# Instructions for Installation and Maintenance

# GESTRA® Float Trap UNA 27 h

Issue Date: 12/91

**Steam Traps**
**PN 63**
**DN 25, 40, 50 mm**
**(1, 1 1/2, 2")**
**UNA 27 h**

**A1**

## Operation

The UNA 27 h Duplex is a float trap with Duplex control for horizontal installation. The ball valve is operated by the float as a function of the condensate level in the trap, i.e. the valve opening depends on the amount of condensate formed. The thermostatic bellows (Duplex control) operates the valve as a function of temperature and ensures automatic air-venting.

The max. permissible differential pressure depends on the cross-sectional area of the orifice. The UNA 27 h is available with the following orifices for max. differential pressures: 45 bar (650 psi), 28 bar (405 psi) or 16 bar (230 psi).

The special features of the UNA 27 h, such as large capacity, small trap body, automatic air-venting during start-up and in continuous operation and operation independent of back pressure, ensure an almost universal application of the trap.

For draining gas and compressed air lines and for the discharge of other cold condensates or distillates, as well as for trapping superheated steam lines, the UNA 27 h Simplex (without thermostatic bellows) is suitable.

## Design

Duplex: with automatic air-venting.

Simplex: without thermostatic bellows, with hand-vent valve supplied separately to be fitted before installation of trap.

When ordered, the float-lifting lever is supplied fitted. It permits purging of the trap during operation.

## Pressure/Temperature Rating

**(DIN 2401) PN 63 GS 22 Mo 4**

| | | | | | |
|---|---|---|---|---|---|
| PMA (Maximum allowable pressure) | barg | 63 | 56 | 47 | 45 |
| | psig | 915 | 810 | 680 | 650 |
| TMA (Maximum allowable temperature) | °C | 250 | 300 | 400 | 450 |
| | °F | 482 | 572 | 752 | 842 |
| Δ PMX (Maximum differential pressure) (**inlet** pressure minus **outlet** pressure) | | 45 bar (650 psi) | | | |

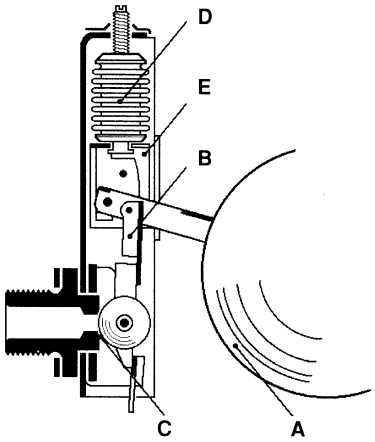



Fig. 1

## Operating Principle (Duplex Design)

Float **A** operates ball valve **C** via link **B** as a function of the condensate level in the trap. The bellows (thermostatic element) **D** is connected to link **B** by carrier **E**. The factory setting of the bellows is such that ball valve **C** is open at temperatures below saturation temperature (at service pressure). Air and incondensable gases can escape. When a condensate/steam mixture flows into the trap, bellows **D** expands, so that ball valve **C** slides in front of the orifice. Drainage now depends on the condensate level in the trap.

## Installation of Trap

The direction of flow is indicated by an arrow on the trap, inlet side. The trap should only be installed in horizontal lines, cover pointing downwards (name plate on top).

**Installation of Hand Vent Valve 4.5 (Fig. 7)**

1. The hand vent valve is supplied separately and must be fitted in place of upper plug **4.1** before submitting trap to pressure. Remove upper plug **4.1** with gasket **4.2**.
2. Screw in hand vent valve **4.5** (3/8" BSP) with gasket **4.2** and tighten.
3. Close valve **4.5** turning to the right.

**Float-Lifting Lever 4.6 (Fig. 6)**

When ordered, lifting lever **4.6** is supplied fitted. Turning the handle **4.6.7** to the left will lift the float and open the valve.

Should the lifting lever be fitted afterwards, it is essential to depressurize trap and to ensure that the lever is positioned underneath the ball float.

## Exchange of Control Unit 3.6 and Seat 2

1. Cut off steam and depressurize trap.
2. Unscrew hexagonal nuts **3.4** from fixing studs **3.3** and remove cover **3.1**.
3. Unscrew socket-head screws **3.7**, take out control unit **3.6**.
4. Unscrew seat **2**.
5. Clean sealing surfaces, and insert new gasket **3.5**
6. Mount seat **2** and control unit **3.6**, insert gasket **3.2** and replace cover **3.1**.

## Drainage

1. Cut off steam, in the case of back pressure also shut off condensate line.
2. Carefully unscrew drain plugs **3.10** and **3.13**, so that trap body can run empty.
3. If necessary, open hand vent valve **4.5** and close immediately all condensate has drained off.
4. Screw in drain plugs **3.10** and **3.13** and tighten. Do not damage gasket.

## Tools Required

Spanners A.F. 17, 19, 22, 24, 27, 30, 36 mm.

5 and 6 mm Allen keys.

4 mm screwdriver.

## Important Notes

1. Retighten nuts **3.4** shortly after first use in diagonally opposite pairs.
2. The factory setting of the bellows must not be modified. If the setting is inadvertently modified, an approximate adjustment may be obtained as follows: press float down lightly until a resistance is felt. Adjust bellows until dimension X is 32 mm for trap size DN 25 mm (1") and 51.5 mm for trap sizes DN 40 and 50 mm (1 1/2 and 2").
3. The max. differential pressure is stamped on the left side of the collar of seat **2**.
4. After reassembly of trap check that hand-vent valve **4.5** is in closed position and float-lifting lever **4.6** in normal position.

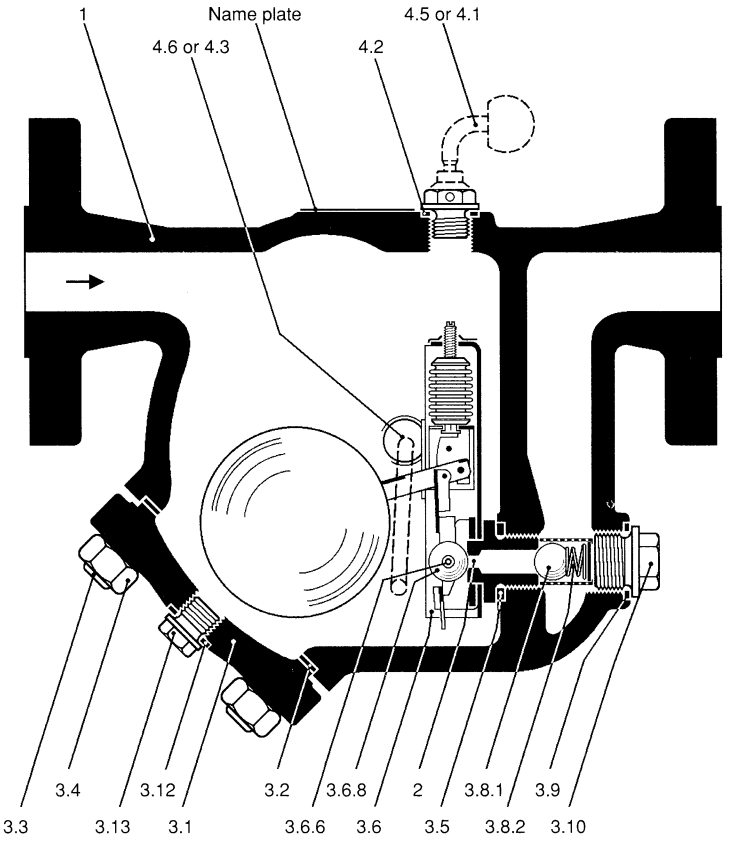



**Fig. 2**

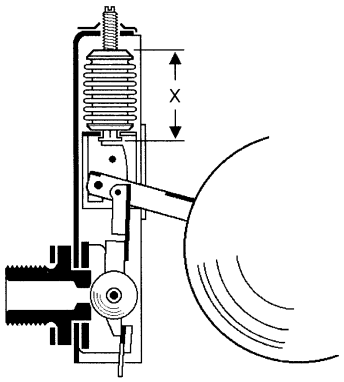



**Fig. 3:** *Control unit Duplex*

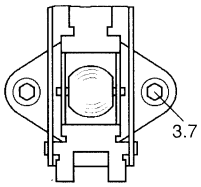



**Fig. 4**

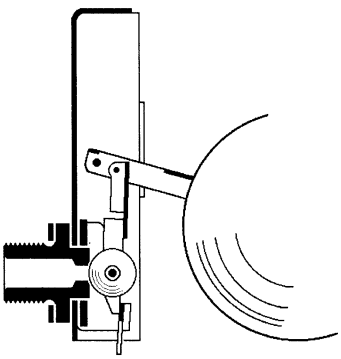


**Fig. 5:** *Control unit Simplex*

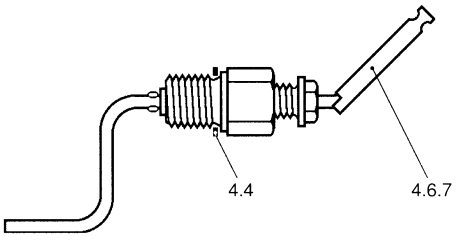



**Fig. 6:** *Float- lifting lever 4.6*

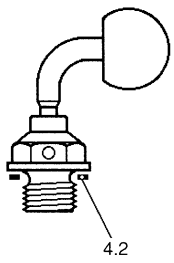



**Fig. 7:** *Hand - vent valve 4 .5*

## Parts List

**for UNA 27 h of GS- 22 Mo 4 (DIN No. 1.5419)**

| Item- No. | Designation | | DN 25 mm (1") Order- No. | DN 25 mm (1") Number | DN 40, 50 mm (1 1/2, 2") Order- No. | DN 40, 50 mm (1 1/2, 2") Number | Hints |
|---|---|---|---|---|---|---|---|
| 1 | Body | | - | 1 | - | 1 | no spare part |
| * 2a | Seat including gasket 3.5 | Orifice 45 | 560 382 | 1 | 560 385 | 1 | |
| * 2b | and 2 socket- head screws 3.7 | Orifice 28 | 560 383 | 1 | 560 386 | 1 | |
| * 2c | | Orifice 16 | 560 384 | 1 | 560 387 | 1 | |
| 3.1 | Cover | | - | 1 | - | 1 | no spare part |
| * 3.2 | Cover gasket 88 x 106 x 1 - DN 25 mm<br>152 x 172 x 1 - DN 40, 50 mm | | 522 247 | 1 | 522 248 | 1 | graphite/CrNi |
| 3.3 | Fixing stud M 16 x 35 - DN 25 mm<br>M 16 x 45 - DN 40, 50 mm | | 012 578 | 4 | 012 562 | 8 | DIN 938 |
| 3.4 | Hexagonal nut M 16 | | 010 168 | 4 | 010 168 | 8 | DIN 934 |
| * 3.5 | Seat gasket 22 x 27 - DN 25 mm<br>24 x 29 - DN 40, 50 mm | | 010 493 | 1 | 013 322 | 1 | 1.4301N |
| * 3.6a | Control unit Duplex including cover gasket 3.2 and 2 socket-head screws 3.7, without seat | | 560 367 | 1 | 560 369 | 1 | |
| * 3.6b | Control unit Simplex including cover gasket 3.2 and 2 socket-head screws 3.7, without seat | | 560 366 | 1 | 560 368 | 1 | |
| * 3.6c | Control unit Duplex including seat gasket 3.5, | Orifice 45 | 560 378 | 1 | 560 381 | 1 | |
| * 3.6d | cover gasket 3.2 and | Orifice 28 | 560 377 | 1 | 560 380 | 1 | |
| * 3.6e | 2 socket- head screws 3.7, and seat | Orifice 16 | 560 376 | 1 | 560 379 | 1 | |
| * 3.6f | Control unit Simplex including seat gasket 3.5, | Orifice 45 | 560 372 | 1 | 560 375 | 1 | |
| * 3.6g | cover gasket 3.2 and | Orifice 28 | 560 371 | 1 | 560 374 | 1 | |
| * 3.6h | 2 socket- head screws 3.7, and seat | Orifice 16 | 560 370 | 1 | 560 373 | 1 | |
| * 3.6.8 | Ball valve with pin 3.6.6 | | 560 055 | 1 | 560 056 | 1 | |
| 3.7 | Socket- head screw M 6 x 20 - DN 25 mm<br>M 8 x 25 - DN 40, 50 mm | | 013 501 | 2 | 012 565 | 2 | DIN 912 A 2 |
| 3.8.1 | Ball (∅ 17 mm) | | 012 653 | 1 | 012 653 | 1 | |
| 3.8.2 | Spring | | 520 601 | 1 | 522 749 | 1 | |
| 3.9 | Gasket | | 012 209 | 1 | 012 209 | 1 | DIN 7603, 1.4571 |
| 3.10 | Plug 3/4" BSP | | 522 734 | 1 | 522 893 | 1 | |
| 3.12 (4.2) | Gasket | | 012 579 | 1 (1) | 012 579 | 1 (1) | DIN 7603, 1.4571 |
| 3.13 (4.1) | Plug 3/8" BSP | | 012 576 | 1 (1) | 012 576 | 1 (1) | DIN 910 |
| 4.3 | Plug 1/2" BSP | | 012 580 | 1 | 012 580 | 1 | DIN 910 |
| 4.4 | Gasket | | 012 088 | 1 | 012088 | 1 | DIN 7603, 1.4571 |
| 4.5 | Hand vent valve including gasket 4.2 | | 560 059 | 1 | 560 059 | 1 | |
| 4.6 | Float- lifting lever including gasket 4.4 and handle 4.6.7 | | 560 063 | 1 | 560 064 | 1 | |
| 4.6.7 | Handle for float- lifting lever | | 520 049 | 1 | 520 049 | 1 | |

* Parts subject to wear (stock- keeping recommended)

## Torques Required for Tightening Parts at Room Temperature

**2** - 180 Nm, DN 25 mm (1")
240 Nm, DN 40, 50 (1 1/2, 2")

**3.4** - 115 Nm

**3.7** - 5 Nm, DN 25 mm (1")
10 Nm, DN 40, 50 mm (1 1/2, 2")

**3.10** - 260 Nm

**3.13** - 140 Nm

**4.1** - 140 Nm

**4.3** - 170 Nm

**4.5** - 140 Nm

**4.6** - 170 Nm

# A1

**Steam Traps**
**PN 63**
**DN 25, 40, 50 mm**
**(1, 1 1/2, 2")**

**UNA 27 h**

GESTRA
AKTIENGESELLSCHAFT
P.O.B. 105460 · D-2800 Bremen 1 · Tel. (0421) 3503-0
Fax (0421)3503-393 · Tx 244945-0 gb d · Ttx 4212166=GAGHB

## Maintenance

The UNA 27 h does not require any particular maintenance. It is, however, recommended to purge the trap from time to time, either

1. by operating float-lifting lever **4.6** during operation or

2. by unscrewing plug **3.13** and brief opening of the isolating valve in the steam line. Do not forget to depressurize trap before unscrewing plug.

## Capacity Chart

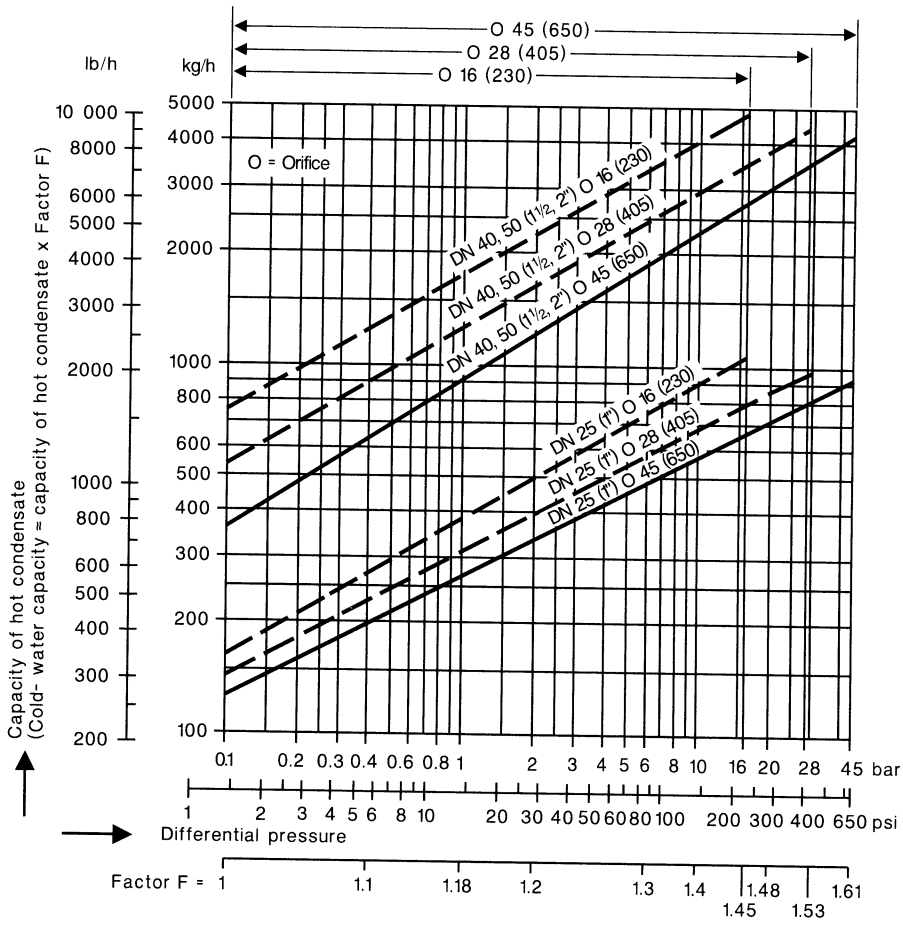
The chart shows the maximum capacities of hot condensate for the range of orifices (O) and sizes available. The cold water capacities are: Capacity of hot condensate multiplied by factor F.

The capacities are dependent on the differential pressure (working pressure). The differential pressure is the difference between inlet and outlet pressures and depends among other things on the run of the line. If the condensate downstream of the trap is lifted, the differential pressure (working pressure) is reduced by approximately 1 bar for 7 m (or 2 psi for 3 feet) in lift.

The maximum admissible differential pressure is dependent on the cross- sectional area of the orifice.

The standard design of the trap is available for a maximum differential pressure of 45 bar (650 psi), see thick lines in the chart.

If, however, larger capacities are required, special orifices are available for differential pressures of:
28 bar (405 psi) or
16 bar (230 psi)
(dashed lines in the chart).




| $k_V$ values in $m^3/h$ | | |
|---|---|---|
| | DN 25 mm (1") | DN 40,50 mm (1 1/2, 2") |
| Orifice 45 | 0.31 | 1.1 |
| Orifice 28 | 0.38 | 1.5 |
| Orifice 16 | 0.44 | 2.1 |

$C_V$ (U.S.) = 1.17 · $k_V$
$C_V$ (U.K.) = 0.98 · $k_V$

Technical modifications reserved.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