Operator's Manual
for the
HBM453 DISPLAY & BLOW-BY METER SYSTEM

J-TEC flow meters operate on the principle of vortex shedding.
A small strut inside the flow tube creates a Karman vortex street
and the vortex formation is sensed by means of an ultrasonic
beam directed across the tube. The flow meter electronics uses
the vortex frequency to determine the flow rate.

The J-TEC HBM453 is a two piece design, consisting of a
handheld enclosure with a display, battery power compartment,
interface cable and a separate flow measurement body.
J-TEC flow meters have a 12-month warranty period.

SPECIFICATIONS

Measured:	Air or low pressure gas*
Flow rate measured:	0.8 to 16.0 ACFM (Actual Cubic Feet per Minute)
Operating (GAS) temperature:	0º to 200ºF
Operating pressure:	-5 TO +5 PSIG
Accuracy:	± 3% full scale
Repeatability:	± 1.0% of reading
Line Size:	5/8" ID
Construction:	Ryton® (PPS) and ABS plastic
Interface Cable Length:	6 feet
Ambient temperature limits:	-20º to 150ºF
Response Time:	100 milliseconds
Power Source:	4 AA batteries (use alkaline or NiMH rechargeable) Operation time is approximately 40 hours on fresh or fully charged batteries
Display:	8 characters x 2 lines: Viewing area 1.5" x 0.6" Top line is the flow Bottom line is the engineering units (ACFM).

*(not approved for explosive gas mixtures, except for crankcase vapors)

Mechanical Installation

The J-TEC HBM453 has two pieces, the Handheld Display and the Flow Meter.

To operate, attach the cable from the Handheld Display to the Flow Meter (the cable must be connected in order for the system to function).

A typical connection to the Flow Meter is made by placing flexible hose onto the outside of the inlet tube and outlet tube. The labeling of the flow direction on the Flow Meter must be aligned with the flow in the tube. The Flow Meter should be installed with a minimum of 12 inches of straight tube upstream. This condition provides a more symmetrical flow profile, which is necessary to obtain accurate and repeatable results.

If liquids are present in the gas flow stream, the Flow Meter should be installed so that liquids will not collect on the ultrasonic transducers in the tube. Installing the Flow Meter vertical with flow into the top and out the bottom will encourage liquids to drain out of the Flow Meter.

The Flow Meter and interconnecting cable should be positioned at least 12 inches away from any ignition wires or fuel injector component to avoid noise interference.

Operation

With the cable attached from the Handheld Display to the Flow Meter, turn on power by cycling the switch to the "1" position (the "0" position on the power switch is OFF).

The display on the Handheld will show "J-TEC HBM453" briefly then display 0.0 and Acfm (actual cubic feet per minute), if there is no flow through the Flow Meter.

Install the Flow Meter, with at least 12 inches of upstream tubing, onto the desired device to measure flow. Ensure the arrow on the Flow Meter is aligned with the direction of the flow stream.

Power remains on until the power switch is cycled to the OFF position ("0" on the switch).

Cleaning and Maintenance

The inside of the flow tube and strut must be kept clean. If the meter produces erratic readings a cleaning schedule should be implemented. To clean the flow tube and strut, gently brush the inside of the tube with a soft brush or cotton swab. A solution of a mild detergent and water may be used to loosen deposits. Ensure detergent is rinsed away and the inside of the flow tube is dry before use.

DO NOT use wire brushes or high-pressure liquids. These may cause damage to the transducers.

Troubleshooting

No Display: Are batteries installed correctly and fully seated?
Are batteries fresh or completely recharged?
Is the Flow Meter connected to the Handheld Display?

Erratic readings: Ensure there is no blockage in Flow Meter flow tube.
Ensure there is not excessive condensate in flow tube.
Ensure Flow Meter and/or cable is at least 12 inches away
from any ignition wiring or other electrical wiring.