

# BOOMPILOT<sup>®</sup>


## INSTALLATION MANUAL

Automatic Boom Section Control for  
TJ744E with 5 sections and Matrix Pro



**TeeJet<sup>®</sup>**  
TECHNOLOGIES

**BoomPilot<sup>®</sup>**

A Subsidiary of  Spraying Systems Co.<sup>®</sup>

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## Safety Information

TeeJet Technologies is not responsible for damage or physical harm caused by failure to adhere to the following safety requirements.

As the operator of the vehicle, you are responsible for its safe operation.

The BoomPilot is not designed to replace the vehicle's operator.

Do not leave a vehicle while the BoomPilot is engaged.

Be sure that the area around the vehicle is clear of people and obstacles before and during engagement.

The BoomPilot is designed to support and improve efficiency while working in the field.

The driver has full responsibility for the quality and work related results.

Disengage BoomPilot before operating on public roads or when not in use to prevent loss of vehicle control.

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## Matrix Pro® with TJ744E Sprayer Control

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This installation manual covers installation and setup of the TeeJet 744E Sprayer Control (with 5 sections) with the Matrix Pro. We have endeavoured to deliver a fault free product. To ensure optimal use of the equipment, we ask you to pay great attention when reading this manual. Regarding responsibility for use of the product, we refer to our sales and delivery terms - especially paragraph 7, which follows:

Product usage.

7.1 Any use of the product is at the sole risk of the buyer. The buyer is therefore not entitled to any form for compensation caused by, for example, any of the following:

- Disturbance to/from any electronic services or products that do not confirm to the standards for CE marking,
- Missing or poor signal coverage or a succession hereof from external transmitters/receivers, used by the buyer,
- Functional faults, which apply to or from a PC-program or PC-equipment, not delivered by the seller.
- Faults that may arise from the buyers negligence to react to warnings and fault messages from the product, or which can be traced to negligence and/or absent constant control of the work carried out in comparison to the planned job.

7.2 When implementing any new equipment the buyer must take great care and pay attention. Any doubts as to correct operation/use should result in contacting TeeJet Technologies.

Kind regards,

**TeeJet Technologies**

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## INTRODUCTION TO TJ744E - ABSC

The Matrix Pro is a combined Guidance and Automatic Boom Section Control (ABSC) device that features control of up to 15 boom sections. The Matrix Pro connects in parallel to the existing wiring loom to the section valves.

### Principle of Operation

The Matrix Pro controls the section valves according to the GPS position as well as the GPS guidance to avoid overlaps or skips.

The Matrix Pro controls the section valves in automatic mode. The section switches should be set to off unless the operator wants to override the auto mode and thus force spraying.

The Matrix Pro monitors the section switches that control the valves in manual mode. The master switch can be used both in automatic mode and in manual mode.

### Required Parts

To add Automatic Boom Section Control to a TJ744 Sprayer Control kit, the following part numbers are required:

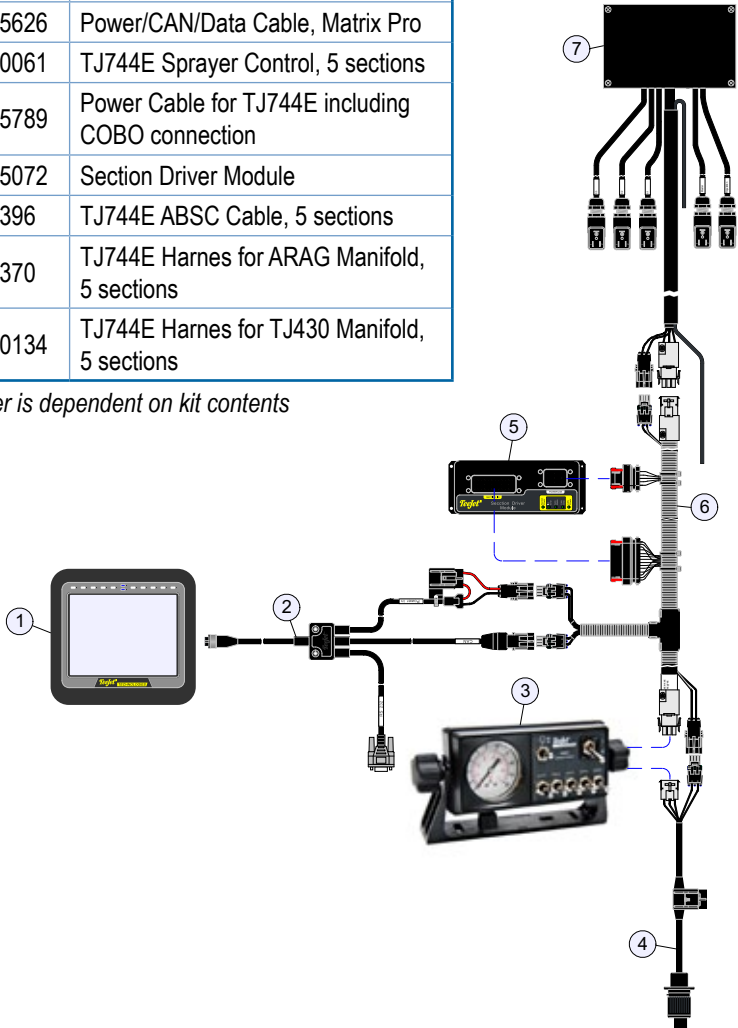
Item	Part Number	Description	Quantity
A	90-xxxx*	Matrix Pro Guidance Controller Kit .....	1
B	198-396	TJ744 ABSC Cable, 5 Section.....	1
C	45-05626	Power/CAN/Data Cable, Matrix Pro.....	1

*\*Part number is dependent on kit contents*

Figure 1-1: System Diagram

Pos.	Part #	Description
1	90-xxxx*	Matrix Pro Guidance Controller
2	45-05626	Power/CAN/Data Cable, Matrix Pro
3	75-50061	TJ744E Sprayer Control, 5 sections
4	45-05789	Power Cable for TJ744E including COBO connection
5	78-05072	Section Driver Module
6	198-396	TJ744E ABSC Cable, 5 sections
7	199-370	TJ744E Harness for ARAG Manifold, 5 sections
	45-10134	TJ744E Harness for TJ430 Manifold, 5 sections

\*Part number is dependent on kit contents

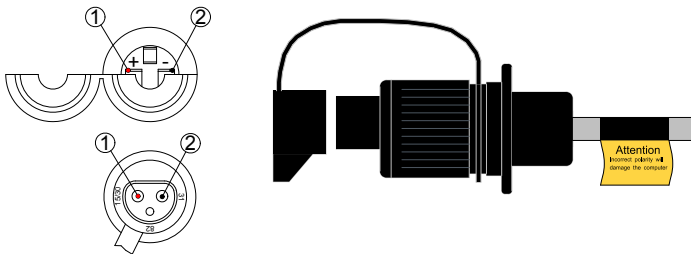


## INSTALLING THE TJ744 ABSC KIT

Connect the automatic boom section kit as shown on the system overview diagram, *Figure 1-1*. The kit includes all necessary connectors to get electrical contact with the TJ744E system.

### Connecting to Power

*Figure 1-2: Connecting to Power*



Pos.	Description
1	+12V (15/30)
2	Ground (31)

### Battery Cable (Option)

The power supply must be strong enough to operate the valves. The total current will depend on the type of valve used.

If a power connector (socket) is not available in the tractor cabin, an optional battery cable can be used (PN 96ET14).

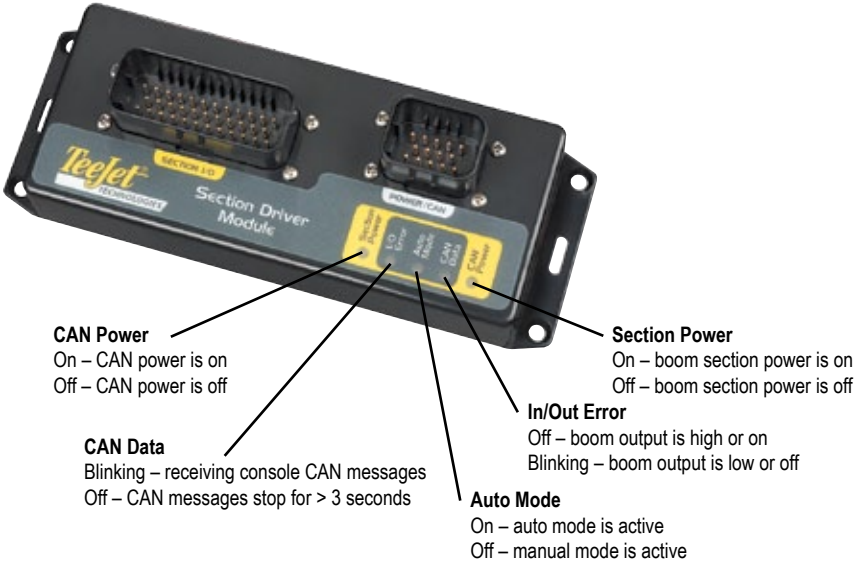


## Mount & Connect SDM

Mount SDM to the operator's preference where LED's can be seen for troubleshooting.

Connect SDM to BoomPilot Harness.

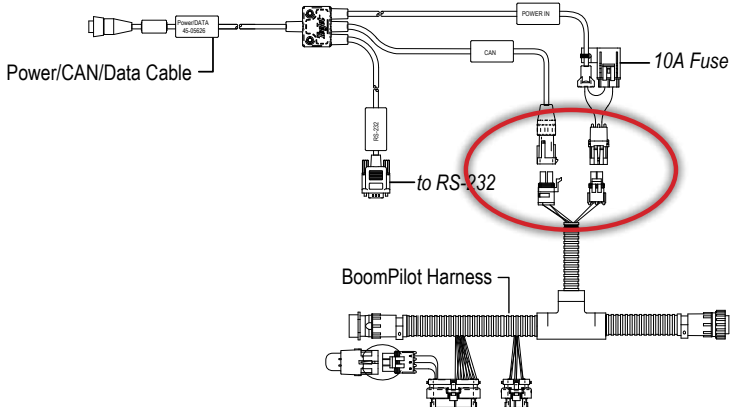
Figure 1-3: LED Description



## Power/CAN/Data Cable to BoomPilot Harness

Connect Power/CAN/Data Cable to BoomPilot Harness.

Figure 1-4: Connect Power/CAN/Data Cable to BoomPilot Harness



## SYSTEM CHECK

After connecting the power connector, it is time to make a system check. To check the system, it is necessary to have full GPS signal. To obtain full GPS signal, the vehicle must be placed outside.

### Check AUTOMATIC mode:

#### TJ744E Switch box:

Section switches should be in the OFF position when working in Automatic mode. The Master switch will control the sprayer and should be ON to enable automatic switching of the sections.

#### Matrix Pro:


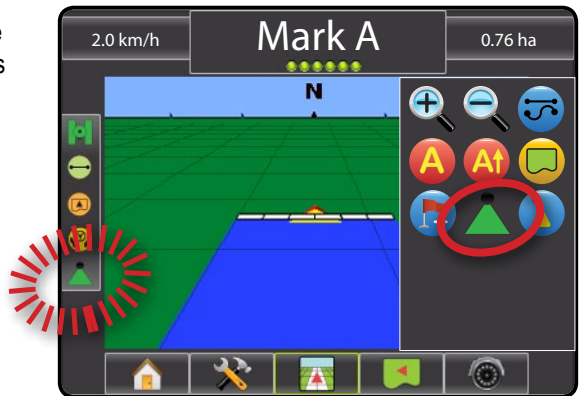
- Turn on the Matrix Pro console
- Encode the number of sections and the width of each (Refer to the Matrix Pro user manual)
- Wait for GPS signal
- Set the BoomPilot mode to AUTOMATIC
  - ◀ Status Bar Icon will change to green 
- Drive forward (> 2 km/h)
- Observe that all valves open
- Check that the valves close when the Master switch is set to OFF

Figure 1-5: Automatic to All Booms On Mode




### Check MANUAL mode:

#### TJ744E Switch Box:

- Set the section switches to ON
- Set the Master switch to ON

#### Matrix Pro:

- Set the BoomPilot mode to MANUAL
  - ◀ Status Bar Icon will change to red 
- Check in the 'Vehicle View Screen' (Matrix Pro) that the section icons turn off and on according to the valve/switch status
- Observe that all valves are open

## CONFIGURATION USING YOUR MATRIX® PRO

The Matrix Pro is used to configure the vehicle and its implements including ABS.

To access BoomPilot configuration options:



1. Press UNIT SETUP bottom tab .
2. Press CONFIGURATION side tab .
3. Select from:
  - ▶ Vehicle – used to establish vehicle type, antenna height, direction to boom and distance to boom
  - ▶ Implement – used to establish number of boom sections, guidance width, spray width, overlap percentage, implement delay on time and implement delay off time
  - ▶ Lightbar – used to establish LED brightness, LED mode and LED spacing

Figure 1-6: Configuration Options

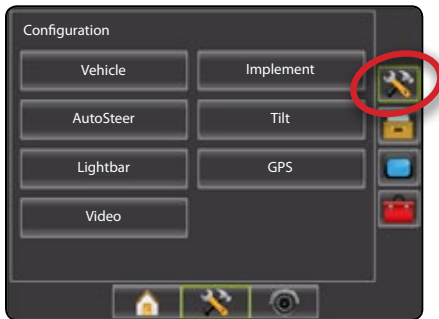
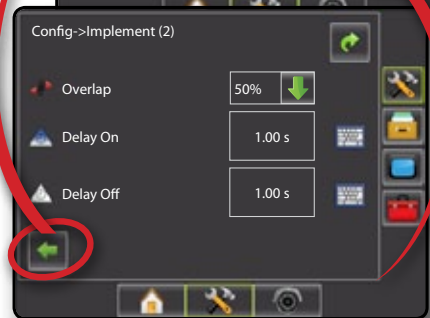
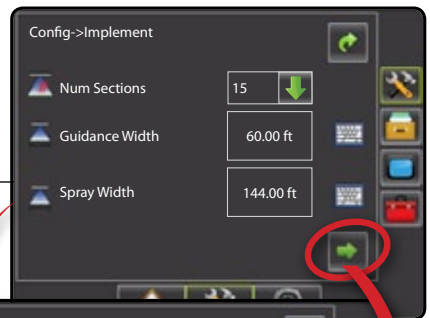
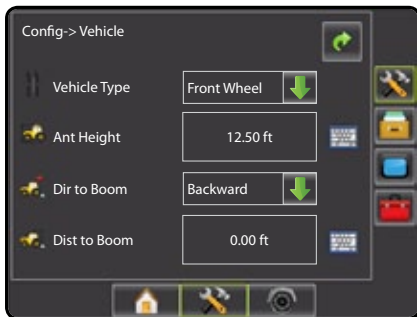









Figure 1-7: Configure Vehicle and Implement Options



## Vehicle Setup

Vehicle Setup is used to configure Vehicle Type, Antenna Height, Direction to Boom and Distance to Boom.

1. Press CONFIGURATION side tab .
2. Press **Vehicle**.
3. Select from:
  - ▶ Vehicle Type  – used to select the type of vehicle steering that most closely represents your vehicle
  - ▶ Antenna Height  – used to enter the height of the antenna from the ground
  - ▶ Direction to Boom  – used to select whether the boom is located behind or in front of the GPS antenna
  - ▶ Distance to Boom  – used to enter the distance from the GPS antenna to the boom
4. Press RETURN arrow  or CONFIGURATION side tab  to return to the main Configuration screen

*NOTE: All settings under Vehicle Setup are required for autosteer and tilt sensor operation, as well as proper implement operation.*










Figure 1-8: Vehicle Setup Options





## Implement - SmartCable or SDM

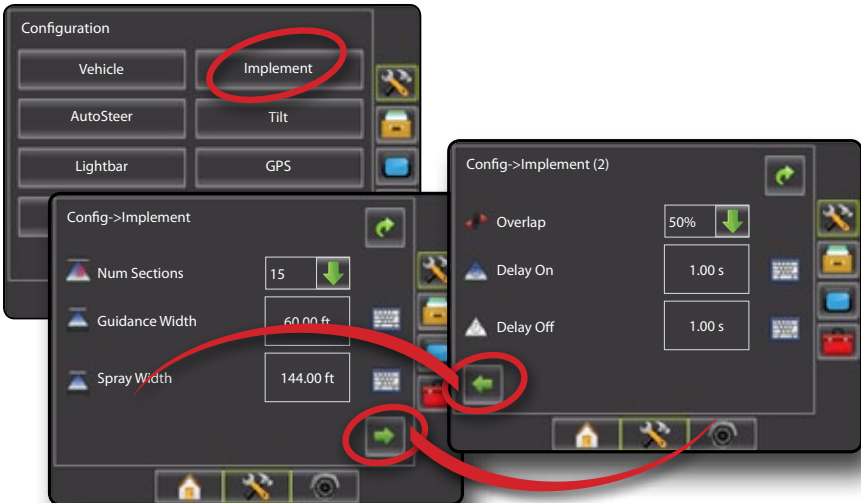
Implement Setup is used to establish number of boom sections, guidance width, spray width, overlap percentage, implement delay on time and implement delay off time.

*Note: If a SmartCable or Section Driver Module (SDM) is not present the configurations for Number of Boom Sections, Overlap, Delay On and Delay Off will not be available - only Guidance Width and Spray Width can be entered.*

1. Press CONFIGURATION side tab .
2. Press **Implement**.
3. Select from:
  - ▶ Number of Boom Sections  – used to select the number of available boom sections
  - ▶ Guidance Width  – used to enter the width between the guidelines
  - ▶ Spray Width  – used to enter the width of each implement section
  - ▶ Overlap  – used to select the amount of overlap allowed when the boom sections are turned on and off
  - ▶ Delay On  – used to enter the timing for the boom section valves to switch on
  - ▶ Delay Off  – used to enter the timing for the boom section valves to switch off
4. Press RETURN arrow  or CONFIGURATION side tab  to return to the main Configuration screen.

*NOTE: Press  or  to switch between Implement setup screens.*


*Figure 1-9: Implement Setup Options with SmartCable or SDM*



## OPERATION USING YOUR MATRIX® PRO

BoomPilot is used to set BoomPilot to Off/Manual , Automatic  or All On .



*NOTE: GPS is unavailable when the BOOMPILOT icon is grey . BoomPilot status bar icon will be Off/Manual .*

*The BOOMPILOT icon  is unavailable if a SmartCable or Section Driver Module (SDM) is not present.*

*Boom master will always override BoomPilot auto condition and turn sections off.*



*BoomPilot auto mode does not require a boundary.*


### Matrix Pro BoomPilot Switch Configuration

BoomPilot (ABSC) System	Controller Master Switch or Original Master Switch	Controller Boom Switches or Original Boom Switches	Matrix Pro Spray Icon
Automatic Mode	On	Off	
Manual Mode	On	On	

### Off/Manual & Automatic

To switch BoomPilot between off/manual  and automatic :


1. Turn the controller master switch to the “On” position. The individual boom section switches should remain in the “Off” position.
2. Press NAVIGATION AND GUIDANCE OPTIONS icon  to display navigation options.
3. Press BOOMPILOT icon .



◀ Off/Manual – Status Bar Icon will change to red 

◀ Automatic – Status Bar Icon will change to green 

In areas where application is not desired, manually turn “off” the rate controller master switch to shut off the booms. Turn the master switch “on” to resume application.

### All Booms On Mode

To turn all booms on :

1. Press NAVIGATION AND GUIDANCE OPTIONS icon  to display navigation options.
2. Press and hold BOOMPILOT icon .

◀ All On – Status Bar Icon will change to yellow 

*NOTE: This does not apply unless a SmartCable or SDM is installed on the system.*

## Example

1. While in manual mode on BoomPilot, enter the field to make the first lap around the field as Matrix Pro continues to track area applied. Manual mode is used to avoid rapid boom on/off activity when backing into corners on first lap.
2. Once back to start point:
  - i) turn section switches “Off”
  - ii) activate automatic mode on BoomPilot
  - iii) turn master “On”
  - iv) begin operation for remainder of field performing guidance functions as desired.

Figure 1-10: Automatic to All Booms On Mode




## BoomPilot Status


BoomPilot Status displays information regarding the current status of the BoomPilot system

1. Press BOOMPILLOT STATUS icon    to view the number of sections.



### BoomPilot Status

 Red = Off/Manual

 Green = Automatic

 Yellow = All On

No icon = Single Boom Section (no SmartCable or SDM installed on system)



# BOOMPILOT<sup>®</sup>

## INSTALLATION MANUAL

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This installation manual covers installation of Matrix Pro with TeeJet 744E Sprayer Control (with 5 sections).

***BoomPilot<sup>®</sup>***



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020-053-UK R2  
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