FLOWSERVE GESTRA

GESTRA Steam Systems

MK 25/2
MK 25/2S

GB

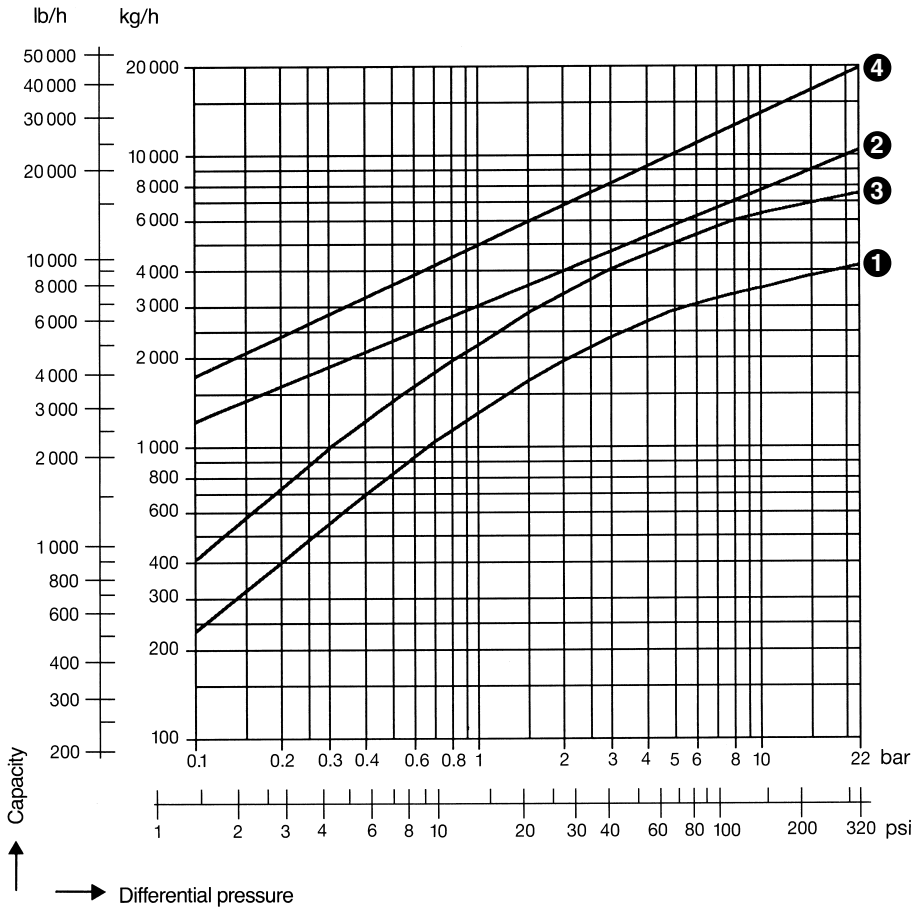
Installation Instructions 810706-01

Steam Traps
MK 25 . . ., DN 40 - 50

RHOMBUS*line*®

Contents

Capacity Chart



1. **MK 25/2:** Condensate temperature 10 K (degC) below saturation temperature.
2. **MK 25/2:** Cold condensate at a temperature of 20 °C (start-up capacity).
3. **MK 25/2S:** Condensate temperature 10 K (degC) below saturation temperature.
4. **MK 25/2S:** Cold condensate at a temperature of 20 °C (start-up capacity).

Fig. 1

Design MK 25/2

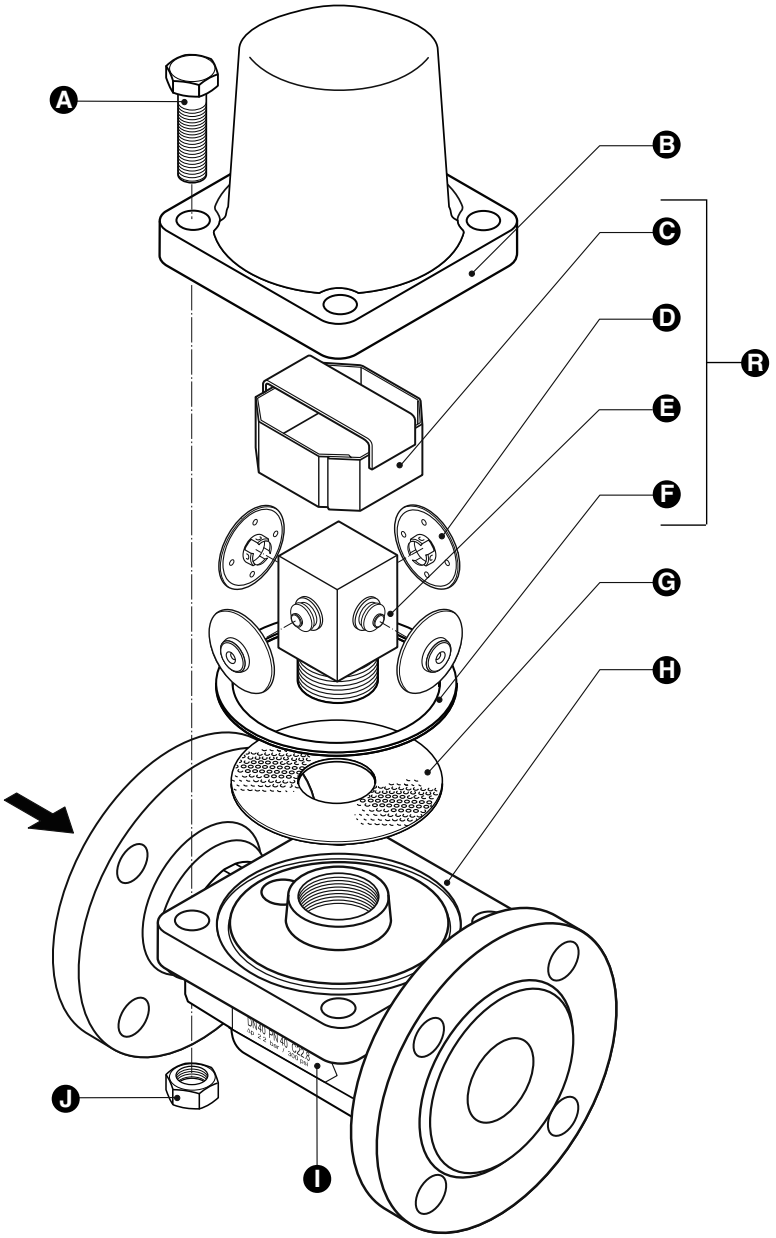


Fig. 2

Design MK 25/2S

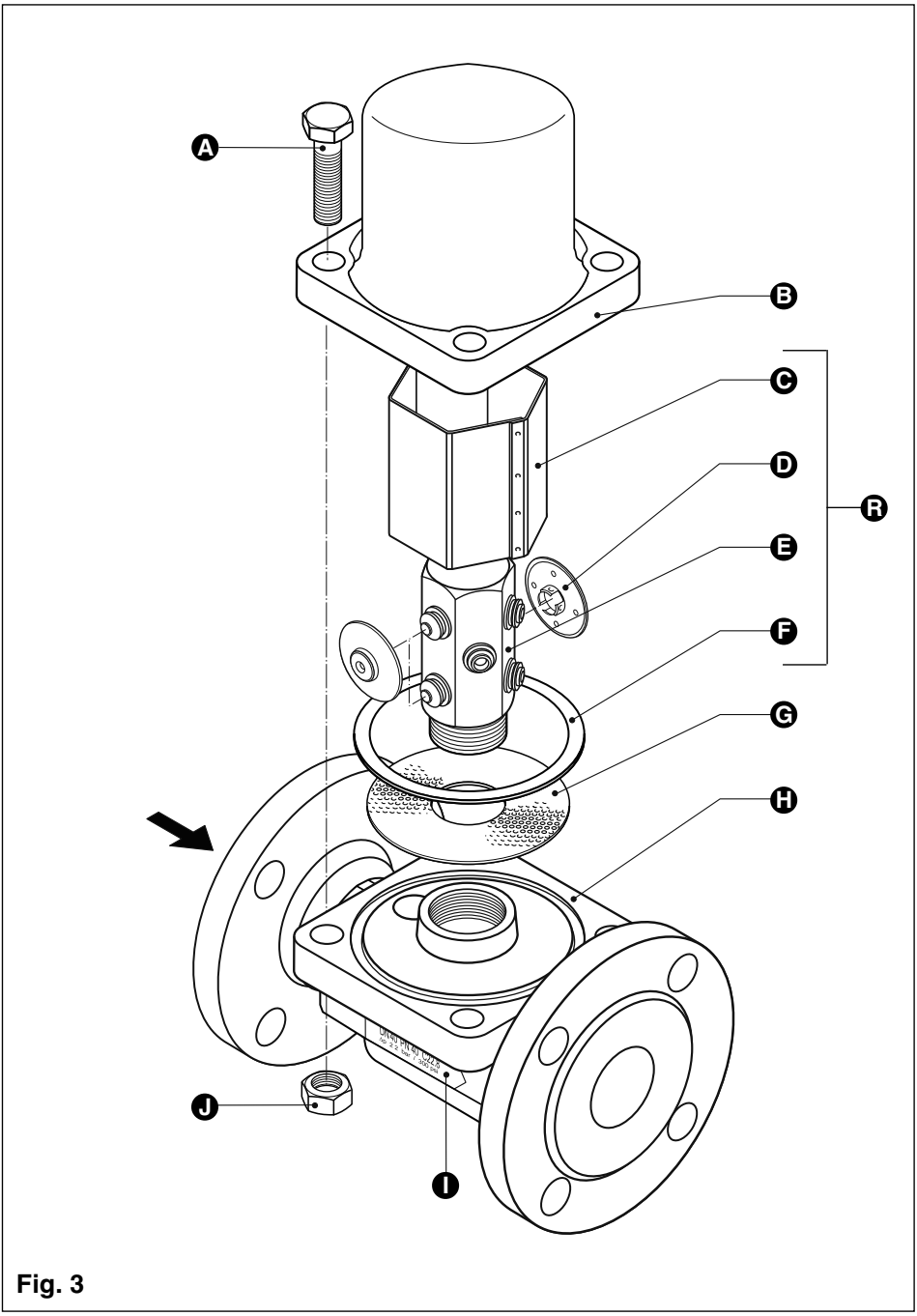


Fig. 3

Check Capsule

Thermostatic capsule Ⓓ for flat seat nozzle support: **5H2**

Capsule intact

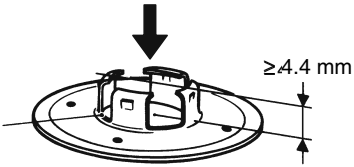


Fig. 4

Capsule defective

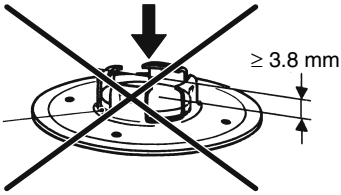


Fig. 5

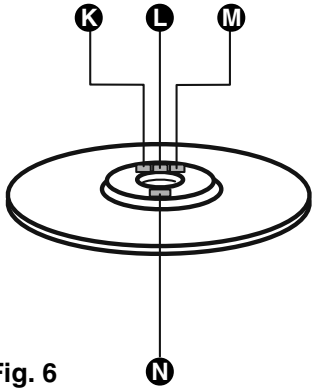
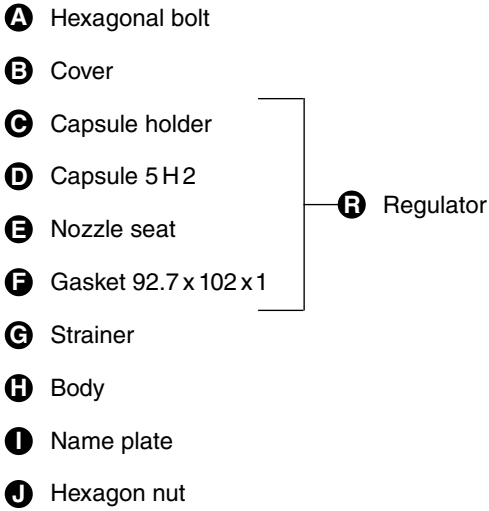


Fig. 6

Key



K Differential pressure rating

5 = Δp 22 bar

L Inlet temperature rating

H = Δt approx. 4 – 5 K

M Capacity rating

2 = high flowrate

N Manufacturing code number

Important Notes

Usage for the intended purpose

Use multi-capsule steam traps MK 25/2 and MK 25/2 S only for the discharge of condensed water or for air venting from steam spaces.

Use this equipment only within the specified pressure and temperature ratings and check corrosion resistance and chemical suitability for the application in question.

Safety note

Installation must only be performed by qualified staff.

Qualified staff are those persons who – through adequate training in engineering, the use and application of equipment in accordance with regulations concerning steam systems, and first aid & accident prevention – have achieved a recognised level of competence appropriate to the installation and commissioning of this device.

Danger

The steam trap is under pressure during operation.
When loosening flanged connections, plugs or the thermostatic capsule, hot water and/or steam may escape. This presents the risk of severe burns to the whole body.
Installation and maintenance work should only be carried out when the system is depressurized: isolate the trap from both upstream and downstream pressure.

The trap becomes hot during operation.
This presents the danger of severe burns to hands and arms. Installation and maintenance work should only be carried out when the system is cold.

Sharp edges on internal parts present a danger of cuts to hands. Always wear industrial gloves for installation and maintenance work.

Rating pursuant to article 9 of the PED[1])

Fluid group	gas		liquid	
	1	2	1	2
Use	no	yes	no	yes

Category	Exception pursuant to article 3.3	I
Nominal size DN	40 – 50	40 – 50
CE marking	no	yes
Type	MK 25/2, CL 150 MK 25/2S, CL 150	MK 25/2, MK 25/2S PN 40, CL 300

[1]) PED = Pressure Equipment Directive

Explanatory Notes

Scope of supply

MK 25/2
1 Steam trap MK 25/2
1 Installation manual

MK 25/2S
1 Steam trap MK 25/2S
1 Installation manual

Description

Thermostatic steam trap with corrosion resistant thermostatic capsule (membrane regulator). Integral strainer, asbestos-free cover gasket (graphite/CrNi). Installation in any position.
The thermostatic capsule “H” discharges the condensate with virtually no banking up.

- **MK 25/2 with single seat**
  With **four** thermostatic capsules “5H2”. For condensate flowrates up to e. g. 2800 kg/h at Δp = 5 bar.
- **MK 25/2S with single seat**
  With **nine** thermostatic capsules “5H2”. For condensate flowrates up to e. g. 5000 kg/h at Δp = 5 bar.

Function

The MK 25... is a multi-capsule high-capacity steam trap with four or nine capsules. The capsule is filled with a liquid which boils at a temperature a few degrees lower than water. As long as condensate flows through the steam trap the liquid in the capsule is completely condensed due to the low ambient temperature. The pressure inside the capsule is lower than the surrounding pressure (service pressure) and the membrane with the valve disc is pushed in the opening direction. As the condensate temperature approaches steam temperature, the liquid filling of the capsule starts to boil and evaporate. The pressure in the capsule rises and the membrane with the valve disc is moved in the closing direction.

Automatic air-venting is provided both, during start-up and during normal operation. The correct functioning of the MK 25 is neither affected by fluctuations in the upstream pressure nor by back pressure.The MK 25 can also be used for thermal air venting.

Technical data

Pressure/Temperature Ratings		**PN 40**				
Body material		1.0460 (P250GH / C22.8) / ASTM A105				
Nominal sizes (DN)		40, 50				
Connection		Flanged DIN PN 40				
Max. allowable pressure PMA	[barg]	40	35	28	21	14.5
	[psig]	580	508	406	305	210
Inlet temperature TMA	[°C]	20	200	300	400	450
	[°F]	68	392	572	752	842

Explanatory Notes – continued –

Technical data – continued –

Pressure/Temperature Ratings		Class 300				
Body material		1.0460 (P250GH / C22.8) / ASTM A105				
Nominal sizes (DN)		40, 50				
Connection		Flanged ASME Class 300				
Max. allowable pressure PMA	[barg]	51	43.9	38.9	34.6	20.2
	[psig]	740	637	565	501	294
Inlet temperature TMA	[°C]	20	200	300	400	450
	[°F]	68	392	572	752	842

Pressure/Temperature Ratings		Class 150				
Body material		1.0460 (P250GH / C22.8) / ASTM A105				
Nominal sizes (DN)		40, 50				
Connection		Flanged ASME Class 150				
Max. allowable pressure PMA	[barg]	19.7	14	10.2	6.5	4.6
	[psig]	287	203	149	94.3	66.7
Inlet temperature TMA	[°C]	20	200	300	400	450
	[°F]	68	392	572	752	842

Max. admissible differential pressure[1])		
Differential pressure ΔPMX	[barg]	22
(**inlet** pressure minus **outlet** pressure)	[psig]	319

[1]) Observe pressure/temperature ratings!

Materials	EN	DIN	ASTM equivalent
Body	P250GH (1.0460)	C22.8 (1.0460)	A105
Cover MK 25/2	P250GH (1.0460)	C22.8 (1.0460)	A105
Cover MK 25/2S	GP240GH (1.0619)	GS-C25 (1.0619)	A216 WCB
Bolts	42CrMo4 (1.7225)		A193 B7
Body gasket	Graphite		
Thermostatic capsule	Hastelloy® / Stainless steel		
Other internals	Stainless steel		

Explanatory Notes – continued –

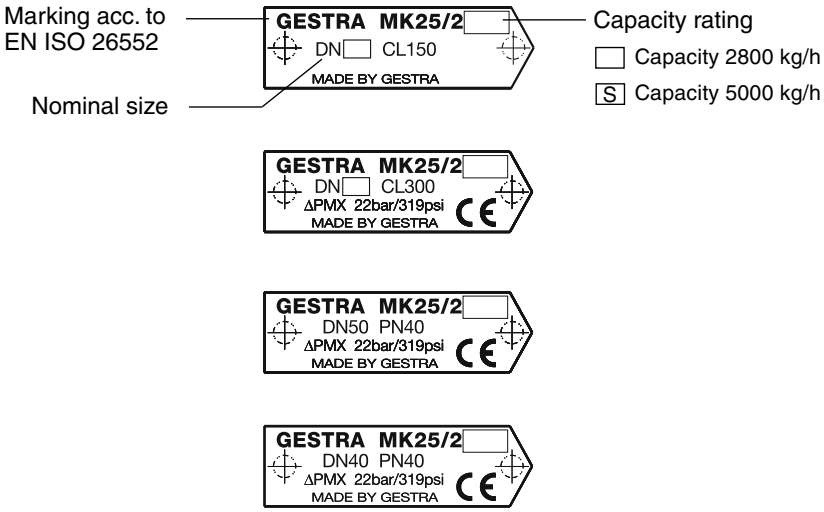
Corrosion Resistance

If the steam trap is used for the intended purpose, its safety is not impaired by corrosion.

Sizing

The trap body must not be subjected to pulsating loads. The dimensional allowances for corrosion reflect the latest state of technology.

Name Plate / Marking



For further specifications to EN 19 see trap body.

Fig. 7

Installation

MK 25...

The steam trap MK 25... can be installed in any position. In the case of a horizontal installation, make sure that the cover is at the top.

Flanged Traps

1. Take care of correct position of installation.
2. Observe direction of flow. The flow arrow is on the trap body.
3. Consider space required for opening trap. When the trap is installed a minimum space of **70 mm** (MK 25/2) or **100 mm** (MK 25/2 S) is required for removing cover Ⓑ.
4. Remove plastic plugs. They are only used as transit protection.
5. Clean seating surfaces of both flanges.
6. Install steam trap.

Screwed-Socket Traps

1. Take care of correct position of installation.
2. Observe direction of flow. The flow arrow is on the trap body.
3. Consider space required for opening trap. When the trap is installed a minimum space of **70 mm** (MK 25/2) or **100 mm** (MK 25/2 S) is required for removing cover Ⓑ.
4. Remove plastic plugs. They are only used as transit protection.
5. Clean internal threads of screwed sockets.
6. Install steam trap.

Socket-Weld Traps

1. Take care of correct position of installation.
2. Observe direction of flow. The flow arrow is on the trap body.
3. Consider space required for opening trap. When the trap is installed a minimum space of **70 mm** (MK 25/2) or **100 mm** (MK 25/2 S) is required for removing cover Ⓑ.
4. Remove plastic plugs. They are only used as transit protection.
5. Clean thermostatic capsule as described under **Maintenance**.
6. Clean socket-weld ends.
7. To install trap only apply arc welding processes 111 and 141 in accordance with DIN EN 24063.

Installation – continued –

Butt-Weld Traps

1. Take care of correct position of installation.
2. Observe direction of flow. The flow arrow is on the trap body.
3. Consider space required for opening trap. When the trap is installed a minimum space of **70 mm** (MK 25/2) or **100 mm** (MK 25/2 S) is required for removing cover Ⓑ.
4. Remove plastic plugs. They are only used as transit protection.
5. Clean butt-weld ends.
6. To install trap only apply arc welding processes 111 and 141 to DIN EN 24063 or gas welding process 3 to DIN EN 24063.

Attention

- Only qualified welders certified e. g. according to DIN EN 287 may weld the steam trap into pressurized lines.
- Do **not** insulate steam trap.

Heat treatment of welds

A subsequent heat treatment of the welds is not required.

Commissioning

MK 25...

Make sure that the flanged connections of the MK 25 are permanently bolted and tight.

Operation

MK 25...

Please note that maintenance is required for certain operation modes (see **Maintenance**).

Maintenance

GESTRA steam traps MK 25... do not require any special maintenance. However, if used in new installations which have not been rinsed it may be necessary to check and clean the regulator (nozzle seat, capsule and capsule holder) and the strainer.

Check steam trap

You can check steam traps MK 25... for steam loss during operation by using the ultrasonic measuring unit VAPOPHONE® or the test unit TRAP*test*®.
Should you detect any loss of live steam clean the trap and/or replace regulator.

Clean/exchange capsule and nozzle seat

1. Take heed of the note “Danger” on page 8.
2. Undo hexagon-head bolts Ⓐ and remove cover Ⓑ from trap body Ⓗ.
3. Remove capsule holder Ⓒ.
4. Remove capsule Ⓓ and clean it. Unscrew nozzle seat Ⓔ.
5. Remove old gasket Ⓕ and strainer Ⓖ.
6. Replace capsule Ⓓ in case of visible signs of wear or damage.
7. Clean body, internals and all gasket surfaces.
8. Apply heat-resistant lubricant to all threads and seating surfaces of the nozzle seat and the cover (use for instance WINIX® 2150).
9. Install strainer Ⓖ, screw in nozzle seat Ⓔ and tighten with a torque of **140 Nm**.
10. Position capsule Ⓓ onto the nozzle seat Ⓔ and press evenly, such that the capsule snaps into place.
11. Insert new gasket Ⓕ.
12. Put cover Ⓑ onto the body Ⓗ. Tighten hexagon-head bolts Ⓐ alternately and in several steps to a torque of **45 Nm**.

Tools

- Spanner A. F.18 mm to DIN 3113, form B
- Spanner A. F. 36 mm to DIN 3113, form B
- Torque spanner 20 – 140 Nm to DIN ISO 6789

Clean/exchange strainer

1. Take heed of note “Danger” on page 8.
2. Undo hexagon-head bolts Ⓐ and remove cover Ⓑ from trap body Ⓗ.
3. Completely unscrew regulator Ⓡ.
4. Remove strainer Ⓖ.
5. Remove old gasket Ⓕ.
6. Clean body, internals and all gasket surfaces.
7. Apply heat-resistant lubricant to all threads and the seating surfaces of the nozzle seat and the cover (use for instance WINIX® 2150).
8. Insert new gasket Ⓕ.
9. Install strainer Ⓖ.
10. Screw in regulator Ⓡ and tighten with a torque of **140 Nm**.
11. Put cover Ⓑ onto the body Ⓗ. Tighten hexagon-head bolts Ⓐ alternately and in several steps to a torque of **45 Nm**.

WINIX® 2150 is a registered trademark of WINIX GmbH, Norderstedt

Maintenance – continued –

Tools

- Spanner A. F. 18 mm to DIN 3113, form B
- Spanner A. F. 36 mm to DIN 3113, form B
- Torque spanner 20 – 140 Nm to DIN ISO 6789

Torques

Item	Designation	Torque [Nm]
Ⓔ	Nozzle seat MK 25/2 / MK 25/2 S	140
Ⓐ Ⓙ	Cover bolts / hexagonal nuts	45

All torques are based at 20 °C room temperature. Do no apply lubricant to threads.

Spare Parts

Spare Parts List

Item	Designation	Stock code	
		MK 25/2	MK 25/2 S
Ⓡ	Regulator with body gasket	098770	098774
Ⓓ	Capsule 5H2 [1])	376174	376174
Ⓕ	Gasket [2]) 92.7 x 102 x 1	375699	375699
Ⓖ	Strainer, body gasket	375698	375698

[1]) Packed 10 per box. Contact your local dealer for smaller quantities.
[2]) Packed 20 per box. Contact your local dealer for smaller quantities.

Annex

CE Declaration of Conformity

We hereby declare that the pressure equipment **MK 25/2** and **MK 25/2 S**, nominal sizes **DN 40 - 50**, conform to the following European Directive:

- EC Pressure Equipment Directive (PED) No. 97/23 of 29 May 1997

These steam traps are pressure equipment as defined in article 1, section 2.1.4 of the PED.

Applied conformity assessment procedure as described in Annex III: Module A

This declaration is no longer valid if modifications are made to the equipment without consultation with us.

Bremen, 5th December 2001
GESTRA AG

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