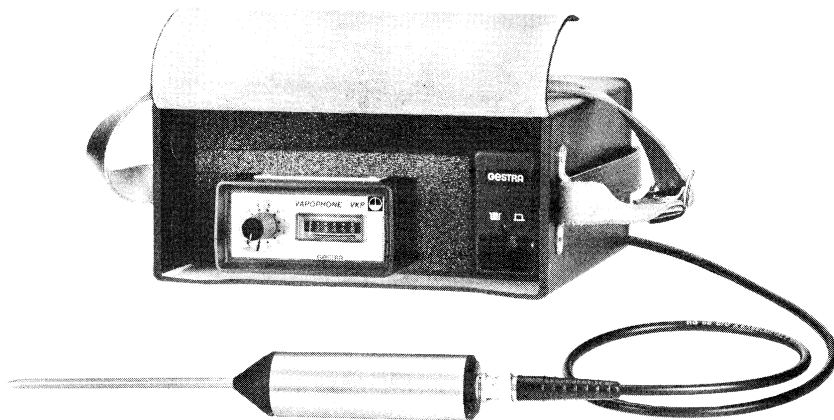


Operating Instructions

GESTRA® Vapophone VKP-Ex

Issue: 1/85



Operation

The Vapophone is used to detect sound in the ultrasonic range as caused by flowing steam. The mechanical ultrasonic vibrations are detected by the probe and converted into electric signals which are amplified in the measuring instrument and indicated on a meter.

The Vapophone is only sensitive to frequencies in the range 40 to 60 kHz which is typical of flowing steam. A false indication on the meter caused by ambient noise is thereby largely excluded.

Description

The Vapophone consists of the electronic measuring instrument, the probe, the connecting cable and the battery charging set. All parts are placed in a shoulder-strap bag which need not be removed for testing purposes.

The equipment is intrinsically safe in conformity with classification

EEEx ib IIC T4
(type-approval No. PTB Ex-84/2063)

and is suited for application in hazardous locations.

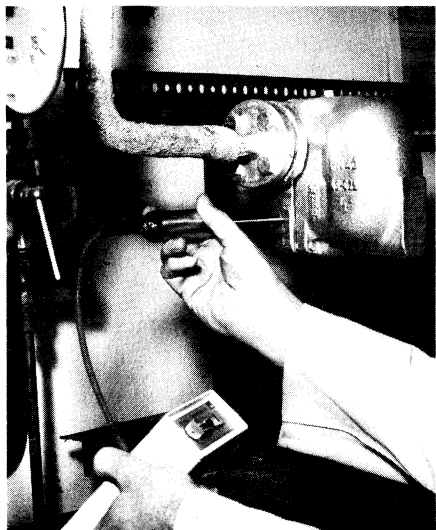
Permissible ambient temperature ranging from -15° to $+60^{\circ}\text{C}$ (5°F to 140°F).

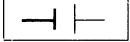
Protection IP 41.

Power supply 9 V nickel-cadmium battery for 50 operating hours.

Commissioning

Connect probe to measuring instrument with the cable provided. The cable is fitted at each end with a BNC plug. The connection for the measuring instrument is accessible at the bottom of the bag after loosening the flap.



Testing of battery: Turn knob of measuring instrument to . The pointer on the meter should show a deflection between scale division 5 and 6. A smaller deflection indicates that the battery requires recharging (see maintenance).

Before starting with the measurements, adjust the sensitivity of the Vapophone with the knob. The highest sensitivity of the equipment is at knob setting 10. Different trap types produce different sound levels even when steam losses and operating conditions are the same. For GESTRA steam traps we recommend for example knob setting 8 for the BK 15 traps and knob setting 7 for the MK 25 traps.

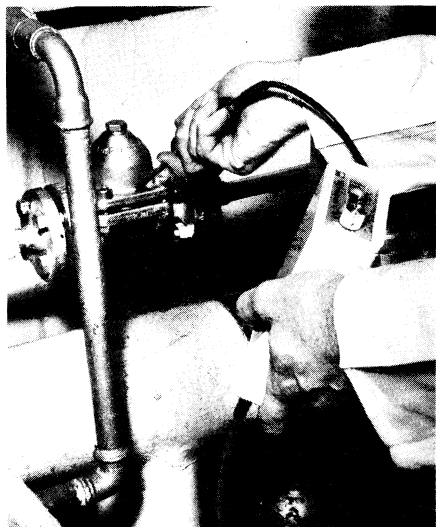
Testing

Position probe pressing gently at right angles to the surface of the steam trap as close as possible to the closing unit of the trap.

See figures.

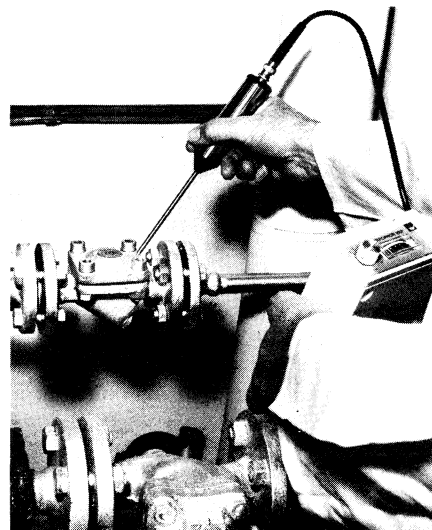
If traps of the same type are tested take care that the probe is always applied at the same point of the trap body in order to be able to compare the results obtained and also to discover changes when repeating the tests.

In the case of steam traps operating continuously and without steam loss within the pressure range of up to 20 bar (290 psi) and with condensate flowrates up to approx. 30 kg/h (66 lb/h), no or only a



slight deflection of the pointer on the meter will be seen.

With increasing steam loss the deflection of the pointer increases. The relation between steam loss and pointer deflection depends on the type of the steam trap and the point chosen for the measurement. To obtain more exact measurements it is therefore necessary to first adjust this relation on the measuring instrument. The same applies if the equipment is used with larger condensate flowrates and higher pressures where, by the nature of things, flow noises are higher so that the sensitivity must be reduced (lower values). It needs some experience in handling the equipment before useful values are obtained.



For many practical cases the exact knowledge of possible steam losses is, however, of secondary importance. What is required is often a reference value permitting the detection, with a tolerable expenditure, of steam traps no longer operating economically. For this purpose the sensitivity should be adjusted to 8 or 7 as explained. A continual pointer deflection between 4 and 5 scale divisions indicates that the traps should either be serviced or replaced as, depending on the trap type, steam losses of 1 to 4 kg/h (2.2 to 8.8 lb/h) can be expected.

Special Hints

1 It has to be taken into account that ultrasonic sources, such as steam reducing stations, in the proximity of the steam trap to be tested might falsify the result. In this case "steam loss" might be indicated even though the traps operate perfectly. This can be verified by scanning the adjacent pipelines. If the deflection remains unchanged or increases, this must be attributed to a foreign ultrasonic source. At this place of installation testing of the steam traps is therefore not possible.

2 Intermittently operating steam traps cause recurrent deflections of the pointer on the meter of the measuring instrument. These deflections might reach the end of the scale.

Thermostatic traps (with bimetallic control or membrane regulators) may operate within the pressure and flow-

rate ranges mentioned either continuously or intermittently. In this case steam losses can be excluded. A recurrent pointer deflection therefore indicates correctly operating steam traps.

Thermodynamically controlled steam traps always operate intermittently over the complete flowrate range mentioned and might thereby cause steam losses which rise with increasing lift frequency. A clear evidence of loss is given by a constantly large deflection of the pointer on the meter. The losses are then, however, far above the reference values indicated for singling out.

As far as steam traps with open float are concerned in principle the same applies as to thermodynamic traps. Because of the trap system, inherent steam losses occur with certainty even during the intermittent working phase of the trap. Singling out of such traps in accordance with specific reference values (to be determined beforehand) is practically impossible.

- 3** Before starting with the measurements an estimation should at least be carried out with the aid of the technical data of the plant to find out whether

the trap flowrate lies within the range that permits testing. When trapping steam lines and tracers this flowrate range applies as a rule.

Maintenance

The Vapophone does not require any particular maintenance, the battery just needs recharging.

Any defect of the probe or the measuring instrument can only be repaired at our works. For this purpose always return the **complete** equipment, i.e. measuring instrument and probe.

Recharging of Battery

Push coaxial plug of charger into coaxial socket of measuring instrument. Then plug charging set into mains socket (220 V/50 Hz). Ensure that knob of measuring instrument is in off position (0 on scale).

Charging time 15-20 hours. The capacity is then sufficient for approximately 50 operating hours. Overcharging of the battery is impossible, provided the charging set supplied with the equipment is used.

Important Note

The battery must not be charged in hazardous locations.

Technical modifications reserved.