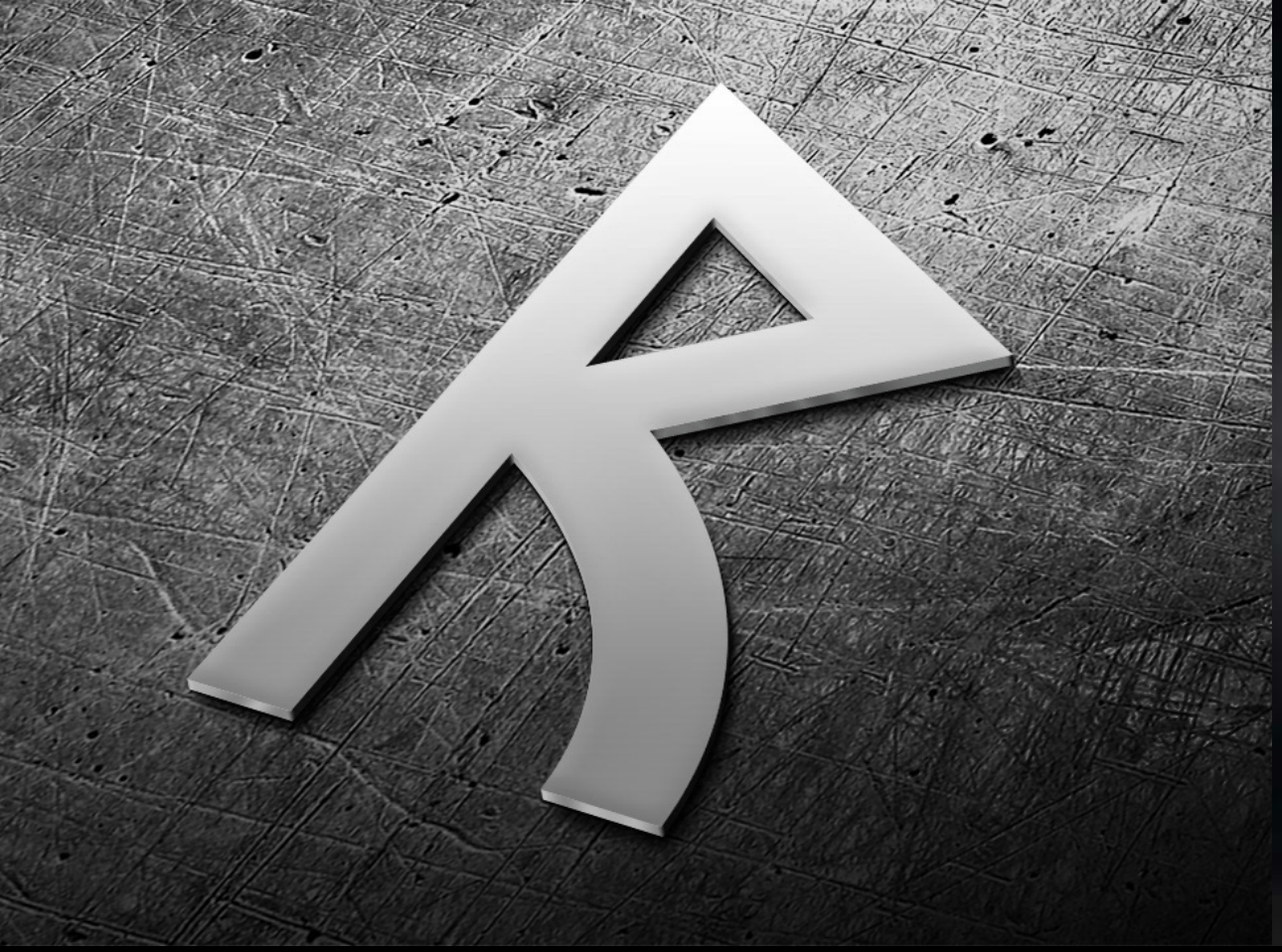


RAIDHO ACOUSTICS SPEAKERS

A COMPLETE GUIDE TO RAIDHO SPEAKERS

Raidho

Acoustics


INTRODUCING....
WORLD CLASS SPEAKERS WITH PROPRIETARY TECHNOLOGY AND A DESIGN LIKE NOTHING ELSE.
THIS IS THE RAIDHO ACOUSTICS SPEAKER LINE.

WHO IS RAIDHO ACOUSTICS?

- RAIDHO ACOUSTICS WAS FOUNDED IN 2003, AND IS OWNED BY DANTAX RADIO A/S.
- OUR SPEAKERS ARE BUILT IN PANDRUP, DENMARK
- WE MAKE OUR OWN DRIVERS ENTIRELY IN HAND, INCLUDING OUR WORLD RENOWNED QUASI RIBBON TWEETER
- FOR THE TD-SERIES, WE PUSHED THE ENVELOPE AND BUILT A NEW DRIVER-DESIGN BASED ON A IDEA THAT TURNED OUT TO BE REALLY GOOD. AN INCREDIBLY STRONG MAGNET WITH 1.1 TESLA MAKES THE DRIVERS AMONG THE MOST POWERFUL UNDERHUNG DESIGNS IN THE WORLD. MEASUREMENTS CONFIRMS THIS ALONG WITH ANOTHER BENEFIT - EXCEPTIONAL LOW DISTORTION LEVELS. ALONG WITH A VERY HIGH SENSITIVITY, THE NEW TD-SPEAKERS MATCHES ANY AMPLIFIER, A CUSTOMER WANTS TO USE, INCLUDING SMALL TUBE AMPS.
- ALL CROSSOVERS ARE BUILT ENTIRELY BY HAND, USING SOME OF THE BEST COMPONENTS AVAILABLE.
- INTERNAL WIRING IS DONE WITH NORDOST-CABLES IN THE TD-SERIES, AND OUR OWN CUSTOM MADE CABLE IN THE OTHER MODELS
- THE TERMINALS IS A NEW IN-HOUSE DESIGN BASED ON COUNTLESS LISTENING SESSIONS
- ALL MODELS EXCEPT THE BOOKSHELF-MODELS HAVE BUILT-IN DECOUPLING IN THE FEET

Raidho Acoustics

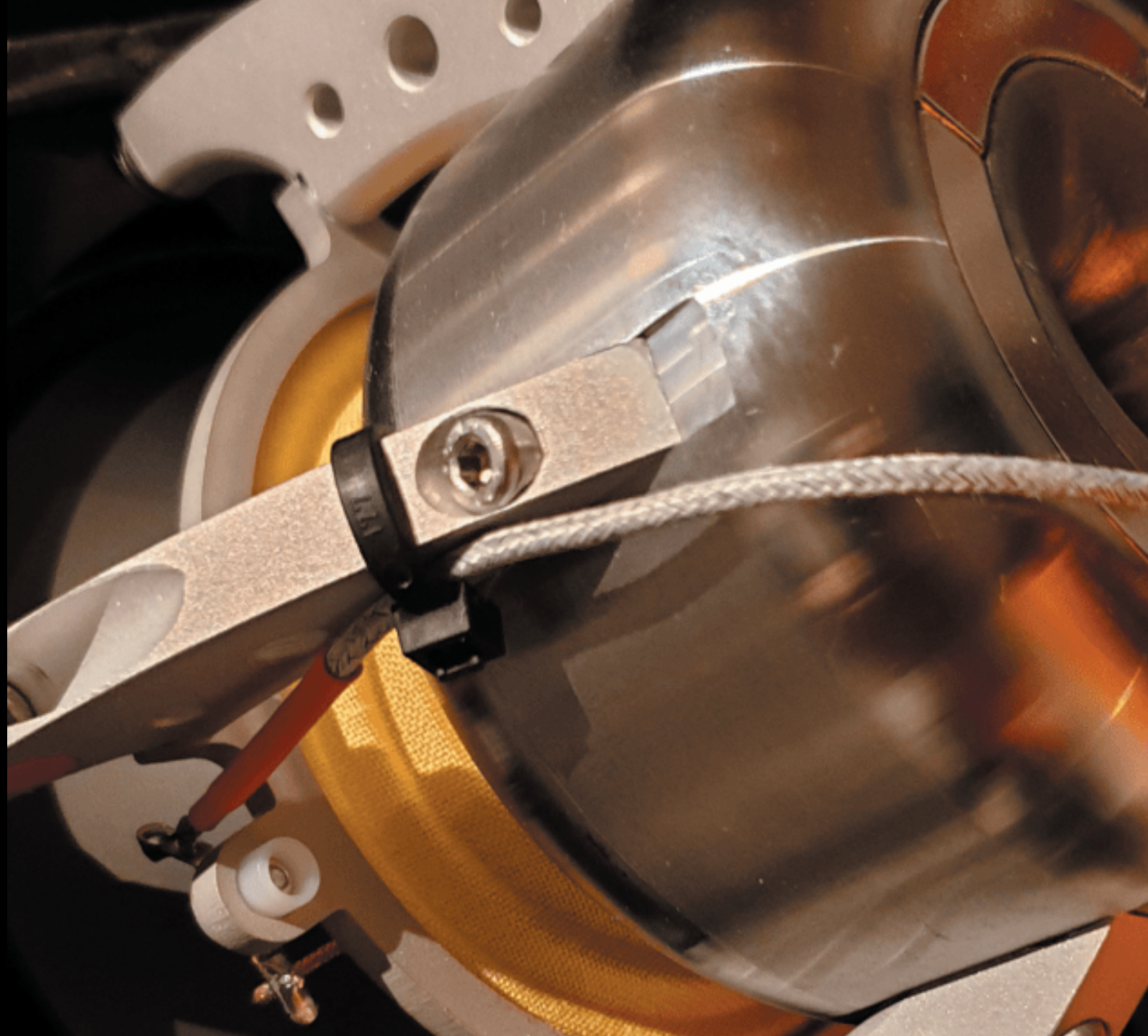
OUR NEW DRIVER...

IT STARTED WITH A SIMPLE IDEA ABOUT ANOTHER WAY TO PLACE THE MAGNETS.

FROM THERE, THE DISTANCE WASN´T FAR FROM THE IDEAS AND SIMULATIONS, AND TO ACTUALLY BUILDING THE DRIVER.

ON THE PICTURE, YOU SEE THE VERY FIRST VERSION OF THE DRIVER, AND NOBODY KNEW EXACTLY WHAT TO EXPECT.

IT TURNED OUT THAT THE DRIVER WORKED ABSOLUTELY PERFECT THE FIRST TIME, IT PLAYED. THE TD-DRIVER WAS BORN!



INNOVATIVE MINDS AND A LOT OF IDEAS.....

Ever since the beginning, the idea was to create speakers based on new, and sometimes radically different ideas.

It began with ideas for different drivers. Our first in-house made driver was made with a series of strong neodymium magnets focused around a very open system, allowing ventilation to the driver with the benefit of cooling the voicecoil and also to remove part of the design that usually causes distortions.

We were among the first to use titanium voicecoils. The benefit from this is a non-existent magnetic influence to the driver. Typical voicecoil-materials like aluminum has small magnetic abilities which, in a driver, works as a brake. By using titanium, the dynamics are heavily increased because the system is practically free from magnetic influence.

The driver in the picture is the well-known and used Raidho driver featuring the “star engine” design.

THE MEMBRANE...

The base of our membrane is an aluminum cone, which in itself, is very rigid and stiff. One of the challenges with aluminum is that is has its own distinct sound/ringing.

To eliminate this, our drivers are all coated with a thin layer of ceramics, adding to the first layers in the design.

On our XT-series, we went a step further and coated the membrane with a thin layer of titanium. This adds to a slightly higher resolution due to slightly higher weight and the magnetic abilities of titanium.

On the TD-series, we went all the way. The membranes are five layers with Tantalum, which is extremely hard and rigid, and our signatur Diamond-coating. In total, this gives us a unique membrane with high, internal damping and excellent, acoustical abilites.

Together with our proprietary titanium voicecoil, our drivers have a very unique, sonic signature with practically no colouration, and excellent dynamic capabilities.

THE RAIDHO QUASI RIBBON TWEETER

Our signature trademark is the world renowned, inhouse made ribbon tweeter.

There is a lot of benefits in using a ribbon tweeter. Frequency range is extremely high, and a ribbon doesn´t color the sound the same way as a conventional tweeter, and at the same time, it never sounds harsh and aggressive.

For the TD-models, this world class tweeter was improved with a changed backplate and rear chamber. This reduced the distortion, which was already really low, with impressive 35 dB, and increased sensitivity of 3 dB, making it optimal to match the new TD-drivers.

X/XT-SERIES DRIVER…

The X and XT-series build on the same basic values as all Raidho-speakers, but with a simplified design where we were able to “shrink” the drivers to match the slimmer enclosures of the X/XT-speakers.

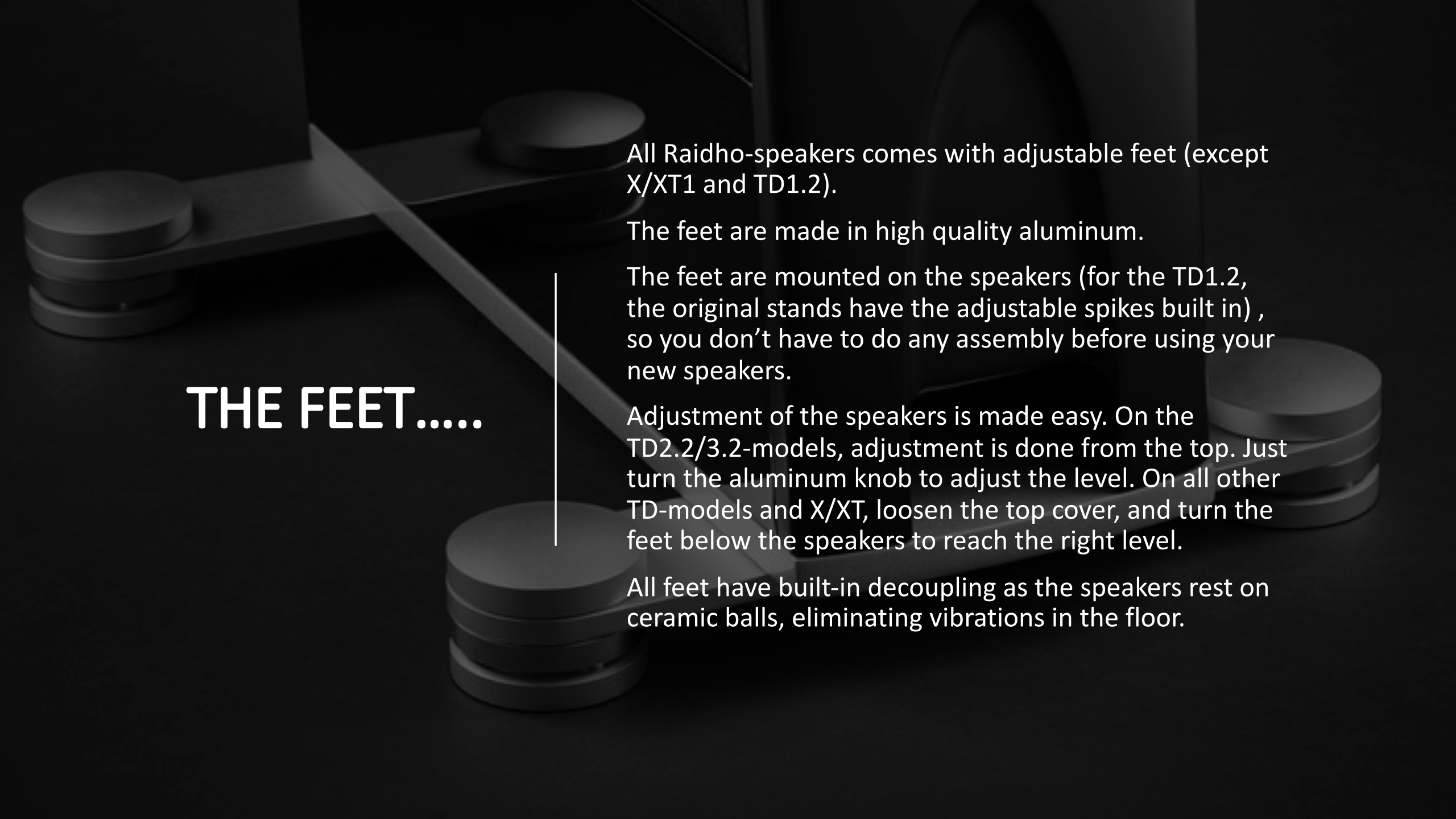
Magnets are neodymium and the ceramic/titanium-membrane is made with a titanium voicecoil.

Attention to details....

All drivers are mounted in massive aluminum baffles in elegant satin black.

The benefits is a frontpanel that is heavy and free from vibrations. The front is rounded of to remove diffractions from the front of the speaker.

This design also eases the procedure of removing a driver for example in case of repair.



THE FEET.....

All Raidho-speakers comes with adjustable feet (except X/XT1 and TD1.2).

The feet are made in high quality aluminum.

The feet are mounted on the speakers (for the TD1.2, the original stands have the adjustable spikes built in) , so you don’t have to do any assembly before using your new speakers.

Adjustment of the speakers is made easy. On the TD2.2/3.2-models, adjustment is done from the top. Just turn the aluminum knob to adjust the level. On all other TD-models and X/XT, loosen the top cover, and turn the feet below the speakers to reach the right level.

All feet have built-in decoupling as the speakers rest on ceramic balls, eliminating vibrations in the floor.

Choosing the right amplifier and cables...

Raidho speakers are designed as easy loads on practically any amplifier. The impedance doesn´t drop below 4 ohms on any model, and the sensitivity is high on all models.

We will recommend a high quality amplifier at any time, but it doesn´t matter if it is a tube amplifier, a class D or a solid state. Our speakers are designed to sound great with anything, you connect them to, but the ultimate results all depends on the electronics.

Choose a good, high quality loudspeaker cable for your Raidho speakers. Just as with the choice of amplifier, it is a matter of taste and preferences, so please consult your dealer, and let him guide you before trying it out at home.

THE RANGE OF MODELS...

X1/XT1 is a elegant, compact bookshelf/standmount speaker (stands sold separately) with the Raidho ribbon tweeter and a 4” bas/midrange driver with either ceramic or titanium cone. Comes in highgloss finish in either black or white.

X2/XT2 is a slim floorstander in a beautiful design, with the Raidho ribbon tweeter and two 4” bas/midrange drivers with either ceramic or titanium cone. The feet have built-in decoupling, and are made in industry grade aluminum in either silver (highgloss black speaker) or black (highgloss maple burl wood).

X3/XT3

The X3/XT3 is a tall, but slim and very elegant floorstander made with the signature Raidho ribbon tweeter, two 4” midrange drivers, two 4” midbass drivers and a 8” sidemounted woofer for exceptional low frequency bass.

X/XT-3 is capable of high powerhandling and is a very versatile performer for a larger room. The design is sleek and typical Scandinavian.

The feet are in industry grade aluminum in either silver (high gloss black) or black (high gloss maple burl), matching the elegant design. The feet have built-in decoupling.

X5/XT5

X5/XT5 is visually a stretched version of the X2/XT2, delivering a stunning look that fits in any room.

X5/XT5 is able to powerhandle like a big speaker, and staying true to the Raidho signature sound.

The speaker is built around the signature Raidho ribbon tweeter.

Midrange is handled by two 4” ceramic (titanium for the XT5) drivers.

Low frequency is delivered by no less than four 4” bas drivers with neodymium magnets and ceramic (titanium for the XT5) cones.

The feet are in industry grade aluminum in either silver (matching the high gloss black) or black (matching the highgloss maple burl).

The feet have built in decoupling.

TD1.2

A worldclass standmount/bookshelf speaker with a stunning design.

Featuring the new Raidho TD ribbon tweeter.

Featuring the new proprietary Raidho TD driver with 5-layer tantalum/diamond cone, titanium voicecoil and in-house made magnetsystem.

The driver is an underhung system with a magnetforce of 1.1 tesla, making it one of the most powerful designs in the world.

Reference speaker with exceptional low distortion figures and the ability to powerhandle like no other compact speaker.

TD2.2

A true reference level speaker in a beautiful design.

2½” way design with impulse optimized crossover for optimal phase response.

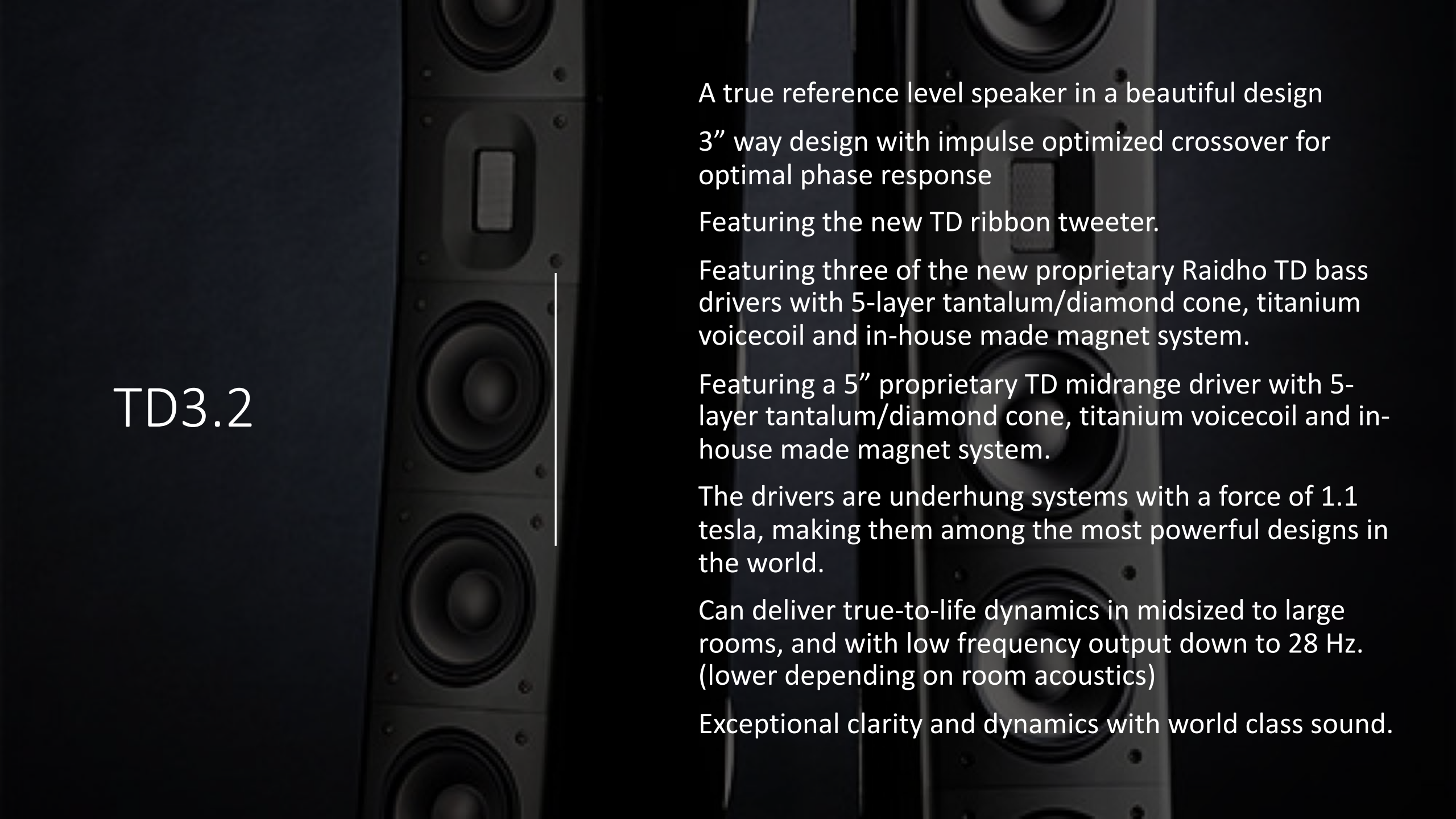
Featuring the new TD ribbon tweeter.

Featuring two of the new proprietary Raidho TD drivers with 5-layer tantalum/diamond cone, titanium voicecoil and in-house made magnetsystem.

The drivers are underhung systems with a magnetforce of 1.1 tesla, making them among the most powerful designs in the world.

Can deliver true-to-life dynamics in small to midsized rooms, and low frequency output down to 32 Hz. (lower depending on room acoustics)

Best of show speaker at RMAF 2019.



TD3.2

A true reference level speaker in a beautiful design

3” way design with impulse optimized crossover for optimal phase response

Featuring the new TD ribbon tweeter.

Featuring three of the new proprietary Raidho TD bass drivers with 5-layer tantalum/diamond cone, titanium voicecoil and in-house made magnet system.

Featuring a 5” proprietary TD midrange driver with 5-layer tantalum/diamond cone, titanium voicecoil and in-house made magnet system.

The drivers are underhung systems with a force of 1.1 tesla, making them among the most powerful designs in the world.

Can deliver true-to-life dynamics in midsized to large rooms, and with low frequency output down to 28 Hz. (lower depending on room acoustics)

Exceptional clarity and dynamics with world class sound.

TD3.8

A true reference level speaker in signature Raidho design, being the first midsize model using 8” drivers.

3” way design with impulse optimized crossover for optimal phase response.

Featuring the new TD ribbon tweeter.

Featuring two new 8” proprietary Raidho TD bass drivers with 5-layer tantalum/diamond cone, titanium voicecoil and in-house made magnet system.

Featuring two 5” proprietary TD midrange drivers for exceptional clarity and resolution. Built with 5-layer tantalum/diamond cone, titanium voicecoil and in-house made magnet system.

The drivers are underhung systems with a force of 1.1 tesla, making them among the most powerful designs in the world.

Can deliver true-to-life full-range dynamics in midsized to large rooms, and with low frequency output down to 23 Hz.

Exceptional clarity and dynamics with world class sound.

Awarded best of show in Munich 2019 and awarded several editors choice around the world.

TD4.2

A true reference level speaker designed as a line-array.

Impulse optimized crossover for optimal phase response.

Amazing looks, being one of the most beautiful speakers in the world.

Featuring the Raidho TD ribbon tweeter.

Featuring two 5” midrange drivers in the “star engine” design, matched to the enclosure, for reference level clarity.

Built with four 6½” low frequency drivers with our proprietary “star engine” design with improved magnets, and proprietary edge wound titanium voicecoil.

TD4.2 is able to deliver authentic dynamics and fantastic resolution, while being a near full-range system reaching down to 25 HZ.

Awarded best of show at Axpona 2019 and awarded with several prices, including the Brutus award 2019 from Positive Feedback.

TD4.8

A true reference level speaker designed as a line-array.

Impulse optimized crossover for optimal phase response.

Amazing looks, being one of the most beautiful speakers in the world, built on design elements from the TD4.2 and D5.1.

Featuring the Raidho TD ribbon tweeter

Featuring two 5” midrange drivers in the “star engine” design, matched to the enclosure, for reference level clarity.

Built with six 6½” low frequency drivers with our proprietary “star engine” design with improved magnets, and proprietary edge wound titanium voicecoil.

True full-range sound with a low frequency reaching down to 20 Hz, the TD4.8 is capable of amazing sound and dynamics.

Awarded best of show at Axpona 2018 and awarded with several prices, including the “cost-no-object” speaker of the year 2018 in Hi-Fi+.

UNPACKING YOUR NEW SPEAKERS....

The packaging of Raidho speakers is a doublebox design (except the TD3.8, 4.2 and 4.8 which comes in wooden crates due to the size and weight), protecting the speakers during shipping etc.

When you unpack them, they are easily removed from the box. For the smaller models, open the box, fold the sides down and flip the box over, lifting it away from the speakers. This is the correct way to do it, so you avoid lifting them and risking a back injury.

When handling the bigger models, we recommend being 2 persons during the lifting and handling. Be careful when handling the bigger models since they are heavy and the highgloss surface can be slippery if you have sweaty hands.

To avoid scratches and dents when handling your new speakers, put a small piece of cloth, blanket etc on the floor while handling the speakers.

We recommend saving the boxes in case of repairs or transportation of the speakers.

BREAKING IN YOUR NEW SPEAKERS....

From Raidho, we have done a lot of the work for you. The new, low loss suspensions are gently exersised during assembly, and in general, a Raidho speaker needs about 150 hours of break-in time to perform optimal.

During break-in, don´t hold back on the volume as it is the movement of the drivers that makes the speakers come to life.

If you plan to leave the house, place the speakers in front of each other with one being out of phase. Turn up the volume and let the music play while you are away. This will save you some time. Please beware that we can´t guarantee that your neighbors will like what you are doing while away.

Be careful not to overload the speakers, as this is not covered by the warranty.

PLACING YOUR SPEAKERS.....

This set-up guide consists of some basic steps.

Once the setup procedure has been completed, you will have a good starting point for further refinement.

The livingroom is an integral part of your soundsystem. Buying a good speaker is not the key to achieve really good sound, if the placement is not optimal. This is the point where most people, who experience bad or not optimal sound from their new investment, could easily reach the goal of high quality sound.

And the best part is, that is not even that difficult, and it isn´t nescessary to remodel the room or fill it with acoustical treatment as the room needs to be a tool in itself.

Let´s get started.....

Follow the instructions. When you start working with it, you will see that it all makes sense.

Speaker placement is first and foremost about finding the optimal position for the speakers in the listening room. What we want is to find a position where the speakers will counter- act standing notes in the room, yielding the flattest and most linear bass response.

Rear wall distance: This is the distance from the wall behind the speakers, to the front- center of the speaker.

Measure the total length (L) of the room. (ex. 8 m)

Now divide the result into the following: 1/7; 1/5; 2/7; 1/3

Discard any result below 1m

Mark each result on the floor of the room

Measure the total width (W) of the room. (ex. 6 m)

Divide the result into the following: 1/7; 1/5; 2/7; 1/3

Discard any result below 1m

Mark each result on the floor of the room

(W) Side-wall distance typically affects the 80-150Hz range

(L) Rear-wall distance typically affects the 20-80 Hz range

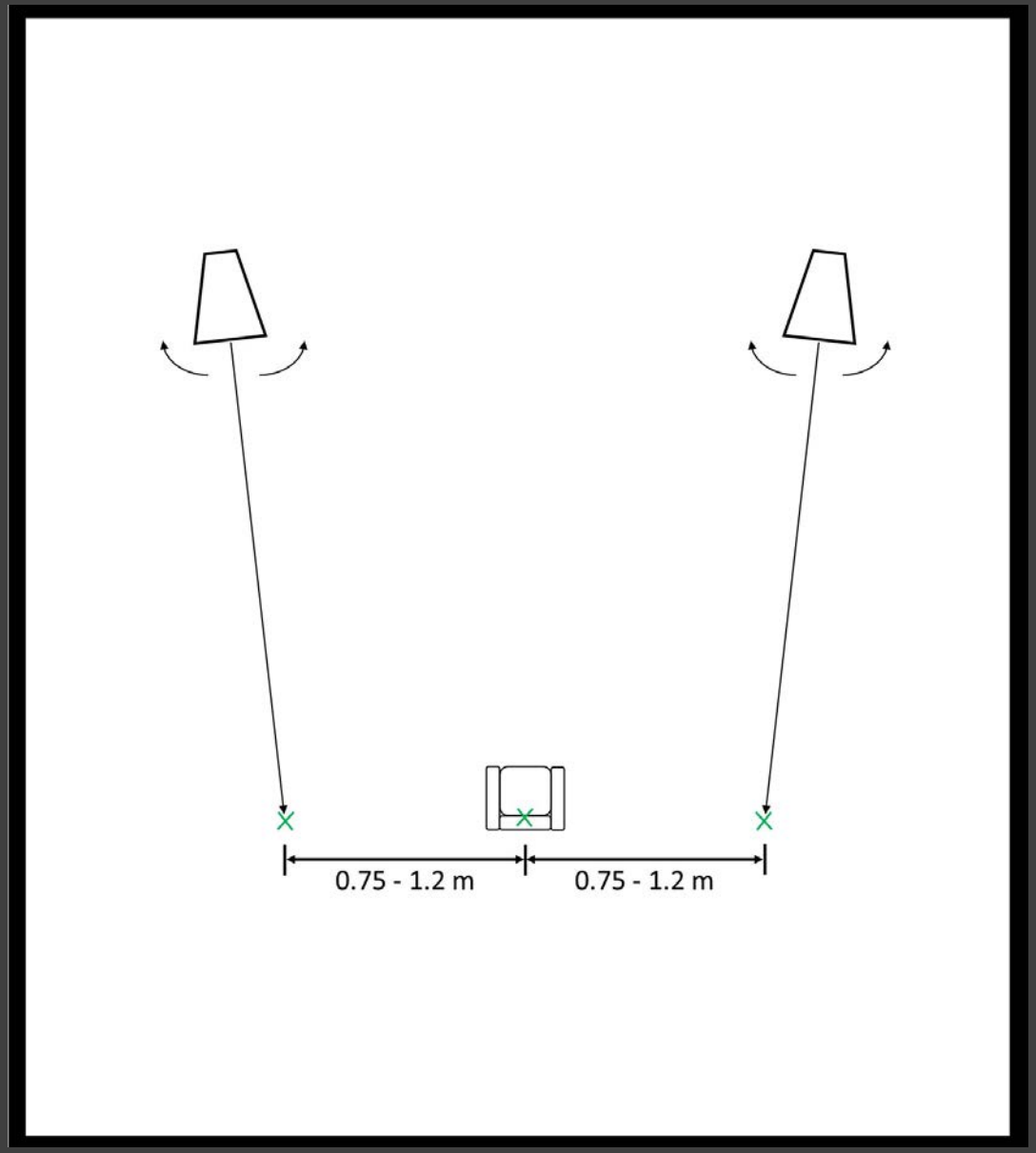
Finding your optimal listening position

The optimal listening position is normally between an even sided triangle and the ”golden” triangle.

The listening position should also be kept a minimum of 1 meter away from the wall behind it.

Try calculating the listening position distance to the back wall, the same way as with the loudspeakers - you could be in for a surprise! (Listen for the best bass performance)

If placing the speakers more than 1m from the sidewall is not practically possible, (typically rooms below 5m in width) then it is VERY important to place damping material on the sidewall (between speaker and listener) to dampen the first reflection. This will ensure that the reproduction of the soundstage is affected as little as possible.



Toe-in and adjustment

Raidho speakers doesn´t require a toe-in directly to the ears. The dispersion of the tweeters allows the speakers to create a huge and airy soundspace that allows them to “disappear”.

The picture illustrates recommended placement in a typical livingroom. Let the tweeters beam out and away from you and carefully work with the toe-in until you reach a level where the speaker disappears and blends in the room.

To work with the bass, which is typically the biggest challenge, please move around in the room to check the low-frequency output. The room and the reflections will always vary a lot depending on where you sit in the room. When you sit in your listening position, the bass should blend in with the rest of the sound, being fast, punchy and dynamic. If it is boomy, the speakers need more adjustment, and even a few millimetres can make a huge difference.

Placement in the room can be calculated by dividing the length of the room in fifths or sevenths, measured from the rear wall and to the front of the speaker at tweeter-level. (as explained on page 17) Use a laser-pointer to find the distance and doing the adjustments. The same goes for the sidewalls where possible.

Depending on if your listening position is high or low, the speakers might need more tilt forward or backwards. This is audible if the treble is lacking a little energy. If you are sitting low, try raising the speaker in the back – are you sitting high, adjust the tilt more backwards.

THE MODEL RANGE AND SPECIFICATIONS

X/XT1

X1 is an elegant and compact stand-mount mini monitor. The speaker is built with the Raidho Ribbon Tweeter and a bass/mid-range driver with a ceramic membrane (ceramic/titanium in the XT1)

Dimensions		145 x 320 x 230 mm (WxHxD)
Weight		8 Kg
Freq. reponse		80 Hz – 50 KHz
Impedance		>6 ohm
Sensitivity		85 dB 2.83 V/m
Crossover		3.5 kHz 1.5
Enclosure		Vented design Port in front panel

X2/XT2

The X2 family is a 2,5 way design with two 4” Raidho ceramic drivers and one Raidho tweeter. (ceramic/titanium for the XT2)

Dimensions		143 x 1040 x 410 mm (300 x 1060 x 470 mm incl. feet) (WxHxD)
Weight		23 Kg
Freq. reponse		60 Hz – 50 KHz
Impedance		>6 ohm
Sensititity		85 dB 1W 2.83 V/m
Crossover		220 Hz and 3.5 KHz 2. Order
Enclosure		Internal vented design Port in rear

X3/XT3

The Raidho Acoustics X3 is a 2.5-way Raidho loudspeaker design. The X3 is equipped with four dedicated 4-inch ceramic (titanium for the XT3) mid-bass drivers and one 8-inch side-mounted bass driver.

Dimensions	:	143 x 1270 x 410 mm (380 x 1290 x 410 mm incl. spikes) (WxHxD)
Weight	:	40 Kg
Freq. reponse		35 Hz – 50 KHz
Impedance		>6 ohm
Sensitivity		85 dB 1W 2.83 V/m
Crossover		180 Hz and 3.5 KHz 2. Order
Enclosure		Internal vented design, Port in front

X5/XT5

3-way design with Raidho ribbon tweeter, 2 midranges and four bas drivers.

Size (WxHxD)		145 x 1320 x 470 mm (300 x 1320 x 470 mm incl. feets) (WxHxD)
Weight		39 Kg
Freq. reponse		40 Hz – 50 KHz
Impedance		>6 ohm
Crossover		220 Hz and 3.5 KHz 2. order
Enclosure		Internal vented design

TD1.2

Worldclass 2-way compact speaker with TD-drivers.

Size		200 x 360 x 410 mm (WxHxD) stands not included
Weight		15 Kg
Freq. reponse		45 Hz – 50 KHz
Impedance		8 ohm
Sensitivity		87 dB 2.828 V/m
Crossover		2.5 kHz; Stepped slope, phase and impulse linear
Enclosure		Ported

TD2.2

The sound defies the size, and the TD2.2 delivers music with authority and dynamics. A 2,5-way system with new drivers and the updated TD-ribbon tweeter, taking our 2-series into the next level.

Size		200 x 1055 x 520 mm (320 x 1150 x 520 mm with feet) (WxHxD)
Weight		45 Kg
Freq. reponse		32 Hz – 50 KHz
Impedance		6 ohm
Sensitivity		88 dB
Crossover		400 Hz and 2.4 Khz, stepped slope
Enclosure		Ported in rear

TD3.2

TD3.2 is capable of delivering a huge soundstage with authentic and organic sound that really captures the listener. A true 3-way design built upon our new drivers including the 5” midrange used in the TD3.8, and the updated TD-ribbon tweeter.

Size		200 x 1235 x 520 mm (320 x 1320 x 520 mm with feet) (WxHxD)
Weight		55 Kg
Freq. reponse		28 Hz – 50 KHz
Impedance		4 ohm
Sensitivity		90 dB
Crossover		400 Hz and 2.4 Khz, stepped slope, phase and impulse linear
Enclosure		Ported in rear

TD3.8

The TD3.8 is an absolute beast and a dream-project. The project was born out of demand for speakers with bigger drivers, and this is the one to beat.

Size		440 x 1420 x 610 mm (WxHxD)
Weight		75 Kg
Freq. reponse		24 Hz – 50 KHz
Impedance		6 ohm
Sensitivity		89 dB
Crossover		400 and 2.4 kHz, Stepped slope, phase and impulse linear
Enclosure		Ported in rear

TD4.2

TD4.2 has moved on to the next level, introducing our acclaimed Tantalum-Diamond-drivers and the updated ribbon-tweeter continues the legacy as one of the best tweeters in the world.

Size		200 x 1550 x 600 mm (440 x 1580 x 600 mm incl. feets) (WxHxD)
Weight		65 Kg
Freq. reponse		25 Hz – 50 KHz
Impedance		>6 ohm
Sensitivity		89 dB
Crossover		400 and 2.5 kHz Stepped slope, phase and impulse linear
Enclosure		Ported in rear

TD4.8

The TD4.8 is a 3-way flagship TD-speaker, built in a stunning scandinavian design that will fit all rooms, this tall speaker is designed as a full-range speaker using our in-house made Tantalum Diamond-drivers with no less than 6 bas-drivers and 2 midranges.

Size (WxHxD)		200 x 179 x 630 mm (440 x 1840 x 630 mm with feet) (WxHxD)
Weight		71 Kg
Freq. reponse		20 Hz – 50 KHz
Impedance		5,5 ohm
Sensitivity		90 dB
Crossover		200 and 3 kHz; Stepped slope, phase and impulse linear
Enclosure		Ported in rear

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