BaTo ARV-230

Industrial Heavy-Duty

PNEUMATIC-HYDRAULIC RIVET TOOL

With Vacuum System, Forged Aluminum and Quick-Change Jaw Case Assembly

OPERATION MANUAL

CE

TÜVRheinland
CERTIFIED

Original Instructions

5. FEATURES

1. This pneumatic-hydraulic rivet tool features **powerful traction force** 23,500 N at 6.2 bar or 5,280 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 **Vacuum System** to suck the mandrel of blind rivet into working nosepiece and automatically eject spent mandrel into visible spent mandrel container after setting blind rivet, that can accelerate operation speed and is ideal for mass production. The special **Vacuum ON/OFF Switch** can adjust the vacuum force or shut off the Vacuum System, therefore **this Air Rivet Tool can set rivet either With or Without Vacuum System.**
3. Innovative **Quick-Change Type Jaw Case System** for fast cleaning or replacing inside parts (Jaws, Jaw Pusher, etc.) just by hand without any wrenches.
4. Durable 3-PC Type Jaws and Jaw Pusher offer longer operation life.
5. Innovative **Shock-Reducer Design™** to minimize hand fatigue.
6. Innovative **Noise Silencer Design™** for working pleasure.
7. Patented **Rivet Size Hole Gauge Design™** to eliminate choosing wrong size blind rivet and working nosepiece.
8. Smart **Nosepieces Storage Design™** to avoid losing nosepieces.
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.

6. SPECIFICATIONS

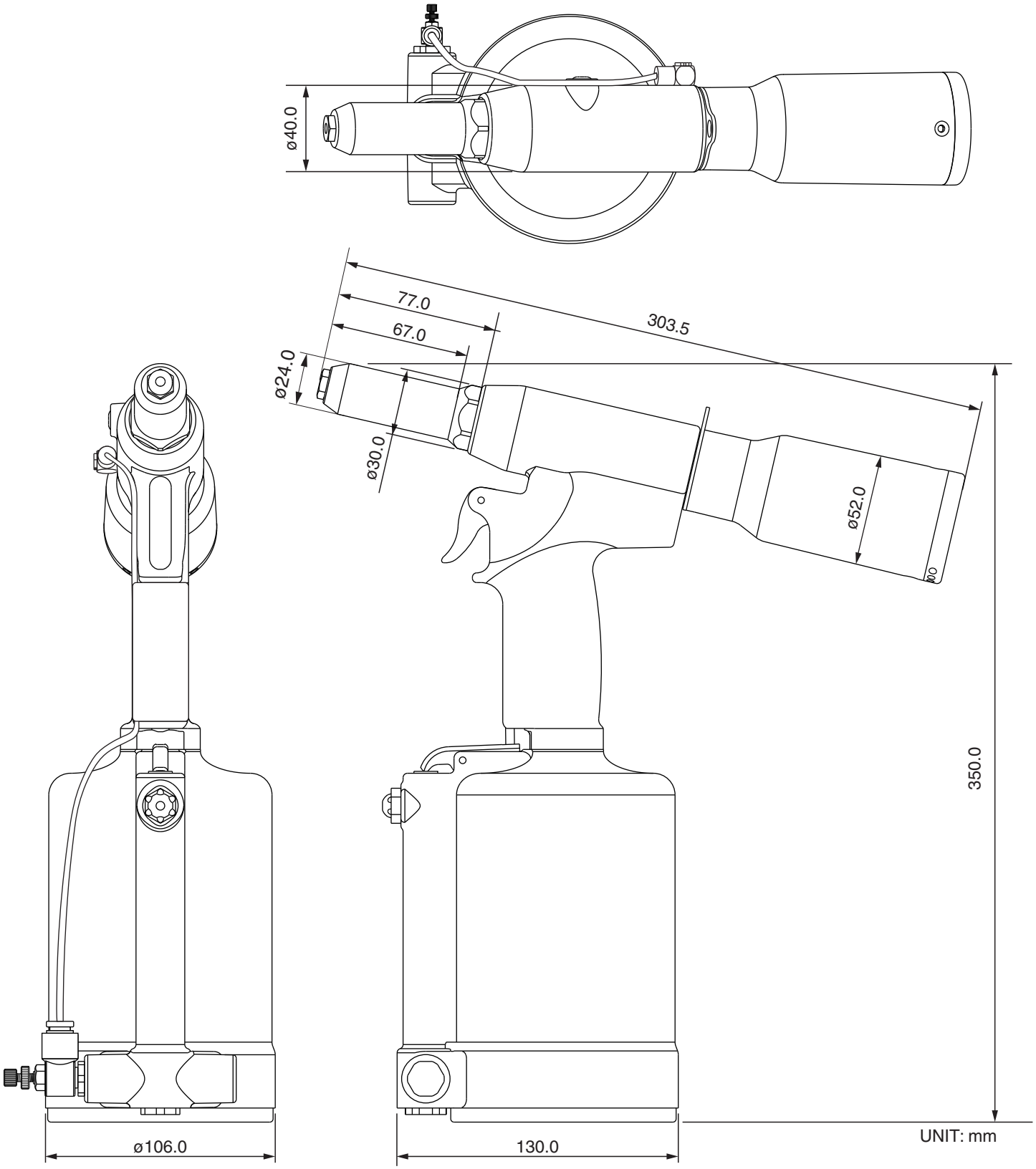
1. **Traction Force:** 23,500 N at 6.2 bar or 5,280 lbf at 90 psi compressed air pressure (without vacuum)
2. **Stroke:** 18.5 mm or 0.728˝
3. **Working Compressed Air Pressure:** 6.0 - 7.0 bar or 85 - 100 psi
4. **Air Consumption:** Approx. 5.7 liters per rivet or 0.2 cuft per rivet. NOTE: The air consumption of Vacuum System is not included.
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}: 74.0dB(A)
   Uncertainty: K_{PA}= 3.0 dB
   Sound Power Level, L_{WA}: 85.0dB(A)
   Uncertainty: K_{WA}= 3.0 dB
8. **Vibration:**
   Hand-arm vibration value: Less than 2.5 m/s²
   Uncertainty : K = 1.5 m/s²
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. 2.72 kg or 6.0 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 (30), Swivel Air Fitting with On/Off Slide Switch (68), Brush (70), 2 Service Tools (71, 72), Hydraulic Oil Injector (74, without Oil), Hydraulic Oil Bottle (73, 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	●	●	●

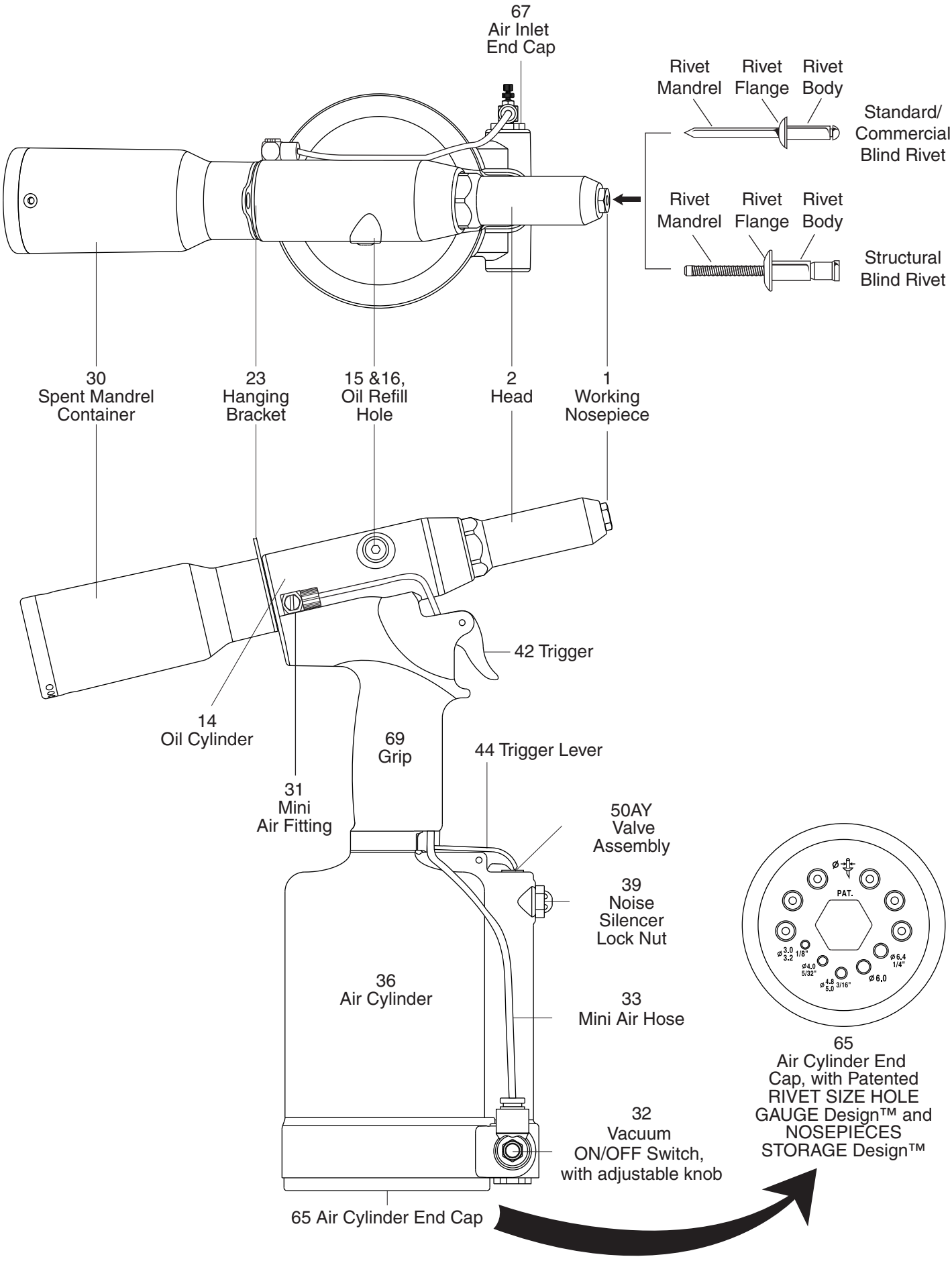
Remarks:

- 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 approximate 0.25mm or 0.01˝ bigger than that of Standard/ Commercial Blind Rivets.
- Use *Monobolt Nosepieces to set *Monobolt Blind Rivets.
- *Monobolt and *Interlock are the registered trade marks of AVDEL.

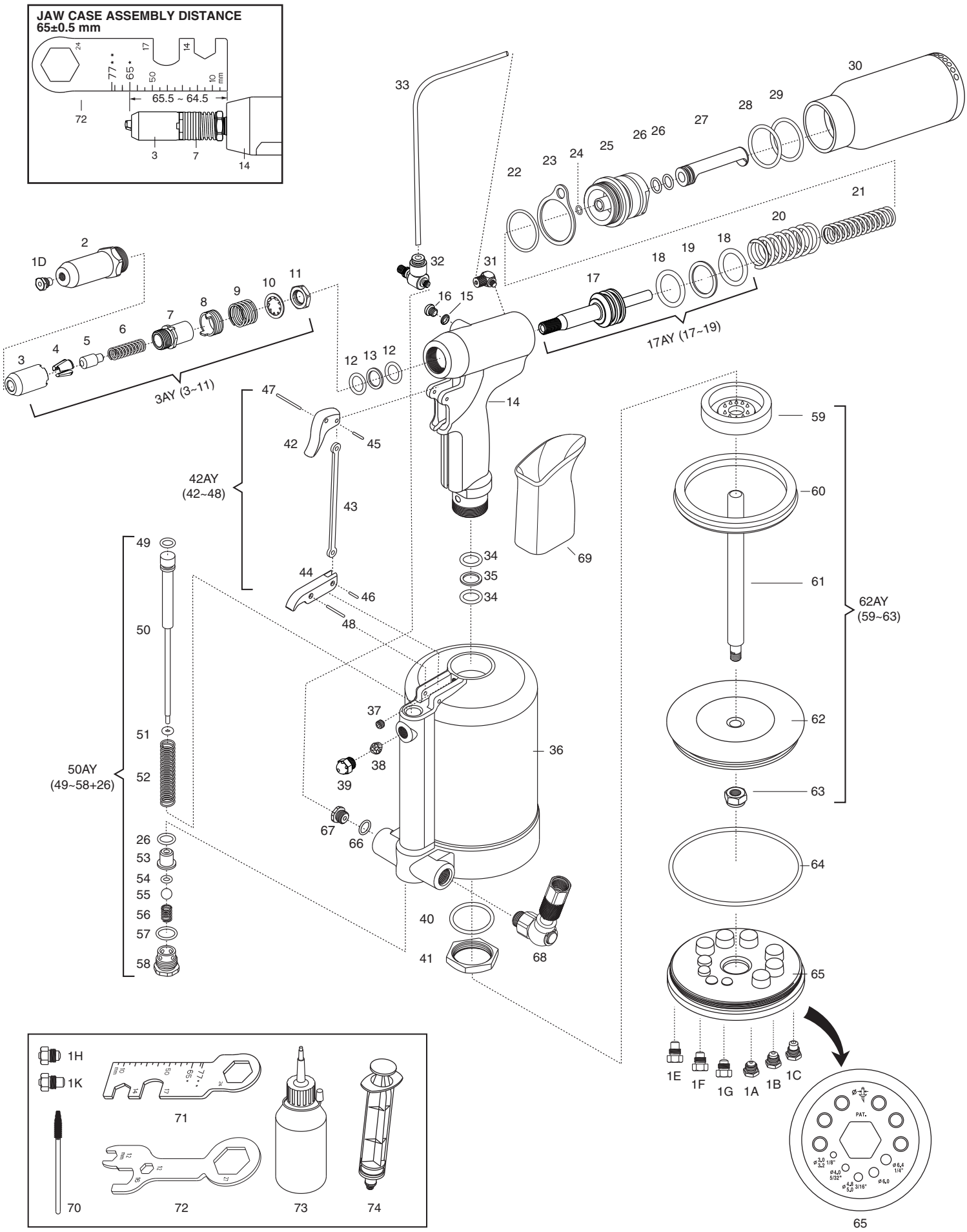
7. DIMENSIONS



8. MAIN PARTS


67
Air Inlet
End Cap
Rivet
Mandrel
Rivet
Flange
Rivet
Body
Standard/
Commercial
Blind Rivet
Rivet
Mandrel
Rivet
Flange
Rivet
Body
Structural
Blind Rivet
30
Spent Mandrel
Container
23
Hanging
Bracket
15 &16,
Oil Refill
Hole
2
Head
1
Working
Nosepiece
42 Trigger
14
Oil Cylinder
69
Grip
44 Trigger Lever
31
Mini
Air Fitting
50AY
Valve
Assembly
39
Noise
Silencer
Lock Nut
36
Air Cylinder
33
Mini Air Hose
32
Vacuum
ON/OFF Switch,
with adjustable knob
65 Air Cylinder End Cap
PAT.
ø 3.0 3.2
1/8"
ø4.0
5/32"
ø 4.8 5.0
3/16"
ø 6.4
1/4"
ø 6.0
65
Air Cylinder End
Cap, with Patented
RIVET SIZE HOLE
GAUGE Design™ and
NOSEPIECES
STORAGE Design™

9. PARTS LIST


JAW CASE ASSEMBLY DISTANCE
65±0.5 mm
65.5 ~ 64.5
72
3
7
14
3AY (3~11)
17AY (17~19)
42AY
(42~48)
50AY
(49~58+26)
62AY
(59~63)
1H
1K
70
71
72
73
74
65

NO.	PART NO.	PART NAME	NO.	PART NO.	PART NAME
•1A	ARV230-01A	Standard Nosepiece, 4.0 mm or 5/32"	• 35	ARV230-35	Oil Cylinder Back-Up Ring
•1B	ARV230-01B	Standard Nosepiece, 4.8/5.0 mm or 3/16"	36	ARV230-36	Air Cylinder
•1C	ARV230-01C	Standard Nosepiece, 6.0 mm	• 37	ARV230-37	Positioning Screw
•1D	ARV230-01D	Standard Nosepiece, 6.4 mm or 1/4"	38	ARV230-38	Noise Silencer
•1E	ARV230-01E	*HSS Nosepiece, 4.0 mm or 5/32”	39	ARV230-39	Noise Silencer Lock Nut
•1F	ARV230-01F	*HSS Nosepiece, 4.8/5.0 mm or 3/16”	• 40	ARV230-40	Lock Nut O-Ring
•1G	ARV230-01G	*HSS Nosepiece, 6.4 mm or 1/4”	• 41	ARV230-41	Oil Cylinder Lock Nut
•1H	ARV230-01H	Optional ★Monobolt Nosepiece, 4.8/5.0 mm or 3/16"	42	ARV230-42	Trigger
•1K	ARV230-01K	Optional ★Monobolt Nosepiece, 6.4 mm or 1/4"	43	ARV230-43	Trigger Link
2	ARV230-02	Head	44	ARV230-44	Trigger Lever
3	ARV230-03	Front Jaw Case, Quick-Change Type	• 45	ARV230-45	Upper Link Pin
• 4	ARV230-04	Jaws, 3-PC Type	• 46	ARV230-46	Lower Link Pin
• 5	ARV230-05	Jaw Pusher, for 3-PC Jaws	• 47	ARV230-47	Trigger Pin
• 6	ARV230-06	Jaw Pusher Spring	• 48	ARV230-48	Lever Pin
7	ARV230-07	Rear Jaw Case, Quick-Change Type	42AY	ARV230-42AY	Trigger Assembly (42~48)
8	ARV230-08	Lock Ring, Quick-Change Type	• 49	ARV230-49	Valve Pusher Upper O-Ring
• 9	ARV230-09	Lock Ring Spring, Quick-Change Type	50	ARV230-50	Valve Pusher
10	ARV230-10	Lock Washer	• 51	ARV230-51	Valve Pusher Lower O-Ring
11	ARV230-11	Lock Nut	• 52	ARV230-52	Valve Pusher Spring
3AY	ARV230-3AY	Jaw Case Assembly (3~11), Quick-Change Type	53	ARV230-53	Valve Sleeve
•12	ARV230-12	Oil Cylinder O-Ring	• 54	ARV230-54	Valve Ball O-Ring
•13	ARV230-13	Oil Cylinder Back-up Ring	• 55	ARV230-55	Valve Ball
14	ARV230-14	Oil Cylinder	• 56	ARV230-56	Valve Spring
•15	ARV230-15	Sealing Washer	• 57	ARV230-57	Valve End Cap O-Ring
16	ARV230-16	Oil Screw Plug	58	ARV230-58	Valve End Cap
17	ARV230-17	Oil Piston	50AY	ARV230-50AY	Valve Assembly (49~58+26)
•18	ARV230-18	Oil Piston O-Ring	• 59	ARV230-59	Buffer Ring
•19	ARV230-19	Oil Piston Back-up Ring	• 60	ARV230-60	Air Piston Ring
17AY	ARV230-17AY	Oil Piston Assembly (17~19)	61	ARV230-61	Air Piston Rod
•20	ARV230-20	Large Return Spring	62	ARV230-62	Air Piston
•21	ARV230-21	Small Return Spring	63	ARV230-63	Air Piston Lock Nut
•22	ARV230-22	Hanging Bracket O-Ring	62AY	ARV230-62AY	Air Piston Assembly (59~63)
23	ARV230-23	Hanging Bracket	• 64	ARV230-64	Air Cylinder End Cap O-Ring
•24	ARV230-24	Vacuum Valve O-Ring	65	ARV230-65	Air Cylinder End Cap, With Patented Rivet Size Hole Gauge Design™ and Nosepieces Storage Design™
25	ARV230-25	Oil Cylinder End Cap			
•26	ARV230-26	O-Ring, for Spent Mandrel Safe Protector, also for Valve Sleeve O-Ring	• 66	ARV230-66	Air Inlet End Cap O-Ring
			67	ARV230-67	Air Inlet End Cap
•27	ARV230-27	Spent Mandrel Safe Protector	68	ARV230-68	Swivel Air Fitting, with ON/OFF Slide Switch
•28	ARV230-28	Oil Cylinder End Cap Front O-Ring	69	ARV230-69	Grip
•29	ARV230-29	Oil Cylinder End Cap Rear O-Ring	• 70	ARV230-70	Brush
•30	ARV230-30	Spent Mandrel Container	• 71	ARV230-71	Wrench 7724
31	ARV230-31	Mini Air Fitting	• 72	ARV230-72	Wrench 2712
32	ARV230-32	Vacuum ON/OFF Switch, with adjustable knob	• 73	ARV230-73	Oil Bottle (without Oil)
•33	ARV230-33	Mini Air Hose	• 74	ARV230-74	Hydraulic Oil Injector (without Oil)
•34	ARV230-34	Oil Cylinder O-Ring			

REMARKS: 1) **• Means wearing parts or possible missing parts.**
2) **Order Example: ARV230-04 Jaws 3-PC Type, 5 sets.**
3) **✻HSS Nosepieces are for setting High Strength Structural (HSS) Blind Rivets.**
4) **★Monobolt Nosepieces are for setting ★Monobolt Blind Rivets.**
5) **Part No. 41 Oil Cylinder Lock Nut needs to replace a new one after repeated fastening 3 ~ 4 times.**
6) **Part No. 40 Lock Nut O-Ring needs to replace a new one when dismantling Part No. 41 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.

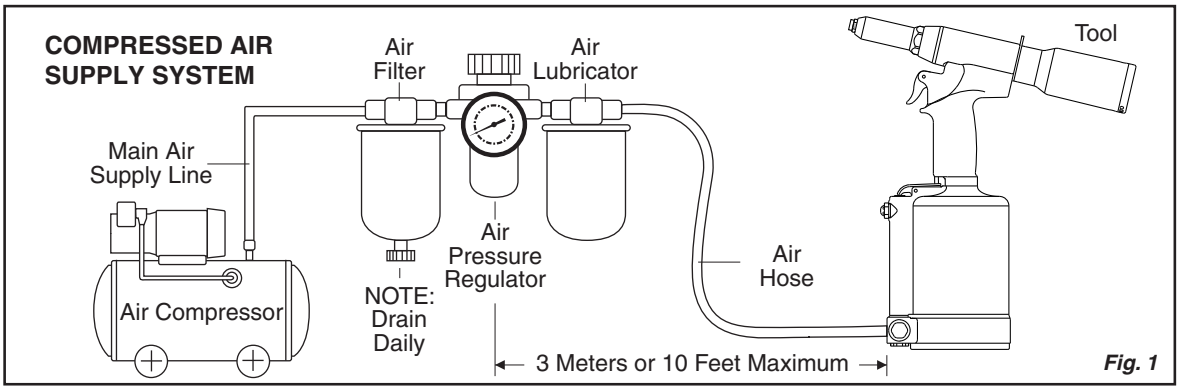


Fig. 1

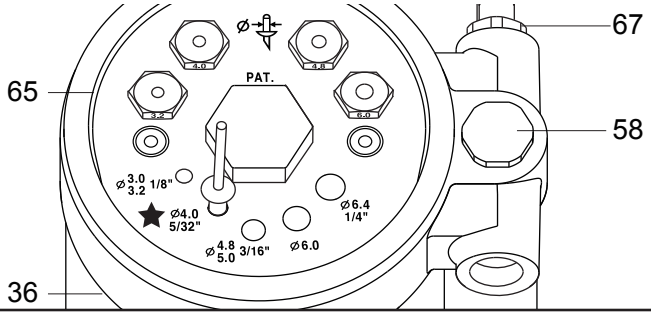
10.3 PRINCIPLE OF OPERATION

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 (42) to suck the compressed air into the air cylinder (36), to activate the air piston assembly (62AY) 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 (42) 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 (62AY) downwards to the original position, the air is therefore expelled from the air cylinder (36) to the air exhaust through the noise silencer (38) with low noise. When releasing trigger (42), in the meantime the Vacuum System automatically ejects the spent mandrel into the spent mandrel container (30). 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 (65) 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 (72) 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 (65).
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 (65).

Patented RIVET SIZE HOLE GAUGE Design™, and NOSEPIECES STORAGE Design™



NOSEPIECES WITH SIZE MARK, Metric Size and Inch Size

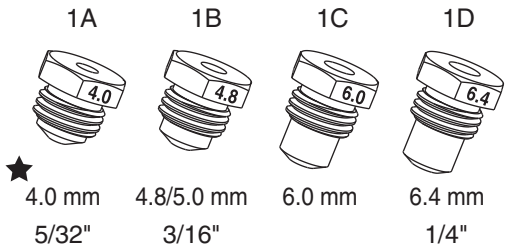


Fig. 2

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 WITH VACUUM SYSTEM OR WITHOUT VACUUM SYSTEM

NOTE: The delivered Tool is already switched on the Vacuum System.

1. **Make sure that the spent mandrel safety protector (27) and spent mandrel container (30) are fitted by pushing to the oil cylinder end cap (25) firmly, the swivel air fitting with on/off slide switch (68) is fastened firmly to the air inlet of tool.**
2. **Ensure the correct working nosepiece (1) suitable for the prepared hole of work pieces is installed firmly to the head (2).**
3. **Connect the tool to the compressed air supply system, switch on the slide switch of swivel air fitting (68) to start the riveting work (Fig. 3).**
4. **With Vacuum System:** Can suck the mandrel of blind rivet into working nosepiece (1) and automatically eject spent mandrel into visible spent mandrel container (30) after setting blind rivet. Can accelerate operation speed and ideal for mass production.
   Turn the knob of the vacuum on/off switch (32) counter-clockwise to switch on the vacuum system, the vacuum force can be adjusted to the optimum condition (Fig. 4).
   Without Vacuum System:
   Turn the knob of vacuum on/off switch (32) clockwise to shut off the vacuum system (Fig. 4).
5. **Insert the mandrel of blind rivet into the working nosepiece (1) of head (2) completely. Note The vacuum system can help to suck the mandrel of blind rivet into the working nosepiece (1) of head (2).**
6. **Lightly depress the trigger (42) to break off the mandrel of blind rivet and deform the rivet body, the work pieces are firmly fastened together at the same time. If more than one depress is required, release trigger (42) and move tool to press working nosepiece (1) to touch rivet flange, then depress trigger (42) again to break off the mandrel of blind rivet.**
7. **Release the trigger (42) and remove the working nosepiece (1) from the fastened work pieces. Note The Vacuum System can automatically eject the spent mandrel into the spent mandrel container (30).**
   Note Under No Vacuum condition: Tilt head (2) upwards to drop the spent mandrel into the spent mandrel container (30).
8. **The fastening cycle is completed, and the tool is ready for setting next same size blind rivet.**
9. **When stopping operation, be sure to switch off the slide switch of swivel air fitting (68) (Fig. 3).**

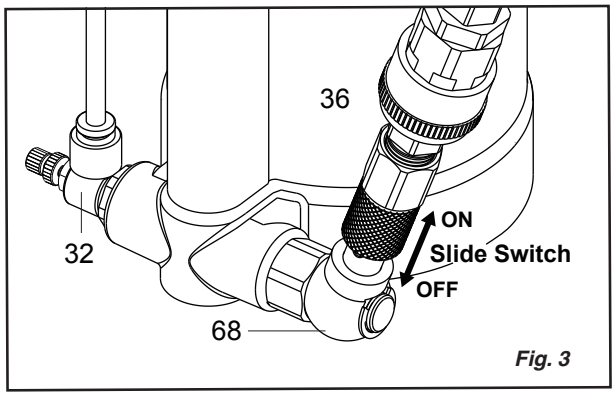


Fig. 3

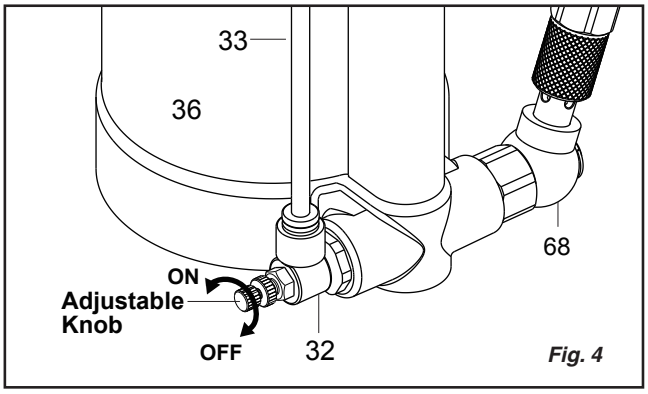


Fig. 4

11. MAINTENANCE

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

11.1 DAILY CHECKS

1. If no air lubricator is fitted on the compressed air supply system, it is suggested to pour a few drops of the light 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.
2. Check for air leaks. If damaged, replace the mini air fittings (31), air hoses (33), and swivel air fitting with on/off slide switch (68).
3. 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 the tool. If there is an air filter, drain it.
4. Check the JAW CASE ASSEMBLY DISTANCE that meets the specification 65±0.5 mm (Fig. 5).
5. Carefully check and firmly tighten the jaw case assembly (3AY), working nosepiece (1), head (2), oil screw plug (16), oil cylinder end cap (25), noise silencer lock nut (39), valve end cap (58), air cylinder end cap (65), air inlet end cap (67), swivel air fitting with on/off slide switch (68) before daily operation.
6. Check to empty the spent mandrels. Be sure to fit the spent mandrel container (30) to the oil cylinder end cap (25) firmly.
7. Check to ensure the trigger (42) operation is normal.

JAW CASE ASSEMBLY DISTANCE 65±0.5 mm

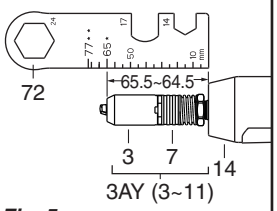


Fig. 5

11.2 WEEKLY CHECKS

1. Dismantle to clean the jaw case assembly (3AY) with special attention to the jaws (4), jaw pusher (5) and jaw pusher spring (6). Use the brush (70) to clean these parts and dip them into oil for lubrication. For better lubrication, lightly apply the thin lubricant oil on the back side of jaws (4) and on the inner slope of front jaw case (3) before reassembly. If jaws (4) and jaw pusher (5) get worn out, and jaw pusher spring (6) becomes shorter or twisted seriously that result in malfunction, replace them. **NOTE:** If the tool is operated frequently, it is suggested to clean and lubricate the jaw case assembly (3AY) daily.
2. Unscrew the noise silencer lock nut (39), and take out the noise silencer (38) to clean it. See 11.6 for detailed operation.
3. Check the oil leaks and the air leaks in the compressed air supply system.

11.3 EMPTY THE SPENT MANDREL CONTAINER

[WARNING] Overfilling spent mandrels causes the tool to malfunction.

When the spent mandrels fill over 70% capacity of the spent mandrel container (30), pull out the spent mandrel container (30) and empty the spent mandrels. Finally, make sure to fit the spent mandrel container (30) back to the tool firmly.

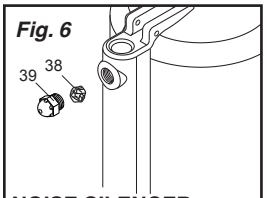
11.4 CLEAN AND REPLACE THE NOSEPIECES

1. Disconnect the tool from the compressed air supply system.
2. Unscrew the working nosepiece (1) from the head (2), also unscrew other nosepieces from the Nosepieces Storage Design™ at the bottom of the air cylinder end cap (65), clean these nosepieces. Check and replace any worn nosepieces.
3. Fasten the working nosepiece (1) back to the head (2) firmly, and store other nosepieces to the Nosepieces Storage Design™ at the bottom of the air cylinder end cap (65).

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

1. Disconnect the tool from the compressed air supply system.
2. Unscrew the noise silencer lock nut (39), take out the noise silencer (38) and clean it. If the noise silencer (38) is blocked or covered badly, replace it with a small piece of 3M scouring pad.
3. Reverse the above step to reassemble these two parts. Ensure that the noise silencer lock nut (39) is fastened firmly.

Fig. 6



NOISE SILENCER

11.6 CHECK, CLEAN AND REPLACE THE INNER PARTS OF THE QUICK-CHANGE TYPE JAW CASE ASSEMBLY (3AY), AND THE JAWS (4). **NOTE:** Often clean and lubricate Jaws to prolong operation life. (Fig. 9)

1. **Disconnect the tool from the compressed air supply system.**
2. Unscrew the head (2) with the wrench 2712 (27), **dismantle the quick-change type jaw case assembly (3AY) by hand as per the following steps: Pull back the lock ring (8) to let the tenons of lock ring (8) separate from the slots of front jaw case (3), hold the lock ring (8) and turn the front jaw case (3) counterclockwise to separate the front jaw case (3) from the rear jaw case (7) (Fig. 7).** If necessary, dismantle the rear jaw case (7) with the wrench 7724 (71) and wrench 2712 (72). Now the inner parts can be checked.

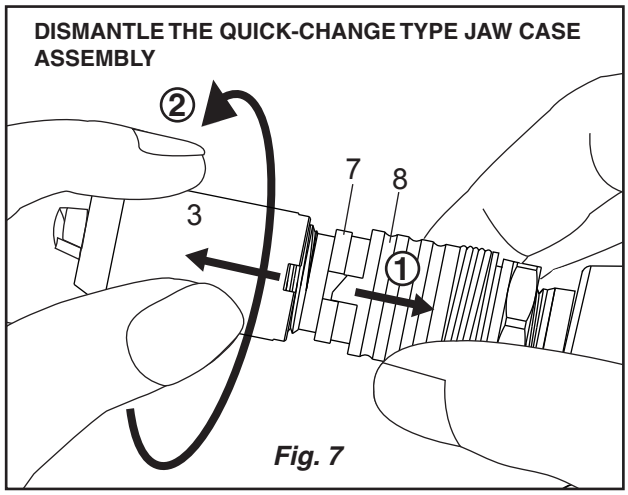


Fig. 7

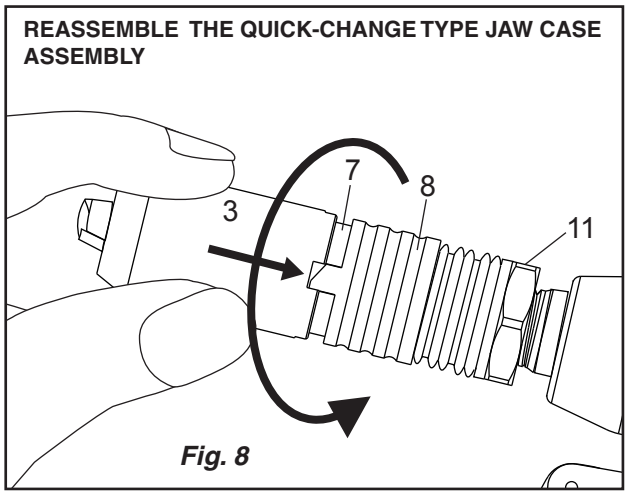


Fig. 8

3. **Check all inner parts. Any worn or damaged parts and twisted jaw pusher spring (6) should be replaced. Pay attention to check the teeth of jaws (4), and replace new jaws (4) if the teeth are worn out. Also pay attention to the jaw pusher (5) and jaw pusher spring (6). Replace them if they are seriously worn out or become shorter or twisted.**
4. Use the brush (70) to clean the front jaw case (3), teeth of jaws (4), jaw pusher (5), jaw pusher spring (6), and rear jaw case (7) (Fig. 9). Dip these parts into oil for lubrication. For better lubrication, lightly apply the thin lubricating oil on the back side of jaws (4) and on the inner slope of front jaw case (3). **Thoroughly cleaning the teeth of jaws (4) and lubricating jaws (4) with thin lubricating oil can prolong the operation life of jaws (4).**
5. Reassemble the lock nut (11), put back the lock washer (10), reassemble lock ring (8) and lock ring spring (9) back onto rear jaw case (7) adjacent to the lock washer (10). Then, put the jaw pusher spring (6) into the rear jaw case (7).
6. Carefully put the jaws (4) into the front jaw case (3) and put the jaw pusher (5) to fit the jaws (4) properly (Fig. 9). Then, insert the rear part of jaw pusher (5) into the front hole of jaw pusher spring (6), and use a hand to fasten these parts (3 ~6) in the front jaw case (3) and rear jaw case (7) firmly by turning the quick-change type front jaw case (3) clockwise all the way until the slots of front jaw case (3) accept the tenons of lock ring (8) with 3 ~ 4 click sounds. Finally the front jaw case (3) can not move backward any more, and the front jaw case (3) is firmly fastened with the rear jaw case (7). Make sure that the lock nut (11) is still not fastened yet.
7. **Use the wrench 7724 (71) to check and adjust the lock nut (11) to the recommended jaw case assembly distance 65±0.5 mm (Fig. 5).** At the same time, tighten the rear jaw case (7) and the lock nut (11) firmly with the wrench 7724 (71) and wrench 2712 (72). Finally, use the wrench 2712 (72) to fasten the head (2) firmly.
8. Connect the tool to the compressed air supply system. It is suggested to depress the trigger (42) twice to adjust the inner parts of jaw case assembly (3AY) to the normal position, so that the blind rivet mandrel can be inserted into the working nosepiece (1) smoothly.

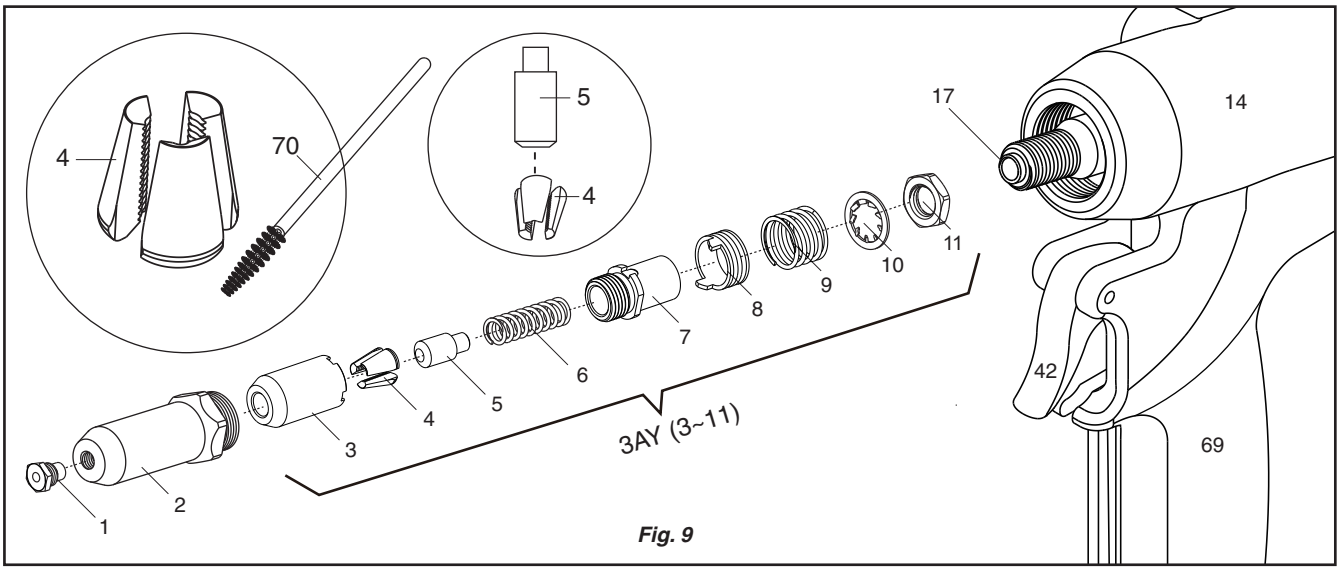


Fig. 9