



## BM-TSM TILT SWITCH LEVEL CONTROL



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**OPERATING INSTRUCTIONS  
PLEASE READ CAREFULLY**

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# SPECIFICATIONS

## BM-TSM TILT SWITCH LEVEL CONTROL GENERAL SPECIFICATIONS

**Switch:** SPDT Mechanical Switch, maximum 250 VAC @ 15A

**Enclosure:** NEMA 4X, 5, & 12; IP 66

**Mounting:** 1-1/4" NPT



**Conduit Entry:** 3/4" NPT

**Enclosure:** Die Cast Aluminum, USDA approved powder coat finish

**Available Rod Lengths:** 1/4" Pipe (SS or Galv.): 1 foot (30.48cm) to 8 feet (243.84cm)  
3/8" SS Round: 1 foot (30.48cm) to 8 feet (243.84cm)

# SAFETY

## SAFETY SUMMARY

Review the following safety precautions to avoid injury and prevent damage to the equipment.

The product should be installed, commissioned, and maintained by qualified and authorized personnel only.

Install according to installation instructions and comply with all National and Local codes.

Use electrical wire that is sized and rated for the maximum voltage and current of the device.

Properly ground the enclosure to an adequate earth ground.

Observe all switch contact ratings as called out on the nameplate and in the installation manual.

Insure that the enclosure cover is in place and secured tightly during normal operation.

In potentially wet environments thoroughly seal all conduit entries.

If this product is used in a manner not specified by the manufacturer the safety protection could be compromised.

## Safety Terms and Symbols



**WARNING:** Warning statements identify conditions or practices that could result in injury or loss of life. Risk of electrical shock.

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**CAUTION:** Caution statements identify conditions or practices that could result in damage to this product or other property.

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## Safety Precaution



**CAUTION:** Before removing the enclosure cover, open all circuits entering the enclosure. Be aware that there may be more than one live circuit.

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# INTRODUCTION

## 1.0 INTRODUCTION

The Bin-Master tilt switch Model BM-TSM is mercury-free, simple and affordable level control designed to control the maximum fill level of bulk solids, such as powder, pellet, and granular materials.

The BM-TSM tilt switch features a non-powered, pendulum-type design for fixed mounting on the outside on the top of the bin. It operates by utilizing an angular motion transferred into linear motion to activate an electrical switch that can be used for a direct input to a control system, or activate an external alarm. The switch is activated when material rises to the level of the probe and tilts the switching mechanism 15 degrees from the vertical hanging position in any direction.

The extension shaft of the tilt switch varies in lengths from one foot up to eight feet in length. You specify the length of the shaft based upon the distance from the top of the bin an alert should be activated. The BM-TSM is available with either a paddle or sphere mounted at the end of the shaft and can be used in materials with a bulk density of at least 15 pounds per cubic foot.

## 2.0 INSTALLATION

### 2.1 Location and Mounting

#### Top Mount – Permanent Installation

1. Locate and cut a hole in top of bin to accept an outside diameter of 1-1/4" pipe coupling (1.950").
2. Position coupling halfway into bin opening and weld.
3. Install tilt switch into the 1-1/4" NPT coupling and tighten unit so conduit opening is in the desired location.
4. Thread on either the 1/4" NPT pipe or 3/8" round with either the paddle or sphere into the flexible coupler and secure with provided roll pin.

Steps 3 and 4 can be reversed if a collapsible indicator paddle is purchased that will fit through the 1-1/4" NPT opening. This will avoid possible entry into vessel to install extension assembly.

NOTE: It is strongly recommended that a thread sealer or pipe dope be used on the 1-1/4" NPT mount and 3/4" conduit connections prior to installation.

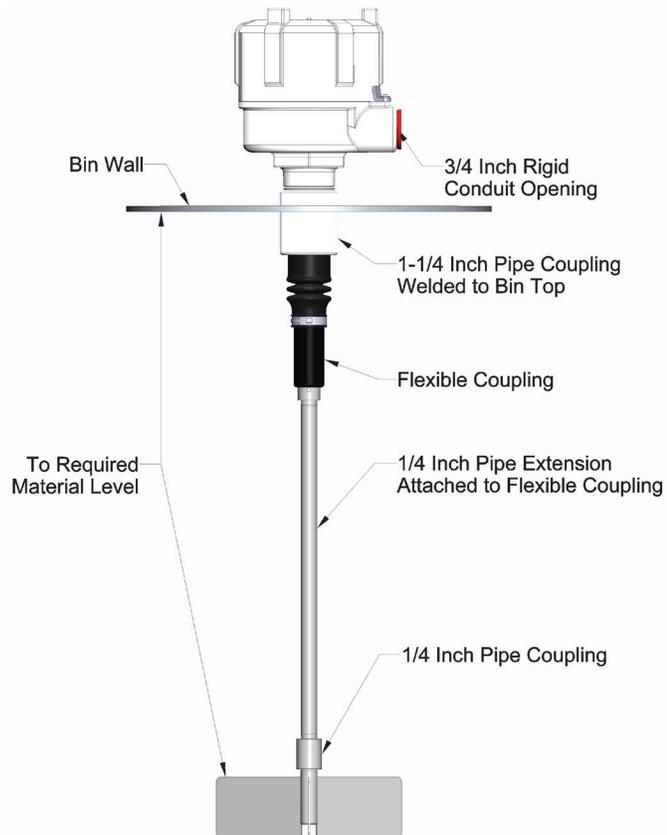
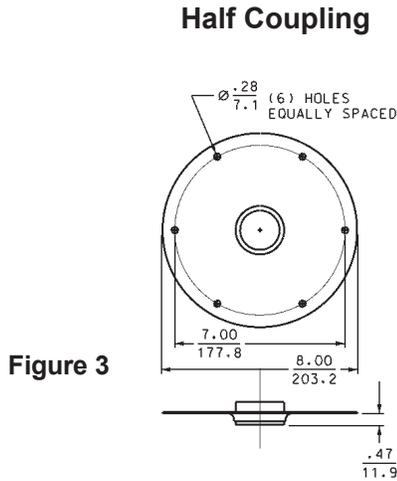
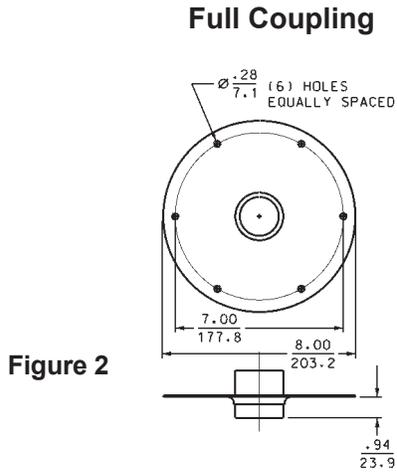


Figure 1

## Top Mount – Semi-Permanent Installation

Mounting plates are necessary when a completely assembled unit is to be mounted on the bin top from the outside when bin access is limited or not permitted, (Fig. 2 & 3, pg.6). First a 5-1/2" hole is cut in the bin top. Next, six bolt holes are drilled around the hole to match the mounting plate, (drill templates are shipped with each mounting plate). The plate, with the unit attached, is then bolted in place. All mounting plates are available in either powder coated carbon steel or un-coated stainless steel.



### TOP MOUNT ONLY

Side mounting for the BM-TSM level control is not recommended.

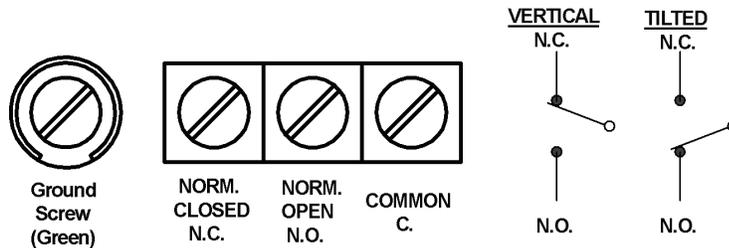
### 2.2 Field Wiring

 Access the switch by removing the electrical enclosure cap. (Do not remove or loosen the switch from its bracket, as it has been factory adjusted). Wire directly to the switch's terminals as illustrated, (Fig. 4 & Fig. 5, pg. 6). In the vertical position, the switch is not-engaged, the NORM CLOSED contact is closed and the NORM OPEN contact is open. When tilted, the micro switch is engaged, the NORM CLOSED contact is open and the NORM OPEN contact is closed.

Field wiring should conform to all national and local electrical codes and any other agency or authority having jurisdiction over the installation. Use wire that is sized and rated for the maximum voltage and current as per application, up to 250VAC 15A, and has a temperature rating of at least 70°C. Installation shall be done by qualified personnel.



**Figure 4**



## 2.3 Grounding

 An equipment grounding connection (earth ground) must be supplied to the unit for safety. Connect the ground conductor to the green equipment grounding screw identified in the enclosure, (Fig. 4, pg. 6).

## 3.0 WARRANTY AND CUSTOMER SERVICE

### 3.1 Limited Warranty

The manufacturer warrants this equipment for two (2) years according to the following terms:

- 1.) This warranty extends to the original purchaser only and commences on the date of original purchase. The original purchaser must mail to the manufacturer the "Warranty Registration" card to confirm the equipment purchase. Failure to do so may void the warranty.
- 2.) The manufacturer will repair or replace any part of this equipment found to be defective, provided such part is delivered prepaid, to the factory. Manufacturer's obligation is limited to the cost of material and labor to repair or replace and does not include transportation expenses.
- 3.) This warranty shall not apply to any product that has, in our judgment, been tampered with, altered, subject to misuse, neglect or accident. In addition, the warranty does not extend to repairs made necessary by normal wear.
- 4.) This warranty is in lieu of all other warranties, expressed or implied.

### 3.2 Customer Service

BinMaster offers a toll-free Customer Service phone number **1-800-278-4241**. You may call the Customer Service Department for technical and application assistance Monday through Friday from 8:00 AM to 5:00 PM Central Time. International customers call us at **(402) 434-9102** or reach us via fax at **(402) 434-9133**.

## 4.0 DISPOSAL

This product consists of materials that can be recycled by specialized recycling companies. It uses recyclable materials are designed to be easily separated. Consult local authorities for proper disposal locations.