

# KOBOLD DAA FLOW INDICATOR

## User Instructions





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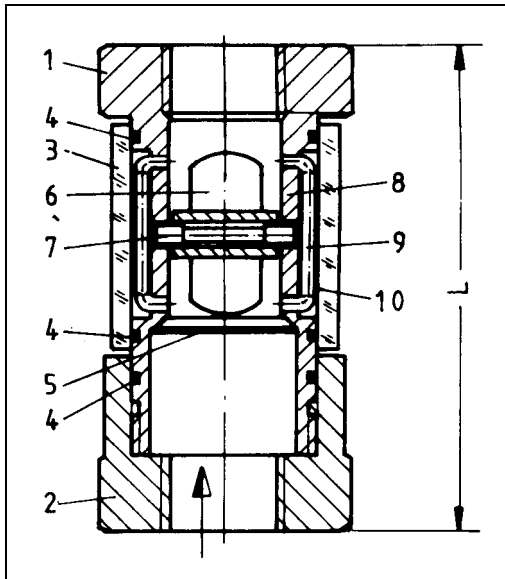
**CAUTION:** For safety reasons, please read the cautionary information located at the end of the manual, before attempting installation.

### 1.0 General

The KOBOLD DAA Flow Indicator is intended for use in applications where only a visual indication of flow is necessary. A paddle wheel is set into motion by flowing liquid, indicating its motion.

The DAA has an integral sight glass cleaning mechanism. It consists of two internal plastic wipers which are used by rotating the sight glass. This cleans the glass and allows the dirt to be swept away by the flowing liquid.

### 2.0 Specifications



**Table 2.1: Materials of Construction**

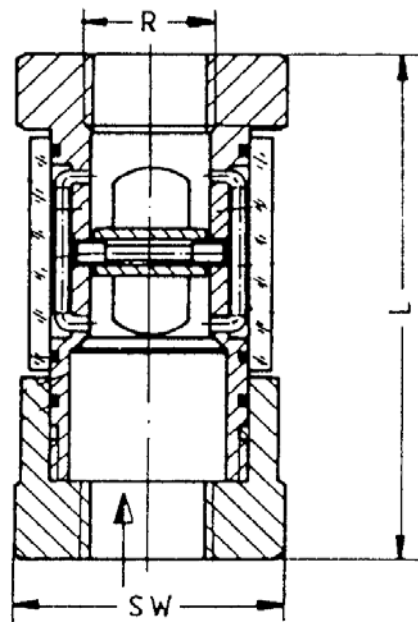
Ref	Component	Material
1	Housing	Ni-plated brass or 303 SS
2	Inlet	Ni-plated brass or 304 SS
3	Cylinder	Borosilicate glass
4	O-Rings	NBR or FKM
5	Orifice	Ni-plated brass or 304 SS
6	Rotor	POM or PTFE
7	Rotor Axle	303 Stainless Steel
8	Support Bars	Ni-plated brass or 303 SS
9	Wiper Yokes	301 SS
10	Wipers Brass Body: SS Body:	Polyolefin FKM

Table 2.2: Physical Specifications

Model	Thread NPT	Length	Hex (mm)	Weight (lbs)	Maximum Pressure	Maximum Temperature
	R	L	SW			
DAA-XX08	1/4"	2.74"	36	0.7	232 PSIG	212°F
DAA-XX10	3/8"	2.74"	36	0.7		
DAA-XX15	1/2"	3.35"	46	1.4		
DAA-XX20	3/4"	3.74"	46	1.4		
DAA-XX25	1"	4.13"	46	1.6		
DAA-XX32	1 1/4"	4.72"	65	3.2		
DAA-XX40	1 1/2"	5.12"	65	3.6		

Specifications subject to change without notice

Diagram 2.3: Dimensions (Refer to Table 2.2: "Physical Specifications")



### 3.0 Installation

**CAUTION: For safety reasons, please read the cautionary information located at the end of the manual, before attempting installation.**

To connect:

1. Connect with appropriately sized fittings.
2. Take care not to place stresses on the glass sight tube - use a wrench to hold the DAA fittings static while you tighten the fittings on your pipe.
3. Install the DAA with the arrows on the device housing aligned with the flow direction in your pipes.
4. To avoid surges and subsequent possible damage to the instrument, flow should be introduced to the system gradually (as described in the cautionary section).

### 4.0 Operation

Liquid flow is indicated by the rotation of the clearly visible paddle wheel.

#### 4.1 Cleaning of Sight Window

The sight window (glass tube) is easily cleaned by rotating it through 180° (about its cylinder axis). This may be done even while media is flowing in the instrument.

### 5.0 Maintenance

The DAA is virtually maintenance free. When required, clean the viewing window as described in operation section 4.1 "Cleaning of Sight Window".

### 6.0 Arrival of Damaged Equipment

Your instrument was inspected prior to shipment and found to be defect-free. If damage is visible on the unit, we advise that you carefully inspect the packing in which it was delivered. If damage is visible, notify your local carrier at once, since the carrier is liable for a replacement under these circumstances. If your claim is refused, please contact KOBOLD Instruments for further advice.

### 7.0 Need Help With Your DAA?

Call one of our friendly engineers at 412-788-2830.



## **Caution**

PLEASE READ THE FOLLOWING GENERAL FLOW METER/ MONITOR WARNINGS BEFORE ATTEMPTING INSTALLATION OF YOUR NEW DEVICE. FAILURE TO HEED THE INFORMATION HEREIN MAY RESULT IN EQUIPMENT FAILURE AND POSSIBLE SUBSEQUENT PERSONAL INJURY.

- Inspect instrument for damage upon arrival. Cracked, fractured, bent or otherwise damaged instruments must not be put into use, since the device is weakened to an unknown extent. (The operations and installation guide will explain how to make a claim on damaged instruments.)
- Under NO circumstances must the maximum tolerances (temperature and pressure) be exceeded.
- The maximum tolerances of the device have been determined using water, air and/or oil. If using other media, especially corrosive ones, it is critically important that the user determine chemical compatibility with our instruments. A list, detailing material composition of our instruments, is available from KOBOLD Instruments Inc. upon request. KOBOLD Instruments Inc. cannot accept responsibility for failure and consequences resulting from use of media other than water, mineral oil, air, and nitrogen.
- Install the device in a fully supported position within your flow system. This avoids excessive stresses which may damage the instrument. In particular:
  - a. Ensure that the plumbing leading to and from the instrument is fully supported and that the instrument does not perform the physical function of a joint.
  - b. When calculating stress on the device caused by plumbing, the weight of the medium in the pipes must be considered as well.
  - c. Misaligned runs of rigid piping can cause large stresses when connected to the instrument. Do not connect in such a fashion.
- During installation, avoid stresses on the instrument by following guidelines given below:
  - a. When connecting fittings, hold the instrument fittings rigid with a correctly sized wrench. Do not install by twisting the instrument into the pipe fittings.
  - b. Do NOT install by holding the device housing to provide counter-torque to the pipe fitting.
  - c. Use an appropriate amount of PTFE tape on male threads of fitting. This reduces the twisting stresses produced by tightening the fittings into each other.
  - d. Do not use pliers or wrenches on the housing, as this may damage it.
  - e. Do not overtighten, as this may fracture the fittings.



- During operation, there are a number of situations to avoid:
  - a. The sudden cessation of fluid flow causes what is typically referred to as "water hammer". Most people are familiar with this phenomenon from their home experience - it is the cause behind the loud clank of water pipes which occurs when faucets are turned off too suddenly. The cause behind this "water hammer" is quite easy to visualize. Water is fairly massive. The amount of water in long runs of pipe is quite substantial. When the faucets are turned off suddenly, especially from a full on condition, the water has considerable momentum and does not want to stop flowing. The situation is similar to stopping a car by running into a wall, rather than by applying brakes. Both are sudden rather than gradual. The damage to the wall can be substantial (not to mention the car).

The "water hammer" causes surges in fluid pressure which could cause the measurement instrument's pressure limit to be exceeded, resulting in failure and possible personal injury.

- b. Fluid surges, as well as the water hammer, can be particularly damaging to empty flowmeters since there is no back pressure in the device. The damage is caused, once again, by momentary excess pressure. To avoid these surges, fluid lines should remain full (if possible) and water flow should be introduced to the device slowly.
- c. If the instrument is isolated with inlet and outlet valves, the flowmeter must be completely drained when said valves are both closed. Failure to do so could result in damage to the device caused by thermal expansion of fluid.
- d. Freezing of water in the instrument must be avoided since the resultant expansion will damage the flowmeter and make it unsafe for use.