

Repairability Snapshot

Google Pixel 7a

November 2023

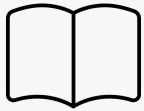


The following is a Repairability Snapshot of the Pixel 7a, a smartphone released on May 10th, 2023. In this snapshot, provided on November 3rd, 2023, we provide a high-level overview evaluating the product on the following core principles of repairability:



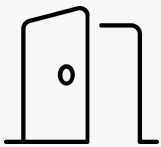
IDENTIFICATION

Clear and unique external product identification makes it easier to find matching repair documentation and compatible replacement parts—especially on a non-operational device.



INFORMATION

Repair information—including repair guides, schematics/board diagrams, troubleshooting information, and support—must be freely accessible to enable repairs.



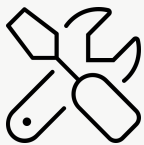
ENTRY

Making the primary entry point(s) easily accessible, well-labeled, and intuitive greatly facilitates repairs. Exterior screws and labeled access points are a welcome sight, indicative that the device isn't glued together. They're also a clear visual cue of where to begin, in case of missing instructions.



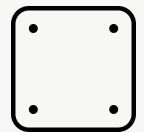
MODULARITY

Streamlining repairs by making key components independently accessible—rather than requiring removal of one component to access the next, or replacing whole assemblies—makes repairs quicker and parts more affordable, and reduces opportunity for accidental damage.



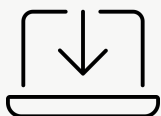
TOOLS

Tools required for common repairs should be inexpensive, widely available, safe, and non-proprietary. Requiring fewer tools saves time and cost.



PARTS

Replacement parts should be easy to identify and obtain. Ideally, no replacement part should cost more than 25% of the product's MSRP to make repair a viable and attractive option.



SOFTWARE

Parts pairing and specialty calibration software should be freely available to anyone who needs it. Repairs are only viable if the device can be restored to full functionality.

The following is a disassembly tree illustrating the process of accessing the major components of the Pixel 7a.

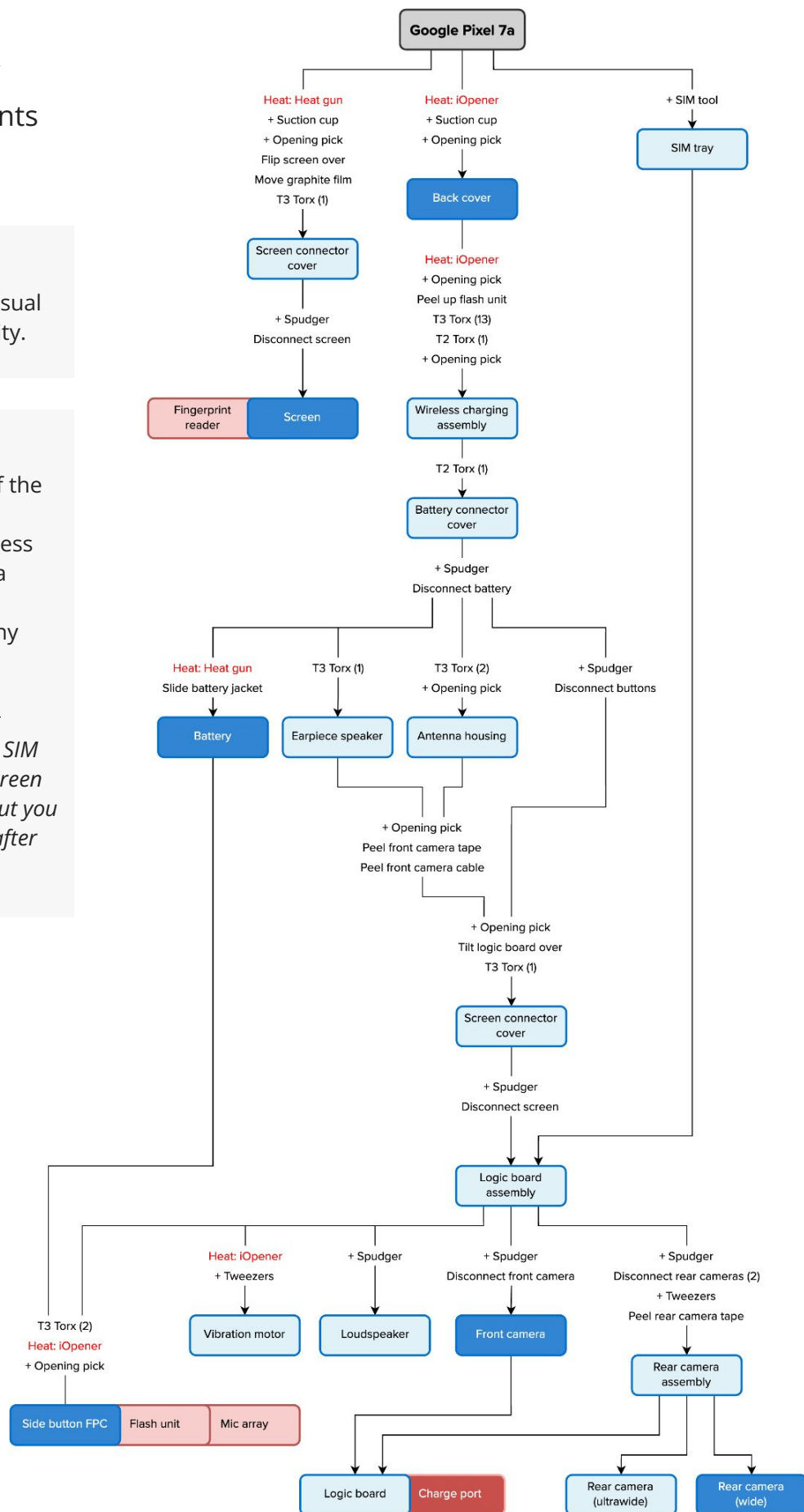
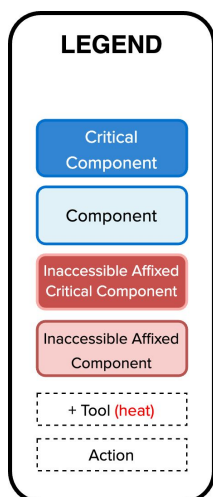
Why a disassembly tree?

Disassembly trees can be a helpful visual indicator of complexity and modularity.

How does it work?

Our disassembly trees illustrate all of the prerequisite actions, tools, and components required in order to access any given part. Each path leading to a component is a required procedure. Parallel paths can be completed in any order.

For example, here, removal of the logic board assembly requires removing the SIM tray in addition to disconnecting the screen (and all of the leading prerequisites), but you can't access the logic board assembly after just removing the SIM tray.



KEY TAKEAWAYS & RECOMMENDATIONS

MAJOR FACTORS

- The back cover glass is independently replaceable.
- Display removal is prioritized; back cover removal isn't necessary to access the display connector.
- Save for a single 1IP fastener, only one screw type (3IP Torx Plus, T3 Torx compatible) is used throughout, and many screws are identical.
- Primary entry through the back cover means internal repairs don't require display removal.
- The wide, ultrawide, and selfie cameras are all modular and independently replaceable.
- Although deep within the phone and part of a larger assembly including the upper mic array and flash, the side button cable is replaceable.
- The battery jacket is a thoughtful addition, but the battery adhesive is still stubborn and requires heat or isopropyl alcohol.
- The USB-C charge port, a high-wear part, is soldered to logic board, requiring expensive logic board replacements in the case of port damage.
- Both the display and back cover require replacement adhesive to reinstall; they don't utilize clips.
- The adhered flash module complicates important repairs.
- No OEM repair manuals are publicly available.
- The replacement parts selection is limited.

MINOR FACTORS

- The wireless charging coil is independent from the back cover, facilitating simple replacements while also eliminating the risk of tearing cables covertly connected to the back cover.
- The loudspeaker, earpiece speaker, and USB-C port feature reusable gaskets instead of waterproofing adhesive.
- Disconnecting the battery is easy, but the connector is hidden under two covers even after removing the back cover.
- The lack of clear external identification makes it difficult to find accurate repair information or compatible parts for a non-working device.
- The rear and selfie cameras connect to the backside of the logic board, requiring an intimidating logic board removal prerequisite.

Key Recommendations:

- ✓ Design the display and back cover to secure without the need for replacement adhesives.
- ✓ Implement a modular charge port.
- ✓ Publish a public service manual and point users to repair resources.
- ✓ Make more replacement parts available to the public.

