

# OPERATION MANUAL


## HEAVY DUTY AUTO DRAIN ADH4000 SERIES

This manual contains instruction for the installation, operation and maintenance of HEAVY DUTY AUTO DRAIN.

### 【Notes to users】

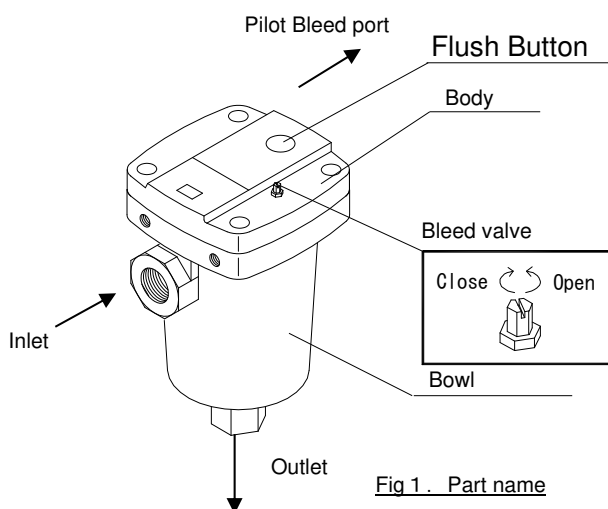
- Before operating, You should first thoroughly read this manual.
- Keep this operation manual.
- Specification and equipment are subject to change without any obligation on the part of the manufacture.

## 1. GENERAL SAFETY INFORMATION

 **Caution** MAKE SURE THE EQUIPMENT DESIGN SPECIFICATION ARE NOT EXCEEDED.

- ◎ Maximum working pressure
  - Do not exceed maximum working pressure.  
ADH4000 : 1.6 MPa(232psi)
- ◎ Maximum and Minimum Operating Temperature
  - Temperature of installing areas and temperature of compressed air must be at 5°C(41°F) to 60°C(140°F).
  - Do not allow freezing inside and outside equipment.
  - Temperature exceeding 60°C(140°F) could cause malfunction and/or accidents.
- ◎ Operating Environment
  - Compressed air and ambient air should not contain corrosive gas, flammable gas, and organic solvent.
  - Vibration and impact by air compressor and other machine should not be conveyed to equipment.
- ◎ In Case of Disassembling
  - This equipment is a pressure containing device. Make sure equipment is depressurized before working on or disassembling it for servicing.

## 2. Part Name and Description



### •Flush button

By pressing flush button, cleaning of exhaust valve and manual drain can be performed. At that time, liquid and/or compressed air may discharge strongly from outlet port.

### •Bleed valve

If condensation flow into auto drain is restricted, open bleed valve gradually, and adjust the bleeding valve opening to ensure that condensation flows in.

## 3. Caution for Installation

- (1) Do not apply for air compressor with discharged flow rate less than 50L/min(2scfm). Blowout might not be stopped if compressor discharged flow rate is insufficient.
- (2) The inlet pipe should not be smaller than 1/2 so that drainage is not restricted.
- (3) Install an isolation valve on the inlet line of auto drain for servicing. Use ball valve with bore of 15mm(9/16 in) or larger. Ball valve & fittings set for Rc1/2(Model No.:ADH-C400) is also available.
- (4) If the inlet line is leaned by the weight of auto drain, fix auto drain on wall or frame with optional bracket. (Model No. of Bracket Set : BM58)
- (5) The outlet tubing or piping should have inner diameter of 8mm(5/16 in) or larger, and length shorter than 10m(33 feet), and should not run upward. Liquid discharge is at system pressure and may require that discharge line be anchored.
- (6) Keep minimum clearance of 200mm (8 in) above auto drain for maintenance. (Refer to dimensional drawing on page 4.)
- (7) During each operation of auto drain a small amount of compressed air is discharged to atmosphere from pilot bleed port. Do not block pilot bleed port.

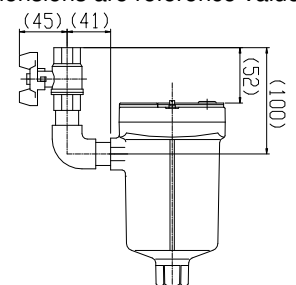
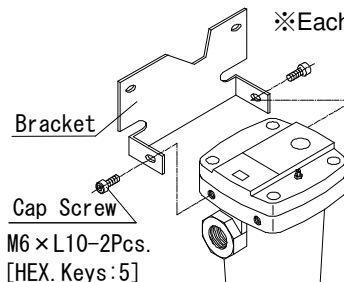
## 4. Installation

- (1) Install below the system drainage point to ensure free gravity drainage of collected liquids to the auto drain inlet port. Auto drain must be installed vertically with outlet port downward. (Tolerance of vertical lean is 5° to ensure proper operation.)  
Caution : Installation out of this direction is not possible.
- (2) See dimensional drawing for connection size and service clearances.
- (3) Pressurize by opening isolation valve slowly, and start operation after checking for leak.

## 5. How to Fit Accessories

Caution : Accessories described here should be ordered as option or be provided separately. They are not included in standard model. So that order additionally if they are required.

- (A) Bracket Set Part no : BM 5 8  
(B) Ball Valve & Fittings Set Part no : ADH - C 4 0 0  
※Each dimensions are reference value.



## 6. Daily Checkout Procedures

Check out at least once a day in accordance with the following procedures. If failure is detected, Follow 7. Troubleshooting.

- (1) Check if liquid is discharged, If liquid is not discharged even though it is collected, it will be failure.
- (2) Check if compressed air is continually discharging from outlet. If discharging air does not stop, it will be failure.
- (3) Press flush button, and clean (flush) exhaust valve. Blockage in exhaust valve by foreign matter can be reduced.

## 7. Troubleshooting

### A. Auto drain is not operated.

- (1) Press flush button.
  - If liquid doesn't flow in, open bleed valve gradually, and adjust bleed valve to be able to let liquid to flow in.
  - If the liquid still doesn't flow in, it will be required to change mounting position of auto drain, shape and size of inlet piping to be easy to flow in.
  - If flush button can not be pressed, require to be repaired.
  - When flush button is pressed, liquid is discharging, but not discharging automatically, then if requires to be repaired.
  - If liquid is not discharged although flush button is pressed, cleaning inside of auto drain and replacement of exhaust valve are required.( Refer to 8. Maintenance.)
  - If the problem persists even after cleaning and replacement, require to be repaired.

### B. The case that compressed air keep blowing from outlet port.

- (1) Is air pressure higher than 0.05MPa(7.5psi), and is air compressor discharged flow rate more than 50L/min(2scfm) per one auto drain?
  - If the above mentioned specifications are not satisfied, review the installation location, or select equipment again.
- (2) At that time, is compressed air slightly exhausted from pilot bleed port?
  - If it is exhausted, it will be malfunction because foreign matter is caught in inner mechanism. Clean autodrain mechanism section (Refer to 8. Maintenance)
  - If the problem persists even after cleaning, if requires to be repaired.
  - If not, the malfunction was caused by leakage due to dust caught in exhaust valve or by clogged orifice. For dust caught in exhaust valve, clean inside of auto drain or change exhaust valve (Refer to 8.Maintenance). For clogged orifice,clean orifice with tool attached.

## 8. Maintenance



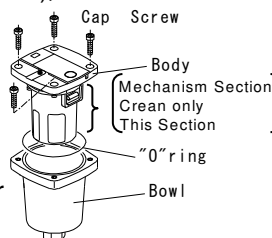
Caution: THIS EQUIPMENT IS A PRESSURE CONTAINING DEVICE.  
DEPRESSURIZE BEFORE SERVICING.

#### ☆How to depressurize

Close isolation valve,and open bleed valve gradually. When bleeding of compressed air stops, press flush button, and check that compressed air is not left in auto drain.

### (A) How to disassemble, <Refer to Fig.4.>

Unscrew 4 cap screws with Allen keys of nominal size 5(mm), And lift the body upward. All drain mechanism section can be taken out.



### (B) Cleaning

- (1) Hold the body, and soak, the section below the body (mechanism section) in water or lukewarm water with a mild household detergent to clean.

Caution: AVOID TO USE SOLVENTS OR AROMATIC HYDROCARBON. Clean with a mild household detergent only. For cleaning, never try to disassemble mechanism section. Equipment might not be reassembled in the same condition as it was when it left the factory.

It is required to replace exhaust valve and valve seat when there is flaw on it, and also when it is too

contaminated to clean.

Follow(E) Replacement of exhaust valve.

- (2) Clean the inside of bowl completely. If inside of Bowl is contaminated, it will cause leakage when reassembled.
- (3) When O-ring is contaminated, clean the surface of it, and check for flaw. If a flaw is detected replace O-ring with new one since It will cause leakage. Part No. of O-ring : G85

### (C) How to reassemble <Refer to Fig.5>

- (1) Put O-ring in the groove on the top of Bowl. **Make sure that O-ring is in place.**
  - (2) Hold the body facing mechanism section downward, set flush button just above inlet port, and put mechanism section in bowl. At this time, when there is clearance of around 3mm(1/6 in) between the body and bowl, it could not be completely installed as such, please adjust the bowl to fit into the body.
  - (3) Tighten 4 cap screws keeping the condition of (2). Tightening torque value of : 5N · m(43.4inch·pounds)
- Caution : Never tighten the screws with out leaving clearance between body and bowl. Parts might be seriously damaged.
- (4) Repressurize by opening isolation valve slowly, and start operation after checking for leak.

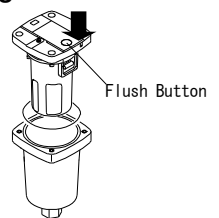


Fig5. How to reassemble

### (D) Orifice cleaning method when orifice clogs, it requires cleaning. <Refer to Fig.6>

- (1) Close valve at the drain inlet side and let the air out of auto drain completely.
- (2) Remove exhaust cover. Take orifice cleaning pin placed on the reverse side of exhaust cover.
- (3) Orifice is located in the center of body. Insert pin into the hole of orifice and remove dust.
- (4) Open valve at the drain inlet side slowly to supply pressure.
- (5) Check if air is exhausted from orifice when pushing flush button. (if the air still go on discharging, repeat from step(3))
- (6) Mount exhaust cover.

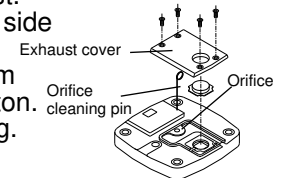


Fig6. Orifice cleaning

### (E) Replacement of exhaust valve

Order a valve maintenance kit (Model:ADH-D400), and replace valve following the attached replacement manual.



Caution :For replacement, special provide tool is required and, if the procedure are not followed, parts could be seriously damaged.

※Valve maintenance kit : A D H - D 4 0 0

## 9. Specifications

Model	A D H 4 0 0 0 - 0 4
Proof pressure	2.5MPa(363psi)
Maximum working pressure	1.6MPa(232psi)
Minimum working pressure	0.05MPa(7.5psi)
Working fluid and temperature	Compressed air, 5~60°C (41~140° F)Corrosive gas, flammable gas and organic solvent are not allowed.
Ambient temperature	5~60°C(41~140° F) Corrosive gas, flammable gas and organic solvent are not allowed.
Maximum drainage	400cc/min (at 0.7MPa)
Connection (Inlet and outlet)	ADH4000-04 :Rc1/2 ADH4000-F04 :G1/2 ADH4000-N04 :NPT1/2
Mass	1.2kg(2.6lbs)
Body surface color	White