biomag® Lumio 3D-e VET

en | Instructions for Use

Pulsed Magnetic Therapy Veterinary Device

Data on completeness of product
Údaje o kompletnosti výrobku

Serial number / Equipment / Mode
Serial number / Equipment / Mode

veterinary technical device

Pulsed Magnetic Therapy Device BIOMAG®

model

Lumio 3D-e VET with applicators

Thank you for purchasing
a BIOMAG® veterinary technical device.
These products have been manufactured with the utmost care
and emphasis on quality conforming to normative requirements.

Please study the Instructions for Use thoroughly prior
To operation and adhere to them accordingly!

1 SAFETY INSTRUCTIONS AND WARNINGS

⚠ **WARNING – The manufacturer shall not be held liable for improper use of the veterinary device!**
⚠ **WARNING – Adhere to the intended purpose, indications, contraindications and other information in these Instructions for Use.**
⚠ **WARNING – Modification of this veterinary device is strictly prohibited.**
⚠ **WARNING – The device must be kept out of the reach of animals to prevent damage to the power cable by chewing, etc.**
⚠ **WARNING – The veterinary device may cause radio interference or disrupt the operation of nearby devices.**
Measures such as reorienting or relocating the veterinary device may be required to mitigate such effects.
The veterinary device may affect nearby devices, such as wristwatches, magnetic media, credit cards, etc., during operation.
A distance of at least 1 m is considered safe.
⚠ **WARNING – Failure to have the device inspected at the prescribed intervals by the customer results in forfeiture of warranty and loss of the manufacturer's responsibility for continued operation.**

- **Before first use, carefully read the veterinary device Instructions for Use.**
- **The veterinary device must not be used for any purpose other than that described in these instructions. The manufacturer shall not bear any responsibility for possible damage. The risk is borne by the user.**
- **The veterinary device is exclusively intended for use on animals.**
- **The veterinary device is solely intended for intermittent operation.**
- **Only persons meeting the requirements specified in the Operator profile, and complying with this manual, may handle or operate the veterinary device.**
- **In the event of a missing product label, contact the distributor or manufacturer.**
- **Only applicators approved by the manufacturer may be connected to the device's connectors.**
- **Protect the device from impact and damage, paying particular attention to the connectors and applicators.**
- **The application pad is intended for use on intact skin, but in the case of bite wounds, lacerations, pressure ulcers, etc., use a disposable or other hygienic barrier.**
- **The device must not be immersed in water, washed or used in wet and humid environments (e.g. near water bowls). Avoid exposing the veterinary device to moisture.**
- **When used with multiple animals, applicators must be disinfected before each subsequent application.**
- **Do not place the device near sources of heat.**
- **To ensure optimal display readability, do not place the device near a light source.**
- **Do not use the veterinary device if it is damaged.**
- **Any veterinary device tampering is prohibited.**
- **The veterinary device must be connected to a suitable electrical supply with undamaged power cables. If in doubt, the check should be performed by a safety inspector.**
- **Do not use the veterinary device if the applicator cables are damaged. Have a qualified service technician inspect the device.**
- **Prevent animals from damaging the veterinary device power cables (e.g. by biting).**
- **In the event of missing or damaged parts of the Instructions for Use, contact the distributor or manufacturer.**
- **If there is any uncertainty regarding the instructions, please contact the manufacturer's customer support line.**

2 INTRODUCTION, CONTENTS OF THE INSTRUCTIONS FOR USE

The BIOMAG® Lumio 3D-e VET Pulsed Magnetic Therapy Device is an active veterinary technical device (hereinafter referred to as the **veterinary device)** consisting of the main unit and connectable applicators. It is intended for the application of low-frequency pulsed magnetic therapy.

The veterinary device must strictly be used in accordance with its intended purpose. The manufacturer is not responsible for improper use, which includes its use against the directions and recommendations given in the Instructions for Use.

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3 INTENDED USE, INDICATIONS, CONTRAINDICATIONS, SYMBOLS

3.1 Intended purpose

The veterinary device is intended for adjunctive symptomatic therapy to aid in the alleviation of pain, swelling, spasms and detoxification, to improve blood circulation (vasodilation) and accelerate healing.
It is used in a variety of musculoskeletal conditions, including degenerative disorders, post-traumatic injuries, post-operative recovery and similar clinical scenarios.

⚠

The device is intended for external use to maintain animal well-being, alleviate pain, support metabolism, and enhance the immune system and regenerative capacity of the body. It is suitable as part of a physiotherapy programe or as a complementary element of treatment.
The veterinary device is exclusively intended for use on intact animal skin. In the presence of bite wounds, cuts, pressure ulcers or similar lesions, we recommend using a disposable or other hygienic barrier.

When using the veterinary device, it is essential to adhere to the **Principles of safe Operation** alongside the listed **Contraindications** / **Indications** and use it in compliance with the specified environmental requirements.
Basic safety information is also shown on the device display.
The use of the veterinary device is described in the final section of the Instructions for Use.

Read the Instructions for Use, follow them and the safety information given in the introduction, observe the purpose of use, indications and contraindications.

3.2 Indications / clinical benefits

The range of veterinary indications is as broad as in human medicine, encompassing post-operative states, spinal disorders, joint conditions, arthrosis, dermatological conditions, fractures and post-exertion recovery. The veterinary device is suitable for companion animals, livestock and working animals (e.g. horses, dogs, cats, rabbits, etc.). It is also utilised in sports to enhance performance and to aid in the recovery of working animals (e.g. draught horses, assistance dogs, police dogs), as well as to promote relaxation and calm in healthy animals. The technology allows for deep tissue and lymphatic massage and provides additional therapeutic effects related to enhanced metabolism and circulation via increased oxygen supply.

- **Pain relief** – pain-relieving effect
- **Tissue regeneration support (stimulation) –** healing effect
- **Oedema –** anti-swelling effect
- **Spasm** – myorelaxing effect
- **Circulatory disorders** – vasodilating effect
- **Metabolic disturbances** – detoxifying effect

Given the minimal contraindications in animals (e.g. acute bleeding) and the substantial health benefits supported by years of practical use, the veterinary device is appropriate for widespread application in both clinical and field-based veterinary care.

3.3 Contraindications

The veterinary device must not be used under the following contraindications:

- **Pregnancy –** or relative pregnancy, subject to consultation with a veterinary surgeon
- **Pacemaker –** implanted cardiac pacemaker
- **Bleeding conditions**
- **Neoplasms** – possible exception subject to veterinary consultation
- **Serious septic states**
- **Febrile conditions**
- **Mycosis at the site of application** – possible exception based on consultation to veterinary consultation
- **Paroxysmal nerve diseases**
- **Hyperthyroidism**
- **Pain of unknown origin**
- **Unspecified diagnosis**
- **Conflict with the professionally determined treatment procedure**

Side effects of the veterinary device:

There are no documented serious or persistent adverse effects. In rare cases (approx. 1% of applications), minor side effects resembling spa effects may occur, such as:

- **Temporary hypersensitivity or pain at the application site**
- **Mild headache**
- **Reduced blood pressure and dizziness**

Preventive measures associated with the veterinary device:

- The veterinary device may either be used independently or in conjunction with other veterinary procedures or devices.
- Animals suffering from **low blood pressure** (or prone to it) or **high blood pressure** must particularly be observed during application.
- Individual effects of magnetic therapy must be assessed based on the particular condition and reactions of **individual animals**.
- In animals exhibiting increased sensitivity, it is advisable to begin therapy with reduced intensity or duration to preserve the benefits of magnetotherapy.
- In case of unexpected reactions, cease the application immediately! Continued application may resume on the recommendation of a veterinary surgeon procedural plan.
- As like with other devices, the veterinary device may only be used to positively influence health conditions that have been diagnosed in the animal by a qualified veterinary surgeon, and for which **Contraindications** have been duly ruled out and the **Patient profile** complied with.

Relative contraindications for operating the veterinary device:

- Pregnancy
- Pacemaker (electric pacemaker)
- Bleeding conditions
- Menstrual bleeding
- Neoplasms
- Serious septic states
- Febrile conditions
- Active tuberculosis
- Mycosis at the site of application
- Paroxysmal nerve diseases
- Hyperthyroidism
- Adrenal hyperfunction
- Myasthenia gravis
- Hypothalamus and pituitary gland diseases
- Psychosis
- Pain of unknown origin
- Unspecified diagnosis
- Conflict with the professionally determined treatment procedure

Failure to observe contraindications may result in harm to both the animal and the operator.
If a layperson is dissatisfied with the results of therapy, a veterinary consultation is required, and the instructions in the **Principles of safe operation** section must be followed.
In case of uncertainty, the operator (whether a veterinarian or layperson) may consult the manufacturer to confirm the suitability of the software and accessories.
Overdose through low-frequency magnetic field therapy is not possible.

3.4 List of abbreviations and symbols used

List of symbols used on the label

	Proceed according to the Instructions for Use	~	Alternating current (AC)
	Device with protection Class II	⎓	Direct current (DC)
	BF type applied part		Caution, important warning
	Input for applicator		Protect from heat
	Power supply symbol		Keep away from moisture
	Electric equipment intended for indoor use		Temperature limitation
	Environmentally friendly disposal of the device		Humidity limitation
	Fragile, handle with care		Atmospheric pressure limitation
	Manufacturer		Date of manufacture
	Distributor	SN	Serial number
	Veterinary technical device (for animal use only)	REF	Catalogue name of the product
CE	A product label by which the manufacturer indicates that the veterinary product is controlled by an authorised person and complies with the applicable requirements for placing on the market in the European Economic Area		

List of abbreviations

PEMF	Pulsed electromagnetic field (Pulsed ElectroMagnetic Field)
LPMF	Low-frequency pulsed magnetic field
MIMI	Maximum intensity of magnetic induction
mT	Millitesla = unit of magnetic induction
f	Frequency = pulse rate
Hz	Hertz = frequency unit
min	Minute = time unit
s	Second = time unit
EMC	Electromagnetic compatibility
	Applicator polarity symbol
*	Note on explanatory information

List of symbols used on the veterinary device and in the manual

	Pulsed Magnetic Therapy Device BIOMAG®		Manufacturer's logo BIOMAG®		Applicator shaping into various positions
3D	Sequential switching		Simultaneous switching		Basic settings
	Indications		1-connector		Language selection
	Contraindications		3-connector		Sound setting
	Principle of biological effect		PIN		Confirmation button
	Start		Stop		Automatic program repeat

Explanations

Veterinary device

= device with applicators

Device = electronic control unit

Applicator = attachable part

4 BASIC INFORMATION

4.1 Principle of biological action

Magnetic therapy uses the effects of an artificial magnetic field with precisely defined parameters on the organism. It is a physical therapy generating a large-area low-frequency pulse magnetic field.
As stated in the intended purpose, physiological changes in tissue after the application of magnetic therapy occur due to pain mitigation and vasodilation of capillaries and precapillaries, which leads to the following treatment effects:

- **Pain-relieving effect** – analgesic, reduces pain
- **Healing** – promoting regeneration, anti-inflammatory and anti-rheumatic effects
- **Anti-swelling** – reduces swelling (oedema)
- **Myorelaxing** – relaxes muscles
- **Vasodilating** – improves microcirculation in particular
- **Detoxifying** – accelerates the elimination of toxins and metabolites

The low-frequency pulsed magnetic field (LPMF) acts on the cell membrane permeability, i.e., improves and accelerates metabolism. It leads to the vasodilation of tiny capillaries and precapillaries at the application site and markedly increases blood perfusion and oxygenation of the body part (microcirculation improvement) to which the LPMF is applied.
It results in increased metabolism and improved supply of exposed tissue with oxygenated blood and nutrients and creates optimal conditions for the healing and regeneration of damaged tissue. Due to mutual influence, these processes enable the above given healing effects. Pulsed electromagnetic field (PEMF) therapy goes through the entire body, affects each cell in the entire exposed tissue and can affect deep and surface structures when applied.

Pain-relieving effect
PEMF therapy, via magnetic induction, induces current in nerve fibres. This induced current blocks the passage of painful sensations from the painful site through the spinal cord to the brain centres. As a result of this and some other mechanisms, pain is suppressed. These other mechanisms also include the increased formation of endorphins, suppression of inflammation and swelling. Furthermore, the muscle relaxant or muscle tone (pressure) relief mechanisms are applied. Increased production of endorphins and control of calcium ion transfer through the cell membrane also helps achieve vasodilation, and analgesic and calming effects. Increased lactate dehydrogenase activity in exposed muscles was proven after PEMF application. Lactate dehydrogenase determines the removal of lactic acid, which stimulates neural receptors and causes pain.

Healing effect
The healing and regenerative effect of PEMF on bones and soft tissue is explained by the non-specific irritation of the cytoplasmic (cellular) membrane. In this membrane, the metabolic chain is activated and its key point is the ratio change between cAMP and cGMP, which means the ratio change between cyclic adenosine monophosphate and cyclic guanosine monophosphate. When using the regenerative effect on bones, the application leads to the increase of osteoclasts and the subsequent start of the bone tissue regeneration process. The PEMF considerably increases healing, activates the creation of new tissue, calcification and leads to increased parathormone sensitivity which, in addition to other things, helps control the level of calcium in the body. Healing of damaged peripheral nerves is considerably accelerated, and the regeneration of neurofibrils (fibres in neurons) and the growth of central axons (fibres emanating from cells) is also accelerated.

Anti-swelling effect
Swelling is caused by the disorder of blood circulation at the blood capillary level with the subsequent accumulation of fluid between cells. PEMF applications aim to counteract the main causes of swelling, i.e., increased blood pressure in capillaries (the smallest blood vessels in the body), the disorder of fluid outflow from tissue and potential increased permeability of capillary walls. Improved perfusion, i.e., better tissue flow, plays an important role in the anti-swelling effect of PEMF. Accelerated metabolism after the application of low-frequency pulsed magnetic therapy enables faster re-absorption of swelling and significant anti-inflammatory and analgesic effects in the affected area.

Myorelaxing effect

PEMF accelerates the flushing of acidic metabolites that cause painful irritation in muscles and sites of chronic inflammation. The flushing of these metabolites is given by improved perfusion (flow through tissues) and by the increased activity of lactate dehydrogenase, which is required for degradation of lactic acid. PEMF applications considerably reduce muscle spasms (cramps). The therapy also decreases radicular irritation, which often causes tingling and throbbing or burning pain. By suppressing pain, the PEMF modulates reflexive changes in the body. Modulation of these reflexes in the body causes muscle spasms or contractures and cramps to relax. This relaxation results in additional pain relief. PEMF application leads to the relaxation of skeletal muscles and improved mobility. This improved mobility will enable further extension of therapy, e.g., in the form of light physiotherapy exercises.

Vasodilating effect

With appropriately set parameters, PEMF counteracts the aggregation of red blood cells (rouleaux formation), which carry oxygen in blood. The final outcome is re-dispersion of red blood cells and an increased surface area available for oxygen binding. Blood that has passed through a suitable magnetic field thereby has a higher ability to bind oxygen and transport it to the tissue. Low-frequency pulsed magnetic therapy activates the parasympathetic nervous system and promotes the reflux of Ca^{2+} ions, which leads to relaxation of the blood vessel muscles (pre-capillary sphincters in particular) and to subsequent vasodilation.

LPMF application affects the polarisation of red blood cells with a positive charge. Polarisation of blood cells acts on the tone of fine vessels, arterioles and capillaries. It results in the enlargement of this blood pool (vasodilation and microcirculation improvement), thus also in the better supply of tissue with oxygenated blood and nutrients. Improved microcirculation additionally facilitates more efficient removal of toxins and metabolic waste from tissue. PEMF significantly increases the partial pressure of oxygen and enhances red blood cell elasticity. More elastic blood cells can then better pass through the blood circulation. In addition, with long-term applications of this method, neovascularisation resulting in faster formation of new blood vessels occurs. At the same time, the magnetic field reduces the risk of blood clots (thrombi).

Detoxifying effect

PEMF passes evenly through animal tissue and can also act, as one of the few methods, at sites of internal inflammation. Where PEMF is applied, it acts on each cell and induces weak electric currents in it. Due to this induction of electric currents, the surface potentials of cells change. Every detoxifying process is based on a better supply of nutrients and better removal of metabolic waste products from tissue.

4.2 Patient, operator and trainer profile

Patient profile

Who is the veterinary device intended for?

- **The device is solely intended for animals.**

Applicable to companion, farm and working mammals (e.g. horse, dog, cat, rabbit).

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The veterinary device may only be used if contraindications have been professionally ruled out.

Operator profile

Who may operate the veterinary device?

- **A trained veterinary surgeon or assistant (technician).**

Training is performed by a trained representative of the manufacturer or distributor.

- **Adult person trained in the operation of the veterinary device, familiar with the instructions for use and compliant with them, including adherence to contraindications for both animal and operator.**

Training is performed by a trained representative of the manufacturer or distributor.
Children and other unauthorised or untrained persons must not handle the veterinary device.
Familiarisation with the characteristics of the veterinary device, its conditions of use and its operator profile is confirmed by the consent of the trainee, in paper or electronic form, or in any other appropriate form allowing for traceability.

Profile of trained instructor

Who is authorised to instruct and train the user of the veterinary device?

- **An authorised employee or representative of the manufacturer (e.g. distributor).**

A record of the training may form part of the purchase agreement, and for persons trained subsequently, a separate record must be made.

⚠ CAUTION

The veterinary device must not be used for any other purpose, by other persons or in any other manner than specified in this section and in these instructions.
The manufacturer shall not bear any responsibility for possible damage. The risk is borne by the user.
Any serious adverse event must be reported to the manufacturer and to the competent authority of the relevant member state.

5 TECHNICAL SPECIFICATIONS: VETERINARY DEVICE, DEVICE AND APPLICATORS

5.1 Technical description of the veterinary device

The veterinary device is solely intended for intermittent operation. It is designed for applications of pulsed magnetic fields in the low-frequency range (4-81 Hz) and is a new model developed from a previous series.

The veterinary device comprises the control unit and connectible applicators. The device is a control unit from which electric pulses of specified parameters are sent to the applicators by way of cables that are connected to the device outputs. The applicator is the attachment part of the veterinary device. The use of the veterinary device is described in the final chapter of the Instructions for Use.

The veterinary device's lifespan is dependent upon regular execution of safety and technical inspections.

5.2 Technical description, parameters and device software

5.2a) Technical description of the device

The electronic control unit is housed in a plastic casing with an information display on the upper surface. At the bottom of the device, there is an input for the power connector and 3 outputs for applicators.

On the back of the device there is a label with identification information about the device and the manufacturer. The device is equipped with control software that contains 6 programs. The application ends automatically after the completion of the selected program. The software version can be displayed on the screen before device start by holding the button for 3 seconds. All indicator and control elements are located on the front of the device and in the **Device description** section. The use of the device is described in the final section of the Instructions for Use.

The control unit must be connected to an appropriate electrical supply.

The technical design is derived from the BIOMAG® Pulsed Magnetic Therapy Device medical device. The veterinary device is equipped with **3D technology**.

In marketing materials, 3D technology refers to the controlled sequential activation of individual applicator outputs on the device, ensuring that at any given moment the device's output is directed exclusively to a single channel. The power is thereby gradually transferred to the applicator during the application and each part of the applicator is switched on separately. This cycle is repeated continuously, so each application is maximally effective and optimally efficient.

The emission of the magnetic field from each separately activated segment occurs during the pulse without interference and always at full intensity. The operation of adjacent or opposite segments is not affected. It should be noted that this connection does not mean a new property of the magnetic field, but only the provision of the more effective transfer of the magnetic field (energy) to the patient. The speed of the magnetic field direction to individual parts of the applicator is pre-set to the maximum, but it is possible to reduce it.

To take advantage of this feature of the veterinary device, special applicators that are designed to allow sequential activation of their respective segments were developed. These applicators connect to the device using a specialised 3-connector system.

As each output device operates independently at full power, even the connection of multiple standard applicators provides more effective output than in veterinary devices lacking this technology. The standard configuration of the veterinary device ensures the sequential and regular alternation of pulses across the outputs.

Lumio 3D-e VET	
REF Lumio 3D-e VET	**Device equipped with a simple mode** 6x 3D programs, 3 outputs, intensity setting, time setting, program repetition, mains adapter, holder, tester, manual

5.2b) Technical parameters of the device

Description	Values
Software version	Display interface www.biomag-medical.com/info/
Power supply voltage	~100-240 V / 50/60 Hz
Adapter supply voltage	24 V ⎓
Device input power	24 W
Device insulation class	II.
Adaptor type	UES24LCP-240100SPA
Adapter input power	Max. 500 mA
Adapter dimensions	88 x 57 x 30 mm
Adapter weight	0.20 kg
Display	LCD single line (1x16 characters)
Applied part type	Type BF
Environment	Normal
Degree of protection – device	IP 30*
Degree of protection – adapter	IP 20 **
MIMI – Maximum intensity of magnetic induction	Max. 35 mT
Output regulation (intensity)	2 levels 50%/100%
Number of outputs for applicators	3
Number of programs	6
Frequencies of programs	4-81 Hz
Pulse shape	Rectangle (modified according to frequency)
Pulse rise time **(depending on program selection and applicator induction)**	0.4-2.5 ms
Pulse width	0.4-15 ms ***
Pulse descending edge depending on the applicator induction	0.5-3.5 ms
Application time	7 time ranges 15, 20, 25, 30, 40, 60, 90 min
End of application	Acoustic signalling + Display indication
Warning messages	Acoustic signalling + Display indication
EMC – electromagnetic compatibility	CSN EN 60601-1-2 ed. 3:2016+A1:2021
Ambient temperature around the device	+5°C – +35°C
Device dimensions	152 x 93 x 34 mm
Device weight	0.18 kg

* IP 3 – protected from penetration of solids of 2.5 mm in size and larger; IP 0 – not protected against water
** IP 2 – protected from penetration of solids of 12.5 mm in size and larger; IP 0 – not protected against water
*** Changes between three levels based on the program to induce maximum cell response.

5.2c) Device software

Programs and their parameters						
Program No.	Name	Frequency / sequence time			Frequency modulation	Intensity	Application time
Program No. 1	**PAIN-RELIEVING EFFECT** Pain-relief support	5-12 Hz 2 min 30 s	15 Hz 15 s	25 Hz 15 s	Gradually increasing	50%/100%	20 min (15-90 min)
Program No. 2	**HEALING EFFECT** Supports healing and regeneration, anti-inflammatory anti-rheumatic effects	50-81 Hz 2 min 30 s		12 Hz 30 s	Gradually increasing / post-pulse	50%/100%	20 min (15-90 min)
Program No. 3	**ANTI-SWELLING EFFECT** Promoting the reduction of swellings	12-15 Hz 2 min 30 s		50-75 Hz 30 s	Gradually increasing	50%/100%	20 min (15-90 min)
Program No. 4	**MYORELAXING EFFECT** Muscle spasm and oedema relief	10-12 Hz 3 min			Gradually increasing	50%/100%	20 min (15-90 min)
Program No. 5	**VASODILATING EFFECT** Support of vasodilation and circulation	12 Hz 1 min		50-80 Hz 2 min	Post-pulse / gradually increasing	50%/100%	20 min (15-90 min)
Program No. 6	**DETOXIFYING EFFECT** Supports metabolism and detoxification	4-12 Hz 2 min		50-81 Hz 1 min	Gradually increasing	50%/100%	20 min (15-90 min)

Sequence = the group of frequencies that repeat periodically over the application time.

The device provides one mode:

The BIOMAG® Lumio 3D-e VET with applicators is tailored for veterinary professionals due to its customisable settings, but can also be used in home care where the operator may use the customisation.

5.3 Technical description and specifications of applicators

We always select the most suitable applicators from the offer for the particular therapeutic intention in terms of size and shape. When assessing the suitable use of individual applicators, we concentrate on the applicator being comfortably placed on the body as close as possible to the affected area. Some applicators can be fixed to the affected area of the body with an elastic strap.

Applicators are the attachment part of the veterinary device, comprising air-core coils wound from enamelled copper or other wire in a specialised configuration. Each applicator has the north pole (indicated on the product label) on one side and south pole on the opposite side During operation, a faint clicking sound may be heard, synchronised with the pulsing rhythm. The applicator surface is made of high-quality artificial leather. All applicators are provided with plastic clips with labels bearing the manufacturer's logo. Applicators connect to the device via 1-connectors or 3-connectors , depending on the model.

▪ Flat applicators
Large-sized applicators.
Suitable for broad-area magnetic field exposure with a design allowing for bending of individual segments. Depending on the selected size and the ability to shape the applicator, they are suitable for use on larger body areas, or even the entire body of the animal.

▪ Local applicators
Smaller-sized applicators.
Suitable for targeted and intensive application of the magnetic field. Used for the treatment of specific points or smaller body areas.

Biomag tester
Using the tester you can detect magnetic pulses coming from the applicator and vibrating in the rhythm of frequencies. The north polarity of the applicator is indicated on the product label by a circle containing the letter Ⓝ.

5.3a) Common parameters and instructions for all applicators

1 | Output cable CYLY 4x0.50 mm
2 | Cable ending: connector JACK 3.5 mm
(1x or 3x – depending on the applicator type)
3 | Attachment part type BF
4 | Operating temperature (applicator warming): max. 41°C
5 | Operating temperature (around the applicator) +5°C – +35°C
with the exception for AV6P2: +5°C – +28°C
6 | During therapy, the animal should remain in a resting position under supervision of the operator
7 | Recommended method of application is through a disposable or other hygienic barrier
8 | Most flat applicators allow for fixation using securing aids

Applicator descriptions are provided on the following pages. Instructions for the use of individual applicators are provided in the final section of the Instructions for Use.

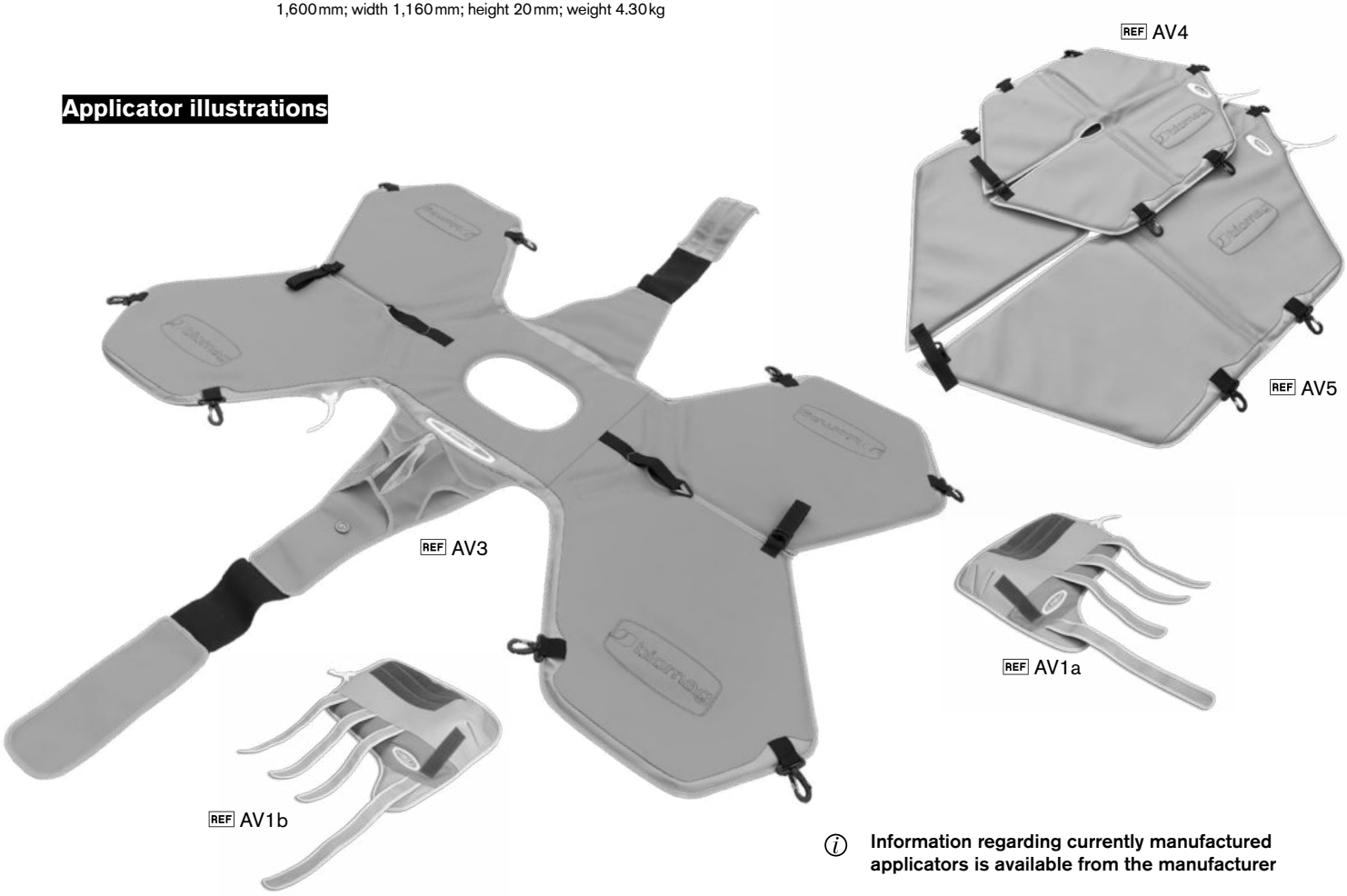
Important warning
Only connect or disconnect the applicator when no program is running on the device.
The use of applicators other than the original applicators, or other accessories approved by the manufacturer, is prohibited for the veterinary product.
For the A6P2 applicator, do not switch the direction of the magnetic field during application and adhere to the pre-set usage time (20 minutes of application and 40 minutes to reach the operating temperature).

Additional accessories
You can find all additional accessories (cases, straps, strips, bags, etc.) at your distributor or manufacturer on request. Specifications available at: https://www.biomag-medical.com/info/.

5.3b) Technical data of veterinary applicators

AV1a	**Local applicator for right-sided limbs with fixation option**
	MIMI 6.5 mT; connector 1x JACK 3.5 mm; length 440 mm; width 420 mm; height 30 mm; weight 0.90 kg
AV1b	**Local applicator for left-sided limbs with fixation option**
	MIMI 6.5 mT; connector 1x JACK 3.5 mm; length 440 mm; width 420 mm; height 30 mm; weight 0.90 kg
AV3	**Multisection flat applicator for practical use**
	MIMI 4.5 mT; connector 3x JACK 3.5 mm; length 1,600 mm; width 1,160 mm; height 20 mm; weight 4.30 kg
AV4	**Four-section flat applicator with universal shaping capability**
	MIMI 3.0 mT; connector 1x jack 3.5 mm; length 740 mm; width 650 mm; height 20 mm; weight 1.30 kg
AV5	**Four-section flat applicator with universal shaping capability**
	MIMI 3.0 mT; connector 3x jack 3.5 mm; length 1,110 mm; width 960 mm; height 20 mm; weight 2.70 kg

Applicator illustrations

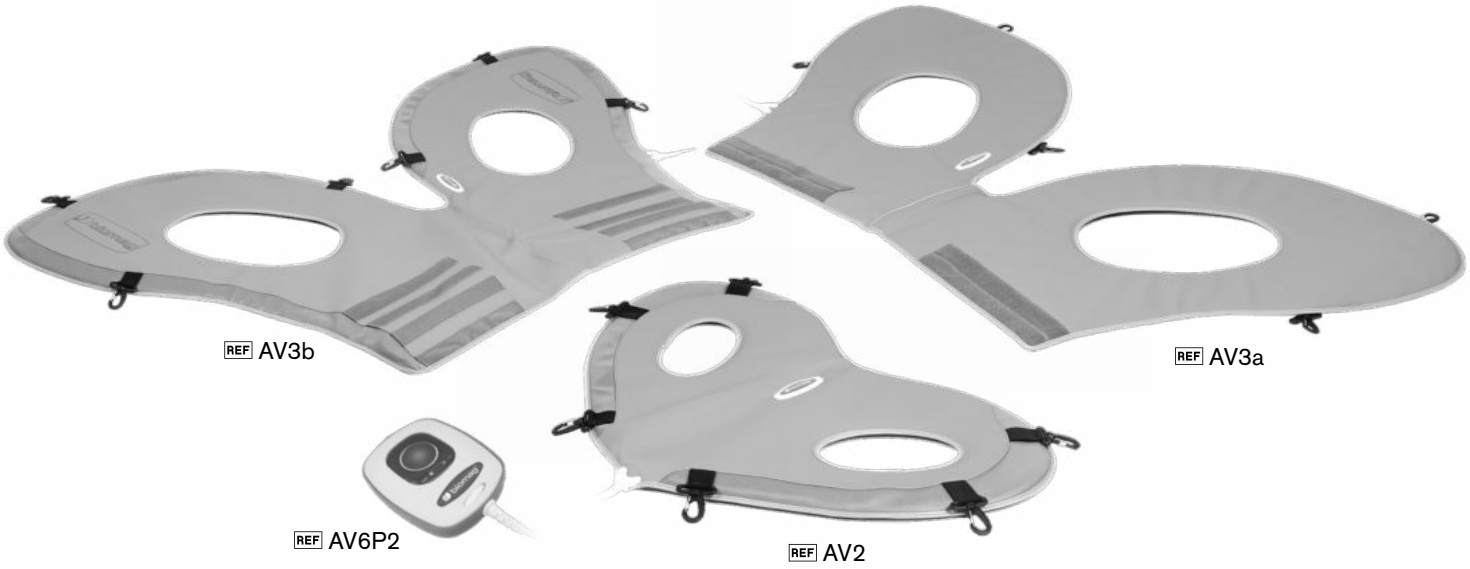


ⓘ **Information regarding currently manufactured applicators is available from the manufacturer**

Continued in section 5.3b

AV2	**Two-section flat applicator with fixation option**
	MIMI 3.0 mT; connector 1x JACK 3.5 mm; length 530 mm; width 820 mm; height 20 mm; weight 1.10 kg
AV3a	**Two-section flat applicator with fixation option**
	MIMI 2.0 mT; connector 1x JACK 3.5 mm; length 800 mm; width 1,550 mm; height 20 mm; weight 2.10 kg
AV3b	**Two-section flat applicator with fixation option**
	MIMI 2.0 mT; connector 1x JACK 3.5 mm; length 960 mm; width 1,550 mm; height 20 mm; weight 2.50 kg
AV6P2	**Local applicator with magnetic field switching and directional capability** version **SPOT** = focused magnetic field version **WIDE** = wide magnetic field
	MIMI 28.0 mT – SPOT / MIMI 16.0 mT – WIDE; connector 1x JACK 3.5 mm; length 170 mm; width 130 mm; height 25 mm; weight 0.60 kg

Applicator illustrations



REF AV3b

REF AV3a

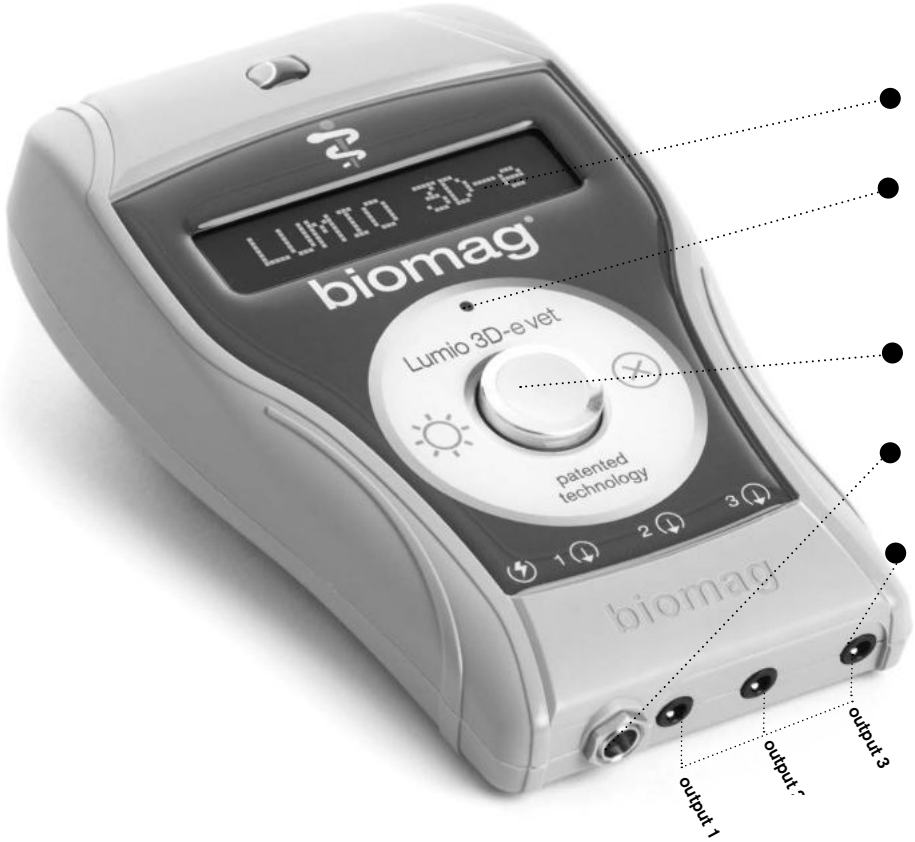
REF AV6P2

REF AV2

ⓘ **Information regarding currently manufactured applicators is available from the manufacturer**

6 DEVICE DESCRIPTION AND OPERATION

6.1 Device description



1 Information display

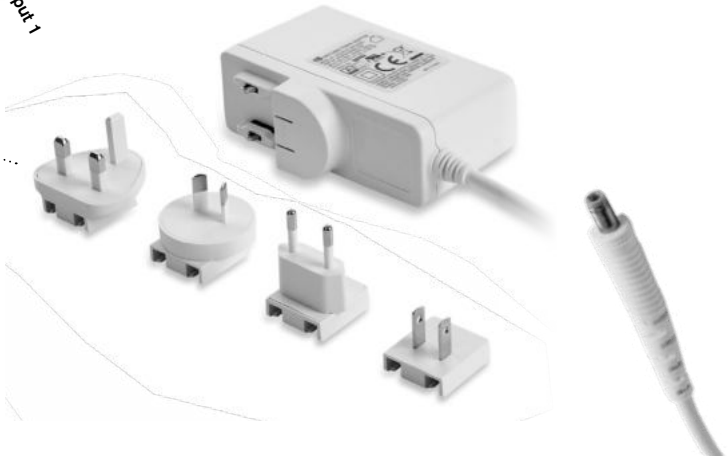
2 Blue indicator LED
- Connection of applicators (constantly emitting light)
- Applicator malfunction (flashing or off)

3 3 Confirmation button START / STOP

4 ADAPTER connector
- Device power supply

5 OUTPUTS for connecting applicators
- 1 – 3

SWITCHING POWER ADAPTOR
- Model: UES24LCP-240100SPA
- Disconnecting from mains is performed by removing the power adapter from the socket



Note:
- Restart the system by pulling out the power adapter.

6.2 Operation – activating the veterinary device

1 | First connect the applicators to the device and switch the device on by plugging the mains adapter into the device and into the mains. An acoustic signal is heard, continue by pressing the button.

2 | The name **LUMIO 3D-e** appears followed by the phrase **veterinary technical device**

3 | The display will sequentially show the following information: **Observe safety warnings, indications, contraindications and other instructions in the user manual.** Confirm consent by pressing the button.

4 | **The Last selection appears.**

5 | Next, select the desired program by holding the button. Release the button to confirm the selection.

TIPS AND ADVICE

- The 3 connectors are properly inserted when the side of the **connector with the logo** is facing upwards.
- Holding the button scrolls through the menu.
- Pressing the button confirms the selected option.
- You can interrupt the program at any time by pressing the button.
- Press the button again to continue the application.
- The program will stop after a timeout is shown on the display.
- Before starting the application, the selected program can be adjusted, e.g., reducing the intensity, setting the time or selecting **3D program** with **3D extended** rotation time (if included). Follow the instructions on the display.
- Program adjustments remain stored in the device memory even after the application is stopped. Make the changes with a repeated program setting.
- During application, double-clicking the button starts or ends **Automatic program repetition** (Repeat 4x, Repeat 3x, Repeat 2x, Do not repeat).. Automatic repeat sequence: first application 20 min +1 h 40 min pause + second application 20 min + 1 h 40 min pause, etc.
- Device settings can be adjusted by entering a **PIN** (to obtain a PIN, contact the distributor). Holding the button for 3 seconds while simultaneously connecting the mains adapter to the power supply. Release the button and the display will show Enter PIN. A menu will appear: change language, test, adjust volume and basic settings.
- Language changes are performed in the **Language settings** menu.
- Device functionality check is carried out by confirming the **Test** item.
- Volume adjustment is performed in the **Sound settings menu** (Loud / Click / Silent).
- Default program settings are restored by confirming the **Basic settings** option.
- Device locking or unlocking at the last active program (to obtain PIN, contact the distributor).

7 APPLICATION – WHEN AND HOW OFTEN TO APPLY

7.1 Recommended number of applications – how often to apply

2x a day, and in more severe cases it can be performed 3 times a day on average, or more often, usually for at least 2 weeks, and in case of chronic conditions significantly longer. The pre-set program durations of 20 minutes are the recommended period to induce the desired effect and may be extended up to 90 minutes. The minimum recommended number of applications is 10, while the maximum number of applications and maximum recommended application times are not stipulated and the applications can be repeated according to the veterinarian recommendation on a long-term basis.

7.2 Applicator selection and taking a position before application – how to apply

From the available applicators (see the **Technical description and specifications of applicators** section), always select the most appropriate one for the specific therapeutic intention and place it as close as possible to the surface of the treated body area.

Preparation prior to application and the application itself should follow the procedure (see **Example of proper veterinary device connection prior to application** section).

Before commencing treatment, ensure you are familiar with all principles of safe operation, and that there are no contraindications in the animal (see the **Safe operation principles** / **Contraindications** section).

When selecting a program, more detailed information about its effects can be found in the descriptions of the effects of individual programs (provided in the **Principle of biological action** section).

7.3 Program selection

Program No. 1 – PAIN-RELIEVING EFFECT

= ANALGESIC

(the dominant effect is pain relieving)

Preferably used in case of all types of pain where pain is one of the main symptoms of disease and we have to reduce it as a matter of priority.

After achieving pain relief, we move to healing and regenerating programs.

This program may also be used in the following cases:

- with all diagnosed problems where the dominant manifestation is pain;
- radicular and pseudoradicular syndromes (nerve compression from various causes), non-healing wounds, pododermatitis, dermatitis, microtrauma;
- if the pain relief must precede, e.g., rehabilitation exercises, locomotor therapy, etc.;
- for alleviation of specific types of pain.

Program No. 2 – HEALING EFFECT

(the dominant effect is healing promoting regeneration, anti-inflammatory and anti-rheumatic effects)

This program is preferentially used where there is a need to accelerate the healing and regeneration of damaged tissue by employing anti-inflammatory and antirheumatic effects.

This program may also be used in the following cases:

- with rheumatic joint and soft tissue disease;
- with all impairment where acute pain was relieved during the previous phase and it is suitable to continue in follow-up treatment and healing.

Program No. 3 – ANTISWELLING EFFECT

(the dominant effect is anti-inflammatory)

We can use it to promote the remission of swelling for various reasons.

This program may also be used in the following cases:

- disorders of fluid drainage from tissue, improved perfusion, enhanced tissue flow, accelerated metabolic exchange, faster absorption of oedema, significant anti-inflammatory and analgesic action;
- gingivitis, allergic rhinitis, where the anti-swelling effect alleviates symptoms and support healing;
- in case of all post-traumatic and postoperative conditions to promote perfusion, accelerate swelling absorption and to promote healing.

Program No. 4 – MYORELAXING EFFECT

= ANTISPASMODIC

(the dominant effect is myorelaxant)

We use it for the targeted requirement to promote the reduction of spasms (cramps) in cases where the dominant manifestation is not pain but mobility disorder and other problems.

This program may also be used in the following cases:

- in animals with conditions in which muscle spasms and stiffness limit limb mobility, and in neurodegenerative diseases manifesting with muscular rigidity (e.g. cauda equina syndrome in dogs), muscle regeneration after sport or work activity, muscle relaxation prior to physiotherapy.

Program No. 5 – VASODILATING EFFECT

(the dominant effect is vasodilatory)

We use it for problems with the requirement to improve microcirculation (vasodilation) in ischaemic manifestations for various reasons.

This program may also be used in the following cases:

- ischaemic diseases of upper and lower limbs for various reasons;
- non-healing chronic wounds, circulatory disorders;
- reduction of thrombotic risk (e.g. thrombi affecting pelvic limbs).

Program No. 6 – DETOXOFYING EFFECT

(the dominant effect is metabolic-detoxification)

Used to support metabolic exchange and detoxification, i.e., when rapid clearance of toxins and metabolites from tissues is desired, along with inflammation reduction and concurrent nutrient delivery enhancement.

This program may also be used in the following cases:

- need to support tissue regeneration following infection (hepatitis, hepatopathy), toxic tissue damage, as well as dermatitis and allergy;
- support for total detoxication – exposure of the liver area stimulates liver function and accelerates and enhances detoxification processes in the whole body;
- localised effects achieved by placing the applicator over the problem area, e.g., muscle, joint, etc.

Note:

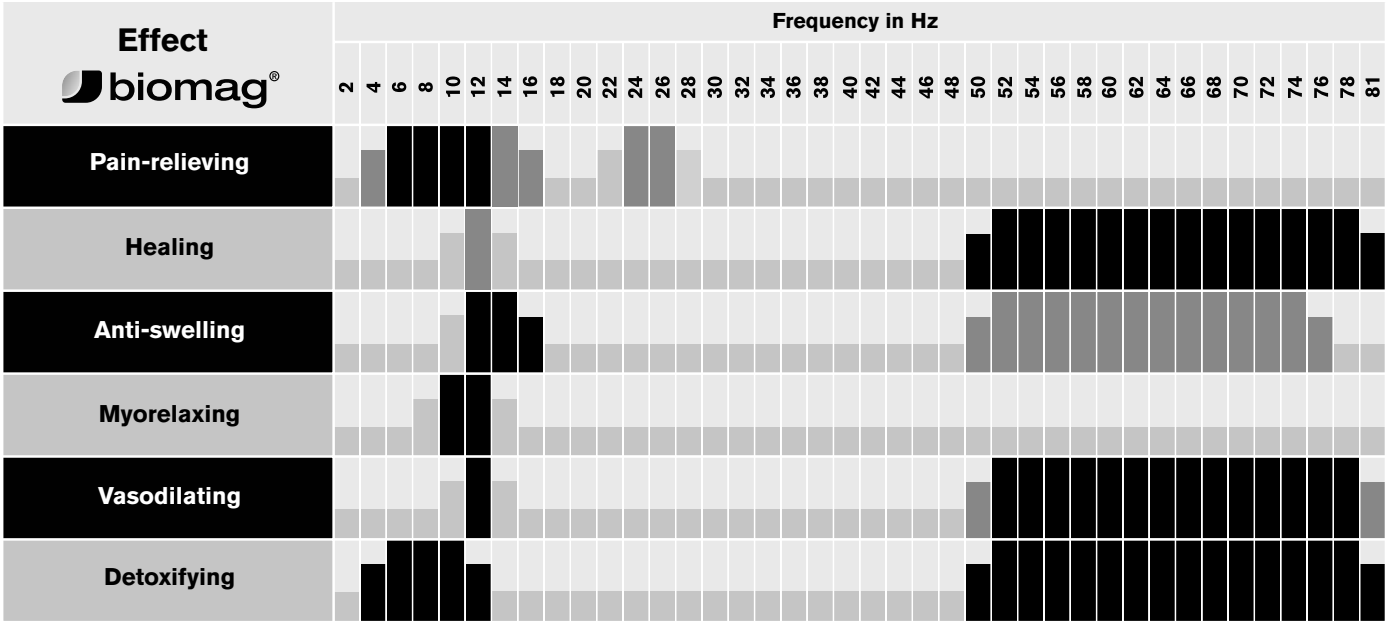
All the programs induce a different extent of all therapeutic effects, while the parameters of individual programs are set so that they purposefully induce the **dominant action of one or two effects.**

In accordance with its **Intended Use**, the veterinary device is applied to generate pulsed magnetic fields.

7.4 General information

- The physiological mechanisms of therapy act on systemic, organ, tissue, cellular and molecular levels, and through these changes, beneficial therapeutic effects are produced within the body.
- Magnetic field lines penetrate all parts of the body, including bones and tissues, uniformly. The animal may lay on a pad during therapy, and the presence of plaster casts does not interfere with therapy. The moist method may be used (an open wound covered with a dressing that is no longer bleeding).
- Before initiating therapy, an appropriate program is selected based on the symptoms of the diagnosed condition to be specifically targeted.

Informative chart of predominant magnetotherapy effects by frequency



= the most effective range of frequencies for the given therapeutic effect
= the range of frequencies for the given therapeutic effect with less considerable effect

7.5 Example of proper veterinary device connection prior to application

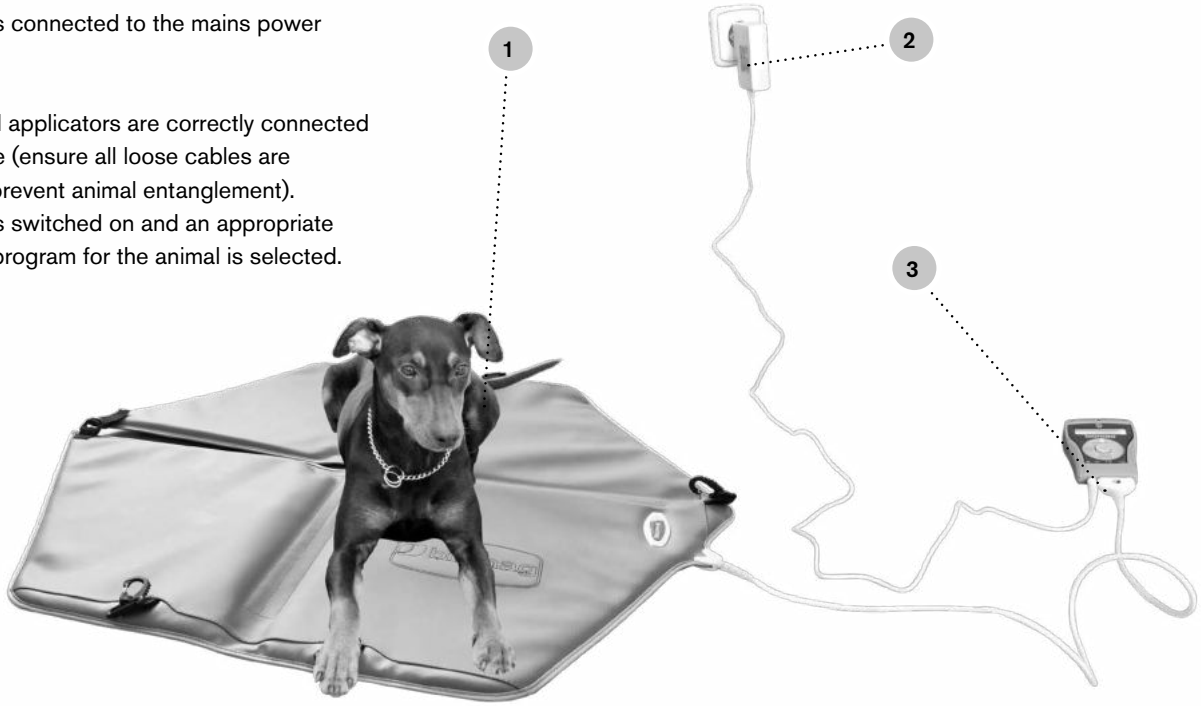
The operator/user is familiar with the principles of safe operation and adheres to them and to the Instructions for Use. The application will only be provided to the animal if the conditions outlined in the **Patient profile** / **Operator profile** are fulfilled.

Contraindications are professionally assessed prior to application. **The animal must not be left unattended during application!**

1 Contraindications have been ruled out for both the animal and the operator.
The applicator is placed on the affected area while the animal is at rest.
When used on multiple animals, a protective barrier should be placed between the applicator and the animal.

2. The device is connected to the mains power supply.

3. The selected applicators are correctly connected to the device (ensure all loose cables are secured to prevent animal entanglement).
The device is switched on and an appropriate application program for the animal is selected.



7.6 Device operation and additional possible settings

1 | Powering on the device

Connect the power adapter to the veterinary device
Plug the adapter into the mains.
The device will beep and its name
and introductory information will be displayed.

LUMIO 3D-e

When you start the appliance for the first time, the name of the first program will appear, and the Last selected item will be displayed upon any subsequent start.

Last selected item

2 | Connecting the applicators

Connect the applicators provided by the manufacturer to the device . The outputs for applicators are at the bottom of the device.

1 Output

2 Outputs

3 Outputs

3 | Program selection

Hold the button to select the desired program.
Release the button immediately when the selected program appears on the display.
Briefly press the button to start the selected program .

ANALGESIC

4 | Program setting options

Adjust the program setting by double-clicking on the button.
Individual items roll when holding the button, then press to confirm the selection.
The setting range is given on p. 17.
Restoring the program to default settings
is performed by entering the PIN and confirming Basic settings .

5 | Interrupting application

During the application, briefly press the button to interrupt the program.

Program interrupted

6 | Ending application

When the time has elapsed, the program ends.
The end of application is indicated by an audio signal.
To end the application before the timeout is displayed on the screen, interrupt the program
and hold the button to continue, e.g., by selecting another program.

End of program

7 | Switching off the device

Switch off the device by disconnecting the adapter from the mains.

8 | Output error

When disconnecting the applicator during operation or in case of failure, the display will show:

Output error

8 USER INFORMATION FOR THE VETERINARY DEVICE

8.1 Principles of safe operation

1 | Before first use of the veterinary device, thoroughly familiarise yourself with the Instructions for Use.
2 | Operation and handling of the veterinary device may only be performed by individuals who meet the requirements specified in the **Operator profile**, and who follow these Instructions for Use.
3 | The veterinary device is exclusively intended for animals.
4 | The veterinary device is only intended for intermittent operation.
5 | Pulsed magnetic fields may influence disorders of function, but not fixed pathological changes.
The therapy is non-addictive, complies with all safety standards and uses a method that is entirely safe for users.
6 | To achieve optimal results, it is recommended that the first five applications are carried out within the initial days.
7 | If no observable effects occur during the initial applications, continue with the therapy.
Positive effects may manifest later.
8 | If a mild worsening of the condition occurs during the first days of therapy, this is a recognised part of the reactive phase.
With subsequent applications, pain typically subsides followed by significant improvement.
9 | Implanted metallic devices are not a contraindication to therapy.
10 | The applied part is intended for use on intact skin, but in the case of bite wounds, lacerations, pressure ulcers, etc., use a disposable or other hygienic barrier.
11 | When used with multiple animals, applicators must be disinfected before each subsequent application.
12 | Only applicators approved by the manufacturer may be connected to the device's connectors.
13 | Do not remove the applicator from the device connector while an application program is running.
Stop the program first or wait for the application closing.
14 | Protect the veterinary device from falls and damage, and pay increased attention to the connectors of both the device and the applicators.
15 | The veterinary device must not be immersed in water, washed or used in wet or humid environments, e.g., water bowls.
Do not expose the device or applicators to moisture.
Do not place the device near sources of heat.
16 | The veterinary device must not be used while the animal is moving freely.
17 | The application must be performed under supervision.
Do not leave the animal unattended.
18 | Do not use the veterinary device if it is damaged.
19 | Any interference with the veterinary device is prohibited.
20 | The veterinary device must be connected to a suitable electrical supply with no visible damage to the power cable.
If in doubt, the check should be performed by a safety inspector.
21 | Ensure the cable is kept at a safe distance from the animal to prevent it from being chewed.
22 | Portable and mobile high-frequency communication devices may interfere with the veterinary device.
Wireless communication systems should not be operated within a 3.3 m distance as they might impact the Biomag functionality.
23 | The veterinary device may cause radio interference or may disrupt the function of nearby equipment, especially if placed adjacent to or stacked with other devices.
Measures may be required to mitigate such interference, such as reorienting or relocating the veterinary device.
24 | Applicators may damage nearby devices during application, such as wristwatches, magnetic storage media, credit cards, etc.
A distance of 1 m from the applicator is safe.
25 | When using multiple applicators in a single therapy session, ensure sufficient distance between them to prevent mutual interference.

WARNING – The manufacturer is not responsible for improper use of the system!
NOTE – During therapeutic applications of the veterinary device, the applicable legal regulations of the respective country must be observed.
NOTE – Monitor current and additional important information and instructions for users, including the possibility of warranty extension on https://www.biomag-medical.com/info/.

8.2 Occupational health and safety when using low-frequency pulsed magnetic fields

It is recommended to follow the Operator profile and adhere to the Instructions for Use. When operating the veterinary device, follow the Principles of safe operation together with the contraindications and operate the device under the prescribed environmental conditions. In other cases, it is recommended to consider the operator's current health and the operation mode. Furthermore, operation and handling of the veterinary device must comply with applicable electrical equipment safety regulations.

9 MAINTENANCE, FUNCTIONALITY, SERVICE, INSPECTION

The expected service life of the veterinary device is 10 years. This service life may be extended by regular preventive safety inspections as defined in the Safety-technical inspection section.

9.1 Device maintenance

The device may only be used in the environment for which it is designed. To ensure reliable function, it must be protected against mechanical damage and dirt. Device cleaning and disinfection should be performed using a Sani-Cloth® Active or another product with the same composition. It includes antiseptic napkins without alcohol designated for the disinfection of surfaces and devices in all types of veterinary institutions. The instructions for use are stated on the agent cover. During cleaning, the device must always be disconnected from the power supply! It is not recommended to clean the device using chemicals such as thinners and solvents that might damage the surface of the device. Do not expose the device to higher temperatures.
The device must be used in accordance with its intended purpose, taking into account its equipment configuration.

9.2 Applicators maintenance

Applicator cleaning and disinfection should be performed using a Sani-Cloth® Active or another product with the same composition. These are antiseptic napkins without alcohol designated for the disinfection of surfaces in all types of veterinary institutions. The instructions for use are stated on the agent cover.
In a domestic environment, it is recommended to clean as needed, but at least once a month.
Never use thinners or other chemical solvents for cleaning or maintenance of the applicators.

9.3 Necessary functionality

If the veterinary device loses functionality, no unacceptable risk is posed.

9.4 Service

A service during the warranty period and after-sales service should be provided by the manufacturer or an authorised service centre. Especially during the warranty period, contact with the customer is ensured by the authorised dealer. The diagrams, lists of parts, descriptions and instructions for calibration or other information determined for the assistance to service staff during the repair of these parts of the veterinary device are available on request from the manufacturer. If a service inspection determines that the device is not safe to operate, no longer fulfils its intended purpose or is irreparable, its service life is considered expired.

Users of the veterinary device are prohibited from making any unauthorised interventions into the device or its applicators.

9.5 Safety technical inspection

The veterinary device is subject to regular functionality and safety inspections. These inspections follow a defined procedure, conducted at prescribed intervals by trained personnel, to verify the safety and efficacy of the veterinary device.

For veterinary devices used by professional care providers, the first safety-technical inspection is required by the manufacturer after 2 years of operation. All subsequent STIs should be performed at 12-month intervals. After 10 years of operation, each subsequent inspection must be carried out every 6 months.

For veterinary devices intended for individual home care use, the first safety-technical inspection by the manufacturer is required after 2 years of veterinary device operation. All subsequent STIs should be performed at 24-month intervals. After 10 years of operation, each subsequent inspection must be carried out every 12 months. Failure to comply with these recommendations may result in the manufacturer disclaiming responsibility for any resulting damage (see the **Safety instructions** section).

This safety-technical inspection is conducted by the manufacturer or an authorised organisation. Based on the results of the inspection, the service life of the device may be extended. If the preventive safety-technical inspection determines that the device is not safe to operate, no longer fulfils its intended purpose or is irreparable, its service life is considered expired.

10 OPERATING, STORAGE AND TRANSPORT ENVIRONMENT, DISTRIBUTOR, EMC

10.1 Operating environment

The veterinary device is intended for use in veterinary institutions, including households and premises that are directly connected to the public power grid supplying buildings used for housing purposes. In facilities designated for the housing or treatment of animals, the veterinary device may only be used if the electrical installation complies with the relevant national regulations, has undergone proper inspection and is fitted with a socket equipped with a surge protector of appropriate rated value. Operating environmental conditions:

- Temperature range: +5°C – +35°C
  Ambient temperature +5°C – +28°C with AV6P2 applicator;
- Relative humidity 15% – 93% without condensation;
- Atmospheric pressure 700 – 1,060 hPa.

10.2 Storage and transport environment

The storage and transport environment of the device must be dry, dust-free, and free of mechanical shocks or chemical exposure. Premises must meet following conditions:

- Temperature -25°C – +70°C
- Relative humidity 15% – 93% without condensation;
- Atmospheric pressure 700 – 1,060 hPa.

If the storage or transport temperature drops below +5°C or rises above +35°C, the veterinary device must be allowed to acclimatise to the prescribed operating temperature range before use.

10.3 Information for distributors

Applicable national legislation on veterinary devices must be observed in the country where the BIOMAG® Pulsed Magnetic Therapy Device is used. This includes mandatory periodic safety and performance inspections, as well as other regulatory requirements for the veterinary device set by local laws and regulations. Compliance with these provisions ensures the safe and effective use of the veterinary device and protects both animal and operator health and safety.

10.4 Information on electromagnetic compatibility

The veterinary device must be used in the environment specified below. The device is suitable for use in all institutions, including domestic environments and facilities connected to the public low-voltage network supplying residential buildings. Included with the veterinary device: the device itself, including the mains adapter (type UES24LCP-240100SPA), and connectable applicators. The device must only be used with the supplied accessories. If needed, the above-mentioned accessories may be ordered from the manufacturer or distributor.

⚠ **WARNING** – Use of accessories or cables other than those specified or supplied by the manufacturer may result in increased electromagnetic emissions or reduced electromagnetic immunity of the veterinary device and may lead to improper operation.

⚠CAUTION – The portable RF communication device (including end equipment such as antenna cables and outside antennas) is not to be used closer than 30 cm (12 inches) from any parts of the device, including the cables specified by the manufacturer.

Portable and mobile high-frequency communication equipment may interfere with the device. No wireless communication system should be operated within a 3.3 m distance. Otherwise, this could lead to reduced performance of the veterinary device.

The veterinary device should not be used in close proximity to or stacked with other equipment. Respect the information given in the Instructions for Use for this equipment. If operation near or in stacked configuration with other equipment is necessary, the device must be observed to ensure it functions properly in the intended configuration.

Electromagnetic emissions

The veterinary device is intended for use in electromagnetic environments compliant with applicable standards for medical devices.
The veterinary device is tested as a medical device in accordance with IEC 60601-1-2:2014/AMD1:2020.
It is classified as Group 1, Class B under CISPR 11, and complies with Class A of IEC 61000-3-2 and with IEC 61000-3-3.

The veterinary device is intended for use in the electromagnetic environment specified below. The user must ensure the veterinary device is operated within this environment.		
Emission test	**Compliance**	**Electromagnetic environment – guidance**
High-frequency emission CISPR 11:2015+AMD1:2016+AMD2:2019	Group 1	The device uses radio-frequency energy solely for internal function. Therefore, its high-frequency emissions are very low and are not likely to cause any interference with electronic equipment in its close vicinity.
High-frequency emission CISPR 11:2015+AMD1:2016+AMD2:2019	Class B	The device system is suitable for use in any institutions, including households and premises that are directly connected to the public power grid supplying buildings used for housing purposes.
Harmonic emissions: IEC 61000-3-2:2018/A1:2020/AMD2:2024	Class A	
Voltage fluctuation / flicker emissions IEC 61000-3-3:2013 +AMD1:2017+AMD2:2021	Compliant	

Electromagnetic resistance

Phenomenon	**Basic standard for EMC or testing method**	**Testing levels of resistance**	
		Professional environment	**Home care environments**
ELECTROSTATIC DISCHARGE	IEC 61000-4-2:2008	±8 kV for contact discharge ±2 kV, ±4 kV, ±8 kV, ±15 kV for air discharge	
RF EM fields propagated by emission	IEC 61000-4-3:2020	3 V/m 80 MHz – 2.7 GHz 80% AM at 1 kHz	10 V/m 80 MHz – 2.7 GHz 80% AM at 1 kHz
Close fields from RF wireless communication devices	IEC 61000-4-3:2020	See Clause 8.10 of IEC 60601-1-2:2014/AMD1:2020	
Nearby magnetic fields	IEC 61000-4-39:2017	See Clause 8.11 of IEC 60601-1-2:2014/AMD1:2020	
Magnetic fields of STIPULATED power frequency	IEC 61000-4-8:2009	30 A/m 50 Hz or 60 Hz	

The veterinary device is intended for use in the electromagnetic environment specified below.
The user must ensure the veterinary device is operated within this environment.

Phenomenon	**Basic standard for EMC or testing method**	**Testing levels of resistance**	
		Professional environment	**Home care environments**
Electrical fast transient / groups of pulses	IEC 61000-4-4:2012	±2 kV Sequential rate 100 kHz	
Surges, integrated	IEC 61000-4-5: 2014+A1:2017	±0.5 kV, ±1 kV	
Surges between the phase and earth	IEC 61000-4-5: 2014+A1:2017	±0.5 kV, ±1 kV, ±2 kV	
Conducted RF interference	IEC 61000-4-6:2023	3 V 0.15 MHz – 80 MHz 6 V in ISM bands 0.15 MHz – 80 MHz 80% AM at 1 kHz	3 V 0.15 MHz – 80 MHz 6 V in ISM bands and amateur radio bands 0.15 MHz – 80 MHz 80% AM at 1 kHz
Short-term drops of voltage	IEC 61000-4-11:2020/ COR1:2020/COR2:2022	0% U_T; 0.5 cycle at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°	
		0% U_T; 1 cycle and 70% U_T; 25/30 cycles the only phase: at 0°	
Voltage interruption	IEC 61000-4-11:2020/ COR1:2020/COR2:2022	0% U_T; 250/300 cycles	

The electromagnetic environment – real relative humidity should be more than 50% and the floor should be conductive.
In this environment, air discharge should be no larger than 8 kV.
A degradation or loss of function of the veterinary device may occur, though this does not represent an unacceptable risk.

Recommended separation distances between portable and mobile high-frequency communication equipment and the veterinary device

The veterinary device is intended for use in an electromagnetic environment where radiated RF disturbances are controlled. The user can help prevent electromagnetic interference by maintaining minimum separation distances between portable and mobile RF communication equipment (transmitters) and the veterinary device, as recommended below based on the maximum output power of the communication equipment.

Rated maximum output power of the transmitter W	Separation distance depending on the transmitter frequency m		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2.5 GHz
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters not listed above, the recommended separation distance *(d)* in metres *(m)* can be estimated using the equation for the frequency of the transmitter, where P is the rated maximum output power of the transmitter in watts *(W)* specified by the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These instructions may not apply to all situations.
Electromagnetic propagation is affected by absorption and reflection from buildings, objects and people.

11 FAULT CONDITIONS

In cases when the short-circuit (failure) condition at the device output or in the applicator occurs, the LED indicator on the device flashes.
* VD = veterinary device

CONDITION	PROBABLE CAUSE	REMEDY
ELECTRICAL ENERGY		
Device shuts down, non-functional VD* due to power fluctuations	Loss or surge in mains voltage causes the device shuts down and cannot be restarted	Have the electrical installation inspected by a qualified professional
Device shuts down, non-functional VD due to environmental factors	Short circuit due to a dislodged component on the circuit board	Send the device for servicing
Device shuts down, non-functional VD due to environmental factors	Short circuit due to ingress of foreign substances	Send the device for servicing
Device shuts down, non-functional VD due to environmental factors	VD exposed to air discharge above 8 kV	Send the device for servicing
Device shuts down, non-functional VD due to leakage current	Damage to the casing of the device or applicator (e.g. cutting or forced intrusion)	Send the VD for servicing
Non-functional VD	Damaged network cable	Send the VD for servicing
THERMAL ENERGY		
Increase in device temperature	Operating temperature exceeds permissible range	Relocate the device, and if non-functional, send for servicing
Increase in applicator temperature	Operating temperature exceeds permissible range	Relocate the applicator to a different location, and if non-functional, send it to the service centre for repair
Hardened and cracked applicator leatherette	Lower ambient temperatures or temperature fluctuations damage the applicator	Send the applicator to the service centre for replacement of the cover
Non-functional VD, damaged printed circuit board	Reduced ambient temperature causes damage to the VD through moisture condensation	Send the device for servicing
Non-functional VD, device signals a fault acoustically	VD may be affected by another heat source	Relocate the VD to another place, non-functional, send for servicing
CHEMICAL EFFECTS		
Damaged device casing	Incorrect cleaning agent	Send the device to the service centre for replacement of the casing
Device shuts down, non-functional VD due to ingress of undesirable substances	Ingress of liquid onto the printed circuit board	Send the device for servicing
Damaged applicator leatherette	Incorrect cleaning agent	Send the applicator to the service centre for replacement of the cover
Hardened and cracked applicator leatherette	Incorrect cleaning agent or effects of another liquid	Send the applicator to the service centre for replacement of the cover

CONDITION	PROBABLE CAUSE	REMEDY
MECHANICAL EFFECTS		
Non-functional VD	Device or applicator dropped	Send the VD for servicing
VD does not function correctly	An output error appears on the device display and the LED flashes	Send the device or applicator for servicing
VD does not function correctly	An output error appears on the device display accompanied by acoustic signalling	Send the applicator or device for servicing
VD does not function correctly	Output error repeatedly displayed	Send the VD for servicing
FUNCTION EFFECTS		
Non-functional VD	Component base malfunction	Send the VD for servicing
Sudden interruption of VD operation, display shuts down	Power supply interrupted	Restore the power supply, inspect the electrical wiring
Non-functional VD, device signals a fault acoustically	VD may be affected by another device	Relocate the VD to another place, non-functional, send for servicing
Non-functional or incorrectly operating VD	Software error	Send the VD for servicing
VD does not function correctly	Stuck control button on the device	Send the device for servicing
USER ERROR		
Non-functional VD	Unauthorised components used	Send the VD for servicing
Non-functional VD	Device operated beyond its service life without timely safety-technical inspection	Send the VD for servicing
Non-functional VD	Device operated under unsuitable conditions	Send the VD for servicing
Non-functional VD	Neglect of maintenance of external power source	Send the VD for servicing
VD does not function correctly	Failure to ensure regular safety-technical or service inspections	Send the VD for servicing
VD does not function correctly	Improper handling resulting in damage to internal components on the printed circuit board	Send the VD for servicing
Non-functional VD	Damaged and non-functional display	Send the VD for servicing
Non-functional VD	Unqualified intervention	Send the VD for servicing
Non-functional VD	Component base malfunction	Send the VD for servicing

CONDITION	PROBABLE CAUSE	REMEDY
USER ERROR		
Interruption of VD operation, device display shuts down	Cause of malfunction due to environmental factors, not compliant with parameters specified in the instructions for use	Send the VD for servicing
Non-functional VD	Adapter connector not fully inserted into the power socket of the device	Insert the adapter into the device
Non-functional VD	Adapter not correctly connected to the electrical outlet	Insert the adapter into the electrical outlet
Illegible device display	Device exposed to intense sunlight	Move VD away from the light source
VD does not function correctly	No applicators are connected to the device output	Connect the applicator
Applicator heating	Incorrect use	Observe the application duration

Temporary loss of function or degradation in the operation of the veterinary device due to electromagnetic interference does not pose an unacceptable risk.
Interruption or end of application might occur earlier than the set program time.
Spontaneous change of the program might occur.
A fault condition may occur – loss of veterinary device function.

ⓘ DEVICE RESTART
If the system does not respond to controls or if its function is unreliable (especially the display), restart the system.
Disconnect the network adapter from the power supply and plug in again. The device will switch on.

For any other unlisted issues, contact your distributor. They will arrange a professional manufacturer's service for you.

12 WARRANTY

The veterinary device is covered by a 24-month warranty from the date of sale. The warranty covers the repair of the system and replacement of components that are damaged due to the use of defective materials, faulty design or workmanship.

The warranty does not cover wear and tear caused by normal use, such as parts with a limited lifespan.

The warranty is void in case of unauthorised tampering with the veterinary device, damage by force, improper handling contrary to the manual or damage occurring due to force majeure.

For any warranty repair you should provide the purchase document and/or the dealer's warranty card with an identical date to that of the product acceptance. The entire veterinary device must be presented, i.e., the device including applicators.

The warranty does not apply to any surface finishes that do not affect the function of the veterinary device.

The manufacturer is not liable for improper use of the veterinary device.

13 DISPOSAL

When disposing of the veterinary device, follow the hazardous waste (electronic waste) disposal regulations applicable in the relevant country. Disposal is also arranged by the manufacturer or distributor.

14 CONTACT INFORMATION

Follow the latest and other important information and instructions for users on https://www.biomag-medical.com/info/. Can't find the certificate or declaration of conformity of your product? Ask the manufacturer for the documents in electronic form.

Should you require assistance with setting up, operating or maintaining the veterinary device, or in the event of another incident, please contact your distributor (manufacturer's representative). If you do not have contact with your distributor, please contact the manufacturer directly.

Manufacturer
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Chomutice 81
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Czech Republic

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15 USE OF THE VETERINARY DEVICE

List of veterinary device components

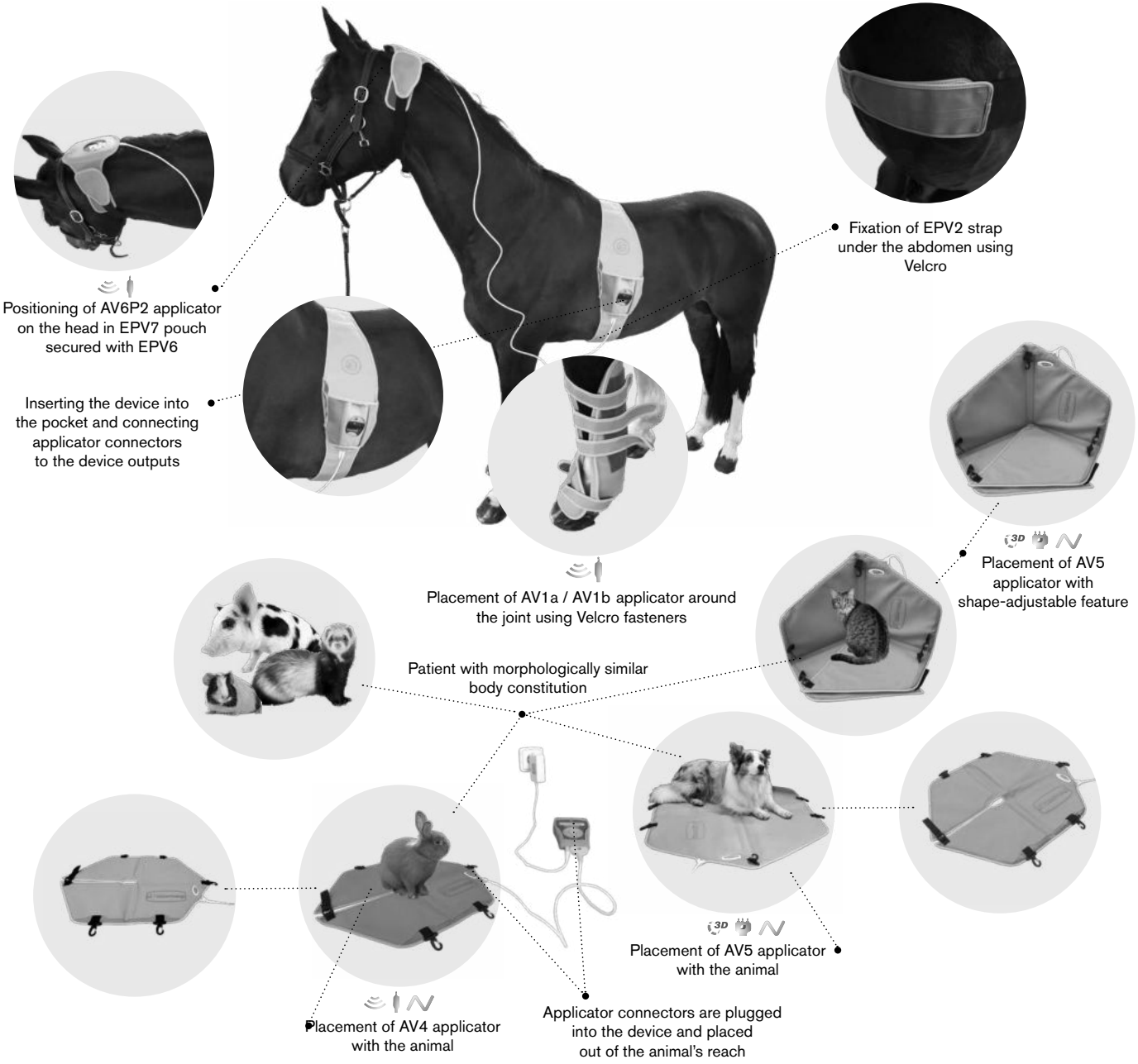
The veterinary device provides animals all the advantages and benefits available to humans. The applicators not only provide high comfort and convenience for horses, but also for other small animals such as dogs and cats. Biomag magnetotherapy not only greatly benefits humans, but also our animal companions.

	Lumio 3D-e VET Magnetotherapy device generating pulses to connected applicators.		**Adapter** package accessory to the device (adapter for powering the device from the mains)
	AV1a applicator intended for application to the right-sided joints of the animal's limbs		**EPV1a / EPV1b** bedding of 2,260 mm for AV4 applicator bedding of 3,280 mm for AV5 applicator
	AV1b applicator intended for application to the left-sided joints of the animal's limbs		**EPV2** Flexible strap with a 2,500 mm pocket for securing the device to the animal's body using Velcro.
	AV2 applicator designed for the cervical region of the animal		**EPV3** 580 mm length strap fitted with plastic clips for attachment to the applicator's carabiners and fastening to the animal's body.
	AV3 applicator intended for application to the entire trunk of the animal		**EPV4** 1,270 mm length strap fitted with plastic clips for attachment to the applicator's carabiners and fastening to the animal's body.
	AV3a applicator intended for application to the anterior part of the animal's body		**EPV5** 1,740 mm length strap fitted with plastic clips for attachment to the applicator's carabiners and fastening to the animal's body.
	AV3b applicator intended for application to the posterior part of the animal's body		**EPV6** 790 mm elastic strap with a hook-and-loop fastener, intended for securing the EPV7 casing.
	AV4 applicator intended for the cervical region or recumbent animals		**EPV7** Casing intended to hold the AV6P2 applicator with optional EPV6 elastic strap fastening.
	AV5 applicator intended for application on a recumbent animal		**EPV8** 130 mm length strap ending with plastic clips allowing attachment to snap-hooks between individual applicators
	AV6P2 applicator intended for intensive application to specific localised issues of the animal		**EPV9** 700 mm length strap with Velcro fastening, suitable as a headband for securing the applicator

*** Additional equipment is available from the manufacturer**

Practical use of the device with AV1a, AV1b, AV4, AV5 and AV6P2 applicators

*** Observe the safety instructions and warnings**



Practical use of the device with AV3 applicator

*** Observe the safety instructions and warnings**

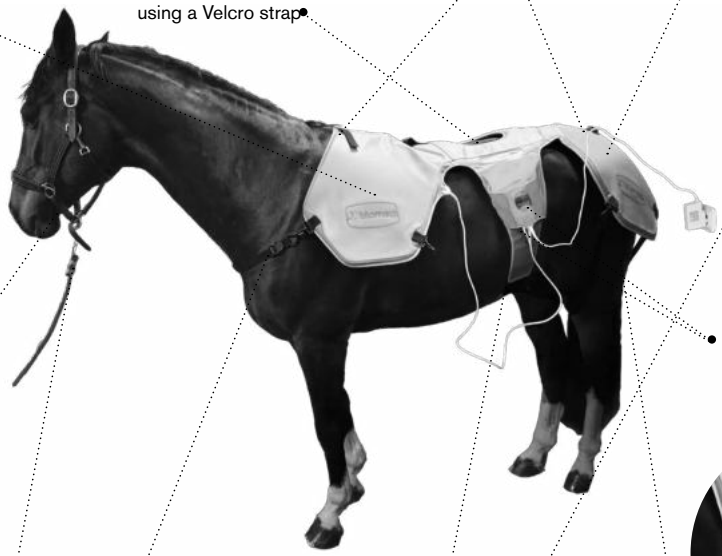
Positioning of front sections of AV3 applicator

Positioning of AV3 applicator on the animal's back with fixation under the abdomen using a Velcro strap

Possibility to loosen or tighten the AV3 applicator

Positioning of rear sections of AV3 applicator

Patient from the equine family or animal with a morphologically similar body constitution



Inserting the device into the pocket and connecting the applicator connectors to the device outputs

Securing the animal to prevent movement and possible access to the cables

Fixation of the front section of the AV3 applicator with EPV4 strap

Connecting the device to the mains, prevent cable chewing or other damage by the animal

Fixation of the rear section of the AV3 applicator around the legs using EPV5 straps

Practical use of the device with AV2, AV3a and AV3b applicators

*** Observe the safety instructions and warnings**

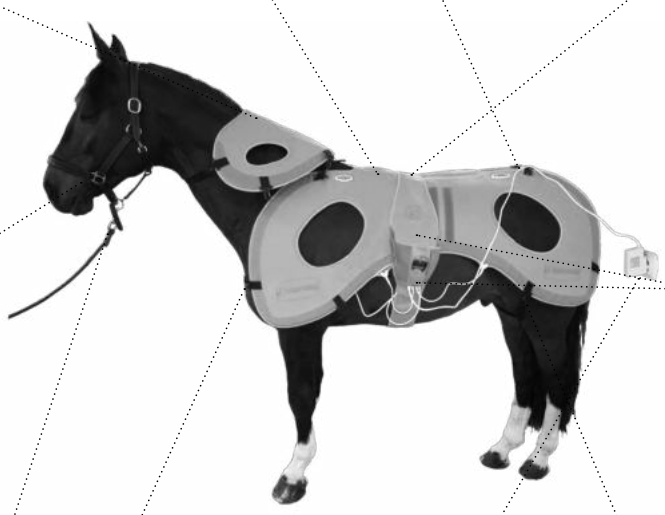
Placement of the AV2 neck applicator

Placement of AV3a applicator on the anterior section

Placement of AV3b applicator on the posterior section

Connecting applicator AV3a / AV3b with Velcro fastener and securing with EPV2 strap

Patient from the equine family or animal with a morphologically similar body constitution



Inserting the device into the pocket and connecting the applicator connectors to the device outputs

Securing the animal to prevent movement and possible access to the cables

Fixation of AV3a applicator with EPV3 strap

Connecting the device to the mains, prevent cable chewing or other damage by the animal

Fixation of AV3b applicator around the legs with EPV4 straps

biomag® e-series

BIOMAG® Lumio 3D-e VET

Information regarding any current offers in a given region is available from the producer, authorised retailers and on https://www.biomag-medical.com/.
Informace o aktuální nabídce v daném regionu jsou k dispozici u výrobce, autorizovaných distributorů a na webových stránkách https://www.biomag.cz/.

biomag® Lumio 3D-e VET

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The colour shown in the illustrations may vary from your particular model.

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Barevné vyobrazení nemusí odpovídat barvě dodávaných výrobků.

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VETERINARY DEVICE

3D Patented Technology

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