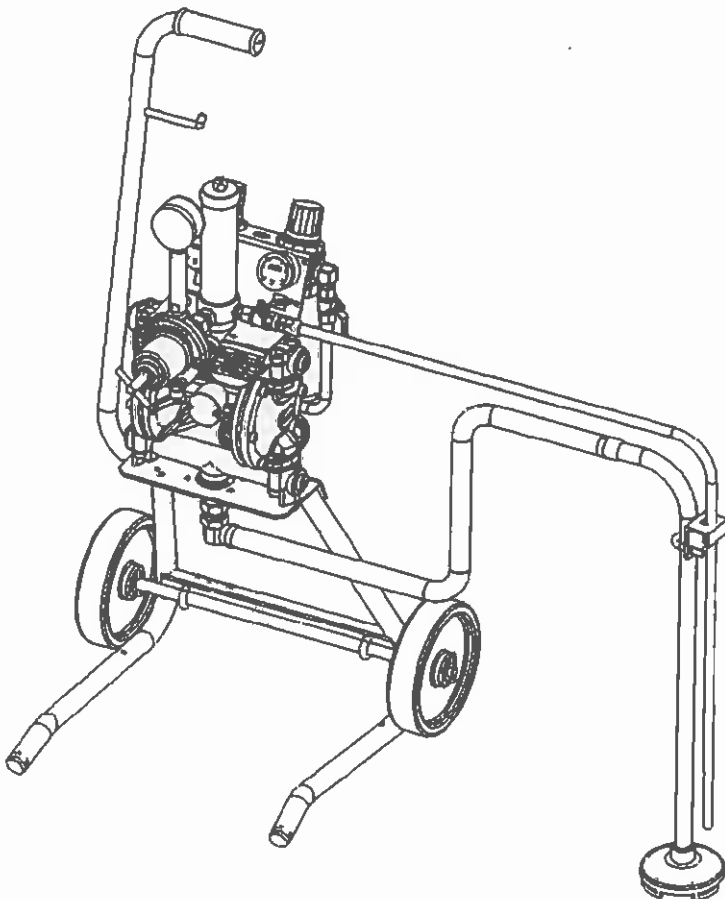


Instruction manual

■ PAINT PUMP DPS-120 / 90 series



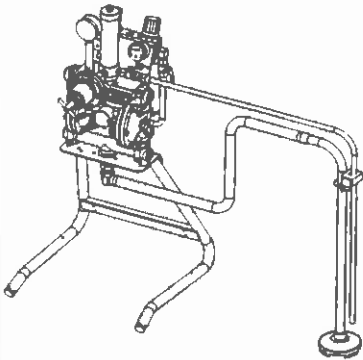
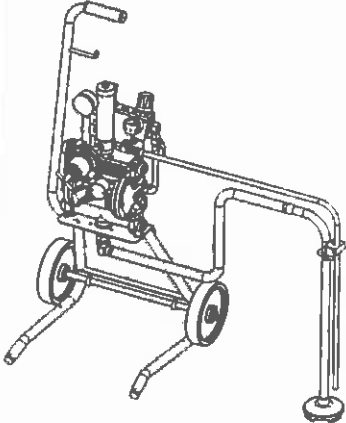
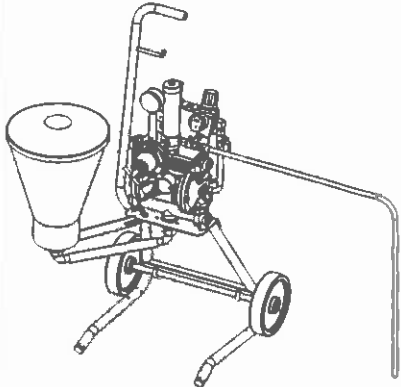
Mount type

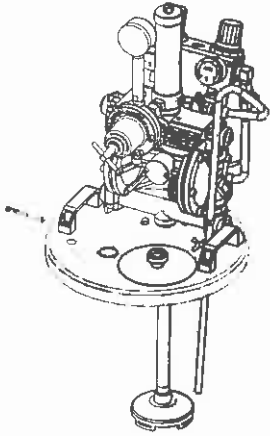
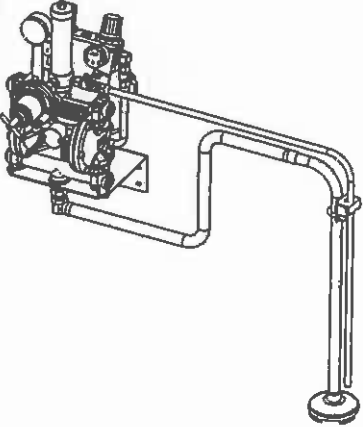
- Stand
- Cart
- Pail
- Wall

Fluid passage

- Aluminum
- Stainless steel
- Anodized aluminum

MODEL

Type	Stand	Cart	Cart (Hopper)
Model	DPS-1201C / CN / C-WB DPS-901G / GN / G-WB	DPS-1203C / CN / C-WB DPS-903G / GN / G-WB	DPS-12036C / CN / C-WB DPS-9036G / GN / G-WB
Fluid passage	<ul style="list-style-type: none"> • Aluminum • Stainless steel (model : 「N」) • Anodized aluminum (model : 「-WB」) 		
			

Type	Pail mount	Wall mount
Model	DPS-1202C / CN / C-WB DPS-902G / GN / G-WB	DPS-1204C / CN / C-WB DPS-904G / GN / G-WB
Fluid passage	<ul style="list-style-type: none"> • Aluminum • Stainless steel (model : 「N」) • Anodized aluminum (model : 「-WB」) 	
		



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Use of the manual

The use and maintenance manual is the document accompanying the equipment from its manufacture till its dismantling. Therefore, it is an integral part of the equipment.

The manual must be read before starting any activity involving the equipment including its handling.

For a better consultation the instruction manual is divided into the following sections:

SECTION 1

Transport, packaging, handling and check on the purchased product.

SECTION 2

Description of the equipment and of its field of application.

It also describes all the technical features of the equipment.

This information can be compared to that of an illustrative leaflet.

SECTION 3

Equipment installation.

SECTION 4

Description of the controls to use the equipment.

SECTION 5

Ordinary and extraordinary maintenance.

ENCLOSURES

Exploded view and list of components.

Symbols used

The operations which can be dangerous if they are not carried out correctly, are indicated with the symbol:



The operations requiring a qualified or specialised staff, to avoid any danger, are indicated with the symbol:



Other symbols

It is advisable to train the staff who have to use the equipment and to check if everything is understood and carried out



Index of the use and maintenance manual



Transport



Description of the equipment



Installation



Ordinary use



Wiring and hydraulic diagrams



Dismantling



Informative letter

This use and maintenance manual is an integral part of the equipment and it must be easily available to the staff in charge of its use and maintenance.

The user and the maintenance man must know the content of this manual. All the descriptions and pictures contained in this manual are not binding.

Although the main features of this equipment are not subject to change, the manufacturing Company reserves itself the right to change those components, details and accessories it deems necessary to improve the machine or to meet manufacturing or commercial requirements, at any time and without updating this manual immediately.



WARNING

To ensure the good working of the equipment and of its safety devices, the pump must be installed by a qualified staff.



WARNING

All rights are reserved. The reproduction of any part of this manual, in any form, is strictly forbidden without prior written authorization of the manufacturing company. The content of this manual can be modified without notice. Great care has been taken in collecting and checking the documentation contained in this manual to make it as complete and comprehensible as possible.



WARNING

This use and maintenance manual does not make up for any design inadequacy. In case of breakdown or malfunction, apply to the customer care service.



WARNING

The original configuration of the equipment must not be changed at all. On receiving the equipment check that:
The supply corresponds to the order specifications.
In case of non-compliance, inform immediately our technical services.

Warranty

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 technicians at our servicing shops.

The warranty covers no intervention of our technicians during installation or dismantling operations. If for practical purposes one of our technicians is sent on site, a charge will be made for the time plus extra for travelling and expenses.

Our warranty does not cover direct or indirect damage to people or property caused by our equipment. It covers no repair operations carried out by the customer or by a third party, either.

THE WARRANTY DOES NOT COVER:

- Damage or breakdown caused by improper use or assembly.
- Damage or breakdown caused by use of spare parts that are different from the original or recommended ones.
- Damage or breakdown caused by a bad preservation.
- Components subject to wear (described in the spare part 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.
- Whenever 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 is disassembled, tampered with or repaired without the authorization of **ANEST IWATA corporation**

All repair interventions carried out under warranty do not interrupt its duration.



1. TRANSPORT AND HANDLING

1.1 Transport

To transport the equipment only the systems described below can be used. In any case make sure that the transport and lifting device can bear the weight of the equipment with its packaging.



WARNING

Always keep the packaging in vertical position.



WARNING

It is advisable that the staff in charge of handling the equipment wear protective gloves and safety shoes.

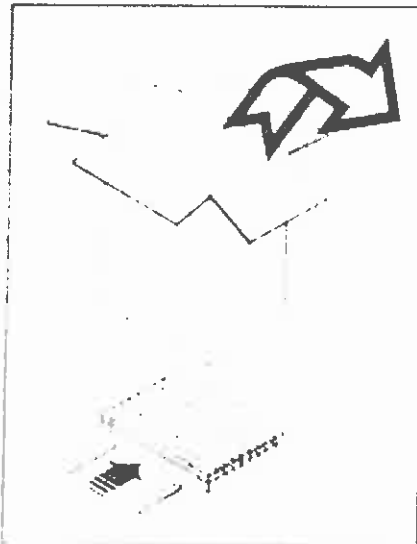


WARNING

While lifting or handling the equipment or any of its components clear the working area. Leave also a sufficient safety area around the equipment to avoid damaging people or objects which could be there.

1.2 Transport with cardboard packaging

The equipment is put inside a cardboard packaging and wrapped with some shockproof material.





1.3 Handling

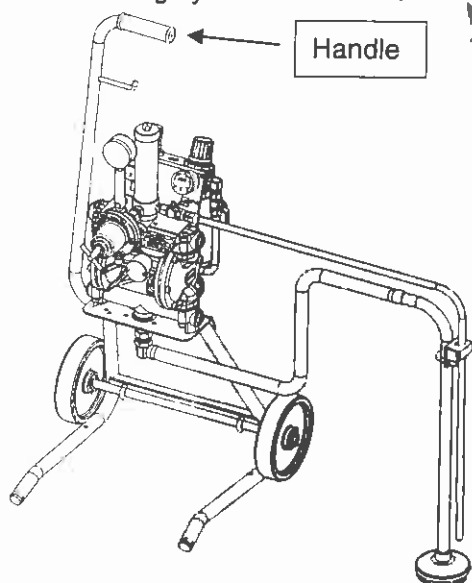
To handle the cardboard packaging use a trolley.



WARNING

Follow the instructions on the packaging before handling and opening it.

Handling by means of handle



handling by means of trolley



1.4 Temporary storage

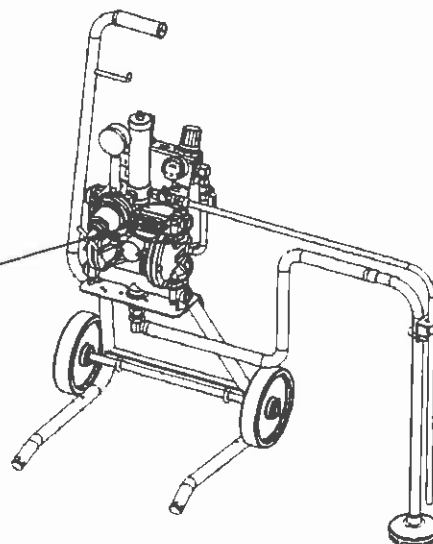
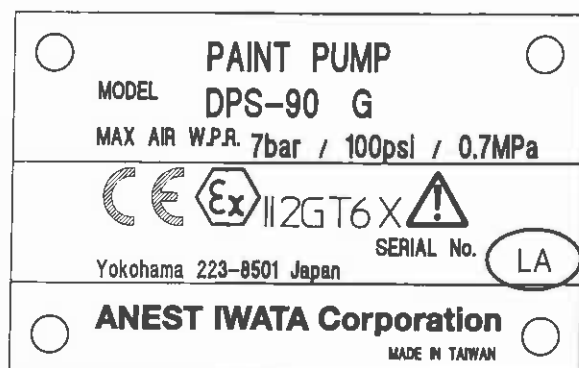
During transport and storage make sure the temperatures between 0 and 40° C are not exceeded. In case of storage, make sure the equipment is not put in places with an excessive humidity.



2. PRODUCT IDENTIFICATION

2.1 Plate data

The manufacturer's identification plate is applied on the diaphragm pump (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 written on the plate itself.



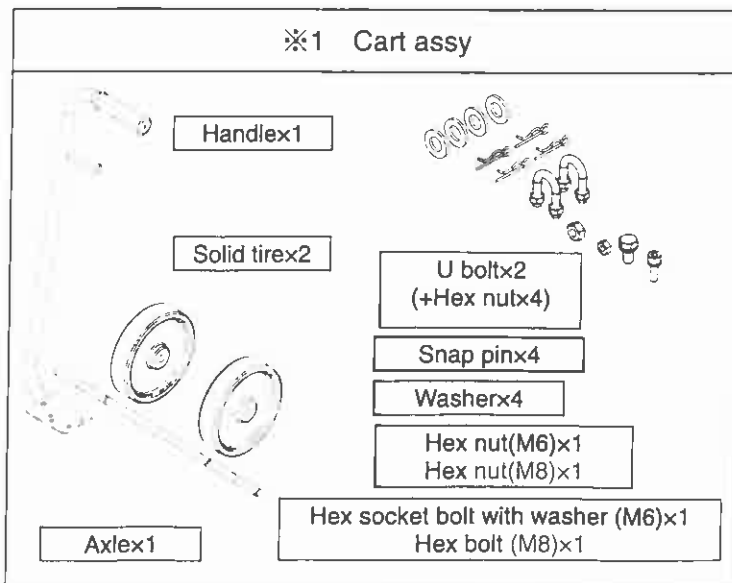


2.2 Check on the purchased product

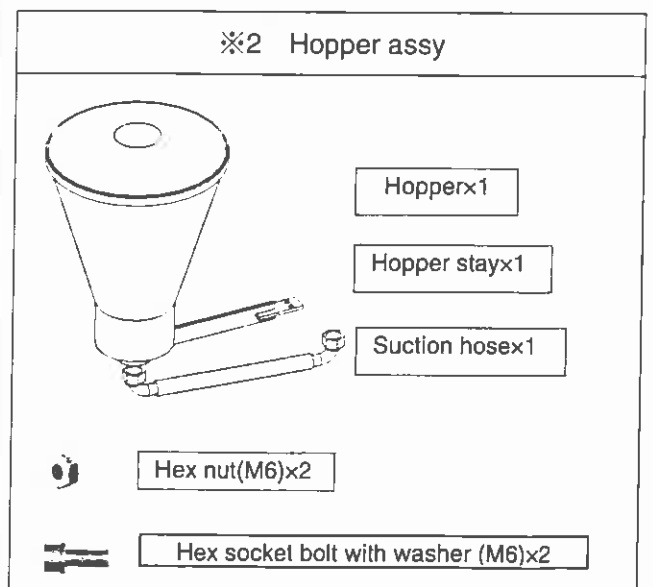
Before using the pump, make sure it has not been damaged during transport or storage.
Also check that all standard components are inside the packaging.

			Parts	Mount Type			
				Stand	Cart	Pail	Wall
	Handle set (for PR-5BL)			1			
	Drain hose			1			
	Instruction manual		(this instruction manual)	1			
	Cart assy		(※1)	-	1	-	-
	Supply lid			-	-	1	-
	Band		-	3	3	-	3
	Fluid supply	Suction	Suction hose		1	1	-
Suction pipe				-	-	1	-
Gravity		Hopper assy	(※2)	-	-	1	-

※1 Cart assy



※2 Hopper assy





2.3 Technical specifications

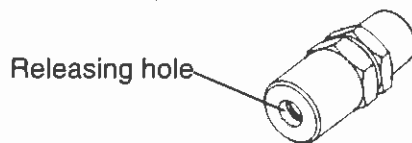
Model		DPS-120□□□□			DPS-90□□□□		
Fluid passage		Aluminum	Stainless steel	Anodized Aluminum	Aluminum	Stainless steel	Anodized Aluminum
Diaphragm pump	Model	DDP-120B	DDP-120BN	DDP-120B-WB	DDP-90F	DDP-90FN	DDP-90F-WB
	Paint output (30cyc/min)	4.5 L/min 1.2 gal/min			1.5 L/min 0.4 gal/min		
	Working pressure rang	1.5 ~ 7 bar 22 ~ 100 psi					
Paint regulator	Model	PR-5BL	PR-5BLN	PR-5BLN	PR-5BL	PR-5BLN	PR-5BLN
	Adjustable pressure rang	0 ~ 3 bar 0 ~ 43.5 psi					
	Max flow	1.5 L/min 0.4 gal/min					
Max fluid viscosity		100 sec / NK-2 (85 sec / Ford #4)					
Fluid temperature		5 ~ 40 °C . 41 ~ 104 F					
Air inlet		G1/4					
Fluid outlet		G3/8					
Required compressor		0.4 ~ 1.5 kW			0.4 ~ 0.75 kW		
Noise Level		70 dB(A)			68 dB(A)		

2.4 Safety systems

Several safety systems have been conceived during the diaphragm pump design and manufacture to safeguard the operator, in compliance with pr EN 12621 Directive about paint.

SAFETY VALVE

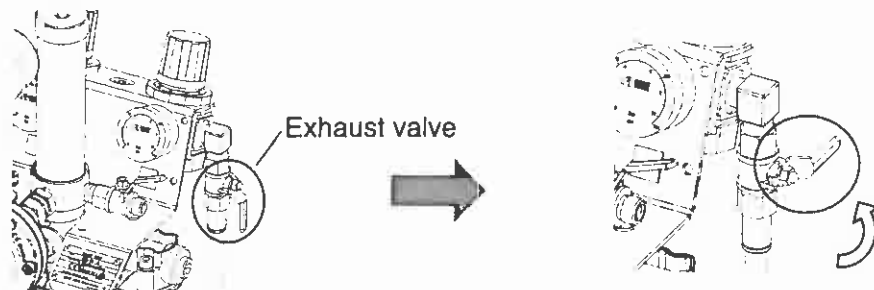
7 bar calibrated safety valve is installed to ensure the pump working pressure does not exceed the limits inside the feeding circuit. If the calibration pressure is exceeded, the valve opens by releasing the excess of air.



Do not disassemble the safety valve.
Doing so might cause faulty operation.

EXHAUST VALVE

In case of anomalies during working, turn 90° the exhaust valve lever. In this way the air supply will be interrupted and the residual pressure inside the pump will be released.



Safety pictograms

Some pictograms can be found on the pump with the safety warnings to follow by anyone who is going to use it.



WARNING

The manufacturing company is not to be held responsible for damage or accidents to people or things coming from the non-compliance with the prescribed rules. the responsibility rests entirely with the operator himself.



2.5 Workable products

All DPS diaphragm pumps are conceived to paint ferrous material in general, wood and plastic. The products that can be delivered are solvent-based paints with a maximum viscosity of 100 sec/NK-2 (85 sec/Ford # 4).

To use the pump with special products ask for the manufacturer's approval. Moreover, the pump technical features will have to be adapted to the special product working.

The Company ANEST IWATA is not to be held responsible for any accident due to the pump use by an UNAUTHORIZED and non qualified staff using it for purposes that are different from the above mentioned ones.

WARNING

Never use the following halogenated hydrocarbon solvents:

methyl chloride, dichloromethane, 1,2 dichloroethane, carbon tetrachloride, trichloroethylene, 1,1,1-trichloroethane which can cause cracks or dissolution on gun body(aluminum) by chemical reactions.

Be sure that all fluids and solvents are compatible with pump parts. We are ready to supply a material list used in the pump (and paint regulator) on request. Please use stainless steel specification (DDP-90FN/-120BN , PR-5BLN) for the liquid of the causticity (except PH6~8).



3. OPERATION

3.1 Operation description

Based on a simple manufacture, the operation consists in two diaphragm movement, which are both fixed at the end of a rod, pressurizing and sending the paint.

The compressed air enters the air chamber from side A in picture 1. The diaphragm is moved to the left, by pushing the paint.

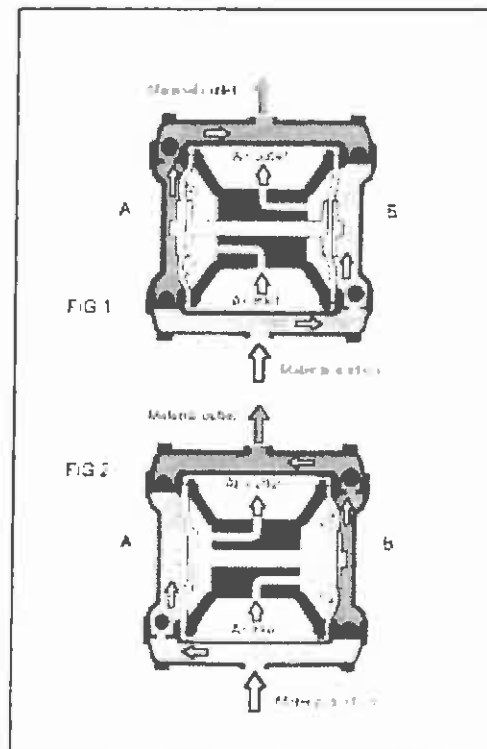
At the same time, the diaphragm on the opposite end (side B) moves to the left by sucking the paint.

When the rod is completely on the left, the air operating valve reverses the operations.

The compressed air enters the air chamber from side B in picture 2. The diaphragm is moved to the right, by pushing the paint.

At the same time, the diaphragm on side A end sucks the paint.

The pump repeats the above-mentioned suction and delivery movements. The result is a steady and pulsation-free material flow.



4. INSTALLATION AND STARTING



4.1 Conditions for installation

The equipment must be installed by a **specialized and authorized staff**.

In any case, follow the instructions below.

Painting must preferably take place inside a suitable 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.

4.2 Installation of DDP-120 / 90

- Place the pump on a stable support, to avoid movements during use.
- The distance between the pump and the fluid (height of suction) must be as short as possible. However, it can vary according to viscosity and required delivery.
- Connect the air supply to the pump supply connection.
- The suction pipe must have an inside diameter of at least 1/2" or slightly higher.
- To install the pump use two M8 bolts by means of the special holes on the adaptor (lower). Do not fasten the pump with any other system.
- Earth the free end of the Ground wire directly.



WARNING

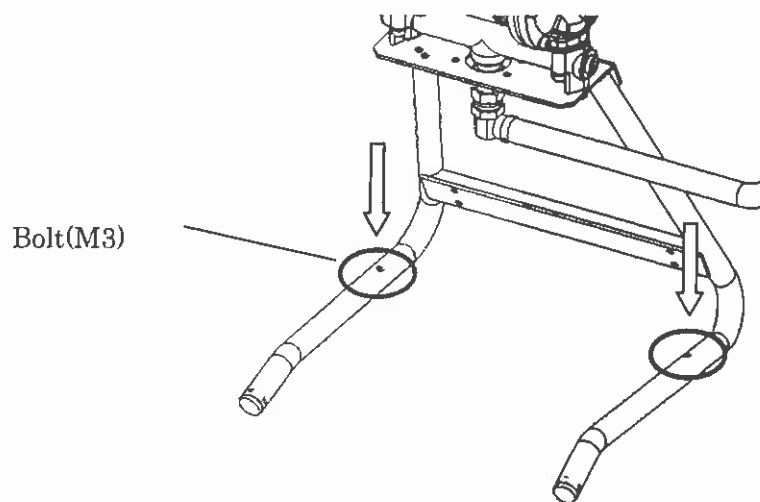
The fluids used and the requirements must be in compliance with section 2.5 (workable products) and with section 5.0 (use).



WARNING

- Consult the local code for detailed instructions relative to ground connections in the work area and to the type of system used.
- The ground wire (included in the supply) must have a minimum section equal to 1.5 mm².
- One end of the cable must be earthen while the other must be connected to the lateral lid of the diaphragm pump.

Fasten the pump to the ground by means of the bracket welded on the trailer or on the stand.
(Reference of the following figure. Use to Bolt(M3))





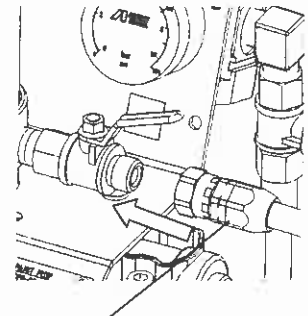
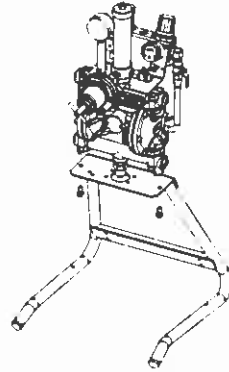
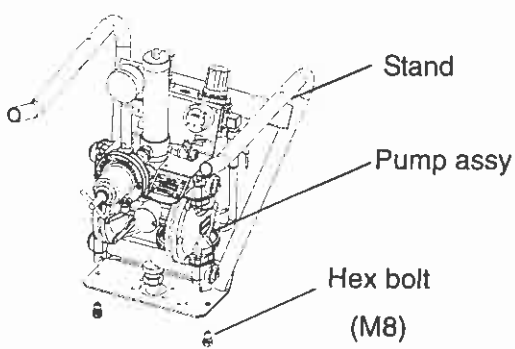
4.3 Installation of models

①: Stand type / Cart type

- 1. Detach the dust proof cap (B,E,F,H,I on page 16)
- 2. Detach the pump assy
- 3. Flip the stand to the other side and retach the pump assy.

Common

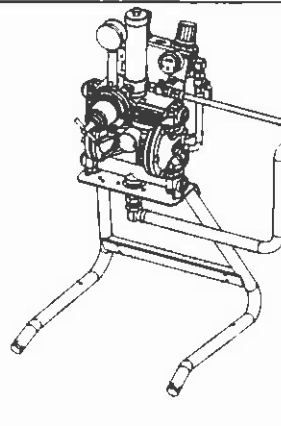
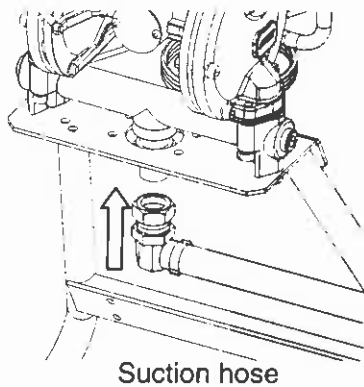
- 1. Attach the drain hose.



Drain hose

②: Paint supply : Suction hose

- 1. Attach the suction hose to the pump assy.
- 2. Fix the drain hose and suction hose with the band (3 spots wherever you want)

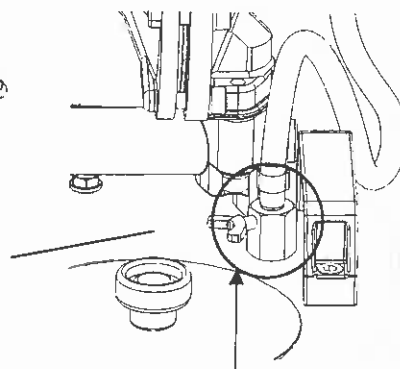
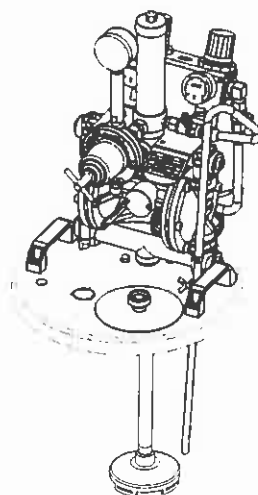
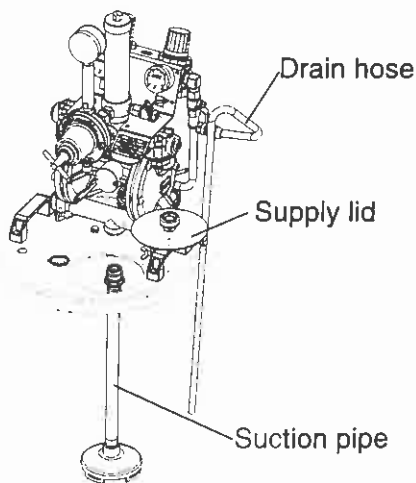


Suction hose

Band 3 spots
Wherever you want

③: Pail mount type

- 1. Detach the dust proof cap (B,E,F,H,I on page 16)
- 2. Attach the supply lid, suction pipe and drain hose (refer to Common-1)
(Make sure the seal tape is taped around the suction pipe)

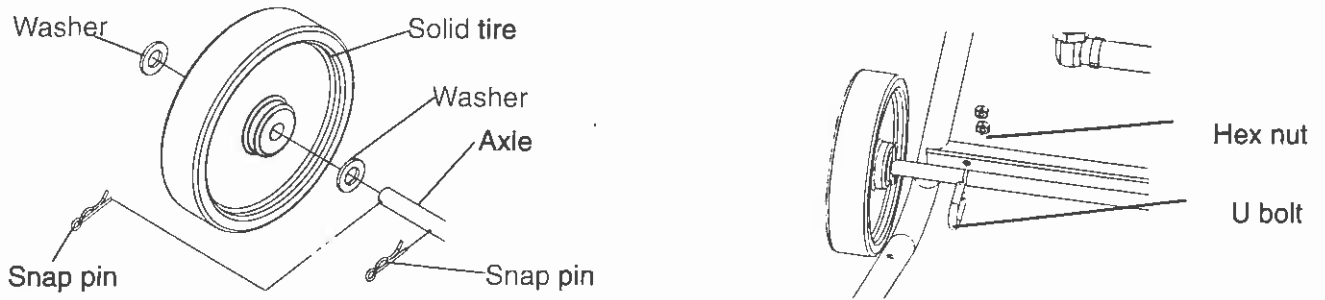


Bolt the drain hose with
the wing bolt.

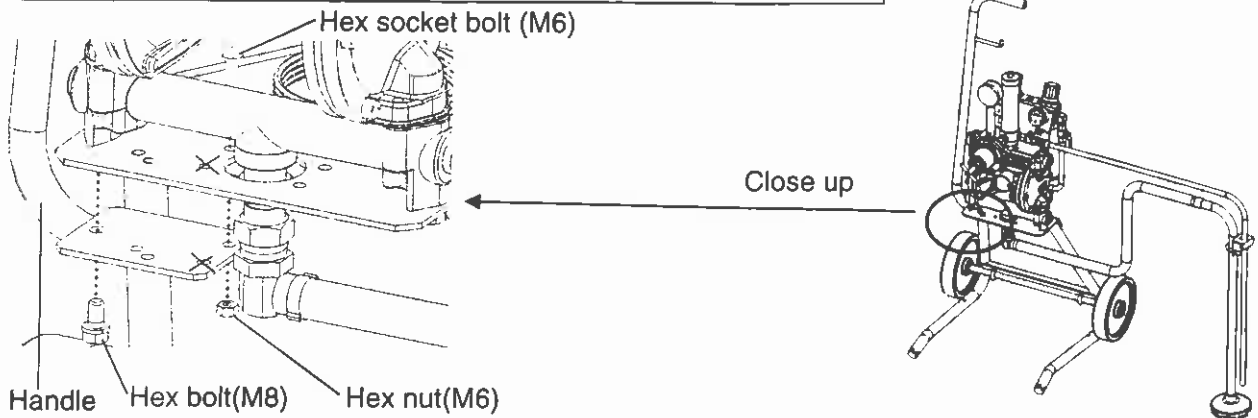


④ : Cart type

-1. Attach the parts referred below in numerical order, and attach them to the stand.

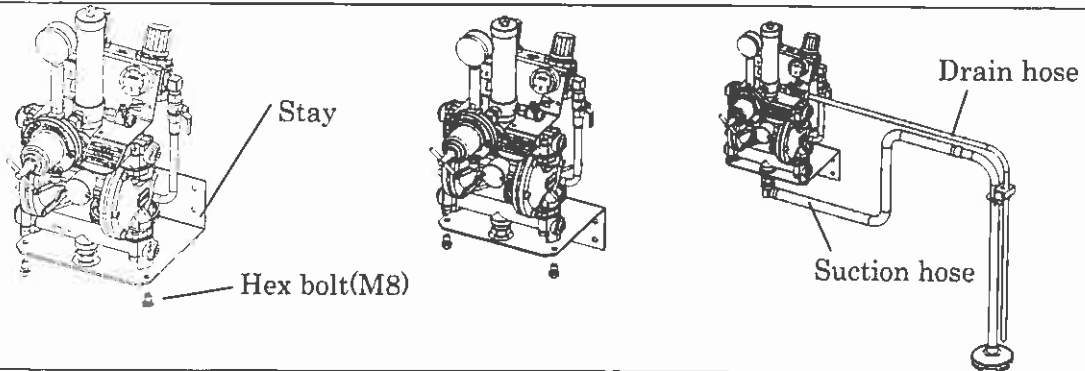


-2. Attach the handle to the stand (unscrew the pump fitting bolt)



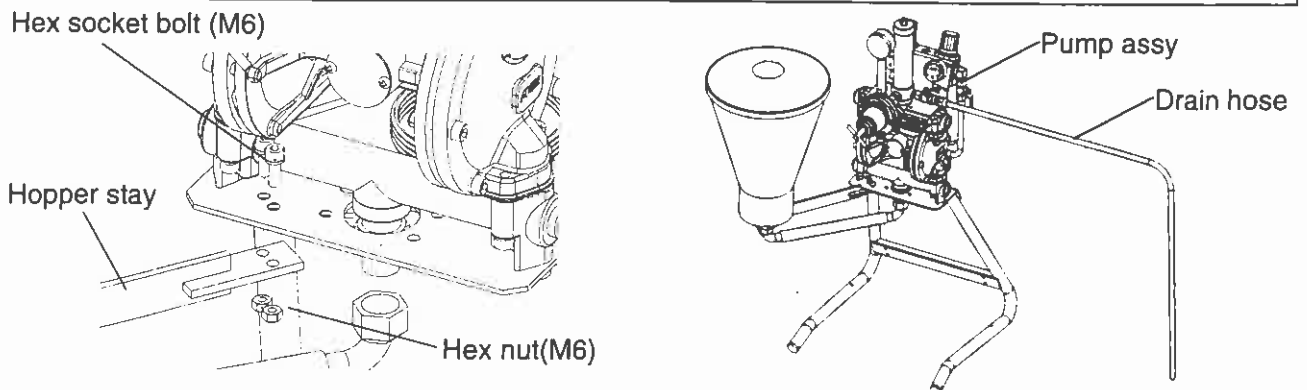
⑤: Wall mount type

- 1. Detach the dust proof cap (B,E,F,H,I on page 16)
- 2. Detach the stay.
- 3. Turn the stay upside down and reattach it to the pump assy.
- 4. Attach the suction hose and drain hose(refer to Common-1).



⑥ : Paint supply : gravity (Hopper)

-1. Attach the hopper assy.





5. USE

5.1 Use

This section describes the diaphragm pump use in compliance with the safety standards in force. Read this section carefully.

5.2 Safety rules during use

To use the diaphragm pump comply with the safety precautions and rules described below.

The manufacturing company declines all responsibility if the operator does not comply with them. It is not to be held responsible for any carelessness during the pump use, either.

If the system is used improperly, it could be broken by causing serious damage.

Use the diaphragm pump for professional purposes only.

Do not change the system. Use only ANEST IWATA original spare parts.

Check the system daily. Repair or replace immediately all worn or damaged parts.

Never exceed the maximum working pressure : 7 bar (100psi).

It is forbidden to use the equipment for purposes that are different from the ones it is destined to which are described in the use and maintenance manual. If in doubt, apply to your ANEST IWATA reseller.

Use paints and solvents compatible with the system parts they come in touch with.

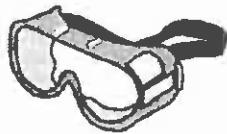
Refer to the paint and solvent features mentioned by the manufacturer.

Wear the protective clothes described in section 5.3.

Comply with all the local standards on electric safety and fire risks.

5.3 Clothes

Wear some protective gloves and goggles, an oxygen mask and some ear protections during working. Always follow the laws in force (Ex. LAW 626/94).





5.4 Prewash

1. Make sure the pump is installed correctly (see section 4.3).
2. Soak the dip tube into the washing liquid, or fill the hopper or the tank according to the model used.
3. Put the exhaust valve in the right position.
4. Adjust the inlet pressure between 2.0 and 7.0 bar.
5. Open gradually the ball valve for paint recirculation (B on page 16). The washing liquid will have to circulate through the dip tube recirculation pipe.
 - If the Pail mount model is used, the washing liquid will circulate through the recirculation pipe.
 - The Hopper model recirculation pipe is directly connected to the hopper.
6. Close the ball valve for paint recirculation and adjust the Paint by means of Paint regulator (Recommended pressure for washing 2.0 bar)
7. Press the gun trigger (or supply the automatic gun opening control with some air), without spraying air and let the washing fluid circulate for some minutes.
8. Make sure the washing has been done and then discharge the pump residual liquid and stop it.



WARNING

The pump must be washed before using it for the first time, if it is not used for a long time and after any color change.

5.5 Starting

Before beginning working, start the pump by following the instructions below:

1. For all models with suction hose, dip it into the product tank to be pumped.
For the model with hopper, fill it with the product to be pumped.
For the models on tank, fill the product tank to be pumped.
2. Open the ball valve for paint recirculation (Pos. B on page 16)
3. Lift and turn gradually the pressure reducer knob (Pos. C on page 16). Adjust it at a pressure slightly higher than 2,0 bar, to enable the pump to release the air.
4. Close the ball valve for paint recirculation (Pos. B on page 16) and release the air through the gun, too.
5. Increase the pressure of the reducer connected to the pump (Recommended pressure about 5,0 bar).
6. Adjust the paint regulator as required (from 0 to 3.0 bar).
7. Adjust the spraying air by means of the reducer (Pos. D on page 16) and test the gun on a panel before using it.



PRECAUTIONS

- a) Use the gun under pressure.
- b) When the paint level inside the tank decreases, the pump can suck some air.
Increase the paint level.
- c) Do not drag the pump by pulling it by the pipes.



PRECAUTIONS: EMERGENCY STOP

When the pump must be stopped because of the following reasons:

- a) The material does not stop coming out of the gun.
- b) Fluid discharge through the connectors or the damaged pipe. Close the exhaust valve.



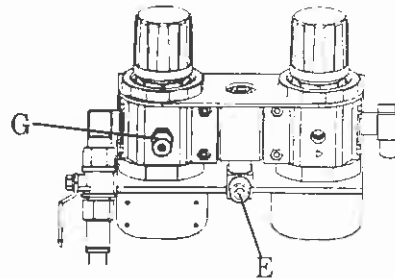
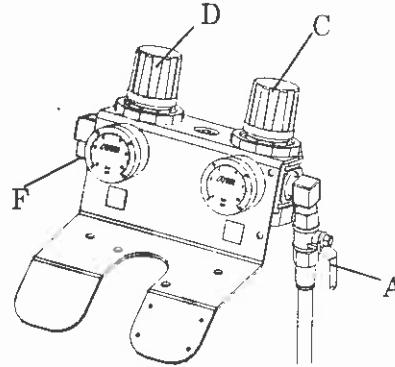
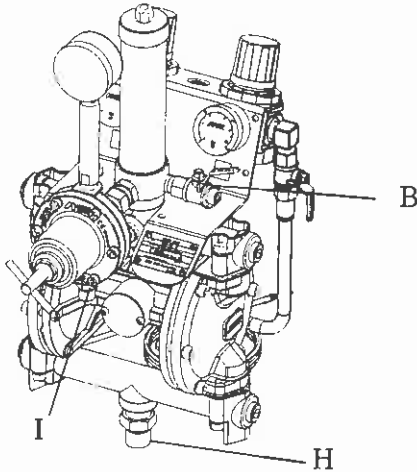
5.6 Daily interruptions

1. When the pump is stopped:

- The air supply must not be disconnected if the interruption is short.
- If the interruption is long, turn the exhaust valve discharge the air from the circuit and open the recirculation valve to release the residual Paint.

2. When the pump is stopped at the end of the working day:

- Wash the fluid passages.
- Remove the suction filter and the filter inside the paint filter and clean it.



- A) Ball valve for exhaust air
- B) Ball valve for paint recirculation
- C) Pump air pressure reducer
- D) Gun air pressure reducer
- E) Feeder line connector
- F) Air connector to gun
- G) Safety valve
- H) Suction connector
- I) Paint regulator output

Dust proof cap (female) : B , E , F , H , I)

Pail mount model : H) is not included (Dust proof cap male)

5.7 Wrong and dangerous uses



A wrong earthing, an insufficient ventilation, a naked flame or a spark can cause a fire or an explosion and provoke some serious injuries.



WARNING

If some sparks or an electric discharge were perceived, interrupt immediately all painting operations. Do not use the system until the problem cause is identified.

Keep away from the working area all kinds of waste, of solvent container, of solvent or petrol soaked rags or clothes. Before starting the system disconnect all the electrical connections inside the working area.

Before using the system switch off all the naked flames and pilot lights inside the working area.

Do not smoke inside the working area.

During painting operations, or if there are some vapors in the air, do not switch on or off the lights inside the working area.

Do not use any petrol engine inside the working area.

Some organic solvents or discharged toxic vapors can enter the eyes or the skin, be swallowed or inhaled, by provoking serious injuries.

When the air engine is running, keep the face away from the exhaust.



5.8 Pressure Release process



WARNING

1. Close the air to the gun.
2. Close the air to the pump (ball valve for exhaust air).
3. Make sure the recirculation pipe is not clogged. Then open gradually the recirculation ball valve and leave it open.
4. Hold the gun tightly and lean it on the earthed metal container, pull the trigger to release the pressure. If an automatic gun is used, supply the rod opening control with some air under pressure.



PRECAUTIONS

1. To operate the pump, use some filtered air by means of an air filter with filtering section lower than 50 µm. We recommend using a filter with condensate automatic discharge.
2. Do not make the pump idle.
3. Do not spray any paint or solvent towards the pump.
4. Do not install the pump near heat sources or in the sun. Put it far from sprinklings of water.
5. To avoid any problem after using bi-component paints, wash the pump immediately after using it otherwise all fluid passages could be clogged and the whole installation will have to be disassembled.



6. MAINTENANCE AND INSPECTION

6.1 General notes



A suitable maintenance is important for a longer duration of the equipment in good working conditions and efficiency ensuring functional safety as time goes by. All maintenance operations must be carried out by a qualified staff. The pump design and the materials used to manufacture it limit the maintenance interventions to a simple periodic cleaning. The staff must be provided with the individual protections that are generally used for similar operations. They also must follow the safety rules described in section 6.2.

6.2 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 operations.
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.



6.3 Recommended programmed operations

Every 50 Working hours

Disassemble and clean the delivery and suction filters as well as the fluid passage ducts.

Note: If highly pigmented paints or paints with many particles tending to deposit are used, carry out maintenance operations at shorter intervals.

Every 2000 working hours

Overhaul the whole painting unit and replace the worn components.

The component corrosion speed varies according to the type of paint and the working conditions. To replace the worn components, follow the given instructions.

6.4 Diaphragm pump disassembly from its base support



PRECAUTIONS

Before disassembling the pump, follow carefully the instructions below:

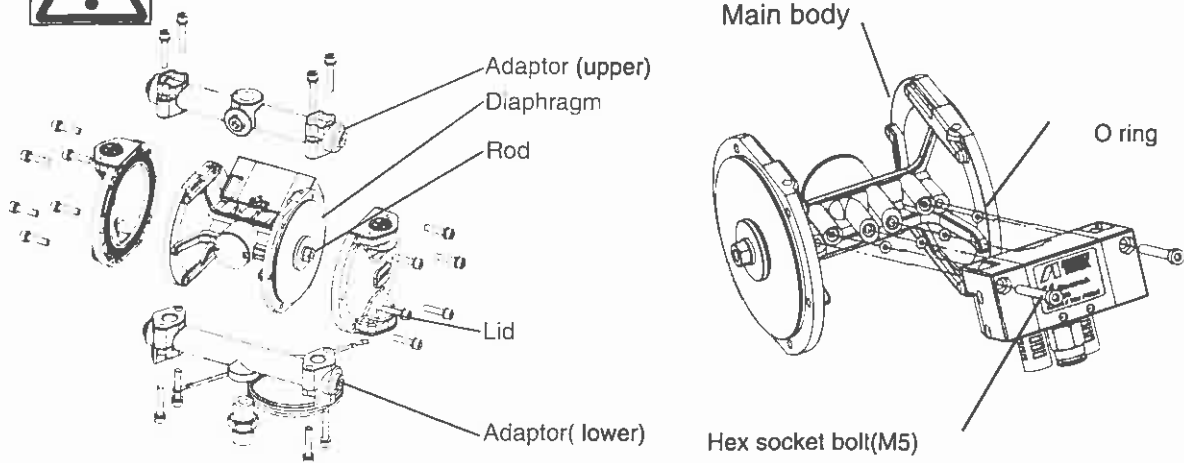
- a) while disassembling the pump, avoid damaging the O rings.
 - b) To disassemble and reassemble the adaptor - and the pump lids use a 5 mm Allen wrench and a 10 mm spanner.
 - c) Disassemble, in this order, the adaptor (lower) , the adaptor (upper) , the side lids , by unscrewing the socket head screw by means of the suitable spanners.
1. Refer to the pressure release process on page 17.
 2. Disconnect the pump from the compressed air supply.
 3. Disassemble the suction filter system from the pump.
 4. Remove the recirculation pipe.
 5. Disassemble the Paint regulator Paint reducer from the pump.
 6. Disassemble the main body from the support base by removing the four special screws.
 7. Remove the adaptor (lower), the adaptor (upper) and the lid by following this order.



PRECAUTIONS

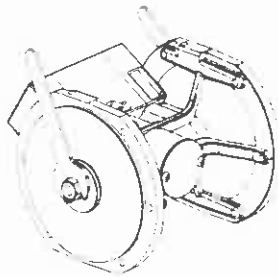


Some paint residues could remain inside the paint regulator: discharge them into the paint tank by overturning the pressure regulator itself.

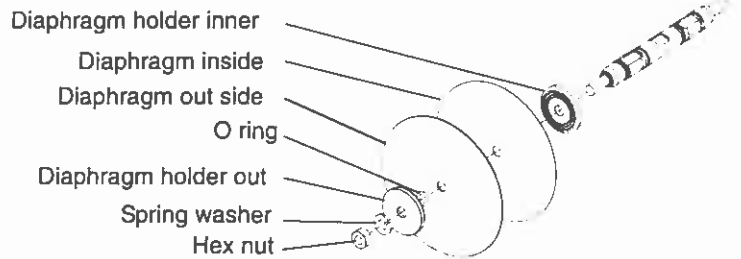


6.5 Diaphragm disassembly

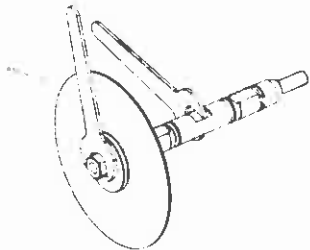
a) Remove the nut to use spanner (13mm, 2pcs).



b) Remove the spring washer, the diaphragm holder out, O ring, the diaphragm outside, the diaphragm inside and the diaphragm holder inner.

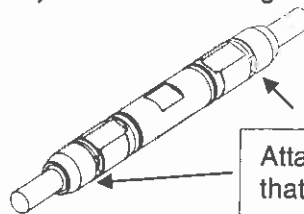


c) Disassemble the rod by pressing on the screw and by pulling from the opposite side-towards the outside.



d) Lock the rod center by means of a 12 mm spanner, loosen the nut on the side where the diaphragm has not been removed yet and disassemble as described in point b).

e) Remove the O rings and the Y packings.



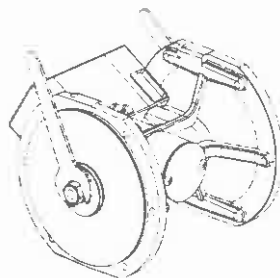
Attach the Y packing to the direction that they open outward.

6.6 Diaphragm reassembly

a) Reassemble in the opposite direction to disassembly.

b) Lubricate the Y packing, the O ring and the slots with some lithium grease.

c) Tightening pressure of nuts : 8.8 Nm.





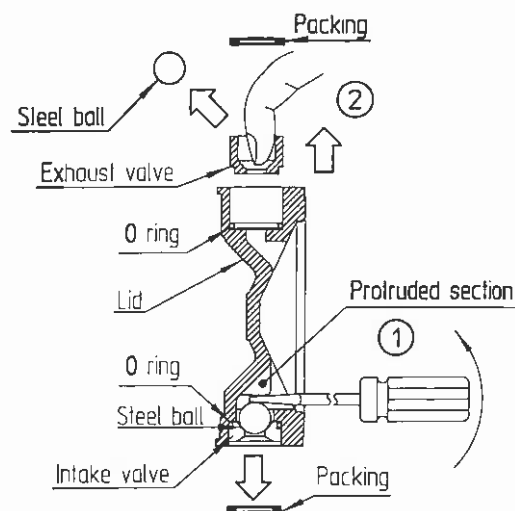
6.7 Intake and Exhaust valve disassembly

a) INTAKE VALVE

By means of ① push the steel ball by avoiding scoring the steel ball and its seat.

b) EXHAUST VALVE

Insert a finger into the valve and remove it.



6.8 Intake and Exhaust valve reassembly

a) INTAKE VALVE

- Assemble the O ring on the valve.
- Insert the ball
- Insert the valve into its seat.
- Assemble the packing

b) EXHAUST VALVE

- Assemble the O ring on the valve.
- Insert the valve into its seat.
- Insert the ball.
- Assemble the packing



PRECAUTIONS

When the lids are reassembled on the pump casing, do not reverse the delivery side with the suction one (trade mark is up-side).

6.9 Paint regulator disassembly and maintenance

☆ marked parts differ among Aluminum, Stainless steel, Anodized Aluminum (Fluid passage) each

No	Parts name	Qty
1	Joint	1
2	Valve spring	1
3	Tungsten carbide ball	1
4	O ring	1
5	Tungsten carbide seat	1
6	Packing	1
7	Jam nut	1
☆ 8	Main body	1
9	Joint	1
10	Diaphragm bolt	1
11	Diaphragm holder	1
12	Diaphragm	1
13	Diaphragm stopper	1
14	O ring	1
15	Spring washer	1
16	Hex. Nut	1
17	Hex socket bolt with washer	6
18	Adj. spring	1
19	Diaphragm cap	1
20	Spring holder	1
21	Hex. Nut	1
22	Handle set	1
23	Rising pipe	1
24	Pressure gauge	1





IMPORTANT

When you disassemble main body, rising pipe and pressure gauge, apply sealing agent to each threaded section to keep airtightness.
Whenever disassembling ball and seat of tungsten carbide, you have to be sure to confirm that there is no wear or damage. If there is any wear or damage, replace with new one.

Disassembling

1. Fully loosen handle set (22), and remove hex socket bolt (17), diaphragm cap (19), spring holder (20), adjusting spring (18) and diaphragm section.
2. Loosen jam nut (7), and remove joint (1), valve spring (2), ball (3), seat (5) and packing (6).
3. Fix hex. section of diaphragm bolt (10), and remove hex. nut (16), spring washer (15), diaphragm stopper (13), O ring (14), diaphragm (12) and diaphragm holder (11).
4. If O ring placed into joint is damaged or deformed, remove O ring from joint.

Assembling

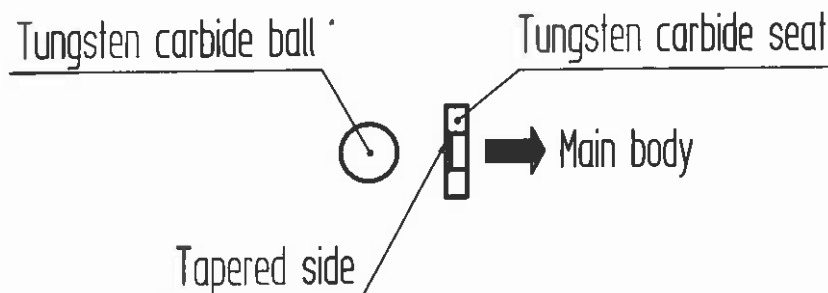
Check on each section if there are damage and foreign matter .

5. Fit diaphragm holder (11), diaphragm (12), O ring (14), diaphragm holder (13) and spring washer (15) into diaphragm bolt (10) and tighten hex. nut (16). Tightening torque of hex.nut 9.8N-m
6. Mount diaphragm section, adjusting spring (18), spring holder (20), and diaphragm cap (19) on main body (8), and evenly tighten bolts with hex. bolt (17) diagonally.
7. Fit O ring (4) to joint (1).
8. Fit packing (6) and tungsten carbide seat (5) to body (8).
9. Fit valve spring (2) and ball (3) to joint (1), and then fit joint (1) to body (8).
Tightening torque of joint 14.7N-m
10. Fix joint (1) with jam nut (7).



IMPORTANT

Fit tungsten carbide seat to main body so that tungsten carbide ball can be fitted on tapered side. Do not forget to fit packing.
Wrong assembling can cause wrong movement of pointer of pressure gauge due to leakage from seat failing performance.
Pay attention to tightening torque when fitting joint (1).
Too much tightening can damage main body.
Tightening torque of joint 14.7 N-m
When fitting joint, pay attention that tungsten carbide ball does not slip out of the seat.



6.10 Paint filter maintenance

If the pump is used correctly (that is it is washed carefully each time it is used), the paint filter needs no special maintenance, with the exception of cleaning and filter replacement.

If there are some solidified paints inside the filter itself or inside the paint passages, disassemble it completely, clean it carefully and reassemble it.

During this operation pay attention to:

- Place the filter casing vertically
- Fasten the filter casing on the adaptor (upper) by means of the filter valve.

Put the middle strength adhesive on the thread and replace the packing between the two parts. Make sure the valve inner part is clean and the ball can move.

7. TROUBLESHOOTING



7.1 Diaphragm pump

The pump does not work, it stops or does not restart.



1. Check the air sources

- a) The compressed air does not reach the pump air inlet
- b) The air pressure is too low to start the pump
- c) The ball valve (P16 A) is in discharging position
- d) The air regulator is closed



- a) Connect the compressed air.
- b) Supply a sufficient air pressure (minimum 2,0 bar).
- c) Turn the valve in the straight position.
- d) Open the air regulator.



2. Paint regulator is closed



Open the Paint regulator



3. The silencer is clogged



Replace the silencer.



4. The following parts are clogged because of solidified paint inside them?

- a) Fluid filter inside the paint filter
- b) Every pump fluid passage
- c) Every paint regulator fluid passage



- a) Clean and replace the fluid filter.
- b) Remove the clogging material.
- c) Remove the clogging material.



5. The pump does not run.



Disassemble the pump and check the following parts which will be replaced if damaged:

- a) Diaphragm outside
- b) Diaphragm inside
- c) Y packings.
- d) O ring.
- e) Rod
(any strange deformation, scratches or burrs).
- f) Self-lubricating bushings.
- g) Main casing inside diameters (\varnothing 15) damaged
(scratched or with burrs).



Replace the Air operating valve.



The pump works, but the fluid does not come out.



1. The following parts are unscrewed or damaged

- a) The pump suction connector with the suction pipe
- b) The suction connector
- c) The adaptor (lower)
- d) The dip tube suction pipe



- a) Check if some tightening are loosened and tighten them.
- b) Put some adhesive and tighten.
- c) Tighten.
- d) If the suction pipe is damaged (it sucks air), replace it.



2. The pressure regulator, the recirculation Ball valve and the gun are closed?



Open the pressure regulator and then the gun and the recirculation ball valve



3. The following parts are clogged with some solidified paint residues?

- a) The paint filter
- b) The suction hose filter
- c) The suction pipe
- d) All the pump fluid passages
- e) All the paint regulator fluid passages



- a) Clean and replace the filter.
- b) Clean and replace the filter.
- c) Remove the solidified part.
- d) Remove the solidified part.
- e) Remove the solidified part.



4.
a) The upper and lower balls are stuck?
b) The ball inside the paint filter is stuck?



- a) Clean the surfaces and release them.
- b) Clean the surface and release it.



5. The following parts are damaged or worn
a) The ball seats (exhaust and intake valves)
b) The balls
c) The O rings of each ball seat
d) The PTFE diaphragms



- a) Replace them.
- b) Replace them.
- c) Replace them.
- d) Replace them.



The outgoing paint contains some air.

1. The following parts are unscrewed or damaged?

- a) The pump joint (P30 No31) with the suction pump
- b) The joint (P30 No31)
- c) The adaptor (lower)
- d) The suction pipe (of the dip tube)

- a) Check the loosened tightening and tighten them.
- b) Put some adhesive and tighten.
- c) Tighten.
- d) If the dip tube is damaged (it sucks air), it must be replaced.

2. The nuts at the rod ends are loosened?

Tighten them.

3. The following parts are damaged?

- a) Diaphragms
- b) The O rings (P30 No23) between the PTFE diaphragm and the diaphragm seat

- a) Replace them.
- b) Replace them.

The fluid discharge decreases

1. The paint regulator is closed?

Open the paint regulator

2. To check the sources of air.

- a) The air flow is interrupted by the air pipe bending
- b) The air pressure is too low to start the pump
- c) The air regulator is closed

- a) Restore the air pipe.
- b) Supply a sufficient air pressure (minimum 2,0 bar).
- c) Open the air regulator.

3. The silencer (P30 No27) is clogged

Replace it.

4. The following parts are clogged with some solidified paint?

- a) The filter inside the paint filter
- b) The suction pipe filter (of the dip tube)
- c) The suction pipe (of the dip tube)
- d) All the pump material passages
- e) All the paint regulator material passages

- a) Clean and replace the filter.
- b) Clean and replace the filter.
- c) Remove the solidified part.
- d) Remove the solidified part.
- e) Remove the solidified part.

5. The following parts are damaged or worn?

- a) The ball seats
- b) The balls (P30 No9)
- c) The PTFE diaphragms

- a) Replace them.
- b) Replace them.
- c) Replace them.



7.2 Paint regulator

PROBLEMS	CAUSES	REMEDIS
The pointer of pressure gauge surpasses max. pressure.	<ol style="list-style-type: none">1. Not properly seated, or foreign matter2. Wear or damage on seat3. Wear and damage on ball4. Seat packing (P20 No6) damaged	<ol style="list-style-type: none">1. Tighten2. Tighten3. Tighten4. Replace diaphragm (P20 No12)5. Replace O ring (P20 No4)
Paint leaks outside	<ol style="list-style-type: none">1. Loose joint (P20 No1)2. Loose bolt with hex. hole (P20 No17)3. Loose nut (P20 No16)4. Diaphragm (P20 No12) damaged5. O ring (P20 No4) damaged	<ol style="list-style-type: none">1. Clean and assemble again.2. Replace tungsten carbide seat (P20 No5)3. Replace tungsten carbide ball (P20 No3)4. Replace packing (P20 No6)
Secondary pressure does not rise	<ol style="list-style-type: none">1. Primary pressure is too low2. Failure of pressure gauge (P20 No24)3. Paint hardened in rising pipe(P20 No23)	<ol style="list-style-type: none">1. Raise primary side pressure2. Replace pressure gauge (P20 No24)3. Clean paint out
Pressure is unstable	<ol style="list-style-type: none">1. Damage to valve spring (P20 No2)	<ol style="list-style-type: none">1. Replace valve spring (P20 No2)



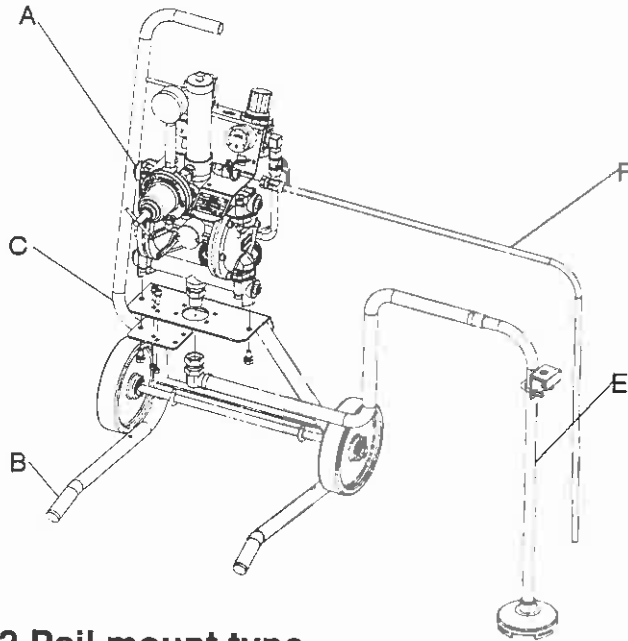
8. SECTIONS WITH SPARE PARTS LIST

No A – G parts (section 8.1~8.4) detail : Refer Page list

No	Page	Section No	Assemble name	No	Page	Section No	Assemble name
A	28	8.5	Pump assy	E	32	9.4	Suction hose
B	31	9.1	Stand	F	32	9.5	Suction pipe
C	31	9.2	Cart assy	F	32	9.7	Drain hose
D	31	9.3	Tank mount assy	G	33	9.8	Hopper assy

☆marked parts differ among Aluminum, Stainless steel, Anodized Aluminum (fluid passage) each

8.1 Stand type and Cart type



Stand type

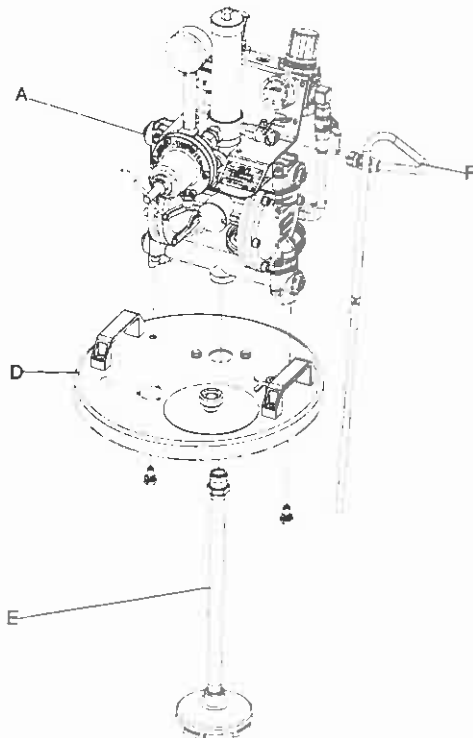
No	Parts name	Qty
☆ A	Pump assy	1
B	Stand	1
☆ E	Suction hose	1
☆ F	Drain hose	1

Cart type

No	Parts name	Qty
☆ A	Pump assy	1
B	Stand	1
C	Cart assy(※)	1
☆ E	Suction hose	1
☆ F	Drain hose	1

※) Assemble:P13 Section ④

8.2 Pail mount type



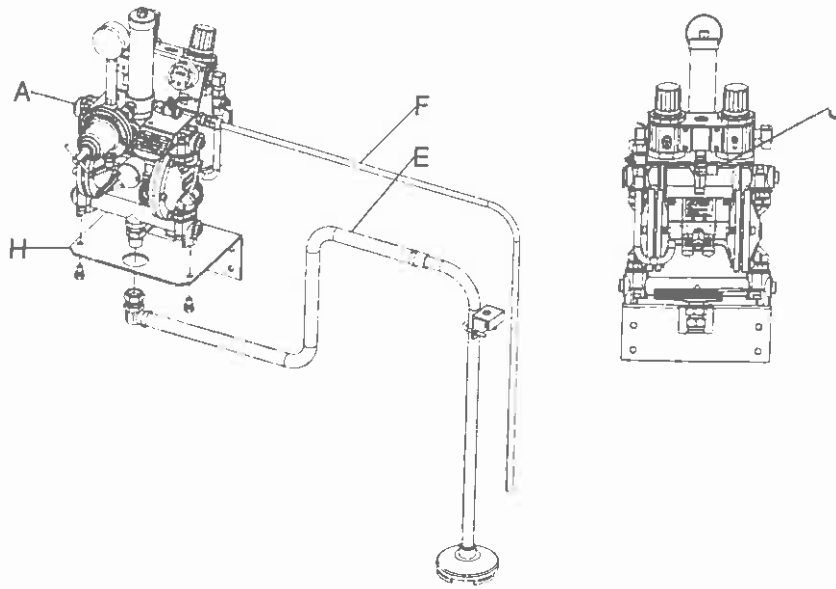
Pail mount type

No	Parts name	Qty
☆ A	Pump assy	1
D	Tank mount assy	1
☆ E	Suction pipe	1
☆ F	Drain hose	1



☆ marked parts differ among Aluminum, Stainless steel, Anodized Aluminum (fluid passage) each

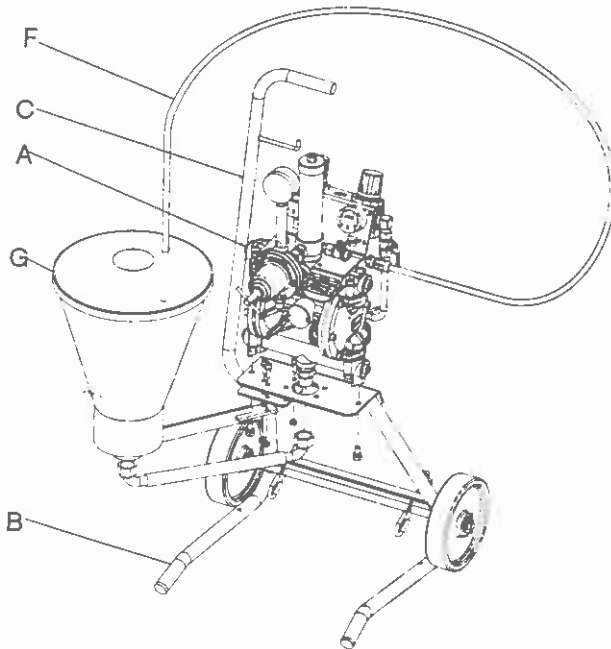
8.3 Wall mount type



Wall mount type

No	Parts name	Qty
☆ A	Pump assy	1
☆ E	Suction hose	1
☆ F	Drain hose	1
H	Stand	1
J	Elbow union	1

8.4 Hopper type



Cart type

No	Parts name	Qty
☆ A	Pump assy	1
B	Stand	1
C	Cart assy	1
F	Drain hose	1
☆ G	Hopper assy(※)	1

※)Assemble : P13 ⑥

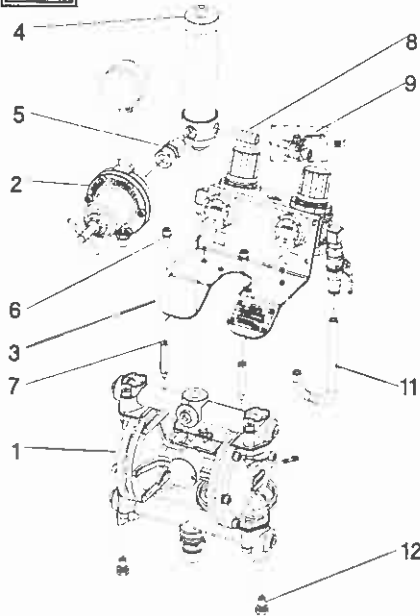


☆ marked parts differ among Aluminum, Stainless steel, Anodized Aluminum (fluid passage) each

★ marked parts differ among DDP-90 type , DDP-120 type each

8.5 Pump assy

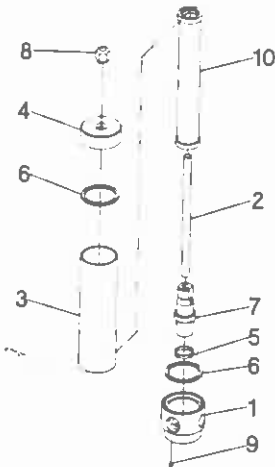
A



No	Parts name	Aluminum	Stainless	Anodized Aluminum
☆☆	1 Diaphragm pump	1	1	1
☆	2 Paint regulator	1	1	1
	3 Air control assy	1	1	1
	4 Paint filter	1	1	1
☆	5 Male-Female union	1	1	1
	6 Hex socket bolt With washer	2	2	2
	7 Panel stay	2	2	2
	8 Nipple	1	1	1
☆	9 Ball valve	1	1	1
	10 Joint	-	1	1
	11 Tube	1	1	1
	12 Washer bolt	2	2	2

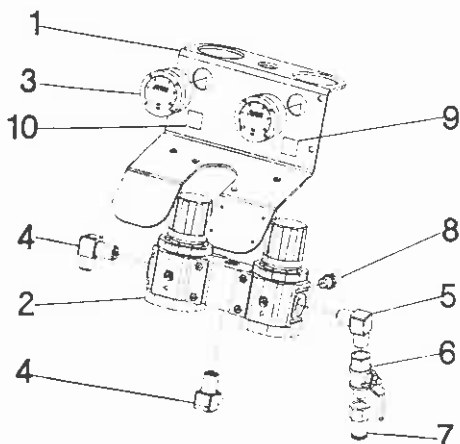
*1 Stainless steel model
Anodized aluminum model

8.6 Paint filter



No	Parts name	Qty
1	Body	1
2	Bolt	1
3	Cylinder	1
4	Cylinder cap	1
5	Packing	1
6	Packing	2
7	Joint	1
8	Bolt cap	1
9	Spring pin	1
10	Filter	1

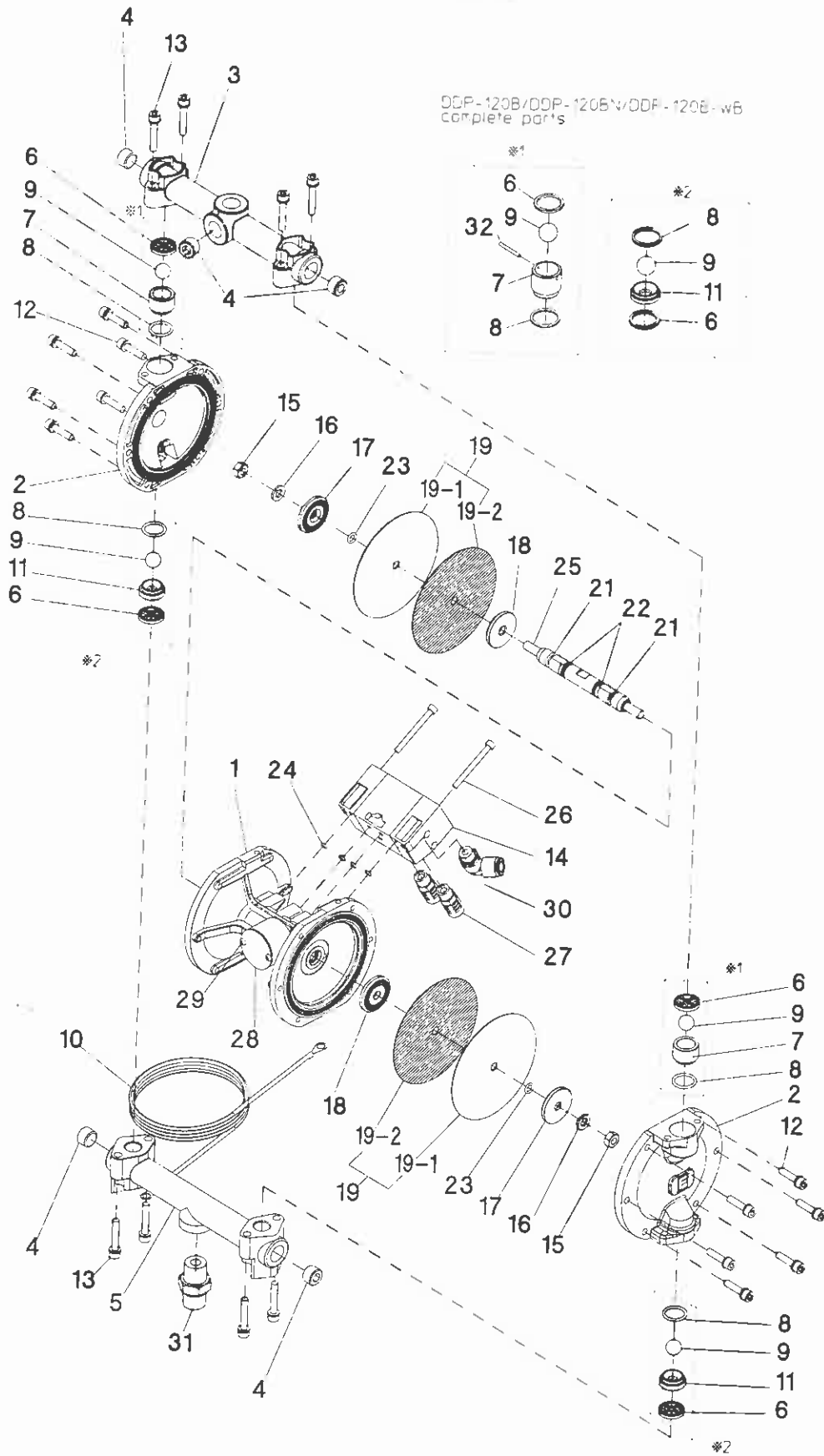
8.7 Air control assy



No	Parts name	Qty	Size
1	Panel	1	
2	Air regulator	1	
3	Pressure gauge	2	-
4	Elbow	2	R1/4xG1/4
5	Elbow	1	R1/4xR1/4
6	Ball valve	1	Rc1/4xR1/4
7	Female union	1	φ10xRc1/4
8	Safety valve	1	
9	Plate(pump)	1	-
10	Plate(gun)	1	-



8.8 Diaphragm pump (DDP-120/90 type)



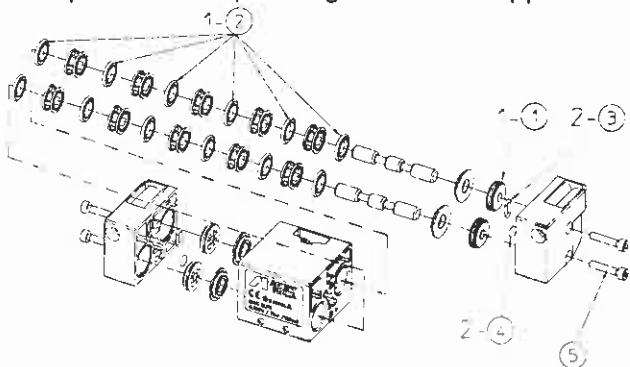


- ☆ marked parts differ among Aluminum, Stainless steel, Anodized Aluminum (fluid passage) each
- ★ marked parts differ among DDP-90 type , DDP-120 type each.

No.	Part name	DDP-90F	DDP-120B
		DDP-90FN	DDP-120BN
		DDP-90F-WB	DDP-120B-WB
☆☆	1 Main body	1	1
☆☆	2 Lid	2	2
☆	3 Adaptor (upper)	1	1
☆	4 Hex socket plug	4	4
☆	5 Adaptor (lower)	1	1
★	6 Packing	4	4
★	7 Exhaust valve	2	2
★	8 O ring	4	4
★	9 Steel ball	4	4
	10 Ground wire	1	1
★	11 Intake valve	2	2
	12 Hex socket bolt with washer	12	12
	13 Hex socket bolt with washer	8	8
	Air operating valve (spare parts set supplied with No.26)	1	1
	15 Hex. nut	2	2
	16 Spring washer	2	2
★	17 Diaphragm holder-out	2	2
★	18 Diaphragm holder-in	2	2
★	19 Diaphragm set	1	1
★	19-1 Diaphragm outside	2	2
★	19-2 Diaphragm inside	2	2
	21 Y packing	2	2
	22 O ring	2	2
	23 O ring	2	2
★	24 O ring	4	4
	25 Rod	1	1
	26 Hex socket bolt	2	2
	27 Muffler	2	2
	28 Blanking cover	1	1
	29 Tapping screw	2	2
	30 Elbow union	1	1
☆	31 Joint	1	1
★	32 Pin	-	2

Detailed drawing of air operating valve

Service parts of air operating valve are supplied as a set of spare parts shown as below.



No	Parts name	Qty
※1	① Piston set	4
	② Spool packing	12
※2	③ O ring	2
	④ O ring	2
	⑤ Hex socket bolt	4

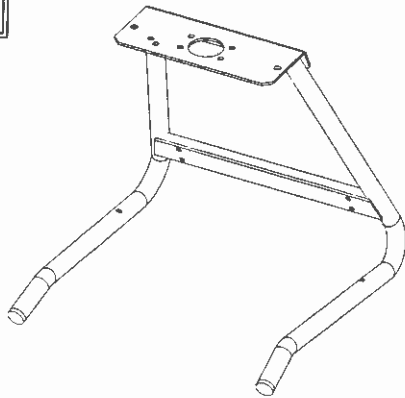
※Supplied as a set of spare parts

9. ACCESSORIES

☆ marked parts differ among Aluminum, Stainless steel, Anodized Aluminum (fluid passage) each

9.1 Stand

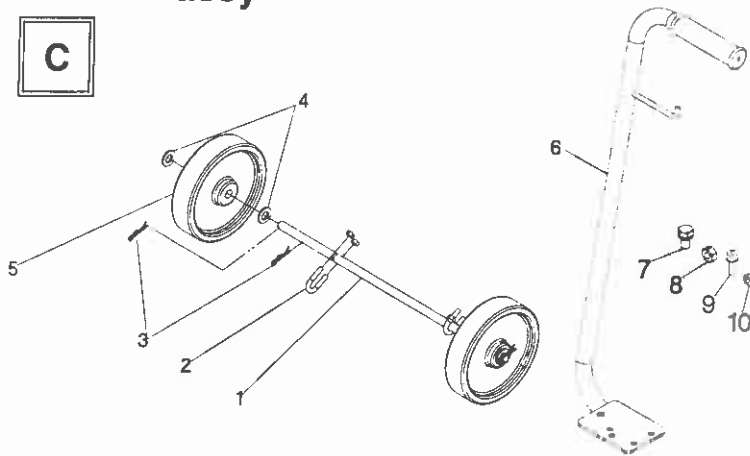
B



No	Parts name	Qty
1	Stand	1

9.2 Cart assy

C

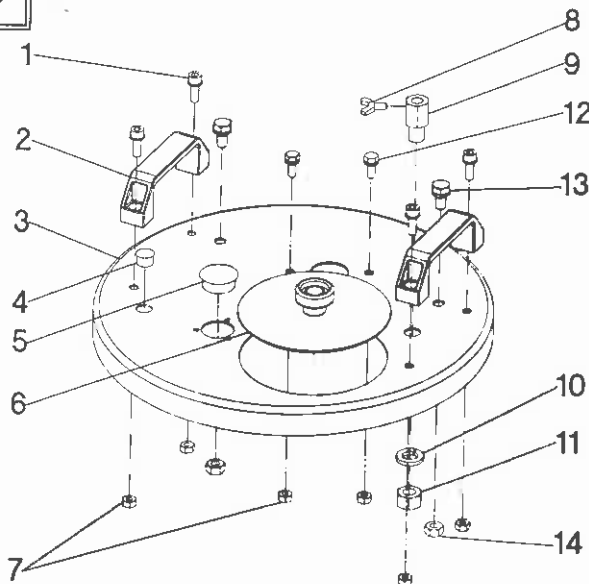


No	Parts name	Qty
1	Axle	1
2	U bolt	2
3	Snap pin	4
4	Washer	4
5	Solid tire	2
6	Handle	1
7	Hex bolt (M8)※	1
8	Hex nut (M8)※	1
9	Hex socket bolt with washer (M6)	1
10	Hex nut (M6)	1

※Unnecessary to this model.

9.3 Tank mount assy

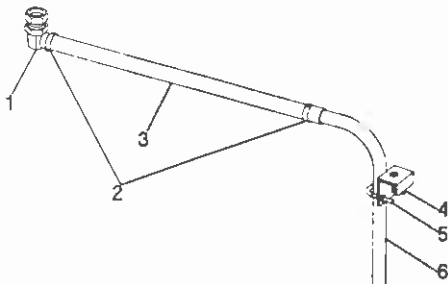
D



No	Parts name	Qty
1	Hex socket bolt with washer	4
2	Grab	2
3	Vessel lid	1
4	Dust proof cap	1
5	Duct proof cap	1
6	Supply lid	1
7	Hex nut	6
8	Wing bolt	1
9	Drain pipe guide	1
10	Spring washer	1
11	Hex nut	1
12	Washer bolt	2
13	Washer bolt	2
14	Hex nut	2

9.4 Suction hose

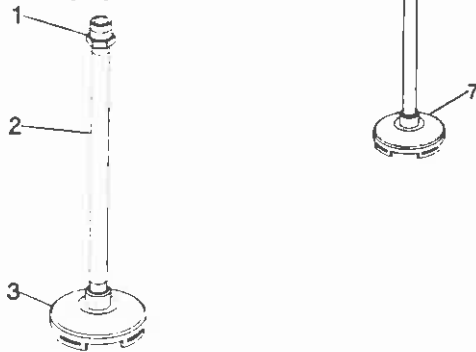
E



No	Parts name	Qty
☆ 1	Suction joint	1
2	Hose band	2
3	Suction hose	1
4	Suction pipe stay	1
5	U bolt	1
☆ 6	Suction pipe	1
7	Suction filter	1

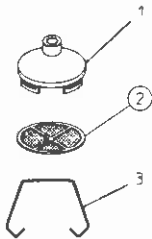
9.5 Suction pipe

E



No	Parts name	Qty
☆ 1	Bushing	1
☆ 2	Suction pipe	1
3	suction filter	1

9.6 Suction filter

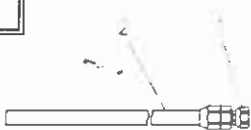


No	Parts name	Qty
1	Fluid filter body	1
2	Filter	1
3	retainer	1

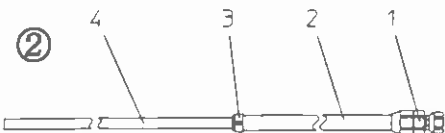
9.7 Drain hose

F

①



②



③



① Stand / cart / wall type Qty

No	Parts name	Qty
☆ 1	Urethane hose joint	1
2	Drain hose	1

② Tank mount type Qty

No	Parts name	Qty
☆ 1	Urethane hose joint	1
2	Drain hose	1
3	Hose band	1
☆ 4	Drain pipe	1

③ Hopper type Qty

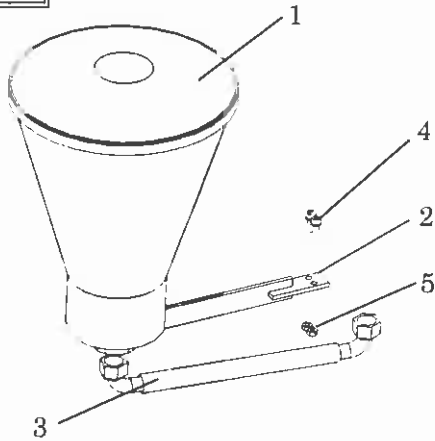
No	Parts name	Qty
1	Urethane hose joint	1
2	Hose joint	1
3	Hose band	1
4	Drain hose	1



☆ marked parts differ among Aluminum, Stainless steel, Anodized Aluminum (Wetted material) each

9.8 Hopper assy

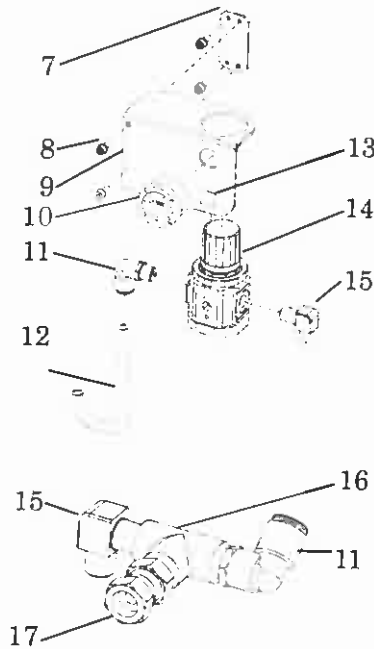
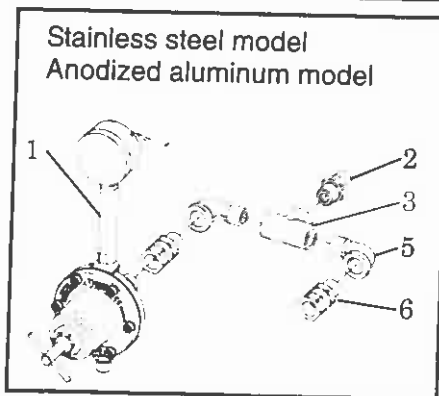
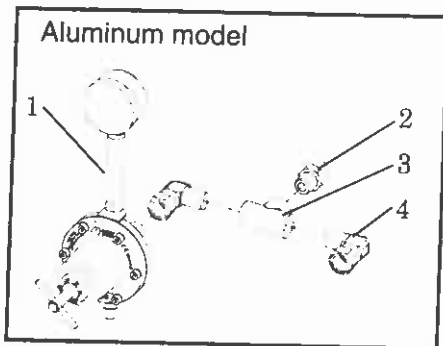
G



No	Parts name	Qty
☆ 1	Hopper	1
2	Hopper stay	1
☆ 3	Suction hose	1
4	Hex socket bolt with washer (M6)	2
5	Hex nut (M6)	2

10. OPTION

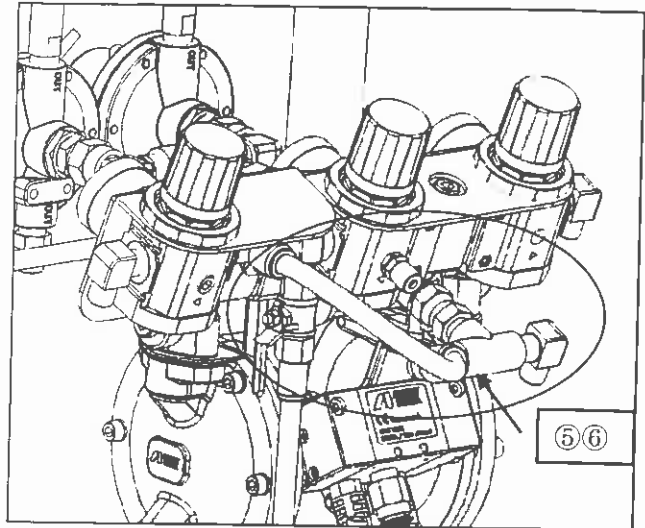
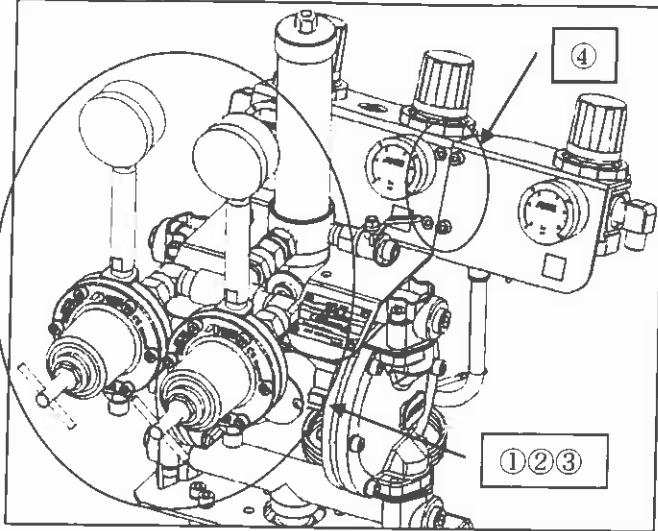
2-way regulator assy



No	Parts name	Qty
☆ 1	Paint regulator	1
☆ 2	Joint	1
☆ 3	Tee	1
4	Elbow union	2
5	Street elbow	2
6	Male-female union	2
7	Sub panel stay	1
8	Hex socket bolt with washer	4
9	Sub panel	1
10	Pressure gauge	1
11	Elbow union	2
12	Tube	1
13	Plate(gun)	1
14	Air regulator	1
15	Elbow	2
16	Tee	1
17	Male-female union	1

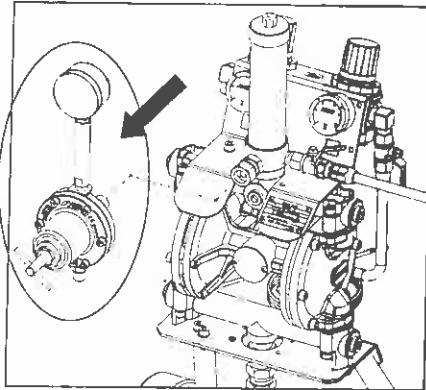
10. 2-WAY REGULATOR ASSY ASSEMBLING

- 1 Remove paint regulator.
- 2 Fit joint assy to Diaphragm pump.
- 3 Fit two paint regulators to joint assy.
- 4 Fit air regulator assy.

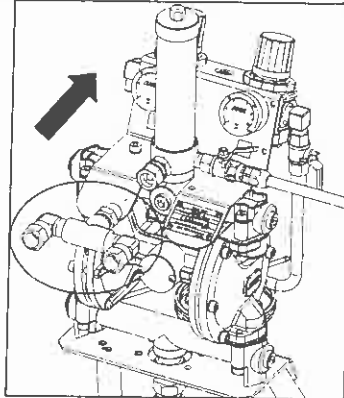


For paint

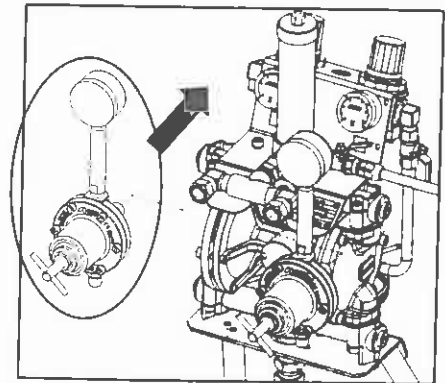
① Remove



② Fit

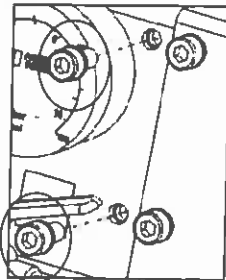


③ Fit

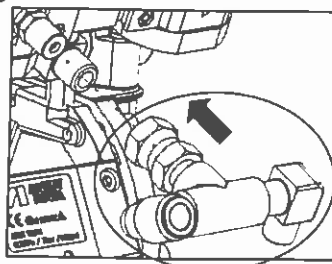


For air

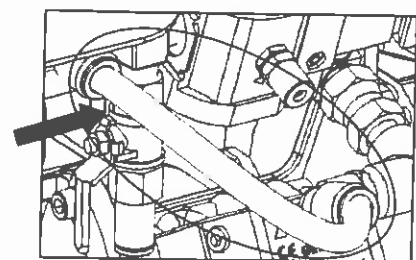
④ Fit



⑤ Fit



⑥ Fit



11. DIMENSION AND WEIGHT OF ALL MODELS

Stand type			Pail mount type		
Model Details	Dimensions (LxWxH) [mm]	Weight [kg]	Model Details	Dimensions (LxWxH) [mm]	Weight [kg]
DPS-1201C	409x358x806	10.5	DPS-1202C	357x312x798	9.6
DPS-1201CN		13.0	DPS-1202CN		12.1
DPS-1201C-WB		10.5	DPS-1202C-WB		9.6
DPS-901G	409x358x764	9.6	DPS-902G	357x312x756	8.7
DPS-901GN		11.7	DPS-902GN		10.8
DPS-901G-WB		9.6	DPS-902G-WB		8.7

Cart type			Wall mount type		
Model details	Dimensions (LxWxH) [mm]	Weight [kg]	Model details	Dimensions (LxWxH) [mm]	Weight [kg]
DPS-1203C	437x452x868	13.0	DPS-1204C	363x214x534	9.5
DPS-1203CN		15.5	DPS-1204CN		12.0
DPS-1203C-WB		13.0	DPS-1204C-WB		9.5
DPS-903G	437x452x868	12.1	DPS-904G	363x214x492	8.6
DPS-903GN		14.2	DPS-904GN		10.7
DPS-903G-WB		12.1	DPS-904G-WB		8.6

Cart type (Hopper)		
Model details	Dimensions (LxWxH) [mm]	Weight [kg]
DPS-12036C	526x528x868	13.0
DPS-12036CN		15.5
DPS-12036C-WB		13.0
DPS-9036G	554x573x868	12.1
DPS-9036GN		14.2
DPS-9036G-WB		12.1

12. DISMANTLING

11.1 Equipment storage

If the diaphragm pump is to be stored for a certain period, the following operations are recommended:
 Disconnect the equipment from the energy sources.
 Remove all-residues and deposits from the pump.
 Cover the equipment with a waterproof tarpaulin.

Dismantling

If for any reason the pump is to be dismantled, some important rules have to be followed to safeguard the environment.

All sheaths, flexible ducts and plastic or non metal components will have to be disposed of separately.

