Diameter \ Rivet Material	Aluminum	Steel	Stainless Steel (Inox)
4.0 mm or 5/32"	●	●	●
4.8/5.0 mm or 3/16"	●	●	●
6.0mm	●	●	●
6.4mm or 1/4"	●	●	●
4.0 mm or 5/32" Structural Rivets	●	●	●
4.8/5.0 mm or 3/16" Structural Rivets	●	●	●
6.4 mm or 1/4" Structural Rivets	●	●	●

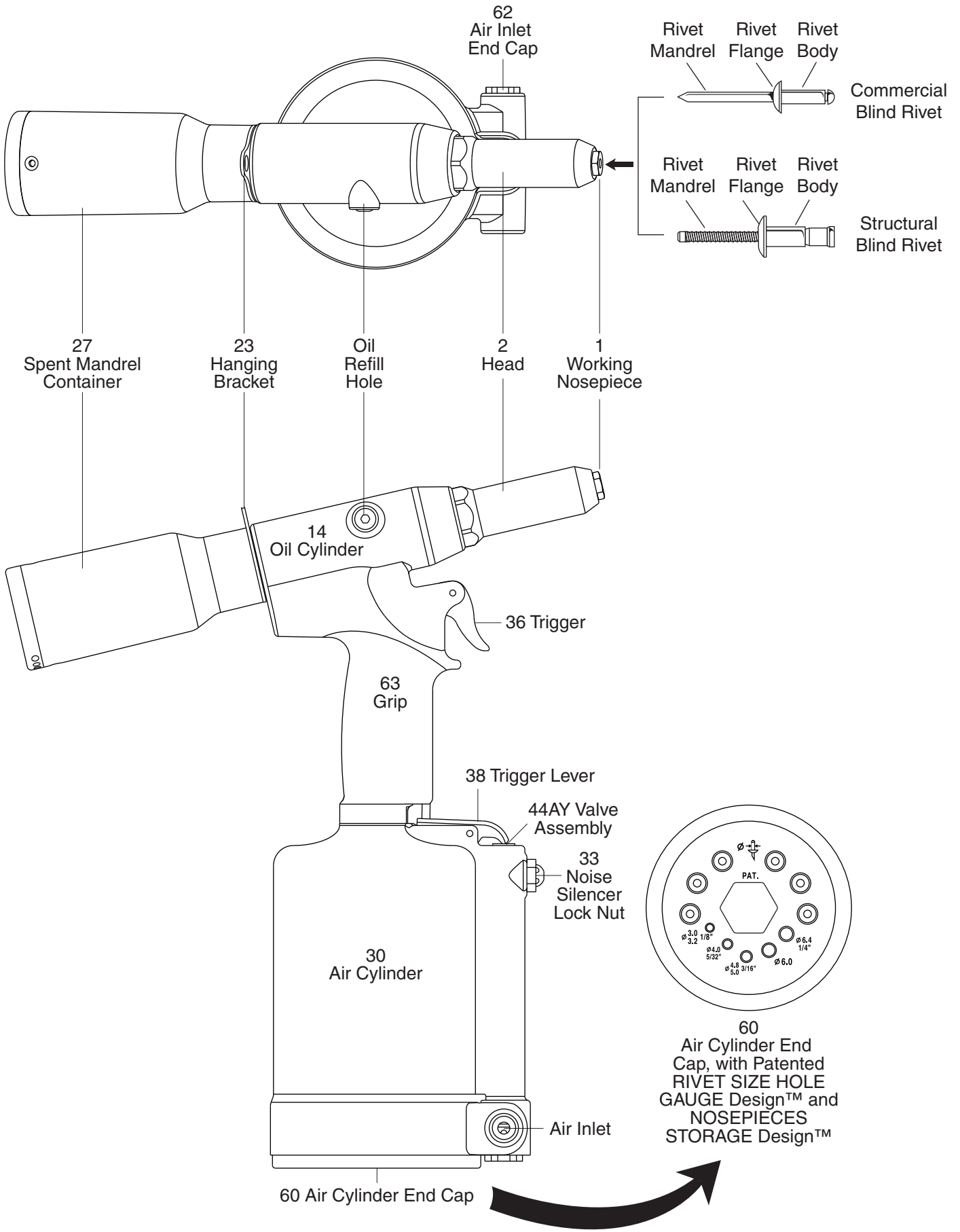
### Remarks:

- Use Standard Nosepieces to set Standard/Commercial Blind Rivets and other Structural Blind Rivets.
- Use HSS Nosepieces to set High Strength Structural (HSS) Blind Rivets. The Mandrel diameter of HSS Blind Rivets is 0.25mm or 0.01" bigger than that of Standard/Commercial Blind Rivets.
- Use \*Monobolt Nosepieces to set \*Monobolt Blind Rivets.
- \*Monobolt is a registered trade mark of AVDEL.

**7. DIMENSIONS**



**8. MAIN PARTS**





NO.	PART NO.	PART NAME	NO.	PART NO.	PART NAME
•1A	AR230-01A	Standard Nosepiece, 4.0 mm or 5/32"	• 31	AR230-31	Positioning Screw
•1B	AR230-01B	Standard Nosepiece, 4.8/5.0 mm or 3/16"	32	AR230-32	Noise Silencer
•1C	AR230-01C	Standard Nosepiece, 6.0 mm	33	AR230-33	Noise Silencer Lock Nut
•1D	AR230-01D	Standard Nosepiece, 6.4 mm or 1/4"	• 34	AR230-34	Lock Nut O-Ring
•1E	AR230-01E	4.0 *HSS Nosepiece for High Strength Structural (HSS) Blind Rivet, 4.0 mm or 5/32"	• 35	AR230-35	Oil Cylinder Lock Nut
			36	AR230-36	Trigger
•1F	AR230-01F	4.8 *HSS Nosepiece for High Strength Structural (HSS) Blind Rivet, 4.8/5.0 mm or 3/16"	37	AR230-37	Trigger Link
			38	AR230-38	Trigger Lever
•1G	AR230-01G	6.4 *HSS Nosepiece for High Strength Structural (HSS) Blind Rivet, 6.4 mm or 1/4"	• 39	AR230-39	Upper Link Pin
			• 40	AR230-40	Lower Link Pin
1H	AR230-01H	Optional *Monobolt Nosepiece, 4.8/5.0 mm or 3/16"	• 41	AR230-41	Trigger Pin
1K	AR230-01K	Optional *Monobolt Nosepiece, 6.4 mm or 1/4"	• 42	AR230-42	Lever Pin
2	AR230-02	Head	36AY	AR230-36AY	Trigger Assembly (36~42)
3	AR230-03	Front Jaw Case, Quick-Change Type	• 43	AR230-43	Valve Pusher Upper O-Ring
• 4	AR230-04	Jaws, 3-PC Type	44	AR230-44	Valve Pusher
• 5	AR230-05	Jaw Pusher, for 3-PC Jaws	• 45	AR230-45	Valve Pusher Lower O-Ring
• 6	AR230-06	Jaw Pusher Spring	• 46	AR230-46	Valve Pusher Spring
7	AR230-07	Rear Jaw Case, Quick-Change Type	• 47	AR230-47	Valve Sleeve O-Ring
8	AR230-08	Lock Ring, Quick-Change Type	48	AR230-48	Valve Sleeve
9	AR230-09	Lock Ring Spring, Quick-Change Type	• 49	AR230-49	Valve Ball O-Ring
10	AR230-10	Lock Washer	50	AR230-50	Valve Ball
11	AR230-11	Lock Nut	• 51	AR230-51	Valve Spring
3AY	AR230-3AY	Jaw Case Assembly (3~11), Quick-Change Type	• 52	AR230-52	Valve End Cap O-Ring
•12	AR230-12	Oil Cylinder O-Ring	53	AR230-53	Valve End Cap
•13	AR230-13	Oil Cylinder Back-up Ring	44AY	AR230-44AY	Valve Assembly (43~53)
14	AR230-14	Oil Cylinder	• 54	AR230-54	Buffer Ring
15	AR230-15	Sealing Washer	• 55	AR230-55	Air Piston Ring
16	AR230-16	Oil Screw Plug	56	AR230-56	Air Piston Rod
17	AR230-17	Oil Piston	57	AR230-57	Air Piston
•18	AR230-18	Oil Piston O-Ring	58	AR230-58	Air Piston Lock Nut
•19	AR230-19	Oil Piston Back-up Ring	57AY	AR230-57AY	Air Piston Assembly (54~58)
17AY	AR230-17AY	Oil Piston Assembly (17~19)	• 59	AR230-59	Air Cylinder End Cap O-Ring
•20	AR230-20	Large Return Spring	60	AR230-60	Air Cylinder End Cap, With Patented Rivet Size Hole Gauge Design™ and Nosepieces Storage Design™
•21	AR230-21	Small Return Spring			
•22	AR230-22	Hanging Bracket O-Ring	• 61	AR230-61	Air Inlet End Cap O-Ring
23	AR230-23	Hanging Bracket	62	AR230-62	Air Inlet End Cap
24	AR230-24	Oil Cylinder End Cap	63	AR230-63	Grip
•25	AR230-25	Oil Cylinder End Cap Front O-Ring	• 64	AR230-64	Brush
•26	AR230-26	Oil Cylinder End Cap Rear O-Ring	• 65	AR230-65	Wrench 7724
•27	AR230-27	Spent Mandrel Container	• 66	AR230-66	Wrench 2712
•28	AR230-28	Oil Cylinder O-Ring	• 67	AR230-67	Oil Bottle (without Oil)
•29	AR230-29	Oil Cylinder Back-Up Ring	• 68	AR230-68	Hydraulic Oil Injector (without Oil)
30	AR230-30	Air Cylinder			

REMARKS: 1) • Means wearing parts or possible missing parts.

2) Order Example: AR230-04 Jaws 3-PC Type, 5 sets.

3) ★ Monobolt is a registered trademark of AVDEL.

4) \*HSS Nosepieces are for setting High Strength Structural (HSS) Blind Rivets.

5) Part No. 35 Oil Cylinder Lock Nut needs to replace a new one after repeated fastening 3 ~ 4 times.

6) Part No. 34 Lock Nut O-Ring needs to replace a new one when dismantling Part No. 35 Oil Cylinder Lock Nut.

## 10. OPERATION INSTRUCTIONS

### 10.1 SETTING AND TESTING

1. The 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; tool's working nosepiece size, blind rivet size and work pieces' hole diameter must be well matched, so that the pilot test can verify the fastening work is correct or not.

### 10.2 COMPRESSED AIR SUPPLY SYSTEM

1. This pneumatic-hydraulic rivet tool is operated with compressed air at an optimum air pressure of 6.2 bar or 90 psi.
2. This pneumatic-hydraulic rivet 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 7.0 bar or 100 psi.
4. The air hose should resist a minimum 150% of maximum operating air pressure (7.0 bar or 100 psi) produced in the COMPRESSED AIR SUPPLY SYSTEM, that is to resist the highest air pressure 10 bar or 145 psi. The air hose should be oil resistant, and have an abrasion resistant exterior. The air hose must have a minimum inner diameter of 10 mm or 3/8". Be sure to expel the accumulated dirt and water from air pipeline before connecting air hose to the tool.

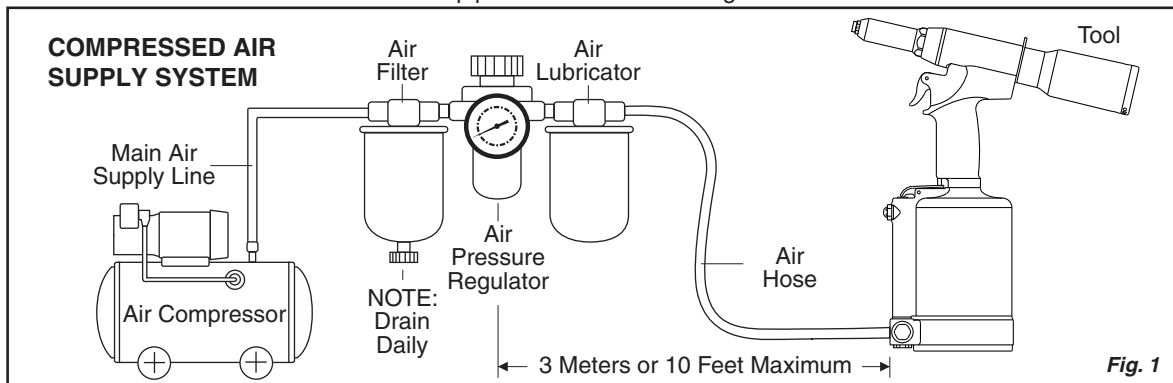


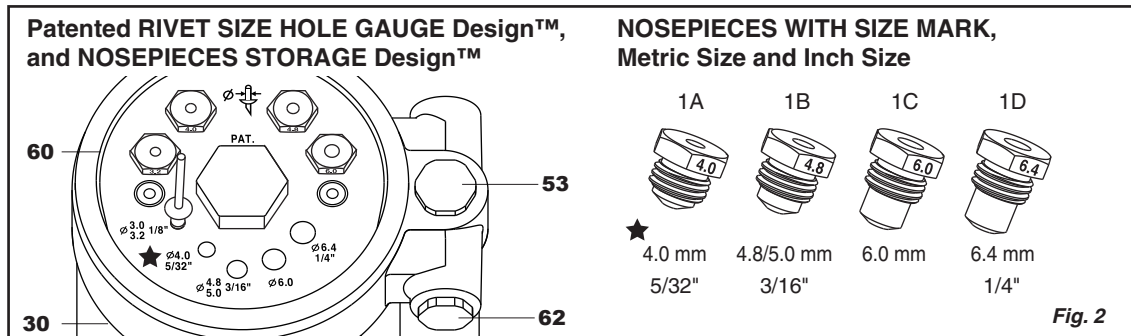
Fig. 1

### 10.3 PRINCIPLE OF OPERATION

1. This pneumatic-hydraulic rivet tool is designed to quickly fasten the work pieces together firmly with a suitable size blind rivet by depressing the trigger (36) to suck the compressed air into the air cylinder (30), to activate the air piston assembly (57AY) upwards, to drive hydraulic oil, to force the oil piston assembly (17AY) backwards, to drive the jaw case assembly (3AY) backwards to deform rivet body and break off the 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 blind rivet, release the trigger (36) to stop fastening rivet, the powerful return springs (20 & 21) push the oil piston assembly (17AY) and jaw case assembly (3AY) forwards to drive hydraulic oil and to release spent mandrel, to push the air piston assembly (57AY) downwards to the original position, the air is therefore expelled from the air cylinder (30) to the air exhaust through the noise silencer (32) with low noise. Finally tilt the head (2) upwards to drop the spent mandrel into the spent mandrel container (27). The fastening cycle is completed, and the tool is ready for setting the next blind rivet.

## 10.4 SELECT AND EXCHANGE THE NOSEPIECES

1. Disconnect the tool from the compressed air supply system.
2. Choose the correct size working nosepiece (1).  
**NOTE: The patented RIVET SIZE HOLE GAUGE Design™** at the bottom of air cylinder end cap (60) provides a great assistance of checking the rivet body diameter of the blind rivet to be fastened, find out the size (for example ★Ø4.0 mm or 5/32") marked beside the hole gauge, then choose the matched size nosepiece (for example ★Ø4.0 mm or 5/32") as the working nosepiece (1), so as **to prevent spent mandrel from being stuck in tool after setting blind rivet** (Fig. 2).
3. Use wrench 2712 (66) to exchange nosepieces (1). Unscrew the replaced nosepiece (1) from the head (2) and choose the matched size nosepiece (for example ★Ø4.0 mm or 5/32") from the Nosepieces Storage Design™ at the bottom of air cylinder end cap (60).
4. Install the matched size nosepiece (for example ★Ø4.0 mm or 5/32") as the working nosepiece (1) into the head (2) firmly, and fasten the replaced nosepiece to the Nosepieces Storage Design™ at the bottom of air cylinder end cap (60).



## 10.5 SUSPENSION DEVICE

The hanging bracket (23) 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

1. Make sure that the spent mandrel container (27) is fitted by pushing to the oil cylinder end cap (24) firmly.
2. Ensure that the correct working nosepiece (1) suitable for the prepared hole of work pieces is fitted to the head (2) firmly.
3. Connect the tool to the compressed air supply system.
4. Insert the rivet mandrel of blind rivet into the working nosepiece (1) of head (2), and insert the rivet body of blind rivet into the prepared hole of work pieces to be fastened.
5. Lightly depress the trigger (36) to break off the rivet mandrel and deform rivet body, the work pieces are firmly fastened together at the same time. If more than one depress is required, release trigger (36) and move tool and push working nosepiece (1) to touch rivet flange, then depress the trigger (36) again to break off rivet mandrel.
6. Release the trigger (36) and move the working nosepiece (1) from the fastened work pieces, tilt head (2) upwards to drop the spent mandrel into the spent mandrel container (27).
7. The fastening cycle is completed, and the tool is ready for setting next same size blind rivet.