FIELD REFERENCE GUIDE

GCS900 Grader

Version 13.1

Trimble® Authorized Dealer

YOUR CONSTRUCTION TECHNOLOGY PROVIDER

SITECH®

TRAINING CHECKLIST

Training Acknowledgement:

Customer Signature Date SITECH Representative Date

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CONTROL BOX LAYOUT

GRADER TRAINING DISPLAY SETTINGS

The **Control Box** must be in **Manager's Mode**

1. Press **"Menu"** 
2. Select **"GNSS Accuracy"** and Press **"OK"**
3. Press and **Hold "F6 "** and Press **"F2" Medium Mode**
4. Change **"GPS Horizontal error limit:"** to **"0.30ft** or **0.090m"** and Press **"Next"** 
5. Change **"GPS Vertical error limit:"** to **"0.30ft** or **0.090m"** and Press **"OK"** Twice
6. Select **"Guidance Method"** and Press **"OK"**
7. Use Arrow to change **Adjust cut to avoid overcut:** to **"NO"** and **Press "OK"**
8. Select **"Increment Switch Adjustment"** and Press **"OK"**
9. Change **Vertical offset increment: "0.00"** and Press **"OK"**
10. Select **"Text Items"** and Press **"OK"**
11. Press **"F1"**  and **Uncheck each Item checked**
12. Press **"F1"**  to select **"Cut/Fill Left"**, **"Station"** and **"Cut/Fill Right"** (select in order)
13. Press **"F3" Cross-Section**
14. Press **"F1"**  and **Uncheck each Item checked**
15. Press **"F1"**  to select **"Cut/Fill Left"**, **"Station"** and **"Cut/Fill Right"** (select in order)
16. Press **"F4" Profile View**
17. Press **"F1"**  and **Uncheck each Item checked**
18. Press **"F1"**  to select **"Cut/Fill Left"**, **"Station"** and **"Cut/Fill Right"** (select in order)
19. Press **"F5" Text View 1**

GRADER TRAINING DISPLAY SETTINGS

20. Press **“F1”**  and **Uncheck each Item checked**

21. Press **“F1”**  to select **“Design Elev.(3D)”**, **“Design XSlope (3D)”**, **“Design Mainfall (3D)”** **“Satellites (3D)”** and ”**V. GNSS Err (3D)** (select in order)

22. Press **“F6” Text View 2**

23. Press **“F1”**  and **Uncheck each Item checked**

24. Press **“F1”**  to select **“Northing (3D)”**, **“Easting (3D)”**, **“Elevation (3D)”**, **“Cross Slope”** and **“Mainfall”** (select in order)

25. Press **“OK”**

26. Select **“Save Settings”** and Press **“OK”**

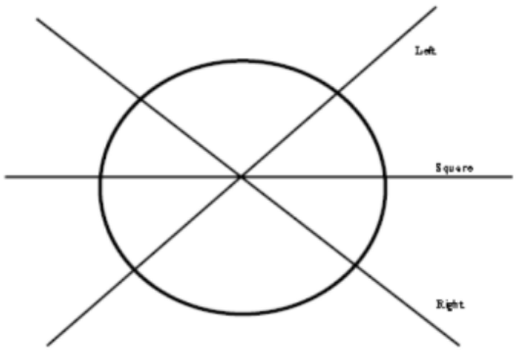
27. Select **“Display Settings”** and Press **“OK”**

28. Enter **Operator’s Name** such as **“Joe G”** and Press **“OK”**

29. Press **“ESC”**  twice to return to operating screen

GRADER SENSOR CALIBRATION TEST

1. **Move Grader to a hard flat surface (concrete or asphalt is preferred)**
2. **Square Blade to and mark ground at each Blade Tip**
3. Press **"Next"**  until **Cross Slope (%)** is displayed
4. ***Square Blade to Chisel Marks***
5. ***Lower the blade to the ground and float the hydraulics***
6. Record **Cross Slope (%)**
7. **Rotate Blade** to the right approx. 30° and float the hydraulics
8. **Rotate Blade** to the left approx. 30° and float the hydraulics
9. **Turn Grader** around and repeat the 3 positions
10. **Cross Slope** accuracy should match readings within +/- 0.2%



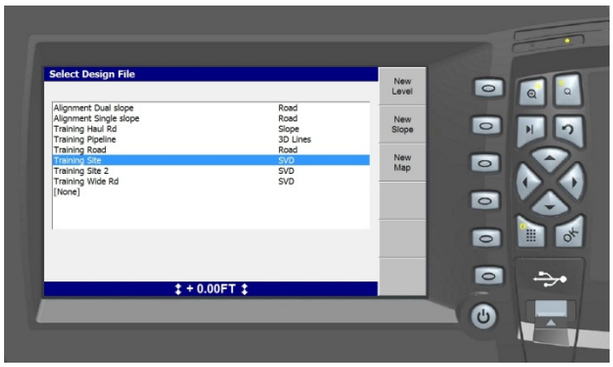
If the readings are greater than +/- 0.2% a new **Sensor Calibration** is required

CHECK BLADE WEAR

1. Press **“Menu”** 
2. Select **“Blade Wear”** and Press **“OK”**
3. Measure from **Center of Cutting Edge Bolts** to **Bottom of Blade**
4. Do not use **Bolt at Blade Tip**
5. Enter **Distance** and Press **“OK”**
6. Press **“ESC”**  to return to operating screen

LOAD DESIGN

1. Press **“Menu”** 
2. Select **“Select Design”** and Press **“OK”**
3. Use Arrows  to highlight **Design** and Press **“OK”**

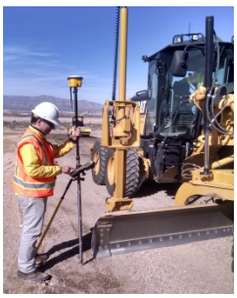


4. Press **“ESC”**  to return to the operating screen

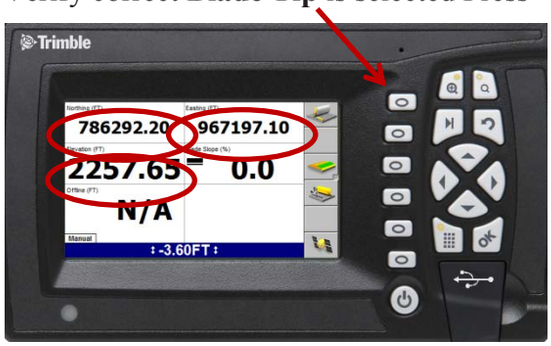
VERIFY GRADER SYSTEM ACCURACY

Verify the system accuracy at the start of each work day using a Permanent Bench Point





1. Move machine to **Bench Point** with the **Blade low to the ground**
2. Position **Blade Tip** over **Bench Point**
3. Press **"Next"**  until **Text Screen 2** is displayed
4. Verify correct **Blade Tip** is selected Press **"F1"** to change **Blade Tip**



5. Verify **Northing, Easting** and **Elevation** are correct **(add distance above Bench Point)**
6. See Supervisor if **Northing** and **Easting** do not match
7. See Supervisor if **Elevation** does not match Press **"Next"** 

VERTICAL OFFSET

1. Press **“F4”**  to enter **Horizontal** and **Vertical Offset**
2. Press **“F6”** until **Vertical Offset** is displayed at the top left of screen
3. **Enter Vertical Offset** and Press “F2”  to select above or below **Design**

4. Press **“OK”** to return to operating screen
5. **Vertical Offset** is displayed at the bottom of the screen

HORIZONTAL OFFSET

1. Press **“F4”**  to enter **Horizontal and Vertical Offset**
2. Press **“F6”** until **Horizontal Offset** is displayed at the top left of screen

3. Press **“F1” Alignment:**
4. Use Arrows  to Select **[Plan Line]** if list is displayed and Press **“OK”**
5. Use Arrows  to Select **Line Offset** and Press **“F1” Select**

HORIZONTAL OFFSET

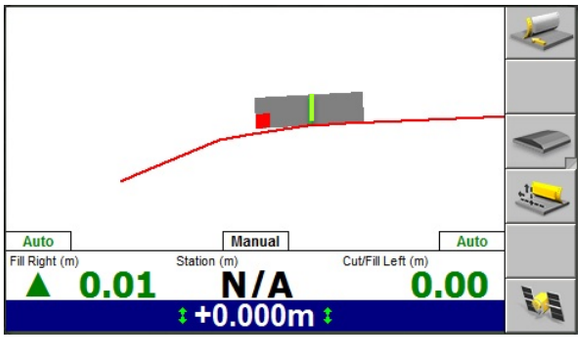
6. Press **“OK”** and enter **Offset distance**

7. Press **“F2”** Select Offset to be **Left** or **Right** of the line **(-3.00 is Left)**
8. Press **“OK”** to return to operating screen

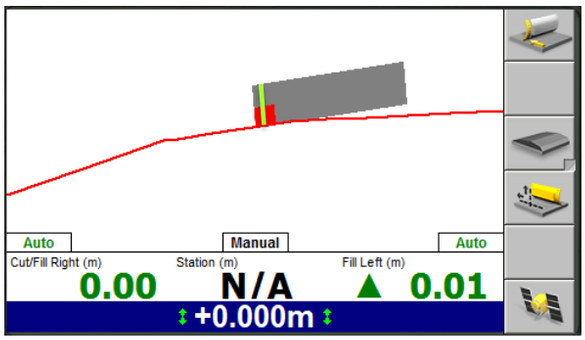
9. **Horizontal Offset** is highlighted in red
10. Press **“F1”**  to change **Blade Left** or **Right**

VERTICAL GUIDANCE

1. Press **“Menu”** 
2. Press **“Guidance Method”** and Press **“OK”**
3. Change **Adjust cut to avoid overcut:** to **“NO”**
4. Press **“F1”** for **Change Method**
5. Select **Method** from list and Press **“OK”**
6. Press **“OK”** to accept change
7. Press **“ESC”**  to return to operating screen



One Point Center is the default setting used for long or wide surfaces. It also allows for shaping crowns by holding the slope past the crown- point.



One Point Focus is used for narrow surfaces such as shoulders or slopes.

CUT AND FILL SITE MAP

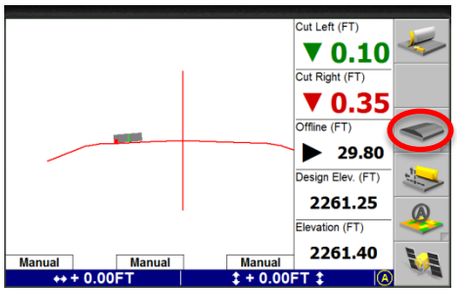
1. Press **“Menu”** and select **“Mapping/Recording Settings”** Press **“OK”**
2. Change **“Mapping for the main screen views”** to **“Yes”** scroll down list
3. Change **“Blade tip mapping”** to **“Auto + forward”** and Press **“OK”**
4. Select **“Main Screen views”** and Press **“OK”**
5. Under **Active views** select **Cut/Fill “Yes”**
6. Under **Main Screen Softkeys** select **Softkey 5 “Mapping On/Off/Auto”** and Press **“OK”**
7. Press **“Esc”** to Main Screen
8. Press **“F5”** until Mapping only in Automatic is displayed
9. Press **“Next”** until **Plan View** with **Cut/Fill Scale** is displayed

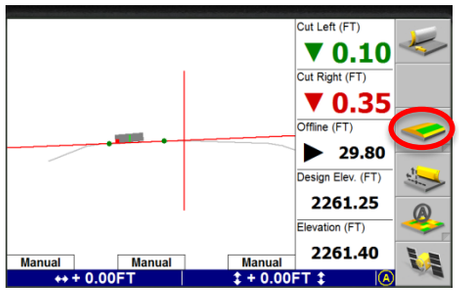
LANE GUIDANCE

1. Move **Blade Tip with Focus** over Lane to be Extended

2. Press **"F3"** for **Lane Guidance**

3. **"F3"** turns **Lane Guidance** Off and On



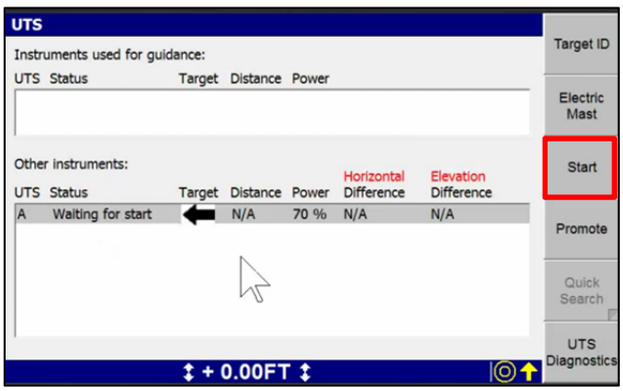


GPS + SONIC SET-UP

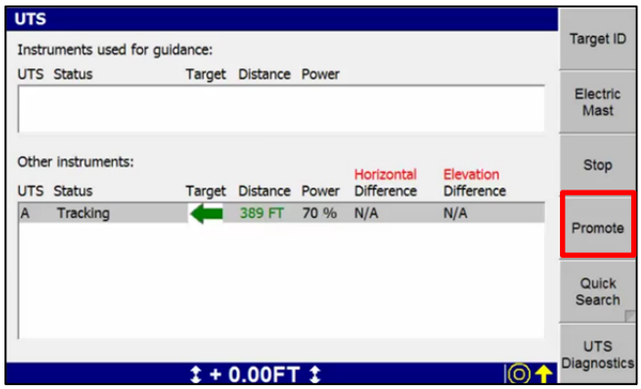
1. Connect Sonic Tracer to Machine
2. Press **“Menu”** 
3. Press **“F4”** repeatedly until “Mode: 3D UTS + Sonic” is displayed
4. Press **“ESC”**  to return to operating screen
5. Press and Hold **“F5 ”**  to enter **Sonic Setup**
6. Lower Blade to finished grade and position **Sonic Tracer** over reference
7. Place 3D side of Blade in **Auto**
8. Press **“F4”** until **Sonic On** is displayed
9. Press **“F5”** to **Bench Sonic Tracer**
10. Press **“ESC”**  to return to operating screen

UTS SET-UP

1. Press **“Menu”** 
2. Press **“F4”Mode** select “**3D UTS”** and Press **“ESC”** 
3. Select **“Calibrate Sensors”** and Press **“OK”**
4. Select **Electric mast(s)** and Press **“OK”**
5. Press **“F6”**  to **Calibrate Mast**
6. Press “F6”  to **Finish**
7. Press **“ESC”**  to return to Configuration screen
8. Press **“F2” “Installation”**
9. Select **“Connectivity Settings”** and Press **“OK”**
10. Select **“Select Radio Band”** and Press **“OK”**
11. Select **“2400 MHz”** and Press **“OK”**
12. Select “**Machine Radio Configuration”** and Press **“OK”**
13. Change **“Channel”** and **“Network ID”** to match UTS and Press **“OK”**
14. Press **“ESC”**  twice to operating screen
15. Press **“F6”**  to **Start UTS**
16. With only one UTS set up, you will see one UTS highlighted in the lower window. Press **“F3”** to **Start** the UTS

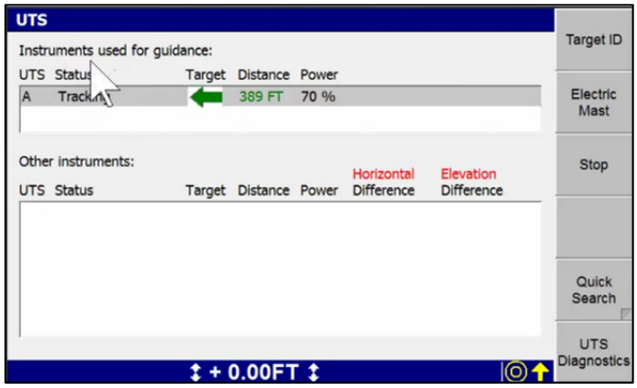


17. Wait a few seconds for the UTS to start up, search and begin tracking. When the Target arrow and Distance value turn green, press **"F4"** to **Promote**.



This moves the UTS into the upper window on the screen.

18. Check to make sure the UTS now appears in the Instruments used for guidance window:



19. Press **"OK"** to return to the main Plan view.

20. Press and Hold 

to open **Bench UTS** screen

Follow instructions to position Blade over Bench Point

21. Enter **Elevation** of **Bench Point**

22. Press **"F5 Left** or **F6 Right"** to **Bench Blade**

Drive to end of work area and check Blade Elevation on a Bench Point to verify Setup

UTS + SONIC SET-UP

1. Connect Sonic Tracer to Machine
2. Press **“Menu”** 
3. Press **“F4”** repeatedly until **“Mode: 3D UTS + Sonic”** is displayed
4. Press **“ESC”**  to return to operating screen
5. Lower Blade to finished grade and position **Sonic Tracer** over reference
6. Place 3D side of Blade in **Auto**
7. Press and Hold **“F5 ”**  to enter **Sonic Setup**
8. Press **“F4”** until **Sonic On** is displayed
9. Press **“F5”**or **“F6”** to **Bench Sonic Tracer**
10. Press **“ESC”**  to return to operating screen

GRADER SENSOR CALIBRATION

The **Control Box** must be in **Manager's Mode**

1. Press **"Menu"** 
2. Select **"Blade Roll"** and Press **"OK"**
3. Select **"Yes"** to allow **Blade Roll** operation and Press **"OK"**
4. Select **"Calibrate Sensors"** and Press **"OK"**
5. Select **"Mainfall, Blade slope, Rotation sensors"** and Press **"OK"**

   Follow the instructions on each screen
6. **Position** and **Mark Blade/Tires** of the Grader

   Use Float Function when positioning blade on ground
7. Press **"Finished"** when complete
8. Select **"Blade Pitch Sensor"** and Press **"OK"**

   Vertically Plumb the Mast and Level Blade with a Spirit Level, Smart Level or Cell Phone App
9. Press **"F6"** or **"OK"** to calibrate
10. Press **"ESC"**  twice to return to operating screen

GRADER LIFT VALUE CALIBRATION

The **Control Box** must be in **Manager's Mode** to perform a **Valve Calibration**

Machine hydraulic oil must be at normal operating temperature and RPMs

1. Press **"Menu"** 
2. Press **"F2"** for **Installation**
3. Select **"Valve Calibration"** and Press **"OK"**
4. Select **Lift valves** and Press **"OK"** (only required if auto Side Shift is installed)
5. Select **"Left"** valve and Press **"OK"**

   Follow the instructions on each screen
6. Press **"OK"** when complete
7. Select **"Right"** valve and **Press "OK"**

   Follow the instructions on each screen
8. Press **"OK"** when complete Press **"ESC"** 
9. Press **"F1" Config**
10. Select **"Save Settings"** and Press **"OK"**
11. Select **"Machine Settings"** and Press **"OK"**
12. Verify **"Name"** of Grader such as "**120M 4403162 GPS"** if **01** is added to the name **erase 01**
13. Press **"OK"** and Press **"ESC"**  twice to return to operating screen

GRADER SIDE SHIFT VALVE CALIBRATION

The **Control Box** must be in **Manager's Mode** to perform a **Valve Calibration**

Machine hydraulic oil must be at normal operating temperature and RPMs

1. Press **"Menu"** 
2. Press **"F2"** for **Installation**
3. Select **"Valve Calibration"** and Press **"OK"**
4. Select **Sideshift valves** and Press **"OK"**
5. **Read Safety Warning** and Press **"OK"**
6. Put **Side-Shift and Lift** to **"Auto"** Press **"OK"**
7. Press **"F1" Left** and Press and Hold **"F6" Test** and record how far the bladed shifted per second
8. Use **Right Arrow to increase speed** and **Left Arrow to decrease speed** 
9. Adjust values until Blade shifts **Left** and **Right** at **25mm** or **1" per second**
10. Press **"OK"** when complete Press **"ESC"**  return to **Configuration Menu**
11. Press **"F1" Config**
12. Select **"Save Settings"** and Press **"OK"**
13. Select **"Machine Settings"** and Press **"OK"**
14. Verify **"Name"** of Grader such as "**120M 4403162 GPS"** if **01** is added to the name **erase 01**
15. Press **"OK"** and Press **"ESC"**  twice to return to operating screen

CONNECT TO WIFI

1. Press “**Menu**” 
2. Press “**F2**” Installation
3. Select “**Connectivity Settings**” then press “**OK**”
4. Select “**Wi-Fi Network**” then press “**OK”**
5. Press “**F1**” New
6. Select the Wi-Fi you wish to connect to press “**OK**”
7. Enter **“Pass Phrase”**
8. Press **“F6”** 
9. Press **“F6”** Finish
10. Select the Wi-Fi to connect to Press **“OK”**
11. Press  2 times to return to the main menu

1. Press "**Menu**" 
2. Press "**F2"** Installation
3. Select "**Connectivity Settings**" then press "**OK**"
4. Select "**Connected Community Settings**" then press "**OK**"
5. Enter "**Device Password**" then press "**Next**" 
6. Enter "**Organization**" then press "**Next**" 
7. "**Filespace** and **Work Group Folder**" should be left to default
8. Press "**OK**"
9. Press  2 times to return to them main screen

CONFIGURE REMOTE ASSISTANT

1. Press "**Menu**" 
2. Press "**F2" Installation**
3. Select "**Connectivity Settings**" then press "**OK**"
4. Select "**Remote Assistant Configuration**" then press "**OK**"
5. Enter "**Support Number**"
6. Press "**F1**" Force Upgrade
7. Press "**OK**"
8. Press  2 times to return to them main screen

WIRELESS DATA SYNC

1. Press “**Menu**” 
2. Press “**F2**” Installation
3. Select “**Connectivity Settings**” then press “**OK**”
4. Select “**Wireless Data Sync**” then press “**OK**”
5. Press “**F1**” Start
6. When synchronization is complete Press “**ESC**”  3 times to operating screen

START REMOTE ASSISTANT

1. Press "**Menu**" 
2. Select "**Remote Assistant**" then press "**OK**"
3. Press "**F1**" Start
4. Once  icon appears at the bottom of the screen the machine is connected
5. Press "**ESC"** 2 times  to return to them main screen

CONNECT TO IBSS BASE STATION

The Control Box must be in Manager's Mode

1. Press **"Menu"** 
2. Press "**F2"** Installation
3. Select "**Connectivity Settings**" then press "**OK**"
4. Select "**GNSS Base Configuration**" then press **"OK"**
5. Select "**IBSS-Remote Base**"
6. Press "**F1**" **Create New**
7. Device Password and Organization should be populated if not see (TCC Settings Sheet)
8. Press **"F6"**
9. Select the Base from list and Press **"F6"**
10. Review **IBSS Base Name** and Press **"F6" Finish**
11. Select **"IBSS - Remote Base"**
12. Use left or right arrow keys to select correct base name and Press "**OK**"
13. Press  2 times to return to operating screen

Notes:

Notes:

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