CKD

SM-190948-A

INSTRUCTION MANUAL

LUBRICATOR

3003E : ECONOMIST TYPE
(FINE OIL MIST)

3503 : ATOMIST TYPE
(FINE OIL FOG)

Discontinued model

- Please read this instruction manual carefully before using this product, particularly the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

CKD Corporation

For Safety Use

To use this product safely, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (to the level pursuant to JIS B 8370 Pneumatic System Rules).

We do not bear any responsibility for accidents caused by any person without such knowledge or arising from improper operation.

Our customers use this product for a very wide range of applications, and we cannot keep track of all of them. Depending on operating conditions, the product may fail to operate to maximum performance, or cause an accident. Thus, before placing an order, examine whether the product meets your application, requirements, and how to use it.

This product incorporates many functions and mechanisms to ensure safety. However, improper operation could result in an accident. To prevent such accidents, read this instruction manual carefully for proper operation.

Observe the cautions on handling described in this manual, as well as the following instructions:

⚠ Precautions

- Since the filter and the lubricator use a plastic bowl, do not use them with an organic solvent or in a heating steam atmosphere. The bowl will be damaged. Use a metal bowl for an organic solvent or in a heating steam atmosphere.
- Before carrying out maintenance on the filter and the lubricator, depressurize the product completely.

INDEX

3003E

3503

LUBRICATOR

Manual No. SM-190948-A

NOTE: Letters & figures enclosed within Gothic style bracket (examples such as [C2-4PP07] · [V2-503-B] etc.) are editorial symbols being unrelated with contents of the book.

Jul.17.1997

Revision : Jun.24.2000

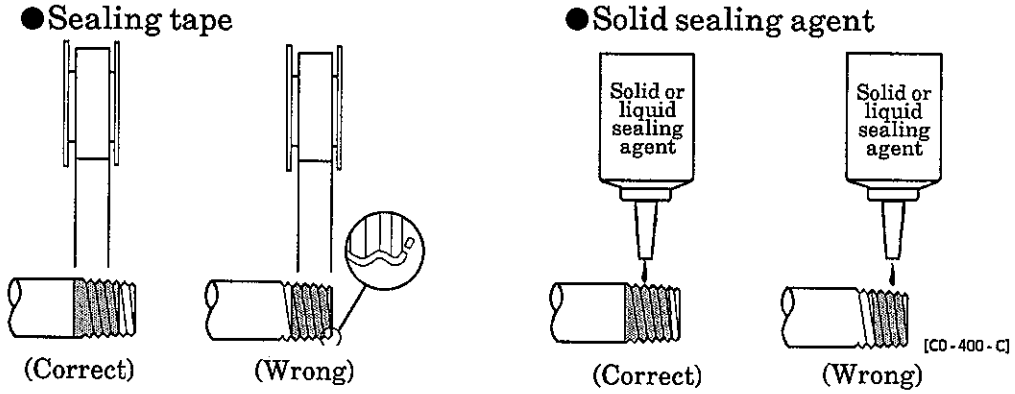
1. CAUTIONS

1) Refer to catalogs for specifications and model numbers of products.
2) Do not use this product where direct sunlight comes in.
3) Compressed air in use must not exceed 1.0 MPa.
4) Do not use it where ambient temperature is over 65 °C.
5) As material is polycarbonate resin, NEVER use it in atmosphere containing organic solvent. As chemical agent proof performance vary depending on material of bowl, refer to catalog for details.

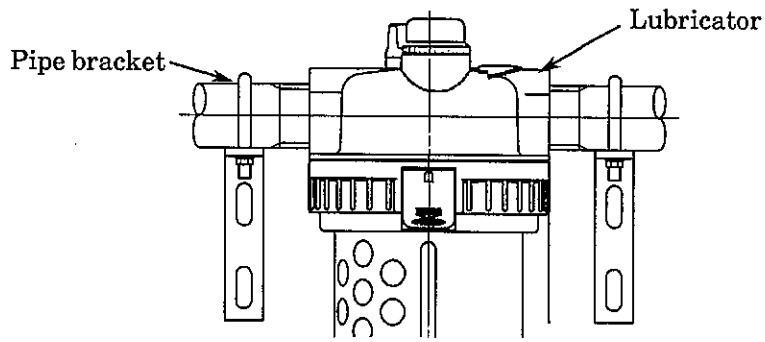
[SM-190948-A]

2. INSTALLATION

1) Install it as closest to air pressure equipment as possible.
2) Install air filter (5μm) in front of lubricator to prevent dust or water from coming in.
3) Install it so that air flow may direct as instructed by an arrow shown on the product.
4) Install it with bowl of lubricator facing downward.
5) When using seal tape or seal material for piping, do not apply it on first two threads at top end of screw so that any remaining of seal tape or material may not stay inside of piping or equipment.



6) When using pipe bracket (optionally available: 6132), assemble lubricator and piping first (see below), and mount them together on pipe bracket and fix them. Install pipe bracket on the wall etc.



7) For operation and maintenance purpose ,keep open space below bowl and above body, of 90 mm or more, and 250 mm or more respectively.
※ In case of metal bowl of large capacity (MG2, MG8, MG20), to facilitate oil filling, arrange union or flexible piping at IN-OUT piping.
8) Install stop valve in oil line before lubricator for auto fill type, "Option V" for maintenance.
9) At end of oil line using auto fill type, "Option V", install stop valve for air release.
Oil line piping must be of galvanized steel pipe or stainless steel pipe.
Oil line piping should be arranged as closest to lubricator as possible, connecting to lubricator with flexible tube (within 1 m).

3. OPERATION

1) Adjustment of oil drop quantity

Oil drop quantity increases by turning adjusting screw left (counter-clockwise), and decreases turning right (clockwise). Once drop quantity is set, proportion between oil and air is kept unchanged even if air flow rate changes.

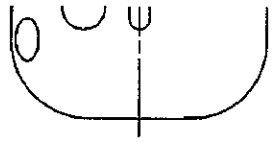
Economist type : All the oil dropped in sight dome will be sent to the OUT side in mist.(Fine oil mist).

Atomist type : 3% of the oil dropped in sight dome will be sent to the OUT side (Fine oil fog).

2) Purging drain

Drain from bottom of bowl periodically.

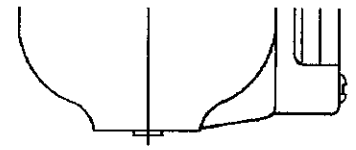
Standard plastic bowl



Drainage can be done by releasing pressure inside bowl and removing bowl.

※ Refer to article 6 for removing and installing bowl.

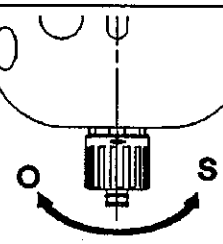
Standard metal bowl



Drainage can be done by releasing pressure inside bowl and removing bowl.

※ Refer to article 6 for removing and installing bowl.

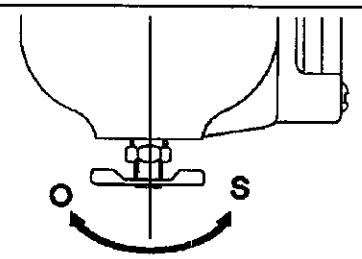
Plastic bowl with manual cock



Drainage can be started by turning cock toward "O", and stopped by turning it toward "S".

※ Release pressure inside bowl before removing bowl.

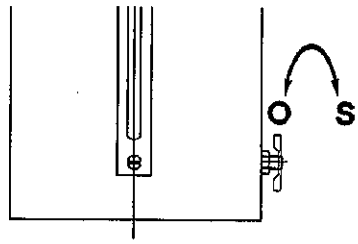
Metal bowl of pet cock



Drainage can be started by turning cock toward "O", and stopped by turning it toward "S".

※ Release pressure inside bowl before removing bowl.

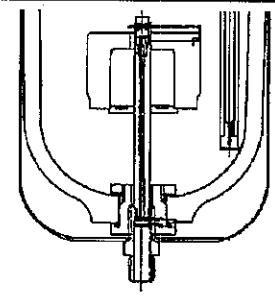
Large capacity metal bowl of pet cock



Drainage can be started by turning cock toward "O", and stopped by turning it toward "S".

※ Release pressure inside bowl before removing bowl.

Auto fill type bowl



Drainage can be done by stopping oil supply line, releasing pressure inside bowl and removing bowl.

※ Refer to article 6 for removing and installing bowl.

4. MAINTENANCE

Before carrying out maintenance, stop supplying compressed air, release primary pressure, and make sure that there is no pressure left in it.

4.1 Periodical inspection

1) Drain from bottom of bowl periodically. Refer to previous article for purging drain.

2) Fill oil periodically according to quantity to be used. Use clean turbine oil (Class 1, ISOVG32).
Fill oil as following procedure:
a. Stop primary pressure.
Note : Economist type can be filled oil without stopping primary pressure (by articles b. and c.).
b. Remove fill plug to make sure that all remaining pressure has gone out, and fill oil from that port.
Note : When filling oil after removing bowl, take fill plug off first and then remove bowl.
When assembling, fix bowl tightly and tighten fill plug.
※ Refer to article 6 for removing and installing bowl.
c. Fill oil just below max. level, and tighten fill plug.
Note : 1. Oil would not drop with fill plug removed.
2. AUTO FILL type, "Option V" can be automatically filled oil.

3) When oil drop quantity decreases, disassemble and clean it in following steps:
a. Stop primary pressure.
b. Make sure that all remaining pressure has gone out.
c-1. Clean filter mounted in siphon tube with neutral detergent if dirty.
c-2. Remove adjusting screw and clean its needle and body's sheet face, if dirty.
Clean passage from needle sheet face through adapter.
c-3. Remove sight dome and clean port through air passage, if dirty.
d. (Atomist type only) When Atomist assy is dirty, remove recrashfier, take Atomist assy out, wash it with neutral detergent, and clean the port by air blow.
e. Assemble all the parts in reverse procedure.
Finally, tighten fill plug and apply primary pressure.

4.2 Troubleshooting

Troubles	Major cause	Countermeasure
Oil does not drop	Insufficient air flow rate, Wrong selection of lubricator model	Check working conditions and min. drop flow rate to review model selection.
	Installation direction is opposite.	Install in right direction as arrow shows.
	Insufficient oil in bowl	Fill up oil before oil becomes lower than min. level shown on bowl.
	Adjusting screw of oil drop quantity is tighten too much.	Adjust to open adequately.
	Viscosity of oil is too thick.	Change oil to designated one.
Air leaks from bowl installed part.	Packing has scratch, or foreign article is attached.	Stop compressed air, remove bowl, and clean or renew packing.
	Bowl is broken.	Stop compressed air, remove bowl, and renew it.
(AUTO FILL type, "Option V") Oil is not supplied.	Stop valve in oil line is closed.	Open stop valve
	Pressure in oil line is poor.	Raise oil supply pressure by 0.035 - 0.35MPa higher than lubricator air pressure.
	Oil line is clogged with dust, etc.	Stop compressed air and oil line, remove bowl assy and oil line piping, and clean or renew auto fill part.
	Float mechanism is clogged with foreign articles etc..	Stop compressed air and oil line, remove bowl assy, and clean or renew float mechanism.
(AUTO FILL type, "Option V") Oil supply does not stop.	Pressure in oil line is too high.	Adjust oil supply pressure to adequate level 0.035 - 0.35 MPa higher than lubricator air pressure.
	Float mechanism is clogged with foreign articles, etc.	Stop compressed air and oil line, remove bowl assy, and clean or renew float mechanism.

⚠ WARNING When a flaw, such as a crack or a scratch, is found on the bowl, replace it with a new one. Failure to follow this instruction may result in breakage of the bowl and an accident.

⚠ WARNING Check the transparent resin bowl regularly for any smears. If there are any smears or it is otherwise unclear, replace it with a new one. Failure to follow this instruction may result in breakage of the bowl and an accident.

⚠ WARNING When cleaning a transparent resin bowl, use a neutral detergent for home use and rinse it well with water. Any other cleaning method may result in breakage of the bowl and an accident.

5. CONSUMABLES AND REPLACEMENT PARTS

When ordering parts, refer:

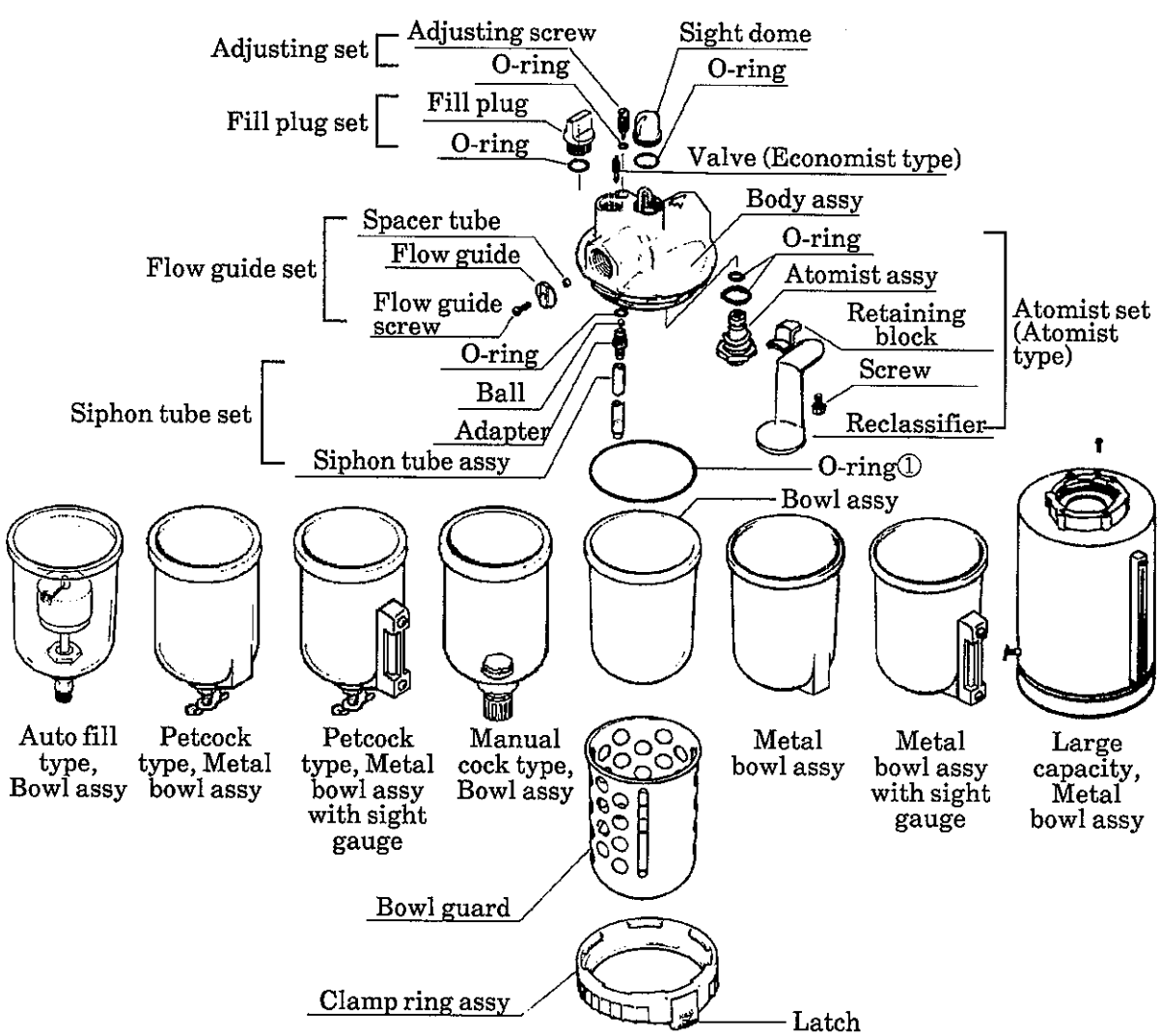
Economist type : 3003E – part code

Atomist type : 3503 – part code

Replacement parts list

Model number			Description	Part code
3003E	3503	Port size		
○	○	3/4・1	Adjusting set	AJ set
○	○	3/4	Flow guide set	Flow guide6
		1	Flow guide set	Flow guide8
○	○	3/4・1	Fill plug set	Plug
—	○	3/4・1	Atomist set	Atomist
○	○	3/4・1	O-ring ①	O ring or 78-061
(Standard) ※	(Standard) ※	3/4・1	Siphon tube set	ST set
Ⓥ ※	Ⓥ ※	3/4・1	Auto fill set	ST set V

Note : ※Choose Ⓥ for Auto fill type (Option V), while (Standard) is for others.



Bowl assy (Refer to article 6. for removing and installing bowl assy)

Appearance shape		Bowl material	Option mark	Parts code
Standard type (Non drainage)		Polycarbonate	No mark	Bowl or 16-5109
		Nylon	Z	Bowl-Z or 16-5109Z
		Metal	M	Bowl-M or 15-7198
		Metal with sight gauge	MG	Bowl-MG or 15-7204
Manual cock type		Polycarbonate	C	Bowl-C or 15-7161
		Nylon	CZ	Bowl-CZ or 15-7161Z
Petcock type		Metal	CM	Bowl-CM or 15-5050
		Metal with sight gauge	CMG	Bowl-CMG or 15-5051
Auto fill type		Polycarbonate	V	Bowl-V or 15-397
		Nylon	VZ	Bowl-VZ or 15-397Z
		Metal	VM	Bowl-VM or 15-5857
		Metal with sight gauge	VMG	Bowl-VMG or 15-398
Large capacity bowl	for 2ℓ	Metal	MG2	Bowl-MG2 or 15-5330 (15-228)
	for 4ℓ		MG8	Bowl-MG8 or 15-5331 (15-211)
	for 20ℓ		MG20	Bowl-MG20 or 15-5332 (15-212)

Note : Large capacity metal bowl assy requires exclusive siphon tube assy. Numbers in bracket are of exclusive siphon tube assy for each large capacity metal bowl. When order is placed by parts numbers, order these numbers as well as numbers for bowl assy.

6. BOWL EXCHANGING

Before replacing the bowl, cut off the pressure to the inlet by closing the oil adjustment needle, and open the outlet to release the pressure completely from the product. Give the fill plug a turn to confirm that the residual pressure is discharged, then remove the fill plug and the bowl.

Caution: Stop the oil line as well when the bowl is an auto-fill type.

6.1 Replacing a Standard Bowl

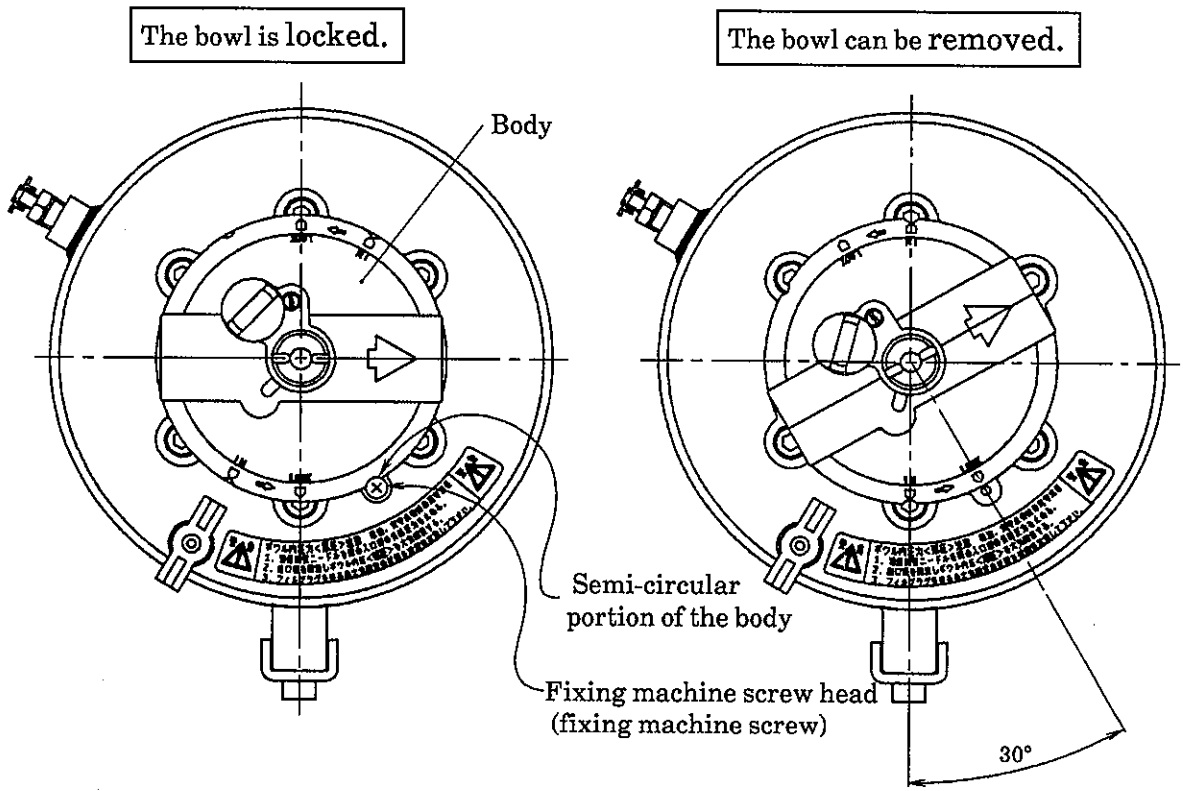
1) Pressing latch of clamp ring assy by finger, turn clamp ring assy 30 ° (Turn ⌂ mark in latch from LOCK ▽ mark to IN ▽ mark).
2) Pull bowl and bowl guard down to remove them together.
3) Assembling them can be done by reverse procedure.
4) Before applying compressed air, make sure that latch is on LOCK position (⌂ mark in latch meets LOCK ▽ mark in body).

6.2 Replacing a Large-Capacity Bowl

1) Unfasten the machine screw fastening the body.
2) Turn the body assembly 30° as shown in the figure below.

(Turn the body until the LOCK ▽ mark on the body points at the center of the hole for the fixing machine screw.)

3) Mount the bowl by following the removal procedure in reverse.
4) Confirm that the semi-circular portion of the body engages with the head of the fixing machine screw.



7. FLOW GUIDE REPLACING

Before replacing the flow guide, cut off the pressure to the inlet by closing the oil adjustment needle, and open the outlet to release the pressure completely from the product. At the same time, confirm that the IN-OUT piping is depressurized.

1) Remove piping at "IN" side on body.
2) Remove old flow guide assembled at inner part of piping port on "IN" side, together with flow guide screw and spacer tube.
3) Install new flow guide, flow guide screw, and spacer tube.
   Note : Install them with convex of flow guide positioned vertically.
4) Connect piping on "IN" side according to article 2.
5) Ensure that piping is done correctly before applying compressed air.

8. SIPHON TUBE REPLACING

Before replacing the flow guide, cut off the pressure to the inlet by closing the oil adjustment needle, and open the outlet to release the pressure completely from the product. At the same time, confirm that the IN-OUT piping is depressurized.

1) Remove bowl according to article 6.
2) Remove old siphon tube assy, separate adapter by wrench etc., and take out O-ring ball.
3) Install new O-ring ball together with adapter.
4) Install new siphon tube assy.
5) Assemble bowl according to article 6.
6) Before supplying compressed air, perform 6.1. 4) or 6.2. 4).

9. ATOMIST REPLACING (Atomist type)

Before replacing the flow guide, cut off the pressure to the inlet by closing the oil adjustment needle, and open the outlet to release the pressure completely from the product. At the same time, confirm that the IN-OUT piping is depressurized.

1) Remove bowl according to article 6.
2) Remove old Atomist set.
3) Install new Atomist set.
4) Assemble bowl according to article 6.
5) Before supplying compressed air, perform 6.1. 4) or 6.2. 4).