KOBOLD BVB VALVE MANIFOLD

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 BVB is a manifold/valve system intended for use with our SV, VKG, and VKM flowmeters. It provides a convenient, compact and tidy way to distribute liquid to up to eight different branches of a piping system.

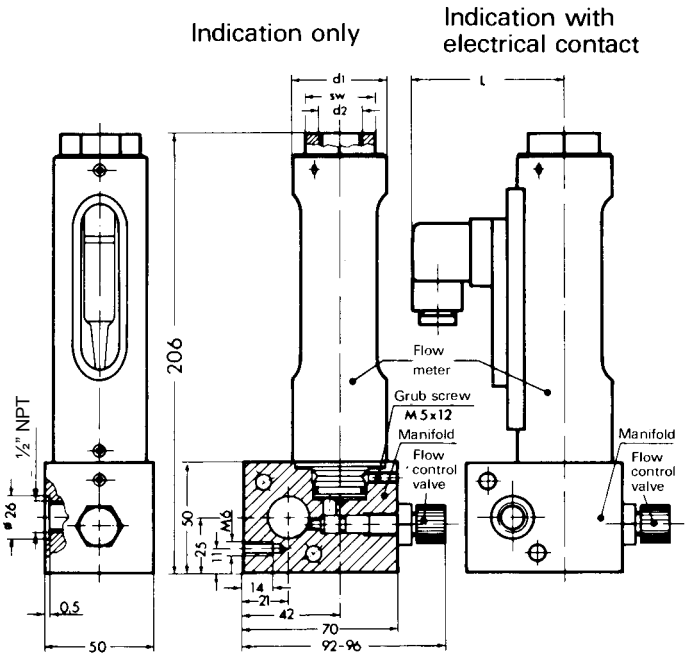
The maximum flow throughput of the BVB is 24 l/m (6.5 GPM). This upper limit applies whether 1 or 8 BVB manifold valves are used.

2.0 Specifications

Table 2.1: Construction & Operational Limits

Body:	Anodized Aluminum
Block Plugs:	Zinc Coated Steel
Valves:	Brass
Valve Seat:	Anodized Aluminum
Manifold Gasket:	Copper or NBR
O-Rings:	NBR
Maximum Pressure:	235 PSI
Maximum Temperature:	210 F
Maximum Throughput:	24 l/min - 6.5 GPM

Diagram 2: Dimensions



3.0 Installation

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

The BVB manifold comes completely assembled, including the flowmeters purchased in conjunction with it.

Make connection to the BVB assembly with ½ NPT fittings. During installation, use PTFE tape on the male fitting to reduce friction during tightening and to help create a good seal. Remember, the BVB is aluminum - do NOT over tighten, as this will irreparably damage the threads.

For instructions on how to connect to your chosen flowmeter, and for information on the flowmeter's limitations, consult the appropriate flowmeter instruction manual.

4.0 Operation

The BVB comes with integral needle valves. The needle valves, in conjunction with the assembly's pressure limitations, set an upper bound of 24 l/min = 6.5 GPM on the throughput of the total BVB assembly. This throughput limit is identical for all sizes of manifolds (1-8 blocks).

We recommend that the total throughput of the manifold be 20-30% less than the capacity of the pump providing the liquid. To protect your investment from damage, we advise that the pump's overcapacity be returned to its source container via a return line installed upstream of the BVB. This return line should be operated by a pressure release valve set at 75 PSI.

As with any distribution manifold of this nature, flow volume drops from the upstream to the downstream end. To ensure that all lines are provided with adequate liquid, we suggest that the lines with the highest flow demand be placed as far upstream in the BVB block as possible. Other lines are then arranged in order of flow demand, most downstream being the line with lowest throughput requirements.

5.0 Maintenance

The BVB can be considered as a needle valve when it comes to maintenance. For trouble-free operation, ensure that your liquid is clean. If necessary, provide filtering to protect your equipment. KOBOLD's MF filters, or equivalent, will perform this function nicely.

For maintenance of the BVB mounted flowmeters, consult their instruction manuals.

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 advisement.

7.0 Need Help With Your BVB?

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 liquid in the pipes must be considered as well as the weight of the pipes.

    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 liquid 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 liquid pressure which could cause the measurement instrument's pressure limit to be exceeded, resulting in failure and possible personal injury.

    b. Liquid 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, liquid 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 liquid.

    d. Freezing of water in the instrument must be avoided since the resultant expansion will damage the flowmeter and make it unsafe for use.