



RG1

ROTARY LEVEL INDICATOR



INSTALLATION INSTRUCTIONS

OPERATION MANUAL

Part No's RG1V56A, RG1V4A

www.go4b.com

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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.

PRODUCT OVERVIEW

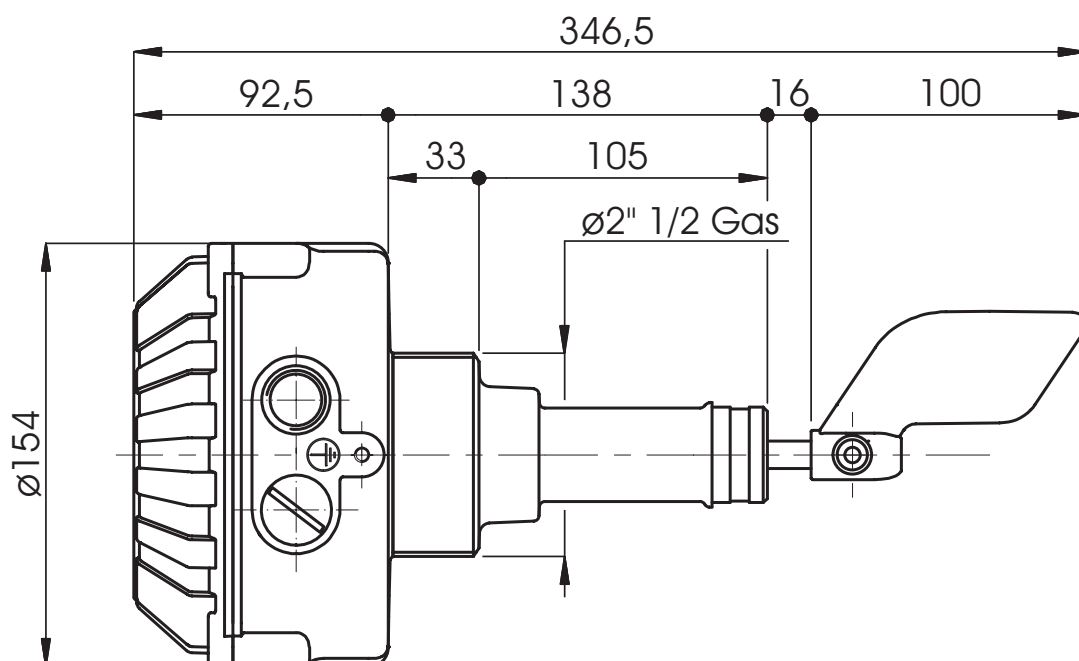
The RG1V rotary paddle switch is designed to detect high and low levels of bulk granular solids in bins, tanks, silos, and as blockage detectors in spouts where failsafe detection is required, or for dust hazard areas.

The detection of material is achieved by a rotating paddle. If material impedes the rotation of the paddle, the motor topples of its axis and triggers a contact. The power supply to the motor is cut and the contact signals that a critical level has been reached, which will cause the motor for any inlet or outlet to close down or start up. When the level of the material reaches normal levels again, the motor returns to its initial position and restarts.

SPECIFICATIONS

Power Supply -	RG1V56A: 110/240 VAC, RG1V4A: 24 VDC
Operating Temp. -	-20° C up to +70°C
Output -	Change over relay 10 A at 250 VAC.
Mounting -	ø 2"1/2 BSPT / Gas
Paddle -	Standard NYLON propeller, available on request in stainless steel or other materials and versions with 1, 2, 3 or 4 blades.
Conduit Entry -	Two conduit entries tapped ø 1/2" BSPP.
Enclosure -	Die-cast aluminium casing.
Protection -	IP65
Approvals -	ATEX Zone 20 / Zone 21  II 1/2 D Ex ta/tb IIIC T85°C IP65 Da/Db TÜV IT 13 ATEX 070

DIMENSIONS



ALL DIMENSIONS
IN MM

INSTALLATION

Before installation, inspect the outer structure of the level gauge. Check the movement of the propeller shaft and the operation of the clutch assembly. If this check reveals anything irregular, the level gauge must be reported back to 4B. 4B level gauges can be installed in any position. With the shaft in a horizontal or vertical position, the level gauge must be mounted with cable glands on the right hand side (Figure 1). The level gauge is mounted on silos or vessels on the side or top. It is important to choose the position so that the device is outside of the product flow, likewise taking care that the material can move freely all around the gauge.

Protective deflectors (Figure 2) are advisable when there is considerable weight load on the shaft or when material flow is uneven and lumps of product may fall down on the probe. The level gauge can be mounted on the silos via a threaded insert (2" 1/2 BSPP), which is welded onto a silo.

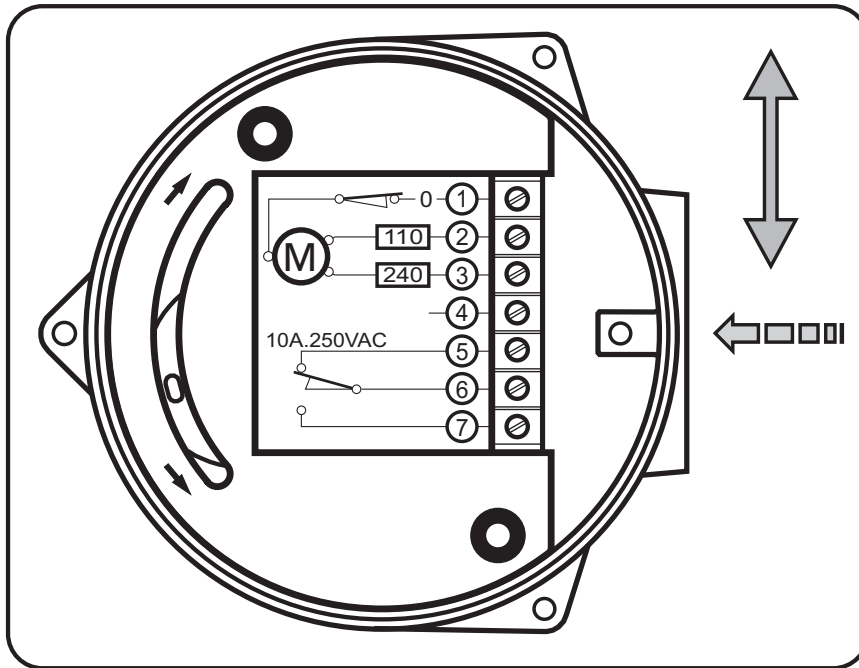


Figure 1 - Mounting position.

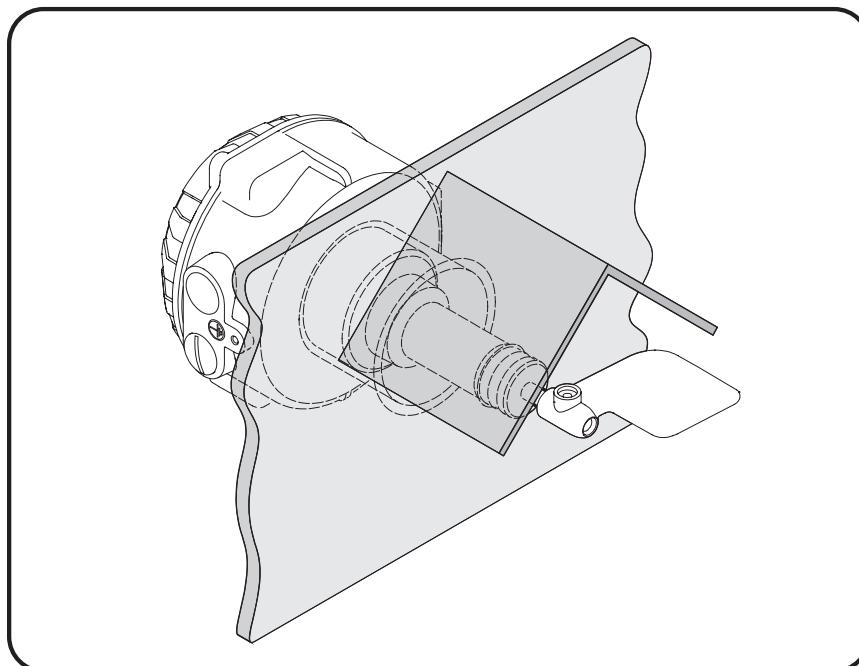


Figure 2 - Shaft protection.

STANDARD WIRING DIAGRAM

All wiring must be in accordance with local and national electrical codes and should be undertaken by an experienced and qualified electrician.

The conductors forming the power supply and signal carrying cable must have an adequate cross-section so that the current density, in each conductor, is no higher than 4 A/mm². One of these is used only for the earthing of the level gauge.

The cross-section of the conductors must also be adequate in relation to the length of the cable used to avoid a drop in voltage along the cable over the values prescribed by the regulations on the subject. It is likewise recommended to use flexible cables with an adequate outside diameter for the cable entries used (not supplied) to ensure a correct sealing of the cable gland on the cable.

External ground connection can be found on the outside of the level gauge next to the cable entry. It is realised via M5 screw and eyelet cable crimp.

- The external earthing has to be carried out by the installer.
- The equipment has to be protected against impact and electrostatic inside the silo.
- The user has to protect the equipment circuits with fuses against short circuit.
- The maximum surface temperature is determined taking into account a safety margin, but without considering a possible dust deposit on the equipment.

WARNING

Use exclusively cable glands certified according to directive 2014/34/EU, Category 2 and EN60079-31 (as applicable).

The terminal box contains a screw which is marked by the earth symbol (Figure 3). This screw must be connected to the Earth core of the power cable. The earth connection of the level gauge is compulsory.

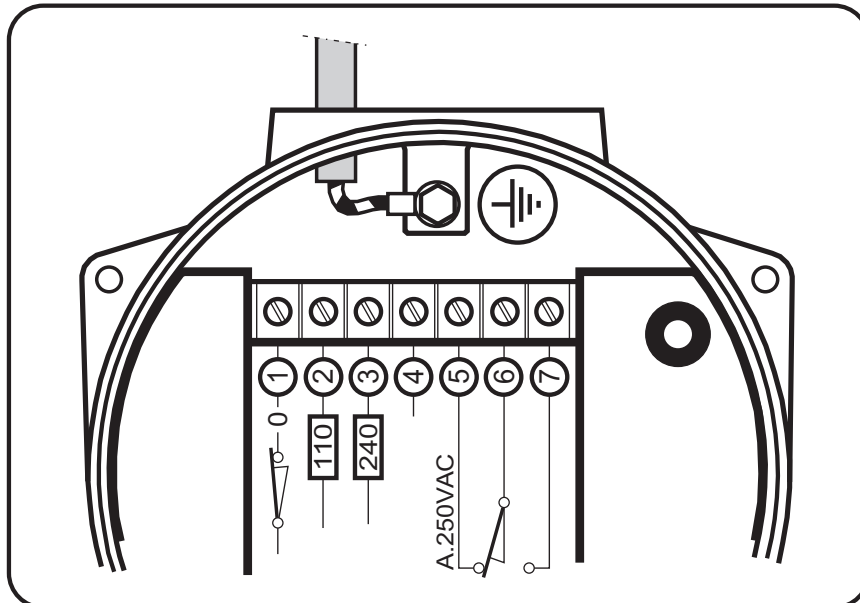


Figure 3 - Earthing detail.

NOTE

4B Rotary level indicators need no routine maintenance. Possible extraordinary maintenance is restricted to replacing parts that are deteriorated by use. The gauge must not be lubricated, the shaft, the only moving part is mounted on ball bearings with permanent lubrication.

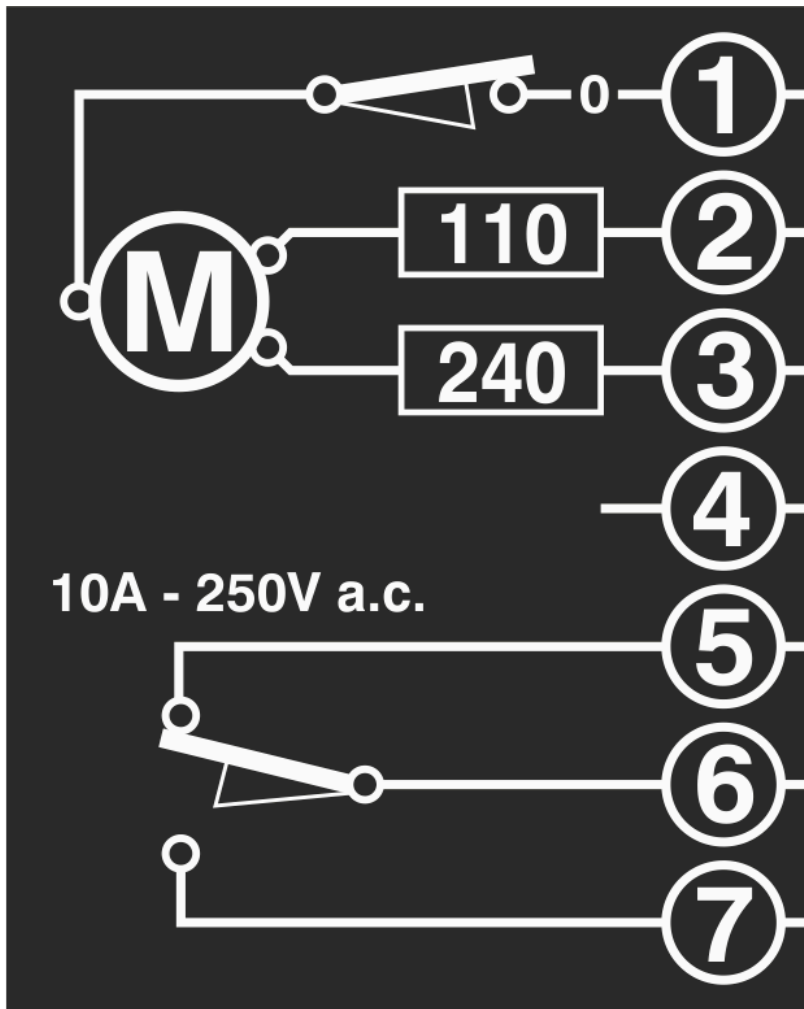


Figure 4 - 110/240 VAC Wiring detail.

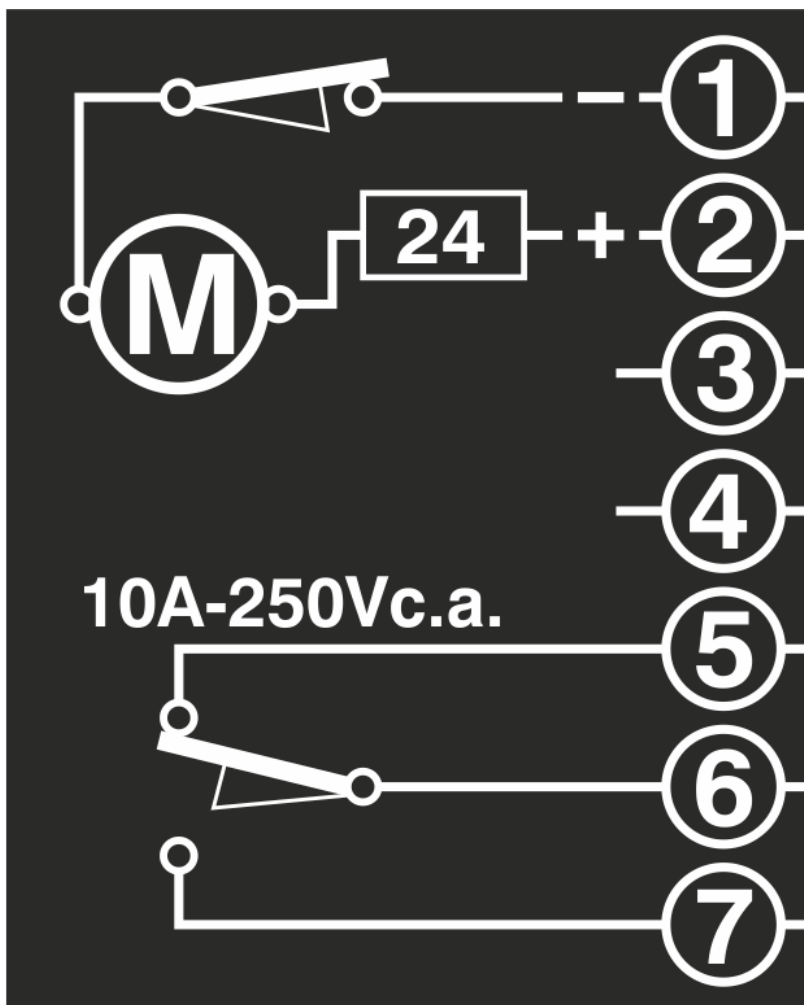


Figure 5 - 24 VDC Wiring detail.

TESTING AND COMMISSIONING

1. Follow the safety rules below when installing this product.
2. Check that the unit is correctly installed (see standard wiring diagram).

WARNING

All the appropriate safety precautions must be taken when electrically operated equipment is used, in order to reduce the risk of fire outbreaks, electric shock and injuries to persons.

- Keep the work zone clean and orderly. Accidents are more likely to occur in untidy areas and environments.

- Before beginning work, make sure that the level gauge is in a perfect condition. Damaged or broken parts must be repaired or replaced by competent personnel authorized by the Manufacturer.

- All verifications, inspections, cleaning and maintenance operations, part changes and replacements, must be carried out with the level gauge disconnected and the plug removed from the power socket.

- It is absolutely forbidden for children, unauthorized and/or inexperienced persons to touch or use the level gauge.

- Make sure that the electricity system complies with the laws in force. Make sure that the earthing is efficiently connected when the instrument is installed.

Make sure that the power socket is suitable, that it complies with the laws in force and that it has a built-in automatic protection circuit-breaker. The level gauge must never be stopped by detaching the plug; moreover, never use the cable to pull the plug from the socket.

- Periodically check to be sure that the cable is in perfect conditions and replace it if damaged. This operation must only be carried out by competent and authorized persons. Only use extension cables of the permitted type and marked.

- Do not allow children or unauthorized persons to touch the cable when the instrument is plugged in.



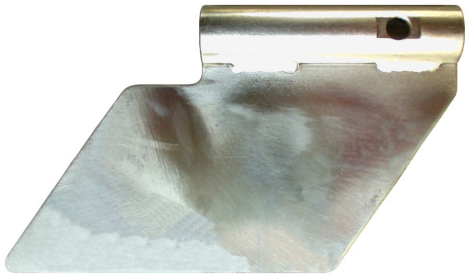



- The models with signal lamp must be protected from direct exposure to sunlight.

TROUBLESHOOTING GUIDE

FAULT	REMEDY
Paddle is not rotating	Check power supply.

PARTS & ACCESSORIES

PADDLES

Part number	Description	Picture
RG1SP1	Single vane screw in NYLON ø120 x 100 mm.	
RG1SP3	3 Vanes NYLON screw ø120 x 65 mm.	
RG1SP1-SS	Single vane screw in Stainless steel ø120 x 100 mm.	
RG1SP4-SS	4 Vanes Stainless steel screw ø100 x 60 mm.	
RG1SP4-SS-L	4 Vanes Stainless steel screw, mounting with flange. ø138 x 60 mm.	
RG1SPV-SS	1 Vanes Stainless steel screw.	

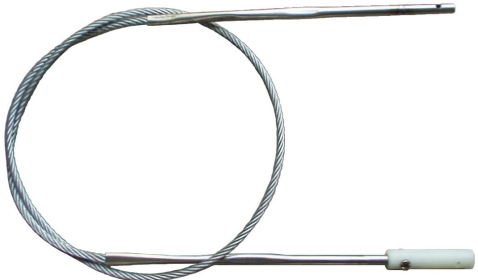
PARTS & ACCESSORIES

EXTENSIONS

Part number	Description	Picture
RG1EXT-0500-SS	Stainless steel extension without rod guard 500 mm (0.5 m) long.	
RG1EXT-1000-SS	Stainless steel extension without rod guard 1000 mm (1 m) long.	
RG1EXT-1500-SS	Stainless steel extension without rod guard 1500 mm (1.5 m) long.	
RG1EXT-0500-SS-G	Extension with rod guard in stainless steel 500 mm (0.5 m) long.	
RG1EXT-1000-SS-G	Extension with rod guard in stainless steel 1000 mm (1 m) long.	
RG1EXT-1500-SS-G	Extension with rod guard in stainless steel 1500 mm (1.5 m) long.	

PARTS & ACCESSORIES

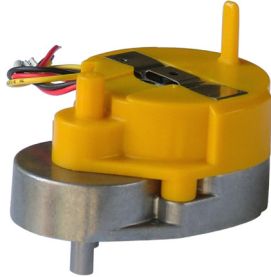
EXTENSIONS

Part number	Description	Picture
RG1EXT-2000-SS-W	Stainless steel flexible extension 2m.	

MOUNTING BRACKET / FLANGES

RG1MP1	Standard aluminium flange. External diameter 203 mm, holes centers \varnothing 178 mm, 6 equidistant \varnothing 7,5 holes.	
RG1-TUBE-2.5"	Iron sleeve 2"1/2 BSPP / Gas	
RG1-TUBE-2.5"-SS	Stainless steel sleeve 2"1/2 BSPP / Gas.	

SPARES

RG1MOTOR-SPARE	<p>Geared motor that can be installed on any bladed level indicator.</p> <p>Available power supplies: V.110/220 a.c. 50/60 Hz. V. 24 d.c.</p> <p>Power consumption: 4 Watt</p>	
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PARTS & ACCESSORIES

PADDLES SELECTION TABLE

Part number	Description	Selection criteria
RG1SP1	Single vane screw in NYLON ø120 x 100 mm.	SUGGESTED MATERIAL DENSITY[kg/dm ³]: between 0.6 and 0.9 MIN. INSTALLATION HOLE DIMENSION[mm]: 65 For medium weight materials.
RG1SP3	3 Vanes NYLON screw ø120 x 65 mm.	SUGGESTED MATERIAL DENSITY[kg/dm ³]: between 0.3 and 0.5 MIN. INSTALLATION HOLE DIMENSION[mm]: 115 For lightweight and medium weight materials.
RG1SP1-SS	Single vane screw in Stainless steel ø120 x 100 mm.	SUGGESTED MATERIAL DENSITY[kg/dm ³]: between 0.6 and 0.9 MIN. INSTALLATION HOLE DIMENSION[mm]: 65 For medium weight materials.
RG1SP4-SS	4 Vanes Stainless steel screw ø100 x 60 mm.	SUGGESTED MATERIAL DENSITY[kg/dm ³]: between 0.3 and 0.5 MIN. INSTALLATION HOLE DIMENSION[mm]: 105 For lightweight and medium weight materials.
RG1SP4-SS-L	4 Vanes Stainless steel screw, mounting with flange. ø138 x 60 mm.	SUGGESTED MATERIAL DENSITY[kg/dm ³]: between 0.2 and 0.4 MIN. INSTALLATION HOLE DIMENSION[mm]: 140 For lightweight materials.
RG1SPV-SS	1 Vanes Stainless steel screw.	SUGGESTED MATERIAL DENSITY[kg/dm ³]: between 0.8 and 1 MIN. INSTALLATION HOLE DIMENSION[mm]: 30 For medium weight materials.

PRODUCT WARRANTY

1. EXCLUSIVE WRITTEN LIMITED WARRANTY

ALL PRODUCTS SOLD ARE WARRANTED BY THE COMPANY 4B COMPONENTS LIMITED AND 4B BRAIME COMPONENTS LIMITED 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, 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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