



Bulldog

Conveyor Belt Alignment & Rip Detection
Switch



INSTALLATION INSTRUCTIONS

OPERATION MANUAL

Part No. MBA2AI, MBA2RAI

www.go4b.com

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|  |  WARNING |
|  | <p>Rotating parts can crush, cut and entangle.</p> <p>Do NOT operate with guard removed.</p> <p>Lockout power before removing guard or servicing.</p> |

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. 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 go to www.go4b.com or call the 24-hour hotline at +1-309-698-5611 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.

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 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 go to www.go4b.com or call the 24-hour hotline at +1-309-698-5611.

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 go to www.go4b.com or call the 24-hour hotline at +1-309-698-5611. 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.

7. SPECIFIC CONDITIONS OF USE:

1. The equipment shall be suitably earth bonded via the PCB mounted terminal inside the equipment enclosure.
2. Do not allow the nylon roller wall thickness to fall below 8mm. The wall thickness shall be checked after every operation of the switch.
3. Warning: The equipment is a potential static hazard, clean only with a damp cloth.
4. Do not allow dust layers to build up on the equipment.
5. The threaded entry holes shall be fitted with suitable cable glands or other suitable accessories such as breather/drains having an equipment certificate that maintain the IP66 Ingress Protection rating of the enclosure. These devices shall incorporate a suitable O-ring or sealing washer and locknut on the entry thread to maintain the IP66 rating.
6. Unused entry holes shall be fitted with suitable stopping plugs having an equipment certificate or having a component certificate subject to the confirmation by the end user/installer of the ingress protection rating and the permitted service temperature of the component. The stopping plugs shall incorporate a suitable O-ring or sealing washer on the entry thread to maintain the IP66 rating.
7. The operating temperature range and ingress protection rating of the enclosure is limited to that of the devices/accessories fitted.

WARNING

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

1. PRODUCT OVERVIEW

A high degree of frictional heat can be created by conveyor belts rubbing against machine structures and casings. This heat can be enough to cause a spark and fire leading to a potential hazardous explosion. The purpose of the Bulldog belt alignment and rip detection system (tear) is to ensure that any belt misalignment or wander is detected BEFORE there is any contact between the running belt and fixed structures or casings.

The rip detection system is designed to detect damaged and/or ripped/torn belts with a pull cord positioned underneath the running conveyor belt.

The Bulldog belt misalignment system consists of two pairs of switches connecting to an electronic control circuit or directly to PLC systems as simple digital switches.

Each tilt mechanism consists of a vertically pivoted roller arm which is then incorporated into a shaft activating two switches.

One of the switches is activated when the roller arm is tilted at a 20° angle (used as an alarm output) and the other activates when the roller is tilted at a 35° angle (used as a shutdown output).

The Bulldog belt alignment units are fitted in pairs at either end of the conveyor at each side of the conveyor belt, so if the belt tracks from its central position it will make contact with either roller causing the arm to tilt and activate a switch depending on the amount the belt has misaligned.

The Bulldog belt rip detection system helps identify damaged or ripped conveyor belts and has the ability to make immediate shutdown procedures to prevent potential damage to machinery components and help prevent costly downtime.

The Bulldog belt rip detection mechanism is an electro mechanical method which requires the use of two Bulldog units at both sides of the conveyor belt. The two rip detection bulldogs (MBA2RA, MBR2A) are connected via a cord and magnets, the cord running underneath the width of the belt to the other rip detection unit. When the damaged or ripped belt pulls on the cord, the magnets are pulled away from the fixed points on the Bulldog units and activates a switch which can be incorporated into the immediate shutdown circuit.

2. SPECIFICATIONS

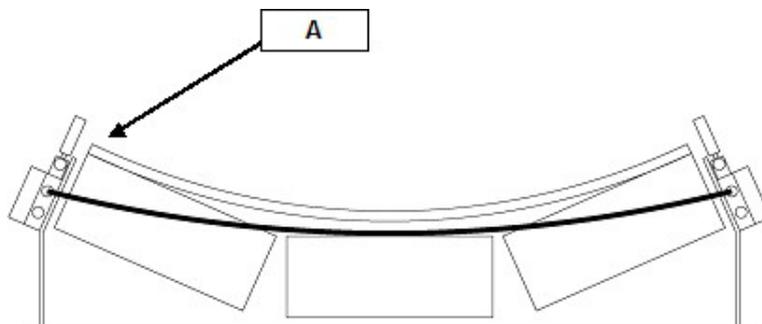
| | |
|---------------------------------|---|
| Supply | 12 – 24vdc & 110-240Vac |
| Fusing | Units should be supplied via a fused isolator rated 5A 250Vac. |
| Micro switch changeover contact | 6A @ 240Vac max. non-inductive. (Maximum input voltage) |
| Terminal block connections | 240V ac 6A max. |
| Reed switch output | 100-Watt Max: 2.1A / 250V ac – 3A / 400V dc (Maximum output voltage) |
| Options (Can be combined) | “-SS” (Stainless Steel Roller) / “-SF” (Stainless Steel Fittings) |
| Approvals | Baseefa10ATEX0135X BAS21UKEX0313X IECEX BAS 10.0056X II 2D Ex tb h IIIC T125°C Db IP66 Tamb -20°C to +50°C |

3. INSTALLATION

INSTALLATION BELT ALIGNMENT

The Bulldog alignment units should be installed in pairs in suitable positions at each end of the conveyor system (as shown in picture below) as near as possible to the main drive and tail end pulleys as is practicable.

If using single pair or extra alignment rollers these should be mounted approximately half way along the belt. Ensure that the belt contacts the centre of the roller mechanism as shown below marked as 'A'.



The Bulldog can be mounted onto a flat surface using the four mounting holes on each corner of the unit with a M6 nut and bolt fixture.

* Please note the roller can be adjusted to any angle by adjustment to the cam shaft as shown below in the next figure.



⚠ WARNING

Installation of the Bulldog belt rip (tear) detection must be carried out whilst the conveyor is powered off and locked off.

INSTALLATION BELT RIP DETECTION

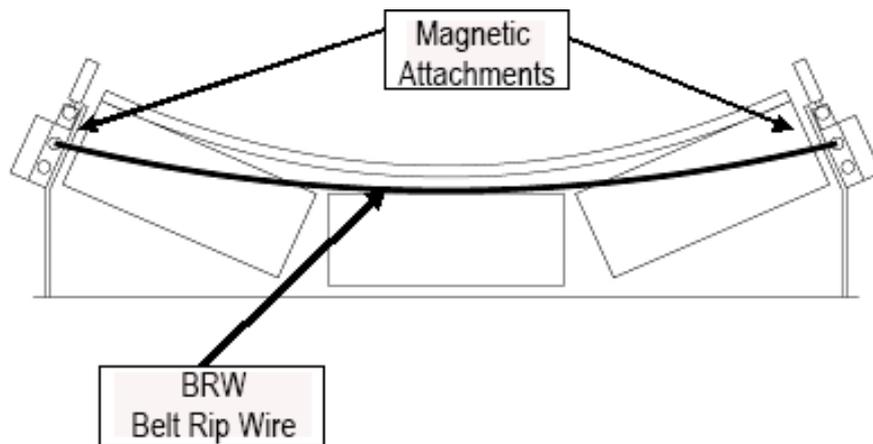
Required components

2 x MBA2RA / MBAR2A Bulldogs

1 x BRW Belt Rip Wire



For rip detection two Bulldog units are required one at either side of the conveyor, the BRW belt rip wire connects the two units together by magnetic attachments at each Bulldog. The belt rip wire is placed on the underside of the conveyor approx 25mm down from the bottom of the belt see the figure below.



The length of the BRW Belt Rip Wire can be adjusted to suit the width of the conveyor by loosening the steel wire clamp and adjusting the cable length through the eyebolt as shown in the figure below.



Steel rip wire with metal clamp



Magnetic attachment to the Bulldog

NOTE

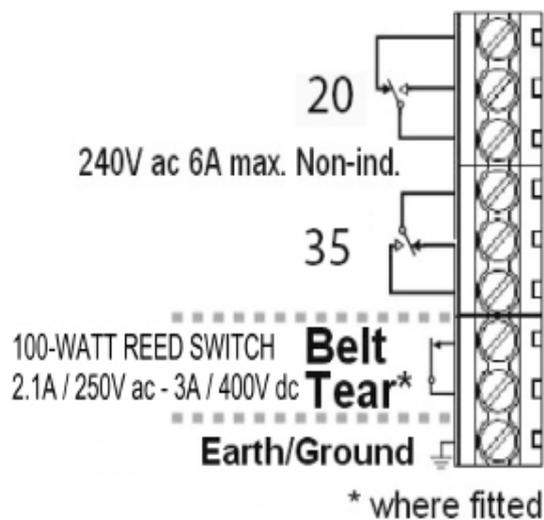
Please note to remove the plastic spacer on the magnets before attachment is made to the Bulldog.

4. OUTPUT CONNECTIONS

The Bulldog system has two built in non-inductive micro switches the first one switches at 20° angle and the second one switches at 35° angle.

The belt rip detection (tear) works on a basis of a reed switch. When the magnet pulls away the reed switch connection is open.

The figure below shows the connections internally of the Bulldog alignment and rip system.



5. PRODUCT WARRANTY

1. EXCLUSIVE WRITTEN LIMITED WARRANTY

All products sold are warranted by the company 4B Components Limited, 4B Braime Components Limited, and 4B France herein after referred to as 4B to the original purchaser against defects in workmanship or materials under normal use for one (1) year after date of purchase from 4B. Any product determined by 4B at its sole discretion to be defective in material or workmanship and returned to a 4B branch or authorized service location, as 4B designates, shipping costs prepaid, will be, as the exclusive remedy, repaired or replaced at 4B's option.

2. DISCLAIMER OF IMPLIED WARRANTY

No warranty or affirmation of fact, expressed or implied, other than as set forth in the exclusive written limited warranty statement above is made or authorized by 4B. 4B specifically disclaims any liability for product defect claims that are due to product misuse, abuse or misapplications, as authorized by law, 4B specifically disclaims all warranties that the product is fit or merchantable for a particular purpose.

3. NO WARRANTY "BY SAMPLE OR EXAMPLE"

Although 4B has used reasonable efforts to accurately illustrate and describe the products in its catalogs, literature, and websites, such illustrations and descriptions are for the sole purpose of product identification and do not express or imply a warranty affirmation of fact, of any kind or a warranty or affirmation of fact that the products will conform to their respective illustrations or descriptions. 4B expressly disclaims any warranty or affirmation of fact, expressed or implied, other than as set forth in the exclusive written limited warranty statement above, including, without limitation, the implied warranties of merchantability and fitness for a particular purpose.

4. LIMITATION OF DAMAGES

Any liability for consequential, incidental, special, exemplary, or punitive damages, or for loss of profit whether direct or indirect, is expressly disclaimed.

With subsidiaries in North America, Europe, China, Asia, Africa and Australia along with a worldwide network of distributors, 4B can provide practical solutions for all your applications no matter the location.



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