

# A10

## Flow Switch



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## 1.0 General Description

The K-TEK Kasiflo Model A10 detects, without contact, dry material flowing in a system. The unit can detect flow in spouts, pipes, ducts and tanks without penetrating the vessel wall. It is sensitive enough to work through most standard bin and duct liners, yet selective enough to ignore normal plant background noise.

Installation consists of mounting the unit with two bolts so that its sensing surface is in contact with the outside wall of the vessel in which flow is to be monitored. Wiring of the power and alarm circuits is dictated by the unit's environment and by the type of application in which it is used. A 3/4 inch conduit entry is provided.

The unit operates in the 40 KHz region, thereby ignoring audible noise and most plant interference. It is also adjustable to reject background noise and vibration. In addition, the built-in time delay assures positive sensing.



## 2.0 Installation and Calibration

After unpacking the unit, inspect it for any evidence of shipping damage. Any claims for damage due to shipping must be filed with the carrier who handled the package(s). Select a mounting location for the unit on the duct in which flow is to be sensed. The mounting location should be away from noisy or vibrating machinery if possible. Even 12 inches away from such machinery is helpful.

The back of the box should be firmly in direct contact with the outside surface of the duct in which material is flowing. When material flow is due to gravity, the flow switch should be mounted on the bottom side of the duct. In pneumatic conveying systems, the flow switch may be able to work on the sides of the duct as well as the bottom. The top of the duct should generally be avoided as a mounting location.

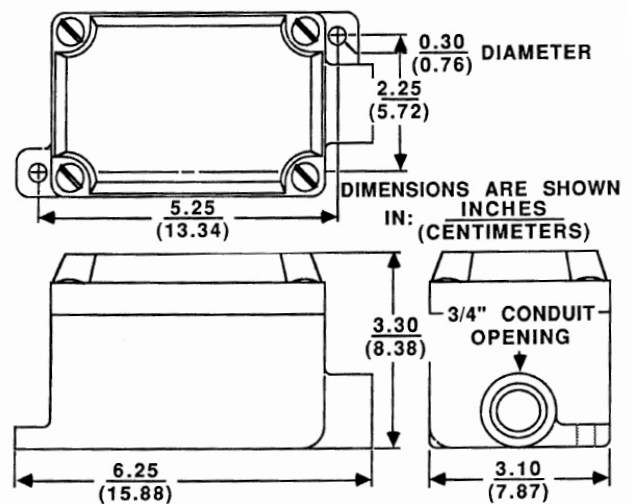


Figure 1 Overall Dimensions

The flow switch will work well with many types of lined duct work, but if the duct has two layers of material with an airspace between, special mounting methods may be necessary. See Figure 3 for typical mounting locations. Figure 4 shows a typical arrangement that may be used with round piping or duct work. Connect the field wiring to the flow switch as shown in Figure 3 or as required for a particular application. Figure 3 shows one, and only one, of many possible applications of Kasiflo. The remote indicator lamp shown in this figure might be located on an operator's graphics panel so that the operator would know when material is flowing at the location being monitored by the Kasiflo.

**CAUTION:** Be sure that all wiring conforms to the requirements of the national Electrical Code and any other enforcing authorities or agencies having jurisdiction over the installation. Be sure that any specific conditions such as areas having explosion hazards are given full consideration.

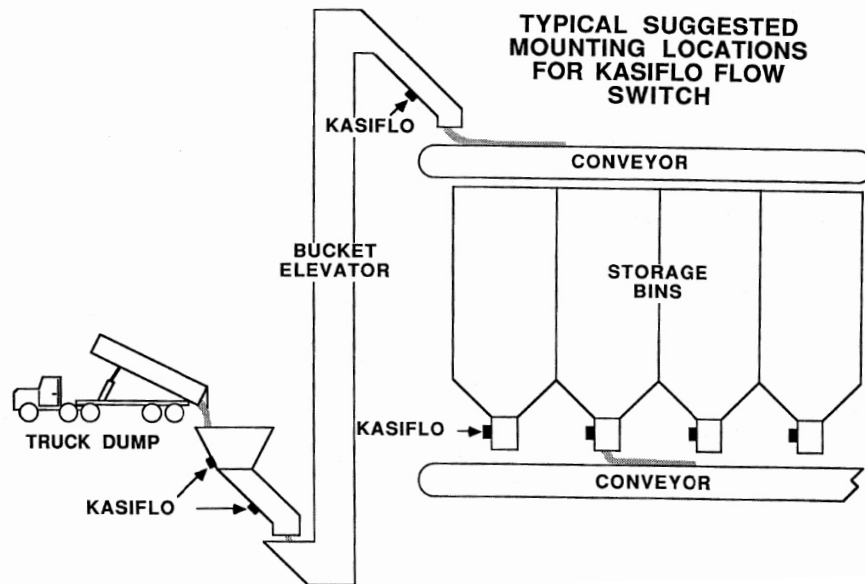


Figure 2 Suggested Mounting

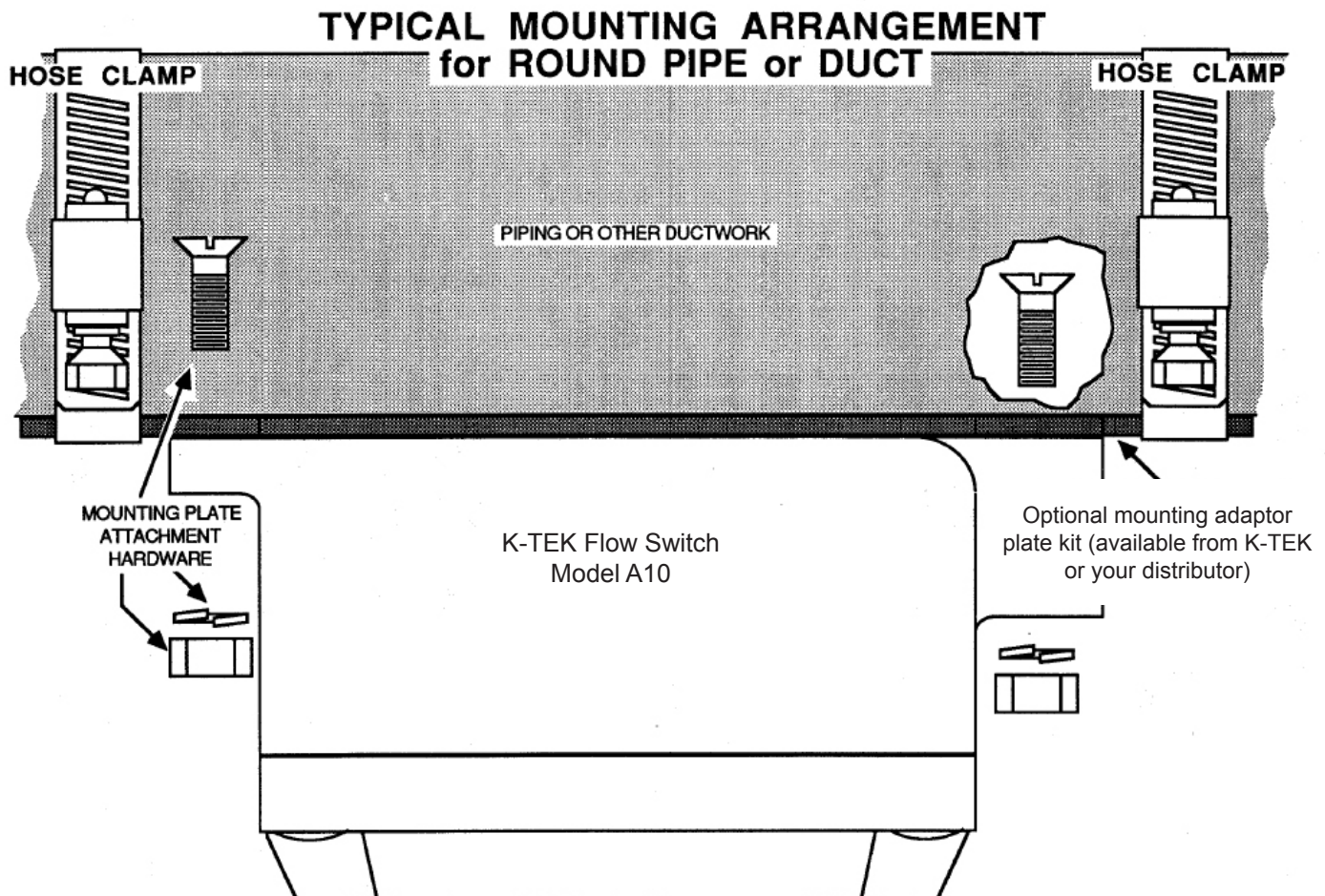


Figure 3 Typical Mounting Arrangement for Round Pipe or Duct



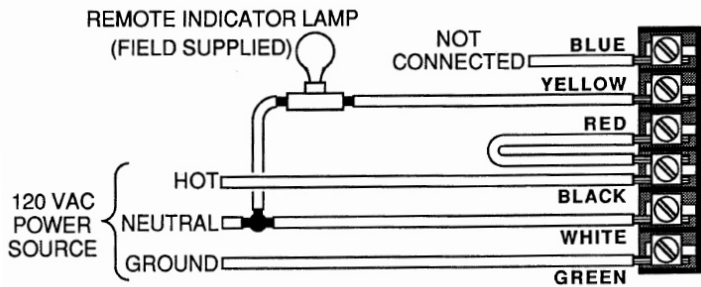


Figure 4 Typical Field Wiring Diagram

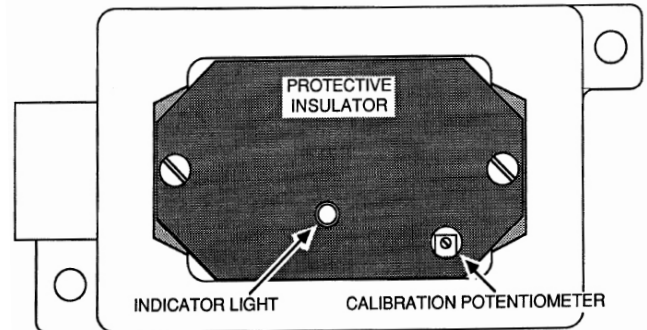


Figure 5 Location of Adjustment and Controls

Test the flow switch for proper operation. As the unit is shipped from the factory, it is set for maximum sensitivity and will work well in many applications with no further adjustment. In some cases where there is a considerable amount of nearby vibration or noise, it may be necessary to adjust the sensitivity to compensate for the noise or vibration. With no material flowing in the duct, apply power to the flow switch and observe the remote indicator light. The lamp should remain off. If the lamp lights or flashes erratically, the flow switch will require adjustment. If the lamp remains off, the next step is to cause a flow of material in the duct. Approximately one second after material begins flowing over the unit, the lamp should come on. When material ceases to flow, the lamp should go out immediately.

if required, calibrate the Kasiflo using the procedures which follow. See Figure 5 for location of adjustments and controls.

### Adjustment Procedure

The purpose of this adjustment is to set the flow switch in such a manner that when the flow switch “hears” product flowing in the duct, the relay will be energized. When product is not flowing, the relay will be de-energized. The CALIBRATION POTENTIOMETER is used to set the flow switch to a particular installation. Once it is set, it should not require further adjustment unless the installation is changed or the unit is moved to a different duct.

The INDICATOR LIGHT is used to determine the proper setting of the calibration potentiometer. Once the flow switch is properly calibrated, the indicator light will show presence or absence of material flow in the duct. Once the flow switch is properly installed and has been tested, use the following procedures to calibrate the unit, if necessary, to the particular installation. The only equipment required is a small screwdriver to adjust the calibration potentiometer.

**CAUTION:** If the flow switch is mounted in a hazardous atmosphere, it will be necessary to follow all required procedures, such as ventilation, hot work permits, etc.

Read all the following steps before beginning:

Step 1: Before beginning adjustment, be sure that all machinery in the general area is operating normally and that no material is flowing in the duct.\

Step 2: Make sure that the power is off, then remove the cover of the enclosure.

**NOTE:** There are 20 complete turns of the calibration potentiometer from one end to the other. When one or the other end is reached, the adjustment screw will continue to turn and “freewheel” (without damage) until the direction of the rotation is reversed.

Step 3: Restore power to the unit and observe the indicator light.

A. If the indicator light is off, turn the potentiometer clockwise until the light comes on. Proceed to “B.”

B. If the indicator light is on, turn the potentiometer counterclockwise until the light goes out. Turn the potentiometer 1/8 turn further counterclockwise. Now cause material to flow in the duct. The light should come on and remain on until flow stops.

Step 4: Remove power from the unit, replace the cover and re-apply power.

This completes the calibration of the flow switch unit, and it is now ready to operate.

### 3.0 Operation

No operator actions are required to use this unit. When material is flowing in the duct, the relay will energize. Since the relay contacts may be used in a number of different ways, the operator should know what to expect when a change of condition occurs and be prepared to take any action required by the system in which the Kasiflo is used.

### 4.0 Maintenance and Troubleshooting

No routine maintenance is required other than keeping the interior of the unit clean and free of dirt, dust and other contaminants. The Kasiflo consists of two main sub-assemblies. These are the enclosure with the ultrasonic transducer attached and the printed circuit board assembly. The following troubleshooting guide will assist in determining how to correct most of the problems that may be encountered. Review the Installation and Calibration procedures in section 3 prior to using this guide.

Problem	Possible Cause	Solution
LED cannot be adjusted to turn on.	Ultrasonic transducer not connected.	Plug transducer cable into circuit board cable.
	No AC power to unit.	Check for 90 VAC to 130 VAC at terminals L1 & L2 on circuit board.
	Bad circuit board.	Replace circuit board assembly.
LED remains on at all times.	Material actually flowing in system.	Interrupt flow to confirm proper operation.
	Excessive vibration or machinery noise at sensing location.	Reduce noise or vibration or relocate flow switch to a quieter location that will indicate desired flow.
	Bad circuit board.	Replace circuit board assembly.
Unit triggers when material flows in duct, but will not reset when material stops flowing or unit gives false alarms.	Unit set too sensitive for application.	Perform ADJUSTMENT PROCEDURE beginning at Section 3.1.
Unit will not detect flow of material.	Sensitivity set improperly.	Perform ADJUSTMENT PROCEDURE beginning at Section 3.1.
	Bad circuit board.	Replace circuit board assembly.
Flow switch operates properly, but no signal at relay terminals.	Burned or broken lands on circuit board.	Turn off power. Remove circuit board from housing and inspect lands from relay to terminals for damage. Replace if necessary.

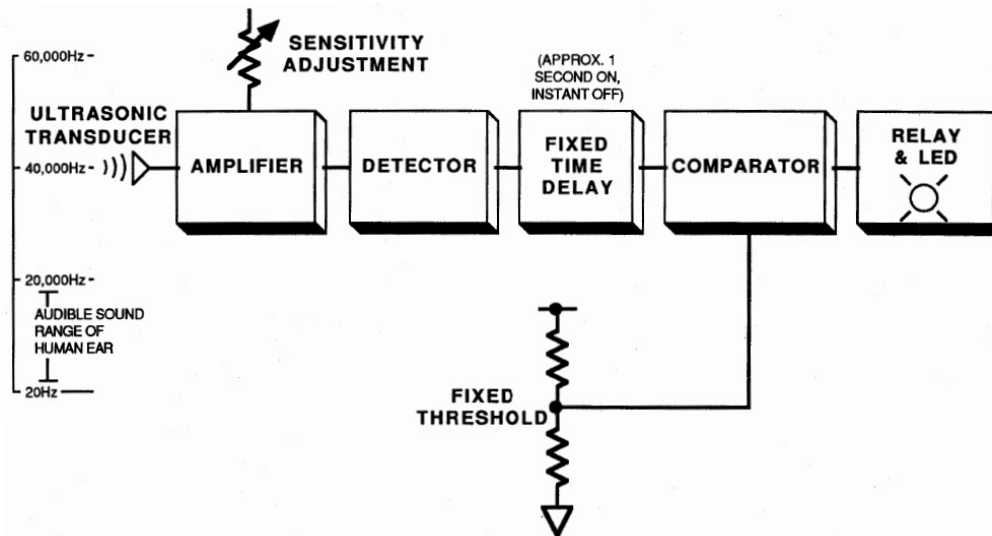


Figure 6 Kasiflo Block Diagram

## 5.0 CUSTOMER SUPPORT

### **K-TEK Solids Level (USA, Canada, International)**

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## 5.1 K-TEK Solids Level RMA Form



K-TEK Solids Level  
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 Houston, TX 77040 USA  
 Phone: (1) 713.462.7665  
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 Email: service@kteksolidslevel.com

**\*\*\* IMPORTANT CUSTOMER NOTICE: PLEASE READ PRIOR TO RETURNING PRODUCTS TO K-TEK\*\*\***

Be sure to include the Return Authorization (RA) number on the shipping label or package to the attention: Customer Service. A copy of this document should also be included with the packing list. K-TEK Solids Level wants to maintain a safe work environment for its employees. In the event, the returned product or material has been in contact with a potentially hazardous chemical, per federal regulations, the customer must provide evidence of decantamination and the related chemical composition and characteristics. In order to expedite your return, please include the applicable Material Safety Data Sheets (MSDS) and decantamination tags by affixing these documents in close proximity to the shipment label for identification purposes.

### Return Authorization Form

Customer:	Contact Name:
Contact Phone:	Contact Email:
Contact Fax:	
Date:	Service Rep:

### Completed by Customer

Product	Serial Number	Job Number

Reason:

Is expedited return shipping requested?  Yes  
*If yes, please provide a purchase order or your shipper's account number (ex FedEx or UPS).  
 K-TEK Solids Level pays return transport via standard ground shipments only.*  
**If purchase order is issued, a copy of purchase order must be included with return authorization documentation.**

Account #:

Is K-TEK Solids Level authorized to repair items determined to be non-warranty?  Yes  
*If yes, a copy of purchase order must be included with return authorization documentation.*

Customer PO#:	Date:
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Has product been in contact with any potentially hazardous chemical?  Yes  
*If yes, documentation product and forward MSDS to K-TEK Solids Level. "ATTN: Customer Service"*

### Return Repaired Product to Address

Shipping Address:	Billing Address:
	Ship Via:



## 6.0 WARRANTY

3 YEAR WARRANTY FOR:  
KCAP™300 & KCAP™400 capacitance switches.

2 YEAR WARRANTY FOR:  
WT2000 radar level transmitters; KP paddle switches; A02, A75, & A77 RF capacitance level switches and A33 & A38 RF capacitance level transmitters; A22 Speed Switch; CP2 Conductance Switch.

1 YEAR WARRANTY FOR:  
LaserMeter™ series laser transmitters; DPM100 digital indicators; KVIEW series digital indicators and controllers; GranuPoint™ and SlurryPoint™ vibrating fork switches, SoliTrak™ Electro-Mechanical Continuous Measuring Devices, SonikTrak™ ultrasonic level transmitters & transducers, ChuteMaster Microwave Transmitter / Receiver and TiltMaster Switches.

### SPECIAL WARRANTY CONSIDERATIONS:

K-TEK Solids does not honor OEM warranties for items not manufactured by K-TEK Solids (i.e. Palm Pilots). These claims should be handled directly with the OEM.

K-TEK will repair or replace, at K-TEK's election, defective items which are returned to K-TEK by the original purchaser within the period specified above from the shipment date of the item and which is found, upon examination by K-TEK, to its satisfaction, to contain defects in materials or workmanship which arose only under normal use and service and which were not the result of either alterations, misuse, abuse, improper or inadequate adjustments, applications or servicing of the product. K-TEK's warranty does not include onsite repair or services. Field service rates can be supplied on request.

If a product is believed to be defective, the original purchaser shall notify K-TEK and request a Returned Material Authorization before returning the material to K-TEK, with transportation prepaid by the purchaser. (Request door to door delivery via Houston International Airport located in Houston, TX, USA.) The product, with repaired or replaced parts, shall be returned to the purchaser at any point in the world with transportation prepaid by K-TEK for best-way transportation only. K-TEK is not responsible for expedited shipping charges. If the product is shipped to K-TEK freight collect, then it will be returned to the customer freight collect.

If inspection by K-TEK does not disclose any defects in material or workmanship, K-TEK's normal charges for repair and shipment shall apply (minimum 250.00 USD).

The materials of construction for all K-TEK products are clearly specified and it is the responsibility of the purchaser to determine the compatibility of the materials for the application.

THE FOREGOING WARRANTY IS K-TEK'S SOLE WARRANTY AND ALL OTHER WARRANTIES EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED AND NEGATED TO THE MAXIMUM EXTENT PERMITTED BY LAW. NO PERSON OR REPRESENTATIVE IS AUTHORIZED TO EXTEND ANY OTHER WARRANTY OR CREATE FOR K-TEK ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF K-TEK'S PRODUCTS. THE REMEDIES SET FORTH IN THIS WARRANTY ARE EXCLUSIVE OF ALL OTHER REMEDIES AGAINST K-TEK. K-TEK SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, OR SPECIAL DAMAGES OF ANY KIND. K-TEK'S SOLE OBLIGATION SHALL BE TO REPAIR OR REPLACE PARTS (FOUND TO BE DEFECTIVE IN MATERIALS OR WORKMANSHIP) WHICH ARE RETURNED BY THE PURCHASER TO K-TEK.



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