

**ISO DYNAJET
FIELD CABLE TESTER
USER MANUAL**



**ISO DYNAJET
75-30130 FIELD
CABLE TESTER**



USER MANUAL

TABLE OF CONTENTS

Chapter 1 Important Safety Information	2
Chapter 2 Introduction	5
2.1 Hardware	5
2.2 Connect to PDM.....	5
2.3 Power Up	5
2.4 Home Screen.....	6
2.4.1 Without Errors	6
2.4.2 With Errors.....	7
2.4.3 Software Files on USB Drive:.....	7
2.5 Setup.....	8
2.5.1 Field Test Mode	8
2.5.2 Program Mode	9
2.5.3 Test Mode	9
Chapter 3 Bootcode Program Mode (BPM)	11
3.1 Boot Update	11
3.1.1 OEM Setup	11
3.1.2 Enable Boot Update	12
3.2 Field Test.....	13
Chapter 4 Warnings	15
4.1 Urgent Warnings	15
4.2 Non-Urgent Warnings	15

Copyrights

© 2019 TeeJet Technologies. All rights reserved. No part of this document or the computer program described in it may be reproduced, copied, photocopied, translated, or reduced in any form or by any means, electronic or machine readable, recording or otherwise, without prior written consent from TeeJet Technologies.

Trademarks

Unless otherwise noted, all other brand or product names are trademarks or registered trademarks of their respective companies or organizations.





Limitation of Liability

TEEJET TECHNOLOGIES PROVIDES THIS MATERIAL “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED. NO COPYRIGHT LIABILITY OR PATENT IS ASSUMED. IN NO EVENT SHALL TEEJET TECHNOLOGIES BE LIABLE FOR ANY LOSS OF BUSINESS, LOSS OF PROFIT, LOSS OF USE OR DATA, INTERRUPTION OF BUSINESS, OR FOR INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND, EVEN IF TEEJET TECHNOLOGIES HAS BEEN ADVISED OF SUCH DAMAGES ARISING FROM TEEJET TECHNOLOGIES SOFTWARE.



Chapter 1 Important Safety Information

All safety related and operating instructions should be read before the system is operated. Safe operation of machinery is the operators responsibility. Safety procedures must be posted close to the equipment and clearly visible to and legible by the operator. Safety procedures should meet all company and local regulations, as well as MSDS-requirements. For assistance, contact a local dealer.

Safety Alert Symbol Definitions:

	DANGER! This symbol is reserved for the most extreme situations where serious personal injury or death is imminent.
	WARNING! This symbol indicates a hazardous situation that could result in serious personal injury or death.
	CAUTION! This symbol indicates a hazardous situation that could result in minor or moderate personal injury.
	NOTE: This symbol addresses practices in which the operator should be aware.

GENERAL WARNINGS AND PRECAUTIONS

	<p>DANGER!</p> <ul style="list-style-type: none"> • Read and follow instructions. If instructions are unclear after reading the manual, please contact a local dealer. • Keep children away from equipment. • Do not operate machinery under the influence of alcohol or any illegal substance. • Some systems include a fan heater. Never cover the heater otherwise there will be serious danger of fire!
	<p>WARNING! ELECTRICAL / SHOCK HAZARDS</p> <ul style="list-style-type: none"> • Before working on any component, make sure that all power supplies have been switched off and cannot be accidentally switched on. • Disconnect power leads before using an arc welder on equipment or anything connected to the equipment. • Systems including frequency drives have a risk of electric shock due to residual voltage. It is not permissible to open the equipment neither to disconnect the system or any quick connection until 5 minutes after the power has been removed. • Only operate the system from the power source indicated in the manual. If you are not sure of the power source, consult qualified service personnel. • Do not use a high-pressure cleaner to clean electrical components. This could damage electrical components and subject the operator to risk of electrical shock. • The electrical supply to the equipment must be properly routed and connected to the equipment. All connections must meet the specified requirements.



WARNING! PRESSURIZED HYDRAULIC SYSTEMS

- Always wear personal protective equipment (PPE) when performing work on hydraulic systems.
- Adhere to the machine manufacturer's approved maintenance instructions when working on the hydraulic system.
- Always turn equipment off when working on the hydraulic system. Take appropriate precautions when opening systems that have been previously pressurized.
- Be aware that hydraulic oil may be extremely hot and under high pressure.



WARNING! CHEMICAL HANDLING

- Always wear PPE when handling any chemical substance.
- Always follow safety labels and instructions provided by the chemical manufacturer or supplier.
- The operator should have full information on the nature and the quantity of the material to be distributed.
- **ADHERE TO FEDERAL, STATE AND LOCAL REGULATIONS REGARDING THE HANDLING, USE OR DISPOSAL OF AGRICULTURAL CHEMICALS.**



WARNING! PRESSURIZED SPRAY SYSTEM

- It is important to recognize proper safety precautions when using a pressurized spray system. Fluids under pressure can penetrate skin and cause serious personal injury.
- The system pressure should never exceed the lowest rated component. Always know your system and all component capabilities, maximum pressures and flow rates.
- Filters can only be opened when the manual valves in front of and behind the filter are in closed position. If any appliance must be taken out of the piping, manual valves in front of and behind this appliance have to be in closed position. If they are reinstalled, make sure that this happens correctly, that this apparatus is well aligned, and that all connections are tight.
- The plumbing supply to the equipment should meet all company and local regulations and must be properly routed and connected to the equipment. All connections must meet the specified requirements
- It is advised to drain and purge the liquid train when the equipment shall not be used for a longer period of time.



WARNING! AUTO STEERING SAFETY

- To prevent serious personal injury or death from being run over by the vehicle or automated motion of the steering system, never leave the vehicles operator seat with the system engaged.
- To prevent serious personal injury or death from being run over by the vehicle or automated motion of the steering system, verify the area around the vehicle is clear of people or obstacles before startup, calibration, tuning or engaging the system.
- Make sure equipment is tightly secured to the proper components.
- Never drive on public roads with system engaged.



CAUTION! EQUIPMENT SAFETY, MAINTENANCE, AND SERVICE

- The equipment should be operated only by properly trained, qualified personnel. They must have proven their skills in the operation of the equipment.
- Before using the equipment, the operator must check if the equipment is in good condition and can be used safely. If not, the equipment cannot be used.
- All necessary PPE must always be readily available to the operator.
- Routinely check the system and components for wear and damage. Replace or repair when necessary.
- Only qualified authorized experts are allowed to repair or maintain the installation. The maintenance and operating instructions shall be rigidly observed and followed.
- A complete manual for the equipment must always be available to the operator or maintenance technician .



CAUTION! HARNESS CABLE AND HOSE SAFETY

- Routinely check all harness cables and hoses for damage or wear. Replace or repair when necessary.
- Do not route harness cables and hoses with sharp bends.
- Do not strap harness cables and hoses to lines with high vibration or spikes in pressure.
- Do not strap harness cables and hoses to lines transporting hot fluids.
- Protect harness cables and hoses from sharp objects, equipment debris, and material buildup.
- Allow sufficient length for harness cables and hoses to have free movement on sections that move during operation and be sure that harness cables or hoses do not hang below the equipment.
- Allow sufficient clearance for harness cables and hoses from implement and machine operational zones.
- When cleaning equipment, protect harness cables from high pressure wash.



NOTE: TOUCH SCREEN CARE

- Keep sharp objects away from the touch screen device. Touching the screen with a sharp object could result in damage to the display.
- Do not use harsh chemicals to clean the console/display. The correct way to clean a console/display is to use a soft damp cloth or anti-static wipe, similar to cleaning a monitor on a computer.



NOTE: RECOMMENDED REPLACEMENT PARTS

- The system has been designed with components that work together to provide the best system performance. When the system requires replacement parts, only TeeJet recommended components should be used to maintain proper system operation and safety.

Chapter 2 Introduction

2.1 Hardware

The Field Cable Tester consists of DynaJet Flex 7140 console with special software for interfacing to an ISO DynaJet Power Distribution Module (PDM). (Figure 1)

Figure 1: Field Cable Tester



2.2 Connect to PDM

The Field Cable Tester can be connected to PDM in two ways:

- 1) With an IC7140 system, disconnect the ECU connector from the PDM. Plug the tester into PDM and the ECU connector. Turn on the ECU power, and then turn on the tester with the switch on side of tester.
- 2) With an IC7140 Flex Hybrid system, disconnect the ECU connector from the Flex Driver harness. Plug the tester into Flex Driver harness and the ECU connector. Turn on the ECU power, and then turn on the tester with the switch on side of tester.

2.3 Power Up

Power up the tester using the switch on the side of the Flex console. On power up, the **SPLASH** screen indicates the tester software version in the lower left corner of the screen. (Figure 2)

Figure 2: Splash Screen



2.4 Home Screen

2.4.1 Without Errors

Next the HOME screen will display. If the Hex files used to reprogram the driver modules are found, then the software version information is displayed.

Figure 3: Dual Driver Software Home Screen

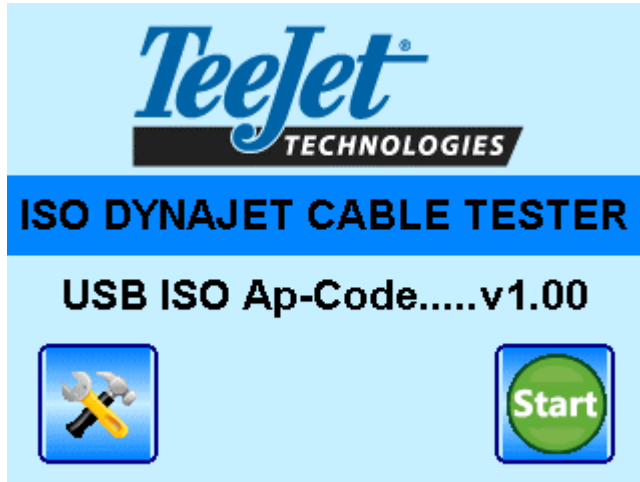


Figure 5: Dual Bootcode Software Home Screen

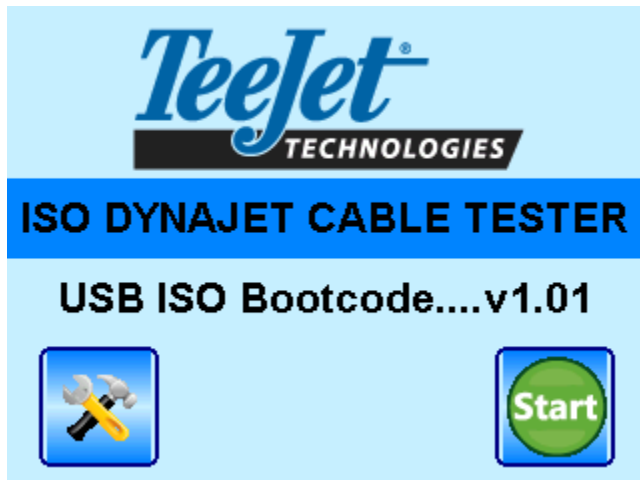


Figure 4: 8-Output Flex Driver Software Home Screen

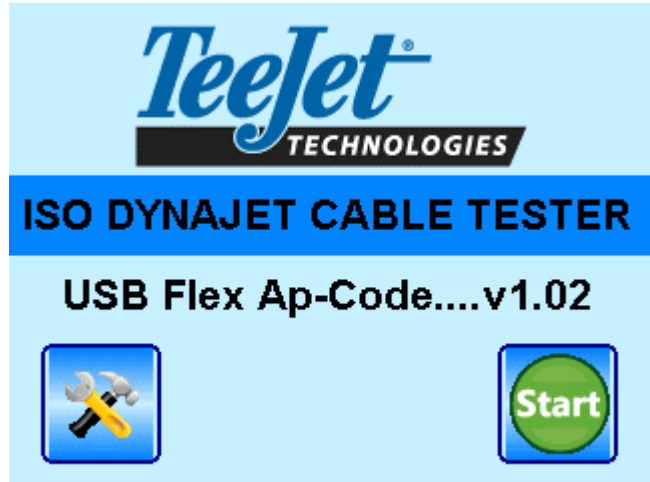
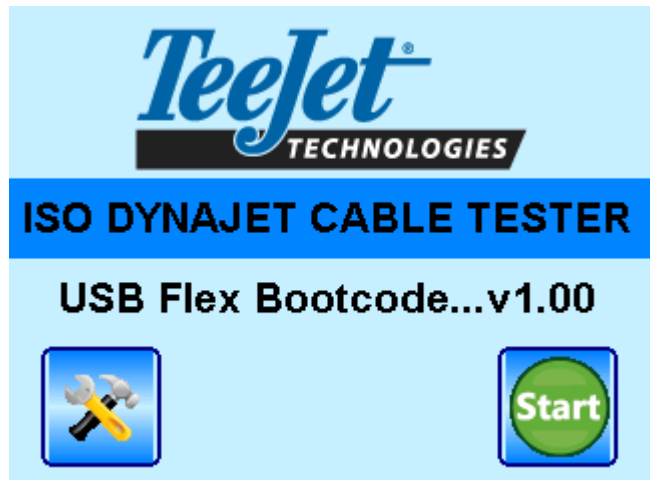


Figure 6: 8-Output Flex Bootcode Software Home Screen



2.4.2 With Errors

If **USB HEX File Not Found** or **USB Drive Not Found** is indicated, then the USB drive needs to be updated with the correct file or possibly just removed and reinserted.

Figure 7: USB HEX File Not Found Home Screen

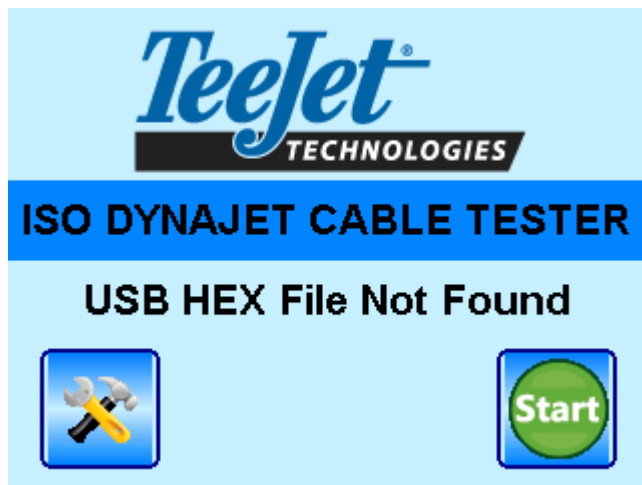
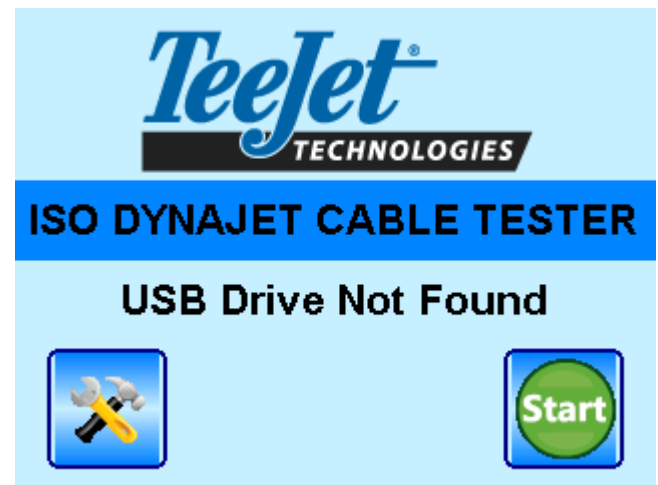


Figure 8: USB Drive Not Found Home Screen



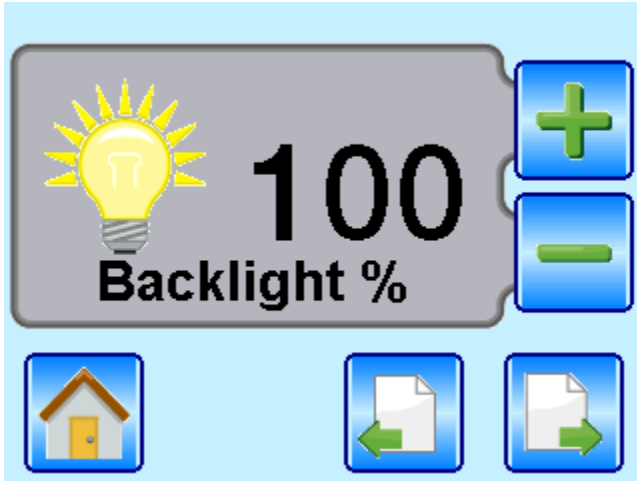
2.4.3 Software Files on USB Drive:

- 1) Application Code Flex Driver..... blacktail.BLACKTAIL-Ver-1_02.hex
- 2) Boot Code Flex Driver..... bootupdateDjFlexDrvr.BLHORSETHF-Ver-1_00.hex
- 3) Application Code ISO Dual/Quad Driver..... nixon.NIXON-Ver-1_00.hex
- 4) Boot Code ISO Dual/Quad Driver..... updateMummy.MUMMY-Ver-1_01.hex
- 5) Application Code Tester Console..... console_v1_00w.bin
- 6) Different ".ins" files indicate file name of the software file to be used for the programming updates.
- 7) "forceupdate" file is necessary for Tester Console programming.

2.5 Setup

If the **SETUP** key is pressed on the **HOME** screen, then the backlight brightness can be adjusted. (Figure 9)

Figure 9: Backlight Brightness Adjustment Screen



2.5.1 Field Test Mode

Pressing the **START** key on the **HOME** screen will scan the cable, detect number of drivers and solenoids, and detect the 5th Wire Start & End terminators. The screen will display a green background color and indicate the system is **READY TO TEST**, after all elements are detected and in working order. (Figure 10)

The screen will display a red or yellow background color when issues are detected. See the [Warnings Chapter](#) for more information. If a problem is detected, try to fix the issue and then press the **SCAN** key to check if the problem has been resolved. If a change is made to the harness, then the **SCAN** key needs to be pressed again to make sure the cable is ready to test or program. (Figure 11)

Figure 10: Field Test Mode – Ready to Test

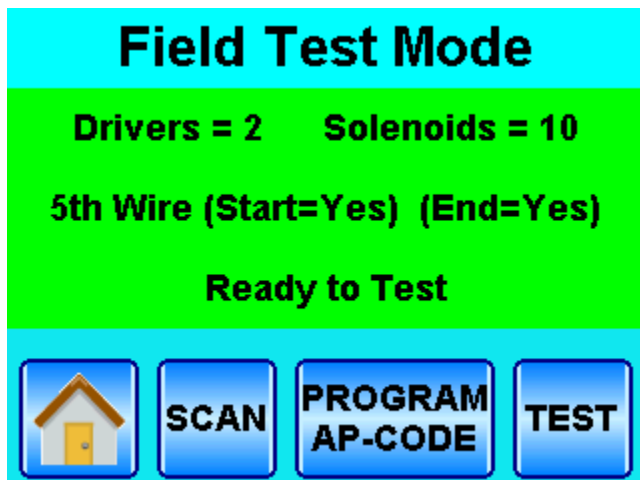
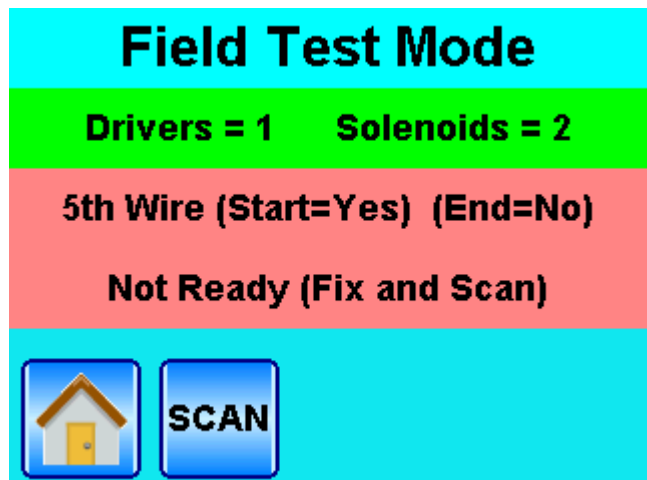


Figure 11: Field Test Mode – Not Ready (Fix and Scan)



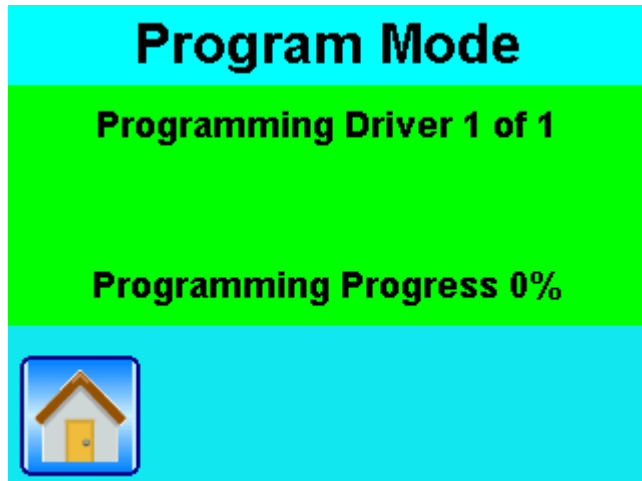
2.5.2 Program Mode

The tester checks that the driver module software version matches other driver modules as well as the software on the USB drive. If a mismatch is detected, the screen displays mismatch information.

Update software on the driver module by pressing the **PROGRAM AP-CODE** key. The tester will reprogram all driver modules one at a time until all are done. (Figure 12)

NOTE: Programming errors will be shown on the screen, the only fix is to reprogram the driver modules.

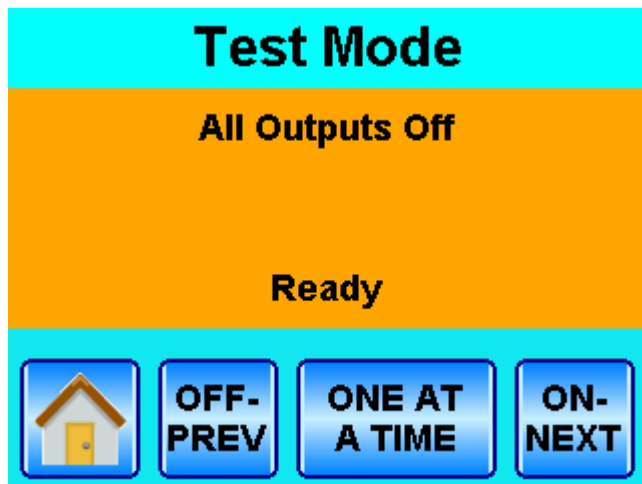
Figure 12: Program Mode



2.5.3 Test Mode

Pressing the **TEST** key navigates to the **TEST MODE** screen, which starts out with **ALL OUTPUTS OFF**. (Figure 13)

Figure 13: Test Mode – All Outputs Off



USER MANUAL

Pressing the **ON-NEXT** key will turn on the first nozzle until the solenoid is detected then it automatically switches to the next nozzle until all are tested. (Figure 14)

Pressing the **ON-NEXT** key while tester is checking nozzles will also switch to the next nozzle.

Pressing the **OFF-PREV** key will shut off the solenoid that is on.

Pressing the **OFF-PREV** key after solenoid shuts off will switch to the previous solenoid and turn it on. If a solenoid isn't detected quick enough then a timeout occurs, the console will beep and display which solenoid number failed. (Figure 15)

Press the **HOME** key to start over.

Figure 14: Test Mode – Checking Nozzle

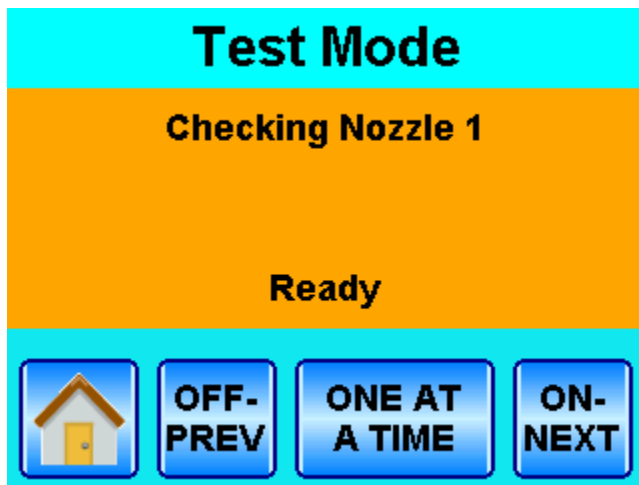
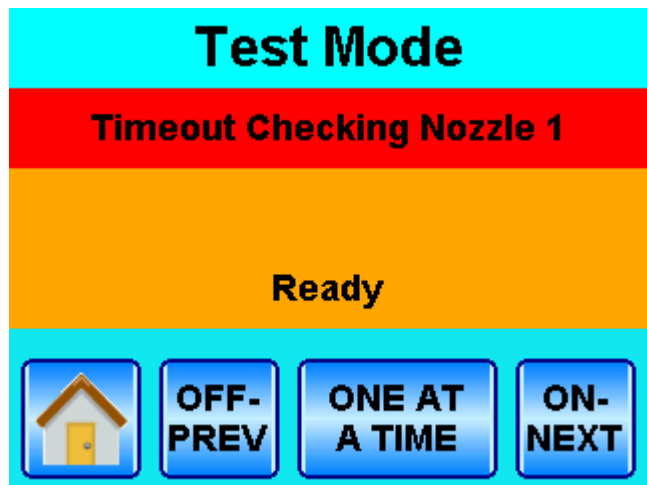


Figure 15: Test Mode – Timeout Checking Nozzle

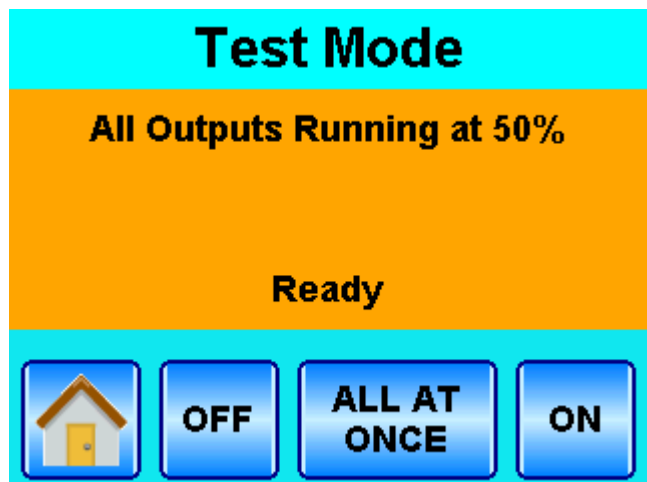


Pressing the **ONE AT A TIME** key will switch to **ALL AT ONCE** mode with **ALL OUTPUTS OFF** (Figure 16), then pressing the **ON** key will turn on all solenoids (Figure 17). Pressing the **OFF** key will shut off the solenoids. Pressing the **ALL AT ONCE** key again will switch back to **ONE AT A TIME** mode.

Figure 16: Test Mode – All Outputs Off



Figure 17: Test Mode – All Outputs Running at 50%



Chapter 3 Bootcode Program Mode (BPM)

Bootcode Program Mode (BPM) allows programming DynaJet Driver Bootcode Software

NOTE: If bootcode programming is interrupted for any reason the driver being programmed will be broken and won't be able to be programmed, so the cable section that includes that driver will be unusable. Once bootcode updating has started do nothing with the sprayer until all programming is done.

3.1 Boot Update

3.1.1 OEM Setup

To access the Boot Update screen in Setup, the OEM Setup option must be enabled.

Enable OEM Setup:

- 1) Cycle the console power.
- 2) When the **SPLASH** screen appears, tap the **upper third of the display** three times until the **OEM SETUP** screen appears (Figure 18).
- 3) Enable or disable **OEM SETUP** by pressing the **OEM SETUP** button (Figures 19 and 20).

Figure 18: Navigating to OEM Setup – tap upper third of the display



Figure 19: OEM Setup Screen – Disabled

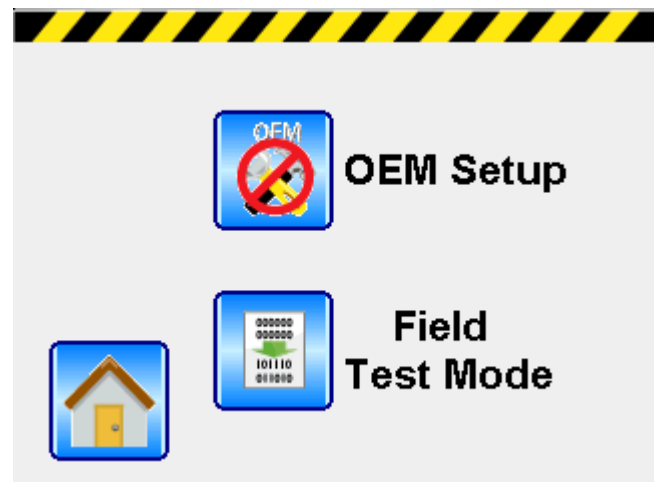
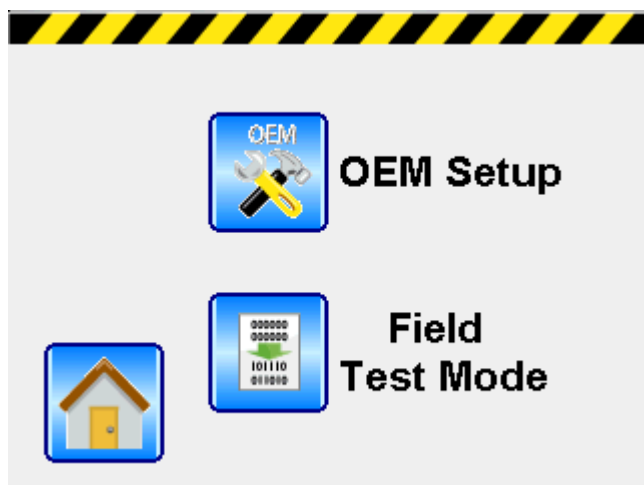


Figure 20: OEM Setup Screen - Enabled



3.1.2 Enable Boot Update

Now that the OEM Settings are turned on, the Boot Update is now accessible and needs to be enabled.

Enable Boot Update:

- 1) Cycle the console power and wait for the **SPLASH** screen to cycle (Figure 21) and the **HOME** screen to appear (Figure 22).
- 2) Once the **HOME** Screen appears, press the **SETUP** key to view the **SETUP** screen landing page (Figure 23).
- 3) Press the **RIGHT ARROW** key to access the **BOOT UPDATE** screen (Figure 24).
- 4) Press on the center of the screen to enter the *Super-Secret Code*: **103055** (Figure 25).
- 5) Press the **ENTER** key to view the **BOOT UPDATE ENABLED** screen
- 6) Press the **HOME** key

Figure 21: Splash Screen



Figure 22: Home Screen – Press Setup Key

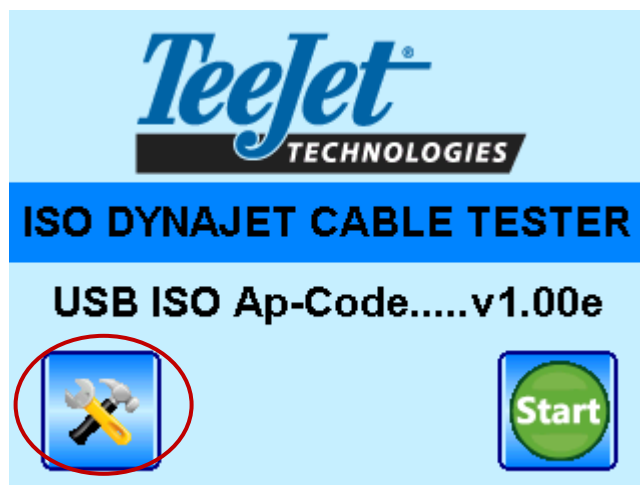


Figure 23: Setup Screen Landing Page – Press Right Arrow

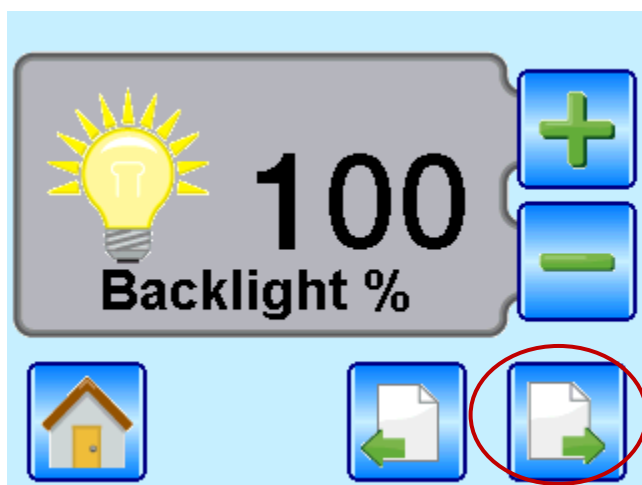


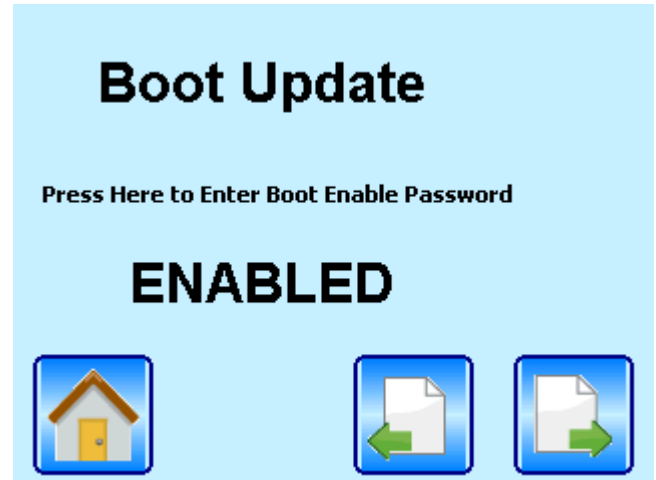
Figure 24: Boot Update Screen – press center of screen



Figure 25: Boot Update – Enter Passcode



Figure 26: Boot Update – Enabled



3.2 Field Test

Now that the Boot Update is enabled, the **HOME** screen will display available files on the USB drive. Press the **START** key to scan cable. When scanning is done, the screen will display drivers detected, solenoids detected, and the 5th Wire Start/End status. Now the program button reads **PROGRAM BOOT** instead of **PROGRAM AP-CODE** (Figure 27). Press the **PROGRAM BOOT** key to program drivers with bootcode files on USB drive. The programming progress will be shown (Figure 28), and you must wait for programming to complete.

NOTE: DO NOT turn off power, start the vehicle or do anything that might cause programming to be interrupted. Interrupting programming can cause the cable being programmed to become unusable!

After programming of bootcode is complete, the tester screen will show **Boot Programming Done.....!!! Turn Off Power!!!**

At this time, turn the tester console off and back on with the switch on side of console.

Figure 27: Field Test Mode – Program Boot

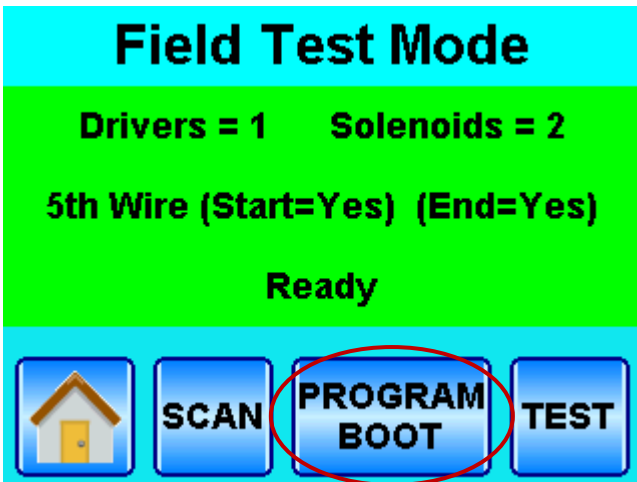
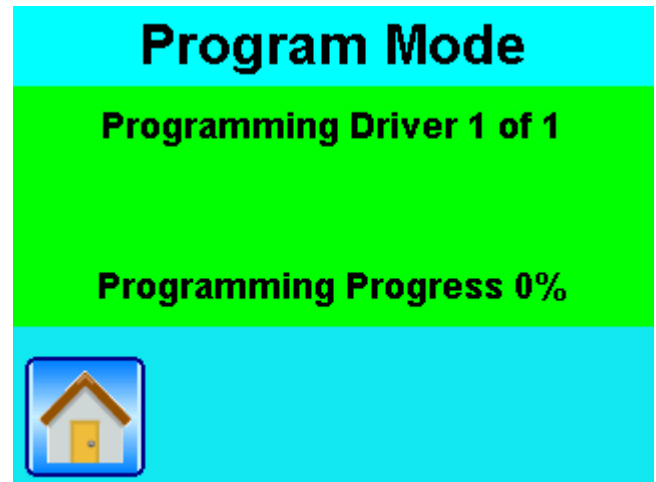


Figure 28: Program Boot - Programming Progress



USER MANUAL

The next time the cable is scanned after pressing the **START** key on the **HOME** screen, the tester will indicate that it has found a **Driver Running Bootcode** (Figure 29), so press the **PROGRAM AP-CODE** key and wait for application code from the USB drive to be programmed on all drivers.

When done programming application code, the tester will automatically scan the cable and the **READY** screen should be showing (Figure 30). Bootcode and Application programming is done, and cable is ready for testing.

Figure 29: Driver Running Bootcode - Not Ready (Fix and Scan)

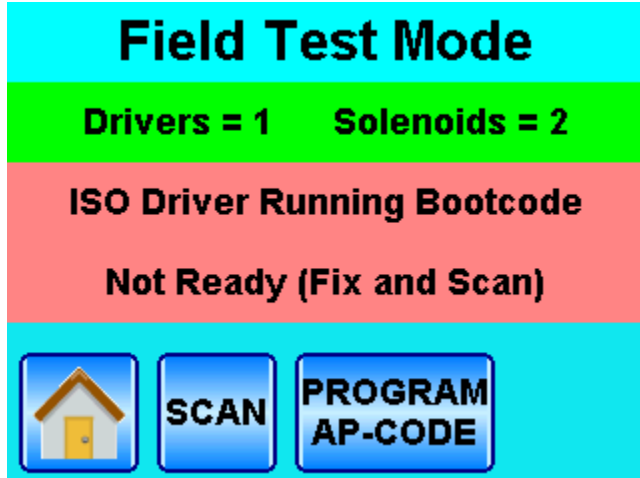
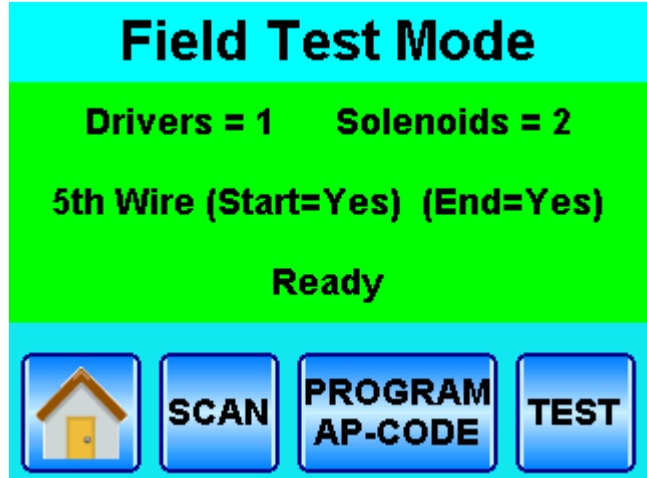


Figure 30: Field Test Mode - Ready



Chapter 4 Warnings

4.1 Urgent Warnings

Warnings shown in **RED** are urgent and should be fixed

- 1) **Flex Driver Running Bootcode - Fix--Program Application Code**
 - a. Application code has been corrupted or programming was interrupted, so driver will have to have application software updated to allow system to operate
- 2) **ISO Driver Running Bootcode - Fix--Program Application Code**
 - a. Application code has been corrupted or programming was interrupted, so driver will have to have application software updated to allow system to operate
- 3) **5th Wire (Start=No) or (End=No) - Not Ready (Fix and Scan)**
 - a. If 5th Wire Start terminator not found, then driver modules did not respond to driver initialization CAN messages.
 - i. 5th Wire Start terminator not installed
 - ii. Driver modules CAN bus shorted or open
 - iii. No power to driver modules
 - b. If 5th Wire End terminator not found, then last driver module did not detect the 5th Wire terminator pulling the 5th Wire low
 - i. 5th Wire End terminator not installed
 - ii. Driver to driver connector problem

4.2 Non-Urgent Warnings

Warnings shown in **YELLOW** are non-urgent and do not have to be fixed

- 1) **No Application Version Response – Fix – Program Application Code**
 - a. At least one detected driver did not respond to the request for application code version information
 - b. Driver was found on CAN bus, but since it did not respond then either it is malfunctioning, or the software is test code that doesn't respond with correct version information format
 - c. Fix by programming with latest application software or replace cable/module
- 2) **No Bootcode Version Response – Fix – Program Boot Code**
 - a. At least one detected driver did not respond to the request for bootcode version information
 - b. Driver was found on CAN bus, but since it did not respond then either it is malfunctioning, or the software is test code or older version software that doesn't respond with correct version information format
 - c. Fix by programming with latest application software or replace cable/module
- 3) **Flex Drivers Software Mismatch – Fix – Program Application Code**
 - a. The application software version found in the Flex 8-output drivers were not all the same
 - b. Fix by programming all Flex drivers with the same application code
- 4) **USB to Flex Driver Ver Mismatch – Fix – Program Application Code**
 - a. The application software file on the USB drive and the application software found in the Flex drivers were not the same and the USB file is a newer version
 - b. Fix by programming all Flex drivers with the same application code
- 5) **USB Ver older than Flex Driver Ver – Fix – Program Application Code**
 - a. The application software file on the USB drive and the application software found in the Flex drivers were not the same, but the USB file is an older version
 - b. Fix by either updating USB drive files to the latest version or reprogramming all driver modules with older software version
- 6) **Flex Drivers Boot Ver Mismatch – Fix – Program Boot Code**
 - a. The bootcode software version found in the Flex 8-output drivers were not all the same
 - b. Fix by programming all Flex drivers with the same bootcode
- 7) **USB to Flex Boot Ver Mismatch – Fix – Program Boot Code**
 - a. The bootcode software file on the USB drive and the bootcode software found in the Flex drivers were not the same version and the USB file is a newer version
 - b. Fix by programming all Flex drivers with the same bootcode
- 8) **USB Ver older than Flex Boot Ver – Fix – Program Boot Code**
 - a. The bootcode software file on the USB drive and the bootcode software found in the Flex drivers were not the same, but the USB file is an older version
 - b. Fix by either updating USB drive files to the latest version or reprogramming all driver modules with older software version

- 9) **No Flex Driver Software Found – Fix – Check USB for Application Code**
 - a. Application software for the Flex 8-output drivers was not found on USB drive
 - b. Fix by getting latest Flex driver application software put on USB drive
 - c. Maybe try reinserting the USB drive
- 10) **No Flex Driver Bootcode Found – Fix – Check USB for Boot Code**
 - a. Bootcode software for the Flex 8-output drivers was not found on USB drive
 - b. Fix by getting latest Flex driver bootcode software put on USB drive
 - c. Maybe try reinserting the USB drive
- 11) **ISO Drivers Software Mismatch – Fix – Program Application Code**
 - a. The application software version found in the ISO Dual/Quad drivers were not all the same
 - b. Fix by programming all ISO Dual/Quad drivers with the same application code
- 12) **USB to ISO Driver Ver Mismatch – Fix – Program Application Code**
 - a. The application software file on the USB drive and the application software found in the ISO Dual/Quad drivers were not the same and the USB file is a newer version
 - b. Fix by programming all ISO Dual/Quad drivers with the same application code
- 13) **USB Ver older than ISO Driver Ver – Fix – Program Application Code**
 - a. The application software file on the USB drive and the application software found in the ISO Dual/Quad drivers were not the same, but the USB file is an older version
 - b. Fix by either updating USB drive files to the latest version or reprogramming all driver modules with older software version
- 14) **ISO Drivers Boot Ver Mismatch – Fix – Program Bootcode**
 - a. The bootcode software version found in the ISO Dual/Quad drivers were not all the same
 - b. Fix by programming all ISO Dual/Quad drivers with the same bootcode
- 15) **USB to ISO Boot Ver Mismatch – Fix – Program Bootcode**
 - a. The bootcode software file on the USB drive and the bootcode software found in the ISO Dual/Quad drivers were not the same version and the USB file is a newer version
 - b. Fix by programming all ISO Dual/Quad drivers with the same bootcode
- 16) **USB Ver older than ISO Boot Ver – Fix – Program Bootcode**
 - a. The bootcode software file on the USB drive and the bootcode software found in the ISO Dual/Quad drivers were not the same, but the USB file is an older version
 - b. Fix by either updating USB drive files to the latest version or reprogramming all driver modules with older software version
- 17) **No ISO Driver Software Found – Fix – Check USB for Application Code**
 - a. Application software for the ISO Dual/Quad drivers was not found on USB drive
 - b. Fix by getting latest ISO Dual/Quad driver application software put on USB drive
 - c. Maybe try reinserting the USB drive
- 18) **No ISO Driver Bootcode Found – Fix – Check USB for Bootcode**
 - a. Bootcode software for the ISO Dual/Quad drivers was not found on USB drive
 - b. Fix by getting latest ISO Dual/Quad driver bootcode software put on USB drive
 - c. Maybe try reinserting the USB drive