

A man in a black wetsuit is sitting on a white surfboard in the middle of a blue ocean. He is smiling and looking towards the camera. The sky is blue with some white clouds. The water is a deep blue with some ripples.

ENTERTAINMENT TV TECHNICAL CERTIFICATION TRAINING

Field Engineering | 2010

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Course Objectives

- » 12.1" Entertainment TV
 - ◆ Analog Only
 - ◆ Not in production presently

- » 17" Entertainment TV
 - ◆ Digital + Analog
 - ◆ Presently in production

12" LCD ENTERTAINMENT TV - ANALOG

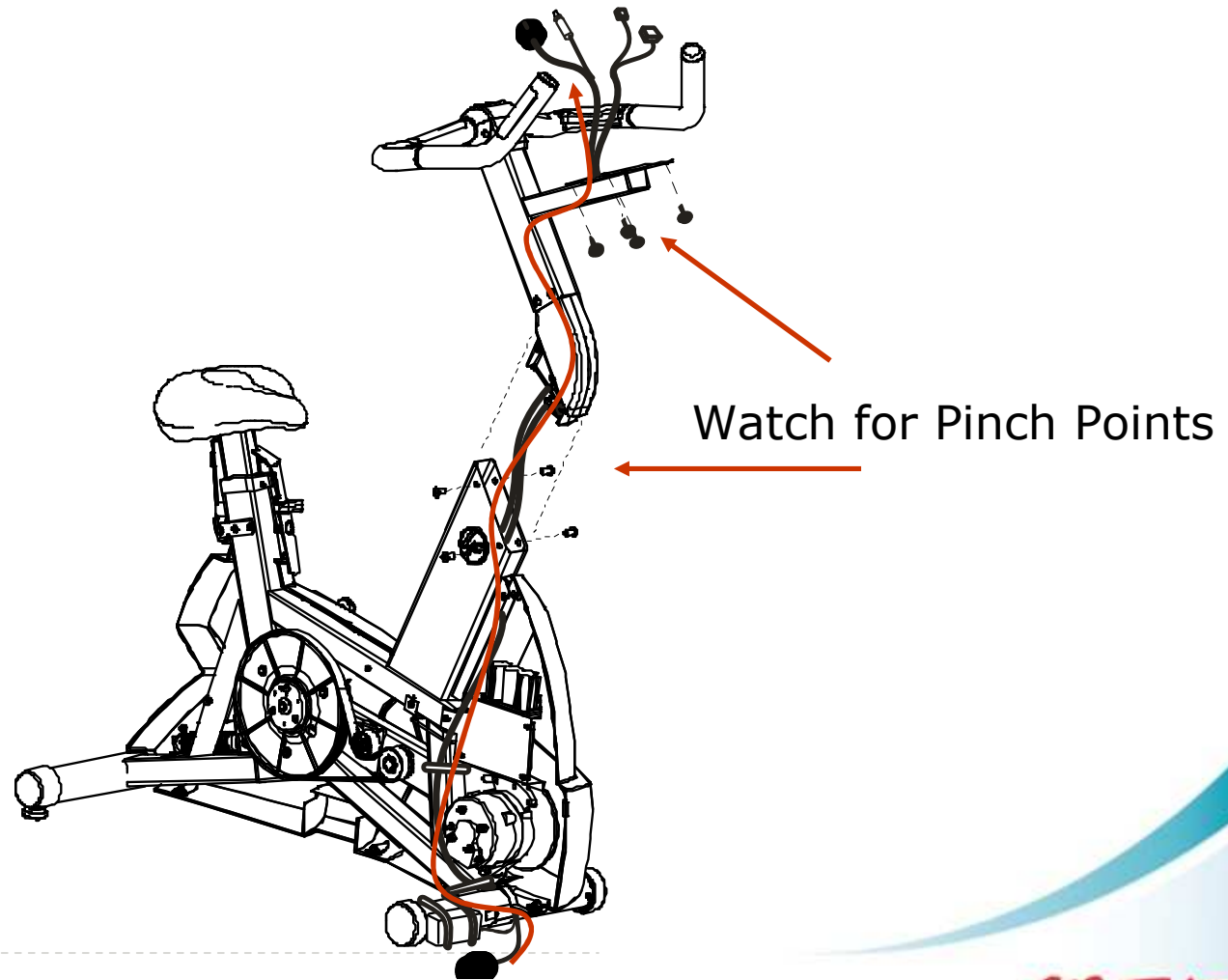
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12" LCD Entertainment

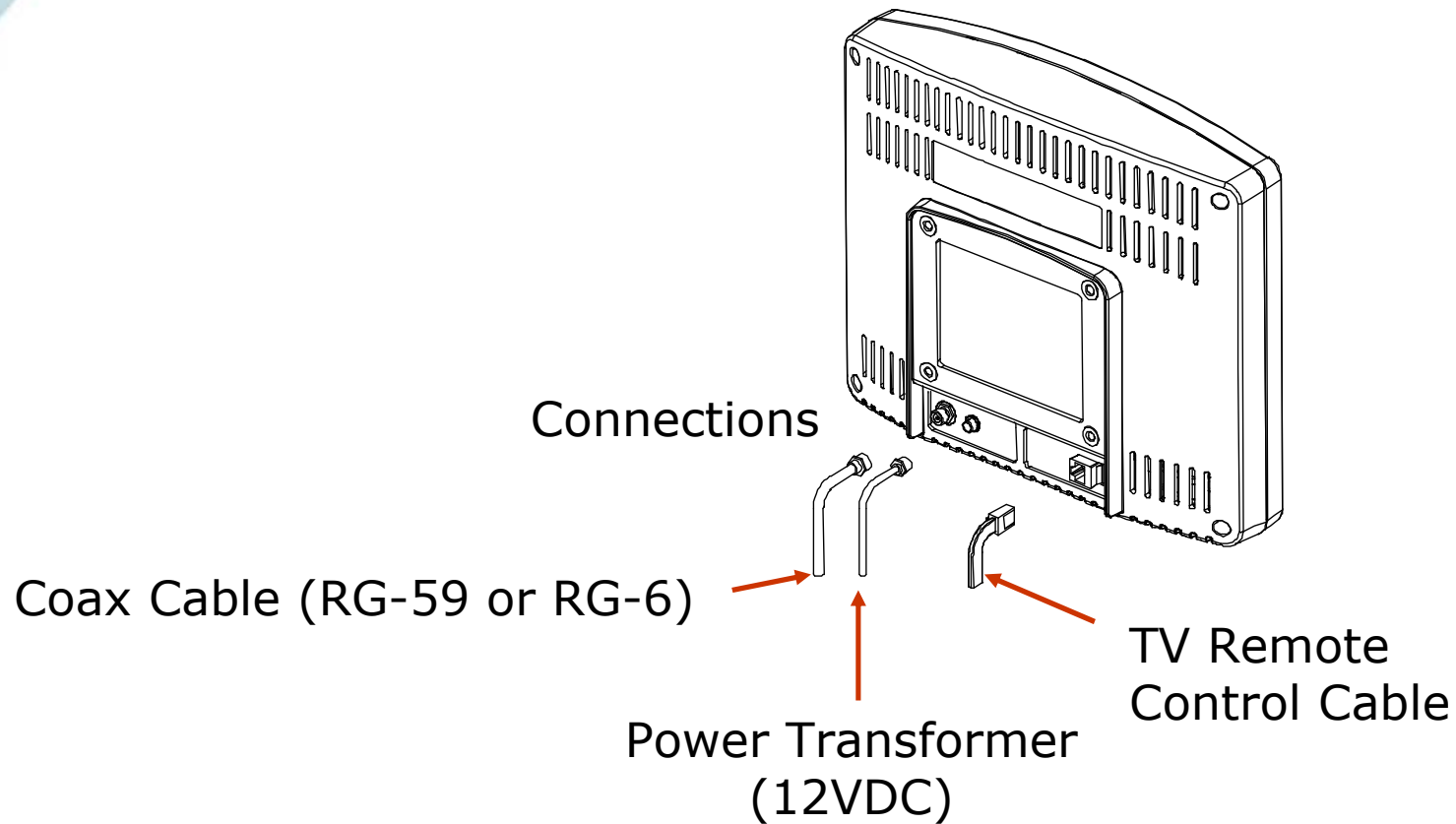
» 95Ri



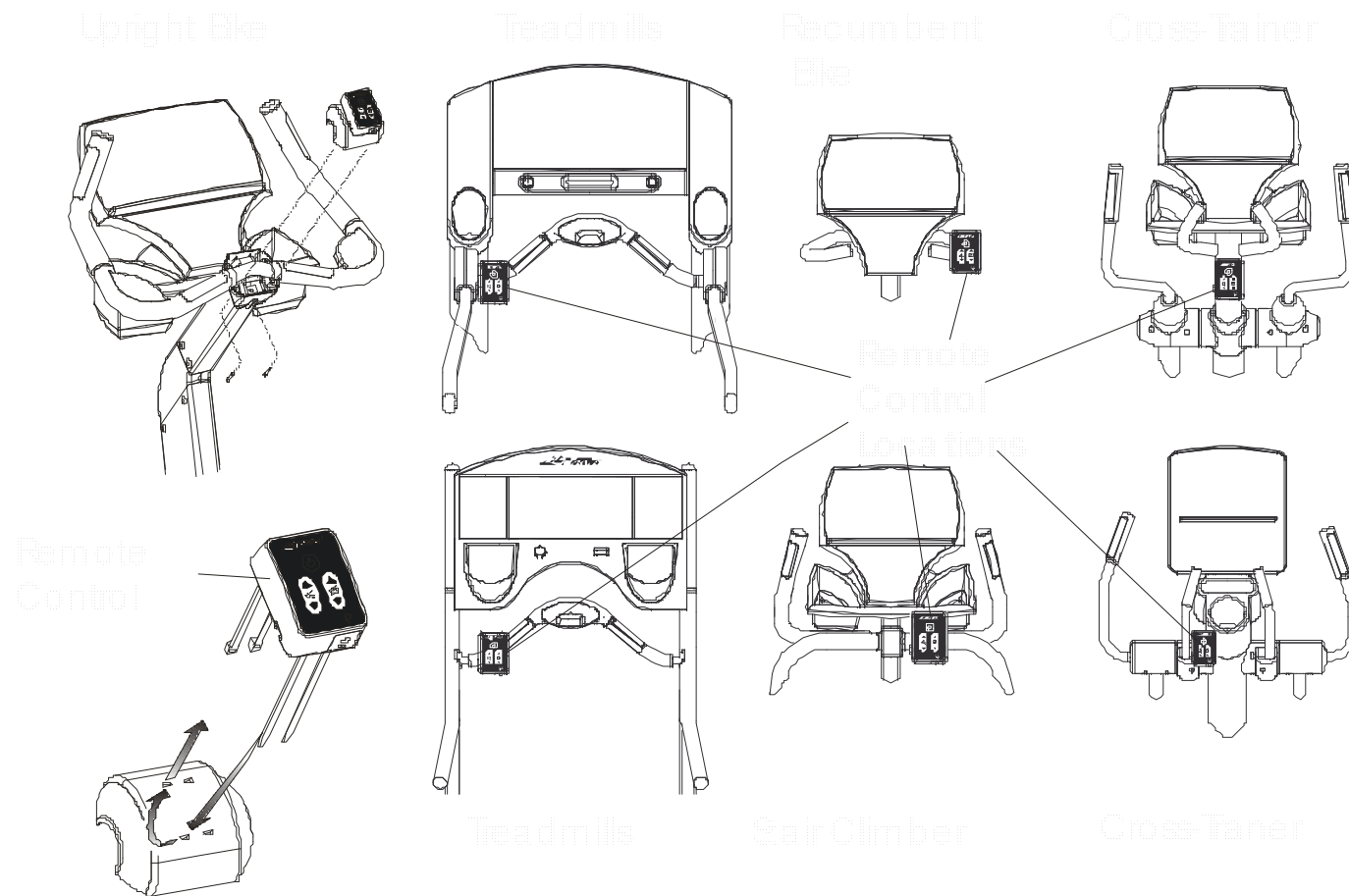
LCD Entertainment Install



12" TV - Connections

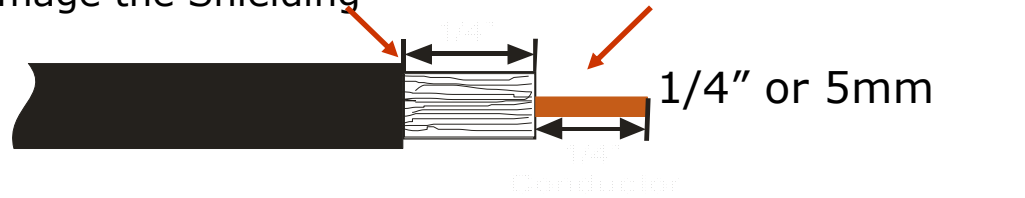


TV Remote Control Locations



Making a Coax Cable for connections

Remove the outer jacket.
Be careful not to damage the Shielding



Fold the Shielding back over the jacket



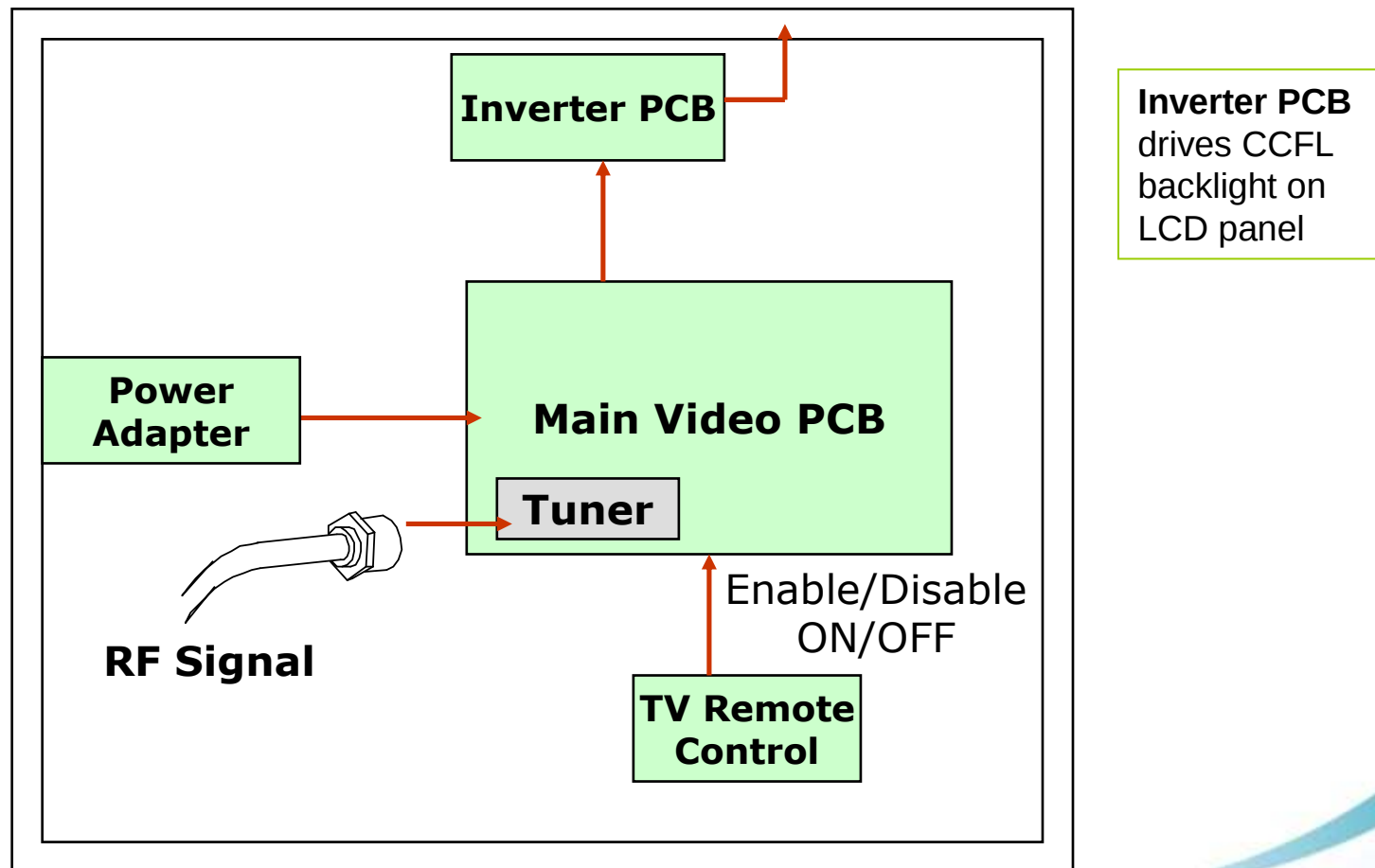
If the cable has an extra foil wrap remove



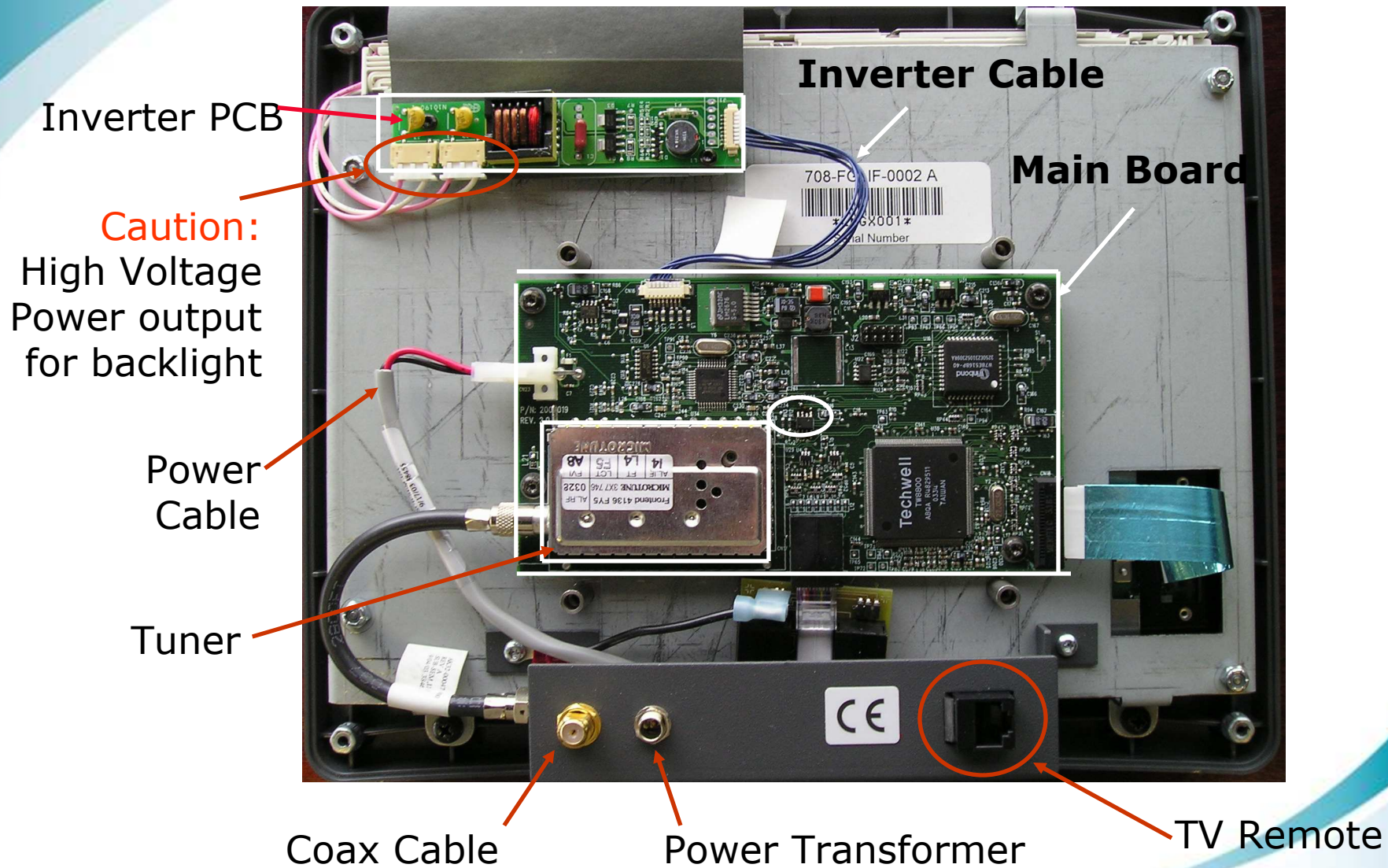
Position connector so the Dielectric center goes inside the connector and the outer shielding bread makes contact with the outer ring of the connector



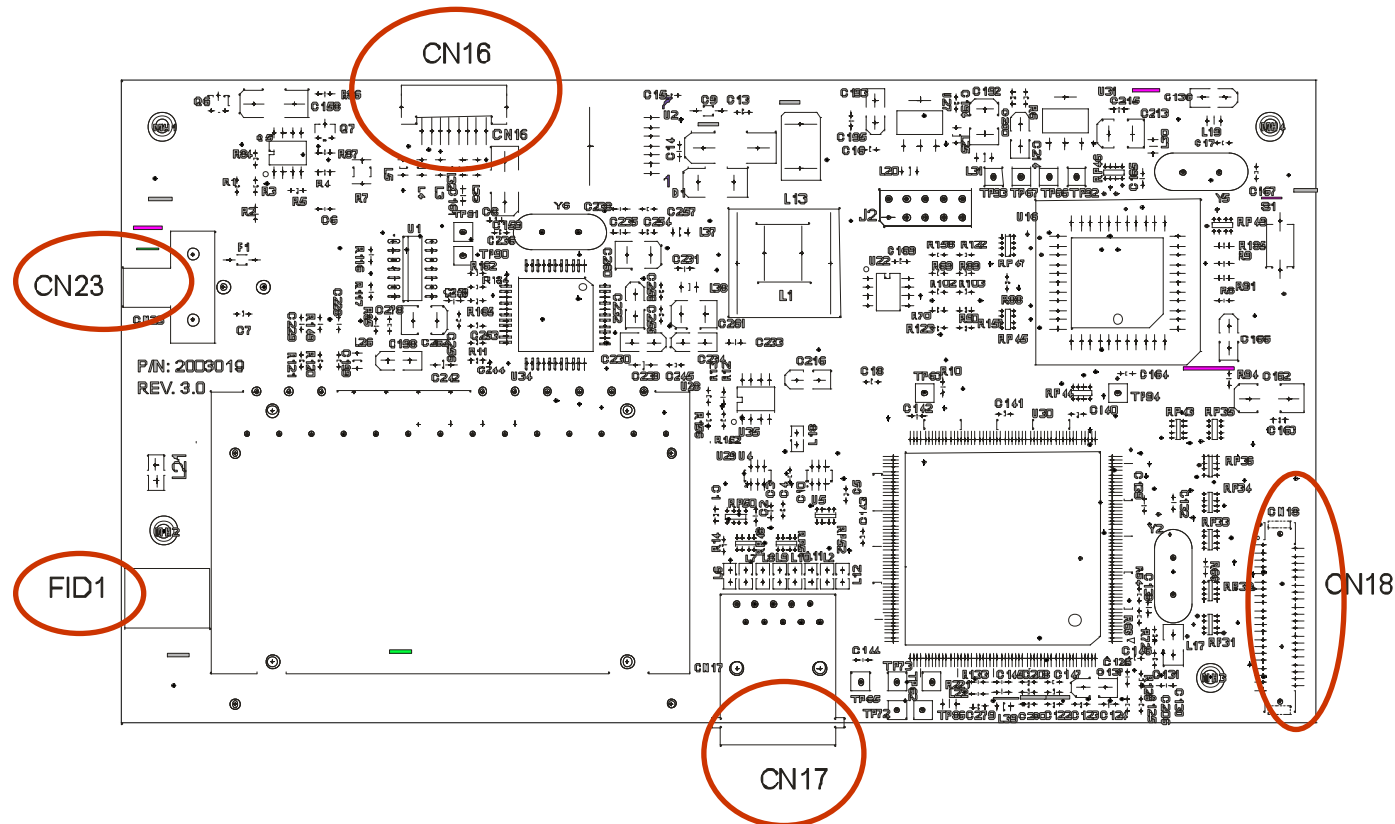
12" Entertainment LCD Block Diagram



12" Entertainment LCD Components



Main Video PCB



CN16: Inverter Power; Pins 1&2=GND, pins 3&5=Vin=12VDC, pin5=Enable=12vdc,pins 6,7,8 n/a

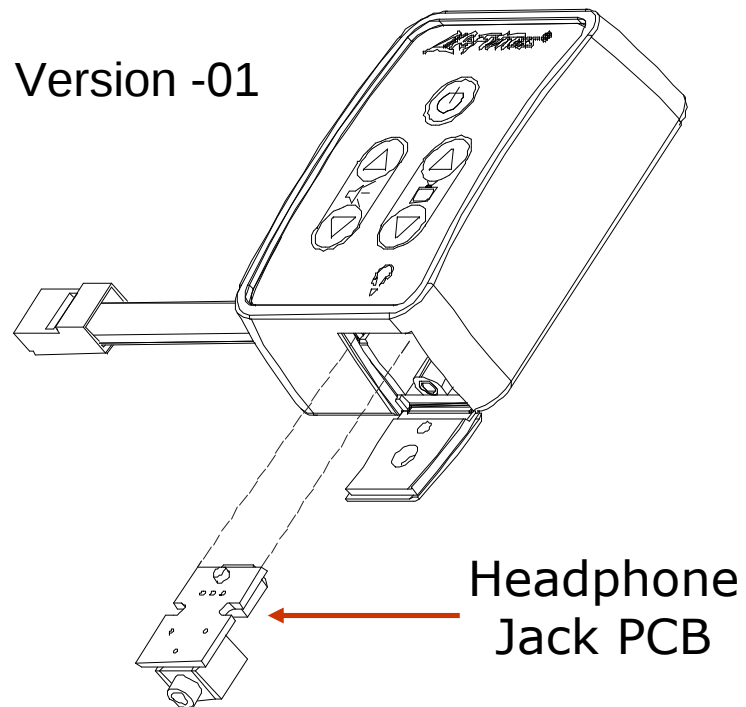
CN23: Main Power Input; Pin 1=(+) 12VDC, Pin 2=(-)GND

CN17: TV remote connection

CN18: LCD ribbon Cable, Communication to LCD Screen

FID1: Antenna Input

12" TV - Remote Controls



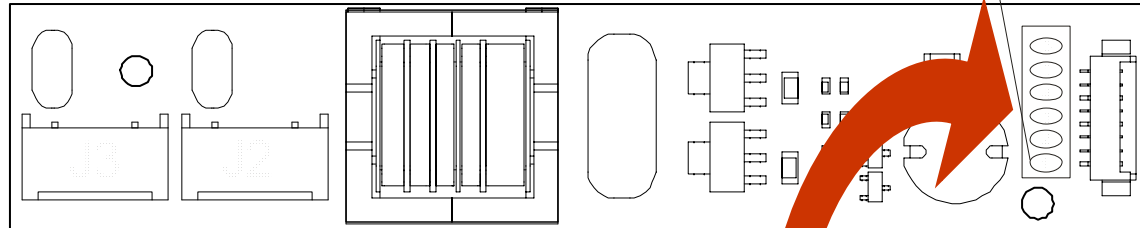
Note: Remotes are not interchangeable.

12" Entertainment TV – Common Issues / Troubleshooting Tips

Inverter Test Points

Test Points

TP1 & TP2 Vin, =12vdc
TP3 & TP4 ground (-)
TP5 Enable line = 12vdc



**Inverter
PCB**

**Inverter
Cable**

**Bad Main
Board**

Example

No voltage at TP1(+) & TP3 (-)
Bad TV Remote- not turning on,

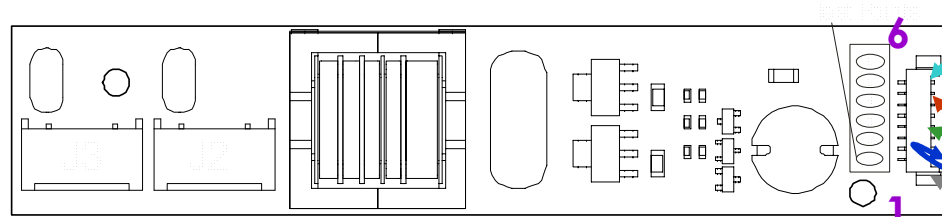
Example:

12vdc at TP1 (+) & TP3 (-) but no Backlight
Bad Inverter Board,

Example:

2vdc at TP5 (+) to TP3 (-)
but NO 12vdc at TP1 & TP2 (+) to TP3 (-)
Bad cable between Inverter PCB and Main PCB

Inverter



Pin out from CN16 to J1

**Pin 1 to TP4
GND**

**Pin 2 to TP3
GND**

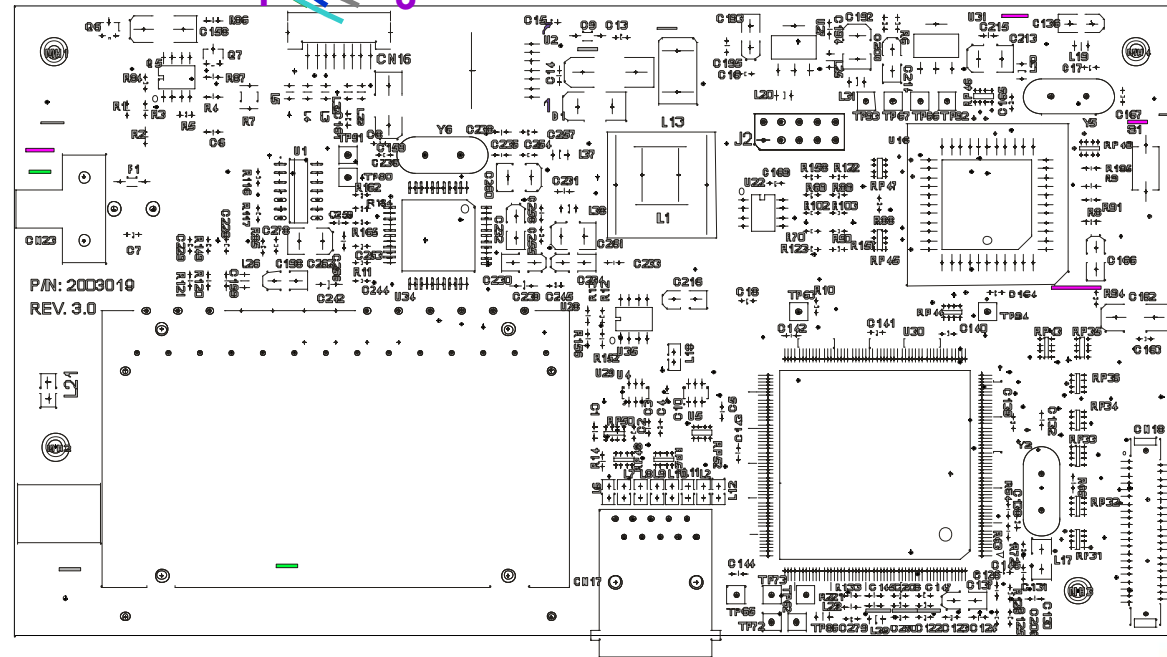
**Pin 3 to TP2
12vdc**

**Pin 4 to TP5
12vdc Enable**

**Pin 5 to TP1
12vdc**

CN23

FID1



Main PCB

CN18

CN17

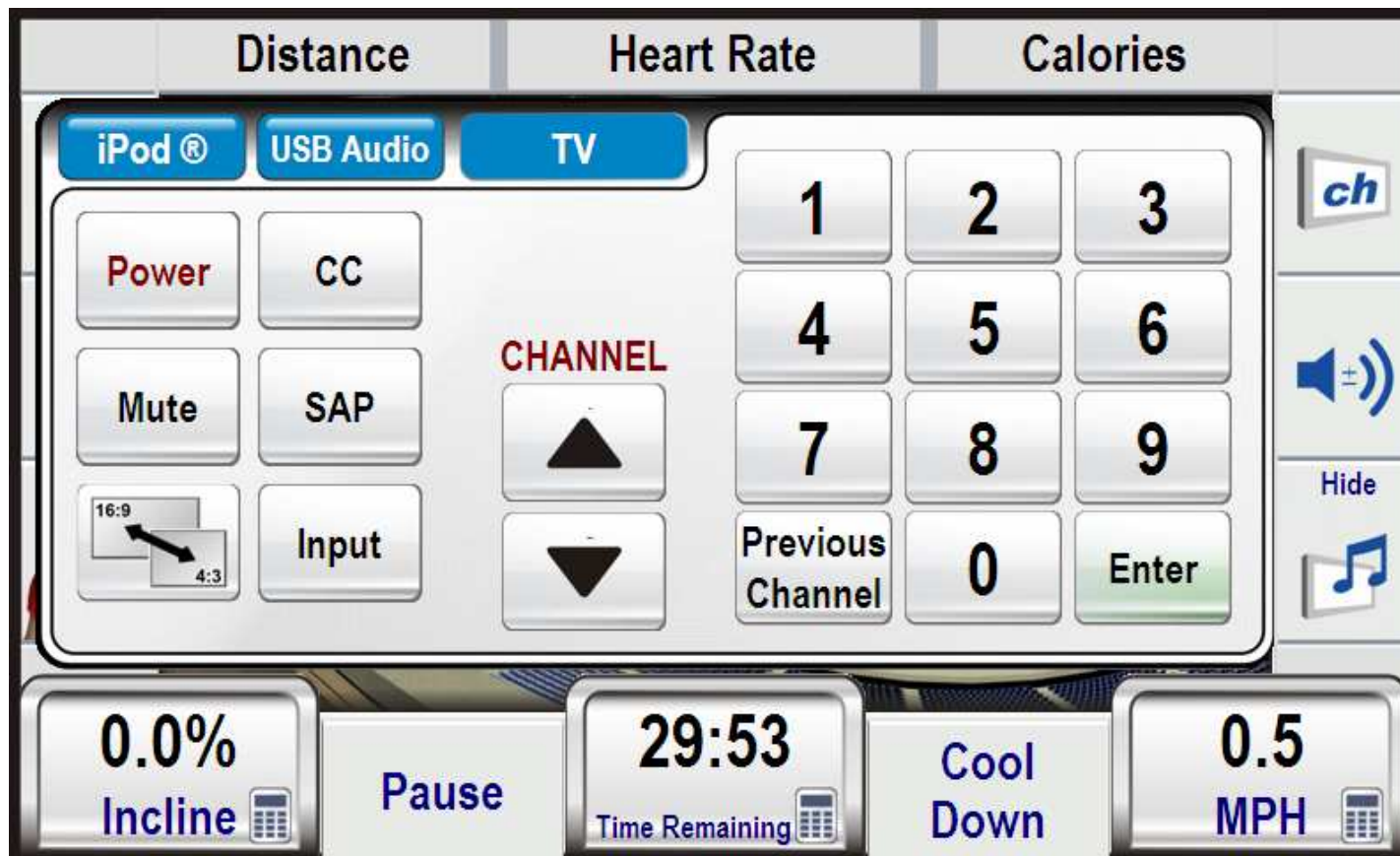
17" ENTERTAINMENT TV - DIGITAL

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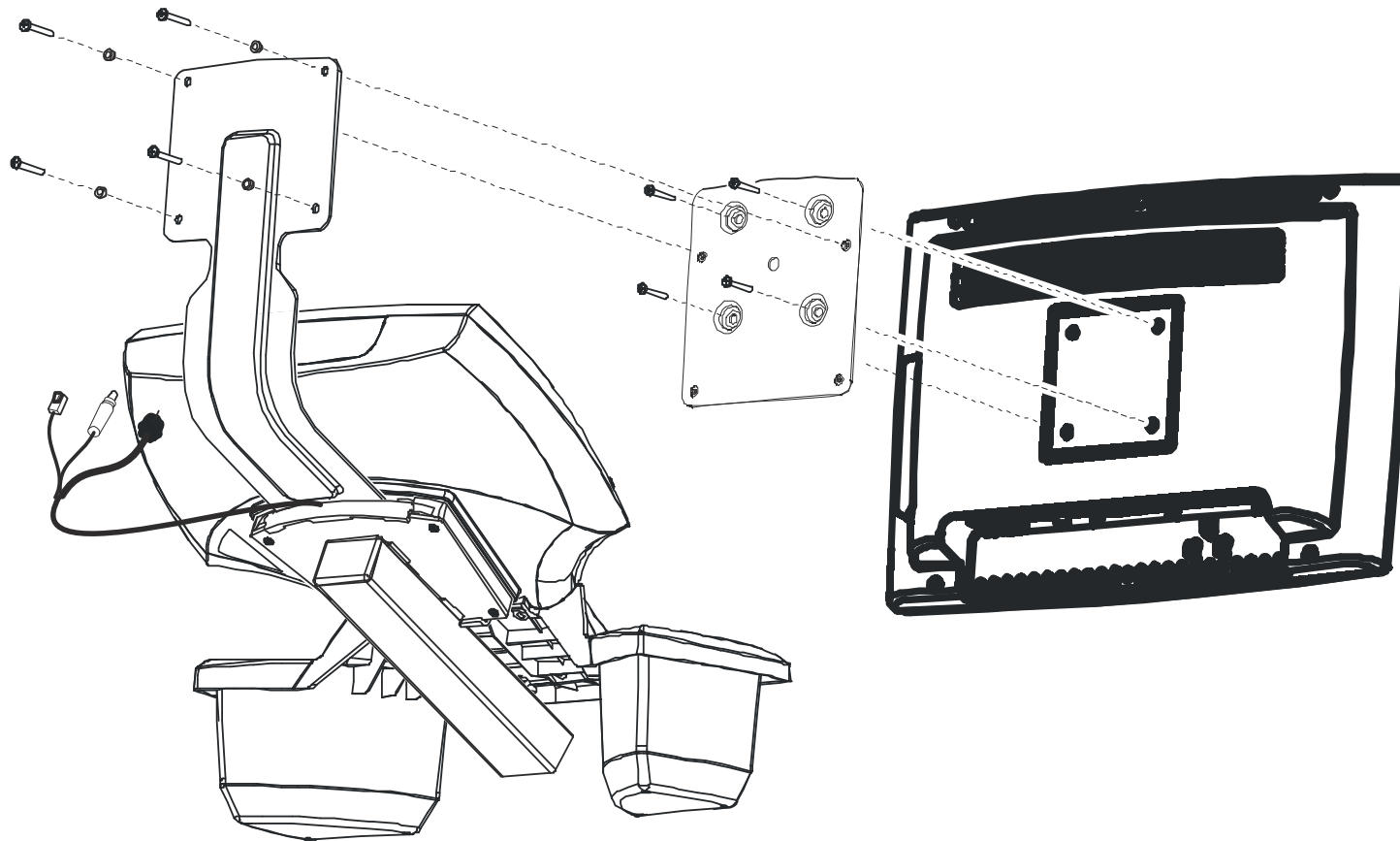
Features Of The 17" TV

- » Products are manufactured by an LCD TV company.
- » Basic, off-the-shelf design, modified to allow wired remote control connection.
- » A/V inputs: S-Video & RCA connectors.
- » Control buttons on the side of TV.
- » Digital TV Tuner.
- » High-Def Tuner (but screen is not Hi-Def).
- » An IR remote control is available
- » Frequently Asked Questions brochure on the LFTechSupport website.

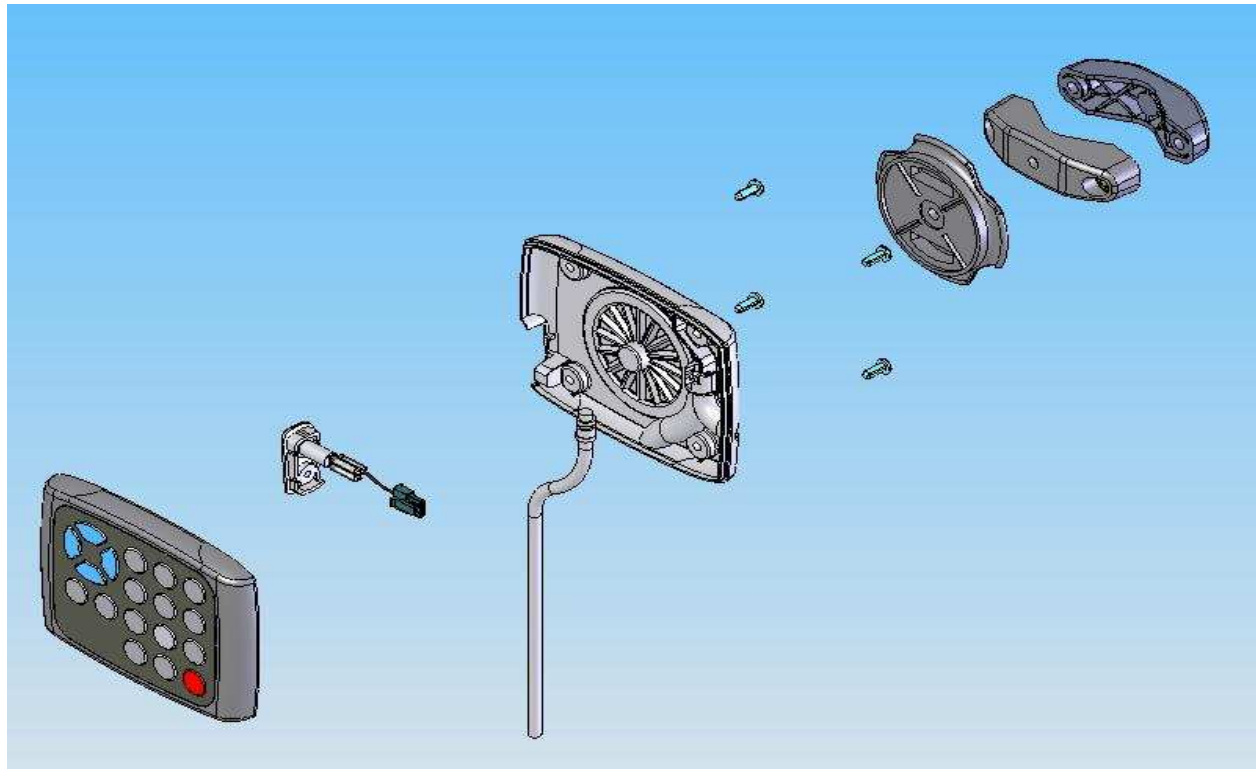
Inspire Console Key Pad for the 17" Entertainment TV



Mounting to 12" Style Bracket



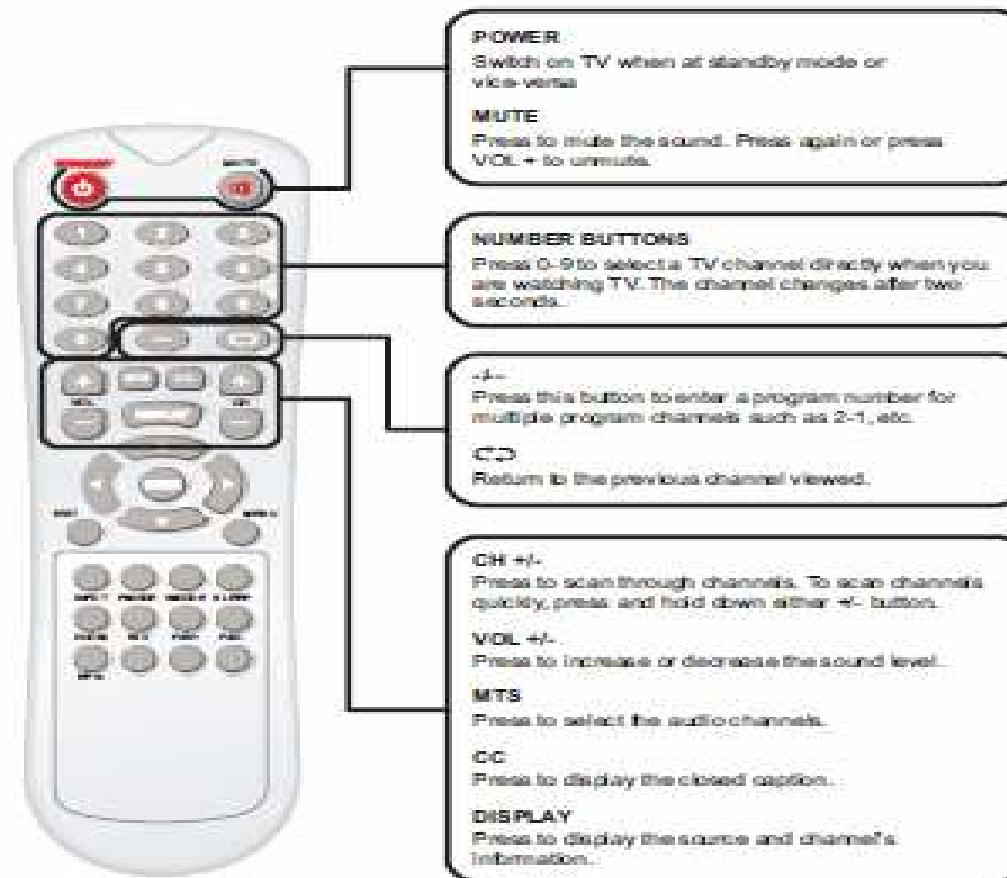
New Wired Remote



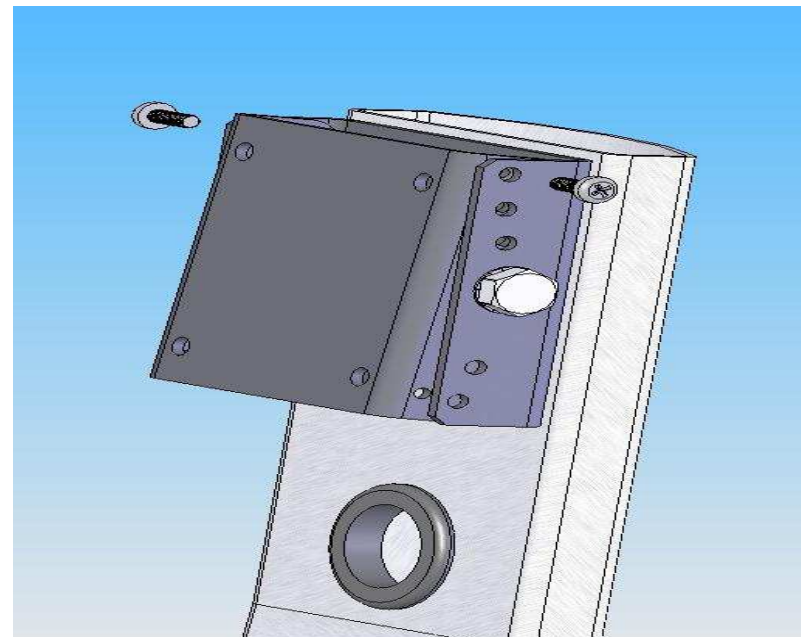
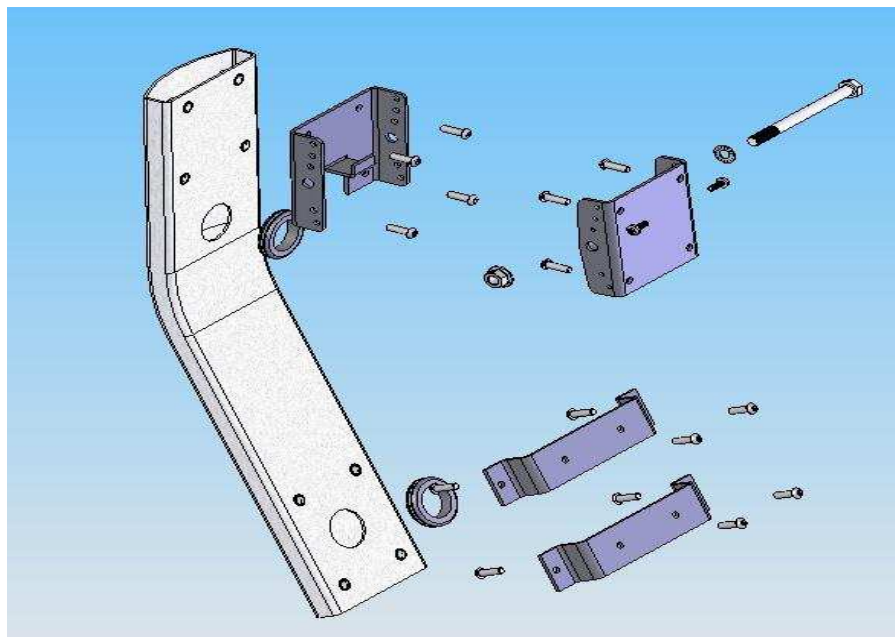
New IR Remote

IR TV Remote

IR TV Remote - Programming is easier with the optional IR TV remote. Contact Life Fitness (see page 109) to order one or more IR TV remote controls if desired.

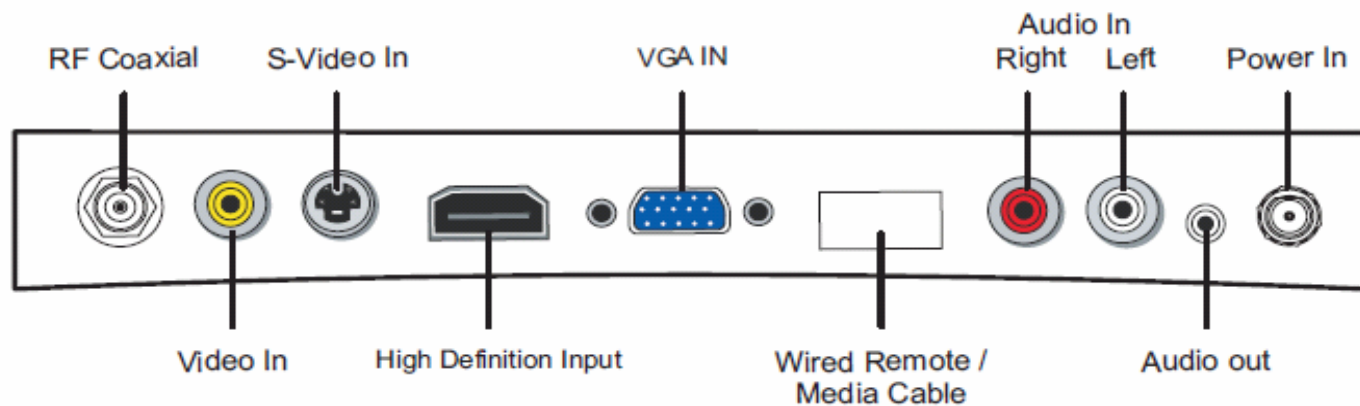
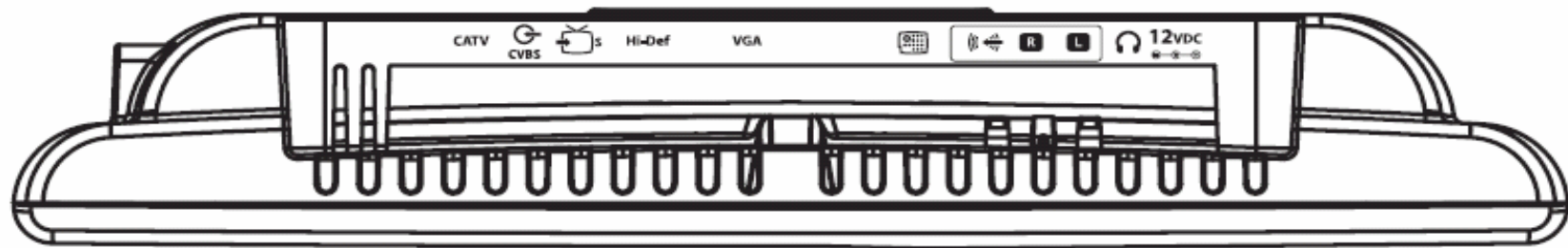


New Mounting Bracket with Adjustable Viewing Angle



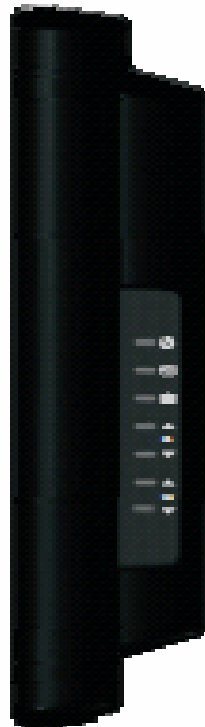
17" TV - Connections

MEDIA CONNECTIONS



17" TV – Side Panel Controls

SIDE PANEL TV CONTROLS



	POWER	Power on/off.
	SOURCE	Select the Input signal source. Use as "ENTER" function when In On Screen Display (OSD).
	MENU	Press once to display the OSD. Press again to turn the OSD off.
	CHANNEL	Scan the channels. Use the UP and DOWN CHANNEL ARROW BUTTONS to scroll through menu options.
	VOLUME	Adjust the volume. Use the UP VOLUME ARROW BUTTON to move right when scrolling through options. Use the DOWN VOLUME ARROW BUTTON to move left when scrolling through options.

17" TV Repair

- » TV is not serviceable on the field and will be replaced as a complete unit.
- » The Remote control has replaceable components.
- » The Remote control design for the 17" TV is similar to last numeric design for the 12.1" TV, but they are not interchangeable.
- » The 17" TV cannot be mounted on the 12.1" TV stand design. It will be top-heavy and could tip over.
- » All future products will be launched with the 17" TV mounting bracket design.
- » The 17" TV can be mounted onto 12.1" TV mounting brackets with the use of the converter bracket.

FYI

- » Black frame attachment is no longer available. If a customer wants the new TV on a black frame machine, they will need to order it with the silver brackets.
- » Engineering is designing an interface to allow the new TV to be controlled by the EZ console products.
- » Due to the design of the new 17" Attachable TV, older 12" TV's are not able to be retro-fitted or upgraded.
 - ♦ There are no plans to create a Digital Tuner upgrade kit to upgrade the previous 12" TV.

If You Are Using TV Side Panel Controls:

» **Set video source (or input source) to Tuner (Must be Checked First)**

1. Press **Source** button from the side until LCD displays TV or Tuner.
2. (**Source** button is the 2nd button from the top)

» **Set Sleep Timer to OFF**

1. Press **Menu** button from the side
2. Press **Channel Down** button to scroll down to **Feature**
3. Press **Volume Up** button to select **Feature** option
4. Press **Channel Down** button to scroll down to **Sleep Timer**
5. Press **Source** button until it displays **OFF**
6. Press **Menu** button to exit

Installation – Channel programming

» **Perform Auto Channel Search to detect all available channels**

1. Press Menu button from the side
2. Press Channel Down button to scroll down to Setup
3. Press Volume Up button to select Setup option
4. Press Channel Up/ Down button to scroll up/down to Tuning Band
5. Press Source button until it reads Cable or Air*
6. Press Channel Down button to scroll down to Auto Ch Search
7. Press Source button to start the channel scan

If you are using IR Remote Control:

»Set video source (or input source) to Tuner

1. Press Input button until LCD displays TV or Tuner

»Set Sleep Timer to OFF

1. Press Sleep button until it displays OFF
2. Perform Auto Channel Search to detect all available channels
3. Press Menu button
4. Press Arrow Down button to scroll down to Setup
5. Press Arrow Right button to select Setup option
6. Press Arrow Up/Down button to scroll up/down to Tuning Band
7. Press Enter button until it reads Cable or Air*
8. Press Arrow Down button to scroll down to Auto Ch Search
9. Press Enter button to start the channel scan

DIGITAL TELEVISION

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Digital Television...

- » What is Digital Television (DTV)?
 - Digital television (DTV) is an improved way to transmit a television programs.
 - Historically TV programs have been broadcast using analog techniques – similar to reel-to-reel and cassette audio tapes for music. Digital TV uses digital techniques for TV programs – similar to how CDs and MP3 players use digital technology for audio.
 - The new digital television standards also allow TV networks to transmit programs with much better picture quality than was possible using the historical analog systems – this is called High Definition Television (HDTV). TV broadcasters can choose to use the DTV channel to send multiple Standard Definition Television (SDTV) programs or a combination of SDTV and HDTV.

Digital Television...

» What is DTV ?

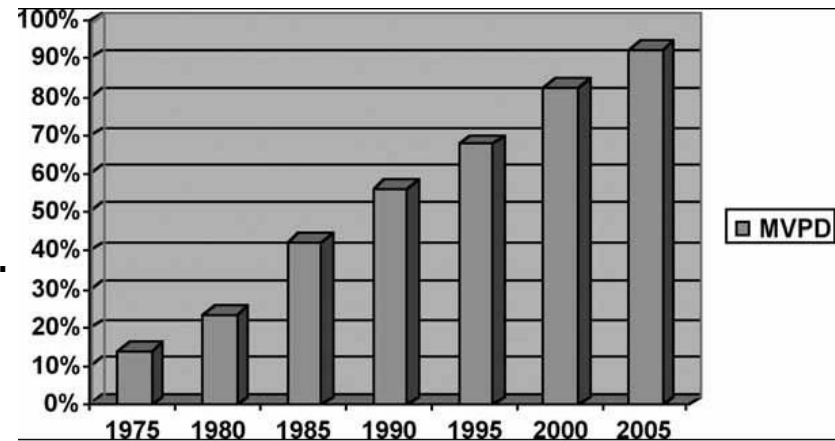
- ◆ - Broadcast TV: In USA, DTV development started in late 1980s and the first, full time, DTV broadcasts began in 1998.
- ◆ - Cable TV: In USA, digital cable signals were introduced in 1989 to permit 10 times more programs on cable. Used Set-Top-Box.
- ◆ - Satellite TV: In USA, first DTV via satellite in 1994. Used Set-Top-Box to receive/decrypt.
- ◆ - Home Theater: In USA, signals between Consumer Electronics typically analog until Digital Video (DV) in 1996. Now, High Definition Media Interface (HDMI) is standard.
- Internet Service Providers: Internet TV has always been digital. IPTV is TV from Telco over phone lines (ADSL). Many other players.

» What Is High Definition TV (HDTV)?

- ◆ - HDTV is a TV program in 720x1280 or 1080x1920 resolution (image pixels).

US Went Digital on June 12, 2009

- » On June 12, 2009 all full-power broadcast television stations in the United States stopped broadcasting on analog airwaves and began broadcasting in digital.



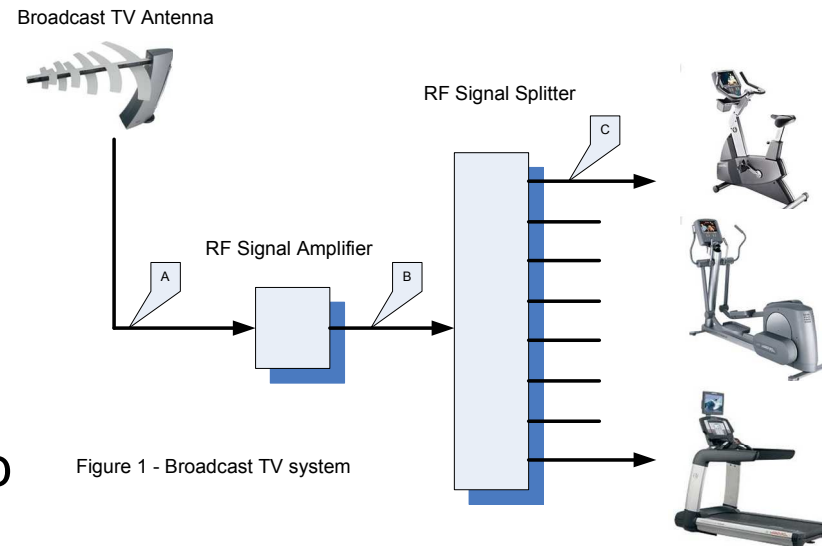
- » **FCC data shows that over 90% of TV users get their TV from a MVPD (Multi-channel Video Programming Distributor, a.k.a. Cable TV or Satellite TV service)**
- » **Virtually none of Life Fitness' customers (Clubs, Spas, Hotels, etc) use an antenna to receive broadcast TV stations.**

Chart from: Justus, Ralph, "OTA?," IEEE Broadcast Technology Society Newsletter, Spring 2008, page 9.

TV SIGNAL ROUTING TIPS

Broadcast TV Model

- » In the Broadcast TV Model, free, over the air, broadcast TV signals are received by an antenna.
- » These TV signals are amplified and split, as needed, and distributed to TV receivers in the club.



Standard Cable TV Model

- » In the Standard Cable TV Model, clear, cable TV signals are received by a cable service drop to the club.
- » These TV signals are amplified and split, as needed, and distributed to TV receivers in the club.
- » Typically 40 to 90 channels are available today.
- » "The cable industry has been working closely with broadcasters ...to ensure that the February 2009 transition is seamless for television viewers."
National Cable & Telecommunications Association (NCTA)

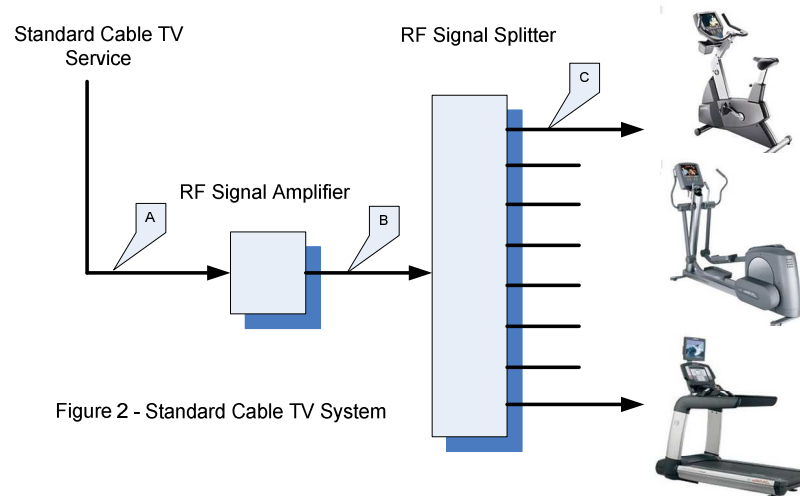


Figure 2 - Standard Cable TV System

BW 9-24-07

Basic Satellite TV Model

- » In the Basic Satellite TV Model, each satellite TV signal is received by a unique STB/receiver in an equipment room.
- » These TV signals are re-modulated on individual TV channels, combined, amplified and split, as needed, and distributed to TV receivers in the club.
- » The STBs, modulators and combiners are collectively called a “headend”.

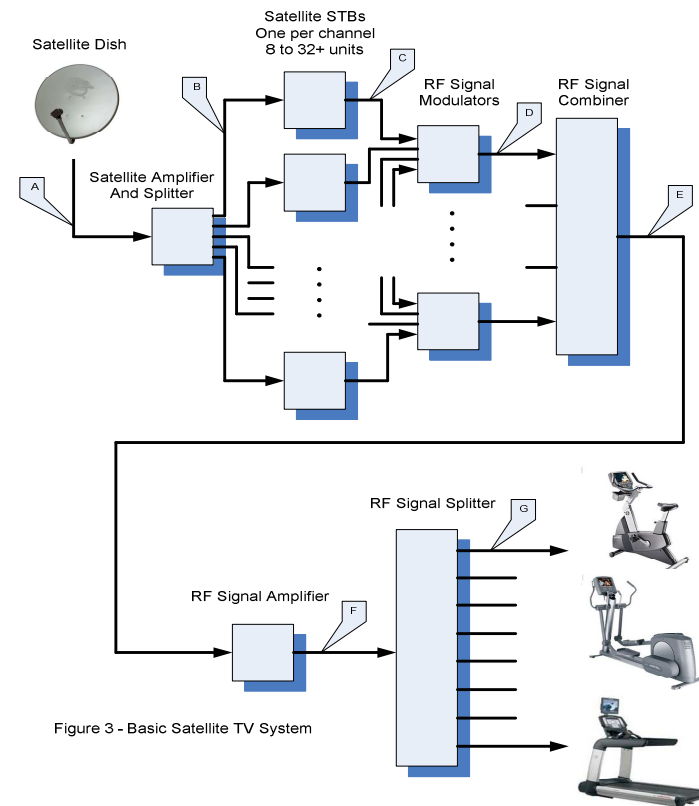
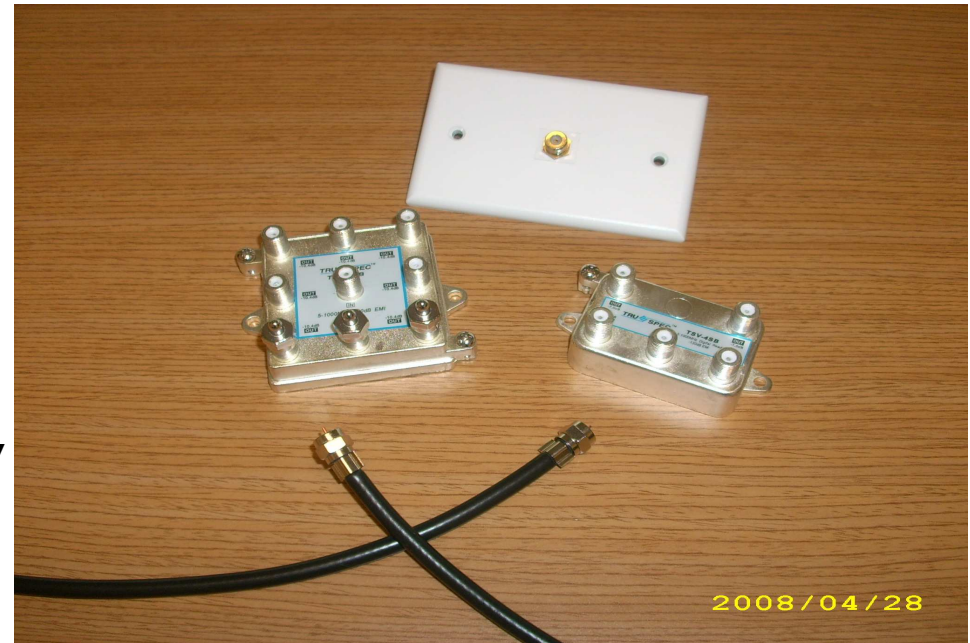


Figure 3 - Basic Satellite TV System

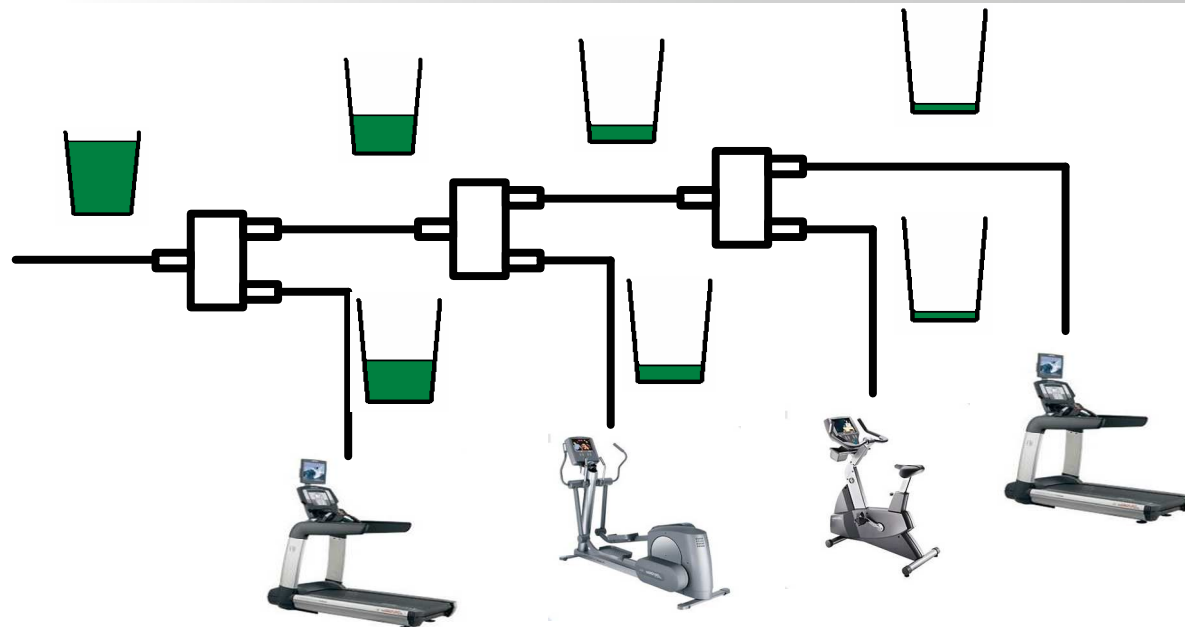
BW 9-24-07

Club Coax Wiring

- » TV signal is delivered to each piece of equipment using a 75-ohm coaxial cable with an F-connector. Either RG-59 or RG-6 cable is acceptable.
- » Each time a 2-way “splitter” is used some of the signal is lost and the rest is divided in half.
- » Delivering a good signal to many pieces of equipment requires attention to many engineering details, including signal loss, signal-to-noise ratio, etc.
- » Ensure that the signal level at the machine is **+12 dBmV +/- 25 dB** that provides a range of **-13 dBmV to +37 dBmV**.
- » These levels are acceptable for both analog and digital TV signals.



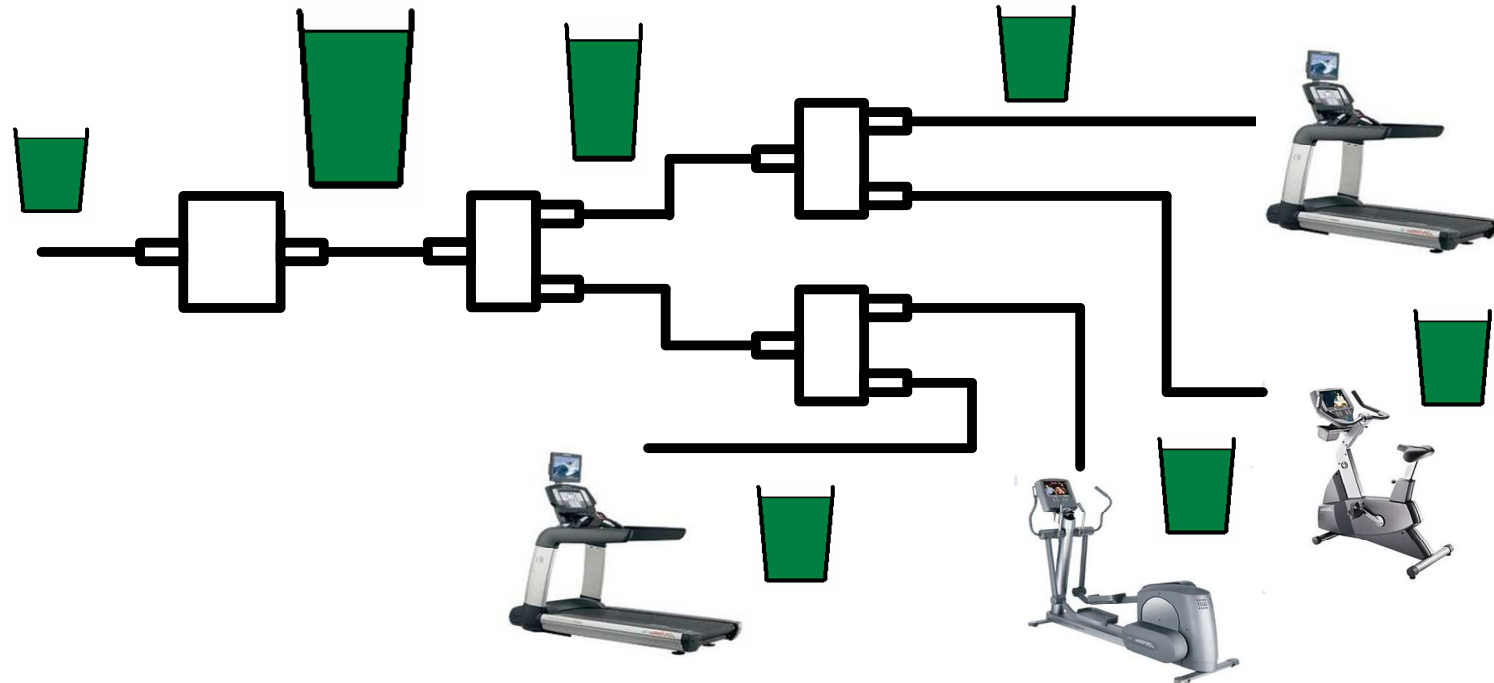
Club Coax Wiring “Daisy-Chain” is BAD



- » First machine – OK TV signal
- » Second machine – poor TV signal
- » Third & fourth machines – bad TV signals

Club Coax Wiring

Good balanced signal distribution



- » Amplify signal before splitting it
- » Amplify just enough to cover losses (splitters, cable, etc)
- » Good TV signals to all machines

BASIC TV TROUBLESHOOTING

Objective

- » Provide basic troubleshooting guidelines to assist CSS and Field Service in determining if a 17" Attachable TV is defective -
- » Note: Additional detail can be found in the Troubleshooting section for both the User Manual and Service Manual.

Major Failure Categories

- » No Power
- » The Blue Power LED indicator on the bottom right of TV front is ON And ...
- » Issues with Channels
- » Picture Quality Issues
- » Issues with Sound

No Power

» The TV does not turn on?

Trouble-shooting tips - Check the following points and correct as needed:

- ◆ Try to turn the TV on using the power button on the wired remote
- ◆ Try to turn the TV on using the power buttons on the side of TV
- ◆ Check power cables for damages
- ◆ Check power supply connections
- ◆ Check for 12VDC at the power jack of the external power supply

» If the all is confirmed to be in good condition and 12 VDC are present at the power jack that connects to the TV, and the TV still does not work, replace TV.

» MORE

The Blue Power LED indicator on the bottom right of TV front is ON

- » And the screen is blank
 - ◆ Check for Input Source by pressing Source button on the side. Should be set to RF TV source.
 - ◆ Reset power to TV (disconnect and reconnect the power supply)
 - ◆ Replace TV if above actions do not fix the issue.
- » And the screen is flickering with different colors (black/white/red/green/blue)
 - ◆ Reset power to TV.
 - ◆ Replace TV if above does not fix the issue.
- » TV's power/Blue LED is blinking
 - ◆ This indicates it is Sleep Mode.
 - ◆ Check Sleep Timer setting.
- » [BACK](#)

Issues with Channels

» TV channels do not change

- ◆ Re-run channel programming (Rescan)
- ◆ Verify the remote operation (Use different remote)
- ◆ Replace TV if above items do not fix the issue.

» Not receiving any cable channels

- ◆ Verify proper “air/cable” settings
- ◆ Verify coax cable and its connections
- ◆ Verify cable signal strength (connect the coax cable to a known operational TV)
- ◆ Replace TV if above items do not fix the issue.

» MORE

Issues with Channels, continued

- » After a Channel scan, NO channels or only SOME channels found
 - ◆ Verify signal connections (from Antenna/Cable to TV)
 - ◆ Verify proper signal strength at TV
 - > Correct if too low or high (see previous)
 - > Move TV location if necessary
 - > Replace amplifier if necessary
 - ◆ Verify antenna (must be suitable for receiving digital TV signal)
 - ◆ Rescan after each item is fixed
 - ◆ These issues are most likely NOT in the TV. Replacing the TV might not fix this.
- » Channels missing when using arrows to change channels, but exist when channel number is entered
 - ◆ Rescan channels. Channel was not recognized at last scan.
- » [BACK](#)

Picture Quality Issues

» Snowy screen

- ◆ Verify proper “air/cable” settings
- ◆ Verify coax cable and its connections
- ◆ Verify proper signal strength at TV (connect the coax cable to a known operational TV)
- ◆ Replace TV if above items do not fix the issue.

» Fuzzy TV screen

- ◆ Check RF/coax connector.
 - > Earlier TV versions have extension piece.
 - > Can buy off-the-shelf extension piece to test
 - > Use Locktite/glue to install

» Picture freezes regularly (cable TV only)

- ◆ Verify proper signal strength at TV
 - > Above 40 dBuV
 - > Below 77 dBuV
- ◆ Correct signals at TV to fix.

» MORE

Picture Quality Issues, continued

» No Color

- ◆ Verify coax cable and its connections
- ◆ Verify proper signal strength at TV
- ◆ If South American country, see Below for setup
- ◆ Rescan and verify
- ◆ Replace TV if above items do not fix the issue.

» South American Country setup (Brazil/Argentina):

- ◆ 1. Set Scanning Mode to "Air + Cable"
- ◆ 2. Set Volume all the way down to "0"
- ◆ 3. Enter 9875 to see the menu
- ◆ 4. Select PAL-M / -N depending on each countries' standard
- ◆ 5. Re-scan with proper scanning mode (as previously set)
 - > Might have to change back to Cable only mode

» MORE

Issues with Sound

» No Sound (or no change in sound)

- ◆ Check Headphones
- ◆ Check Headphone Jack
- ◆ Check wired Remote Control
- ◆ If using Inspire console
 - > Check Cable from TV to Console
 - > Check Sound from Virtual Trainer
- ◆ Check for sound with headphones plugged directly into TV
- ◆ Rescan – if sound missing on some channels
- ◆ Confirm correct Country selected
- ◆ Isolate all above issues and fix them
 - > Replace TV if no other fix for issue

» BACK

Summary – TV's

- ◆ Is the 12.1" TV Analog or Digital?
- ◆ Is the 17" TV Analog or Digital?
- ◆ Are Coax cable amplifiers required for a club?
- ◆ Can the 17" TV be mounted to an existing 12.1" TV bracket?
- ◆ Can the 17" TV wireless remote control be used for the 12.1" TV?
- ◆ Are all the wired TV remotes inter-changeable?
- ◆ How do you trouble-shoot a 17" TV with volume complaints?

Questions





THANK YOU!

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