CKD

HEAVY DUTY DRAIN
5100-4C

Instruction manual

- Be sure to read this manual before installing and operating your HEAVY DUTY DRAIN.
- Keep this manual within the reach of an operator all the time.

CKD Corporation

CSM-0052-A/ 4

Thank you for adopting CKD's quality product.

Read this booklet and understand idea for efficient utilization of HEAVY DUTY DRAIN and its proper operation as we have lined up fundamental suggestions regarding its installation, operation and maintenance.

Keep this booklet handy for quick reference.

Please be advised in advance that there may be some discrepancies between products and contents of this book due to improvement of specification after printing.

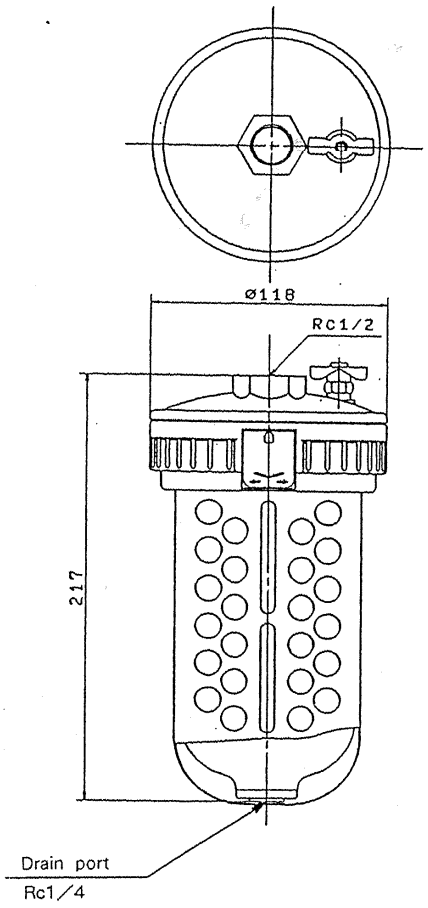
Table of Contents

1. PRODUCT

1-1. Specifications

Items \ Model No.		5100-4C
Operating pressure range	MPa	0.07～1.0
Type		Normally open
Proof pressure	MPa	1.5
Operating temperature range	℃	5～65
Drain discharge rate	cm^3	170 (Pressure at 0.5MPa)
Port size		Rc1/2
Drain discharge port size		Rc1/4
Mass	kg	1.9
Bowl guard		Standard equipment

1-2. External dimensions



2. CAUTION

·Make unloader piping of IDΦ5.7 or more, length of piping within 5m and avoid standing up right piping.

·Make sure to discharge residual air pressure out of bowl before commencing inspection of insufficient drain unloading. Give an air flushing after washing the unloading unit with water.

·Keep the unit out of direct sun ray.

·Pay re-consideration to the mounting location of Polycarbonate bowl where any of such chemical substances as listed below exist near by.

·Acetaldehyde	·Cresole	·Nitric Acid
·Acetic Acid	·Cyclohexanone	·Nitrobenzene
·Acetone	·Cyclohexane	·Nitrocellulose
·Acrylonitrile	·Cyclohexanol	·Parchloroethylene
·Aminoethanol	·Dimethylformaldhyde	·Phenol
·Ammonium Fluoride	·Dioxan	·Phosphorus Oxychloride
·Ammonium Sulfide	·Estel Phosphate	·Phosphorus Trichloride
·Benzene	·Ethane Tetrachloride	·Potassium Hydroxide (more than 5%)
·Benzonic Acid	·Ethyl Ether	·Pyridine
·Benzyle Alchol	·Ethylene Chlorohydrin	·Sodium Hydroxide Solution (more than 5%)
·Brombenzene	·Ethylene Dichrolide	·Sodium Sulfide
·Bromophenol Acid	·Fleon	·Sulfuric Acid
·Buthylene Acid	·Formic Acid	·Sulpher Chloride
·Calcium Hydroxide	·Gasoline	·Tetrahydro Naphthalene
·Carbon Disulfide	·Hydrochloric Acid	·Thiophene
·Carbon Tetrachloride	·Lacquer Thinner	·Toluen
·Chloro Benzen	·Methanol	·Trichloroethylene
·Chloroform	·Methylene Chloride	·Xylene

3. INSTALLATION

1) Install it so as to have unloading port held downward.

2) Avoid its installation where environment temperatur is foreseen to rise higher than 65℃.

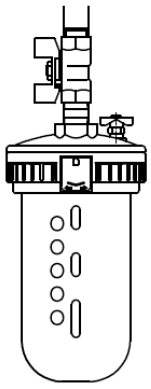
3) Keep working pressure within 1.0MPa.

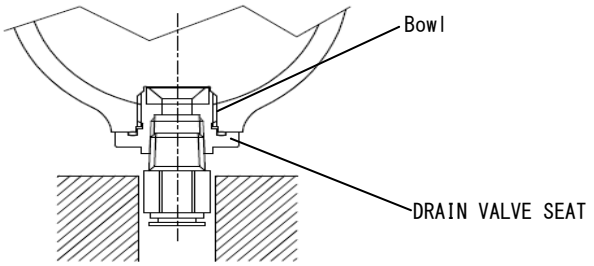
Total system is inoperative with the pressure lower than 0.1MPa because it requires the pressure of at least 0.1MPa.

4) With the mechanical drain type, use a tube 6mm or more in inner diameter for the drain line. The tube should be short to prevent bending. If the bore is 6mm, mark sure that the tube is no more than 5m in length.

5) Stop valve is recommended to ensure easy maintenance at connecting port side.

6) Drain piping work. Remove the bowl assembly. Fixing the fittings. Turn and screw the DRAIN VALVE SEAT. The recommended torque is 6~8N・m. Be careful not to apply force to the bowl.

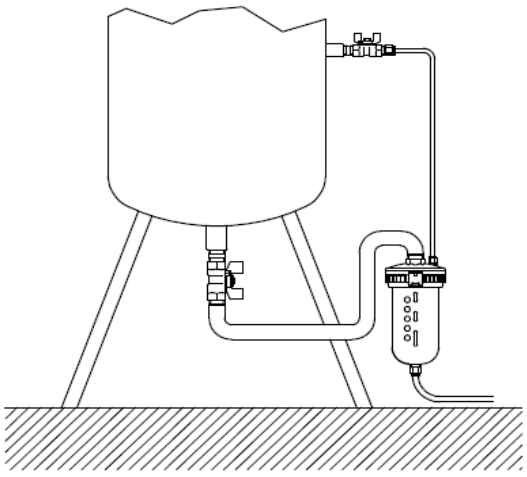




7) When drain is installed higher than normal tank drain outlet where clearance is limited.

(1) Open the petcock slightly to bleed air.

(2) Remore the petcock as illustrated below. Run tubing from drain to air outlet from tank to equalize air pressure.



4. DESCRIPTION OF FUNCTION

The heavy-duty drain is suitable for circuits generating a great amount of drain such as the circuits of after-cooler, refrigerating air dryer, etc.

①Petcock

The petcock can be used, when cleaning the bowl and/or drain unit or bleeding compressed air in the bowl. Then the petcock in a counter-clockwize direction to bleed the compressed air.

②Drain unit

Drain level can be detected by floating power caused by foam rubber float. Mechanical arm mechainsm puts jet valve operation into practice with certainy, and supplies pilot signal.

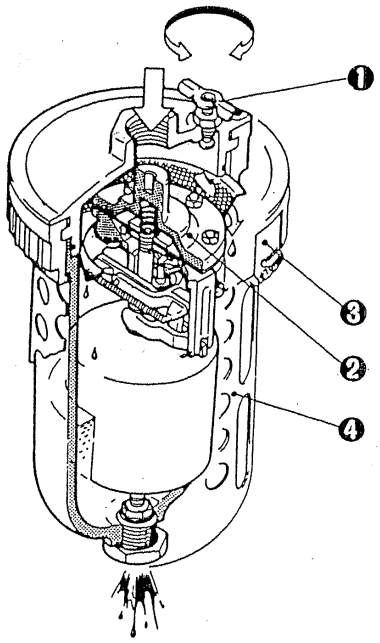
Drain is discharged from the drain valve connected with diaphsam biston, due to the opening and closing operations by pilot signal.

③Cramp ring

Bowl and drain unit can be cleaned easily, because of adoption of one-touch type cramp ring.

④Bowl guard

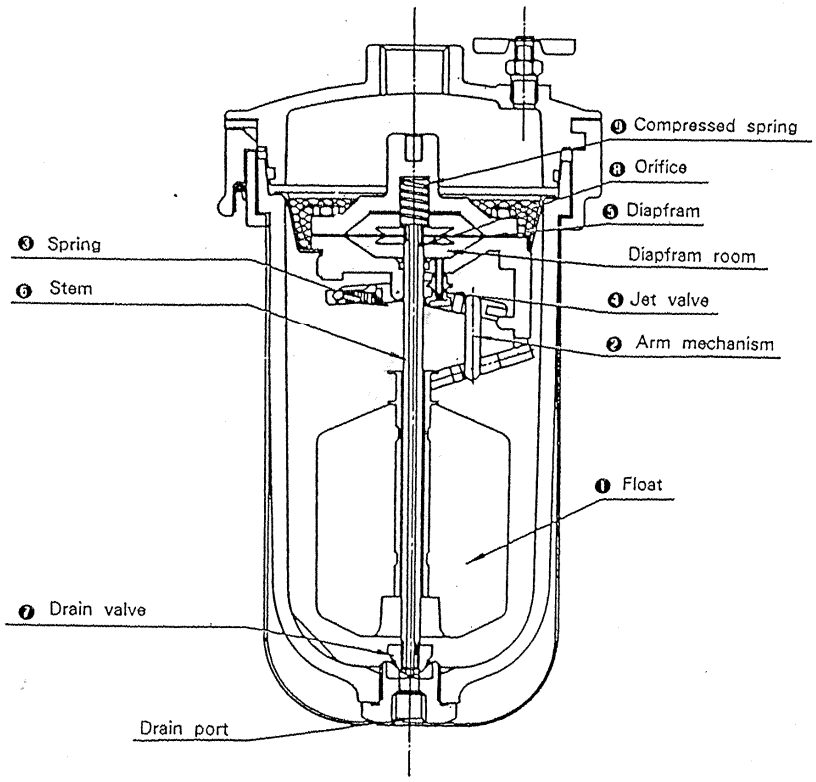
Even if the bowl bursts, the operator should be protected by the bowl guard. The bowl guard is slotted to provicle optimum view of clean platic bowl while providing the safety of a bowl guard.



5. PRINCIPLE OF OPERATION

Liguid contaminants as they collect in the bowl raise a foam nitrile rubber float ①. When the liquid level reaches a given point, the float ① triggers a mechanisms (sping ③, jet valve ④ and arm mechanisms ②) which pilots line pressure against a large area piston or diapfram ⑤ (incorposated with stem ⑥) which snaps open the drain valve ⑦ the contaminants are dischanged from the drain orifice at line pressure.

As the liguid level falls, the pilot valve closes, line pressure against the pioton diapfram ⑤ returns to atmosphere and the drain valve ⑦ snaps closed.



6. MAINTENANCE

6-1. Bowl exchanging

Before trying to remove the bowl, shut off compressed air, purge residual pressure and verify no more pressure remains.

1) Turn clamp ring ass'y 30° (that is to have ⌂ mark on latch leave ⌂ LOCK mark and match to IN ⌂ marking) while pressing the latch on clamp ring ass'y.

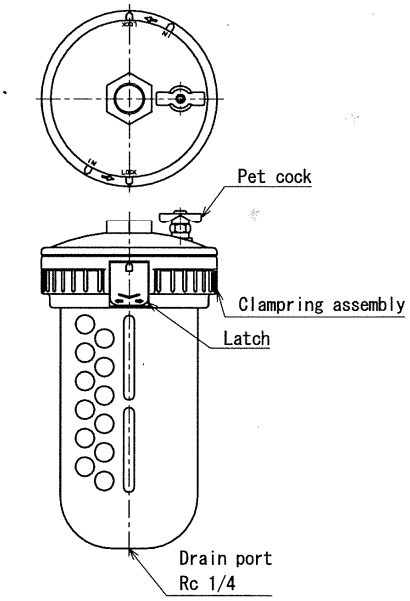
2) Pull the set of bowl downward as is and total ass'y of bowl and bowl guard come out.

Remark1.) The bowl doesn't often come off easily. It comes off mightily when making efforts too much and is dangerous. (First of all, push the lower side of the bowl from horizontal direction lightly. And, detach it after confirming loosening.)

3) To re-assemble total set, comply with the reversed steps of dismounting.

4) Before charging compressed air to the system, verify that latch is "Locked" condition. (That is the ⌂ mark on latch is matched to ⌂ Lock mark on the body.)

Remark2.) When metal bowl and metal bowl with gauge are used, bowl guard is not used.



6-2. Replacement of drain unit

Should there be any one of following phenomena, replace the components with new one as described in the following article.

Phenomena :

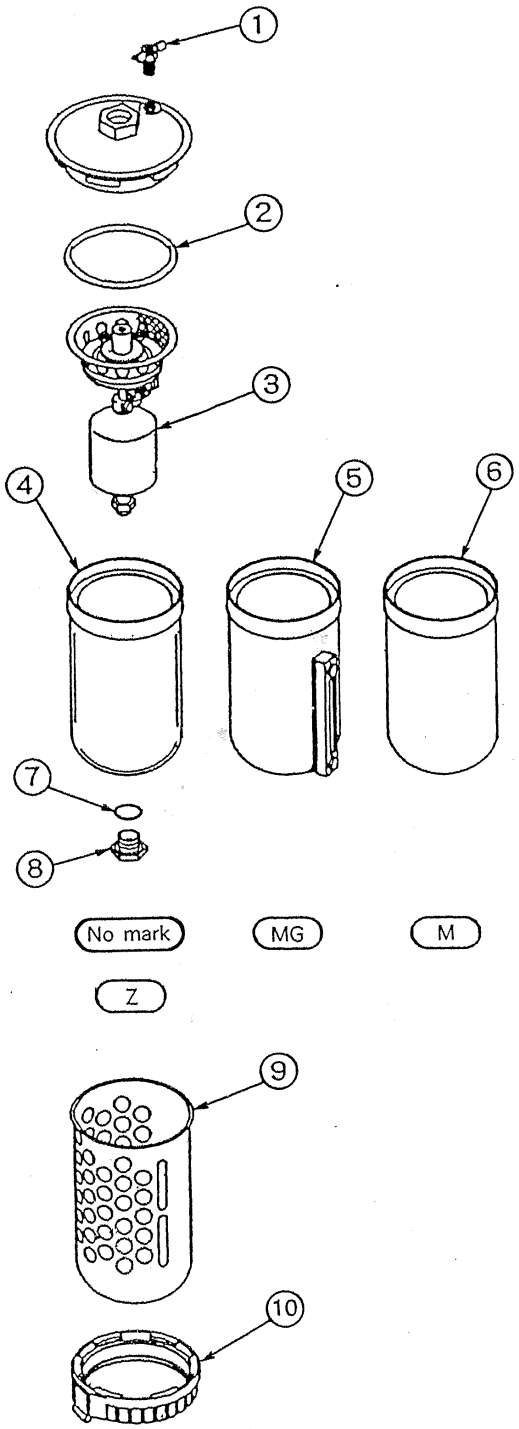
a) It does not unload drain automatically. (Float is buried with drain.)

b) Float does not go down even after unloading drain.

c) Drain drips down.

d) Air keeps leaking through unloading port.

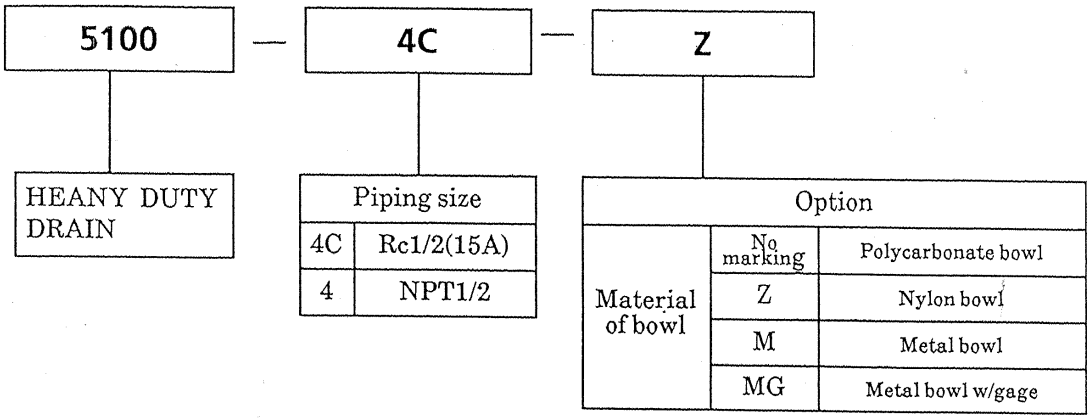
6-3. Break-up and parts list



Part name/Specifications	Model name	Comp	Qty
Consumable parts kits	5100-KIT	2	1
		3	1
		7	1
		8	1
Pet cock	DT3000-PETCOCK	1	1
Drain unit	1326-DRAIN-UNIT	3	1
Drain seat assembly	A1338-DRAIN-SEAT	7	1
		8	1
Bowl assembly(No mark) Polycarbonate bowl	5100-BOWL	2	1
		4	1
		7	1
		8	1
Bowl assembly(Z) Nylon bowl	5100-BOWL-Z	2	1
		4	1
		7	1
		8	1
Bowl assembly(M) Metal bowl	5100-BOWL-M	2	1
		6	1
		7	1
		8	1
Bowl assembly(MG) Metal bowl with sight gauge	5100-BOWL-MG	2	1
		5	1
		7	1
		8	1
Bowl guard	1138-BOWL-GUARD	9	1
Clamp ring assembly	1138-CLAMP-RING	10	1
O-ring	1138-ORING	2	5

※1 5pcs./set

7. MODEL CODE


5100
4C
Z
HEANY DUTY DRAIN
Piping size
4C Rc1/2(15A)
4 NPT1/2
Option
Material of bowl
No marking Polycarbonate bowl
Z Nylon bowl
M Metal bowl
MG Metal bowl w/gage