Model: Torq-Matic™ Serial # TM80-001–800174 and TM120-001–120107	October 31, 2013
Product Bulletin # Wrench 18	

TM Auto-Pivot Mode Upgrade

The new Auto-Pivot Mode feature for the TM wrenches is now available for sale as an upgrade kit. TM wrenches with a serial number included in the ranges listed in the header are eligible for the upgrade. This kit has been installed as a standard feature on wrenches since May 2012. The feature allows the operator to pre-program hole center, mouse hole, and park positions so the unit will automatically pivot to and stop at these positions at the touch of a button. The feature also allows the operator to pre-program left and right rotational limits.

Recommendation

The Auto-Pivot Mode upgrade kit (Canrig P/N AY50655) includes all of the hardware necessary to perform the installation. The upgrade kit must be installed by a Canrig-qualified technician. The technician will perform the following tasks during the installation:

- Install encoder on the rotation hydraulic motor.
- Install encoder guard set.
- Install counter card module in the PLC panel and configure the Unit No. and Mode switches on the front of the card.
- Run encoder cable from encoder to PLC panel.
- Download new PLC and screen programs.
- Perform the initial setup on the wrench driller's console HMI (Human-Machine Interface).
- Function-test the feature from the HMI touchscreen, the wrench driller's console, and the radio remote to ensure proper operation.
- Mark bolt hole alignment between the wrench lower base and the pocket.

Contact Rigline 24/7™ for pricing and availability and to schedule a technician to perform the upgrade.

General Information

This bulletin familiarizes the operator with the relevant HMI screens used for setup and operation, provides instructions for the operator to update the settings, and instructs the operator on how to operate the wrench using the new features.

HMI Screen Guide

Rotate Settings

The Rotate Settings screen (see Figure 1) allows the operator to verify or set up the rotational position settings for hole center, mouse hole, and park positions. The Rotate Settings screen can be accessed by pressing the **Menu** button from any screen and then selecting **Rotate Setup**.

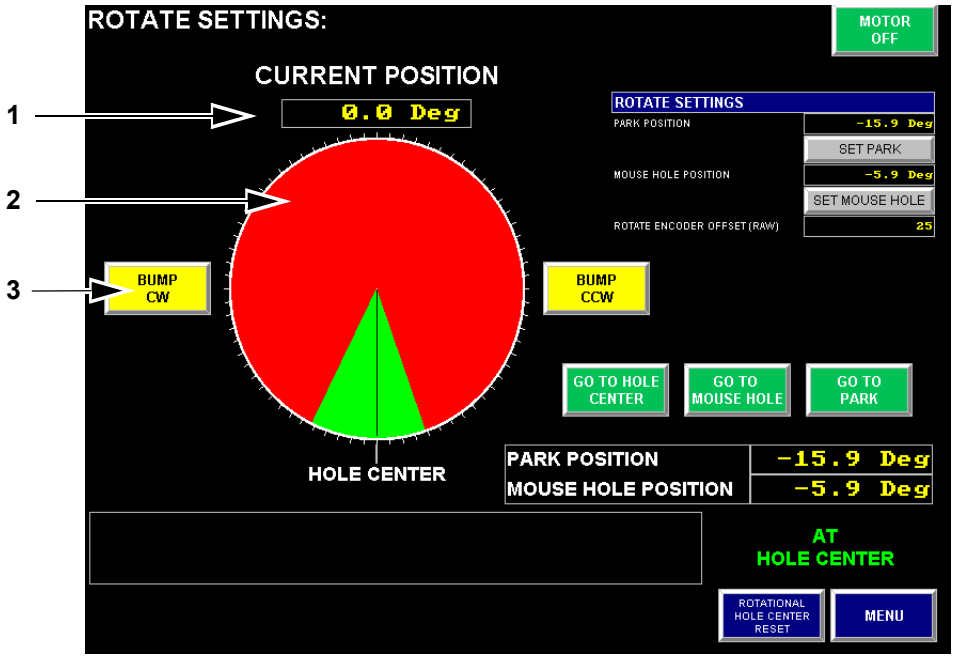

Figure 1: Rotate Settings Screen

Item	Description
1	**Current Position** - Indicates the current wrench position in degrees. The hole center position is always set to 0°.
2	**Position Indicator** - Graphically displays the safe area (green), off-limits area (red), and current wrench position (black line). The graphic is oriented with the hole center position (0°) at the bottom. The position indicator is displayed on multiple screens.
3	**Bump CW** - Pivots the wrench incrementally in the clockwise (CW) direction for positional fine-tuning. Press once for each increment of rotation.

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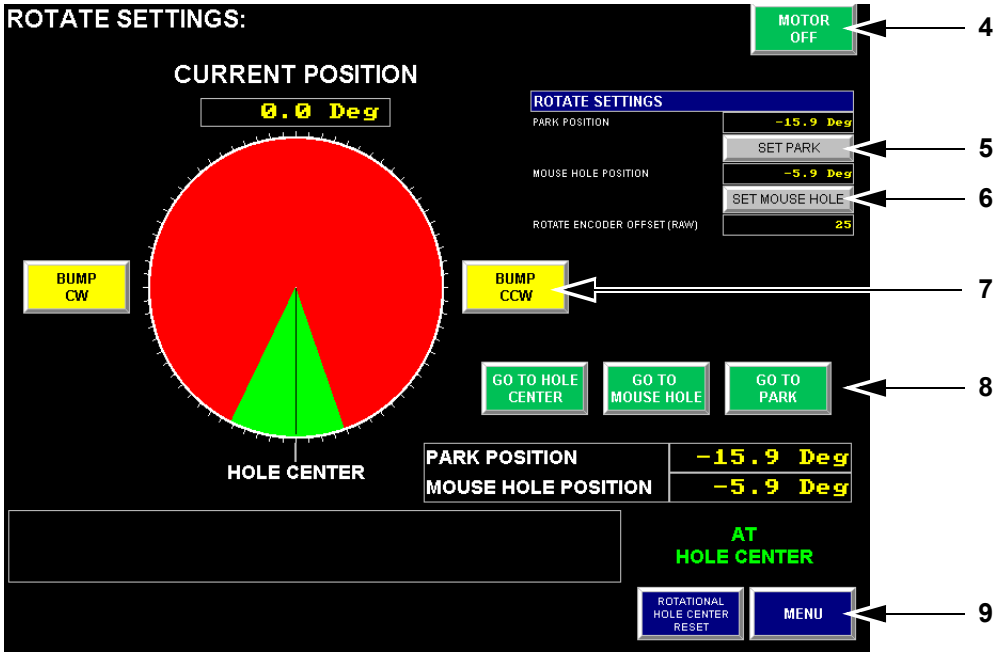

Figure 2: Rotate Settings Screen

Item	Description
4	**Motor Off/On** - Allows the operator to turn the pump motor on or off from the Rotate Settings menu.
5	**Set Park** - Pivot the wrench to the park position and press **Set Park** to program the Park Position. The Set Park button will flash if the park position is not set.
6	**Set Mouse Hole** - Pivot the wrench to the mouse hole and press **Set Mouse Hole** to program the Mouse Hole Position. The Set Mouse Hole Position button will flash if the position is not set.
7	**Bump CCW** - Pivots the wrench incrementally in the counterclockwise (CCW) direction for positional fine-tuning. Press once for each increment of rotation.
8	**Go to Hole Center** - Automatically rotates the wrench to pre-set hole center rotational position. **Go to Mouse Hole** - Automatically rotates the wrench to pre-set mouse hole rotational position. G**o to Park** - Automatically rotates the wrench to pre-set park rotational position. Note that the Go to Hole Center/Mouse Hole/Park buttons remain hidden from all screens until the positions are set.
9	**Rotational Hole Center Reset** - Pivot the wrench to hole center and press **Rotational Hole Center Reset** to set the Hole Center Position. When selecting this option, a pop-up screen will display asking the operator to verify the wrench is physically aligned with the hole center. If not, the operator must cancel the operation, manually rotate the wrench to hole center, and then press **Rotational Hole Center Reset** again.

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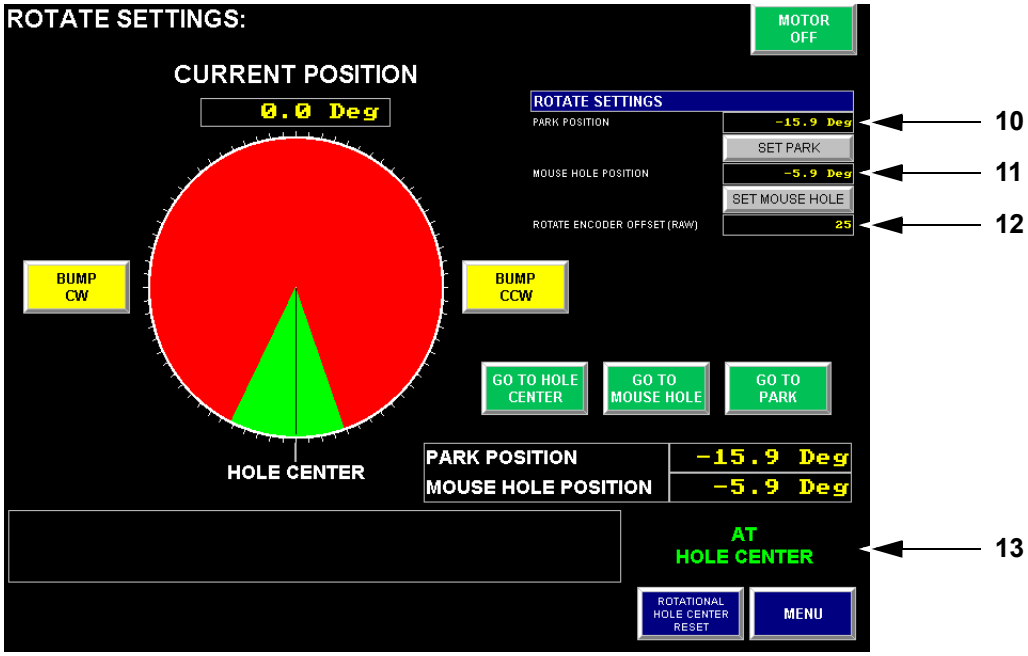

Figure 3: Rotate Settings Screen

Item	Description
10	**Park Position** - Indicates the park position setting in rotational degrees from hole center. A negative value indicates the position is CCW from hole center.
11	**Mouse Hole Position** - Indicates the mouse hole position setting in rotational degrees from hole center. A negative value indicates the position is CCW from hole center.
12	**Rotate Encoder Offset (Raw)** - Indicates the positional accuracy that must be met in order for the wrench to be considered in position, expressed in encoder counts, where 44 encoder counts = 0.1°. For example, if the value is set to 44, the wrench position must be within 0.1° on either side of the preset position in order to be considered in position.
13	**At Hole Center/At Park/At Mouse Hole** - Displays when the actual wrench rotational position is at one of the preset positions within the tolerance dictated by the Rotate Encoder Offset value.

Mouse hole, park, left (or CW) limit, and right (or CCW) limit positions are all expressed as a reference angle from hole center (0°).

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Hole center, mouse hole, and park positions must always be located within the safe area limits of rotation (green area).

Hole center, mouse hole, and park positions cannot be set at the same position.

In the event of loss of power or rig move, the rotational settings must be reverified. Align the wrench manually with hole center and check to see if the current position reads 0° and **At Hole Center** is displayed. Repeat this for the mouse hole and park positions.

Bolt hole orientation between the wrench lower base plate and pocket must remain the same for each rig move in order to maintain accurate left and right rotational limit settings. Failure to maintain a consistent bolt hole orientation will nullify the accuracy of these settings and could result in equipment damage, property damage, and/or injuries to personnel. Use marking arrows or other means to align the bolt holes consistently.

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Warning Messages

A warning message (see Figure 4) appears on the main screen after each PLC power cycle if **Rotate Encoder** is selected or reselected.

Figure 4: Power Cycle Warning Message

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Set Up the Travel Limits

Travel limits will be set up by a Canrig-qualified technician during installation or commissioning.

Set Up the Hole Center Position

Hole center position will be set up by a Canrig-qualified technician during installation or commissioning.

Set Up the Mouse Hole Position

1. Touch the **Menu** button from any screen.
2. On the Menu pop-up screen, touch the **Rotate Setup** button. The Rotate Settings screen appears (refer to Figure 1 on page 2).
3. Pivot the wrench to the mouse hole position. Ensure the wrench is centered on the hole.
4. Touch the **Set Mouse Hole** button to set the mouse hole position.

Set Up the Park Position

1. Pivot the wrench to the park position.
2. On the Rotate Settings screen, touch the **Set Park** button to set the park position.

Test the Travel Limits

1. Attempt to manually rotate the wrench to the left travel limit while observing the position indicator. The wrench should stop before the position indicator enters the red zone.
2. Attempt to manually rotate the wrench to the right travel limit while observing the position indicator. The wrench should stop before the position indicator enters the red zone.

Test the Park, Hole Center and Mouse Hole Positions

From the Driller's Console

1. Press and hold the **Reset** button.
2. Pull the joystick up to disengage the locking mechanism.
3. Double-tap the joystick in the direction to rotate.

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4. When the wrench begins to rotate, release the **Reset** button.

> In Step 5, if there are no pre-programmed positions in the direction of rotation, the wrench will not move.

5. Ensure the wrench automatically stops at the next programmed position.
6. When the wrench stops, verify that one of the positional indicators (**At Hole Center**, **At Mouse Hole**, or **At Park**) is illuminated.
7. Wrench rotation can be stopped at any time by pressing the **Stop** button.

From the Radio Remote

Using the auto pivot feature from the radio remote is similar to using the feature from the driller's console, except that the operator must press and hold the **Option**/**Rotate** toggle switch (2nd switch from the right) in the Rotate position while double-tapping the left joystick.

1. Press and hold the **Option**/**Rotate** toggle switch into the Rotate position.
2. Double-tap the left joystick in the direction of the desired rotation.
3. When the wrench begins to rotate, release the **Rotate** switch.

> In Step 4, if there are no pre-programmed positions in the direction of rotation, the wrench will not move.

4. Verify the wrench automatically stops at the next programmed position.
5. When the wrench stops, verify that one of the positional indicators is illuminated (*At Hole Center*, *At Mouse Hole*, or *At Park*).
6. Wrench rotation can be stopped at any time by pressing the **Start**/**Stop** toggle switch into the **Stop** position.

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From the HMI

Auto-Pivot Mode controls are available on the Wrench and Manual Operations screens. (Note that the **Bump CW** and **Bump CCW** buttons are not available on the Manual Operations screen.)

Figure 5: Rotate-Auto Mode Controls on the HMI

Press the **Go to Park**, **Go to Hole Center**, or **Go to Mouse Hole** buttons to move the wrench to the selected position.

When the wrench stops, verify the **At Hole Center**, **At Mouse Hole**, or **At Park** indicator is backlit.

From the **Main** screen, press the **Bump CW** or **Bump CCW** buttons to rotate the wrench slightly (0.1°) in the selected direction.

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