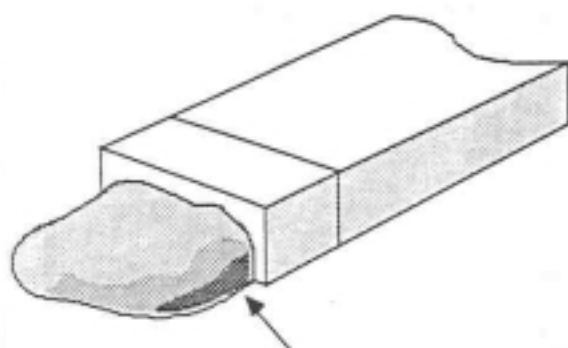


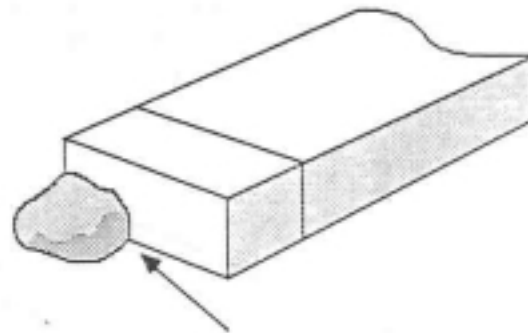
SURFACE MOUNT ASSEMBLIES (CON'T)

On mini-mica chip capacitors, the solder fillet shall be continuous on two sides for at least 50% of the component width.



GREATER THAN 50% COVERAGE
OF CHIP WIDTH

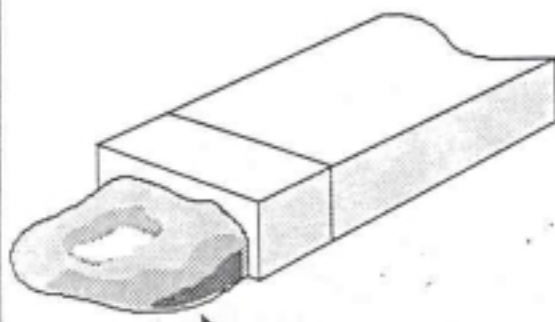
ACCEPTABLE



LESS THAN 50% COVERAGE
OF CHIP WIDTH

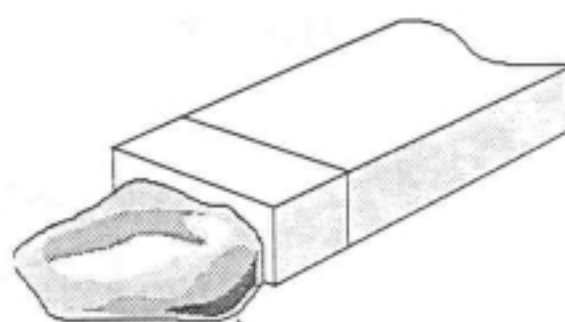
REWORK

Voids are permissible up to 80% of the coverage requirement.



VOID IS LESS THAN 80%
OF THE SOLDER WIDTH

ACCEPTABLE



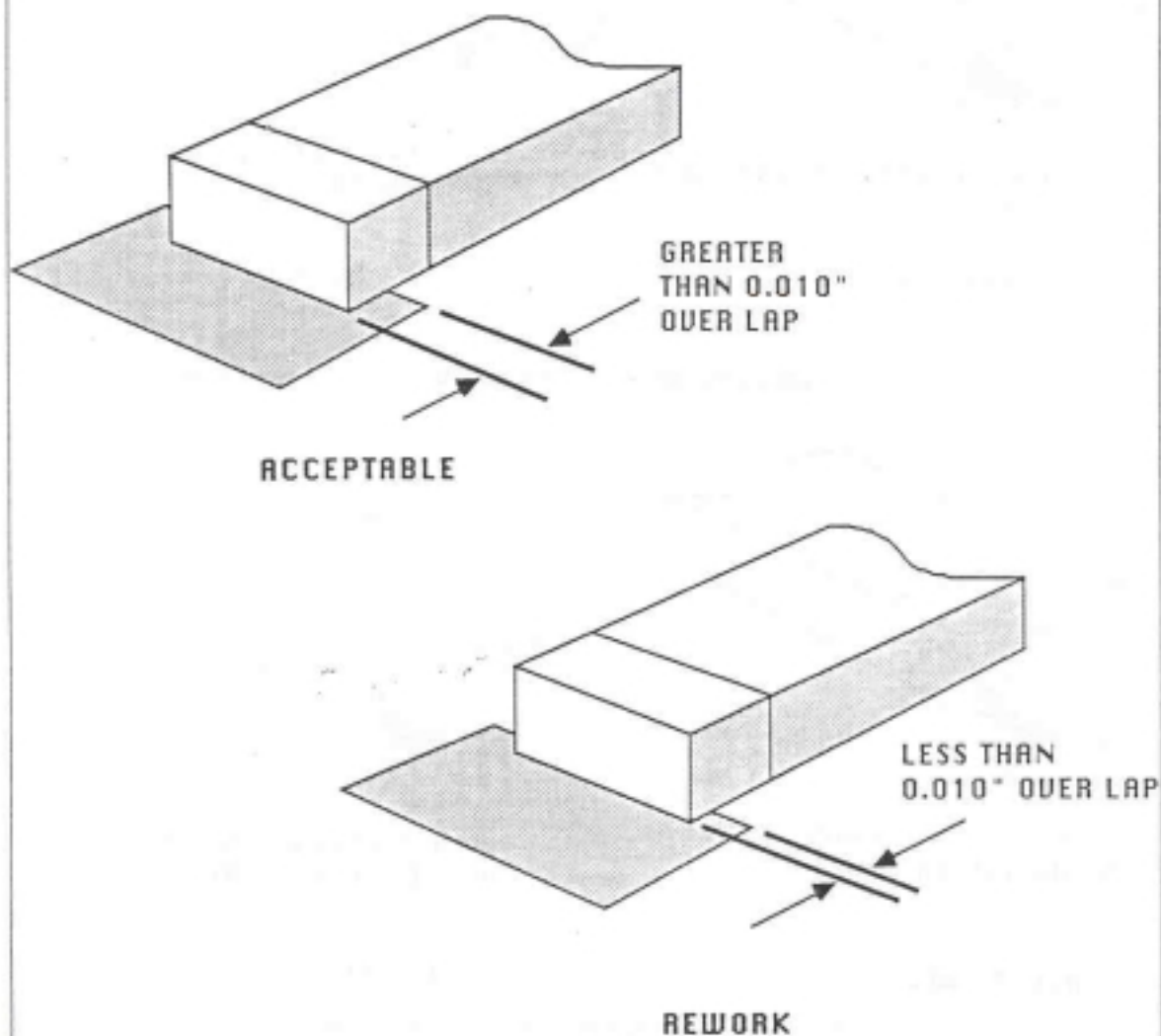
VOID IS GREATER THAN 80%
OF THE SOLDER WIDTH

REWORK

The minimally acceptable fillet shall rise from the pad to the edges of the capacitor that normally contacts the board and shall show a concave fillet.

SURFACE MOUNT COMPONENTS (CON'T)

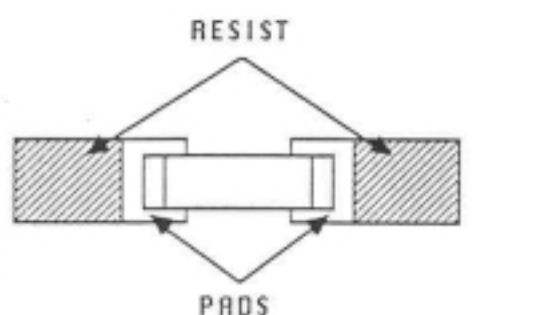
The length part of the solderable end cap of the device should overlap the mounting pad by at least 0.010" (the thickness of two pieces of notebook paper).



SURFACE MOUNT COMPONENTS (CON'T)

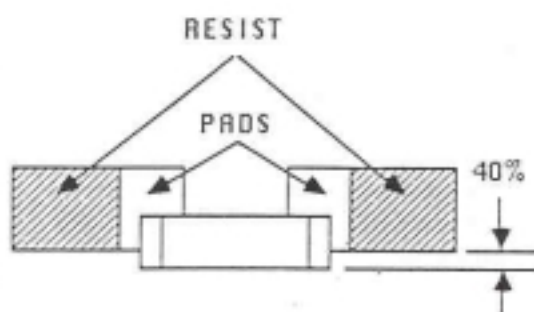
The illustrations below show the amount of chip misalignment that is acceptable.

The length part of the solderable end cap of the device should not be misaligned with the mounting pad by more than 50% of its length.



PREFERRED

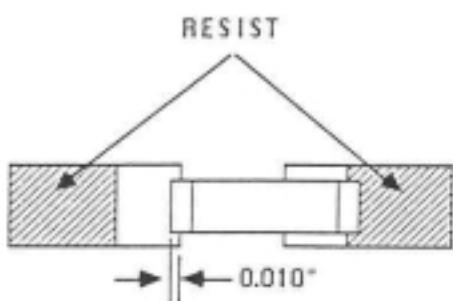
The part is evenly aligned between the two conductor lands (solder is not shown).



MINIMUM ACCEPTABLE

Part misalignment does not exceed 40% of the width.

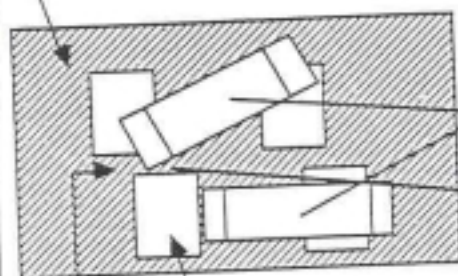
Part overlap on the pads is not less than 0.010".



SURFACE MOUNT COMPONENTS (CON'T)

The illustration below shows an unacceptable amount of misalignment that should be reworked.

RESIST



MISSED PAD

LESS THAN 0.010" CLEARANCE,
POTENTIAL SHORT

REWORK

The part does not overlap the pads.

Misalignment exceeds 50% of the width of the pad.

Poor positioning creating a potential short (closer than 0.010" - the thickness of two sheets of paper).

SECTION I GENERAL INFORMATION

1.1 INTRODUCTION

This manual contains information concerning the physical, mechanical, and electrical characteristics of the BENDIX/KING EPH and EPI Series handheld VHF radios.

1.2 INTRINSICALLY SAFE MODELS

Radios certified Intrinsically Safe for use in hazardous environments require special care in their repair and maintenance. Therefore, it is strongly recommended that you send all Intrinsically Safe radios in need of repair to BENDIX/KING to ensure compliance with Intrinsically Safe certification.

WARNING

MODIFICATION OR IMPROPER REPAIR OF INTRINSICALLY SAFE RADIOS
WILL MAKE THEM UNSAFE FOR OPERATION IN HAZARDOUS
ENVIRONMENTS AND WILL VOID THEIR INTRINSICALLY SAFE RATING.

1.3 DESCRIPTION

The EPH Series radios are self-contained VHF FM Transceivers covering the frequency range of 148 MHz to 174 MHz (EPI covers 136 to 160 MHz). The units are multi-channel, digitally synthesized radios using a single crystal for frequency control. All models incorporate an EEPROM for the storage of channel frequency, Code Guard™, and Dual Tone Multiple Frequency/Automatic Numeric Identifier (DTMF/ANI) encode information. All models also include low battery and busy channel indicators. Toggle switches control hi/low transmit power, priority scan, and multi-channel scan. Status and channel information is displayed over a liquid crystal display on keyboard/display models. Connectors are provided on the side of the unit for external antenna, microphone, speaker, and other optional accessories. A variety of twist-off battery packs are also available.

A partial list of available features include:

- Frequency range 148 - 174 MHz (EPH) or 136 - 160 MHz (EPI)
- Channel Spacing 25/30 KHz or 12.5/15 KHz
- Transmitter RF output 1.5 Watts or 5/2 Watts
- Metal or Lexan case
- Numeric or Alphanumeric display
- 14 Channels, or 210 Channels in groups of 14

NOTE: 210-channel radios may have special programming features that reduce the number of channels available to the user.

1.4 TECHNICAL CHARACTERISTICS

FREQUENCY:	148-174 MHz (EPH) 136-160 MHz (EPI)
POWER SUPPLY:	One rechargeable nickel-cadmium battery pack with temperature sensor or one Alkaline battery pack
OPERATIONAL FEATURES:	
Priority Channel Scan	Programmable*
Transmit-Time-Out Timer	Programmable*
Scan Delay	Programmable*
DTMF/ANI Encode	Programmable*
Code Guard Squelch	Programmable*
Squelch Tail Elimination	Standard
	* Keyboard units only
CHANNELS:	14, or 210 in fifteen 14-channel groups
FREQUENCY SPREAD:	26 MHz with no degradation
CHANNEL SPACING:	
Flex-Mode:	12.5/15 or 25/30 KHz Programmable by channel
Non-Flex-Mode:	25/30 KHz
OPERATING TEMPERATURE:	-30° to +60°c

PHYSICAL DIMENSIONS

Weight:	20 oz (24 oz with large battery) 0.6 kg (0.7 kg with large battery)
Width:	2.55 in (64.8 mm)
Depth:	1.5 in (38.1 mm)
Height:	6.6 in (167.6 mm) 7.8 in (198.1 mm) with large battery)
ANTENNA TYPE:	Threaded Helical wound rubber flex (standard) BNC Helical wound rubber flex (optional)
CHANNEL SPACING:	30 KHz
MAX CURRENT DRAIN:	
Transmit 5 watt:	1.4 amps
Receive:	165 mA
Receive standby:	45 mA (battery save off) 15 mA (battery save on)
FCC Identification number:	K95 LT 2002

TRANSMITTER

	<u>25/30 KHz</u>	<u>12.5/15 KHz</u>
RF OUTPUT - EPH 21:	1.5 W	1.5 W
RF OUTPUT - EPH 51 (Hi/Lo):	5/2 W	5/2 W
OPERATING FREQUENCY SPREAD	26 MHz	26 MHz
SPURIOUS AND HARMONICS:	60 dB	60 dB
FM HUM AND NOISE (per EIA):	43 dB	37 dB
AUDIO DISTORTION:	3%	3%
AUDIO RESPONSE:	+1 to -3 dB	+1 to -3 dB
MODULATION CHARACTERISTICS:	15KOF2D 16KOF3E 16KOFXE	

RECEIVER

	<u>25/30 KHz</u>	<u>12.5/15 KHz</u>
SENSITIVITY: 12dB SINAD	0.25 μ V	0.25 μ V
OPERATING FREQUENCY SPREAD	26 MHz	26 MHz
SELECTIVITY:	72 dB	60 dB
SPURIOUS, INCLUDING IMAGE:	75 dB	75 dB
INTERMODULATION:	70 dB	60 dB
AUDIO OUTPUT AT 5% DISTORTION:	500 mW	500 mW
AUDIO RESPONSE (PER EIA):	+1dB to -3 dB	+1dB to -3 dB

1.5 ACCESSORIES

A wide variety of optional accessories are available for the EPH hand held transceivers. Contact your BENDIX/KING dealer for complete information.

1.6 LICENSE REQUIREMENTS

This equipment must be licensed by the Federal Communications Commission (FCC) before it may be used. Your BENDIX/KING dealer can assist you in filing the appropriate application for the FCC, and will program each radio with your authorized frequencies and signaling codes.

1.7 SERVICE INFORMATION

If you need service, contact your BENDIX/KING dealer or any BENDIX/KING Mobile Communications dealer equipped to service your radio.

If you find it inconvenient to have service performed by your local dealer, you may contact BENDIX/KING at this address:

BK Radio, Inc.
2901 Lakeview Road, Suite 100
Lawrence, Kansas 66049
(913) 842-0402