



Dear 4B Customer:

Congratulations on your purchase. 4B appreciates your business and is pleased you have chosen our products to meet your needs.

Please read in its entirety and understand the literature accompanying the product before you place the product into service. Please read the safety precautions carefully before operating the product. With each product you purchase from 4B, there are some basic but important safety considerations you must follow to be sure your purchase is permitted to perform its design function and operate properly and safely, giving you many years of reliable service. Please read and understand the Customer Safety Responsibilities listed below. Failure to follow this safety directive and the Operation Manuals and other material furnished or referenced, may result in serious injury or death.

### SAFETY NOTICE TO OUR CUSTOMERS

- A. In order to maximize efficiency and safety, selecting the right equipment for each operation is vital. The proper installation of the equipment, and regular maintenance and inspection is equally important in continuing the proper operation and safety of the product. The proper installation and maintenance of all our products is the responsibility of the user unless you have asked 4B to perform these tasks.
- B. All installation and wiring must be in accordance with Local and National Electrical Codes and other standards applicable to your industry. (Please see the article "Hazard Monitoring Equipment Selection, Installation and Maintenance" at [www.go4b.com](http://www.go4b.com).) The installation of the wiring should be undertaken by an experienced and qualified professional electrician. Failure to correctly wire any product and/or machinery can result in the product or machine failing to operate as intended, and can defeat its design function.
- C. Periodic inspection by a qualified person will help assure your 4B product is performing properly. 4B recommends a documented inspection at least annually and more frequently under high use conditions.
- D. Please see the last page of this manual for all warranty information regarding this product.

### CUSTOMER SAFETY RESPONSIBILITIES

#### 1. READ ALL LITERATURE PROVIDED WITH YOUR PRODUCT

Please read all user, instruction and safety manuals to ensure that you understand your product operation and are able to safely and effectively use this product.

#### 2. YOU BEST UNDERSTAND YOUR NEEDS

Every customer and operation is unique, and only you best know the specific needs and capabilities of your operation. Please call the 24-hour hotline at 309-698-5611 for assistance with any questions about the performance of products purchased from 4B. 4B is happy to discuss product performance with you at any time.

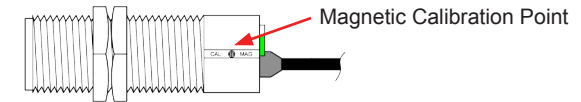
## SENSOR CALIBRATION

The M300 Slipswitch is factory calibrated at a set speed of 10 PPM and a start-up delay of 5 seconds. The sensor *must* be calibrated for your equipment, see "INITIAL SENSOR CALIBRATION".

### INITIAL SENSOR CALIBRATION -

1. Check that the unit is correctly installed. (see standard wiring diagram)
2. Check that the distance between target, stud or bolt head and sensing face of unit is within the minimum distance specified.
3. With the belt tight and without introducing any product into the machine, start up machine. Allow machine time to attain normal running speed.
4. Place the magnet (supplied with unit) on "Cal Mag" point located at the rear of the sensor. Each flash of the green LED represents one second for the start-up delay. Remove the magnet when the required start up delay has been achieved.
5. The relay will be energized under normal conditions.

Note - When the magnet is placed against the "Cal Mag" point the output LED will flash at one second intervals, as a guide to time delay. When the magnet is removed, the output LED will again flash at one second intervals, to confirm the start-up delay and at the same time the unit will self calibrate to 20% under the monitored speed. If a zero start up delay is required, allow machine to reach running speed and touch the "Cal Mag" point with magnet and instantly remove.



### SENSOR RECALIBRATION -

If the M300 Slipswitch is to be used for a slower speed or with a longer time delay than previously calibrated, the unit may trip out before it can be calibrated. This can be avoided by applying power while holding the magnet on the "Cal Mag" point and removing the magnet only when the machine has reached normal speed. Wait for the green LED to illuminate permanently and then recalibrate using steps 1 - 5 in the "INITIAL SENSOR CALIBRATION" above.

### WARNING

Do NOT recalibrate sensor due to belt slipping issues.

## TESTING AND COMMISSIONING

1. Check that the unit is correctly installed (see standard wiring diagram).
2. Check that the distance between the target, stud or bolt head and sensing face of M300 Slipswitch is within the minimum distance specified.
3. Start up machine.
4. The red input LED should be blinking indicating that a target is being detected. The green output LED should be on indicating that the output is on (energized). Use a metal putty knife or a small piece of metal and place it between the sensing face of the M300 Slipswitch and the target to test the contact relay. 4B's SpeedMaster™ calibration and testing device can be used to insure the M300 shuts down the machine at the correct percentage of slip.
5. If calibrated correctly, the machinery should shut down in under a second. If shut down takes more than a second, the M300 Slipswitch may not have been calibrated and the "INITIAL SENSOR CALIBRATION" steps should be repeated.

### WARNING

If the system does not immediately shutdown as expected or alarm as required, then remove the machine from service until the problem has been diagnosed and corrected.

**⚠ WARNING**

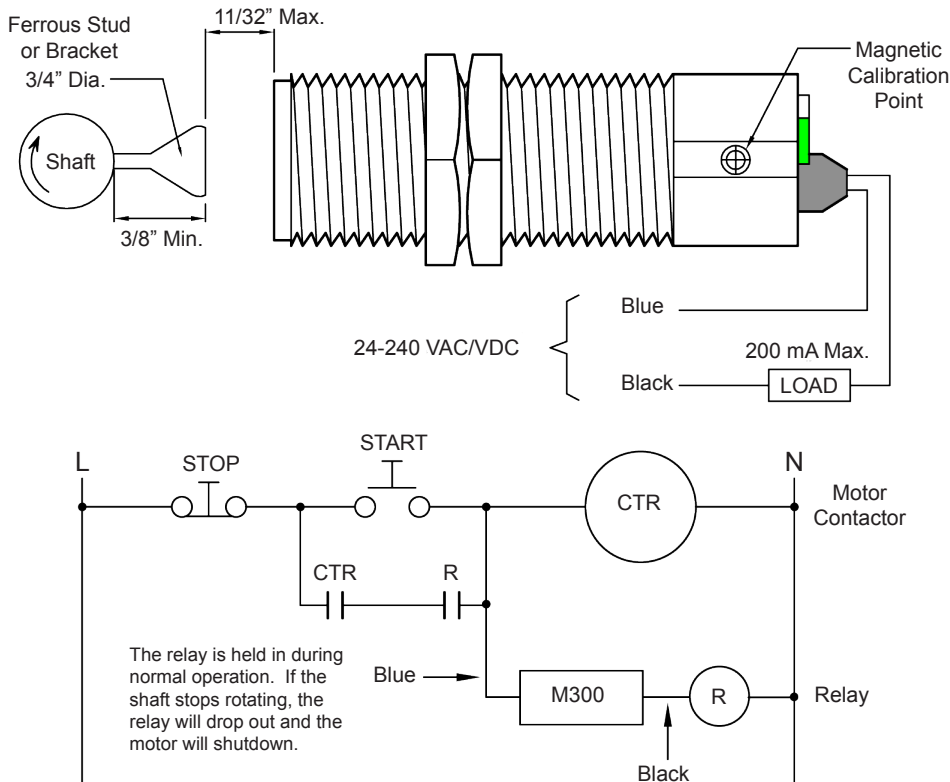
O.S.H.A. requires that all exposed rotating shafts are provided with a full guard. Therefore, this device and its target must be equipped with a guard.

Fasten the M300 Slipswitch to a suitable mounting bracket, such as 4B's Whirligig® universal shaft sensor mount, with the nose of the switch within the sensing range of the target, as shown below -



**M300 Slipswitch Shown on Optional Whirligig® Shaft Sensor Mount with Mag-Con™ Magnetic Connector**

**STANDARD WIRING DIAGRAM**



**3. SELECT A QUALIFIED AND COMPETENT INSTALLER**

Correct installation of the product is important for safety and performance. If you have not asked 4B to perform the installation of the unit on your behalf, it is critical for the safety of your operation and those who may perform work on your operation that you select a qualified and competent electrical installer to undertake the installation. The product must be installed properly to perform its designed functions. The installer should be qualified, trained, and competent to perform the installation in accordance with Local and National Electrical Codes, all relevant OSHA Regulations, as well as any of your own standards and preventive maintenance requirements, and other product installation information supplied with the product. You should be prepared to provide the installer with all necessary installation information to assist in the installation.

**4. ESTABLISH AND FOLLOW A REGULAR MAINTENANCE AND INSPECTION SCHEDULE FOR YOUR 4B PRODUCTS**

You should develop a proper maintenance and inspection program to confirm that your system is in good working order at all times. You will be in the best position to determine the appropriate frequency for inspection. Many different factors known to the user will assist you in deciding the frequency of inspection. These factors may include but are not limited to weather conditions; construction work at the facility; hours of operation; animal or insect infestation; and the real-world experience of knowing how your employees perform their jobs. The personnel or person you select to install, operate, maintain, inspect or perform any work whatsoever, should be trained and qualified to perform these important functions. Complete and accurate records of the maintenance and inspection process should be created and retained by you at all times.

**5. RETAIN AND REFER TO THE OPERATION MANUAL FOR 4B'S SUGGESTED MAINTENANCE AND INSPECTION RECOMMENDATIONS**

As all operations are different, please understand that your specific operation may require additional adjustments in the maintenance and inspection process essential to permit the monitoring device to perform its intended function. Retain the Operation Manual and other important maintenance and service documents provided by 4B and have them readily available for people servicing your 4B equipment. Should you have any questions, please call the free 24-hour hotline number (309-698-5611).

**6. SERVICE REQUEST**

If you have questions or comments about the operation of your unit or require the unit to be serviced please contact the 4B location who supplied the product or send your request via fax (309-698-5615) or call us via our 24-hour hotline number in the USA (309-698-5611). Please have available product part numbers, serial numbers, and approximate date of installation. In order to assist you, after the product has been placed into service, complete the online product registration section which is accessed via our website [www.go4b.com](http://www.go4b.com).

## ⚠ WARNING

- Rotating machinery can cause serious injury or death
- Always lockout and tagout the machine prior to installation

## INTRODUCTION

The M300 Slipswitch is a simple inductive proximity shaft speed monitoring device with an adjustable 0 - 30 second start-up delay, all housed in a 30 mm diameter moulded body. The self-contained unit has a single set point, which signals when the shaft speed has dropped by 20% of normal running speed. It is used for detecting dangerous slow down and underspeed conditions on conveyors, bucket elevators, airlocks, mixers, fans, grinders and many other machines.

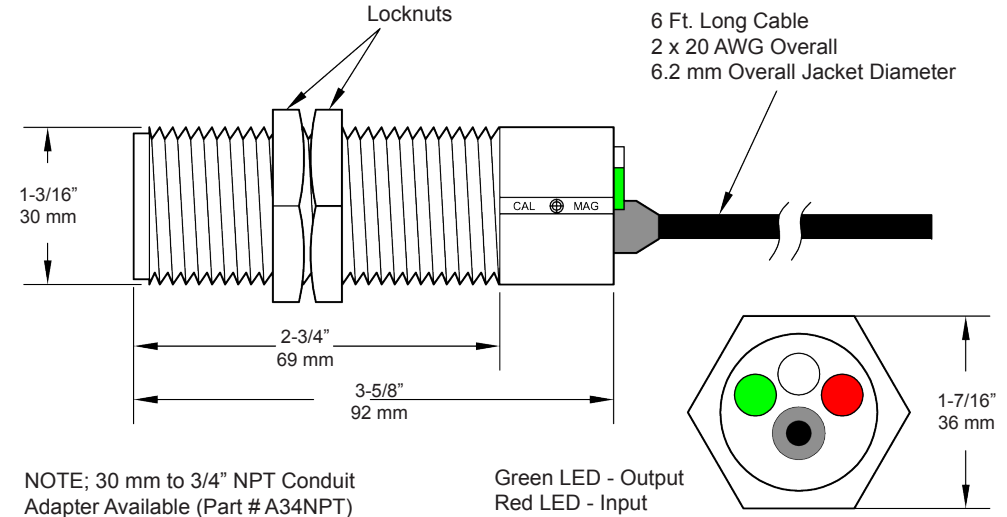
No connection is necessary between the sensor and the equipment being monitored. The proximity sensor detects a stud or bolt mounted on a shaft, or other suitable target. Ideally, the target should be of ferrous metal, but non-ferrous metal will be detected at a shorter range. Maximum range of ferrous targets is 9 mm (11/32") and for non-ferrous targets is 6 mm (15/64"), assuming a 19 mm (3/4") diameter target. Smaller targets may be used but operating distances will be reduced.

The unit has a 2 wire power supply, 24 to 240 VAC/VDC. The load can be connected in either wire but must have the same voltage rating as supply being used.

## SPECIFICATIONS

Supply:	24 to 240 VAC/VDC
Fusing:	Supply to be fused at 5A maximum
Switching Capacity:	200 mA maximum
Saturation Voltage:	8 Volts maximum (output on)
Leakage Current:	1.6 mA maximum (output off)
Ambient Temperature:	-13°F (-25°C) to +158°F (+70°C)
Output State:	Triac - normally closed above set speed, normally open at 20% below set speed.
Sensing Range:	11/32" (9 mm) maximum on ferrous metal at 77°F (25°C)
Input Pulse Range:	10 to 3,600 pulses per minute (PPM) maximum
Start-Up Delay:	Adjustable - 0 to 30 seconds
Trip Point:	20% below set speed.
Enclosure:	ISO threaded 30 mm by 1.5 mm pitch, molded poly carbonate.
Relative Humidity:	90% RH
LED Indicators:	Red - 'Target Sensed', Green - 'Set Speed'
Connections:	2 wire, 6 ft (2 meter) long leads. Can be extended with 2 wire lead.
Approval:	CSA Class II Division 1 Groups E, F and G (ATEX available)
Protection:	IP67

## DIMENSIONS



## INSTALLATION

The M300 Slipswitch should be wired as indicated by the connection diagram.

The M300 Slipswitch must be wired through a load/resistor (see standard wiring diagram) and not directly to supply voltage. The supply polarity is not important and the load can be connected in either wire.

Do not wire the M300 Slipswitch to a motor starting coil due to 200 mA max. current capacity.

It is not recommended to wire the M300 Slipswitch in series with other sensors.

The cable on the M300 Slipswitch can be extended to virtually any length in ordinary 2 wire cable. Two locknuts are provided to mount the M300 Slipswitch in position. Mount securely to withstand vibration.

Ensure that the unit and target are adequately guarded (refer to page 6).

⚠ WARNING

Rotating parts can crush, cut and entangle.

Do NOT operate with guard removed.

Lockout power before removing guard or servicing.