

**Operating instructions BA 2022-001 Industry
for compressed air container stirrers**



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Contents

1. Important notices	Page 2
1.1 Important note symbols.....	Page 2
1.2 Important general notices	Page 2
2. Safety instructions.....	Page 3
2.1 General safety instructions	Page 3
2.2 Additional safety instructions when used in potentially explosive atmospheres	Page 3
2.3 Hazards from ignition sources in the mixing container	Page 3
2.4 Sources of ignition from differences in potential.....	Page 4
2.5 Safety note in operation for the medium dust.....	Page 4
3. Technical data	Page 4
3.1 General technical data	Page 4
3.2 Specific technical data	Page 4
3.3 Markings	Page 5
3.4 Temperature classes	Page 5
4. Installation.....	Page 5
4.1 Before you start.....	Page 5
4.2 Pneumatic installation	Page 5
4.3 Adjustment.....	Page 5
4.4 Mounting the compressed air stirrer	Page 5
4.5 Fitting the connection coupling	Page 6
4.6 Fitting the stirring rotor	Page 6
5. Putting into service	Page 6
6. Maintenance and repair.....	Page 6
7. Lubrication	Page 7
8. Guarantee.....	Page 7
9. Accessories	Page 7
9.1 Accessories.....	Page 7
9.2 Stirring rotors	Page 8

1. Important notices

1.1 Important note symbols

Failure to observe these danger and safety notices can lead to serious personal injury !



Danger



**Information and
safety notices**



**Important notices on
explosion protection**

1.2 Important general notices

The compressed air industrial mixers from Buddeberg GmbH are explosion-protected according to the current ATEX regulation 2014/34/EU and are assigned to device categories II, zone 1 and 2 (gas atmosphere G) or zone 21 and 22 (dust atmosphere D), see marking on the stirrer.

Compressed air industrial mixers of device category II include the explosion subgroups IIA, IIB and IIC, and can thus be used for mixing work in these areas.

2. Safety instructions

2.1 General safety instructions

Introductory remarks

Read through these instructions carefully before using the compressed air industrial stirrer for the first time. Please also take account of the supplementary safety instructions in the individual chapters of these operating instructions.

During and after use, the stirring rotor and the moving parts may very possibly have hot surfaces.

All work with respect to setting-up, connections, commissioning, maintenance and repair may only be carried out by properly qualified specialist personnel. Improper use and incorrect installation or operation can lead to serious personal injury and damage to property.

Handling compressed air

- Always wear protective glasses.
- Do not remain in a direct line with the jet of compressed air.
- Do not attempt to operate the appliance with other gases or liquids.
- Do not operate the appliance with pressures higher than that which is recommended for it.
- Damage may occur if the appliance is operated at higher speeds than those recommended.

Use for the intended purpose

The compressed air industrial stirrers are designed for all mixing tasks in the laboratory, technical colleges or in production for dispersion, emulsifying, homogenising, suspending and blending.

 They comply with all current standards and regulations and fulfil the requirements laid down by the Directive 2014/34/EU (ATEX). The technical data and the details of permitted conditions are to be found in this documentation with a declaration of conformity. **All specifications must be followed scrupulously! Buddeberg GmbH disclaims any liability arising from alterations undertaken to the compressed air stirrers and mixers without prior consultation with Buddeberg GmbH and the latter's written agreement.**

2.2 Additional safety instructions when used in potentially explosive atmospheres

Explosive gas mixtures or concentrations of dust in conjunction with hot and moving parts of the stirrer can lead to serious or even fatal injury.

All work with respect to setting-up, connections, commissioning, maintenance and repair may only be carried out by properly-qualified specialist personnel, taking into account

- these instructions and the declaration of conformity
- the warning and instruction labels on the stirrer
- all other documentation and commissioning instructions related to the stirrer
- any instructions and requirements specific to the plant
- currently-valid national/regional regulations (explosion protection, safety, accident prevention)

2.3 Hazards from ignition sources in the mixing container

- Monitoring the content level is prescribed in order to avoid the mechanical generation of sparks from friction, striking or wearing processes.
- To avoid electrostatic loading in liquids, these liquids must have a conductivity of $>10^{-8}$ S/m.
- It must be ensured that the stirring level remains fully immersed during operation.
- The stirring container must be authorised for ATEX operations. If containers are made of plastic, these must be conductive. In case of doubt, clarify this with the manufacturer.

2.4 Sources of ignition from differences in potential

To avoid generation of sparks due to potential differences, an earthing cable must be firmly attached to the stirrer at the point provided.

PMC-type container stirring units can also alternatively be earthed via the steel frames of the IBC container. It must hereby be observed that the star bolts for fixing the stirring unit crossbeam fits tightly to the frame of the container and that a metallic contact between the stirring unit and the frame is ensured. The PMC 120 series has its own set of instructions.

2.5 Safety note in operation for the medium dust

Due to the overpressure in the compressed air motor, it cannot be ruled out that air lightly blows off the stirrer on the housing and on the drive shaft. Therefore, these areas are to be checked on a regular basis and cleaned if necessary to prevent the dispersion of dust.

3. Technical data

3.1 General technical data

Working pressure: maximum 6 bar, a reduction is permitted at any time

Temperature range: ambient temperature in normal operation (not potentially explosive atmosphere):
 $-20^{\circ}\text{C} \leq T_A \leq +80^{\circ}\text{C}$

 Ambient temperature in a potentially explosive atmosphere: $-20^{\circ}\text{C} \leq T_A \leq +40^{\circ}\text{C}$

The temperature of the compressed air used must not exceed the maximum permitted ambient temperature.

3.2 Specific technical data

Type	Power output watts	No-load speed rpm	Torque max. Nm	Pressure max. bar	Air consumption L/min. at 6 bar unstressed	Article No. EAN No.
AFR 64/160-V	640	1600	4.7	6	800	40 26446 00503 0
AFR 64/65-V	640	650	9.4	6	800	40 26446 00504 7
AFR 64/30-V	640	300	21.0	6	800	40 26446 00505 4
BSR 64/160-A-V	640	1600	4.7	6	800	40 26446 00494 1
BSR 64/65-A-V	640	650	9.4	6	800	40 26446 00495 8
BSR 64/30-A-V	640	300	21.0	6	800	40 26446 00496 5
PM 64/160-A-V	640	1600	4.7	6	800	40 26446 00492 7
PM 64/65-A-V	640	650	9.4	6	800	40 26446 00491 0
PM 64/30-A-V	640	300	21.0	6	800	40 26446 00493 4
PM 64/280-V	640	2800	2.5	6	800	40 26446 00516 0
PM 64/160-V	640	1600	4.7	6	800	40 26446 00506 1
PM 64/65-V	640	650	9.4	6	800	40 26446 00507 8
PM 64/30-V	640	300	21.0	6	800	40 26446 00508 5
PM 120/300-V	1200	300	63.0	6	1400	40 26446 00828 4
PM 120/600-V	1200	600	38.0	6	1400	40 26446 00829 1
PM 120/1000-V	1200	1000	19.0	6	1400	40 26446 00830 7
PMC 120/300	1200	300	63.0	6	1400	40 26446 00810 0
PMC 120/600	1200	600	38.0	6	1400	40 26446 00811 6
PMC 120/1000	1200	1000	19.0	6	1400	40 26446 00812 3
WSR 64/160-A-V	640	1600	4.7	6	800	40 26446 00497 2
WSR 64/65-A-V	640	650	9.4	6	800	40 26446 00498 9
WSR 64/30-A-V	640	300	21.0	6	800	40 26446 00499 6

3.3 Markings

Marking sample, type PM 64/160-V:

Buddeberg GmbH Mallaustr. 49 68219 Mannheim	Manufacturer
PM 64/160-V	Appliance type
max. 6 bar	max. pressure
Art. Nr. 4026446005061	Article number
Ser-Nr. 123456 / 2022	Serial number / year of manufacture
 II 2G Ex h IIC T5 Gb	ATEX marking

Key to ATEX marking:

Gas	Dust	
II		equipment group
2		equipment category
G	D	for gas / dust atmospheres
Ex h		ignition protection type
IIC	IIIC	explosion group
T5	T4	temperature class
Gb	Db	equipment safety level

3.4 Temperature classes

The temperature classes designate the maximum permitted surface temperature of the used appliances. Unless otherwise specified, the compressed air industrial stirrers are classified in temperature class T5 (max. 100°C).

4. Installation

4.1 Before you start

 The compressed air stirrer may only be assembled when the details on the rating plate correspond with the permitted potential explosive atmosphere on the site and the stirrer is undamaged.

4.2 Pneumatic installation

For maximum safety, performance and service life, the compressed air industrial stirrers should be operated with a maximum air pressure of 6 bar and a corresponding compressed air tubing (see accessories). The working air must be clean and dry (insert a service unit for this purpose). Do not use worn or damaged compressed air tubing or connections. Care must be taken that all tubing and connections are of the correct size.

4.3 Adjustment

Lubrication: For continuous operation, a lubricator is to be installed in the compressed air feed, and it must be set to feed one drop of oil per approximately 2 m³ of compressed air.

Speed regulation: The speed of the stirrer is controlled by the valve mounted on the stirrer.

4.4 Mounting the compressed air stirring unit

The compressed air industrial stirrers can be mounted according to their design for the intended application:

- AFR series stirring units are fitted with a bunghole adapter to unscrew on standard industrial drums.
- Stirring units with a support arm must be attached to a stable stand with a suitable bosshead clamp (see accessories).
- Stirring units with a flange are attached directly onto the container or the container crossbeam with a suitable tool.

4.5 Fitting the connection coupling

 In ex-operation, only use the connection couplings from our range of accessories. Please note that, for safety reasons, drill chucks may not be used in potentially explosive areas.

Separate the stirrer from the compressed air supply.

Before fitting the connection coupling, ensure that the take-off shaft from the stirrer is neither dirty nor damaged. Fasten the connection coupling to the drive shaft of the motor and fix the locking screws using a suitable tool.

4.6 Fitting the stirring rotor

Separate the stirrer from the compressed air supply.

Before fitting the stirring rotor, ensure that the stirrer shaft is neither dirty nor damaged. Fasten the stirring rotor to the connection coupling provided and fix the locking screws using a suitable tool.

Both stirring blades of the swing-out stirring system BuddeMix SW are mounted onto both booms without using tools. If mounted correctly, the flat sides of the blades face outwards and can move freely on the axle.

5. Putting into service

• **Before connecting to the compressed air supply and putting into service, ensure that the valve on the stirrer is closed.**

- Check that the pressure is at max. 6 bar from the compressed air supply. This will guarantee an optimum start when the speed regulator valve is opened.
- For reasons of safety, the stirrer container must be fixed with a clamp holder (see accessories).
- Compressed air industrial stirrers and mixers must not be allowed to operate under no-load conditions. The stirring level must be constantly immersed in the liquid.
- Only use stirring rotors from the range of accessories provided. Wait until the motor has come to a standstill and the compressed air supply is disconnected before removing the stirring rotors.

• **Disconnect the compressed air industrial stirrers and mixers from the compressed air supply once the working process is completed.**

6. Maintenance and repair

- Maintenance and repairs may only be carried out by the manufacturer or trained personnel. If the compressed air stirrer is faulty, please contact the manufacturer.
- Only original Buddeberg replacement parts may be used.
- Before maintenance work is carried out, the compressed air stirrer must be disconnected from the compressed air supply.
- The filter in the service unit must be cleaned regularly and emptied of condensate while the stirrer is in use.
- Check the oil level regularly in the lubricator and top up as necessary.

• **In order to conform to the safety regulations in accordance with the ATEX Directive 2014/34/EU, vanes and ball bearings need to be changed immediately on deterioration of power. Please contact the manufacturer.**

7. Lubrication

- Only use the types of lubricating oil listed below:
Shell – Tellus HL/HLP 32 | Aral – Vitam GF 32 | BP – Energol HL P 32 | Fuchs Renolin B 10
- Only use the types of lubricating grease listed below:
Fuchs – Renolit LX-GFL 0/00
- When used in the food industry:
Food grade oil according to USDA-H1 and/or FDA 178.3570 viscosity class 32
Grease: USDA-H1 and/or FDA 178.3570, NLGI class: 2 – DIN 51818

8. Guarantee

The manufacturer provides a guarantee of 12 months on material and construction defects. Damage arising from wear, overuse or improper use is not covered by the guarantee.

9. Accessories

9.1 Accessories

	Article no.
Floor stand 1000 mm	4026446000868
Floor stand 1500 mm	4026446000837
Floor stand stainless steel	4026446008260
Wall bracket	4026446000875
Bosshead KR 260	4026446003869
Bosshead KR 360	4026446008154
Clamp holder SP	4026446007928
Stirrer shaft protection	4026446000950
Connection coupling VK 14 x 10 mm	4026446007058
Connection coupling VK 14 x 12 mm	4026446006471
Connection coupling VK 14 x 14 mm	4026446007447
Connection coupling VK 14 x 16 mm	4026446000448
Connection coupling VK 14 x 20 mm	4026446000790
Connection coupling VK 19 x 20 mm	4026446000806
Connection coupling VK 19 x 25 mm	4026446005501
Service unit WE-2022	4026446009359
Compressed air tubing ø 9mm	4026446000622
Compressed air tubing ø 13mm	4026446000721
Cylinder oil 500 ml	4026446000813
Food grade oil 500 ml	4026446005245

9.2 Stirring rotors

	Article no.
BuddeMix 5 ø 150x12 mm	4026446005283
BuddeMix 6 ø 170x12 mm	4026446005290
BuddeMix 7 ø 210x14 mm	4026446005306
BuddeMix 8 ø 320x20 mm	4026446005313
BuddeMix 9 ø 430x25 mm	4026446008222
BuddeMix 10 ø 500x25 mm	4026446008239
BuddeMix 11 ø 550x25 mm	4026446008246
BuddeMix 12 ø 600x25 mm	4026446008253
BuddeMix SWK 1 ø 42/180x10 mm	4026446005757
BuddeMix SWK 2 ø 35/170x10 mm	4026446005764
BuddeMix SW 2 ø 78/400 mm	4026446005399
BuddeMix SW 3 ø 100/500 mm	4026446005405
BuddeMix SW 4 ø 44/300 mm	4026446005740
BuddeMix SW residue paddle	4026446005139
DS 7 dissolver stirring rotor ø 100x14 mm	4026446001490
DS 8 dissolver stirring rotor ø 125x14 mm	4026446001506
DS 9 dissolver stirring rotor ø 150x14 mm	4026446001513
DS 10 dissolver stirring rotor ø 200x20 mm	4026446001520
DS 11 dissolver stirring rotor ø 250x20 mm	4026446001537
DS 12 dissolver stirring rotor ø 300x25 mm	4026446008208
DS 13 dissolver stirring rotor ø 350x25 mm	4026446008215
PR 10 propeller stirring rotor ø 125x14 mm	4026446001346
PR 11 propeller stirring rotor ø 150x14 mm	4026446001353
PR 13 propeller stirring rotor ø 175x14 mm	4026446001391
PR 15 propeller stirring rotor ø 200x20 mm	4026446001384
PR 17 propeller stirring rotor ø 250x20 mm	4026446001445
PR 18 propeller stirring rotor ø 300x20 mm	4026446001438
PR 19 propeller stirring rotor ø 350x25mm	4026446008185
PR 20 propeller stirring rotor ø 400x25mm	4026446008192