ASAHI SUNAC

Operation and Maintenance Manual

Pneumatic Bellows Pump
Ecollows

BP360S

This manual contains important information on warnings and cautions. Read the manual thoroughly before starting to operate the equipment, and follow the instructions.
Always keep the manual handy until such time as the equipment is no longer being used.
If your manual is lost or worn badly, do not hesitate to contact our agency, which is closest to you, or the Asahi Sunac Corporation, directly, and ask us to send you a new one.

PNEUMATIC BELLOWS PUMP

28th Edition: July 1, 2022

Thank you for buying our product.

Dear Valued Customer:

Thank you very much for choosing our pneumatic bellows pump (BP360S).

In order to keep the equipment in the best condition for an extended period, please carefully read this manual before use. Above all, the specifications, warnings and prohibitory or cautionary instructions shown herein shall be fully understood and observed during the use of the equipment.

The equipment covered by this manual is designed for industrial coating work. It shall be used by those who have been duly trained regarding the handling and scope of application and have an understanding of the operating procedure.

If you need further information about this manual, please call us described on the back cover by specifying the “model” and “serial No.” of your equipment.

Thank you,
Asahi Sunac Corporation

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1 For Your Safety

Contents of this instruction manual shall be fully understood and the instructions shown herein shall be strictly observed.
Using the machine without following instructions in this manual **may lead to bodily injury or damage to properties.**

The safety measures described herein are the minimum requirements and additional measures may also be required. All requirements provided by laws and legislations as well as rules and guidelines laid by your company or office shall be observed.

The cautionary instructions shown below shall be construed as minimum basic requirements for safety in the use of our product.

● **Cautionary instructions are shown in three levels as defined below.**

⚠ **WARNING**	Calls the user's attention to a situation that may lead to bodily injury and describes how to avoid that situation.
⚠ **CAUTION**	Calls the user's attention to a situation that may lead to damage or breakdown to the equipment and describes how to avoid that situation.
NOTE	Gives important or helpful information.

＊ Please remember that the situation mentioned under ⚠CAUTION may also lead to a serious disaster under certain circumstances. All instructions are important for your safety and prevention of machine disorder and shall be strictly observed.

⚠ WARNING

Danger from abuse

<<General safety requirements>>

- Never change or modify any pump part without approval as doing so may lead to a malfunction.
- Periodically inspect the whole equipment and repair or replace faulty parts if necessary.
- When performing a spraying operation, always wear the protective goggles, working clothes and face mask recommended by the paint/solvent manufacturers. Other protective devices may also be required depending on components of the paint and the ventilation level. Please consult the paint/solvent manufacturer.
- Do not leave the workplace with the pump kept running. Children and those who are not well acquainted with the coating machine shall be kept off the pump.

<<Compatibility of the paint/solvent>>

Check the compatibility of the paint and solvent to be used with the "materials of pump parts in contact with the fluid." Before actually using the paint and solvent for the pump, thoroughly study the specifications provided by the paint/solvent manufacturers.

⚠ WARNING

To prevent fire and explosion

<<Sources of ignition>>

Static electricity is generated while paint is running through the pump or hose.
If any part of the coating machine is not correctly grounded, electrostatic sparks may be generated. The sparks may ignite volatile components of a solvent, paint mist spray, suspended particles or another combustible substance to cause a fire or explosion, possibly resulting in a serious injury or damage to the equipment.

- The vicinity of the spraying area shall be well ventilated.
- Do not perform the coating work in the vicinity of an open flame, pilot lamp or another source of ignition.
- When cleaning the system, never fail to remove the nozzle. Direct the tip of the spray gun toward a grounded metallic paint can and pull the trigger with part of the gun in contact with the paint can.
- Check that the coating machine and the products to be coated have been grounded. If not, electrostatic discharge and/or sparks may cause a fire or explosion.
- If you feel shocked by static electricity even slightly while handling the coating machine, immediately stop the coating work and check each component for grounding. Do not restart the coating work until the cause is located and corrective action is taken.
- Fire extinguishers with a sufficient capacity shall always be available in the spray coating area.

<<Grounding>>

To prevent danger from static electricity, ground the pump, products to be coated and all other coating machines (ones in use around the pump). If no adequate ground is provided, perform the grounding work (class D grounding) using the methods specified by the Technical Standards for Electric Equipment. The methods for grounding the coating equipment are described below.

- Grounding the pump
  Connect the round, crimped terminal at the one end of the attached grounding cable to the grounding terminal ⏚ on the pump body and connect the clip at the other end of the cable to a class D ground.
- Grounding the air compressor
  Follow the manufacturer's instructions.
- Grounding the paint hose
  Use a completely grounded paint hose.
  When using an extended paint hose, check that it has been completely grounded.
- Grounding the spray gun
  The spray gun firmly connected with a correctly grounded air hose and pump is considered to be adequately grounded.
- Grounding the products to be coated
  Keep the hangers and grounding clips clean and grounded.
- Grounding the paint container
  Always use a conductive metallic one and put it on a grounded floor or table.
  For detail, follow the local regulations.
- Grounding the cleaning solvent can
  Always use a conductive metallic one and put it on a grounded floor or table. Do not put it on a non-conductive material such as paper or corrugated cardboard.
  When cleaning the pump or reducing the pressure, pull the trigger of the gun with its metallic part firmly held on the rim of a grounded container.

⚠ WARNING

<<Solvent>>

- Never use halogenated hydrocarbon solvents as they will chemically react in a dangerous manner with the aluminum and plating materials used in the coating machine.
- Halogenated hydrocarbon solvents may cause an explosion if brought into contact with aluminum or plated part of a pressure vessel (e.g. pump, heater, filter, valve or gun).
  This explosion may lead to a fatal injury.

[Example of halogenated hydrocarbon]

Chlorinated	Trichloroethylene, tetrachloroethylene and ethylene chloride
Bromated	N-propylbromide
Fluorinated	HCFC-225, HFC-43-10mee and HFE-449s1 (HFE-7100)

(Shown above is not a conclusive list of halogenated hydrogen carbonates. For detail, contact the paint manufacturer.)

⚠ WARNING

The paint mist and spraying atmosphere may lead to dyspnea and/or organic solvent poisoning.

- **Do not use the pump indoor or in a poorly ventilated place, e.g. in a tunnel or tank. When using the product, take enough care of yourself as well as the surrounding people and livestock.**

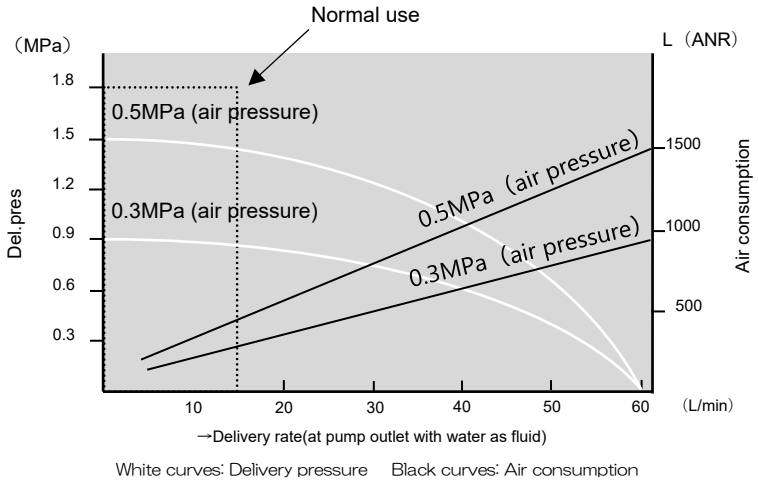
2 Specifications and machine components

Model	BP360S
Pressure ratio	1 : 3
Fluid displacement	0.73L/cycle
Maximum Recommended Continuous Cycle Rate	15L/min（20 cycle／min）
Maximum Recommended Intermittent Cycle Rate	30L/min（40 cycle／min）
Maximum delivery rate	60 liters/min (for pump as a single unit with water as fluid)
Maximum air pressure	0.7MPa
Maximum paint pressure	2.1MPa
Maximum fluid temperature	60°C
Operating noise pressure level	82dB/A (at 0.7 MPa)
Air inlet diameter	G1/2 (PF1/2)
Paint outlet diameter	Rc3/4 (PT3/4)
Paint inlet diameter	Rc1 (PT1)
ID of suction hose	ϕ25.4 mm
Weight	37kg (pump body 33kg)
Outside dimensions	350mm H x 230mm W x 540mm D (pump body)

⚠ CAUTION

There is fear of loosening of the piston and the damage of Bellows when the amount of the exhalation that exceeds 15L/min (exhalation 0.73 liters a cycle) is used regularly.

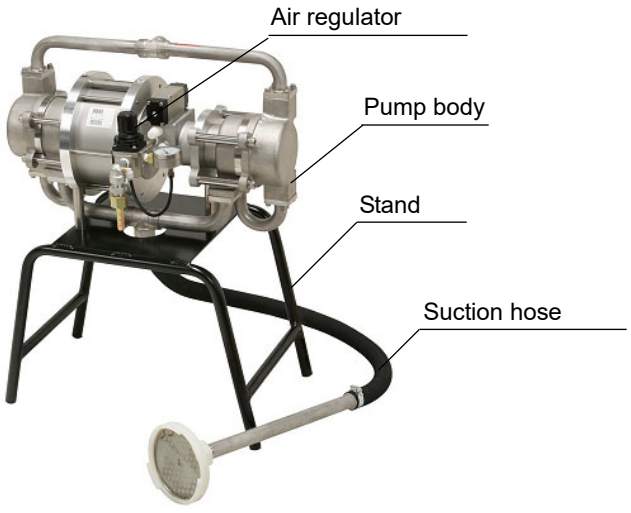
● **Delivery performance and air consumption** – for pump as a single unit



● **Standard components**

Pump body	1 set
Air regulator	1 set
Suction hose	1 set
Stand	1 set

● **Standard components**



3 General Cautionary Notes Before Starting Operation

1) The pump uses compressed air as source of motive power.
   For the compressor, use a 7.5kW (10PS) or larger one.
2) The compressed air source shall be processed by an air drier, air filter or the like to remove moisture, particles and other impurities.
3) When a mist separator, mist filter or the like is used to remove oils from the compressed air, always combine a lubricator (oiler) for continuous lubricant supply.

●Specified oil JIS K2213-Class 2

Similar to SAE-10	Turbine oil ISO VG32
Idemitsu Kosan	Daphne Turbine Oil 32
Cosmo	Cosmo Turbine Super 32
Showa Shell	Turbo Oil T32
JX Nippon Oil & Energy Corporation	Turbine Oil 32
Mobil	Mobil DTE Oil Light

4) Installing the compressor at a distance may cause a pressure drop. Pay attention to its distance and pump capacity.

NOTE

A compressed air pressure of 0.3MPa or higher is required to run the machine.

5) Although the pump has a simple construction and a fewer consumable parts, it shall be adjusted or repaired according to “Internal Inspection and Part Replacement Procedures” (page 10 and subsequent) and “Troubleshooting” (page 16 and subsequent) if it shows a sign of disorder or trouble. If the problem cannot be corrected, do not further check or service the pump but immediately contact the distributor or directly us for correct and complete repair at our factory.
6) The paint that quickly settles shall be thoroughly agitated before use or used with an agitator.
7) After finishing the work, leave the paint in the pump or completely clean the pump.
   Incompletely cleaning the pump causes the remaining paint to be hardened in the pump, which makes the pump unable to absorb paint in the next work or otherwise makes the pump inoperable.
8) The paint containing aggregate cannot be used for the pump due to its construction.
9) The paint containing abrasive particles, e.g. zinc rich paint, may affect the durability of the balls, seats, U-packings, pistons and bellows and shall be used with care.
10) The pump uses a snap-action pilot valve as air changeover device to reverse the pump rotating direction at the stroke ends. Therefore, it continuously releases the pilot valve operating air if it stops at the right or left stroke end but this is not a failure. It stops releasing the air when restarted.

4 Operating Procedures and Cautionary Notes

1) Unpackaging and electric connections

Model BP360S bellows pump is 100% checked before delivery and may be directly used after a hose and a gun are installed. After unpackaging, however, thoroughly check for broken, missing or loose parts arising from vibration during transportation. Please notify the distributor or us of missing or broken parts, if any.

(1) The package contains standard components listed in page 4. Check for missing ones.
(2) Discase the pump body and connect a pipe or hose to the paint outlet joint.
(3) Rotate the air regulator handle counterclockwise to fully loosen.
(4) Connect the air compressor to the air regulator.

2) Operating procedures

First, flush the inside of the equipment with a solvent (paint thinner) and try to perform each operation.

⚠ WARNING

Check the paint circuit for leak and, if any, immediately rotate the air regulator handle counterclockwise to reduce the pressure to zero. Then, tighten the leaking joint.

⚠ CAUTION

Keep a ventilator running when using a solvent (paint thinner).

If the solvent contains any foreign matter, remove it. Any foreign matter in the pump may clog the piping and/or lead to poor coating results.
To accomplish this, perform the following preparatory operations.

(1) Pour about 10 liters of solvent into the paint can (container) and put the suction port of the equipment into the container.
(2) Slowly open the air regulator handle (rotate clockwise) to supply compressed air and start the pump.

⚠ CAUTION

In order to prevent an air regulator from getting damage , unlock the handle of air regulator before operate.

⚠ CAUTION

Adjust the air regulator pressure around 0.1MPa.
The pump operation speed (exhalation) becomes excessive and possibility damage of Bellows when paints are filled and the pump is washed.
Please defend the air regulator pressure as shown in the above - mentioned.

(3) The solvent circulates through the piping and hose and removes air (comes out as bubbles) in the equipment.
After flushing, remove the suction port and dry run the pump to completely remove the solvent from the piping and hose end. Close the air regulator (rotate counterclockwise).
Then, the equipment is ready for the coating work.

3) Starting the pump

(1) Pour the paint to be used in the paint container.

(2) Slowly open the air regulator handle (rotate clockwise) to start the pump.

NOTE

Adjust the air regulator pressure around 0.1MPa.
The pump operation speed (exhalation) becomes excessive and possibility damage of Bellows when paints are filled, Please defend the air regulator pressure as shown in the above – mentioned.

(3) After paint is sufficiently absorbed, set the air regulator to a desired pressure.

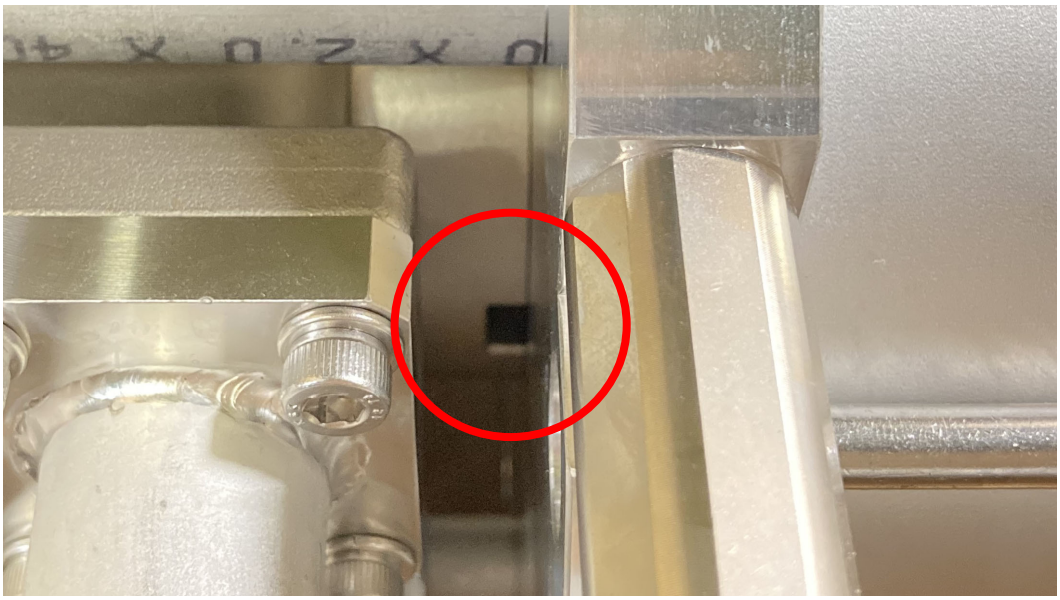
NOTE

The air regulator pressure should be 0.3MPa or higher, in general.

When a viscous paint is used or a higher pumping rate is required, set the air regulator to a slightly higher pressure

⚠ CAUTION

- **Air purging or pressured paint feeding from the suction side of the BP360S may cause excessive pressure on the bellows and damage it.**
  When performing air purging or pressured paint from the suction side, set the pressure to 0.02MPa or less.
- **At the bottom of the case（3721-003/118）, there is a place where paint leaks when the bellows is damaged（photo below）. If there is a leak, maintenance is required.**
- **If the paint runs out during operation and air is absorbed instead, the pump runs dry and become unable to spray. Reduce the air pressure with the air regulator, add paint and remove air from the piping and hose end. Then, set the air regulator back to the original pressure and restart operation.**
- **There is fear of loosening of the piston and the damage of Bellows when the amount of the exhalation that exceeds 15L/min (exhalation 0.73 liters a cycle) is used regularly.**



4) Stopping operation

(1) When stopping operation, close the air regulator (rotate counterclockwise) to stop the pump.
(2) Never fail to release the pressure from the piping and hose end.

⚠ WARNING

Failure to release the pressure from the piping and hose end may cause a reverse paint flow. For the line where the pressure cannot be released, install a check valve or the like to prevent the reverse flow.

⚠ CAUTION

When starting daily operation of the pump or finishing the work, open or close the air regulator. Note that leaving the air regulator open when starting the compressor may put the air valve out of order, possibly resulting in a malfunction of the pump.

5) When finishing the work

When finishing the work, stop operation using the procedure described in 4) “Stopping operation” and perform step (1) or (2) below.

⚠ WARNING

Failure to release the pressure from the piping and hose end may cause a reverse paint flow. For the line where the pressure cannot be released, install a check valve or the like to prevent the reverse flow.

(1) Leave the equipment filled with paint.
In this case, air has been completely removed from the paint circuit and paint has been just as stored in a paint can so that it will not solidify. If the pump is to be withdrawn from service for an extended period, however, take step (2) for the paint likely to be settle or consisting of two components.

(2) Completely remove the paint from the equipment.
The remaining paint even in a slight amount will solidify and settle and shall be thoroughly removed by flushing with a solvent. Please follow the “ 2) Operating procedures”.
In this case, it is recommended to fill the equipment with a solvent until put back in use.

⚠ CAUTION

After using a soluble paint, flush with water. If the equipment is to be withdrawn from service for an extended period, it shall be thoroughly flushed with water and then flushed and filled with an organic solvent.

5 Maintenance and Periodical Inspection

1) Maintenance

(1) Daily maintenance

Clean the suction filter.

(2) Every 100 hours

Clean the pump.

(3) Every 1,000 hours

Check the bellows, piston, U-packings, balls and seats.

2) Replacement frequencies for consumable parts

The consumable parts identified in the table shall be kept in stock as spars.

(1) Parts in contact with the fluid

Replacement frequencies during normal delivery at 7 liters/min (a changeover sound heard every three seconds)

The codes represent the page No. where the relevant part is shown and the item No. on that page. Values shown in hrs

Code	Part number	Part name	Ordinary paint	Abrasive paint (e.g. ceramic or zinc)
19-8	3721-208	Piston	10,000 to 20,000h	2,000 to 4,000h
19-25	3721-025	Seat	10,000 to 20,000h	2,000 to 4,000h
19-28	3721-028	U-packing	5,000 to 10,000h	1,000 to 2,000h
19-35	3720-021	Ball	5,000 to 10,000h	1,000 to 2,000h
19-10	3721-010	Bellows	5,000 to 10,000h	1,000 to 2,000h

⚠ CAUTION

When replacing the U-packings and piston, also replace the O-rings (102-6115), O-rings (130-6034), Washer (3721-238), hexagon socket head cap screws (3721-236) and bellows (3721-010).

(2) Air changeover parts

Replacement frequencies during normal delivery at 7 liters/min (a changeover sound heard every three seconds)

The codes represent the page No. where the relevant part is shown and the item No. on that page. Values shown in hrs

Code	Part number	Part name	Not lubricated	Lubricated
19-11	3721-211	Shaft	10,000h	15,000h
19-12	3721-212	Shaft	10,000h	15,000h
19-13	3721-113	Shaft	10,000h	15,000h
19-14	3721-014	Slider	10,000h	15,000h
19-27	3721-027	Bushing	10,000h	15,000h
19-37	3721-237	Air operated valve	10,000h	15,000h
19-43	101-6014	O-ring	10,000h	15,000h
19-45	101-9020	O-ring	10,000h	15,000h
19-53	101-9014	O-ring	10,000h	15,000h

The replacement frequencies shown above are general ones and may vary depending on the color change frequency, the paint used and operating pressure. It is necessary to timely check and replace the parts.

The exchange time is different by paint used and the operating condition. It is not guarantee time.

6 Internal Inspection and Part Replacement Procedures

Periodically check the U-packings, balls, bellows, seats, etc.

Worn or fatigued parts shall be replaced with new ones with the following procedures.

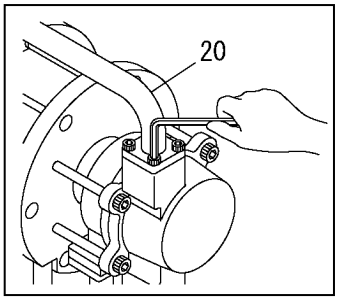
Thoroughly flush the pump before overhauling it for inspection or replacement of parts.

⚠ CAUTION

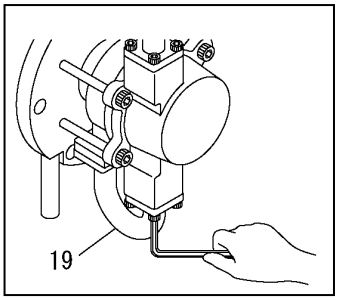
The internal inspection and part replacement may only be performed by operators acquainted with the procedures and using the specified methods.

* The codes shown in parentheses represent the page number where the relevant part is shown and the item number on that page.

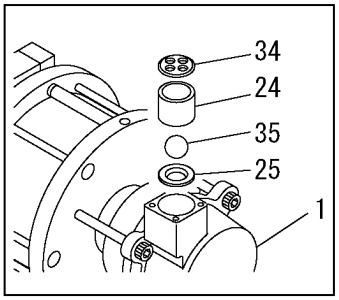
1) Checking and replacing the valves, balls and seats



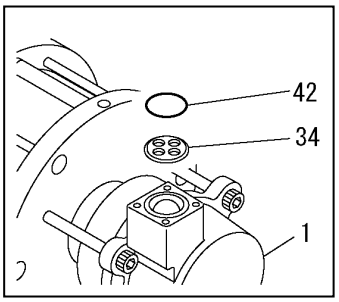
1) Remove the manifold (19-20) using a hexagonal wrench.



2) Remove the manifold (19-19) using a hexagonal wrench.

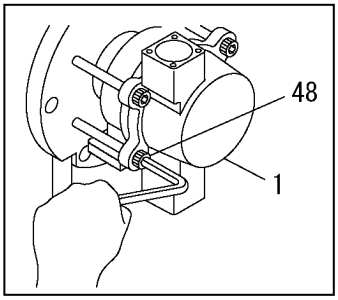


3) Remove the spacer (19-34) and guide (19-24). Then, the ball (19-35) and seat (19-25) can be replaced with new ones.
If the ball or seat is flawed or the ball diameter is 24mm or less, replace.

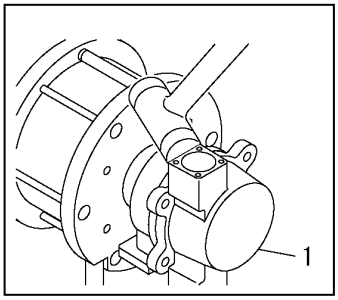


4) Note that an O-ring (19-42) is required for the spacer (19-34) at the outlet side above the flange (19-1) when reassembling. (No O-ring is provided with the spacer (19-34) at the outlet side.)

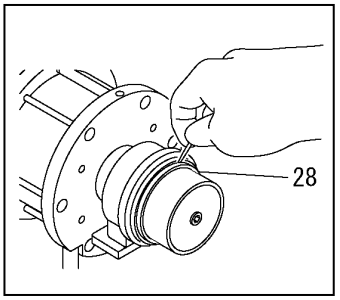
2) Checking and replacing the U-packing



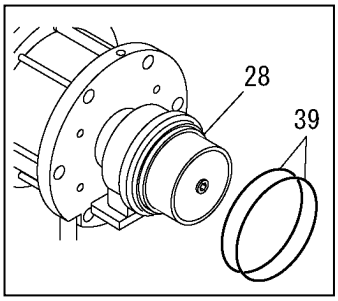
1) Remove the hexagon socket head cap screws (19-48) securing the flange (19-1) using a hexagonal wrench.



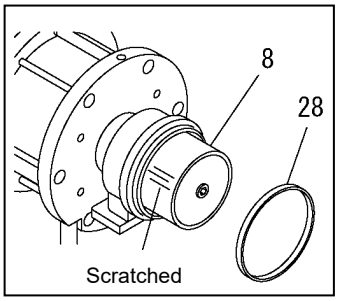
2) After removing all hexagon socket head cap screws, remove the flange (17-1) by tapping with a plastic hammer or the like.



3) Remove the packing (19-28) using an eyeleteer or the like.

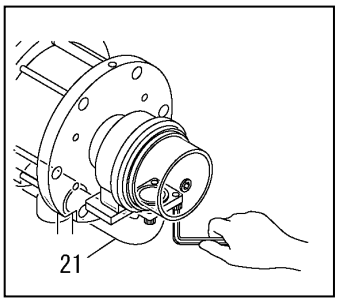


4) When replacing the U-packing with a new one, also replace the O-rings (19-39).

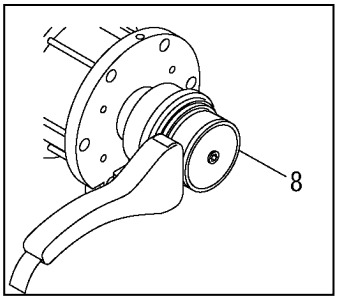


5) If the piston (19-8) is not so deeply scratched as to catch your nails, install a new U-packing and assemble in the opposite order of 1) to 3).
A U-packing is also provided at the opposite side of the pump. Replace it with a new one in the same manner.

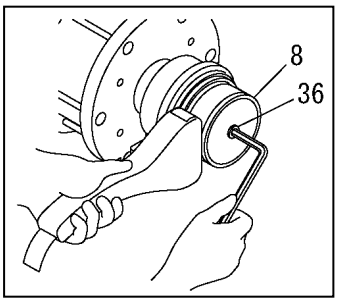
3) Checking and replacing the piston and bellows



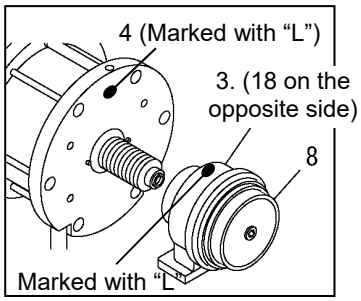
1) Remove the manifold (19-21) in the same manner as for other ones.



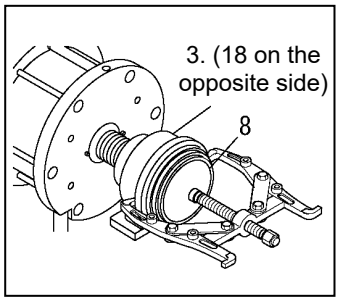
2) Wind the attached band wrench around the piston (19-8).



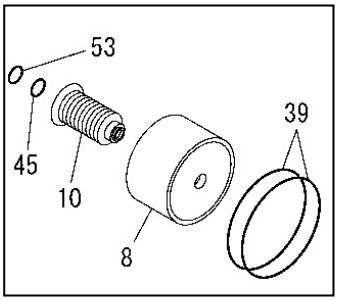
3) Loosen the hexagon socket head cap screw (19-36) using a hexagonal wrench. At this time, use a pipe or the like to pinch the screw with the band wrench.



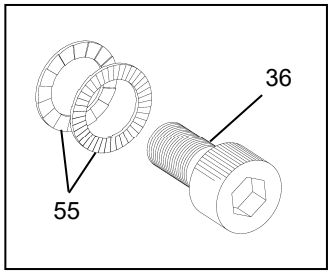
4) Then, remove the piston (19-8) together with the case (19-13) by pulling. *1

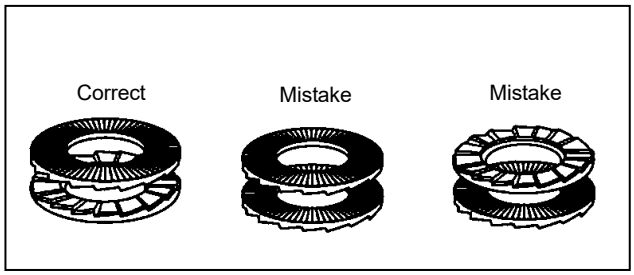


5) If they cannot be pulled out, screw in the hexagon socket head cap screw again for about two turns and pull them out using a pulley remover.

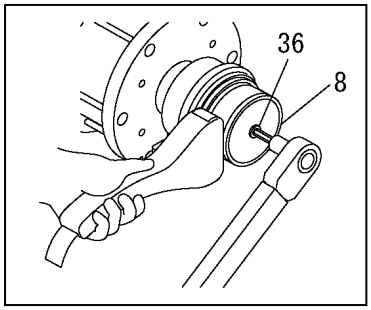


6) When replacing the piston (19-8) with a new one, also replace the bellows (19-10) and O-rings (19-45, 19-43 and 19-39).

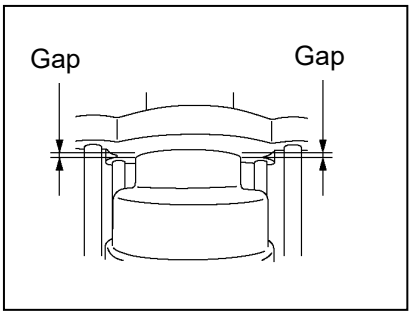




7) Assemble in the opposite order of disassembly. The washer (19-55) must be replaced with new ones. Note it in the direction of the washer.



8) Tighten the hexagon socket head cap screw (19-36) using a hexagonal wrench by pinching the screw with the attached band wrench. Then, tighten to 50N-m using a torque wrench. *2
Tighten to 50N-m again 10 minutes later.



9) Assemble the piston on the opposite side in the same manner.

10) Mount the flange (19-1) using the hexagon socket head cap screw (19-48). When tightening the hexagon socket head cap screw (19-48), take care to keep a uniform gap between the case (19-3) and the housing (19-4). The same applies to the gap between the case (19-18) and the body (19-7) at the opposite side.

*1 The case (19-3), housing (19-4), and flange (19-1) marked with “L” on the body constitute the dedicated assembly parts set to be arranged on the left side of the pump body. The case (19-8), housing (19-5), and flange (19-2) constitute the dedicated parts set to be arranged on the opposite side.

*2 Do not assemble the flange (19-1) before assembling the piston on the opposite side. Otherwise, it may cause breakage of the bellows (19-10) due to overload.

4) Checking and replacing the pilot valve system (slider)

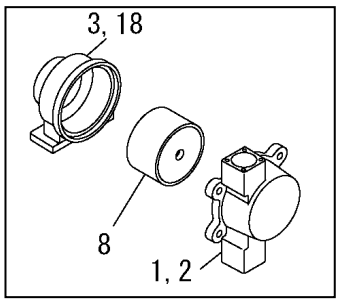
* Only check the pilot valve system when the pump malfunctions.

(1) If the pump malfunctions, first check that the air-operated valve (19-37) has been running. Press the pushbutton at the side of the air-operated valve to open the air regulator again and supply compressed air.

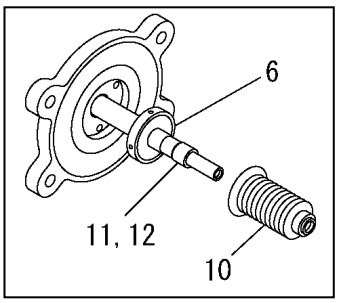
If the pushbutton does not move quickly or air is continuously leaking from the muffler (19-33), replace the air-operated valve with a new one. At this time, align the marks (A and B) at the top of the body (19-7) with those (A and B) on the air-operated valve.

(2) If air is continuously leaking from the muffler (19-32) provided on the body (19-7) or the air-operated valve (19-37) frequently malfunctions, the pilot valve system must have been worn. Check and repair with the following procedure.

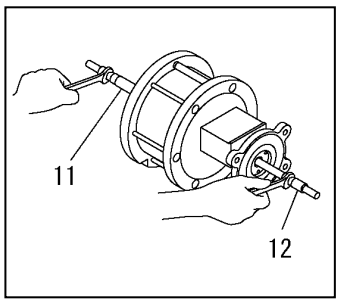
1) Stop the air supply to the air inlet.



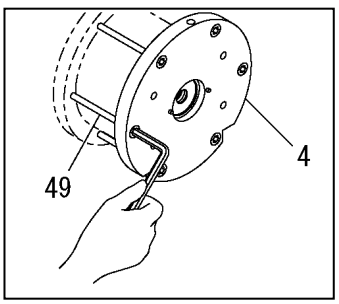
2) Remove the flange (19-1), piston (19-8) and case (19-18), etc. according to the inspection and replacement procedure for piston and bellows (page 12).



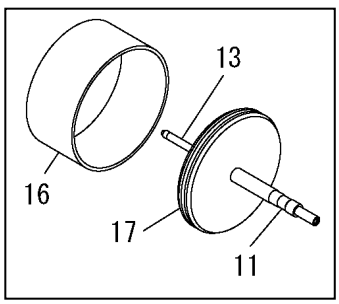
3) Remove the bellows (19-10) from the shafts (19-11 and 19-12). Then, remove the retainer (19-6).



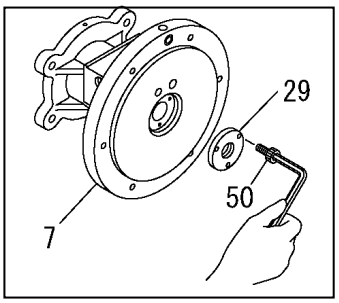
4) Then, remove the shafts (19-11 and 19-12) using a 17mm wrench applied over the width across flats. The shafts have been coated with adhesive and may not rotate smoothly. In this case, use a pipe or the like with the wrench to remove them. At this time, take care not to apply an excessive force to bend the shafts.



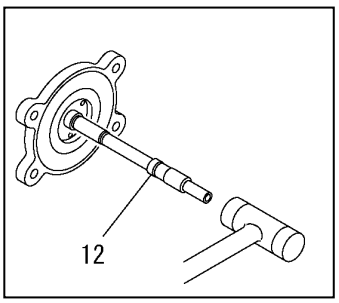
5) Remove the hexagon socket head cap screw (19-49) and remove the housing (19-4). Also remove the hexagon socket head cap screw (17-12) securing the cart and pump.



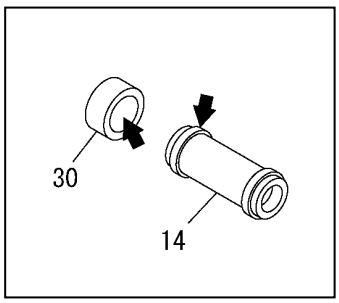
6) After removing the cylinder (19-16), remove the shaft (19-11) together with the piston (19-17).



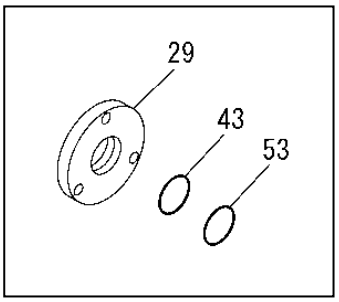
7) Remove the two retainers (19-29) provided on the body (19-7).



8) Insert the shaft (19-12) again. After checking that it no longer goes in, tap it with a plastic hammer to remove the dry bearing (19-30) and slider (19-14) from the opposite side of the body (19-7).



9) Replace the dry bearing (19-30) and slider (19-14) if it flawed or worn.



10) Replace the O-ring (19-43) or (19-53) for the retainer (19-29).

11) Assemble in the opposite order of disassembly. Grease the slider (19-14) and O-rings.

Recommended grease: NOK KLUBER SEALUB S-14

Second recommended grease: Alvania Grease RA-J, Showa Shell

12) When assembling the shaft (19-12), thoroughly degrease its threaded portion, coat that portion with sealer and screw the shaft in. At this time, take care not to protrude the sealer to stick to the slider (19-4). If the sealer sticks to the slider, the pump may malfunction.

Recommended sealer: Thread Lock 1323B, Three Bond

13) After tightening the shaft (19-12) using a wrench, further tighten to 40N-m using a torque wrench.

14) The bellows (19-10) is not reusable. When reassembling, replace it with a new one.

15) Then, assemble in the opposite order of disassembly.

7 Troubleshooting

* The codes shown in parentheses represent the page number where the relevant part is shown and the item number on that page.

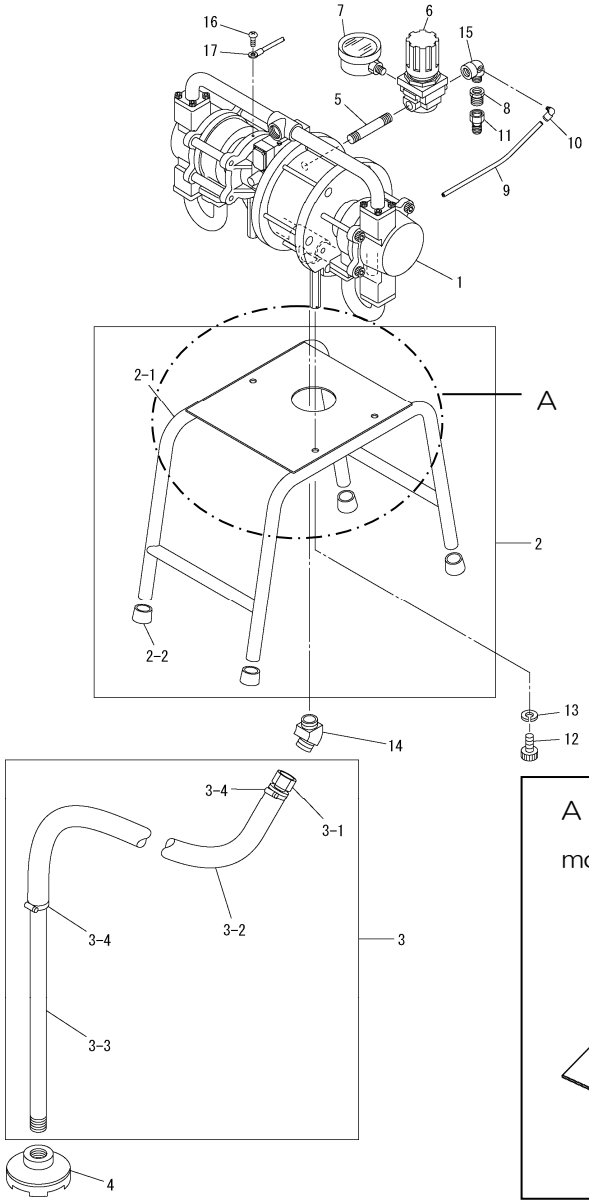
Symptom	Cause	Remedy
1. The paint pressure does not rise at all.	1) The air regulator (17-6) is left open.	1) Completely open (rotate clockwise).
	2) Damage to the pressure gauge (17-7)	2) Replace with a new one.
	3) The ball (19-35) in the pump sticks to the seat (19-25) due to incomplete flushing after use.	3) Thoroughly flush with paint thinner. If the problem persists, overhaul and flush the pump.
	4) A malfunction of the air-operated valve (19-37).	4) Push the pushbutton at the side of the air-operated valve. If the pump stops again after pressing the pushbutton, check the slider (19-14).
	5) Clogging matter in the suction filter (17-4)	5) Clean the suction filter screen.
2. The delivery rate drops.	1) Clogging matter in the suction filter (17-4)	1) Clean the suction filter screen.
	2) Clogging matter in the piping downstream the pump	2) Flush the piping.
3. Instable pump operation	1) Clogging matter in the suction filter (17-4)	1) Clean the suction filter screen.
	2) A malfunction of the slider (19-14). At this time, air is continuously leaking from the muffler (19-32).	2) Check and clean the slider. If the slider seal (black part) is flawed or worn, replace.
	3) Tear of the suction hose (17-3)	3) Replace the suction hose.
4. The pump does not stop even when the spray is suspended.	1) There is no paint in the paint can.	1) Replenish the paint.
	2) A foreign object is caught by the ball (19-35) or seat (19-25) in the pump or the seat is worn.	2) Clean or replace the ball or seat.
5. Air leak from the muffler (16-33)	1) A failure of the air-operated valve (19-37)	1) Replace the air-operated valve (19-37). (At this time, align the marks (A and B) at the top of the body (19-7) with those (A and B) on the air-operated valve.)
6. Air leak from the muffler (16-32)	1) A failure of the slider (19-14)	1) Replace the slider (19-14).
	2) Wear of the O-ring (19-43)	2) Replace the O-ring (19-43).
7. Intrusion of air through the delivery port	1) Damage to the bellows (19-10)	1) Replace the bellows with a new one. In this case, paint likely has intruded into the air circuit and it is necessary to check the pneumatic system.
	2) Tear of the suction hose (17-3)	2) Replace the suction hose with a new one.
	3) Loose manifold (19-21 or 19-19) or damage to the O-ring (19-42)	3) Tighten the hexagon socket head cap screw (19-51) securing the manifold or replace the O-rings.

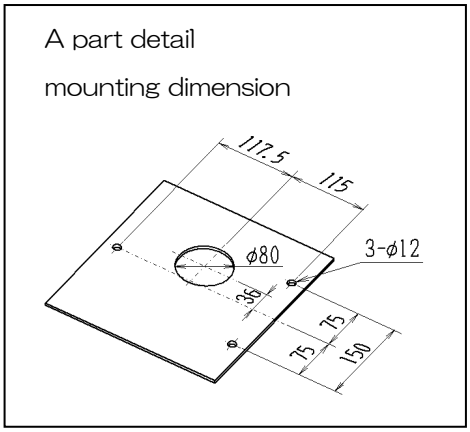
Note: The geometric dimensions of and specifications for the pump may be changed without notice to reflect technical improvements.

8 Exploded Diagram and Names of Parts

BP360S

40365-2





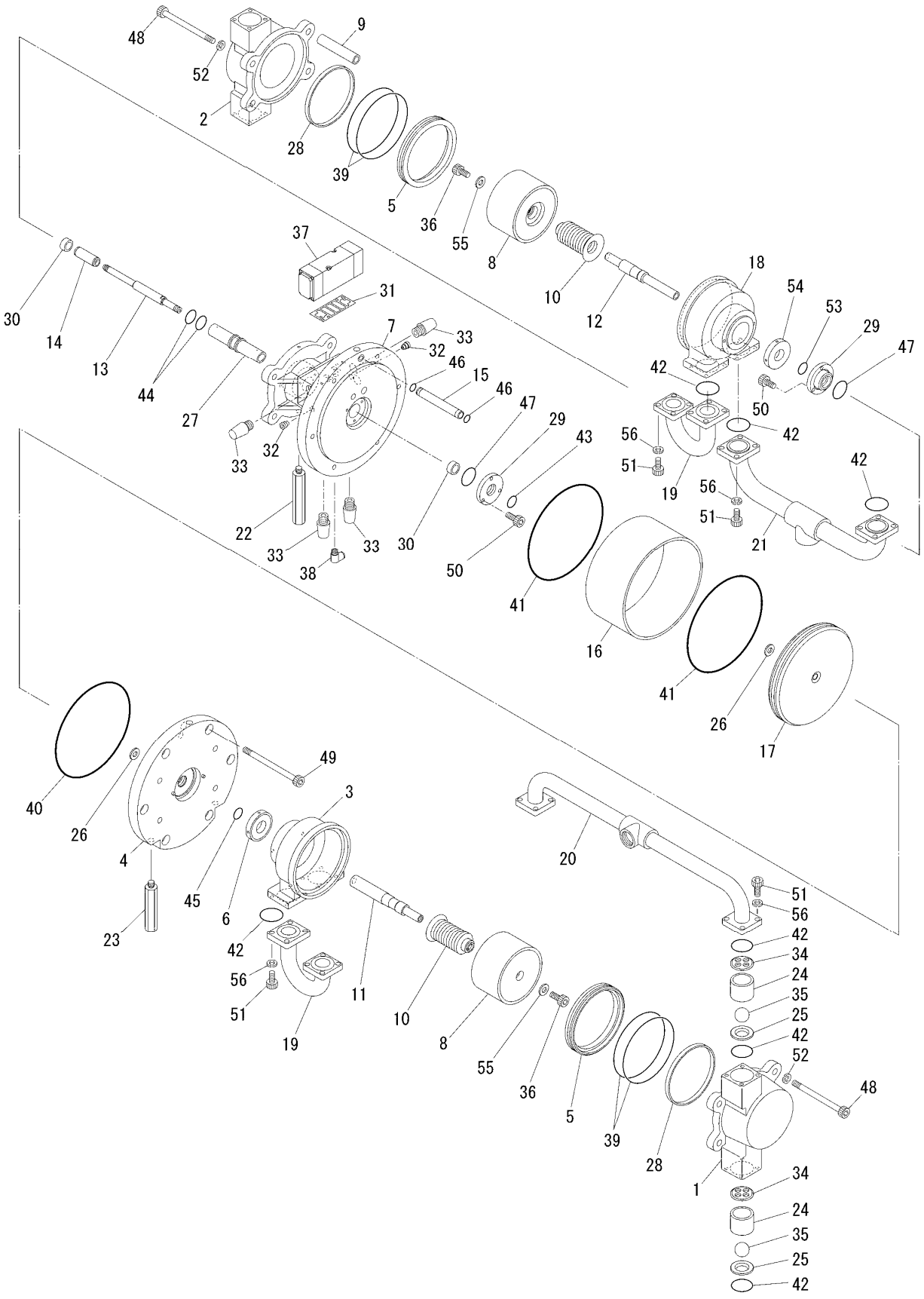
Bellows pump

No.	Part No.	Part name	Qty	Remarks
1	3721-2	Bellows pump	1	
2	205C	Cart	1	
2-1	205C-001	Frame	1	
2-2	1925-003	Flat round rubber plug	4	
3	5609	Suction hose	1	
3-1	342-0166	Male hose nipple	1	
3-2	573-0010	Rubber hose	1	
3-3	5609-004	Pipe	1	
3-4	8063-004	Hose band	2	
4	0502	Suction filter	1	
5	3720-025	Pipe	1	
6	301-0036	Air regulator	1	

No.	Part No.	Part name	Qty	Remarks
7	305-0003	Pressure gauge	1	
8	247-2304	Hose joint	1	
9	40364-010	Air hose	1	
10	384-0606	Quick-connect joint	1	
11	342-0140	Male hose nipple	1	
12	03-51015	Hex. socket head cap screw	3	
13	41-51000	Spring washer	3	
14	40365-014	Adapter	1	
15	40365-015	Street elbow	1	
16	68-10410	Cross-recessed, pan-head machine screw	1	
17	40338-024	Grounding wire	1	

Bellows pump body

BP360S <3721-2>



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Bellows pump body BP360S

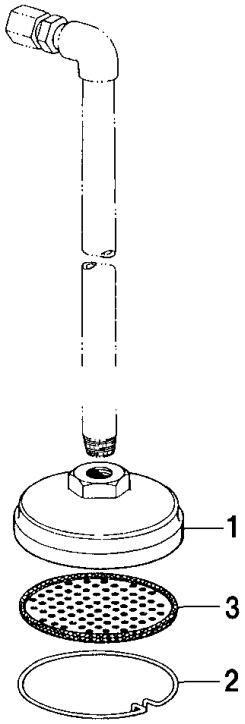
No.	Part No.	Part name	Qty	Remarks
1	3721-001	Flange	1	
2	3721-002	Flange	1	
3	3721-003	Case	1	
4	3721-004	Housing	1	
5	3721-005	Housing	2	
6	3721-006	Retainer	1	
7	3721-007	Body	1	
8	3721-208	Piston	2	
9	3721-009	Pipe	8	
10	3721-010	Bellows	2	
11	3721-211	Shaft	1	
12	3721-212	Shaft	1	
13	3721-113	Shaft	1	
14	3721-014	Slider	1	
15	3721-015	Pipe	1	
16	3721-016	Cylinder	1	
17	3721-017	Piston	1	
18	3721-118	Case	1	
19	3721-019	Manifold	2	
20	3721-020	Manifold	1	
21	3721-021	Manifold	1	
22	3721-022	Spacer	1	
23	3721-023	Spacer	2	
24	3721-024	Guide	4	
25	3721-025	Seat	4	
26	3721-026	Washer	2	
27	3721-027	Bushing	1	
28	3721-028	U-packing	2	

No.	Part No.	Part name	Qty	Remarks
29	3720-024	Retainer	2	
30	3720-018	Dry bearing	2	
31	3721-031	Packing	1	
32	3711-007	Muffler	2	
33	3720-023	Muffler	4	
34	3721-034	Spacer	4	
35	3720-021	Ball	4	
36	3721-236	Hex. socket head cap screw	2	
37	3721-237	Air-operated valve	1	
38	384-0601	Quick-connect joint	1	
39	102-6115	O-ring	4	*
40	102-6170	O-ring	1	
41	130-6150	O-ring	2	
42	130-6034	O-ring	10	*
43	101-6014	O-ring	1	
44	130-6022	O-ring	2	
45	101-9020	O-ring	1	
46	130-6012	O-ring	2	
47	130-6025	O-ring	2	
48	03-710110	Hex. socket head cap screw	8	
49	03-708120	Hex. socket head cap screw	6	
50	03-70408	Hex. socket head cap screw	6	
51	03-70618	Hex. socket head cap screw	32	
52	48-71000	Spring washer	8	
53	101-9014	O-ring	1	
54	3721-154	Retainer	1	
55	3721-238	Washer	2	
56	41-70600	Spring washer	32	

Parts marked * recommendable spare parts.

SF1406

0502



Suction filter SF1406

No.	Part No.	Part name	Qty	Remarks
1	0502-001	Filter body	1	
2	0502-002	Snap	1	

No.	Part No.	Part name	Qty	Remarks
3	0502-003-04	Screen	1set	40 mesh

9 Maintenance Log

Operators should be encouraged to record the service work such as part replacement, overhaul/cleaning, action against failures and troubles and repair in the following form as doing so eases later management.

Equipment name			Pneumatic bellows pump (BP360S)		Date of acquisition: YYYY/MM/DD	
Date of service			Portion worked on	Description	Results	Who serviced
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac

Note: The geometric dimensions of and specifications for the pump may be changed without notice to reflect technical improvements.

10 Warranty

ASAHI SUNAC CORPORATION (the “Company”) shall provide the original purchaser (the “Purchaser”) with warranty service for a period of one (1) year from the date of purchase of the product, as follows:

- Should you find defects in design or workmanship with regard to parts, ship them back to the Company, with freight prepaid. The Company shall repair or replace the parts free of charge and reimburse the freight charges, provided that, as a result of an inspection and investigation of the parts conducted by the Company, the defects are deemed to be to attributable to the factors within the Company’s responsibility.

- In the following cases, free after-sales service is not provided.

  1. Failure resulting from an inappropriate method of installing this equipment.
  2. Failure resulting from a use method not conforming to this instruction manual or mishandling.
  3. Failure resulting from insufficient maintenance management of this equipment and incorrect handling such as non-conformance to the procedures specified in this instruction manual.
  4. Failure resulting from unauthorized alteration or structure change of this equipment without the Company’s consent.
  5. Failure due to force majeure such as earthquake, disaster, flood disaster or lightening.
  6. Warranty for consumables worn or deteriorated even in the case where this equipment is used correctly.
  7. Repair after the machine has been used outside Japan, and shipping cost.
  8. In addition to the above, failure due to circumstances beyond our control.

- As for items such as parts purchased by the Company from another manufacturer, the warranty of that manufacturer shall apply.

- As for any parts deemed to be defective, the Company shall not be held liable for any expenses beyond the provision of repair or replacement parts free of charge.

- The Company shall not be held liable for any damage to the Purchaser caused by factors not attributable to the Company, such as misuse of product, etc.

- When the transfer of title takes place with regard to the equipment, please make sure that this manual is handed over to the new owner of the equipment.
- This equipment is built in accordance with the Japanese safety regulations. When it is to be used outside Japan, modifications may be necessary to be in compliance with the safety regulations of the country in which it will be used.

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ASAHI SUNAC

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