

DMEGA Suction System **TERAVAC** Model

Installation & User's Manual

Teravac Series





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Certificate of conformity



This devices classification according to Council Directive 93/42/EEC as amended by Directive 2007/47/EC Annex IX Rule 12 is I

DMEGA Co., Ltd. Certificated under sole responsibility that the product :

Product name : Teravac Series

Product type/model : Dry Process Suction

- Ordinary equipment (IPX0).
- Equipment not suitable for use in the presence of a flammable anesthetic
- Mixture with air or with oxygen or nitrous oxide.
- Continuous operation.

This equipment has been tested and found to comply with the limits for medical devices in Electromagnetic Compatibility Directive 93/42/EEC

- IEC 60601-1-1: 2005/AMD1: 2012
- IEC 60601-1-6: 2010, IEC 60601-1-6: 2010/ AMD1: 2013,
- EN 60601-1-2: 2015, EN 55011: 2009 / A1: 2010,
EN 61000-3-2: 2014, EN 61000-3-3: 2013.

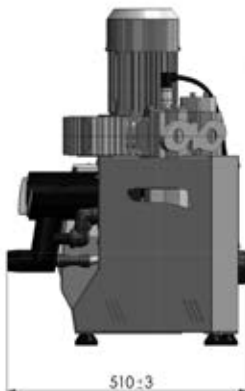
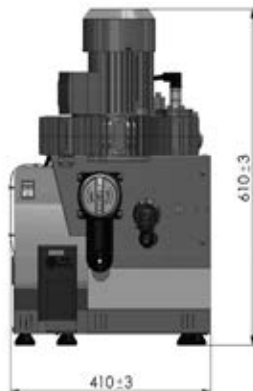
These limits are designed to provide reasonable protection against harmful interference in a typical medical installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to other devices, which can be determined by turning the equipment off and on, the user is encourage trying to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving device.
- Increase the separation between the equipment.
- Connect the equipment into an outlet on a circuit different from that to which the other device(s) are connected.
- Consult that manufacturer or field service technician for help.

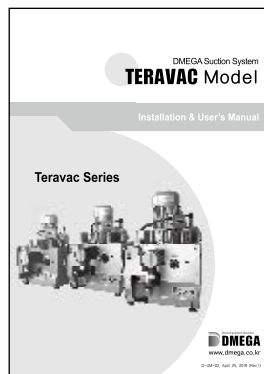
The EUT is professional equipment. So this test is not required with EN 61000-3-2 (IEC 61000-3-2).

Teravac Series CONTENTS

► Teravac Series Suction Model



► User's Manual



► Connection Hose



Exhaust Air Hose
Ø36x3,000mm



Suction Inlet Hose
Ø30x1,500mm



Drain Outlet Hose
Ø19x1,500mm

INSTRUCTION WARNING AND CAUTION, PLEASE READ BEFORE OPERATION

While reading your manual, please pay close attention to areas labeled :

WARNING AND CAUTION

The description of each is found below



WARNING

Warnings are given where failure to observe instruction could result in Injury to people. And to avoid the risk of electric shock, this equipment must only be connected to supply mains with protective earth.



CAUTION

Cautions are found where failure to observe the instruction could result in Damage to the equipment, associated equipment and process.

The following symbols of warning will be found on the equipment

	Electric shock (Attached label on the product)		Hot surface (Attached label on the product)
	Alternating current		CE mark
	Attention, consulting Accompanying documents		Protective earth (ground)
	"ON" (power : connection from the mains)		"OFF" (power : disconnection from the mains)
	Date of manufacture		Manufacturer
	Serial Number		European Representative
	Dispose of Electric and Electronic Equipment Correctly		Refer to instruction manual/ booklet Follow instructions for use.

SECTION 1. SAFETY INFORMATION

- 1.1 Never operate this product if it has a damaged cord or plug. If it is not working properly, has been dropped, damaged or has fallen into water, please contact appropriate service center for examination and repair.
- 1.2 Keep the cord away from heated surfaces. All electrical products generate heat. To avoid serious burns, NEVER touch suction motor during or immediately after operation. The temperature to suction motor can be reached 120°C.
- 1.3 Never block any air exhaust valve or place it on a soft surface where the openings may be blocked. The air exhaust valve is for ventilation of the motor inside the housing. Keep the air exhaust valve free of lint, dirt and other foreign objects.



WARNING

Blocking air exhaust valve can cause the product to overheat and fire.

- 1.4 Never drop or insert fingers or any other object into any openings. It may get caught on the rotating parts and cause damage or injury to the equipment.
- 1.5 Use only in well ventilated areas. All motor of products have a built in cooling fan, but if not ventilated, it may cause overheating.



WARNING

Do not operate the pumps in an atmosphere containing flammable or explosive gases/vapors.

- 1.6 Before using the equipment. Check that the suction and discharge are correct.
- 1.7 Protect from contaminants and moisture when not using the equipment for a long period of time. Parts exposed to moisture may rust if left unused for a long time.



WARNING

Do not modify this equipment without authorization of the manufacturer. Excessive use of equipment or user disassembly may cause motor fires.

1.8 Electrical shock Hazard

Disassembly or attempted repairs if accomplished incorrectly can create electrical shock hazard. Refer servicing to qualified service agencies only.

- (1) Disconnect electrical power at the circuit breaker or fuse box before installing this Product.
- (2) Install the system in a location where it will not come in to contact with water or other liquids.
- (3) Install the system in a location protected from the weather.
- (4) Electrically ground the system. Failure to follow these instructions can be resulting death, fire or electrical shock



WARNING

When these suction units need to be terminated at once in any case of emergency, please switch off power switch.

- 1.9 Do not use this product in or near area where it can fall or be pulled into water or other liquids. If moisture enters the motor, it may cause malfunction of the motor
- 1.10 Do not reach for this product if it has fallen into liquid. Unplug immediately. Water may cause a short circuit which may result in an electric shock.
- 1.11 Never operate this product outdoors in the rain or in a wet area. All electrical products can be electrocuted by moisture.
- 1.12 Do not use places where is a explosion. Do not use this equipment in or near explosive atmospheres or where aerosol (spray) products are being used. There is a risk of explosion or fire in case of motor overheating in the firearm area.

SECTION 2. INSTALLATION NOTES

2.1 Introduction

This manual has been compiled not only for the care and maintenance of DMEGA suction system now in your possession, but as a helpful reference and guide to prevent many problems which can occur if used improperly.

2.2 Intended Use :

This product is a dry suction device which generates vacuum pressure by compressing air.

2.3 Environmental Conditions for normal operation

- Temperature: 10°C ~40°C
- Humidity: 30% to 80% R.H.
- Atmospheric pressure: 700 to 1,060 hPa

The suction system should be located preferably in a clean, dry and well-ventilated area. Please be sure not to block the ventilation ports located on the motor housing. The unit should be placed where the surrounding temperature remains between 10°C and 35°C (50°F and 95°F). Always check to insure the location chose is protected from direct or indirect moisture contact.

2.4 Unpacking

Carefully remove the machine from the shipping case. Preserve all Paperwork for future reference. If damage has occurred from shipment a claim must be filed with the carrier immediately; preserve the shipping carton for inspection by the carrier. If you are required to communicate with your dealer or DMEGA, be sure to include your order numbers for quick identification.

2.5 Mounting

Rubber feet are attached to the product. Rubber feet are excellent for applications involving a semi-flexible surface such as bench top; they help to isolate noise and eliminate creeping. However, the horizontal position of the motor shaft should be preferred. Me equipment has not a switch. When it separate power supplies, it just remove plug.

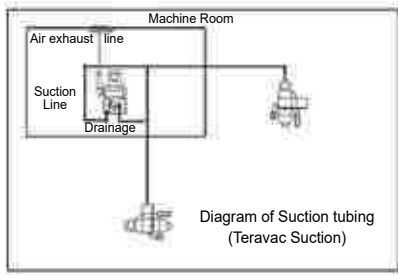
2.6 Installation Location

In order to prevent damage to the suction motor, the installation height of the equipment should be within 30~40cm from floor to drain. If the drain hose position is higher than that of the equipment, residual water level at the time of power off may flow back to the pump.



CAUTION

Place suction outlet valve higher position than drainage to prevent backflow problem



Please be sure not to be bended any of suction inlet hose and outlet hose. This can causes loosing vacuum power or damage of suction motor. Also use exhaust air hose with $\varnothing 38\text{mm}$ diameter hose.

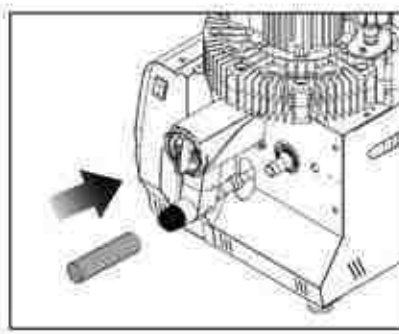
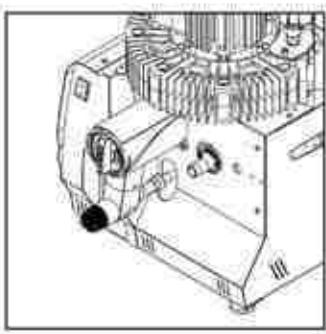
Exhaust air temperature increases significantly and discharge drastically too hot for most plastic piping. Therefore, metal piping or heat-resistant pipe is recommended for at least the first five (5) to eight (8) feet (1.5 ~ 2.5 meters) form the air exhaust valve on the discharge side. In addition, this piping **MUST** be guarded and marked **DANGER-HOT-DO NOT TOUCH.**"

⚠ CAUTION

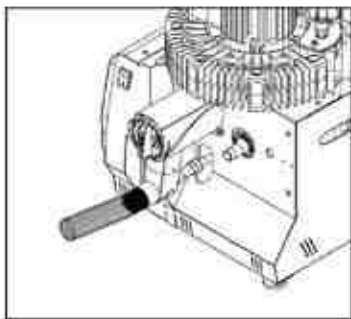
Do not use hoses such as rubber or PVC hose which are not resistant to chemicals or disinfectants or insufficient flexibility. Only use PVC flexible spiral hoses with integrated spiral or hoses of equivalent material.

2.7 Suction Inlet Hose Connection

(1) Remove the cover of suction inlet and push-in tubing connector in the inlet hole.



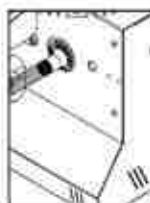
- (2) Connect suction inlet hose (Ø32, spiral hose) at tubing connector and tighten with electric insulation tape.



(electric insulation tape)

2.8 Waste outlet hose connection

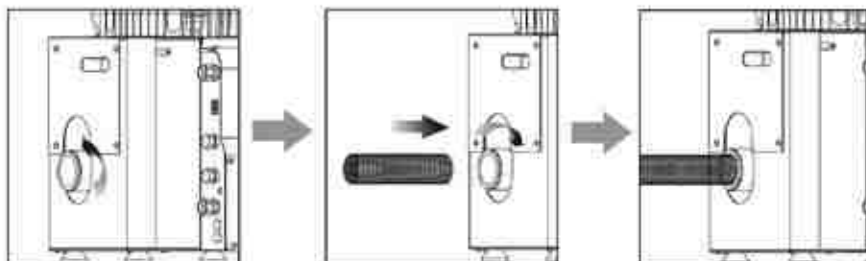
- (1) Always use spiral hose with Ø19mm interior diameter.
- (2) Connect hose to the outlet hole with clockwise direction.
- (3) Please be tightening with hose clip or electric insulation tape.
- (4) Always is higher position than drainage to prevent backflow problem.



(electric insulation tape)

2.9 Exhaust Air Hose Connection

- (1) Turn left exhaust air outlet hole clamp.
- (2) Connect exhaust air outlet hose to the hole (strongly push-in).
And turn right exhaust air outlet hole clamp for fasten.



- (3) Always place end of the air outlet hose out of building or window to prevent noisy problem, hot temperature and bad odor.
- (4) Always keep clean water and moisture from end of exhaust air hose.
(Be cautious the chance of in-coming water like rain or vapor due to extension more than three meters (3m) exhausts air hose.)

2.10 Electrical Connection

The mains connection must only be made by well-trained electricians. To insure safe installation, check local current and voltage. Serious damage may occur to the motor if it is connected improper voltage.

SECTION 3. OPERATION

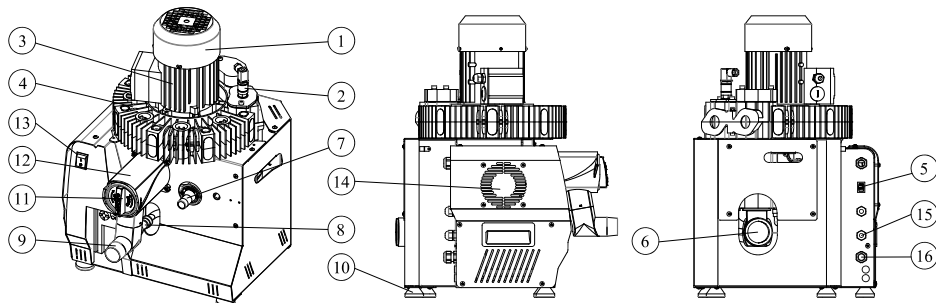
3.1 Check list before start up the system.

3.2 Check if there is any foreign material in the cooling fan part of the motor.

3.3 From the motor side of the system, verify the blower is rotating in the direction of clockwise. On the system powered by a 3-phase electric power, change the connection of any two (2) wires to reverse blower rotation.

SECTION 4. PRODUCT INFORMATION

4.1 Functional Description



No.	Name	Description
1	Cooling Fan Cover	It is cover that protects cooling fan of drive motor.
2	Automatic Vacuum Sensor	Automatic pressure sensor enables reaction to supply optimal vacuum power for the surgery use.
3	Motor	Main power unit for generating vacuum pressure
4	Impellor Chamber	Impellor fixing and protect cover for generating vacuum pressure
5	Pressure Sensor By-Pass Switch	When pressure is abnormal or vacuum power is not sufficient, this switch gives fast & easy solution.
6	Exhaust Air Outlet	An outlet through which the air is discharged through the separator.
7	Waste Water Outlet	The outlet through which the patient' s blood, saliva and water are discharged through the separator
8	Auto By-Pass Drain Tubing	Device for automatically discharging residues after using the device
9	Suction Inlet	Suction inlet by operation of the device.
10	Inverter	Teravac series supply optimal vacuum power for surgery use.
11	Inlet filter	Cover type filter that can collect foreign matter from suction inlet
12	Filter Housing	Integrated cover to protect filter and suction inlet
13	Main Power Switch (On/Off)	Main power switch for starting the equipment
14	Inverter Cooling Fan	A device for discharging hot air generated from the inverter to the outside.
15	Main Power Cord	Main power transmission cable.
16	Suction Ignition Switch Cord	Operation cable connected with unit chair and signal processing.

4.2 Teravac Specification

Specification	Teravac 3000	Teravac 5000	Teravac 6000
Main Voltage	220 ~ 240 VAC	220~240 VAC	220~240 VAC
Frequency	0 ~ 70 Hz	0 ~ 70 Hz	0 ~ 65 Hz
Motor Power	0.63 kw (50 Hz)	0.94 kw (50 Hz)	1.1 kw (50 Hz)
Inverter Power	0.75kw	1.5 kw	2.2 kw
Rated Current	3,5 ~ 4 Amp	4 ~ 4.5 Amp	4 ~ 5 Amp
Vacuum Regulated	180~200 m bar	180~200 m bar	180~200 m bar
Number of dental unit onnection	2 ~ 3 unit	4 ~ 5 unit	4 ~ 6 unit
Max. Airflow	600 LPM	900 LPM	1,200 LPM
Motor Speed	0 ~ 3980 rpm	0 ~ 3980 rpm	0 ~ 3740 rpm
Weight	32 kg	33 kg	37 kg
Dimensions (W x L x H)	54 x 41 x 61 cm	54 x 41 x 61 cm	54 x 41 x 63 cm
Noise Level	59 dB	61 dB	61 dB

4.3 Inverter

(1) Automatic pressure sensor Mode

Suction power is regulated automatically by automatic pressure sensor according to surgery use. The product is setting this pressure sensor mode for supplying optimal vacuum power & reducing electric cost. It also prevent over-heating problem for the motor. The frequency is regulated from 0 ~ 70 Hz automatically.



(2) Pressure sensor By-Pass Mode (55 Hz)

When pressure sensor is abnormal or vacuum power is not sufficient, this switch gives fast & easy solution.

When this switch is On, Motor speed is setting 55Hz immediately to supply sufficient vacuum power.

And please contact your authorized technician to replace pressure sensor



(3) Changing fixed frequency (55Hz) to lower frequency



- ① Press MODE button
- ② When parameter "0" display, turn dial clockwise to parameter "5"
- ③ Press SET button, then it will show "55Hz"
- ④ Turn dial counter clockwise to desirable frequency (0~55Hz).
- ⑤ Press SET button to fix the frequency.

(4) Changing Current (Amp) & Voltage (Vac) display

During the product operation, press SET button to check current & voltage.

Frequency (SET) – Current (SET) – Voltage (SET) - Frequency

(5) Automatic Reset mode

When ant inverter error is occurred, power switch-off until signal is gone.

And power switch-on again to reset.



(6) Off-timer function for 20 seconds

When suction signal is off, suction motor is reducing motor speed gradually and it stop after 20 seconds. It reduces any remaining residue of water & blood in the suction hose.

SECTION 5. MAINTENANCE

: Periodical maintenance

Regular maintenance should be performed by dentist or staff according to follow-ing terms.

- Every 1 year :

* Check the motor status whether it is abnormal. If abnormal bearing sound of the Motor is detected or over heating problem happen, call authorized dealer for Checking.

* Check the plastic hose or joint whether any leakage problem is occur.

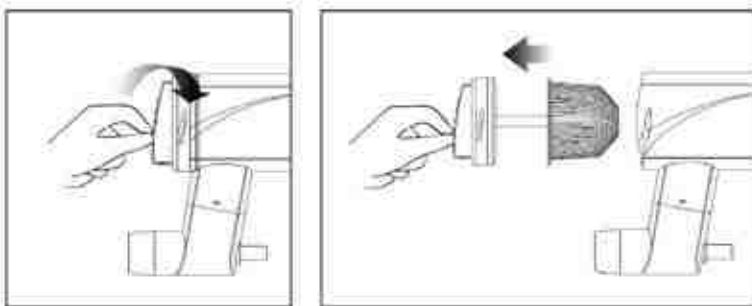
If necessary, change all the necessary parts.

- Every 5 years :

* Replace the motor bearing, rubber part like O-ring, gasket.

5.1 Cleaning Suction inlet filter & procedures of filter part

(1) Pull out filter part from machine in clockwise direction of cover.



(2) Clean filter in running water for removing particle or debris. (Recommending it cleaned at least twice per month for avoiding reduction of suction power)



(3) After cleaning, reassemble the filter part.
If replacement is necessary by damage or loss of the inlet filter, it must be purchased through the manufacturer (DMEGA).

5.2 Cleaning Suction unit

After every treatment – For avoiding bad odor and reducing infection possibility, Clinic should suck 1 glass of water before the next treatment.

After finishing last treatment of the day – For avoiding bad odor and reducing infection possibility, Clinic is be sure to clean suction unit by NON-FOAMING cleaning & disinfectant.



CAUTION

***DO NOT use a foaming cleaning & disinfectant agent.
It causes backflow of water to the suction motor and can damage it.***

SECTION 6. DISPOSAL



CAUTION

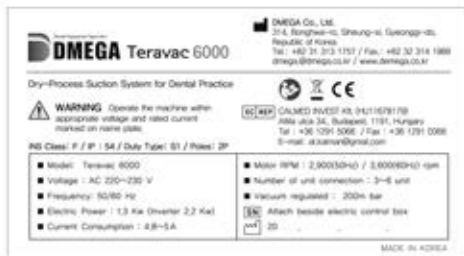
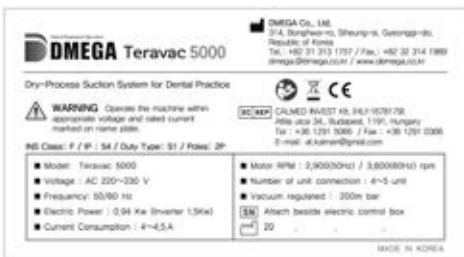
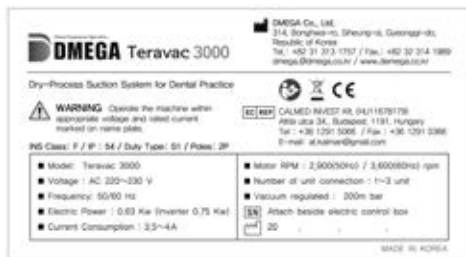
***This product may be contaminated after using years.
Please make the disposal organization aware of this In order that they
Can take the proper safety actions.***



Uncontaminated plastic components of the product may be recycled.
The built-in electric circuit board and other electric components should be disposed as electric waste.

Other metal components may be disposed of as metallic waste.

If the product is returned to the local dealer or DMEGA, all connections should be closed so that they are water-tight.



SECTION 7. TROUBLE-SHOOTING CHART

This trouble-shooting is carried out by qualified technicians only.

Problem	Reason	Remedy
Unit does not work	Mains supply is not connected Incorrect electrical connection or Power source	Check mains power, fuses and reset Circuit breaker if necessary
Unusual noise increased	Solid particle or debris is coming into the suction motor	Dismantle unit and clean the Impeller of the motor
Excessive vibration	Damaged impeller Motor and/or impeller are dirty	Dismantle unit and clean the Impeller of the motor
Unit is very hot	Wrong wiring Low voltage Suction inlet is clogged Operating pressure or vacuum is too high	Check wiring Supply proper voltage Clean primary filter Install a relief valve and pressure or Vacuum gauge
Suction is too low	Suction inlet is clogged Leaking problem in the suction plumbing	Clean primary filter Check all suction tubes, hoses and connection. Replace if necessary
Suction power is weak & waste water outlet Holeoccurring suction	Red rubber drain valve is back- Side position or fitted wrongly	Unscrew 2 bolts & positioned rubber Drain valve correctly, (convex surface is outside & flat surface is inside)
Motor overload	Low voltage	Check power source Check wire size and wire connections

Warranty

DMEGA Suction System, when properly installed and operated under normal conditions of use, are warranted by DMEGA Co., Ltd. to be free from defects in material and workmanship for a period of twenty-fourth (24) months from the date of purchase from DMEGA Co., Ltd. or an authorized DMEGA Representative or Distributor. In order to obtain performance under this warranty, the buyer must promptly (in no event later than 30 days after discovery of the defect) give written notice of the defect to DMEGA Co., Ltd.

(Fax: +82-31-314-1989 or E-mail: dmega@dmega.co.kr) or a representative in your country.

Customer is responsible for freight charges to DMEGA in all cases.

This warranty does not extend to any goods or parts which have been subjected to misuse, lack of maintenance, neglect, damaged by accident or transit damage.

This express warranty excludes all other warranties or representations expressed or Implied by any literature, date or person. DMEGA maximum liability under this exclusive remedy shall never exceed the cost of the subject product. DMEGA reserves the right, at its sole discretion, to refund the purchase price in lieu of repair or replacement.

DMEGA is not responsible or liable for indirect or consequential damage of any kind. However, including but not limited to those for use of any products, loss of time, Inconvenience, lost profit, labor charges, or other incidental or consequential damages with respect to persons, business, or property, whether as a result of breach of warranty, negligence or otherwise.

Notwithstanding any other provision of this warranty: Customer's remedy against DMEGA for goods supplied or for non-deliverable goods or failure to furnish goods, whether or not based on negligence, strict liability or breach or express or implied warranty is limited solely to DMEGA's option, to replacement of or cure of such non-forming or non-deliverable goods or return of the purchase price for such goods and in no event shall exceed the price or charge for such goods. DMEGA expressly disclaims any warranty of merchantability or fitness for a particular use of purpose with respect to the goods sold.

There are no warranties that extend beyond the descriptions set forth in this warranty,

WARRANTY

1. Details and Period

When this product goes out of order under the normal use of customer, we will repair it free of charge from defects in material and workmanship during the period of twenty-fourth (24) months from the date of purchase from DMEGA Co., Ltd.

2. Exception for warranty

Even during the warranty period, we will provide repair Services for problems not covered under this warranty with reasonable charges.

- Users faults by lack of maintenance
- Faults by the users own intention of dismantle or repairs,
- Damages caused by natural disaster (Fire, Flood, Earthquake, Lighting, etc.)
- Replacement to new parts,
- Without the warranty card
- Faults and Damages caused by not following instructions for use,



3. Notice

- This warranty is invalid without a stamp.
- If you have any questions about this warranty, please contact DMEGA CO., LTD or an authorized Dmega's Representative or Distributor.
- Please be sure to write the place where you Purchased and dates.
- Please be sure to keep the warranty card securely as it is not reissued.

Directions for the use

- Use and keeping this product in a dry place or with no Sudden changes in temperature.
- Avoiding impact to this product

Date	Details	Results of Check	Inspector

Notwithstanding any knowledge of DMEGA regarding the use or uses intended to be made of goods, proposed changes or additions to goods, or any assistance or suggestions that may have been made by DMEGA personnel. Unauthorized extensions of warranties by the customer shall remain the customer's responsibility.

Customer is responsible for determining the suitability of DMEGA products for customer's use or resale, or for incorporating them into objects or applications which customer designs, assemblies, constructs or manufacturers.

This warranty can be modified only by authorized DMEGA personnel, by signing a specific written description of any modifications

WARRANTY

TERAVAC 3000 / 5000 / 6000

We will repair this product free of charge
according to warranty overleaf from
defects in material and workmanship
during the period of twenty-fourth
(24) months.

Stamp	
-------	--



Serial Number

Corporate Name

Address

Delivery Date

Store

Tel

Address

Sales person



EC REP

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