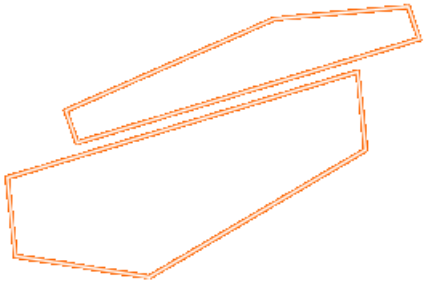
IbX instruments KJDF1 Exhaust and Fume Elimination System User Manual

KJDF1 Exhaust and Fume Elimination System (Scrubber)
Please read the User Manual carefully before use and follow all operating and safety instructions!



user manual

Contents

KJDF1 Exhaust and Fume Elimination System

Important notice
This instrument is designed for laboratory usage only. Please read this manual carefully before installing or operating this equipment. The instrument shall not be modified in any way. Any modification will void the warranty and may result in potential hazard. We are not responsible for any injury or damage caused by any non-intended purposes and modifying the instrument without authorization.
Service
In order to guarantee this equipment Works safely and efficiently, it must have a regular maintenance. In case of any faults, do not try to repair it yourself. If help is needed, you can always contact your supplier or Labbox via www.labbox.com

Please provide the customer care representative with the following information:

- Serial number
- Description of problem
- Your contact information

Warranty
This instrument is warranted to be free from defects in materials and workmanship under normal use and service, for aperiod of 12 months from the date of invoice. The warranty is extended only to the original purchaser. It shall not apply toany product or parts which have been damaged on account of improper installation, improper connections, misuse,accident or abnormal conditions of operation.
For claim under the warranty please contact your supplier.

⚠ **Warning:** The instrument cannot provide the designed protection for operators who do not follow the right procedures and requirements given by the manufacturer.

⚠ **Warning:** All solutions must be handled with care according to the lab's safety regulation.

Please make a reference to the related material safety data sheet. Wear the lab-gown, goggle and rubber gloves all the time. Be care of hot reagents.

Warning: Be aware of the risk of electric shock. Only the trained professionals are permitted to open the face panel or back cover.

Notes: Please make sure that the water, electricity and gas sources of the instrument are turned off after the experiment is completed. (Please operate according to the actual situation!)

General

Exhaust System is one neutralizing absorption waste gas absorption device for environment protection.
It is designed to neutralize acid fume and other harmful waste gases are generated from digestion.
Three-level absorption: gas scrubbing with liquid, absorption with neutralization solution (soda lime), absorption and drying with active carbon. The corrosion-resistant pump with high suction force equipped is able to produce strong suction of waste gas.
Operating principle: negative pressure is produced in the waste absorption piping by strong suction force generated by pump, and the waste gas produced by the digestor is accordingly pumped to the Exhaust System. First, most acid fume is cooled and recycled by the gas Exhaust System device. Then the waste gas travels through the tank filled with neutralizer or soda lime for neutralization and absorption. Afterwards the waste gas passes through the tank filled with active carbon for complete absorption and drying. Finally, the treated gas is exhausted by pump to the air.
Application: It is applied to food industry, pharmaceutical industry, agriculture, forestry, environmental protection, chemical industry, ecology as well as institutions and scientific research departments for absorption of acid fume generated during the chemical reaction in chemical analysis of soil, forage, plants, seeds, and ores.

Special notes:

1. The washing tank shall be filled with distilled water or NaOH solution with 10% concentration. The formulated NaOH solution shall be used after it is cooled to room temperature.
2. The liquid volume in the washing tank shall not exceed the scale mark.
3. The neutralizer in the neutralizing tank shall be NaOH solution with 10%-30% concentration.
4. The soda lime in the soda lime neutralization tank and the active carbon in the active carbon tank shall not exceed the scale mark in the inner respective tank.
5. Replacement shall be carried out in time as long as the acidity is shown by the indicator in the neutralizer or the soda lime turned pale yellow.
6. The active carbon in the tank shall be taken out and dried for reuse after every one or two experiments.
7. The solution in the washing tank and neutralization tank shall be replaced at the same time.

Main Technical Function of the Instrument

2.1 Specification
2.1.1 Power supply: AC 220±22 V; 50±1 Hz
2.1.2 Power: 320 W
2.1.3 Weight: 25 kg
2.1.4 Dimension: 390 mm × 340 mm × 550 mm (L × W × H)
2.2 Working Condition
2.2.1 Input voltage: AC 220±22 V; 50±1 Hz
Overcurrent and leakage protection switch and reliable ground wire shall be provided.
2.2.2 This instrument shall be installed where power socket is provided.
2.2.3 Configuration of the power supply shall be in conformity with power supply requirements in case of electrical overloading; ground wire and independent power switch and safety device for the electric security of the operators.

2.2.4 Sound ventilation shall be ensured for use of the product.

2.3 Features

2.3.1 The gas pipeline is resistant against strong acid corrosion.
2.3.2 The pump provides strong and efficient suction force.
2.3.3 Sound and compact design saves space for the instrument.
2.3.4 The waste gas suction speed can be controlled by a knob on the front and bottom side of the instrument.

Structure of the Instrument

3.1 Main components of the instrument

1. Air inlet
2. Air outlet
3. Washing tank
4. Neutralization tank
5. Drying tank
6. Fast coupling
7. Flowmeter valve
8. Pipe Joint
9. Connecting Pipe

10. Power switch
11. Pipeline connection Instruction

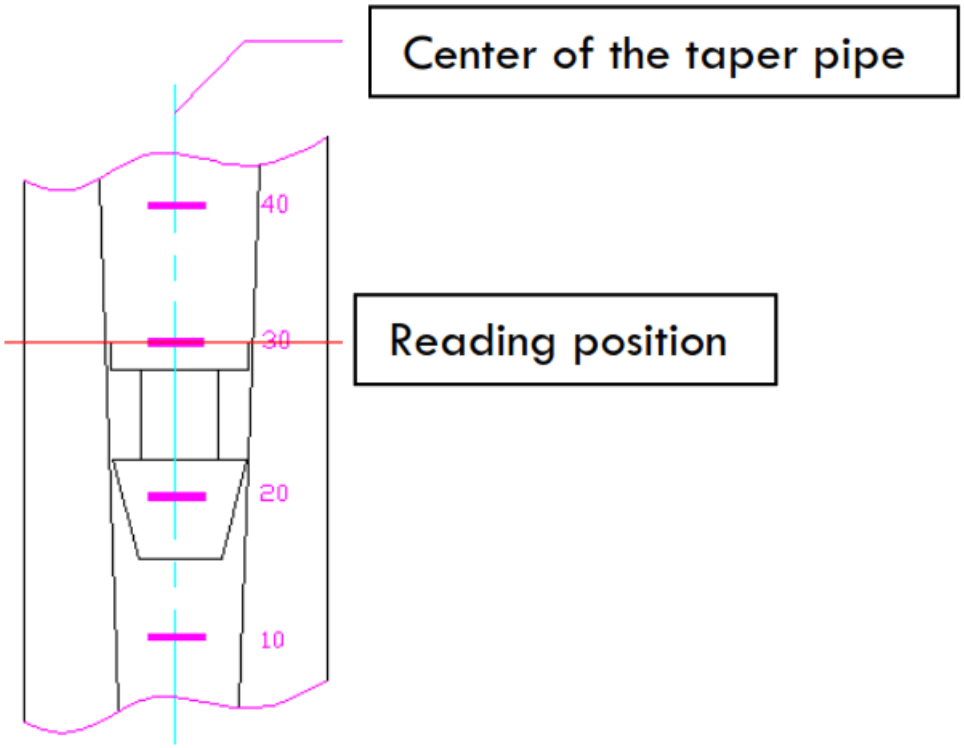
12. Power socket
13. Cooling Fan

3.2 Joining process for fast coupling

3.2.1 The PTFE pipe end can be inserted into the fast coupling.

3.2.2 When the PTFE pipe need to be pulled out, Press down the clamp ring of the fast coupling with left hand. At the same time, grasp tightly the PTFE pipe end with right hand and pull it out in an upright manner. Attention: Be sure not to pull the bellows in a rude manner.

3.3 Reading of the flowmeter



Installation

4.1 Installation Requirements
4.1.1. The instrument shall be installed in a level position.
4.1.2. A reliable AC220V power supply shall be located near the Exhaust System and shall be preferably equipped with an independent air switch and leakage protector.
4.1.3. The Exhaust System shall be located where there is favorable ventilation, though, the waste gas is harmless after disposal.

4.2 Installation

4.2.1. The Exhaust System shall be installed in a level position nearby the digestor and digestion waste discharge system.
4.2.2. Connect the power cord for Exhaust System and switch on the power.
4.2.3. Connect the waste gas outlet of the digestion waste discharge system and the waste gas inlet of Exhaust System to the PTFE bellows.
4.2.4. Switch on the Exhaust System, pump start working.
4.2.5. Turn the knob on the front and bottom side of the instrument until the required gas pumping speed is reached.
(The normal gas pumping speed may be generally selected to be 1.2 m 3 /h for every 20 digestion samples.)

Operation of the Instrument

5.1 Sample Preparation

5.1.1. Preparation of the NaOH solution
The concentration of NaOH solution shall be 10 % – 30 %.
Na2CO3 solution can be used as a substitute for NaOH solution and formulated in two ways:

- Dilute 600 g Na2CO3 with 3 L warm distilled water.
- Dilute 1.7 kg Na2CO3·10H2O with 3 L warm distilled water.

5.1.2 Add pH indicator to NaOH solution:

Indicator shall be added to the NaOH solution. Normally 100 mg bromothymol blue shall be added to per 3 L NaOH solution. As a pH indicator, bromothymol blue is insoluble in water. It is freely soluble in ethyl alcohol,

taking on sandy beige and freely soluble in diluted alkaline solution, taking on blue. The color ranges from yellow, via green to blue, with the pH value ranging from 6.0 to 7.6.
Other pH indicator can be used on condition that meets the requirements.
5.1.3 The three tanks shall be cleaned and dry if they will not be put to use for a long time after the experiment.
5.1.4 Soda lime is made of no reusable particles. Thus it shall be replaced for new one after complete reaction.
5.1.5 The active carbon in the tank shall be replaced for dry one, and the replaced active carbon may be put into drying oven for reuse.
5.1.6 When the knob is turned to the maximum position and the indication from the flowmeter is below 1m 3 /h, please screw off the filter cap in the active carbon tank. Then put it under the running water tap for 5 minutes for washing in order that the filter cap is not blocked with solid particles. (Be sure not to hold tightly the filter section in the cap in case it is damaged.)

5.2 Operating procedure of the instrument

5.2.1 First, connect the gas inlet of Exhaust System to the gas outlet of the digestion waste discharge system properly.
5.2.2 Fill the inner tank with soda lime and active carbon until they reach the scale. Shake the tank while filling in order that the soda lime and active carbon is tamped.
5.2.3 Check every tank cover for leakproofness and the piping connection for accuracy. (The tank cover may be put into the neck in the case and screwed tight for leakproofness after tightening.)
5.2.4 Turn on the main switch for the Exhaust System to enable the pump.
5.2.5 Turn the knob on the front and bottom side of the instrument until the required pumping speed is achieved.
5.2.6 Put the digestor into operation and the sample digestion starts.
5.2.7 Shut down the digestor and leave the Exhaust System running in non-load condition for 10 minutes after completion of the sample digestion, which serves as protection for the pump.
5.2.8 Switch off the power and Exhaust System stops running.

Notice: Two ways of filling the neutralizing tank:

1. Pour the NaOH solution with the indicator into the neutralizing tank directly.
2. Fill the inner tank with soda lime and then put it into the outer tank.

Maintenance and Service

6.1 Maintenance

6.1.1 Regular check for the gas piping is required. Timely maintenance and replacement shall be carried out in case of loosening or leakage.
6.1.2 Corrosion may occur due to strong acid in the piping. Stop using the instrument if the corrosion is in a severe condition. Please consult with your provider and handle it properly under the direction of the customer service staff.
6.1.3 Timely replace the gas Exhaust System and the neutralizer.

6.2 Service

Item No.	Faults	Analysis	Solutions
1	No power for the complete machine	a.The fuse is burned b.Loose joining of the power line	a.Replace the fuse b.Join the power line properly
2	Incomplete waste gas disposal	a.Complete reaction of the soda lime b.Insufficient neutralizer	a.Replace for new soda lime b.Replace for new NaOH solution
3	Malfunction of the pu mp	a.Pump broken b.Power line of the pump cut off	a. Please consult with your provider. Check and repair it until t he circuit functions properly
4	Insufficient suction force of the pump	a.Low voltage b.Leakage in the whole waste gas pipi ng	a.Make the voltage stable (Install A C stabilized-voltage power) b.Check and repair the piping
5	Gas leakage	Leakage somewhere of the waste gas piping or the joining	Stop digestion and just enable the Exhaust System for piping repair

Declaration and Safety Instructions

7.1 Declaration
This product has a 1 year warranty for the complete machine after the date of sale (subject to the invoice date), except in the following cases:
7.1.1 Expiration of the warranty period;
7.1.2 Damages of the instrument arising from misuse;
7.1.3 Damages due to disassembly without authorization of the manufacturer;
7.1.4 Damages of the instrument caused by improper storage.
7.2 Safety instructions
This section serves as safety instructions regarding use of the instrument in the user manual, including safety operation and warning of dangers in use. Please read carefully the provisions as follows. In the event of negative effects arising from imprudent implementation of the following provisions, the customer shall take the responsibility.
7.2.1 Be wearing the protection suit and the eye shield during operation as the acid in the digestion is strong acid.
7.2.2 Shut down the instrument and be sure not to continue operation in case of accident during the operation.
7.2.3 Operation of the instrument shall only be performed by specialized personnel and strictly trained professionals.

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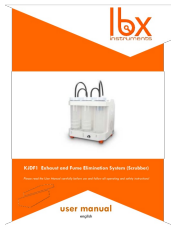
Documents / Resources

	IbX instruments KJDF1 Exhaust and Fume Elimination System [pdf] User Manual KJDF1 Exhaust and Fume Elimination System, KJDF1 Exhaust, KJDF1, Exhaust, Fume Elimin ation System

References

- Lab supplies - Labbox Export