



Model Number: DP6391

High-pressure **Pneumatic Airless** paint sprayer

## Instruction Manual

(Please read carefully before using)



<http://www.airlesspaintsprayer-pump.com>



 **Safety Warning**

- This equipment must only be operated by trained personnel.
- Every equipment has a specific use. Please consult the agent of Dino-power if you have any questions.
- Never attempt to modify the equipment, nor exceed the maximum working pressure of the system.
- Check the equipment everyday. Maintain or replace old or broken parts immediately.
- Read the warnings provided by the manufacturers of coatings and solvents. Make sure that the used coatings and solvents are applicable to the contact parts of the equipment.
- Do not drag equipment with the high-pressure hose, nor put the high-pressure hose in places of heavy traffic, on sharp edges, on moving objects and on hot surfaces.
- Follow all relevant laws and regulations of local governments and the country regarding fire prevention, electricity usage and safety.
- Do not point the spray gun at anybody or any part of the body. Do not put your hand or finger on the spray gun, nor block the crack or leak point with your hand, body, glove, or duster cloth.
- The injury caused by high-pressure coating sprayed onto the skin may appear just as a cut, but it is actually a severe injury. The victim should go to see a professional doctor immediately.
- Before operating the equipment, please tighten all connectors and make sure that the trigger safety of spray gun can be operated safely.
- When the spraying is stopped, please lock the trigger of spray gun.
- Check the high-pressure hose and connecting parts everyday. Replace broken parts immediately. Do not repair broken high-pressure connecting parts, in which case the whole pressure hose must be replaced.
- The intake hose of air-driven motor must be tied up and firmly connected.
- While the pressure is not released and the intake switch is opened, do not loosen the connecting parts among coating pump, high-pressure hose and spray gun.

The equipment must be well grounded while being used. If there are electrostatic sparks or you receive an electric shock, please stop spraying immediately until you find out the cause and eliminate the trouble.

- Keep the circulation of fresh air to avoid the accumulation of the flammable gases in solvents and coatings during spraying operations.
- In the spraying area, naked fire is forbidden. Do not smoke in the spraying area.
- In the spraying area, do not turn on or off any light during spraying operations.
- Do not start the gasoline engine in the spraying area.

- Know the special harm of the coating you are using.
- Always wear protective glasses, gloves, clothing and mask recommended by the manufacturers of coatings and solvents.
- Actions of thrashing, knocking or throwing the cylinder of the coating machine are forbidden. If the cylinder is found broken, it should be replaced with a new one. It is also recommended that the cylinder should be replaced with a new one after being used for 5000 hours (or 3 years) to ensure the safety.
- The bolts connecting the cylinder, the upper cover and the lower cover of the cylinder must be tightened as per the torque defined in the following table. If abnormalities such as distortion and sliding are found on bolts, they should be replaced with new ones as per the performance ratings and specifications.

Between real product and the corresponding description in the instruction manual. Please take actual product as standard. All modifications due to error correction or product improvement will be explained by Dino-Power Industry & Trade Co., Ltd. at any time without notice. The revised parts will be included in the second edition of the instruction manual.

# Dino-Power Airless Spraying Machine

## 1 General

### 1.1 Application

Model DP6391 high-pressure airless spraying machines are the 3<sup>rd</sup> generation spraying equipments developed by our factory. They are applicable to industrial usage such as steel structures, ships, automobiles, railway vehicles, geology, Aeronautics and Astronautics and so on, for the spraying of new coatings or thick-film heavy-duty anti-corrosive coatings which are difficult to operate.

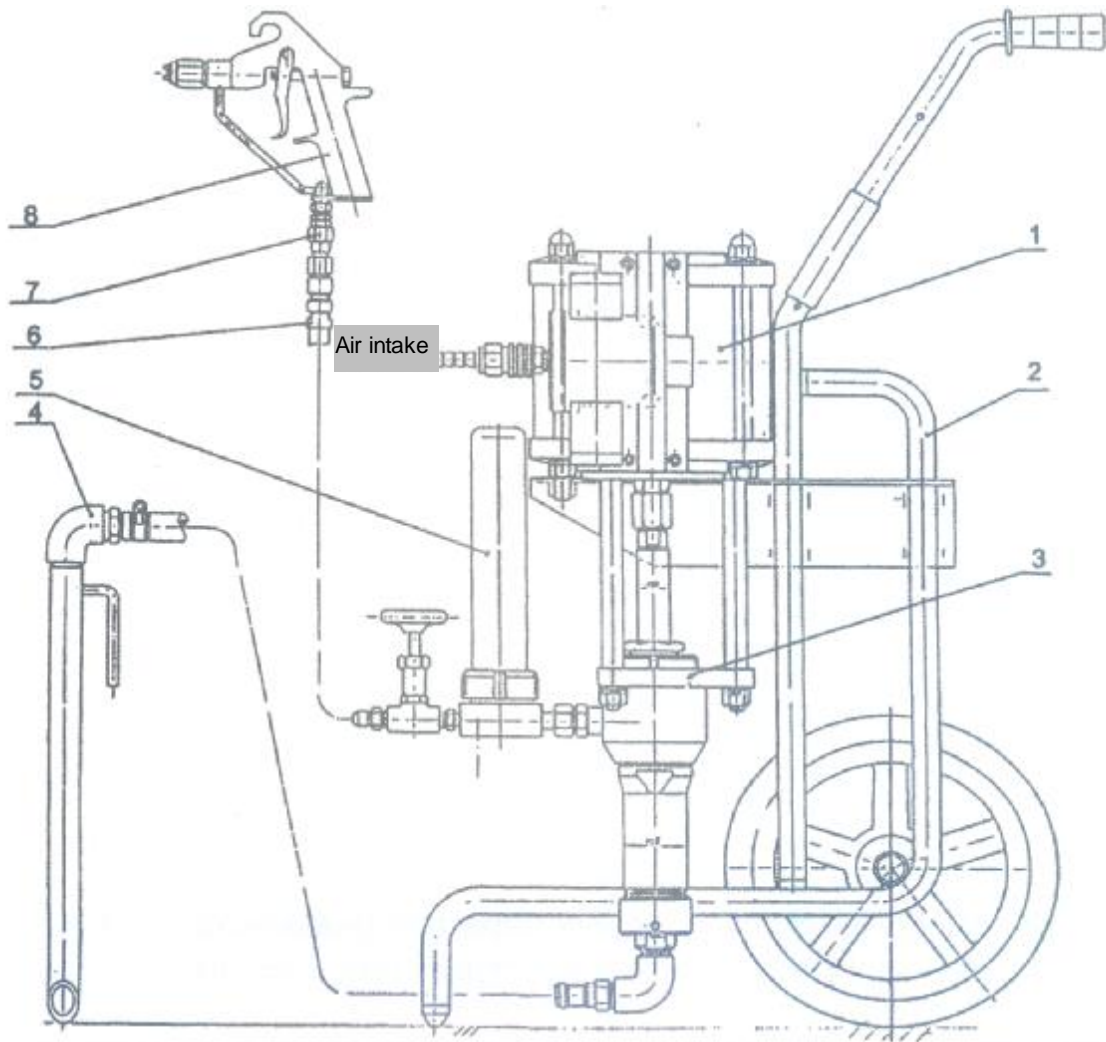
### 1.2 Product Characteristics

Model DP6391 high-pressure airless sprayers adopt advanced technology and are unique. They are almost free of “Dead Point” fault during reversion and shutdown caused by the “Frosting” resulted from the “Adiabatic Expansion” of exhaust parts. The new silencing device greatly reduces exhaust noise. The air-distributing reversing device is unique and moves quickly and reliably, with small amount of compressed air and low energy consumption. Compared with their foreign counterparts with the same main parameters, the weight of the former is only one third of the latter and the volume is only one quarter of the latter. Moreover, they have high operational reliabilities, which are advantageous to ensure the coating period and enhance and ensure the coating quality.

## 2 Main Technical Parameters

Model	Pressure ratio	Coating delivery capacity (L/min)	Air intake pressure (MPa)	Air consumption (L/Min)	GW (Kg)
DP6391A	30: 1	8.40	0.3~0.6	450-1200	75.00
DP6391A	45: 1	7.00	0.3~0.6	450-1200	75.00
DP6391B	38: 1	13.50	0.3~0.6	650-1400	87.00
DP6391B	46: 1	10.40	0.3~0.6	650-1400	84.00
DP6391B	69: 1	7.00	0.3~0.6	650-1400	84.00
DP6391C	45: 1	13.50	0.3~0.6	900-1650	99.00
DP6391C	60: 1	11.00	0.3~0.6	900-1650	96.00
DP6391C	76: 1	8.00	0.3~0.6	900-1650	93.00

### 3 outline drawing of Dino-Power Airless Sprayer (See Figure)



The main working part of the sprayer is the double-acting air-driven high pressure painting pump. The reversing mechanism is the pilot all pneumatic control air-distributing reversing device with special form. When the compressed air flows into the cylinder, the piston moves to the upper part or lower part of the cylinder, forcing the upper or lower pilot valve to operate. The control air drives the air-distributing reversing device to act in an instant, therefore realizing stable and continuous reciprocating movement of the piston of the air-driven motor. Thanks to the rigid connection between the piston and the plunger of the coating hydraulic pump, and the greater area of the piston than that of the plunger, the sucked coating is pressurized. The pressurized coating is conveyed to the airless spray gun via the high-pressure hose, and finally released of the hydraulic pressure and atomized at the airless nozzle, and then sprayed to the surface of the target to form a coating layer.

### 4 Operating instruction

4.1 Before using, first check if all bolts, nuts, pipe connectors, and the connecting nuts and hose clamps of the suction system have been tightened. Learn carefully about the opening and closing direction of gate valve on each air circuit, and the rotating directions of pressure regulating valve and discharge valve (for the pressure regulating valve, turn the hand wheel clockwise to open and anti-clockwise to close).The

capacity of the equipped air compressor must be large enough. The length of the used air pipe must not exceed 5m.

4.2 Plug both the coating suction pipe and the discharge valve into the tank containing diluted coating, put through the air source, and adjust the air intake pressure according to the type of coating. To ensure safe use, the maximum air intake pressure must not exceed 0.6MPa, and is better to be kept at a value as low as possible as long as the atomization of the coating is good.

4.3 Open the discharge valve (Do not open the spray gun), then the air-driven hydraulic booster pump of the sprayer will move to-and-fro in a continuous and stable way. After the coating hydraulic system of the sprayer has circulated in idle condition for 2 to 3 minutes, close the bleed valve. If the air-driven hydraulic pump can work in balance peacefully after the pressure of the coating hydraulic system has reached balance, the spraying operation can be started.

4.4 During the spraying, the spray gun should be pointed vertically or almost vertically at the workpiece being coated; and the moving direction should be parallel to the surface being coated. The speed should be even to avoid sagging.

4.5 The coating should be kept clean. For the unclean coating, it is not allowed to be used if not being filtered first with a strainer of 40 to 100 meshes according to the dimension and viscosity of the coating particle. If the coating is new, clean and without impurities such as hornskin and sand grain, it does not need to be filtered after having been evenly mixed. For the coating apt to deposit, it should be mixed regularly and continuously during the spraying process.

4.6 During the spraying process, the trigger safety of spray gun should be locked in time if the nozzle is being cleaned or replaced or the spraying is stopped. Under no circumstances should the spray gun be pointed at the operator or others, in case the trigger is accidentally pressed causing the high-pressure coating to spray and injure someone. If the spray gun can still be opened after the trigger safety has been locked, the small nut at the end of the drawbar of the gun's valve plug should be adjusted. If the nozzle is blocked, it should be immersed and cleaned with solvent, or cleaned carefully with a brush. Do not poke it with hard things as this may damaging the nozzle.

4.7 If a airless tip is used during spraying process and the nozzle is slightly blocked, just turn the handle 180 degrees and trigger the spray gun, the dirt in the nozzle will be blown off by the hydraulic pressure of the high-pressure coating itself. If the nozzle is completely blocked, the connecting nut of the nozzle has to be slightly loosened. The handle can only be turned after the coating has been depressurized. If the handle is turned by force while the coating is still pressurized, the handle is easily damaged. While using standard nozzle or airless tip, a sealing ring has to be placed at the joint of the nozzle and the spray gun.

4.8 If the sprayer has worked continuously for a long time and a severe "frosting" phenomenon has appeared inside and outside the silencer, a water-separating air filter and an air dryer can be installed before the compressed air enters the sprayer, and the silencer can be dismantled. Another way is to replace the engine oil in the oil cup of oil atomizer with "Anti-icing Fluid for Radiator". The water-separating air filter and air dryer will be purchased or manufactured by the customer according to actual needs. The "Anti-icing Fluid for Radiator" is available nationwide.

4.9 If the spraying operation is finished or will not be used for a long periods of time, the suction pipe should be pulled out of the coating tank in time. The residual coating in the coating pump, the suction pipe, the high-pressure hose and the spray gun should be discharged by running the sprayer idly. Then the whole coating hydraulic loop including the coating pump, the suction pipe, the discharge valve, the high-pressure hose, the airless spray gun and the nozzle should be cleaned by running the sprayer idly with dilution agent or solvent. During the cleaning, the opening of air intake ball valve should be small, the reciprocal time of the sprayer is better to be controlled within 30 to 40 times per minute.

## 5 Common Faults and Trouble-shooting Method

Generally, the faults of airless sprayer can be divided into two types: faults in air system and faults in coating system. If a fault occurs, it's prohibited to dismantle blindly. The fault should be analyzed and eliminated step by step as shown in the following table. Before that, the pressure switch should be dismantled and the air intake ball valve should be closed.

SN	Phenomenon	Reason	Trouble-shooting Method
1	Not enough power for reversing, small flow during operation.	Air intake amount not enough.	<ol style="list-style-type: none"> <li>1) Check if the pressure of air source meets the requirement? (0.6~0.8MPa)</li> <li>2) Do the specifications of air compressor and the drift diameter of air source pipeline meet the requirements? (the delivery capacity should not be less than 1.2 m<sup>3</sup>/min, the drift diameter of the pipeline should not be less than 20mm)</li> <li>3) Are the connectors on each pipeline tightened?</li> <li>4) Has the air intake switch reached the maximum opening?</li> </ol>
2	The sprayer is whirring; the coating pressure is not enough; the atomization is not good.	<ol style="list-style-type: none"> <li>1) Severe abrasion between slide boards; the contact surfaces are not parallel; the sealing is not good; air partially escapes; air intake amount of the cylinder decreases; not enough spraying pressure due to the reduction of piston thrust.</li> <li>2) Deformation of slide block after having been used for a long term. The air flow can not press one slide block onto another, causing leakage.</li> <li>3) The O-shape rubber sealing ring in the cylinder is abraded and raised, resulting in an insufficient air pressure.</li> <li>4) The air intake cartridge is blocked by foreign objects. The air path is not smooth, resulting in insufficient air intake</li> </ol>	<ol style="list-style-type: none"> <li>1) Dismantle the air-distributing block and the slide block and put them on a piece of metallographic abrasive paper, which has been spread out on a flat plate. Push and grind them smoothly with both hands and then clean them. The flatness can be checked with red lead powder. The even distribution of red squeegee oil on both contact surfaces means that they are flat. If not, grind them again with the above-said method. After being grinded to flat, the slide board and the intra-cavity of the slide block must be oiled with 20# engine oil, and assembled as per their original forms.</li> <li>2) Dismantle the air-distributing block and the slide block, and grind them with a piece of abrasive paper until they are working smoothly with the reversing piston. Oil the cavity of the slide block with clean 20# engine oil.</li> <li>3) Unscrew all the bolts connecting the upper cover and the lower cover to the cylinder. Open the cylinder, replace the damaged O-shape sealing ring, and oil the inwall of the cylinder with clean 20# engine oil.</li> <li>4) Clean or replace the air intake cartridge.</li> </ol>
3	The sprayer stops after starting. A air stream sprays continuously from upper or lower observation plug hole.	Foreign object exists on the outer edge of the O-shape sealing ring on the reversing piston; blowby happens between the upper and the lower cavity.	Dismantle the air-distributing board and the upper cover of the reversing piston, take out the reversing piston and replace the broken O-shape sealing ring. Purge and clean the reversing piston hole with compressed air. Oil the inwall and the O-shape sealing ring with clean 20# engine oil and assemble them as per their original forms
4	The sprayer stops after starting. A air stream sprays continuously from the silencer.	<ol style="list-style-type: none"> <li>1) The reversing block stops at the dead point position in the middle.</li> <li>2) The O-shape sealing ring of the cylinder piston is broken.</li> <li>3) The M8 nut of the air-distributing piston rod is lost.</li> </ol>	<ol style="list-style-type: none"> <li>1) Dismantle the screw on the air intake cover and push the reversing piston to make it leave the dead point position.</li> <li>2) Replace the O-shape sealing ring of the cylinder, and oil the inwall of the cylinder with clean 20# engine oil.</li> <li>3) Re-tighten the M8 nut.</li> </ol>
5	The pressure drops suddenly during spraying; the atomization is not good; the coating sprays like rays or no coating sprays, but the air-driven pump works normally.	<ol style="list-style-type: none"> <li>1) The coating suction inlet is blocked.</li> <li>2) On each valve port, foreign objects raise the valve pug.</li> <li>3) The spring above the plunger valve body is fractured.</li> <li>4) "Cavitation Erosion" happens on each high-pressure valve port.</li> <li>5) The V-shape sealing ring on the plunger valve body has been abraded.</li> </ol>	<ol style="list-style-type: none"> <li>1) Clean the suction inlet.</li> <li>2) Clean the foreign objects on each valve port. Clean the strainer inside the pressure reservoir.</li> <li>3) Replace the spring.</li> <li>4) Replace the suction valve body, the plunger valve body, the discharge valve body or the steel ball.</li> <li>5) Replace the V-shape sealing ring on the plunger valve body.</li> </ol>



6	After the discharge valve and the spray gun have been closed, the air-driven motor still moves to-and -fro regularly.	1) The V-shape sealing ring on the plunger valve body has been abraded. 2) The high-pressure valve ports on the plunger valve, the suction valve and the discharge valve are broken.	1) Replace the V-shape ring on the plunger valve body. <b>Caution: The V-shape sealing ring should be replaced in group and as per its quantity and direction before it is dismantled.</b> 2) Replace the suction valve body, the suction valve body, the discharge valve body or the steel ball.
7	During spraying, coating is found in the oil cup of the pump base.	The V-shape sealing ring in the pump base is abraded.	Replace the V-shape sealing ring in the pump base. <b>Caution: The V-shape sealing ring should be replaced in group and as per its quantity and direction before it is dismantled.</b>

Generally speaking, the trouble-shooting should be done step by step. At first, presume some parts are normal and the others are not, and check the parts you think are faulty. If the checked parts are normal, check other parts, until all faults are eliminated.

**Caution: Before the trouble-shooting and maintenance operation, the air intake ball valve must be closed and the system must be depressurized by opening the discharge valve.**

## 6 Equipment Maintenance

6.1 To avoid damaging the high-pressure hose, while using it, do not overbend, stepped on, stress or roll by wheels.

6.2 To ensure good filtering functions, strainers on the equipment must be maintained and cleaned regularly (strainers on coating sucker, pressure storing filter, and the inner tube of the pikestaff) .

6.3 When the nozzle hole is blocked, do not stab it with a needle, in case the nozzle lip is damaged and the atomization quality is affected.

6.4 The pump rods of air-driven pump and plunger pump should be injected with lubricant regularly (in the 43# compacting screw).

6.5 The oil cup in the air-driven dual parts must be filled with 20# engine oil regularly.

## 7 Spare Parts Packages List

Model DP6391A 30 : 1 & DP6391B 46 : 1

SN	Name	Specification	Quantity	Assembling part
1	46# Kraft V-shape sealing ring	∅ 51.5 X ∅ 36.5X 6	6	Coating cylinder
2	45# PTFE V-shape sealing ring	∅ 51.5 X ∅ 36.5X 6	6	Coating cylinder
3	59# pump body washer	∅ 74 X ∅ 68X 4	1	Coating cylinder
4	66# suction valve washer	∅ 59 X ∅ 51X 4	1	Coating cylinder

Model DP6391A 45 : 1 & DP6391B 69 : 1

SN	Name	Specification	Quantity	Assembling part
1	46# Kraft V-shape sealing ring	∅ 42 X ∅ 30X 7	6	Coating cylinder
2	45# PTFE V-shape sealing ring	∅ 42 X ∅ 30X 7	6	Coating cylinder
3	59# pump body washer	∅ 61.5 X ∅ 30X 7	1	Coating cylinder
4	66# suction valve washer	∅ 49 X ∅ 45X 4	1	Coating cylinder

Model DP6391C 45 : 1

SN	Name	Specification	Quantity	Assembling part
1	Kraft V-shape sealing ring	∅ 60 X ∅ 40X 8	2	Plunger valve body
2	PTFE V-shape sealing ring	∅ 60 X ∅ 40X 7.5	3	Plunger valve body
3	Kraft V-shape sealing ring	∅ 64 X ∅ 42.6X 9	4	Pump base
4	PTFE V-shape sealing ring	∅ 64 X ∅ 42.6X 8	4	Pump base

Model DP6391C 60 : 1

SN	Name	Specification	Quantity	Assembling part
1	46# Kraft V-shape sealing ring	∅ 51.5 X ∅ 36.5X 6	6	Coating cylinder
2	45# PTFE V-shape sealing ring	∅ 51.5 X ∅ 36.5X 6	6	Coating cylinder
3	59# pump body washer	∅ 74 X ∅ 68X 4	1	Coating cylinder
4	66# suction valve washer	∅ 59X ∅ 51X 4	1	Coating cylinder

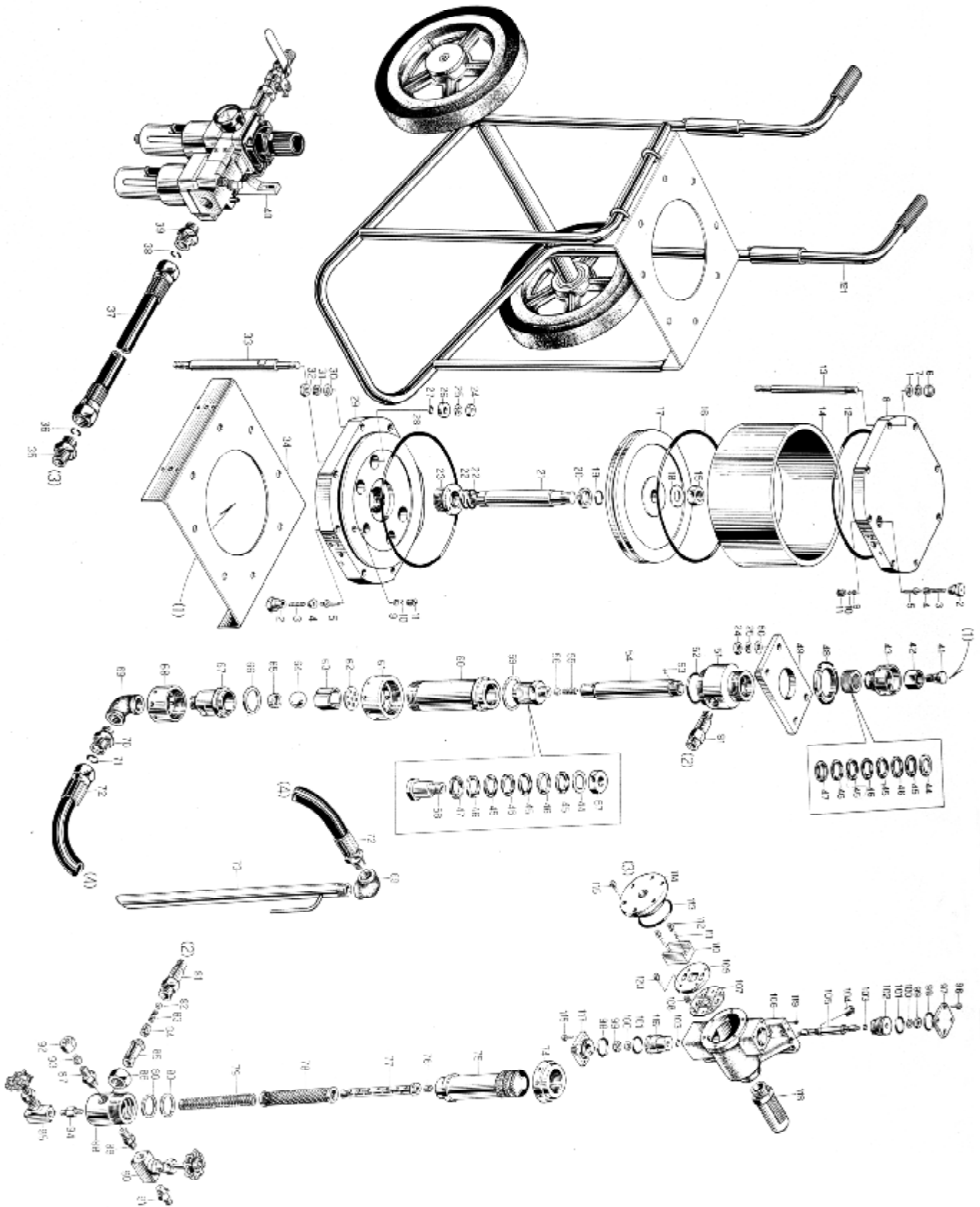
Model DP6391C 76 : 1

SN	Name	Specification	Quantity	Assembling part
1	46# Kraft V-shape sealing ring	∅ 42 X ∅ 30X 7	6	Coating cylinder
2	45# PTFE V-shape sealing ring	∅ 42 X ∅ 30X 7	6	Coating cylinder
3	59# pump body washer	∅ 61.5 X ∅ 56.5X 4	1	Coating cylinder
4	66# suction valve washer	∅ 49 X ∅ 45X 4	1	Coating cylinder

### 8 Packing List

1 Complete set of airless pump machine	1 set
2. Airless spray gun	1 set
3. Airless tip	1 set
4. High-pressure hose ( ∅ 8mm X 10m )	1 set
5. High-pressure hose ( ∅ 6mm X 2m )	1 set
6 Transition joint (M14X1)	1 set
7. Repair kit supplied by manufacturer	1 set
8 hook spanner 78-85	1 set
9 hook spanner 55-62	1 set
10. Inner hexagon spanner 5mm	1 set
11. Inner hexagon spanner 6mm	1 set
12 Product instruction manual	1 copy

# 9 Exploded Drawing



## 10 Parts List

SN	Name	SN	Name	SN	Name	SN	Name
1	Plain washer	32	Nut	63	Retaining ring	95	Needle valve
2	One-way valve cover	33	Bolt	64	Steel ball	96	Inner hexagon cheese head screw
3	Rectangular spring	34	Panel	66	Suction valve washer	97	Upper cover of air-distributing cylinder
4	Sliding bush	35	Air intake joint	67	Suction valve body	98	O-shape sealing ring
5	Check valve assembly	36	Packing pate	68	Suction valve nut	99	Nut
6	Cap nut	37	Air intake pipe	69	Angle ball joint	100	Washer
7	Spring washer	38	Packing pate	70	Coating suction pipe joint	101	O-shape sealing ring
8	Upper cover of cylinder	39	Joint	71	Packing pate	102	Air-distributing short piston
9	Retaining ring	40	Air-driven dual parts (assembly)	72	Coating suction hose	103	O-shape sealing ring
10	O-shape sealing ring	41	Connecting screw	73	Feeding pipe	104	End cap
11	Sealing base	42	Connecting nut	74	Gland nut	105	Air-distributing piston rod
12	O-shape sealing ring	43	Housing pin	75	Pressure storing cylinder	106	Air-distributing body
13	Screw stud	44	Sealing baseplate	76	L screw plug	107	Sealing gasket
14	Cylinder body	45	V-shape ring (leather)	77	Coating passing pipe	108	Gasket
15	Nut	46	V-shape ring (Plastic)	78	Strainer assembly	109	Air-distributing plate
16	O-shape sealing ring	47	Sealing pressure plate	79	Strainer framework	110	Air-distributing slide block
17	Piston	48	Round nut	80	Gasket	111	Spring
18	Gasket	49	Fixing plate	81	Check valve body	112	Spring base
19	O-shape sealing ring	50	Plain washer	82	Steel ball	113	O-shape ring
20	Piston gasket	51	Pump base	83	Spring	114	Air intake cover
21	Piston rod	52	Pump body gasket	84	Spring base	115	Inner hexagon cheese head screw
22	O-shape sealing ring	53	Spring $\varnothing$ 62X $\varnothing$ 5X40	85	Union	116	Air-distributing piston
23	Guiding packing gland	54	Pump rod	86	Union nut	117	Cover of air-distributing cylinder
24	Nut	55	Spring	87	Discharge connector	118	Silencer
25	Plain washer	56	Steel ball	88	Main body of pressure reservoir	120	Inner hexagon cheese head screw
26	Bolt gasket	57	Nut	89	Joint	121	Frame assembly
27	O-shape sealing ring	58	Gasket body	90	Needle valve		
28	O-shape sealing ring	59	Pump body gasket	91	Discharge connector		
29	Cylinder baseplate	60	Pump body	92	Nut		
30	Plain washer	61	Pump body nut	93	End cap		
31	Light spring washer	62	Spring $\varnothing$ 52X $\varnothing$ 4.5X28	94	Joint		

“Dino-Power” series high-pressure airless sprayers are applicable to the coatings of steel structures, ships, encaustic tiles, big buildings, big overpass steel structure pavements, bridges, pressure vessels, leather, locomotives, railway vehicles, cars, airplanes, chemical equipments, wind power equipments, furniture, racks, containers, pipelines, storage tanks, tablet sugar coatings in pharmaceutical industry, and so on.

To customers:

- 1、 Various models of high-pressure airless sprayers are available for your selection as per your different coating requirements.
- 2、 The equipped nozzle for the product leaving the factory may not meet your actual needs for spraying. There are more than 30 specifications of nozzles manufactured by our factory, which you can order separately as per the requirements for the coating and design of your products and projects.
- 3、 If the spraying equipment is faulty and the fault can not be eliminated after you have carefully read the instruction manual, you can call us on 86-574-88278841 or send email to us at [dpairless@gmail.com](mailto:dpairless@gmail.com) and clearly describe the fault and the detailed process of the occurrence of the fault. We will promptly advise you of the trouble-shooting methods. Personnel operating and maintaining this equipment must be familiar with all requirements of this instruction manual.
- 4、 Our products are very popular in the market. Our company is the first professional enterprise to manufacture high-pressure airless spraying equipment and high-pressure oil injection equipment.
- 5、 Thanks to the trust and cooperation of our customers over the long term, series products of “Dino-Power” spraying equipment have excelled in the field of coating technology in all industrial departments. We sincerely hope that you order complete sets or parts of “Dino-Power” spraying equipments via various sources.