VKP 41*plus* (Ex)

Test Equipment for Steam Traps

TRAP*test* VKP 41*plus* Ex
TRAP*test* VKP 41*plus*

Description

Steam trap testing, recording & evaluation system **TRAP*test* VKP 41*plus*** (**VKP 41*plus* Ex** for applications in potentially explosive areas) for checking steam traps of **all types and makes** for steam loss and banking-up of condensate.

The test equipment consists of the **data collector,** the **Com Box** with **measuring transducer** and the software program for data management on the PC.

Function

The test equipment detects and evaluates mechanical ultrasonic vibrations on the surface of the trap body caused by the media flowing through the steam trap.

By pressing the sensor tip onto the point on the trap body characteristic of the respective trap type the ultrasonic vibrations are then picked up by the hand-held probe (=measuring transducer) and converted to digital signals.

The recorded ultrasonic vibrations are analysed by the data collector and evaluated in accordance with certain empirically ascertained limit values that depend on the trap type. During the test the temperature of the steam trap is measured, too. Provided that the service pressures are specified, the system can also identify blocked (waterlogged) steam traps.

If the annual operating hours and the specific steam costs have been entered in the system GESTRA TRAP*test* VKP software can calculate CO_2 emissions and the financial loss caused by faulty steam traps. To quantify the steam loss caused by faulty steam traps, empirical values obtained from laboratory tests are used as reference.

All curves recorded for a steam trap as well as the associated numerical test results including the associated evaluation and calculation can be stored and printed out. This permits comparing current test results with one another and with those of former tests. Regular tests will thus yield useful information on the service life, standard maintenance intervals of stream traps and costs associated with faulty equipment and then allow specifying the best steam trap system for the application.

Technical Data

System requirements for PC software

- Operating system Microsoft Windows 7SP1, Windows 10
- 4.2 GB free hard disk space
- minimum 4 GB RAM

Duration of one trap test
At least 10 sec., max. 20 sec.

Data collector
4" colour multi-touch display
Protected against dust and splashing water: Protection IP 68
Resolution 480 x 800
Bluetooth range distance: 8 m
Lithium ion batteries (capacity VKPN 41*plus* Ex 3600 mAh, VKPN 41*plus* 4800 mAh)
Operating voltage: 3.7 V
Capacity of battery ("battery life") approx. 8 hours
USB data cable with accessories

Hand-held measuring probe (measuring transducer)
Measuring range for surface temperature: -10°C to +350 °C
Power supplied by battery in Com Box

Com Box
Lithium ion battery (capacity 1250 mAh)
Operating voltage: 3.7 V
Capacity of battery ("battery life") approx. 8 hours
USB power cable

Scope of supply

1 Transportation case
1 Carrying bag
1 Data collector type VKPN 41*plus* (Ex)
1 USB data cable with accessories for data collector
1 Com Box type VKPC 40*plus* (Ex)
1 USB power cable type VKPA 40*plus* for Com Box
1 Power supply plug for Com box
4 Adapters for power plug for different types of mains sockets
1 Strap to fix the Com box
1 Measuring probe type VKPS 40Ex with connecting cable
1 PC software program TRAP*test* VKP on data carrier
1 Mirror
1 File
1 Operating manual

Materials of construction

Components	**EN**
Body of the measuring probe	3.7035
Housing of the Com Box	ABS (acrylonitrile butadiene styrene)
Transportation case (hard case)	Aluminium / plywood / TCN film / foamed plastic / cardboard
Carrying bag	Nylon Cordura fabric Samoa

Dimensions and weights

Components	**VKP 41plus**		**VKP 41plus Ex**	
	Dimensions (H x W x D) [mm]	**Weight** [g]	**Dimensions (H x W x D)** [mm]	**Weight** [g]
Transportation case (hard case), without content	173 × 450 × 340	4,900	173 × 450 × 340	4,900
Transportation case (hard case), cpl. with content		approx. 6,500		approx. 7,250
Carrying bag, without content	320 × 300 × 40	330	320 × 300 × 40	330
Carrying bag, cpl. with content		approx. 1,300		approx. 2,150
Data collector	137 × 72.1 × 20.8	290	137 × 72.1 × 26.9	370
Com Box	83.0 × 96.0 × 32.0	160	83.0 × 96.0 × 32.0	approx. 560
Measuring probe (diameter × length)	36 × 210	440	36 × 210	440

Test Equipment for Steam Traps

TRAP*test* VKP 41*plus* Ex
TRAP*test* VKP 41*plus*

ATEX and IECEx

Test equipment type VKP 41*plus* Ex is approved for use in explosion-risk areas. The following components are approved for application in explosion-risk area:

- Data collector type VPKN 41*plus* Ex
- Measuring transducer type VKPS 40Ex
- Com Box type VKPC 40*plus* Ex
- Carrying bag

Do NOT use the supplied file and the adjustable mirror in explosion-risk areas!

The equipment can be used in zones (surrounding atmosphere acc. to Directive 1999/92/EC) 1 and 2 (ATEX Directive 2014/34/EC).

Components	Type	ATEX marking
Data collector	VPKN 41*plus* Ex	Europe: II 2G Ex ib IIC T4 Gb IP64
Com Box	VKPC 40*plus* Ex	II 2G Ex ib IIC T4
USB network cable for Com Box:	VKPA 40*plus*	
Hand-held measuring probe (measuring transducer)	VKPS 40Ex	Ex ib IIC T4 Gb

Approval certificate

EC prototype test certificate for TRAP*test* type VKP 41*plus* Ex: BVS 15 ATEX E 002 available on request.

Specification Text

GESTRA TRAP*test* VKP 41*plus* (Ex)

Steam trap testing, recording & evaluation system VKP 41plus (VKP 41plus Ex for applications in potentially explosive areas) for checking steam traps of all types and makes for steam loss and banking-up of condensate

The test equipment consists of the data collector, the Com Box with measuring transducer and the software program for data management on the PC.

The data collector uses a special GESTRA software program. The data collector and the Com Box are Bluetooth enabled devices and allow for easy data exchange between them.

The data collector can be connected to a PC via USB data cable. The supplied GESTRA software program TRAP*test* VKP is installed and run on a PC and allows the user to analyse the test results, use report forms to calculate steam loss and CO_2 emissions and create lists for maintenance schedules, repair work and ordering.

A constant contact pressure, which is independent of the actual pressure applied by the tester, ensures correct readings and, consequently, objective test results. To start the test press the tip of the measuring probe onto the measuring point.

The colour multi-touch display graphically illustrates the course of the test and shows more detailed information on the test. The large backlit colour multi-touch display can be used even in poor visibility conditions.

Supply in accordance with our general terms of business.

Pressure and temperature ratings

Components	Service temperature [°C]	Storage temperature [°C]	Air humidity
Data collector	-20 to +50	-10 to +50	0–95% (not condensing)
Com Box[1])	-10 to +50	-10 to +50	0–95% (not condensing)
Measuring probe [1])	-10 to +60	-10 to +50	0–95% (not condensing)

[1]) Charging temperature: 0 to +35 °C

Measuring range for the adjusted application	Flowrate [kg/h]
Steam tracer and steam line	0 to 20
Heat exchanger	>20

Min. upstream pressure for temperature measurement: 0.1 bar

Max. differential pressure: 20 bar

Specifications

- Universally applicable for steam traps of all types and makes
- Automatic and objective evaluation of steam trap performance, no special knowledge required
- Ultrasonic detector with integrated temperatures sensor for detecting steam loss and waterlogging in steam traps
- Graphic display of measurement in form of a curve
- Normal check and quick check
- Safe, reliable and easy to use thanks to Bluetooth® connection

GESTRA TRAP*test* VKP

- Powerful PC software program
- Database can handle more than 20,000 test objects
- Clear and easy to use routines to analyse the test results
- Easy to calculate steam loss (expressed in the currency of your country)
- Automatic calculation of CO_2 emissions
- Various functions for exporting and importing data
- Large number of customizable report forms
- Many languages already installed, individual adaptation possible
- More types and languages can be added
- Update function

Data collector

- Very compact and extremely robust
- Intuitive operation
- Short test duration 10 or 20 seconds
- Automatic language adaptation for more than 20 languages
- Up to 2500 test objects can be saved
- Very bright capacitive colour multi-touch display for safe operation even with wet fingers or gloves
- VKP 41plus Ex for application in potentially explosive areas
- Camera and telephone function

Annual costs caused by loss of live steam and potential saving

Number of steam traps installed _____

Annual failure rate _____

(empirical value for first test approx.15 – 25 %)

A Number of faulty steam traps _____

B Steam loss per steam trap [kg/h] _____

C Annual operating hours _____

D Annual steam loss A x B x C [kg] = _____

E Cost of steam per ton [Euro/t] _____

F Annual loss D / 1000 x E [Euro] = _____

G Annual savings CO_2 D x 0.16*) [kg] = _____

*) Results may vary as a function of the fuel used for generating steam and condensate return.

Example

A	Number of faulty steam traps	20
B	Steam loss per steam trap	3 kg/h
C	Annual operating hours	8.000 h
D	Annual steam loss	480.000 kg
E	Cost of steam per ton	30 Euro/t
F	Annual loss	14,400 Euro
G	Annual saving CO_2	76,800 kg

Data transfer

Steam trap is tested

GESTRA AG

Münchener Straße 77, 28215 Bremen, Germany
Telefon +49 421 3503-0, Telefax +49 421 3503-393
E-mail info@de.gestra.com, Web www.gestra.de

808958-01/08-2017cmp · GESTRA AG · Bremen · Printed in Germany