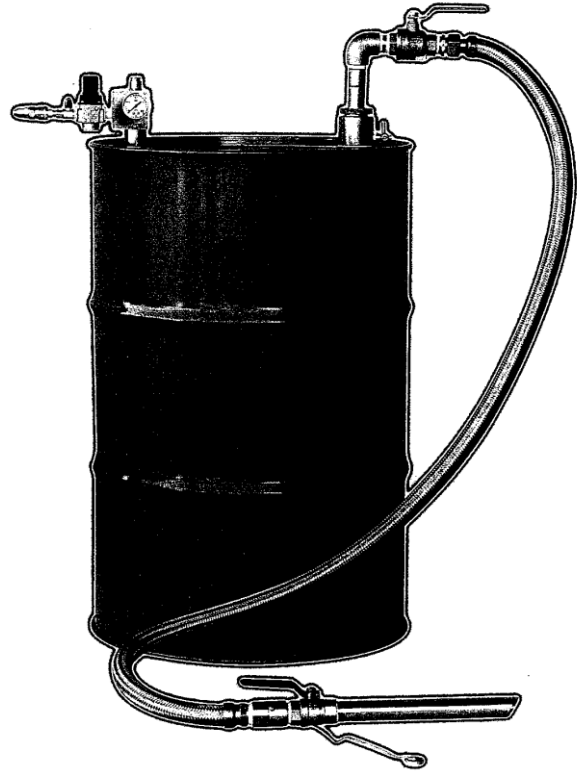


SEPARATE TYPE

AIR PRESSURE PUMP

USE AND MAINTENANCE MANUAL

- APDS Series for delivery
- APDQS Series for collection



* In the photo: delivery type SUS model.

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INTRODUCTION

Thank you for purchasing our Air Pressure Pump. This product utilizes compressed air to deliver/collect liquids from/into drum cans. It's a safe, inexpensive and high quality product. "Electric pumps are expensive", "Operating manual pumps is troublesome!" – we have developed this product taking customers' opinions under consideration. And we made it safe! The regulator stabilizes pressure inside of a drum can, while the relief valve protects from regulator's malfunction. This is the end to your troubles with liquid transfer. Enjoy the safety and convenience of our product, but first, please read this manual carefully and refer to it whenever necessary,




AQUASYSTEM CO., LTD.

DEVICE'S FEATURES:

- It's an innovative type with two separate components: regulating and delivery part
- Flow path has been enlarged allowing even higher delivery rate of high viscosity oil and chemicals
- Disassembly and cleaning have never been easier!
- The device does not utilize electricity at all and can be safely used in hazardous areas.

SAFETY PRECAUTIONS

- This manual contains safety-related information. Please follow it strictly. Before using the device, carefully read the manual (misusing the device may result in accidents).
- Keep the manual in a safe place and refer to it when necessary.

Symbol	Meaning
 DANGER!	Misuse may result in death or serious injuries.
 WARNING!	Misuse may result in death or serious injuries.
 CAUTION!	Misuse may result in human injuries and material damage.

* Please remember, that the safety measures and warnings pointed out in this manual are not exhaustive for all possible situations. Although we have designed our product to be as safe as possible, persons operating and maintaining the device should strictly follow all safety rules in the operation/maintenance area.

* Compressed air entering and leaving the drum can may cause the drum to produce loud sounds. Consider using the device in an industrial area.

BEFORE USING THE DEVICE

BY ALL MEANS OBEY THE FOLLOWING RULES!

This pump, utilizing compressed air, is intended to either deliver or collect liquids from/into drum cans. Do not use it for any other purpose.

DANGER!

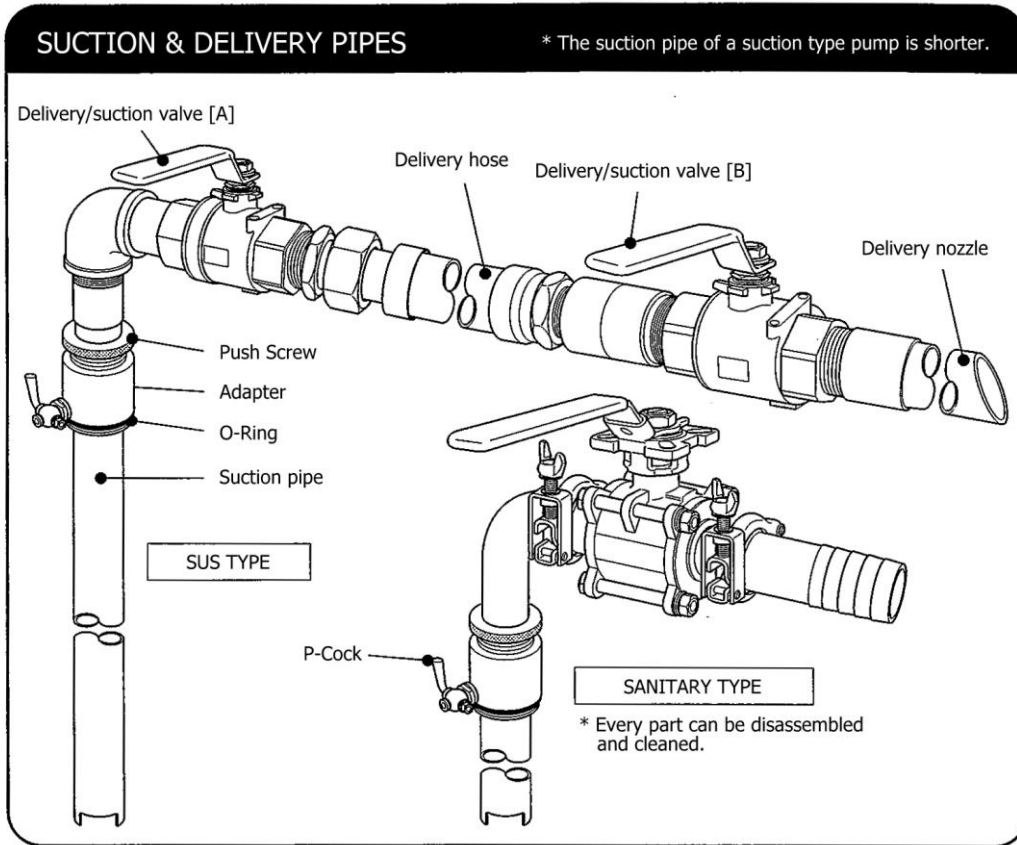
- Please use drum cans with sheet thickness of at least 1.2 mm and: smaller inlet's diameter: Ø3/4" (approx. 20 mm); bigger inlet's diameter: 2" (approx. 50 mm).
- APDS Series users should use pressure lower than 1 MPa.
- APQS Series users should use pressure lower than 0.7 MPa.
Please do not exceed the pressure level both for APDS and APDQS Series. Regulator and/or relief valve malfunction may result in drum can's explosion.
- Keep the pressure inside of a drum can at 0.05 MPa. Do not manipulate with drum can's inner pressure settings, as it may result in damaging the container.
- Read the manual carefully and use the device correctly.
You can learn about permitted liquids from this manual.
- Be careful not to touch or ingest the transferred liquid.
In case of direct contact with liquid (ingestion, skin contamination etc.), immediately proceed with safety procedures and seek medical attention.
- Do not use fire.
Connect the ground wire to pump's main body and nozzle, especially when using the device in hazardous areas and/or transferring inflammable or explosive liquids. Do not use fire.
- Do not disassemble or reset the regulator.
The regulator and relief valve are already correctly set to protect you. Do not manipulate them.
- Do not insert the end of the hose into liquid during the delivery.
When the level of fluid in drum can becomes low, the air is also sucked by the pump and leaves the system with the rest of the fluid through the delivery hose. Do not leave the hose immersed as the air coming out may splash the liquid.
- Decompress the air inside the drum can until normal pressure level returns.
Remember to close the air valve after using the pump. Carefully release the P-cock (pump's main body) to decompress the air in the drum can.

WARNING!

- Use the pump in a proper place.
Keep the equipment away from children.
- Seek medical attention.
If you suddenly feel worse while operating the pump, immediately discontinue the operation and seek medical attention.
- Use protection equipment.
Remember to wear protection clothes and equipment according to the liquids safety instructions.
- Do not assemble, reassemble or repair the pump on your own.
Service related matters are restricted to authorized experts.
- Remember to change the liquid properly.
When changing the liquid you are going to transfer, always carefully clean the pump out of the liquid transferred before. Not doing so may lead to dangerous chemical reactions.

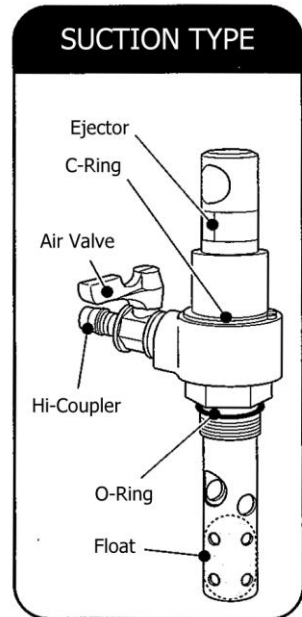
CAUTION!

- Request technical service whenever required
When the device stops operating or operates in a strange manner, immediately turn off the device and contact technical service. Do not use broken equipment, as it may result in accidents.
- Do not cause shock to device's main body
It may result in pump's malfunction, breakdowns and leakage.
- Prevent water from getting into compressed air
Use an air dryer especially when transferring liquids, which should not come in contact with water.
- Firmly hold the hose and the nozzle
The delivery flow (APDS Series) is very strong, especially when transferring low viscosity liquids. Hold the hose and the nozzle firmly.
- Remember to close the air valve.
After using the pump close the air valve.
- Maximum size of transferable particles is 7~8 mm.
The pump is capable of transferring liquids contaminated by sludge or metal particles of size no larger than 7~8 mm.



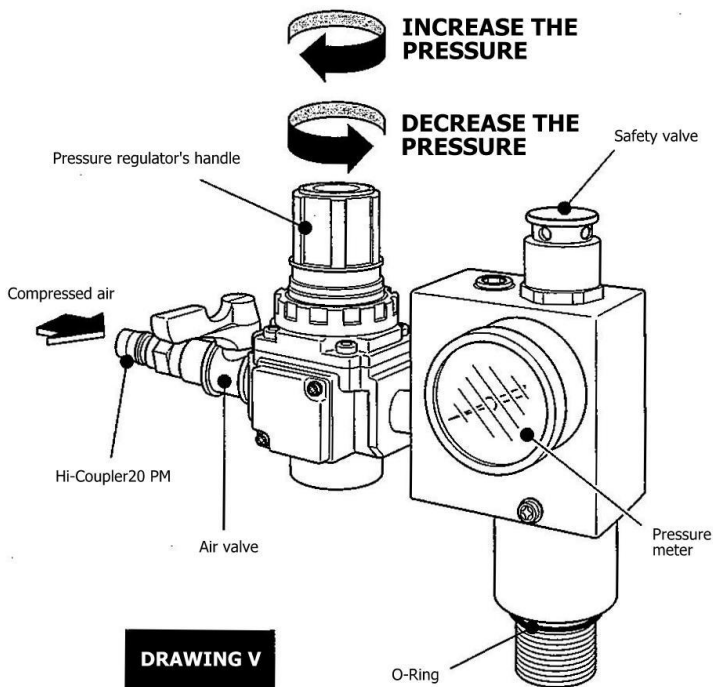
DELIVERY TYPE

The pressure increasing part
Refer to drawing V.



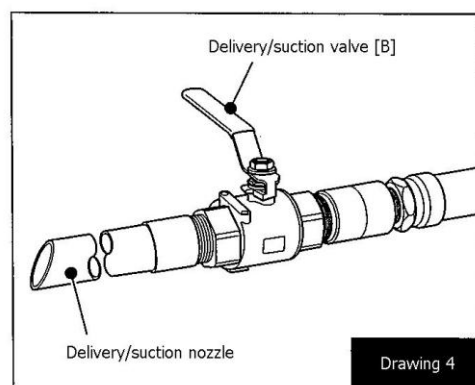
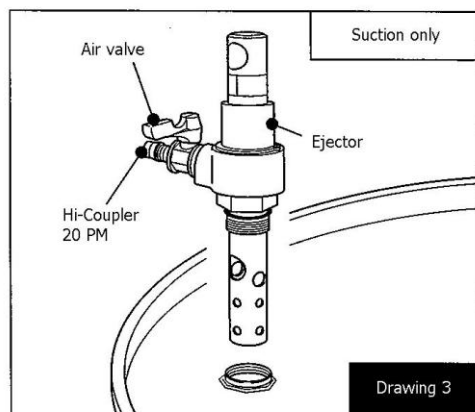
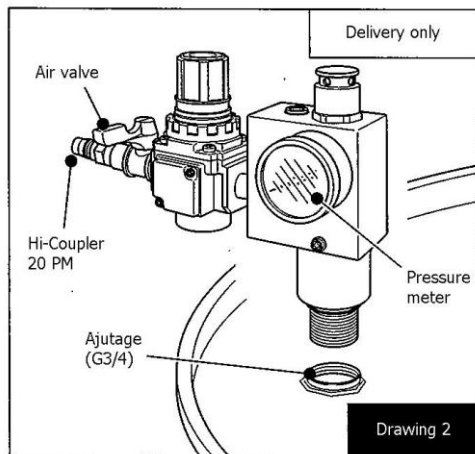
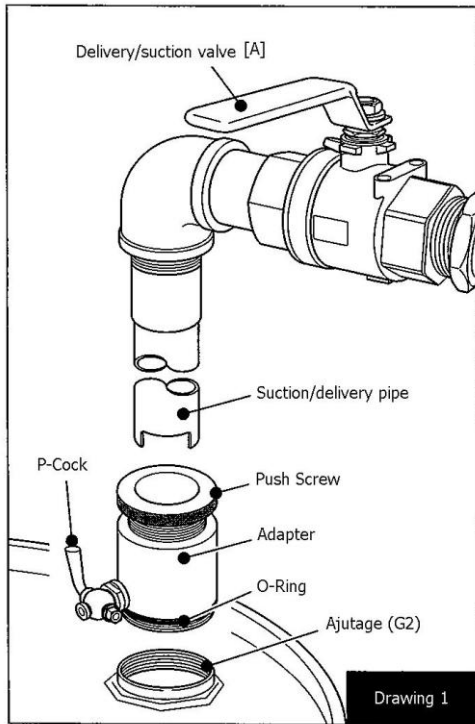
[The delivery part]

COMPRESSED AIR LINE COMPONENTS DESCRIPTION. Setting up the regulator (**ONLY IF DEREGULATED**).



The regulator is preset. At compressor's 7.0 kgf/cm², drum can's inner pressure is stabilized to 0.5 kgf/cm² (which equals 2.5 handle rotations from a 'closed' state).

- ① The pressure regulator's handle is locked. To unlock it, pull it up once firmly.
- ② By rotating the handle right, you increase the pressure. By rotating the handle left, you decrease the pressure.
- ③ Operate the handle manually. Do not use any tools as they may damage the handle and cause an accident.
- ④ Pressing the handle locks it. When experiencing troubles while locking the handle, rotate it slightly left and right, and press it.
- ⑤ Check the pressure after setting the regulator.
- ⑥ Always set the pressure lower than the original setting (max 85% of the original setting).



USAGE INSTRUCTION

- ① Fix the adapter firmly to drum can's larger ajutage (outlet, G2). [Drawing 1]
- ② Release the Push Screw and insert the pipe into the adapter until you can't insert it any further. [Drawing 1]
- ③ Manually tighten the Push Screw. [Drawing 1]
- ④ Insert into the smaller ajutage (outlet, G3/4): the regulator (for delivery) or the ejector (for suction). Fix it firmly. [Drawings 2 & 3]
- ⑤ Close the air valve by setting it perpendicularly to the hi-coupler 20PM. [Drawings 2 & 3]
- ⑥ Close the suction/delivery valves [A] & [B] by setting them perpendicularly to the hose. [Drawings 1 & 4]
- ⑦ **[Delivery only]** Close the adapter's P-cock. [Drawing 1]
- ⑧ Connect the compressor to hi-coupler 20PM. [Drawings 2 & 3]
- ⑨ Open the air valve – the compressed air enters the can (below 1 MPa).
[Delivery only] Make sure the pressure (measured by the meter) is stabilized at 0.05 MPa (0.5 kgf/cm²). [Drawing 2]
- ⑩ Opening suction/delivery valves [A] & [B] begins suction/delivery.
 - **[Delivery]**
When the liquid in drum can runs out, the air will come out of a delivery line.
 - **[Suction]**
When the liquid fills the can full, the float ball will block the suction line. The suction will automatically stop. [Drawings 1 & 4]
- ⑪ Closing the suction/delivery valve [B] stops suction/delivery. [Drawing 4]
- ⑫ After use, close the air valve and suction/delivery valve [A]. Open the suction/delivery valve [B] to let out the leftover liquid from the hose. After that, close the suction/delivery valve [B]. [Drawings 1 & 4]
- ⑬ **[Delivery only]** Open the adapter's P-cock to restore normal pressure in the drum can.
 - Leftover pressure may be very dangerous. It may splash the liquid and push the pump out of the can. Make sure the pressure meter shows "0".
 - Please use a ground wire for protection against fire and explosion.

SEPCIFICATIONS TABLE

APDS Series (for delivery)

Model	Permitted Liquids	Materials: Delivery Parts	Materials: Pressure Increasing Parts	Materials: Packing	Materials: Hose (Diameter/length)
APDS-25SUS	Chemicals, Solvents	SUS	<ul style="list-style-type: none"> ● SUS ● Teflon ● Viton + Teflon Coating ● Perfluoro 	<ul style="list-style-type: none"> ● Teflon ● Perfluoro 	SUS (Ø25/2 m)
APDS-25 (Sanitary)	Sanitary Liquids	SUS (Sanitary Pipe)			Plastic* hose (Ø25/1.2 m)
APDS-32SUS	Chemicals, Solvents	SUS			SUS (Ø32/2 m)
APDS-32SUS	Sanitary Liquids	SUS (Sanitary Pipe)			Plastic* hose (Ø38/1.2 m)
APDS-32 (Aluminum)	Chemicals, solvents	Aluminum, SUS	SUS, brass, NBR	NBR	PVC (Ø38/2 m)

APDQS Series (for collection)

Model	Permitted Liquids	Materials: Delivery Parts	Materials: Pressure Increasing Parts	Materials: Packing	Materials: Hose (Diameter/length)
APDSQS-25SUS	Chemicals, Solvents	SUS	<ul style="list-style-type: none"> ● SUS ● Brass ● Aluminum 	<ul style="list-style-type: none"> ● Teflon ● Perfluoro 	SUS (Ø25/2 m)
APDQS-25 (Sanitary)	Sanitary Liquids	SUS (Sanitary Pipe)			Plastic* hose (Ø25/1.2 m)
APDQS-32SUS	Chemicals, Solvents	SUS			SUS (Ø32/2 m)
APDQS-32SUS (Sanitary)	Sanitary Liquids	SUS (Sanitary Pipe)			Plastic* hose (Ø38/1.2 m)
APDQS-32 (Aluminum)	Chemicals, solvents	Aluminum, SUS	SUS, brass, NBR	NBR	PVC (Ø38/2 m)

* Polyolefin + styrene.

TROUBLESHOOTING

If the pump operates in a strange manner, immediately turn it off and carefully read the troubleshooting section below:

APDS Series (for delivery)

Symptom	Make sure that...
The liquid is not delivered at all.	<ul style="list-style-type: none"> ● The compressor is properly connected to the pump. ● The drum can is tightly closed. ● The drum can and the hose are not damaged. ● The valves have been opened.
The delivery rate is very low.	<ul style="list-style-type: none"> ● The pressure inside of a drum can is not too low. (Original setting: 0.5~0.6 kgf/cm²) ● Compressed air's pressure is not too low. ● The valves are all max opened. ● Liquid's viscosity is not too high. ● The P-cock is closed.
The drum can is deforming.	<ul style="list-style-type: none"> ● The pressure inside of a drum can is not too high. (Original setting: 0.5~0.6 kgf/cm²) ● The drum is durable enough (refer to safety precautions).

APDQS Series (for collection)

Symptom	Make sure that...
There is no suction at all.	<ul style="list-style-type: none"> ● The compressor is properly connected to the pump. ● The drum can is tightly closed. ● The valves have been opened.
The suction rate is very low.	<ul style="list-style-type: none"> ● The drum can and the hose are not damaged. ● The hose and the nozzle are not clogged.
The drum can is deforming.	<ul style="list-style-type: none"> ● The drum is durable enough (refer to safety precautions).

PUMP MODELS COMPARISON

APDS Series (for delivery)

Model	Max delivery rate (l/min)					
	1 cP	100 cP	500 cP	1000 cP	3000 cP	4000 cP
APDS-25SUS	70	67	37	24	8	5
APDS-32SUS	130	127	70	49	15	10
APDS-25 (Sanitary)	78	66	24	19	6	4
APDS-32 (Sanitary)	193	189	95	49	19	16
APDS-32 (Aluminum)	131	127	70	47	15	9

APDQS Series (for collection)

Model	Max suction rate (l/min)					
	1 cP	100 cP	500 cP	1000 cP	3000 cP	4000 cP
APDQS-25SUS	68	64	43	22	7	5
APDQS-32SUS	139	131	93	65	20	12
APDQS-25 (Sanitary)	74	60	28	18	6	4
APDQS-32 (Sanitary)	197	180	125	96	34	18
APDQS-32 (Aluminum)	128	119	84	61	20	12

* The above measurements are a result of experiments and calculations. The values may, vary according to liquid's properties.

WARRANTY AND SERVICE

Thank you for purchasing our product! We look forward to provide you with help, advice and service, however, please remember that the warranty does not cover all possible cases, in which such service may be required.

① If the product has been used correctly, yet broke down, it will be repaired for free if the breakdown has been reported within 12 months from the date of purchase. Otherwise, the service will not be free. In both cases covering shipment and shipment-related costs is customer's responsibility.

② The product's breakdown has been reported within 12 months from the date of purchase, but:

- The product has been misused.
- The product has been repaired/serviced, however, not by AQUASYSTEM.
- The product has not been stored or maintained properly.
- There are no documents/receipts, which would prove the purchase.
- The product has been overused, which caused product's inner abrasions.

In such cases, service is not free.

For inquiries concerning service, please contact:

AQUASYSTEM Product Service

+ 81 749 23 9139