Inserting the test strip

2

Check the use by date that is indicated on the test strip container next to the ⌛ symbol.
Use only test strips that are not past the use by date.

3

Insert the test strip into the test strip slot of the diabetes manager in the direction of the arrow. The device turns on automatically and the LED at the test strip slot lights up. If the tone for blood glucose tests is turned on, a signal is issued.

Note
When the diabetes manager prompts you to apply a drop, you have approximately 2 minutes to apply blood to the test strip. If you do not apply any blood during this time, the diabetes manager turns itself off.

4

The Apply drop display appears. The test strip is ready for testing.

Put the diabetes manager aside.

▸ Do not allow any liquid to enter the test strip slot of the diabetes manager.

▸ Remove the test strip in case of a test strip error, and repeat the blood glucose test using a new test strip.

▸ Only apply blood to the test strip when the test strip is in the test strip slot and *Apply drop* is displayed.

▸ When a test strip is in the diabetes manager, the touchscreen and the buttons, including the power button, are deactivated. The buttons are activated again when you remove the test strip or the test is complete.

▸ Other ways to start a blood glucose test: In the Main menu, tap the Test 🔴 menu. If you want to perform a test in a dark environment, this procedure is beneficial because the light at the test strip slot is turned on.

Obtaining blood
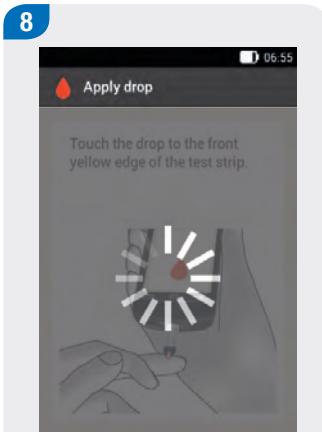
Use your finger pricker to prick the side of a fingertip.

Encourage a blood drop to form by gently massaging the finger in the direction of the fingertip.

Applying blood

7

Touch the blood drop to the front yellow edge of the test strip.
Do not put blood on top of the test strip.

8

The blood glucose test starts when enough blood has been drawn up by the test strip.

Displaying the test result

9

The test result is displayed and saved.

If the tone for blood glucose tests is turned on, a signal is issued.
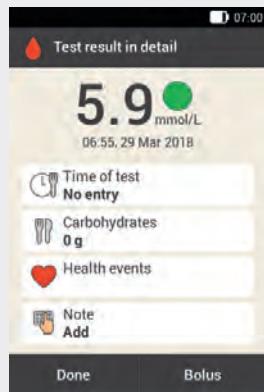
Tap OK.

Note
For information on blood glucose results, see the section *Causes of Implausible Test Results* in this chapter.

▶ The blood glucose result can be used for bolus advice for a period of 15 minutes.

10

After approximately 3 seconds the Test result in detail display appears.

If you want to add information (Time of test, Carbohydrates, Health events, Note) to the test result, follow the instructions in the following section.

If you want to complete the blood glucose test without adding any information or delivering a bolus, tap Done.

If you want to deliver a bolus, tap Bolus.

Note
▶ You can subsequently change the added information in the *My data* menu.
▶ If bolus advice has been calculated based on information you added about health events and carbohydrates, you cannot change this information anymore.

11

Remove the used test strip and dispose of it according to local regulations.

5.3 Adding Information

You can save additional information for a test result to describe certain events in connection with this test result or particular characteristics of the test result.

If you are using the bolus advice feature, see also the information in Chapter 7 *Bolus Advice*.
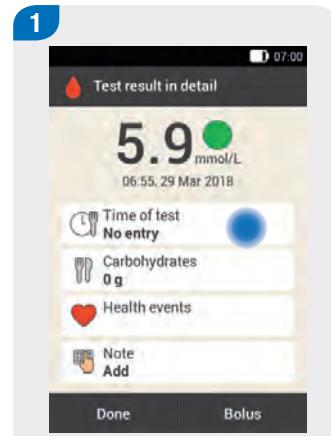
⚠ **WARNING**

Incorrect entries for carbohydrate amounts or health events may lead to incorrect bolus advice.
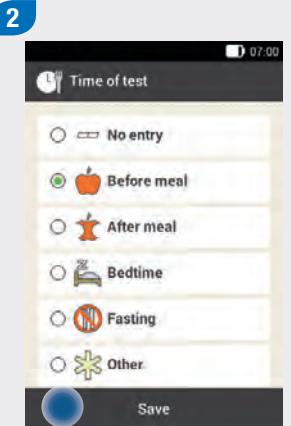
Entering the time of test

You can assign exactly one time of test to each blood glucose test. This information may be helpful later on for determining patterns in your blood glucose level.

Tap Time of test.

91

Entering carbohydrates

2
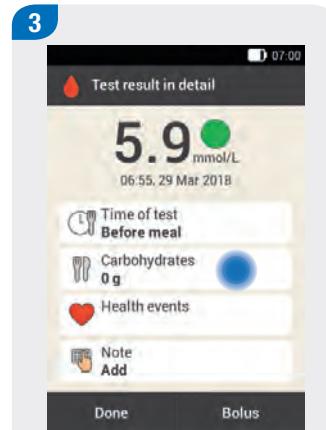
Tap the desired Time of test (for example, After meal).
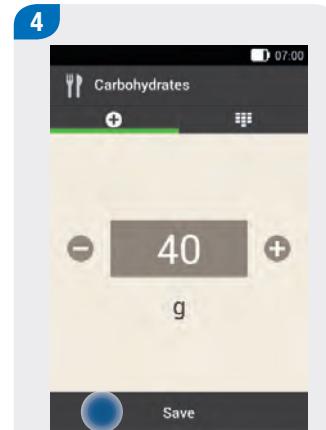
Tap Save.

If you test your blood glucose in connection with a meal, it is advisable to save the carbohydrate amount you consumed.

If you are using bolus advice, the entered carbohydrate amount is used to calculate the insulin amounts you need.

3

Tap Carbohydrates.

4


Use ⊖ or ⊕ to set the amount of carbohydrates consumed.

Tap Save.

92
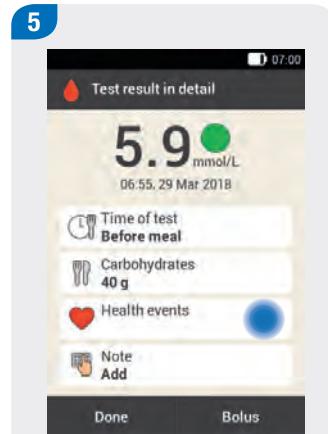
Setting health events
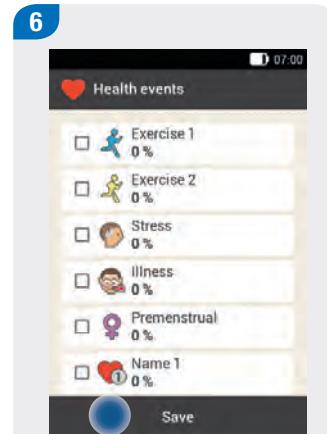
If you have set up bolus advice and select a health event, bolus advice will be adjusted by the percentage you specified.

If you have selected more than one health event in the Health events display, you will have to enter an overall percentage for the selected health events in the next step.

Discuss health event adjustments with your healthcare professional, who will help you to determine the suitable percentage for the adjustment.

5

Tap Health events.

6
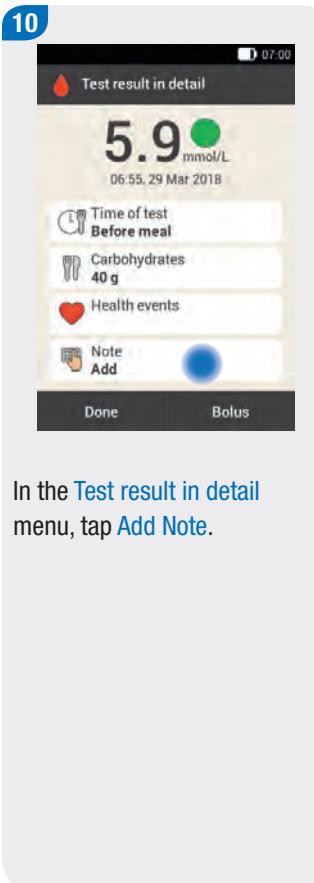

Choose from 1 to a maximum of 4 health events. Tap the appropriate health events.

Tap Save.

Entering a note

10
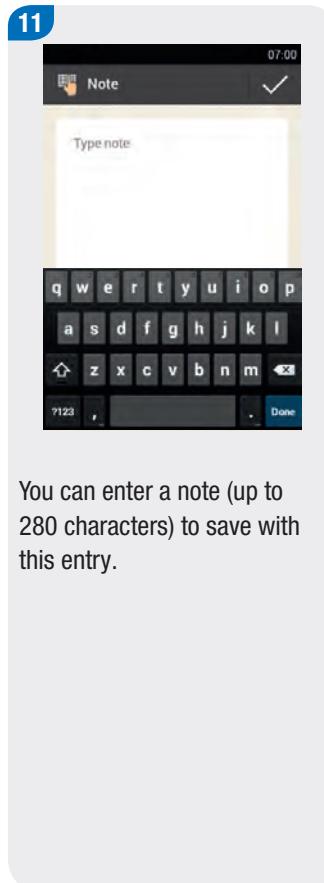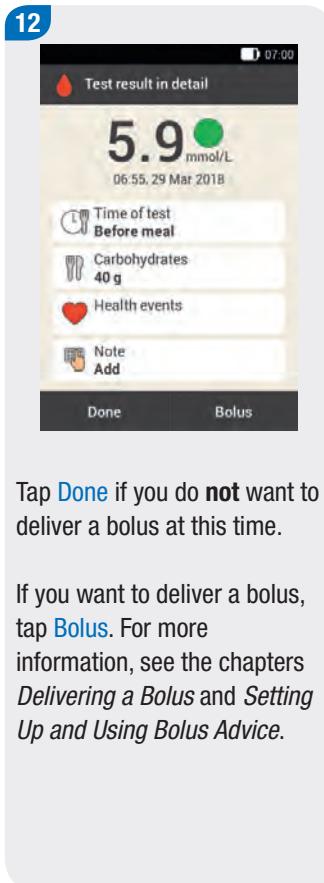
In the Test result in detail menu, tap Add Note.

11

You can enter a note (up to 280 characters) to save with this entry.

12

Tap Done if you do **not** want to deliver a bolus at this time.

If you want to deliver a bolus, tap Bolus. For more information, see the chapters *Delivering a Bolus* and *Setting Up and Using Bolus Advice*.

Injection mode (without micropump): Entering basal insulin

Injection mode allows you to save the amounts of basal insulin you injected in the diabetes manager. This is done most easily when you test your blood glucose. Note that the basal insulin you specify does not have any influence on bolus advice calculation.

13

If the diabetes manager is not connected to the micropump (injection mode): Tap Basal insulin.

14

Use ⊖ and ⊕ to set the desired amount of basal insulin.

Tap Save.

15

If you want to save all entries without delivering a bolus, tap Done.

If you want to save all entries and deliver a bolus, tap Bolus.

5.4   Evaluating Test Results

Blood glucose results reflect the current status of the blood glucose level. Test results are influenced by different factors, including type of diet, medication taken, state of health, stress and physical activity.

Certain substances can interfere with the blood glucose result. This can lead to falsely elevated or lowered test results. For more information, see the test strip package insert.

Note
▸ Do not change your therapy based on single blood glucose results.
▸ If the test result is below or above the blood glucose range that you defined with your healthcare professional, consult your healthcare professional.
▸ If the test result does not match how you feel, for example, if it is unexpectedly low, eat fast acting carbohydrates. Afterwards, perform a control test with the Accu-Chek Aviva control solutions. Then repeat the blood glucose test. If the new test result still does not match how you feel, consult your healthcare professional.
▸ If your blood glucose level is very high without any apparent cause, check the micropump system for occlusions or leaks. Repeat the blood glucose test. If in doubt, replace the reservoir and the infusion assembly.
▸ If test results repeatedly do not match how you feel, check the items in the following section *Causes of Implausible Test Results*.

5.4.1 Colour Coding of Test Results

On the Test result in detail display, a coloured dot appears to the right of the test result. The colour of the dot depends on how high the test result is in relation to the defined blood glucose target range for the current time block.

Overview of meaning of colours:

Colour of dot	Blood glucose result is
Blue, Hyper	above the hyper warning limit. It is strongly recommended that you test for ketones and test your blood glucose frequently.
Blue	above your target range, but below your hyper warning limit.
Green	within your target range.
Yellow	below your target range, but above your hypo warning limit.
Red, Hypo	below your hypo warning limit. It is strongly recommended that you eat a sufficient amount of fast acting carbohydrates immediately.
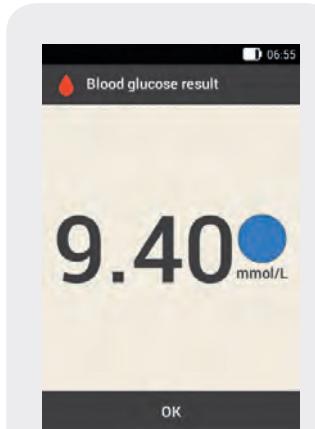
Green

Green dot:
The blood glucose result is within the target range for the current time block.

Blue
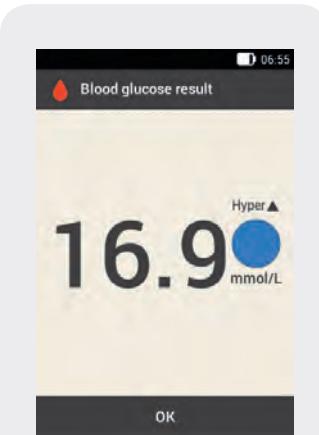
Blue dot:
The blood glucose result is above the target range for the current time block.

The blood glucose result does not exceed the hyper warning limit.

97

Blue with Hyper

Blue dot with the supplement Hyper:
The blood glucose result exceeds the hyper warning limit.

The diabetes manager displays a warning. Check blood glucose, ketones and insulin delivery.

Yellow
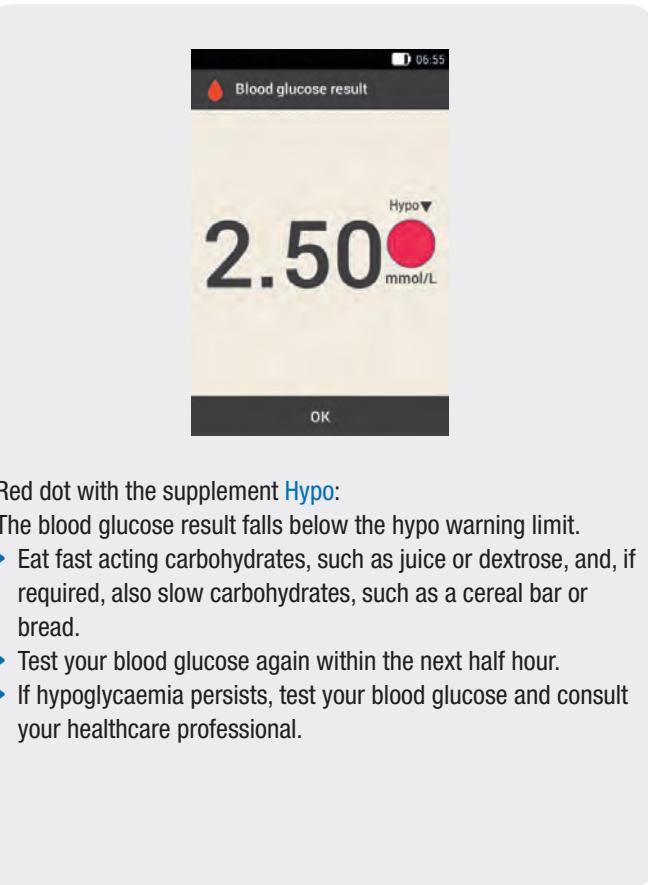
Yellow dot:
The blood glucose result is below the target range for the current time block.

The blood glucose result does not fall below the hypo warning limit.

Red

Red dot with the supplement Hypo:
The blood glucose result falls below the hypo warning limit.
▶ Eat fast acting carbohydrates, such as juice or dextrose, and, if required, also slow carbohydrates, such as a cereal bar or bread.
▶ Test your blood glucose again within the next half hour.
▶ If hypoglycaemia persists, test your blood glucose and consult your healthcare professional.

5.4.2   LO Display

Treat a very low blood glucose level as instructed by your healthcare professional. The LO display can also appear for technical reasons.
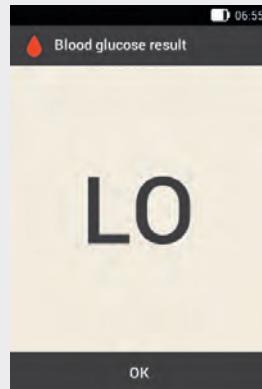
> ⚠️ **WARNING**
>
> The **LO** display may indicate a very low blood glucose value (possibly severe hypoglycaemia).

Being aware of the symptoms of low blood glucose can help you to better understand your test results and decide what to do.

Symptoms of low blood glucose (hypoglycaemia) may include:
▸ Anxiety, shakiness
▸ Sweating, headache
▸ Increased hunger, dizziness
▸ Pale skin colour, fatigue
▸ Sudden change in mood or irritability
▸ Difficulty concentrating, clumsiness
▸ Palpitations and/or confusion

LO display

The blood glucose result is below the measuring range of the diabetes manager (less than 1.1 mmol/L). If you are experiencing a symptom of low blood glucose, proceed as follows:
▸ Eat fast acting carbohydrates, such as juice or dextrose, and, if required, also slow carbohydrates, such as a cereal bar or bread.
▸ Test your blood glucose again immediately and then again within the next half hour.
▸ If hypoglycaemia persists, test your blood glucose and consult your healthcare professional.
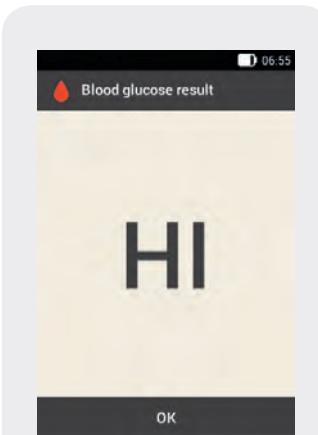
5.4.3   HI Display

Repeat the blood glucose test. If the repeated test also results in a HI display, proceed as instructed by your healthcare professional. Being aware of the symptoms of high blood glucose can help you to better understand your test results and decide what to do.

Symptoms of high blood glucose (hyperglycaemia) may include:
▶ Increased thirst
▶ Frequent urination
▶ Blurred vision
▶ Drowsiness
▶ Abdominal pain/cramps
▶ Nausea
▶ Dizziness

HI display

The blood glucose result is above the measuring range of the diabetes manager. If you are experiencing any of the common symptoms of high blood glucose, contact your healthcare professional.

⚠ **WARNING**

The **HI** display may indicate a very high blood glucose value (possibly severe hyperglycaemia). Proceed as instructed by your healthcare professional straight away and repeat the blood glucose test.

5.4.4 Causes of Implausible Test Results

If the diabetes manager repeatedly displays implausible test results or error messages, check the items listed below. Answer the questions in the following table.

If you cannot answer the questions in the table with yes, correct the respective item and repeat the test.

If you have observed all these items and are still experiencing implausible test results or error messages, contact your Customer Support and Service Centre.

Troubleshooting checks
Did you perform the blood glucose test as instructed in the User's Manual?
Did you wash your hands with warm water and soap and dry them thoroughly?
Did you only apply blood after Apply drop appeared on the screen?
Did you apply the blood drop immediately after it formed?
Are the test strips still valid (see the label on the test strip container next to the ⌛ symbol)?
Did you perform the test within the correct temperature range?
Did you observe the storage conditions for the diabetes manager and the test strips?
Did you observe the sources of error mentioned in the test strip package insert?
Was the cap on the test strip container always closed tightly?

Troubleshooting checks

Did you use the test strip immediately after removing it from the test strip container?

Are the diabetes manager and test strips working properly?

⚠ **WARNING**

Implausible test results and error messages may also be caused by the diabetes manager having fallen off of something. If this is the case, contact your Customer Support and Service Centre.

Note
Check at regular intervals whether the micropump system has visible or tangible signs of damage. This applies especially if the system components fell off of something or were exposed to particular mechanical stress.

If you are not sure whether the diabetes manager is working properly, perform a control test. For more information, see the section *Control Testing* in the chapter *Care and Maintenance* of this User's Manual.

6 Delivering a Bolus

A bolus represents the required insulin amount to be delivered in addition to the basal rate, in order to cover the intake of food and correct an elevated blood glucose level. The bolus type and bolus amount are determined by your healthcare team's guidelines, your blood glucose level, your eating behaviour, your state of health as well as the type and duration of physical activity.

A prerequisite for insulin therapy is that you received qualified training and are able to understand and apply the basic principles of bolus calculation according to the specifications of your healthcare team.

6.1   Manual Bolus Delivery

You can deliver a bolus manually or by means of the bolus advice feature. This chapter explains manual bolus delivery with different bolus types. Moreover, it describes the options to cancel bolus delivery.

The entries required to program a manual bolus without using the bolus advice feature are made on the Bolus input display.

When you enter the total amount for a manual bolus, this insulin amount is always added to the correction part of a bolus. A correction part is always delivered as a standard bolus or as an immediate delivery part of a multiwave bolus.

6.2   Bolus Input Display

Blood glucose result
The current test result is displayed.
If no current test result exists, --- is displayed.

Active insulin
If bolus advice is activated, the amount of active insulin that is to be considered is displayed. If there is no active insulin, --- is displayed.
This display element is only visible if the bolus advice feature is activated.
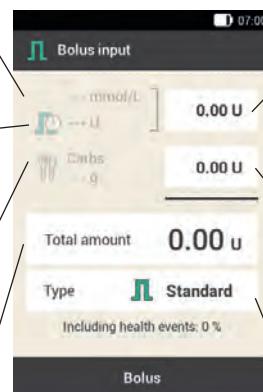
Carbohydrate amount
The carbohydrate amount entered after performing a blood glucose test is displayed. If no carbohydrate amount was entered, --- is displayed.

Total amount
In this entry field, you can enter the total amount for the bolus.
The total amount is the sum of correction bolus and meal bolus.

Correction bolus
Tap this entry field to enter the insulin amount needed to bring a blood glucose value outside the target range back into the target range.

Meal bolus
Tap this entry field to enter the insulin amount to compensate for the food intake.

Bolus type
Tap this element to select one of the following bolus types: standard bolus, extended bolus, multiwave bolus, quick bolus, pen/syringe.

Note the following for bolus input:

▶ When the Bolus input display appears for the first time, there is no bolus amount specified. You must enter the bolus amount.

▶ If you first set the correction bolus or the meal bolus, the total bolus amount is deactivated and cannot be adjusted. The value, however, is updated accordingly.

▶ Take the following into account when you enter the total amount:

 • The entry fields for correction bolus and meal bolus are deactivated.

 • If you increase the total amount, the value for the correction bolus is increased accordingly.

 • If you reduce the total amount, the value for the meal bolus is reduced, if one exists. Once the meal bolus reaches "0", the correction bolus is reduced accordingly.

6.3 Bolus Types

You can choose from the following bolus types on the Bolus input display:

▶ Standard bolus

▶ Extended bolus

▶ Multiwave bolus
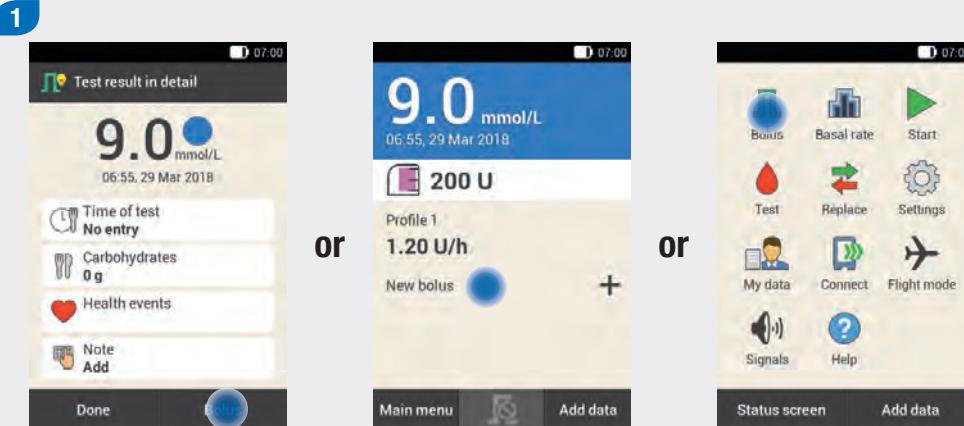
In addition, you can choose a quick bolus, a customised bolus and a bolus with pen or syringe.

Symbol	Name	Description
	Standard bolus	The standard bolus delivers the programmed insulin dose all at once. Use this bolus for foods that contain fast acting carbohydrates, such as cake or bread. Use the standard bolus if you want to correct an elevated blood glucose level.
	Extended bolus	The extended bolus does not deliver the bolus insulin all at once, but over a longer period of time. Use the extended bolus for meals that are digested slowly, for example, foods with complex carbohydrates or foods that are high in fat and protein. An extended bolus can also be helpful for meals that extend over a longer period of time (for example, a buffet).
	Multiwave bolus	A multiwave bolus combines a standard bolus with an extended bolus. A part of the bolus amount is delivered immediately, whereas the other part is delivered over a specified period of time. Use this bolus for meals that contain both fast and slowly digestible carbohydrates, proteins and fats. You can also use this bolus for meals with several courses. If you are planning to eat slowly digestible carbohydrates but have an elevated blood glucose level before the meal, you can use this bolus type as well. In this case, you program the immediate part of the bolus to correct the blood glucose level and the extended part for the carbohydrates.

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6.4   Programming a Bolus

You can program a bolus in different ways. Start with one of the following three options:

1

or

or

Test result > Bolus

Status screen > Bolus

Main menu > Bolus

Option 1:

After testing your blood glucose: On the Test result in detail display, tap Bolus.
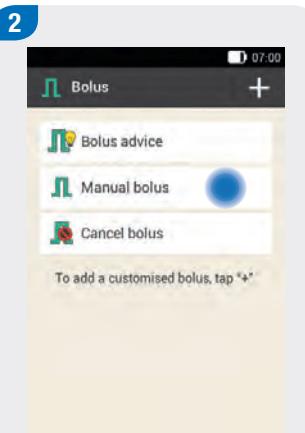
Option 2:

On the Status screen, tap New bolus or the ➕ symbol.
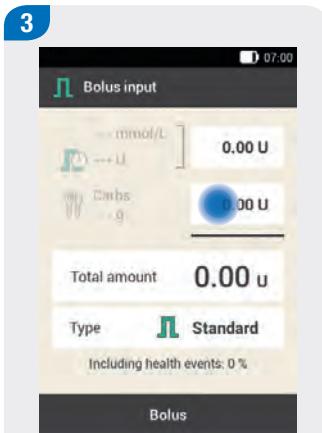
Option 3:

In the Main menu, tap the Bolus menu.

2

Tap Manual bolus.

3
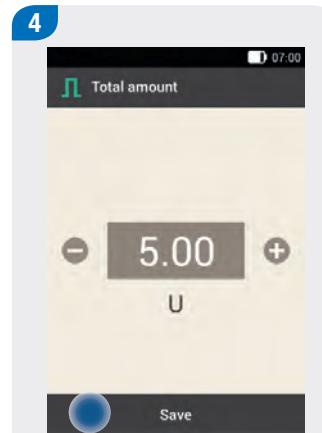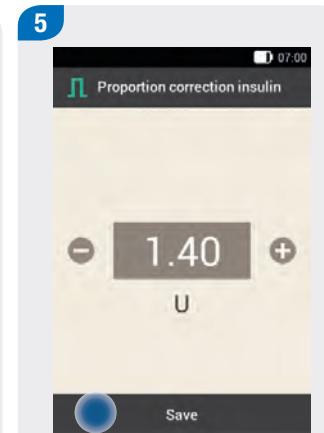
Tap the entry fields that are appropriate to your situation to enter the correction bolus, meal bolus or total amount.

4

Use ⊖ and ⊕ to set the desired amount for the meal bolus.

Tap Save.

5
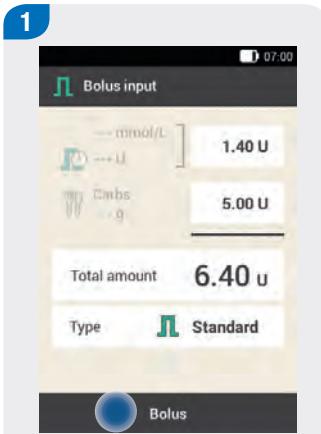
Use ⊖ and ⊕ to set the desired amount for the correction bolus.
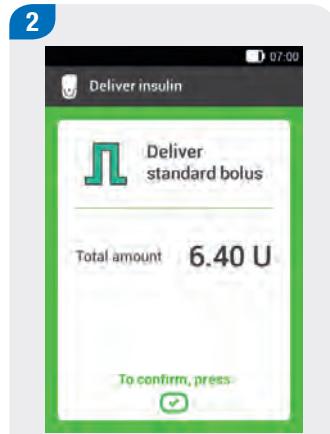
Tap Save.

6.4.1   Standard Bolus

1

The *Standard* bolus type is set as the default in the factory settings.

Tap Bolus.
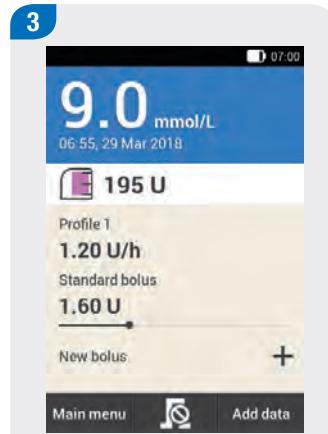
2

To confirm this step and deliver the standard bolus, press the insulin button lit up in green ☑ below the diabetes manager screen.

When the diabetes manager is ready to deliver basal or bolus insulin, the insulin button below the screen lights up green.
The Deliver insulin display with the green frame always appears when you deliver a bolus using the diabetes manager.
Check the displayed total amount before pressing the insulin button.

3
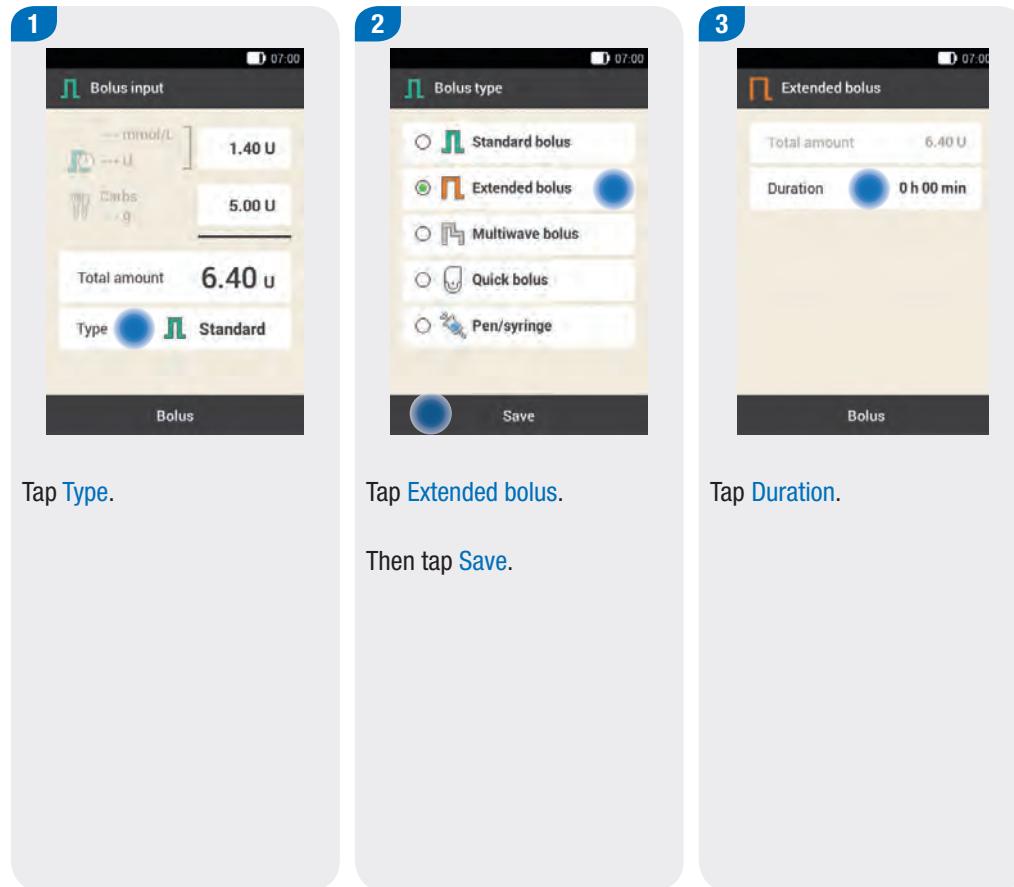
The micropump delivers the standard bolus. The Status screen is displayed with the current bolus information.
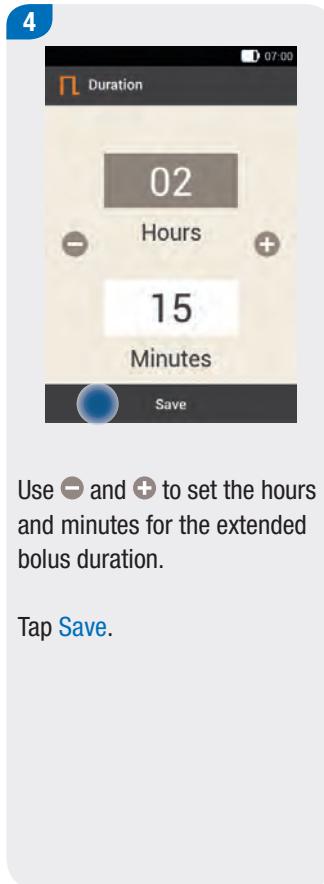
6.4.2 Extended Bolus

The duration of bolus delivery can be programmed in 15-minute increments for a period of up to 24 hours. Delivery begins immediately after you confirm the bolus. Throughout bolus delivery, the Status screen shows the remaining time and remaining amount of the extended bolus.
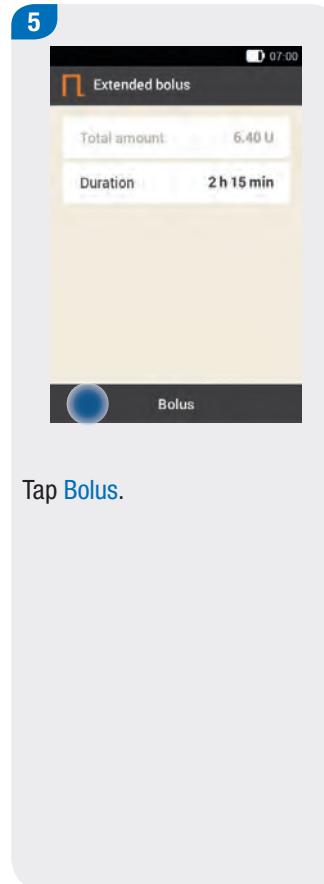
The extended bolus must not be used to correct blood glucose values. Therefore, you cannot select this bolus type if the bolus you programmed contains correction insulin.

1

Tap Type.

2

Tap Extended bolus.

Then tap Save.

3

Tap Duration.

110

4
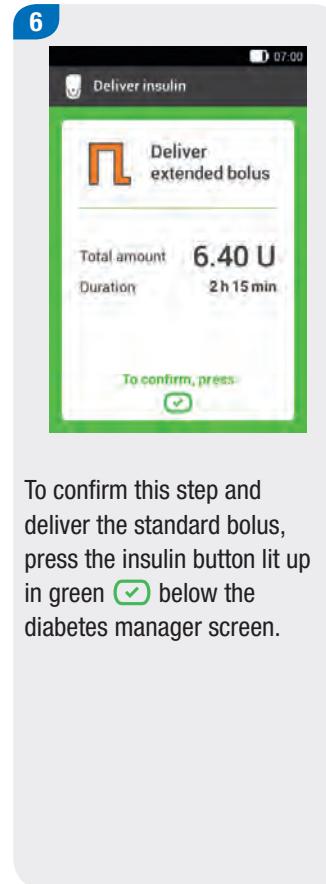
Use ⊖ and ⊕ to set the hours and minutes for the extended bolus duration.

Tap Save.
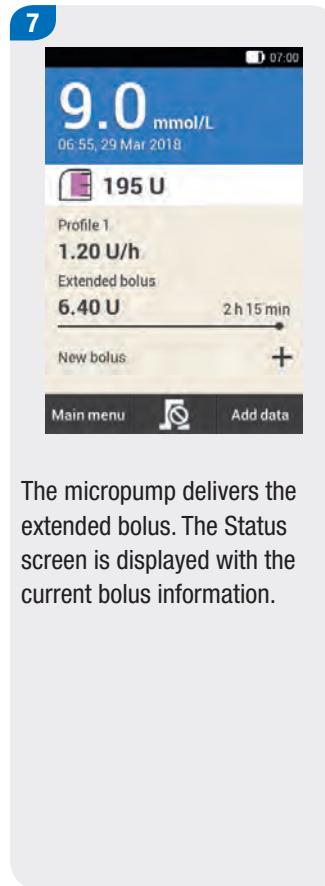
Note
The duration you set for the extended bolus will be used as the default setting when the extended bolus is delivered the next time.

5

Tap Bolus.

6

To confirm this step and deliver the standard bolus, press the insulin button lit up in green ☑ below the diabetes manager screen.

111

When the diabetes manager is ready to deliver basal or bolus insulin, the insulin button below the screen lights up green.
The Deliver insulin display with the green frame always appears when you deliver a bolus using the diabetes manager.
Check the displayed Total amount and the duration before pressing the insulin button.

7

The micropump delivers the extended bolus. The Status screen is displayed with the current bolus information.
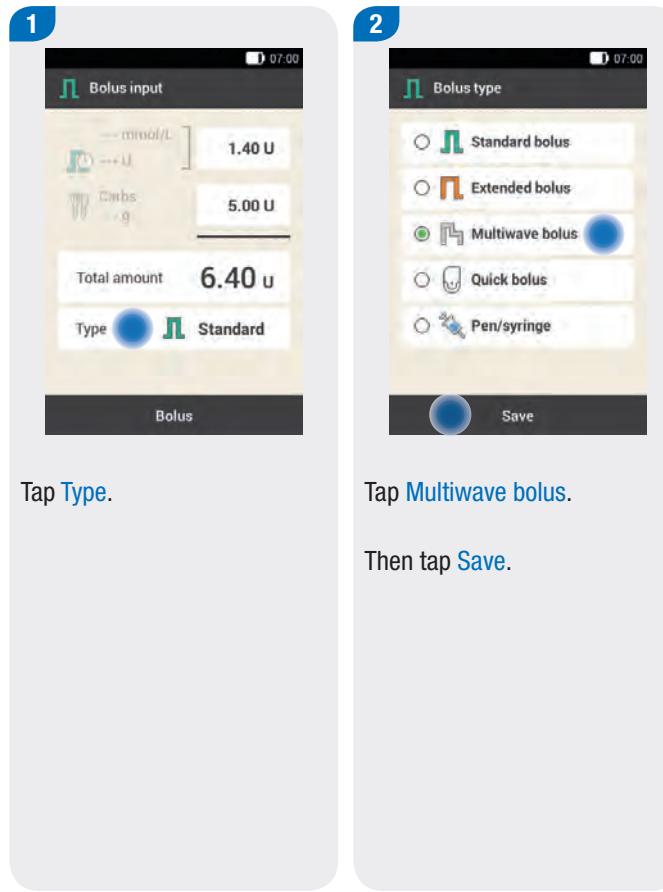
Note
You can add a standard bolus to an ongoing extended bolus and one additional extended bolus or a multiwave bolus.

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6.4.3   Multiwave Bolus

The duration of the extended bolus delivery can be programmed in 15-minute increments for a period of up to 24 hours. Delivery begins immediately after you confirm the bolus.
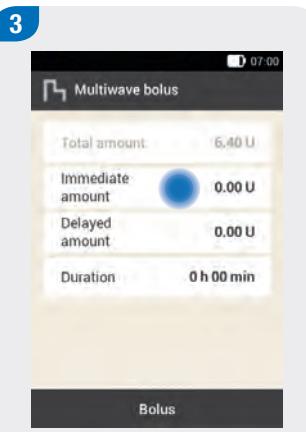
You can add an extended bolus to an ongoing multiwave bolus. As soon as the immediate part of a multiwave bolus was delivered, you can add a standard bolus or another multiwave bolus.

1

Tap Type.

2

Tap Multiwave bolus.

Then tap Save.
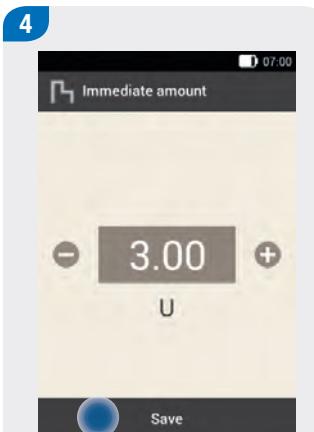
Note
Start with the entries for the correction insulin and the meal bolus.
If you enter the total amount first, you cannot make any entries for the correction bolus and the meal bolus. The entry fields will be deactivated (greyed out).

3
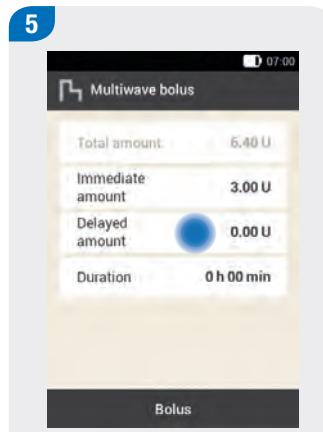
Tap Immediate amount to enter the bolus part that is to be delivered immediately.

4
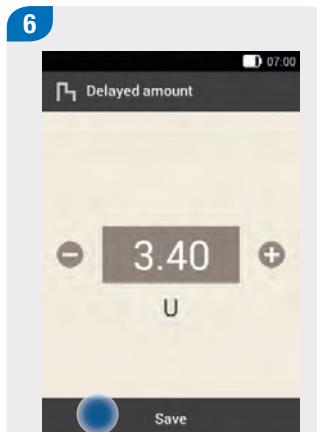
Use ⊖ and ⊕ to set the Immediate amount.

The Immediate amount must not be less than the part set for the correction insulin.

Tap Save.

5

Tap Delayed amount to enter the bolus part that is to be delivered in a delayed fashion.

6
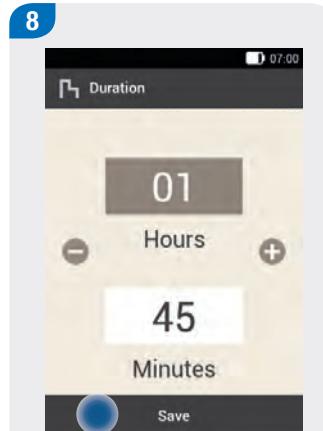
Use ⊖ and ⊕ to set the Delayed amount.

The Delayed amount must not be greater than the part set for the meal bolus.

Tap Save.

7

Tap Duration.

8
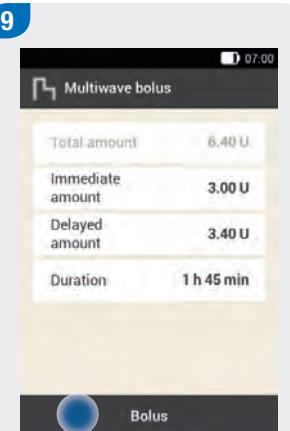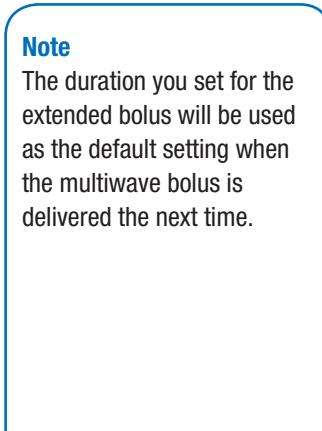
Use ⊖ and ⊕ to set the duration of the delayed part.

Tap Save.

Note
The duration you set for the extended bolus will be used as the default setting when the multiwave bolus is delivered the next time.

9
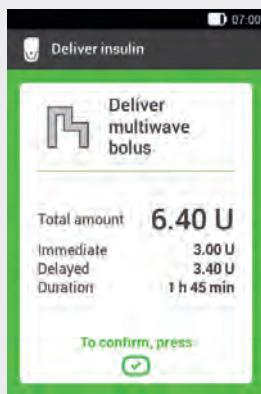
Tap Bolus.

10
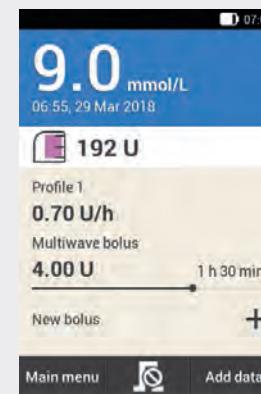
To confirm this step and deliver the multiwave bolus, press the insulin button lit up in green ✅ below the diabetes manager screen.

When the diabetes manager is ready to deliver basal or bolus insulin, the insulin button below the screen lights up green.
The Deliver insulin display with the green frame always appears when you deliver a bolus using the diabetes manager.
Check the displayed Total amount, Immediate amount, Delayed amount and the duration before pressing the insulin button.

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The micropump delivers the multiwave bolus. The Status screen is displayed with the current bolus information.

6.5 Quick Bolus

A quick bolus is a bolus that can be programmed and delivered using the quick bolus buttons on the micropump.

As with the standard bolus, the quick bolus delivers the programmed insulin dose all at once. The quick bolus is suitable for meals that contain mainly carbohydrates that can be digested rapidly as well as for the correction of an elevated blood glucose level.

A quick bolus allows a bolus to be discreetly delivered if the diabetes manager is not available or cannot communicate with the micropump. This is the case, for example, when flight mode is turned on. The bolus amount can only be programmed in defined increments.

The basic setting for the quick bolus increment is 0.2 units. Thus, you can set the bolus amount to 0.2 units, 0.4 units, 0.6 units and so on. If necessary, you can change the quick bolus increment to 0.2, 0.5, 1.0 or 2.0 units. See the chapter *Changing Settings*.
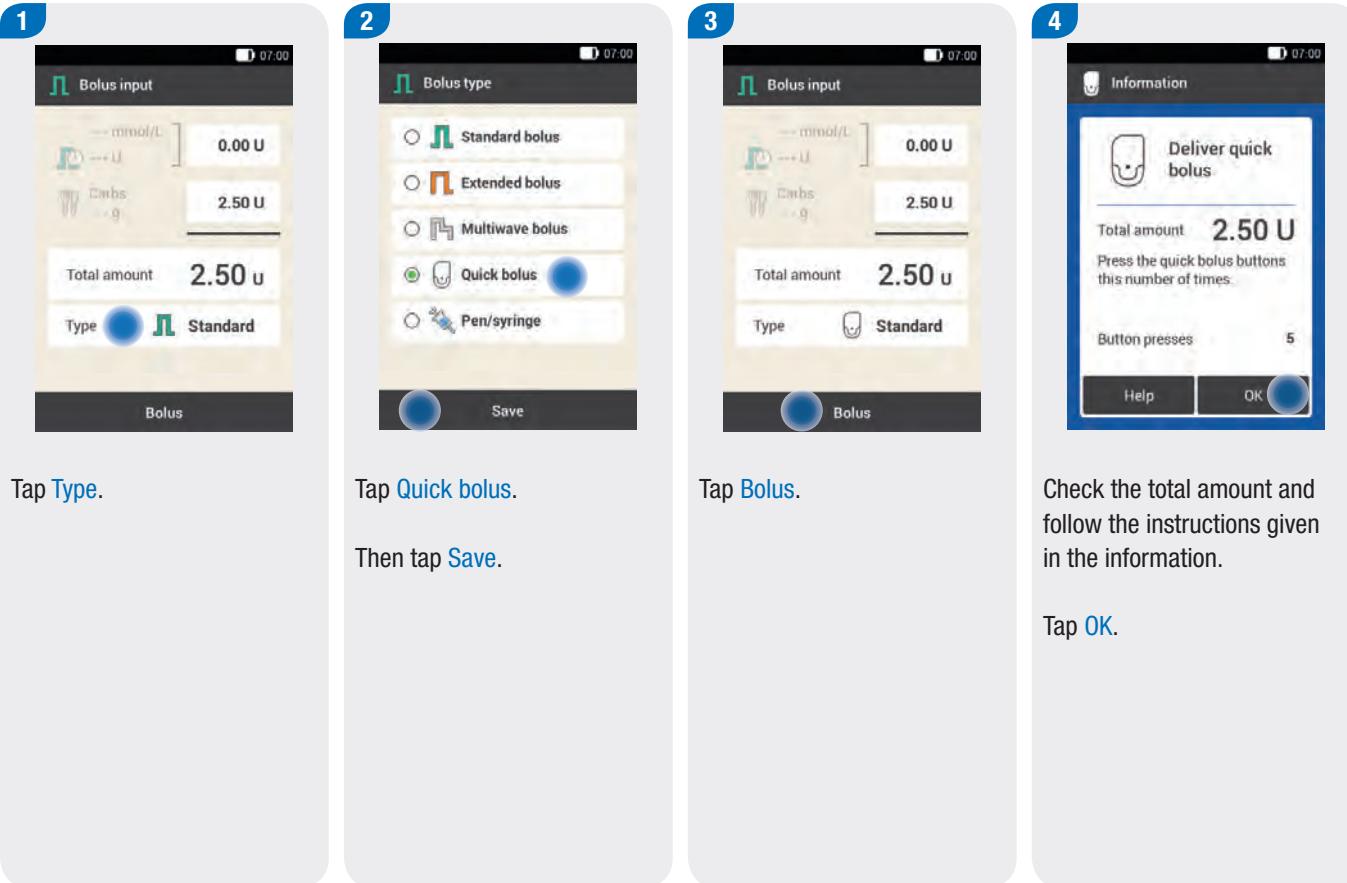
⚠ **WARNING**

▶ Make sure that you know and use the set quick bolus increment. If you use a different quick bolus increment to the one you intended, an incorrect insulin dose will be delivered.
▶ Note that a quick bolus is always considered to be a correction bolus.

Note
Fill in the increment you set for the quick bolus on the flap card of the perforated cover page.

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6.5.1   Programming a Quick Bolus

1	**2**	**3**	**4**
Tap Type.	Tap Quick bolus. Then tap Save.	Tap Bolus.	Check the total amount and follow the instructions given in the information. Tap OK.

6.5.2 Delivering a Quick Bolus

1

3 s

Press and hold both quick bolus buttons for approximately 3 seconds until you hear a sequence of signals.

2

Simultaneously press both quick bolus buttons repeatedly until the desired insulin amount is set. The micropump issues a signal every time the buttons are successfully pressed.

Example
With a quick bolus increment of 0.5 units, you must press the quick bolus buttons 5 times to deliver an insulin amount of 2.5 U.

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Note
▶ If you have not pressed the quick bolus buttons for approximately 3 seconds, the entry phase ends and the micropump provides acoustic feedback. A signal is issued for each programmed quick bolus increment.
▶ If you do not confirm the acoustic feedback in Step 4 by pressing the quick bolus buttons, no bolus will be delivered and a sequence of signals for cancelling the bolus will be issued.

3

Check whether the acoustic feedback corresponds to the desired insulin amount.

4

If the acoustic feedback corresponds to the bolus amount you require, press the quick bolus buttons to confirm insulin delivery until you hear a sequence of signals.

Note
Enter the insulin and carbohydrate amounts associated with the quick bolus in the logbook. Be sure to assign correction and mealtime boluses correctly. Otherwise, subsequent data entries in the logbook as well as future bolus advice calculations might not be correct.

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6.6 Delivering the Bolus with a Pen or Syringe

If you want to deliver a bolus with a pen or syringe, you can document the insulin amounts delivered on the Bolus input display.

The boluses that you deliver with a pen or syringe are saved in the diabetes manager database. The entered insulin amounts are evaluated for future bolus advice calculations. This improves the result of further bolus advice calculations.

1

Select one of the 3 options for bolus delivery that are mentioned in the section *Standard Bolus*. Perform the appropriate steps until the Bolus input menu is displayed.

Tap Type.

2
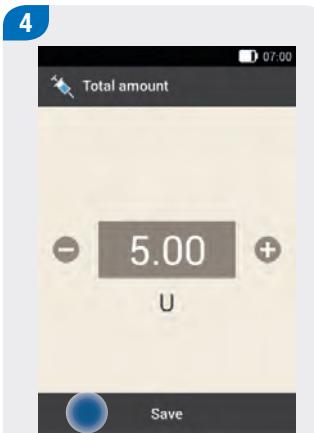
Tap the Pen/syringe bolus type.

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3
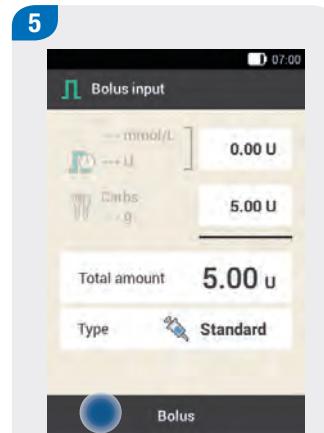
Tap the desired entry field.

If you tap Total amount, the entered insulin amount is added to the correction bolus.

4
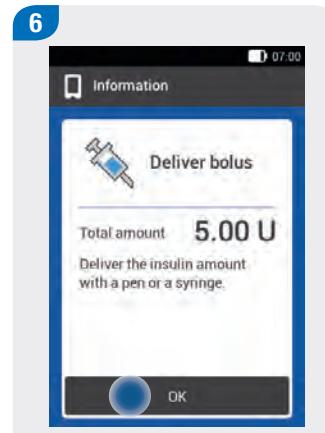
Use ⊖ and ⊕ to set the insulin amount you want to deliver using a pen or syringe.

Tap Save.

5

Tap Bolus.

6

If the total amount to be delivered is correct, tap OK.

7

Inject the insulin units with a pen or syringe.

6.7   Cancelling a Bolus

Example

To cancel an ongoing bolus, press the ⌧ button on the Status screen or in the Main menu.
If this is not possible, remove the micropump from the infusion assembly.

6.7.1   Cancelling Bolus Programming

Standard, extended and multiwave bolus
While programming, press the ⬅ button to go back to the previous step and enter a new value.

Quick bolus
If you do not confirm the quick bolus by pressing both quick bolus buttons within 5 seconds of the acoustic feedback for the insulin amount, programming of the quick bolus will be cancelled automatically.

6.7.2 Cancelling a Bolus During Delivery

If you have the diabetes manager at hand: Press the 🔲 button during bolus delivery to cancel the bolus. Bolus delivery is cancelled and the diabetes manager displays warning W38 Bolus cancelled.
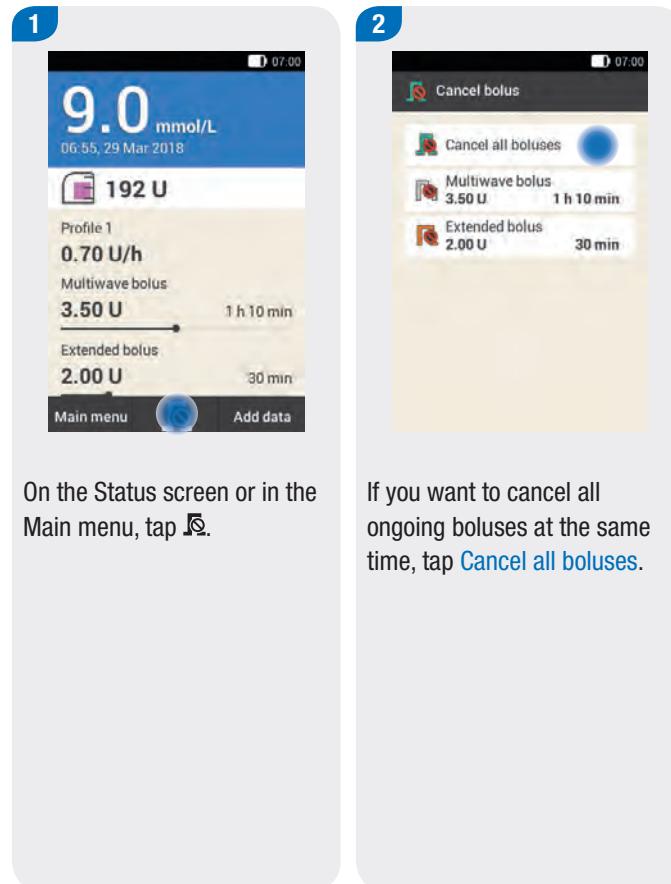
If you do not have the diabetes manager at hand: Remove the micropump from the infusion assembly for as long as the bolus is being delivered. Then place the micropump back onto the infusion assembly.

6.7.3 Cancelling a Bolus Using the *Cancel bolus* Menu

In the Main menu and on the Status screen, you can cancel a bolus by tapping 🔲.
In the Bolus menu, you can tap the Cancel bolus item. Here you can cancel one bolus or all ongoing boluses.

Cancelling all boluses

1
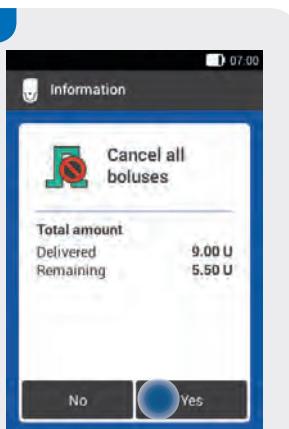
On the Status screen or in the Main menu, tap 🔲.

2

If you want to cancel all ongoing boluses at the same time, tap Cancel all boluses.

Cancelling single boluses
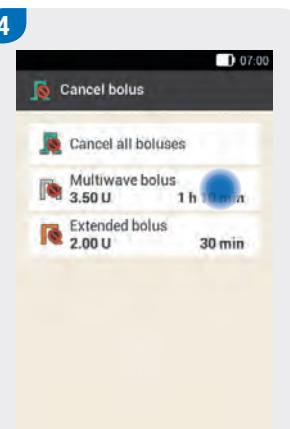
3
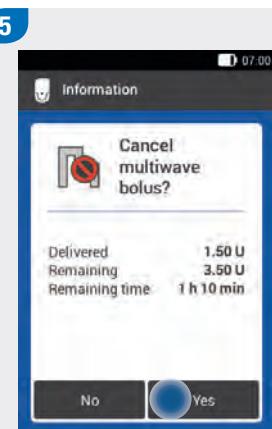
If you want to cancel all boluses now, tap Yes.

4

Tap the bolus you want to cancel.

5

Tap Yes if you want to cancel the bolus now.

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6.8 Delaying Bolus Delivery

In some situations (for example, if you have gastroparesis) it may be helpful to only start a bolus after you have started eating. You can use the delivery lag time setting to specify an interval between programming a bolus and the actual start of bolus delivery.
Discuss using the delivery lag time setting with your healthcare team.
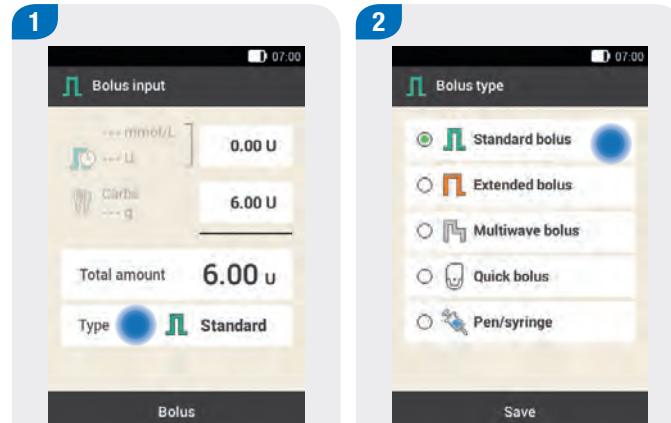
If you want to use the delivery lag time, you must activate this feature in the *Bolus settings* menu first (see chapter *Settings*).

Note
If a bolus contains correction insulin, it is not possible to enter a delivery lag time. Correction insulin must always be delivered immediately.
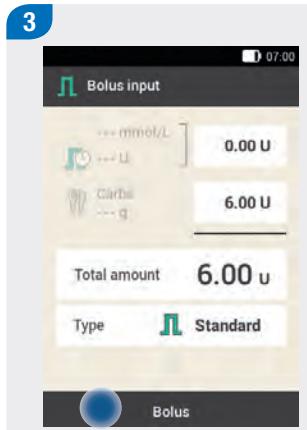
Setting the delivery lag time
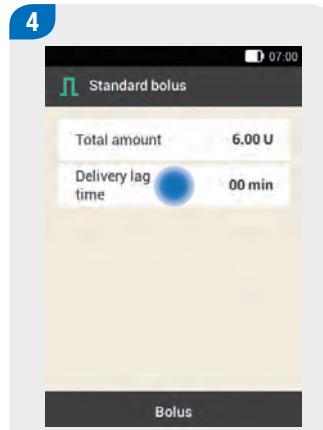
1

Select one of the 3 options for bolus delivery that are mentioned in the section *Standard Bolus*. Perform the appropriate steps until the Bolus input menu is displayed.

Tap Type.

2
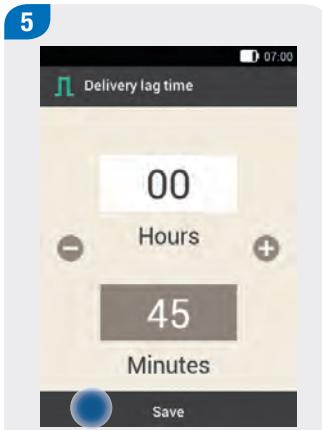
Tap the required bolus type, for example, Standard bolus.

3

Tap Bolus.

4
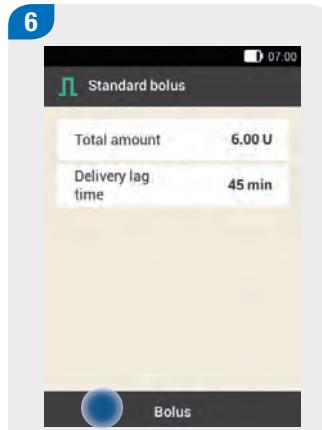
Tap Delivery lag time.

5
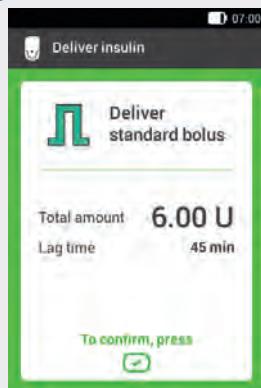
Use ⊖ and ⊕ to set the Delivery lag time.

Tap Save.

6

Tap Bolus.

7

To confirm this step and deliver the standard bolus, press the insulin button lit up in green ✅ below the diabetes manager screen.

8

The Status screen is displayed with the current bolus information and the set delivery lag time.

7 Bolus Advice

The bolus advice feature aims to bring your blood glucose level back into the target range defined for you, by delivering an insulin amount that was calculated in advance. The bolus advice feature of the diabetes manager consists of two components: First, a recommendation for a correction bolus to adjust your blood glucose level if it is not within the target range. Secondly, a recommendation for a meal bolus that covers your food intake. However, the bolus advice feature only makes a recommendation if you set up (configured) bolus advice beforehand.

7.1 Overview

The bolus advice feature of the diabetes manager consists of two components: First, a recommendation for a correction bolus to adjust your blood glucose level if it is not within the target range. Secondly, a recommendation for a meal bolus that covers the carbohydrates contained in your meals.

The recommendation for the correction bolus is positive if your current blood glucose level is above your target range. If, at the same time, a meal bolus is recommended, a negative correction bolus lowers the total insulin amount of bolus advice.

If your blood glucose value is below the hypo warning limit, no bolus advice is issued. Instead, you receive a recommendation to consume a certain carbohydrate amount to bring your blood glucose level back to within the target range.

Advantages of bolus advice:
▶ Bolus advice is calculated based on the current blood glucose value, your carbohydrate intake and other factors.
▶ Insulin from a previous bolus that is still acting and difficult to be estimated manually, is taken into account automatically.
▶ Therapy schemes can be adhered to more consistently.
▶ Blood glucose values can be kept within the target range for a longer time period more easily.

Note the following:

▶ The micropump system is not able to judge your current situation independently of your own assessment.

▶ Insulin that was not delivered via the micropump system can only be taken into account if you specify this in the diabetes manager.

▶ Bolus advice cannot correct any input errors. This is particularly true for the carbohydrate amount entered.

▶ Warnings are displayed for entries that exceed possible limit values.

▶ No warning message is displayed if the data is possible (within the acceptable ranges) but incorrect. Therefore, it is important to carefully review all of your entries.

Terminology for setting bolus advice

Carbohydrate ratio

The carbohydrate ratio defines the insulin amount necessary to compensate for a certain amount of ingested carbohydrates.

Insulin sensitivity

The insulin sensitivity defines the insulin amount required to lower your blood glucose level by a certain value.

Target range

The target range describes which blood glucose values are considered acceptable when fasting or before a meal. The target range is specified by the lower and upper BG thresholds.

Meal rise

During or after meals, an increase in the blood glucose level is considered normal within a certain range, even if a bolus was delivered. Enter the maximum increase in your blood glucose level that is to be tolerated without an additional correction bolus.

Snack size

The snack size defines a carbohydrate threshold; when this is exceeded, a meal rise should be taken into account. Thus, the snack size indicates which carbohydrate amounts should not be considered as regular meals with an expected and tolerated meal rise.

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Acting time

The acting time is the period of time from the start of bolus delivery until the blood glucose level is expected to return to the target level.

You can specify the duration of the acting time according to your needs. The total acting time includes the offset time.

Offset time

The offset time is the period of time after which the insulin is expected to start lowering the blood glucose level in the body.

Time blocks

Time blocks allow you to divide the day into different time periods according to your individual lifestyle.

Time blocks help you and your healthcare professional to recognise more easily how your blood glucose level is affected by your daily activities and lifestyle.

Note
▶ Discuss intended changes to your bolus advice options with your healthcare professional in advance.
▶ After bolus advice is set up, you can change the options or turn off bolus advice, if required.
▶ If you turn off bolus advice, all bolus advice options will be deleted.

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7.2 Setting Up Bolus Advice

Main menu > Settings > Bolus settings
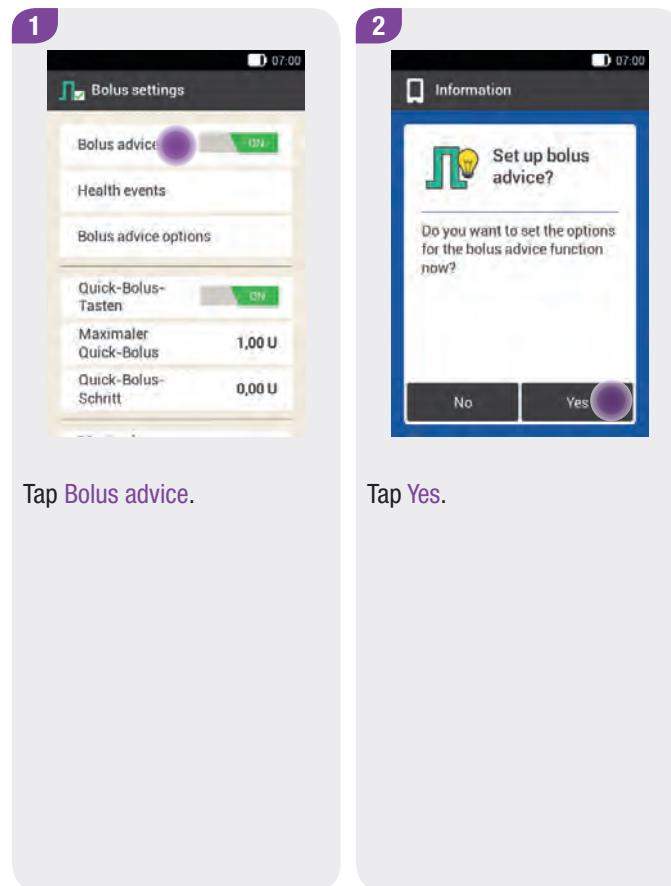
After you turn on bolus advice, you set up the time blocks first. All time blocks add up to a time period of 24 hours. The diabetes manager factory settings contain 5 default time blocks. You can set up a maximum of 8 time blocks.

The bolus advice feature uses the time blocks that you have already set while executing the setup wizard. If required, you can change the time block settings.

⚠️ **WARNING**
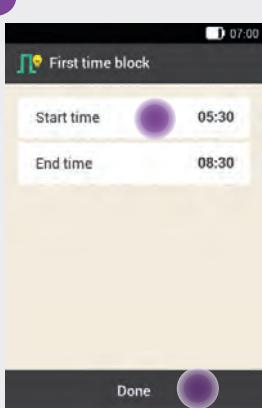
Discuss intended changes to your bolus advice options with your healthcare professional in advance.

Tap Bolus advice.

Tap Yes.
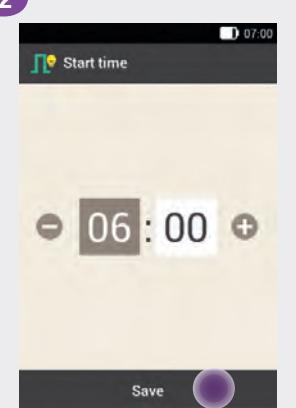
Defining a time block

| 1 | 2 | 3 | 4 |

The display for defining the first time block appears.

Tap Start time.

If you want to keep the start and end times, tap Done.

The ⟵ button is deactivated.
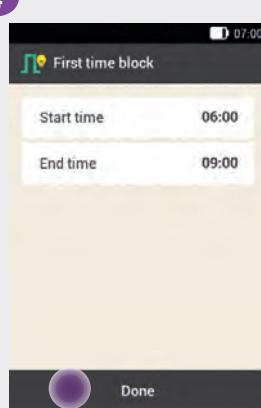
Use ➖ and ➕ to set the Start time for the first time block.

The minutes can be set in 15-minute increments.

Tap Save.

Use ➖ and ➕ to set the End time for the first time block.

The minutes can be set in 15-minute increments.

Tap Save.

The changed start and end times for the first time block are displayed.

Tap Done.

Setting the target range

1	2	3	4

Tap Upper limit value.

If you do not want to modify the limit values for the target range, tap Next.
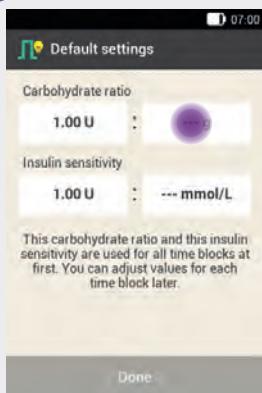
Use ⊖ and ⊕ to set the Upper limit value.

Tap Save.

Use ⊖ and ⊕ to set the Lower limit value.

Tap Save.

The limit values currently set for the target range are displayed.

Tap Next.

Defining the default settings

1

To define the default settings, tap the adjustment fields for the Carbohydrate ratio.

Then tap the adjustment fields for the Insulin sensitivity.

Note
The Done button on the Default settings display remains deactivated (grey) until the entries for Carbohydrate ratio and Insulin sensitivity are complete.

Example

Carbohydrate ratio:
1.00 U : 10 g

In this example, one insulin unit compensates for 10 g of carbohydrates.

Carbohydrate ratio

2

Use ⊖ and ⊕ to set the insulin units for the Carbohydrate ratio.

Tap Save.

3

Use ⊖ and ⊕ to set the carbohydrate amount for the Carbohydrate ratio.

Tap Save.

Insulin sensitivity

Example

Insulin sensitivity:
1.00 U : 2.2 mmol/L

In this example, one insulin unit lowers the blood glucose value by 2.2 mmol/L.

4

Use ⊖ and ⊕ to set the insulin units for the Insulin sensitivity.

Tap Save.

5

Use ⊖ and ⊕ to set the blood glucose value for the Insulin sensitivity.

Tap Save.

6

Tap Done.

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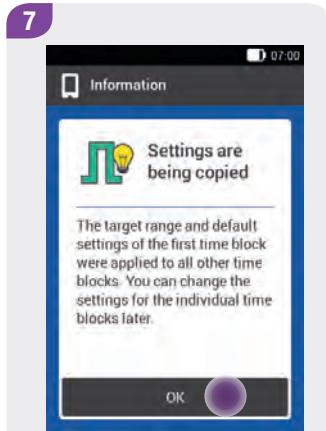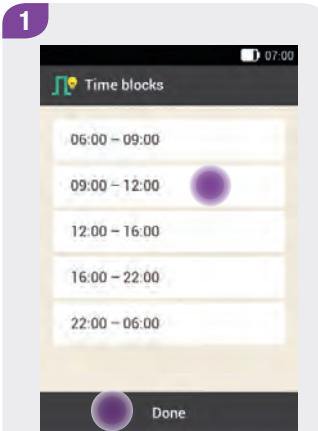
Changing the time block settings

7

The default settings for carbohydrate ratio and insulin sensitivity are copied to all time blocks.
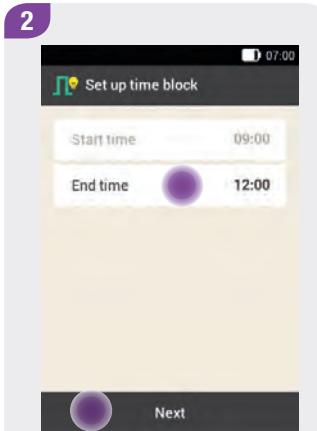
You can change the settings for each time block separately.

Tap OK.

1

Tap the time block you want to change.

If you do not want to change the copied settings for the other time blocks, tap Done. Continue with the section *Setting health events*.

2

Tap End time.

Note
You can change the start time for the first time block only.

Changes to the Target range, Carbohydrate ratio and Insulin sensitivity can be made for each time block.

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3

Set the End time for the selected time block.

Tap Save.

4

Tap Next.

5

Set the upper and lower limit values.

Tap Next.

6

Tap Done when you have completed the desired settings for all time blocks.

Setting health events

Health events or your activities have an impact on your blood glucose level. Bolus advice calculation takes health events into account.

Each health event adjusts bolus advice by the percentage set by you. A positive percentage (+) increases the bolus amount and a negative percentage (-) decreases the bolus amount.

You can choose between 5 default health events and 3 customised health events:
▸ Exercise 1 🏃
▸ Exercise 2 🏃
▸ Stress 🙂
▸ Illness 🤒
▸ Premenstrual ♀
▸ Customised: Name 1-3 ❤

You can also enter health events at a later time.

The percentage for a health event must be between -50 % and +50 %. The percentage can be changed in increments of 5 %. Discuss changes to your bolus advice options with your healthcare professional in advance.

⚠ **WARNING**
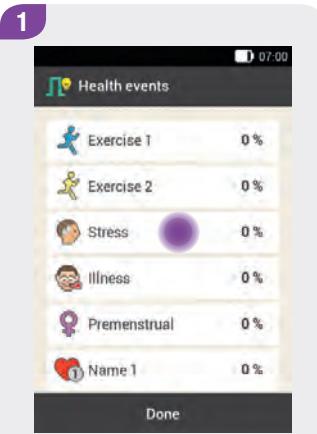
Incorrectly entered health events may lead to inappropriate bolus advice.
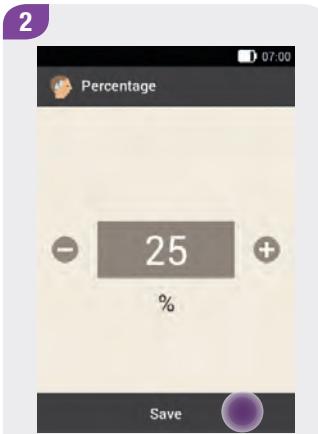
Example
You go for a run and create the customised health event *Run* with a percentage of -20 %.
When you select the *Run* health event during bolus calculation, the bolus amount is decreased by 20 %.

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Setting a health event

Customised health event

1

Tap the health event for which you want to make settings (for example, Stress).

2
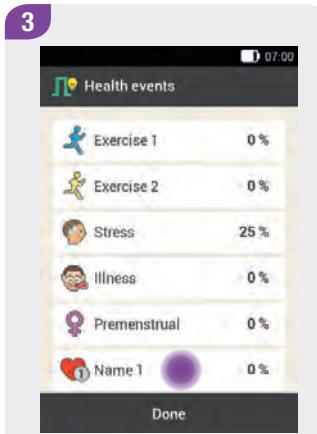
Enter a Percentage for the selected health event.

Tap Save.

Repeat Steps 1 and 2 to set the percentage for other health events.

3
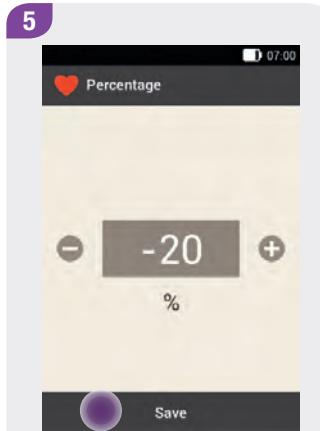
The Health events are displayed with the percentages that were set.

If you want to set a customised health event, tap ❤.

4
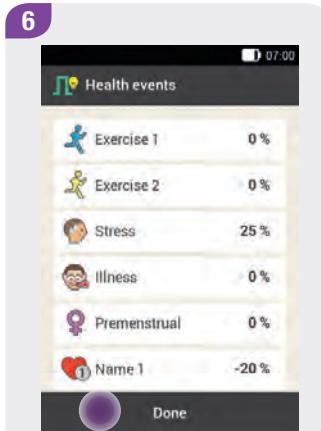
Tap 👆 to enter a name (for example, Run) for the customised health event.

5

Use ⊖ and ⊕ to set the percentage for the customised health event.

Tap Save.

6

The Health events are displayed with the percentages that were set.
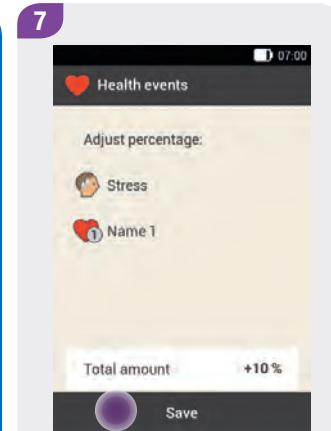
Tap Done.

Note
You can select a maximum of 4 health events.

If you have selected more than one health event, you will have to enter a total percentage for the selected health events in the next step.

Discuss health event adjustments with your healthcare professional, who will help you to determine the suitable percentage for the adjustment.

7
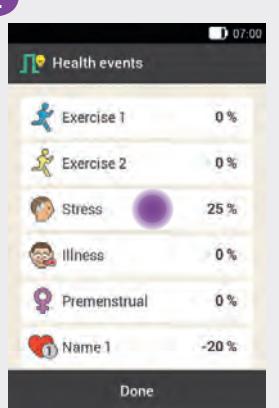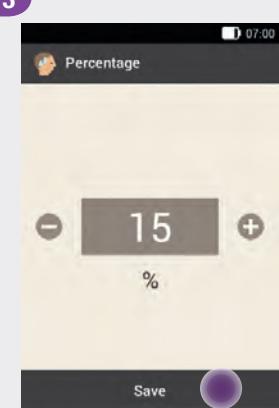
Specify a total percentage for the health events.
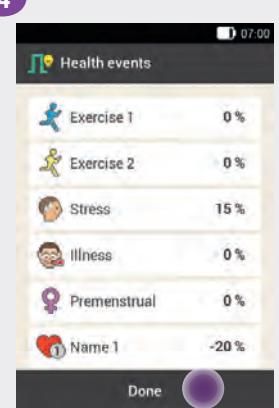
Tap Save.

Changing percentages for health events

1	2	3	4

Tap Health events.

Tap the health event for which you want to make settings (for example, Stress).

Enter a percentage for the selected health event.
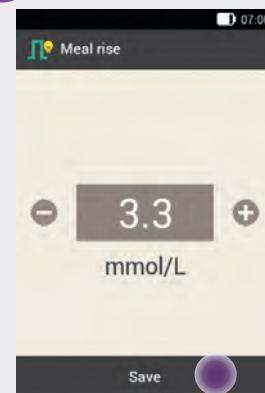
Tap Save.

Repeat Steps 2 and 3 to set the percentage for other health events.

The Health events are displayed with the percentages that were set.

Tap Done after setting the health events.

Bolus advice options

1

Tap Meal rise, Snack size, Acting time and Offset time to adjust the respective settings.
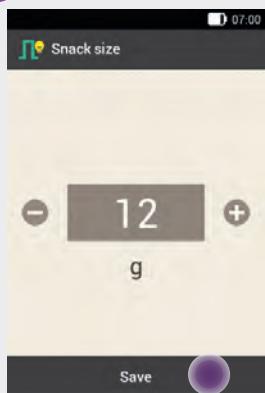
Note
The Done button on the Bolus advice options display remains deactivated (grey) until the entries for Meal rise, Snack size, Acting time and Offset time are complete.

Meal rise

2

Use ⊖ and ⊕ to set the meal rise value.

Tap Save.
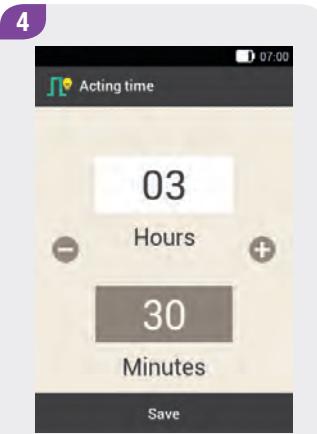
Snack size

3

Use ⊖ and ⊕ to set the snack size value.

Tap Save.

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Acting time   **Offset time**

4
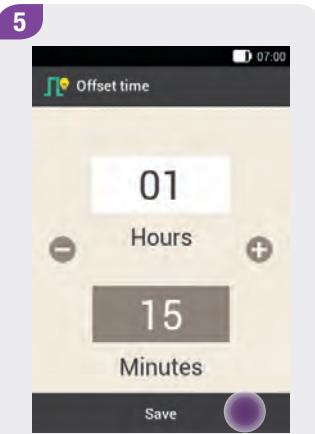
Use ⊖ and ⊕ to set the hours and minutes for the acting time.

Tap Save.

5
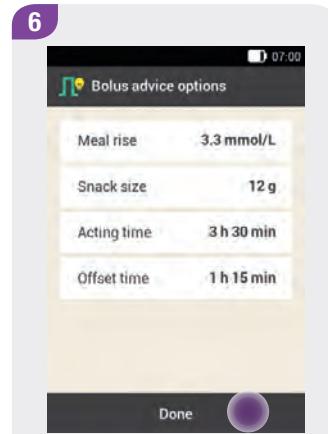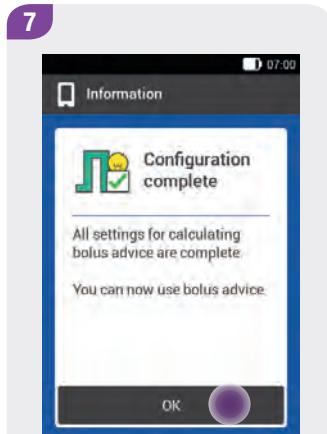
Use ⊖ and ⊕ to set the hours and minutes for the offset time.

Tap Save.

6

Tap Done to complete the setup wizard.

7

All settings for calculating bolus advice are now complete.

Tap OK.
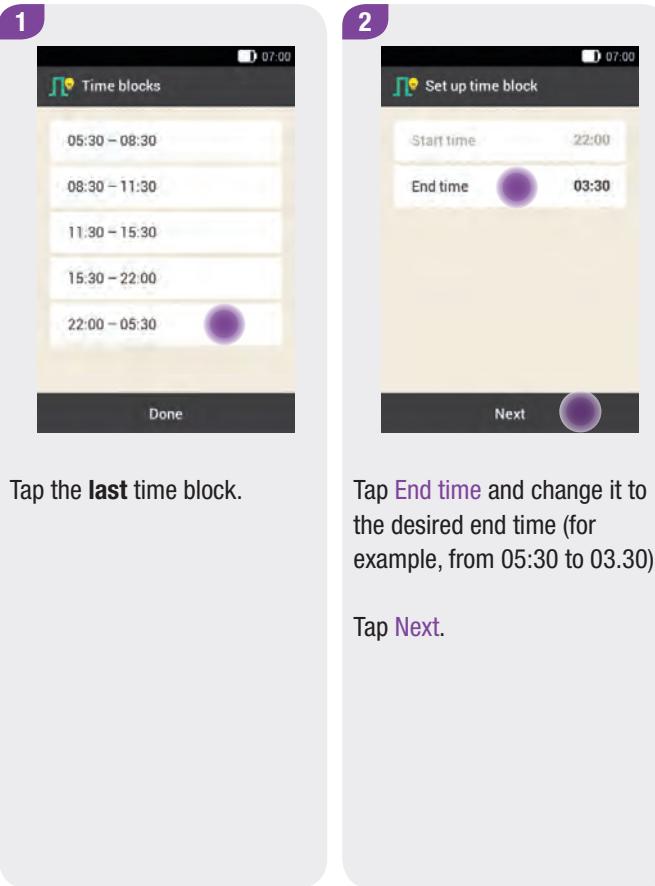
7.2.1 Adding a Time Block

This section describes how to add a new time block.

To add a time block, decrease the end time of the last time block.

After the new time block has been created, you may have to adjust the end time and other information for each time block.

Adding time blocks

1

Tap the **last** time block.

2

Tap End time and change it to the desired end time (for example, from 05:30 to 03.30).

Tap Next.
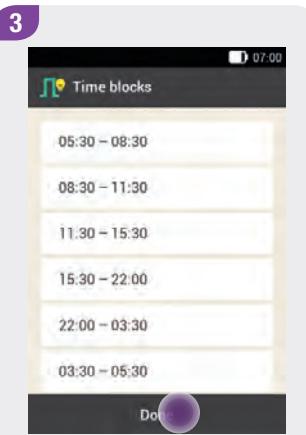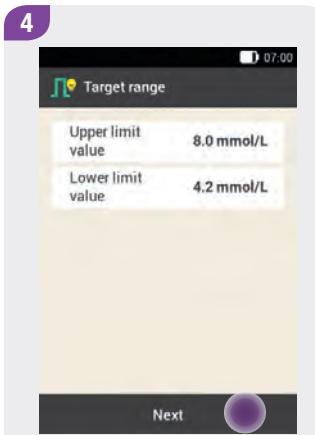
Note
▶ Decrease the End time of the last time block by any amount in order to create a new time block. This creates a new time block by splitting the last time block into 2 time blocks.
▶ However, do not decrease the End time until it equals the Start time because this will delete the time block.

3
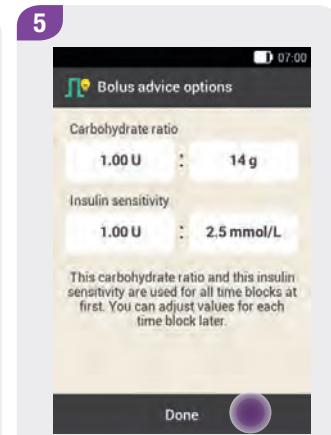
The last time block is split into two time blocks (for example, second to last time block 22:00–03:30, last time block 03:30–05:30).

Tap Done.

4
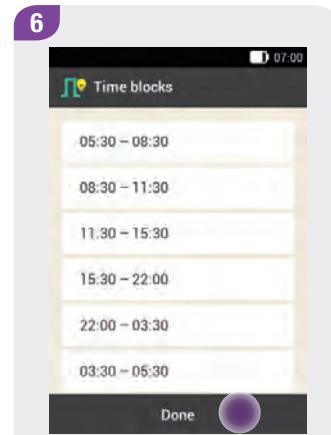
Set the Upper limit value and Lower limit value for the new time block.

Tap Next.

5

Set the Carbohydrate ratio and Insulin sensitivity for the new time block.

Tap Done.

6


It may be necessary to change the end times and settings of other time blocks.
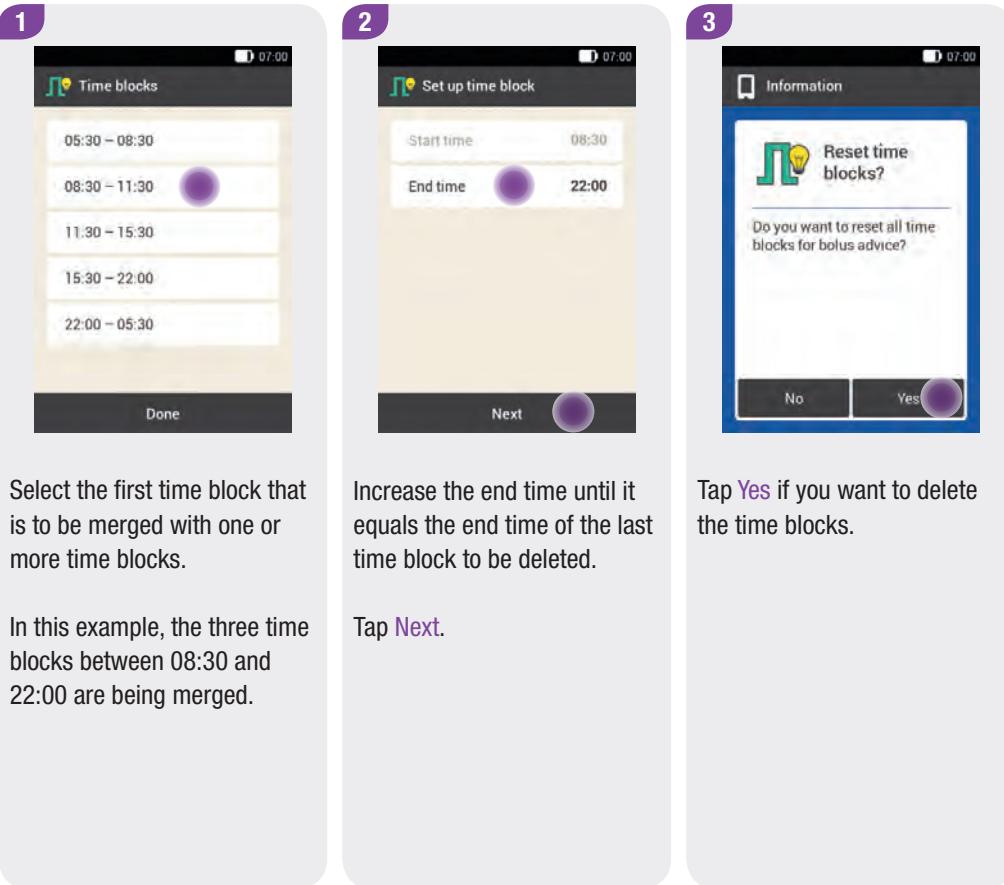
Tap Done when you have finished editing the time blocks.

7.2.2 Deleting Time Blocks
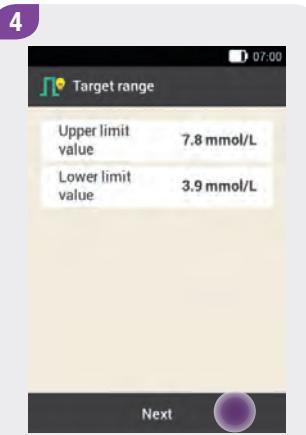
This section describes how to delete one or more time blocks.

The first method to delete one or more time blocks is to merge time blocks.

Deleting several time blocks

1

Select the first time block that is to be merged with one or more time blocks.

In this example, the three time blocks between 08:30 and 22:00 are being merged.

2

Increase the end time until it equals the end time of the last time block to be deleted.

Tap Next.

3

Tap Yes if you want to delete the time blocks.

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4
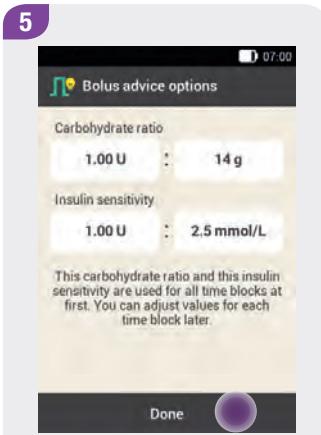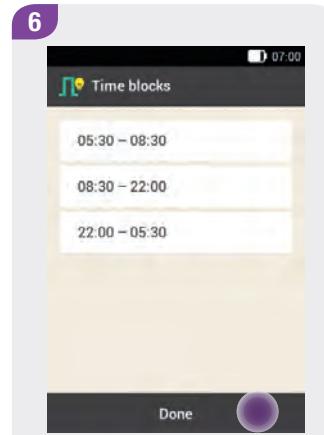
Set the Upper limit value and Lower limit value for the merged time block.

Tap Done.

5

Set the Carbohydrate ratio and Insulin sensitivity for the merged time block.

Tap Done.

6

It may be necessary to change the end times and settings of the remaining time blocks.

Tap Done when you have finished editing the time blocks.

Deleting a single time block

The second method deletes a single time block by decreasing the end time of the time block until it is the same as its start time.

After time blocks have been deleted, it may be necessary to change the end times and other information for the remaining time blocks until all of the time blocks are set up the way you want them.

1

Tap the time block to be deleted.

In this example, the time block from 11:30 to 15:30 is to be deleted.

2

Decrease the end time until it equals the start time.

Tap Next.

3

Tap Yes if you want to delete the time block.

4
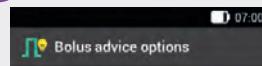
Set the Upper limit value and Lower limit value for the new time block.

Tap Done.

5

Set the Carbohydrate ratio and Insulin sensitivity for the merged time block.

Tap Done.

6
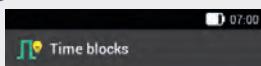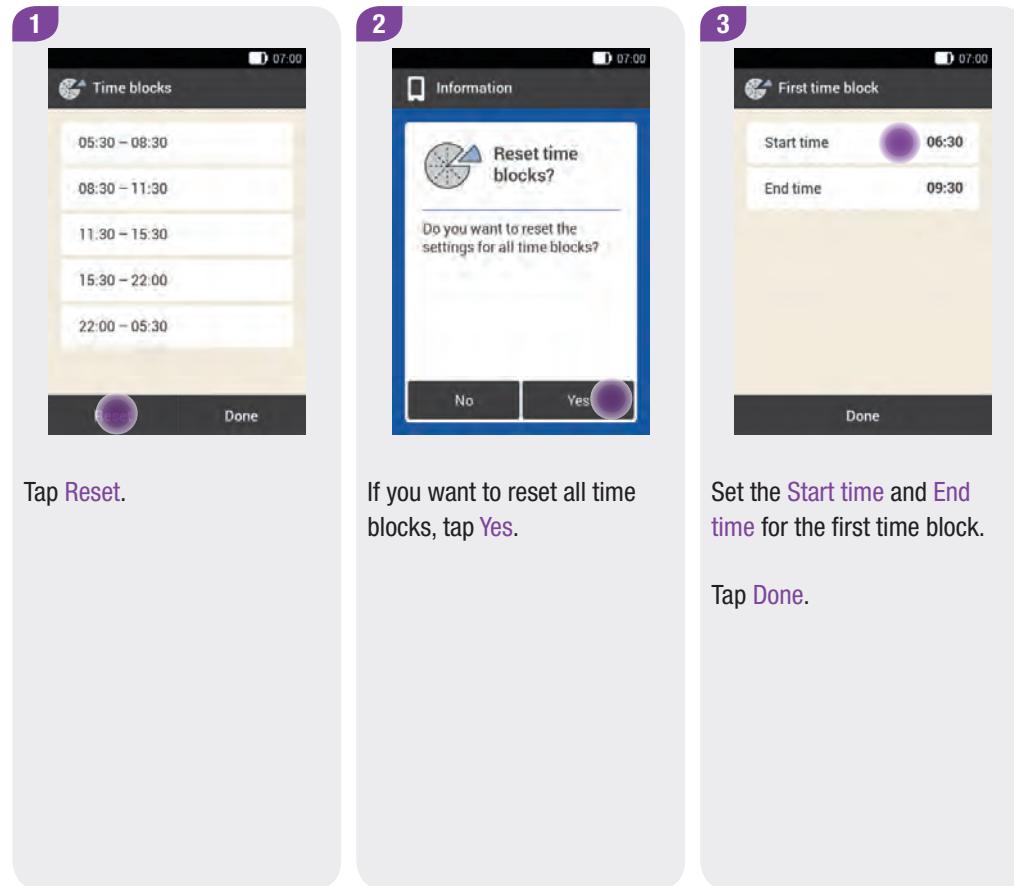
It may be necessary to change the end times and settings of the remaining time blocks.

Once you have finished editing the time blocks, tap Done.

7.2.3 Resetting All Time Blocks

This section describes how to restore the settings for all time blocks to the factory settings and then re-enter them. Changing the start time of the first time block may be one reason for resetting all time blocks.

1

Tap Reset.

2
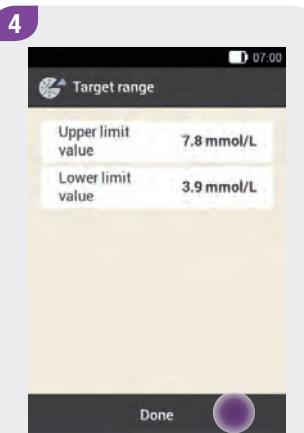
If you want to reset all time blocks, tap Yes.

3

Set the Start time and End time for the first time block.

Tap Done.

4
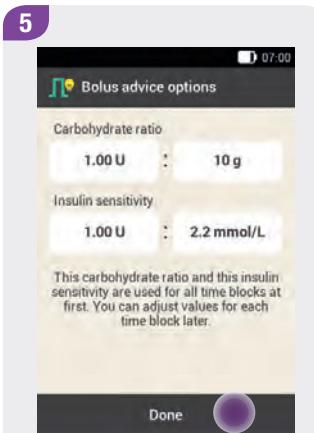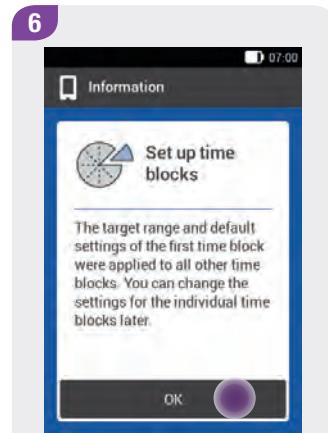
Set the default values for the Upper limit value and Lower limit value.

Tap Done.

5

Set the default values for the Carbohydrate ratio and Insulin sensitivity.

Tap Done.

6

Tap OK.

7

It may be necessary to change the end times and settings of the other time blocks.

Tap Done when you have finished editing the time blocks.

7.2.4   Changing Bolus Advice Options

This section describes how to change the values for meal rise, snack size, acting time and offset time.

1

Tap Bolus advice options.

2

Tap the respective entries to set the Meal rise, Snack size, Acting time and Offset time.

Tap Done after making all the settings.

7.3   Using Bolus Advice

Delivering a recommended bolus

You can use the bolus advice feature directly after testing your blood glucose. Note that a blood glucose result is only valid for bolus advice **within 15 minutes of the blood glucose test**.
You can also call up bolus advice from the Status screen or Main menu.

Additional information:

▶ The ⬚ symbol indicates that the bolus advice feature is turned on.
  If no bolus advice is set up, bolus advice is turned off or a manual bolus was delivered, the ⬚ symbol is displayed.

▶ If you deliver a bolus straight from the micropump, the information on the total bolus amount is taken into account for future bolus advice. However, the total bolus amount is considered as a correction bolus, and no meal rise is registered. If this bolus was used for food intake, you should edit the bolus in your logbook to assign the bolus part that was used for the carbohydrates. This ensures that you receive as accurate bolus advice as possible as a direct consequence (during acting time).

▶ If you provide values for Blood glucose result, Carbohydrates and Health events to calculate bolus advice, you will obtain the best results. All entries are saved.

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Starting bolus advice after a BG test
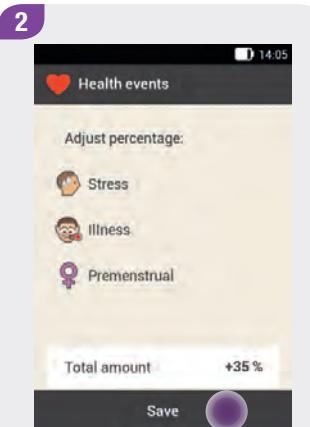
1

Tap the respective entries to add information on Time of test, Carbohydrates or Health events.

Tap Bolus.

2

Enter the percentage for the total amount if you have selected several health events.

Tap Save.

If you have entered only one or no health event, the Health events display will not appear.

3

Tap Bolus.

The bolus advice feature calculates a suggestion and transfers the recommended values to the entry fields. Tap the respective entry fields if you want to change the suggested values.

Selecting the bolus type
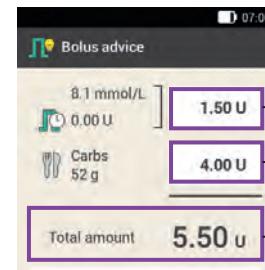
4

Tap Type to select the desired bolus type.

Tap Bolus.

Changing bolus advice values

— Correction bolus

— Meal bolus, changed

— Value has been updated
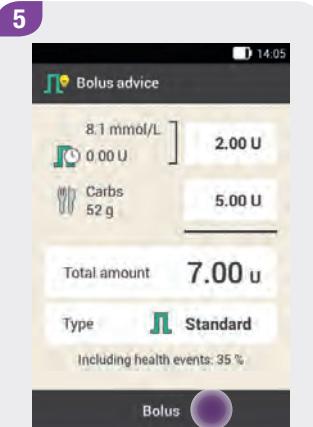
If you change the correction bolus or meal bolus first, the Total amount cannot be changed. The value, however, is updated accordingly (see figure).

If you change the Total amount first, the correction bolus and meal bolus cannot be changed.
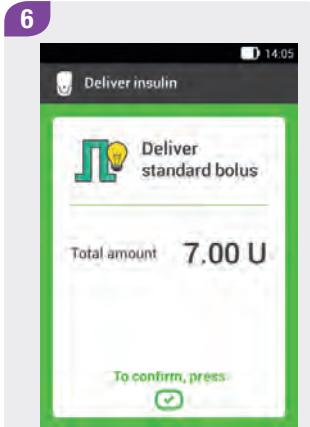
If you increase the Total amount, the Correction bolus is increased accordingly. If you decrease the Total amount, the meal bolus is decreased accordingly. Once the meal bolus reaches "0", the correction bolus is reduced accordingly.

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Confirming the bolus
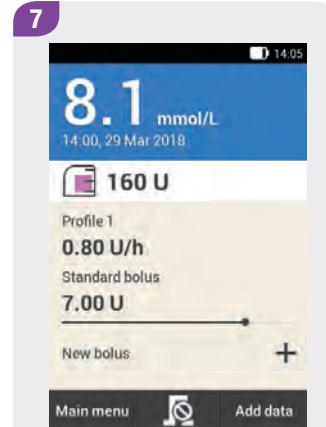
Note
Not every bolus type can be selected, depending on the setting. You cannot select an extended bolus, for example, if a correction bolus is to be delivered.
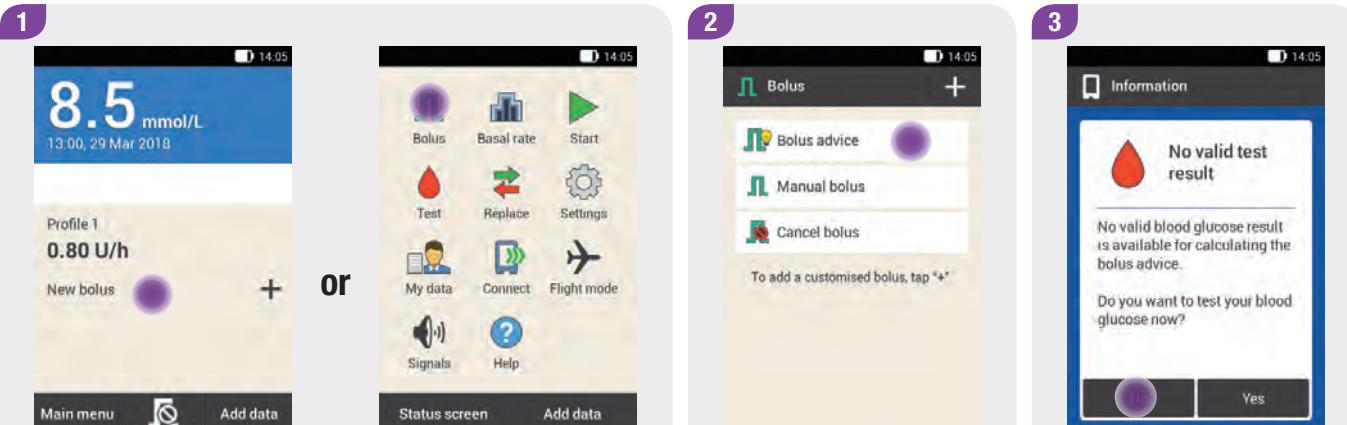
5

Tap Bolus.

6

To confirm this step and deliver the standard bolus, press the insulin button lit up in green ☑ below the diabetes manager screen.

7

The Status screen is displayed showing the current bolus information.

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Starting bolus advice without a BG test
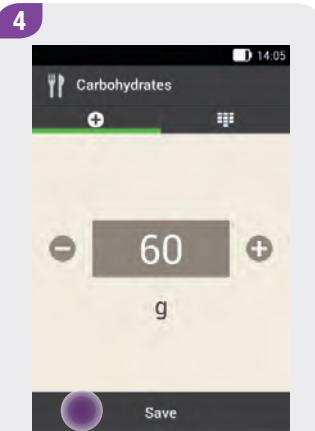
1

or

On the Status screen, tap New bolus or the ✚ symbol.

In the Main menu, tap the Bolus menu.

2

Tap Bolus advice.

3

Tap No to obtain bolus advice without performing a blood glucose test.

Entering carbohydrates   **Confirming the bolus**

Note

If no valid blood glucose result exists and you do not want to test your blood glucose, you can enter the carbohydrate amount you consumed. If you then tap Bolus on the Bolus advice display, a suggestion for a meal bolus is displayed.
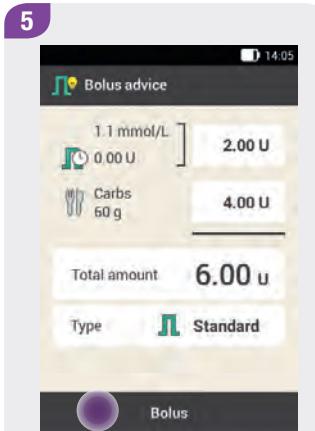
Enter a carbohydrate amount of up to 240 g.

4
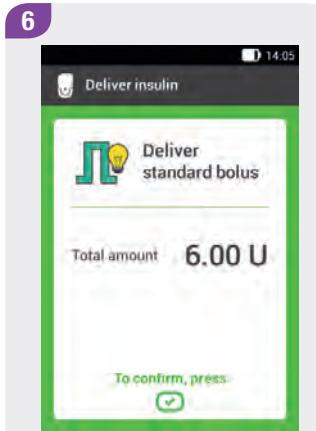
Enter the carbohydrates consumed.

To set the carbohydrates using the keyboard, tap ▦.

Tap Save.

5

Tap Bolus.

6
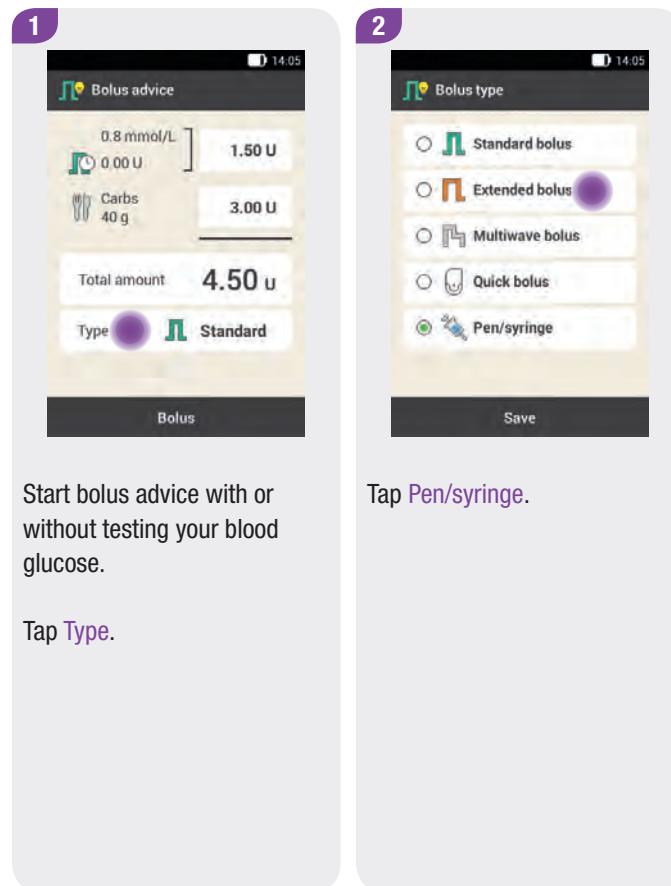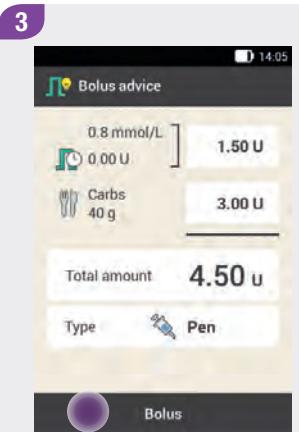
To confirm this step and deliver the bolus, press the insulin button lit up in green ☑ below the diabetes manager screen.

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7.3.1 Bolus Advice for Pen/Syringe
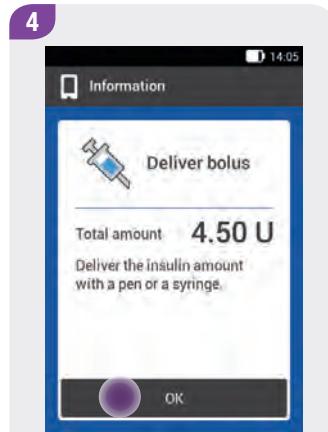
The bolus advice feature is also available in injection mode. Make sure that the insulin amount saved by the micropump system is identical to the amount you delivered.

Also consult the instructions for use for your insulin pen or syringe.

Start bolus advice with or without testing your blood glucose.

Tap Type.

Tap Pen/syringe.

3
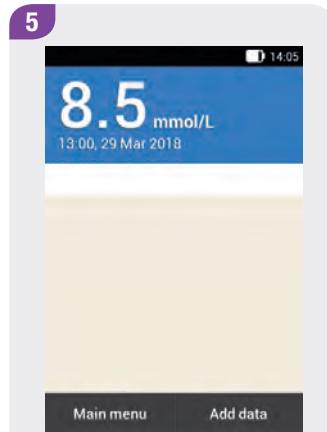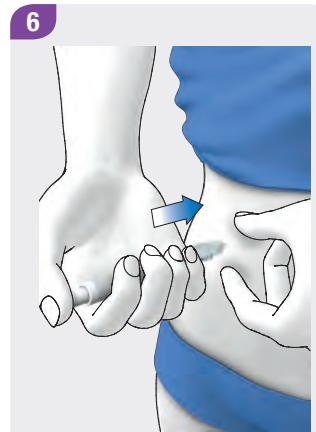
Once you have completed your entries, tap Bolus.

4

Tap OK.

5

The Status screen is displayed.

6

Deliver the insulin units you confirmed with a pen or syringe.

161
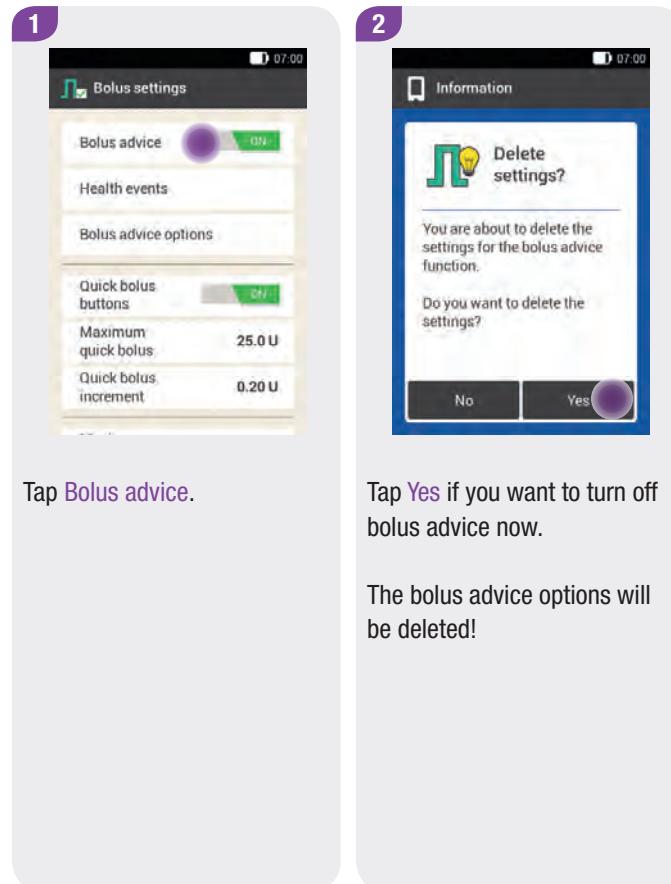
7.4   Turning Off Bolus Advice

Main menu > Settings > Bolus settings

This section describes how to turn off bolus advice.

> **Note**
> If you turn off bolus advice, all bolus advice options will be restored to the factory settings. If you want to use bolus advice again, you must set it up once again.

1

Tap Bolus advice.

2

Tap Yes if you want to turn off bolus advice now.

The bolus advice options will be deleted!

8 Basal Rate Profiles and Temporary Basal Rates

8.1 Basal Rate Profiles

In this chapter you will learn how you can adapt your basal insulin supply to your life situations using different basal rate profiles and Temporary Basal Rates (TBR).

The basal rate is a continuous delivery of insulin that covers the meal-independent insulin requirement. The size of the basal rate depends on your personal circumstances and the time of day.

A basal rate profile consists of a combination of basal rates that are defined according to your personal requirements and cover 24 hours a day. If your insulin needs differ on certain weekdays, on weekends, during illness or on holiday, you can create and use different basal rate profiles. You can set up a maximum of 5 basal rate profiles in the diabetes manager.

Basal rate profiles are defined through basal rate segments. Each basal rate segment needs a start time and an end time as well as an insulin amount, which is specified in insulin units per hour (U/h).

If you activate a Temporary Basal Rate of less than 100 % in addition to a low basal rate, this may be less than the minimum possible output amount of the micropump.

> **Note**
> If you activate a different basal rate profile, all ongoing insulin deliveries (basal rate, boluses) will be cancelled.

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8.2   Creating and Editing a Basal Rate Profile

A basal rate profile can be programmed, edited and deleted in different ways. Start by using one of the following two options:

1

or

On the Status screen, tap the area indicating the basal rate.

In the Main menu, tap the Basal rate menu.

2
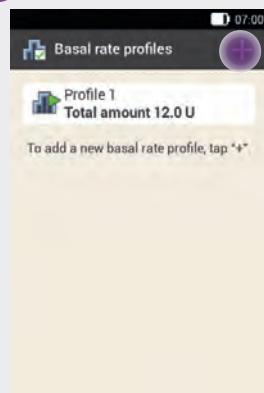
In the Basal rate menu, tap Basal rate profiles.

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### 8.2.1 Programming a Basal Rate Profile

Note
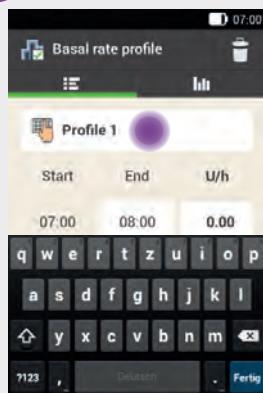
▶ Basal rate time blocks are not identical to or shared with the time blocks for bolus advice.

▶ You are only able to edit the end times of basal rate time blocks. The start time of each time block is identical to the end time of the previous time block.

▶ To add a new time block, set the end time of the last time block to the desired start time of the new time block.

▶ To delete a time block, set the end time of the time block to equal the start time of the same time block.

▶ When the maximum possible number of 5 basal rate profiles is reached, the Basal rate profiles display does not show the ＋ symbol.

1

Tap ＋ to add a basal rate profile.

2
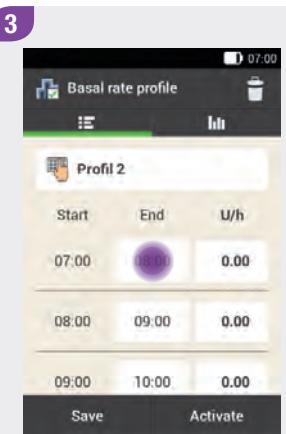
Tap the item with the 🖫 symbol.
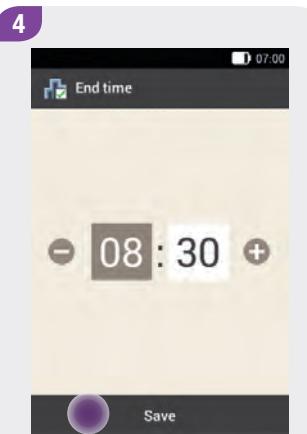
Enter the desired name (for example, Weekend) for the Basal rate profile. The name may have up to 12 characters.

Confirm your entry with ⬅.

3

Tap the first time block. Set the end time and the insulin amount.

4
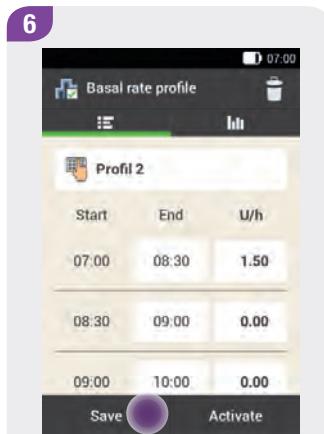
Use ⊖ and ⊕ to set the end time for the time block (for example, start at 07:00, end at 08:30).

Tap Save.

5

Use ⊖ and ⊕ to set the insulin amount for the time block (for example, 1.50 U/h).

Tap Save.

6

Repeat this process for all 24 time blocks.

Tap Save.

If you want to use the basal rate profile immediately, tap Activate.

## 8.2.2 Activating a Basal Rate Profile

7

The newly programmed basal rate profile is displayed in the overview of the existing basal rate profiles.

Check whether the total amount displayed corresponds to the total amount defined by your healthcare professional.

1

Tap the basal rate profile you want to activate (for example, Profile 2).

The currently active basal rate profile is indicated by the 🏫 symbol.

2

If required, scroll the screen upwards to be able to check all time blocks of the basal rate profile.

Once all settings are correct, tap Activate.
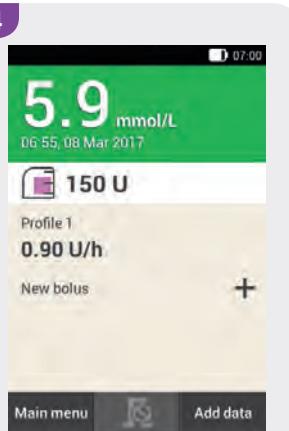
3

To confirm this step and activate the basal rate profile, press the insulin button lit up in green ☑ below the diabetes manager screen.

Note
Tapping ⤺ cancels the activation of the selected basal rate profile and takes you to the previous display. The basal rate profile that was previously active, remains active.

4

The activated basal rate profile is displayed on the Status screen.