

## Measuring Electrodes

### NRG 16-19, NRG 16-27, NRG 16-28

### Test Chambers

### VKE 16-1, VKE 16A, VKE 26

#### Description

The measuring electrodes NRG 16-19, NRG 16-27 and NRG 16-28 are designed for use in conjunction with suitable registration equipment (e. g. test station NRA 1-3) for monitoring steam traps.

The measuring electrodes are either fitted directly in the steam trap or in a separate test chamber, and monitor the steam trap for banking-up of condensate or loss of live steam.

The measuring electrodes NRG 16-27, NRG 16-28 feature an additional temperature sensor for detecting the condensate temperature.

The test station NRA 1-3 is designed for the connection of up to max. 16 measuring electrodes and a temperature sensor Pt 100.

#### Function

The following electrodes can be used for monitoring steam traps:

- Measuring electrodes NRG 16-27, NRG 16-28 for detecting loss of live steam (electrode exposed) and banking-up of condensate (by measuring the temperature of the condensate) or
- Measuring electrode NRG 16-19 for detecting banking-up of condensate **or** loss of live steam (electrode exposed or immersed).

The measuring electrodes NRG 16-27, NRG 16-28 work according to the conductivity measurement principle and signal electrode exposed or immersed. The equipment is also equipped with a temperature sensing element Pt 1000 for measuring the temperature of the condensate. The measuring electrode is installed either directly inside the steam trap to be monitored or in the separate test chamber VKE 16 mounted upstream of the trap.

Faulty steam traps cause either banking-up of condensate or loss of live steam. Both conditions will be detected by the measuring electrode and indicated and evaluated by the test station NRA 1-3.

The measuring electrode NRG 16-19 works according to the conductivity measurement principle, too. Depending on the installation the electrode detects either loss of live steam or banking-up of condensate. The readings are then evaluated by the test station NRA 1-3 or by the level switch NRS 1-52, NRS 1-53.

#### Design

##### NRG 16-19, NRG 16-27:

Screwed  $\frac{3}{8}$ " , ISO 228-1

##### NRG 16-28:

Screwed M 24 x 1.5

#### Technical Data

##### NRG 16-19, NRG 16-27, NRG 16-28

##### Service pressure

PN 40, max. 32 bar at 238 °C

##### Mechanical connection

NRG 16-19, NRG 16-27 screwed G  $\frac{3}{8}$ " A ISO 228

NRG 16-28 screwed M 24 x 1.5

##### Materials

NRG 16-19

Screwed-in union: 1.4301

Spacer disk: 1.4571

Electrode rod: 1.4571

Insulating disk: Gylon®

NRG 16-27, NRG 16-28

Screwed-in union: 1.4571

Electrode rod: 1.4571

Electrode insulation: PEEK

#### Technical Data – continued –

##### Response sensitivity

> 1  $\mu$ S/cm at 25 °C

##### Electrode voltage

12 V

##### Electrical connection

NRG 16-19:

PTFE connecting line, 2 m long, 2 x 1.5 mm<sup>2</sup>

NRG 16-27, NRG 16-28:

M 12 sensor connector, 5 poles, A coded

##### Protection

NRG 16-27, NRG 16-28: IP 65 to DIN EN 60529

NRG 16-19: IP 52 to DIN EN 60529

##### Max. admissible ambient temperature at terminal

80 °C

##### Weight

Approx. 0.3 kg

##### Test chamber VKE 16-1, VKE 16 A

##### Designs

Electrode connection in flow direction to the left or to the right. Please state when ordering.

##### Pressure/Temperature Ratings VKE 16-1

Service pressure	bar	40	28.4	23.3	23.1
Inlet temperature	°C	20	250	385	400

##### Pressure/Temperature Ratings VKE 16A

Service pressure	bar	40	32
Inlet temperature	°C	20	238

##### Materials VKE 16-1

Enclosure: 1.0619

Flange: 1.0460

##### Materials VKE 16 A

Enclosure: 1.4571

Flange: 1.4571

##### End connections VKE 16-1

Flanges: EN 1092, PN 40

Screwed sockets: BSP and NPT thread

Nominal sizes: DN 15, 20, 25,  $\frac{1}{2}$ " ,  $\frac{3}{4}$ " , 1"

Available on request: DN 40, 50;  $1\frac{1}{2}$ " , 2"

##### End connections VKE 16A

Flanges: EN 1092, PN 40

Nominal sizes: DN 15, 20, 25,  $\frac{1}{2}$ " ,  $\frac{3}{4}$ " , 1"

Available on request: DN 40, 50;  $1\frac{1}{2}$ " , 2"

##### Connection of electrode

Screwed  $\frac{3}{8}$ " to ISO 228-1

##### Test chamber VKE 26

##### Designs

Electrode connection in flow direction to the left or to the right. Please state when ordering.

##### Pressure/Temperature Ratings

Service pressure	bar	40	28.4	23.3	23.1
Inlet temperature	°C	20	250	385	400

##### Materials

Flange: 1.0460

##### Connections

Threaded standpipe:  $\frac{3}{8}$ "

Air-balance pipe:  $\frac{3}{8}$ "

##### Connection of electrode

Screwed G  $\frac{3}{8}$ " A Iso 228

## Important Notes

### Connecting cables for measuring electrodes NRG 16-19

The measuring electrode comes with a 2 m long connecting cable and can be directly connected to the test station NRA 1-3. To extend the cable use screened two-core cable, e.g. Ölflex 110 CH, manufactured by Lapp, 2 x 0.5 mm<sup>2</sup>. Max. cable length between measuring electrode and test station NRA 1-3: 100 m.

### NRG 16-27, NRG 16-28

To extend the cable use screened five-core cable, e.g. Ölflex 110 CH, manufactured by Lapp, 5 x 0.5 mm<sup>2</sup>. Max. cable length between measuring electrode and test station NRA 1-3: 100 m.

Connecting cable assemblies (with connector) of various lengths are available as add-on equipment.

## Order & Enquiry Specification

### NRG 16-19

Conductivity measuring electrode for detecting loss of live steam or banking-up of condensate. This measuring method can be used with any type and make of steam trap. The measuring electrode works with the test station NRA 1-3 and the level switch NRS 1-52, NRS 1-53.

The measuring electrode is mounted in the test chamber VKE 16-1, VKE 16A or VKE 26.

### NRG 16-27

Conductivity measuring electrode with Pt 1000 temperature sensing element for detecting loss of live steam and banking-up of condensate. This measuring method can be used with any type and make of steam trap. The measuring electrode works with the test station NRA 1-3.

The measuring electrode is mounted in the test chamber VKE 16-1, VKE 16A or VKE 26.

### NRG 16-28

Conductivity measuring electrode with Pt 1000 temperature sensing element for detecting loss of live steam and banking-up of condensate. This measuring method can be used with any type and make of steam trap. The measuring electrode works with the test station NRA 1-3.

The measuring electrode is mounted in RHOMBUSline steam traps.

## Application of European Directives

### Pressure Equipment Directive

The equipment conforms to this directive and can be used for the following media:  
Fluids of group 2

### ATEX (Atmosphère Explosible)

The equipment must not be used in potentially explosive areas.

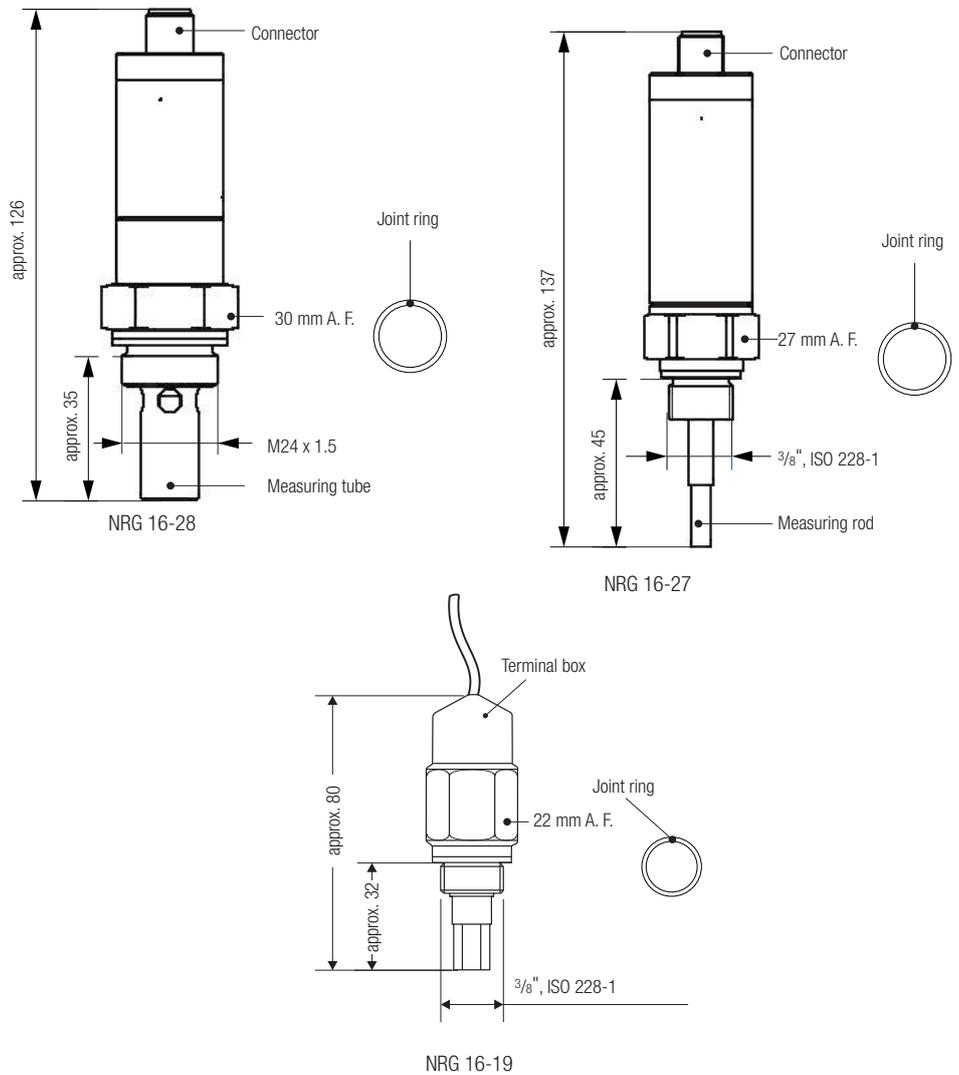
The level electrodes NRG 16-19, NRG 16-27 and NRG 16-28 are simple items of electrical equipment according to EN 60079-11 paragraph 5.7.

According to the European Directive 2014/34/EU the equipment must be provided with approved Zener barriers if used in potentially explosive areas.

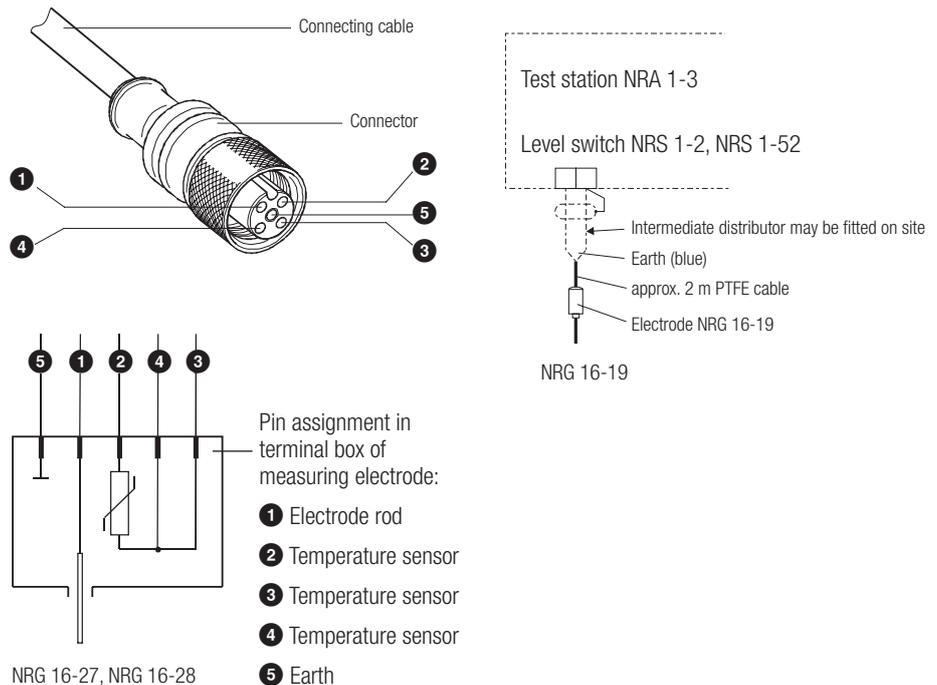
Applicable in Ex zones 1, 2 (1999/92/EC).

The equipment does not bear an Ex marking.

## Dimensions NRG 16...



## Electrical Connection



## Important Notes

### Test chamber VKE 16-1 and VKE 16A

Make sure that the name plate on top can be read. Observe the flow direction arrow on the trap body. Install the test chamber only in the horizontal line upstream of the steam trap to be monitored.

## Order & Enquiry Specification

### Test chamber VKE 16-1

GESTRA test chamber for GESTRA test unit for steam trap systems VKE. Installation upstream of the steam trap.

Materials:

Body: 1.0619

Flange: 1.0460

Connection: Flange EN 1092 form B1

Other connections available on request.

Electrode connection  $\frac{3}{8}$ " either to the right or left side.

For lines with monodirectional flow.

Test chambers as standard available in sizes DN 15 to DN 25.

### Test chamber VKE 16A

GESTRA test chamber for GESTRA test unit for steam trap systems VKE. Installation upstream of the steam trap.

Materials:

Body: 1.4571

Flange: 1.4571

End connection: Flange EN 1092 form B1

Other connections available on request.

Electrode connection  $\frac{3}{8}$ " either to the right or left side.

For lines with monodirectional flow.

Test chambers as standard available in sizes DN 15 to DN 50.

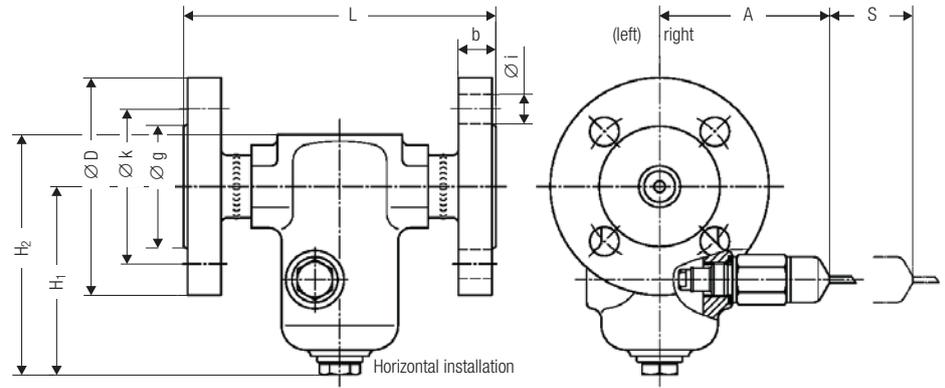
## Application of European Directives

### Pressure Equipment Directive

The equipment conforms to this directive and can be used for the following media:

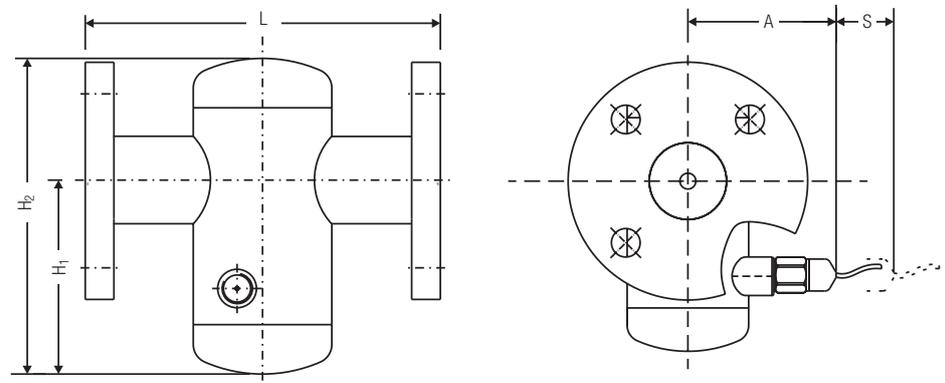
Fluids of group 2

## Dimensions VKE ...



Test chamber VKE 16-1

Dimensions		Design										
		DIN flanges					Screwed sockets					
Nominal sizes	mm	15	20	25	40	50	15	20	25	40	50	
	inch	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	2	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	2	
Length	L	150	150	160	On request					95		On request
	A	~80 (NRG 16-19) ~130 (NRG 16-27)								~80 (NRG 16-19) ~130 (NRG 16-27)		
Withdrawal space	S	~40 (NRG 16-19) ~50 (NRG 16-27)			On request					~40 (NRG 16-19) ~50 (NRG 16-27)		
	H <sub>1</sub>	~93								~118		
Height	H <sub>2</sub>	~93			On request					~118		
	D	95	105	115								
Flange dimensions	b	16	18	18	On request					~118		
	k	65	75	85								
	g	45	58	68								
	i	14	14	14								
	Number of holes	4	4	4								



Test chamber VKE 16A

Dimensions		Design				
		DIN flanges				
Nominal sizes	mm	15	20	25	40	50
	inch	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	2
Length	L	160	160	160	230	
	A	~90 (NRG 16-19) ~130 (NRG 16-27)			~100 ~150	
Withdrawal space	S	~93 (NRG 16-19) ~118 (NRG 16-27)			~115 ~186	
	H <sub>1</sub>	~90			~115	
Height	H <sub>2</sub>	~143			~186	

Measuring Electrodes  
**NRG 16-19, NRG 16-27, NRG 16-28**  
 Test Chambers  
**VKE 16-1, VKE 16A, VKE 26**

**Important Notes**

**Test chamber VKE 26**

The test chamber is mounted on float traps with  $\frac{3}{8}$ " vent hole. Installation of measuring electrode vertically on top. The test chamber has a  $\frac{3}{8}$ " screwed socket for connecting a balance pipe.

**Order & Enquiry Specification**

**Test chamber VKE 26**

GESTRA test chamber for GESTRA test unit for steam trap systems VKE. The operation of the test chamber for monitoring traps for banking-up of condensate is based on the conductive measuring principle. For mounting on float trap provided with  $\frac{3}{8}$ " vent hole in cover.

Connections:

$G\frac{3}{8}$ " threaded connection for float trap body.

$G\frac{3}{8}$ " lateral screwed socket for balance pipe

$G\frac{3}{8}$ " screwed socket for measuring electrode.

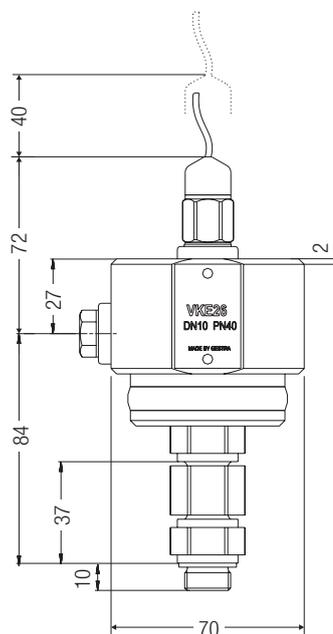
**Application of European Directives**

**Pressure Equipment Directive**

The equipment conforms to this directive and can be used for the following media:

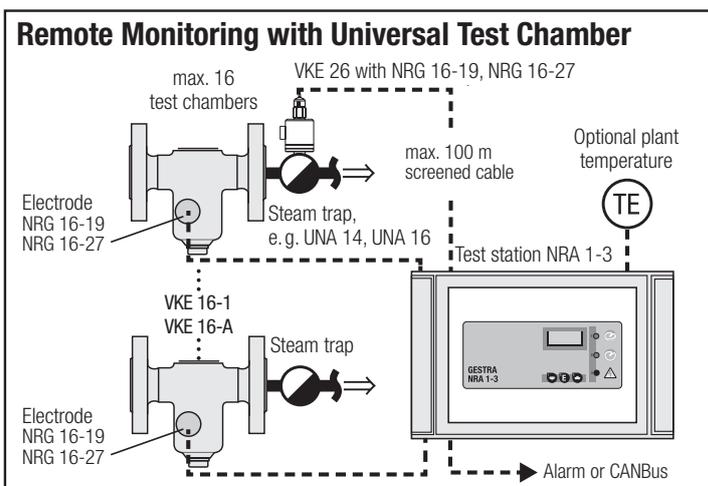
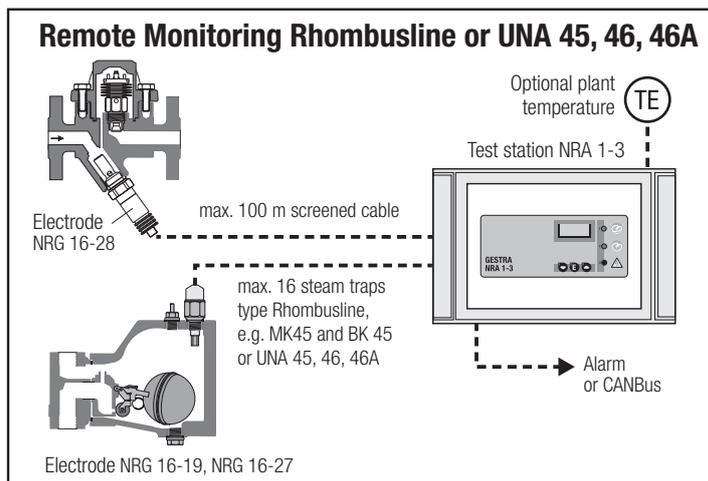
Fluids of group 2

**Dimensions VKE ...**



Test chamber VKE 26

**Examples of installation NRG 16-19, NRG 16-27, NRG 16-28**



Supply in accordance with our general terms of business.

**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

