

MINIMED™ 670G SYSTEM USER GUIDE



Medtronic

MINIMED™ 670G
SYSTEM USER GUIDE



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■ Before you begin



1

1 Before you begin

This user guide is designed to help you understand the operation of the MiniMed 670G system with SmartGuard technology, our latest advancement in diabetes management. In the MiniMed 670G system, SmartGuard technology can automatically adjust insulin delivery based on your sensor glucose (SG) values. The SmartGuard feature can be used in two modes: Manual Mode or Auto Mode. Work closely with your healthcare professional when starting insulin pump therapy.




In this user guide, the term Auto Mode refers to the automatic control of insulin delivery. For more information, see *About SmartGuard Auto Mode, on page 215*. When your pump is not operating in Auto Mode, the term Manual Mode is used to describe its functions.

Using this user guide

This user guide contains valuable information about using your new insulin pump. To help you find the information you need, you can use the table of contents at the beginning of the user guide and the index at the end of the user guide. There is also a glossary of terms, which starts on *page 327*.

The following table describes certain terms, conventions, and concepts used in this user guide.

Convention	What it means
Select	To activate a screen item, accept a value, or initiate an action.
Select and hold	To perform an action using your pump screen, press the Select button and hold until the action is complete.
Press	To push and then release a button.

Convention	What it means
Press and hold	To push and keep pressure on a button.
Bold text	To indicate screen items and buttons. For example, "Select Next to continue."
Italic text	To indicate a name or numeric value that appears differently on your pump screen.
X	To indicate a numeric value.
Note	 Note: A note provides helpful information.
Caution	 Caution: A caution notifies you of a potential hazard which, if not avoided, may result in minor or moderate injury or damage to the equipment.
WARNING	 WARNING: A warning notifies you of a potential hazard which, if not avoided, could result in death or serious injury. It may also describe potential serious adverse reactions and safety hazards.

The MiniMed 670G System User Guide includes instructions on how to set up devices on the MiniMed 670G insulin pump. For additional instructions not included in the MiniMed 670G System User Guide, please refer to the instructions for the device.

Device	For instructions see
Reservoir	Reservoir user guide
Infusion Sets	Infusion set user guide
Transmitter	Guardian Link (3) transmitter user guide
Sensor	Guardian Sensor (3) user guide

Device	For instructions see
Meter	Compatible Ascensia BG meter user guide

Acronyms and abbreviations

The following table defines acronyms and abbreviations used in this guide.

Acronyms and abbreviations	Definition
BG	blood glucose
CGM	continuous glucose monitoring
CT scan	computed tomography scan
DKA	diabetic ketoacidosis
EMC	electromagnetic compatibility
ESD	electrostatic discharge
FCC	Federal Communications Commission
FDA	Food and Drug Administration
GPS	global positioning system
ISIG	interstitial signal
IV	intravenous
NiMH	nickel-metal hydride
MRI	magnetic resonance imaging
RF	radio frequency
SG	sensor glucose
SN	serial number
TDD	total daily dose

Emergency kit

Keep an emergency kit with you at all times to make sure that you always have necessary supplies. Tell a family member, co-worker, or friend where you keep your emergency kit.

It is important that you test your blood glucose (BG) more frequently while you are traveling. The routine hassle of travel, including stress, changes in time zones, schedules and activity levels, meal times and types of food, can all affect your diabetes control. Be extra attentive to monitoring your BG frequently, and be prepared to respond if needed.

Your emergency kit should include these items:

- fast-acting glucose tablets
- BG monitoring supplies
- urine or blood ketone monitoring supplies
- extra MiniMed infusion set and MiniMed reservoir
- extra new AA lithium or alkaline batteries, or fully charged NiMH batteries
- insulin syringe and fast-acting insulin (with dosage instructions from your healthcare professional)
- adhesive dressing
- glucagon emergency kit



WARNING: Do not use the Bolus Wizard feature to calculate a bolus for a period of time after giving a manual injection of insulin by syringe or pen. Manual injections are not accounted for in the active insulin amount. Therefore, the Bolus Wizard feature could prompt you to deliver more insulin than needed. Too much insulin can cause hypoglycemia. Consult with your healthcare professional for how long you need to wait after a manual injection of insulin before you can rely on the active insulin calculation of the Bolus Wizard feature.



WARNING: Do not use Auto Mode for a period of time after giving a manual injection of insulin by syringe or pen. Manual injections are not accounted for in Auto Mode. Therefore, Auto Mode could deliver too much insulin. Too much insulin may cause hypoglycemia. Consult with your healthcare professional for how long you need to wait after a manual injection of insulin before you resume Auto Mode.

For details on pump safety, see *User safety*, on page 7.

User safety

Indications

MiniMed 670G System

The MiniMed 670G system is intended for continuous delivery of basal insulin (at user selectable rates) and administration of insulin boluses (in user selectable amounts) for the management of Type 1 diabetes mellitus in persons age seven and older requiring insulin as well as for the continuous monitoring and trending of glucose levels in the fluid under the skin. The MiniMed 670G system includes SmartGuard technology, which can be programmed to automatically adjust delivery of basal insulin based on continuous glucose monitoring (CGM), and can suspend delivery of insulin when the SG value falls below or is predicted to fall below predefined threshold values.

The Guardian Sensor (3) is not intended to be used directly for making therapy adjustments, but rather to provide an indication of when a fingerstick may be required. All therapy adjustments should be based on measurements obtained using a home glucose monitor and not on values provided by the Guardian Sensor (3).

Contraindications



WARNING: Medtronic performed an evaluation of the MiniMed 670G system and determined that it may not be safe for use in children under the age of 7 because of the way that the system is designed and the daily insulin requirements. Therefore this device should not be used in anyone under the age of 7 years old. This device should also not be used in patients who require less than a total daily insulin dose of 8 units per day because the device requires a minimum of 8 units per day to operate safely.

Pump therapy is not recommended for people whose vision or hearing does not allow recognition of pump signals and alarms.

Do not use the serter on products other than the Enlite sensor or Guardian Sensor (3). Medtronic cannot guarantee the safety or efficacy of this product if used with other products.

The reservoir is contraindicated for the infusion of blood or blood products.

Infusion sets are indicated for subcutaneous use only and not for intravenous (IV) infusion or the infusion of blood or blood products.

Insulin pump therapy is not recommended for those who are unwilling to perform at least four BG tests per day. As insulin pumps use rapid acting insulin only, BG testing is required to help identify rapid glycemic deterioration due to insulin infusion occlusion, infusion site problems, insulin stability issues, user error, or a combination of these.

SmartGuard Auto Mode cannot be used for people who require less than eight units or more than 250 units of total daily insulin dose per day.

Pump therapy is not recommended for people who are unwilling or unable to maintain contact with their healthcare professional.

Potential risks

Risks related to insulin pump infusion set

General risks related to insulin pump infusion set may include:

- Localized infection
- Skin irritation or redness
- Bruising
- Discomfort or pain
- Bleeding
- Irritation
- Rash
- Occlusions that can interrupt insulin delivery and lead to hyperglycemia or Diabetic Ketoacidosis

Patients should be instructed to follow the provided user guides for insertions and care of infusion sets. If an infusion site becomes irritated or inflamed, the infusion set should be removed and another placed in a new location.

Risks related to insulin administration and pump use

Due to the use of insulin, there is risk related to the infusion of insulin and the potential interruptions of insulin delivery. These general risks may include:

- Hypoglycemia
- Hyperglycemia
- Diabetic Ketoacidosis
- Seizure
- Coma
- Death

Risks related to sensor use

General risks related to sensor use may include:

- Skin irritation or other reactions
- Bruising
- Discomfort
- Redness
- Bleeding
- Pain
- Rash
- Infection
- Raised bump
- Appearance of a small "freckle-like" dot where needle was inserted
- Allergic reaction
- Fainting secondary to anxiety or fear of needle insertion
- Soreness or tenderness
- Swelling at insertion site
- Sensor fracture, breakage or damage
- Minimal blood splatter associated with sensor needle removal
- Residual redness associated with adhesive, tape, or both
- Scarring

Specific risks related to sensor use

Taking medications with paracetamol, including, but not limited to fever reducers or cold medicine, while wearing the sensor may falsely raise your SG readings. The level of inaccuracy depends on the amount of paracetamol active in your body and may be different for each person. Always use BG meter readings to verify your glucose level before making therapy decisions, including when you could have paracetamol active in your body. Avoid taking medications with paracetamol while in Auto Mode. If paracetamol is taken, use additional BG meter readings to verify your glucose levels, and consider exiting Auto Mode. Do not use these additional BG meter readings to calibrate the sensor. Always check the label of any medications to confirm whether paracetamol is an active ingredient.

Sensor placement and insertion has been studied in the belly (abdomen) only and is not approved for other sites.

Risks related to meter use

For the most current risks, see the user guide that came with your device.

Risks related to serter use

General risks with serter use may include skin infection around the area where the serter is used.

Risks related to the MiniMed 670G insulin pump system

General risks related to the MiniMed 670G insulin pump system may include:

- Hypoglycemia
- Hyperglycemia
- Diabetic Ketoacidosis
- Seizure
- Coma
- Death

General warnings

Pump

- Do not use the pump when a flammable anesthetic mixture with air, oxygen, or nitrous oxide is present. These environmental conditions can damage your pump and result in serious injury.
- Always use the fingertip for blood samples used for calibrating the sensor while in Auto Mode. The fingertip was the only site studied for use with Auto Mode. Do not use blood samples from the palm to calibrate the sensor as this site was not studied for use with Auto Mode and the performance of the system is not known.
- Do not make treatment decisions, such as determining your insulin dose for meals, using the MiniMed 670G system CGM values, as they are not intended to be used to make such treatment decisions. The MiniMed 670G system CGM does not replace a BG meter. Always use the values from your BG meter for treatment decisions. BG values may differ from SG values. Using the SG readings for treatment decisions could lead to high or low BG.
- Never rely on the pump beeps or vibrations alone to navigate through the pump screens or menus. Always check your pump screen as you navigate. The pump beeps and vibrations are intended to notify you of a condition that may require attention. Relying on the pump beeps or vibrations alone to navigate can result in incorrect menu selection or settings.
- Do not use your pump if the screen appears broken or unreadable. In some instances, impact to the pump can damage the screen while the buttons continue to function. If the screen is broken or unreadable, do not press any buttons. Remove the pump and begin using your backup insulin plan per the direction of your healthcare professional. If the pump is accidentally programmed while the screen is broken or unreadable, this could result in high or low BG levels. If your screen is damaged, contact your local representative to arrange for shipment of a replacement pump.
- Only use rapid acting U-100 insulin (Humalog, NovoLog, and NovoRapid) that has been prescribed by your healthcare professional for use with an infusion pump. Do not put any other drugs or medications inside your reservoir for use with this pump. Other drugs or medications are not intended for use with this pump. Use of other drugs or medications can cause serious injury.

- Always make sure the infusion set is disconnected from your body before you rewind your pump or fill the infusion set tubing. Never insert the reservoir into the pump while the tubing is connected to your body. Doing so could result in an accidental infusion of insulin.
- Do not insert the reservoir in the pump if you did not rewind your pump. Doing so could result in an accidental infusion of insulin.
- Do not use the MiniMed 670G insulin pump or additional system devices adjacent to other electrical equipment which may cause interference with the normal system operation. This includes mobile communication devices such as cell phones, GPS navigation systems, and any electrical equipment that has an output transmitter power greater than 1W. For more information about recommended separation distance guidelines between the insulin pump and common RF emitters, see *Guidance and manufacturer's declaration, on page 313*. The recommended separation distance between the insulin pump and common RF emitters is 0.3 meters (12 inches). Other electrical equipment that may compromise normal system operation has been contraindicated. For more information, see *Exposure to magnetic fields and radiation, on page 16*.
- Do not unscrew or retighten the tubing connector on the reservoir while the infusion set is connected to your body. Doing so could result in an accidental infusion of insulin.
- Do not use standard Luer sets with the MiniMed 670G insulin pump. Standard Luer sets are not compatible with the pump. The MiniMed reservoirs and the MiniMed infusion sets are specifically designed for use with the MiniMed 670G insulin pump.
- Do not change or modify the MiniMed reservoir or the MiniMed infusion set unless expressly approved by Medtronic Diabetes. Modifying the devices can cause serious injury, interfere with your ability to operate the device, and void your warranty.
- Do not rely on preset pump alarms or reminders alone to prompt you to check your BG. This can cause you to forget to check your BG. Set additional reminders on other devices, such as your cell phone.
- Do not change or modify the internal RF transmitter or antenna unless expressly approved by Medtronic Diabetes. Doing so could interfere with your ability to operate the equipment.

- Do not attempt to use the MiniLink transmitter (MMT-7703), the Guardian Link transmitter (MMT-7763), or the Guardian Connect transmitter (MMT-7821) with the MiniMed 670G insulin pump. These transmitters do not communicate with this insulin pump.
- If other devices that employ radio frequencies are in use, such as cell phones, cordless phones, and wireless networks, they may prevent communication between the transmitter and the insulin pump. This interference does not cause any incorrect data to be sent and does not cause any harm to your devices. Moving away from, or turning off, these other devices may enable communication. If you continue to experience RF interference, please contact your local representative.
- Special Precautions regarding Electromagnetic Compatibility (EMC): This body worn device is intended to be operated within a reasonable residential, domestic, public or work environment, where common levels of radiated “E” (V/m) or “H” fields (A/m) exist; such as cellular phones, Wi-Fi, Bluetooth wireless technology, electric can openers, microwave and induction ovens. This device generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the provided instructions, may cause harmful interference to radio communications.
- Portable and mobile RF communications equipment can affect Medical Electrical Equipment as well. If you encounter RF interference from a mobile or stationary RF transmitter, move away from the RF transmitter that is causing the interference.
- Do not rely on glucose sensor-enabled features when Airplane Mode is on because the pump does not receive sensor readings from the transmitter. Glucose sensor-enabled features include SmartGuard Suspend on low, SmartGuard Suspend before low, and SmartGuard Auto Mode. When using Airplane Mode, always rely on your BG values when making therapy decisions to avoid hypoglycemia or hyperglycemia.
- This device can generate, use, and radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If the device does cause interference to radio or television reception, you are encouraged to try to correct the interference by one or more of the following measures:

- Decrease the distance between the transmitter and the insulin pump to 1.8 meters (6 feet) or less.
- Decrease the distance between the meter and the insulin pump to 1.8 meters (6 feet) or less.
- Increase the separation between the transmitter and the device that is receiving/emitting interference.
- The safety of the MiniMed 670G system has not been studied in people with impaired kidney function. Please let your healthcare professional know if you have kidney disease so you and your healthcare professional can determine if the potential benefits of using the system outweigh the risks.
- Monitor for diabetic retinopathy. During the beginning of insulin pump therapy, rapid improvement in glucose control and reduction in A1c may result in worsening of existing diabetic retinopathy. Use of the MiniMed 670G system has been associated with rapid improvement in glucose control. Monitor for diabetic retinopathy with retinal eye examinations and if necessary adequate treatment must be performed by your healthcare professional before beginning a treatment with the MiniMed 670G insulin pump.
- The safety of the MiniMed 670G system has not been studied in pregnant women, people with type 2 diabetes, or in people using other anti-hyperglycemic therapies apart from insulin. Please let your healthcare professional know if any of these conditions apply to you so you and your healthcare professional can determine if the potential benefits of using the system outweigh the risks.
- The safety of using Auto Mode, Suspend before low, and Suspend on low in people who have no pump experience is not known. Auto Mode, Suspend before low, and Suspend on low should not be used if insulin pump settings have not been previously established. Insulin pump settings include basal rates, insulin to carb ratio, or insulin sensitivity factors. Always discuss with your healthcare professional before using Auto Mode, Suspend before low, or Suspend on low.

Reservoir and infusion sets

For the most current warnings, see the user guide that came with your device.

- Only use rapid acting U-100 insulin (Humalog, NovoLog, and NovoRapid) that has been prescribed by your healthcare professional for use with an infusion pump. Do not put any other drugs or medications inside your reservoir for use with this pump. Other drugs or medications are not intended for use with this pump, and can result in serious injury.
- If insulin, or any liquid, gets inside the tubing connector, it can temporarily block the vents that allow the pump to properly prime the infusion set. This may result in the delivery of too little or too much insulin, which can cause hyperglycemia or hypoglycemia. If this occurs, start over with a new reservoir and infusion set.
- If infusing insulin, and your BG level becomes unexplainably high, or an occlusion alarm occurs, check for clogs and leaks.
- Only use reservoir and infusion sets manufactured or distributed by Medtronic Diabetes. The pump has undergone extensive testing to confirm appropriate operation when used with compatible reservoirs and infusion sets manufactured or distributed by Medtronic Diabetes. We cannot guarantee appropriate operation if the pump is used with reservoirs or infusion sets offered by third parties. We are not responsible for any injury or malfunctioning of the pump that may occur in association with such use.
- Do not use the infusion set for more than three days. Insulin is not labeled for more than three days when it is used in an infusion set. If insulin is used in the infusion set for more than three days, it may increase the risk of set occlusions and cause problems with insulin absorption, which may lead to severe hyperglycemia and DKA.

Sensor

For the most current warnings, see the user guide that came with your device.

- Keep the sensor away from children. This product contains small parts and may pose a choking hazard.
- Do not attempt to remove the sensor yourself if you suspect that the sensor is broken. While there is no evidence of a sensor breaking in a patient's body, sensor breakage can result in serious injury. Contact your healthcare professional for assistance in removing the sensor.

- Taking medications with paracetamol while wearing the sensor may falsely raise your SG readings. The level of inaccuracy depends on the amount of paracetamol active in your body and may be different for each person.
- The sensor is designed to work with Guardian Link (3) transmitter only. It is not interchangeable with transmitters and recorders that are not compatible with the sensor. Connecting your sensor to a transmitter or recorder that is not approved for use with the sensor may cause damage to the components or inaccurate SG values.

Serter

For the most current warnings, see the user guide that came with your device.

- The one-press serter (MMT-7512) does not work the same as other Medtronic insertion devices. Failure to follow directions or using a different serter may result in improper insertion, pain, or injury.

Transmitter

For the most current warnings, see the user guide that came with your device.

Do not allow children to put small parts in their mouth. This product poses a choking hazard for young children.

Meter

For the most current warnings, see the user guide that came with your device.

Always use the fingertip for blood samples used for calibrating the sensor while in Auto Mode. The fingertip was the only site studied for use with Auto Mode. Do not use blood samples from the palm to calibrate the sensor as this site was not studied for use with Auto Mode and the performance of the system is not known.

Exposure to magnetic fields and radiation

- Do not expose your pump to MRI equipment, diathermy devices, or other devices that generate strong magnetic fields (for example, x-ray, CT scan, or other types of radiation). The strong magnetic fields can cause the devices to malfunction, and result in serious injury. If your pump is exposed to a strong magnetic field, discontinue use and contact your local representative for further assistance.

Magnetic fields, and direct contact with magnets, may affect the accurate functioning of your system, which may lead to health risks such as hypoglycemia or hyperglycemia.

- Always remove your pump, sensor, transmitter, and meter before entering a room that has x-ray, MRI, diathermy, or CT scan equipment. The magnetic fields and radiation in the immediate vicinity of this equipment can make your devices nonfunctional or damage the part of the pump that regulates insulin delivery, possibly resulting in over delivery and severe hypoglycemia.
- Do not expose your pump to a magnet, such as pump cases that have a magnetic clasp. Exposure to a magnet may interfere with the motor inside the pump. Damage to the motor can cause the device to malfunction, and result in serious injury.
- Always carry the Medical emergency card provided with your device when you are traveling. The Medical emergency card provides critical information about airport security systems, and using your pump on an airplane, that can help you and others. Not following the guidance on the Medical emergency card could result in serious injury.

General precautions

Always test your BG levels at least four times per day. Although the pump has multiple safety alarms, it cannot notify you if the infusion set is leaking, or the insulin has lost its potency. If your BG is out of range, check the pump and the infusion set to ensure that the necessary amount of insulin is being delivered.

Waterproof capabilities

- At the time of manufacture and when the reservoir and tubing are properly inserted, your pump is waterproof. It is protected against the effects of being underwater to a depth of up to 3.6 meters (12 feet) for up to 24 hours.
- If the pump is dropped, hit against a hard object, or otherwise damaged, the waterproof characteristics of the outer casing of the pump may be compromised. If your pump has been dropped or you suspect your pump is damaged, carefully inspect your pump to ensure there are no cracks before exposing your pump to water.
- This waterproof capability rating applies only to your pump.

- If you believe that water has entered your pump or you observe any other possible pump malfunction, check your BG, and treat high BG as necessary, using an alternative source of insulin. Contact your local representative for further assistance. Always contact your healthcare professional if you experience excessively high or low BG levels or if you have any questions about your care.

Electrostatic discharge

- Although the MiniMed 670G insulin pump is designed to be unaffected by typical levels of electrostatic discharge (ESD), very high levels of ESD can result in a reset of the pump's software and a pump error alarm. After clearing the alarm, verify that your pump is set to the correct date and time, and that all other settings are programmed to the desired values. The software reset could erase your previously programmed settings. Following a pump reset, Auto Mode will be unavailable for five hours to allow active insulin to be updated.
- For more information on pump alarms, see *Pump alarms, alerts, and messages, on page 240*. For more information on re-entering your pump settings, see *My pump is asking me to enter my settings, on page 282*. If you are unable to re-enter your pump settings, or otherwise believe there is a problem with your pump, contact your local representative.

Extreme temperatures

Exposure to extreme temperatures can damage your device, which can adversely affect safety and effectiveness of your device. Avoid the following conditions:

1. Avoid exposing your pump to temperatures above 40°C (104°F) or below 5°C (41°F). This may damage your device.
2. Insulin solutions freeze near 0°C (32°F) and degrade at temperatures higher than 37°C (98.6°F). If you are outside in cold weather, wear your pump close to your body and cover it with warm clothing. If you are in a warm environment, take measures to keep your pump and insulin cool.
3. Do not steam, heat, sterilize, or autoclave your pump. Exposure to high temperatures may damage your device.

Lotion, sunscreen, and insect repellent

Some skin care products, such as lotion, sunscreen, and insect repellents, can cause damage to plastics, which is a material used in your pump case. After using such products, be sure to wash your hands prior to handling your pump. If you get any skin care products or insect repellents on your pump, wipe them off as soon as possible with a damp cloth and mild soap. For instructions on cleaning your pump, see *Cleaning your pump*, on page 291.

Infusion sets and sites

Always refer to the infusion set user guide for all precautions, warnings, and instructions relating to the infusion set and your insertion sites. Not referring to the infusion set user guide can result in minor injury or damage to the infusion set.

Sensor

Always refer to the sensor user guide for all precautions, warnings, and instructions relating to the sensor. Not referring to the sensor user guide can result in minor injury or damage to the sensor.

Transmitter

Always refer to the transmitter user guide for all precautions, warnings, and instructions relating to the transmitter. Not referring to the transmitter user guide can result in minor injury or damage to the transmitter.

Meter

Always refer to the meter user guide for all precautions, warnings, and instructions relating to compatible meters. Not referring to the meter user guide can result in minor injury or damage to the meter.

Adverse reactions

Always refer to the sensor user guide for adverse reactions related to the sensor. Not referring to the sensor user guide can result in minor injury or damage to the sensor.

Keeping track of your system information

The serial number (SN) is located on the back of your pump. If you are using the pump clip, you need to remove the pump clip to view the serial number. It also displays in your Pump status screen. For more details on the status screens, see *Status screens, on page 42*. You will need your pump serial number if you call your local representative. For future reference, enter the serial number of your pump and the purchase date in the following table:

Pump serial number and purchase date
Serial Number:
Purchase Date:

Insulin guidelines



WARNING: Never start on insulin until directed by your healthcare professional. Do not use insulin in your pump while you are practicing by either inserting an insulin filled reservoir into your pump, or connecting an insulin filled infusion set to your body. Doing so could result in an infusion of insulin, not prescribed by your healthcare professional, which may result in low or high BG.

The MiniMed 670G insulin pump has been studied with and is intended for use with the following rapid acting U-100 insulins:

- U-100 NovoLog
- U-100 Humalog
- U-100 NovoRapid

The use of any other insulin in the MiniMed 670G insulin pump has not been tested and may not be appropriate for use with this device.



WARNING: Only use rapid acting U-100 insulin (Humalog, NovoLog, and NovoRapid) in the MiniMed 670G insulin pump. Use of the incorrect insulin, or insulin with a greater or lesser concentration, may result in over delivery or under delivery of insulin. Over delivery or under delivery of insulin may result in high or low BG levels. High BG levels may lead to Diabetic Ketoacidosis. Low BG levels may lead to coma or death. If you are unsure about whether you can use a specific insulin with this pump, please contact your healthcare professional.

Consumables

The pump uses disposable (single-use) MiniMed reservoirs and infusion sets for insulin delivery.



WARNING: Only use reservoir and infusion sets manufactured or distributed by Medtronic Diabetes. The pump has undergone extensive testing to confirm appropriate operation when used with compatible reservoirs and infusion sets manufactured or distributed by Medtronic Diabetes. We cannot guarantee appropriate operation if the pump is used with reservoirs or infusion sets offered by third parties and therefore we are not responsible for any injury or malfunctioning of the pump that may occur in association with such use.

- **Reservoirs**—Use the MiniMed reservoir MMT-332A, 3.0 mL (300-unit).
- **Infusion sets**—Medtronic Diabetes provides a variety of infusion sets to fit your needs. Contact your healthcare professional for help in choosing an infusion set. Change your infusion set every two to three days per your infusion set manufacturer's instructions. Compatible infusion sets include: MMT-386, MMT-387, MMT-394, MMT-396, MMT-397, MMT-398, MMT-399, MMT-368, MMT-369, MMT-370, MMT-377, MMT-378, MMT-381, MMT-382, MMT-383, MMT-384, MMT-862, MMT-864, MMT-866, MMT-874, MMT-876, MMT-884, MMT-886 MMT-921, MMT-923, MMT-925, MMT-941, MMT-943, MMT-945, MMT-961, MMT-963, MMT-965, MMT-975, MMT-905, MMT-906, MMT-905T, MMT-211, MMT-212, MMT-213, MMT-231, MMT-232, MMT-233,

MMT-242, MMT-243, MMT-244, MMT-247, MMT-248, MMT-242T, MMT-247T. The MMT numbers may change if other compatible infusion sets become available.

Optional MiniMed 670G system devices

- **Compatible Ascensia BG meter (not available in all countries)**—the MiniMed 670G system comes with a compatible meter. Depending on your country, compatible Ascensia BG meters include the CONTOUR NEXT LINK 2.4 and CONTOUR PLUS LINK 2.4 meters. The MMT numbers are MMT-1151 and MMT-1351, which may change if other compatible Ascensia meters become available. The meter wirelessly connects to your pump, allowing you to send BG meter readings to your pump. The Remote Bolus feature allows you to use your meter to start a bolus on your pump. You can also use this meter to upload system data to your diabetes management software using the USB port on your computer. For more details, see your meter user guide.
- **Guardian Link (3) transmitter (MMT-7811)**—used with your pump for CGM. A device that connects to a glucose sensor. The transmitter collects data measured by the sensor and wirelessly sends this data to monitoring devices.
- **Guardian Sensor (3) (MMT-7020)**—used with your pump for CGM. The sensor is a small part of the CGM system that you insert just below your skin to measure glucose levels in your interstitial fluid. The sensor is a disposable (single-use) device. Only use the Guardian Sensor (3) (MMT-7020) glucose sensor with the transmitter. Do not use any other sensor. Other sensors are not intended for use with the transmitter, and will damage the transmitter and the sensor.
- **CareLink USB (MMT-7306)**—used to upload system data to the diabetes management software using a USB port on your computer.

Accessories

The following accessories may be used with the MiniMed 670G system.

- **Pump clip**—used to wear the pump on your belt. Also, you can use the tip of the pump clip to open the battery compartment on your pump. Refer to your pump clip user guide for instructions on using your pump clip.

- **Activity guard (ACC-1520)**—used if you are active in sports, or if a child is wearing the pump. Using the activity guard prevents the reservoir from being rotated or removed from the pump.
- **Skins**—used to personalize the look of your pump. Skins are decorative overlays. Your pump is designed to have skins attached to the back of the pump and the front of the pump clip. Skins also provide additional protection against surface scratches.

Ordering supplies and accessories

To order supplies or accessories, contact your local representative.

2



First steps

2

First steps

This chapter gives you an overview of your pump so you can become familiar with the buttons and screens. Read this entire chapter to understand the basic features before using your pump to deliver insulin.

Your pump

The following illustration shows the different parts of your pump. The reservoir, with the tubing connector attached, is inserted into the reservoir compartment.



Using the buttons



Caution: Do not use sharp objects to press the buttons on your pump. Using sharp objects can damage your pump.

The following picture shows the buttons and the notification light on your pump. The notification light flashes when your pump has an alarm or alert. The notification light is not visible unless flashing.




The following table describes how to use the buttons.

To do this:

Display the menu.

Follow these steps:

From the Home screen, press the  button.

To do this:	Follow these steps:
Scroll up or down a menu or list, or increase or decrease the value of a setting.	Press the \wedge or \vee buttons.
Select an item on a screen or menu.	Press the \wedge , \vee , \langle , or \rangle buttons to select the desired item, and then press the \odot button.
Enter a value into a field.	Press the \wedge , \vee , \langle , or \rangle buttons to select the desired field, and then press the \odot button. The field you select flashes. Press the \wedge or \vee buttons to enter the desired value, and then press the \odot button.
Return to the previous screen.	Press the \blacktriangleleft button.
Display the Home screen.	Press and hold the \blacktriangleleft button to return to the Home screen.
Put the pump in sleep mode.	Press and hold the \square button for about two seconds.
Wake up the pump.	Press any button.

About batteries

The pump requires one new AA (1.5 V) battery. For best results, use a new AA lithium (FR6) battery. The pump also accepts an AA alkaline (LR6) or a fully charged AA NiMH (HR6) nickel-metal hydride rechargeable battery.



Caution: Do not use a carbon zinc battery in your pump. Carbon zinc batteries are not compatible with the pump. Use of carbon zinc batteries can cause the pump to report inaccurate battery levels.

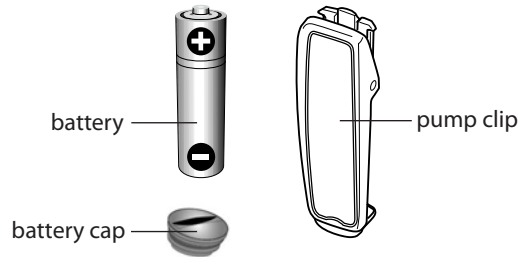
Carbon zinc batteries have a short shelf life, they deteriorate rapidly in cold weather, and oxidation of the zinc wall eventually causes the contents to leak out. They will not perform as well as other battery types to power the pump and may potentially damage your pump.



Note: Do not use cold batteries because the battery life may incorrectly appear as low. Allow cold batteries to reach room temperature before you insert them in your pump.

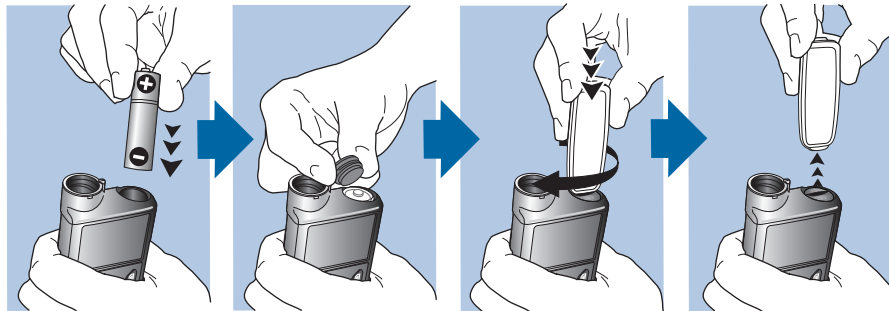
Inserting the battery

Your pump does not ship with the battery cap on. The battery cap is located in the pump box, separate from the pump.



To insert the battery:

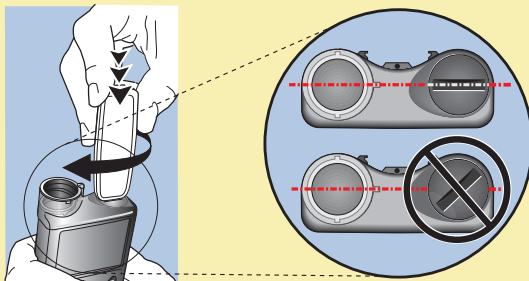
1. Insert the new or fully charged AA battery, making sure to insert the negative end (-) first. After you insert the battery, the positive end (+) is visible.



2. Use the pump clip to tighten the battery cap.



Caution: Do not overtighten or undertighten the battery cap. Overtightening the battery cap can cause damage to your pump case. Undertightening the battery cap will prevent the pump from recognizing the new battery. Turn the battery cap clockwise until the cap is aligned horizontally with the pump case, as shown in the following example.



Note: If this is the first time you have inserted a battery in your pump, the Startup Wizard begins. For more information about the Startup Wizard, see *Entering your startup settings*, on page 32. If this is not the first time you have inserted a battery into your pump, the Home screen appears and the pump resumes your basal delivery.

Removing the battery



Caution: Do not remove the battery unless you are inserting a new one, or if you are storing your pump. Your pump cannot deliver insulin while the battery is removed. After removing an old battery, be sure to replace it with a new battery within 10 minutes to clear the Insert battery alarm and avoid a Power loss alarm. If power loss occurs, you must re-enter your time and date settings.

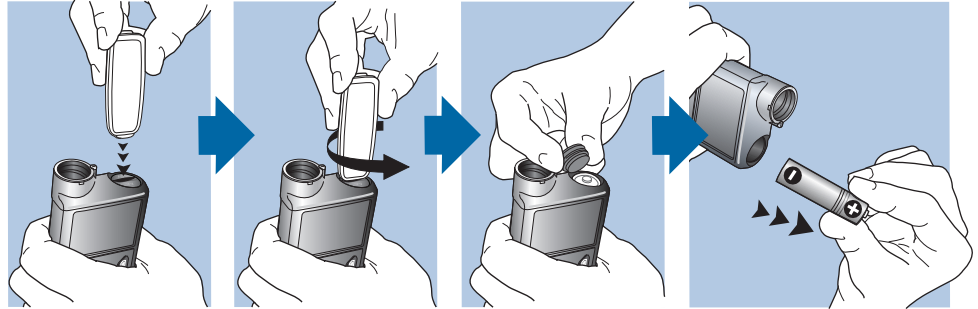
To remove the battery:

1. Before removing a battery from your pump, clear any active alarms or alerts.
2. Use the pump clip to loosen and remove the battery cap.



Note: Use your pump clip to remove and retighten the battery cap. If the pump clip is unavailable, you may use a coin.

3. Remove the battery.



4. Dispose of old batteries according to local regulations for battery disposal (nonincineration), or contact your healthcare professional for disposal information.
5. After removing your battery, wait until the Insert Battery screen appears before inserting a new battery.

If you are removing the battery to place your pump in storage, see *Storing your pump*, on page 292 for more information.

Getting to know your pump

This section shows you how to navigate through the screens and menus on your pump. It also helps you learn how to enter information and view the status of your pump.

Entering your startup settings

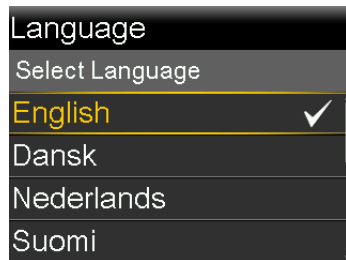
Your pump has a Startup Wizard that begins when you insert your battery for the first time. The Startup Wizard guides you through setting the language, the time format, the current time, the current date, and rewinding your pump.



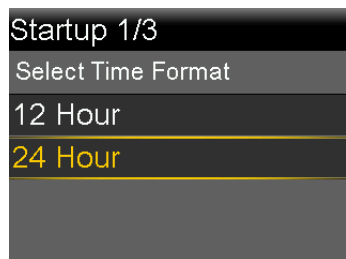
Note: Use this procedure when you are entering your settings for the first time. If this is not the first time you are entering your pump settings, and your pump is asking you to re-enter your settings, see *My pump is asking me to enter my settings, on page 282*.

To use the Startup Wizard:

1. The Startup Wizard begins after the Welcome screen appears. When the Select Language screen appears, select your language.



2. When the Select Time Format screen appears, select a **12 Hour** or a **24 Hour** time format.



3. When the Enter Time screen appears, adjust the setting to the current time. If you are using a 12-hour clock, be sure to specify AM or PM. Select **Next**.



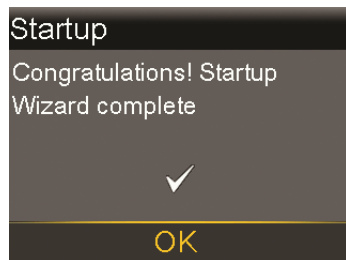
- When the Enter Date screen appears, adjust the **Year**, **Month**, and **Day** to the current date. Select **Next**.



- A "Rewinding" message appears. Rewinding returns the piston in the reservoir compartment to its starting position. This may take several seconds.




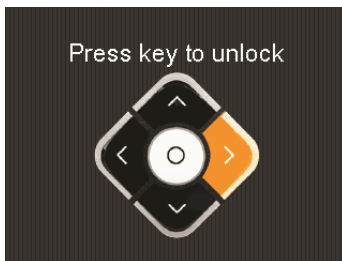
- When rewinding is complete, a message appears confirming the startup is complete. Select **OK** to go to the Home screen.




To become familiar with the buttons and screens on your pump, see the following sections in this chapter.

Unlocking your pump

Your pump automatically locks when entering sleep mode. When you wake up your pump from sleep mode, you must unlock your pump before navigating to the menu. When you press select , you will be shown a screen asking you to unlock your pump. Press the highlighted button to unlock your pump.



The pump will take you to your selected screen after you press the correct button. If you press an incorrect button, the screen prompts you to try again. If you press the  button, you will be taken back to the Home screen.

After your pump is unlocked, it will remain unlocked until you re-enter sleep mode. For information about the different power modes, or to put your pump to sleep, see *Power modes*, on page 50.

Home screen

The Home screen appears by default after you change the battery, when you wake the pump from sleep mode, and when you are not actively using another screen.

To see what your Home screen looks like if you use a sensor, see *Home screen with CGM in Manual Mode*, on page 167.

To see what your Home screen looks like when you are in Auto Mode, see *Home screen with SmartGuard Auto Mode*, on page 221.








The following items appear on your Home screen:

















Item	Description
Status icons	Displays icons that show a quick status of your pump system. For more information, see <i>Status icons</i> , on page 36.
Current time	Displays the current time of day. For details on setting the time, see <i>Time and date</i> , on page 162.







Item	Description
BG meter readings	<p>If you have taken a BG meter reading using your compatible Ascensia BG meter or manually entered a BG meter reading within the last 12 minutes, the BG meter reading appears on the Home screen.</p> <p>You can enter your BG meter reading manually using the Enter BG feature, Event Markers feature, or when you use the Bolus Wizard feature to deliver a bolus. For details on using the Bolus Wizard feature, see <i>Bolus Wizard feature, on page 82</i>.</p>
Active Insulin	<p>Displays the amount of bolus insulin the pump estimates is still working to lower your BG levels. For more details on active insulin, see <i>About active insulin, on page 88</i>.</p>











Status icons








The status icons appear at the top of the Home screen to provide a way for you to quickly check the status of your system. The status icons are described in the following table. For information on viewing detailed status screens, see *Status screens, on page 42*.

Icon	Icon name	What it means
	Battery	<p>The color and fill level of the battery icon indicate the charge level of your pump battery.</p> <p>When a new battery is inserted and your battery is full, the icon is solid green  indicating that approximately 100% of your battery capacity remains. In most cases, you can expect at least seven days of use remaining.</p> <p>As the battery life is used, the icon changes from solid green in the following order . This indicates that the charge level of your battery is decreasing from 100% to 0%. The yellow icon indicates that the battery will soon need to be replaced. It is recommended that you have a new or fully charged battery available. The remaining charge level of your battery varies based on the battery type and how you use the pump.</p> <p>When your battery is low, the icon has a single red bar  indicating that under typical use you have up to 10 hours of use remaining.</p> <p>When your battery needs to be replaced immediately, the icon is solid black with a red outline , indicating you have less than 30 minutes of use remaining.</p>


Icon	Icon name	What it means
	Reservoir	<p>Shows the approximate amount of insulin left in your reservoir. The color and the fill level of the icon indicate the status. The reservoir icon is representative of the Medtronic reservoir MMT-332A, 3.0 mL (300-unit). When your reservoir is full, the icon is solid green. As your insulin is used, the icon becomes emptier, and the color of the icon changes as shown in the following example. For more information about your reservoir, see <i>Reservoir and infusion set on Setting up the reservoir and infusion set, on page 109.</i></p> <ul style="list-style-type: none"> <li>•  Approximately 85–100% of the reservoir remains. <li>•  Approximately 71–84% of the reservoir remains. <li>•  Approximately 57–70% of the reservoir remains. <li>•  Approximately 43–56% of the reservoir remains. <li>•  Approximately 29–42% of the reservoir remains. <li>•  Approximately 15–28% of the reservoir remains. <li>•  Approximately 1–14% of the reservoir remains. <li>•  The reservoir remaining amount is unknown.
	Audio	<p>The audio mode you are using: vibrate only , audio only , or vibrate and audio .</p> <p>When the Alert Silence feature is turned on, the audio mode icons appear as follows: vibrate only , audio only , or vibrate and audio .</p>

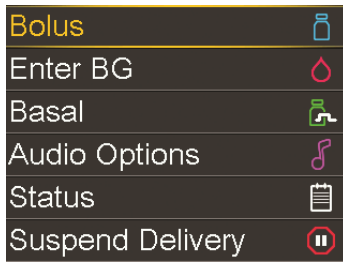
Icon	Icon name	What it means
	Connection	<p>The connection icon appears green  when the Sensor feature is on and your transmitter is successfully communicating with your pump. The connection icon appears with a red X  when the Sensor feature is turned on, but the transmitter is not connected or communication with your pump has been lost. For more information about the Sensor feature, see <i>Understanding CGM, on page 165</i>.</p>
	Airplane Mode	<p>The Airplane Mode icon  appears in place of the Connection icon if Airplane Mode is turned on. When Airplane Mode is turned on, the pump cannot receive wireless communication from other devices. For more information about using Airplane Mode, see <i>Airplane Mode, on page 151</i>.</p>
	Temporary Network Connection	<p>Replaces Connection icon while you are temporarily connected to a remote upload device.</p>

Icon	Icon name	What it means
	Calibration	<p>The approximate time left until your next sensor calibration is due. Appears only when the Sensor feature is turned on. The color and the circle around the icon indicate the status. When your sensor is fully calibrated, the icon has a solid green circle around it. As the time for your next sensor calibration approaches, the green circle around the icon becomes smaller, and the color of the icon changes as shown in the following example. For more information about calibrating your sensor, see <i>Calibrating your sensor</i>, on page 200.</p> <ul style="list-style-type: none"> •  Time to your next sensor calibration is more than 10 hours. •  Time to your next sensor calibration is 8 to 10 hours. •  Time to your next sensor calibration is 6 to 8 hours. •  Time to your next sensor calibration is 4 to 6 hours. •  Time to your next sensor calibration is 2 to 4 hours. •  Time to your next sensor calibration is less than 2 hours. •  Sensor calibration is required now. •  Time to your next sensor calibration is unavailable. •  Sensor is not ready for a calibration. This occurs when a new sensor is connected or within 15 minutes of a Calibration not accepted alert.








Icon	Icon name	What it means
	Sensor Life	<p>The number in the center of the Sensor Life icon indicates the number of days remaining in the life of your sensor. The icon appears only when the Sensor feature is turned on. When you insert a new sensor, the icon color is solid green. When one day is remaining in the life of your sensor, the icon color turns red.</p> <p></p> <p>If the number of days remaining in the life of your sensor is unavailable, the Sensor Life icon appears with three dots .</p>
	Auto Mode Readiness	<p>The Auto Mode Readiness icon indicates whether your pump is ready to enter Auto Mode. The icon appears with a loading symbol  when the pump is updating a condition that requires you to wait. The icon appears with a question mark  when the pump requires an action from you to enter Auto Mode. For more information about Auto Mode Readiness, see <i>SmartGuard Auto Mode Readiness, on page 219</i>.</p>
	Block Mode	<p>Indicates that the pump is in Block Mode, and that certain functions are restricted. Caregivers, such as parents of a young child, can use Block Mode to restrict access to critical pump settings. For more information about Block Mode, see <i>Block Mode, on page 154</i>.</p>

Using the menu

The menu is where you access the various features and functions of your system. To display the menu, press  from the Home screen.



The following options are available from the menu:

Select this	Menu Indicators	To do this
Bolus		Set up and deliver your bolus insulin delivery.
Enter BG		Enter your BG value.
Basal		Set up your basal insulin delivery.
Audio Options		Set your audio, vibrate, and volume options for the notifications you receive.
Status		View information about your pump, any notifications you have received, your current settings, and optional sensor.
Suspend Delivery		Stop your current basal and bolus insulin delivery.
Options		Set your SmartGuard settings, reminders, delivery settings, enter event markers, view your history, and access the Utilities menu.

Status screens

The Status screens provide information about your pump, any notifications you have received, your current settings, and optional sensor. The Status screens are described in the following table:

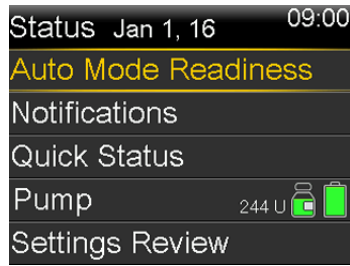
Status screen	Displays this information
Auto Mode Readiness	A list of conditions your pump has to meet before it can enter Auto Mode. For more information on Auto Mode, see the <i>SmartGuard Auto Mode</i> chapter.

Status screen	Displays this information
Notifications	A list of alarms, alerts, and reminders that have occurred over the past 24 hours. You can display further details about a particular alarm, alert, or reminder by selecting it from the list. For more information on alarms and alerts, see the <i>Alarms, alerts, and messages</i> chapter.
Quick Status	A summary of status information, including your last bolus, last BG meter reading, current basal rate, reservoir level, and pump battery charge level. If you are using a sensor, this screen also displays the time that your next calibration is due and the status of the SmartGuard features.
Pump	Provides a detailed view of your pump status, including whether your pump is in a specific mode, the reservoir status, battery status, the pump serial number, and other details about your pump.
Sensor	The Sensor status screen is available only if your sensor feature is turned on. The Sensor status screen indicates if any alert silence options are turned on. It also shows the status of your calibrations, your sensor life, ISIG, transmitter battery, serial number and version number of your transmitter, and the status of the SmartGuard features.
Settings Review	The Settings Review screen provides a list of all your pump settings. The settings are organized by where they appear in the menu for your pump. For example, your bolus settings appear under the Insulin Settings section, and your brightness level setting appears under the Utilities section.

Viewing the Status screens

1. From the Home screen, press  and select **Status** from the menu.

The Status screen appears. The Reservoir icon shows the approximate amount of insulin left in your reservoir. For more information, see *Status icons, on page 36*.




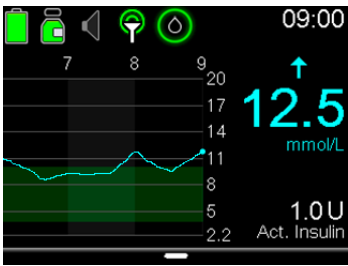
2. Press \wedge or \vee to move up or down the screen. Select the status screen that you want to view. Refer to the table at the beginning of this section for a description of the different status screens.

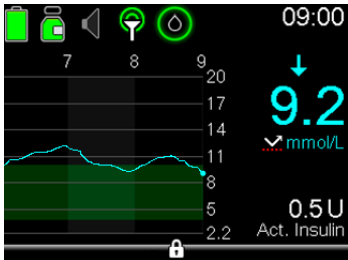
Modes

The MiniMed 670G insulin pump includes SmartGuard technology that automatically adjusts insulin delivery based on SG values. These glucose sensor-enabled features include SmartGuard Suspend on low, SmartGuard Suspend before low, and SmartGuard Auto Mode. The following tables show the differences between each mode and the delivery and suspend options available.


Manual Mode


Mode CGM options	Bolus delivery options	Basal delivery	Suspend options
<p>Pump without CGM</p> 	<ul style="list-style-type: none"> • Bolus Wizard feature, which uses programmed carb ratio, insulin sensitivity, BG target, and active insulin time settings. • Normal bolus • Square Wave bolus • Dual Wave bolus • Remote bolus • Preset bolus • Easy Bolus feature <p>For more information, see the <i>Bolus</i> chapter.</p>	<ul style="list-style-type: none"> • Programmed basal delivery settings—For more information, see <i>Basal insulin settings</i>, on page 56. • Temporary basal rates—For more information, see <i>Temporary basal rates</i>, on page 64. • Preset temporary basal rates—For more information, see <i>Preset Temp basal rates</i>, on page 66. 	<p>Manual suspend—For more information, see <i>Stopping and resuming your insulin delivery</i>, on page 70.</p>

Mode CGM options	Bolus delivery options	Basal delivery	Suspend options
<p>Pump with CGM</p>  <p>The screenshot shows a mobile application interface for a pump with CGM. At the top, there are icons for battery, pump status, and a green circle with a white dot. Below these are the numbers 7, 8, and 9. The main display features a line graph showing glucose levels over time. A large blue number '12.5' with an upward arrow indicates the current glucose level in mmol/L. Below the graph, it shows '1.0U Act. Insulin' and '2.2'.</p>	<ul style="list-style-type: none"> • Bolus Wizard feature, which uses programmed carb ratio, insulin sensitivity, BG target, and active insulin time settings. • Normal bolus • Square Wave bolus • Dual Wave bolus • Remote bolus • Preset bolus • Easy Bolus feature <p>For more information, see the <i>Bolus</i> chapter.</p>	<ul style="list-style-type: none"> • Programmed basal delivery settings—For more information, see <i>Basal insulin settings</i>, on page 56. • Temporary basal rates—For more information, see <i>Temporary basal rates</i>, on page 64. • Preset temporary basal rates—For more information, see <i>Preset Temp basal rates</i>, on page 66. 	<p>Manual suspend—For more information, see <i>Stopping and resuming your insulin delivery</i>, on page 70.</p>

Mode CGM options	Bolus delivery options	Basal delivery	Suspend options
<p>Pump with CGM and with SmartGuard features enabled: Suspend before low or Suspend on low</p> 	<ul style="list-style-type: none"> • Bolus Wizard feature, which uses programmed carb ratio, insulin sensitivity, BG target, and active insulin time settings. • Normal bolus • Square Wave bolus • Dual Wave bolus • Remote bolus • Preset bolus • Easy Bolus feature <p>For more information, see the <i>Bolus</i> chapter.</p>	<ul style="list-style-type: none"> • Programmed basal delivery settings—For more information, see <i>Basal insulin settings, on page 56.</i> • Temporary basal rates—For more information, see <i>Temporary basal rates, on page 64.</i> • Preset temporary basal rates—For more information, see <i>Preset Temp basal rates, on page 66.</i> 	<ul style="list-style-type: none"> • Manual suspend—For more information, see <i>Stopping and resuming your insulin delivery, on page 70.</i> • SmartGuard Suspend before low—For more information, see <i>SmartGuard Suspend before low, on page 174.</i> • SmartGuard Suspend on low—For more information, see <i>SmartGuard Suspend on low, on page 178.</i>

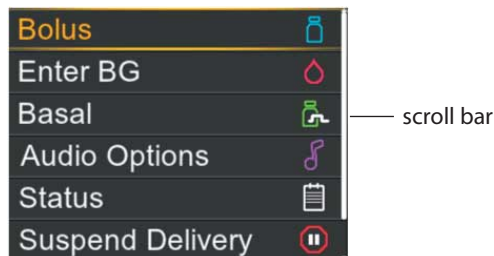
SmartGuard Auto Mode

	Bolus delivery options	Basal delivery	Suspend options
<p>SmartGuard Auto Mode (Auto Basal delivery)</p> 	<ul style="list-style-type: none"> • Auto Mode Bolus impacted by Carb Ratio and Active Insulin Time settings • Patient enters carb grams and BGs • Pump may recommend bolus when BG ≥ 8.3 mmol/L entered • Patient accepts or cancels bolus <p>For more information, see the <i>SmartGuard Auto Mode</i> chapter.</p>	<ul style="list-style-type: none"> • Automatic delivery of basal insulin based on recent insulin delivery needs and SG values to target of 6.7 mmol/L. • May set a temporary target of 8.3 mmol/L for up to 12 hours <p>For more information, see the <i>SmartGuard Auto Mode</i> chapter.</p>	<p>Manual suspend—</p> <p>For more information, see <i>Stopping and resuming your insulin delivery</i>, on page 70.</p>

	Bolus delivery options	Basal delivery	Suspend options
<p>SmartGuard Auto Mode (Safe Basal delivery)</p> 	<ul style="list-style-type: none"> • Auto Mode Bolus impacted by Carb Ratio and Active Insulin Time settings • Patient enters carb grams and BGs • Pump may recommend bolus when $BG \geq 8.3$ mmol/L entered • Patient accepts or cancels bolus <p>For more information, see the <i>SmartGuard Auto Mode</i> chapter.</p>	<ul style="list-style-type: none"> • Automatic delivery of basal insulin at a fixed rate • Does not use SG values to adjust rate <p>For more information, see the <i>SmartGuard Auto Mode</i> chapter.</p>	<p>Manual suspend – For more information, see <i>Stopping and resuming your insulin delivery</i>, on page 70.</p>


Scroll bar

The scroll bar is located on the right side of the display, as shown in the following example. It appears only when there is more information available to view on the screen. Press \wedge or \vee to move up or down the screen.



Power modes

Your pump is designed to conserve battery power when you are not actively using the pump screens.

In this mode	Your pump behaves like this
Awake	<p>Your pump screen is on. Unless you are actively using another screen, your Home screen appears.</p> <p>To wake up your pump from being in power save or sleep mode, press any button. If your pump has been in sleep mode, the pump is locked. To unlock your pump, see <i>Unlocking your pump, on page 34</i>.</p>
Power save	<p>Your pump is fully functional, but the screen goes dark to save power. You can set how long it takes for your screen to enter power save mode by changing the Backlight setting. For more information, see <i>Display Options, on page 155</i>. If any button is pressed while the pump is in Power save mode, the pump returns to the screen that was last displayed.</p>
Sleep	<p>Your pump automatically enters sleep mode when you have not pressed any buttons for about two minutes after your screen goes dark (power save mode). Your pump is still fully functional. If any button is pressed while the pump is in sleep mode, you will be shown a screen asking you to unlock your pump. For details, see <i>Unlocking your pump, on page 34</i>.</p> <p>To put your pump into sleep mode, press and hold the  button for about two seconds.</p>

If you remove your pump

You may have an occasion when you need or want to remove your pump. If you have to remove and store your pump, it is recommended that you do the following:

- Write down a record of your current basal rates and use the Save Settings feature. See *Saving your settings, on page 157* for more information.
- Remove the battery. See *Storing your pump, on page 292* for more information.

Remember, your body still needs insulin while your pump is removed.

Consult your healthcare professional to determine an alternate method of receiving insulin. Disconnecting from your pump for less than one hour may not require an insulin adjustment. If you remove your pump for more than one hour, you should take your insulin another way, as prescribed by your healthcare professional.

3



Basal

Basal insulin is the "background" insulin that you need throughout the day and night to maintain your target BG values when you are not eating. Your basal insulin accounts for approximately one half of your daily insulin requirements. Your pump mimics a pancreas by delivering insulin continuously over 24 hours.



Note: In Manual Mode, your basal insulin is delivered according to your programmed basal pattern. In SmartGuard Auto Mode, insulin is delivered based on sensor values and your recent insulin delivery needs. For more information on Manual Mode, see *Manual Mode, on page 216*. For more information on Auto Mode, see *SmartGuard Auto Mode, on page 215*.

Your basal insulin is delivered according to a basal pattern. Basal patterns and other basal settings are described in the following sections.

Basal rate

Your basal rate is the specific amount of basal insulin that your pump continuously delivers each hour. While some people use one basal rate all day, others require different rates at different times of the day.

Your basal rates are set in one or more basal patterns. Each basal pattern covers 24 hours. For specific information about basal patterns, see *Basal patterns, on page 58*.

Basal insulin settings

Your basal insulin delivery settings are described in the following table.

Setting	What it is	What it does for you
Basal Pattern	A set of one or more basal rates that cover a 24-hour period.	Allows you to vary your basal rate according to your needs. You can set up to eight basal patterns. For details on setting up basal patterns, see <i>Adding a new basal pattern</i> , on page 59. For details about starting a basal pattern, see <i>Changing from one basal pattern to another</i> , on page 62.
Temp Basal	A basal rate that you use in place of your scheduled basal rate for short-term situations.	Allows you to temporarily change your current basal rate for a duration of time that you specify. For details about starting a Temp Basal rate, see <i>Starting a Temp Basal rate</i> , on page 65.
Preset Temp	A temporary basal rate that you can define ahead of time.	Allows you to set and save temporary basal rates for known short-term situations, such as when you are sick or have times of increased or decreased activity. For details about setting up a Preset Temp basal rate, see <i>Preset Temp basal rates</i> , on page 66. For details about starting a Preset Temp basal rate, see <i>Starting a Preset Temp basal rate</i> , on page 68.
Max Basal Rate	Maximum amount of basal insulin that your pump can deliver per hour.	Provides a safety measure by limiting the total amount of basal insulin your pump can deliver per hour. For details about setting your Max Basal rate, see <i>Max Basal Rate</i> , on page 57.

Max Basal Rate

Max Basal Rate limits the amount of basal insulin that can be delivered per hour, based on the maximum rate you set. You are unable to set any basal rates, temp basal rates, or preset temp basal rates that exceed the max basal rate amount. You can set your max basal rate from 0 to 35 units per hour. Set your max basal rate as prescribed by your healthcare professional.



Note: If you are setting your max basal rate after you have set up your basal patterns or preset temp basal rates, you cannot set your max basal rate lower than any of your existing basal rates. You cannot access this feature during a Normal bolus delivery.

To set your Max Basal Rate:

1. Press and go to the Max Basal/Bolus screen.

Options > Delivery Settings > Max Basal/Bolus

2. Select **Max Basal** to set the maximum number of basal insulin units that can be delivered each hour.

Because the Max Basal Rate setting determines your basal insulin limits, a warning message appears any time you enter the screen to change the value. To continue setting the value, select **Continue**.

3. In the Max Basal Rate screen, select **Max Basal** to set the maximum units per hour.
4. Select **Save**.

Example 1: Max basal

Helen has a very low insulin requirement. Her highest basal rate is only 0.400 units per hour. As a safety measure, Helen's healthcare professional set her pump with a max basal rate of 1.00 units per hour.

Example 2: Max basal

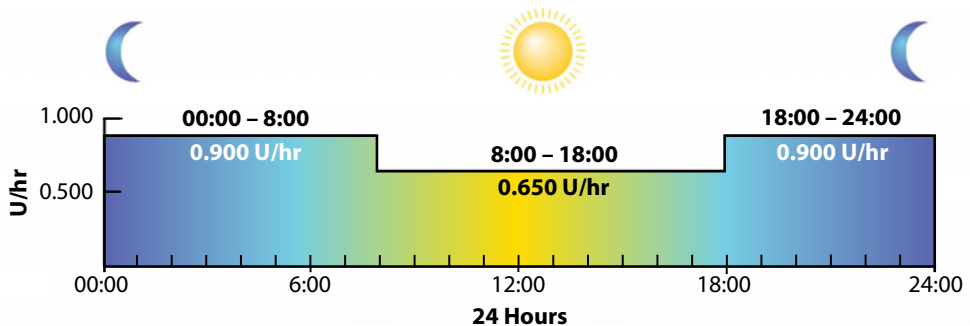
Rusty needs large amounts of insulin to control his BG levels. His new pump was delivered from the factory with a max basal rate of 2.00 units per hour, but he needs 2.80 units per hour in the early morning. Rusty plans to consult his healthcare professional about increasing his max basal rate to 3.00 units per hour to accommodate his needs.

Basal patterns

Your basal pattern determines the amount of basal insulin you receive throughout the day and night. Because your basal insulin needs can vary, you can set up to eight basal patterns. For example, you might use one basal pattern during the week and a different basal pattern during the weekend.

A basal pattern is made up of one to 48 basal rates that you set up to cover a full 24-hour period. If you only need one basal rate throughout the day, you set only one rate for the 24-hour period. If you need the basal rates to change during the day or night to better match your insulin needs, you can set more than one rate, each with a separate start and end time.

The following example represents one basal pattern with three basal rates set for three different time periods.



Your healthcare professional will determine what rates are right for you.



Note: If you have already set up basal patterns and want to switch from using one basal pattern to another, see *Changing from one basal pattern to another*, on page 62.

Adding a new basal pattern

This procedure shows you how to add a new basal pattern.

To add a new basal pattern:

1. Press  and go to the Basal Pattern Setup screen.

Options > Delivery Settings > Basal Pattern Setup

The Basal Pattern Setup screen appears. Your active basal pattern appears with a check mark and the 24-hour delivery amount, as shown in the following example.

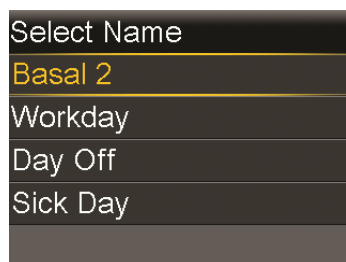


2. If this is your first time setting up a basal pattern, the unit amount will be 0.0. Select **Basal 1** and proceed to step 5.

If this is not your first time setting up a basal pattern, proceed to the next step to add a new pattern.

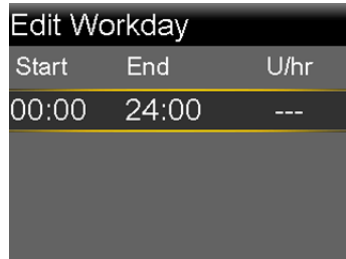
3. To add a new basal pattern, select **Add New**.

The Select Name screen appears.



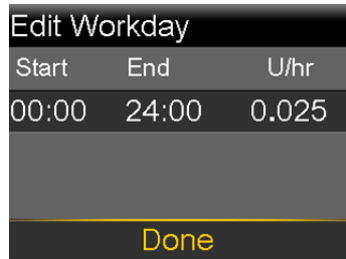
Note: The Workday, Day Off, and Sick Day patterns are available so that you can match a basal pattern name to your insulin needs on those particular days.

4. Select the basal pattern that you want to set up. An edit screen appears for the pattern you selected. The following example shows the Edit Workday screen.



Start	End	U/hr
00:00	24:00	---

5. To create one continuous 24-hour basal rate for your basal pattern, continue with this step. To create more than one basal rate for your new basal pattern, skip to step 6.
 - a. Leave End time at 24:00 to set a 24-hour rate. The Start time of the first time segment is always 00:00.
 - b. Set your rate in units per hour.



Start	End	U/hr
00:00	24:00	0.025

Done

- c. Skip to Step 7.
 6. To create more than one basal rate for your new basal pattern, enter one basal rate at a time, as described in the following steps:
 - a. Set the End time and the Rate for your first basal rate. You set your rates in 30-minute increments.

If you set the End time to anything other than 24:00, a second basal rate setting appears.

Edit Workday		
Start	End	U/hr
00:00	07:30	0.075
07:30	18:00	---

The Start time for the next rate is always the same as the End time of the previous rate.



Note: If you need to make a change, you can press \wedge to scroll up to the rate you want to change. Adjust the End time or Rate values as desired.

Note that pressing \wedge or \vee when a field is selected (flashing) adjusts the value of that field. When there is no field selected, pressing \wedge or \vee allows you to scroll up or down the list of basal rates.

- b. Continue setting rates for different time periods as needed. The End time for your last rate must be 24:00, as shown in the example below.

Edit Workday		
Start	End	U/hr
00:00	07:30	0.075
07:30	18:00	0.025
18:00	24:00	0.050
Done		

7. When you finish setting your basal pattern, select **Done**. (The Done option appears only when the last End time in your basal pattern is set to 24:00). A screen appears that allows you to review your basal pattern. If you need to make any changes, press \blacktriangleleft to return to the previous screen.



Note: If you press \blacktriangleleft to return to the previous screen without saving, your changes will not be saved or implemented.

8. Select **Save**.

To activate your basal pattern, see *Changing from one basal pattern to another*, on page 62.

Editing, copying, or deleting a basal pattern

To edit, copy, or delete a basal pattern:

1. Press  and go to the Basal Pattern Setup screen.

Options > Delivery Settings > Basal Pattern Setup


The Basal Pattern Setup screen displays all of your existing basal patterns.

2. Select the basal pattern you want to edit, copy, or delete.
3. Select **Options**.
4. Do one of the following:
 - Select **Edit** to adjust the End time or rate values for one or more of the basal rates in this basal pattern.
 - Select **Copy** to copy the basal rate information from the selected basal pattern to a new basal pattern. When the Select Name screen appears, you can select any available name from the list. Use the Edit option to adjust the new basal pattern as desired.
 - Select **Delete** to delete the selected basal pattern. You cannot delete the active basal pattern.

Changing from one basal pattern to another

When you change to a new basal pattern, your pump delivers your basal insulin according to the basal pattern you selected.

To change to a different basal pattern:

1. Press  and go to the Basal Patterns screen.

Basal > Basal Patterns

The Basal Patterns screen shows the basal patterns you have set up. The active basal pattern is indicated with a check mark.

2. Select the basal pattern you want to start.

The Basal screen displays the details for the selected basal pattern.

3. To start this pattern, select **Begin**.

Example 1: **Basal patterns**

Ken has had his insulin pump for about a month. He tests his BG four to six times a day and records his results in his logbook. He is happy with his glucose control during the week but on the weekends, he noticed that he has to eat more food to prevent his BG from running too low.

Ken has realized that during the week while he is at work, he is very inactive and sits at a desk most of the time. On the weekends, though, he is busy with yard work, running errands, and playing with his kids. Ken plans to speak with his healthcare professional to see if he should add a different Basal Pattern to lower his basal settings to receive less insulin during active times, such as his weekends.

He can use the Basal Patterns feature to support his weekend change in activity. During the week, he can set his pump to deliver his Basal 1 pattern, and on Saturday morning, he can switch over to his Weekend pattern, which he can set with lower basal rates for the weekend. On Monday morning, he can return his pump to the Basal 1 pattern for his weekday insulin needs.

Example 2: **Basal patterns**

Cynthia has had diabetes for about 12 years and has been on her pump for several weeks. Every Monday, Wednesday, and Friday, Cynthia goes on a three kilometer walk in the morning. To prevent hypoglycemia on these days, she uses a different basal pattern. For those days, she simply switches over to Basal 2, which she has programmed with a lower set of basal rates. Before she learned to use the patterns feature, she would have to eat more food throughout the day to keep her BG at a safe level. Cynthia has also noticed that a few days prior to menstruation, her BG levels seem to rise, requiring more insulin. She has programmed a Basal 3 pattern on her pump with higher basal rates for this time.

Temporary basal rates

The Temp Basal feature and Preset Temp feature allow you to set temporary basal rates to manage BG levels during short-term activities or conditions that require a basal rate different than your current one, such as an illness or a change in physical activity. You can make an immediate change to your basal insulin for a set period of time (30 minutes to 24 hours), up to your max basal rate.



Note: SmartGuard Auto Mode is not available if Temp Basal is active. If you wish to switch your pump to Auto Mode, you must first cancel Temp Basal. For more information on canceling a Temp Basal, see *Canceling a Temp Basal or Preset Temp basal rate*, on page 69.

About Temp Basal rates

A temp basal rate temporarily overrides all other basal programming. Your programmed basal pattern resumes after the temp basal rate delivery is completed or cancelled.

The Temp Basal feature allows you to set and start a temporary basal rate immediately. The Preset Temp feature allows you to set up a temp basal rate ahead of time for known situations. You define temp basal rates and preset temp basal rates using either a percentage of your current basal pattern, or by setting a specific rate, as described in the following table.

This temp basal type:	Works like this:
------------------------------	-------------------------

Percent	
---------	--

	Delivers a percentage of the basal rates programmed in your active basal pattern for the duration of the temp basal rate. The temp basal amount is rounded down to the next 0.025 units if your basal rate is set at less than 1 unit per hour, or to the next 0.05 units if your basal rate is set at more than 1 unit per hour.
--	---

	Temp basal rates can be set to deliver from 0 to 200% (twice the amount) of your scheduled basal rate. The percent amount you can use, however, is based on the largest basal rate scheduled during the temp basal duration, and is limited by your max basal rate.
--	---

This temp basal type:	Works like this:
-----------------------	------------------

Rate	Delivers a fixed basal insulin rate in units per hour for the duration of your temporary basal, limited by your max basal rate.
------	---

To use the Temp Basal feature, see *Starting a Temp Basal rate, on page 65*. To use the Preset Temp Basal feature, see *Preset Temp basal rates, on page 66*.

Example 1: Temporary basal rates

Jessica enjoys her exercise classes, but finds that her glucose levels drop after she attends them. She is working with her healthcare professional to learn how to use the Temp Basal feature so that she receives a reduced percentage of her usual basal insulin while exercising.

Starting a Temp Basal rate

When you start a temp basal rate, your basal delivery changes to the temporary basal rate for the duration you set. When the duration is complete, your basal insulin automatically returns to the active basal pattern.

To start a temp basal rate:

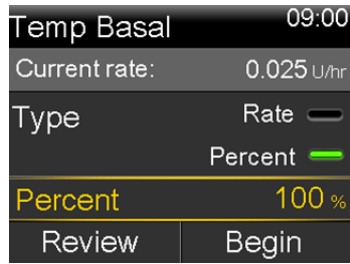
1. Press  and go to the Temp Basal screen.

Basal > Temp Basal

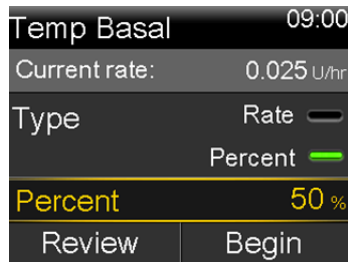
2. **Duration** is flashing. Set the Duration for this temp basal rate. The Duration can be set from 30 minutes to 24 hours, in 15-minute increments.



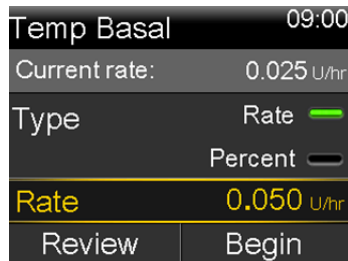
3. Select **Next**.
4. The Type defaults to Percent. You can switch between Percent and Rate by selecting **Type**.



5. Depending on the Type you selected, do one of the following:
 - Enter a percentage:



- Enter a basal rate, making sure you do not exceed your max basal rate:



6. If desired, select **Review** to review your temp basal setting.
7. Select **Begin** to start the temp basal rate.

Your Temp Basal rate continues for the duration you set. A Temp Basal banner appears on the Home screen during your temp basal delivery. Your scheduled basal rate automatically starts again when your Temp Basal rate finishes.

Preset Temp basal rates


The Preset Temp feature allows you to set up basal rates for recurring short-term situations where you need to temporarily change your basal rate.

There are four names you can use to match your preset temp basal rate to a situation: High Activity, Moderate Activity, Low Activity, and Sick. There are also four additional preset temp rates available to use for other circumstances (Temp 1 through Temp 4).


Setting up and managing Preset Temp basal rates

This section describes how to set up, edit, rename, or delete a preset temp basal rate. For information on how to start using a preset temp basal rate, see *Starting a Preset Temp basal rate*, on page 68.

To set up a preset temp basal rate:

1. Press  and go to the Preset Temp Setup screen.
Options > Delivery Settings > Preset Temp Setup
2. Select **Add New**.
3. Select a name for the preset temp basal rate you want to set (Temp 1, High Activity, Moderate Activity, Low Activity, or Sick).
4. The Type defaults to Percent. You can switch between Percent and Rate by selecting **Type**.
5. If you are using Percent, enter the percentage you want to use. If you are using Rate, enter the rate in units per hour. You cannot exceed your max basal rate.
6. Set the **Duration** (from 30 minutes to 24 hours in 15-minute increments) that you want this preset temp basal to be active.
7. Select **Save**.

To edit, rename, or delete a preset temp basal rate:

1. Press  and go to the Preset Temp Setup screen.
Options > Delivery Settings > Preset Temp Setup
2. Select the desired preset temp basal.



Note: You cannot select a preset temp basal rate that is currently in use.


3. The next screen displays the temp basal info. Do one of the following:

- Select **Edit** to adjust the Type (Percent or Rate), the Percentage or Rate amount, and the Duration for this preset temp basal rate.
- Select **Rename** to assign a different name to this preset temp basal rate. When the Select Name screen appears, you can select any available name from the list.
- Select **Delete** to delete this preset temp basal rate.

Starting a Preset Temp basal rate

You must set up preset temp basal rates before you can use the Preset Temp feature. For more information, see *Preset Temp basal rates, on page 66*.

To start a preset temp basal rate:

1. Press  and go to the Preset Temp screen. The Preset Temp option only appears if you have set up preset temp basal rates.

Basal > Preset Temp

The Preset Temp screen displays the preset temp basal rates you have set up, along with their percentage or rate amounts.

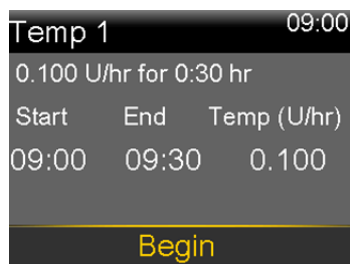
Preset Temp	09:00
Current rate:	0.025 U/hr
Temp 1	0.100 U/hr
High Activity	25 %
Moderate...	50 %



Note: Depending on your active basal pattern, it is possible for a percentage preset temp basal rate to exceed your max basal limit. Because you cannot use a preset temp basal rate that exceeds your max basal limit, these rates appear grayed out in the list, and are not available for use.

2. Select the preset temp basal rate that you want to use.

3. Select **Begin**.



Your preset temp basal rate continues for the duration you set. A Temp Basal banner appears on the Home screen during your preset temp basal delivery. Your scheduled basal rate automatically starts again when your preset temp basal rate finishes.


Switching to SmartGuard Auto Mode from Temp Basal

In order to switch to Auto Mode, you must first cancel any active Temp Basal rate. Auto Mode cannot begin while a Temp Basal rate is active. For information on how to cancel a Temp Basal rate, see *Canceling a Temp Basal or Preset Temp basal rate, on page 69*.

Canceling a Temp Basal or Preset Temp basal rate

You can cancel a temp basal or preset temp basal rate at any time. When you do so, your scheduled basal pattern automatically starts again.

To cancel a Temp Basal rate:

1. From the Home screen, press  and go to the Temp Basal screen.
The Temp Basal screen displays the name (Preset Temp only), current basal rate, the set duration, and the remaining time.
2. Select **Cancel Temp Basal**.


Viewing your basal information

The following table describes how you can view your basal rates and patterns.

To do this:

View your current basal rate

Do this:

From the Quick Status, you can view your current basal rate. Press  and go to the Quick Status screen.

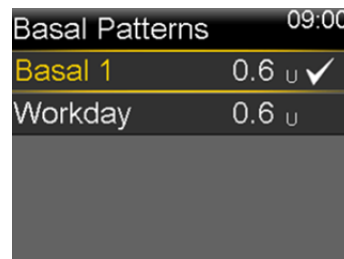
Status > Quick Status

View your basal patterns

Press  and go to the Basal Patterns screen:

Basal > Basal Patterns

The Basal Pattern screen shows the basal patterns you have set up, and the 24-hour insulin total for each basal pattern. A check mark appears next to the active basal pattern.



To see the individual basal rates, select the desired basal pattern.

Stopping and resuming your insulin delivery

Use Suspend Delivery if you need to stop all active basal and bolus insulin deliveries. While your insulin delivery is suspended, your pump beeps, vibrates, or both depending on your audio settings. This reminder occurs every 15 minutes to remind you that insulin is not being delivered.



Note: The first reminder occurs 15 minutes after your pump display times out. If you press a button and wake up your pump, the reminder will not occur until 15 minutes after your pump display times out again. To adjust your timeout setting, see *Display Options*, on page 155.

To continue your basal insulin delivery, use the Resume Delivery feature. When you use the Resume Delivery feature, your pump starts your programmed basal pattern, but does not start any previously programmed bolus deliveries.



Note: If you want to stop a bolus delivery only, without stopping your basal delivery, see *Stopping a bolus delivery*, on page 105.




WARNING: Always check the pump Daily History after you resume insulin delivery to determine the amount that was delivered. If needed, program a new bolus or fill the cannula. A bolus delivery or fill cannula that was suspended does not restart when you resume. Failing to resume insulin delivery can result in hyperglycemia and ketoacidosis.




WARNING: Do not rely solely on the audio or vibration notifications when using the Audio or Vibrate options. These notifications may not occur as expected if the speaker or vibrator in your pump malfunctions. A missed notification could result in the delivery of too much or too little insulin. This is most common when using the Easy Bolus feature, or when your pump is in Manual Suspend. Contact your local representative with any concerns.

To suspend all insulin delivery:

1. Press  and go to the **Suspend Delivery** screen.
A confirmation message appears.
2. Select **Yes** to suspend your pump and stop all insulin delivery.
The Home screen indicates that your insulin is suspended. Your pump functions are limited until you resume your insulin delivery.

To resume basal insulin delivery:

1. While insulin is suspended, press  and go to the **Resume Delivery** screen.
A confirmation message appears.

2. To resume your basal insulin delivery, select **Yes**. If a Temp Basal was active when you suspended your pump, it resumes if the time is still within the duration that you set.



Note: If you still need a bolus delivery that was in progress before you suspended your delivery, check the Daily History screen for the actual bolus units delivered and the intended bolus amount. Then you can set up a new bolus amount as needed. See *Daily History*, on page 135 for details about using the Daily History screen.

4



Bolus

Bolus 4

A bolus is the amount of insulin taken to cover an expected rise in BG, typically when you eat a meal or snack. You can also use a bolus to correct a high BG reading.

About bolus deliveries

There are different types of bolus deliveries you can use, depending on your insulin needs at the time. There are also different ways you can deliver a bolus. Discuss these options with your healthcare professional to determine what is best for you.

Bolus types



Note: While in SmartGuard Auto Mode, you can only deliver a Normal bolus.

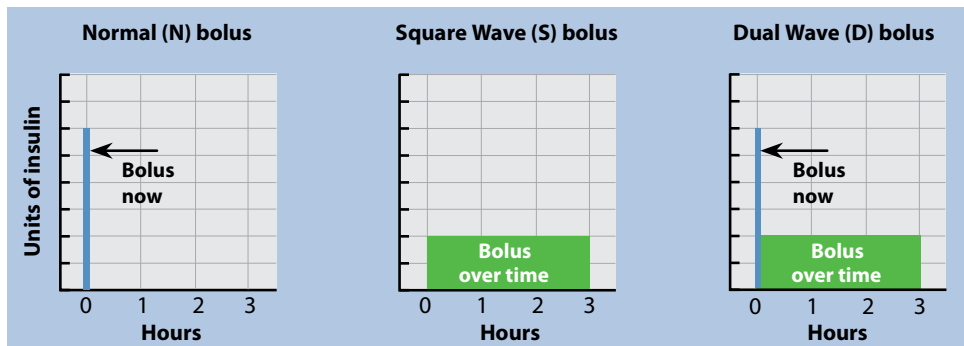
The following table provides general information about the available bolus types.

Type	How it works	When to use it
Normal	Provides a single immediate dose of insulin.	This is the typical bolus type you use to cover your food intake, or to correct a high BG meter reading. For details about using the Normal bolus feature, see <i>Normal bolus</i> , on page 90.

Type	How it works	When to use it
Square Wave bolus	Delivers a single bolus evenly over an extended period of time (30 minutes to 8 hours).	<p>You might use a Square Wave bolus:</p> <ul style="list-style-type: none"> • If you have delayed food digestion due to gastroparesis or meals high in fat. • When snacking over an extended period of time. • If a Normal bolus drops your BG too rapidly. <p>For details about using the Square Wave bolus feature, see <i>Square Wave bolus, on page 93</i>.</p>
Dual Wave bolus	Delivers a combination of an immediate Normal bolus followed by a Square Wave bolus.	<p>You might use a Dual Wave bolus:</p> <ul style="list-style-type: none"> • When you eat meals that are both high in carbs and fat which may delay digestion. • When your meal bolus is combined with a correction bolus for an elevated BG. <p>For details about using a Dual Wave bolus, see <i>Dual Wave bolus, on page 96</i>.</p>

Bolus type example

The following example shows how the different bolus types work.



Bolus delivery options

The following table describes the different ways you can deliver a bolus.



Note: Different bolus delivery options are available depending on whether the pump is in Manual Mode or Auto Mode. For a list of delivery options available for each mode, see *Modes*, on page 44.

Delivery method	Type of bolus available	How it works
Bolus Wizard feature	Normal bolus, Square Wave bolus, Dual Wave bolus	<p>You enter your BG meter reading or the carbs you plan to eat, or both. Then the Bolus Wizard feature calculates an estimated bolus amount based on your individual settings.</p> <p>The Bolus Wizard feature is only available in Manual Mode.</p> <p>For details about using the Bolus Wizard feature, see <i>Bolus Wizard feature</i>, on page 82.</p> <p>To deliver a:</p> <ul style="list-style-type: none">• Normal bolus using the Bolus Wizard feature, see <i>Delivering a Normal bolus with the Bolus Wizard feature</i>, on page 90.• Square Wave bolus using the Bolus Wizard feature, see <i>Delivering a Square Wave bolus with the Bolus Wizard feature</i>, on page 94.• Dual Wave bolus using the Bolus Wizard feature, see <i>Delivering a Dual Wave bolus with the Bolus Wizard feature</i>, on page 97.

Delivery method	Type of bolus available	How it works
Auto Mode Bolus	Normal bolus	<p>You enter your BG meter reading or your carbs you plan to eat, or both. Then the Auto Mode Bolus feature calculates a bolus amount to cover the meal or correction.</p> <p>The Auto Mode Bolus feature is only available in Auto Mode.</p> <p>For details about using the Auto Mode Bolus feature, see <i>SmartGuard Auto Mode Bolus</i>, on page 227.</p>
Manual	Normal bolus, Square Wave bolus, Dual Wave bolus	<p>You do your own calculation and manually enter your bolus amount.</p> <p>To deliver a:</p> <ul style="list-style-type: none"> • Normal bolus, see <i>Delivering a Normal bolus using Manual Bolus</i>, on page 93 • Square Wave bolus, see <i>Delivering a Square Wave bolus using Manual Bolus</i>, on page 96 • Dual Wave bolus, see <i>Delivering a Dual Wave Bolus using Manual Bolus</i>, on page 98
Preset Bolus	Normal bolus, Square Wave bolus, Dual Wave bolus	<p>You select from specific bolus settings that you define ahead of time for recurring situations.</p> <p>For details about using the Preset Bolus feature, see <i>Preset Bolus</i>, on page 102.</p>

Delivery method	Type of bolus available	How it works
Easy Bolus feature	Normal bolus	<p>After the Easy Bolus feature is set up, you can deliver a Normal bolus by using the \wedge button when the pump is in sleep mode.</p> <p>For details about using the Easy Bolus feature, see <i>Easy Bolus feature</i>, on page 99.</p>
Remote Bolus from your compatible Ascensia BG meter	Normal bolus or any Preset Bolus set up on your pump.	<p>For information on using the Remote Bolus feature on your compatible Ascensia BG meter, see the user guide that came with your meter.</p> <p>For information on turning on the Remote Bolus feature on your pump, see <i>Setting up the Remote Bolus feature</i>, on page 126.</p>



Note: The Remote Bolus feature is not available when in SmartGuard Auto Mode, even if the Remote Bolus feature is turned on.

Bolus settings

The following table describes some bolus settings that may need to be changed before you use your bolus options. Consult with your healthcare professional for the settings that are right for you.



Note: There are additional settings required if you want to use the Bolus Wizard feature. These are described in the section, *Bolus Wizard feature*, on page 82.

Setting	What it is	What it does for you
Max Bolus	Maximum amount of bolus insulin (in units) your pump can deliver in a single bolus.	Provides a safety measure by limiting the total amount of bolus insulin you can program for a single bolus delivery. For details about setting the max bolus amount, see <i>Max Bolus</i> , on page 80.
Bolus Increment	The amount of insulin (in units) that is increased or decreased with each button press when adjusting your bolus amount. The Bolus Wizard feature and Auto Mode Bolus will also use the increment to display the bolus total and adjustment amounts. This setting does not apply to the Easy Bolus feature.	Allows you to set your increment value according to your typical bolus amounts. For details about setting the bolus increment, see <i>Bolus Increment</i> , on page 81.
Bolus Speed	The speed that your pump delivers your bolus insulin.	Allows you to set your bolus insulin delivery speed to Standard or Quick. For details about setting your bolus speed, see <i>Bolus Speed</i> , on page 82.


Max Bolus

Max Bolus limits the amount of insulin that can be delivered in a single bolus. Your pump prevents single bolus insulin deliveries that exceed the max bolus you set. You can set your max bolus from 0 to 25 units. Set your max bolus as prescribed by your healthcare professional.

If you are setting your max bolus after you have set up your Preset Bolus deliveries, you cannot set your max bolus lower than any of your Preset Bolus amounts.

The max bolus setting applies to both Manual Mode and Auto Mode.

To set your max bolus:

1. Press  and go to the Max Basal/Bolus screen.
Options > Delivery Settings > Max Basal/Bolus
2. Select **Max Bolus**.
3. Because the Max Bolus setting determines your bolus insulin limit, a warning message appears any time you go to the screen to change the value. To continue to the Max Bolus screen, select **Continue**.
4. Select **Max Bolus**, and then set the maximum number of insulin units your pump can deliver in one bolus.
5. Select **Save**.

Example 1: Max Bolus

Shelby takes very small doses of insulin for her meal boluses. As a safety limit, her healthcare professional had her reset her pump with a Max Bolus of 5.0 units.

Example 2: Max Bolus

David is a growing teenager. He loves to eat big meals and requires very large doses of insulin for his food. David's healthcare professional had him reset his pump with a Max Bolus of 20.0 units so he can take more insulin when needed.

Bolus Increment

The Bolus Increment setting determines the number of units that are increased or decreased with each button press when you adjust your bolus delivery amount in the Bolus Wizard, Manual Bolus, and Preset Bolus screens. Depending on your typical bolus amount, you can set your increment to 0.1 units, 0.05 units, or 0.025 units.



Note: The Easy Bolus feature uses a setting called Step Size to determine the number of insulin units for each button press. See *Setting up the Easy Bolus feature, on page 100* for more information.

To set your Bolus Increment:

1. Press  and go to the Bolus Increment screen.


Options > Delivery Settings > Bolus Increment

2. Select **Increment** to set your desired increment value.
3. Select **Save**.

Bolus Speed

Bolus Speed sets the rate at which your pump delivers bolus insulin. You can set a Standard rate (1.5 units per minute), or a Quick rate (15 units per minute).

To set your Bolus Speed:

1. Press  and go to the Bolus Speed screen.

Options > Delivery Settings > Bolus Speed

2. Select **Standard** or **Quick**.
3. Select **Save**.

Bolus Wizard feature

The Bolus Wizard feature uses your individual Bolus Wizard settings to calculate an estimated bolus amount based on the BG values and carbs that you enter. Work with your healthcare professional to define your personal settings, which include your carb ratio, insulin sensitivity, BG target range, and active insulin time.



Note: If you do not know how to count carbs, consult with your healthcare professional before using the Bolus Wizard feature.

After you set up the Bolus Wizard feature, you can use it to calculate and deliver a food bolus, a correction bolus, or a food plus correction bolus using a Normal bolus (see *Delivering a Normal bolus with the Bolus Wizard feature, on page 90*), Square Wave bolus (see *Delivering a Square Wave bolus with the Bolus Wizard feature, on page 94*), or Dual Wave bolus (see *Delivering a Dual Wave bolus with the Bolus Wizard feature, on page 97*).



Note: Be aware that if you already have the Bolus Wizard feature open prior to wirelessly sending your BG meter reading to your pump, you must close the Bolus Wizard feature and open it again, in order for that reading to appear.

The following sections describe how to set up the Bolus Wizard feature. Bolus delivery instructions are provided in the individual sections for each bolus type.

Understanding your Bolus Wizard settings

Your pump guides you through entering the following settings when you first turn on the Bolus Wizard feature. Get your prescribed settings from your healthcare professional, and always consult your healthcare professional before changing your settings. The setup procedure begins on *page 84*.

Setting	What it does
Carb Ratio	Used for food bolus calculations. The number of carb grams that are covered by 1 unit of insulin.
Insulin Sensitivity Factor	Used to calculate correction bolus amounts. Your insulin sensitivity factor is the amount that BG is reduced by one unit of insulin.
BG Target	The Bolus Wizard feature calculates your estimated bolus based on your BG target range. The high and low values you set are the values to which your BG is corrected. To use a single target value rather than a range, set the same value for the high and low value of your BG target. If your BG value is above the high target value, a correction dose is calculated. If your BG value is below the low target value, a negative correction is calculated and subtracted from your food bolus.
Active Insulin Time	Active insulin is the bolus insulin that has been delivered by the pump and is still working to lower your BG levels. Active insulin time is the length of time that bolus insulin is tracked as active insulin. Work with your healthcare professional to get the active insulin time that best represents the insulin type you use and your physiological insulin absorption rate. For more information about how the Bolus Wizard feature uses your active insulin amount, see <i>About active insulin</i> , on <i>page 88</i> .



Setting up the Bolus Wizard feature

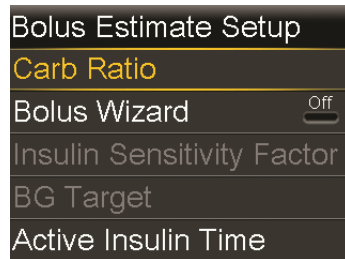
Before you can use the Bolus Wizard feature to calculate a bolus, you must turn on the Bolus Wizard feature and enter your Bolus Wizard settings.

To set up the Bolus Wizard feature:

1. Press  and go to the Bolus Estimate Setup screen.

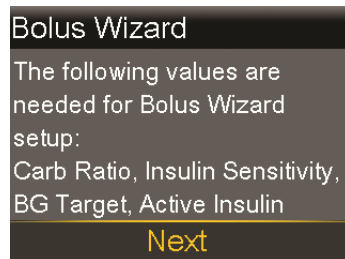
Options > Delivery Settings > Bolus Estimate Setup

The Bolus Estimate Setup screen appears with the Bolus Wizard feature turned off.



2. Select **Bolus Wizard** to turn on the feature.

If this is the first time you have turned on the Bolus Wizard feature, your pump displays information about the settings you need to enter.



Make sure you have the values you need, and then select **Next** to continue.



Note: As you enter your personal settings, your pump displays information about each setting. Select **Next** to continue when you have read each explanation.

- When the Edit Carb Ratio screen appears, enter your carb ratio. You can set up to eight carb ratios using different time segments. The time segments must cover a 24-hour period.

Edit Carb Ratio		
Start	End	g/U
00:00	24:00	---

If your ratio value is outside the range of 5 to 50 grams per unit, a message appears asking you to confirm your setting.

- When the Edit Sensitivity screen appears, enter your insulin sensitivity factor. You can set up to eight different sensitivity factors using different time segments. The time segments must cover a 24-hour period.

Edit Sensitivity 2/4		
Start	End	mmol/L per U
00:00	24:00	---

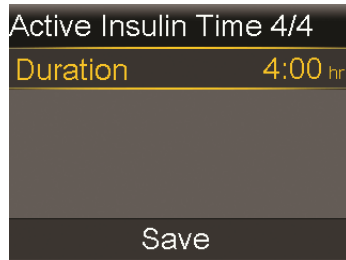
If the value you enter is outside the range of 1.1 to 5.6 mmol/L, per U, a message appears asking you to confirm your setting.

- When the Edit BG Target screen appears, enter your Bolus Wizard BG target range. You can set up to eight different BG target ranges using different time segments. The time segments must cover a 24-hour period.

Edit BG Target 3/4		
Start	End	Lo-Hi (mmol/L)
00:00	24:00	--- - ---

If your Bolus Wizard BG target is outside the range of 5.0 to 7.8 mmol/L, a message appears asking you to confirm your setting.

6. When the Active Insulin Time screen appears, enter your active insulin time value. The default is four hours.



7. Select **Save**.

A message appears letting you know the Bolus Wizard setup is complete.

You can now use the Bolus Wizard feature to calculate a bolus.


Changing your Bolus Wizard settings

This section shows you how to make changes to your personal settings after you initially set up the Bolus Wizard feature. Except for the carb ratio setting, these settings are available only if the Bolus Wizard feature is turned on. Always consult with your healthcare professional before making changes to your personal settings.

Changing your carb ratio

The carb ratio setting is always available whether or not you have the Bolus Wizard feature turned on.

To change your carb ratio:

1. Press  and go to the Carb Ratio screen.
Options > Delivery Settings > Bolus Estimate Setup > Carb Ratio
2. Select **Edit**.
3. Select the carb ratio to adjust the Start time, the End time, and the ratio. You can set up to eight different carb ratios using different time segments. The time segments must cover a 24-hour period.


If you set a value outside the typical range of 5 to 50 grams per unit, a message appears asking you to confirm your setting.

4. When you have made your changes, select **Save**.

Changing your insulin sensitivity factor

The Insulin Sensitivity Factor option is only available if the Bolus Wizard feature is turned on.


To change your insulin sensitivity factor:

1. Press  and go to the Sensitivity screen.
Options > Delivery Settings > Bolus Estimate Setup > Insulin Sensitivity Factor
2. Select **Edit**.
3. Select the sensitivity factor to adjust the Start time, the End time, and the Sensitivity amount. You can set up to eight different sensitivity amounts using different time segments. The time segments must cover a 24-hour period.
If you set a value that is outside the typical range of 1.1 to 5.6 mmol/L per unit, a message appears asking you to confirm your setting.
4. When you have made your changes, select **Save**.

Changing your Bolus Wizard BG target

Your target range can be from 3.3 to 13.9 mmol/L. The Bolus Wizard BG Target option is only available if the Bolus Wizard feature is turned on.


To change your Bolus Wizard BG target range:

1. Press  and go to the BG Target screen.
Options > Delivery Settings > Bolus Estimate Setup > BG Target
2. Select **Edit**.
3. Select the BG target to adjust the Start time, the End time, and the Lo (low) and Hi (high) BG Target values. Your high value cannot be less than your low value. You can set up to eight different values using different time segments. The time segments must cover a 24-hour period.
If your BG target is outside the typical range of 5.0 to 7.8 mmol/L, a message appears asking you to confirm your setting.
4. When you have made your changes, select **Save**.

Changing your Active Insulin Time

The active insulin time setting lets the pump know which active insulin time to use in calculating the amount of active insulin to subtract before estimating a bolus. Your healthcare professional will prescribe the active insulin time that is best for you.


To change your active insulin time:

1. Press  and go to the Active Insulin Time screen.
Options > Delivery Settings > Bolus Estimate Setup > Active Insulin Time
2. Select **Duration**, then adjust your active insulin time (in hours), using 15-minute increments.
3. Select **Save**.

Turning off the Bolus Wizard feature

You can turn off the Bolus Wizard feature at any time. Your Bolus Wizard settings remain in your pump. When the Bolus Wizard feature is turned off, the Bolus Wizard option does not appear in the Bolus menu, and you cannot edit your Insulin Sensitivity Factor or BG Target settings from the Bolus Estimate Setup screen.

To turn off the Bolus Wizard feature:

1. Press  and go to the Bolus Estimate Setup screen.
Options > Delivery Settings > Bolus Estimate Setup
2. Select **Bolus Wizard** to turn the feature off.

About active insulin

Active insulin is the bolus insulin that has already been delivered to your body, and is still working to lower your BG levels. The pump considers your active insulin time setting in determining if any active insulin is still in your body from prior boluses. This may help prevent hypoglycemia caused by over-correcting for high BG.

Your current active insulin amount displays on the Home screen, and includes only the bolus insulin you have already received.

When you are using the Bolus Wizard feature, the Bolus Wizard calculator uses your current active insulin value to determine if there is an active insulin adjustment needed. The active insulin adjustment calculation considers both the bolus insulin that has already been delivered (the amount shown on the Home screen), as well as any insulin that is going to be delivered by an active Square Wave bolus.



WARNING: Do not use the Bolus Wizard feature to calculate a bolus for a period of time after giving a manual injection of insulin by syringe or pen. Manual injections are not accounted for in the active insulin amount. Therefore, the Bolus Wizard feature could prompt you to deliver more insulin than needed. Too much insulin can cause hypoglycemia. Consult with your healthcare professional for how long you need to wait after a manual injection of insulin before you can rely on the active insulin calculation of the Bolus Wizard feature.

Bolus Wizard warnings

When you use the Bolus Wizard feature, there may be times when you see one of the following:

Warning:	What it means:	What to do:
High BG	Your BG meter reading is above 13.9 mmol/L.	<ul style="list-style-type: none">• Check infusion set.• Check ketones.• Consider an insulin injection.• Monitor your BG.
Low BG	Your BG meter reading is below 3.9 mmol/L.	Treat your low BG. Do not give yourself a bolus until your BG returns to normal.

Warning:	What it means:	What to do:
Max Bolus exceeded	The bolus amount entered exceeds your Max Bolus setting.	<p>Check the bolus amount. Select No to cancel, or Yes to continue. If you select Yes, the bolus amount that you entered is reduced to your max bolus limit.</p> <p>Let your healthcare professional know if you routinely receive the Max Bolus exceeded warning so that they can adjust your pump settings.</p>

Normal bolus

A Normal bolus provides a single immediate dose of insulin. You use a Normal bolus to cover your food intake or to correct a high BG meter reading.


You cannot access the Reservoir & Tubing, Delivery Settings, or Sensor Settings menu options during a Normal bolus delivery.



Note: Your pump allows you to deliver a Normal bolus while a Square Wave bolus or the Square portion of a Dual Wave bolus is being delivered.

Delivering a Normal bolus with the Bolus Wizard feature

To deliver a Normal bolus using the Bolus Wizard feature:

1. For a correction bolus or a food bolus with a correction, use your BG meter to check your BG. For a food bolus only, skip this step.
2. Press  and go to the Bolus Wizard screen.

Bolus > Bolus Wizard

The Bolus Wizard screen shows your current BG meter reading (if applicable) and any insulin that is still active from previous boluses. For more information about active insulin, see *About active insulin, on page 88*. For more information, see *About your compatible Ascensia BG meter, on page 125*.

Bolus Wizard		09:00
BG	7.2 _{mmol/L}	0.3 _U
Active Ins. adjust.		-0.3 _U
Carbs	0 _g	0.0 _U
Bolus		0.0 _U
Next		

3. If you are not using a wirelessly connected meter, you can select **BG** to manually enter your BG meter reading.

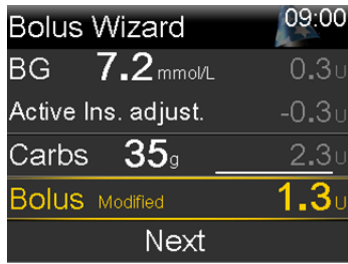


Note: If you choose not to enter a BG value, three dashes appear on the screen in place of the BG value.

4. For a food bolus, select **Carbs** to enter the carb count of your meal. For a correction bolus where no food was eaten, leave the Carbs value at 0.
5. Your calculated bolus appears in the Bolus field.


Bolus Wizard		09:00
BG	7.2 _{mmol/L}	0.3 _U
Active Ins. adjust.		-0.2 _U
Carbs	35 _g	2.3 _U
Bolus		2.3 _U
Next		

If you want to change the bolus amount, select **Bolus** and make any desired adjustment. If you change your bolus amount, the word “Modified” appears next to the new bolus amount.



6. Select **Next** to review your bolus information.

Your bolus amount appears.

 **Note:** If you modified your bolus amount in the previous step, **Bolus Calculated** displays your original bolus amount, **Modification** displays the amount you added or subtracted from your bolus, and **Bolus** displays the actual bolus amount.

Bolus Wizard		09:00
Bolus Calculated		2.3 U
Modification		-1.0 U
Bolus		1.3 U
Deliver Bolus		

7. Select **Deliver Bolus** to start your bolus.




Your pump beeps or vibrates and displays a message when your bolus starts. The Home screen shows your bolus amount as it is being delivered. Your pump beeps or vibrates when your bolus is complete.

Delivering a Normal bolus using Manual Bolus

The following section describes how to deliver a Normal bolus using the Manual Bolus feature.

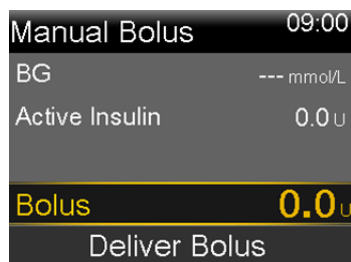
To deliver a Normal bolus using Manual Bolus:

1. Press  and go to the Manual Bolus screen.

Bolus > Manual Bolus



Note: If the Bolus Wizard feature is turned off, the Manual Bolus screen appears when you select Bolus.



The Manual Bolus screen shows your current BG value (if applicable) and any insulin that is still active from previous boluses. For more information about active insulin, see *About active insulin, on page 88*.

2. Select **Bolus** to set your bolus delivery amount (in units).
3. Select **Deliver Bolus** to start your bolus.

Your pump beeps or vibrates and displays a message when your bolus starts. The Home screen shows your bolus amount as it is being delivered. Your pump beeps or vibrates when your bolus is complete.

Square Wave bolus

A Square Wave bolus delivers a bolus evenly over a period of time (30 minutes to 8 hours).

When using the Bolus Wizard feature, a Square Wave bolus is available only when giving a food bolus without a correction for an elevated BG. A Square Wave bolus is not available for a correction bolus alone, or a correction bolus with food bolus.

A Square Wave bolus can be useful in these situations:

- If you have delayed food digestion due to gastroparesis or meals high in fat.
- When you are snacking over an extended period of time.
- If a Normal bolus drops your BG too rapidly.

Since the Square Wave bolus extends delivery over a period of time, the insulin is more likely to be available as you need it.



Note: You cannot perform these functions during a Square Wave bolus delivery:


- Enable Auto Mode.
- Change the Max Bolus or the Active Insulin Time settings.
- Set a second Square Wave or a Dual Wave bolus.
- Fill the cannula.
- Rewind your pump.
- Run a self-test.
- Access the Manage Settings menu.

All other functions are available during the Square Wave bolus.

Turning on or off Square Wave bolus

The Square Wave bolus delivery option is available only after you turn on the Square Wave feature.

To turn on or turn off the Square Wave feature:

1. Press  and go to the Dual/Square screen.


Options > Delivery Settings > Dual/Square Wave

2. Select **Square Wave** to turn the feature on or off.
3. Select **Save**.

Delivering a Square Wave bolus with the Bolus Wizard feature

You can deliver a Square Wave bolus with the Bolus Wizard feature only after you turn the Square Wave option on. Also, you must have entered a Carbs value.

To deliver a Square Wave bolus with the Bolus Wizard feature:

1. Press  and go to the Bolus Wizard screen.

Bolus > Bolus Wizard

The Bolus Wizard screen shows your current BG meter reading (if applicable) and any insulin that is still active from previous boluses. For more information about active insulin, see *About active insulin, on page 88*. For more information, see *About your compatible Ascensia BG meter, on page 125*.

2. If you are not using a wirelessly connected meter, you can select **BG** to manually enter your BG meter reading.




Note: If you choose not to enter a BG meter reading, three dashes appear on the screen instead.

3. Select **Carbs** to enter the amount of carbs in your food.
4. Review your calculated bolus amount in the Bolus field. If you want to change the bolus amount, select **Bolus** and make your desired change. Remember, if there is a correction bolus amount calculated, you are not able to give a Square Wave bolus.



Note: If you change your bolus amount, the word “Modified” appears next to the new bolus amount.


5. Select **Next** to review your bolus information.
6. Select **Square**.
The Bolus Wizard screen appears with your bolus amount.
7. To change the time period over which your bolus is delivered, select **Duration** to adjust the time. The duration can be from 30 minutes to 8 hours, in 15 minute increments.
8. Select **Deliver Bolus** to start your bolus.


During a Square Wave bolus delivery, the Square Bolus banner displays on your Home screen until bolus delivery is complete. You can press  and select **Bolus** to stop the bolus, to see details on the insulin that has been delivered, or to access the Bolus menu.

Delivering a Square Wave bolus using Manual Bolus

The Square Wave option is available in the Manual Bolus screen only after you turn on the Square Wave feature.

To deliver a Square Wave bolus manually:

1. Press  and go to the Manual Bolus screen.
Bolus > Manual Bolus
2. Set your bolus delivery amount (in units), and then select **Next**.
3. Select **Square**.
4. Select **Duration** and set the amount of time over which you want your Square Wave bolus to be delivered. The duration can be from 30 minutes to 8 hours, and is set in 15-minute increments.
5. Select **Deliver Bolus** to start your bolus.

During a Square Wave bolus delivery, the Square Bolus banner displays on your Home screen until bolus delivery is complete. You can press  and select **Bolus** to stop the bolus, to see details on the insulin that has been delivered, or to access the Bolus menu.

Dual Wave bolus

The Dual Wave bolus feature meets both immediate and extended insulin needs by delivering a combination of an immediate Normal bolus followed by a Square Wave bolus.


A Dual Wave bolus can be useful in these situations:

- When you need to correct an elevated BG before a meal, and you also need a delayed bolus for food that is absorbed slowly.
- When you eat meals with mixed nutrients, such as carbs, fats and proteins, that are absorbed at different rates.

Turning on or off Dual Wave bolus

The Dual Wave bolus delivery option is available only after you turn on the Dual Wave feature.


To turn on or turn off the Dual Wave feature:

1. Press  and go to the Dual/Square screen.
Options > Delivery Settings > Dual/Square Wave
2. Select **Dual Wave** to turn the feature on or off.
3. Select **Save**.

Delivering a Dual Wave bolus with the Bolus Wizard feature

You can deliver a Dual Wave bolus with the Bolus Wizard feature only after you turn the Dual Wave option on.

To deliver a Dual Wave bolus with the Bolus Wizard feature:

1. For a correction bolus or a food bolus with a correction, use your BG meter to check your BG. For a food bolus only, skip this step.
2. Press  and go to the Bolus Wizard screen.

Bolus > Bolus Wizard

The Bolus Wizard screen shows your current BG meter reading (if applicable) and any insulin that is still active from previous boluses. For more information about active insulin, see *About active insulin, on page 88*. For more information, see *About your compatible Ascensia BG meter, on page 125*.

3. If you are not using a wirelessly connected meter, you can select **BG** to manually enter your BG meter reading.



Note: If you choose not to enter a BG value, three dashes appear on the screen in place of the BG value.

4. For a food bolus, select **Carbs** to enter the carb count of your meal. For a correction bolus where no food was eaten, leave the Carbs value as 0.
5. Review your calculated Bolus amount. If you want to change the amount, select **Bolus** and make your desired change.



Note: If you change your bolus amount, the word “Modified” appears next to the new bolus amount.

6. Select **Next** to review your bolus information.

7. Select **Dual**.

The Bolus Wizard screen appears, with the food amount split evenly between the Now and Square portions.


8. If you need to change the amounts, select the area of the screen with the Now value and adjust the **Now** amount.

When you adjust the Now amount, the Square amount adjusts automatically.

Bolus Wizard		09:00
Bolus		1.8 U
Now	28 %	0.5 U
Square	72 %	1.3 U
Duration		3:00 hr
Deliver Bolus		

9. Adjust the **Duration** over which you want the Square Wave portion to be delivered. The duration can be from 30 minutes to 8 hours.


10. Select **Deliver Bolus** to start your bolus.

During a Dual Wave delivery, the Home screen shows the progress of the Now portion of your delivery. When the Now portion is complete, the Dual Bolus banner displays until bolus delivery is complete. You can press  and select **Bolus** to stop the bolus, to see details on the amount of bolus insulin delivered, or to access the Bolus menu.

Delivering a Dual Wave Bolus using Manual Bolus

The Dual Wave option is available in the Manual Bolus screen only after you turn on the Dual Wave feature.

To deliver a Dual Wave bolus using Manual Bolus:

1. Press  and go to the Manual Bolus screen.

Bolus > Manual Bolus


The Manual Bolus screen appears.

2. Set your bolus delivery amount (in units), and then select **Next**.
3. Select **Dual**.


The Manual Bolus screen appears, with the Now and Square portions split evenly.


Manual Bolus	09:00	
Bolus	0.8 U	
Now	50 %	0.4 U
Square	50 %	0.4 U
Duration	0:30 hr	
Deliver Bolus		

4. If you need to change the amounts, select the area of the screen with the Now value and adjust the **Now** amount. When you adjust the Now amount, the Square amount adjusts automatically.
5. Adjust the **Duration** over which you want the Square Wave portion to be delivered. The duration can be from 30 minutes to 8 hours.
6. Select **Deliver Bolus** to start your bolus.

During a Dual Wave delivery, the Home screen shows the progress of the Now portion of your delivery. When the Now portion is complete, the Dual Bolus banner displays until bolus delivery is complete. You can press  and select **Bolus** to stop the bolus, to see details on the amount of bolus insulin delivered, or to access the Bolus menu.

Easy Bolus feature

The Easy Bolus feature allows you to quickly deliver a Normal bolus using only the  button. Your pump must be in sleep mode to use the Easy Bolus feature.

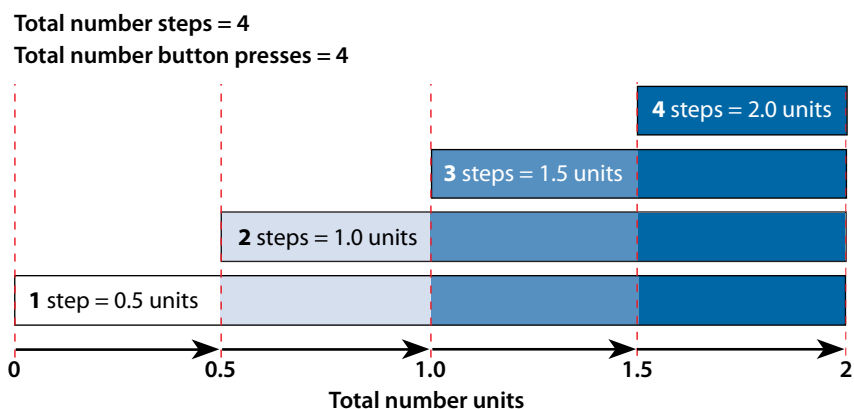
Before using the Easy Bolus feature, you must turn on the feature and set the step size. The step size determines the number of units the bolus amount increases each time you press the  button. Your Easy Bolus delivery is limited to 20 steps or your max bolus limit, whichever comes first.

To help you count your Easy Bolus steps, each time you press the \wedge button, your pump makes a different tone. There are five different tones that repeat in a pattern for every five steps you use. If your audio options are set to Vibrate only, the pump will not beep at all, and instead it will vibrate once with each key press.

Understanding the Easy Bolus step sizes

When setting up the Easy Bolus feature, you can set the step size from 0.1 to 2.0 units. Your step size cannot be higher than your max bolus. Set the step size to a number that makes it easy for you to calculate your bolus amount.

The following example shows how your bolus amount is increased with each step, or each press of the \wedge button when using the Easy Bolus feature to deliver a bolus. In this example, the step size is 0.5 units. For a delivery of 2.0 units, you would need four steps, or press the \wedge button four times when using the Easy Bolus feature.



Setting up the Easy Bolus feature

The Easy Bolus option is available only after you turn on the feature.

To set up the Easy Bolus feature:


1. Press \odot and go to the Easy Bolus screen.
Options > Delivery Settings > Easy Bolus
2. Select **Easy Bolus** to turn on the feature.
3. Set the **Step Size** amount (in units). You can set the step size from 0.1 to 2.0 units. Your step size cannot be higher than your max bolus.
4. Select **Save**.

Delivering a bolus using the Easy Bolus feature

Initially you should use the Easy Bolus feature while looking at the pump screen as you count the tones or vibrations.



WARNING: Never rely on beeps or vibrations alone while using the Easy Bolus feature. Always confirm your insulin delivery by looking at your pump screen. When using the Audio or Vibrate options, it is possible that an audio or vibration notification may not occur as expected if the speaker or vibrator in your pump malfunctions. Relying on beeps or vibrations while using the Easy Bolus feature could result in over delivery of insulin.

To use the Easy Bolus feature, your pump must be in sleep mode. Your pump automatically goes into sleep mode two minutes after the screen turns off. You can manually put your pump into sleep mode by pressing and holding the  button for about two seconds.

To deliver a bolus using the Easy Bolus feature:

1. While your pump screen is in sleep mode, press and hold \wedge for about one second. After your pump beeps or vibrates, release \wedge . You can now start programming your bolus with the Easy Bolus feature.



Note: If your pump does not respond when you press \wedge , it may not be in sleep mode, even if the screen is dark.

2. Press \wedge the number of times needed to set your bolus amount. Each time you press \wedge , your pump sounds a tone or vibrates, and your bolus amount increases by the number of units set for the step size.



Note: You cannot use \vee to set up the insulin amount for your bolus. Pressing \vee cancels the bolus.

3. When you have reached the desired bolus amount, press and hold \wedge to confirm the amount. You should hear a confirmation tone or feel a vibration for each button press. Count to ensure the amount is correct. If the amount is not correct, press and hold \vee until you hear a tone, and then start again from step 1.
4. When the bolus amount is confirmed, press and hold \wedge for about one second to deliver your bolus. Your pump beeps or vibrates. Your bolus starts immediately after the confirmation.



Note: If you do not start your bolus within 10 seconds, the bolus is cancelled and a message appears letting you know that your bolus was not delivered.

Preset Bolus

The Preset Bolus feature allows you to set up in advance bolus deliveries you expect to use frequently. There are four Preset Bolus names that allow you to match a bolus to a meal with a known carb content: Breakfast, Lunch, Dinner, and Snack. There are four additional Preset Bolus names that can be set for other circumstances (Bolus 1 through Bolus 4).



Note: To set up a Dual Wave bolus or Square Wave bolus, the Dual Wave bolus or Square Wave bolus feature must be turned on.

Setting up and managing Preset Bolus deliveries

To set up Preset Bolus amounts:

1. Press \odot and go to the Preset Bolus Setup screen.

Options > Delivery Settings > Preset Bolus Setup

The Preset Bolus Setup screen appears, showing any existing Preset Bolus settings.

2. Select **Add New**.

The Select Name screen appears with the available Preset Bolus names.

3. Select the Preset Bolus you want to set.
The Edit screen for that particular Preset Bolus appears.
4. Select **Bolus** to set the bolus amount.
5. Select **Type** to set this as a Normal bolus, Square Wave bolus, or Dual Wave bolus.



Note: The **Type** field appears only when you have the Dual Wave bolus or Square Wave bolus features turned on.

If you set the type to Square Wave or Dual Wave, additional settings appear.

6. If you are setting up a Square Wave bolus or Dual Wave bolus, do the following:
 - For a Square Wave bolus, set the **Duration** of time for the bolus delivery.
 - For a Dual Wave bolus, adjust the **Now/Square** percentages as needed, then set the **Duration** of time for the Square Wave portion of the bolus.



Note: If you later turn off the Dual Wave bolus or Square Wave bolus feature, your existing Preset Bolus settings are still available for use.

7. Select **Save**.


Editing, renaming, or deleting a Preset Bolus

You cannot delete, rename, or edit a Preset Bolus while it is delivering.



Note: You can only rename or delete a Dual Wave Preset Bolus or Square Wave Preset Bolus when the Dual Wave bolus or Square Wave bolus feature is turned off.

To edit, rename, or delete a Preset Bolus:

1. Press  and go to the Preset Bolus Setup screen.
Options > Delivery Settings > Preset Bolus Setup


The Preset Bolus Setup screen appears, showing any existing Preset Bolus settings.

2. Select the desired Preset Bolus.
3. Select **Options**.
4. Do one of the following:
 - Select **Edit** to adjust the Bolus value and Type, if applicable. If you change to a Square Wave bolus, you need to enter the Duration. If you change to a Dual Wave bolus, you need to enter the Now and Square amounts, and the Duration.
 - Select **Rename** to assign a different name to this Preset Bolus. When the Select Name screen appears, you can select any available name from the list.
 - Select **Delete** to delete this Preset Bolus.

Delivering a Preset Bolus

Follow these steps to deliver a Preset Bolus. You must set up Preset Bolus deliveries before you can use the Preset Bolus feature. For more information, see *Setting up and managing Preset Bolus deliveries, on page 102*.

To deliver a Preset Bolus:

1. Press  and go to the Preset Bolus screen.

Bolus > Preset Bolus

The existing preset bolus settings appear, showing your current BG value (if applicable) and any insulin that is still active from previous boluses. For more information about active insulin, see *About active insulin, on page 88*.


2. Select the Preset Bolus you want to deliver.
3. Verify your bolus amounts, and then select **Deliver Bolus**.

Your pump displays a progress bar on the Home screen when your bolus starts. The pump beeps or vibrates when delivery starts and when delivery finishes.


Stopping a bolus delivery

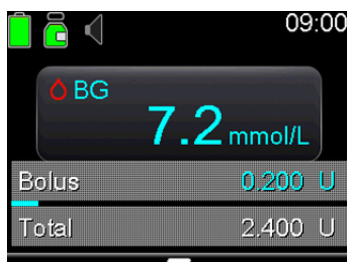
The following procedures describe how to stop a Normal bolus or a Dual Wave bolus during the Now portion delivery, and how to stop a Square Wave bolus or a Dual Wave bolus during the Square portion delivery.



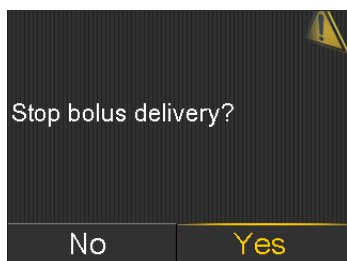
Note: This procedure describes how to stop a bolus that is in progress. It does not stop your basal insulin delivery. If you need to stop all insulin delivery, use the Suspend Delivery feature (press  and select **Suspend Delivery**).

To stop a Normal bolus delivery or the Now portion of a Dual Wave bolus delivery:

1. While your pump is delivering your Normal bolus or the Now portion of a Dual Wave bolus, press  from the Home screen.



2. Select **Stop Bolus**, then select **Yes** to confirm.




Note: If you are delivering a Normal bolus and a Square Wave bolus at the same time, or a Normal bolus and the Square portion of a Dual Wave bolus at the same time, both boluses are stopped.

The Bolus Stopped screen appears and shows the amount of bolus delivered, and the original bolus amount you set up.



To stop a Square Wave bolus delivery or the Square portion of a Dual Wave bolus delivery:

1. Press  from the Home screen.
2. Select **Bolus**.
3. Select **Stop Bolus**.
4. To stop your bolus, select **Yes** to confirm.



Note: If you are delivering a Normal bolus and a Square Wave bolus at the same time, or a Normal bolus and the Square portion of a Dual Wave bolus at the same time, both boluses are stopped.

The Bolus Stopped screen appears and shows the amount of bolus delivered, and the original bolus amount you set up.

■ Reservoir and infusion set

5

5 Reservoir and infusion set

Setting up the reservoir and infusion set

When you are ready to use your pump with insulin, make sure the time and date are correct on your pump. You must also program your settings as instructed by your healthcare professional.

You will need these items:

- MiniMed 670G insulin pump
- Vial of insulin (U-100)
- MiniMed reservoir
- MiniMed-compatible infusion set and its user guide



WARNING: Clear the active insulin value before using your pump to deliver insulin for the first time. If you have practiced giving boluses on your pump before using insulin, the active insulin value could be inaccurate. This could result in inaccurate insulin delivery, and serious injury. For details, see *Clearing your active insulin*, on page 158.

Removing the reservoir

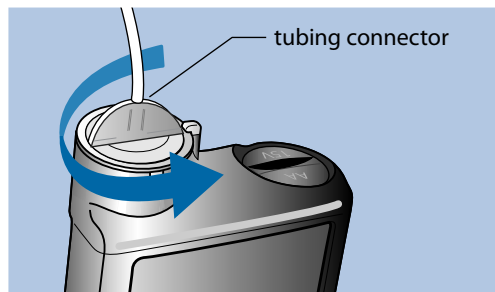
If this is the first time you are inserting a reservoir into your pump and you do not currently have a reservoir loaded, skip to *Rewinding your pump*, on page 110.



WARNING: Never insert the reservoir into the pump while the tubing is connected to your body. Doing so could result in an accidental infusion of insulin, which may cause low BG.

To remove your reservoir:

1. Wash your hands.
2. Remove the entire infusion set from your body.
3. If you have the optional activity guard attached to the reservoir compartment on your pump, remove it now.
4. Turn the tubing connector a half-turn counter-clockwise, then pull the reservoir and connector out from the pump.



5. Dispose of the used reservoir and infusion set according to local regulations, or contact your healthcare professional for disposal information.

Rewinding your pump

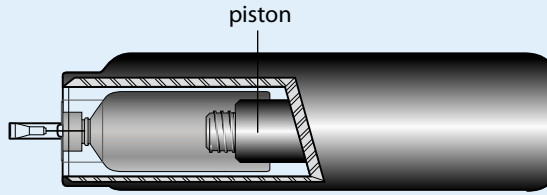


WARNING: Always make sure the infusion set is disconnected from your body before you rewind your pump or fill the infusion set tubing. Never insert the reservoir into the pump while the tubing is connected to your body. Doing so could result in an accidental infusion of insulin, which can cause hypoglycemia.


When you rewind your pump, the piston in the reservoir compartment returns to its starting position and allows a new reservoir to be placed into the pump.



Note: The piston is located in the reservoir compartment of your pump. It engages the reservoir and pushes insulin through the tubing.



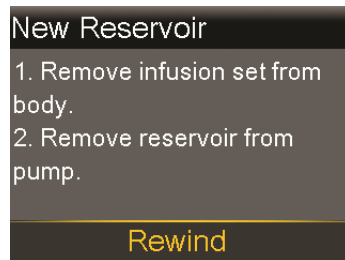
To rewind your pump:

1. Press  and go to the New Reservoir screen.

Options > Reservoir & Tubing > New Reservoir

The New Reservoir screen appears.

If you have not yet removed the infusion set and reservoir, do so now.



2. Select **Rewind**.

The piston in the reservoir compartment of your pump returns to its starting position. This may take several seconds. During this process, a "Rewinding" message appears.

Another message appears to let you know that your pump has finished rewinding, and then the New Reservoir screen appears.

New Reservoir

1. Fill reservoir.
2. Connect tubing to reservoir.

DO NOT CONNECT TO BODY.

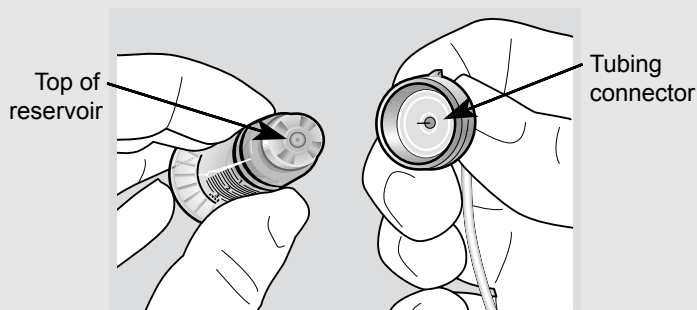
Next

3. Follow the instructions in the next section to fill your reservoir.

Filling the reservoir



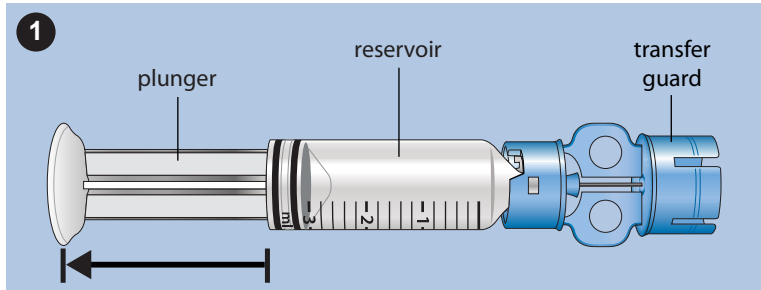
WARNING: Do not use the reservoir or infusion set if any liquid gets on the top of the reservoir or inside the tubing connector (as shown in the image). Liquid can temporarily block the vents. This may result in the delivery of too little or too much insulin, which can cause hyperglycemia or hypoglycemia. If any liquid gets on the top of the reservoir or inside the tubing connector, start over with a new reservoir and infusion set.



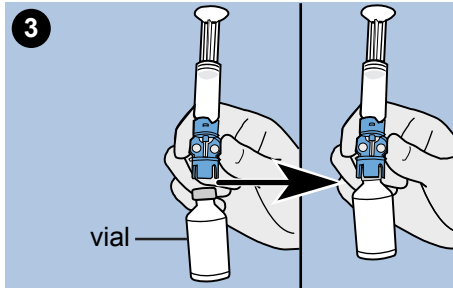
WARNING: Always allow your insulin to reach room temperature before use. Cold insulin can cause air bubbles in the reservoir and tubing, which may result in inaccurate insulin delivery.

To fill the reservoir, do these steps:

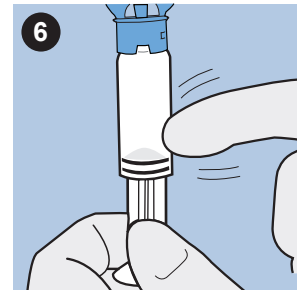
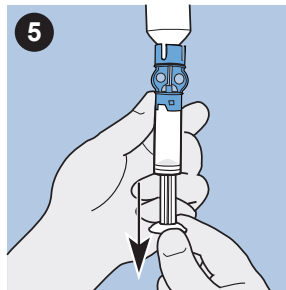
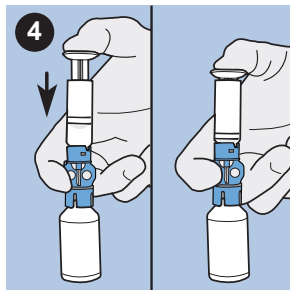
1. Remove the reservoir from the package and fully extend the plunger.



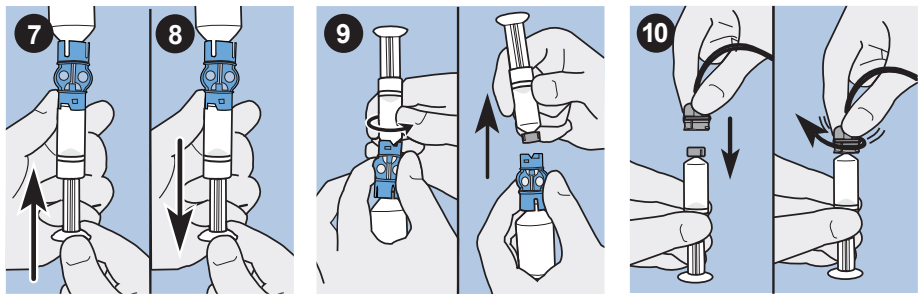
2. Swab the vial with alcohol (not shown).
3. Press the transfer guard onto the vial without pushing down on the plunger.



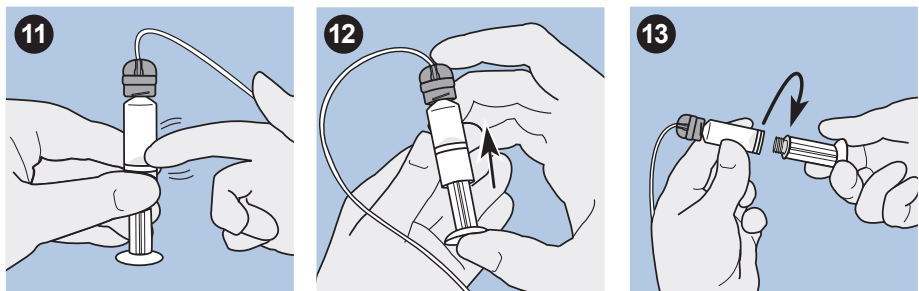
4. Push down on the plunger to pressurize the vial. Hold down the plunger rod.
5. While still holding down the plunger rod, flip the vial over so the vial is on top. Slowly pull down on the plunger to fill the reservoir.
6. Gently tap the side of the reservoir to make any air bubbles rise to the top of the reservoir.



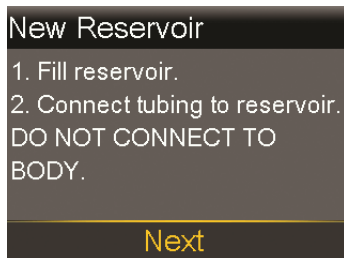
7. Slowly push up on the plunger just enough to remove any air bubbles from the reservoir.
8. Slowly pull down on the plunger to fill the reservoir to the number of units desired.
9. To avoid getting liquid on the top of the reservoir, flip the vial over so that it is upright. Turn the reservoir counter-clockwise, then pull straight up to remove the reservoir from the transfer guard.
10. Place the tubing connector onto the reservoir. Turn the connector clockwise, pressing gently against the reservoir until you feel it slide in. Push in and continue turning until the reservoir and the connector lock with a click.



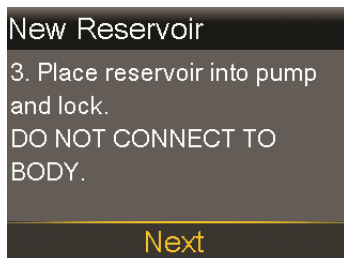
11. Tap the side of the reservoir to remove any air bubbles.
12. To purge air bubbles that have risen to the top of the reservoir, push up on the plunger until you see insulin in the tubing.
13. Without pulling, turn the plunger counter-clockwise to remove it from the reservoir.



14. Select **Next** from the New Reservoir screen.



The New Reservoir screen now instructs you to place the reservoir in your pump.



15. Follow the instructions in the next section to insert the reservoir into the reservoir compartment of your pump immediately after filling it.

Inserting the reservoir into your pump

Be sure to perform the following steps in the order they are presented.



Note: Do not insert the reservoir into your pump until you have received training.

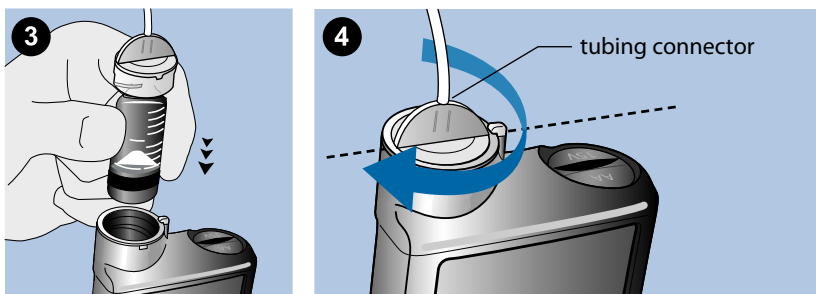


WARNING: Always rewind your pump before inserting a new reservoir. Failing to rewind your pump could result in an accidental infusion of insulin, which can cause hypoglycemia.

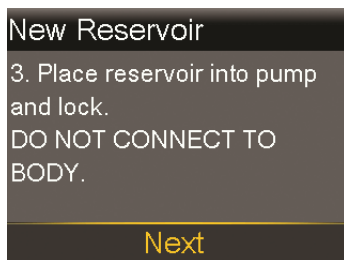
Never insert the reservoir into the pump while the tubing is connected to your body. Doing so could result in an accidental infusion of insulin, which can cause hypoglycemia.

To insert the reservoir into your pump:

1. If you are using the pump for the first time, remove the shipping cap from the reservoir compartment.
2. Rewind your pump if you have not yet done so. See *Rewinding your pump*, on page 110 for more information.
3. Insert the reservoir into the top of the reservoir compartment.
4. Turn the tubing connector approximately a half-turn clockwise until the connector is locked. The tubing connector should be aligned horizontally with the pump case as shown in the following example.



5. Your pump should be displaying the New Reservoir screen shown in the following example. Select **Next** to continue.



6. Select and hold **Load** until you see a checkmark on the screen and your pump beeps or vibrates. Holding **Load** moves the piston up in the reservoir compartment until it engages with the bottom of the reservoir.



Note: If you press the **Back** button after the loading process begins, a Loading incomplete alarm will occur.

When the loading process is completed, the following screen appears.



7. Select **Next** to continue.
8. Follow the instructions in the next section to fill the tubing with insulin.

Filling the tubing

You need to fill the infusion set tubing with insulin before you insert the set into the body.



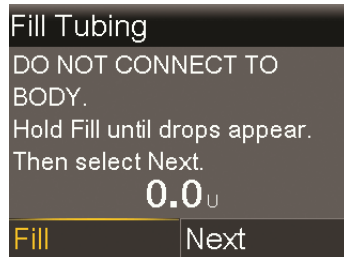
WARNING: Always make sure the infusion set is disconnected from your body before you rewind your pump or fill the infusion set tubing. Never insert the reservoir into the pump while the tubing is connected to your body. Doing so could result in an accidental infusion of insulin, which can cause low BG.



WARNING: Always check your tubing for air bubbles. Continue to press **Fill** until the bubbles have been removed from the tubing. Air bubbles may result in inaccurate insulin delivery.

To fill the tubing:

1. After you load your reservoir and select **Next** from the Load Reservoir screen, the Fill Tubing screen appears.



2. Select and hold **Fill**. Your pump beeps six times to let you know it is positioning the reservoir. Continue holding **Fill** until insulin droplets form on the tip of the infusion set needle, then release. Your pump beeps as it fills the tubing, and the amount of insulin you are using appears on the screen.

If you get the Max Fill Reached alarm, it means you have used more than 30 units of insulin to fill your tubing. For details, go to *Pump alarms, alerts, and messages, on page 240*, and see the description for Max Fill Reached.
3. Select **Next** to continue.
4. Follow the instructions in the next section to insert the infusion set into your body before filling the cannula.

Inserting the infusion set



WARNING: Do not remove the reservoir from the pump while the infusion set is connected to your body. Doing so could result in the delivery of too little or too much insulin, which can cause high BG or low BG.

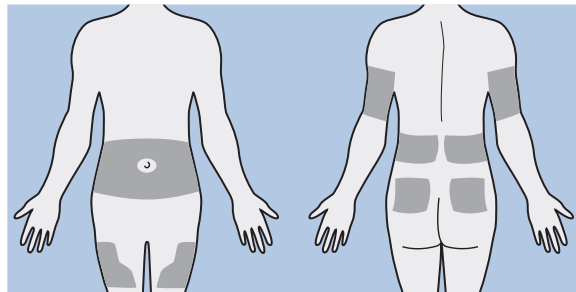
You must have completed the following procedures, as described previously, before inserting the infusion set into your body:

- Rewinding your pump.
- Filling your reservoir.
- Inserting the reservoir into pump.
- Filling the tubing with insulin.

Shown here are the best body areas (shaded) for infusion set insertion. Avoid the 5.0 cm (2-inch) area around the navel to help ensure a comfortable infusion site and to help with adhesion.



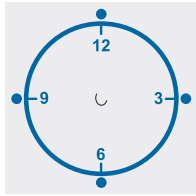
Caution: Do not use the same infusion set insertion site for an extended period of time. This can cause the site to become overused. Rotate the infusion set insertion sites regularly.



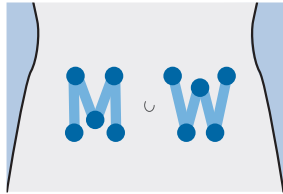
Caution: Always change your infusion set every two to three days. Using the same infusion set for an extended period of time can cause infusion set occlusion or site infection.

To keep sites healthy, some people find it helpful to use a visual scheme to help them rotate their insertion sites in an organized way. For example, here are two commonly used methods. For maximum effectiveness, use both methods, alternating between them:

- Visualize an imaginary clock drawn on your abdomen surrounding your belly button. Rotate infusion set insertion sites by starting at 12 o'clock and then rotate the site clockwise to 3 o'clock, 6 o'clock, and so on.



- Imagine a letter M or a letter W on either side of your belly button. Start at the end of one letter and proceed through the letter, rotating to each intersection in turn.



Medtronic Diabetes offers a variety of infusion sets for your pump.



Note: Always refer to your infusion set user guide for instructions on inserting an infusion set.

After your infusion set is inserted, see *Filling the cannula*, on page 120 to fill the infusion set cannula.

Filling the cannula

Filling the soft cannula with insulin is required after the infusion set is inserted into your body and the introducer needle is pulled out. The insulin amounts required to fill the cannula depend on the type of infusion set you are using. Refer to your infusion set instructions for this information.



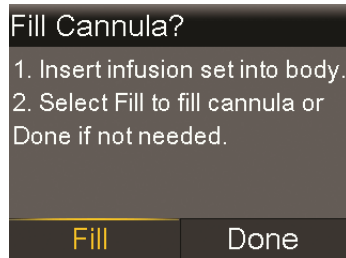
Note: If you are using an infusion set with a needle, you do not need to fill the cannula. Select **Done** when the system prompts you to continue with the fill process.



WARNING: Never leave your pump on the Fill Cannula? screen. Insulin delivery is suspended while on the Fill Cannula? screen. Always finish filling your cannula or return to the Home screen to avoid continued insulin delivery suspension. Failing to do this can result in hyperglycemia.

To fill the cannula:

1. After you fill your tubing and insert your infusion set, the Fill Cannula? screen appears.



Note: If your screen turns off before you are ready to fill your cannula, press any button on your pump to turn it on again.

2. To fill your cannula now, select **Fill**. If you are using an infusion set with a needle, you do not need to fill the cannula. Select **Done** to skip this step. The Fill Cannula screen appears.



3. Adjust the Fill amount for your particular infusion set, and then select **Fill Now**. If you are unsure about the fill amount, see the instructions that came with your infusion set.

4. As the cannula starts filling, your screen displays the amount of units being delivered. The pump beeps or vibrates when the delivery is complete.
After the cannula is filled, the Home screen appears. Your pump is now ready to deliver insulin.

To stop filling the cannula:

1. Select **Stop Filling** to stop filling the cannula.



2. Select **Yes**.
The Fill Stopped screen appears confirming amount delivered.
3. Select **Done**.

Disconnecting your infusion set

Always refer to your infusion set user guide for instructions on how to disconnect your infusion set.

Reconnecting your infusion set

Always refer to your infusion set user guide for instructions on how to reconnect your infusion set.

6



Meter

Meter

The MiniMed 670G insulin pump can only wirelessly connect with a compatible Ascensia BG meter to receive remote BG readings. If you do not connect a compatible Ascensia BG meter to your pump, you must enter your BG readings manually. To wirelessly connect your pump and meter, you need the following items:

- MiniMed 670G insulin pump
- Compatible Ascensia BG meter
- Compatible Ascensia BG meter user guide

About your compatible Ascensia BG meter

You can set up your pump to automatically receive BG readings from your compatible Ascensia BG meter. When the pump is on the Home screen, it beeps or vibrates when it receives a BG reading from the meter. After confirming the BG value, the BG Meter screen appears, where you can view your current BG reading and, if necessary, deliver a bolus. Once received from the meter, you must confirm the value on your pump. Your BG values will appear on your pump screen for 12 minutes, along with any insulin that is still active from any previous boluses. If your BG reading is outside the range of 3.9 to 13.9 mmol/L, the pump displays an alert. In this case, treat your low BG or high BG as directed by your healthcare professional.



Note: You can wirelessly connect up to six compatible Ascensia BG meters to your pump. However, only one compatible Ascensia BG meter can communicate with your pump at a time. Your pump will only display

the BG reading from the latest value received from the connected compatible Ascensia BG meter. In order for your pump to use the BG reading, you must confirm the reading on your pump.

The compatible Ascensia BG meter may not be available in all countries.

You can also deliver a Normal Bolus or a Preset Bolus from your compatible Ascensia BG meter. For more information about setting up your pump to use the Remote Bolus feature, see *Setting up the Remote Bolus feature*, on page 126. Consult your healthcare professional before using the Remote Bolus feature.



Note: The Remote Bolus feature is not available when in SmartGuard Auto Mode, even if the Remote Bolus feature is turned on.

Wirelessly connecting your pump and meter

Always refer to your compatible Ascensia BG meter user guide for instructions on connecting the meter to the pump.

Setting up the Remote Bolus feature

The Remote Bolus feature allows you to send a Normal Bolus or a Preset Bolus remotely from your meter. To access this option, your meter and pump must be wirelessly connected, and the Remote Bolus option on your pump must be turned on. Consult your healthcare professional before using the Remote Bolus feature.




Note: The Remote Bolus feature is not available when in SmartGuard Auto Mode, even if the Remote Bolus feature is turned on.

The following procedure describes how to turn the Remote Bolus feature on or off. For information on using the Remote Bolus feature, see the user guide that came with your compatible Ascensia BG meter.



Note: Remote Bolus default setting is on.


To turn on or off Remote Bolus:

1. Make sure that your pump and compatible Ascensia BG meter are connected.
2. Press  and go to the Remote Bolus screen.
Options > Utilities > Remote Bolus
The Remote Bolus screen appears.
3. Select **Remote Bolus** to turn the feature on or off.
4. Select **Save**.

Deleting a meter from your pump

Follow this procedure to delete your compatible Ascensia BG meter from the pump.

To delete the meter from the pump:

1. Press  and go to the Manage Devices screen.
Options > Utilities > Device Options > Manage Devices
The Manage Devices screen appears.
2. Identify and select your meter by the serial number. See your compatible Ascensia BG meter user guide for instructions on locating your serial number.
3. Select **Delete**.
4. A screen appears confirming that you would like to delete the device. Select **Yes** to confirm or **No** to cancel.



7 History and events

This chapter describes the History and Event Markers features. The History screens provide details about your personal therapy with your pump, including information about your insulin deliveries, BG meter readings, SG readings, and any alarms and alerts you received. The Event Markers feature allows you to enter and save information, such as manual BG readings, carbohydrates eaten, and exercise.

You can view updates on the Daily History summary screen to learn the following information about your therapy with your pump over a period of time:

- automatic and manual transitions into and out of SmartGuard Auto Mode
- start time and the end time for all your Temp Target events
- correction boluses that your pump automatically calculates for you

For more information about the Auto Mode feature on your pump, refer to *SmartGuard Auto Mode*, on page 215.

History


The History feature includes the Summary, Daily History, and Alarm History screens. The SG Review and ISIG History screens are available if you are using the Sensor feature.

Summary screen

The Summary screen shows details about past insulin deliveries and meter readings. If you are using a sensor, the Summary screen also shows information about your sensor alerts and SG readings.

You can view historical details for a single day, or you can select multiple days to view an average of all the results for the number of days that you selected.

To view your Summary screen:

1. Press  and go to the Summary screen.
Options > History > Summary
2. Select the time period for the Summary screen.
The Summary screen appears, showing information for the number of days that you selected.
3. You can scroll down to view the entire screen. If you are using the 1 Day view, you can use the < and > buttons on your pump to view the results for each day in history.

Understanding the Summary screen

The Summary screen separates information into these categories:

- Auto Mode
- overview
- bolus
- BG meter
- sensor
- low management mode

Summary screen: Auto Mode

The following table describes the Auto Mode portion of the Summary screen.

Name	Description
Time in Auto Mode	number of hours / percent of time in SmartGuard Auto Mode
Time in target range	number of hours / percent of time in target range (3.9 mmol/L to 10 mmol/L)
Time below range	number of hours / percent of time below target range (below 3.9 mmol/L)
Time above range	number of hours / percent of time above target range (above 10 mmol/L)

Summary screen: overview

The following table describes the overview portion of the Summary screen.



Note: If you are viewing a single day of Summary results, then the values shown are the actual results for the selected day. If you are viewing more than one day of Summary results, then the value is an average of the days that you selected.

Name	Description
TDD	Total daily dose of insulin units.
Basal	<ul style="list-style-type: none"> • Insulin units devoted to basal delivery. • Percentage of insulin devoted to basal delivery.
Bolus	<ul style="list-style-type: none"> • Insulin units devoted to bolus delivery. • Percentage of insulin devoted to bolus delivery.
Total Carbs	Daily carbohydrate amount, in grams.

Summary screen: bolus

The following table describes the bolus portion of the Summary screen:



Note: If you are viewing a single day of Summary results, then the values shown are the actual results for the selected day. If you are viewing more than one day of Summary results, then the value is an average of the days that you selected.



Note: The Summary screen does not show a bolus that was delivered to both cover a Carb amount and correct a BG value.

Name	Description
Carb bolus only	<ul style="list-style-type: none"> • Total insulin units delivered using the Bolus Wizard feature or Auto Mode Bolus with food amount only. • Number of times the Bolus Wizard feature or Auto Mode Bolus delivered a food bolus only.

Name	Description
BG Correction Only	<ul style="list-style-type: none"> Total insulin units delivered using the Bolus Wizard feature or Auto Mode Bolus with BG correction amount only. Number of times the Bolus Wizard feature or Auto Mode Bolus delivered a BG correction bolus only.

Summary screen: BG meter

The following table describes the BG meter portion of the Summary screen:

Name	Description
BG	Total number of BG meter readings, including readings from a compatible Ascensia BG meter and BG meter readings entered manually.
Average BG	Average BG meter readings.
BG Standard Dev	Standard deviation of BG meter readings.
Low BG	Lowest BG meter reading.
High BG	Highest BG meter reading.

Summary screen: sensor

The following table describes the sensor portion of the Summary screen. If the sensor feature has never been turned on, this portion of the screen does not appear. If the sensor feature was turned on at least once, but is currently turned off, this portion of the screen appears gray.

Name	Description
SG Average	Average SG value.
SG Std. Dev.	Standard deviation of the SG readings.

Summary screen: low management mode


The following table describes the low management mode portion of the Summary screen. This portion shows information about the SmartGuard suspend features. For details on the SmartGuard suspend features, see *SmartGuard Technology, on page 166*.

Name	Description
Suspend before low	The average number of Suspend before low events per day.
Suspend on low	The average number of Suspend on low events per day.
Time suspended by sensor	The average duration (amount of time) suspended as a result of Suspend on low or Suspend before low events per day.

Daily History

The Daily History screen displays a list of actions you performed on your pump or event entries that you made for the selected day, such as your BG meter readings, SG calibrations, bolus deliveries, any temp basal rates you have used, and so on. The list displays the most recent action or event first. From this list, you can display further details about any action or event.

To view your Daily History:

1. Press  and go to the Daily History screen.

Options > History > Daily History


A list of dates appears.

2. Select a specific date of history to view. A list appears with any pump actions or events entered on the specified day.
3. You can select any item in the list to open the Detail screen, which displays more information about the selected action or event. For example, if you view the details of a bolus delivered using the Bolus Wizard feature, the Detail screen shows you all of the data associated with that bolus, such as the BG correction amount, active insulin adjustment, carbs entered, and calculated bolus.

Alarm History

The Alarm History screen displays a list of alarms and alerts that occurred on the selected day. The list displays the most recent alarm or alert first. From this list, you can display further details about any alarm or alert.

To view your Alarm History:

1. Press  and go to the Alarm History screen.

Options > History > Alarm History

A list of dates appears.

2. Select a specific date of alarm history to view. A list appears showing any alarms or alerts that occurred on the specified day.
3. You can select any alarm or alert in the list to open the Alarm Detail screen, which displays more information about the selected alarm or alert.

Using SG Review

The SG Review feature allows you to view a graph of your SG history, based on high and low limits you enter. You can view information for one day, or view an average of your SG data over a number of days.

This SG Review feature is available if you are using the Sensor feature.



Note: The high and low limits that you set in the SG Review screen are only used to view your SG data. These limits are not the same as the high and low glucose limits used for your sensor alerts. Changing your limits in the SG Review screen does not affect the high and low glucose limits used for your sensor alerts.

To review your SG history:

1. Press  and go to the SG Review screen.

Options > History > Sensor Glucose Review

The SG Review screen appears. The high and low limits that appear are either the values you entered for the last SG Review, or the default values of 10 mmol/L for the High Limit and 3.9 mmol/L for the Low Limit.



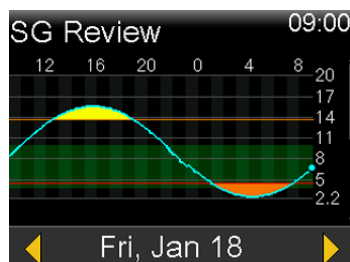
2. Enter the High Limit and Low Limit that you want to use to view your SG data.

There must be a minimum of 1.1 mmol/L difference between the High Limit and the Low Limit.

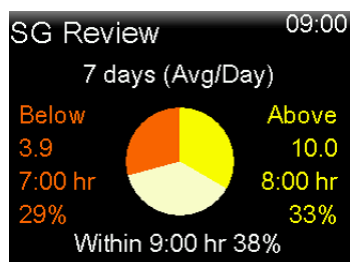
3. Enter the number of days of SG history to average, and select **Next**.

A graph of your SG data appears. If you specified one day of history to view, the graph shows details about when your SG was above, below, or within your specified limits. You can scroll down to view the number of hours and percentage of time you were above, within, and below your SG limits.

If you have no data saved, a message appears on the screen letting you know there is no data available.



If you view information for multiple days, the graph shows the average percentage of time that your SG was above, below, or within your specific limits.



ISIG History

ISIG is an electronic reading from your sensor that is used in conjunction with your calibration numbers to calculate the current glucose reading on your pump.


To review your ISIG History:

1. Press  and go to the ISIG History screen.

Options > History > ISIG History

The ISIG History screen displays an hourly sequence for one 24-hour day.

2. Scroll through the list to highlight an hour, then press  to select it.

Use the  or  buttons to scroll through the listing of ISIG readings, which occur every five minutes.


Event Markers

The Event Markers feature allows you to electronically save certain types of information.

When using this feature, enter events when they happen because the system records the time of the entry. You cannot change entries after you have put the information into your pump. You can view your saved events in the Daily History screen.

The entered information can be sent to the CareLink Personal software, where it can be used to generate reports you can share with your healthcare professional.

To enter Event Markers:

1. Press  and go to the Event Markers screen.

Options > Event Markers

2. Select and enter event information for any of the following categories:

BG



If you are not using the Bolus Wizard feature, Auto Mode Bolus, manual entry, or a compatible Ascensia BG meter to record your BG meter readings in your pump, you can enter them in this screen. If you are using a sensor, you may use a BG meter reading you enter in this screen for calibration. You can also enter non-calibration BG meter readings, such as those readings taken when eating or when your BG is rising or falling rapidly.




Injection



Enter the number of units of any insulin you have given by injection.



Note: Insulin units entered using the injection event marker are not added to your Active Insulin amount tracked on the pump.

Food		<p>Enter the amount of carbohydrates that you have eaten or drunk that have not been entered in the Bolus Wizard feature or Auto Mode Bolus. For example, you might enter carbs that you ate to correct a low BG.</p> <p>Do not use this screen to enter carbs that you have already entered in the Bolus Wizard feature or Auto Mode Bolus.</p>
Exercise		<p>Enter the length of time you exercised. It is helpful to be consistent and enter the information either before or after each time you exercise.</p>
Other		<p>Examples of Other event markers can include when you take medications, when you feel ill, or when you are under stress.</p>

8


Reminders

Reminders help you remember to do important routine activities. There are specific reminders that prompt you to check your BG after a bolus, give a food bolus, check your reservoir level, and change your infusion set. There are also personal reminders you can use for any purpose. If you have the sensor feature turned on, the calibration reminder prompts you to calibrate your sensor.

Personal reminders

The Personal reminders include six numbered reminders, along with the specific reminders for BG Check and Medication.

To create a new Personal reminder:

1. Press  and go to the Personal screen.
Options > Reminders > Personal
2. Select **Add New**.
The Select Name screen appears showing the available reminders.
3. Select the reminder that you want to set.
The Edit screen appears for the selected reminder.
4. Enter the time that you want the reminder to occur.
5. Select **Save**. The Personal reminder occurs at the specified time each day unless you change or delete it.

To edit, rename or delete an existing Personal reminder:

1. Press  and go to the Personal screen.

Options > Reminders > Personal

2. Select the reminder that you want to change.
3. Do one of the following:
 - Select **Reminder** to turn this reminder on or off.
 - Select **Edit** to change the time of the reminder.
 - Select **Rename** to select a new name for this reminder.
 - Select **Delete** to delete this reminder.

Bolus BG Check reminder

The Bolus BG Check reminder helps you remember to check your BG after a bolus. After you start a bolus, the pump asks you when you want to be reminded to check your BG. The timer counts down from the time the bolus started.



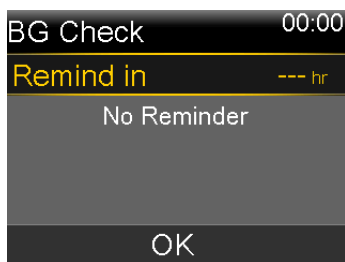
Note: The Bolus BG Check reminder is not available when you deliver a bolus using the Remote Bolus feature from your compatible Ascensia BG meter.

To turn on or turn off Bolus BG Check reminders:

1. Press and go to the BG Check screen.
Options > Reminders > Bolus BG Check
2. To turn the reminder on or off, select **Reminder**.
3. Select **Save**.

To use a Bolus BG Check reminder when delivering a bolus:

1. After you turn on the Bolus BG Check reminder, each time you start a bolus, the following screen appears:



2. Enter a time from 30 minutes to 5 hours, in 30-minute increments. Select **OK**. If you do not want a reminder after the bolus, select the dashes without adding a time, and then select **OK**. If needed, press \vee to return to the dashes.

Missed Meal Bolus reminder

The Missed Meal Bolus reminder alerts you if a bolus is not delivered within a time period that you set. These time periods are usually set around your typical meal times to help ensure a meal bolus is not missed. You can set up to eight Missed Meal Bolus reminders.

To create a new Missed Meal Bolus reminder:

1. Press \odot and go to the Missed Meal Bolus screen.
Options > Reminders > Missed Meal Bolus
2. Select **Add New**.
3. Select **Start Time** and enter a time.
4. Select **End Time** and enter a time. The time range is from one minute to 24 hours.
5. Select **Save**.

To turn on or off, edit, or delete existing Missed Meal Bolus reminders:

1. Press \odot and go to the Missed Meal Bolus screen.
Options > Reminders > Missed Meal Bolus
2. Select one of the reminders that you have already created.
3. Change any of the following:
 - Select **Reminder** to turn this reminder on or off.
 - Select **Edit** to change the time of this reminder.

- Select **Delete** to delete this reminder.

Low Reservoir reminder

The Low Reservoir reminder alerts you when the insulin level in your reservoir is low. This feature allows you to program your pump to generate a reminder before your reservoir is empty. You can adjust the Units amount to notify you when your reservoir has a specified number of units remaining, and then alert you again when half of the remaining units are used.




Note: The number of units remaining in your reservoir can be found on the Quick Status screen. For more information on accessing the Status Screens, see *Status screens*, on page 42.



WARNING: When the pump detects a low reservoir condition during a bolus or fill cannula delivery, the Low reservoir alert displays. When delivery has finished, check the amount left in the reservoir to make sure your pump does not run out of insulin, as this could lead to an under delivery of insulin, which may cause hyperglycemia.


Low Reservoir reminder setup:

1. Press  and go to the Low Reservoir screen.
Options > Reminders > Low Reservoir
2. Select **Units** to enter the number of units. You can set a value from 5 units to 50 units.
3. Select **Save**.

Set Change reminder

The Set Change reminder helps you remember to change your infusion set. After you turn on this reminder, it automatically tracks the time between infusion set changes and reminds you to change your infusion set.


To turn on or off, or change the Set Change reminder:

1. Press  and go to the Set Change screen.
Options > Reminders > Set Change
2. Select **Reminder** to turn the reminder on or off. If you turn on the reminder, select **Time** and choose two or three days for the reminder.
3. Select **Save**.

Calibration reminders

The Calibration reminder is available if you are using the Sensor feature. This feature helps you remember to calibrate your sensor. For example, if you set your reminder to four hours, you receive a Calibrate By alert four hours before the next BG meter reading is due.

To turn on or off, or change the Calibration reminder:

1. Press  and go to the Calibration screen.
Options > Reminders > Calibration



2. Select **Reminder** to turn the reminder on or off.
3. If you turn on the reminder, select **Time** and enter a time between 5 minutes and 6 hours. The time can be set in 5-minute increments.
4. Select **Save**.

9

9 General settings

This chapter provides information about common tasks for various settings.

Airplane Mode

Airplane Mode temporarily stops wireless communication with your pump. Use this mode during airline travel when you are instructed to turn off wireless devices.



WARNING: Do not rely on glucose sensor-enabled features when Airplane Mode is on because the pump does not receive sensor readings from the transmitter. Glucose sensor-enabled features include SmartGuard Suspend on low, SmartGuard Suspend before low, and SmartGuard Auto Mode. When using Airplane Mode, always rely on your BG values when making therapy decisions to avoid hypoglycemia or hyperglycemia.

Check airline policies for specific instructions about operating medical devices during a flight. Check local airport policies for specific instructions about medical devices and security procedures.

The following table provides special instructions when using Airplane Mode and additional devices with your pump:

When using this device:	Do this:
Compatible Ascensia BG meter	When Airplane Mode is turned on, the Remote Bolus feature is not available, and you must enter BG meter readings manually. When Airplane Mode is turned off, use your meter normally.

When using this device: **Do this:**

Non-linked BG meter Use your non-linked BG meter normally whether Airplane Mode is on or off.


Sensor and transmitter When Airplane Mode is turned on, your pump does not receive sensor readings from your transmitter.

When Airplane Mode is turned off, it can take up to 15 minutes before the pump and the transmitter start to wirelessly communicate again. The transmitter begins to send up to the last 10 hours of sensor data to the pump.

When you turn off Airplane Mode:


- If Airplane Mode was turned on for six hours or less, wait 15 minutes for the sensor and transmitter to wirelessly send your pump the missing SG readings.
 - If Airplane Mode was turned on for more than six hours, disconnect and reconnect the transmitter and sensor, and then select **Reconnect Sensor** when it appears on the pump screen.
-


To turn on or turn off Airplane Mode:

1. Press  and go to the Airplane Mode screen.

Options > Utilities > Airplane Mode

2. Select **Airplane Mode** to turn the feature on or off.
3. Select **Save**.




When Airplane Mode is turned on, the Home screen shows the Airplane Mode icon  in place of the Connection icon.

 **Note:** Airplane Mode cannot be used while in Auto Mode. To use Airplane Mode, you must be in Manual Mode. To return to Auto Mode after using Airplane Mode, Auto Mode must be turned on and a BG must be entered. For instructions on turning Auto Mode on or off, see *Setting up SmartGuard Auto Mode, on page 217*. Additional


steps may be required before you can return to Auto Mode. Follow the instructions on your pump screen. For more information, see *SmartGuard Auto Mode Readiness, on page 219*.

Audio Options

The Audio Options screen lets you set the audio and vibrate options. It also lets you change the volume of most alerts and notifications if audio is enabled.

The audio setting that you are currently using appears on the Home screen. An audio icon will indicate if your settings are audio only , vibrate only , or audio and vibrate both . For more information, see *Status icons, on page 36*.

To adjust the audio and vibrate settings:

1. Press  and select **Audio Options** to go to the Audio Options screen.
2. Select **Audio** or **Vibrate** for the option you want to use. You can use one option or both.
3. If the Audio option is enabled, the volume can be changed. Select **Volume** and use the left or right button to adjust to the desired level.
4. Select **Save**.


Auto Suspend

Auto Suspend is a safety feature that stops all insulin delivery and sounds an alarm if you do not press any buttons for a specified period of time. For example, your healthcare professional may have you set the time based on the number of hours that you typically sleep at night. Discuss with your healthcare professional how to best use this feature.



Note: The Auto Suspend feature continues working when your pump switches to SmartGuard Auto Mode.

To set up Auto Suspend:

1. Press  and go to the Auto Suspend screen.

Options > Delivery Settings > Auto Suspend

2. Select **Alarm**.
3. Select **Time** and enter the number of hours that you want to set.
4. Select **Save**.

Block Mode

The Block Mode feature allows caregivers, such as parents of a young child, to restrict access to critical pump settings.



WARNING: Always monitor the pump when it is used in Block Mode. You can manually suspend while in Block Mode. This could result in hyperglycemia and ketoacidosis.

When Block Mode is on, you cannot start a new bolus delivery, start a new basal pattern, or start a new temp basal delivery. However, any previous bolus and basal deliveries continue normally, and the pump user can stop a bolus delivery at any time.

When your pump is in Block Mode, you can suspend insulin delivery, receive SG values, receive BG values from your compatible Ascensia BG meter, review history, test the pump, and clear alarms and alerts. However, you cannot change any settings.




Note: The Block Mode feature has some differences when your pump is in Auto Mode. See *Block Mode when in SmartGuard Auto Mode*, on page 224.




WARNING: Always monitor pump use during Block Mode. Block Mode does not prevent Remote Bolus deliveries from your compatible Ascensia BG meter. When your pump is in Block Mode, you can still deliver a bolus from your compatible Ascensia BG meter using the Remote Bolus feature.

To turn Block Mode on or off:

1. Press  and go to the Block Mode screen.

Options > Utilities > Block

2. Select **Block Mode** to turn the feature on or off.
3. Select **Save**. While Block Mode is turned on, a lock icon  appears on the Home screen.

If you are turning on Block Mode, a message appears asking if you would like to change your Remote Bolus setting as well. This message appears only if the Remote Bolus setting was on.

4. Select **Yes** to change Remote Bolus setting.
5. Select **Remote Bolus** to turn the feature on or off.
6. Select **Save**.

Display Options

The Display Options allow you to increase or decrease the brightness of your screen. From the Display Options screen, you can also adjust the amount of time the backlight stays on after you press a button.

To adjust the display options:

1. Press  and go to the Display Options screen.

Options > Utilities > Display Options

2. Select **Brightness** to adjust the brightness of your screen. You can set a level from 1 to 5, or select **Auto** to have the screen automatically adjust to your current environment.



Note: The brightness setting you select can affect the life of your battery. For a longer lasting battery, consider using a lower level setting.

3. Select **Backlight** to adjust the timeout for the backlight on your pump screen. You can select 15 seconds, 30 seconds, 1 minute, or 3 minutes.




Note: The backlight can affect the life of your battery. For a longer lasting battery, consider setting the screen timeout to 30 seconds.

4. Select **Save**.

Language

You can change the language that your pump uses to display information.

To change the Language setting:

1. Press  and go to the Language screen.
Options > Utilities > Language
A checkmark indicates which language is active.
2. Select your desired language.
3. Select **Yes** when the confirmation message appears.

Managing your pump settings

Manage Settings lets you save, restore, or clear your settings.




The following table describes the Manage Settings options:

Save Settings	Saves a record of your current settings that you can use if a future event requires you to re-enter your settings.
Restore Settings	Allows you to restore your settings, using the backup settings that you saved using the Save Settings feature.
Clear All Settings	Erases your settings and returns them to the factory defaults. To use your pump again after clearing all settings, you may use Restore Settings or manually re-enter your settings. This enables you to restore a previous version of your settings or enter your settings again.
Clear Active Insulin	This option appears only if you have never cleared your active insulin. It clears both Active Insulin and sets your Total Daily Dose to 0 for Auto Mode. Use this option when you are ready to use your pump with insulin for the first time or when directed by your healthcare professional. You can only clear your active insulin once.
Settings History	Displays a history of recent activities that relate to managing your settings, such as saving, clearing, and restoring your settings.

Saving your settings

Saving a record of your settings allows you to restore your settings at a later date, if necessary.

To save your current settings:

1. Press  and go to the Manage Settings screen.
Options > Utilities > Manage Settings
2. Simultaneously press and hold  and  until the Manage Settings menu appears.
3. Select **Save Settings**.




If these are the first settings you have saved, a message appears telling you that your settings are saved.

If you have previously saved settings, a message appears asking if you would like to replace your previous settings with your current settings. Select **Yes** to accept. Select **No** to cancel.

Restoring your settings

This option allows you to replace your current pump settings with the last settings that you have saved. The Restore Settings menu option is available only if you have previously saved your settings.

To restore your previous settings:

1. Press  and go to the Manage Settings screen.
Options > Utilities > Manage Settings
2. Simultaneously press and hold  and  until the Manage Settings menu appears.
3. Select **Restore Settings**.
4. To replace your current settings with your previous settings, select **Yes**. To cancel, select **No**.

Clearing your settings


The Clear All Settings feature erases your current settings and returns them to the factory defaults. After you clear your settings, your pump displays the Startup Wizard, where you can re-enter your pump settings. You must re-enter your settings to continue using your pump.

The Clear All Settings feature does not delete wireless connections to other devices, such as your transmitter or meter.





Caution: Do not clear your pump settings unless directed by your healthcare professional. If you clear your pump settings, it will be necessary to reprogram all your personal pump settings as directed by your healthcare professional.

To clear all your settings:

1. Make sure the pump is not connected to your body.
2. Press  and go to the Manage Settings screen.

Options > Utilities > Manage Settings

3. Simultaneously press and hold  and  until the Manage Settings menu appears.
4. Select **Clear All Settings**.

A confirmation screen appears asking if you want to clear all your settings.

5. To continue clearing your settings, select **Yes**. If you do not want to clear your settings, select **No**.

If you clear your settings, your pump displays the Welcome screen and continues to the Startup Wizard. For more details on entering your startup settings, see *Entering your startup settings*, on page 32.

Clearing your active insulin



Use this feature when you are ready to use your pump with insulin for the first time. This feature clears the total daily dose and any active insulin values that your pump has tracked, and then sets the active insulin value to zero. If you have

practiced delivering a bolus with your pump prior to using your pump with insulin, you must clear the active insulin. This ensures that the Bolus Wizard feature has an accurate active insulin amount for bolus calculations.

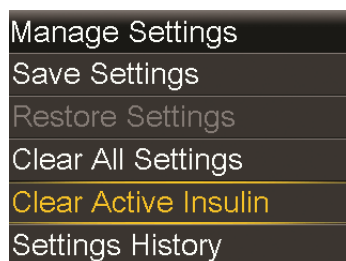
You can clear your active insulin only once. After you clear your active insulin, the feature is no longer available.

1. Press  and go to the Manage Settings screen.

Options > Utilities > Manage Settings

2. Simultaneously press and hold  and  until the Manage Settings menu appears.

The Manage Settings screen appears. If you have never cleared your active insulin, the Clear Active Insulin option appears.



Note: If the Clear Active Insulin selection does not appear on the Manage Settings screen, it means that you have already cleared your active insulin on the pump.

3. Select **Clear Active Insulin**.
A confirmation screen appears asking if you want to continue.
4. Select **Clear** to clear your active insulin value from your pump. If you do not want to clear your active insulin at this time, select **Cancel**.

A message appears confirming that your active insulin value is cleared.

Viewing your pump setting history

The Settings History shows you a history of activities you have performed in the Manage Settings area, such as saving, restoring, or clearing your settings.

1. Press  and go to the Manage Settings screen.

Options > Utilities > Manage Settings

2. Simultaneously press and hold > and ↩ until the Manage Settings menu appears.
3. Select **Settings History**.
The Settings History screen appears.

Self Test

Self Test is a safety utility that allows you to check if your pump is operating properly. This self-diagnostic feature can be used for maintenance or to check that your pump is operating properly. Self Test is additional to the routine tests that run independently while the pump operates.



Note: Your insulin delivery suspends for up to two minutes while your pump runs a self test.

Self Test includes the following tests:

Test	Description
Display	Turns on the display for up to 45 seconds.
Notification light	Turns on the notification light for three seconds and then turns it off.
Vibration	Generates two vibration cycles.
Tone	Generates an alert tone, an Easy Bolus (step 1) tone, and an alarm tone.

The pump will run through a series of tests as listed in the previous table. Self Test requires you to observe the pump during the test.

To run the Self Test:

1. Press Ⓞ and go to the Self Test screen.

Options > Utilities > Self Test

A message indicates that the Self Test is in progress.

Self Test takes up to two minutes to complete. During that time, the display briefly turns white, the notification light blinks, the pump vibrates, and the pump beeps.

2. If Self Test does not detect a problem, the display returns to the Utilities screen.

If Self Test detects a problem, a message appears with more information about the problem. If Self Test displays an error message or you observe the pump not behaving as indicated during the test, contact your local representative.


Sensor Demo

Sensor Demo lets you see what the Home screen would look like if you were using the optional CGM feature. For more information about sensor graphs, please see *The sensor graph*, on page 207.



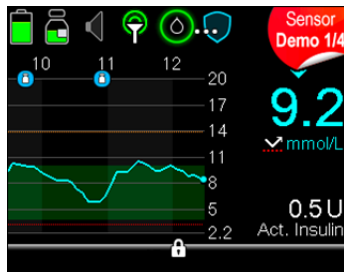
WARNING: Do not use Sensor Demo to make any decisions related to your therapy. Information seen in the Sensor Demo is not real data. It is an example of the type of information you can access when using the sensor feature. Making treatment decisions based on data that is not real can cause hypoglycemia or hyperglycemia.


To view the sensor graph example screens:

1. Press  and go to the Sensor Demo screen.

Options > Utilities > Sensor Demo

The Sensor Demo screen appears as an example of what your Home screen looks like when you are using the optional CGM feature.




2. Press > to view the sensor graph examples.
3. Press the < or > buttons to view the different sensor screen examples.
Sensor Demo simulates an SG graph, showing an example of the general trend of glucose as it rises and falls over time. The top of the graph indicates the time of day, while the side bar shows the SG reading markers.
4. To exit Sensor Demo, press .

Time and date

Make sure the time and date are always set correctly on your pump. This is necessary to ensure the correct basal insulin delivery and to keep an accurate record of pump functions. You may need to change the time or the date if you travel to a different time zone or practice daylight saving time. After the time and date are changed, the pump adjusts all settings automatically.

To change the time and the date:

1. Press  and go to the Time & Date screen.
Options > Utilities > Time & Date
2. Select and change the **Time**, **Time Format**, or **Date** as necessary. If you are using a 12-hour clock, be sure to specify AM or PM.
3. Select **Save**.

10

Setting up CGM

10

Setting up CGM

This chapter explains how to wirelessly connect your pump and transmitter, and how to enter your sensor settings and set up CGM on your pump. You will need the following:

- MiniMed 670G insulin pump
- SG settings (provided by your healthcare professional)
- Guardian Sensor (3)
- Guardian Link (3) transmitter kit



WARNING: Do not make therapy treatment decisions based on SG values. SG and BG values may differ. If your SG reading is low or high, or if you feel symptoms of low or high glucose, confirm your SG reading with your BG meter prior to making therapy decisions to avoid hypoglycemia or hyperglycemia.

Understanding CGM

The Sensor feature on the pump lets you integrate and use CGM. CGM is an SG monitoring tool that uses a glucose sensor that is placed below your skin to continuously measure the amount of glucose in your interstitial fluid. CGM helps you better manage your diabetes by:

- Recording your glucose values throughout the day and night
- Showing the effects that your diet, exercise, and medication can have on your glucose levels

- Giving you additional tools to help you prevent high and low glucose levels



Note: If you lose sensor functionality, you will no longer have access to CGM features. For details on restoring sensor functionality, see *Troubleshooting sensor issues, on page 284.*

SG readings and BG meter readings are not the same.

SmartGuard Technology

SmartGuard technology automatically adjusts insulin delivery based on your SG values. SmartGuard technology can be used in two modes: Manual Mode and Auto Mode. This chapter describes SmartGuard technology used in Manual Mode with the SmartGuard suspend (Suspend before low and Suspend on low) features. SmartGuard suspend features can automatically stop and resume insulin delivery based on your SG values and low limit. When your pump suspends insulin delivery based on your SG values and your low limit, it is called a SmartGuard suspend event. Your low limit should be set based on recommendations from your healthcare professional. When a SmartGuard suspend event occurs, basal insulin delivery automatically resumes if your SG values are rising and have met the specified criteria, or if the maximum suspend time of two hours is reached.

Auto Mode is also part of SmartGuard technology. When your pump is in Auto Mode, your basal insulin delivery is automatically controlled. For details, see *About SmartGuard Auto Mode, on page 215.*

The following table lists SmartGuard features and where to find them.

To learn more about:	Go to this section:
How to use SmartGuard technology to automatically suspend your insulin delivery before you reach your low limit.	<i>SmartGuard Suspend before low, on page 174.</i>
How to use SmartGuard technology to automatically suspend your insulin delivery when you reach your low limit.	<i>SmartGuard Suspend on low, on page 178.</i>
How SmartGuard technology automatically resumes your basal insulin delivery after a SmartGuard suspend event.	<i>Automatically resuming basal delivery after a SmartGuard suspend event, on page 181.</i>

To learn more about:

How SmartGuard Auto Mode works.

Go to this section:

About SmartGuard Auto Mode, on page 215.

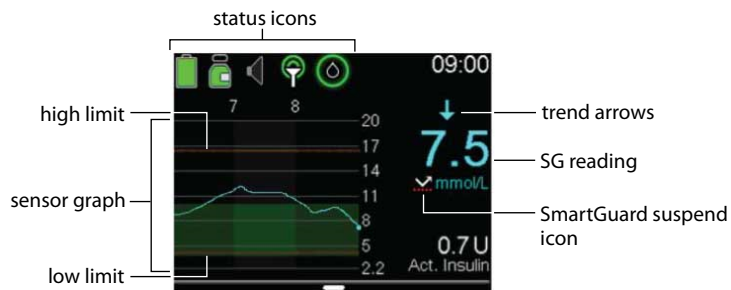
To set up the SmartGuard suspend features, see *Setting up the low SG settings, on page 188.*

Home screen with CGM in Manual Mode



When you turn on the Sensor feature, the Home screen on your pump changes to display a real-time graph that shows your SG information. For more information, see *Turning on the Sensor feature, on page 184.*


















Note: To see the Home screen in Auto Mode, see *Home screen with SmartGuard Auto Mode, on page 221.*







The following items appear on your Home screen with CGM in Manual Mode:

Item	Description
Airplane Mode icon	<p>The Airplane Mode icon  appears in place of the Connection icon if Airplane Mode is turned on. When Airplane Mode is turned on, the pump cannot receive wireless communication from other devices.</p> <div><p>WARNING: Do not rely on glucose sensor-enabled features when Airplane Mode is on because the pump does not receive sensor readings from the transmitter. Glucose sensor-enabled features include SmartGuard Suspend on low, SmartGuard Suspend before low, and SmartGuard Auto Mode. When using Airplane Mode, always rely on your BG values when making therapy decisions to avoid hypoglycemia or hyperglycemia.</p></div>

Item	Description
Calibration icon	<p>The approximate time left until your next sensor calibration is due. Appears only when the Sensor feature is turned on. The color and the circle around the icon indicate the status. When your sensor is fully calibrated, the icon has a solid green circle around it. As the time for your next sensor calibration approaches, the green circle around the icon becomes smaller, and the color of the icon changes as shown in the following example. For more information about calibrating your sensor, see <i>Calibrating your sensor, on page 200</i>.</p> <ul style="list-style-type: none"> •  Time to your next sensor calibration is more than 10 hours. •  Time to your next sensor calibration is 8 to 10 hours. •  Time to your next sensor calibration is 6 to 8 hours. •  Time to your next sensor calibration is 4 to 6 hours. •  Time to your next sensor calibration is 2 to 4 hours. •  Time to your next sensor calibration is less than 2 hours. •  Sensor calibration is required now. •  Time to your next sensor calibration is unavailable. •  Sensor is not ready for a calibration. This occurs when a new sensor is connected or within 15 minutes of a Calibration not accepted alert.
Connection icon	<p>The connection icon appears green  when the Sensor feature is on and your transmitter is successfully communicating with your pump. The connection icon appears with a red X  when the Sensor feature is turned on, but the transmitter is not connected or communication with your pump has been lost. For more information about the Sensor feature, see <i>Understanding CGM, on page 165</i>.</p>

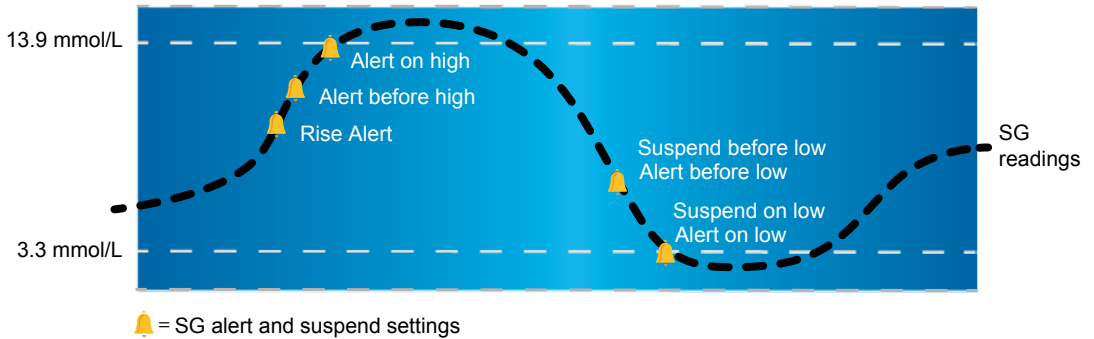
Item	Description
Auto Mode Readiness	<p>The Auto Mode Readiness icon indicates whether your pump is ready to enter Auto Mode. The icon appears with a loading symbol  when the pump is updating a condition that requires you to wait. The icon appears with a question mark  when the pump requires an action from you to enter Auto Mode. For more information about Auto Mode Readiness, see <i>SmartGuard Auto Mode Readiness</i>, on page 219.</p> <p>When your pump is in Auto Mode, the Auto Mode shield  appears in the center of your Home screen. For more information, see <i>Home screen with SmartGuard Auto Mode</i>, on page 221.</p>
Sensor graph	<p>Displays your SG readings over a period of three hours. The orange line represents your high SG limit, and the red line represents your low SG limit. The blue line represents your SG trends during the specified period. For more information, see <i>The sensor graph</i>, on page 207.</p>
Sensor Life icon	<p>The number in the center of the Sensor Life icon indicates the number of days remaining in the life of your sensor. The icon appears only when the Sensor feature is turned on. When you insert a new sensor, the icon is solid green. When one day is remaining in the life of your sensor, the icon color turns red.</p> <div> </div> <p>If the number of days remaining in the life of your sensor is unavailable, the Sensor Life icon appears with three dots .</p>
SG reading	<p>Shows your current SG reading which is sent wirelessly to your pump by the transmitter.</p>

Item	Description
SmartGuard suspend icon	<p>The SmartGuard suspend icon appears only when either the Suspend before low or Suspend on low feature is set to on. For details on SmartGuard technology, see <i>SmartGuard Technology</i>, on page 166.</p> <p>The SmartGuard suspend icon indicates the current status of the suspend features, as follows:</p> <ul style="list-style-type: none"> • The icon is a white arrow with a dotted red line  when either the Suspend on low or Suspend before low is turned on and ready. • The arrow icon flashes if your insulin delivery is currently suspended due to a Suspend on low or Suspend before low event. • The icon appears as a gray cross with a dotted line under it  when neither suspend feature is available. The suspend features might be unavailable due to a recent suspend or because there are no SG values available. It might also be unavailable because the pump is not currently delivering insulin.
Trend arrows	<p>Shows the rate at which the most recent SG level is rising or falling.</p> <ul style="list-style-type: none"> •  - Rising trend arrows •  - Falling trend arrows <p>For more information about trend arrows, see <i>Identifying rapid changes in SG</i>, on page 208.</p>

Understanding glucose settings

There are several types of glucose alerts you can set to notify you if your glucose values are changing at a particular rate, or if they are approaching or have reached a specified low or high limit. You can also set your pump to automatically suspend insulin delivery before or when you reach your low limit.

The following graph shows the different high and low glucose alerts you can use.



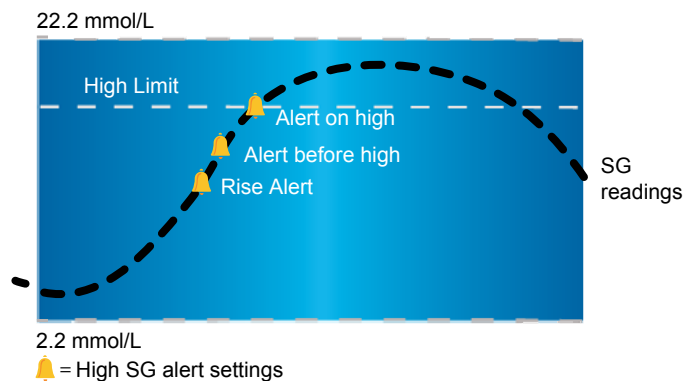
The high alerts are described in the *High SG settings* section on page 172. For details on low alerts and suspend options, see *Low SG settings*, on page 173.

High SG settings




These settings alert you:

- when your SG is rising rapidly (Rise Alert)
- when your SG is approaching your high limit (Alert before high)
- when your SG has reached your high limit (Alert on high)

The following graph shows the different high SG settings you can use:



The following table describes the high SG settings.

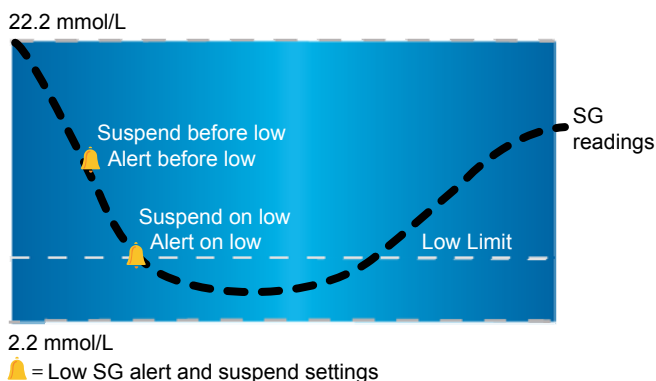
High glucose setting	Description
High limit	Your high limit is the value on which your other high SG settings are based. Your high limit can be set from 5.6 mmol/L to 22.2 mmol/L. You can set a different high limit for up to eight time segments throughout the day or night.
Alert before high	When Alert before high is on, the pump alerts you any time the SG is predicted to reach the high limit. This makes you aware of potential highs before they occur.
Time before high	Time before high is only available when using Alert before high. Time before high determines when you will receive an Alert before high. You can set a time between 5 and 30 minutes.
Alert on high	When Alert on high is on, your system alerts you when your SG reading reaches or exceeds your High Limit.
Rise Alert	<p>The Rise Alert notifies you when your glucose is rising rapidly. This alert helps you understand how much your glucose levels are affected by meals or, for example, when forgetting to give a bolus. You can set the rise rate to match the arrows that display on the Home screen during a glucose rise, or to a custom rise rate.</p> <ul style="list-style-type: none"> •  - SG is rising at a rate of 0.056 mmol/L per minute or more. •  - SG is rising at a rate of 0.111 mmol/L per minute or more. •  - SG is rising at a rate of 0.167 mmol/L per minute or more. • Custom - SG is rising at the rate that you set which can be set from 0.050 to 0.275 mmol/L per minute.
Rise Limit	The Rise Limit determines when you will receive a Rise Alert. Rise Limit is only available when using Rise Alert.

To set up your high SG settings, see *Setting up the high SG settings, on page 184*.

Low SG settings

The low SG settings allow you to be alerted or have insulin delivery suspended when you are either approaching or have reached your low limit. This is done by using alerts and SmartGuard technology described on *page 166*.

The following graph shows the different low SG settings you can use:



WARNING: Suspend before low and Suspend on low are not intended to be a treatment for low BG. Having insulin suspended when glucose is low may not bring your BG back to your target range for several hours. In that case, you run the risk of hypoglycemia. Always confirm your BG readings with your BG meter and treat according to the recommendations of your healthcare professional.

The following sections describe how to set up your low SG settings in Manual Mode. For details on setting up your low SG settings in Manual Mode, see *Setting up the low SG settings*, on page 188.

Low limit

The low limit is the value on which the other low SG settings are based. The low limit can be set from 2.8 mmol/L to 5.0 mmol/L. You can set a different low limit for up to eight time segments throughout the day or night.

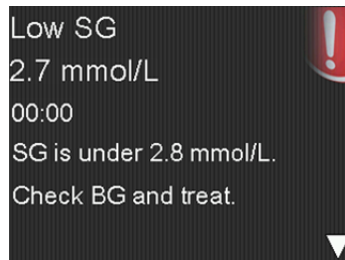
SmartGuard Suspend before low

The SmartGuard Suspend before low feature stops insulin delivery when your SG values are approaching your low limit. This feature is intended to suspend insulin delivery to minimize the amount of time spent low.

The default setting for the Suspend before low feature is off. Consult your healthcare professional for the Suspend before low setting that is best for you.

If you turn on Suspend before low, then Alert on low is automatically turned on. You also have the option to turn on Alert before low.

- If Alert before low is on, your pump alerts you when insulin delivery is suspended. For details, see *Alert before low, on page 177*.
- If Alert before low is off, then Suspend before low appears on the screen, but the pump will not beep or vibrate when insulin delivery is suspended.
- The user can enable Alert before low, Alert on low, Suspend before low, and Suspend on low. There is an additional fixed low alert at 2.8 mmol/L that cannot be turned off.
- Suspend before low and Suspend on low cannot be enabled at the same time. When either is enabled, the user can enable the Resume basal alert.
- The Low SG alert appears when your SG values reach or fall below 2.8 mmol/L. This alert cannot be turned off. When the alert appears on your screen, it shows your SG value next to your Low SG alert. In this user guide, the SG value will be represented as “Low SG X.X” for this alert.




WARNING: Always confirm your SG readings with your BG meter and treat according to the recommendations of your healthcare professional. The Suspend before low feature uses the SG value, not your BG value, to automatically suspend insulin delivery. Your pump automatically suspends insulin delivery when your SG is approaching the low limit. However your BG reading may be higher or lower than the SG value. Assuming that your SG value is accurate may result in the delivery of too little or too much insulin, which can cause hyperglycemia or hypoglycemia.

Suspend before low conditions

When a Suspend before low event occurs, all insulin delivery is suspended. A Suspend before low event occurs when:

- Your SG value is at or within 3.9 mmol/L above your low limit.
- Your SG is predicted to reach or fall below a level that is 1.1 mmol/L above your low limit within approximately 30 minutes.

Responding to a Suspend before low event

When you clear the Suspend before low alert, the SmartGuard suspend icon  flashes and "Suspended before low" appears on your Home screen. If your SG reaches your low limit, an Alert on low occurs.

When a Suspend before low event occurs, insulin delivery will remain suspended for at least 30 minutes. Insulin delivery will be suspended for a maximum of two hours. You can manually resume insulin delivery at any time. For details, see *Manually resuming basal delivery during a SmartGuard suspend event, on page 191*. After the minimum 30-minute suspend time, basal insulin delivery will automatically resume if the following conditions are met:

- Your SG is at least 1.1 mmol/L above your low limit.
- Your SG is estimated to be more than 2.2 mmol/L above your low limit within 30 minutes.


If you do not respond to the Suspend before low alert, your pump resumes insulin delivery after two hours and displays a Basal delivery resumed alert.

When Suspend before low is unavailable

After a Suspend before low event occurs, there is a period of time when the Suspend before low functionality is unavailable. This is to prevent prolonged suspended basal delivery. The length of time it is unavailable will vary. You can manually suspend insulin delivery at any time. For details, see *Stopping and resuming your insulin delivery, on page 70*.



Note: The maximum amount of time the Suspend before low feature will be unavailable is four hours.

When the SmartGuard suspend features are unavailable, the SmartGuard suspend icon on the Home screen appears as a gray cross .

When a Suspend before low event occurs and you respond within two hours and:

- Stay suspended for the two-hour maximum suspend time, the SmartGuard suspend features will be unavailable for 30 minutes after your basal insulin delivery resumes.
- Your insulin automatically resumes due to your rising SG levels, the SmartGuard suspend features will be unavailable for 30 minutes after your basal insulin delivery resumes.
- Manually resume your basal insulin delivery, the SmartGuard suspend features will be unavailable for 30 minutes after your basal insulin delivery resumes.

If your pump has been suspended for two hours and you have not responded, basal insulin delivery automatically resumes.

If you respond within 30 minutes of basal insulin delivery being resumed, the SmartGuard suspend features will be unavailable for a total of 30 minutes. For example:

- If you respond 10 minutes after your basal insulin delivery resumes, the SmartGuard suspend features will be unavailable for an additional 20 minutes.
- If you respond 20 minutes after your basal insulin delivery resumes, the SmartGuard suspend features will be unavailable for an additional 10 minutes.

If you respond 30 minutes to four hours after your basal insulin delivery resumes, the SmartGuard suspend features will be available immediately.

If you do not respond, the SmartGuard suspend features will be unavailable for four hours after basal delivery resumes.

Alert before low

When Alert before low is on, you will receive an alert when you are approaching your low limit. This makes you aware of potential lows before they occur.

The Alert before low feature can be used with the Suspend before low and Suspend on low features. The Alert before low feature works as follows:

- If Alert before low is on, and both SmartGuard suspend features are off, you receive the Alert before low 30 minutes before you reach your low limit.

- If Suspend on low is on, and Alert before low is on, you receive an Alert before low 30 minutes before you reach your low limit.
- If Suspend before low is on, and Alert before low is on, you receive a Suspend before low alert when insulin delivery is suspended. For details, see *SmartGuard Suspend before low, on page 174*.

You can also choose to have the Alert before low off.

SmartGuard Suspend on low

The SmartGuard Suspend on low feature stops insulin delivery when your SG value reaches or falls below the low limit that you set. When a Suspend on low event occurs, all insulin delivery is suspended. This feature is used for situations when you cannot respond to a low glucose condition. It is intended to suspend insulin delivery and minimize the amount of time spent low.



WARNING: Do not use the Suspend on low feature until you have read the information in this user guide and received instructions from your healthcare professional. The Suspend on low feature causes the pump to temporarily suspend insulin delivery for a maximum of two hours. Under some conditions of use, the pump can suspend again, resulting in limited insulin delivery. Prolonged suspension can increase the risk of serious hyperglycemia, ketosis, and ketoacidosis.


The default setting for the Suspend on low feature is off. Consult your healthcare professional for the Suspend on low setting that is best for you.

If you turn on Suspend on low, then Alert on low is turned on automatically. For more information, see *Alert on low, on page 180*.



WARNING: Always confirm your SG readings with your BG meter and treat according to the recommendations of your healthcare professional. The Suspend on low feature uses the SG value, not your BG value, to automatically suspend your pump. Your pump may automatically suspend when your SG is at or below the low limit, while your BG is above that limit. Assuming that your SG value is accurate may result in the delivery of too little or too much insulin, which can cause hyperglycemia or hypoglycemia.

Responding to a Suspend on low event

When you clear the Suspend on low alarm, the SmartGuard suspend icon  flashes and "Suspended on low" appears on your Home screen.

When a Suspend on low event occurs, the pump alerts you.

When a Suspend on low event occurs, insulin delivery will remain suspended for at least 30 minutes. Insulin delivery will be suspended for a maximum of two hours. You can manually resume insulin delivery at any time. For details, see *Manually resuming basal delivery during a SmartGuard suspend event, on page 191*. After the minimum 30-minute suspend time, basal insulin delivery will automatically resume if the following conditions are met:

- Your SG is at least 1.1 mmol/L above your low limit.
- Your SG is estimated to be more than 2.2 mmol/L above your low limit within 30 minutes.


If you do not respond to the Suspend on low alarm, your pump resumes insulin delivery after two hours and continues to display an emergency message.

When Suspend on low is unavailable

After a Suspend on low event occurs, there is a period of time when the suspend functionality is unavailable. This time will vary depending on whether or not you respond to the Suspend on low event. You can manually suspend insulin delivery at any time. For details, see *Stopping and resuming your insulin delivery, on page 70*.



Note: The maximum amount of time the Suspend on low feature will be unavailable is four hours. After this time period, the Suspend on low feature automatically enables.

When the SmartGuard suspend features are unavailable, the SmartGuard suspend icon on the Home screen appears gray .

When a Suspend on low event occurs and you respond within two hours and

- Stay suspended for the two-hour maximum suspend time, the SmartGuard suspend features will be unavailable for 30 minutes after your basal insulin delivery resumes.
- Your insulin automatically resumes due to your rising SG levels, the SmartGuard suspend features will be unavailable for 30 minutes after your basal insulin delivery resumes.
- Manually resume your basal insulin delivery, the SmartGuard suspend features will be unavailable for 30 minutes after your basal insulin delivery resumes.

If your pump has been suspended for two hours and you have not responded, basal insulin delivery automatically resumes.

If you respond within 30 minutes of basal insulin delivery being resumed, the SmartGuard suspend features will be unavailable for a total of 30 minutes. For example:

- If you respond 10 minutes after your basal insulin delivery resumes, the SmartGuard suspend features will be unavailable for an additional 20 minutes.
- If you respond 20 minutes after your basal insulin delivery resumes, the SmartGuard suspend features will be unavailable for an additional 10 minutes.

If you respond 30 minutes to four hours after your basal insulin delivery resumes, the SmartGuard suspend features will be available immediately.

If you do not respond, the SmartGuard suspend features will be unavailable for four hours after basal delivery resumes.

Alert on low

The Alert on low feature is automatically turned on when either the Suspend before low or the Suspend on low feature is turned on.

When Alert on low is set to on, you receive an alert when your SG reading reaches or falls below your low limit. If your pump is suspended and you have not responded, an emergency message appears.

Automatically resuming basal delivery after a SmartGuard suspend event

In addition to suspending insulin delivery, the pump can also automatically resume delivery of basal insulin. If insulin has been suspended by either the Suspend before low or the Suspend on low feature, insulin delivery will automatically be resumed if either of the following conditions are met:

- if insulin has been suspended for a minimum of 30 minutes and SG values are at least 1.1 mmol/L above the low limit and expected to be more than 2.2 mmol/L above the low limit in 30 minutes.
- after a maximum of two hours.

Resume basal alert

When the Resume basal alert is on, you will be alerted when insulin is automatically resumed. If the Resume basal alert is off, basal insulin resumes, but you do not receive an alert. However, you will get a message indicating that the basal has automatically resumed.

If basal resumes after the maximum suspend time of two hours, you will be alerted even if the Resume basal alert is set to off. It is important that you check your BG and ensure your glucose is at a safe level.

For details on setting up the Resume basal alert, see *Setting up the low SG settings*, on page 188.

SmartGuard suspend examples

The following examples describe several scenarios that illustrate different types of suspend events, user actions in response to these events, and what happens to insulin delivery in each case.

The examples cover the following:

- Example 1: Suspend before low, non-responsive, auto resume basal (trending upwards)
- Example 2: Suspend before low, responsive, manually resume basal
- Example 3: Suspend before low, responsive, stays suspended

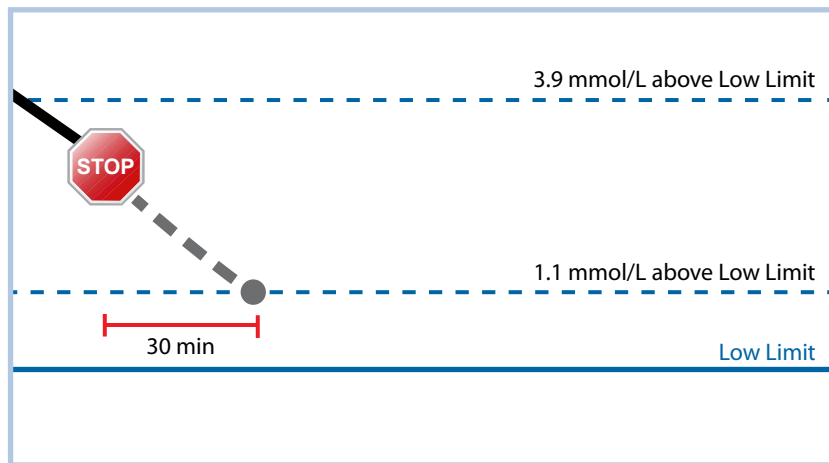
- Example 4: Suspend on low, response after basal delivery resumes



Note: During the Suspend on low siren, you can press any button to silence your pump for two minutes. The temporary silencing of the alarm does not affect the suspension or delivery of insulin.

Example 1: Suspend before low, non-responsive, auto resume basal (trending upwards)

Sarah has been experiencing low SG values. Her healthcare professional has recommended she use the Suspend before low feature. While at a concert, Sarah's SG values are approaching her low limit. Her pump recognizes that her glucose will be at or within 1.1 mmol/L above her low limit within 30 minutes and suspends her insulin. Sarah has her Alert before low set to off so that she is not alerted when this occurs.



An hour later, her SG values are 1.2 mmol/L above her low limit. Her pump estimates her SG values will be 2.4 mmol/L above her low limit within 30 minutes. Her pump automatically resumes her basal insulin delivery.

When the concert ends, Sarah sees that her pump automatically suspended and resumed her insulin delivery and a potential low was avoided. She clears the messages by selecting OK.

Example 2: Suspend before low, responsive, manually resume basal

Kate decides to meet her friends at the mall. While shopping, she gets a Suspend before low alert. This indicates that her SG values are approaching the low limit she has set. She clears the alert and sees that her insulin has been suspended. Kate checks her BG to confirm. Based on her healthcare professional's recommendation, Kate stops for a snack to help avoid hypoglycemia. Knowing the carbohydrate will make her glucose rise, Kate manually resumes her basal insulin delivery by selecting Suspended before low from the Home screen and choosing Resume basal.

Kate knows that after she has manually resumed her basal insulin delivery, the suspend functions will be unavailable for 30 minutes. However, she will be alerted if she reaches her low limit.

Example 3: Suspend before low, responsive, stays suspended

Doug has just finished his evening jog on the beach. As he is walking home, he receives a Suspend before low alert. He sees that his pump has automatically suspended his insulin delivery. Doug clears the alert by selecting OK on his pump. He knows that his pump is now suspended and insulin delivery has been stopped. He checks his BG to confirm and keeps his insulin suspended.

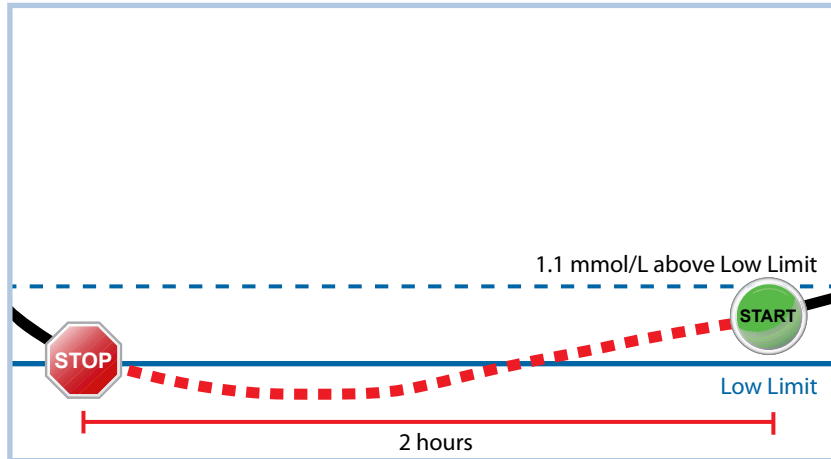
A while later, Doug receives another alert. He looks at his pump and sees that he has received an Alert on low. His SG has reached his low limit. He clears the alert and checks his BG to confirm. He eats carbohydrates to treat the low glucose as instructed by his healthcare professional.

Doug keeps his insulin suspended as directed by his healthcare professional. He knows that once his SG is above his low limit and trending upward, or reaches the maximum suspend time of two hours, basal insulin delivery will automatically resume.

Example 4: Suspend on low, response after basal delivery resumes

Michael is on his college hockey team. He played in a hockey tournament all day and is so exhausted that he falls asleep watching television. His SG value begins to drop. When his SG value reaches his low limit, the pump begins to alarm. His pump automatically suspends all insulin delivery. Michael does not respond to the alarm. After ten minutes, his pump begins to siren and displays the emergency message.

About three hours later, Michael's roommate comes home. He hears the pump sirening and wakes up Michael. Michael clears any messages by selecting OK. He sees that his basal insulin was suspended for the two hour maximum and had automatically resumed delivery. He checks his blood sugar and sees that it is within the target range.




Michael has responded to his alert. The pump will suspend insulin delivery and alarm again if his sensor value reaches or falls below his low limit again.

Turning on the Sensor feature

You must turn on the Sensor feature before you can set up your glucose alerts and start monitoring your SG levels.

To turn on the Sensor feature:

1. Press  and go to the Sensor Settings screen.
Options > Utilities > Sensor Settings
2. Select **Sensor** to turn on the sensor feature. The sensor settings become accessible.


Setting up the high SG settings

The steps below guide you through setting up your high SG settings. For details on your high SG settings, see *High SG settings, on page 172*.



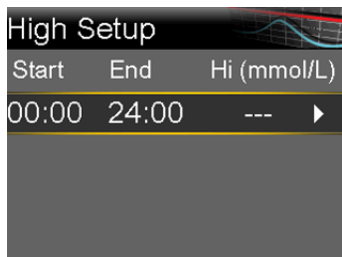
Note: When you enter your settings, you first define the time segment, and then select the high SG settings you want during that time segment.

To set up the high SG settings:

1. Press  and go to the High Setup screen.

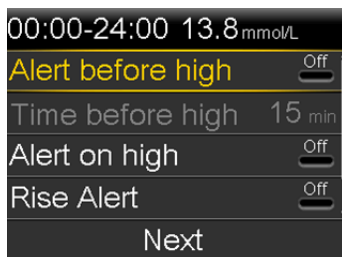
Options > SmartGuard > High Setup

The High Setup screen appears.



2. Select the time segment. The End time starts flashing.
The Start time of the first time segment is always 00:00. You can set up to eight time segments, each with a different high limit. If you set more than one time segment, the time segments must cover a 24-hour period.
3. Set the End time.
4. Set your High limit. You can enter a value from 5.6 to 22.2 mmol/L, in increments of 0.2 mmol/L.
5. Select the arrow to the right of the End time to select the high alerts for this time segment.

A screen appears showing the high alerts for the selected time segment.



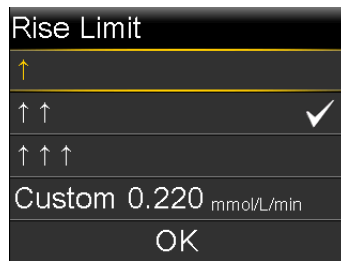
6. Set the following alerts as desired:
 - a. Select **Alert before high** if you want to receive an alert before you reach your high limit.

- b. If you turned on Alert before high, enter the **Time before high** to set how soon you want to be alerted before reaching your high limit. You can enter a value from 5 to 30 minutes.
- c. Select **Alert on high** if you want an alert when you reach your high limit.
- d. Select **Rise Alert** if you want to receive an alert when your SG is rising quickly.

Skip to step 11 if you do not select Rise Alert.

- 7. If you turned on the Rise Alert, you need to set the Rise Limit. Scroll down and select **Rise Limit** to access this option.

The Rise Limit screen appears.



- 8. Select the arrow option (one, two, or three arrows) that corresponds to the rise rate you want to use. To use a custom rate, skip to the next step.
 - Select **↑** for an alert when your SG has been rising at a rate of 0.056 mmol/L per minute or more.
 - Select **↑↑** for an alert when your SG has been rising at a rate of 0.111 mmol/L per minute or more.
 - Select **↑↑↑** for an alert when your SG has been rising at a rate of 0.167 mmol/L per minute or more.

Select **OK**, and skip to step 11.




Note: These arrows appear on your Home screen to let you know the rate at which your SG has been rising.

- 9. To enter a custom rise limit, do the following:
 - a. Select **Custom**. The Custom Limit screen appears.

- b. Select **Rise Limit** and set a rise rate from 0.050 to 0.275 mmol/L/min. You set the rate in 0.005 mmol/L/min increments.
 - c. Select **OK** to return to the Rise Limit screen and then select **OK** again to confirm your settings.
10. When you have set all the high SG settings for the selected time segment, select **Next** to continue.
 11. If you entered an End time of anything other than 24:00, another time segment appears. When you are finished entering high SG settings, select **Done**.
 12. Review your settings, and select **Save**.


To change your high SG settings:

1. Press  and go to the High Setup screen.
Options > SmartGuard > High Setup
The High Setup screen appears.
2. Select **Edit**.
3. Select and, if needed, adjust the time segment you would like to change.
4. Select any alert setting to turn it on or off or to adjust the setting.
5. Select **Next**.
6. Select **Done**.
7. Review your settings, and select **Save**.

High Snooze

The High Snooze option is available once you have set your high SG settings. The High Snooze option allows you to set the amount of time that you want to wait before you are reminded that an alert condition still exists. After a high alert is received and cleared, you will be alerted again only if the high alert condition still exists after the snooze time you have set.

Setting the High Snooze:

1. Press  and go to the Snooze screen.
Options > SmartGuard > Snooze

The Snooze screen appears.

2. Select **High Snooze** and enter a value from 5 minutes to 3 hours, in 5-minute increments.
3. Select **Save** to save your Snooze settings.

Setting up the low SG settings

The steps below guide you through setting up the low SG settings. For details on the low SG settings, see *Low SG settings, on page 173*.



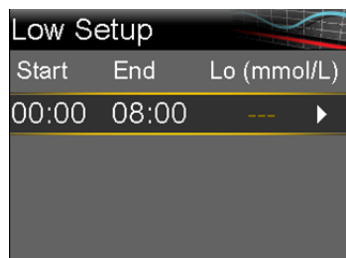
Note: When you enter your settings, you first define the time segment and then select the low SG settings you want during that time segment.

To set up the low SG settings:

1. Press  and go to the Low Setup screen.

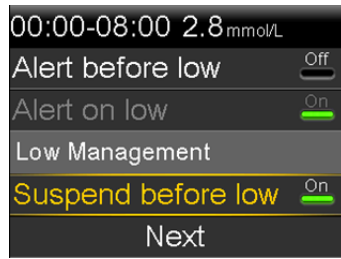
Options > SmartGuard > Low Setup

The Low Setup screen appears.



2. Select the time segment. The End time starts flashing.
The Start time of the first time segment is always 00:00. You can set up to eight time segments, each with a different low limit. If you set more than one time segment, the time segments must cover a 24-hour period.
3. Set the End time.
4. Set your low limit. You can enter a value from 2.8 to 5.0 mmol/L, in increments of 0.2 mmol/L.
5. Select the arrow to the right of the End time to select the low SG settings for this time segment.

A screen appears showing the available settings for the selected time period.



6. Set the following as desired:
 - a. Select **Suspend before low** to have insulin suspended before you reach your low limit. The Alert on low alert is automatically turned on and cannot be turned off.
 - b. Select **Alert before low** to receive an alert before you reach your low limit. If Suspend before low is also on, you are alerted when insulin is suspended.
 - c. Select **Suspend on low** to have insulin suspended when you reach or fall below your low limit. The Alert on low alert is automatically turned on and cannot be turned off.
 - d. Select **Alert on low** if you want to receive an alert when your SG reaches or falls below your low limit. If either suspend feature is on, this will already be on.
 - e. Select **Resume basal alert** if you want an alert when basal insulin delivery is resumed based on SG values during a SmartGuard suspend event. If you do not turn on the alert, the Basal delivery resumed message will still appear on the pump, but you will not be alerted.



Note: When setting your low alerts:


- If you turn on the Suspend before low or the Suspend on low feature, then the Alert on low feature is turned on automatically.
- Only one SmartGuard suspend feature can be used during each time segment. You cannot use both the Suspend before low and the Suspend on low features in the same time segment.

7. When you have set all the low SG settings for the selected time segment, select **Next** to continue.
8. If you entered an End time of anything other than 24:00, another time segment appears.

When you are finished entering your low SG settings, select **Done**.

9. Review your settings, and select **Save**.


To make changes to your low SG settings:

1. Press  and go to the Low Setup screen.
Options > SmartGuard > Low Setup
The Low Setup screen appears.
2. Select **Edit**.
3. Select, and if needed, adjust the time segment you would like to change.
4. Select any alert setting to turn it on or off or to adjust the setting.
5. Select **Next**.
6. Select **Done**.
7. Review your settings, and select **Save**.

Low Snooze

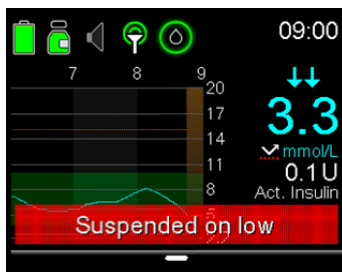
The Low Snooze option is available once you have set your low SG settings. The Low Snooze option allows you to set the amount of time that you want to wait before you are reminded that an alert condition still exists. After a low alert is received and cleared, you will be alerted again only if the low alert condition still exists after the snooze time you have set.

Setting the Low Snooze:

1. Press  and go to the Snooze screen.
Options > SmartGuard > Snooze
The Snooze screen appears.
2. Select **Low Snooze** and enter a time between 5 minutes and 1 hour.


Manually resuming basal delivery during a SmartGuard suspend event

When your pump suspends insulin due to a Suspend before low or Suspend on low event, the bottom of your Home screen displays either Suspended before low or Suspended on low depending on which is active.



If you do not want to wait for your pump to automatically resume your basal insulin, you can follow the procedure below to manually resume your basal delivery.

To manually resume basal delivery:

1. Press  and select **Suspended before low** or **Suspended on low**.
The SmartGuard screen appears.
2. Select **Resume Basal**.
3. Select **Yes** to resume basal delivery.

Wirelessly connecting your pump and transmitter using Auto Connect

Before you can start using your sensor, you must first wirelessly connect your pump to your transmitter so they can begin communicating with each other.

The Auto Connect process locates your transmitter without having to enter the serial number of the transmitter into your pump manually.

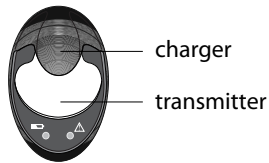
Note the following before trying to connect your pump and transmitter:

- You can connect only one transmitter to your pump. If you already have a transmitter connected to your pump, you must delete it before continuing. For instructions on deleting a transmitter from your pump, see *Deleting the transmitter from your pump*, on page 198.


- Ensure that you are not close to other Medtronic devices that are in search mode before using Auto Connect. (For example, if another household member is connecting a BG meter or transmitter to his or her insulin pump.) If you know multiple people are connecting devices, such as in a training class, use the Manual Connect process on *page 195*.

Connecting your pump and transmitter using Auto Connect:

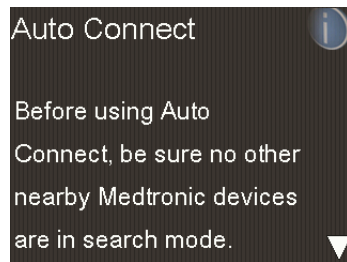
1. Attach your transmitter to the charger and make sure the transmitter is fully charged. Keep your transmitter attached to the charger.



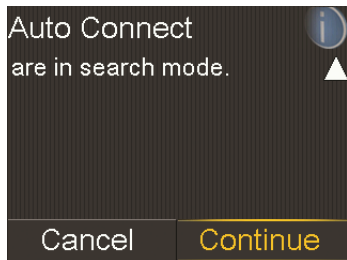
Note: Both lights on the charger are off when the transmitter is fully charged. For more information, see your transmitter user guide.

2. Press  and go to the Auto Connect screen.

Options > Utilities > Device Options > Connect Device > Auto Connect

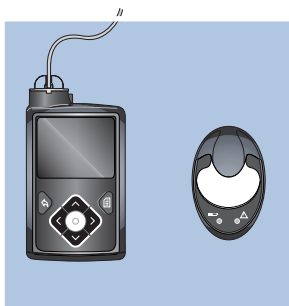


3. Make sure there are no other devices in search mode nearby, scroll down to the bottom of the Auto Connect screen, and select **Continue**.



The New Device screen appears.

- Place the transmitter (still attached to the charger) next to the pump.



- Select **Search** on your pump and immediately remove the transmitter from the charger.



The following happens when you start the search process:

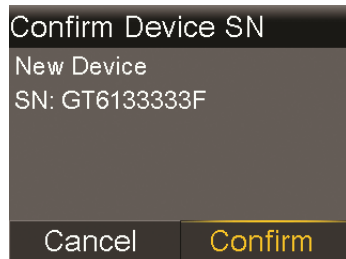
- On your pump, a message appears to let you know your pump is searching.
- On your transmitter, a green light flashes 10 times and then turns off.




Note: The search process can take up to two minutes. You cannot access your pump screens or suspend your pump during the search process.

When your pump finds the transmitter, the Confirm Device SN screen appears.

6. Ensure the transmitter serial number on your pump screen matches the serial number on the back of your transmitter and then select **Confirm**.



If the connection is successful, your pump displays a success message. If the Sensor feature is turned on, the Connection icon  appears on the Home screen.

If your pump does not find your transmitter, see the following procedure, *If your pump does not find your transmitter*. If your pump finds multiple devices, skip to the steps on *page 194*.

If your pump does not find your transmitter:

1. Place the transmitter back on the charger and make sure your transmitter is fully charged before continuing.
2. Place your pump and transmitter within an arm's length of each other.
3. Select **Retry** on your pump and immediately remove the transmitter from the charger to start the search process.
4. If the search is unsuccessful the second time, select **Cancel** when the No Devices Found message appears and then follow the instructions in *Wirelessly connecting your pump and transmitter using Manual Connect*, on *page 195*.

If your pump found multiple devices:

1. Write down the serial number for your transmitter. The serial number can be found on the back of your transmitter.
2. Place the transmitter back on the charger and make sure your transmitter is fully charged before continuing.

3. Select **Next** from the Multiple Devices Found message to display the Enter Device SN screen.
4. Manually enter your device serial number by following the instructions, starting with step 4 in *Wirelessly connecting your pump and transmitter using Manual Connect*, on page 195.

Wirelessly connecting your pump and transmitter using Manual Connect

The Manual Connect process requires you to enter the serial number of the transmitter into your pump. Use this process if you are unsuccessful using the Auto Connect process, or when multiple people in close range are connecting their pumps with other devices, such as a group training session.



Note: You can connect only one transmitter to your pump. If you already have a transmitter connected to your pump, you must delete it before continuing. For instructions on deleting a transmitter from your pump, see *Deleting the transmitter from your pump*, on page 198.

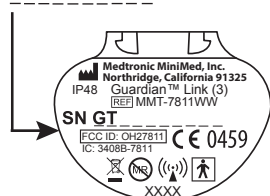
Connecting your pump and transmitter using Manual Connect:

1. You need the serial number for your transmitter during the connection process. Write down the serial number in the following space provided.

Find your serial number here:

Write it here:

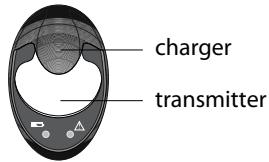
SN GTXXXXXXXX



Write your serial number here, include any letters:


SN GT _____

2. Attach your transmitter to the charger, and make sure the transmitter is fully charged. Keep your transmitter attached to the charger.

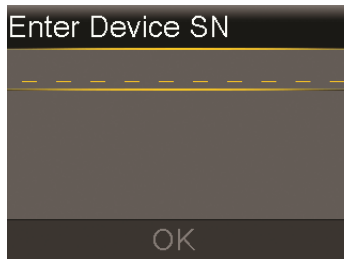


Note: Both lights on the charger are off when the transmitter is fully charged. For more information, see your transmitter user guide.

If you remove the transmitter from the charger to write down the serial number, the green charger light may start flashing when you attach the transmitter to the charger again. You can continue the connection process without waiting for the charger light to stop flashing.

3. On the pump, press  and go to the Enter Device SN screen.

Options > Utilities > Device Options > Connect Device > Manual Connect



4. Use the pump navigation buttons to enter the serial number of the transmitter and select **OK**.
The New Device screen appears.
5. Select **Search** on your pump and immediately remove the transmitter from the charger.




The following happens when you start the search process:

- On your pump, a message appears to let you know your pump is searching.
- On your transmitter, a green light flashes 10 times and then turns off.



Note: The search process can take up to two minutes. You cannot access your pump screens or suspend your pump during the search process.

6. Place the transmitter next to the pump.

If the connection is successful, your pump displays a success message. If the Sensor feature is turned on, the Connection icon  appears on the Home screen.


If your pump does not connect to your transmitter:

1. If your pump does not connect to the transmitter, do one of the following:
 - Select **Retry** to return to the Enter Device SN screen on your pump, and then return to step 4 of the procedure above and follow the instructions to search again.
 - Select **Cancel** to return to the Connect Device screen, where you can search again using Manual Connect or Auto Connect.
2. If you have tried to connect multiple times without success, see *My pump cannot find the sensor signal*, on page 284.

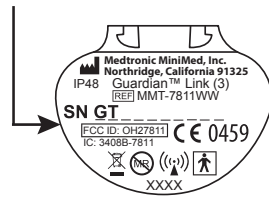
Deleting the transmitter from your pump

Follow this procedure to delete the transmitter from your pump. Use this process when you are replacing your transmitter.

To delete your transmitter from your pump:

1. Press  and go to the Manage Devices screen.
Options > Utilities > Device Options > Manage Devices
2. Identify and select your transmitter by the serial number. The serial number can be found on the back of the transmitter.

SN GTXXXXXXXX



3. Select **Delete**.
4. A screen appears confirming that you would like to delete the device. Select **Yes** to confirm or **No** to cancel.

Inserting the sensor

Always refer to your sensor user guide for instructions on how to insert the sensor.

Connecting the transmitter to the sensor

Always refer to your transmitter user guide for instructions on how to connect the transmitter to the sensor.

Starting the sensor

After you insert your sensor and connect your sensor and transmitter, your pump starts communicating with the transmitter. The pump notifies you when the sensor is ready to use.

To start a new sensor using the Start New Sensor message:

1. Select **Start New Sensor** when it appears on the pump screen.
The "Sensor warm-up started" message appears.



Note: It may take up to five minutes for the "Sensor warm-up started" message to appear.

2. Select **OK**.

"Warm up..." appears on the Home screen until the sensor is ready for first calibration.



Note: If you do not see the **Start New Sensor** option, then follow the procedure for manual connection described below.

To start a new sensor using manual connect:

1. Press  and go to the Sensor Connections screen.

Options > Utilities > Sensor Settings > Sensor Connections

2. Select **Start New Sensor**.

The Start New Sensor screen appears.

3. If you have not done so already, connect the transmitter to your sensor. For details about connecting your transmitter and sensor, see your transmitter user guide.

Your pump searches for your transmitter signal. It can take up to six minutes for your pump and transmitter to start communicating.

4. Select **OK**.
5. The Sensor warm-up started message appears on the screen. Select **OK**.

If you receive a message that your pump cannot find the sensor signal, continue to the next section.

If your pump cannot find the sensor signal:

1. If your pump cannot find the sensor signal, follow the instructions on your pump screen. Your pump guides you through the following steps:

- a. Disconnect and reconnect the transmitter from the sensor. Pay attention to the transmitter, and notice if the transmitter light blinks when connected to the sensor. If the transmitter light does not blink, you need to charge your transmitter.
 - b. Move your pump closer to your transmitter. It can take up to 15 minutes for your pump to find the sensor signal.
 - c. If your pump is still unable to find the sensor signal, make sure you are away from any electronic devices that might cause interference.
2. If you have gone through all of the troubleshooting on your pump screen and your pump still cannot find the sensor signal, call your local representative for assistance.

Calibrating your sensor

Calibration is the process of entering a BG meter reading to calculate SG values. You must calibrate your sensor regularly to ensure you continue to receive SG data. For details, see *Guidelines for calibrating*, on page 203.

Within two hours after you use your pump to start the sensor, your pump displays a Calibrate now alert to let you know that a calibration is due. This BG meter reading is the first calibration for your sensor. It takes up to five minutes after calibration to see the first SG reading on your Home screen. You enter your second calibration within six hours after your first calibration.

After you have entered your first two calibrations, you must calibrate your sensor again within 12 hours. If you do not enter a BG meter reading within 12 hours, your pump displays the Calibrate now alert and stops calculating SG values until a calibration BG is successfully entered. The sensor must be calibrated at a minimum of every 12 hours throughout the life of the sensor. For better sensor performance, it is recommended that you calibrate your sensor three or four times each day at regular times throughout the day, such as before meals.


You may also receive additional Calibrate now alerts to let you know that another calibration is required to improve performance.

When the Calibrate now alert appears, the system stops calculating SG values until a calibration BG is successfully entered.



Note: Sensor calibration is successful only if your BG entry is in the range of 2.2 to 22.2 mmol/L. Remember to calibrate three to four times throughout the day for optimal results.

To calibrate your sensor:



1. Take a BG meter reading.
2. Press  and go to the Calibrate Sensor screen.
Options > Utilities > Sensor Settings > Calibrate Sensor
3. Select **BG** and enter the value.
4. Select **Calibrate**.




Where to enter your calibration BG meter reading

There are several screens on the pump where you can enter a BG meter reading for calibration. These screens are described in the following table. These options are available only if you are using a sensor.



Note: After your compatible Ascensia BG meter wirelessly transmits your BG reading to your pump, you will be required to confirm your BG on your pump before you can use it for calibration.

Pump screen	How to enter your calibration BG
BG screen When you manually enter a BG, the pump will prompt if you want to calibrate your sensor with the BG reading. Press  then select Enter BG .	Enter a BG meter reading specifically for calibration.
Calibrate Sensor screen Press  , then select: Options > Utilities > Sensor Settings > Calibrate Sensor	Enter a BG meter reading specifically for calibration.

Pump screen	How to enter your calibration BG
<p>BG Meter screen</p> <p>The BG Meter screen appears after your compatible Ascensia BG meter sends a BG meter reading to your pump, and after you confirm the BG.</p>	<p>Select the Calibrate Sensor option to calibrate your sensor with the current BG meter reading.</p>
<p>BG screen in Event Markers</p> <p>Press , then select:</p> <p>Options > Event Markers > BG</p>	<p>When you enter a BG meter reading in Event Markers, the Event Markers screen has an option to use the BG value for calibration.</p>
<p>BG field in the Bolus Wizard screen</p> <p>Press , then select:</p> <p>Bolus > Bolus Wizard</p> <p>The Bolus Wizard feature is only available in Manual Mode.</p>	<p>When you enter a BG meter reading to deliver a bolus using the Bolus Wizard feature, the Bolus Wizard feature gives you the option to use the BG value for calibration after the bolus is delivered.</p>
<p>BG field in the Auto Mode Bolus screen</p> <p>Press , then select Bolus.</p> <p>Auto Mode Bolus is only available in Auto Mode.</p>	<p>When you enter a BG meter reading to deliver a bolus using the Auto Mode Bolus feature, Auto Mode gives you the option to use the BG value for calibration after the bolus is delivered.</p>

When to calibrate

The following table describes when to calibrate your sensor.

Calibrate	Description
<p>After warm-up is complete.</p>	<p>Do your first sensor calibration.</p> <p>Your pump displays a Calibrate now alert within two hours after starting a new sensor. Your first SG reading appears up to five minutes after you calibrate.</p>

Calibrate	Description
Six hours after your first calibration.	Do your second sensor calibration. Six hours after you calibrate for the first time, a Calibrate now alert appears, and your pump stops calculating your SG values. It takes up to five minutes after you calibrate to receive SG values again.
Within 12 hours after your second calibration and at least every 12 hours thereafter.	After you do your second calibration, you need to calibrate at least every 12 hours. For better sensor performance, it is recommended that you calibrate your sensor three or four times each day. If you do not calibrate for more than 12 hours, a Calibrate now alert appears. It takes up to five minutes after you calibrate to receive SG values again.
When the Calibrate now alert appears.	You may also receive additional Calibrate now alerts to let you know that another calibration is required to improve performance. It takes up to five minutes after you calibrate to receive SG values again.

Guidelines for calibrating

Follow these guidelines for best sensor calibration results:

- Calibrate three to four times spread out throughout the day to improve accuracy. For details, see *When to calibrate, on page 202*.
- You can calibrate anytime. However, calibrating with two or three trend arrows may temporarily decrease accuracy until the next calibration. For an example of trend arrows on the Home screen, see *Home screen with CGM in Manual Mode, on page 167*.
- Always calibrate immediately after testing your BG. Never calibrate with a BG meter reading that you have taken more than 12 minutes earlier as that BG value would no longer be considered valid.
- Always use clean, dry fingers when you test your BG levels.
- Use only your fingertips when obtaining blood samples for calibration.



Note: If your BG meter readings are significantly different than your SG readings, you need to wash your hands and calibrate again.

Disconnecting the transmitter from the sensor

Always refer to your transmitter user guide for instructions on disconnecting the transmitter from the sensor.


Removing the sensor

Always refer to the sensor user guide for instructions on how to remove the sensor.

Turning off Sensor Settings

You can turn off Sensor Settings at any time. If you disconnect the transmitter from the sensor, turn off the Sensor Settings to avoid getting a sensor alert. Your sensor settings remain in your pump. You cannot make changes to the settings until you turn on the Sensor Settings again.

To turn off Sensor Settings:

1. Press  and go to the Sensor Settings screen.
Options > Utilities > Sensor Settings
2. Select **Sensor**.
3. Select **Yes** to turn off the sensor feature.

11



Using GIM

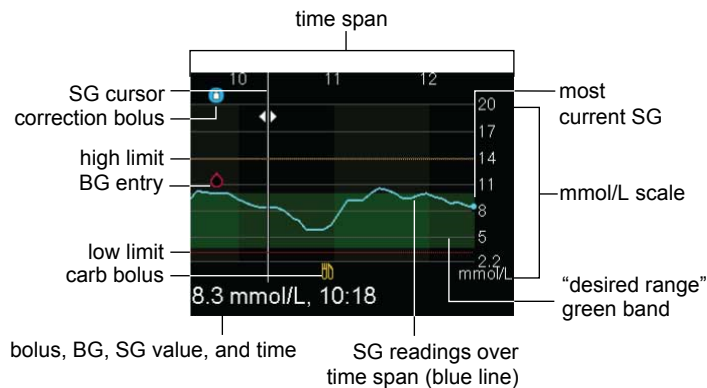
11

Using CGM

This chapter provides information on how to use CGM on your pump and view your SG data. This information helps you identify SG trends, including being notified if your SG is falling or rising rapidly. You can also view historical SG readings in a graph format. Information is also included on how to silence your glucose alerts.

The sensor graph

The sensor graph displays your current SG reading that is wirelessly sent to your pump by the transmitter.



The sensor graph includes the following information:






- The most recent SG reading
- Historical SG readings for the last 3-hour, 6-hour, 12-hour, or 24-hour periods
- Your high and low limits

- The bolus deliveries you have given during the time period shown on the graph
- Any suspend events that have occurred

If an SG reading does not appear on the graph, some possible reasons for this include:

- An error condition or a sensor-related alert is occurring.
- A new sensor that you just inserted is still initializing.
- A new sensor that just initialized is still calibrating.
- An existing sensor that you have recently reconnected is not ready.
- More than six hours have passed since the initial sensor calibration.
- More than 12 hours have passed since the last sensor calibration.




To view the sensor graph:

1. From the Home screen, press the  button.
A full-screen view of the 3-hour graph appears.
2. Press  to navigate to the 6-hour, 12-hour, and 24-hour graphs.
3. Press  to view SG readings and event details.
4. To exit the full-screen view, press , or press the  button again.

Identifying rapid changes in SG

When you use a sensor, trend arrows appear on the Home screen if your SG has been rising or falling faster than a certain per-minute rate. The number of arrows that appear tell you how quickly your SG has been changing.

The following table shows the trend arrows and their corresponding rates.

	SG has been rising at a rate of 0.056 mmol/L per minute or more, but less than 0.111 mmol/L per minute.
	SG has been falling at a rate of 0.056 mmol/L per minute or more, but less than 0.111 mmol/L per minute.
	SG has been rising at a rate of 0.111 mmol/L per minute or more, but less than 0.167 mmol/L per minute.



SG has been falling at a rate of 0.111 mmol/L per minute or more, but less than 0.167 mmol/L per minute.






SG has been rising at a rate of 0.167 mmol/L per minute or more.



SG has been falling at a rate of 0.167 mmol/L per minute or more.

Silencing glucose alerts

The Alert Silence feature allows you to make SG alerts silent for a set period of time. This is useful in situations where you do not want to disturb others, such as when you are in a business meeting or in a movie theater. When using this feature, one of the following status icons appears on the Home screen, depending on your Audio Options settings: vibrate only , audio only , or vibrate and audio . Your system still records the time and glucose value for any alerts that occur. You can view this information in the Alarm History screen.



Note: Alert Silence does not silence Auto Mode exit, High SG, Auto Mode off, and Low SG X.X mmol/L (X.X represents 2.8 mmol/L or below) alerts. These are based on set glucose thresholds and cannot be silenced.

If a glucose alert occurs when you are using the Alert Silence feature, the notification light begins to flash and the Sensor alert occurred message appears letting you know an alert was silenced, but there is no vibration or beep. If you have not cleared the alert by the end of the preset alert silence duration, your pump begins to beep or vibrate periodically until the alert is cleared.

The following table describes the glucose alerts that are silenced with each option.

This Alert	Silences these alerts
Silence setting	
High Alerts Only	Alert on high, Alert before high, and Rise Alert

**This Alert
Silence
setting**

Silences these alerts

High & Low
Alerts

Alert on high, Alert before high, Rise Alert, Alert on low, Alert before low, Suspend before low, and Resume Basal Alert




Note: Alert on low cannot be silenced if the SmartGuard Suspend on low or SmartGuard Suspend before low options are turned on.

All Sensor
Alerts

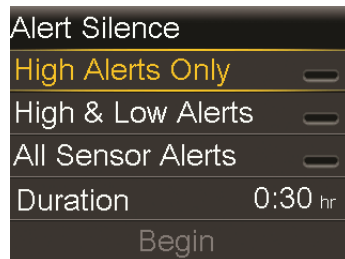
All of the alerts listed previously for High & Low Alerts, plus the following:

- All calibration alerts, reminders, or error messages
 - All alerts relating to sensor insertion, including alerts about sensor warm-up, changing your sensor, sensor expiration, sensor errors, connection issues, and so on
 - All alerts related to your transmitter, including all alerts about your transmitter battery and all connection issues
-

To silence Glucose alerts:

1. Press  and go to the Alert Silence screen.

Audio Options > Alert Silence Options




2. Select High Alerts Only, High & Low Alerts, or All Sensor Alerts to set the alerts you want silenced. Refer to the previous table for details about the alerts silenced with each selection.



Note: If you select **All Sensor Alerts**, you will not receive most alerts related to your SG readings, your sensor, calibration requirements, or your transmitter. Low SG X.X mmol/L (X.X represents 2.8 mmol/L or below), Auto Mode exit, High SG, and Auto Mode off alerts cannot be silenced. You will still receive and hear these alerts when Alert Silence is on. If a silenced glucose alert occurs, the notification light flashes and a message appears on your pump to let you know a silenced alert occurred, but there is no vibration or beep. You can view the specific alert in Alarm History. For more information on how to view the Alarm History screen, see *Alarm History*, on page 135.

3. Set the **Duration** time (from 30 minutes to 24 hours) for which the alerts will be silenced.
4. Select **Begin**. The Alert Silence settings immediately take effect and you are returned to the Sensor Settings screen.

To cancel Alert Silence:

1. Press  and go to the Alert Silence screen.

Audio Options > Alert Silence



2. Select **Cancel Alert Silence**.

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SmartGuard Auto Mode

The Auto Mode feature is part of SmartGuard technology. It automatically controls basal insulin delivery. However, the Auto Mode feature still requires your input for meals, calibrations, and times when you need the target value raised.



Note: The pump requires a minimum of 8 units and a maximum of 250 units per day to operate in Auto Mode.

About SmartGuard Auto Mode

SmartGuard Auto Mode is an insulin delivery feature designed to help people on intensive insulin therapy to achieve better control 24 hours a day. This is achieved by automatically controlling basal insulin delivery to regulate glucose levels to a target SG amount. The standard target SG setting is 6.7 mmol/L and the target can be set temporarily to 8.3 mmol/L for exercise and other events.

When Auto Mode is active, the SG values it receives from the transmitter are used to automatically calculate the basal insulin dose. This process of automatic delivery of insulin is called Auto Basal.

Auto Mode depends on reliable, accurate sensor measurements and your accurate entry of carbs to deliver insulin for meals. Therefore, the basic management of the therapy requires the following activities:

- Periodic BG readings using a BG meter to calibrate the sensor. The minimum calibration is every 12 hours. For better sensor performance, it is recommended that you calibrate your sensor three or four times each day. You may also receive periodic requests from your pump for BG readings without the need for calibration.
- Use of the Auto Mode Bolus feature to deliver boluses to cover meals, and when your pump recommends a bolus.



Note: Delivering a bolus in SmartGuard Auto Mode is similar to delivering a bolus with the Bolus Wizard feature in Manual Mode.

A BG reading above 8.3 mmol/L causes Auto Mode to automatically calculate if a correction bolus is needed to bring BG down to the 8.3 mmol/L BG correction target. If needed, a correction bolus will be recommended.

Manual Mode

In this user guide, the term Manual Mode refers to system functions other than Auto Mode. In other words, if Auto Mode is not active, the system is in Manual Mode.

Before using SmartGuard Auto Mode

SmartGuard Auto Mode can be enabled at any time, but it does not activate until the system completes a 48-hour warm-up period while you use the pump to deliver insulin. This warm-up period begins the midnight after the pump starts delivering insulin and it does not require sensor use. During the warm-up period, your Auto Mode system collects and processes data that help enable its automatic function. Some alarms that occur during warm-up, including a Suspend before low alert or a Suspend on low alert, will turn off Auto Mode.



WARNING: Do not put your pump into Auto Mode if you have used the pump in the last 3 days to practice button pressing, or if basal insulin that was programmed into your pump was not your actual basal delivery. Doing so may result in the delivery of too little or too much insulin, which can cause hyperglycemia or hypoglycemia. Auto Mode uses the recent delivery history on your pump to determine the Auto Basal delivery amount you receive. If you have been practicing with your pump, you must clear the active insulin and the total daily doses in the pump before using Auto Mode. Use the Clear Active Insulin option in the Manage settings menu to clear both active insulin and the total daily dose.


To ready your pump for SmartGuard Auto Mode:

1. Cancel any active Temp Basal rates. See *Canceling a Temp Basal or Preset Temp basal rate*, on page 69.
2. Ensure your delivery is not suspended. See *Stopping and resuming your insulin delivery*, on page 70.
3. Set your carb ratio. See *Changing your carb ratio*, on page 86.
4. Review your high and low limit settings. Your high and low limit settings apply to Auto Mode. See *Setting up CGM*, on page 165 for details.
5. Enter a BG reading if you have not entered one in the past 12 minutes. If necessary, calibrate your sensor. If you have just started a new sensor, calibrate your sensor, and then wait 30 minutes before you enter a BG for Auto Mode. For more information about calibrating your sensor, see *Calibrating your sensor*, on page 200.

Setting up SmartGuard Auto Mode

Auto Mode can be enabled at any time but will not activate until the 48-hour warm-up period has been completed. For details about the warm-up period, see *Before using SmartGuard Auto Mode*, on page 216. Once enabled, Auto Mode begins automatically when all conditions are met and a BG is entered. For more information, see *SmartGuard Auto Mode Readiness*, on page 219.

To set up Auto Mode:

1. Press  and go to the Auto Mode screen.
Options > SmartGuard > Auto Mode
2. Select **Auto Mode** to turn the feature on or off.
3. Select **Auto Mode BG alert** to turn it on or off.



Note: The Auto Mode BG alert is set to On by default. When this setting is on, your pump alerts you when Auto Mode requires a BG to remain active. For information about the conditions that cause Auto Mode to require a BG, see *Safe Basal*, on page 222.

4. Select **Save**.

Conditions to activate SmartGuard Auto Mode

If you have been using Auto Mode and you turn off your pump for less than two weeks, there will only be a five-hour warm-up period once the pump is restarted. The other conditions must still be met before Auto Mode will activate.

If you have turned off your pump for more than two weeks, a new 48-hour warm-up period will be required.

If Auto Mode is enabled but not active, the Auto Mode Readiness screen indicates the reason why Auto Mode has not yet activated. See *SmartGuard Auto Mode Readiness*, on page 219.

It takes five hours for the Auto Mode Active Insulin to be updated. This update time happens under the following conditions:

- when your pump is turned on the first time
- may occur following a complete pump reset caused by a loss of power or a software error
- following a Suspend lasting four hours or longer



Once the Active Insulin is updated, it will be valid unless one of the conditions above happens, which will restart the update period. Auto Mode will then be locked out for another five hours.

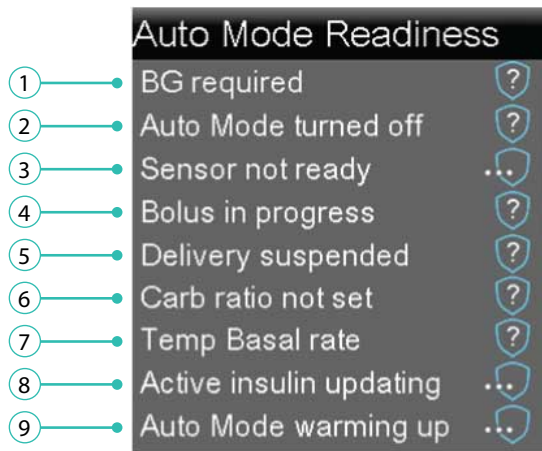
SmartGuard suspend features and SmartGuard Auto Mode





When SmartGuard Auto Mode is active, the SmartGuard suspend features are unavailable and automatically turned off. If you are using Suspend before low or Suspend on low, they are automatically turned off when Auto Mode becomes active. If your pump exits Auto Mode, the SmartGuard suspend features are not active until you turn them on after you exit Auto Mode. If you want to use the SmartGuard suspend features, you must manually turn them on after you exit Auto Mode. See *Low SG settings, on page 173*.








SmartGuard Auto Mode Readiness





The Auto Mode Readiness screen indicates whether your pump is ready to enter Auto Mode, or return to Auto Basal from Safe Basal.

The following table shows what to do when the wait icon  or the question icon  appear by items on the Auto Mode Readiness status screen.




Line	If this appears	Do this
1	Calibration required 	Perform a fingerstick and calibrate your sensor.
	BG required 	Perform a fingerstick and enter a new BG.
	Wait to enter BG... 	Wait until the pump prompts you to enter a BG.
	Processing BG... 	Wait until the BG has processed.

Line	If this appears	Do this
2	Auto Mode turned off 	Turn on Auto Mode in the SmartGuard, Auto Mode screen.
3	Sensor not ready 	<p>Do the following:</p> <ul style="list-style-type: none"> • Check to see if your pump has a transmitter ID entered in Utilities, Device Options. For example, GT6133333M. <p>Make sure your pump is connected to a transmitter. For more information, see <i>Wirelessly connecting your pump and transmitter using Auto Connect</i>, on page 191.</p> <ul style="list-style-type: none"> • Check your Home screen. If you see , move your pump and transmitter closer together. The pump will try to find the transmitter signal. <p>If after 30 minutes the pump and transmitter are still not communicating, you will receive a Lost sensor signal alert. Check that the sensor is still inserted in the skin, and the transmitter and sensor are still connected. Move your pump closer to your transmitter.</p> <ul style="list-style-type: none"> • If your SG is outside of the 2.2 to 22.2 mmol/L range, your pump will not enter Auto Mode.
	Sensor off 	Turn on the sensor in the Utilities, Sensor Settings screen.
	Airplane mode on 	Turn off the Airplane Mode in the Utilities, Airplane Mode screen.
4	Bolus in progress 	Wait until the bolus is complete or stop the bolus yourself before Auto Mode can activate.
5	Delivery suspended 	If insulin delivery is suspended, Auto Mode cannot activate. Treat low BG if necessary as instructed by your healthcare professional.

Line	If this appears	Do this
6	Carb ratio not set 	When you turn on the Bolus Wizard feature for the first time, enter your Carb Ratio in the Edit Carb Ratio screen. You can also enter your Carb Ratio in the Bolus Estimate Setup screen, even if the Bolus Wizard feature is not turned on.
7	Temp Basal rate 	If a temp basal is currently active, you must wait until it has completed or cancel the temp basal yourself before Auto Mode can activate.
8	Active insulin updating 	If active insulin is currently updating, it may take up to five hours to complete. You must wait until this amount is updated before Auto Mode can activate.
9	Auto Mode warming up 	Auto Mode is gathering information on your insulin delivery history in order to personalize its automatic delivery of insulin.

To check Auto Mode Readiness:

1. Press  and select **Status** to go to the Status screen.
2. Select **Auto Mode Readiness**.

Home screen with SmartGuard Auto Mode

When your pump transitions into Auto Mode, the Home screen on your pump changes to display a shield that contains a real-time display of your current SG level. The Home screen also displays your current Active Insulin value.



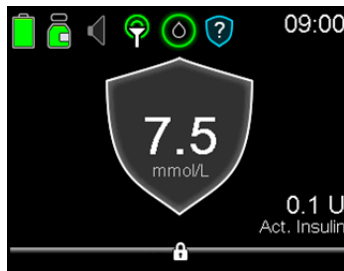
Using SmartGuard Auto Mode

The following sections provide information on how to use SmartGuard Auto Mode and how to view your SG data. This information helps you identify SG trends, including indications that your SG is falling or rising rapidly. You can also view historical SG readings in a graph format.

Safe Basal

Safe Basal is an automatic function within SmartGuard Auto Mode and cannot be modified. The Safe Basal rate is determined by the Auto Mode feature based on your insulin delivery history. It allows you time to perform additional actions required to ensure Auto Mode remains active. Safe Basal covers your basal needs by delivering insulin at a constant rate. Safe Basal does not adjust insulin delivery based on your current SG values.

When the pump is in Safe Basal, the Auto Mode shield appears with a white outline.



Several conditions can cause a transition into Safe Basal. The following table describes these conditions and the actions you must take to resume Auto Basal delivery. An optional setting called the Auto Mode BG alert can be set to have the pump alert you when a BG entry is required. This setting is turned on by default. For more information about setting the Auto Mode BG alert, see *Setting up SmartGuard Auto Mode*, on page 217.

Condition	Actions to take
Auto Mode has been at the minimum delivery limit for 2 1/2 hours.	Enter a BG. If your Auto Mode BG alert setting is enabled, you will receive an Auto Mode min delivery alert.

Condition	Actions to take
Auto Mode has been at the maximum delivery limit for four hours.	Enter a BG. If your Auto Mode BG alert setting is enabled, you will receive an Auto Mode max delivery alert.
Auto Mode detects that your sensor might be under-reading.	Enter a BG. If your Auto Mode BG alert setting is enabled, you will receive a BG required alert.
An entered BG is 35% or more different than your current SG value.	Enter a BG. If your Auto Mode BG alert setting is enabled, you will receive a BG required or Cal required for Auto Mode alert.
No SG data has been received for more than five minutes.	<ul style="list-style-type: none"> • If SG data is not available due to a signal interference, three dashes appear on the screen in place of the SG data. If the interference is intermittent, the Auto Mode shield appears with a white outline, and no action will be required. • If your pump has not received SG data for 30 minutes or more, you will receive a Lost sensor signal alert. For more information about what to do in case of a lost sensor signal, see <i>CGM (sensor) alarms, alerts, and messages, on page 257.</i> • If the SG data is not available because the SG calibration has expired, you will receive a Calibrate Now alert. Calibrate your sensor. See <i>CGM (sensor) alarms, alerts, and messages, on page 257.</i> <p>The Auto Mode BG alert does not apply to this condition.</p>

After 90 minutes in Safe Basal, if the condition that caused the pump to transition into Safe Basal has not been resolved, the pump will enter Manual Mode.



Note: When you change your sensor, your pump will switch to Safe Basal for up to 90 minutes. The pump will guide you through calibrating and entering a BG for Auto Mode.

Example: Safe Basal

Alex's pump is in Auto mode. Before lunch, he checks his BG, and enters the value into his pump. Alex notices the BG he entered was much higher than his current SG reading. His pump displays a gray shield, indicating that Auto mode is now in Safe Basal delivery. Alex also received a BG Required for Auto Mode alert. He washes his hands, repeats his fingerstick, and enters the new BG into the pump. After his pump enters Safe Basal, Alex checks his user guide and realizes that his pump entered Safe Basal because the difference between his SG and BG entry was greater than 35%.

Block Mode when in SmartGuard Auto Mode

The Block Mode feature allows a caregiver to block the patient from changing settings or delivering a bolus directly on the pump. In Auto Mode, the Block Mode feature still allows:

- Auto Basal delivery
- BG correction bolus if BG was sent from your compatible Ascensia BG meter
- Calibration if BG was sent from your compatible Ascensia BG meter

The Block Mode feature does not allow:

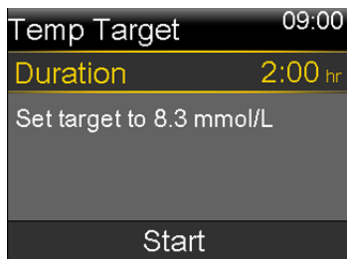
- Bolus delivery or entry unless prompted by the Bolus Recommended screen
- Changes to Auto Mode settings
- Manual BG entry

Setting Temp Target

You may set a temporary SG target (Temp Target) of 8.3 mmol/L for situations in which you would like your target to be temporarily higher, such as exercise. Check with your healthcare professional regarding use of a Temp Target.

To set a Temp Target:

1. Press  and select Temp Target to go to the Temp Target screen.



2. Set the duration. The default is 2 hours and the maximum duration is 12 hours. Use \wedge and \vee to set the duration in 30-minute increments.
3. Select **Start**.

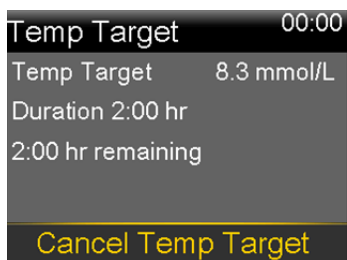
The screen will show Temp Target Started, then change to the Home screen, where a banner will show the remaining Temp Target time.



When the Temp Target time has run out, the banner will disappear from the Home screen.

To cancel Temp Target:

1. Press \odot and select **Cancel Temp Target** to go to the Temp Target screen.

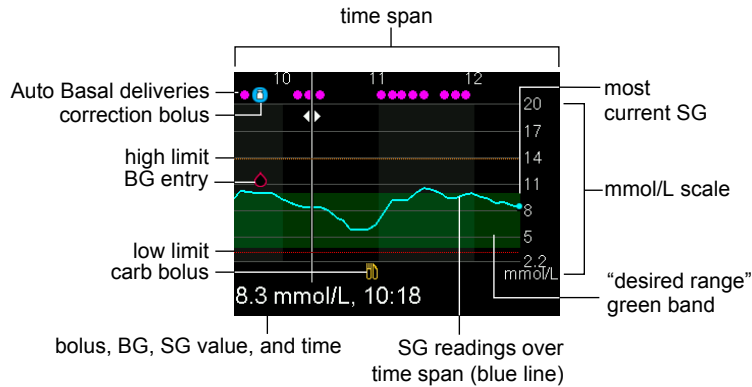


2. Select **Cancel Temp Target**.

The Temp Target will be cancelled and the Home screen will appear, with no Temp Target banner.

SmartGuard Auto Mode sensor graph

Your Auto Mode sensor graph displays your current SG reading that is wirelessly sent to your pump by your transmitter.



The Auto Mode sensor graph includes the following information:






- The selected SG or event details are displayed at the bottom of the screen.
- Historical SG readings are displayed for the last 3-hour, 6-hour, 12-hour, or 24-hour periods. They appear as a blue line across the screen.
- Correction boluses are shown as white vials inside blue circles.
- Meal (carb) boluses are shown as yellow knife and fork symbols. These represent any bolus amounts that include a carb entry.
- BG entries appear as red drop symbols.
- The numerous small magenta dots along the top represent the automatically delivered basal insulin (Auto Basal or Safe Basal) delivered by SmartGuard Auto Mode.
- A time change event appears as a white clock symbol.

If an SG reading does not appear on the graph, some possible reasons for this include:

- An error condition or a sensor-related alert is occurring.
- A new sensor that you just inserted is still initializing.
- A new sensor that just initialized is still calibrating.
- An existing sensor that you have recently reconnected is not ready.
- More than six hours have passed since the initial sensor calibration.

- More than 12 hours have passed since the last sensor calibration.

To view the sensor graph:


1. From the Home screen, press the  button to display the SG graph. A full-screen view of the 3-hour graph appears.
2. Press  to navigate to the 6-hour, 12-hour, and 24-hour graphs.
3. Press  to view SG readings and event details.
4. To exit the full-screen view, press  or press the  button again.

Enter BG

The BG screen lets you manually enter a BG value. When you access the BG screen, it does not show any previously entered manual or linked meter BG values. If a BG value is received from a linked meter, that value will immediately display in a separate BG Meter screen and you will be prompted to confirm the BG value.

When you enter a BG while in Auto Mode, a correction bolus may be suggested.

To manually enter BG readings:

1. Press  and select **Enter BG** to go to the BG screen.
2. Select **Enter BG**.
3. Enter a BG value.
4. Select **Save**.
5. A screen appears prompting you to calibrate your sensor with the BG value if you want. Select **Yes** or **No**.

SmartGuard Auto Mode Bolus

Delivering a bolus in SmartGuard Auto Mode is similar to delivering a bolus using the Bolus Wizard feature in Manual Mode. The Bolus feature in Auto Mode requires you to enter either carbs or a BG value. You may also choose to enter both. Auto Mode then calculates the bolus amount needed to cover the meal or correction. Once you confirm this amount, Auto Mode will deliver the bolus.

The Auto Mode Bolus screen shows your current Active Insulin value.



WARNING: Do not use Auto Mode for a period of time after giving a manual injection of insulin by syringe or pen. Manual injections are not accounted for in Auto Mode. Therefore, Auto Mode could deliver too much insulin. Too much insulin may cause hypoglycemia. Consult with your healthcare professional for how long you need to wait after a manual injection of insulin before you resume Auto Mode.



Note: Auto Mode Bolus only supports Normal boluses. Square Wave, Dual Wave, Easy, Manual, Remote, and Preset bolus types cannot be delivered while in Auto Mode.

Bolus	09:00
BG	--- mmol/L
Carbs	0 g
Active Insulin	0.0 U
Next	

If you are using a compatible Ascensia BG meter, you may send your BG meter readings directly to your pump. A confirmation screen will appear asking you to confirm the BG value on the pump. Confirmed BG values will automatically be used in the BG selection of the Auto Mode Bolus screen. These entries will be valid for up to 12 minutes after sending them to the pump. If you wish to enter your BG using a compatible Ascensia BG meter, do this prior to using the Auto Mode Bolus screen. If you are not using a compatible Ascensia BG meter, you must manually enter your BG value.



Note: In order to ensure accuracy, do not use a BG meter reading in the Auto Mode Bolus screen if more than 12 minutes have passed since you have taken the reading. That BG reading and the corresponding bolus amount may no longer be accurate.

To use the Auto Mode Bolus feature:

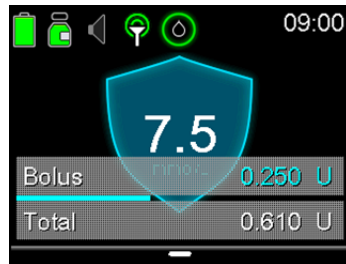
1. Press  and select Bolus to go to the Auto Mode Bolus screen.


2. If you are using a compatible Ascensia BG meter, skip to step 3. Otherwise, enter your BG value. You can enter a range from 1.1 mmol/L to 33.3 mmol/L.
3. Enter your Carb amount in grams. If you choose not to enter a Carb amount, skip to step 4.
4. Select **Next**.

The screen indicates the amount of the calculated bolus.

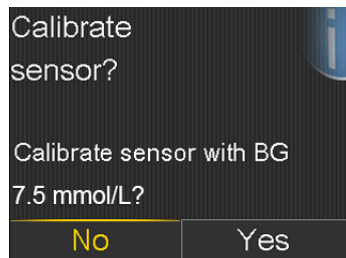
5. Select **Deliver Bolus**.

A screen appears briefly to indicate the bolus delivery has started. Then, the Home screen appears and shows the progress of the bolus delivery.



Note: You can stop a bolus at any point by pressing  and selecting **Stop Bolus**.

6. If a new BG value is used in the Auto Mode Bolus feature, the following screen also appears, prompting you to calibrate your sensor. Select **Yes** or **No**.




Correction Boluses

When a BG reading over 8.3 mmol/L is received and confirmed while your pump is in Auto Mode, your pump may recommend a correction bolus. The calculation takes into account any active insulin that has already been delivered by the pump. If the BG is not above 8.3 mmol/L, or if the bolus would be zero after accounting for active insulin, no correction will be recommended. If your pump calculates that a correction bolus is needed, the Bolus Recommended screen appears.

To administer a correction bolus from the Bolus Recommended screen, select the Bolus option. If you do not wish to bolus at this time, you may select Cancel to reject the correction bolus. Selecting Bolus will take you to the Auto Mode Bolus screen where you can confirm and deliver the correction bolus. For more information, see *SmartGuard Auto Mode Bolus*, on page 227.

Alert Silence

The Alert Silence feature  allows you to temporarily silence SG alerts. This is useful in situations where you do not want to disturb others, such as when you are in a business meeting or in a movie theater. When using this feature, your system still records the time and glucose value for any alerts that occur. You can view this information in the Alarm History screen. See *Alarm History*, on page 135 for details.

If a glucose alert occurs when you are using the Alert Silence feature, the notification light begins to flash and the *Sensor alert occurred* message appears, but there is no vibration or sound. If you have not cleared the alert by the end of the preset alert silence duration, your pump begins to beep or vibrate periodically until the alert is cleared.



Note: The following alerts are never silenced:

- Low SG X.X mmol/L (X.X represents 2.8 mmol/L or below)
- Auto Mode exit
- High SG
- Auto Mode off


For more information about the Auto Mode exit, High SG, and Auto Mode off alerts, see *SmartGuard Auto Mode alerts and messages*, on page 269. For more information about the Low SG X.X mmol/L (X.X represents 2.8 mmol/L or below) alert, see *CGM (sensor) alarms, alerts, and messages*, on page 257.

You can check the status of the Alert Silence feature in the Sensor Status Screen. For more information, see *Status screens*, on page 42.

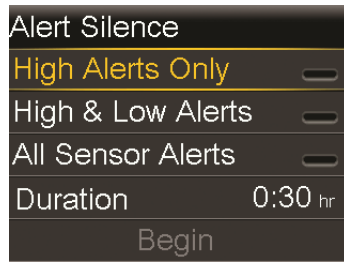
The following table describes the glucose alerts that are silenced with each option.

This Alert Silence setting	Silences these alerts
High Alerts Only	Alert on high, Alert before high, and Rise Alert
High and Low Alerts	Alert on high, Alert before high, Rise Alert, Alert on low, and Alert before low
<div> </div> <p>Note: Alert on low cannot be silenced if the SmartGuard Suspend on low or SmartGuard Suspend before low options are turned on.</p>	
All Sensor Alerts	<p>All of the alerts listed previously for High and Low Alerts, plus the following:</p> <ul style="list-style-type: none"> • All calibration alerts, reminders, or error messages • All alerts relating to sensor insertion, including alerts about sensor warm-up, changing your sensor, sensor expiration, sensor errors, connection issues, and so on • All alerts related to your transmitter, including all alerts about your transmitter battery and all connection issues

To set Alert Silence in Auto Mode:

1. Press  and go to the Alert Silence screen.

Audio Options > Alert Silence Options




2. Select High Alerts Only, High and Low Alerts, or All Sensor Alerts to set the alerts you want silenced. Refer to the previous table for details about the alerts silenced with each selection.



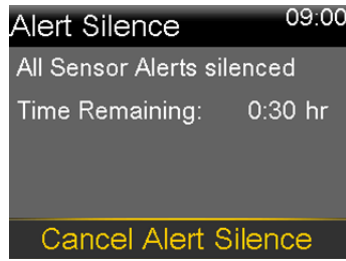
Note: If you select **All Sensor Alerts**, you will not receive most alerts related to your SG readings, your sensor, calibration requirements, or your transmitter. Low SG X.X mmol/L (X.X represents 2.8 mmol/L or below), Auto Mode exit, High SG, and Auto Mode off alerts cannot be silenced. You will still receive and hear these alerts when Alert Silence is on. If a silenced glucose alert occurs, the notification light flashes and a message appears on your pump to let you know a silenced alert occurred, but there is no vibration or beep. You can view the specific alert in Alarm History. For more information, see *Alarm History*, on page 135.

3. Set the **Duration** time (from 30 minutes to 24 hours) for which the alerts will be silenced.
4. Select **Begin**. The Alert Silence settings immediately take effect and you are returned to the Sensor Settings screen.

To cancel Alert Silence:

1. Press  and go to the Alert Silence screen.

Audio Options > Alert Silence



2. Select **Cancel Alert Silence**.

Exiting SmartGuard Auto Mode

Auto Mode is turned off automatically after most pump alarms, except for the following alarms:

- Auto Suspend
- Battery failed
- Power loss
- Battery not compatible.
- Insert battery
- Replace battery now
- Loading incomplete
- No reservoir detected
- Max fill reached
- Fill Cannula

If an alarm has initiated a pump reset, you must turn on Auto Mode again and go through a five-hour warm-up period. For more information about pump alarms, see *Pump alarms, alerts, and messages*, on page 240.

SmartGuard Auto Mode may stop working because:

- You manually turned off the feature through the Auto Mode settings.
- Auto Mode has been in Safe Basal for 90 minutes. See *Safe Basal*, on page 222.
- Any suspend event has not been cleared within 4 hours.
- You manually turned off the Sensor feature or disconnected the transmitter.

You can turn off Auto Mode at any time. For more information, see *Setting up SmartGuard Auto Mode*, on page 217.

Returning to SmartGuard Auto Mode

If you have automatically transitioned to Manual Mode, you can return to Auto Mode if all readiness conditions are satisfied and you enter a BG. For more information, see *SmartGuard Auto Mode Readiness*, on page 219.



Note: If you have turned Auto Mode off, you cannot return to Auto Mode until you turn Auto Mode on again.

You may return to Auto Mode if:

- Auto Mode is enabled on your pump.
- Your sensor is providing good SG values.
- A bolus is not in progress.
- A Temp Basal rate is not in progress.
- 48 hour warm-up is complete.
- Auto Mode is not in a five-hour warm-up period.
- You have entered a new BG reading.

If any of these conditions are not met, Auto Mode cannot restart.

13


13

Alarms, alerts, and messages

This chapter describes the general behavior of the most common and the most serious notifications and how to resolve them.

About alarms, alerts, and messages

Your pump has a sophisticated safety network. If this safety network detects anything unusual, it conveys this information in the form of notifications. Notifications include alarms, alerts, and messages.

When you have received more than one notification and there are multiple messages to view, a small white flap appears on the notification icon in the upper-right corner of the screen . When you clear the first notification, the next notification becomes visible.



Note: It is important that you promptly respond to all notifications and confirmations that appear on your pump. In the event that you do not respond, your pump may remain on that screen until addressed.

When you respond to a message, there may be times when another message appears. Always be sure to address all notifications you have received.

A white triangle in the lower-right corner means you must press  to continue.



WARNING: If you receive a Critical pump error alarm on your pump, the following screen displays and the pump sirens.



Immediately disconnect from your insulin pump and discontinue use. Contact your local representative for assistance.

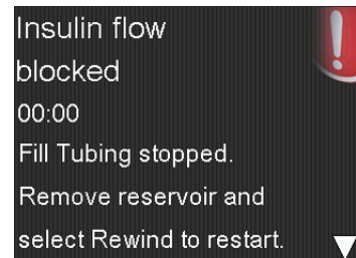
Remember, your body still needs insulin while your pump is removed. It is important that you consult your healthcare professional to determine an alternate method of receiving insulin while your pump is removed. For more information on the Critical pump error alarm, see *Pump alarms, alerts, and messages*, on page 240.

Alarms

An alarm warns you of a condition that needs your immediate attention. Stopped insulin delivery and low glucose levels are the most common reasons for alarms.



WARNING: Always address alarms immediately when they occur. Ignoring an alarm can result in hyperglycemia or hypoglycemia.



When an alarm occurs:

Display: The pump displays a notification with a red icon and instructions.

Notification light: The red notification light blinks twice, followed by a pause, in a continuous repeating pattern.

Audio: Depending on your Audio Options settings, the pump emits an alarm tone, a continuous three-pulse-and-pause vibration pattern, or both the alarm tone and vibration.

You must resolve the underlying problem that triggered the alarm. In most cases, you clear an alarm by pressing \surd and then you make a selection. In some cases, however, clearing the alarm does not fix the underlying problem. The alarm repeats until the underlying problem is fixed.

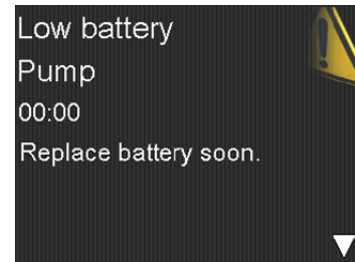
If you do not respond to an alarm, after ten minutes the alarm tone escalates to a loud emergency siren.

Alerts

An alert makes you aware of a situation that may require your attention. When an alert occurs, always check your pump screen to see if any action is required.

When an alert occurs:

Display: The pump displays a notification with a yellow icon and instructions.



Notification light: The red notification light on your pump blinks once, followed by a pause, then blinks once again in a continuous repeating pattern.

Audio: Depending on your Audio Options settings, the pump either beeps or vibrates in a continuous three-pulse-and-pause pattern, or does both.

To clear an alert, press \surd and then make a selection. If you do not respond to an alert, the pump beeps every five minutes or every fifteen minutes, depending on the alert. Some alerts will also escalate to a loud emergency siren after ten minutes.



Note: If an alert occurs when you are in a screen other than the Home screen, the alert message may appear after you return to the Home screen.

Messages

A message informs you about the status of your pump or if you need to make a decision.

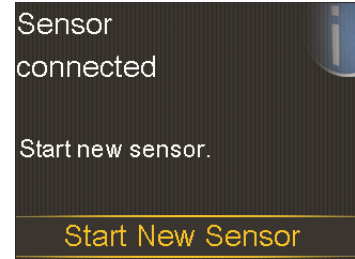
When a message occurs:

Display: The pump displays a notification with a blue icon and instructions.

Notification light: Does not illuminate or blink.

Audio: Depending on the message, the pump emits a message tone, an alert tone, or no tone. Depending on your Audio Options settings, you may hear a tone, feel a one-pulse-only vibration, or hear a tone and feel a vibration.

You clear the message by pressing \vee and making a selection.



Pump alarms, alerts, and messages

The following table lists the most common or serious alarms, alerts, and messages related to your pump. The table also explains the meaning, consequences, and the reasons why these notifications appear, and provides steps for problem resolution. For a list of the alarms that do not turn off Auto Mode, see *Exiting SmartGuard Auto Mode*, on page 233.

Title and text	Type	Explanation	Next steps
<p>Active Insulin cleared</p> <p>Any Active Insulin amount has been cleared.</p>	Alert	<p>Your active insulin amount is now at 0 units. This may occur because certain alarms automatically clear active insulin.</p>	<ul style="list-style-type: none"> • Select OK to clear the alarm. • The active insulin tracked prior to pump restart is not included in new Bolus Wizard calculations. Consult your healthcare professional for how long you need to wait after active insulin is cleared before you can rely on the active insulin calculation of the Bolus Wizard feature. • You can check Daily History for the time and amount of your last bolus.
<p>Auto Suspend</p> <p>Insulin delivery suspended. No buttons pressed within time set in Auto Suspend.</p>	Alarm	<p>Insulin delivery is currently suspended by Auto Suspend. Auto Suspend is a feature you enabled to automatically suspend insulin delivery and trigger an alarm after no buttons are pressed for a specified period of time. Auto Suspend does not disable Auto Mode. Insulin delivery is suspended until you clear the alarm and resume basal delivery.</p>	<ul style="list-style-type: none"> • To clear the alarm and resume basal insulin delivery, select Resume Basal. • Check your BG and treat as necessary.

Title and text	Type	Explanation	Next steps
<p>Battery failed</p> <p>Insert a new AA battery.</p>	Alarm	The pump battery does not have enough power.	<ul style="list-style-type: none"> • Select OK to clear the alarm. • Remove the old battery and insert a new AA battery.
<p>Battery not compatible.</p> <p>See User Guide.</p>	Alarm	The battery that you inserted into the pump is not compatible.	<ul style="list-style-type: none"> • To clear the alarm, remove the incompatible battery. • Insert a new AA battery.
<p>Bolus not delivered</p> <p>Bolus entry timed out before delivery. If bolus intended, enter values again.</p>	Alert	Bolus values entered, but bolus was not delivered within 30 seconds.	<ul style="list-style-type: none"> • Select OK to clear the alert. • If bolus delivery was intended, check your BG, re-enter bolus values and deliver bolus.
<p>Bolus stopped</p> <p>Cannot resume bolus or cannula fill. XX.XXX of YY.YYY U delivered. ZZ.ZZZ U not delivered. If needed, enter values again.</p>	Alarm	The battery power was exhausted while a bolus or Fill Cannula was in progress, or you did not respond to the Resume bolus? message after replacing the battery.	<ul style="list-style-type: none"> • Note the amount of insulin not delivered. • Replace the AA battery. • Select OK to clear the alarm. • Deliver the remaining bolus amount if needed.

Title and text	Type	Explanation	Next steps
<p>Cannot connect device</p> <p>This device is incompatible with your pump. See User Guide.</p>	Alert	<ul style="list-style-type: none"> You may be trying to connect a device that is not compatible with your pump. You are trying to connect a transmitter to your pump but another transmitter is already wirelessly connected to your pump. 	<ul style="list-style-type: none"> Select OK to clear the alert. Check the list of devices that are compatible with your pump in <i>Optional MiniMed 670G system devices</i>, on page 22. If you are replacing your transmitter, make sure that you first delete the old transmitter from your pump before you try to connect your new transmitter. Only one transmitter can be connected to your pump. For details, see <i>Deleting the transmitter from your pump</i>, on page 198.
<p>Check settings</p> <p>Startup Wizard settings complete. Check and set up your other settings.</p>	Alert	<p>Some settings have been cleared or reverted to factory default values.</p>	<ul style="list-style-type: none"> Select OK to clear the alert. Review any settings that you have not already set in Startup Wizard and re-enter the values, if necessary.

Title and text	Type	Explanation	Next steps
<p>Critical pump error</p> <p>Delivery stopped. Pump not working properly. Stop using pump. Remove infusion set from body. Consider other insulin treatment. See User Guide.</p>	Alarm	Your pump has encountered an error that cannot be resolved. For example, your pump may have a mechanical problem.	<p>The pump is not able to deliver insulin. Remove your infusion set and stop using your pump.</p> <ul style="list-style-type: none"> • Consider another form of insulin delivery. • Check your BG, and treat as necessary. • Write down the error code that appears on the alarm screen. • Call your local representative for assistance with your pump.
<p>Delivery limit exceeded</p> <p>Delivery stopped. Check BG. See User Guide for more information.</p>	Alarm	Your pump has suspended because the hourly delivery limit was met. This limit is based on the maximum bolus and maximum basal setting. If this alarm occurs during a bolus, the bolus is canceled before it can complete.	<ul style="list-style-type: none"> • Check your BG. • Select Resume Basal. • Check Bolus History and reevaluate your need for insulin. • Continue to monitor your BG.
<p>Fill Cannula?</p> <p>Select Fill to fill cannula or select Done if not needed.</p>	Alarm	You had the Fill Cannula screen displayed for 15 minutes.	<ul style="list-style-type: none"> • To proceed and fill the cannula, select Fill. • If you do not need to fill the cannula, select Done to skip this process.

Title and text	Type	Explanation	Next steps
<p>High BG XX.X mmol/L</p> <p>Check infusion set. Check ketones. Consider insulin injection. Monitor BG. Confirm BG?</p>	Alert	<p>Your BG meter reading is above 13.9 mmol/L.</p> <p>This alert applies only to Manual Mode. For High BG XX.X mmol/L in Auto Mode, see <i>SmartGuard Auto Mode alerts and messages, on page 269</i>.</p>	<ul style="list-style-type: none"> • Select No to prevent the remote BG from being used by your pump. Select Yes to confirm the BG reading. • Check your BG and treat as necessary.
<p>Insert battery</p> <p>Delivery stopped. Insert a new battery now.</p>	Alarm	<p>The battery was removed from the pump.</p> <p>If a bolus was in progress when the battery was removed, a Resume bolus? message appears and a tone sounds when a new battery is inserted. The message indicates how much bolus was delivered.</p>	<ul style="list-style-type: none"> • Insert a new AA battery. • The alarm clears when you insert a new battery. • The pump powers off after 10 minutes unless you insert a new battery.


Title and text	Type	Explanation	Next steps
<p>Insulin flow blocked</p> <p>Check BG. Consider injection and testing ketones. Change reservoir and infusion set.</p>	Alarm	Your pump has detected that the basal or bolus insulin flow was blocked.	<ul style="list-style-type: none"> • Check your blood glucose. Consider checking ketones and take an injection if needed. • Remove your infusion set and reservoir. • Select Rewind to start the new reservoir process using a new infusion set and reservoir. <p>If a bolus delivery was in progress when the alarm occurred:</p> <ul style="list-style-type: none"> • Check the Daily History screen for the amount of bolus already delivered before the pump alarmed. • Consider delivering remaining bolus, if the bolus insulin was not included in an insulin injection.



WARNING: Do not use Auto Mode for a period of time after giving a manual injection of insulin by syringe or pen. Manual injections are not accounted for in Auto Mode. Therefore, Auto Mode could deliver too much insulin. Too much insulin may cause hypoglycemia. Consult with your healthcare professional for how long you need to wait after a manual injection of insulin before you resume Auto Mode.

Title and text	Type	Explanation	Next steps
<p>Insulin flow blocked</p> <p>Check BG. Consider injection and testing ketones. Estimated 0 U insulin in reservoir. Change reservoir and infusion set.</p>	Alarm	<p>Your pump has detected that the insulin flow was blocked and there is no insulin in the reservoir.</p>	<ul style="list-style-type: none"> • Check your blood glucose. Consider checking ketones and take an injection if needed. • Remove your infusion set and reservoir. • Select Rewind to start the new reservoir process using a new infusion set and reservoir. <p>If a bolus delivery was in progress when the alarm occurred:</p> <ul style="list-style-type: none"> • Check the Daily History screen for the amount of bolus already delivered before the pump alarmed. • Consider delivering remaining bolus, if the bolus insulin was not included in an insulin injection.

Title and text	Type	Explanation	Next steps
<p>Insulin flow blocked</p> <p>Fill Cannula stopped.</p> <p>Remove infusion set from body.</p> <p>Change reservoir and infusion set.</p>	Alarm	<p>Your pump has detected the insulin flow was blocked while filling the cannula.</p>	<ul style="list-style-type: none"> • Check your blood glucose. Consider checking ketones and take an injection if needed. • Remove your infusion set and reservoir. • Select Rewind to start the new reservoir process using a new infusion set and reservoir.
<p>Insulin flow blocked</p> <p>Fill Tubing stopped.</p> <p>Remove reservoir and select Rewind to restart.</p>	Alarm	<p>Your pump has detected the insulin flow was blocked while filling the tubing. Possible connection issue between the tubing and reservoir.</p>	<ul style="list-style-type: none"> • Remove the reservoir and select Rewind to restart the fill tubing process. • Disconnect tubing from reservoir. • Be sure tubing is not crimped or bent. • Continue following the steps displayed on the pump using the same infusion set and reservoir. • If this alarm occurs again, use a new infusion set.

Title and text	Type	Explanation	Next steps
<p>Loading incomplete</p> <p>Remove reservoir and select Rewind to restart loading.</p>	Alarm	<p>You pressed  after loading began.</p>	<ul style="list-style-type: none"> Remove the reservoir to start again. Select Rewind and follow the on-screen instructions.
<p>Low battery Pump</p> <p>Replace battery soon.</p>	Alert	<p>The battery in the pump is low on power. Remaining battery life is 10 hours or less.</p>	<ul style="list-style-type: none"> Select OK to clear the alert. Replace the AA battery as soon as possible. Otherwise, insulin delivery stops, and the Replace Battery Now alarm occurs. If the pump is delivering a bolus or filling the cannula, wait until delivery is complete to replace battery.
<p>Low BG X.X mmol/L</p> <p>Treat Low BG. Do not bolus until BG is normal. Monitor BG. Confirm BG?</p>	Alert	<p>Your BG meter reading is below 3.9 mmol/L.</p>	<ul style="list-style-type: none"> Select No to prevent the remote BG from being used by your pump. Select Yes to confirm the BG reading. Check your BG and treat as necessary.

Title and text	Type	Explanation	Next steps
<p>Low reservoir</p> <p>XX units remaining. Change reservoir.</p>	Alert	Your reservoir is low on insulin, according to the number of units set in the Low Reservoir Reminder.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Change the reservoir soon. • If you do not change the reservoir after you receive this alert, you will receive a second Low reservoir alert when the insulin level reaches half of your original alert amount.
<p>Manage settings error</p> <p>Delivery stopped. Backup settings cleared from Manage Settings. Current settings are working properly. Select OK to restart. See User Guide.</p>	Alarm	A pump error has occurred, and you need to restart your pump. Your backup settings have been lost, but your current settings are unchanged.	<ul style="list-style-type: none"> • Select OK to restart your pump. Your current settings are unchanged. Only your backup settings are lost. • When the pump restarts, follow instructions on the pump display. • If the pump was delivering a bolus or filling the cannula, check Daily History and evaluate your need for insulin.
<p>Max Fill reached</p> <p>3X.X U. Did you see drops at the end of tubing?</p>	Alarm	You have exceeded the number of units expected to fill the tubing. By now, insulin should be at the end of the tubing.	<ul style="list-style-type: none"> • If you see drops at the end of the tubing, select Yes. • If you do not see drops, select No. • Follow instructions displayed on the pump.

Title and text	Type	Explanation	Next steps
<p>Max Fill reached</p> <p>4X.X U. Remove reservoir and select Rewind to restart New Reservoir procedure.</p>	Alarm	<p>You have exceeded the number of units expected to fill the tubing. By now, insulin should be at the end of the tubing.</p>	<ul style="list-style-type: none"> Remove the reservoir. Check if you still have insulin in the reservoir. If you do, you can continue using the same reservoir. Select Rewind to restart the new reservoir procedure.
<p>No reservoir detected</p> <p>Rewind before loading reservoir.</p>	Alarm	<p>There is no reservoir in the pump or the reservoir is not properly locked into place.</p>	<ul style="list-style-type: none"> Select Rewind. Ensure that your reservoir is filled with insulin. When prompted, ensure that your reservoir is inserted and properly locked into place.
<p>Power error detected</p> <p>Delivery stopped. Record your settings by uploading to CareLink or write your settings on paper. See User Guide.</p>	Alarm	<p>The internal power source in your pump is unable to charge. Your pump is operating on the AA battery only.</p>	<ul style="list-style-type: none"> Select OK to clear the alarm. Check your BG and treat as necessary. Record your settings as soon as possible because your AA battery may not last long. Call your local representative for assistance with your pump.

Title and text	Type	Explanation	Next steps
<p>Power loss</p> <p>AA battery was removed for more than 10 min or power was lost. Select OK to re-enter time and date.</p>	Alarm	Your pump battery has been out for more than ten minutes, and your pump has lost power. You must reset your time and date.	<ul style="list-style-type: none"> • Select OK to go to the Time & Date screen. • Enter the current time, time format, and date.
<p>Pump error</p> <p>Delivery stopped. Current settings cleared. Pump restart needed. Select OK to restart and then re-enter your settings. See User Guide.</p>	Alarm	Your pump encountered an error and will restart. Your pump settings will return to factory default values.	<ul style="list-style-type: none"> • Select OK to restart your pump. • When the pump restarts, follow instructions on the pump display. • After restart, check settings and re-enter values as needed. • If you recently saved backup settings in Manage Settings, use Restore Settings. • If the pump was delivering a bolus or filling the cannula, check Daily History and reevaluate your need for insulin. • If this alarm recurs frequently, write down the error code displayed on the alarm screen (you can also find it in your Alarm History) and call your local representative.

Title and text	Type	Explanation	Next steps
<p>Pump error Delivery stopped. Settings unchanged. Pump restart needed. Select OK to restart. See User Guide.</p>	<p>Alarm</p>	<p>A pump error has occurred, you need to restart your pump.</p>	<ul style="list-style-type: none"> • Select OK to restart your pump. • If the pump was delivering a bolus or filling the cannula, check Daily History and reevaluate your need for insulin. • If this alarm recurs frequently, write down the error code displayed on the alarm screen (you can also find it in your Alarm History) and call your local representative.
<p>Pump error Delivery stopped. Settings unchanged. Select OK to continue. See User Guide.</p>	<p>Alarm</p>	<p>Your pump encountered an error but a restart is not necessary. The issue is resolved. Your settings are not changed.</p>	<ul style="list-style-type: none"> • Select OK to resume basal delivery. • If the pump was delivering a bolus or filling the cannula, check Daily History and reevaluate your need for insulin. • If this alarm recurs frequently, write down the error code displayed on the alarm screen (you can also find it in your Alarm History) and call your local representative.

Title and text	Type	Explanation	Next steps
<p>Pump restarted</p> <p>Delivery stopped. Settings unchanged. Select OK to continue. See User Guide.</p>	Alarm	<p>Your pump has encountered a problem and has restarted. Your settings have not been changed.</p>	<ul style="list-style-type: none"> • Select OK to continue. • If the pump was delivering a bolus or filling the cannula, check Daily History and re-evaluate your need for insulin. • If this alarm recurs frequently, write down the error code displayed on the alarm screen (you can also find it in your Alarm History) and call your local representative.
<p>Replace battery</p> <p>Battery life less than 30 minutes. To ensure insulin delivery, replace battery now.</p>	Alert	<p>Battery life is low and will be exhausted within 30 minutes.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Replace the AA battery.
<p>Replace battery now</p> <p>Delivery stopped. Battery must be replaced to resume delivery.</p>	Alarm	<p>Insulin delivery has stopped due to low power. Battery was not replaced after the Low battery Pump alert.</p>	<p>Replace the battery immediately to resume insulin delivery.</p>

Title and text	Type	Explanation	Next steps
<p>Reservoir estimate at 0 U</p> <p>To ensure insulin delivery, change reservoir.</p>	Alert	Your reservoir level is estimated at 0 units.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Change the reservoir now.
<p>Resume bolus?</p> <p>XXX of YYY U delivered.</p> <p>Resume delivery of ZZZ U?</p>	Message	A normal bolus delivery has been interrupted because the pump battery was removed. If it is within 10 minutes since this interruption, you can resume this bolus.	<ul style="list-style-type: none"> • Check the message to see how much of the bolus was actually delivered. • To cancel remaining amount of bolus, select Cancel. • To resume remaining amount of bolus, select Resume.
<p>Resume Dual bolus?</p> <p>XX of YY U delivered.</p> <p>Resume delivery of ZZ U for XX:XX hr?</p>	Message	The Square portion of Dual Bolus delivery has been interrupted. If it is within 10 minutes since this interruption, you can resume this bolus.	<ul style="list-style-type: none"> • Check the message to see how much of the Dual Wave bolus was actually delivered. • To cancel remaining amount of bolus, select Cancel. • To resume remaining amount of bolus, select Resume.

Title and text	Type	Explanation	Next steps
<p>Resume Dual bolus?</p> <p>XX of YY U delivered.</p> <p>Resume delivery of ZZ U now, and AA U Square for XX:XX hr?</p>	Message	<p>The Now portion of a Dual Wave bolus delivery has been interrupted because the pump battery was removed. If it is within 10 minutes since this interruption, you can resume this bolus.</p>	<ul style="list-style-type: none"> • Check the message to see how much of the Dual Wave bolus was actually delivered. • To cancel remaining amount of bolus, select Cancel. • To resume remaining amount of bolus, select Resume.
<p>Resume Square bolus?</p> <p>XX of YY U delivered for XX:XX hr.</p> <p>Resume delivery of ZZ U for XX:XX hr?</p>	Message	<p>The Square Wave bolus delivery was interrupted. If it is within 10 minutes since this interruption, you can resume this bolus.</p>	<ul style="list-style-type: none"> • Check the message to see how much of the Square Wave bolus was actually delivered. • To cancel remaining amount of bolus, select Cancel. • To resume remaining amount of bolus, select Resume.
<p>Rewind required</p> <p>Delivery stopped.</p> <p>Rewind was required due to pump error.</p> <p>Select OK to continue. See User Guide.</p>	Alarm	<p>Your pump encountered an error.</p>	<ul style="list-style-type: none"> • Select OK to clear the alarm after the pump has completed rewinding. • Select Reservoir & Tubing from the Home screen to start the new reservoir process using a new infusion set and reservoir. For details, see <i>Setting up the reservoir and infusion set, on page 109</i>.

Title and text	Type	Explanation	Next steps
Stuck button Button pressed for more than 3 minutes.	Alarm	The pump has detected that a button has been pressed for an unusually long time.	<ul style="list-style-type: none"> • Select OK to clear the alarm. • If this alarm occurs again, call your local representative for assistance with your pump. <p>If you are unable to clear the alarm:</p> <ul style="list-style-type: none"> • If you are unable to clear the alarm, see <i>Troubleshooting pump issues, on page 279</i>. • Consider another form of insulin, because your pump is not delivering insulin. • Check your BG and treat as necessary. • Call your local representative for assistance with your pump.

CGM (sensor) alarms, alerts, and messages

The following table lists the most common or serious alarms, alerts, and messages related to your SG readings, as well as the status of your transmitter and sensor. The table also explains the meaning, consequences, and the reasons why these notifications appear, and provides steps for problem resolution.

Title and text	Type	Explanation	Next steps
<p>Alert before high</p> <p>Sensor glucose approaching High Limit. Check BG.</p>	Alert	Your SG value is approaching your specified high limit.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG. • Follow instructions from your healthcare professional and continue to monitor your BG.
<p>Alert before low</p> <p>Sensor glucose approaching Low Limit. Check BG.</p>	Alert	Your SG value is approaching your specified low limit.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG. • Follow instructions from your healthcare professional and continue to monitor your BG.
<p>Alert on high XX.X mmol/L</p> <p>High sensor glucose. Check BG.</p>	Alert	Your SG value is at or above your specified high limit.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG. • Follow instructions from your healthcare professional and continue to monitor your BG.
<p>Alert on low X.X mmol/L</p> <p>Low sensor glucose. Check BG.</p>	Alert	Your SG value is at or below your specified low limit.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG. • Follow instructions from your healthcare professional and continue to monitor your BG.
<p>Alert on low X.X mmol/L</p> <p>Low sensor glucose. Insulin delivery suspended since XX:XX. Check BG.</p>	Alarm	Your SG value is at or below your specified low limit, and the pump has suspended insulin delivery due to a Suspend on low or Suspend before low event.	<ul style="list-style-type: none"> • Select OK to clear the alarm. • Check your BG. • Follow instructions from your healthcare professional and continue to monitor your BG.

Title and text	Type	Explanation	Next steps
<p>Basal delivery resumed</p> <p>Basal delivery resumed at XX:XX after suspend by sensor. Check BG.</p>	Message	<p>Your pump is resuming basal insulin delivery after a Suspend on low or Suspend before low event occurred.</p>	<ul style="list-style-type: none"> • Select OK to clear the message. • Check your BG. • Follow instructions from your healthcare professional and continue to monitor your BG.
<p>Basal delivery resumed</p> <p>Low settings change caused basal to be resumed at XX:XX. Check BG.</p>	Alert	<p>Your pump is resuming basal insulin delivery after a Suspend before low or a Suspend on low event occurred, because you have turned off the Suspend before low or the Suspend on low feature.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG. • Follow instructions from your healthcare professional and continue to monitor your BG.
<p>Basal delivery resumed</p> <p>Maximum 2 hour suspend time reached. Check BG.</p>	Alert	<p>Your pump is resuming basal insulin delivery two hours after a Suspend before low or Suspend on low event occurred.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG. • Follow instructions from your healthcare professional and continue to monitor your BG.

Title and text	Type	Explanation	Next steps
<p>Basal delivery resumed</p> <p>Maximum 2 hour suspend time reached. SG is still under Low limit. Check BG.</p>	Alarm	<p>Your pump is resuming basal insulin delivery two hours after a Suspend before low or Suspend on low event occurred.</p>	<ul style="list-style-type: none"> Your pump has resumed basal insulin delivery; however, your SG value is still at or below your low limit. Select OK to clear the alarm. Check your BG. Follow instructions from your healthcare professional and continue to monitor your BG.
<p>BG not received</p> <p>Place pump close to transmitter. Select OK to resend BG to transmitter.</p>	Alert	<p>The transmitter was unable to receive the calibration BG meter readings from the pump.</p>	<ul style="list-style-type: none"> Move your pump and transmitter closer together. Select OK. Your pump tries again to send your BG to your transmitter for sensor calibration.
<p>Calibrate now</p> <p>Check BG and calibrate sensor.</p>	Alert	<p>A BG meter reading is needed immediately to calibrate your sensor so that you can continue receiving SG readings.</p>	<ul style="list-style-type: none"> If you are unable to calibrate now, you can use the Snooze feature. Set the desired time, and select Snooze. If you do not calibrate before the Snooze time is up, the Calibrate Now alert occurs again.

Title and text	Type	Explanation	Next steps
<p>Calibration not accepted</p> <p>Wait at least 15 minutes. Wash hands, test BG again and calibrate.</p>	Alert	Your system was unable to use the BG meter readings you entered to calibrate your sensor.	<ul style="list-style-type: none"> • Wash and dry hands thoroughly. See <i>Guidelines for calibrating</i>, on page 203. • Select OK to clear the alert. • After 15 minutes, enter a new BG meter reading for calibration as instructed in <i>Calibrating your sensor</i>, on page 200. If you receive a Calibration not accepted alert on your second calibration after 15 minutes, a Change sensor alert occurs. • Call your local representative if you have questions.
<p>Cannot find sensor signal</p> <p>Disconnect and reconnect transmitter, then select OK. Notice if transmitter light blinks.</p>	Alert	The pump has not received a signal from the transmitter.	<ul style="list-style-type: none"> • Disconnect and reconnect your transmitter and sensor. • See if the light on your transmitter blinks when connected to the sensor. You may need this information for troubleshooting later. • Select OK. Your pump searches for your sensor. If your pump receives a signal from your sensor, you do not need to do anything else. If your pump does not receive a signal from the sensor, another message appears to let you know.

Title and text	Type	Explanation	Next steps
<p>Change sensor</p> <p>Insert new sensor and Start New Sensor.</p>	Alert	<p>You selected No in the Check sensor insertion message, indicating that your sensor is not fully inserted.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Change your sensor. For details, see your sensor user guide. • After you change your sensor, refer to <i>Starting the sensor, on page 198</i>.
<p>Change sensor</p> <p>Second calibration not accepted. Insert new sensor.</p>	Alert	<p>This alert occurs when you receive two Calibration not accepted errors in a row.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Change your sensor. For details, see your sensor user guide.
<p>Change sensor</p> <p>Sensor not working properly. Insert new sensor.</p>	Alert	<p>This alert occurs when the transmitter diagnoses a problem with the sensor that cannot be resolved.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Change your sensor. For details, see your sensor user guide.
<p>Check connection</p> <p>Ensure transmitter and sensor connection is secure, then select OK.</p>	Alert	<p>The pump fails to detect the transmitter and is unable to receive sensor signal.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • If your sensor is fully inserted, select Yes. If your sensor is not fully inserted, select No. • if your sensor was not fully inserted, insert a new sensor. • If you still cannot connect your sensor, see <i>My pump cannot find the sensor signal, on page 284</i>.

Title and text	Type	Explanation	Next steps
<p>Lost sensor signal</p> <p>Move Pump closer to transmitter. May take 15 minutes to find signal.</p>	Alert	Transmitter signal has not been received for 30 minutes during or after initialization.	<ul style="list-style-type: none"> • Move your pump closer to your transmitter. It can take up to 15 minutes for your pump to start communicating with your transmitter. • Select OK to clear the alert.
<p>Low battery transmitter</p> <p>Recharge transmitter within 24 hours.</p>	Alert	The battery in the transmitter needs to be recharged within 24 hours.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Recharge your transmitter as soon as possible.
<p>Low SG X.X mmol/L</p> <p>SG is under 2.8 mmol/L. Check BG and treat.</p>	Alarm	<p>Your SG value has reached or fallen below 2.8 mmol/L. This alarm is factory set and cannot be changed or turned off.</p> <p>This alarm cannot be silenced and is always enabled, whether the pump is in Auto Mode or Manual Mode.</p>	<ul style="list-style-type: none"> • Select OK to clear the alarm. • Check your BG and treat as necessary.



Note: X.X represents the SG value that appears on your pump.

Title and text	Type	Explanation	Next steps
<p>Medical device</p> <p>CALL FOR EMERGENCY ASSISTANCE. I have diabetes.</p>	Alarm	Your pump is suspended due to low SG, and you have not responded to the alarm within 10 minutes.	<ul style="list-style-type: none"> • Select Dismiss. • Immediately call for emergency assistance.
<p>No calibration occurred</p> <p>Confirm sensor signal. Calibrate by XX:XX.</p>	Alert	The transmitter was unable to receive the calibration BG meter readings from the pump.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check the status icons on your Home screen to ensure that your pump has a signal from your sensor. If there is no sensor signal, see <i>My pump cannot find the sensor signal</i>, on page 284. • Calibrate again by the time shown on the pump screen to ensure you continue SG monitoring.
<p>No calibration occurred</p> <p>Confirm sensor signal. Check BG again to calibrate sensor.</p>	Alert	<p>The transmitter was unable to receive the required calibration BG from the pump.</p> <p>Calibration is required by the system for SG values to resume. "Calibration required" appears on your sensor graph.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Take another BG meter reading and calibrate again.

Title and text	Type	Explanation	Next steps
<p>Possible signal interference</p> <p>Move away from electronic devices. May take 15 minutes to find signal.</p>	Alert	There may be interference from another electronic device that is affecting the communication between your pump and transmitter.	<ul style="list-style-type: none"> • Move away from other electronic devices. It can take up to 15 minutes for your pump to start communicating with your transmitter. • Select OK to clear the alert.
<p>Rise Alert</p> <p>Sensor glucose rising rapidly.</p>	Alert	Your SG value has been rising as fast or faster than your preset Rise Alert Limit.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Monitor trend and glucose level. • Follow instructions from your healthcare professional.
<p>Sensor alert occurred</p> <p>Check Alarm History for silenced alerts.</p>	Alert	Sensor alert occurred when Alert Silence is on.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check the Alarm History screen to see which alerts were silenced. • Select the alert to open the Alarm Detail screen. • Take action based on the selected alert.

Title and text	Type	Explanation	Next steps
<p>Sensor connected</p> <p>If new sensor, select Start New. If not, select Reconnect.</p>	Message	<p>The transmitter has detected that you have connected a sensor. The pump needs to know if this is a new sensor or if you have reconnected your old sensor.</p>	<ul style="list-style-type: none"> • If you have connected a new sensor, select Start New Sensor. • If you have reconnected a sensor you have been using, select Reconnect Sensor. • In either case, a "warm-up" message appears on your Home screen, and you will be prompted to enter a BG value when your sensor is ready for calibration. Your pump starts receiving your SG values again after the two-hour initialization is complete.
<p>Sensor connected</p> <p>Start new sensor.</p>	Message	<p>The pump has detected that this is a new sensor, which needs to be started and warmed-up.</p>	<ul style="list-style-type: none"> • Select Start New Sensor. <p>The alert will close and a "warm-up" message appears on the sensor graph with a progress bar.</p>
<p>Sensor expired</p> <p>Insert new sensor.</p>	Alert	<p>The sensor has reached the end of its useful life.</p>	<ul style="list-style-type: none"> • Change your sensor. For details, see your sensor user guide. • Select OK to clear the alert.
<p>Sensor signal not found</p> <p>Did transmitter light blink when connected to sensor?</p>	Alert	<p>The pump has still not received a signal from the transmitter.</p>	<p>When you reconnected the transmitter to the sensor, did you see a blinking green light on the transmitter?</p> <ul style="list-style-type: none"> • Select Yes or No and follow the instructions on the screen.

Title and text	Type	Explanation	Next steps
<p>Sensor signal not found</p> <p>See User Guide.</p>	Alert	<p>After multiple attempts, the pump failed to detect the transmitter and is unable to receive sensor signal.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Repeat the connection process. Remove the transmitter from the sensor for about ten seconds, and then reconnect it to the sensor. • It can take up to 15 minutes for your pump to find the sensor signal. • Move your pump closer to your transmitter to improve reception. • Make sure you are away from any electronic devices that might cause interference, such as cellular phones and other wireless devices. • If your pump still cannot find the sensor signal, call your local representative for assistance.
<p>Sensor warm-up started</p> <p>Warm-up takes up to 2 hours. You will be notified when calibration is needed.</p>	Message	<p>The sensor warm-up has begun.</p>	<ul style="list-style-type: none"> • Select OK to clear the message. <p>A "Warm-up" message with a progress bar appears on the sensor graph during warm-up, which takes up to two hours. You will be notified when calibration is needed.</p>
<p>Sensor updating</p> <p>Do not calibrate unless notified. This could take up to 3 hours.</p>	Alert	<p>The SG value is unavailable due to a temporary situation.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Follow the instructions on the pump screen. You do not need to change the sensor.

Title and text	Type	Explanation	Next steps
<p>Suspend before low</p> <p>Delivery stopped. Sensor glucose approaching Low Limit. Check BG.</p>	Alert	<p>Your SG value is falling. Insulin delivery is suspended according to your Suspend before low setting and your SG is approaching your specified low limit.</p> <p>Suspend before low is not available in Auto Mode.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG. If necessary, treat your BG as directed by your healthcare professional.
<p>Suspend on low</p> <p>Delivery stopped. Sensor glucose XX.X mmol/L. Check BG.</p>	Alarm	<p>Your SG value is at or below the low limit you specified.</p> <p>Suspend on low is not available in Auto Mode.</p>	<ul style="list-style-type: none"> • Select OK to clear the alarm. • Check your BG. If necessary, treat your BG as directed by your healthcare professional.
<p>Transmitter battery depleted</p> <p>Recharge transmitter now.</p>	Alert	<p>The battery in the transmitter needs to be recharged. SG values are not recorded or transmitted until you recharge transmitter.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Recharge your transmitter.

SmartGuard Auto Mode alerts and messages

The following table lists the most common or serious alerts and messages related to Auto Mode. The table also explains the meaning, consequences, and the reasons why these notifications appear, and provides any necessary steps for problem resolution.

Title and text	Type	Explanation	Next steps
<p>Auto Mode started</p> <p>Current action canceled.</p>	Alert	This alert happens when the user starts an operation that is not allowed in Auto Mode while the pump is transitioning to Auto Mode.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Allow your pump to complete its transition to Auto Mode.
<p>Auto Mode started</p> <p>The following SmartGuard settings are now turned off:</p> <ul style="list-style-type: none"> - Suspend before low - Suspend on low 	Alert	Your pump has started Auto Mode. The Suspend before low and Suspend on low settings are now turned off.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Allow your pump to complete the transition into Auto Mode.

Title and text	Type	Explanation	Next steps
<p>Auto Mode exit <i>Basal Name</i> started. Would you like to review the Auto Mode Readiness screen?</p>	Alert	<p>Your pump has exited Auto Mode because you have turned off your sensor, a suspend has not been cleared within 4 hours, or you have been in Safe Basal the maximum of 90 minutes.</p> <p>This alert cannot be silenced, and is always enabled whenever the system is in Auto Mode.</p>	<ul style="list-style-type: none"> • Select No to clear the alert. Select Yes to view the Auto Mode Readiness screen. • Check your BG. • Calibrate your sensor. • Follow instructions from your healthcare professional and continue to monitor your BG. <p>For details, see <i>Exiting SmartGuard Auto Mode</i>, on page 233 and <i>Returning to SmartGuard Auto Mode</i>, on page 234.</p>

Title and text	Type	Explanation	Next steps
<p>High SG</p> <p>SG has been high for over 1 hour. Check infusion set. Check ketones. Monitor BG.</p> <p>Followed by</p> <p>Auto Mode exit</p> <p>Monitor BG and treat as necessary. <i>Basal Name</i> started. Enter BG to continue in Auto Mode.</p>	Alert	<p>Your pump has exited Auto Mode based on a set glucose threshold and length of time:</p> <ul style="list-style-type: none"> • 16.7 mmol/L or higher for one hour • 13.9 mmol/L or higher for three hours. <p>This alert cannot be silenced and is always enabled whenever the pump is in Auto Mode.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG and treat as necessary.
<p>Auto Mode max delivery</p> <p>Auto Mode has been at maximum delivery for 4 hours. Enter BG to continue in Auto Mode.</p>	Alert	<p>Auto Mode has been delivering at your maximum Auto Mode basal delivery rate for four hours. This rate is determined automatically by your system.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG and enter it into your pump to exit Safe Basal and return to Auto Basal. • Follow instructions from your healthcare professional and continue to monitor your BG.

Title and text	Type	Explanation	Next steps
<p>Auto Mode max delivery</p> <p>Auto Mode has been unable to bring your SG down. Enter BG and resume delivery to continue in Auto Mode.</p>	Alert	Auto Mode has been unable to lower your SG value. Your pump is suspended, and your predicted SG is above target.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG and enter it into your pump. • Follow instructions from your healthcare professional and continue to monitor your BG.



Note:

- The title of the alert appears the same as the previous Auto Mode max delivery alert in the table.
- If you have suspended your pump, you will have no delivery. However, the alert may still occur.

<p>Auto Mode min delivery</p> <p>Auto Mode has been at minimum delivery for 2:30 hr. Enter BG to continue in Auto Mode.</p>	Alert	Your pump has been delivering at your minimum Auto Mode basal delivery rate for two and a half hours. This rate is determined automatically by your system.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG and enter it into your pump to exit Safe Basal and return to Auto Basal. • Follow instructions from your healthcare professional and continue to monitor your BG.
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Title and text	Type	Explanation	Next steps
<p>Auto Mode min delivery</p> <p>Your SG has been below target for 2:30 hr. Enter BG and resume delivery when ready to continue in Auto Mode.</p>	Alert	Your pump is suspended, and your predicted SG has been below target for two and a half hours.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG and enter it into your pump. • Follow instructions from your healthcare professional and continue to monitor your BG.



Note:

- The title of the alert appears the same as the previous Auto Mode min delivery alert in the table.
- If you have suspended your pump, you will have no delivery. However, the alert may still occur.

<p>Auto Mode off</p> <p><i>Basal Name</i> started. Would you like to review the Auto Mode Readiness screen?</p>	Alert	<p>The Auto Mode setting in the SmartGuard menu is turned off.</p> <p>This alert cannot be silenced, and is always enabled whenever the system is in Auto Mode.</p>	<ul style="list-style-type: none"> • Select Yes to check the Auto Mode Readiness status screen for information to re-enter Auto Mode. • Select No to clear the alert.
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Title and text	Type	Explanation	Next steps
<p>BG required</p> <p>Enter a new BG for Auto Mode.</p>	Alert	<p>Auto Mode requires a BG to check the reliability of the sensor.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Enter a BG to return to Auto Basal from Safe Basal, or to enter Auto Mode from Manual Mode.
<p>Bolus recommended</p> <p>For XX.X mmol/L entered, a correction bolus is recommended.</p> <p>Select Bolus to program a bolus.</p>	Alert	<p>Auto Mode calculated that a bolus is recommended based on the BG value that you entered.</p>	<ul style="list-style-type: none"> • Select Bolus to program a correction bolus. • Select Cancel if you do not want to deliver a correction bolus.
<p>Cal required for Auto Mode</p> <p>Enter a BG and calibrate sensor for Auto Mode.</p>	Alert	<p>Calibration may be required by Auto Mode, even when SG values are available.</p>	<ul style="list-style-type: none"> • Select OK to clear the alert. • Check your BG and enter it into your pump. • Calibrate your sensor using the BG that you entered.
<p>High BG XX.X mmol/L</p> <p>Check infusion set. Check ketones. Monitor BG. Confirm BG?</p>	Alert	<p>Your BG meter reading is above 13.9 mmol/L.</p> <p>This alert applies only to Auto Mode. There is an equivalent alert for Manual Mode. See <i>Pump alarms, alerts, and messages, on page 240.</i></p>	<ul style="list-style-type: none"> • Select No to Prevent the remote BG from being used by your pump. Select Yes to confirm the BG reading.

CareLink software alert and message

The following table lists the most common or serious alerts and messages related to the CareLink software. The table also explains the meaning, consequences, and the reasons why these notifications appear, and provides steps for problem resolution. If you get an alarm, alert, or message that is not listed, select OK to clear the notification and call your local representative.

Title and text	Type	Explanation	Next steps
<p>Connect Device?</p> <p>Device with SN <XXXXXXXXXX> is trying to connect to your pump. Allow connection?</p>	Message	The CareLink USB or BG meter is attempting to connect to your pump in preparation for data download.	<ul style="list-style-type: none"> • Select Yes to allow connection, only if you are expecting or performing a data download. • Select No to deny connection. If no selection is made, the screen will timeout after 30 seconds and will automatically reject the request.
<p>Download slow</p> <p>Insulin delivery not affected. CareLink download may take longer than usual. Select OK to continue. See User Guide.</p>	Alert	The download of pump data is taking longer than expected. Data will not be affected.	<ul style="list-style-type: none"> • Select OK to clear the alert. • Wait for the data to finish downloading. • If problem still persists or if there is no progress in download, call your local representative for assistance.

14

■ Troubleshooting

14 Troubleshooting

This chapter contains procedures and information to help you understand and address conditions that might occur with your pump.

For a list of alarms, alerts, and messages that may appear on your pump, see *Pump alarms, alerts, and messages*, on page 240.

Troubleshooting pump issues



WARNING: If you receive a critical error on your pump, the following screen displays and the pump sirens.



Immediately disconnect from your insulin pump and discontinue use. Contact your local representative for assistance.

Remember, your body still needs insulin while your pump is removed. It is important that you consult your healthcare professional to determine an alternate method of receiving insulin while your pump is removed. For more information on pump alarms, see *Pump alarms, alerts, and messages*, on page 240.

My pump buttons are stuck

During atmospheric pressure changes, your pump buttons may not work for up to 45 minutes. For example, during airplane travel your pump buttons may get stuck. This is rare. If this occurs, either wait for the problem to correct itself, or if you have a new AA battery with you:

1. Remove the battery cap.
2. Place the battery cap back onto the pump.

Your pump will check the AA battery power, and may require a new AA battery.

3. If prompted, insert a new AA battery.

If these steps do not correct the problem, contact your local representative for assistance.

What is a Check Settings alarm?

This alarm occurs when a condition causes your pump to reset to factory settings. You see this alarm after your pump guides you through re-entering the Startup Wizard settings.

The Check Settings alarm is letting you know that other settings may have been cleared or reverted to factory default values. Review any settings that you have not already set in Startup Wizard and re-enter the values, if necessary.

My pump is asking me to rewind



WARNING: Do not insert the reservoir into your pump until you have received training for your pump. Doing so could damage your reservoir. Damaging your reservoir could cause an inaccurate insulin delivery, which may cause hypoglycemia.


You must rewind your pump when changing the reservoir. Rewinding returns the piston in the reservoir compartment to its starting position. It is normal for your pump to ask you to rewind anytime you must remove and replace the reservoir, such as when resolving an Insulin Flow Blocked alarm or addressing a problem loading the reservoir.

I dropped my pump






Caution: Always inspect your pump to ensure there are no cracks before exposing your pump to water, especially if your pump has been dropped, or you suspect your pump is damaged. Water leakage can cause the pump to malfunction, and result in injury.

Do the following:


1. Check that all connections are still tightly in place.
2. Check the display, button area, and pump case for cracks or damage.
3. Check the infusion set, including the tubing connector and tubing for cracks or damage.
4. Review the status screen, basal rates and other pump settings.
5. Perform the Self Test procedure. Press  and select:
Options > Utilities > Self Test
6. If the self test does not complete successfully, or if you are concerned about your pump, call your local representative for assistance and check your BG.

I cannot get to the Manage Settings screen

These personalized settings, under the Manage Settings screen, should be provided by your healthcare professional in your training session. If you go to **Options > Utilities > Manage Settings**, a message appears telling you that the feature is not normally accessible and to consult your user guide. To access the Manage Settings screen press  and select:

1. **Options > Utilities > Manage Settings**
2. Simultaneously press and hold  and  for about two seconds. The Manage Settings screen appears.


My pump display times out too quickly

Your pump display times out after 15 seconds by default in order to conserve battery power. You can increase this setting up to three minutes. Press  and select **Options > Utilities > Display Options**, and then adjust the Backlight setting as desired.

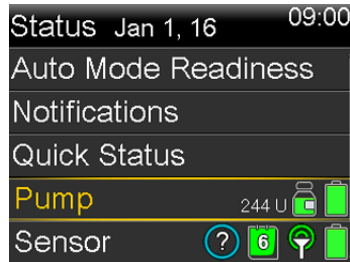


Note: Be aware that using a longer Backlight time causes your pump to use more battery power. When your pump battery is low, the timeout for the backlight on your pump screen is automatically reduced.

Where is my pump status screen?

1. Press  and select Status to go to the Status screen.

The Status screen appears.



2. From the Status screen, you can select the type of status information you want to view. For example, to see a quick status of your pump and recent insulin deliveries, go to Quick Status. For details, see *Status screens, on page 42*.

My pump is asking me to enter my settings

Certain pump errors can clear your settings and return them to their factory default values. This also happens if you intentionally clear your settings. Do not clear your settings unless directed to do so by your healthcare professional.

If you have saved your settings using the Save Settings option, you can restore them using the Restore Settings option. If you restore your settings, ensure the restored settings match the settings prescribed most recently by your healthcare professional.

The Startup Wizard appears automatically when your pump restarts. The wizard guides you through entering the following information. Be sure to have these values ready when you begin.

- Time format, time, and date
- Active Insulin Time
- Basal patterns

After you enter your pump settings, you have the option of entering the following Bolus Wizard settings:

- Carb ratio
- Insulin sensitivity factor
- BG target

To enter your pump settings:

1. Begin entering your settings by selecting your language. Select **Next** to go to each new screen.
2. When the Select Time Format screen appears, select a **12 Hour** or a **24 Hour** time format.
3. When the Enter Time screen appears, adjust the setting to the current time. If you are using a 12-hour clock, be sure to specify AM or PM.
4. When the Enter Date screen appears, adjust the **Year**, **Month**, and **Day** to the current date.

5. When the Active Insulin Time screen appears, enter the **Duration**.

For details, see *About active insulin, on page 88*.

6. Enter your first basal rate by entering the End time and the Rate. You can enter more basal patterns after you complete the startup wizard.

For details, see *Adding a new basal pattern, on page 59*.

After you complete your basal pattern, a screen appears to allow you to review your basal information.

7. When the message appears asking if you want to setup the Bolus Wizard settings, do one of the following:
 - Select **Yes** to continue entering your settings, then continue to the next section.
 - Select **No** if you do not want to enter your Bolus Wizard settings. A message appears confirming the startup is complete. Select **OK** to continue using your pump.

To enter your Bolus Wizard settings:

1. When your pump shows a list of settings for the Bolus Wizard feature, make sure you have the values you need before continuing.
2. When the Carb Ratio screen appears, enter your carb ratio by entering the End time and the ratio. You can adjust your carb ratio at any time.
For details, see *Changing your carb ratio, on page 86*.
3. When the Sensitivity screen appears, enter your insulin sensitivity factor by entering the End time and the mmol/L per unit. You can adjust your insulin sensitivity factor at any time.
For details about entering insulin sensitivity factors, including how to set multiple time periods, see *Changing your insulin sensitivity factor, on page 87*.
4. When the BG Target screen appears, enter your BG Target range by entering the End time and your Lo (low) and Hi (high) values. You can adjust your BG Target ranges at any time.
For details, see *Changing your Bolus Wizard BG target, on page 87*.
5. A message appears confirming the startup is complete. Select **OK** to continue using your pump.

Troubleshooting sensor issues

My pump cannot find the sensor signal

If your pump cannot find the sensor signal after you connect your sensor and transmitter, follow the instructions on the pump screen to troubleshoot the issue as described below.

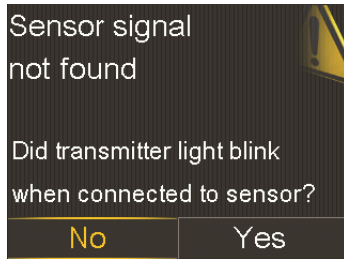
If your pump finds the sensor signal at any time during troubleshooting, your pump beeps or vibrates, and "Warm up" appears on your sensor graph. It can take up to two hours for your sensor to warm up.



Note: If you are using the Alert Silence feature and a glucose alert occurs, the notification light begins to flash and the *Sensor alert occurred* message appears, but no explanatory text is displayed. All silenced alerts are displayed with explanatory text in the Alarm History screen.

1. Make sure your system meets the following requirements:

- Your transmitter is fully charged.
If both lights on the charger are off, your transmitter is fully charged. For details, see your transmitter user guide.
 - You have only one transmitter connected to your pump.
Delete the current transmitter that is connected to your pump before continuing. For details, see *Deleting the transmitter from your pump, on page 198*.
 - Your transmitter is placed next to your pump.
 - Your transmitter is reconnected to the pump, if your pump has been recently reset. For details, see *Wirelessly connecting your pump and transmitter using Auto Connect, on page 191*.
 - The Airplane Mode is turned off on your pump.
 - You have applied the tape correctly, as instructed in the serter user guide.
2. Disconnect the transmitter from the sensor for at least 10 seconds.
 3. Reconnect the transmitter with the sensor to restart communication. While the light on the transmitter is blinking, select **OK** on the pump to acknowledge the alert.
 4. Depending on whether the light blinked when you connected the transmitter to the sensor, select **Yes** or **No** on your pump and do one of the following:



- If the transmitter light did not blink, you need to charge your transmitter. When your transmitter is charged, start your sensor. For details, see *Starting the sensor, on page 198*.
- If your transmitter light blinked, but you still have no sensor signal, continue to the next step.

5. Move your pump closer to your transmitter and select **OK**. It can take up to 15 minutes for your pump to find the sensor signal.
6. If your pump still cannot find the sensor signal, make sure you are away from any electronic devices that might cause interference, such as cellular phones and other wireless devices, and select **OK**.
7. If you have gone through all the troubleshooting steps on your pump screen, and your pump still cannot find the sensor signal, or if your sensor graph displays "Sensor signal not found. See User Guide," call your local representative for assistance.


Calibration not accepted

Calibration not accepted alert occurs when one of the following happens:

- System was unable to use the BG meter readings you entered to calibrate your sensor.
- System rejects two calibrations in a row from the same sensor.
- The transmitter was unable to receive the calibration BG meter readings from the pump due to failed sensor signal.

For details on when and how to calibrate your sensor, see *Calibrating your sensor, on page 200*.

Why does the SmartGuard suspend icon on my Home screen appear gray?

The SmartGuard suspend icon appears gray  on the Home screen when either the Suspend on low or Suspend before low feature is unavailable. The SmartGuard suspend features may be unavailable due to the following conditions:

- A suspend event has occurred recently.
After a Suspend before low or Suspend on low event occurs, there is a period of time when the suspend functionality is unavailable. This time will vary depending on whether or not you respond to the suspend event. Typically, the suspend features will be unavailable for 30 minutes after your basal insulin delivery is resumed. For details, see *When Suspend before low is unavailable, on page 176* or *When Suspend on low is unavailable, on page 179*.
- No SG values are available.

SG values may be unavailable because:

- Your pump is in Airplane Mode.
- Sensor calibration is required.

For details on when and how to calibrate your sensor, see *Calibrating your sensor, on page 200*.

- Your pump has lost connection to the sensor.

Move your pump closer to the sensor. For more details, see *My pump cannot find the sensor signal, on page 284*.

- The SG value received was outside the expected range and was not displayed.

Select **OK** to clear the alert. If the issue continues, you may need to replace the sensor.

If the issue persists, call your local representative for assistance.

15

Maintenance

Maintenance

Cleaning your pump



Caution: Never use organic solvents, such as lighter fluid, nail polish remover, or paint thinner to clean your pump. Never use lubricants with your pump. When cleaning your pump, be sure to keep the reservoir compartment dry and away from moisture. Cleaning your pump with organic solvents can cause the pump to malfunction, and result in minor injury.

Make sure you have the following supplies ready for cleaning your pump: three or four small, clean, soft cloths, a mixture of water with a mild detergent, clean water, 70% alcohol, and a few clean cotton tips and cotton balls.

To clean your pump:

1. Dampen a cloth with water mixed with a mild detergent.
2. Using the cloth, wipe the outside of the pump.
3. Dampen a clean cloth with water and wipe to remove any detergent residue.
4. Dry with a clean cloth.
5. Wipe your pump with a 70% alcohol wipe.
6. Using a dry clean cotton tip, remove any battery residue from the battery cap.
7. Using a dry clean cloth, remove any battery residue from the battery compartment opening.

Cleaning your transmitter

Always refer to your transmitter user guide for instructions on cleaning the transmitter.

Storing your pump

Storage mode allows you to safely place your pump in storage while not in use.



Note: If you place your pump in storage mode, it is important to insert a new AA battery for 8 to 12 hours every six months to ensure that the internal battery does not discharge to a deep discharge. A battery that is deeply discharged takes longer to charge than a normal battery.




WARNING: After placing your pump in storage mode, do not rely on active insulin tracked in the pump when making new Bolus Wizard calculations. Storage mode clears active insulin. Inaccurate Bolus Wizard calculations could result in inaccurate insulin delivery, and serious injury.

Placing your pump in storage mode:

1. Remove the AA battery from the pump. For details, see *Removing the battery*, on page 31.



Note: When you remove the battery, your pump issues an Insert Battery alarm for 10 minutes or until you place your pump into storage mode.

2. Press and hold  until your screen turns off.



Caution: Never expose the pump to temperatures below -20°C (-4°F) or above 50°C (122°F) while it is in storage without a battery. Storing your pump in temperatures outside of this range can damage your pump.

Waking your pump from storage mode

1. Insert a new AA battery into your pump. For details, see *Inserting the battery, on page 30*.
A Pump Error message appears.
2. Select **OK**.
Your pump displays a Power Loss alarm.
3. Select **OK**.
The Time & Date screen appears.
4. Enter the current **Time**, **Time Format** and **Date**.
5. Select **Save**.
Your pump displays an Active Insulin Cleared alert.
6. Select **OK**.
Make sure that all of your settings, such as basal rate, are set as desired. If you need to, reapply your last saved settings by using the Restore Settings option as instructed in *Restoring your settings, on page 157*.
7. You must repeat the connection process for your transmitter and meter. For details, see *Wirelessly connecting your pump and transmitter using Auto Connect, on page 191*. Always refer to your compatible Ascensia BG meter user guide for instructions on connecting the meter to the pump.

Storing your transmitter

Always refer to your transmitter user guide for instructions on storing your transmitter.

Pump disposal

Contact your local representative for information on proper disposal of the MiniMed 670G insulin pump. Always follow local laws and regulations for disposal of medical devices.

16

Product specifications and safety information

16

Product specifications and safety information

This chapter provides detailed product specifications and safety information.

Product specifications

Alarm and alert escalation

The following alerts may escalate to a siren if not cleared:

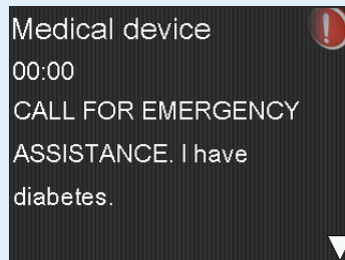
- Alert before high
- Alert before low
- Alert on high
- Alert on low
- Basal delivery resumed
- BG not received
- Calibration not accepted
- Calibrate now
- Cannot find sensor signal
- Change sensor
- Check connection
- Lost sensor signal
- No calibration occurred
- Possible signal interference
- High SG
- Rise Alert
- Sensor expired
- Sensor signal not found
- Low SG X.X mmol/L (X.X represents 2.8 mmol/L or below) alert
- Sensor updating
- Transmitter battery depleted

For alerts that escalate to a siren, the pump will begin to siren if the alert is not cleared in 10 minutes. Before the siren occurs, your pump will beep, vibrate, or both, depending on your audio settings.

Minutes	Audio	Audio and vibration	Vibration
0	Audio	Audio and vibrate	Vibrate
1	Audio	Audio and vibrate	Vibrate
2	Audio	Audio and vibrate	Vibrate
3	Audio	Audio and vibrate	Vibrate
4	Audio	Audio and vibrate	Vibrate
5	Audio	Audio and vibrate	Vibrate
6	Audio and vibrate	Audio and vibrate	Audio and vibrate
7	Audio and vibrate	Audio and vibrate	Audio and vibrate
8	Audio and vibrate	Audio and vibrate	Audio and vibrate
9	Audio and vibrate	Audio and vibrate	Audio and vibrate
10	Siren and vibrate	Siren and vibrate	Siren and vibrate



Note: The Medical device alarm sirens immediately when this screen displays.



Altitude range

- Pump operating range is from 70.33 kPa (10.2 psiA) to 106.18 kPa (15.4 psiA)
- Storage range is from 49.64 kPa (7.2 psiA) to 106.18 kPa (15.4 psiA)

Audio frequency

The following table lists the various audible tones and their corresponding frequencies:

Tone name	Frequency
Alarm	1655 Hz followed by 3310 Hz
Alternate Alarm	1850 Hz
Siren (escalated alarm)	1655 Hz, followed by 3310 Hz
Alert	934 Hz
High Sensor Glucose	1312 Hz, followed by 1410 Hz, 1500 Hz, 1619 Hz, 1722 Hz
Low SG	1722 Hz, 1619 Hz, 1500 Hz, 1410 Hz, 1312 Hz
Lost SG	1485 Hz, followed by 1395 Hz, 1320 Hz, 1395 Hz
Message tone	1655 Hz
Reminder tone	934 Hz
Fill tubing tone	1850 Hz
Bolus delivery cancellation tone	1485 Hz, followed by 1655 Hz and 1485 Hz
Loading complete tone	934 Hz
Reservoir loading in progress tone	1850 Hz
Easy Bolus activation	1045 Hz
Easy Bolus step 1 increment	1175 Hz
Easy Bolus step 2 increment	1320 Hz
Easy Bolus step 3 increment	1395 Hz
Easy Bolus step 4 increment	1570 Hz
Easy Bolus step 5 increment	1760 Hz

Backlight

Type	LED (Light-emitting Diode)
Time out	15 seconds (default), 30 seconds, one minute, three minutes
Time out when battery is low	15 seconds (default), 30 seconds

Basal delivery

Delivery rate range	0 to 35 units per hour or the Max Basal Rate amount, whichever is lower.
Max Basal Rate default	2 units per hour
Basal patterns	Maximum of 8 patterns. Each pattern covers a 24-hour period and can have up to 48 rates. Rates are set in 30-minute increments.
Basal pattern names	Fixed names: Basal 1, Basal 2, Basal 3, Basal 4, Basal 5, Workday, Day Off, Sick Day
Increments	<ul style="list-style-type: none">• 0.025 units per hour for basal amounts in the range 0 to 0.975 units• 0.05 units per hour for basal amounts in the range 1 to 9.95 units• 0.1 units per hour for basal amounts of 10 to 35 units

BG Target

Maximum targets	8
Range	3.3 to 13.9 mmol/L
Default value for High BG targets and Low BG targets	None



Note: Auto Mode uses a fixed BG Target of 8.3 mmol/L.

BG meter value

The most recent BG value received from the meter. If you are using a compatible Ascensia BG meter, this value appears on the Home screen when the Sensor feature is off. This value also appears in the Bolus Wizard screen when setting up a bolus.

Expiration	12 minutes
Range	1.1 to 33.3 mmol/L

Bolus delivery

Bolus Speed options	<ul style="list-style-type: none"> • Standard: 1.5 units/minute • Quick: 15 units/minute
Bolus programming increments	<ul style="list-style-type: none"> • 0.025 units • 0.05 units • 0.1 units
Fluid delivered/stroke	<ul style="list-style-type: none"> • 0.25 µL (microliter) for 0.025 unit pump stroke • 0.5 µL for 0.05 unit pump stroke • 2.0 µL for 0.2 unit pump stroke

Bolus Wizard feature default settings

Item	Default	Limits	Increments
Carb units	grams	-	-
Insulin to carb ratio	None	1–200 g/u	0.1 g/u for 1–9.9 g/u; 1 g/u for ratios of 10 g/u to 200 g/u
Insulin Sensitivity Factor	None	0.3–22.2 mmol/L	0.1 mmol/L
BG Target	None	3.3–13.9 mmol/L	0.1 mmol/L
Active Insulin Time	4 hours	2 to 8 hours	15 minutes

Bolus Wizard feature specifications

There are four different formulas the Bolus Wizard feature uses to estimate a bolus, depending on your current BG. The following formulas apply only when the carb units are in grams.

1. If your current BG is greater than your High BG Target, the Bolus Wizard feature subtracts active insulin from the BG correction estimate, then adds this to the food estimate to get the total bolus estimate. However, if the result of subtracting active insulin from BG correction estimate is a negative number (less than zero), the total bolus estimate is based only on the food estimate.

$$\text{total bolus estimate} = \frac{\text{(food estimate)} \quad A}{B} + \frac{\text{(correction estimate)} \quad C - D}{E} - \text{active insulin}$$

where: A = food (grams)
 B = carb ratio
 C = current BG
 D = High BG Target
 E = insulin sensitivity

Food estimate:

Carb grams ÷ Carb ratio = Units of insulin

Correction estimate:

(Current BG - High BG Target) ÷ Insulin sensitivity - Active insulin = Units of insulin

Total bolus estimate:

Food estimate + Correction estimate = Units of insulin

2. If your current BG is less than your Low BG Target, the Bolus Wizard feature adds the BG correction estimate to the food estimate to get the total bolus estimate.

$$\text{total bolus estimate} = \frac{\text{(food estimate)} \quad A}{B} + \frac{\text{(correction estimate)} \quad C - D}{E}$$

where: A = food (grams)
 B = carb ratio
 C = current BG
 D = Low BG Target
 E = insulin sensitivity

Food estimate:

Carb grams ÷ Carb ratio = Units of insulin

Correction estimate:

(Current BG - Low BG Target) ÷ Insulin sensitivity = Units of insulin

Total bolus estimate:

Food estimate + Correction estimate = Units of insulin

3. If your current BG is within your High or Low BG Target, the total bolus estimate is based only on the food estimate.

$$\text{total bolus estimate} = \frac{\text{food (grams)}}{\text{carb ratio}}$$

Food estimate:

Carb grams ÷ Carb ratio = Units of insulin



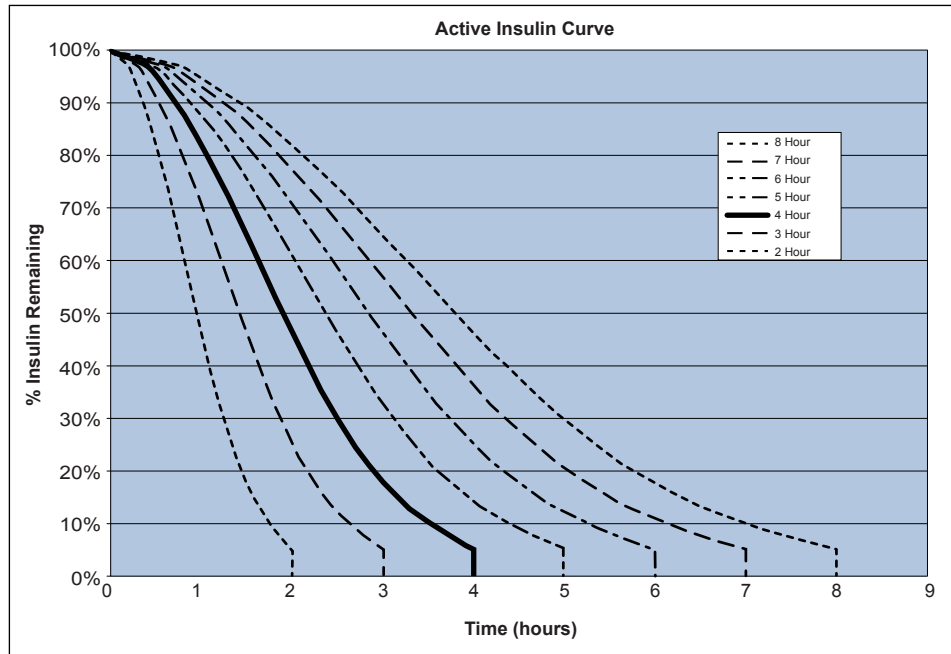
Note: When the current BG is below the Low BG Target, an active insulin amount is not considered in the Bolus Wizard feature calculations.

Total bolus estimate = Food estimate

4. If you do not enter a BG, the total bolus estimate is based only on the food estimate.

Following are some notes about using the Bolus Wizard feature:

- If a Dual Wave bolus is less than the estimate due to the Max Bolus limit or a change that you make, the Square portion is reduced first.
- Based on the Active Insulin Time setting you choose, your pump keeps track of how much insulin is still active in your body. This is shown as Active Insulin or Act. Insulin on the Home screen, Bolus screen, Manual Bolus screen, Preset Bolus, and Daily History screens. This prevents stacking of insulin, and lowers the chances of hypoglycemia.
- The Bolus Wizard feature may utilize your current BG measurement, carbohydrate consumption, and active insulin to calculate your estimated bolus.
- The following Active Insulin Curve represents how long a bolus of insulin lowers your glucose after the bolus is given. The percentage of insulin remaining lowers at varying rates depending on how long the insulin is active in your body.



Graph adapted from Mudaliar and colleagues, Diabetes Care, Volume 22, Number 9, Sept. 1999, page 1501.

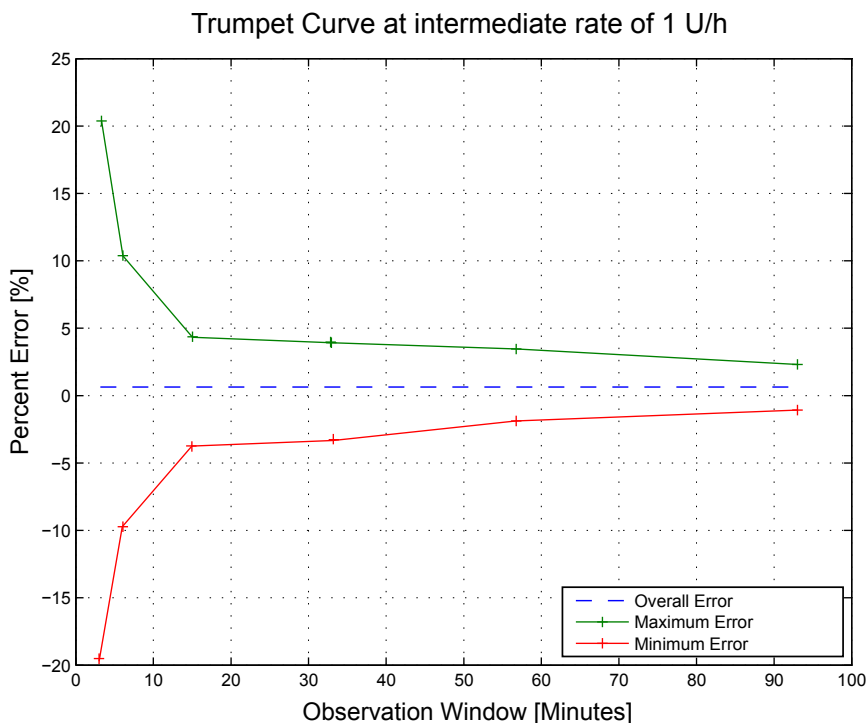
Carb ratios

Maximum ratio settings	Range
8	1 to 200 grams/unit

Delivery accuracy

- For a basal rate of 1.0 U/h, the delivery accuracy is $\pm 5\%$.
For a basal rate of 0.025 U/h, the delivery accuracy is $\pm 10\%$.
Delivery accuracy for bolus volumes < 0.1 unit is $\pm 20\%$ and delivery accuracy for bolus volumes ≥ 0.1 unit is $\pm 5\%$.
- All Normal boluses are delivered within 16 minutes, 41 seconds ± 3 seconds at Standard rate (25 units, at 1.5 units per minute), and within 1 minute, 41 seconds ± 3 seconds at Quick rate (25 units, at 15 units per minute).

- The maximum infusion pressure generated and the occlusion threshold pressure using a 3.0-mL reservoir is 90.67 kPa (13.15 psi). The average resulting bolus volume generated upon clearing the occlusion is 0.0112 mL (equivalent to 1.12 units of U-100 insulin).
- The following is a representative delivery accuracy curve. The Trumpet Curve represents the maximum percentage change from the expected insulin dosage for a given time interval, known as the observation window, during the infusion of insulin. The upper curve corresponds to positive changes, and the lower curve corresponds to negative changes.



Easy Bolus feature

Allows user to set up and deliver a Normal Bolus when the pump is in Sleep Mode. This is done using the \wedge and with the help of audio and vibration cues.

Audio mode range	0 to 20 increments or Max Bolus limit, whichever comes first
Vibrate mode range	0 to 20 increments or Max Bolus limit, whichever comes first

Default step size	0.1 unit
Adjustable step size	0.1 to 2 units per increment up to Max Bolus limit

Environmental conditions

The MiniMed 670G insulin pump system is designed to withstand most conditions encountered in your daily life. For more details about environmental conditions, such as exposure to magnetic fields and radiation, waterproof capabilities, and extreme temperatures, see *User safety, on page 7*.

- Pump storage temperature range without a AA battery is from -20°C (-4°F) to 50°C (122°F).
- Pump operating temperature range with insulin is from 5°C (41°F) to 37°C (98.6°F).
- Air pressure range is from 700 hPa (10.2 psi) to 1060 hPa (15.4 psi).
- Operating relative humidity (RH) range of the pump: 20% to 90%. This requirement exceeds IEC 60601-1, subclause 7.9.3.1 (30% to 75%).
- Non-operating relative humidity range of the pump: 5% to 95%

Essential performance

The insulin pump maintains insulin delivery accuracy in the specified environmental conditions.

Filling the infusion set and cannula

- The cannula can be filled from 0.025 units to 5.1 units, in increments of 0.025 units.
- The standard fill rate is 1.5 units per minute.
The quick fill rate is 15 units per minute.
- When filling the tubing, a warning occurs at 30 units. A second warning occurs at 40 units instructing you to rewind the pump.
- Insulin used to fill the infusion set is recorded in the Daily History.

Infusion pressure

The maximum infusion pressure and occlusion pressure are 90.67 kPa (13.15 psi).

Insulin delivery default settings

Bolus settings

Item	Default setting	Limits	Increments
Bolus Wizard feature:	Off	-	-
Easy Bolus feature:	Off	-	-
Easy Bolus step size:	0.1 U	0.1 U to 2 U	-
Bolus increment:	0.10 U	0.025 U 0.05 U 0.10 U	-
Dual/Square bolus:	Off	-	-
Max bolus:	10 U	0 to 25 U (per single bolus)	-
Bolus BG Check Reminder:	Off	0:00 to 5:00	0:30

Basal settings

Item	Default setting	Limits	Increments
Max Basal Rate	2 U/h	0–35 U/h	0.025 U for 0.025–0.975 U/h 0.05 U for 1.00–9.95 U/h 0.1 U for rates of 10.0 U/h or more
Basal Rate	0.000 U/h	0.000 U/h to Max Basal Rate setting	0.025 U for 0.025–0.975 U/h 0.05 U for 1.00–9.95 U/h 0.1 U for rates of 10.0 U/h or more
Temp Basal Type	Percent	Percent, Rate	N/A

Item	Default setting	Limits	Increments
Temp Basal Percent	100%	0–200%	5%
Temp Basal Rate	Current basal rate	0.0 U/hr to Max Basal Rate	0.025 U for 0.025–0.975 U/h 0.05 U for 1.00–9.95 U/h 0.1 U for rates of 10.0 U/h or more

Insulin sensitivity factor

Maximum settings	8
Default	None. Insulin sensitivity is set during Startup of the Bolus Wizard feature.
Range	0.3 to 22.2 mmol/L/unit



Note: The insulin sensitivity factor only applies while the pump is in Manual Mode.

Low Reservoir reminder

The values are based on displayed amount, not actual amount.

Alert range	Increment	Default value
First reminder occurs at 5 to 50 units. Second reminder occurs at 50 percent of the remaining specified amount. The second reminder is automatic and cannot be changed by the user.	1 unit	20 units

Max Bolus

Range	0 to 25 units
Default	10 units

Normal bolus

Range is 0.025 to 25 units of insulin, and limited by the Max Bolus setting.

Occlusion detection

When occlusion is detected, the Insulin flow blocked alarm occurs. The occlusion alarm is triggered by an average of 2.23 units of missed insulin (standard bolus) or 1.97 units of missed insulin (quick bolus). The MiniMed 670G insulin pump is intended for use with U-100 insulin. This table shows occlusion detection for four different situations when using U-100 insulin.

Rate	Minimum time before alarm	Average time before alarm	Maximum time before alarm
bolus delivery (10 units at standard speed)	71 seconds	95 seconds	136 seconds
bolus delivery (10 units at quick speed)	9 seconds	10 seconds	14 seconds
basal delivery (1.0 u/h)	2.00 hours	2.50 hours	3.80 hours
basal delivery (0.025 u/h)	123.38 hours	142.03 hours	178.33 hours

Percent temp basal

The default value is 100 percent of basal programming. For example, if you program six units of basal per day, the default temp basal will be six units per day.

Range	0 to 200%
Default	100% of basal programming
Increment	5%

Program safety checks

A single fault condition will cause the pump to suspend insulin delivery. Maximum infusion with a single fault condition is 0.2 units.

Pump dimensions

The pump dimensions in inches are no greater than 3.81 length x 2.11 width x 0.98 depth.

The pump dimensions in centimeters are no greater than 9.68 length x 5.36 width x 2.49 depth.

Pump memory

User settings and pump history are stored in non-volatile memory which will retain data. The memory size will hold 90 days of pump history before it becomes full and has to be written over. This means that at any time the user can review a maximum of 90 days of history.

Pump weight

The mass of the insulin pump without battery and consumables is no greater than 106 grams.

Sensor default settings

High sensor settings			
Item	Default setting	Limits	Increments
High SG alert limit	13.8 mmol/L	5.6 to 22.2 mmol/L	0.2 mmol/L
Alert before high	Off	-	-
Alert on high	Off	-	-
Time before high	15 minutes	5 to 30 minutes	5 minutes
Rise Alert	Off	-	-
Rise Limit	Two up arrows	<ul style="list-style-type: none">• 1 up arrow (0.056 mmol/L/min)• 2 up arrows (0.111 mmol/L/min)• 3 up arrows (0.167 mmol/L/min)• Custom limit (0.050 to 0.275 mmol/L/min)	
High Snooze	1 hour	5 minutes to 3 hours	5 minutes

Low sensor settings			
Item	Default setting	Limits	Increments
Low SG alert limit	3.4 mmol/L	2.8 to 5.0 mmol/L	0.2 mmol/L
Suspend before low	Off	-	-
Suspend on low	Off	-	-
Alert before low	Off	-	-
Alert on low	Off	-	-
Low Snooze	20 minutes	5 minutes to 1 hour	5 minutes
Resume basal alert	Off	-	-

Auto Mode settings			
Item	Default setting	Limits	Increments
Auto Mode	Off	-	-
Auto Mode BG alert	On	-	-

IEC60601-1-2:2007 notice

IEC60601-1-2:2007; Special EMC Precautions for Medical Electrical Equipment

1. Special Precautions regarding Electromagnetic Compatibility (EMC): This body worn device is intended to be operated within a reasonable residential, domestic, public or work environment, where common levels of radiated "E" (V/m) or "H" fields (A/m) exist; such as cellular phones, Wi-Fi, Bluetooth wireless technology, electric can openers, microwave and induction ovens. This device generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the provided instructions, may cause harmful interference to radio communications.

2. Portable and mobile RF communications equipment can affect Medical Electrical Equipment as well. If you encounter RF interference from a mobile or stationary RF transmitter, move away from the RF transmitter that is causing the interference.

IEC60601-1-2:2007; subclause 5.2.2:

The MiniMed 670G insulin pump should not be used adjacent to other electrical equipment. If adjacent use becomes necessary, the MiniMed 670G insulin pump should be observed to verify normal system operation.

Guidance and manufacturer's declaration

Guidance and Manufacturer's Declaration - Electromagnetic Emissions		
<p>The MiniMed 670G insulin pump is intended for use in the electromagnetic environment specified below. The customer or the user of the MiniMed 670G insulin pump should make sure that it is used in such an environment.</p>		
Emissions Test	Compliance	Electromagnetic Environment - Guidance
<p>RF emissions</p> <p>Test: 47 CFR Part 15, Subpart C Section 15.247(a)(2)/RSS-210 FHSS–DAOO-705, DTS-KDB 558074, ANSI C63.4, RSS-Gen, FCC Part 15 Section 15.109, Class B/ANSI c63.4 (2009)</p>	<ul style="list-style-type: none"> • 6 dB and 99% Bandwidths: Pass • Maximum Output Power: Pass • TX Spurious Emissions: Pass • Power Spectral Density: Pass 	<p>The MiniMed 670G insulin pump must emit electromagnetic energy in order to perform its intended function. Nearby electronic equipment may be affected.</p>
<p>RF emissions</p> <p>EN55011 (2009)+A1</p>	<p>Class B</p>	<p>The MiniMed 670G insulin pump is suitable for use in aircraft and in all establishments, including domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.</p>
<p>RTCA DO 160G (2010) 20.5 and 21.5</p>	<p>Complies</p>	
<p>ARIB STD-T66</p>	<p>Complies</p>	

Guidance and Manufacturer's Declaration - Electromagnetic Immunity


The MiniMed 670G insulin pump is intended for use in the electromagnetic environment specified below. The customer or the user of the MiniMed 670G insulin pump should assure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±8 kV contact ±15 kV air @ (30-60% Relative Humidity)	±8 kV contact ±15 kV air @ (30-60% Relative Humidity)	For use in a typical domestic, commercial, or hospital environment.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	Not applicable	Requirement does not apply to this battery powered device.
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	Not applicable	Requirement does not apply to this battery powered device.
Voltage dips, short interruptions and voltage variations on power supply lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0.5 cycle	Not applicable	Requirement does not apply to this battery powered device.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	400 A/m (continuous field at 60 seconds)	400 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Note: U_T is the a.c. mains voltage prior to application of the test level.

Guidance and Manufacturer's Declaration - Electromagnetic Immunity

The MiniMed 670G insulin pump is intended for use in the electromagnetic environment specified below. The customer or user of the MiniMed 670G insulin pump should assure that it is used in such an electromagnetic environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment Guidance
Radiated RF IEC 61000-4-3	10 V/m 80 MHz to 2.5 GHz	10 V/m 80 MHz to 6 GHz	<p>Portable and mobile RF communications equipment should be used no closer to any part of the MiniMed 670G insulin pump, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance:</p> $d = 1.2 \sqrt{P}$ <p>80 MHz to 800 MHz</p> $d = 2.3 \sqrt{P}$ <p>800 MHz to 6 GHz</p> <p>Where P is the maximum output power rating of the transmitter in Watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).</p> <p>Field strengths from fixed RF transmitters should be less than the compliance level in each frequency range.^a This could be determined by an electromagnetic site survey.^b</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 

Guidance and Manufacturer's Declaration - Electromagnetic Immunity

The MiniMed 670G insulin pump is intended for use in the electromagnetic environment specified below. The customer or user of the MiniMed 670G insulin pump should assure that it is used in such an electromagnetic environment.

Note: At 80 MHz and 800 MHz, the higher frequency range applies.

Note: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption, and reflection from structures, objects and people.

Note: The table is per IEC (EN) 60601-1-2 Edition 3.

- a. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.
- b. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcasts and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Guardian Link (3) transmitter is used exceeds the applicable RF compliance level above, the Guardian Link (3) transmitter should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Guardian Link (3) transmitter.

Recommended separation distances between the MiniMed 670G insulin pump and common household radio transmitters			
Household RF Transmitter	Frequency	Recommended Separation Distance (meter)	Recommended Separation Distance (inch)
Telephones			
Cordless Household	2.4 GHz	0.3	12
Cordless Household	5.8 GHz	0.3	12
TDMA-50 Hz (cell phone)	1.9 GHz	0.3	12
TDMA-50 Hz (cell phone)	800 MHz	0.3	12
PCS (cell phone)	1.9 MHz	0.3	12
DCS (cell phone)	1.8 MHz	0.3	12
GSM (cell phone)	900 MHz	0.3	12
GSM (cell phone)	850 MHz	0.3	12
CDMA (cell phone)	800 MHz	0.3	12
Analog (cell phone)	824 MHz	0.3	12
CDMA (cell phone)	1.9 MHz	0.3	12
Wi-Fi Networks			
802.11b	2.4 GHz	1	39.5
802.11g	2.4 GHz	1	39.5
802.11n	2.4 GHz	1	39.5
Bluetooth wireless technology 500 kb/s	2.4 GHz	0.1	3.93
ZigBee 250 kb/s	2.4 GHz	0.1	3.93

Recommended separation distances between portable and mobile RF communications equipment and the MiniMed 670G insulin pump

The MiniMed 670G insulin pump is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or user of the MiniMed 670G insulin pump can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the MiniMed 670G insulin pump as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter (W)	Separation distance according to the frequency of transmitter (m)	
	80 MHz to 800 MHz $d=1.2\sqrt{P}$	800 MHz to 6 GHz $d=2.3\sqrt{P}$
0.01	0.12	0.23
0.1	0.38	0.73
1	1.2	2.3
10	3.8	7.3
100	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where p is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

Note: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Wireless communication

Quality of service

The CGM transmitter and the MiniMed 670G insulin pump are associated as part of an 802.15.4 network for which the pump functions as the coordinator and the CGM transmitter as an end node. In an adverse RF environment, the insulin pump will assess channel changing needs based on "noise" levels detected during an

energy scan. The pump will perform the energy scan if after 10 minutes no CGM transmitter signal has been received. If the channel change occurs the pump will send beacons on the new channel.

The CGM transmitter will initiate a channel search when beacon detection fails on the associated channel. The search will be conducted across all five channels. When the beacon is located the transmitter will rejoin on the identified channel. Upon re-association any missed packets (up to 10 hours) will be transmitted from the CGM transmitter to the pump.

In normal operation the CGM transmitter will transmit a packet every five minutes and retransmit the packet if the data is corrupted or missed.

Radio frequency (RF) communications specifications

Utilizes the IEEE 802.15.4 protocol with the proprietary data format.






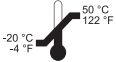
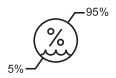




Pump frequency	2.4 GHz; proprietary Medtronic protocol; range up to 1.8 meters (6 feet)
Operating frequencies	2420 MHz, 2435 MHz, 2450 MHz, 2465 MHz, 2480 MHz
Bandwidth	5 MHz which is allocated channel bandwidth per the IEEE protocol

Data security

The MiniMed 670G insulin pump is designed to only accept radio frequency (RF) communications from recognized and linked devices (you must program your pump to accept information from a specific device).

The MiniMed 670G system ensures data security via encryption and proprietary means and ensures data integrity using error checking processes, such as cyclic redundancy checks.

Icon table

Follow instructions for use	
Manufacturer	
Date of manufacture	
Use by	
One per container/package	(1X)
Recycle: Electronic Equipment	
Catalogue or model number	REF
Serial number	SN
Storage temperature range	
Storage humidity range	
Magnetic Resonance (MR) Unsafe: keep away from magnetic resonance imaging (MRI) equipment	
Type BF Device (protection from electrical shock)	
Non-ionizing electromagnetic radiation (RF communication)	
Pump: Protected against the effects of continuous immersion in water (3.6 meters or 12 feet for 24 hours).	IPX8
Signifies compliance to Australian EMC and radio communications requirements	

■ Appendix A: End user software license agreement



End user software license agreement

End user software license agreement

NOTICE TO USER: Certain portions of software contained in this product may be covered by the GNU General Public License, Version 2 or Version 3 (“Open Source”), which can be obtained through the GNU web site at www.gnu.org/copyleft/gpl.html. The source code for any Open Source can be obtained, for a nominal fee to cover the cost of shipping and media, by contacting Medtronic MiniMed, Inc., **Director of Software Development**, 18000 Devonshire Street, Northridge, CA 91325-1219, USA, tel: +1-866-948-6633.



Glossary

active insulin	Bolus insulin that has been delivered by the pump and is still working to lower your BG levels.
active insulin adjustment	The amount of insulin that is subtracted from your BG correction bolus to account for the active insulin that is tracked by the Bolus Wizard feature.
Active Insulin Time	A Bolus Wizard setting that lets you set the length of time that bolus insulin is tracked as active insulin.
Activity Guard	An attachment that can be used to ensure that the reservoir stays secure during activity, or when the pump is worn by a child.
Airplane Mode	A feature that temporarily stops your device from communicating wirelessly.
alarm	An audible beep or vibration with a message to inform you that the pump is no longer delivering insulin. Alarms require immediate action.
Alarm History	A feature that stores information about recent alarms and alerts.
alert	An audible beep or vibration with a message to inform you of a situation that may require your attention.
Alert before low	An alert that occurs when you are approaching your low SG value.
Alert Limits	The values that you set to determine when low and high glucose alerts are triggered.

Alert on low	An alert that occurs when your SG value reaches or falls below your low limit.
Auto Basal	The automatically adjusted basal insulin delivered by Auto Mode based on your SG values.
Auto Mode	Auto Mode is an insulin delivery feature that automatically controls basal insulin delivery to regulate BG levels to a target SG value.
Auto Mode Bolus feature	The Auto Mode Bolus feature assists the user in calculating a recommended bolus amount based on optional carbohydrate intake and optional BG measurement. The user may enter one or both of the two optional inputs. This feature utilizes the Carb Ratio setting to compute the bolus.
Auto Suspend	An alarm that you set to suspend insulin delivery and trigger an alarm if no buttons are pressed for a specified period of time. Clearing the alarm resumes insulin delivery.
Awake mode	A state in which the pump screen is on. Unless you are actively using another screen, your Home screen appears.
basal insulin	Insulin that is continuously delivered by the pump to meet your individual insulin needs between meals and during sleep.
basal pattern	A set of one or more basal rates that covers a 24-hour period.
basal rate	The amount of continuous basal insulin that you program your pump to automatically deliver per hour.
BG	Abbreviation for blood glucose. See <i>blood glucose</i> .
BG meter	A device that measures glucose levels in the blood.
BG Targets	The high and low values to which your BG is corrected when using the Bolus Wizard feature.
Block Mode	A feature that restricts the ability to change all settings. You can still perform certain functions, such as suspending insulin delivery, reviewing history, testing your pump, or clearing alarms and alerts.

blood glucose (BG)	Refers to glucose (sugar) that is present in the blood, commonly measured by a BG meter.
Bolus BG Check reminder	A reminder that you set just after you program a bolus. The reminder notifies you to check your BG when the time period that you specified has passed.
bolus insulin	Insulin used to cover an expected rise in BG levels due to carbohydrates, or to lower a high BG value down to your target range.
Bolus Speed	A feature that lets you choose the speed at which your device delivers bolus insulin.
Bolus Wizard feature	A feature that uses your individual Bolus Wizard settings to calculate an estimated bolus amount based on the BG values and carbs that you enter. These settings include Carb Ratio, Insulin Sensitivity Factor, BG Target Range, and Active Insulin Time.
calibrate	The process of using a meter BG reading to calculate SG values.
Calibration reminder	A reminder you can set to let you know when your next calibration is due.
cannula	Short, thin, and flexible tube placed in the tissue below the skin. Insulin is delivered through the cannula into the body.
carb ratio	The number of grams of carbohydrates covered by one unit of insulin. The carb ratio is used to calculate bolus amounts.
CGM	Abbreviation for continuous glucose monitoring. See <i>continuous glucose monitoring</i> .
continuous glucose monitoring (CGM)	A monitoring tool that uses a glucose sensor placed below the skin to continuously measure the amount of glucose in your interstitial fluid.
correction bolus	Insulin used to lower a high BG value down to your target range.
Daily History	A feature that displays the actions that you performed using your device.

Diabetic Ketoacidosis (DKA)	A serious condition that occurs when the insulin levels are low, BG levels are elevated, and the body uses fat for energy. This process produces ketones which upset the body's acid-base balance, leading to a potentially life threatening situation.
Dual Wave bolus	A type of bolus that provides a dose of insulin delivered as a combination of a Normal Bolus followed by a Square Wave bolus.
Easy Bolus feature	A feature that lets you deliver a Normal Bolus in preset increments using only audio or vibrate confirmation.
Event Marker	A feature that allows you to record events, such as BG readings, injections, carbohydrates, and exercise.
food bolus	A dose of insulin you give to cover an expected rise in glucose levels from carbohydrates.
High limit	The value you set to determine when the pump will alert you of a high SG condition.
infusion set	Tubing that connects to the reservoir on one end, and has a needle or cannula on the other end, that you insert into your body. Insulin travels from the pump through the infusion set into your body.
infusion site	The location on the body where the infusion set is inserted.
insulin sensitivity factor	The amount that BG is reduced by one unit of insulin. The insulin sensitivity factor is used to calculate correction bolus amounts.
interstitial fluid	The fluid that surrounds the cells in the body.
ISIG	The signal created by the sensor that is used to calculate your SG value. Typically used by Medtronic technical support representatives when troubleshooting.
lock	A pump feature that prevents accidental button presses.
Low limit	The value you set to determine when the pump will alert you of a low SG condition, and also used for determining if insulin delivery should be suspended.

Manual Bolus	A feature that allows you to enter and deliver a dose of insulin in the amount that you have determined is necessary.
Manual Mode	Manual Mode refers to system functions other than Auto Mode. In other words, if Auto Mode is not active, the system is in Manual Mode.
Max Basal Rate	A feature that allows you to set the maximum amount of basal insulin that can be delivered per hour.
Max Bolus	A feature that allows you to set the maximum bolus amount that can be delivered in one dose.
meter	A term for any BG meter.
Missed Meal Bolus reminder	A reminder that a bolus was not delivered during time periods that you specify, often set around your meal times.
Normal Bolus	A type of bolus that provides an entire dose of insulin immediately.
notifications	All notifications are designed to get your attention and convey different types of information. They include alarms, alerts, reminders, and messages.
occlusion	A blockage or crimp of the cannula or tubing that prevents proper insulin flow.
piston	The part of the insulin pump that engages the reservoir and moves insulin through the tubing.
Power save mode	A state in which your pump is fully functional, but the screen goes dark to save power. You can set how long it takes for your screen to enter power save mode by changing the Backlight setting.
Preset Bolus	A feature that allows you to set up and save a bolus for specific meals or snacks that you frequently eat or drink.
Preset Temp Basal	A feature that allows you to set up and save temporary basal rates for repeated use.
reminder	A type of notification that you can set to help you remember to do something.

reservoir	The small container that you fill with insulin and insert into your delivery device.
Resume basal alert	An alert that can be set to occur when your pump has automatically resumed basal insulin delivery after a Suspend before low or Suspend on low event because your SG values have met the necessary criteria. This alert will always occur if basal insulin delivery has resumed because the two-hour maximum suspend time has elapsed.
Rewind	A feature used when changing a reservoir. It returns the piston to its starting position and allows a new reservoir to be placed into the pump.
Rise Alert	An alert that notifies you if your SG value is rising rapidly.
sensitivity	See <i>insulin sensitivity factor</i> .
sensor (glucose sensor)	The small part of the continuous glucose monitoring system that you insert just below your skin to measure glucose levels in your interstitial fluid.
sensor glucose (SG)	Refers to glucose (sugar) that is present in the interstitial fluid and is measured by a glucose sensor.
Set Change reminder	A reminder that you can set to change your infusion set.
SG	Abbreviation for sensor glucose. See <i>sensor glucose</i> .
Sleep mode	A state in which your pump is fully functional, but the screen is dark. Your pump automatically enters sleep mode when you have not pressed any buttons for about two minutes.
SmartGuard suspend	SmartGuard suspend features include Suspend before low and Suspend on low.
SmartGuard technology	A feature that can automatically stop and resume insulin delivery based on your SG values and low limit. SmartGuard Auto Mode can automatically adjust basal insulin delivery based on SG values.
Square Wave bolus	A bolus delivered evenly over a specified time period.

Suspend before low	A feature that suspends insulin delivery when the sensor predicts the SG value is approaching your low limit.
Suspend Delivery	This feature stops all insulin delivery until you resume it. Only the basal insulin restarts when delivery is resumed.
Suspend on low	A feature that suspends insulin delivery when your SG value reaches or falls below your low limit.
Temp Basal Rate (temporary basal rate)	A feature that allows you to temporarily increase or decrease your current basal rate for a duration of time that you specify.
transfer guard	The plastic piece that comes attached to the reservoir. It is used to connect the reservoir to the insulin vial while filling the reservoir with insulin.
transmitter	A device that connects to a glucose sensor. The transmitter collects data measured by the sensor and wirelessly sends this data to monitoring devices.



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