

# BOOMPILOT<sup>®</sup>

## INSTALLATION MANUAL

Automatic boom section control installation manual  
for use with ARAG BRAVO 300 controller w/Matrix<sup>®</sup> Pro



**TeeJet<sup>®</sup>**  
TECHNOLOGIES

**BoomPilot<sup>®</sup>**

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

## Copyrights

© 2013 TeeJet Technologies. All rights reserved. No part of this document or the computer programs 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.



## 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.

# Table of contents

---

<b>REQUIRED COMPONENTS</b>	<b>2</b>
----------------------------	----------

---

<b>PRINCIPLE OF OPERATION</b>	<b>4</b>
-------------------------------	----------

---

<b>INSTALLATION</b>	<b>4</b>
---------------------	----------

---

1.	INSTALLING THE ARAG 180 ADAPTER CABLE .....	4
2.	MOUNT & CONNECT SDM.....	7
3.	DISCONNECT & RECONNECT HARNESES & CABLES .....	7
4.	CONNECT POWER/CAN/DATA CABLE TO BOOMPILOT HARNESS .....	8
5.	CONNECTING TO POWER.....	8
6.	RECOMMENDED ELECTRONICS INSTALLATION .....	8
7.	COMPLETE ELECTRONIC INSTALLATION .....	8

---

<b>SYSTEM CHECK</b>	<b>9</b>
---------------------	----------

---

	Check AUTOMATIC mode: .....	9
	<i>ARAG BRAVO 300:</i> .....	9
	<i>Matrix Pro:</i> .....	9
	Check MANUAL mode:.....	9
	<i>ARAG BRAVO 300:</i> .....	9
	<i>Matrix Pro:</i> .....	9

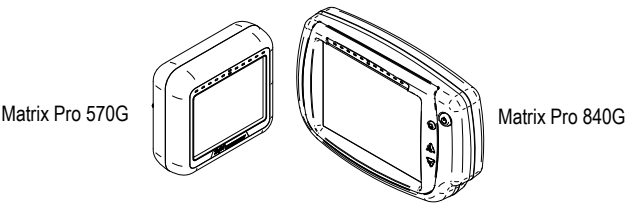
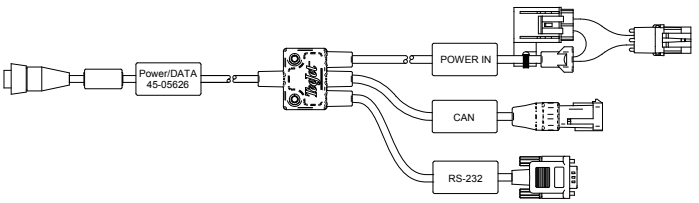
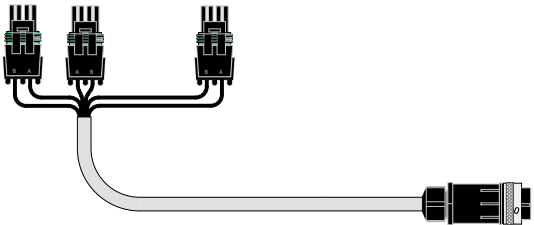
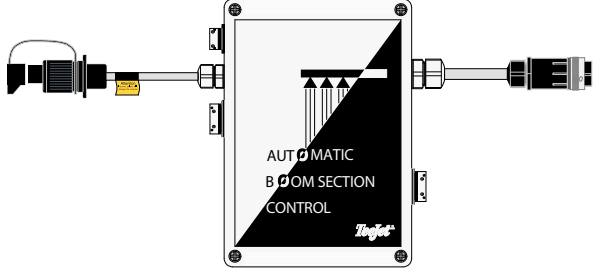
## REQUIRED COMPONENTS

Unpack the installation kit and identify the required parts for your installation.

Item	Part Number	Description	Quantity
A	90-xxxx*	Matrix Pro guidance controller kit .....	1
B	45-05845	Power/CAN/data cable .....	1
C	199-263	BoomPilot harness.....	1
D	902-364	ABSC adapter box .....	1
E	XXX-XXX*	ARAG 300 adapter cable .....	1
	XXX-XXX*	.....	1
	XXX-XXX*	.....	1
F	020-044	Installation manual, ARAG BRAVO 300.....	1
G	98-05243	Matrix Pro BoomPilot setup guide .....	1

\*Part number is dependent on kit contents

Part number	Description
903-332	ABSC adapter box kit for ARAG 300, 4 sections
903-333	ABSC adapter box kit for ARAG 300, 5 sections
903-334	ABSC adapter box kit for ARAG 300, 7 sections

Item	Part #	Description	Illustration
A	Part number is dependent on kit contents	Matrix Pro guidance controller kit	 <p>Matrix Pro 570G      Matrix Pro 840G</p>
B	45-05845	Power/CAN/data cable	
C	199-263	BoomPilot harness	
D	902-364	ABSC adapter box	

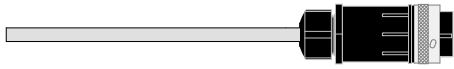
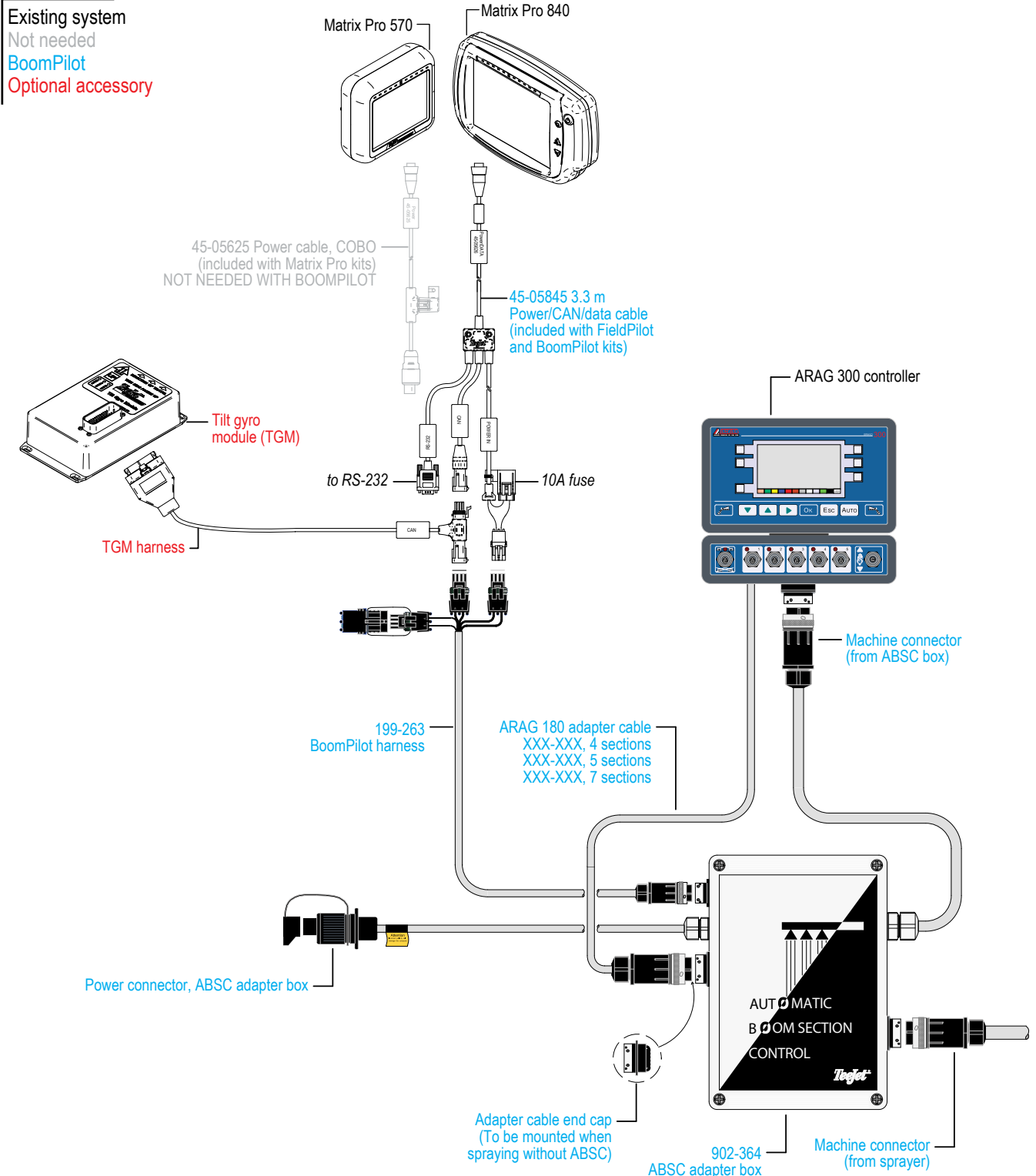
Item	Part #	Description	Illustration
E	XXX-XXX* XXX-XXX* XXX-XXX*	ARAG 300 adapter cable	
F	020-044	Installation manual, ARAG BRAVO 300	
G	98-05243	Matrix Pro BoomPilot setup guide	

Figure 1: System diagram



## PRINCIPLE OF OPERATION

The BoomPilot system controls the sections valves according to the GPS position. The GPS makes it possible to avoid overlaps or skips.

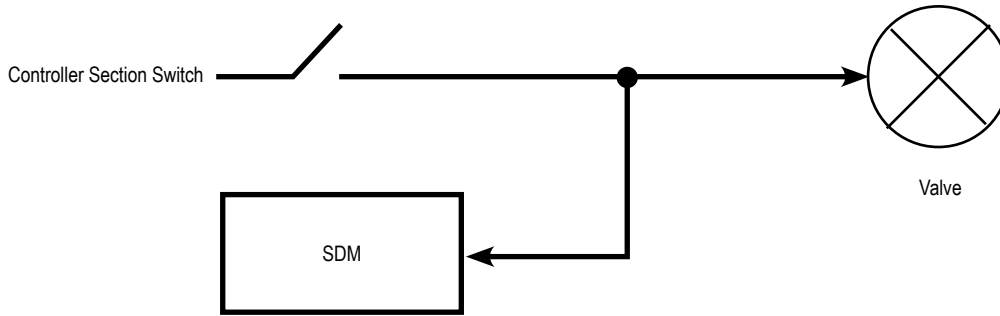
The Section Driver Module (SDM) is designed for switching active high when spraying. This means that a 12V signal is issued to control the corresponding section valve.

The SDM is connected in parallel with the controller section switches.


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

The BoomPilot monitors the controller section switches that controls the valves in manual mode. The the Master switch can be used both in automatic mode as well as in manual mode.

Figure 2: Principle of operation



## INSTALLATION

 If there are questions concerning the installation of the BoomPilot system on this vehicle, or due to the changes in component specifications the parts supplied in the kit are not exactly as presented in this document, please contact your dealer or TeeJet Customer service representative for clarification before installation. TeeJet Technologies is not responsible for misuse or incorrect installation of the system.

*NOTE: All references to left and right are stated as if the user is seated in the driver's seat.*

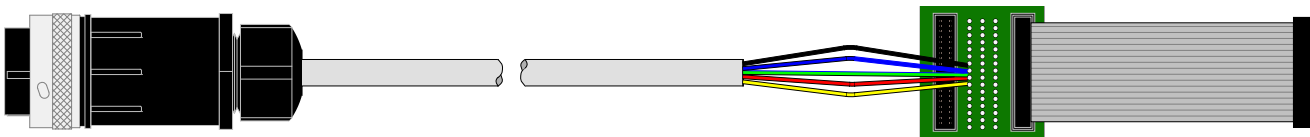
*NOTE: BE VERY CAREFUL TO ABSOLUTELY SECURE ALL CABLES AND HOSES SO THAT THEY DON'T INTERFERE WITH THE MANY MOVING PARTS OF THE MACHINE!*

### 1. INSTALLING THE ARAG 180 ADAPTER CABLE

To get electrical contact with the sections and the Master switch in the ARAG 300, it's necessary to install the adapter cable (POS. 9), in the ARAG 300 controller. This is a critical operation and must only be conducted of persons with the necessary skills.

*Note: In case the ARAG 300 controller is damaged during the installation, it's on the buyers sole risk and therefore the buyer is not entitled to any form for compensation.*

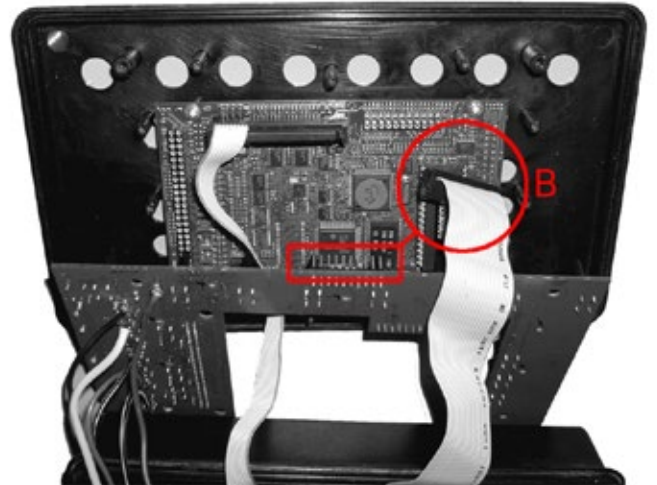
Figure 3: Arag 300 adapter cable



Disassemble the ARAG 300 controller by unscrewing the screws on the rear side (Controller and switch box).



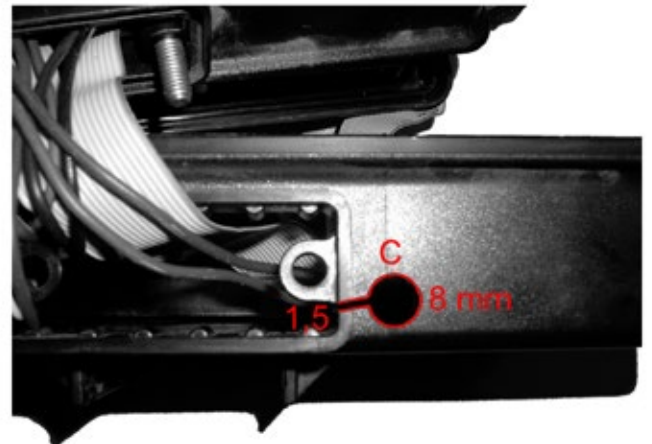
Disconnect the flat cable connector from the circuit board (B).



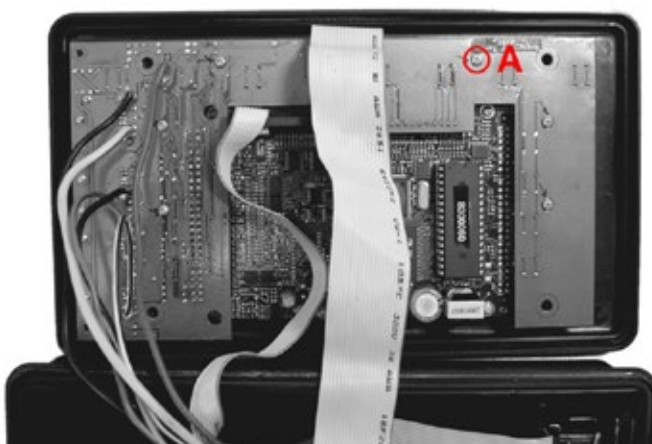
Unscrew the two 6 mm bolts which fix the controller to the switch box part.



Drill a 8 mm hole in the bottom of the controller housing (C).  
Make a 1,5 mm gab as shown on the picture.



Unscrew all the screws which fasten the circuit board to the front housing (A).



Install the ARAG 300 adapter cable (D).





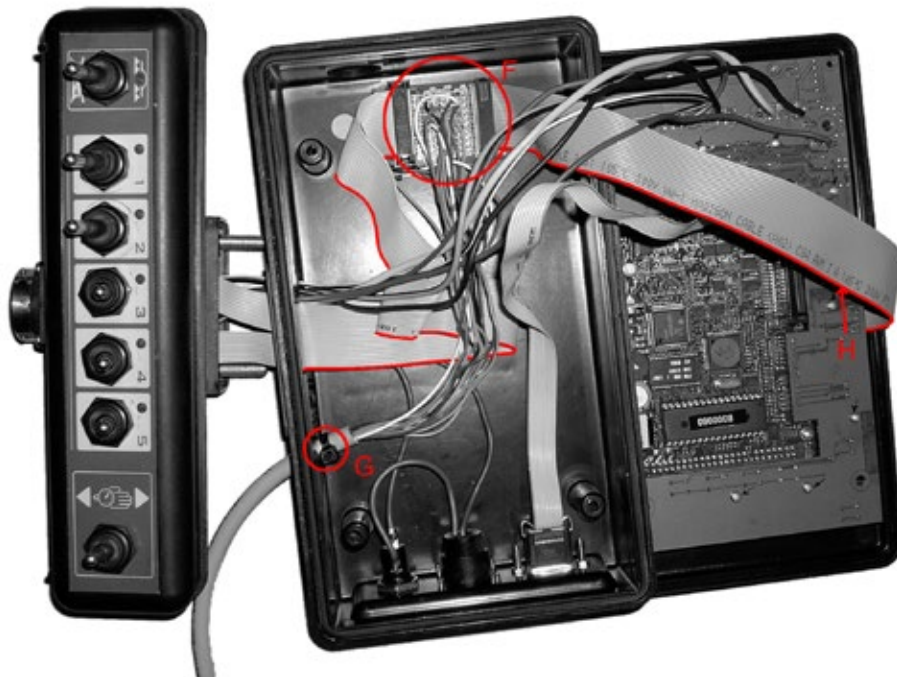
Place the free wires of the ARAG 300 adapter cable one by one in the hole and pull the cable trough as shown (E).



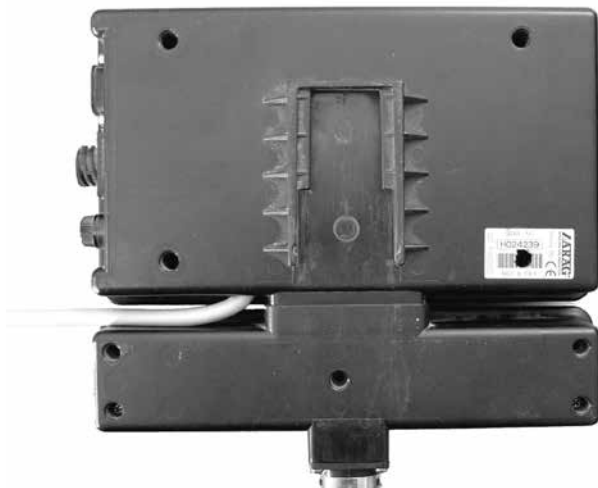
Place the Circuit board on in the bottom of the controller housing and fasten it with the adhesive tape (F).

Connect the flat cables as shown on the picture (H).

Secure the cable with a cable strip (G).



Organize the wires inside carefully and assemble the unit again.

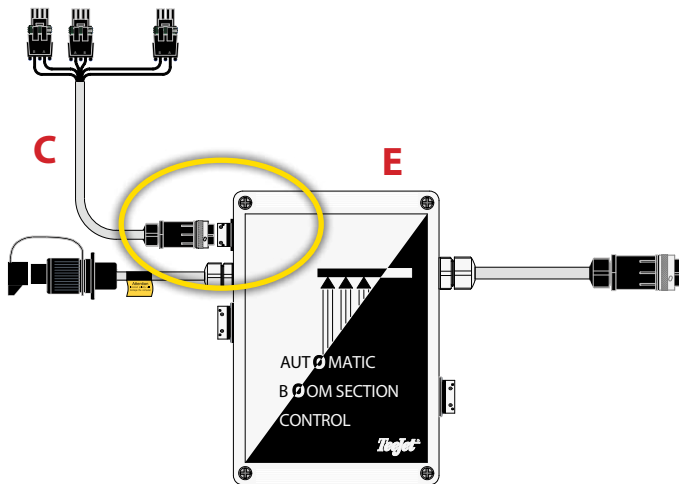




## 2. MOUNT & CONNECT SDM

1. Mount SDM (E) as shown where LED's can be seen for troubleshooting.
2. Connect SDM (E) to BoomPilot Harness (C).

Figure 4: Connect SDM



## 3. DISCONNECT & RECONNECT HARNESES & CABLES

The BoomPilot SDM harness (C) tees into the existing system's connection between the ARAG BRAVO 300 rate controller and flow control harness.

1. Disconnect existing connection at the back of the ARAG BRAVO 300 console.
2. Connect BoomPilot harness (C) to ARAG BRAVO 300 console.
3. Connect BoomPilot harness (C) to existing ARAG BRAVO 300 flow control harness.

Figure 5: Disconnect existing connection

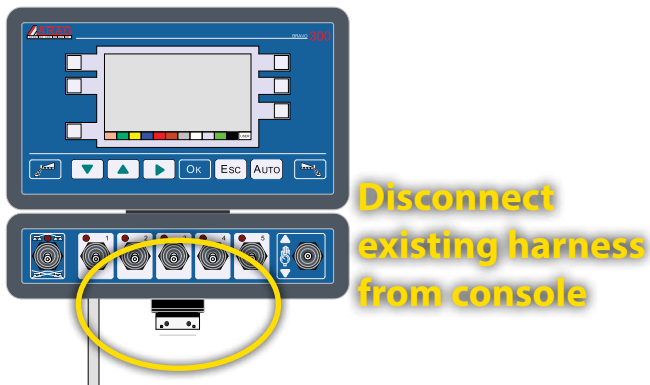
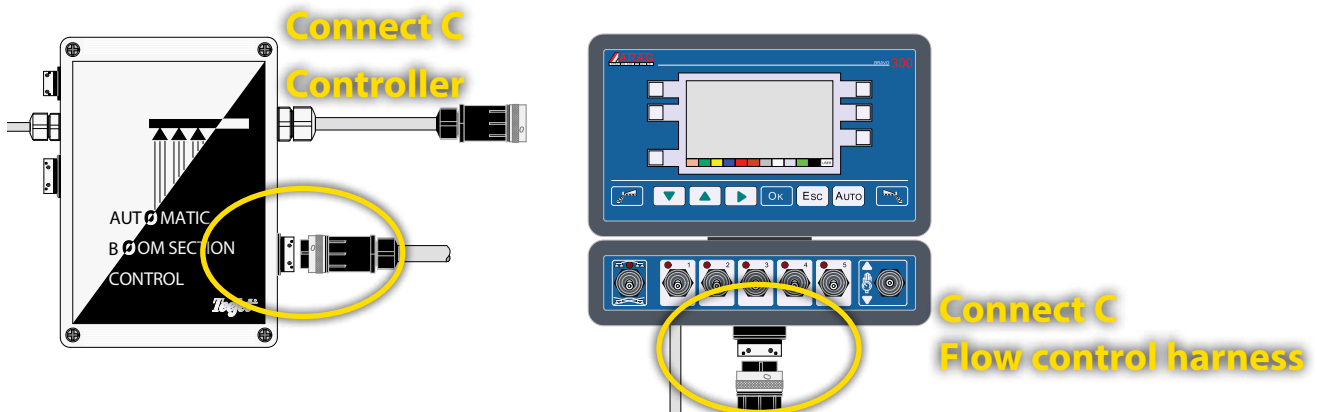


Figure 6: BoomPilot harness to flow control harness

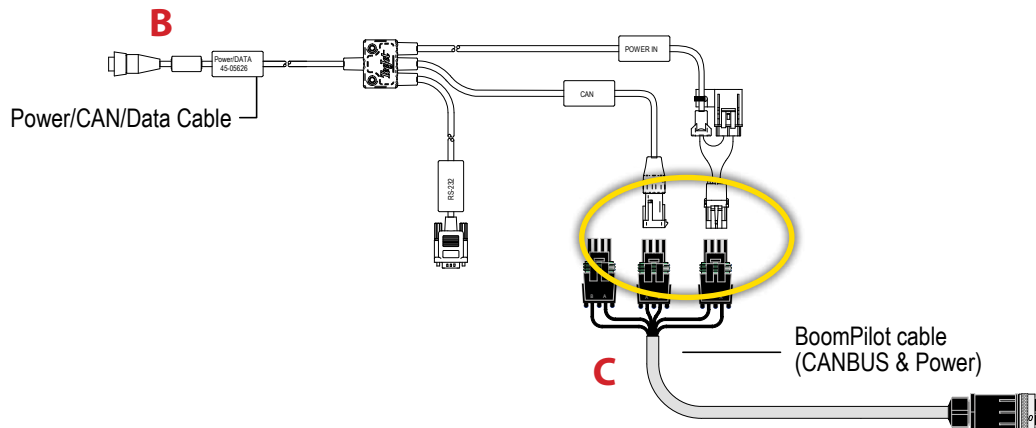
BoomPilot harness to controller



## 4. CONNECT POWER/CAN/DATA CABLE TO BOOMPILOT HARNESS

Connect Power/CAN/data cable (B) to BoomPilot harness (C).

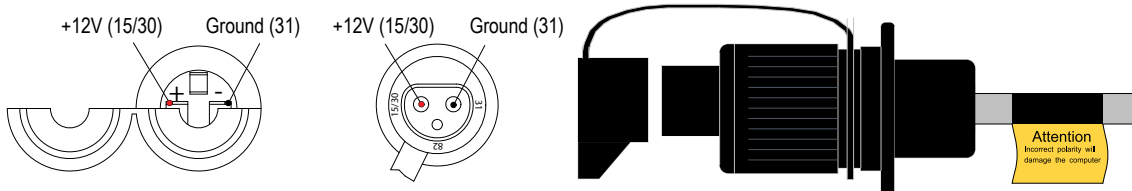
Figure 7: Connect power/CAN/data cable to BoomPilot harness



## 5. CONNECTING TO POWER

Warning: When connecting the system to 12V power it's very important that the polarity is correct, if not the system will be damaged.

COBO cable

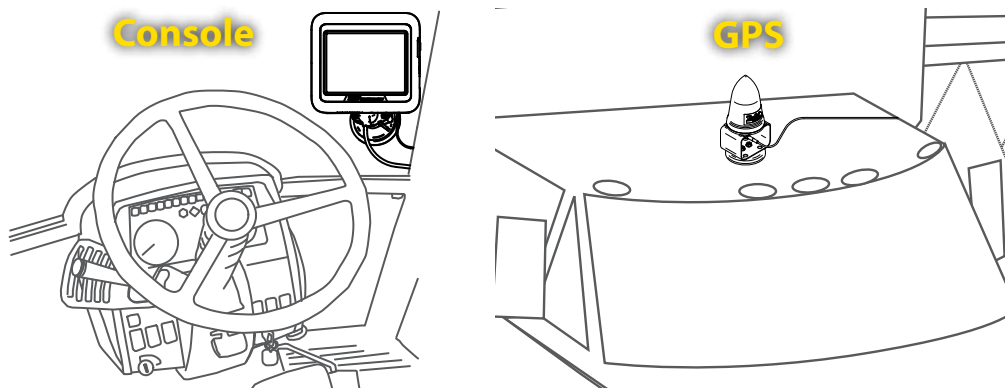


The power supply must be strong enough to operate the Section and Master valves. The total current will depend on the used valve type.

## 6. RECOMMENDED ELECTRONICS INSTALLATION

The control console can be mounted to the operator's preference. The GPS antenna should be mounted in the center on top of the cab on a metal surface of at least 10 cm square.

Figure 8: Recommended electronics installation



## 7. COMPLETE ELECTRONIC INSTALLATION

Refer to the Matrix Pro BoomPilot Setup Guide for further instructions on setting up and using your Matrix Pro for ABSC.

If not using a Matrix Pro, please refer to the owner's manual supplied with the guidance system to complete the electronic installation and setup.

## 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:

#### ARAG BRAVO 300:

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

### Check MANUAL mode:

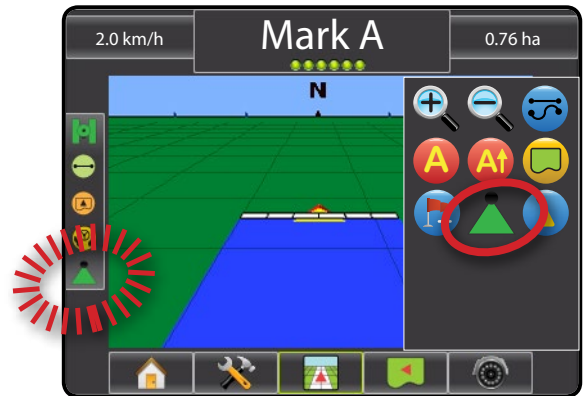
#### ARAG BRAVO 300:

- 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

Figure 9: Automatic to all booms on mode













# BOOMPILOT<sup>®</sup>

## USER MANUAL

---

A series of equipment-specific installation kits have been developed to work in conjunction with your automated boom section control system. This kit contains the necessary components and instructions to install ABSC on a ARAG BRAVO 300. Please review this manual thoroughly before beginning the installation process.

***BoomPilot***<sup>®</sup>



TeeJet Aabybro  
Mølhavevej 2  
DK 9440 Aabybro  
Danmark  
[www.teejet.com](http://www.teejet.com)

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

020-044-UK R1 EN English  
© TeeJet Technologies 2013