

**KBT<sup>®</sup>**

**Tilt Switch Probes And Control Unit**

## Tilt Switch Probes And Control Unit

### Description

Tilt Switch Probes are electro-mechanical tilt sensors designed for sensing bulk materials presence or absence at the location of installation. Typical applications include high and low level detection and detection of plugged conditions in chutes. Also used for detecting the conditions of bulk material on conveyor belts.

KBT makes various Tilt Switches for different applications: SS Series with stainless steel body for corrosion resistance. CB Series with metal cast enclosure to meet heavy working conditions. MS Series are mechanically sealed to ensure maximum protection against liquid, corrosives and other environment hazards. Depending on the applications, can be supplied with a dedicated control unit or can be directly integrated in existing control system.

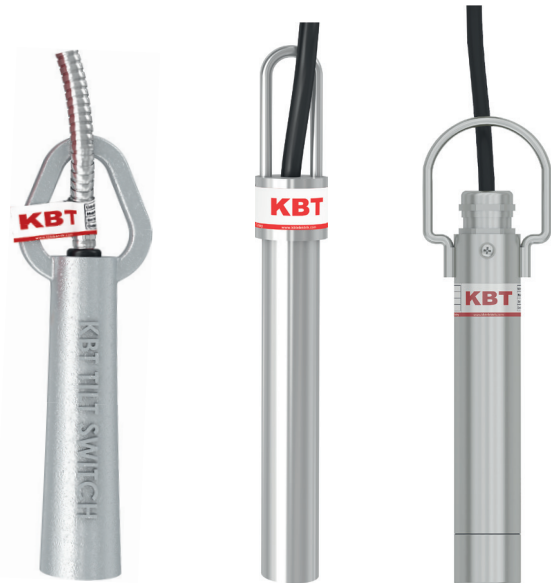
KBT Tilt Switches have two different output options.

- Standard NC tilt switches which can be used as standalone or be paired with our control units, can detect tilted and vertical positions.
- Electronic output switches can only be used by pairing with a control unit and have the ability to detect status for tilted, vertical, fault and short circuit status. With the added advantage of having a fault relay, you can detect problems earlier with electronic models and prevent loss and downtime.

Ask us about the compability of KBT Tilt Switches with your existing control units.

### Features

- Robust and resistant
- Simple Installation
- Wide range of customization options
- Mercury and non-mercury options
- NC or electronic output options
- Control units to monitor your applications
- Delay options to prevent false alarms
- IP68 protection class
- Probe extensions are available for application needs
- Cable protection options reduce the risk of a failure



## Tilt Switch Probes

### CB-39 Series - Heavy Duty Cast Iron Probe

Model	Tilt Angle	Mercury	Non-Mercury	Output
CB-39	35°	x		NC when vertical. Opens at angle.
CB-39A	20°	x		NC when vertical. Opens at angle.
CB-39NM	20°		x	Used with 24V relay for NO/NC output. Internal 2 second delay.
CB-39E	35°	x		Electronic. Must be used with Control Units.
CB-39AE	20°	x		Electronic. Must be used with Control Units.
CB-39NME	20°		x	Electronic. Must be used with Control Units.

### SS-43 Series - Stainless Steel Probe

Model	Tilt Angle	Mercury	Non-Mercury	Output
SS-43	35°	x		NC when vertical. Opens at angle.
SS-43A	20°	x		NC when vertical. Opens at angle.
SS-43NM	20°		x	Used with 24V relay for NO/NC output. Internal 2 second delay.
SS-43E	35°	x		Electronic. Must be used with Control Units.
SS-43AE	20°	x		Electronic. Must be used with Control Units.
SS-43NME	20°		x	Electronic. Must be used with Control Units.

### MS-59 Series - Mechanically Sealed Probe

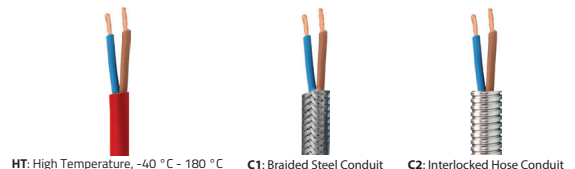
Model	Tilt Angle	Mercury	Non-Mercury	Output
MS-59	35°	x		NC when vertical. Opens at angle.
MS-59A	20°	x		NC when vertical. Opens at angle.
MS-59NM	20°		x	Used with 24V relay for NO/NC output. Internal 2 second delay.
MS-59E	35°	x		Electronic. Must be used with Control Units.
MS-59AE	20°	x		Electronic. Must be used with Control Units.
MS-59NME	20°		x	Electronic. Must be used with Control Units.

### Technical Specifications

<b>Enclosure</b>	<b>CB-39 Series:</b> Nickel plated ductile iron casting <b>SS-43 Series:</b> Stainless steel <b>MS-59 Series:</b> Carbon Steel or Stainless Steel (ask for special material)
<b>Mounting</b>	Hanger and two S-hooks (included with probe)
<b>Temperature Rating</b>	-40 °C, +80 °C (Lowest temp -25°C for ATEX)
<b>Protection Class</b>	IP68
<b>Certifications</b>	CE, EAC, optional cULus
<b>Hazardous Area</b>	Optional ATEX Zone 20/21 (II 1D Ex ma, ta IIIC T120°C Da)
<b>Contact Capacity</b>	CB-39, SS-43 and MS-59: 120 VAC 12.5 A CB-39A, SS-43A and MS-59A: 120 VAC 1.5 A CB-39NM, SS-43NM and MS-59NM: 48 VAC/VDC 0.25 A

### Other Options

- HT: High Temperature, -40 °C - 180 °C
- C1: Cable Protection, braided steel conduit.
- C2: Cable Protection, interlocked hose conduit.



## Probe Options

### Hazardous Location Option

X: ATEX Zone 20/21 certified for hazardous locations. II 1D Ex ma, ta IIIC T120°C Da. (Suffix to model name, eg. CB-39NMX)

### Probe Extension Options

-**BF**: Ball Float. 4" by standard, custom dimensions are available. Useful with low-density material.

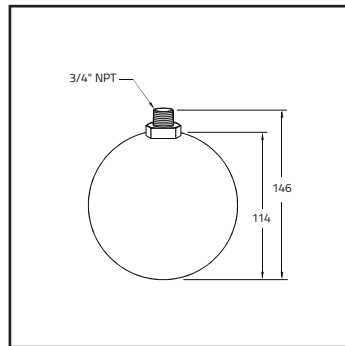
-**EP**: Extension Plate. Useful for flow detection applications.

-**WP**: Wear Plate. Used to lengthen the probe or to protect the probe body.

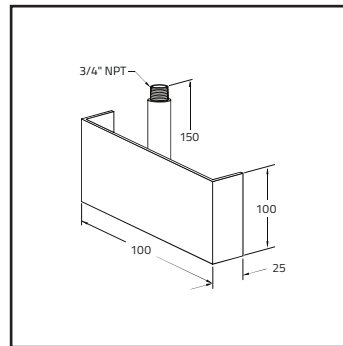
-**CP**: Cross Paddle. Used for flowing material.

### Probe Extensions

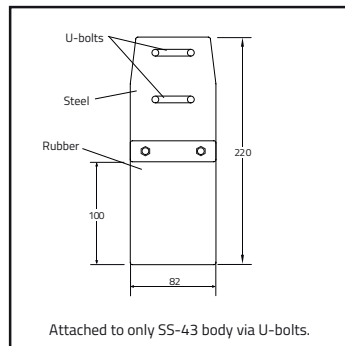
CB-39 extensions are attached to probe via 3/4" NPT screws. SS-43 extensions are welded to the body by standard. Ask for removable extensions if needed.



**Ball Float**

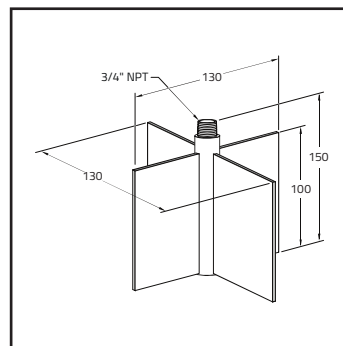


**Extension Plate**



**Wear Probe**

Attached to only SS-43 body via U-bolts.

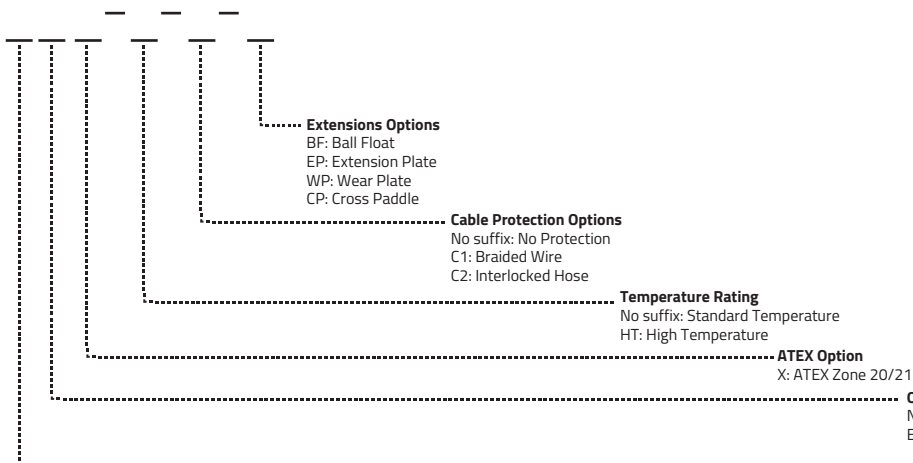


**Cross Paddle**

Custom dimensions for all extensions are available upon request.

### Model Codification

CB-39  
SS-43  
MS-59



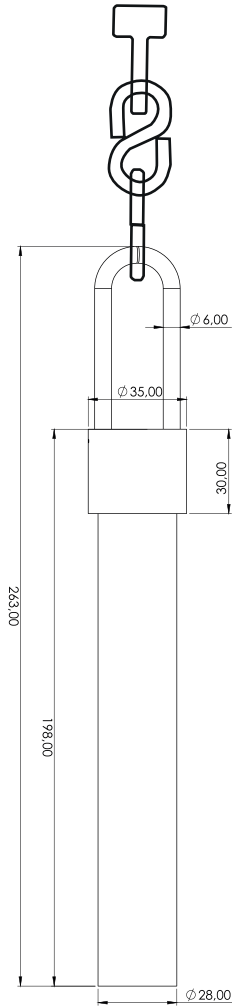
### Coding Examples

CB-39  
SS-43NMX-HT-C2-EP  
CB-39A-C1

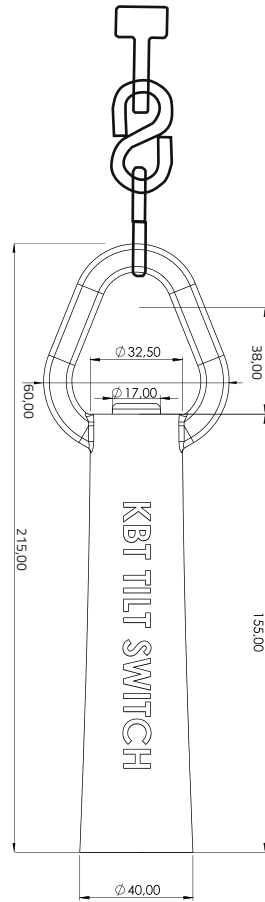
**Output Options**  
No Suffix: NC when vertical  
E: Electronic Output through Control Units

**Contact Types**  
No suffix: Mercury, 35°  
A: Mercury, 20°  
NM: Non-mercury, 20°

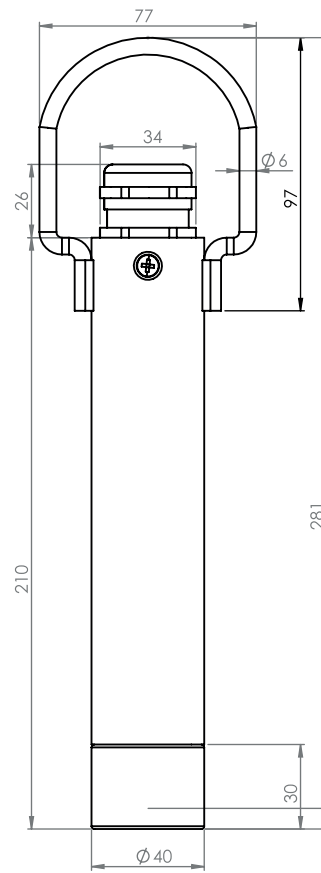
## Technical Drawing



**SS-43**



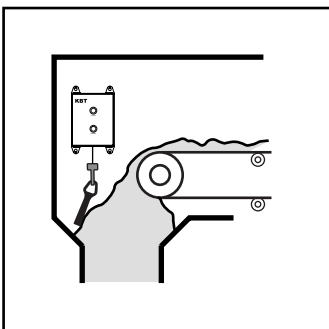
**CB-39**



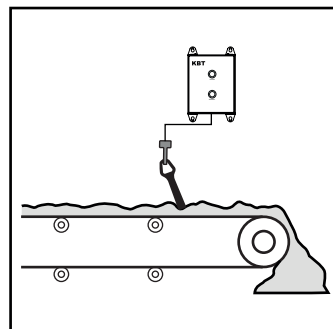
**MS-59**

Optional 3/4" process connection for extensions.  
Welded to the bottom on request.

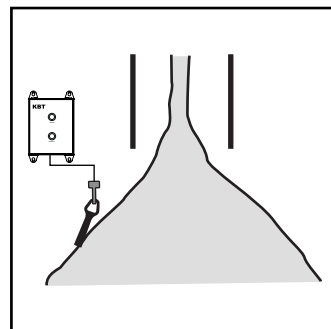
## Application Examples



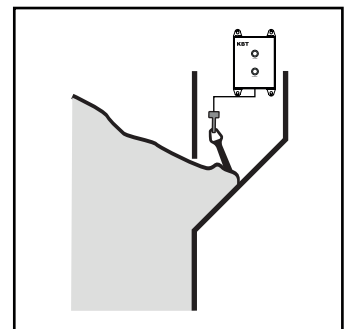
Plugged Chute



Flow Indicator



High Level



Low Level

## Tilt Switch Control Units

### Control Units

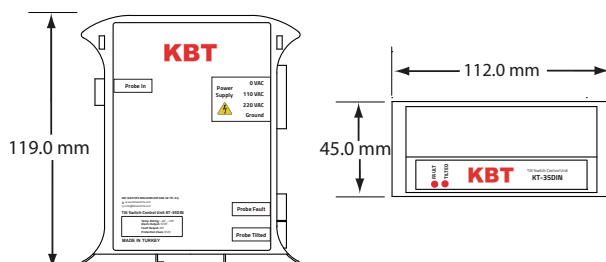
Model	Type	Enclosure	Alarm Contact	Fault Contact
KT-30F	Field mount	Metal	1 SPDT	1 NO, short circuit indicator. Only when use with electronic output models.
KT-30FS	Field mount	Stainless Steel	1 SPDT	1 NO, short circuit indicator. Only when use with electronic output models.
KT-32F	Field mount	Thermoplastic	1 SPDT	1 NO, short circuit indicator. Only when use with electronic output models.
KT-35DIN	DIN mount	Thermoplastic	1 NO	1 NO, short circuit indicator. Only when use with electronic output models.



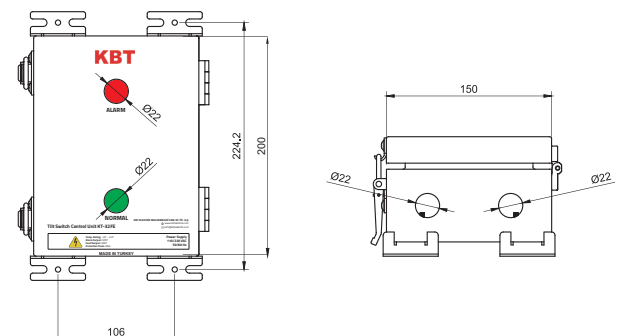
### Technical Specifications

<b>Enclosure</b>	KT-30F	Metal
	KT-30FS	Stainless Steel
	KT-32F	Thermoplastic
	KT-35DIN	
<b>Mounting</b>	KT-30F	Screwed into its place via brackets supplied.
	KT-30FS	
	KT-32F	
	KT-35DIN	DIN Mount
<b>Temperature Rating</b>	All models	-40 °C, +80 °C
<b>Input</b>	All models	110/220 VAC, 50/60 Hz
<b>Alarm Contact</b>	KT-30F	1 SPDT - 110/220 VAC 10 A - 30 VDC 7 A
	KT-30FS	
	KT-32F	
	KT-35DIN	1 NO - 110/220 VAC 2 A - 24 VDC 3 A
<b>Fault Contact</b>	KT-30F	1 SPDT - 110/220 VAC 2 A - 24 VDC 2 A
	KT-30FS	
	KT-32F	
	KT-35DIN	1 NO - 110/220 VAC 2 A - 24 VDC 2 A
<b>Delay</b>	All models	1, 2, 4 or 6 seconds.
<b>Protection Class</b>	KT-30F	IP66
	KT-30FS	
	KT-32F	
	KT-35DIN	IP20
<b>Certifications</b>	All models	CE

### KT-35DIN Mounting Dimensions



### KT-30F / KT-30FS Mounting Dimensions



# KBT<sup>®</sup>

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