TEN00819-00

Operation & Maintenance Manual

BULLDOZER

D37EXi-24 D37PXi-24
D39EXi-24 D39PXi-24

SERIAL NUMBERS D37-85309 and up
D39-96159

⚠ WARNING

Unsafe use of this machine may cause serious injury or death. Operators and maintenance personnel must read this manual before operating or maintaining this machine. This manual should be kept near the machine for reference and periodically reviewed by all personnel who will come into contact with it.

NOTICE

Komatsu has Operation & Maintenance Manuals written in some other languages. If a foreign language manual is necessary, contact your local distributor for availability.

KOMATSU

FOREWORD

⚠ WARNING

This Operation and Maintenance Manual gives information related to "intelligent Machine Control".
Please read this Operation and Maintenance Manual after reading the manual for the standard machine.

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

CALIFORNIA

Proposition 65 Warning

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer, birth defects and reproductive harm.

Wash hands after handling.

READ THIS MANUAL

Before reading this manual, read the Operation and Maintenance Manual of standard machine (D37EX-24, D37PX-24, D39EX-24, D39PX-24).

This manual describes only the special device or function for D37EXI-24, D37PXI-24, D39EXI-24, and D39PXI-24. For the other part than described in this manual, see the Operation and Maintenance Manual of standard machine.

This manual gives details of the operation and methods of inspection and maintenance for this machine that must be observed in order to use the machine safely. Most accidents are caused by the failure to follow fundamental safety rules for the operation and maintenance of machines.

Read, understand and follow all precautions and warnings in this manual and on the machine before performing operation and maintenance. Failure to do so may result in serious injury or death.

Komatsu cannot predict every circumstance that might involve a potential hazard when the machine is used. Therefore, the safety messages in this manual and on the machine may not include all possible safety precautions.

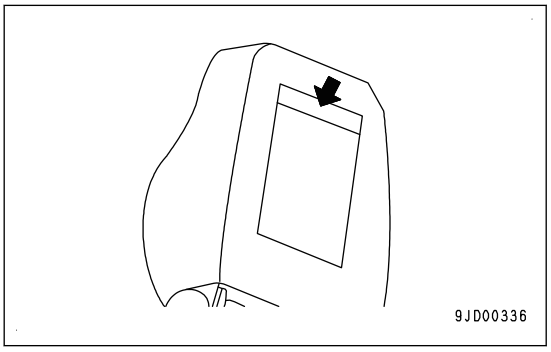
If you perform any operation, inspection, or maintenance under conditions that are not described in this manual, understand that it is your responsibility to take the necessary precautions to ensure safety. In no event should you or others engage in the prohibited uses or actions described in this manual. It is dangerous to perform improper operation and maintenance of the machine. It may cause serious injury or death.

If you sell the machine, be sure to give this manual to the new owner together with the machine.

Always keep this Operation and Maintenance Manual in the indicated location so that all relevant personnel can read it at any time.

Storage location for the Operation and Maintenance Manual

It is provided on the back of the backrest of operator's seat.



If this manual is lost or damaged, contact Komatsu or your Komatsu distributor and tell them about the machine model name and the serial No. immediately to arrange for its replacement.

For details regarding the machine model name and the serial No., see the machine serial No. plate. In order to arrange the proper Operation and Maintenance Manual, you will need to provide the machine model name and the serial No.

This manual uses the International System of Units (SI) for units of measurement. For reference, units that have been used in the past are given in { }.

The explanations, values, and illustrations in this manual have been prepared based on the latest information available as of the date of its publication. Continuing improvements in the design of this machine may lead to additional changes that are not reflected in this manual. If there is any question or suggestion, consult your Komatsu distributor.

The numbers in the illustrations correspond to the numbers in ( ) in the text. (Example: 1 → (1))

Komatsu delivers machines that comply with all applicable regulations and standards of the country to which it has been shipped. If this machine has been purchased in another country, it may lack certain safety devices and specifications that are necessary for use in your country. If there is any question about whether your product complies with the applicable standards and regulations of your country, consult your Komatsu distributor before operating the machine.

SAFETY INFORMATION

To enable you to use the machine safely, and to prevent personal injury to operators, service personnel or bystanders, the precautions and warnings included in this manual and the safety signs attached to the machine must always be observed.

To identify important safety messages in the manual and on the machine labels, the following signal words are used.

The "Safety Alert Symbol" identifies important safety messages on machines, in manuals, and elsewhere. When you see this symbol, be alert to the risk of personal injury or death. Follow the instructions in the safety message.

⚠ DANGER	This signal word indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	This signal word indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	This signal word indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices that may cause property damage.

The following signal words are used to alert you to information that must be followed to avoid damage to the machine.

NOTICE	If precautions described are not observed, the machine may be damaged or the service life may be reduced.
REMARK	This word is used for information that is useful to know.

INTRODUCTION

intelligent Machine Control

The system that utilizes ICT (Information Communication Technology) in each stage of earth moving operation, such as survey, design, operation, supervision, examination and maintenance.

It enables the highly efficient and highly accurate earth moving operation by utilizing information provided in each stage of operation.

Utilizing the information provided in the operation to the other operations enables better productivity and quality in the whole operation.

MACHINE FEATURES

For this machine, current position information is obtained by using GNSS satellite and the base station. By using the obtained current position information and information data for the operation, blade is automatically controlled.

Under the blade automatic control, even if the operator does not operate the blade control lever, the blade automatically moves along the preset design surface. By using this function effectively, you can easily build a ground surface as designed.

When the load to blade increases, the blade is automatically raised to keep the constant targeted load by adjusting lifting amount, before the machine becomes impossible to travel forward. Therefore, this function can be used not only for the finishing leveling but also the dozing and carrying operation.

Use this machine mainly for the following operation.

- Dozing work
- Leveling work

For detail of work procedure, see “PRECAUTIONS WHEN USING BLADE AUTOMATIC CONTROL”.

This machine has the current ground display (as-built) function which grasps the ground shape under the track as well as the operation and display it on the control box screen. By using this function, the progress of operation can be checked in real time on the control box screen.

In order to use the blade automatic control or current ground display (as-built) function, following device is needed besides this machine.

- GNSS satellite (GPS, GLONASS)
  Use it at a place under the open sky where has no obstacle.
- Base station
  For the usable the base station, consult your Komatsu distributor in advance.
- Operation information data
  Project file is necessary, which contains the data necessary for “intelligent Machine Control” such as the design surface, control point, etc.
  For details, consult your Komatsu distributor beforehand.

Observation items for use

- While the blade automatic control is in operation, the blade moves even if the operator does not operate the blade control lever.
  Before turning on the blade automatic control, check thoroughly if there are any persons or obstacles in the area around the machine.
- While the blade automatic control is in operation, if the operator operates blade control lever, this blade lever operation is given the priority and the blade moves as operated by the operator. When the operator stops lever operation, the blade automatic control restarts.
  While the blade automatic control is in operation, do not release your hand from the blade control lever, so that you can avoid the danger immediately if any.
- When performing the inspection, maintenance, moving and loading/unloading on the trailer etc., i.e. other operation than the operation by “intelligent Machine Control” at the jobsite, turn off the blade automatic control and turn off the control box power supply.
- You can turn off the blade automatic control by setting the work equipment lock lever to LOCK position.

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SAFETY

⚠ WARNING

This section describes cautions which are necessary to provide the efficient operation with “intelligent Machine Control”.
Please follow the instructions described in the Operation and Maintenance Manual for the standard machine for safety information of the whole machine.

GENERAL PRECAUTIONS COMMON TO OPERATION AND MAINTENANCE

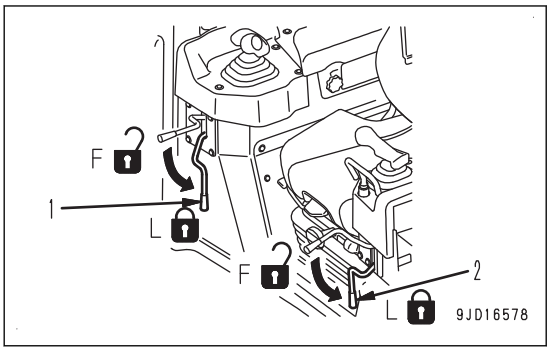
Mistakes in operation, inspection, or maintenance may result in serious personal injury or death. Before performing operation, inspection, or maintenance, always read “SAFETY”, Operation and Maintenance Manual of standard machines and this manual carefully and obey the warnings.

PRECAUTIONS WHEN GETTING ON OR OFF MACHINE

PRECAUTIONS WHEN STANDING UP FROM OPERATOR'S SEAT

Before standing up from the operator's seat to adjust the seat, always perform the following. Turn off the blade automatic control. Lower the work equipment to the ground, operate the work equipment lock lever (1) and parking brake lever (2) by holding the operating portions on the top, set the levers to LOCK position (L), and stop the engine.

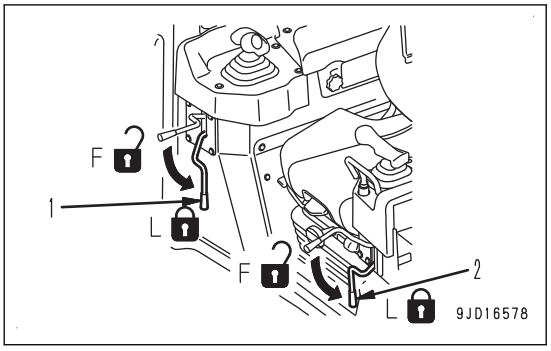
If the control levers are touched by mistake, there is danger that the machine may suddenly move and cause serious personal injury or death.

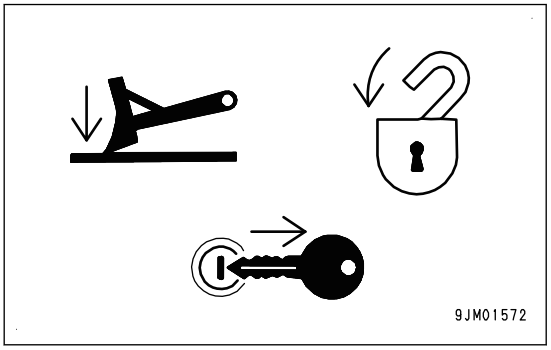


PRECAUTIONS WHEN LEAVING MACHINE

If the proper procedures are not taken when parking the machine, the machine may suddenly move off by itself, and this may lead to serious personal injury or death. Observe the following.

- When leaving the machine, always turn off the blade automatic control and lower the work equipment to the ground. Operate the work equipment lock lever (1) and parking brake lever (2) by holding the operating portions on the top, set the levers to LOCK position (L), and stop the engine.
- Lock all the places and always take the key with you and keep it in the specified place.





PRECAUTIONS FOR BLADE AUTOMATIC CONTROL

- While the automatic control of blade is in operation, the blade moves even if the operator does not operate the blade control lever.
  Before turning the automatic control of blade ON, check thoroughly that there are no persons or obstacles in the area around the machine.
- While the automatic control of blade is in operation, if the operator operates blade control lever, this blade lever operation is given the priority and the blade moves as operated by the operator. When the operator stops lever operation, the automatic control of blade restarts.
  While the automatic control of blade is in operation, do not release your hand from the blade control lever, so that you can avoid the danger immediately if any.
- When performing the inspection, maintenance, moving and loading/unloading on the trailer etc., i.e. other operation than the operation by “intelligent Machine Control” at the jobsite, turn off the automatic control of blade, then turn off the control box power supply.

PRECAUTIONS FOR OPERATION

START ENGINE

IN COLD WEATHER

- If the work equipment is operated without sufficient warming-up operation of the machine, response of the work equipment to movement of the control lever will be slow, and the work equipment may not respond as the operator intends, so always perform the warming-up operation. Particularly in a cold weather, be sure the warm-up operation is completed.
- If the machine is not thoroughly warmed up before turning on the automatic control of blade, the response of the blade will be slow, or the blade will move suddenly and this may lead to unexpected accidents, so always perform the warming-up operation. Particularly in a cold weather, be sure the warm-up operation is completed.
- If the battery electrolyte is frozen, do not charge the battery or start the engine with a different power source. There is a hazard that this will ignite the battery and cause the battery to explode.
  Before charging or starting the engine with a different power source, melt the battery electrolyte and check that there is no leakage of electrolyte before starting.

PRECAUTIONS FOR MAINTENANCE

PRECAUTIONS FOR CHECK AND MAINTENANCE

- When performing the check and maintenance of the machine, turn off the automatic control of blade and turn off the control box power supply.
  If you perform the check while control box power supply is turned on, and you touch the Auto/Manual switch accidentally, the automatic control of blade may be turned on, and the blade start moving, resulting in serious personal injury or death.
- Only when performing the check and adjustment for the automatic control of blade, turn on the control box power supply, and perform the check and adjustment. Check that there are no persons or obstacles in the area around the machine.

PRECAUTIONS FOR GNSS ANTENNA

- Cable connector of the GNSS antenna is looseness-free structure. Check is not needed.
- If the GNSS antenna contacts with obstacles during operation or traveling, and it has to be checked and replaced, ask your Komatsu distributor.
- There is a danger of falling or tipping over that can lead to serious personal injury or death. Do not get on the cab to check the GNSS antenna.

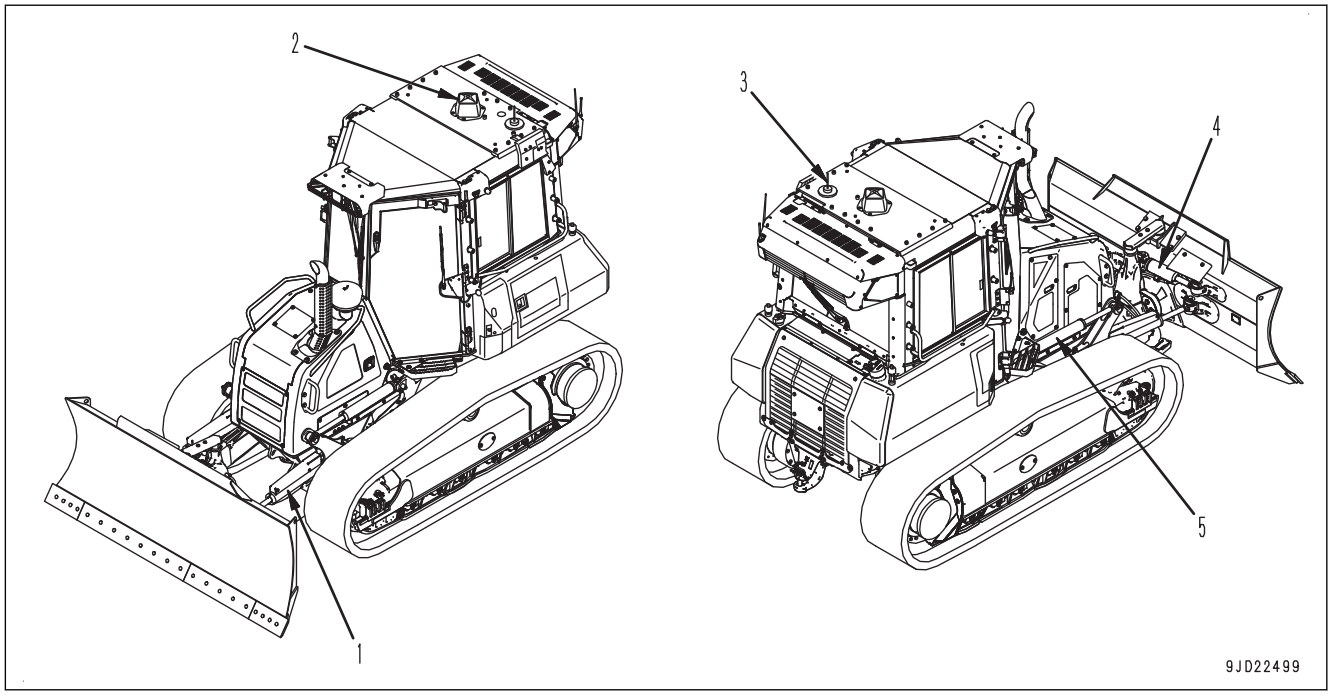
OPERATION

⚠ WARNING

This section describes cautions which are necessary to provide the efficient operation with “intelligent Machine Control”.
Please follow the instructions described in the Operation and Maintenance Manual for the standard machine for operation information of the whole machine.

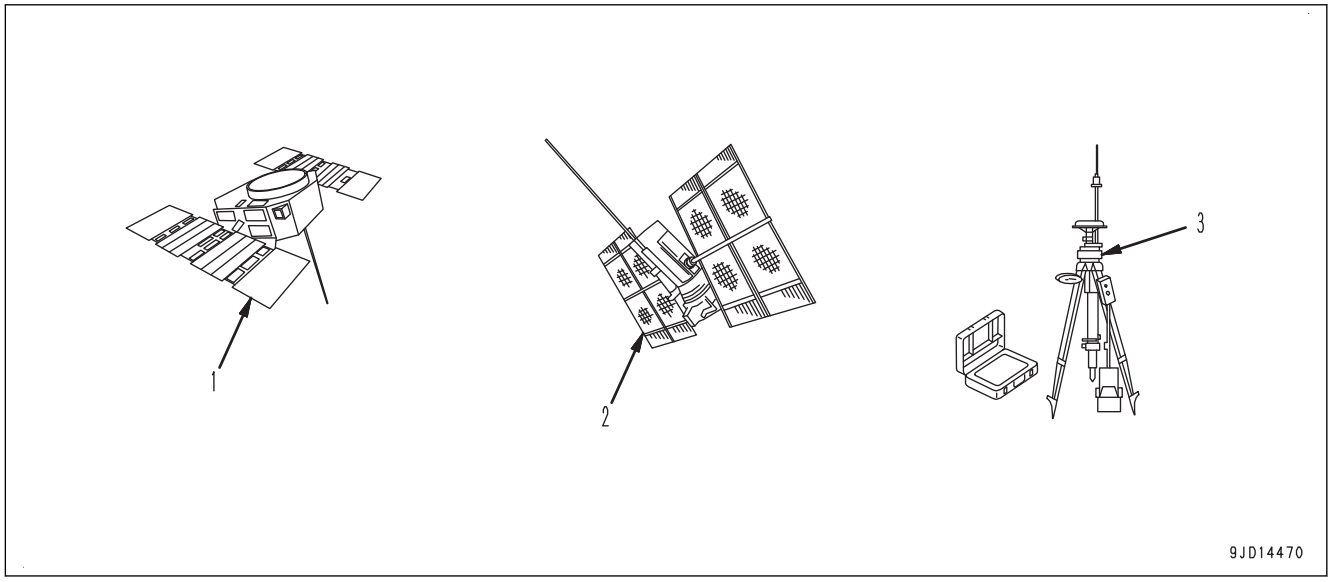
GENERAL VIEW

MACHINE EQUIPMENT NAME



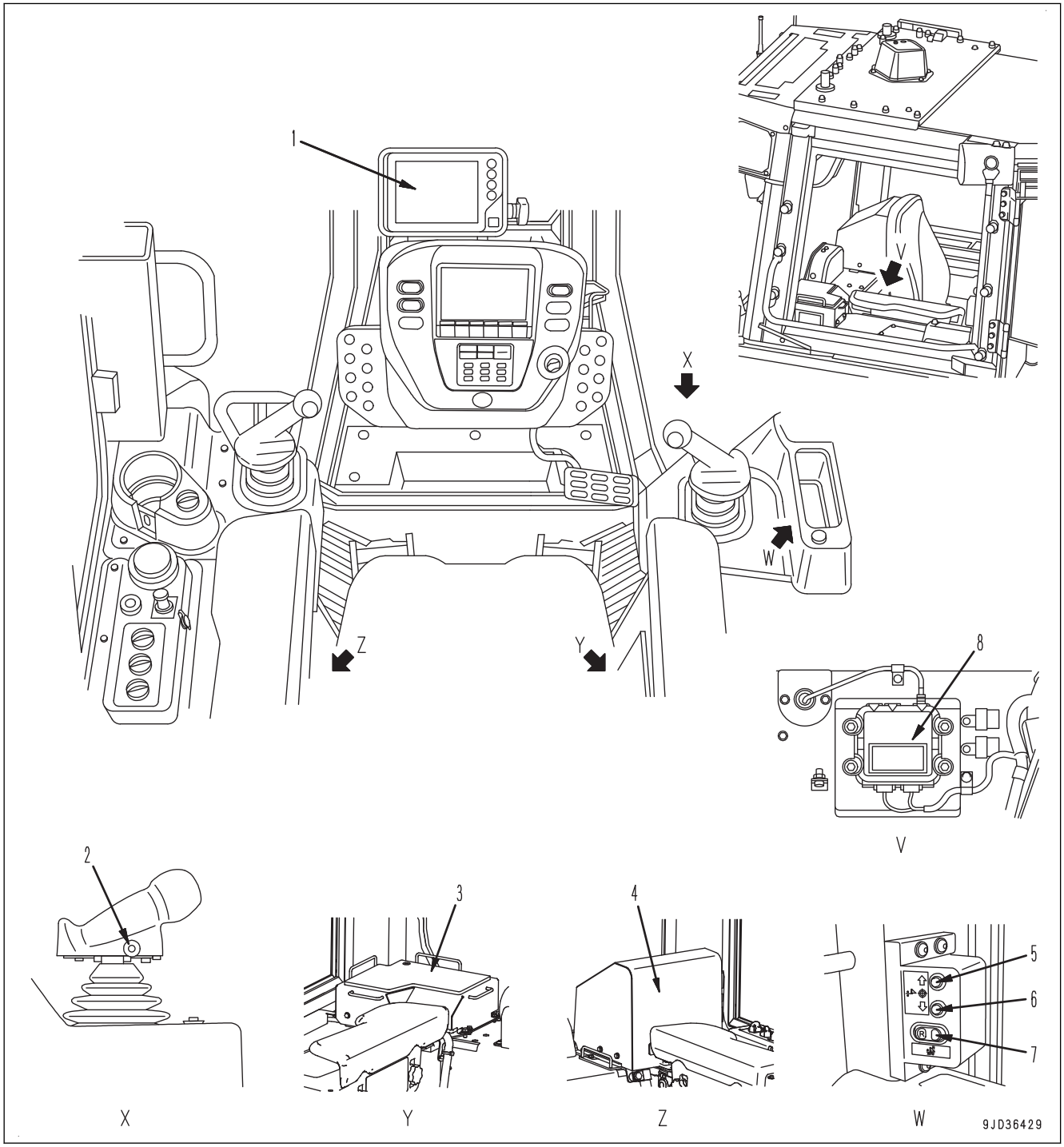
(1) Blade angle cylinder (with stroke sensor)
(2) GNSS antenna
(3) Radio antenna
(4) Blade tilt cylinder (with stroke sensor)
(5) Blade lift cylinder (with stroke sensor)

MACHINE OUTSIDE EQUIPMENT NAME



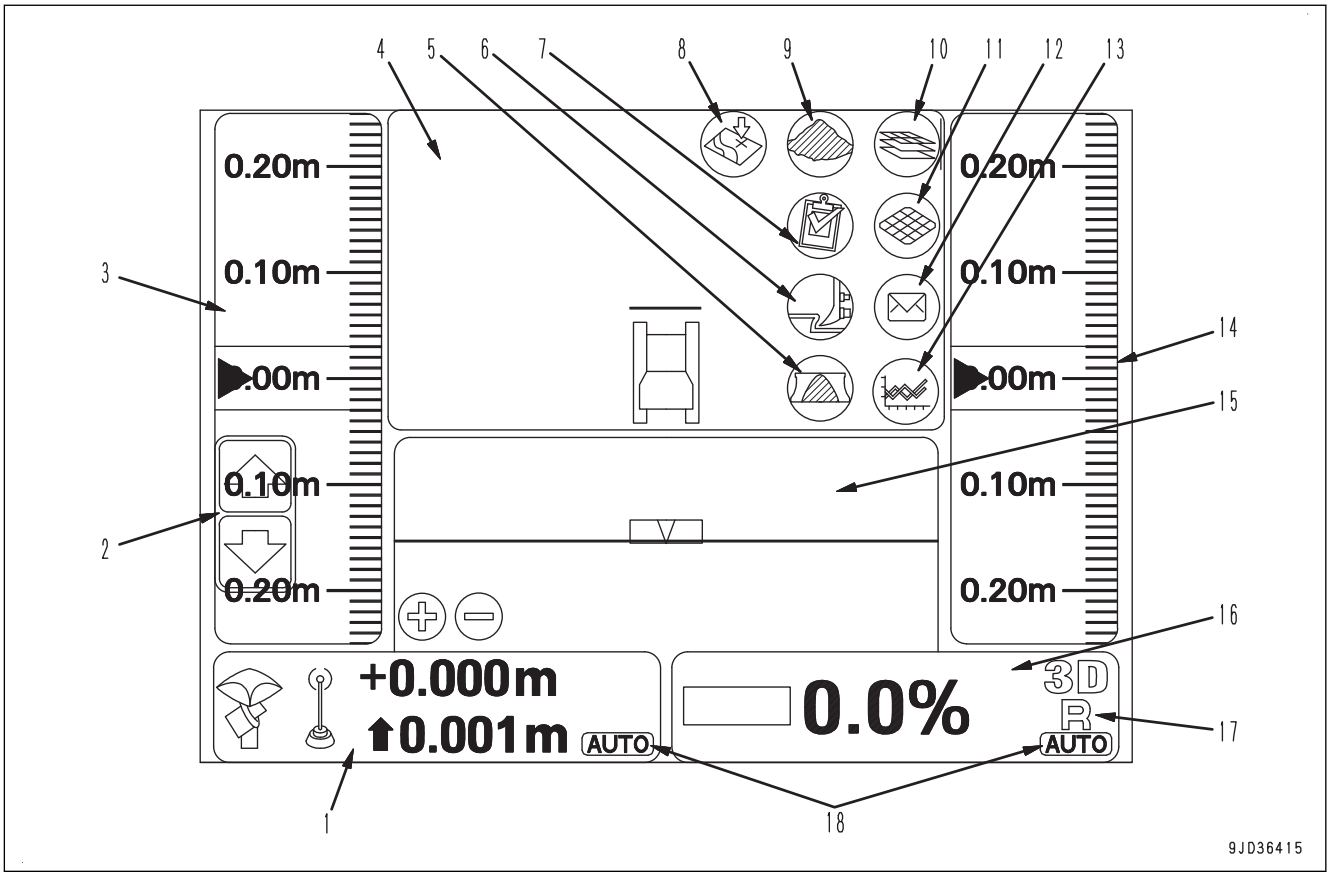
(1) GNSS satellite (GPS)
(2) GNSS satellite (GLONASS)
(3) Base station

CONTROLS AND GAUGES NAMES



(1) Control box
(2) Auto/Manual switch
(3) ICT sensor controller (inside the cover)
(4) GNSS receiver (inside the cover)
(5) Cut/Fill offsets switch (Up)
(6) Cut/Fill offsets switch (Down)
(7) Back grade mode switch
(8) Network modem (if equipped)

CONTROL BOX NAME



(1) Elevation control key
(2) Cut/Fill offsets
(3) Left window
(4) Main window
(5) Blade load selection
(6) Dozing mode selection
(7) Task detail
(8) Take a topo shot
(9) Material selection
(10) Toggle As-built mode
(11) Start/Stop As-built updates
(12) Sitelink3D messaging
(13) Sitelink3D activity
(14) Right window
(15) Lower window
(16) Slope control key
(17) Back grade mode indicator
(18) AUTO indicator

The figure shows a typical example of the control box main window.
The contents displayed on the screen depends on the setting.

EXPLANATION OF COMPONENTS

The following is an explanation of devices necessary to operate the machine.

To perform suitable operations correctly and safely, it is important to completely understand methods of operating the equipment, and the meanings of the displays.

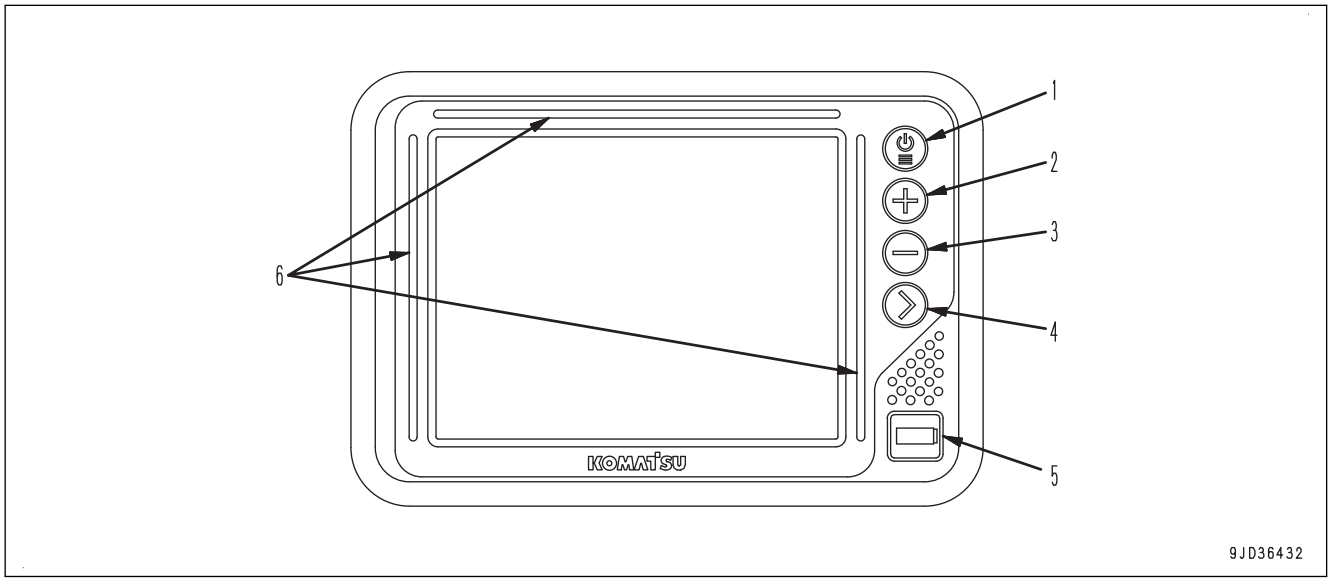
intelligent Machine Control SYSTEM

CONTROL BOX

⚠ WARNING

To prevent the blade from moving suddenly, turn on the control box power only when performing work with “intelligent Machine Control”.

The control box has 2 functions, a function to set or adjust the design surface to be used for the blade automatic control, and a function to display the GNSS satellite information. Touch the screen directly to operate it.



(1) Power ON/OFF and menu switch
(2) Zoom in switch
(3) Zoom out switch
(4) Toggle main view switch
(5) USB port
(6) LED indicator

- Place the machine on a level ground under the open sky, turn on the power of base station, and then turn on the control box power supply to perform the inspection.
- If the control box starts operation on the slope of which pitching angle (inclination in front or rear) or rolling angle (inclination in right or left) is 20 ° or more, accuracy of it may deteriorate. Start the control box on a level place.
- The power supply of the control box is not linked with the starting switch of the machine. Before starting the check or work with “intelligent Machine Control”, hold down the power ON/OFF and menu switch (1) to turn on the control box power.
  Also, after finishing the check or work with “intelligent Machine Control”, hold down the power ON/OFF and menu switch (1) to turn off the control box power.

REMARK

- There is no priority in order between switching on/off of control box power supply and switching on/off of starting switch of the machine.
- The control box operates on Windows® operating system.
  After turning on the control box power supply, it takes approximately 2 minutes until Windows® operating system starts and the main window is displayed. In the same way, after turning off the control box power supply, it takes approximately 2 minutes until the main window is finished and Windows® operating system shuts down.
  (Windows is a registered trademark of Microsoft Corporation in the United States and/or other countries.)

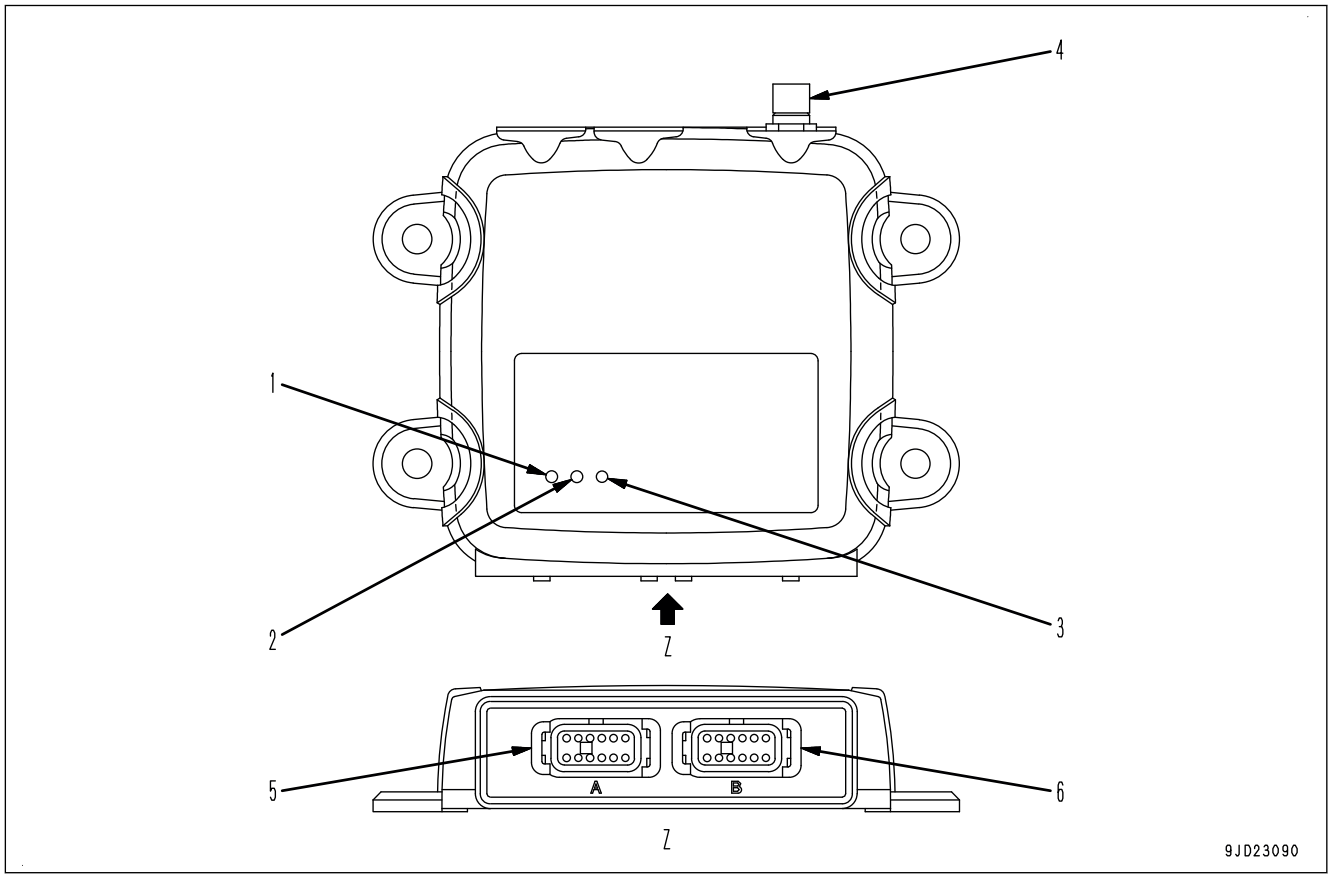
NETWORK MODEM

(if equipped)

The network modem is a necessary terminal for 3G communication in order to obtain the satellite compensation information via network, and connect the construction management system such as the Sitelink3D.

NOTICE

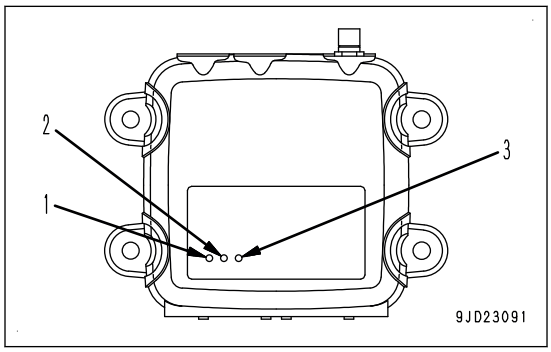
When using the network modem, Komatsu recommends using Komatsu genuine network modem antenna (option).
If other antenna than Komatsu genuine part is used, it may not be complied with the regulations in the country or area where the machine is used. This is because the network modem is a wireless device which uses radio wave.



(1) Power supply state LED
(2) Communication state LED
(3) Bluetooth state LED
(4) Antenna connecting port
(5) Connector port 1
(6) Connector port 2

How each state LED works

For the questions about the communication, consult your Komatsu distributor.



Display of the power supply state LED (1)

Lighting color	State
Green	ON
Not lit	OFF

Display of the communication state LED (2)

Lighting color	State
Not lit	OFF
Yellow	Being started up
Flashing in green	Not being connected to the Sitelink3D server. (No GPRS connection information is obtained)
Green	Connection to the Sitelink3D server is established, but no GNSS compensation information is obtained.
Green, red (flashes alternately)	Connection to the Sitelink3D server is established, and GNSS compensation information is received.

Display of the Bluetooth state LED (3)

Lighting color	State
Not lit	Connection to the Bluetooth is not established.

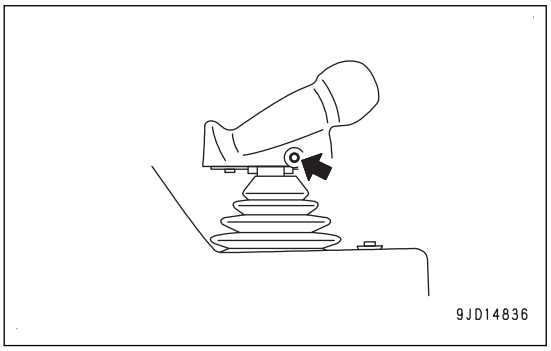
AUTO/MANUAL SWITCH

⚠ WARNING

- **While the blade automatic control is in operation, the blade moves even if the operator does not operate the blade control lever.**
  Be sure that no person or obstacle is around the machine before turning on the blade automatic control.
- **Blade moves in accord with the operator's operation of the blade control lever which is given the priority while the blade automatic control is in operation. When the operator stops lever operation, the blade automatic control restarts.**
  Do not release your hand from the blade control lever in order to avoid the danger immediately even when the blade automatic control is in operation.
- **Turn off the blade automatic control and turn off the control box power supply when performing the inspection, maintenance, moving and loading/unloading on the trailer etc. other than the operation by "intelligent Machine Control" at the jobsite.**
- **You can turn off the blade automatic control by setting the work equipment lock lever to LOCK position.**

You can turn on or off the blade automatic control by using the Auto/Manual switch.

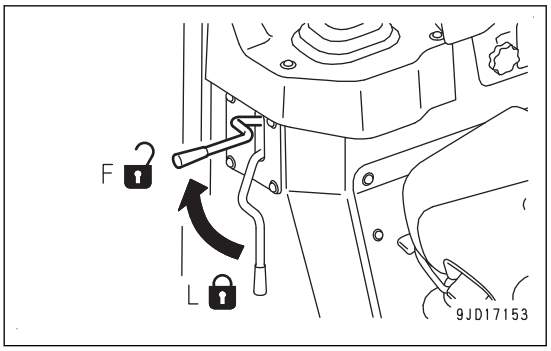
Auto/Manual switch is located on the blade control lever.



When turning on the blade automatic control

Operate the work equipment lock lever by holding the operating portion on the top, place the lock lever in FREE position (F), and press the Auto/Manual switch once.

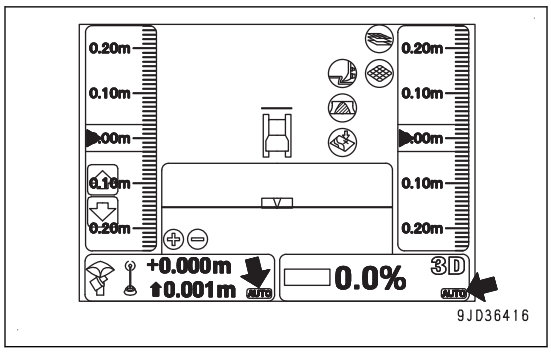
The blade automatic control is turned on.

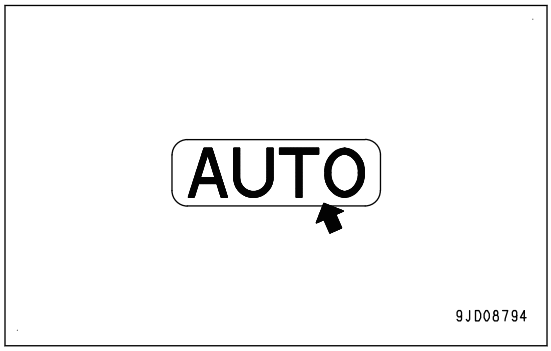


“AUTO” is displayed on the control box screen when the blade automatic control is turned on.

The blade automatic control is not turned on even if Auto/Manual switch is pressed when there is abnormality in the system.

In this case, “AUTO” is not displayed on the control box screen.

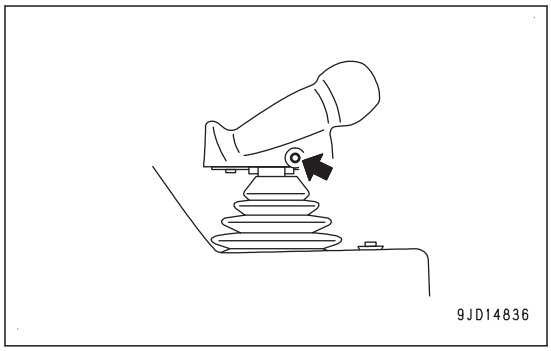




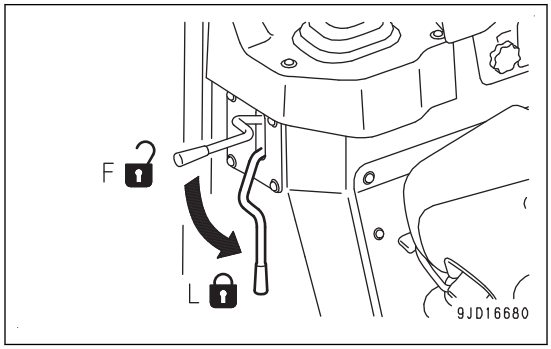
When turning off the blade automatic control

Press the Auto/Manual switch once while the blade automatic control is turned on.

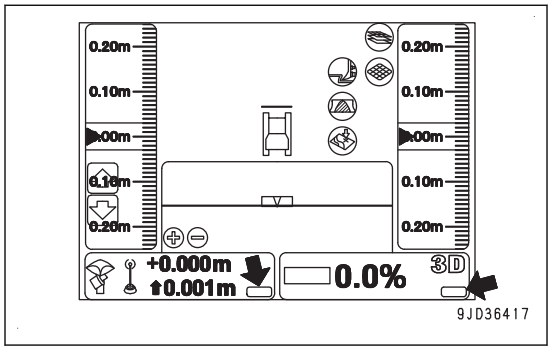
The blade automatic control is turned off.



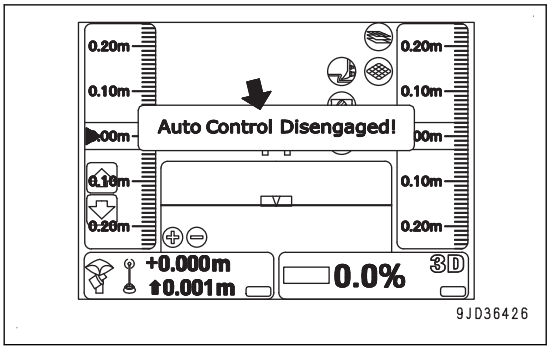
The blade automatic control is turned off also when operating the work equipment lock lever by holding the operating portion on the top and placing the lock lever in LOCK position (L).

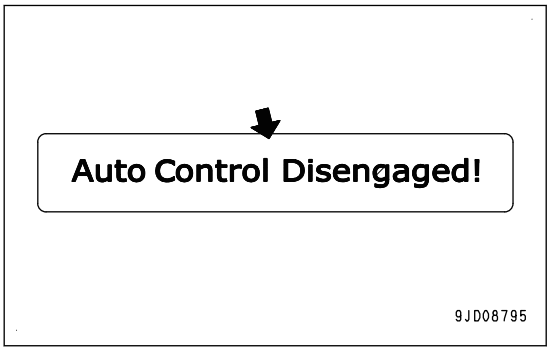


“AUTO” goes out from the control box screen when the blade automatic control is turned off.



"Auto Control Disengaged!" message pops up on the control box screen when the blade automatic control is switched from on to off.

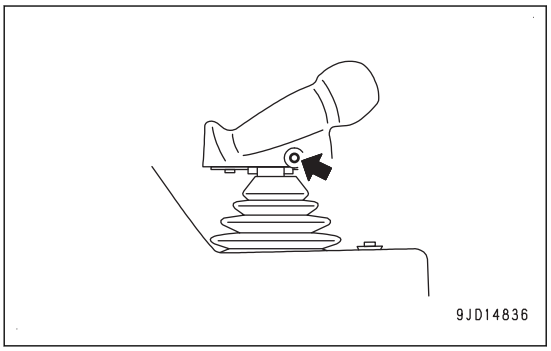




When the blade automatic control is automatically turned off

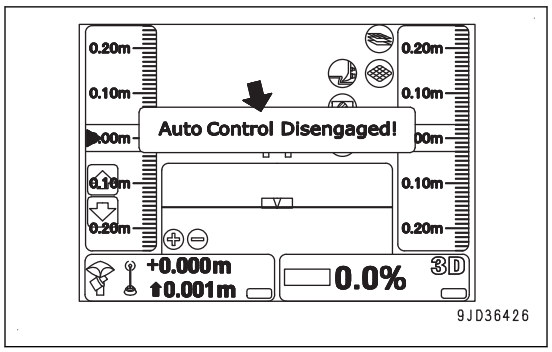
The blade automatic control is automatically turned off in the following conditions even if Auto/Manual switch is not pressed.

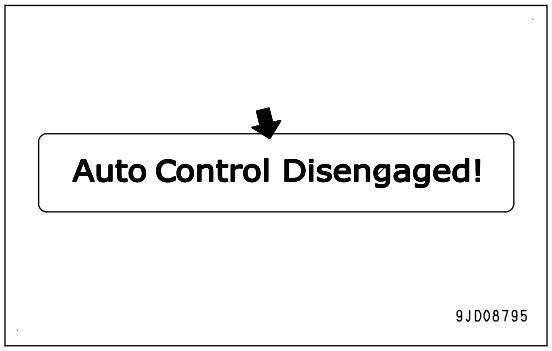
- When the machine is stopped for 30 seconds or more
- When the blade edge protrudes out of the designed range.
- When the number of GNSS satellites from which the system can receive the signals is decreased
- When the radio waves from the base station cannot be received
- When the starting switch of the machine is turned to OFF position
- When there is an abnormality in the system such as open circuit, etc.



"Auto Control Disengaged!" message pops up on the control box screen and the notice sound "Beep" can be heard when the blade automatic control is automatically turned off.

At this time, "AUTO" on the control box screen goes out.





CUT/FILL OFFSETS SWITCH

Press the cut/fill offsets switches to adjust the cut/fill offset quantity setting quickly nearby.

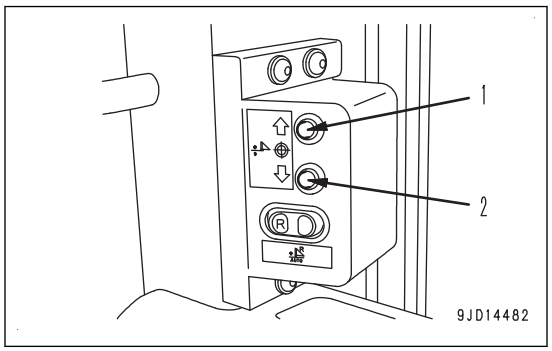
The cut/fill offsets switches are located on the right side of the blade control lever.

(1) Cut/fill offsets switch (Up)

When this switch is pressed, the cut/fill offset increases. (Design surface rises.)

(2) Cut/fill offsets switch (Down)

When this switch is pressed, the cut/fill offset decreases. (Design surface lowers.)

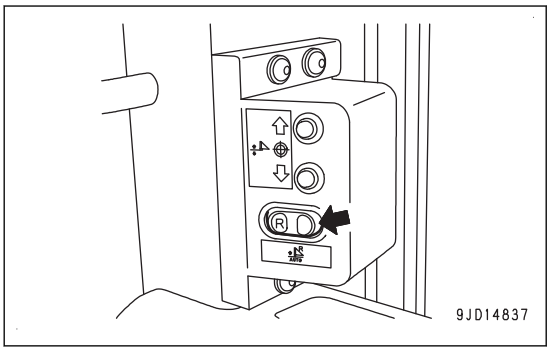


The increase/decrease amount when the cut/fill offsets switches are pressed is the same as the setting of the "Cut/Fill offsets" on the control box screen.

BACK GRADE MODE SWITCH

Press the back grade mode switch, and select on or off of the back grade mode.

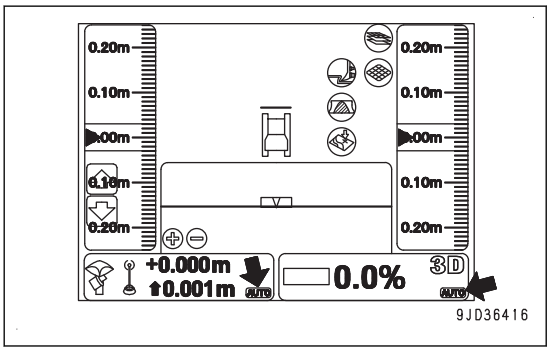
The back grade mode switch is located on the right side of the blade control lever.



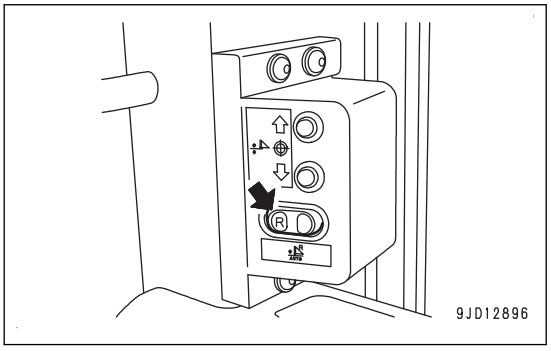
When turning on the back grade mode

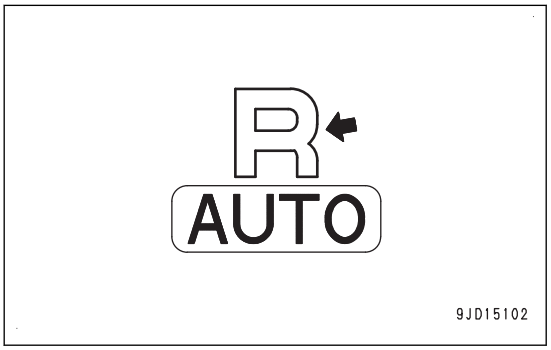
Press the back grade mode switch once when blade automatic control is turned on (Control box displays “AUTO”).

After the buzzer sounds “peep” twice, the back grade mode is turned on.

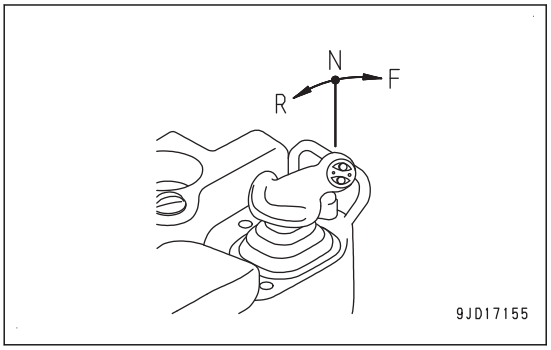


When the back grade mode is turned on, LED of the back grade mode switch lights up, and the back grade mode indicator is displayed at the top of “AUTO” on the control box screen.

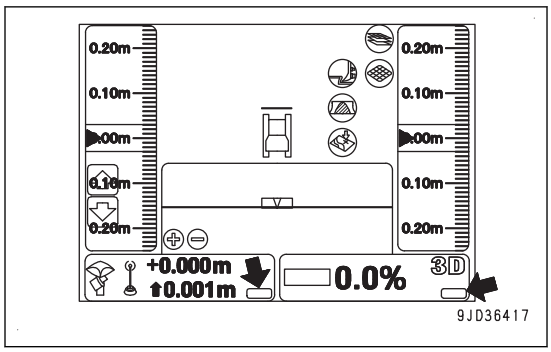




While the back grade mode indicator is displayed on the control box screen, you can control the dozing in forward travel by setting the joystick (steering, directional and gear shift lever) to FORWARD position (F). You can perform the back grade work by setting the lever to REVERSE position (R).



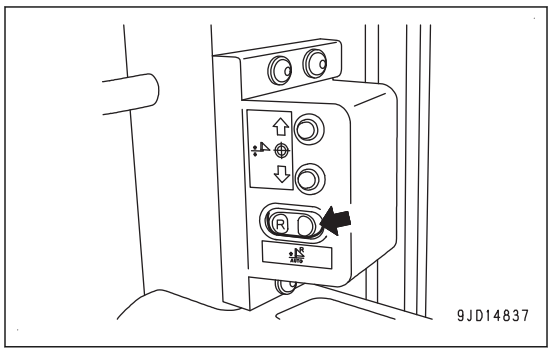
While the blade automatic control is OFF (“AUTO” is not displayed on the control box screen), even if you press the back grade mode switch, it does not work.



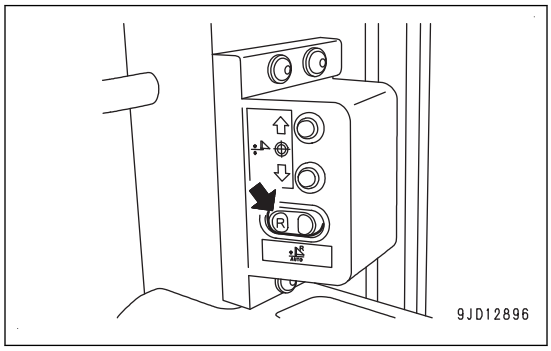
When turning off the back grade mode

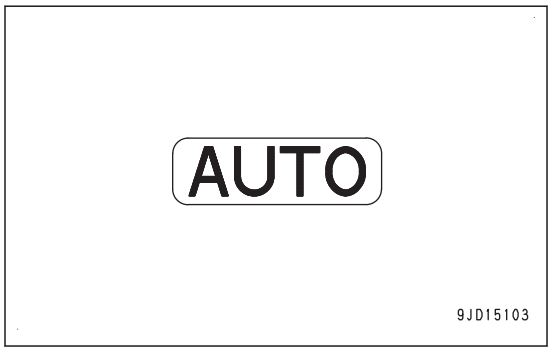
Press the back grade mode switch once while the back grade mode is turned on.

After the buzzer sounds “peep” once, the back grade mode is turned off.

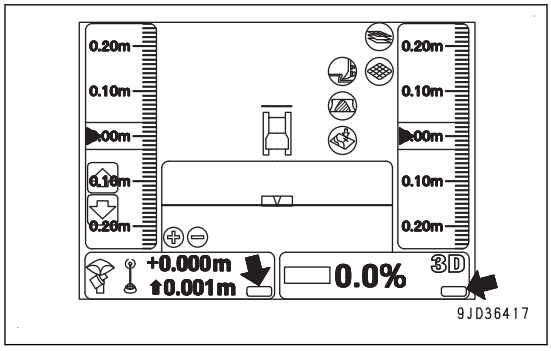


When the back grade mode is turned off, LED of the back grade mode switch goes out, and the back grade mode indicator on the control box screen goes out as well.





While the back grade mode is turned on, if the blade automatic control is turned off (“AUTO” on control box screen goes out), the back grade mode is automatically turned off.



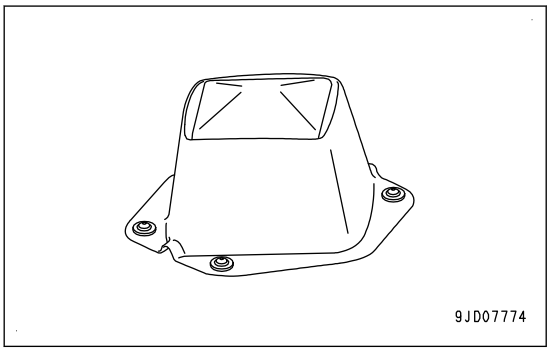
While the back grade mode is turned on, you can perform leveling work even in reverse travel since the blade automatic control also operates in reverse travel similarly to in forward travel.

GNSS ANTENNA

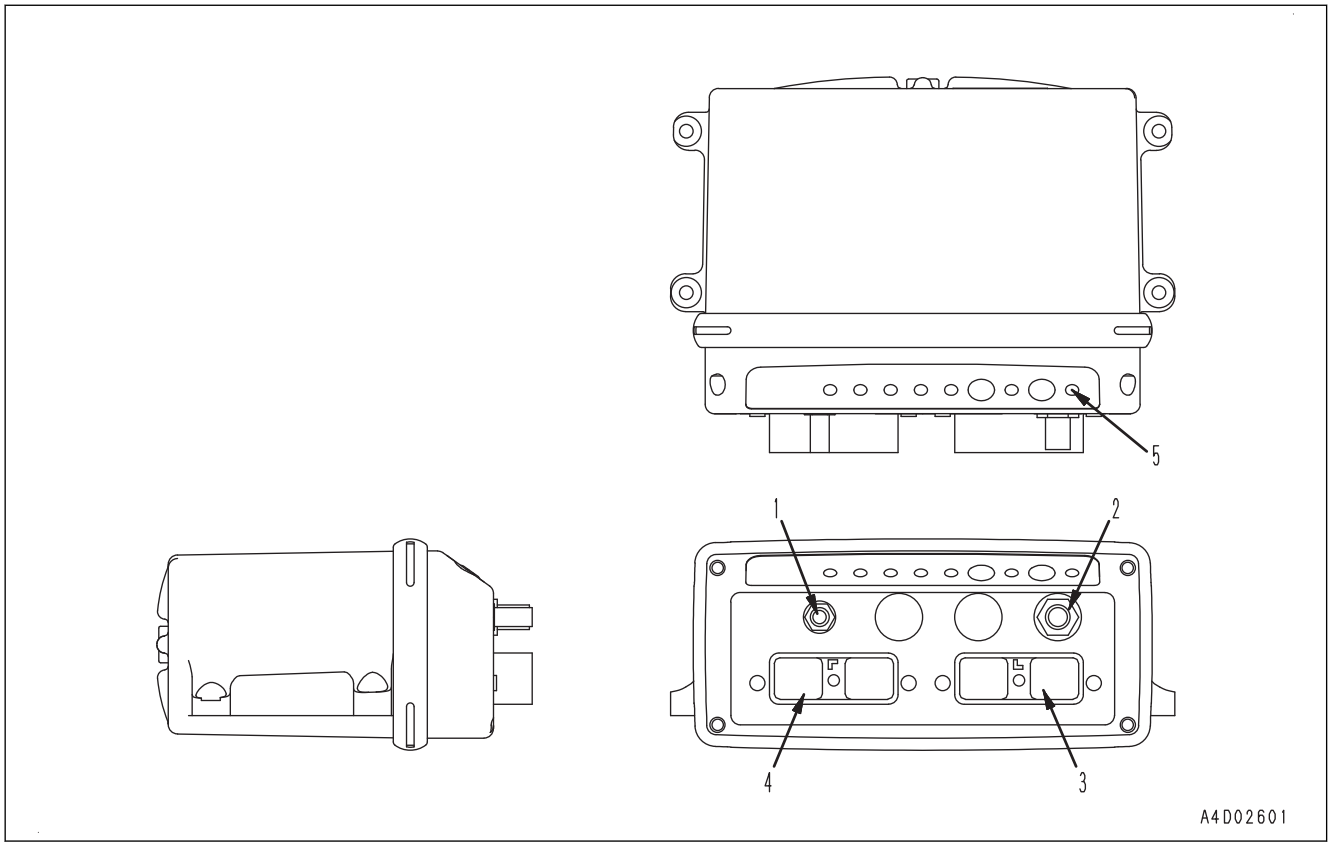
⚠ WARNING

- **Cable connector of the GNSS antenna is looseness-free structure. Check is not needed.**
- **If the GNSS antenna contacts with obstacles during operation or traveling, and it has to be checked and replaced, ask your Komatsu distributor.**
- **There is a danger of falling or tipping over that can lead to serious personal injury or death. Do not get on the cab to check the GNSS antenna.**

GNSS antenna is the device to receive the radio waves from the GNSS satellite.



GNSS RECEIVER



(1) Radio antenna connecting point (only when radio device is built-in)

(2) GNSS antenna connecting point

(3) Machine body harness connecting point (DRC26-40P(A))

(4) Machine body harness connecting point (DRC26-40P(B))

(5) GNSS satellite capturing display LED

GNSS satellite capturing display LED (5) indicates the number of GNSS satellites by color and number of flashes.

- Number flashes in green: Number of captured GPS
- Number flashes in orange: Number of captured GLONASS

GNSS receiver has the following functions.

- Receives GNSS position information from GNSS satellite through GNSS antenna, and processes it.
- Receives the correction information of GNSS position from the base station through the radio antenna, and processes it.
- Receives the network signals in the machine and information from the input signals, and processes them.
- Calculates the coordinate information necessary for the blade automatic control from the received information, and outputs it.

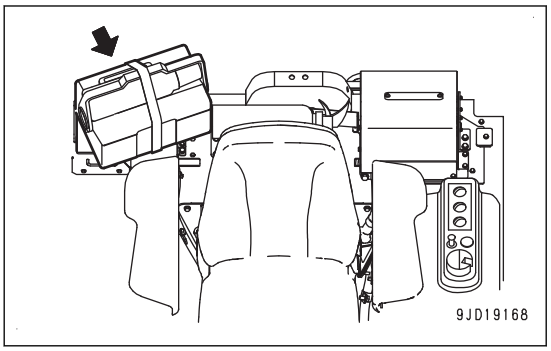
OTHER EQUIPMENT

LUNCH BOX FIXING BELT

This is the place for lunch box.

Fix the lunch box with belt.

This can be used for other things than lunch box. Make efficient use of this.



MACHINE OPERATIONS AND CONTROLS

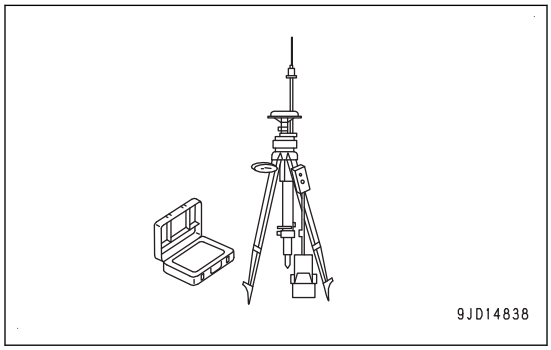
CHECKS AND ADJUSTMENT BEFORE STARTING ENGINE

Before starting the automatic control of the blade, perform the same walk-around checks, checks before starting (start-up inspection) and adjustment as of standard machine.

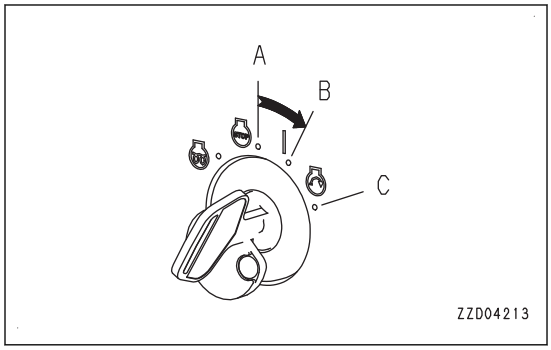
For the method of checks and adjustment, see the Operation and Maintenance Manual for standard machine.

1. Set the base station and turn on the power supply.

   For details of handling the base station, see the instruction manual of the base station.

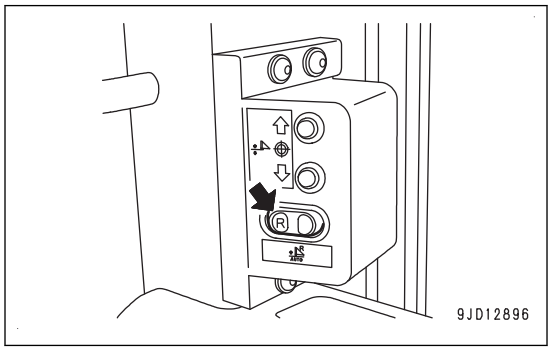


2. Turn the starting switch to ON position (B).



Check that LED of the back grade mode switch lights up for 3 seconds when turning the starting switch to ON position.

If it does not light up, it may be defective such as open circuit.
Ask your Komatsu distributor for repair.

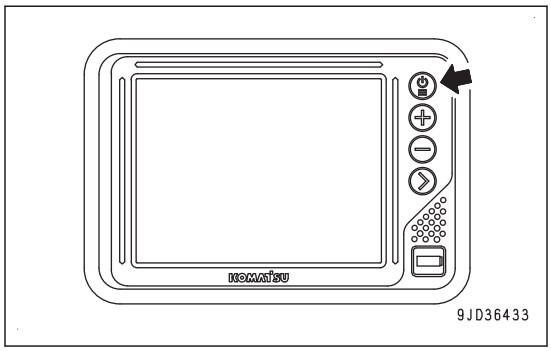


3. Hold down the power ON/OFF and menu switch to turn on the control box power.

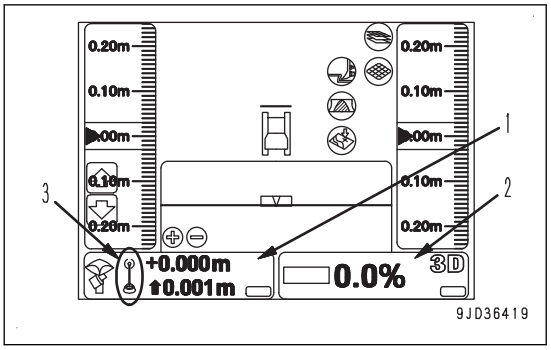
   REMARK

   If the control box starts operation on the slope of which pitching angle (inclination in front or rear) or rolling angle (inclination in right or left) is 20 ° or more, accuracy of it may deteriorate.

   Start the control box on a level place.



4. Check that Windows® operating system starts and the main screen is displayed on the control box.
5. Check the color of “elevation control key” (1) or “slope control key” (2).
   - If it is red, there is abnormality.
     Check the displayed message and take necessary actions. For details see “ACTIONS WHEN MESSAGE IS DISPLAYED ON CONTROL BOX”.
   - If it is green, there is no abnormality.



- It takes approximately 2 minutes until the main window is displayed on the control box after the power ON/OFF and menu switch is held down.
- If “elevation control key” (1) is red and “Waiting to Initialize...” is continuously displayed, the antenna is not receiving enough radio waves from the GNSS satellite. Check that there are no obstacles around which shuts off the radio waves from the GNSS satellite.
- The number of GNSS satellites which can receive the radio waves always varies. Depending on the place or time zone, you have to wait until the condition to receive the radio waves becomes better.
  On the control box screen, you can check the number of satellites which is receiving the radio waves from the GNSS satellite and expected accuracy of positioning.
- If the x mark is displayed on “radio status” (3) and “elevation control key” (1) is red and “Waiting for radio link...” is displayed, the radio waves from the base station are weak or radio configuration is wrong. Configure the radio. For details, see “METHOD FOR CONFIGURING RADIOS”.
- If the starting switch is kept in OFF position (A), “slope control key” (2) is red and “Komatsu controller not connected!” is displayed. Turn the starting switch to ON position (B), check that “slope control key” (2) changes to green color, and proceed to the next step.
- When “slope control key” (2) is orange and “Heading Initializing” is displayed, there is not abnormality. If the machine is moved forward and reverse after the engine starts, “slope control key” (2) changes to green. Go to the next step.

OPERATIONS AND CHECKS AFTER STARTING ENGINE

Before starting the automatic control of the blade, perform the same operation and check after the engine has started as of the standard machine.

For the method of operation and check, see the Operation and Maintenance Manual for standard machine.

RESET CYLINDER STROKE END

⚠ WARNING

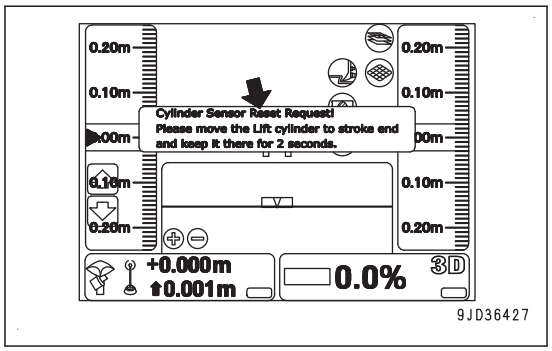
Before resetting the stroke end of each cylinder, check thoroughly if there is any person or obstacle in the area around the machine.

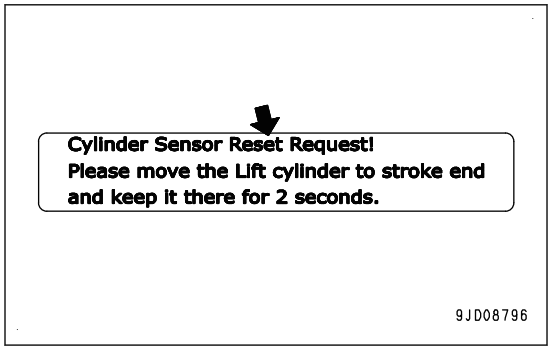
For this machine, the position of blade is obtained by the information from the stroke sensor installed on the cylinder.

Reset the stroke end of each cylinder not only immediately after starting the engine but also approximately twice a day in order to get accurate automatic control of blade.

- When the stroke end resetting operation has not been performed at all after the starting switch of the machine is turned to ON position
  The message of “Cylinder Sensor Reset Request!” is displayed on the control box screen.

  “Lift cylinder”, “Tilt cylinder”, or “Angle cylinder” is displayed in the message. Reset the stroke end of the displayed cylinder.





- When no message is displayed
  The resetting of the stroke end of every cylinder has been completed, so the resetting is no more necessary.

RESET LIFT CYLINDER STROKE END

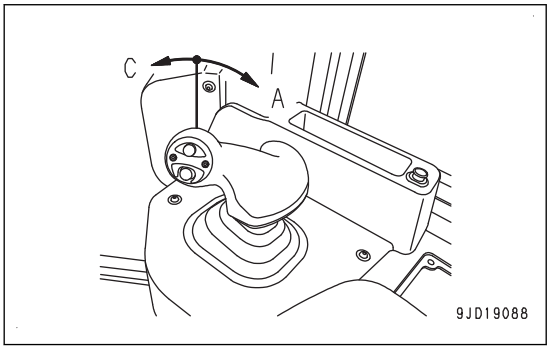
(If messages of “Cylinder Sensor Reset Request!” and “Lift Cylinder” are displayed)

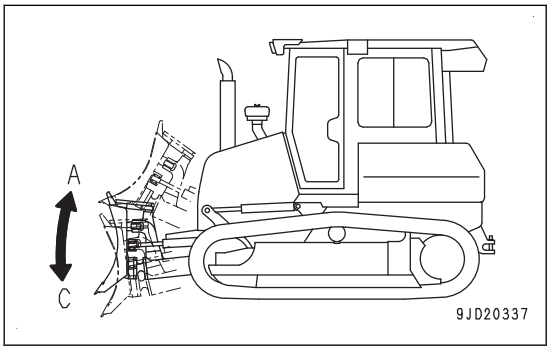
1. Place the blade control lever to RAISE position (A) to operate it to the stroke end, and then keep it for 2 seconds or more.
2. Check the message on the control box screen.

   When “Lift cylinder” changes to “Tilt cylinder” or “Angle cylinder” or when the message of “Reset cylinder!” goes out, resetting of the stroke end of lift cylinder is completed.

   REMARK

   - If the resetting of the stroke end of lift cylinder is not completed, lower the blade once, and repeat step 1 again.
     Move the cylinder to the stroke end at certain speed.
   - If the resetting of the stroke end of lift cylinder is not completed after several trials of step 1, place the blade control lever to LOWER position (C) to move the cylinder to the stroke end of LOWER side, and then keep it for 2 seconds or more.
     At this time, the machine will be raised, so be sure that the surroundings are safe before performing this operation.





RESET TILT CYLINDER STROKE END

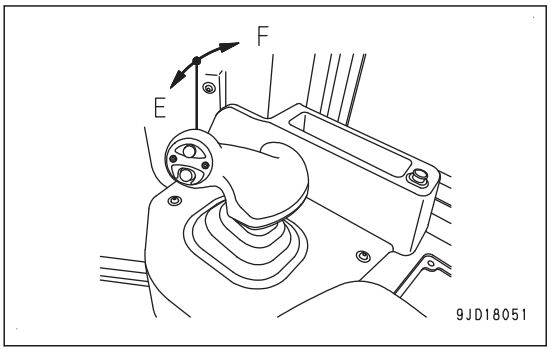
(If the messages of “Cylinder Sensor Reset Request!”, “Tilt cylinder” is displayed)

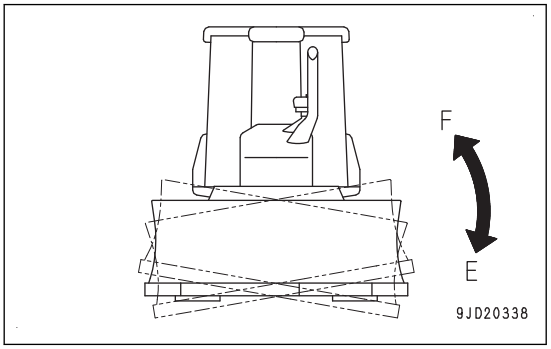
1. Raise the blade so that you can perform tilting operation.
2. Place the blade control lever to left TILT position (E) to operate it to the stroke end, and then keep it for 2 seconds or more.
3. Check the message on the control box screen.

   When “Tilt cylinder” changes to “Angle cylinder” or when the message of “Reset cylinder!” goes out, resetting of the stroke end of tilt cylinder is completed.

   REMARK

   - If the resetting of the stroke end of tilt cylinder is not completed, tilt RIGHT the blade once, and repeat step 2 again.
     Move the cylinder to the stroke end at certain speed.
   - If the resetting of the stroke end of tilt cylinder is not completed after several trials of step 2, place the blade control lever to tilt RIGHT position (F) to move the cylinder to the stroke end of tilt RIGHT side, and then keep as it is for 2 seconds or more.





RESET ANGLE CYLINDER STROKE END

(When message of “Cylinder Sensor Reset Request!”, “Angle cylinder” is displayed)

1. Raise the blade and tilt it LEFT.

   If the blade is not tilted LEFT, the resetting of the stroke end of angle cylinder cannot be done.

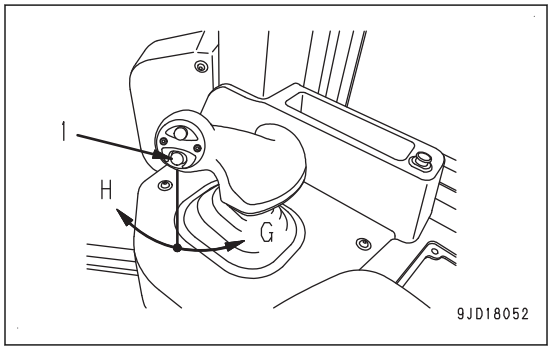
2. Place angle switch (1) to angle LEFT position (G) to move the cylinder to the stroke end, and then keep it as it is for 2 seconds or more.

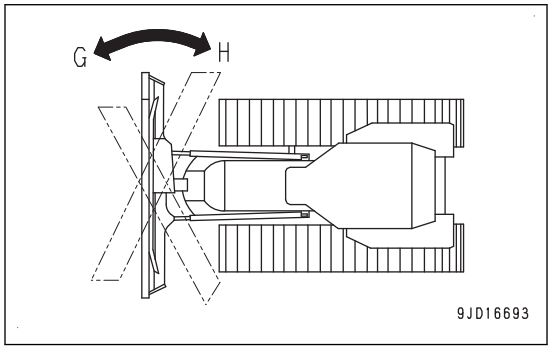
3. Check the message on the control box screen.

   When the message of “Cylinder Sensor Reset Request!” goes out, resetting of the stroke end of angle cylinder is completed.

   REMARK

   - If the resetting of the stroke end of angle cylinder is not completed, angle RIGHT the blade once, and repeat step 2 again.
     Move the cylinder to the stroke end at certain speed.
   - If the resetting of the stroke end of angle cylinder is not completed after several trials of step 2, place angle switch (1) to angle RIGHT position (H) to move the cylinder to the stroke end of angle RIGHT side, and then keep as it is for 2 seconds or more.
   - Depending on the length of the pitch rod, resetting of the stroke end of angle cylinder is only possible for either angle LEFT or angle RIGHT.



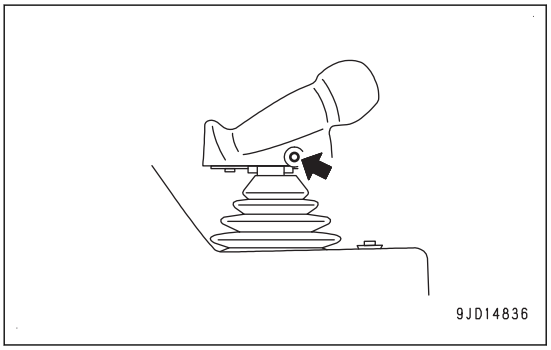


METHOD FOR STOPPING ENGINE

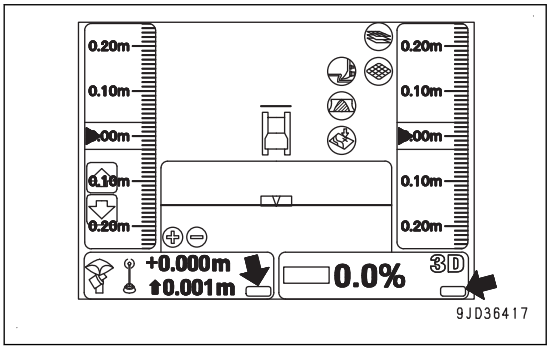
NOTICE

The power supply of the control box is not linked with the starting switch of the machine. After finishing the operation, hold down the power ON/OFF and menu switch of control box separately from the starting switch in order to turn off the control box power .
If the power supply of control box is not turned off, the batteries may be exhausted.

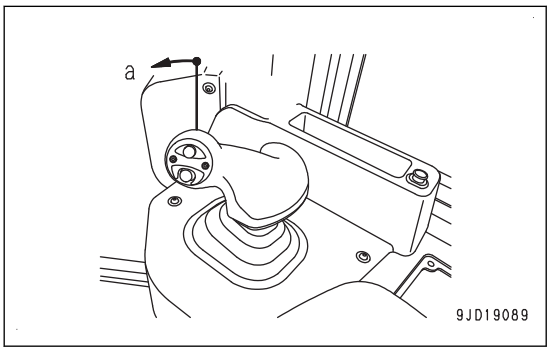
1. Press Auto/Manual switch once to turn off the blade automatic control.



2. Check that “AUTO” on the control box screen goes out.



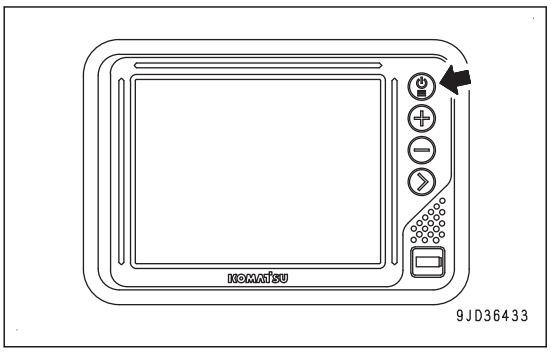
3. Set the blade control lever to LOWER position (a) and lower the blade to the ground.



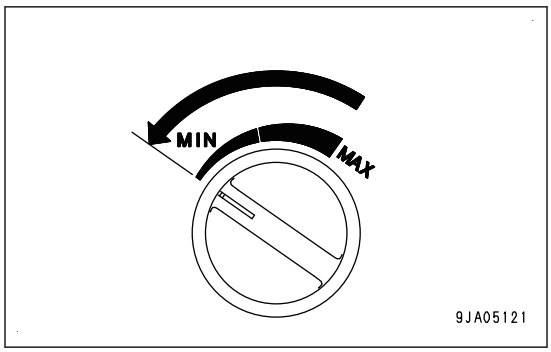
4. Hold down the power ON/OFF and menu switch to turn off the control box power.

   REMARK

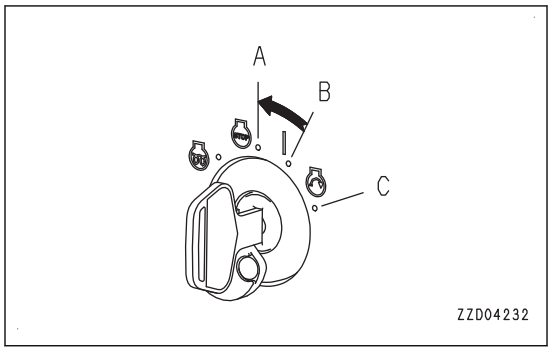
   It takes approximately 2 minutes until the software is finished and Windows® operating system shuts down after the power ON/OFF and menu switch is held down.
   During this time, you can turn the starting switch of the machine to OFF position, proceed to the following step.



5. Set the fuel control dial to Low idle (MIN) position and run the engine at low idle for approximately 5 minutes.
   The engine is cooled gradually.



6. Turn the starting switch to OFF position (A).
   The engine will stop.
7. Remove the starting switch key.



METHOD FOR USING AUTOMATIC BLADE CONTROL

PREPARATIONS FOR BLADE AUTOMATIC CONTROL

Before starting the blade automatic control, prepare or set the following.

Preparations in conformity to each site condition

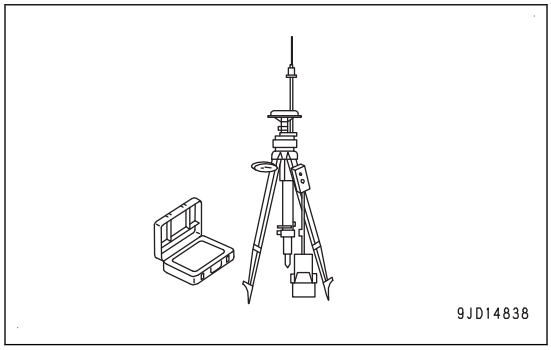
- Set base station
- Method for configuring radios
- Project file setting
- Input pitching rod length
- Method for inputting wear amount of blade edge and track shoe
- Set base point for checking blade elevation

Checks before starting

- Reset cylinder stroke end
- Check blade elevation, adjust
- Select active file

PREPARATIONS IN CONFORMITY TO EACH SITE CONDITION

SET BASE STATION



The base station communicates with the machine by using radio.

For the setting place of the base station, select such place that there is no obstacle between the base station and jobsite so that the radio signal can reach.

Also select setting place where has already been measured and its coordinate has been determined.

For the usable base station, consult your Komatsu distributor in advance.

For details of handling the base station, see the instruction manual of the base station.

METHOD FOR CONFIGURING RADIOS

Set the radio of control box matching with the radio setting of the base station.

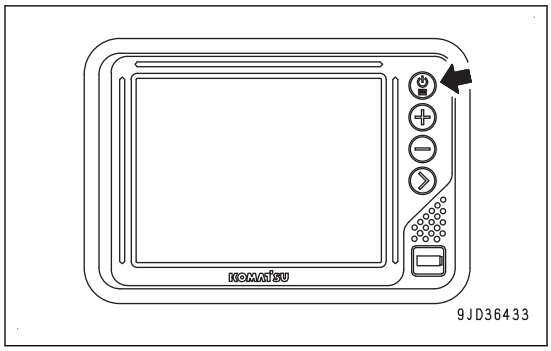
Resetting is not necessary unless the setting of the base station is changed.

REMARK

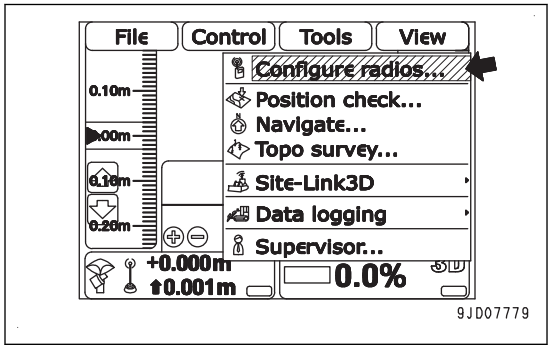
There are 2 specifications for the radio, “Topcon Digital 2 (UHF)” and “Topcon FH915 (SS)”. Which specification can be used for the radio depends on the radio board in the GNSS receiver installed on the machine.
If the radio specification of radio board is different from the radio specification of the base station, the radio cannot be used. To use the radio, the radio board in the radio transmitter of the base station or that in GNSS receiver must be replaced. Consult your Komatsu distributor.

1. Set the base station and turn on the power supply.
2. Hold down the power ON/OFF and menu switch to turn on the control box power.

   Starting switch of the machine can be turned off.



3. Press the power ON/OFF and menu switch again to display the main window.
4. On “Tools” menu, press “Configure radios...” and select.



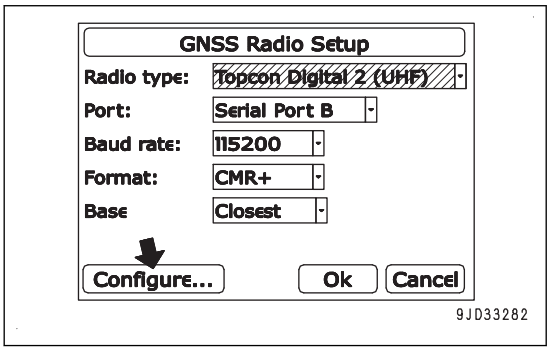
“GNSS Radio Setup” screen is displayed.
The displayed screen varies depending on the radio specification of GNSS receiver.

5. Check if it matches with the radio specification of the base station to be used, and press “Configure...”.

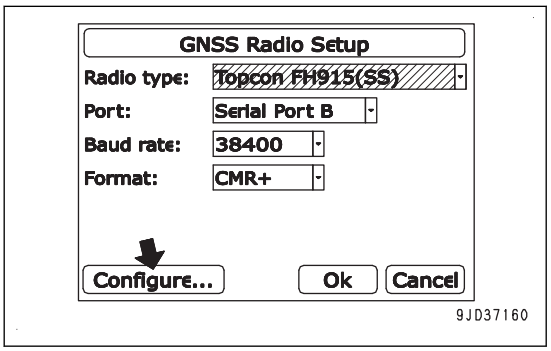
REMARK

Following figures are examples of the setting. Details of the setting are different by the radio board specification in GNSS receiver.
Consult your Komatsu distributor.

(For Topcon Digital 2 (UHF))



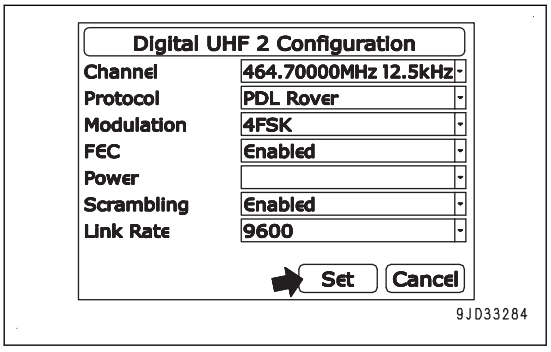
(For Topcon FH915 (SS))



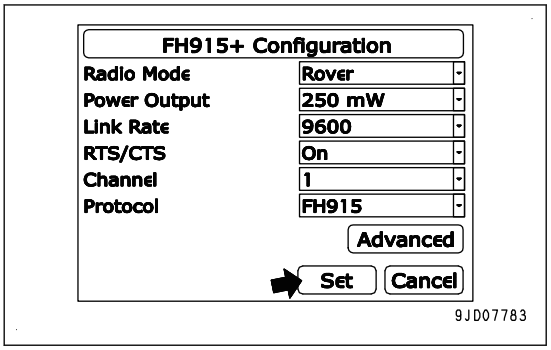
After a while, following screen is displayed.

6. Select each item matching with the radio setting of the base station to be used, and press “Set”.

(For Topcon Digital 2 (UHF))

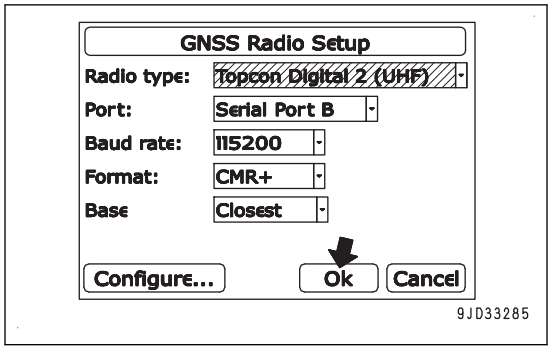


(For Topcon FH915 (SS))

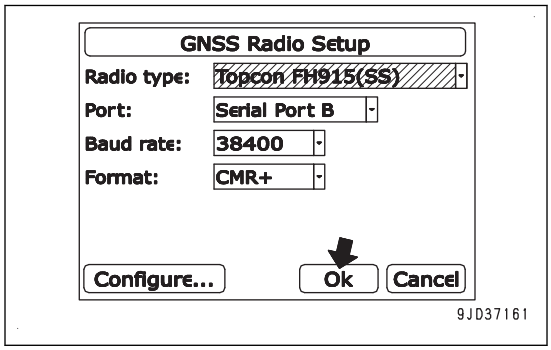


7. After “GNSS Radio Setup” screen is displayed, press “Ok”.

(For Topcon Digital 2 (UHF))

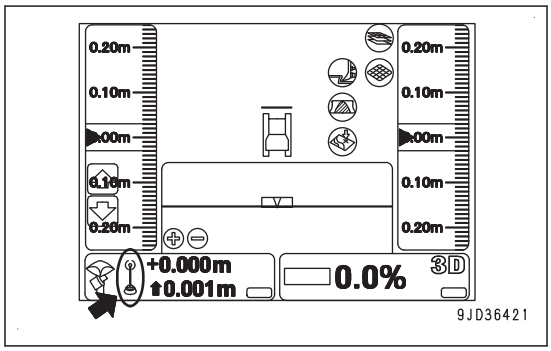


(For Topcon FH915 (SS))



8. Check that mark "x" of “radio status” of “elevation control key” goes out and the message of “Waiting for radio link...” is not displayed.

   The radio wave from the base station is received.



While using Topcon Digital 2 (UHF), the radio from the base station cannot be received in some case even if the setting is correct.

In such case, set “Channel” to the different frequency once in step 6, and set it to the correct frequency again.

PROJECT FILE SETTING

Project file is necessary to use the blade automatic control function.

Project file contains the data necessary for the work with “intelligent Machine Control” such as the design surface, control point, etc.

Project file is created on a personal computer by using 3D-Office software.

3D-Office which is provided by Topcon Co. Ltd., is the machine control supporting software for a personal computer. For details, see the operation and maintenance manual for 3D-Office.

For setting of the project file, see “PROJECT FILES”.

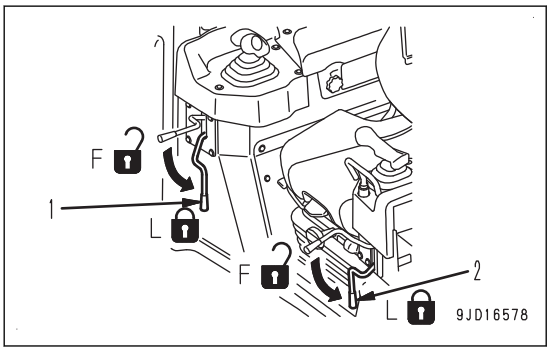
INPUT PITCHING ROD LENGTH

The length of pitching rod must be inputted when the blade edge has been adjusted. Measure the length of pitching rod and input it.

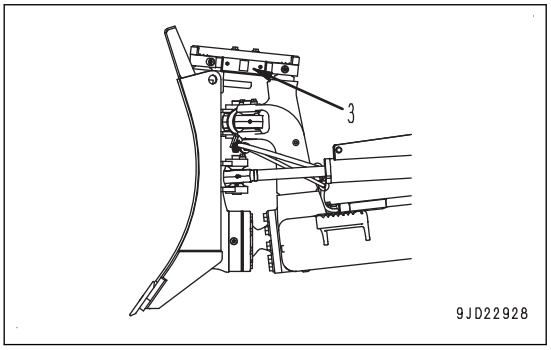
Finishing accuracy of the blade automatic control is decreased if the machine is operated with the pitching rod of wrong length.

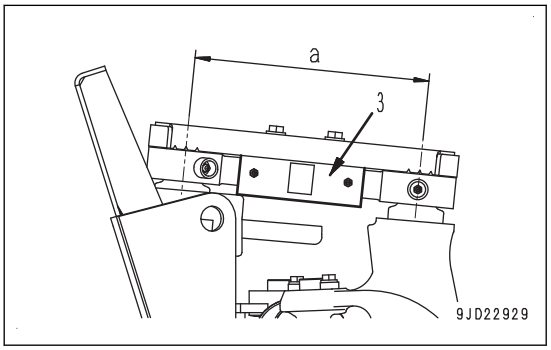
For the adjusting method of the blade edge angle, see Operation and Maintenance Manual for the standard machine, “OPERATION”, “METHOD FOR ADJUSTING WORK EQUIPMENT”.

1. Stop the machine on a level place.
2. Lower the blade to the ground.
3. Operate the work equipment lock lever (1) and parking brake lever (2) by holding the operating portions on the top, place the levers in LOCK position (L).
4. Stop the engine.



5. Measure the distance (a) between joints of pitching rod (3).



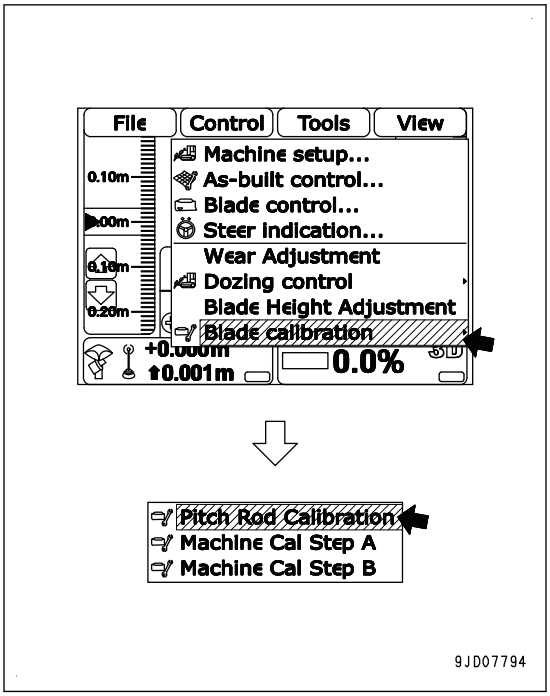


6. Turn on the power supply of the control box.

   It does not matter if power supply of the base station and starting switch of the machine are turned off.

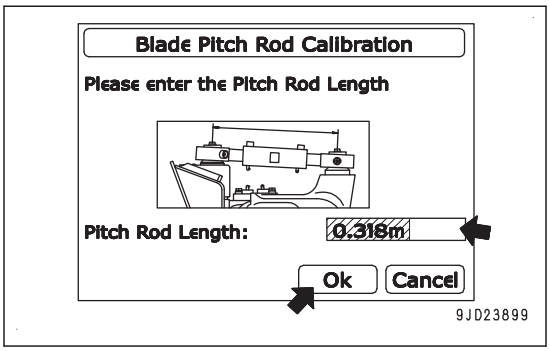
7. Press the power ON/OFF and menu switch to display the main menu.

8. Press “Blade calibration” and “Pitch Rod Calibration” in order on the “Control” menu.



9. Press “Pitch Rod Length:” input portion, and input the measured length on the “Blade Pitch Rod Calibration” screen.

10. Press “Ok”.

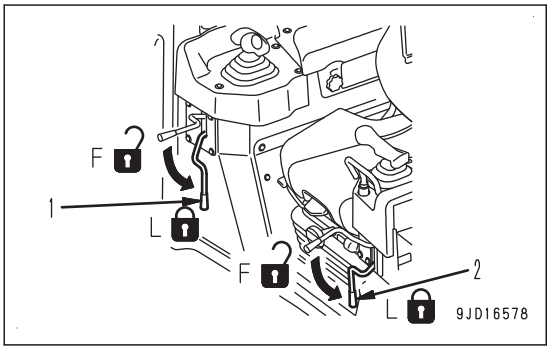


METHOD FOR INPUTTING WEAR AMOUNT OF BLADE EDGE AND TRACK SHOE

As the cutting edge of blade, track roller or track link wears, finishing accuracy of the blade automatic control deteriorates and the current ground display has an error. Measure the wear amount and input it to correct this error.

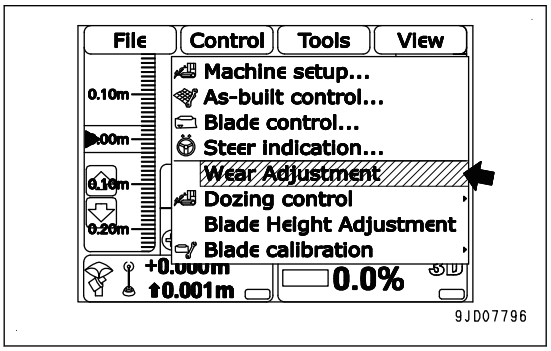
When these parts wear or they are replaced with new ones, wear amount should be inputted. Measure the wear amount and input it.

1. Stop the machine on a level place.
2. Lower the blade to the ground.
3. Operate the work equipment lock lever (1) and parking brake lever (2) by holding the operating portions on the top, place the levers in LOCK position (L).
4. Stop the engine.

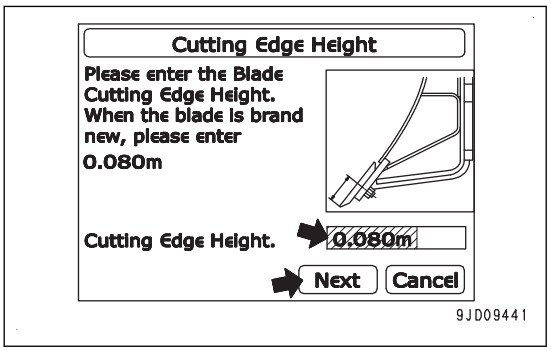


5. Turn on the power supply of the control box.

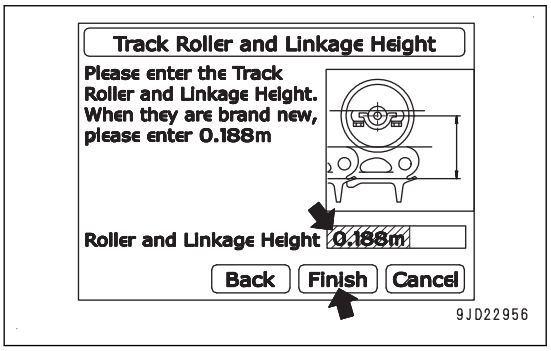
   It does not matter if power supply of the base station and starting switch of the machine are turned off.
6. Press the power ON/OFF and menu switch to display the main menu.
7. Press “Wear Adjustment” in “Control” menu, and select.



8. Measure the length from the tip of cutting edge to the center of mounting bolt.
9. On “Cutting Edge Height” screen, press “Cutting Edge Height” input portion and input the measured length.
10. Press “Next”.
    - When the cutting edge is new, the length is 0.080 m {3.1 in} .
    - If you do not change the wear amount of cutting edge, press “Next”.



11. Measure the length from the top of track shoe to the center of track roller.
12. On “Track Roller and Linkage Height” screen, press “Roller and Linkage Height” input portion and input the measured length.
13. Press “Finish”.
    - When the track roller and track shoe are new, the value will be as follows.



Machine model	(m { in})
D37EXI D37PXI	0.188 {7.4}
D39EXI D39PXI	0.196 {7.7}

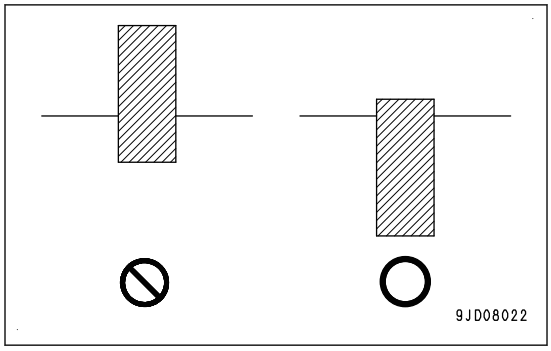
- If you do not change the wear amount of track roller and track shoe, press “Finish”.

SET BASE POINT FOR CHECKING BLADE ELEVATION

Set the base point for checking the blade elevation near the jobsite, and measure its accurate elevation in advance.

Set the base point with not floating from the ground in wide and flat place so that you can check the blade elevation of leveled machine with standard posture.

The standard posture denotes that the blade edge is the same height of the ground where the track contacts.



CHECKS BEFORE STARTING

RESET CYLINDER STROKE END

For detail, see “RESET CYLINDER STROKE END”.

CHECK BLADE ELEVATION, ADJUST

For the automatic control of the blade, the position information of GNSS satellite is used. The position information of GNSS satellite contains the error, and the height varies up and down depending on the day or time.

In order to minimize the deterioration of finishing accuracy by the error, check and adjust the blade elevation at least once a day before starting operation.

CHECK BLADE ELEVATION

1. Set the base station and turn on the power supply.
2. Turn on the power supply of the control box.
3. Start the engine.
4. Move the machine to a base point, the elevation of which is known.
5. Perform the stroke end resetting operation of the blade.

   For details, see “RESET CYLINDER STROKE END”.
6. Make the tilted or angled blade straight.
7. Raise the blade higher than the base point, approach the base point straight, and stop the machine.
8. Set the joystick (steering, directional and gear shift lever) to NEUTRAL position.

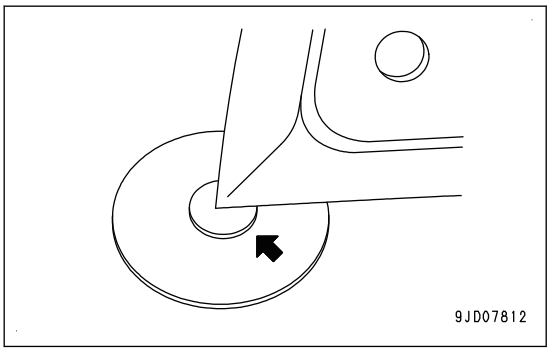
   REMARK

   If you turn the machine (counter-rotation turn in particular), the directional error becomes large and the accurate measurement cannot be obtained. When you turned the machine to correct the direction, drive the machine in reverse once for approximately 5 m {16 ft 5 in}, and then drive straight forward.
9. Lower the blade to match the either end of blade at right or left side with the base point.

   Stop the blade just before it touches to the ground and the base point, and do not lower the blade to the ground.

   REMARK

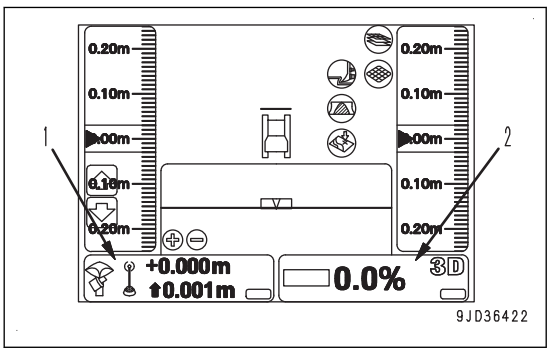
   The setting place of the base point should be determined in advance so that the machine is leveled with standard posture.
   The standard posture denotes that the blade edge is the same height of the ground where the track contacts.



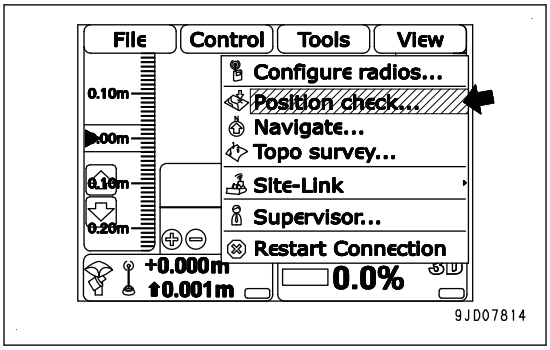
10. Check that “elevation control key” (1) and “slope control key” (2) are green and the machine direction on the control box screen is the same as the actual machine direction.

    If “Heading Initializing” is displayed, repeat the procedure from step 7.

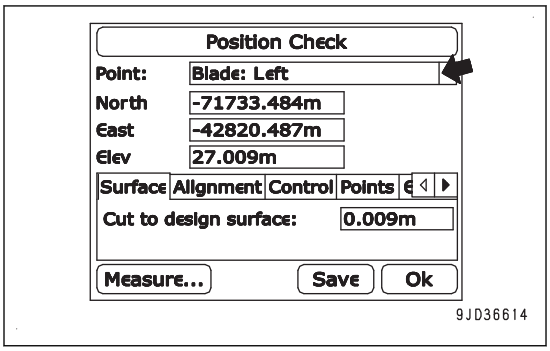
    Even if the machine is out of the design surface and “Out of design!” is displayed, it is not a trouble.



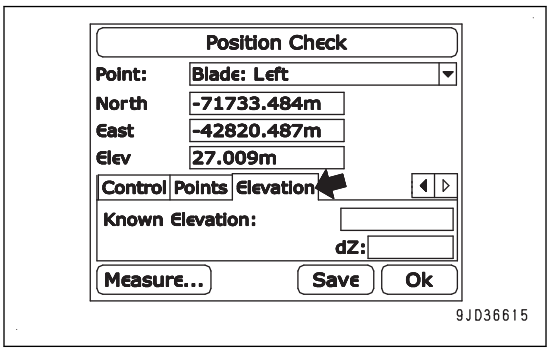
11. Press the power ON/OFF and menu switch to display the main menu.
12. On “Tools” menu, press “Position check...” and select.



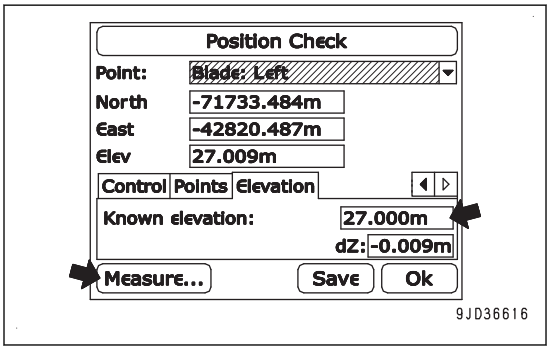
13. Select the position of blade matched with the base point on “Position check...” screen.
    - When matched with the left blade edge: “Blade: Left”
    - When matched with the right blade edge: “Blade: Right”



14. Press “Elevation” tab and select.

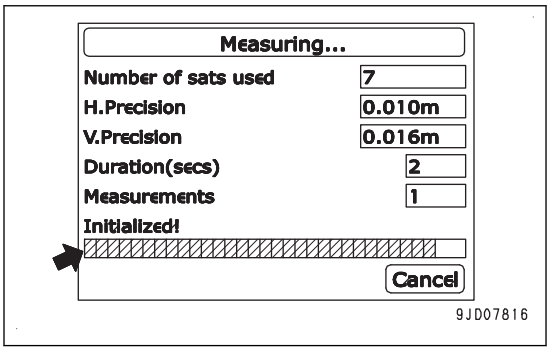


15. Press the input section of “Known elevation:” and input the elevation of the base point.
16. Press “Measure...”.



The screen shown on the right is displayed.

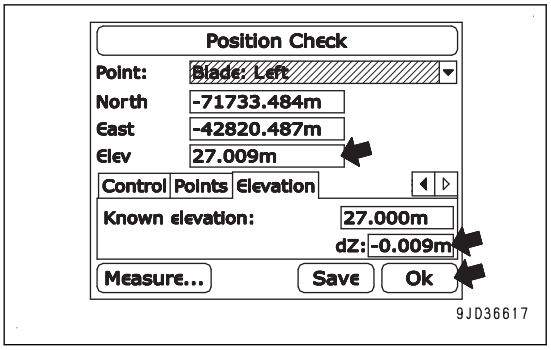
When the bar at the bottom of the screen reaches the right end, screen returns to “Position Check” screen.



The altitude that the machine recognizes is displayed in "Elev". The difference between above altitude and the altitude of the base point that is inputted in "Known elevation:" is displayed in "dZ".

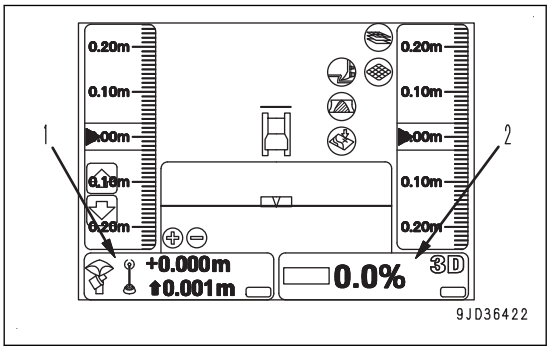
17. Check the difference between the altitude that the machine recognizes and the altitude of the base point, and press "Ok".

    The screen returns to the main window.



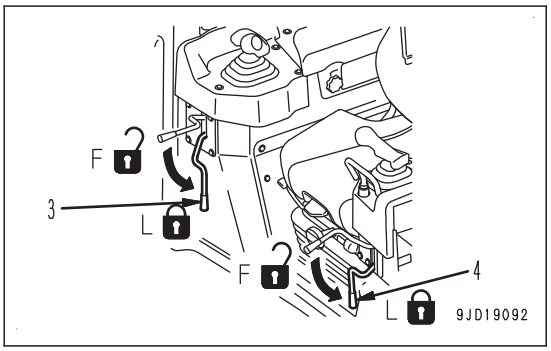
18. Check that "elevation control key" (1) and "slope control key" (2) are green and the machine direction on the control box screen is the same as the actual machine direction.

    If the machine direction on the control box screen does not match with the actual machine direction, repeat the procedure from step 7.

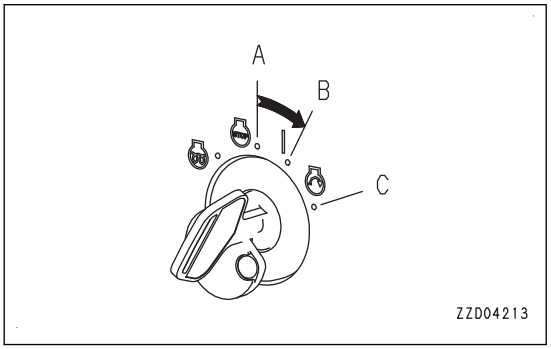


19. Operate the work equipment lock lever (3) and parking brake lever (4) by holding the operating portions on the top, place the levers in LOCK position (L)
20. Stop the engine.

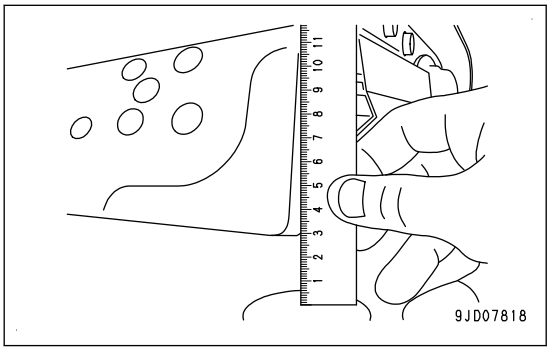
    At this time, do not turn off the control box power supply.



21. After the engine stops, turn the starting switch to ON position (B) again.



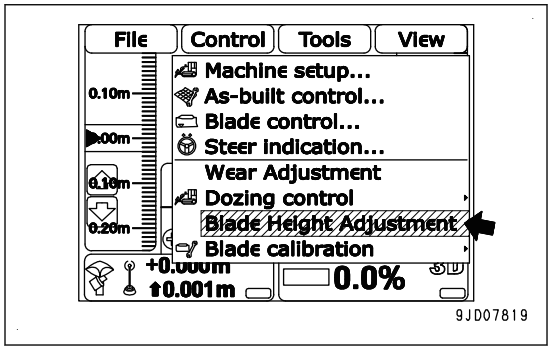
22. Measure the height from the base point to the blade edge, add the altitude of the base point to the value, and check that the obtained value is matched with the altitude that the machine recognizes at step 17.



ADJUST BLADE ELEVATION

When checking the blade elevation, if the elevation recognized by the machine does not match with the sum of the base point elevation and the height of blade edge from the base point, adjust the blade elevation.

1. Press the power ON/OFF and menu switch to display the main menu.
2. Press “Blade Height Adjustment” in “Control” menu, and select.



3. On “Blade Height Adjustment” screen, check the blade elevation adjustment value before adjustment, and calculate compensation value (a) to input.

   (a) = (b) + (c) + (d)

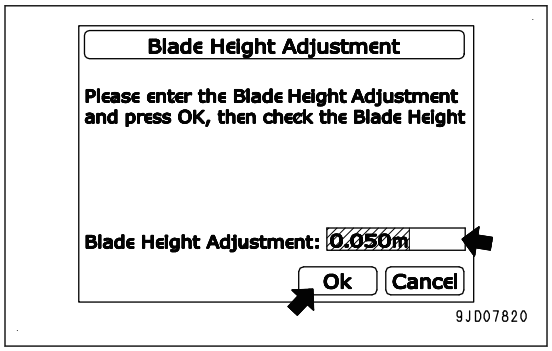
   (b) Difference between the altitude that the machine recognizes and the altitude of the base point (the value displayed in “dZ”)

   (c) Height from the base point to blade edge

   (d) Blade elevation adjustment value before adjustment
4. Input calculated compensation value (a) and press “Ok”.
5. Perform check the blade elevation again.

   If there is no error, start the work.

   If you find any error, adjust the blade elevation again.



REMARK

If there is dispersion on compensation value (a), repeat the calculation of compensation value for 5 to 10 times and use their average value.

SELECT ACTIVE FILE

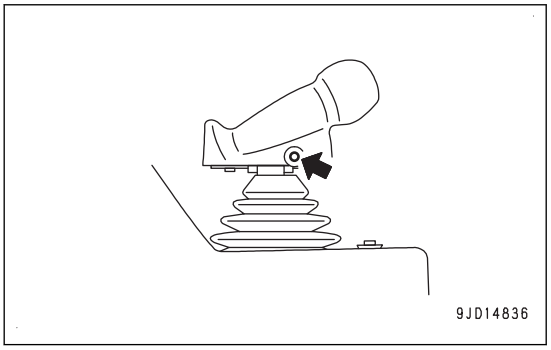
Before starting the automatic control of blade, select the design surface to use.

For the method of selecting the design surface, see “ACTIVE FILE”.

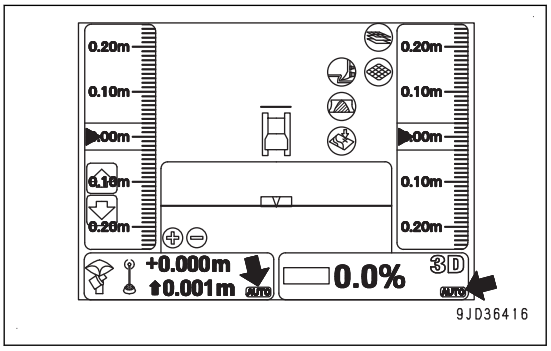
HANDLE AUTOMATIC BLADE CONTROL

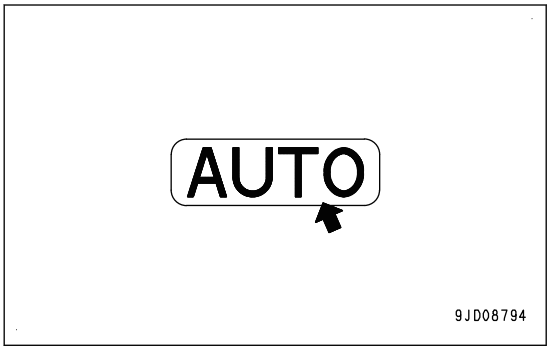
METHOD FOR ACTIVATING AUTOMATIC BLADE CONTROL

1. Press Auto/Manual switch to turn off the blade automatic control.



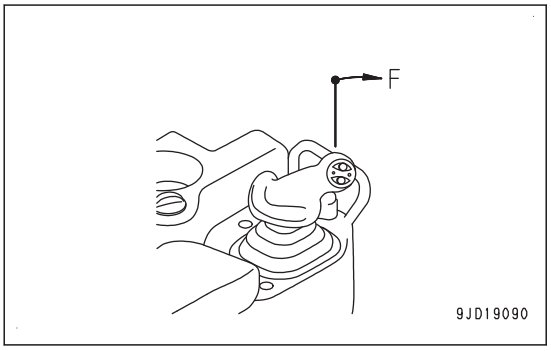
When the blade automatic control is turned on, “AUTO” is displayed on the control box screen.





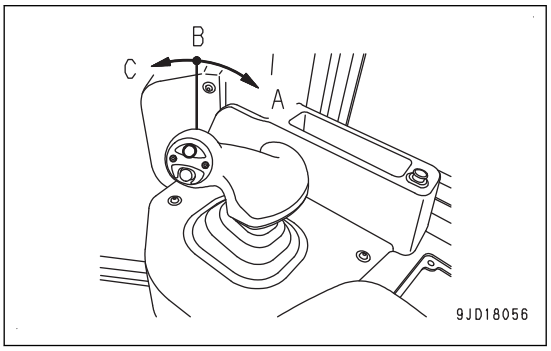
2. Set the joystick (steering, directional and gear shift lever) to FORWARD position (F).
3. Perform LOWER trigger operation.

   Perform this when the blade edge is higher than the design surface and height of the ground where the track contacts. In this case, the blade automatic control starts only after LOWER trigger operation.



   1) Move the blade control lever to LOWER direction (C) once and return it to NEUTRAL position (B).

      The blade automatically lowers to the design surface or height of the ground where the track contacts.



REMARK

- Operator does not need to keep the lever at LOWER position until the blade reaches to the design surface.
- While the machine is traveling or stopped, the blade automatically lowers with LOWER trigger operation.
  Move the blade control lever to RAISE direction (A) to cancel the blade automatic control.
- If LOWER trigger operation is performed quickly, the blade control lever may vibrate and may be set in RAISE direction (A) and LOWER direction (C) repetitively, and the work equipment may hunt.
  If the blade control lever vibrates, hold it with your hand to prevent vibration.

4. Drive the machine.

   The blade automatic control starts.

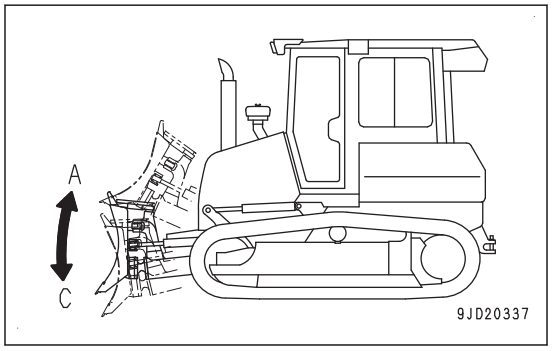
ACTIONS WHEN AUTOMATIC BLADE CONTROL IS ACTIVATED

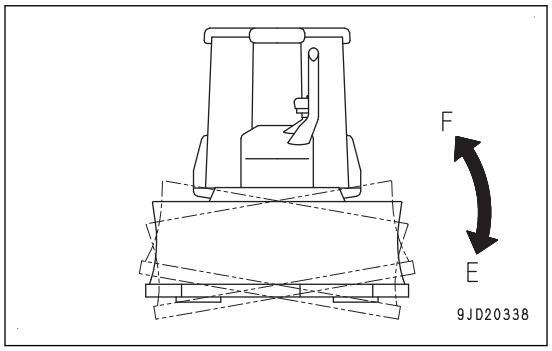
While the blade automatic control is in operation, the blade automatically moves to lifting direction (A) and (C) and to tilting direction (E) and (F) even if the blade control lever is kept in NEUTRAL position.

Blade moves as such that the blade edge moves along the preset design surface.

REMARK

When the design surface is located lower than the current ground level, the blade will cut the soil.
When the design surface is located higher than the current ground level, the blade will dump the soil holding in it to the ground.
With these 2 operations, you can easily build a ground surface as designed.





When the load to blade increases, the blade is automatically raised to keep the constant targeted load by adjusting lifting amount, before the machine becomes impossible to travel forward.

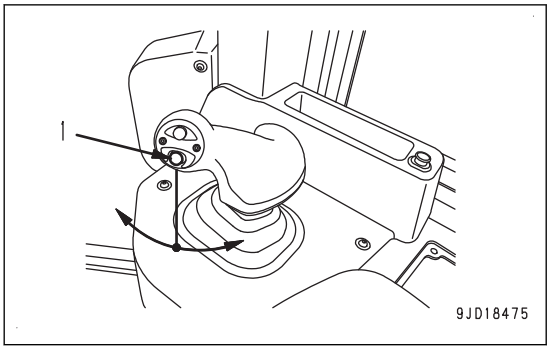
REMARK

If some places higher than the design surface are left, drive the machine in reverse, and drive it on that place several times so that such places can be built as designed.

The blade moves as operated by the operator if the operator operates blade control lever while the blade automatic control is in operation.

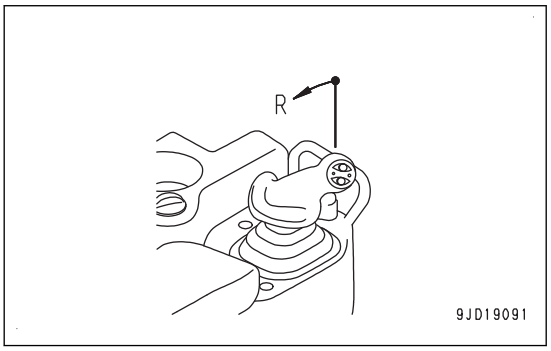
When the operator stops lever operation and return the lever to NEUTRAL position, the blade automatic control restarts.

Operation of angle switch (1) is independent from the blade automatic control. While the blade automatic control is in operation, operator can angle the blade to change the dumping direction of soil.



METHOD FOR OPERATING TO TRAVEL REVERSE WHILE USING AUTOMATIC BLADE CONTROL

1. Set the joystick (steering, directional and gear shift lever) to REVERSE position (R).

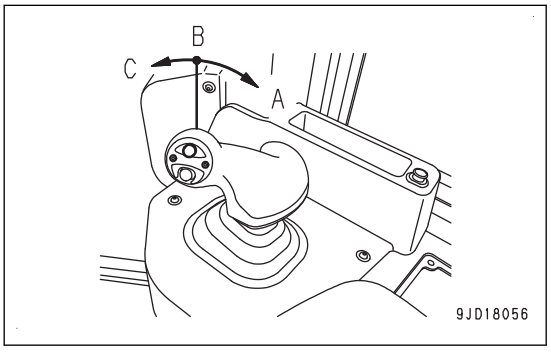


2. Perform RAISE trigger operation.
   1) Move the blade control lever to RAISE direction (A) once and return it to NEUTRAL position (B).

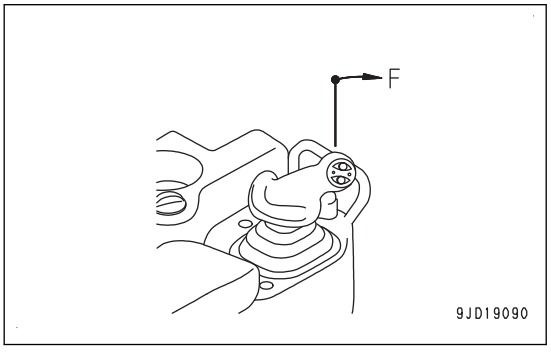
      The blade automatically rises to the certain height.

      REMARK

      - While the machine is traveling or stopped, the blade automatically rises with RAISE trigger operation. Move the blade control lever to LOWER direction (C) to cancel it.
      - When the back grade mode is turned on, even if RAISE trigger operation is performed, the blade does not raise to specific height automatically.

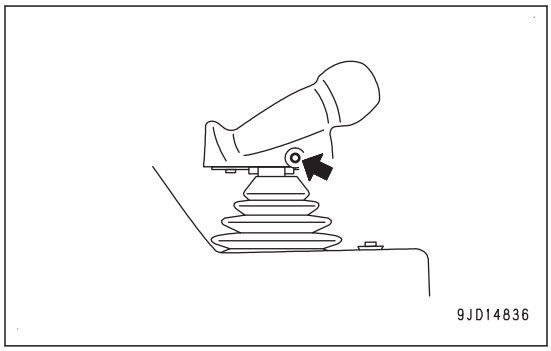


3. Drive the machine in reverse to a place where the blade automatic control starts again.
4. Place the joystick (steering, directional and gear shift lever) in FORWARD position (F), and perform LOWER trigger operation.

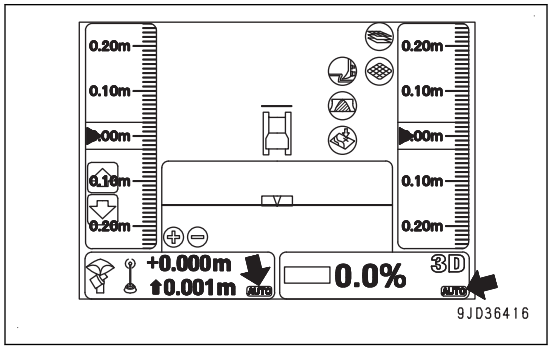


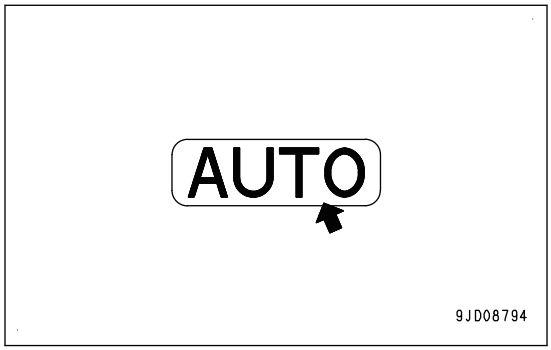
HANDLE BACK GRADE MODE

1. Press Auto/Manual switch to turn off the blade automatic control.



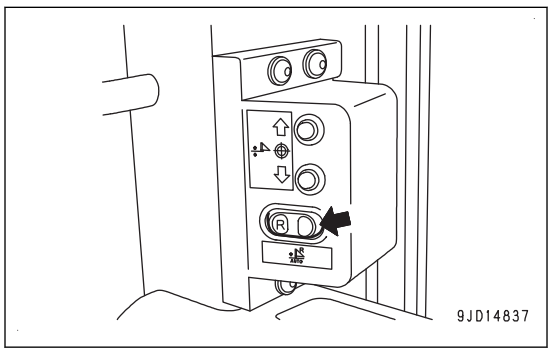
When the blade automatic control is turned on, “AUTO” is displayed on the control box screen.



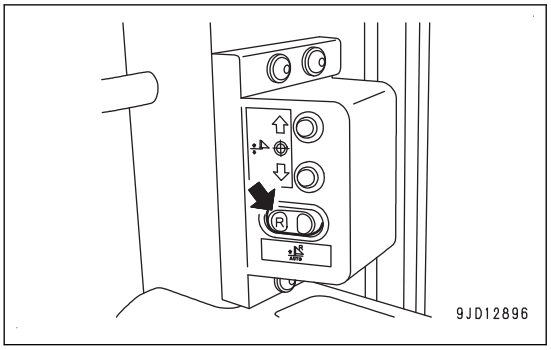


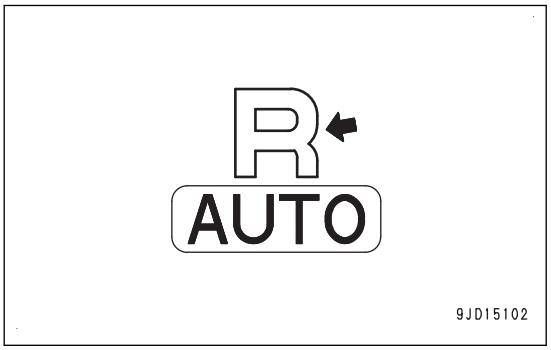
2. Press the back grade mode switch once.

   After the buzzer sounds “peep” twice, the back grade mode is turned on.



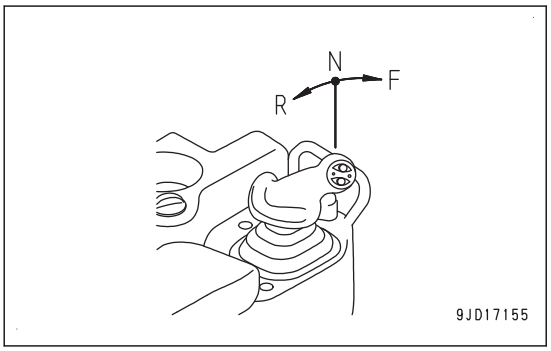
LED of the back grade mode switch lights up, and the back grade mode indicator is displayed at the top of “AUTO” on the control box screen.





While the back grade mode is turned on, when the joystick (steering, directional and gear shift lever) is set to reverse position (R), the blade automatic control operates as well similarly to when the lever is set to FORWARD position (F).

- Blade automatic control starts when driving the machine with LOWER trigger operation, and leveling work can be performed when driving the machine in reverse.
  For LOWER trigger operation method, see “METHOD FOR ACTIVATING AUTOMATIC BLADE CONTROL”.
- Even when performing RAISE trigger operation, the blade does not raise to specific height automatically. Operate the blade control lever to RAISE position to raise the blade.



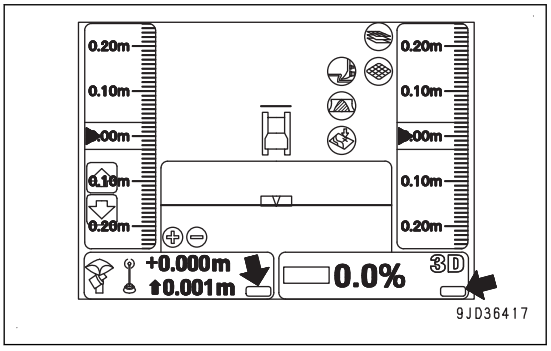
When the machine travels in reverse, the blade edge shape is not suitable for dozing. When the load on the blade is excessive, the blade thrusts and the track slips.

Use this for finishing leveling when the height difference to the design surface is small.

Even if the back grade mode is turned on, when the joystick (steering, directional and gear shift lever) is in FORWARD position (F), the blade automatic control works similarly to when the back grade mode is turned off.

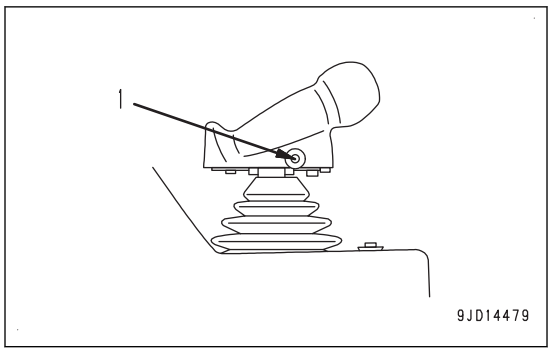
- When leveling forward, move the machine forward by performing LOWER trigger operation, similarly to when the back grade mode is turned off. The blade automatic control starts.
- When you do not level the ground by traveling forward, raise the blade by operating the blade control lever in RAISE direction, and set the joystick (steering, directional and gear shift lever) to FORWARD position (F). The blade automatic control starts only after LOWER trigger operation.

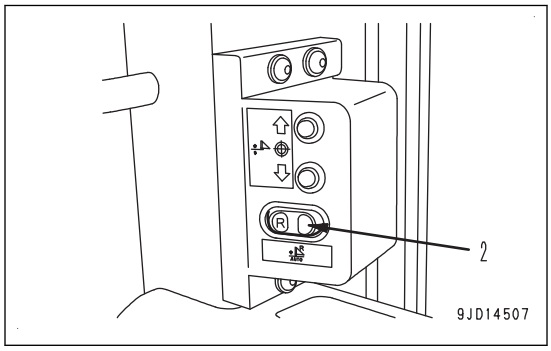
When blade automatic control is turned off (“AUTO” on control box screen goes out), the reverser leveling mode is automatically switched from on to off.



When turning on the back grade mode again, press Auto/ Manual switch (1), turn on the blade automatic control, and press back grade mode switch (2).

The back grade mode is turned on.

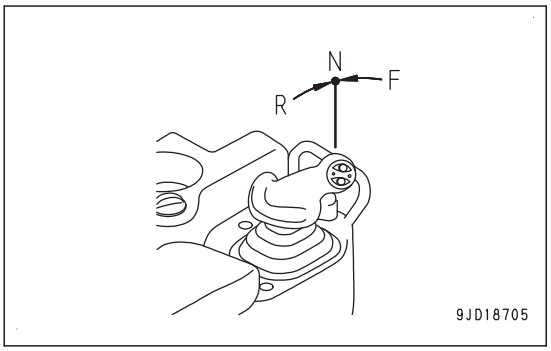




DEACTIVATE AUTOMATIC BLADE CONTROL

Stop the machine or set the joystick (steering, directional and gear shift lever) to NEUTRAL position (N).

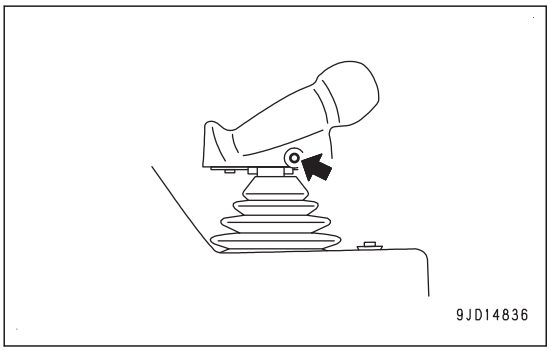
The blade automatic control stops.



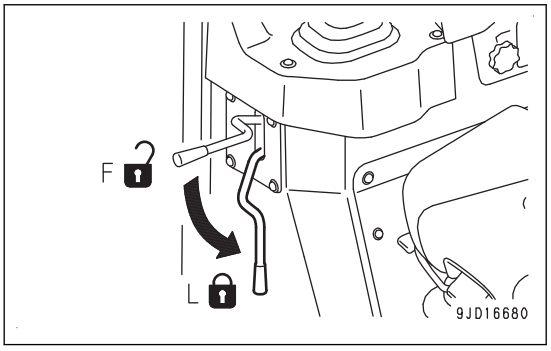
When turning off the blade automatic control

Press the Auto/Manual switch once while the blade automatic control is turned on.

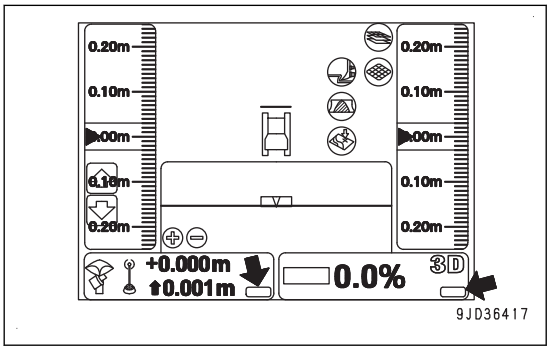
The blade automatic control is turned off.



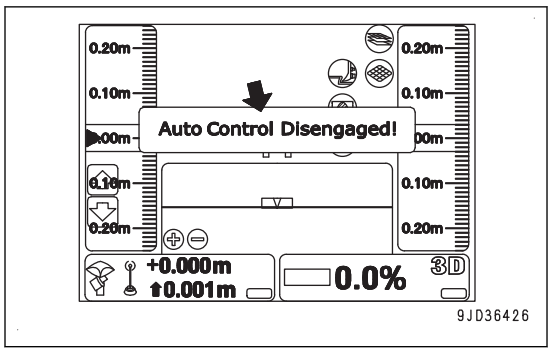
The blade automatic control is turned off also when operating the work equipment lock lever by holding the operating portion on the top and placing the lock lever in LOCK position (L).

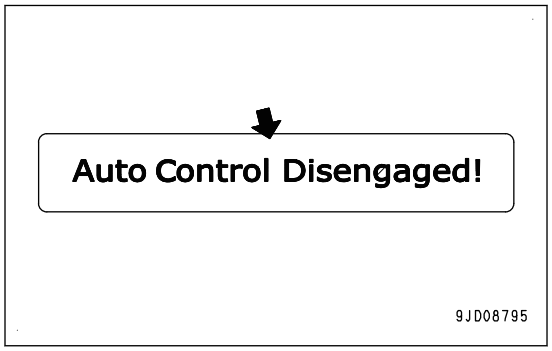


“AUTO” goes out from the control box screen when the blade automatic control is turned off.



“Auto Control Disengaged!” message pops up on the control box screen when the blade automatic control is switched from on to off.



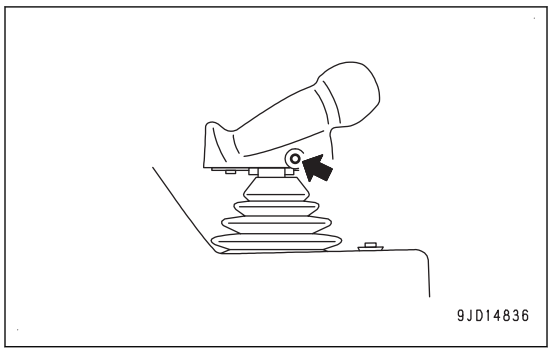


REMARK

The blade automatic control is not turned on while “AUTO” is not displayed on the control box screen.
Press the Auto/Manual switch again to display “AUTO” on the control box screen when restarting the blade automatic control.

When the blade automatic control is automatically turned off

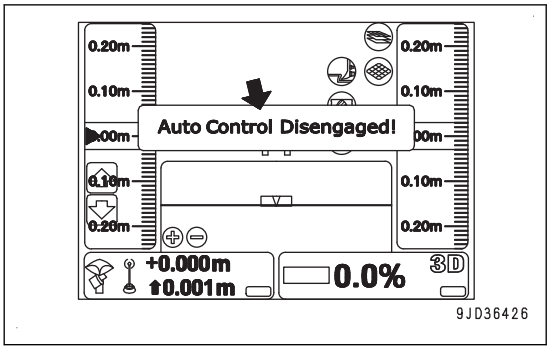
The blade automatic control is automatically turned off in the following conditions even if Auto/Manual switch is not pressed.

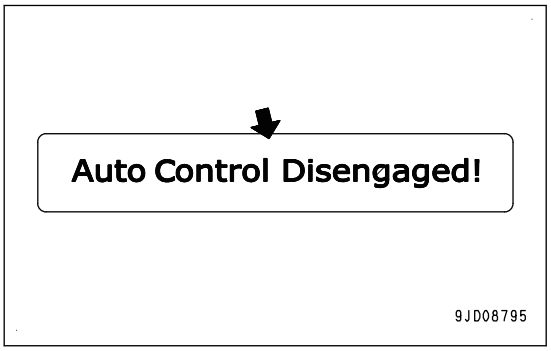


- When the machine is stopped for 30 seconds or more
- When the blade edge protrudes out of the designed range.
- When the number of GNSS satellites from which the system can receive the signals is decreased
- When the radio waves from the base station cannot be received
- When the starting switch of the machine is turned to OFF position
- When there is an abnormality in the system such as open circuit, etc.

When the blade automatic control is automatically turned off, “Auto Control Disengaged!” message pops up on the control box screen, and notice sound “Beep” can be heard.

At this time, “AUTO” on the control box screen goes out.





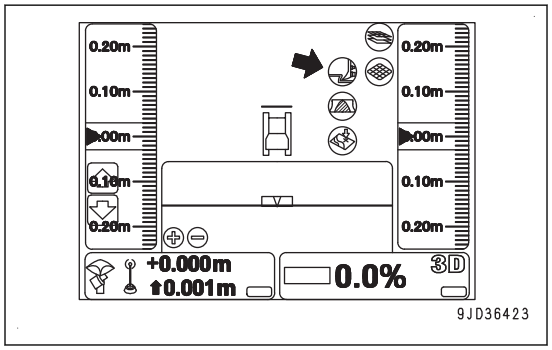
MODE SETTINGS

DOZING MODE SETTINGS

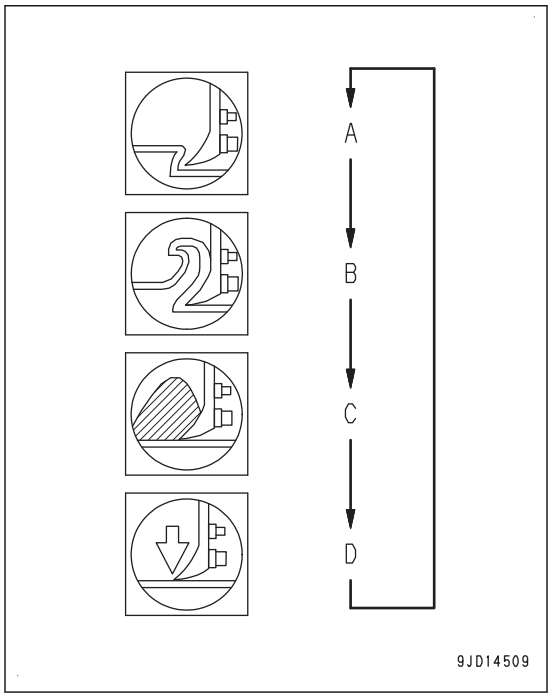
Set dozing mode depending on the type of operation.

There are 4 modes in the dozing mode.

Each time “Dozing mode selection” is pressed, 4 modes of dozing mode switch in order.



	Dozing mode	Type of operation
(A)	Cutting & Carry	Normal operation
(B)	Cutting	Effective dozing operation (Short range cutting method)
(C)	Spreading	Spreading operation of piled soil higher than the blade height
(D)	Simple Grading	Operation to finish uneven ground, flat ground, or slope by traveling along or across the slope

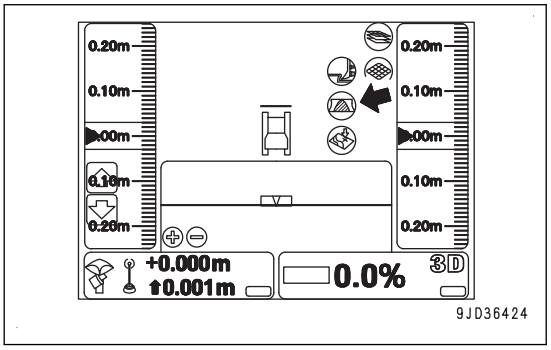


BLADE LOAD MODE SETTINGS

Set the blade load mode depending on the type of soil and operation at jobsite.

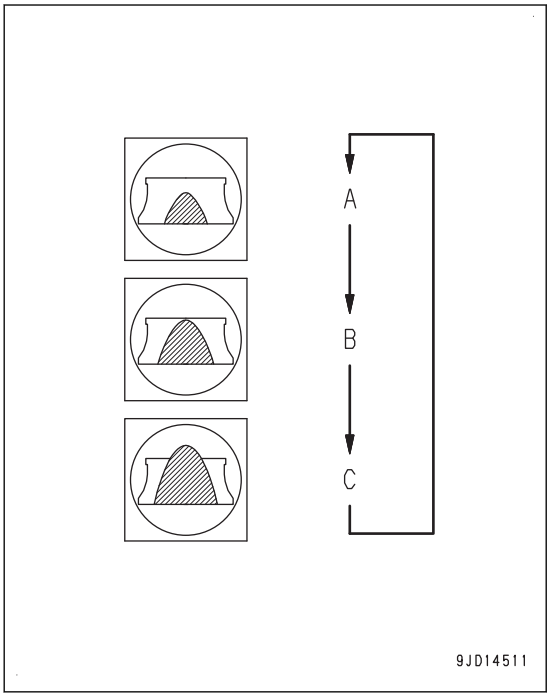
Each time “Blade load selection” is pressed, 3 modes switches in order.

	Blade load mode	Type of soil and operation at jobsite
(A)	Light	Operation on the sand or soft ground where the track easily slips
		When holding a little soil on the blade
(B)	Normal	Normal operation
(C)	Heavy	Operation on the heavy soil such as clay, etc.
		When holding a large soil on the blade



REMARK

When the dozing mode is set to “Simple Grading”, the control by blade load is not performed, so the setting of the blade load mode cannot be done.

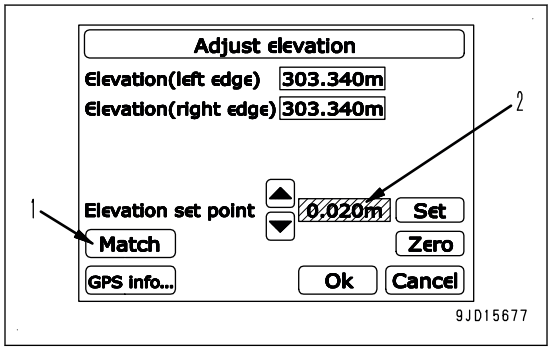


SET SCRAPING DEPTH FROM CURRENT GROUND SURFACE

You can set scraping depth quickly on the basis of the current ground surface by using the matching function.

1. Lower the blade to the ground of the current state.
2. On the main window, press “elevation control key”.
3. On “Adjust elevation” screen, press “Match” (1).

   The design surface is offset toward the blade elevation, and the offset value is displayed in input section (2) for “Elevation set point”.



4. Press input section (2) for “Elevation set point”, and input a value obtained by subtracting the set scraping depth (250 mm {9.8 in} or less) from the displayed offset value.

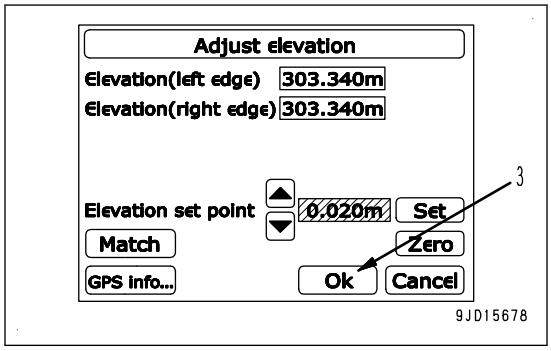
   REMARK

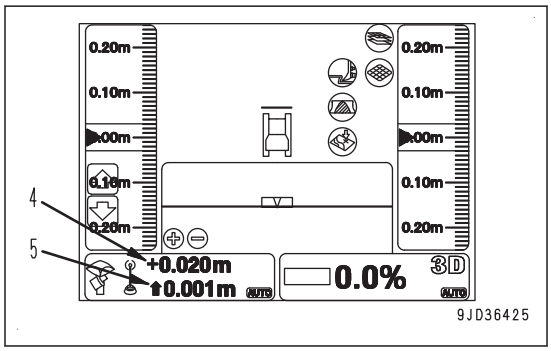
   You can adjust the scraping depth with the pop-up menu displayed by holding down the main window or with the cut/fill offsets switch.

5. On “Adjust elevation” screen, press “Ok” (3).

   The screen returns to the main window.

   On “elevation control key”, “Cut/Fill offset” (4) (value input in step 4) and “Cut/Fill reading” (5) (distance from the blade edge to the design surface) are displayed.





SMOOTH START

When the operation started with automatic control of blade, operation is controlled so that the shape after dozing is smooth and cutting shape is the same as preset. This function is called Smooth Start.

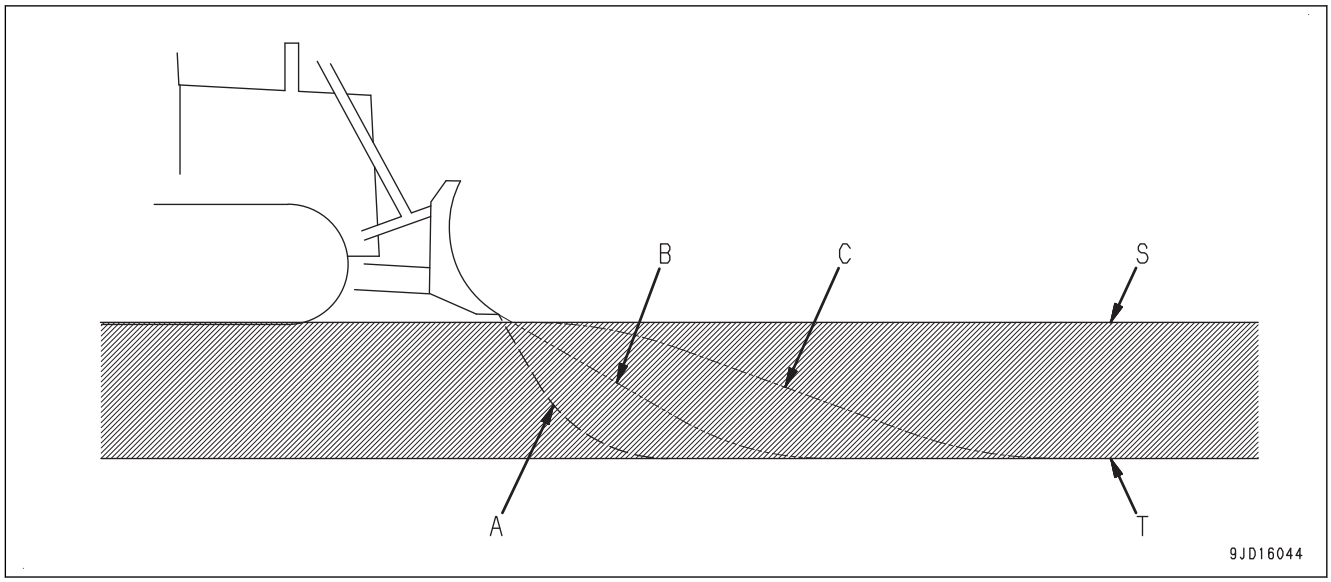
If Smooth Start function is enabled, adjust the travel speed with the decelerator/brake pedal when starting dozing.

Enable or disable Smooth Start function according to the work.

If the operation is not dozing but spreading or to start dozing at steep angle in particular, make Smooth Start function disabled.

REMARK

- The cutting shape by Smooth Start varies depending on the dozing mode.
  When “Cutting” is selected, cutting angle becomes steeper compared to that at “Cutting & Carry” or “Spreading”.
- Smooth Start function is not available for “Simple Grading”, so you cannot select it.
- Smooth Start function is only available when design surface (T) is lower than the blade edge. It does not function when design surface (T) is higher than the blade edge.
- The travel speed is restricted even if the blade control lever is operated while the Smooth Start function is enabled.



(S) Current surface

(T) Design surface

(A) Smooth Start disabled

(B) Smooth Start enabled (for “Cutting”)

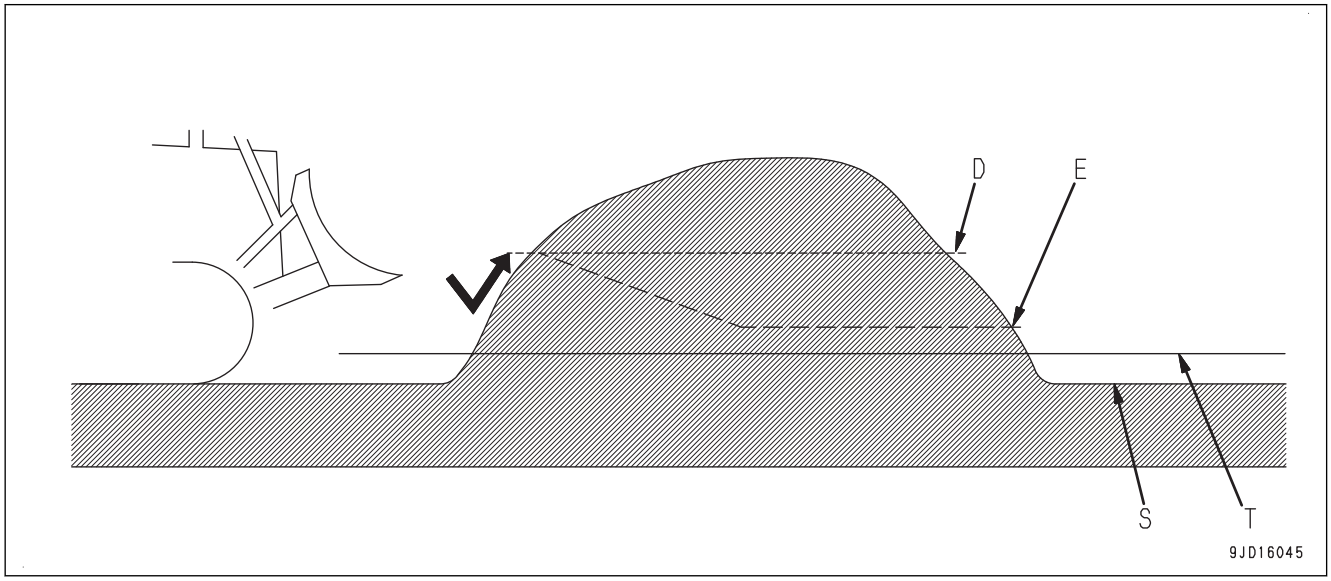
(C) Smooth Start enabled (for “Cutting & Carry” and “Spreading”)

CHANGE BLADE LOWER EDGE POSITION IN CUTTING IN

When the machine cuts in with Smooth Start enabled, the blade lower edge height is usually the height of ground with which the track is in contact.

You can freely change the blade lower edge height when the machine cuts in by performing the following operation.

1. Place the joystick (steering, directional and gear shift lever) in FORWARD position, and perform LOWER trigger operation.
2. Blade will move down automatically. Before the blade reaches the ground or the design surface, operate the blade control lever to RAISE direction.
3. Return the blade control lever to NEUTRAL position while the height of blade bottom is at any height.



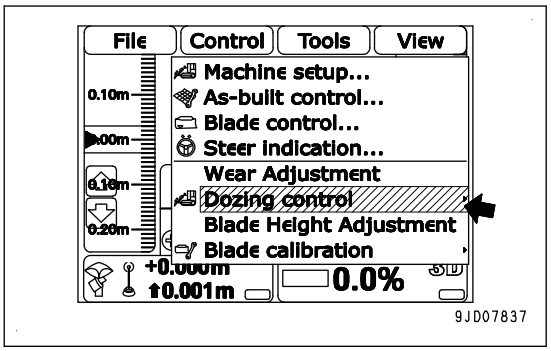
(S) Current surface
(T) Design surface
(D) Changed cut-in height in Smooth Start mode
(E) Changed cut-in shape

This operation may be effective when you cuts in piled soil from any height.

If you perform this operation while there is no piled soil in front of the machine, the blade stops in air and is held at that position. In this case, place the joystick (steering, directional and gear shift lever) in NEUTRAL position, and restart the operation.

METHOD FOR SELECTING SMOOTH START

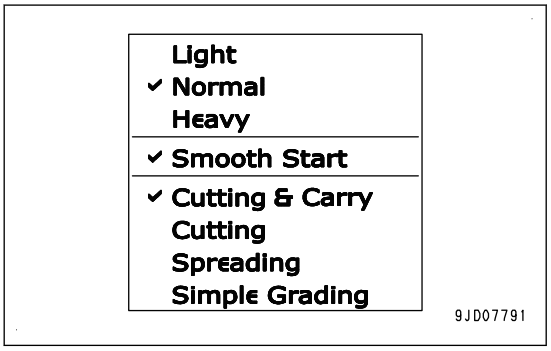
1. Press the power ON/OFF and menu switch to display the main menu.
2. Press “Dozing control” in “Control” menu, and select.



The present mode selection is displayed.

The mode which has a check mark on the left is selected. “Smooth Start” is enabled with a check mark on the left and disabled without a check mark.

3. Press “Smooth Start” to select enable or disable.



REMARK

With the same procedure, dozing mode and blade load mode can be set.

FUNCTION RELATED WITH MACHINE MONITOR BLADE AUTOMATIC CONTROL

The following descriptions give you the functions related to automatic control of blade among the functions of the machine monitor.

For other functions of the machine monitor and handling method, see the Operation and Maintenance Manual of standard machine.

ADJUST GAIN OF AUTOMATIC BLADE CONTROL

If the response speed of lift RAISE/LOWER and tilt RIGHT/LEFT during the blade automatic control is too fast or too slow, the ground may become waved or undulate after the leveling work.

At this time, the gain of lifting and tilting can be adjusted with the user menu of the machine monitor.

The gain means the setting which decides the response speed of blade while it is automatically controlled. Select “Default” or “Option A” to set it.

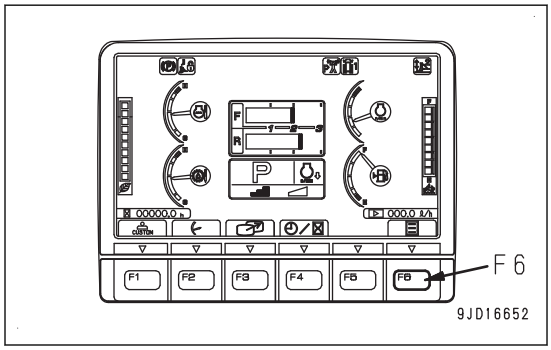
Select “Default” for the leveling work or dozing work on general soil.

Select “Option A” if leveled ground becomes waved or undulate under the selection of “Default” and the gain of lift RAISE/LOWER or tilt RIGHT/LEFT should be adjusted individually.

METHOD FOR ADJUSTING GAIN OF AUTOMATIC BLADE CONTROL

1. Press switch F6 on the standard screen of the machine monitor to display the user menu.

   F6: User menu display switch



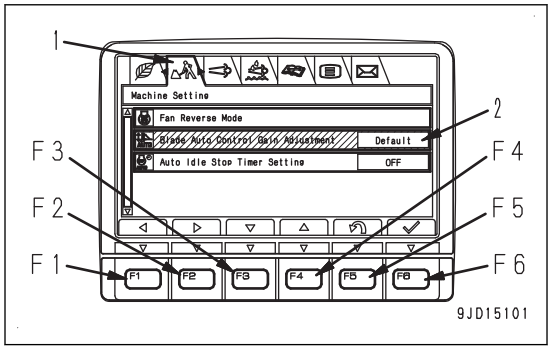
2. Press switches F1 and F2 and move the menu to right and left to display “Machine Setting” screen (1).

   The current gain setting is displayed on “Blade Auto Control Gain Adjustment” (2).

   On this screen, it is possible to perform the following operations with switches F1 to F6.

   F1: Moves to the left menu. When on the left end, it moves to the right end menu.

   F2: Moves to the right menu. When on the right end, it moves to the left end menu.



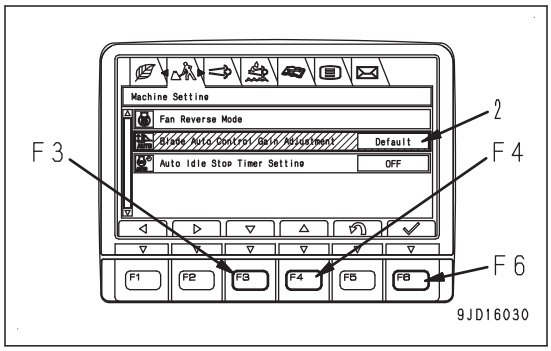
   F3: Moves to the next item (1 line below). When on the last line, it moves to the first line.

   F4: Moves to the previous item (1 line above). When on the first line, it moves to the last line.

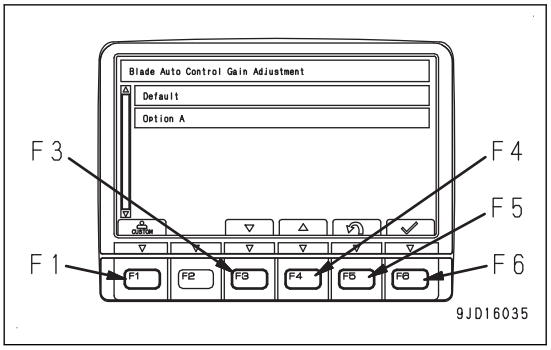
   F5: Returns the screen to the standard screen.

   F6: Displays the setting screen for selected item.

3. When changing the gain setting, press switches F3 and F4, select “Blade Auto Control Gain Adjustment” (2), and press switch F6.



4. Select “Default” or “Option A” on “Blade Auto Control Gain Adjustment” screen.



On this screen, it is possible to perform the following operations with switches F1, F3 to F6.

F1: Moves to “Option A” screen. (Only when “Option A” is selected)

F3: Moves to the next item (1 line below). When on the last line, it moves to the first line.

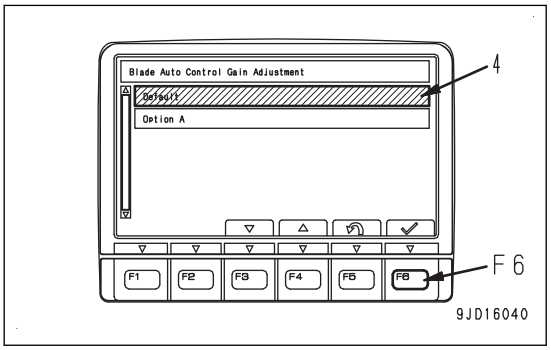
F4: Moves to the previous item (1 line above). When on the first line, it moves to the last line.

F5: Cancels the setting change and returns the screen to “Machine Setting” screen.

F6: Changes the setting and returns the screen to “Machine Setting” screen.

- When performing leveling work or dozing work on general soil

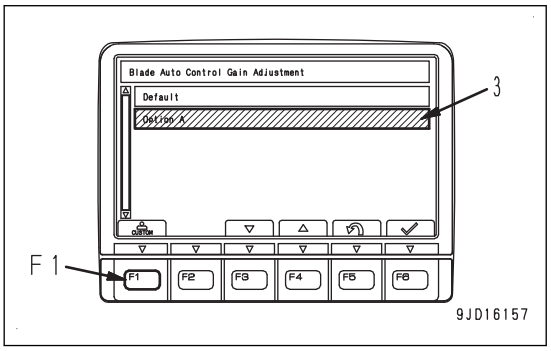
1) Select “Default” (4) on “Blade Auto Control Gain Adjustment” screen and press switch F6.



“Default” is set.

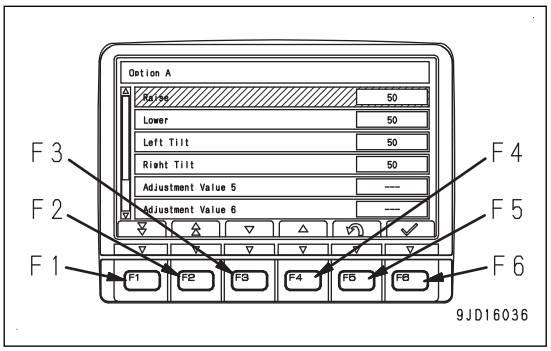
- When adjusting the gain of lift RAISE/LOWER or tilt RIGHT/LEFT individually.

1) Select “Option A” (3) on “Blade Auto Control Gain Adjustment” screen and press switch F1.



On “Option A” screen, each gain adjustment value of lift RAISE/LOWER or tilt RIGHT/LEFT when “Option A” has been set.

2) Select the item to adjust and press switch F6.



On this screen, it is possible to perform the following operations with switches F1 to F6.

F1: Displays the next page. When on the last page, it displays the first page.

F2: Displays the previous page. When on the first page, it displays the last page.

F3: Moves to the next item (1 line below). When on the last line, it moves to the first line.

F4: Moves to the previous item (1 line above). When on the first line, it moves to the last line.

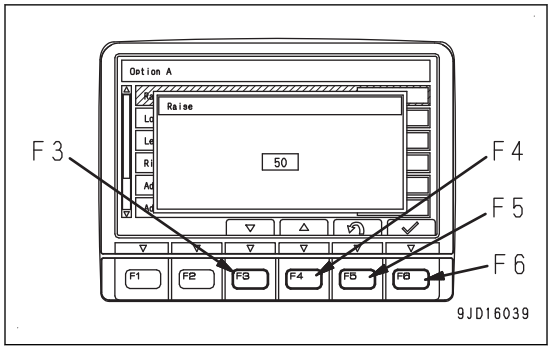
F5: Cancels the selection and returns the screen to “Blade Auto Control Gain Adjustment” screen.

F6: Displays “gain adjustment input” screen for selected item.

REMARK

“Adjustment value 5” to “Adjustment value 8” are not used for this machine. If these are selected and switch F6 is pressed, “gain adjustment input” screen is not displayed.

3) On “gain adjustment input” screen, press switches F3 and F4, and increase or decrease the adjustment values.



On this screen, it is possible to perform the following operations with switches F3 to F6.

F3: Decreases the adjustment value by 1. If it is kept pressed, the adjustment value decreases continuously.

F4: Increases the adjustment value by 1. If it is kept pressed, the adjustment value increases continuously.

F5: Cancels the change of adjustment value and returns the screen to “Option A” screen.

F6: Changes the adjustment value and returns the screen to “Option A” screen.

4) Press switch F6 to accept the inputted adjustment value.

The accepted adjustment values are reflected to the blade automatic control.

5) Perform the gain adjustment while operating the machine actually and checking whether the leveling result has been improved.

NOTICE

If the adjustment value is largely changed, the blade may move unexpectedly. Change the adjustment value gradually while checking the actual movement of the blade.

- The larger the adjustment value becomes, the faster the blade starts moving. The smaller the adjustment value becomes, the slower the blade starts moving.
  If the leveling result becomes waved at short cycle, decrease the gain.
  If the leveling result becomes waved at long cycle, increase the gain.
  If there are noticeable piled soils on the leveled ground, decrease the RAISE gain and increase the LOWER gain.
  If there are noticeable thrust marks of the blade edge on the leveled ground, increase the RAISE gain and decrease the LOWER gain.
- When the adjustment value is 50, the response speed is the same as “Default”.
- The adjustment value can be changed within the following range.

  Lift RAISE/LOWER: 15 to 100

  Tilt RIGHT/LEFT: 0 to 100

REMARK

- In “Default”, each gain has already been adjusted according to each type of work.
  Select it for the leveling work or dozing work on general soil.
- In “Option A”, the gain for lift RAISE/LOWER or tilt RIGHT/LEFT can be adjusted individually.
  Select “Option A” if leveled ground becomes waved or undulate under the selection of “Default”. The gain can be adjusted by adapting the soil conditions and travel speed to the actual work contents.
- Once the gain adjustment values of “Option A” have been set, they are saved even though the gain adjustment is set to “Default” afterward. It will be effective when “Option A” is set again.

PRECAUTIONS WHEN USING BLADE AUTOMATIC CONTROL

There are works not recommended for blade automatic control and works that required cautions in Operation and Maintenance Manual, “OPERATION”, “RECOMMENDED APPLICATIONS”. Pay attention to the following operations and precautions.

Works not recommended for blade automatic control

The following works are not recommended for the blade automatic control. Turn off the blade automatic control, and operate blade with blade control lever.

- Dozing and ditching of hard or frozen ground
  For the hard ground which requires you to tilt the blade and incline the blade edge in order to cut in, you cannot use the blade automatic control.
  Crumble the ground by operating the blade with the blade control lever and ripper control lever (if equipped), and then use the blade automatic control.
- Works of felling trees and removing stumps
  For the operation such as felling trees or removing stumps or raising boulders which does not have design surface, the blade automatic control cannot be used.
  Remove the obstacles in advance, and then use the blade automatic control.

Precautions when leveling soft ground where track sinks in

After leveling with the blade, the track may roughen the leveled surface and make it lower than the design surface.

Use the blade automatic control while paying attention to the following.

- Tamp the soft places with a heavy machine, etc. in advance.
- In rough dozing, leave the top portion of the design surface (approximately 50 mm {2 in}).
- Cut the top portion of the design surface (approximately 50 mm {2 in}) left in rough dozing in one pass.
  (Reduce the subsidence by completing the finish work in one pass.)
  Adjust the offset amount, after checking the subsidence state.
- Reduce the dozing quantity in the finish work.
  (Reduce the factors of ground subsidence.)
  Set the dozing quantity to below the half of the blade height as standard.

RECOMMENDED APPLICATIONS AND MODES

METHOD FOR DOZING

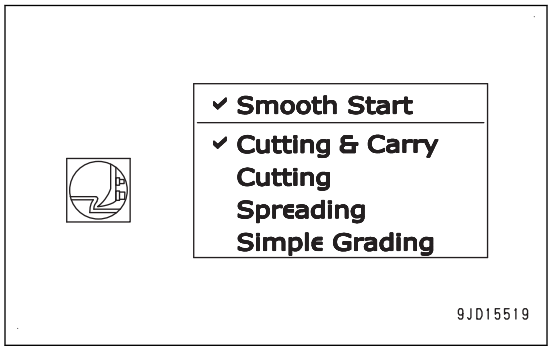
Dozing work is the operation to cut the ground and make the lower surface than the current ground.

There are 2 methods as follows. Select the method of operation depending on the state.

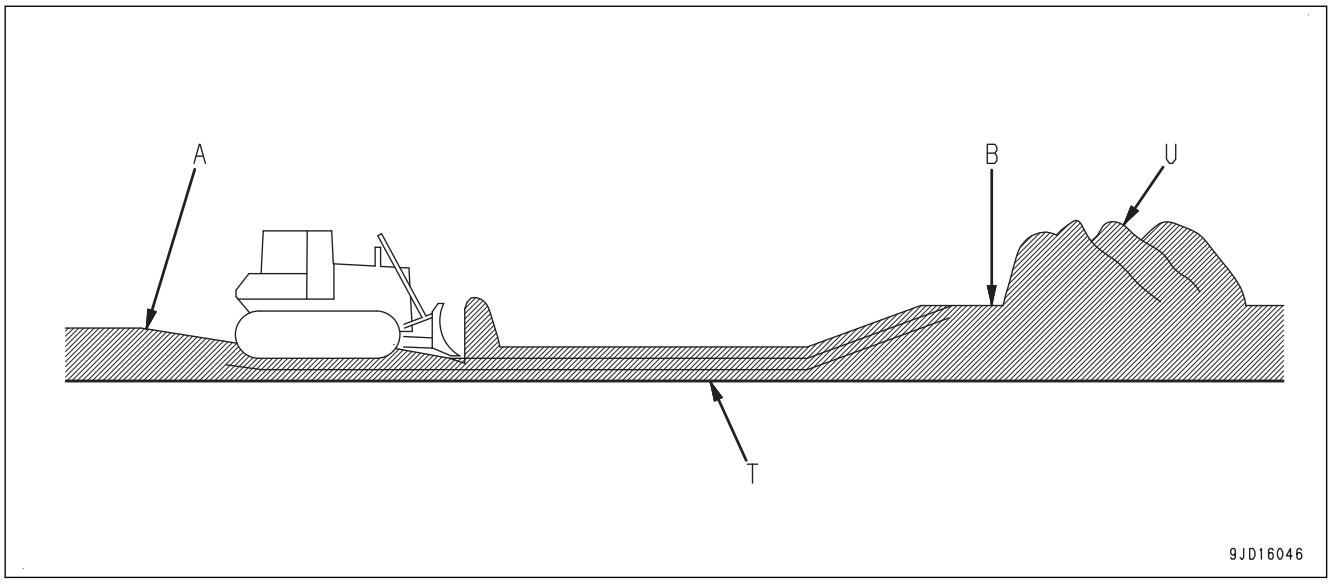
METHOD FOR SCRAPING LEVELLY

This is the method to cut the ground in shallow depth for long distance to make the traveling in reverse more comfortable.

Enable “Smooth Start” and select “Cutting & Carry”.



1. Start the blade automatic control at position (A) apart from piling position (U).
   The machine automatically start the dozing.
2. After carrying the soil to piling point (B), drive the machine in reverse.



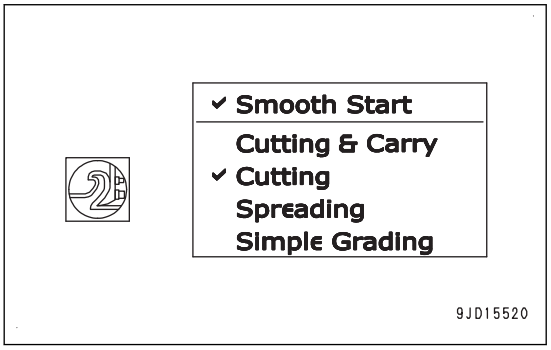
(T) Design surface

- If some place higher than the design surface is left at 1 time dozing, travel on that place several times so that such place can be built as designed.
- If the soil in front of the blade disappears and no load to the blade in the middle of carrying the soil, drive the machine in reverse once and get the load to the blade again.
- When the design surface is deep, offset the design surface upward and cut the ground by each 100 to 200 mm {3.9 to 7.9 in} in steps, you can operate smoother and more stable.

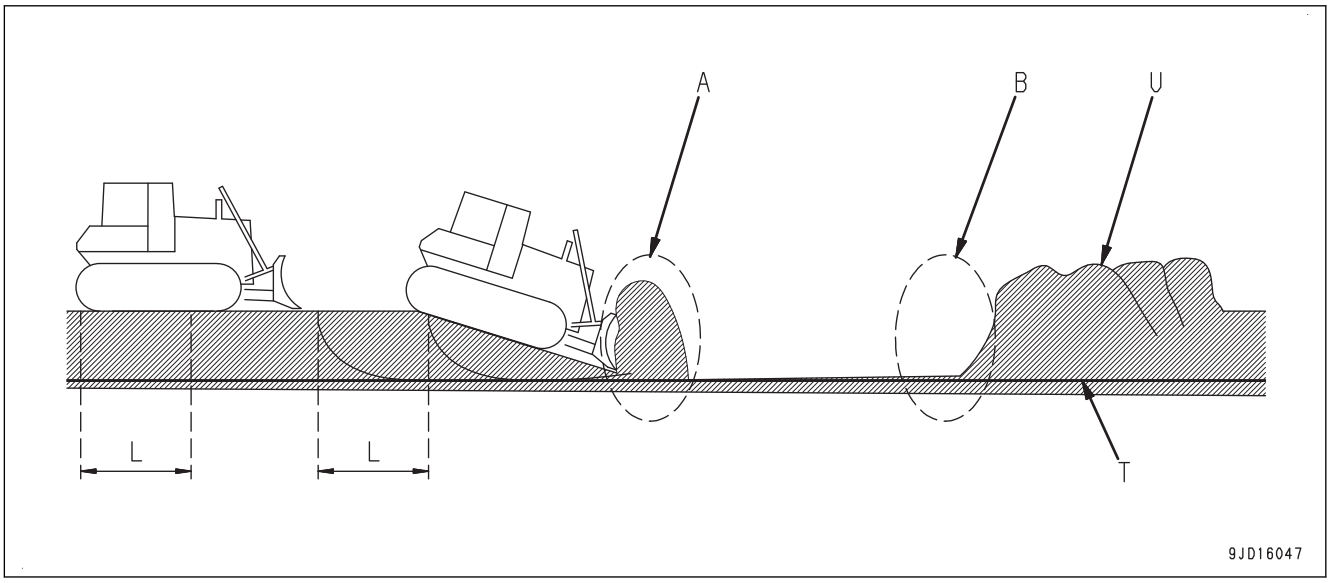
METHOD FOR SCRAPING SOILS IN SHORT DISTANCE

In this method, carrying distance is short and operation is efficient.

Enable “Smooth Start” and select “Cutting”.



1. Start dozing by the blade automatic control from the position near piling position (U).
2. Gradually retract the starting point of dozing and repeat traveling backward and forward.



(T) Design surface

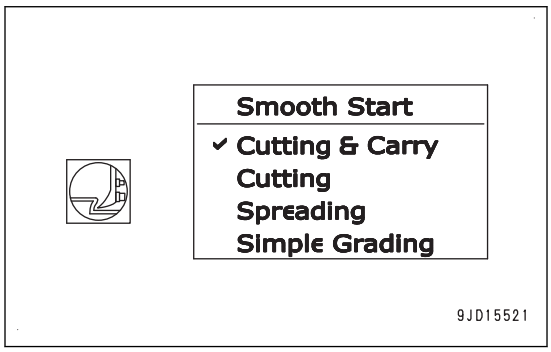
- As standard, limit the distance of each reverse travel to a half of the machine overall length (L) (approximately 2 m {6 ft 7 in}), and the dozing depth to 250 mm {9.8 in} . Operator should adjust the dozing distance and dozing depth, depending on the type of soil.
- When driving the machine in reverse at the place where the cutting angle changes, the operator comfort may be bad. In this case, set the cutting depth to 200 mm {7.9 in} or less.

  For details of setting of the cutting depth, see “METHOD FOR ADJUSTING CUT/FILL OFFSETS” and “METHOD FOR ADJUSTING CUT/FILL OFFSETS (POP-UP MENU)”.
- If the type of soil is not uniform, blade may cut too deep at position (A) where the surface changes from downhill to level ground. Use the blade control lever to raise the blade.
- At position (B) where the blade pushes the carried soil to the soil piled at the last time, the track may slip and damage the surface of the ground. Use the blade control lever to raise the blade.
- When the design surface in the range of piling soil is not set, operate the blade by using blade control lever to release the load.

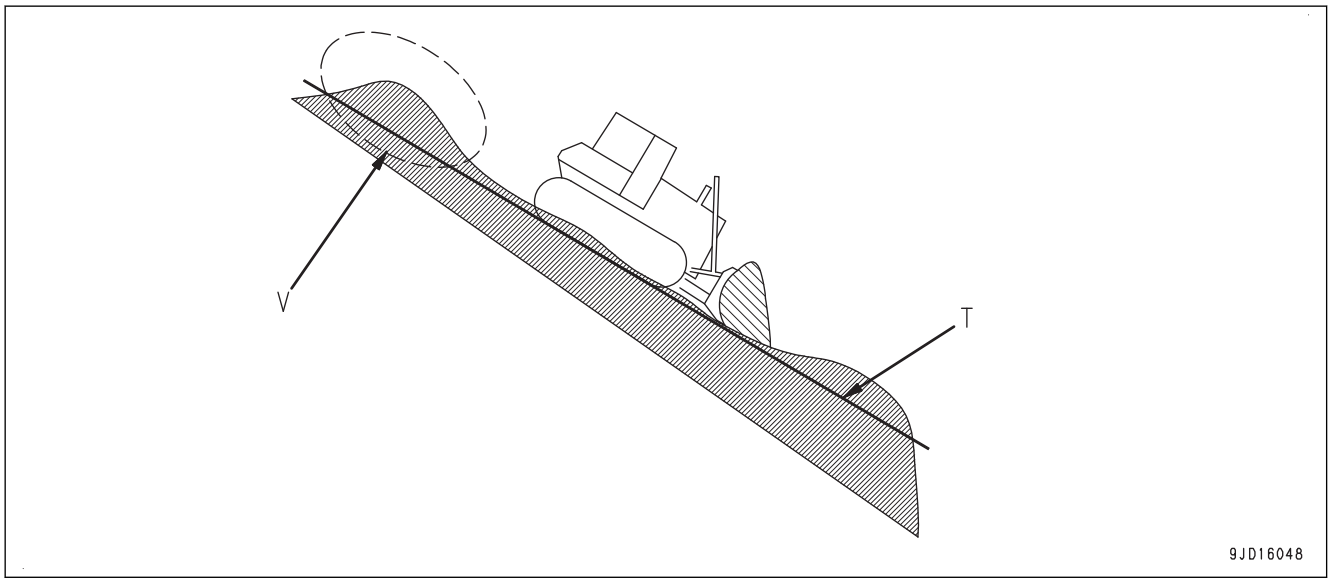
METHOD FOR SCRAPING NATURAL GROUND

Natural ground scraping work is the operation to generate the inclined surface by scraping the soil on the slope.

Disable “Smooth Start” and select “Cutting & Carry”.



Start the blade automatic control, and drive down the machine on the slope.
The machine automatically start the scraping.



(T) Design surface (V) Uncut part

On the slope, Smooth Start function may be enabled and the soil at back side cannot be cut and left as uncut part. Disable Smooth Start function.

CUTTING AND CARRY OPERATION

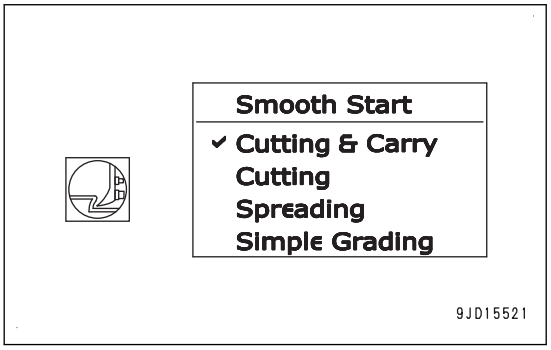
Cutting and carry work is the operation to fill the lower place than the design surface with the soil.

There are 2 methods as follows. Apply these methods depending on the necessity of tamping the filled place.

CARRY SOILS TO HOLE

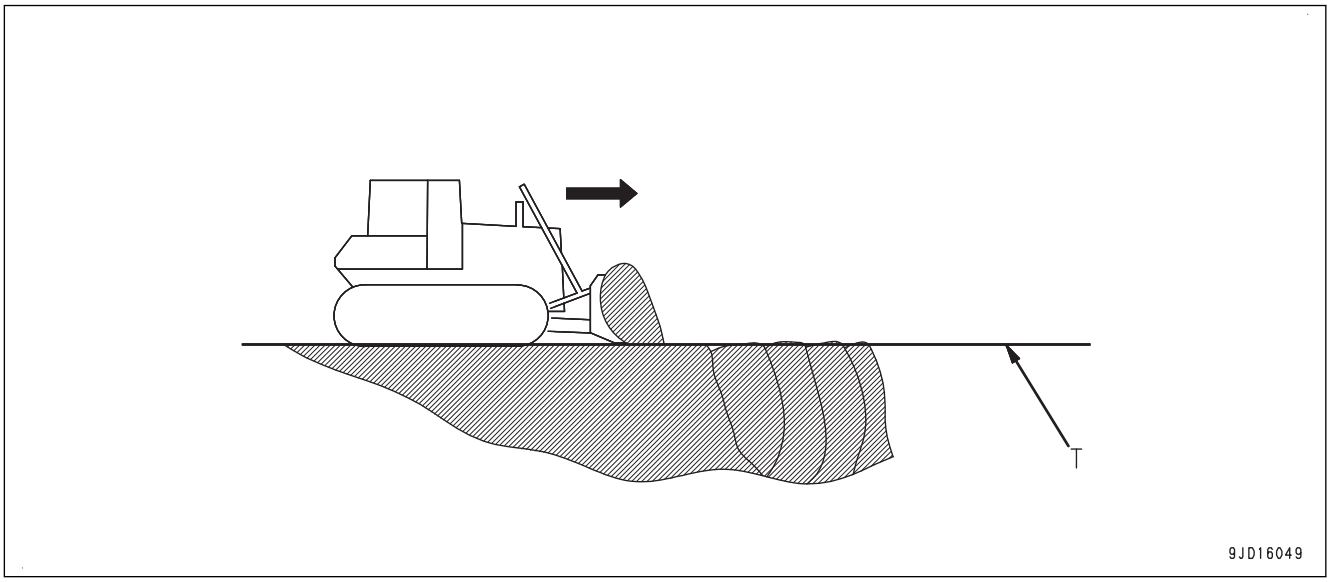
This is the method when tamping the filled place is not necessary.

Select “Cutting & Carry”.



1. Hold and carry piled soil to a hole by the automatic control of the blade.
2. When the held soil is all spread out, drive the machine in reverse.

   When dropping the held soil from a high place during the cutting and carry operation, leave a pile of the soil.



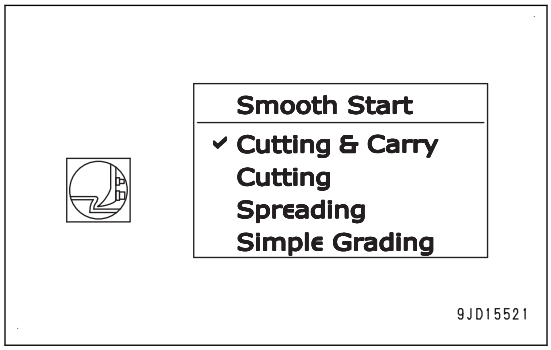
(T) Design surface

CARRY AND COMPACT SOILS

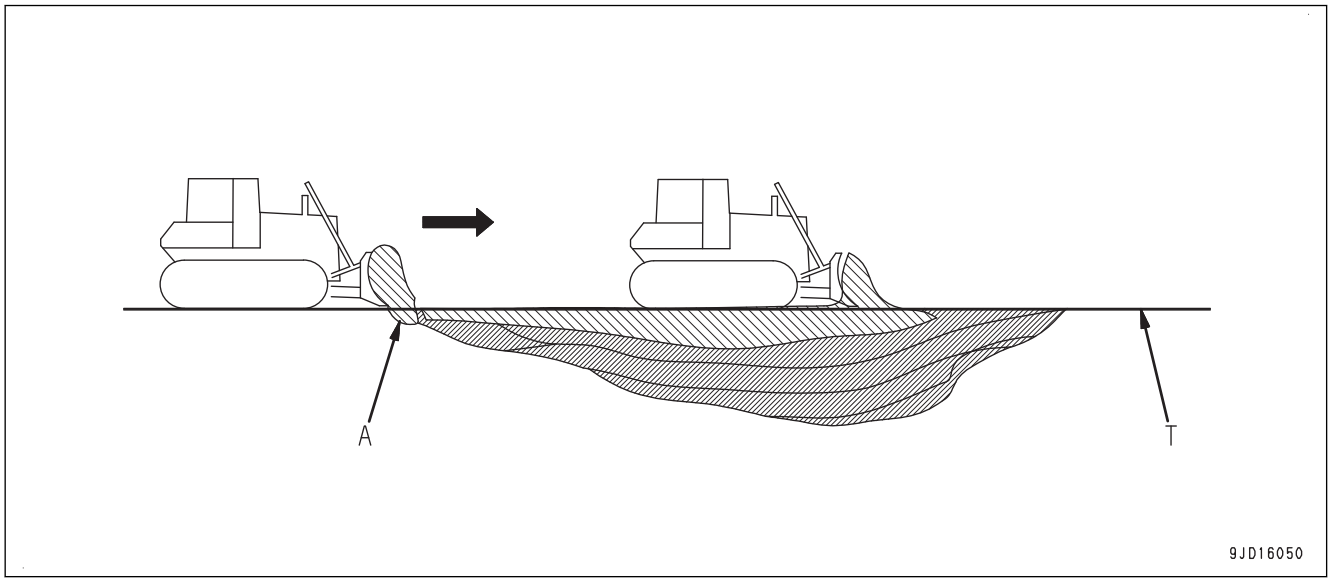
This is the method when tamping the filled place is necessary.

This method is not suitable for the operation gradually fill the hollow by piling the soil.

Select “Cutting & Carry”.



1. Hold and carry piled soil to a hole by the automatic control of the blade.
2. After position (A) which is lower than the design surface, control the blade by using both of the automatic control of the blade and the blade control lever.



(T) Design surface

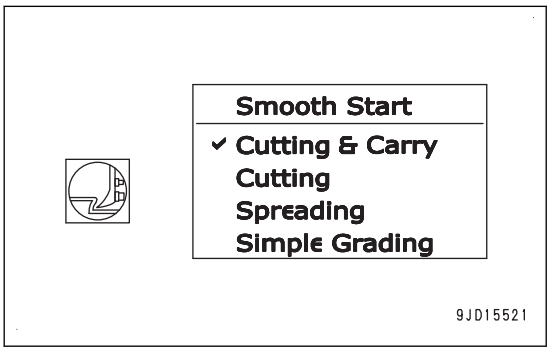
For cutting and carry operation up to 200 mm {7.9 in} from the design surface, you can work more efficiently by controlling the blade with the blade control lever.

SPREADING OPERATION

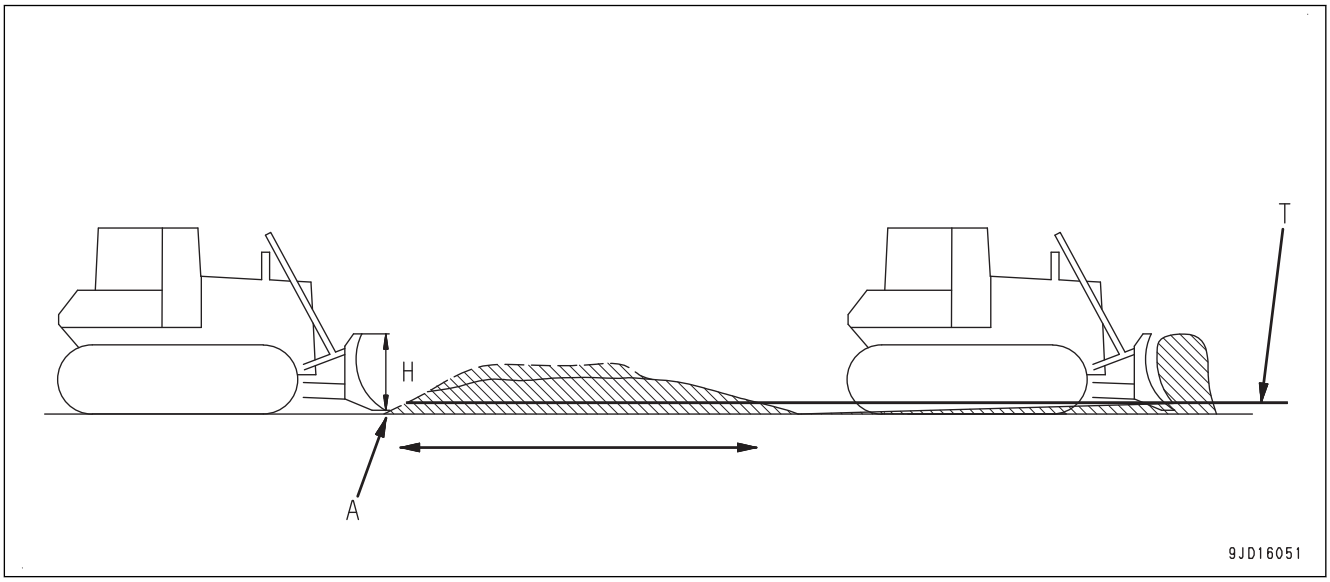
Spreading work is the operation to spread the piled soil and make the higher surface than the current ground.

WHEN SPREADING SOILS TO PLACES LOWER THAN BLADE EDGE

Select “Cutting & Carry”.



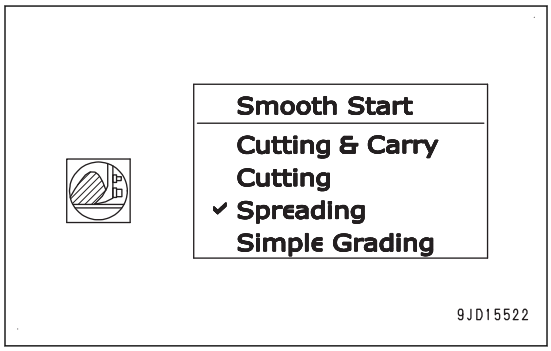
1. Set the design surface at the higher position than the current ground.
2. Start the blade automatic control at position (A) before the piled soil.
   The blade automatically holds the piled soil and spread it out.
3. When the held soil is all spread out, drive the machine in reverse.
   By escalating the design surface, tamped high surface can be obtained.



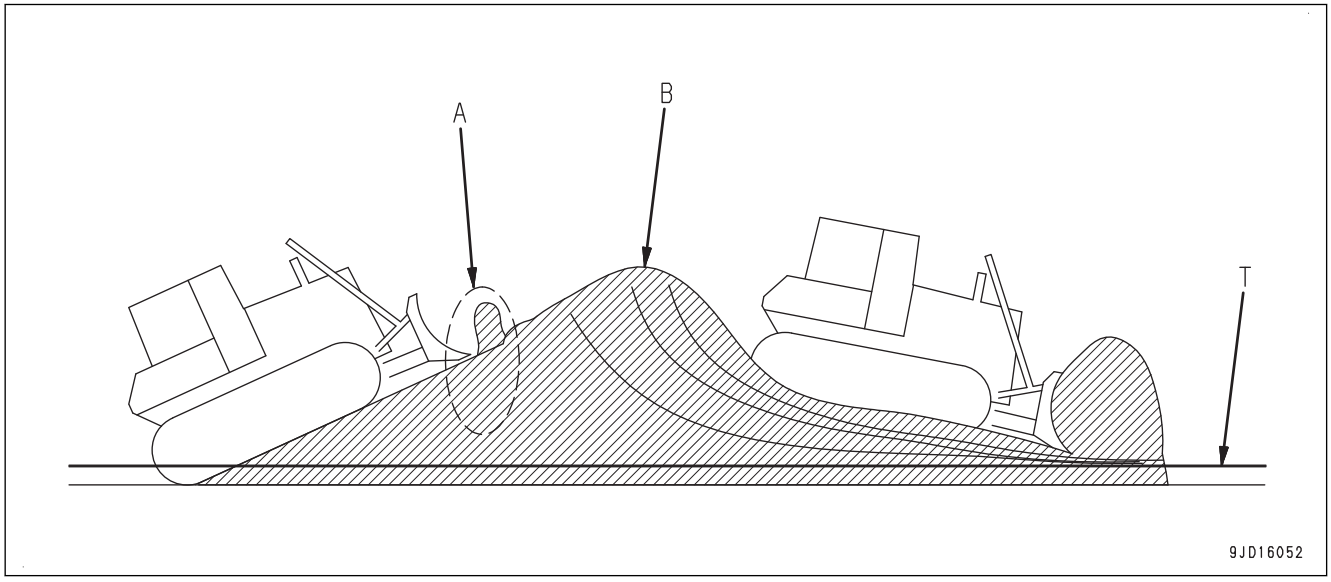
(T) Design surface (H) Blade height

WHEN SPREADING SOILS TO PLACES HIGHER THAN BLADE EDGE

Select “Spreading”.

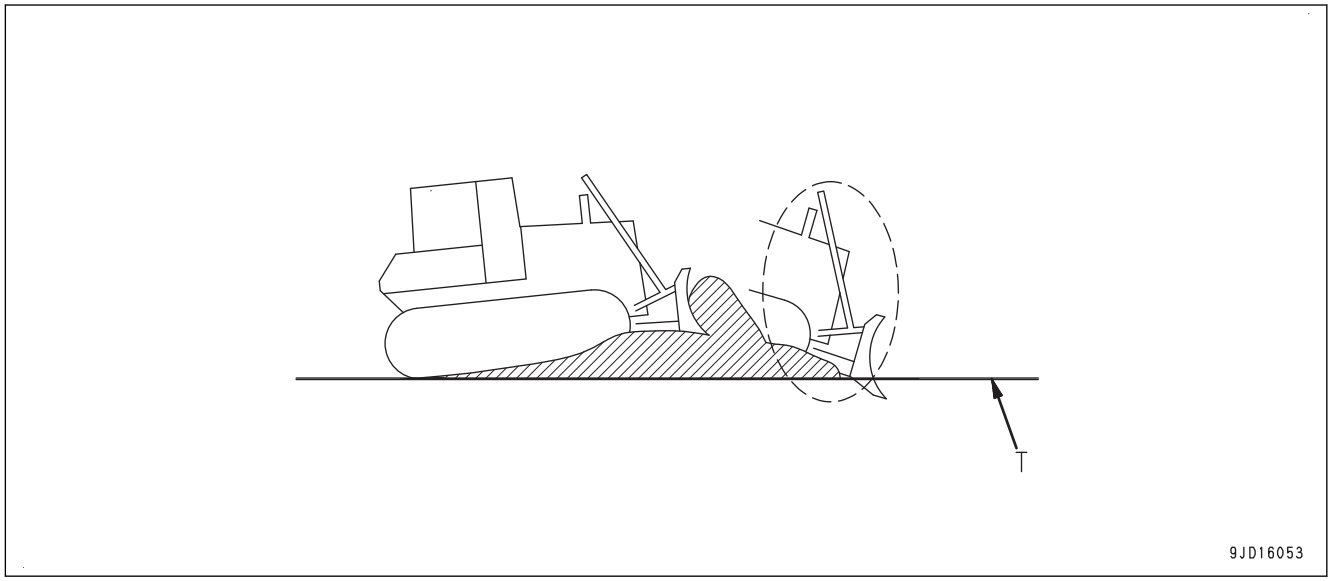


At position (A) where the blade holds the piled soil while pushing up, adjust the holding amount by using both of the automatic control of blade and manual blade control by blade control lever.
From position (B) where the machine gets over the top and goes down, the automatic control of blade is effective.



(T) Design surface

When driving down the deep step, the speed of blade by the automatic control may not catch up the dropping speed of the machine and a hollow is generated on the ground. If the machine is about to drop, raise the blade by using the blade control lever.



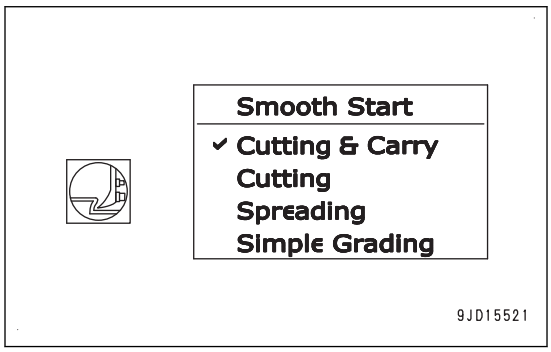
(T) Design surface

RAISING GROUND LEVEL OPERATION (PUSHING UP SOILS)

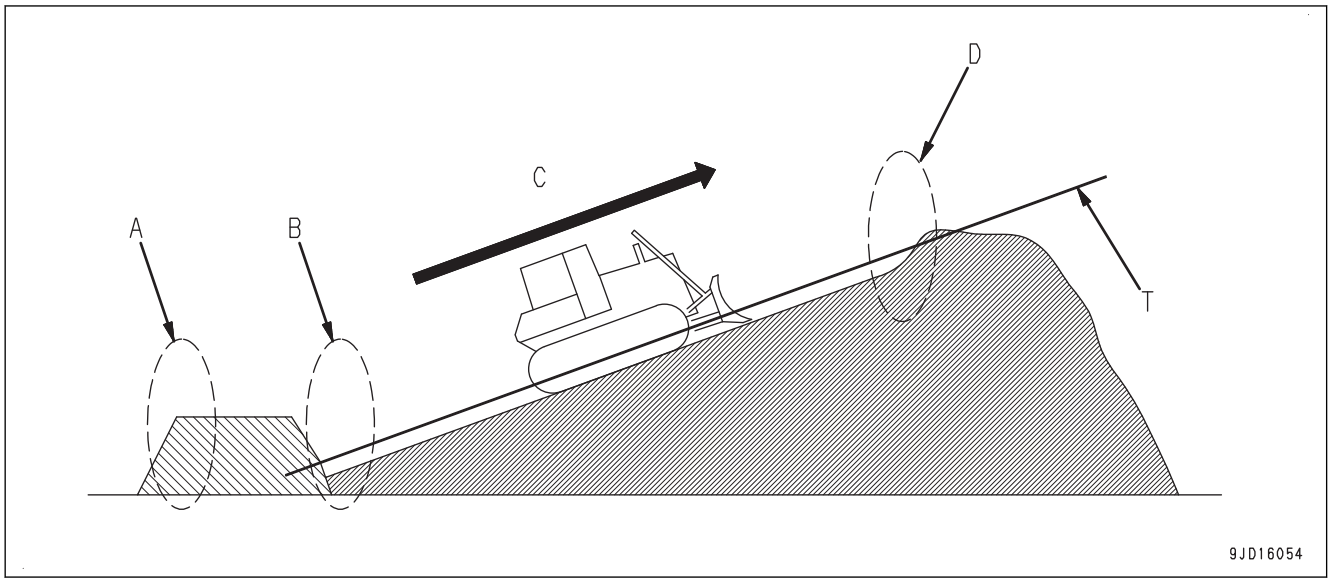
Raising ground level work (pushing up soil) is the operation to push up the piled soil onto the slope.

Select “Cutting & Carry”.

When a design surface of a horizontal part is made before a slope and a small load is applied to the blade, see “WHEN FINISHING CONCAVE INFLECTION POINT VERTICALLY”.



1. At place (A) where you pull down the piled soil and hold it on the blade, operate the blade by using blade control lever.
2. At place (B) where you start to ascend the slope, also operate the blade by using blade control lever.
3. Push up the soil.
   - Place (C) where angle is narrow
     The blade automatic control is effective.
   - Place (D) where angle is sharp
     The load on the blade may be reduced too much and the angle may become sharper.
     Adjust the operation by using both of the blade automatic control and manual blade control by blade control lever.

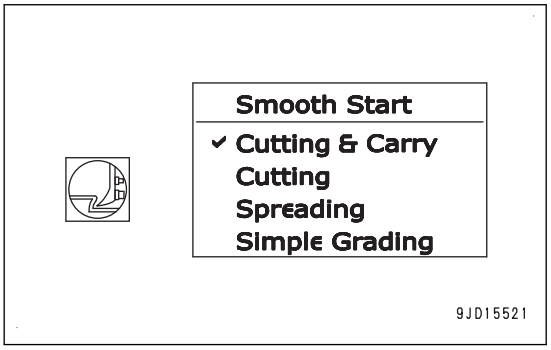


(T) Design surface

PUSH AND TURN OPERATION

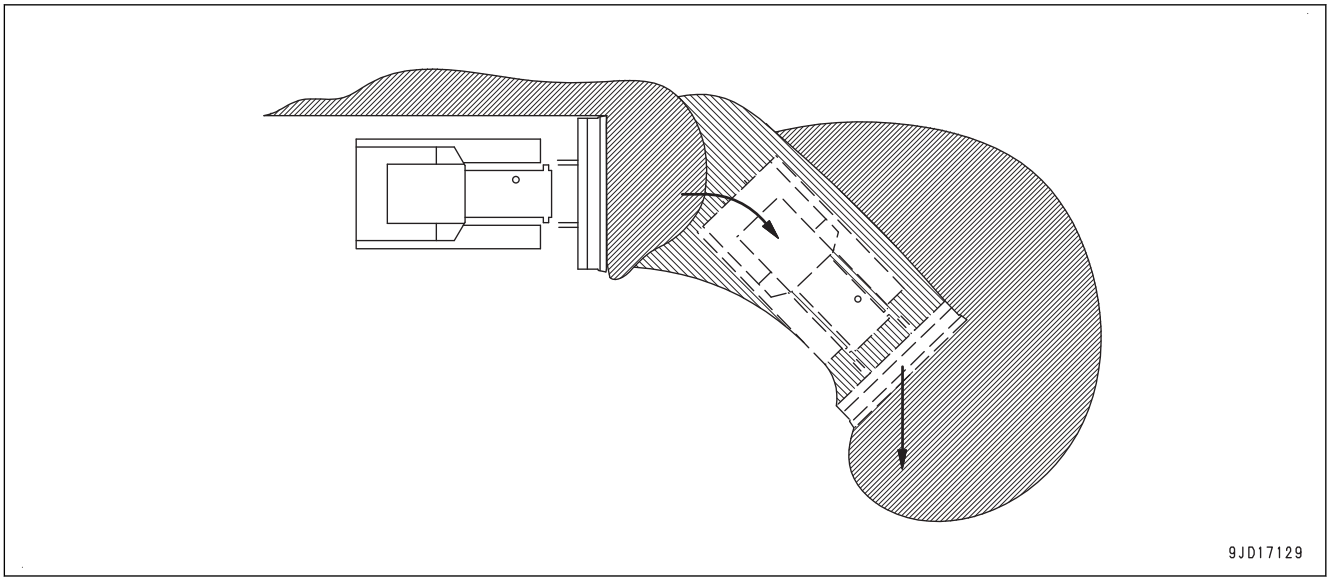
Push and turn work is such operation that the machine pushes piled soil forward and spread it while changing the direction by turning.

Select “Cutting & Carry”.



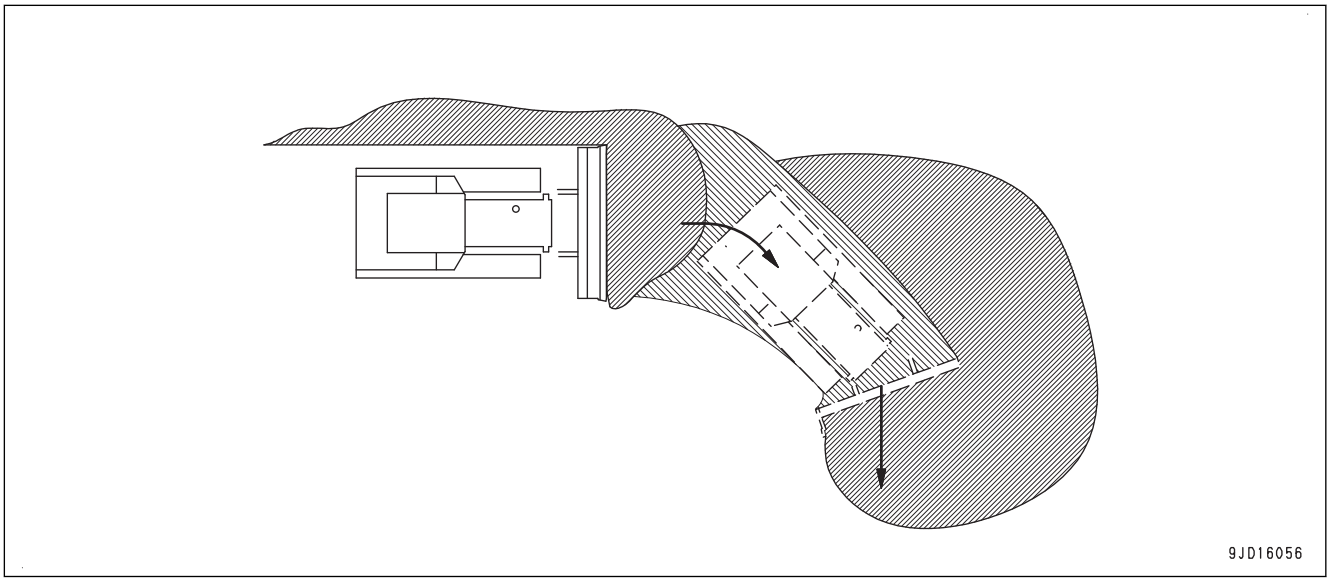
The method of the automatic control of blade is the same as of spreading operation.

Turn the machine to the direction of spreading by referring to “SPREADING OPERATION”.



If you face the blade straight forward by angling operation, less soil spills from the sides of the blade.

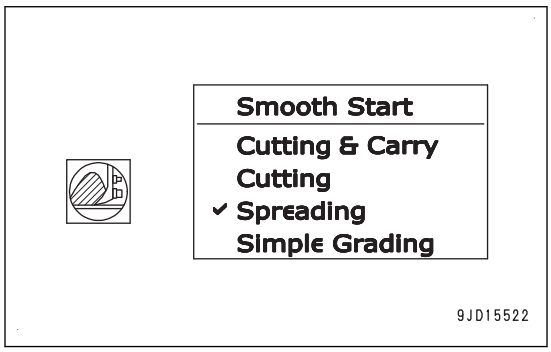
Angling operation is not an automatic operation. Operate the angle switch to angle the blade.



NATURAL GROUND SIDE-CUTTING OPERATION

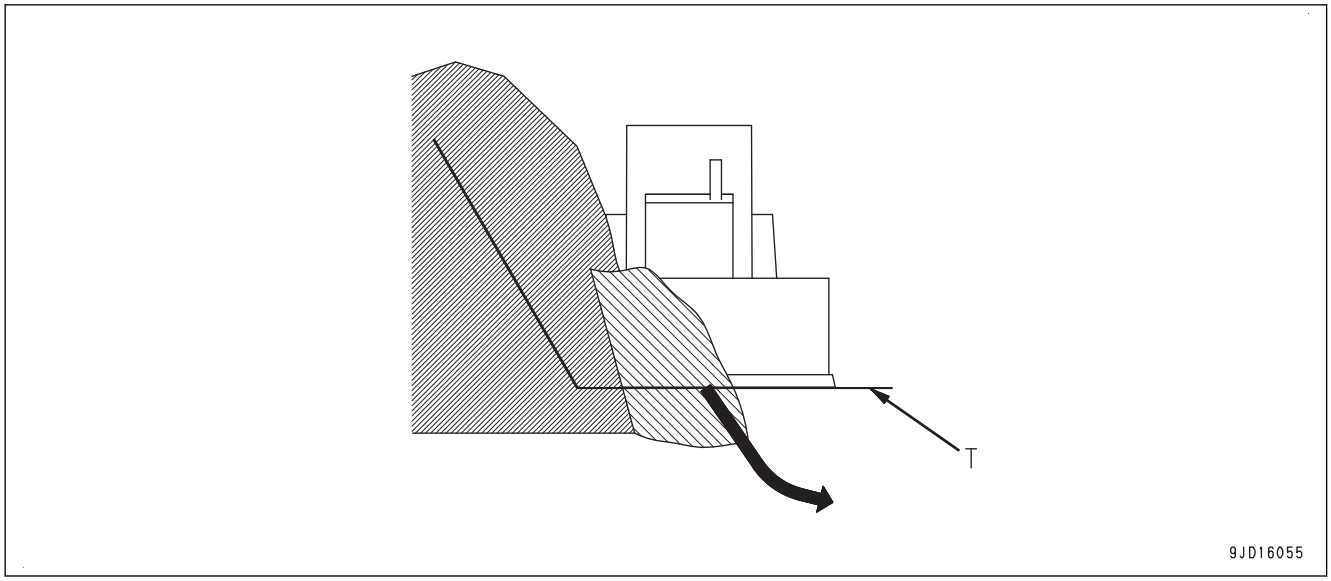
Natural ground side-cutting work is the operation to pull down the soil by using one side of blade.

Select “Spreading”.



When pulling down the hard natural ground by using the blade automatic control, if the load is applied only one side of blade, the blade cuts in too much and track on that side slips easily.

Adjust the operation by using both of the blade automatic control and manual blade control by blade control lever.

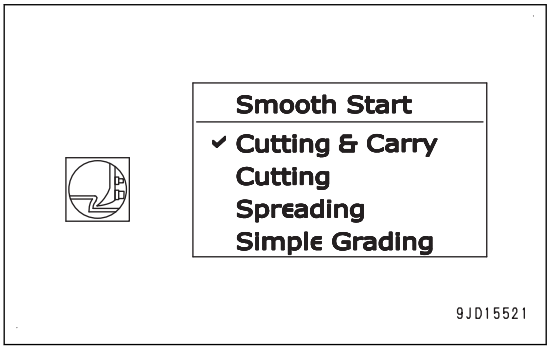


(T) Design surface

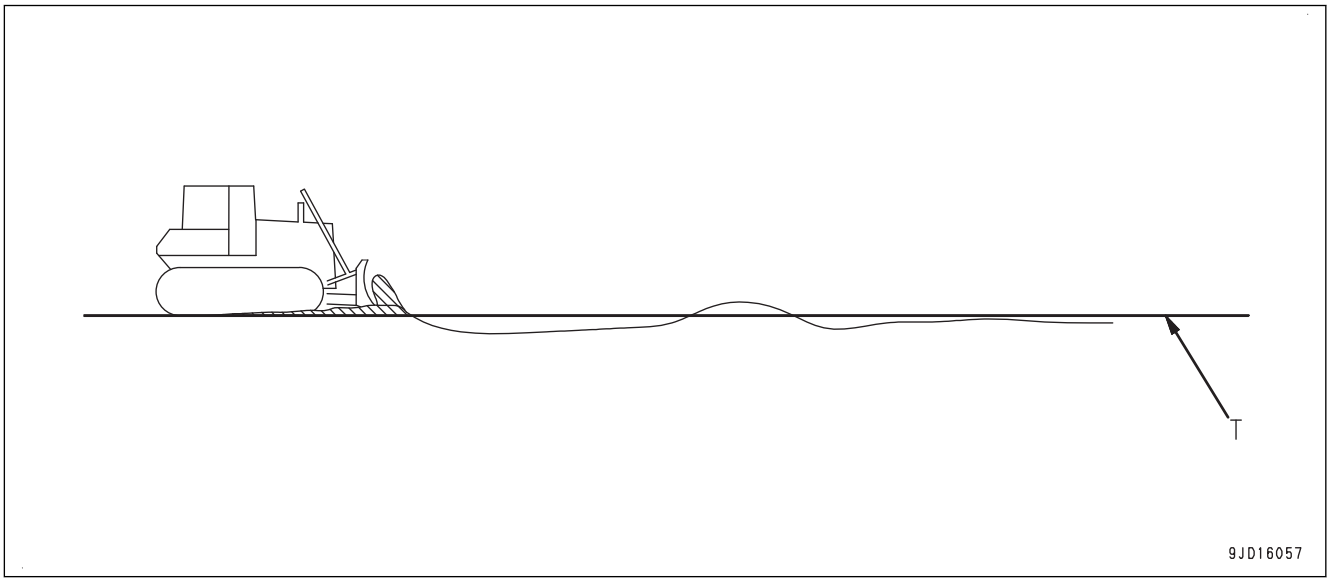
LEVELING WORK

Leveling work is the operation to finish the ground when the current ground is similar to the design surface.

Select “Cutting & Carry”.



1. Start the blade automatic control, and drive the machine.
   The blade automatically levels the ground.
2. Start the place higher than the design surface, and carry the cut soil to the lower place to fill there.



(T) Design surface

- If some place higher than the design surface is left at 1 time dozing, travel on that place several times so that such place can be built as designed.
- Depending on the type of soil, if the travel speed is high, the leveled surface may be uneven. Decrease the travel speed.

When checking the height of design surface by using blade, place the joystick (steering, directional and gear shift lever) in FORWARD position with decelerator/brake pedal and decelerator pedal depressed, and perform LOWER trigger operation.

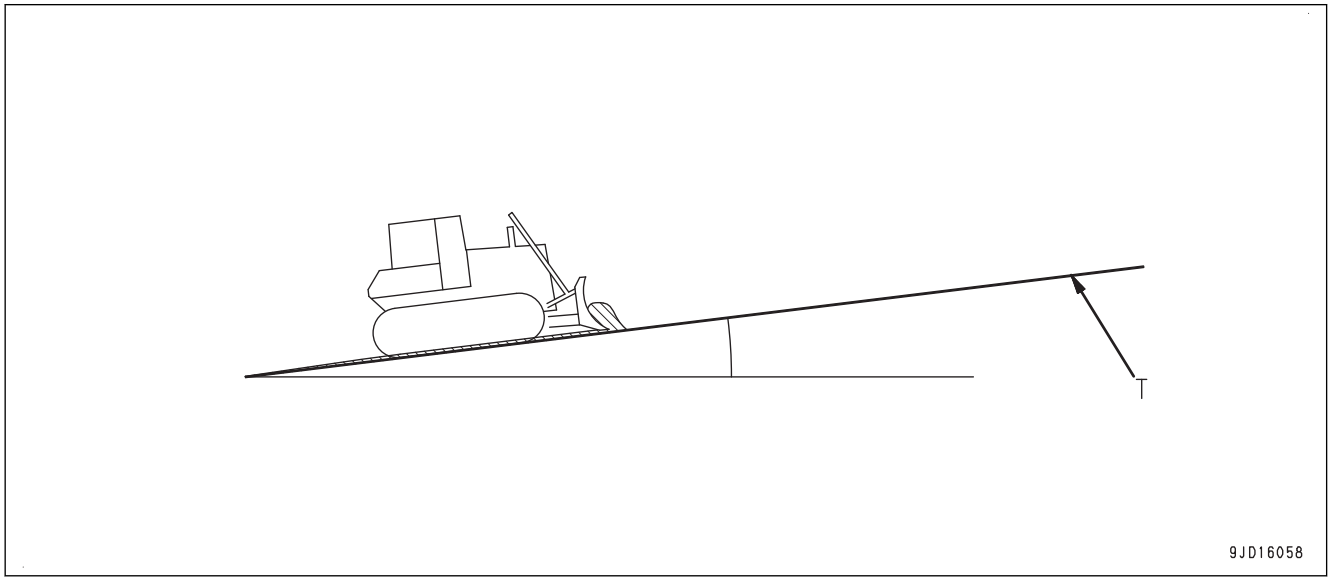
For LOWER trigger operation method, see “METHOD FOR ACTIVATING AUTOMATIC BLADE CONTROL”.

Since the blade will automatically go down to the height of design surface, you can grasp the relationship between the machine and design surface. However, if the height of design surface is lower than the ground where the track contacts, the blade does not go down below the ground.

Even for the design surface which is not horizon, the blade automatic control can be used.

When turning the machine on the slope at leveling work, turn with large turning radius or change the direction of machine and push the soil slantwise in straight line in order to make the finishing surface smooth.

In the work on a sharp slope, sideway or downhill operation is more efficient than uphill operation.



(T) Design surface

When waves may occur during leveling work and the leveled surface may be rough, the possible causes of this phenomenon are as follows.

Find out the cause and take remedies.

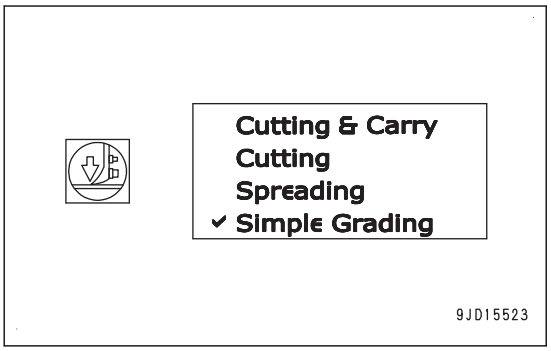
Main causes	Remedy
Hydraulic oil temperature is low.	Perform warm-up operation until pointer of hydraulic oil temperature gauge enters green range.
Operation is not suitable for blade automatic control.	The following works are not suitable for the blade automatic control and can lower the response of blade. Turn off the blade automatic control, and operate blade with blade control lever. • Cutting or ditching into hard or frozen ground • Work on a place where soil condition is uneven Leveled surface may be uneven at place where the ground hardness changes.
Sharp turn on a slope	When the machine turns sharply on a slope or its direction is changed suddenly by rock, etc., finishing accuracy can lower. When turning the machine on a slope, increase the turning radius.
Travel speed is too high.	Depending on the type of soil, if the travel speed is too high, the leveled surface may be uneven. Decrease the travel speed.
Wrong setting of gain adjustment for blade automatic control	Check if contents of setting of gain adjustment is suitable for soil type, and adjust again if necessary. For details, see “ADJUST GAIN OF AUTOMATIC BLADE CONTROL”.
Insufficient receiving state of GNSS satellite	Check that sufficient visibility is secured over GNSS antenna. Check that there is no obstacle such as a tree, building, vehicle, cliff, etc. which blocks or reflects the signals from the satellite.

BACK GRADE WORK

Leveling work with the back grade mode is turned on in the following cases.

- When dragging back the remaining soil at the wall side by traveling in reverse
- When erasing track marks

Select “Simple Grading”.



REMARK

When “Simple Grading” is selected, you cannot set the Smooth Start and the blade load mode.

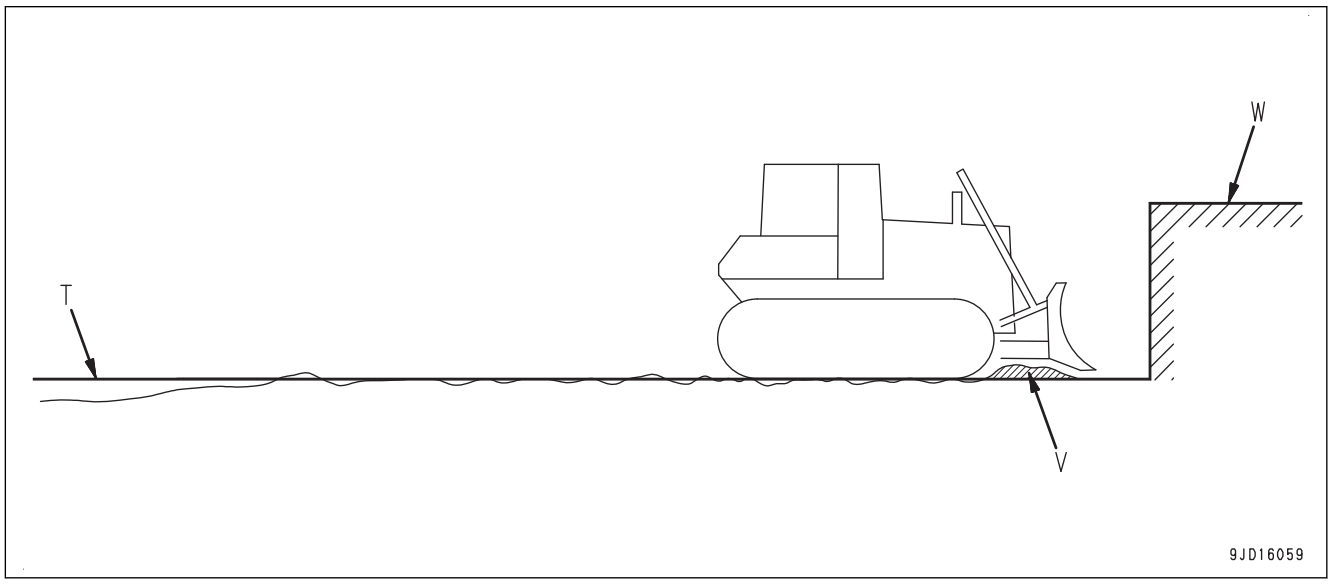
1. Start the blade automatic control and turn on the back grade mode.

   For details of the method of selecting the back grade mode, see “HANDLE BACK GRADE MODE”.
2. Raise the blade with the blade control lever and move forward enough to hold remaining soil at the back of the blade.
3. Place the joystick (steering, directional and gear shift lever) in REVERSE position with the decelerator/brake pedal depressed, and perform LOWER trigger operation.

   For LOWER trigger operation method, see “METHOD FOR ACTIVATING AUTOMATIC BLADE CONTROL”.
4. After the blade lowers, start reverse travel by releasing the decelerator/brake pedal slowly.
5. Hold the remaining soil at the back of the blade, carry it to the place lower than the design surface and track marks to fill there.

   When the load on the blade is excessive, the blade thrusts and the track slips.

   Adjust the blade by raising or “floating” the blade with the blade control lever as well.
6. When remaining soil is excessive, drag some soil back from your side by several times.



(T) Design surface (W) Obstacles such as walls

(V) Remaining soil

When the machine travels in reverse, the blade edge shape is not suitable for dozing.

Use this for finishing leveling when the height difference to the design surface is small.

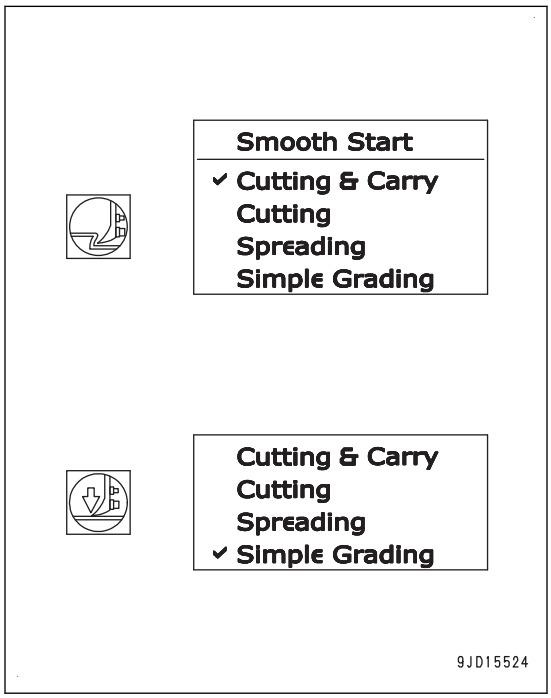
FINISHING OPERATION OF BANK SOIL

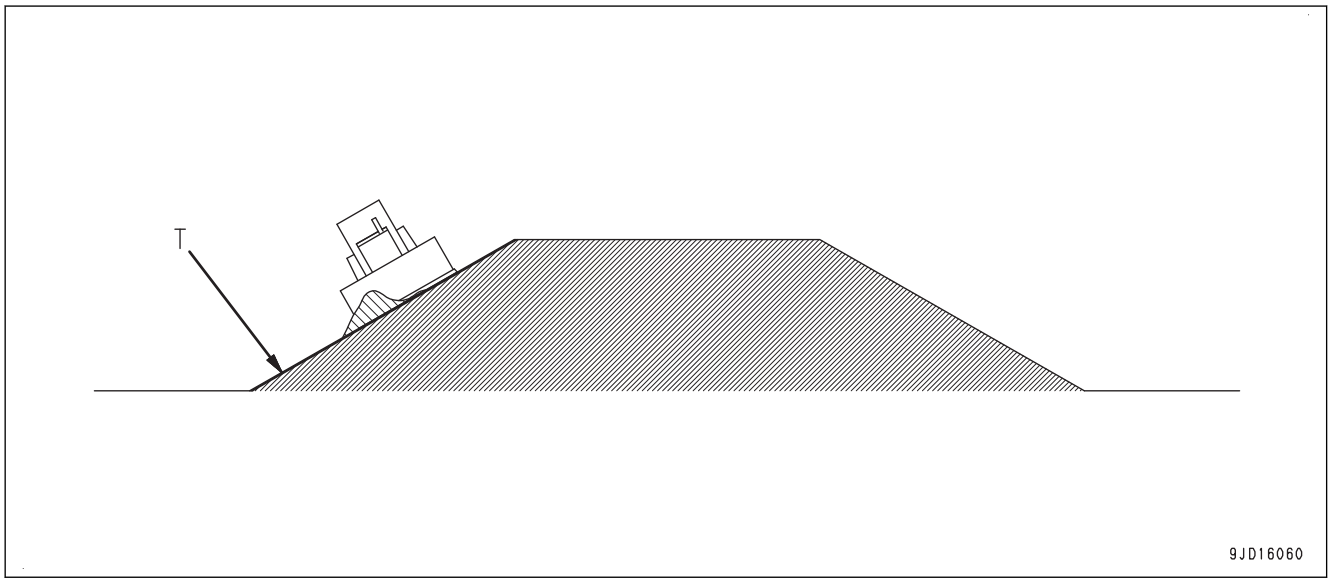
Finishing work of bank soil is the operation to finish the surface of bank.

WHEN FINISHING SLOPE SURFACE BY OPERATING HORIZONTALLY

When finishing the bank by traveling on the side slope parallel to the slope, operate with same manner as leveling work.

Select “Cutting & Carry” or “Simple Grading” by referring to “LEVELING WORK”.





(T) Design surface

If the steering operation is needed to recover from the sideways slip of machine while traveling on the side slope parallel to the slope, avoid the sideways slip according the following procedure.

- Decrease the load against the blade.
  It is recommended to set the dozing depth to 10 to 20 mm {0.4 to 0.8 in} when finishing a slope surface by operating horizontally.
- Decrease the travel speed.
  It is recommended to set the gear speed to the 1st when traveling on a slope horizontally.
- Do not drive the machine parallel to the slope, but drive it diagonally.

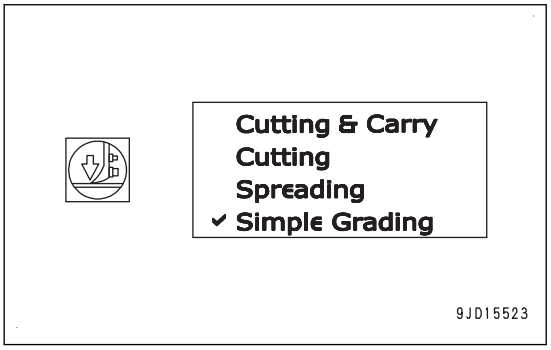
WHEN FINISHING CONCAVE INFLECTION POINT VERTICALLY

This is the operation to finish the bank by crossing over the place where the angle of design surface changes sharply.

Select “Simple Grading”.

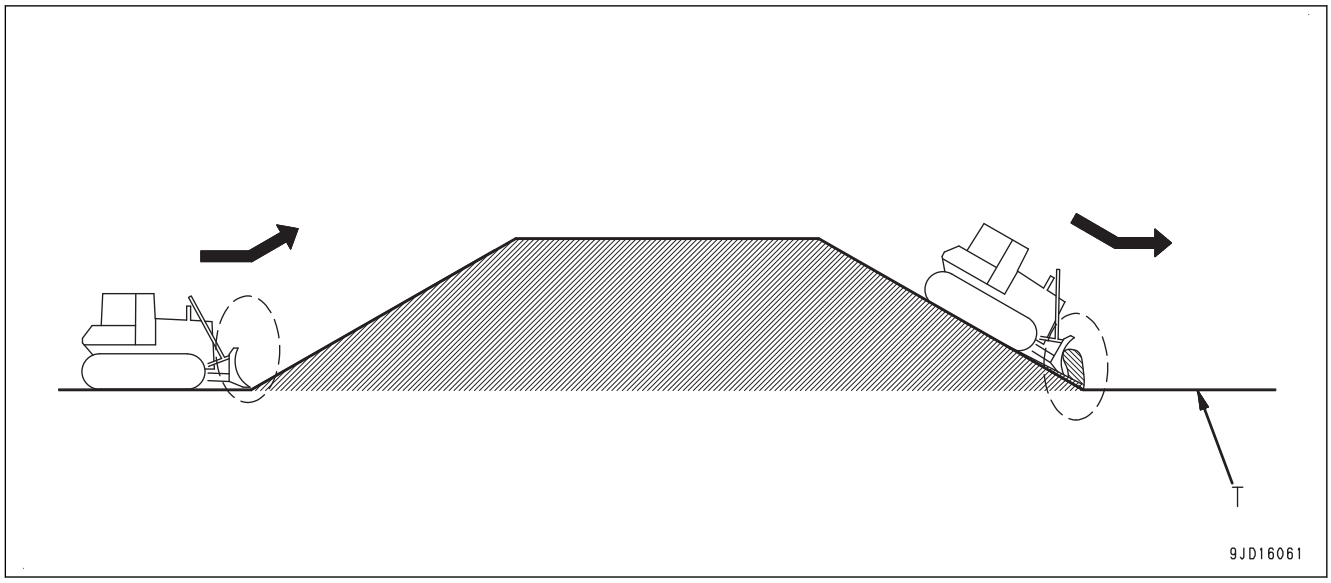
REMARK

When “Simple Grading” is selected, you cannot set the Smooth Start and the blade load mode.



At the place where the angle of design surface changes sharply, operate the decelerator/brake pedal to decrease the travel speed.

When the dozing mode is set to “Simple Grading”, the blade edge always moves along the design surface. Even if a load is applied to the blade, the blade does not rise automatically. Therefore, use this method for the finishing operation under a light load.



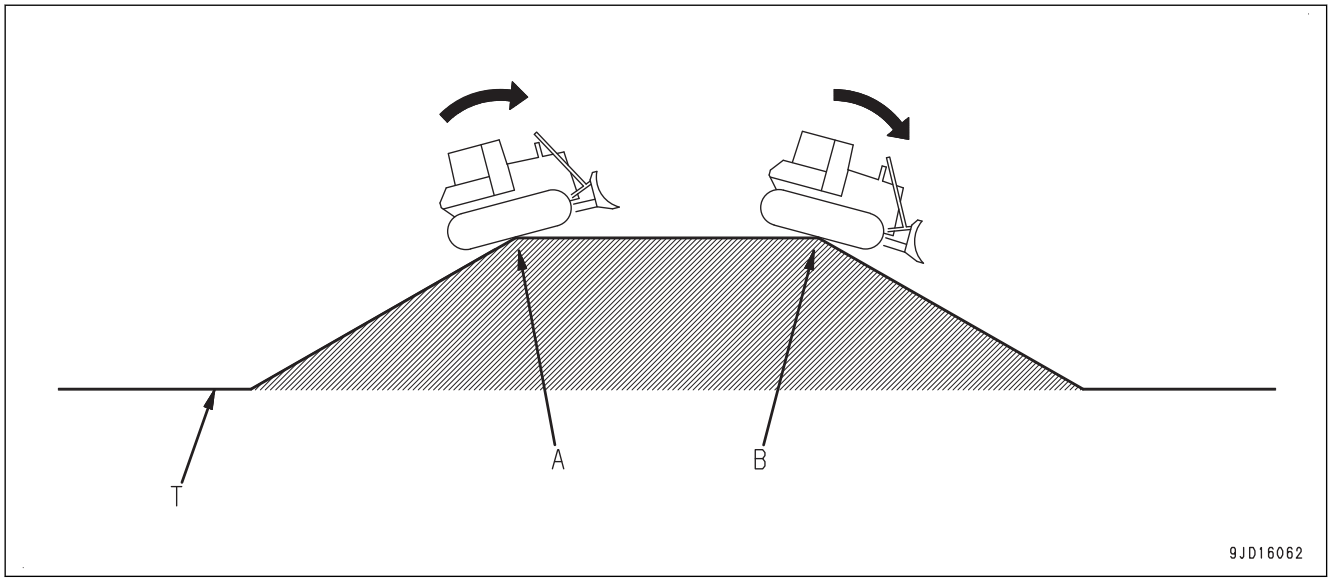
(T) Design surface

If the slope length is shorter than the machine overall length, the finishing accuracy may become worse at a concave inflection point. In such case, do as follows.

- Use both of the blade automatic control and manual blade control by blade control lever.
- Change the working direction of the machine.

WHEN FINISHING CONVEX INFLECTION POINT

- At convex inflection points (A) and (B), perform finishing work by operating the blade with the blade control lever or by traveling transversely.
- The brake mode is recommended to maintain the speed of the work equipment. If the brake mode is used, the travel speed can be decreased without decreasing the engine speed.

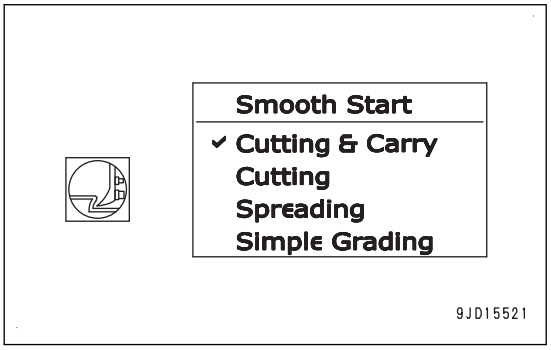


(T) Design surface

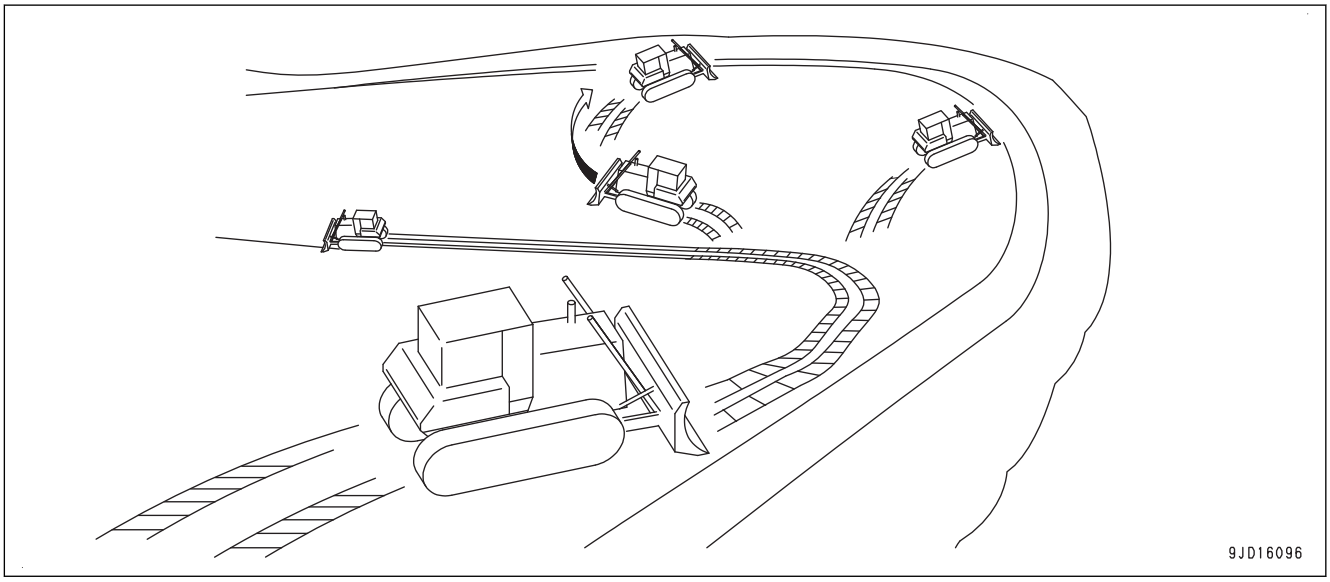
SUPER ELEVATION OPERATION

Super elevation operation is the work to create designed 3D curved surface by dozing operation.

Select “Cutting & Carry”.



Use the automatic control of blade to cut and finish the curved surface which does not have an inflection point.



TRANSPORTATION

Transporting the Machine

Contact your Komatsu distributor when transporting the machine.

The overall height and machine weight, the network modem antenna, the GNSS antenna bracket and the cylinder stroke sensor on the work equipment cylinders are different from the non-ICT machine.

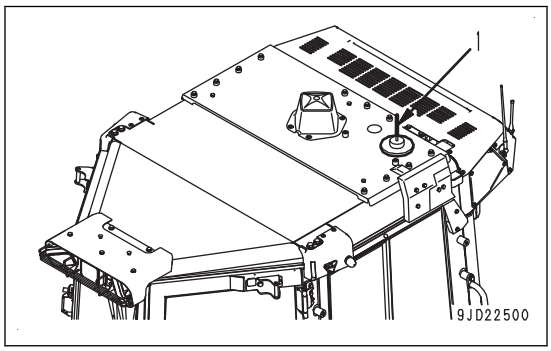
NOTICE

Do not allow the cylinder to rotate when work equipment is not attached. If removing the GNSS antenna bracket to shorten overall height, remove radio device antenna first.

REMOVE RADIO DEVICE ANTENNA CABLE

When transporting the machine, remove radio antenna (1).

	Overall height (mm {ft in})	
	D37EXI D37PXI	D39EXI D39PXI
When radio antenna is not removed	3140 {10’ 4"}	3205 {10’ 6"}
When radio antenna is removed	2945 {9’ 8"}	3010 {9’ 11"}



PRECAUTIONS FOR LONG-TERM STORAGE

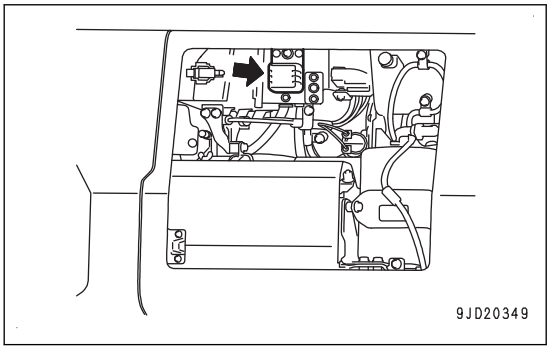
For the method of long-term storage (1 month or more), see Operation and Maintenance Manual for the standard machine, “OPERATION”, “PRECAUTIONS FOR LONG-TERM STORAGE”.

Handling method of the battery disconnect switch for this machine is different from that of the standard machine.

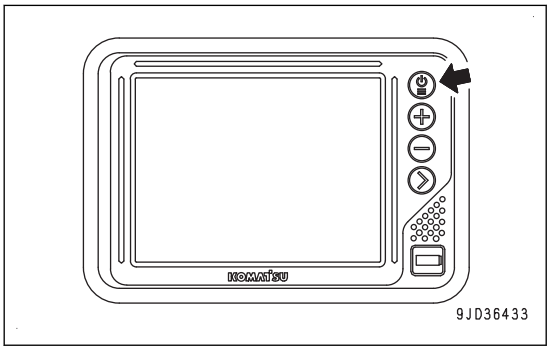
TURN BATTERY DISCONNECT SWITCH TO OFF POSITION BEFORE LONG-TERM STORAGE

Before reading this section, see Operation and Maintenance Manual for the standard machine “OPERATION”, “BATTERY DISCONNECT SWITCH”.

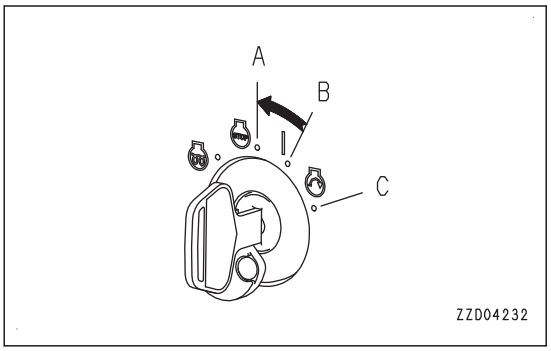
The battery disconnect switch is in the hydraulic oil inspection cover on the left side of the machine.



1. Hold down the power ON/OFF and menu switch to turn off the control box power.



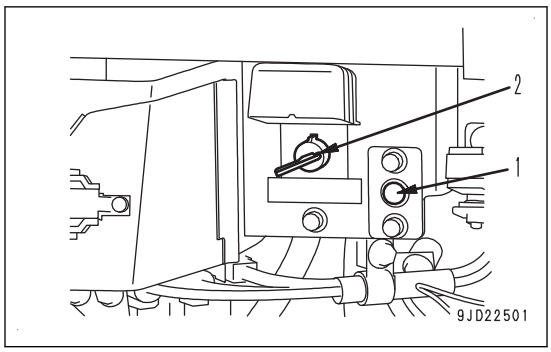
2. Turn the starting switch to OFF position (A).

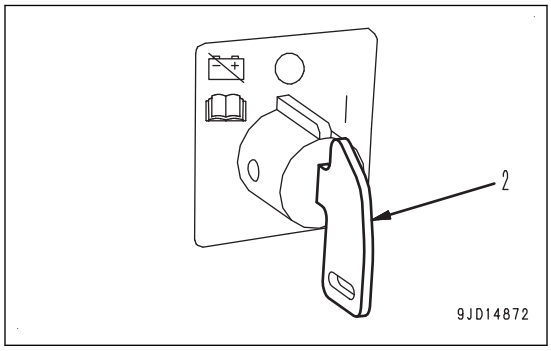


3. Check that Windows® operating system of the control box has been shut down completely.
4. While system operating lamp (1) is not lit, turn the battery disconnect switch (2) to OFF position and remove the key.

NOTICE

The system operating lamp does not correspond with the control box. Always check that the Windows® operating system of control box has been shut down completely, and then operate the battery disconnect switch.





TROUBLES AND ACTIONS

OTHER TROUBLE

PHENOMENA AND ACTIONS FOR CONTROL BOX

- Contact your Komatsu distributor for the remedies indicated with (*) in the remedy column.
- Ask your Komatsu distributor for repairs for problems or causes which are not listed below.

Problem	Main causes	Remedy
Control box cannot be turned on.	Defective wiring	Check the connector on back of control box for disconnection and the open circuit, and repair it if any (*)
	Time of pressing the power ON/OFF and menu switch of the control box is too short.	Hold down the power ON/OFF and menu switch.
	Blown fuse	Check, repair. (*)
	Insufficient battery charge	Charge the battery.
	Battery disconnect switch is at OFF position.	Turn it to ON position.
Control box freezes (touch panel does not react).	Control box may be defective.	Restart the control box.
		Check, replace. (*)
It automatically changes to Windows® operating system screen.	Control box may be defective.	Restart the control box.
		Check, replace. (*)
The message about cylinder stroke end reset does not go out.	Operation procedure may be wrong.	Perform stroke end reset of cylinder. For details, see “RESET CYLINDER STROKE END”.
	Incorrect input of pitch rod length	Input pitch rod length correctly. For details, see “INPUT PITCHING ROD LENGTH”.
	Stroke sensor may be defective.	Check, replace. (*)
Compensation value of blade elevation exceeds 50 mm {2 in} .	Incorrect input of wear amount	Input wear amount correctly. For details, see “METHOD FOR INPUTTING WEAR AMOUNT OF BLADE EDGE AND TRACK SHOE”.
	Incorrect input of pitch rod length	Input pitch rod length correctly. For details, see “INPUT PITCHING ROD LENGTH”.
	Stroke end is not reset.	Perform stroke end reset of cylinder. For details, see “RESET CYLINDER STROKE END”.
	Incorrect setting of the base station, base point and control point	Set them correctly.
	The machine was turned when approaching to the base point.	Approach by straight travel.
	Insufficient receiving state of GNSS satellite	Operate in another time.
		Move to the place with open sky.

Problem	Main causes	Remedy
Finishing accuracy is poor.	Incorrect input of wear amount	Input wear amount correctly. For details, see “METHOD FOR INPUTTING WEAR AMOUNT OF BLADE EDGE AND TRACK SHOE”.
	Incorrect input of pitch rod length	Input pitch rod length correctly. For details, see “INPUT PITCHING ROD LENGTH”.
	Stroke end is not reset.	Perform stroke end reset of cylinder. For details, see “RESET CYLINDER STROKE END”.
	Incorrect setting of the base station, base point and control point	Set them correctly.
	The machine was turned when approaching to the base point.	Approach by straight travel.
	Insufficient receiving state of GNSS satellite	Operate in another time.
		Move to the place with open sky.
“AUTO” is not displayed on the control box screen.	-	Check. For details, see “AUTO/MANUAL SWITCH”.
The control box does not react to the pressing of the cut/fill offsets switch.	Defective switch, defective wiring	Check, repair. (*)
LED of the back grade mode switch does not light up when turning the starting switch to ON position.	Defective switch, defective wiring	Check, repair. (*)
The buzzer does not sound when the back grade mode switch is pressed.	Operation procedure may be wrong.	Press the back grade mode switch when the automatic control of blade is enabled (“AUTO” is displayed on the control box). For details, see “BACK GRADE MODE SWITCH”.
	Defective switch, defective wiring	Check, repair. (*)

ACTIONS WHEN MESSAGE IS DISPLAYED ON CONTROL BOX

- If the message is displayed on the control box screen, take actions according to the following table.
- As for the corrective actions indicated with (*) in the remedy column, always contact your Komatsu distributor.
- When the control box is started or restored from abnormality, a message is displayed temporarily until the system is restored. Wait for a few minutes until the system is restored.
- If the control box has any abnormality, restart the control box once. Then, check if it recovers to the normal state.

Control box screen display				Main causes	Remedy
Elevation control key (Left bottom of the main window)		Slope control key (Right bottom of the main window)			
GPS receiver not connected !	(Red)	IMU sensor not connected !	(Red)	System is being started.	Wait.
				Defective wiring	Check, repair. (*)
Waiting for radio link...	(Red)	-	-	System is being started.	Wait.
				The power supply of base station is turned off.	Turn on the power supply of base station.
				Radio reception is poor.	Move the machine near the base station.
				Wrong radio configuration	Configure the radio. For details, see “METHOD FOR CONFIGURING RADIOS”.
-	-	IMU sensor not connected	(Red)	System is being started.	Wait.
				Defective wiring	Check, repair. (*)
				Defective IMU sensor	Check, replace. (*)
Waiting for satellites...	(Red)	-	-	System is being started.	Wait.
				Failed to receive the signals from GNSS satellites.	Move the machine to a place under the open sky.
				Defective wiring	Check, repair. (*)
-	-	Komatsu controller not connected!	(Red)	The starting switch of the machine is turned off.	Turn the starting switch of the machine to ON position.
				Defective wiring	Check, repair. (*)
-	-	Cylinder Stroke Reading Abnormal	(Red)	Abnormality is displayed on the machine monitor.	Check the detail of abnormality display, perform checking of it, and repair. (*)
-	-	Komatsu CAN Comms Abnormal	(Red)	Abnormality is displayed on the machine monitor.	Check the detail of abnormality display, perform checking of it, and repair. (*)
-	-	Komatsu Machine Trouble	(Red)	Abnormality is displayed on the machine monitor.	Check the detail of abnormality display, perform checking of it, and repair. (*)

Control box screen display				Main causes	Remedy
Elevation control key (Left bottom of the main window)		Slope control key (Right bottom of the main window)			
Waiting to initialize...	(Red)	-	-	System is being started.	Wait.
				Insufficient receiving state of GNSS satellites	Move the machine to a place under the open sky, or wait for a better time for communication of GNSS satellite.
-	-	System initializing	(Red)	System is being started.	Wait.
Initializing	(Red)	-	-	System is being started.	Wait.
Configuring GPS	(Red)	-	-	System is being started.	Wait.
No GPS localization	(Green)	-	-	Control points file is not yet set.	Select the project file including control points file. For details, see “METHOD FOR IMPORTING AND SETTING PROJECT FILES”.
					Set control points file. For details, see “METHOD FOR IMPORTING CONTROL POINT FILES”.
Low precisions...	(Orange)	-	-	Positioning accuracy gets worse than that of setting in “Machine set-up...”. For details, see “SET FOR CONNECTING TO MACHINE”.	Move the machine to a place under the open sky, or wait for a better time for communication of the GNSS satellite.
					When the finishing accuracy is not important, you may continue the work.
-	-	Heading Initializing	(Orange)	Machine direction is not known.	Move the machine backward and forward.
					Keep the joystick (steering, directional and gear shift lever) in NEUTRAL position while the machine is stopped.

Control box screen display				Main causes	Remedy
Elevation control key (Left bottom of the main window)		Slope control key (Right bottom of the main window)			
Out of design area...	(Green)	Out of design area...	(Green)	Project file is not selected.	Select the project file including design surface. For details, see “METHOD FOR IMPORTING AND SETTING PROJECT FILES”.
				Design surface is not selected.	Set the design data. For details, see “METHOD FOR SELECTING AN ACTIVE SURFACE FILE”.
				Out of range of selected design surface	Move the machine within the selected range of design surface.
-	-	1.$%	(Red)	System error	Take actions according to other messages displayed at the same time.

ACTIONS WHEN POP-UP MESSAGE IS DISPLAYED ON CONTROL BOX

Control box screen display Pop-up message (screen center)		Main causes	Remedy
Auto Control Disengaged!	(Red)	Automatic control of blade is turned off from on.	Press the Auto/Manual switch. For details, see “AUTO/ MANUAL SWITCH”.
Cylinder Sensor Reset Request! Please move the Lift cylinder to stroke end and keep it there for 2 seconds.	(Gray)	Resetting of the stroke end of lift cylinder is not completed.	Perform resetting of the stroke end of cylinder. For details, see “RESET CYLINDER STROKE END”.
Cylinder Sensor Reset Request! Please move the Tilt cylinder to stroke end and keep it there for 2 seconds.	(Gray)	Resetting of the stroke end of tilt cylinder is not completed.	
Cylinder Sensor Reset Request! Please move the Angle cylinder to stroke end and keep it there for 2 seconds.	(Gray)	Resetting of the stroke end of angle cylinder is not completed.	

ACTIONS WHEN Sitelink3D MESSAGE IS DISPLAYED ON CONTROL BOX

The following messages are not abnormalities but take a remedy according to the message if necessary.

Control box screen display	Main causes	Remedy
No current "activity" selected! Please select an activity from the Sitelink3D menu.	“Activity” of “Sitelink3D” menu has not been set.	Press “Ok” and close the message screen. On the control box screen, press “Sitelink3D activity” or select “Activity” of “Sitelink3D” menu. If the Activity is not displayed on the drop down list, register it from the office side. Even if performing the work without setting the Activity, it does not affect the work.
Registered name of terminal: “Content of message”	A message is received from the device which is connected to the same site of Sitelink3D.	No remedy is needed since the message display will be cleared as time elapsed. Check the contents of the message by pressing “Sitelink3D messaging” on the control box screen, or on “View messages...” of “Sitelink3D” menu.

HANDLE CONTROL BOX

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INTRODUCTION

3DMC is a software interface between the worker and the machine components.

You can create, update, copy, and delete the files, or lap the image files of 2-screen display, etc. by using the menus, switches, and keys.

If the worker can access a piece of information or a file, he/she can save that information or file to the memory in the control box or a USB memory and can update it at any time.

FUNCTION OF SWITCHES

POWER ON/OFF AND MENU SWITCH

Hold down the power ON/OFF and menu switch to turn on the control box power.

If the power ON/OFF and menu switch is held down again while the control box power is turned on, the control box power will be turned off.

While the main window is being displayed, press the power ON/OFF and menu switch and the main menus (“File”, “Control”, “Tools”, and “View”) can be displayed.

AJD04827

ZOOM IN SWITCH

Press the zoom in switch and the main window display is enlarged.

AJD04828

ZOOM OUT SWITCH

Press the zoom out switch and the main window display is reduced.

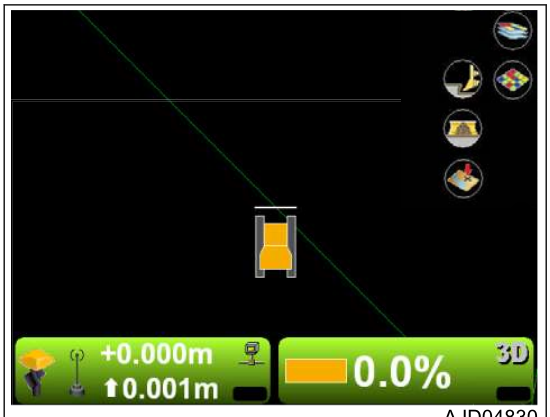
AJD04829

TOGGLE MAIN VIEW SWITCH

While the main window is being displayed, press the Toggle main view switch, and you can switch the screens of Plan view, Section view, and Profile view.

AJD04833

(Plan view)



AJD04830

(Profile view)

AJD04831

(Section view)

AJD04832

BRIGHTNESS AND VOLUME CONTROL

Hold down the Toggle main view switch, and you can display the adjustment mode screen.

Keep pressing each adjustment bar and slide it up and down to adjust the brightness of the control box screen and to control the volume.

(1) Brightness adjustment of LED indicator

(2) Brightness adjustment of backlight of switches

(3) Brightness adjustment of screen

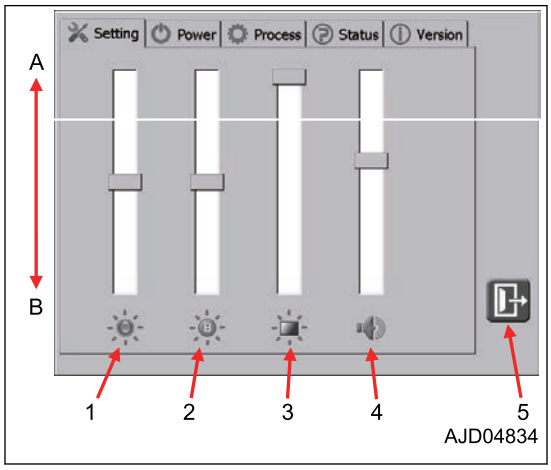
(4) Volume control

(5) “RETURN” button

(A) Bright, Large volume

(B) Dark, Small volume

Press “RETURN” button (5), and the screen returns to the main window.



LED INDICATOR

The cut fill amount against the surface height, transverse slope, and the distance from the steering polyline can be individually set and displayed on the LED indicators which are located at upper part and right and left sides of control box screen.

For the setting method and accuracy of display, see “SET FOR CONNECTING TO MACHINE”.

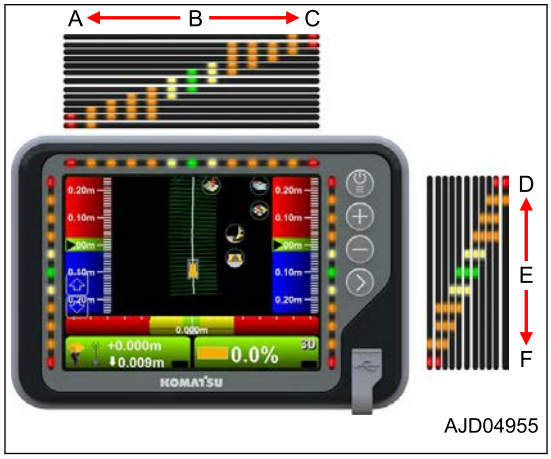
(1) Upper LED indicator

(2) L.H. LED indicator

(3) R.H. LED indicator

Lighting pattern of LED indicator

- Upper LED indicator
  - (A) Deviation to the left from alignment, leftward slope
  - (B) On-grade
  - (C) Deviation to the right from alignment, rightward slope
- L.H. or R.H. LED indicator
  - (D) Cut, slope angle is large
  - (E) On-grade
  - (F) Fill, slope angle is small



Example of lighting of LED indicator

When L.H. LED indicator is set to the Cut Fill display, LED lights up as follows.

(When On-grade)

When blade edge is at the height of design surface, 3 (yellow, green, yellow) LED lamps at the center of indicator light up.

AJD04839

(When blade is off the design surface)

When the blade edge is off the height of design surface beyond the set On-grade display width, 3 (orange, yellow, green) LED lamps light up.

The figure shows the example when blade is off toward the Cut side (where blade edge is higher than the height of design surface).

For the setting method of On-grade display width, see “SET FOR CONNECTING TO MACHINE”.

AJD04873

(When blade is far off the design surface)

When the blade edge is off the height of design surface beyond the range which the indicator can display, 2 (red, orange) LED lamps light up.

The figure shows the example when blade is far off toward the Fill side (where blade edge is lower than the height of design surface).

AJD04885

REMARK

The function to display the Cut Fill amount or the distance from the steering polyline is similar to the function to display the grade indicator at the right and left of the screen and the light bar at the lower part of the screen.
Cut Fill amount can be displayed on both LED indicator and grade indicator. You can make the grade indicator not to be displayed to widen the main window. For the displaying method of grade indicator and light bar, see “VIEW MENU”.

(When displaying the grade indicator)

AJD04836

(When not displaying the grade indicator)

AJD04837

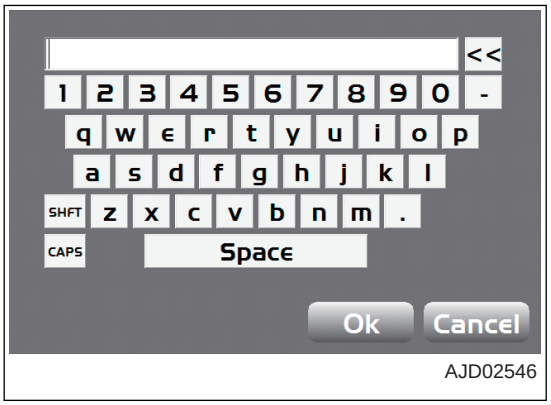
KEYBOARD FUNCTIONS

Press the input section for letters or numerals, and the keyboard pops up. Input letters or numerals by using the pop-up keyboard.

There are following 2 types of keyboards.

Alphanumeric keyboard

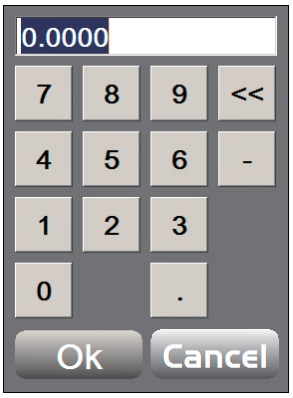
You can input letters and numerals.



AJD02546

Numeric keyboard

You can input only numerals.

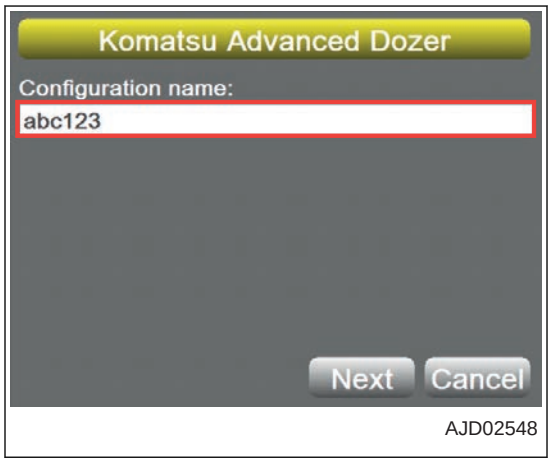


AJD02547

METHOD FOR INPUTTING WITH ALPHANUMERIC KEYBOARD

1. Press the input section.

   The alphanumeric keyboard is displayed.



AJD02548

2. Input letters or a value by pressing the alphanumeric keyboard.

   (1) “Ok” button

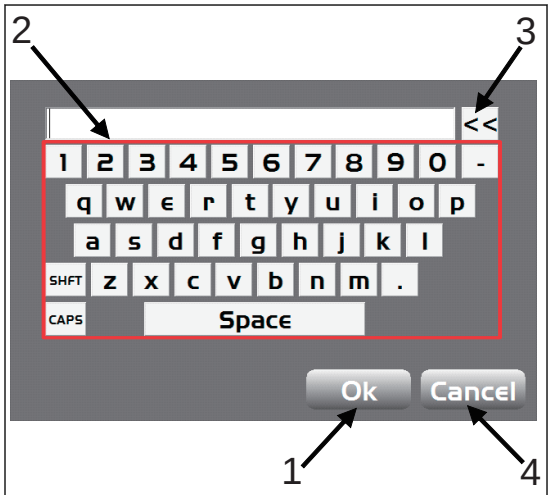
   (2) Alphanumeric keys

   (3) Backspace key

   (4) “Cancel” button

3. After inputting, press “Ok”.

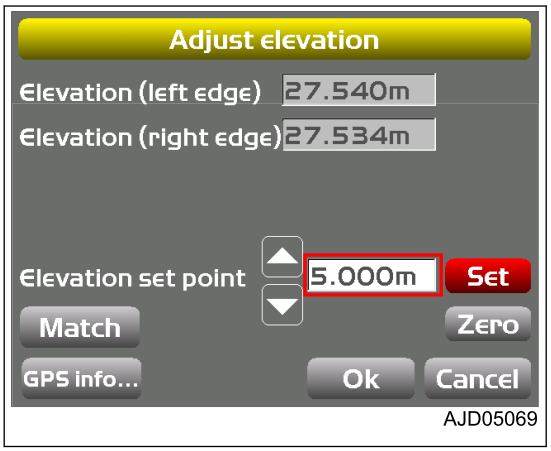
   The input information becomes effective and the alphanumeric keyboard goes out.



AJD02549

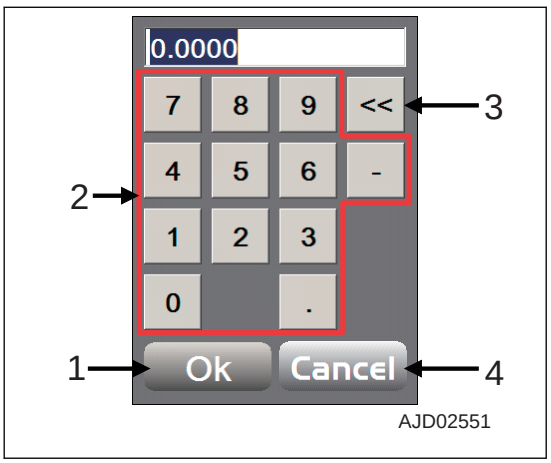
METHOD FOR INPUTTING WITH NUMERIC KEYBOARD

1. Press the input section.
   The numeric keyboard is displayed.



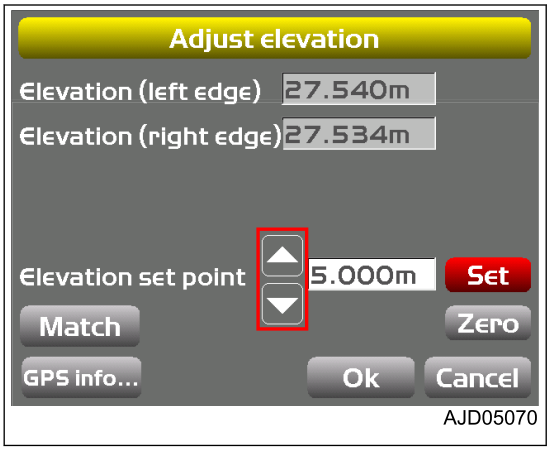
AJD05069

2. Input a value by pressing the numeric keyboard.
   (1) “Ok” button
   (2) Numeric keys
   (3) Backspace key
   (4) “Cancel” button
3. After inputting, press “Ok”.
   The input information becomes effective and the numeric keyboard goes out.



AJD02551

You can also change the value by pressing “Set” and then pressing the up and down arrow keys.



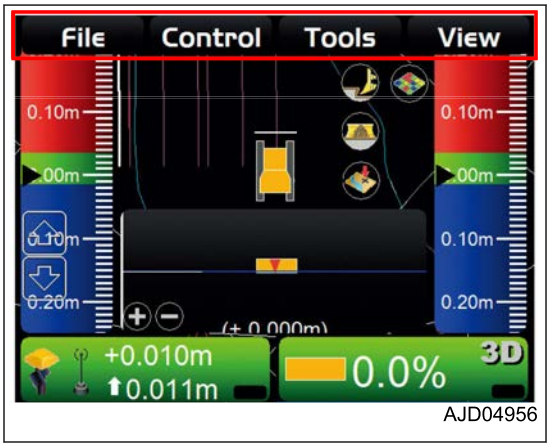
AJD05070

METHOD FOR DISPLAYING MAIN MENU

While the main window is being displayed, press the power ON/OFF and menu switch.

AJD04827

The main menu (“File”, “Control”, “Tools”, and “View”) is displayed.



AJD04956

FILE MENU

Before starting of work, it is necessary to prepare the project file, control point file, surface files, machine setting file, etc. which are required for accurate leveling of the jobsite.

On “File” menu, you can input, output, and set the project file, control point file, layers, point data file, surface files, and work data which are used for 3DMC.

PROJECT FILES

Project file (*.tp3) is a jobsite file which contains the files of all types such as the control point file, layer, point data file, surface file, etc. which are handled by 3DMC.

The project file is used together with 3D-Office or Pocket-3D made by TOPCON CORPORATION. Also, you can use the same setting in common by importing this file into the internal memory of the control box of another construction machine.

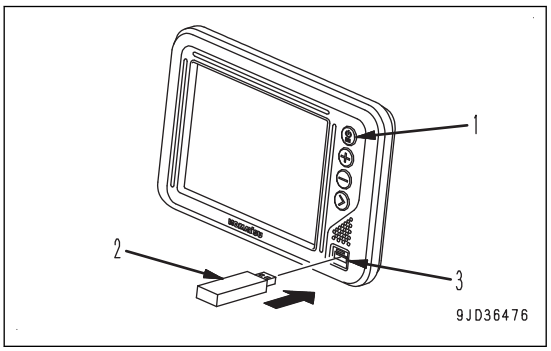
METHOD FOR IMPORTING AND SETTING PROJECT FILES

When importing a project file from USB memory to internal memory of the control box and setting it as a current work, perform the following procedure.

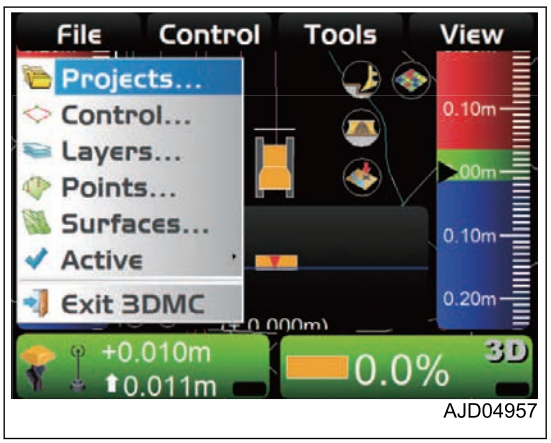
If the following files are contained in the project files, those files are also imported.

- Control point file (*.gc3)
- 3D surface files
  - Alignment file (*.rd3)
  - TIN data file (*.tn3)
  - Plane surface file (*.pl3)
- Linework data file (*.ln3)
- Point data file (*.pt3)

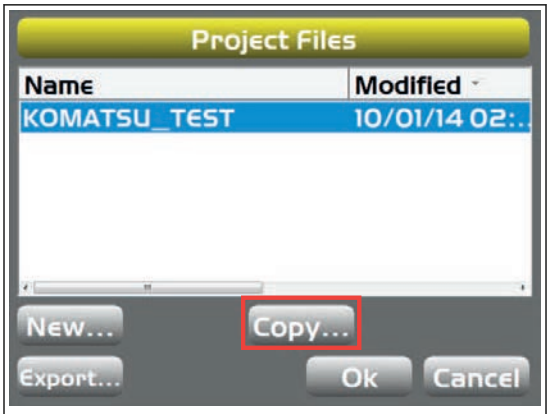
1. Hold down the power ON/OFF and menu switch (1) to turn on the control box power.
2. Insert USB memory (2) in which project files are saved into USB port (3) of the control box.



3. Press the power ON/OFF and menu switch (1) to display the main menu.
4. On “File” menu, press “Projects...” and select.



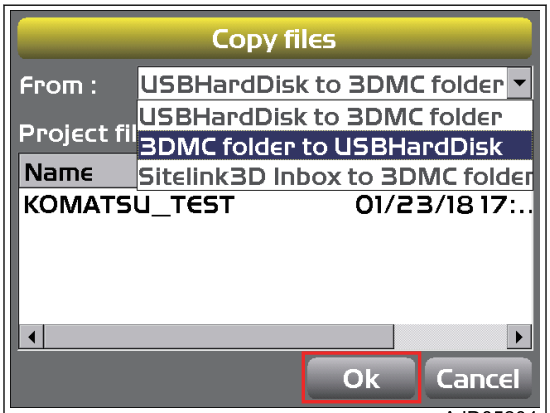
5. On “Project Files” screen, press “Copy...”.



AJD02554

6. On “Copy files” screen, select “USBHardDisk to 3DMC folder”.
7. Select a project file to be imported to the internal memory of the control box, and press “Ok”.

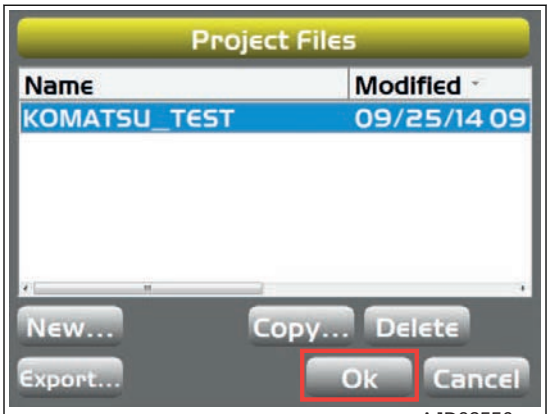
   The selected project file is imported into the internal memory of the control box.



AJD05204

8. On “Project Files” screen, select the imported file, and press “Ok”.

   The imported project file is set as the current work in the control box.



AJD02556

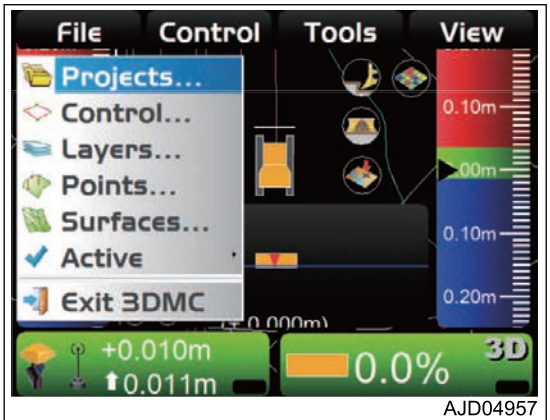
REMARK

- If a project file is saved already in the internal memory of the control box, select the one to use.
- When reading the Project files obtained from the Sitelink3D server, select “Sitelink3D Inbox to 3DMC folder”.

METHOD FOR CREATING A PROJECT FILE

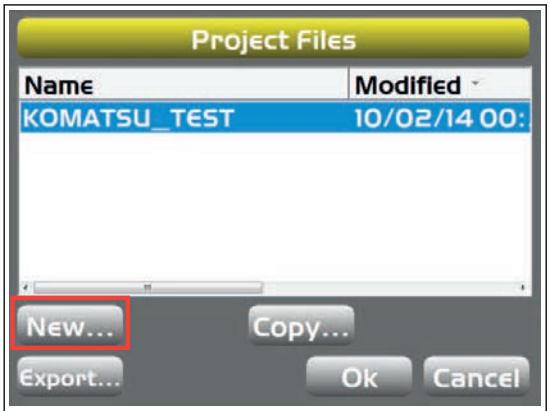
When creating multiple project files, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Projects...” and select.



AJD04957

3. On “Project Files” screen, press “New...”.

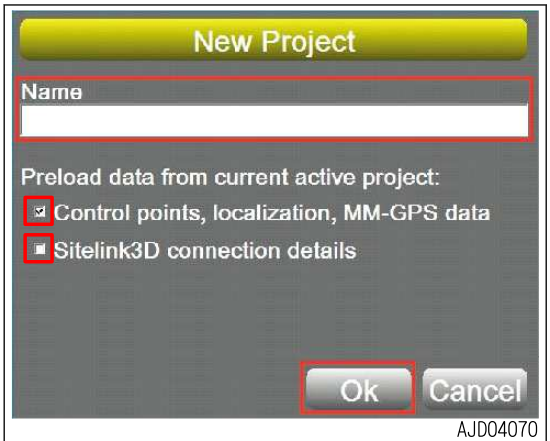


AJD02558

4. Press the input section for “Name”.
5. Input “Name” of the project by using the alphanumeric keyboard.
6. Press “Ok”.

REMARK

- When taking in the control points, localization, and mmGPS data from the current project, put a tick on the check box of “Control points, localization, MM-GPS data”.
  This machine does not use the mmGPS data.
- When taking in the connection setting of the Sitelink3D from the project, put a tick on the check box of “Sitelink3D connection details”.



AJD04070

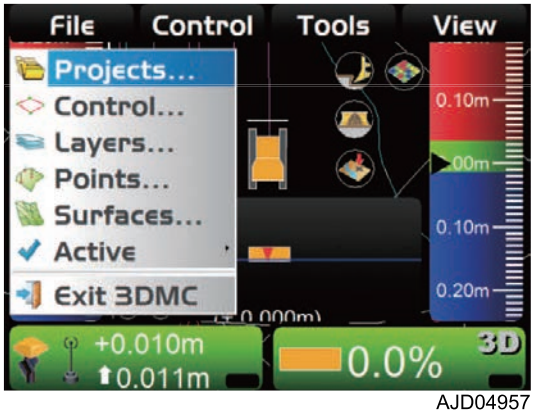
METHOD FOR EXPORTING A PROJECT FILE

When using a project file used in the control box for Pocket-3D or another application, export that project file to USB memory or the internal memory of the control box.

REMARK

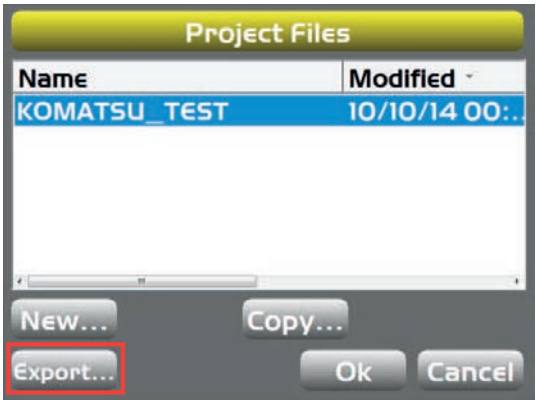
Pocket-3D is application software for GNSS specially designed for land survey. By inputting the survey points, design surface data, alignment data, etc. in advance, you can easily navigate to survey points or cut positions, or check the cut/fill amount easily while watching the screen.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Projects...” and select.



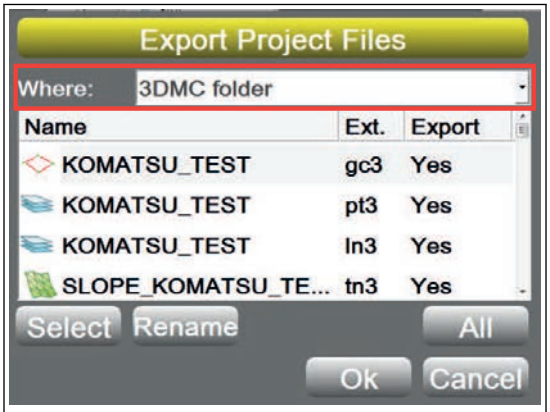
AJD04957

3. On “Project Files” screen, press “Export...”.



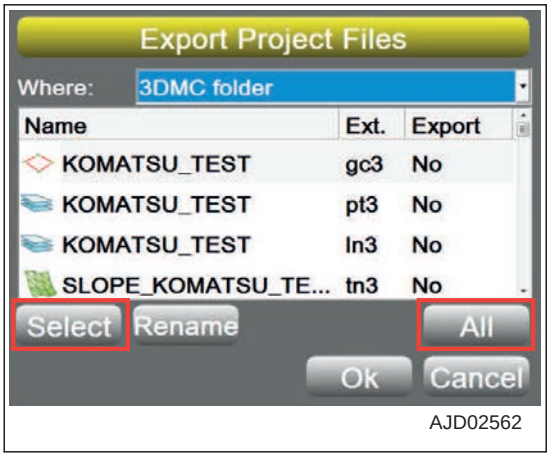
AJD02560

4. On “Export Project Files” screen, select “Where:” (Exporting destination of file).



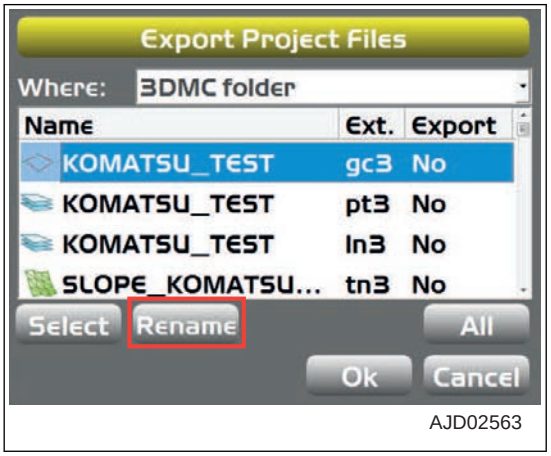
AJD02561

5. Select a file to export.
   - When exporting all files
     Select “All”.
   - When exporting files individually
     Select “Select”.
6. Select “Yes” (Export) or “No” (Not export).



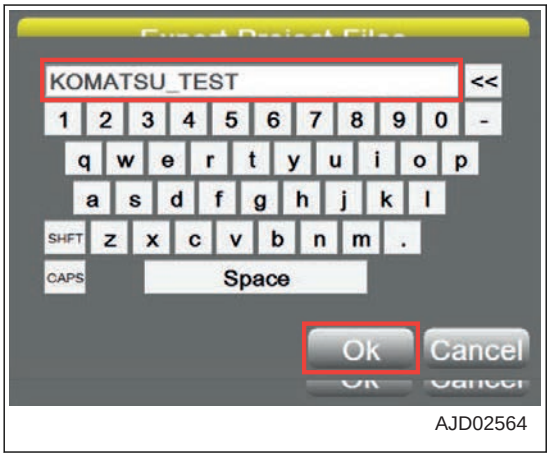
AJD02562

7. Select 1 file, and press “Rename”.
   You can rename the selected file and export it under a different name.



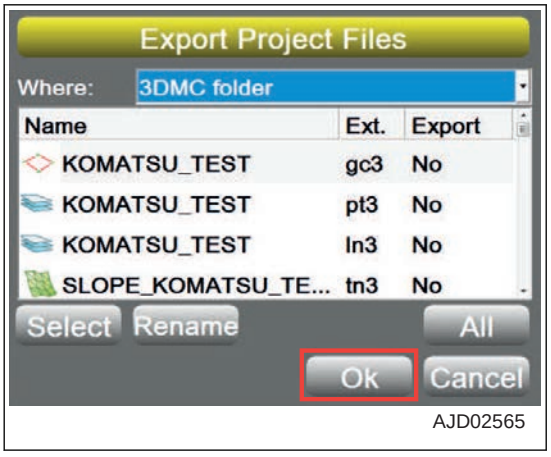
AJD02563

8. Input the new filename, and press “Ok”.



AJD02564

9. Press “Ok” and export the file.
   The screen returns to “Project Files” screen.



AJD02565

CONTROL POINT FILES

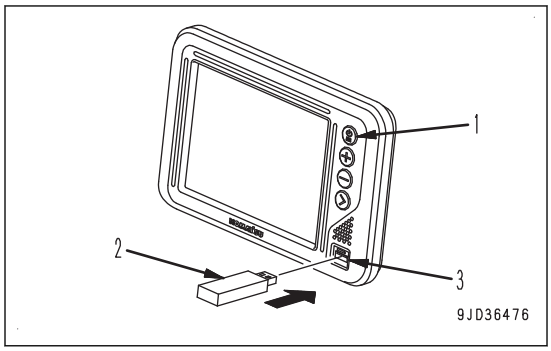
The control point files (*.gc3) contain the control points (coordinates of N, E, and elevation) and localization data (coordinates of latitude, longitude, and elevation).

The control point files are necessary to 3DMC and usually are contained in the project files. You can read the control point files individually from USB memory or internal memory of the control box to 3DMC.

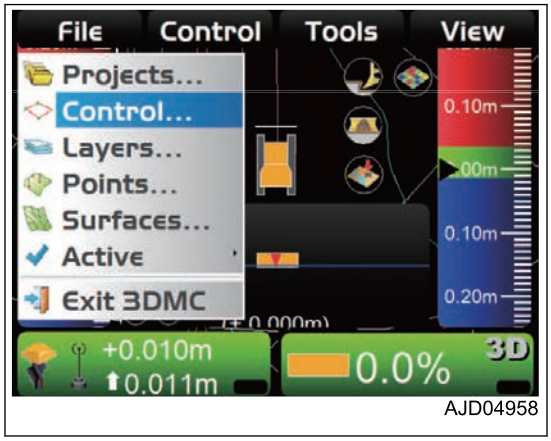
METHOD FOR IMPORTING CONTROL POINT FILES

When importing a control point file, perform the following procedure.

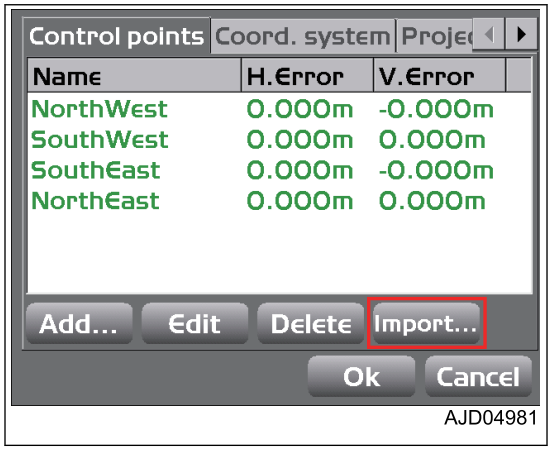
1. Hold down the power ON/OFF and menu switch (1) to turn on the control box power.
2. Insert USB memory (2) in which control point files are saved into USB port (3) of the control box.



3. Press the power ON/OFF and menu switch (1) to display the main menu.
4. On “File” menu, press “Control...” and select.



5. On “Control points” tab, press “Import...”.

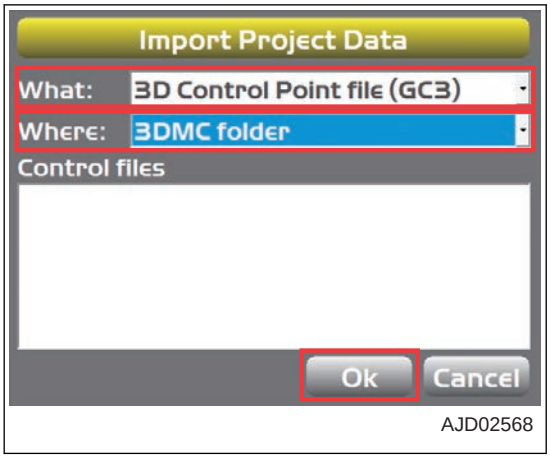


6. On “Import Project Data” screen, select “What:” and “Where:”.

   As “What:”, select the “Control point files (GC3)” or “Control data from project file (TP3)”.

   As “Where:”, select the place where the control point file is saved.

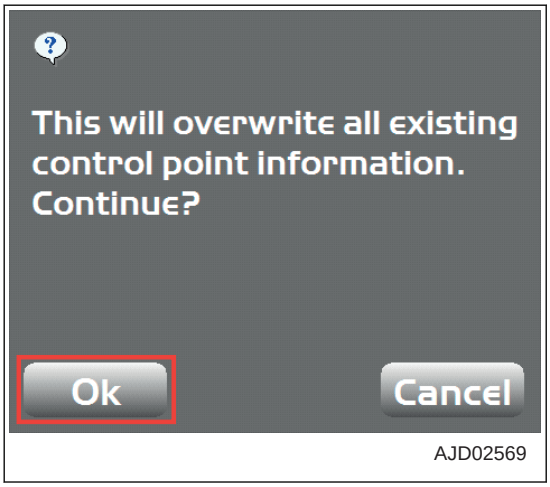
7. Select the name of the file to be imported, and press “Ok”.



AJD02568

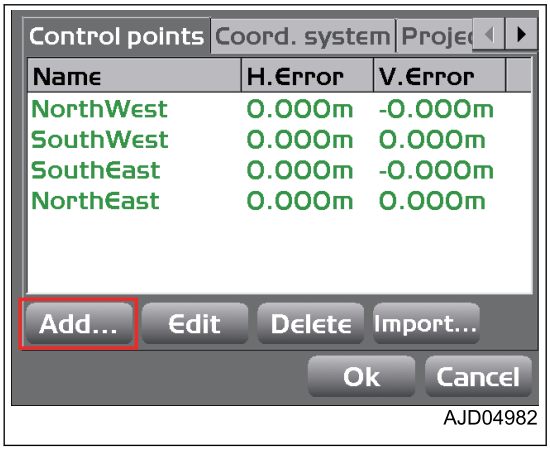
The message screen is displayed.

8. Press “Ok”, and apply the data to the current work.



AJD02569

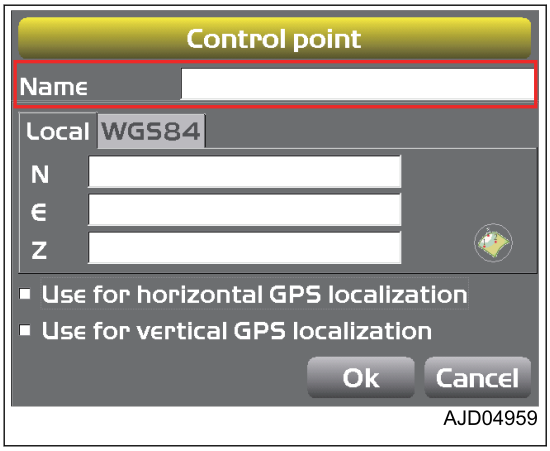
9. When adding a new control point, press “Add...” on “Control points” tab.



AJD04982

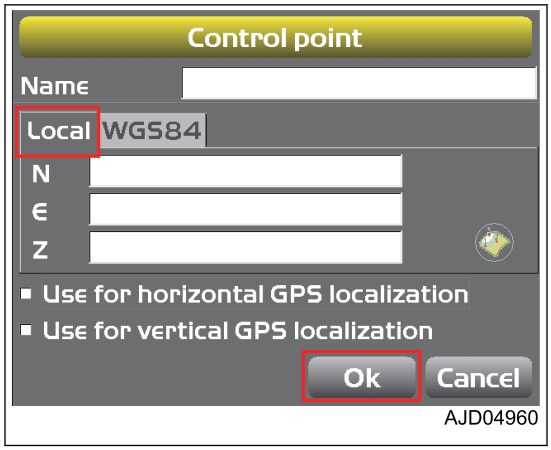
10. On “Control point” screen, press the input section for “Name”.

11. Input the name of the new control point, by using the alphanumeric keyboard.

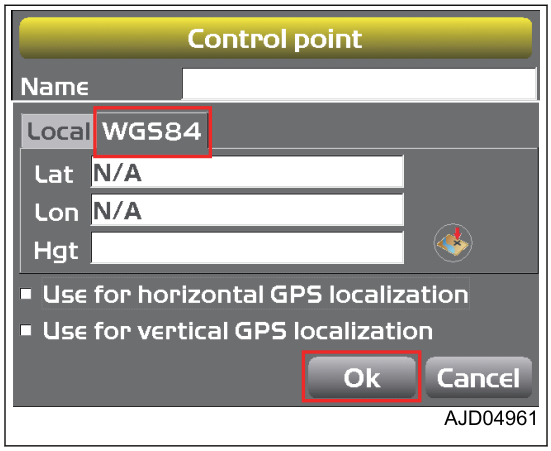


AJD04959

12. Input the information of the control point.
    - “Local” tab
      Input “N” (Northing), “E” (Easting), and “Z” (elevation).
    - “WGS84” tab
      If correct GNSS coordinates are available, input the “Lat”, “Lon”, and “Hgt” (Ellipsoid).
    - Check box of localization
      Check this when using for localization.
13. Press “Ok”.
    Returns the screen to the previous screen.

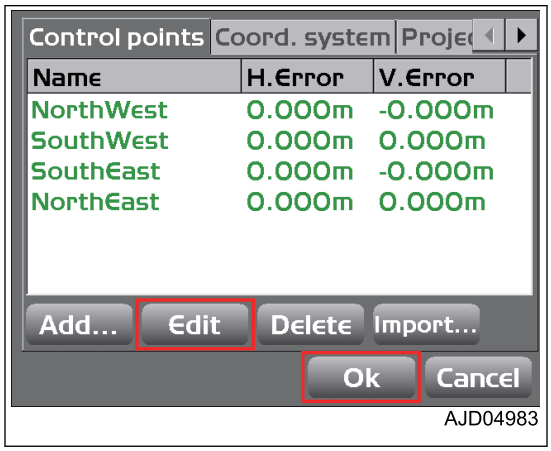


AJD04960



AJD04961

14. When editing a control point, select the control point to edit on “Control points” tab, then press “Edit”.
15. Input the new jobsite coordinates or GNSS coordinates, and press “Ok”.
    Returns the screen to the screen shown in the right figure.
16. Press “Ok”.
    The screen returns to the main window.



AJD04983

LAYERS

The layers are attributes of the point data or the line work data. The layers of 3DMC contain the point data or the line work data.

Linework data (*.ln3) is an aggregate of polylines (line segments), and is used to display buildings, curbs, side-walks, boundaries, etc. with polylines (line segments) and use them as landmarks for operations.

You can convert the linework data into Surface when using.

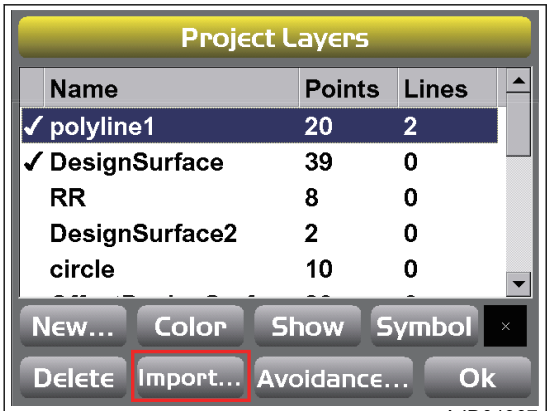
METHOD FOR IMPORTING LAYERS

Usually, layers are contained in the project files. However, you can import them separately from the internal memory of the control box as well.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Layers...” and select.

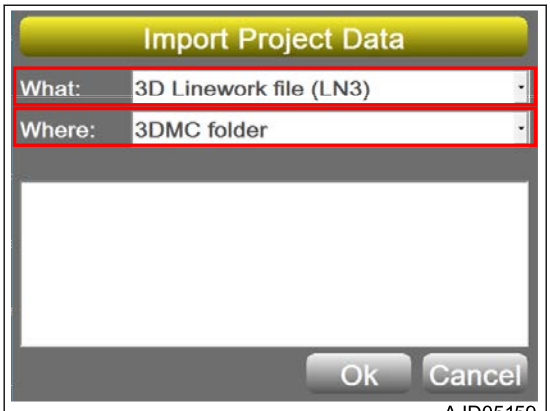
AJD04962

3. On “Project Layers” screen, press “Import...”.



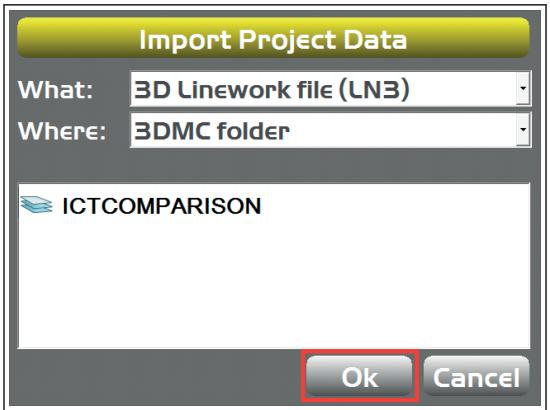
AJD04967

4. On “Import Project Data” screen, select “What:” (Type of file to be imported) and “Where:” (Place to save the file).



AJD05159

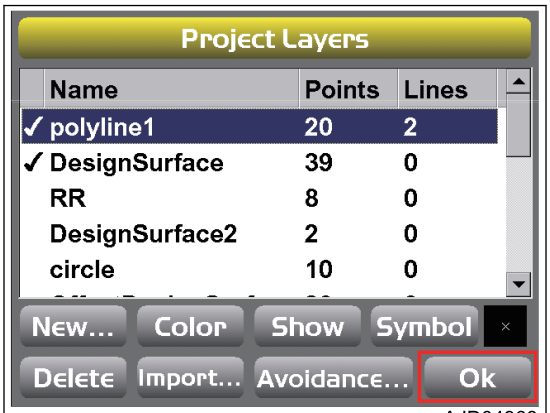
5. Select the file to be imported, and press “Ok”.



AJD02577

6. On “Project layers” screen, select the layer name of the point or line work.
7. Specify “Color”, “Show”, and “Symbol”.
   - “Color”
     Specify the color of the displayed line.
   - “Show”
     Specify the item to display or not by inputting a check mark (to display) or not (not to display).
   - “Symbol”
     Specify the shape of the displayed symbol.
8. Press “Ok”.

   The screen returns to the main window.



AJD04968

POINT DATA

Point data file (*.pt3) is used to record the coordinates of the points measured in position check or travel record (Topo survey).

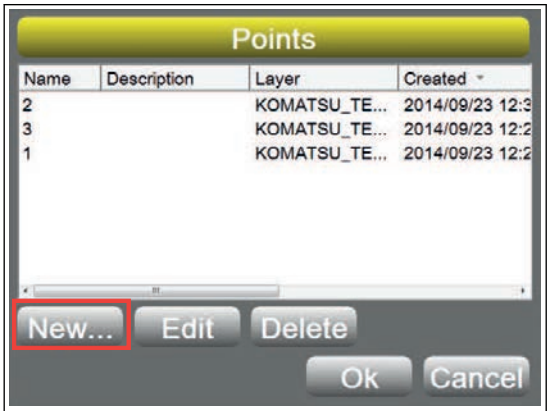
METHOD FOR REGISTERING POINT DATA

When registering point data to 3DMC, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Points...” and select.

AJD04969

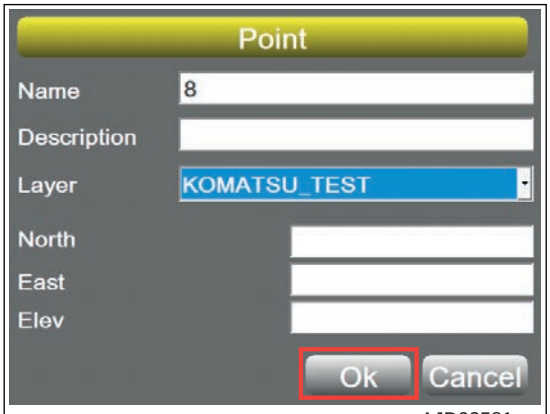
3. On “Points” screen, press “New...”.



AJD02580

4. On “Point” screen, input information of the point.
   - “Name”
     Input the name of the point data. (Input only the number.)
   - “Description”
     Input explanation of the point.
   - “Layer”
     Select the layer of the point.
   - “North”, “East”, and “Elev”
     Input “N” (Northing), “E” (Easting), and “Elev”.
5. Press “Ok”.

   The screen returns to “Points” screen of step 3.



AJD02581

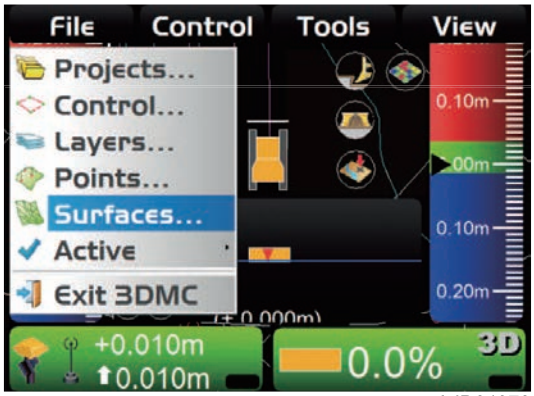
SURFACE FILE

Types of surface files

	Plane surface file/ Sloping plane surface file (*.pl3) • A plane surface file is a surface file for a plane where the longitudinal slope and lateral slope are both 0%. • A sloping plane surface file is a surface file for a plane which is slanted in the longitudinal and lateral directions.
	Crown road surface file (= Alignment file) (*.rd3) • A crown road surface file is a 3-D linear surface file which is composed of files of centerline XY plane surface data, longitudinal section data, and lateral section data for road linear design.
	TIN (Triangular mesh) data file (*.tn3) • A TIN data file is a 3-D surface file composed of triangular faces joined to each other.

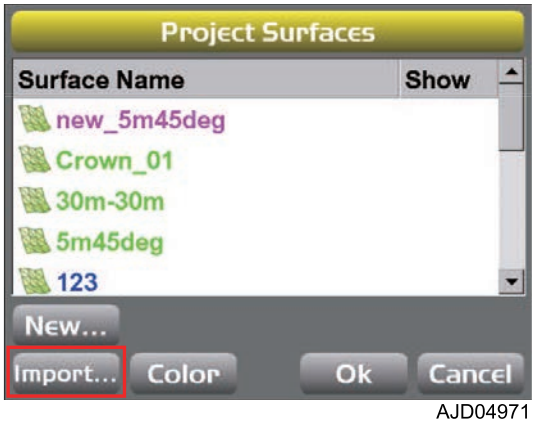
METHOD FOR IMPORTING SURFACE FILES

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Surfaces...” and select.



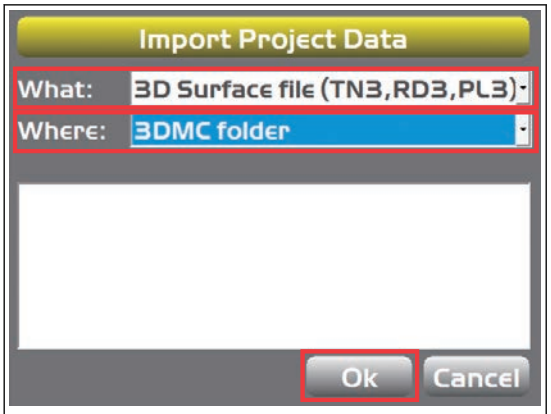
AJD04970

3. On “Project Surfaces” screen, press “Import...”.



AJD04971

4. On “Import Project Data” screen, select “What:” (Type of file to be imported) and “Where:” (Place to save the file).
5. Select the file to be imported, and press “Ok”.



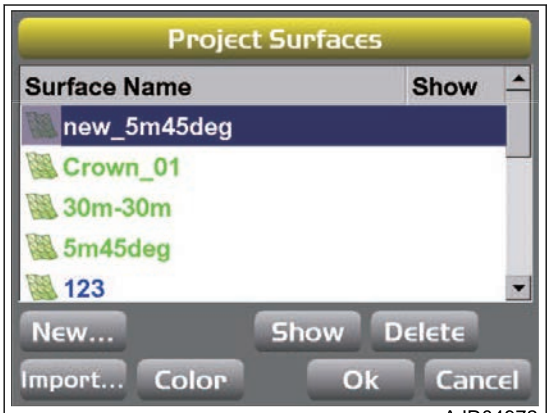
AJD02584

If you cannot set a surface contained in the project file as the current work, perform the following procedure.
(Example) When setting the Flat Plane Surface “new_5m45deg” as current work

6. Press the power ON/OFF and menu switch to display the main menu.
7. On “File” menu, press “Surfaces...” and select.

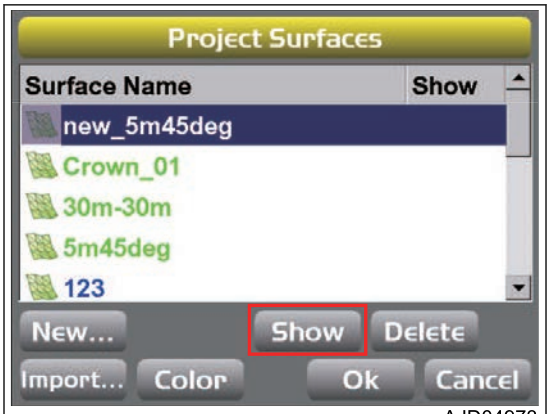
AJD04970

8. On “Project Surfaces” screen, select a surface to be set as the current work.



AJD04972

9. Press “Show”.



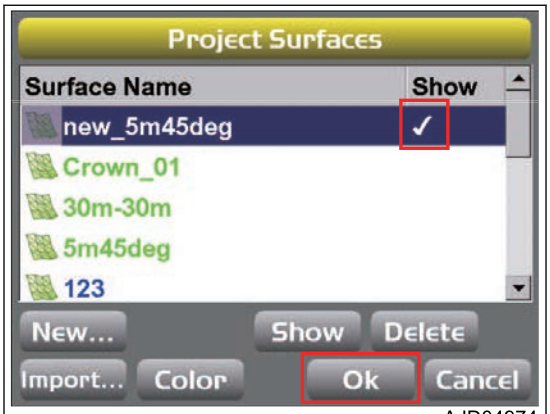
AJD04973

A check mark is inputted to “Show”, and the content of Surface is displayed on the main window.

When the Surface has been newly set to the internal memory of the control box, a check mark is inputted to “Show”.

10. Press “Ok”.

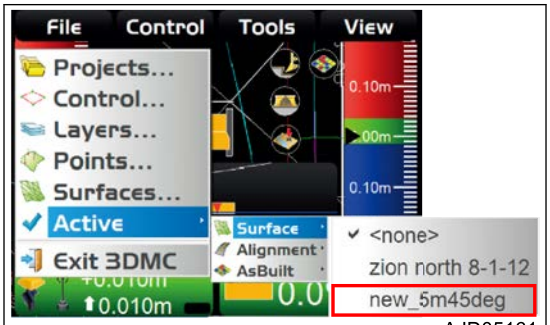
    The screen returns to the main window.



AJD04974

11. Press the power ON/OFF and menu switch to display the main menu.
12. On “File” menu, press “Active” and “Surface” in order, and select.
13. Select a surface to be set as the current work from the surfaces list.

    The screen returns to the main window.

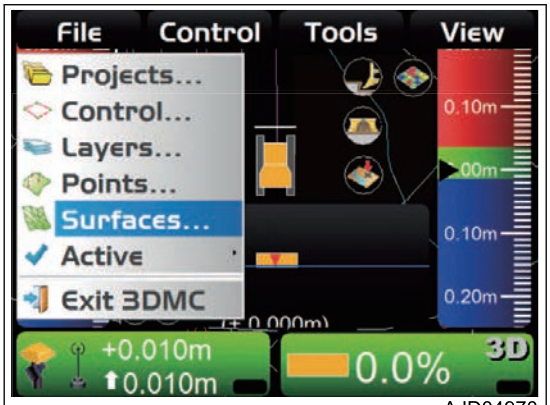


AJD05161

METHOD FOR CREATING FLAT SURFACE FILES

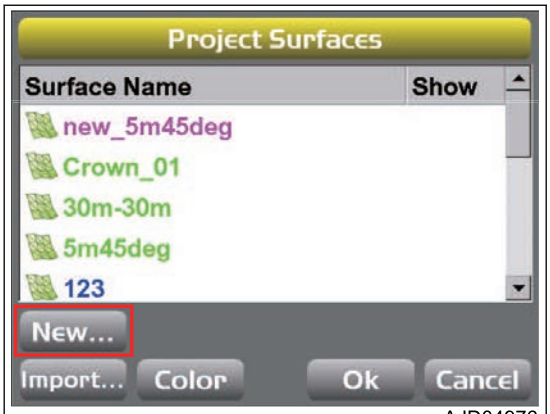
When creating the flat plane surface, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Surfaces...” and select.



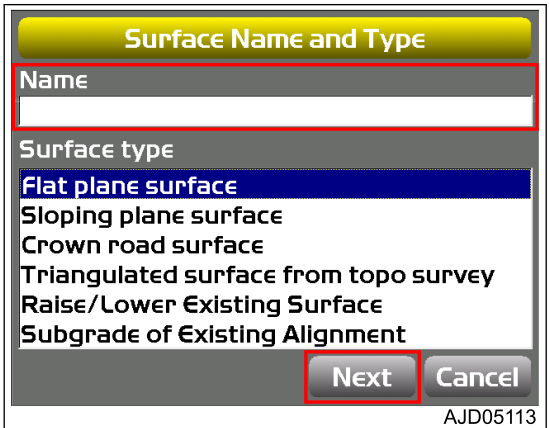
AJD04970

3. On “Project Surfaces” screen, press “New...”.



AJD04976

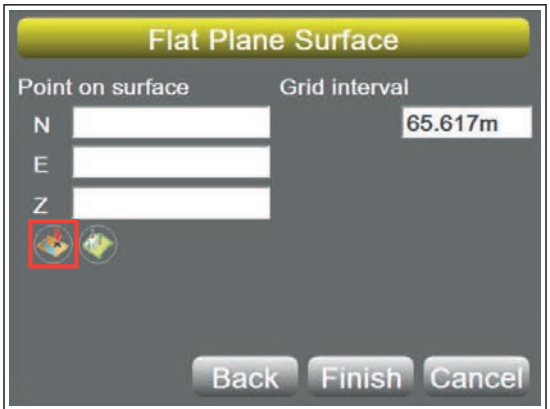
4. On “Surface Name and Type” screen, press the input section for “Name”.
5. Input the name of Surface files to make newly, by using the alphanumeric keyboard.
6. Select “Flat Plane Surface” (“Surface type”), and press “Next”.



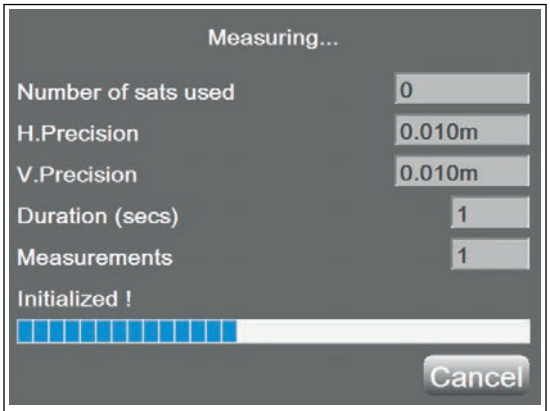
AJD05113

AJD02546

7. On “Flat Plane Surface” screen, input the coordinate values (m) of the “Point on surface” to refer to, or move the machine to the control point, lower the blade edge to the ground, and press “Take a topo shot”.

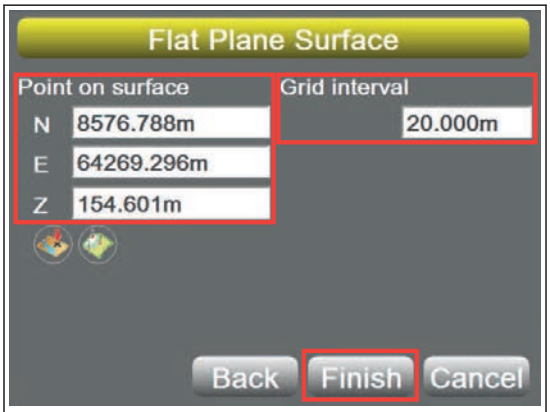


AJD02592



AJD02593

8. On “Flat plane surface” screen, input “Grid interval”, and press “Finish”.

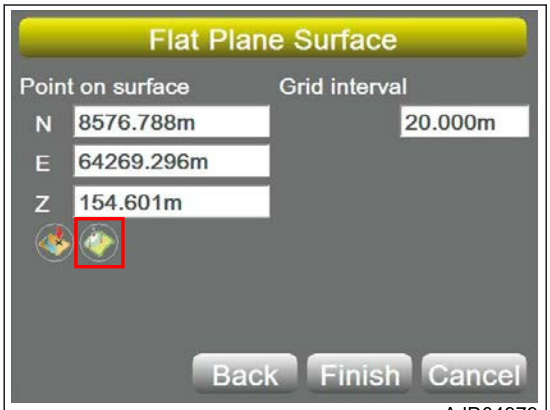


AJD02594

REMARK

You can create the Flat Plane Surface by the following methods, instead of measuring the control point on “Flat Plane Surface” screen.

- Method 1
  Set the point saved in the internal memory of the control box as a control point by “Set points...”.
- Method 2
  Directly input “Point on surface”.

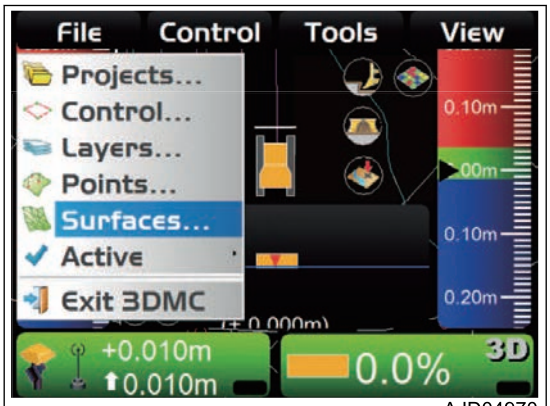


AJD04979

METHOD FOR CREATING SLOPING SURFACE FILES

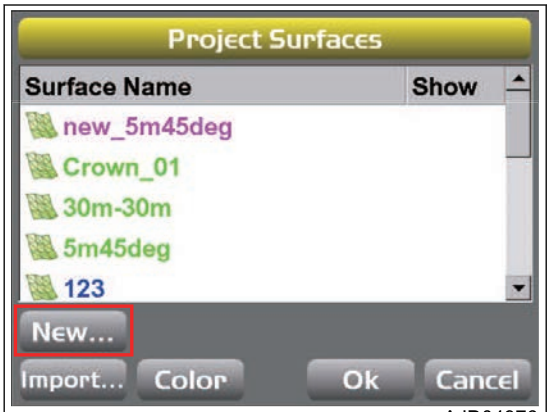
When creating the sloping plane surface file, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Surfaces...” and select.



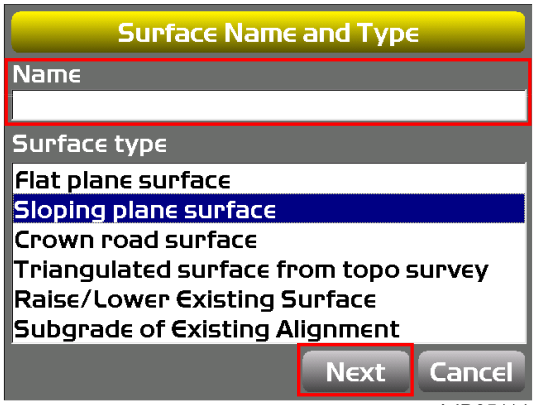
AJD04970

3. On “Project Surfaces” screen, press “New...”.



AJD04976

4. On “Surface Name and Type” screen, press the input section for “Name”.
5. Input the name of Surface files to make newly, by using the alphanumeric keyboard.
6. Select “Sloping plane surface” (“Surface type”), and press “Next”.

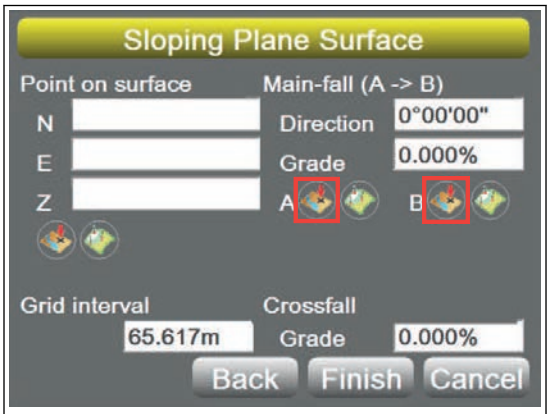


AJD05114

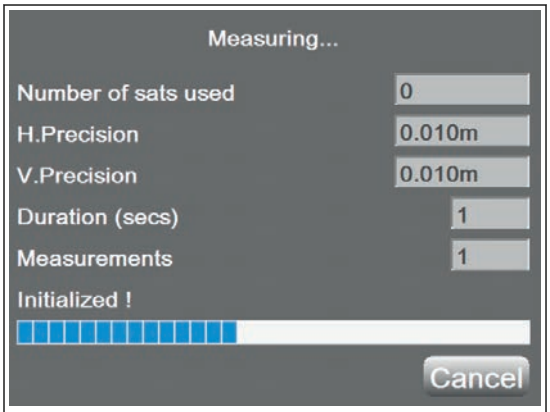
7. Check that “Sloping Plane Surface” screen is displayed.
8. Move the machine to point “A”, and then lower the blade edge to the control point.
9. Press “Take a topo shot” of point “A”, and measure the point.

   The coordinates of point “A” which the machine recognizes are displayed on “N”, “E”, “Z” of “Point on surface”.
10. Move the machine to point “B”, and then lower the blade edge to the control point.
11. Press “Take a topo shot” of point “B”, and measure the point.

    The value when you draw a straight line from the point “A” to point “B” is displayed on “Direction” and “Grade” of “Main-fall (A -> B)”.



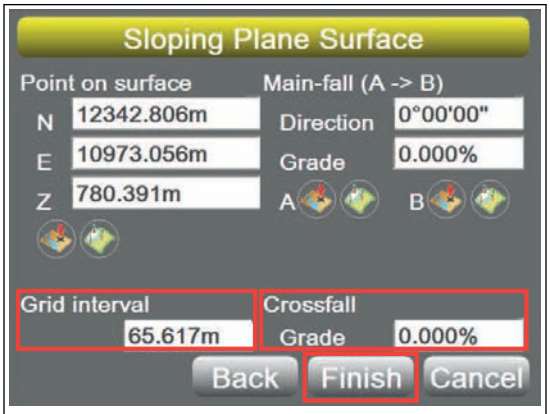
AJD02596



AJD02593

12. On “Sloping Plane Surface” screen, press the input section for “Grid interval” and “Crossfall Grade”.
13. Input a value by using the numeric keyboard.
14. Press “Finish”.

    The screen returns to “Project Surfaces” screen.

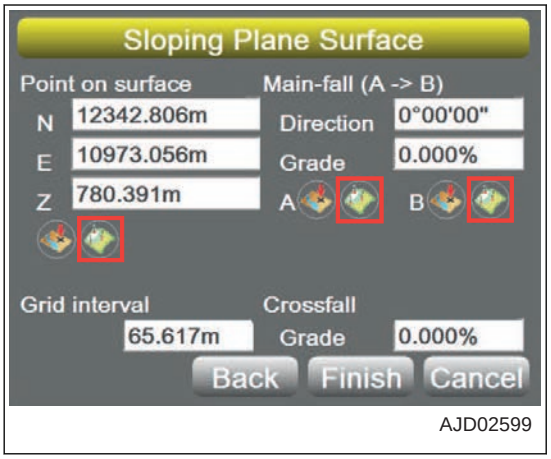


AJD02598

REMARK

You can create the sloping plane surface file by the following methods, instead of measuring the points “A” and “B” on “Sloping Plane Surface” screen.

- Method 1
  Set the point saved in the internal memory of the control box as points “A” and “B” by “Set points”.
- Method 2
  Input the “Point on Surface” and “Main-fall (A -> B)” directly.
  (You can set the control point for surface by “Take a topo shot” or “Set points” as well.)

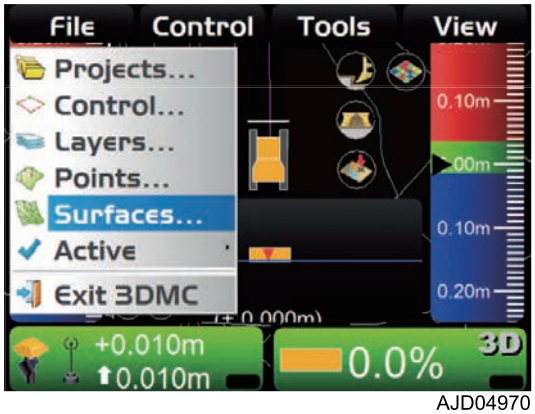


AJD02599

METHOD FOR CREATING CROWN ROAD SURFACE FILES

When creating a crown road surface file, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Surfaces...” and select.

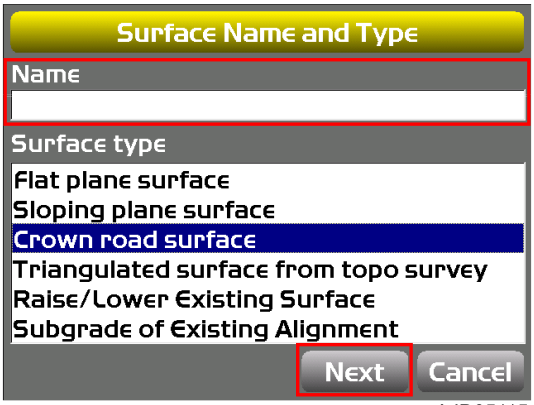


AJD04970

3. On “Project Surfaces” screen, press “New...”.

AJD04976

4. On “Surface Name and Type” screen, press the input section for “Name”.
5. Input the name of Surface files to make newly, by using the alphanumeric keyboard.
6. Select “Crown road surface” (“Surface type”), and press “Next”.

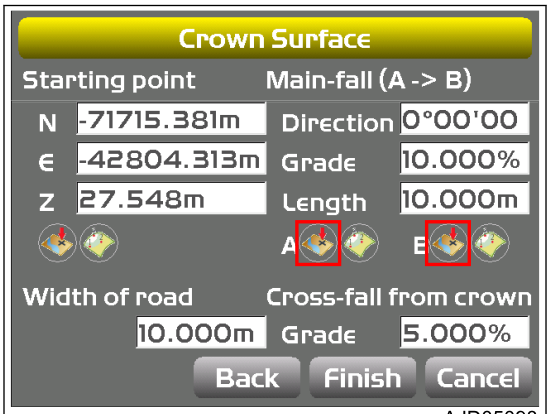


AJD05115

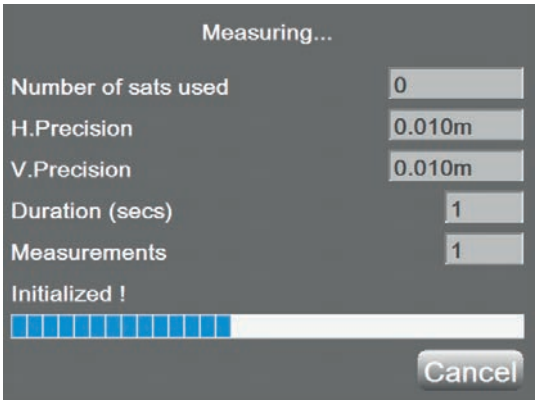
7. Check that “Crown Surface” screen has been displayed.
8. Move the machine to point “A”, and then lower the blade edge to the control point.
9. Press “Take a topo shot” of point “A”, and measure the point.

   The coordinates of point “A” which the machine recognizes are displayed on “N”, “E”, and “Z” of “Starting point”.
10. Move the machine to point “B”, and then lower the blade edge to the control point.
11. Press “Take a topo shot” of point “B”, and measure the point.

    The value when you draw a straight line from the point “A” to point “B” is displayed on “Direction”, “Grade”, and “Length” of “Main-fall (A -> B)”.



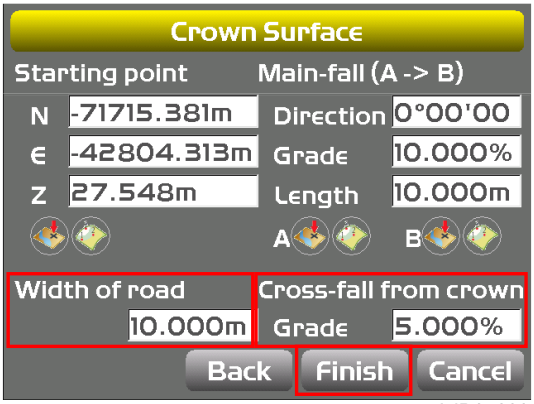
AJD05098



AJD02593

12. On “Crown Surface” screen, press “Grade” input section of “Width of road” and “Cross-fall from crown”.
13. Input a value by using the numeric keyboard.
14. Press “Finish”.

    The screen returns to “Project Surfaces” screen.



AJD05099

REMARK

You can create the crown road surface by the following methods, instead of measuring the points “A” and “B” on “Crown Surface” screen.

- Method 1
  Set the point saved in the internal memory of the control box as points “A” and “B” by “Set points”.
- Method 2
  Input the “Starting point” and “Main-fall (A ->B)” directly.
  (You can set the starting point by “Take a topo shot” or “Set points” as well.)

METHOD FOR CREATING TRIANGULATED SURFACES FROM A TOPO SURVEY FILE

When creating a TIN surface file, perform the following procedure.

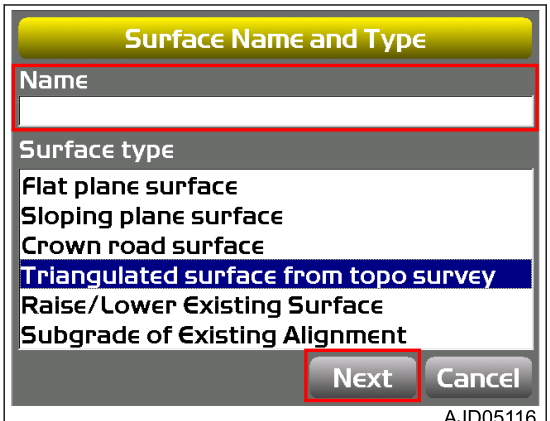
1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Surfaces...” and select.

AJD04970

3. On “Project Surfaces” screen, press “New...”.

AJD04976

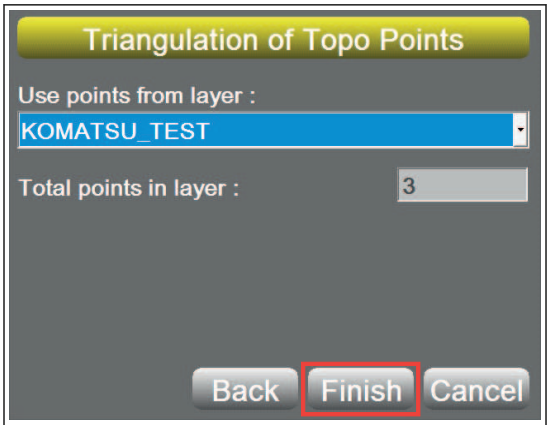
4. On “Surface Name and Type” screen, press the input section for “Name”.
5. Input the name of Surface files to make newly, by using the alphanumeric keyboard.
6. Select “Triangulated surface from topo survey” (“Surface type”), and press “Next”.



AJD05116

7. On “Triangulation of Topo Points”, select the point data contained in the layer to use from “Use points from layer :”.
8. Press “Finish”.

   The screen returns to “Project Surfaces” screen.



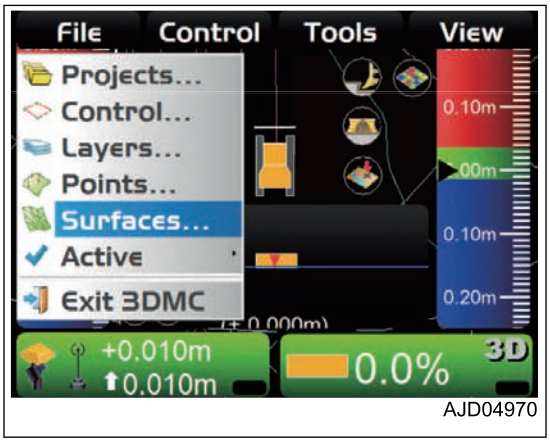
AJD02605

METHOD FOR CREATING SURFACE FILES AFTER REFLECTING RAISE OR LOWER AMOUNT OF AN EXISTING SURFACE

When making a new Surface by adding cut/fill amount to an existing Surface (“TIN”, “Plane Surface”, and “Alignment” selectable from “Active”), perform the following procedure.

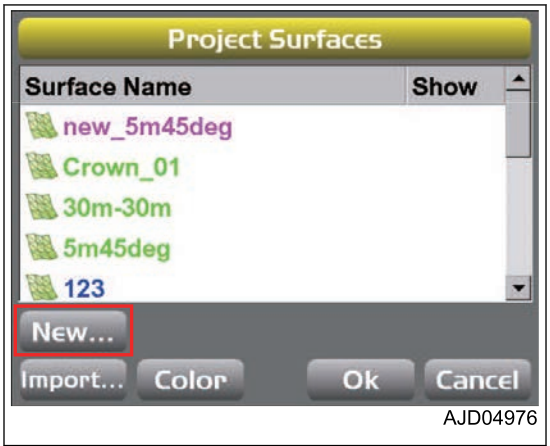
For selecting method for “Active”, see “METHOD FOR SELECTING AN ACTIVE SURFACE FILE”.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Surfaces...” and select.



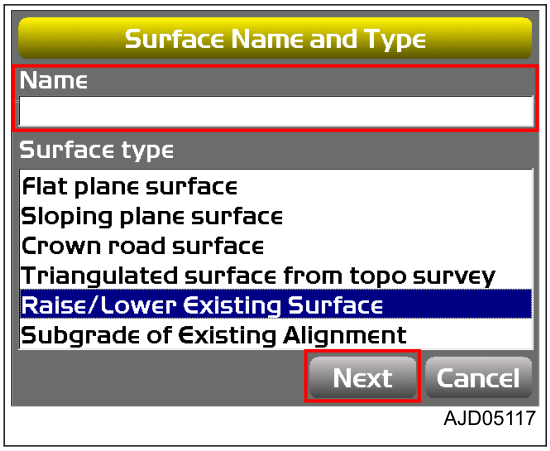
AJD04970

3. On “Project Surfaces” screen, press “New...”.



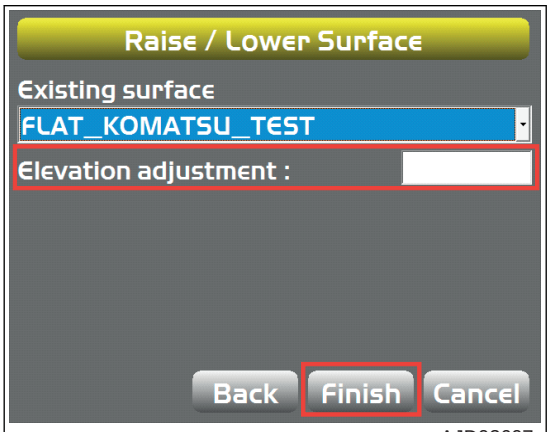
AJD04976

4. On “Surface Name and Type” screen, press the input section for “Name”.
5. Input the name of Surface files to make newly, by using the alphanumeric keyboard.
6. Select “Raise/Lower Existing Surface” (“Surface type”), and press “Next”.



AJD05117

7. On “Raise/Lower Surface” screen, select an existing Surface to which you add cut/fill amount from “Existing surface:”.
8. Press the input section for “Elevation adjustment :” in the existing Surface.
9. Input a value by using the numeric keyboard.
   - Positive number
     Raises the subgrade from Surface which you are working on/ referring to.
     This is applied to the centerline of Surface which you are working on/ referring to.
   - Negative number
     Lowers the subgrade from Surface which you are working on/ referring to.
     This is applied to the centerline of Surface which you are working on/ referring to.



AJD02607

10. Press “Finish”.

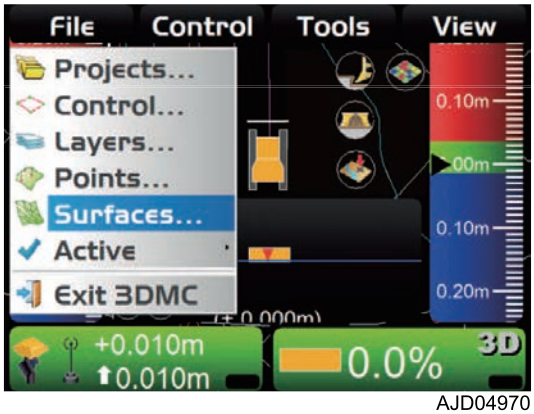
    The screen returns to “Project Surfaces” screen.

METHOD FOR CREATING ALIGNMENT FILE OF SUBGRADE OF ACTIVE ALIGNMENT

When creating a new alignment data by adjusting an existing alignment data (“Alignment” selectable from “Active”), perform the following procedure.

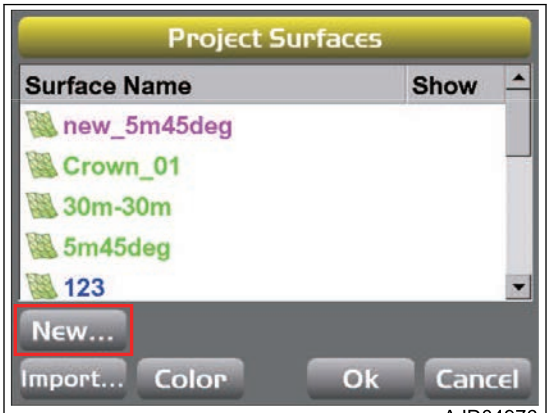
For selecting method for “Active”, see “METHOD FOR SELECTING AN ACTIVE SURFACE FILE”.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Surfaces...” and select.



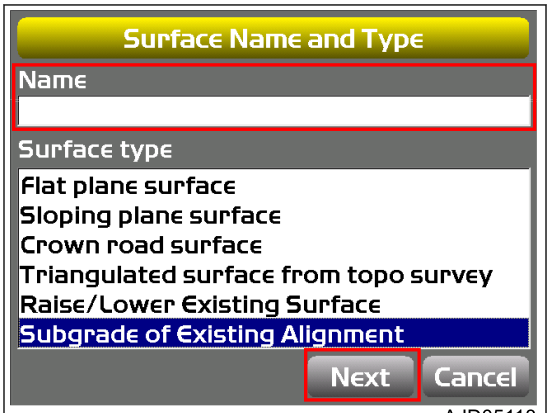
AJD04970

3. On “Project Surfaces” screen, press “New...”.

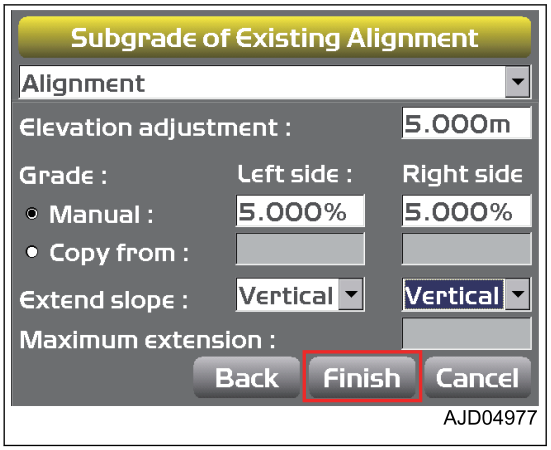


AJD04976

4. On “Surface Name and Type” screen, press the input section for “Name”.
5. Input the name of Surface files to make newly, by using the alphanumeric keyboard.
6. Select “Subgrade of Existing Alignment” (“Surface type”), and press “Next”.



AJD05118



7. On “Subgrade of Existing Alignment” screen, select an alignment data to refer to create a new alignment data.
8. Press the input section for “Elevation adjustment :”.
9. Input a value by using the numeric keyboard.
   - Positive number
     Raises the subgrade from Surface which you are working on/ referring to.
     This is applied to the centerline of Surface which you are working on/ referring to.
   - Negative number
     Lowers the subgrade from Surface which you are working on/ referring to.
     This is applied to the centerline of Surface which you are working on/ referring to.
10. Press the input section for “Grade:”.
11. Input a value by using the numeric keyboard.
    - “Manual :”
      When effective, input the percentage of the right side/ left side of the subgrade element to decide the slope on the right side/ left side of the machine or road.
    - “Copy from :”
      When effective, use the grade (slope) of the reference cross section element matched to the input offset value (lateral offset amount (m) from the centerline).

      The grade on the right side/ left side is read in from the reference alignment file.
12. Select “Extend slope :”.
    - When “Vertical” is selected
      The cross section of the subgrade is fixed as a horizontal offset which is the same as the cross section of the reference alignment file.
    - When “Continue” is selected
      You can extend the end of Surface on the right side/ left side selected in the input section for “Maximum extension :”.
      Use this when an intersection point exceeding the end of cross section is expected.
13. Press “Finish”.

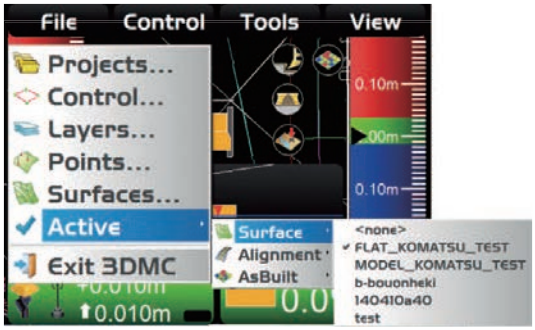
    The new surface file is saved.

ACTIVE FILE

METHOD FOR SELECTING AN ACTIVE SURFACE FILE

When selecting an surface file to be used for control in an actual jobsite (TIN data, Plane Surface file, and Alignment file), perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Active” and “Surface” in order, and select.
3. On the main window, select an surface file to make active.



AJD04984

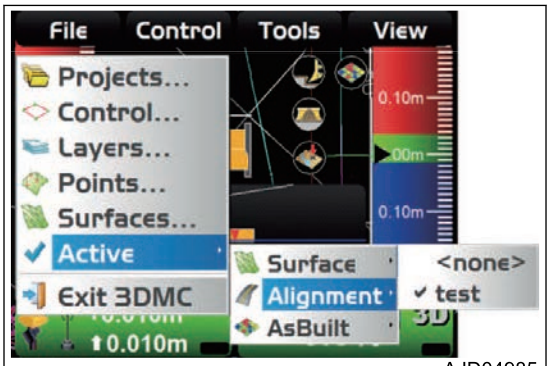
REMARK

- You cannot use the surface for control by simply taking it in. You can use the surface for control when it is selected as active data.
- If there is no check mark (not displayed) on “Show” of the Surface files, the names of Surface files are not listed in “Active”, and you cannot select them.
  Put a check mark on “Show” of the Surface files to be selected by referring to “METHOD FOR IMPORTING SURFACE FILES”.
- When displaying both of TIN data and alignment file and using them for control, select TIN data from “Surface”, and then select the alignment file from “Alignment”.

METHOD FOR SELECTING AN ACTIVE ALIGNMENT FILE

When selecting an alignment file to be used for control in an actual jobsite, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Active” and “Alignment” in order, and select.
3. On the main window, select an alignment file to be set active.



AJD04985

REMARK

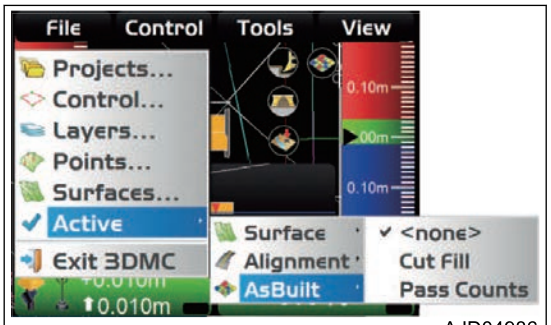
- By setting an alignment file from “Surface” or “Alignment” to an active surface, you can use the alignment file on the steering display.
- When you select the Alignment file from “Alignment”, 3DMC recognizes it as the Surface files for the Steer Indication.
- When the same Surface files are selected both on “Surface” and “Alignment”, if you cancel the selection on “Surface”, the selection on “Alignment” will also be canceled.

METHOD FOR SELECTING AN ACTIVE AS-BUILT VIEW

When selecting an active as-built view, perform the following procedure.

(You can select by shortcut on the main window as well.)

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Active” and “AsBuilt” in order, and select.
3. On the main window, select an as-built control screen to make active.



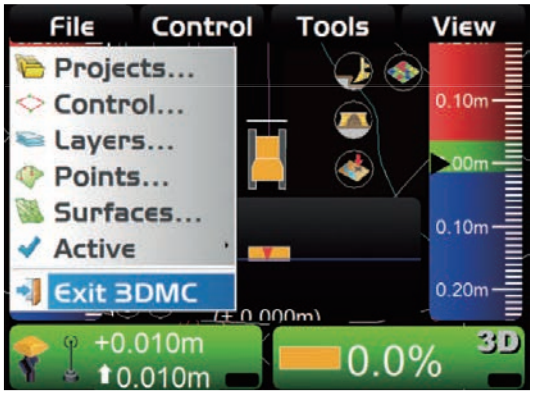
AJD04986

EXIT 3DMC

METHOD FOR EXITING 3DMC

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Exit 3DMC” and select.

   3DMC is finished.



AJD04987

CONTROL MENU

You can set the machine configuration, set the as-built control, set the blade control, and calibrate the blade on the control menu.

You can make, edit, copy, and delete the machine configuration files.

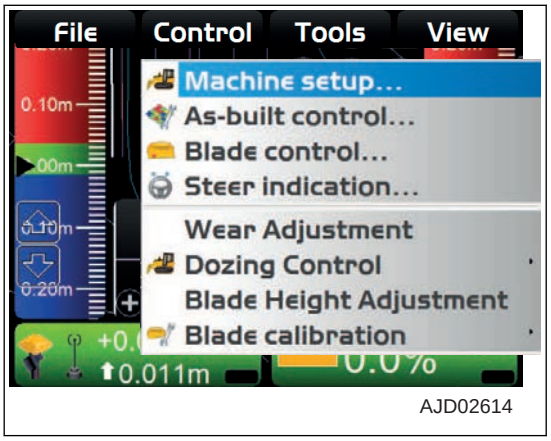
MACHINE SETTING

On “Machine setup...”, you can set the Machine configuration files including “GPS Comms Configuration”, “GPS Precisions”, “GPS radio configuration”, and “GX-55 Light_Bars”.

This setting needs to be set again only when GNSS receiver is replaced, GPS precision is changed, or setting of GNSS radio device or base station is changed.

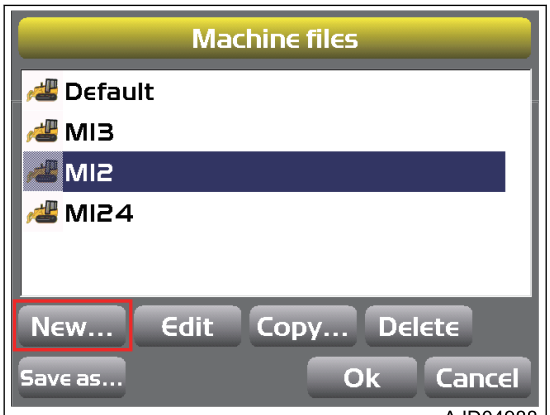
SET FOR CONNECTING TO MACHINE

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Control” menu, press “Machine setup...” and select.



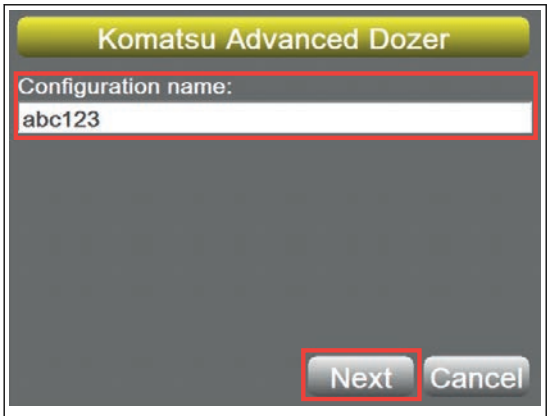
AJD02614

3. On “Machine files” screen, press “New...”.



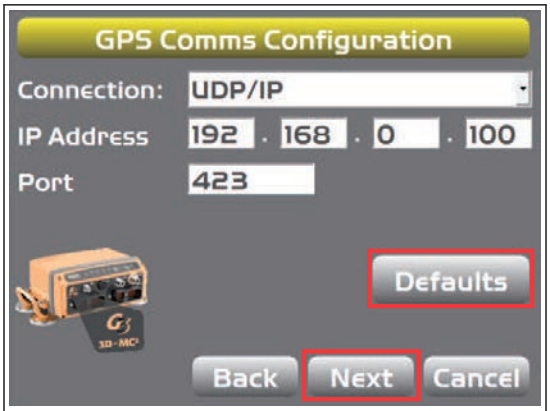
AJD04988

4. On “Komatsu Advanced Dozer” screen, press the input section for “Configuration name:”.
5. Input the setting name by using the alphanumeric key-board.
6. Press “Next”.



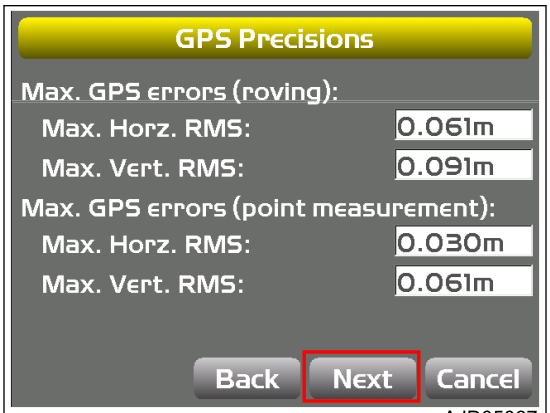
AJD02616

7. On “GPS Comms Configuration” screen, set “Connection:” to “UDP/IP”, and press “Defaults”.
8. When the value in the figure is reached, press “Next”.



AJD02617

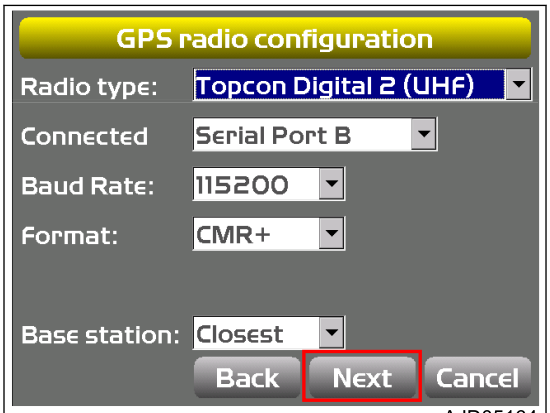
9. On “GPS Precisions” screen, input “Max. GPS errors (roving):” and “Max. GPS errors (point measurement):”, and press “Next”.



AJD05067

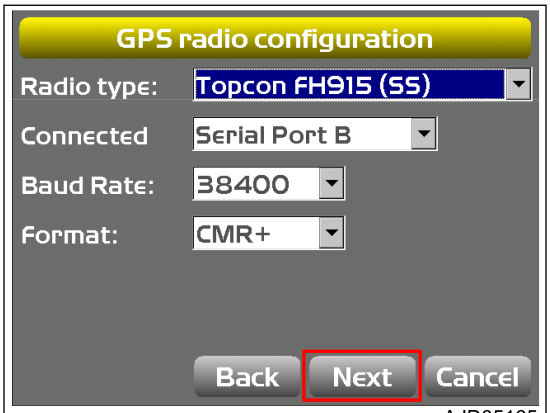
10. On “GPS radio configuration” screen, select the radio information, then press “Next”.

(For Topcon Digital 2 (UHF))



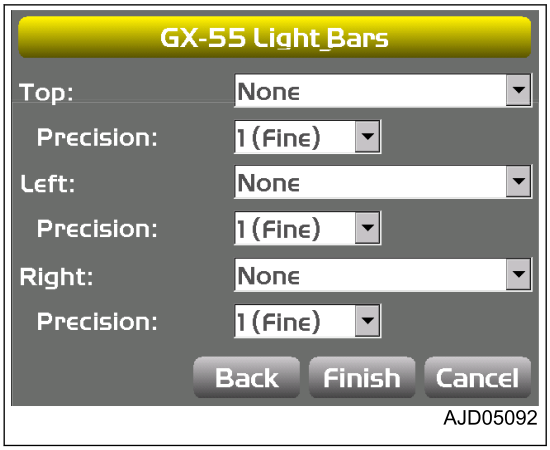
AJD05164

(For Topcon FH915 (SS))



AJD05165

11. On “GX-55 Light_Bars” screen, set the display of LED indicator.

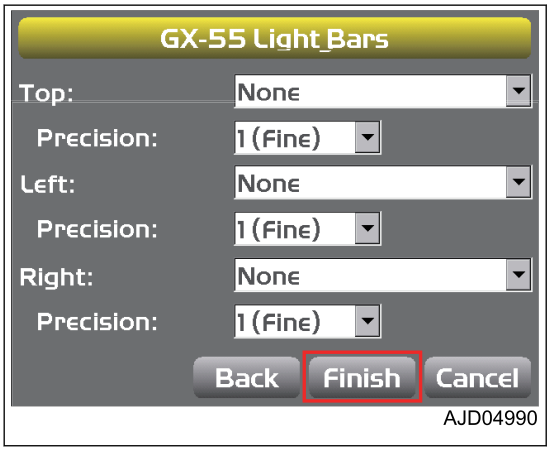


AJD05092

- “Top:”, “Left:”, “Right:”
  You can set the contents displayed on the LED indicators which are located at upper part and right and left sides of control box screen.
  - “None”
    The display function of LED indicator is not used, and no LED lights up.
  - “Cut/fill”, “Cut/fill left”, “Cut/fill right”
    Cut Fill amount (distance) at the current blade height against the height of Surface is displayed.
    When “Cut/fill” has been set, the reference height should be the one according to the automatic best-fit blade control or the single point blade control that have been set on “Blade Control” screen.
    For the automatic best-fit blade control or single point blade control, see “BLADE CONTROL”.
    When “Cut/fill left” or “Cut/fill right” has been set, the reference height should be the left end or the right end of the blade.
  - “Cross-slope”
    Deviation (angle) in the current inclination of blade against the inclination of the Surface is displayed.
    When “Cross-slope” has been set, the reference should be the section view (lateral inclination of machine).
  - “Steering x-track”
    Distance from the steering polyline is displayed.
    The points of reference, functions, and offsets which have been set on “Steer Indication” screen has been displayed. For the setting method of the Steer Indication, see “STEER INDICATION OPTIONS”.
- “Precision:”
  The displaying precision of each LED indicator can be set in 5 stages (1 through 5). For the relationship between the set precision and the On-grade (green LED lighting) display width, see the following table.

	Unit	1(Fine)	2	3	4	5(Coarse)
Cut/fill	mm	±7	±10	±15	±25	±50
Steering x-track	{ in}	{±0.3}	{±0.4}	{±0.6}	{±1}	{±2}
Cross-slope	%	±0.5	±1	±2	±3	±4

12. After setting on “GX-55 Light_Bars” screen, press “Finish”.



AJD04990

METHOD FOR SETTING AS-BUILT CONTROL OPTIONS

On “As-Built Control” screen, you can perform the setting of Server/Local for As-Built Control management and Addition/Deletion of As-Built Surface.

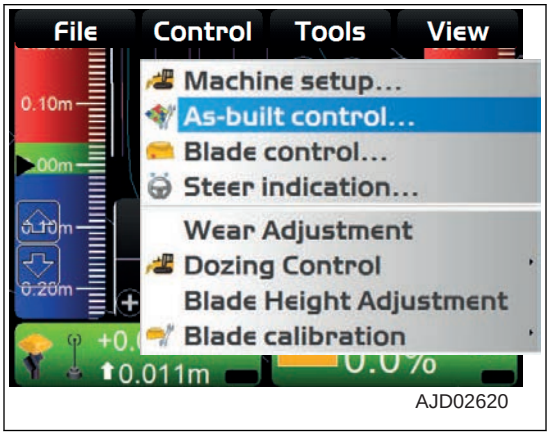
- When “Managed by Sitelink3D server” is selected
  The control box reads the AsBuilt data from the server.
- When “Local as-built only” is selected
  The control box manages the AsBuilt.
  In this setting, the server does not renew the AsBuilt data. You can perform the Addition/Deletion of the locally managed As-Built Surface.

AJD04992

METHOD FOR ADDING AND SETTING AS-BUILT SURFACE DISPLAY

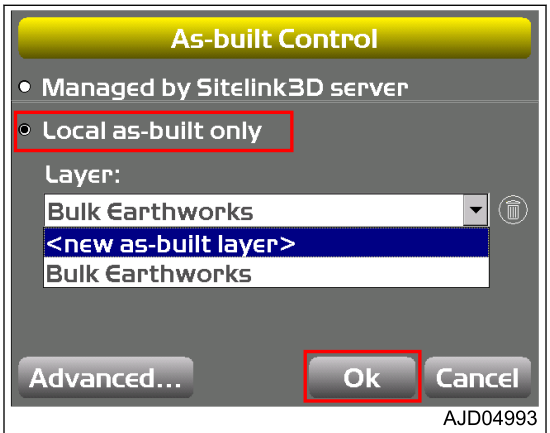
This function enables you to control the as-built surface of “Elevation” and “Pass Counts” displayed by the current surface with the internal memory of the server or the control box.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Control” menu, press “As-built control...” and select.



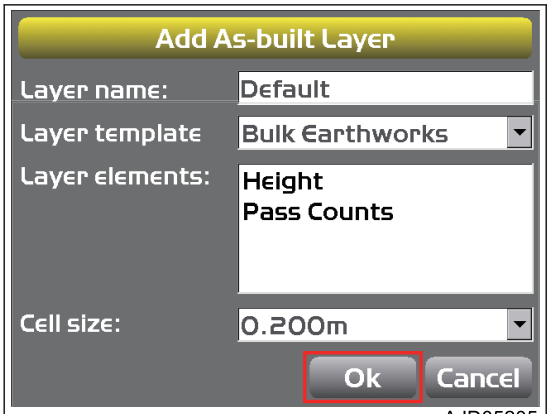
AJD02620

3. On “As-built Control” screen, check that a check mark is inputted on “Local as-built only”.
   "Local" means the internal memory of the control box.
4. Select “<new as-built layer>” on “Layer:”, and press “Ok”.



AJD04993

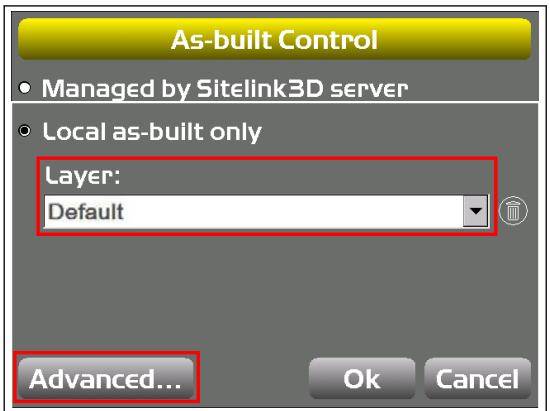
5. On “Add As-built Layer” screen, press the input section of “Layer name”.
6. Input the layer name by using the alphanumeric keyboard.
7. Input the profile of As-built Surface, and press “Ok”.



AJD05205

As-built Surface added to “Layer:” is set.

8. On “As-built Control” screen, press “Advanced...”.

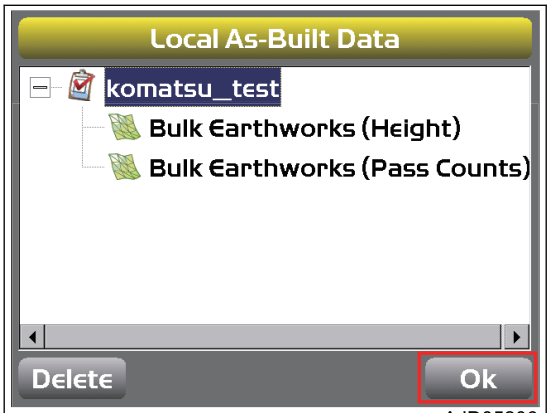


AJD04995

On “Local As-built Data” screen, you can check the profile of As-built Surface.

9. Press “Ok”.

   The screen returns to “As-built Control” screen.

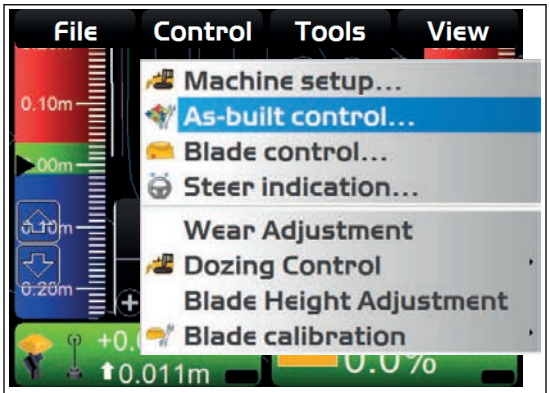


AJD05206

METHOD FOR DELETING AS-BUILT SURFACE DISPLAY

When deleting As-built surface display in the internal memory of the control box, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Control” menu, press “As-built control...” and select.



AJD02620

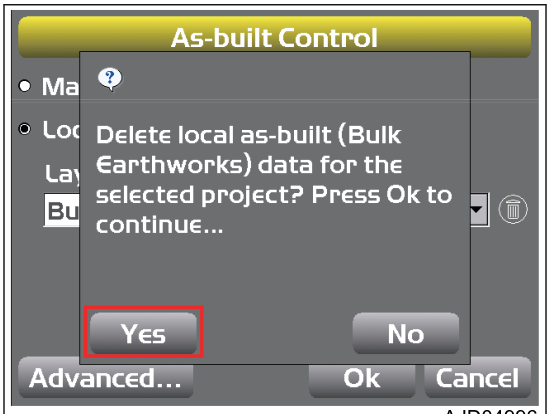
3. On “As-built Control” screen, select the As-built Surface to be deleted, then press “Trash” button.

AJD05060

The warning screen is displayed.

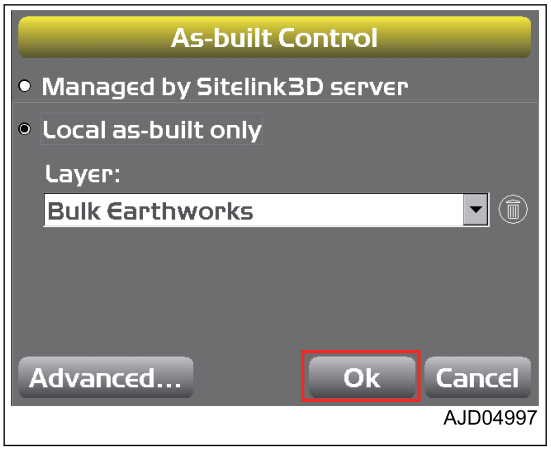
4. Press “Yes”.

   The screen returns to “As-built Control” screen.



AJD04996

5. On “As-built Control” screen, press “Ok”.
   The screen returns to the main window.



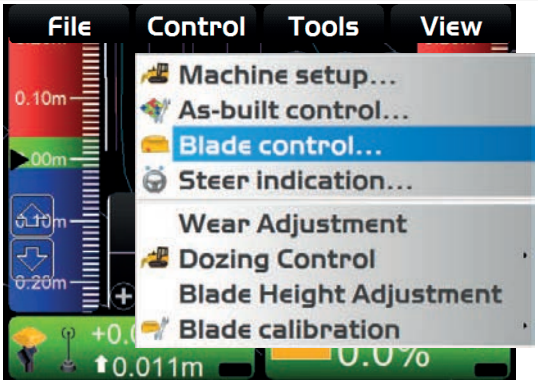
BLADE CONTROL

METHOD FOR SETTING AUTOMATIC BEST-FIT BLADE CONTROL

When the automatic best-fit blade control is used, 3DMC uses the whole blade edge as reference elevation.

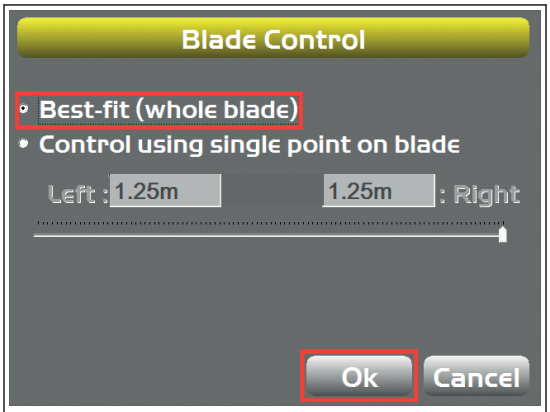
When there is a break line (a broken portion or a sharply changing portion of topography) in the surface, use the automatic best-fit blade control to perform finish leveling accurately.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Control” menu, press “Blade control...” and select.



AJD02630

3. On “Blade Control” screen, check “Best-fit (whole blade)”.
4. Press “Ok”.



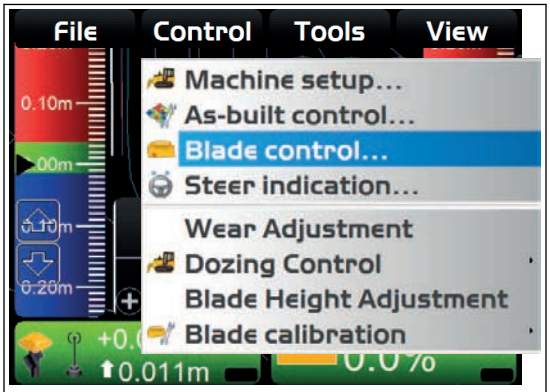
AJD02631

METHOD FOR SETTING SINGLE POINT BLADE CONTROL

When the single point blade control is used, 3DMC does not use the whole blade edge as a reference elevation but uses 1 point selected on the blade.

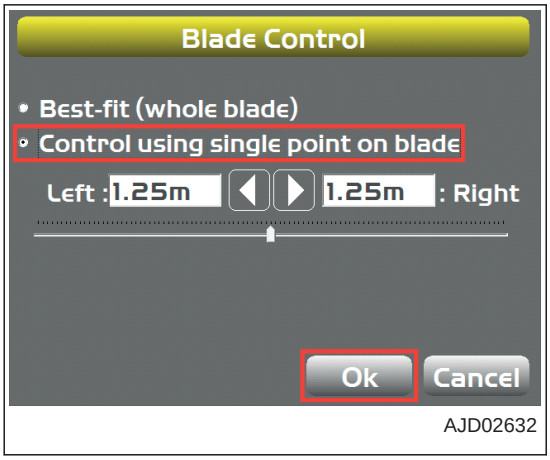
When finish-leveling to a range where the surface is smaller than the blade width, use the single point blade control.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Control” menu, press “Blade control...” and select.



AJD02630

3. On “Blade Control” screen, check “Control using single point on blade”.
4. Press “Ok”.

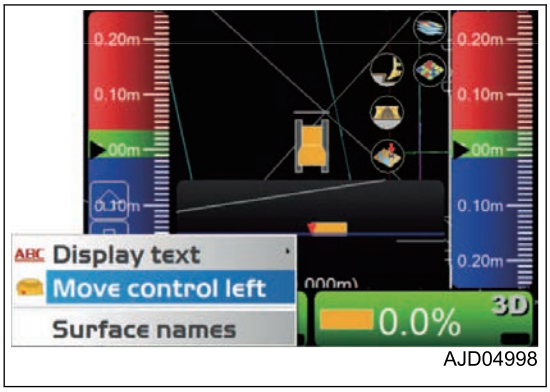


AJD02632

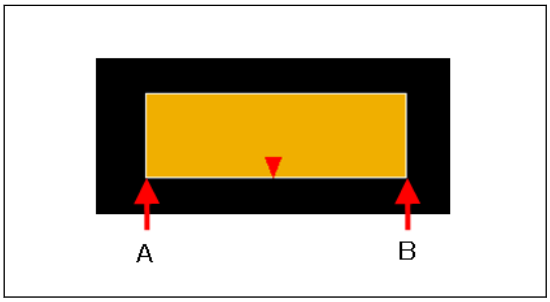
WHEN YOU CHANGE BLADE CONTROL POINT QUICKLY

You can change the blade control point quickly while the profile is displayed on the main window.

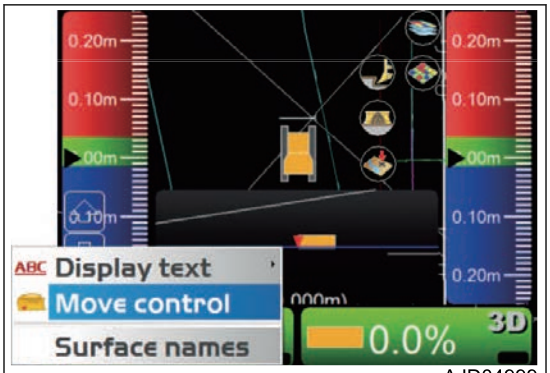
1. When setting the blade control point to the left end (or right end) of the blade edge, press left end (A) (or right end (B)) of the blade edge at the top of the screen.
2. Press “Move control left” (or “Move control right”).



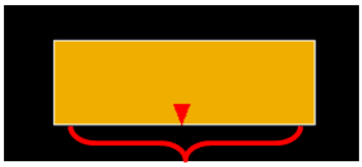
AJD04998

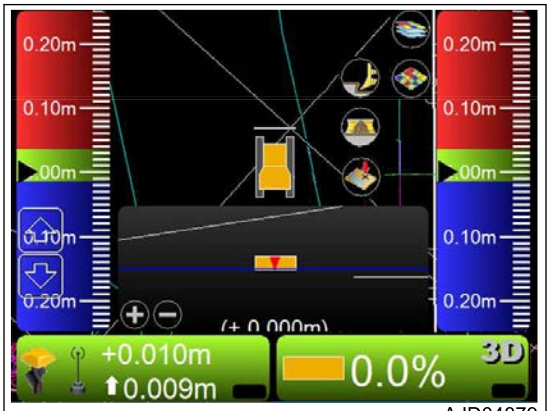


3. When setting the blade control point to any point of the blade edge, press any point (in the range of (C)) of the blade edge at the top of the screen.
4. Press “Move control”.



AJD04999





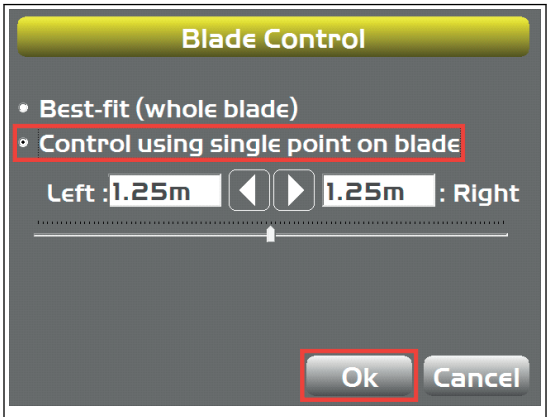
AJD04879

WHEN YOU CHANGE BLADE CONTROL POINT ON BLADE CONTROL SCREEN

When “Control using single point on blade” is selected, you can change the blade control point by using the slider button or the right/left arrow on “Blade Control” screen.

1. On “Blade Control” screen, check “Control using single point on blade”.
2. Select 1 point apart from the right/left of the blade by moving the slider button to the right/left or by using the right/left arrow.
3. Press “Ok”.

   This blade control point is applied to the machine.



AJD02632

STEER INDICATION OPTIONS

METHOD FOR SETTING STEER INDICATION OPTIONS

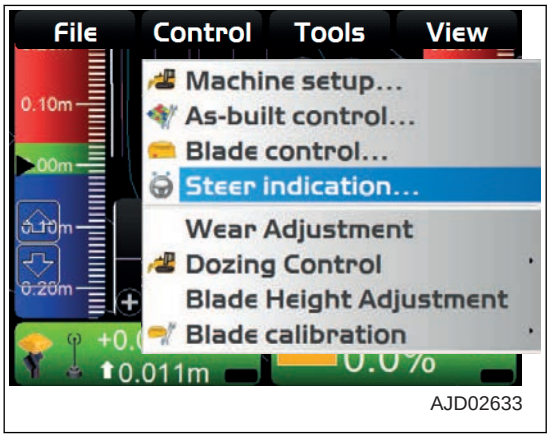
3DMC performs steering of the machine and operations by using the polyline layers in the line work file as landmarks. Generally, a file containing the alignment file is used for operations of the route.

The polylines indicate the features and targets such as bases of buildings, curbs, sidewalks, tops and bases of slopes, borders of projects, etc. When the polylines are composed of 3-D information at each shift point, you can select them on the main window. For the selecting method of the polylines, see “METHOD FOR USING POLYLINE”. The selected polylines are used as alignment data for steering of the machine, or as design elevations to control the blade.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Control” menu, press “Steer indication...” and select.

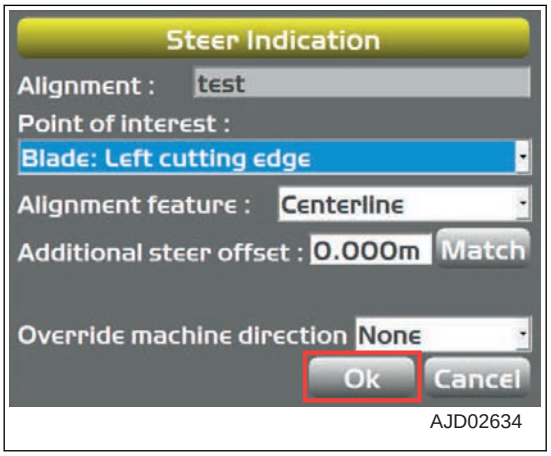
   REMARK

   “Steer indication...” menu is displayed only when the Alignment file has been selected.
   For the selecting method of Alignment, see “METHOD FOR SELECTING AN ACTIVE ALIGNMENT FILE”.



AJD02633

3. On “Steer Indication” screen, select or input the following parameters.
   - “Point of interest :”
     Select the blade edge position to display the Steer Indication.
   - “Alignment feature :”
     Select the position where the polyline as a landmark for the Steer Indication is in the Alignment data.
   - “Additional steer offset :”
     Input the distance to offset the target position from the position which has been set on “Alignment feature :”.
   - “Override machine direction”
     This function is disabled for this machine. Select “None”.
4. Press “Ok”.



AJD02634

ADJUST WEAR AMOUNT

For adjustment of wear amount of the blade, see “METHOD FOR INPUTTING WEAR AMOUNT OF BLADE EDGE AND TRACK SHOE”.

DOZING CONTROL

For setting of the dozing control, see “DOZING MODE SETTINGS”.

ADJUST BLADE ELEVATION

For adjustment of blade elevation, see “ADJUST BLADE ELEVATION”.

CALIBRATE BLADE POSITION

Perform calibration related to the blade.

Calibration of pitch rod

For details, see “INPUT PITCHING ROD LENGTH”.

Machine calibration step A

For machine calibration step A, contact your Komatsu distributor.

If you select it, press “Cancel” and return to the main window.

Machine calibration step B

For machine calibration step B, contact your Komatsu distributor.

If you select it, press “Cancel” and return to the main window.

TOOLS MENU

On “Tools” menu, you can measure the jobsite land form and blade edge position by coordinates and configure the radio.

RADIO DEVICE SETTINGS

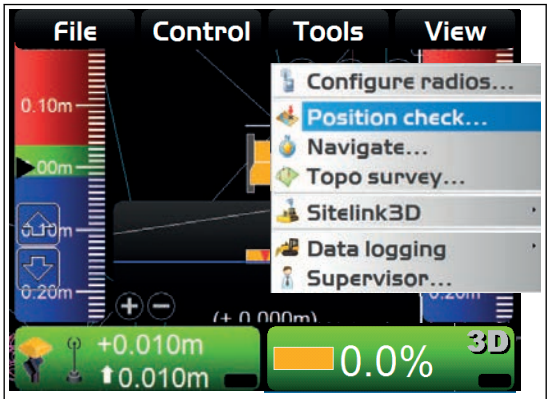
For the settings of radio, see “METHOD FOR CONFIGURING RADIOS”.

POSITION SETTINGS

METHOD FOR CHECKING BLADE ELEVATION

When checking the blade elevation, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Tools” menu, press “Position check...” and select.

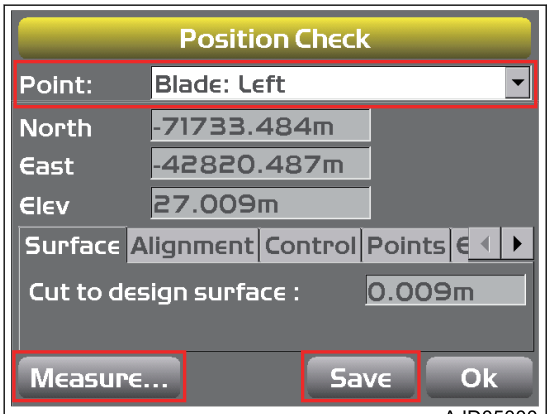


AJD02635

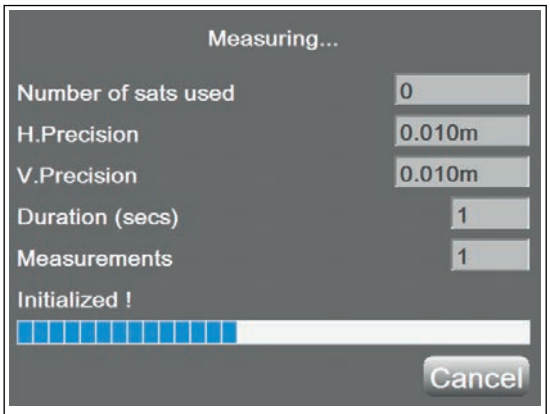
3. On “Position Check” screen, select “Point:”.

   Select the setting position of blade edge from “Blade: Left”, “Blade: Middle”, and “Blade: Right”.
4. Press “Measure...”.

   After the measurement is finished, the coordinates of the measuring point of the selected blade edge is displayed on “Position Check” screen.
5. Press “Save”.



AJD05000

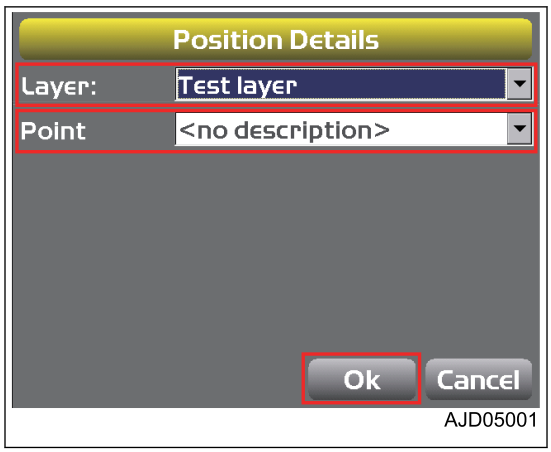


AJD02593

6. On “Position Details” screen, select “Layer:” (name of layer to use) and “Point description:” (explanation of point).
   - When you select “<new description>” as “Point description:”, you can set the point description by using the alphanumeric keyboard.
   - If you cannot change the layer on “Position Details” screen, disable the Topo survey function. For detail, see “PERFORM TOPOGRAPHIC SURVEYS”.
7. Press “Ok”.

   The screen returns to the “Position Check” screen.
8. Press “Ok”.

   The screen returns to the main window.



NAVIGATE POINTS

You can select a navigation/survey point and navigate the machine to that point.

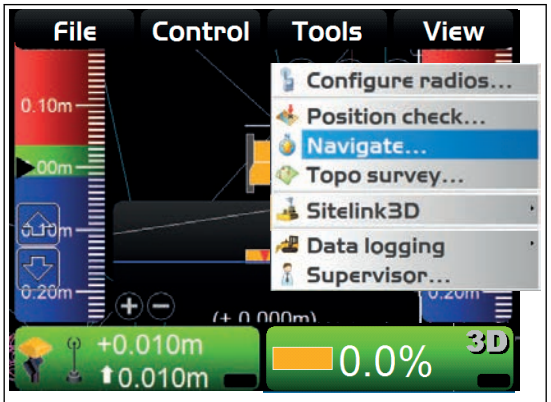
As a navigation/survey point, you can select a point of any layer in the project file.

METHOD FOR NAVIGATING TO POINTS

You can navigate to points by using the pop-up menu as well.

When using the pop-up menu, see “METHOD FOR NAVIGATING TO POINTS (POP-UP MENU)”.

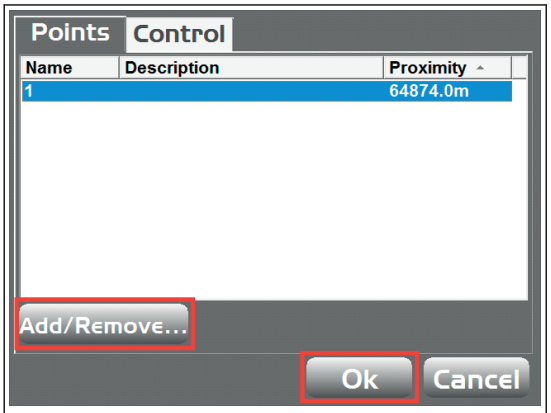
1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Tools” menu, press “Navigate...” and select.



AJD02638

3. Press “Add/Remove...”.

   The point is added/deleted to/from the list.
4. Select a point
5. Press “Ok”.



AJD02639

The survey point information is displayed on the main window.

The machine is drawn together with an arrow to navigate to the reference point.

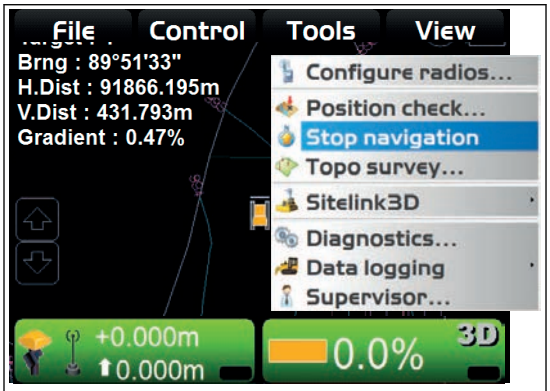
AJD05002

When the point to navigate to and the machine are displayed on the same screen, the arrow goes out.

AJD05003

6. When stopping navigation to the point, press “Tools” and “Stop navigation” in order from the main menu on the main window, and select.

   Navigation to the point is stopped.



AJD02642

AJD04884

REMARK

When the “Navigate to the point” is performed, one of the left end, center, and right end of blade edge is used as a reference point which has been set in “Point of interest :” of “Steer Indication” screen or in the Steerpoint of the Pop-up menu.
To set or change the reference point for Navigation, see “STEER INDICATION OPTIONS” or “OPERATION USING POP-UP MENU”.

TOPO SHOT FOR TOPOGRAPHIC SURVEY

PERFORM TOPOGRAPHIC SURVEYS

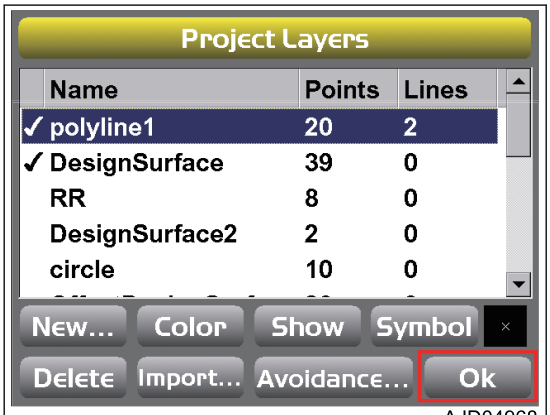
You can continuously measure and record the coordinates of the blade edge position at a fixed interval or at any time.

TAKE A TOPO SHOT OF BLADE ELEVATION FOR TOPOGRAPHIC SURVEY IN CERTAIN INTERVAL

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “File” menu, press “Layers...” and select.

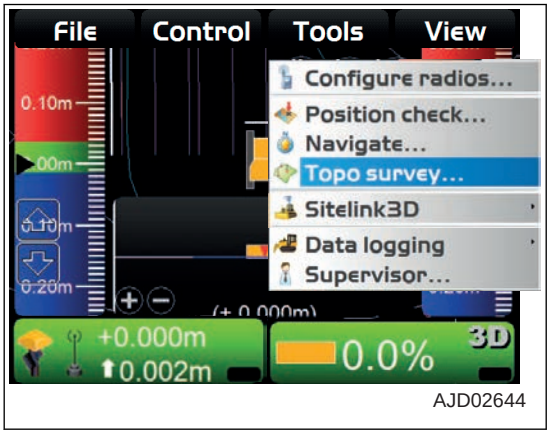
AJD04962

3. On “Project Layers” screen, make a new layer for recording topographic survey.
4. Press “Ok”.



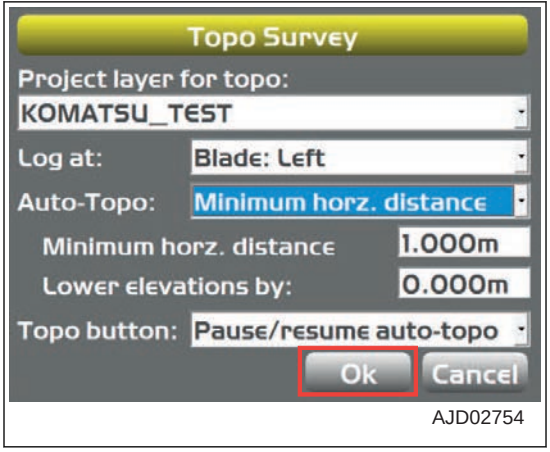
AJD04968

5. Press the power ON/OFF and menu switch to display the main menu.
6. On “Tools” menu, press “Topo survey...” and select.



AJD02644

7. On “Topo Survey” screen, input information.
   - “Project layer for topo:”
     Select the layer for recording topographic survey.
   - “Log at:”
     Select a blade position where you record topographic survey.
   - “Auto-Topo:”
     Select “Minimum horz. distance”.
   - “Minimum horz. distance”
     Press the input section for “Minimum horz. distance”, and then input “Minimum horz. distance” by using the numeric keyboard.
   - “Lower elevations by:”
     Press the input section of “Lower elevations by:” and input the value to be offset to the Elevation by using the numeric keyboard.
     Offset the Elevation Coordinates of blade edge (of which position is measured) and save the data.
   - “Topo button:”
     Select “Pause/resume auto-topo”.

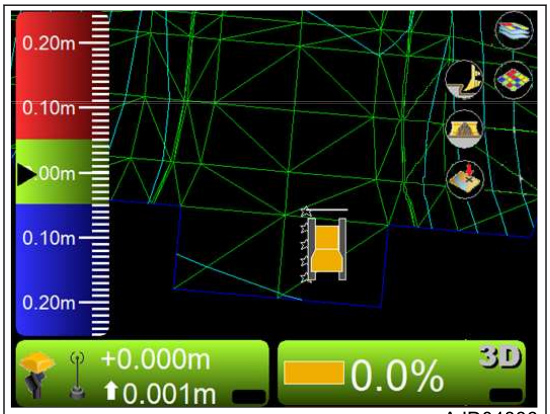


AJD02754

8. Press “Ok”.

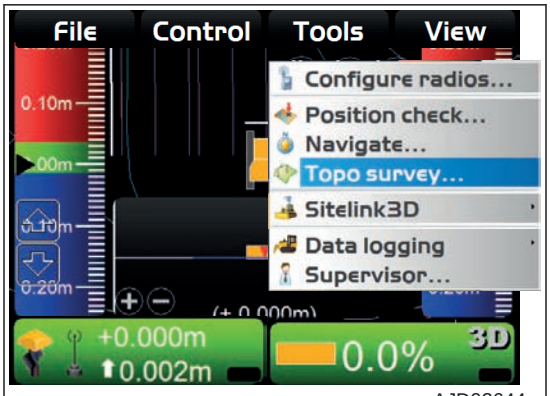
   The screen returns to the main window, and the topographic survey recording function starts.

When the machine starts moving, the topographic survey recording is displayed.
(Example) Mark ☆ on main window



AJD04886

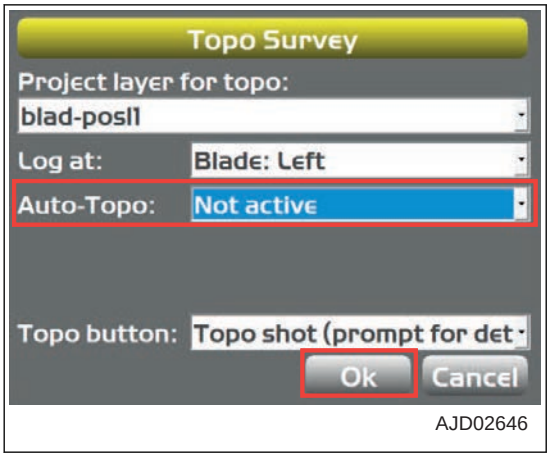
9. When stopping the topographic survey recording function, press “Tools” and “Topo survey...” in the main menu on the main window and select.



AJD02644

10. On “Topo Survey” screen, select “Not active” for “Auto-Topo:”.
11. Press “Ok”.

    3DMC continues the topographic survey recording until “Not active” is selected for “Auto-Topo:”.



AJD02646

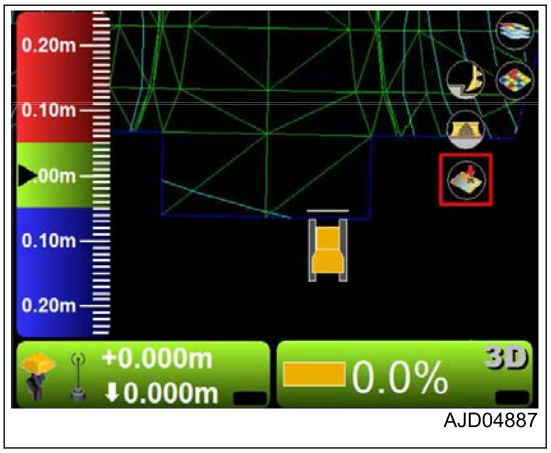
REMARK

There are following 2 types of topographic survey recording.

- Topographic survey recording by minimum horizontal distance
  This is useful for recording of the blade locus.
- Topographic survey recording by fixed (time) intervals
  This is useful for recording the blade edge position continuously to grasp the dispersion of the blade edge position based on the satellite capturing position.
  (The use for recording the blade locus is similar to the method by the minimum horizontal distance.)

REMARK

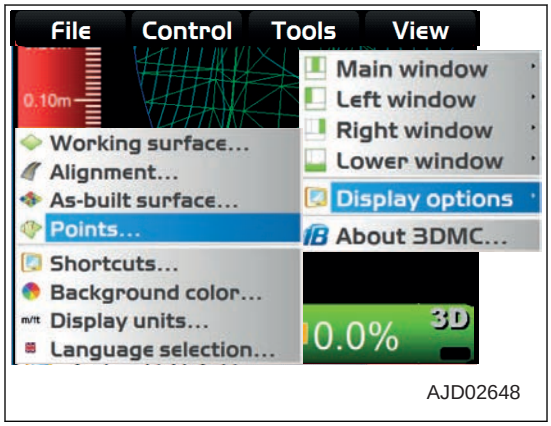
- You can pause/resume the topographic survey recording by pressing “Take a topo shot”.
- If topo shot point is not displayed when “Take a topo shot” is pressed and pause/resume is switched, see “OPERATIONS WHEN POINTS FROM TOPO SURVEY FILE IS NOT DISPLAYED”.



AJD04887

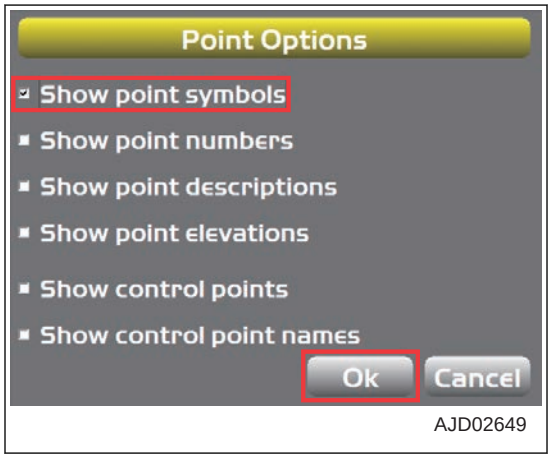
OPERATIONS WHEN POINTS FROM TOPO SURVEY FILE IS NOT DISPLAYED

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Display options” menu, press “Points...” and select.



AJD02648

3. On “Point options” screen, check “Show point symbols”.
4. Press “Ok”.



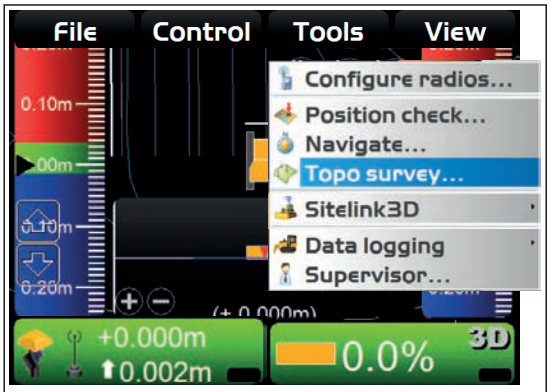
AJD02649

TAKE A TOPO SHOT OF BLADE ELEVATION FOR TOPOGRAPHIC SURVEY IN PREFERABLE TIMING

You can select “Topo shot (prompt for details)” or “Topo shot (no prompt)” with “Topo button:” on the “Topo Survey” screen.

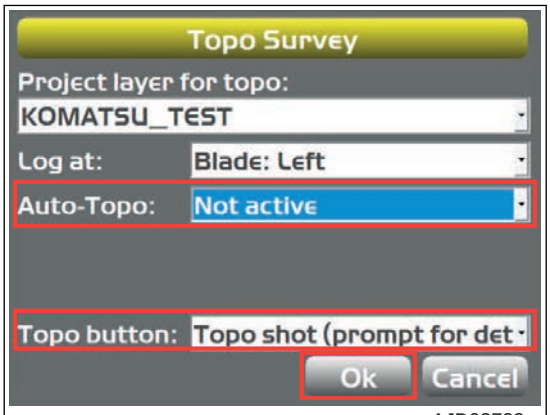
WHEN SELECTING PROMPT FOR DETAILS

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Tools” menu, press “Topo survey...” and select.



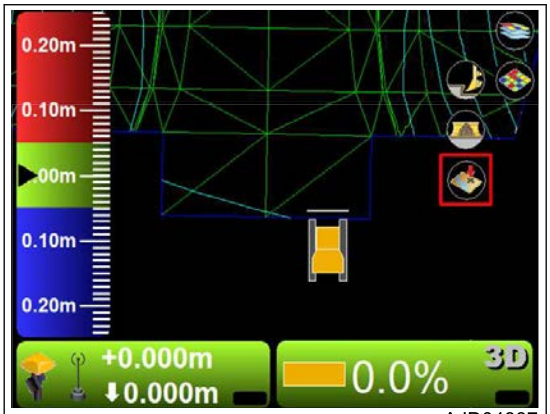
AJD02644

3. On “Topo Survey” screen, select “Not active” for “Auto-Topo:”.
4. Select “Topo shot (prompt for details)” for “Topo button:”.
5. Press “Ok”.



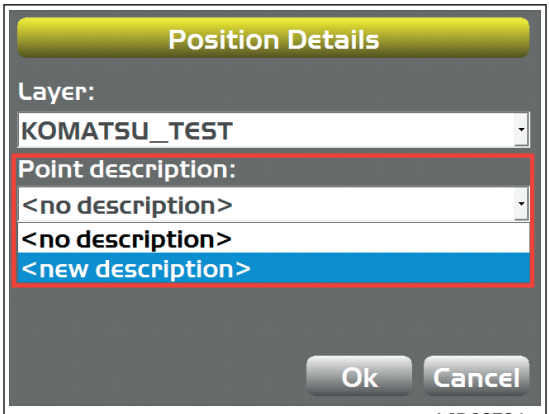
AJD02733

6. On the main window, press “Take a topo shot”.



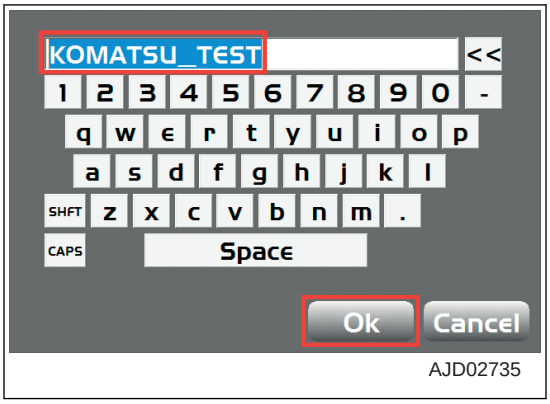
AJD04887

7. On “Position Details” screen, select “<new description>” for “Point description:”.



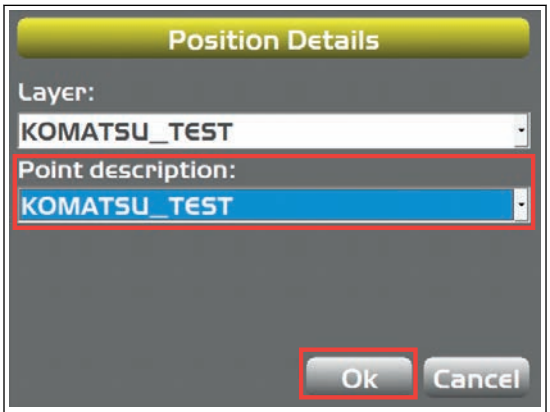
AJD02734

8. Input information of the point with the alphanumeric keyboard.
9. Press “Ok”.



AJD02735

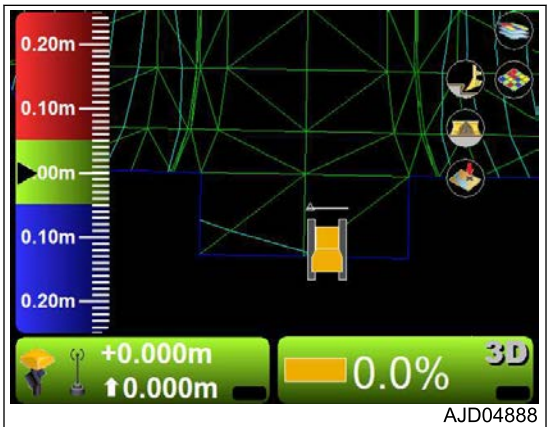
10. Check that the information of the point is input to “Point description:”, and press “Ok”.



AJD02736

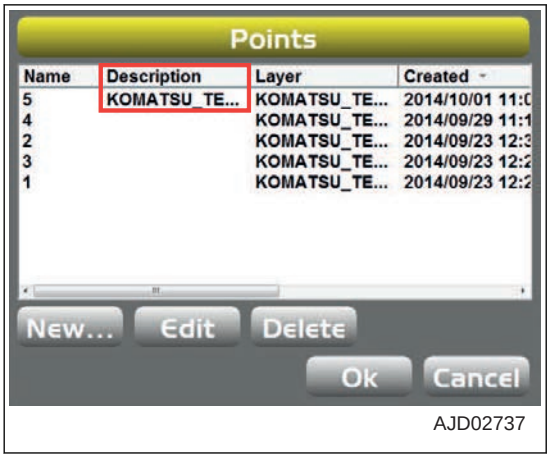
The topographic survey recording is displayed.

(Example) Mark △ at left end of blade on main window



AJD04888

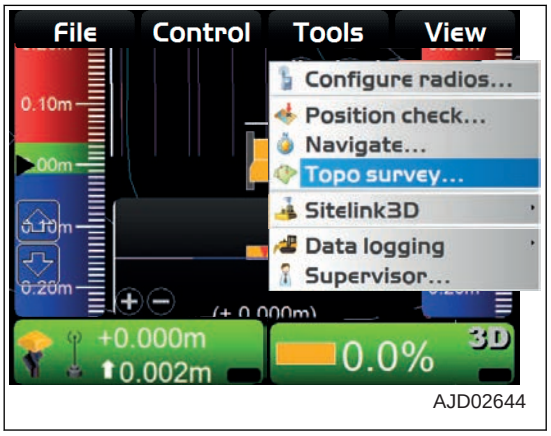
- On the main window, each time “Take a topo shot” is pressed, the coordinates of the blade edge are measured and recorded.
  Input the information of the point of “Position Details” every time.
- You can check the contents of “Point description:” by “Description” on “Points” screen.
  To display “Points” screen, press “File” and “Points...” in order in the main menu on the main window.
- Use only numerals for “Name” of point. Set the information of the point by the comment in “Description”.
- On the main window, each time “Take a topo shot” is pressed, “Position Details” screen is displayed.
  You can change the setting of “Point description:” every time.



AJD02737

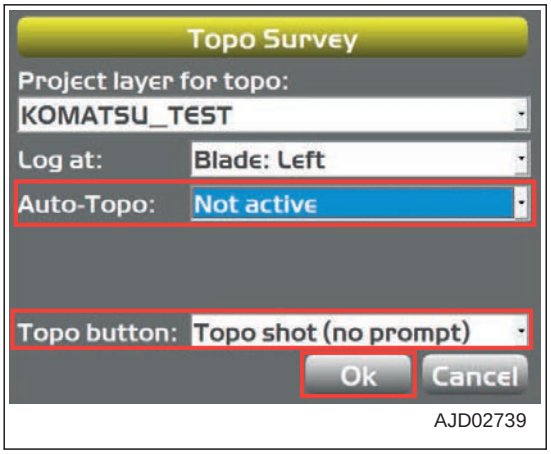
WHEN SELECTING NO PROMPT

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Tools” menu, press “Topo survey...” and select.



AJD02644

3. On “Topo Survey” screen, select “Not active” for “Auto-Topo:”.
4. Select “Topo shot (no prompt)” of “Topo button:”.
5. Press “Ok”.



AJD02739

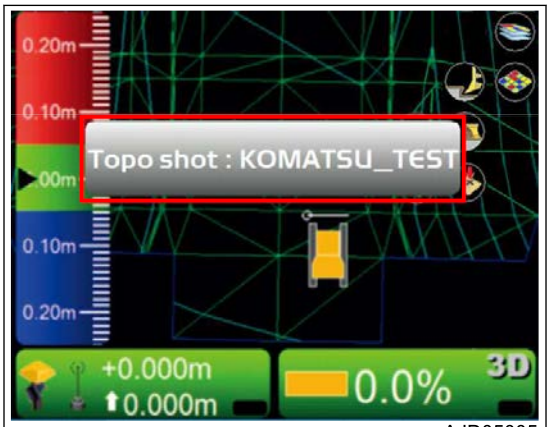
6. On the main window, press “Take a topo shot”.

AJD04887

“Auto-Topo:” (information set on detailed position screen) and topographic survey recording are displayed.

For the information set on “Position Details” screen, see “WHEN SELECTING PROMPT FOR DETAILS”.

(Example) Mark ○ at left end of blade on main window



AJD05005

METHOD FOR SETTING Sitelink3D

With “Sitelink3D”, you can perform the setting for Network Connection, Operator, Activity, Delay, Material, Export Data, and Message.

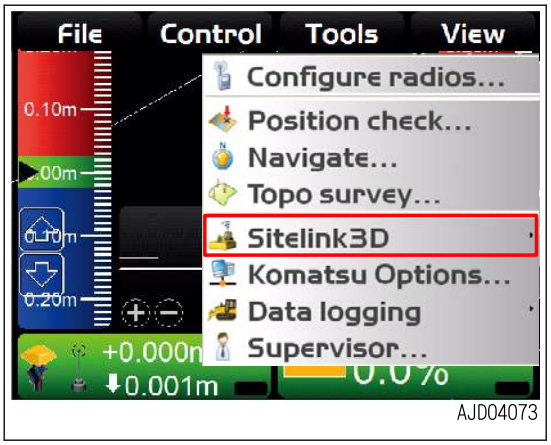
To execute “Sitelink3D” menu, the control box must be connected to the Internet.

In addition, it is necessary to create a site, to issue a one-time registration code of the Sitelink3D, and to create a task from the WebPortal of the Sitelink3D that is the Topcon construction management system. For the operation method of the WebPortal, see the Topcon materials.

REMARK

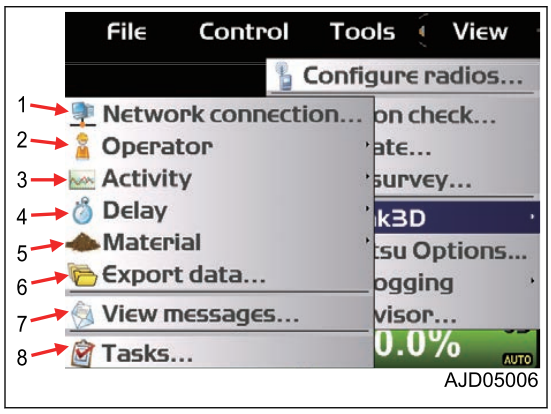
If a large capacity of data is saved in the control box, hard disk is used fully and the control box may not operate normally. Frequently delete the unnecessary data.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Tools” menu, press “Sitelink3D” and select.
   “Sitelink3D” menu is displayed.



SETTING CONTENTS BY Sitelink3D MENU

On “Sitelink3D” menu, you can set the following.



AJD05006

(1) “Network connection...”

You can perform the setting for connecting the control box to the Sitelink3D.

(2) “Operator” (*)

You can select the operator.

(3) “Activity” (*)

You can select the name of activity.

(4) “Delay” (*)

You can select the delay information.

(5) “Material” (*)

You can select the soil type information.

(6) “Export data...”

You can send the Surface file via network to the devices (control box, 3D-Office, etc.) which are connected to the Sitelink3D.

(7) “View messages...”

You can view or delete the received messages.

(8) “Tasks...”

You can open the task menu of the Sitelink3D.

(*): The list of information set at the WebPortal is displayed. Select the item from the list. For the item which is not set at the WebPortal, only “<none>” is displayed.

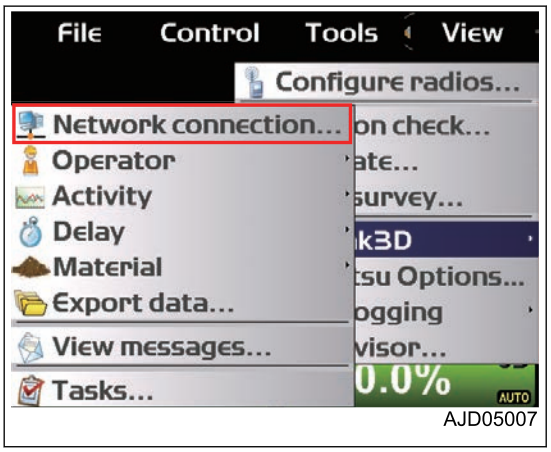
METHOD FOR REGISTERING ON Sitelink3D

To perform the following procedure, you need to connect the network modem to WebPortal of Sitelink3D beforehand. For the details, consult your Komatsu distributor.

In order to register on the Sitelink3D, issue the one-time registration code with the WebPortal of Sitelink3D in advance.

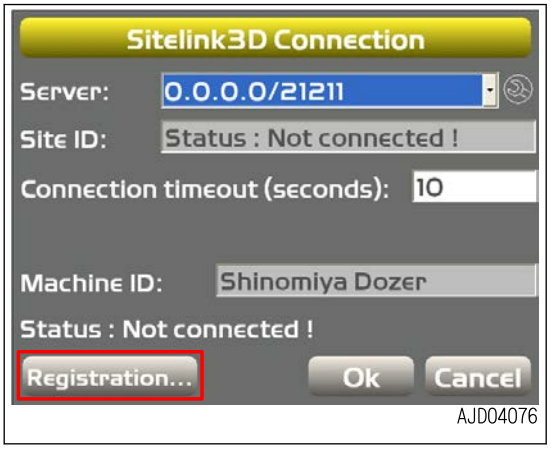
After issuing the one-time registration code, register the control box on the Sitelink3D according to the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Tools” menu, press “Sitelink3D” and “Network connection...” in order.



AJD05007

3. On “Sitelink3D Connection” screen, press “Registration...”.



AJD04076

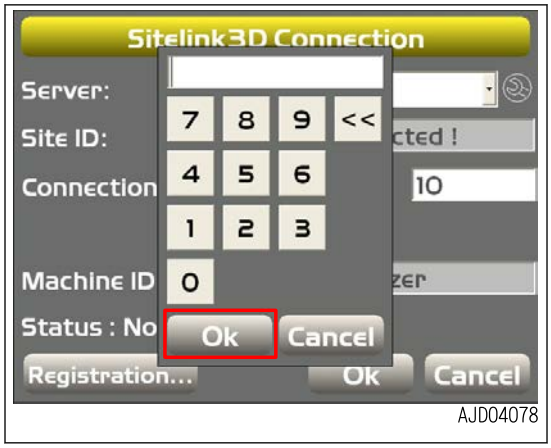
The message “Please have your one-time Sitelink3D registration code ready. Press Ok to enter code...” is displayed.

4. Press “Ok”.

AJD04077

5. By using the numeric keyboard, input the one-time registration code issued with the WebPortal of Sitelink3D, and press “Ok”.
   - When the registration of code is succeeded
     The message indicating the success of registration is displayed.
   - When the registration of code is failed
     The error message is displayed.
     Check the one-time registration code and press “Ok” again.
6. After completing the registration, hold down the power ON/OFF and menu switch to turn off the power, and hold down the power ON/OFF and menu switch again to restart the control box.

   The registered settings become effective.

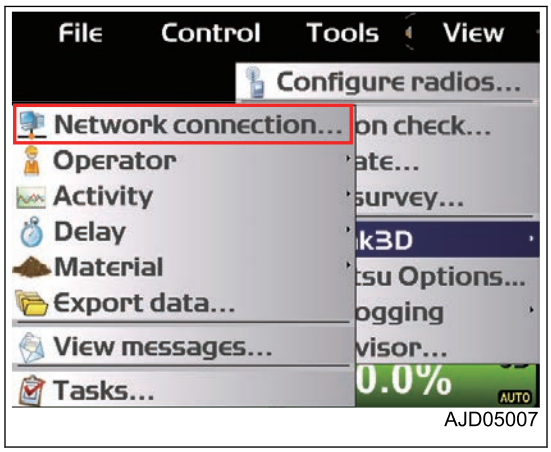


METHOD FOR CONNECTING TO Sitelink3D

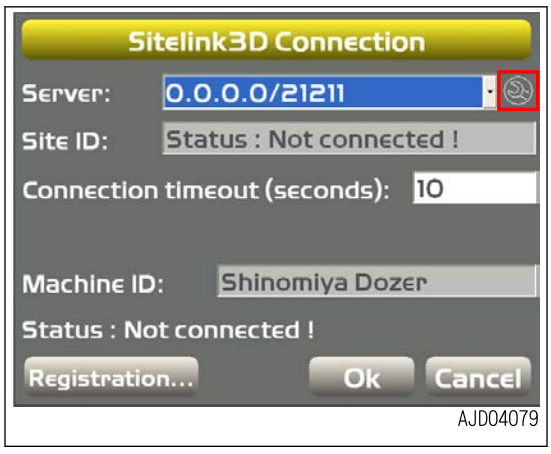
To connect to Sitelink3D, the registration of the control box to Sitelink3D must have been completed.

In addition, write the address and site number of server with the WebPortal of Sitelink3D in advance. (Example: 172.30.0.10/21251)

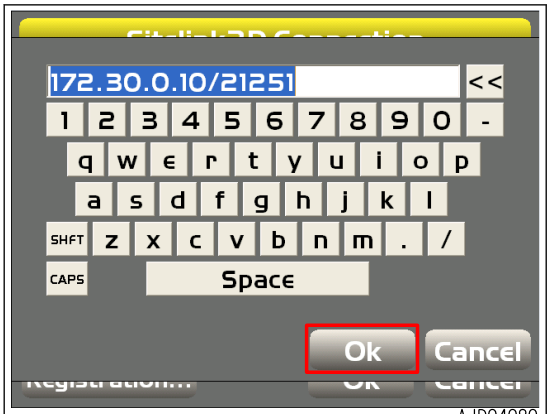
1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Tools” menu, press “Sitelink3D” and “Network connection...” in order.



3. Press the “wrench mark” button on “Sitelink3D Connection” screen.



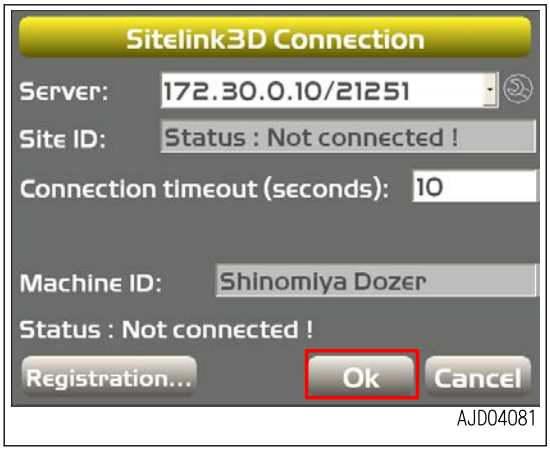
4. Input the address of the server and the site No. which have been checked in the WebPortal, and press “Ok”.



AJD04080

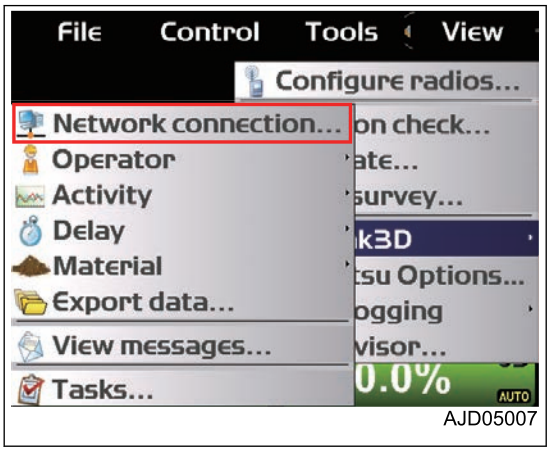
5. Press “Ok” on “Sitelink3D Connection” screen.

   The control box is connected to Sitelink3D, and the screen returns to the main window.



AJD04081

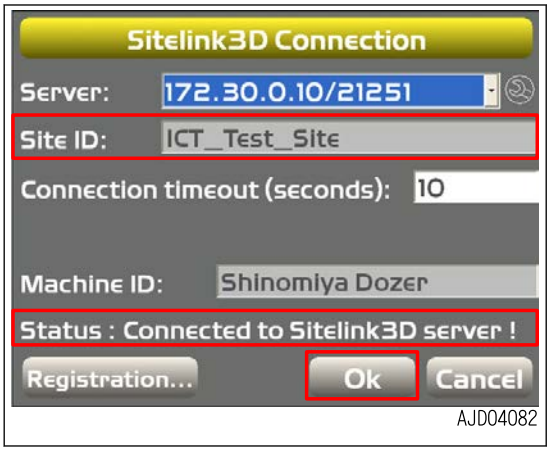
6. Press the power ON/OFF and menu switch to display the main menu.
7. On “Tools” menu, press “Sitelink3D” and “Network connection...” in order.



AJD05007

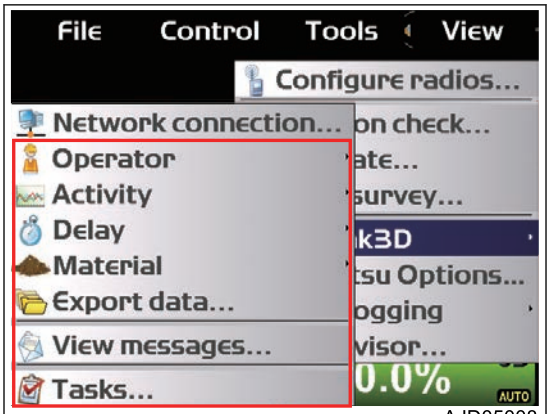
8. On “Sitelink3D Connection” screen, check that the control box is connected to the Sitelink3D.

   When the control box is connected to the Sitelink3D, “Status:” is changed to “Connected to Sitelink3D !”, and “Site ID:” is displayed.
9. Press “Ok”.



AJD04082

Each setting item in “Sitelink3D” menu becomes Enabled.



AJD05008

METHOD FOR SETTING CONSTRUCTION INFORMATION

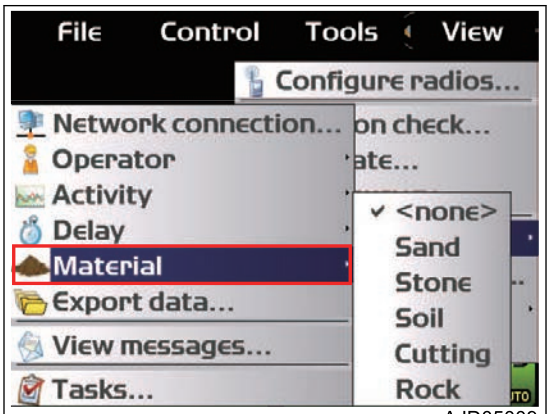
Once the construction information (Operator, Activity, Delay, Material) are set, the current construction information can be checked at the office.

To enable the setting of construction information, the control box must be connected to the Sitelink3D.

In addition, the setting of construction information must be completed as well at the WebPortal of Sitelink3D.

1. Connect to the Sitelink3D.
2. Press the power ON/OFF and menu switch to display the main menu.
3. On “Tools” menu, press “Sitelink3D” and select.
4. Press “Operator”, “Activity”, “Delay”, or “Material” and select.

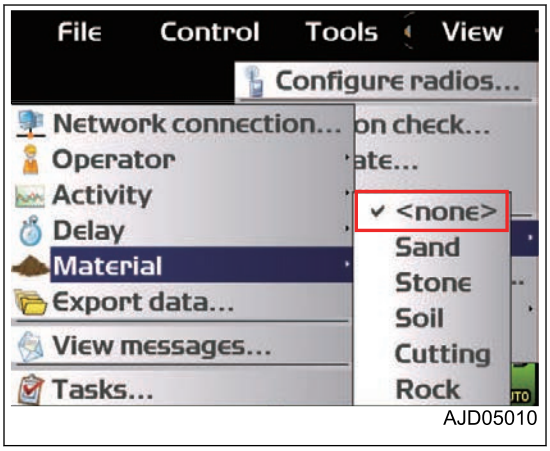
   A list for selection is displayed. Press the desired item to select it.



AJD05009

REMARK

The construction information set at the WebPortal of Sitelink3D is displayed in the list for selection.
For the item with no setting of construction information, only “<none>” is displayed.



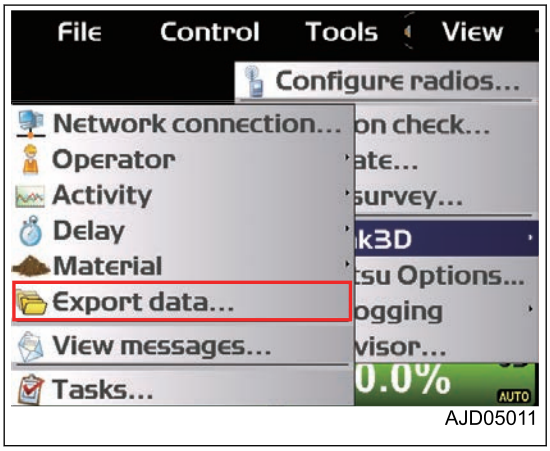
AJD05010

METHOD FOR OUTPUTTING DATA

You can select the necessary information from the active Project File and export the Design Surface File to the devices (control box, 3D-Office, etc.) connected to the same site of Sitelink3D.

To export the data, the control box must be connected to the Sitelink3D.

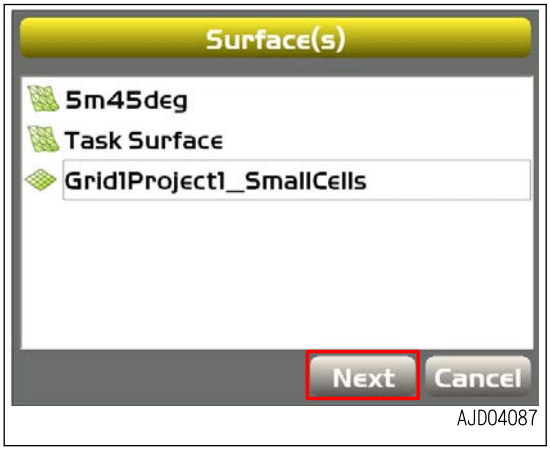
1. Connect to the Sitelink3D.
2. Press the power ON/OFF and menu switch to display the main menu.
3. On “Tools” menu, press “Sitelink3D” and “Export data...” in order.



AJD05011

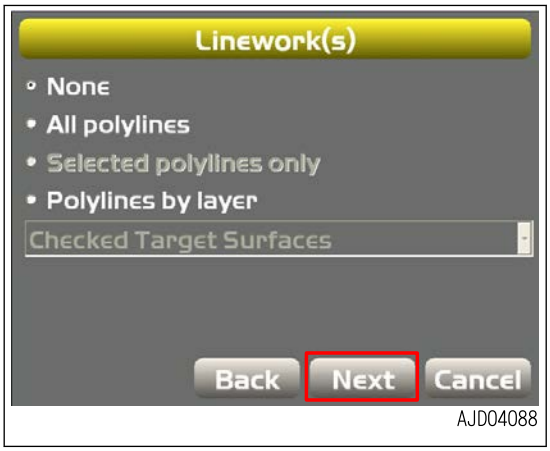
4. Select all the Surfaces to be exported on “Surface(s)” screen, and press “Next”.

   On “Surface(s)” screen, the list of Surfaces in the active Project Files is displayed.



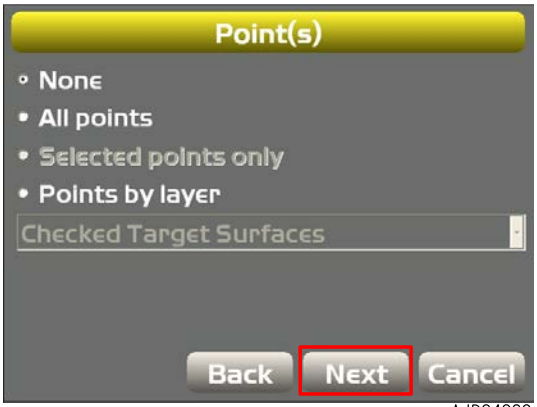
AJD04087

5. Select the export method of Linework(s) included in the active Project File on “Linework(s)” screen, and press “Next”.
   - “None”: Exports none.
   - “All polylines”: Exports all the polylines.
   - “Selected polylines only”: Exports the selected polylines.
   - “Polylines by layer”: Exports the polylines which are included in the selected Layer.



AJD04088

6. Select the export method of Point(s) included in the active Project File on “Point(s)” screen, and press “Next”.
   - “None”: Exports none.
   - “All points”: Exports all the Points.
   - “Selected points only”: Exports the selected Points.
   - “Points by layer”: Exports the Points which are included in the selected Layer.



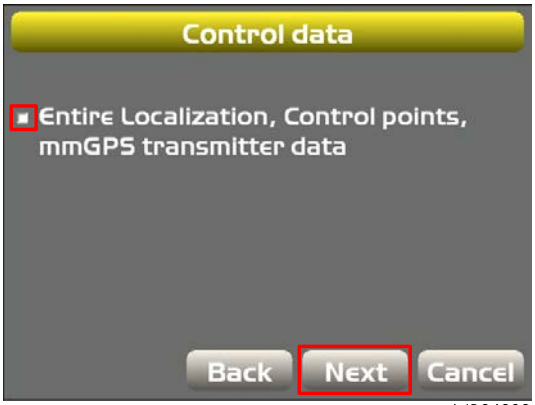
AJD04089

“Control data” screen is displayed.

7. To export the Control data included in the active Project File, tap the check box to put a tick in it, and press “Next”.

   NOTICE

   When the Control data is exported, all Localization File, Control Point(s), and mmGPS data are exported. In addition, the active Project at Recipients is overwritten by Control data.

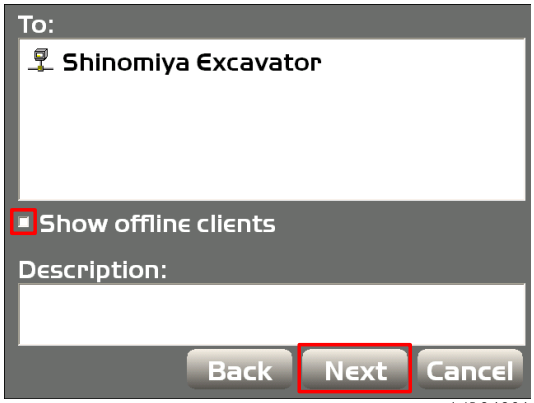


AJD04090

8. Select the device of Recipients, and press “Next”.

   REMARK

   Put a tick in the check box of “Show offline clients”, and the devices currently in offline are also displayed.



AJD04091

9. Select if you import the exported data to the active Surface at Recipients of data, and press “Next”.

   (1) “Import into recipients current active project”

   Exported data to the active Project at Recipients is imported.

   (2) “Overwrite surface w. same name”

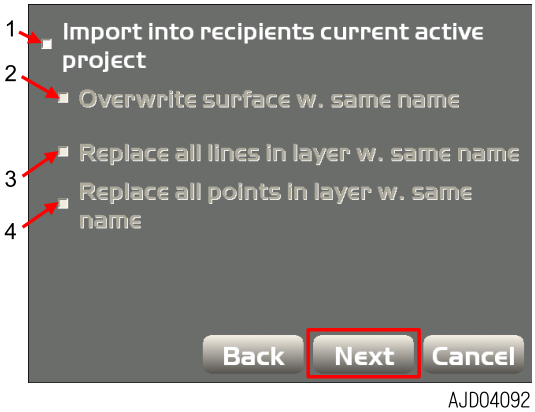
   The Surface with the same name is overwritten.

   (3) “Replace all lines in layer w. same name”

   All lines in the Layer with the same name are replaced.

   (4) “Replace all points in layer w. same name”

   All points in the Layer with the same name are replaced.

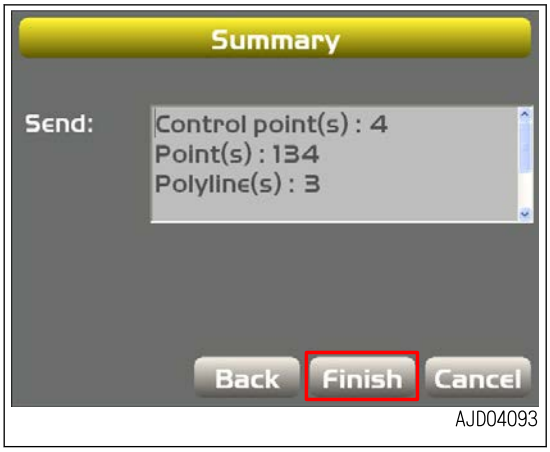


AJD04092

On “Summary” screen, the Summary of Export Data setting is displayed.

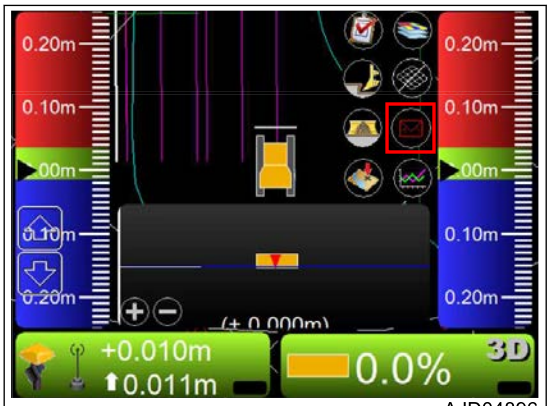
10. Press “Finish”.

    The data exporting starts.



AJD04093

During the data exporting, “Sitelink3D messaging” mark on the main window becomes red.



AJD04896

When the data exporting is completed, “File send : succeeded!” message is displayed and the color of “Sitelink3D messaging” returns to the original color.

NOTICE

While transmitting/receiving the data, do not change the Project File or Sitelink3D setting.

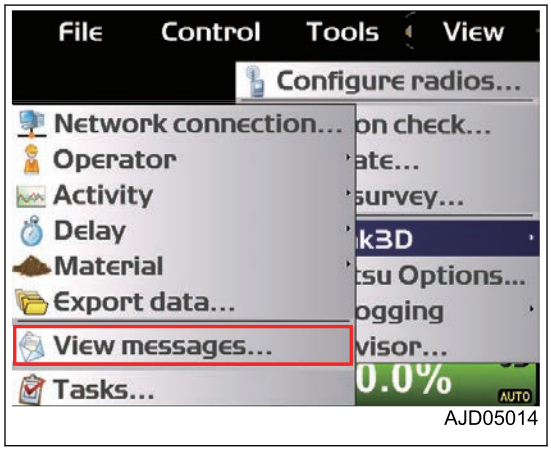
AJD05012

METHOD FOR SENDING MESSAGE

You can send the message to the devices (control box, 3D-Office, etc.) which are connected to the same site of Sitelink3D.

To send the message, the control box must be connected to the Sitelink3D.

1. Connect to the Sitelink3D.
2. Press the power ON/OFF and menu switch to display the main menu.
3. On “Tools” menu, press “Sitelink3D” and “View messages...” in order.

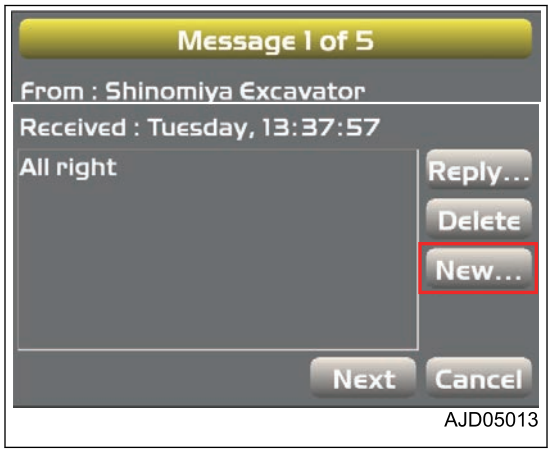


REMARK

Even if “View messages...” is pressed when no message has been received, the message reception screen is not displayed. In this case, press “Sitelink3D messaging” on main window to display the message sending screen.

The message reception screen is displayed.

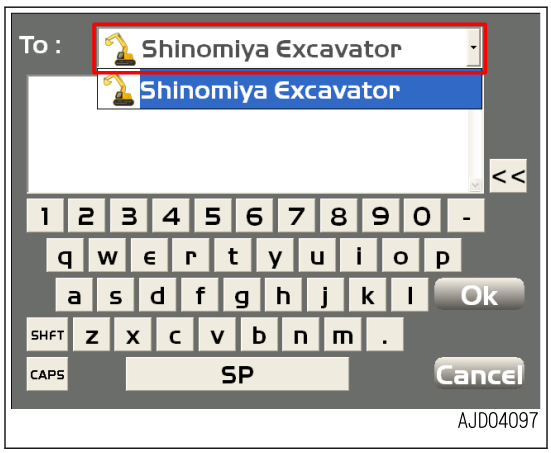
4. Press “New...”.



The message sending screen is displayed.

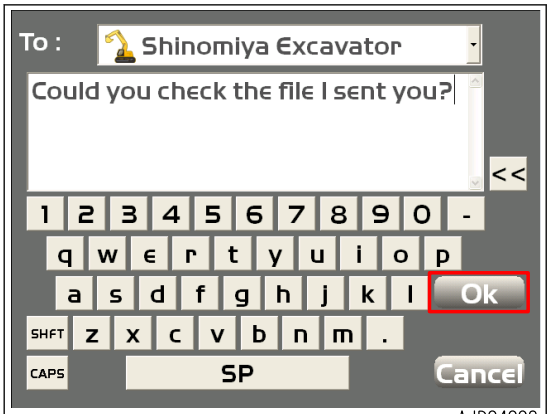
5. Press the drop-down list beside “To :”, and select the device name of the message destination.

   The list of devices currently connected to the same site is displayed in the drop-down list.



6. Input the message by using the alphanumeric keyboard, and press “Ok”.

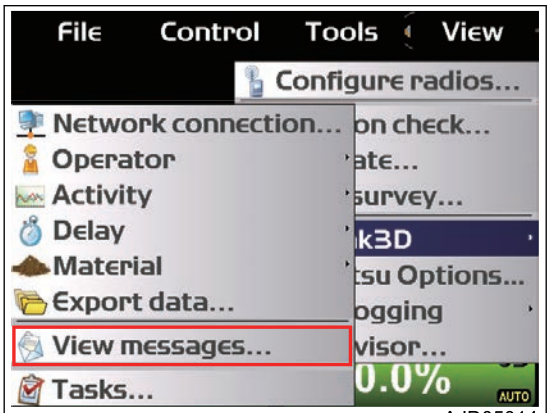
   The message will be sent.



AJD04098

METHOD FOR CHECKING RECEIVED MESSAGE

1. Connect to the Sitelink3D.
2. Press the power ON/OFF and menu switch to display the main menu.
3. On “Tools” menu, press “Sitelink3D” and “View messages...” in order.



AJD05014

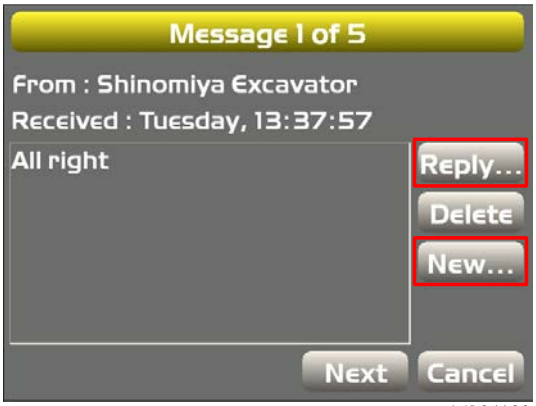
The received message is displayed.

4. Check the received message.
5. When checking the other received messages, press “Next”.

AJD04100

REMARK

Press “Reply...” or “New...”, the message sending screen opens and you can send the message.
When pressing “Reply...”, the destination of the message is set to the source of the received message.



AJD04130

When the messages are sent from other devices, the received messages are displayed on the main window.

AJD04901

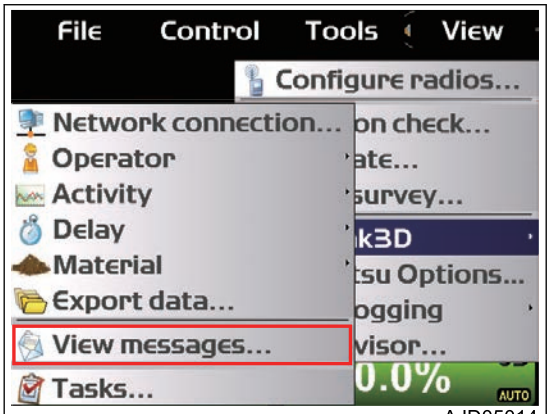
At the same time, “Sitelink3D messaging” on the main window becomes yellow.

When pressing “Sitelink3D messaging”, the received message is displayed.

AJD04902

METHOD FOR DELETING RECEIVED MESSAGE

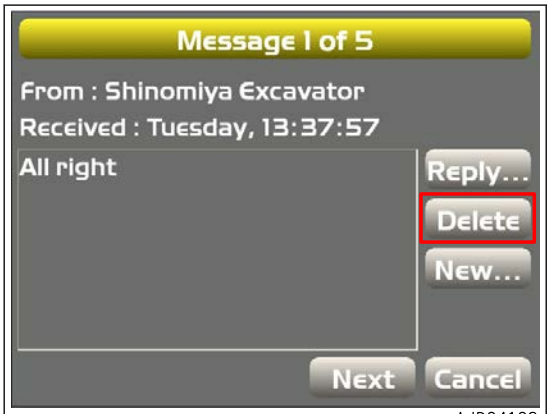
1. Connect to the Sitelink3D.
2. Press the power ON/OFF and menu switch to display the main menu.
3. On “Tools” menu, press “Sitelink3D” and “View messages...” in order.



AJD05014

The received message is displayed.

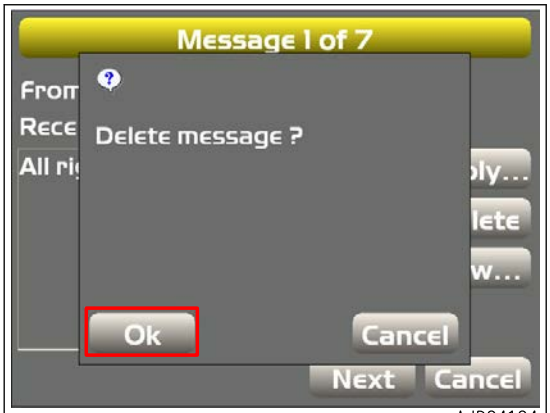
4. Display the message to be deleted, and press “Delete”.



AJD04103

The confirmation screen is displayed.

5. Press “Ok”.
   The message will be deleted.



AJD04104

TASK MENU

With the task menu, you can perform the check of task information, check of task progress, check of task productivity, and check of task status.

(1) Name of the currently selected task

The task name which is currently selected is displayed.

(2) Task list

The currently selectable tasks are displayed.

(3) “Select task”/“Deselect task” button

You can select or deselect the tasks.

The position (1) shows the task name which is being selected.

(4) “Ok” button

Saves the setting which has been set in the task menu.

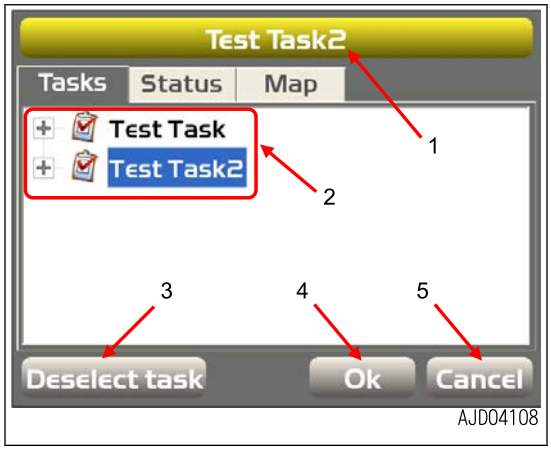
(5) “Cancel” button

Finishes the task menu.

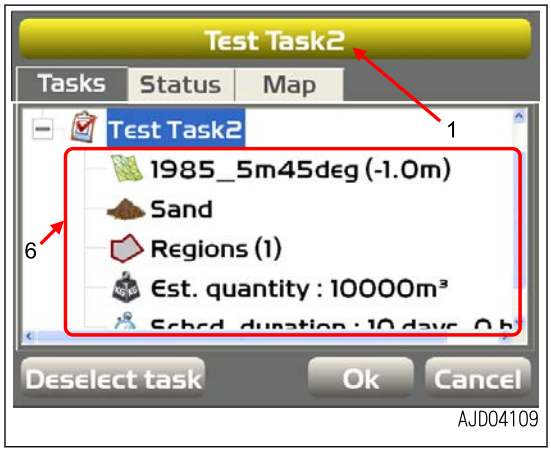
(6) Display of task information

When pressing the "+" button, the task information at the left of the task is displayed.

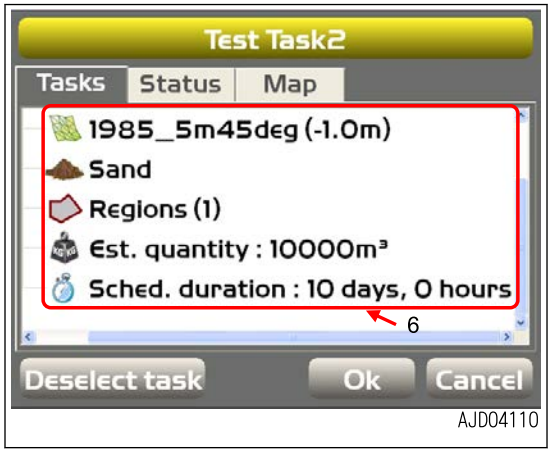
- Design pad information of the Task
- Soil type of the Task
- Number of regions of the Task
- Amount of soil assigned to the Task
- Duration of the Task



AJD04108



AJD04109

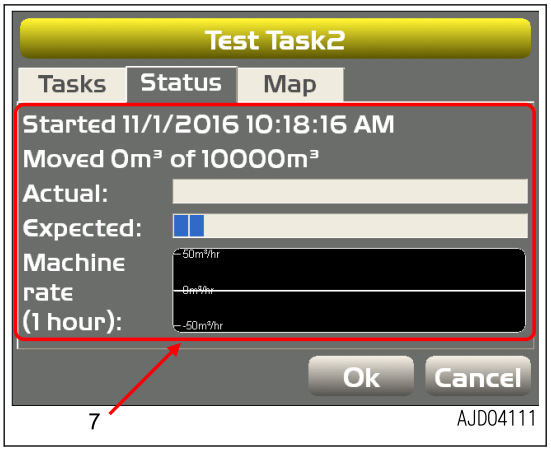


AJD04110

(7) Display of task state

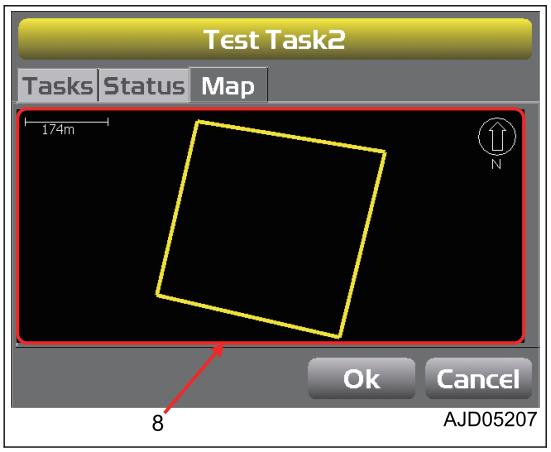
When “Status” tab is pressed, the current task state is displayed.

- Starting time of the Task
- Amount of soil completed for the Task
- Progress of the Task
- Progress of the Task target
- Productivity of the machine



(8) Check of the Task regions

When “Map” tab is pressed, you can check the size of task region with a map of reduction scale.



SUPERVISOR MODE

In the supervisor mode of 3DMC, the supervisor can enable or disable the user to operate the menus, buttons, and screen items.

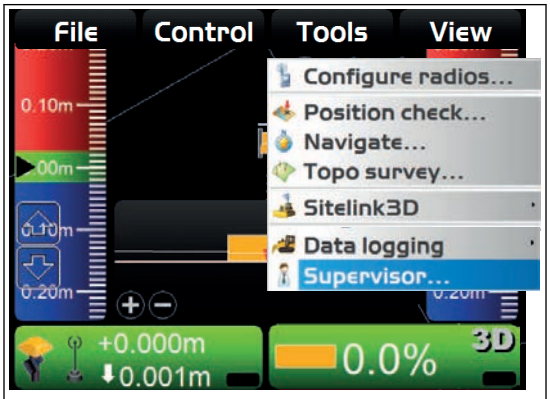
A password is required to use the supervisor mode.

The password differs, depending on the case.

Default password: topcon

METHOD FOR USING SUPERVISOR MODE

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Tools” menu, press “Supervisor...” and select.



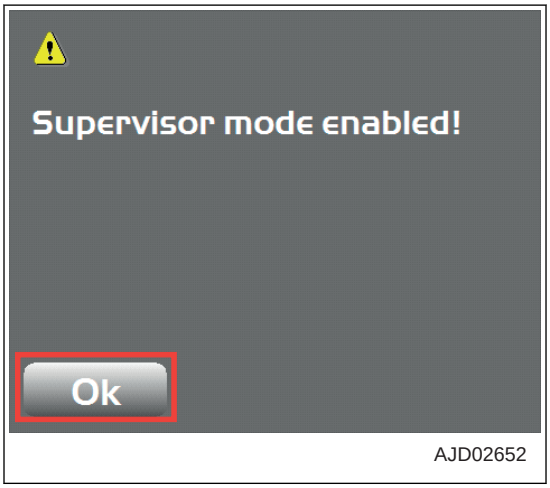
AJD02650

3. Input the password by using the alphanumeric keyboard.
4. Press “Ok”.

AJD02651

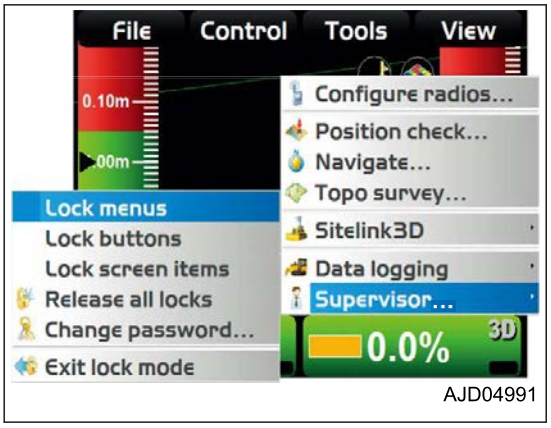
The message screen is displayed.

5. Press “Ok”.



AJD02652

6. Press the power ON/OFF and menu switch to display the main menu.
7. On “Tools” menu, press “Supervisor...”, and select a menu to operate.



AJD04991

METHOD FOR LOCKING MENUS, BUTTONS AND SCREEN ITEMS

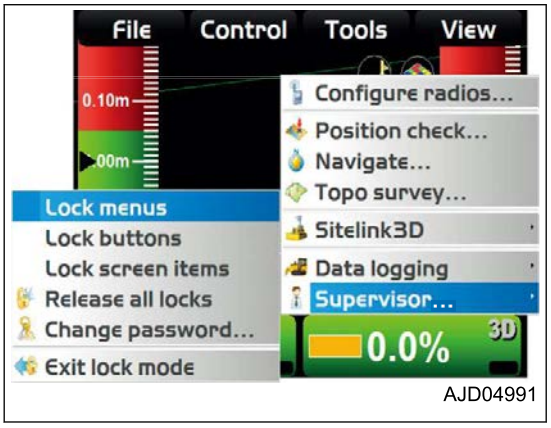
You can lock the menu, buttons, and screen items of 3DMC so that they cannot be operated.

- Menu
  Menus selected from“ File”, “Control”, “Tools”, and “View”
- Button
  Buttons displayed on various screens
  (Example) “Edit” button, etc. which is displayed on “Machine files” screen
- Screen items
  Alphanumeric input section or drop-down menu

1. Enable the supervisor mode.

   For the method for setting the supervisor mode, see “METHOD FOR USING SUPERVISOR MODE”.

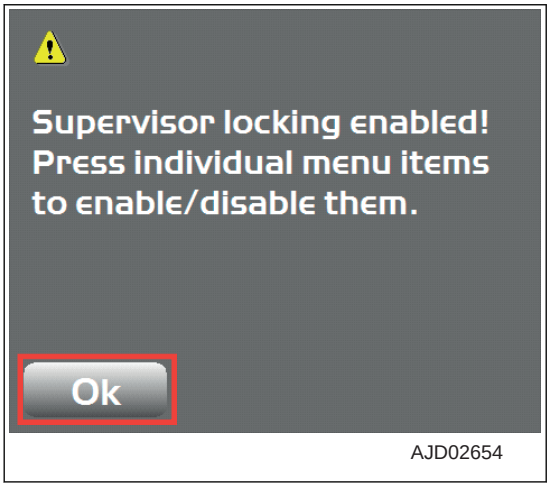
2. Press the power ON/OFF and menu switch to display the main menu.
3. On “Tools” menu, press “Supervisor...”.
4. Press and select an item to lock (“Lock menus”, “Lock buttons”, or “Lock screen items”).



AJD04991

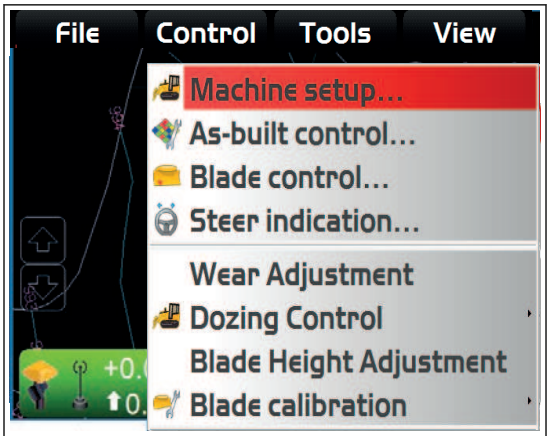
The message screen is displayed.

5. Press “Ok”.

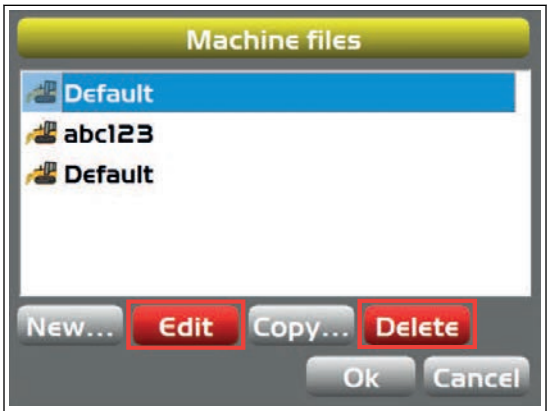


AJD02654

6. Press the item to lock (menu, button, or screen item).
   The locked item is indicated in red.
7. When unlocking an locked item, press that locked item again.
   The unlocked item is not indicated in red any more.

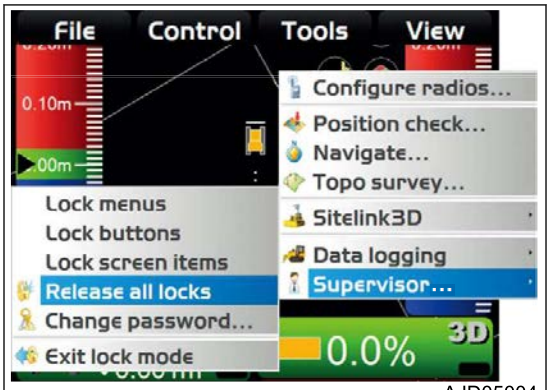


AJD02655



AJD02656

You can unlock all the locked items by selecting “Release all locks”.



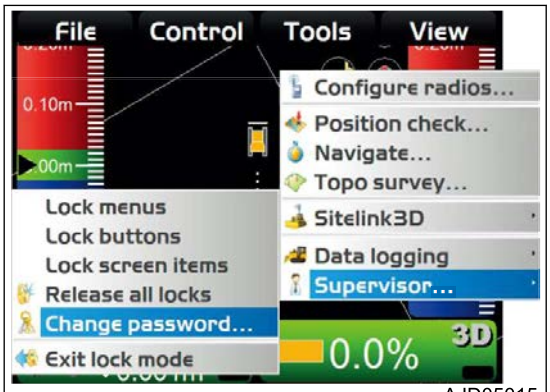
AJD05004

METHOD FOR CHANGING THE PASSWORD

1. Enable the supervisor mode.

   For the method for setting the supervisor mode, see “METHOD FOR USING SUPERVISOR MODE”.

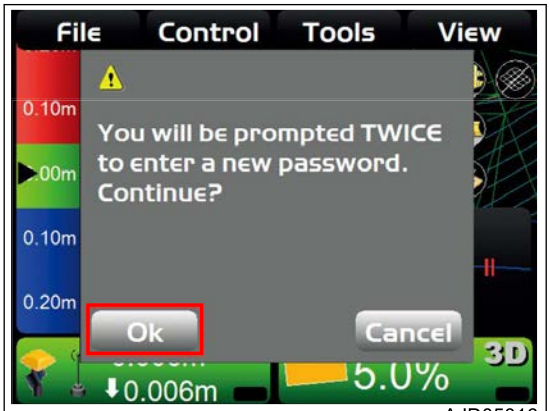
2. Press the power ON/OFF and menu switch to display the main menu.
3. On “Tools” menu, press “Supervisor...” and “Change password...” in order, and select.



AJD05015

The message screen is displayed.

4. Press “Ok”.



AJD05016

5. Input a new password twice by using the alphanumeric keyboard.
6. Press “Ok”.

AJD02660

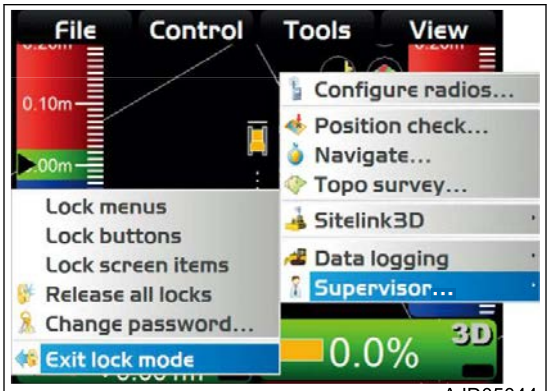
7. Press “Ok”.
   The screen returns to the main window.

AJD05017

METHOD FOR FINISHING LOCK MODE

When finishing the use of supervisor mode, finish the lock mode.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “Tools” menu, press “Supervisor...” and “Exit lock mode” in order, and select.
   The lock mode is finished.



AJD05044

VIEW MENU

3DMC can display several types of screen. Each screen contains useful information.

On the main window, select “View” in the main menu, and you can operate the screens.

MAIN WINDOW DISPLAY

On “Main window”, you can display “Plan”, “Section”, or “Profile”.

METHOD FOR DISPLAYING MAIN WINDOW DISPLAY

When displaying the main window, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Main window”.
3. Press and select necessary displays.

   The check mark of each display indicates that the display is being displayed.

AJD02741

(Plan view)

A picture of the machine and the selected surface seen from the side of the machine are shown.

AJD04905

(Section view)

A picture of the rear side of the blade and a lateral section of the selected surface are shown.

AJD04906

(Profile view)

A picture and a longitudinal section of the machine seen from the side of the machine are shown.

AJD04907

LEFT WINDOW DISPLAY

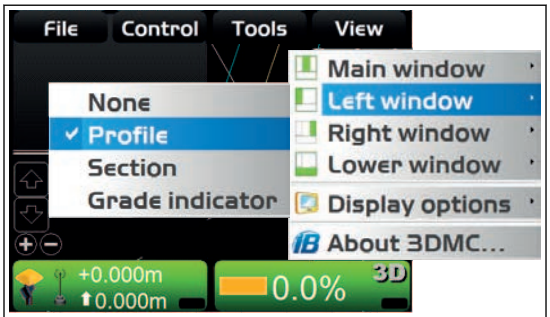
On “Left window”, you can display “Profile”, “Section”, or “Grade indicator”.

METHOD FOR DISPLAYING LEFT WINDOW DISPLAY

When displaying the left window display, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Left window”.
3. Press and select necessary displays.

   The check mark of each display indicates that the display is being displayed.



AJD02742

(Profile view)

A picture and a longitudinal section of the machine seen from the side of the machine are shown.

AJD04908

(Section view)

A picture of the rear side of the blade and a lateral section of the selected surface are shown.

AJD04909

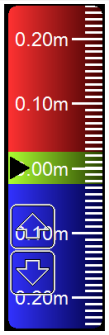
(Grade indicator)

The cut/fill amount is displayed by the fill indication (blue), on-grade (green), and cut indication (red).

When “Invert colors” is checked, the fill indication is red and the cut indication is blue.

For the change of “Invert colors”, see “METHOD FOR CHANGING HIGHLIGHT COLOR”.

For the change of indication of the grade indicator, see “METHOD FOR CHANGING GRADE INDICATOR DISPLAY”.



RIGHT WINDOW DISPLAY

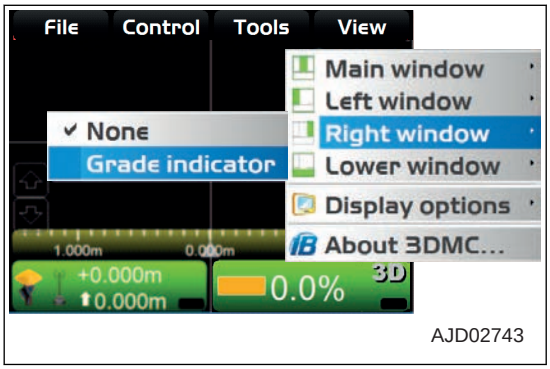
You can display the “Grade indicator” on the “Right window”.

METHOD FOR DISPLAYING RIGHT WINDOW DISPLAY

When displaying the right window, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Right window”.
3. Press “Grade indicator” and select.

   The grade indicator is displayed.



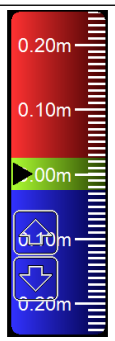
AJD02743

The cut/fill amount is displayed by the fill indication (blue), on-grade (green), and cut indication (red).

When “Invert colors” is checked, the fill indication is red and the cut indication is blue.

For the change of “Invert colors”, see “METHOD FOR CHANGING HIGHLIGHT COLOR”.

For the change of indication of the grade indicator, see “METHOD FOR CHANGING GRADE INDICATOR DISPLAY”.



LOWER WINDOW DISPLAY

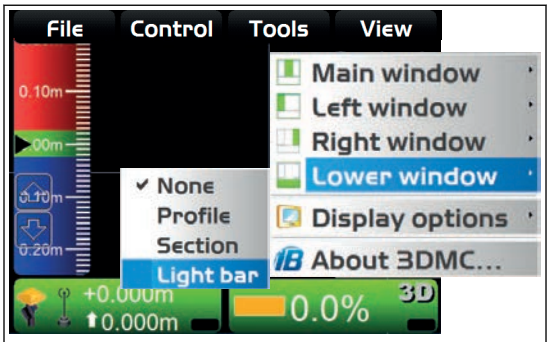
On “Lower window”, you can display “Profile”, “Section”, or “Light bar”.

METHOD FOR DISPLAYING LOWER WINDOW DISPLAY

When displaying the lower window, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Lower window”.
3. Press and select necessary displays.

   The check mark of each display indicates that the display is being displayed.



AJD02691

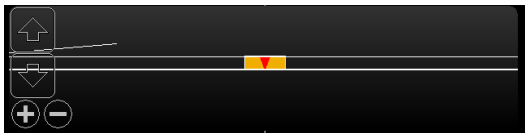
(Profile view)

A picture and a longitudinal section of the machine seen from the side of the machine are shown.

AJD04057

(Section view)

A picture of the rear side of the blade and a lateral section of the selected surface are shown.



AJD04058

(Light bar)

Indicates the right and left directions of the machine.

For the change of indication of the light bar, see “METHOD FOR CHANGING DISPLAY OF LIGHT BAR”.

AJD04059

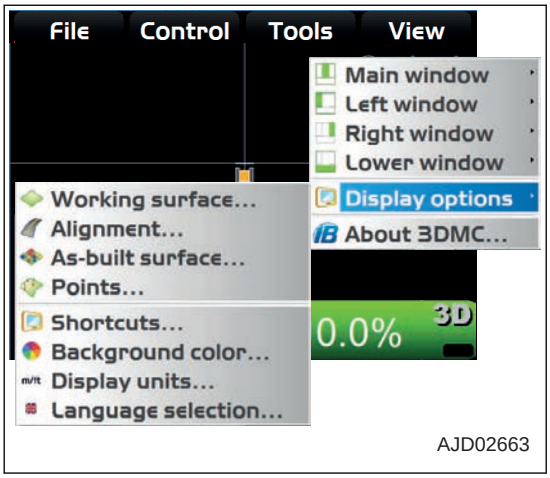
DISPLAY OPTIONS

In “Display options”, you can select various data display methods depending on the file selected for display.

METHOD FOR DISPLAYING DISPLAY OPTIONS

When displaying available display options, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Display options” and select.
3. Press a necessary menu.

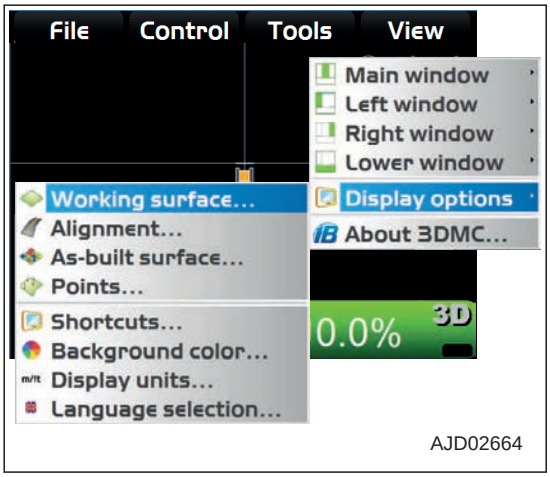


AJD02663

METHOD FOR SETTING WORKING SURFACE DISPLAY

When using a surface file, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Display options” and “Working surface...” in order, and select.

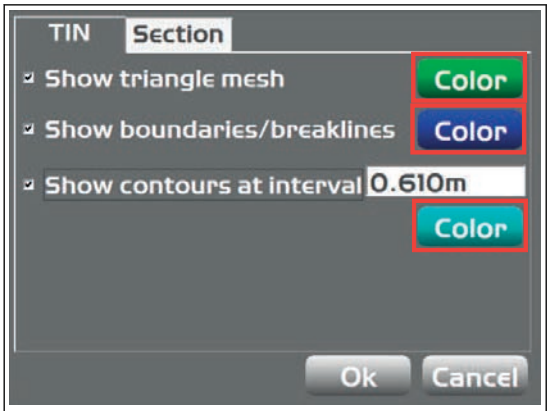


AJD02664

3. On “TIN” tab, press “Color”, and change “Show triangle mesh”, “Show boundaries/breaklines”, or “Show contours at interval”.

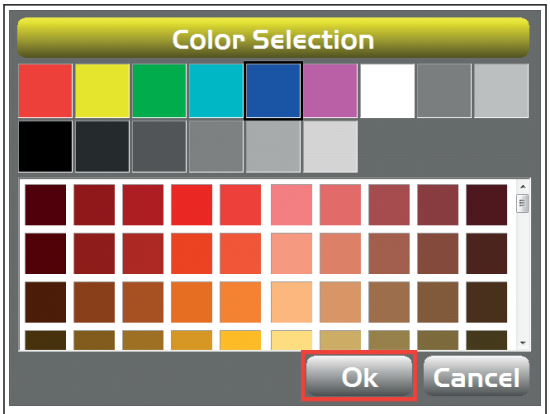
   You can change the colors of the lines individually.

   You can set Display/Non-display of the lines by checking or unchecking their check boxes.



AJD02665

4. On “Color Selection” screen, select a color, and press “Ok”.



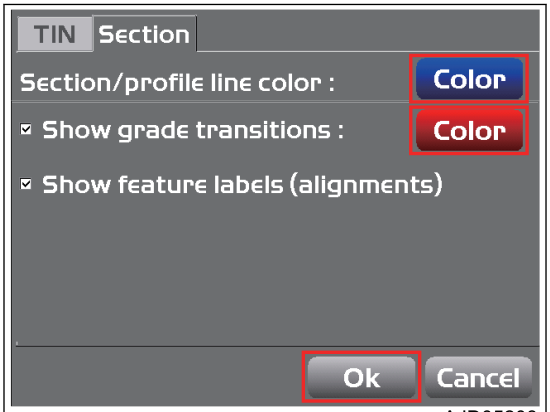
AJD02666

5. On “Section” tab, press “Color”, and change “Section/profile line color :” or “Show grade transitions :”.

   You can change the colors of the lines or points individually.

   You can set display/non-display of the slope-change point marker displayed in the section view and profile view, and the function labels by checking or unchecking the check box.

6. Press “Ok”.



AJD05208

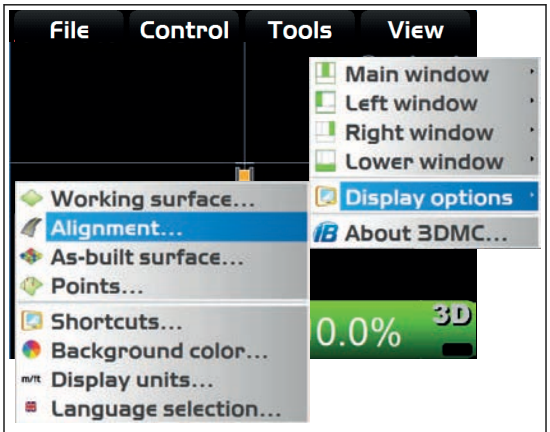
METHOD FOR SETTING ALIGNMENT DISPLAY

When using an alignment file, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Display options” and “Alignment...” in order, and select.

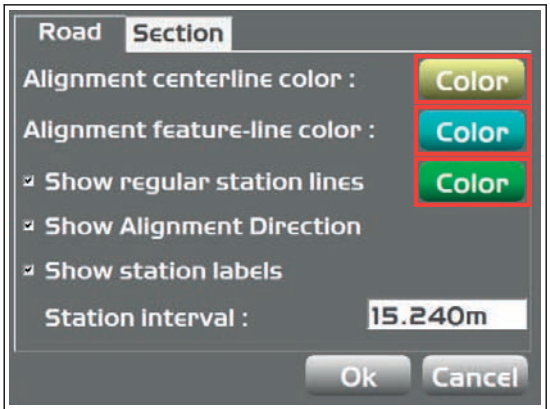
   REMARK

   “Alignment...” menu is displayed only when the Alignment file has been selected.
   For the selecting method of Alignment, see “METHOD FOR SELECTING AN ACTIVE ALIGNMENT FILE”.



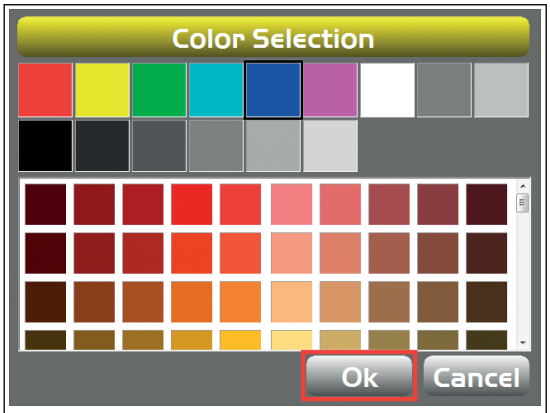
AJD02668

3. On “Road” tab, press “Color”, and change “Alignment centerline color :”, “Alignment feature-line color :”, and “Show regular station lines”.



AJD02669

4. On “Color Selection” screen, select a color, and press “Ok”.



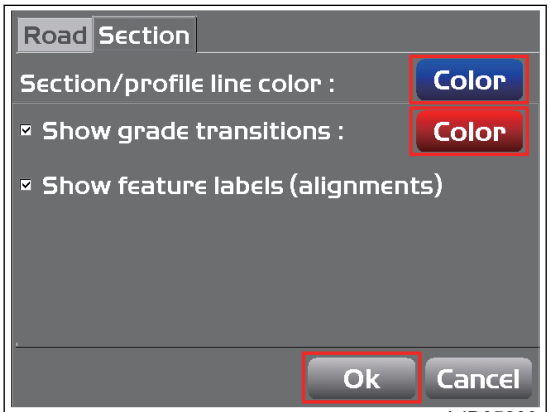
AJD02666

5. On “Section” tab, press “Color”, and change “Section/profile line color :” or “Show grade transitions :”.

   You can change the colors of the lines or points individually.

   You can set display/non-display of the slope-change point marker displayed in the section view and profile view, and the function labels by checking or unchecking the check box.

6. Press “Ok”.

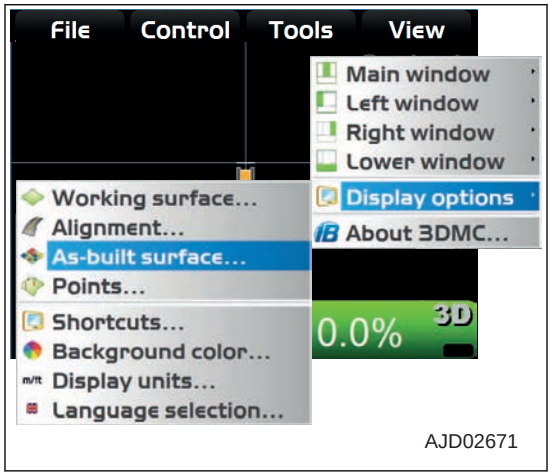


AJD05209

METHOD FOR SETTING AS-BUILT SURFACE DISPLAY

When changing the setting of as-built surface display, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Display options” and “As-built surface...” in order, and select.

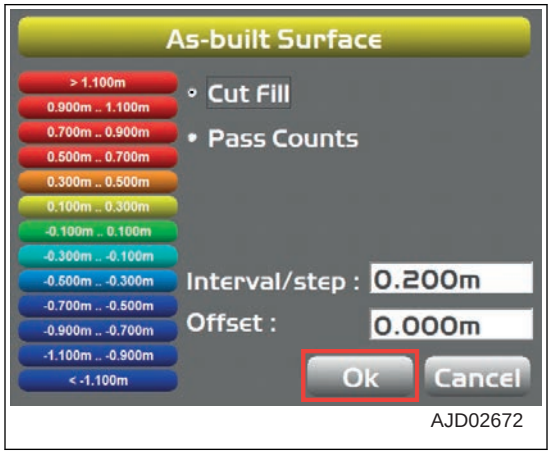


AJD02671

3. Select or input necessary options on “As-built Surface” screen, and press “Ok”.
4. Press any “Interval” button, and change the color.

   REMARK

   You can use 13 colors in total for cut/fill operation and number of operation (number of passes).
5. Press “Ok”.



AJD02672

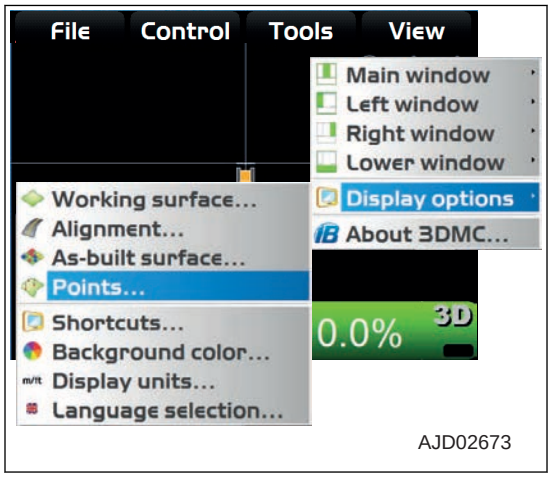
METHOD FOR SETTING POINT DISPLAY

When changing the display setting of the points, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Display options” and “Points...” in order, and select.

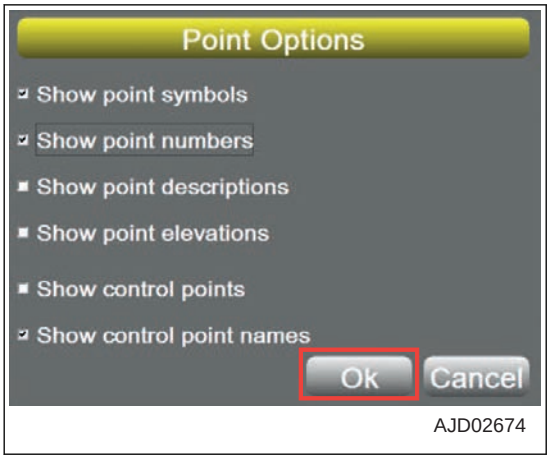
   You can set the display of the points and control point.

   (Example) You can display the symbol or number of a point during topo survey.



AJD02673

3. On “Point options” screen, check the check boxes of the necessary displays, and press “Ok”.

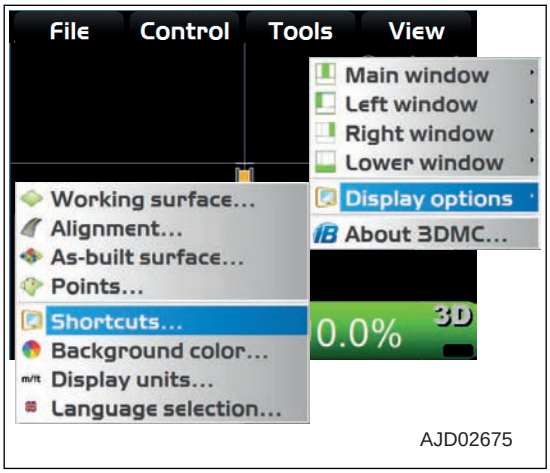


AJD02674

METHOD FOR SETTING SHORTCUTS DISPLAY

You can set shortcuts display on the main window.

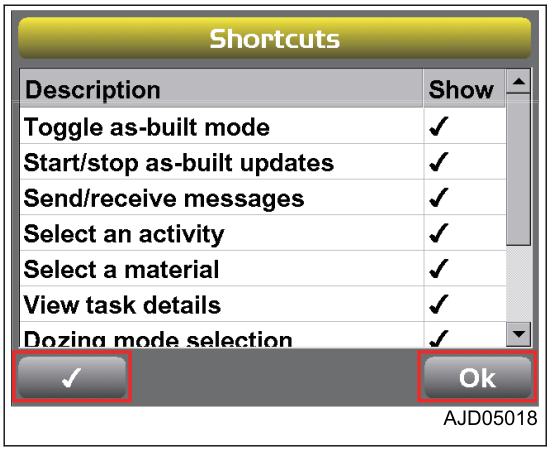
1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Display options” and “Shortcuts...” in order, and select.



AJD02675

3. On “Shortcuts” screen, select the item of “Description” and press “check mark” button.
   - When a check mark is inputted to “Show”, a shortcut is displayed on the main window.
   - When no check mark is inputted to “Show”, no shortcut is displayed on the main window.
4. Press “Ok”.

   The screen returns to the main window.



AJD05018

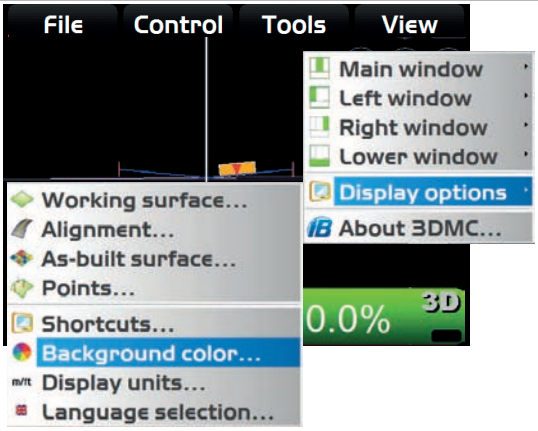
5. Check the shortcut on the main window.

AJD04911

METHOD FOR SETTING BACKGROUND COLOR DISPLAY

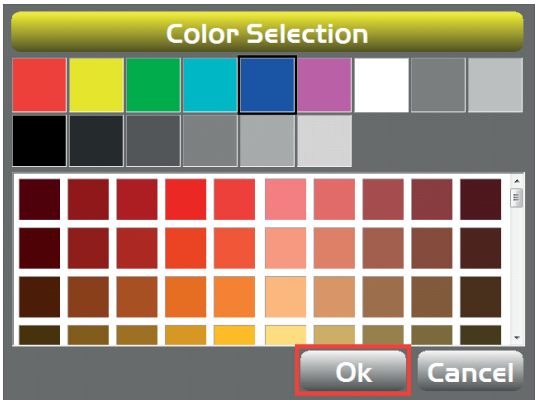
When changing the background color of the main window, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Display options” and “Background color...” in order, and select.



AJD02677

3. On “Color Selection” screen, select a color, and press “Ok”.

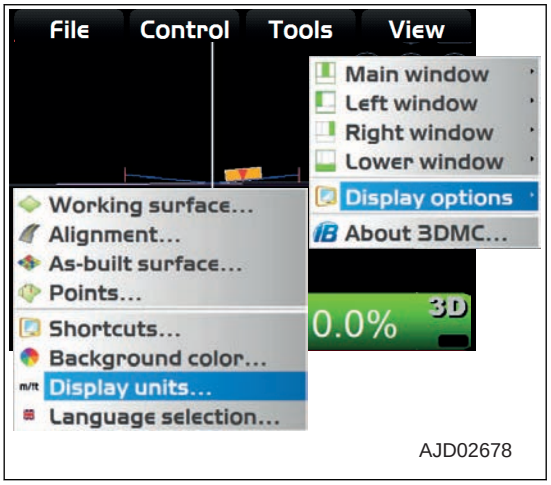


AJD02666

METHOD FOR SETTING DISPLAYED UNITS

When setting the displayed units for work, perform the following procedure.

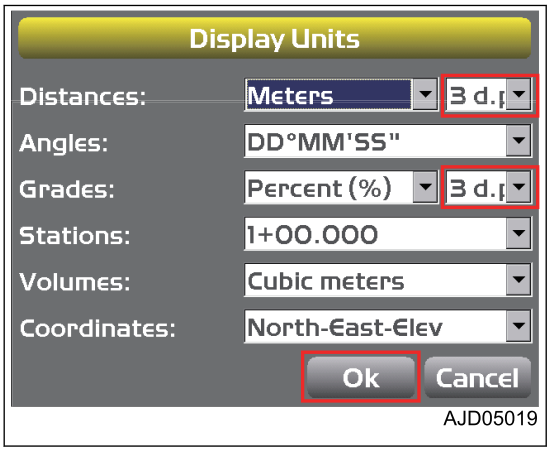
1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Display options” and “Display units...” in order, and select.



3. On “Display Units” screen, select the units to be displayed, and press “Ok”.

   REMARK

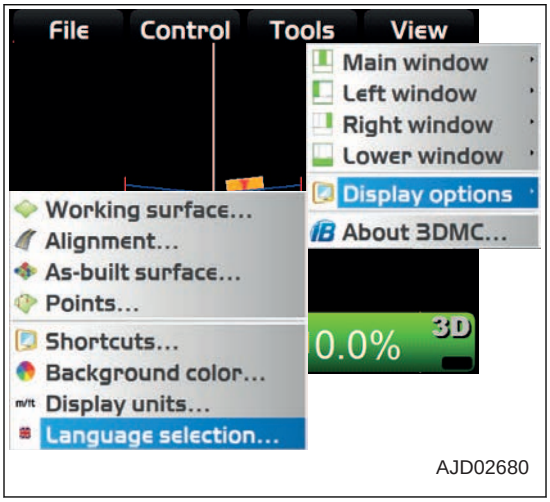
   When changing the number of decimal places related to distance or grade, change “*d.p.” in “Distances:” or “Grades:”.



METHOD FOR SELECTING LANGUAGE

When the language of the control box is not the one which you want to use, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Display options” and “Language Selection...” in order, and select.



AJD02680

3. On “Language Selection” screen, select the language to display, and press “Ok”.

   (When English is selected)

AJD05020

4. Finish 3DMC, and then start it again.

   After changing the language, load the selected language into 3DMC.

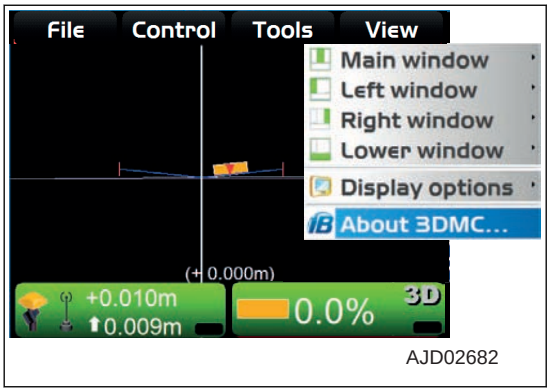
3DMC

You can display 3DMC information in “About 3DMC...”.

METHOD FOR DISPLAYING 3DMC INFORMATION

When displaying information related to 3DMC, perform the following procedure.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “About 3DMC...” and select.

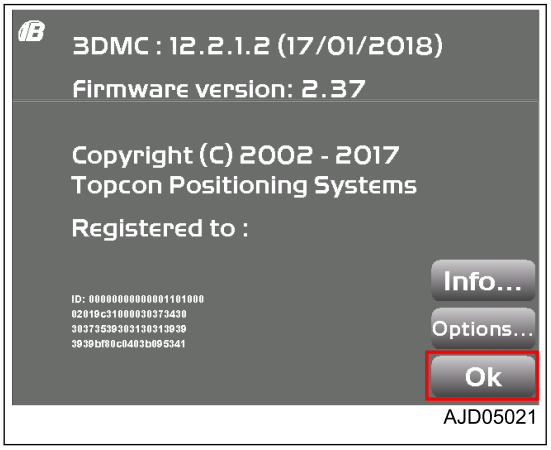


AJD02682

Information related to 3DMC is displayed.

3. Press “Ok”.

   The screen returns to the main window.



AJD05021

MAIN WINDOW DISPLAY

The following is displayed on the control box screen.

- Main window (Differs depending on selected file and display options)
- Shortcut button (Icons of frequently used functions)
- Pop-up menus of various functions (Differs depending on type of open file and selected information)

ELEVATION CONTROL KEY

“Elevation control key” indicates “Cut/Fill offset” and “Cut/Fill reading” at the blade elevation.

“Elevation control key” also indicates the state of the connected sensor by graphics, information messages, and colors.

(1) GNSS status

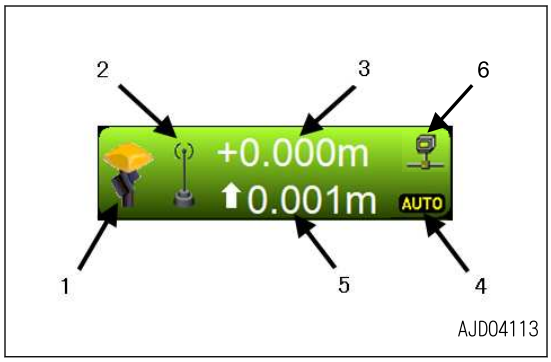
(2) Radio status

(3) Cut/Fill offset (*1)

(4) AUTO indicator

(5) Cut/Fill reading

(6) Sitelink3D indicator (*2)



*1: “Cut/Fill offset” means the offset quantity of elevation of Surface in the cut/fill direction.

The elevation of Surface can be adjusted finely and temporarily, and it is the same as the value input to “Elevation set point”.

- “Cut/Fill offset” (3) indicates the current cut/fill offsets quantity setting, and you can change it at any time. When the machine cannot cut to the design elevation, the operator adjusts the cut/fill offsets quantity setting and changes the design elevation so that the machine can cut/fill.
- “Cut/Fill reading” (5) indicates the current cut/fill amount.
  “Cut/Fill reading” (5) is constantly updated, according to the difference between the blade elevation and current Surface elevation (height).

  REMARK

  The current cut/fill amount means the distance from the current blade elevation to the current design elevation (design surface height adjusted by the cut/fill offsets quantity setting).
- The background color of “elevation control key” indicates the state of the sensor.

  Green: Displays the optimum state of sensor for grading.

  Red: Displays the error state, where automatic control is disabled.

  Orange: Displays that GNSS accuracy is low.
- Icon status
  Marks X on “GNSS status” (1) and “radio status” (2) indicates that the corresponding sensors/receivers are not available.
  Flashing of “GNSS status” (1) and “radio status” (2) indicates that the radio connection has been tried for 3 to 10 seconds. (The radio link signal level is low.)

*2: “X” is displayed when the Sitelink3D function is not effective.

SLOPE CONTROL KEY

(1) Angle of blade

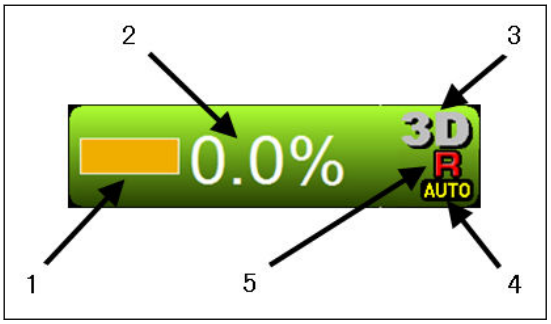
(2) Design cross-slope (*)

(3) Type of control

(4) AUTO indicator

(5) Back grade mode indicator

*: Lateral slope angle of Surface against travel direction of machine.

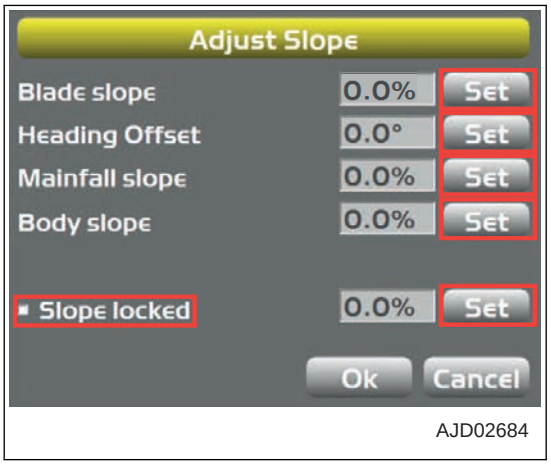


When “Slope control key” is pressed, “Adjust Slope” screen is displayed.

AJD04915

The values of “Blade slope”, “Heading Offset”, “Mainfall slope”, and “Body slope” have been adjusted according to the machine body when the machine is shipped from the plant.

Do not change these values. If these values are changed, the accurate automatic control of the blade becomes unavailable.



AJD02684

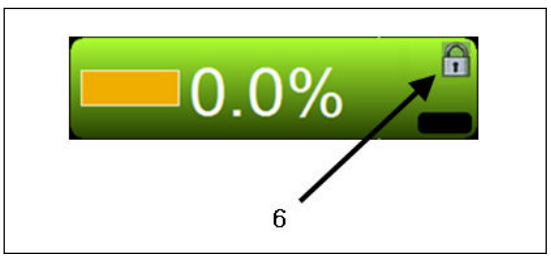
- “Blade slope”
  Inclination of blade in right and left directions (Body slope + blade tilting angle)
- “Heading Offset”
  Compensation value of machine orientation (yawing angle)
- “Mainfall slope”
  Inclination of machine body in longitudinal direction (pitch angle)
- “Body slope”
  Inclination of machine body in lateral direction (rolling angle)

When it is required to keep the blade at a certain inclination angle, use the slope fixing function, regardless of inclination of the Surface.

Press “Set” on the right of “Slope locked”, and input the value of inclination angle to be fixed.

Check the check box of “Slope locked”, and “Slope locked” becomes effective.

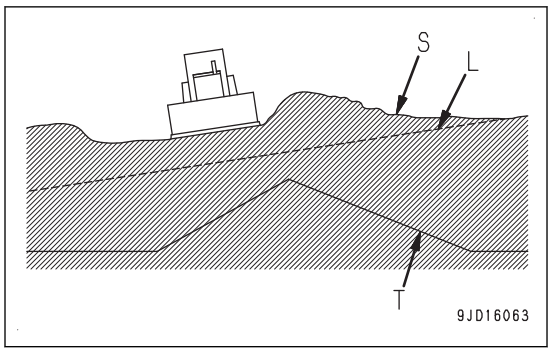
At this time, “Lock mark” (6) is displayed on “Slope control key”.



REMARK

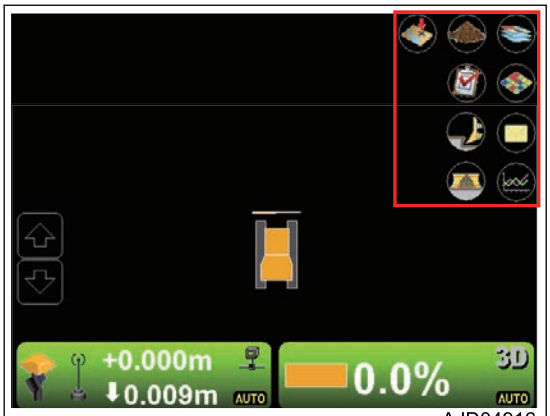
The slope locked function is useful when current surface (S) is apart from design surface (T) and you want to cut roughly in the course of dozing.

(L) Lateral slope angle which is set to 3DMC when the slope locked function is used



SHORTCUT ON THE MAIN WINDOW

	“Toggle As-built mode”
	“Start/Stop As-built updates”
	“Dozing mode selection”
	“Blade load selection”
	“Take a topo shot”
	“Task detail”
	“Sitelink3D messaging”
	“Sitelink3D activity”
	“Material selection”

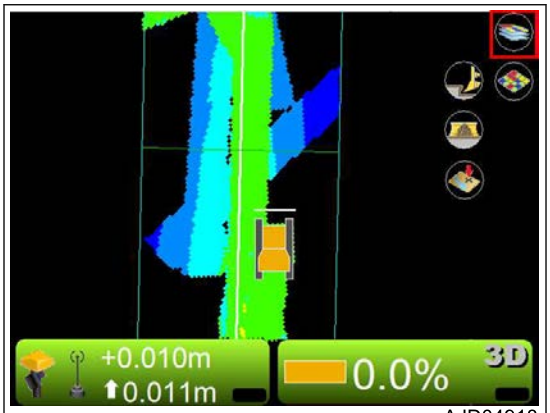


AJD04916

TOGGLE AS-BUILT MODE

You can change the as-built mode view to “Cut Fill”, “Pass Counts”, or “<none>” by pressing “Toggle As-built mode” on the main window.

(Screen of “As-Built: Cut Fill” or “As-Built: Pass Counts”)



AJD04918

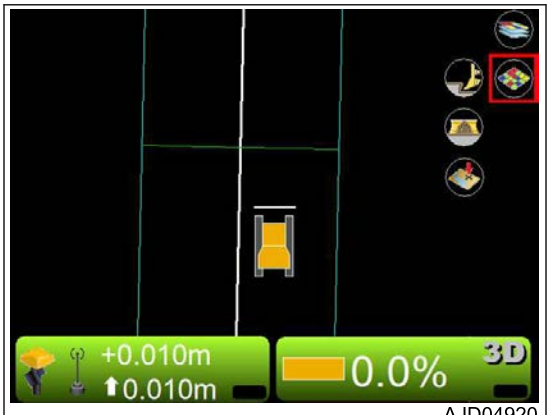
(Screen of “As-Built: <none>”)

AJD04919

START/STOP AS-BUILT UPDATES

You can start or stop updating the as-built surface by pressing “Start/Stop As-built updates” on the main window.

	Start of as-built surface update
	Stop of as-built surface update

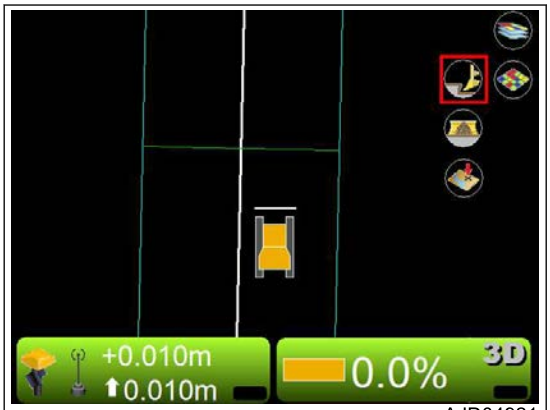


AJD04920

DOZING MODE SELECTION

You can set the dosing mode by pressing “Dozing mode selection” on the main window.

For detail, see “DOZING MODE SETTINGS”.

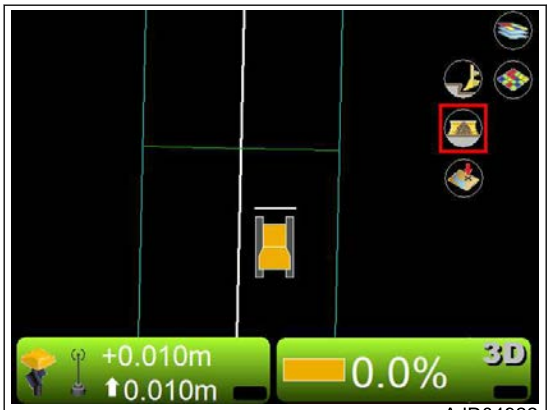


AJD04921

BLADE LOAD SELECTION

You can set the blade load mode by pressing “Blade Load selection” on the main window.

For detail, see “BLADE LOAD MODE SETTINGS”.



AJD04922

TAKE A TOPO SHOT

On the main window, you can set the topographic survey by pressing “Take a topo shot”.

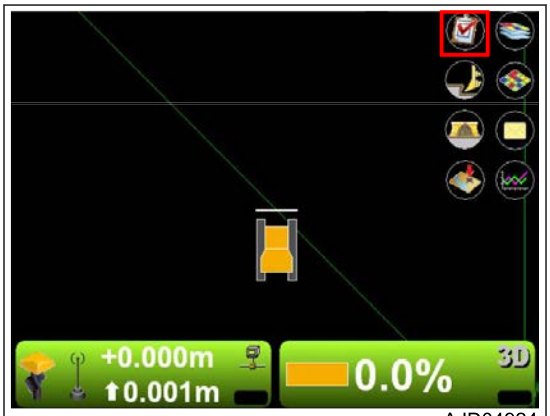
For detail, see “PERFORM TOPOGRAPHIC SURVEYS”.

AJD04923

TASK DETAIL

On the main window, press “Task detail” and you can check the tasks of the Sitelink3D.

For details, see “METHOD FOR SETTING Sitelink3D”, “TASK MENU”.



AJD04924

Sitelink3D MESSAGING

On the main window, press “Sitelink3D messaging” and you can create and view the messages of the Sitelink3D.

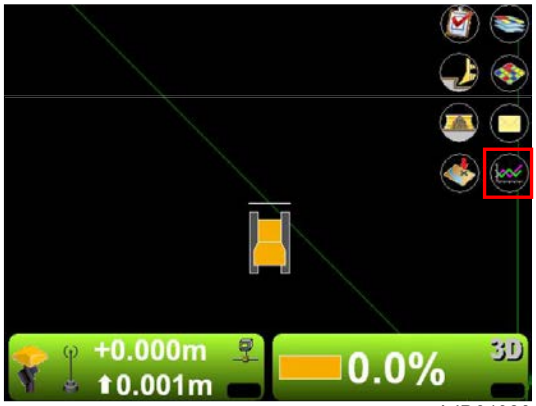
For details, see “METHOD FOR SETTING Sitelink3D”, “METHOD FOR SENDING MESSAGE” or “METHOD FOR CHECKING RECEIVED MESSAGE”.

AJD04898

Sitelink3D ACTIVITY

On the main window, press “Sitelink3D activity” and you can set the activity of the Sitelink3D.

For details, see “METHOD FOR SETTING Sitelink3D”, “METHOD FOR SETTING CONSTRUCTION INFORMATION”.

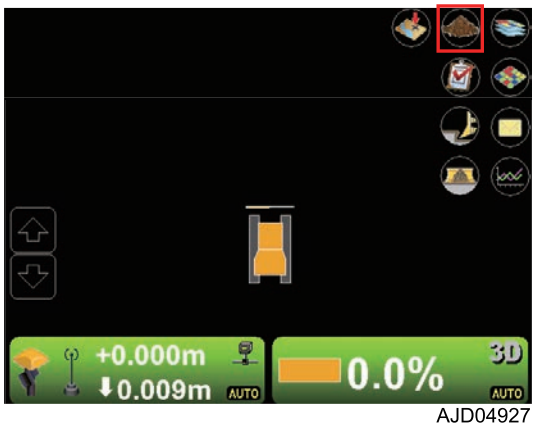


AJD04926

MATERIAL SELECTION

Press “Material selection” on main window, and you can set and check the soil condition of Sitelink3D.

For details, see “METHOD FOR SETTING Sitelink3D”, “METHOD FOR SETTING CONSTRUCTION INFORMATION”.



AJD04927

PAN OF MAIN MAP VIEW

With the pan function, you can pan the main window by holding down the main window. By using this function, you can see places far from the machine without reducing the display.

You can use it while “Plan” is selected.

OPERATION ON MAIN MENU

METHOD FOR DISPLAYING GNSS INFORMATION

When checking GNSS information, perform the following procedure.

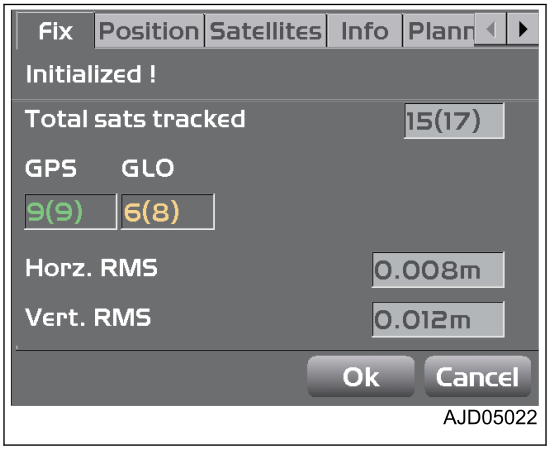
1. On the main window, press “elevation control key”.

AJD04928

2. On “Adjust elevation” screen, press “GPS info...”.
   The following tabs are displayed.

AJD02745

- “Fix” tab (State and quality of GNSS)

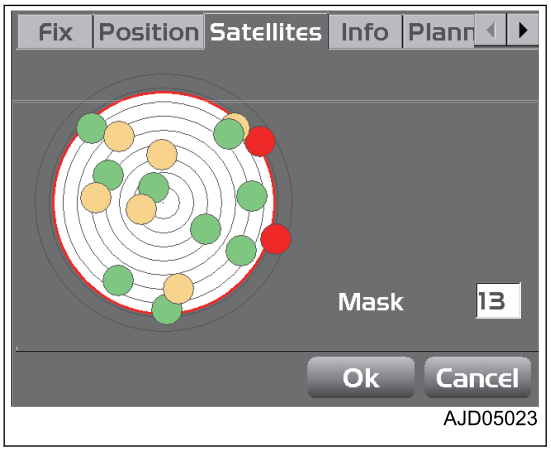


AJD05022

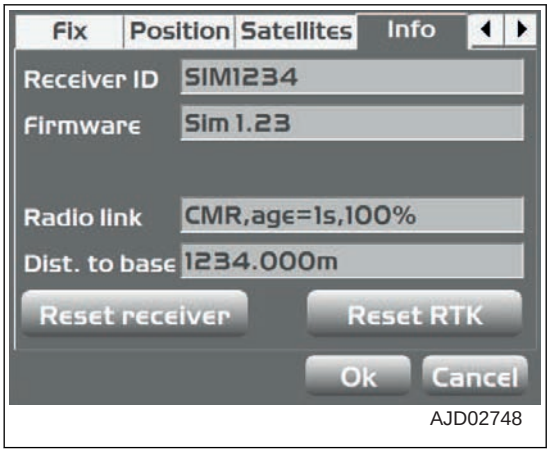
- “Position” tab (Position of blade edge)

- “Satellites” tab (Capturing of satellites and input of mask angle)

  The green circle indicates GPS satellite, the yellow circle indicates GLONASS satellite, and the red circle indicates the satellite that is not used to receive location information.



- “Info” tab (Display of receiver information or resetting of receiver)



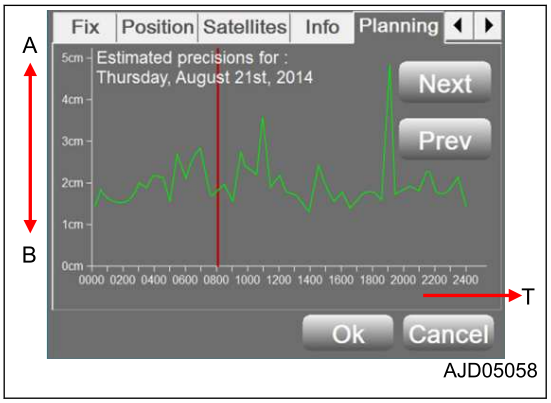
- “Planning” tab (Satellite plan information)

  The red vertical line indicates the current time.

  (A) Error is large (Low accuracy)

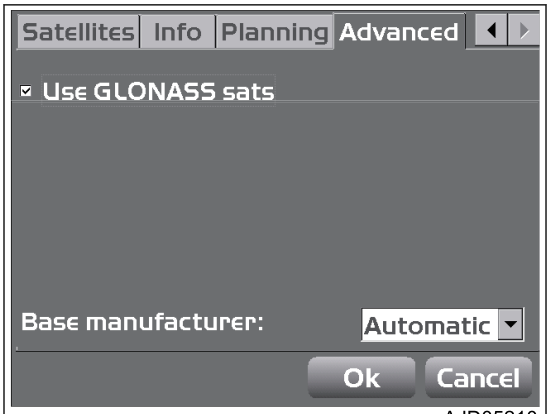
  (B) Error is small (High accuracy)

  (T) Time



- “Advanced” tab (Advanced GNSS options)

  You can set the use/not use of GLONASS satellite. This setting affects not only the individual satellite but also all GLONASS satellites.



When both of the machine and the base station use GLONASS and the base station is not manufactured by Topcon, select an applied base station manufacturer such as Sokkia, Trimble, etc. from “Base manufacturer:” list.

METHOD FOR ADJUSTING CUT/FILL OFFSETS

When adjusting the cut/fill offsets quantity setting, perform the following procedure.

By using the pop-up menu, you can adjust the cut/fill offset quantity setting as well.

When using the pop-up menu, see “METHOD FOR ADJUSTING CUT/FILL OFFSETS (POP-UP MENU)”.

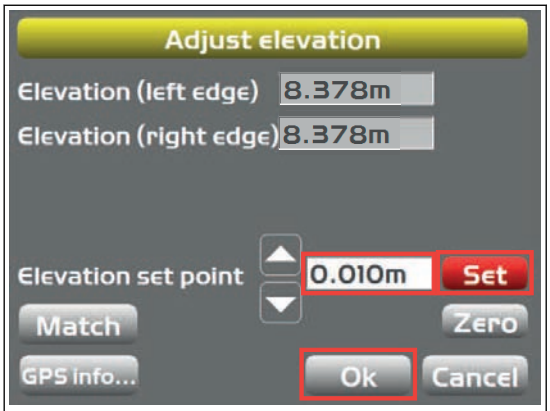
1. On the main window, press “elevation control key”.

AJD04928

“Adjust elevation” screen is displayed.

(“Set” is displayed in red.)

2. Press the input section for “Elevation set point”.
3. Input a value by using the numeric keyboard.
4. Press “Set” and lock “Elevation set point” (cut/fill offsets quantity setting).
5. Press “Ok”.



AJD02685

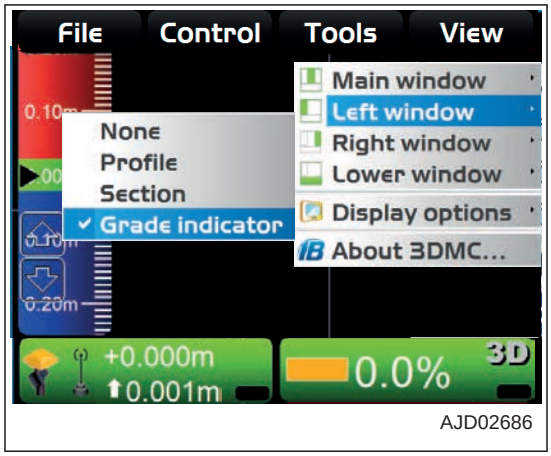
REMARK

- When inputting “Elevation set point”, you can set by using Up and Down arrow keys.
- By using the matching function, you can quickly offset the Design surface to the height of blade edge. For the operating method, see “METHOD FOR USING AUTOMATIC BLADE CONTROL”, “SET SCRAPING DEPTH FROM CURRENT GROUND SURFACE”.

METHOD FOR CHANGING GRADE INDICATOR DISPLAY

You can display the grade indicator on the left window or on the right window.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On “View” menu, press “Left window” (or “Right window”) and “Grade indicator” in order, and select.

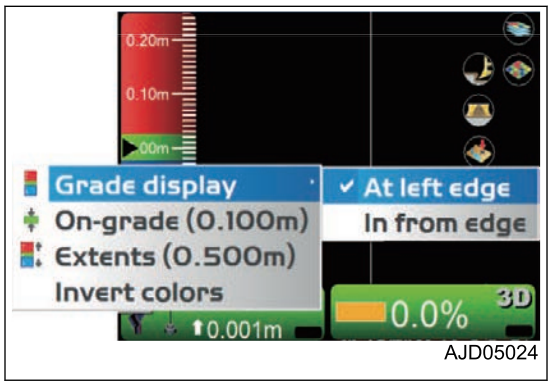


AJD02686

METHOD FOR CHANGING SLOPE DISPLAY

You can set the cut/fill control point by selecting “Grade display” and referring to 1 point on the blade edge.

1. Hold down the grade indicator and display the grade indicator menu.
2. Press “Grade display”, and press “At left edge” (“At right edge”) or “In from edge”.
   - “At left edge” (“At right edge”)
     For the grade indicator, see the left end (right end) position of the blade.
   - “In from edge”
     For the grade indicator, see the position at the distance from the input blade left end (right end).
     Input the distance from the left end (right end) by using the numeric keyboard.

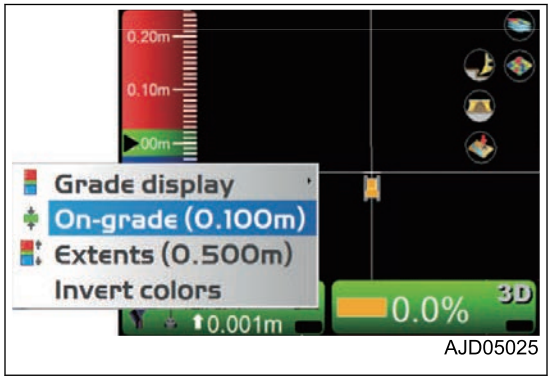


AJD05024

METHOD FOR CHANGING ON GRADE

“On-grade” (** m) indicates the current on-grade (green) width.

1. Hold down the grade indicator and display the grade indicator menu.
2. Press “On-grade” (** m).
3. The numeric keyboard is displayed. Change the on-grade width.

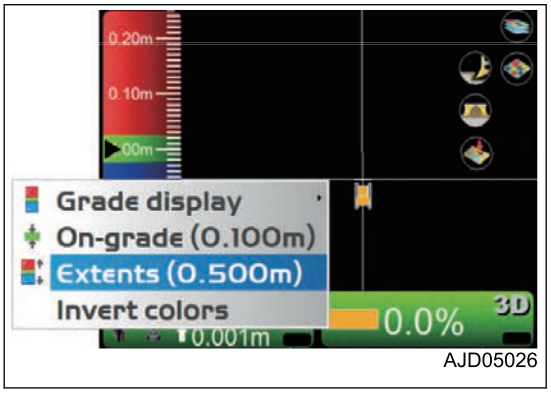


AJD05025

METHOD FOR CHANGING RANGE

"Extents" (** m) indicates the current scale (gradation intervals) of the grade indicator.

1. Hold down the grade indicator and display the grade indicator menu.
2. Press "Extents "(** m).
3. When the numeric keyboard is displayed, change the gradation intervals.



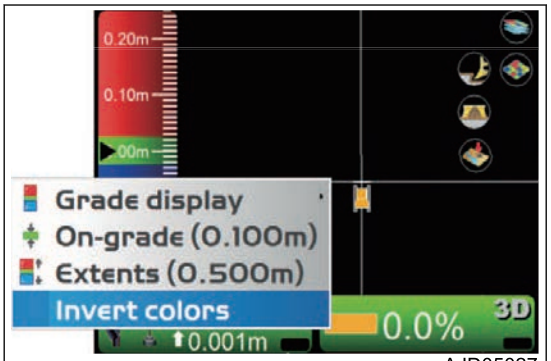
AJD05026

METHOD FOR CHANGING HIGHLIGHT COLOR

You can highlight the grade indicator color by selecting "Invert colors".

1. Hold down the grade indicator and display the grade indicator menu.
2. Press "Invert colors".

   The grade indicator color is highlighted.



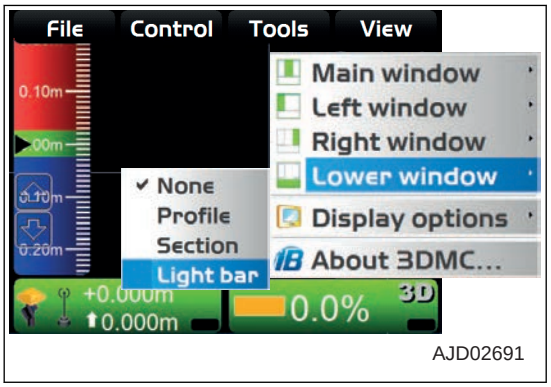
AJD05027

METHOD FOR CHANGING DISPLAY OF LIGHT BAR

You can change the display of the light bar.

1. Press the power ON/OFF and menu switch to display the main menu.
2. On "View" menu, press "Lower window" and "Light bar" in order and select.

   The light bar is displayed.
3. Hold down the light bar and display the light bar menu.
4. Press "Green", "Yellow", or "Extents", and change the color and range of the light bar.



AJD02691

OPERATION USING POP-UP MENU

DISPLAY EXTENDED STATUS TEXT IN PLAN/PROFILE/SECTION

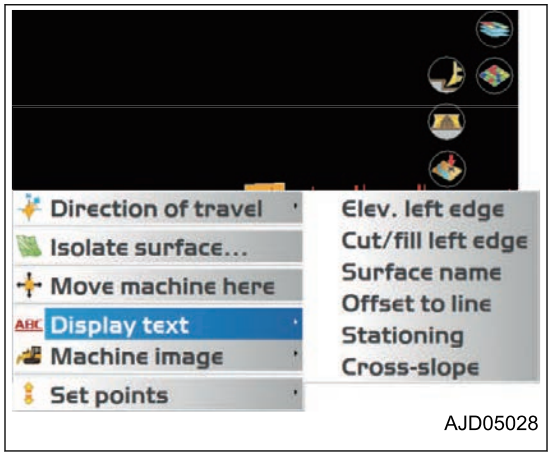
Hold down the main window, and the menu is displayed. You can set the extended functions of each screen.

On “Display text” menu, the sub-menus related to the pressed screen and the pressed section of the screen are displayed.

Select a menu, and its information is displayed at the related section in the screen.

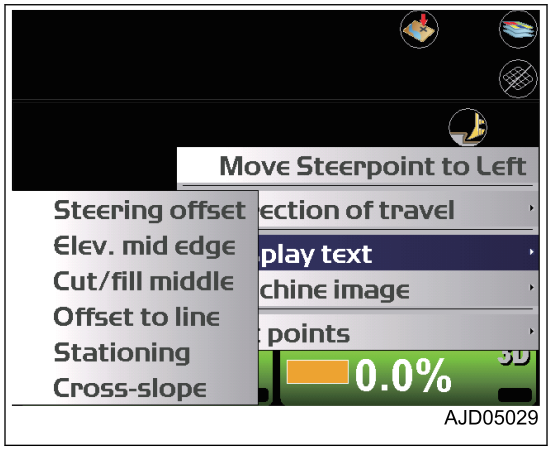
(Example) When you set the main window to the section view and hold down the left side, center, or right side of the screen, the following menus are displayed.

- If you hold down the left side of the main window, the screen shown at right is displayed.



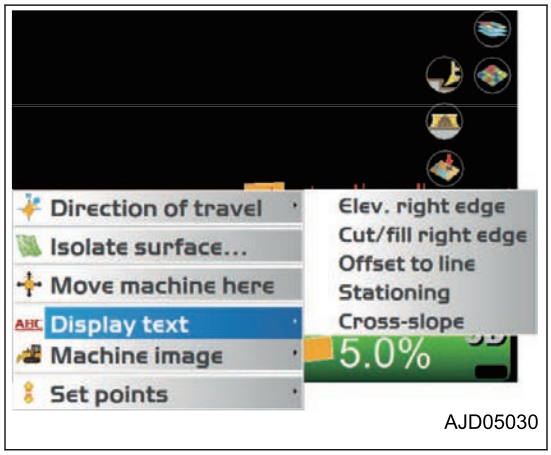
AJD05028

- If you hold down the center of the main window, the screen shown at right is displayed.



AJD05029

- If you hold down the right side of the main window, the screen shown at right is displayed.



AJD05030

REMARK

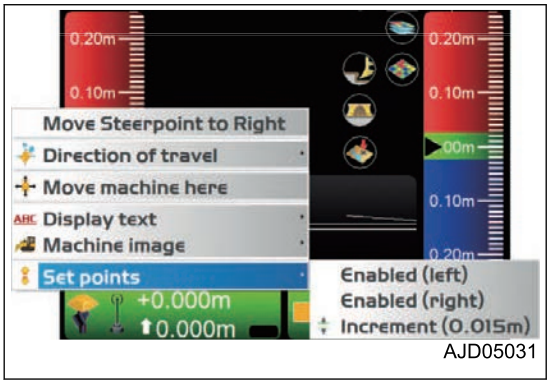
When you select the longitudinal or lateral display in the left window or lower window, menus are displayed similarly.

METHOD FOR ADJUSTING CUT/FILL OFFSETS (POP-UP MENU)

By using the pop-up menu, you can adjust the cut/fill offset quantity setting quickly from the main window.

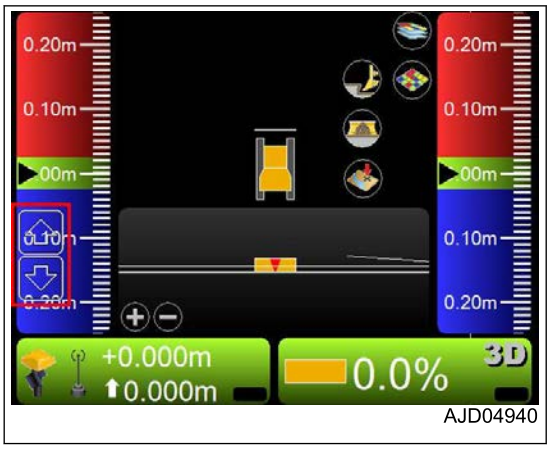
1. Hold down any point of the main window.
2. Press “Enabled (left)” in “Set points”.

   “Cut/Fill offsets” is displayed at the bottom left of the screen.



AJD05031

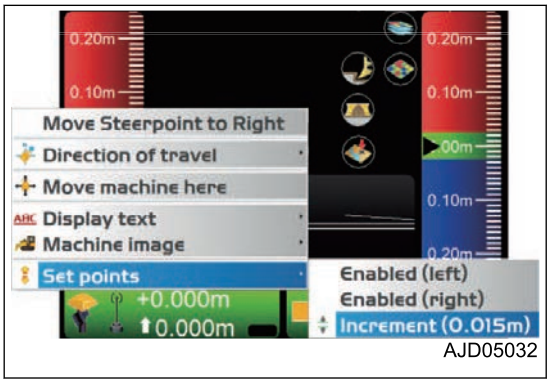
3. Press “Cut/Fill offsets”, change the cut/fill offsets quantity setting, and adjust the cut/fill amount.



AJD04940

4. Hold down any point of the main window.
5. Press “Increment” (** m) in “Set points”.

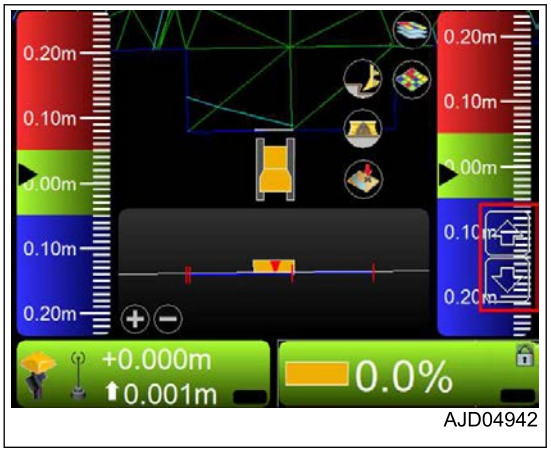
   By using the numeric keyboard, you can set the intervals of increase/decrease when “Cut/Fill offsets” is pressed.



AJD05032

REMARK

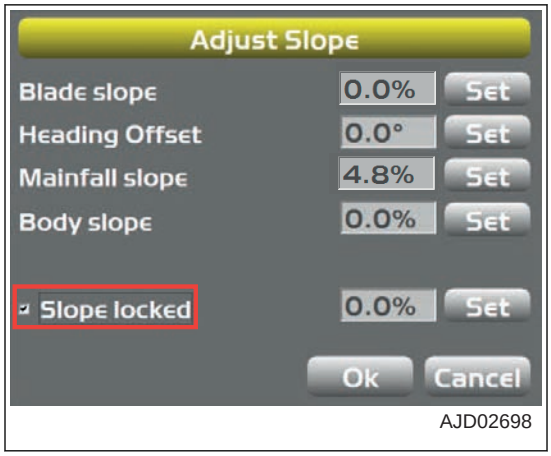
If you press “Enabled (right)” in “Set points”, “Cross slope adjustment” is displayed.
You can adjust the lateral slope angle of Surface freely to a certain angle by pressing “Cross slope adjustment”.



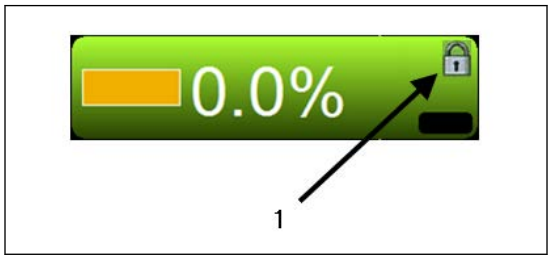
AJD04942

However, when adjusting the lateral slope angle of Surface, you are required to use the slope fixing function.

On “Adjust Slope” screen, check the check box of “Slope locked”, and display “lock mark” (1) at the “slope control key”.



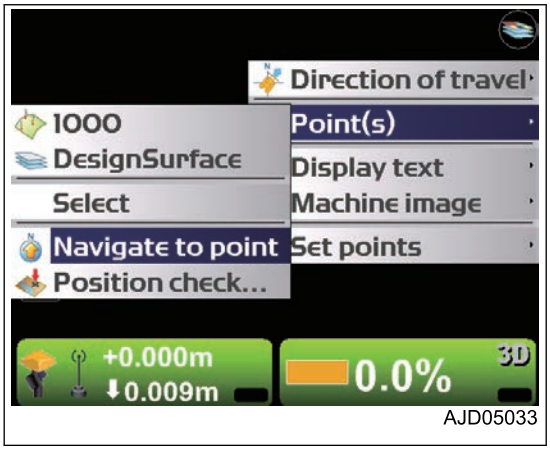
AJD02698



METHOD FOR NAVIGATING TO POINTS (POP-UP MENU)

Press a point on the main window and display the pop-up menu, and you can navigate the machine to that point.

1. On the main window, hold down the target point, and display the menu.
2. Press “Navigate to point” from “Point(s)” and select the target point.



AJD05033

The result of navigation to the point is displayed on the main window.

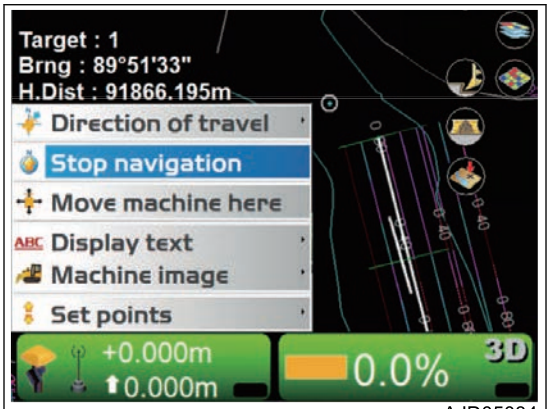
AJD05002

When the point to navigate to and the machine are displayed on the same screen, the arrow goes out.

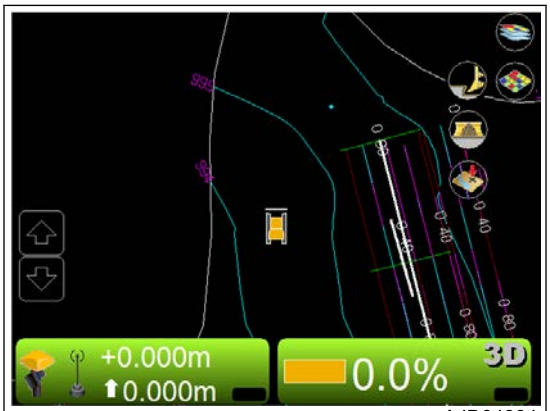
AJD05003

3. When stopping the navigation to the point, hold down the place where no point is displayed on main window, and display the menu.
4. Press “Stop navigation”.

   Navigation to the point is stopped.



AJD05034



AJD04884

METHOD FOR USING POLYLINE

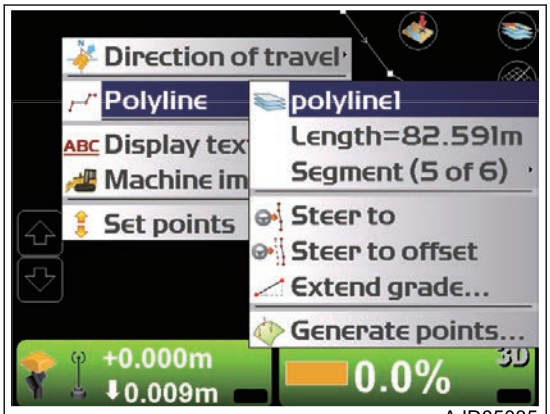
For the explanation of function and application of the polyline, see “STEER INDICATION OPTIONS”.

STEERING OPERATION TO POLYLINE

When using the polyline for steering, perform the following procedure.

1. On the main window, hold down the polyline and display the menu.
2. Press the “Polyline”.

   A horizontal line perpendicular to the selected polyline is displayed.

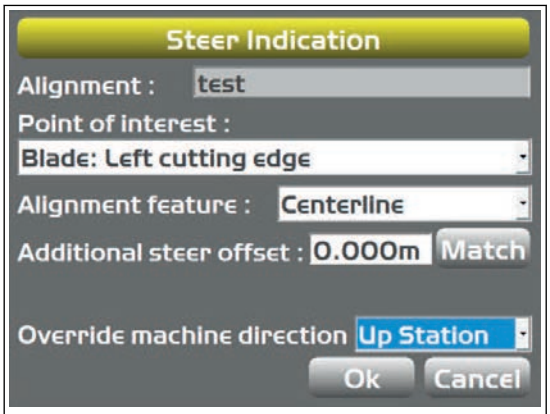


AJD05035

3. Press the power ON/OFF and menu switch to display the main menu.
4. On “Control” menu, press “Steer indication...” and select.

   The setting of the Steer Indication can be changed.

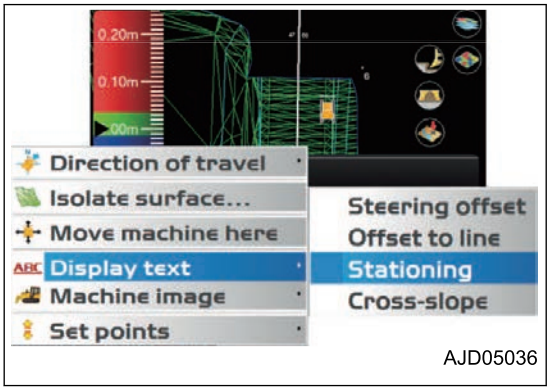
   For the setting method, see “STEER INDICATION OPTIONS”.



AJD02751

5. Hold down the Section view screen, and display the menu.
6. Press “Display text”.

   You can display the additional steering information on the Section view screen.

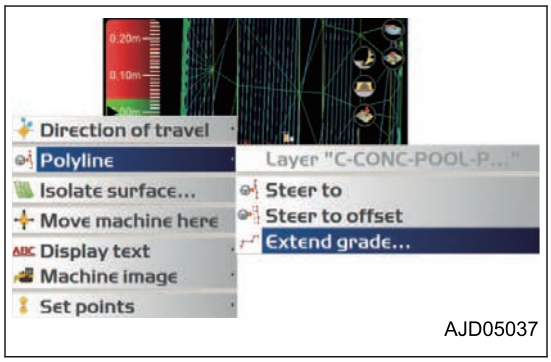


AJD05036

GRADING OPERATION TO POLYLINE

1. On the main window, hold down Polyline for Simple Grading and display the menu.
2. Press “Extend grade...” in “Polyline”.
3. Input the grade of the leveling ground by using the numeric keyboard.

   The leveling ground surface (cross-sectional surface) which has the inputted grade is displayed on the Section view screen, and a horizontal line perpendicular to the polyline of Plan view screen is displayed.



4. Start Simple Grading.

   Repeat step 1 for other polylines.

MOVE THE STEER POINT (POP UP MENU)

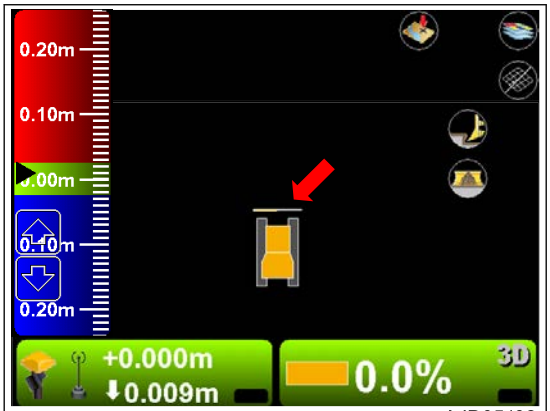
By using the pop-up menu, you can move and set the Steerpoint: a point of reference when performing “Steer Indication” or “Navigate to point”.

1. Display “Plan view” on the main window, and hold down the vicinity of blade shown in the figure.

   Pop-up menu appears according to the position which is held down.

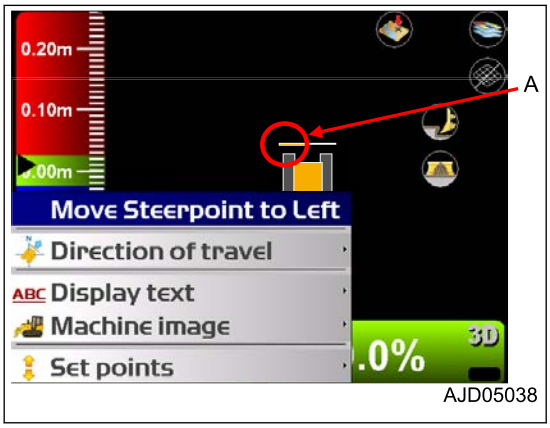
2. Press “Move Steerpoint to Left” or “Move Steerpoint to Mid” or “Move Steerpoint to Right”.

   Steeropint is moved to the selected blade edge position, and setting has done.



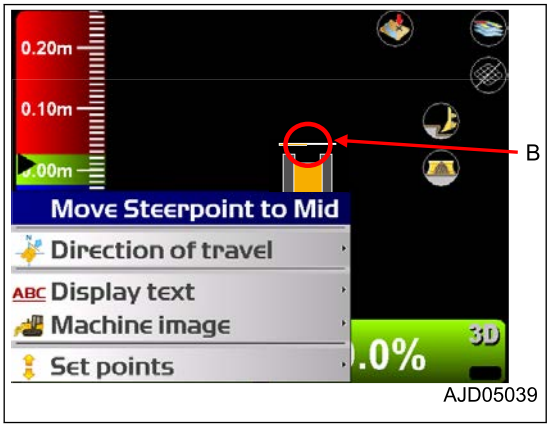
AJD05132

- If you hold down the left vicinity (A) of blade, the screen shown in the figure is displayed.



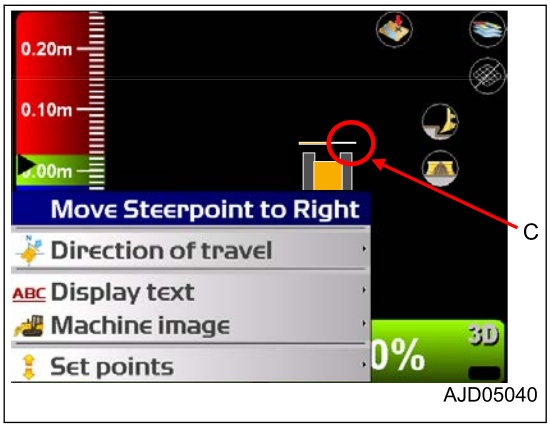
AJD05038

- If you hold down the center vicinity (B) of blade, the screen shown in the figure is displayed.



AJD05039

- If you hold down the right vicinity (C) of blade, the screen shown in the figure is displayed.



AJD05040

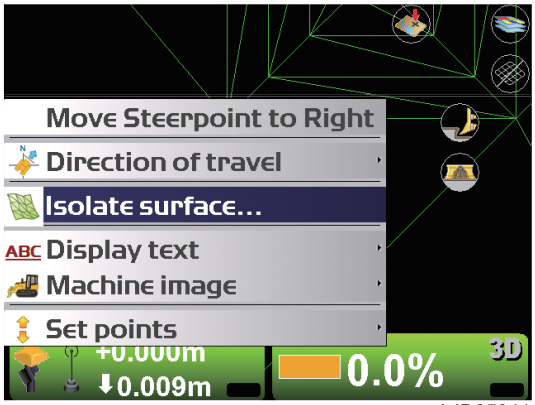
REMARK

You can as well set the Steerpoint on “Steer Indication” screen.
On “Point of interest :” of “Steer Indication” screen, select the blade edge position of which you are going to set the Steerpoint.
For the setting method of the Steer Indication, see “STEER INDICATION OPTIONS”.

METHOD FOR SETTING ISOLATE SURFACE REGION

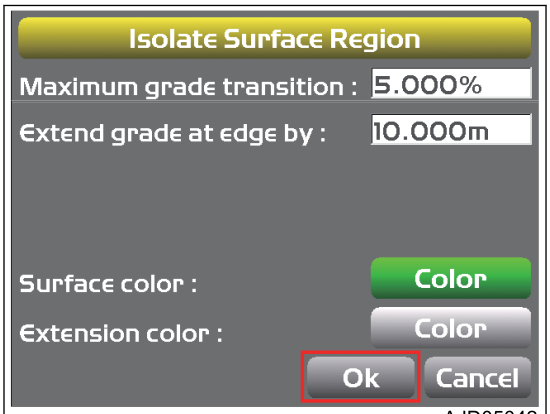
Based on any triangular mesh of the active TIN data, you can isolate a region of triangular mesh which has a certain grade, and set it as the region to be controlled. The triangular meshes out of the region are ignored as out of the design area. You can freely change and enlarge the region of the selected triangular mesh.

1. On the main window, hold down the triangular mesh to be selected from TIN data, and display the menu.
2. Select “Isolate surface...”.



AJD05041

3. On “Isolate Surface Region” screen, set the triangular mesh region to be isolated from the active TIN data.
   - “Maximum grade transition :”
     Based on the triangular mesh which is held down, select the triangular mesh region whose grade is within the inputted grade.
   - “Extend grade at edge by :”
     Enlarge the region to be controlled by the inputted width from the outer edge of the isolated triangular mesh region.
   - “Surface color :”
     Set the color of the isolated triangular mesh region.
   - “Extension color :”
     Set the color of the enlarged region to be controlled.
4. Press “Ok”.

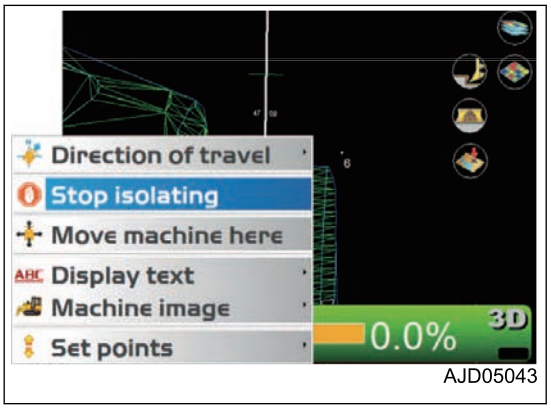


AJD05042

The screen returns to the main window.

AJD04953

5. After finishing the work, hold down the main window, and display the menu.
6. Select “Stop isolating”.



AJD05043

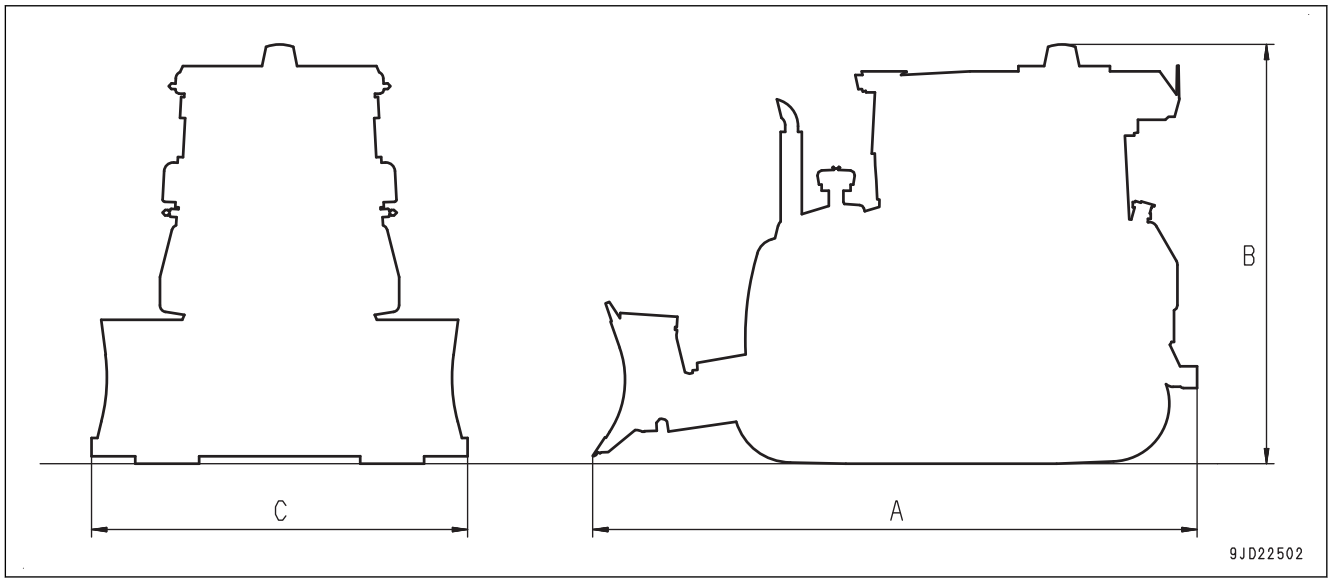
SPECIFICATIONS

SPECIFICATIONS

SPECIFICATIONS: D37EXI-24

With power angle power tilt dozer, ROPS cab

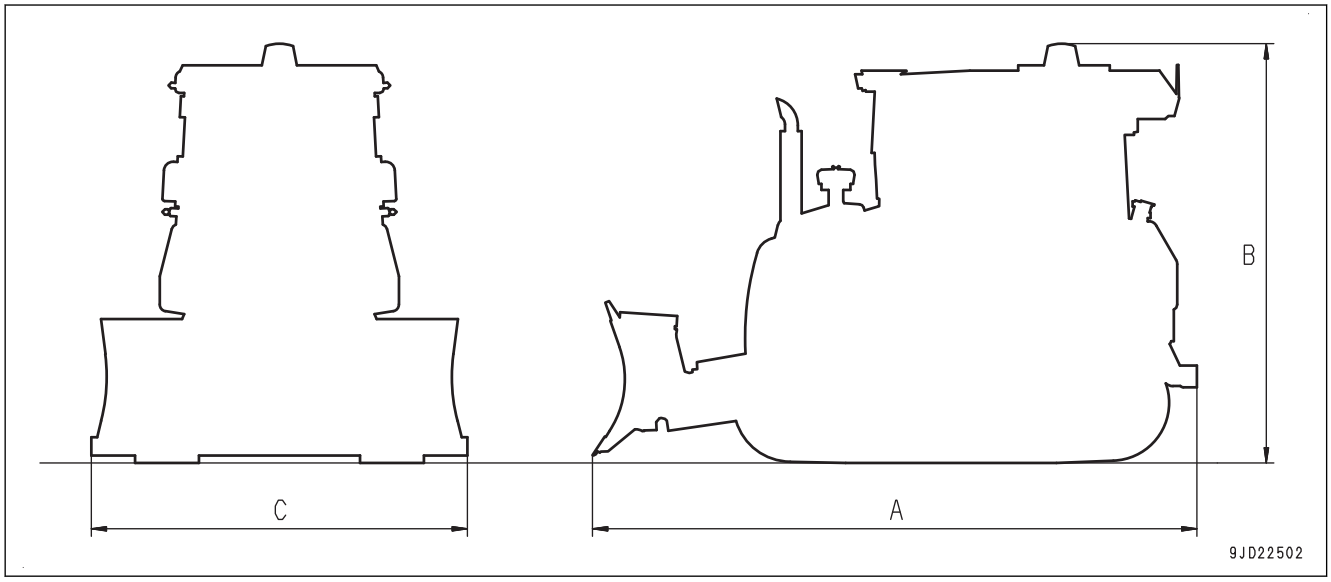
	Item		Unit	D37EXI-24
	Machine weight		kg { lb}	9000 {19845}
	Engine model		-	Komatsu SAA4D95LE-7 diesel engine
	Rated horse-power	SAE J1995 (gross)	kW { HP} / min^{-1} { rpm}	67.7 {90.7}/ 2200 {2200}
		ISO 9249 /SAE J1349 (net)		66.1 {88.6}/ 2200 {2200}
A	Overall length		mm {ft in}	4275 {14’ 0"}
B	Overall height (including GNSS antenna)		mm {ft in}	2945 {9’ 8"}
C	Overall width		mm {ft in}	2710 {8’ 11"}
	Travel speed (Quick shift mode)	Forward (1st/2nd/3rd)	km/h { MPH}	3.4/5.6/8.5 {2.1/3.5/5.3}
		Reverse (1st/2nd/3rd)	km/h { MPH}	4.1/6.5/8.5 {2.5/4.0/5.3}
	Travel speed (Variable shift mode)	Forward	km/h { MPH}	0.8 to 8.5 {0.5 to 5.3}
		Reverse	km/h { MPH}	0.8 to 8.5 {0.5 to 5.3}



SPECIFICATIONS: D37PXI-24

With power angle power tilt dozer, ROPS cab

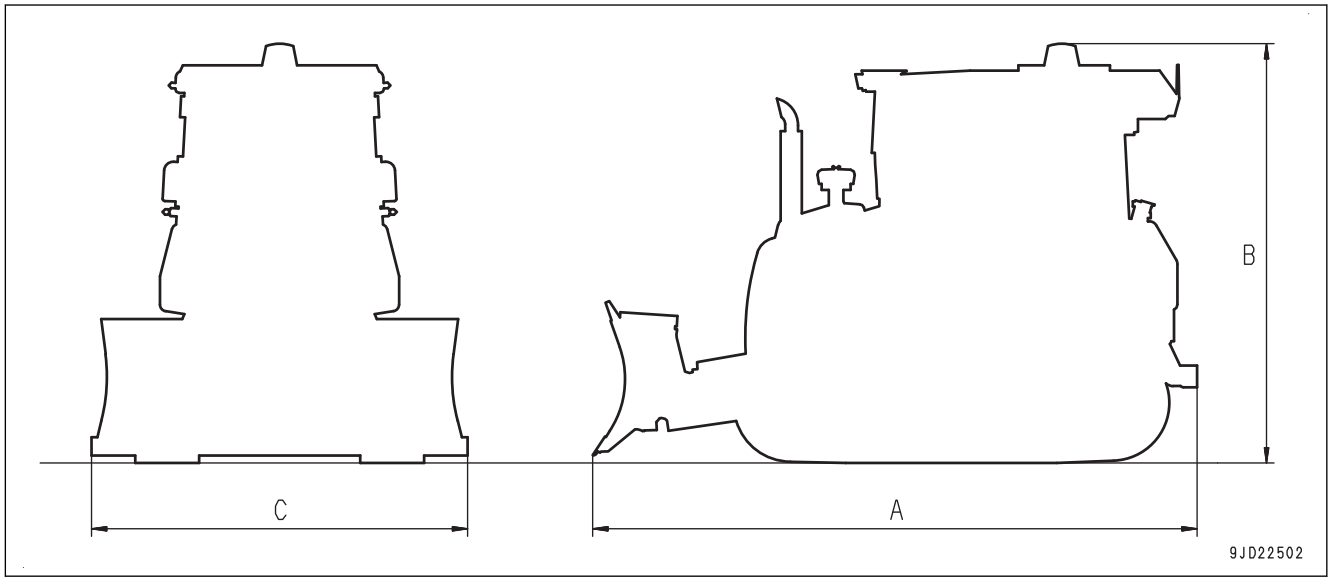
	Item		Unit	D37PXI-24
	Machine weight		kg { lb}	9300 {20506.5}
	Engine model		-	Komatsu SAA4D95LE-7 diesel engine
	Rated horse-power	SAE J1995 (gross)	kW { HP} / min^{-1} { rpm}	67.7 {90.7}/ 2200 {2200}
		ISO 9249 /SAE J1349 (net)		66.1 {88.6}/ 2200 {2200}
A	Overall length		mm {ft in}	4275 {14’ 0"}
B	Overall height (including GNSS antenna)		mm {ft in}	2945 {9’ 8"}
C	Overall width		mm {ft in}	3200 {10’ 6"}
	Travel speed (Quick shift mode)	Forward (1st/2nd/3rd)	km/h { MPH}	3.4/5.6/8.5 {2.1/3.5/5.3}
		Reverse (1st/2nd/3rd)	km/h { MPH}	4.1/6.5/8.5 {2.5/4.0/5.3}
	Travel speed (Variable shift mode)	Forward	km/h { MPH}	0.8 to 8.5 {0.5 to 5.3}
		Reverse	km/h { MPH}	0.8 to 8.5 {0.5 to 5.3}



SPECIFICATIONS: D39EXI-24

With power angle power tilt dozer, ROPS cab

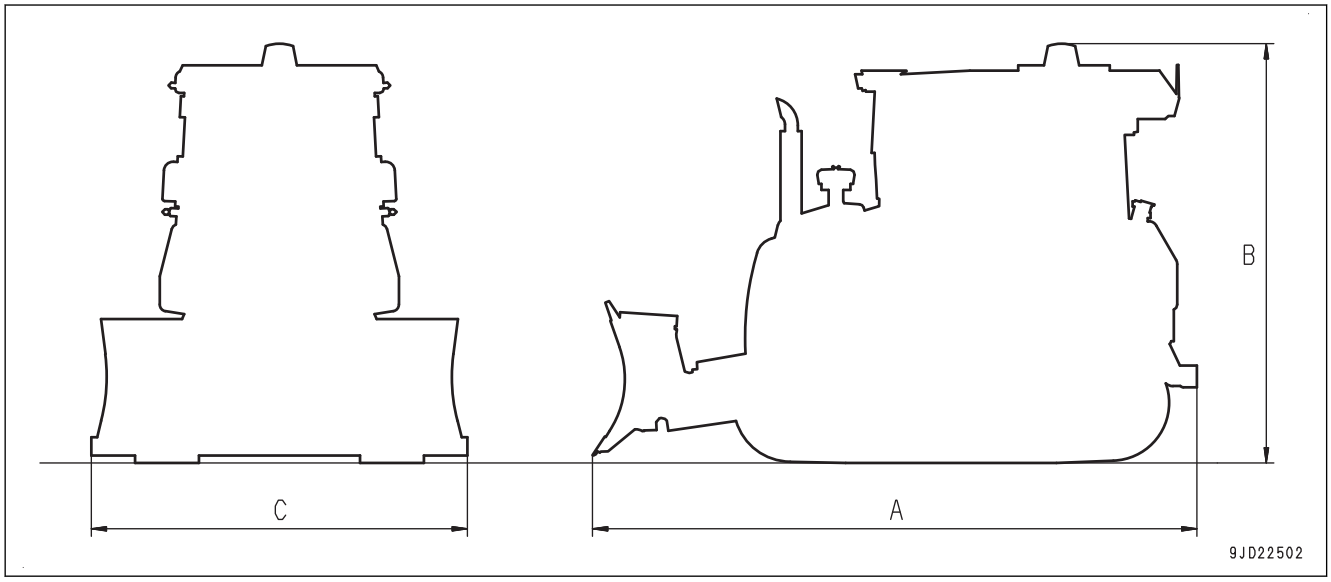
	Item		Unit	D39EXI-24
	Machine weight		kg { lb}	9850 {21719.3}
	Engine model		-	Komatsu SAA4D95LE-7 diesel engine
	Rated horse-power	SAE J1995 (gross)	kW { HP} / min^{-1} { rpm}	80 {107}/ 2200 {2200}
		ISO 9249 /SAE J1349 (net)		78.4 {105}/ 2200 {2200}
A	Overall length		mm {ft in}	4385 {14’ 5"}
B	Overall height (including GNSS antenna)		mm {ft in}	3010 {9’ 11"}
C	Overall width		mm {ft in}	2710 {8’ 11"}
	Travel speed (Quick shift mode)	Forward (1st/2nd/3rd)	km/h { MPH}	3.4/5.6/8.5 {2.1/3.5/5.3}
		Reverse (1st/2nd/3rd)	km/h { MPH}	4.1/6.5/8.5 {2.5/4.0/5.3}
	Travel speed (Variable shift mode)	Forward	km/h { MPH}	0.8 to 8.5 {0.5 to 5.3}
		Reverse	km/h { MPH}	0.8 to 8.5 {0.5 to 5.3}



SPECIFICATIONS: D39PXI-24

With power angle power tilt dozer, ROPS cab

	Item		Unit	D39PXI-24
	Machine weight		kg { lb}	10420 {22976}
	Engine model		-	Komatsu SAA4D95LE-7 diesel engine
	Rated horse-power	SAE J1995 (gross)	kW { HP} / min^{-1} { rpm}	80 {107}/ 2200 {2200}
		ISO 9249 /SAE J1349 (net)		78.4 {105}/ 2200 {2200}
A	Overall length		mm {ft in}	4385 {14’ 5"}
B	Overall height (including GNSS antenna)		mm {ft in}	3010 {9’ 11"}
C	Overall width		mm {ft in}	3250 {10’ 8"}
	Travel speed (Quick shift mode)	Forward (1st/2nd/3rd)	km/h { MPH}	3.4/5.6/8.5 {2.1/3.5/5.3}
		Reverse (1st/2nd/3rd)	km/h { MPH}	4.1/6.5/8.5 {2.5/4.0/5.3}
	Travel speed (Variable shift mode)	Forward	km/h { MPH}	0.8 to 8.5 {0.5 to 5.3}
		Reverse	km/h { MPH}	0.8 to 8.5 {0.5 to 5.3}



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D37EXI-24, D37PXI-24, D39EXI-24, D39PXI-24 BULLDOZER

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