

PiezoWave^{2T}

Manufactured by Richard Wolf,
distributed by Elvation.

Therapy sources in detail

Technical features,
characteristics, and
areas of application



Acoustic field parameters in ESWT–what they really mean

Focal size, –6 dB zone, 5 MPa zone, energy flux density, and penetration depth are all terms used in shockwave therapy. But these terms are often used inconsistently–and in clinical practice, this is more likely to result in confusion than clarity.

We have therefore provided a practical orientation on the most important terms here:

Energy flux density (EFD)

Energy flux density (unit: mJ/mm^2) is an established parameter to describe the shockwave intensity in the focal point. It is calculated using the measured acoustic pressure signal and is used to estimate the energy output of a system.

Important note for clinical practice:

EFD can be useful to compare treatment intensities of different units– but only to a limited extent, as energy distribution varies spatially.

–6 dB zone (relative measure)

The –6 dB zone describes the area around the focus where the pressure is at least 50 % of the maximum pressure.

Problematic:

As this measure depends on maximum peak pressure, the –6dB zone is a relative measure–and is therefore unsuitable for comparing the therapeutic efficacy of different units. The measure only indicates how well the unit can focus.

Example:

At higher intensities, the peak pressure increases faster than the pressure in the surrounding area → The –6 dB zone becomes smaller even though the energy output is higher. The therapeutically relevant area, for example the 5 MPa zone (s. below), becomes larger–but the –6 dB zone shrinks.

Why Richard Wolf GmbH and ELvation Medical GmbH do not use the –6 dB zone:

As the –6 dB zone is not an objective measure of efficacy and use of this term is often misleading, we deliberately decided not to use it.

5 MPa zone (absolute measure)

The 5 MPa zone describes the area where the positive acoustic pressure is at least 5 megapascal–which corresponds to 50 bar. This threshold level was defined as therapeutically relevant and capable of eliciting biological effects in tissue (e.g., cell stimulation, blood-flow stimulation).

Clinical use:

The 5 MPa zone is an absolute parameter which can be used for comparisons and is more suitable than the –6 dB zone when evaluating and comparing therapeutic impact zones of different units.

Penetration depth

Focal center (max. acoustic pressure):

Distance between the skin surface and the point where the acoustic pressure is highest–i.e., the central focal point.

Distal (end of the 5 MPa zone):

Indicates the penetration depth of the shockwave at 5 MPa– i.e., the “distal” end of the “impact zone”.

What does that mean in clinical practice?

The clinical relevance of physical parameters has not yet been fully elucidated.

It is nevertheless useful to record as many established parameters (unit used, therapy source, penetration depth, (how it was determined, which area was treated, etc.)) as possible to make it easier to correlate physical parameters with clinical results.

Recommendation:

For a more in-depth categorization of the physical principles, please also refer to the ISMST Guidelines.

We want to share our expertise



Do you have any questions about our products or their application: We are happy to share clinical experiences, studies and case studies.

One-to-one conversation:

+49 (0) 7231 – 56 36 56

Use our contact number

or our live chat:

<https://www.elvation.de/en/contact/>



Therapy source F7G3



Light and handy

The precisely defined focus of this therapy source makes the F7G3 especially suitable for the precise localization of pain points. With a compact aperture diameter of 7 cm, it is the lightest therapy source in our range, which makes it easy to use and ensures that the operator can work ergonomically.



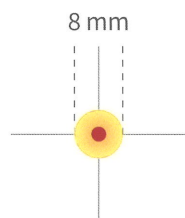
Well suitable for:

Musculoskeletal disorders:

- small superficial structures (e.g., hand, shoulder, foot, ankle)
- pointed structures with limited contact surfaces (e.g., epicondyle of the humerus, tuberosity of the tibia)

Urology:

- superficial, clearly delineated structures (Peyronie's disease)



Skin level



Focal parameter

- EFD max.: 0.403 mJ/mm²
- Pmax: 49 MPa

Focal form

- point-focused



Penetration depth

central 0 - 30 mm



Focal measurements

5 MPa* Zone

- Length: 20 - 40 mm
- Diameter: 8 mm

20 mm

30 mm

40 mm



Therapy source F10G4



The allrounder with an exceptional performance

The F10G4 therapy source holds a special place in our range as it offers the highest maximum acoustic pressure, making it universally suitable for many established ESWT indications



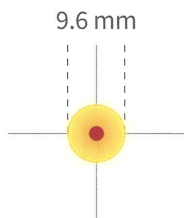
Well suitable for:

Musculoskeletal disorders:

- versatile, for all pathologies requiring a penetration depth between 5 and 40 mm in the central focal zone

Urology:

- clearly delineated structures which require high intensity (Peyronie's disease)



Skin level



Focal parameter

- EFD max.: 0.822 mJ/mm²
- Pmax: 77.7 MPa

Focal form

- point-focused



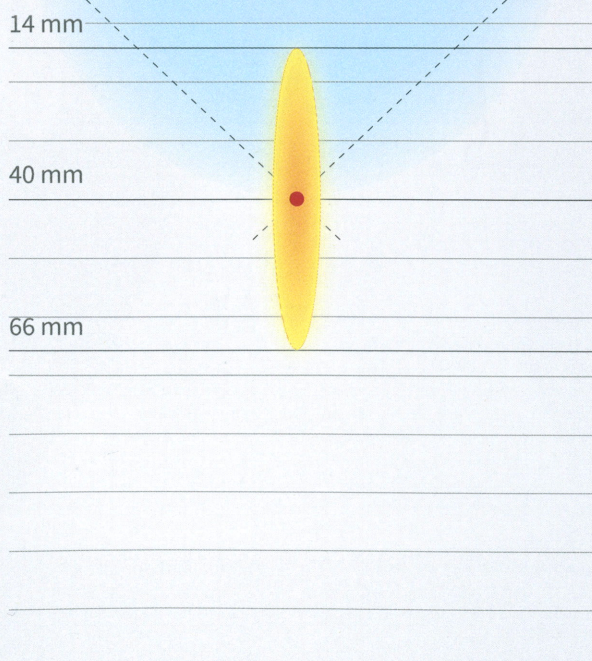
Penetration depth

central 5 - 40 mm



Focal measurements

- 5 MPa*** Zone
- Length: 14 - 66 mm
- Diameter: 9.6 mm



Therapy source FB10G6



High performance due to patented double-layer technology

The FB10G6 has a double layer of piezo elements. This design results in an expanded focal volume and permits targeted administration of high-energy acoustic pulses over a larger area of tissue—with a penetration depth ranging from 0 to 60 mm in the focal center.



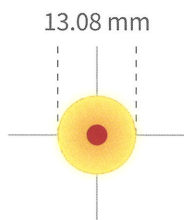
Well suitable for:

Musculoskeletal disorders:

- large areas, e.g., extensive calcium deposits, broad tendon insertions and to cover the fracture gap during pseudarthrosis treatment
- deep underlying structures, e.g., trigger points in the hip and buttock areas

Urology:

- deep underlying structures, e.g., trigger points in the pelvic floor musculature affected by CPPS



Focal parameter

- EFD max.: 0.702 mJ/mm²
- Pmax: 78.5 MPa

Focal form

- point-focused



Penetration depth

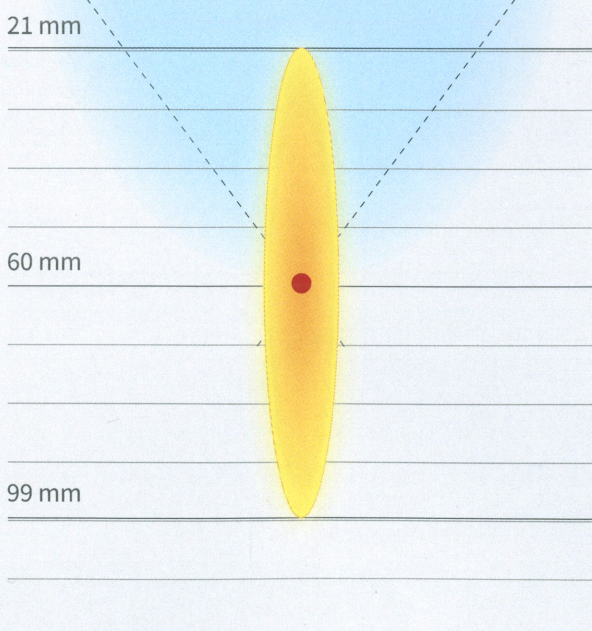
central 0 - 60 mm



Focal measurements

5 MPa* Zone

- Length: 21 - 99 mm
- Diameter: 13.08 mm



FB10G6

F10G10

Therapy source F10G10

★ Deep penetration depth with elongated focal zone

The low aperture angle of the F10G10 creates an extremely elongated focal zone, making it especially suitable to treat consecutive layers of tissue and deep underlying pathologies.

The source permits targeted therapy to be carried out at penetration depths of 10 to 100 mm in the focal center

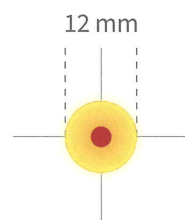
Well suitable for:

Musculoskeletal disorders:

- deep trigger points in the hip and buttock areas, e.g., the piriform muscle, quadratus lumborum
- obese patients

Urology:

- deep underlying structures, e.g., trigger points in the pelvic floor musculature affected by CPPS



Skin level



↔ Focal parameter

- EFD max.: 0.323 mJ/mm²
- Pmax: 39.6 MPa

Focal form

- point-focused

↕ Penetration depth

central 10 - 100 mm

↕ Focal measurements

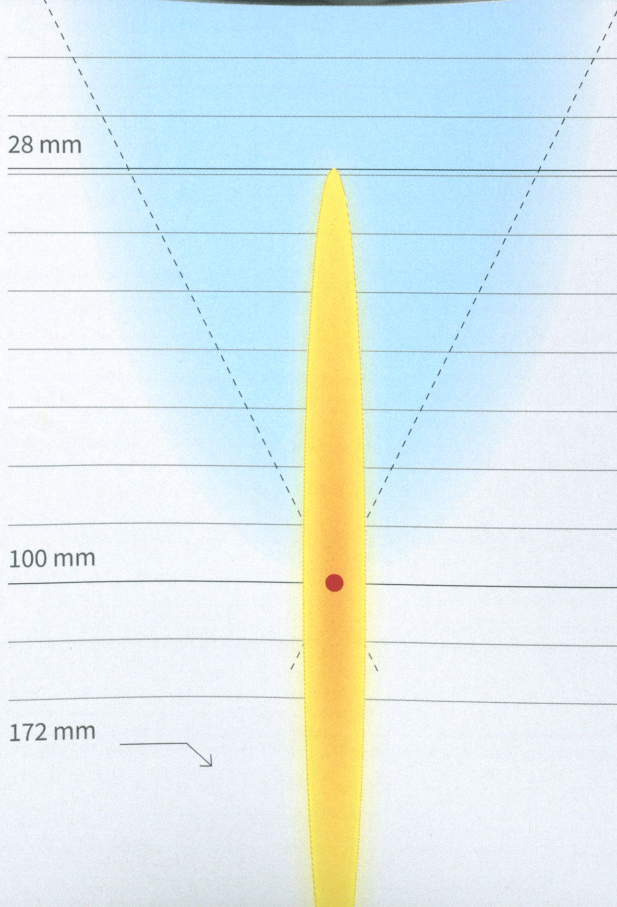
5 MPa* Zone

- Length: 28 - 172 mm
- Diameter: 12 mm

28 mm

100 mm

172 mm



Therapy source FBL10x5G2

★ Linear focus with a large treatment volume

The special design and patented double-layer technology of this therapy source creates a linear focus especially suited to treating superficial elongated structures effectively and efficiently.



Well suitable for:

Musculoskeletal disorders:

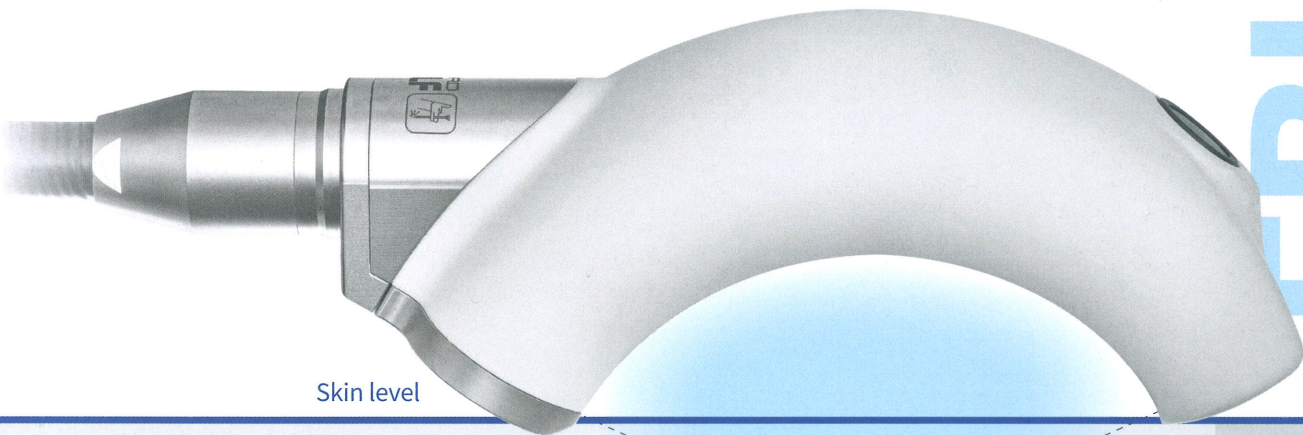
- superficial broad myofascial structures, for example, the iliotibial band, thoracolumbar fascia
- broad areas of muscle fibers, for example, the trapezius, the gastrocnemius muscle, the elbow extensor muscles

Urology:

- extended coverage of the corpora cavernosa when treating erectile dysfunction

Dermatology:

- diabetic foot syndrome
- pressure ulcers
- cellulite



Focal parameter

- EFD max.: 0.160 mJ/mm²
- Pmax: 11.1 MPa

Focal form

- linear-focused



Penetration depth

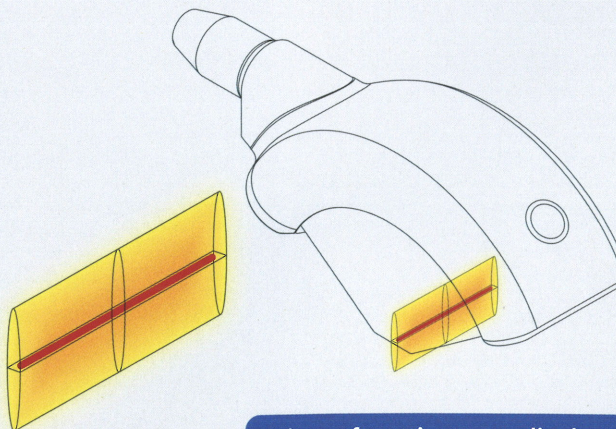
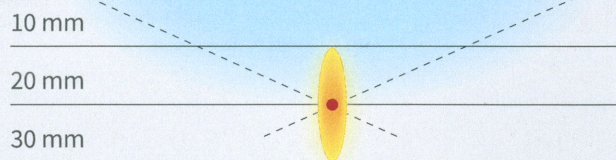
central 0-20 mm



Focal measurements

5 MPa* zone

- Length: 50.2 mm
- Width: 4.1 mm
- Height: 23.4 mm



Linear focus is perpendicular to the therapy source

FBL10x5G2

F7G3



Light and handy



0.403 mJ/mm²

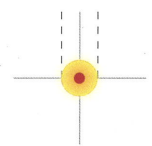


Penetration depth / Focal zone

central 0 - 30 mm

5 MPa* 20 - 40 mm

8 mm



F10G4



The allrounder with an exceptional performance



0.822 mJ/mm²

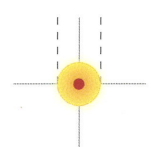


Penetration depth / Focal zone

central 5 - 40 mm

5 MPa* 14 - 66 mm

9.6 mm



FB10G6



High performance due to patented double-layer technology



0.702 mJ/mm²

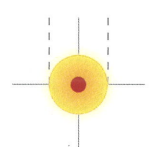


Penetration depth / Focal zone

central 0 - 60 mm

5 MPa* 21 - 99 mm

13.08 mm



F10G10



Deep penetration depth with elongated focal zone



0.323 mJ/mm²

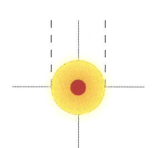


Penetration depth / Focal zone

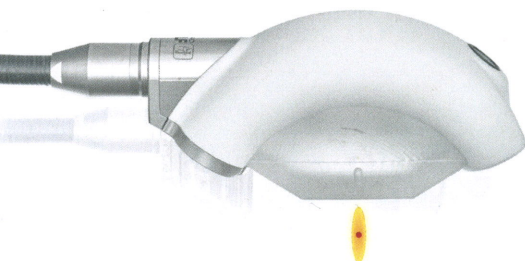
central 10 - 100 mm

5 MPa* 28 - 172 mm

12 mm



FBL10x5G2



Linear focus with a large treatment volume



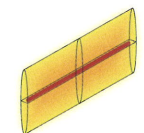
0.160 mJ/mm²



Penetration depth / Focal zone

central 0 - 20 mm

5 MPa* 10 - 30 mm



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