

Instruction manual

Diaphragm Pump DDP-70B DDP-70BN

This instruction manual contains **IMPORTANT WARNINGS**, **CAUTIONS and INSTRUCTIONS**. Read and understand this instruction manual before use and retain for reference.

Important information - Safety precautions

- Equipment in this instruction manual is exclusively for coating purposes. Do not use for other purposes.
- Read and understand this instruction manual. The operator shall fully understand the requirements stated within the instruction manual including important warnings, cautions, operation and correct handling.
- Incorrect operation or mishanding can cause serious bodily, death, fire or explostion.

Safety precautions

- The safty precautions in this instruction manual describe the minimum necessary information. Be sure to Follow national and local regulations on fire prevention, electricity and safety as well as your own corporate regulations.
- Pay special attention to sections shown with the symbols below. The explanations of the symbols are as follows.

Warning and caution

MarkingThis symbol indicates that a potentially hazardous situation may respectively be an analysis of the serious injury or death if not followed.	
	This symbol indicates that a potentially hazardous situation may result in Minor or moderate injury or death if not followed.

Type of symbols

	This symbol indicates you must use caution. Explanation will be given near symbol.
\otimes	This symbol indicates warning may cause physical harm. Explanation will be given near symbol.
	This symbol indicates recommendations or requirements. Explanation will be given near symbol.

% We shall not be responsible for any injury or damage caused by disregard of warnings, cautions or instructions.

Notes

Important	This symbol indicates important information needed to achieve full performance and function of the equipment.
Hint !	This symbol indicates useful knowledge and advice.

Important information - safety precautions

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 Wear protective cover. During painting, be sure to wear protective cover such as glasses, mask or gloves to avoid serious injury caused by paints or solvents which might enter your eyes or you might inhale. Be careful about ventilation. Use it in well-ventilated place. Painting or cleaning in a narrow place with insufficient ventilation can cause organic solvent intoxication by sprayed mist of paint or volatile solvent. If you feel any abnormality during operation, consult a medical doctor immediately.
 Contact is forbidden. When paint leaks, never try to stop it by hand. In that case, close ball valve (for air) immediately, stop pump and open ball valve (for drain) and reduce paint pressure down to [0 MPa]. Be careful about bodily injury. Never point gun toward a person or animal. Never pull trigger of gun when human body or fingers come near tip of air cap of gun. Paint can enter human body directly through eyes, mouth or skin. It is very dangerous. If you feel any abnormality or receive any injury, consult a medical doctor immediately. Limit of fluid to be used. Do not use it for food products. As pump parts are not suitable for food products, foreign matter entering through parts can cause health problems.
 Never use near sparks or open fire. Especially the following will cause fire. Open flames such as cigarettes, pipes. Electric goods such as stoves, lamps or heaters. Be careful about ventilation. Use it in well-ventilated place. Painting or cleaning in a narrow place with insufficient ventilation can cause fire or explosion due to sprayed mist of paint or solvent which catches fire. Connect grounding. Securely ground pump, spray gun, workpieces and containers containing paint or solvent. Be sure to use lwata's designated urethane air hose with built-in ground wire to have continuous grounding between pump and spray gun or connect grounding separately. Insufficient grounding will cause explosion or fire if exposed to a spark of static electricity.
 Be careful about explosion. Be sure to use paint pump at less than max. fluid operating pressure. Usage at more than max. fluid operating pressure can cause explosion of pump resulting in great danger. Never bend hose with a radius of less than 50mm. Never put heavy things on it (in order not to damage the hose). If done, hose can explode causing great danger. Securely connect hose to avoid leak and looseness. If hose is disconnected during operation, hazardous hose movement and paint ejection will cause severe bodily injury. Never use cracked, damaged, bent, crushed or distorted hose. Such a hose can cause great danger during operation.
Important
 Never alter the equipment. When you replace parts, be sure to use our genuine parts. If not done, it can cause insufficient performance or failure. Never use the following halogenated hydrocarbon solvents: methyl chloride, dichloromethane, 1.2 dichloroethane, carbon tetrachloride, trichloroethylene, 1.1.1- trichloroethnae which can cause cracks or dissolution on gun body(aluminum) by chemical reactions. (Be sure that all fluids and solvents are compatible with gun parts. We are ready to supply a material list used in the gun on request. Please use stainless specification (DDP-70BN) for the liquid(except for PH6~8).
 Install or keep pump free of rain or splashes. If not done, it can cause pump failure. Install pump free of paint mist. Attached paint mist etc., can cause pump failure. Use clean air filtered through dryer and filter (finer than 50 microns). If not done, it can cause pump failure. You can use pump without lubricating oil. If you lubricate oil by using a lubricator, use the following oil: kind of lubricating oil: turbine oil ISO VG32 or VG46 Use of machine oil or spindle oil can cause pump failure. Do not use pump for oilless use which was once used with lubricating oil.
If pump was once lubricated, the pump can cause failure unless it is lubricated again.

•Check to make sure the products are as ordered, and they have not been distorted or damaged during transportation.



· Check if accessories are included.

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• If there is some damage or something is lost during transportation, do not use the product, and contact the shop which sold it to you.

(this instruction manual)

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■3. Specifications

3-1 Specifications

Model	DDP-70B	DDP-70BN	
Туре	General purpose SUS304		
Dimensions (L x W x H) mm	173 x ⁻	113 x 143	
Mass kg	1.9	3.2	
Air Inlet	G	1/4 B	
Fluid Outlet	R	c 1/4	
Fluid Inlet	R	c 1/4	
Operating air pressure MPa	0.15 ~ 0.70		
Max.operating fluid pressure MPa	0.70		
Fluid output per cycle mL/cycle		20	
Max. fluid output L/min	*	× 6	
Max.No. of cycles cycle/min 300		300	
Fluid Temperature [°] C	5 ~ 40		

X Air pressure 0.70MPa, Fluid output opening

■3. Specifications

3-2 Performance curve



■4. Name of each section



5-1. Installation, connection and inspection

🗥 WARNING

- · Securely connect hose to avoid leaks and looseness. If hose is disconnected during operation, hazardous hose movement and paint ejection will cause severe bodily injury.
- · Securely ground pump, spray gun, workpiece and containers containing paint or solvent. Insufficient grounding will cause explosion or fire by spark of static electricity.

Important

- Install or keep pump free of rain or splashes. If not done, it can cause pump failure.
- · Install pump free of paint mist. Attached paint mist etc., can cause pump failure.
- Use clean air filtered through dryer and filter (finer than 50 microns). If not done, it can cause pump failure.
- · Install pump free of paint mist.
- Attached paint mist etc., can cause pump failure.

(1) Setting for pump



Please confirm two holes (M6) are created in Job 1 the lower adaptor of pump.

Job 2 Please lock two bolts (M6) certainly.

Connect suction tube on the fluid inlet on the diaphragm pump. Ensure attaching suction filter on the suction tube.

5-2Check operation

Important

- Do not idle pump operation. Idle operation can cause pump failure. -
- Flush fluid passages of this unit completely with cleaning fluid (3~4 l). When first use or not-use for a long poriud.



Please open the ball valve (for air) to operate pump.

Hint !

- Do not use the following paints which can causepump failure.
- contains big solid matter,
 contains solid matter of sharp shape,
- has corrosivenss (except for PH6~8).

	Important				
Regarding ③ in the below chart, consult our distributor or the shop which sold it to you. If it is not done properly, it can cause poor performance.					
•R	efer to the chart below to do the	e inspection and maintenance.			
No	Time	Inspection and maintenance			
1	After every job ends	Inspect and clean filter.			
2	Every 50~100 hours	Clean pump.			
3 Every 1000 hours Overhaul the whole pump.		Overhaul the whole pump.			
	(about one year)	💥 Inspect and replace consumable parts.			
	-7 Drahlance and Damadian				

■7. Problems and Remedies

Important

Ask the distributor or the shop which sold it to you about \cancel{a} marked items. If they are not done properly, it can cause poor performance.

No	Problems	Causes	Remedies
1	Pump does	$(\widehat{1})$ exhaust hole air operating valve is clogged.	(1) Inspect and clean exhaust hole of air operating valve.
	not operate.	(refer to page 25).	
		2 Air pressure is insufficient.	(2) Increase air pressure.
		③ Ball valve is closing (air)	(3) Open the ball vavle (air)
		(4) Diaphragm is damaged.	④ Disassemble, inspect, replace.☆
		(5) Ball of intake valve or exhaust valve is stuck.	5 Disassemble, inspect, clean.
2	Pump operation	 Air pressure is insufficient. 	① Increase air pressure.
	ls unstable.	(2) Filter of intake hose set are clogged.	(2) Clean filter. (refer to page 34).
	Output is small.	③ Air is stored in pump.	(3) Open drain ball valve and release air.
		(4) Exhaust hole air operating valve is clogged.	(4) Inspect and clean exhaust hole of air operating valve.
		(refer to page 25).	
		5 Pump freezes.	5 Supply air dehumidified by dryer.
		6 Intake and exhaust valves are not properly seated.	⑥ Disassemble, inspect, replace.☆
		${f O}$ Damage and wear of packings of rod and oilless bearing.	⑦ Disassemble, inspect, replace.☆
		(8) Damage on diaphragm.	(8) Disassemble, inspect, or replace.☆
		(9) Inside of pump is clogged.	(9) Disassemble, inpsect, replace.☆
3	Paint contains	① Intake hose set is loose.	1 Tighten and secure connection.
	air.	(2) Hole in intake hose.	(2) Replace hose.
		(3) Lower adaptor is loose.	③ Tighten.
		(4) Nut to hold diaphragm is loose or O ring is damaged.	④ Disassemble, inpsect, tighten or replace.☆
		5 Diaphragm is damaged.	(5) Disassemble, inpsect, replace.☆
		6 Seat packing is distorted or damaged.	⑥ Disassemble, inpsect, replace.☆
(4)	Paint leaks	(1) Connection is loose.	(Î) Assemble again.☆
		2 Seat packing is distorted or damaged.	② Disassemble, inpsect, replace.☆
(5)	Air leaks	(1) Air operating valve are not fitted properly.	Tighten and fit correctly.
		2 Lid is not fitted properly.	(2) Assemble again.☆
		(3) Diaphragm is not fitted well.	(3) Assemble again.☆
6	Pump operates	(1) Filter of Intake hose set are clogged.	(1) Clean filter.
	but paint does not come out.	 Inside of intake hose set are clogged. 	② Disassemble, inpsect, clean or replace.*

8-1. Pump

Important

When fitting parts, tighten bolts with hex.hole evenly and diagonally by turns.
Pay attention to up-down direction of main body and fitting direction of adaptor (upper and lower sets).



8-2. Air operating valve

Important

- As small holes on back of air operating valve are exhaust holes, do not allow paint or solvent to adhere.

If it done, it can cause failure of pump.

- Always fully close or fully open the circulation valve. Opening the valve halfway can cause seat wear, fluid leakage and lack of fluid pressure.





- Job 1 Remove 4 bolts with hex.hole(M5) and then air operating valve and O ring.
- Job 2 Remove 4 bolts with hex.hole(M4) on side of air operating valve and remove blocks on both sides.

■8. Disassembly and Assembly



8-4 Rod section

Important

- Do not damage, bend rod, or attach dirt or foreign matter to it. If done, it can damage the rod.
- When fitting Y packing or O ring to rod, be sure to grease and careful about fitting direction. Do not damage Y packing or O ring. Wrong fitting can fail pump.
- When placing Y packing on the rod, make sure that open side of the packing faces outside.

Open side faces outside Ca

8-5 Intake valve, exhaust valve

Important

- Check to ensure that placing seat before placing seat. If not, it may cause paint leakage.
- Be sere assembling aspect of seat and lid.



Job 1 Remove packing, seat and steel ball.

Job 2 Replace worn or damaged parts

Caution when assembling

• Pay attention to direction of seating section and exhaust direction of adaptor (upper).

·Securely tighten bolts with hex. hole evenly and diagonally.

Tightening torque is 6N·m {60kgf·cm}.

Pay attention to up-down direction of main body and lid.

■9. Parts list

9-1 Diaphragm pump DDP-70B · 70BN



• $rac{1}{4}$ marked parts are consumable parts

	No.	Parts name	Qty	
	1	Adaptor	2	×
	2	Plug with hex.hole	2	×
	3	Lid	2	×
☆	4	Seat	4	
☆	5	Packing	8	
☆	6	Steel ball	4	
	7	Main body	1	
	8	Diaphragm holder-out	2	
	9	Diaphragm holder-in	2	
☆	10	Diaphragm set	1	
☆	10-1	Diaphragm-in	2	
☆	10-2	Diaphragm-out	2	
☆	12	O ring	2	
	13	Rod	1	
	14	Spring washer	2	
	15	Hex. Nut	2	

	No.	Parts name	Qty
☆	16	PSD packing	1
☆	17	Y packing	2
	18	Sub plate	1
	19	Gasket	1
☆	20	Air operating valve	1
	20-1	Air operating valve	1
	20-2	Packing	1
	20-3	Bolt with hex. Hole	2
	23	Muffler	2
☆	24	Ball valve	1
	25	Bolt with washer and hex. hole	8
	26	Bolt with washer and hex. hole	8
	27	Nameplate	1

9-2 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	Qťy	Notice
1	Spare parts set	1set	1-1 Spool packing x12pcs 1-2 Spool x2pcs 1-3Packing spacer x4pcs 1-4 Piston set x4pcs
2	O ring	1set	S-4 x4pcs
3	Spacer set	1set	10pcs
4	Cap button set	1set	4-1 Cap(1)x1pc 4-2 Cap(2)x1pc 4-3 Button setx2pcs
5	Hex socket head bolt	4	M4 x20L



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