

# CS 550,551,550i,551i/150RC

## Spreader Joystick Controller Installation Manual



## Table of Contents

<b>1</b>	<b>System Components</b>	<b>3</b>
<b>2</b>	<b>Spreader System Layout</b>	<b>4</b>
<b>3</b>	<b>Joystick System Layout</b>	<b>4</b>
<b>4</b>	<b>Mounting</b>	<b>5</b>
4.1	Microcontroller	5
4.2	Display and Joystick	6
<b>5</b>	<b>Dimensions</b>	<b>7</b>
5.1	Display	7
5.2	Joystick	7
<b>6</b>	<b>Connector Details</b>	<b>8</b>
6.1	Microcontroller Connection	8
6.2	Solenoid Connection	8
<b>7</b>	<b>Cable Connections</b>	<b>9</b>
7.1	Cable Connections	9
7.2	Main Harness Connections	9
<b>8</b>	<b>Cable Function Chart</b>	<b>11</b>
<b>9</b>	<b>Installation Notes</b>	<b>13</b>
9.1	Step 1	13
9.2	Step 2	13
<b>10</b>	<b>Installation Test Checklist</b>	<b>15</b>
<b>11</b>	<b>Warning</b>	<b>16</b>
<b>12</b>	<b>Appendix – Detailed CS550/150 System Layout</b>	

Bosch Rexroth Canada Corp. reserves the right to revise this information at any time and for any reason and reserves the right to make changes at any time, without notice or obligation, to any of the information contained in this piece of literature.

Please check for updates at: [www.boschrexroth.ca/compu-spread](http://www.boschrexroth.ca/compu-spread)

# 1 System Components



## 2 550i Spreader System Layout

**See Appendix (CS-550i System Layout Drawing).**

## 3 Joystick System Layout

**See Appendix (CS550i-150RC System Layout Drawing).**

## 4 551i System Layout

**See Appendix (CS551i-150RC System Layout Drawing).**

The following is a detailed navigation chart for the system layout. See Appendix for the detailed system layout including all the components and part numbers.

<b>CS-550 / 150 ELECTRONIC SYSTEM BUILDER</b>			
<b>TABLE OF CONTENTS</b>			
COORDINATES			
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>X.Y</b>	<b>DETAILS</b>
<b>550 SPREADER</b>			
1	SPREADER PACKAGES	E1	DISPLAY AND RC INCLUDED
2	MAIN HARNESS	D7	ADVANCED OR LITE
3	CANBUS CABLES	C2	
4	SENSOR EXTENSIONS	B6	
5	SENSOR NETWORK	C6	PULL-UP RESISTOR (WHITE MOTOR)
6	VEHICLE SPEED	B7	
7	VALVE EXTENSIONS	E6	IF RC LOCATED IN CAB
8	550 AUXILIARY CABLE	E3	MATERIAL DETECT / CHANGE
9	VALVE ADAPTER	E6	(C4M TO ITT) FOR OLD SCB/MP18
<b>150 ARMREST</b>			
1	RCE CABLES	A3	IN-VALVE OR IN-CAB
2	POWER FLOAT	C4	NO ADAPTERS FOR NEW C4 BLOCK
3	150 AUXILIARY	B2	
4	CANBUS CABLE	C2	
5	LOW OIL, SPIN. REV.	C3	ADAPTERS REQUIRED
<b>SPECIAL FUNCTIONS</b>			
1	PRESSURE/TEMP/CHUTE	D3	HYDRAULIC MONITORING
2	ROAD TEMP	D0	ROAD AND AMBIENT TEMP
3	WIFI	D2	NEED EXTENSION?
4	GPS PUCK	E0	
5	ANTI-ICE	E4	USE C4-C4 EXTENSIONS (CUT END)
<b>TOW PLOW</b>			
1	TP SPREADER PKG	E1	INCLUDES TWO 4-4's
2	MAIN HARNESS	D9	
3	CANBUS SPLITTER	D6	
4	SENSOR EXTENSIONS	B6	RC ON TRUCK OR TRAILER?
5	SENSOR NETWORK	C6	IF PULL-UP RESISTORS REQUIRED
6	VALVE EXTENSIONS	E6	RC ON TRUCK OR TRAILER?

## 5 Mounting

### 5.1 Microcontroller

1. The microcontrollers(s) can be mounted horizontal or with the connectors oriented to the bottom. The controller cannot be mounted with the connectors facing upwards.
2. The mounting surface must be flat and all four bracket holes used.
3. Sufficient space must be allowed for the mating and un-mating of the connectors.
4. If the controller is mounted in the cab, valve extension cables are required to be routed into the valve enclosure.
5. If the controller is mounted in the valve enclosure, the main harness leads will terminate directly to the valve solenoid.
6. The mount hole spacing is 188mm (7.4") by 59mm (2.32").
7. See the "Installation Notes" for additional recommendations (page 15).

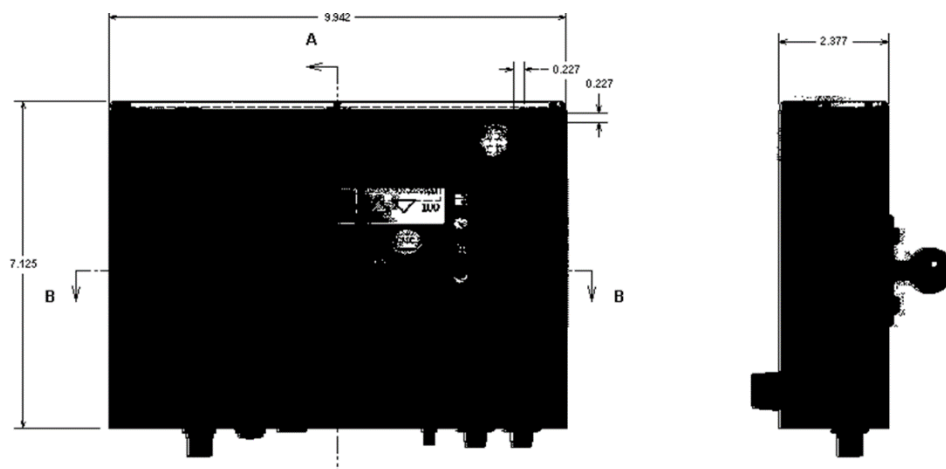




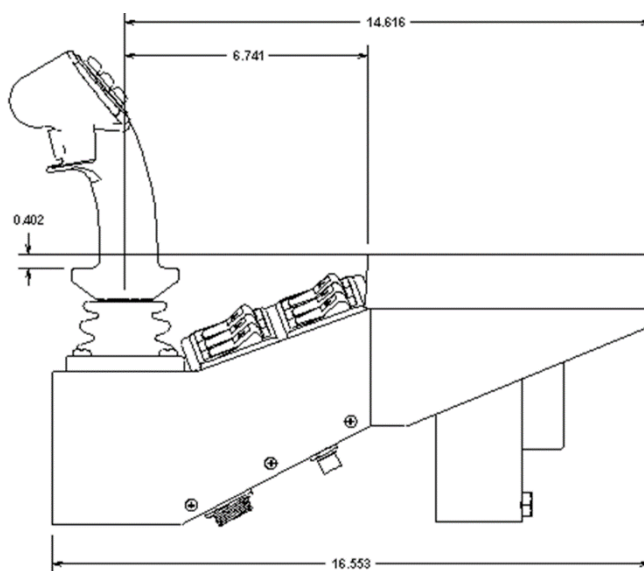


## 5 Dimensions

### 5.1 Display



### 5.2 Joystick

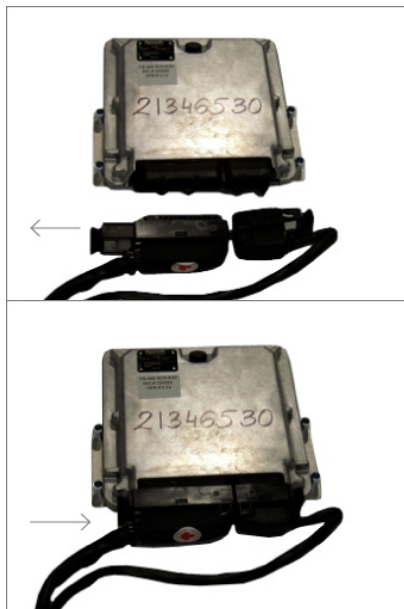


## 6 Connector Details

### 6.1 Microcontroller Connection

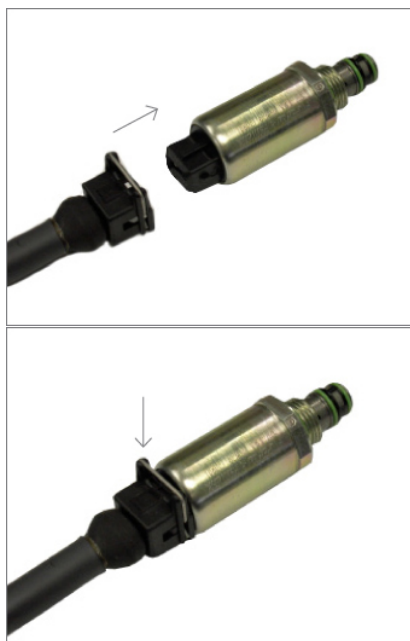
1. Extend sliding tabs.
2. Partially insert connector into socket and ensure the 4 coding posts align into housing.
3. Push sliding tabs in and the connector will fully insert and lock itself.
4. To remove, pull the tabs out and the connector will un-mate.

Note: The RC4-4 "Spreader" controller uses only the larger connector, while the RCE "Joystick" controller uses both.



### 6.2 Solenoid Connection

1. Push on the connector to mate.
2. Press metal retainer to un-mate.



## 7 Cable Connections

### 7.1 Cable Connections

Connect the CANBUS EXTENSION from CAN1 to the CANBUS lead on the main harness or to the FEMALE CONNECTOR on the armrest (if equipped).



Connect the MALE CONNECTOR to CAN2 of the RCE harness.

If switches are present: Connect the power harness to the ignition, disconnect then to the 2 PIN CONNECTOR.



- P3 interconnects with the 16 PIN ARMREST CONNECTOR. Connect the power harness to battery or ignition disconnect.
- P5 is for the AUXILIARY CABLE with bare leads. (See OSD for pinouts.)

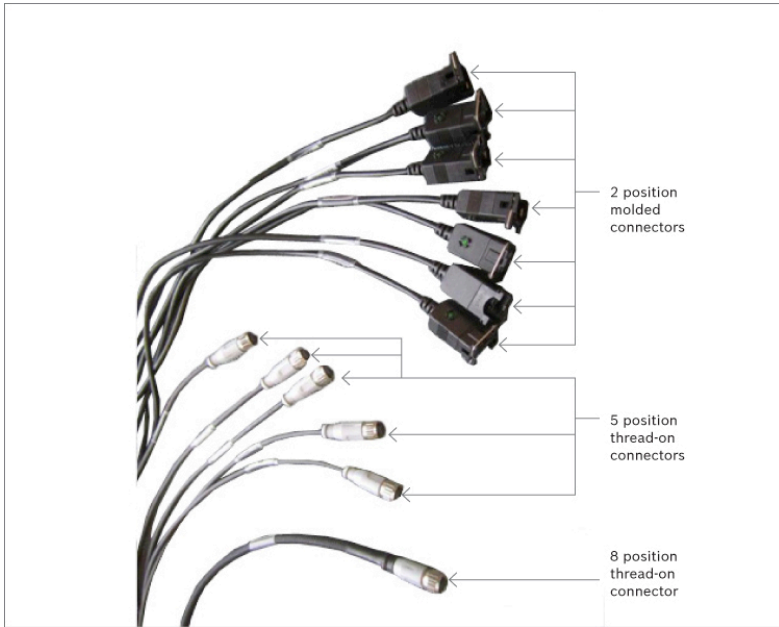


## 7.2 Main Harness Connections

All **2 POSITION MOLDED CONNECTORS** with diagnostic LEDs are for solenoids. Each leg has a function label.

Note: Valve extensions are required if the microcontroller is mounted in the cab (see page 7, note 4, 5).

- All **5 POSITION THREAD-ON** connectors are for sensors.
- The **8 POSITION THREAD-ON** connectors are for CANBUS and auxiliary digital inputs. (See layouts on pages 4 to 6.)
- See system layout for **Auxiliary Cable** and **Remote Pause/Blast**.
- See installation notes for routing details (page 15).
- See function chart for connection details (page 13, 14).



**NOTE: INLINE SENSOR NETWORK(PN:R987376742) NEEDS TO BE INSTALLED FOR SENSORS REQUIRING A PULL UP RESISTOR , SUCH AS WHITE MOTOR TYPES.**

# 8 Cable Function Chart

**Standard CS550 Cable Harness (PN: R987376368)**

*\*Wiring changes with Spinner reverse mode on firmware 99 and above*

Cable Label	Primary Function	Secondary Function
S5 SPINNER	Spinner Feed	Prewet(Spn Rvs)
S4 CONV.	Conveyor/Auger Feed	
S12 ANTI-ICE	Anti-ice Feed, Boom L	Cross CONV(Cross Cnv, Metric)

		Spinner Rvs (Spn Rvs RC Firmware 98 and lower) *Gate Lower (Spn Rvs with RC firmware 99 and up)
S11 LIQUID	Pre-wet Feed	Boom L (3Boom Anti-icing) Spinner Fwd (Spn Rvs RC Firmware 98 and lower) *Gate Raise (Spn Rvs with RC firmware 99 and up)
G1 GATE RAISE	Gate Raise Feed	Cross CONV1(Cross Cnv, Imperial) Boom L (Liquid+) Gate Raise (Spn Rvs with RC firmware 98 and lower) *Spinner Fwd (Spn Rvs with RC firmware 99 and up)
G2 GATE LOWER	Gate Lower Feed	Cross CONV2( Cross Cnv, Imperial) Boom Right(Liquid+) Gate Lower (Spn Rvs with RC firmware 98 and lower) *Spinner Reverse (Spn Rvs with RC firmware 99 and up)
GS 12V	12V Output W/GS	Boom C(3 Boom Anti-icing) Chute Left(Pattern) Air Gate(Air Gate) Boom C(Liquid+) Cross Cnv Dig(Cross Cnv, Metric)
REVERSE	Auger Reverse Feed	Boom R(3 Boom Anti-icing) Chute Right(Pattern) Cross Dig(Cross Cnv, Metric)
S3 GSS	Ground Speed Input	
S6 CSS	Conv Speed feedback	
S9 LSS	Pre-wet Flow Feedback	Spinner Motor Speed (Wt/Area)
S10 GATE SS	Gate Pos Feedback	
S8 SPIN SS	Anti-ice Flow Feedback	
AUX SS	Temp &Pressure Inputs	Chute Position Input (Pattern) *Spinner Fwd/Rvs select Pin 5 (Spn Rvs with RC firmware 99 and up)

**CS550Lite Cable Harness (PN: R987376367)**

Cable Label	Primary Function	Secondary Function
S5 SPINNER	Spinner Feed	Boom L(3 Boom Anti-icing) Prewet(Spn Rvs)
S4 CONV.	Conveyor/Auger Feed	Boom R(3 Boom Anti-icing)
S11 LIQUID	Pre-wet Feed	Boom C( 3 Boom Anti-icing) Spinner Fwd(Spn Rvs)

S7 REVERSE	Anti-icing/Auger Reverse /GS12/Air Gate	Option selectable, one function only
S3 GSS	Ground Speed Pulse	
S6 CSS	Conveyor Speed Feedback	
S9 LSS	Pre-wet Flow Meter Feedback	
S8 SPIN SS	Spinner Speed Feedback	Anti-ice Flow Feedback
AUX SS	Pressure Input	

## 9 Installation Notes

### 9.1 Step 1

Unpack all the supplied parts and check the packing list for completeness.

### 9.2 Step 2

Untie and layout all the cables supplied, to ensure proper lengths.

Note: Electromagnetic devices such as relays, magnetic switches and solenoids, can generate large negative voltage spikes. These large spikes are conducted into the vehicle's electrical system and may adversely affect all electronic devices including engine computers. It is strongly recommended that these electromagnetic devices be electrically suppressed. See warnings and instructions in Body Builder manuals.

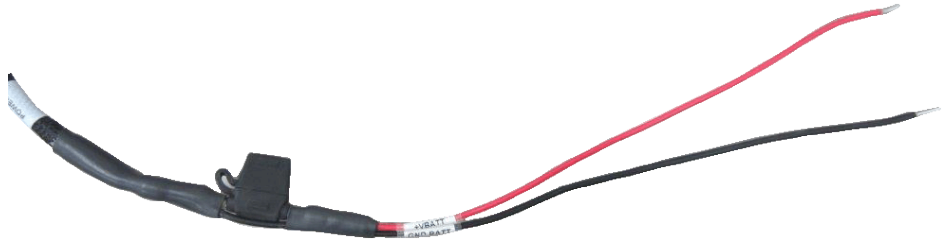
1. Connect the Controller 12V power supply and the ground wire using a dedicated circuit only. (Connect to the ignition disconnect, if available. Otherwise, connect directly to the battery.)
2. Ensure wiring for transmission devices such as radios, etc. are not attached to the controller or bundled with the controller wiring.
3. A sufficiently large distance to radio systems must be maintained.
4. Make sure all mounting posts are properly grounded; a direct ground wire to the negative battery post is recommended. Floor mats and undercoating will interfere with proper grounding.
5. Disconnect the battery terminals before welding on a vehicle with electronic equipment.
6. Disconnect the negative battery terminal when wiring electronic devices.
7. Mount the consoles so that they do not interfere with vehicle controls or obstruct visibility.
8. Mount microcontrollers so that oil and salt spray do not contact the housing.
9. Route cables so that they will not be abused, damaged or immersed in oil.
10. When routing cables through metal opening, always use grommets to prevent cable damage.
11. When running wires around a dump box pivot point, ensure no connectors can be separated when the hoist is activated.
12. Tie cables clear of all moving parts like drive-axles or conveyor chains.
13. Observe the cable labeling (under the clear cover) for the proper termination of inputs and outputs.
14. Use dielectric grease on all external cable connections and pins to ensure proper corrosion protection.
15. Thoroughly clean all power and ground terminals before connecting power harness.
16. Stand clear of any hydraulic functions when first powering up the system
17. DO NOT drill holes in any of the enclosures.
18. DO NOT mount components onto the sides, top or front of the CS-150.



19. DO NOT re-wire any of the consoles or cable harnesses.
20. DO NOT weld on the vehicle without completely disconnecting all electronic consoles.
21. The cylindrical post on which the CS-150 console rests is the only point that may be used for mounting purposes as no circuitry or wiring is present inside it.

**Warning:**

- DO NOT remove the fuse holder on the main harness.



- Replace fuse with appropriate rating (see fuse chart)
 

2-2 MAIN HARNESS	R987376367	10A
4-4 MAIN HARNESS	R987376368	15A
150 RCE IN-VALVE HARNESS	R987376374	20A
150 RCE IN-CAB HARNESS	R987376369	20A

**\*\*\*** Failure to maintain proper fuse protection can lead to product damage and fire hazard not covered by warranty.

**Failure to follow the recommendations will void your warranty.**

## 10 Installation Test Checklist

<b>Work order #:</b>		<b>Date:</b>	
<b>Part number:</b>		<b>Software Version:</b>	
<b>Serial number:</b>		<b>Signature:</b>	
After all controller cables and hydraulics are plumbed – vehicle hopper empty			
<b>OK</b>	<b>NOTES</b>		
<input type="checkbox"/>	Start the vehicle – engage hydraulic pump		
<input type="checkbox"/>	Power on display, check for backlight and display operation		
<input type="checkbox"/>	Press the “speed” field and hold the “up arrow” for 5 seconds – Release (Turning on simulated ground speed)		
<input type="checkbox"/>	Press the up arrow again to increase speed to 20		
<input type="checkbox"/>	Rotate all the dials clockwise to 5 – rate should change		
<input type="checkbox"/>	Verify that the conveyor/auger is operating – feedback?		
<input type="checkbox"/>	Verify that the spinner is operating		
<input type="checkbox"/>	Verify that the liquid pump is operating – feedback?		
<input type="checkbox"/>	Verify that the gate cylinder and sensor is operating (if equipped)		
<input type="checkbox"/>	Press the speed down arrow to lower the speed to 0 – press the speed field to exit		
<input type="checkbox"/>	Drive the vehicle to check that vehicle speed registers		
<input type="checkbox"/>	Activate the joystick as defined in the OSD test drawing – verify proper actuation		
<input type="checkbox"/>	Test special functions – power float, low oil, emergency raise		
<input type="checkbox"/>	Test auxiliary switches for proper operation		

**The above procedure is a simple way to verify system connections, hydraulics operation, and sensor feedback. It may not work for all the systems. The reliable way to test is to follow the steps in 550 Calibration Manual.**

## 11 Warning

This glass LCD touch screen display has been extensively tested and validated against its intended use. This glass could crack and break if the display is dropped on to a hard surface or receives a substantial impact. If the glass chips or cracks, discontinue use and contact Bosch Rexroth Canada to have it replaced - do not touch or attempt to remove the broken glass. Any misuse/abuse causing damage, whether intended or not, will become the sole responsibility of the owner/buyer which will render the warranty of this product, void

## Notes



LIABILITY NOTICE

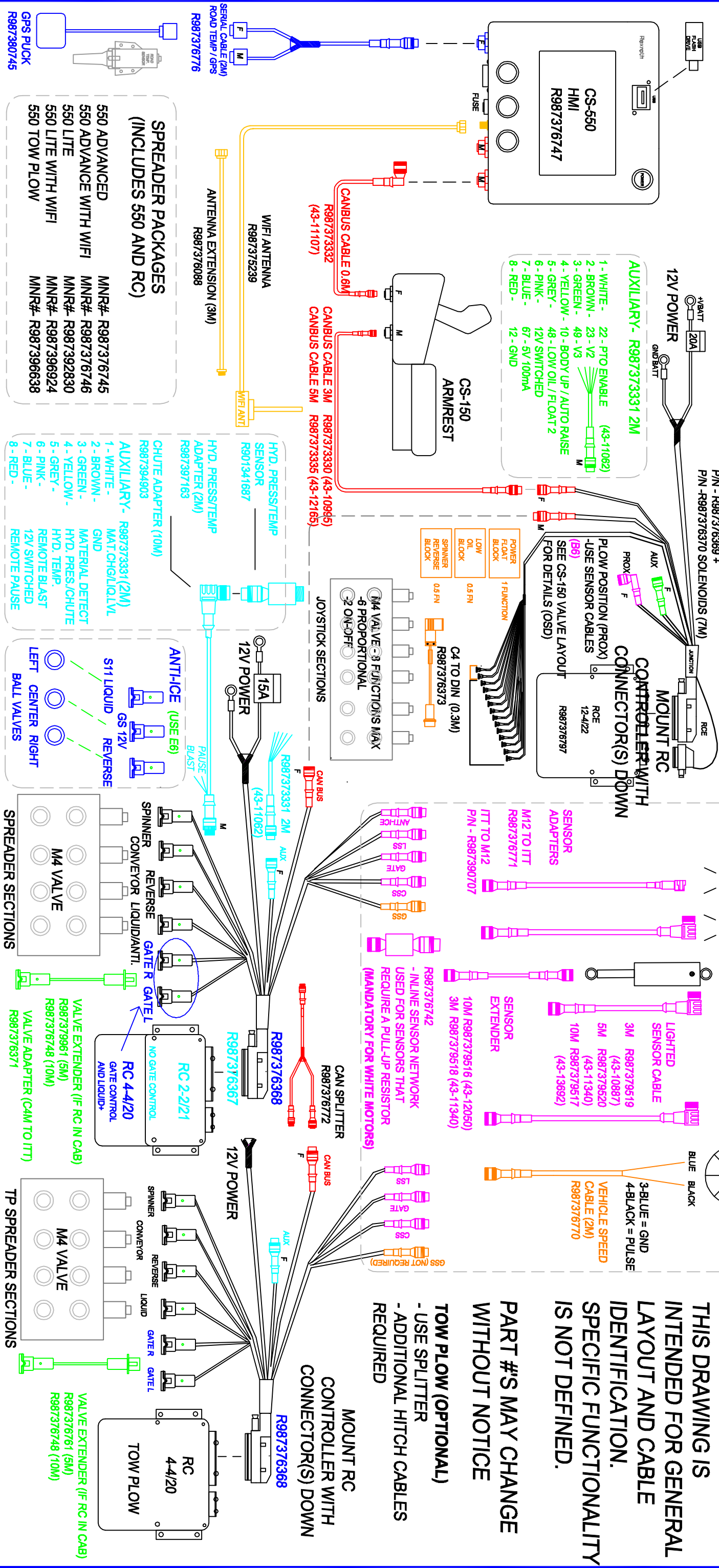
THE DATA SPECIFIED ON THIS DOCUMENT ONLY SERVES TO DESCRIBE THE PRODUCT. NO STATEMENTS CONCERNING A CERTAIN CONDITION OR SUITABILITY FOR A CERTAIN APPLICATION CAN BE DERIVED FROM OUR INFORMATION. THE INFORMATION GIVEN DOES NOT RELEASE THE USER FROM THE OBLIGATION OF OWN JUDGMENT AND VERIFICATION. IT MUST BE REMEMBERED THAT OUR PRODUCTS ARE SUBJECT TO A NATURAL PROCESS OF WEAR AND AGING.

RCE JOYSTICK HARNESS (IN VALVE)  
ELECTRONICS MOUNTED IN VALVE ENCLOSURE

R987376374

RCE HARNESSSES (IN CAB)

P/N - R987376369 +  
P/N -R987376370 SOLENOIDS (7M)



NOTE:

THIS DRAWING IS  
INTENDED FOR GENERAL  
LAYOUT AND CABLE  
IDENTIFICATION.  
SPECIFIC FUNCTIONALITY  
IS NOT DEFINED.

PART #S MAY CHANGE  
WITHOUT NOTICE

TOW PLOW (OPTIONAL)  
- USE SPLITTER  
- ADDITIONAL HITCH CABLES  
REQUIRED

MOUNT RC  
CONTROLLER WITH  
CONNECTOR(S) DOWN

Rexroth  
Bosch Group

CS-550\_SYSTEM  
LAYOUT

1	SEE_TABLE_OF_CONTENTS_FOR_DETAILS	I.N.	REVDT	DRAWN BY: T.GIES	JAN21/15	SHEET SIZE: SIZE
#				DESIGN ENG.: T.GIES	JAN21/15	REV.: #1
#				CUSTOMER:		
#				SCALE: SCALE	DRAWING NO.: 550_150_TP	
REV.	REVISION	BY	DATE			

