LAUPER INSTRUMENTS JPES Gas Detection User Manual

Contents

LAUPER INSTRUMENTS JPES Gas Detection

Product Information

The JPES series of heated gas sample probes is designed for use with dust and aerosol-containing gases in extractive sampling systems. It is especially suitable for measurement in non-stationary applications. The JPES can be used with water vapor and high dew point corrosive gases, which must be kept above their dew point to prevent corrosion and sample degradation prior to analysis or sample conditioning. The JPES can be delivered with a large assortment of accessories and several filter elements to meet user-specific applications.

Features

- Heated sample line JHSo
- Heated sample pipe JBER
- Portable sample probe JPES
- Filter elements of various materials
- Easy filter replacement without tools and without disconnecting the heated sample hose

Product Usage Instructions

Mounting:
The JPES gas sample probe should be mounted in a position where it can capture a representative sample of the gas stream being monitored. The probe should be securely mounted using appropriate hardware such as brackets or clamps.

Installation
Before installing the JPES gas sample probe, ensure that the unpacking process has been completed correctly. The installation instructions should be followed carefully, including mounting and electrical connections.

Start-Up
After installation, the JPES gas sample probe should be checked thoroughly to ensure that all connections are secure and that there are no leaks. Once the system has been checked, the probe can be started up by applying power to the heating element and allowing the system to warm up. It is recommended to wait until the sample line and probe have reached the desired temperature before taking measurements.

Demounting
When the JPES gas sample probe is no longer required, it should be demounted carefully. All electrical connections should be disconnected, and the probe should be carefully removed from its mounting position. The probe should be stored in a safe and secure location to prevent damage.

Maintenance and Service
The JPES gas sample probe requires regular maintenance to ensure that it continues to function correctly. The O-rings and filter element should be checked and replaced as necessary. Filter replacement can be done easily without any tools and without disconnecting the heated sample hose.

OPERATING MANUAL

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Introduction

The JPES series of heated gas sample probes is designed for use with dust and aerosol-containing gases in extractive sampling systems, especially for measure-ment in not stationary applications. Water vapour and high dew point corrosive gases must be kept above their dew point to prevent corrosion and sample degradation prior to the analysis or sample conditioning.
The JPES can be delivered with a large assortment of accessories and several filter elements to meet user-specific applications.
The JPES incorporates a non-corrosive heated, replaceable filter element. The filter element is mounted in a thermally isolated and electrically heated stainless steel housing covered by a protective enclosure.
The temperature regulation is done by a maintenance-free, PTC heater. The heated sample line JH-SO 9412 series is directly connected with the probe housing with a Quick On connection.
For proper selection of various sample pipe constructions and materials as well as filter elements please refer to our trained personnel.

Mounting
The complete unit consists of the heated filter head, mounting and installation material. The probe is mounted directly to a sampling hole or flange. If the assembly takes place horizontally, the JPES should be built in an angle at least between 5° and 15° from the horizontals falling, to allow condensate flow back into the process.

Versatile
Different pipes – heated and unheated – materials and filters as well as heated sample lines make the JPES very flexible for different applications.

Service and security
Filter replacement can be done easily without any tools and without disconnecting the heated sample hose.

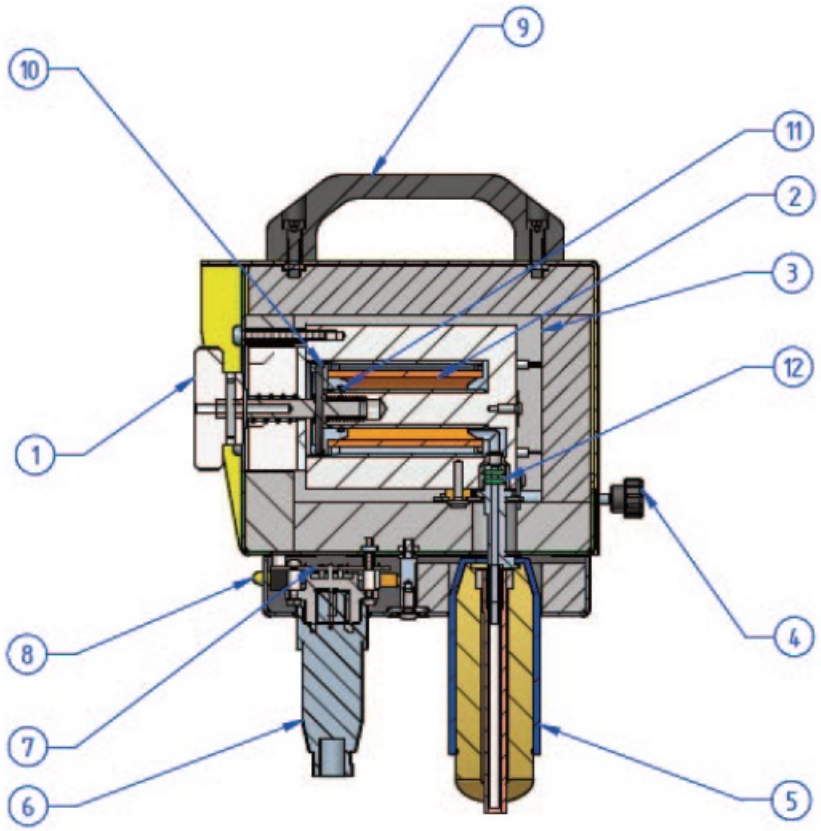
General safety information
Gas sample probes are sophisticated devices intended for use by qualified personnel only. It is necessary that this manual is been read and understood by those who will install, use and maintain this equipment.

Intended Use
The portable heated gas sampling probe is designed for mobile use in gas analysis systems. Please observe the technical specifications regarding ambient and supply conditions and admissible temperature limits.

CAUTION
The sample probe JPES is not suitable for use in hazardous areas.

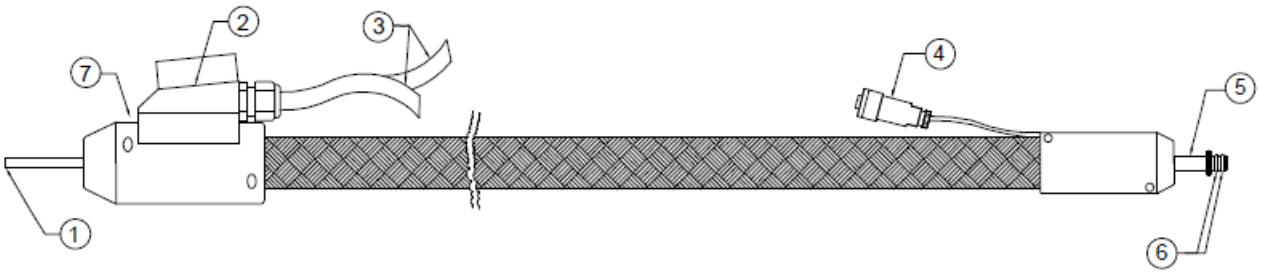
Description

Portable sample probe JPES



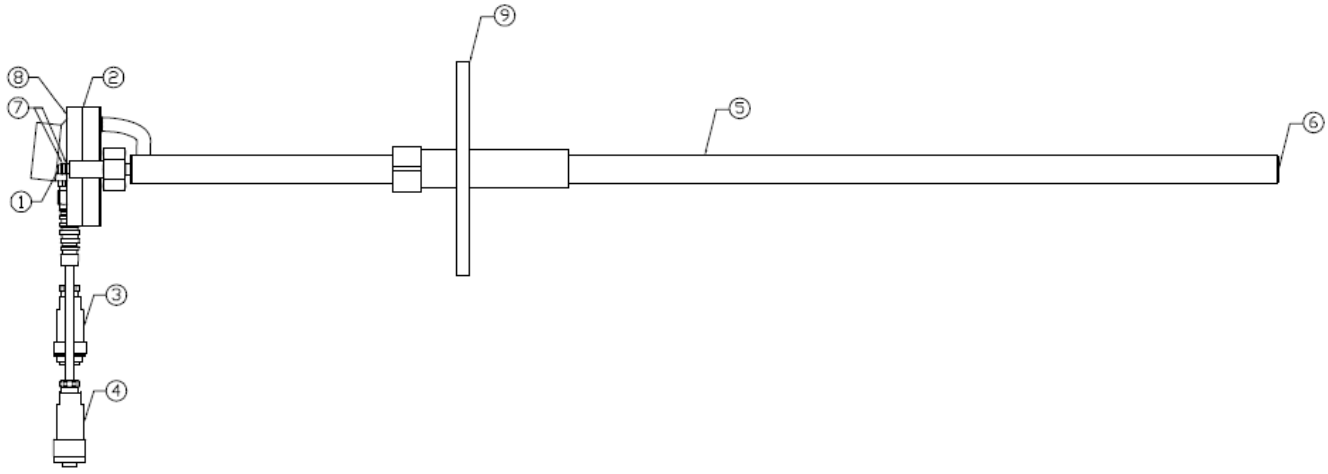
1	Filter lock
2	Filter element
3	Isolation
4	Quick On lock
5	Heated sample line
6	Cable connector
7	Printed circuit board
8	Status and supply indicators
9	Carrying handle
10	O – ring B (Filter lock outside) Ø 33 mm
11	O – ring A (Filter lock inside) Ø 15 mm
12	O – ring C (Quick On connectors) Ø 6 mm

Heated sample line JHSo



1	Connector stub stainless steel
2	Integrated temperature controller
3	2 x 2 m power and status cord
4	0.3 m cable with cable connector to sample probe or to heated sample pipe
5	Quick on connector to sample probe
6	O-ring C (Quick On connectors) Ø 6 mm
7	Heater indicator

Heated sample pipe JBER



1	Quick on connector to sample probe
2	Integrated temperature controller
3	0,3 m cable with cable plug from heated hose JHSo
4	0,5 m cable with cable connector to sample probe
5	Double tubed sample pipe
6	Thread connector R 3/8”
7	O-ring C (Quick On connectors) Ø 6 mm
8	Heater indicator
9	Positioning flange for grid measurements

Calibration port
The calibration port allows calibration on the raw gas side with minimum effort.

NOTE

For optimal performance of the sample gas probe JPES we recommend the use of JCT heated sample hoses. These are available in different designs and connection configurations for in-doorand as well for out door use. Additional installation materials and guidelines for professional mounting are also available at JCT.

Filter elements of various materials

- PTFE
- stainless steel
- glass fibre

Technical data

JPES

Operation data

Filter elements	GF, PTFE, SS
Filter surface	50 cm2
Operating pressure	50 kPa
Flow rate	up to 200 NL/h, depending on filter element
Sample gas wetted parts	SS316Ti, Viton®
Operating temperature nominal	+180°C
Operating temperature max.	+200°C
Heat up time	< 15 min
Permissible ambient tempe- rature	-20°C…+55°C
Protection class in mounting position	IP 42
Area classification	for use in safe, nonhazardous area only

Construction

Dimension over all	155 x 188 x 184 mm WxHxD
Sample pipe (standard)	SS316Ti, L= 300 mm, Ø 10 mm
Dead volume	36,3 cm3
Mounting flange	20 – 60 mm
Mounting angle	range 5° to 15° with respect to the horizontal, sloping down
Mounting position	any
Weight	3,1 kg

Housing material	sheet steel, powder coated
Housing colour	RAL 7037
Sample gas connection	Quick On
Heated line connection	Quick On (max. 5 kg vertical load)
Calibration port	Quick On
Approval / Sign	CE

Electrical

Power supply	230 VAC or 115 VAC/ 50/60 Hz +/- 10%
Heater element	PTC self limiting
Power consumption	approx. 160 W
Inrush current	3 A
Status signal	Volt free contact
Contact load	min. 24V DAC / 50 mA;
Low temperature contact limit	max. 230 VAC / 5A cosP 0,95
Switching hysteresis	+150°C (± 5°K)
Connector 7-pin	± 15°K

Subject to change without notice

Technical data JHSo

Heated sample line

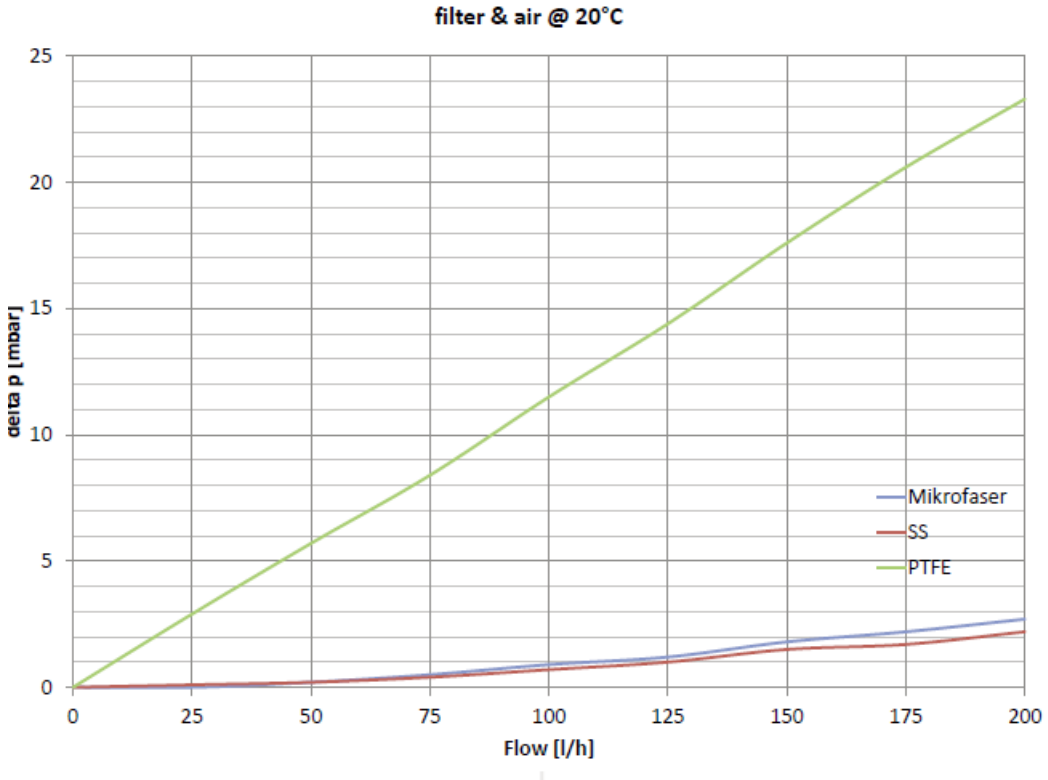
Supply voltage	115 VAC or 230 VAC/ 50/60 Hz
Power consumption	approx. 100 W/m
Heater	Integrated temperature controller
Protection shell	PA-braided
Outer diameter	35 mm
Minimal bending radius	50 mm
Colour	Black
Operating temperature max.	+180°C
Heat up time	< 15 min
Fusing	External, on site
Weight	approx. 0,7 kg/m
Inner core	PTFE
Nominal width inner-liner	ID/OD 4/6 mm
Signal cord	2 x 0,75², open endings
Power cord	CEE 7/7 or country specific plug
Cable length	2 m
Protection class	IP54

Technical data JBER

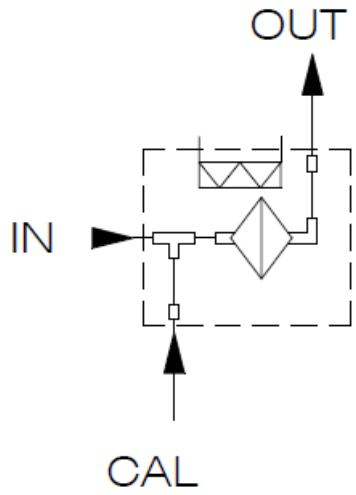
Heated sample pipe

Supply voltage	115 VAC or 230 VAC/ 50/60Hz
Power consumption	approx. 530 W
Heater	Integrated temperature controller
Gas wetted parts	SS 316 Ti
Outer diameter	25 mm
Nominal width inner-pipe	ID 4 mm
Length	500 / 750 / 1000 / 1500 / 2000 / 2500 mm
Length over all	610 / 860 / 1110 / 1610 / 2110 / 2610 mm
Weight	1,1 / 1,2 / 1,4 / 1,8 / 3,0 / 3,6 kg
Operating temperature	+180°C
Sample gas temperature	max. 250°C
Heat up time	< 15 min
Connector 7-pin	Power supply via heated hose
Protection class	IP54

Pressure characteristics (with new filter)



Flow charts



Installation, unpacking

- Check instrument for any damage caused by shipping. If any damage is established, contact the carrier and dis-tributor immediately.
- Check instrument and any other parts against order.

Installation instructions

- Disconnect mains before working on electrical part of equipment.
- The equipment has to be connected and grounded according to the local rules and regulations.
- It is essentially necessary to keep the electronics away from radiant heating (thermal insulation). The ambient temperature must not exceed 60°C.
- The probe mounting has to be done always with a minimum inclination of 5° towards the sampling pipe. This is necessary to prevent a possible flow back from condensate into the probe.

Mounting

- Mount filter element according to description.(Refer to chapter “Maintenance and service”).
- Push in sample pipe and tighten union nut stalwart.

CAUTION
Sealing is radial. Tighten stalwart only!

NOTE
Lateral mobility of the sample pipe is normal as sealing is radial.

- Mount the probe with a gasket or universal adapter with aid of some PTFE paste on the process flange or sampling hole. (see “Installation example”)
- The universal adapter which is part of the set is suitable for nominal pipe sizes up to 60mm. Adapters for larger diameters are available on request.
- Hang up the JPES sample probe with a mounting chain.
- Take care of the correct mounting angle according to technical specifications.
- Connect the sample line to the JPES by pulling out the Quick On lock and pushing in the sample line. Then

connect the other end to the sample conditioning or analyzer.

- Establish electrical connections, supply as well as the status contact for the analyzer.
- Connect the cable connector of the heated sample line (4) with the sample probe.
- for heated sample pipe: install electrical connection from heated sample line via heated sample pipe to probe, i.e. connect cable plug (3) of heated sample pipe with heated sample hose and cable connector (4) with the probe.

CAUTION
Quick On must lock into place properly.

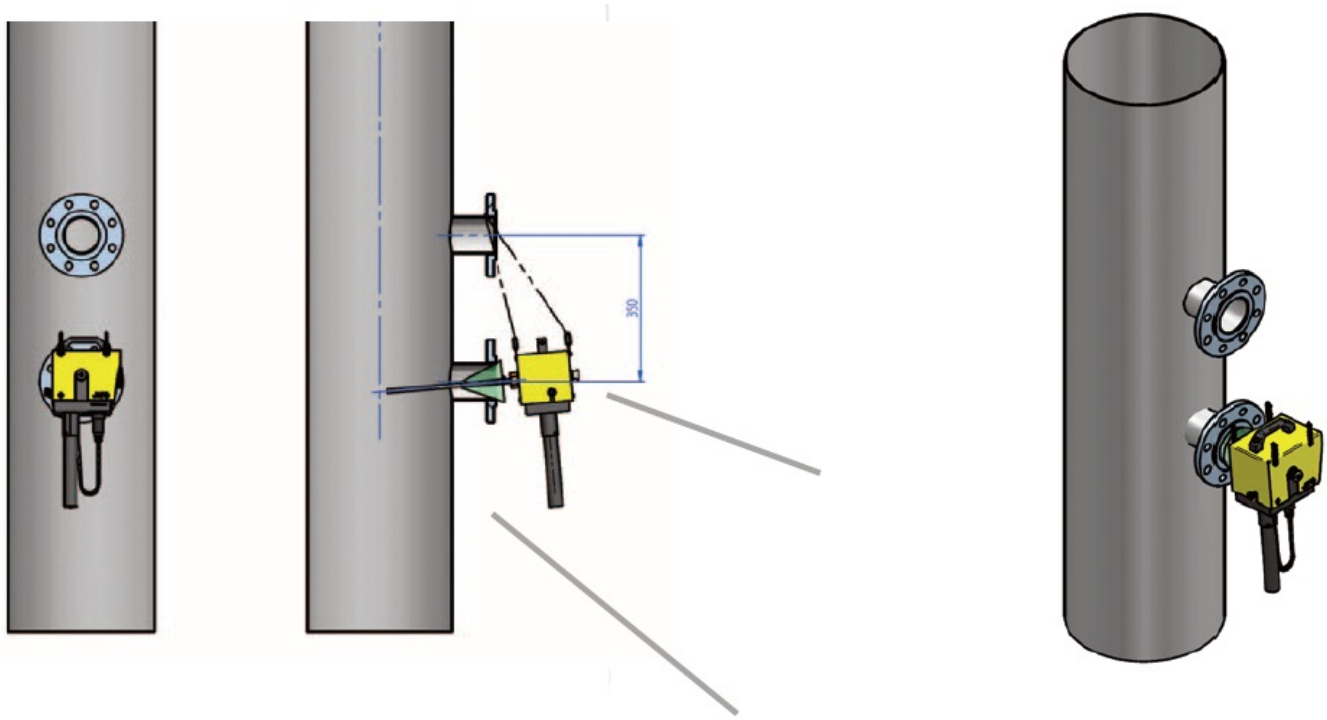
CAUTION
If the sample gas temperature exceeds 250°C, mount sample probe not flush but in adequate distance or with a thermal isolation mat.

NOTE
Maximum temperature for the universal adapter is 250°C.

NOTE
The heated sample line must be strain relieved and must not be hung on the fitting

CAUTION
Never use grease for mounting sample pipe!

Installation example



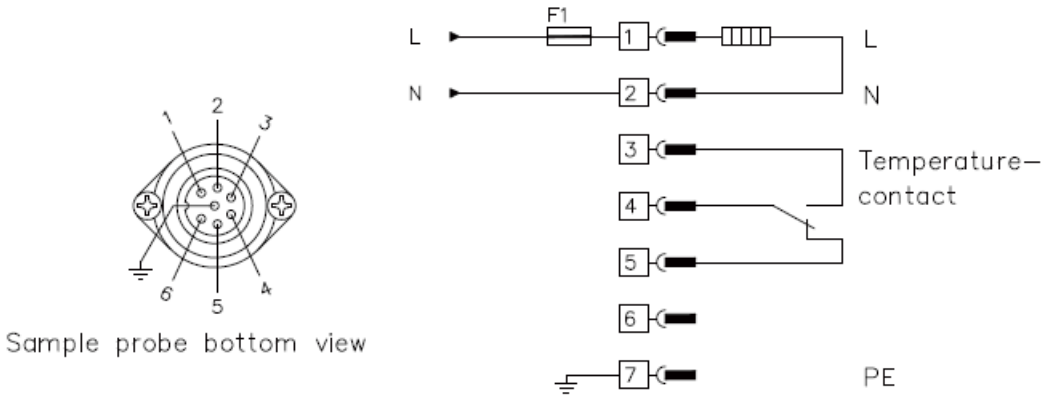
Electrical connections

- Check local voltage, frequency, and power consumption against type plates of probe, heated line, and (if applicable) heated pipe.

- Connect mains to the supply outlet and JPES temperature status contact to the analyzer. If needed, connect a 2-pole switch in the main supply. The JPES sample probe is not equipped with a switch.
- The operator must provide suitable stress relief for all cables.
- Fusing has to be done on-site according to local rules and regulations.
- Take care of min. bending radius and mechanical support by the mounting of the heated hose.

Electrical interface

Electrical interface (probe only)



CAUTION

This unit is operated with mains power. During operation, some parts of the unit are energized with dangerous volt-age! During operation, the housing of the probe can get very hot. Removing the probe housing will expose heated parts. Disconnect power before repair or maintenance and ensure that the internal temperature has dropped to a safe level before working on it. Always wear heat-resistant gloves. There is a burn hazard if necessary precautionary steps are not taken. This unit is not intended for use in explosion-hazardous areas or with explosive or flammable gases and must not be operated under these conditions. If these warning notices are ignored possible serious injuries and/or damages may be caused.

Only qualified staff who has been trained according to this manual should operate and maintain this instrument. For certain and safe operation the instrument needs to be transported carefully, be part of a well-planned application, installed correctly as well as operated and maintained according to these instructions. Requirements

for qualifications of staff: Qualified staff in the sense of this manual and/or the warning references are persons, who are familiar with assembly, mounting, start-up, and operating of this prod-uct and have sufficient qualifications for their tasks.

Startup

1. Check of the proper installation
2. Review the equipment for damage
3. Check for leaks.
4. Ensure that the unit, filter room, and filter element are clean and no foreign particles are inside.
5. Check all connectors and cable glands for a tight fit.

   CAUTION Before switching on the sample probe ensure that the operating voltage of the unit and the line voltage are identical.
6. Switch on the power supply of the JPES sample probe. The yellow LED is turned on. After a lead time of approx. 15 minutes the green LED lights up and the operating temperature is reached.

NOTE
Any smell at the first time heat up is normal and is no reason for a warranty claim. New filter elements and sealings may influence the measurement results. It is recommended to purge the gas sampling probe diligently in heated condition.

Feeding of calibration gas:

1. Feed calibration gas with minor overpressure (approx. 2l/min more than sample gas flow) into the calibration port.
2. Excess calibration gas flows off into the process.

Demounting

- Purge the probe with air or inert gas for approx. 20 min.
- Disconnect units supply at the site and disconnect the status contact.
- Take the heated line out of service.
- Disconnect cable connector from JPES respectively from heated sample pipe.
- Loosen Quick on lock from probe and remove it downwards.
- Remove probe from sample duct.
- Disassemble sample pipe with disassembling aid.
- Store and dispose with expertise.

Transport & storage

To ensure flawless usage over many years, transport and store of the JPES sample probe, the heated sample line and their accessories, only in appropriate transport cases (e.g. JPES carrying case).

Maintenance and service

NOTE
If an item is returned to JCT Analysentechnik, for main-tenance or repair reasons, it will only be accepted after the RMA form on our website has been completed (**www.jct.at/rma**). This is to ensure the security of JCT staff.

Recycling

The unit contains elements which are suitable for recy-cling, and components which need special disposal. You are therefore requested to make sure that the unit will be recycled by the end of its service life.

Replacement of O-rings
O-rings are consumables. Replace indurate or damaged O-ring seals (A, B, C) of heated sample line or filter lock.

- Shut down JPES sample probe and heated sample line and wait for cool down.
- Pull off O-rings with non metallic tool (wood- or plas-tic wedge).
- Apply a thin wetting of PTFE paste on O-rings and pull them on.

Replacement of filter element
Filter elements, O-rings and gaskets are consumables and have to be replaced regularly, at least once a year. Ensure that sealing surfaces are clean and unhurt. Please note that FFKM sealing materials are aging irre-versibly at high temperatures. This process is called “outgasing”.

Burn hazard!
Use heat resistant gloves.

CAUTION
The housing of the probe may get very hot!Take care, in case of process over pressure, explosive and/or toxic gas emanation is possible. To avoid accidents take care for necessary safety pre-cautions in case of service and maintenance.

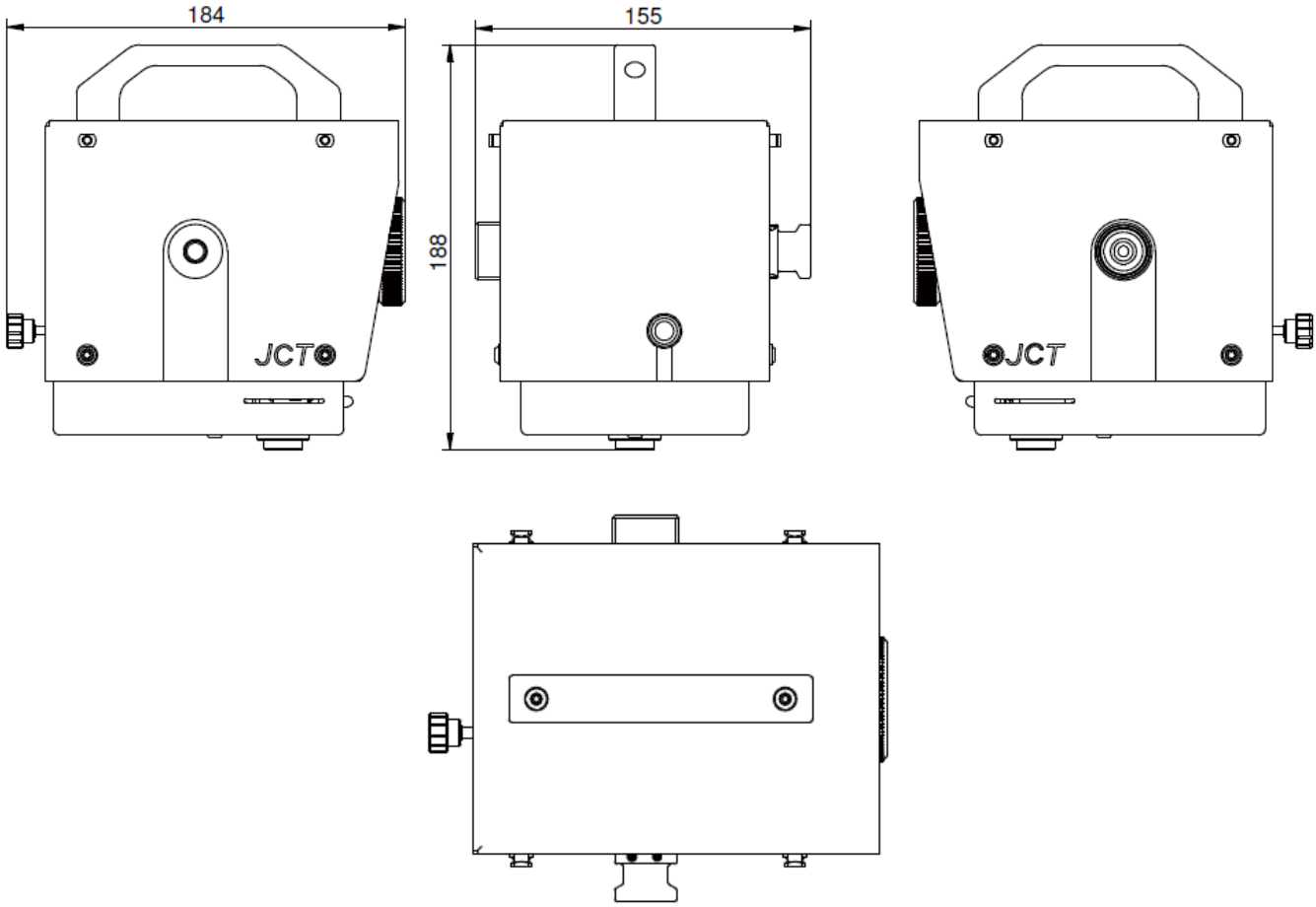
For cleaning or replacing following steps should be done:

1. Switch off the power supply and wait for cooling down of the probe.
2. Turn away the filter lock (Pos 1) for pulling out the filter element.
3. ‘Take-off the filter element (Pos 2) from the support tube of filter lock (Pos 1). Pull out filter element and if applicable gaskets.
4. Replace the filter element (Pos 2) and/or the gaskets (applies only for sieve filter elements).
5. Remount the filter element (Pos 2) and if applicable the gaskets.
6. Screw on the filter element-screw stalwart.

CAUTION
Tightening is radial. Tighten stalwart only!

NOTE
Any smell at the first time heat up is normal and is no reason for a warranty claim. New filter elements and sealings may influence the measurement results. It is recommended to purge the gas sampling probe diligently in heated conditions.

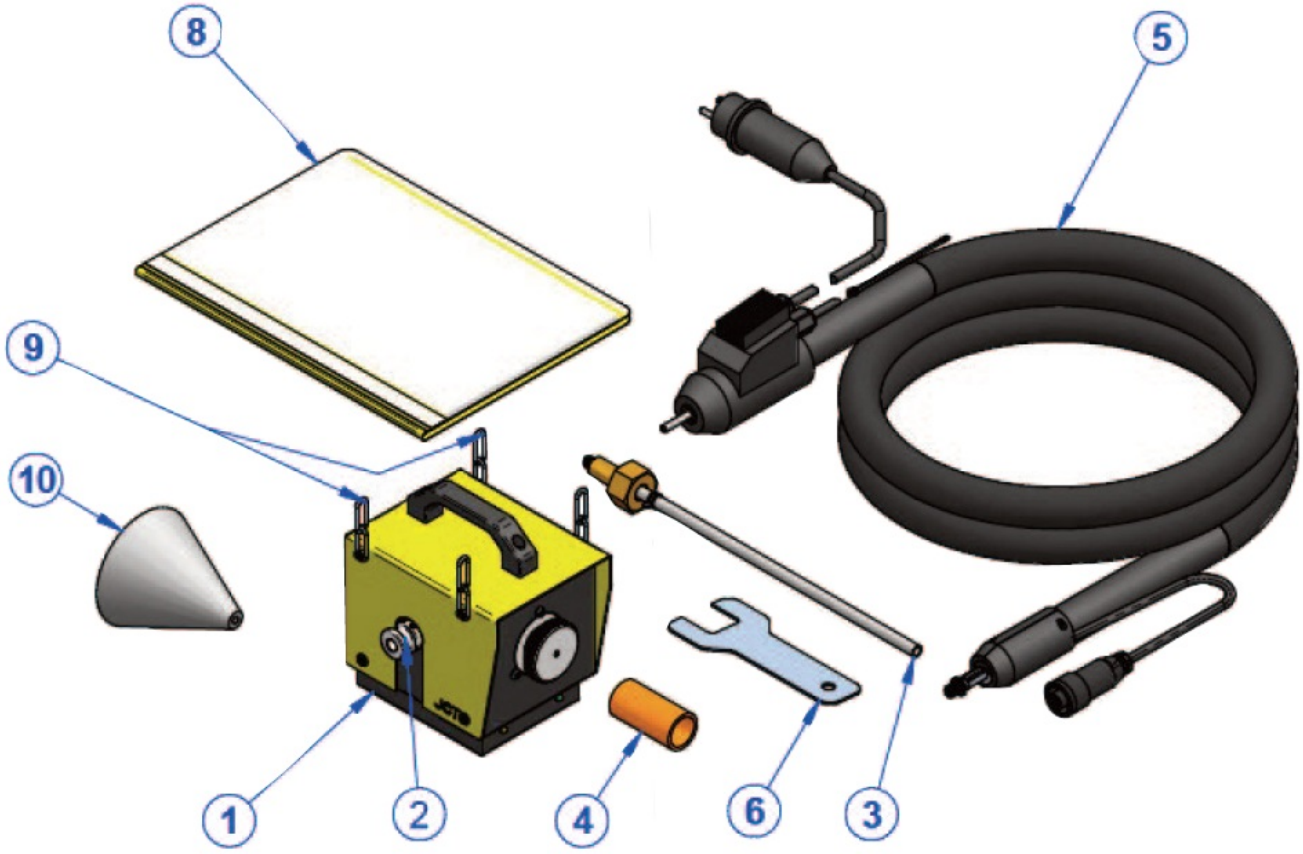
Dimensions



Order codes

partno	Description
34.00150	JPESX Starter kit, 115 VAC
34.00250	JPES Starter kit, 230 VAC
34.00180	JPESX Premium kit, 115 VAC
34.00280	JPES Premium kit, 230 VAC

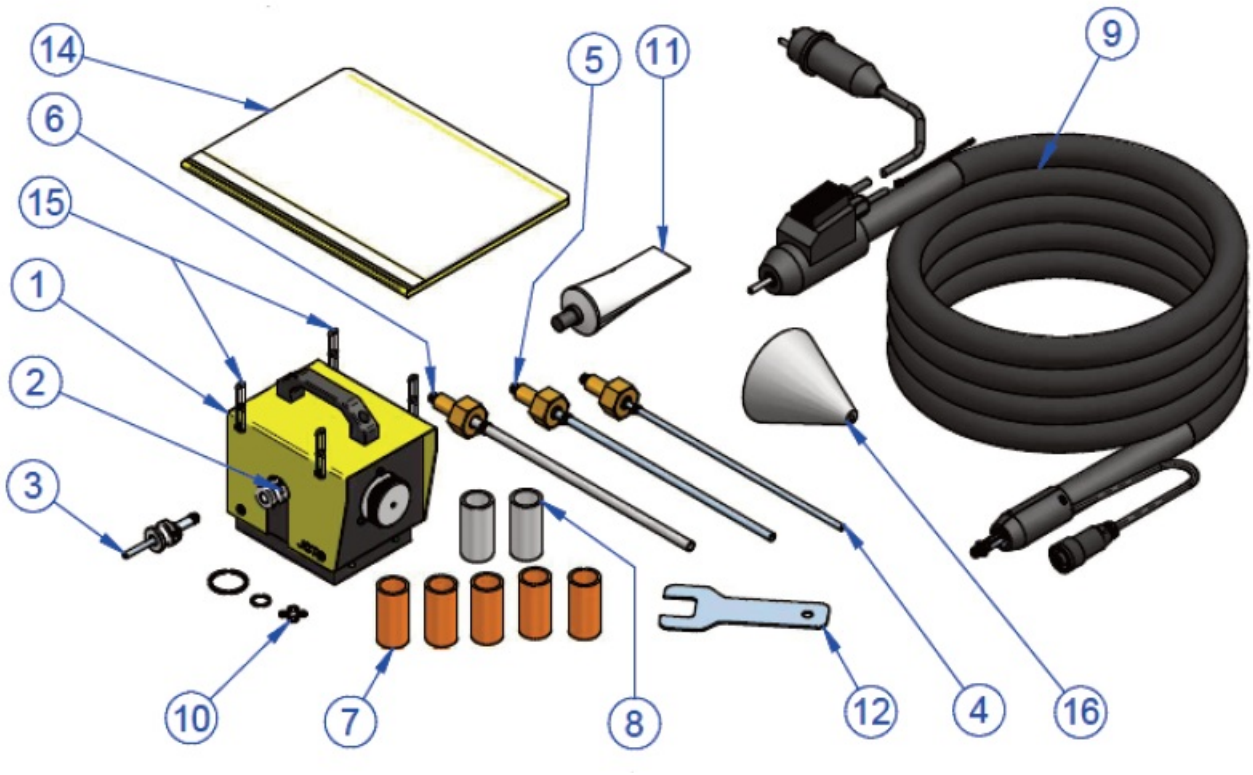
Scope of delivery JPES Starter kit



Content

1	1x Portable sample probe JPES,
2	1x Calibration gas tamping
3	1x Sample pipe Ø 10 mm, length 300 mm
4	1x Filter microfiber
5	1x Heated sample line 3 m
6	1x Disassembling aid
7	1x Carrying case*
8	1x Operating manual
9	1x Mounting chain (l=2 x 1 m)
10	1x Universal sample pipe adapter

Scope of delivery JPES Premium kit



content

1	1x Portable sample probe JPES
2	1x Calibration gas blind plug
3	1x Calibration gas connector (on request with fitting)
4	1x Sample pipe Ø 6 mm, length 300 mm
5	1x Sample pipe Ø 8 mm, length 300 mm
6	1x Sample pipe Ø 10 mm, length 300 mm
7	5x Filter element microfiber
8	2x Filter element PTFE
9	1x Heated sample line 5 m
10	1x O-ring set
11	1x PTFE paste 113,4 g collapsible tube
12	1x Disassembling aid
13	1x Carrying case*
14	1x Operating manual
15	1x Mounting chain (l = 2 x 1 m)
16	1x Universal sample pipe adapter

Accessories

- **Description**
  - O-ring removal tool

Heated sample lines
Heated hose 230 VAC l=3 m inside 6x4mm integrated controller
Heated hose 230 VAC l=5 m inside 6x4mm integrated controller
Heated hose 230 VAC l=7 m inside 6x4mm integrated controller
Heated hose 230 VAC l=10 m inside 6x4mm integrated controller
Heated hose 230 VAC l=15 m inside 6x4mm without controller
Heated hose 230 VAC l=20 m inside 6x4mm without controller
Heated hose 115 VAC l=3 m inside 6x4mm integrated controller
Heated hose 115 VAC l=5 m inside 6x4mm integrated controller
Heated hose 115 VAC l=7 m inside 6x4mm without controller
Heated hose 115 VAC l=10 m inside 6x4mm without controller
Heated hose 115 VAC l=15 m inside 6x4mm without controller
Heated hose 115 VAC l=20 m inside 6x4mm without controller

Filter elements
Filter element microfiber 2 µm (5 pcs.)
Filter element PTFE 2 µm (3 pcs.)
Filter SS sieve fabric 2 µm, incl. sealing
Sample pipes
SS316Ti, ID/OD 10/12 mm, max. 600°C; L= 300 mm
SS316Ti, ID/OD 10/12 mm, max. 600°C; L= 500 mm
SS316Ti, ID/OD 10/12 mm, max. 600°C; L= 1000 mm
SS316Ti, ID/OD 10/12 mm, max. 600°C; L= 2000 mm
SS316Ti, ID/OD 8/10 mm, max. 600°C; L= 300 mm
SS316Ti, ID/OD 8/10 mm, max. 600°C; L= 500 mm
SS316Ti, ID/OD 8/10 mm, max. 600°C; L=1000 mm
SS316Ti, ID/OD 6/8 mm, max. 600°C; L= 300 mm
SS316Ti, ID/OD 6/8 mm, max. 600°C; L= 500 mm
SS316Ti, ID/OD 6/8 mm, max. 600°C; L=1000 mm
SS316Ti, ID/OD 4/6 mm, max. 600°C; L= 300 mm
SS316Ti, ID/OD 4/6 mm, max. 600°C; L= 500 mm
SS316Ti, ID/OD 4/6 mm, max. 600°C; L=1000 mm

Heated pipes with integrated temperature controller
heated sample pipe 230 VAC, l=500 mm
heated sample pipe 230 VAC, l=750 mm
heated sample pipe 230 VAC, l=1000 mm
heated sample pipe 230 VAC, l=1500 mm
heated sample pipe 230 VAC, l=2000 mm
heated sample pipe 230 VAC, l=2500 mm
heated sample pipe 115 VAC, l=500 mm
heated sample pipe 115 VAC, l=750 mm
heated sample pipe 115 VAC, l=1000 mm
heated sample pipe 115 VAC, l=1500 mm
heated sample pipe 115 VAC, l=2000 mm
heated sample pipe 115 VAC, l=2500 mm
pre filter for heated sampling pipe JBER
Positioning flange for grid measurements
DN 65, PN6; DIN 2573; SS 316
2“, SS 316
3“, SS 316

Adapter for third-party heated lines without Quick On connection
Calibration gas connector
Mounting chain (2×1 m)
Disassembling aid (flat spanner)
Stationary sampling point: sample gas connector with ferrule for screw in mounting
Stationary sampling point: sample port with ferrule welded in mounting
Mobile sample point adapter universal (cone-shaped for pipe diameter 20…60 mm)

Spare parts

Description

34.00520	Filter lock complete
34.90025	Calibration gas blind plug
P3400100	Carrying case yellow with shell moulds
K3401001	O-ring for positioning flange

Consumables

Description

part no		**Description**
34.90011	O-ring A (Filter lock inside) Ø 15mm	
34.90013	O-ring B (Filter lock outside) Ø 33mm	
34.90012	O-ring C (Quick On connectors) Ø 6mm	
34.90010	O-ring set consisting of: 1x O-ring A, 1x O-ring B, 4x O-ring C	
K3419010	PTFE paste 113,4g collapsible tube	

Fault diagnostic checklist

Malfunction	**Cause / remedy**
No operation	• check power supply and fuses
Low tempe- rature	• operating conditions beyond specificati- ons check operation conditions • Heater defective call JCT service
Wrong mea- surements	• check O-ring sealings replace O- rings
Flow blocked or too low	• filter element clogged check pre filter (if applicable) replace filter element • operating conditions beyond specificati- ons Add additional pre filter

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Documents / Resources

	LAUPER INSTRUMENTS JPES Gas Detection [pdf] User Manual JPES Gas Detection, JPES, Gas Detection, Detection

References

- suche.ch
- PART
- Home | Lauper Instruments

Manuals+,