

# John Deere Excavator Grade Guidance and SmartGrade™

(PIN: 1FF210PA\_\_F\_00001— )

(PIN: 1FF350PA\_\_F\_00001— )

(PIN: 1FF380PA\_\_F\_00001— )

(PIN: 1FF470PA\_\_F\_00001— )



## OPERATOR'S MANUAL

### John Deere Excavator Grade Guidance and SmartGrade™

OMT473969X019 ISSUE C3 (ENGLISH)

#### 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.

If this product contains a gasoline engine:

### **⚠ WARNING**

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

The State of California requires the above two warnings.

**Worldwide Construction  
And Forestry Division**  
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## Prevent Fires, Clean Debris From Machine

**Handle Fluids Safely:** All fuels, most lubricants, and some coolant mixtures are flammable. Store flammable fluids away from fire hazards. Never refuel machine while smoking or when near sparks or flame.

**Clean Machine Regularly:** Engine temperatures may be elevated following engine shut-down. Keep flammable debris (trash, leaves, twigs, straw, etc.), grease and oil from accumulating in or around engine compartment, radiator, batteries, fuel tank, operator station, fuel lines, hydraulic lines, exhaust components, and electrical wiring. Never store oily rags or flammable materials inside any machine compartment.

**Maintain Hoses, Tubes, and Wiring:** Replace hoses and tubes immediately if they begin to leak, and clean up any oil spills. Examine electrical wiring and connectors frequently for damage.

**Keep a Fire Extinguisher Available:** Always keep a multipurpose fire extinguisher on or near the machine. Know how to use an extinguisher properly.

**Be Aware of the Operating Environment:** debris may contain sparks or embers. Do not operate near any flames.



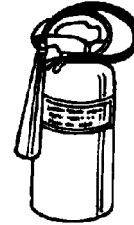
Handle Fuel Safely

T133553 —UN—07SEP00



Clean Machine Regularly

T133554 —UN—07SEP00



Carry a Fire Extinguisher



Caution

T133552 —UN—15APR13

T133555 —UN—15APR13

TX,PREVENT,FIRE -19-02NOV22-1/1

## Parking the Machine

**IMPORTANT:** During freezing weather, prevent damage to undercarriage components from frozen mud and dirt. Machine must be parked on a solid, level surface to prevent tracks freezing in the ground.

1. Park machine on a solid, level surface.

During freezing weather, clean mud and dirt from tracks, rollers, and track frames. Clean the steps and service walks after parking the machine.

If tracks are frozen in the ground, slowly raise the machine using boom to free the tracks. Move machine carefully.

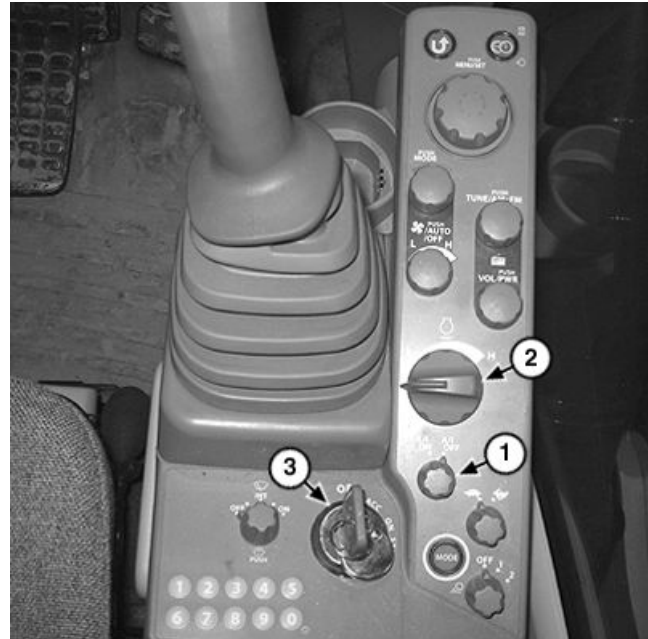
2. Lower equipment to the ground.
3. Turn auto-idle switch (1) to the A/I OFF position.

**IMPORTANT:** Turbocharger can be damaged if procedure to shut down engine is not done properly.

4. Turn engine speed dial (2) to slow idle position and run engine without load for 5 minutes.
5. Turn key switch (3) to the OFF position. Remove key from switch.
6. Place the pilot control shutoff lever (4) in the locked (UP) position.

**IMPORTANT:** Prevent cab electrical component damage from bad weather. Windows, roof vent, and cab door must be closed to prevent rain from entering.

7. Close windows, roof vent, and cab door.
8. Lock all access doors and compartments.



Switch Panel



Pilot Control Shutoff Lever

1—Auto-Idle Switch  
2—Engine Speed Dial

3—Key Switch  
4—Pilot Control Shutoff Lever

TX1087012A—UN—18/JAN11

TX1087013A—UN—18/JAN11

DH10862,0000193 -19-29NOV18-1/1

## Do Not Use High Impact Hydraulic Attachments

**IMPORTANT:** Prevent grade system damage. Do not use high impact hydraulic attachments when machine is equipped with Grade Guidance or Grade Control. Use of high impact hydraulic attachments such as hydraulic hammers and plate compactors can cause grade system damage.

High impact hydraulic attachments must not be used on machines equipped with Grade Guidance or Grade Control. Use of high impact hydraulic attachments such as hydraulic hammers and plate compactors can cause grade system damage, including but not limited to:

- Grade guidance/control harness damage
- Grade guidance/control sensor damage
- Accelerated component wear resulting in poor grade system performance/accuracy

JD29379,0000A94 -19-09SEP21-1/1

### Edit Control Points

1. Navigate through menu: **MAIN MENU >> DATA >> CONTROL**. The CONTROL POINTS screen appears and CONTROL POINTS is active.
2. Select a control point from the list to enable EDIT (4).
3. Select EDIT to display the CONTROL POINT screen.
4. Update the desired information.
5. Select OK (9) to save the changes and return to the CONTROL POINTS screen.
6. Select OK (5) to return to the main screen.

### Delete Control Points

1. Navigate through menu: **MAIN MENU >> DATA >> CONTROL**. The CONTROL POINTS screen appears and CONTROL POINTS is active.
2. Select a control point from the list to enable DELETE (3).
3. Select DELETE and a delete confirmation pop-up window appears.
4. Select YES to delete the control point and return to the CONTROL POINTS screen.
5. Select OK (5) to return to the main screen.

JL41294,0000218 -19-30NOV20-2/2

1. Navigate through menu: **MAIN MENU >> DATA >> SURFACES**. The PROJECT SURFACES screen appears.
  2. Select NEW to display the SURFACE WIZARD : SURFACE NAME AND TYPE screen.
  3. Select data field located under NAME and enter the name of the surface using the alphanumeric keyboard.
  4. Select SLOPING PLANE SURFACE as the surface type.
  5. Select NEXT to display the SURFACE WIZARD : SLOPING PLANE SURFACE screen.
  6. Move the machine and position the attachment so the cutting edge rests on reference point a.
  7. Select drop-down menu located next to POI: (9) and choose the location of the reference point on the cutting edge for a measurement.
  8. Select MEASURE POINT A (11) icon. The POINT ON SURFACE: values appear when measuring is finished.
  9. Move the machine and position the attachment so the cutting edge rests on reference point b.
  10. Select drop-down menu located next to POI: and choose the location of the reference point on the cutting edge for a measurement.
  11. Select MEASURE POINT B (12) icon. The MAIN-FALL (A->B): values appear when measuring is finished.
- NOTE: Setting measurement in GRID INTERVAL: data field to the same length as the cutting edge helps keep passes straight.*
12. Enter measurement in GRID INTERVAL: data field.
  13. Enter percentage in CROSSFALL: data field.
  14. Select FINISH. Settings are saved and a pop-up window appears.
  15. Select YES to set the new surface as active or select NO to keep the new surface inactive and return to the PROJECT SURFACES screen.
  16. Select CLOSE to return to the main screen.

JL41294,000021D -19-21OCT20-4/4

## Data Menu—Active

### Selecting an Active Surface File—3D Control Mode Only

1. Navigate through menu: **MAIN MENU >> DATA >> ACTIVE >> SURFACE.**

*NOTE: Only visible surfaces are shown in the SURFACE submenu. See Surface Files—Display, Edit, and Delete in this section.*

*NOTE: A check mark in the SURFACE submenu indicates the active surface file.*

2. Select the name of the surface file to make active on the main screen from the SURFACE submenu.

### Selecting an Active Surface File—2D Control Mode Only

1. Navigate through menu: **MAIN MENU >> DATA >> ACTIVE.**

*NOTE: A check mark in the ACTIVE submenu indicates the active surface file.*

2. Select the name of the surface file to make active on the main screen from the ACTIVE submenu.

### Selecting an Active Alignment File—3D Control Mode Only

1. Navigate through menu: **MAIN MENU >> DATA >> ACTIVE >> ALIGNMENT.**

*NOTE: Only visible alignment files are shown in the alignment submenu. See Surface Files—Display, Edit, and Delete in this section.*

*NOTE: A check mark in the ALIGNMENT submenu indicates the active alignment file.*

*NOTE: If an alignment file is set as the active surface, the ALIGNMENT submenu is not selectable.*

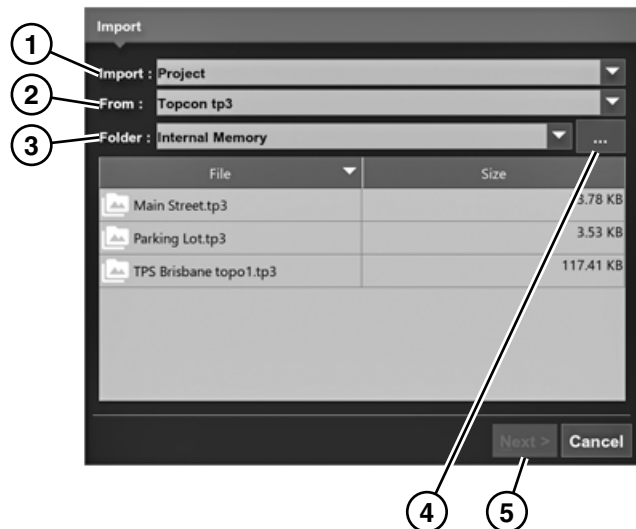
2. Select the name of the alignment file to make active on the main screen from the ALIGNMENT submenu.

JL41294,000022C -19-30OCT20-1/1

## Data Menu—Import/Export

### Import Files

1. When importing files from a USB key, insert the USB key into the display unit.
2. Navigate through menu: **MAIN MENU >> DATA >> IMPORT/EXPORT >> IMPORT.** The IMPORT screen appears.
3. Select drop-down menu located next to FOLDER: (3) or BROWSE (4) icon to choose the desired file location.
4. Select drop-down menu located next to IMPORT: (1) to choose the file to import.
5. Select drop-down menu located next to FROM: (2) to choose the desired file type.
6. Choose a file from the list and select NEXT (5). A screen that corresponds to the selected options appears.
7. Modify settings and select NEXT until the IMPORT SUMMARY screen appears.
8. Review selected settings and select IMPORT to save the file to the internal drive and return to the main screen.



IMPORT Screen

1— IMPORT:  
2— FROM:  
3— FOLDER:

4— BROWSE  
5— NEXT

TX1298107—UN—05OCT20

Continued on next page

JL41294,0000217 -19-07OCT20-1/2

## Control Menu—Steer Indication—3D Control Mode Only

*NOTE: An active alignment file is required to view the STEER INDICATION menu item. See Data Menu—Active in this section.*

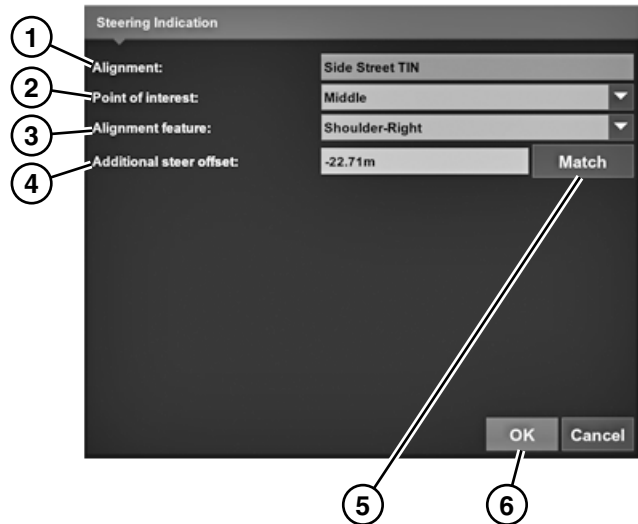
Setting the steer indication option allows the operator to steer the machine manually to a polyline layer in the active alignment file. See Data Menu—Active in this section. Polylines represent features or objects, such as building pads, curbs, sidewalks, the top/toe of slopes, or any boundary on the project.

To enable steering points, see Indicator Display Options in this section.

1. Navigate through menu: **MAIN MENU >> CONTROL STEER INDICATION**. The STEERING INDICATION screen appears.

*NOTE: File name displayed in data field located next ALIGNMENT: (1) is the active alignment file. To change the alignment file, see Data Menu—Active in this section.*

2. Select drop-down menu located next to POINT OF INTEREST: (2) and choose the edge of the attachment to steer from.
3. Select drop-down menu located next to ALIGNMENT FEATURE: (3) and choose the feature to steer to.
4. Select data field located next to ADDITIONAL STEER OFFSET: (4) to enter an offset from the feature



STEERING INDICATION Screen

- |                      |                    |
|----------------------|--------------------|
| 1—ALIGNMENT:         | 4—ADDITIONAL STEER |
| 2—POINT OF INTEREST: | OFFSET:            |
| 3—ALIGNMENT FEATURE: | 5—MATCH            |
|                      | 6—OK               |

or select MATCH (5) to enter an offset using the attachment position.

5. Select OK (6) to return to the main screen.

JL41294,00002FC -19-19NOV20-1/1

TX1298252 —UN—19OCT20

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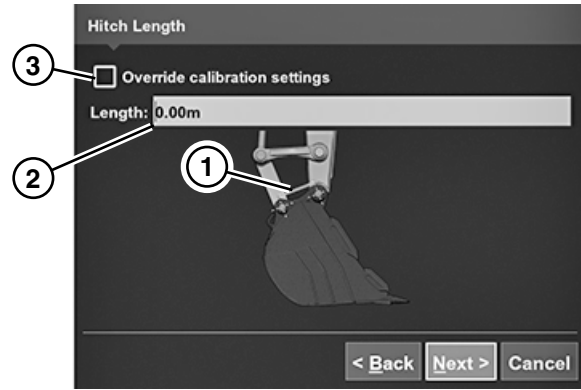
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## Control Menu—Attachment Hitch Length Setting

If using an attachment with abnormal hitch length, dimensions must be manually entered into the HITCH LENGTH screen. The HITCH LENGTH screen is only visible while in supervisor mode. For more information on supervisor mode, see Tools Menu—Supervisor Mode in this section.

**NOTE:** If equipped with an attachment coupler, measure hitch length where arm attaches to coupler, not where coupler attaches to bucket.

1. Measure and record hitch length (1) from center of attachment arm pin to center of attachment link pin as shown.
2. Enter recorded value (2) and select the check box (3).
3. Select NEXT to update calibration with new hitch length value.



Hitch Length Screen

1— Hitch Length  
2— Recorded Value

3— Check Box

JD29379,0000A92 -19-29JUL21-1/1

TX1315237—UN—28JUL21

## Control Menu—2D Options—2D Control Mode Only

1. Navigate through menu: **MAIN MENU >> CONTROL >> 2D OPTIONS.**

**NOTE:** A check mark next to a menu item indicates the option is active.

- Select Use Laser Reference to obtain measurements using a laser transmitter over a known point.
- Select Compass Enabled to use machine position as a compass for desired orientation.

2. The main screen appears.

JL41294,0000236 -19-29MAR22-1/1

## Control Menu—3D/2D Mode

The 3D/2D mode menu item allows the operator to switch between three-dimensional (3D) control mode and two-dimensional (2D) control mode. Modes are selectable only if all sensors required are available. See Control Menu—Machine Setup in this section. Selected sensor type changes options available on the main screen display.

1. Navigate through menu: **MAIN MENU >> CONTROL.**
2. Select the displayed inactive control mode to switch control modes.
3. The main screen appears.

JL41294,0000232 -19-04NOV20-1/1

## Control Menu—Auto Control/Guidance Only

The auto control/guidance only menu item allows the operator to activate auto control or guidance only. Activate guidance only if control valve is not equipped. Guidance only disables the over-dig, virtual front, and automatics features, menu items, and changes options available on the main screen display.

**NOTE:** To prevent auto control from affecting boom, arm, or bucket movement, the feature should be

*deactivated before removing or installing bucket. For additional information on removing or installing bucket, see machine operator's manual.*

1. Navigate through menu: **MAIN MENU >> CONTROL.**
2. Select the displayed inactive option to activate it.
3. The main screen appears.

JL41294,00002FB -19-20SEP21-1/1

### Create a Complex Slope Surface

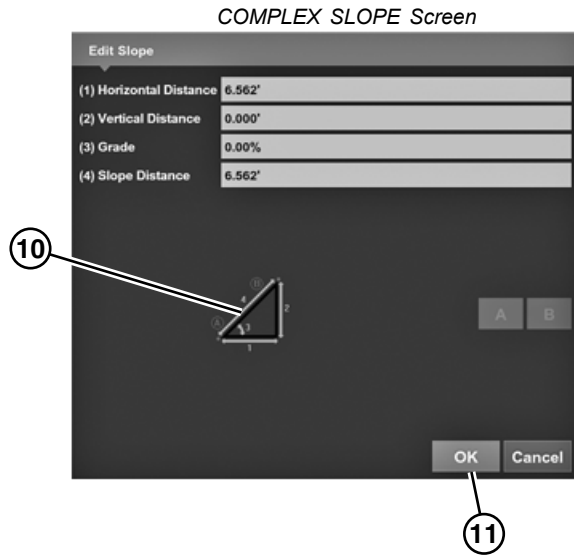
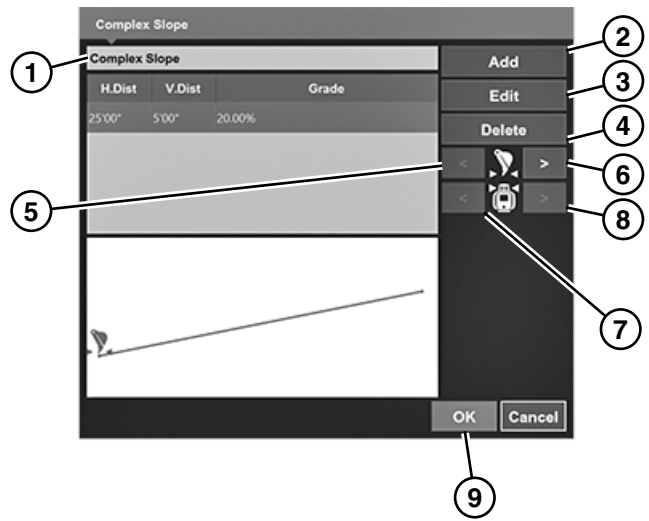
1. Navigate through menu: **MAIN MENU >> TOOLS >> COMPLEX SLOPE**. The COMPLEX SLOPE screen appears.
2. Select data field (1) and enter the name of the complex slope using the alphanumeric keyboard.
3. Select ADD (2) to display the EDIT SLOPE screen.
4. Enter values for the segment. When there is enough information, values will auto-populate based on the DIAGRAM (10) icon on the screen.
5. Select OK (11) to save the segment and return to the COMPLEX SLOPE screen.

*NOTE: MOVE LASER TRANSMITTER LEFT (7) and MOVE LASER TRANSMITTER RIGHT (8) icons are enabled when more than one segment has been created.*

6. Use MOVE BUCKET LEFT (5) or MOVE BUCKET RIGHT (6) icons to move the bucket to the desired transition location.
7. Select OK (9) to save the complex slope surface and return to the main screen. The complex slope surface is active on the main screen.

- 1— Data Field
- 2— ADD
- 3— EDIT
- 4— DELETE
- 5— MOVE BUCKET LEFT
- 6— MOVE BUCKET RIGHT

- 7— MOVE LASER TRANSMITTER LEFT
- 8— MOVE LASER TRANSMITTER RIGHT
- 9— OK
- 10— DIAGRAM
- 11— OK



EDIT SLOPE Screen

TX1298602 —UN—03NOV20

TX1298604 —UN—27OCT20

JL41294,0000241 -19-21OCT20-3/3

## Indicator Display Options

### Enable Set Points

*NOTE: Optional on-screen INCREMENT SET POINT and DECREMENT SET POINT are not displayed by default. Physical set point buttons are located on the pilot control levers. See Pilot Control Levers. (Section 2-1.)*

1. Navigate through menu: **MAIN MENU >> VIEW >> DISPLAY OPTIONS >> INDICATORS >> SET POINTS**.

*NOTE: A check mark in the SET POINTS submenu indicates the option is active.*

2. Select ENABLED (LEFT) or ENABLED (RIGHT). The main screen appears with the selected option displayed.
3. Select INCREMENT SET POINT OR DECREMENT SET POINT to adjust the cut/fill set point indicator.

### Adjust Set Point Control Increments

1. Navigate through menu: **MAIN MENU >> VIEW >> DISPLAY OPTIONS >> INDICATORS >> SET POINTS >> INCREMENT**. A pop-up screen appears.
2. Enter a measurement using the numeric keyboard. Select OK to save settings and return to the main screen.

### Display Text

1. Navigate through menu: **MAIN MENU >> VIEW >> DISPLAY OPTIONS >> INDICATORS >> DISPLAY TEXT >> NEW DISPLAY TEXT**. The main screen appears with an on-screen text box displayed.
2. Select and hold on the on-screen text box. A context pop-up menu appears.

*NOTE: A check mark in the context pop-up menu indicates the option is active.*

3. Select MOVABLE to allow the on-screen text box to be moved to a desired location. The main screen appears.
4. Repeat as necessary to add more information to the on-screen text box.

### Enable Steering Point—3D Control Mode Only

*NOTE: An active alignment file is required to view steering points. See Data Menu—Active in this section.*

*A check mark in the INDICATORS submenu indicates the option is active.*

1. Navigate through menu: **MAIN MENU >> VIEW >> DISPLAY OPTIONS >> INDICATORS >> STEERING POINT**. The main screen appears with the option active.
2. Select appropriate steering point on the attachment.
  - **MOVE STEERING LEFT:** Select and hold left of the attachment. A context pop-up menu appears. Select MOVE STEERING LEFT to set steering point on the left edge of the attachment.
  - **MOVE STEERING MIDDLE:** Select and hold middle of the attachment. A context pop-up menu appears. Select MOVE STEERING MIDDLE to set steering point on the middle of the attachment.
  - **MOVE STEERING RIGHT:** Select and hold right of the attachment. A context pop-up menu appears. Select MOVE STEERING RIGHT to set steering point on the right edge of the attachment.
3. The main screen appears.

JL41294,00002FD -19-19NOV20-1/1

## View Menu—About

The ABOUT screen provides information about the 3DMC system, which includes 3DMC software version build date, firmware version, and license information. This screen also displays if 3DMC is properly authorized to function. If the system reports an unauthorized message, contact an authorized John Deere dealer.

1. Navigate through menu: **MAIN MENU >> VIEW >> ABOUT**. The ABOUT screen appears.
2. View displayed information.
3. Select CLOSE to return to the main screen.

JL41294,000020D -19-30OCT20-1/1

## Providing Support

John Deere SmartGrade™ Remote Support

C&F - 1234

Support Desk: #JD00001234

1 / 3 connected

Devices Support Requests Pair Requests Unpair Requests Desk Information

Showing 3 of 3

MACHINE ID	LAST CONNECTED	MACHINE S/N	SERVICE TAG
	Apr 24, 2020 (Connected)		

Machine ID:  
Client Name:  
Machine S/N:  
Service Tag:  
Last Connection Start: April 24, 2020, 8:36:20 AM Central Daylight Time  
Last Connection End: Connected

Change Tags Unpair Remote Control Remote View Remote File Manager Remote MC-X Config

TX1308398A

### Remote Support Types

- 1— REMOTE VIEW Button
- 2— REMOTE CONTROL Button
- 3— REMOTE FILE MANAGER Button
- 4— REMOTE MC-X CONFIG Button
- 5— CHANGE TAGS Button
- 6— UNPAIR Button

Once a remote support client device has been paired with a support desk, the following remote support types are available:

- **REMOTE VIEW Button (1)**—Views the client device display. The support desk cannot make changes to the client device. For more information, see Remote View. (Section 2-4.)
- **REMOTE CONTROL Button (2)**—Accesses the client device. The support desk can remotely operate the client device. For more information, see Remote Control. (Section 2-4.)
- **REMOTE FILE MANAGER Button (3)**—Establishes a file transfer connection with the client device. Files can be transferred between the support desk and the client device. For more information, see Remote File Management. (Section 2-4.)
- **REMOTE MC-X CONFIG Button (4)**—Accesses the MC-X machine control gateway on the client device. Various networking and configuration settings can be viewed and modified. For more information, see Remote MC-X Configuration. (Section 2-4.)
- **CHANGE TAGS Button (5)**—Change the pairing tags associated with the paired client device. Service tags created by one support desk cannot be viewed by another. For more information, see Configuring Remote Support Desk. (Section 2-4.)
- **UNPAIR Button (6)**—Remove the client device pairing from the support desk. For more information, see Managing Pairings. (Section 2-4.)

PN36905,000A0EC -19-01JUN20-1/1

TX1308398A—JUN—19/JAN21

## Providing Unsolicited Support

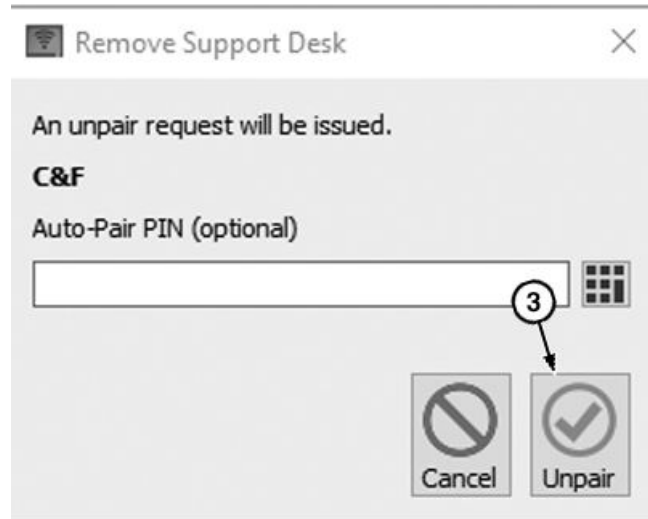
Any type of remote support can be provided to a client device unprompted by a support request. For more information, see Providing Support. (Section 2-4.)

PN36905,000A0F2 -19-01JUN20-1/1

**NOTE:** Auto-pair pins are supplied by the support desk. If an auto-pair pin is not provided, the support desk needs to manually approve the unpair request. For more information, see *Managing Pairings*. (Section 2-4.)

5. Enter the AUTO-PAIR PIN if applicable.
6. Select the UNPAIR button (3).

3— UNPAIR Button



Remove Support Desk Dialog Box

PN36905,000A0A3 -19-06MAY20-3/3

TX1296343A —UN—04MAY20

## Usage of Remote Support

John Deere SmartGrade™ Remote Support is included with the purchase of an eligible John Deere SmartGrade™

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JDLink is a trademark of Deere & Company*

system. An active JDLink™ subscription is required to use Remote Support features. For more information, contact an authorized John Deere dealer.

PN36905,000A0A4 -19-06MAY20-1/1

## Basic Remote Support Troubleshooting

Symptom	Problem	Solution
<b>Support Desk Cannot Pair</b>	Invalid support desk number	Check support desk number and try again. See <i>Pairing to a Support Desk</i> . (Section 2-5.)
	Inactive JDLink™ subscription	Contact an authorized John Deere dealer.
<b>Paired Support Desk Cannot Connect</b>	JDLink radio does not have cellular connectivity	Move machine to a different area and try again.
	Operator did not accept remote control request on client device	Accept control request from support desk on client device.
	Inactive JDLink™ subscription	Contact an authorized John Deere dealer.
	Network cable is disconnected or damaged	Contact an authorized John Deere dealer.

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PN36905,000A0A5 -19-06MAY20-1/1

# Miscellaneous—Troubleshooting

## RTK Communication Problems

Symptom	Problem	Solution
<b>Receiver Does Not Power On</b>	The power button was pressed too quickly	Make sure to hold the power button down for at least 1 second.
	The power cable is incorrectly connected or damaged	Check that the power cable is correctly connected to the battery.  Check that the red dots on the power cable connector and the socket on the receiver are aligned, and the cable is pushed in as far as it will go.  If the power cable is damaged, contact an authorized John Deere dealer.
<b>Display Message States Waiting for Corrections</b>	Radio settings do not match base station	See base station manufacturer's manual.
<b>Radio Modem Does Not Power On</b>	The power cable is incorrectly connected or damaged	Check that the power cable is correctly connected to the battery.
		If the power cable is damaged, contact an authorized John Deere dealer.
<b>Radio Modem Light Is Not Flashing</b>	The cable is incorrectly connected or damaged	Check that the cable from the receiver is properly connected to the radio.
		If the cable is damaged, contact an authorized John Deere dealer.

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