

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

To: Holders of CMM 23-40-01 for Handset with Support Bracket, PNR ST3100 Series, PNR HC3100 Series

HIGHLIGHTS

CMM 23-40-01, REVISION 5, DEC 20/2006

Initial Issue Revision 4 pages which have been revised or added are outlined below together with a description of the change. Please remove and insert affected pages in accordance with the "List of Effective Pages".

PAGES	DESCRIPTION OF CHANGE
Highlights Page 1	Added to describe the Revision 5 of this CMM
Record of Revisions Page 1	Revised to indicate changed pages
List of Effective Pages Pages 1 - 4	Revised to indicate changed pages
List of Materials Page 1	Material specification added
Description and Operation Page 4	Revised to indicate new Handset
Testing and Fault Isolation Pages 101, 103, 104	Revised to indicate new voltage values
Repair Pages 602, 606, 607	Revised to indicate new material specification
Assembly Pages 701 - 702	List of Materials deleted and assembly procedure corrected
NI-Alpha Page 1004	Revised to reflect new Handset
Detailed Parts List, Figure 1 Pages 1001-2 - 1001-3	Revised to reflect not illustrated items
Detailed Parts List, Figure 1A Pages 1001A-3 - 1001A-4	Revised to reflect not illustrated items
Detailed Parts List, Figure 1B Pages 1001B-2 - 1001B-5	Revised to reflect new Handsets and parts and not illustrated items
Detailed Parts List, Figure 1C Pages 1001C-3	Revised to reflect not illustrated items
Detailed Parts List, Figure 1D Pages 1001D-1	Revised to reflect not illustrated items
Detailed Parts List, Figure 1E Pages 1001E-2	Revised to reflect new part number
Appendix Pages 1007/1008	Revised to reflect added Handset and new keyboard layout

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BECKER
AVIONIC SYSTEMS

NSCM: D2356

HANDSET with SUPPORT BRACKET

PART NUMBER

HANDSET	ST3100 SERIES
SUPPORT BRACKET	HC3100 SERIES

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

INITIAL ISSUE:
REVISION 5

23-40-01

DEC 20/2006

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RECORD OF REVISIONS

REV. NO.	ISSUE DATE	INSERTED		REV. NO.	ISSUE DATE	INSERTED	
		DATE	BY			DATE	BY
01	JUN 15/89						
02	NOV 15/98						
03	JUL 11/2000	JUL 11/2000	BECKER				
04	SEP 30/2005	SEP 30/2005	BECKER				
05	DEC 20/2006	DEC 20/2006	BECKER				

Retain this record in the front of the manual

On receipt of revisions, insert revised page in the manual and enter revision number, date and initials.

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RECORD OF TEMPORARY REVISIONS

TEMP REV	PAGE NUMBER	ISSUE DATE	BY	DATE REMOVED	BY

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SERVICE BULLETIN LIST

SERVICE BULLETIN NUMBER	MODIFICATION	INSERTION	
		DATE	BY
SB3100-23-1	REV.1	JUNE 15/89	BECKER
SB3100-23-2	REV.1	JUNE 15/89	BECKER
SB3100-23-3	REV.1	JUNE 15/89	BECKER
SB3100-23-4	DEC 10/93	NOV. 15/98	BECKER
SB3100-23-5	REV. 0	MAY 2005	BECKER

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	ROR-1	Dec 20/2006	5 Jul 11/2000
	ROR-2	blank	6 Jul 11/2000
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LIST OF MATERIALS

NOTE: Equivalent substitutes may be used instead of the listed items.

NOTE: For the supplier's name and address refer to chapter INTRODUCTION.

MATERIAL NO.	DESIGNATION AND SPECIFICATION	SUPPLIER'S CODE	USE					
			T E S T I N G	D I S A S S E M B L Y	C L E A N I N G	C H E C K	R E P A I R	A S S E M B L Y
VP7293	ADHESIVE (REPLACED BY ELASTOSIL A07)	WACKER					X	
ELASTOSIL A07	ADHESIVE	WACKER					X	
SICOMET 85	ADHESIVE	SICHEL					X	
CRN3/32BL	HEAT-SHRINK-SLEEVE	RAYCHEM					X	

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INTRODUCTION

1. GENERAL

This manual has been compiled in accordance with the requirements set out in the ATA specification 100. It is intended to provide such data as is necessary for an approved repair facility to return unserviceable handsets and support brackets to a serviceable condition.

2. MANUFACTURING

The handsets and support brackets are manufactured and product supported by:

BECKER Flugfunkwerk GmbH
Baden Airpark / Building B 108
D-77836 Rheinmuenster
GERMANY

Tel.: +49 (0) 7229/305-0
Fax: +49 (0) 7229/305-217
e-mail: support@becker-avionics.de

3. LAYOUT OF THE MANUAL

This manual contains a general description and operation followed by data for maintenance, repair, disassembly and assembly of the handsets and support brackets. This is followed by an Illustrated Parts List which gives detailed information.

4. REVISION SERVICE

This manual will be updated as required by revisions. Service Bulletins may be issued separately. Their effect on the manual will, however, be evident by reissue of the Service Bulletin List as appropriate.

5. SHOP VERIFICATION

The sections within this manual have been verified at the manufacturer, the disassembly, assembly and testing instructions by actually performing the functions covered in their respective sections.

6. LIST OF ABBREVIATIONS

AC	AIRCRAFT
ACC	ACCORDING
AF	AUDIO FREQUENCY
AMEND.	AMENDMENT
APPROX.	APPROXIMATELY
AR	AS REQUIRED
ARINC	AERONAUTICAL RADIO, INC.
ASSY	ASSEMBLY
BLK	BLACK
BLU	BLUE
BRN	BROWN
CCW	COUNTERCLOCKWISE
CG	CENTER OF GRAVITY
CM	CENTIMETER
CW	CLOCKWISE
DB	DECIBEL
DC	DIRECT CURRENT
DET	DETAIL
DTMF	DUAL TONE MULTI FREQUENCY
EFF	EFFECTIVE
FIG	FIGURE
GRN	GREEN
H	HOUR
HZ	HERTZ
IDENT	IDENTIFICATION
IN	INCH
INBD	INBOARD
INT	INTENTIONALLY
INTRO	INTRODUCTION
IPL	ILLUSTRATED PARTS LIST
KG	KILOGRAM
KHZ	KILOHERTZ
L	LITER
LH	LEFT HAND
LHR	LOW HEAT RELEASE
M	METER
MEK	METHYL-ETHYL-KETONE
MGW	MAXIMUM GROSS WEIGHT
MISCL	MISCELLANEOUS
MM	MILLIMETER
MTBF	MEAN TIME BETWEEN FAILURE
MV	MILLIVOLT

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NHA	NEXT HIGHER ASSEMBLY
NO.	NUMBER
NP	NOT PROCURABLE
NSCM	NATO SUPPLY CODE OF MANUFACTURERS
ORG	ORANGE
OUTBD	OUTBOARD
PA	PASSENGER ADDRESS
PC	POLY-CARBONATE
PNR	PART NUMBER
PTT	PUSH-TO-TALK
PU	POLY-URETHAN
PVC	POLY-VENYL-CHLORIDE
PVF	POLY-VINYL-FOAM
RF	REFERENCE
REQ	REQUIRED
RH	RIGHT HAND
RMS	ROOT MEAN SQUARE (EFFECTIVE)
SPL	SOUND PRESSURE LEVEL
TTL	TOTAL
V	VOLTS
VIO	VIOLET

7. LIST OF VENDORS

NSCM	VENDOR NAME AND ADDRESS
D2650	WACKER CHEMIE GMBH HANNES-SEIDEL-PLATZ 4 81737 MUENCHEN GERMANY
D2065	SICHEL WERKE GMBH SICHELSTRASSE 1 30453 HANNOVER GERMANY
D2167	LOCTITE DEUTSCHLAND ARABELLASTRASSE 17 81925 MUENCHEN GERMANY
D1973	RAYCHEM GMBH HAIDGRABEN 6 85521 OTTOBRUNN GERMANY

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DESCRIPTION AND OPERATION

1. GENERAL

The handsets are part of the aircraft intercommunication system, facilitating intercommunication within the aircraft and passenger address announcements.

2. AVAILABLE TYPES, VARIANTS

The following table lists the various types of handsets and support brackets. The dimensions are the same for all types / variants.

DESIGNATION	HANDSET	SUPPORT BRACKET	REMARK
Type A1	ST3100-20-01	HC3100-20-02 (replaced by HC3100-21-10)	Standard cabin handset, beige eritrea (cable beige eritrea or black)
Type A2	ST3100-20-02	HC3100-20-03	Optional cabin handset, soft grey (cable black)
Type B	ST3100-30-01	HC3100-20-01 (replaced by HC3100-33-10)	Standard cockpit handset, black (cable black)
Type C1	ST3100-21-10	HC3100-21-10	New standard cabin handset, beige eritrea (cable beige)
Type C2	ST3100-22-10	HC3100-22-10	New optional cabin handset, soft grey (cable black)
Type C3	ST3100-23-10	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
Type C4	ST3100-21-11	HC3100-21-10	New Handset, same as type C1 but different colour of "EMER CALL" key cap
Type D	ST3100-33-10	HC3100-33-10	New standard cockpit handset, black (cable black)
Type E	ST3100-24-20	HC3100-33-10	Optional cockpit handset, black (cable black)
Type F	ST3100-24-21	HC3100-33-10	Optional cockpit handset, black (cable black)
Type G0	ST3100-24-15	HC3100-33-10	Optional cabin handset, black (cable black)
Type G1	ST3100-21-15	HC3100-21-10	Optional cabin handset, beige eritrea (cable beige eritrea)
Type G3	ST3100-23-15	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
Type H0	ST3100-24-16	HC3100-33-10	Optional cabin handset, black (cable black)
Type H1	ST3100-21-16	HC3100-21-10	Optional cabin handset, beige eritrea (cable beige eritrea)

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DESIGNATION	HANDSET	SUPPORT BRACKET	REMARK
Type H3	ST3100-23-16	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
Type J0	ST3100-24-17	HC3100-33-10	Optional cabin handset, black (cable black)
Type J1	ST3100-21-17	HC3100-21-10	Optional cabin handset, beige eritrea (cable beige eritrea)
Type J3	ST3100-23-17	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
Type K1	ST3100-21-18	HC3100-21-10	Optional cabin handset, beige eritrea (cable beige eritrea)
Type K2	ST3100-22-18	HC3100-22-10	Optional cabin handset, soft grey (cable black)
Type K3	ST3100-23-18	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
Type L1	ST3100-21-12	HC3100-21-10	Optional cabin handset, beige eritrea (cable beige eritrea)
Type L2	ST3100-22-12	HC3100-22-10	Optional cabin handset, soft grey (cable black)
Type L3	ST3100-23-12	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
Type L4	ST3100-21-13	HC3100-21-10	Optional cabin handset, beige eritrea (cable beige eritrea) same as type L1 but different color of "EMER CALL" key cap
Type M	ST3100-23-19	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
Type N1	ST3100-21-14	HC3100-21-10	Optional cabin handset, beige eritrea (cable beige eritrea)
Type N2	ST3100-22-14	HC3100-22-10	Optional cabin handset, soft grey (cable black)
Type N3	ST3100-23-14	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
Type O	ST3100-23-20	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
Type P1	ST3100-21-21	HC3100-21-10	Optional cabin handset, beige eritrea (cable beige eritrea)
Type P2	ST3100-22-21	HC3100-22-10	Optional cabin handset, soft grey (cable black)
Type P3	ST3100-23-21	HC3100-23-10	Optional cabin handset, pepperdust (cable black)

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DESIGNATION	HANDSET	SUPPORT BRACKET	REMARK
Type Q1	ST3100-21-22	HC3100-21-10	Optional cabin handset, beige eritrea (cable beige eritrea)
Type Q2	ST3100-22-22	HC3100-22-10	Optional cabin handset, soft grey (cable black)
Type Q3	ST3100-23-22	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
	ST3100-21-25	HC3100-21-10	Optional cabin handset, eritrea-beige (cable beige)
	ST3100-21-28	HC3100-21-10	Optional cabin handset, eritrea-beige (cable beige)
	ST3100-21-30	HC3100-21-10	Optional cabin handset, eritrea-beige (cable beige)
	ST3100-21-31	HC3100-21-10	Optional cabin handset, eritrea-beige (cable beige)
	ST3100-21-32	HC3100-21-10	Optional cabin handset, eritrea-beige (cable beige)
	ST3100-22-24	HC3100-22-10	Optional cabin handset, soft grey (cable black)
	ST3100-22-26	HC3100-22-10	Optional cabin handset, soft grey (cable black)
	ST3100-22-28	HC3100-22-10	Optional cabin handset, soft grey (cable black)
	ST3100-22-30	HC3100-22-10	Optional cabin handset, soft grey (cable black)
	ST3100-22-31	HC3100-22-10	Optional cabin handset, soft grey (cable black)
	ST3100-22-32	HC3100-22-10	Optional cabin handset, soft grey (cable black)
	ST3100-23-23	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
	ST3100-23-24	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
	ST3100-23-26	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
	ST3100-23-27	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
	ST3100-23-28	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
	ST3100-23-29	HC3100-23-10	Optional cabin handset, pepperdust (cable black)

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DESIGNATION	HANDSET	SUPPORT BRACKET	REMARK
	ST3100-23-30	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
	ST3100-23-31	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
	ST3100-23-32	HC3100-23-10	Optional cabin handset, pepperdust (cable black)
	ST3100-25-32	HC3100-25-10	Optional cabin handset, foggy (cable black)
	ST3100-26-18	HC3100-23-10	Optional cabin handset, pepperdust (cable pepperdust)
	ST3100-26-32	HC3100-23-10	Optional cabin handset, pepperdust (cable pepperdust)
	ST3100-26-33	HC3100-23-10	Optional cabin handset, pepperdust (cable pepperdust)
	ST3100-27-12	HC3100-25-10	Optional cabin handset, foggy (cable foggy)
	ST3100-27-32	HC3100-25-10	Optional cabin handset, foggy (cable foggy)
	ST3100-27-37	HC3100-25-10	Optional cabin handset, foggy (cable foggy)
	ST3100-28-35	HC3100-33-10	Optional cabin handset, black (cable tarnishead black)
	ST3100-28-36	HC3100-33-10	Optional cabin handset, black (cable tarnishead black)
	ST3100-28-38	HC3100-33-10	Optional cabin handset, black (cable tarnishead black)

UNIT TYPES
Table 1

3. DESCRIPTION

A. Mechanical description

- (1) A handset unit comprises the handset and the support bracket. These two parts are connected together by a coiled cable.
- (2) The support bracket is made of polycarbonate and contains the unit connector and two permanent magnets for activating the ON/OFF reed switch. Two mechanical detents are also provided for the handset.
- (3) The handset itself comprises two polycarbonate casing halves and contains a mike capsule, a phone capsule, the key board with the key board circuit board beneath and the generator/amplifier board. The key board and the generator/amplifier board are plugged in one above the other.

B. Electrical description

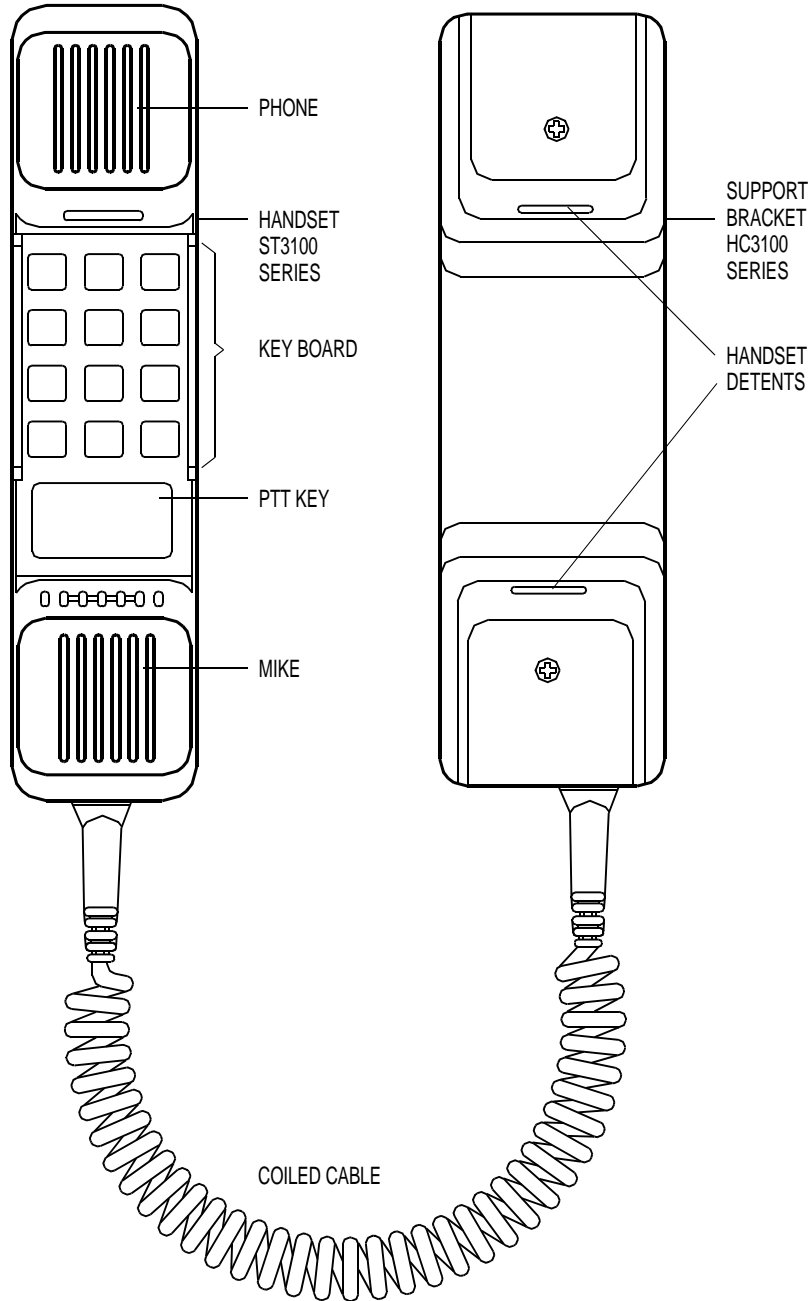
- (1) The cabin handset type can be used for telephonic communication within the aircraft and also for PA announcements in the cabin. The cockpit handset type is intended for PA announcements only. The units work in the AF frequency range between 200 Hz and 6 kHz.
- (2) Microphone amplifier
The microphone amplifier amplifies the microphone signal to 400 mV. A bandpass limits the frequency range between 200 Hz and 6 kHz with the microphone connected.
- (3) Key board
The cabin handset type is equipped with a key board having 6, 9 or 12 dialling push-buttons. The PA button stands somewhat higher than the others and is thus easily located. The cockpit handset type has no key board but a push-to-talk (PTT) button only.
- (4) Dual tone multifrequency code generator
When a dialling button is pressed, the DTMF generator generates the appropriate dual-tone frequency that is transmitted by way of the AF amplifier to the AF output of the unit.
- (5) Muting switch
Whenever a dialling push-button is pressed, the microphone signal to the AF output of the unit is muted.
- (6) AF amplifier
The AF amplifier amplifies the microphone signal and the various dual tone frequencies. The signals are decoupled by way of the same AF output.
- (7) ON/OFF switch
When the handset is placed in the support bracket, a reed switch disconnects the AF output and the power supply to the unit.
- (8) Power supply
The handset works with a nominal 12 V DC power supply.

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

(9) The following initial letters are used to identify the various components:

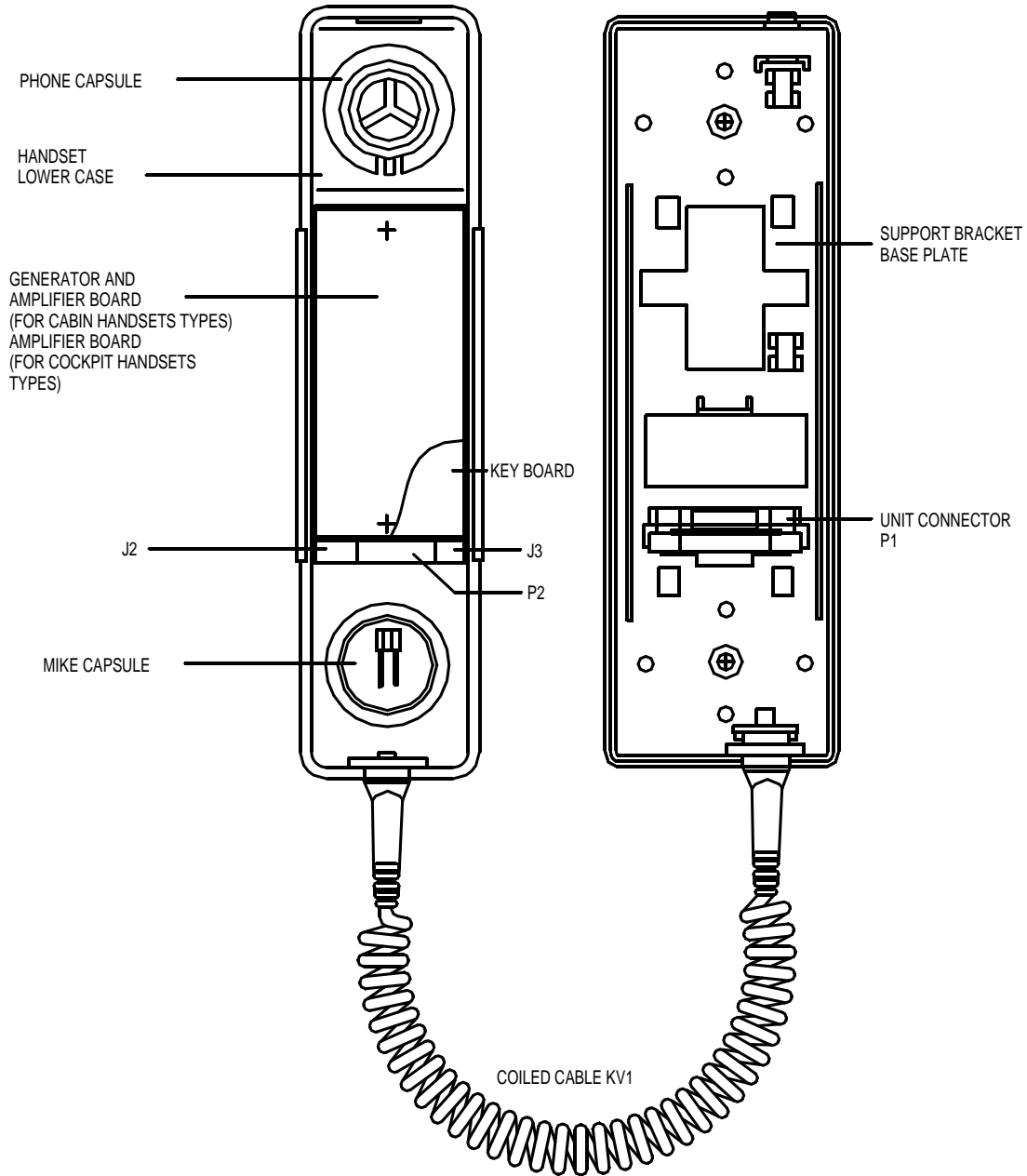
BR	Jumper
C	Capacitor
D	Diode
IC	Integrated circuit
J	Jack (female connector)
KV	Cable
MC	Mike capsule
P	Plug (male connector)
PC	Phone capsule (earphone)
Q	Crystal
R	Resistor
S	Switch or push-button
T	Transistor
TP	Test point

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



HANDSET AND SUPPORT BRACKET
FIGURE 1

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



COMPONENT ILLUSTRATIONS
FIGURE 2

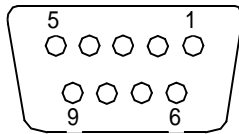
COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

P 1 PIN	UNIT CONNECTOR FUNCTION
1	PHONE AUDIO INPUT (HI)
2	PHONE AUDIO INPUT (LO)
3	SHIELD FOR PIN 4 AND 5 (NOT USED WITHIN HANDSET)
4	MIKE AND DTMF AUDIO OUTPUT AND SUPPLY VOLTAGE INPUT (HI)
5	MIKE AND DTMF AUDIO OUTPUT AND SUPPLY VOLTAGE INPUT (LO)
6	PTT KEY LINE (HI)
7	PTT KEY LINE (LO)
8	NOT USED
9	NOT USED
P 2 PIN	MODULE CONNECTOR FUNCTION
1	NOT USED
2	MIKE (HI)
3	MIKE (LO)
4	PTT KEY (HI)
5	PTT KEY (LO)
6	PHONE (HI)
7	PHONE (LO)

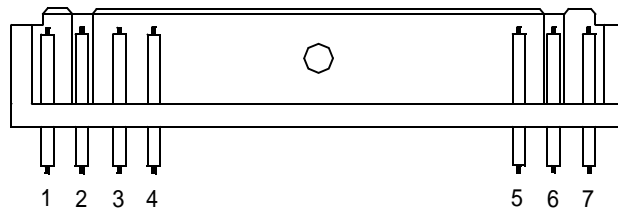
CONNECTOR PIN FUNCTIONS
Table 2

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

CONNECTOR WIRING SIDE



P1



P2

CONNECTOR PIN LOCATIONS
FIGURE 3

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

C. Description of the functional block diagram (Ref. Fig. 4)

(1) Microphone amplifier

The AF signal from the mike capsule is amplified in the mike preamplifier and then passed to an AF bandpass filter. The AF bandpass comprises of a high-pass filter and a low-pass filter that limit the frequency range to between 200 Hz and 6 kHz (inclusive microphone). The AF signal is then passed through the closed muting switch to a further amplification stage. The microphone output voltage can be adjusted by an adjustable resistor. When the handset is removed from the bracket, the amplified microphone signal is transmitted from the output of the amplification stage through the reed switch to the AF output of the unit.

(2) Push-button circuit

The 6, 9 or 12 buttons on the cabin handset types are connected to a DTMF generator. The DTMF generator generates max. 12 dual tone frequency combinations appropriate to each of the up to 12 keys. The output frequency from the generator pass through the AF amplifier and the reed switch to the AF output of the unit. Whenever a dialing button is pressed, the microphone signal is interrupted by the muting switch.

(3) Earphone input for Handset types A1, A2 and B only

The AF input signal coming from the unit connector passes through an adjustable resistor directly to the phone capsule. The sensitivity of the AF input can be adjusted by means of the adjustable resistor.

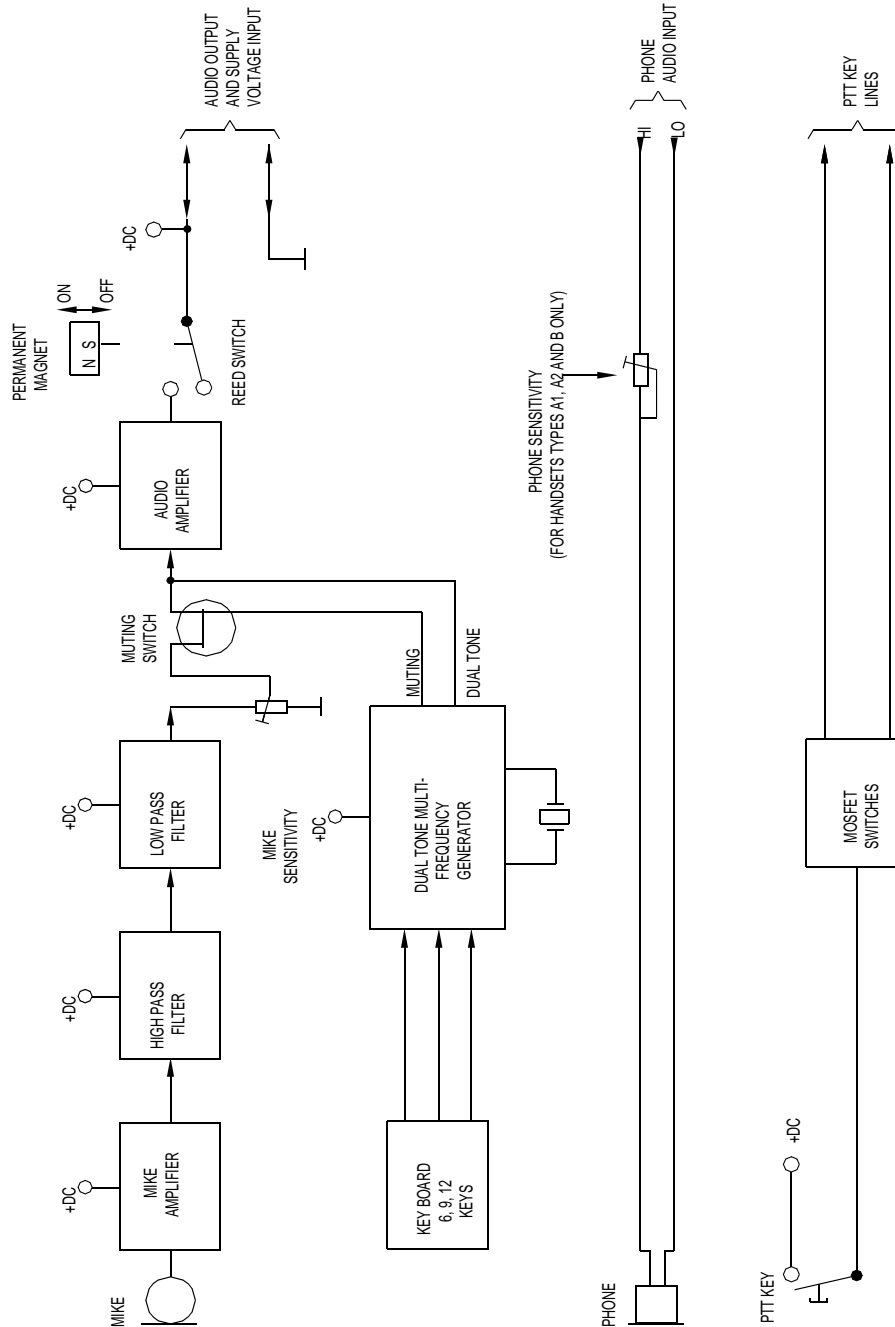
(4) Earphone input for all other Handset types

The AF input signal goes from the unit connector directly to the phone capsule.

(5) Push-to-talk (PTT) key

The PTT key acts on a MOSFET switching stage that closes the keying circuit.

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



BLOCK DIAGRAM FOR CABIN AND COCKPIT HANDSET TYPES
FIGURE 4

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

D. Description of the circuit diagrams (Ref. Fig. 8)

(1) Mike preamplifier

The mike signal from the mike capsule MC1 passes through C2 to the base of the prestage T1. This prestage works in an emitter circuit and amplifies the microphone input signal. The amplifier AF signal is decoupled by C5 and passed to the bandpass IC1. IC1a is an active high-pass filter whose frequency determining components are R6, R7, C5, C6 and C7. Then follows the IC1b as the active low-pass filter whose frequency determining components are C10, C11, R12, R13 and R14. The cut-off frequency of the high-pass is 200Hz and that of the low-pass 6kHz.

On leaving the bandpass, the AF signal passes through R20 to the muting switch T2. The output voltage of the microphone amplifier can be adjusted by means of R20. The FET T2 is conductive as long as none of the buttons S1 to S12 is pressed. T3 further amplifies the microphone signal to the final output voltage.

When the handset is removed from the support bracket, the amplified microphone signal finally passes through the closed reed switch S15 to the AF output P2-2.

From the module connector P2-2, the AF output passes through the socket connection J2 to the unit connector P1-4.

(2) Dual tone multifrequency generator (DTMF) for cabin handsets only (Ref. Table 3)

The max. 12 keys are arranged and wired in 4 rows and 3 columns with 7 connections being made to the DTMF generator IC2. When the dialling buttons are pressed, the crystal-controlled generator provides one of the listed dual tone frequency combinations to pin3.

The signal concerned is decoupled by C19 and passes through R24 to the input of the amplifier stage T3. To avoid oscillation in the amplifier stage, feedback is effected by C16. The signal then passes through T3 and the reed switch S15 to the AF output of the unit. When any of the keys S1 to S12 are pressed, the microphone signal is muted. In this case pin 24 of the DTMF generator is feeding a Hi-signal to the FET switch T2.

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

BUTTON	FREQUENCY 1	FREQUENCY 2
1	697HZ	1209HZ
2	697HZ	1336HZ
3	697HZ	1477HZ
4	770HZ	1209HZ
5	770HZ	1336HZ
6	770HZ	1477HZ
7	852HZ	1209HZ
8	852HZ	1336HZ
9	852HZ	1477HZ
10	941HZ	1209HZ
11	941HZ	1336HZ
12	941HZ	1477HZ

DUAL TONE FREQUENCY COMBINATIONS

Table 3

(3) Power supply

The AF output of the unit is also the power supply input. From pin 4 of the unit connector P1, the power supply voltage passes through the plug and socket connection J2 - P2 to the reed switch S15. The zener diode D1 protects the unit from excessive voltage peaks on the power supply line. The operating voltage for the DTMF generator is stabilized by D2 to 5 V and filtered by C18.

(4) Earphone input for handset types A1, A2 and B only

The phone capsule PC1 is connected directly to the AF input of the unit through the adjustable resistor R26. R26 facilitates adjusting the sensitivity of the AF input. C27 linearizes the earphone frequency response. R27 limits the range of adjustment of R26. The component pins P2-6 and P2-7 are connected through the socket connection J3 with unit connector pins P1-1 and P1-2.

(5) Earphone input for all other handset types

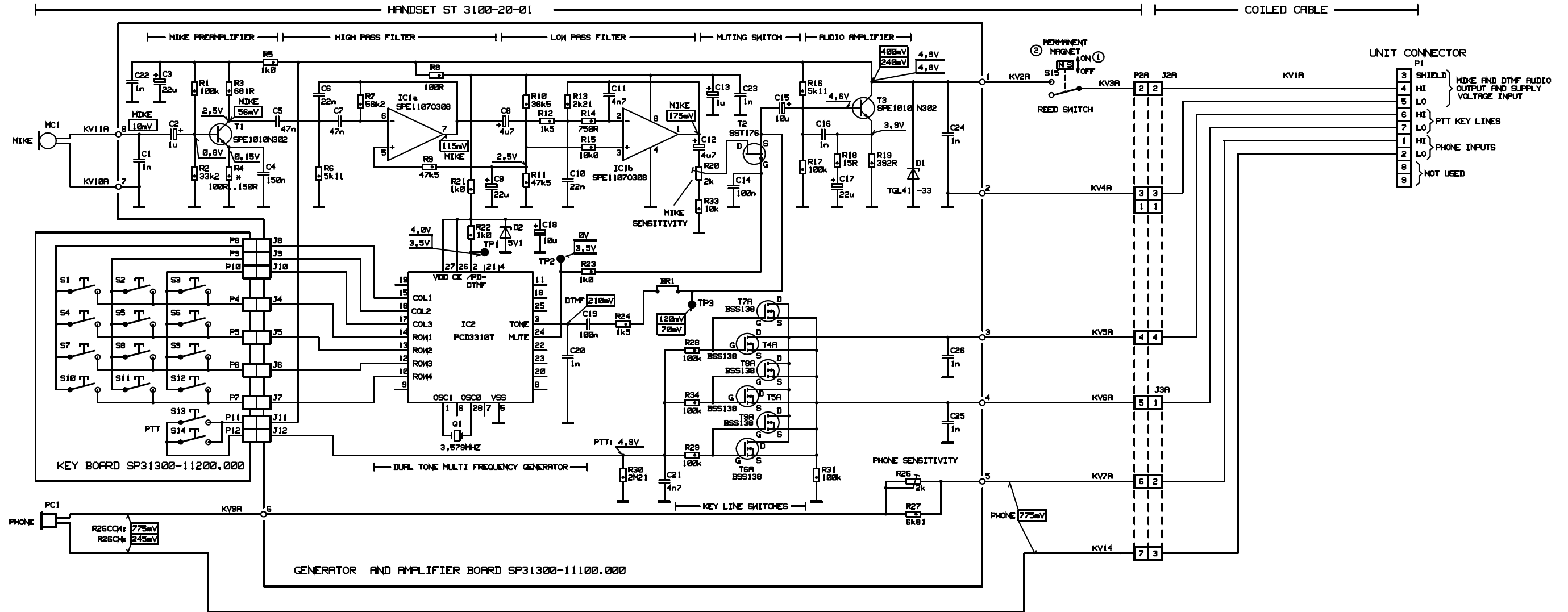
The phone capsule PC1 is connected directly to the AF input of the unit. C27 linearizes the earphone frequency response. The component pins P2-6 and P2-7 are connected through the socket connection pins P1-1 and P1-2.

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

(6) Push-to-talk key (PTT)

When the PTT key S13 / S14 is pressed, the internal operating voltage is applied through R28, R29 and R34 to the parallel connected MOSFETS T4 to T9. A positive voltage applied to the gate makes the MOSFETS conductive. The passage between the drain and source of the MOSFET exhibits a low resistance and connects the key lines of component pins P2-4 and P2-5 to one another. The component pins are connected through the socket connection with the key line contacts P1-6 and P1-7 of the unit connector.

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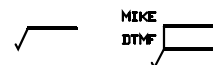


NOTES:

- = METALLIZED RESISTOR
- * = SELECTED COMPONENT
- ① DRAWN SWITCH POSITION: HANDSET IS HOOKED ON.
- ② CONTAINED IN SUPPORT BRACKET



ALL AC VOLTAGE LEVELS MEASURED WITH AN AF MILLIVOLTMETER
R IN $\geq 100k\Omega$ AT V IN = 10mV, R LOAD = 150 Ω DECOUPLED VIA 47 μ F.
R28 ADJUSTED TO V OUT = 400mV, TOLERANCES $\pm 1\%$.

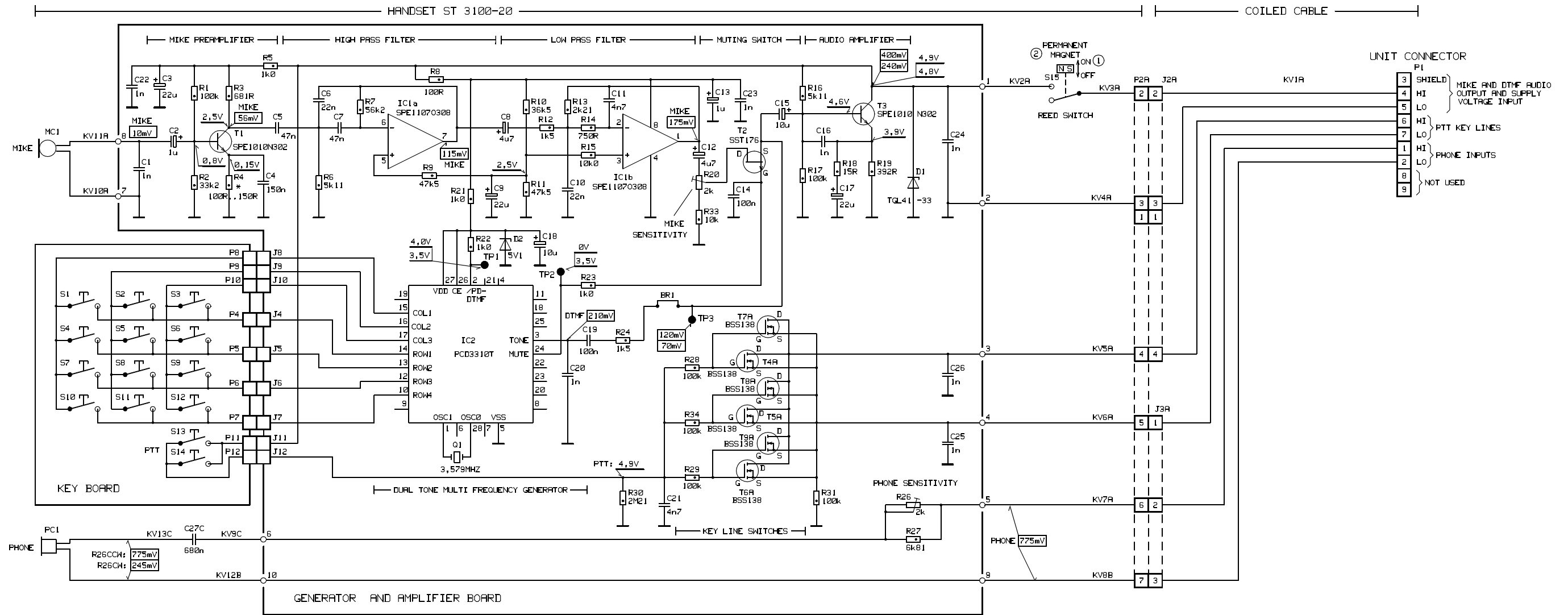


ALL DC VOLTAGE LEVELS MEASURED WITH A MULTIMETER
R IN $> 1M\Omega$ AT SUPPLY VOLTAGE = +12V VIA 470R; TOLERANCES $\pm 1\%$.

THE CIRCUIT DIAGRAM IS VALID FOR THE FOLLOWING CABIN HANDSETS:

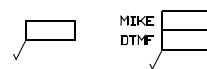
- ST3100-20-01
 - ST3100-20-02
- FOR GENERATOR AND AMPLIFIER BOARD WITH INDEX A

CIRCUIT DIAGRAM FOR CABIN HANDSET TYPES (INDEX A)
FIGURE 5

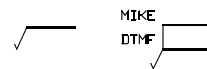


NOTES:

- ⊞ = METALLIZED RESISTOR
- * = SELECTED COMPONENT
- ① DRAWN SWITCH POSITION: HANDSET IS HOOKED ON.
- ② CONTAINED IN SUPPORT BRACKET



ALL AC VOLTAGE LEVELS MEASURED WITH AN AF MILLIVOLTMETER
R IN $\geq 100k\Omega$ AT V IN = 10mV, R LOAD = 150 Ω DECOUPLED VIA 47 μ F.
R20 ADJUSTED TO V OUT = 400mV. TOLERANCES $\pm 15\%$.

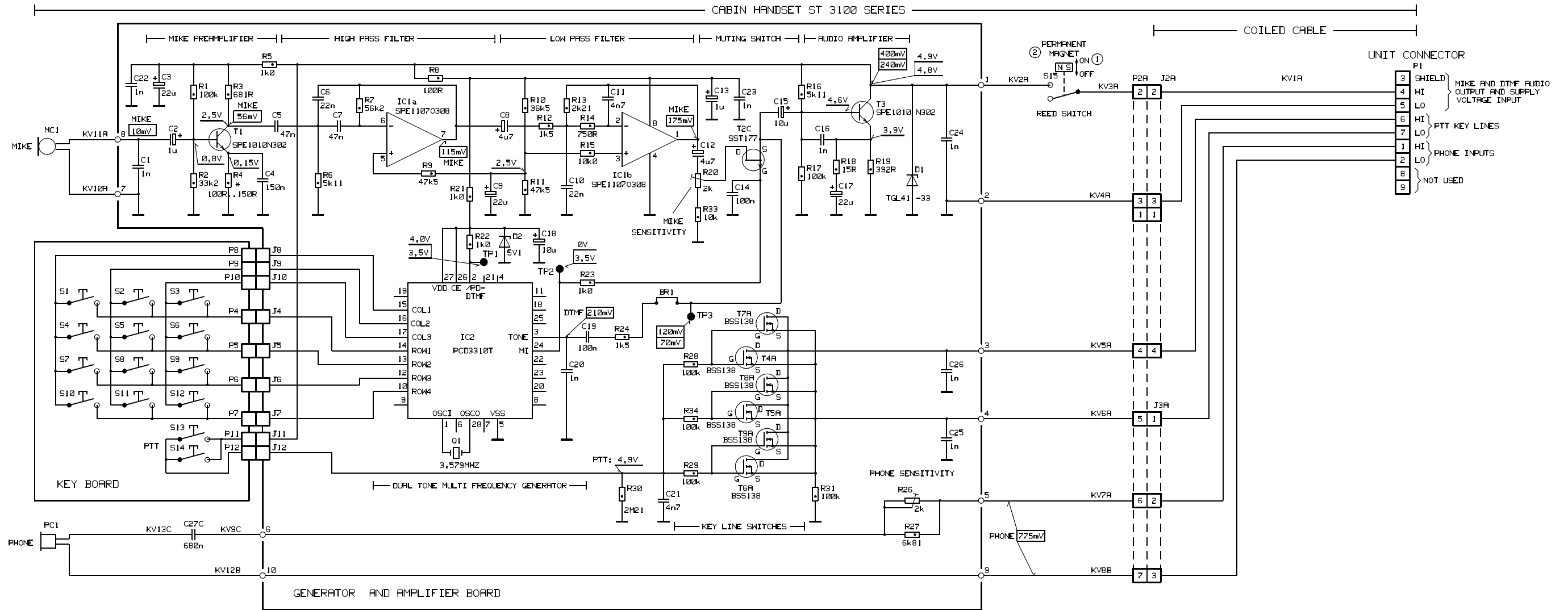


ALL DC VOLTAGE LEVELS MEASURED WITH A MULTIMETER
R IN $> 1M\Omega$ AT SUPPLY VOLTAGE = +12V VIA 470 Ω ; TOLERANCES $\pm 15\%$.

THE CIRCUIT DIAGRAM IS VALID FOR THE FOLLOWING CABIN HANDSETS:

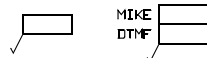
- ST3100-20-01
 - ST3100-20-02
- FOR GENERATOR AND AMPLIFIER BOARD WITH INDEX B

CIRCUIT DIAGRAM FOR CABIN HANDSET TYPES (INDEX B)
FIGURE 6



NOTES:

- = METAL FILM RESISTOR
- * = SELECTED COMPONENT
- ① DRAWN SWITCH POSITION: HANDSET IS HOOKED ON.
- ② CONTAINED IN SUPPORT BRACKET



ALL AC VOLTAGE LEVELS MEASURED WITH AN AF MILLIVOLTMETER
R IN 210kΩ AT V IN = 10mV, R LOAD = 150Ω DECOUPLED VIA 47μF.
R20 ADJUSTED TO V OUT = 400mV, TOLERANCES ±15%.

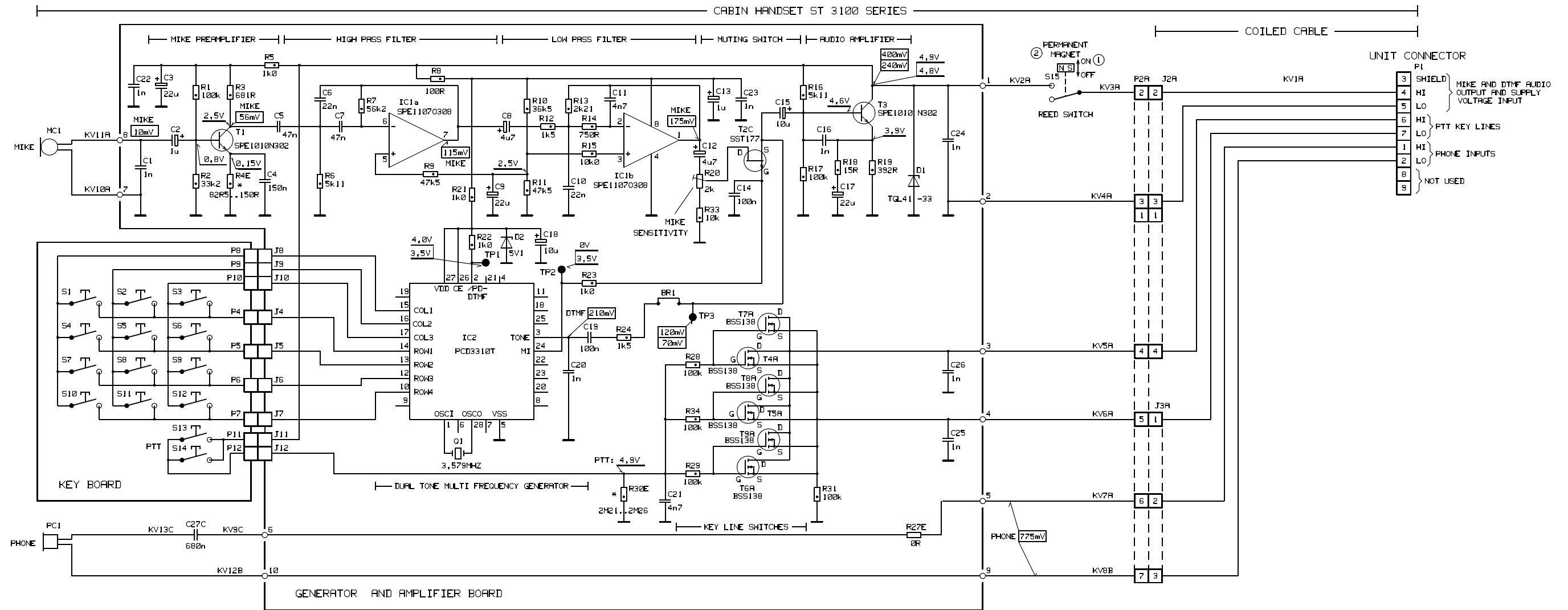


ALL DC VOLTAGE LEVELS MEASURED WITH A MULTIMETER
R IN > 1MΩ AT SUPPLY VOLTAGE = +12V VIA 470R; TOLERANCES ±15%.

THE CIRCUIT DIAGRAM IS VALID FOR
THE FOLLOWING CABIN HANDSETS:

- ST3100-20-01
 - ST3100-20-02
- } FOR GENERATOR AND AMPLIFIER
BOARD WITH INDEX C AND D

CIRCUIT DIAGRAM FOR CABIN HANDSET TYPES (INDEX C AND D)
FIGURE 7



NOTES:

—□— = METAL FILM RESISTOR

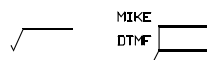
* = SELECTED COMPONENT

① DRAWN SWITCH POSITION: HANDSET IS HOOKED ON.

② CONTAINED IN SUPPORT BRACKET



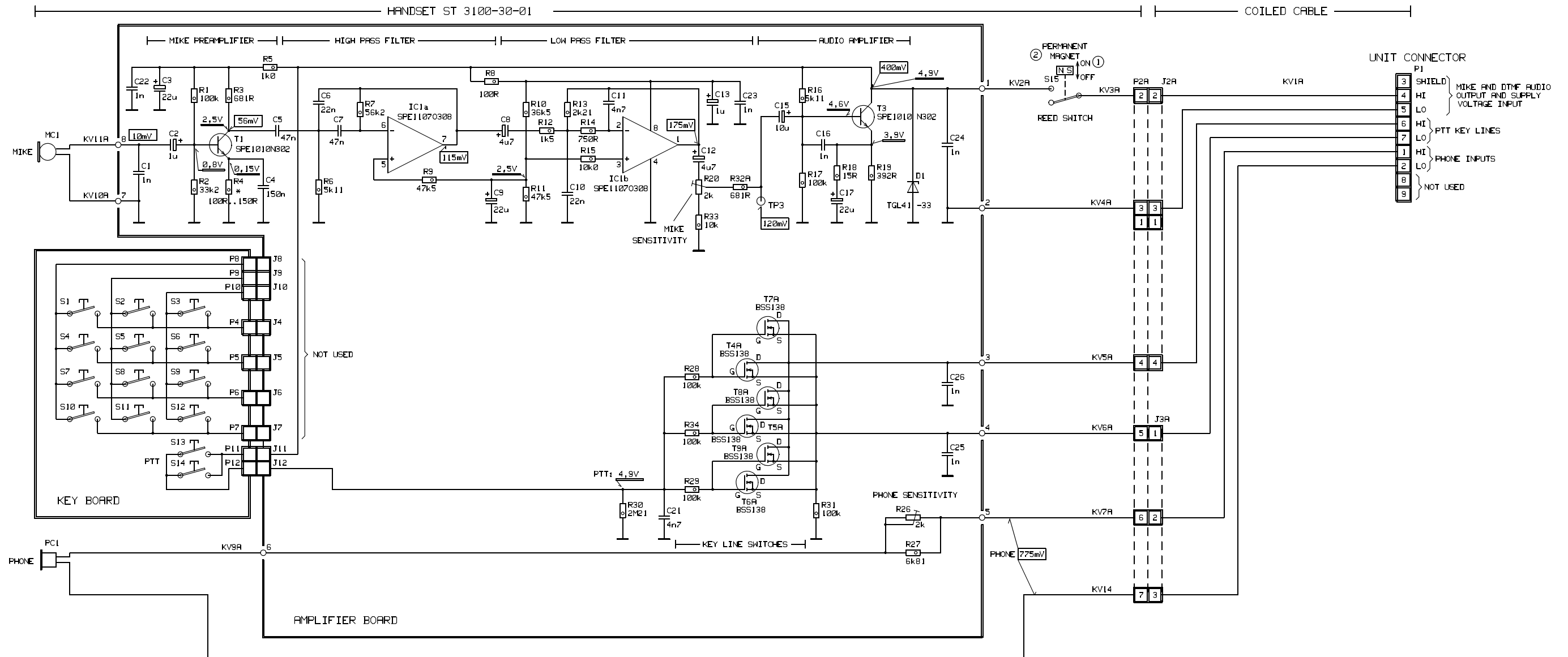
ALL AC VOLTAGE LEVELS MEASURED WITH AN AF MILLIVOLTMETER
R IN 2100Ω AT V IN = 10mV, R LOAD = 150Ω, DECOUPLED VIA 47μF.
R20 ADJUSTED TO V OUT = 400mV, TOLERANCES ±15%.



ALL DC VOLTAGE LEVELS MEASURED WITH A MULTIMETER
R IN > 1MΩ AT SUPPLY VOLTAGE = +12V VIA 470R; TOLERANCES ±15%.

THE CIRCUIT DIAGRAM IS VALID FOR
THE CABIN HANDSETS WITH GENERATOR
AND AMPLIFIER BOARD WITH INDEX E

CIRCUIT DIAGRAM FOR CABIN HANDSET TYPES (INDEX E)
FIGURE 8



NOTES:

- ⊖ = METALLIZED RESISTOR
- * = SELECTED COMPONENT
- ① DRAWN SWITCH POSITION; HANDSET IS HOOKED ON.
- ② CONTAINED IN SUPPORT BRACKET

ALL AC VOLTAGE LEVELS MEASURED WITH AN AF MILLIVOLTMETER
R IN 2100kΩ AT V IN = 10mV, R LOAD = 150Ω DECOUPLED VIA 47uF.
R20 ADJUSTED TO V OUT = 400mV. TOLERANCES ±15%.

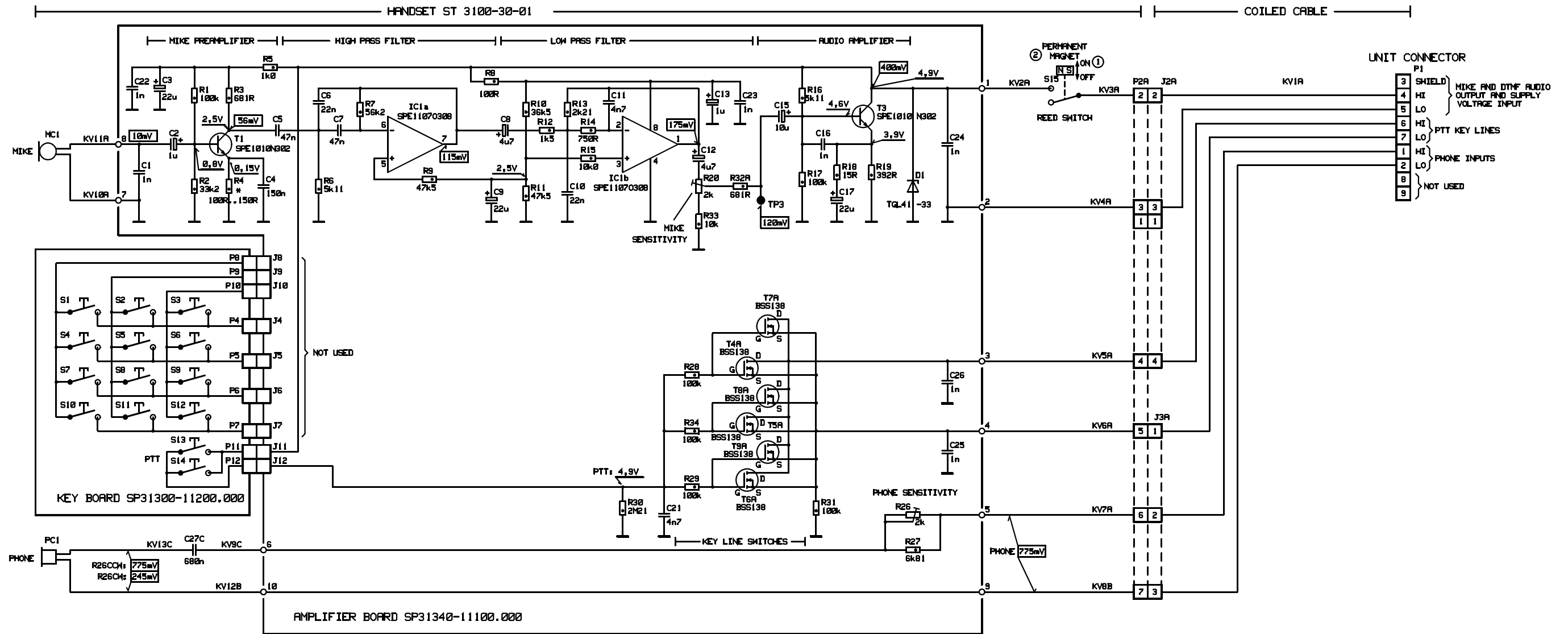
ALL DC VOLTAGE LEVELS MEASURED WITH A MULTIMETER
R IN >1MΩ AT SUPPLY VOLTAGE = +12V VIA 470R; TOLERANCES ±15%.

THE CIRCUIT DIAGRAM IS VALID FOR THE FOLLOWING COCKPIT HANDSETS:

TYPE B ST3100-30-01

FOR AMPLIFIER BOARD WITH INDEX A

CIRCUIT DIAGRAM FOR COCKPIT HANDSET TYPES (INDEX A)
FIGURE 9



NOTES:

- ▬ = METALLIZED RESISTOR
- * = SELECTED COMPONENT

- ① DRAWN SWITCH POSITION: HANDSET IS HOOKED ON.
- ② CONTAINED IN SUPPORT BRACKET



ALL AC VOLTAGE LEVELS MEASURED WITH AN AF MILLIVOLTMETER
R IN $\geq 100k\Omega$ AT V IN = 10mV, R LOAD = 150 Ω DECOUPLED VIA 47 μ F.
R20 ADJUSTED TO V OUT = 400mV. TOLERANCES $\pm 1\%$.

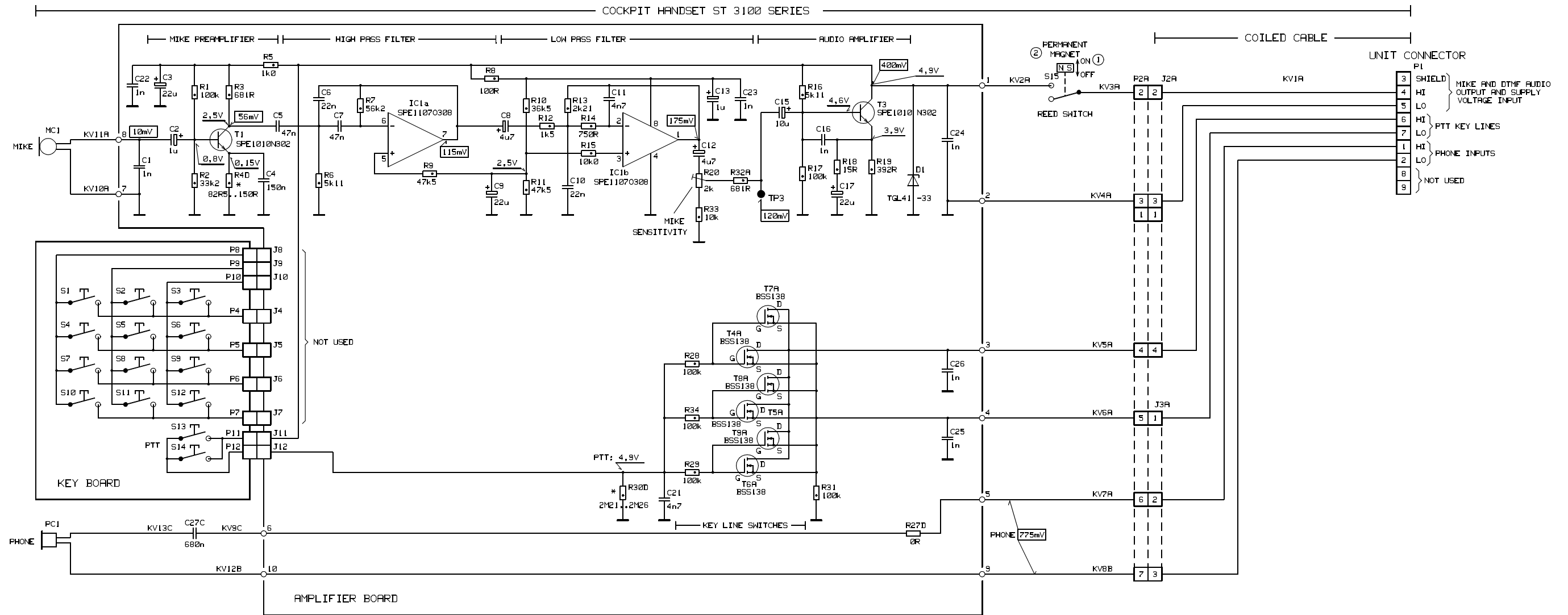


ALL DC VOLTAGE LEVELS MEASURED WITH A MULTIMETER
R IN $> 1M\Omega$ AT SUPPLY VOLTAGE = +12V VIA 470R; TOLERANCES $\pm 1\%$.

THE CIRCUIT DIAGRAM IS VALID FOR THE FOLLOWING COCKPIT HANDSETS:

ST3100-30-01 FOR AMPLIFIER BOARD WITH INDEX B AND C

CIRCUIT DIAGRAM FOR COCKPIT HANDSET TYPES (INDEX B AND C)
FIGURE 10



NOTES:

- = METAL FILM RESISTOR
- * = SELECTED COMPONENT

- ① DRAWN SWITCH POSITION: HANDSET IS HOOKED ON.
- ② CONTAINED IN SUPPORT BRACKET



ALL AC VOLTAGE LEVELS MEASURED WITH AN AF MILLIVOLTMETER
R IN 2100kΩ AT V IN = 10mV, R LOAD = 150Ω DECOUPLED VIA 47μF.
R20 ADJUSTED TO V OUT = 400mV. TOLERANCES ±15%.

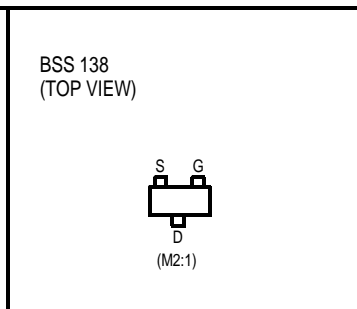
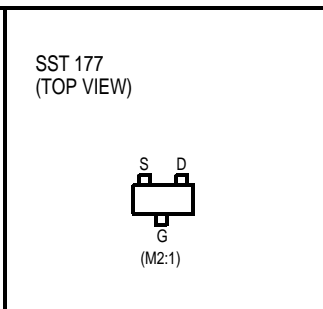
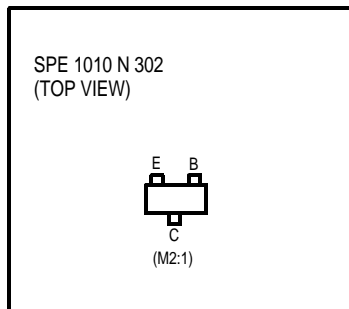
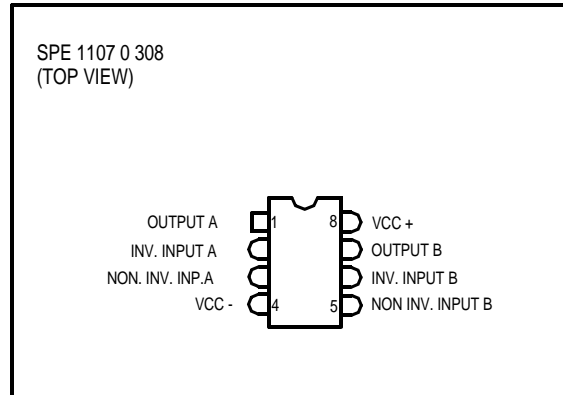
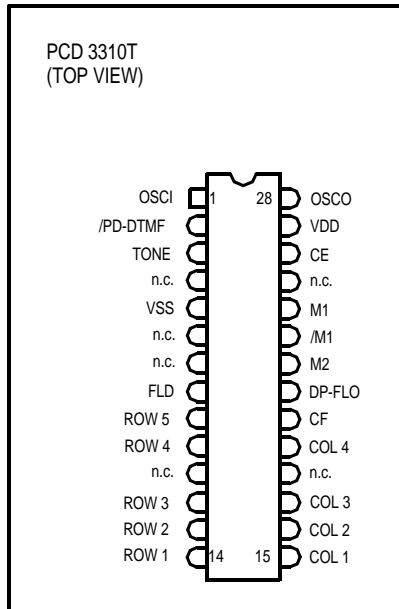


ALL DC VOLTAGE LEVELS MEASURED WITH A MULTIMETER
R IN >1MΩ AT SUPPLY VOLTAGE = +12V VIA 470R. TOLERANCES ±15%.

THE CIRCUIT DIAGRAM IS VALID FOR
THE COCKPIT HANDSETS WITH
AMPLIFIER BOARD WITH INDEX D

CIRCUIT DIAGRAM FOR COCKPIT HANDSET TYPES (INDEX D)
FIGURE 11

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



IC AND TRANSISTOR LEAD CONFIGURATION DIAGRAMS
FIGURE 12

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

E. Description of integrated circuits

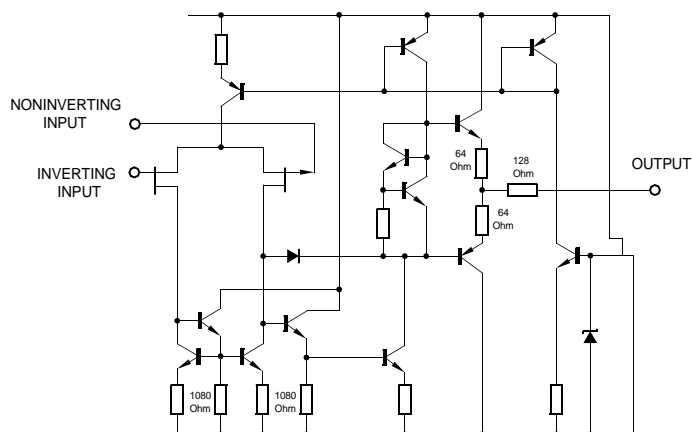
The following ICs are fitted in the handsets:

- (1) SPE 1107 O 308 (Ref. Fig. 12 and 13)

LOW NOISE JFET-INPUT DUAL OPERATIONAL AMPLIFIERS

The SPE 1107 O 308 JFET-input operational amplifiers are designed to offer low noise high slew-rate, low input bias and offset current, and low offset voltage temperature coefficient. Each JFET-input operational amplifier incorporates well-matched, high voltage JFET and bipolar transistors in a monolithic integrated circuit.

SCHEMATIC DIAGRAM
(one section)



SCHEMATIC DIAGRAM OF THE INTEGRATED CIRCUIT
SPE 1107 O 308
FIGURE 13

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

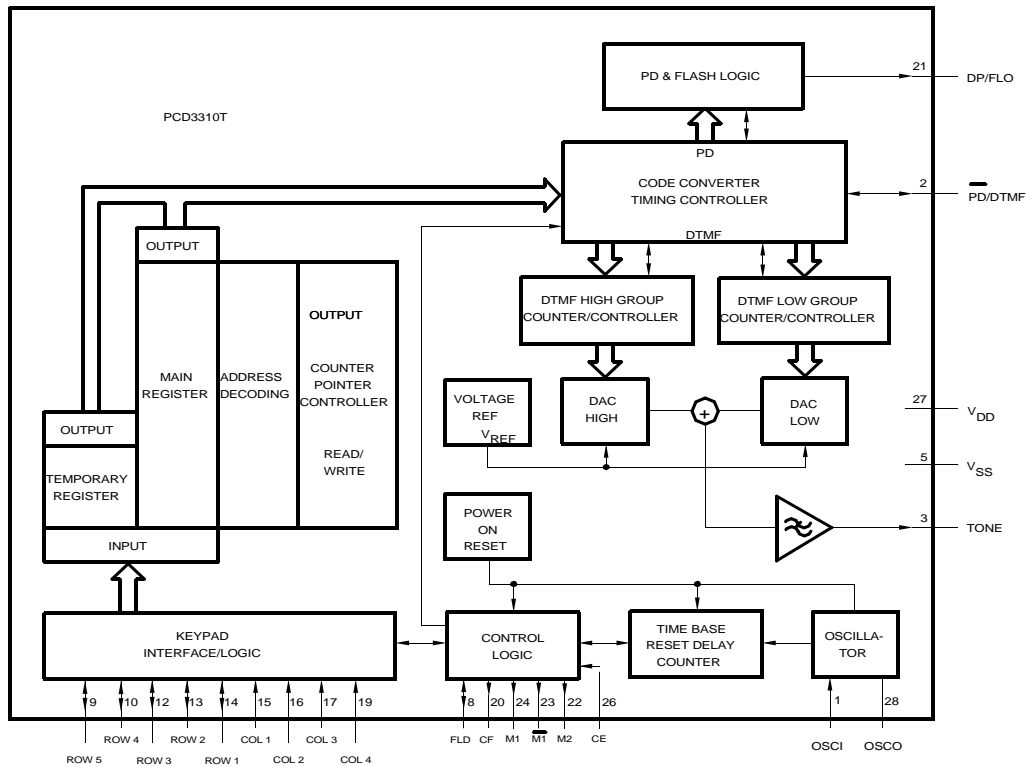
(2) PCD 3310T (Ref. Fig. 12 and 14)

CMOS PULSE AND DTMF DIALLER WITH REDIAL

The PCD 3310T is a single-chip silicon gate CMOS integrated circuit with an on-chip oscillator for a 3,58MHz crystal. It is a dual-standard dialling circuit for either pulse dialling (PD) or dual tone multifrequency (DTMF) dialling.

Input data is derived from any standard matrix keyboard for dialling in either DP or DTMF mode. Numbers up to 23 digits can be retained in RAM for redial and notepad facilities.

In DTMF mode bursts as well as pauses are timed to a minimum, in manual dialling the maximum depends on the key depression time.



NOTE: PINS 4, 6, 7, 11, 18 AND 25 ARE NOT CONNECTED

BLOCK DIAGRAM OF THE INTEGRATED CIRCUIT PCD 3310T
FIGURE 14

4. OPERATION

A. Operation and function elements (Ref. Table 4)

OPERATION / FUNCTION ELEMENT	FUNCTION
HANDSET WITH - MIKE CAPSULE - PHONE CAPSULE - PUSH-TO-TALK (PTT) BUTTON - KEYBOARD (6,9 OR 12 BUTTONS) - REED SWITCH	SPEECH TRANSMISSION AUDIO RECEPTION PA ANNOUNCEMENTS DIALLING OF TELEPHONE CONNECTIONS INTERRUPTS THE AF OUTPUT AND POWER SUPPLY TO THE UNIT WHEN THE HANDSET IS PLACED AND CLIPPED IN THE SUPPORT BRACKET
SUPPORT BRACKET WITH - 2 HANDSET DETENTS	HANDSET FIXING ON THE SUPPORT BRAK-KET

OPERATION AND FUNCTION ELEMENTS
Table 4

B. Keyboard

The keyboard of the cabin handset types can be equipped with the different handset key caps. The procedure for replacing key caps is detailed in the section DISASSEMBLY.

C. Operating instructions

(1) Telephone connections

- (a) Remove handset from support bracket.
- (b) Dial the required connection by pressing the appropriate button.
- (c) After the conversation place handset in support bracket and clip it in.

NOTE: Incoming calls are indicated by a call tone.

(2) PA announcements

- (a) Remove handset from support bracket.
- (b) Dial the PA area by pressing the appropriate PA button.
- (c) Press and hold the PTT key and speak into the microphone.
- (d) After the PA announcement place handset in support bracket and clip it in.

5. TECHNICAL DATA

A. General

Power supply: 8 V DC to 28 V DC
Current drain: min. 8 mA at 8 V DC to 28 V DC
max. 50 mA at 8 V DC to 28 V DC

Handset dimensions

Length: 215 mm (8.46 in.)
Width: 50 mm (1.97 in.)
Depth: 31 mm (1.22 in.)

Support bracket dimensions

Length: 208 mm (8.19 in.)
Width: 65 mm (2.56 in.)
Depth: 44 mm (1.73 in.)

Weight
(Handset and Support Bracket): max. 550 g (1.2 lb)

B. Environmental conditions

Operating temperatures: -15 deg. C to +70 deg. C

Storage temperatures: -55 deg. C to +85 deg. C

Humidity: up to 95% at 50 deg. C

Altitude: 15.000 ft. (4.572 m)

Vibration: max. 0,76 g

Shock: 6 g

Acceleration: 9 g

NOTE: Listed values for operating temperature, humidity, altitude, vibration, shock and acceleration are values where the handset still operates.

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

- C. Microphone with pre-amplifier
- | | |
|-----------------------------|--|
| Frequency response: | 200 Hz to 6 kHz (-3 dB),
referred to 1 kHz |
| Distortion: | < 5% at 12 V DC to 28 V DC
< 10% at 8 V DC |
| Sensitivity (output level): | 400 mV +/- 10% at 114 dB SPL/
1 kHz and 12 V DC |
| Sensitivity adjustment: | -6 dB (adjustable with R20) |
| Impedance: | 80 Ohm +/-20% nominal at 16 V DC |
| Noise level: | < -60 dB referenced to 400 mV |
| Hum rejection: | < 3 mV |
- D. Earphone
- | | |
|--|--|
| Frequency response: | 300 Hz to 4,5 kHz (+/- 6 dB),
(referred to 1 kHz) |
| Distortion: | < 5% at 10 mW/300 Hz to 4,5 kHz |
| Sensitivity: | 105 dB SPL +/-3dB at 0,775 V/
1 kHz (= 1 mW into 600 Ohm) |
| Sensitivity adjustment for
handset types A1, A2 and B | -10 dB (adjustable with R26) |
| Impedance for handset types
A1, A2 and B | 600 Ohm to 2100 Ohm +/-10% |
| Impedance for all other
handset types | 600 Ohm +/-10% |
- E. Push-to-talk (PTT) switch
- | | |
|-----------------|--------------------|
| Switch life: | 300.000 operations |
| Resistive load: | 28 V DC, 0,5 A |
- F. ON/OFF Reed switch
- | | |
|--------------|--------------------|
| Switch life: | 100.000 operations |
|--------------|--------------------|

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

6. ENVIRONMENTAL QUALIFICATION FORM

CONDITIONS	SECTION/ PARAGRAPH OF DO-160B	DESCRIPTION OF CONDUCTED TEST
TEMPERATURE AND ALTITUDE	4.0	EQUIPMENT TESTED TO CAT. A2 41.300 FT. (12.497 M)
LOW TEMPERATURE TEST	4.5.1	
SHORT-TIME HIGH OPERATING TEMPERATURE	4.5.2	
HIGH TEMPERATURE	4.5.3	
ALTITUDE	4.6.1	
DECOMPRESSION	4.6.2	
OVERPRESSURE	4.6.3	
TEMPERATURE VARIATION TEST	5.0	EQUIPMENT TESTED TO CAT. C
HUMIDITY	6.2	EQUIPMENT TESTED TO CAT. A
SHOCK CRASH SAFETY	7.3.1	PARAGRAPH 7.3.1
VIBRATION	8.0	EQUIPMENT TESTED WITHOUT SHOCK MOUNT TO CAT. B AND O (DO-160B, FIG.8-1 AND 8-2)
EXPLOSION	9.0	EQUIPMENT IDENTIFIED AS X, NO TEST REQUIRED
WATERPROOFNESS	10.0	EQUIPMENT IDENTIFIED AS X, NO TEST REQUIRED
FLUID SUSCEPTIBILITY	11.0	EQUIPMENT IDENTIFIED AS X, NO TEST REQUIRED
SAND AND DUST	12.0	EQUIPMENT IDENTIFIED AS X, NO TEST REQUIRED
FUNGUS	13.0	EQUIPMENT IDENTIFIED AS X, NO TEST REQUIRED
SALT SPRAY	14.0	EQUIPMENT IDENTIFIED AS X, NO TEST REQUIRED
MAGNETIC EFFECT	15.0	EQUIPMENT TESTED TO CAT. Z
POWER INPUT TEST	16.0	EQUIPMENT IDENTIFIED AS X, NO TEST REQUIRED
VOLTAGE SPIKE CONDUCTED SUSCEPTIBILITY	17.0	EQUIPMENT TESTED TO CAT. A

ENVIRONMENTAL QUALIFICATION FORM
Table 5

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

CONDITIONS	SECTION/ PARAGRAPH OF DO-160B	DESCRIPTION OF CONDUCTED TEST
AUDIO FREQUENCY CONDUCTED SUSCEPTIBILITY	18.0	EQUIPMENT IDENTIFIED AS X, NO TEST REQUIRED
INDUCED SIGNAL SUSEPTIBILITY	19.0	EQUIPMENT TESTED TO CAT. A
R.F. RADIATED SUSCEPTIBILITY	20.0	EQUIPMENT TESTED TO CAT. Z
R.F. EMISSION	21.0	EQUIPMENT TESTED TO CAT. A
OTHER TESTS		FIRE RESISTANCE TESTS WERE CON- DUCTED BY THE CABLE MANUFACTURER IN ACCORDANCE WITH FAR PART 25, APPENDIX F

ENVIRONMENTAL QUALIFICATION FORM
TABLE 5 (CONTINUED)

TESTING AND FAULT ISOLATION

1. GENERAL

- A. Defects which may occur are listed in table 101 with their probable causes.
- B. Defective parts must be repaired by authorized personnel or be exchanged by serviceable parts. Care should be taken that only original parts are used.
- C. For required equipment refer to SPECIAL TOOLS, FIXTURES AND EQUIPMENT.

2. PROCEDURE

A. Preparation

Arrange the test set-up as shown in Fig.101

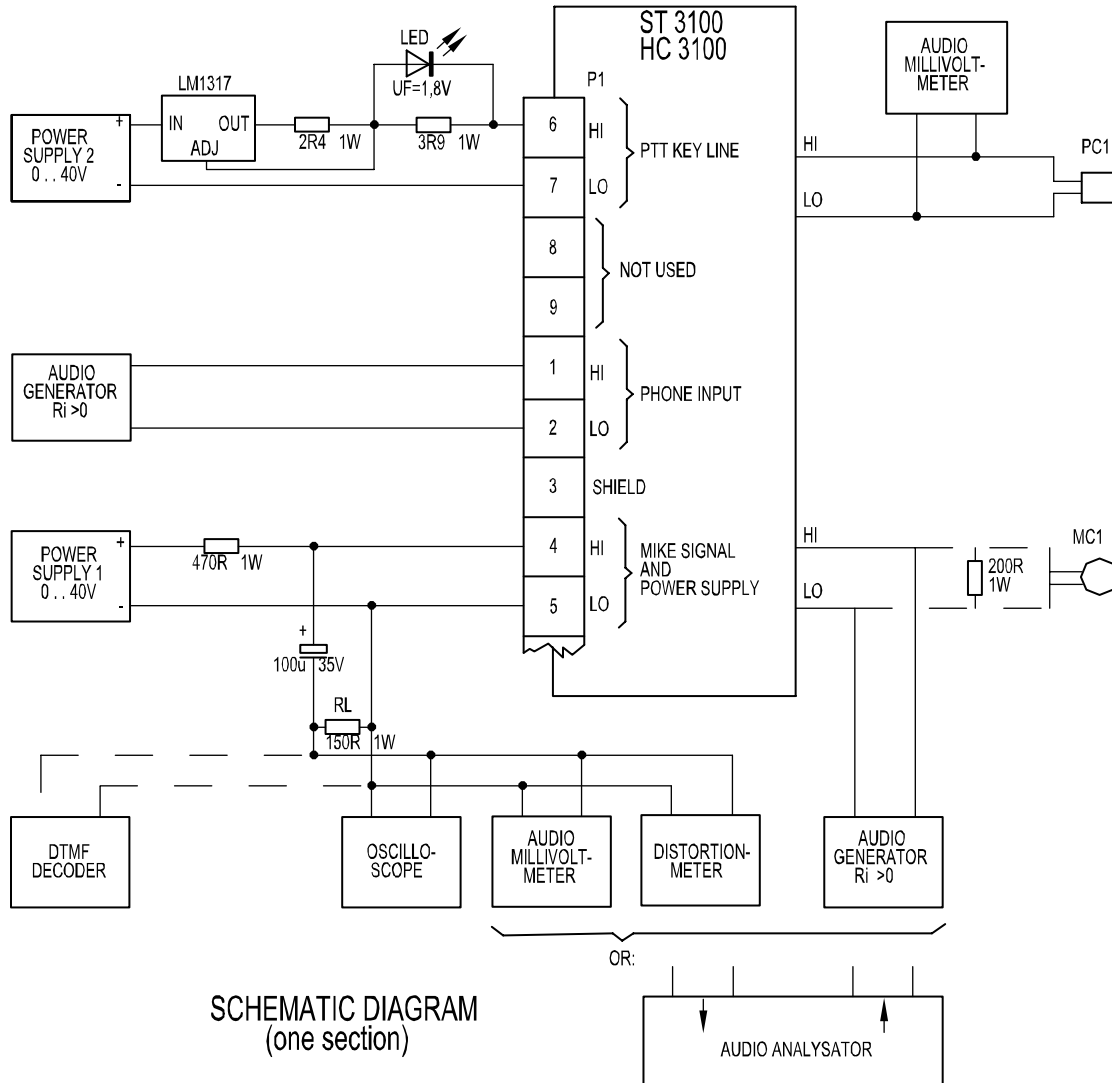
B. Test with power supply voltage +12 V DC

- (1) Set the power supply unit 1 to +12 V DC.
- (2) Measure current consumption with handset in support bracket.
Required result: 0 mA
- (3) Remove handset from support bracket and measure operating current.
Required result: 13 mA (± 3 mA)
- (4) Open the handset and disconnect the mike capsule MC1.
- (5) Feed AF level with 10 mV / 1 kHz at low resistance applied to the mike connections (red=high, blue=low). Measure the output voltage on the test set-up and adjust by means of R20 (Ref. Fig.103) to 400 mV into 150 Ohm (RL) load.

NOTE: Remove keyboard cover plate to get access to R20

- (6) Measure frequency response at $V_{out} = 0.4$ V (reference 1kHz).
Required results: 200 Hz: -7 dB to -13 dB
6 kHz: -3 dB to -9 dB
- (7) Measure distortion factor at $V_{out} = 0.4$ V.
Required results: 300 Hz: $\leq 5\%$
1 kHz: $\leq 5\%$
6 kHz: $\leq 5\%$
- (8) Connect 200 Ohm resistor across mike input and measure signal / noise ratio.
Required result: ≥ 66 dB referred to $V_{out} = 400$ mV
- (9) Disconnect the 200 Ohm resistor.

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TEST SET-UP
FIGURE 101

(10) DTMF

NOTE: Step (10) is not required for cockpit handset types.

- (a) Unsolder jumper BR1 (Ref. Fig. 104).
- (b) Press any dialing button and measure switch-off attenuation at $f = 1 \text{ kHz}$.
Required result: $\geq 40 \text{ dB}$ referred to $V_{\text{out}} = 400 \text{ mV}$
- (c) Solder in wire jumper BR1.

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(d) Press dialing button S2 (Ref. Fig. 102) and measure DTMF output voltage (non-weighted; bandwidth = 20 kHz).

Required result: 270 mV (± 30 mV)

(e) Put DTMF decoder into operation.

(f) Press keys S1 to 12 one after the other and check for correct interpretation.

(11) Set power supply unit 2 to +28 V and press the PTT button.

Required result: LED in test set-up must illuminate

C. Testing with power supply voltage +28 V DC

(1) Set power supply unit 1 to +28 V DC.

(2) Measure operating current.

Required result: 36 mA (± 8 mA)

(3) Measure AF output voltage as detailed in step B. (5) but do not make further adjustments to R20.

Required result: 400 mV (-0 mV / +100 mV)

(4) Measure distortion factor with $V_{in} = 10$ mV / 1 kHz.

Required result: $\leq 5\%$

NOTE: Step (5) is not required for cockpit handset types

(5) Press dialing button S2 and measure DTMF output voltage.

Required result: 270 mV (± 30 mV)

(6) Set power supply unit 2 to +28 V.

(7) Press PTT button.

Required result: LED in test set-up must illuminate

D. Testing with power supply voltage +8 V DC

(1) Set power supply unit 1 to +8 V DC

(2) Measure operating current.

Required result: 10 mA (+4 mA / -2 mA)

(3) Measure AF output voltage as detailed in step B. (5) but do not make further adjustments to R20.

Required result: ≥ 200 mV

I

COMPONENT MAINTENANCE MANUAL
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- (4) Measure distortion factor at $f = 1$ kHz.

Required result: $\leq 10\%$

NOTE: Step (5) is not required for cockpit handset types

- (5) Press dialing button S2 and measure DTMF output voltage.

Required result: ≥ 130 mV

NOTE: Step (6) is not required for cockpit handset types

- (6) Check function of dialling buttons with the DTMF decoder as detailed in step B. (10) (e) and (f).

- (7) Set power supply unit 2 to +28 V.

- (8) Press PTT button.

Required result: LED in test set-up must illuminate

- (9) Set power supply unit 1 back to 12 V.

E. Check the phone function for handset types A1, A2 and B only

- (1) Connect an AF millivoltmeter to the phone connections parallel to the phone capsule PC1.

- (2) Turn R26 (Ref. Fig. 103) fully CCW.

- (3) Feed 775 mV = 0 dB, 1 kHz low impedance in the phone branch of the test set-up.

- (4) Measure output voltage at the phone connections.

Required result: 775 mV (+0 mV / -10 mV)

- (5) Turn R26 fully CW and determine adjustment range of R26.

Required result: 775 mV (+0 mV / -50 mV)

- (6) Turn R26 back CCW.

- (7) Reconnect the mike capsule in correct phase.

- (8) Close the handset and tighten the screws.

- (9) Put the keyboard cover back in place.

F. Check the phone function for all other handset types

- (1) Connect an AF millivoltmeter to the phone connections parallel to the phone capsule PC1.

- (2) Feed 775 mV = 0 dB, 1 kHz low impedance in the phone branch of the test set-up.

- (3) Measure output voltage at the phone connections.

Required result: 775 mV (+0 mV / -50 mV)

- (4) Reconnect the mike capsule in correct phase.

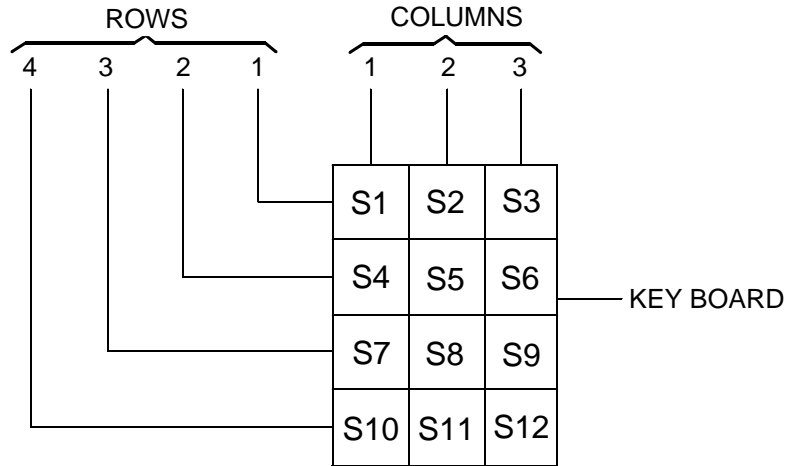
- (5) Close the handset and tighten the screws.

- (6) Put the keyboard cover back in place.

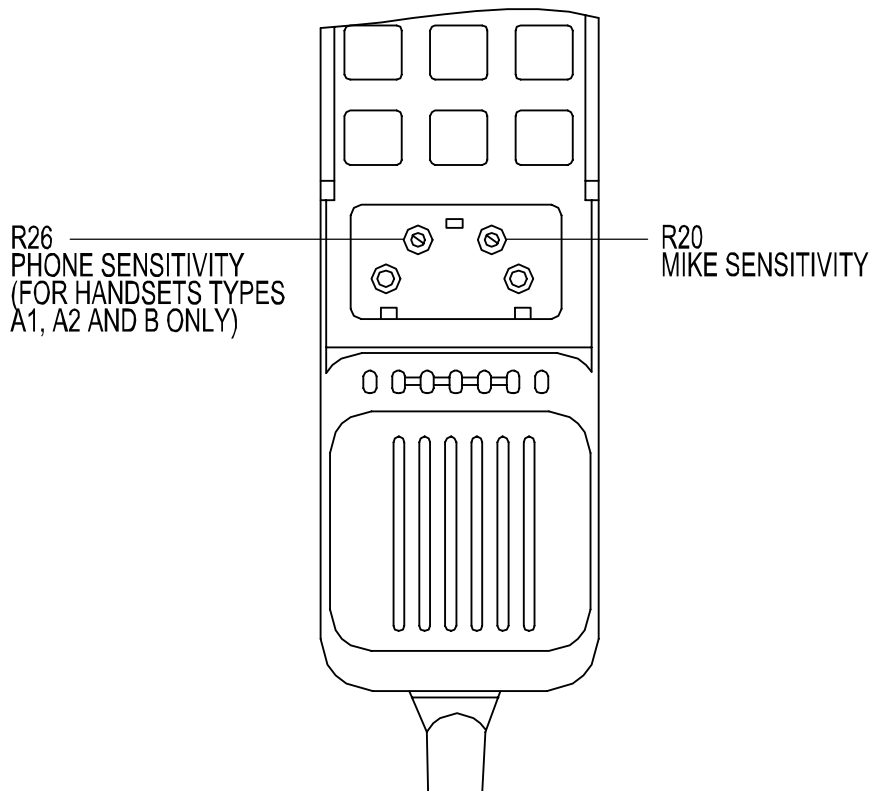
G. Sound-pressure level measurements

- (1) Direct a 1 kHz sound source with a sound level of 114 dB (A) towards the acoustic aperture to the microphone.
- (2) Check the output voltage.
Required result: V_{out} approx. 400 mV (qualitative detection)
- (3) Apply an AF level of 775 mV / 1 kHz to the phone branch.
- (4) Measure the sound pressure RMS value (time weighting: fast) at the phone acoustic aperture with an sound pressure meter.
Required result: 105 dB (A) (± 3 dB, qualitative detection)

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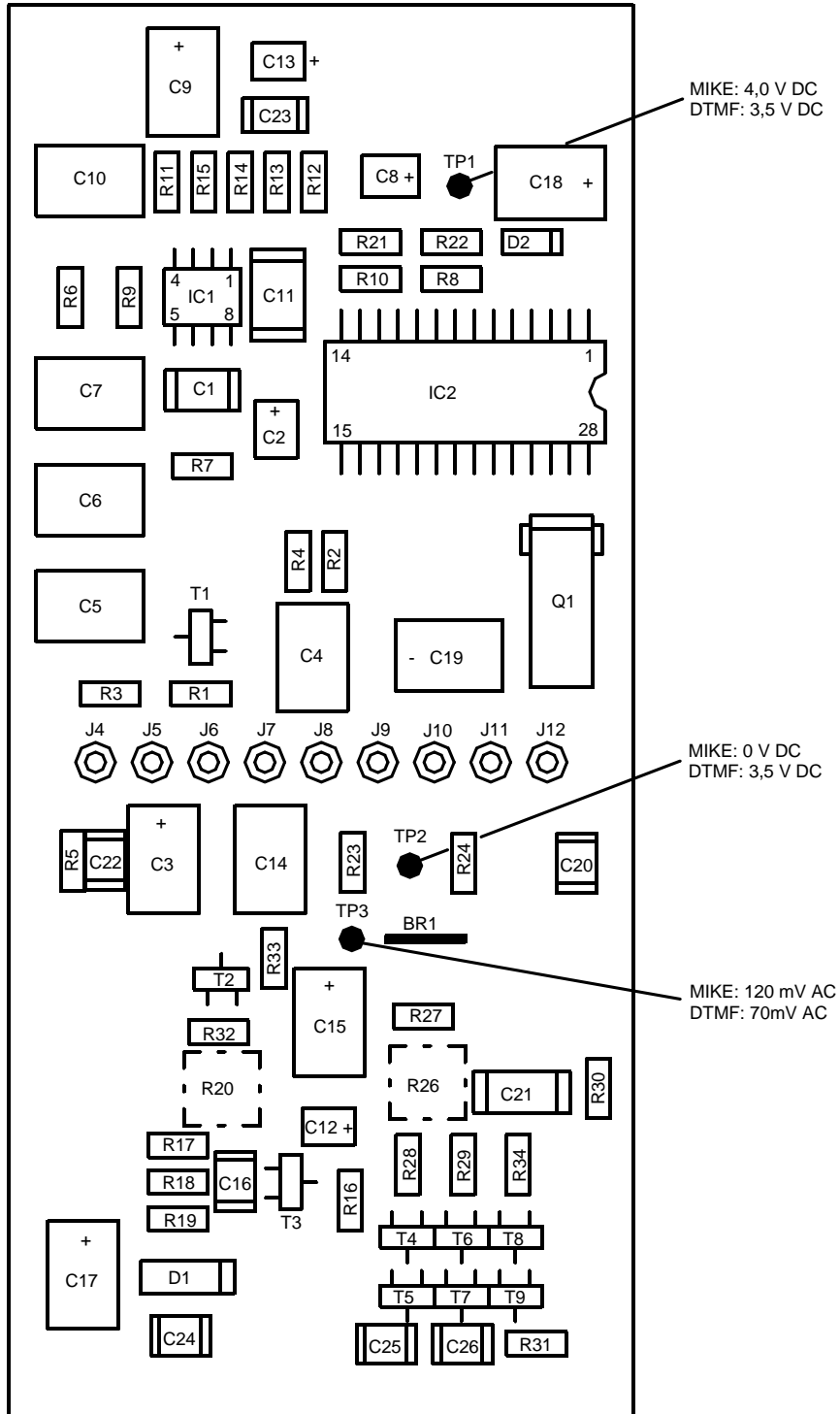


KEY ASSIGNMENT FOR HANDSET TESTING
FIGURE 102



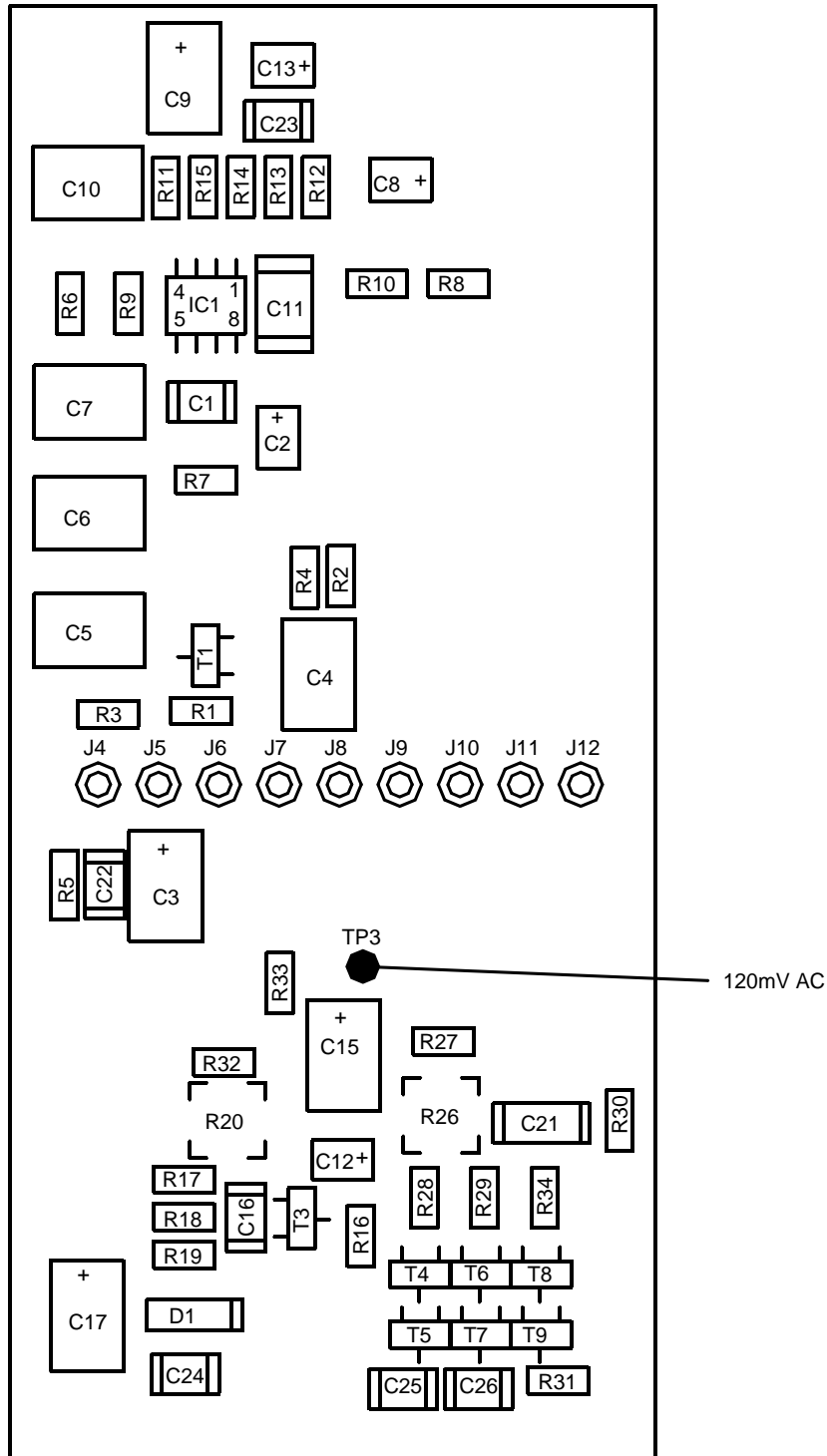
LOCATION OF ADJUSTABLE RESISTORS UNDER THE KEYBOARD COVER
FIGURE 103

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



TEST POINT LOCATIONS OF THE GENERATOR AND AMPLIFIER BOARD
FOR CABIN HANDSET TYPES
FIGURE 104

COMPONENT MAINTENANCE MANUAL
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TEST POINT LOCATIONS OF THE GENERATOR AND AMPLIFIER BOARD
FOR COCKPIT HANDSET TYPES
FIGURE 105

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

3. LIST OF POSSIBLE DEFECTS

DEFECT	PROBABLE CAUSE	CORRECTION
NO VOICE COMMUNICATION AND NO SUBSCRIBER DIALING POSSIBLE	FAULTY HANDSET	REPLACE OR REPAIR HANDSET
	FAULTY COILED CABLE OR CONNECTORS J2 OR J3	REPLACE COILED CABLE KV1
	FAULTY UNIT CONNECTOR P1	REPLACE COILED CABLE KV1
	FAULTY REED SWITCH S15	REPLACE REED SWITCH S15
VOICE COMMUNICATION DISTORTED OR IMPOSSIBLE	FAULTY MIKE AMPLIFIER	REPLACE OR REPAIR GENERATOR / AMPLIFIER BOARD
	FAULTY MIKE CAPSULE MC1	REPLACE MIKE CAPSULE MC1
DISTORTED OR NO AUDIO TRANSMISSION	FAULTY PHONE CAPSULE PC1	REPLACE PHONE CAPSULE PC1
	FAULTY ADJUSTMENT RESISTOR R26	REPLACE ADJUSTMENT RESISTOR R26
	BROKEN CABLE	LOCATE BROKEN CABLE WITH A DIGITAL MULTIMETER AND REPAIR
	FAULTY CONNECTOR(S)	EXAMINE CONNECTORS AND CLEAN OR REPLACE IF NECESSARY
NO SUBSCRIBER DIALING POSSIBLE	FAULTY DTMF GENERATOR	REPAIR OR REPLACE GENERATOR AND AMPLIFIER BOARD
	FAULTY PUSH BUTTONS	REPLACE KEY BOARD
FAULTY MIKE AMPLIFIER; REQUIRED RESULTS DURING TEST NOT ACHIEVED	FAULTY TRANSISTORS T1 TO T3 OR FAULTY IC1	CHECK LEVEL AND DC VOLTAGES, IF NECESSARY REPLACE FAULTY PARTS

FAULT ISOLATION CHART
Table 101

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

DEFECT	PROBABLE CAUSE	CORRECTION
NO VOICE COMMUNICATION (PTT)	FAULTY MOSFETS T4 TO T9	CHECK WITH DIGITAL MULTIMETER AND IF NECESSARY REPLACE FAULTY PARTS
	FAULTY PUSH BUTTONS	REPLACE KEY BOARD
	BROKEN CABLE	LOCATE BROKEN CABLE WITH A DIGITAL MULTIMETER AND REPAIR
FAULTY DTMF GENERATOR; REQUIRED RESULTS DURING TEST NOT ACHIEVED	FAULTY IC2	CHECK AF OUTPUT WITH DTMF DECODER AND IF NECESSARY REPLACE IC2

FAULT ISOLATION CHART
TABLE 101 (CONTINUED)

DISASSEMBLY

1. GENERAL

- A. This section gives instruction for a complete disassembly of the handset and support bracket.
- B. Disassemble the units in a clean, dust free area to avoid malfunction caused by contamination.
- C. Disassemble the unit only to the extent necessary for repair or replacement of parts found to be defective.
- D. References to the Illustrated Parts List figure (Item number) are always given in brackets following the nomenclature of the part.
- E. Mark all parts to facilitate assembly and to avoid errors.

WARNING: BEFORE YOU START DISASSEMBLY ENSURE THAT THE POWER SUPPLY IS SWITCHED OFF OR THAT THE UNIT CONNECTOR P1 IS DISCONNECTED.

2. PROCEDURE FOR HANDSET

- A. Removal of keyboard (Ref. IPL, Fig. 1, 1A, 1B, 1C, or 1D)
 - (1) Insert disassembly aid first in the left- and then in the right-hand gap and release the cover (20).
 - (2) Remove key caps (15) and key springs (30).
 - B. Disassembly of housing (Ref. IPL, Fig. 1, 1A, 1B, 1C, or 1D)
 - (1) Remove screws (80) and washers (90).
 - (2) Carefully separate the upper case (65) from the lower case (100).
 - (3) Removal of coiled cable (150) and connector (160)
 - (a) Disconnect the two sockets of the coiled cable (150) from the connector (160) and remove the coiled cable (150).
 - (b) Remove nut (200), washers (180, 190) and screw (170) from the connector (160).
 - (c) Remove connector (160).
 - (4) Removal of generator and amplifier board (110) and keyboard (120)
 - (a) Unsolder the connections of generator and amplifier board (110).
 - (b) Remove screws (130) and washers (140) from the generator and amplifier board (110).
 - (c) Remove the generator and amplifier board (110) together with the keyboard (120).
 - (d) Carefully separate generator and amplifier board (110) and keyboard (120)
- NOTE: The boards are connected by plug-in connectors P4/J4 to P12/J12.
- (5) Removal of phone (210) capsule
 - (a) Unsolder the connections of the phone capsule (210).
 - (b) Remove screw (220), washer (230) and clip (240).
 - (c) Remove phone capsule (210).
 - (6) Removal of mike capsule (260)
 - (a) Unsolder the connections of the mike capsule (260).

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- (b) Remove screw (270), washer (280) and clip (290).
- (c) Remove mike capsule (260).
- (7) Removal of reed switch S15 (300)
 - (a) Remove the reed switch (300) as described in section REPAIR, para. 3.A.(1).

3. PROCEDURE FOR SUPPORT BRACKET

- A. Disassembly of support bracket (Ref. IPL, Fig. 1E)
 - (1) Remove screws (100) and washers (110).
 - (2) Remove the support case (20) from support base plate (60).
 - (3) Remove coiled cable with connector and the connector plate.
 - (4) Release the handset detents (30) with a screwdriver or similar tool.
 - (5) Remove handset detents (30) together with pressure springs (40).
 - (6) Remove the magnets sets (50) with a screwdriver or similar tool.

CLEANING

1. GENERAL

WARNING: OBSERVE THE MATERIAL MANUFACTURERS PRECAUTIONS

NOTE: Use only specified cleaning materials or equivalent substitutes

2. PROCEDURE

- A. Remove dirt and dust with a vacuum cleaner.
- B. Clean the outer surface of the unit with a dry clean cotton cloth.
- C. Remove grease spots and heavy dirt from the unit with isopropyl cleaner.
- D. Clean the connectors with isopropyl cleaner.

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CHECK

1. GENERAL

- A. Checks must be carried out by authorized personnel only.
- B. Should repair be necessary, refer to section REPAIR (page 601).
- C. No special equipment is required for check procedures.

2. PROCEDURE

- A. Check the mechanical parts visually with particular respect to the following defects:
 - (1) Dents, scratches, broken fasteners, damage to housing or its parts.
 - (2) Dirt and scratches on type plate.
 - (3) Dirty, bent or broken pins, cracked bushings, burned connector contacts.
 - (4) Dirty, mechanically damaged or jammed push-buttons.
 - (5) Damaged capsule protection felt.
 - (6) Loose seats, missing screws and washers.
 - (7) Dirty, mechanical damaged handset detents.
- B. Check the electrical parts visually with particular respect to the following defects:
 - (1) Broken connections and mechanical damage to semiconductors.
 - (2) Damaged insulation, indications of overheating.
 - (3) Circuit boards for
 - (a) Flaws or cracks in their coating
 - (b) Damaged connectors
 - (c) Missing or damaged parts
 - (4) Damaged insulation, pulled-out or overextended coiled cable.
 - (5) Broken connections and mechanical damage to the mike or phone capsules.
 - (6) Damages or broken connections on reed switch.
 - (7) Damaged or broken off reed switch magnet.

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REPAIR

1. GENERAL

- A. This sections gives instructions for repair or replacement of defective parts. Replace only parts found defective during TESTING AND FAULT ISOLATION or CHECK procedures.
- B. Limits
 - (1) Except for permissible repairs outlined in the following paragraphs, repair of detail parts and components is considered neither practicable nor reliable. Parts which do not meet check requirements shall be replaced.
- C. Soldering work
 - CAUTION: THE HANDSET IS AN EXTREMELY SENSITIVE UNIT. ONLY AUTHORIZED PERSONEL SHOULD DO ANY SOLDERINGS ON THE EQUIPMENT TO AVOID DAMAGES DURING REPAIR PROCEDURES.
 - CAUTION: ENSURE THAT THE POWER SUPPLY OF THE HANDSET IS SWITCHED OFF BEFORE YOU DO ANY SOLDERINGS.
 - (1) Soldering time should be kept as short as possible. Take care that no cold junctions occur.
 - (2) To clean the soldering terminals from old solder, heat them with a soldering iron and remove the molten solder with the solder extraction device (suction pump).
 - (3) The soldering devices (Ref. Table 602) are used as follows:
 - (a) Low voltage soldering station max. 30 Watts with max. 2 mm wide soldering tip for small solderings.
 - (b) Low voltage soldering station min. 30 Watts for larger solderings and IC solderings.
- D. Replacement of SMD components
 - (1) SMD components should be handled with care. To avoid damage of the SMD components and the circuit boards it is strongly recommended to use a SMD soldering device for any SMD solderings.
- E. Treatment of MOS components
 - (1) Metal-oxylde ICs have to be handled with care to avoid electrostatic discharge.
 - (2) The following advices have to be observed to avoid damage of MOS components:
 - (a) MOS components should remain on electrically conductive material as long as they are not required for any work.They should never be stored or transported in polstyrene containers or on plastic rails.

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- (b) Persons working with MOS components must ground themselves with a suitable grounding strap.
- (c) Required test equipment must be grounded.
- (d) Do not touch the contacts, MOS components should only be touched on their housings.
- (e) MOS ICs in plug-in mounts must never be pulled out or plugged in under voltage.

2. LIST OF MATERIALS AND EQUIPMENT

NOTE: Equivalent substitutes may be used for listed items.

MATERIAL NO.	DESIGNATION AND SPECIFICATION	SOURCE
VP7293	ADHESIVE (REPLACED BY ELASTOSIL A07)	WACKER-CHEMIE GMBH HANNS-SEIDEL-PLATZ 4 81737 MUENCHEN GERMANY
ELASTOSIL A07	ADHESIVE	WACKER-CHEMIE GMBH HANNS-SEIDEL-PLATZ 4 81737 MUENCHEN GERMANY
SICOMET 85	ADHESIVE	SICHEL-WERKE GMBH SICHELSTRASSE 1 30453 HANNOVER GERMANY
CRN3/32BL	HEAT-SHRINK-SLEEVE	RAYCHEM GMBH HAIDGRABEN 6 85521 OTTOBRUNN GERMANY

LIST OF MATERIALS
Table 601

COMPONENT MAINTENANCE MANUAL
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MATERIAL NO.	DESIGNATION AND SPECIFICATION	SOURCE
	SOLDERING STATION MAX. 30 W	LOCAL PURCHASE
	SOLDER EXTRACTION TOOL (SUCTION PUMP)	LOCAL PURCHASE
	SMD SOLDERING DEVICE	LOCAL PURCHASE
	SMD UNSOLDERING DEVICE	LOCAL PURCHASE
PH-PHILLIPS RECESS, SIZE 1	SCREWDRIVER	LOCAL PURCHASE

LIST OF EQUIPMENT
Table 602

3. PROCEDURE

A. Repair of the handset (Ref. Fig. 601 and Fig. 602)

- (1) Replacement of reed switch S15
 - (a) Unsolder cables KV2 and KV3 from reed switch S15 and remove reed switch.
 - (b) Clean the ends of cables KV2 and KV3.
 - (c) Make sure that there is no remaining adhesive in the mounting place of the reed switch.
 - (d) Shorten the new reed switch as shown in Fig. 601, detail A for amplifier board with index A or Fig. 602, detail A for amplifier board with index B and upwards.
 - (e) Insert new reed switch S15 in the lower case of the handset.
 - (f) Bond the leads to the supports using adhesive VP7293.
 - (g) Slide heat-shrink-sleeves onto cables KV2 and KV3.
 - (h) Solder cables KV2 and KV3 onto reed switch.
 - (i) Shrink the sleeves using a hot air blower.

NOTE: Keep the distance between the heat-shrink-sleeves and reed switch as shown in Fig. 601 and Fig. 602, detail A.

- (2) Replacement of connector P2 with cable harness (Ref. Fig. 601 and Fig. 602)
 - (a) Unsolder cable KV2 thru KV 14 of cable harness as shown in Fig. 601 and 602 from the generator and amplifier board, phone capsule PC1, mike capsule MC1 and reed switch S15.
 - (b) Remove connector and cable harness.
 - (c) Insert new connector P2 in the lower case of the handset and fasten it in place.

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NOTE: Step (d) thru (f) is applicable if generator and amplifier board with index A is installed.

(d) Slide heat-shrink-sleeves onto cables KV2, KV3, KV9 and KV14.

CAUTION: BEFORE SOLDERING, MAKE SURE THAT THE CABLES ARE CONNECTED CORRECTLY. CABLES KV9, KV11 AND KV13 ARE SOLDERED TO THE TERMINALS MARKED WITH AN +, OR AN RED POINT ON THE PHONE CAPSULE PC1 AND MIKE CAPSULE MC1.

(e) Solder cable KV2 and KV3 onto reed switch S15.

(f) Solder cable KV9 and KV14 onto phone capsule PC1.

(g) Solder cable KV2, KV4, KV5, KV6, KV7, KV10 AND KV11 onto corresponding terminals of generator and amplifier board and mike capsule (Ref. Fig. 601).

NOTE: Step (h) thru (m) is applicable if generator and amplifier board with index B and upwards is installed.

(h) Slide heat-shrink-sleeves onto cables KV2, KV3, KV9, KV12 and KV13.

CAUTION: BEFORE SOLDERING, MAKE SURE THAT THE CABLES ARE CONNECTED CORRECTLY. CABLES KV9, KV11 AND KV13 ARE SOLDERED TO THE TERMINALS MARKED WITH AN +, OR AN RED POINT ON THE PHONE CAPSULE PC1 AND MIKE CAPSULE MC1.

(i) Solder cables KV2 and KV3 onto reed switch S15.

(j) Solder cables KV9 and KV12 onto corresponding terminals on generator and amplifier board.

(k) Solder cables KV9 and KV13 onto capacitor C27.

(l) Solder cables KV12 and KV13 onto phone capsule PC1.

(m) Solder cable KV2, KV4, KV5, KV6, KV7, KV8, KV10 AND KV11 onto corresponding terminals of generator and amplifier board and mike capsule (Ref. Fig. 602).

NOTE: Keep the distance between the heat-shrink-sleeves and reed switch as shown in Fig. 601 and Fig. 602, detail A.

(n) Shrink all heat-shrink-sleeves using a hot air blower.

(3) Replacement of phone capsule PC1 on handset with generator and amplifier board with index A (Ref. Fig. 601 and 602)

NOTE: Replacement of phone capsule requires installation of C27 (680 nF). C27 is supplied together with the phone capsule.

(a) Unsolder cables KV9 and KV14 from phone capsule PC1.

(b) Replace phone capsule.

(c) Shorten cable KV9 for installation of C27.

(d) Slide heat-shrink-sleeve onto phone capsule soldering terminal of cable KV14 and KV13.

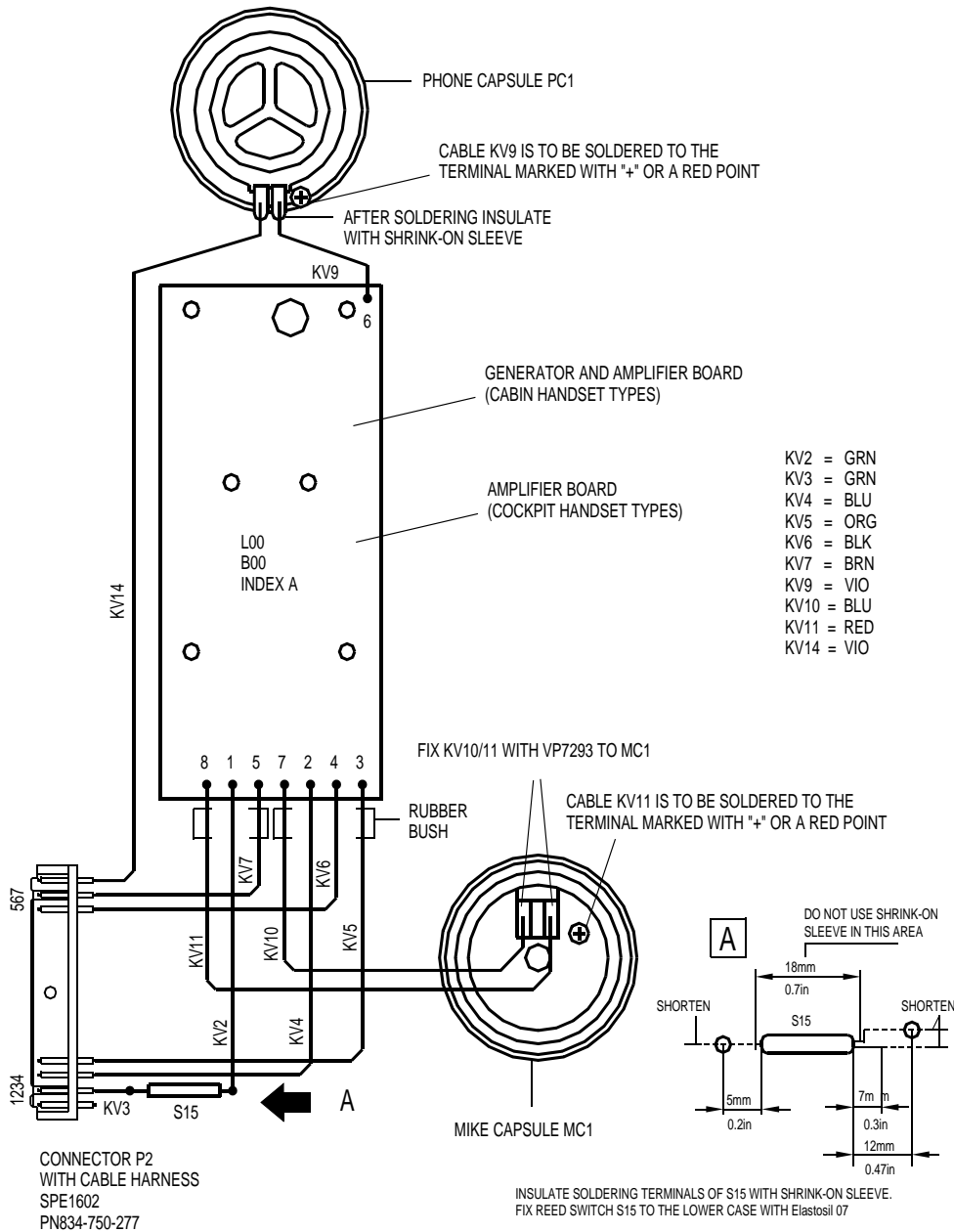
(e) Slide heat-shrink-sleeve onto C27 soldering terminal of cable KV9 and KV13.

(f) Attach capacitor C27 to the lower case using Sicomet 85. Additionally secure C27 all around with adhesive VP7293.

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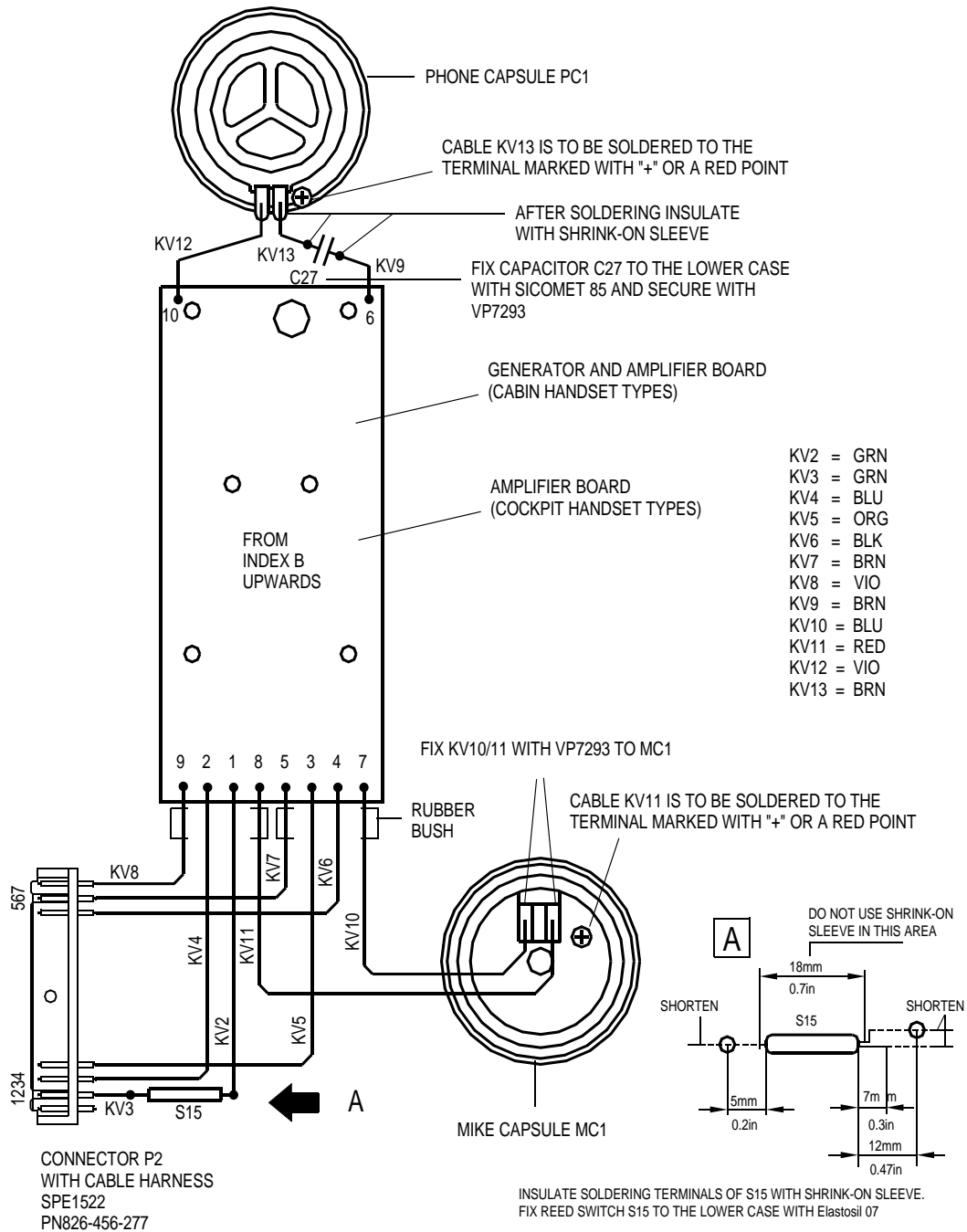
- (g) Solder cables KV9 and KV13 as shown in Fig. 602 to C27.
 - (h) Solder cables KV14 and KV13 as shown in Fig. 601 and 602 onto the phone capsule PC1.
 - (i) Shrink the sleeves using a hot air blower.
- (4) Replacement of phone capsule PC1 on handset with generator and amplifier board with index B and upwards (Ref. Fig. 602)
- (a) Unsolder cables KV12 and KV13 from phone capsule PC1.
 - (b) Replace the phone capsule.
 - (c) Slide heat-shrink-sleeve onto phone capsule soldering terminal of cable KV12 and KV13.
 - (d) Solder cables KV14 and KV13 as shown in Fig. 601 and 602 onto the phone capsule PC1.
 - (e) Shrink the sleeves using a hot air blower.
- (5) Replacement of mike capsule MC1 (Ref. Fig 601 and 602)
- (a) Unsolder cables KV10 and KV11 from mike capsule.
 - (b) Replace the mike capsule.
 - (c) Solder cable KV11 onto the mike capsule terminal marked with a "*" or a red dot.
 - (d) Solder cable KV10 onto the mike capsule terminal.
- B. Repair of support bracket
- (1) Replacement of the reed switch magnets (Ref. IPL, Fig. 1E)
- (a) Remove the magnets (50).
 - (b) Clean the grooves, make sure that all adhesive is removed.
 - (c) Apply adhesive VP7293 into grooves.
 - (d) Attach the two magnet sets (50).
 - (e) Secure the magnets (50) all around with adhesive Elastosil A07.

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GENERATOR AND AMPLIFIER BOARD WITH INDEX A
FIGURE 601

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



GENERATOR AND AMPLIFIER BOARD WITH INDEX B AND UPWARDS
FIGURE 602

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ASSEMBLY

1. GENERAL

- A. This section gives assembly instructions for the handset and support bracket.
- B. Assemble the units in a clean, dust free area to avoid malfunction caused by contamination.
- C. Ensure that necessary CLEANING, CHECK and REPAIR procedures have been carried out.
- D. References to the Illustrated Parts List figure (Item number) are always given in brackets following the nomenclature of the part.

2. LIST OF MATERIALS AND EQUIPMENT

Not applicable

3. PROCEDURE FOR HANDSET

A. Assembly of housing (Ref. IPL, Fig. 1, 1A, 1B, 1C, or 1D)

(1) Installation of reed switch S15 (300)

- (a) Install the reed switch (300) as described in section REPAIR, para. 3.A.(1).

(2) Installation of mike capsule (260)

- (a) Place the mike capsule (260) correctly in the lower case (100) with the soldering lugs towards the keyboard.
- (b) Fasten the mike capsule (260) with clip (290), washer (280) and screw (270).

NOTE: For soldering refer to section REPAIR, para. 3.A.(5).

(3) Installation of phone capsule (210)

- (a) Place the phone capsule (210) correctly in the lower case (100) with the soldering lugs towards the keyboard.
- (b) Fasten the phone capsule (210) with clip (240), washer (230) and screw (220).

NOTE: For soldering refer to section REPAIR, para. 3.A.(3) or 3.A.(4), depending on the configuration.

(4) Installation of generator and amplifier board (110), keyboard (120) and connector P2 (160)

- (a) Place the keyboard (120) into the lower case (100).
- (b) Plug the generator and amplifier board (110) onto the keyboard (120).
- (c) Fasten the generator and amplifier board (110) with washers (140) and screws (130).
- (d) Place the connector P2 (160) into lower case (100).
- (e) Fasten the connector with screw (170), washers (180), spring washer (190) and nut (200).

NOTE: For soldering refer to section REPAIR, para. 3.A.(2)

(5) Installation of coiled cable (150)

- (a) Place the coiled cable correctly into the lower case (100).
- (b) Insert the anti-king-device of the coiled cable into the lower case (100).
- (c) Plug the sockets of the coiled cable onto connector (160).

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- (6) Assembly of upper case (65) and lower case (100)
 - (a) Place the upper case (65) onto the lower case (100).
 - (b) Secure with screws (80) and washers (90).

B. Installation of keyboard (Ref. IPL, Fig. 1, 1A, 1B, 1C, or 1D)

- (1) Put the key spring (30) for each cap onto the handset.

NOTE: The PTT button requires 2 springs.

- (2) Place the key caps (15) onto the handset.

NOTE: The PTT button is installed in the cockpit handsets only.

- (3) Place the cover (20) onto the handset and press until it snaps in.

4. PROCEDURE FOR SUPPORT BRACKET

A. Assembly of support bracket (Ref. IPL, Fig. 1E)

- (1) Place the pressure springs (40) onto the handset detents (30).
- (2) Place pressure springs and handset detents together into the support case (20) and let them snap in.
- (3) Install the magnet sets (50) as described in section REPAIR, para. 3.B.(1).
- (4) Insert the connector plate and anti-king-device of the coiled cable onto support base plate (60) and let it snap in.
- (5) Place the support case (20) onto support base plate (60) and secure with screws (100) and washers (110).
- (6) Secure the screws (100) with Loctite 0259.

5. STORAGE INSTRUCTIONS

- A. Store the unit in a dry, well ventilated room.
- B. Store the unit in its original packing laying flat.
- C. No specific preservation is required.

FITS AND CLEARANCES

NOT APPLICABLE

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SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

The following equipment is required to accomplish all maintenance tasks:

NOTE: Ensure that all measurement devices are calibrated.

NOTE: Equivalent substitutes may be used.

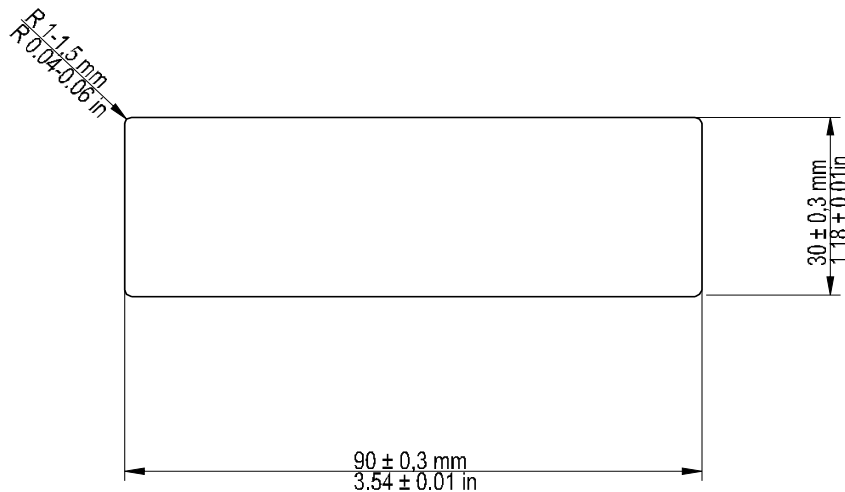
NO.	TOOL PART NO.	DESCRIPTION	SUPPLIER'S CODE AND ADDRESS
1		Power supply unit 0 to 40 V DC \geq 1 A	Local purchase
2	ELAVI	Ammeter	D8412 Hartmann & Braun AG Ernst-Amme-Str. 28 38114 Braunschweig GERMANY
3	SPN	AF generator	D0894 Rohde & Schwarz GmbH & Co KG Muehldorfstr. 15 81671 Muenchen GERMANY
4	UPGR	AF millivoltmeter	D0894
5	HP339A	Distortion factor meter	C0278 Hewlett Packard GmbH Herrenbergstr. 110 71034 Boeblingen GERMANY
6	NFA-1	AF analyzer (alternatively to the combination of Nos. 3,4 and 5)	D4598 Wandel & Goltermann Arbachtalstr. 6 72800 Eningen GERMANY
7		Oscilloscope	Local purchase
8	DMM4020	Digital voltmeter	C1834 Kontron Elektronik GmbH Ronsdorferstr. 145 40233 Duesseldorf GERMANY
9	ELE	Reference noise generator	D0894
10	2232	Sound level meter	C5592 Brueel & Kjaer GmbH Im Tiefen See 45 64293 Darmstadt GERMANY
11		DTMF decoder	Local purchase

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NO.	TOOL PART NO.	DESCRIPTION	SUPPLIER'S CODE AND ADDRESS
12	LM317	Voltage regulator	Local purchase
13		LED, forward voltage UF=1,8 V	Local purchase
14		Resistor 2,4 Ohms / 1 W	Local purchase
15		Resistor 3,9 Ohms / 1 W	Local purchase
16		Resistor 470 Ohms / 1 W	Local purchase
17		Resistor 150 Ohms / 1 W	Local purchase
18		Resistor 200 Ohms / 1 W	Local purchase
19		Capacitor 100 μ F / 35 V	Local purchase
20	820-415-919	Disassembly device	Becker Flugfunkwerk GmbH

LIST OF SPECIAL TOOLS, FIXTURES AND EQUIPMENT
Table 901

Disassembly Device (PNR 820-415-919, Drawing No. 31300-00000-100).



Sheet metal 0,8 mm (0.03 in.) DIN1783 AL Mg 2,5 F23

NOTE: all edges broken

DISASSEMBLY DEVICE
FIGURE 901

ILLUSTRATED PARTS LIST

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INTRODUCTION

1. GENERAL

This IPL contains the complete listing of all replaceable parts of the Handset with Support Bracket.

2. MATERIAL ARRANGEMENT

A. This IPL comprises the following sections:

(1) Introduction

The introduction contains all explanatory information for the individual sections as is necessary for use of this IPL. The introduction further contains a list of abbreviations used in the detailed parts list as well as a list of manufacturer's codes together with manufacturer's names and addresses.

(2) Equipment Designator Index

This section contains a listing of equipment designators of all items listed in the detailed parts list. They are ordered in alphabetical sequence with cross-reference to the Fig. / Item Nos.

(a) Column "Designator" contains the equipment designator.

(b) Column "Fig" contains the figure number.

(c) Column "Item" contains the item number.

(3) Numerical Index

(a) This section contains a listing of part numbers of all items listed in the detailed parts list in alpha/numerical sequence with cross-reference to respective Fig./Item Nos. as well as units per assy. The order of precedence in beginning the part number arrangement at the left-hand (first) position is as follows:

- letters A through Z (except `O` to be considered as zero),

- numerals 0 through 9.

(b) For subsequent rows, the order is:

- a dash (-),

- letters A through Z (except `O` to be considered as zero),

- numerals 0 through 9.

(4) Detailed Parts List

(a) Column FIG. ITEM

The first number in the first line of a page indicates the number of the figure illustrating the part. The second number indicates the item number by which the part is identifiable on the illustration. A dash (-) placed before the item number indicates that the part is not illustrated.

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(b) Column PART NUMBER

The part number column contains the original manufacturer's part number. When standard parts are used, the standard part number is listed in this column.

(c) Column AIRLINE STOCK NUMBER

This column is left blank for airline internal use.

(d) Column NOMENCLATURE

1 Indenture System

The indenture system shows the relationship of parts and assemblies to next higher assemblies or installations, as follows

1234567

Assembly or installation assembly RF number.

Attaching parts for assembly or installation.

.Detail parts for assembly

.Sub-assembly

Attaching parts for sub-assembly.

..Detail parts for sub-assembly

..Sub-sub-assembly

Attaching parts for sub-sub-assembly.

...Detail parts for sub-sub-assembly etc.

2 Attaching parts

Attaching parts are captioned ATTACHING PARTS and are listed immediately following the parts attached.

The *** symbol follows the last item of the attaching parts group. Column EFF CODE

3 Vendor Code

Parts manufactured by companies other than Becker are identified by an appropriate vendor code following the nomenclature. Vendor codes are in accordance with current issues of Federal Supply Codes for Manufacturers Cataloging Handbooks H4-1, H4-2 and H4-3, and are preceded by the letter ^oV^o. Standard parts such as AN, MS etc. are not identified by a vendor code.

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4 Underlined Ohm Values

Pre-selected resistors are indicated by underlined Ohm values and correspond to the listed part numbers.

(e) Column EFF CODE

The Effectivity Code column establishes a part relationship with units or assemblies which are essentially the same but have minor deviations. These units or assemblies are assigned reference letters such as A, B, C etc. Parts which are not common to all configurations but are associated with one or more of the coded lead items, carry the letter or letters assigned to the lead item with which it is associated. Where a part is common to all lead items, the effectivity column is left blank.

(f) Column UNITS PER ASSY

This column contains the quantity of a specific catalog sequence numbered part required in the build sequence of only one (where more than one exists) next higher sub-sub-assembly, sub-assembly, assembly or installation level as applicable. For bulk items, the letters °AR° are inserted in the quantity column to indicate °as required°. Where items are listed for reference purpose, °RF° is inserted.

(5) Appendix

This section contains tables listing the Handset Keyboard part numbers including its breakdown part numbers (keys). The Appendix simplifies the usage of all different Handset Keyboards in the detailed parts list and allows to identify the appropriate keys linked to a Keyboard.

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B. List of Abbreviations

The following abbreviations are used in this IPL:

Abbreviation

AR	AS REQUIRED
ASSY	ASSEMBLY
BKDN	BREAKDOWN
DET	DETAIL
EFF	EFFECTIVE/EFFECTIVITY
FIG	FIGURE
IPL	ILLUSTRATED PARTS LIST
NHA	NEXT HIGHER ASSEMBLY
NP	NOT PROCURABLE
OPT	OPTIONAL
PN	PART NUMBER
REPLD	REPLACED
REPLS	REPLACES
REQ	REQUIRED
R	REVISED
RF	REFERENCE
SUPSD	SUPERSEDED
SUPSDS	SUPERSEDES
TTL	TOTAL
V	VENDOR

3. LIST OF VENDORS

VC0867	Gutekunst & Co Carl-Zeiss-Strasse 15 72555 Metzingen GERMANY
VC3269	EJOT GmbH & Co. KG Untere Bienhecke 15 57334 Bad Laasphe GERMANY
VD2030	Lapp KG Schulze-Delitzsch-Strasse 25 70565 Stuttgart GERMANY
VD8512	AMP Deutschland GmbH Amperestrasse 7 - 11 63225 Langen GERMANY
VD8527	Hellermann Paul GmbH Siemensstrasse 5 25421 Pinneberg GERMANY

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EQUIPMENT DESIGNATOR INDEX

DESIGNATOR	FIG	ITEM	DESIGNATOR	FIG	ITEM	DESIGNATOR	FIG	ITEM
C1	2	10	J7	2	110	R4E	2	170
C10	2	180	J8	2	110	R5	2	120
C11	2	270	J9	2	110	R6	2	210
C12	2	60	Q1	2	350	R7	2	190
C13	2	200	R1	2	140	R8	2	310
C14	2	100	R10	2	280	R9	2	220
C15	2	290	R11	2	220	T1	2	160
C16	2	10	R12	2	260	T2C	2	90
C17	2	40	R13	2	250	T3	2	160
C18	2	290	R14	2	240	T4A	2	380
C19	2	100	R15	2	80	T5A	2	380
C2	2	200	R16	2	210	T6A	2	380
C20	2	10	R17	2	140	T7A	2	380
C21	2	270	R18	2	50	T8A	2	380
C22	2	10	R19	2	30	T9A	2	380
C23	2	10	R2	2	330			
C24	2	10	R20	2	70			
C25	2	10	R21	2	120			
C26	2	10	R22	2	120			
C3	2	40	R23	2	120			
C4	2	340	R24	2	260			
C5	2	150	R26	2	70			
C6	2	180	R27	2	360			
C7	2	150	R27D	2	360B			
C8	2	60	R27E	2	360A			
C9	2	40	R28	2	140			
D1	2	20	R29	2	140			
D2	2	300	R3	2	130			
IC1	2	230	R30	2	370			
IC2	2	320	R30D	2	370B			
J10	2	110	R30E	2	370A			
J11	2	110	R31	2	140			
J12	2	110	R32A	2	55			
J4	2	110	R33	2	80			
J5	2	110	R34	2	140			
J6	2	110	R4D	2	170			

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PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ
COVERPNR1		1	20	AR
		1A	20	AR
		1B	20	AR
		1C	20	AR
DIN125-2-2A2		1	180	2
		1A	180	2
		1B	180	2
		1C	180	2
DIN127B2-0X12		1	190	1
		1A	190	1
		1B	190	1
		1C	190	1
DIN433-2-7A2		1	140	6
		1	230	2
		1	280	2
		1	90	2
		1A	140	6
		1A	230	2
		1A	280	2
		1A	90	2
		1B	140	6
		1B	230	2
		1B	280	2
		1B	90	2
		1C	140	6
		1C	230	2
		1C	280	2
		1C	90	2
DIN433-3-2A2		1D	110	2
DIN439M2A2		1	200	1
		1A	200	1
		1B	200	1
		1C	200	1
DIN7985M3X8A2		1D	100	2
DIN7985M3X8A2SW		1D	100A	2
DIN84M2X6A2		1	170	1
		1A	170	1

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PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ
DIN84M2X6A2		1B	170	1
		1C	170	1
HC3100-20-01		1E	1	RF
HC3100-20-02		1E	1A	RF
HC3100-20-03		1E	1B	RF
HC3100-21-10		1E	1C	RF
HC3100-22-10		1E	1D	RF
HC3100-23-10		1E	1E	RF
HC3100-25-10		1E	1F	RF
HC3100-33-10		1E	1G	RF
HV2101-632-1010		1E	80	1
KA25X16WN1442		1	80	2
		1A	80	2
		1B	80	2
		1C	80	2
KA25X6WN1442		1	220	2
		1	270	2
		1A	220	2
		1A	270	2
		1B	220	2
		1B	270	2
		1C	220	2
		1C	270	2
KA25X8WN1442		1	130	6
		1A	130	6
		1B	130	6
		1C	130	6
KEYPNR1		1	15	AR
		1A	15	AR
		1B	15	AR
		1C	15	AR
PN2-331272-3		2	110	9
ST3100-20-01		1A	1	RF
ST3100-20-02		1C	1	RF
ST3100-21-10		1A	1A	RF
ST3100-21-11		1A	1B	RF
ST3100-21-12		1A	1C	RF

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PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ	
ST3100-21-13			1A	1D	RF
ST3100-21-14			1A	1E	RF
ST3100-21-15			1A	1F	RF
ST3100-21-16			1A	1G	RF
ST3100-21-17			1A	1H	RF
ST3100-21-18			1A	1J	RF
ST3100-21-21			1A	1K	RF
ST3100-21-22			1A	1L	RF
ST3100-21-25			1A	1M	RF
ST3100-21-28			1A	1N	RF
ST3100-21-30			1A	1P	RF
ST3100-21-31			1A	1Q	RF
ST3100-21-32			1A	1R	RF
ST3100-22-10			1C	1A	RF
ST3100-22-12			1C	1B	RF
ST3100-22-14			1C	1C	RF
ST3100-22-18			1C	1D	RF
ST3100-22-21			1C	1E	RF
ST3100-22-22			1C	1F	RF
ST3100-22-24			1C	1G	RF
ST3100-22-26			1C	1H	RF
ST3100-22-28			1C	1J	RF
ST3100-22-30			1C	1K	RF
ST3100-22-31			1C	1L	RF
ST3100-22-32			1C	1M	RF
ST3100-23-10			1B	1	RF
ST3100-23-12			1B	1A	RF
ST3100-23-14			1B	1B	RF
ST3100-23-15			1B	1C	RF
ST3100-23-16			1B	1D	RF
ST3100-23-17			1B	1E	RF
ST3100-23-18			1B	1F	RF
ST3100-23-19			1B	1G	RF
ST3100-23-20			1B	1J	RF
ST3100-23-21			1B	1H	RF
ST3100-23-22			1B	1J	RF
ST3100-23-23			1B	1K	RF

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PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ
ST3100-23-24			1B	1L RF
ST3100-23-25			1B	1M RF
ST3100-23-26			1B	1N RF
ST3100-23-27			1B	1P RF
ST3100-23-28			1B	1Q RF
ST3100-23-29			1B	1R RF
ST3100-23-30			1B	1S RF
ST3100-23-31			1B	1T RF
ST3100-23-32			1B	1U RF
ST3100-24-15			1	1 RF
ST3100-24-16			1	1A RF
ST3100-24-17			1	1B RF
ST3100-24-20			1	1C RF
ST3100-24-21			1	1D RF
ST3100-25-32			1D	1 RF
ST3100-24-21			1	1D RF
ST3100-26-18			1B	1V RF
R ST3100-26-32			1B	1W RF
ST3100-26-33			1B	1X RF
ST3100-27-12			1D	1A RF
ST3100-27-32			1D	1B RF
ST3100-27-37			1D	1C RF
ST3100-28-34			1	1G RF
ST3100-28-35			1	1H RF
ST3100-28-36			1	1J RF
ST3100-28-38			1	1K RF
ST3100-30-01			1	1E RF
ST3100-33-10			1	1F RF
TY23M			1D	90 2
VD101			1D	40 4

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PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ
233-129-213		1	190	RF
		1A	190	RF
		1B	190	RF
		1C	190	RF
		1D	190	RF
234-028-216		1	90	RF
		1	140	RF
		1	230	RF
		1	280	RF
		1A	90	RF
		1A	140	RF
		1A	280	RF
		1B	90	RF
		1B	140	RF
		1B	230	RF
		1B	280	RF
		1C	90	RF
		1C	140	RF
		1C	230	RF
		1C	280	RF
234-036-216		1D	90	RF
		1D	140	RF
		1D	230	RF
		1D	280	RF
		1E	110	RF
292-486-216		1	180	RF
		1A	180	RF
		1B	180	RF
		1C	180	RF
		1D	180	RF
472-875-203		1E	100	RF
516-252-251		1B	10	1
528-072-251		1	10C	1
528-110-251		1	10D	1
528-153-251		1	10	1
528-161-251		1A	10E	1
528-171-251		1B	10C	1

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PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ
528-196-251		1	10A	1
528-201-251		1A	10F	1
528-218-251		1B	10D	1
528-234-251		1	10B	1
528-242-251		1A	10G	1
528-250-251		1B	10E	1
528-285-251		1A	10H	1
528-293-251		1B	10F	1
528-307-251		1C	10C	1
528-358-251		1A	10D	1
528-366-251		1B	10B	1
528-374-251		1C	10B	1
528-404-251		1B	10H	1
528-439-251		1A	10J	1
528-447-251		1B	10J	1
528-455-251		1C	10D	1
528-471-251		1A	10K	1
528-481-251		1B	10K	1
528-498-251		1C	10E	1
528-511-258		1A	40K	1
528-528-258		1A	40L	1
528-560-251		1B	10L	1
528-609-251		1B	10M	1
528-617-251		1C	10F	1
528-633-251		1A	10L	1
528-684-251		1B	10N	1
528-692-251		1C	10G	1
528-722-251		1B	10P	1
528-757-251		1A	10M	1
528-765-251		1B	10S	1
528-773-251		1C	10H	1
531-162-251		1B	10R	1
531-189-251		1A	10N	1
531-197-251		1B	10S	1
531-200-251		1C	10J	1
531-219-251		1A	10P	1
531-227-251		1B	10T	1

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PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ	
531-235-251			1C	10L	1
531-596-258			1A	40C	1
531-626-258			1A	40D	1
531-650-258			1A	40E	1
531-669-258			1A	40F	1
531-677-258			1A	40G	1
531-685-258			1A	40H	1
531-707-258			1A	40J	1
532-355-258			1A	40M	1
532-381-258			1A	40N	1
532-401-258			1A	40P	1
532-411-258			1A	40Q	1
532-436-258			1C	40B	1
532-452-258			1C	40C	1
532-495-258			1C	40D	1
532-525-258			1C	40E	1
532-533-258			1C	40F	1
532-551-258			1C	40G	1
532-576-258			1C	40H	1
532-592-258			1C	40J	1
532-614-258			1C	40K	1
532-622-258			1C	40L	1
532-649-258			1B	40A	1
532-665-258			1B	40B	1
532-673-258			1B	40C	1
532-681-258			1B	40D	1
532-691-258			1B	40E	1
532-703-258			1B	40F	1
532-711-258			1B	40G	1
532-721-258			1B	40H	1
532-738-258			1B	40J	1
532-746-258			1B	40K	1
532-754-258			1B	40L	1
532-762-258			1B	40M	1
532-789-258			1B	40N	1
532-797-258			1B	40P	1
532-800-258			1B	40Q	1

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ	
532-819-258			1B	40R	1
532-827-258			1B	40S	1
532-835-258			1B	40T	1
532-843-258			1	40	1
532-851-258			1	40A	1
532-861-258			1	40B	1
532-878-258			1	40C	1
532-886-258			1	40D	1
532-916-251			1A	10B	1
532-924-251			1C	10A	1
532-932-251			1B	10A	1
532-959-251			1A	10C	1
571-148-284			1D	100	1
571-210-284			1D	65	1
571-288-258			1D	40	1
571-334-251			1D	10	1
587-176-276			1D	150	1
588-431-251			1D	10A	1
588-466-251			1D	10B	1
588-512-329			2	70	2
			2	70A	1
588-601-258			1D	40A	1
588-611-258			1D	40B	1
588-628-258			1D	40C	1
724-912-277			2	110	RF
749-982-201			1	170	RF
			1A	170	RF
			1B	170	RF
			1C	170	RF
			1D	170	RF
750-379-210			1	200	RF
			1A	200	RF
			1B	200	RF
			1C	200	RF
			1D	200	RF
766-496-203			1E	100	RF
774-707-315			2	10	8

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ
774-707-315		2	10A	7
821-391-284		1A	100	1
821-748-315		2	270	2
821-756-313		2	60	2
821-764-313		2	290	2
		2	290A	1
821-772-313		2	200A	2
821-780-313		2	40	3
821-799-323		2	140	6
821-802-323		2	330	1
821-810-323		2	130	1
		2	50A	1
821-829-323		2	170A	1
		2	310	1
821-837-323		2	120	4
		2	120A	1
821-845-323		2	80	2
821-853-323		2	190	1
821-861-323		2	220	2
821-871-323		2	260	2
		2	260A	1
821-888-323		2	210	2
821-926-323		2	50	1
821-942-323		2	250	1
821-950-323		2	360	1
821-969-323		2	370	1
821-977-314		2	340	1
821-985-314		2	150	2
821-993-314		2	180	2
822-000-314		2	100	2
822-027-308		2	230	1
822-035-301		2	300	1
822-183-342		2	350	1
822-191-308		2	320	1
822-205-302		2	90	1
822-213-302		2	380	6
822-221-301		2	20	1

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ
822-728-352		1	210	1
		1A	210	1
		1B	210	1
		1C	210	1
		1D	210	1
822-736-350		1	260	1
		1A	260	1
		1B	260	1
		1C	260	1
		1D	1260	1
822-752-209		1	220	RF
		1	270	RF
		1A	220	RF
		1A	270	RF
		1B	220	RF
		1B	270	RF
		1C	220	RF
		1C	270	RF
		1D	220	RF
		1D	270	RF
822-760-209		1A	130	RF
		1B	130	RF
		1C	130	RF
		1D	130	RF
822-779-209		1	80	RF
		1	130	RF
		1A	80	RF
		1B	80	RF
		1C	80	RF
822-809-295		1D	80	RF
		1E	80	RF
		1A	40	1
		1E	70	1
823-279-258		1	40E	1
823-287-258		1E	70	1
823-406-258		1E	70	1
823-414-258		1	100	1
823-661-284		1A	50	1
824-496-284				

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ	
824-526-251			1A	10	1
824-534-261			1	240	2
824-534-261			1	290	2
			1A	240	2
			1A	290	2
			1B	240	2
			1B	290	2
			1C	240	2
			1C	290	2
			1D	240	2
			1D	290	2
824-550-373			1A	110	1
			1C	110	1
			2	1	RF
824-569-251			1	120	1
			1A	120	1
			1B	120	1
			1C	120	1
			1D	120	1
824-801-284			1E	10A	1
824-828-284			1E	20A	1
824-836-241			1E	30A	2
824-895-284			1	50	1
824-941-373			1	110A	1
			2	1B	RF
824-976-284			1E	10	1
824-992-284			1E	20	1
825-001-241			1E	30	2
825-247-245			1	30	AR
			1A	30	AR
			1B	30	AR
			1C	30	AR
			1D	30	AR
825-654-278			1	300	1
			1A	300	1
			1B	300	1
			1C	300	1

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ	
825-654-278			1D	300	1
826-091-323			2	280	1
826-227-302			2	160	2
826-235-323			2	240	1
826-243-323			2	30	1
826-251-238			1	70	2
			1A	70	2
826-251-238			1B	70	2
			1C	70	2
826-383-245			1E	40	RF
826-456-277			1	160	1
			1A	160	1
			1B	160	1
			1C	160	1
			1D	160	1
826-685-283			1E	60	1
826-693-283			1E	60A	1
828-221-284			1A	60	1
828-238-284			1	60	1
828-319-251			1	10E	1
829-927-323			2	170A	1
832-588-276			1	150A	1
			1C	150	1
833-169-276			1A	150	1
833-193-284			1C	50	1
833-207-251			1C	10	1
833-258-284			1C	100	1
833-517-284			1C	60	1
833-541-284			1E	10B	1
833-568-284			1E	20B	1
833-576-241			1E	30B	2
833-614-258			1C	40	1
833-622-258			1E	70B	1
833-703-283			1E	60B	1
834-531-314			1	310	1
			1A	310	1
			1B	310	1

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

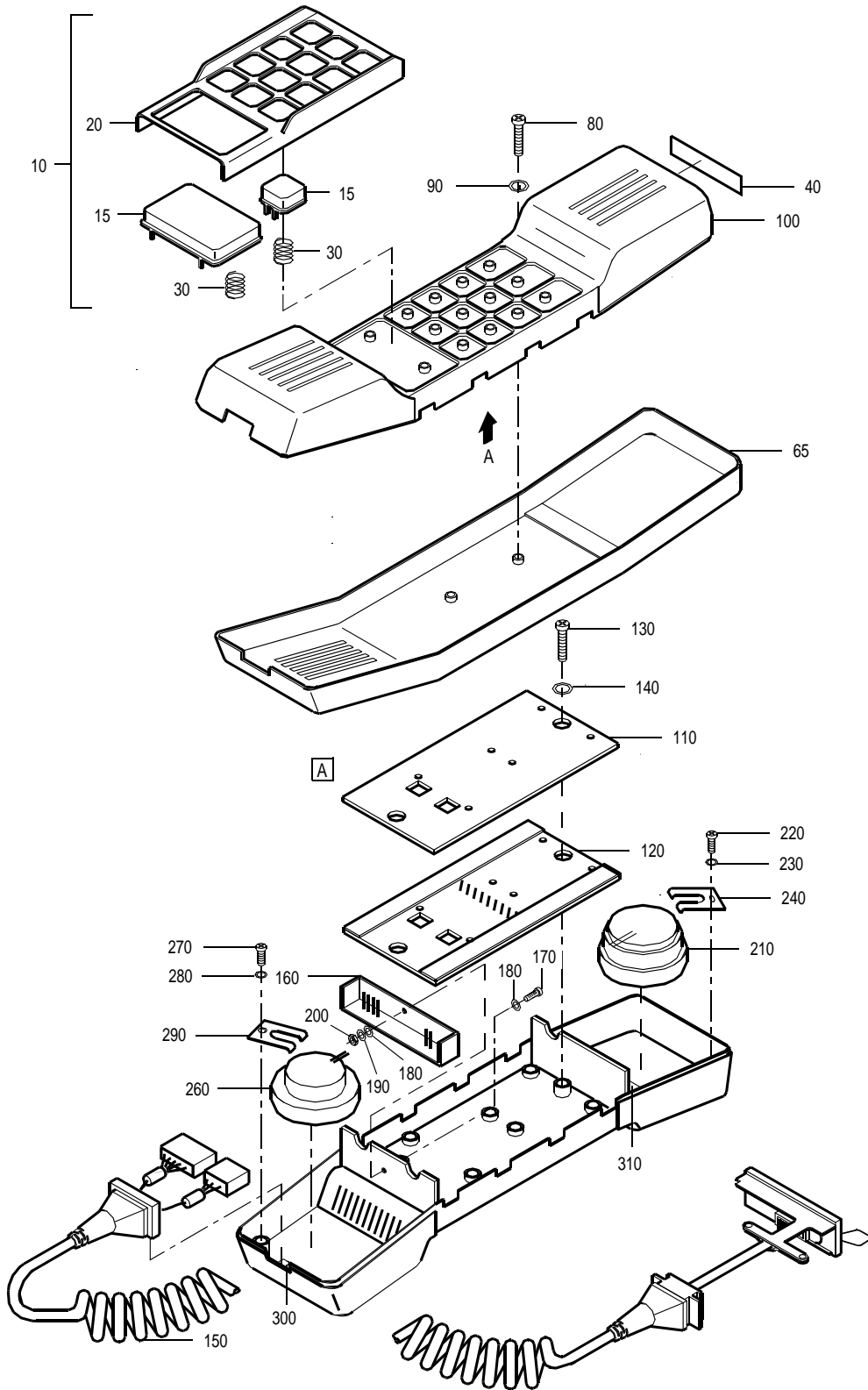
PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ
834-531-314		1C	310	1
		1D	310	1
834-742-337		1E	50	2
834-750-277		1	160	1
		1A	160	1
		1B	160	1
		1C	160	1
842-427-323		2	360A	1
		2	360B	1
843-342-258		1A	40A	1
843-350-258		1C	40A	1
843-369-258		1B	40	1
843-377-258		1	40F	1
843-431-284		1B	50	1
843-441-276		1A	150A	1
843-474-276		1	150	1
		1B	150	1
		1C	150A	1
		1D	150	1
843-512-258		1E	70C	1
843-520-258		1E	70D	1
843-539-258		1E	70E	1
843-547-258		1E	70F	1
843-555-284		1E	10G	1
843-768-284		1E	20E	1
843-814-241		1E	30C	2
844-659-323		2	370A	1
844-659-323		2	370B	1
844-888-284		1B	60	1
844-901-284		1B	100	1
845-477-251		1B	10	1
845-612-283		1E	60E	1
846-260-373		1	110	1
		1A	110A	1
		1B	110	1
		1C	110A	1
		1D	110	1

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

PART NUMBER	AIRLINE STOCK NUMBER	FIG.	ITEM	TTL REQ
846-260-373		2	1A	RF
846-279-373		1	110B	1
		2	1C	RF
846-295-284		1E	10C	1
846-325-284		1E	20C	1
846-376-283		1E	60C	1
846-414-284		1E	10D	1
846-422-284		1E	20D	1
846-481-283		1E	60D	1
846-511-284		1E	10F	1
846-521-284		1E	20F	1
846-589-283		1E	60F	1
849-901-258		1A	40B	1
849-936-251		1A	10A	1

DETAILED PARTS LIST

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



HANDSET ASSY
FIGURE 1

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1					
-1	ST3100-24-15		HANDSET ASSY	A	RF
-1A	ST3100-24-16		HANDSET ASSY	B	RF
-1B	ST3100-24-17		HANDSET ASSY	C	RF
-1C	ST3100-24-20		HANDSET ASSY	D	RF
-1D	ST3100-24-21		HANDSET ASSY	E	RF
-1E	ST3100-30-01		HANDSET ASSY (PRE SB 3100-23-1)	F	RF
-1F	ST3100-33-10		HANDSET ASSY (POST SB 3100-23-1)	G	RF
-1G	ST3100-28-34		HANDSET ASSY	H	RF
-1H	ST3100-28-35		HANDSET ASSY	J	RF
-1J	ST3100-28-36		HANDSET ASSY	K	RF
-1K	ST3100-28-38		HANDSET ASSY	L	RF
10	528-153-251		.KEYBOARD SET (REFER FIG. APPENDIX 1 FOR DET.)	A	1
-10A	528-196-251		.KEYBOARD SET (REFER FIG. APPENDIX 1 FOR DET.)	B	1
-10B	528-234-251		.KEYBOARD SET (REFER FIG. APPENDIX 1 FOR DET.)	C	1
-10C	528-072-251		.KEYBOARD SET (REFER FIG. APPENDIX 1 FOR DET.)	D	1
-10D	528-110-251		.KEYBOARD SET	E	1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1			(REFER FIG. APPENDIX 1 FOR DET.)		
-10E	828-319-251		.KEYBOARD SET (REFER FIG. APPENDIX 1 FOR DET.)	F,G	1
-10F	589-160-251		.KEYBOARD SET (REFER FIG. APPENDIX 1 FOR DET.)	H	1
-10G	588-776-251		.KEYBOARD SET (REFER FIG. APPENDIX 1 FOR DET.)	J	1
-10H	588-784-251		.KEYBOARD SET (REFER FIG. APPENDIX 1 FOR DET.)	K	1
-10J	588-792-251		.KEYBOARD SET (REFER FIG. APPENDIX 1 FOR DET.)	L	1
15	KEYPNR1		..KEY	NP	AR
20	COVERPNR1		..COVER	NP	AR
30	825-247-245		..SPRING, KEY		AR
40	532-843-258		.PLATE, IDENTIFICATION	A	1
-40A	532-851-258		.PLATE, IDENTIFICATION	B	1
-40B	532-861-258		.PLATE, IDENTIFICATION	C	1
-40C	532-878-258		.PLATE, IDENTIFICATION	D	1
-40D	532-886-258		.PLATE, IDENTIFICATION	E	1
-40E	823-406-258		.PLATE, IDENTIFICATION	F	1
-40F	843-377-258		.PLATE, IDENTIFICATION	G	1
-40G	589-195-258		.PLATE, IDENTIFICATION	H	1
-40H	588-636-258		.PLATE, IDENTIFICATION	J	1
-40J	588-644-258		.PLATE, IDENTIFICATION	K	1
-40K	588-652-258		.PLATE, IDENTIFICATION	L	1
-50	824-895-284		.CASE, UPPER		1
R -60	828-238-284		..CASE (SUPSD BY ITEM 65)		1
65	824-895-284		..CASE, COMPLETED		1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
R	1				
	-70	826-251-238	(SUPSDS ITEMS 60A, 70A) .GASKET, MAPAFLEX (SUPSD BY ITEM 65) ATTACHING PARTS		2
	80	KA25X16WN1442	.SCREW (VC3269) (BECKER PNR 822-779-209)		2
	90	DIN433-2-7A2	.WASHER (BECKER PNR 234-028-216) * * *		2
	100	823-661-284	.CASE, LOWER		1
	110	846-260-373	.BOARD, GENERATOR AND AMPLIFIER (SEE FIG.3 FOR BKDN)	A-E, H-L	1
	-110A	824-941-373	.BOARD, AMPLIFIER (SEE FIG.3 FOR BKDN)	F	1
	-110B	846-279-373	.BOARD, AMPLIFIER (SEE FIG.3 FOR BKDN)	G	1
	120	824-569-251	.KEYBOARD		1
	130	KA25X8WN1442	.SCREW (VC3269) (BECKER PNR 822-760-209)		6
	140	DIN433-2-7A2	.WASHER (BECKER PNR 234-028-216)		6
	150	843-474-276	.CABLE, COILED	A-E, G-L	1
	-150A	832-588-276	.CABLE, COILED	F	1
	160	834-750-277	.CONNECTOR WITH CABLE HARNESS (FOR AMPLIFIER BOARD WITH INDEX A)		1
	-160A	826-456-277	.CONNECTOR WITH CABLE HARNESS (FOR AMPLIFIER BOARD WITH INDEX B AND UP) ATTACHING PARTS		1
	170	DIN84M2X6A2	.SCREW (BECKER PNR 749-982-201)		1

- ITEM NOT ILLUSTRATED

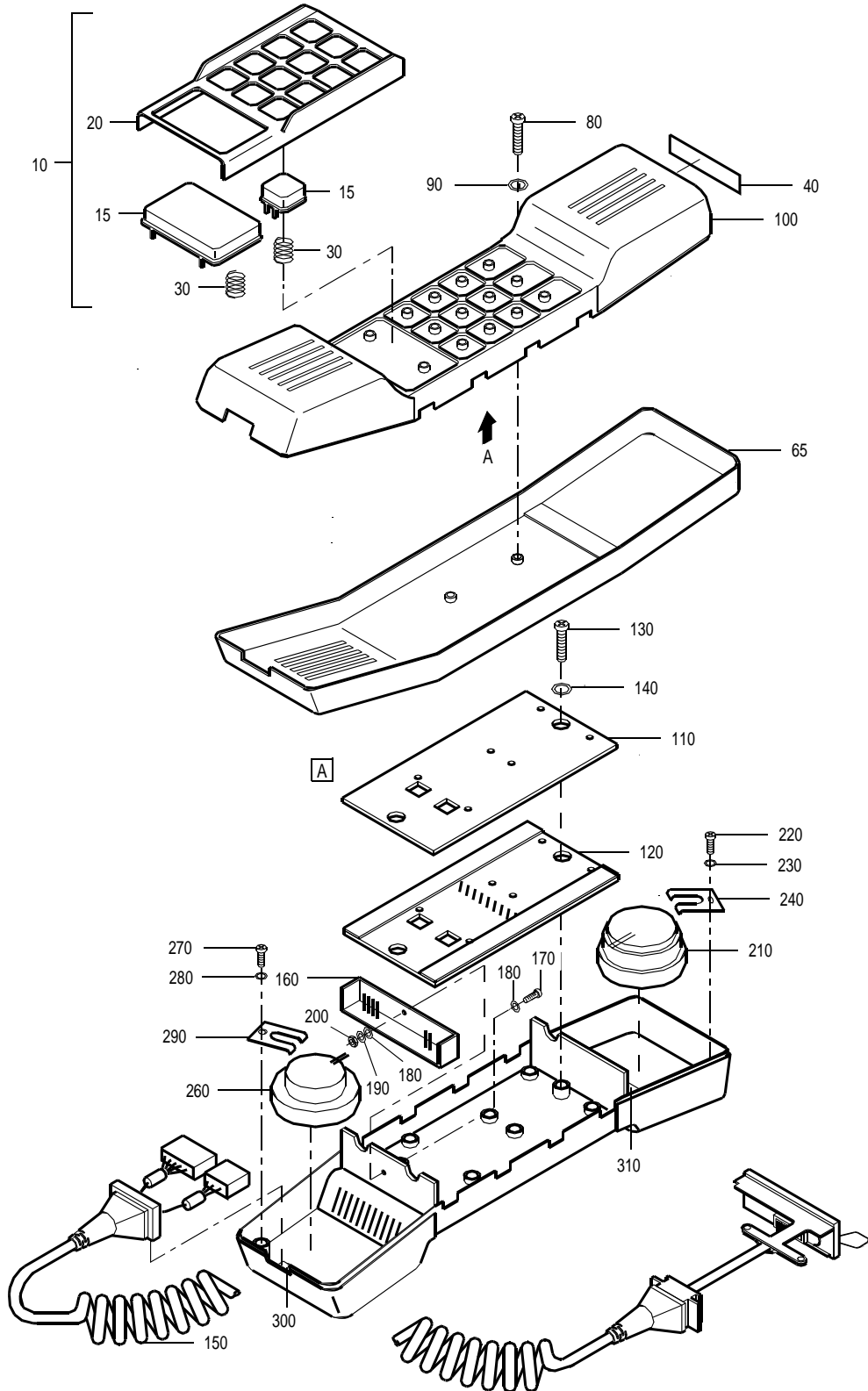
COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1					
180	DIN125-2-2A2		.WASHER (BECKER PNR 292-486-216)		2
190	DIN127B2-0X12		.WASHER, SPRING (BECKER PNR 233-129-213)		1
200	DIN439M2A2		.NUT (BECKER PNR 750-379-210)		1
			* * *		
210	822-728-352		.CAPSULE PC1, PHONE ATTACHING PARTS		1
220	KA25X6WN1442		.SCREW (VC3269) (BECKER PNR 822-752-209)		2
230	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		2
240	824-534-261		.CLIP * * *		2
260	822-736-350		.CAPSULE MC1, MIKE ATTACHING PARTS		1
270	KA25X6WN1442		.SCREW (VC3269) (BECKER PNR 822-752-209)		2
280	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		2
290	824-534-261		.CLIP * * *		2
300	825-654-278		.SWITCH S15, REED		1
310	834-531-314		.CAPACITOR, FOIL (680NF +/- 20 PERCENT, 50 V (C27C))		1

- ITEM NOT ILLUSTRATED

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COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



HANDSET ASSY
FIGURE 1A

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1A					
-1	ST3100-20-01		HANDSET ASSY (PRE SB 3100-23-1)	A	RF
-1A	ST3100-21-10		HANDSET ASSY POST SB 3100-23-1)	B	RF
-1B	ST3100-21-11		HANDSET ASSY	C	RF
-1C	ST3100-21-12		HANDSET ASSY	D	RF
-1D	ST3100-21-13		HANDSET ASSY	E	RF
-1E	ST3100-21-14		HANDSET ASSY	F	RF
-1F	ST3100-21-15		HANDSET ASSY	G	RF
-1G	ST3100-21-16		HANDSET ASSY	H	RF
-1H	ST3100-21-17		HANDSET ASSY	J	RF
-1J	ST3100-21-18		HANDSET ASSY	K	RF
-1K	ST3100-21-21		HANDSET ASSY	L	RF
-1L	ST3100-21-22		HANDSET ASSY	M	RF
-1M	ST3100-21-25		HANDSET ASSY	N	RF
-1N	ST3100-21-28		HANDSET ASSY	P	RF
-1P	ST3100-21-30		HANDSET ASSY	Q	RF
-1Q	ST3100-21-31		HANDSET ASSY	R	RF
-1R	ST3100-21-32		HANDSET ASSY	S	RF

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1A					
10	824-526-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	A,B	1
-10A	849-936-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	C	1
-10B	532-916-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.) FOR DET.)	D	1
-10C	532-959-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	E	1
-10D	528-358-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	F	1
-10E	528-161-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	G	1
-10F	528-201-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	H	1
-10G	531-219-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	J	1
-10H	528-285-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	K	1
-10J	528-439-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	L	1
-10K	528-471-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	M	1
-10L	528-633-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	N	1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1A					
-10M	528-757-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	P	1
-10N	531-189-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	Q	1
-10P	528-242-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	R	1
-10Q	547-786-251		.KEYBOARD SET (REFER FIG. APPENDIX 1A FOR DET.)	S	1
15	KEYPNR1		..KEY	NP	AR
20	COVERPNR1		..COVER	NP	AR
30	825-247-245		..SPRING, KEY		AR
40	823-279-258		.PLATE, IDENTIFICATION	A	1
-40A	843-342-258		.PLATE, IDENTIFICATION	B	1
-40B	849-901-258		.PLATE, IDENTIFICATION	C	1
-40C	531-596-258		.PLATE, IDENTIFICATION	D	1
-40D	531-626-258		.PLATE, IDENTIFICATION	E	1
-40E	531-650-258		.PLATE, IDENTIFICATION	F	1
-40F	531-669-258		.PLATE, IDENTIFICATION	G	1
-40G	531-677-258		.PLATE, IDENTIFICATION	H	1
-40H	531-685-258		.PLATE, IDENTIFICATION	J	1
-40J	531-707-258		.PLATE, IDENTIFICATION	K	1
-40K	528-511-258		.PLATE, IDENTIFICATION	L	1
-40L	528-528-258		.PLATE, IDENTIFICATION	M	1
-40M	532-355-258		.PLATE, IDENTIFICATION	N	1
-40N	532-381-258		.PLATE, IDENTIFICATION	P	1
-40P	532-401-258		.PLATE, IDENTIFICATION	Q	1
-40Q	532-411-258		.PLATE, IDENTIFICATION	R	1
-40R	589-786-258		.PLATE, IDENTIFICATION	S	1
-50	824-496-284		.CASE, UPPER		1
R -60	828-221-284		..CASE (SUPSD BY ITEM 65)		1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1A					
R 65	824-496-284		..CASE, COMPLETED (SUPSDS ITEMS 60A, 70A)		1
-70	826-251-238		..GASKET, MAPAFLEX (SUPSD BY ITEM 65) ATTACHING PARTS		2
80	KA25X16WN1442		.SCREW (VC3269) (BECKER PNR 822-779-209)		2
90	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		2

100	821-391-284		.CASE, LOWER		1
110	824-550-373		.BOARD, GENERATOR AND AMPLIFIER (SEE FIG.3 FOR BKDN)	A	1
-110A	846-260-373		.BOARD, GENERATOR AND AMPLIFIER (SEE FIG.3 FOR BKDN)	B-S	1
120	824-569-251		.KEYBOARD		1
130	KA25X8WN1442		.SCREW (VC3269) (BECKER PNR 822-760-209)		6
140	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		6
150	833-169-276		.CABLE, COILED	A	1
-150A	843-441-276		.CABLE, COILED	B-S	1
160	834-750-277		.CONNECTOR WITH CABLE HAR- NESS (FOR AMPLIFIER BOARD WITH INDEX A)		1
-160A	826-456-277		.CONNECTOR WITH CABLE HAR- NESS (FOR AMPLIFIER BOARD WITH INDEX B AND UP) ATTACHING PARTS		1
170	DIN84M2X6A2		.SCREW (BECKER PNR 749-982-201)		1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1A					
180	DIN125-2-2A2		.WASHER (BECKER PNR 292-486-216)		2
190	DIN127B2-0X12		.WASHER, SPRING (BECKER PNR 233-129-213)		1
200	DIN439M2A2		.NUT (BECKER PNR 750-379-210)		1

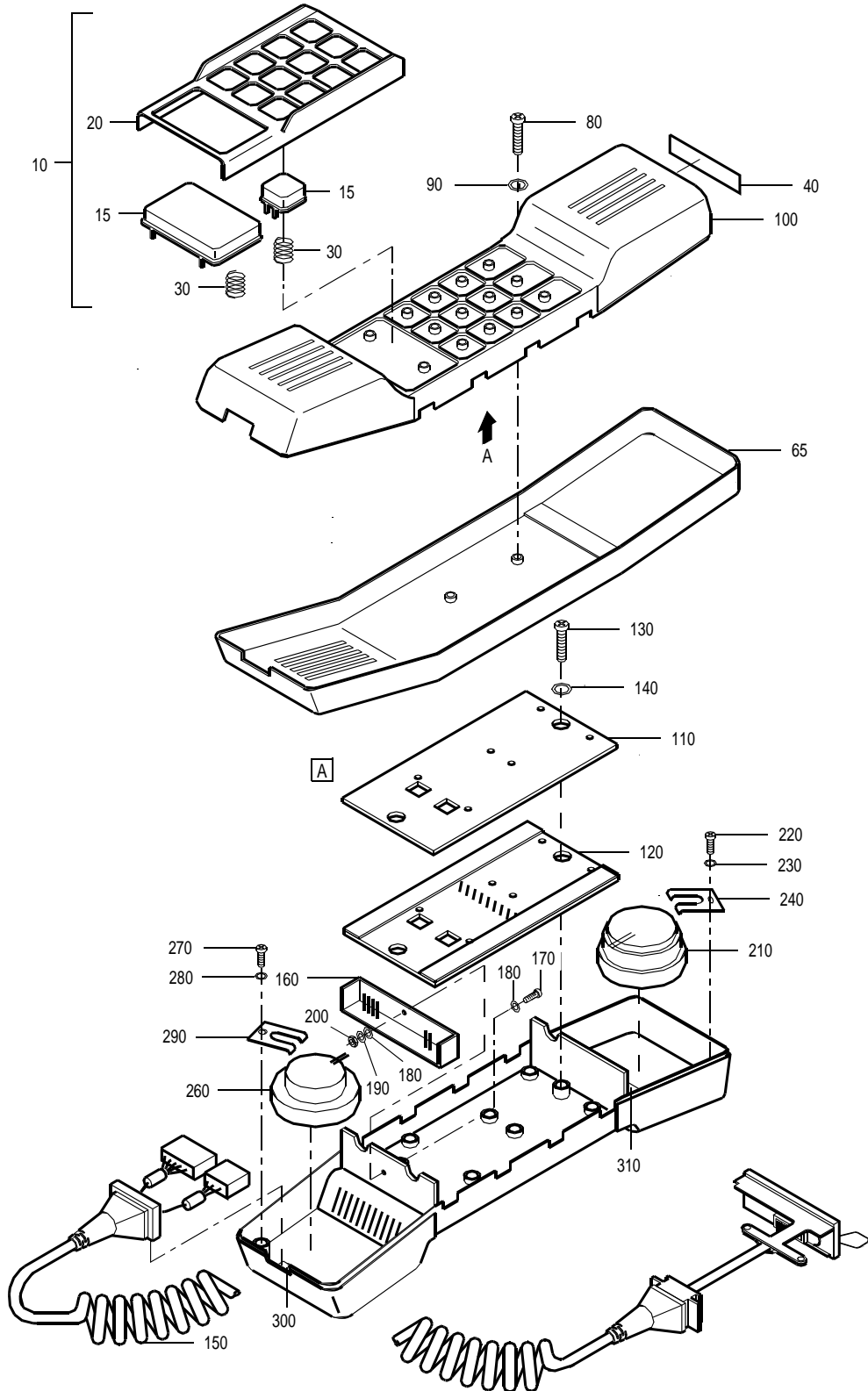
210	822-728-352		.CAPSULE PC1, PHONE ATTACHING PARTS		1
220	KA25X6WN1442		.SCREW (VC3269) (BECKER PNR 822-752-209)		2
230	DIN433-2-7A2		.WASHER		2
240	824-534-261		.CLIP		2

260	822-736-350		.CAPSULE MC1, MIKE ATTACHING PARTS		1
270	KA25X6WN1442		.SCREW (VC3269) (BECKER PNR 822-752-209)		2
280	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		2
290	824-534-261		.CLIP		2

300	825-654-278		.SWITCH S15, REED		1
310	834-531-314		.CAPACITOR, FOIL (680NF +/- 20 PERCENT, 50 V (C27C))		1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



HANDSET ASSY
FIGURE 1B

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1B					
-1	ST3100-23-10		HANDSET ASSY	A	RF
-1A	ST3100-23-12		HANDSET ASSY	B	RF
-1B	ST3100-23-14		HANDSET ASSY	C	RF
-1C	ST3100-23-15		HANDSET ASSY	D	RF
-1D	ST3100-23-16		HANDSET ASSY	E	RF
-1E	ST3100-23-17		HANDSET ASSY	F	RF
-1F	ST3100-23-18		HANDSET ASSY	G	RF
-1G	ST3100-23-19		HANDSET ASSY	H	RF
-1H	ST3100-23-20		HANDSET ASSY	J	RF
-1J	ST3100-23-21		HANDSET ASSY	K	RF
-1K	ST3100-23-22		HANDSET ASSY	L	RF
-1L	ST3100-23-23		HANDSET ASSY	M	RF
-1M	ST3100-23-24		HANDSET ASSY	N	RF
-1N	ST3100-23-26		HANDSET ASSY	P	RF
-1P	ST3100-23-27		HANDSET ASSY	Q	RF
-1Q	ST3100-23-28		HANDSET ASSY	R	RF
-1R	ST3100-23-29		HANDSET ASSY	S	RF
-1S	ST3100-23-30		HANDSET ASSY	T	RF

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1B					
-1T	ST3100-23-31		HANDSET ASSY	U	RF
-1U	ST3100-23-25		HANDSET ASSY	V	RF
-1V	ST3100-23-32		HANDSET ASSY	W	RF
-1W	ST3100-26-18		HANDSET ASSY	X	RF
-1X	ST3100-26-33		HANDSET ASSY	Y	RF
R -1Y	ST3100-26-32		HANDSET ASSY	Z	RF
10	845-477-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	A	1
-10A	532-932-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	B	1
-10B	528-366-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	C	1
-10C	528-171-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	D	1
-10D	528-218-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	E	1
-10E	531-227-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	F	1
-10F	528-293-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	G	1
-10G	516-252-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	H	1
-10H	528-404-251		.KEYBOARD SET	J	1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1B			(REFER FIG. APPENDIX 1B FOR DET.)		
-10J	528-447-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	K	1
-10K	528-481-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	L	1
-10L	528-560-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	M	1
-10M	528-609-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	N,X	1
-10N	528-684-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	P	1
-10P	528-722-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	Q	1
-10Q	528-765-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	R	1
-10R	531-162-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	S	1
-10S	531-197-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	T	1
-10T	528-250-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	U	1
-10U	528-641-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	V	1
R	-10V	551-041-251	.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	W, Z	1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1B					
-10W	577-561-251		.KEYBOARD SET (REFER FIG. APPENDIX 1B FOR DET.)	Y	1
15	KEYPNR1		..KEY	NP	AR
20	COVERPNR1		..COVER	NP	AR
30	825-247-245		.SPRING, KEY		AR
40	843-369-258		.PLATE, IDENTIFICATION	A	1
-40A	532-649-258		.PLATE, IDENTIFICATION	B	1
-40B	532-665-258		.PLATE, IDENTIFICATION	C	1
-40C	532-673-258		.PLATE, IDENTIFICATION	D	1
-40D	532-681-258		.PLATE, IDENTIFICATION	E	1
-40E	532-691-258		.PLATE, IDENTIFICATION	F	1
-40F	532-703-258		.PLATE, IDENTIFICATION	G	1
-40G	532-711-258		.PLATE, IDENTIFICATION	H	1
-40H	532-721-258		.PLATE, IDENTIFICATION	J	1
-40J	532-738-258		.PLATE, IDENTIFICATION	K	1
-40K	532-746-258		.PLATE, IDENTIFICATION	L	1
-40L	532-754-258		.PLATE, IDENTIFICATION	M	1
-40M	532-762-258		.PLATE, IDENTIFICATION	N	1
-40N	532-789-258		.PLATE, IDENTIFICATION	P	1
-40P	532-797-258		.PLATE, IDENTIFICATION	Q	1
-40Q	532-800-258		.PLATE, IDENTIFICATION	R	1
-40R	532-819-258		.PLATE, IDENTIFICATION	S	1
-40S	532-827-258		.PLATE, IDENTIFICATION	T	1
-40T	532-835-258		.PLATE, IDENTIFICATION	U	1
-40U	532-770-258		.PLATE, IDENTIFICATION	V	1
-40V	557-072-258		.PLATE, IDENTIFICATION	W	1
-40W	584-584-258		.PLATE, IDENTIFICATION	X	1
-40X	577-571-258		.PLATE, IDENTIFICATION	Y	1
R -40Y	591-637-258		.PLATE, IDENTIFICATION	Z	1
-50	843-431-284		.CASE, UPPER		1
R -60	844-888-284		..CASE (SUPSD BY ITEM 65)		1
65	843-431-284		..CASE, COMPLETED (SUPSDS ITEMS 60A, 70A)		1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
R	1B				
	-70	826-251-238			2
				..GASKET, MAPAFLEX (SUPSD BY ITEM 65) ATTACHING PARTS	
	80	KA25X16WN1442		.SCREW (VC3269) (BECKER PNR 822-779-209)	2
	90	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216) * * *	2
	100	844-901-284		.CASE, LOWER	1
	110	846-260-373		.BOARD, GENERATOR AND AMPLIFIER (SEE FIG.3 FOR BKDN)	1
	120	824-569-251		.KEYBOARD	1
	130	KA25X8WN1442		.SCREW (VC3269) (BECKER PNR 822-760-209)	6
	140	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)	6
	150	843-474-276		.CABLE, COILED BLACK	A-W 1
	-150A	577-588-276		.CABLE, COILED PEPPERDUST	X-Z 1
	160	834-750-277		.CONNECTOR WITH CABLE HAR- NESS (FOR AMPLIFIER BOARD WITH INDEX A)	1
	-160	826-456-277		.CONNECTOR WITH CABLE HAR- NESS (FOR AMPLIFIER BOARD WITH INDEX B AND UP) ATTACHING PARTS	1
	170	DIN84M2X6A2		.SCREW (BECKER PNR 749-982-201)	1
	180	DIN125-2-2A2		.WASHER (BECKER PNR 292-486-216)	2
	190	DIN127B2-0X12		.WASHER, SPRING (BECKER PNR 233-129-213)	1

- ITEM NOT ILLUSTRATED

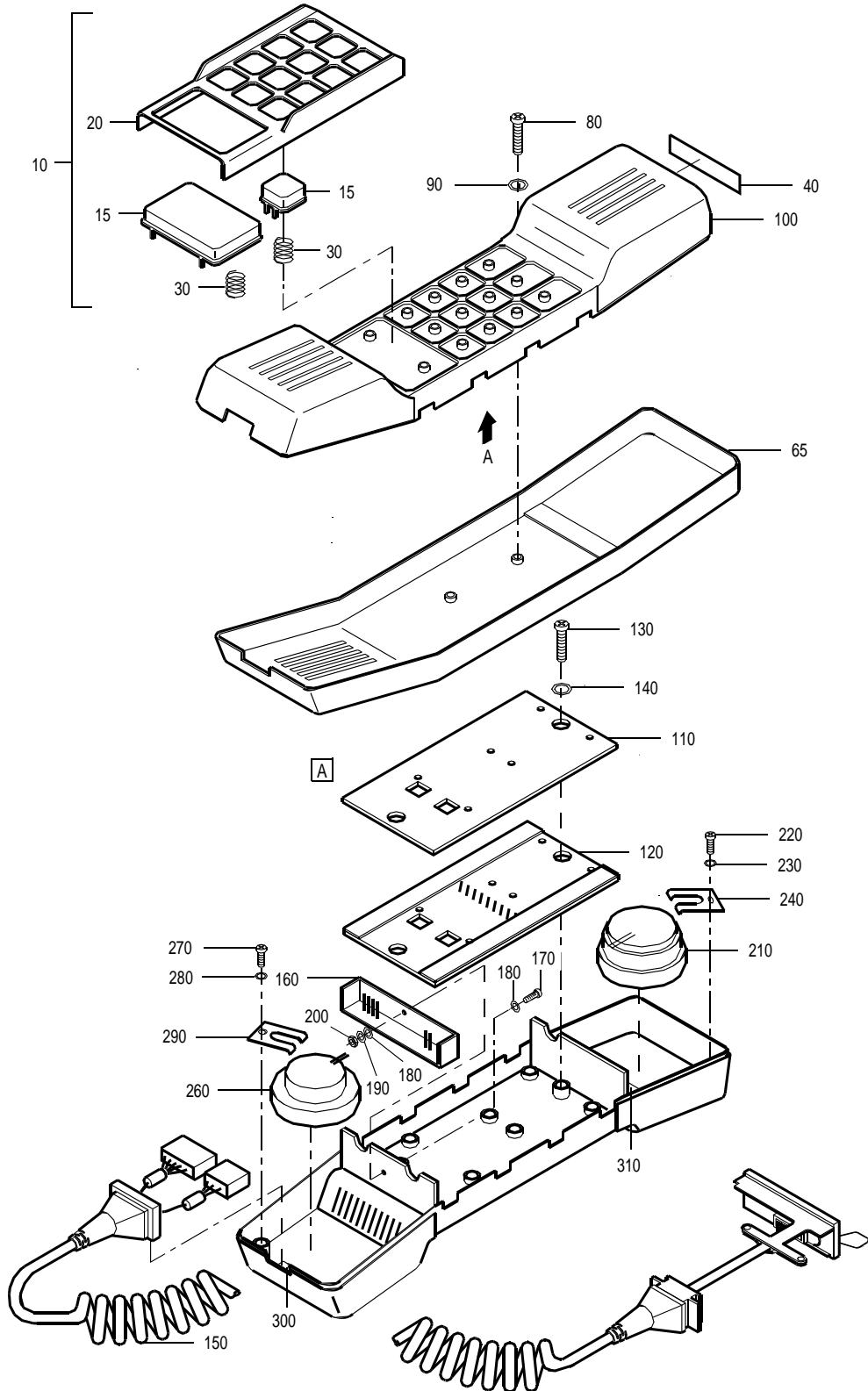
COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1B					
200	DIN439M2A2		.NUT (BECKER PNR 750-379-210) * * *		1
210	822-728-352		.CAPSULE PC1, PHONE ATTACHING PARTS		1
220	KA25X6WN1442		.SCREW (VC3269) (BECKER PNR 822-752-209)		2
230	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		2
240	824-534-261		.CLIP * * *		2
260	822-736-350		.CAPSULE MC1, MIKE ATTACHING PARTS		1
270	KA25X6WN1442		.SCREW (VC3269) (BECKER PNR 822-752-209)		2
280	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		2
290	824-534-261		.CLIP * * *		2
300	825-654-278		.SWITCH S15, REED		1
310	834-531-314		.CAPACITOR, FOIL (680NF +/- 20 PERCENT, 50 V (C27C))		1

- ITEM NOT ILLUSTRATED

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COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



HANDSET ASSY
FIGURE 1C

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1C					
-1	ST3100-20-02		HANDSET ASSY (PRE SB 3100-23-1)	A	RF
-1A	ST3100-22-10		HANDSET ASSY (POST SB 3100-23-1)	B	RF
-1B	ST3100-22-12		HANDSET ASSY	C	RF
-1C	ST3100-22-14		HANDSET ASSY	D	RF
-1D	ST3100-22-18		HANDSET ASSY	E	RF
-1E	ST3100-22-21		HANDSET ASSY	F	RF
-1F	ST3100-22-22		HANDSET ASSY	G	RF
-1G	ST3100-22-24		HANDSET ASSY	H	RF
-1H	ST3100-22-26		HANDSET ASSY	J	RF
-1J	ST3100-22-28		HANDSET ASSY	K	RF
-1K	ST3100-22-30		HANDSET ASSY	L	RF
-1L	ST3100-22-31		HANDSET ASSY	M	RF
-1M	ST3100-22-32		HANDSET ASSY	N	RF
10	833-207-251		.KEYBOARD SET (REFER FIG. APPENDIX 1C FOR DET.)	A,B	1
-10A	532-924-251		.KEYBOARD SET (REFER FIG. APPENDIX 1C FOR DET.)	C	1
-10B	528-374-251		.KEYBOARD SET (REFER FIG. APPENDIX 1C FOR DET.)	D	1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1C					
-10C	528-307-251		.KEYBOARD SET (REFER FIG. APPENDIX 1C FOR DET.)	E	1
-10D	528-455-251		.KEYBOARD SET (REFER FIG. APPENDIX 1C FOR DET.)	F	1
-10E	528-498-251		.KEYBOARD SET (REFER FIG. APPENDIX 1C FOR DET.)	G	1
-10F	528-617-251		.KEYBOARD SET (REFER FIG. APPENDIX 1C FOR DET.)	H	1
-10G	528-692-251		.KEYBOARD SET (REFER FIG. APPENDIX 1C FOR DET.)	J	1
-10H	528-773-251		.KEYBOARD SET (REFER FIG. APPENDIX 1C FOR DET.)	K	1
-10J	531-200-251		.KEYBOARD SET (REFER FIG. APPENDIX 1C FOR DET.)	L	1
-10K	531-235-251		.KEYBOARD SET (REFER FIG. APPENDIX 1C FOR DET.)	M	1
-10L	589-241-251		.KEYBOARD SET (REFER FIG. APPENDIX 1C FOR DET.)	N	1
15	KEYPNR1		..KEY	NP	AR
20	COVERPNR1		..COVER	NP	AR
30	825-247-245		..SPRING, KEY		AR
40	833-614-258		.PLATE, IDENTIFICATION	A	1
-40A	843-350-258		.PLATE, IDENTIFICATION	B	1
-40B	532-436-258		.PLATE, IDENTIFICATION	C	1
-40C	532-452-258		.PLATE, IDENTIFICATION	D	1
-40D	532-495-258		.PLATE, IDENTIFICATION	E	1
-40E	532-525-258		.PLATE, IDENTIFICATION	F	1
-40F	532-533-258		.PLATE, IDENTIFICATION	G	1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1C					
	-40G 532-551-258		.PLATE, IDENTIFICATION	H	1
	-40H 532-576-258		.PLATE, IDENTIFICATION	J	1
	-40J 532-592-258		.PLATE, IDENTIFICATION	K	1
	-40K 532-614-258		.PLATE, IDENTIFICATION	L	1
	-40L 532-622-258		.PLATE, IDENTIFICATION	M	1
	-40M 590-789-258		.PLATE, IDENTIFICATION	N	1
	-50 833-193-284		.CASE, UPPER		1
R	-60 833-517-284		..CASE (SUPSD BY ITEM 65)		1
	65 833-193-284		..CASE, COMPLETED (SUPSDS ITEMS 60A, 70A)		1
R	-70 826-251-238		..GASKET, MAPAFLEX (SUPSD BY ITEM 65) ATTACHING PARTS		2
	80 KA25X16WN1442		.SCREW (VC3269) (BECKER PNR 822-779-209)		2
	90 DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		2
			* * *		
	100 833-258-284		.CASE, LOWER		1
	110 824-550-373		.BOARD, GENERATOR AND AMPLIFIER (SEE FIG.3 FOR BKDN)	A	1
	-110A 846-260-373		.BOARD, GENERATOR AND AMPLIFIER (SEE FIG.3 FOR BKDN)	B-N	1
	120 824-569-251		.KEYBOARD		1
	130 KA25X8WN1442		.SCREW (VC3269) (BECKER PNR 822-760-209)		6
	140 DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		6
	150 832-588-276		.CABLE, COILED	A	1
	-150A 843-474-276		.CABLE, COILED	B-N	1
	160 834-750-277		.CONNECTOR WITH CABLE		1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1C					
-160A	826-456-277		HARNESS (FOR AMPLIFIER BOARD WITH INDEX A) .CONNECTOR WITH CABLE HARNESS (FOR AMPLIFIER BOARD WITH INDEX B AND UP) ATTACHING PARTS		1
170	DIN84M2X6A2		.SCREW (BECKER PNR 749-982-201)		1
180	DIN125-2-2A2		.WASHER (BECKER PNR 292-486-216)		2
190	DIN127B2-0X12		.WASHER, SPRING (BECKER PNR 233-129-213)		1
200	DIN439M2A2		.NUT (BECKER PNR 750-379-210) * * *		1
210	822-728-352		.CAPSULE PC1, PHONE ATTACHING PARTS		1
220	KA25X6WN1442		.SCREW (VC3269) (BECKER PNR 822-752-209)		2
230	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		2
240	824-534-261		.CLIP * * *		2
260	822-736-350		.CAPSULE MC1, MIKE ATTACHING PARTS		1
270	KA25X6WN1442		.SCREW (VC3269) (BECKER PNR 822-752-209)		2
280	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		2
290	824-534-261		.CLIP * * *		2
300	825-654-278		.SWITCH S15, REED		1

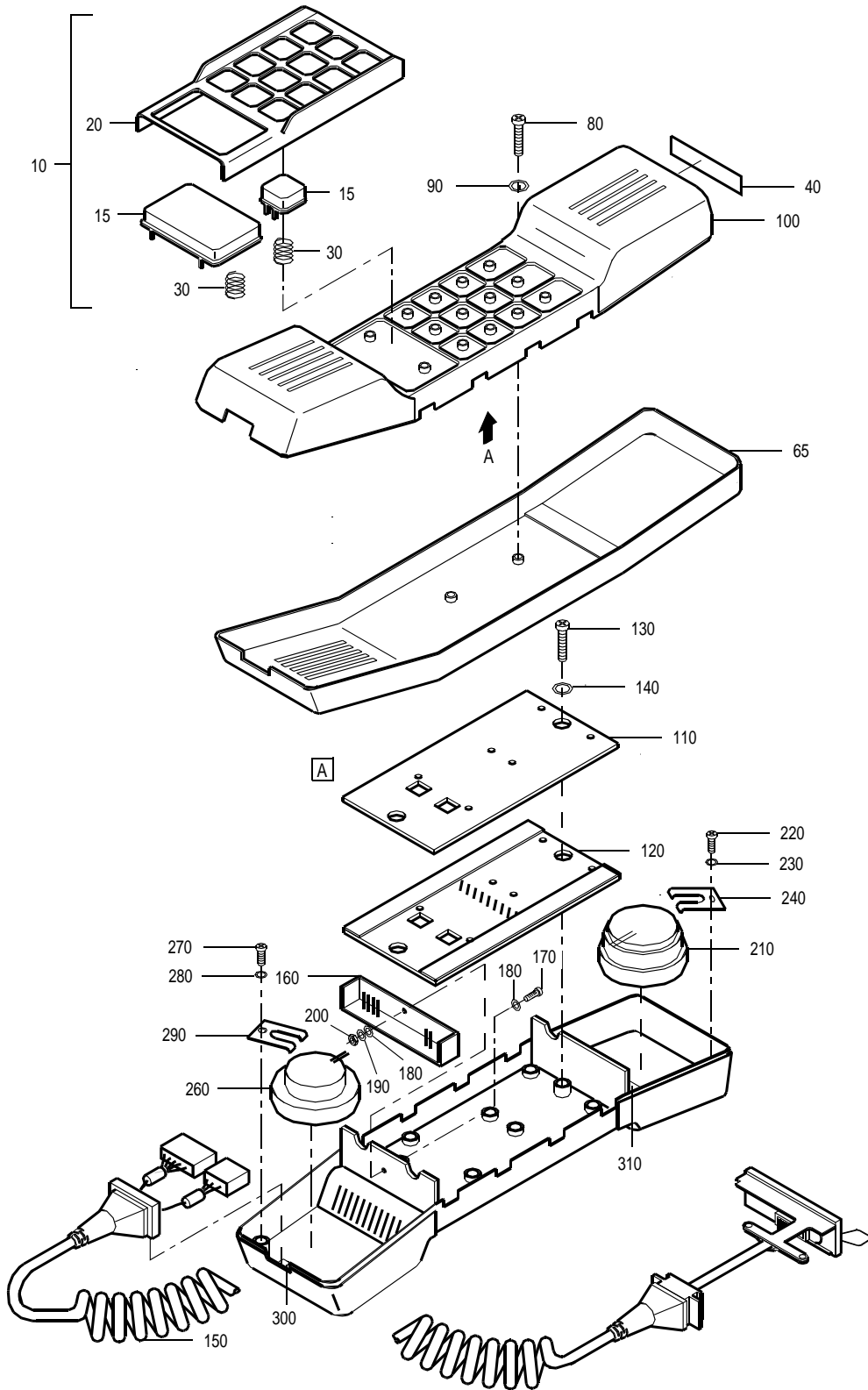
- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1C 310	834-531-314		.CAPACITOR, FOIL (680NF +/- 20 PERCENT, 50 V (C27C))		1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



HANDSET ASSY
FIGURE 1D

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1D					
-1	ST3100-25-32		HANDSET ASSY	A	RF
-1A	ST3100-27-12		HANDSET ASSY	B	RF
-1B	ST3100-27-32		HANDSET ASSY	C	RF
-1C	ST3100-27-37		HANDSET ASSY	D	RF
10	571-334-251		.KEYBOARD SET (REFER FIG. APPENDIX 1D FOR DET.)	A,C	1
-10A	588-431-251		.KEYBOARD SET (REFER FIG. APPENDIX 1D FOR DET.)	B	1
-10B	588-466-251		.KEYBOARD SET (REFER FIG. APPENDIX 1D FOR DET.)	D	1
15	KEYPNR1		..KEY	NP	AR
20	COVERPNR1		..COVER	NP	AR
30	825-247-245		..SPRING, KEY		AR
40	571-288-258		.PLATE, IDENTIFICATION	A	1
-40A	588-601-258		.PLATE, IDENTIFICATION	B	1
-40B	588-611-258		.PLATE, IDENTIFICATION	C	1
-40C	588-628-258		.PLATE, IDENTIFICATION	D	1
-50	571-210-284		.CASE, UPPER		1
R -60	589-578-284		..CASE (SUPSD BY ITEM 65)		1
65	571-210-284		..CASE, COMPLETED (SUPSDS ITEMS 60A, 70A)		1
R -70	826-251-238		..GASKET, MAPAFLEX (SUPSD BY ITEM 65) ATTACHING PARTS		2
80	KA25X16WN1442		.SCREW (VC3269) (BECKER PNR 822-779-209)		2

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1D					
90	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216) * * *		2
100	571-148-284		.CASE, LOWER		1
110	846-260-373		.BOARD, GENERATOR AND AMPLIFIER (SEE FIG.3 FOR BKDN)	A-D	1
120	824-569-251		.KEYBOARD		1
130	KA25X8WN1442		.SCREW (VC3269) (BECKER PNR 822-760-209)		6
140	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		6
150	843-474-276		.CABLE, COILED BLACK	A	1
-150A	587-176-276		.CABLE, COILED	B-D	1
160	826-456-277		.CONNECTOR WITH CABLE HARNESS (FOR AMPLIFIER BOARD WITH INDEX A) ATTACHING PARTS		1
170	DIN84M2X6A2		.SCREW (BECKER PNR 749-982-201)		1
180	DIN125-2-2A2		.WASHER (BECKER PNR 292-486-216)		2
190	DIN127B2-0X12		.WASHER, SPRING (BECKER PNR 233-129-213)		1
200	DIN439M2A2		.NUT (BECKER PNR 750-379-210) * * *		1
210	822-728-352		.CAPSULE PC1, PHONE ATTACHING PARTS	A-D	1
220	KA25X6WN1442		.SCREW (VC3269) (BECKER PNR 822-752-209)		2
230	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		2

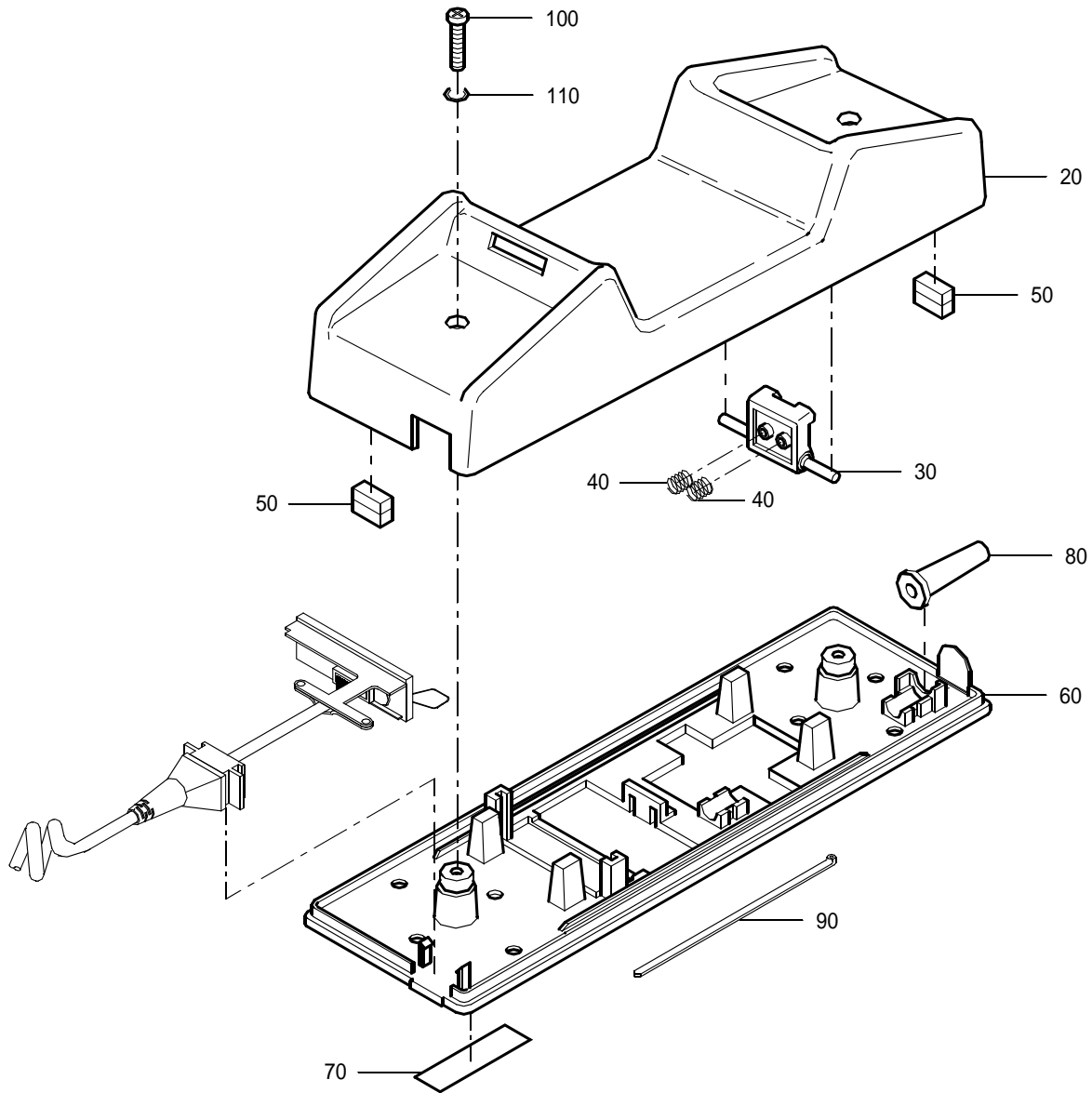
- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1D					
240	824-534-261		.CLIP ***		2
260	822-736-350		.CAPSULE MC1, MIKE ATTACHING PARTS		1
270	KA25X6WN1442		.SCREW (VC3269) (BECKER PNR 822-752-209)		2
280	DIN433-2-7A2		.WASHER (BECKER PNR 234-028-216)		2
290	824-534-261		.CLIP ***		2
300	825-654-278		.SWITCH S15, REED		1
310	834-531-314		.CAPACITOR, FOIL (680NF +/- 20 PERCENT, 50 V (C27C))		1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



SUPPORT BRACKET ASSY
FIGURE 1E

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1E					
-1	HC3100-20-01		BRACKET ASSY, SUPPORT (PRE SB 3100-23-2 AND SB 3100-23-3)	A	RF
-1A	HC3100-20-02		BRACKET ASSY, SUPPORT (PRE SB 3100-23-2 AND SB 3100-23-3)	B	RF
-1B	HC3100-20-03		BRACKET ASSY, SUPPORT (PRE SB 3100-23-2 AND SB 3100-23-3)	C	RF
-1C	HC3100-21-10		BRACKET ASSY, SUPPORT (PRE SB 3100-23-2 AND SB 3100-23-3)	D	RF
-1D	HC3100-22-10		BRACKET ASSY, SUPPORT (PRE SB 3100-23-2 AND SB 3100-23-3)	E	RF
-1E	HC3100-23-10		BRACKET ASSY, SUPPORT	F	RF
-1F	HC3100-33-10		BRACKET ASSY, SUPPORT (PRE SB 3100-23-2 AND SB 3100-23-3)	G	RF
-1G	HC3100-25-10		BRACKET ASSY, SUPPORT	H	RF
-10	824-976-284		.CASE ASSY, SUPPORT	A	1
-10A	824-801-284		.CASE ASSY, SUPPORT	B	1
-10B	833-541-284		.CASE ASSY, SUPPORT	C	1
-10C	846-295-284		.CASE ASSY, SUPPORT	D	1
-10D	846-414-284		.CASE ASSY, SUPPORT	E	1
-10E	843-555-284		.CASE ASSY, SUPPORT	F	1
-10F	846-511-284		.CASE ASSY, SUPPORT	G	1
-10G	571-301-284		.CASE ASSY, SUPPORT	H	1
20	824-992-284		..CASE, SUPPORT	A	1
-20A	824-828-284		..CASE, SUPPORT	B	1
-20B	833-568-284		..CASE, SUPPORT	C	1
-20C	846-325-284		..CASE, SUPPORT	D	1
-20D	846-422-284		..CASE, SUPPORT	E	1
-20E	843-768-284		..CASE, SUPPORT	F	1
-20F	846-521-284		..CASE, SUPPORT	G	1
-20G	571-271-284		..CASE, SUPPORT	H	1
30	825-001-241		..DETENT, HANDSET	A,G	2
-30A	824-836-241		..DETENT, HANDSET	B,D	2
-30B	833-576-241		..DETENT, HANDSET	C,E	2

- ITEM NOT ILLUSTRATED

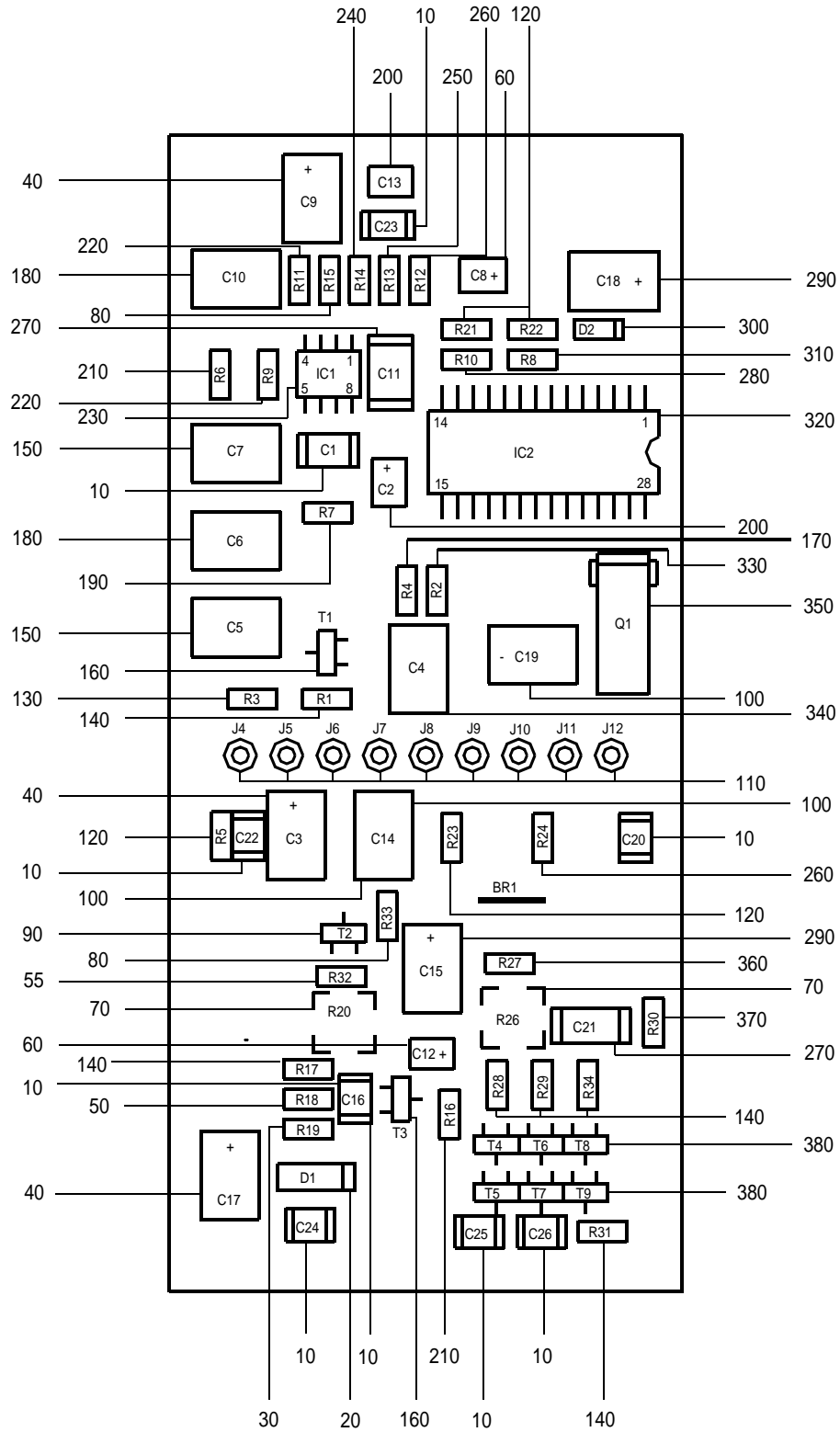
COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
1E					
-30C	843-814-241		..DETENT, HANDSET	F	2
-30D	571-296-241		..DETENT, HANDSET	H	2
40	VD101		..SPRING, PRESSURE (VC0867) (BECKER PNR 826-383-245)		4
50	834-742-337		..MAGNET SET		2
60	826-685-283		.PLATE, SUPPORT BASE	A	1
-60A	826-693-283		.PLATE, SUPPORT BASE	B	1
-60B	833-703-283		.PLATE, SUPPORT BASE	C	1
-60C	846-376-283		.PLATE, SUPPORT BASE	D	1
-60D	846-481-283		.PLATE, SUPPORT BASE	E	1
-60E	845-612-283		.PLATE, SUPPORT BASE	F	1
-60F	846-589-283		.PLATE, SUPPORT BASE	G	1
-60G	595-586-283		.PLATE, SUPPORT BASE	H	1
70	823-414-258		.PLATE, IDENTIFICATION	A	1
-70A	823-287-258		.PLATE, IDENTIFICATION	B	1
-70B	833-622-258		.PLATE, IDENTIFICATION	C	1
-70C	843-512-258		.PLATE, IDENTIFICATION	D	1
-70D	843-520-258		.PLATE, IDENTIFICATION	E	1
-70E	843-539-258		.PLATE, IDENTIFICATION	F	1
-70F	843-547-258		.PLATE, IDENTIFICATION	G	1
-70G	571-288-258		.PLATE, IDENTIFICATION	H	1
80	HV2101-632-1010		.DEVICE, ANTI-KINK (ACC) (VD8527) (BECKER PNR 822-809-295)		1
90	TY23M		.BOND, CABLE (ACC) (VD2030) (BECKER PNR 826-383-245)		2
100	DIN7985M3X8A2		.SCREW (BECKER PNR 766-496-203)	B,C,D E,F,H	2
-100A	DIN7985M3X8A2SW		.SCREW (BECKER PNR 472-875-203)	A,G	2
110	DIN433-3-2A2		.WASHER (BECKER PNR 234-036-216)		2

- ITEM NOT ILLUSTRATED

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COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



KEYBOARD SET
FIGURE 2

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
2					
-1	824-550-373		BOARD, GENERATOR AND AMPLIFIER, INDEX <= D (SEE FIG.1, 1A AND 1C FOR NHA)	A	RF
-1A	846-260-373		BOARD, GENERATOR AND AMPLIFIER, INDEX >= E (SEE FIG.1A,1B, 1C AND 1D FOR NHA)	B	RF
-1B	824-941-373		BOARD, AMPLIFIER, INDEX <= C (SEE FIG.1A FOR NHA)	C	RF
-1C	846-279-373		BOARD, AMPLIFIER, INDEX >= D (SEE FIG.1A FOR NHA)	D	RF
10	774-707-315		.CAPACITOR, CERAMIC 1nF, +/- 5%, 50V (C1,C16,C20,C22,C23,C24,C25,C26)	A,B	8
-10A	774-707-315		.CAPACITOR, CERAMIC 1nF, +/- 5%, 50 V (C1,C16,C22,C23,C24,C25,C26)	C,D	7
20	822-221-301		.DIODE 33V, 1A TGL41-33 (D1)		1
30	826-243-323		.RESISTOR, METAL FILM 392 OHM, +/- 1%, 0.25W (R19)		1
40	821-780-313		.CAPACITOR, TANTALUM-ELEC. 22µF, +/-20%, 16V (C3,C9,C17)		3
50	821-926-323		.RESISTOR, METAL FILM 15 OHM, +/- 1%, 0.25W (R18)		1
55	821-810-323		.RESISTOR, METAL FILM 681 OHM, +/- 1%, 0.25W (R32A)	C,D	1
60	821-756-313		.CAPACITOR, TANTALUM- ELEC. 4.7µF, +/-20%,16V		2

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
2					
70	588-512-329		(C8,C12) .RESISTOR, VARIABLE 2kOHM, +/-20%, 0.25W ST-4B, LIN	A,C	2
-70A	588-512-329		(R20,R26) .RESISTOR, VARIABLE 2kOHM, +/-20%, 0.25W ST-4B, LIN	B	1
80	821-845-323		(R20) .RESISTOR, METAL FILM 10kOHM, +/-1%, 0.25W		2
90	822-205-302		(R15,R33) .TRANSISTOR SST177	A,B	1
100	822-000-314		(T2C) .CAPACITOR, FOIL 100nF, +/-5%, 25V	A,B	2
110	PN2-331272-3		(C14,C19) .JACK (1-PIN) (VD8512) (BECKER PNR 724-912-277) (J4,J5,J6,J7,J8,J9,J10, J11,J12)		9
120	821-837-323		.RESISTOR, METAL FILM 1kOHM, +/-1%, 0.25W	A,B	4
-120A	821-837-323		(R5,R21,R22,R23) .RESISTOR, METAL FILM 1kOHM, +/-1%, 0.25W	C,D	1
130	821-810-323		(R5) .RESISTOR, METAL FILM 681OHM, +/-1%, 0.25W		1
140	821-799-323		(R3) .RESISTOR, METAL FILM 100kOHM, +/-1%, 0.25W		6
150	821-985-314		(R1,R17,R28,R29,R31,R34) .CAPACITOR, FOIL 47nF, +/-5%, 25V		2

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
2					
160	826-227-302		(C5,C7) .TRANSISTOR		2
170	829-927-323		(T1,T3) .RESISTOR, METAL FILM 82.5- <u>130</u> -150 OHM, 0.25W (R4E)	A,B	1
-170A	821-829-323		.RESISTOR, METAL FILM 82,5- <u>100</u> -150 OHM, +/-1%, 0.25W (R4D)	C,D	1
180	821-993-314		.CAPACITOR, FOIL 22nF, +/-5%, 25V (C6,C10)		2
190	821-853-323		.RESISTOR, METAL FILM 56.2KOHM, +/-1%, 0.25W (R7)		1
200	821-772-313		.CAPACITOR, TANTALUM- ELEC. 1µF, +/-20%, 35V (C2,C13)		2
210	821-888-323		.RESISTOR, METAL FILM 5.11KOHM, +/-1%, 0.25W (R6,R16)		2
220	821-861-323		.RESISTOR, METAL FILM 47.5kOHM, +/-1%, 0.25W (R9,R11)		2
230	822-027-308		.CIRCUIT, INTEGRATED (IC1)		1
240	826-235-323		.RESISTOR, METAL FILM 750 OHM, +/-1%, 0.25W (R14)		1
250	821-942-323		.RESISTOR, METAL FILM 2.21kOHM, +/-1%, 0.25W (R13)		1
260	821-871-323		.RESISTOR, METAL FILM 1.5kOHM, +/-1%, 0.25W (R12,R24)	A,B	2

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
2					
-260A	821-871-323		.RESISTOR, METAL FILM 1.5kOHM, +/-1%, 0.25W (R12)	C,D	1
270	821-748-315		.CAPACITOR, CERAMIC 4.7nF, +/-5%, 50V (C11,C21)		2
280	826-091-323		.RESISTOR, METAL FILM 36.5kOHM, +/-1%, 0.25W (R10)		1
290	821-764-313		.CAPACITOR, TANTALUM- ELEC. 10µF, +/-20%, 25V (C15,C18)	A,B	2
-290A	821-764-313		.CAPACITOR, TANTALUM- ELEC. 10µF, +/-20%, 25V (C15)	C,D	1
300	822-035-301		.DIODE 5.1V, 0.5W (D2)	A,B	1
310	821-829-323		.RESISTOR, METAL FILM 100 OHM, +/-1%, 0.25W (R8)		1
320	822-191-308		.CIRCUIT, INTEGRATED PCD3310T (IC2)	A,B	1
330	821-802-323		.RESISTOR, METAL FILM 33.2kOHM, +/-1%, 0.25W (R2)		1
340	821-977-314		.CAPACITOR, FOIL 150nF, +/-5%, 50V (C4)		1
350	822-183-342		.CRYSTAL 3.579MHZ NMS-035-18 (Q1)	A,B	1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

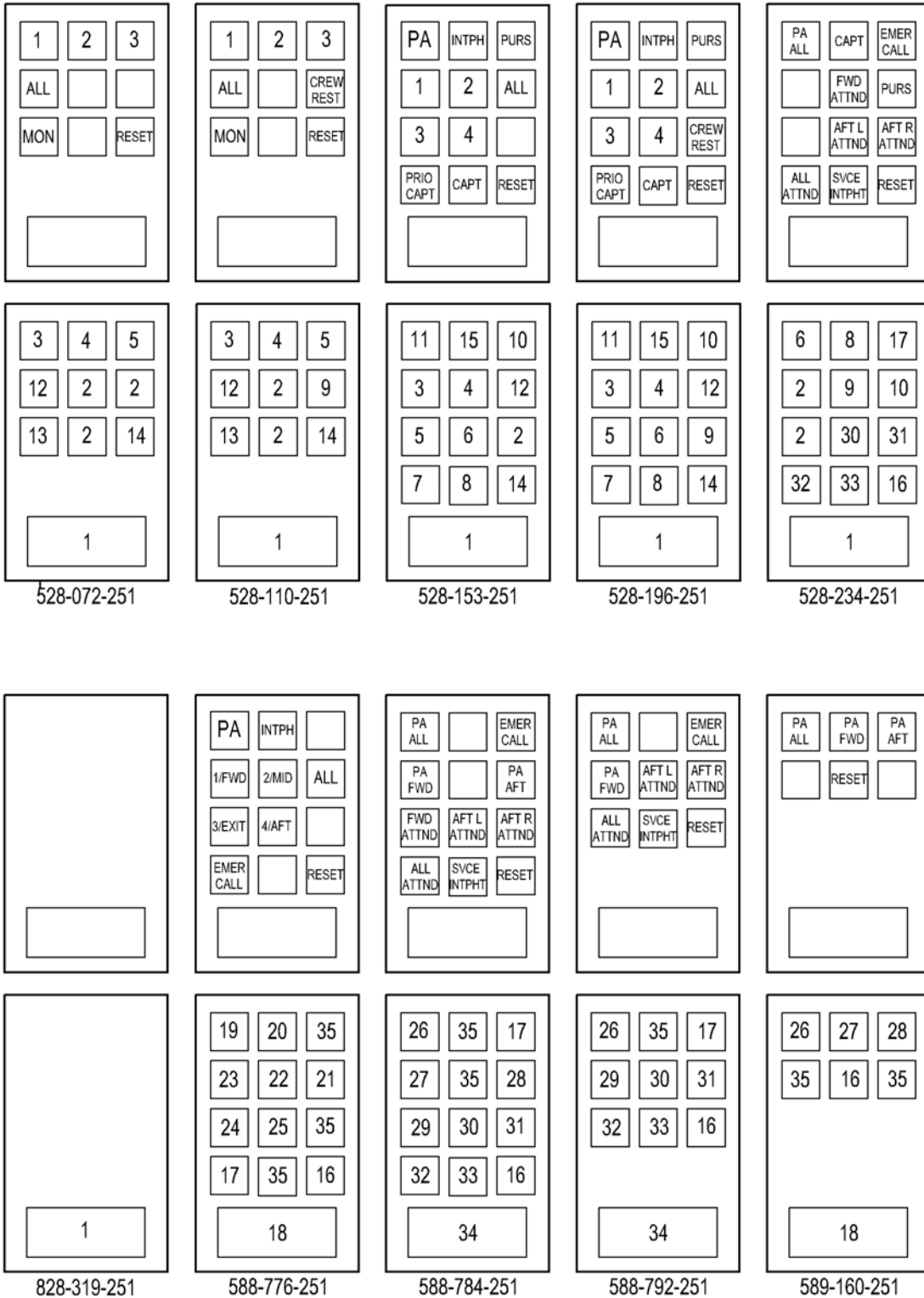
FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1234567	EFF CODE	UNIT PER ASSY
2					
360	821-950-323		.RESISTOR, METAL FILM 6.81kOHM, +/-1%, 0.25W (R27)	A,C	1
-360A	842-427-323		.RESISTOR, METAL FILM 0 OHM, +/-1%, 0.25W (R27E)	B	1
-360B	842-427-323		.RESISTOR, METAL FILM 0 OHM, +/-1%, 0.25W (R27D)	D	1
370	821-969-323		.RESISTOR, METAL FILM 2.21 MOHM, +/-2%, 0.25W (R30)	A,C	1
-370A	844-659-323		.RESISTOR, METAL FILM 2.21- 2.26 MOHM, +/-2%, 0.25W (R30E)	B	1
-370B	844-659-323		.RESISTOR, METAL FILM 2.21- 2.26 MOHM, +/-2%, 0.25W (R30D)	D	1
380	822-213-302		.TRANSISTOR BSS138 (T4A,T5A,T6A,T7A,T8A,T9A)		6

- ITEM NOT ILLUSTRATED

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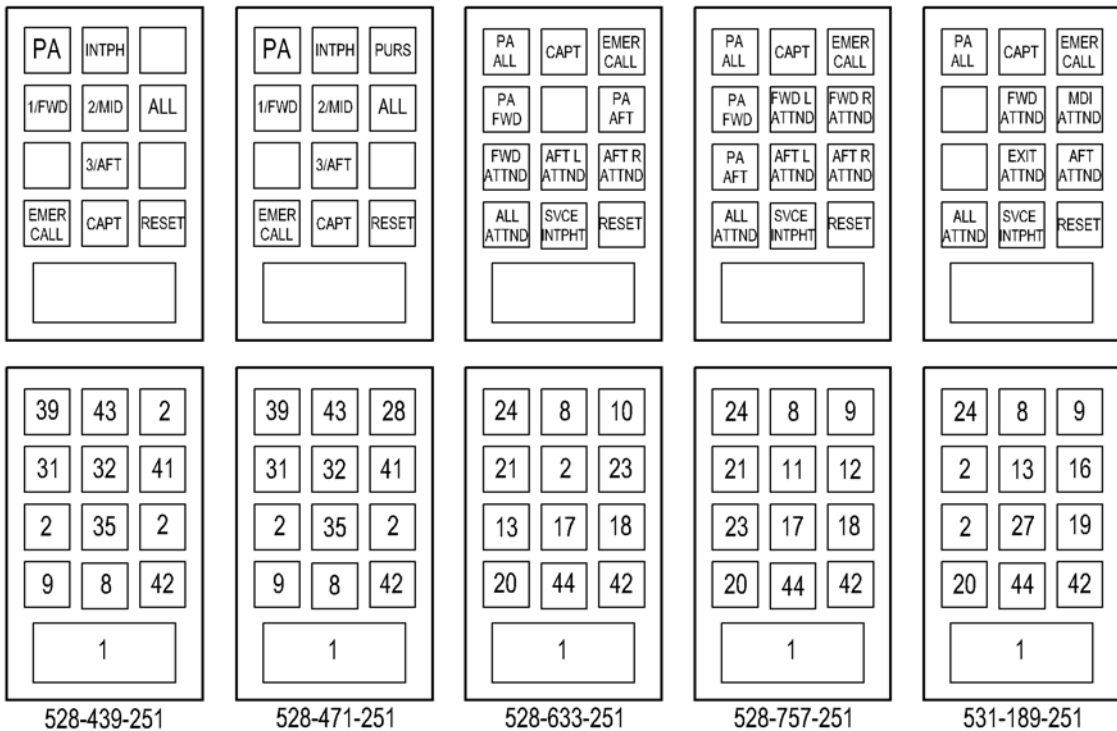
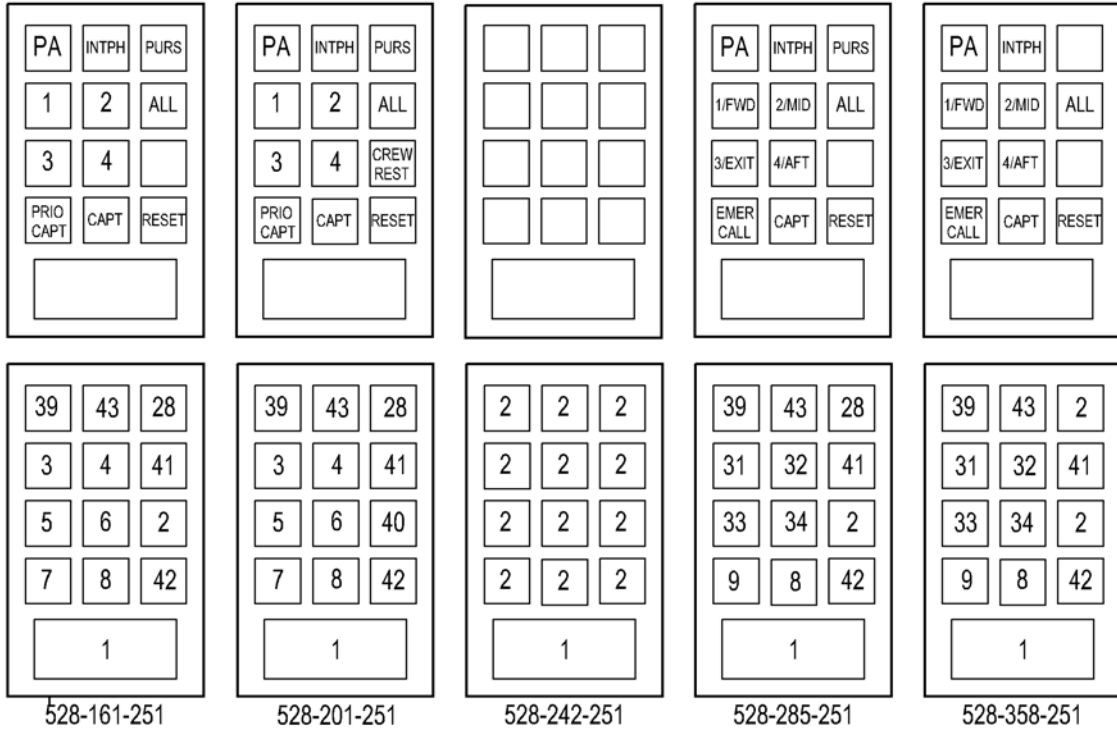
APPENDIX

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



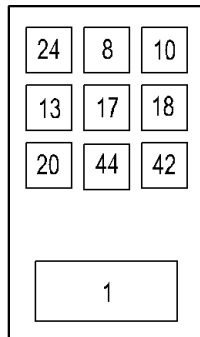
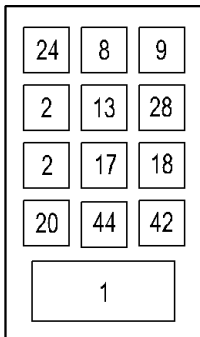
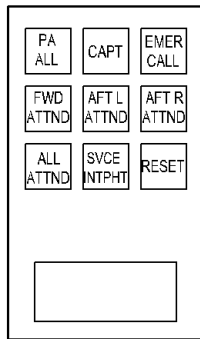
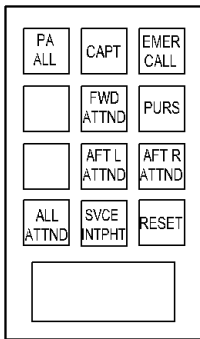
KEYBOARD-LAYOUT (NUMBERS ON KEYS REFER TO ITEM NUMBERS IN TABLE)
FIGURE APPENDIX 1

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



KEYBOARD-LAYOUT (NUMBERS ON KEYS REFER TO ITEM NUMBERS IN TABLE)
FIGURE APPENDIX 1A

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

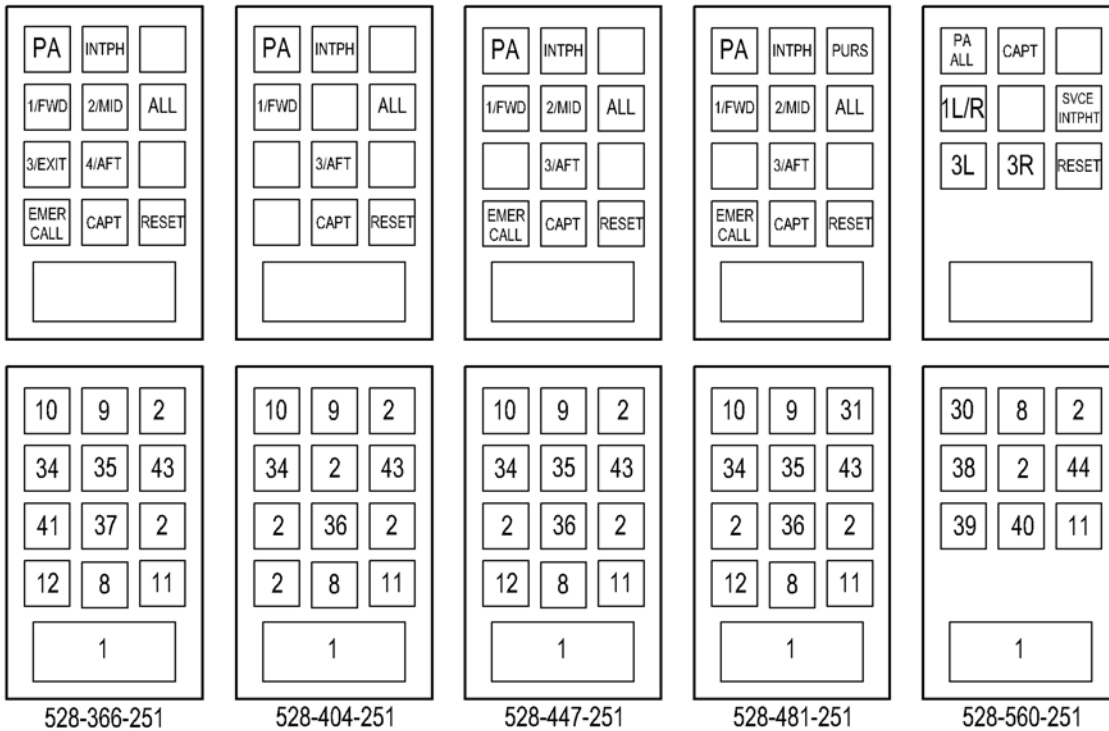
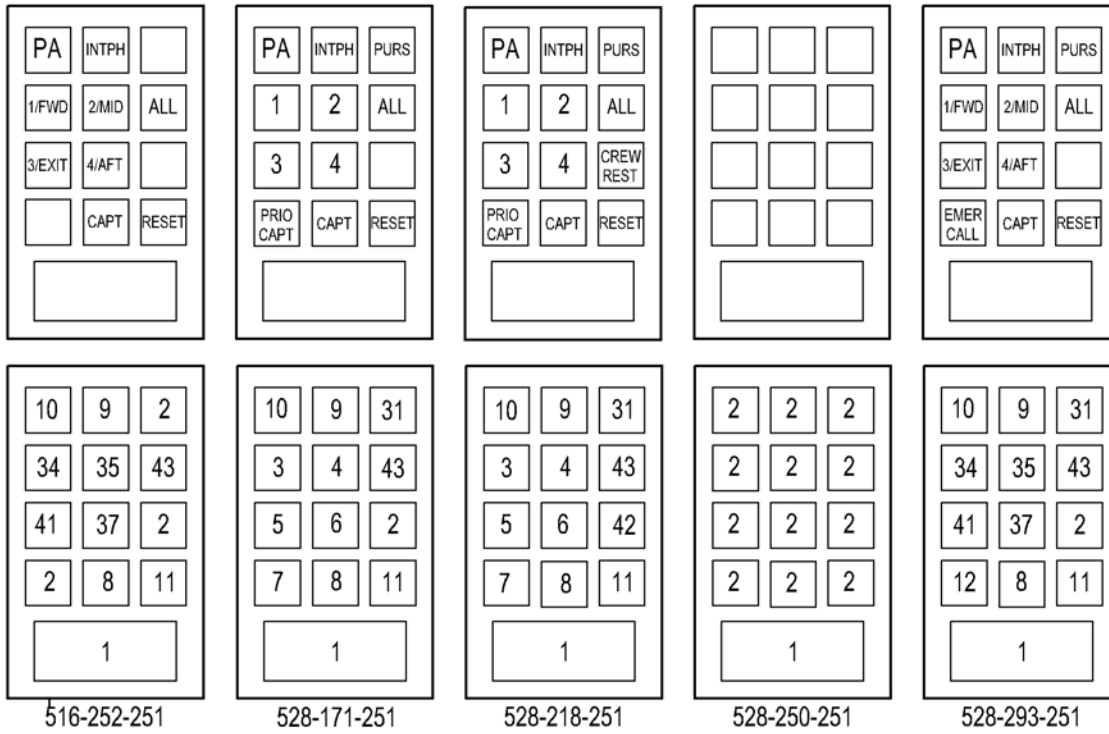


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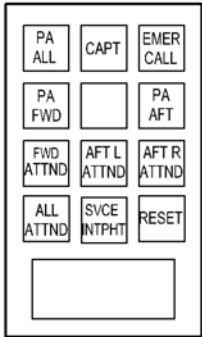
KEYBOARD-LAYOUT (NUMBERS ON KEYS REFER TO ITEM NUMBERS IN TABLE)
FIGURE APPENDIX 1A (CONTINUED)

COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES

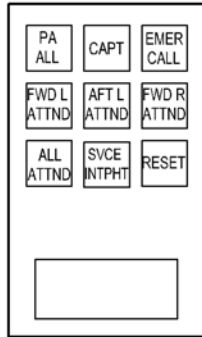


KEYBOARD-LAYOUT (NUMBERS ON KEYS REFER TO ITEM NUMBERS IN TABLE)
FIGURE APPENDIX 1B

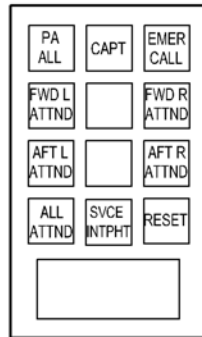
COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



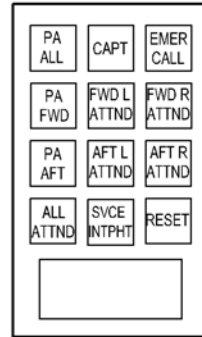
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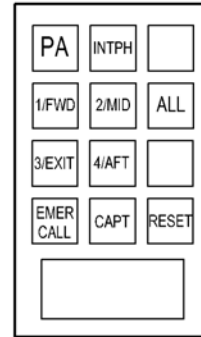
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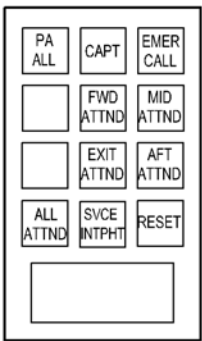
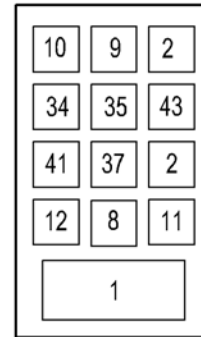
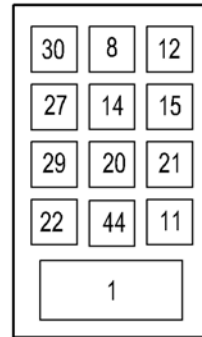
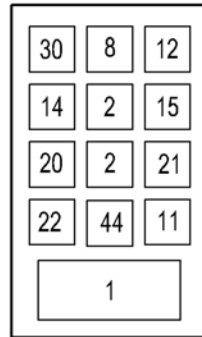
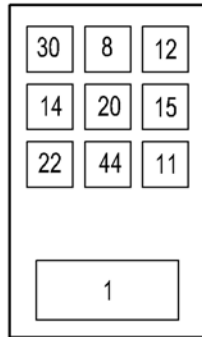
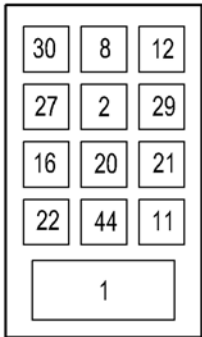
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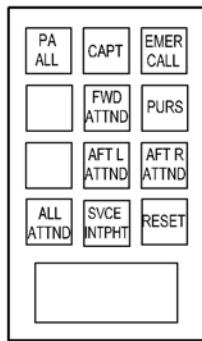
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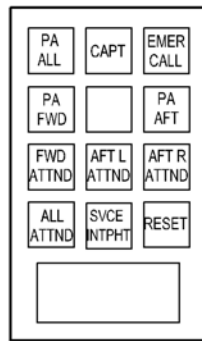
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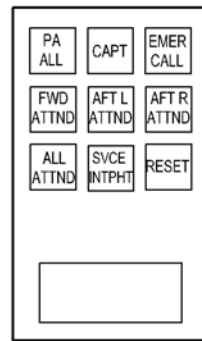
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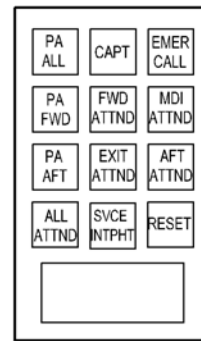
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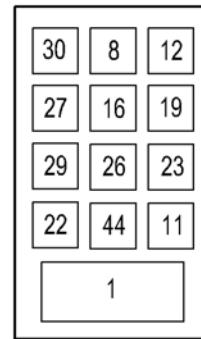
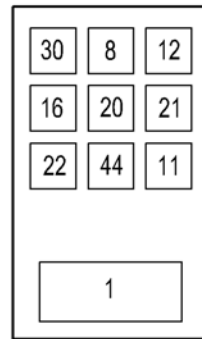
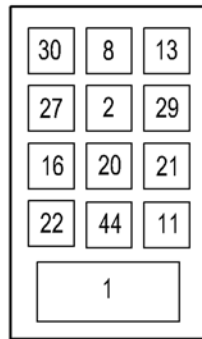
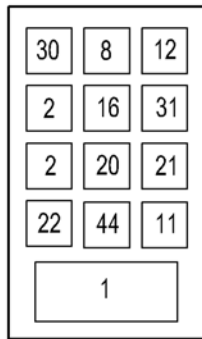
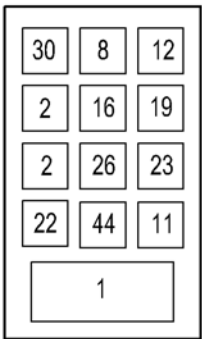
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551-041-251

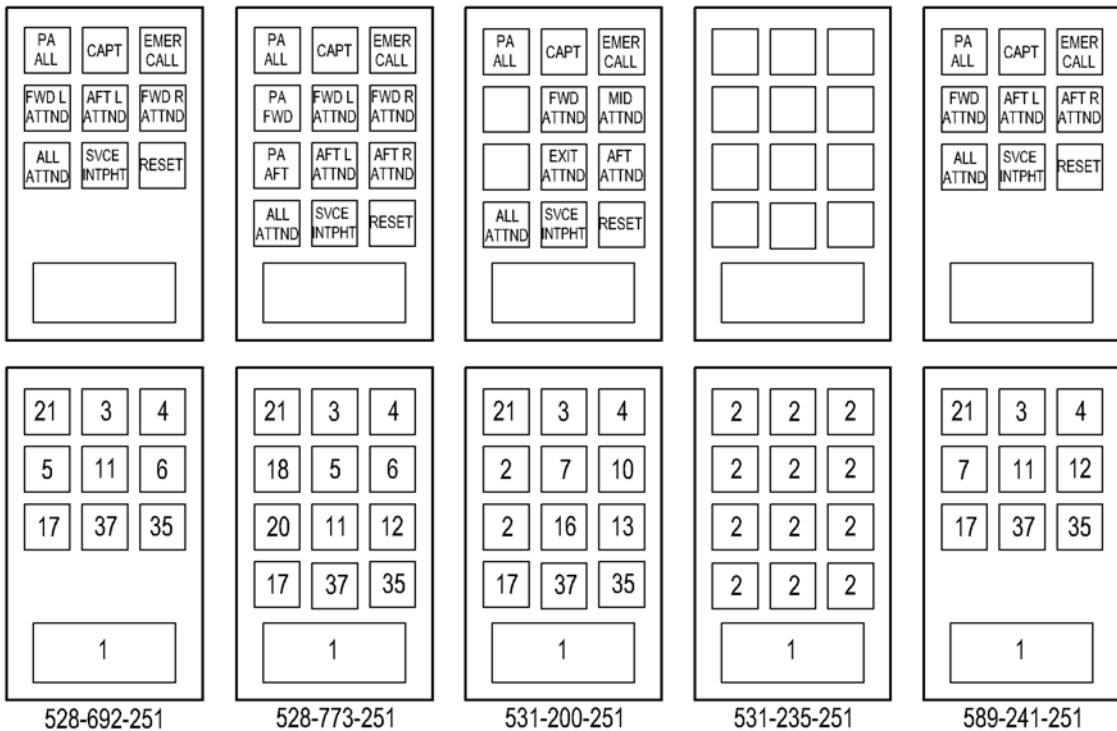
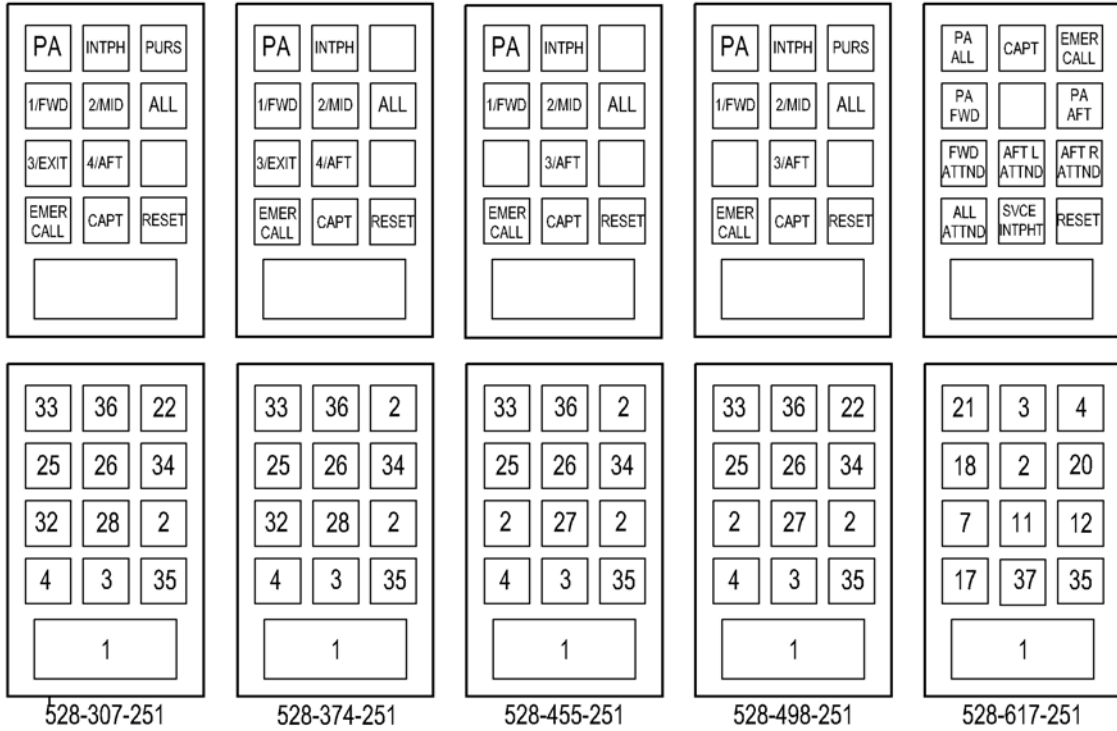


577-561-251



KEYBOARD-LAYOUT (NUMBERS ON KEYS REFER TO ITEM NUMBERS IN TABLE)
FIGURE APPENDIX 1B (CONTINUED)

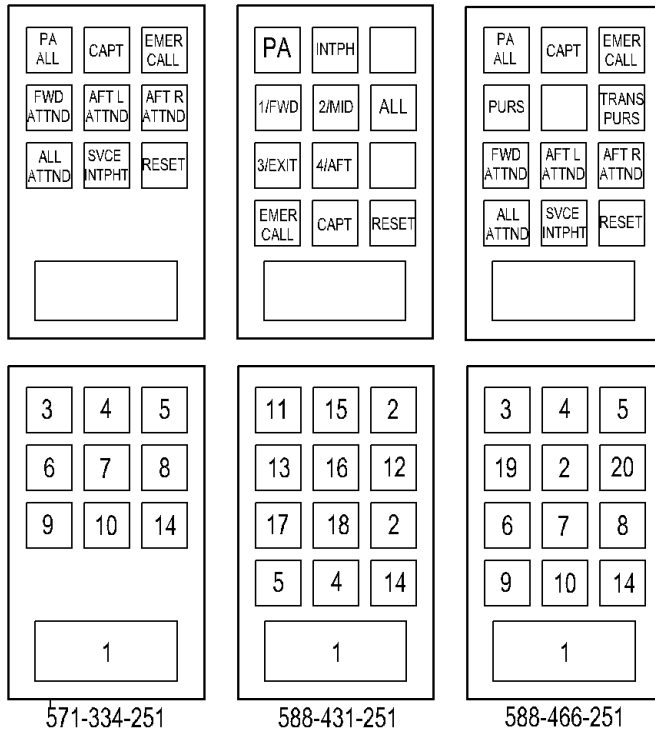
COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



KEYBOARD-LAYOUT (NUMBERS ON KEYS REFER TO ITEM NUMBERS IN TABLE)
FIGURE APPENDIX 1C

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COMPONENT MAINTENANCE MANUAL
PNR ST3100 SERIES, HC3100 SERIES



KEYBOARD-LAYOUT (NUMBERS ON KEYS REFER TO ITEM NUMBERS IN TABLE)
FIGURE APPENDIX 1D

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