

User Manual

Pneumatic airless sprayer

HB330 45:1/63:1

HB310 30:1

PUMP INSTRUCTIONS & SERVICE Manual-parts list



Model	HB330-45	HB330-63	HB310-30
Fluid Pressure Ratio	45:1	63:1	30:1
Delivery(L/min)	9.7	6	6
CC per Cycle	103	66	66
Stroke Length(mm)	108	108	108
Air Power Range(BAR)		3-7	
Max Outlet Pressure(BAR)	315	441	211



Important Safety Instructions. Read all warnings and instructions in this manual. Save these instructions.

ISO 9001:2022 

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1.Warning

- Warning symbol



This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.


- Caution symbol




This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

- Danger symbol

! DANGER ! **DANGER !** - High Pressure Device For Professional Use Only
- Read instruction manual before operating; observe all warnings.

 **FIRE** -Always keep spray pump in a well ventilated area a minimum of 25' from spray activity to avoid possible fire or explosion with flammable liquids. High velocity flow of material through equipment may create static electricity. All equipment and object being sprayed must be properly grounded to prevent sparking which may cause fire or explosion

 **INJECTION HAZARD** -High pressure spray or application equipment can cause serious injury if the spray penetrates the skin. **DO NOT** point any high pressure device gun or nozzle at anyone or any part of body. **DO NOT** attempt to deflect or stop leaks in the system by hand. In case of penetration, adequate medical aid must be immediately obtained

WARNING

1-1 EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before you operate the equipment.
- Use the equipment only for its intended purpose. If you are not sure, contact HVBAN.
- Do not change or adjust this system.
- Check the equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest-rated system component. Refer to the Technical Data section for the maximum pressure of this equipment.
- Use fluids and solvents that are compatible with the equipment wetted parts. Refer to the Technical Data section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Do not use hoses to pull equipment.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose HVBAN hoses to temperatures above 100°C(212°F) or below -40°C(-40°F).
- Wear hearing protection when you operate this equipment.
- Do not lift pressurised equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.

1.Warning



WARNING

1-2 MOVING PARTS HAZARD

Moving parts, such as the air motor piston, can pinch or amputate your fingers.

- Keep clear of all moving parts when you start and operate the pump.
- Before you service the equipment, follow the Pressure Relief Procedure to prevent the equipment from starting unexpectedly.



WARNING

1-3 TOXIC FLUID HAZARD

Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, or swallowed.

- 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.

1-4 Plate Data

HVBAN identification plate is applied on the airless unit. (See picture below)
It must not be removed at all, even if the equipment is resold.
For any communication with the manufacturer always mention the serial number attached on the pump.

Model HB330 Ratio 63:1
Air Pressure Range 3-7Bar
Max. Paint Delivery 6 L/Min

Model HB330 Ratio 45:1
Air Pressure Range 3-7Bar
Max. Paint Delivery 9.7 L/Min

Model HB310 Ratio 30:1
Air Pressure Range 3-7Bar
Max. Paint Delivery 6 L/Min

2.Installation

2-1 Conditions for installation

- 1) **The equipment must be installed by a specialized and authorized staff.**
In any case, follow the instructions below,
Painting must preferably take place inside spray booth equipped with suction device.
Do not use the unit if the suction device is off.



WARNING

If painting is carried out outside the spray booth, always operate in a place with a right ventilation to avoid concentrating inflammable vapours coming from solvents or paints.

- 2) **The pump requires 4.2m³/min of compressed air while operating at 7bar air pressure and 60cycles per minute. Ensure that you have an adequate compressed air supply.**

Bring a compressed air supply line from the air compressor to the pump location. Be sure all air hoses are properly sized and pressure-rated for your system. Use only electrically conductive hoses.

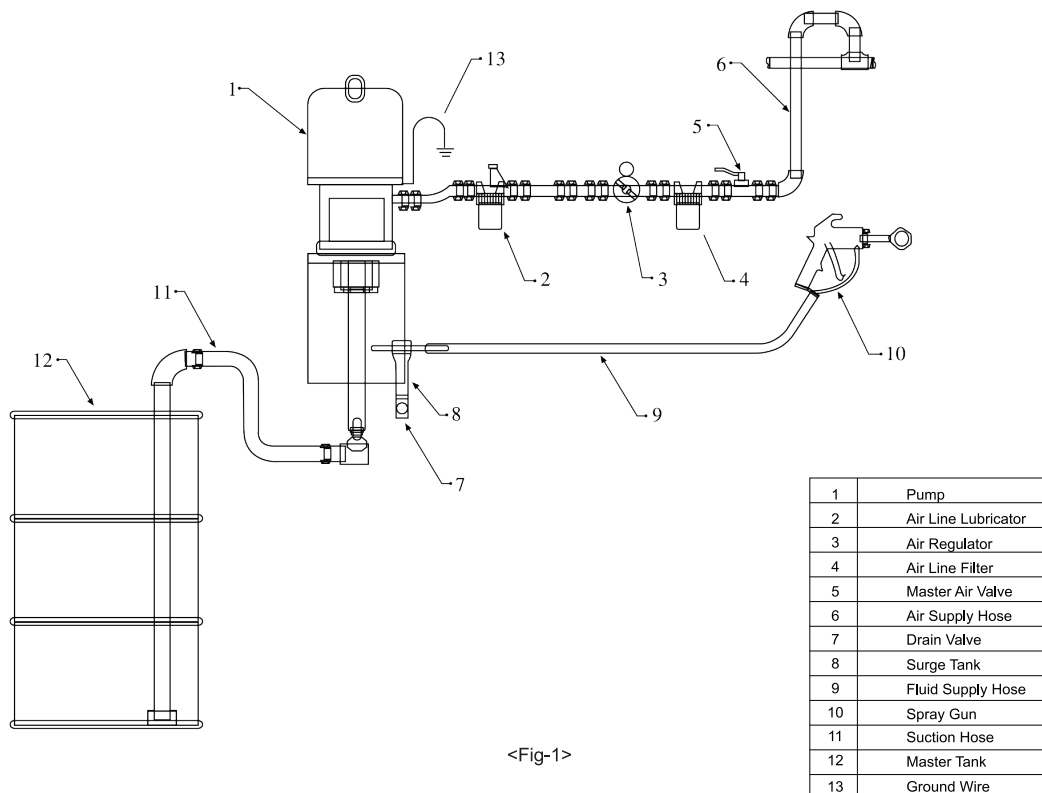
The air hose should have a 3/4 npt(m) thread.

Install a bleed-type shutoff valve in the airline to isolate the air line components for servicing, Install an air line moisture from the compressed air supply.

Keep the site clear of any obstacles or debris that could interfere with the operator's movement.

Have a grounded, metal pail available for use when flushing the system or draining the fluid filter.

2-2 Typical installation



<Fig-1>

3. Operation

3-1 Pressure relief procedure



INJECTION HAZARD

The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. Fluid under high pressure can be injected through the skin and cause serious injury.

To reduce the risk of an injury from injection, splashing fluid, or moving parts, follow the Pressure Relief Procedure whenever you :

- are instructed to relieve the pressure
- stop spraying
- check or service any of the system equipment, or install or clean the spray tips.

See <Fig-1>.

1. Lock the gun trigger safety.
2. Close the bleed-type master air valve(5, required in your system).
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(7, required in your system), 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 to relieve pressure gradually, then loosen completely. Now clear the tip or hose..

Packing nut / wet-cup

Before starting, fill the packaging nut 1/3 full with TSL-OIL.

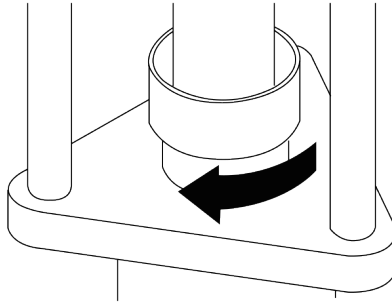
To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the pressure relief procedure.

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.

See <Fig-2>.



<Fig-2>

3-2 Flush the pump before first use

The pump is tested with lightweight 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.

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 you fluid manufacturer or supplier for recommended flushing fluids and flushing frequency.

WARNING

The reduce the risk of serous injury whenever you are instructed to relieve pressure,always follow the **Pressure relief procedure.**

- 1.Relieve the pressure.
- 2.Remove the tip guard and spray tip from the gun.
- 3.Remove the filter element from the surge tank. Reinstall the filter or surge tank below.
- 4.Place the suction tube in a container of solvent.
- 5.Hold a metal part of the gun firmly to the side of a grounded metal pail.
- 6.Start the pump. Always use the lowest possible fluid pressure when flushing.
- 7.Trigger the gun.
- 8.Flush the system until clear solvent flows from the gun.
- 9.Relieve the pressure.
- 10.Clean the tip guard, spray tip, and fluid filter element separately, then reinstall them.
- 11.Clean the inside and outside of the suction tube.

3.Operation

3-3 Using the Airless spray gun

Before operating the equipment, read the instruction manual supplied with the gun. Spray some test patterns before doing any finished work.

NOTE:To avoid tip-over, the cart must be on a flat level surface. Failure to follow this caution could result in injury or equipment damage.

3-4 Prime the pump

See<Fig-1>.

1. Install the spray tip and tip guard on the gun(10).
2. Close the air filter/regulator and master air valves(5).
3. Close the fluid drain valve(7).
4. Engage the air line coupler with the mating coupler attached to the air filter/regulator inlet and twist with a wrench to lock.
5. Check that all fittings throughout the system are tightened securely.
6. Place the suction hose(11) into the fluid supply container(12).
7. Open the fluid shutoff valve.
8. Open the master-air valves(5)
9. Hold a metal part of the gun(10) firmly to the side of a grounded metal pail and hold the trigger open,
10. Slowly open the air filter/regulator until the pump starts.
11. Cycle the pump slowly until all air is pushed out and the pump and hoses are fully primed.
12. Release the gun trigger and lock the trigger safety. The pump should stall against pressure.
13. If the pump fails to prime properly, open the drain valve(7),. Use the drain valve as a priming valve until the fluid flows from the valves. Close the valve.

3-5 Set the air and fluid pressure

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure relief procedure.**

- 1.Relieve the pressure. Install the tip guard and spray tip in the gun.
- 2.Open the air filter/regulator slowly. Use the regulator to control pump speed and fluid pressure. Always use the lowest air pressure necessary to get the desired results. Higher pressures cause premature tip and pump wear.

WARNING

COMPONENT RUPTURE HAZARD

To reduce the risk of overpressurizing your system, which could cause component rupture and serious injury, never exceed the specified maximum incoming air pressure to the pump(see **Technical data**)

CAUTION

Do not allow the pump to run dry. It will quickly accelerate to a high speed, causing damage. If your pump is running too fast, stop it immediately and check the fluid supply. If the container is empty and air has been pumped into the lines, refill the container and prime the pump and the lines, or flush and leave it filled with a compatible solvent. Eliminate all air from the fluid system.

3. With the pump and lines primed, and with adequate air pressure and volume supplied,the pump will start and stop as you open and close the gun.

3-6 Shutdown and care of the pump

WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure relief procedure**.

For overnight shutdown, stop the pump at the bottom of its stroke to prevent fluid from drying on the exposed displacement rod and damaging the throat packings. **Relieve the pressure.**
Always flush the pump before the fluid dries on the displacement rod. See **Flushing**.

4.Maintenance and Inspection

4-1 Safety rules during maintenance

The main rules to follow during maintenance interventions on the unit are :

1. Disconnect the pneumatic supply before replacing any component.
2. Do not wear rings, watches, chains, bracelets etc during maintenance.
3. Always use the individual protections(Gloves, safety, shoes etc)
4. Do not use naked flames, points or pins for cleaning.
5. Do not smoke.

4-2 Recommended schedule for Maintenance

Daily Maintenance	<ol style="list-style-type: none">1. Clean nozzle tip2. Clean gun filter3. loosen air regulator to allow pressure to fall to 0 bar by exhausting paint from gun. When you don't clean pump, always keep paint surface in paint container above intake set...4. Clean fluid intermediate filter
Every 50 hours	<ol style="list-style-type: none">1. Clean paint passages (especially when paint has lot of pigments or deposits easily)
Every 100 hours	<ol style="list-style-type: none">1. Clean paint passages with cleaning liquid
Every 300 hours	<ol style="list-style-type: none">1. Tighten packings of lower pump set
Every 500 hours	<ol style="list-style-type: none">1. Apply grease to each sliding section of lower pump set and air motor set
Every 1000 hours	<ol style="list-style-type: none">1. Overhaul the whole unit2. Replace worn parts
CAUTION	Regarding to the maintenance every 500/1000 hours, ask HVBAN before maintenance

5.Troubleshooting and Service

5-1 Air Motor

Troubleshooting

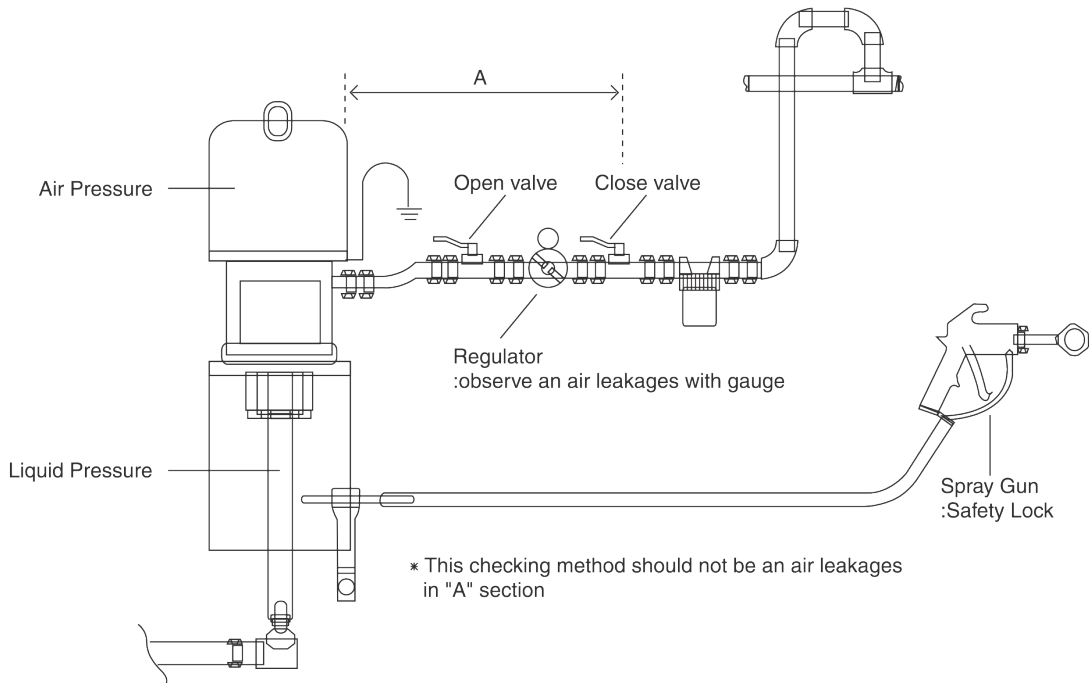
Locating Air Leaks

To locate an air leak, Connect the air hose and turn the air on.Refer to <Fig-3>.

Use the checking methods listed in the Check Chart below, to find where the air is leaking.Refer to <Fig-4>.

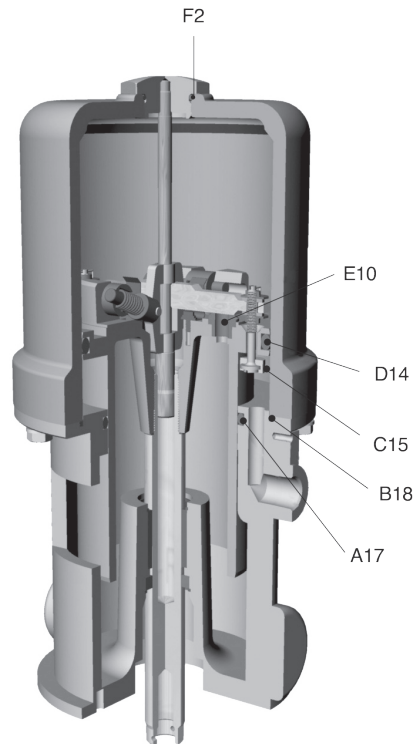
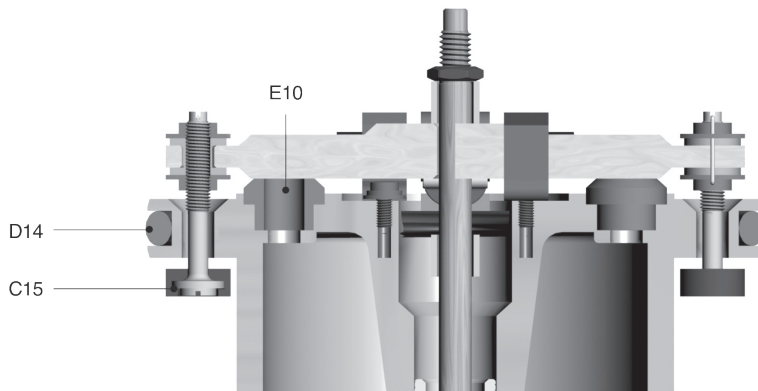
CHECK CHART			
Stroke Position	Fig Ref. Points	Checking Method	Cause of Leakage
BOTH (UP & DOWN)	A	Needle of gauge falling down by an air leakages. (BOTH CYCLES)	Worn seal(17)
	B		Damaged seal(18)
UP only	C	Needle of gauge falling down by an air leakages. (UP CYCLE ONLY)	Worn or damaged poppet(15)
	D		Worn O-ring:seal(14)
DOWN only	E	Needle of gauge falling down by an air leakages. (DOWN CYCLE ONLY)	Worn or damaged poppet(10)
	F		Damaged O-ring:seal(2)

See<Fig-4>.



<Fig-3>

5.Troubleshooting and Service



<Fig-4>

-Grounding-

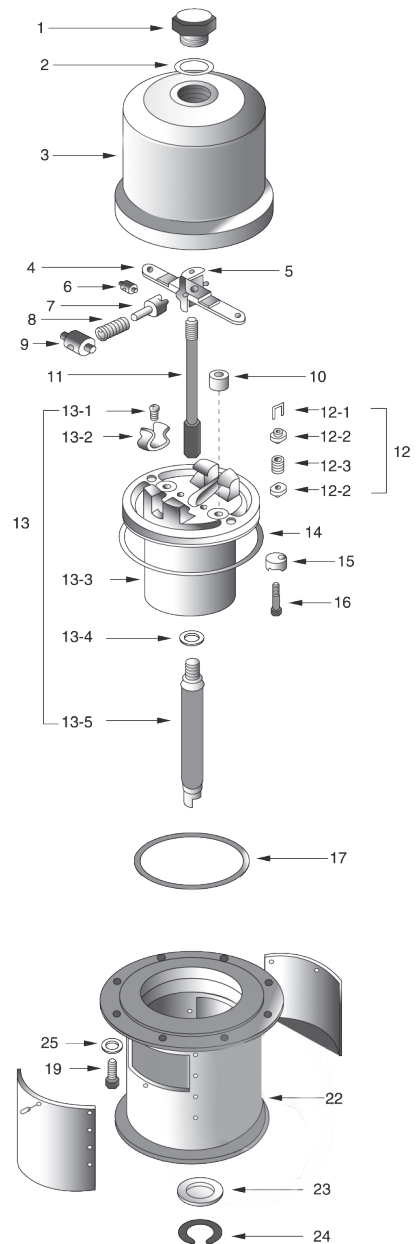


For your safety, read the **FIRE OR EXPLOSION HAZARD** section on page 2 and ground your entire system as instructed there.

5.Troubleshooting and Servie

1)Parts Drawing and List

NO	DESCRIPTION	QTY
1	PACKING NUT	1
2	O-RING	1
3	CYLINDER	1
4	ACTUATOR(WIRE TYPE)	1
5	YOKE	1
6	PIN	2
7	ARM	2
8	SPRING	2
9	ROCKER	2
10	POPPET	2
11	TRIP ROD	1
12	LOCK SET(WIRE TYPE)	1
12-1	LOCK WIRE	2
12-2	NUT	4
12-3	POPPET	2
13	PISTON ASSEMBLY	1
13-1	SCREW	2
13-2	CLIP	2
13-3	PISTON	1
13-4	GASKET FIAT.COPPER	1
13-5	ROD	1
14	SEAL	1
15	POPPET	2
16	STEM	2
17	SEAL	1
19	SCREW	8
22	BASE	1
23	SEAL	1
24	SNAP RING	1
25	SPRING WASHER	8



<Fig-5>

All parts in grey are "Wear and Tear" parts to be replaced with HVBAN Repair Kit.(RPK)HVBAN Repair Kit would be greatly contribute to the customers' stable maintenance.

5.Troubleshooting and Service

2)How to service for Air Motor

Disassembling

Disconnect all hoses, rods, tubes, controls, etc. from the air motor as necessary to provide ease in servicing. Clamp the base(22) securely. Unscrew the nut(1) and Separate the nut(1) from the trip rod(11), Hang to prevent to drop the trip rod(11) down with using a nut [M8]. Unscrew the bolts(19)/washers(25), Remove the cylinder(3).

WARNING

Always keep your fingers clear of the toggle assemblies(E) to avoid pinching or amputating them.

Use a screwdriver to push down on the trip rod yoke(5), and Snap the toggle assemblies(E) down. Grip the toggle rocker(9) with pliers, Compress the spring(8), Swing the toggle assembly(E) up and away from the piston lugs(H), and Remove the parts. See <Fig-6>, Remove upper adjusting nuts(12-2) from the air transfer stem valves(G), Screw the valve stems(16) and lower adjusting nuts(12-2). Remove the valve poppets(15) from the valve stems(16), and Inspect them for cracks. Inspect the valve actuator(4) to be sure it is supported by the spring clips(13-2) but slides into them easily. Remove the trip rod yoke(5), valve actuator(4), and the trip rod(11). Check the exhaust valve poppets(10) for cracks. Pull the piston(13-3) up out of the base(22), and Inspect the o-ring(14,17) in the base casting.

Reassembling

Clean all parts thoroughly and Inspect for wear or damage. Replace parts as necessary. Inspect the polished surfaces of the piston(13-3), piston rod(13-5) and cylinder(3) inside walls for scratches or wear. Lubricate all parts with a light waterproof grease. Be sure the o-rings are in place, slide the piston rod down through the throat bearing and the lower piston into the base(22). Place the exhaust valve poppets(10) on piston(13-3).

Install the poppets(15) on the valve stems(16), and reassemble the valve stem(16), adjusting nuts(12-2), trip rod(11), valve actuator(4), trip rod yoke(5) and toggle assemblies(E) on the piston(13-3). See <Fig-6>.

Adjust the valve stems(16) so there is a 3.2mm clearance between(the toggle assemblies are in the down position).

Reinstall the cylinder(3) and the packing nut(1) with the o-ring(2).

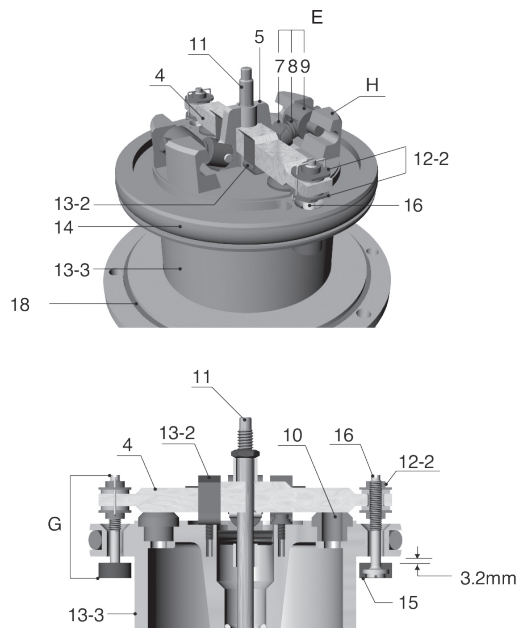
Reassemble the air motor to the displacement pump. Before mounting the pump, connect an air hose to the air motor, and run the pump to be sure it operates smoothly.

WARNING

Never operate the pump with the air motor plates removed.

The piston in the air motor, located behind the air motor

plates moves when air is supplied to the motor. Moving parts can pinch or amputate your fingers or other body parts.



<Fig-6>

5.Troubleshooting and Service

5-2 Displacement Pump

Troubleshooting

NOTE:CHECK ALL POSSIBLE PROBLEMS AND SOLUTIONS BEFORE DLSASSEMBLING PUMP.

	CAUSE	SOLUTION
Pump fails to operate	Restricted line or inadequate air supply	Clear: increase air supply
	Obstructed fluid hose,gun,or dispensing valve	Open,clear
	Exhausted fluid supply	Refill: purge all air from pump and fluid lines
	Fluid dried on displacement rod	Clean: always stop pump at bottom of stroke; keep wet-cup 1/2 filled with compatible solvent
	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,clear
	Exhausted fluid supply	Refill: purge all air from pump and fluid lines
	Air in displacement pump and hose	Reprime.See page 4
	Packing nut too tight or too loose	Adjust.See page 4
Pump operates but output low on down strokes	Worn throat packings	Replace.See page 12
	Held open or worn intake valve	Clear: service.See page 12
Pump operates but output low on up strokes	Held open or worn fluid piston valve or packings	Clear: service.See page 12
Erratic or accelerated operation	Exhausted fluid supply	Refill: purge all air from pump and fluid lines
	Packing nut too tight	Adjust.See page 4
	Held open or worn intake valve	Replace.See page 12
	Held open or worn fluid piston valve or packings	Replace.See page 12

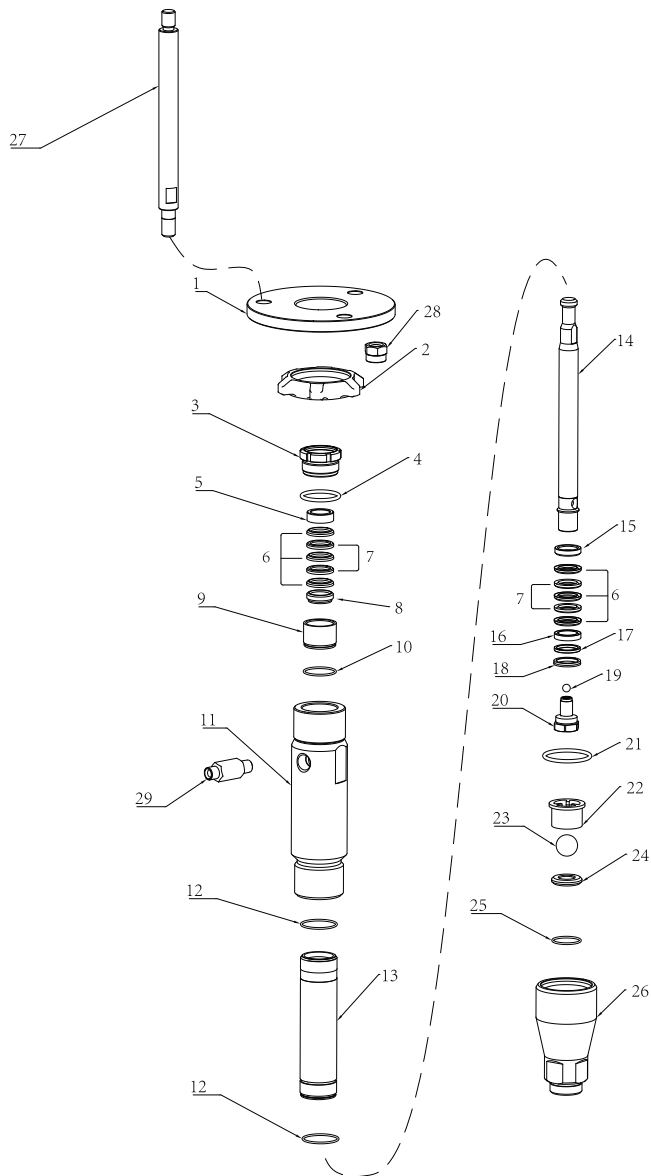
To determine if the fluid hose or gun valve is obstructed, follow the Pressure Relief Procedure Warning below. Disconnect the fluid hose and place a container at the pump fluid outlet to catch any fluid. Turn on the air just enough to assist the pump (about 20-40psi=1.4-2.8bar). if the pump starts when the air is turned on, the obstruction is in the fluid hose or gun valve.

5.Troubleshooting and Service

1)Parts Drawing and Parts List

Standard: 330-63

NO	DESCRIPTION	QTY
1	FLANGE	1
2	NUT	1
3	COMPRESSION NUT	1
4	O-RING 35x42x3.5	1
5	GLAND	1
6	V-PACKING(TEFLON)	6
7	V-PACKING(LEATHER)	4
8	GLAND	1
9	SLEEVE	1
10	O-RING 30.8x1.8	1
11	SLEEVE	1
12	O-RING 38.2x34.7x1.8	2
13	SLEEVE	1
14	DISPLACEMENT ROD	1
15	GLAND	1
16	GLAND	1
17	WASHER PLATE	1
18	SEAL	1
19	BALL 7.938	1
20	PISTON	1
21	O-RING 44x51x3.5	1
22	BALL RETAINER	1
23	BALL 22.225	1
24	VAVLE	1
25	O-RING 27x1.8	1
26	INTAKE HOUSING	1
27	TIE ROD	3
28	NUT M14	3
29	NIPPLE	1

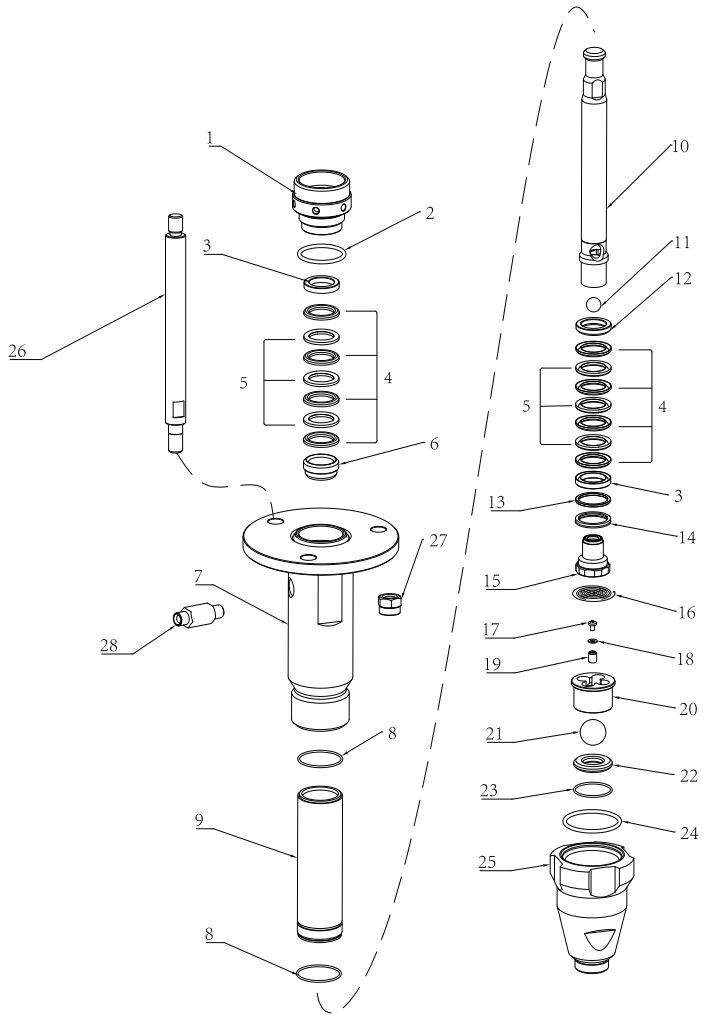


<Fig-7>

5.Troubleshooting and Service

Standard: 330-45

NO	DESCRIPTION	QTY
1	PACKING NUT	1
2	O-RING 41x48x3.5	1
3	GLAND	2
4	V-PACKING(TEFLON)	8
5	V-PACKING(LEATHER)	6
6	GLAND	1
7	SLEEVE	1
8	GLAND	1
9	O-RING 44.5x40.9x1.8	2
10	SLEEVE	1
11	DISPLACEMENT ROD	1
12	BALL 14.2875	1
13	WASHER PLATE	1
14	SEAL	1
15	PISTON	1
16	SPRING 1.6xOD44.2	1
17	BOLT M4x8	1
18	WASHER	1
19	NUT	1
20	BALL RETAINER	1
21	BALL 25.4	1
22	VAVLE	1
23	O-RING 38.2x34.7x1.8	1
24	O-RING 51x58x3.5	1
25	INTAKE HOUSING	1
26	TIE ROD	3
27	NUT	3
28	NIPPLE	1



<Fig-8>

5.Troubleshooting and Service

2)How to service for the Pump

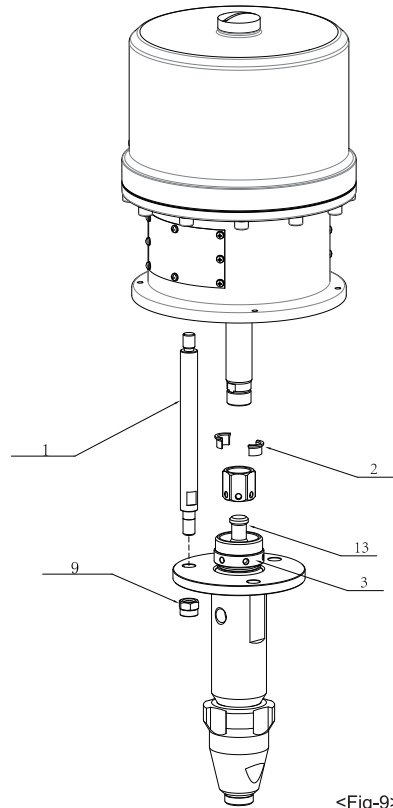
Disconnecting



WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the Pressure Relief Procedure on page.3

1. Flush the pump if possible. Stop the pump at the bottom of its stroke.
Follow the Pressure Relief Procedure Warning on page 5.
2. Disconnect the air and fluid hoses. Remove the pump from its mounting.
3. Unscrew the tie rod locknuts(9) from the tie rods(1). Remove the two couplers(2). Unscrew the displacement rod(13) from the air motor. Carefully pull the displacement pump off the air motor.
4. To service the displacement pump, refer to Displacement Pump Service on page 14.



Reconnecting

1. Position the displacement pump on the tie rods(1).See<Fig-9>.
2. Screw the locknuts(9) onto the tie rods(1) loosely. Screw the displacement rod(13) into the piston rod of the air motor.
3. Mount pump and reconnect all hoses. Reconnect the ground wire if it was disconnected during repair.
4. Tighten the tie rod locknuts(9) evenly.
5. Start the pump and run it slowly, at about 40psi(2.8bar) air pressure, to check that it is operating properly. Tighten the packing nut/wet-cup(3) with the wrench supplied, it's just snug-no tighten. Fill the wet-cup half full with Throat Seal Liquid or compatible solvent.

5.Troubleshooting and Service

Displacement pump service

Disassembly

When disassembling the pump, lay out **all** removed parts in sequence, to ease reassembly. Refer to <Fig-10/11>. Clean **all** the parts thoroughly when disassembling.

Check them carefully for damage or wear, replacing parts as needed.

- Remove the displacement pump from the air motor as explained on page 17.
- Unscrew the intake valve housing(20) from the pump housing(10).
- Remove the retainer(17), o-ring(18), and ball(19) from the intake valve housing(20).
- Loosen the packing nut(3). Push the displacement rod(13) down as far as possible, then pull it out the bottom of the pump housing(10).
- Secure the flats of the displacement rod(13) in a vise.

Unscrew the piston(15) out of the rod. Remove the ball(14), washer(23), v-packings(5,6) and glands(4,7).

- Remove the packing nut(3), throat packings(5,6) and glands(4,7) from the pump housing.
- Inspect **all** parts for damage. Clean **all** parts and threads with a compatible solvent before reassembling. Inspect the polished surfaces of the displacement rod(13) and sleeve(12) for scratches or other damages, which can cause premature packing wear and leaking.

To check, run a finger over the surface or hold the parts up to the light at an angle. Be sure the ball seats of the piston(R) and intake valve housing(S) are not chipped or nicked.

Replace any worn or damaged parts

Reassembly

- Lubricate the throat packings(5,6) and install them in the pump housing(10) one at a time as follows, with the lips of the v-packings facing down.

Install the packing nut(3) loosely. See the throat packing detail in <Fig-10/11>.

- If you removed the sleeve(12), reinstall it in the pump housing(10), making sure to replace the gasket(11). Be sure the tapered end of the sleeve faces down, toward the pump intake housing(20).

CAUTION

If the inner surface of the sleeve(12) is damaged, it must be replaced.
Also when replacing the sleeve(12) sure to install a new gasket(11).

5.Troubleshooting and Service

STANDARD:330-63

- Lubricate the piston packings(5,6) and install them onto the piston(15) one at a time in the following order, with the lips of the v-packings facing up.
See<Fig-10/11>.

- Use thread sealer on the piston(15). Install the piston ball(14) on the piston and screw the piston valve assembly into the displacement rod(13). Torque to 180kgf.cm.

- Insert the displacement rod(13) into the bottom of the pump housing(10) being careful not to scratch the sleeve(12).

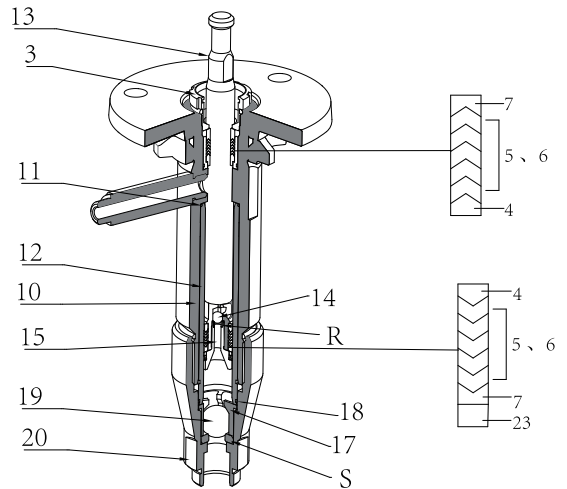
Push the rod straight up until it protrudes from the packing nut(3).

- Install the ball(19), o-ring(18), retainer(17), and ball stop pin(16) in the intake valve housing(20).

Apply thread lubricant and screw the intake housing into the pump housing(10). Torque to 800kgf.cm.

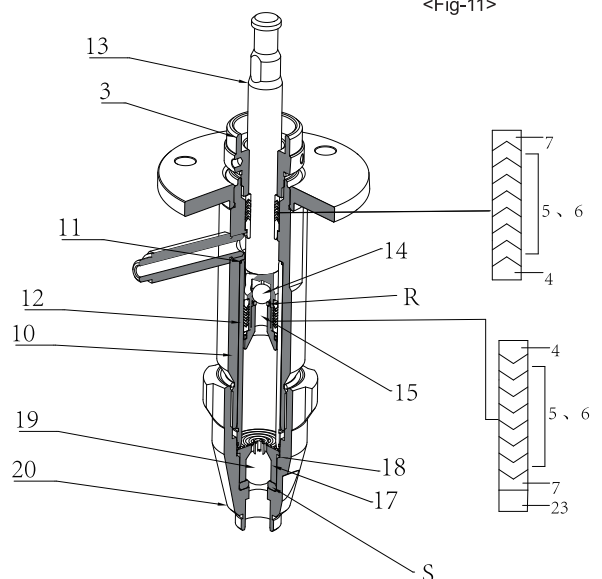
- Tighten the packing nut(3) just only enough to stop leakage, but no tighter.(200kgf.cm)

- Reconnect the displacement pump to the air motor as explained on page 17.



<Fig-10>

STANDARD:330-45



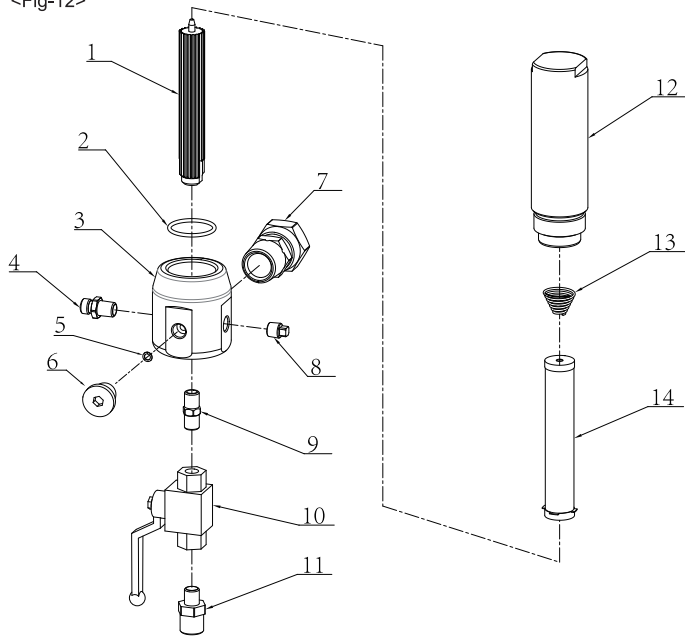
<Fig-11>

5.Troubleshooting and Service

5-3 Surge Tank Assembly

STANDARD:330-63 330-45

<Fig-12>

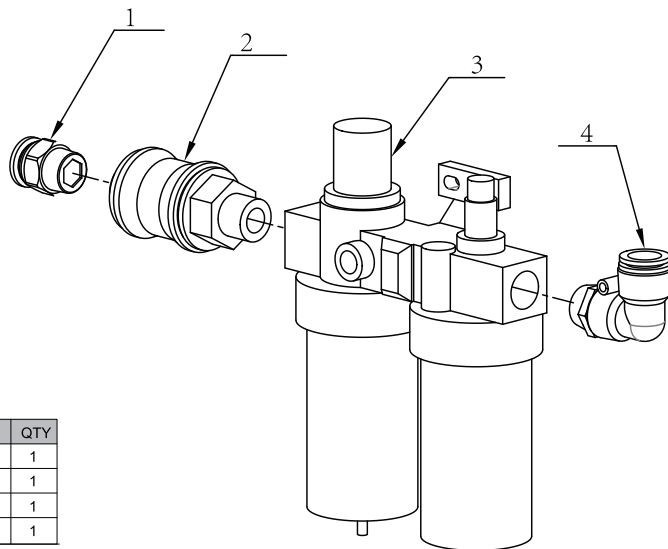


NO	DESCRIPTION	QTY
1	SUPPORT	1
2	PACKING	1
3	MANIFOLD	1
4	NIPPLE	1
5	WASHER	1
6	PLUG	1
7	UNION	1
8	PLUG	1
9	NIPPLE	1
10	BALL VALVE	1
11	DRAIN NIPPLE	1
12	BOWL	1
13	SPRING	1
14	SURGE FILTER	1

5-4 Air Regulator Assembly

STANDARD:330-63 330-45

<Fig-13>



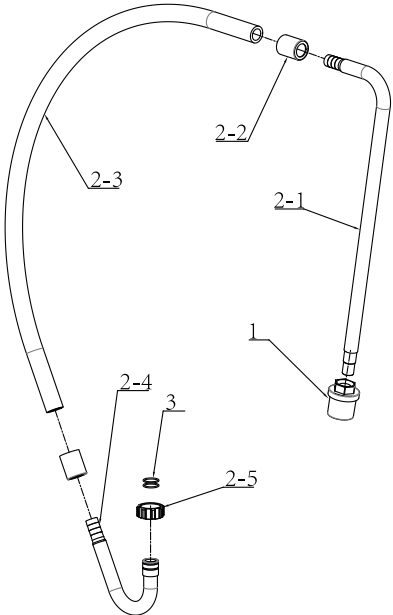
NO	DESCRIPTION	QTY
1	CONNECTOR	1
2	VALVE	1
3	REGULATOR	1
4	ELBOW	1

5.Troubleshooting and Service

5-5 Suction Assembly

STANDARD:330-63 330-45

<Fig-14>

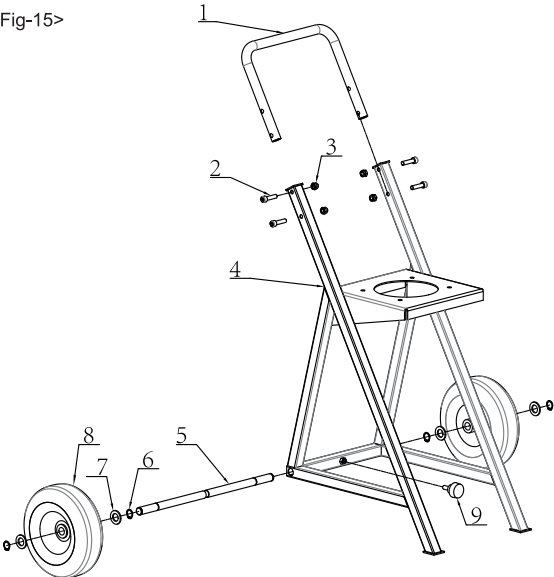


NO	DESCRIPTION	QTY
1	FILTER	1
2-1	PIPE	1
2-2	CONNECTOR	2
2-3	HOSE (1.1m)	1
2-4	ELBOW	1
2-5	NUT	1
3	O-RING (21.95x25.5x1.78)	2

5-6 Cart Assembly

STANDARD:330-63 330-45

<Fig-15>



NO	DESCRIPTION	QTY
1	RACK-1	1
2	BOLT(M10x40)	4
3	NUT(M10)	4
4	RACK-2	1
5	WHEEL AXLE	1
6	TIRE SNAP RING	4
7	WASHER	4
8	WHEEL	2
9	BOLT	1

6.Warranty and Limitations

6-1 Warranty General

All HVBAN products have a one year guarantee from the invoice date, unless otherwise stated in writing. The warranty covers all manufacturing faults and material defects. Any spare part replacement or repair operations are covered only if they are carried out by our authorized distributors. This warranty covers when the equipment is installed, operated and maintained in accordance with HVBAN's written recommendations. HVBAN shall not be liable for, any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of Non-HVBAN component parts. This warranty is conditioned upon the CARRIAGE PAID return of the equipment claimed to be defective to an authorized HVBAN distributors for verification of the claim. If the claimed defect is verified, HVBAN will repair or replace free of charge any defective parts. This components will be returned to the original purchase CARRIAGE PAID 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.

6-2 The Warranty does not cover

- Damage or breakdown caused by improper use or assembly.
 - Damage or breakdown caused by the use of spare parts that are diferent from the original or recommended ones.
 - Damage or breakdown caused by bad preservation.
 - **Components subject to wear(described in parts list)**
- Warranty Forfeiture:**
- In case of delayed payment or other contractual defaults.
 - Whenever changes or repairs are carried out on our equipment without prior authorization.
 - When the serial number is damaged or removed.
 - When the damage is caused by improper use or functioning, or if the equipment falls, is bumped or by other causes not due to the normal working conditions.
 - Whenever the unit disassembled, tampered with or repaired without the authorization of HVBAN.



FUZHOU HVBAN MECHANICAL EQUIPMENTS CO., LTD.

No. 2 Plant, Mawei Sci-Tech Innovation Center, No. 56 Kuaizhou Road Liando U Valley,
Mawei Town, Mawei District, Fuzhou, Fujian, China

Zip code:350015