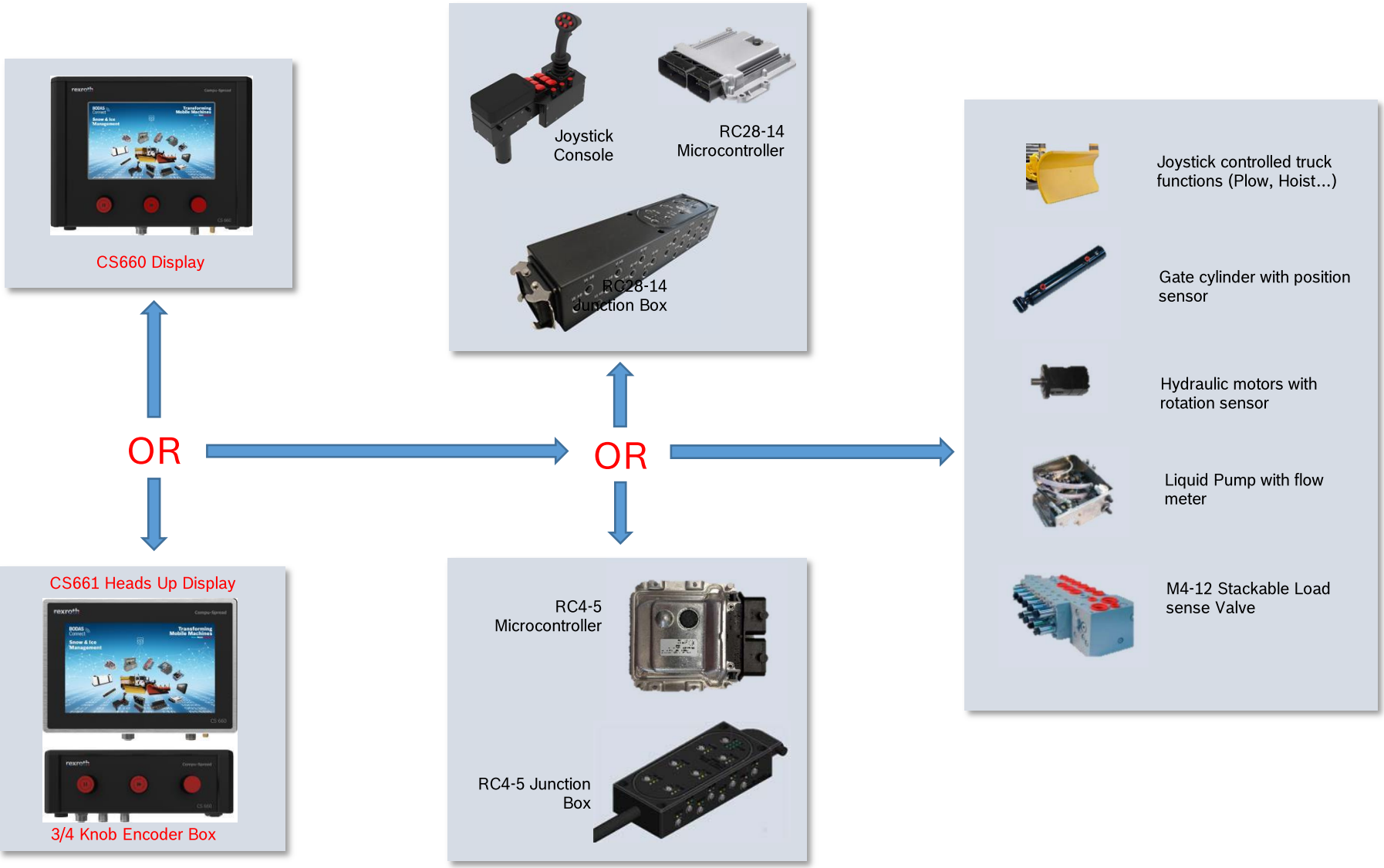
rexroth
A Bosch Company

CS660/CS661 Spreader Controller

Installation Information

Table of Contents

1 System Components

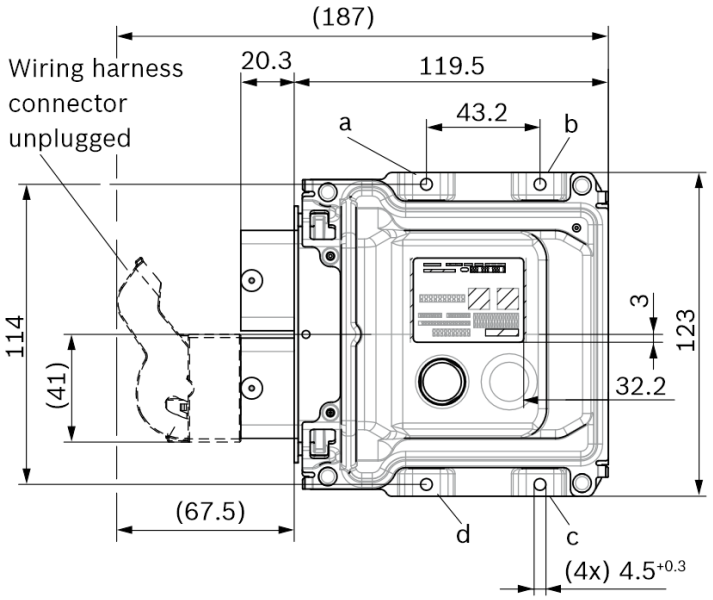


2 Mounting & Dimensions

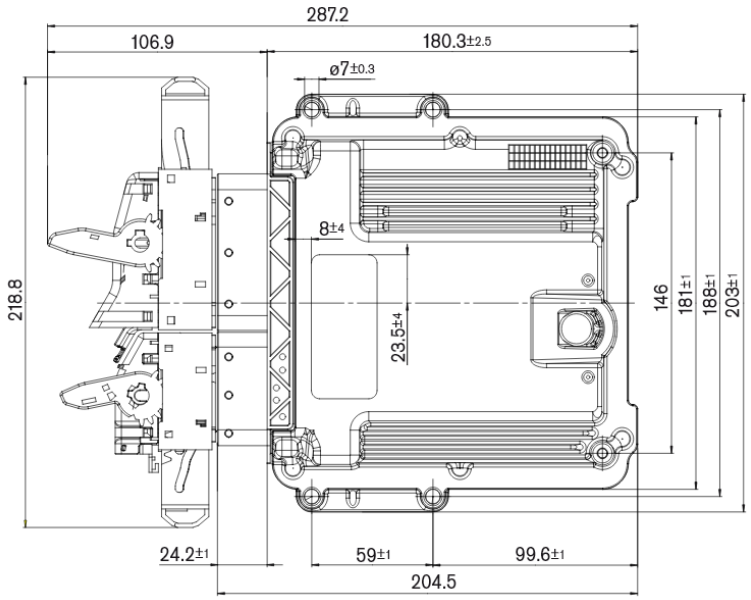
2.1 Microcontroller

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. As the controller is directly connected to it's junction box, mounting both parts must be considered at the same time.

RC4-5



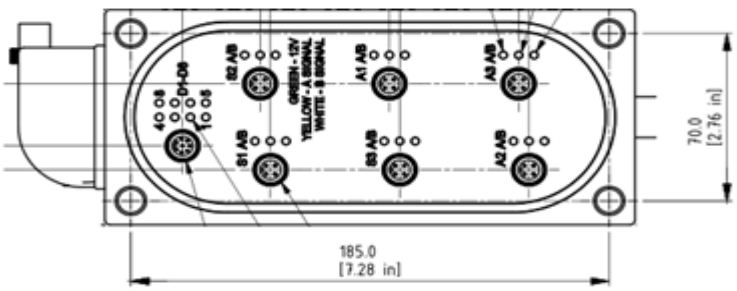
RC28-14

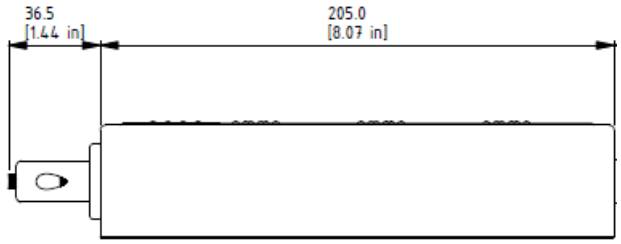


2.2 Junction Box

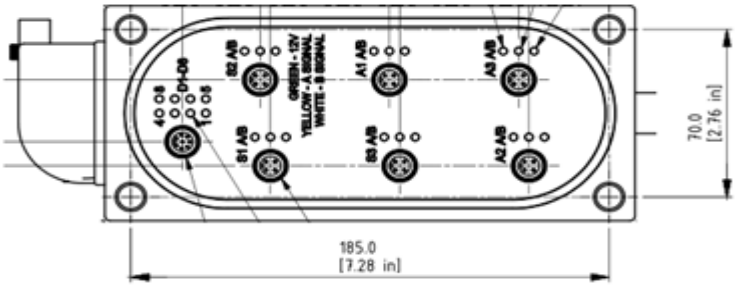
1. The junction box is designed to be mounted inside of an enclosure with a hole to accommodate the connection of sensors to outside devices.
2. The entire seal must make contact with the enclosure to prevent water and contaminants from entering the enclosure.

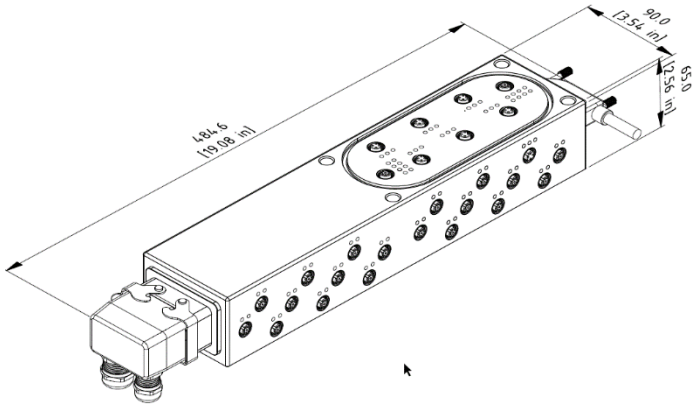
RC4-5 Junction Box





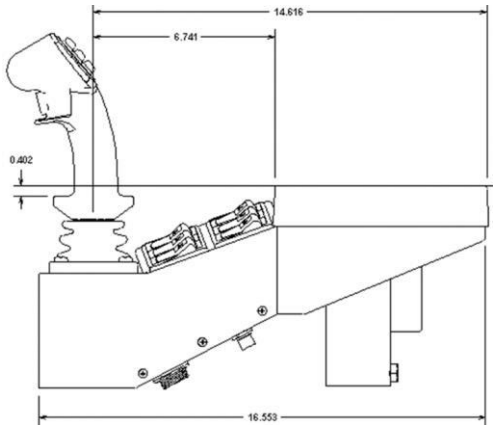
RC28-14 Junction Box

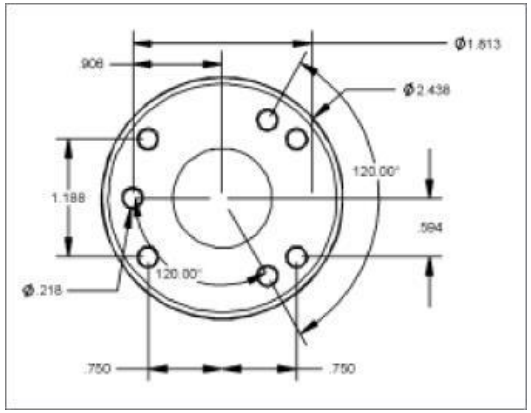




2.3 Display, Encoder Box & Joystick

1. Both 660 and 661 displays utilize a ball mount where 4 holes of the flange must be secured. (See hole array.)
2. A similar ball mount is used when the display is coupled to the armrest – one long arm and one short.
3. The joystick armrest console utilizes a tube mount that slips over 1-7/8” O/D pedestal tubing.
4. The tube mount can slide forward and back 1.7” to optimize the armrest position. (Loosen the ¼-20 nuts.)
5. The ratchet clamp can be used to lock the rotation of the tube and bracket.
6. See the “Installation Notes” section for additional recommendations.





3 Connector Details

3.1 Microcontroller Connection

1. Pull locking lever away from the cable end of the connector
2. Partially insert connector into socket and ensure the 2 coding posts align into housing.
3. Push locking lever in opposite direction and the connector will fully insert and lock itself.
4. To remove, pull the locking lever away from the cable side of the connector. It will un-mate.

3.2 Solenoid Connection

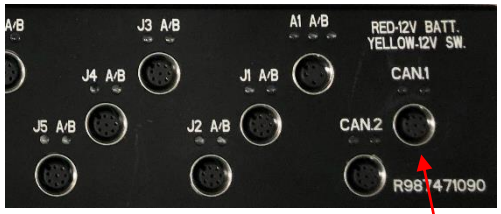
1. Press valve cable end onto solenoid connector

2. Press metal retainer to un-mate

4 Cable Connections

4.1 CS660 Display

1 Connect the CANBUS EXTENSION from CAN connector on the display to the CAN1 connector on the junction box.



2 Connect all sensor cables such as conveyor speed, ground speed from the sensors to the correct connector on the junction box.

3 Connect all valve splitter cables from the junction box to the proper solenoids on the hydraulic valve assembly

4.2 CS661 Heads Up Display with Encoder Box

1 Connect from CAN connector on the display to one of the leads on the CAN splitter cable.
2 Connect the other lead of the CAN splitter cable to the CAN1 connector on the encoder box. The encoder box may be attached to the joystick console. See OSD for details.
3 Connect the other end of the CAN splitter cable to CAN1 connector on the junction box
4 Connect all sensor cables including ground speed to the correct connector on the junction box.
5 Connect all valve splitter cables from the junction box to the proper solenoids on the hydraulic valve assembly

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

5 Installation Notes

5.1 Step 1

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

5.2 Step 2

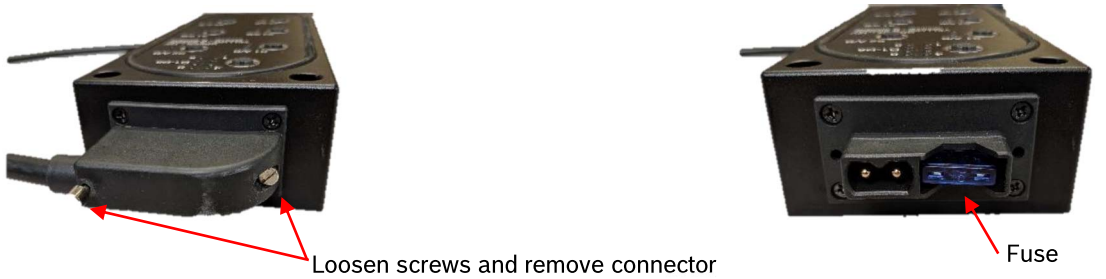
Untie and layout all the cables supplied, to ensure proper lengths.

Note: Electromagnetic devices such as relays, magnetic switches and solenoids, can generate large negative voltage spikes. These large spikes are introduced 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 junction box power and the ground wire using a dedicated circuit only. (Recommend to connect to the ignition switch)
2. Ensure wiring for transmission devices such as radios, etc. are not attached to the controller or bundled with the controller wiring. And a sufficiently large distance to radio systems must be maintained.
3. 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.
4. Disconnect the battery terminals before welding on a vehicle with electronic equipment.
5. Disconnect the negative battery terminal when wiring electronic devices.
6. Mount the consoles so that they do not interfere with vehicle controls or obstruct visibility.
7. Mount microcontrollers so that oil and salt spray do not contact the housing.
8. Route cables so that they will not be abused, damaged or immersed in oil.
9. When routing cables through metal opening, always use grommets to prevent cable damage.

10. When running wires around a dump box pivot point, ensure no connectors can be separated when the hoist is activated.
11. Tie cables clear of all moving parts like drive-axles or conveyor chains.
12. Observe the cable labeling (under the clear cover) for the proper termination of inputs and outputs.
13. Use dielectric grease on all external cable connections and pins to ensure proper corrosion protection.
14. Thoroughly clean all power and ground terminals before connecting power harness.
15. Stand clear of any hydraulic functions when first powering up the system
16. DO NOT drill holes in any of the enclosures.
17. DO NOT re-wire any of the consoles or cable harnesses.
18. DO NOT weld on the vehicle without completely disconnecting all electronic consoles.

5.3 Fuses



Replace fuse with appropriate rating:

RC4-5 Junction Box	15A	CS660 Console	2.5A
RC28-14 Junction Box	30A	CS550 Encoder Box	2.5A

Note: Failure to maintain proper fuse protection can lead to product damage and fire hazard not covered by warranty. And f**ailure to follow the recommendations will void your warranty.**

6 Installation Test Checklist

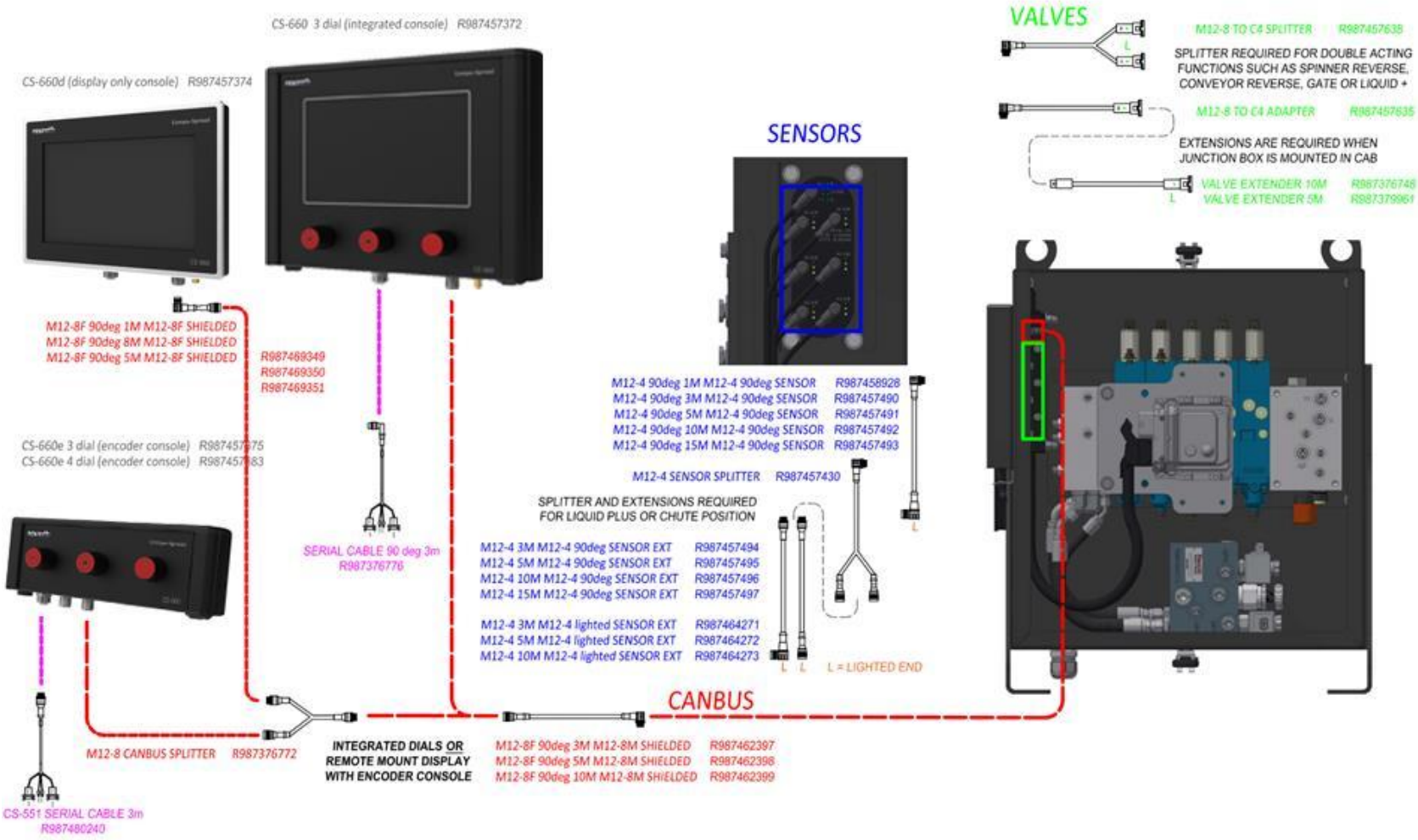
Work order #:	**Date:**
Part number:	**Software Version:**
Serial number:	**Signature:**

After all controller cables and hydraulics are plumbed – vehicle hopper empty

OK	NOTES
☐	Start the vehicle – engage hydraulic pump
☐	Power on display, check for backlight and display operation
☐	Press and hold the “speed” field for 5 seconds , press “up arrow” to set a speed– (Turning on simulated ground speed)
☐	Press the up arrow again to increase speed to 20
☐	Rotate all the dials clockwise to 5 – rate should change
☐	Verify that the conveyor/auger is operating – feedback?
☐	Verify that the spinner is operating
☐	Verify that the liquid pump is operating – feedback?
☐	Verify that the gate cylinder and sensor is operating (if equipped)
☐	Press the speed down arrow to lower the speed to 0 – press the speed field to exit
☐	Drive the vehicle to check that vehicle speed registers
☐	Activate the joystick as defined in the OSD test drawing – verify proper actuation
☐	Test special functions – power float, low oil, emergency raise
☐	Test auxiliary switches for proper operation

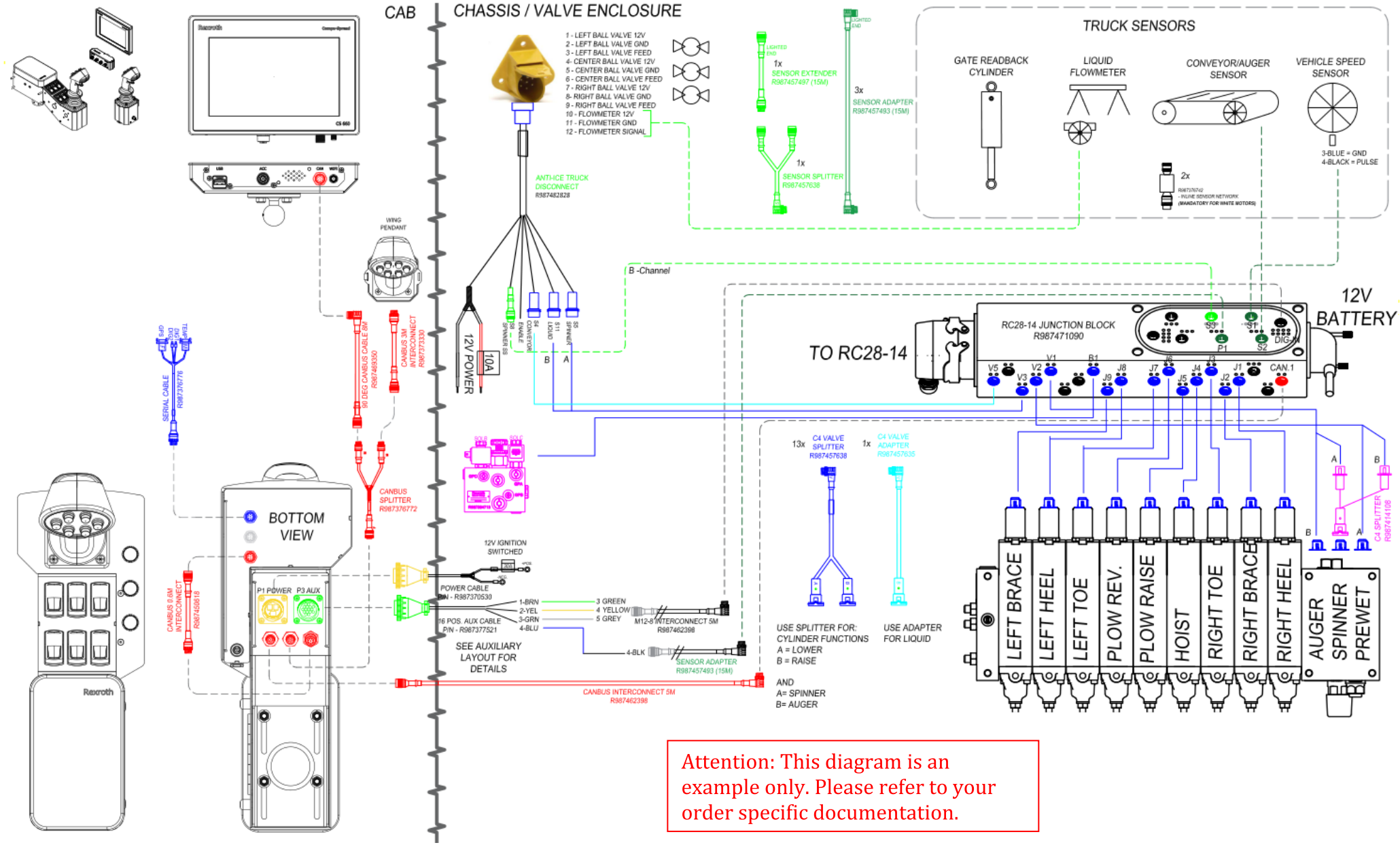
The above procedure is a simple way to verify system connections, hydraulics operation, and sensor feedback. It may not work for all the systems. The reliable way to test is to follow the steps in CS-660 Calibration Manual.

7 Example system layout



Attention: This diagram is an example only. Please refer to your order specific documentation.

8 Example system layout with Joystick Console



Attention: This diagram is an example only. Please refer to your order specific documentation.

9 Cable Connection Chart

RC4-5 Controller

RC4-5 Junction box connectors	Default function (Refer to order specific documentation)	Spinner or conveyor reverse
Sensors		
S1-A	Ground Speed	Ground Speed
S1-B	Spare	Spare
S2-B	Spinner SS	Spinner SS
S2-A	Conveyor Speed	Conveyor Speed
S3-B	Anti-Ice flow /Level	Anti-Ice flow /Level
S3-A	Prewet flow/Level	Prewet flow/Level
Analog Inputs		
A1-A	Configurable	Configurable
A1-B	Configurable	Configurable
A2-A	Gate Position Sensor	Gate Position Sensor
A2-B	Configurable	Configurable
A3-A	Configurable	Configurable
A3-B	Configurable	Configurable
Dig Sensors-8pin		
D1-8	Configurable	Configurable
PWM Outputs		
V1-B	Conveyor output	Conveyor output
V1-A	Spinner output	Conveyor reverse
V2-B	Prewet	Spinner output
V2-A	Anti-Ice	Spinner reverse
Digital Outputs		
V3-B	Configurable, GS12-default	Prewet
V3-A	Configurable, Reverse-default	Anti-Ice
V4-B	Gate Up	Gate Up
V4-A	Gate Down	Gate Down
V5-B	Configurable	(Dig Option 3)
V5-A	LEDop(50mA)	LEDop(50mA)

Attention: This chart is an example only. Please refer to your order specific documentation (OSD).

10 Cable Connection Chart with Joystick Console

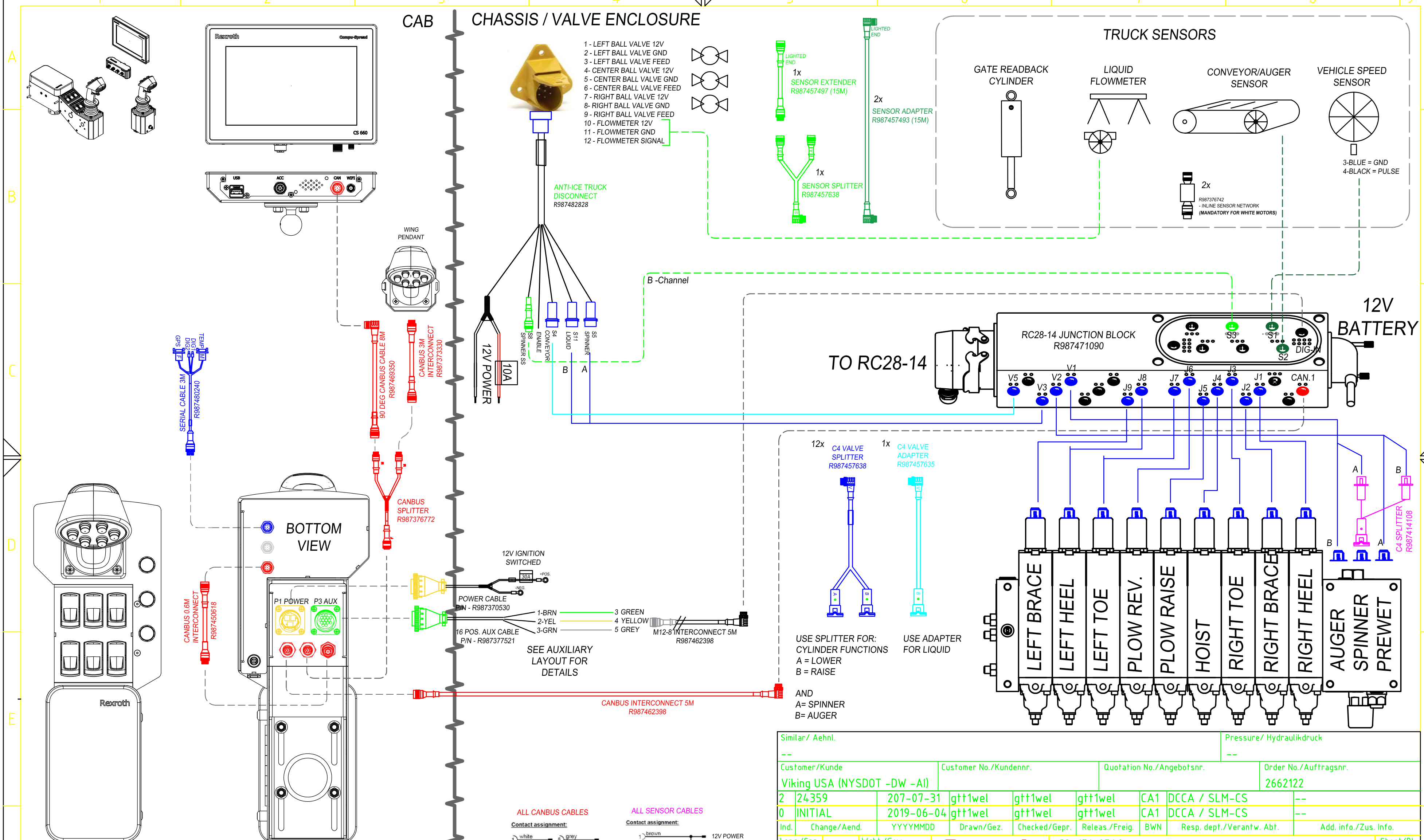
RC28-14 Controller

Junction box connectors	Junction box connectors	Spinner or conveyor reverse
Sensors		
S1-A	Ground Speed	Ground Speed
S1-B	Spare	Spare
S2-A	Conveyor Speed	Conveyor Speed
S2-B	Spinner Speed	Spinner Speed
S3-A	Prewet flow/Level	Prewet flow/Level
S3-B	Anti-Ice flow/Level	Anti-Ice flow/Level
Analog Inputs		
A2-A	Gate Position	Gate Position
A2-B	Configurable	Configurable
A1-B	Configurable	Configurable
A1-A	Configurable	Configurable
A3-A	Configurable	Configurable
A3-B	Configurable	Configurable
Digital Inputs		
D1-8	Configurable	Material detect
Prox Inputs		
P1-A	Prox1	Prox1
P1-B	Prox2	Prox2
PWM Outputs		
V1-B	Conveyor output	Conveyor output
V1-A	Spinner output	Conveyor reverse
V2-B	Prewet	Spinner output
V2-A	Anti-Ice	Spinner reverse
V3-B	Configurable, GS12-default	Prewet output
V3-A	Configurable, Reverse-default	Anti-Ice
V4-B	Gate Up	Gate Up
V4-A	Gate Down	Gate Down
V5-B	C-Boom(Dig Option 2)	(Dig Option 2)
V5-A	R-Boom(Dig Option 3)	(Dig Option 3)
Joystick Function Outputs		
J1	1A,1B	1A,1B

Attention: This chart is an example only. Please refer to your order specific documentation.

J2	2A,2B	2A,2B
J3	3A,3B	3A,3B
J4	4A,4B	4A,4B
J5	5A,5B	5A,5B
J6	6A,6B	6A,6B
J7	7A,7B	7A,7B
J8	8A,8B	8A,8B
J9	9A-AUX 1,9B-AUX 2	9A-AUX 1,9B-AUX 2
Power Float Outputs		
B1-A	Float_1(2.2A)	Float_1(2.2A)
B1-B	Float_1(2.2A)	Float_1(2.2A)
B2-A	Float_2(2.2A)	Float_2(2.2A)
B2-B	Float_2(2.2A)	Float_2(2.2A)
B3-A	OIL/PTO(2.2A)	OIL/PTO(2.2A)
B3-B	AUX(2.2A)	AUX(2.2A)
Light/Dig Outputs		
L1-L8	For future use	For future use

Attention: This chart is an example only. Please refer to your order specific documentation.



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.

DESIGN OUTPUT COMPLETE
GTT1WEL

Similar/ Aehnl.				Pressure/ Hydraulikdruck	
--				--	
Customer/Kunde	Customer No./Kundennr.	Quotation No./Angebotsnr.	Order No./Auftragsnr.		
Viking USA (NYSDOT -DW -AI)			2662122		

Ind.	Change/Aend.	YYYYMMDD	Drawn/Gez.	Checked/Gepr.	Releas./Freig.	BWN	Resp. dept./Verantw. Abt.	Add. info./Zus. Info.
2	24359	207-07-31	gtt1wel	gtt1wel	gtt1wel	CA1	DCCA / SLM-CS	--
0	INITIAL	2019-06-04	gtt1wel	gtt1wel	gtt1wel	CA1	DCCA / SLM-CS	--

Lang./Spr.	Wght./Gew.		Title	Sheet/Bl.
EN/DE	--	Rexroth Bosch Group	CS-151-0540 SYSTEM LAYOUT	1/1
Crit. P. --	Scale/M.stab NTS	Mat. meets/Stoffe s. / Syst. ACA	Doc. type FLP R987494225	DP/TD 001 · Ind. 2 · Format B
MNR R987494225			Repl. for --	Repl. by --

CS-661
R987459408

CS-660
3 DIAL - R987457372
4 DIAL - R987457382

CAB CONTROLS

WIFI ANTENNA
R987375239

ANTENNA EXTENSION (3M)
R987376088

CHASSIS / VALVE ENCLOSURE

SENSOR EXTENDER
R987457494 (3M)
R987457495 (5M)
R987457496 (10M)
R987457497 (15M)

USE SPLITTER FOR SENSORS THAT SHARE A PORT:
- CONV. + SPIN
- LIQUID + ANTI-ICE

SENSOR SPLITTER
R987457638

SENSOR ADAPTER
R987458928 (1M)
R987457490 (3M)
R987457491 (5M)
R987457492 (10M)
R987457493 (15M)

TRUCK SENSORS

GATE READBACK CYLINDER

LIQUID FLOWMETER
A-PREWET
B- ANTI-ICE

SPINNER SENSOR

CONVEYOR/AUGER SENSOR
M12 PULL-UP ADAPTER
R987482879

VEHICLE SPEED SENSOR
3-BLUE = GND
4-BLACK = PULSE
M12 VEHICLE SPEED CABLE
R987498414

1" RAM BALL MOUNT R987454095
1" RAM: 5.25" BRACKET ARM R987454096
1" RAM: 3" BRACKET ARM R987454591

90 DEG CANBUS EXTENSION 8M
R987469350

OR

USE SPLITTER AND EXTENSION FOR REMOTE DISPLAY

CANBUS SPLITTER
R987376772

OR

CS-CAN-CM 660
3 DIAL - R987457375
4 DIAL - R987457383

Fuse 1/4" x 1.25" 2AG glass fuse (2.5A)
R911386828

OR

SERIAL CABLE
R987376776

1.5" RAM BASE + ARM 3" LONG R987376774
1.5" RAM ARM 6" LONG R987376786
1.5" RAM ARM 8" LONG R987465887
1.5" RAM BASE ONLY R987461421

HYD. OIL FLOAT LEVEL SWITCH

HYD. PRESS/TEMP SENSOR
R901341687

TO RC 4-5

POWER

A2 A/B S3 A/B S1 A/B D1-8
A3 A/B A1 A/B S2 A/B
V3 A/B V1 A/B CAN.1
V4 A/B V2 A/B

STANDARD PORT ASSIGNMENTS

S1-A	Gnd Speed
S2-B	Spn SS
S2-A	Conv Speed
S3-A	Liq/lvl
S3-B	Deice/lvl
A2-A	GateRdbk
A2-B	Option(wet/liq,...)
A1-B	Temperature
A1-A	Pressure
A3-A	Low oil
A3-B	Oil Temp
V1-B	Conv output
V1-A	Spin output
V2-B	Prewet
V2-A	Deice
V3-B	Op1(L-3boom)
V3-A	Op2(C-3boom)
V4-B	Gate Up
V4-A	Gate own
V5-B	Op3(R-3boom)
V5-A	LEDop(50mA)

C4 VALVE SPLITTER
R987457638 (1M)
R987497697 (2M)
R987497700 (3M)
R987497701 (5M)

USE SPLITTER FOR FUNCTIONS THAT SHARE A PORT :
- SPIN+CONV.
- PREWET+ANTI.
- GATE RSE/LOW

C4 VALVE ADAPTER
R987457635 (1M)
R987497672 (2M)
R987497673 (3M)
R987497696 (5M)

USE ADAPTER FOR :
- PREWET ONLY
- ANTI-ICE ONLY

GATE
ANTI-ICE
PRE-WET
SPINNER
CONVEYOR

The valve graphic is intended for illustration and orientation purposes only. The actual valve may be arranged differently

ROAD TEMP. SENSOR

THIRD PARTY AVL MODULE

GNSS GPS RECIEVER
R913067839

CANBUS INTERCONNECT
R987462397 (3M)
R987462398 (5M)
R987462399 (10M)

LIABILITY NOTICE

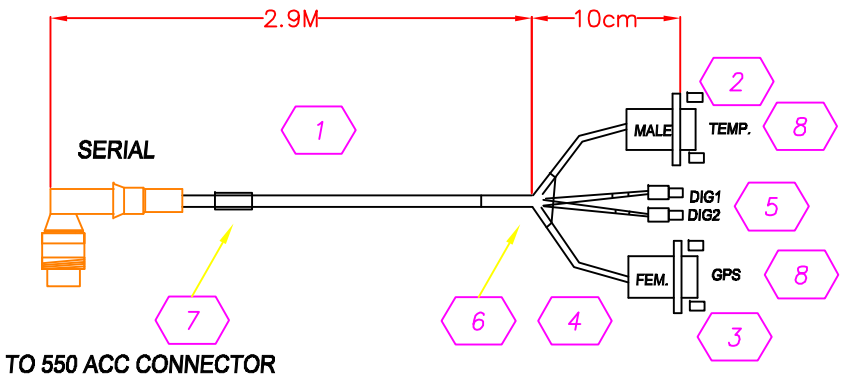
THE DATA SPECIFIED ON THIS DOCUMENT ONLY SERVES TO DESCRIBE THE PRODUCT. NO STATEMENTS CONCERNING A CERTAIN CONDITION OR SUITABILITY FOR A CERTAIN APPLICATION CAN BE DERIVED FROM OUR INFORMATION. THE INFORMATION GIVEN DOES NOT RELEASE THE USER FROM THE OBLIGATION OF OWN JUDGMENT AND VERIFICATION. IT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

Similar/ Aehnl.								Pressure/ Hydraulikdruck	
--								--	
Customer/Kunde		Customer No./Kundennr.			Quotation No./Angebotsnr.			Order No./Auftragsnr.	
DCNA Compu Spread								N/A	
1		July29_20	GTT1WEL	GTT1WEL	GTT1WEL	CA1	DCCA / SLM-CS	--	
0	INITIAL	July29_20	GTT1WEL	GTT1WEL	GTT1WEL	CA1	DCCA / SLM-CS	--	
Ind.	Change/Aend.	YYYYMMDD	Drawn/Gez.	Checked/Gepr.	Releas./Freig.	BWN	Resp. dept./Verantw. Abt.	Add. info./Zus. Info.	

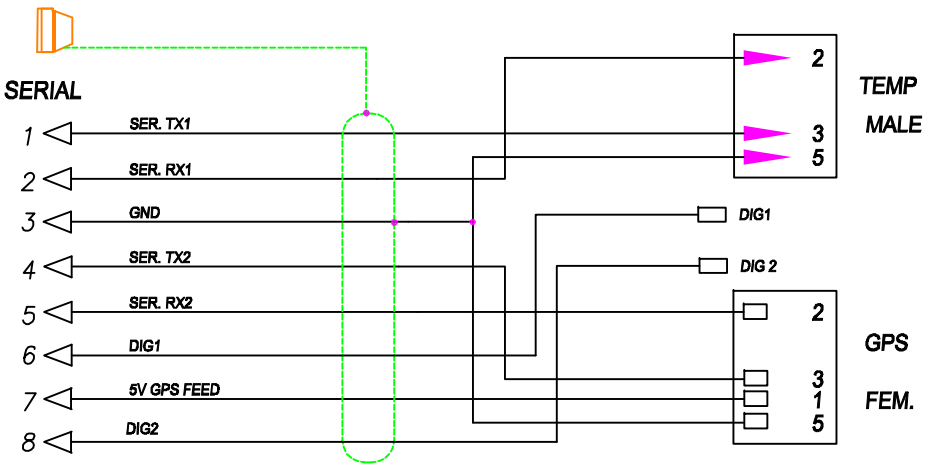
Lang./Spr.		Wght./Gew.	Rexroth Bosch Group	CS-660 / 661 SYSTEM CABLE LAYOUT			Sheet/Bl.
EN/DE		--					1/1
	Crit. P.	Scale/M.stab		Doc. type	Spreader System Layout	DP/TD	Ind.	Format
	--	NTS	Mat. meets/Stoffe s.	Syst.		001	5	B
MNR	660/661 System		2510761	ACA	Repl. for --	Repl. by --		

BILL OF MATERIAL

ITEM	QTY.	DESCRIPTION
1	1	MALE. M12 8 POS. 90deg 3M- CONEC P/N- 43-18885
2	1	DB-9 MALE - AMP P/N - 747043-4
3	1	DB-9 FEMALE - AMP P/N - 747318-4
4	5	LABEL LEG AS PER DRAWING
5	2	1/4" FEMALE QC
6	AS REQ.	ADHEASIVE HEATSHRINK
7	1	LABEL: 550 SERIAL P/N R987376776, DATE, TESTED
8	4	COUPLING NUT: DIGI-KEY - 160-000-006R032
		THREAD NUTS ONTO LOCKING SCREWS
	R6	COUPLING NUT: DIGI-KEY - 160-000-006R032



TO 550 ACC CONNECTOR
ON THE BOTTOM LEFT OF THE CONTROLLER



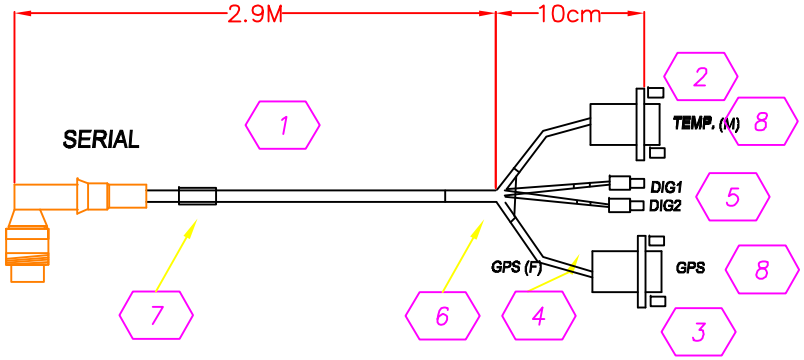
DRAWN BY:	T.G	FEB_1/10	SHEET SIZE: A
CHECKED BY:	T.G	MAR8_11	
DESIGN ENG.:	T.G	FEB_1/10	REV.: 6
CUSTOMER:	BOSCH REXROTH		
SCALE:	SCALE	DRAWING NO.:	R987376776_R5

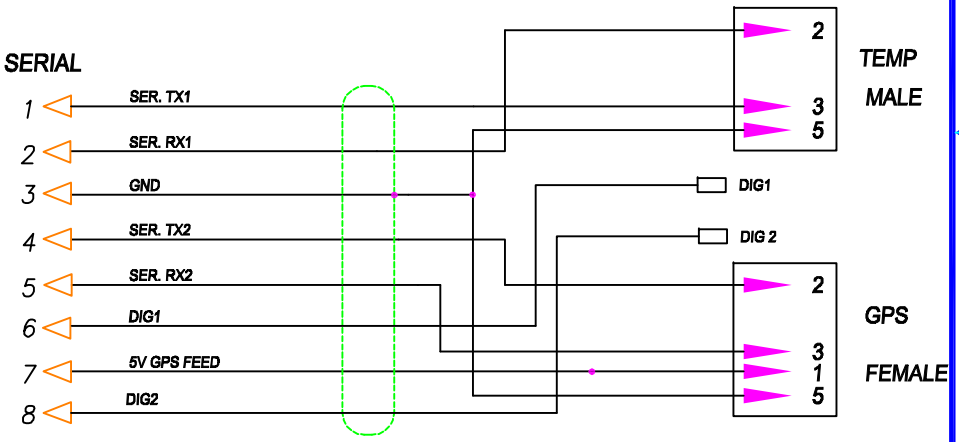
Rexroth
Bosch Group

550_SERIAL
P/N-279162_R987376776

BILL OF MATERIAL

ITEM	QTY.	DESCRIPTION
1	1	MALE. M12 8 POS. 3M 90deg– CONEC P/N– 43–18885
2	1	DB–9 MALE – AMP P/N – 747043–4
3	1	DB–9 FEMALE – AMP P/N – 747318–4
4	5	LABEL LEG AS PER DRAWING
5	2	1/4" FEMALE QC
6	AS REQ.	ADHEASIVE HEATSHRINK
7	1	LABEL:550 SERIAL(NULL) P/N R987400008, DATE, TESTED
8	4	COUPLING NUT: DIGI–KEY – 160–000–006R032
		THREAD NUTS ONTO LOCKING SCREWS
		SIMILAR TO 279162–PINS 2, 3 SWAPPED ON GPS LEAD
	R5	CONEC TINNED





DRAWN BY:	T.G	AUG22/12	SHEET SIZE: A
CHECKED BY:	T.G	AUG22/12	
DESIGN ENG.:	T.G	AUG22/12	REV.: 5
CUSTOMER:	BOSCH REXROTH		
SCALE:	SCALE	DRAWING NO.:	R987400008_R5

Rexroth
Bosch Group

550_SERIAL_NULL
P/N–R987400008