

ED7 ENTERTAINMENT

presents

A Simplified Pocket eBook on...

***Compact
Cassette***

Cassette Tapes and Players for Starters

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I: Names

"Compact Cassette" is the official name of the format.

"Cassette tape" refers to a cassette of tape, and is the unofficial name of the format.

Confusingly enough, "cassette" refers to the same thing. But "tape" refers to adhesive tape.

"Cassette deck" refers to high-fidelity cassette recorders that are usually big and heavy. Note that cassette recorders can play cassette tapes.

II: Cassette Tapes

A: (Optional) Background

The Compact Cassette is an analog magnetic tape recording format, primarily used for storage and retrieval of audio signals.

In the late 1970s, the Walkman brand—referring to Sony's line up of portable cassette players—popularized the idea of listening to music on the go, hence being the original predecessor to our modern music culture.

However, regardless of its contribution, many people today criticize the Compact Cassette for

being inferior to modern digital formats in many ways.

Unlike these people, I take music very seriously. I feel that modern means of music are rather bland; uninvolved, and sometimes creepy.

I have been playing with cassette tapes from the age of nine, and it is the only thing that uniquely defines what I am; everything else has its own external influences.

Despite the changes in music trends over the years, I still see the Compact Cassette as the audio format that gives me the most satisfaction.

There is much more going on in the world of cassette tapes, which should enlighten you with the purpose of this guide.

When I reveal my interest for cassette tapes to other people, I receive two opposing kinds of responses, in which those who criticize are usually ones I do not socialize with. So, if you are reading this, I humbly appreciate your interest! Read on...

B: Cassette Tape Anatomy

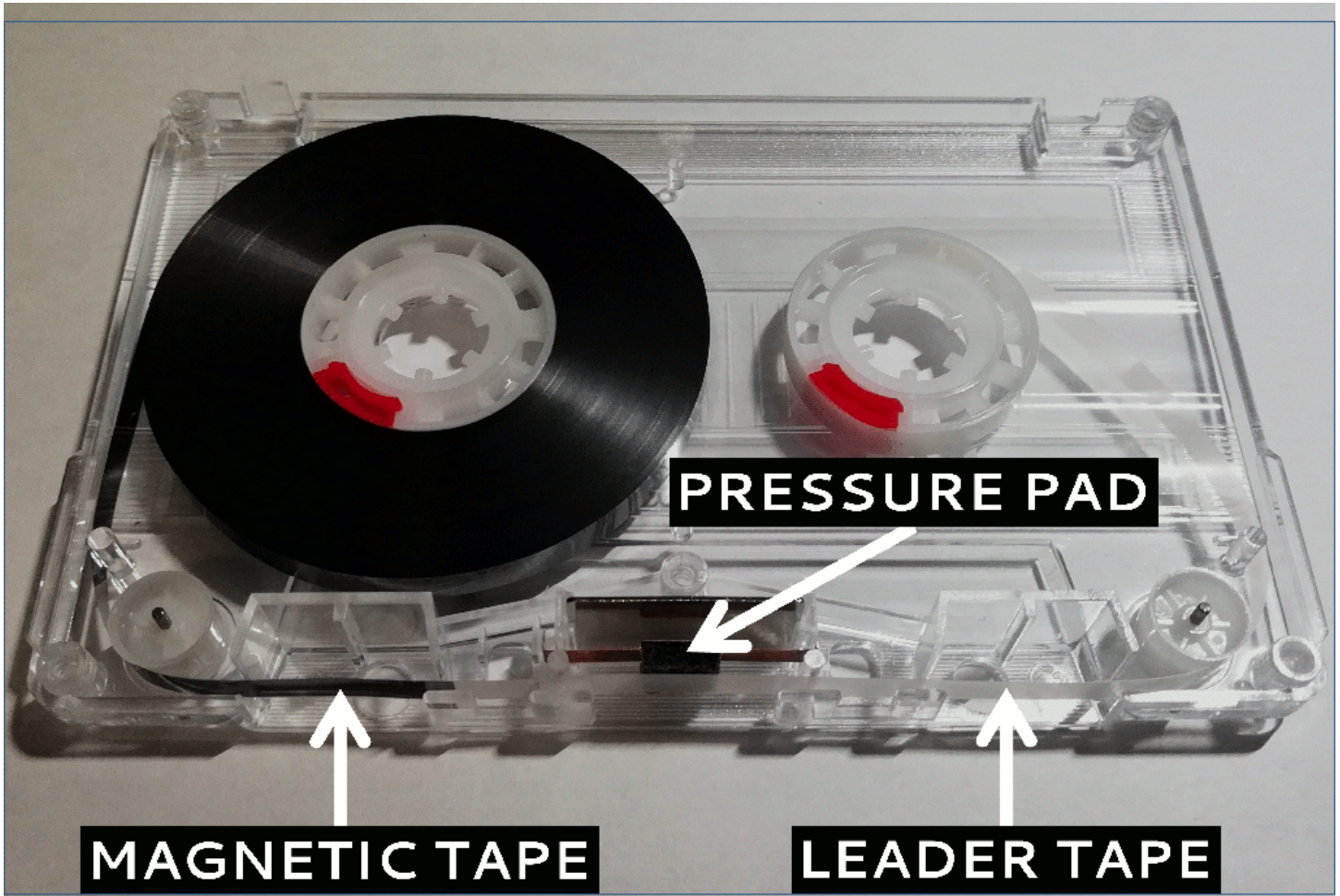


Image: A cassette tape with its shell opened. Be extremely careful when disassembling cassette tapes, or you will be treating yourself a nightmare.

Magnetic Tape	Contains recorded material.
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Leader Tape	Protects magnetic tape from pulling force exerted when the tape reaches its ends.
Pressure Pad	Maintains contact between tape and head.

In the conventional forward direction, tape unwinds from the left (supply) reel, passes the pressure pad, then winds around the right (take-up) reel.

In the same convention, the width of the magnetic tape is split into four tracks. Two for each of the two sides: A and B, in which one for each of the stereo channels: left and right. Sides

are recorded in the opposite direction of one another.

Forward Left >>

Forward Right >>

<< Reverse Right

<< Reverse Left

Illustration: Tracks within the width of the magnetic tape, where the head is below and pressure pad is above. If we look at the tape into the cassette, then this illustration would be vertically flipped. In actuality, there are gaps between these tracks to prevent cross-talk.

C: Tape Lengths

Cassette tapes are sold at different lengths, mostly by recording time.

These are marketed with the 'C' prefix, so a 60-minute tape—30 minutes per side—is called a C60.

Lengths longer than C60¹ require thinner, weaker, and more fragile tape to be able to fit in fix-sized cassettes.

1 Length chosen for its popularity. Actual length depends on tape itself.

C90 is a good, popular cut-off before diminishing returns become significant.

The shortest length is C0, that are cassettes with no tape.

The longest known length is C180, loaded with very thin, very weak, and very fragile tape. It is very rare but not recommended for use. C120 tapes are also not recommended.

In actuality, there are deviations between different tapes of the same marketed length. For example, a C90 is usually a C94 in actuality. The extra length is intentional not only to compensate over tape speed deviations among

different cassette recorders, but also to let that last song of yours to finish uninterrupted.

However, sellers who take account of tape length deviations may be selling tape in their actual lengths, so their C90 may be an actual C90.

D: Handling Cassette Tapes

- 1 Do not make tactile contact to the tape, unless required for repair, in which case then wash your hands with soap to get rid off as much oil as possible.

In a simpler English: Do not touch the tape.

- 2 Rewind and stow them into their cases when you are finished using them to protect the recorded parts from exposure.
- 3 Keep them contained within their cases in cold and dry places.

- 4 It is suggested to hold them with clean hands at all times.
- 5 DO NOT ATTEMPT TO LUBRICATE THE TAPE IN ANY WAY! This will cause a major disaster, especially to any cassette players that played it.
- 6 If desired for no reason whatsoever, take caution when winding them with a pen or pencil, or just forget about doing it.

E: (Optional) Tape Types

There are four tape types, each having its own chemical and electrical properties. However, this typing is just a reference standard, and individual tapes may deviate for better or worse. Therefore, no two tapes of the same type are exactly similar from one another.

The most common type that is still available today is Type I: Ferric, sometimes marketed as "Low Noise" or "Normal Position". Being known as the worst of the four types does not imply that it is bad. There are good ferric tapes that can be comparable to the higher tape types, and

bad ones that set the groundwork for many of the false beliefs which the norm has caught on.

The other three tape types will not be covered in detail unless they see a market resurgence.

IEC² Type	Common Names	Typical Sound Characteristics
I	Ferric, Normal, "Low Noise"	More bass, less treble
II	Chrome, High, CrO ₂	Less bass, more treble, good for CD
III	FerriChrome	Combines I and II together
IV	Metal	Best of both worlds

2 International Electrotechnical Commission

Type III: FerriChrome, was available in the market for a short time. As a result, they are rare, but are rather impractical for use, because very few cassette recorders provide proper recording and playback support for these tapes.

I happen to have a Sony FeCr 46 in a good condition under my possession, but never used it otherwise.

As for my recommendation, always go with Type I. Aside from being the most cost-efficient and compatible, it defines the warm sound that analog formats are known for.

III: Cassette Players

A: Loading Cassettes

Different cassette players have their own ways of loading cassettes

Insert a cassette such that the side where its tape is exposed faces the transport.



Image: A cassette inserted into a cassette player. Notice how the transport fits into the access holes of the cassette.

An easy way to define the transport is by this analogy: The tape is the road on which the

transport travels. Conversely, the transport is the vehicle that travels along the tape.

Usually, cassettes are inserted by the compartment door before closing it. It is advised not to force the compartment door closed.

Refer to the user's manual of your cassette player for specific instructions.

B: Playing Cassette Tapes

To begin playback:

- For cassette players with “piano keys”, push the play (▶) key until it locks in.

Those of you who are accustomed to using touch-sensitive controls may have a bit of hesitation doing this initially.

- For cassette players with buttons (logic controls), press the play (▶) button.

Push/press the fast forward (▶▶) or rewind (◀◀) keys/buttons to advance the tape quickly in their respective direction.

Where the triangular symbols are pointing to depends on the direction tape travels through the transport. Boomboxes typically have theirs reversed.

To end playback:

- For cassette players with “piano keys”, push the stop (■) key until the play (▶) button pops out.

- For cassette players with buttons, press the stop (■) button.

The next time you begin playback again, you will resume where you left off.

Refer to the user's manual of your cassette player for specific instructions.

C: Transport Anatomy

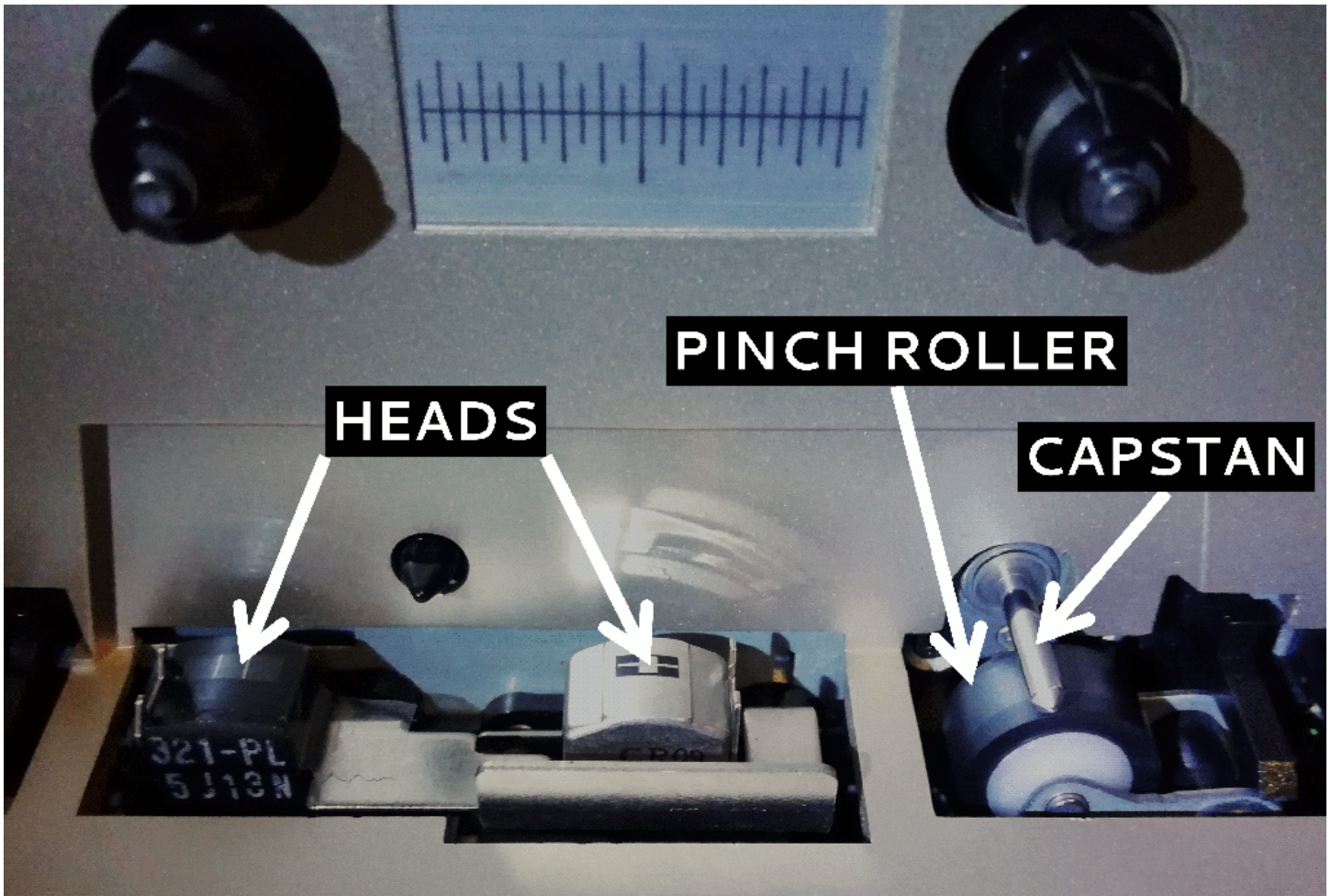


Image: A simple unidirectional transport of a cassette deck.

Heads	"Reads" and/or "writes" magnetic signal from/onto tape, depending on what kind.
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Capstan	Pulls tape towards the take up spool.
Pinch Roller	Allows the capstan to do its job.

At the bare minimum, a cassette player has a playback head (metal alloy at center), a capstan and its accompanying pinch roller, and a “spinning thing” that winds tape around the take up reel.

It is a common mistake to think that the “spinning thing” is responsible for tape movement and hence tape speed. Again, this responsibility goes to the capstan, having the closest connection to the motor.

D: Care and Maintenance

Get to know your cassette players, be nice to them, and maintain them regularly. In return, they should give you the best results possible without hiccups.

Here are some ways to maintain healthy relationships between you and your cassette players:

- 1 Use good tapes. Brand is usually a good indication of quality.

My list includes TDK, Maxell, Sony, Fuji, and JVC. Pre-recorded tapes are a hit-or-miss.

2 Do not make tactile contact to any of the transport parts, unless required for maintenance or repair.

In a simpler English: Do not touch the inside of a cassette tape player.

3 Clean the transport regularly, as explained in [D1: Cleaning].

4 Store them in cold, dry places.

5 Above all, if something does not sound, look, or feel right to you, then stop playing the cassette tape immediately. It is better to be

safe than sorry. Clean—as explained below—before playing other cassette tapes.

Refer to the user's manual of your cassette player for additional notes.

D1: Cleaning

Clean the heads, capstans, and pinch rollers after every ten hours of use, or anytime brown³ matter can be seen.

Use a good⁴ cotton swab dipped with 99% isopropyl alcohol, then gently rub it over the heads and capstans.

Pinch rollers are better off cleaned using a cotton swab dipped with lukewarm water.

3 Usually brown, actually depends on the chemical composition of magnetic particles. If pale, gooey white, then the tape has been “infected with cancer”. Clean right after playing such cassette tapes.

4 Absolutely NO Q-tips®.

Ensure the absence of cotton residues. Here is where bad cotton swabs give you a nightmare.

Do not use anything abrasive, as these will damage the polished surfaces that are crucial for smooth tape movement. This oddly includes head-cleaning tapes, as they too can be abrasive. In fact, none of my cassette player user manuals mention anything about head-cleaning tapes, but cotton swabs dipped with alcohols. Though, they do not mention anything about not using Q-tips®.

E: Troubleshooting

The following is a list of common issues with cassette tapes and players. The obvious have been omitted.

First and foremost, check with another tape to confirm that your issue lies on the cassette player and/or tape, and that its not part of the actual recording.

1 Dull and/or imbalanced sound

- The playback head may be dirty. See [D1: Cleaning] for cleaning instructions.

- The playback head may not have been aligned to the tape tracks.
 - If applicable, flip the tape to the opposite side and play it in that direction.
 - Jiggle the cassette tape in attempts to center its pressure pad.
 - Otherwise, the proper remedy is beyond the scope of this guide. Keyword: azimuth
- The tape may be worn. Unfortunately, we cannot do much to remedy this.
- The playback head may be worn. Replace it, if possible. Worn heads have a good chance to be restored successfully by "relapping."

2 Fluttery sound

- The capstan and/or pinch roller may be dirty. See [D1: Cleaning] for cleaning instructions.

3 Sticky tape

- Its plastic binder may be shedding glue. It is advised not to use them anymore. Clean the transport right after playing such cassette tapes.

4 Chewed tape

- This is uncommon unless you or the previous user(s) have not been following any

of the instructions in [D1: Cleaning]. A chewed tape can be repaired with some loss by splicing. Clean the transport after recovering the tape.

5 “It’s not working.”

- Well, like any repairman would say, you have to be more specific than this. See the following section about repair services.

F: Repair Services

F1: About Repair Shops

Well, this is one of the biggest Achilles' Heel within the world of Compact Cassette.

As of early 2019, there are still a few repair shops that actually do actual repairs on cassette players and recorders, you just have to find them.

Once you do find them, keep in mind that many repairmen are showing their age by now, so you have to accommodate over their patience and mindsets.

Unfortunately, some of them are not overly friendly to “youngsters” like me, as with the case from my experience.

At certain times, they might even turn down requests for cheap, plastic devices.

If you are in Metro Vancouver, BC, Canada, then I can recommend you Innovative Audio in Surrey. Visit [iavscanada.com] for more details.

F2: Alternative Option

Alternatively, if you have a real friend whom is expert in—or have a great deal of experience tinkering around—electronics, then your cassette deck may stand a good chance of getting repaired.

To get started, contact that friend—not forgetting to describe your problem—then look for the service manual to your cassette deck ([\[HiFi Engine\]](#) is a good place to start, sign up required).

If your search returns nothing, then you can try a broader search. Look for similar models within

your range, it is very likely that they have the same parts and/or configuration. This is possible because most electronics are designed under a modular approach.

A common repair work involves replacing any worn rubber belts and electronic components such as—and especially—capacitors.

Your friend can can also consult the text-heavy [[S.E.R FAQ](#)] for more about repairing “consumer electronic equipment and other household devices,” including cassette decks.

IV: Trivia

- 1 The Compact Cassette was originally conceived in 1963 by Phillips as a dictation format; it was not made with high-fidelity sound in mind. I have a demonstration cassette tape in a good condition copyrighted in 1970, and it sounds rather awful for today's standards.

- 2 People actually used to wind their cassette tapes with pen or pencil, because doing this on their portable cassette players takes a chunk of power out of their batteries, which alone are expensive for pocket money back then.

To somehow get over this, some portables run on Ni-Cd rechargeable batteries. Sadly, these are pretty much unusable nowadays as we all know that rechargeable batteries wear out over time.

3 In cased you missed it: In 2014, Disney's *Guardians of the Galaxy* features a main character with his Sony TPS-L2 (later re-branded as the first Walkman) and his *Awesome Mix Vol. 1* mix tape, which was later sold as a soundtrack cassette. It is a major factor to the recent cassette comeback, and hence the prices on related eBay listings, especially on the TPS-L2. I was not moved by

any of this though, as my love for cassettes goes all the way back to 2006.

4 The Compact Cassette has also been used for computer data storage and software distribution. There are a number of modern games for vintage computers being distributed via cassette tapes.

5 Arguably, the best home cassette deck is the Nakamichi Dragon, and the best portable cassette recorder is the Sony Walkman WM-D6C.

6 As of early 2019, you can still get brand new⁵ cassette decks and tapes for much higher prices but with less hassle.

For a new cassette deck, check out the TASCAM 202mkVII. For a new blank cassette tape, check out RecordingTheMasters' FOX and the Maxell UR.

5 Meaning not new old stock (NOS).

V: Footnote

There are lots more about cassette tapes to write about. However, this document is made to teach the basics of using cassette tapes and players, sufficient enough to provide anyone a lifetime of warm listening enjoyment.

If you would like to inquire for more about cassette tapes, you may send an email to [ed7-aspire4925@hotmail.com].

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