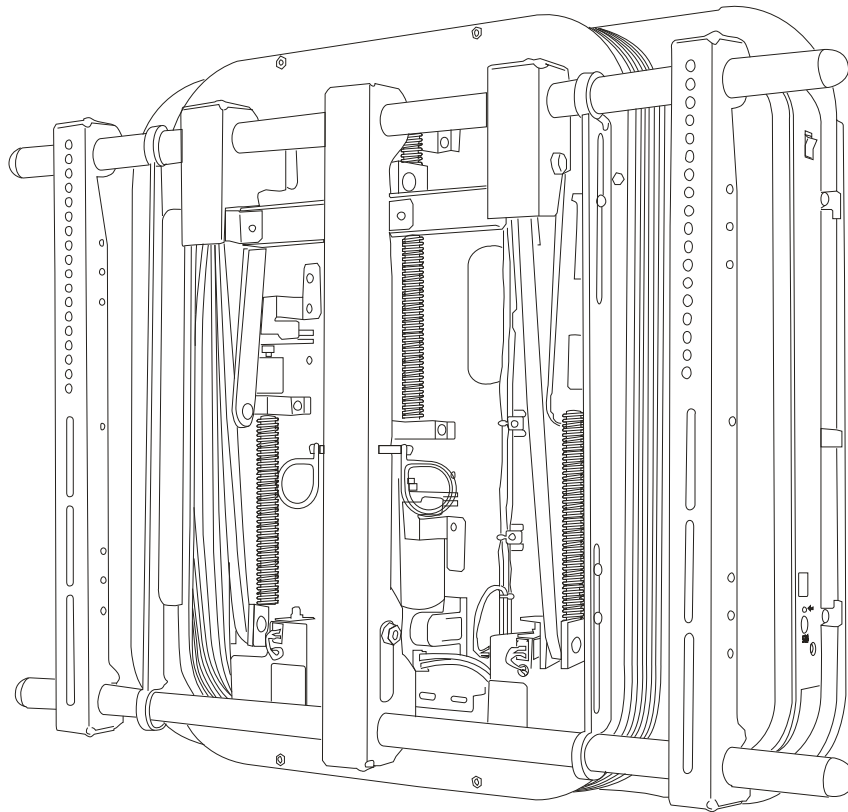# INSTALLATION INSTRUCTIONS

Automated Wall Mount

backed by **CLO** SYSTEMS

⊚CHIEF®

CM7

DISCLAIMER

Milestone AV Technologies, Inc., and its affiliated corporations and subsidiaries (collectively, "Milestone"), intend to make this manual accurate and complete. However, Milestone makes no claim that the information contained herein covers all details, conditions or variations, nor does it provide for every possible contingency in connection with the installation or use of this product. The information contained in this document is subject to change without notice or obligation of any kind. Milestone makes no representation of warranty, expressed or implied, regarding the information contained herein. Milestone assumes no responsibility for accuracy, completeness or sufficiency of the information contained in this document.

⚠ IMPORTANT WARNINGS AND CAUTIONS!

⚠ **WARNING:** A WARNING alerts you to the possibility of serious injury or death if you do not follow the instructions.

⚠ **CAUTION:** A CAUTION alerts you to the possibility of damage or destruction of equipment if you do not follow the corresponding instructions.

⚠ **WARNING:** Failure to read, thoroughly understand, and follow all instructions can result in serious personal injury, damage to equipment, or voiding of factory warranty! It is the installer's responsibility to make sure all components are properly assembled and installed using the instructions provided.

⚠ **WARNING:** Failure to provide adequate structural strength for this component can result in serious personal injury or damage to equipment! It is the installer's responsibility to make sure the structure to which this component is attached can support five times the combined weight of all equipment. Reinforce the structure as required before installing the component.

⚠ **WARNING:** Exceeding the weight capacity can result in serious personal injury or damage to equipment! It is the installer's responsibility to make sure the combined weight of all components attached to this accessory does not exceed 180 lbs (81kg).

Table of Contents

Important Safety Instructions (SAVE THESE INSTRUCTIONS)

⚠ **WARNING:** *When using CM7, basic precautions should always be followed, including:*

- Read the entire users manual before attempting to use CM7.

- Keep everything and everyone away from CM7 while in motion. Do not contact moving parts.

- The user must observe the CM7 while it is in motion at all times until it is stopped by pressing on one of the directional arrows on the remote control.

- Follow the installation instructions provided to correctly install CM7. To prevent injury, CM7 must be securely attached to the wall in accordance with the installation instructions.

- CM7 restricts movement based upon the TV width set on the side controls of CM7. The TV width must be set correctly before operating CM7.

- CM7 mounting bracket is intended for use only with the maximum weight of 180 pounds (81 kg). Use with TVs heavier than 180 pounds (81 kg) may result in instability and cause injury.

- To reduce the risk of injury, close supervision is necessary when operating CM7 near children.

- Only use attachments recommended or sold by the manufacturer. Do not operate CM7 without all covers and guards in place.

- Do not use outdoors.

- CM7 is designed to mount on vertical walls only. Do not mount CM7 on ceilings or non-vertical walls.

- To disconnect, turn all controls to the off ("O") position, then remove plug from outlet.

- Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.

- Unplug from outlet when not in use and before servicing or cleaning.

- Do not operate CM7 with a damaged cord or plug, or after the appliance malfunctions or is dropped or damaged in any manner. Return appliance to the nearest authorized service facility for examination, repair, or electrical or mechanical adjustment.

- Connect to a properly grounded outlet only. See Grounding Instructions.

Grounding Instructions

This appliance must be grounded. In the event of malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock.

This appliance is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER – Improper connection of the equipment-grounding conductor can result in a risk of electric shock.

The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.

Check with a quali ed electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the appliance is properly grounded. Do not modify the plug provided with the appliance – if it will not t the outlet, have a proper outlet installed by a quali ed electrician.
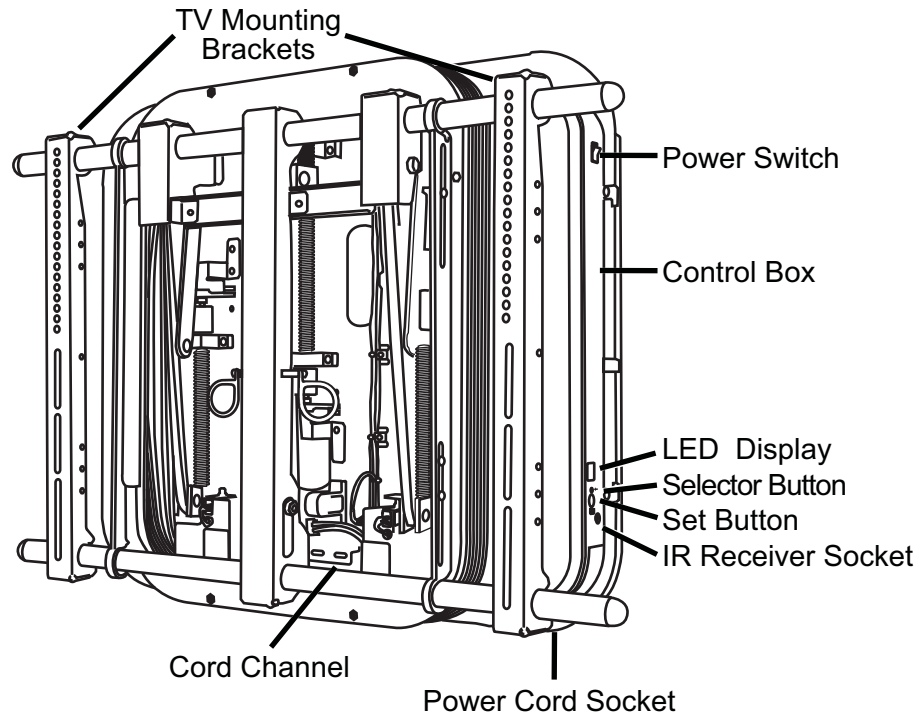
This appliance is for use on a circuit having a nominal rating more than 120 V, 15 A and is for use on a circuit having a nominal rating of 120 V), and is factory equipped with a speci c electric cord and plug. No adapter should be used with this appliance. If the appliance must be reconnected for use on a different type of electric circuit, the reconnection should be made by quali ed service personnel; and after the reconnection, the appliance should comply with all local codes and ordinances.
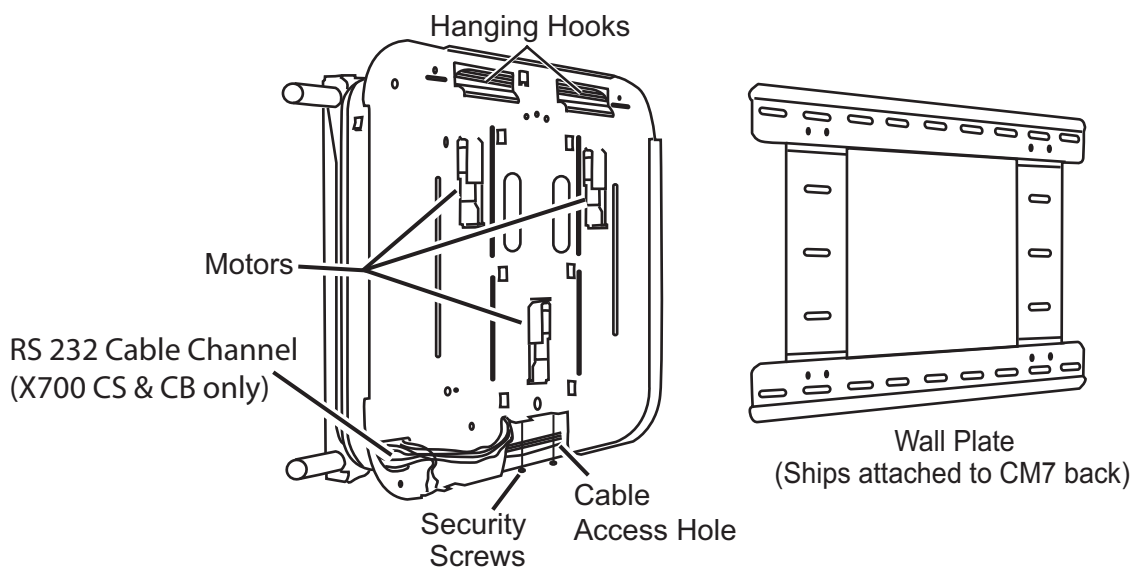
Grounding Pin

Cover of Grounded Outlet Box

Grounding Pin
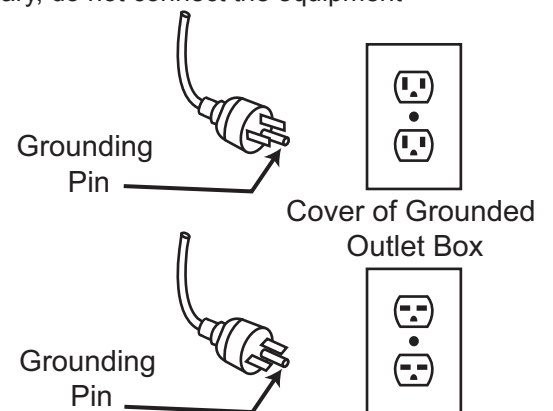
CM7 Overview

CM7 mount is a motorized mount for most flat-panel TVs from 40" to 63" (101,6 to 160 cm), weighing up to 180 pounds (81 kg). CM7 allows a viewer to adjust the viewing angle of the TV with the touch of a remote control button. In the retracted position, the TV is 4.6" (11,68 cm) from the wall. Activating CM7 smoothly extends the TV away from the wall about 12" (30,48 cm) allowing you to swivel the TV from side to side and tilt it up and down. As CM7 mount extends the TV from the wall, a bellows extends with the TV to cover the CM7 actuators and all of TV cables within the bellows. This gives CM7 a clean look.

CM7 (front)

TV Mounting Brackets

Power Switch

Control Box

LED Display

Selector Button

Set Button

IR Receiver Socket

Cord Channel

Power Cord Socket

CM7 (back)

Hanging Hooks

Motors

RS 232 Cable Channel
(X700 CS & CB only)

Security Screws

Cable Access Hole

Wall Plate
(Ships attached to CM7 back)

CM7 packaging includes:

Zip Tie Fasteners (X10)	Screen Size Selection Pointer	Hex Wrench (for safety clips)	Black 2-1/2" (63 mm) Wall Screws (X6)	Cement Anchors (X6)

Cross Plates (Optional)	Bracket Extensions (Optional)	Bar Extenders (Optional)	Remote Control

TV Mounting Hardware	IR Receiver Velcro Tab	IR Receiver (for remote control)	Power Cord	Size AA Batteries
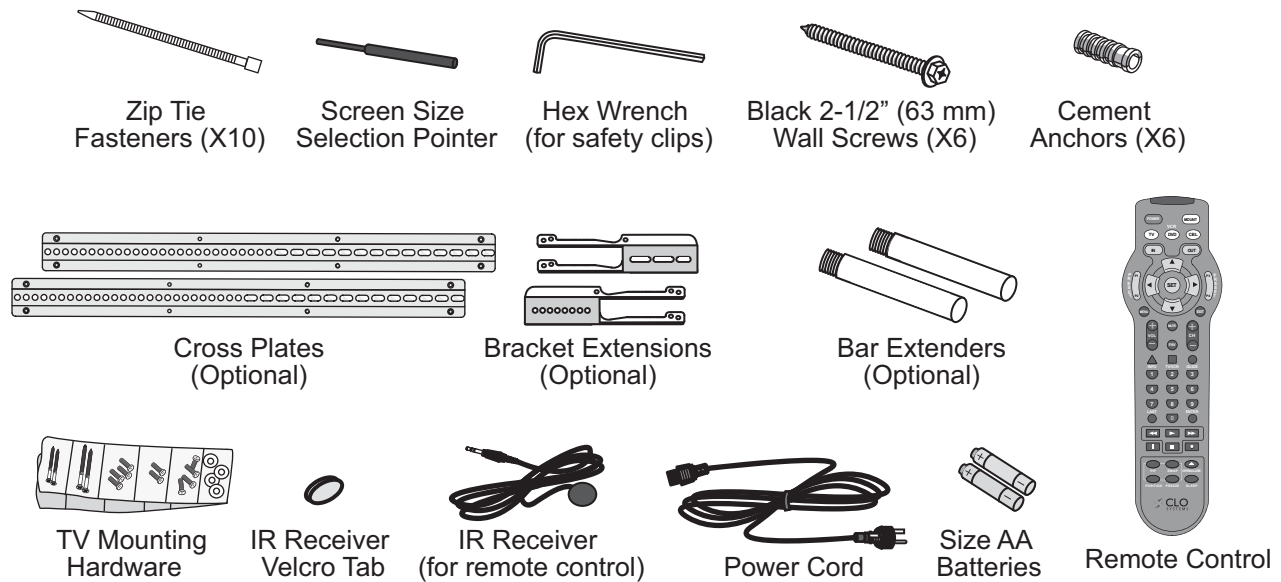
CM7 Specifications

Caution: *CM7 mount is intended for use only with the maximum weight and TV widths indicated. Use with products heavier than the maximum weight or larger than the TV widths indicated may result in instability and cause injury.*

Specification	Value
Maximum Tilt/Swivel Ranges based upon TV outside width	40" - 44.9" (102 - 113 cm): 7° up, 20° down, 28° left, right (56° total) 45" - 48.9" (114 - 123 cm): 7° up, 20° down, 26° left, right (52° total) 49" - 55.9" (124 - 140 cm): 7° up, 20° down, 23° left, right (46° total) 56" - 63.0" (142 - 160 cm): 7° up, 20° down, 19° left, right (38° total)
TV Sizes Accomodated	40" - 61" (102 - 155 cm) TV outside width must be < 63" (160 cm).
Overall Mount Size	31 1/2" (w) x 22 3/4" (h) x 4 1/2" (d) 80 cm (w) x 57,80 cm (h) x 11,43 cm (d)
Maximum Weight Limit	180 lbs. (81 kg)
Minimum Extension from Wall	4.6" + TV (11,68 cm + TV)
Maximum Extension from Wall	12" + TV (30,48 + TV)
Weight of CM7	60 lbs. (29,50 kg)

Certifications & Marks

$C\epsilon$ · c(UL)us · TÜV Rheinland of North America, Inc. C US · www.tuv.com TÜV ID:000000001 · GS geprüfte Sicherheit

Installing CM7

For concrete wall installation, go to the "Concrete Wall Installation" section. For wood stud wall installation continue below.

Tools Needed

|			
Level	Philips screw driver	3/8" (9.5 mm) wrench	Socket wrench (optional)
Adhesive tape	Stud finder	Hammer	Drill with 1/8" (3mm) bit (Wood stud wall)

Masonry bit (Concrete wall)

Wood Stud Wall Installation

1. **Locate wall studs**

1-1. Using a stud nder, locate two wooden studs no more than 17" (43,18 cm) apart, center to center.

1-2. Mark the stud centers on the wall.

To avoid property damage or injury, the mount must attach to at least two 2" x 4" (51 x 102 mm) wood studs.
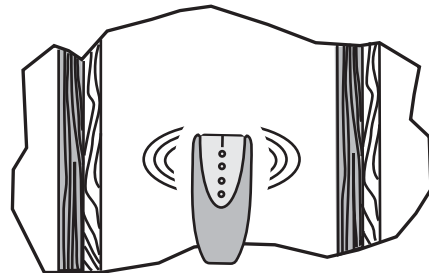
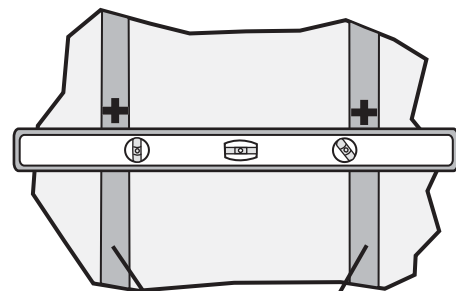**2.** **Drill mounting holes**

2-1. Remove the wall plate from the back of the CM7. First loosen the 2 security screws at the bottom, then lift the wall plate off the CM7.

2-2. Hold the wall plate up to the wall so that the mounting holes line up with studs.

2-3. Level the wall plate.

2-4. Mark the 6 places where the wall plate holes line up with the wall studs.

2-5. Remove the wall plate, then drill 6 holes with a 1/8" (3mm) drill bit, 2-1/2" (6,35 cm) deep at the locations drawn from step 2-4.

2"x 4" (51 x 102 mm) Wood Studs
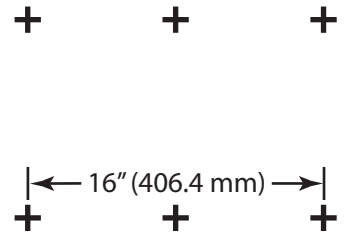
Concrete Wall Installation

1. Mark anchor locations

1-1. Remove the wall plate from the back of the CM7. First loosen the 2 security screws at the bottom, then lift the wall plate off the CM7.

1-2. Hold the wall plate up to the wall where you want the CM7 located.
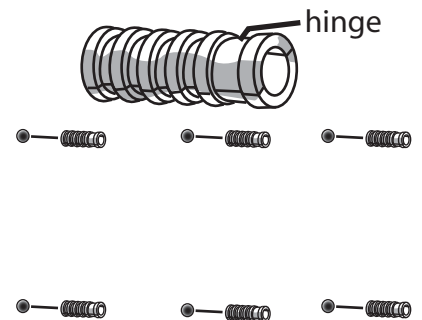
1-3. Level the wall plate.

1-4. Mark the wall in 6 places as shown. Holes should be as far apart as possible.

|← 16" (406.4 mm) →|

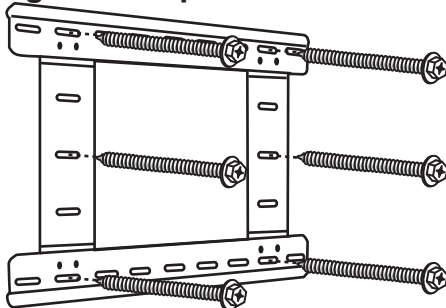**2. Install six screw anchors**

2-1. Using a 1/2" (13 mm) masonry drill bit, drill 6 holes 2-1/2" (6,35 cm) deep at the locations drawn in step 1-4.

2-2. Install the 6 anchors as shown with the hinged end facing toward you.

hinge

Both Wood Stud & Concrete Wall Installation

3. Hang the wall plate

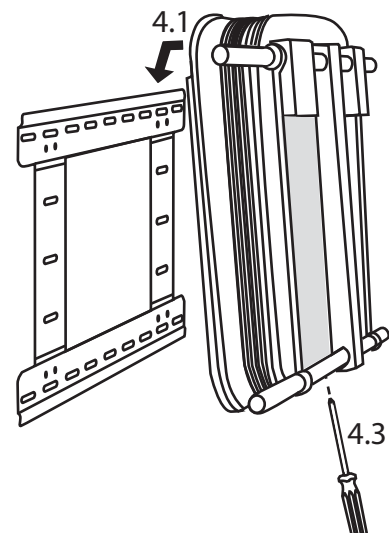3-1. Secure the wall plate to the wall using all six of the provided black 2-1/2" (6,35 cm) lag bolts.

4. Hang CM7 on the wall

4-1. Hang the CM7 on the top edge of the wall plate.

4-2. If needed, slide CM7 on the wall plate about 1.5" (3,81 cm) in either direction to center it in the room.

4-3. Using a philips screw driver, tighten the 2 security screws on the bottom of the CM7.

4.1

4.3

5. Set the CM7 TV width

It is important to set the correct TV width on CM7 to avoid injury or property damage. The CM7 restricts movement based upon the TV width that is set.

Power switch
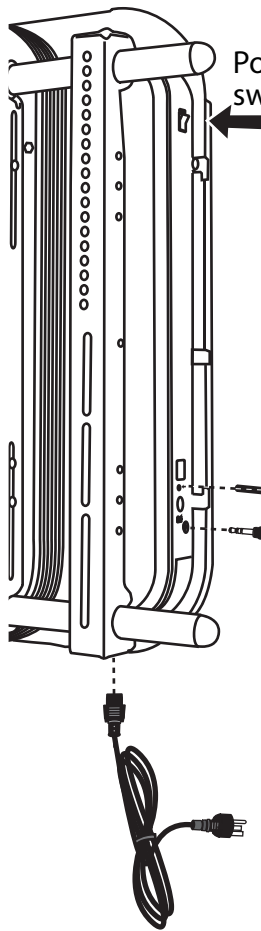
5-1. Attach the power cord and connect the CM7 to a grounded power outlet. The CM7 power cord has a grounding conductor grounding plug. The plug must be plugged into an appropriate outlet with 3 prongs that is properly installed and grounded in accordance with all local codes and ordinances. See the front of this manual for more grounding instructions.

5-2. Press the power switch to ON (1).
IMPORTANT: Do not operate the CM7 by using the remote control at this time.

5-3. Measure the total width of the TV including any side speakers that may be attached to the TV. Do not use the TV manufacturer's screen size, which is measured diagonally, to set the TV width on CM7.

Do not use.
(incorrect)

Use this width.
(correct)
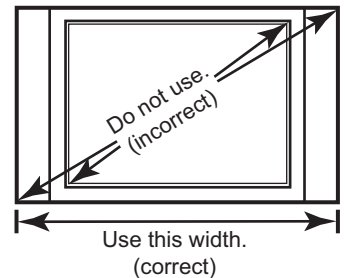
5-4. Insert the provided plastic pointer into the Selector hole, and press the button until the TV width code corresponds to the outside width of your TV as indicated in the table below.

Code	TV Outside Width
C1	40" - 44.9" (102 - 113 cm)
C2	45" - 48.9" (114 - 123 cm)
C3	49" - 55.9" (124 - 140 cm)
C4	56" - 63.0" (142 - 160 cm)

5-5. Hold the black rubber Set button, below the selector hole, until the TV width code stops blinking.

5-6. Attach the IR receiver.

5-7. Optional (X700CS & CB Models only): To control CM7 with home automation through the RJ11/RS232 port, see page 22 for instructions.

6. Remove the TV Mounting Brackets

6-1. Extend CM7 straight out from the wall by pressing the MOUNT button and then the OUT button on the remote once while aiming at the IR Receiver.

6-2. Remove the hex screws from the ends of the TV Mounting Brackets with the provided hex wrench.

6-3. Pull the Safety Clips from the backs of the TV Mounting Brackets, and then remove the TV Mounting Brackets.
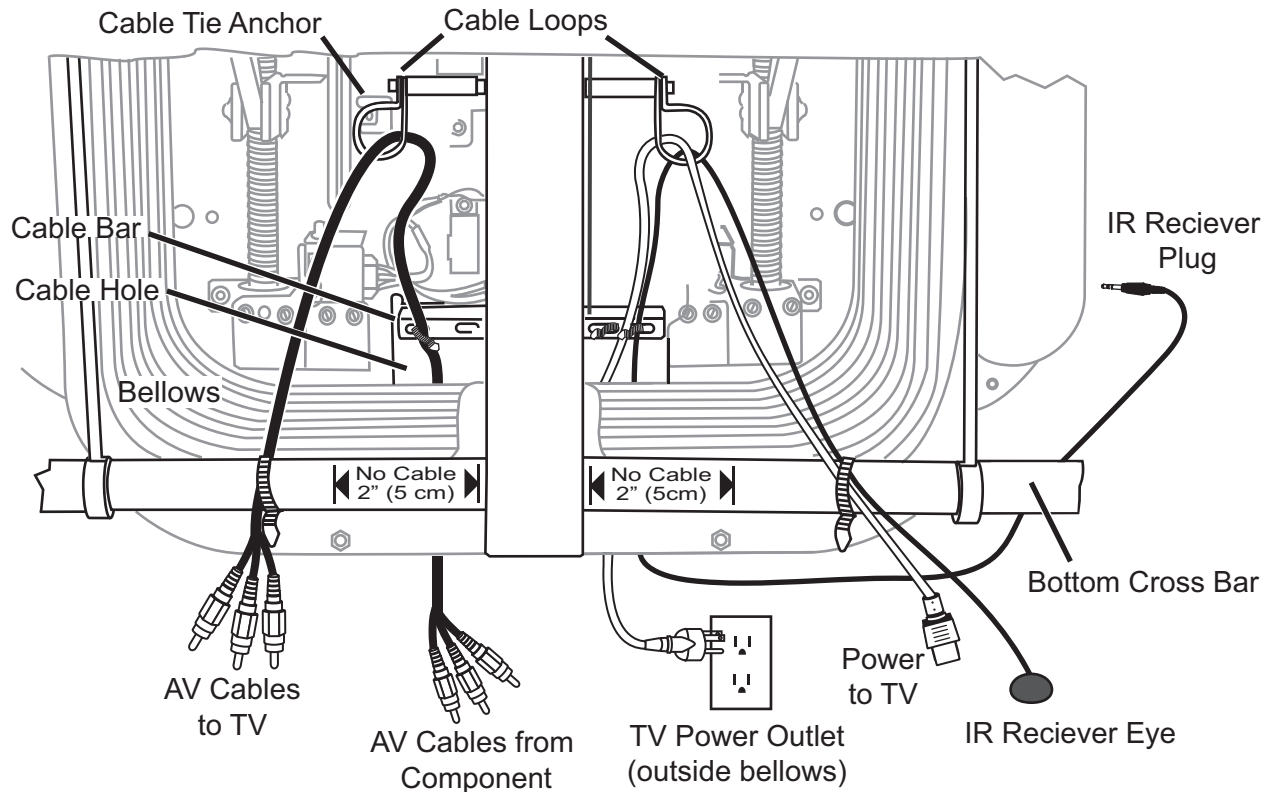
6-4. Save all the removed pieces.

Safety Clips
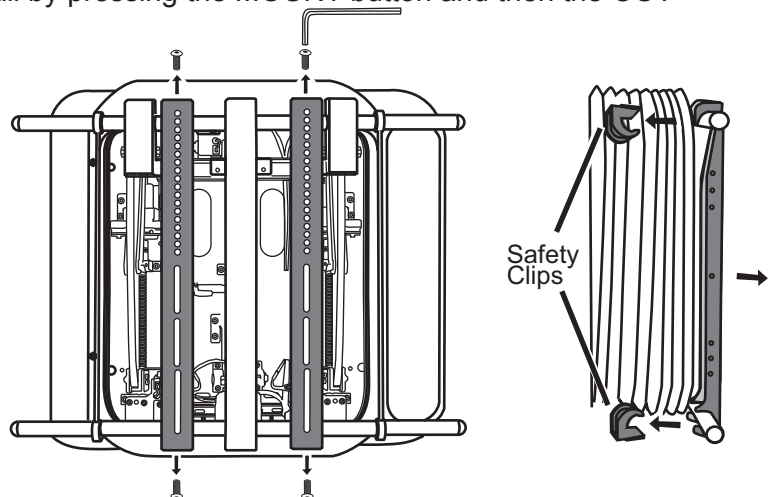
7. Route the Cables and IR Receiver

CM7 is designed to hide cables and the TV power cord by passing them through the bellows to the wall. Use the cable-separating features built into CM7 to keep the power and AV cables separated to minimize electrical interference and binding as CM7 moves.
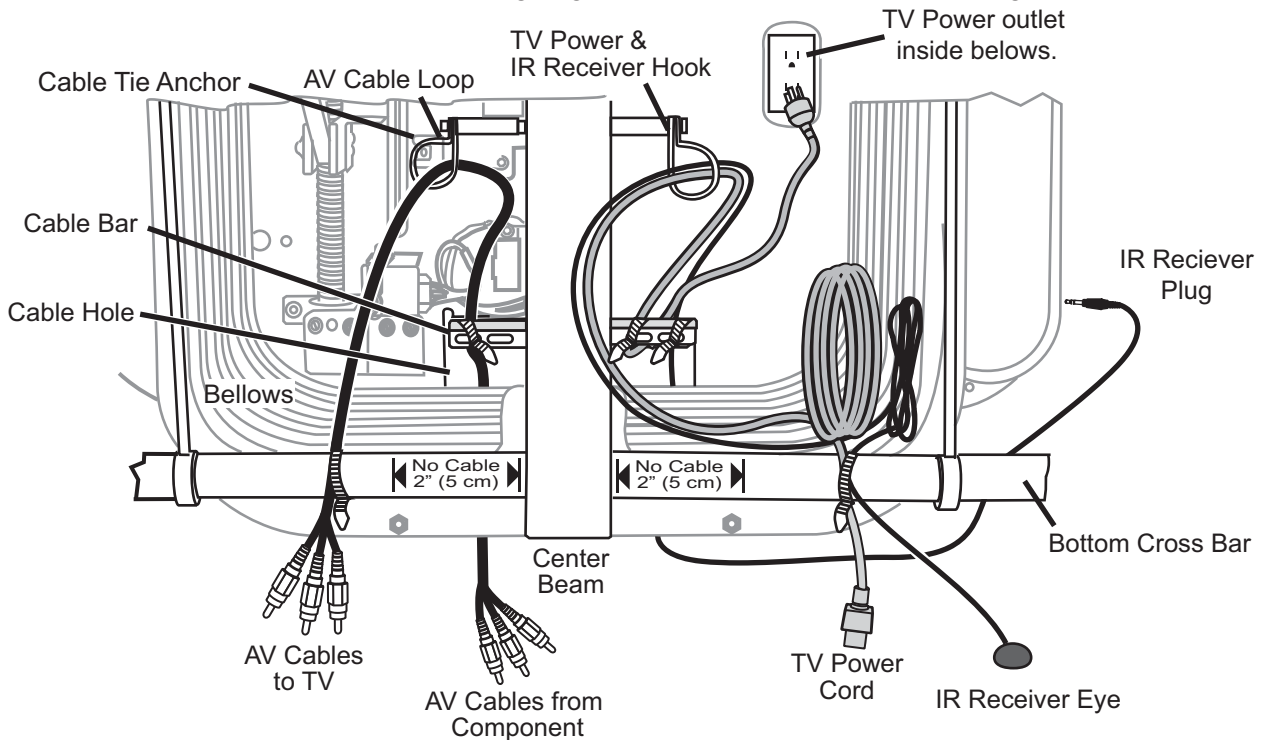
If the TV power outlet is located outside the bellows of CM7, follow the directions below. If the power outlet for your TV and CM7 is located inside the bellows, go to page 9.

Cable Tie Anchor — Cable Loops — IR Reciever Plug — Cable Bar — Cable Hole — Bellows — No Cable 2" (5 cm) — No Cable 2" (5cm) — Bottom Cross Bar — AV Cables to TV — AV Cables from Component — TV Power Outlet (outside bellows) — Power to TV — IR Reciever Eye

7-1. Run A/V cables over the bottom cross bar, through a cable loop and down through the cable hole in the back of the CM7.

7-2. Run the TV power cord on the other side the same way.

7-3. Unplug the IR Receiver and run the plug end up over the bottom cross bar, through a cable hook and out the cable hole. Plug the IR Receiver back into the side of CM7.

7-4. The AV, power cord, and IR Receiver cords must be long enough to connect equipment, but not so long that they get caught in CM7 parts. Test this by tilting up, down, and side to side.

7-5. Using the provided zip ties, fasten all cables to the Cable Bar located near the Cable Hole.

7-6. Using the provided zip ties, fasten the cables to the Bottom Cross Bar so that they pass over the cross bar. The cables should be at least 2" (5 cm) from the center beam. Cut off the excess zip tie ends.

If the power outlet for TV and CM7 is located inside the bellows of CM7, follow these directions.

7-1. Run A/V cables on the left side going over the bottom cross bar, through a cable loop and down

TV Power outlet inside belows.

Cable Tie Anchor — AV Cable Loop

TV Power & IR Receiver Hook

Cable Bar

Cable Hole

IR Reciever Plug

Bellows

No Cable 2" (5 cm)

No Cable 2" (5 cm)

Center Beam

Bottom Cross Bar

AV Cables to TV

AV Cables from Component

TV Power Cord

IR Receiver Eye

through the cable hole in the back of the CM7.

7-2. Run the TV power cord over the bottom cross bar, through the right cable loop, under the cable bar at the back, and up toward the electrical outlet. Secure the power cord to the cable bar using a zip tie.

7-3. Run the IR receiver cord over the bottom cross bar, through the right cable loop, through the bellows and down through the cord hole, plugging it into the side of the CM7 control box.

7-4. Coil up the excess TV power cord and IR Receiver cord and put a zip tie around them.

7-5. Plug the CM7 power cord into CM7, run the cord up through the cable hole and plug it in, gathering the excess with a cable tie. Place the cord into the space near the cable bar as shown to the right. Fasten it to the cable bar with another zip tie.

7-6. The AV, power cord, and IR Receiver cords must be long enough to connect equipment, but not so long that they get caught in CM7 parts. Test this by tilting up, down, and side to side.

7-7. Fasten all cables to the cable bar at the back of CM7 using the provided zip ties.

7-8. Fasten the cables to the bottom cross bar so that they are at least 2" (5 cm) from the center beam. Cut off the excess zip tie.
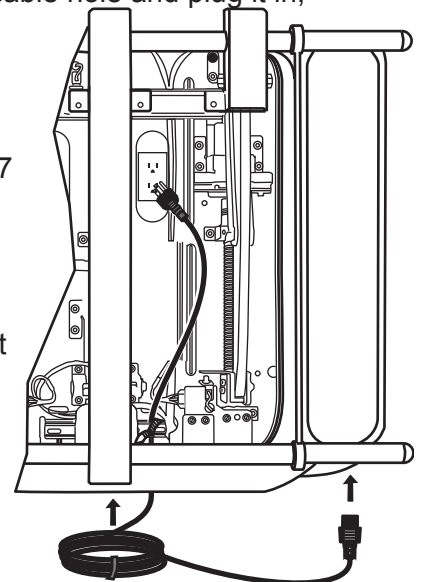
8. **Attach adapters to CM7 (If Needed)**

Several optional attachments can be added to make the CM7 t TVs with non-standard hole spacing. Measure the width and height of the holes on the back of the TV to see if any adapters are needed.
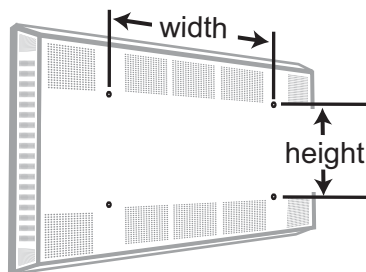
width

height

If the width is 26" - 34.50" (66.04 - 87.63 cm), install optional Bar Extensions.

If the width is less than 21.50" (54.61 cm), install optional Cross Plates.

If the height is 18.50" - 27.50" (47 - 70 cm) , install optional Bracket Extensions.

More than one adapter may need to be installed if multiple cases are true.

Optional Bar Extensions - width of the TV holes is more than 26" (66 cm)

Bar extensions do not ship standard with all CM7s, so they may need to be ordered. Contact your local retailer or distributor where you purchased the CM7 to order optional components.

1.

(X 2)

2.

(X 2)
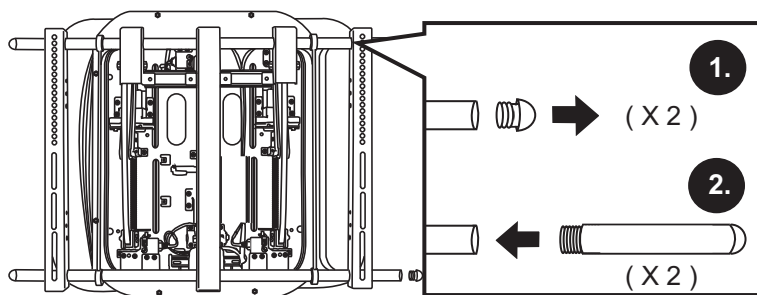
1. Remove the two rubber stoppers from the right ends of the CM7 cross bars and twist them onto the bar extensions.

2. Screw the bar extensions into the CM7 cross bars until they are tight.

3. Loosen the hex screws across the top and bottom of the cross bars just enough to slide the two cross bars laterally. Do not loosen the hex screws all the way. Center the cross bars and retighten the hex screws.

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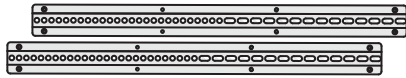## Optional Cross Plates - width of the TV holes is less than 21.50" (54.61 cm)

Cross plates do not ship standard with all CM7s, so they may need to be ordered. Contact your local retailer or distributor where you purchased the CM7 to order optional components.

Installation

Hook End

1. Using a washer, lock washer and bolt, attach the two cross plates to the back of the TV. Make sure that the center is   at against the TV.

2. Attach the brackets to the TV. Make sure that the hook end is at the top.

Optional Bracket Extensions - height of the TV hole is greater than 18.5" (47 cm)
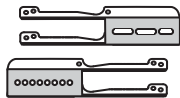
Bracket extensions do not ship standard with all CM7s, so they may need to be ordered. Contact your local retailer or distributor where you purchased the CM7 to order optional components.
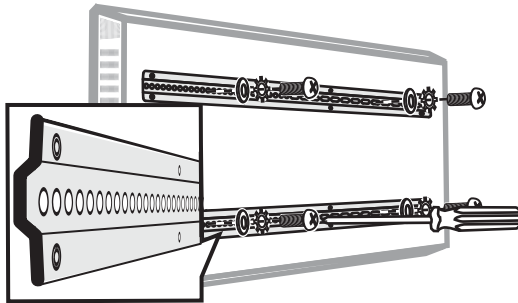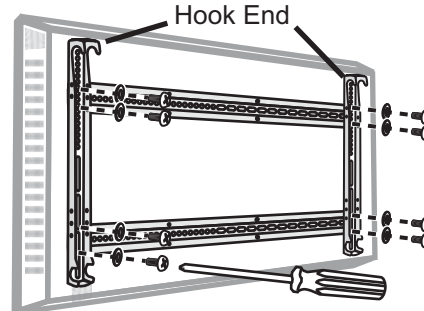
Installation

Holes on top.

1.

2.

3.

Slots on bottom.
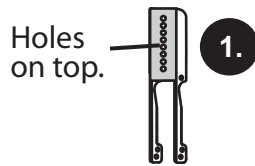
1. Align the bracket extensions containing round holes with the "hook end" of the TV mounting brackets. Align the bracket extensions containing slots with the end of the TV brackets containing slots.

2. Attach the bracket extensions to the TV mounting brackets with the provided screws.

3. Attach the brackets to the TV with the hook end on the top.

Hook End
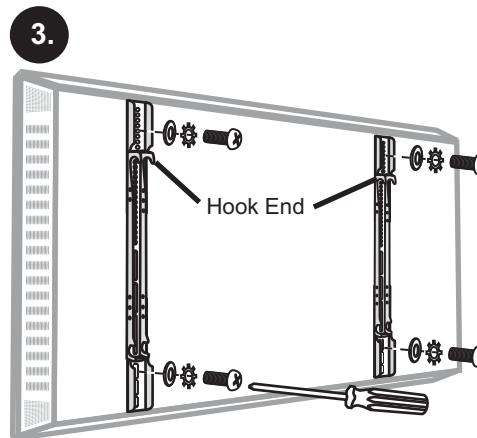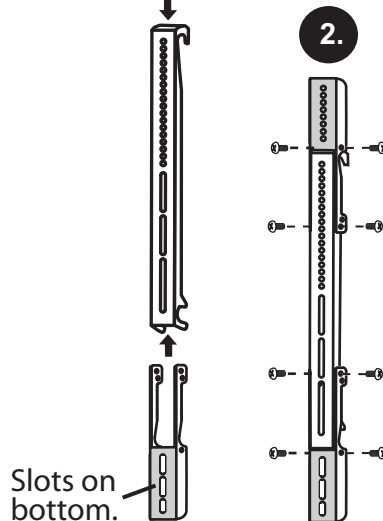
9. **Attach mounting brackets to the TV**

9-1. Place the TV Mounting Brackets on the TV lined up with the mounting holes so that the hook is on the top.

9-2. Using a washer, lock washer and then a bolt, attach the brackets securely to your TV. Use the bolts that came with your TV if possible. If this is not possible, select hardware from those supplied. Bolts must match your TV manufacturer's recommendations or else they can not be used.

Although a philips screw driver is pictured, some specialized TV screws require the special hex wrench provided with the screw packet.

Hook End   TV Mounting Brackets
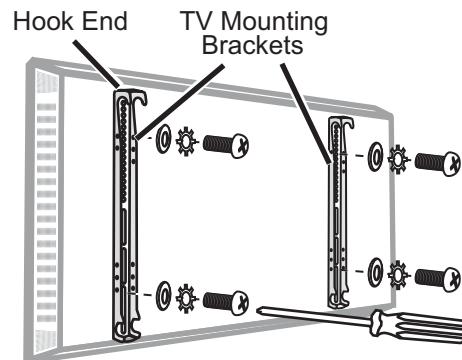
10. **Hang the TV on CM7**

⚠ *Caution: The TV is very heavy. Use at least two people to hang the TV on* CM7.

10-1. Hang the TV on the top bar of CM7 and then carefully rotate it down.

Top Bar

1

2
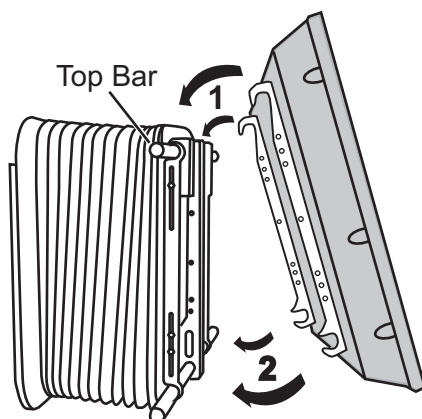
11. **Attach the safety clips**

11-1. Insert the two safety clips on to the top of the TV Mounting Brackets and secure them using the included hex wrench.

11-2. Continue running the cables to the TV. The TV may need to be tilted out on the bottom, especially if connectors are toward the center of the TV. If the TV needs to be tilted, have one person carefully tilt the TV out from the bottom and another person run the cables.

11-3. After the cables have been connected, secure the bottom safety clips to the bar.

11-1
Hex Wrench
Hex Screw

TV Mounting Bracket

Safety Clips

11-3
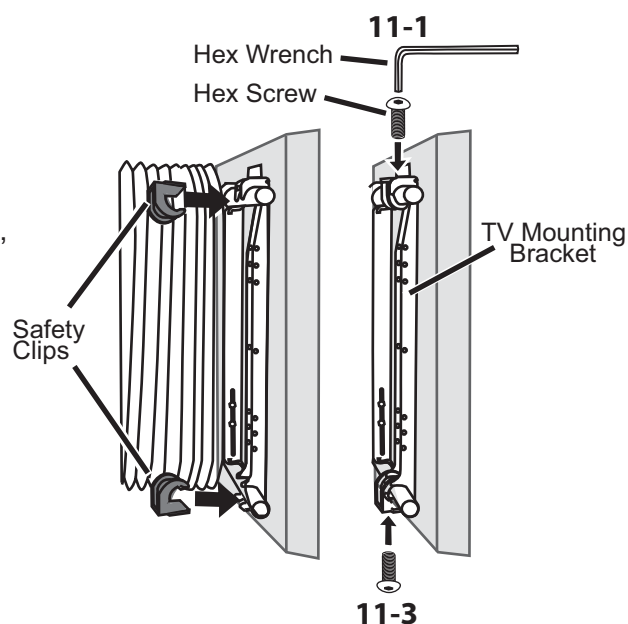
12. **Attach IR Receiver to TV**

    12-1. Using the provided velcro tab, adhere the IR receiver eye-piece to the TV so it has a clear line of sight with the remote control.

13. **Calibrate CM7 to Your TV**

13-1 ← (label on diagram)

13-2 ← (label on diagram)
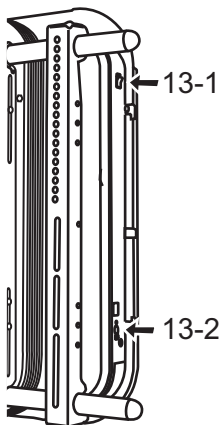
IMPORTANT: CM7 must be calibrated to the TV to avoid hitting the wall.

    13-1. Switch off the main power on the control box of CM7.

    13-2. Hold down the set button on the control box while switching on the power. Continue holding down the Set button for 5 seconds until the display reads **CT**.

    13-3. Stand back while CM7 moves through the calibration sequence, moving in and out, left and right and up and down.

    13-4. CM7 is done calibrating when it goes back to the home position against the wall.

    13.5 If the TV is not parallel with the wall in the home position, you can reset the home position so that the TV is upright. To do this, go to step 14.

14. **Reset the home position of CM7 (optional)**

    14-1. Move CM7 to the home position, against the wall, by pressing the IN button on the remote once.

    14-2. Insert the provided plastic pointer into the Selector hole on the side of the CM7 control box and press the button until the display reads **HP**.

    14-3. Using the up and down arrow buttons on the remote, adjust the CM7 to the position where you want the TV when it is in "home" position.

    14-4. Press the Set button on the side of the CM7 for 3 seconds.

    14-5. The CM7 will now go to the new home position you just programmed every time you select the IN button for it to go home.

Using CM7

Setting CM7 TV width

NOTE: Do not repeat setting the width if you finished step 5 in the installation portion of this manual.

⚠️ *Caution: CM7 restricts movement based upon the TV width selected by the user. The TV width must be set correctly before operating CM7. Setting the incorrect width may result in property damage and/or injury.*

1. Plug in CM7.

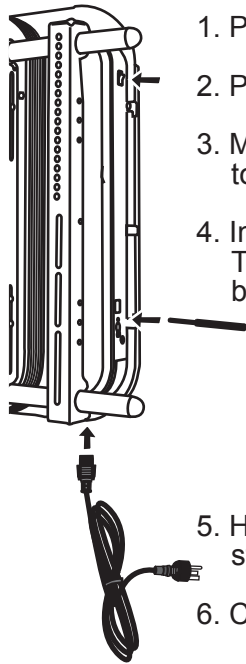2. Press the power switch on the side of CM7 to "1" (ON).

3. Measure the total width of the TV including any side speakers that may be attached to the TV.

4. Insert the provided plastic pointer into the Selector hole, and press the button until the TV width code corresponds to the outside width of your TV as indicated in the table below.

Code	TV Outside Width
C1	40" - 44.9" (102 - 113 cm)
C2	45" - 48.9" (114 - 123 cm)
C3	49" - 55.9" (124 - 140 cm)
C4	56" - 63.0" (142 - 160 cm)

5. Hold the black rubber Set button, below the Selector hole, until the TV width code stops blinking.

6. CM7 will restrict the movement of the TV based upon the TV width selected.

Adjusting the TV position

⚠️ *Before using CM7, it is important that the correct TV width is set to avoid property damage or personal injury. See the "Setting CM7 TV Width section above to set the correct TV width. Keep everything and everyone away from CM7 while in motion. The user must observe the CM7 while it is in motion at all times until it is stopped by pressing one of the directional arrows on the remote control.*

1. With CM7 plugged in, press the POWER switch on the control box to "1" (ON).

2. On the remote, first push **MOUNT** and then **POWER**. CM7 is now ready to receive control signals from the remote control.

3. If the TV width code is not displayed on the control box, press **POWER** on the remote. Then press **OUT** once to extend the TV out from the wall. There is no need to hold down the button. Pressing any of the arrow buttons while CM7 is moving the TV will stop it.

4. On the remote, press one of the four (4) arrow keys to start CM7 swiveling or tilting in the direction selected. Press any of the four arrow keys or **IN** or **OUT** to stop CM7 from moving the TV.

OR

5. Press **IN** once to send CM7 back to the resting/home position, which will retract the TV against the wall.

OR

6. Once the preset buttons have been set, press the **P1 or P2** (Model X700RS & RB) or **P1, P2, P3 or P4** (Model X700CS & CS) to go to pre-programmed positions (see "Programming CM7 Preset Position Buttons").

Universal Remote Control

Once programmed, the universal remote can control TVs, VCRs, DVD Players and Cable boxes. See the pages following for instructions on how to program the remote.

Power turns on/off the selected device.

TV, once programmed to your TV, makes the TV the selected device.

SET
This button sets the Preset position to the current CM7 position. In other modes, this button selects or sets options.

P1 moves CM7 to the Preset 1 position.

P2 moves CM7 to the Preset 2 position.

Arrow Buttons tilt the TV in the direction of the button in CM7 mode. In other modes these navigate on-screen menus.

MENU opens the setup menu for the selected device.

VOL adjusts the volume up or down.

M**UTE** turns the sound off for the selected device.

INFO displays information about the current video source.

LAST goes to the last channel selected.

Rewind rewinds the current video.

Pause Pauses the currently playing video.

PIP turns on the Picture in Picture.

POSITION on TV changes the position of the PIP window. On CBL: Page Down.

DVD/VCR, once programmed, makes the VCR/DVD the selected device

Number buttons allow you to enter the corresponding number.

Play plays the currently inserted media.

Stop stops the currently playing video.

SWAP switches the PIP and background video sources.

FREEZE on TV freezes the PIP, on DVD displays Setup menus, on VCR shows tape Speed, on CBL:Page Up

MOUNT makes CM7 the selected device.

CBL, once programmed to your Cable box, makes the Cable box the selected device.

P3 moves CM7 to the Preset 3 position.

P4 moves CM7 to the Preset 4 position.

IN or OUT, in CM7 mode, **IN** returns CM7 to the home position and **OUT** extends CM7.

EXIT leaves the current menu.

CH changes to the next/previous channel or chapter.

FAV in CBL mode, returns to the programmed favorite channel.

TV/VCR rotates through the available video sources for the selected device.

GUIDE shows the guide in CBL mode and turns on Closed Captioning (CC) in TV mode.

ENTER selects the currently highlighted option.

Fast Forward fast forwards the currently inserted video.

Record starts recording.

OPEN/CLOSE opens/closes the media tray of the selected device.

SLEEP Puts the selected device into a sleep/low power consumption state.

Programming the Universal Remote

Once programmed, the universal remote can control TVs, VCRs, DVD Players and Cable boxes in addition to CM7. You can also set the preset buttons so that you can reposition CM7 to your favorite positions with one push of a button.

Programming CM7 Preset Position Buttons

⚠️ *Before using CM7, it is important that the correct TV width is set to avoid property damage or personal injury. Keep everything and everyone away from CM7 while in motion.*

1. With CM7 plugged in, turn on the power by pressing the power button on the control box located on the right side of CM7.

2. On the remote, press the **MOUNT** button.

3. Move CM7 to the position you want for the preset.

4. Press **SET** once.

5. Depending upon your model, your remote may have two presets or four. Press the number of the preset you would like to program (P1, P2, P3, or P4).

6. Move CM7 to the next position you want for a preset.

7. Repeat steps 4 and 5 again.
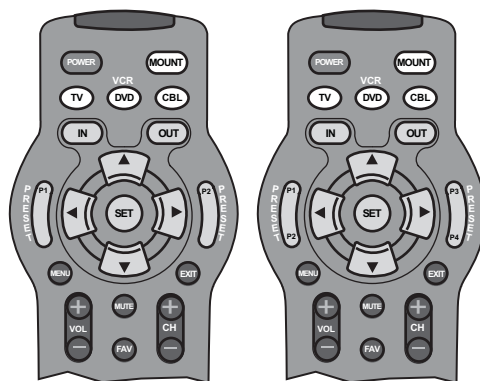
Programming the Remote to Operate Existing Devices

TV Programming

To program the universal remote to operate your TV:

1. Turn the TV on.

2. Press the **TV** and **SET** buttons together until the **TV** button stays lit.

3. While pointing at the TV, enter a 3-digit code from the code list for your TV brand. Keep entering codes until the TV powers off. Then continue to step 4.

4. Press **SET**. The **TV** button will blink 3 times and go out.

5. Test the remote to see that it works properly with the TV. If it does not, repeat steps 2-5 again.
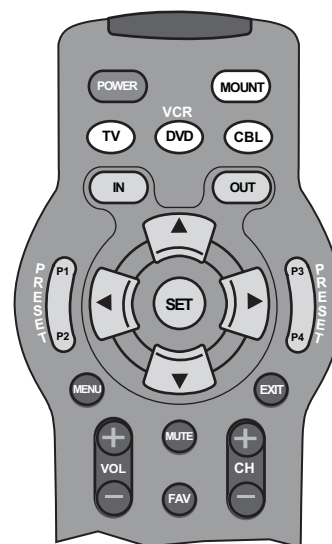
TV Brand	Code Numbers	TV Brand	Code Numbers
Admiral	220 160 081 072	Emerson	245 155 154 143 096 076 051 048 047 043 028 005 004 001
Advent	231	Fisher	057 007
Aiwa	213	Fujitsu	244
Akai	146 001	Funai	245 043 028
Amark	143	Funai	245 043 028
Ampro	073	Futuretech	043
Amstrad	052	Gateway	041 202
Anam	242 131 080 056 043	GE	220 165 160 155 144 074 073 056 034 009 008 004 001
Aoc	058 004 001	Gradiente	218
Apex	247	Haier	203
Audiovox	076	Hallmark	004
Blaupunkt	088	Hitachi	143 075 072 023 012 011 010 009 004
Broksonic	241	In nity	249 164
Cairn	201	JBL	249 164
Candel	004 003 002 001	JCPenney	160 143 101 065 030 024 009 008 004 001
Capehart	058	Jensen	013
Cetronic	043	JVC	237 230 145 083 070 038 034
Citizen	143 103 101 043 004 003 002 001	KEC	043
Classic	043	Kenwood	070 001
Concerto	004	Kloss	059 002
Contec	051 043	KMC	143
Cornea System	246	KTV	250 154 143 043 001
Coronado	143	LG (Goldstar)	143 127 119 106 004
Craig	043	Lodgenet	072
Crown	143 043	Loewe	249
Curtis Mathes	143 101 004 001	Logik	072
CXC	043	LXI	249 164 160 081 052 015 007
Daewoo	143 127 125 114 103 076 043 027 016 004	Magnovox	249 205 223 222 216 210 164 160 127 094 064 063 060 059 022 004 003 001 218 219
Daytron	143 004	Marantz	249 164 001
Dell	036	Matsui	164
Dwin	177	Memorex	096 072 007 004
Dynasty	043	Metz	088
Dynatech	062	MGA	042 028 024 004 001
Eiki	187	Minerva	088
Electrohome	196 143 076 024	Mitsubishi	225 146 124 109 042 040 031 028 021 024 004

TV Brand	Codes	TV Brand	Codes
Mitsubishi	225 146 124 109 042 040 031 028 021 024 004	Siemens	088
Motorola	217	Signature	072
MTC	101 062 004 001	Sony	194 147 139 070
Nad	025 015	Soundesign	043 028 004 003
NEC	056 040 024 019 016 001	SSS	043 004
Nikei	043	Supremacy	002
Olevia	045	Sylvania	249 245 240 229 226 211 164 160 127 064 063 060 059 003
Onking	043	Symphonic	245
Omwa	043	Tandy	081
Optonica	081 019	Tatung	062 056
Orion	096	Technics	080 034
Panasonic	250 249 238 227 164 080 056 034 017 033	Techwood	004
Philco	164 064 063 060 059 056 024 004 003 001	Teknika	43 101 072 043 028 024 004 003 002
Philips	249 205 164 127 093 059 038 005 004 003 001	Telefunken	037
Pioneer	135 025 023 018 001	Telerent	072
Portland	143 004	Tera	172
Proscan	197 165 220 160 144	Thomas	245
Proton	173 171 143 131 058 004	TMK	004
Quasar	250 056 044 034 017	Toshiba	232 138 101 062 040 032 030 015 007
Radio Shack	143 127 043 019 004	Totevision	143
RCA	228 220 165 160 152 144 074 065 056 024 023 004 001	Universal	009 008
Realistic	047 043 019 007	Video Concepts	146
Roctec	186	Vidikron	184
Runco	182 168 073	Vidtech	004
Sampo	202 058 004 001	Visio	100
Samsung	251 248 209 160 143 127 105 101 089 026 004	Wards	249 164 143 074 072 064 063 060 034 028 019 009 008 004
Sanyo	082 057 053 020 007	Westinghouse	245 076
Sceptre	035	Yamaha	004 001
Scott	143 048 043 028 004	York	004
Sears	165 160 143 094 082 057 030 028 015 007 004	Yupiteru	043
Sharp	207 170 143 081 029 028 022	Zenith	103 095 073 072

DVD Player Programming

To program the universal remote to operate your DVD Player:

1. Turn the DVD Player on.

2. Press the **DVD** and **SET** buttons together until the **DVD** button stays lit.

3. While pointing at the DVD Player, enter a 3-digit code from the code list for your DVD Player brand. Keep entering codes until the DVD Player powers off. Then continue to step 4.

4. Press the **SET** button. The **DVD** button will blink 3 times and go out.

5. Test the remote to see that it works properly with the DVD Player. If it does not, repeat steps 2-5 again.
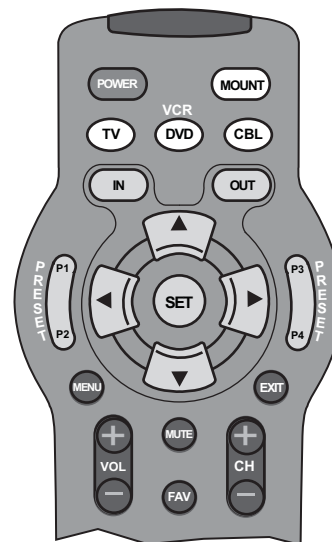
DVD Brand	Codes	DVD Brand	Codes
Apex Digital	153 220	Nad	221
Broksonic	017	Onkyo	233 001
Cyberhome	165 020 004	Panasonic	234 228 167 152 149
Daewoo	193 171	Philips	237 166 168 016 007
Denon	240 226	Pioneer	230 229 189 015
Emerson	158 150 148	Proceed	219
GE	243 231	Proscan	231 229
Go Video	014 160 002	RCA	243 231 170 019
Gradiente	201 192	Samsung	248 161 013 005
Harman Kardon	225 218 173	Sansui	017
Humax	190 191	Sanyo	006
JVC	238 012	Sharp	222 202
Kenwood	224	Sony	244 232 204 169 003 009
KLH	223	Sylvania	172 150
LG (GoldStar)	249 247 241 235	Thompson	243 231
Lite On	021	TIVO	191
Magnavox	237 163 168 016	Toshiba	250 245 233 190 194 151 011 018
Marantz	168	Yamaha	246 234
Memorex	008	Zenith	247 241 235 014
Mitsubishi	227		

VCR Programming

Note that the VCR button is actually labelled DVD on the button, but VCR next to the button. To program the universal remote to operate your VCR:

    1. Turn the VCR on.

    2. Press the **VCR** (**DVD)** and **SET** buttons together until the **DVD** button stays lit.

    3. While pointing at the VCR, enter a 3-digit code from the code list for your VCR brand. Keep entering codes until the VCR powers off. Then continue to step 4.

    4. Press the **SET** button. The **DVD** button will blink 3 times and go out.

    5. Test the remote to see that it works properly with the VCR. If it does not, repeat steps 2-5 again.

| VCR Brand	Codes	VCR Brand	Codes	VCR Brand	Codes
Aiwa	461 334	Magin	404	Salora	314
Akai	446 425 424 346 343 316	Magnavox	464 456 445 367 334	Samsung	508 468 425 412 409 407 404 445 332
Ampro	372	Marantz	445 369 367 312	Sansui	435 348 343
Anam	445	Marta	406	Sanyo	404 314 310 307 301
Audio Dynamics	343 339 312	Matsui	330	Scott	431 429 412 337
Bloksonic	429 337	Mei	445	Sears	412 406 320 314 310 309 308 301
Canon	445	Memorex	445 439 406 372 353 334 314 310 301	Sharp	515 465 459 445 353
Capehart	408	MGA	359 346	Shintom	324
Craig	435 404 301	Minolta	501	Signature	334
Curtis Mathes	445 341	MTC	404 334	Sony	512 506 454 453 445 378 376 358 357 356 353 352 301
Daewoo	417 412 411 408 310 307 305	Multitech	334 324	Soundesign	34
Daytron	408	NEC	348 343 339 312	STS	320
DBX	343 339 312	Nordmende	343	Sylvania	520 519 518 445 367 359 334
Dynatech	353 334	Optonica	353	Symphonic	334
Electrohome	359	Orion	325	Tandy	334 310
Emerson	467 431 429 417 406 445 346 337 336 334 325 306	Panasonic	511 502 445 374 370	Tatung	343 339
Fisher	310 309 308 301	Pentax	445 320	TEAC	343 339 334
Funia	334	Philco	445 367 334	Technics	445 370
GE	447 444 409 407 445 372	Philips	406 445	Teknika	406 445 334 319
Go Video	468 455 436 432 404	Pilot	406	Thomas	334
Harman Kardon	346 312	Pioneer	348 321 320	TMK	306
Hitachi	460 343 334 326 320	Portland	408	Toshiba	521 431 413 412 382 359 347 320 308
Instant Replay	445	Proscan	505 504	Totevision	406 404
JCL	445	Pulsar	372	Unitech	404
JCPenney	406 404 445 320	Quartz	341 302	Vector Research	312
Jensen	343	Quasar	445	Victor	348
JVC	452 430 445 360 348 312	Radio Shack	423	Video Concepts	346 334 312
Kenwood	348 347 334 314	RCA	509 458 447 445 444 409 407 404 341 334 320	Videosonic	404
LG (GoldStar)	423 414 406 320 312	Realistic	406 404 445 353 334 314 310 308 301	Wards	431 404 445 353 324 320 301
Lloyd	334	RICO	358	Yamaha	343 339 334 312
LXI	406 334 309 301	Runco	448	Zenith	467 406 380 372 358 356 348 334

Cable TV Set-Top Box Programming

To program the universal remote to operate your Cable Box:

    1. Turn the Cable Box and TV on.

    2. Press the **CBL** and **SET** buttons together until the **CBL** button stays lit.

    3. While pointing at the Cable Box, enter a 3-digit code from the code list for your Cable Box brand. Keep entering codes until the Cable Box powers off. Then continue to step 4.

    4. Press the **SET** button. The **CBL** button will blink 3 times and go out.

    5. Test the remote to see that it works properly with the Cable Box. If it does not, repeat steps 2-5 again.

Brand	Codes	Brand	Codes	Brand	Codes
ABC	205 200 103 039 004	Hitachi	103	Regency	057
Amricast	099	Jerrold	231 201 200 101 069 004 001 103	Samsung	030
Antronit	014	Magnavox	095 094	Scienti c Atlanta	231 205 200 118 117 110 042 037 034 011 008 001
Archer	014 007	Media One	017	Signal	030
Bell South	099	Memorex	008	Signature	103
Centurion	092	Mitsubishi	102	SL Marx	030
Century	007	M-Net	204	Sony	214 213 212 211
Citizen	007	Motorola	001 002	Starcom	231 201 004
Combano	081 080	Movie Time	032	Stargate	201 104 030
Consat	001	Novaplex	092	Tadiran	030
Comtronics	030	NSC	038	Time Warner	231
Digicable	206	Oak	204 037	Tocom	056 039 003
Eagle	003 030 020	Panasonic	047 044	Toshiba	008
Eastern	066 057	Paragon	008	Unika	014 007
Echostar	106	Philips	095 085 020 017	United Cable	004
Electricord	032	Pioneer	203 231 121 105 034 103	Universal	035 032 014 007
Gemini	201 054	Prucer	078 047	Viewstar	089 087 086 020 018
General Electric	072	PTS	202 001	Zenith	093 060 008
General Instrument	104 001 103	Pulsar	008		
GNC	099	RCA	047		
Golden Channel	030	Reconton	098		
Hamlin	049	Regal	049		

Controlling CM7 with Home Automation (RJ11/RS232 port)

CM7 can be controlled through Home Automation remote controls and control panels such as those made by Crestron, AMX, Control4 and life|ware. To do this, do the following:

RJ11/RS 232 Port
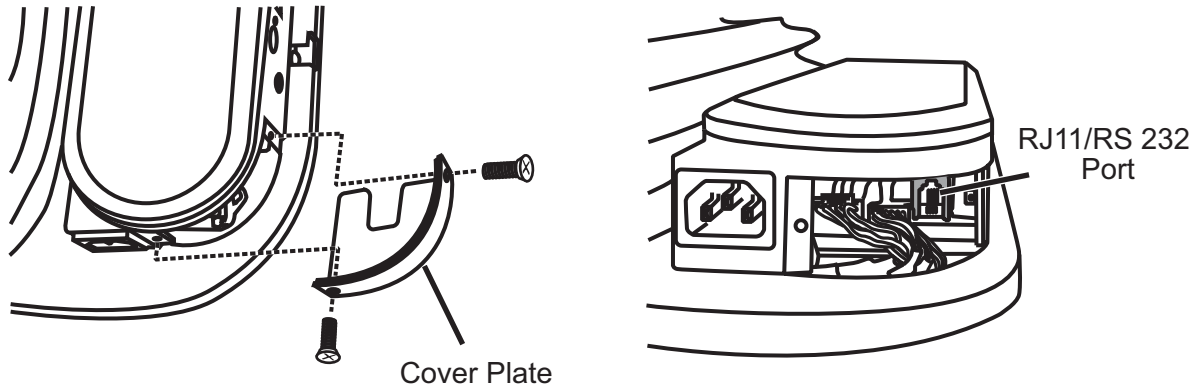
Cover Plate

1. Using a philips screw driver, remove both screws from the cover plate located at the bottom, right-hand side of the control box.

2. Remove the cover plate to expose the RS232 port.

3. Download the RS232 program from the Home Automation vendor's web site.

4. Plug the home automation control into the RS232 port on CM7 running the cord out the back hole in the back plate of CM7.

5. Replace the cover plate and secure it in place with the screws.

6. Follow the vendor's instructions.

Troubleshooting

CM7 Will Not Move

If CM7 becomes unresponsive, rst check to see what the LED display on the side of the CM7 control reads. Then choose a course of action based upon the code.

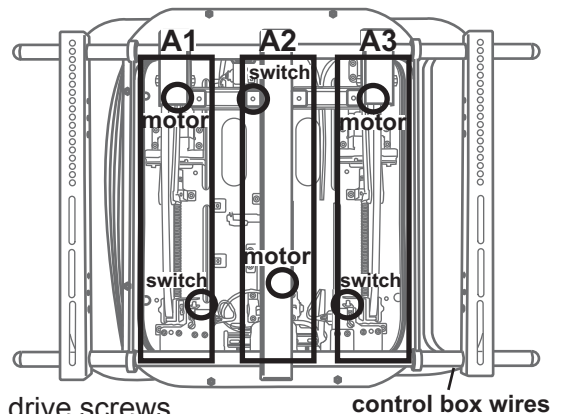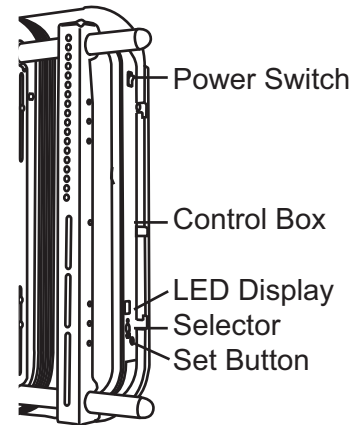### "A1", "A2", or "A3" is displayed on control box

Possible Causes:
- One of the motor cables is disconnected.
- One of the "stop" sensors is disconnected, misaligned or broken.
- One of the long drive screws is dirty.
- A motor coupling is loose.

How to Correct:

1. Unplug CM7 from power for at least 10 seconds.

2. Check that the TV and CM7 are not trapped against the wall or any other object.

3. Plug in CM7, turn on the power and try to move the CM7 using the remote control. If it works properly, do not continue to step 4.

4. With the CM7 powered on, insert the provided plastic pointer in the Selector hole on the side of the CM7 and press it until "t" shows on the LED display.

5. Using the remote control, straighten CM7 so that it is parallel with the wall, and then press the "Set" button on the control box for three seconds. The CM7 should return to the home position against the wall.

6. Unplug CM7 from power for at least 10 seconds and then plug it in again. Turn on the power and try to move the CM7 using the remote control. Continue to the next step if it does not work correctly.

7. Unplug the CM7 from power.

8. Remove the TV and inspect the areas in the picture corresponding to the error message. For example, if A3 is displayed on the LED, look at areas in the A3 box. Make sure that all motor and "stop" switch wire connections are securely connected.

9. Check to see that the wires leading to the control box are securely connected.

10. Clean any substances or particles from the long drive screws.

11. Plug in CM7, turn on the power and try to move the CM7 using the remote control.

"C1", "C2", "C3" or "C4" is displayed on control box

Normally CM7 will show the code associated with the TV mounted on it.

1. Check that the IR receiver is plugged into the side of the CM7 and that the IR Receiver eye is in direct line of sight with the remote control.

2. Make sure that the code set on the control box is the correct code for the TV width mounted.

Code	TV Outside Width
C1	40" - 44.9" (102 - 113 cm)
C2	45" - 48.9" (114 - 123 cm)
C3	49" - 55.9" (124 - 140 cm)
C4	56" - 63.0" (142 - 160 cm)

If the code is incorrect, reset the width code.

2-1. Press the power switch to ON (1).

2-2. Measure the **total outside width** of the TV including any side speakers that may be attached to the TV. Do not use the TV manufacturer's screen size, which is measured diagonally, to set the TV width on CM7.

2-3. Insert the provided plastic pointer into the selector hole, and press the button until the TV width code corresponds to the outside width of your TV as indicated in the table below.

Code	TV Outside Width
C1	40" - 44.9" (102 - 113 cm)
C2	45" - 48.9" (114 - 123 cm)
C3	49" - 55.9" (124 - 140 cm)
C4	56" - 63.0" (142 - 160 cm)

2-4. Hold the black rubber set button, below the selector hole, until the TV width code stops blinking.

3. Check that the TV and CM7 are not trapped against the wall or any other object.

4. Plug in CM7, turn on the power and try to move the CM7 using the remote control. If it works properly, do not continue to the next step.

5. Insert the provided plastic pointer into the Selector hole on the side of CM7, and press the button until a "t" is shown.

6. Using the remote control, straighten CM7 so that it is parallel with the wall and then press the Set button on the control box for three seconds. CM7 will return to the home position.
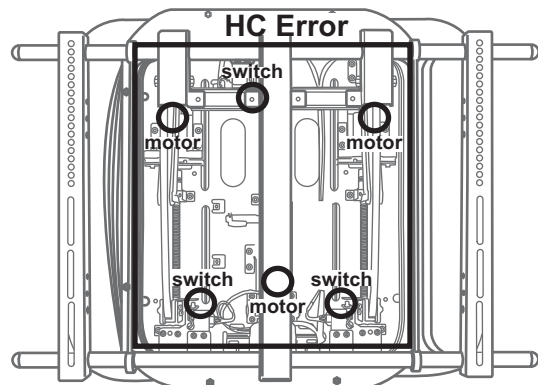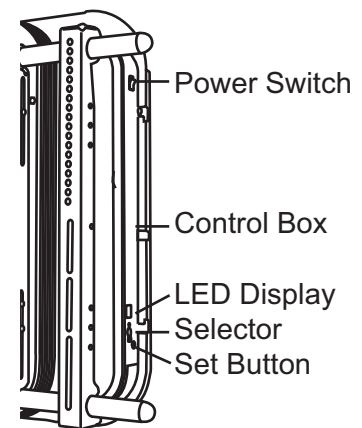
7. Unplug CM7 and plug it in again.

Power Switch
Control Box
LED Display
Selector
Set Button
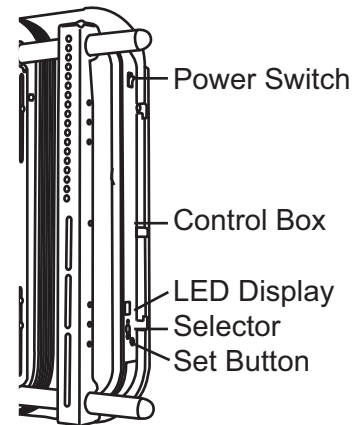
"HC" is displayed on control box

Possible Causes:

- Person or object is obstructing the motion of the CM7.
- One of the large drive screws has dirt or something on it.
- The linkages are rubbing against something.
- A motor cable has a short.

How to Correct:

1. Unplug CM7 from power for at least 10 seconds..

2. Check that the TV and CM7 are not trapped against the wall or any other object.

3. Plug in CM7, turn on the power and try to move the CM7 using the remote control. If it works properly, do not continue to the next step.

4. With the CM7 powered on, insert the provided plastic pointer in the Selector hole on the side of the CM7 and press it until "t" shows on the LED display.

5. Using the remote control, straighten CM7 so that it is parallel with the wall, and then press the "Set" button on the control box for three seconds. The CM7 should return to the home position against the wall.

6. Turn the power switch on the control box to "0" (OFF).

7. Hold down the Set button on the control box while switching the power switch to "1" (ON). Continue holding down the Set button for 5 seconds until the display reads **CT**.

8. Stand back while CM7 moves through the calibration sequence, moving in and out, left and right and up and down.

9. CM7 is done calibrating when it goes back to the home position against the wall.

10. Turn on the CM7 and test to see if it is operating normally. If it is not, remove the TV from CM7 and continue.

11. Check that there are no foreign objects in the switches and motors in the areas shown in the picture.

12. Check to see that the wire connections are securely connected and clean any substances that are found around the large drive screws.

13. Check the motors for faults in the areas shown in the picture.

14. Plug in CM7. Turn on the power, and try to move CM7 using the remote control.

Power Switch

Control Box

LED Display
Selector
Set Button

HC Error

switch
motor   motor
switch   switch
motor

"H1", "H2", or "H3" is displayed on control box

Possible Causes:

- A cable has become disconnected.
- A "stop" switch is faulty.
- There is dirty or debris in one of the switches.

How to Correct:

1. Unplug CM7 from power.

2. Check that the TV and CM7 are not trapped against the wall or any other object.

3. Plug in CM7, turn on the power and try to move the CM7 using the remote control. If it works properly, do not continue to step 4.

4. Turn the power switch on the control box to "0" (OFF).

5. With the CM7 powered on, insert the provided plastic pointer in the Selector hole on the side of the CM7 and press it until "t" shows on the LED display.

6. Using the remote control, straighten CM7 so that it is parallel with the wall, and then press the "Set" button on the control box for three seconds. The CM7 should return to the home position against the wall.

7. Unplug CM7 from power for at least 10 seconds and then plug it in again. Turn on the power and try to move the CM7 using the remote control. Continue to step 8 if it does not work correctly.

8. Unplug the CM7 from power.

9. Remove the TV and inspect the areas in the picture corresponding to the error message. For example, if H3 is displayed on the LED, look at areas in the H3 circle. Make sure that all motor and "stop" switch wire connections are securely connected.

10. Clean any substances or particles from the long drive screws.

11. Plug in CM7, turn on the power and try to move the CM7 using the remote control.

Power Switch

Control Box

LED Display
Selector
Set Button

H2

H1   H3
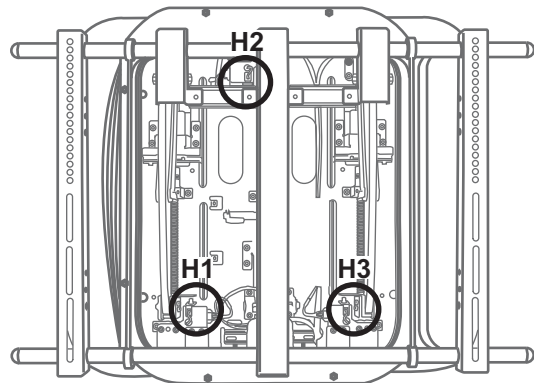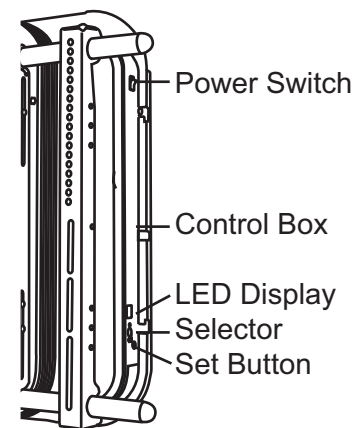
TV does not fit CM7

1. Make sure that the TV is not too large or heavy for CM7:

> Maximum TV outside width accomodated: 40" - 63" (102 - 160 cm)

> Maximum weight limit: 180 lbs. (81 kg)

2. If mounting holes on TV back are too wide or narrow, an optional adapter may be needed.

TV leans forward at the home position (not parallel with wall)

Possible Causes:

- The weight of the TV is causing the CM7 to lean forward in the home position.

How to Correct:

1. Move CM7 to the home position, against the wall, by pressing the **IN** button on the remote once.

2. Insert the provided plastic pointer into the Selector hole on the side of the CM7 control box and press the button until the display reads **HP**.

3. Using the up and down arrow buttons on the remote, adjust the CM7 to the position where the TV is parallel with the wall.

4. Press the Set button on the side of the CM7 for 3 seconds.

5. The CM7 will now go to the new home position you just programmed every time you select the **IN** button for it to go home.

Maintenance

1. Remove the TV from CM7 yearly to check that no cords are inteferring with moving parts.

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