Formula Air
Supporting your performance

# ATEX certified
# Rotary valves RVA-X

## Maintenance manual (EN)

# Content

# 1. Introduction

This manual cannot be reproduced, even partially, without prior written consent by Formula Air Group. Every step of the ATEX rotary valve all along its life cycle has been deeply analyzed by Formula Air Group in the expected area during the design, construction, and manual creation. However, it is understood that nothing can replace the experience, training and good sense of those professionals who work with the device.

Ignoring the cautions and warning from the present manual, using improperly parts or the whole device supplied, using unauthorized spare parts, manipulating the device by non-qualified personnel, violation of any safety norm regarding design, construction and use expected by the supplier, exempt Formula Air Group from all responsibility in case of damages to people or properties.

Formula Air Group does not take any responsibility for the non-observance of the user about the preventive safety measures presented in this manual.

The utilization implies compliance and knowledge of the ATEX Directive 2014/34/ EU. For use in potentially explosive areas, the installation rules stipulated by the technical rules of the area for which the ATEX rotary valve is designed must be observed.

Failure to comply with the requirements of the operating manual or incorrect use of the ATEX rotary valve during operation can lead to the damage of the ATEX rotary valve and the loss of the safety function performed by the ATEX rotary valve itself. This will result in termination of the warranty on the item and will release the manufacturer from any liability.

**Warranty**

Regarding to the device's warranty, see the sales general condition.

**Attention**

Before proceeding with the installation of the ATEX rotary valve, ensure that the markings on the product are compatible with the ATEX rating of the site of use. Failure to comply with this prescription can cause serious injury to persons including death and/or serious damage to property.

**NOTE: All drawings and references contained within this manual are noncontractual and are subject to change without prior notice at the discretion of the Formula Air Group and its partners.**



The ATEX rotary valves are ATEX certified protective systems which prevent a dust explosion inside a vessel to propagate to the ductwork and other areas.

The ATEX rotary valve is flameproofed and resistant to a certain pressure in case of explosion, but can not be used in a normal process as fire protection system.

The ATEX rotary valves are built in 3 mm thick steel, powder coated RAL 5010 and neoprene rubber.

# 2. Product description

Formula Air ATEX rotary valves fulfil all relevant requirement to be used safely in an explosion hazardous environment. To accomplish this, several instructions are described in this manual and shall be following prior to and during operation.

Note that besides the 2014/324/EU directive, ATEX components using electrical components meant for installing within a complete installation needs to comply to :

**2006/42/EU** – Machine Directive

**2014/35/EU** – Low Voltage Equipment Directive

**2014/30/EU** – Electromagnetic Compatibility and Repealing Directive (EMC)

**2014/68/EU** – Pressure Equipment Directive

The following harmonized standards have been applied:

**EN-ISO80079-36:2016**

Explosive atmospheres – Part 36: Non-electrical equipment for explosive atmospheres – Basic method and requirement

**EN 1127-1:2019**

Describes the general requirements for explosion isolation systems and sets out the criteria for alternative test methods and interpretation means to validate the efficacy of explosion isolations.

**EN-ISO 80079-37:2016**

Explosive atmospheres - Part 37: Non-electrical equipment for explosive atmospheres - Non-electrical type of protection constructional safety ''c'', control of ignition sources ''b'', liquid immersion ''k''.

**EN 15089:2009**

This European Standard describes the general requirements for explosion isolation systems. This European Standard specifies methods for evaluating the efficacy of the various explosion isolation systems, and methods for evaluating design tools for such explosion isolation systems when applying these in practice.

*Figure 1. Formula Air rotary valve RVA-X*

## 2.1 How it works

The ATEX rotary valve is functionally built up of the following main components:

1. Rotary valve body
2. Rotor
3. Drive set (motor and gearbox)

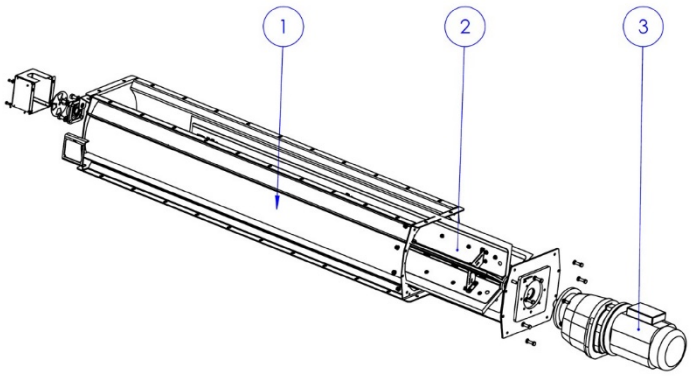



*Figure 2. Structural design*

### 2.1.1 Rotary valve body

The rotary valve body is made of sheet steel. Inlet and outlet are foreseen with flange connection. The end plate positioned at the drive set can be dismounted in a way that provides access to the rotor.

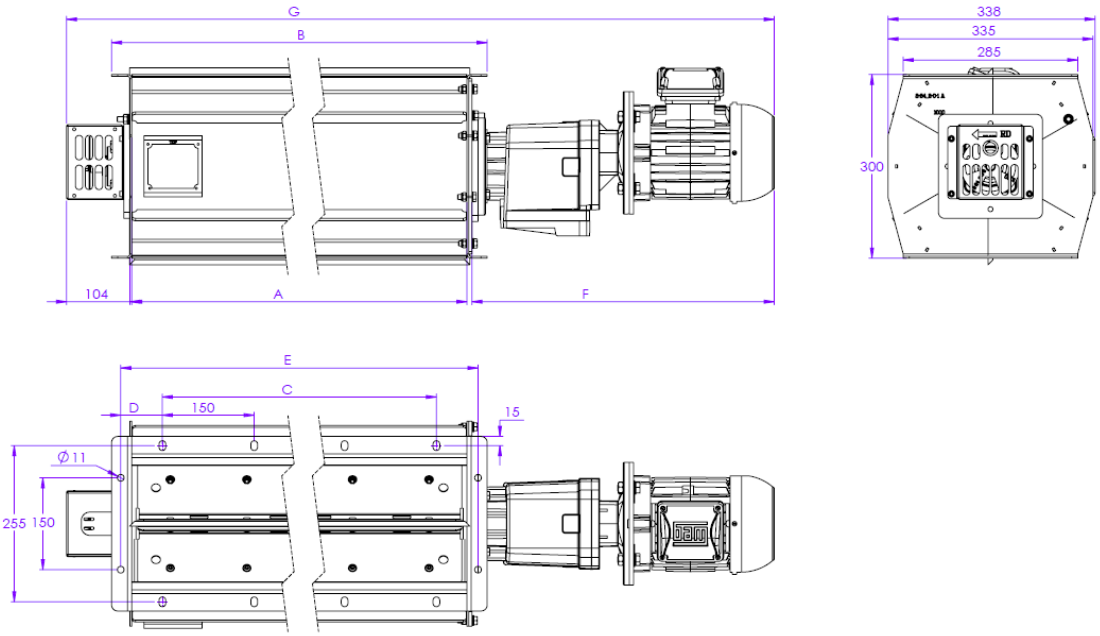
### 2.1.2 Rotor

The rotor is built up of a rotor shaft mounted with 6 sets of blades. Sealing blades in neoprene rubber are mounted in the blade retainers.

### 2.1.3 Motor and Gearbox

The rotor is driven by an electric motor. The connection between rotor and electric motor is established by a gearbox. The motor of the rotary valve can come in ATEX or non-ATEX configurations.

## 2.2 Overall dimensions




| Type | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | Mass (kg) |
|---|---|---|---|---|---|---|---|---|
| **RVA1-X*-06** | 250 | 316 | 150 (1x150) | 68 | 286 | 418 | 782 | 48 |
| **RVA2-X*-06** | 500 | 566 | 450 (3x150) | 43 | 536 | 494 | 1108 | 74 |
| **RVA3-X*-06** | 750 | 816 | 600 (4x150) | 93 | 786 | 494 | 1359 | 91 |
| **RVA4-X*-06** | 1000 | 1066 | 900 (6x150) | 68 | 1036 | 494 | 1609 | 107 |
| **RVA5-X*-06** | 1500 | 1566 | 1350 (9x150) | 93 | 1536 | 494 | 2109 | 141 |

* Can be 1, 2 or 3 (according to ATEX marking of the rotary valve):

X1 = suitable for use in ATEX zone 21 or 22 externally
X2 = suitable for use in ATEX zone 22 externally
X3 = suitable for use in non-hazardous area externally

## 2.3 Technical datasheet

Installation, operation, maintenance, and repair in areas with risk of explosions may only be carried out by qualified personnel. The proper installation must ensure that there are no unwanted vibrations during the operation.

Ensure that no tools or foreign objects remain in the machine during assembly or maintenance.

Selection and installation of the electrical parts within hazardous areas shall be fulfilled according the EN60079-14 and the installation instructions of the specific equipment.

The valve should only be exposed to organic or non-metallic dust.

The user has to install pressure detector or other detection devices that automatically and instantaneously stops the rotary valve when an explosion is detected. These detection devices are not subject of the rotary valve certificate.

The ATEX rotary valve has to be installed so that the risk of electrostatic charging of the surface is avoided.

The airtightness of the rubber blade has to be controlled regularly according to the instructions in this user manual (see point 4.4.1).

| | |
|---|---|
| Ambient temperature range | **from -20° C to +60° C** |
| Maximum allowed product temperature | **60° C** |
| Parameters of the dust | organic non-metal dust<br>**Kst,max=200 bar.m.s-1**<br>**MIE ≥ 13 mJ**<br>**MIT ≥ 430°C** |
| Maximum output speed of gearbox | **21 rpm** |
| Required torque with motor 0,37kW | **70Nm** |
| Required torque with motor 0,55kW | **160Nm** |

| **Size** | **Maximum reduced pressure pred, max (kPa)** |
|---|---|
| RVA1-X*-06 | 70 |
| RVA2-X*-06,<br>RVA3-X*-06,<br>RVA4-X*-06,<br>RVA5-X*-06 | 40 |

## 2.4 Preventing ignition sources

The following measures have been applied to prevent ignition sources from occurring within the rotary valve:

| | |
|---|---|
| Frictional heating in shaft seals. | Low circumferential speed. |
| Frictional heating in bearing. | Bearings shall be inspected, lubricated and replaced according. to IOM.* |
| Frictional heating or sparking from grinding rotor. | Low circumferential speed and periodic inspection of clearance and rotor condition prescribed in IOM.* |
| Glowing particles from external process. | End user responsibility, instructions added to IOM.* |
| Electric motors and gearboxes | Electric motor and gearbox shall be ATEX approved if the application requires it |
| Isolated metal parts may become electrostatically charged due to internal friction. | Earthing and bonding prescribed in IOM.* |

**Interval of maintenance*

**CAUTION!**

Selection and installation of these parts within hazardous areas shall be fulfilled according to EN 60079-14 or local legislation and the installation instructions of the specific equipment.

The ATEX rotary valve installation, connection, start-up and maintenance has to be performed in absence of potentially explosive atmosphere through the process interruption.

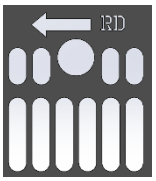
The installation, connection, start-up and maintenance of the rotary valves have to be performed by qualified personnel. Use the appropriate equipment and clothing, apply the necessary safety measures and do not work alone.

The ATEX rotary valve must not be started until it has been mechanically connected on both sides to other ducting components by means of the built-in flanges.

The ATEX rotary valve must be sealed on both sides of the hole series and bolted in the predrilled holes.

It is mandatory to make sure that the whole installation is stopped and cannot be started-up again before everything is connected and assembled.

## 3. Electrical connection




Electrical connection must only be carried out by a certified electrician. When making the electrical connection, check that the ATEX rotary valve rotor is turning in the correct direction. The rotation direction is indicated by an arrow on the rotation disk cover.

The electrical connection must be carried out in accordance with current local and national regulation.

### 3.1 Electrostatic bond

Electrostatic bonding of an ATEX rotary valve must be carried out before commissioning.

### 3.2 Earthing

All conductive parts and electrical equipment shall be connected to each other and earthed. The earthing and bonding instructions from the motor supplier shall be followed.

No potential difference between all metal parts within the machine, or between machine and earth may exist. Therefor earthing resistance between all metal parts and earth shall be measured before operation and shall be maximum $10^6$ Ω between individual items and to earth and the connected process structure. An earthing resistance higher than $10^6$ Ω may indicate bad earth connections.

### 3.3 Precautions for proper use

**CAUTION!**

It is strictly forbidden to open the ATEX rotary valve while the installation is running.

During functioning, the user has to ensure himself that there is no material stacking or material build-up inside the ATEX rotary valve in order to ensure the proper discharge of the material. The user also has to ensure the operating temperature would not increase above 70°C. In case this happen, the rubber lips have to be checked properly and in case of signs of any damage, it has to be replaced immediately, otherwise the increased temperature of rubber lips could cause decline of quality of the sealing lips material.

During maintenance keep the system disconnected and all the electrical equipment turned off.

User has to add such equipment so that upon detection of an explosion the rotary valve is stopped automatically and instantaneously. The equipment for detection of an explosion and devices for automatic and instantaneous stopping of the rotary valve is not subject of this certificate.

After the event of an explosion, do not unblock or manipulate the ATEX rotary valve until the explosion is completely extinguished. Check if the ATEX rotary valve and its parts are working properly. Clean the valve. Replace any parts that are damaged!

**CAUTION!**

Be aware of hot particles remaining inside the ATEX rotary valve, even if the explosion is over. While opening the ATEX rotary valve, parts can fall off from inside, damaging the operator or goods.

Every time there is a potentially explosive atmosphere danger, special safety steps must be taken, as the following:

Tools or operations which can produce sparks, which can cause gas ignition, or flammable vapors, are not allowed to be used in any procedure that takes place in any area classified as explosion risk.

Avoid dust removal by blowing while cleaning.

Open flames or sparks near the explosion risk area is strictly forbidden.

End user shall perform an ignition hazard assessment of the complete installation considering possibility of hot or glowing particles entering ATEX rotary valve. If glowing or hot particles are expected within product flow, measures shall be taken to prevent entry of glowing or hot particles into the rotary valve.

Electric motor and gearbox shall be suitable for the intended zone, ambient temperature range, maximum allowed surface temperature and dust group. If the permissible ambient temperature or ATEX rating of the motor or gearbox deviates from the ATEX rotary valve, the worst-case value is valid.

### 3.4 Gearbox & Motor

For information on the installation of the gearbox and drive motors, see relevant manuals from the original manufacturers (supplied separately).

Electrical parts shall be maintained according to manufacturer's instructions and inspected periodically according to local and national legislation (e.g. EN 60079-17).

If there is any doubt whether an ATEX rotary valve or any important parts hereof is intact until next overhaul, replacement must always be carried out.

**Important: Always wear the required safety equipment. The national safety rules in force must be observed.**

## 4. Maintenance

### 4.1 Periodic maintenance

In order for the ATEX rotary valve certification approval to be guaranteed by the manufacturer, maintenance must be carried out by the manufacturer or a distributor appointed by the manufacturer.

Maintenance must always be carried out according to the instructions in the manual.

### 4.2 Overhaul

For the manufacturer's guarantee for explosion safeguard to apply, the customer must have regular maintenance carried out by the manufacturer or a distributor appointed by the manufacturer.

For distributors to be approved to carry out maintenance for the manufacturer, they must be trained by the manufacturer. The following must be checked: rubber blades, rotor, bearings, gearbox and motor.

To avoid dust layer build-up on the rotary valve, the user needs to ensure regular cleaning with a wet cloth. NEVER use a dry cloth which could contribute to electrostatic charging of the rotary valve surface. The maximum allowed dust layer is 2mm - 5mm.

**NOTE!**

Rubber blades and sealing ring must be impermeable! Monitor wear regularly until service intervals can be determined. Overhaul must minimum take place every 6 months.

### 4.3 Motor, gearbox & bearings

**Bearing Maintenance**

The lifespan of the grease is influenced by many factors. The regreasing intervals in our table thus can only be seen as very rough estimates.

Experience with comparable bearings or ones already used is therefore very important as not all operating conditions and influential factors that affect the service life of a lubricant – and hence also the bearing – are known or determinable in many cases.

Bearings needing regreasing can be done with a grease gun only use the grease type : SKF LGHC2, LGFQ2, or GHB2, at the same time must be done control of bearings visual check and control of unexpected noise. In case of found malfunction the change of bearing is necessary.

**Greasing interval**

| Operating temperature of bearing °C | Greasing interval | | |
|---|---|---|---|
| | Environmental conditions | | |
| | Clean | Dirty | Very dirty Heavily humid |
| 50 | 3 years | 6 months | 3 months |
| 70 | 1 year | 2 months | 1 month |

In case the ATEX rotary valve is used outside of an ATEX zone, any bearing grease can be used. When it is installed within an ATEX zone (21 or 22) the use of a conductive grease for bearing greasing is necessary.

The user has to ensure the operating temperature would not increase above 70°C. If this happens, the bearing has to be checked properly and if necessary, the bearing has to be greased or replaced immediately.

For information on the maintenance of the gearbox and drive motors, see relevant manuals from the original manufacturers (supplied separately).

## 4.4 Replacing spare parts

If the rubber blades are not impermeable or worn, they must be replaced. Visual inspection is carried out.

### 4.4.1 Rubber wear out

Rubber blades are worn out and must be replaced when dimension A and B are below optimal measurements in the following table (See figure 4).

| RVA size | A (mm) | B (mm) |
|---|---|---|
| RVA1 | 32 | 10 |
| RVA2 | 38 | 10 |
| RVA3 | 38 | 10 |
| RVA4 | 38 | 10 |
| RVA5 | 38 | 10 |

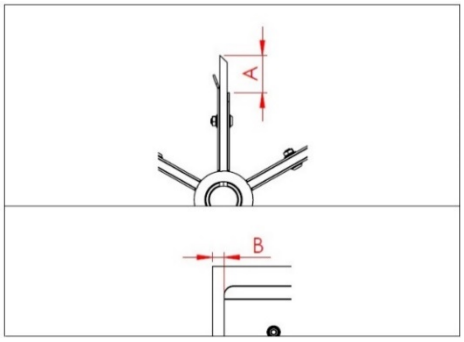


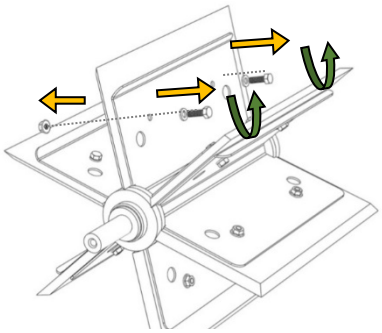

*Figure 4. Rubber wear out*

### 4.4.2 Replacing the rubber blades

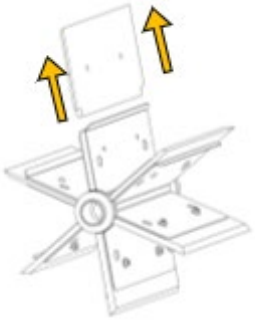
**CAUTION!** Before any manipulation to the ATEX rotary valve, make sure that the motor is stopped and that all electrical connections are disconnected.

NOTE : all electrical manipulations should be performed by qualified personnel only.

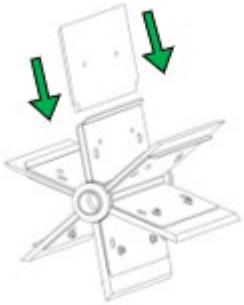
Step 1: Unscrew the nuts and bolts holding the rubber blades.



Step 2: Take the rubber blades out.



Step 3: Introduce the new rubber blades into the metal vane gap. Make sure that the holes are aligned, and the flap is in the right direction then bolt them back.



### 4.5 Maintenance after an explosion

If an explosion has occurred, it is imperative that a visual control be done by an approved maintenance team.

A complete inspection is mandatory to make sure that the rotary valve has not suffered damages such as : cracks, deformation, loss of components. Also, the airtightness of the rubber blades needs to be checked before starting the installation.

Any damages, warping or notable changes will be subject of replacement parts (see point 6).

### 4.6 Noise level

The noise ratio of the component in our scope of supply in connected condition and without waste material is below 70 dB(A) measured at 1 meter from the component.

Noise from transported waste material is not included.

**IMPORTANT!**

A higher noise level may occur depending on local conditions, transported material and other components connected to the ATEX rotary valve. In this case separate measurements may be required.

If the total noise level in the area exceeds 85 dB(A), hearing protection must be used.

# 5. ATEX certification

This symbol indicates information concerning the directive ATEX 2014/34/EU.

Every information preceded by this symbol must be executed by highly qualified personnel, competent in safety environments regarding to environments characterized by the presence of potentially explosive atmospheres.

## 5.1 Potentially explosive atmosphere

An explosive atmosphere for the purpose of Directive 2014/34/EU is defined as a mixture with air, under atmospheric condition, of flammable substances in the form of gases, vapors, mists or dusts in which, after ignition has occurred, combustion spreads to the entire unburned mixture.

A potentially explosive atmosphere is an atmosphere which could become explosive due to local and operational conditions.

In carrying out the obligations laid down in Directive 99/92/EC, hazardous environments are classified in terms of zones based on the frequency and duration of the occurrence of an explosive atmosphere.

### 5.1.1 Dangerous areas classification

Zone 0: An area in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapor or mist is present continuously, frequently or for extended periods of time.

Zone 1: An area in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapor or mist is likely to occur occasionally in normal operation.

Zone 2: An area in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapor or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

Zone 20: An area in which an explosive atmosphere in the form of a cloud of combustible dust in air is present continuously, frequently or for extended periods of time.

Zone 21: An area in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur occasionally in normal operation.

Zone 22: An area in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

The ATEX 2014/34/EU Directive classifies the protection system (in this case the rotary valve) into 3 categories, with direct protection levels, guaranteed to the related protection.

| Protection Level | Plant |
|---|---|
| | Dust category |
| Very High | 1D (zone 20) |
| High | 2D (zone 21) |
| Normal | 3D (zone 22) |

## 5.2 ATEX code description

The ATEX rotary valve is marked according to the European Directive 2014/34/EU:

**II 1/-D Ex h IIIB T135°C Da/-**

**Ta = -20°C to +60°C**

**II 1/2D Ex h IIIB T135°C Da/Db**

**Ta = -20°C to +60°C**

**II 1/3D Ex h IIIB T135°C Da/Dc**

**Ta = -20°C to +60°C**

**In which:**

| | |
|---|---|
| II | : Equipment group II for use above ground |
| 1/ | : Category 1D, suitable for use with zone 20, 21 or 22 internally |
| -D | : No category externally, suitable for use in non-hazardous area |
| 2D | : Category 2D, suitable for use with zone 21 or 22 externally |
| 3D | : Category 3D, suitable for use with zone 22 externally |
| Ex h | : Mechanical parts are protected by constructional safety "c" |
| IIIB | : Dust group IIIB for use with non-conductive dust types of groups IIIA and IIIB |
| T135°C | : Maximum surface temperature 135°C |
| Da/ | : Equipment Protection Level Da, suitable for use with zone 20, 21 or 22 internally |
| - | : No EPL externally, suitable for use in non-hazardous area |
| Db | : Equipment Protection Level Db, suitable for use with zone 21 or 22 externally |
| Dc | : Equipment Protection Level Db, suitable for use with zone 22 externally |
| Ta | : Allowed ambient temperature range |

## 5.3 Production identification

The identification of Formula Air Group as manufacturer of the ATEX rotary valve is due to the conformity with the current legislation by means of the following:

- Declaration of conformity according to Directive ATEX 2014/34/EU

| | | |
|---|---|---|
| | Formula Air Supporting your performance | 1 P. Motiekaičio g. 3<br>LT-77104 Šiauliai<br>Lithuania |
| | Product: | Rotary valve |
| 2 | Type: | RVAX-X3-06 ATEX |
| 3 | Serial Number: | XXXXXXXXXX |
| 4 | Production year: | 202X |
| 5 | Max. explosion reduced pressure, $P_{red}$ | 0,X bar |
| | Explosion resistance pressure, $P_{max}$ | 0,X bar |
| 6 | Max. rotation speed, $rpm_{max}$ | 21 rpm |
| 7 | Ambient temperature, $T_{amb}$ | -20°C to +60°C |
| 8 | Valve volume | X m³/h |
| 9 | Inclination of rotary valve | Horizontal |
| 10 | Max. dust concentration | Without limits |
| 11 | ATEX certificate number | FTZÚ 20 ATEX 0045X |
| 12 | Number of standard | EN 15089 |
| 13 | CE 1026 Ex II 1/-D Ex h IIIB T135°C Da/-<br>Ex II D St 1 | |
| | Please refer to user manual before installation | |

*Figure 5. Product name label for equipment placed in a non-hazardous area*

| | | |
|---|---|---|
| | Formula Air Supporting your performance | 1 P. Motiekaičio g. 3<br>LT-77104 Šiauliai<br>Lithuania |
| | Product: | Rotary valve |
| 2 | Type: | RVAX-X2-06 ATEX |
| 3 | Serial Number: | XXXXXXXXXX |
| 4 | Production year: | 202X |
| 5 | Max. explosion reduced pressure, $P_{red}$ | 0,X bar |
| | Explosion resistance pressure, $P_{max}$ | 0,X bar |
| 6 | Max. rotation speed, $rpm_{max}$ | 21 rpm |
| 7 | Ambient temperature, $T_{amb}$ | -20°C to +60°C |
| 8 | Valve volume | X m³/h |
| 9 | Inclination of rotary valve | Horizontal |
| 10 | Max. dust concentration | Without limits |
| 11 | ATEX certificate number | FTZÚ 20 ATEX 0045X |
| 12 | Number of standard | EN 15089 |
| 13 | CE 1026 Ex II 1/3 D Ex h IIIB T135°C Da/Dc<br>Ex II D St 1 | |
| | Please refer to user manual before installation | |

*Figure 6. Product name label for equipment placed in ATEX zone 22 outside*

| | | |
|---|---|---|
| | Formula Air Supporting your performance | 1 P. Motiekaičio g. 3<br>LT-77104 Šiauliai<br>Lithuania |
| | Product: | Rotary valve |
| 2 | Type: | RVAX-X1-06 ATEX |
| 3 | Serial Number: | XXXXXXXXXX |
| 4 | Production year: | 202X |
| 5 | Max. explosion reduced pressure, $P_{red}$ | 0,X bar |
| | Explosion resistance pressure, $P_{max}$ | 0,X bar |
| 6 | Max. rotation speed, $rpm_{max}$ | 21 rpm |
| 7 | Ambient temperature, $T_{amb}$ | -20°C to +60°C |
| 8 | Valve volume | X m³/h |
| 9 | Inclination of rotary valve | Horizontal |
| 10 | Max. dust concentration | Without limits |
| 11 | ATEX certificate number | FTZÚ 20 ATEX 0045X |
| 12 | Number of standard | EN 15089 |
| 13 | CE 1026 Ex II 1/2 D Ex h IIIB T135°C Da/Db<br>Ex II D St 1 | |
| | Please refer to user manual before installation | |

*Figure 7. Product name label for equipment placed in an ATEX zone 21 outside*

Explanation of the label Figures 5, 6, 7:

1. Name and address of the manufacturer
2. Designation of series of type
3. Serial number
4. Year of construction
5. Explosion resistance pressure or explosion shock resistance pressure for the rotary valve
6. Maximal airspeed
7. Ambient temperature range
8. The volume of the rotary valve
9. Positioning of the rotary valve
10. Maximal dust concentration in duct at install location
11. The certification references
12. The numbers of standard that are used
13. CE marking. For equipment-group II, G (Gas) and/or D (Dust)*

* According to II ATEX 2014/34/EU minimum info (some other manuals have more info).

## 6. Components and spare parts

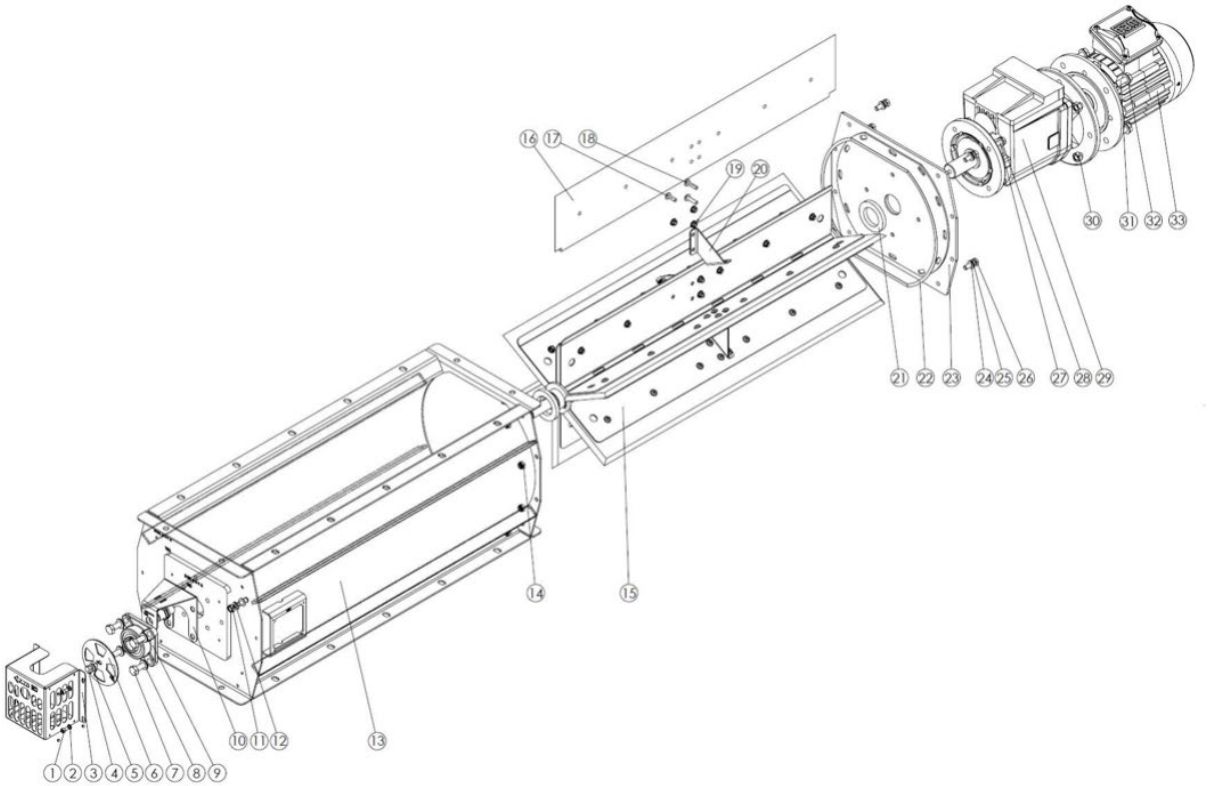



*Figure 8. Exploded view*

| Position | Description | Position | Description |
|---|---|---|---|
| 1 | Bolt M5x10 | 18 | Bolt M6x25 |
| 2 | Washer M5 | 19 | Nut M6 |
| 3 | Rotation disk cover | 20 | Vane reinforcements |
| 4 | Bolt M8x18 | 21 | Felt ring (set of 2) |
| 5 | Washer M8 | 22 | Butyl tape |
| 6 | Rotation disk RAL 3020 | 23 | Rotary valve cover |
| 7 | Bolt M10x25 | 24 | Washer M8 |
| 8 | Washer M10 | 25 | Washer M8 |
| 9 | Bearing UCF 204 | 26 | Bolt M8x25 |
| 10 | Detector holder | 27 | Washer M8 |
| 11 | Nut M8 | 28 | Bolt M8x20 |
| 12 | Washer M8 | 29 | Gear |
| 13 | Rotary valve body RVAx-Xi-06 | 30 | Nut M10 |
| 14 | Nut M8 | 31 | Bolt M10x30 |
| 15 | Rotor RVAx-Xi-06 | 32 | Washer M10 |
| 16 | Rubber blades (set of 6) | 33 | Motor |
| 17 | Bolt M6x20 | | |

**Spare parts**

| Code | Description |
|---|---|
| JCAB000028 | Bearing for RVA rotary valve (all models) |
| JCAB000017 | Set of rubber blades (6 pcs) for RVA1 ATEX |
| JCAB000018 | Set of rubber blades (6 pcs) for RVA2 ATEX |
| JCAB000019 | Set of rubber blades (6 pcs) for RVA3 ATEX |
| JCAB000020 | Set of rubber blades (6 pcs) for RVA4 ATEX |
| JCAB000021 | Set of rubber blades (6 pcs) for RVA5 ATEX |
| JCAB000027 | Felt seals kit for all RVA rotary valve (all models, ATEX or not) _ 2 seal rings |
| JEBD000001 | Gearbox ATEX2GD for motor 0,37kW |
| JEBD000002 | Gearbox ATEX2GD for motor 0,55kW |
| JEAB000003 | Motor 2D suitable for ATEX zone 21- IE2 - 0,37kW - 4Pole - 230/400V - 50Hz |
| JEAB000001 | Motor 3GD suitable for ATEX zone 22 - IE2 - 0,37kW - 4Pole - 230/400V - 50Hz |
| JEAA000005 | Motor non ATEX - IE2 - 0,37kW - 4Pole - 230/400V - 50Hz |
| JEAB000004 | Motor 2D suitable for ATEX zone 21 IE2 - 0,55kW - 4Pole - 230/400V - 50Hz |
| JEAB000002 | Motor 3GD suitable for ATEX zone 22 - IE2 - 0,55kW - 4Pole - 230/400V - 50Hz |
| JEAA000006 | Motor non ATEX - IE2 - 0,55kW - 4Pole - 230/400V - 50Hz |
| JCAB000022 | Rotor complete RVA1 -Xi-06 |
| JCAB000023 | Rotor complete RVA2 -Xi-06 |
| JCAB000024 | Rotor complete RVA3 -Xi-06 |
| JCAB000025 | Rotor complete RVA4 -Xi-06 |
| JCAB000026 | Rotor complete RVA5 -Xi-06 |

## 7. Rotation detector (optional)

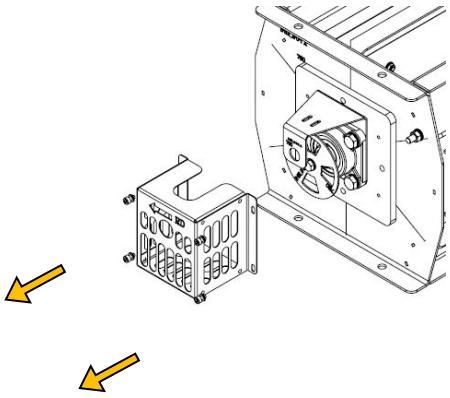
The optional rotation detector is a detection system that controls if the rotation disk is turning. In case of rotation failure, it sends a signal to a control panel.

### 7.1 Placing the rotation detector

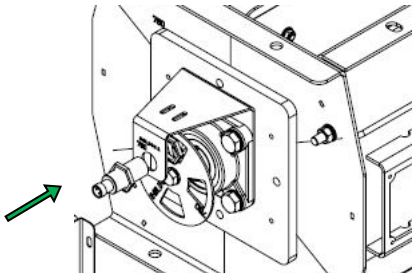
**CAUTION!** Before any manipulation to the ATEX rotary valve, make sure that the motor is stopped and that all electrical connections are disconnected.

NOTE : all electrical manipulations should be performed by qualified personnel only.

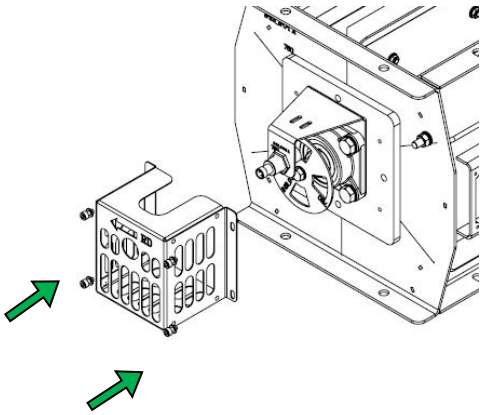
Remove the rotation disk protection cover by untightening the bolts holding it on the ATEX rotary valve body.



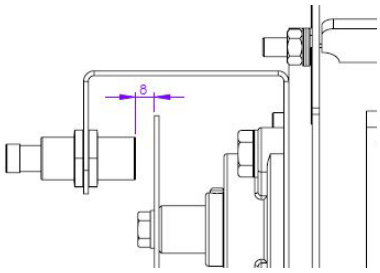
Introduce the sensor in the hole on the top of the front of the over and tighten it in place with the nuts supplied with the detector.



Place the rotation disc cover back in place by tightening the bolts holding it on the ATEX rotary valve body.



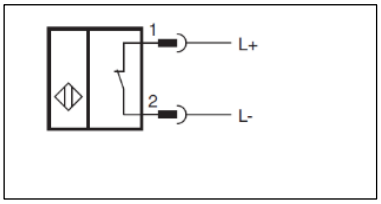
NOTE : make sure that the min/max distance between detector head and disk is respected as mentioned in the supplier detector guide.




## 7.2 Connecting the detector

**CAUTION!** Before any manipulation to the rotary valve, make sure that the motor is stopped and that all electrical connections are disconnected.

NOTE : all electrical manipulations should be performed by qualified personnel only.



## 8. Troubleshooting

| Failure | Possible causes | Proposed solutions |
|---|---|---|
| ATEX Rotary valve switches off thermally | Foreign body got stuck<br>Rotor frozen<br>Gear motor defective<br>Rotor defective<br>Motor protection set incorrectly<br>Fuse defective<br>Big voltage drop in power supply | Remove foreign body<br>Thaw on the outside with hot air or water<br>Replace motor, or gearbox<br>Replace rotor<br>Adjust the motor protection<br>Replace fuse<br>Insure voltage consistency |
| ATEX Rotary valve is not turning | Working switch is off<br>Motor protection switched of thermally<br>Conditions of operation are not met in the control system<br>Fuse defective<br>It might be that something is stuck in the rotary valve<br>It might be that the motor or gearbox is broken<br>It might be that the motor or gearbox shaft key is broken | Stop the installation, switch on the working switch<br>See "Rotary valve switches off thermally"<br>Investigate why conditions are not met<br>Investigate that nothing is stuck in the rotor<br>Investigate if a part is broken and needs to be replaced |
| ATEX Rotary valve makes "screaming" noise | Foreign body got stuck<br>Rotor/rotary valve body is defective<br>The rotor turns the wrong way | Remove foreign body<br>Replace defective component<br>Wire the motor correctly |
| The material will not pass the valve without accumulation | Volume of material per rotation is larger than planned<br>Airflow opposite to the material flow prevents proper falling material<br>Settling velocity of material less than expected<br>The material accumulates in lumps which cannot pass<br>The material is not removed fast enough at the outlet of the rotary valve<br>Transported material is too big/bulky<br>Material agglutinates | Reduce the volume of material feed, or replace rotary valve<br>More frequent maintenance<br>Adjust the production machine to change the flow of material<br>Check the proper functioning of the emptying system<br>Use the adequate rotary valve |
| Rotation disk doesn't' turn but rotor does | Rotation disk and rotor axle are no longer consolidated | Tighten rotation disk on rotor axle |
| Rotation detector doesn't react | Cable is not connected<br>Improperly connected cables<br>Detection distance is too big or too short | Make sure cables are connected<br>Insure proper cable connection<br>Verify installation distance |

## 9. Dismantling and recycling

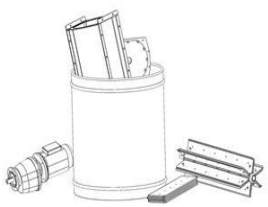
When dismantling a unit, be sure to keep in mind the following important information:

- As the unit is dismantled, set aside all still functioning parts to re-use them on another unit.
- You should always separate the different materials depending on their type: iron, rubber, oils, greases, etc...
- Recyclable parts must be disposed of in the appropriate containers or brought to a local recycling company.

The rubbish must be collected in special containers with appropriate labels and disposed of in compliance with the national laws and/or local legislations in force.

**CAUTION!**

It is strictly forbidden to dispose of toxic wastes in municipal sewerage and drain systems. This concerns all oils, greases, and other toxic materials in liquid or solid form.



## 10. Maintenance log

| date | description |
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