DEVELOPMENT
PRODUCTION
SALES
SERVICE
CONSULTING
SUPPORT

MEDIPO ZT s.r.o.

ASSOCIATION OF MANUFACTURES AND SUPPLIERS OF MEDICAL DEVICES

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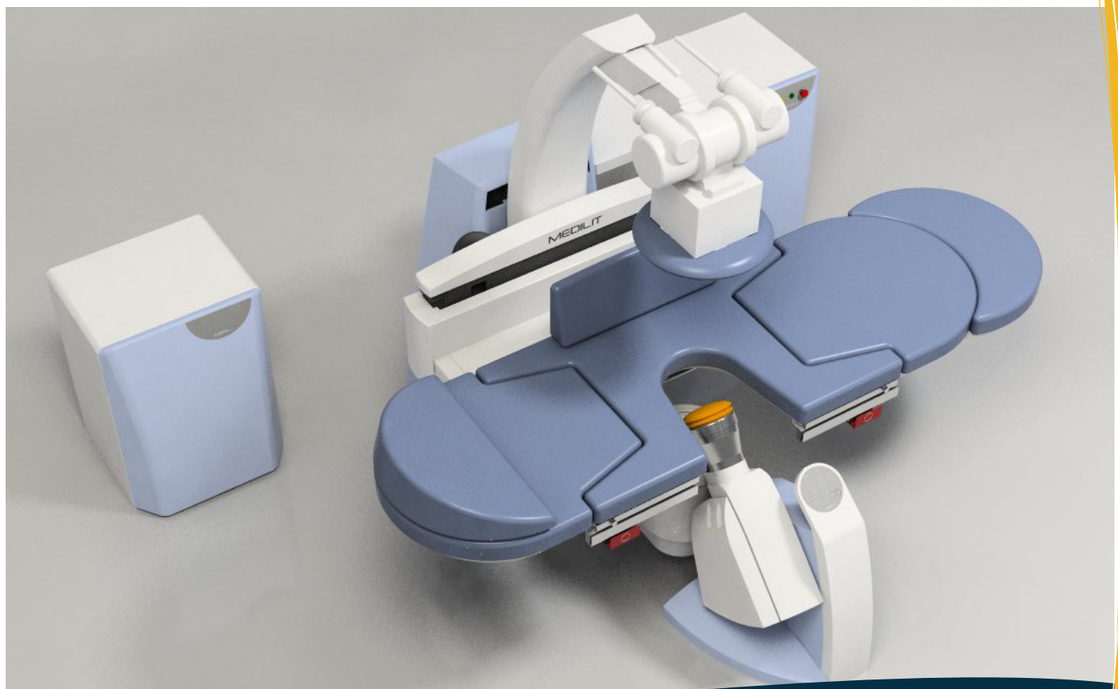

lithotriptor **MEDILIT**

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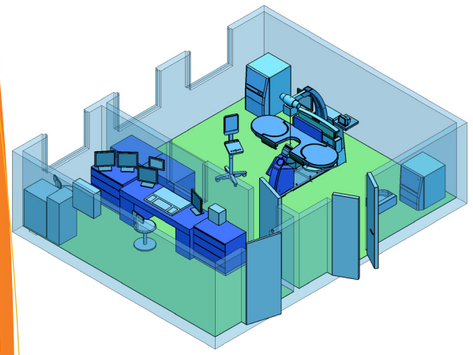
Medilit characteristics

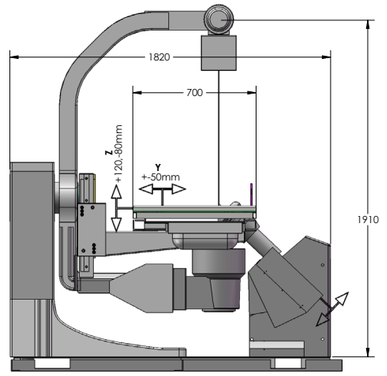
NON-INVASIVE REMOVAL OF CONCREMENTS USING A FOCUSED SHOCK WAVE

The MEDILIT lithotriptor is a powerful device especially designed for non-invasive removal of concrements in the kidneys and the urinary and bile ducts using a focused shock wave. It can also be used in the therapy of Peyronie's disease and in the treatment of various orthopedic conditions.

The machine is operated from the control room and the entire therapy process is computer-controlled.

The staff are thus protected not only from the x-ray radiation but also from the acoustic manifestations of the shock wave. The table top is motor-driven and can be positioned multi-directionally in all three axes (x, y, z). It can be tilted to the Trendelenburg position to facilitate determination of the optimum point of shock wave entry into the patient's body. X-ray and ultrasound (optional) direction systems are available for concrement localization. Both systems can operate simultaneously, considerably reducing the radiation burden in continuous monitoring of the localization quality and the therapeutic effect.





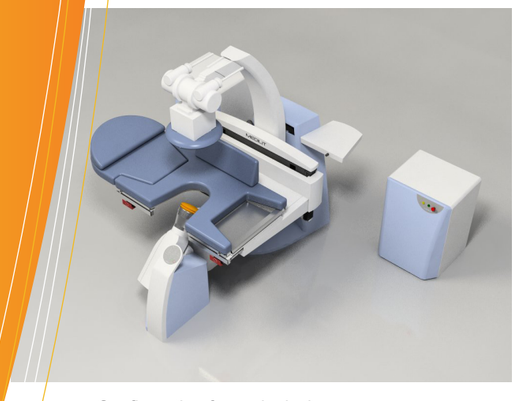
shock wave lithotripsy
lithotriptor MEDILIT

EXACTNESS
EFFECTIVENESS
ECONOMY
EASY OF USE

EASY OF USE AND ECONOMY

The exchangeable electrode system minimizes the operating cost. Worn electrode tips can be resharpened; the long electrode tip, when totally worn out, can be replaced.

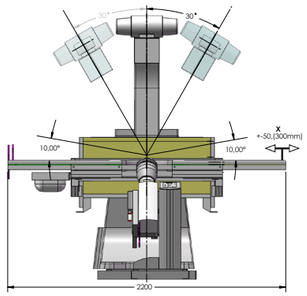
The machine features remarkable ease of operation. The individual actions are arranged in menus displayed on the control computer monitor and can be selected from a keyboard on the control panel.



Configuration for urological surgery.

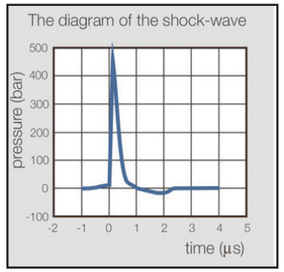
AUTOMATICALLY SYNCHRONIZED

Shock-wave generation is synchronized by the R-wave of the EGG signal with the refractory phase of the heart cycle. If the stone is shifted relative to the focus by the patient's breathing movements, shock-wave generation may be synchronized with the patient's respiration waveform. The sync signal can be derived from either the inspiration or the expiration phase. The shock wave generator uses the electro-hydraulic principle. The spark gap is situated in the primary focus of a rotational ellipsoid. The wave is reflected by a reflector and propagates through a water bath in a rubber bag and a contact gel film into the patient's body. It concentrates again in the secondary focus to which the stone has been localized. The water bath is degasified for elimination of free air bubbles to prevent energy dissipation and thus a reduction in therapy efficiency. The water is heated to body temperature. The discharge energy is continuously variable.



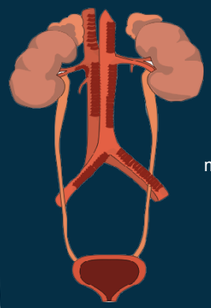
HIGH EFFICIENCY

The shock wave thus produced shows a very steep leading edge and a suppressed under-pressure phase, which is important in order to obtain highly efficient crushing and to eliminate the adverse reaction of adjacent tissue damage. The spark gap system allows adjustment of the electrode tip distance in variation with the set voltage, water quality and the condition of electrode wear.



The discharge timing is thus optimal with regard to the transformation of electric energy to acoustic energy.

In addition to control of the entire therapy process, the system software enables continuous monitoring of the equipment condition. It issues warning messages in the event of a malfunction or possible human error. The course of the therapy can be printed out and/or stored on a disk. For statistical purposes, it is possible to archive data on the number of discharges, total absorbed energy and total duration of x-ray exposure. Patient data and remarks can be inserted using an integrated text editor. A database program module is available for comparative and statistical purposes, and for result and patient record processing.

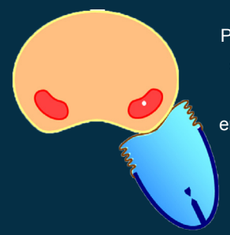


The concrements may occur in the kidney or the ureter.

Focus concrement

For successful therapy, the concrement has to be visualized and set into the secondary focus of an ellipsoid. Two imaging systems are available: a mandatory x-ray system and an optional ultra-sound system. The x-ray system consists of an x-ray generator, an image intensifier, a CCD x-ray camera, a TV chain and a circuit for high-quality processing of fully digital images. Two different readings have to be taken in order to obtain all three spatial concrement co-ordinates. The concrement stored in the computer memory is then highlighted using the cursor, which activates the corresponding automatic movement of the table. The x-ray image can subsequently be modified, e.g. to enhance the contrast, smooth out the image digitally, etc., in order to achieve the highest possible diagnostic quality. The ultrasound system is optional and need not be part of the configuration. It has been proven in practice as a convenient method of monitoring the course of the therapy after the concrement has been localized and set to the secondary focus using the x-ray system.

Focusing into the second focal point, where the concrement is placed.



Propagation of shock waves in the water environment.

Generating shock waves by flash-over of a spark.