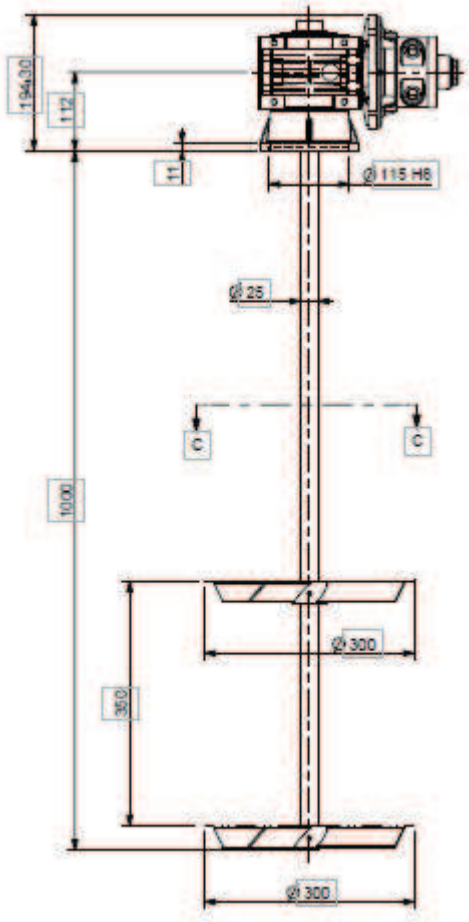
VALSPRAY

MACCHINE ED ACCESSORI PER LA VERNICIATURA,
SABBIATURA, INCOLLAGGIO E DOSAGGIO

# Pneumatic mixer

## Operating instructions



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# 1 Product overview

## 1.1 Overview

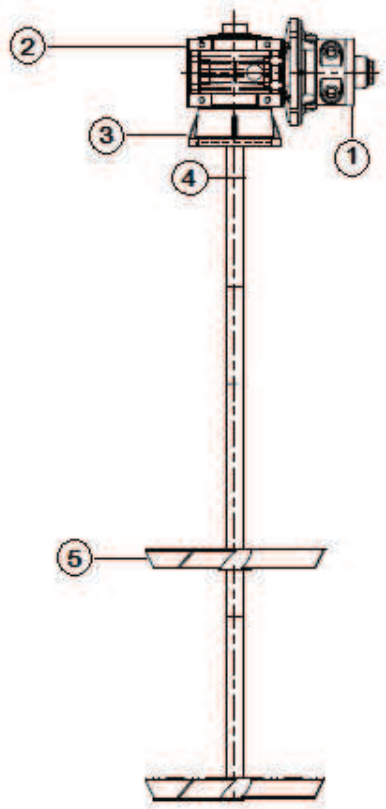



Fig. 1: Overview

1 Pneumatic motor
2 Gear reducer
3 Coupling flange
4 Shaft
5 Impeller

## 1.2 Short description

The pneumatic agitator (hereafter called Agitator) is used for agitating, mixing and consistency maintenance of fluid coating materials.

# 2 Safety

## 2.1 Explanation of symbols

This manual contains the following notes:

**DANGER!**

High-risk situations that will lead to severe or fatal injuries.

**WARNING!**

Medium-risk situations that can lead to severe or fatal injuries.

**CAUTION!**

Low-risk situations that can lead to minor injuries.

**NOTICE!**

Situations that can lead to material damage.

**ENVIRONMENT!**

Situations that can lead to environmental damage.

Contains additional information and recommendations.

## 2.2 Intended Use

### Use

The agitator with pneumatic motor is to be used exclusively for agitating, mixing and con-sistency maintenance of fluid coating materials. The agitator may exclusively be used in original packs and with suitable approved cleaning agents.

The agitator may only be operated within the approved technical data. ↳ 11 “Technical data”

The agitator may be used under the following conditions:

- in explosive areas Ex zones 1 and 2
- in non-explosive areas
- with flammable fluid coating materials of the Explosion group IIB
- with non-inflammable fluid coating materials

### Wrong Use

If the agitator unit is used improperly, there is risk of death. Adhere to the following conditions:

- Do not process any gaseous or solid materials.
- Only use the agitator with components approved for operation by Generalcontrol SPA.
- Only use approved materials. Observe the safety data sheets.
- Do not attempt to make changes on your own.
- Only use agitator in a container pointed downwards.
- Do not use agitator in Ex zone 0.

### EX labelling

Ⓔx II 2GD c IIB T4

II - Device group II: all areas except mining

2GD - Device category 2 for gas/dust ex-atmosphere

c - Made in safety area

IIB - For all gases of Explosion group IIA & IIB

T4 - Temperature class 135°C

## 2.3 Residual risks

### Explosion

Sparks, open flames and hot surfaces can cause explosions in explosive atmospheres. Serious injuries and death can be the consequence.

- Only work on the product after eliminating explosive atmosphere.
- Do not use sources of ignition and open light.
- Do not smoke.
- Ground the product.

Flammable materials can cause a fire or an explosion.

- Ensure that the flashpoint of the cleaning agent is at least 5 K above the ambient temperature.
- Please note the explosion group of the material and cleaning agent
- Ensure that technical ventilation and fire protection equipment are in operation.
- Do not use sources of ignition and open light.
- Do not smoke.
- Observe the safety data sheets.

### Material

If you come in contact with hazardous liquids or vapors, serious injury or death can be the consequence.

- Ensure the technical ventilation is operational.
- Observe the safety data sheets.
- Adjust the rotational speed to the material viscosity.
- Avoid formation of eddies.
- Reduce rotational speed when removing material
- Keep the agitator at a safe distance from the wall and the bottom of the container.
- Wear specified protective equipment.

### Noise

The noise during normal operation may cause severe hearing damage.

- Do not spend more time then necessary in the work area.
- Wear specified protective equipment.
- If possible take the muffler outside the working area by using a rilsan hose.

### Rotary components

Clothing or hair can get entangled in the rotary components and if body parts come in contact with them, it can result in serious injuries.

To avoid injury:

- Keep the product at a safe distance from the body.
- Do not touch the rotary components.
- Wear close-fitting work clothes.
- If you have long hair, wear a head cover.
- Wear specified protective equipment.

### Compressed air

Hoses under pressure can tear or burst. If compressed air escapes, it can cause serious injury.

- Protect compressed air hoses from heat and sharp edges.
- Do not let the compressed air hose bear the weight of the agitator.
- Do not use the compressed air hose to pull the throttle valve.

» Separate the agitator from the compressed air supply after the work is over.
» Wear specified protective equipment.

If hoses under pressure come off loose, the hoses can lash around and cause injuries.

» Check that the hose connections are seated tightly.
» Check compressed air hose for damage.
» Relieve pressure from the hoses after each shift and before servicing and maintenance work.

## 2.4 Property damage

### Material damage due to excessive rotational speed

Operate the agitator at excessive high rota-tional speeds may cause vortex currents and mix air in the product. Air in the material line can cause uneven coating.

» Adjust the rotational speed to the material viscosity.
» Reduce rotational speed when removing material

### Unprepared material

If you do not agitate the material well, the settled material particles remain at the bottom of the container. This can cause imperfect painting results.

» Agitate the material in the delivery pack before painting or emptying.

## 2.5 Conduct in the event of a hazardous situation

The behavior in the event of a hazardous situation is dependent on assembly at the operator.

Basically:

» Close media lines.
» Secure against being switched on again.
» Relieve the lines.

## 2.6 Staff qualification

**⚠ WARNING!**

**Inadequate qualification**

If you do not assess risks properly, serious injury or death may result.

– All activities must be conducted exclusively by people who possess the proper qualifications.

**Cleaning staff**

The cleaning personnel is verifiably instructed on the following contents by the operator:

» Handling cleaning tools
» Handling cleaning agents
» Possible dangers at the place of work

**Electrically instructed person.**

The electrically instructed person has been instructed and if necessary trained by a qualified electrician.

Contents of training:

» assigned tasks
» Possible hazards of improper conduct
» safety devices
» precautionary measures

**Mechanic**

The mechanic is trained specifically for the field of work in which he works. The mechanic has been instructed by the operator and receives regular training.

The mechanic has knowledge of regulations and safety measures when working in potentially explosive areas.

Furthermore, he has the following knowledge:

» National Health and Safety Regulations
» Guidelines and Rules of engineering
» Applicable accident prevention regulations

The mechanic is responsible for the following activities on equipment and components:

» Assembly
» Commissioning
» Servicing
» Maintenance
» Disassemble

**Trained person**

The trained person is verifiably instructed by the operator.

Contents of training:

» Using the product
» Handling the coating materials used
» Possible dangers at the workplace.

Dürr Systems GmbH offers special product training ↳ “Hotline and Contact”.

## 2.7 Personal protective equipment

When working in explosive areas, the personal protective equipment used must be conductive.

Wear the required personal protective equipment when working. Provide the following personal protective equipment:

**Eye protection**
Protects eyes from dust, paint drops and particles.

**Protective gloves**
Protects your hands against:

- Mechanical attacks
  - Cuts
  - Grazing
  - Puncture
- Thermal attacks
  - Heat
  - Cold
- Chemical attacks
  - Irritation
  - Caustic burns

**Protective workwear**
Tight fitting workwear with low tear strength, tight sleeves and no hanging parts.

**Respiratory protection, ambience-dependent**
The ambience-dependent respiratory protection protects from hazardous gases, vapors, dust and similar materials and media. If a permissible limiting value is exceeded 100x, a respiratory protection insulation device must be used. The ambience-dependent respiratory protection device may only be used with minimum 17 % oxygen content in the air.

**Safety boots**
Protect feet from crushing, falling items and slipping.

**Use ear protection**
Protects from auditory damage due to noise.

# 3 Installation and operation

## 3.1 Agitator

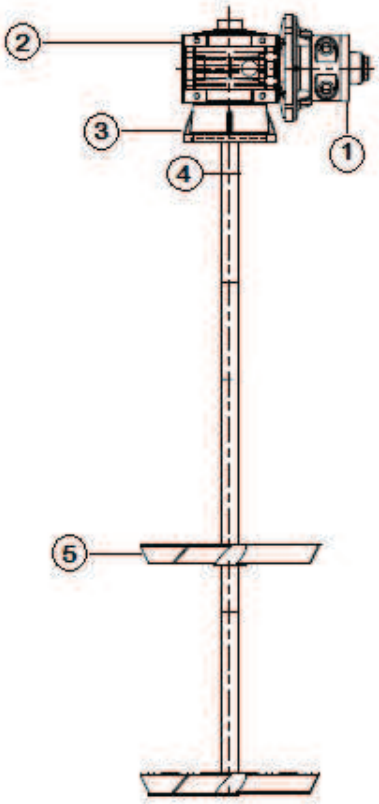



Fig. 2: Design and operation

1 Pneumatic motor
2 Gear reducer
3 Coupling flange
4 Shaft
5 Impeller

For agitating material, you can fix the agitator to a vessel by its coupling flange (3). Use the connection on the air motor (1) to connect the agitator to compressed air. Connect and disconnect or adjust the rotational speed of the agitator shaft (4) by using a filter regulator (optional) to be mounted on air inlet connection of the motor (1). The pneumatic motor (1) drives the gear reducer (2) that make the shaft (4) moving.

The shaft(4) is fixed to the gear reducer(2) by a screw and a washer, monted on head of it. The agitator blade (5) is firmly connected to the agitator shaft by screws and rotates synchronously with it. The muffler has to be mounted on exhaust air connection of the motor and reduces the sound emission.

# 4 Transport, packaging and storage

## 4.1 Transport inspection

Inspect delivery on receipt for completeness and integrity.

Report defects immediately.↳ “Hotline and Contact”

## 4.2 Handling of packaging material

**ENVIRONMENT!**

**Environmental damage due to wrong disposal**

Wrongly disposed packaging material may not be re-used or recycled. It harms the environment.

– Dispose of material no longer required in an environment-friendly manner.
– Observe local disposal specifications.

## 4.3 Storage

Requirements for the warehouse:

» Do not store outdoors.
» Store in a dry and dust-free place.
» Do not expose to aggressive media.
» Protect from solar radiation.
» Avoid mechanical vibrations.
» Temperature: 10 °C to 40 °C
» Relative humidity: 35 % to 90 %

» Protect agitator shaft and agitator blade from load to avoid bending.

# 5 Commissioning

## 5.1 General notes

Commissioning is done after:

» Shift breaks
» Weekends
» Company holidays
» and longer operational interruptions

## 5.2 Commissioning

Personnel:

» Mechanic

Protective equipment:

» Safety boots
» Eye protection

» Check compressed air hose for correct connection.
» Check that the screw on the agitator blade is seated tightly.
» Check that the screw on the shaft head is seated tightly.
» Check all components for damage.
» Adjust input pressure of the compressed air provided by the system according to specifications. ↳ 11.5 “Operating values”

# 6 Operation

## 6.1 Safety recommendations

**WARNING!**

**Danger of explosion if there are sources of ignition in an explosive atmosphere.**

Sparks, open flames and hot surfaces can cause explosions in explosive atmospheres. Serious injuries and death can be the consequence.

– Only perform servicing and maintenance work after eliminating explosive atmosphere.
– Do not use any sources of ignition and no open light in the work area.
– Do not smoke.

**WARNING!**

**Danger of explosion if there are sources of ignition in an explosive atmosphere.**

If a rotary component of the agitator touches a fixed object, it can generate sparks. Sparks can cause explosions in explosive atmospheres. Serious injuries and death can be the consequence.

– The agitator may only be used in the delivery pack.
– Make sure that there are no objects present in the container.

**WARNING!**

**Risk of harmful or irritant substances**

If you come in contact with hazardous liquids or vapors, it can cause serious injury or death can result.

– Ensure the technical ventilation is operational.
– Observe the safety data sheets.
– Wear specified protective clothing.

**WARNING!**

**Risk of injury from whipping hoses**

If hoses under pressure come off loose, the hoses can lash around and cause injuries.

– Check that the hose connections are seated tightly.
– Check hoses for damage.
– Relieve pressure from the hoses after each shift and before servicing and maintenance work.

**WARNING!**

**Risk of injury due to escaping compressed air**

Compressed air hoses under pressure can tear or burst. If compressed air escapes, it can cause serious injury.

– Separate the product from the compressed air supply after the work is over.

**WARNING!**

**Danger due to escaping compressed air**

Compressed air escaping from the sound muffler can contain solid or liquid particles. Particles under pressure can injure the eyes or the skin.

– Wear specified protective equipment.

**WARNING!**

**Danger due to damaged components**

If you operate the product with damaged components, serious injury or death may result.

– Check components at specified intervals for damage.
– If you detect unusual operating sounds or any other noticeable aspects, put the product out of service.
– Contact the manufacturer ↳ “Hotline and Contact”.
– Replace damaged components promptly.

## 6.2 General notes

**NOTICE!**

**Contact of rotary components with objects**

If the rotary agitator touches a fixed object, the agitator shaft can bend or the agitator blade can be damaged.

A bent agitator shaft can cause high vibrations in the pneumatic motor. The vibrations can loosen the agitator from the stand and can touch the walls or bottom of the container. Material can squirt out.

Contact with objects can reduce the service life of the components.

– Keep the agitator at a safe distance from the wall and the bottom of the container.
– Keep the agitator at a safe distance from objects.

**NOTICE!**

**Unprepared material**

If you do not agitate the material well, the settled material particles remain at the bottom of the container. This can cause imperfect painting results.

– Agitate the material before painting or emptying.

**NOTICE!**

**High rotational speed**

Operating the agitator at excessively high rotational speeds causes eddy currents and mixes-in air. Air in the material line can cause uneven coating.

– Adjust the rotational speed to the material viscosity.
– Reduce rotational speed when removing material

## 6.3 Checks

Check for unusual noises during operation. Perform the following checks before beginning the shift:

» Cleanliness
  Ensure there are no material residues and other contaminants. Damage and leaks can only be seen on clean components.
» Check tightness of the connections and lines.
» Threaded pin on the connecting piece is tightened.
» Screw on the agitator blade is tightened.
» A pin is present in the agitator blade.
» Material temperature ↳ 11.3 “Operating conditions”
» Operating pressure ↳ 11.5 “Operating values”

## 6.4 Agitating

**NOTICE!**

**Unprepared material**

If you do not agitate the material well, the settled material particles remain at the bottom of the container. This can cause imperfect painting results.

– Agitate the material before painting or emptying.

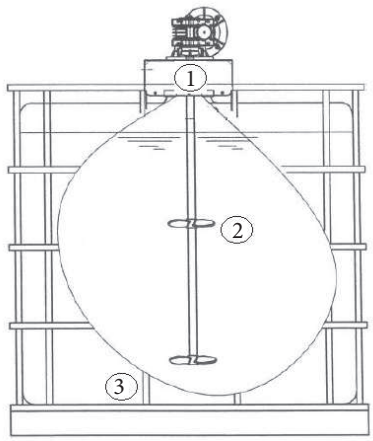



Fig: Ideal agitating position

1 Install the agitator in the centre of the vessel
2 Impeller dimension up to 50% of the vessel diameter and far from objects if provided inside it.
3 Distance from the bottom of the vessel: 10 cm min.

Personnel:

» Trained person

Protective equipment:

» Eye protection
» Respiratory protection, ambience-dependent
» Use ear protection
» Protective gloves
» Protective workwear
» Safety boots

Requirements:

» Compressed air supply is switched on.
» Material is in the container.
» Agitator and container are grounded.
» Agitator is correctly mounted ↳ 5.1 “Assembly”.

**Switching on**

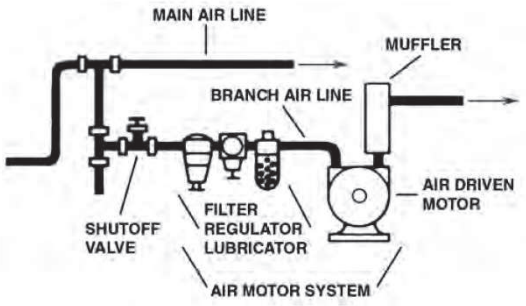



Fig. 7: Switching on

1. Open the shutoff valve
2. Slowly rotate the setting screw on the filter regulator.
3. ⇨ Agitator is switched on. The more the filter regulator is opened, the faster does the agitator shaft rotate

The rotational speed depends on the material viscosity.

**NOTICE!**

**High rotational speed**

Operating the agitator at excessively high rotational speeds causes eddy currents and mixes-in air. Air in the material line can cause uneven coating.

– Adjust the rotational speed to the material viscosity.
– Reduce rotational speed when removing material

**Switching off**

4. Rotate the setting screw on the filter regulator in the opposite direction.
   ⇨ The more the regulator is closed, the slower does the agitator shaft rotate. If the regulator is closed completely, the agitator is switched off.
5. Pull out the agitator from the container.
6. Wipe material drops with a cloth.

# 7 Cleaning and maintenance

## 7.1 Safety recommendations

Do not conduct cleaning and maintenance work in explosive atmosphere.

**WARNING!**

**Danger of fire and explosion**

Flammable materials can cause a fire or an explosion.

– Ensure that the flashpoint of the cleaning agent is at least 5 K above the ambient temperature.
– Pay attention to the explosion group of the material, cleaning and rinsing agent.
– Ensure that technical ventilation and fire protection equipment are in operation.
– Do not use any sources of ignition and no open light.
– Do not smoke.
– Observe the safety data sheets.

**WARNING!**

**Risk of injury due to escaping material and compressed air**

Material can escape with high pressure and penetrate the body. Death or serious injury can result.

Before working on the product:

– Disconnect the system with the product from compressed air and material supply.
– Relieve the lines.
– Secure the system against being switched on again.

**WARNING!**

**Risk of injury from unsuitable replacement parts in potentially explosive atmospheres**

If you use replacement parts that do not comply with the provisions of the ATEX guidelines, the replacement parts can cause explosions in an explosion-prone atmosphere. Serious injuries and death can result.

– Only use original replacement parts.

**WARNING!**

**Unsuitable tools in hazardous areas.**

Unsuitable tools can generate sparks and cause a fire or an explosion. Serious injuries or death can result.

– If possible, carry out cleaning und maintenance work outside the Ex zones.
– For activities within the EX zone, use tools with the corresponding Ex labelling.

**WARNING!**

**Danger of explosion if there are sources of ignition in an explosive atmosphere.**

If metal parts fall into the container, sparks can be generated. Sparks can cause explosions in explosive atmospheres. Serious injuries and death can be the consequence.

– Perform maintenance work outside the reach of the container.
– Prevent metal parts from falling into the container.

**WARNING!**

**Risk of harmful or irritant substances**

If you come in contact with hazardous liquids or vapors, it can cause serious injury or death can result.

– Ensure the technical ventilation is operational.
– Observe the safety data sheets.
– Wear specified protective clothing.

**WARNING!**

**Components flying about**

The components in the pneumatic motor are under pressure and can cause serious injuries on dismantling the pneumatic motor.

– Do not dismantle pneumatic motor.
– If there is a malfunction or fault in the pneumatic motor, please return it to the reseller.

**NOTICE!**

**Material damage due to unsuitable cleaning agent**

Unsuitable cleaning agents can damage the product.

– Only use suitable cleaning agents approved by the material manufacturer.
– Observe the safety data sheets.
– Place heavily soiled components into a cleaning bath.
  – For cleaning baths, use only electrically non-conductive containers.
  – Do not use ultrasound baths.

## 7.2 Cleaning

Clean the agitator after each change of material and at the end of work.

Depending on the level of contamination, Dürr Systems GmbH recommends the following cleaning methods:

» Light contamination
  Manual cleaning with a cloth or a soft brush:
  » Pneumatic motor
  » Agitator
» Light to medium contamination
  » Cleaning container:
    » Clean agitator in a container cleaning agent.
» Heavy contamination
  Cleaning bath:
  » Clean the agitator in a cleaning bath.

### Manual cleaning

Personnel:

» Cleaning staff

Protective equipment:

» Respiratory protection, ambience-dependent
» Eye protection
» Protective workwear
» Protective gloves
» Safety boots

Requirements:

» Compressed air supply is switched off.
» Compressed air hose is depressurized.

1. Remove contamination with a cloth or a soft brush.

### Cleaning container

Personnel:

» Cleaning staff

Protective equipment:

» Respiratory protection, ambience-dependent
» Eye protection
» Use ear protection
» Protective workwear
» Protective gloves
» Safety boots

Requirements:

» Compressed air supply is switched on
» Cleaning container is unbreakable, corrosion-free and grounded.

**! NOTICE!**

**Penetration of cleaning agents**

If cleaning agents penetrates the pneumatic motor, the pneumatic motor can be damaged.

– Do not submerge pneumatic motor in the cleaning medium.

**! NOTICE!**

**Contact of rotary components with objects**

If the rotary agitator touches a fixed object, the agitator shaft can bend or the agitator blade can be damaged.

A bent agitator shaft can cause high vibrations in the pneumatic motor. The vibrations can loosen the agitator from the stand and can touch the walls or bottom of the container. Material can squirt out.

Contact with objects can reduce the service life of the components.

– Keep the agitator at a safe distance from the wall and the bottom of the container.
– Keep the agitator at a safe distance from objects.

1. Hold the agitator by the handle.
2. Submerge the agitator in the cleaning agent.

**Switch it on slowly**

3. Let it run at medium rotational speed until the contamination comes off.

**Switch it off**

4. Pull out the agitator from the container.
5. Wipe drops with a cloth.
6. Remove loosened contaminants with a cloth or a soft brush.

   ⇨ If necessary, repeat steps 1 to 9 until agitator is clean.
7. After cleaning, wipe the agitator dry with a cloth.

### Cleaning bath

Personnel:

» Cleaning staff

Protective equipment:

» Respiratory protection, ambience-dependent
» Eye protection
» Protective workwear
» Protective gloves
» Safety boots

Requirements:

» Compressed air supply is switched off.
» Compressed air hose is depressurized.

1. Disassemble agitator blade ↳ 9.4 “Troubleshooting”.
2. Disassemble agitator shaft ↳ 9.4.2 “Replace agitator shaft”.

**! NOTICE!**

**Penetration of cleaning agents**

If cleaning agents penetrates the pneumatic motor, the pneumatic motor can be damaged.

– Do not submerge pneumatic motor in the cleaning medium.

3. Place components in the cleaning bath.

   ⇨ The cleaning duration depends on the contamination.
4. Remove components.
5. Remove residual contamination with a cloth or a soft brush.

   ⇨ If necessary, repeat steps 1 to 4 until agitator is clean.
6. Wipe components dry with a dry clean cloth.
7. Dismantle components ↳ 9.4 “Troubleshooting”.

## 7.3 Maintenance

### 7.3.1 Maintenance schedule

| Interval | Maintenance work |
|---|---|
| before each use | Commissioning ↳ 5.2 |
| after each use | Cleaning agitator ↳ 8.2 |

### 7.3.2 Lubrication schedule

| Interval | Maintenance work |
|---|---|
| After 16 operating hours | Lubricate pneumatic motor ↳ 8.3.3 “Lubrication”. |

### 7.3.3 Lubrication

**Lubricate pneumatic motor.**

If you operate the agitator with oil-free compressed air, the pneumatic motor must be lubricated manually.

Personnel:

» Mechanic

1. Switch off compressed air supply.
2. Relieve the line.
3. Disconnect the compressed air hose from the compressed air supply.
4. Put in two drops of lubricant in the compressed air hose.

   Do not fill in the lubricant directly in the pneumatic motor.

5. Connect the compressed air hose to the compressed air supply.
6. Turn on compressed air supply.

   ⇨ The lubricant is distributed in the pneumatic motor.

7. In alternative to filling the oil manually, use a filter regulator lubricator to do it automatically

# 8 Faults

## 81 Safety recommendations

**WARNING!**

**Danger of fire and explosion**

Flammable materials can cause a fire or an explosion.

– Ensure that the flashpoint of the cleaning agent is at least 5 K above the ambient temperature.
– Pay attention to the explosion group of the material, cleaning and rinsing agent.
– Ensure that technical ventilation and fire protection equipment are in operation.
– Do not use any sources of ignition and no open light.
– Do not smoke.
– Observe the safety data sheets.

**WARNING!**

**Risk of injury from unsuitable replacement parts in potentially explosive atmospheres**

If you use replacement parts that do not comply with the provisions of the ATEX guidelines, the replacement parts can cause explosions in an explosion-prone atmosphere. Serious injuries and death can result.

– Only use original replacement parts.

**WARNING!**

**Danger of explosion if there are sources of ignition in an explosive atmosphere.**

If metal parts fall into the container, sparks can be generated. Sparks can cause explosions in explosive atmospheres. Serious injuries and death can be the consequence.

– Perform maintenance work outside the reach of the container.
– Prevent metal parts from falling into the container.

**WARNING!**

**Risk of harmful or irritant substances**

If you come in contact with hazardous liquids or vapors, it can cause serious injury or death can result.

– Ensure the technical ventilation is operational.
– Observe the safety data sheets.
– Wear specified protective clothing.

**WARNING!**

**Components flying about**

The components in the pneumatic motor are under pressure and can cause serious injuries on dismantling the pneumatic motor.

– Do not dismantle pneumatic motor.
– If there is a malfunction or fault in the pneumatic motor, please return it to the reseller.

## 8.2 Behavior during faults

When faults occur:

» Switch off the compressed air supply and secure it against unauthorized restarting.
» Relieve the lines.
» Follow the defects table to correct the fault.

## 8.3 Defects table

| Fault description | Cause | Remedy |
|---|---|---|
| Pneumatic motor runs slowly or not all. | Compressed air supply is switched off. | Turn on compressed air supply. |
| | Compressed air supply paused | Localize and eliminate compressed air interruption. |
| | Filter regulator is not open. | Turn on the filter regulator slowly. |
| | Filter regulator defective | Replace filter regulator ↳ 9.4.3 |
| | Pneumatic motor has no lubrication / is running dry. | Lubricate pneumatic motor ↳ 8.3.3 |
| | Pneumatic motor defective. | Send the pneumatic motor for repairs or replace it ↳ 9.4.4 |
| | Compressed air hose with cross section less than DN 8 used. | Mount compressed air hose with the required diameter ↳ 11.2 |
| Agitator vibrates/ not running quietly. | Agitator shaft and /or agitator blade not correctly mounted. | » Assemble agitator shaft again ↳ 9.4.2<br>» Assemble agitator blade ↳ 9.4.1 |
| | Agitator blade damaged or bent. | Replace agitator blade ↳ 9.4.1 |
| | Agitator shaft has an imbalance or is damaged. | Replace agitator shaft ↳ 9.4.2 |
| Material sprays out. | Material is being agitated with too high a rotational speed. | Reduce rotational speed ↳ 7.4 |
| Material coat is uneven. | Material is being agitated with too high a rotational speed. | Reduce rotational speed ↳ 7.4 |

## 8.4 Troubleshooting

### 8.4.1 Replace agitator blade

Check components for damage before assembly. If necessary, replace with new components.

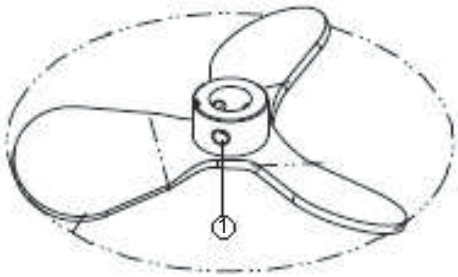



Fig: Replace agitator blade

Personnel:
» Mechanic

Protective equipment:
» Protective gloves
» Safety boots
» Eye protection

Requirements:

» Compressed air hose is dismounted.
  ↳ 10.2 “Disassembly”
» Filter regulator is closed.

### Disassemble

1. Remove screw (1).
2. Remove agitator blade from the shaft.
   ⇨ Contaminants can stick agitator blades together If necessary, loosen them carefully using a rubber mallet.

### Assembly

1. Insert the agitator blade on the agitator shaft
2. Thread-in screws and tighten them.
   ⇨ Agitator blade has been assembled.

## 8.4.2 Replace agitator shaft

Check components for damage before assembly. If necessary, replace with new components.

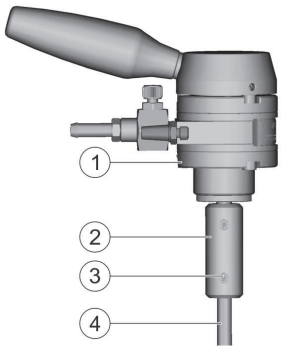



Fig. 12: Replace agitator shaft

Personnel:
» Mechanic

Protective equipment:
» Protective gloves
» Safety boots
» Eye protection

Requirements:

» Compressed air hose is dismounted.
  ↳ 10.2 “Disassembly”

### Disassemble

1. Disassemble agitator blade ↳ 9.4.1 “Replace agitator blade”.
2. Clamp agitator shaft (4) in a vise with plastic protective jaws.
   ⇨ The pneumatic motor (1) points sideways.
3. Unscrew threaded pin (3).
4. Pull off agitator shaft (4) from the connecting piece (2).
   ⇨ Contaminants can jam the agitator shaft. If necessary, loosen them carefully using a rubber mallet.

   Agitator shaft is disassembled.

### Assembly

1. Clamp agitator shaft (4) in a vise with plastic protective jaws.
   ⇨ The pneumatic motor (1) points sideways.
2. Insert agitator shaft (4) into the connecting piece (2) with the flattened side towards the bores .
3. Screw-in and tighten threaded pin (3).
4. Assemble agitator blade ↳ 9.4.1 “Replace agitator blade”.
   ⇨ Agitator shaft has been assembled.

### 8.4.3 Replace pneumatic motor.

Check components for damage before assembly. If necessary, replace with new components.

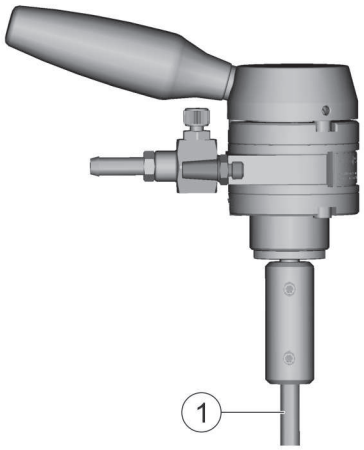



Fig. 15: Replace pneumatic motor.

Personnel:

» Mechanic

Protective equipment:

» Protective gloves
» Safety boots
» Eye protection

Requirements:

» Compressed air hose is disassembled.

» Filter regulator is closed.

**Disassemble**

1. Disassemble agitator shaft 9.4.2

**Assembly**

1. Assemble agitator shaft 9.4.2

⇨ Pneumatic motor is mounted.

# 9 Technical Data

## 9.1 Connections

| Detail | Value |
|---|---|
| Compressed air connection | DN 10 mm |

## 9.2 Operating conditions

| Detail | Value |
|---|---|
| Surface temperature when operating with protective gloves, max. | 40 °C |
| Surface temperature when operating with heat-resistant protective gloves, max. | 85 °C |
| Max. material temperature | 40 °C |
| Ambient temperature | 0 °C - 40 °C |
| Distance of the agitator blade from the wall and the bottom of the container, min. | 10 cm |

## 9.3 Emissions

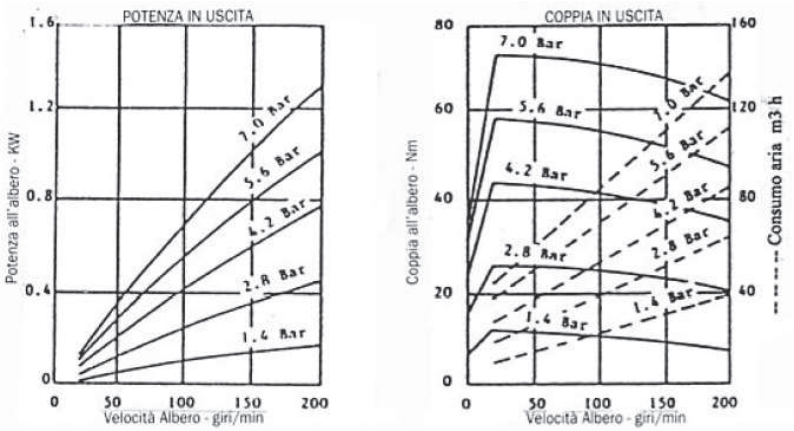
| Detail | Value |
|---|---|
| Noise level without load, operating pressure max. 7 bar | 103 dB |
| Noise level at max RPM, operating pressure max. 7 bar | 80 dB |
| Muffler permeability | 36 microns |

## 9.4 Operating values

| Detail | Value |
|---|---|
| Protection type | IP 65 |
| Operating pressure min. | 0.5 bar |
| Operating pressure max. | 7 bar |
| Recommended rotational speed range | up to 2000 RPM |

### Performance

The characteristic curve shows the relation between the power&speed and the air consumption&rotational speed&torque of the agitator.




## 9.5 Type plate

The type plate is placed on the pneumatic motor and features the following detail:

- Product name
- Maximum operating pressure
- EX labelling
- Maximum surface temperature
- CE labelling
- Material number
- Year of manufacture
- Serial number

## 9.6 Materials used

All parts in contact with material are made of 304 stainless steel

The position numbers of the components refer to the Chapter ↳ 12.1 “Replacement parts”.

| Component | Material |
|---|---|
| Agitator blade | 304 S.S. |
| Screws | 304 S.S. |
| Connecting piece | 304 S.S. |
| Agitator shaft (10) | 304 S.S. |

## 9.7 Operating and auxiliary materials

| Material | Environment | Specification |
|---|---|---|
| Lubricant for pneumatic motor | For environment < 38°C | SAE#10 - EXXON HDX+10 |
| | For environment > 38°C | SAE#20 - EXXON HDX+20 |

## 9.8 Compressed air

### Compressed air quality

- Purity classes according to ISO 8573-1:2010 3:4:X
- Limitations for purity class X:
  - ≤ 25 mg/m³

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# Declaration of Conformity

*Konformitätserklärung*

(according to EU Directive 2014/34/EU, Annex VIII)
*(im Sinne der Richtlinie 2014/34/EU, Anhang VIII)*

declares in sole responsibility that the Air motors in category 2G and 2D that are listed below and that are subject to this declaration are meeting the requirements set forth in **Directive** 2014/34/EU

*erklärt in alleiniger Verantwortung, dass die im Folgenden aufgelisteten Druckluftmotoren der Kategorie 2G und 2D, auf die sich diese Erklärung bezieht, übereinstimmen mit der **Richtlinie** 2014/34/EU*

Motor types / *Motortypen:*

| | | | | | |
|---|---|---|---|---|---|
| 1AM-NCC-11 | 1UP-NCC-3E | 2AM-FCC-21 | 2AM-NCW-172 | 4AM-FRV-13G | 4AM-NRV-157 |
| 1AM-NCC-12 | | | 2AM-NCW-33A | 4AM-FRV-13H | 4AM-NRV-159 |
| 1AM-NCC-15A | 1UP-NCW-251 | 2AM-FCW-13 | 2AM-NCW-33B | 4AM-FRV-13J | 4AM-NRV-160 |
| 1AM-NCC-15B | 1UP-NCW-22 | 2AM-FCW-13A | 2AM-NCW-72 | 4AM-FRV-142 | 4AM-NRV-161 |
| 1AM-NCC-59A | 1UP-NCW-2A | 2AM-FCW-13LL | 2AM-NCW-7A | 4AM-FRV-142A | 4AM-NRV-162 |
| 1AM-NCC-59B | 1UP-NCW-32 | 2AM-FCW-13NLP | 2AM-NCW-7ALL | 4AM-FRV-145 | 4AM-NRV-164 |
| 1AM-NCC-65 | 1UP-NCW-5 | | 2AM-NCW-7ANLP | 4AM-FRV-158 | 4AM-NRV-164A |
| 1AM-NCC-88 | | 2AM-FRV-109 | 2AM-NCW-7B | 4AM-FRV-24 | 4AM-NRV-165 |
| 1AM-NCC-95 | 1UP-NRV-10 | | 2AM-NCW-7BLL | 4AM-FRV-51 | 4AM-NRV-170 |
| 1AM-NCC-96 | 1UP-NRV-11 | 2AM-NCC-102SS | 2AM-NCW-7BNLP | 4AM-FRV-58C | 4AM-NRV-200SS |
| | 1UP-NRV-11-GR11 | 2AM-NCC-106 | 2AM-NCW-7G | 4AM-FRV-63 | 4AM-NRV-201SS |
| 1AM-NCW-100 | 1UP-NRV-15 | 2AM-NCC-106A | 2AM-NCW-82 | 4AM-FRV-63A | 4AM-NRV-21A |
| 1AM-NCW-101 | 1UP-NRV-16-GR11 | 2AM-NCC-16 | 2AM-NCW-82SSA | 4AM-FRV-63ALL | 4AM-NRV-22A |
| 1AM-NCW-14 | 1UP-NRV-21-GR11C | 2AM-NCC-16A | 2AM-NCW-86 | 4AM-FRV-63ANLP | 4AM-NRV-22B |
| 1AM-NCW-14C | 1UP-NRV-29-GR11 | 2AM-NCC-16B | 2AM-NCW-97 | | 4AM-NRV-22BLL |
| 1AM-NCW-57 | 1UP-NRV-3A | 2AM-NCC-16D | | 4AM-NCC-144 | 4AM-NRV-22BNLP |
| | 1UP-NRV-3B | 2AM-NCC-16F | 2AM-NRV-104 | 4AM-NCC-26 | 4AM-NRV-22D |
| 1AM-NRV-105SS | 1UP-NRV-4 | 2AM-NCC-16G | 2AM-NRV-160 | 4AM-NCC-42 | 4AM-NRV-22F |
| 1AM-NRV-251SS | 1UP-NRV-4-GR11 | 2AM-NCC-16LL | 2AM-NRV-173 | 4AM-NCC-43A | 4AM-NRV-22G |
| 1AM-NRV-252SS | | 2AM-NCC-16NLP | 2AM-NRV-251 | 4AM-NCC-68 | 4AM-NRV-22H |
| 1AM-NRV-39A | 2AM-ACC-88 | 2AM-NCC-171 | 2AM-NRV-89 | 4AM-NCC-95 | 4AM-NRV-22J |
| 1AM-NRV-39C | 2AM-ACC-88A | 2AM-NCC-40A | 2AM-NRV-89LL | | 4AM-NRV-251 |
| 1AM-NRV-39SS | 2AM-ACC-91 | 2AM-NCC-40B | 2AM-NRV-89NLP | 4AM-NCW-163 | 4AM-NRV-253 |
| 1AM-NRV-56 | 2AM-ACC-92 | 2AM-NCC-43A | 2AM-NRV-90 | | 4AM-NRV-50CLL |
| 1AM-NRV-56-GR11 | 2AM-ACC-93 | 2AM-NCC-43ALL | | 4AM-NRV-109 | 4AM-NRV-50CNLP |
| 1AM-NRV-60 | | 2AM-NCC-43ANLP | 4AM-ARV-119 | 4AM-NRV-115 | 4AM-NRV-50H |
| 1AM-NRV-60-GR11 | | 2AM-NCC-43B | 4AM-ARV-119A | 4AM-NRV-116 | 4AM-NRV-50L |
| 1AM-NRV-63A | 2AM-ARV-92 | 2AM-NCC-43C | 4AM-ARV-120 | 4AM-NRV-122 | 4AM-NRV-54 |
| 1AM-NRV-7SS | 2AM-ARV-92LL | 2AM-NCC-6 | 4AM-ARV-121 | 4AM-NRV-128 | 4AM-NRV-54A |
| 1AM-NRV-80-GR11A | 2AM-ARV-92NLP | 2AM-NCC-66 | 4AM-ARV-154 | 4AM-NRV-130 | 4AM-NRV-54ALL |
| 1AM-NRV-82 | 2AM-ARV-93 | 2AM-NCC-74 | 4AM-ARV-167 | 4AM-NRV-130B | 4AM-NRV-54ANLP |
| | 2AM-ARV-93LL | 2AM-NCC-75A | | 4AM-NRV-131 | 4AM-NRV-54B |
| 1UP-NCC-13 | 2AM-ARV-93NLP | 2AM-NCC-76 | 4AM-FCC-1D | 4AM-NRV-133 | 4AM-NRV-5E |
| 1UP-NCC-14 | | 2AM-NCC-78 | 4AM-FCC-1E | 4AM-NRV-143 | 4AM-NRV-70C |
| 1UP-NCC-1A | 2AM-FCC-1 | 2AM-NCC-85 | | 4AM-NRV-147 | 4AM-NRV-70CLL |
| 1UP-NCC-20 | 2AM-FCC-107 | 2AM-NCC-96 | 4AM-FRV-13A | 4AM-NRV-150 | 4AM-NRV-70CNLP |
| 1UP-NCC-20A | 2AM-FCC-1B | | 4AM-FRV-13C | 4AM-NRV-153 | 4AM-NRV-92 |
| 1UP-NCC-30 | 2AM-FCC-1LL | 2AM-NCW-108 | 4AM-FRV-13CLL | 4AM-NRV-155 | 4AM-NRV-93 |
| 1UP-NCC-33 | 2AM-FCC-1NLP | 2AM-NCW-171 | 4AM-FRV-13CNLP | 4AM-NRV-156 | 4AM-NRV-98 |

| | | | | | |
|---|---|---|---|---|---|
| 4AM-RV-127-GR20 | 6AM-NRV-16 | 6AM-NRV-7D | 8AM-NRV-32A | 16AM-FRV-32 | NL32-NCW-6 |
| 4AM-RV-75-GR20 | 6AM-NRV-170 | 6AM-NRV-7E | 8AM-NRV-39 | 16AM-FRV-33 | NL32-NCW-8 |
| 4AM-RV-75-GR25 | 6AM-NRV-22A | 6AM-NRV-82 | 8AM-NRV-42A | 16AM-FRV-34 | |
| | 6AM-NRV-251 | | 8AM-NRV-43 | | NL32-NRV-20 |
| 6AM-ARV-54 | 6AM-NRV-27 | 8AM-ARV-70 | 8AM-NRV-45 | NL22-FCC-3 | |
| 6AM-ARV-55 | 6AM-NRV-29A | 8AM-ARV-71 | 8AM-NRV-55 | | NL42-NCC-1 |
| | 6AM-NRV-34 | | 8AM-NRV-5B | NL22-FCW-4 | NL42-NCC-11 |
| 6AM-FRV-17 | 6AM-NRV-47A | 8AM-FCC-11A | 8AM-NRV-73 | | NL42-NCC-251 |
| 6AM-FRV-17A | 6AM-NRV-47B | | 8AM-NRV-76 | NL22-NCC-1 | NL42-NCC-5 |
| 6AM-FRV-17B | 6AM-NRV-53 | 8AM-FRV-2A | 8AM-NRV-79 | NL22-NCC-5 | NL42-NCC-7 |
| 6AM-FRV-17C | 6AM-NRV-53A | 8AM-FRV-2B | 8AM-NRV-80 | NL22-NCC-5-GR11 | |
| 6AM-FRV-17D | 6AM-NRV-53B | 8AM-FRV-2B-UN | | | NL42-NCW-10 |
| 6AM-FRV-23A | 6AM-NRV-57 | 8AM-FRV-30A | 8AM-RV-50 | NL22-NCW-2 | NL42-NCW-2 |
| 6AM-FRV-5 | 6AM-NRV-58 | 8AM-FRV-40 | 8AM-RV-50A | NL22-NCW-2B | NL42-NCW-252 |
| 6AM-FRV-5A | 6AM-NRV-60 | 8AM-FRV-61 | | | NL42-NCW-6 |
| 6AM-FRV-62 | 6AM-NRV-63 | 8AM-FRV-75 | 16AM-FCC-1 | NL32-NCC-1 | |
| 6AM-FRV-71 | 6AM-NRV-66 | 8AM-FRV-78 | 16AM-FCC-26 | NL32-NCC-19 | NL52-NCC-1 |
| 6AM-FRV-72 | 6AM-NRV-67 | | | NL32-NCC-23 | NL52-NCC-3 |
| 6AM-FRV-81 | 6AM-NRV-67 | 8AM-NCC-54 | 16AM-FRV-13 | NL32-NCC-251 | NL52-NCC-251 |
| | 6AM-NRV-72 | 8AM-NCC-68 | 16AM-FRV-13A | NL32-NCC-5 | |
| 6AM-NCC-28 | 6AM-NRV-72A | | 16AM-FRV-19 | NL32-NCC-7 | NL52-NCW-2 |
| | 6AM-NRV-75 | 8AM-NRV-17 | 16AM-FRV-2 | | NL52-NCW-252 |
| 6AM-NRV-11 | 6AM-NRV-76 | 8AM-NRV-170 | 16AM-FRV-251 | NL32-NCW-2 | NL52-NCW-4 |
| 6AM-NRV-11A | 6AM-NRV-7A | 8AM-NRV-28A | 16AM-FRV-252 | NL32-NCW-20 | |
| 6AM-NRV-11D | 6AM-NRV-7B | 8AM-NRV-29 | 16AM-FRV-27 | NL32-NCW-252 | |

Applicable standard: **DIN EN 1127-1:2011, DIN EN 13463-1:2009, DIN EN 13463-5: 2011**

*Angewandte Norm:* ***DIN EN 1127-1:2011, DIN EN 13463-1:2009, DIN EN 13463-5: 2011***

The products are marked with the following characteristics:

*Die Produkte sine mit folgender Kennzeichnung versehen:*

**II 2 GDc T4 (+1$^0$C < Ta < +40$^0$C)**

**GAST** will archive the documents required according to 2014/34/EU Annex VIII at the following location: SIRA Certification Service, EU Code 0518 :

***GAST*** *hinterlegt die gemäß 2014/34/EU Anhang VIII geforderten Unterlagen bei benannter Stelle: SIRA Certification Service, EU-Kennnummer 0518*

***GAST, 2300 M-139, Benton Harbor, Michigan USA***

***February 20, 2017***
Place and date of issue
*Ort und Datum der Ausstellung*

*Mike Douglass*
*Assessing Engineer*

*Raouf Luka*
*Regulatory Engineer Group Leader*