

PMR 446 radio handheld

Art.-Nr. 20455

stabo frecomm 450 Set

Owners Manual



Important

Before your installation please read this manual carefully and keep it for further information.



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General notes

Please read this manual carefully and completely to make yourself familiar with the various functions of your radio set. Make sure to observe the safety instructions to avoid any danger for you and other persons as well as damage to the radio set. Keep the operating instructions in a safe place. Be sure to hand over the instructions in case you lend out or sell the radio sets.

The manufacturer disclaims any liability for damage and consequential damage caused by the nonobservance of these instructions!

Safety warnings

Persons with cardiac pacemakers are generally advised not to use radio sets! No transmission in immediate proximity to persons with cardiac pacemakers.

Do not touch the antenna during the transmission; do not hold it close to your body, especially not close to the face or the eyes. When using a headset be sure not to turn the volume of your radio set too high: otherwise the noise might damage your hearing.

Do not operate the radio sets neither in an aircraft nor in a hospital or in comparable facilities. Switch off the radio sets, if you are in explosive-prone environment (e. g. petrol station). Make sure not to change the battery pack/the battery in those places.

When using the radio set in a vehicle be sure to comply with the national regulations! In some countries it is forbidden to use a radio set while driving a vehicle! In a vehicle equipped with an airbag you must not operate or store the radio sets neither directly above the airbag nor in the inflation zone of the airbag.

Never open the housing of a radio set or its accessories and do not carry out any modification. Ensure that any repair is carried out by qualified personnel only. Modifications of or interventions in the radio set automatically lead to an expiry of the type approval, moreover it voids all warranty claims!

Prevent children from playing with the radio sets, accessories, batteries or the packing material.

If you state the odour emissions or the formation of smoke, immediately switch off the radio set and remove the battery pack/the batteries. Do not operate the radio set, if you detect any damage of the housing or the antenna. Contact a qualified workshop.

Protect your radio sets and the accessories against moistness, heat, dust and strong vibrations. Avoid operating temperatures below -10°C or above $+50^{\circ}\text{C}$. Do not expose the radio sets to direct sunlight for a prolonged period (e.g. rear window shelf in the vehicle). Do not employ the radio sets in the rain: however, if the radio set has become wet, switch it off immediately, take out the battery pack/the batteries and dry it by means of a soft, lint-free cloth. Only employ the radio set, if it is completely dry.

Never throw the battery packs/batteries into the fire! Never short-out the contacts of the battery pack!

Important information

stabo freecomm 450 is a PMR 446-radio set for voice radio over short distances.

The radio standard PMR 446 is assigned in AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, HR, HU, NL, NO, PL, PT, SE, SI (free of charge and without any registration).

There is obligatory registration in IT: Italian residents have to pay a nonrecurring charge upon registration of the radio set! (Tourists may use their radio sets free of charge for the duration of their stay in Italy.)

For information on national regulations concerning the use of radio sets on travels abroad please contact the embassies/consulates of the corresponding countries or you may get the information from the corresponding telecoms and postal regulator.

PMR 446-radio sets transmit/receive on 8 specified channels (446 MHz). Within the radius of reach (max. 5 km) you can communicate via an optional number of radio sets, however, only one person can talk and the other/s listen. Uncoded voice radio links are not confidential!

The range is a function of many factors. Apart from the statutory transmitting power other factors are relevant: e.g. the position of the antenna (it should be installed at right angle and send freely), the energy supply (fully charged battery packs fully exploit the reach) and above all the environment where you transmit. Each "obstacle" (hills, buildings, trees) reduces the range; some materials (e.g. reinforced concrete, pieces of rock) give rise for considerable screening effects. Under optimum conditions (i.e. unobstructed view, e.g. in the open country, during sailing or paragliding) PMR 446 radio sets have a maximum reach of 5 km. In housing areas a range of 1–2 km is realistic, in strongly screened environment (e.g. in the mountains or inside buildings made of reinforced concrete) the reach may drop to a few hundred metres or less.

Scope of delivery

2 PMR 446 hand voice radio sets

2 belt clips

1 design double tabletop charger

1 power supply unit 230 V/50 Hz

2 NiMH battery packs 700 mAh/3.6 V *



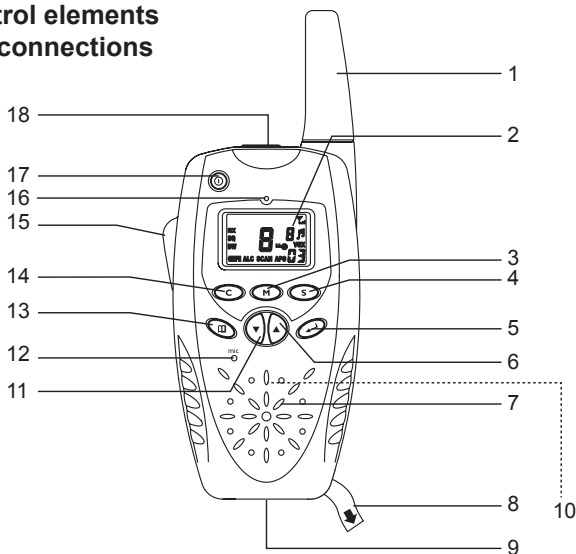
*** Important information:**

Both NiMH-battery packs have already been inserted correctly into the radio sets!

Before you can use the radio sets the battery packs have to be charged for 12 to 14 hours. Before the first charging you have to pull the contact protection strip out of the housing in direction of the arrow!

Do not remove the green foil of the battery pack!

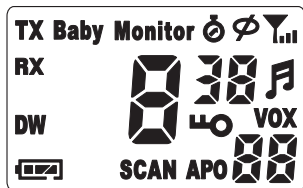
Control elements and connections



- 1. Antenna** The antenna is fixed to the housing; do not try to unscrew it!
- 2. LC display**
- 3. Monitor key **M**** A short keystroke bypasses the squelch (the display shows “RX”) for 15 sec. or until renewed short keystroke.
- 4. Scan key **S**** Start/stop of the scan.
- 5. Enter key** **↵** Short keystroke: Switching on the display light for 5 sec. Longer keystroke (approx. 2 sec.): Switching on the key lock
In the menu: Confirmation of a setting.
- 6. UP key **▲**** Stepwise or continuous boosting of the volume
In the menu: Stepping forward through the individual settings
- 7. Speaker**
- 8. Contact protection strip** (to be pulled out before the first loading!)

- 9. Battery lock**
- 10. Battery cover**
- 11. DOWN key ▼** Stepwise or continuous turning down the volume
In the Set menu: Stepping forward through the individual settings
- 12. Microphone**
- 13. Menu key □** Switching over to the Set menu and stepping forward to the individual functions
- 14. Call key C** Sending out a call tone
- 15. PTT key** Transmission key
- 16. Transmission/reception LED** red light during transmission, green light during reception and red light in intervals of 2 sec. with activated battery stand-by mode.
- 17. On/off switch Ⓞ**
- 18. MIC/SPK socket:** Connection socket for an optional headset

The display:




TX	Shows whether you are transmitting
	Shows when your radio set is receiving a signal
RX	Shows when your radio set is receiving a signal
DW	Dual Watch is activated
	Battery charge indicator (3 steps)
Baby	Baby sitting: Radio set is activated as baby sitter
Monitor	Baby sitting: Radio set is activated as listening set for parents
	Shows the adjusted channel number
SCAN	SCAN is activated
	Stop watch is activated
38	Shows the number adjusted for the CTCSS-process
	Display for the setting and transmission of a call tone
	Key lock is activated
APO	Auto-Power-Off is activated
VOX	VOX is activated
	Display of the volume
	Scrambler is activated

Note: The symbols **SQ** and **ALC** that are displayed after switching on do not have any function.

Important provisions for the operation!

The battery packs included in the scope of delivery have already been inserted correctly into the radio sets!

Before the commissioning of the radio sets the battery packs have to be charged (charging time approx. 12 to 14 hours).

 **Note: Before the first charging you have to pull the contact protection strip out of the radio sets in direction of the arrow!**

Charging of the battery packs

The charging current of this battery charger is adjusted to approx. 50 mA to 100 mA, the charging time thus depends on whether you want to charge one or two battery packs and on the state of charge and the capacity of the battery pack. Recharging of partly discharged battery packs is basically possible; however, it reduces their lifetime.

The tabletop charger does not switch off automatically. Be sure to terminate the charging in time in order to avoid overcharging of the battery pack, as repeated overcharging also reduces their lifetime.

Maximum charging times:

With completely discharged battery packs with a capacity of 700 mAh the two battery packs are fully charged after 12–14 hours. If you want to recharge two half-full battery packs, the charging time is only 6–7 hours. If you only put one radio set into the charger for charging, the charging current doubles from approx. 50 mA to approx. 100 mA; thus the charging times are reduced by half!

Charging of the battery pack in the radio set:

1. Plug the power supply unit into a 230 V socket.
2. Connect the power supply unit to the charger.
3. Switch off the radio sets.
4. Place the radio sets into the charging shaft.

The control lamps on the charger emit red light, the battery packs are now being charged (charging times please see above).

Safety instructions for the charger

The double tabletop charger must only be used for the charging of the NiMH battery packs that are included in the scope of delivery!

Do not place radio sets that are equipped with batteries (not rechargeable), into the charger!

There is explosion hazard!

The charger must only be operated with the delivered power supply unit. Do not abuse it as DC voltage source for other applications.

Prevent small metal parts from penetrating into the charger.

Do not disassemble neither the power supply unit nor the charger.

Disconnect the device from the mains if you do not use it.

Never short-out the contacts of the battery pack!

Make sure that the radio sets are switched off during charging.

Only use the charger in closed rooms. Protect it from humidity, dust, heat and strong vibrations.

Removing/inserting the battery pack

Remove the battery packs, if you do not use your radio sets for a prolonged period! Ensure the correct polarity when reinserting the battery packs (the white indicating label is visible, the arrow points upwards)!

Opening/closing the battery case

Take off the belt clip! Unlock the safety catch at the notch (see figure 1), slightly lift the battery cover and pull it downwards.

Slide the cover on the housing and lock the safety catch.

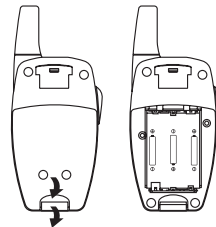


Fig. 1

Fig. 2

Operation with batteries

Your radio sets can also be operated with three micro-batteries each (type: AAA, LR03). It is essential to ensure the indicated polarity when inserting them into the battery case (see figure 2)!

In case of a battery change you always have to exchange all batteries. Do not mix different battery types, batteries with different capacities or batteries and rechargeable battery cells!

Do not try to charge a radio set that is equipped with batteries in the charger! There is explosion hazard!

Remove the batteries, if you do not use your devices for a prolonged period!

Information on disposal of battery packs/batteries

Used up battery packs and batteries are not to be thrown into the domestic waste. Be sure to observe the national disposal regulations and dispose used up battery packs/batteries (only if completely discharged) with the corresponding collecting points.

Energy management

The power consumption of this radio set is very small. If no signal is received, the electronic battery stand-by mode is activated. If the capacity of the battery pack is too low or if the batteries are empty, the radio set will emit an audio warning that is repeated every 15 sec. Now you have to charge the battery pack or replace the batteries.

If the battery stand-by mode is activated the transmission/reception LED emits red light in intervals of 2 sec.

Attach/take off belt clip

Place the grooves of the belt clip on the guide rails on the upper part of the housing and slide the clip downwards until the safety catch snaps in (see figure 3).

Push the safety catch (on top of the belt clip) away from the housing in order to remove it from the radio set (see figure 4).

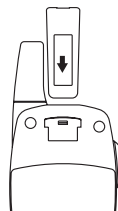


Fig. 3

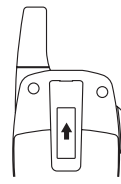



Fig. 4


Operation/functions

Note: If a setting is not activated within 10 seconds the radio set will automatically adopt the last setting. As confirmation there is a double beep sound.

Switching on/off the radio set

Pushing the on/off key  permits to switch the radio set on (the radio set is thus ready-to-receive) and off. Switching on/off is accompanied by a beep sound.





Adjusting the volume

Pushing the  (loud) or  (mute) keys permits to change the volume in 8 steps.

Select channel

This function permits to select one of the eight channels.

Always adjust both radio sets to the same channel!

1. One push on the  key until the channel number is flashing.
2. Select a free channel by means of the  or  key.
3. Validate by means of the **PTT** or  key.

Transmitting/receiving

Hold the PTT button pressed and speak with normal voice level and a distance of approx. 5 cm into the microphone. If your message is finished, release the **PTT** key, thus you free the channel and your radio partner can reply. If you receive a signal, *RX* will be displayed.

Automatic squelch

Your radio set is equipped with an automatic squelch that prevents that an annoying noise can be heard on free radio channels. However, under certain conditions – and depending on the distance – computers, electric or electronic devices might interfere with this squelch, so that you hear noises.

Due to the supersensitive receiver of the radio set, such interferences in immediate proximity are normal and unavoidable.


In case of such interferences you should change the distance to the source of interference and hold the radio set in such a manner that the antenna could send freely.

Pilot tone process CTCSS


Your radio set is equipped with a pilot tone process that permits to address specific individual partner stations or groups or to receive only calls from the latter. For this, the radio sets are switched to mute and only the transmission or reception of the corresponding pilot tone “opens” the channel, so that only desired messages are exchanged (key/lock principle).

 **Note: Make sure that you and your partner use the same channel and the same pilot tone.** 38 different tones are available (see table).

Activate pilot tone process CTCSS

1. Push the  key twice until the pilot tone number is flashing.
2. Select the pilot tone number by means of the **▲** or **▼** key.
3. Validate by means of the **PTT** or **←** key.

Deactivate the pilot tone process CTCSS

1. Push the  key twice until the pilot tone number is flashing.
2. Select the *00* by means of the **▲** or **▼** key.
3. Validate by means of the **PTT** or **←** key.






Speech scrambling

Speech scrambling prevents that your transmission can be tapped without further auxiliaries by unauthorized persons.






Note: You and your partner have to adjust the same speech scrambling code!

Your radio set is equipped with 4 speech scrambling codes that are designated as 1, 2, 3, and 4 in the menu. The display OF means: no scrambling.


Activate speech scrambling

1. Push the  key three times until OF is indicated on the right side of the display.
2. Select the desired speech scrambling code (1, 2, 3, or 4) by means of the keys  or .
3. Validate by means of the PTT or  key, the  symbol is now displayed.







Deactivate speech scrambling

1. Push the  key three times until 1, 2, 3 or 4 is indicated on the right side of the display.
2. Select the OF by means of the  or  key.
3. Validate by means of the PTT or  key, the  symbol is no longer displayed.

Call tone

Push the call key  to send out a tone call that is received by the partner station. You also hear the call tone in your own speaker and the transmission LED is lit.

Selection of the call tone

1. Push the  key four times, the  symbol is displayed and a number between 1 and 10 is flashing down right.
2. Select one of 10 different call tones by means of the  or  key.
3. Validate by means of the PTT or  key, the  symbol is no longer displayed.

Monitor key M


A short stroke on this key permits to bypass the squelch, thus you can also hear weak signals.

Pushing the key once again (or automatically after 15 sec.) permits to switch on the squelch once again.

Key lock and display lighting

As a protection against faulty operation you can lock the keyboard (with the exception of the PTT and call tone key).

Activate key lock

Push the  key for 2 sec., the  symbol is displayed.

Deactivate key lock

Push the  key for 2 sec., the  symbol is no longer displayed.

Display lighting

A short stroke on the ← key activates the display lighting for approx. 5 sec.

Automatic scan

The automatic scan permits to find active channels quickly. It scans independently all of the 8 channels and stops as soon as a signal exceeds the squelch threshold. After having found a signal scanning will stop. It will start anew, if no signal is available. You can also restart scanning by pushing the ▲ or ▼ key.

Activate scanning

1. Push the **S** key for 2 sec., **SCAN** is displayed.
2. The direction of scanning can be changed by means of the ▲ or ▼ key.

Deactivate scanning

To deactivate scanning you push the ← key or the **S** key, *SCAN* is no longer displayed.

Dual watch function

If you wish to be ready-to-receive on both channels instead of only one channel, you require the **dual watch function**. With this function the radio set automatically changes every 0.5 sec. From the actual channel to any second channel (preferred channel).

Activate Dual Watch

1. Push the [] key seven times until *DW* is displayed and the channel number is flashing.
2. Select the preferred channel by means of the ▲ or ▼ key.

Monitoring can be interrupted and restarted by means of the monitor key **M**.

Deactivate Dual Watch

To deactivate the dual watch function you push the **PTT** key or the ← key, *DW* is no longer displayed.

Stop watch function

The radio set is equipped with an integrated stop watch with a time measuring range of 1 sec. to 9 hrs 59 min. 59 sec. If the watch is not stopped during this time, the time measurement will start anew.

Activate the stop watch

1. Push the [] key ten times until *0:00:00* is displayed.
2. The ▲ key starts the time measurement.
3. The ▼ key stops the time measurement or resets the stop watch.

Deactivate the stop watch

Push the ← or the □ key, the channel number is displayed.

VOX function (phonetic transmission)

This function permits to send without activating the transmit key: Voices/noises that hit the microphone thus switch on the transmitter of the radio set.

In order to avoid a permanent accidental activation of the radio set by environmental noises, the VOX function is only activated in a distance of up to approx. 30 cm. For this reason you should use an optional headset, if your hands are busy (e.g. during installation work/during cycling), but if you want to wear the radio set on the belt. If you want to employ the radio set for baby sitting, fix the headset near the child's bed and position the radio set in appropriate distance (see below).

Adjust the sensitivity according to the environmental noises, so that the set switches from reception to transmission if your voice volume is appropriate. You can select between 4 sensitivity levels (step 4 = highest sensitivity).

Activate VOX


1. Push the □ key eight times until VOX is displayed and OF is flashing.
2. Select the desired sensitivity level 1, 2, 3 or 4 by means of the keys ▲ or ▼
3. Validate by means of the **PTT** or ← key, the VOX is displayed.

Deactivate VOX

1. Push the □ key eight times until the adjusted sensitivity level is flashing.
2. Select the OF by means of the ▲ or ▼ key.
3. Validate by means of the **PTT** or ← key, the VOX is no longer displayed.

Baby sitting

Radio sets with VOX function can also be used for baby sitting. The baby set is activated by crying/calling and then transmits to the parents' set.

 **Be sure to observe that the acoustic monitoring via radio set permits to ease the supervision of a child, however it can by no means substitute the personal supervision!**

Activate the VOX function on the baby set (please see above) and adjust the highest sensitivity level (level 4). Fasten the headset (out of reaching area of the child) near the crib, ensure that it is not covered (e.g. by the blanket). Connect the headset to the radio set (MIC/SPK socket) and place the radio set in an upright position and a distance of approx. 1 m.


➔ **Note: Check (with an assistant or for instance with a portable radio as sound source), whether there is sufficient radio reception between the children's room and the room where you stay! Optimise the position of the radio set, if required.**

Baby sitter function

This additional function assures that the sleep of your child is not disturbed by accidental transmission (possibly from the neighbourhood). In this case the two radio sets have different settings: For the baby set you have to switch off the receiver and activate the key lock and for the parents' set you have to lock the transmission and the call key.

➔ **Note: First you activate the VOX function on the baby set (please see above) and adjust the highest sensitivity level (4). Then you activate the additional baby sitter function:**


Activate baby sitter

1. Push the  key five times until *BABY* is displayed and *OF* is flashing.
2. Select the *ON* by means of the ▲ or ▼ key.
3. Validate by means of the **PTT** or ← key.


Deactivate baby sitter

Push the ← key to deactivate the function, *BABY* is no longer displayed.

Activate parents' listening set

1. Push the  key six times until *MONITOR* is displayed and *OF* is flashing.
2. Select the *ON* by means of the ▲ or ▼ key.
3. Validate by means of the **PTT** or ← key.





Deactivate parents' listening set

1. Push the  key six times until *MONITOR* is displayed and *ON* is flashing.
2. Select the *OF* by means of the ▲ or ▼ key.
3. Validate by means of the **PTT** or ← key, the *MONITOR* is no longer displayed.





Automatic power OFF

The radio set is equipped with an automatic power OFF function. Thus the radio set switches off automatically after the time you have set (1 hour, 2 hours, 3 hours or 6 hours). Shortly before the radio set switches off an audio warning is emitted for approx. 15 sec. and *OF* is flashing in the display. If you push any key during this time, the timer will be restarted. If no key is pushed, the radio set will switch off.

Activate APO

1. Push the  key nine times until *APO* is displayed and 0 is flashing.
2. Select 1, 2, 3 or 6 by means of the keys  or .
3. Validate by means of the **PTT** or  key, *APO* is displayed.

Deactivate APO

1. Push the  key nine times until 1, 2, 3, or 6 is flashing in the display.
2. Select the number 0 by means of the  or .
3. Validate by means of the **PTT** or  key, *APO* is no longer displayed.

Care instructions

Protect your radio sets and the accessories against humidity/moistness, dust/contamination, strong vibrations and extreme temperatures.

Do not dip the radio sets and the accessories into water or other liquids. Clean the housings of the radio sets by means of a slightly damp, lint-free cloth, do not at all use detergents or solvents. Keep the battery contacts clean by means of a dry cloth.

Remove the battery packs/batteries, if you do not use your devices for a prolonged period.



Disposal instruction

Electric and electronic devices are not to be thrown into the domestic waste. Deliver devices that are out of order/used with a corresponding collecting point. Please contact your local authorities for corresponding information.

Technical data

Frequency range:	446.00625 MHz-446.09375 MHz
Number of channels:	8
Number of subchannels (CTCSS):	38
Range:	max. 5 km (with unobstructed view)
Output power:	≤500 mW
Operating pressure:	3.6 V/700 mAh NiMH battery pack or 3x micro-batteries type AAA or LR03
Dimensions (WxHxD):	136 x 51 x 30 mm (incl. antenna)
Weight:	116 g with batteries

Troubleshooting

Fault Your radio set cannot be switched on.

Remedy Charge the battery pack or renew the batteries.

Fault You can neither speak nor hear your radio partner.

Remedy Adjust the same channel and possibly the same CTCSS-tone for all radio sets.
If you are out of reach, reduce the distance to your radio partner.

Fault You do hear your radio partner and your partner does not hear you (*Micky-Mouse-effect*).

Remedy Make sure that the scrambler is either activated or deactivated for **both** radio sets.
With an active scrambler both radio sets must be adjusted to the same speech scrambling code.

Fault No key function

Remedy The key lock is switched on. Deactivate the key lock.

Fault The channel is permanently busy

Remedy The VOX sensitivity of a partner set is adjusted too high, for this reason the radio set transmits continuously. Reduce the VOX-sensitivity of the device.
Other parties in your environment occupy the channel. Switch to another channel.

Channel-frequency table		CTCSS (Continuous Tone Coded Squelch System) Pilot tone-frequency table									
Channel no.	Frequency (MHz)	Sub Chan.	Freq. (Hz)	Sub Chan.	Freq. (Hz)	Sub Chan.	Freq. (Hz)	Sub Chan.	Freq. (Hz)	Sub Chan.	Freq. (Hz)
1	446.00625	1	67.0	9	91.5	17	118.8	25	156.7	33	210.7
2	446.01875	2	71.9	10	94.8	18	123.0	26	162.2	34	218.1
3	446.03125	3	74.4	11	97.4	19	127.3	27	167.9	35	225.7
4	446.04375	4	77.0	12	100.0	20	131.8	28	173.8	36	233.6
5	446.05625	5	79.7	13	103.5	21	136.5	29	179.9	37	241.8
6	446.06875	6	82.5	14	107.2	22	141.3	30	186.2	38	250.3
7	446.08125	7	85.4	15	110.9	23	146.2	31	192.8	0	—
8	446.09375	8	88.5	16	114.8	24	151.4	32	203.5		

Manufacturer warranty

We offer a 2-year warranty for the product stabo freecomm 450 Set.

The warranty period starts with the day you have bought the product (please keep the receipt as proof of purchase in a safe place!); the validity period of the warranty is not extended, if the product is exchanged or repaired.

The warranty shall extend to the repair free of charge of all manufacturing and material defects on the date of purchase of this product, the warranty does not apply for

- Transport damages,
- Radio sets that have been opened or modified without authorisation,
- Damages caused by inappropriate handling, wilful damage or non-observance of the operating instructions,
- Damages caused by the use of accessories other than those included in the scope of supply,
- Functions that are not described in the operating instructions,
- Faults due to mechanical overstressing, the impact of heat or humidity, leaking batteries or incorrect voltage supply.
- Consumables (battery packs)
- Freight or transport charges.

The manufacturer will comply with the guarantee claims according to his best judgement either by repair or by exchange of the product or product parts. In case of an exchange the product may possibly differ from the model that has been bought originally.

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