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ALINCO



PMR446 FM TRANSCEIVER

DJ-PN446

Instruction Manual

Thank you for purchasing your new Alinco transceiver. Please read this manual carefully before using the product to ensure full performance, and keep this manual for future reference as it contains information on after-sales service. In case addendum or errata sheets are included with this product, please read those materials and keep them together with this instruction manual for future reference.

■ Introduction

Please read this manual completely from the first page to the last, to learn all the functions the product offers. It is important to note that some of the operations may be explained in relation to information in other chapters. By reading just one part of the manual, you may risk not understanding the complete explanation of the function.

■ Safety

It is important that the operator is aware of, and understands, hazards common to the operation of any transceiver.

■ Lightening

Any person is not safe outdoor during thunderstorm and lightning. This condition is getting worse if somebody keeps a handheld radio; chances of being hit by lightning are doubled since lightning may hit a radio antenna as well. At this time, there is no hand-held radio having any kind of protection against lightning current (which is higher than 10 kA.). Note also that no car provides adequate protection of its passengers or drivers against lightning as well. Therefore, Alinco will not take responsibility for any danger associated with using its handheld radios outdoor or inside the car during lightning.

■ Advanced Setting

Channels and basic functions have been preprogrammed before shipping. Advanced setting requires dealer's programming software. Please contact your local dealer for details.

■ Covering ranges

You may expect a range of approx. 1.5km/1 miles when located on a flat, noise-free place like on a beach. However, it may vary drastically depending on how to wear and carry the radios, surrounding locations/conditions and static noise levels (below or near power transmission lines), etc. In urban areas with many buildings or inside a building, such covering range may become drastically short even to several tens of meters.

■ Enclosure protection

This transceiver is NOT water and dust protected of any degrees. Avoid contacts with water and dust, and if wet or dirty, immediately wipe them out with clean dry cloth. Please also note that the body is small and thin: DO NOT carry it in your pocket to avoid cracking. This product is NOT anti-explosive. Never use in close vicinity to explosive gas, combustible dust, on an oil rig or in an open mine.

■ Important Notice

The utility software may be available to distributors/dealers only. Programming cable is optional. The manufacturer will not release the software to unauthorized party so please contact your dealer for details.







This product may be delivered to the consumer after being preprogrammed with the operating parameters, then certain operation may be disabled for user-accesses. The manufacturer and distributors are not aware of details of such dealer-programming. Therefore, please contact to your dealer in case any technical assistance may be necessary.

■ Features

- Frequency: PMR446 (99ch)
- Power: 0.5W
- Compact size: H103mm x W39mm x D18mm
- Ultra-compact antenna for better portability
- Weight approx. 50g include battery and antenna
- CTCSS and DCS: 39 CTCSS codes, 104 DCS codes (can be set by the menu in radio)
- LED backlight controllable.
- Includes End Beep, Key tone, Low voltage alert, Key lock, VOX and TOT.
- Works with 3.7V 750mAh Li-ion cell

WARNING

To prevent any hazard during operation of Alinco's radio product, in this manual and on the product you may find symbols shown below. Please read and understand the meanings of these symbols before starting to use the product.

 Danger	This symbol is intended to alert the user to an immediate danger that may cause loss of life and property if the user disregards the warning.
 Alert	This symbol is intended to alert the user to a possible hazard that may cause loss of life and property if the user disregards the warning.
 Caution	This symbol is intended to alert the user a possible hazard that may cause loss of property or injure the user if the warning is disregarded.
	Alert symbol. An explanation is given.
	Warning symbol. An explanation is given.
	Instruction symbol. An explanation is given.



Alert

■ Environment and condition of use

- ❗ Use of this product may be prohibited or illegal outside of your country. Be informed in advance when you travel.
- ❗ It is recommended that you check local traffic regulations regarding the use of a radio equipment while driving. Some countries prohibit or apply restrictions for the operation of radios and mobile-phones while driving.
- ⊘ Do not use this product in close proximity to other electronic devices, especially medical ones. It may cause interference to those devices.
- ❗ Keep the radio out of the reach of children.
- ⊘ In case a liquid leaks from the product, do not touch it, and keep away from source of heat and fire. Internal battery contains flammable material.
- ⊘ Never operate this product in facilities where radio products are prohibited for use such as aboard aircraft, in airports, in medical facilities. Misuse may cause danger and subject to fine and or penalty.
- ⊘ Risk of explosion if battery is replaced with an incorrect type. Dispose of, or recycle used batteries according to your local regulations.
- ❗ The manufacturer declines any responsibilities against loss of life and property due to a failure of this product when used with or as a part of a device made by third parties.


■ Handling this product

- ❗ Be sure to reduce the audio output level to minimum before using an optional earphone. Excessive audio may damage hearing.
- ⊘ Unauthorized modification or repair may result in electric shock, fire and/or malfunction and voids warranty.
- ⊘ Do not operate this product in a wet place such as in a shower room. It may result in electric shock, fire and/or malfunction.
- ⊘ Do not place the product in a container carrying conductive materials, such as metal in close proximity. A short-circuit to the product may result in electric shock, fire and/or malfunction.
- ❗ Turn off the radio before entering any area with a potentially explosive atmosphere or blasting caps.


■ About chargers

- ⊘ Do not use adapters other than having the specified voltage. It may result in electric shock, fire and/or malfunction. Never turn on the radio while charging.
- ⊘ Do not handle adapter with a wet hand. It may result in electric shock.
- ❗ Securely plug the adapter into the wall outlet. Insecure installation may result in short-circuit, electronic shock and/or fire.
- ⊘ Do not use the adapter if the plug or socket contacts are dirty. Overheating and/or short-circuiting may result in fire, electric shock and/or damage to the product.



■ In case of emergency

 In case of the following situation (s), please turn off the product, switch off the source of power, then remove or unplug the power-cord. Please contact your local dealer of this product for service and assistance. Do not use the product until the trouble is resolved. Do not try to troubleshoot the problem by yourself.

- When a strange sound, smoke and/or strange odor comes out of the product.
- When the product is dropped or the case is broken or cracked.
- When a liquid penetrated inside.
- When a power cord is damaged.

 For your safety, turn off then remove all related AC lines to the product and its accessories from the wall outlet if a thunderstorm is likely.


■ Maintenance


-  Do not open the unit and its accessories. Please consult with your local dealer of this product for service and assistance.
-  Be sure to clean the radio when the radio is dirty. Not only radio performance is going bad, but the virus increase under the situation, and affect the health.





Caution

Environment and condition of use


-  Do not use the product in proximity to a TV or a radio. It may cause interference or receive interference.


 Do not place in a humid, dusty or insufficiently ventilated place. It may result in electric shock, fire and/or malfunction.


 Do not place in an unstable or vibrating position. It may result in electric shock, fire and/or malfunction when/if the product falls to the ground.

 Do not place the product in proximity to a source of heat and humidity such as a heater or a stove. Avoid placing the unit in direct sunlight.


 Be cautious of a dew formation. Please completely dry the product before use when it happens.

 Electronics devices such as solar panels and LED light bulbs may generate high levels of RF noise that may cause an interference. This is not a defect of receiver circuits of our product.


 Do not operate the radio, disassemble or charge the battery in the potentially flammable and explosive atmosphere (such as gas station, coal gas station, etc...).

 Do not carry the radio in hip pocket, It may damage and / or cause injury when you sit down.








 Be cautious of wearing microphone when the microphone is inserted in place where is easy to collect electric static. It might be feel electric static at ear. This electric shock is not electric leakage.

 Use of generic USB adapter may cause damage to the radio and internal battery. Be sure to use genuine adapter only.

 Use of third party accessory may result in damage to this product. It will void our warranty for repair.

 Use of this radio in vicinity to GPS and ETC receivers may cause malfunctions.

■ About transceiver

-  Be cautious of the antenna when carried in your shirt-pocket etc. It may make contact with your eye and cause injury.
-  Do not connect devices other than specified ones to the jacks and ports on the product. It may result in permanent damage and voids warranty.
-  Turn off and remove charger cable from the product when the product is not in use for extended period of time or in case of maintenance.
-  Never pull the cord alone when you unplug charger cable from the wall outlet.
-  Use a clean, dry cloth to wipe off dirt and condensation from the surface of the product. Never use thinner or benzene for cleaning as solvents cause damages to materials and prints on the surface.
-  When wear neck strap, be careful for protruding objects, and not to be involved in shredder.
-  Check with your local waste officials for details on recycling or proper disposal of the electronics product, battery-packs and accessories in your area.

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• STANDARD ACCESSORIES

ALINGO

EDS-36	Charger cable
EME-82	Earphone microphone
EDC-321	AC adapter (5V DC 1A 5W)
EBC-64	Lanyard

NOTE: Accessories may differ depending on the version you have purchased. Please contact your local dealer for details of standard accessories and the warranty-policy before purchase.

• BATTERY INFORMATION

⦿ Charging Operation

The battery is not fully charged at the factory, please charge it before use.

The battery life is over when its operating time decreases even though it is fully and correctly charged.

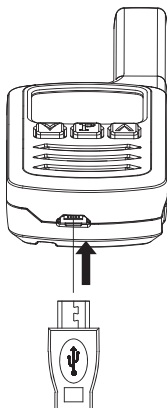
To charge the battery inside:

- Connect the provided charger cable to the adapter.
The cable can charge 2 radios at the same time.
- Connect the USB mini-plug as shown to the USB port located at the bottom of the radio.
- The LED on the upper left of the radio turns orange when the charge starts and turn off when the charge is completed.

Remove the cable from the radio when charged.

Over-charge may cause damage to the battery.

Note: The LED remains turned off when the battery is full.



• BATTERY INFORMATION

ALINGO

⦿ Notice for Charging Battery

- ▲ The ambient temperature should be between +5°C to +40°C (+41°F to +104°F) while charging.
Charging outside this range may not fully charge the battery.
- ▲ Always switch off the transceiver during charging. Otherwise, it may not charge correctly.
- ▲ To avoid interfering the charging procedure, please do not take out the battery during charging.
- ▲ Do not recharge the battery if it is already fully charged. This may shorten the life of the battery or damage the battery.
- ▲ Do not charge the battery or transceiver if it is damp. Dry it before charging to avoid danger.

⦿ Replacing internal battery

- ▲ Never attempt to disassemble the radio to replace the battery inside. Unauthorized operation will void the warranty. Please consult with your dealer for technical support.

• BATTERY INFORMATION (Battery in this chapter refers to the one inside)

Caution

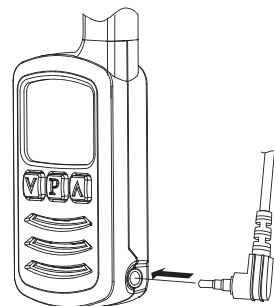
- Risk of explosion, generation of heat or leak of chemicals inside if the battery is replaced by an incorrect type or reverse polarity.
- Charging should be conducted in a temperature range of +5°C to +40°C (+41°F to +104°F).
- Don't modify, dismantle, incinerate or immerse the battery in the water as this can be dangerous.
- Never short-circuit the battery, as this can cause damage to the equipment or lead to heating of the battery which may cause burns.
- Unnecessary prolonged charging (overcharging) can deteriorate battery performance.
- Battery is a consuming part. When its operating time becomes considerably short after a normal charge, please consider that the battery is exhausted. Please consult your dealer.
- The battery is recyclable. Check with your local waste officials for details on recycling options or proper disposal in your area.
- Use specified genuine chargers only to charge battery. Use of other chargers may cause damage to products, you and your property.
- The battery inside discharges even when turned off due to standby current. Supplementary charge it every once in a while. Over discharged battery won't accept the charge.

• INSTALLING / REMOVING MICROPHONE

ALINGO

The microphone jack is located at the bottom side of the radio.
Connect EME-82 as shown to the jack and place the cable upward.

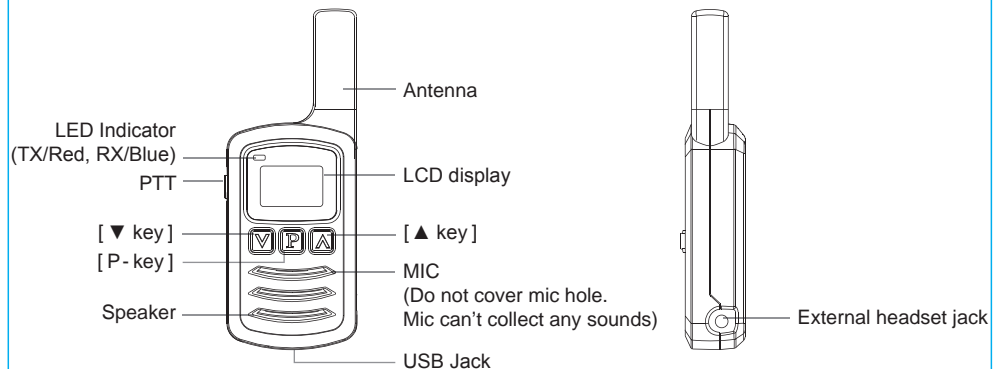
Note: Use of the earphone microphone is optional.



NOTE:

- Use of third party accessory may result in damage to this product. It will void our warranty for repair.
- Never twist, bend, lean, curl the cable. EME-82 is not repairable.
- Both the radio and EME-82 are not water-resistant. Be mindful to water and dust as the jack is not covered for protection.

• PRODUCT OVERVIEW

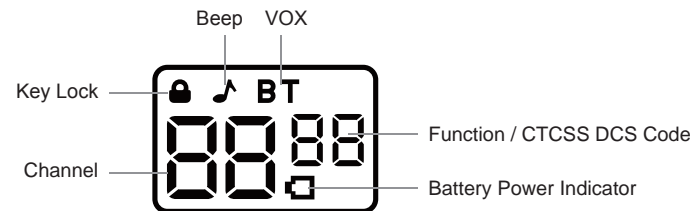


NOTE: P-key is used for function setting after power on.

• BASIC OPERATION

ALINGO

📶 LCD Display



NOTE: In this manual, "Press" refers to pressing the key securely and release at once. Holding the key may operate different functions.

• BASIC OPERATION

(((1) TURN THE RADIO ON/OFF

Press and hold P-key until it turns on with a beep sound. The battery level is displayed in 5 levels; 5 is full, 1 is low and needs to be recharged. Release when the channel number is displayed. To Turn off, press and hold P-key again. The radio needs to be turned on to operate following instructions.

(((2) ADJUSTING VOLUME LEVEL

Press ▲/▼keys to display UL(Volume Level) and a volume level. Press either keys to increase or decrease. The level is selectable from 0 to 8 (max) and press PTT or P-key to set.

You may feel a static shock when wearing a microphone in a dry atmosphere but it's not a defect of product but a cause of nature. It is the same shock you feel typically when opening a door of a car in certain conditions.

(((3) CHANNEL SETTING

Press P-key. The channel number starts to blink. Press ▲ (upward) / ▼ (Downward) keys to select a desired channel. Pressing and holding ▲/▼ keys while selecting channels will continuously change numbers. Please refer to P. 17 for DJ-PN446's default channel setting. Leave it for 5 seconds, or press either PTT or P- key to set the selected channel.

• BASIC OPERATION

ALINGO

If there is blank channel between two channels, radio will skip blank channels.

If input channel number is not belong to programmed channel, radio will emit wrong prompt voice to return current channel.

Channels not being programmed by the dealer software won't be displayed. If it displays only "21" and "23" skipping "22" , it means the ch. 22 has not been programmed by dealer.

(((4) TRANSMITTING AND RECEIVING

Receiving

When a signal is being received, the LED turns blue and hear the call.

Transmitting

Observe that the channel is not in use (Blue LED is not lit). Press and hold [PTT] key and talk to microphone. While transmitting, the LED turns red. Please keep the distance between mouth and speaker to be 2.5-5cm, speak in normal tone to get the best acoustic fidelity. Release the PTT to stop transmitting. The red LED turns off.

• SET MODE

Functions in the below chart are user programmable at factory default. If the operation described here can't be performed, please contact your dealer as it should be dealer-programmed before delivery to you. Please read P.6 to 13 in advance to learn about details of functions.

- In operation mode, press P-key twice. The number shown on right upper corner starts to blink.
- Press P-key again to select a menu to edit. Pressing P-key will switch the menu.
- In the menu to edit, press ▲/▼ keys to select a parameter of your preference.
- Press P-key to set and continue to edit, or press PTT to complete the setting and exit.

Menu	Function	LCD display	Available setting	Default setting
1	CHANNEL	Number	1-99 channels	1ch
2	CTCSS / DCS	OF-K3()	CTCSS is 1 – 39 / DCS is A1 – K3	CTCSS 10
3	KEY LOCK	LC	ON / OFF shown as OF	OFF
4	VOX	BΓ	OFF / 1 – 9	OFF
5	Squelch	Sq	OFF-9	4
6	BEEP	bP	ON / OFF	ON
7	END BEEP	Eb	ON / OFF	ON
8	LED Control	Ld	ON / OFF /AO	AO (Automatic off)

• SET MODE

ALINGO

Please read P.9 for key operations

(((1) CTCSS/DCS Setup:

This is a selective calling function. The transmitting signal carries a subaudible CTCSS/DCS tone, and receiver detects such tone to determine if incoming signal matches your user group's or not. Only matching signal can open the squelch and hear the audio. DJ-PN446 is programmed with CTCSS and DCS in factory, but you may change such tones according to your preference. 39 tones are available in CTCSS, 104 in DCS system. Refer to P.17 for preprogrammed channel details, P.18 and P.19 for tone lists. All radios in the group should be set to the same tone. Please note that this function does not eliminate interferences of other users, but just filters unwanted audio to hear by remaining squelch closed. To disable the tone operation, set OF to all radios.

(((2) Key lock ON/OFF [LC]:

This function is to lock keys except PTT and P-key to avoid mis-operations. When activated (ON), "Key icon" appears on the display. Select OFF(OFF) to disable, and the icon disappears.

• SET MODE

(((3) VOX ON/OFF BT [BΓ]:

VOX allows hands-free operation. It transmits when the microphone detects certain level of audio (voice), and returns to receive when the audio is gone. In the VOX setting, press ▲/▼ keys to select a microphone sensitivity. Level 9 is the most sensitive (transmits in lower voice). When activated, "BT" icon appears on the display. Select level OF (OFF) to disable.

NOTE:

- **Third party microphones may not support VOX function of this product. Use of third-party accessories voids warranty anyway.**
- **Louder environment noise may activate transmitting. This function can't be used in noisy places like construction sites and night clubs.**
- **It takes a fraction of a second till start transmitting after the audio is detected. Start talking too soon may loose an initial word. VOX may require some experience to conveniently use it.**

(((4) Beep sounds [bp]:

This is to disable all beep and alert tones that sounds after key operations and other events. Factory default is ON and all beeps sound.

• SET MODE

ALINGO

(((5) End beep [Eb]:

This function adds a beep sound at every end of transmission to inform the transmission is completed. Default is ON, and select OF(OFF) to disable. The beep sounds at the transmitting side, so OFF setting will disable your tone sent to others, but you still continue to hear others tones unless they select OFF also.

(((6) LED back light control [Ld]:

This is to select the display illumination operation. Default is AO and automatically turns on, then turn off after 5 seconds from the last key operation. Select OF(OFF) to turn off the illumination. This setting consumes battery least. ON is not recommended as it remain lit always and consumes battery so fast.

(((7) Squelch level [sq]:

Squelch is to mute a typical white-noise of FM modulation mode in standby state. The default level is 4 and usually not necessary to change the value. In addition, when the CTCSS/DCS selective calling is set, you don't hear such white-noise anyway. This function is frequently used in amateur radio to receive very weak signals, but not very much used in commercial communications.

• RESET

Turn off the radio. Press P, ▼ and PTT keys all together for 2seconds.
RT and the version is displayed and turns on with default setting.

• TECHNICAL SPECIFICATION

General		Receiver		
Frequency Range	446.00625-446.19375Mhz	Sensitivity -12dBu	-12dBu	
Channel Capacity	99 channels	Adjacent Channel Selectivity	≥ 60dB	
Channel Spacing	12.5kHz	Intermodulation	≥ 55dB	
Operation voltage	3.7V DC ±20%	Spurious Rejection	≥ 70dB	
Frequency Stability	±2.5ppm	Audio Power Output	250mW	
Operation Temperature	-10°C ~ 50°C	Audio Distortion	≤ 3%	
Size	H103mm × W39mm × D18mm	Transmitter		
Weight	Approx. 50g (including battery and antenna)	Power Output	0.5W	
Battery	Type	Li-Ion	Modulation	8K50F3E
	Voltage	3.7Vdc	Adjacent Channel Power	≥ 60dB
	Capacity	750mAh		
	Charging temperature	+5°C ~ 40°C		

• TROUBLE SHOOTING

ALINGO

Problem	Corrective action
No power	A. The battery may be exhausting. Recharge or replace the battery. B. Battery life is end; contact to local dealers to replace.
Battery power drops shortly after charging.	The battery is exhausted. Replace the battery to new one; Ask local dealer.
All channels are noisy	Set CTCSS/DCS or Adjust the squelch level.
No sound when using microphone.	Microphone or the jack is broken. Please contact with local dealers for inspection.
Communication distance becomes short and Low sensitivity.	Antenna may be broken. Consult your local dealer for service.
Cannot talk or hear other members in your groups.	A. Different frequency or channels signaling. B. Different CTCSS/DCS signaling. C. Out of communication range.
Cannot power on or frequent power off.	Check if the battery pack is charged.

• TROUBLE SHOOTING

The receiving sound level is low or intermitted.	Consult with local dealers for inspection.
Receiving signal is intermittent.	Out of communication range or obstruct by buildings etc. Change position to transmit.
Speaker sounds lower or with dry noise after certain time of usage.	Check the speaker. Iron powder or dusts is in the speaker. Consult your dealer for assistance.
Receive voice from the other parties and can't transmit.	Interference is being received. Use CTCSS/DCS function.
Receiving indicator with green light but no sound.	A. Low volume, increase the audio level. B. Volume switch or speaker is broken. Consult your dealer for assistance. C. Microphone jack is broken. Consult your dealer for assistance.

• DEFAULT CHANNEL SETTING

ALINGO

Channel Number	Frequency(MHz)	CTCSS / DCS Tone	Channel Number	Frequency(MHz)	CTCSS / DCS Tone
1	446.00625	94.8	13	446.04375	D132N
2	446.09375	88.5	14	446.01875	D155N
3	446.03125	103.5	15	446.05625	D134N
4	446.06875	79.7	16	446.08125	D243N
5	446.04375	118.8	17	446.10625	None
6	446.01875	123	18	446.11875	None
7	446.08125	127.3	19	446.13125	None
8	446.05625	85.4	20	446.14375	None
9	446.00625	107.2	21	446.15625	None
10	446.09375	110.9	22	446.16875	None
11	446.03125	114.8	23	446.18125	None
12	446.06875	82.5	24	446.19375	None

• CTCSS FREQUENCY CHART

No.	Frequency(Hz)	No.	Frequency(Hz)	No.	Frequency(Hz)
1	67.0	15	107.2	29	173.8
2	69.3	16	110.9	30	179.9
3	71.9	17	114.8	31	186.2
4	74.4	18	118.8	32	192.8
5	77.0	19	123.0	33	203.5
6	79.7	20	127.3	34	210.7
7	82.5	21	131.8	35	218.1
8	85.4	22	136.5	36	225.7
9	88.5	23	141.3	37	233.6
10	91.5	24	146.2	38	241.8
11	94.8	25	151.4	39	250.3
12	97.4	26	156.7		
13	100.0	27	162.2		
14	103.5	28	167.9		

• DCS CODE CHART

ALINGO

No.	Code No.	No.	Code No.	No.	Code No.	No.	Code No.	No.	Code No.	No.	Code No.
A0	D023N	c0	D125N	E0	D245N	G0	D356N	i0	D506N	K0	D732N
A1	D025N	c1	D131N	E1	D246N	G1	D364N	i1	D516N	K1	D734N
A2	D026N	c2	D132N	E2	D251N	G2	D365N	i2	D523N	K2	D743N
A3	D031N	c3	D134N	E3	D252N	G3	D371N	i3	D532N	K3	D754N
A4	D032N	c4	D143N	E4	D255N	G4	D411N	i4	D546N		
A5	D036N	c5	D145N	E5	D261N	G5	D412N	i5	D565N		
A6	D043N	c6	D152N	E6	D263N	G6	D413N	i6	D606N		
A7	D047N	c7	D155N	E7	D265N	G7	D423N	i7	D612N		
A8	D051N	c8	D156N	E8	D266N	G8	D431N	i8	D624N		
A9	D053N	c9	D162N	E9	D271N	G9	D432N	i9	D627N		
b0	D054N	d0	D165N	F0	D274N	h0	D445N	J0	D631N		
b1	D065N	d1	D172N	F1	D306N	h1	D446N	J1	D632N		
b2	D071N	d2	D174N	F2	D311N	h2	D452N	J2	D645N		
b3	D072N	d3	D205N	F3	D315N	h3	D454N	J3	D654N		
b4	D073N	d4	D212N	F4	D325N	h4	D455N	J4	D662N		
b5	D074N	d5	D223N	F5	D331N	h5	D462N	J5	D664N		
b6	D114N	d6	D225N	F6	D332N	h6	D464N	J6	D703N		
b7	D115N	d7	D226N	F7	D343N	h7	D465N	J7	D712N		
b8	D116N	d8	D243N	F8	D346N	h8	D466N	J8	D723N		
b9	D122N	d9	D244N	F9	D351N	h9	D503N	J9	D731N		