

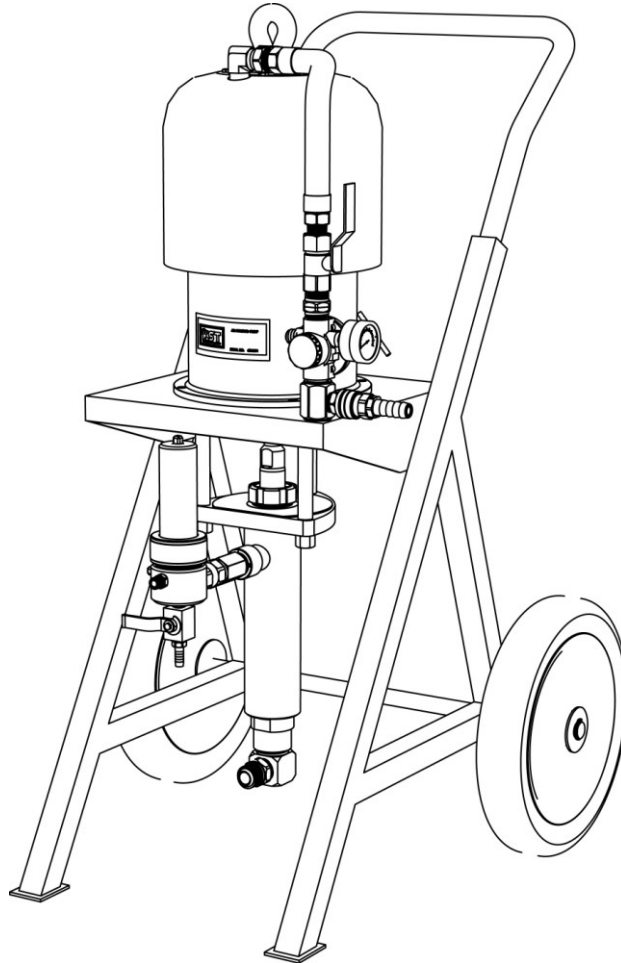
REPAIR INSTRUCTIONS

STEEL PUMPS

4500 PSI (31.50 MPa, 310 bar) Maximum Fluid Working Pressure

100 psi (0.7 MPa, 7 bar) Maximum Air Pressure

45:1 Ratio Pump



This manual contains important warning and information.

Read and keep reference.

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! WARNING

 <p>INSTRUCTIONS</p>	<h2>EQUIPMENT MISUSE HAZARD</h2> <p>Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.</p> <ul style="list-style-type: none"> _ This equipment is for professional use only. _ Read all instruction manuals, tags, and labels before operating the equipment. _ Use the equipment only for its intended purpose. If you are uncertain about usage, call your KST distributor. _ Do not alter or modify this equipment. Use only genuine KST parts and accessories. _ Check equipment daily. Repair or replace worn or damaged parts immediately. _ Do not exceed the maximum working pressure of the lowest rated system component. _ Do not use hoses to pull equipment. _ Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose KST hoses to temperatures above 82_C (180_F) or below -40_C (-40_F). _ Wear hearing protection when operating this equipment. _ Do not lift pressurized equipment. _ Comply with all applicable local, state, and national fire, electrical, and safety regulations. 		<h2>INJECTION HAZARD</h2> <p>Spray from the gun/valve, hose leaks, or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Fluid splashed in the eyes or on the skin can also cause serious injury.</p> <ul style="list-style-type: none"> _ Fluid injected into the skin might look like just a cut, but it is a serious injury. Get immediate medical attention. _ Do not point the gun at anyone or at any part of the body. _ Do not put your hand or fingers over the spray tip. _ Do not stop or deflect leaks with your hand, body, glove or rag. _ Do not "blow back" fluid; this is not an air spray system. _ Always have the tip guard and the trigger guard on the gun when spraying. _ Be sure the gun trigger safety operates before spraying. _ Lock the gun trigger safety when you stop spraying. _ Tighten all fluid connections before operating the equipment. _ Check the hoses, tubes, and couplings daily. Replace worn, damaged, or loose parts immediately. Permanently coupled hoses cannot be repaired; replace the entire hose. _ Use only KST approved hoses. Do not remove any spring guard that is used to help protect the hose from rupture caused by kinks or bends near the couplings.
	<h2>TOXIC FLUID HAZARD</h2> <p>Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> _ Know the specific hazards of the fluid you are using. _ Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state and national guidelines. _ Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer. 		<h2>FIRE AND EXPLOSION HAZARD</h2> <p>Improper grounding, poor ventilation, open flames or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.</p> <ul style="list-style-type: none"> _ If there is any static sparking or you feel an electric shock while using this equipment, stop spraying immediately. Do not use the equipment until you identify and correct the problem. _ Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being sprayed. _ Keep the spray area free of debris, including solvent, rags, and gasoline. _ Electrically disconnect all equipment in the spray area. _ Extinguish all open flames or pilot lights in the spray area. _ Do not smoke in the spray area. _ Do not turn on or off any light switch in the spray area while operating or if fumes are present. _ Do not operate a gasoline engine in the spray area.
	<h2>MOVING PARTS HAZARD</h2> <p>Moving parts, such as the air motor piston, can pinch or amputate your fingers.</p> <ul style="list-style-type: none"> _ Keep clear of all moving parts when starting or operating the pump. 		

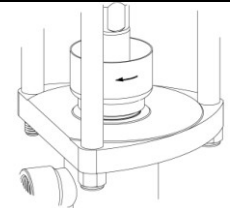
Operation

1. Lock the spray gun trigger safety.
2. Close the red-handed bleed-type master air valve
3. Unlock the gun trigger safety.
4. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
5. Lock the gun trigger safety.
6. Open the drain valve having a container ready to catch the drainage.
7. Leave the drain valve open until you are ready to spray again.

If you suspect that the spray tip or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, very slowly loosen the tip guard retaining nut or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip or hose.

Packing nut / wet-cup

Before starting, fill the packing nut 1/3 full with TSL or compatible solvent. To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the pressure relief procedure. The packing nut is torqued at the factory and is ready for operation. If it becomes loose and there is leaking from the throat packings, relieve pressure, then torque the nut to 136-149N.m using a wrench. Do this whenever necessary. Do not over tighten the packing nut.



Flush the Pump Before first Using

The pump is tested with lightweight motor oil, which is left in to protect the pump parts.

If the fluid you are using may be contaminated by the oil, flush it out with a compatible solvent before using the pump. If the pump is being used to supply a circulating system, allow the solvent to circulate until the pump is thoroughly flushed.

Flush the pump.

- Before the first use.
- When changing colors or fluids.
- Before fluid can dry or settle out in a dormant pump (check the pot life of catalysed fluids)
- Before storing the pump

Flush with a fluid that is compatible with fluid you are pumping and with the wetted parts in your system.

Check with a fluid manufacturer or supplier for recommended flushing fluids and flushing frequency.

Troubleshooting

Check all possible causes and problems before disassembling the pump.

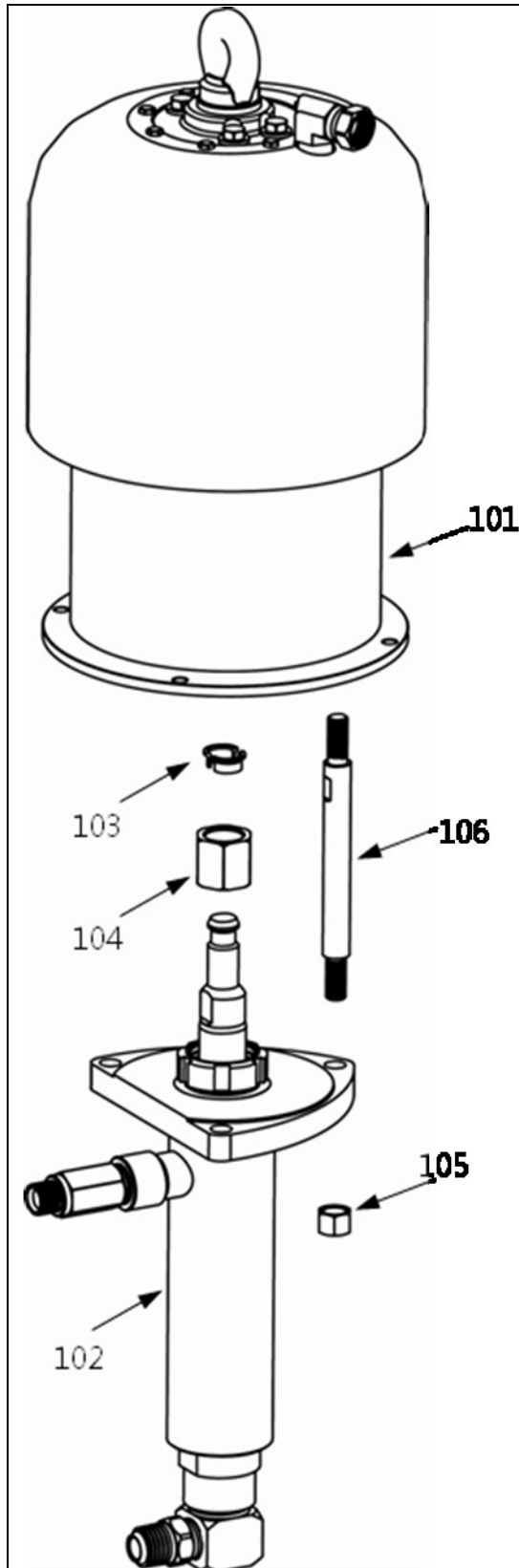
PROBLEM	CAUSE	SOLUTION
Pump fails to operate	Restricted line or inadequate air supply	Clear; increase air supply.
	Obstructed fluid hose, gun, or dispensing valve	Open, clean.
	Exhausted fluid supply	Refill; purge all air from pump and fluid lines.
	Damaged air motor	Service air motor
Pump operates, but output low on both strokes	Restricted line or inadequate air supply	Clear; increase air supply.
	Obstructed fluid hose, gun, or dispensing valve.	Open, clean.
	Exhausted fluid supply	Refill; purge all air from pump and fluid lines.
	Air in displacement pump and hose.	Rprime*
	Packing nut too tight or too loose	Adjust.
	Worn throat packings	replace
Pump operates, but output low in down stroke	Held open or worn intake valve	Clear; service.
Pump operates, but output low on up stroke	Held open or worn fluid piston valve or packings	Clear; service.
Erratic or accelerated operation	Exhausted fluid supply	Refill; purge all air from pump and fluid lines
	Packing nut too tight	Adjust.
	Held open or worn intake valve	Clear; service.
	Held open or worn fluid piston valve or packings	Clear; service.

To determine if the fluid hose or gun / valve is obstructed, follow the **pressure relief Procedure Warning** below.

Disconnect the fluid hose and place a container at the pump fluid outlet to catch any fluid.

Turn on the air just enough to start the pump (about 20–40 psi [140–280 kPa, 1.4–2.8 bar]). If the pump starts when the air is turned on, the obstruction is in the fluid hose or gun/valve.

Parts drawing and Parts List



No	Part No	Description	Qty
101	K254-100	AIR MOTOR	1
102	451-200	DISPLACEMENT PUMP ASS'Y	1
103	KS-003	COUPLING COLLER	2
104	KS-004	COUPLING NUT	1
105	KS-005	NUT	3
106	KS-006	TIE ROD	3

DISCONNECTING THE DISPLACEMENT PUMP

1. Flush the pump if possible. Stop the pump at the bottom of its stroke. **Relieve the pressure.**
2. Disconnect the air and fluid hoses. Remove the pump from its mounting.
3. Unscrew the coupling nut off of the air motor piston rod . Be Carefully not to loss the two couplers as you lower the nut. Unscrew the tie rod locknuts from the tie rods. Carefully pull the displacement pump away from the air motor.
4. To service the displacement pump, refer to displacement pump service.

RECONNECTING THE DISPLACEMENT PUMP

1. Align the pump's fluid outlet to the optional fluid outlet of the air motor. Position the displacement pump on the tie rod.
2. Make sure the couplers are in place inside the coupling nut. Screw the coupling nut up onto the air motor piston rod snugly. Screw the locknut onto the tie rods loosely.
3. Mount the pump and reconnect all hoses. Reconnect the ground wire if it was disconnected during repair.
4. Tighten the tie rod locknuts evenly, and torque to 40-50ft-lb (54-68 N.m). Torque the coupling nut to 145-155 ft-lb(195-210 N. m)
5. Start the pump and run it slowly, at about 40 psi (280 kPa,2.8 bar) air pressure, to check the tie rods for signs of binding. Adjust the tie rods as necessary to eliminate binding. Tighten the packing nut/wet-cup whit the wrench supplied. Fill the wet-cup half full whit throat seal liquid or compatible solvent.

Displacement Pump Service

Disassembly

When disassembling the pump, lay out all removed parts in sequence, to ease reassembly.

Clean all the parts thoroughly when disassembling. Check them carefully for damage or wear, replacing parts as needed.

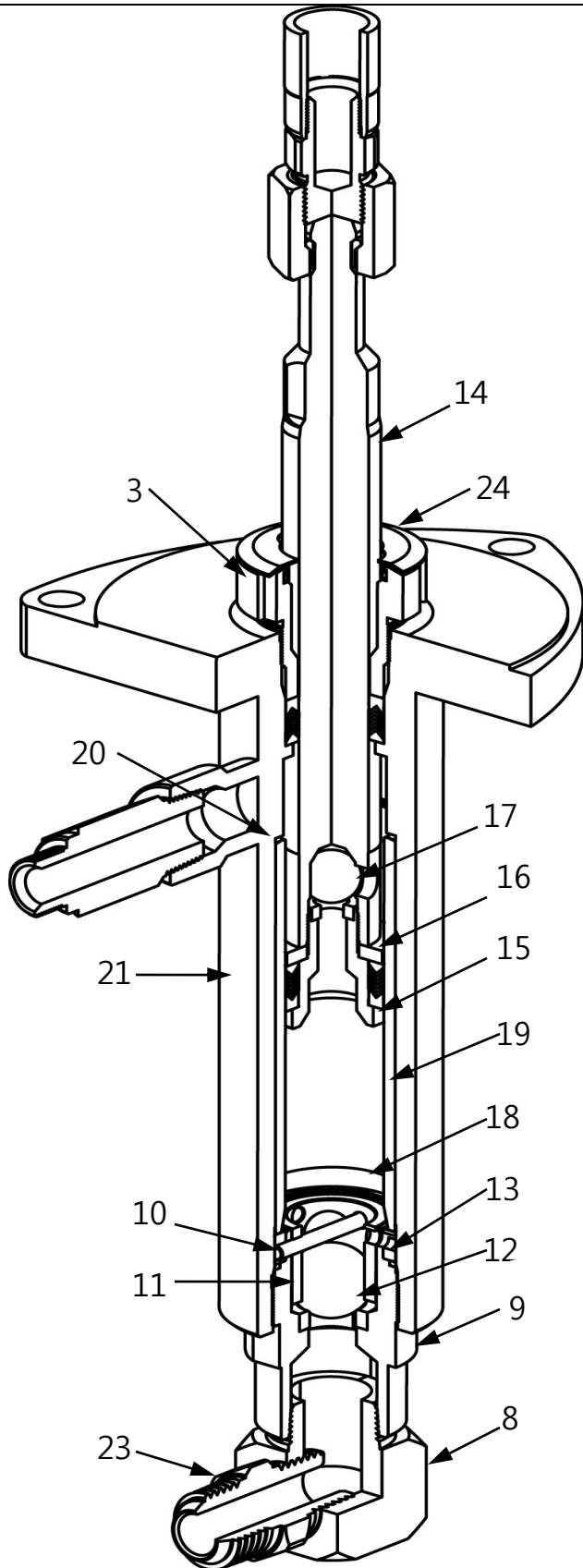
1. Remove the displacement pump from the air motor as explained.
2. Unscrew the intake valve housing (9) from the pump housing (21). If it is difficult to remove, squirt penetrating oil around the threads and *gently* tap around the valve housing with a plastic hammer to loosen it.
3. Remove the ball stop pin (10), o-ring(13) retainer (18), and ball (12) from the intake housing (9).
4. Loosen the packing nut (3). Push the displacement rod (14) down as far as possible, then pull it out the bottom of the pump housing (21).
5. Secure the flats of the displacement rod (14) in a vise. Screw the piston stud(15) out of the rod . Remove the ball(17), washer(16), packings(5,6) And glands(4,7).
6. Remove the packing nut (3), throat packings (5,6) and glands (4,7) from the pump housing (21).
7. Inspect all parts for damage. Clean all parts and thread with a compatible solvent before assembling. Inspect the polished surfaces of the displacement rod (14) and sleeve (19) for scratches, scoring or other damage, which can cause premature packing wear and leaking. To check, run a finger over the surface or hold the part up to the light at an angle. Be sure the ball seats of the piston and intake housing are not chipped or nicked. Replace any worn or damaged parts.

NOTE: If the sleeve (19) needs replacement and is hard to remove, contact your KST distributor.

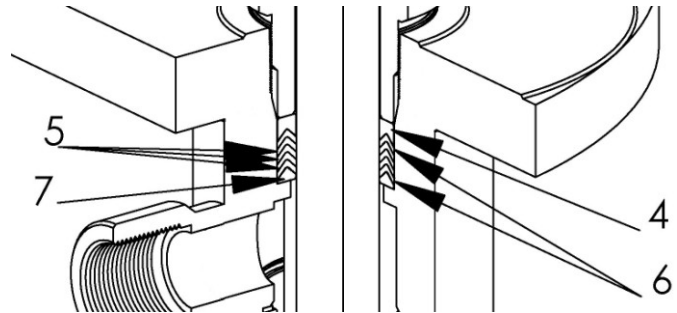
Reassembly

1. Lubricate the throat packings and install them in The outlet housing (21) one at a time as follows, *with the lips of the v-packings facing down*: the male gland (7), one teflon (6), three leather(5), one teflon (6), and the female gland (4). Install the packing nut (3) loosely. See the throat packing detail.
2. If you removed the sleeve (19), reinstall it in the pump housing (21), making sure to replace the gasket (20). *Be sure the tapered end of the sleeve faces down, toward the pump intake.*
3. Lubricate the piston packings and install them onto the piston stud (15) one at a time in the following order, *with the lips of the v-packings facing up*: the female gland (4), one Teflon (6), three leather (5), one Teflon (6) the male gland (7), and the packing washer (16). See the piston packing detail.
4. DO NOT use thread sealant on the piston stud(15) Install the piston ball (17) on the piston and screw the piston valve assembly into the displacement rod (14). Torque to 65–75 ft-lb (88–102 N.m).
5. Insert the displacement rod (14) into the bottom of the pump housing (21), being careful not to scratch the sleeve (19). Push the rod straight up until it protrudes from the packing nut (3).
6. Install the ball (12), o-ring (13), retainer(18), and ball stop pin (10) in the intake valve housing (9). Apply thread lubricant and Screw the intake housing into the pump housing (21). Torque to 75–100 ft-lb (102–136 N.m).
7. Reconnect the displacement pump to the air motor as explained.

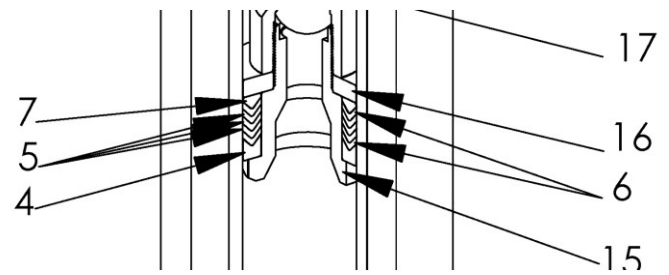
Service



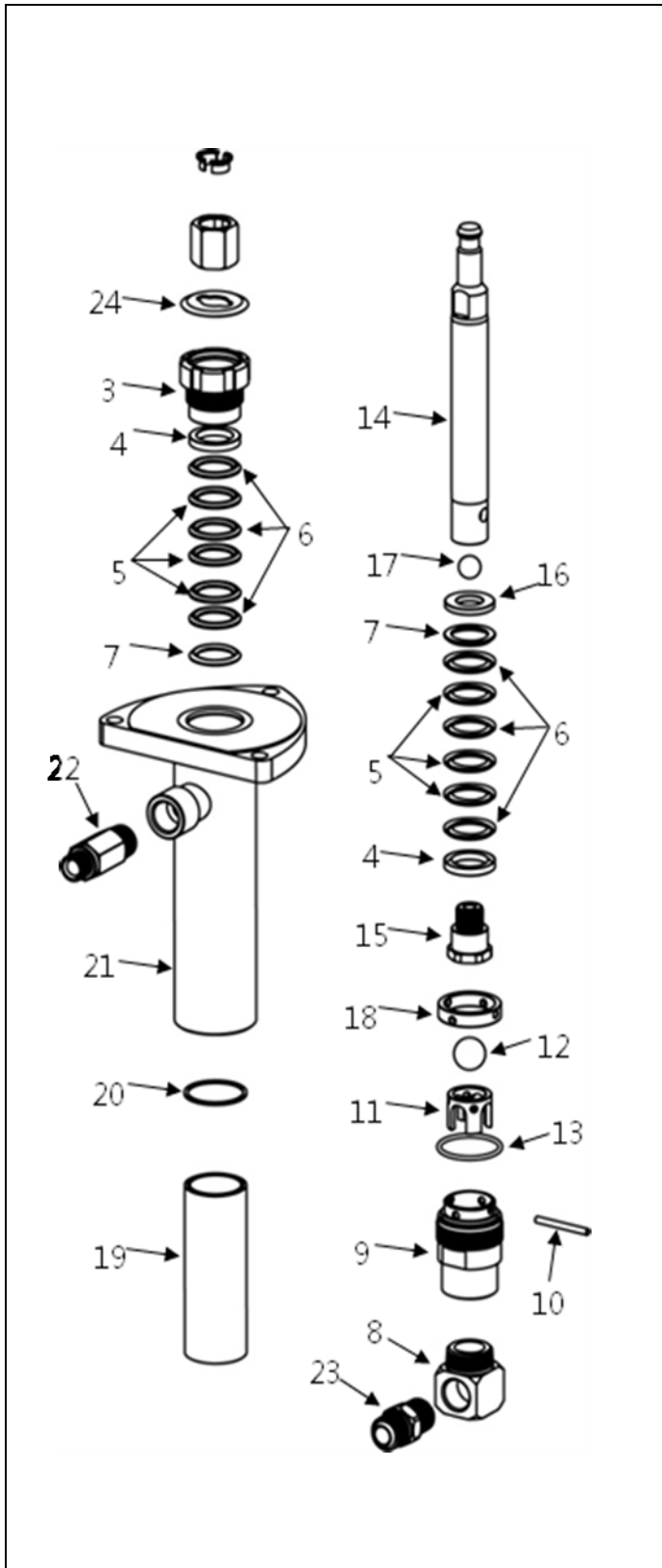
Throat Packing



Piston Packing



Parts drawing and Parts List



Note : part marked in color are the spare parts

These parts are included in repair kit which may be purchased separately.

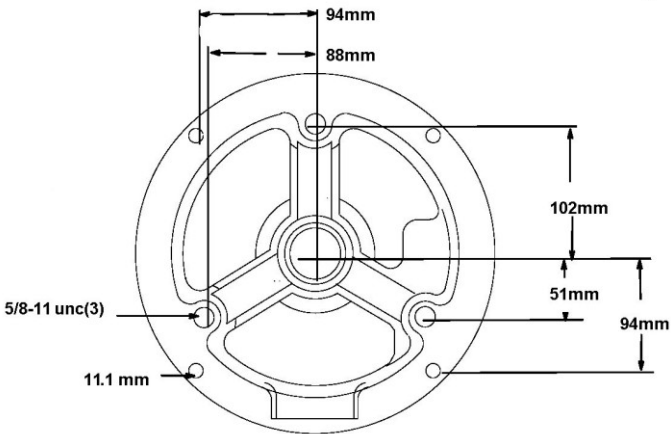
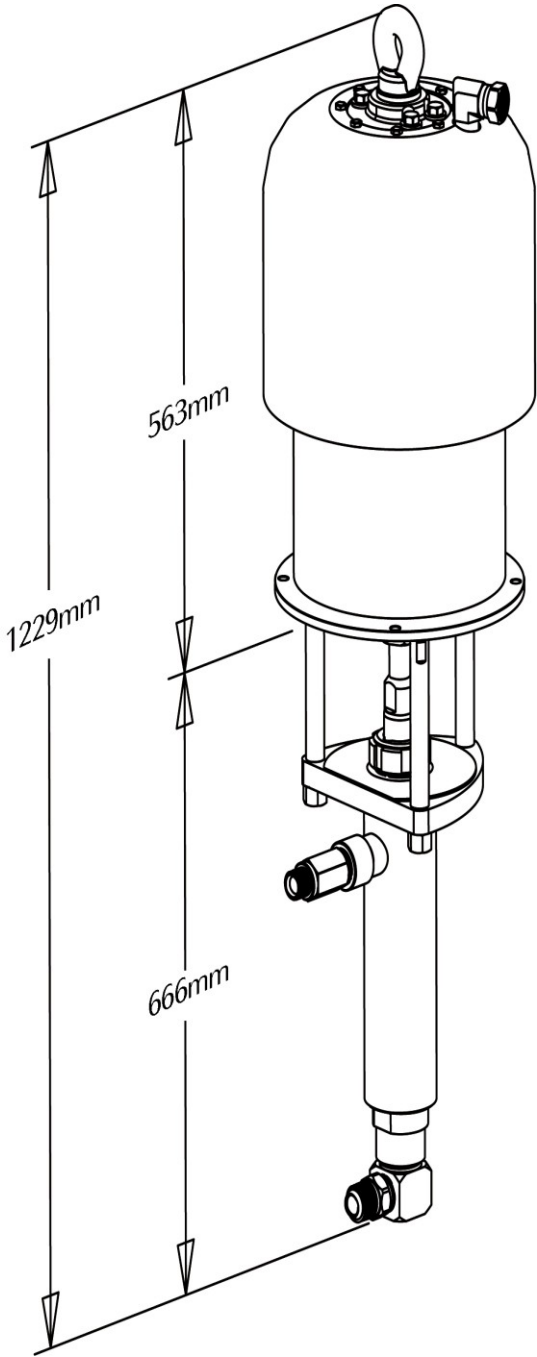
Always use genuine KST parts

No	Part No	Description	Qty
3	451-03	PACKING NUT	1
4	451-04	PACKING GLAND(F)	2
5	451-05	PACKING(LEATHER)	6
6	451-06	PACKING(TEFLON)	6
7	451-07	PACKING GLAND(M)	2
8	451-08	TUBE	1
9	451-09	INTAKE HOUSING	1
10	451-10	PIN	1
11	451-11	BALL GUIDE	1
12	451-12	BALL (1-1/4")	1
13	451-13	O-RING(TEFLON)	1
14	451-14	DISPLACEMENT ROD	1
15	451-15	VALVE PISTON	1
16	451-16	WASHER	1
17	451-17	BALL (7/8")	1
18	451-18	RETAINER	1
19	451-19	SLEEVE	1
20	451-20	GASKET	1
21	451-21	PUMP HOUSING	1
22	451-22	NIPPLE(PT1*PF3/4)	1
23	451-23	NIPPLE(PT1*PF1)	1
24	451-24	PLUG	1

Technical Data

Maximum fluid working pressure	4500 psi (31.5 MPa, 310 bar)
Maximum air input pressure	100 psi (0.7 MPa, 7.0 bar)

Dimensions	Mounting Hole Layout
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KST Standard Warranty

KST warrants all equipment referenced in this document which is manufactured by KST and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by KST, KST will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by KST to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with KST written recommendations.

This warranty does not cover, and KST shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-KST component parts. Nor shall KST be liable for malfunction, damage or wear caused by the incompatibility of KST equipment with structures, accessories, equipment or materials not supplied by KST, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by KST.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized KST distributor for verification of the claimed defect. If the claimed defect is verified, KST will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

KST sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within one (1) years of the date of sale.

KST MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY KST. These items sold, but not manufactured by KST (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. KST will provide purchaser with reasonable assistance in making any claim for breach of these warranties. In no event will KST be liable for indirect, incidental, special or consequential damages resulting from KST supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of KST or otherwise.

KST Information

TO PLACE AN ORDER OR FOR SERVICE, contact your DST distributor, or call these numbers to identify the nearest distributor.

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