



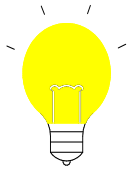
PK3 Owner's Manual

Bicomponent, Impact Air Mixture Cleaning and Spray Gun

Suitable for Nonflammable Foam and Polyurea.

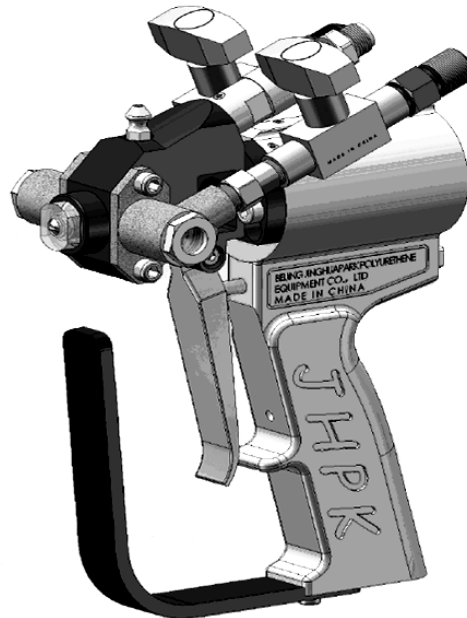
Not for use in explosive atmosphere.

A maximum fluid operating pressure of 24MPa, an air inlet pressure of 0.4-0.8MPa



Important safety notes

Please study all the warnings and notes in this manual



















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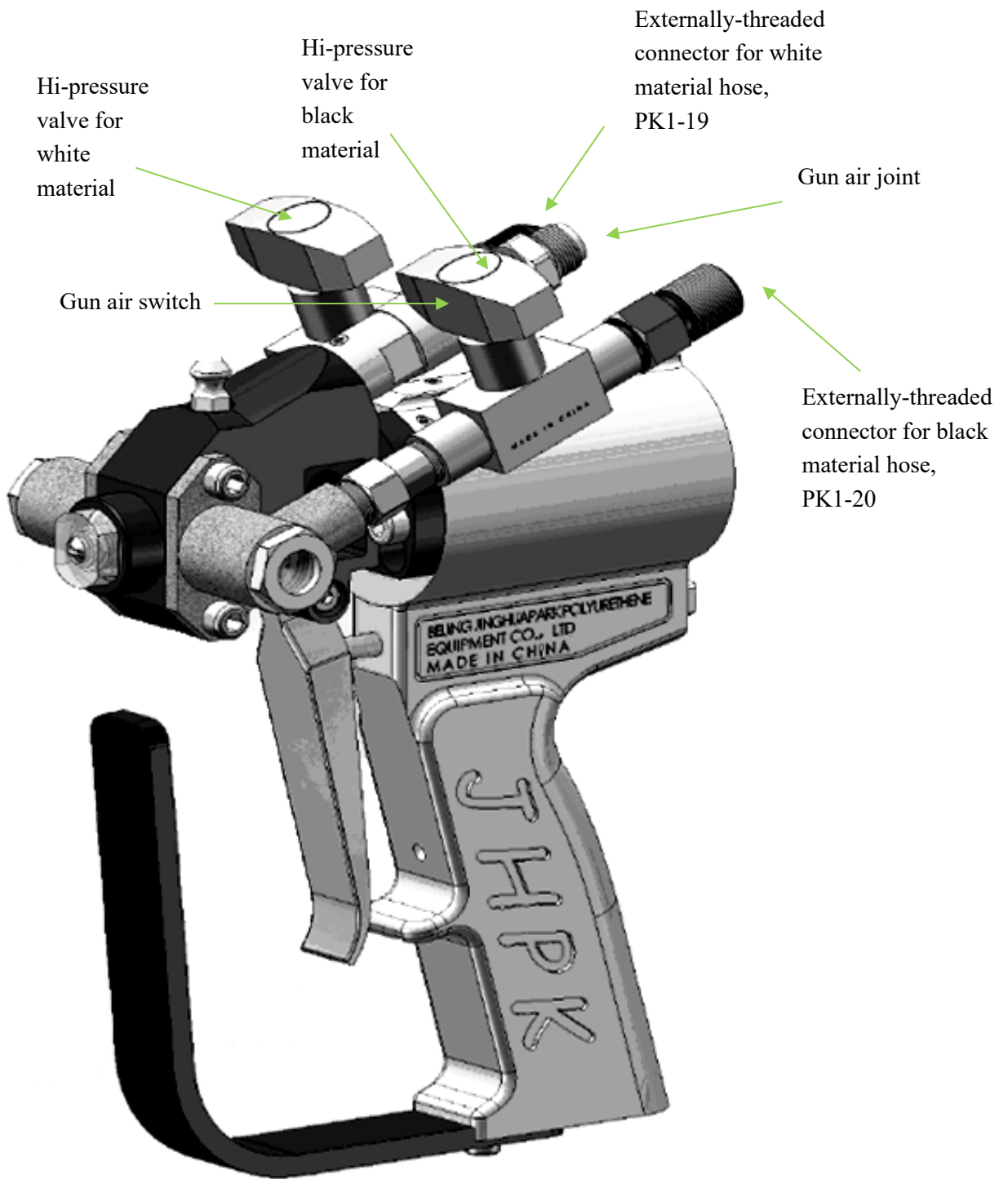
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Warning

 WARNING		
	<p>Danger of Electric Shock It will cause electric shock if inappropriate connection with the earth, set-up or use of the system.</p> <ul style="list-style-type: none">• Disconnect the general electric power of the mainframe before maintenance.• Keep the good connection with the earth during equipment operation.• Do not explore the equipment in the rain; keep the equipment in room.	
	<p>Personal Protective Equipment Need to wear appropriate protective equipment during operation, equipment maintenance or entering into the equipment working zone to avoid serious injury including hearing eyes, breathing poisonous gas, burning skin and hearing loss. These protective equipment are including but not limiting to,</p>	
	<ul style="list-style-type: none">• Safety Glasses• Lugging Gloves• Hearing Protection Device• Protective Clothing and Respirator recommended by the liquid and solvent manufacturer	
	<p>Danger of Fire and Explosion</p> <ul style="list-style-type: none">• The flammable smoke from solvent and dope in the working area easily cause fire or explosion. In order to avoid fire or explosion please follow the instruction,• Use and clean the equipment in ventilated environment.• Make sure the working area is clean and keep the solvent, waste pieces and gases etc. away from the working area.• Stop the operation immediately if see static sparkle or feel electric shock. Do not use the equipment till finding the root cause and taking action plan.• Equip with effective fire extinguishers in working area.	
	<p>Danger of High Pressure Aluminum Parts</p> <p>Do not use 1,1,1 three monomer (VCM), methylene chloride, other halogenated hydrocarbon solvents or containing this kind of solvents fluid in the high pressure aluminum device.</p>	
	<p>Danger of Burn</p> <p>The fluid on the surface of the equipment or heating in the equipment can become very hot in operation. To avoid serious burns do not touch the hot fluid or the heating parts of the equipment. Please wait for equipment/fluid cooling down completely.</p>	
	<p>Danger of Moving Parts</p> <p>The moving parts will crush or cut off fingers or other parts of the body.</p> <ul style="list-style-type: none">• Be away from moving parts.• Do not operate when cover is open or taken off.• Cut off power and air supply before examine or move maintaining equipment because pressuring equipment can be started accidentally without warning.	
	<p>Danger of Improper Operation</p> <p>Improper Operation may cause serious injury or death.</p> <ul style="list-style-type: none">• Do not operate over the rated parameters please reference to the equipment manual.• Only use the original part from equipment manufacturer for repairing or replacing and do not alter the equipment.• Keep away pipe and cable away from the public areas, sharp edges, moving parts and heating surfaces.• Do not twist or over bend pipes or use pipes drag equipment.• Please follow all the safety requirements to operate equipment.	

I. JHPK-PK III Spray Gun and Hose Path Connections



JHPK has been awarded UKAS system certificate Standard:Q/DXHPK001-2009

II. Exploded View of JHPK-PK III Spray Gun



III. Selection of JHPK-PK III Gun Head and Nozzle

JHPK-PK III pneumatic spray gun provides multiple modes of material discharge, which are achievable by merely replacing gun head, small nozzle, and associated accessories. See Fig. (2) below:

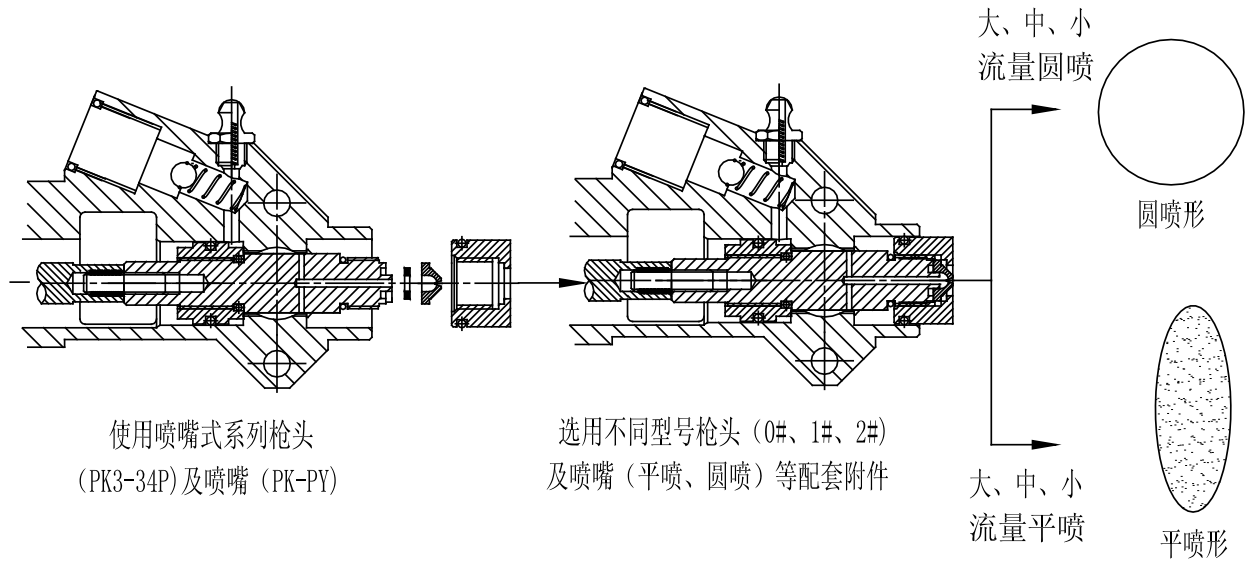


Fig. (1)

Fig. (2) is a schematic of impact discharge path; the feed materials are mixed by impact in the gun head before being blown out.

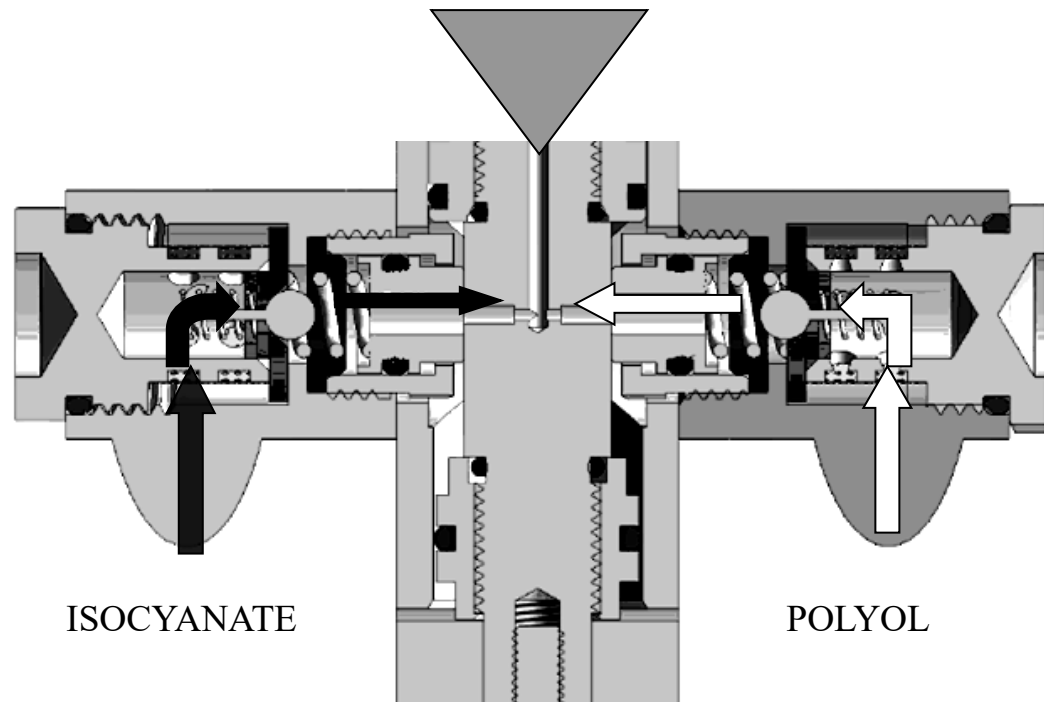


Fig. (2)

3.1. Round gun head and nozzle

The round spraying of feed material is the most widely used spraying mode in engineering application. JHPK-PK III pneumatic spray gun sprays in round pattern with a round spray gun head or with nozzle-type guns and small round nozzles. See Fig. (1). You may use Table (1) below to determine the most appropriate gun and nozzle model to suit the spray area, thickness, and the operating space and then decide the spray flow.

Our JHPK-PK III spray gun comes with the following standard gun head: 2# round gun head (part No. PK3-34-02), which produces an outflow of 4.5~5.5kg/min at an air pressure of 0.7MPa. Different gun heads, nozzles, and accessories are available to suit the user's needs.

Table (1)

Gun head			Gun head + small round nozzle				
Gun head No.	Part No. of gun head	Flow rate Kg/min	Gun head No.	Gun head model	Nozzle No.	Nozzle model	
0#	PK3-34-00	3.5~4.5	0#	PK3-34P-00	0#	PK-PY-00	3.0~4.0
1#	PK3-34-01	4.5~5.5	1#	PK3-34P-01	1#	PK-PY-01	4.0~5.0
2#	PK3-34-02	5.5~6.5	2#	PK3-34P-02	2#	PK-PY-02	5.0~6.0

3.2. Gun head and sealing cap for injection:

If you manufacture products by mould-injection process, then you should use a round gun head with a sealing cap for filling purpose so as to achieve the injection; see Fig. (1). The gun head No. shall be determined on the basis the product size and the formation mode (i.e., completion in one operation or in several operations); see Table (2). We will provide recommendation from the information provided by you.

Table (2)

Gun head + sealing cap for injection application			
Gun head No.	Part No. of gun head	Part No. of sealing cap for injection application	Flow rate Kg/min
0#	PK3-34-00	PK3-15G	3.5~4.5
1#	PK3-34-01	PK3-15G	4.5~5.5
2#	PK3-34-02	PK3-15G	5.5~6.5

3.3. Flat gun head and nozzle:

JHPK-PK III pneumatic spray gun sprays in flat pattern with a nozzle-type of heads and a small flat nozzle; see Fig. (1). With a flat pattern, the feed materials are sprayed in a sector shape; it primarily applies to operation where the surface evenness requirement is stringent or the operating space is limited. It is characterized by a small flow and a wide spray angle possibility. The selection of gun head is given in Table (3).

Table (3)

Gun head + small flat nozzle				
Gun head No.	Gun head model	Nozzle No.	Nozzle model	Flow rate Kg/min
0#	PK3-34P-00	0#	PK-PP-00	3.0~4.0
1#	PK3-34P-01	1#	PK-PP-01	4.0~5.0
2#	PK3-34P-02	2#	PK-PP-02	5.0~6.0

Note: When selecting different gun heads and nozzles to change the spray/injection function, please use correct accessories; if you are not certain, please contact our after-sale personnel for consultancy.

IV. Inspection of JHPK-PK III Spray Gun

The inspection may be carried out at the end of each working day or during the operation. Before inspection, you shall fully understand the location of various parts of the gun and their function in order to have accurate analysis and judgment. Note: If the gun works normally at the end of the working day, you need only to close the feed material valves and then pull the lock bolt several times to fully eject the feed material out of the mixing chamber. After this, switch off the air supply. Use a grease gun to fill adequate amount of grease through the lubricating nipple of the gun.

4.1 Inspection of the mixing chamber

4.1.1. Check the metal friction pair and the O-ring for their integrity.

(1) Switch off the air supply on the gun and wait about 10-20s before switching it on again. (At this time, the feed valves should be in an open position).

(2) Repeat the above operation 2 or 3 times. If any feed material is ejected out of the gun head outlet, it indicates either a poor tightness between the metal friction pair and the gun head or a damaged O-ring (J7554-07) of the friction pair. In the latter case, the O-ring shall be replaced without delay; otherwise the leaking feed materials will solidify in the mixing chamber, making the gun inoperable. See Fig. (3).

Note: Typically, the metal friction pair does not deteriorate easily, because both the pair and the gun head have received hardening treatment.

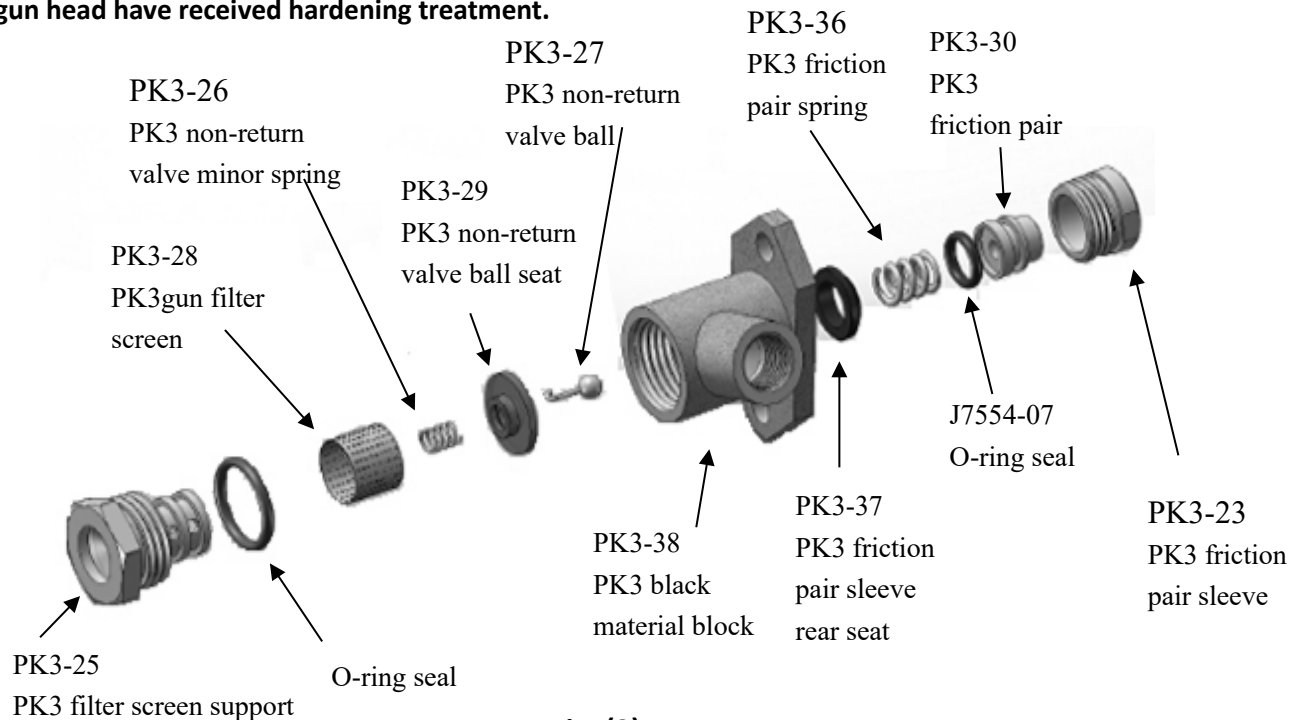


Fig. (3)

(3) The dead solidification between the metal friction pair and its sleeve caused by leaking material will result in leakage between the pair and the gun head (PK3-34), which in turn leads to more serious leakage in the gun head chamber. The worst case is that foaming occurs in the mixing chamber.

4.1.2 Inspection of friction pair spring (PK3-36)

Over time with the use of the spray gun, PK3 friction pair spring (PK3-36) becomes fatigued and does not have sufficient elasticity to secure a tight contact between the pair and the gun head, resulting in material leakage between them. The friction pair spring should be checked periodically and its operation status be noticed from time to time during operation. A timely replacement is required in case of any defect.

4.1.3 Inspection of O-ring in the mixing chamber

Switch on the air supply switch on the spray gun, switch off the two feed material valves on the material supply block, and pull the lock bolt such that the gun is in a discharge status. If air runs out from the gun front, then the O-rings (J7554-12, PK3-10, JY21105-01) are damaged and shall be replaced, see Fig. (4); otherwise the air will escape during job spraying, resulting in environment pollution by diffused feed material.

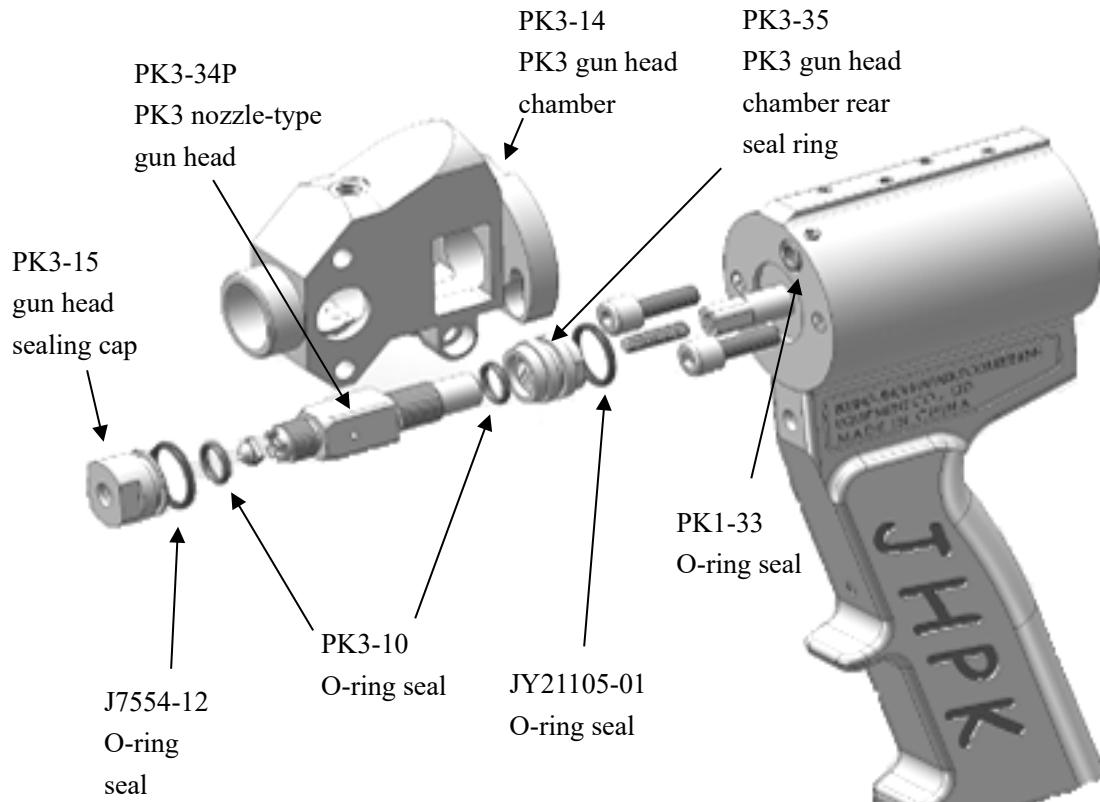


Fig. (4)

4.2 Inspection of pneumatic system

4.2.1 Inspection of lock bolt piston O-ring (PK1-33)

Close the two feed material valves on the material supply block, open the air switch on the gun, and pull the lock bolt to put the gun head in operation motion without the supply of feed material, then check the gun head for its motion smoothness. Check the lock bolt for its operation flexibility. Check the gun handle for air leakage. In any of the above cases, check the bolt piston O-ring (PK1-33) for any damage or swelling. In the event of damage or swelling, replace the sealing ring immediately; see Fig. (6).

4.2.2 Inspection of the gun piston O-ring

If the lock bolt operation is normal, close the feed material valves on the material supply block, and quickly pull the bolt 3-5 times to trial operate the gun without material feeding. If the gun head is slow and forceless in motion, accompanied by air leakage, check O-rings (PK1-33, PK3-12, JY21202-01, PK3-10, J7554-29) for any damage. A damaged O-ring easily gives rise to air carry-over in the gun, making the gun inoperable or forceless in action; see Fig. (6).

4.2.3 Inspection of feed material switch valves

Put the equipment in operation status, close the switch valves on the two material supply blocks, and pull the bolt several times, if there is material being sprayed out, it indicates a leaking feed material valve. Solutions:

Use a special socket hexagon spanner to loosen the set screws on the black handle of the feed material switch valve, take down the black handle, and rotate the lock nut on the sealed bearing outer ring 1/4 circle clockwise using a suitable spanner, then try the gun again and check for any leakage. The lock nut on the sealed bearing outer ring shall not be rotated too large an angle in one

operation; each rotation operation shall not exceed 1/4 circle. Otherwise, the internal sealing parts in the feed material switch valve would be damaged, rendering the valve useless.

Note: Everyday inspection of the gun is essential because of the properties of polyurethane material, which solidifies quickly. Also, isocyanate reacts with the moisture in the air to generate solidified crystals. Such properties call for a good tightness of all the sealing parts in contact with feed materials. Otherwise, the gun becomes inoperable or malfunctions, which has a direct impact upon production.

V. Cleaning of JHPK-PK III Spray Gun

Our JHPK-PK III spray gun is continuously-operating air-cleaned gun, without the problem of gun head blockage. However, routine inspection and periodical maintenance are essential. Under normal condition, the gun shall be thoroughly cleaned, maintained, serviced every 3-5 days; gun solvent may be used as the cleaning agent. Medical vaseline or lithium base grease (premium grease) may be used as the lubricant. Our after-sale personnel will provide 1-2 times of guidance on gun cleaning.

5.1 Cleaning of the mixing chamber

Before maintenance, the feed material pressure shall be released and the gun air supply be switched off. Work following the exploded view of the gun and observe the following steps:

- Step 1. Switch off the feed material valves on the two material supply blocks, remove the two socket hexagon cap screws (PK3-18) on the blocks. Remove the metal friction pair assembly from the two blocks and have them cleaned piece by piece, with particular attention paid to the cleaning of the metal friction pair and the interior of its sleeve. See Fig. (3).

Note: Do not scratch the friction pair's gun contact face when cleaning the exterior of the pair. The interior of the friction pair sleeve shall be cleaned of any residual feed material so that the pair may be installed true to their position. Check the friction pair O-ring (J7554-07) for their wearing condition, and check PK3 friction pair spring (PK3-36) for its spring force adequacy.

- Step 2. Firstly, loosen and remove the sealing cap (PK3-15) of PK3 gun head chamber, then loosen the tightening screw (PK3-31) of the chamber flange and rotate off PK3 gun chamber (PK3-14) to clean the chamber interior of any material residual and make the gun head slide without obstruction. See Fig. (4).

- Step 3. Remove PK3 gun head (PK3-34/PK3-34P) and use a special drill bit to clear the feed material inlet and outlet on the gun head.

5.2 Dismantling of pneumatic system of the gun: (these steps shall be performed following the exploded view of the gun)

Dismantle and clean this system only when it has defect; dismantling and cleaning of this system on a routine basis are not recommendable.

- Step 1. Loosen and remove PK3 gun tail-hood (PK3-05), use a socket hexagon spanner to remove rear piston (PK3-07) of PK3 gun in the air chamber, use a pair of inside calipers to remove the in-hole snap ring (PK3-09) and PK3 piston diaphragm (PK3-11), push PK3 front piston (PK3-33) from the front to the rear to take out PK3 front piston. Never knock the piston front end using a metal object. Check associated parts for their O-ring integrity (PK3-12, JY21202-01, J7554-29, and PK3-10). See Fig. (5).

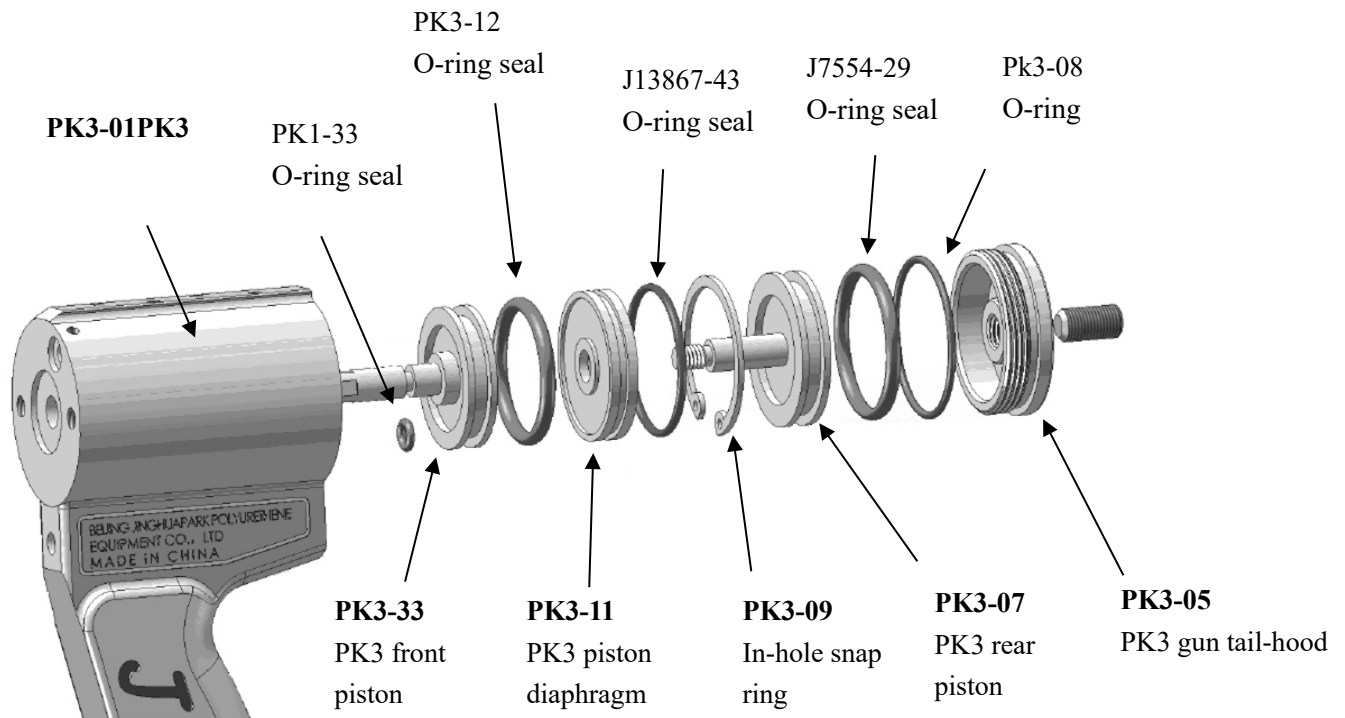


Fig. (5)

Step 2. Loosen the pipe plug of PK3 bolt (PK3-04) and remove PK3 bolt piston (PK3-02). Check the 3 O-rings (PK1-33) on the bolt piston for their integrity. If all the condition is satisfactory, apply grease to prepare for reassembling. See Fig. (6) below

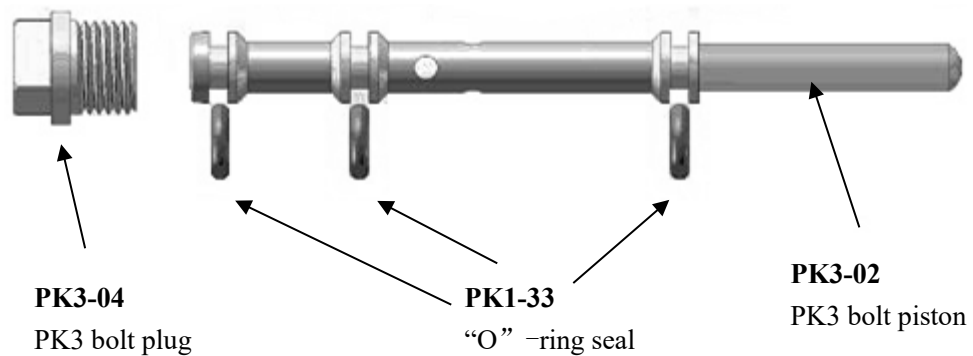


Fig. (6)

Upon completion of the above procedures, apply grease to necessary places (for example, seal ring face, gun head surface, etc.), then assemble the parts in reverse order of dismantling. Have a trial operation and put the gun into job operation only after a satisfactory trial operation.

VI. Adjustment after Gun Head Blockage

6.1 Small discharge or non-discharge of material

When the gun discharges reduced quantity or no quantity suddenly during operation, you should check the main machine, with particular attention paid to the feed material pressure. If the main machine is found in good condition, perform the following inspection and adjustment (remove the material supply blocks on both side of the gun before adjustment):

- Step 1. Check the gun head mixing chamber cavity for cleanness and any obstruction. Is the gun cleaning air supply blocked or not? As a result, the air flow is absent or reduced for gun cleaning. If there is blockage, use the gun cleaning drilling bit supplied along with the machine to clear the air path and the gun head. See Fig. (7).

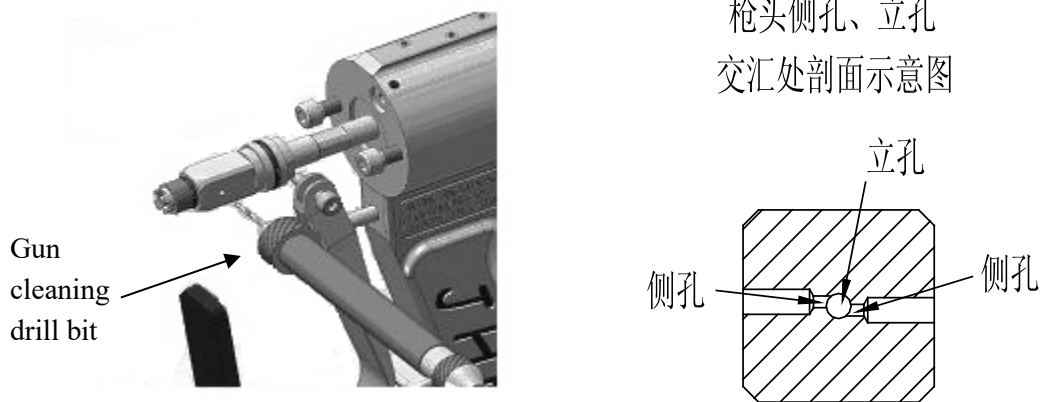


Fig. (7)

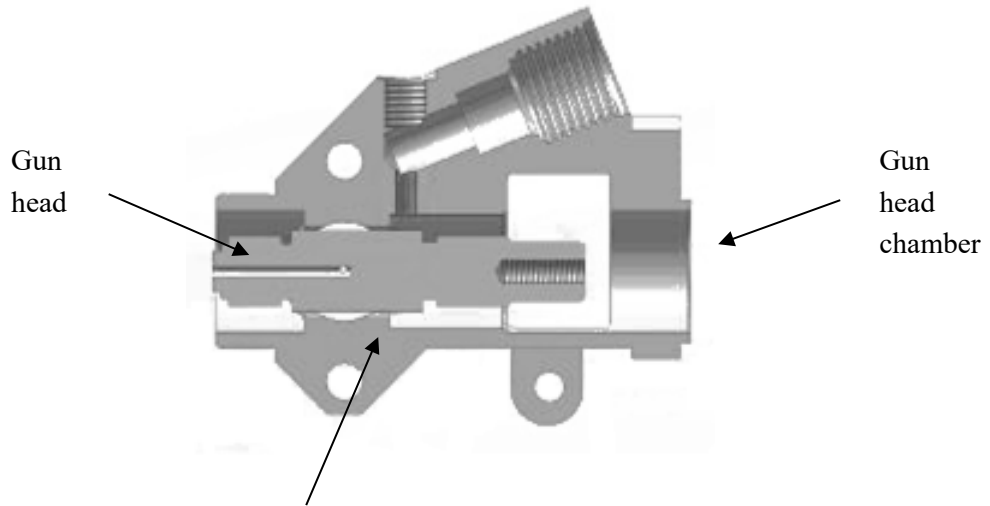
- Step 2. Is PK3 gun filter screen (PK3-28) clean or not?

Step 3. Check whether the friction pair O-ring sealing ring (J7554-07) is damage or PK3 friction pair spring (PK3-36) has insufficient elastic force.

- Step 4. Is the gun head position correct? If not, adjust as below:

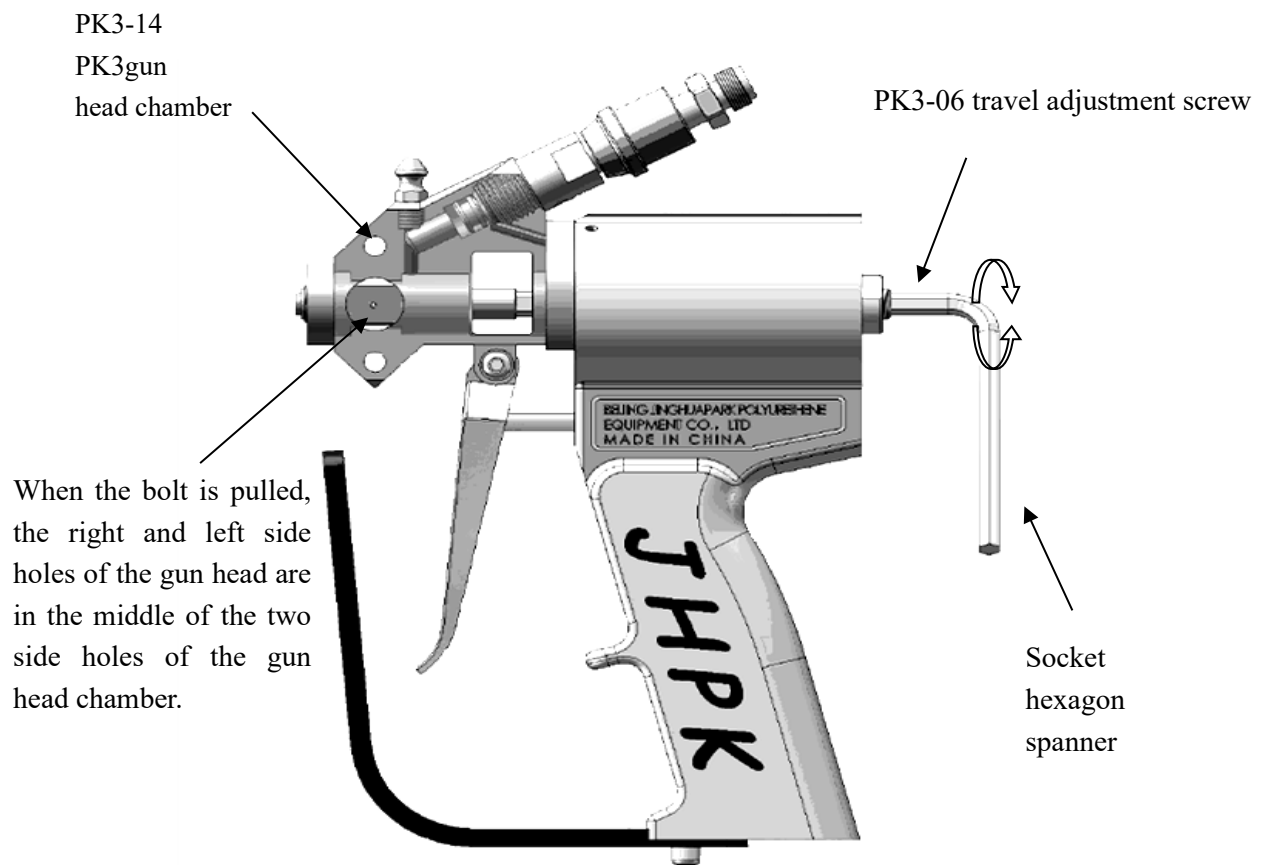
Pull the bolt to send the gun head in motion and watch from the observation hole on either side of PK 3 gun head chamber (PK3-14) whether the material inlet on the gun head is situated in the middle of the hole on either side of the head. If not, release the bolt to restore the gun head to its original position and use a socket hexagon spanner to rotate the travel adjustment screw (PK3-06) in the gun tail-hood. Adjust repeatedly until the said material inlet position is correct. See Fig. (9).

Fig. (8) shows the correct position of the gun head when the bolt is pulled.



When the bolt is pulled, the right and left side holes of the gun head are in the middle of the two side holes of the gun head chamber.

Fig. (8)



When the bolt is pulled, the right and left side holes of the gun head are in the middle of the two side holes of the gun head chamber.

Fig. (9)

- Step 5. Put a clean container below each of the two material supply block, see Fig. (10), and open the feed material valves of the two material supply blocks simultaneously, then observe the discharge and the feed material hydraulic pressure gage reading. For a normal operation, the two feed material components should be ejected out steadily and the pressure reading of both components shall be approximately the same.

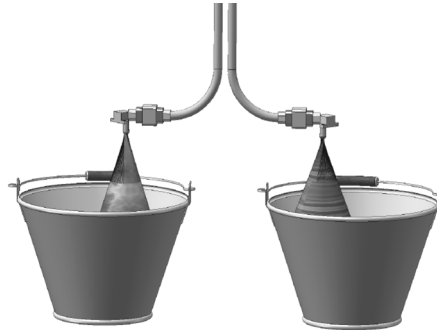


Fig. (10)

6.2 Poor spray condition

When trying to identify the reason for poor mixing of feed materials, you shall understand two factors of mixing condition: pressure and temperature.

(For pressure and temperature adjustment, see the equipment operation guide).

6.2.1 If you are using the machine for spraying application

1. If the feed material temperature is excessive, the foaming agent in white material will gasify, resulting in fleecy effect and excessive spray of the material and inhomogeneous mixing. Consequently, the spray coat will be uneven and the product performance will be compromised.
2. If the feed material temperature is too low, its viscosity will increase, the spray material will become striped and unevenly mixed. Also, the atomization effect will be poor. Similarly, the spray coat will be uneven and the product performance will be compromised.
3. If the feed material pressure is excessive, the material will rebound during application, resulting in material wastage.

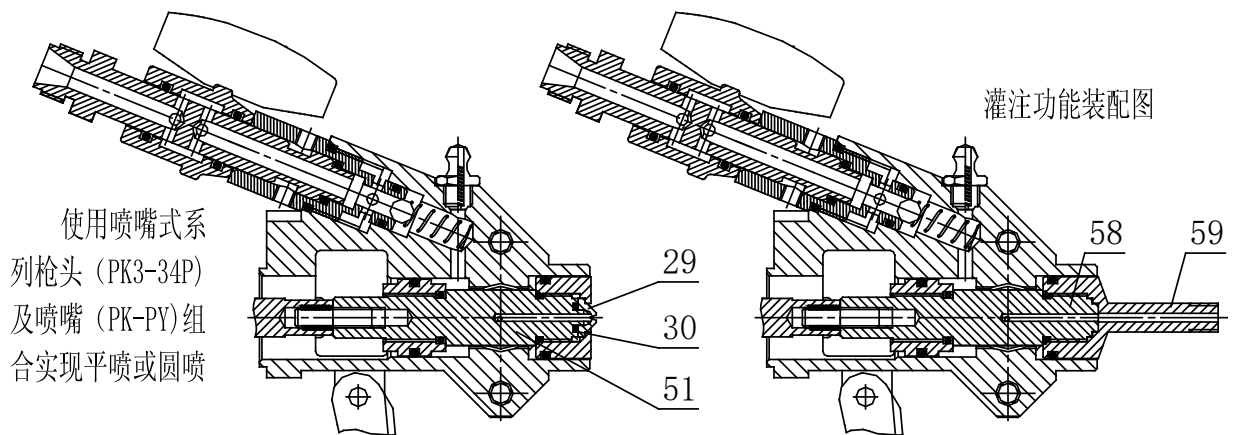
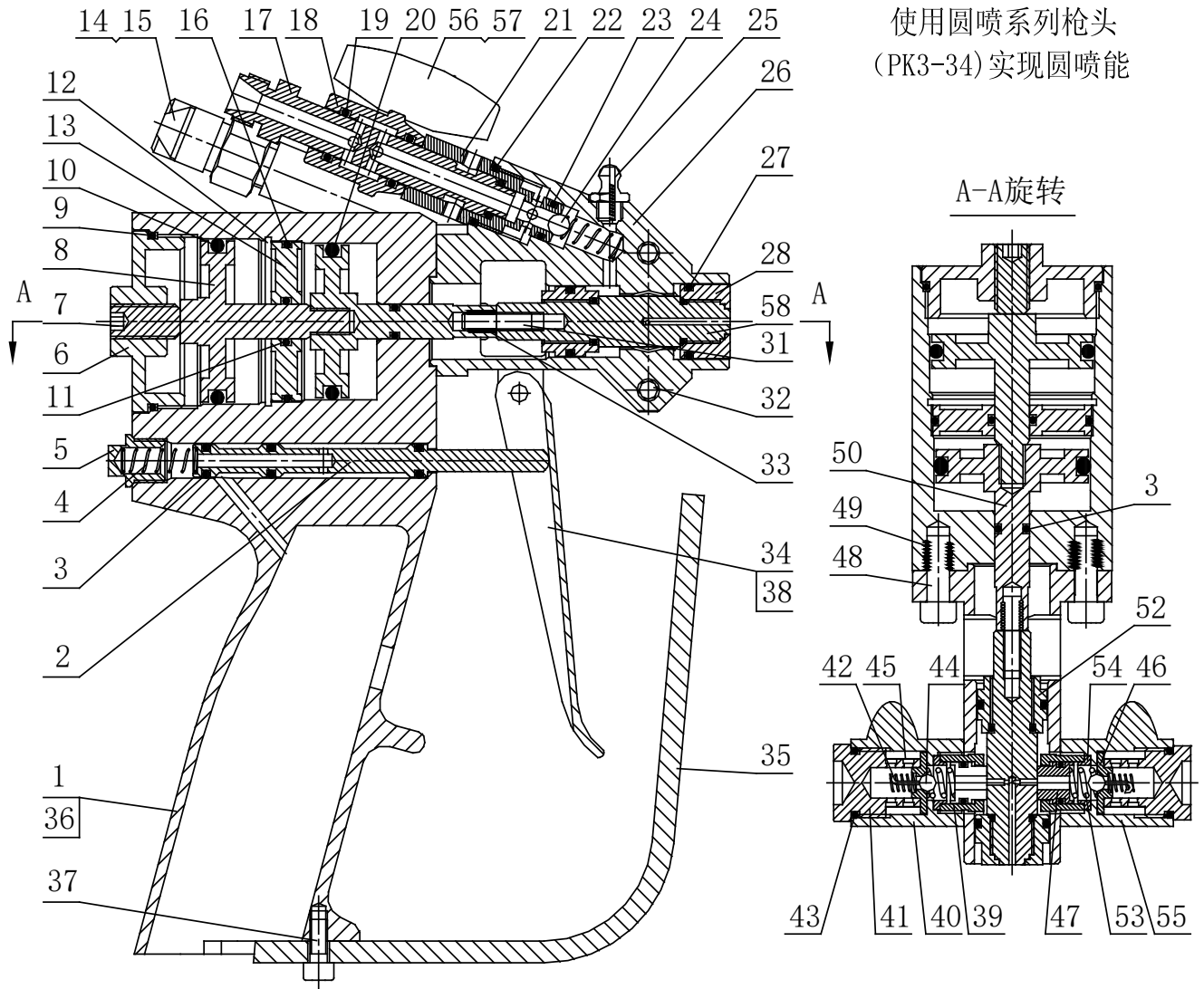
6.2.2 If you are using the machine for injection application

1. If the feed material temperature is excessive, the foaming agent in the white material will gasify, the foaming rate will be accelerated, and the material will fly all around, making it difficult to inject to the bottom. Consequently, defective or hollow products will be produced.
2. If the raw material temperature is too low, the raw material viscosity will increase, the material will become striped during injection; the mixing will be even. The consequence is that the foaming multiplication ratio is low and the products will shrink.
3. If the feed material pressure is too high, the material will rebound during injection and the life of the equipment may be impaired; if the pressure is too low, the mixing will be uneven, which results in a low foaming multiplication ratio, shrinking products, and compromised product properties.

Therefore, we recommend that you set the black material temperature at 35°C—45°C and the black material temperature at 25°C—35°C and the pressure at 4—7MPa, depending on the ambience, air temperature, and work process. The actual parameters should be refined as appropriate to the specific site situation.

VII. Assembly Drawing of JHPK-PK III Spray Gun and List of Parts

Visit EquipmentOptionsDirect.com to find our interactive PKIII parts selector in our parts menu. It is the easiest way to identify and order parts.



List of Parts

S/N	Part No.	Part designation	Qt'y	S/N	Part No.	Part designation	Qt'y
1	PK3-01	PK3 gun body	1	31	PK3-17	Fitting screw for PK3 gun head	1
2	PK3-02	PK3 bolt piston	1	32	PK3-18	Socket hexagon cap screw	2
3	PK1-33	O-ring seal	5	33	PK3-19	Thread nut	1
4	PK3-03	PK3 restoring spring	2	34	JPG-18	Bolt clip	1
5	PK3-04	PK3 bolt plug	1	35	PK3-20	PK3 gun finger guard	1
6	PK3-05	PK3 gun tail-hood	1	36		Socket hexagon pointless set screw	7
7	PK3-06	PK3 travel adjustment screw	1	37	PK3-21	Socket hexagon cap screw	1
8	PK3-07	PK3 rear piston	1	38	PK3-22	Socket hexagon cap screw	1
9	PK3-08	O-ring seal	1	39	PK3-23	PK3 friction pair sleeve	2
10	J7554-29	O-ring seal	1	40	PK3-24	PK3 white material block	1
11	PK3-10	O-ring seal	3	41	PK3-25	PK3 filter screen support	2
12	PK3-09	In-hole snap ring	1	42	PK3-26	PK3 non-return valve minor spring	2
13	PK3-11	PK 3 piston diaphragm	1	43	JY21105-01	O-ring seal	3
14	PK1-20	Externally-threaded connector for black material hose	1	44	PK3-27	PK3 non-return valve ball	2
15	PK1-19	Externally-threaded connector for white material hose	1	45	PK3-28	PK3 gun filter screen	2
16	JY21202-00	O-ring seal	1	46	PK3-29	PK3 non-return valve ball seat	2
17	J16830-00	Gun air joint	1	47	PK3-30	PK3 friction pair	2
18	J16831-00	Gun air switch	1	48	PK3-31	Socket hexagon cap screw	2
19	J7554-09	O-ring seal	2	49	PK3-32	Thread nut	2
20	PK3-12	O-ring seal	1	50	PK3-33	PK3 front piston	1
21	PK3-13	PK3 air inlet valve connector	1	51	PK3-34P	PK3 nozzle-type gun head	*

22	PK1-45	O-ring seal	1	52	PK3-35	PK3 gun head chamber rear seal ring	1
23	J7554-07	O-ring seal	4	53	PK3-36	PK3 friction pair spring	2
24	PK1-44	Steel ball $\Phi 5$	1	54	PK3-37	PK3 friction pair sleeve rear seat	2
25	PK1-47	Straightway pressure injection oiler	1	55	PK3-38	PK3 black material block	1
26	PK3-14	PK3 gun head chamber	1	56	PK3-39	Externally-threaded connector	2
27	J7554-12	O-ring seal	1	57	PK3-40	Hi-pressure valve	2
28	PK3-15	PK3 gun head sealing cap	1	58	PK3-34-02	2# round spray gun head	1
29	PK-PY/PK-PP	Small nozzle	*	59	PK3-15G	PK3 gun head sealing cap for injection	*
30	PK-P-DP	Washer	*	60			

Note: * indicates options. The standard version of this gun comes with a 2# round gun head; however, other round gun head models are also available to the user.