

Dereneville High End - a decision for a lifetime.



Dereneville
by AVDesignHaus

User manual
Drive unit DAE-01 CL (e)

Dear customer,

We congratulate you on your purchase of this new and worldwide unique drive unit for analog turntables, whose extensive possibilities we would like to explain to you in the following.

In this drive unit we have combined the advantages and precision of digital technology with the pure, analogue part of music.

Our motivation: Thinking the feasible and doing the thinkable.

Our principles: We only believe in physical limits and the technically feasible.

Our maxim: No compromises!

During the six years of development, we repeatedly encountered obstacles and seemingly insurmountable limits. But such setbacks only drove us further. And, with sometimes massive technical effort, we finally overcome all obstacles!

Our hardware and software design combines highest precision, flexibility and intuitive operation.

Essential components of our design are:

- Powerful 16-bit microcontroller by Fujitsu
- High-precision embedded real-time operating system
- Software designed, programmed and tested according to automotive standards
- Sophisticated interrupt system (ensures the „synchronization“ of the software)
- Papst BLDC-Motor

Now we are particularly proud to be able to offer to you the result of our efforts. If, despite our careful quality control, you should ever have reason for complaint or a question about the device, please do not hesitate to contact us directly.

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1. Explanation of symbols, environmental protection

1.1 Explanation of symbols

Warning notes

	<p>Warning notes in the text are marked by a warning triangle. In addition, signal words indicate the type and severity of the consequences if the measures to avert the danger are not followed.</p>
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The following signal words can be used in this document:

- **NOTE** means that damage to property may occur.
- **WARNING** means that serious to life-threatening personal injuries can occur.
- **DANGER** means that serious to life-threatening personal injury will occur.

	<p>Important information without dangers for people or things are marked by the adjacent symbol. These informations are limited by lines above and below the text.</p>
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1.2 Important information

Symbol	Meaning
▶	Instruction for action
→	Reference to a text passage in the document
●	Enumeration/List entry
-	Enumeration/List entry (2nd level)

1.3 Environmental protection

Packaging disposal

The packaging protects the device from transport damage. The packaging materials have been selected according to environmentally friendly and disposal aspects and can therefore be recycled.

The return of remaining packaging parts, such as packaging tapes, PE bags etc., into the material cycle saves raw materials and reduces the amount of waste.

Your dealer will generally take back these packaging parts.

If you dispose of the packaging parts by yourself, please ask for the address of the nearest reusable material and recycling centre!

2. Safety Instructions

Read these operating instructions carefully and completely before attempting to install and operate the device!

Keep these operating instructions in a safe place.

This manual contains important safety and operating instructions for the use of the drive unit.

If the device is sold hand over this document to the buyer.

DAE-01 CL

This device is supplied with operating voltage by a high-quality plug-in power supply unit. Optionally the length-regulated transformer power supply DPS-24 VDC is available.

The device contains no user-serviceable parts.

Follow the instructions and notes to avoid damage to the device!

Follow the instructions of a warning to avoid serious injury!

Please use this drive unit only according to the instructions in this operating manual.

The device is designed exclusively for closed rooms operation.

The unit may only be opened or serviced by a qualified technician.

	<p>WARNING! NEVER operate the unit with a mains voltage other than the recommended 110-240V. This could cause a fire or destroy the unit!</p>
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	<p>NOTE: Avoid operating or installing the device in environments with temperatures below -10°C (+14°F) or above +40°C (+104°F). Avoid direct sunlight on the device and operation in excessively dusty environments.</p>
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	<p>WARNING: This appliance can be operated by children over 8 years of age and by persons with physical, mental or sensory disabilities or persons without experience and knowledge, provided that they have been supervised beforehand or have received instructions for the safe operation of the appliance and have understood any danger. Children must not play with the appliance.</p>
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	<p>WARNING! NEVER operate the appliance if there is obvious damage to the mains plug, the mains cable, the mains adapter or the appliance itself!</p>
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	<p>WARNING! Repairs only by the manufacturer.</p>
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3. General information

The drive unit is based on a powerful BLDC motor (brushless DC motor), which is controlled by a powerful Fujitsu 16 bit microcontroller (automotive standard). This enables functions that underline the outstanding position of this drive unit:

- Quartz precision speed control.
- Individual adjustability of all speeds with extrem high precision.
- Flexible, variable drive dynamics to accommodate different belt/platter pairings.
- Pitching (almost) without limits.
- The Motion Care function with individual settings automatically maintains drive belt and bearings.
- Recording operating time for drive belt and pickup.

The following parameters can be stored:

Speed	33,33
	45,00
Drive dynamics	Max. Acceleration
	Max. Brake
	Gain
Recording operating time	Drive Belt
	Pickup

3.1 Operating statuses

The drive unit is always in one of the following operating statuses:

- **ON:**
The drive unit is ready for use.
- **OFF:**
The drive unit is in standby mode and is awaiting its next use.
- **Motion Care function:**
The drive unit „wakes up“ after a waiting period and turns the turntable only for about 20 s to maintain the drive belt and bearings at a lowered speed.

3.2 „ON“

3.2.1 The motor runs

When the motor runs, the corresponding speed of the platter is displayed.



If a speed deviating from the standard value has been selected („Pitch“), the display shows the actual speed.



If the motor accelerates or brakes, the target speed display flashes to indicate that the target speed has not yet been achieved.

The characteristics of this dynamic can be configured, which means that the duration of this process varies depending on the setting (→ 5.5.2).



3.2.2 The motor is stopped

Display when the motor is stopped:



3.2.3 The motor is stopped and there are alerts

The drive unit records the operating time of the components „drive belt“ and „pickup“. A maximum operating time can be set for each of these components. If one or more of the components reaches the maximum operating time, an alert message appears on the display.

If the adjustable limits for the max. operating time of the drive belt or one or more pickups are reached, the corresponding alerts are displayed, alternating with the display for the currently active pickup, indicating that the selected maximum operating time of a component has been achieved.



Max. operating time drive belt achieved



Max. operating time pickup achieved



Max. operating time drive belt and pickup achieved



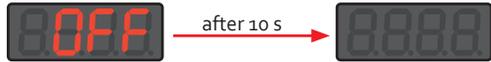
NOTE:

These warnings are only notes on possibly worn components. They do not affect the functionality of the drive unit in any way however!

3.3 „OFF“

The drive unit is switched off and is in standby mode. The motor is in free-wheel mode and can be moved easily.

„OFF“ appears in the display and disappears after approx. 10 s.



3.4 Motion Care function

The Motion Care function maintains the drive belt and all bearings associated with the platter movement. To do this, the drive unit „wakes up“ after a waiting time of 24 h and rotates the platter at a reduced speed for about 20 s.

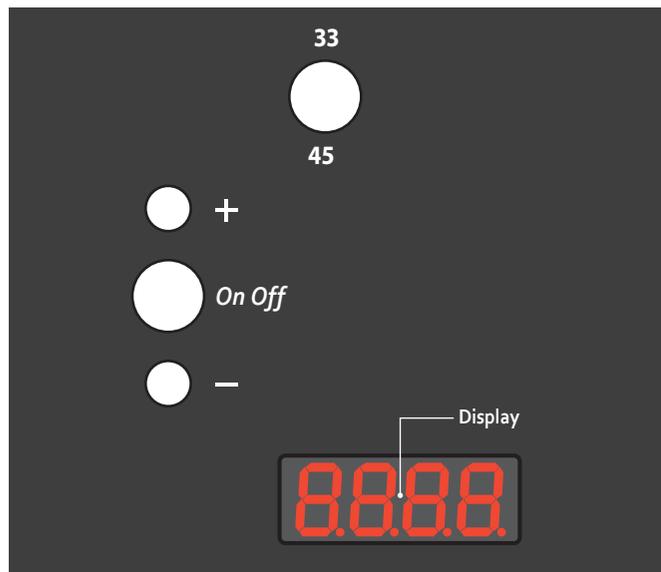
Once the set rotation time has elapsed, the motor stops and the drive unit starts to countdown the waiting time until the next run of Motion Care.

When the Motion Care function is activated, the current status of the function is shown on the display.

Display	Motion Care Status
	The remaining time until the next Motion Care run is displayed in „hh.mm“.
	If the remaining time until the next Motion Care run is less than 1 h, the display changes to „mm.ss“.
	The leading „P“ indicates an active „Motion Care“ run. While a Motion Care run is performed, the remaining active time is displayed in seconds „ss“.

4. Operation

4.1 The control panel



4.2 Switch on the drive unit („On“)

- ▶ By pressing the [On Off] key for **approx. 3 s**, the drive unit changes from standby mode „Off“ to operating mode „On“.

Modus	▶	Display
Operating mode „On“	 for approx. 3 s	

- ▶ By pressing the [On Off] key for **approx. 6 s**, the drive unit changes from activated motion care function to operating mode „On“.

Modus	▶	Display
Operating mode „On“	 for approx. 6 s	

4.3 Switch off the drive unit („Off“)

- ▶ By pressing the [On Off] key for **approx. 3 s**, the drive unit changes from operating mode „On“ respectively from activated Motion Care function to the standby mode „Off“.

Modus	▶	Display
„Off“ standby mode	 more than 3 s	 after 10 s 

4.4 Activating Motion Care function

- ▶ By pressing the [On Off] key for **more than 6 s**, the drive unit changes from operating mode „On“ respectively from the standby mode „Off“ to activated Motion Care function.

Modus	▶	Display
Motion Care function	 more than 6 s	

4.5 Starting/stopping the motor

- ▶ To start the motor, press key [33 45] to select the last used platter speed.



As long the motor accelerates or brakes, the target speed display flashes, to indicate that the target speed has not been reached yet. As soon as the drive unit reached the target speed, the speed is displayed continuously.

- ▶ Press [On Off] to stop the motor.

The drive unit changes to operating mode; the display shows „0“ (→ 4.2).



4.6 Select speed

The drive unit provides 2 speeds. The selection is made by pressing key [33 45].

Key [33 45] switches 2 speeds: For the first time it is pressed a speed of 33.33 rpm is set.

Pressing key [33 45] again sets the speed to 45.00 rpm. Each further actuation of key [33 45] switches between the speeds 45,00 rpm and 33.33 rpm.

4.7 Vary standard speed („Pitch“)

Each of the standard speeds can be varied with a resolution of 0.01 rpm. There are no restrictions regarding the setting value: The speed can be set from the minimum to the maximum possible speed of the motor.

- ▶ Press keys [33 45] (repeatedly) to select the desired speed of the platter.

The motor starts and accelerates to nominal speed.



- ▶ Press [+] to increase speed.
- ▶ Press [-] to decrease speed.

Short pressing changes the speed by 0.01 rpm. Longer pressing changes the speed continuously, whereby the step size of the speed change increases by the duration of the key operation.

The maximum step size of the change can be set individually in the configuration menu under menu item „Key Delay“.

The display shows the target speed. As long as the display is flashing, the drive unit is in the dynamic phase and the selected speed has not yet been achieved.



A pitch setting will not be stored!

A varied speed setting is retained only until key [33 45] is pressed again or the device is switched off with key [On Off].

4.8 Operating time alerts

In order to ensure optimum playback quality and to protect your valuable vinyl discs, the drive belt and pickup should be replaced after a certain period of operation.

We have therefore integrated separate hour meters for drive belt and pickup into these drive units.

The number of hours until a operating time alert for component replacement appears on the display can be set individually in the Configuration menu (→ 5.5).

When the maximum operating time of the drive belt and/or the pickup has been reached, the corresponding warning notes are shown, alternating with the display of „0“, indicating that the adjusted maximum operating time of a component has been achieved.



Max. operating time drive belt achieved



Max. operating time pickup achieved



Max. operating time drive belt and pickup achieved

5. Configuration menu

The Configuration menu allows the individually adaptation of the drive unit to the requirements of the platter.

For the correct speed, the relationship between the pulley and the platter must be considered very carefully. It is also very important to optimize acceleration and braking forces in order to match the material properties of the drive belt and the mass of the platter.

This allows the drive unit to be optimally adjusted to the pairing with the platter and adapted to actual conditions.

The channels are not numbered consecutively, they are organized in meaningful categories:

- Channels below 100 are intended for the general channels „Dimmer“, „Key Delay“ and „Pickup“.
- Channels 100 ... 123 concern the „Set“
- Channel 999 is for reset to factory defaults

„Gaps“ in channel numbering during selection therefore are completely normal.

5.1 Call up Configuration menu

- ▶ Press and hold the **[On Off]** key and then briefly press the **[-]** key to enter the Configuration menu.

The display changes to the channel display („c“ and channel number):

Function		Display
Configuration menu	 + 	

- ▶ Press **[On Off]** to exit the Configuration menu.

5.2 Channel selection

- ▶ Press **[+]** to increase channel number.
- ▶ Press **[-]** to decrease channel number.

After selecting the channel to be edited, the channel number and the current value for this channel are displayed alternately.



5.3 Changing channel value

- ▶ Press and hold the **[33 45]** key and then briefly press the **[+]** key to increase channel value.
- ▶ Press and hold the **[33 45]** key and then briefly press the **[-]** key to decrease channel value.

Pressing and holding the buttons **[+]** / **[-]** for a longer time will change the channel value continuously, whereby the step size of the change of the channel value increases by the duration of the button operation.

- ▶ Press and hold the **[33 45]** and **[On Off]** key to restore the original channel value („Undo“).

While the channel value is changed, only the channel value is shown in the display.

The effect of change a channel value is immediate, if possible. For example, the speed settings are directly passed on to the motor with each channel value change, so that the resulting changes can be checked directly.

If the value of a channel is not changed for a certain time, the current value for this channel and the channel number is displayed alternately again.

When you exit the Configuration menu by pressing the **[On Off]** key, changed channel values are stored in the non-volatile memory and thus remain safely stored until any later changes are made, even in the event of a power failure.



Some channels are used only to display actual values. A change of these channel values therefore is not possible.



There is no need to hurry while changing values in the Configuration menu. The Configuration menu will not be exited until the **[On Off]** key has been pressed.

5.4 General configuration channels

Channels below 100 are intended for the general channels „Dimmer“, „Key Delay“, „Set“ and „Pickup“.

5.4.1 Dimmer

These channels control the brightness behaviour of the display.

During the operation the display is dimmed brighter (*Dimm Max*) to facilitate the operation of the drive unit.

If no more operation is made, the display remains bright for some time (*Dimm Delay*) and then darkens (*Dimm Min*) in order not to be disturbingly noticed.

Channel	Function	Variable	Range of values
1	Dimm Min	yes	0,0 - 99,0
2	Dimm Max	yes	0,0 - 99,0
3	Dimm Delay	yes	00,01 - 02,00

5.4.2 Key Delay

Values can be changed step by step by short keystrokes or continuously by longer keystrokes.

Prolonged pressing changes a value continuously, whereby the step size of the change of the value increases by the duration of the key operation.

This channel controls the speed at which the step size increases when a key is held down permanently.

The larger the value of this channel, the slower, the smaller the value of this channel, the faster the step size increases.

Channel	Function	Variable	Range of values*
10	Key Delay	yes	10 - 200

*Factory setting: 25

5.5 Overview set channels

Set channel overview DAE-01 CL:

Channel	Function	Variable	Range of values
100	33,33 rpm coarse setting	yes	19 - 166
101	33,33 rpm fine setting	yes	0 - 999
102	45,00 rpm fine setting	yes	0 - 999
110	Gain	yes	1 - 200
111	Acceleration	yes	10 - 999
112	Brake	yes	10 - 999
120	Timer Drive belt target	yes	0 - 9999
121	Timer Drive belt actual	no*	Time
122	Timer Pickup target	yes	0 - 9999
123	Timer Pickup actual	no*	Time

Set channel overview DAE-01 CLe („extended“):

Channel	Function	Variable	Range of values
100	33,33 rpm coarse setting	yes	19 - 166
101	33,33 rpm fine setting	yes	0 - 999
102	45,00 rpm fine setting	yes	0 - 999
110	Gain	yes	1 - 200
111	Acceleration	yes	10 - 999
112	Brake	yes	10 - 999
120	Timer Drive belt target	yes	0 - 9999
121	Timer Drive belt actual	no*	Time
122	Timer Pickup 1 target	yes	0 - 9999
123	Timer Pickup 1 actual	no*	Time
124	Timer Pickup 2 target	yes	0 - 9999
125	Timer Pickup 2 actual	no*	Time

The **DAE-01 CLe** drive unit provides an additional counter for the operating hours of a second tonearm/pickup.

This allows the recording of operating hours of two separate tonearms/pickups (Pickup 1 and Pickup 2).

▶ Press and hold the [On Off] key and then briefly press the [33 45] key to toggle between Pickup 1 („PU 1“) and Pickup 2 („PU 2“).

„PU 1“ or „PU 2“ respectively appears in the display.

We recommend the following standard settings:

Gain (Channel 110) = value: 150

Acceleration (Channel 111) = value: 400

Brake (Channel 112) = value: 100

With these settings the time for acceleration is approx. 5 s and the time for deceleration also approx. 5 s.

*) Deleting the values of „actual“ channels

The values of the „actual“ channels cannot be changed, but they can be deleted and thus set to „zero“ by all means:



ATTENTION!
Deleting the value of an „Actual“ channel cannot be undone!

▶ Select the „Actual“ channel whose value you want to reset.

▶ Press keys [33 45] and simultaneously key [+].

The value of the selected „Actual“ channel is set to „Zero“.

5.5.1 Speed adjustment

The speed adjustment should be done very carefully, because of its enormous importance.

- ▶ Setting the speed 33.33 rpm coarse. We recommend the use of a 300 Hz stroboscope disc and a 300 Hz stroboscope to perform this setting.

Channel	Function	Variable	Range of values
100	33,33 rpm coarse setting	yes	19 - 166



NOTE

If the speed 33.33 rpm cannot be set correctly within the value range, the existing pulley must be exchanged for a suitable one.

From the setting of the 33.33 rpm coarse value the speed 45.00 rpm is derived.

- ▶ After the speed 33.33 rpm is adjusted coarse, the fine setting follows.

Channel	Function	Variable	Range of values
101	33,33 rpm fine setting	yes	0 - 999

When the platter is spinning at the desired speed:

- ▶ Return to „33.33 rpm coarse setting“ (Channel 100).
- ▶ There, change the current value once and then restore the original value (e.g. from value 60 to 61 and back to 60 again).

Through this measure, the „33.33 rpm fine setting“ is also taken into account into calculation of speed 45.00 rpm.

- ▶ Although both speeds are already set very precisely now, we recommend you to check each individual speed again and adjust it slightly if necessary.

Channel	Function	Variable	Range of values
102	45,00 rpm fine setting	yes	0 - 999

The fine settings of speed 45.00 rpm has no influence on speed 33.33 rpm.

5.5.2 Drive dynamics

The drive unit is equipped with a very powerful motor, which easily accelerates or decelerates even a 60 kg-platter to its nominal speed.

The power transmission between the drive unit and platter is of particular importance in this context.

By changing the drive dynamics of the drive unit (acceleration and deceleration behaviour), specific properties of the components involved in the power transmission can be taken into account:

- **Drive Belt**
Design, elasticity, surface and friction coefficients (material used)
- **Platter**
Weight, surface and friction coefficients (material used)
- **Pulley**
Diameter, surface and friction coefficients (material used)

Thus a heavy platter can be accelerated or decelerated comparatively gently, whereas a light platter can be accelerated or decelerated very fast to nominal speed.

The values for „Brake“ and „Acceleration“ are parameters for linear functions, while „Gain“ is a first-order nonlinear function. Linear and nonlinear functions together form the drive characteristic.

Channel	Function	Variable	Range of values
110	Gain	yes	1 - 200
111	Acceleration	yes	10 - 999
112	Brake	yes	10 - 999

We differentiate between „Brake“ and „Acceleration“, although the components involved will behave the same in both situations.

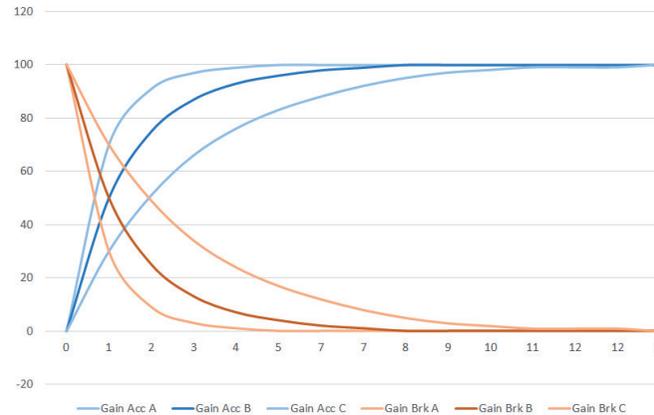
This, however, allows the user, for instance for aesthetic reasons, to accelerate the platter differently from deceleration.

5.5.3 Gain

„Gain“ describes the non-linear behaviour of 1st order during acceleration or deceleration. The set value describes the gradient of the drive characteristic curve with which the nominal speed is achieved.

Channel	Function	Variable	Range of values
110	Gain	yes	1 - 200

The higher this value is set, the „steeper“ the drive characteristic curve is and the faster the nominal speed is achieved.



In the above diagram examples of „Acceleration“ are shown in blue and „Brake“ in red.

5.5.4 Brake, Acceleration

The values for „Brake“ and „Acceleration“ describe the maximum acceleration and braking effect respectively.

The higher these values are adjusted, the stronger the acceleration.

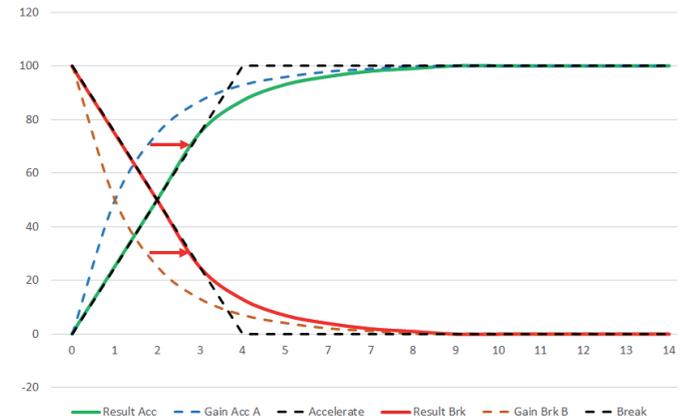
Channel	Function	Variable	Range of values
111	Acceleration	yes	10 - 999
112	Brake	yes	10 - 999

However, the set value for „Gain“ is decisive for the course of the drive characteristic curve. The selected acceleration or braking values can only limit the drive behaviour.

If, for example, the drive characteristic curve is to be steep but the acceleration only low, „Gain“ is set to a high value, while „Brake“ and „Acceleration“ are set to low values.

For the course of the drive characteristic curve, the „Brake“ or „Acceleration“ curves are compared with the „gain“ curve.

At each time point of the acceleration process, the respective lower value is evaluated to control the motor.



In the above example, the drive dynamics during the first 3 s is determined by the linear course of „Acceleration“. After that, „Gain“ provides smaller values and therefore is taken as the result.

The same applies analogously to the braking process shown in red.

5.5.5 Max. operating time until alerts

The max. operating hours are set with the target values. If the actual values reach or exceed the target values, a alert message appears on the display (→ 4.9).

Channel	Function	Variable	Range of values
120	Timer Drive belt target	yes	0 - 9999
121	Timer Drive belt actual	no	Time
122	Timer Pickup target	yes	0 - 9999
123	Timer Pickup actual	no	Time

5.5.6 Display of operating duration of motor and drive unit

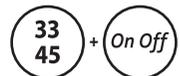
Channel	Function	Variable	Range of values
900	Operating time (motor only)	no	Days
901	Operating time total (incl. electronics)	no	Days

5.5.7 Reset

Channel 999 resets the operating parameters („Set“) to the factory settings. This means

- the speeds are set for a 30 cm platter.
- the operating hour counters for pickup and drive belt and their maximum operating hours are reseted.

The recorded operating hours for motor and drive unit are not affected by the reset.

Channel	Function	▶	Display
999	Reset to factory settings		

To perform a reset, please proceed as follows:

- ▶ Press and hold the keys [33 45] and [On Off].

The following animation appears on the display:



The reset process can still be aborted by releasing keys [33 45] and [On Off] during the running animation.

After a few seconds the display will show the following:



The reset has been performed, all parameters have been reset and stored.

- ▶ Release keys [33 45] and [On Off].

6. Disposal instructions

Valid for European Union Countries: According to the European WEEE Directive and its implementation into national laws we take this device back. For disposal please send the device to the following address:

AVDesignHaus
Rotherstraße 8
59555 Lippstadt
Germany

7. Warranty

Our products are developed and manufactured in Germany according to the highest quality standards.

Should you have any reason for complaint despite our careful quality control, please contact us directly.

AVDesignHaus will do everything in its power to repair the device and restore it to its original condition in a reasonable time.

If this is not possible for technical reasons, **AVDesignHaus** will replace the product with a new device.

This limited warranty is valid for a period of two years beginning from the date of original purchase.

8. General terms and conditions

1. The warranty is limited to the repair of the device. Neither transportation, nor any other costs or risk for removal, transport and installation of the products is covered by the warranty

2. The warranty is transferable.

3. The warranty is not valid

- for damage caused by incorrect installation, connection or packaging.
- for damage caused by use, negligence, or use of parts other than those described in the user manual, or use of parts not manufactured or authorized by **AVDesignHaus**.
- for damage caused by defective or inappropriate accessories or by an unsuitable power supply unit.
- for damage caused by accidents, lightning, water, chemicals, heat or fire, war, public disturbance or other causes.
- beyond the reasonable control of **AVDesignHaus** and its authorized partners.
- for devices whose serial number has been changed, deleted, removed or made illegible.
- for repairs or modifications carried out by an unauthorized person.

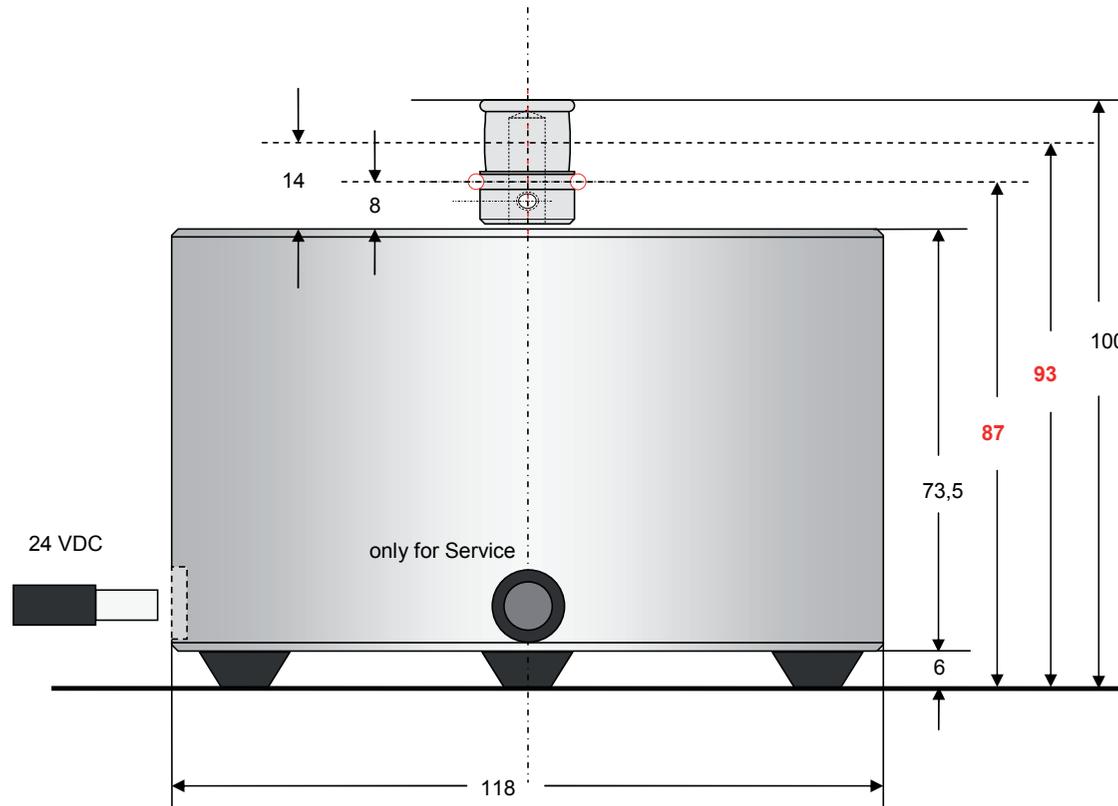
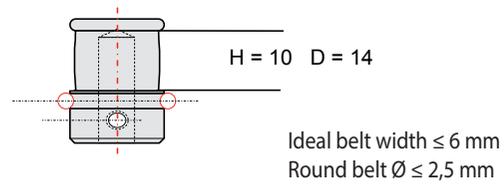
4. This warranty supplements all national/regional legal obligations and does not affect your legal rights as customer..

How to claim repairs under warranty:

If service is required, please contact the dealer from whom the device was purchased or: **www.AVDesignHaus.de**

We sincerely wish you a lot of pleasure using your new product!

9. Dimensions DAE-01 CL



Dereneville
by AVDesignHaus

Dereneville High End - a decision for a lifetime.