BUCKET CONFIGURATION

OUTLINE OF CALIBRATION

⚠ CAUTION

- **Move the machine to the flat and firm ground such as concrete. (Angle of inclination within 5 °)**
- **Set the swing lock switch to ON (lock) position, and do not perform the swing operation once the calibration has started.**
- **Provide a high enough space for the auto tilt bucket not to contact the ground during the tilting operation for calibration.**
- **The accuracy of the machine control will deteriorate in some combination of the quick coupler and the auto tilt bucket, due to the play in the connecting portion.**
  Reduce the play by inserting the shims if it is too large.

Machine calibration (TS machine calibration or manual machine calibration), and the positional calibration for the proportional control lever and potentiometer full lever should have been completed before the bucket configuration is performed.

Ask your Komatsu distributor for the machine calibration and the positional calibration for the proportional control lever and the potentiometer full lever if those have not been performed yet.

Bucket configuration is performed from the intelligent Machine Control system menu.

There are 4 kinds of bucket configurations as follows.

- Conventional Bucket Exchange calibration
  Perform Conventional Bucket Exchange when changing the bucket to the one other than tilt bucket such as conventional bucket or slope finishing bucket.
- Tilting Bucket Exchange calibration
  Perform Tilting Bucket Exchange when changing the bucket to the one with tilting function.
- Auto Tilt Bucket Exchange calibration
  If the bucket is to be replaced with the auto tilt bucket, perform Auto Tilt Bucket Exchange.
- Bucket Tooth Calibration
  Perform Bucket Tooth Calibration when the tooth tip position changes due to the worn tooth.

REMARK

- If the bucket weight changes largely, bucket weight setting should be executed in addition to the above.
  Set the bucket weight by referring to BUCKET WEIGHT SETTING.
- Be careful of measuring position while performing the calibration when the bucket is equipped with a quick coupler.
  The shape of the bucket including the quick coupler is to be measured.
- In any calibration screen, you can escape from the calibration by tapping RETURN button. Tap RETURN button again and the screen returns to previous screen.
- The rotational bucket with rotation mechanism is not applicable to this machine. Do not use the rotational bucket.
- Foot pedal operation is not available after "Auto Tilt Bucket Exchange" calibration is performed.
- Working mode needs to be ATT/P mode when performing "Auto Tilt Bucket Exchange" calibration. Check that the working mode is ATT/P mode before starting the calibration.

PROCEDURES OF CALIBRATION AFTER REPLACING CONVENTIONAL BUCKET

Perform the conventional bucket replacement calibration when replacing the bucket to the one other than tilt bucket such as standard bucket or slope finishing bucket.

Perform this calibration on the steady ground so that machine does not incline when the bucket is operated.

Check there is no person in the operating range of work equipment, and pay great attention to the safety when moving the work equipment.

METHOD FOR STARTING APPLICATION FOR CALIBRATION AFTER REPLACING CONVENTIONAL BUCKET

1. Tap the menu button of the control box.
   Main menu screen is shown.


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2. Tap “Machine Setup” button.
   The screen changes to the “Machine Setup” screen.

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3. Tap “Bucket Configuration” button.
   The screen changes to “Bucket Configuration” screen.

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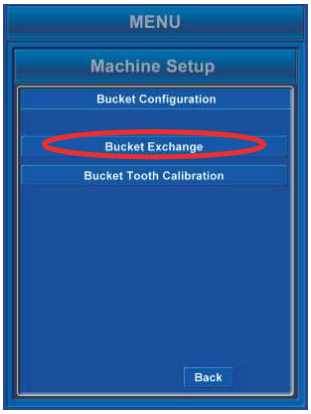
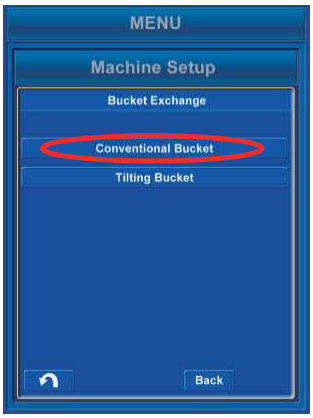
4. Tap “Bucket Exchange” button.
   The screen changes to “Bucket Exchange” screen.



5. Tap “Conventional Bucket” button.
   Calibration of “Conventional Bucket” starts and the screen changes to the Bucket File Select screen.
   Tap the RETURN button and the screen goes back to the previous screen.



SELECT CONVENTIONAL BUCKET FILES

1. Select the bucket file to be used from the list on “Conventional Bucket Files” screen.

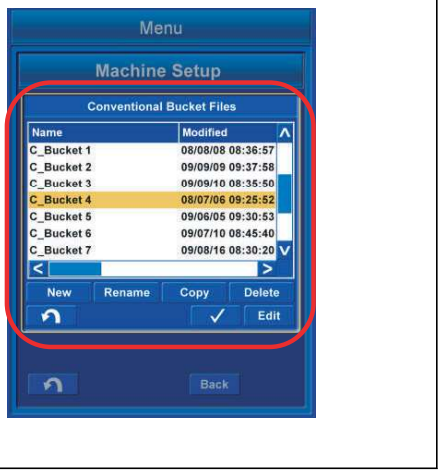
   To change the content of the selected bucket file, tap “Edit” button.

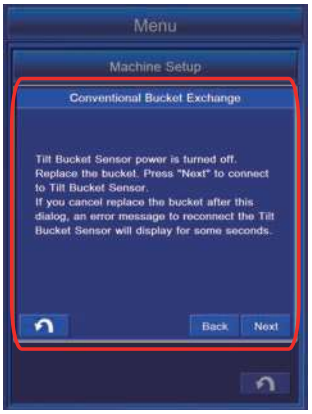
   If you do not change the content, tap the ENTER button, and do the procedure in “CALCULATE AUTOMATIC CALIBRATION AND WRITE PARAMETER VALUE”.

   REMARK

   - The currently selected bucket is highlighted in yellow.
   - If the bucket file is not in the list, tap “New” button to make a new file. The input data is saved in the file.
   - To check the content of the bucket file, tap “Edit” button. The content of the file is shown. If no change is required, tap the RETURN button.
   - Function of each button in the screen is as follows.
     - “New” button
       Makes a new file based on the highlighted file.
     - “Rename” button
       Changes the name of the highlighted file.
     - “Copy” button
       Copies the bucket file from the USB flash drive into the control box, or from the control box into the USB flash drive.
     - “Delete” button
       Deletes the highlighted file.
     - RETURN button
       The screen goes back to the previous screen.

   When you replace the bucket, the screen to show the timing of the replacement is shown. Obey the instruction on the screen to replace the bucket.





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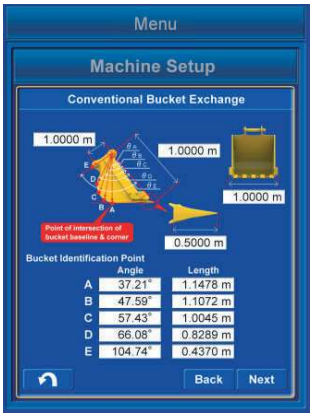
2. Tap “Edit” button.

   Information of the selected bucket file is shown.

   Check the value. If a change is required, measure the bucket shape.

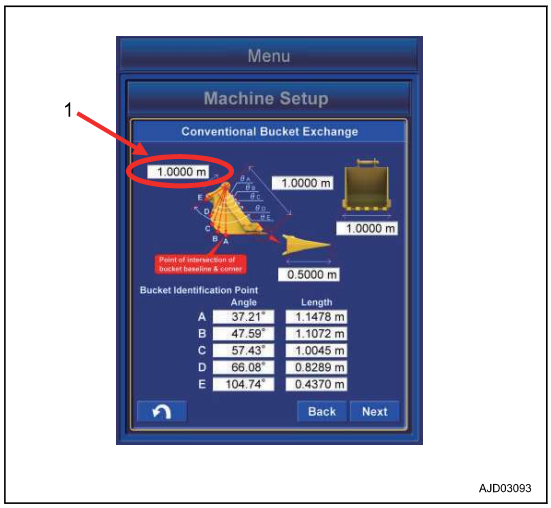


METHOD FOR MEASURING BUCKET SHAPE

Measure the dimensions and angles for inputting the bucket information.

Measure the length dimension to mm unit, and angle to 0.1 ° unit.

1. Measure the dimension (1).

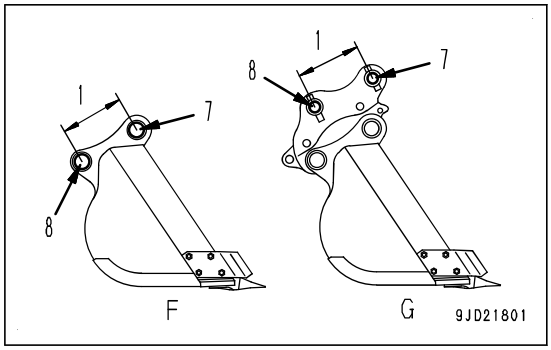


Dimension (1) is the distance between the bucket pin (7) and the bucket link pin (8).

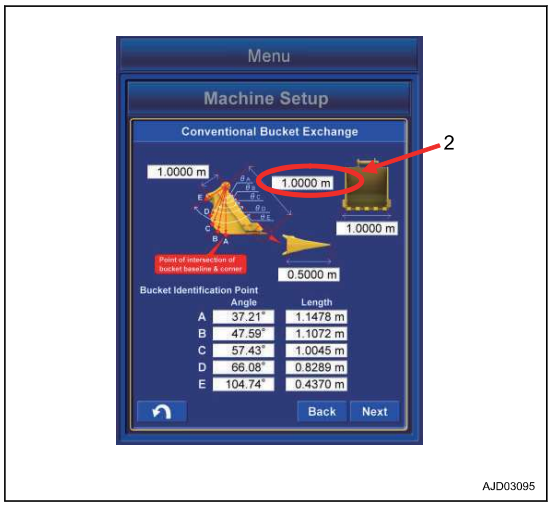
Measure with a tape measure, and input the data.

(F): When the quick coupler is not installed

(G): When the quick coupler is installed



2. Measure the dimension (2).



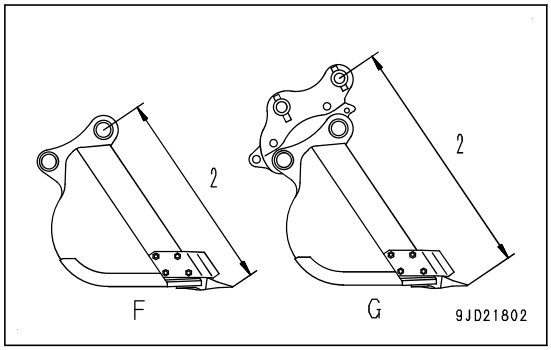
Dimension (2) is the distance between the bucket pin (7) and tooth tip.

Measure with a tape measure, and input the data.

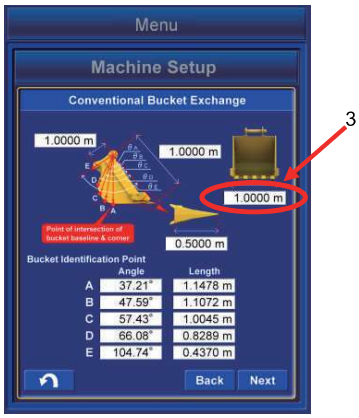
2 persons are required for the measurement.

(F): When the quick coupler is not installed

(G): When the quick coupler is installed



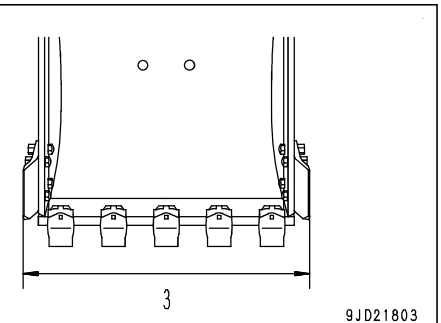
3. Measure the dimension (3).



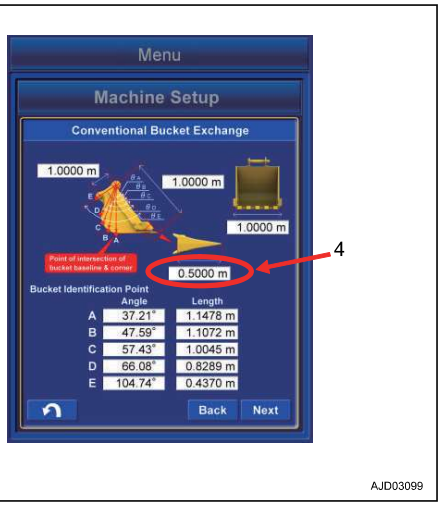
Dimension (3) is the distance between the bottom of bucket side cutters.

Measure with a tape measure, and input the data.

Measure the distance at widest part and input the data if the bucket has no side cutters.

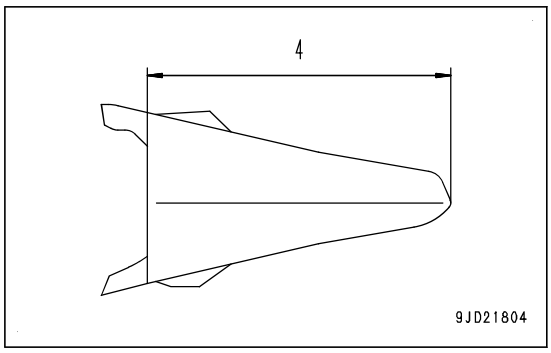


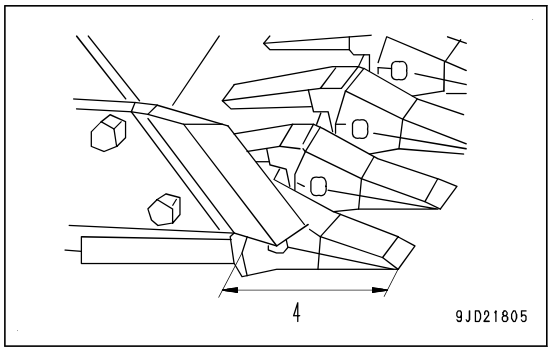
4. Measure the dimension (4).



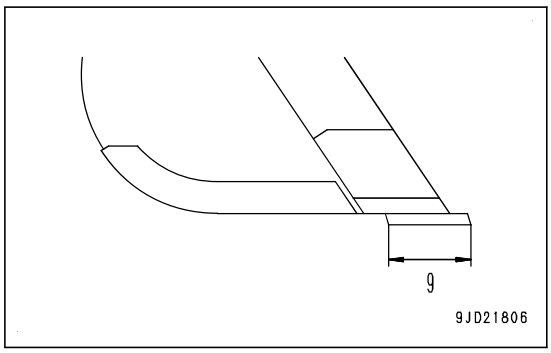
Dimension (4) is the distance between root and tip of the tooth.

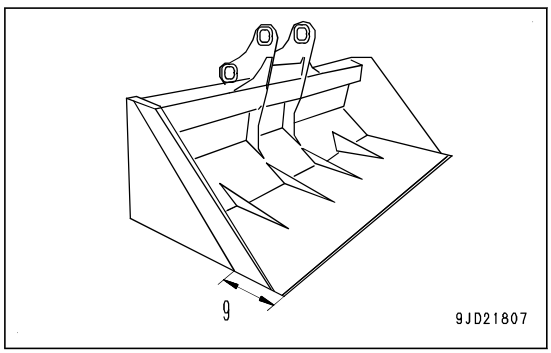
Measure with a tape measure, and input the data.



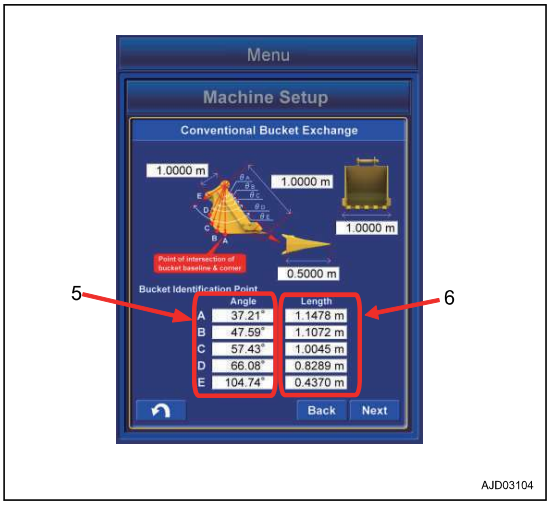


Measure the blade width (9) and input the data if bucket has no tooth.





5. Measure the angle (5) and dimension (6) of “Bucket Identification Point”.



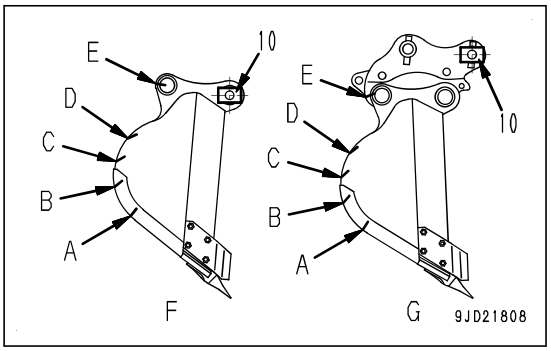
6. Put the marks with marker pen at the 5 points (A), (B), (C), (D), and (E) of “Bucket Identification Point”.

   “Bucket Identification Point” (A) is the cross point of straight line of bucket bottom face and corner.

   If it is difficult to distinguish the straight line of bottom face and corner, select the point that touches the ground if the floor face digging were performed.

   “Bucket Identification Point” (E) is the most outside part on the extended line between bucket pin and bucket link pin.

   “Bucket Identification Point” (B), (C), and (D) divide equally the distance between (A) and (E).



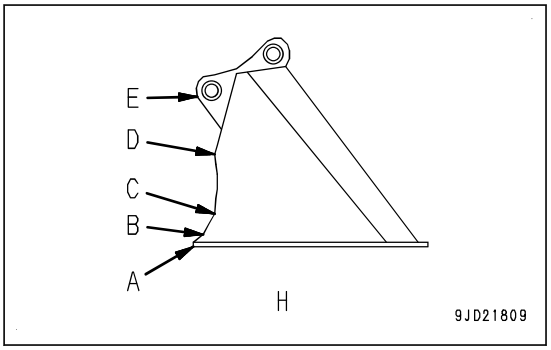
7. Set the magnet pole jig (10) to the bucket pin.

   Align the center of foot pin and center of pole.

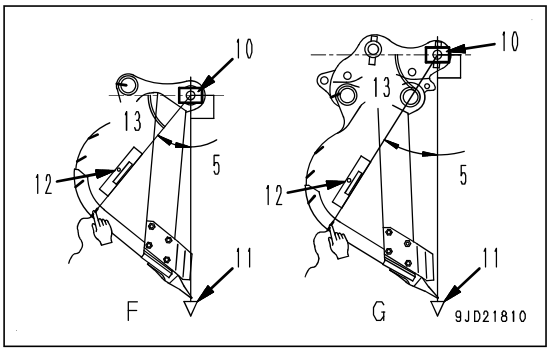
   (F): When the quick coupler is not installed

   (G): When the quick coupler is installed

   (H): When slope finishing bucket is installed



8. Apply the plumb (11) to the magnet pole jig (10), and set the bucket so that the line between bucket pin and tooth tip is vertical.
9. Measure the distance between the point out of (A) to (E) and center of pole with a tape measure, and input the data in the dimension column (6).
10. Put the end of string to the magnet pole (10) and stretch the string to the point out of (A) to (E).
11. Set the digital angle gauge (12) on to the string, and measure the angle (13) of (A) to (E).



Angle (13) is the angle between level line of bucket pin and each point of (A) to (E).

- When the string is below the level line of bucket pin
  Subtract the angle (13) from 90 °, and input the calculated value in the Angle (5) of the “Bucket Identification Point”.
- When the string is above the level line of bucket pin
  Add the angle (13) to 90 °, and input the calculated value in the Angle (5) of the “Bucket Identification Point”

(F): When the quick coupler is not installed

(G): When the quick coupler is installed

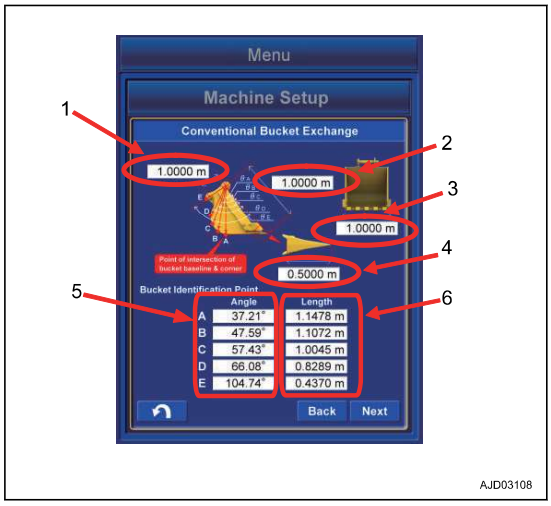
REMARK

- 2 persons are required to measure the dimensions (6) and the Angle (5) of the “Bucket Identification Point”.
- The work equipment is lowered due to hydraulic drift when it is above the ground. Perform measuring of “Bucket Identification Point” as making sure that the plumb (11) is vertical from time to time.

METHOD FOR INPUTTING BUCKET INFORMATION

Input the measured dimensions and angles.

Tap within the white frame of dimension value to be input again, and then the numeric keypad pops up. Input the numeric value with it.
Measure the length dimension to mm unit, and angle to 0.1 ° unit.



You can input the numeric value within the range shown below.

- Numeric value (1)
  Min: 0.00001 m to Max: 19.99999 m
- Numeric value (2)
  Min: 0.00001 m to Max: 19.99999 m
- Numeric value (3)
  Min: 0.0001 m to Max: 5.9999 m
- Numeric value (4)
  Min: 0.0001 m to Max: 2.9999 m
- Angle (5)
  Min: 0.01 ° to Max: 179.99 °
- Numeric value (6)
  Min: 0.0001 m to Max: 5.9999 m

Check the input numeric value. If there is no problem, tap “Next” button.

(If you input the value outside the range, “Next” button will be unavailable.)

If a numeric value or angle column is empty, even if “Next” button is pushed, it is invalid.

METHOD FOR MEASURING BUCKET FOOT ANGLE

1. Set the bucket foot pin (1) and the bucket link pin (2) horizontal by using a level or a laser level.

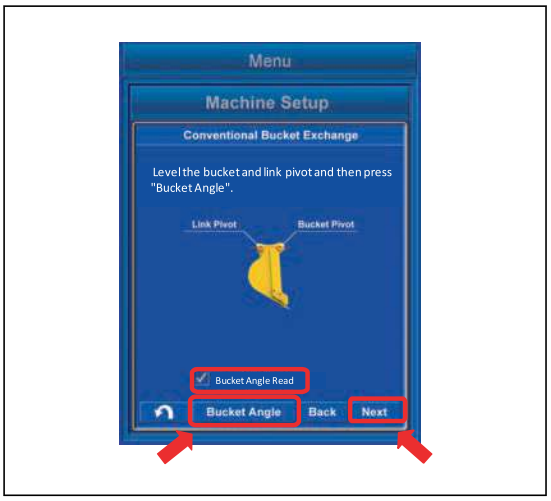
   (A): When the quick coupler is not installed

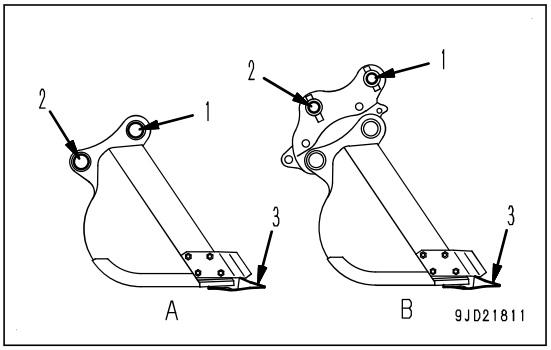
   (B): When the quick coupler is installed

2. Tap the “Bucket Angle” button.

   A tick is put in the check box of “Bucket Angle Read”, and work equipment angle at that posture is saved.

3. Tap the “Next” button.





4. Set the bucket foot pin (1) and the tooth tip (3) vertical by using a plumb or a laser level.

   Move the bucket only. Do not move the other work equipment (boom, arm) at this time.

   (A): When the quick coupler is not installed

   (B): When the quick coupler is installed

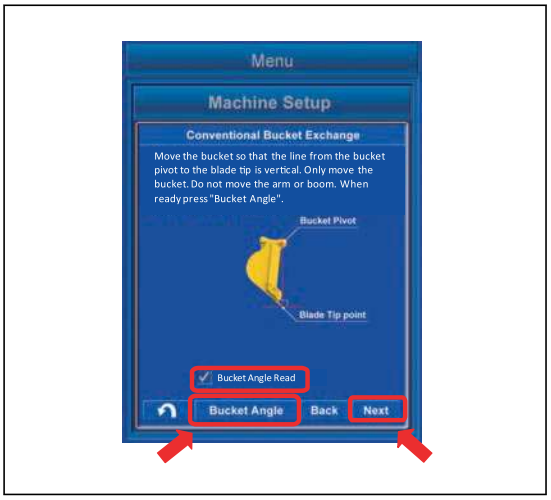
5. Tap the “Bucket Angle” button.

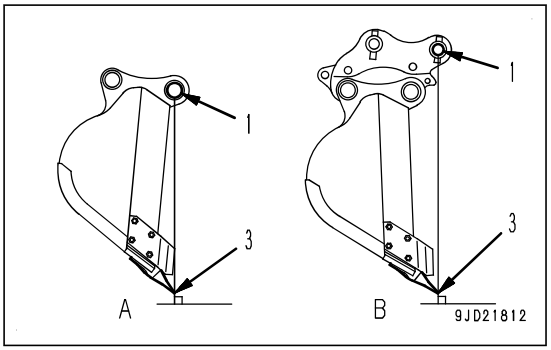
   A tick is put in the check box of “Bucket Angle Read”, and work equipment angle at that posture is saved.

6. Tap the “Next” button.

   REMARK

   In order to adjust work equipment angle again, tap the “Bucket Angle” button and you can execute again.
   If no tick is in the check box of “Bucket Angle Read”, “Next” button is invalid.





METHOD FOR CALCULATING AUTOMATIC CALIBRATION AND WRITING PARAMETER VALUE

1. Tap the “Next” button.

   Automatic calibration is executed.

   After the calculation is finished, the screen changes.

2. Hold down the “Set” button for 0.5 seconds or longer.

   The conventional bucket parameter obtained by automatic calibration calculation is written in Komatsu controller, and the display returns to the menu screen.

   Conventional Bucket Exchange calibration is completed.

   If the bucket weight changes largely, bucket weight setting should be executed.

   For bucket weight setting, see “BUCKET WEIGHT SETTING”.

3. After the setting is completed, turn the starting switch key to OFF position, turn it to ON position again, and restart the control box.

Tap the “Next” button and if automatic calibration calculation fails, error screen is displayed.

In this case, the numeric value which has been input may be wrong.

Tap the Back button, and check back the input result.