LINN

Klout Service Manual

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Introduction

About this manual

This manual is designed to help you as a Linn Retailer or Distributor to provide the best possible service for your customer should a problem arise. It covers just about every fault that has ever occurred in the entire history of the Klout Power Amplifier, which was first introduced in June 1992.

If you have any suggestions or comments regarding this manual, please contact Paul O'Neill at Linn Products Ltd:

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How to use this manual

The main body of this manual, the fault table, is designed to be as quick and simple as possible to use when you are confronted with a faulty product and so it is arranged by fault symptom as the symptom is usually all that you know about the fault.

Table of contents & fault symptoms

Look firstly at the table of contents and find the category that you covers the symptom you are seeing, then look down the list of faults in that section until you find the symptom or symptoms that best describe the problem.

Circumstances

Then simply follow the table along – the table specifies circumstances surrounding the fault symptom – e.g. whether the fault is likely to be intermittent or constant, if the fault only occurs within a range of serial numbers etc.

Possible causes

The next column details possible causes – this is effectively the most important section – probably the reason you are looking at this manual at all. There may be several possible causes for the symptom you have – it is worth checking out all of these (maybe there is more than one fault). For some faults, simple checks are detailed that you can use to rule out the problem without replacing any parts, whereas for other faults, the simplest way to rule out the problem is to replace the component(s) listed

Cure

Quite simply the action that you must take to cure the problem.

If you are unsure about the meaning of any words or phrases, look in the **Glossary.** (accessible via Linfo Website - Product Information)

Before embarking on any Service work, you should read the **Service Procedures** section (accessible via Linfo Website - Product Information), as there are certain procedures that must be followed in order to ensure the problem is resolved quickly and permanently.

Retailer & Distributor Obligations

Linn Specialist Retailers or Distributors are obliged to carry out the repairs in this manual under the terms of the contract & warranty agreements. You should return a faulty product to Linn for repair, only if the fault is not covered in this Service Manual. If a product, which is under warranty, is returned to Linn for repair and the fault is covered in the service manual, Linn may levy a charge and this charge should not be passed to the customer.

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Installation

Important Safety Information

Mains connections

This appliance **must** be earthed – both for Safety and functional reasons.

Lethal Voltages

Inside the Klout, lethal voltages are present – do not touch any part of the circuitry with any part of your body or with metallic or conductive objects. Avoid especially the area around the mains inlet and its connectors.

The Klout audio boards contain a bank of large, powerful capacitors, which can store a lethal voltage for a considerable length of time after the unit is switched off. Be very careful when working on the internals of the Klout.

Installation Instructions

Unpacking

Take great care when handling the Klout as it weighs 11Kg – take care to avoid damaging yourself, the Klout or anything else.

Unpack the product & retain the packing for future transportation.

As a Linn retailer, you are responsible for ensuring correct installation of the product. Consult the user manual and read the Placement & Handling information below.

Placement

Location & Environment

Avoid location near electronic products that may transmit RF, such as microcomputers, fax machines, TVs etc, or connect it to the same mains socket as these devices. Also avoid close contact with the mains or signal leads of such products – careful routing of the cable may be required.

Although the Klout can usually be stacked along with other products with no problem, it is better if possible to keep it apart from other products to prevent its operation being adversely affected by the heat and strong electrical field emitted by some products. This is preferable also, in order to prevent the heat & electrical field which unavoidably emanate from a product as powerful as the Klout from adversely affecting any other products.

As the Klout must, at times dissipate a considerable amount of heat, allow adequate ventilation and space around the unit to allow sufficient air-flow to ventilate the Klout, especially when it is working hard (playing loud).

Avoid locations that have high humidity.

Avoid locations where there is a lot of dust.

Handling & general maintenance.

No standard maintenance is required, except periodically re-inserting the connectors to improve contact.

Always handle the Klout with great care.

Always turn off the Klout before connecting or disconnecting any plugs to/from the sockets at the back of the unit.

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Wait at least 10 seconds after switching off the unit before unplugging anything from the back of the Klout to avoid damage to the speakers.

If you are carrying out any work on the Klout with its' sleeve removed, **ALWAYS** take anti-static precautions as tiny static discharges from your body, which you may be completely unaware of, can damage electronic circuitry and cause major problems. Anti-static earth mats & wrist straps must be used when handling any of the circuit boards or any spare parts.

Power-up problems

The following are some problems you may encounter when you power up the Klout.

Won't Power up (both LEDs dead)			
Symptom	**Circumstances**	**Possible Cause(s)**	**Cure**
Won't power up.	Constant	Fuse blown in unit and/or in mains plug.	Replace fuse(s) with correct value & type. Fuse in mains lead should be 5A. Fuse in Klout should be "Slow Blow" – look for a 'T' before the rating on the fuse. Correct type is: 220-240V - 3.15A 100-120V - 6.3A
Won't power up	May be intermittent	Mains lead faulty	Replace faulty mains lead.
Won't power up	Most likely to happen after voltage selector adjusted Probably constant	Mains voltage selector has not clicked into place after adjustment and is not set to any voltage.	Click selector into position.
Won't power up	Probably intermittent – tapping or bumping the unit makes fault come & go	Bad connection either inside or outside the unit.	Find and eradicate bad connection. It may be something as simple as a connector not pushed fully home and may be easily visible. If fault is intermittent, see **Introduction to Fault Finding** section (paragraph on intermittent faults - accessible via Linfo Website - Product Information). If fault is not intermittent, it may be possible to trace the fault – again see **Introduction to Fault Finding** – Substitution & Isolation
Won't power up	May be intermittent, much more likely to be constant.	Wrong mains voltage for Klout setting – mains voltage is too low. (e.g. 240V Klout being used with 115V mains supply.)	Check voltage rating at rear of Klout. If wrong, adjust to correct mains setting.

Won't power up	May be intermittent All the above 'Power up' faults have been ruled out.	Transformer faulty or control (relay) board faulty. Substitute a known good transformer or control board to see which is faulty.	Replace transformer or control board.

Powers up but then dies			
Symptom	**Circumstances**	**Possible Cause(s)**	**Cure**
Unit dies intermittently or stops working for a while.	At any time	Mains voltage dropping too low for Klout to function correctly (known as 'Brown outs' as these voltage drops also sometimes cause the lights to dim.)	Consult an electrician or your power company.
Powers up but then dies – may switch off & on randomly	May be intermittent, much more likely to be constant.	Wrong mains voltage for Klout setting – mains voltage is too low. (e.g. 240V Klout being used with 115V mains supply.)	Check voltage rating at rear of Klout. If wrong, adjust to correct mains setting.
Powers up but then dies.	Probably intermittent – tapping or bumping the unit makes fault come & go	Bad connection either inside or outside (mains lead) the unit.	Find and eradicate bad connection. It may be something as simple as a connector not pushed fully home and may be easily visible. If fault is intermittent, see **Introduction to Fault Finding** section (paragraph on intermittent faults - accessible via Linfo Website - Product Information). If fault is not intermittent, it may be possible to trace the fault – again see **Introduction to Fault Finding** – Substitution & Isolation

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Dies after playing loudly for a long time	Only happens when Klout is very warm.	Klout transformer contains thermal protection circuitry. If the Klout gets too hot, the transformer shuts down (i.e. supplies no power to the rest of the amp) and the amp will switch off completely.	Allow the Klout to cool down - the transformer will automatically reset and the Klout will work normally. If this happens constantly, it could be that there is insufficient ventilation, the transformer is faulty or the Klout is being driven harder than it is safely able to accept. Try increasing ventilation around the Klout, try the Klout in a different system, try another transformer – if condition persists after these 3 changes then the Klout is simply being driven much harder than it was designed to be.

Fuse blowing			
Symptom	**Circumstances**	**Possible Cause(s)**	**Cure**
Fuse blowing	May be intermittent	Wrong type of fuse fitted	Replace fuse(s) with correct value & type. Fuse in mains lead should be 5A. Fuse in Klout should be “Slow Blow” – look for a ‘T’ before the rating on the fuse. Correct type is: 220-240V - 3.15A 100-120V - 6.3A
Fuse blowing	May be intermittent	Mains surges	Consult an electrician or your power company.
Fuse blowing	Probably constant	Wrong mains voltage for Klout voltage setting - mains voltage is too high, e.g. Klout set to 115V connected to 230V mains. Perhaps mains selector is at correct voltage setting but has not clicked into place correctly.	Replace blown fuse & adjust voltage to correct setting.

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Fuse blowing	Probably constant	One of the Bridge rectifier diodes on one of the audio boards has gone short circuit (or low impedance). To check: Power down, remove top cover, replace fuse if blown, disconnect transformer from one channel and power up. If fuse blows, reconnect & try other channel, Once you know which channel is faulty, measure across D6, D7, D8 & D9 on that channel. If okay, they should measure around 700 or 800Kohms in both directions. If faulty, it will measure a **lot** less (perhaps 7 or 8 ohms)	Replace the faulty diode – Linn part no for all 4 diodes is: MISS 010
Fuse Blowing	Intermittent Only happens if Klout is switched on, off, on, off a few times	If Klout is switched on, off, on etc too quickly, the inrush limiter does not have time to recover & this can blow the fuse.	Klout is not faulty – no repair is necessary or possible Fast switch off, on etc should be avoided.
Fuse Blowing	May be intermittent All the above 'Fuse blowing' faults have been ruled out.	Transformer faulty or control (relay) board faulty. Power down, try unplugging the transformer connector to the control board. If the fuse continues to blow, suspect control board faulty. If disconnecting this lead fixes it, suspect transformer faulty.	Replace transformer or control board.

Problems switching on or off via Kairn

Symptom	**Circumstances**	**Possible Cause(s)**	**Cure**
Won't switch on or off via Kairn	Constant Powers up okay when switched on normally.	Klout and/or Kairn wrongly connected or set.	Connect Kairn 'Line Remote in' to Klout 'Line remote out' Set Klout switch to 'Standby'

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When several Klouts are connected to Kairn, one - or some - or all Klouts do not switch on or off via Kairn	Probably constant, but may be intermittent	When Several Klouts are connected in series to a Kairn and one Klout has a fault in the 'standby' circuit, any Klouts after the faulty unit in the series may not switch on/off with certain faults With other faults, the faulty Klout drains the current from the Kairn & no Klouts can switch on/off.	Isolate the faulty Klout by removing units from the chain one at a time until you isolate the Klout which is causing the problem. Alternatively, plug the Klouts into the Kairn one at a time (simply switching off the Klouts will not work) while measuring the +10V supply at the Kairn 'remote in' socket. The voltage should rise to >10V. If one Klout causes the voltage to fall below +10V, this is most likely to be the cause. The fault in that Klout will probably be caused by one of the faults in this section – see the faults listed above & below.
Takes a long time to power up via Kairn	Constant Several Klouts are connected to Kairn.	The more Klouts connected to a Kairn, the longer it takes for the Klouts to switch on as each Klout draws current from the Kairn.	No cure is necessary or possible.
Won't switch on or off via Kairn	May be intermittent Powers up okay when switched on normally	Kairn is faulty. Kairn must supply around +10V to the Klout to power it up.	Repair the Kairn. Try another Kairn if available
Won't switch on or off via Kairn	May be intermittent Powers up okay when switched on normally	Faulty connecting lead between Kairn & Klout Line remote.	Repair or replace lead
Won't switch on or off via Kairn	May be intermittent Powers up okay when switched on normally All the above 'Won't power up via Kairn' faults have been ruled out.	Remote cable inside Klout faulty, wrongly wired or wrongly connected. This is the cable which connects P7 on the small board which holds the 'Remote in/out' sockets (at rear of Klout) to the control/relay board – PCAS 159 - connector marked 'Remote'	Check the wiring of this cable against that of another working Klout. Make sure it is wired correctly, is properly connected (no bad connections), not backwards etc.
Won't switch on or off via Kairn	May be intermittent Powers up okay when switched on normally All the above 'Won't power up via Kairn' faults have been ruled out.	U1, D3 or K1 (relay) on PCAS 159 (control / relay board) faulty.	Replace faulty part: U1 – Linn part no: IC 345 D3 – Linn part no: MISS 614 K1 – Linn part no: SWRL 041

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Won't switch on or off via Kairn	May be intermittent Powers up okay when switched on normally All the above 'Won't power up via Kairn' faults have been ruled out.	Faulty control (relay) board.	Replace control board – Linn part no: PCAS 159/PT

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Protection (or Tripping) Problems

Important information regarding Trip faults – please read this before fault finding on Trip faults.

The following are some problems you may encounter with regards to the Klout going into protection, i.e. the affected channel shuts down (usually but not always, the LED indicates a Trip condition by going from green to red). 'Protection' is also referred to as 'Trip'

The Klout's protection circuitry is very sophisticated and very sensitive. There are several different conditions that can cause the Klout channel(s) to trip including: Over-temperature, over-current, under-voltage etc.

Be aware that the Klout usually trips for a very good reason & is indicating the presence of a situation that is potentially harmful to the Klout, the speakers or some other aspect of the system. Most trip situations are genuine and caused by a problem with the system, not the Klout. In this case you must isolate & remove the source of the problem from the system – see **Introduction to Fault Finding** (accessible via Linfo Website - Product Information) for tips on how to do this. This manual deals only with Klout failures, not failures with other aspects of the system.

Occasionally however, there may be a tripping problem, which is caused by a fault in the Klout. If this is the case, one of the boards in the Klout or possibly the transformer will contain the source of the problem. You must isolate the faulty board before proceeding with any fault finding from the tables below**.** Possibilities are: the main (amplifier) board, the protection (piggy back) board, the transformer or the Aktiv card (if fitted) – see 'Isolating the Faulty Klout Board' below or **Introduction to Fault Finding** section (accessible via Linfo Website - Product Information) for tips on how to isolate the faulty board.

The faults below are listed by board, i.e. all the faults on the Amplifier board are grouped together, same goes for the piggy-back board etc. It is assumed in the table below that the fault is definitely inside the Klout (not somewhere else in the system) and the faulty board has been isolated. If you are not definitely sure that the fault is with the Klout, check the system again – you must isolate the fault before proceeding.

The trip circuit (especially if the Klout is faulty) can show a failure in a variety of ways – usually this involves the LED changing from green to red to green to red etc on the affected channel, but not always. Sometimes the LED will go green/off/green/off; led may be permanently red or some other pattern. It is very difficult to narrow LED patterns down to a specific failure as a single fault may cause a number of different LED patterns depending on the circumstances.

If a trip condition exists, electronic engineers or technicians will find it extremely difficult to fault find on the Klout in a conventional sense as the channel shuts down, so fault finding is not usually possible by normal means.

Isolating the Faulty Klout Board

If a Klout channel is tripping or demonstrating a fault, you must first isolate the fault to a single board. On a very odd occasion, there may be more than one board faulty, but the same principles apply.

The simplest way of isolating the fault is to swap things over, i.e. swap the piggy-back board from the faulty channel to the good channel & vice-versa. Do the same with the transformer output cables**.** Be very careful to connect the boards etc correctly, as incorrect connection can cause further damage. If the fault moves across with the board or lead, then you know that you have the faulty part.

Sometimes the fault may disappear as you fault find, this indicates either an intermittent fault or that you have inadvertently repaired the fault (maybe the fault was caused by something like a bad connection and by moving things around, you have repaired it.)

See also the **Introduction to Fault Finding** section (accessible via Linfo Website - Product Information) which deals with this subject in much greater detail.

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Channel tripping – where fault is on main Amplifier board – PCAS 160

Symptom	LED status	Circumstances	Possible Cause(s)	Cure
Channel trips	Any LED pattern is possible	Probably intermittent	Solder fault – dry joint or solder splash.	Find & eradicate solder fault – see **Introduction to Fault Finding** section (accessible via Linfo Website - Product Information) for tips on how to do this
Channel trips	Any LED pattern is possible	May be intermittent	Broken component	Find & replace broken component – see **Introduction to Fault Finding** section (accessible via Linfo Website - Product Information) for tips on how to do this
LED dims or dies	LED dims or dies (but does not turn red)	Amp works okay otherwise (continues to play okay, even when LED fails) May be intermittent	LED faulty or possibly has a poor solder joint (dry joint or solder splash)	Repair soldering or replace LED – Linn part no: MISS 592
Channel trips	LED flashes green, red, green, red etc	Applies only to Klouts < ser/no: 1800 May only happen after Klout has been playing music for a while or when playing music quite loudly. Unlikely to see this fault any more – most Klouts of this age have either been upgraded already or do not require this upgrade as they are unaffected by the problem (did not affect all Klouts)	Old spec board causing problem.	Board requires replacement – Linn part no: PCAS KLOUT/KIT This part comprises of 2 complete Klout channels (= 2 Main boards and 2 Protection (piggy back) boards) The protection boards in an old Klout will also require upgrade
Channel in trip	LED is constantly red	Probably constant	Z3 or Z4 on PCAS 160 faulty.	Replace Z3 and/or Z4 – Linn part no: MISS 603 for both parts

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Channel trips	LED flashes red, green, red, green etc. May only flash red briefly (channel mutes) and then play as normal or may flash continuously.	Probably intermittent. May only happen occasionally or may be much more frequent. May happen in a variety of circumstances. This fault is not stable and so it is difficult to attach it to only one mode of failure.	Q1 and Q2 are mismatched. Measure voltage at pin 1 of U3 while unit is powered up – BE CAREFUL. – lethal voltages present. It should measure between –7V and 0V dc. If the measurement is < -7V or > 0V, Q1 & Q2 are not well matched & should be replaced – then do the measurement again	Replace Q1 & Q2 – Linn part no: TRAN 032 for both parts.
Channel trips	Most likely that LED flashes red, green, red, green, etc	Probably constant May also cause distortion on the output if the channel is playing.	One of the driver transistors: Q20, Q21, Q22, Q30, Q31, Q27, Q26 or Q25 faulty. Most likely to have an internal short circuit (or very low impedance). Measure across the junctions of these parts – all junctions of all transistors should have high impedance values (Kilohms or Megohms). A faulty transistor will probably have a very low impedance value (ohms or low Kohms) so should be easy to spot. If unsure, compare to a known working Klout board. These parts are found on the underside of the board	Replace faulty transistor – Linn part nos: Q20, Q21, Q22 & Q30 – TRAN 032 Q25, Q26, Q27 & Q31 – TRAN 032.

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Channel trips	LED flashes green, red, green, red etc constantly	Probably a constant fault Distortion may also be heard	Bad solder joint at Q23 and/or Q24 or these components are faulty. These are 2 of the large power transistors, located under the metal 'H' shaped plate. They are the main power-amp transistors for the channel. With unit switched off, measure across each junction of each transistor using an ohmmeter. If okay, measurements should be Megohms or Kilohms. If faulty, they tend to measure a few ohms only.	Replace faulty transistor – Linn part nos: Q23 – TRAN 017 Q24 – TRAN 018. Occasionally, these transistors are blown due to a transistor failure in another part of the circuit. If you find that replacing these parts does not fully cure the fault, then measure every junction of every transistor & compare to a known working board. This may seem like a time consuming job, but it does not take as long as you may expect. If any transistors' measurements differ greatly from the good board, replace the transistor. There is also a slight possibility if you find another faulty transistor that it has blown the new Q23/Q24 you fitted – you may require to replace these parts again.
Channel tripping	LED stays red – never goes to green.	Probably constant	U3 (op-amp IC) is faulty.	Replace U3 – Linn part no: IC 403
No music but LED stays green	LED never goes to red, even when Klout is switched off.	Probably constant	U1 (+15V regulator) faulty. Can be found under the Piggy-back board.	Replace U1 – Linn part no: IC 076
Channel dead	LED is constantly red	Probably constant	U5 (-40V regulator) faulty. Can be found under the Piggy-back board.	Replace U5 – Linn part no: IC 077

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Channel tripping	LED may flash Green, red, green etc or may flash green, off, green, off etc.	All the above Trip faults have been ruled out. Probably constant	One or more of the regulators – U1, U2, U4 or U5 is faulty. These are found under the Piggy-back board Sometimes a faulty regulator will measure (unit switched off) open circuit or short circuit, indicating which regulator or regulators are faulty, but at other times they will measure okay. Normally with a faulty regulator, you can power the unit up & measure which voltage line is faulty. With the Klout, however, the Trip circuit shuts down the channel making measurement very difficult.	Replace faulty regulator or regulators. If unsure which one is faulty, replace all. Be very careful when replacing regulators, as it is easy to break tracks and lift pads from the board when removing them. Do not attempt to remove them intact – always snip the legs away from the body first. Linn part nos: U1 & U4 – IC 076 U2 & U5 – IC 077

Channel tripping – where fault is on Protection (Piggy-back) board – PCAS 161

Symptom	LED status	Circumstances	Possible Cause(s)	Cure
Channel trips	Any LED pattern is possible	Probably intermittent	Solder fault – dry joint or solder splash.	Find & eradicate solder fault – see **Introduction to Fault Finding** section (accessible via Linfo Website - Product Information) for tips on how to do this
Channel trips	Any LED pattern is possible	May be intermittent	Broken component	Find & replace broken component – see **Introduction to Fault Finding** section (accessible via Linfo Website - Product Information) for tips on how to do this

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Channel trips	LED flashes red, green, red, green etc	Probably intermittent. May only happen when music playing or when Klout is warm. Do not confuse this fault with a genuine trip condition caused by overdriving the power amp where the amp gets very hot and trips to protect itself.	Thermistor (R26) faulty. This is the orange/silver component located near the middle of the board. On very early Klouts it is located on the underside of the board.	Replace R26 – Linn part no: MISS 160
Channel trips	LED flashes red, green, red, green etc or stays red	Probably constant	U1 faulty.	Replace U1 – Linn part no: IC 361.
Channel dead	LED stays red – never goes to green.	Probably constant	Q5 faulty.	Replace Q5 – Linn part no: TRAN 033
Channel trips	LED flashes red, green, red, green etc	Fault may not show immediately - may take some time for it to show. May be intermittent	Z3 or Z6 faulty. These are the 2 thru-hole zener diodes on the piggy-back board (usually silver in colour)	Replace faulty component – Linn part no: MISS 593 for both parts.
Channel trips	LED flashes green, red, green, red etc	Applies only to Klouts < ser/no: 1800 May only happen after Klout has been playing music for a while or when playing music quite loudly. Unlikely to see this fault any more – most Klouts of this age have either been upgraded already or do not require this upgrade as they are unaffected by the problem (did not affect all Klouts)	Old spec board causing problem.	Board requires replacement. Linn part no: KLOUT/PIGGYKIT for a pair of boards (it is best to replace both piggy-back boards if they are old spec) or PCAS 161/L9R1 for one board only. Also may require main board replacement. If this is the case, Linn part no: PCAS KLOUT/KIT – this comprises of two complete channels (main board & piggy-back board for each channel)

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Channel tripping	Any LED pattern	All the above Piggy-back board (PCAS 161) faults have been ruled out.	PCAS 161 faulty	Replace PCAS 161 – Linn part nos: KLOUT/PIGGYKIT for a pair of boards (it is best to replace both piggy-back boards if they are old spec) or PCAS 161/L9R1 for one board only.

Channel tripping – miscellaneous causes.

Symptom	LED status	Circumstances	Possible Cause(s)	Cure
Channel trips	Any LED pattern is possible	May be intermittent	Aktiv card faulty Power down & try swapping Aktiv card with the other channel to see if fault moves with the card.	Repair/replace Aktiv card
Channel trips	Any LED pattern is possible	May be intermittent	Aktiv card cable faulty Power down & try swapping Aktiv card cable with the other channel to see if fault moves with the cable.	Repair/replace Aktiv card cable.
Channel trips	Any LED pattern is possible	Probably constant	Transformer not properly connected (not pushed fully into socket, connected out of step etc) Or transformer faulty – try swapping the transformer connector from the faulty channel to the good channel & vice versa to see if the fault moves.	Check transformer connector is properly fitted into socket Replace transformer if definitely faulty – Linn part no: MCAS 016.

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Channel trips	Any LED pattern is possible	Probably constant More likely to happen after some work has been carried out on Klout	Piggy-back board not properly connected to Main board. Possibilities are: Piggy board connected out of step (every pin of connector should go into a socket – if one (or more) does not, this causes problems) Or – connectors not making good contact – may not be pushed fully home or may be a bad connection etc.	Connect board correctly. Occasionally, depending on the mode of failure, a wrong connection may cause a fault on one of the boards. If you find this to be the case, you will have to find the fault, using this manual.
Red LED but music still playing	LED flashes red occasionally	Applies only to Klouts < ser/no: 1800 Sound does not mute during 'trip'	In early Klouts, the over-voltage sensors were slightly too sensitive and occasionally displayed trip when no trip condition existed.	Remove R62 on the Piggy-back board (PCAS 161).
Channel trips	LED flashes green, red, green, red etc	Only happens briefly after power up and only happens when Klout is not connected to a pre-amp	The Klout's sensitive trip circuitry may occasionally get confused if the inputs are not connected to anything.	Connect a pre-amp & the problem should clear.
Channel trips	LED flashes green, red, green, red etc	Only happens when Klout is powered up while music is playing quite loudly	Because the Klout's protection circuitry is very sensitive, it can get caught in a loop if it is powered up while loud music is playing and may trip a few times.	Either power up the Klout first, mute the pre-amp or turn the volume down slightly until the Klout has settled down (a few seconds only is required)

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LED does not act 'normally' after Klout is switched off

- Klout works okay otherwise -

Important information regarding LED patterns after switch off

Please note – the Klout LEDs have no designated power down pattern. In other words, after the power is switched off, the LEDs are left to their own devices & power down in a random fashion. The fact that the LEDs on most channels follow the same pattern i.e. go from Green to Red then fade away is purely coincidental. If a Klout channel follows a different pattern (as long as the Klout works okay otherwise), this usually does not indicate the presence of a fault.

However, there are certain faults, which are known to cause these symptoms. These are listed below. If none of these faults apply, then the channel in question is almost definitely not faulty, but is simply powering down in a slightly different manner than the customer may expect. Customers sometimes experience anxiety when this occurs, especially if the Klout in question is one of several Klouts in (for example) an Aktiv system and only one shows this symptom. Check and eliminate the faults listed below then if the condition persists, reassure the customer that this is not a problem.

LED not acting as expected after Klout is switched off.

Symptom	LED status	Circumstances	Possible Cause(s)	Cure
Led stays red for a long time after switch off	LED may flash red, green, red etc for a short time but then stays red for about 40 seconds or more. LED may also stay on when unit is in standby.	Probably constant	Zener diode Z3 and/or Z4 are faulty or inserted backwards. These components on certain specs of board are found on the underside of the board.	Replace component(s) – Linn part no: MISS 630 for both parts. Very occasionally when one of these Zeners is faulty, it will also cause the voltage regulator to fail. Z3 fault may blow U1 – Linn part no: IC 076 Z4 fault may blow U2 – Linn part no:IC 077.
LED stays green after switch off	LED stays green for about 30 seconds after switch off.	May be intermittent	Q1 and Q2 are mismatched. Measure voltage at pin 1 of U3 while unit is powered up – BE CAREFUL. – lethal voltages present. It should measure between –7V and 0V dc. If the measurement is < -7V or > 0V, Q1 & Q2 are not well matched & should be replaced – then do the measurement again	Replace Q1 & Q2 – Linn part no: TRAN 032 for both parts.

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Amplifier problems

It is assumed at this point that you have traced the fault to the Klout, i.e. the rest of the system has been ruled out (source products, pre-amp, Aktiv cards, speakers, cables etc).

Audio Problems

Symptom	Circumstances	Possible Cause(s)	Cure
No output from one or both channels	LEDs stay green. May be intermittent – more likely to be constant	Aktiv link has been snipped or removed, or link has a bad solder joint.	Re-make or replace link, or repair bad solder joint.
Blowing speaker units – DC voltage on output of channel	Probably constant	One of the transistors on the main board has gone short circuit (or low impedance) internally. Usually this will activate the trip circuit, but very occasionally a failure will evade the trip circuit. Measure impedance across every junction of every transistor on the main board and compare to a known working board. It is usually fairly easy to trace the faulty part or parts (remember there may be more than one) Do not forget to include the big power transistors under the metal h-shaped clamp.	Replace faulty part (or parts)
Distortion on one channel	Probably constant	One of the transistors on the main board has gone short circuit (or low impedance) internally. Usually this will activate the trip circuit, but very occasionally a failure will evade the trip circuit. Measure impedance across every junction of every transistor on the main board and compare to a known working board. It is usually fairly easy to trace the faulty part or parts (remember there may be more than one). Do not forget to include the big power transistors under the metal h-shaped clamp.	Replace faulty part (or parts)

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High pitched noise through speaker on one channel	LED on affected channel stays on for a long time after Klout is switched off.	Zener diode Z3 and/or Z4 are faulty or inserted backwards. These components on certain specs of board are found on the underside of the board.	Replace component(s) – Linn part no: MISS 630 for both parts. Very occasionally when one of these Zeners is faulty, it will also cause the voltage regulator to fail. Z3 fault may blow U1 – Linn part no: IC 076 Z4 fault may blow U2 – Linn part no:IC 077.

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Sound Quality problems

Listed below are some possible causes of problems with the Klout sound quality. It is assumed at this point that you have traced the fault to the Klout, i.e. the rest of the system has been ruled out (source products, pre-amp, Aktiv cards, speakers, cables etc).

Sound Quality Problems

Symptom	Circumstances	Possible Cause(s)	Cure
Klout sound quality is not as good as expected	May be intermittent – more likely to be constant. All other aspects of the system are okay	Earth connections not making good contact.	Re-make all earth connections – remove screws etc, clean and/or rub all metal contacts with fine emery paper and make all screws tight.
Klout sound quality is not as good as expected	May be intermittent – more likely to be constant. All other aspects of the system are okay	Screws holding the bottom plate on are loose or are not as tight as they should be	Tighten all screws, especially those holding the bottom plate on to the extrusion – with these screws, it is a good idea to fit shake-proof washers between the head of the screw & the plate (they fit inside the countersink) to improve earth continuity and prevent the screws loosening again – Linn part no for these washers is: MECH 010
Klout sound quality is not as good as expected	May be intermittent – more likely to be constant. All other aspects of the system are okay	Klout is old spec – many improvements have been made to the Klout since its earliest days. See **Klout History** (accessible via Linfo Website - Product Information) for details of dates & serial numbers of changes.	All sound quality upgrades can be carried out by the retailer, with the possible exception of the Shim mod, which should be carried out at the Linn factory. Contact Linn service dept for details.

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Miscellaneous Problems

It is assumed at this point that you have traced the fault to the Klout, i.e. the rest of the system has been ruled out (source products, pre-amp, Aktiv cards, speakers, cables etc).

Miscellaneous Problems

Symptom	Circumstances	Possible Cause(s)	Cure
Mechanical buzzing noise heard from Klout (not through speakers) briefly when Klout is first powered up	Probably intermittent Applies only to Klouts < ser/no: 3796.	Requires modification.	Fit ferrite rings to transformer leads. You must remove the connector from the end of each of the transformer output cables – TAKE NOTE of where each wire goes BEFORE removing connectors. The rings simply fit over the cable (not necessary to fit at a particular place on the cable, although near the connectors is okay). Linn part no for rings: IND 089
Mechanical hum from transformer – heard from Klout, not through speakers	May be intermittent	All transformers hum to a greater or lesser extent – the more powerful the transformer, the louder the hum. With a transformer as powerful as that fitted to the Klout, some audible hum is unavoidable, so it is really a case of how loud the hum is. A quiet transformer will hum much louder if the mains supply is noisy – ensure this is not the case before proceeding, as Linn cannot cure transformer hum if noisy mains is the cause. If you are sure that noisy mains is not the cause, then to avoid a purely subjective conclusion (one customer's idea of noisy may differ from another) compare the Klout to as many Klouts as are available. Do this to build up a picture of what is normal. (Remember however that older Klouts tend to be noisier than newer Klouts, as the transformer noise levels were gradually improved through the years.)	Replace the transformer – Linn part no: MCAS 016.

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Clicking noise from Klout when it is switched off.	Klout is connected to Kairn via line remote for remote switching	If you have the Kairn & the Klout wired up for remote switching, but the Kairn is switched on and the Klout is switched **off** (as opposed to Standby as it should be), the relay may click as it tries to power up the Klout.	Klout is not faulty – no cure is necessary or possible.