UHF FM PMR TRANSCEIVER

DJ-FX446

Instruction Manual



Thank you for purchasing your new Alinco transceiver.

This instruction manual contains important safety and operating instructions. Please read this manual carefully before using the product and keep it 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 previous chapters. By reading just one part of the manual, you may risk not understanding the complete explanation of the function. In addition, please understand that your radio may be programmed by the dealer according to the local regulation, masking some offeatures mentioned in this manual. Please consult your dealer for details of programming.

Before transmitting

There are many radio stations operating in proximity to the frequency ranges this product covers. Be careful not to cause interference when transmitting around such radio stations

■ Lightning

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 handheld 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.

■ Covering ranges

You may expect a range of up to 2 km at high-power 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 will become drastically short even to several tens of meters

■ About 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 with a clean dry cloth. Please also note that the body is small and thin; DO NOT carry it in your pants pocket to avoid cracking.

NOTICE/Compliance Information Statement

For your safe and efficient use of the transceiver, please read the following safety information.

C € Conformity Information

Alinco, Inc. Electronics Division hereby declares on our sole responsibility that the products listed belowcomply with the essential requirements of the Directive 1999/5/EC. The council of 3/9/99 on RadioEquipment and Telecommunication Terminal Equipment and the mutual recognition of their conformityand with the provisions of Annex, after having performed the required measuremens at Notified Bodies perStandards, and relative certificates (or documents) can be reviewed at http://www.alinco.com/Ce/

DJ-FX446: PMR446 HANDHELD TRANSCIVER / $446.00625 \sim 446.09375$ MHz (PMR446 / 8 channels)

< € 0700

Manufacturer:

ALINCO.Inc. Electronics Division

Yodoyabashi Dai Bldg 13F, 4-4-9, Koraibashi, Chuo-ku, Osaka 541-0043 JAPAN This device is authorized for use in all EU and EFTA member states.

Features

This transceiver has the following main features:

- Computer-programmable with free software downloadable from Alinco website (with optional ERW-8 interface cable)
- Works with 3.7V 1000mAh li-ion cell yet powerful legal-limit TX output and clear, crisp 300mW Audio output
- Compact size 50W x 157H x 19D mm(with antenna)
- Weight less than 90g inclusive of 3.7V 1000mAh li-ion cell and antenna
- Ultra-compact antenna for better portability
- Scan functions
- 50 CTCSS tones and 105 DCS Tones
- Simple, easy-to-use interface and Back-lit, large LCD screen with Channeldisplay mode, suitable for commercial-applications.
- Includes VOX function, APO, Low Battery indication, Key lock function, Tone Call and more!

Warning

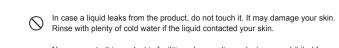
To prevent any hazard during operation of Alinco's radio product, in this manual and on the product you may find symbols shown below. Please read and understand the meanings of these symbols before starting to use the product.

<u> </u>	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 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.
<u> </u>	Alert symbol. An explanation is given.
0	Warning symbol. An explanation is given.
(1)	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.
- O 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.

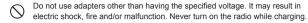


- Never operate this product in facilities where radio products are prohibited for use such as aboard aircraft, in airports, in ports, within or near the operating area of business wireless stations or their relay stations.
- The manufacturer declines any responsibilities against loss of life and/or a property due to a failure of this product when used to perform important tasks like life-guarding, surveillance, and rescue.
- O not use multiple radios in very close proximity. It may cause interference and/or damage to the product(s).
- 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.
- Use of third party accessory may result in damage to this product. It will void our warranty for repair.

Handling this product

- Be sure to reduce the audio output level to minimum before using an earphone or a headset. Excessive audio may damage hearing.
- Never open the radio unless you are authorized.Internal modification or external, non-certified attachments to the PMR radio cansels the CE certification of the radio and voids authorization for operating the radio.
- On 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 water or metal in close proximity. A short-circuit to the product may result in electric shock, fire and/or malfunction.

About chargers



O not plug multiple devices using an adapter into a single wall outlet. It may result in overheating and/or fire.

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 (including DC cables, AC cables and adapters) 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.

⚠ 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 install in a humid, dusty or insufficiently ventilated place. It may result in electric shock, fire and/or malfunction.

Do not install 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 install 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.

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

About transceiver

Be cautious of the whip 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 damage to the devices.

Turn off and remove the power source (AC cable, DC cable, battery, cigar cable, charger adapter etc.) 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 AC cable form 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.



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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Accessories

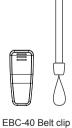


EDC-201 Adapter (CEE 7/2 PIN)





 $Instructions (This\ booklet)$



with hand strap

Battery Information

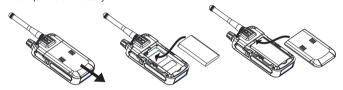
Disassembly and Reassembly of the battery

Slide down the battery cover by pushing notches. The battery cover will open.

Observe that the battery terminals are located on the upper left side of the case.

Be cautious to the polarity of the battery pack, and place it as shown below.

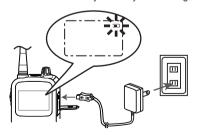
Slide upward the battery cover until it clicks.



Charging Operation

The battery pack is not charged when shipped. It must be charged before using. Connect the AC adapter and USB connecter as shown below. TURN OFF the unit. It will take approx. 3.5 hours to completely charge an empty battery pack. While charging, the bars inside the icon moves.

The icon shows the battery state in 4 levels, empty is shown without bars, full with 3 bars. The battery icon stays lit showing 3 bars when the charge is full.



[Important]

- Turn off the unit while charging.
 It can't charge the battery pack correctly if turned on.
- You can't operate the unit with using a provided AC adapter.
 The adapter is to charge the battery pack only.

Caution

- Risk of explosion, generation of heat or leak of chemicals inside if the battery is replaced by an incorrect type or reverse polarity. Use always the recommended types of batteries in this manual only.
- The battery pack isn't fully charged when shipped. It must be charged before use.
- Charging should be conducted in a temperature range of +5°C to +40°C (+41°F to +104°F).
- Be sure to remove the battery when not in use. It consumes the battery even the power is off.
 Leaving it inside the radio will cause over-discharge and may cause damages to the battery pack.
- Never leave the battery pack in a heated place like inside a car or close to a window in summer. Heated Li-Ion battery pack may catch fire.
- Don't modify, dismantle, incinerate or immerse the battery pack in the water as this can be dangerous.
- Never short-circuit the battery pack terminals, 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.
- The battery pack should be stored in a dry place where temperature is in -10°C to +45°C (+14°F to +113°F) range. Temperatures outside this range can cause the battery liquid to leak. Exposure to prolonged high humidity can cause corrosion of metal components.
- Battery-packs are a consuming part. When its operating time becomes considerably short after a normal charge, please consider that the pack is exhausted and replace it with a new one.
- The battery pack 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 packs. Use of other chargers may cause damage to products, you and your property.
- Never carry battery packs together with conductive articles such as metals in a same bag to prevent from short-circuiting. Put the packs only in nylon bags to carry them safely.

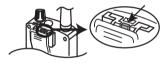
1.Installation of the belt clip

Attach the clip as shown by sliding in the smaller piece to the frame on the back of the unit. It clicks when attached correctly.



2.Detaching the belt clip

Observe a small projection as shown. While pusing it with a tool like a screw driver slightly toward the belt clip, push the clip upward to remove it.



3.Installation of optional accessories

Open the rubber cap on top of the unit and connect with the plug of the optional accessory. Be sure to close the cap when the accessory is not in use. Refer to P.29 for how to fit the cable around your body. To remove it, never pull the cable but by holding the plug.

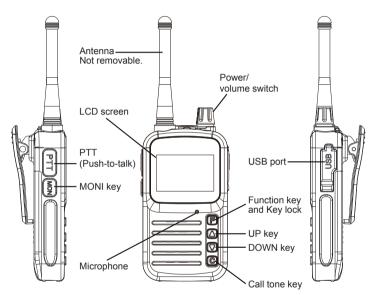


4. Hand Strap

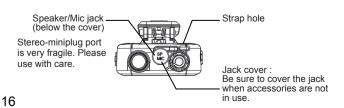
Attach the hand strap as shown.

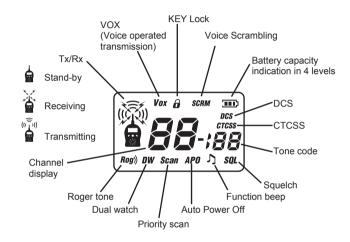


Names and Operations of Parts



Note: Please do not close the microphone hole.





Basic Operation

Function introduction

1. To turn on/off

Attach the battery pack. Turn on the power by turning the dial clockwise. A beep

sounds and the icons appear on the display. Turn the dial counterclockwise gently until locks to turn off. Stop rotating the dial when it's turned off otherwise the dial may be damaged and cause malfunction.



2. To select channel and transmit

Press or key to select a desired, clear channel to operate. All units in the same group should use the same channel and same selective calling settings that the instruction will follow. It is a good practice to monitor the channel to make sure no one is using it before transmitting. Press then start speaking in a normal voice level.

Don't talk too loud, too undertone nor too close to the microphone otherwise the audio may be distorted.

3. Scan function

Press and hold \triangle or \bigcirc key for 2 seconds to start scanning. A scan icon appears on the display. While scanning, press another triangle key to change the scanning direction. Press any key other than \triangle or \bigcirc key to stop. Scan stops when a signal is detected, and resumes scanning after the receiving signal is gone.

4. CTCSS/DCS

CTCSS and DCS are used to filter receiving audio, and sometimes effective to eliminate receiving noise. Their functions are practically the same, just different technology is used. All users in the same group should set the same CTCSS or DCS code to the units. After setting, only the matching code signal is heard. This is not a voice scrambling, but just to reduce chances hearing unwanted signals.







- Press key and press triangle keys to select CodE menu.
- Press key again, CTCSS and flashing 2 digit code appears on the display.
- Press triangle keys to select desired CTCSS (50 codes) or DCS (105 codes) codes.
- Press PTT or leave it for 10 seconds to set, or press (a) key to return to the menu. When set, The CTCSS/DCS code remains displayed as shown.

Note:

- If there may be a signal that is different from your CTCSS/DCS code on your channel, even you don't hear it because of CTCSS/DCS function, you can't transmit. A warning beep sounds in this condition when you press PTT.

 Observe the radio icon to see if it shows receiving, or press key to temporary release the CTCSS/DCS to hear the actual audio. Press key again to go back to the CTCSS/DCS operation.
- There may be a delay and you miss hearing a word at the beginning of transmission when CTCSS/DCS is used. To avoid this, press PTT, wait just an instant then start speaking.

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Basic Operation

5: CALL TONE tune setting

Press (a) key to transmit a call tone to attract an attention of users in your group.

The tone is selectable from 5 different tunes.

- Press key and press triangle keys to select CALL menu.
- Press key again, and use triangle keys to select a desired parameter. Different tunes sound as you change the parameter.
- Press PTT or leave it for 10 seconds to set and exit, or press key to return to the menu.
- Call tone is also a subject to CTCSS/DCS squelch operation. You can't hear the receiving sound if different tone squelch setting is applied.

6. VOX function

When this function is activated, the transmitting can be started by voice and not necessary to press and hold the PTT key.

- Press P key and press triangle keys to select VOX menu. VOX icon and OF or 2 digit number is displayed.
- Press P key again, and use triangle keys to select a parameter from 01 to 05. The code stands for VOX sensitivity, lower the number, lower the sensitivity so needs louder voice to start transmitting.
- Press PTT or leave it for 10 seconds to set, or press (a) key to return to the menu, or repeat the sequence and select OF to deactivate VOX.





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Note:

- · VOX doesn't work properly in a noisy place, as the noise cause transmitting.
- · VOX doesn't work properly when the battery level is low.

7. DW (Dual Watch) function

This function enables to manage transmitting and receiving 2 channels of your choice easily.

- Select the channel you wish to operate as a main channel and press key, then press triangle keys to select DW menu. DW icon and CH is displayed.
- Press P key again, then use triangle keys to select another channel number you wish to operate as a sub channel.
- DE DE DE
- Press PTT or leave it for 10 seconds to set, or press & key to return to the menu.

When DW is activated, 2 channels are scanned automatically. To transmit on the main CH, press PTT. To transmit on the sub CH, press key. During the DW, key is deactivated for monitor function. Repeat the sequence and select OF to turn off the DW function.

Settings such as CTCSS/DCS on both main and sub channels remain valid during the DW operation.

Basic Operation

8. SQL function

Squelch is a function that eliminates the noise when no signals are being received.

Setting the higher squelch level allows you to monitor only stronger signals.

Usually start from level zero (the squelch is open and hear the noise), increasing the level and when the noise is gone, set just 1 level higher than the current level. For example the noise is cut at level 2, set the level to 3 and exit.

- Press key and press triangle keys to select SQL menu. SQL icon and OF or 2 digit number is displayed.
- Press key again, and use triangle keys to select a parameter from 01 to 05.
- Press PTT or leave it for 10 seconds to set, or press **©** key to return to the menu.

9. Voice scrambling

An analog scrambling is provided for better security of your communication. Please note that this scrambling can be decoded easily, so not suitable for confidential communications.

- Press key and press triangle keys to select SCRM menu. SCRM icon and OF or ON is displayed.
- Press key again, and use triangle keys to select a desired parameter.
- Press PTT or leave it for 10 seconds to set, or press (2) key to return to the menu.
 - · All units within your group should set the same parameter.



SOL

10. Function beep

When ON is selected, a beep sounds at any key operation except PTT.

- Press R key and press triangle keys to select Beep menu. A note icon and OF or ON is displayed.
- Press Press key again, and use triangle keys to select a desired parameter.
- · Press (PTT) or leave it for 10 seconds to set and exit, or press (B) key to return to the menu.

11. Roger beep

When ON is selected, a beep sounds at the end of every transmission.

- Press R key and press triangle keys to select Roger beep menu. A Rog icon and OF or ON is displayed.
- Press Press key again, and use triangle keys to select a desired parameter.
- · Press (PTT) or leave it for 10 seconds to set and exit, or press (a) key to return to the menu.



Basic Operation

12. APO function

When activated, it will automatically turn off the power after a preset time is elapsed without being key operated.

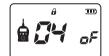
- Press key and press triangle keys to select APO menu. An APO icon and OF or 01-06 is displayed.
- Press P key again, and use triangle keys to select a desired parameter. the unit of parameter is "hour(s)".
- Press PTT or leave it for 10 seconds to set and exit, or press key to return to the menu.

When the unit is turned off by APO, rotate the dial to off position once, then turn on.

13. Key lock

When activated, it will lock keys to avoid accidental key operations.

- Press and hold key for 3 seconds. A lock icon is displayed.
- Repeat it to unlock. A lock icon dissapears.
 In key-lock state, and triangle keys are blocked.



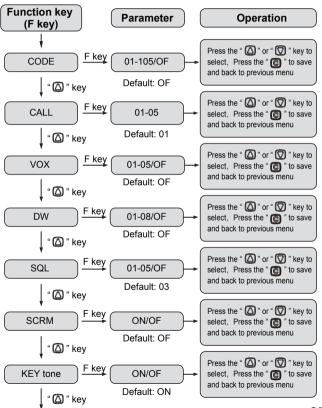
14. Low battery warning

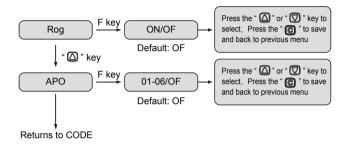
When the battery is about to be empty, a waring sign "Lo BA" will appear on the

display and beeps sound. Replace or charge the battery pack when it appears, or the unit will automatically shut off.



Function key operation / Quick chart





Frequency Chart (in MHz)

Ch.	Freq.	Ch.	Freq.
1	446.00625	5	446.05625
2	446.01875	6	446.06875
3	446.03125	7	446.08125
4	446.04375	8	446.09375

Trouble shooting Guide

Problem	Corrective Action				
No Power	A. The battery may be exhausting. Recharge or replace the battery. B. The battery may not be installed correctly. Remove the battery and install it again. C. The power switch is broken; send it to local dealers to repair. D. Battery life is end; contact to local dealers to replace.				
Battery doesn't last enough	The battery is exhausted. Replace the battery pack with a new one.				
Scan doesn't work	Squelch is open. Adjust the level.				
All channels are noisy	Adjust squelch level.				
No sound when using earphone	Earphone or the jack is broken. Please contact with local dealers for inspection.				
Communication distance becomes short, and Low sensitivity	A. Check whether the antenna is in good conduction and the antenna is fixed securely to the body. B. Antenna may be broken. Consult your local dealer for services.				
Can't communicate with other group members.	A. Make sure all units are set with the same channels, CTCSS or DCS tones. B. Out of communication range.				
The audio sound level is low or intermittent	Consult with local dealers for inspection.				
Receiving signal is intermittent	A. Out of communication range or obstruct by walls, buildings etc. Change position to transmit. B. Internal components may be in trouble, please contact with local dealers to repair.				
Receiving audio is distorted	An internal speaker may be in trouble. If the audio from an earphone is clear,consult your dealer for repair.				
Can't transmit	Press MONI key to monitor the channel. Transmission is prohibited when the channel is busy.				
Receive icon appears but can't hear the audio	A. Audio level too low, increase the audio level. B. Wrong CTCSS or DCS is set. Press MONI key for monitoring C. Earphone port may be damaged, please contact with local dealers for repair.				

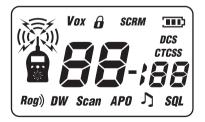
Maintenance and Reference

- Never grab the antennas, earphones or microphones to carry the units. It may cause damage to the accessories and/or units.
- 2. Periodically clean the surface of the unit with a clean cloth. Those cleaning kits for digital cameras are ideal also to clean the radio products.
- Remove the battery pack from the unit to store the unit. The unit should be kept in a clean, dry place without direct sunlight.

Resetting

When you reset the unit, all settings will return to the initial factory settings.

- ① Turn on the unit with the 🕞 key pressed.
- ② All the icons appear on the display after a second.
 Keep holding key for another second, then release it.



Optional / Spare accessories

• EBP-90 L	i-ion Battery Pack	(DC 3.7V 1000mAh)
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· EBC-40 Belt Clip

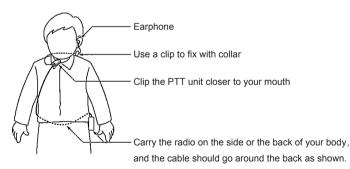
EDC-200 AC Adaptor (NEMA Type A)EDC-201 AC Adaptor (CEE 7/2 PIN)

• EME-24 Earphone Microphone (Can't operate VOX)

EME-61 Earphone Microphone with VOX

• EMS-60 Speaker microphone (Can't operate VOX)

Recommened installation of earphone microphone



Clamp the excessive length of cable at your waist

Specifications

Frequency range	446.00625-446.09375MHz 8 channels
Output Power	Max. 0.5W
CTCSS/DCS tone	50CTCSS/105DCS
Frequency stability	±2.5ppm
Rx Sensitivity	-9dBu EMF
Audio output	300mW
Supply Voltage	3.7V
Operating Temperature	-20℃~+65℃
Battery type	1000mAh(Li-ion)
Dimensions	50W x 157H x 19D mm(with antenna)
Weight	approx. 90g (with battery pack)

^{*} All specifications are subject to change without notice or obligation.

^{*} ALINCO and Alinco logo are registered trademarks of Alinco, Inc in many countries including USA, Russia, EU states and China.

Appendix

50 Group of CTCSS Frequency(Hz)

$\overline{}$									
01	67.0	11	94.8	21	131.8	31	171.3	41	203.5
02	69.3	12	97.4	22	136.5	32	173.8	42	206.5
03	71.9	13	100.0	23	141.3	33	177.3	43	210.7
04	74.4	14	103.5	24	146.2	34	179.9	44	218.1
05	77.0	15	107.2	25	151.4	35	183.5	45	225.7
06	79.7	16	110.9	26	156.7	36	186.2	46	229.1
07	82.5	17	114.8	27	159.8	37	189.9	47	233.6
08	85.4	18	118.8	28	162.2	38	192.8	48	241.8
09	88.5	19	123.0	29	165.5	39	196.6	49	250.3
10	91.5	20	127.3	30	167.9	40	199.5	50	254.1

105 Group of DCS Codes

01	023	19	116	37	225	55	325	73	452	91	627
02	025	20	122	38	226	56	331	74	454	92	631
03	026	21	125	39	243	57	332	75	455	93	632
04	031	22	131	40	244	58	343	76	462	94	645
05	032	23	132	41	245	59	346	77	464	95	654
06	036	24	134	42	246	60	351	78	465	96	662
07	043	25	143	43	251	61	356	79	466	97	664
08	047	26	145	44	252	62	364	80	503	98	703
09	051	27	152	45	255	63	365	81	506	99	712
10	053	28	155	46	261	64	371	82	516	100	723
11	054	29	156	47	263	65	411	83	523	101	731
12	065	30	162	48	265	66	412	84	526	102	732
13	071	31	165	49	266	67	413	85	532	103	734
14	072	32	172	50	271	68	423	86	546	104	743
15	073	33	174	51	274	69	431	87	565	105	754
16	074	34	205	52	306	70	432	88	606		
17	114	35	212	53	311	71	445	89	612		
18	115	36	223	54	315	72	446	90	624		

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< € 0700



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