



VKP 40plus Ex

**Scope of supply**

- 1 Transportation case
- 1 Carrying bag
- 1 Data collector type VKPN 40plus Ex
- 1 Dockin station with accessories for data collector
- 1 Com Box type VKPC 40plus Ex
- 1 USB power cable type VKPA 40plus 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 Software program TRAPtestVKP 40 on DVD
- 1 Mirror
- 1 File
- 1 Operating manual

Test Equipment for Steam Traps

**TRAPtest VKP 40plus Ex**

**Description**

Steam trap testing, recording & evaluation system **TRAPtest VKP 40plus 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 ultrasonic vibrations generated on the trap body surface by the media flowing through the steam trap. These ultrasonic vibrations are then picked up by the hand-held probe (measuring transducer) by pressing the sensor tip onto a point on the trap body that is characteristic of the respective trap type. The ultrasonic vibrations are then converted by the measuring probe into electric pulses and – in the form of digital signals – fed via connecting cable to the Com Box. The Com box then transfers the signals to the data collector via Bluetooth.

The touch screen of the data collector shows the signals received during the test as a standing curve. With this graphical representation one can see at once whether the tested steam trap is blowing off steam or not.

The recorded ultrasonic vibration is 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, the software program can calculate the financial loss caused by faulty steam traps. To quantify the steam loss caused by faulty steam traps, empirically obtained test values are used as reference.

**Function - continued -**

All curves recorded for a steam trap as well as the associated numerical test results and the corresponding analysis by the system can be stored and printed out. This permits the comparison of current test results against those of former tests and also those taken from other installations. In the course of time useful information is thus obtained regarding the service life of the traps and standard maintenance intervals and it becomes easier to assess the suitability of the different trap types for the intended application.

**Technical Data**

**System requirements for PC software**

- Operating system: Microsoft Windows® 7, DVD drive
- SQL-Server® 2008 Express
- Microsoft Windows® Mobile Device Center
- 1 GB free hard disk memory and at least 1 GB working memory

**Duration of one trap test**

At least 10 sec., max. 20 sec.

**Data collector**

- 3.5" user interface (= touch screen)
- Resolution 480 x 640 pixel
- Bluetooth range distance: 8 m
- 1 lithium ion battery (capacity 4,000 mAh)
- Operating voltage: 3.7 V
- Capacity of battery ("battery life") approx. 8 hours
- Docking station 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**

- 1 lithium ion battery (capacity 1250 mAh)
- Operating voltage: 3.7 V
- Capacity of battery ("battery life") approx. 8 hours
- USB power cable

**Materials**

Components	EN
Data collector type VKPN 40plus Ex	See operating instructions for the data collector
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	Dimensions (H x W x D) [mm]	Weight [g]
Transportation case (hard case), without content	173 x 450 x 340	4,900
Transportation case (hard case), cpl. with content	173 x 450 x 340	approx. 7,600
Carrying bag, without content	310 x 260 x 8	330
Carrying bag, cpl. with content	310 x 260 x 8	approx. 2,400
Data collector	225 x 85 x 58	980
Com box	83 x 96 x 32	approx. 560
Measuring probe (diameter x length)	36 x 210	440

## Test Equipment for Steam Traps

### TRAPtest VKP 40plus Ex

#### ATEX and IECEx

Test equipment type VKP40plus Ex is approved for use in explosion-risk areas. The following components are approved for application in explosion-risk area:

- Data collector type VPKN 40plus Ex
- Measuring transducer type VKPS 40Ex
- Com Box type VKPC 40plus 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 94/9/EC).

Components	Type	ATEX marking
Data collector	VPKN 40plus Ex	Europe: II 2G ia IIC T4 Gb IP64 International: Ex ia IIC T4 Gb IP64
Com box	VKPC 40plus Ex	II 2G Ex ib IIC T4
USB power cable for Com box	VKPA 40plus	
Measuring probe	VKPS 40Ex	Ex ib IIC T4 Gb

#### Approval certificate

EC prototype test certificate for TRAPtest type VKP 40plus Ex: BVS 15 ATEX E 002 available on request.

#### Specification Text

##### GESTRA TRAPtest VKP 40plus Ex

Steam trap testing, recording & evaluation system TRAPtest VKP 40plus Ex for applications in potentially explosive areas for checking steam traps of all types and makes for steam loss and banking-up of condensate

Part of the test equipment is the data collector (= mobile Personal Digital Assistant) with robust, resistive (pressure-sensitive) touchscreen display and stylus.

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 docking station. The supplied GESTRA software program TRAPtest VKP 40 allows you to evaluate the test results directly on your PC and, among other things, to create repair jobs and view and print out financial analyses.

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 touch screen graphically illustrates the course of the test in form of a standing curve and shows additional important information regarding the test. The large backlit touchscreen display can be used even in poor visibility conditions.

Supply in accordance with our general terms of business.

#### Pressure & temperature ratings

If you want to use the TRAPtest VKP40plus Ex outside the rated pressure/temperature range please contact a FLOWSERVE Gestra representative.

Components	Service temperature [°C]	Storage temperature [°C]	Air humidity
Data collector	-20 to +50	-20 up to +35 <sup>2)</sup>	0–95% (not condensing)
Com Box <sup>1)</sup>	-10 to +50	-20 up to +35 <sup>2)</sup>	0–95% (not condensing)
Measuring probe <sup>1)</sup>	-10 to +60	-20 up to +35 <sup>2)</sup>	0–95% (not condensing)

<sup>1)</sup> Charging temperature 0 to +35 °C    <sup>2)</sup> Stored up to 24 hours: -20°C to +70 °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: 1.1 bar

Max. differential pressure: 20 bar

#### Features of the VKP 40plus Ex

The test equipment for steam traps TRAPtest type VKP 40plus Ex intended for use in explosion-risk areas (Directive 94/9/CE) offers the following benefits:

- Automatic evaluation of the tested steam traps
- Universally applicable for all types and makes of steam traps
- PC software is independent of country specific Windows versions
- User-friendly and easy-to-use PC software tool for logging and managing trap specific data
- Data exchange between PC and data collector by the click of a mouse
- Easy to migrate databases and import data from old VKP 40 versions
- Export and import functions for importing databases created on other PCs or exporting databases to other PCs and for data backup
- Clear and informative print-out detailing repair jobs
- Detailed online documentation
- Additional languages can easily be added (English and German by default)
- Allows for uncomplicated financial analysis (expressed in the currency of your country)
- Country-specific settings (e. g. power supply, paper size etc.) possible

#### Features of the data collector type VKPN 40plus Ex

- The data collector intended for use in explosion-risk areas (Directive 94/9/CE) offers the following benefits:
- Mobile Personal Data Assistant (PDA) with Bluetooth connection
- Data collector with robust, resistive (pressure-sensitive) touchscreen display and stylus
- Clear graphical user interface
- Illuminated touchscreen display shows the recorded sound curves
- During the test instant visual indication of steam loss caused by leaking trap
- Storage capacity sufficient for 750 steam traps with 1 up to 256 test jobs
- Integrated temperature measurement allows to detect waterlogged steam traps (banking-up of condensate)
- Test measurement for ad hoc tests and automatic evaluation of steam trap performance without any previous data acquisition
- No skilled labour needed for the tests
- Protected against dust and splashing water: Protection IP 65

#### 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] \_\_\_\_\_

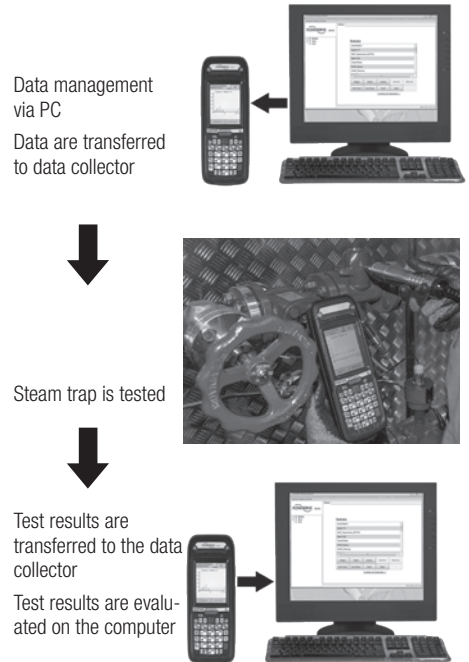
**F** Annual loss D / 1000 x E [Euro] = \_\_\_\_\_

**G** Annual saving CO<sub>2</sub> D x 0.16\* [kg] = \_\_\_\_\_

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

#### Example

<b>A</b> Number of faulty steam traps	20
<b>B</b> Steam loss per steam trap	3 kg/h
<b>C</b> Annual operating hours	8000 h
<b>D</b> Annual steam loss	480,000 kg
<b>E</b> Cost of steam per ton	30 Euro/t
<b>F</b> Annual loss	14,400 Euro
<b>G</b> Annual saving CO <sub>2</sub>	76,800 kg



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