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SAFETY

Read this manual completely before using the instrument.

1. The LABLINE is designed to behave like an exchange line therefore only telecommunication apparatus designed to connect to telephone lines must be connected to it.
2. Under no circumstances must the LABLINE be connected to the Public Switched Telephone Network (PSTN) or any PABX extension ports.
3. When using the LABLINE to test the performance of unapproved telecommunication apparatus, due consideration must be paid to any hazard involved.
4.  **WARNING** The connection sockets have high voltages present during Ringing and Pulse dialling. Although this is not hazardous, it can be painful.

5. The unit is designed to be powered from a 230 V, 50 Hz source. The IEC Power Lead provided is fitted with a 5 Amp fused mains plug.
6. The Mains Switch at the IEC Socket needs to be in the Off position to isolate the unit from the mains.
7. There are no user serviceable parts in this unit. Under no circumstances should the user attempt to open the unit. If opened, the warranty will be invalidated.
8. Should the unit require a service, repair or calibration, please return it to a recognised dealer or to:

Crucible Technologies
11 Glaisdale Road
Northminster Business Park
Upper Poppleton
York YO26 6QT

Tel: +44 (0) 8702 60 60 82

When returning the unit to Crucible–Technologies, please contact the Repairs Department to receive a Returns Number. The owner will be advised of any costs prior to work commencing.

GETTING STARTED

Before using the LABLINE, please check that the following items have been included in the shipment.

- LABLINE Unit
- IEC Power Lead
- Handset
- User Manual

Check for damage in transit. If there is any sign of damage, please report it to your supplier and do not attempt to repair the unit.

The unit is factory set to be powered from a 230 V supply. This is indicated on the rating plate. (If a 110 V unit has been supplied, the rating plate will indicate this). Please ensure that this product is powered from the correct source. The apparatus is CLASS II double insulated construction, so does not require a protective earth connection.

UNDER NO CIRCUMSTANCES SHOULD THIS PRODUCT BE CONNECTED TO THE PSTN.

INTRODUCTION

The LABLINE is a bench top telephone line simulator designed to test a wide range of telecom products. It simulates a telephone line, enabling one to test most functions of a telephone on one instrument.

The LABLINE provides a realistic simulation of telephone lines. The feed voltage applied to the Unit Under Test (UUT) is 48 V and the ring voltage is a real 70 V, 25 Hz signal with DC backing. This ensures that telecommunication apparatus that work on the LABLINE are sure to work on real telephone lines.

It is useful for engineers who need to test products. However, the controls are straightforward to use which makes it ideal for non-technical personnel.

APPLICATION

There are a wide variety of applications for LABLINE, some of which are listed below:

FAULT ANALYSIS

The LABLINE is useful for checking returns from customers to make sure the fault lies with the returned product and not with the user. Non-technical staff are able to check a telephone or an answering machine, just by connecting it to the LABLINE and carrying out tests, as one would do if using a normal phone line. In less than a minute, tests such as off-hook, dialling, handset operation and ringing can be completed.

The LABLINE provides many benefits over using a telephone line for testing. All the dialled digits can be checked and not just the digits needed to route a call. One person can carry out complete testing as ringing starts at the push of a button. No call costs are incurred.

REPAIR

The LABLINE provides a telephone line on every technician's workbench. This allows products to be checked as repairs are carried out. On completion of the repair, the telephone or answering machine can be fully checked including operation with switchable polarity and line current.

PRODUCTION

The LABLINE can be used for production testing of many telecommunication products. Features such as digit timings, signal level (displayed on the bar graph) and adjustable ring level, will allow the test engineer to build the LABLINE into a production test procedure.

OPERATION

SUPPLY

The unit is designed to be powered from the mains 230 V, 50 Hz. Versions of the unit powered from 110 V can be supplied. Please contact your supplier for this voltage option.

PHONE SOCKET

The phone socket is fed from a 48 V source. When the polarity switch is set to positive, A is positive wrt B. This is reversed when the polarity switch is set to negative.

When the line current is set to Hi, this represents a 1 km line and when set to Lo it represents a 7.5 km line.

The pin configuration on the socket is representative of a standard phone socket on the wall and is as follows:

A	⇒	Pin 2
B	⇒	Pin 5
E	⇒	Pin 3
S	⇒	Pin 4

Within the LABLINE, there is a 1.8 μ F/250 V capacitor to feed the ringing to the UUT. This capacitor is connected between pins **B** and **S**.

NOTE: 4mm sockets are also provided. They are connected to pins A and B. These are useful as measurement points or to connect any adapters.

RINGING

The ringing is applied to the UUT by operating the Ring On/Off switch. The ringing cadence is that of the standard UK PSTN.

The pre-set control at the back of the LABLINE can set the level of the ringing. Once ringing is applied, it can either be stopped by operating the Ring On/Off

switch or by seizing the line (i.e. answering the call) with the UUT.

NOTE: If continuous ringing is required for test purposes, then turn power on whilst holding the Ring Switch down. After about 5 seconds release the switch. The LABLINE will generate ringing continuously

DIAL TONE

The Dial Tone provided on the LABLINE is a realistic 350 + 440 Hz as found on most modern exchanges. This is presented to the UUT when it seizes the line prior to dialling. However, if the line is seized in response to ringing no dial tone is applied.

DIALLING

The digits dialled by the UUT are shown on the 8 digit LCD. The digits can be Pulse, Tone or both. The Tone digits are shown with a dot underneath to differentiate them from the Pulse digits. The timing limit on the Make and Break of Pulse dialling are set carefully to detect any problem that may exist. The level of tones is displayed on the Bar Graph.

A Time Break Recall (TBR) signal is either displayed as a Pulse digit 1 or R depending on its timing. If the break time is less than 80 mS then a Pulse digit 1 is displayed. If the break is greater than 80 mS then an R is displayed. This way the time limits for Pulse break are not compromised. An Earth Recall is shown as an E on the LCD display.

When more than 8 digits are dialled and there is a pause of more than 5 seconds the display starts to scroll all the digits dialled. A maximum of 64 digits can be detected and displayed.

When the UUT is On-line, the display scrolling can be frozen by pressing the Ring On/Off button. In the frozen mode the display flashes. The freeze can be terminated by the operation of the Ring On/Off button or by dialling a digit.

NOTE: The display freeze only works in the On-line mode, as in the Off-line mode, the Ring On/Off button is used to turn the signal on.

The scrolling of the display carries on in the Off-line mode.

PULSE DIAL TIMINGS

Pulse dial Make/Break/IDP timings can be brought up on the display by dialling 200 after seizing the line. The displayed Make/Break timings are based on the last digit dialled and the IDP based on the last two digits dialled. Further digits (Pulse or Tone) can be timed by dialling these after 200. The display will automatically update to show the Make/Break timings of the last digit dialled and the IDP between the last two digits.

TONE DIAL TIMINGS

Tone dialling On/Off times can be displayed by entering 200 after seizing the line. On timings are based on the last digit dialled whilst Off timings are based on the pause between last two digits dialled. Further digits (Pulse or Tone) can be timed by entering these after dialling 200.

PULSE DIAL TIMING CHECK

During Pulse dialling, if the following timing errors are detected, an error message is flashed on the display:

MAKE TIMINGS	Limits $33.3 \text{ mS} \pm 30\%$	
	Low timing gives an error	MKE < 23 mS
	High timing gives an error	MKE > 43 mS
BREAK TIMINGS	Limits $66.6 \text{ mS} \pm 30\%$	
	Low timing gives an error	MKE < 46 mS
	High timing gives an error	MKE > 86 mS

Transients of less than 5 mS duration are ignored.

The error message will time out after five seconds. However, if a valid digit is detected or another error message is to be displayed, the original message will be

overwritten.

DIAL UP SUPERVISORY TONES

Various supervisory tones can be dialled up by keying in specific codes from the unit plugged into the master socket. These are given below:

300	⇒	RING BACK TONE
301	⇒	PAY TONE
302	⇒	ENGAGED TONE
303	⇒	PATH ENGAGED (PARK) TONE
304	⇒	UNOBTAINABLE TONE

NOTE 1: The frequency for all the above tones is set to 400 Hz.

NOTE 2: In addition to the above, a couple of self-test features are provided.

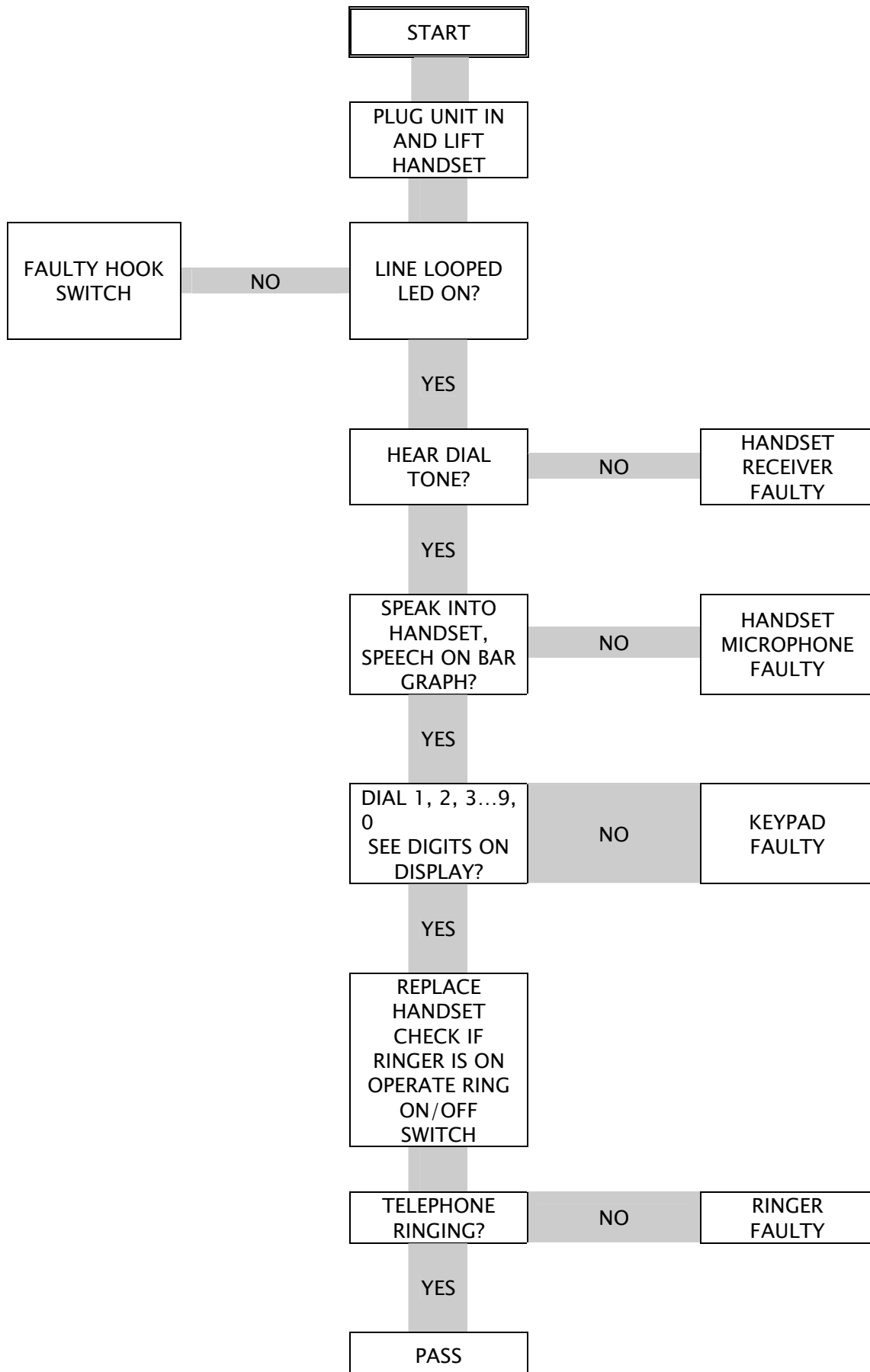
100	⇒	GIVES ISSUE OF SOFTWARE
999	⇒	TESTS LCD

HANDSET

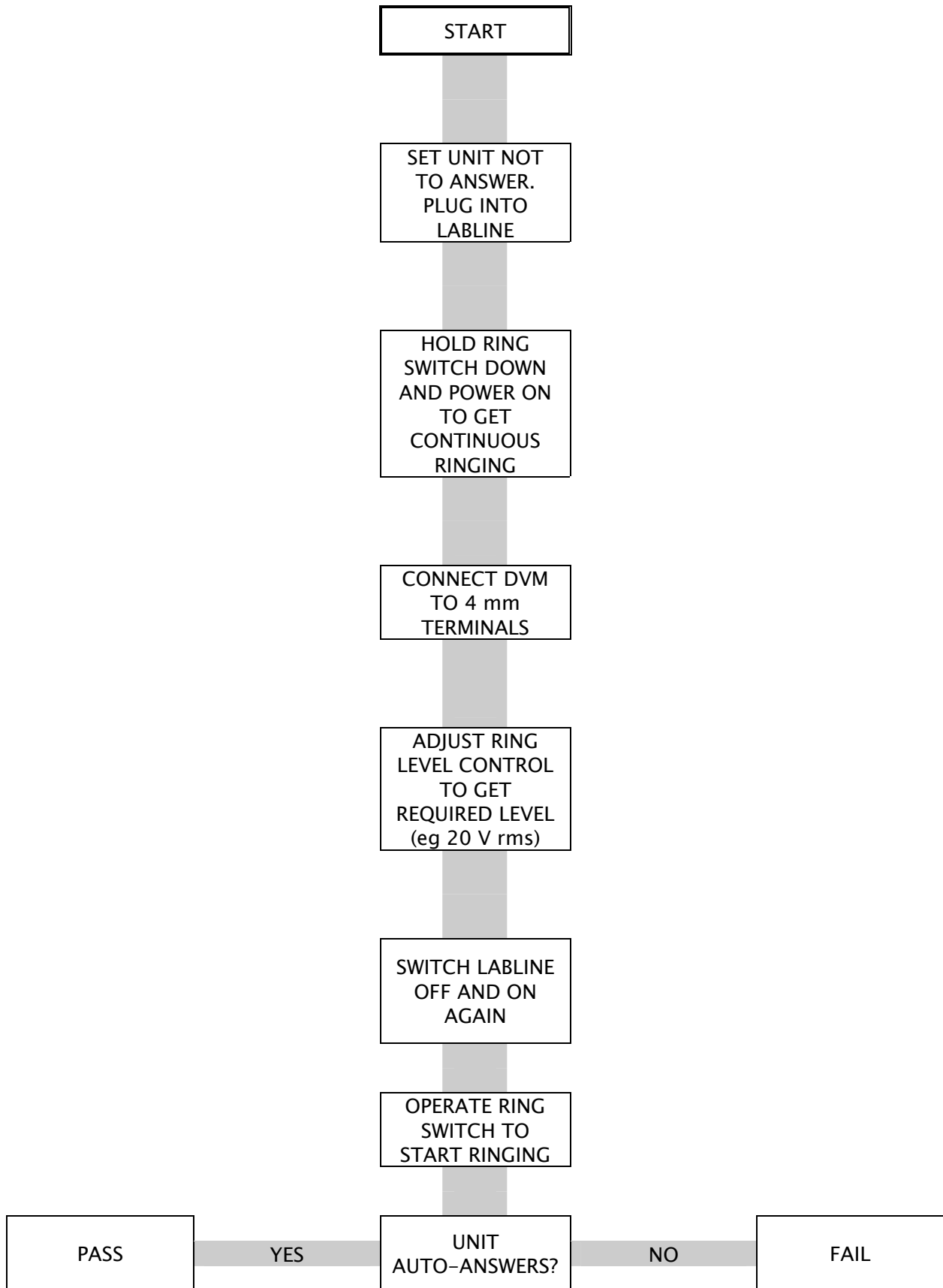
The LABLINE is supplied with a handset fitted with a push-to-talk button. The handset socket is located on the rear of the LABLINE. When testing answering machines, the handset can be used to listen to messages from and record messages to the answering machine.

TEST EXAMPLES

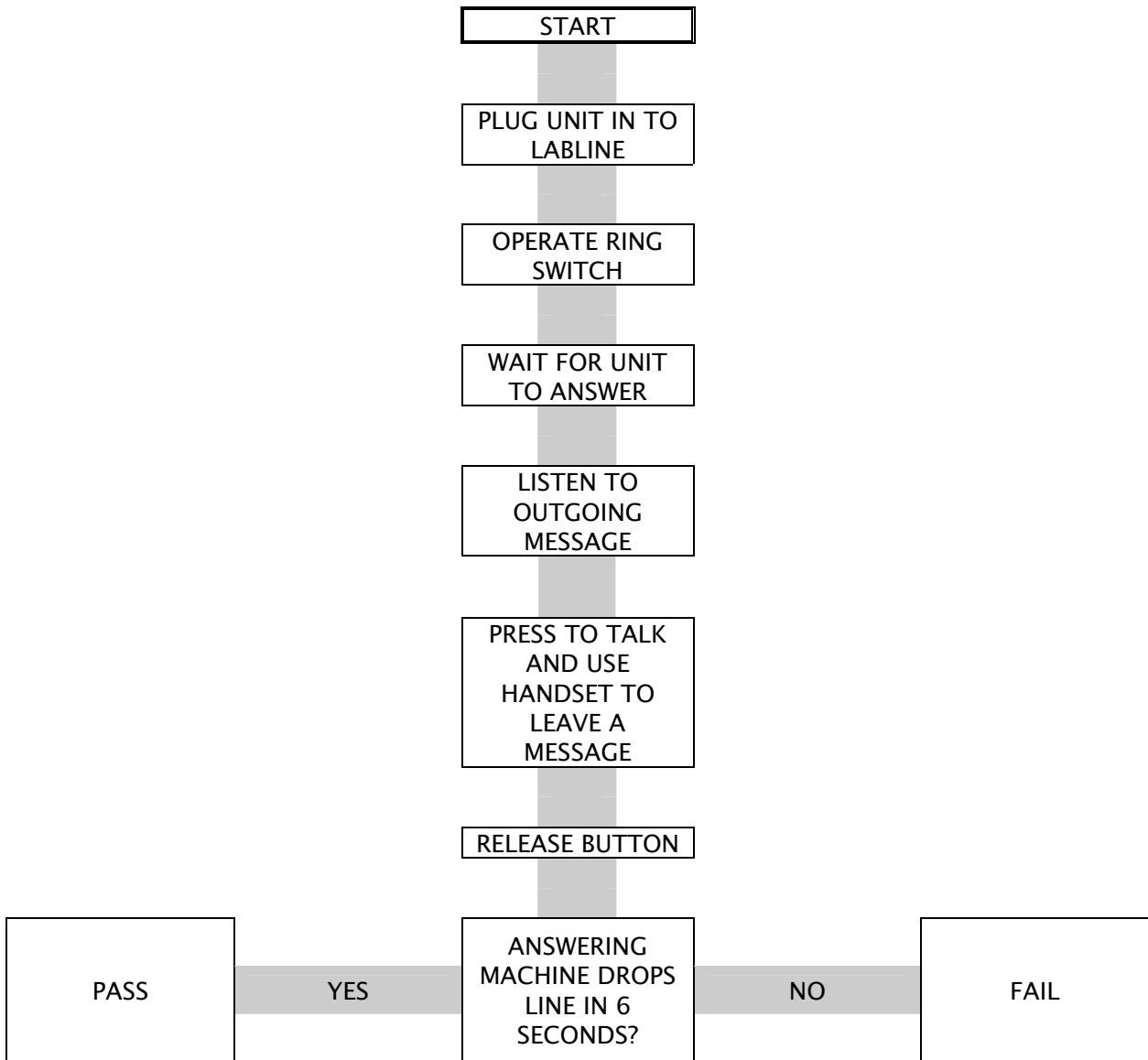
FUNCTIONAL TEST OF TELEPHONES



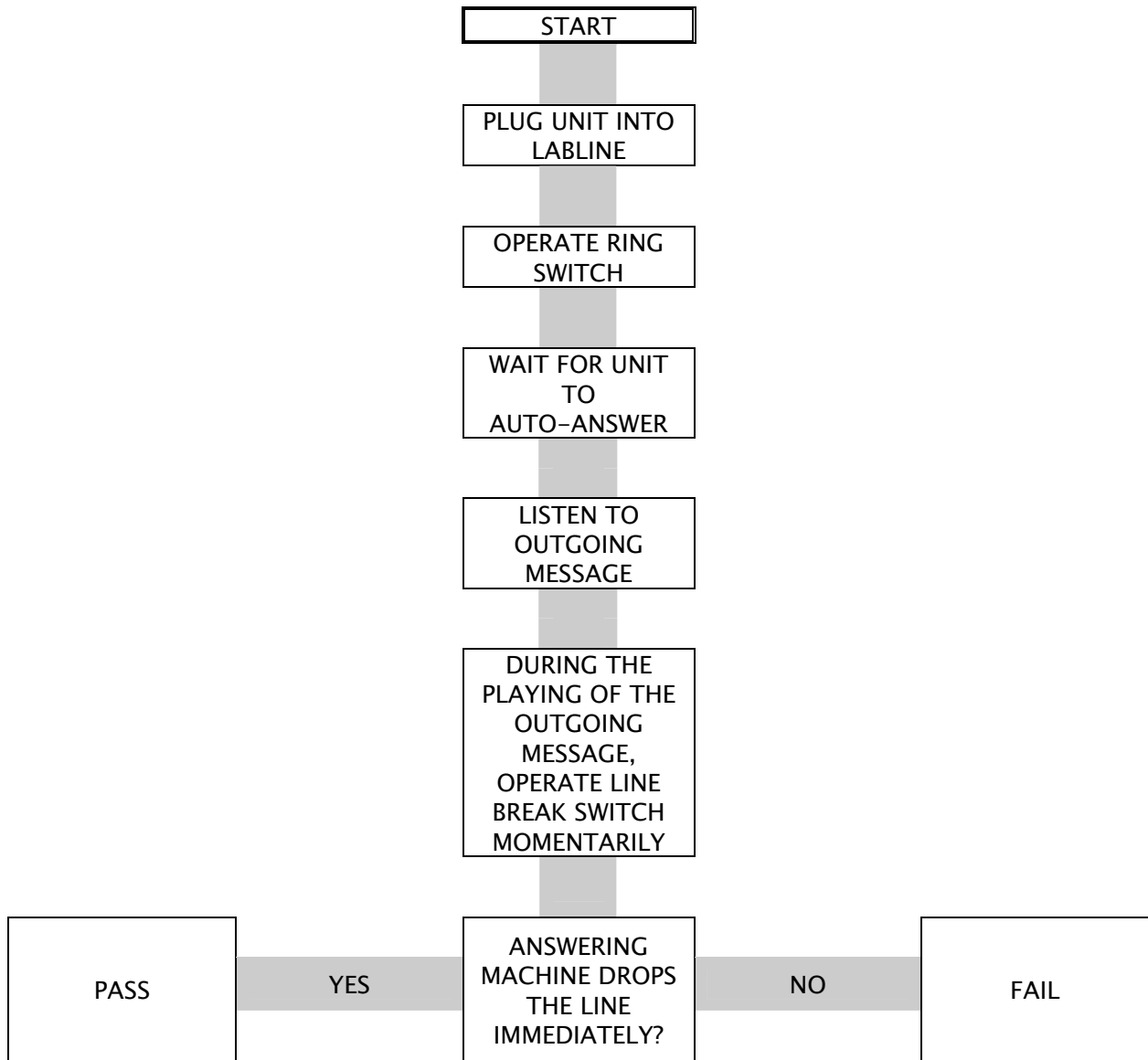
RING DETECT SENSITIVITY ON AUTO-ANSWER APPARATUS



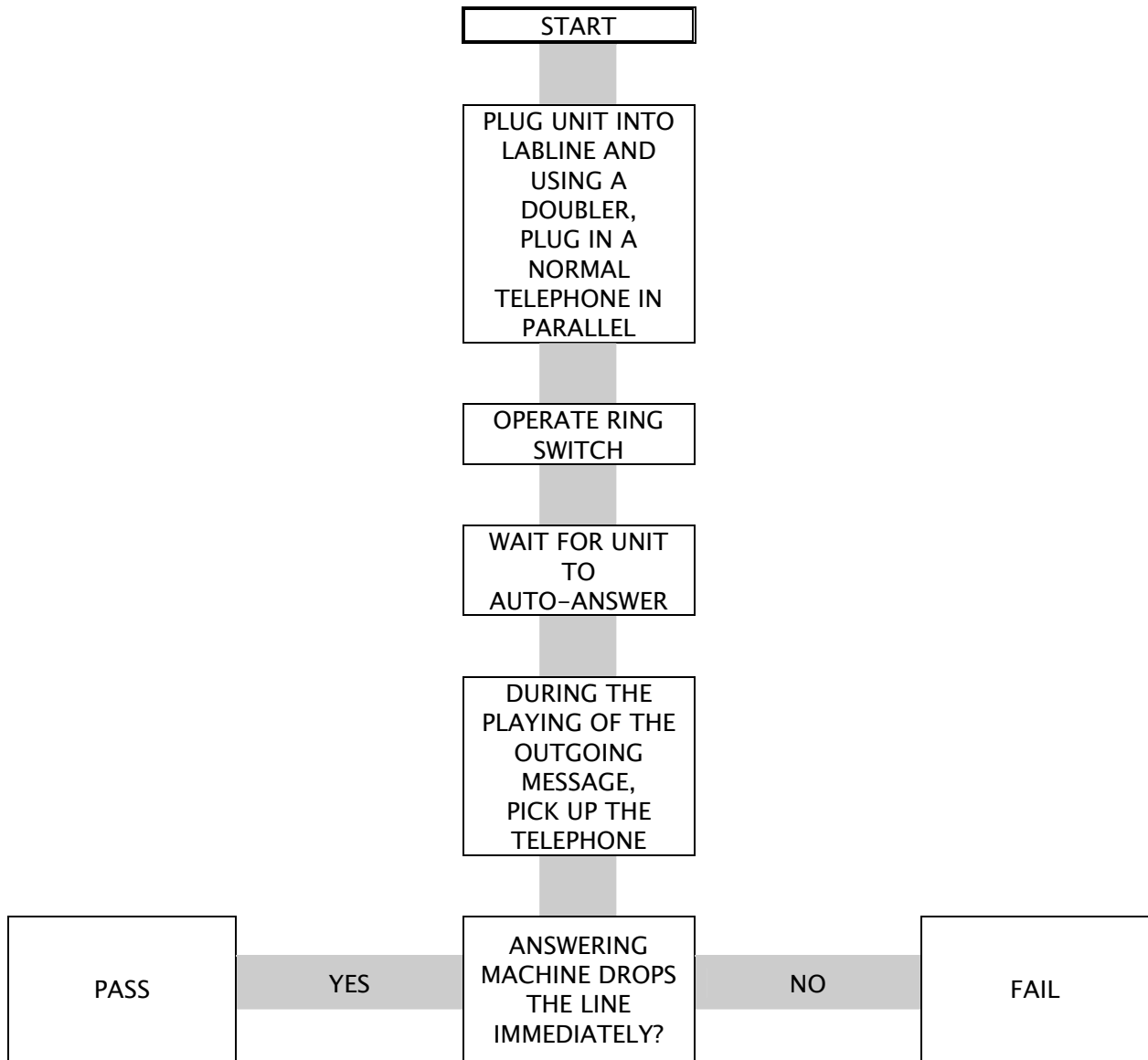
ANSWERING MACHINE CLEARDOWN TO SILENCE



ANSWERING MACHINE CLEARDOWN TO LINE BREAKS



ANSWERING MACHINE CLEARDOWN TO EXTENSION PHONE PICK UP



SPECIFICATION

MASTER SOCKET	DC Voltage	48 V \pm 5%
	Feed Bridge	2 x 200 Ω \pm 10%
	DC Resistance	180 Ω \pm 10% (= 1 km line)
1380 Ω \pm 10% (= 7.5 km line)		
DIAL TONE	Frequency	350 Hz + 440 Hz
	Level	-8 / -14 dBm
RINGING	Voltage	70 V \pm 10% rms (factory default)
	User Level	Adjustable from 0 V to 95 V rms
	Frequency	25 Hz
	Type	AC (near sinusoid), DC backed
	Cadence	PSTN
PULSE DIALLING	Make	25-41 mS
	Break	50-82 mS
	IDP	>200 mS
	On-Hook	>300 mS
	Off-Hook	>200 mS
	TBR	80-110 mS
TONE DIALLING	Tone Time	>40 mS
	Accept Frequency	\pm 1.5%
	Reject Frequency	\pm 3.5%
BAR GRAPH	Reference	Top LED set to -1 dBm \pm 1 dB
	Range	3 \pm 1 dB per LED
TOLERANCE unless otherwise specified	Frequency	\pm 10%
	Timing	\pm 10%
	Level	\pm 3 dB
POWER	Mains	230 V, 50 Hz, 50 mA