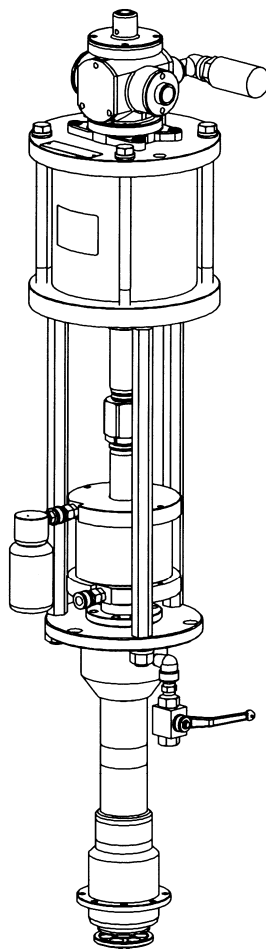


Yamada

INSTRUCTION

INK SUPPLY PUMP

IP140S3 MODEL No.853787 IP200S25 MODEL No.853767
IP140S12 MODEL No.853862 IP250S10 MODEL No.853786
IP140S25 MODEL No.853861 IP250S20 MODEL No.853768
IP200S10 MODEL No.853785



WARNING

Prior to operating this pump, be sure to read this operation manual for safety. After reading the manual, please keep it at hand any time for your quick reference.

YAMADA CORPORATION

- Preface

Thank you very much for purchasing Yamada Pump. This pump can be supplied to each place in the factory with the pump for the force feed of the ink material through piping and the hose, and ink can be taken out freely only by operating the outlet valve in the work place.

The drum lift and the trestle, etc. are combined according to the container of ink and it uses it.

- For Safe Operation

This manual describes the items that are important for the user to operate this product safely, correctly, and efficiently. Before operating this product, read this manual thoroughly, in particular, "Warnings and Cautions" at the beginning of this manual.

- Warnings and Cautions

For safe use of this product, be sure to note the following: In this document, warnings and cautions are indicated by symbols. These symbols are for those who will operate this product and for those who will be nearby, for safe operation and for prevention of personal injury and property damage. The following warning and caution symbols have the meanings described below. Be sure to remember their meanings.



WARNING : This indicates the existence of potential hazard which, if not avoided, will result in death or serious injury.



CAUTION : This indicates the existence of potential hazard which, if not avoided, may result in bodily injury or in physical damage.

Furthermore, to indicate the type of danger and damage, the following symbols are also used along with those mentioned above:




















This symbol indicates an act that is prohibited (prohibition). The concrete contents of prohibition are indicated by the side of the indication.



This symbol indicates the contents that must be observed. The concrete contents of observance are indicated by the side of the indication.

- Precautions on Use

The following warnings and cautions are very important. Be sure to observe them.

 WARNING	
	- Keep your face away from the exhaust and discharge ports. Material may suddenly come out. There is a possibility of losing eyesight if it strikes eyes.
	- Gasoline is a high volatile fuel. Do not use it to clean the pump in any case, otherwise ignition or explosion may be caused.
	- Keep your fingers away from each port to avoid injury from moving parts.
	- Modification of this pump may lead to death, bodily injury, or a failure. Do not modify it in any case because it involves a risk.
	- Keep your hands away from shovel(the lowest part of the pump). During operation to avoid hand injury resulting from being caught in shovel.
	- Keep your face and hands away from the outlet when handling the bleeder valve. Air-containing material may suddenly come out. There is a possibility of losing eyesight and injuring the hand.
	- The operator and maintenance engineer should read the operation manual thoroughly before operating the pump and performing maintenance in respect of this pump.
	- Always wear proper safety equipments(facemask, ear plugs, and safety shoes, etc.) when installing, operating and disassembling the pump.
	- Make ground connection when working with flammable material or in explosive atmosphere. Rapid pumping of material can result in static electrical charge. Also, be sure to provide proper ventilation where a flammable atmosphere may exist.
	- Execute the daily checkup.
	- Use this pump according to the product specification.
	- Attach a valve(for stop in emergency) or regulator to the air supply pipe to keep supply air pressure under 0.7 MPa.
	- Discontinue it when you feel a hazard or abnormality during the work. And correspond according to the troubleshooting.
	- Stop pump operation immediately when a drum becomes empty. Running the pump dry will cause excessive vibration, resulting in reduction of pump life and damage to other equipment. Be especially careful when pumping explosive material. Mixture of an air and vaporized material can explode. If there is any possibility of running dry, install a dry-run protection device like a liquid level control.
	- Before maintenance operation, be sure to stop air from being supplied to the pump, and release the internal pressure (both air and material) of the pump. There is danger such as spouting of the material when the maintenance work is done with air supplied.
	- Do not discharge material directly onto the ground. Dispose of harmful materials according to the requirements specified in MSDS or local regulations. Also, dispose of pump according to the local regulations after removing residual material from inside pump. (Please contact industrial waste disposal service.)



CAUTION



- Keep hands and fingers away from the pump during operation to avoid injury from moving parts.



- Use pump for the material suitable for the specification. Parts may be corroded and material leak from the damaged parts can lead to environmental pollution. Also, follow handling notes (MSDS) of the manufacturer about the handling of the material used.



- Take fall-prevention measures if using a slim or light tank. Risk of falling will be increased due to shift in center of gravity caused by change in the material level in a tank.



- Take protective measures against rainwater and dust. It is likely to lead to the pollution of the material.



- Be very careful about the edge of the pump when you lift the pump. Your hands might be injured.



- Be very careful about your posture when installing the pump. Back injury may be caused by lifting the pump.



- Do not touch the surfaces of the pump and the hose when pumping high-temperature material. Risk of burns exists.



- Stop the air supply source after the end of work when not using this pump for a long time such as nighthtimes and holidays. Also, open the valve of the exhalation port and liberate pressure in the pump and the hose. There is a possibility of polluting facilities because of the damage of the hose and the leakage of the valve. Such a secondary disaster becomes a responsibility on the user side.



- Place a drum on a flat, level surface to position pump horizontally against a ground. Operating the pump on a slope may cause a fall or tip-over due to shift in center of gravity caused by change in the material level.



- Material remaining inside or on the surface of the pump may spill out by inserting or removing the pump into/from a drum. Be very careful not to get your clothing dirty.



- Do not fill the oil cup with any liquids other than specified. The oil cup may be damaged or deformed, resulting in liquid leak or deterioration of packing.

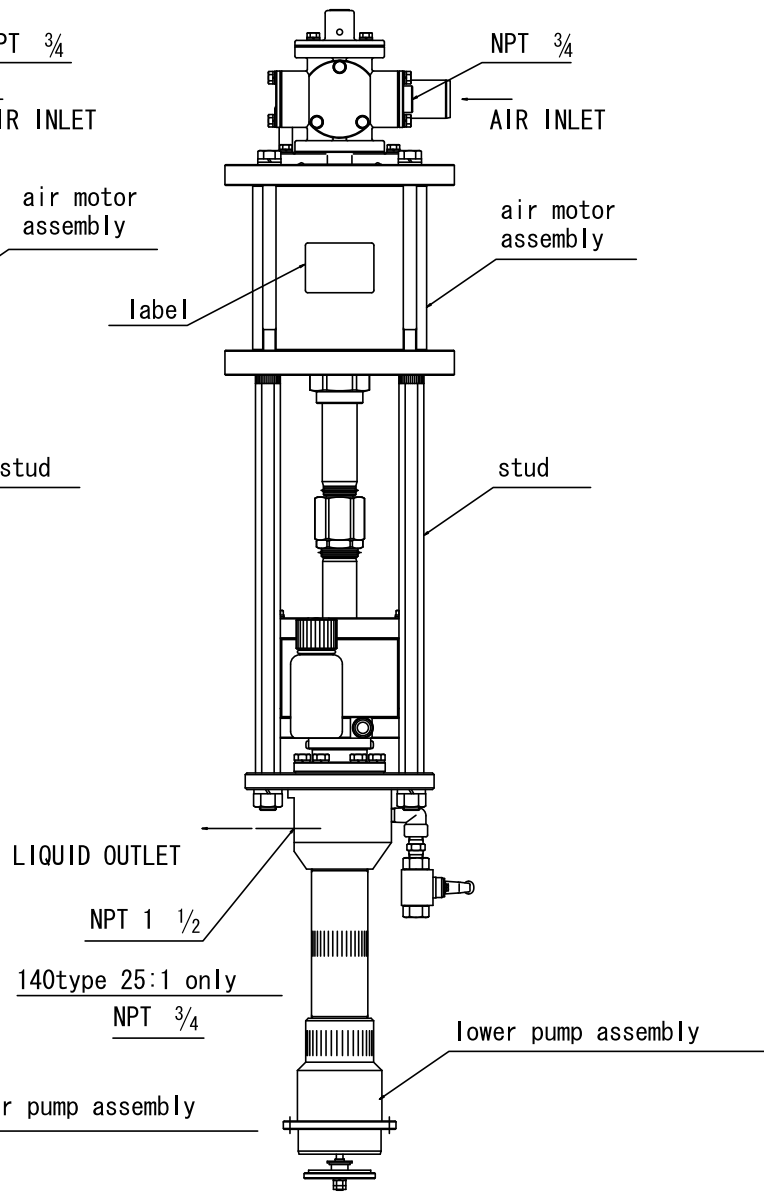
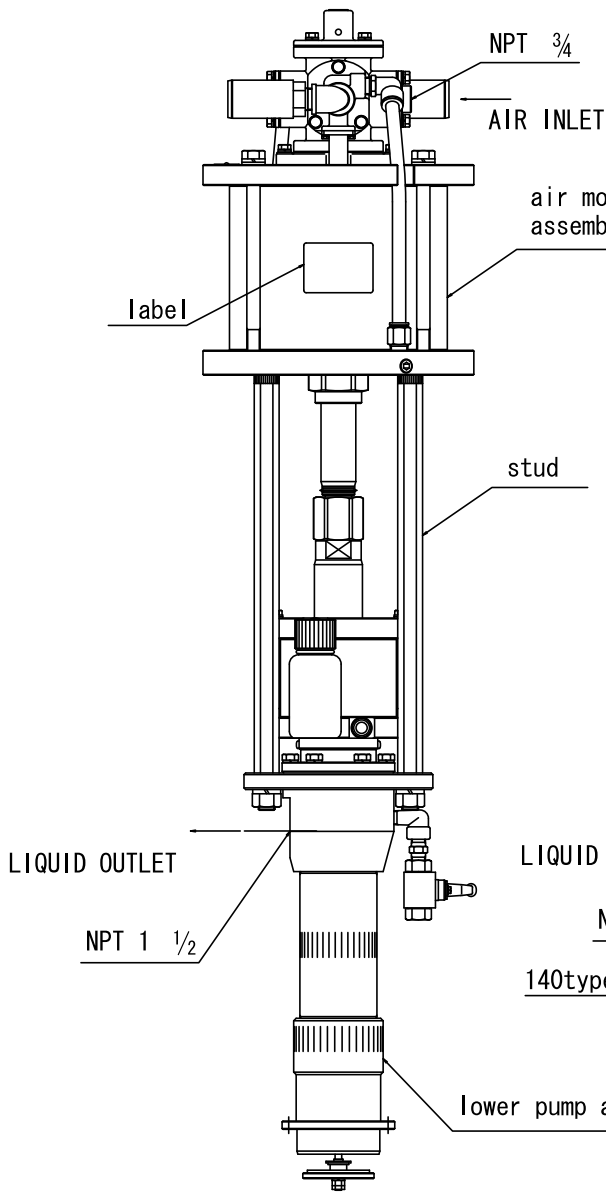
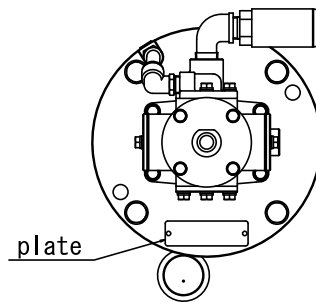
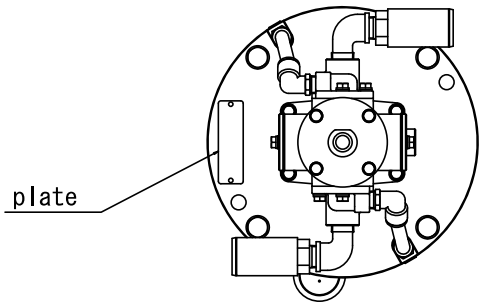
Table of Contents

- Preface	
- For Safe Operation	
- Warnings and Cautions	
- Precautions on Use	
1. Name of each part	1
2. Operation mechanism	
2.1 Air-powered pump	2
3. Name of each part and faction	2
4. Preparation for use	
4.1 Connecting the air source	3
4.2 Connecting the ink supply hose	3
5. Preparation for operation	
5.1 Filling the oil cup of ink supply pump with oil	4
6. Maintenance and inspection	
6.1 Maintenance and Inspection for the pump	5
6.2 Check and measure when troubles	6
7. Articles of consumption (packing) list	8
8. Parts list and exploded view	
8.1 Ink pump parts list (140type,200type,250type)	9
8.1.1 Explode view of the switching valve assembly (804355)	10
8.1.2 Explode view of the switching valve assembly (804358)	11
8.1.3 Switching valve assembly parts list	
140type,200type (804355) 250type (804358)	12
8.2.1 Explode view of the air motor assembly 804398 (140type)	13
8.2.2 Air motor assembly (140type) parts list	14
8.3.1 Explode view the air motor assembly 804354 (200type)	15
8.3.2 Air motor assembly (200type) parts list	16
8.4.1 Explode view of the air motor assembly 804357 (250type)	17
8.4.2 Air motor assembly (250type) parts list	18
8.5.1 Explode view of the lower pump assembly (804399)	
IP140S3, IP250S10	19
8.5.2 Lower pump assembly (804399) parts list	20
8.6.1 Explode view of the lower pump assembly (804450) IP140S25	21
8.6.2 Lower pump assembly (804450) parts list	22
8.7.1 Explode view of the lower pump assembly (804356)	
IP140S12, IP200S25	23
8.7.2 Lower pump assembly (804356) parts list	24
8.8.1 Explode view of the lower pump assembly (804436) IP200S10	25
8.8.2 Lower pump assembly (804436) parts list	26
8.9.1 Explode view of the lower pump assembly (804359) IP250S20	27
8.9.2 Lower pump assembly (804359) parts list	28
9. Pump specification	29
10. Limited warranty	32

1. Name of each part

250type

140, 200type



2. Operation mechanism

2.1 Air-powered pump

The YAMADA Air-powered Pump is a reciprocating type pump that is driven by compressed air. This pump consists of an air motor section to drive the pump and a lower pump to draw up the material as shown in Fig. 2.1. When compressed air is fed from the compressor to the air motor, the air piston starts up/down motion by the function of the air switching mechanism incorporated in it. This motion is transmitted to the piston of the lower pump by the connecting rod between the air piston of the air motor and the piston of the lower pump, and gives up/down reciprocating motion to the lower pump. The material is sucked into the lower pump by up/down motion of the lower pump and sent out from the discharge port by pressure.

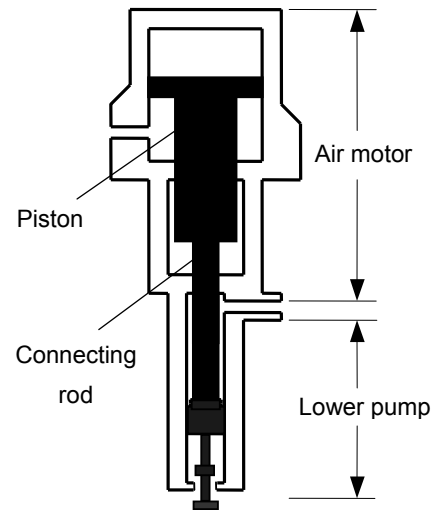
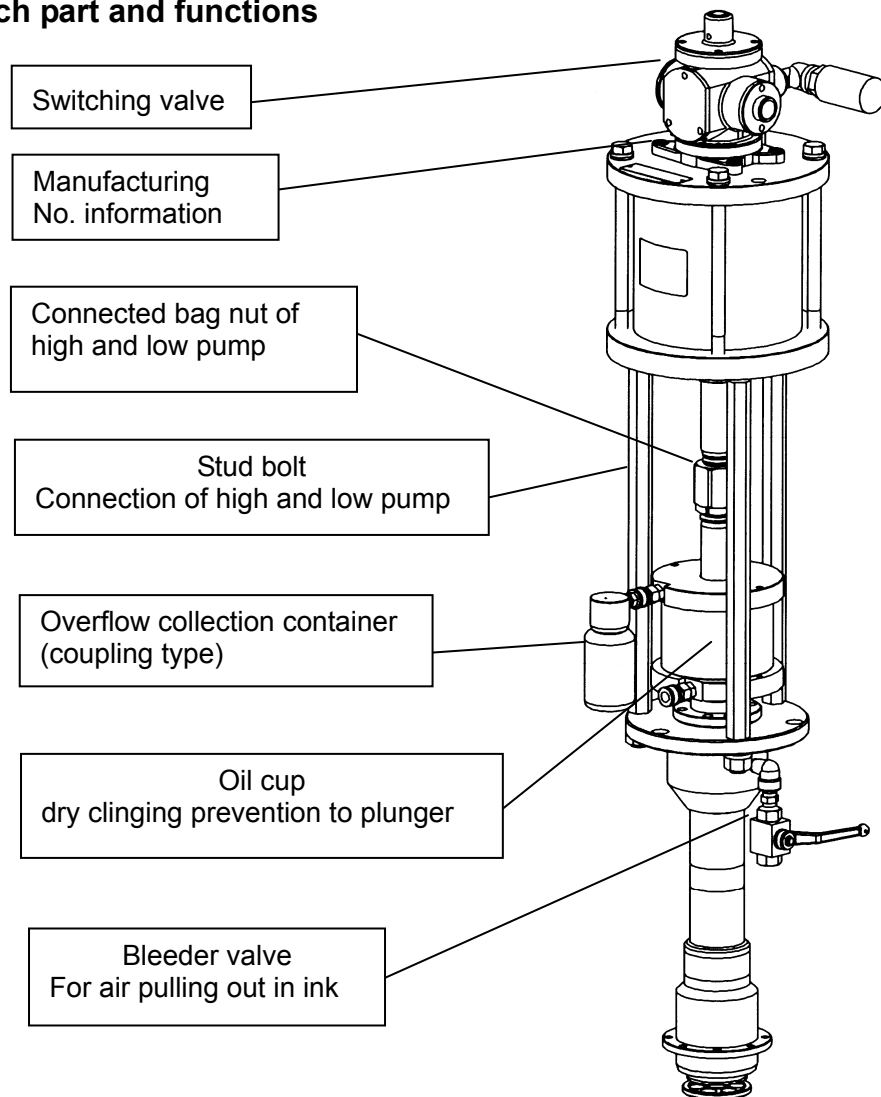


Fig.2.1

3. Name of each part and functions



4. Preparation for use

4.1 Connecting the air source

Please connect the pump control air with size NPT 3/4 of the screw of the air entrance.

Please construct the air connection to swing to the trestle freely when it is assumed a flexible connection such as the hoses, and you use the trestle by the pump. Never lay the metal directly.

Prepare an NPT1/2 hose (M) and connect it to the material discharge port of this machine.

CAUTION



- Please install the main air valve (hand valve) in the supply origin in the air source to facilitate maintenance, the check, and maintenance.
- Please execute regular filter management and the refueling management by setting up one set that consists of the air three point unit in the supply line in the air source to maintain a steady driving.
- Please install the special air regulator on the pump air entrance to do a peculiar ink pump driving control. (option)
- Proper pump driving air pressure is different depending on properties of the ink material. The adjustment is done between 0.2~0.7 MPa. The installation of the air regulator facilitates this adjustment.

4.2 Connecting the ink supply hose

Please connect the pump exhalation entrance and the ink supply piping with the hose (option).

Size of pump exhalation entrance screw

140type(25:1)pump only	NPT 3/4 (F)
140type pump	NPT 1 ¹ / ₂ (F)
200type pump	NPT 1 ¹ / ₂ (F)
250type pump	NPT 1 ¹ / ₂ (F)

Please assume a flexible connection such as the hoses, and construct the connection so that the pump may freely swing to the trestle.

Never lay the metal directly.

CAUTION



- Please install the main valve (manual high-pressure valve) in the hose joint of the ink supply piping to facilitate maintenance and the check.
- Please procure the hose of the performance that can oppose the exhalation pressure of the pump for the ink supply hose.
- Please procure the hose of the pressure of using regularly performance of about 17.5 MPa to oppose the exhalation pressure 25 times this when the highest use air pressure is assumed to be 0.7 MPa when 25×1 ink supply pumps are adopted.

5. Preparations for the operation

5.1 Filling the ink supply pump with oil

The pump is equipped with the fluid cups that prevent any fluid from being stuck to the plunger rod or gland packing. Follow the procedure below to fill the pump with solvent appropriate for ink.

- 1) Use the coupler to remove the “overflowed oil collection container”. (Fig.6.1)
- 2) Connect the hose of the oil pump HOP-20W(option) to the lower coupler. (Fig.6.2)

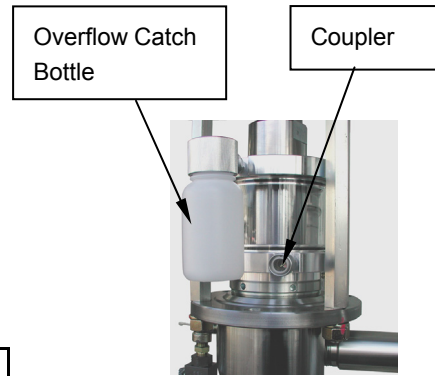


Fig.6.1

	CAUTION
	<ul style="list-style-type: none"> - The overflow collection container cannot be replenished well because there is no escape of air by an imperfect connection. Please reconfirm the coupler connection of the overflow collection container when you feel resistance while filling the hand pump.

- 3) Fill the pump with oil so that approximately 50 % of the cup is filled with oil with the up/down operation of the solvent pump. (Fig.6.2)
- 4) After filling the pump, remove each hose and attach the “overflowed solvent collection container” on the top of the cup. (Fig.6.2).

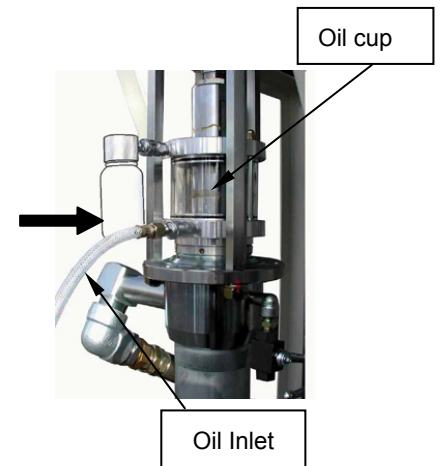


Fig.6.2

	CAUTION
	<ul style="list-style-type: none"> - When you use the ink supply pump for a long time, ink overflows mainly because the gland packing is worn out and then ink is accumulated in the collection container. This phenomenon indicates when to replace the gland packing with a new one. Check to see whether ink is accumulated in the collection container periodically.

	WARNIG
	<ul style="list-style-type: none"> - All packing used for the pump is NBR type. Do not use any solvent that corrodes NBR type packing. - Be sure to attach the overflowed fluid collection container to the pump. When packing is worn out and ink leaks, the internal pressure of the solvent cup increases. This may damage the cup if you do not attach this container to the pump.
	<ul style="list-style-type: none"> - Do not put any solvent into the overflowed fluid collection container before attaching it to the pump. When ink leaks due to worn-out packing, ink cannot be exhausted in the normal way and may gush out from the hole of the container top, and then spoil the surrounding.

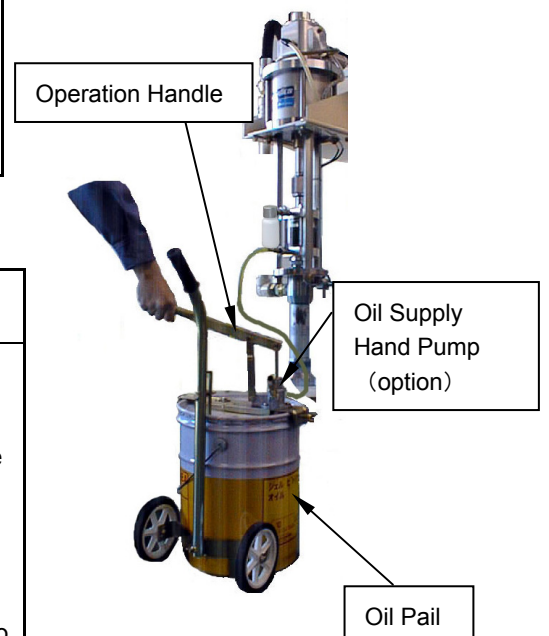


Fig.6.3

6. Maintenance and inspection

6.1 Maintenance and inspection of the pump

1. The plunger sliding section and solvent cup of the pump are sealed with seal. When the plunger slides up and down repeatedly, solvent is accumulated at the rim of the plunger. Clean the rim periodically. (Fig.7.1)



CAUTION



- To clean the plunger, stop the pump at its upper movable limit completely. If you try to clean the plunger even though it is moving, your finger may be caught between the plunger and the solvent cup, and injured.

2. As daily check, check to see if no air or ink leaks from each joint of the pump with your eyes.
3. When the amount of solvent increases in the cup (due to ink leakage), follow the procedure below.
 - 1) Connect the optional solvent removal gun (OS-200W) to the lower coupler, and then pull its lever to remove solvent (Fig.7.2). With pushing back the lever, exhaust the removed solvent into a container.
 - 2) After removing solvent from the cup, fill the pump with new solvent with following the section "Filling the ink supply pump with solvent" on P.4.
4. Remove the overflowed solvent collection container to exhaust the solvent accumulated in the container (Fig.7.3).

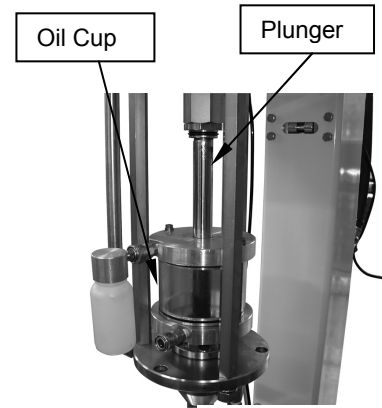


Fig.7.1

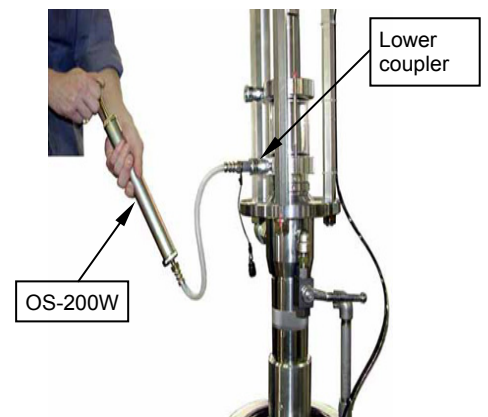


Fig.7.2



Fig.7.3

5. If you use the pump in areas where rust is easily caused such as in a coastal zone, metal parts may be corroded.
To prevent serious rust damages especially to a cap nut, supply corrosion inhibitor around the cap nut connecting the upper and lower pumps periodically (once in every three months).

6.2 Check and measure when troubles

Troubleshooting

Symptom	Probable cause	Corrective measure
The pump is not operated.	The compressor is not operated.	Operate the compressor.
	The air piping valve is closed.	Open the valve.
	The air pressure is set to less than 0.2 MPa.	Set the air pressure to 0.2 MPa or more.
	The valve on the ink delivery side is closed.	Open the valve.
	The air pipe (570144) for operating the pump is folded.	Replace the air pipe (570144).
	Freezing occurs in the silencer.	Install an air filter and a lubricator (oil supply) for the air piping.
	The lower limit is detected at a position that does not correspond to the lower limit, and the air operating valve is automatically closed.	Move the lower limit torque dog to the proper position.
	The O-ring of the air piston slide section is worn away. (Air leakage occurs from the silencer.)	Replace the part.
	The block (701823) and block retainer (701816) are worn away, so that the block cannot be supported.	
The part (spring, pin, etc.) related to the switching mechanism in the air motor (803941) is damaged.		
The pump is not stopped.	Ink leakage occurs from the ink delivery piping.	Tighten the faulty portion again or replace the part.
	Ink leakage occurs from the part connecting section of the lower pump. (The part connecting screw is loose or the O-ring, backup ring, or packing is damaged.)	
Air leakage occurs from the air motor.	The part connecting screw is loose, or the O-ring or packing is damaged.	Tighten the faulty portion or replace the part.
When ink is passed for the first time, it cannot be sucked at all.	The operating speed of the pump is so high that the lower pump cannot suck in time. (The valve in the lower pump is not effective.)	Lower the air pressure setting and operate the pump at 8 to 10 CPM until ink is sucked.
The oil cup is swelling out. (It is gradually melted.)	The oil that is not matched to acrylic resin is used in the oil cup. (In this case, the gland packing may also be damaged.)	Replace the part and put the specified oil into the cup. Specified oil: Multi-purpose oil for industrial use [machine oil (without additive) ISO VG10]
The liquid in the oil cup increases quickly.	The gland packing is worn away or damaged.	Replace the part.
Ink leakage occurs from the lower pump.	The screw of the part connecting section is loose or the O-ring, backup ring or packing is damaged.	Tighten the faulty portion again and replace the part.

Ink is not fed by pressure.	The body of the pail can is uneven, so that the lift does not reach the ink surface.	Avoid using the pail can with unevenness on the body.
	No hole is provided in the center of the vinyl sheet of the pail can. (Pump suction section)	Make a round hole with a diameter of about 120 mm in the center of the vinyl sheet and remove vinyl fragments.
	There remain cut off vinyl fragments in the center of the vinyl sheet of the pail can.	Remove the cut off vinyl fragments.
	The sheet of the piston valve is defective (sheet wear or inclusion of foreign substances) or the packing is damaged when the ascending process of the plunger motion is faster.	Replace the part or remove foreign substances.
	The sheet of the foot valve is defective (sheet wear or inclusion of foreign substances), the packing is damaged, or the shovel rod is bent when the descending process of the plunger motion is faster.	
	The operating speed of the pump is so high that the lower pump cannot suck in time when the descending process of the plunger motion is faster. (The inside of the pump is in the vacuum status.)	Lower the air pressure setting to a level at which the symptom shown at left disappears. (In the current condition, this pressure is the upper limit value of normal pump operation.)
	The connecting screw section between the air motor and the plunger of the lower pump is loose and gets out of place. (The internal parts of the lower pump may be damaged.)	After inspecting the inside of the lower pump, replace the damaged parts and tighten the connecting screw section again.

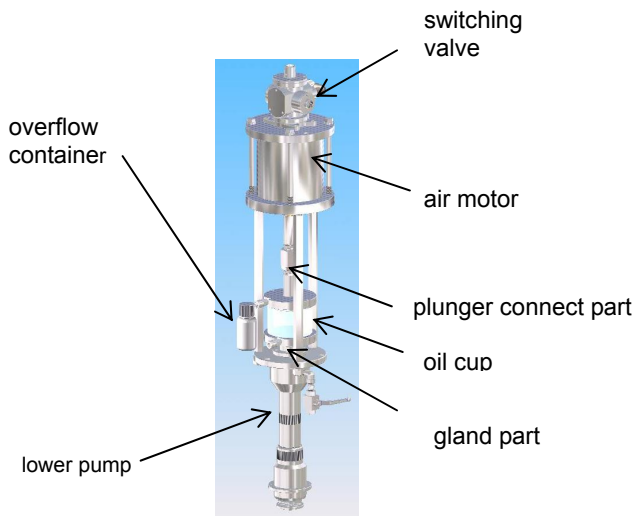


Fig1. ink pump appearance

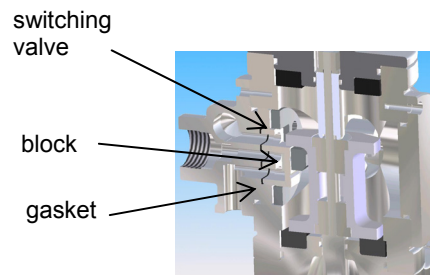


Fig.2 switching valve

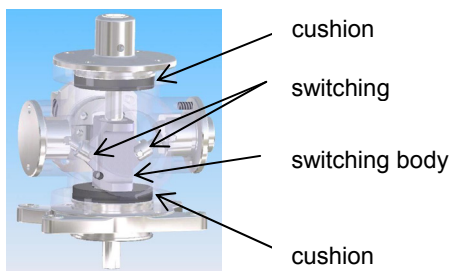


Fig.3 switching valve tructure

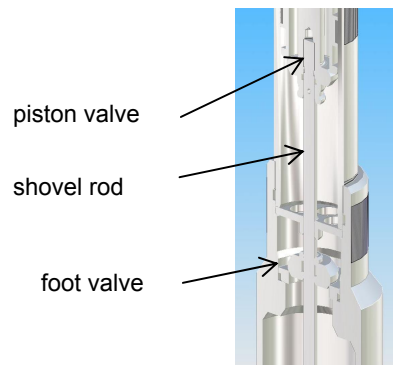


Fig.4 lower pump

7. Articles of consumption (packing) list

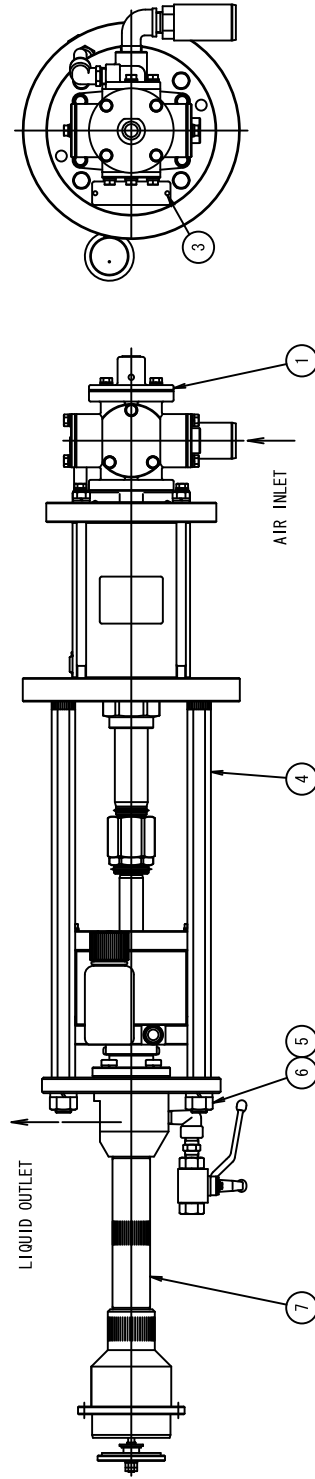
The rubber seal parts consumed by wear-out are listed. Please refer to the part list in the back for the endurance consumption parts excluding this.

Use part	Item No.	Part No.			Description	Qty.
		140type	200type	250type		
Switch valve assembly	16	640015	←	←	O ring	2
Air motor assembly	22	640013	←	←	O ring	1
	32	640075	640088	640099	O ring	1
	34	640041	←	←	O ring	1
Lower pump assembly	9	(3:1) 684711	(10:1) 685578	(10:1) 684711	Packing	1
		(25:1) 685615	(25:1) 685456	(20:1) 685460		
		(12:1) 685456				
	27	(3:1) 684712	(10:1) 772778	(10:1) 684712	Back up ring	1
		(25:1) 772811	(25:1) 772694	(20:1) 772698		
		(12:1) 772694				
	28	(3:1) 684713	(10:1) 685579	(10:1) 684713	U type packing	1
		(25:1) 685616	(25:1) 685458	(20:1) 685461		
		(12:1) 685458				
	43	(3:1) 640067	(10:1) 640063	(10:1) 640067	U type packing	2
		(25:1) 685618	(25:1) 685459	(20:1) 685463		
		(12:1) 685459				
	44	(3:1) 643727	(10:1) 643723	(10:1) 643727	Back up ring	2
		(25:1) 685619	(25:1) 772695	(20:1) 685464		
		(12:1) 772695				
52	(3:1)	(10:1) ←	(10:1) ←	Back up ring	2	
	(25:1) 643669	(25:1) ←	(20:1) ←			
	(12:1)					
58	(3:1)	(10:1) ←	(10:1) ←	Packing	1	
	(25:1) 685546	(25:1) ←	(20:1) ←			
	(12:1)					

8. Parts list and exploded view

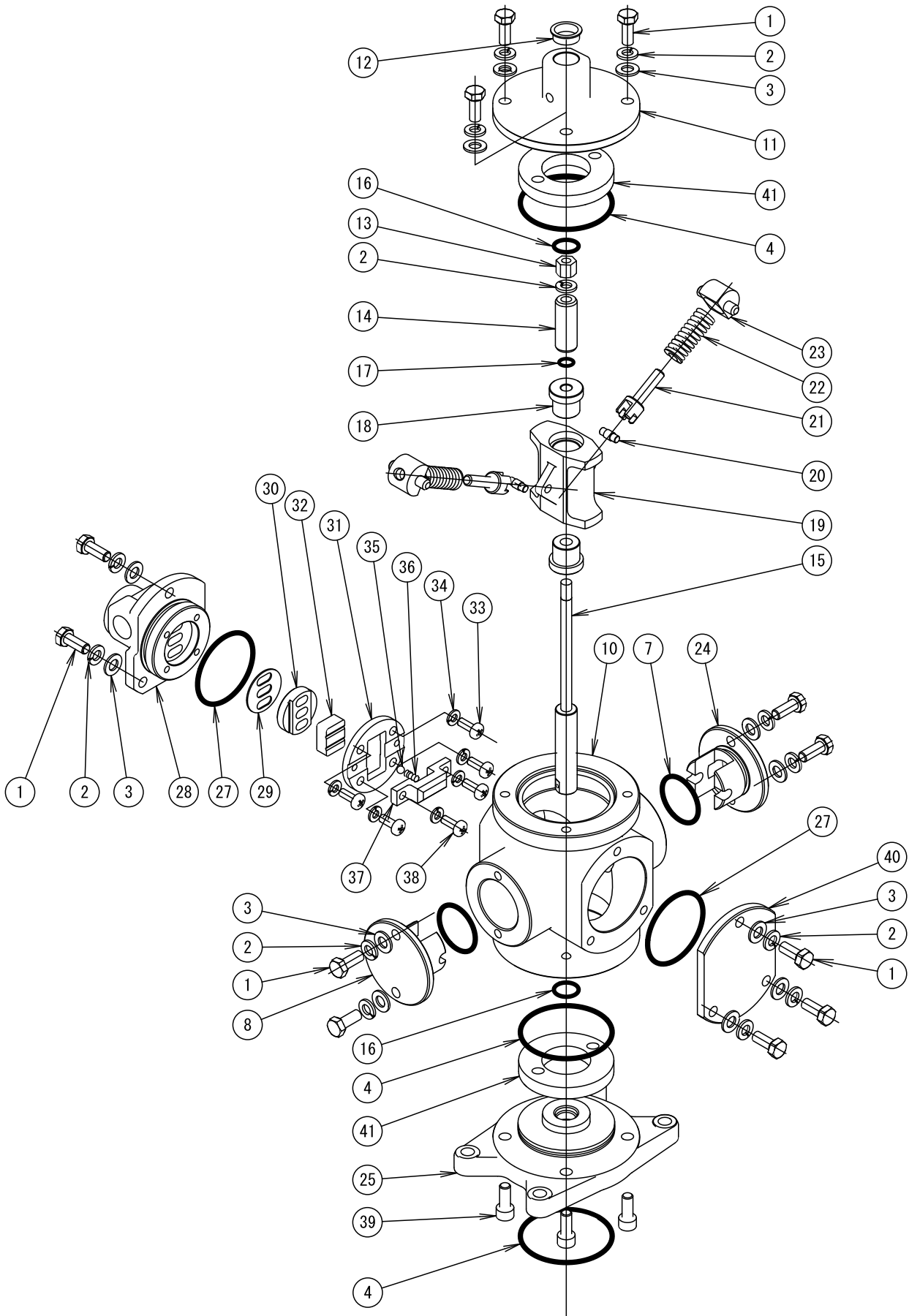
8.1 Ink pump parts list (140type, 200type, 250type)

DWG. NO.	DWG. NO.	853787	DWG. NO.	853767
THE DWG. OF:	THE DWG. OF:	Ink pump assembly IP140S 3	THE DWG. OF:	Ink pump assembly IP200S 25
DWG. NO.	DWG. NO.	853862	DWG. NO.	853786
THE DWG. OF:	THE DWG. OF:	Ink pump assembly IP140S 12	THE DWG. OF:	Ink pump assembly IP250S 10
DWG. NO.	DWG. NO.	853861	DWG. NO.	853768
THE DWG. OF:	THE DWG. OF:	Ink pump assembly IP140S 25	THE DWG. OF:	Ink pump assembly IP250S 20
DWG. NO.	DWG. NO.	853785		
THE DWG. OF:	THE DWG. OF:	Ink pump assembly IP200S 10		

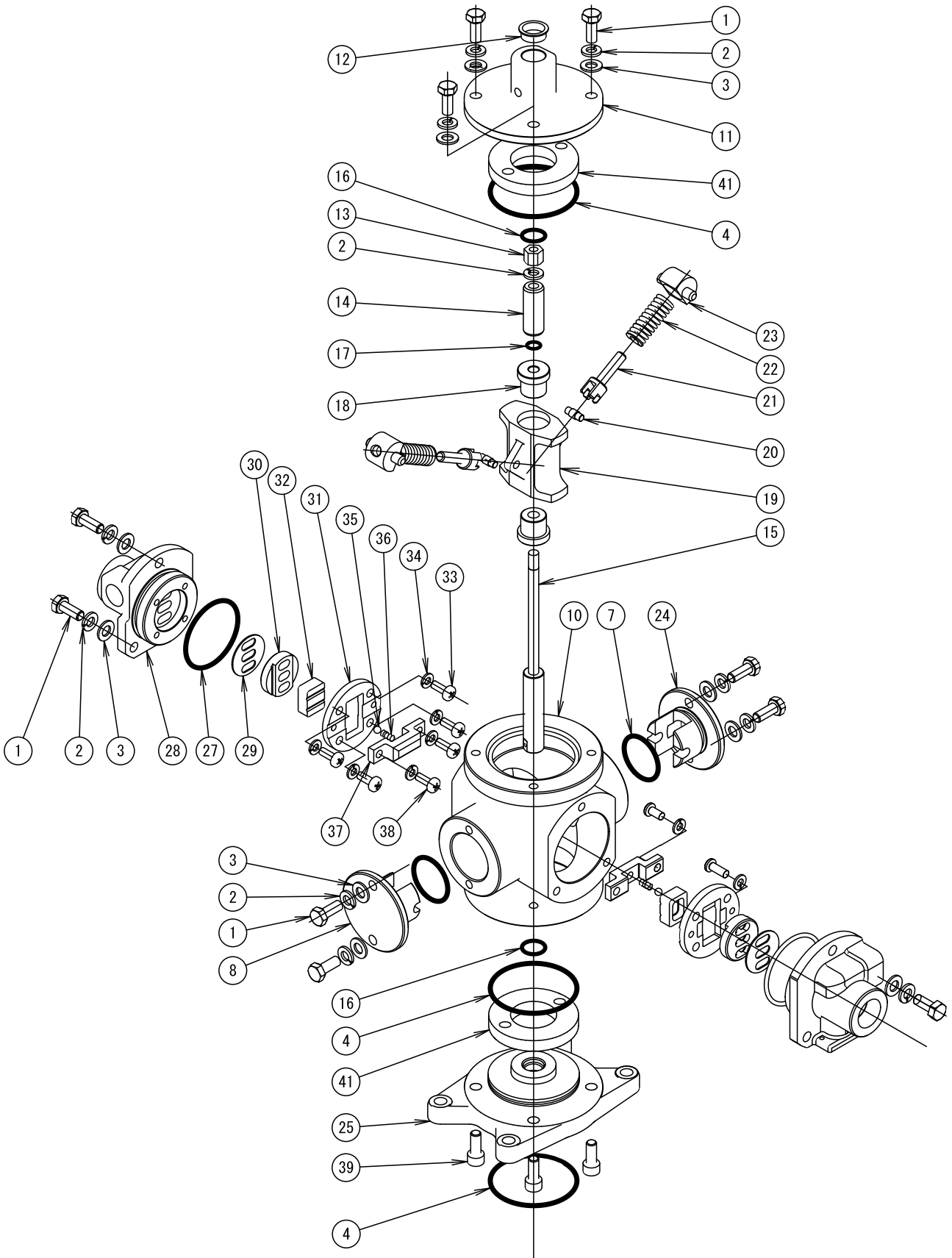


7	804399	804356	804450	804436	804356	804399	804359	1	lower pump assembly	QTY
6	631426	↓	↓	↓	↓	↓	↓	3	spring washer	
5	627018	↓	↓	↓	↓	↓	↓	3	nut	
4	714994	↓	↓	↓	↓	↓	↓	3	stud	
3	685750	↓	↓	↓	↓	↓	↓	2	parker tack	
1	804398	↓	↓	804354	↓	804357	↓	1	air motor assembly	
REF. NO.	853787 (3 × 1)	853862 (12 × 1)	853861 (25 × 1)	853785 (10 × 1)	853767 (25 × 1)	853786 (10 × 1)	853768 (20 × 1)		DESCRIPTION	
		PART NO. (140type)		PART NO. (200type)		PART NO. (250type)				

8.1.1 Explode view of the switching valve assembly (804355)



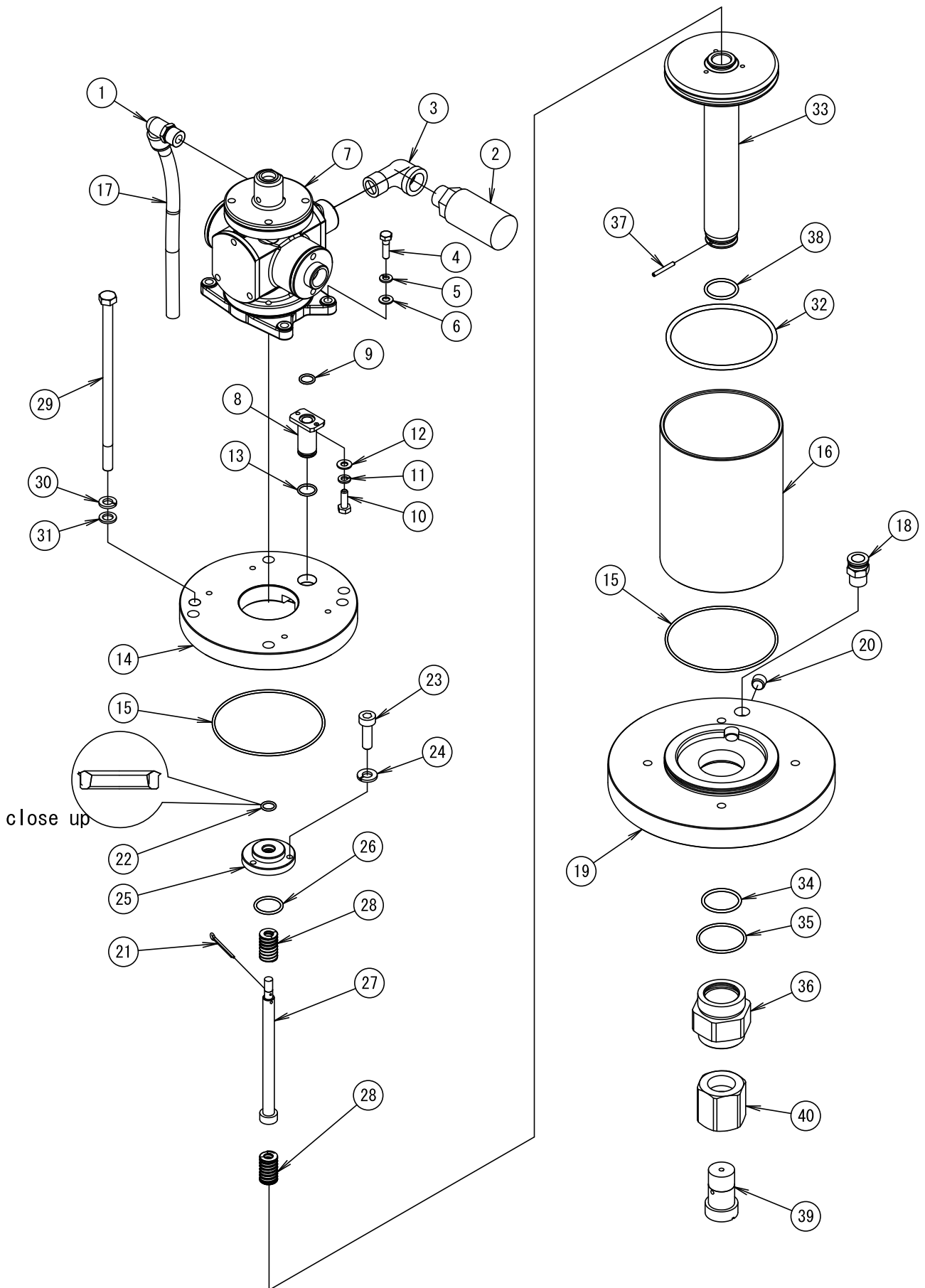
8.1.2 Explode view of the switching valve assembly (804358)



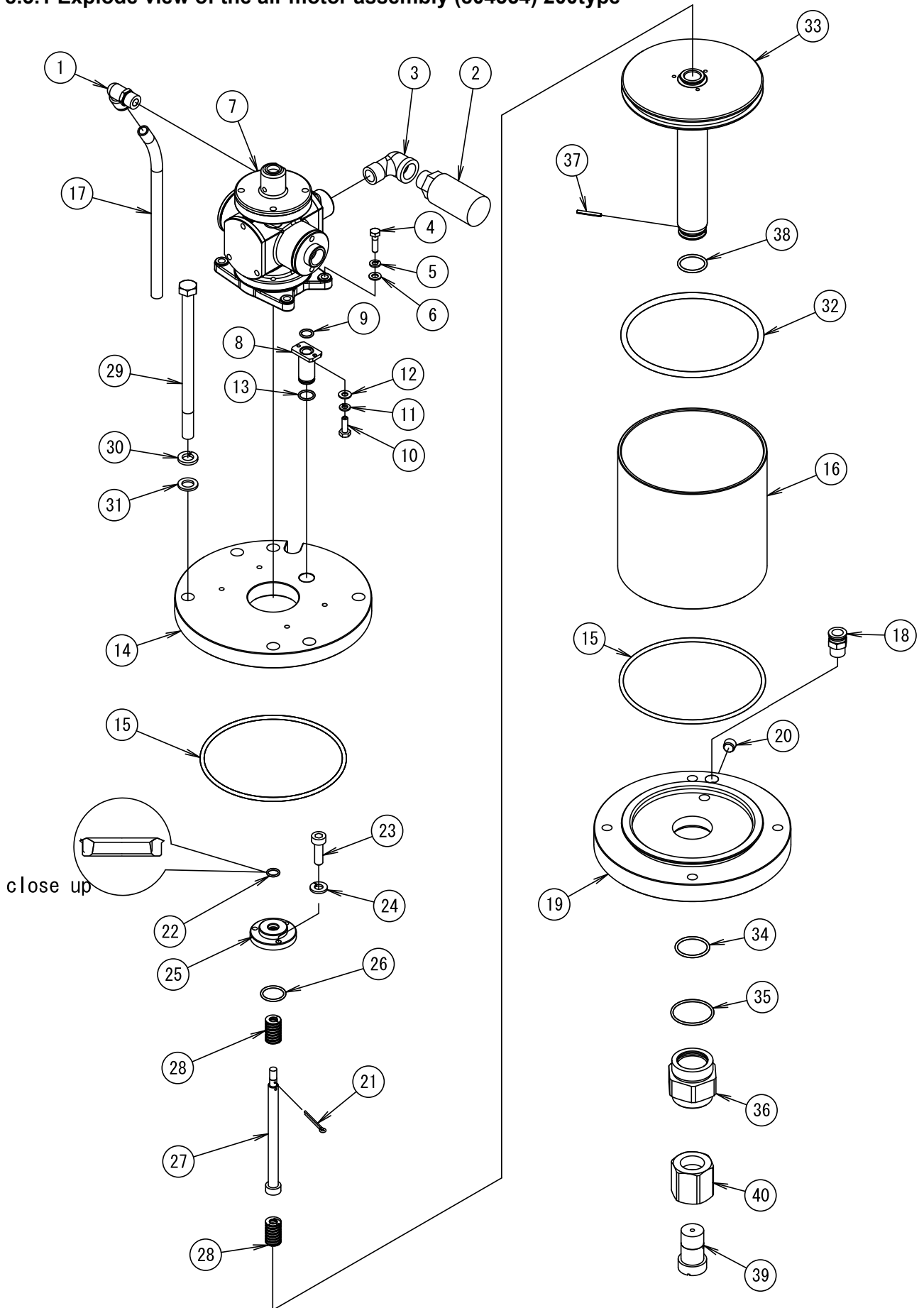
8.1.3 Switching valve assembly parts list
140type, 200type(804355), 250type(804358)

Item No.	Part No.	Description	140,200type Qty.	250type Qty.	Remark
1	611147	bolt	14	←	
2	631420	spring washer	15	←	
3	631013	washer	14	←	
4	640138	o ring	3	←	
7	640132	o ring	2	←	
8	714818	holder	1	←	
10	715113	valve cylinder	1	←	
11	714820	cap	1	←	
12	685559	cap	1	←	
13	685454	lock nut	1	←	
14	713515	bushing	1	←	
15	715010	valve rod	1	←	
16	640015	o ring	2	←	
17	640005	o ring	1	←	
18	713517	bushing	2	←	
19	713518	switching valve	1	←	
20	700231	pin	2	←	
21	714446	switching pin	2	←	
22	684537	spring	2	←	
23	713620	spring holder	2	←	
24	715114	holder	1	←	
25	715117	base cap	1	←	
27	640136	o ring	2	←	
28	715115	valve body	1	2	
29	772331	gasket	1	2	
30	705688	switching valve	1	2	
31	705687	guide plate	1	2	
32	705693	block	1	2	
33	685942	screw	4	8	
34	631418	spring washer	6	12	
35	630313	ball	1	2	
36	706612	spring	1	2	
37	705700	block holder	1	2	
38	602297	screw	2	4	
39	619147	socket bolt	4	4	
40	715116	cap	1		
41	770549	cushion	2	←	

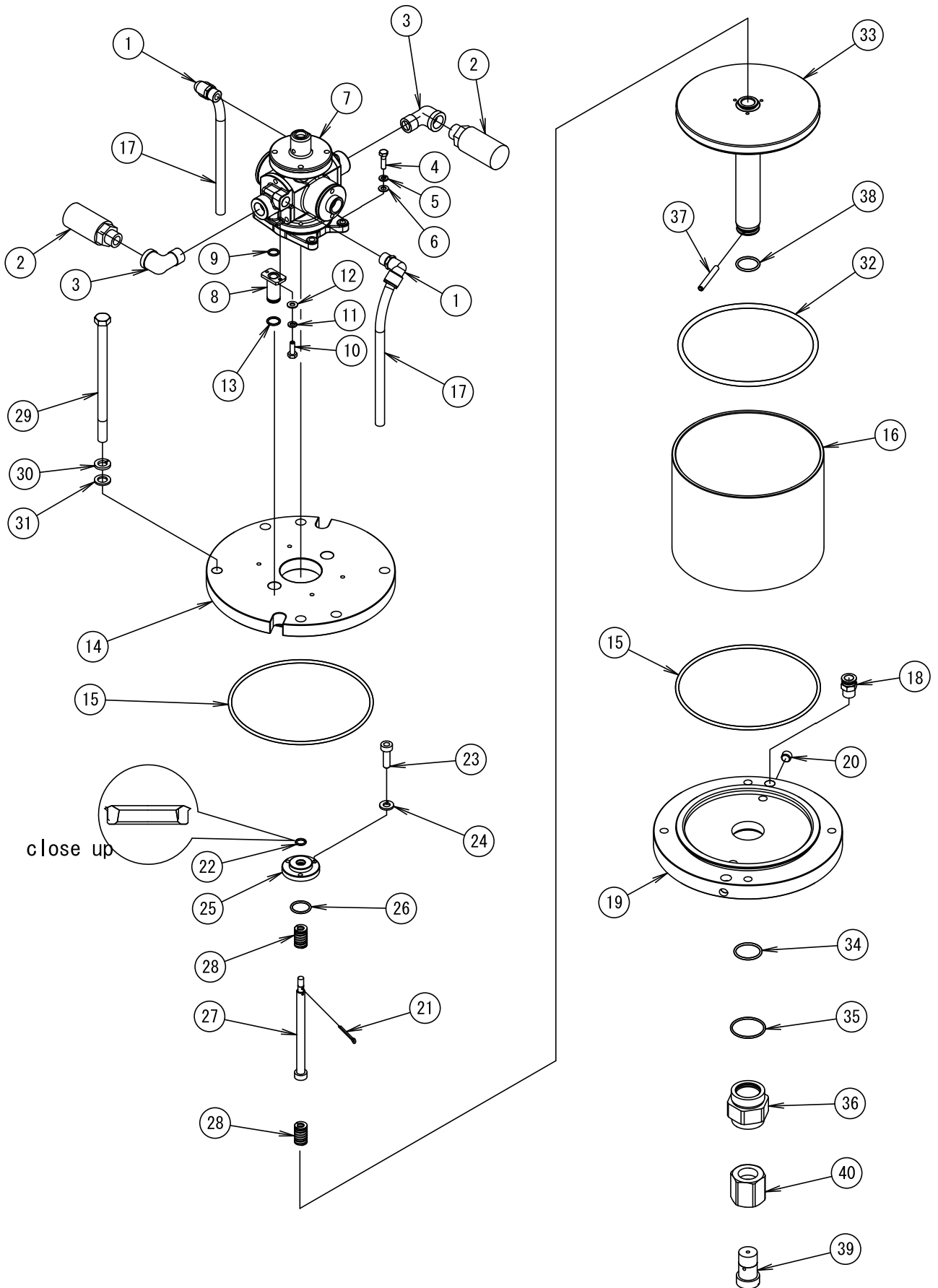
8.2.1 Explode view of the air motor assembly (804398) 140type



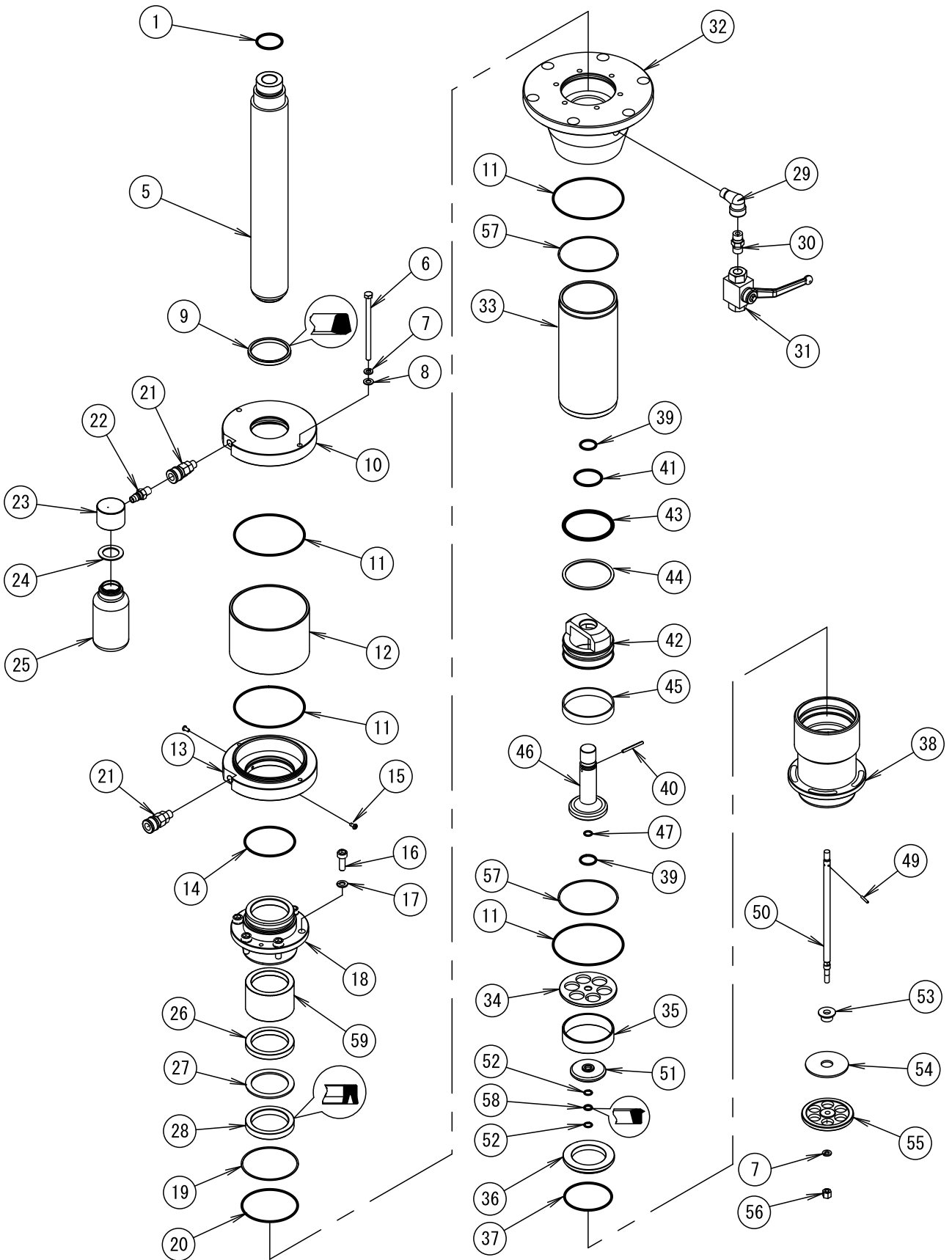
8.3.1 Explode view of the air motor assembly (804354) 200type



8.4.1 Explode view of the air motor assembly (854357) 250type



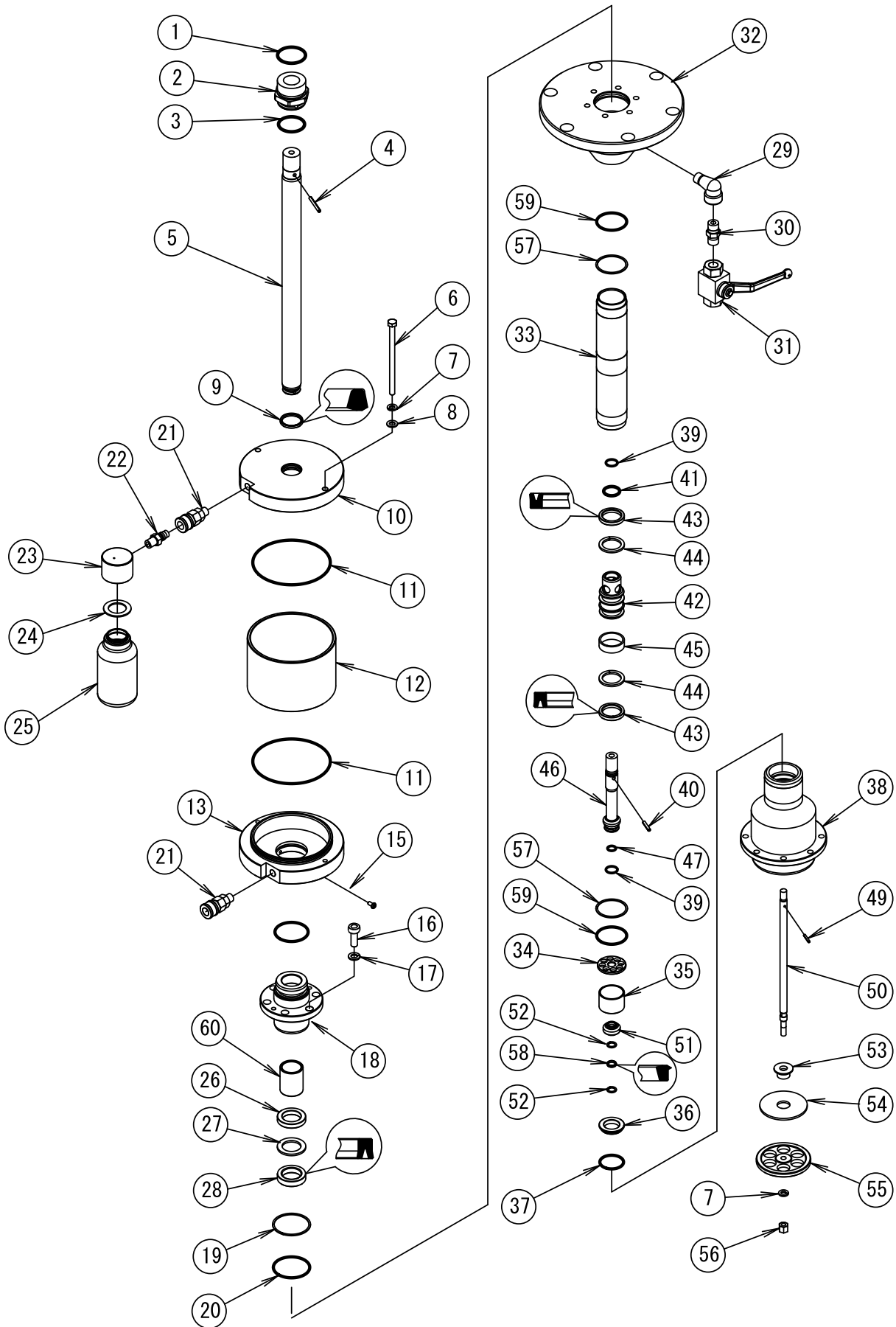
8.5.1 Exploded view of the lower pump assembly (804399) IP140S3, IP250S10



8.5.2 Lower pump assembly (804399) parts list

Item No.	Part No.	Description	Qty.	Remark
1	640040	o ring	1	
5	715145	plunger	1	
6	685267	bolt	2	
7	631420	spring lock washer	3	
8	631013	washer	2	
9	684711	packing	1	
10	715146	cap	1	
11	640149	o ring	4	
12	772143	oil cup	1	
13	715147	socket	1	
14	640146	o ring	1	
15	602284	screw	2	
16	619175	socket bolt	6	
17	631421	spring lock washer	6	
18	715148	gland retainer	1	
19	685119	backup ring	1	
20	640147	o ring	1	
21	680742	air chuck	2	
22	680743	nipple	1	
23	715993	adapter	1	
24	772330	packing	1	
25	686106	bottle	1	
26	713839	packing gland	1	
27	684712	backup ring	1	
28	684713	packing	1	
29	681198	street elbow	1	
30	685367	nipple	1	
31	685354	valve	1	
32	715149	body	1	
33	715150	suction tube	1	
34	715151	valve sttoper	1	
35	715152	spacer	1	
36	715153	valve seat	1	
37	640144	o ring	1	
38	715154	foot valve housing	1	
39	640130	o ring	2	
40	685462	pin	1	
41	640042	o ring	1	
42	715155	piston body	1	
43	640067	o ring	2	
44	643727	backup ring	2	
45	772185	wear ring	1	
46	715156	piston valve	1	
47	640009	o ring	1	
49	632547	pin	1	
50	715027	shovel rod	1	
51	715157	foot valve	1	
52	643669	backup ring	2	
53	713551	valve guide	1	
54	713552	valve plate	1	
55	713553	shovel	1	
56	681886	lock nut	1	
57	685362	backup ring	2	
58	685546	packing	1	
59	772184	throat bearing	1	

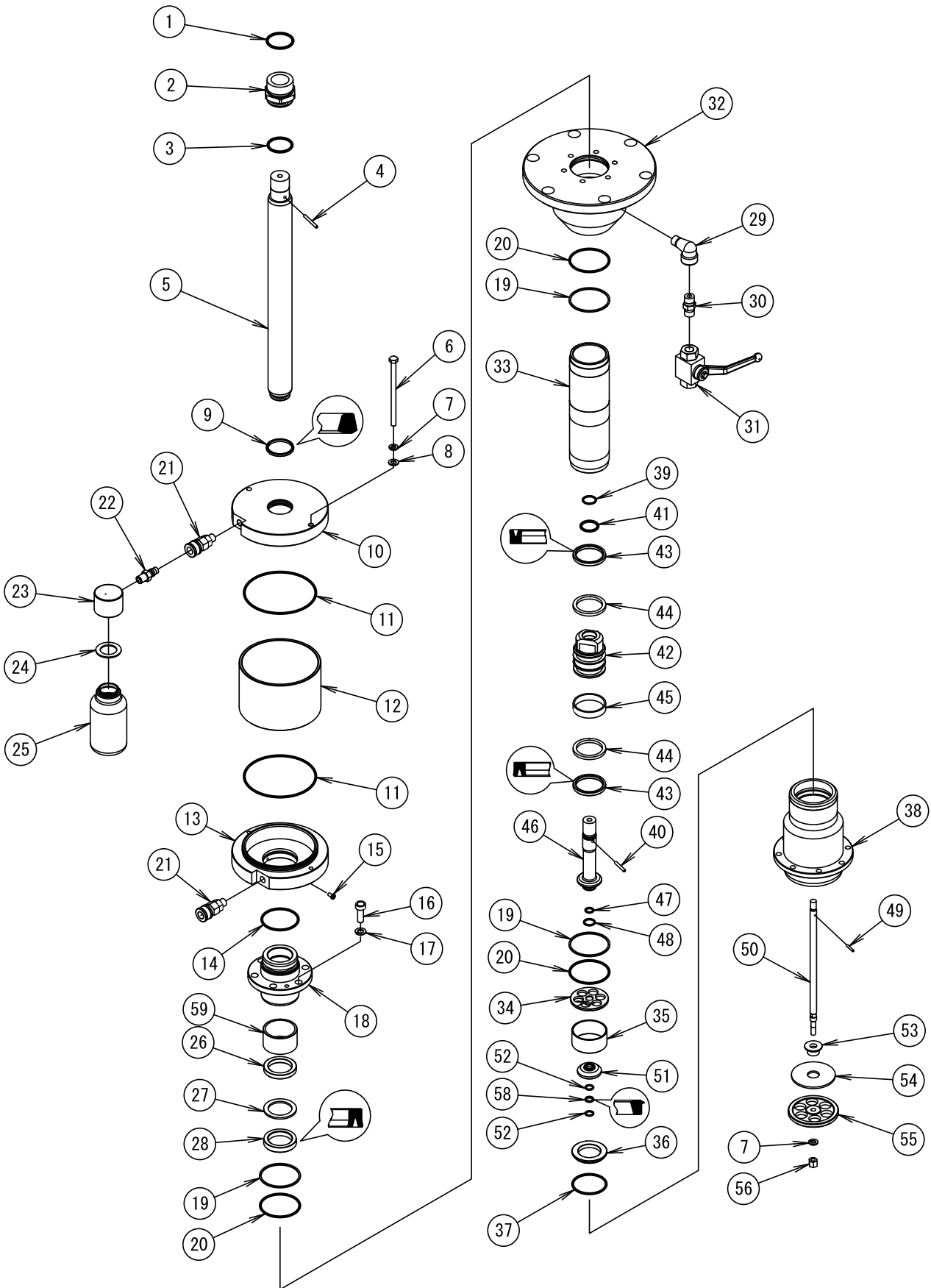
8.6.1 Explode view of the lower pump assembly (804450) IP140S25



8.6.2 Lower pump assembly (804450) parts list

Item No.	Part No.	Description	Qty.	Remark
1	640040	o ring	1	
2	715248	bushing	1	
3	640037	o ring	1	
4	685471	pin	1	
5	715249	plunger	1	
6	685267	bolt	2	
7	631420	spring lock washer	3	
8	631013	washer	2	
9	685615	packing	1	
10	715250	cap	1	
11	640149	o ring	2	
12	772143	oil cup	1	
13	715251	socket	1	
14	640135	o ring	1	
15	602284	screw	2	
16	619175	socket bolt	4	
17	631421	spring lock washer	4	
18	715252	gland retiner	1	
19	685115	backup ring	1	
20	640136	o ring	1	
21	680742	air chuck	2	
22	680743	nipple	1	
23	715993	adapter	1	
24	772330	packing	1	
25	686106	bottle	1	
26	715253	packing gland	1	
27	772811	backup ring	1	
28	685616	packing	1	
29	681198	street elbow	1	
30	685367	nipple	1	
31	685354	valve	1	
32	715254	body	1	
33	715255	suction tube	1	
34	715256	valve stopper	1	
35	715257	spacer	1	
36	715258	valve seat	1	
37	640132	o ring	1	
38	715259	foot valve housing	1	
39	640015	o ring	2	
40	685617	pin	1	
41	640020	o ring	1	
42	715260	piston body	1	
43	685618	packing	2	
44	685619	backup ring	2	
45	772812	wear ring	1	
46	715261	piston valve	1	
47	640009	o ring	1	
49	682544	pin	1	
50	715027	shovel rod	1	
51	715262	foot valve	1	
52	643669	backup ring	2	
53	713551	valve guide	1	
54	713552	valve plate	1	
55	713553	shovel	1	
56	681886	lock nut	1	
57	685114	backup ring	2	
58	685546	packing	1	
59	640134	o ring	2	
60	772810	throrat bearing	1	

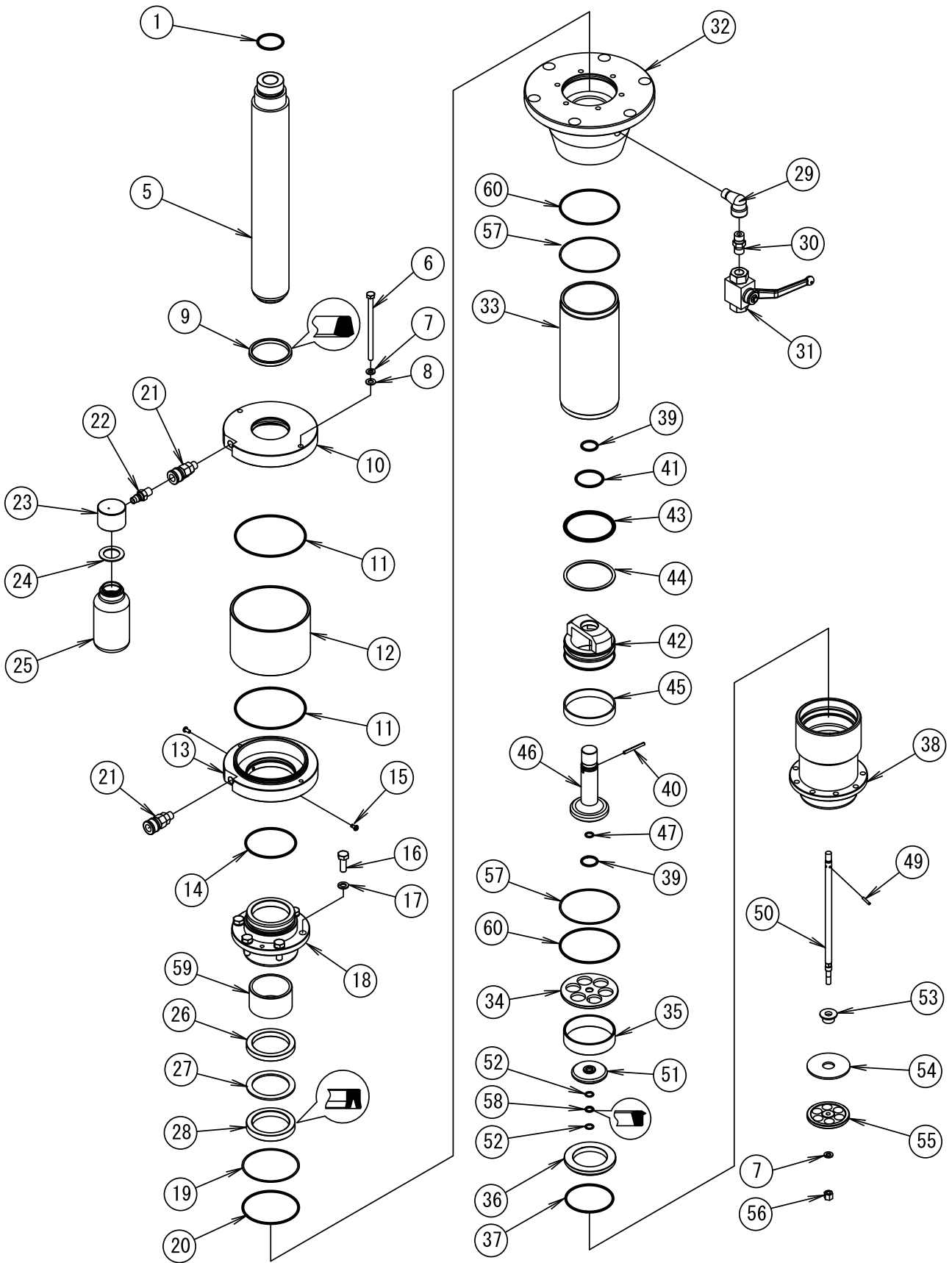
8.7.1 Explode view of the lower pump assembly (804356) IP140S12, IP200S25



8.7.2 Lower pump assembly (804356) parts list

Item No.	Part No.	Description	Qty.	Remark
1	640040	o ring	1	
2	715029	bushing	1	
3	640037	o ring	1	
4	685471	pin	1	
5	715015	plunger	1	
6	685267	bolt	2	
7	631420	spring washer	3	
8	631013	washer	2	
9	685456	packing	1	
10	715016	cap	1	
11	640149	o ring	2	
12	772143	oil cup	1	
13	715017	socket	1	
14	640137	o ring	1	
15	602284	screw	2	
16	619175	socket bolt	6	
17	631421	spring washer	6	
18	715030	gland retainer	1	
19	685359	backup ring	3	
20	640138	o ring	3	
21	680742	air chuck	2	
22	680743	nipple	1	
23	715993	adapter	1	
24	772330	packing	1	
25	686106	bottle	1	
26	715019	packing gland	1	
27	772694	backup ring	1	
28	685458	packing	1	
29	681198	street elbow	1	
30	685367	nipple	1	
31	685354	valve	1	
32	715018	body	1	
33	715020	suction tube	1	
34	715022	valve stopper	1	
35	715023	spacer	1	
36	715024	valve seat	1	
37	640136	o ring	1	
38	715137	foot valve housing	1	
39	640017	o ring	1	
40	685455	pin	1	
41	640025	o ring	1	
42	715025	piston body	1	
43	685459	packing	2	
44	772695	backup ring	2	
45	772696	wear ring	1	
46	715026	piston ring	1	
47	640009	o ring	1	
48	640015	o ring	1	
49	632544	pin	1	
50	715027	shovel rod	1	
51	715028	foot valve	1	
52	643669	backup ring	2	
53	713551	valve guide	1	
54	713552	valve plate	1	
55	713553	shovel	1	
56	681886	lock nut	1	
58	685546	packing	1	
59	772697	throat bearing	1	

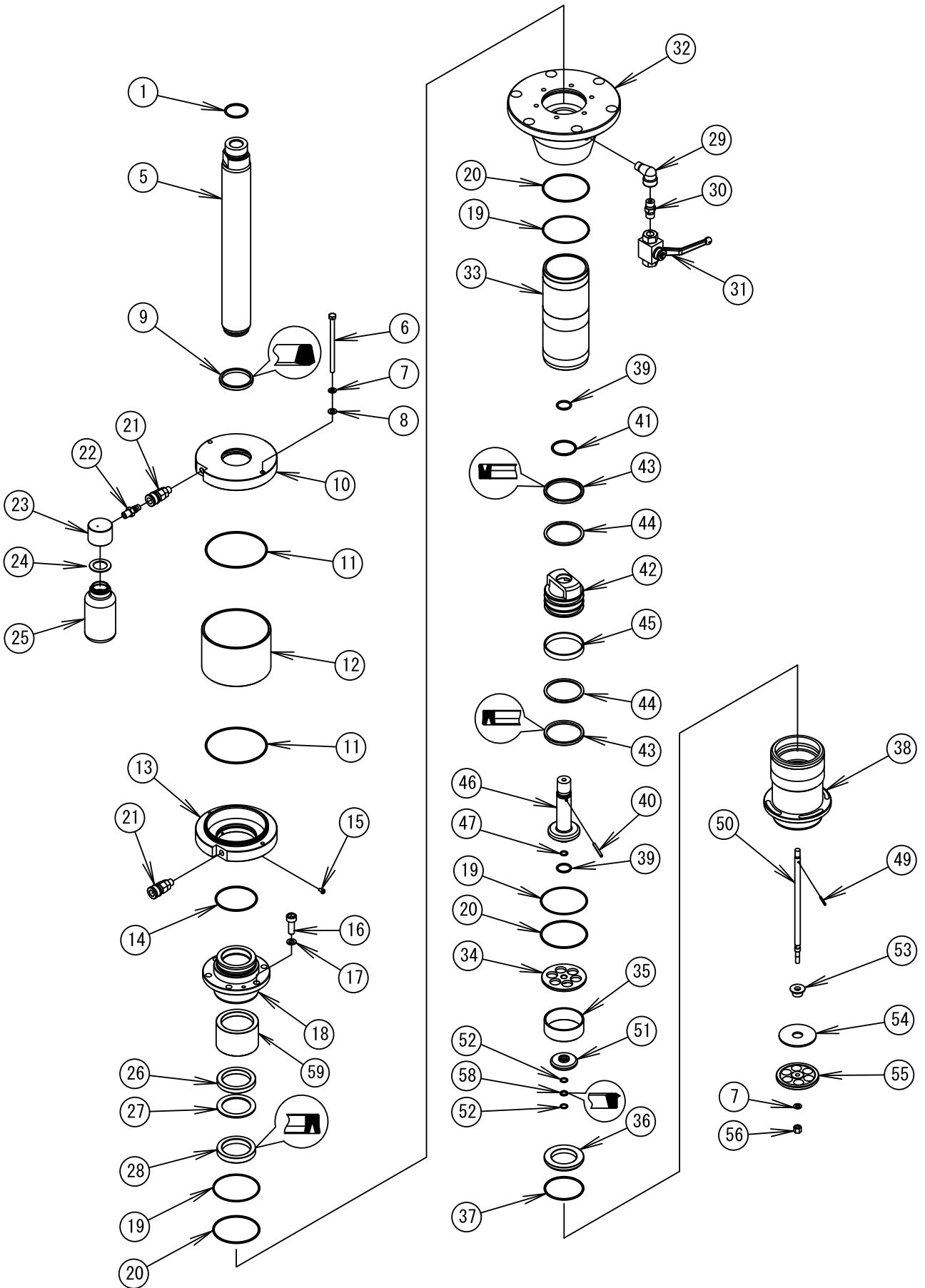
8.8.1 Explode view of the lower pump assembly (804436) IP200S10



8.8.2 Lower pump assembly (804436) parts list

Item No.	Part No.	Description	Qty.	Remark
1	640040	o ring	1	
5	715203	plunger	1	
6	685267	bolt	2	
7	631420	spring washer	3	
8	631013	washer	2	
9	685578	packing	1	
10	715204	cap	1	
11	640149	o ring	2	
12	772143	oil cup	1	
13	715205	socket	1	
14	640142	o ring	1	
15	602284	screw	2	
16	619175	socket bolt	6	
17	631421	spring lock washer	6	
18	715206	gland retainer	1	
19	685580	backup ring	1	
20	640144	o ring	1	
21	680742	air chuck	2	
22	680743	nipple	1	
23	715993	adapter	1	
24	772330	packing	1	
25	686106	bottle	1	
26	715207	packing	1	
27	772778	backup ring	1	
28	685579	packing	1	
29	681198	street elbow	1	
30	685367	nipple	1	
31	685354	valve	1	
32	715208	body	1	
33	715209	suction tube	1	
34	715210	valve stopper	1	
35	715211	space	1	
36	715212	valve seat	1	
37	640141	o ring	1	
38	715213	foot valve housing	1	
39	640130	o ring	2	
40	685462	pin	1	
41	640042	o ring	1	
42	715214	piston body	1	
43	640063	o ring	1	
44	643723	backup ring	1	
45	772779	wear ring	1	
46	715215	piston valve	1	
47	640009	o ring	1	
49	632547	pin	1	
50	715027	shovel rod	1	
51	715216	foot valve	1	
52	643669	backup ring	2	
53	713551	valve ring	1	
54	713552	valve plate	1	
55	713553	shovel	1	
56	681886	lock nut	1	
57	685581	backup ring	2	
58	685546	packing	1	
59	772780	throat bearing	1	
60	640145	o ring	2	

8.9.1 Explode view of the lower pump assembly (804359) IP250S20



8.9.2 Lower pump assembly (804359) parts list

Item No.	Part No.	Description	Qty.	Remark
1	640040	o ring	1	
5	715040	plunger	1	
6	685267	bolt	2	
7	631420	spring lock washer	3	
8	631013	washer	2	
9	685460	packing	1	
10	715041	cap	1	
11	640149	o ring	2	
12	772143	oil cup	1	
13	715042	socket	1	
14	640141	o ring	1	
15	602284	screw	2	
16	619175	socket bolt	6	
17	631421	spring lock washer	6	
18	715053	gland retainer	1	
19	685361	backup ring	3	
20	640143	o ring	3	
21	680742	air chuck	2	
22	680743	nipple	1	
23	715993	adapter	1	
24	772330	packing	1	
25	686106	bottle	1	
26	715044	packing gland	1	
27	772698	backup ring	1	
28	685461	packing	1	
29	681198	street elbow	1	
30	685367	nipple	1	
31	685354	valve	1	
32	715043	body	1	
33	715045	suction tube	1	
34	715047	valve stopper	1	
35	715048	spacer	1	
36	715049	valve seat	1	
37	640140	o ring	1	
38	715138	foot valve housing	1	
39	640130	o ring	2	
40	685462	pin	1	
41	640042	o ring	1	
42	715050	piston body	1	
43	685463	packing	2	
44	685464	backup ring	2	
45	772699	wear ring	1	
46	715051	piston valve	1	
47	640009	o ring	1	
49	632547	pin	1	
50	715027	shovel rod	1	
51	715052	foot valve	1	
52	643669	backup ring	2	
53	713551	valve guide	1	
54	713552	valve plate	1	
55	713553	shovel	1	
56	681886	lock nut	1	
58	685546	packing	1	
59	772700	throat bearing	1	

9. Pump specification

■ Engineering Data

TYPE		IP140S3	IP140S12	IP140S25
MODEL No.		853787	853862	853861
PUMP RATIO (NOMINAL)		3 x 1	12 x 1	25 x 1
FLUID CONNECTION	SUCTION PORT	Suction port has a mounting flange for an elbow stand or inductor plate.		
	DISCHARGE PORT	NPT 1_1/2 (F)		NPT 3/4 (F)
AIR CONNECTION	SUPPLY PORT	NPT 3/4 (F)		
OPERATING AIR PRESSURE		0.2 ~ 0.7 MPa		
MAXIMUM OPERATING NOISE	A-WEIGHTED SOUND PRESSURE LEVEL *1	90 dB		
	A-WEIGHTED SOUND POWER LEVEL *2	94 dB		
AMB. TEMP. RANGE	ENV. TEMPERATURE	0 ~ 60 °C		
	MATERIAL TEMP.	0 ~ 80 °C		
STROKE (NOMINAL)		150 mm		
DISCHARGE VOLUME per CYCLE *3		1311 mL	281.6 mL	156.6 mL
MAXIMUM DISCHARGE PRESSURE		2.1 MPa	8.4 MPa	17.5 MPa
WEIGHT		65 kg	53 kg	50 kg

IP200S10	IP200S25	IP250S10	IP250S20
853785	853767	853786	853768
10 x 1	25 x 1	10 x 1	20 x 1
Suction port has a mounting flange for an elbow stand or inductor plate.			
NPT 1_1/2 (F)			
NPT 3/4 (F)			
0.2 ~ 0.7 MPa			
90 dB		88 dB	
93 dB		94 dB	
0 ~ 60 °C			
0 ~ 80 °C			
150 mm			
833 mL	281.6 mL	1311 mL	625 mL
7.0 MPa	17.5 MPa	7.0 MPa	14 MPa
64 kg	58 kg	82 kg	74 kg

*1 Measurement method of A-weighted sound pressure level is based on ISO 1996.

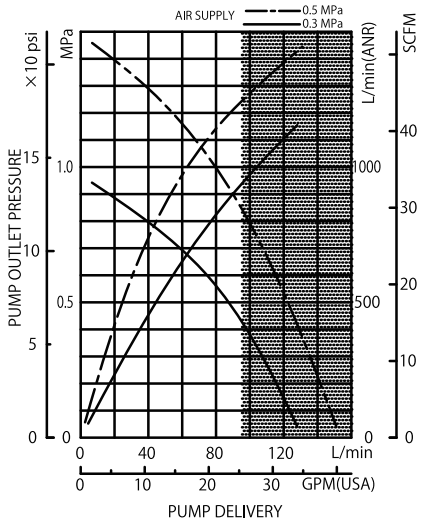
*2 Measurement method of A-weighted sound power level is based on ISO 3744.

*3 Discharge volume (per cycle) varies according to use conditions.

■ Performance curve

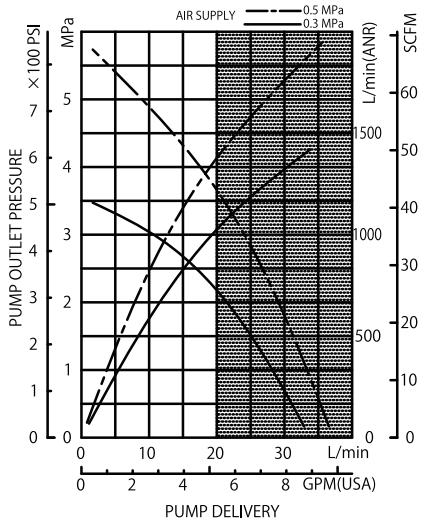
853787 (IP140S3)

TEST FLUID : Nikka Oil Mills Co.,Ltd. Soybean oil
 FLUID TEMPERATURE : 25.0 °C



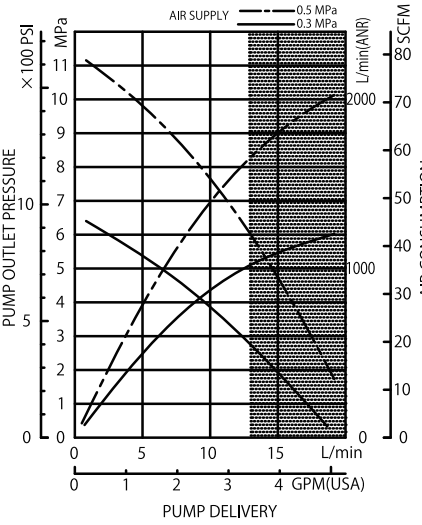
853862 (IP140S12)

TEST FLUID : Nikka Oil Mills Co.,Ltd. Soybean oil
 FLUID TEMPERATURE : 12.0 °C



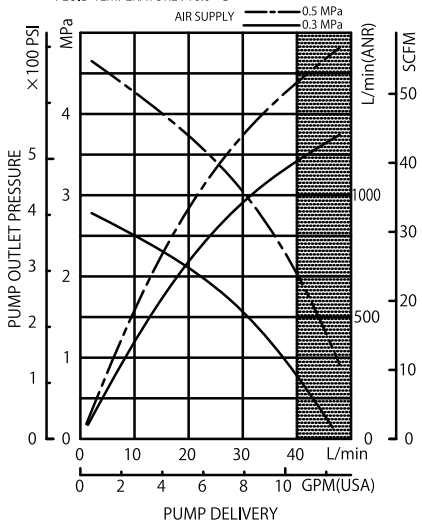
853861 (IP140S25)

TEST FLUID : Nikka Oil Mills Co.,Ltd. Soybean oil
 FLUID TEMPERATURE : 29.0 °C



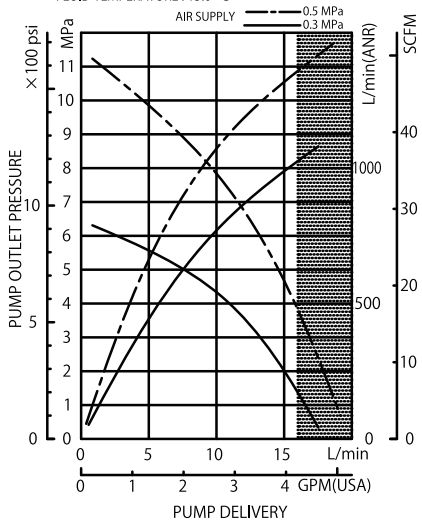
853785 (IP200S10)

TEST FLUID : Nikka Oil Mills Co.,Ltd. Soybean oil
 FLUID TEMPERATURE : 16.0 °C



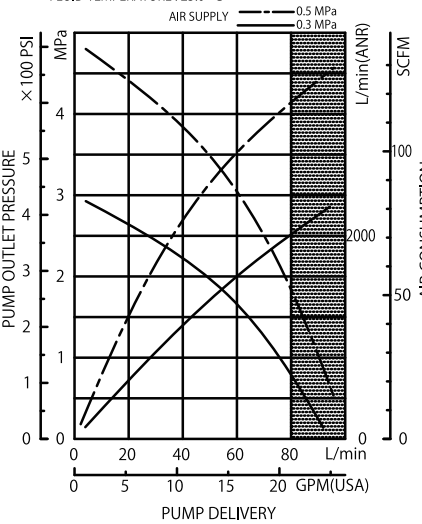
853767 (IP200S25)

TEST FLUID : Nikka Oil Mills Co.,Ltd. Soybean oil
 FLUID TEMPERATURE : 15.0 °C



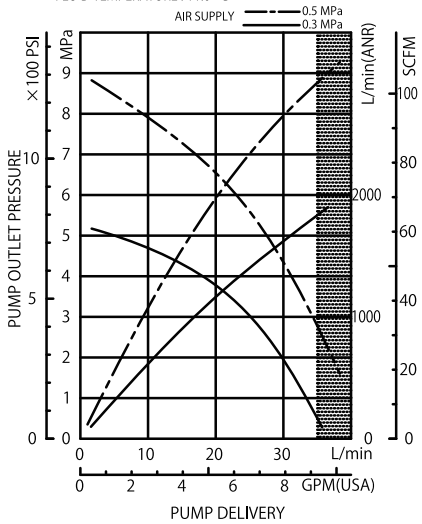
853786 (IP250S10)

TEST FLUID : Nikka Oil Mills Co.,Ltd. Soybean oil
 FLUID TEMPERATURE : 25.0 °C



853768 (IP250S20)

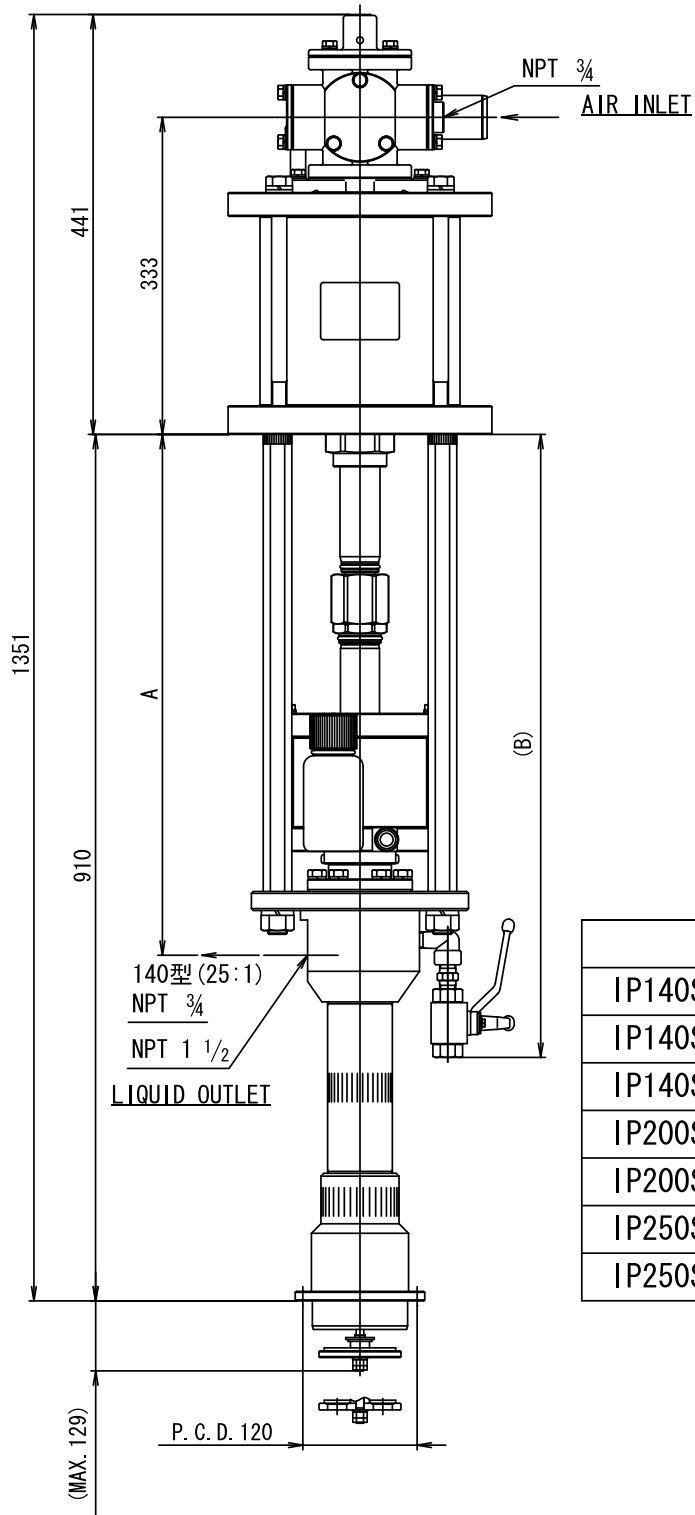
TEST FLUID : Nikka Oil Mills Co.,Ltd. Soybean oil
 FLUID TEMPERATURE : 11.0 °C



NOTE
 The continuous pump operation should be avoided if the desired delivery is in the range shaded in the figure below.

■ Appearance and dimensions

IP140S, IP200S, IP250S



	A	(B)
IP140S 3	550	657
IP140S 12	547	654
IP140S 25	537	654
IP200S 10	550	657
IP200S 25	547	654
IP250S 10	550	657
IP250S 20	550	657

10. Limited Warranty

- If an abnormality occurs during normal operation in accordance with the operating instructions and other operating cautions within the warranty period (12 months after date of purchase) that can be attributed to a manufacturing defect, the defective parts of this product will be serviced or the product will be replaced free of charge. However, this warranty will not cover compensation for incidental damage or any malfunction listed below.

1. Warranty period

This warranty will be valid for a period of 12 months after the date of purchase.

2. Warranty

If, during the warranty period, any of the material of the genuine parts of this product or the workmanship of this product is found defective, and is so verified by our company, the servicing cost will be fully born by our company.

3. Exclusion

Even during the warranty period, this warranty does not cover the following:

- 1) Malfunction arising from use of parts other than manufacturer-specified genuine parts
- 2) Malfunction arising from misuse or operating errors, or lack of storage or maintenance care
- 3) Malfunction arising from use with a fluid that may cause corrosion, inflation or dissolution of the component parts of the product
- 4) Irregularity arising from repair made by other than by our firm, our regional office, dealer or authorized service personnel
- 5) Malfunction arising from modification of the product by other than authorized service personnel
- 6) Wear and tear of parts that must be regularly replaced in the course of normal operation, such as packings, O-rings, balls, and valve seats
- 7) Malfunction and/or damage due to transportation, moving or droppage of the product after purchase
- 8) Malfunction and/or damage due to fire, earthquake, flood or other force majeure
- 9) Malfunction arising from use of compressed air that contains impurities or excessive moisture, or use of gases or fluids other than the specified compressed air
- 10) Malfunction arising from use with a fluid that causes excessive abrasion or use of lubricating oil other than that specified for this product

Furthermore, this warranty does not cover the rubber parts, or other parts that are subject to wear in normal operation, used in this product and its accessories.

4. Parts

Parts for this product will be kept available for 5 years after discontinuation of production. Once 5 years have elapsed after close of production, availability of parts for this product cannot be guaranteed.

Manufactured by

YAMADA CORPORATION

INTERNATIONAL DEPARTMENT

No.1-3, 1-Chome, Mimami-Magome, Ohta-Ku, Tokyo, 143-8504, Japan

PHONE : +81-(0)3-3777-0241

FAX : +81-(0)3-3777-0584

YAMADA EUROPE B.V.

Aquamarijnstraat 50, 7554 NS Hengelo (0), The Netherlands

PHONE : 31(0) 74-2422032

FAX : 31(0) 74-2421055

201205 INK035U