

LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR

Operating manual (as of: 24.09.2010)



This publication describes the status of this product at the point in time of publication and does not necessarily correspond with future versions of the product.

Subject to alterations!

Reprinting, duplication or translation of this operating manual, including only excerpts, is not permitted without the written consent of VULKAN LOKRING Rohrverbindungen GmbH & Co. KG.

© Copyright 2010 VULKAN LOKRING Rohrverbindungen GmbH & Co. KG

All rights reserved!

CONTENTS

1	GENERAL INFORMATION	04
1.1	PROPER USE OF LOKTRACER TLD.1000	04
1.2	EXPLANATION OF SYMBOLS	04
2	FOR SAFE OPERATION	05
3	YOUR LOKTRACER TLD.1000	06
3.1	SUPPLIED ACCESSORIES	06
3.2	CONTROLS	07
4	INITIAL COMMISSIONING AND DESCRIPTION OF FUNCTIONS	08
4.1	SWITCHING ON AND OFF	08
4.2	SWITCHING THE LC DISPLAY LIGHT ON AND OFF	09
4.3	SWITCHING THE ACOUSTIC SIGNAL ON AND OFF	09
4.4	CHANGING THE LEAK DETECTION MODE	09
4.5	LEAKAGE RATE DISPLAY	10
4.6	MANUAL SUPPRESSION OF BACKGROUND CONCENTRATIONS	10
4.7	CHARGING OF THE RECHARGEABLE BATTERIES	10
5	TRACE GAS LEAK DETECTION	11
5.1	FUNCTIONAL PRINCIPLE	11
5.2	IMPLEMENTATION	11
6	SERVICING THE LOKTRACER TLD.1000	14
6.1	CLEANING AND CARE	14
6.2	MAINTENANCE	14
7	DISPOSAL	14
7.1	DISPOSAL OF THE PACKAGING	14
7.2	DISPOSAL OF THE OLD DEVICE	14
8	TROUBLESHOOTING	15
9	TECHNICAL DATA	15
10	SHORT INSTRUCTIONS	16

LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR

1. GENERAL INFORMATION

This operating manual describes the trace gas leak detector LOKTRACER TLD.1000 for people performing maintenance or installation work on refrigeration or air-conditioning systems and who have the corresponding skills and know-how.

Please read this operating manual with all due care and attention before using the device for the first time. It gives you all necessary information for safe, effective operation of the LOKTRACER TLD.1000.

Please also comply with:

- Statutory regulations regarding the handling of refrigeration or air-conditioning systems
- Special instructions for the maintenance of refrigeration or air-conditioning systems possibly available in your company

Keep this operating manual with your LOKTRACER TLD.1000 so that you can find the required information quickly when the need arises.

1.1 PROPER USE OF LOKTRACER TLD.1000

LOKTRACER TLD.1000 is rated for commercial use and serves for leakage detection in refrigeration and air-conditioning systems in conjunction with LOKTRACE gas which is a mixture consisting of 95% nitrogen and 5% hydrogen.

LOKTRACER TLD.1000 may only be used by persons having the necessary skills and know-how for the maintenance or installation of refrigeration and air-conditioning systems.

VULKAN LOKRING Rohrverbindungen GmbH & Co. KG does not assume any liability for damage caused by the following:

- Use for any other than the purposes described in this operating manual
 - Changes to LOKTRACER TLD.1000 made without the explicit approval of VULKAN LOKRING Rohrverbindungen GmbH & Co. KG
 - Damage to the device caused by external influences
 - Incorrect operation
-

1.2 EXPLANATION OF SYMBOLS



Risk of personal injury or damage to the device



Special information for using the device effectively

LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR

2 FOR SAFE OPERATION



Please read through this operating manual with all due care and attention before using this device for the first time.

General safety instructions:

Only use this device for the intended purpose stated in chapter 1.1 (see page 4).

This device has been developed solely for LOKTRACE gas. Other gases can cause damage to the refrigeration or air-conditioning system.

Pay special attention in particular to the right mixing ratio of 95% nitrogen to 5% hydrogen. Concentrations with a share of more than 5.7% hydrogen are explosive.

Never inhale LOKTRACE gas.

The LOKTRACE gas filling in the cylinder must be replaced at least once a year, as in the long term, hydrogen escapes even from steel cylinders.

Do not run a refrigeration or air-conditioning system filled with LOKTRACE gas. This could damage the system.

Wear safety goggles and safety gloves during the maintenance of refrigeration and air-conditioning systems. Any contact between refrigerant and your body can cause frostbite in these places because the refrigerant withdraws heat from your body.

Refrigerant vapours are heavier than air. Never inhale refrigerant vapours. They will displace the oxygen you need to breath.

Do not make any changes or alterations to this device.

Repairs may only be carried out by trained staff. Only original spare parts from VULKAN LOKRING may be used.

Check that the device is undamaged every time before you use the device.

Do not use the device if the device is damaged.

Following leak detection with LOKTRACE gas or possibly after carrying out repairs, always evacuate the refrigeration or air-conditioning system according to the manufacturer's instructions.

Never blow tobacco smoke onto the sensor head of the tracer gas leak detector to „check whether it works“. The tar residues in the smoke can settle on the sensor surface and reduce its sensitivity.

Do not hold the sensor head of the trace gas leak detector to the LOKTRACE gas cylinder valve and open the LOKTRACE gas cylinder valve to „check whether it works“. This could damage the sensor system.

The diffusion surface of the sensor head of the trace gas leak detector must always be kept clean and free of oil or grease. Do not spray it with any evaporating liquids or gases as this distorts the future display values and generates error messages.

Make sure that the sensor head of the trace gas leak detector never comes into contact with vapours and substances containing silicone.

Please also comply with these safety instructions:

- Statutory regulations regarding the handling of refrigeration or air-conditioning systems
- Special instructions for the maintenance of refrigeration or air-conditioning systems possibly available in your company

LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR

3 YOUR LOKTRACER TLD.1000

3.1 SUPPLIED ACCESSORIES



- Operating manual on CD-ROM



- Mains adapter

The LOKTRACER TLD.1000 has been carefully checked before shipment.

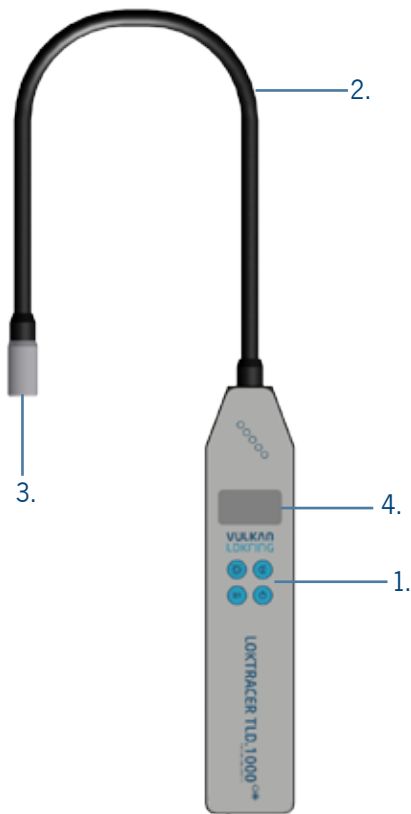
On receiving the delivery, please check that all the parts named above are present and not damaged in any way.

If any parts are missing or damaged, immediately inform the company responsible for the transport.

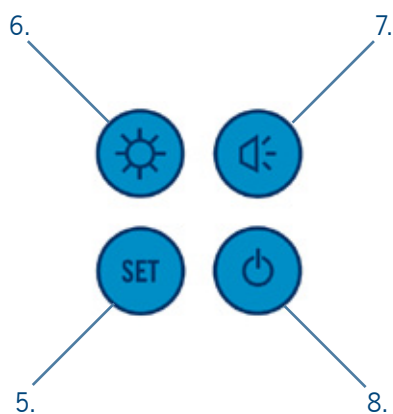
LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR

3.2 CONTROLS



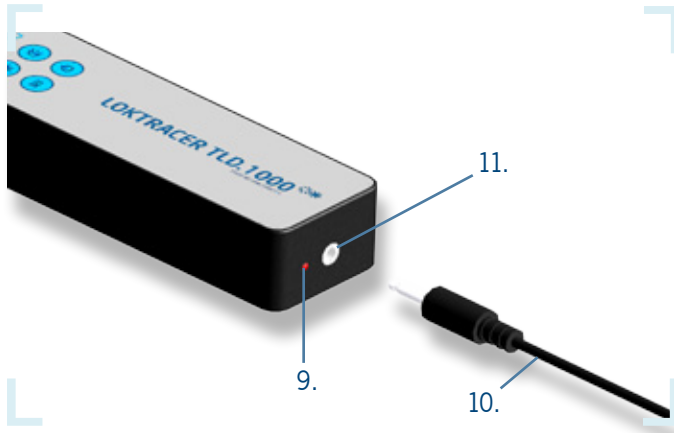
- 1. Function keys
- 2. Measuring sensor
- 3. Sensor head
- 4. LC display



- 5. Set button
- 6. Light button
- 7. Sound button
- 8. On/Off button

LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR



- 9. Charging control LED
- 10. Mains adapter
- 11. Power jack

4 INITIAL COMMISSIONING AND DESCRIPTION OF FUNCTIONS



1. Before using the LOKTRACER TLD.1000 for the first time it is necessary to charge the rechargeable batteries completely.
2. If the LOKTRACER TLD.1000 has not been used for a longer period of time or if it has been exposed to highly contaminated, dirty air for a longer period of time, it is possible for deposits to settle on the gas sensor in the device. This can lead to the display of a non-existing gas concentration. Switching the device on frequently and letting it heat up cleans the sensor so that it returns to its original zero and is therefore completely ready for normal use. If this is not the case, carry out a test in uncontaminated outside air to check whether the air inside the room is polluted.
3. If the LOKTRACER TLD.1000 has been stored below 0°C for a longer period of time, it must be switched on at least 10 minutes before use. Leak detection can then begin.

4.1 SWITCHING ON AND OFF



Switch the LOKTRACER TLD.1000 on and off by pressing and holding the On/Off button (8).



1. After switching on, all LEDs light up and the green LED is flashing. The LC display (4) shows "HEAT". During this phase, the sensor heats up and gets cleaned for up to 50 seconds.
2. If the upper left corner of the LC display (4) shows a battery symbol the rechargeable batteries have to be charged. In this case, you can continue to work with the device for approx. 15 minutes.
3. The hydrogen concentration in the ambient air is automatically set to a leakage rate of 0 g p.a. when the LOKTRACER TLD.1000 is switched on. You should therefore never switch the LOKTRACER TLD.1000 on in a contaminated atmosphere.
4. After switching on, the LOKTRACER TLD.1000 is working in the non-selective search mode (see chapter 4.4).

LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR

4.2 SWITCHING THE LC DISPLAY LIGHT ON AND OFF



With the LOKTRACER TLD.1000 on, switch the LC display light on and off by pressing and holding the light button (6) until you hear the beep.

4.3 SWITCHING THE ACOUSTIC SIGNAL ON AND OFF



With the LOKTRACER TLD.1000 on, switch the acoustic signal on and off by pressing and holding the sound button (7) until you hear the beep.

4.4 CHANGING THE LEAK DETECTION MODE



The LOKTRACER TLD.1000 offers two different leak detection modes, the very sensitive search mode and the very selective measuring mode. After switching on, the LOKTRACER TLD.1000 is working in the search mode. In this mode, the LOKTRACER TLD.1000 is very sensitive but not really selective, i. e., the unit also reacts to other gases.

The search mode enables you to detect really small leaks. If you detect a gas concentration in the search mode, it is necessary to switch to the measuring mode to ensure that the detected gas is really hydrogen. Whenever the unit is working in the measuring mode, the LC display (4) shows the unit [ppm] after the measured value. The search mode does not show a unit after the measured value.



With the LOKTRACER TLD.1000 on, change the leak detection mode by pressing and holding the set button (5) until you hear the beep.

LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR

4.5 LEAKAGE RATE DISPLAY

The extent of the leak is displayed in [ppm]. Additionally it is indicated by the speed of the acoustic signal as well as by the yellow and red LEDs.



LOKTRACER TLD.1000 measures hydrogen concentrations in the ambient air. However, this operating manual states leakage rates for refrigerant in grams per year.

Meaning of the displayed measuring values at a pressure of 5 bar:

R134a		R600a	
ppm	g/a	ppm	g/a
1	1.5	1	0.7
10	15	5	3.7
100	150	100	7.5

4.6 MANUAL SUPPRESSION OF BACKGROUND CONCENTRATIONS



For large leaks, you can suppress a background concentration of up to 30 g p.a. To do so make sure that the unit is working in the measuring mode and press and hold the set button (5) until you hear two beeps. The LC display (4) shows "SET" and a measuring value of 0 ppm. The current hydrogen concentration will no longer trigger an acoustic alarm. The acoustic signal will only speed up and the LEDs go on when the hydrogen concentration increases, i.e. when you get closer to the actual leak.

4.7 CHARGING OF THE RECHARGEABLE BATTERIES



The LOKTRACER TLD.1000 can be used with the mains adapter (10) connected. In this case the rechargeable batteries are not charging. For charging of the rechargeable batteries the LOKTRACER TLD.1000 has to be turned off.



Connect the mains adapter (10) to the power jack (11). The charging control LED (9) lights red. The LC display (4) shows "LOAD". When the rechargeable batteries are fully charged, the LC display (4) shows "FULL". If the rechargeable batteries are completely discharged, the charging process can last up to 12 hours.

LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR

5 TRACE GAS LEAK DETECTION

5.1 FUNCTIONAL PRINCIPLE

Trace gas leak detection has seen years of successful use on the industrial sector for checking the tightness of refrigeration and air-conditioning systems.

LOKTRACE gas is used for leak detection; this is a gas mixture consisting of 95% nitrogen and 5% hydrogen. The hydrogen share acts as trace gas.

LOKTRACE gas is non-toxic, non-corrosive and not harmful to the environment. Thanks to its chemical properties, the gas spreads very quickly through the test device. Outside the system, LOKTRACE gas volatilises very quickly so that there will not be any persistent pollution of the ambient air around the test device.

The international standard ISO 10156 states that a mixture consisting of 95% nitrogen and 5% hydrogen is not inflammable. This also applies when it is released and mixes with air.

LOKTRACE gas is filled into the empty system at a pressure of approximately 5 bar. The trace gas leak detector can be used to locate leakages.

Hydrogen molecules are the smallest particles occurring in nature and escape from even the tiniest leakages. Consequently, it is possible to detect tiny leakages so that the leak detector fulfils standards EN 35422 and EN 14624 which demand the detection of leakages of less than 5 g per year.

As hydrogen is lighter than air, the hydrogen molecules rise and the pipes can be easily checked from above.

The trace gas leak detector reacts almost exclusively to hydrogen. It therefore has only very negligible cross sensitivities. As a result, this kind of leak detection is highly reliable.

As LOKTRACE gas is a natural gas, it can be filled into the empty system for leak detection and simply released into the environment after the detection procedure.

5.2 IMPLEMENTATION



To optimise the response time of the LOKTRACER TLD.1000, we recommend exposing the sensor to a small amount of LOKTRACE gas before each leak detection.



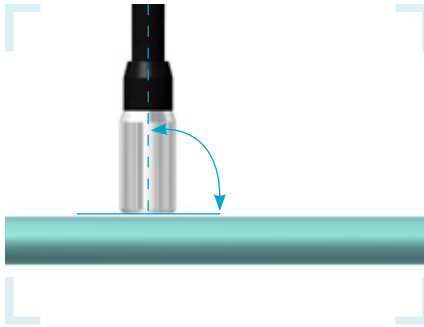
Never switch the refrigeration or air-conditioning system on during leak detection.



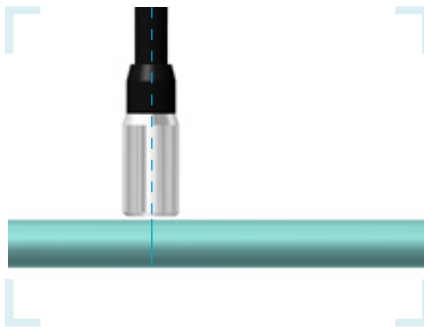
1. In the case of large leaks (rough leaks), the leakage site can frequently be found through the noise of the escaping gas. If you cannot find the leak without using the LOKTRACER TLD.1000, please comply with the instructions for suppressing background concentrations of hydrogen in chapter 4.6. If this still is not sufficient, reduce the test pressure to 2 bar and blow compressed air through the area above the refrigeration or air-conditioning system to reduce the hydrogen concentration.
2. Following a large leak, there will be a high concentration of hydrogen in the air. Air the area well before the next leak detection.

LOKTRACER TLD.1000

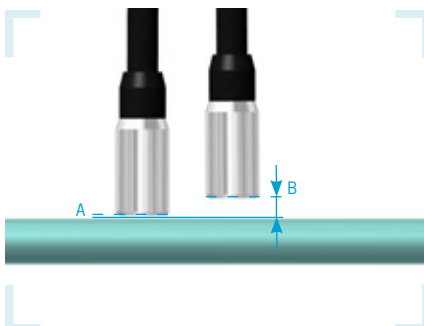
TRACE GAS LEAK DETECTOR



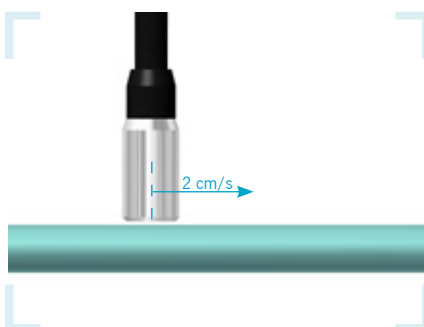
The sensor head (3) needs to be at right angles with the surface which needs to be checked.



The sensor head (3) needs to be centred to the surface which needs to be checked.



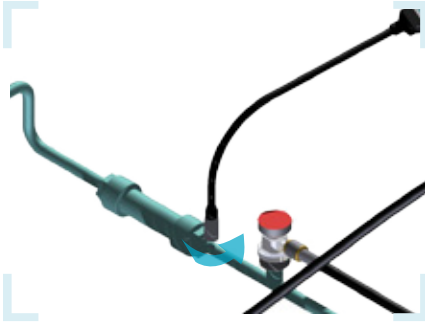
The optimal distance (A) between the sensor head (3) and the surface which needs to be checked is 1 mm. At spaces which are difficult to access the maximum distance (B) shall not be greater than 5 mm.



Move the sensor head slowly along the air-conditioning pipe (max. 2 cm per second).

LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR



Screwed unions or other connection points must be „scanned“ slowly, i.e. move the sensor head (3) right around the complete connection point.



When the LOKTRACER TLD.1000 indicates a leak, it is advisable to hold the sensor head (3) away from the leakage site for approx. 5 to 10 seconds. Then check whether the LOKTRACER TLD.1000 indicates a leak at the same site again. Repeat this step up to three times. This verifies that there really is a leak at this site.

If a leak is detected, switch to the measuring mode by pressing the set button (5) until you hear the beep.

Now the size of the leak is displayed in [ppm].

LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR

6 SERVICING THE LOKTRACER TLD.1000

6.1 CLEANING AND CARE

If necessary, clean the LOKTRACER TLD.1000 with a clean cloth.
Do not use any solvents or abrasive cleaning agents.

6.2 MAINTENANCE



It is necessary to arrange for annual inspections by the manufacturer, a service company or instructed staff. The inspection sticker adhered to the device housing shows when the last inspection was carried out and indicates the date of the next one.



The LOKTRACER TLD.1000 must only be maintained by the manufacturer or by instructed staff in service companies.

7 DISPOSAL

7.1 DISPOSAL OF THE PACKAGING

Dispose of the packaging as waste paper.
Dispose of plastic packaging as recycling waste.

7.2 DISPOSAL OF THE OLD DEVICE

On finally decommissioning the LOKTRACER TLD.1000, take it to the next recycling centre.

LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR

8 TROUBLESHOOTING

Error code	Cause	Recommendation
ERR P	disturbed gas flow	Send in the device.
E 32	calibration error	Send in the device.
E 64	damaged sensor	Send in the device.
E 128	memory error	Send in the device.
E 192	memory error and damaged sensor	Send in the device.
ACCU	rechargeable batteries are low	Charge the rechargeable batteries.
UEG	excessive hydrogen concentration	Switch the unit off and on.

9 TECHNICAL DATA

Power supply	Rechargeable batteries
Measuring range	1ppm to 999ppm / 0.1Vol% to 4 Vol%
Resolution	1ppm / 0.1 Vol%
Test gas	Forming gas 95/5, 5 Vol% hydrogen in 95 Vol% nitrogen
Time until ready	< 50 sec.
Reaction time	2 to 3 sec.
Tolerable operating temperature	-5°C to 40°C
Tolerable storage and transport temperature	-25°C to 70°C
Tolerable storage and transport humidity	20% to 80% rel. hum.
Power consumption	2 watt
Operating period	approx. 2.5 hours
Probe	300 mm
Dimensions (length x width x height)	190 x 40 x 28 mm
Weight	320g

LOKTRACER TLD.1000

TRACE GAS LEAK DETECTOR

10 SHORT INSTRUCTIONS



It is very important that you read the detailed operating manual before starting the LOKTRACER TLD.1000.

Switch LOKTRACER TLD.1000 on by pressing the lower button in fresh air or in a gas-free environment. After switching on, at the end of a brief period you will hear a continuous tone.

The LC display shows "HEAT".

After the heating-up phase, the green LED lights up and indicates that the device is ready together with the acoustic signal that begins at the same time (ticking tone).

The unit starts working in the very sensitive but non-selecting search mode.

When the gas concentration increases, the acoustic signal gets louder.

Briefly press the set button to change to the measuring mode.

Briefly press the sound button to switch the acoustic signal on and off.

Press and hold the upper push-button to suppress background concentrations of up to 30 g p.a. In this mode the LC display shows "SET".

Briefly press the light button to switch the LC display light on and off.



LOKRING: Weltweite Verbindungen

LOKRING: connecting worldwide



D VULKAN LOKRING Rohrverbindungen GmbH & Co. KG

Heerstraße 66 _ 44653 Herne/Germany _ PO Box 20 04 68 _ 44634 Herne/Germany
Phone +49 23 25 92 23 04 _ Fax +49 2 32 55 12 22
E-mail: info.lok@vulkan.com _ www.vulkan.com

**VULKAN
LOKRING**

AUS Australien – Australia
VULKAN INDUSTRIES
Far East Pte. Ltd.
12 Wollong Street
AU – 2250 North Gosford NSW
Phone +61 2 43 22 85 -33 / Fax -99
E-mail: info@vulkan.com.au

B Belgien – Belgium
L Luxemburg – Luxembourg
NL Niederlande – Netherlands
LOKRING Benelux
Van Coulsterweg 3
NL – 2952 CB Alblasserdam
Phone +31 7 86 81 07 80
Fax +31 7 86 81 07 99
E-mail: lokring@vulkan-benelux.com

BR Brasilien – Brasil
VULKAN DO BRASIL Ltda.
Av. Tamboré 1113 _ Alphaville Industrial
BR – CEP 06460-915 Barueri, SP
Phone +55 11 41 66 66 00
Fax +55 11 41 95 19 71
E-mail: lokring@vulkan-brasil.com.br

CN China
Shanghai Branch of WUXI VULKAN
Technologies Co.,Ltd
Room 906-907
Yi Xiang Building
No. 1599, Road Yan An (W)
CN – 200050 Shanghai
Phone +86 21 52 37 70 -01 / Fax -04
E-mail: info@vulkan-lokring-china.com

F Frankreich – France
VULKAN FRANCE
Froid & Climatisation
12 avenue Emile Zola – ZAC de L'Agavon
F – 13170 Les Pennes Mirabeau
Phone +33 4 42 02 21 -06 / Fax -09
E-mail: ppeignard@vulkan.fr

GR Griechenland – Greece
Zypern – Cyprus
Hannele Smirneos
Manis 14
GR – 15234 Halandri
Phone / Fax +30 21 06 08 12 -78
E-mail: vulkansm@otenet.gr

GB Großbritannien – Great Britain
VULKAN INDUSTRIES LTD.
Archer Road/Armytage Road
GB – HD6 1XF Brighouse, West Yorkshire
Phone +44 14 84 71 22 73
Fax +44 14 84 72 13 76
E-mail: info@vulkan.co.uk

IND Indien – India
VULKAN Technologies PVT LTD.
GAT NO 399. Plot no 6.
Village-Bhare, Pirangut Ind. Area
Tal. Mulshi
IN – 412111 Pune
Phone +91 20 22 92 37 -70 / Fax -69
E-mail: vulkan@vsnl.net

I Italien – Italy
VULKAN Italia S.R.L.
Via dell' Agricoltura 2
I – 15067 Novi Ligure
Phone +39 01 43 31 02 11
Fax +39 01 43 32 97 40
E-mail: info@vulkan-italia.it

ROK Korea
DUO EnTech
#501, World Vision Bldg.
234-6, Gocheon-Dong, Ulsang-City,
Kyunggi-Do
KR – 437-801, Korea
Phone +82 3 14 27 54 25
Fax +82 3 14 57 54 25
E-mail: duoitl@unitel.co.kr

N Norwegen – Norway
BSH Husholdningsapparat AS
P.b. 6595 Etterstad
N – 0606 Oslo
Phone +47 22 66 06 00
Fax +47 22 66 05 50
E-mail: atle.jensen@bshg.com

PL Polen – Poland
Zakład Handlowo-Usługowy »AGMET«
Wojciech Gierczyk
Ul. Zatorska 36
PL – 51215 Wrocław
Phone +48 71 34 55 420
Fax +48 71 34 55 310
E-mail: gierczyk@agmet.cc.pl

RO Rumänien – Romania
Aston Com S.A.
Str. Drum Intre Tariale 160-174
Depozit 7, Sector 3
RO – 032982 Bucuresti
Phone +40 3 11 00 00 -95 / Fax -96
E-mail: alin.opran@yahoo.com

S Schweden – Sweden
Kylma AB
Smidesvägen 4-8
SE – 17104 Solna
Phone +46 8 59 89 08 -32 / Fax -91

SRB Serbien/Montenegro
MNE Serbia/Montenegro
LOKRING d.o.o.
Borivoja Stevanovića 12b
CS – 11000 Belgrad
Phone +38 11 13 34 78 -61 / Fax -60
E-mail: office@lokring.rs

SK Slowakei – Slovakia
PULZAR 2i, s.r.o.
Cementarenska 16
SK – 97401 Banská Bystrica
Phone / Fax +42 1 4 84 14 13 99
E-mail: pulzar-bb@stonline.sk

SLO Slowenien – Slovenia
DINES d.o.o.
Vurnikova 2
SI – 1000 Ljubljana
Phone +38 6 14 38 39 15
Fax +38 6 14 33 72 38
E-mail: dines@dines.si

E Spanien – Spain
VULKAN ESPAÑOLA, S.A.
Avda. Montes de Oca 19, Nave 7
E – 28709 San Sebastián de los Reyes (Madrid)
Phone +34 9 13 59 09 71
Fax +34 9 13 45 31 82
E-mail: vulkan@vulkan.es

ZA Südafrika – R.S.A.
VULKAN LOKRING SA (Pty) Ltd.
Suite 73 Private Bag X18
ZA – 7701 Rondebosch
Phone +27 2 16 86 23 48
Fax +27 2 15 55 16 13
E-mail: vulkansa@africa.com

CZ Tschechische Republik – Czech Republic
LEDOCOM spol. s.r.o.
Sibřina 149
CZ – 25084 Praha-Ost
Phone +42 0 2 41 71 65 08
Fax +42 0 2 41 71 65 08 25
Email: info@ledocom.cz

TR Türkei – Turkey
OSMAN KAYNAK MÜMESSİLLİK
VE DANISMANLIK HİZMETLERİ
Çengelköy Halk Caddesi No:8 D:3
TR – 34680 Çengelköy Üsküdar İstanbul
Phone +90 21 64 22 79 07
Fax +90 21 64 22 60 18
E-mail: osman.kaynak@kaynakmdh.com

H Ungarn – Hungary
A/C Légkondicionáló Kft.
Alsókubin u. 7
H – 1119 Budapest
Phone +36 13 63 06 00
Fax +36 13 83 61 16
E-mail: mosonyi.andras@acklima.hu

USA USA
AMERICAN LOKRING CORPORATION
2551 State Road 60 W Bartow
FL 33830, USA
Phone +01 86 35 33 41 68
Fax +01 86 37 33 90 30
E-mail: info@lokringusa.com