DIAMONDMOWERS.COM

PRODUCT INFORMATION

Record the model and order number of your unit here. When calling for warranty, service or parts, you may be asked to provide this information, in order to ensure fast, accurate service.

MODEL: IBC Smart Screen

ORDER NUMBER: _____

WELCOME!

Thank you for choosing Diamond Mowers®, and welcome to your IBC (Integrated Boom Controls) Smart Screen. Before you begin operating, we encourage you to look through this manual to review the proper maintenance and operating techniques that will keep you, and your equipment, safe – while ensuring you the most productive attachment in the market.

We have nothing but respect and admiration for you. Our job at Diamond® is to provide you with the toughest, most reliable and safest equipment that will allow you to do your job better. That also means being there when you need us.

CONTACT US:

Parts: 888.960.0361 **|** parts@diamondmowers.com
Warranty / Service: 888.960.0364 **|** warranty@diamondmowers.com
Main Office: 800.658.5561 **|** 605.977.3300
Website: www.diamondmowers.com **|** **Email**: info@diamondmowers.com

Your time is important to us.
We guarantee that Genuine Diamond Parts will ship within 72-hours of the order being placed or the parts and shipping are free.

Thanks again for choosing Diamond.
If at any time your needs are not being met, please feel free to contact anyone in our executive team.

PRODUCT REGISTRATION

OWNER REGISTRATION

In your welcome packet you should have received a warranty registration form. Complete and return this form to our main office. It's a self-mailer, so no postage is required.

If you'd rather complete this info online, go to: http://info.diamondmowers.com/register-my-product

Returning your registration information to Diamond will help us process any warranty claims quickly and efficiently – so you can get back to work, fast.

TRANSFERRED OWNERSHIP

If you have acquired this IBC Smart Screen from a previous owner, we encourage you to register your equipment online. By registering your Diamond Mowers unit, you'll stay informed on product advancements, offers and service alerts.

Register by going to: http://info.diamondmowers.com/register-my-product

We honor our equipment's warranty from the date it was put into service, no matter who's in charge of running it.

For any questions, contact our Warranty / Service team at: 888.960.0364 or 605.977.3300 or
warranty@diamondmowers.com

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INTENDED USE

The IBC Smart Screen is designed to be used for monitoring the IBC Joystick and lift valve system and its parameters for tractor mounted boom applications..

Authorized Diamond implements include:

- Boom mounted mowers / implements (tractor mid-mounted only)

This device should only be used with Diamond's IBC Joystick and lift valve system, tractor mid-mounted configurations for boom implements. Any use on non-Diamond implements, is strictly prohibited. Any use outside of the aforementioned application is considered contrary to its intended use. Any damage that may occur as a result of misuse will void warranty as stated in Diamond Mowers' warranty policy.

> **NOTICE**
>
> Do not operate this attachment without first reading the operating instructions and safety precautions in this manual.

TAKE A LOOK AROUND

IBC SMART SCREEN
Intelligently designed smart screen interface allows the operator to quickly configure and monitor the status of the entire IBC system, including the joystick, mower operational controls, lift valves, and cooling system. The IBC Smart Screen can even diagnose malfunctions and errors that could potentially occur within the IBC system.


WIRING HARNESS
The IBC Smart Screen comes with a single plug and play wiring harness that easily connects your smart screen to your existing IBC Joystick wiring harness.

ADJUSTABLE MOUNT
The IBC Smart Screen comes with an adjustable mount, which allows for a variety of positions and orientations for the operator, and also facilitates a quick and easy installation.
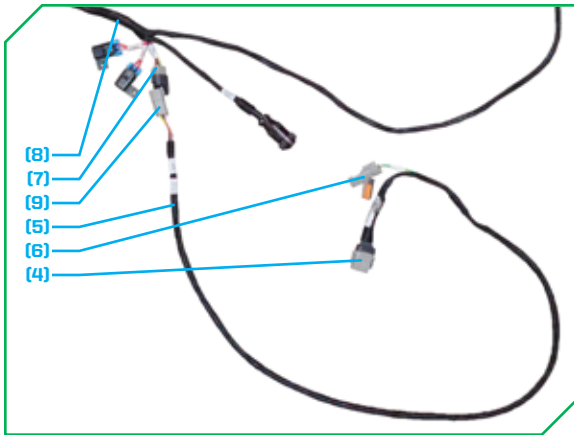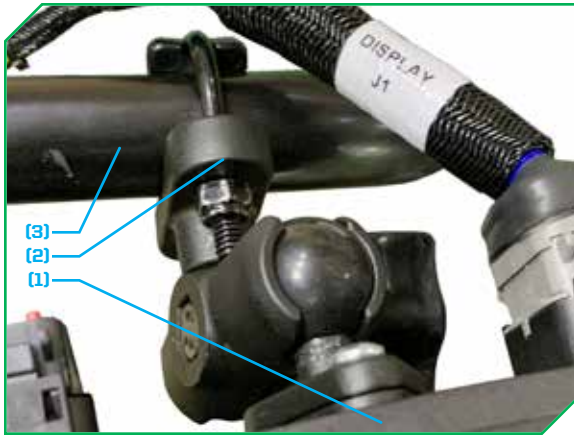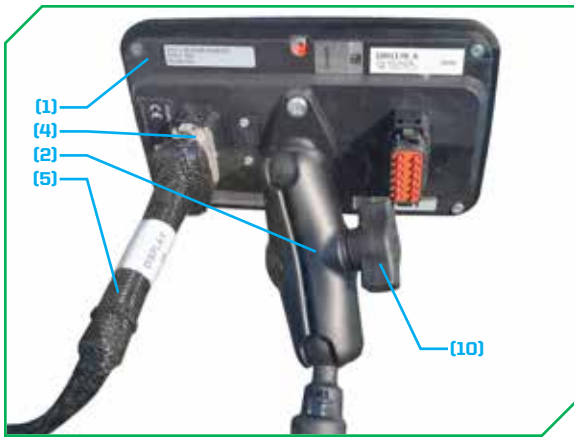
INSTALLATION

Reference your parts book for additional clarification.

- Assemble the adjustable mount$_{(2)}$ to the back of the IBC smart screen display$_{(1)}$ with its hardware as illustrated.

- Assemble the adjustable mount$_{(2)}$ to the tractor's door hand rail$_{(3)}$ with its U-clamp and hardware as illustrated.

- Plug the connector$_{(4)}$ labeled "**DISPLAY J1**" of the IBC smart screen harness$_{(5)}$ into the back of the smart screen display$_{(1)}$ as illustrated.
  - **NOTE:** The connector$_{(6)}$ illustrated below will not be used; tie and secure this connector to the IBC smart screen harness$_{(5)}$.

- Locate the connector$_{(7)}$ labeled "**SERVICE TOOL**" of the IBC joystick harness$_{(8)}$ (already installed in your tractor) and remove its black protective cap.
  - **NOTE:** This device is not compatible with any other system other than the IBC Joystick system.

- Plug the connector$_{(9)}$ from the IBC smart screen harness$_{(5)}$ into the connector$_{(7)}$ labeled "**SERVICE TOOL**" of the IBC joystick harness$_{(8)}$.

- Slightly loosen the thumb screw$_{(10)}$ on the adjustable mount$_{(2)}$ and adjust the IBC smart screen display$_{(1)}$ for the optimum position for the operator; tighten the thumb screw$_{(10)}$ to lock the IBC smart screen display$_{(1)}$ in position.

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OPERATING THE IBC SMART SCREEN

- Hard keys(1) are labeled **(F1-F8)** as illustrated at left.
- When the tractor's ignition is turned on, the display will boot up.
  - LED backlighting of the hard keys(1) **(F1-F8)** will flash on and off at approximately 2 Hz.
  - The Diamond Logo appears approximately (5) seconds after the display is turned on and will remain on through the boot / startup process.
  - There are no operable buttons / controls during the boot / startup process.
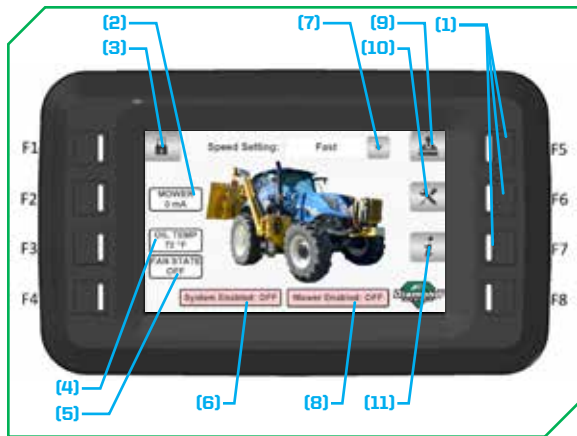
HOME SCREEN

When the IBC Smart Screen display has finished booting up, it will switch to the "Home Screen" as illustrated at left.

- Navigation / monitoring / settings options:
  - Padlock(3) button (smart screen display **ONLY**) - Opens a number touchpad allowing the user to enter a 5-digit passcode to navigate to the **MOWER SETTINGS SCREEN**.
    - If the passcode is incorrect, a **RED** "Invalid Passcode" banner will appear for (2) seconds.
  - Speed Setting button(7) - Pressing this button will drop down a menu where the speed (fast, medium, slow) may be selected.
  - System Enabled OFF / ON(6) - Indicates if the system is active or not; the button will be **RED** when **OFF**, and **GREEN** when **ON**.
  - Mower Enabled OFF / ON(8) - Indicates if the mower is enabled or not; the button will be **RED** when **OFF**, and **GREEN** when **ON**.
  - Joystick(9) button (or hard key(1) **F5**) - Opens the **JOYSTICK STATUS SCREEN**.
  - Maintenance(10) button (or hard key(1) **F6**) - Opens the **SYSTEM DIAGNOSTICS SCREEN** - This button will flash **RED** if any errors are detected in the control system.
  - Information(11) button (or hard key(1) **F7**) - Opens the **SYSTEM INFORMATION SCREEN**.

- Monitoring / status information:
  - E-Stop Banner(12) - When the E-Stop button has been pressed, a **RED** banner will appear stating it is pressed and to lift the button to continue.
  - Mower(2) - Indicates the measured current feedback (milliamps) of the coil on the mower valve.
  - Oil Temp(4) - Indicates the hydraulic oil temperature (°F).
    - If the temperature exceeds 200°F, the box will flash **RED** and be accompanied by an audible buzzer.
    - The buzzer will sound (6X - 500ms **ON** / 500ms **OFF**) and repeat every (5) minutes as long as the temperature exceeds 200°F.
  - Fan State(5) - Indicates the current status of the cooling fan.
    - This box will either state **OFF**, **FORWARD**, or **REVERSE**.
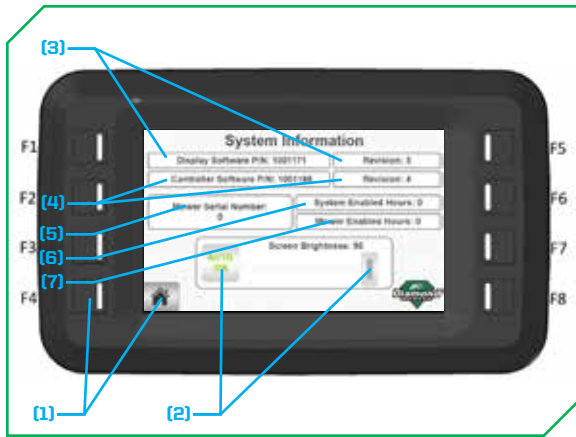
OPERATING THE IBC SMART SCREEN

The "System Information" screen allows the user to view the current software revisions of the IBC smart screen and controller, the serial number of the mower, and system hours.

- Navigation / monitoring / settings options:
  - Home$_{(1)}$ button (or hard key$_{(1)}$ F4) - Opens the **HOME SCREEN**.
  - Brightness AUTO / MANUAL$_{(2)}$ button (smart screen display **ONLY**) - Controls the display screen brightness.
    - **AUTO ON** will allow the display to automatically adjust the screen brightness to the ambient lighting conditions.
    - **AUTO OFF** allows the operator to use the slider$_{(2)}$ button to adjust the display screen brightness manually between 20% minimum to 100% maximum brightness.

- Monitoring / status information:
  - Display Software P / N & Revision$_{(3)}$ - Indicates the IBC smart screen display software part number and revision level.
  - Controller Software P / N & Revision$_{(4)}$ - Indicates the controller software part number and revision level.
  - Mower Serial Number$_{(5)}$ - Indicates the serial number of the mower.
  - System Enabled Hours$_{(6)}$ - Indicates the the total number of hours the system has been enabled.
  - Mower Enabled Hours$_{(7)}$ - Indicates the the total number of hours the mower has been enabled (running).
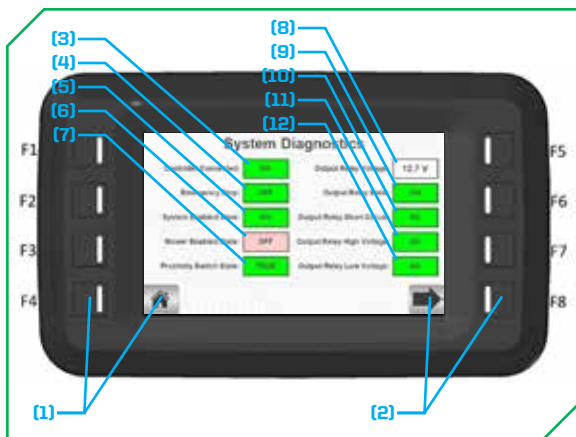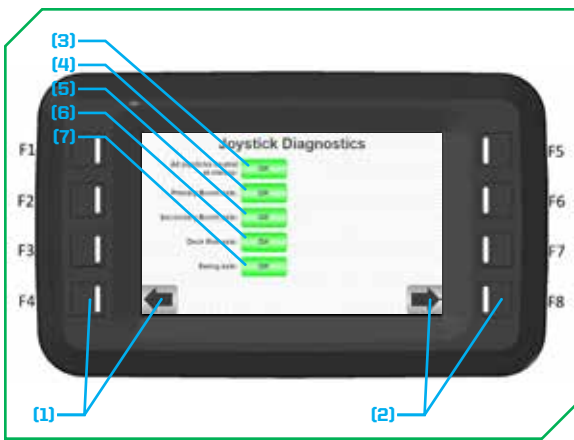
The "System Diagnostics" screen allows the user to view diagnostic information about the IBC controller, as well as the state of the system enable, E-Stop, mower, and proximity switch (travel rest **ONLY**).

- Navigation / monitoring / settings options:
  - Home$_{(1)}$ button (or hard key$_{(1)}$ F4) - Opens the **HOME SCREEN**.
  - Next screen$_{(2)}$ button (or hard key$_{(2)}$ F8) - Opens the **JOYSTICK DIAGNOSTICS SCREEN** - The next screen$_{(2)}$ button will flash **RED** if any joystick or valve coil errors are detected.

- Monitoring / status information:
  - Controller Connected$_{(3)}$ (**OK** = **GREEN** / **ERROR** = **RED**) - Indicates communication between the IBC smart screen and the IBC controller.
    - If the IBC controller is **NOT** connected, an additional flashing banner will appear at the bottom of the screen.
  - Emergency Stop$_{(4)}$ (**OFF** = **GREEN** / **ON** = **RED**) - Indicates the status of the E-Stop button.
    - **OFF** means the E-Stop is reset (not pressed down).
    - **ON** means the E-Stop is engaged (pressed down).
  - System Enabled State$_{(5)}$ (**ON** = **GREEN** / **OFF** = **RED**) - Indicates if the electronic control system is engaged.
  - Mower Enabled State$_{(6)}$ (**ON** = **GREEN** / **OFF** = **RED**) - Indicates if the mower has been enabled (running).
  - Proximity Switch State$_{(7)}$ (**TRUE** = **GREEN** / **FALSE** = **RED**) - Indicates if the proximity switch (travel rest **ONLY**) has been engaged.
    - The proximity switch (when engaged) reduces power / hydraulic force to the boom arms to prevent damage to the travel rest.

- Output Relay Voltage[8] - Indicates the supplied voltage at the IBC controller output relay, indicating what voltage is being supplied to the controller.
  - Voltage is displayed in 0.1VDC increments.
- Output Relay State[9] (ON = **GREEN** / OFF = **RED**) - Indicates the state of the IBC controller output relay.
  - This indicator is directly affected by the state of the E-Stop.
- Output Relay Short Circuit[10] (OK = **GREEN** / ERROR = **RED**) - Indicates if a short circuit event has occured at the IBC controller output relay.
- Output Relay High Voltage[11] (OK = **GREEN** / ERROR = **RED**) - Indicates if a high voltage event (>32VDC) has occured at the IBC controller output relay.
- Output Relay Low Voltage[12] (OK = **GREEN** / ERROR = **RED**) - Indicates if a low voltage event (<8VDC) has occured at the IBC controller output relay that could **NOT** automatically be reset when the supply voltage returned to a nominal level (i.e. 12VDC).
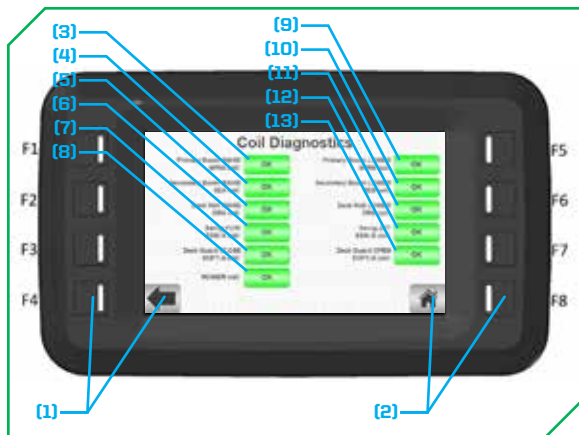

JOYSTICK DIAGNOSTICS SCREEN

The "Joystick Diagnostics" screen allows the user to view diagnostic information about the IBC joystick and directly access the "Joystick Status" display screen.

- Navigation / monitoring / settings options:
  - Back screen[1] button (or hard key[1] **F4**) - Opens the **SYSTEM DIAGNOSTICS SCREEN** - The back screen[2] button will flash **RED** if any IBC controller errors are detected.
  - Next screen[2] button (or hard key[2] **F8**) - Opens the **COIL DIAGNOSTICS SCREEN** - The next screen[2] button will flash **RED** if any valve coil errors are detected.

- All Joysticks Neutral At Startup[3] (OK = **GREEN** / ERROR = **RED**) - Indicates if all (4) of the joystick axis are or are not at their neutral position when the system is powered on.
  - Pressing the button[3] will open the **JOYSTICK STATUS SCREEN**.
- Primary Boom Axis[4] (OK = **GREEN** / ERROR = **RED**) - Indicates if the input signal from the joystick Y-axis is within acceptable range (0.5 - 4.5VDC).
  - Pressing the button[4] will open the **JOYSTICK STATUS SCREEN**.
- Secondary Boom Axis[5] (OK = **GREEN** / ERROR = **RED**) - Indicates if the input signal from the joystick X-axis is within acceptable range (0.5 - 4.5VDC).
  - Pressing the button[5] will open the **JOYSTICK STATUS SCREEN**.
- Deck Roll Axis[6] (OK = **GREEN** / ERROR = **RED**) - Indicates if the input signal from the joystick deck roller switch is within acceptable range (0.5 - 4.5VDC).
  - Pressing the button[6] will open the **JOYSTICK STATUS SCREEN**.
- Swing Axis[7] (OK = **GREEN** / ERROR = **RED**) - Indicates if the input signal from the joystick swing roller switch is within acceptable range (0.5 - 4.5VDC).
  - Pressing the button[7] will open the **JOYSTICK STATUS SCREEN**.

OPERATING THE IBC SMART SCREEN


COIL DIAGNOSTICS SCREEN

The "Coil Diagnostics" screen allows the user to view diagnostic information about the valve coils (controller outputs) and directly access either the "Coil Status Front" display screen or "Coil Status Rear" display screen.

- Navigation / monitoring / settings options:
  - Back screen$_{(1)}$ button (or hard key$_{(1)}$ F4) - Opens the **JOYSTICK DIAGNOSTICS SCREEN** - The back screen$_{(2)}$ button will flash **RED** if any IBC joystick or IBC controller errors are detected.
  - Home$_{(2)}$ button (or hard key$_{(2)}$ F8) - Opens the **HOME SCREEN**.

- Primary Boom RAISE SPRA coil$_{(3)}$ (**OK** = **GREEN** / **ERROR** = **OPEN CIRUIT** or **SHORT CIRCUIT** = **RED**).
  - Pressing the button$_{(3)}$ will open the **COIL STATUS REAR SCREEN**.

- Seconday Boom RAISE SEA coil$_{(4)}$ (**OK** = **GREEN** / **ERROR** = **OPEN CIRUIT** or **SHORT CIRCUIT** = **RED**).
  - Pressing the button$_{(4)}$ will open the **COIL STATUS FRONT SCREEN**.

- Deck Roll RAISE DRA coil$_{(5)}$ (**OK** = **GREEN** / **ERROR** = **OPEN CIRUIT** or **SHORT CIRCUIT** = **RED**).
  - Pressing the button$_{(5)}$ will open the **COIL STATUS FRONT SCREEN**.

- Swing FORE SSW-A coil$_{(6)}$ (**OK** = **GREEN** / **ERROR** = **OPEN CIRUIT** or **SHORT CIRCUIT** = **RED**).
  - Pressing the button$_{(6)}$ will open the **COIL STATUS REAR SCREEN**.

- Deck Guard (5th spool option) CLOSE SOPT-A coil$_{(7)}$ (**OK** = **GREEN** / **ERROR** = **OPEN CIRUIT** or **SHORT CIRCUIT** = **RED**).
  - NOTE: This button is only visible if the 5th option is enabled; in the event the 5th option is not utilized, an error code will be generated that can be ignored.
  - Pressing the button$_{(7)}$ will open the **COIL STATUS REAR SCREEN**.

- Mower coil$_{(8)}$ (**OK** = **GREEN** / **ERROR** = **OPEN CIRUIT** or **SHORT CIRCUIT** = **RED**).
  - Pressing the button$_{(8)}$ will open the **HOME SCREEN**.

- Primary Boom LOWER SPRB coil$_{(9)}$ (**OK** = **GREEN** / **ERROR** = **OPEN CIRUIT** or **SHORT CIRCUIT** = **RED**).
  - Pressing the button$_{(9)}$ will open the **COIL STATUS REAR SCREEN**.

- Seconday Boom LOWER SEB coil$_{(10)}$ (**OK** = **GREEN** / **ERROR** = **OPEN CIRUIT** or **SHORT CIRCUIT** = **RED**).
  - Pressing the button$_{(10)}$ will open the **COIL STATUS FRONT SCREEN**.

- Deck Roll LOWER DRB coil$_{(11)}$ (**OK** = **GREEN** / **ERROR** = **OPEN CIRUIT** or **SHORT CIRCUIT** = **RED**).
  - Pressing the button$_{(11)}$ will open the **COIL STATUS FRONT SCREEN**.

- Swing AFT SSW-B coil$_{(12)}$ (**OK** = **GREEN** / **ERROR** = **OPEN CIRUIT** or **SHORT CIRCUIT** = **RED**).
  - Pressing the button$_{(12)}$ will open the **COIL STATUS REAR SCREEN**.

- Deck Guard (5th spool option) OPEN SOPT-B coil$_{(13)}$ (**OK** = **GREEN** / **ERROR** = **OPEN CIRUIT** or **SHORT CIRCUIT** = **RED**).
  - NOTE: This button is only visible if this option is enabled.
  - Pressing the button$_{(3)}$ will open the **COIL STATUS REAR SCREEN**.

NOTE: **OPEN CIRUIT** errors will automatically reset as soon as the physical issue is resolved and the output is activated.

NOTE: **SHORT CIRUIT** errors will automatically attempt to reset a total of (5) times as soon as the error is detected. If the error is not able to be reset automatically, the physical issue has to be resolved and then a power cycle must be completed for the error to reset.

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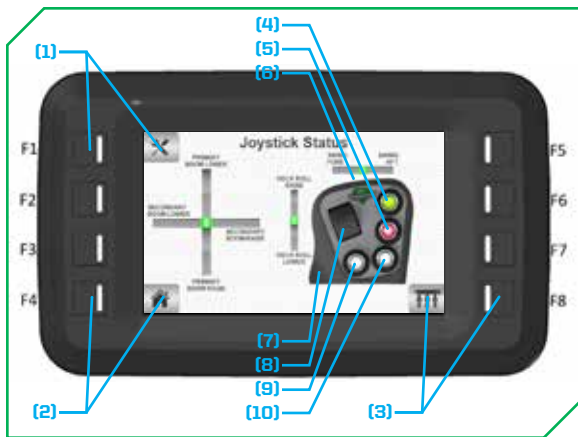
The "Joystick Status" screen allows the user to view real-time animated input signals coming from the IBC joystick. This screen also serves as a reference for which joystick axis or button controls which function.

- ○ **NOTE:** If the E-Stop is pressed or the system is disabled, joysticks signals can still be viewed in real-time, which can be useful in diagnosing joystick input signals without actuating hydraulic functions.

- ○ **NOTE:** Moving any of the proportional axis on the joystick will cause the corresponding bar on the display screen to fill with a green color depending on how far the axis is moved.
  If a proportional axis is at its neutral position, the center mark of the corresponding bar will turn green (see upper illustration). If any proportional axis has an error, the corresponding bar on the screen will turn red (see lower illustration).

- Navigation / monitoring / settings options:
  - ○ Maintenance$_{(1)}$ button (or hard key$_{(1)}$ **F1**) - Opens the **JOYSTICK DIAGNOSTICS SCREEN**.
  - ○ Home$_{(2)}$ button (or hard key$_{(2)}$ **F4**) - Opens the **HOME SCREEN**.
  - ○ Valve$_{(3)}$ button (or hard key$_{(3)}$ **F8**) - Opens the **COIL STATUS FRONT SCREEN**.
  - ○ System Enable$_{(4)}$ button - Pressing the button on the joystick will cause the corresponding button on the screen to light up **GREEN**.

- ○ Mower ON / OFF$_{(5)}$ button - Pressing the button on the joystick will cause the corresponding button on the screen to light up **RED**.

- ○ Swing$_{(6)}$ roller switch - Operates the proportional axis for swing **FORE** and swing **AFT**.

- ○ Joystick$_{(7)}$ handle - Operates the proportional axis for primary boom **LOWER** and primary boom **RAISE**, and secondary boom **LOWER** and secondary boom **RAISE**.

- ○ Deck Roll$_{(8)}$ roller switch - Operates the proportional axis for deck roll **RAISE** and deck roll **LOWER**.

- ○ Deck Guard (optional 5th spool) CLOSE$_{(9)}$ button - Pressing the button on the joystick will cause the corresponding button on the screen to light up **WHITE**.

- ○ Deck Guard (optional 5th spool) OPEN$_{(10)}$ button - Pressing the button on the joystick will cause the corresponding button on the screen to light up **WHITE**.
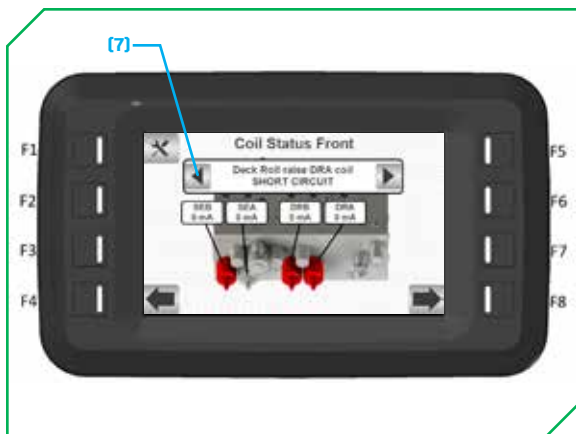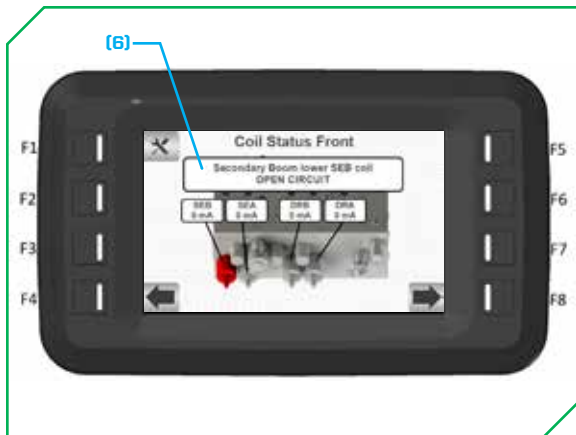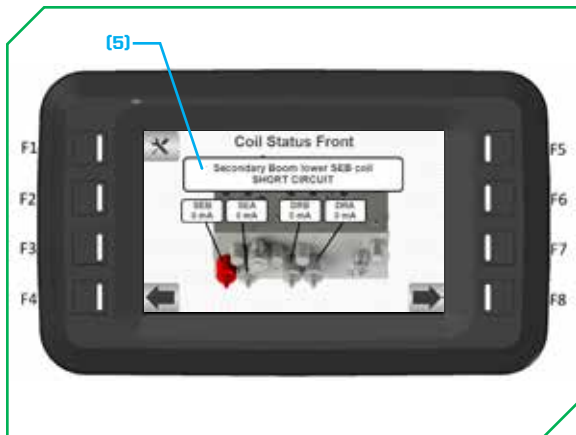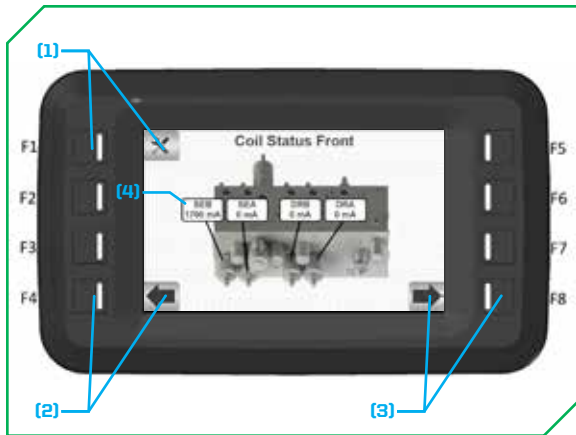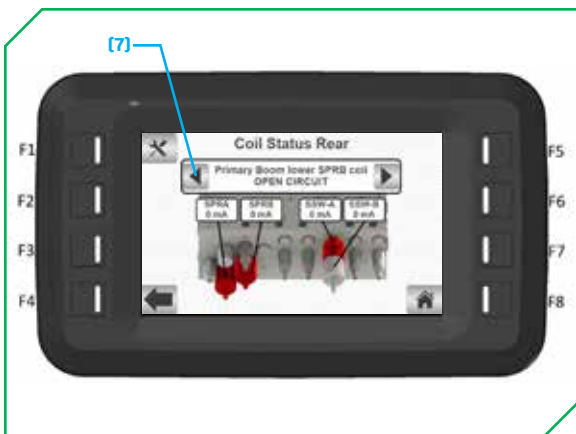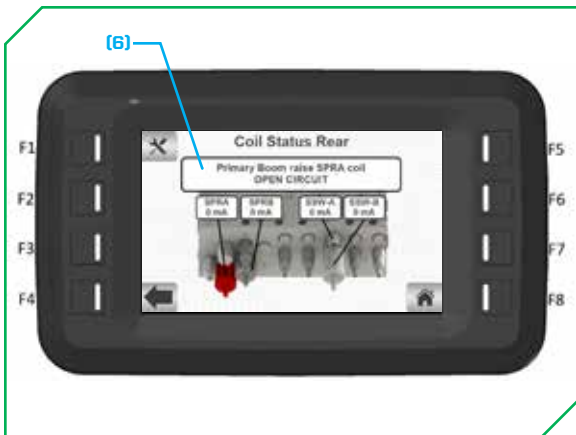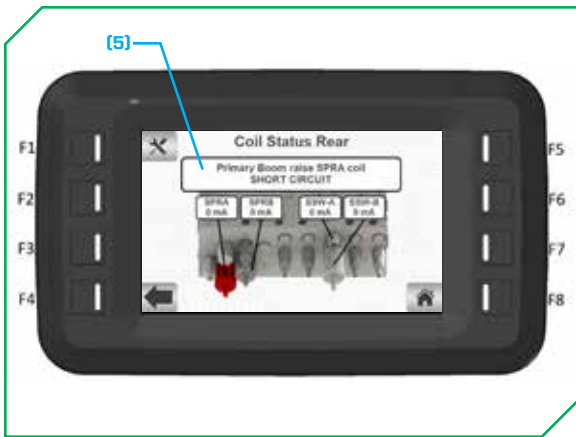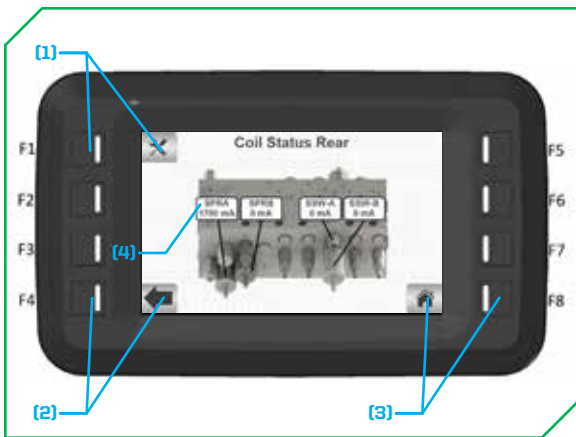
OPERATING THE IBC SMART SCREEN

The "Coil Status Front" screen allows the user to view coil current feedback and coil diagnostic information for valves located on the front side of the hydraulic valve manifold.

- Navigation / monitoring / settings options:
  - Maintenance[1] button (or hard key[1] **F1**) - Opens the **COIL DIAGNOSTICS SCREEN**.
  - Back screen[2] button (or hard key[2] **F4**) - Opens the **JOYSTICK STATUS SCREEN**.
  - Next screen[3] button (or hard key[3] **F8**) - Opens the **COIL STATUS REAR SCREEN**.

- Monitoring / status information:
  - Output Current Feedback[4] - Indicates output current to each valve coil listed on the "Coil Status Front" screen along with its name (i.e. SEB). The current is measured in milliamps (mA).
  - Output Short Circuit[5] - Indicates a short circuit has been detected at an output; a banner will appear. Valve on 3D model: (**OK** = **NO COLOR** / **ERROR** = **RED**).
  - Output Open Circuit[6] - Indicates an open circuit has been detected at an output; a banner will appear. Valve on 3D model: (**OK** = **NO COLOR** / **ERROR** = **RED**).

NOTE: If multiple short / open circuit errors are detected at the same time, all of the applicable valve coils will turn red and the banner that appears will have left / right arrows[7] that allow the operator to cycle through the active errors.

NOTE: Short circuit errors, once physically resolved, require a power cycle to clear from the control system.

NOTE: Open circuit errors, once physically resolved, do **NOT** require a power cycle to clear from the control system. Operate the function as normal and if a current measurement is registered, the error will clear automatically.

The "Coil Status Front" screen allows the user to view coil current feedback and coil diagnostic information for valves located on the rear side of the hydraulic valve manifold.

- Navigation / monitoring / settings options:
  - Maintenance[1] button (or hard key[1] **F1**) - Opens the **COIL DIAGNOSTICS SCREEN**.
  - Back screen[2] button (or hard key[2] **F4**) - Opens the **JOYSTICK STATUS SCREEN**.
  - Home screen[3] button (or hard key[3] **F8**) - Opens the **HOME SCREEN**.

- Monitoring / status information:
  - Output Current Feedback[4] - Indicates output current to each valve coil listed on the "Coil Status Rear" screen along with its name (i.e. SPRA). The current is measured in milliamps(mA).
  - Output Short Circuit[5] - Indicates a short circuit has been detected at an output; a banner will appear. Valve on 3D model: (**OK** = **NO COLOR** / **ERROR** = **RED**).
  - Output Open Circuit[6] - Indicates an open circuit has been detected at an output; a banner will appear. Valve on 3D model: (**OK** = **NO COLOR** / **ERROR** = **RED**).

NOTE: If multiple short / open circuit errors are detected at the same time, all of the applicable valve coils will turn red and the banner that appears will have left / right arrows[7] that allow the operator to cycle through the active errors.

NOTE: Short circuit errors, once physically resolved, require a power cycle to clear from the control system.

NOTE: Open circuit errors, once physically resolved, do **NOT** require a power cycle to clear from the control system. Operate the function as normal and if a current measurement is registered, the error will clear automatically.
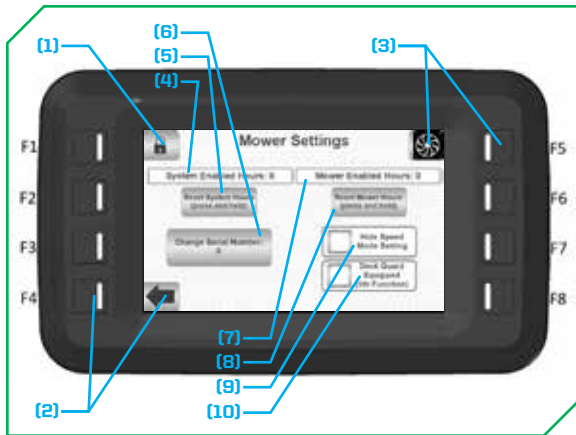
OPERATING THE IBC SMART SCREEN

The "Mower Settings" screen is passcode-protected and allows authorized users to view and adjust certain parameters. This screen also provides access to more advanced settings via another passcode entry.

- **NOTE:** There are (2) levels of passcode-protected screens. The first-level is for dealers / service technicians that need to adjust cooling fan settings, reset system / mower hours (non-lifetime hour counters), or change the serial number. The second-level is for Diamond personnel **ONLY** that need to adjust axis / worksection parameters or reset lifetime hour counters.

- Navigation / monitoring / settings options:

- Padlock(1) button (smart screen display **ONLY**) - Opens a number touchpad allowing the user to enter a 8-digit passcode to navigate to the **AXIS PARAMETERS SCREEN**.
    - If the passcode is incorrect, a **RED** "Invalid Passcode" banner will appear for (2) seconds.

- Back screen(2) button (or hard key(2) **F4**) - Opens the **HOME SCREEN**.

- Fan Settings screen(3) button (or hard key(3) **F5**) - Opens the **COOLING FAN SETTINGS SCREEN**.

- Change Serial Number(6) button - Opens a number touchpad allowing the user to enter or edit the serial number of the machine; this will display on the **SYSTEM INFORMATION SCREEN**, though it is not editable on that screen.

- Hide Speed Mode Setting(9) button - This option will hide the speed mode setting menu on the **HOME SCREEN**.

- Deck Guard Equipped (5th Function)(10) button - This option enables the deck guard open / close functions via the joystick push buttons; when selected, the additional coils are shown in the **COIL DIAGNOSTICS SCREEN**.

- System Enabled Hours(4) field - Indicates how many hours the control system has been enabled; this value can be reset to (0) hours if the Reset System Hours button(5) immediately below is pressed and held.

- Mower Enabled Hours(7) field - Indicates how many hours the control system has been enabled; this value can be reset to (0) hours if the Reset Mower Hours button(8) immediately below is pressed and held.
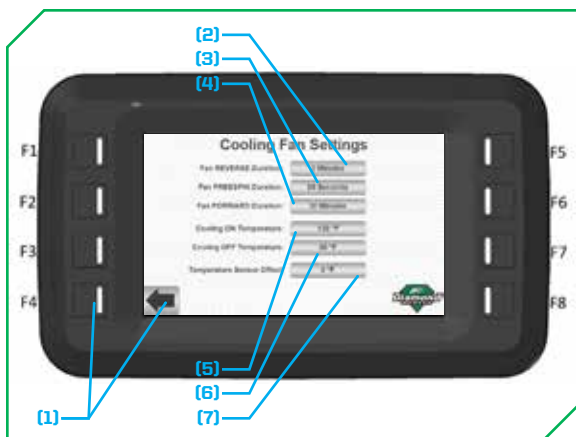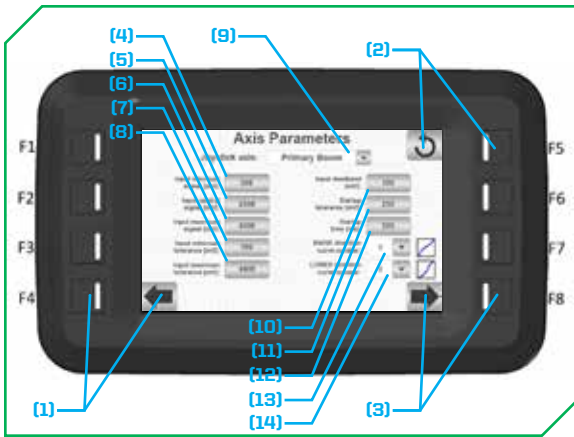
The "Cooling Fan Settings" screen allows authorized users to change parameters of the automated cooling fan operation.

- Navigation / monitoring / settings options:
    - Back screen(1) button (or hard key(2) **F4**) - Opens the **MOWER SETTINGS SCREEN**.

    - Fan REVERSE Duration(2) - Indicates how long the fan runs in the reverse direction at the beginning of each cooling cycle.
        - Pressing the field will open a number touchpad, allowing new values to be entered; each field has specific high / low limits.

- NOTE: Pressing any of the fields listed below will open a number touchpad, allowing new values to be entered; each field has specific high / low limits.

- Fan FREESPIN Duration(3) - how long the fan freespins between reverse and forward spinning operations.

- Fan FORWARD Duration(4) - Indicates how long the fan runs in the forward direction each cooling cycle.

- Cooling ON Temperature(5) - Indicates hydraulic oil temperature at which a cooling cycle is started.

- Cooling OFF Temperature(6) - Indicates hydraulic oil temperature at which a cooling cycle ends (cycle will repeat otherwise).

- Temperature Sensor Offset(7) - Allows a +/- offset to be applied to the temperature sensor value.
   - NOTE: This should remain at 0°F except for rare circumstances or troubleshooting.

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The "Axis Parameters" screen allows authorized users to adjust IBC joystick parameters for individual functions with proportional control features.

- Navigation / monitoring / settings options:
  - Back screen[1] button (or hard key[1] **F4**) - Opens the **MOWER SETTINGS SCREEN**.
  - Reset[2] button (or hard key[2] **F5**) - Opens a dialog box[15] to reset all axis and worksection parameters to their default values with a user confirmation.
  - Next screen[3] button (or hard key[3] **F8**) - Opens the **WORKSECTION PARAMETERS SCREEN**.
- **NOTE:** Pressing any of the fields or drop down menus listed below allows the user to change settings for the selected joystick axis. The selected joystick axis can be changed using the drop down menu[9]. Each axis has identical sets of adjustable parameters.
  - Input minimum signal (mV)[4] - Indicates the expected minimum signal value of the axis.
  - Input neutral signal (mV)[5] - Indicates the expected signal value when the axis is at its neutral position.
  - Input maximum signal (mV)[6] - Indicates the expected maximum signal value of the axis.
  - Input minimum tolerance (mV)[7] - Indicates the minimum signal value before an axis range error appears.
  - Input maximum tolerance (mV)[8] - Indicates the maximum signal value before an axis range error appears.
  - Input deadband (mV)[10] - Indicates the amount of signal value around the neutral position that the axis can be moved before the associated hydraulic function starts operating (i.e. 100mV deadband = 50mV of deadband on either side of neutral).
  - Startup tolerance (mV)[11] - Indicates hydraulic oil temperature at which a cooling cycle is started.
  - Startup time (ms)[12] - Indicates the limit in each direction that an axis must remain within during startup.
  - RAISE direction curve number[13] - Changes the axis profile. Profile is shown on the graphic to the right of the setting.
  - LOWER direction curve number[14] - Changes the axis profile. Profile is shown on the graphic to the right of the setting.
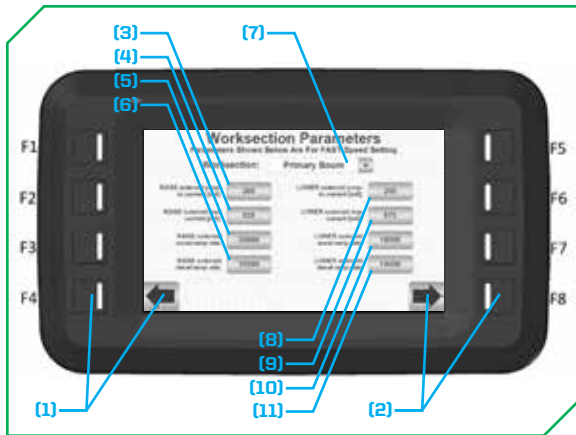
OPERATING THE IBC SMART SCREEN

The "Worksection Parameters" screen allows authorized users to adjust coil / output parameters for individual functions with proportional control.

- Navigation / monitoring / settings options:
  - Back screen$_{(1)}$ button (or hard key$_{(1)}$ **F4**) - Opens the **AXIS PARAMETERS SCREEN**.
  - Next screen$_{(2)}$ button (or hard key$_{(2)}$ **F8**) - Opens the **SYSTEM PARAMETERS SCREEN**.

- **NOTE:** Pressing any of the fields or drop down menus listed below allows the user to change settings for the selected worksection. The selected worksection can be changed using the drop down menu$_{(7)}$. Each worksection has identical sets of adjustable parameters.

- **NOTE:** All worksection parameters apply to the default **FAST** speed setting. The **MEDIUM** and **SLOW** settings are derived automatically from the **FAST** speed setting parameters.
  - RAISE$_{(3)}$ / LOWER$_{(8)}$ Solenoid jump-to-current (mA) - Indicates the minimum output current when a function is actuated (0mA output when not actuated).
  - RAISE$_{(4)}$ / LOWER$_{(9)}$ Solenoid max current (mA) - Indicates the maximum output current.
  - RAISE$_{(5)}$ / LOWER$_{(10)}$ Solenoid Accel ramp rate (mA/s) - Indicates how quickly output current can increase.
  - RAISE$_{(6)}$ / LOWER$_{(11)}$ Solenoid Decel ramp rate (mA/s) - Indicates how quickly output current can decrease.

NOTE: Depending on the worksection selected in the drop down menu$_{(7)}$, RAISE / LOWER may also read as FORE / AFT.
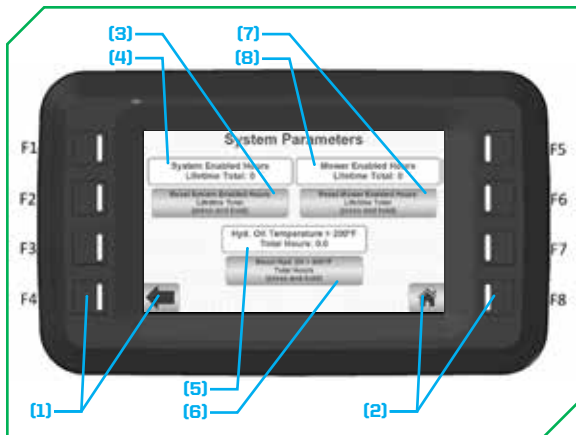
The "System Parameters" screen allows an authorized user to view and reset total lifetime hour counters. These counters are separate from those on the "Mower Settings" screen, and should only be reset in cases where most or all of the system has been replaced.

- Navigation / monitoring / settings options:
  - Back screen$_{(1)}$ button (or hard key$_{(1)}$ **F4**) - Opens the **WORKSECTION PARAMETERS SCREEN**.
  - Home screen$_{(2)}$ button (or hard key$_{(2)}$ **F8**) - Opens the **HOME SCREEN**.

- System Enabled Hours Lifetime Total$_{(4)}$ field – Indicates how many hours the control system has been enabled over the entire lifetime of the system; this value can be reset to (0) hours if the System Enabled Hours Lifetime Total button$_{(3)}$ immediately below is pressed and held.

- Mower Enabled Hours Lifetime Total$_{(8)}$ field – Indicates how many hours the mower has been enabled/running over the entire lifetime of the system; this value can be reset to (0) hours if the Mower Enabled Hours Lifetime Total button$_{(7)}$ immediately below is pressed and held.

- Hydraulic Oil Temperature > 200°F Total Hours$_{(5)}$ field – Indicates how many hours the hydraulic oil has been measured as greater than 200°F over the entire lifetime of the system; this value can be reset to (0) hours if the Hydraulic Oil Temperature > 200°F Total Hours button$_{(6)}$ immediately below is pressed and held.

MAINTENANCE
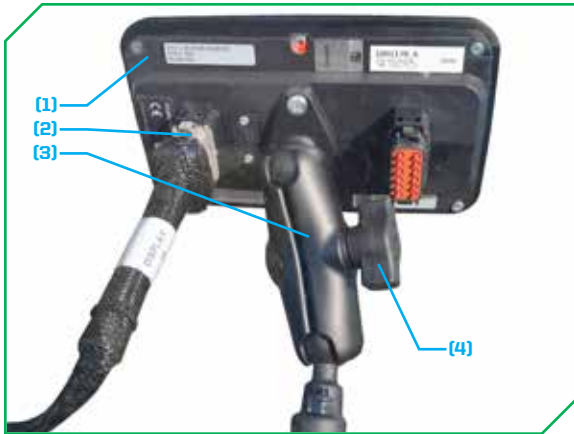
Cleaning:

- If the IBC smart screen display$_{(1)}$ needs to be cleaned, use a lightly dampened (with water) microfiber cloth to remove dirt / debris, and then use a clean microfiber cloth to wipe clean and dry.

- NEVER use alkaline or other chemical cleaners, high-pressure air, high-pressure water, or steam to clean the IBC smart screen display$_{(1)}$ or damage will occur.

- A small amount of isopropyl alcohol can be applied to a microfiber cloth to remove harsh stains.

General:

- Never cover the IBC smart screen display$_{(1)}$ with clothing or other items while it is powered on.
  - Doing so can prevent proper heat dissipation. If the IBC smart screen display$_{(1)}$ becomes too hot it can operate at limited speeds or become damaged.
  - Avoid pointing hot air vents directly at the IBC smart screen display$_{(1)}$.

- Avoid contact of the IBC smart screen display$_{(1)}$ from any hard and / or sharp objects.
  - Resistive type displays$_{(1)}$ are more prone to scratches than capacitive-touch or non-touch models.

Mounting:

- Confirm the IBC smart screen display$_{(1)}$ is securely mounted
  - Harness connection$_{(2)}$ to the IBC smart screen display$_{(1)}$ is fully seated.
  - Thumb screw$_{(4)}$ on the adjustable mount$_{(3)}$ is snug/tight.
  - U-clamp$_{(5)}$ on the adjustable mountt$_{(3)}$ is securely fastened onto the tractor's door hand rail$_{(6)}$.

When replacing parts, use Genuine Diamond Parts. Guaranteed to ship within 72-hours of your order being placed, or the parts and shipping are free.

Call: 888-960-0361 or 605.977.3300 | **Email:** parts@diamondmowers.com

Order online: www.diamondmowers.com

> ### NOTICE
> Failure to inspect, clean, and maintain the attachment and its hardware can result in equipment failure.

TROUBLESHOOTING

PROBLEM	POTENTIAL CAUSE	SOLUTION
IBC Smart Screen Malfunction	Wiring disconnected / broken	Verify wiring is viable. • Repair / replace any damaged wiring or harnesses. • Verify all connections are correct, and connectors are fully seated / connected.
	IBC Smart Screen is defective	• Verify unit is being operated correctly per the operations section. • Contact Diamond Mowers for assistance.

For any questions, contact our Warranty / Service team at
888.960.0364 or 605.977.3300

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