Toledo Integrated Systems

Toledo Transducers Inc.

Brake Monitor

Operator Manual

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Revision 3.0

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Limited Warranty

The software and equipment are warranted by the manufacturer, Toledo Integrated Systems, to be free from defects in workmanship for one year from the date of the manufacturer's shipment. This warranty is limited to the functions of the Brake Monitor as stated in this manual.

All products subject to this warranty must be returned for examination, repair or replacement.

F.O.B. to: Toledo Integrated Systems
1345 Ford Street
Maumee, OH 43537

The express warranty set forth herein is in lieu of all other warranties, expressed or implied, including without limitation any warranties of merchant-ability or fitness for particular purpose. All such warranties are hereby disclaimed and excluded by the manufacturer.

Repair or replacement of defective products as provided above is the sole and exclusive remedy provided thereunder. The manufacturer shall not be liable for any further loss, damages, or expenses, including incidental or consequential damages, directly or indirectly arising from the sale or use of this product. This includes any failure inside other manufacturers units that are tied into the Brake Monitor.

Any unauthorized repairs or changes to the program will void this warranty.

There are no warranties that extend beyond those expressly set forth herein.

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Section 1 Home Screen

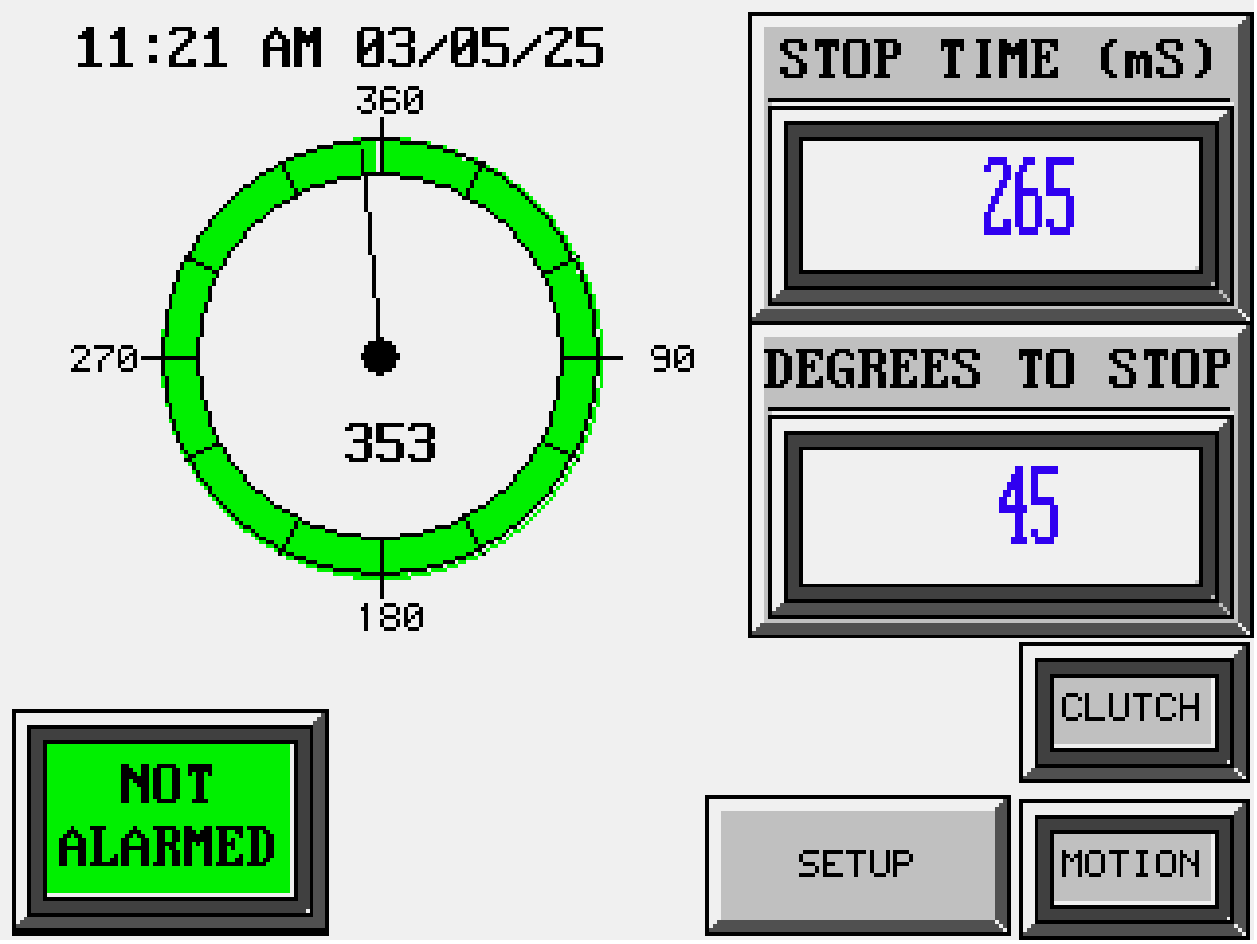

Figure 1

Above is the “Brake Monitor Home Screen”. The current press angle is always displayed below the date and time.

The “Stop Time” shows the amount of time in milliseconds it took the press to stop the last time the press brake was engaged.

The “Degrees to Stop” shows the number of degrees it took to stop the press the last time the press brake was engaged.

The “Clutch” indicator will highlight blue when the clutch is engaged.

The “Motion” indicator will highlight blue when the press is in motion.

Press the “Setup” button on the bottom of the screen to access the setup screen seen in section 2.

Section 2 Setup

Figure 2

The Setup screen above can be accessed by clicking the “Setup” button on the Brake Monitor Home Screen (Figure 1).

The brake monitor system incorporates configurable fault timing parameters to ensure operational precision and safety. It also provides the ability to perform a brake test, a way to calibrate the encoder and a way to set password security to restrict certain screen access.

2.1 Set Fault Times

Figure 2.1

The Fault Times screen above can be accessed by clicking the “Set Fault Times” button on the Setup screen (Figure 2).

The "Allowable Stop Time" is a user-defined parameter, specified in milliseconds, representing the maximum duration permitted for the press to achieve a complete stop, after the clutch is engaged, before triggering a fault condition. This setting establishes a critical threshold for braking performance evaluation.

The "Clutch Engagement Time" constitutes another adjustable parameter, also measured in milliseconds, which defines the maximum allowable time for motion to be sensed after the clutch is engaged. This parameter ensures the clutch meets a timely engagement within the specified set limit.

2.2 Brake Test

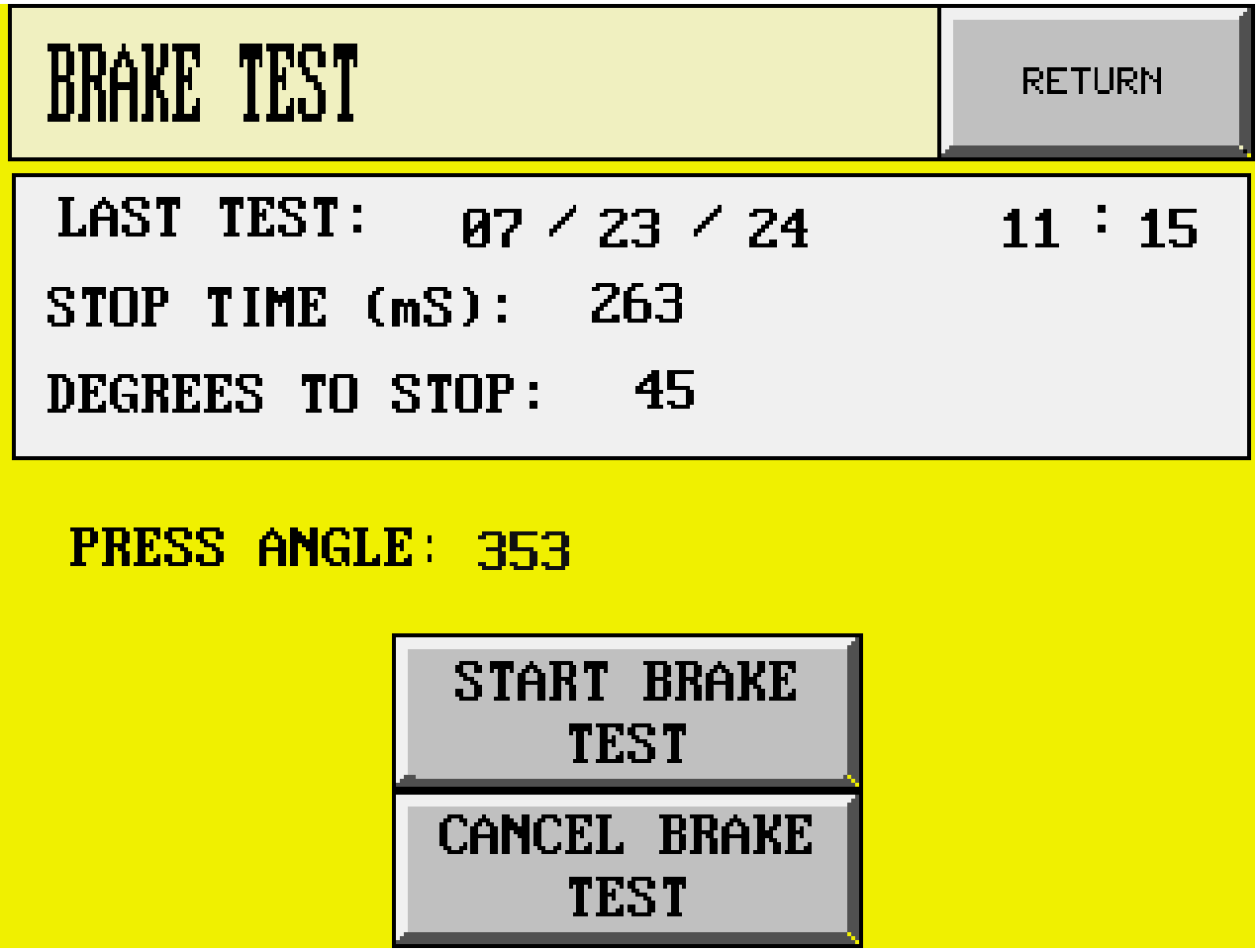

Figure 2.2

The Brake Test screen can be accessed by clicking the “Brake Test” button on the Setup screen (Figure 2).

After selecting “90 Deg Brake Test” from the System Setup Menu, the above screen will be displayed. This Brake Test is used to test Stop Time when an immediate stop signal is given to the press control when the press is in motion and hits 90 degrees. The top of the display indicates the stopping time from the last time the test was performed. Brake tests should be performed periodically to check the condition of the brake.

Steps to perform a brake test:

1) Set the counterbalance pressure according to the upper die weight.

2) Put the press at top of the stroke.

3) Put the press in continuous or single mode.

4) Run the main motor at its fastest speed.

5) Press “Start Brake Test” to activate the brake test.

6) Run the press.

7) When the press passes 90 degrees, the immediate stop output will open giving a signal to the press control to stop.

8) Once the press comes to a complete stop, the “Last Test” parameters will be updated to what was just measured.

2.3 Calibrate Encoder

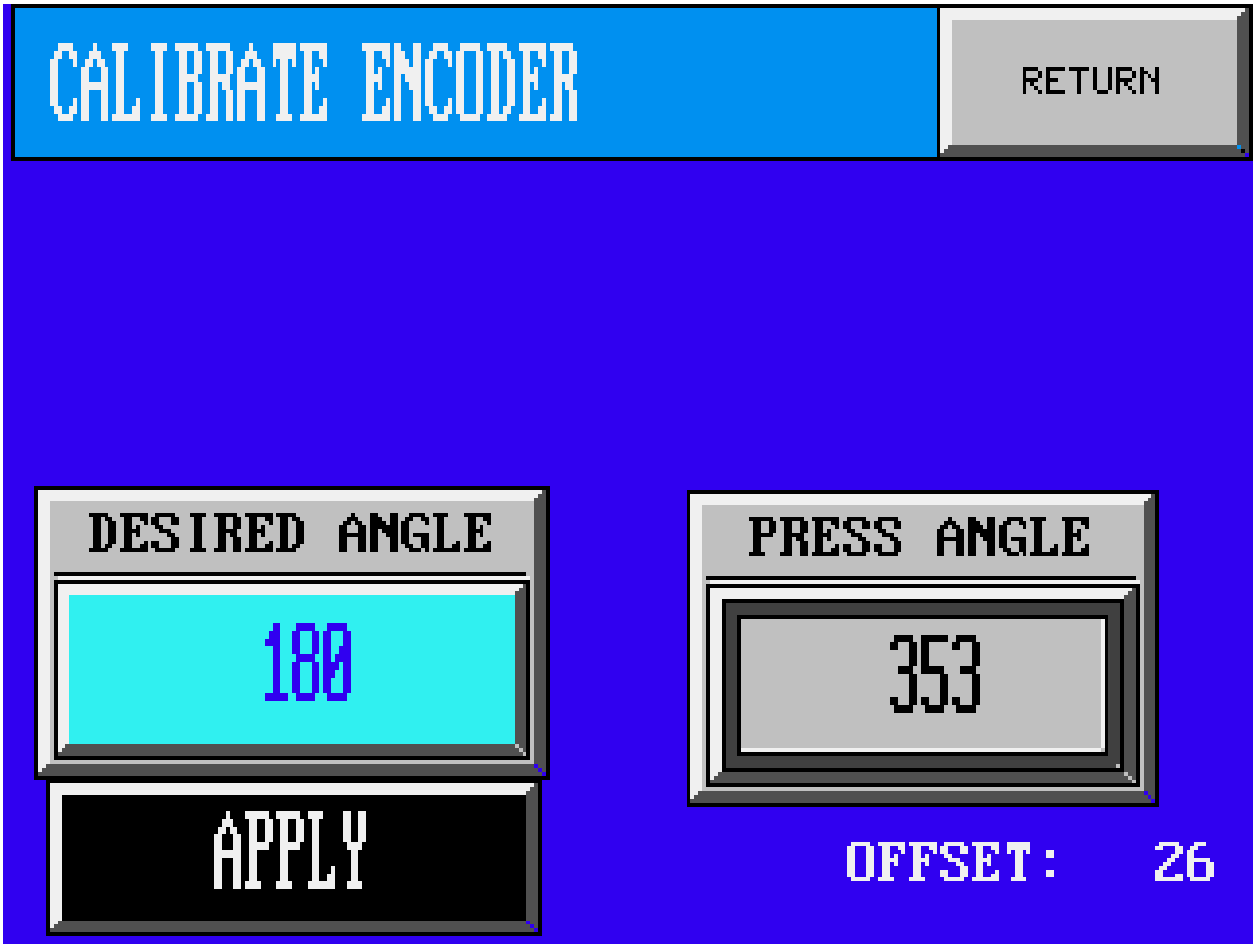

Figure 2.3

The Calibrate Encoder screen can be accessed by clicking the “Calibrate Encoder” button on the Setup screen (Figure 2).

Steps to set the Press Angle:

1) Inch the press around and make sure that the PRESS ANGLE is moving in the

correct direction. If it is not, switch the A and B Encoder wires.

2) Inch the press around at least one full stroke to make sure that the Z pulse has

cycled

3) Inch the press to a known position (the most common is either 0 or 180).

4) When the press is at a known position, use the keys in Figure 2.4 to type in the Desired Angle, then click apply.

2.4 Set Password

Figure 2.4

Figure 2.5

The Password Setup screen can be accessed by clicking the “Set Password” button on the Setup screen (Figure 2).

There is only one password that can be set for the brake monitor.

This password restricts:

- Alarm Reset
- Setup screen
- Any parameter changes

NOTE: A zero in the “Customer Password” indicates there is no password set (Figure 2.4). Every password prompt can be bypassed by pressing enter (Figure 2.5).

Section 3 Alarm Fault Banner

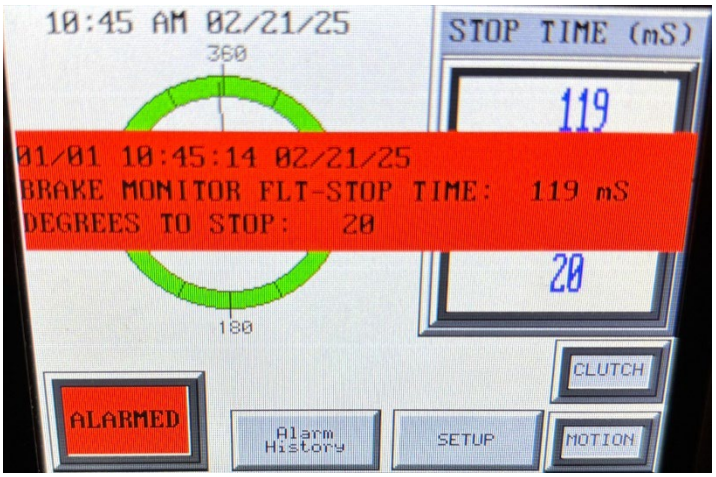

Figure 3.1

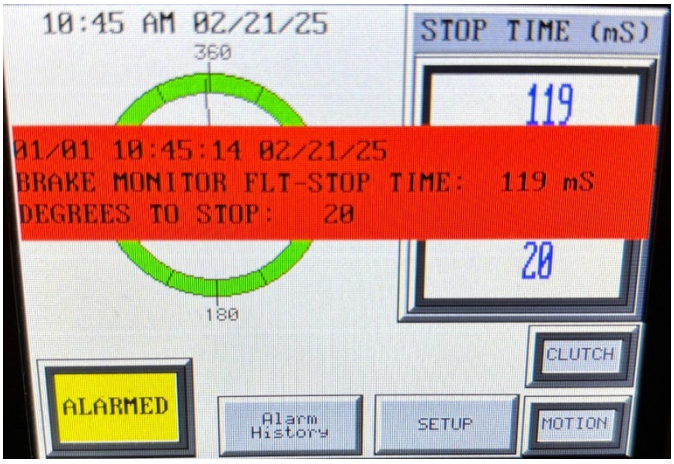

Figure 3.2

When a fault occurs a fault banner will be displayed as seen above in Figures 3.1 and 3.2. The banner will describe the fault, record the stop time, record the degrees it took to stop, and time stamp the fault.

The alarmed button seen in the bottom left corner in figures 3.1 and 3.2 will flash between red and yellow when the fault is not reset. To reset the fault, press the flashing ALARMED button and it should return to the NOT ALARMED state seen in Figure 1. If additional faults exist, the next fault will be displayed, and the above reset process will need to be repeated to clear that fault.

NOTE: The operator will be prompted to enter a password to reset the alarmed state.

DRIFT FAULT

A Drift Fault occurs when motion is detected on the encoder without the clutch valve engaged.

NO MOTION FAULT

When the clutch valve is engaged, the press is given 500mS to get above 1SPM before declaring a No Motion Fault.

BRAKE MONITOR FAULT

A Brake Monitor Fault occurs when the stopping time of the press exceeds the Allowable Stopping Time. Refer to Section 2.1 for an explanation on setting the Allowable Stop Time.

Appendix A: Customer Wire Connections