Installation and Maintenance Manual

IMPORTANT INFORMATION

Before you install this AutoCav ensure you open the attached boxes and read the enclosed information carefully.
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AutoCav QUICK START

BEFORE YOU BEGIN: Contact the CS AutoCav Manager on (888) 466 0030 to go over installation notes specific to this unit.

SA#

This unit is supplied:
- with all supplied switches pre-wired for plug & play
- with no switching devices supplied (Customer to organize)
- with some of the switching devices pre-wired and the rest to be organized by the customer.

This unit has been tested in our factory and filmed in operation. To request a copy of the video, email info@csfordoors.co.nz and mention the SA# above.

Failure to follow the following steps carefully may be costly and time consuming.

1 READ BEFORE YOU START

Read the Installation and Maintenance Manual FULLY before beginning the installation.

2 INSTALL (BUT DO NOT LINE!)

Install the unit the same as you would any pocket door, taking into account the following points:
- Extra height above the track for packing and wiring
- Access to motor & gearbox
- Connection of switching devices and/or sensors
- Track must be kept clean and free of dirt or swarf (no contamination at all)
- Door slides freely without rubbing on anything. (Disconnect drive bar to check.)

3 DO THE CYCLE TEST

Once the unit is physically installed into the opening, aligned correctly and has been checked that it is moving freely then it should be connected to the power temporarily (you can run an extension cord if required) and complete the cycle test (page 7).

5 ROUGH IN WIRING (before lining walls)

On page 7 there are individual explanations of the purpose of each cable and the most common locations to run them to.
Run all of your cables to the correct locations and ensure they are connected to the correct inputs on the red controller.

4 LINE & FINISH

Install drywall, taking care around access covers for a neat, tidy finish. Ensure you plug labelled switches correctly back together.
Take care not to pinch or stretch any electrical wiring when lining.

Don’t paint over the safety beams! Ensure you inform your painter!
EXTRA CARE MUST BE TAKEN IN AND AROUND THE SAFETY BEAM WIRES LOCATED IN THE VERTICAL DOOR JAMBS.
Preparation and Installation

Option 1 - Top Mount

Option 2 - Wall Mount

Option 3 - Heavy Weight Fixing

BEFORE YOU START

Contamination of the top track.

CS Automatic Units require the track running surface to be clean and free of any contamination or damage. For smooth reliable service, the tires on the carriage should not be chipped, dented or have swarf embedded in the tire.

Check that both the box section and carriage running surfaces are free from dust or debris. If not done, this will affect the operation of the unit.

Please ensure you take extra care with the carriages to avoid any damage during the installation process.

If anything looks out of specification or you are unsure, contact Cavity Sliders before beginning your install.
1 **Prepare the door.**

In the center of the top of your door leaf, router out a $140 \times 30\text{mm} \times 8\text{mm}$ ($5\text{-}1/2" \times 1\text{-}3/16" \times 5/16"$) deep hole for the drive bar connector.

Drill two holes 85mm (3-3/8") in from either edge of the top of your door leaf in the positions as marked.

Screw both mounting plates to the door with the mounting plates placed exactly in the center of the door thickness.

At the bottom of the door leaf cut a groove to the dimensions and tolerances shown. Make it central of the door thickness and absolutely straight.

3 **Fit the door.**

Load the carriages into the notched end of the track and slide into place.

Position the door underneath the carriages and offer the mounting plate onto the wheel hanger shaft.

Depress the plunger using the bolt head and slide until the bolt snaps into locked position.

Connect the drive bar to the door using long custom shoulder cap screws.

Connect the belt clamp to the drive bar with the connector bolt and T-nut.

2 **Fix the T-Guide.**

Fix the T-Guide to the floor so that it is not visible when the door is in the pocket. The front edge of the T-Guide should sit flush with the final casings.
4 Adjust the door height.
When adjusting door height, the wrench should be horizontal to the nut. Use the small end of the wrench supplied to rotate the hexagonal nut at the bottom of the carriage hanger shaft.

To raise door: Rotate wrench from **left to right**.
To lower door: Rotate wrench from **right to left**.

Note: The top of the hanger pin screws into a self-locking Nyloc type nut in the carriage. For the assembly to remain in its adjusted position over time the hanger pin must be screwed into the nylon locking portion of the nut by at least 3 full turns. (The thread gets harder to turn once it reaches the start of the nylon locking ring).

If the belt has lifted (or dropped) from the above action, reposition the belt bracket by loosening the bolt holding this in place, level up and re-tighten.

5 Check door alignment.
For trouble free operation, perform the following checks:
Carefully move the door manually from fully open to fully closed, checking that it moves freely.
Check that the alignment when fully closed and fully open is plumb and true.
1 Mounting consideration for power supply and battery backup

The CS AutoCav system uses DC motor control to drive a toothed belt to which the door(s) are connected. The drive system is housed within the top track of the door installation. This allows for either in wall fitting (pocket door) or on wall mounting (surface slider).

A powerful gearbox is mated to the DC motor to provide low maintenance reliable operation. Mounted externally from the door is the DC power supply, batteries, and activation devices. Consideration of wiring for these devices is required prior to door installation.

2 Initial Cycle Test

Turn on power (you can run an extension cord if required).

Wait 10 seconds.

Press test switch or activation device once.

Door will slowly fully open and pause (Door is learning open position).

Door will then quickly return to the position it started in then slowly fully close and remain closed (Door is learning close position).

Press switch once more.

Door will open fully, pause, then close fully.

This completes the test proving that the door is functioning.

Power down unit.

3 Rough in wiring BEFORE lining walls

A CS Autocav unit will have a combination of the following cables, which will be clearly labelled and referenced on a wiring diagram provided.

The most common cables are individually explained below:

A External activation (White 6 core security cable)

Run this to where activation is desired to be positioned on the ‘outside’ or ‘secure’ side of the unit. May be identified by red sticker.

B Internal activation (White 6 core security cable)

Run this to where activation is desired to be positioned on the ‘inside’ or ‘exit free’ side of the unit. May be identified by green sticker.

C Outputs (White 6 core security cable)

This typically sends signals such as Door open, Door closed, Door locked, Door fault etc. for use with security and automation systems.

Check with your site’s security or automation technician first, but typically running into the ceiling space is a safe bet to allow for future connection. May be identified by blue sticker.

D Power Supply Cable (Black 2 core)

Run this to the desired location of power supply (typically ceiling).

E Power Supply Coms Cable (Grey 4 core)

Run this to the desired location of power supply (typically ceiling).

F Controller Service Coms Cable (Grey 8 core)

This cable allows communication with the controller for commissioning and servicing.

Run to a position where the supplied RJ45 socket can be mounted to allow for future connection (typically ceiling or other easily accessible area).

G Safety Beam Receiver Cables

Emitter: Grey cable to head with blue and grey wire
Receiver: Black cable to head with blue & black wire

H Fire

This input is to use with building fire alarm system to hold door open in event of fire.

Check with your site’s fire alarm technician first, but typically running into the ceiling space is a safe bet to allow for future connection.
4 Installing safety beams

Mark two mounting positions. Recommended height is 200mm (7-7/8”) and 900mm (35-7/16”) above floor. 
Drill ø13mm (1/2”) holes in each side of the door frame in the positions marked.

TAKE EXTRA CARE WITH THESE CABLES!!

Given the highly responsive nature of the safety beams they can be quite sensitive to installation damage such as pinching, friction damage and breakage.

Run the grey emitter cables to the safety beam heads on the closing jamb side.
Run the black receiver cables to the safety beam heads on the split jamb side.

Slide the heads and the cables into the vertical jambs. Connect wires (see below).

Safety Beam Wiring
Finishing the Installation

1 **Access to components.**
Access to the belts, drive bar connector, gearbox and auto tensioner are through access panels above the opening and pocket. Take care not to cover up access to removable/serviceable parts when finishing the wall.

2 **Painting.**
*Don’t paint over the safety beams!*

3 **Final commission and test.**
Refer to the wiring diagram provided with the unit to ensure all cables are connected to the correct inputs and outputs.
Wire your chosen activation options to the appropriate cables that were run as indicated earlier in this document.
CAREFULLY ENSURE DOOR IS FREE FROM OBSTRUCTION AND IS MOVING FREELY BEFORE POWERING UP UNIT.
Power up the unit and test your activation options are functioning correctly.
Final mounting of activation options will now complete the installation.

Call the CS team on (888)466 0030 if you have any questions or concerns.

Operation

1 **Basic operation**
Operation of the AutoCav will vary depending on customer requirements. Input functions can be selected from 32 options and outputs from 30 options.
Six inputs can be wired to the controller – eight if safety beams are not required.
Six outputs are offered – four transistor and two solid state relay.

2 **Initial power up**
Upon power up the door will test the safety beams and ignore one or both pairs if they are deemed non operational. The door will not move until an input is received. When it receives an input it will perform the command at reduced speed for the first time.
This is to test the end stops of the doorway. After the door has tested the extents of travel, preset speed will be achieved.

3 **Safety beam blocked**
If door is closed no effect is seen.
If open, the door will remain open until the safety beam is clear.
If closing, the door will stop and open until safety beam is clear.

4 **Obstacle in doorway**
When moving, the door will monitor parameters used to determine if an obstacle is present. Once an obstacle is detected the door will reverse direction to its end limit.
The door will move slowly past a previously detected obstacle to test the object has been removed. If the obstacle is present for five tests the door will remain fully open until given an input command.

5 **Loss of power**
In the event that mains power to the AutoCav is lost, then one of two outcomes will apply:
A Battery backup will seamlessly power the door for up to 48 hours - dependant on battery charge/age.
B If no battery backup has been specified, the door will be able to be manually pushed in either direction with a force not greater than 110N.*

*Force subject to the following conditions: weight/size of door, friction acting on door (seals etc.) and quality of installation/door.
Removal of Door and Belt

(If required at a later date for maintenance purposes)

Begin by removing the head jamb from one side (if fitted).

1 Removing the drive bar.
Before removing the carriages you need to disconnect the drive bar from the socket on top of the door.

Remove the belt connector bolt and T-nut from connector assembly, allowing the drive bar to be removed from the track.

Using a flat bladed screwdriver, depress the tap marked “press” and lever upwards toward the track.

Should the wedge be damaged in removal, contact your nearest CS branch for a replacement.

Once the locking wedge is removed, the drive bar will slide forward towards you and up out of the socket.

To disconnect the drive bar from the belt, undo the cap screw whilst holding the T nut on the back.

Once this is removed the drive bar will slide out.

2 Removing the belt.
To release the tension on the belt for removal:

Lift the roll pin to release the ratchet, allowing the pulley to move towards the gearbox.

Use a 16mm ring wrench to wind the bolt on the end until the pulley has moved along its slot fully.

Roll the belt off the pulley.

3 To re-tension the belt:

Fit the belt over the pulleys at gearbox and tensioner ends, making sure that the belt to drive bar connector is located correctly.

Undo the 16mm bolt. This will allow the pulley to slide back and tension the belt.

4 Removing the door leaf.

Fit the club end of the adjusting wrench over the hexagonal nut at the bottom of the hanger pin.

Use the extended part of the wrench to press down the plunger pin that protrudes up from the mounting plate. Once this plunger is fully depressed, slide the wrench sideways towards the plunger pin.

The whole carriage (including the shaft) will now disengage from the mounting plate.
Controller Specifications

### Standard CS Autocav Controller Specs

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door speed</td>
<td>500mm/sec (20”/sec) opening</td>
</tr>
<tr>
<td>Safety features</td>
<td>Safety beams 2 pair</td>
</tr>
<tr>
<td></td>
<td>Electronic obstacle detection</td>
</tr>
<tr>
<td>Power requirements</td>
<td>110V AC 60Hz single phase</td>
</tr>
<tr>
<td>Battery backup</td>
<td>(optional) - 24VDC</td>
</tr>
<tr>
<td>Door weight</td>
<td>Up to 250kg (500lb) (total door weight per motor)</td>
</tr>
<tr>
<td>Door size</td>
<td>Up to 2700mm (106”) high x 5000mm (196”) wide*</td>
</tr>
<tr>
<td>Drive system</td>
<td>Brushless DC motor with toothed belt</td>
</tr>
<tr>
<td>Locking device</td>
<td>Mechanical. Non maglock motor lock</td>
</tr>
<tr>
<td>Hold open time</td>
<td>0 - 25 Sec (adjustable)</td>
</tr>
<tr>
<td>Fire alarm</td>
<td>Dry contact</td>
</tr>
</tbody>
</table>

### Standard door functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry input</td>
<td>Push button, handwave or overhead sensor</td>
</tr>
<tr>
<td>Exit input</td>
<td>Push button, handwave or overhead sensor</td>
</tr>
<tr>
<td>Mode switch</td>
<td>Auto, Hold Open, Hold Closed</td>
</tr>
<tr>
<td>Normal hold open time</td>
<td>3 Sec</td>
</tr>
<tr>
<td>Normal opening speed</td>
<td>500mm/sec (20”/sec)</td>
</tr>
<tr>
<td>Normal closing speed</td>
<td>250mm/sec (10”/sec)</td>
</tr>
<tr>
<td>Safety beams</td>
<td>2 pairs</td>
</tr>
<tr>
<td>Battery backup</td>
<td>Optional</td>
</tr>
<tr>
<td>Wiring looms</td>
<td>Included 5000mm (16ft) standard</td>
</tr>
</tbody>
</table>

### Additional door functions available

8 Inputs

- Dry contact. Select from – Open Cycle, Open Only, Close Only, Hold Open, Safety Beams, Lock, Partial, Fire, Forwards, Backwards.

6 Outputs

- 4 transistor, 2 relay. Select from – Door Open, Door Closed, Door Stopped, Door Locked, Door Engaged, Door Vacant, Door Fault, Door on batteries, Fire, Door Forced.

Touch screen

- 2.8 inch OLED touch screen

Partial Open

- 1 – 100% of open size adjustable

Opening Speed

- 100 – 500mm /sec. (4” - 20”/sec). Door weight dependant.

Closing Speed

- 100 – 500mm /sec. (4” - 20”/sec). Door weight dependant.

Acceleration

- Adjustable

Deceleration

- Adjustable

Positive Close

- Constant force applied when closed for seal compression

Hold Position

- On or off. Door cannot be moved when stopped

Force Open

- On or off. Door will auto open when pushed

Fire Event

- Fire door or smoke door

Standard settings are default. These can be adjusted on request.

All door functions are available through CS Controller Interface application. Windows based operating system required.
Sample AutoCav Control Layout

**Default Input Configuration**

<table>
<thead>
<tr>
<th>Description</th>
<th>Action</th>
<th>Switch Type</th>
<th>Enabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lock Door</td>
<td>Lock Node 1</td>
<td>Normally-Open</td>
<td></td>
</tr>
<tr>
<td>Liveline Sensors</td>
<td>Lock Node 2</td>
<td>Normally-Open</td>
<td></td>
</tr>
<tr>
<td>Proxy Card</td>
<td>Open Cycle Aux</td>
<td>Normally-Open</td>
<td></td>
</tr>
<tr>
<td>Inside Sensor</td>
<td>Open Cycle bolt</td>
<td>Normally-Open</td>
<td></td>
</tr>
<tr>
<td>Outside Sensor</td>
<td>Open Cycle Entry</td>
<td>Normally-Open</td>
<td></td>
</tr>
<tr>
<td>Fire</td>
<td>Open</td>
<td>Normally-Open</td>
<td></td>
</tr>
<tr>
<td>Safety Beam 1</td>
<td>Safety Beam/Open</td>
<td>Normally-Closed</td>
<td></td>
</tr>
<tr>
<td>Safety Beam 2</td>
<td>Safety Beam/Open</td>
<td>Normally-Closed</td>
<td></td>
</tr>
</tbody>
</table>

- Latched input. Fire input allowed, all others ignored.
- Latched input. Fire and Open Aux input allowed, all others ignored.
- Momentary input. Open cycle, hold closed to keep door open.
- Momentary input. Open cycle, hold closed to keep door open.
- Momentary input. Open door, hold closed to keep door open.
- Safety beam, stops door from closing if active.
- Safety beam, stops door from closing if active.
# Troubleshooting

If you experience trouble with your AutoCav, please ask a qualified electrician to try the following solutions:

## ➤ There is no power in the AutoCav controller (LED 1, LED 2 & LED 3 are OFF).

- Check power outlet
- Check power cable leads
- Check power supply, power supply switch and fuse
- Check power cable from UPS to controller

## ➤ Door stays open and does not close

### 1. Safety beam is active (one of the LED 4 or LED 5 is OFF/both of the LEDs are OFF)

- Make sure the safety beams have not been blocked by something (e.g. paint, obstacle, tape)
- Restart the controller*
- Check the wiring according to the installation manual
- Make sure Emitters are in one side and Receivers on the other side
- Short out the safety inputs from the controller (Contact Cavity Sliders for instruction of safety beam short out)

### 2. One of the inputs stay active

- Activation Devices (e.g. push buttons, overhead sensor, PLC ) are faulty
- Wrong wiring or damaged wires
- Input 6 is ON. Input 6 is fire input and it is normally open.

## ➤ One or more activation devices do not work

- Wrong/ damaged wiring
- Activation device is faulty
- Key switch has been used to deactivate the other inputs (check wiring and schematic)

## ➤ Door starts opening /closing but stops suddenly

## ➤ Door opens and closes slowly

- Swarf or dirt in the door’s track
- Worn carriages
- Any kind of obstacle in the door’s pocket, or somewhere that does not let the door move freely
- To make sure door is running freely,
  a) Unplug the power lead of the door’s controller
  b) Open and close the door manually
  c) Door should run smoothly and freely

*To restart the controller, you need to turn off and turn on the controller. To do this, unplug the power lead of the controller and plug in again.

If the problems remain
Please make sure you done all the above steps, then install SMC Team Viewer software on your laptop. Connect your laptop to SMC controller, and call Cavity Sliders technical support on (888) 466 0030. Software is available from www.csfordoors.co.nz or the USB flash memory supplied with the unit.
### Components Checklist

**Job Name:** ______________________  **SA:** ______________________

#### AUTO COMPONENTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS Motor</td>
<td>ZB00084</td>
</tr>
<tr>
<td>Dunker Motor</td>
<td>ZB00118</td>
</tr>
<tr>
<td>Controller</td>
<td>ZB00092</td>
</tr>
<tr>
<td>Tensioner</td>
<td>ZB00310/11</td>
</tr>
<tr>
<td>Adapter Plate</td>
<td>ZB00080</td>
</tr>
<tr>
<td>Drive Bar</td>
<td>ZB00007</td>
</tr>
<tr>
<td>Belt Joiner</td>
<td>ZB00318</td>
</tr>
<tr>
<td>Power Supply</td>
<td>ZB00344</td>
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</tbody>
</table>

#### ACTIVATION PACKS

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACPACK001</td>
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<tr>
<td>ACPACK002</td>
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<tr>
<td>ACPACK003</td>
<td></td>
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<td>ACPACK004</td>
<td></td>
</tr>
<tr>
<td>ACPACK005</td>
<td></td>
</tr>
<tr>
<td>ACPACK006</td>
<td></td>
</tr>
<tr>
<td>ACPACK008</td>
<td></td>
</tr>
<tr>
<td>CUSTOM</td>
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</tr>
</tbody>
</table>

#### WIRING

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Core Loom</td>
<td>ZB00204</td>
</tr>
<tr>
<td>Safety Beams</td>
<td>ZB00038</td>
</tr>
<tr>
<td>Power Cable</td>
<td>ZB00206</td>
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<tr>
<td>RJ45 Cable</td>
<td>ZB00102</td>
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<tr>
<td>SMC Cable</td>
<td>ZB00096</td>
</tr>
<tr>
<td>Test Kit</td>
<td>ZB00079</td>
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<tr>
<td>IEC Power NZ/US</td>
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</tr>
</tbody>
</table>

#### WIRING DIAGRAM

#### PROGRAMMING

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>ON</th>
<th>OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CAN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Direction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Motor Type</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>Default Settings</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>RJ11</td>
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<tr>
<td>6</td>
<td>SMC</td>
<td></td>
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</table>

**Technician:** ______________________  **Date:** ______________________
# Maintenance Checklist

<table>
<thead>
<tr>
<th>Date Checked</th>
</tr>
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<tbody>
<tr>
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</table>

## Door Leaf

1. Check the carriages are running freely. Wipe/clean the track if necessary.
2. Check the door has floor clearance, and runs clear of the floor guide.
3. If door seals are fitted check for excessive wear.

## Door Controller

1. Ensure cables are free from the moving drive bar and belt.
2. Ensure controller lid fits firmly.
3. Check for loose plugs/terminals.

## Door Motor

1. Ensure the motor mounts are secure.
2. Check for oil leaks.
3. Ensure belt and pulley is in good condition.
4. Check belt tension.

## Door Operation

1. Check safety devices are operational.
2. Ensure the door and associated equipment are functioning correctly.
3. If batteries are connected an ‘on battery’ test should be performed.
4. Check the 24VDC power supply is free of dust and has adequate air flow.