

Rexroth - 105 Controller Installation & Operations Manual

The Drive & Control Company



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FUNCTIONAL PURPOSE

The CS-105 consoles by Bosch Rexroth offer a unique, compact Truck Control Centre to efficiently operate all truck functions from one command console. The CS-105 consoles can be custom designed to meet the specific needs of any individual plow truck or fleet of plow trucks. Both hydraulic and electric functions can be operated from these reliable consoles.

DESCRIPTION

Input voltage when supplied via our own Power Distribution box supplies the CS-105 command console. By using the Power Distribution box in conjunction with the command console we can safely facilitate high current functions such as lighting. For these applications the distribution box is supplied with high current, main power, circuit breaker, of approximately 80 amps. Thus, each individual lighting function is separately protected with a circuit breaker.

We now have power available to the CS-105 command console which when requested by the operator will supply output voltage or current to the requested function. The interface between the function and the command console is handled via a customer supplied hard wire which is connected to the terminal strips. The balance of functions is handled through our own auxiliary cable harnesses.

This combination gives you a complete plug-in package. Combine it with our own hydraulic pumps and valves and you have a reliable and advanced system.

CONTROL UNIT INSTALLATION

Preparation

Ensure all system components have been supplied as per your purchase invoice. Visually inspect components for damage or incorrectly supplied material.

Installing

Refer to CS-105 Electronic Installation drawing for connection relationship of control system components and associated interface. For further information regarding system components please see OSD.

Mounting location

Always select a mounting location that allows easy operator accessibility. Typical mounting locations include pedestal and dash mounting between operator and passenger seats. Ensure CS-105 consoles don't interfere with existing dash mount accessories, as well. Allow clearance for cables to prevent unnecessary stress from incorrect cable routing.

Cable routing

Ensure grommets are always used in new or existing floor or cab wall openings. Cables are to be secured via plastic ties and mounting brackets away from moving parts and areas of extreme heat (i.e. engine exhaust system).

INSTALLATION RECOMMENDATIONS

1. Read the power float hydraulics manual before starting the installation.
2. Unpack all the supplied parts and check the packing list for completeness.
3. Untie and layout all the cables supplied, to ensure proper lengths.
4. **Note: Electromagnetic devices**
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.
5. Connect the Controller 12V power supply and the ground wire using a dedicated circuit only. (directly to the battery)
6. Connect 12V power and ground for all peripheral equipment such as GPS, Material Detection etc., to the same dedicated circuit only.
7. Ensure wiring for transmission devices such as radios, etc. are not attached to the controller or bundled with the controller wiring.
8. Disconnect the battery terminals before welding on a vehicle with electronic equipment.
9. Disconnect the negative battery terminal when wiring electronic devices
10. Mount the consoles so that they do not interfere with vehicle controls or obstruct visibility.
11. Route cables so that they will not be abused or damaged.
12. When routing cables through metal opening, always use grommets to prevent cable damage.
13. When running wires around a dump box pivot point, ensure no connectors can be separated when the hoist is activated.
14. Tie wrap cables clear of all moving parts like drive-axles or conveyor chains.
15. Observe the cable labeling for the proper termination of inputs and outputs.
16. Use dielectric grease on all external cable connections and pins to ensure proper corrosion protection.
17. Thoroughly clean all power and ground terminals before connecting power harness.
18. Stand clear of any hydraulic functions when first powering up the system
19. DO NOT drill holes in any of the enclosures.
20. DO NOT attempt to mount components onto the sides, top or front of the console.
21. DO NOT attempt to re-wire any of the consoles.

Failure to follow the recommendations will void your warranty

CALIBRATION OF PROPORTIONAL JOYSTICK

Joystick adjustment procedure

To calibrate the joystick functions in the CS-105 main and/or wing control console, the console must first be opened. To do this, identify the fastening screws that are used to close the control console. They are located on the rear, and the sides. Remove the fastening screws, and store in a safe location. Open the lid of the control console. Do not let the lid drop down; possible damage may result.

On/Off Joysticks

On/Off joysticks have cam activated switches, which when activated, provide a 12 volt output. The On/Off joystick, regardless of its functions, requires no calibration.

Proportional joysticks

Proportional joysticks have a circuit board mounted to the joystick, which when activated, provides a variable current output. The output increases/decreases proportionally with the movement of the joystick.

Location of the proportional board

The function that requires calibration will have a circuit board parallel to the movement of that function. For example, if the Dump Raise function required adjustment, first locate the Dump joystick on the front of the CS-105 control console. It is mounted so that the movement of the Dump function is vertical. To raise the Dump, the driver pulls the joystick towards him/her. To lower the Dump, the driver pushes the joystick away from him/her. The circuit board will be mounted parallel to that movement.

Test setup

The joystick was factory calibrated in the Raise/Up/Right position (whatever is applicable), using an ammeter and test leads. Input voltage was set at 14 volts (approximate voltage measured at battery terminals when the truck is running).

NOTE: If you are not using an ammeter, then skip to next section.

Using an ammeter

If an ammeter and test leads are to be used, reference the "P2 Valve Cable Pinout/Output Layout" drawing. If for example the Dump function requires calibration, then locate under control functions "Dump Raise", on the "P2 Valve Cable Pinout/Output Layout". By looking to the left of the control functions, you will find the corresponding cable output. At the valve, unplug the solenoid from that cable output. Take the plug from the solenoid, and insert into the receptacle of the test leads, take the plug of the test leads and insert into the cable output of the cable. Insert the banana connectors of the test leads into the common and the 10/20 AMP inputs of the ammeter, and set the scale on the ammeter to the highest range.

Calibration procedure

PLEASE NOTE: The truck must be running, and the CS-105 control console must be turned on, before beginning adjustment of the proportional joystick.

1. Locate P1 on the "Bottom View of Proportional Joysticks: Typical". Engage the joystick to the Raise/Up/Right position, until first movement of the function is noticed (or current is displayed on the ammeter). Hold at this position. Adjust minimum setting by turning adjustment screw on P1 counter clockwise to decrease, clockwise to increase. Stop when desired minimum speed of function is achieved.

NOTE: Factory Minimum Setting - 900mA + 5%

2. Locate P2 on the "Bottom View of Proportional Joysticks: Typical". Engage the joystick to the Raise/Up/Right position; to the joysticks maximum field of movement (maximum current will be displayed on the ammeter). Hold at this position. Adjust maximum setting by turning adjustment screw on P2 counter clockwise to decrease, clockwise to increase. Stop when desired maximum speed of function is achieved.

NOTE: Factory Maximum Setting - 1200mA+ 5%

If the joystick in the control console has a third adjustment, P3, then you must perform Step 3. IF the joystick has only 2 adjustments, proceed to Step 4.

3. Locate P3 on the "Bottom View of Proportional Joysticks: P3 Adjustment Option". Engage the joystick in the Lower/Down/Left position; to the joysticks maximum field of movement (maximum current will be displayed on the ammeter). Hold at this position. Adjust maximum setting by turning adjustment screw on P3 counter clockwise to decrease, clockwise to increase. Stop when desired maximum speed of function is achieved.

NOTE: Factory Maximum Setting - 1200mA+5%

4. This adjustment procedure creates a "Calibration Window". This means that while adjusting the minimum, the maximum changes. While adjusting the maximum, the minimum changes. Because of this interaction, it will be necessary to perform steps 1 and 2 (3 if applicable), two, or possibly three times to achieve the desired settings.

ONLY NECESSARY IF JOYSTICK HAS A P3 ADJUSTMENT.

WARNING: The proportional joystick was designed for a maximum output NO GREATER THAN 1.8A (1800mA). If the maximum is calibrated to a value greater than 1.8A (1800mA), the customer assumes liability for any damage that may occur. Warranty is null and void on all components damaged by over calibration.