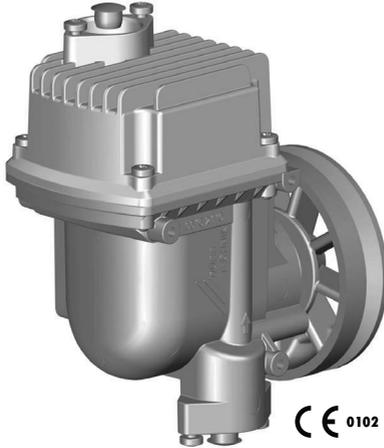


# Gas recovery pump MEX 083 1

EN



CE 0102

PTB 01 ATEX 5004

II 1/2G c d IIA T3 X  
II G IIA

Installation and Operating Instructions

CE

0831100100L02



 **DÜRR  
TECHNIK**

1608V001



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## Addresses



# Important information

## 1 About this document

These installation and operating instructions represent a part of the unit. They correspond to the relevant version of the unit and the status of technology valid at the time of its market launch.



In the event that the instructions and notes in these installation and operating instructions for are not observed, Dürr Technik accepts no warranty or liability of any kind for the safe operation and reliable function of the units.

This translation was prepared to the best of our knowledge. The original German language version of the manual is the definitive version. Dürr Technik is not liable for translation errors.

### 1.1 Warnings and symbols

#### Warnings

The warnings in this document are intended to draw your attention to possible injury to persons or damage to machinery.

The following warning symbols are used:



General warning symbol



Warning – dangerous high voltage



Warning – hot surfaces



Warning - automatic start-up of the unit

The warnings are structured as follows:



#### SIGNAL WORD

#### Description of the type and source of danger

Here you will find the possible consequences of ignoring the warning

- › Follow these measures to avoid the danger.

The signal word differentiates between four levels of danger:

- **DANGER**  
Immediate danger of severe injury or death
- **WARNING**  
Possible danger of severe injury or death
- **CAUTION**  
Risk of minor injuries
- **NOTICE**  
Risk of extensive material/property damage

#### Other symbols

These symbols are used in the document and on or in the unit:



Note, e.g. specific instructions regarding efficient and cost-effective use of the unit.



Comply with the specification in the accompanying documents.



CE labelling



Date of manufacture



Observe the fitting installation position of the pump.



Dispose of the unit properly and in accordance with applicable national, regional and local laws.



Switch off and de-energise the device (e. g. unplug from mains).

### 1.2 Copyright information

All names of circuits, processes, names, software programs and units used in this document are protected by copyright.

The reprinting of the installation and operating instructions, even in extracts, is only permitted with the written permission of Dürr Technik.

## 2 Safety

Dürr Technik has developed and constructed the units in such a way that danger is to a large extent excluded if the units are used as intended. Nevertheless, residual risks can remain. You should therefore observe the following notes.

### 2.1 Intended use

The unit is suitable for the aspiration of gas/vapour/air mixtures that may be potentially explosive. The unit can be used, for example, for the aspiration of fuel vapour/air mixtures in fuel dispensers.

Permissible ambient temperature -40°C to +60°C.



#### CAUTION

**The combustible gases or fluids occurring in operation must belong to explosion group IIA with a maximum experimental safety gap > 0.9 mm**

The unit is designed for use with a plant or a machine. It must only be put into operation when the manufacturer of the plant or machine in which the unit is installed has ensured that all requirements necessary to guarantee safe operation have been satisfied.

The gas recovery pumps must be electrostatically earthed. The flame arresters (and the components surrounding them) should be visually inspected at appropriate intervals, in particular for contamination and corrosion. Where necessary they should be cleaned or replaced. The ambient temperature and the temperature at the inlet must not exceed +60 °C.

The operational overpressure in the outlet line in relation to atmospheric pressure must not exceed 150 mbar (150 hPa).

When using the gas recovery pumps as a protection system, the following additional requirements must also be satisfied:

Max. hose and pipe length between the dispensing valve and the gas recovery pump

1. Gas recovery hose with an internal diameter ≤ 10 mm in a coaxial hose ≤ 10 m together with a downstream pipe DN 15 (G1/2"), length ≤ 3 m  
or
2. Coaxial hose with an external diameter ≤ 38 mm, length ≤ 6 m together with a downstream pipe DN 15 (G1/2"), length ≤ 3 m

3. In addition, the following vessels may be installed in the pipe on the suction side:

- a Pulsation damper 250 ml from Scheidt & Bachmann, no. 0582542, or
- b Condensation separator from Fafnir, no. XO 013001.

The vessels are to be installed at a distance of between 0.3 m and 2.5 m upstream of the gas recovery pump. The minimum pipe length between the hose and the vessel must be 0.5 m.

### 2.2 Improper usage

Any other usage or usage beyond this scope is deemed to be improper. The manufacturer accepts no liability for damage resulting from such use. In such cases, the user/operator will bear the sole risk.



#### WARNING

**Serious injury and material damage due to improper usage**

- › Conveying explosive mixtures in any way other than that specified is not permitted.

### 2.3 General safety information

- › When operating this unit, always observe all directives, laws, and other rules and regulations applicable at the site of operation.
- › Check the function and state of the unit prior to each use.
- › Do not convert or modify the unit.
- › Comply with the specifications of the Installation and Operating Instructions.
- › Ensure that the unit operator has access to the Installation and Operating Instructions at all times.

### 2.4 Safety rules for gas recovery pumps

The following rules and directives must be followed when working with or on the gas recovery pump.

- **EN 60079-0 (IEC 60079-0)**  
Electrical apparatus for potentially explosive atmospheres - General requirements.
- **EN 60079-10 (IEC 60079-10)**  
Electrical apparatus for explosive gas atmospheres Part 10: Classification of hazardous areas.

– EN 60079-14 (IEC 60079-14)

Electrical apparatus for explosive gas atmospheres - Part 14:Electrical installations in hazardous areas.

– EN 13617-1

Petrol filling stations.Part 1: Safety requirements for construction and performance of metering pumps, dispensers and remote pumping units.

- Country-specific safety directives.
- Country-specific environmental directives.
- Country-specific occupational health and safety regulations.
- Leaflet from TÜV Rheinland:Monitoring of gas recovery systems.
- **If appropriate, other country-specific regulations and guidelines.**

## 2.5 Qualified personnel

### Operation

Unit operators must ensure safe and correct handling based on their training and knowledge.

- › Instruct or have every operator instructed in the handling of the unit.

### Installation and repairs

- › Always arrange for any assembly work, readjustments, alterations, extensions, and repairs to be performed by Dürr Technik or by personnel authorised and trained by Dürr Technik. Qualified personnel are defined as those trained by Dürr Technik; who are familiar with the unit technology; and are aware of the dangers presented by the unit.

## 2.6 Protection from electric shock

- › When working on the units observe all the relevant electrical safety regulations.
- › Immediately replace any damaged cables or plugs.

## 2.7 Only use genuine parts

- › Only use accessories and special accessories that are specified or approved by Dürr Technik.
- › Only use original working and spare parts.



Dürr Technik accepts no liability for damage resulting from the use of non-approved accessories, special accessories or any working parts or spare parts other than original parts.

## 2.8 Transportation and storage

The unit is delivered in a cardboard box filled with packing material. The original packaging provides optimum protection for the unit during transport. Wherever possible, always use the original packaging for transport and storage of the unit.

- Keep the packing materials out of the reach of children.



### NOTICE

#### Risk of corrosion of the unit

Moisture can lead to corrosion.

- › Protect the unit from moisture during transportation.

The unit may be stored in its original packaging

- in warm, dry and dust-free rooms;
- protected from contaminants.



If possible, retain the packaging material.

### Ambient conditions during storage and transport

Ambient conditions during storage and transport		
Temperature	°C	-40 to +60
Relative humidity	%	10 % to 90 %

Please refer to the labels on the packaging padding.

## 2.9 Disposal

### Unit



Dispose of the unit properly and in accordance with applicable national, regional and local laws.

### Packaging



Dispose of the packaging material in an environmentally responsible manner.

- Note current disposal routes.
- Keep the packing materials out of the reach of children.



## 3 Overview

### 3.1 Scope of delivery

The following items are included in the scope of delivery (possible variations due to country-specific requirements and/or import regulations):

#### Gas recovery pump MEX 0831

- The gas recovery pump MEX 0831 complete consists of:
  - Pump
  - Fan belt pulley (optional)
  - Installation and Operating Instructions

### 3.2 Spare parts and accessories

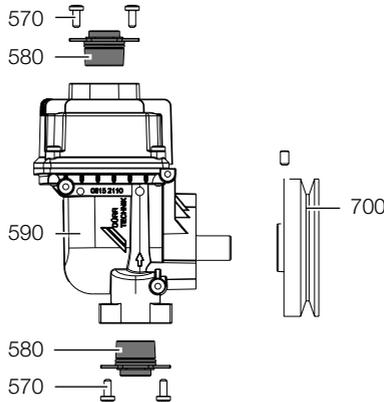


Figure 1: Spare parts for gas recovery pump MEX 0831

Item no.	Name of item	Order number
570	Fixing screws M5 x 15	—
580	Flame arrester	0615 0750
	Alternatively: Flame arrester G1/4" Ex	0544100049
590	Pump	—
700	Fan belt pulley incl. clamping screw	0831-006-00

## 4 Technical data

### 4.1 Dimensions

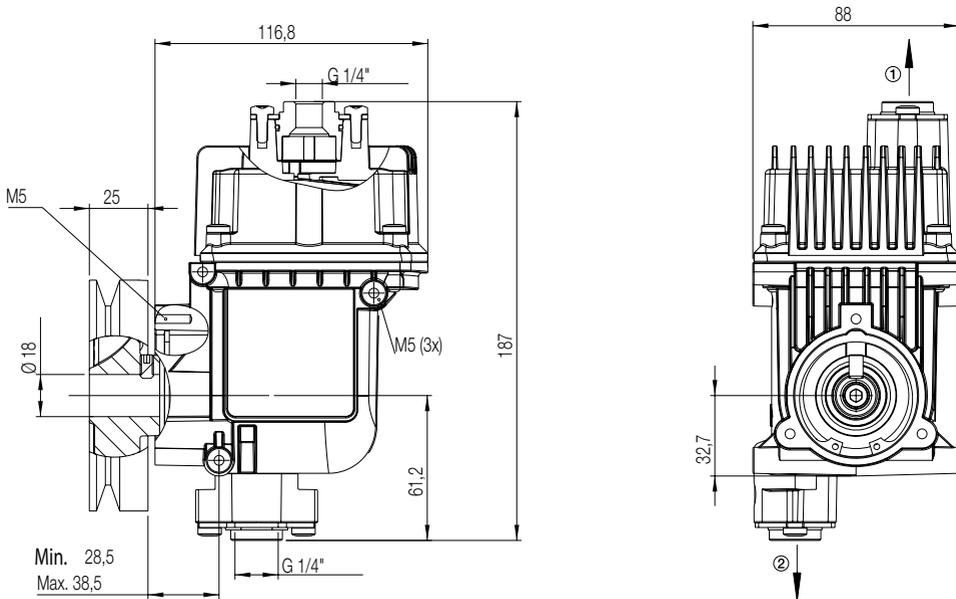


Figure 2: Dimensions of gas recovery pump MEX 0831

- ① Outlet
- ② Inlet

### 4.2 Technical data

General technical data			
Article no.		0831	0831 (example 2300 rpm)
Suction capacity $S_{\text{eff}}$	l/min	49	44
End pressure $P_{\text{abs}}$	mbar	<150	~120
Noise level	dB (A)	≤ 70	≤ 70
Recommended motor power	W	170	150
Max. rotational speed	rpm	2900	2300

## 5 Volumetric flow rate characteristic curve

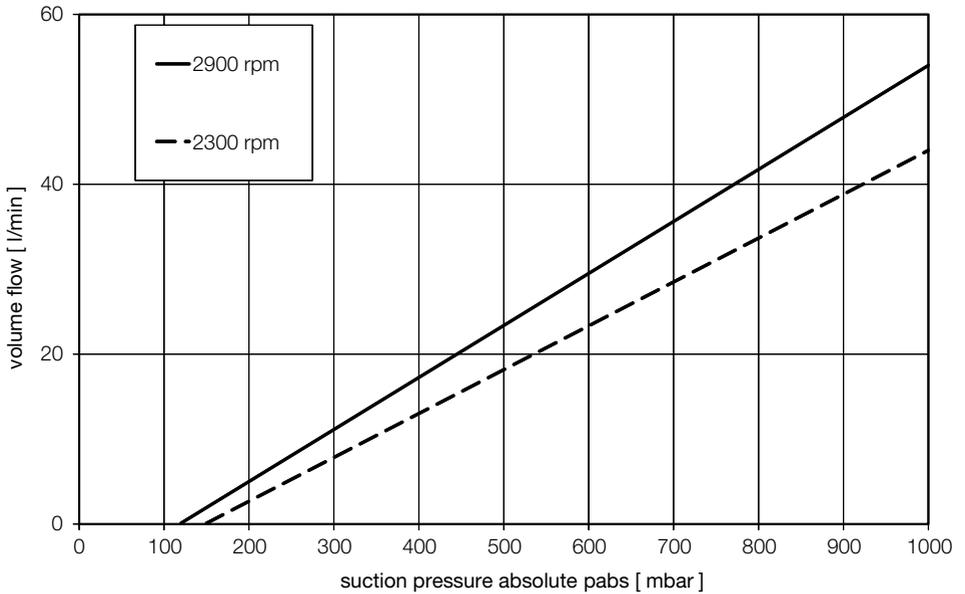


Figure 3: MEX 0831 volumetric flow rate characteristic curve

Volumetric flow rate per pump

Conveyed medium: Air

Counter-pressure  $p_c$ : 150 mbar

## 6 Declaration of conformity

### 6.1 EU declaration of conformity in accordance with ATEX directive 2014/34/EU

The unit named below fulfills the requirements of the following directives:

- ATEX directive 2014/34/EU

Manufacturer's name:	Dürr Technik GmbH & Co. KG
Manufacturer's address:	Pleidelzheimer Straße 30 D-74321 Bietigheim-Bissingen

Reference number:	0831-10 0831-11
Article designation:	Gas recovery pump MEX
From the serial number:	H400000

<b>Description of the unit:</b>	The gas recovery pumps of type "MEX" are piston pumps with integrated flame arresters on the inlet and outlet for the aspiration of explosive fuel vapour-air mixtures in gas recovery equipment of dispensing equipment at filling stations. The vacuum pumps run in intermittent operation.
<b>Requirements for explosion protection of the unit:</b>	Interior of the inlet and outlet lines: requirements in accordance with category 1 Environment of the vacuum pump: requirements in accordance with category 2
<b>Description of the protection system:</b>	The gas recovery pumps of the type "MEX" should also be used in the gas recovery lines as an explosion flame arrester or detonation flame arrester between the dispensing valve and the storage tank. This is to prevent flame transmission when there is an ignition at the dispensing valve when there is deflagration or stable detonation of potentially explosive vapour-air mixtures of the explosive group IIA under the following conditions: Downstream max. hose and tube length: 1. Gas recovery hose with an internal diameter $\leq 10$ mm in a coaxial hose $\leq 10$ m, or optionally, 2. Coaxial hose $\leq 6$ m with an external diameter $\leq 38$ mm, together with an inlet side pipe DN15 (G1/2") $\leq 3$ m. On both the inlet and pressure side of the pumps there are flame arresters. The gas recovery pump can be used upstream of the feed in the gas accumulation line instead of a separate flame arrester (deflagration or detonation flame arrester).



<b>ATEX:</b>	EC Type Examination Certificate Number PTB 01 ATEX 5004
<b>Notified body:</b>	Physikalisch-Technische Bundesanstalt, Bundesallee 100 D-38116 Brunswick, ID no. 0102
<b>Labelling:</b>	Unit:  II 1/2G c d IIA T3 X  Protection system:  II G IIA
Notified body for testing of the QA system	  0102

EN

We hereby declare that the unit must not be commissioned until it has been established that the machine into which this unit is to be installed complies with the provisions as set out in ATEX Directive 2014/34/EU.

**The PTB testing instructions "Requirements for explosion-proof vacuum pumps" have been applied in conjunction with the following harmonised and other standards:**

DIN EN 1127-1:2011-10

DIN EN 13463-1:2009-07

DIN EN 13463-3:2005-07

DIN EN 13463-5:2011-10

DIN EN ISO 16852:2010-09

Bietigheim-Bissingen, 20/04/2016

Andreas Ripsam  
Executive Board of Dürr Technik

Proof of signature in the  
Original document held by Dürr Technik



## 7 Requirements

The unit is intended for installation in machines. The following requirements must be satisfied:

- Set up/install the unit on a clean, level, and sufficiently stable surface (observe the weight of the unit).
- Set up or install the unit so that the type plate can be easily read and the unit is easily accessible for operation and maintenance.
- Install the unit in a housing or machine so that connecting units, flame arrester and control panels are easily accessible when removing or opening the housing access.
- Power cords and gas hoses must not be bent.
- Ambient temperature: -40 °C to +60 °C



### NOTICE

#### **Risk of overheating due to insufficient ventilation**

The units generates heat. Possibility of heat damage and/or reduced service life of the unit.

- › Do not cover the unit.
- › Air must be able to flow in and out unobstructed.
- › Ventilation openings must be sufficiently large.
- › Installed units may require an independent ventilation system in unfavourable cases.

## 8 Vibrations

The unit generates vibrations.



### CAUTION

**The use of rigid connections may damage the units or the system in which the units have been installed.**

- › Do not use rigid connection lines between the units and the system.

## 9 Installation position and fastening

Depending on the application, the unit can be installed in the stated permissible installation positions/areas in the fuel dispenser. In order to prevent the unit from completely filling up with condensation, the permitted installation area must be complied with.

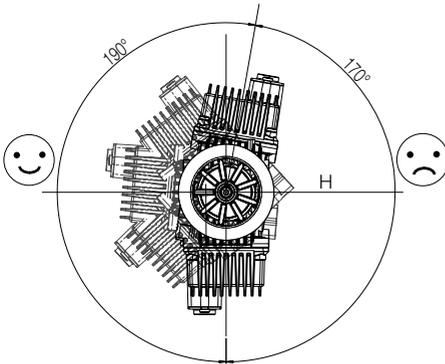


Figure 4: Installation position of the unit

H Horizontal

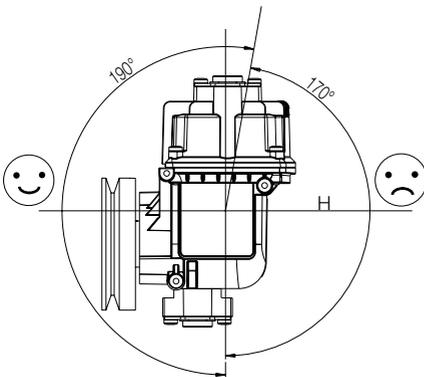


Figure 5: Installation position of the unit

H Horizontal



### NOTICE

**Incorrect installation positions reduce the service life of the unit considerably.**

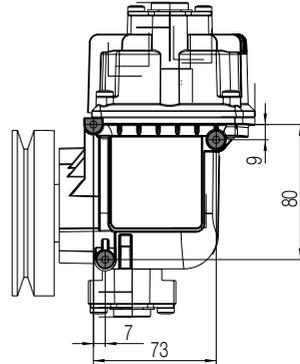
The manufacturer's warranty will no longer apply.

- Comply with the permitted installation position as shown.

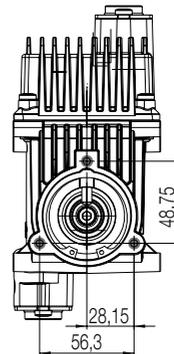
### Fastening the unit

There are 2 options for fastening the unit within the fuel dispenser.

#### Fastening to the side surface (3 female threads M5 x 11)



#### Fastening to the shaft side of the unit (3 female threads M5 x 11)



Fastening to three fastening points on one side is sufficient.

## 10 Installation

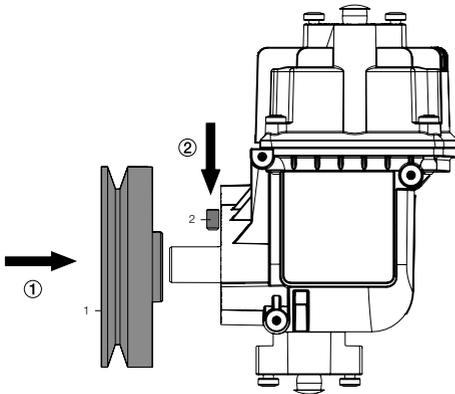
### 10.1 Fan belt pulley and belt drive

**DANGER**  
**Risk of explosion due to build-up of electrostatic charge**

Serious personal injury and material damage due to electrostatic discharge

- Only use electrically conductive drive belts.
- Inspect the belt tension at regular intervals.
- Replace broken or damaged belts.
- The motor and fan belt pulley must line up exactly.

The fan belt pulley must only be installed in the position shown.



- 1 Fan belt pulley
- 2 Clamping screw

Wrench sizes and tightening torques for the clamping screw of the fan belt pulley

Wrench size (mm)	Wrench length (mm)	Tightening torque (Nm)
3	100	5 + 1

Comply with the permissible position range on the shaft (distance: 28.5 mm min.; 38.5 mm max; see "4.1 Dimensions").

The effect of the fan on the unit must not be diminished by covers or similar.

**WARNING**  
**Damage to the flame arrester due to knocks on the drive shaft and fan belt pulley**

The service life and operational safety will be reduced due to the loss of protection from the flame arrester.

- Knocks on the drive shaft and fan belt pulley are not permitted.
- Slide the fan belt pulley by hand onto the drive shaft.

**Recommended belt profiles:**

Belt type	Profile
Narrow V-belt	SPZ7XPZ

### 10.2 Electric drive

**NOTICE**  
**The unit must only be operated with a motor that satisfies the following requirements.**

**DIN EN IEC 60079-10 / VDE 0165 Part 101**

Electrical apparatus for explosive gas atmospheres – Part 10:

Classification of hazardous areas.

**DIN EN IEC 60079-14 / VDE 0165 Part 1**

Electrical apparatus for explosive gas atmospheres – Part 14:

Electrical installations in hazardous areas.

## 10.3 Flame arrestor and line connections



### WARNING

#### Explosion hazard from spark formation

Flammable substances may ignite if the flame arrestors required by the manufacturer are not used.

- › Installation of the flame arrestors is a requirement for operation of the unit.

When connecting the gas recovery hoses to the unit, the requirements relating to proper use must be followed (refer to "2.1 Intended use").

The flame arrestors are equipped as standard with a G 1/4" female thread. Here the gas recovery hoses are connected with corresponding tube fittings. The suction-side connection (coming from the dispensing valve) of the gas recovery pump is marked with an arrow.

For some special applications the flame arrestor is equipped with an NPT 1/4" female thread.



## 11 Operation



### CAUTION

#### Burns from hot surfaces

The surfaces of the unit are hot during operation

- › Allow surfaces to cool down before performing operating or maintenance work.

The unit is intended for installation in machines. To ensure perfect operation of the control part of the unit the following conditions must be satisfied:

- Ambient temperature: -40 °C to +60 °C
- The operating pressure of the outlet line must not be more than 150 mbar (150 hPa) above the ambient pressure.

## 12 Maintenance



Prior to working on the device or in case of danger, disconnect it from the mains (e. g. pull the mains plug).



### CAUTION

#### Burns from hot surfaces

The surfaces of the unit are hot during operation

- › Allow surfaces to cool down before performing operating or maintenance work.
- › Only use accessories and special accessories that are specified or approved by Dürr Technik.
- › Only use original working and spare parts.



Dürr Technik accepts no liability for damage resulting from the use of non-approved accessories, special accessories or any working parts or spare parts other than original parts.

### 12.1 Maintenance schedule

Maintenance interval	Maintenance work
Annually	<ul style="list-style-type: none"> <li>- Surface, clean vents (refer to "12.2 Cleaning")</li> <li>- Check the flame arrestor for dirt and wear (see "12.3 Flame arrestor")</li> </ul>

### 12.2 Cleaning

The unit must be cleaned annually to guarantee perfect operation.

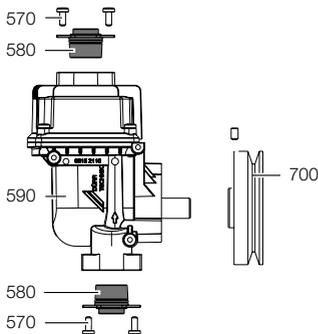
- › Clean the surface with a lint-free cloth.
- › Keep the ventilation openings of the crankcase chamber and cylinder head free from dust and impurities.

## 12.3 Flame arrestor

Within the scope of the type approval, the owner is obliged to perform a visual inspection of the flame arrestors annually. The flame arrestor must be checked for dirt and corrosion. Where necessary the flame arrestor should be cleaned or replaced.

The flame arrestors can be completely removed from the pump to allow them to be checked.

- › Loosen the fixing screws M5 x 12 on the flame arrestors.
- › Pull out the flame arrestors by the flange from the pump and check for dirt and wear.
- › Depending on the result of the check, either clean or replace the flame arrestors.
- › Re-install the flame arrestors. Make sure that the O-ring is not damaged. Lightly greasing the O-ring eases assembly.
- › Screw the flame arrestors back onto the pump housing with the screws (tightening torque 5 - 6 Nm). Secure the thread with anaerobic adhesive (medium strength).



590 Pump

580 Flame arrestor protection

570 Fixing screws

## 13 Taking the unit out of use

If the unit is not used for a lengthy period of time then we recommended shutting it down.

- › Unplug at the mains.
- › Disconnect the unit from the pipe system.
- › Remove the unit.
- › Completely clean the unit.
- › Store the unit in accordance with the storage conditions (refer to "2.8 Transportation and storage") and in the original packaging if possible.



## 14 Tips for operators and service technicians



Any repairs above and beyond routine maintenance must only be carried out by suitably qualified personnel or by one of our service technicians.



De-energise the unit prior to working on it or in the event of potential danger (e. g. pull the mains plug) and prevent it from being switched back on again.

Problem	Probable cause	Solution
<b>Unit does not start</b>	No power supply voltage	› Check the mains fuse, the unit fuse and the mains connections.
	Power supply voltage voltage too low	› Check the power supply voltage.
	Open/closed-loop control defective	› Check the open/closed-loop control.
	Mechanical sluggishness	› Factory repair
	Motor defective	› Replace the unit.
	The temperature switch in the motor switched off due to high ambient temperatures	› Allow the unit to cool down. Ensure better cooling. › Caution, unit restarts automatically!
<b>Poor delivery rate</b>	1.Measuring system not OK 2.Open/closed-loop control not OK 3.Flow losses in the pipes too high	1.Check the measurement system and correct or replace 2.Check the open/closed-loop control and correct or exchange if necessary 3.Increase the size of the line cross-sections, reduce the line length and number of deflections, and check the lines for mechanical damage such as kinking. Clean the lines.
	Flame arrestor dirty	› Clean and replace if necessary.
	Control valve dirty or defective	› Clean the control valve and replace if necessary
	Piston or shaft seal worn	› Factory repair
	Pump valve faulty	› Factory repair
	Mechanical sluggishness	› Factory repair
	Motor speed too low	› Check the mains connection

Problem	Probable cause	Solution
<b>Delivery rate too high</b>	Fluid in the gas/bellows counter Gauge defective	› Clean or replace the gauge.
<b>Unit too noisy</b>	Pump or motor bearing defective	› Factory repair.
	Vibrations are transferred to the surroundings.	› Check the installation and if necessary stiffen the vibrating component, route it differently, provide support etc. Use flexible metal gas lines.

EN



## Service

Dürr Technik GmbH & Co. KG  
74301 Bietigheim-Bissingen  
Telephone 0 71 42 / 90 22 - 20  
Fax 0 71 42 / 90 22 - 99  
e-mail: [service@duerr-technik.de](mailto:service@duerr-technik.de)

## Replacement order

Telephone 0 71 42 / 9022 - 0  
Fax 0 71 42 / 9022 - 99  
e-mail: [office@duerr-technik.de](mailto:office@duerr-technik.de)

The following information is required when ordering spare parts:

- Type designation and item number
- Order number as appears on the spare parts list
- Quantity required
- Exact shipping address
- Shipping information

## Repairs/return delivery

Ensure that the unit is **depressurized** before transport! Use the original packaging when returning units, if possible. Always pack the units in a plastic bag. Use recyclable packing material.

## Return delivery address:

Dürr Technik GmbH & Co. KG  
Pleidelsheimer Straße 30  
74321 Bietigheim-Bissingen  
-Germany-

## International addresses for Dürr Technik

[www.duerr-technik.com](http://www.duerr-technik.com)







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