

**IBM Fiscal Printer  
Argentina Model 4610 GR3/GA3/GE3 (Macarena)  
Return Codes**

Document Number (FAR90R0E-PDF)

For printer microcode EC level 0E

Owner: Alejandra Cartamil  
Copy Printed: January 27, 2003 at 11:44 a.m.



---

# Fiscal Unit Return Codes

---

---

## 4690 OS Hardware Return Code Descriptions

---

This list contains information about the return code (RC=8090xxxx) in system messages.

If your return code is not listed here - or - under “Return Code Descriptions” in the *IBM 4690 OS Store System: Messages Guide*, it is an undefined error.

**Note:** *Service the fiscal printer to replace both the fiscal processor card and the fiscal printer.*

The following tables define the meaning of fiscal unit return codes reported in byte 8 of fiscal unit status.

---

## DOS/WINDOWS and 4690 OS Return Code Descriptions

---

---

### 002 => DOS/WINDOWS 80900102 => 4690 OS

**Explanation:** An overflow occurred. The void transaction total exceeds the maximum allowed value. The request is not processed.

**User Response:** Issue the total and end transaction commands to end the sales transaction or a cancel transaction command to cancel the sales transaction.

---

### 004 => DOS/WINDOWS 80900104 => 4690 OS

**Explanation:** An overflow occurred. The discount transaction total exceeds the maximum allowed value. The request is not processed.

**User Response:** Issue the total and end commands to end the sales transaction or cancel command to cancel the sales transaction.

---

### 006 => DOS/WINDOWS 80900106 => 4690 OS

**Explanation:** An overflow occurred. The uplift transaction total exceeds the maximum allowed value. The request is not processed.

**User Response:** Issue the total and end commands to end the sales transaction or cancel command to cancel the sales transaction.

---

### 008 => DOS/WINDOWS 80900108 => 4690 OS

**Explanation:** An underflow occurred. The current transaction total or one of the VAT category transaction sales totals is less than the minimum allowed value. The request is not processed.

**User Response:** Cancel the transaction or make the total greater than the minimum allowed value.

---

### 010 => DOS/WINDOWS 80900110 => 4690 OS

**Explanation:** An underflow occurred. The void transaction total is less than the minimum allowed value. The request is not processed.

**User Response:** Issue the total and end commands to end the sales transaction or cancel command to cancel the sales transaction.

---

**012 => DOS/WINDOWS 80900112 => 4690 OS**

**Explanation:** An underflow occurred. The discount transaction total is less than the minimum allowed value. The request is not processed.

**User Response:** Issue the total and end commands to end the sales transaction or cancel command to cancel the sales transaction.

---

**014 => DOS/WINDOWS 80900114 => 4690 OS**

**Explanation:** An underflow occurred. The uplift transaction total is less than the minimum allowed value. The request is not processed.

**User Response:** Issue the total and end commands to end the sale transaction or cancel command to cancel the sales transaction.

---

**015 => DOS/WINDOWS 80900115 => 4690 OS**

**Explanation:** The requested rectify can not be executed by any of the following causes:

- There is no command executed before that could be rectified.
- The requested rectify has been already done.
- Some data of the rectify issued does not match with the original values.

The request is not processed.

**User Response:** Check the application program for the first two cases or correct the rectify data for the last one.

---

**016 => DOS/WINDOWS 80900116 => 4690 OS**

**Explanation:** An overflow occurred. The daily total or one of the VAT category daily sales totals exceeds the maximum allowed value at total request time. The request is not processed.

**User Response:** Make the total less than or equal to the maximum allowed value, issue an end or cancel command and then issue a daily closure command.

---

**018 => DOS/WINDOWS 80900118 => 4690 OS**

**Explanation:** An overflow occurred. The void daily total exceeds the maximum allowed value at end transaction time. The request is not processed.

**User Response:** Make the total less than or equal to the maximum allowed value, issue an end or cancel command, and then issue a daily closure command.

---

**020 => DOS/WINDOWS 80900120 => 4690 OS**

**Explanation:** An overflow occurred. The discount daily total exceeds the maximum allowed value at end transaction time. The request is not processed.

**User Response:** Make the total less than or equal to the maximum allowed value, issue an end or cancel command, and then issue a daily closure command.

---

**022 => DOS/WINDOWS 80900122 => 4690 OS**

**Explanation:** An overflow occurred. The uplift daily total exceeds the maximum allowed value at end transaction time. The request is not processed.

**User Response:** Make the total less than or equal to the maximum allowed value, issue an end or cancel command and then issue a daily closure command.

---

**023 => DOS/WINDOWS 80900123 => 4690 OS**

**Explanation:** The general parameters has not been set. The request is not processed.

**User Response:** Use the set general parameters (2E cmd.) to load the information.

---

**024 => DOS/WINDOWS 80900124 => 4690 OS**

**Explanation:** The user total amount is not equal to the fiscal total amount. The values associated with the total request do not match the totals stored in the fiscal memory. The request is not processed.

**User Response:** Correct the computation procedure of the total, then issue end or cancel command.

---

**025 => DOS/WINDOWS 80900125 => 4690 OS**

**Explanation:** A fiscal rules violation has occurred. The word 'total' (or equivalent) or logo characters occurs in a message when not allowed, or a reserved character is used in the message. Note that not all rules violations apply to all countries. The request is not processed.

**User Response:** Correct the fiscal rules violation and try the command again.

---

**026 => DOS/WINDOWS 80900126 => 4690 OS**

**Explanation:** An underflow occurred. A transaction amount was negative at total request time. This return code applies (where applicable) to:

- Transaction total
- VAT total
- VAT category total accumulator
- VAT category tax accumulator

The request is not processed.

**User Response:** Make the amount greater than or equal to zero, then issue an end or cancel command.

---

**027 => DOS/WINDOWS 8090061B => 4690 OS**

**Explanation:** An overflow occurred. The discount on subtotal exceeds the maximum allowed value. The request is not processed.

**User Response:** Make the amount less than the maximum allowed value, then issue an end or cancel command.

---

**028 => DOS/WINDOWS 8090061C => 4690 OS**

**Explanation:** An overflow occurred. The uplift on subtotal exceeds the maximum allowed value. The request is not processed.

**User Response:** Make the amount less than the maximum allowed value, then issue end or cancel command.

---

**029 => DOS/WINDOWS 80900129 => 4690 OS**

**Explanation:** Tender is not completed. The payment total was less than the transaction total. The request is not processed.

**User Response:** Use the rectify option on the payment command or issue an additional payment command to complete processing.

---

**030 => DOS/WINDOWS 80900130 => 4690 OS**

**Explanation:** The item or negative item operation is not valid. Possible reasons are:

- The requested VOID amount did not match the current adjusted item accumulator.
- The requested DISCOUNT amount is not less than the current item accumulator.
- The resulting item accumulator is either less than or equal to zero or greater than the maximum allowed item value.
- A negative item operation was requested for an item that was previously voided.
- The TAX category did not match the previously sold referenced item.

The request is not processed.

**User Response:** If a negative item command was issued, correct the application program. If you issued an item sale command, issue a subtotal command and continue the ticket.

---

**031 => DOS/WINDOWS 8090061F => 4690 OS**

**Explanation:** An underflow occurred. The sum of the discount on subtotal operations in this sales transaction is less than the minimum allowed value. The request is not processed.

**User Response:** Make the amount greater than or equal to the minimum allowed value, then issue an end or cancel command.

---

**032 => DOS/WINDOWS 80900620 => 4690 OS**

**Explanation:** An underflow occurred. The sum of the uplift on subtotal operations in this sales transaction is less than the minimum allowed value. The request is not processed.

**User Response:** Make the total greater than or equal to zero, then issue an end or cancel command.

---

**033 => DOS/WINDOWS 80900141 => 4690 OS**

**Explanation:** The TI/CN set/reset perception type table has not been set or the perception type number is out of range. The request is not processed.

**User Response:** Use the TI/CN set/reset perception type (22 cmd.) to load the information or correct the perception type number (range 01 to up 30) and then issue the command again.

---

**034 => DOS/WINDOWS 80900142 => 4690 OS**

**Explanation:** An underflow occurred. The void daily total is less than the minimum allowed value. The request is not processed.

**User Response:** Make the total greater than or equal to the minimum allowed value, issue an end or cancel command and then issue a daily closure command.

---

**035 => DOS/WINDOWS 80900143 => 4690 OS**

**Explanation:** Illegal condition on negative item:

- Documents Type A: The net price accumulator became zero while Tra\_Tax or Tra\_Percep are not zero of the same VAT category.
- Documents Type B and C: The transaction total accumulator became less than the Tra\_Tax of the same Vat category.

The request is not processed.

**User Response:** Issue the command again with the correct values or issue the command after there is enough amounts in the corresponding accumulators.

---

**036 => DOS/WINDOWS 80900144 => 4690 OS**

**Explanation:** An underflow occurred. The discount daily total is less than the minimum allowed value. The request is not processed.

**User Response:** Make the total greater than or equal to the minimum allowed value, issue an end or cancel command and then issue a daily closure command.

---

**037 => DOS/WINDOWS 80900145 => 4690 OS**

**Explanation:** The command is not accepted in phase 1 because it has been done before or the command is not accepted in phase 2 because the phase 1 must be executed first. The request is not processed.

**User Response:** Issue an phase 2 or issue the phase 1.

---

**038 => DOS/WINDOWS 80900146 => 4690 OS**

**Explanation:** An underflow occurred. The uplift daily total is less than the minimum allowed value. The request is not processed.

**User Response:** Make the total greater than or equal to the minimum allowed value, issue an end or cancel command and then issue a daily closure command.

---

**039 => DOS/WINDOWS 80900627 => 4690 OS**

**Explanation:** Not allowed items or negative items sale (D0, D1, D2, D3, B0, B1, B2, B3, 31, 32, 33 or 34 cmd's.) after to issued uplift or discount on subtotal (D9, B9 or 37 cmd's.). The request is not processed.

**User Response:** Correct the application program.

---

**040 => DOS/WINDOWS 80900628 => 4690 OS**

**Explanation:** The VAT category field is not blank and the amount field is blank in a item sales transaction. The request is not processed.

**User Response:** Correct the application program.

---

**041 => DOS/WINDOWS 80900629 => 4690 OS**

**Explanation:** The current VAT rate table is not verified. The request is not processed.

**User Response:** Check the application program. The program must issue a verify VAT rate table command before further operations are processed. The VAT rate table must be loaded before issuing the verify VAT rate table command.

---

**042 => DOS/WINDOWS 8090062A => 4690 OS**

**Explanation:** There is a VAT rate table mismatch. The request is not processed.

**User Response:** Correct the VAT rate table and issue the command again.

---

**043 => DOS/WINDOWS 8090062B => 4690 OS**

**Explanation:** The fiscal memory VAT rate table is full. The request is not processed.

**User Response:** Call for service. The fiscal base unit must be exchanged in order to load new VAT table rates.

---

**044 => DOS/WINDOWS 8090062C => 4690 OS**

**Explanation:** The VAT category specified is not valid or the data supplied with the load VAT rate table (20 cmd.) is not valid or the VAT category is disabled. The request is not processed.

**User Response:** Correct the application program.

---

**045 => DOS/WINDOWS 8090062D => 4690 OS**

**Explanation:** The ticket cancel (07 cmd.) or ticket invoice cancel (0F cmd.) or credit note cancel (3A cmd.) is not allowed because the amount total was already printed. The request is not processed.

**User Response:** Correct the application program sequence.

---

**048 => DOS/WINDOWS 80900630 => 4690 OS**

**Explanation:** An overflow occurred. The sum of the daily operations for discount on subtotal exceeds the maximum allowed value at end transaction time. The request is not processed.

**User Response:** Make the total less than or equal to the maximum allowed value, issue an end or cancel command and then issue a daily closure command.

---

**049 => DOS/WINDOWS 80900631 => 4690 OS**

**Explanation:** An overflow occurred. The sum of the daily operations for uplift on subtotal exceeds the maximum allowed value. The request is not processed.

**User Response:** Make the total less than or equal to the maximum allowed value, issue an end or cancel command and then issue a daily closure command.

---

**050 => DOS/WINDOWS 80900632 => 4690 OS**

**Explanation:** An underflow occurred. The sum of the daily operations for discount on subtotal is less than the minimum allowed value. The request is not processed.

**User Response:** Make the total greater than the minimum allowed value, issue an end or cancel command and then issue a daily closure command.

---

**051 => DOS/WINDOWS 80900633 => 4690 OS**

**Explanation:** An underflow occurred. The sum of the daily operations for uplift on subtotal is less than the minimum allowed value. The request is not processed.

**User Response:** Make the total greater than the minimum allowed value, issue an end or cancel command and then issue a daily closure command.



---

**052 => DOS/WINDOWS 80900634 => 4690 OS**

**Explanation:** The transaction total is equal to zero. The request is not processed.

**User Response:** Adjust the transaction total or issue a cancel command.

---

**053 => DOS/WINDOWS 80900635 => 4690 OS**

**Explanation:** The requested time used on the set date (16 cmd.) is not within the allowed range of the current fiscal printer time or the requested time is previous to the date of the last closure stored in the fiscal memory. The request is not processed.

**User Response:** Either correct the time sent to the fiscal printer or if the fiscal printer time differs from the actual time by more than the allowed range, call for service.

---

**054 => DOS/WINDOWS 80900636 => 4690 OS**

**Explanation:** The perception type table is not set. The request is not processed.

**User Response:** Use the TI/CN set/reset perception type (22 cmd.) to load the information.

---

**055 => DOS/WINDOWS 80900203 => 4690 OS**

**Explanation:** The fiscal request message length is less than the minimum required value. The request is not processed.

**User Response:** Check the application program.

---

**056 => DOS/WINDOWS 80900150 => 4690 OS**

**Explanation:** An overflow occurred. The cancel transaction daily total exceeds the maximum allowed value at cancel transaction time. The request is not processed.

**User Response:** Make the total less than or equal to the maximum allowed value, issue a cancel command and then issue a daily closure command.

---

**057 => DOS/WINDOWS 80900151 => 4690 OS**

**Explanation:** An underflow occurred. The cancel transaction daily total is less than the minimum allowed value at cancel transaction time. The request is not processed.

**User Response:** Make the total greater than or equal to the minimum allowed value, issue a cancel command and then issue a daily closure command.

---

**058 => DOS/WINDOWS 8090063A => 4690 OS**

**Explanation:** An overflow occurred. The amount due accumulator exceeds the maximum allowed value. The request is not processed.

**User Response:** Correct the payment amount and issue the command again.

---

**059 => DOS/WINDOWS 8090063B => 4690 OS**

**Explanation:** An underflow occurred. The amount due accumulator is less than the minimum allowed value. The request is not processed.

**User Response:** Correct the payment amount and issue the command again.

---

**060 => DOS/WINDOWS 8090063C => 4690 OS**

**Explanation:** The payment type table is not loaded. The request is not processed.

**User Response:** Use the set payment type (24 cmd.) to load the information.

---

**061 => DOS/WINDOWS 8090063D => 4690 OS**

**Explanation:** An overflow occurred. The transaction total or one of the VAT category transaction sales totals exceeds the maximum allowed value on an item command. The request is not processed.

**User Response:** Issue an end or cancel command.

---

**062 => DOS/WINDOWS 8090063E => 4690 OS**

**Explanation:** The command can be executed only for ticket invoice or credit note type A or B. The request is not processed.

**User Response:** Check the application program.

---

**063 => DOS/WINDOWS 8090063F => 4690 OS**

**Explanation:** The set POS identification is not set. The request is not processed.

**User Response:** Use the set POS identification (1E cmd.) to load the information. Depending on the country laws, this command may require IBM service personnel.

---

**064 => DOS/WINDOWS 80900127 => 4690 OS**

**Explanation:** An overflow occurred. The specified value received amount from the application program exceeds the maximum allowed amount or the daily payment type accumulators exceeds the maximum allowed value. The request is not processed.

**User Response:** Correct the value and try the operation again.

---

**065 => DOS/WINDOWS 80900201 => 4690 OS**

**Explanation:** A request was sent to the fiscal unit and the fiscal command byte is not recognized. The request is not processed.

**User Response:** Check the application program.

---

**066 => DOS/WINDOWS 80900202 => 4690 OS**

**Explanation:** A request was sent to the fiscal unit and the fiscal command byte extension is not recognized. The request is not processed.

**User Response:** Check the application program.

---

**067 => DOS/WINDOWS 80900643 => 4690 OS**

**Explanation:** The command was processed successfully. No error occurred.

**User Response:** No action is required.

---

---

**068 => DOS/WINDOWS 80900204 => 4690 OS**

**Explanation:** An overflow occurred. The transaction general global perception total by perception type or the transaction general perception by perception type or the transaction general perception by VAT category and perception type or the transaction general perception total exceeds the maximum allowed value. The request is not processed.

**User Response:** Issue an ticket invoice end or ticket invoice cancel or credit note end or credit note cancel command.

---

**069 => DOS/WINDOWS 80900205 => 4690 OS**

**Explanation:** An attempt was made to print a line on the CR, SJ or DI stations

- without the correct payment phase done inside of ticket, ticket invoice or credit note OR
- that exceeds the maximum number of ordinary print lines allowed during a ticket, ticket invoice or credit note.

The request is not processed.

**User Response:** Issue the payment phase (D5, B5 or 38 cmd.) OR issue an end (06, E3 or 39 cmd.)

---

**073 => DOS/WINDOWS 80900303 => 4690 OS**

**Explanation:** An error occurred while printing on an inserted document. The request is not processed.

**User Response:** If the error continues, service the printer.

---

**075 => DOS/WINDOWS 80900209 => 4690 OS**

**Explanation:** Printing not allowed. Possible reasons are:

- If ticket is in progress, ordinary printing line on DI station (EB cmd.) is not allowed at this point.
- If ticket invoice is in progress, ordinary printing line on CR/SJ station (EA cmd.) is not allowed at this point.
- If credit note is in progress, ordinary printing line on CR/SJ station (EA cmd.) is not allowed at this point.
- Orientation print PORTRAIT and linefeed direction REVERSE on DI station not allowed during ticket invoice or credit note.

The request is not processed.

**User Response:** Check the application program.

---

**076 => DOS/WINDOWS 80900210 => 4690 OS**

**Explanation:** Invalid print station selected. The request is not processed.

**User Response:** Correct the print station and issue the command again.

---

**077 => DOS/WINDOWS 80900211 => 4690 OS**

**Explanation:** The download graphic is corrupted. The request is not processed.

**User Response:** The graphics must be initialized. Erase all graphics from printer flash using CA cmd. (cmd. extension 10) and the issued CA cmd. (cmd. extension 02) again.

---

**078 => DOS/WINDOWS 80900304 => 4690 OS**

**Explanation:** Graphic with same number already in printer flash. The request is not processed.

**User Response:** The user attempted to download a graphic using a number already in printer flash.

Correct the graphic number or erase all graphics from printer flash using the CA cmd. (10 cmd. extension) and then issue the CA cmd. (02 cmd. extension) again.

---

**079 => DOS/WINDOWS 80900212 => 4690 OS**

**Explanation:** Invalid Sequence. This command can only be sent inside a download graphics command set. The request is not processed.

**User Response:** Issue the CA cmd. (cmd. extension 10) and then restart the download sequence.

---

**080 => DOS/WINDOWS 80900213 => 4690 OS**

**Explanation:** Graphic don't downloaded. The request is not processed.

**User Response:** Download graphic with CA cmd. (cmd. extension 02) before printing.

---

**081 => DOS/WINDOWS 80900651 => 4690 OS**

**Explanation:** The print typeface specified is not valid. The request is not processed.

**User Response:** Specify a valid print typeface.

---

**082 => DOS/WINDOWS 80900306 => 4690 OS**

**Explanation:** A request to print on the CR, SJ or DI station was made:

- without start an application-originated report. OR
- without start a NFH Document. OR
- without issue the ticket, ticket invoice or credit note.

The request is not processed.

**User Response:** Start an application-originated report or a NFH document or issued a ticket, ticket invoice or credit note.

---

**083 => DOS/WINDOWS 80900307 => 4690 OS**

**Explanation:** An unrecoverable error occurred reading the fiscal memory identification/status/setup area.

**User Response:** Service the printer.

---

**084 => DOS/WINDOWS 80900308 => 4690 OS**

**Explanation:** The payment trailer line is mandatory when the payment type correspond to "credit card".

**User Response:** Fill the payment trailer line and issue the command again.

---

**085 => DOS/WINDOWS 80900309 => 4690 OS**

**Explanation:** The VAT rate for this VAT category is not valid. The request is not processed.

**User Response:** Check the application program.

---

**086 => DOS/WINDOWS 80900401 => 4690 OS**

**Explanation:** The password entered is not valid or the maximum number of attempts to enter the correct password was exceeded. The request is not processed.

**User Response:** Reenter the correct password or if the maximum number of attempts was exceeded, use the J4/CE jumper to restore normal operation.

**Note:** Only authorized service personnel can perform functions that require a password.

---

**087 => DOS/WINDOWS 80900657 => 4690 OS**

**Explanation:** The printer command received by the fiscal printer is not valid. The request is not processed.

**User Response:** Issue a valid printer command.

---

**089 => DOS/WINDOWS 80900312 => 4690 OS**

**Explanation:** The fiscal memory is full. All fiscal commands are rejected except the fiscal memory report.

**User Response:** Service the printer.

---

**090 => DOS/WINDOWS 8090065A => 4690 OS**

**Explanation:** The requested daily closure was not found in the fiscal memory. The request is not processed.

**User Response:** Specify a valid closure number or valid dates.

---

**091 => DOS/WINDOWS 80900314 => 4690 OS**

**Explanation:** An error occurred while printing the start-up message.

**User Response:** Turn the power OFF and ON again. If the error continues, service the printer.

---

**092 => DOS/WINDOWS 80900315 => 4690 OS**

**Explanation:** The requested internal table register was not found in the fiscal memory. The request is not processed.

**User Response:** Specify a valid table entry.

---

**095 => DOS/WINDOWS 80900425 => 4690 OS**

**Explanation:** The address or length data is not valid. The requested address range is not valid or is wrong in the engineering dump command. The request is not processed.

**User Response:** Correct the input data.

---

**096 => DOS/WINDOWS 80900140 => 4690 OS**

**Explanation:** A numeric field contains characters that are not valid. The request is not processed.

**User Response:** Correct the value and issue the command again.

---

---

**097 => DOS/WINDOWS 80900410 => 4690 OS**

**Explanation:** Fiscal RAM is in error or does not match the fiscal memory.

**User Response:** Service the printer. The J4/CE jumper procedure is required.

**Note:** Only authorized service personnel can move the J4/CE jumper.

---

**098 => DOS/WINDOWS 80900411 => 4690 OS**

**Explanation:** Fiscal RAM is restored.

**User Response:** Remove the J4/CE jumper to restore normal operation.

**Note:** Only authorized service personnel can move the J4/CE jumper.

---

**099 => DOS/WINDOWS 80900318 => 4690 OS**

**Explanation:** The maximum &repairac. repair actions have been reached.

**User Response:** Exchange the fiscal printer at the next failure occurrence.

---

**100 => DOS/WINDOWS 80900329 => 4690 OS**

**Explanation:** An error occurred while reading from the fiscal memory. The request is not processed.

**User Response:** Service the printer.

---

**101 => DOS/WINDOWS 80900326 => 4690 OS**

**Explanation:** An unrecoverable error occurred when writing to fiscal memory. The request is not processed.

**User Response:** Service the printer.

---

**102 => DOS/WINDOWS 80900327 => 4690 OS**

**Explanation:** The fiscal parameter configuration (C4 cmd.) was attempted more than once with the same extension since the last J4/CE jumper reset or X' C402' was attempted with the display addresses already set. The request is not processed.

**User Response:** Reset the printer using the J4/CE jumper procedure and initialize the printer again.

**Note:** Only authorized service personnel can move the J4/CE jumper.

---

**103 => DOS/WINDOWS 80900421 => 4690 OS**

**Explanation:** The data is not valid. The requested data or number is out-of-range. The request is not processed.

**User Response:** Correct the input data.

---

**104 = DOS/WINDOWS 80900360 = 4690 OS**

**Explanation:** The barcode data must be null terminated. The request is not processed.

**User Response:** Correct the barcode data and issue the command again.

---

---

**105 = DOS/WINDOWS 80900361 = 4690 OS**

**Explanation:** The barcode size is invalid OR the graphic size is invalid. The width is greater than 62 (0x3E) or the height is greater than 21 (0x15). The request is not processed.

**User Response:** Correct the barcode size and issue the command again OR correct the graphic size and issue the CA cmd. (cmd. extension 02) again.

---

**107 => DOS/WINDOWS 8090066B => 4690 OS**

**Explanation:** The microcode EC level table is full. The request is not processed.

**User Response:** Exchange the microcode EC level by the last EC level stored in the microcode EC level table or exchange the fiscal memory.

---

**108 => DOS/WINDOWS 80900328 => 4690 OS**

**Explanation:** The POS identification table is full. The request is not processed.

**User Response:** If the table must be updated, exchange the fiscal memory.

---

**109 => DOS/WINDOWS 80900324 => 4690 OS**

**Explanation:** The fiscal memory is not connected. The fiscal unit cannot restart processing.

**User Response:** Service the printer. When servicing, first check to ensure the cable connections on the fiscal processor card are correct.

The J4/CE jumper procedure is required when the fiscal memory is reconnected.

**Note:** Only authorized service personnel can move the J4/CE jumper.

---

**112 => DOS/WINDOWS 80900670 => 4690 OS**

**Explanation:** The fiscal printer was reset.

**User Response:** No action is required.

---

**113 => DOS/WINDOWS 80900341 => 4690 OS**

**Explanation:** An unrecoverable printer error occurred after two power-on resets.

**User Response:** Turn the power off and then on again. If the problem persists, service the printer.

---

**114 => DOS/WINDOWS 80900363 => 4690 OS**

**Explanation:** A printer communication error occurred.

**User Response:** Service the printer.

---

**115 => DOS/WINDOWS 80900701 => 4690 OS**

**Explanation:** The taxpayer issuer condition table is full. The request is not processed.

**User Response:** If the table must be updated, exchange the fiscal memory.

---

---

**116 => DOS/WINDOWS 80900702 => 4690 OS**

**Explanation:** The payment type lines used exceeds the maximum payment type lines allowed. The request is not processed.

**User Response:** If the payment total is less than transaction total, cancel the transaction or If the payment total is greater than or equal to transaction total, cancel or end the transaction.

---

**118 => DOS/WINDOWS 80900704 => 4690 OS**

**Explanation:** The selected payment type or perception type is invalid or the description field data is blank. The request is not processed.

**User Response:** Select the correct payment type or perception type or input data in the description field and then issue the command again.

---

**119 => DOS/WINDOWS 80900677 => 4690 OS**

**Explanation:** Alphabetic fields with invalid data. The request is not processed.

**User Response:** Correct the data and then issue the command again.

---

**120 => DOS/WINDOWS 80900678 => 4690 OS**

**Explanation:** A printer card time-out occurred while executing a command.

**User Response:** Turn the power OFF and then ON again. If the problem persists, service the printer.

---

**121 => DOS/WINDOWS 80900679 => 4690 OS**

**Explanation:** Audit port wrap test fail.

**User Response:** None. Service the printer.

---

**123 => DOS/WINDOWS 8090067B => 4690 OS**

**Explanation:** An overflow occurred. The fixed transaction total exceeds the maximum allowed value at end transaction time. The request is not processed.

**User Response:** Make the total less than or equal to the maximum allowed value, issue an end or cancel command, and then issue a daily closure command.

---

**124 => DOS/WINDOWS 8090067C => 4690 OS**

**Explanation:** An overflow occurred. The fixed daily total exceeds the maximum allowed value at end transaction time. The request is not processed.

**User Response:** Make the total less than or equal to the maximum allowed value, issue an end or cancel command and then issue a daily closure command.

---

**125 => DOS/WINDOWS 8090067D => 4690 OS**

**Explanation:** The number of lines available to print is not sufficient. The request is not processed.

**User Response:** Possible actions to take are:

- If the string &totaldef. wasn't printed
  - To send any command with less lines to print.
  - Issue the ticket invoice cancel (OF cmd.) or credit note cancel (3A cmd.)



- If the string &totaldef. was printed
  - Issue the ticket invoice end (E3 cmd.) or credit note end (39 cmd.) with the less quantity of lines.

---

**128 => DOS/WINDOWS 80900320 => 4690 OS**

**Explanation:** Fiscal memory is not serialized. The request is not processed.

**User Response:** Service the printer.

---

**129 => DOS/WINDOWS 80900321 => 4690 OS**

**Explanation:** The fiscal unit is not in fiscal mode. The request is not processed.

**User Response:** Call for service to set fiscal mode.

---

**131 => DOS/WINDOWS 80900323 => 4690 OS**

**Explanation:** A problem was detected in a display or in the configuration for the point-of-sale displays. No fiscal commands can be executed. The minimum number of POS displays that must be configured is &dispnum..

**User Response:** Follow the maintenance manual procedures to set the configuration correctly. If problem persists, service the POS terminal.

---

**133 => DOS/WINDOWS 80900364 => 4690 OS**

**Explanation:** The amount is zero. The request is not processed.

**User Response:** The amount must be greater than zero.

---

**134 => DOS/WINDOWS 80900325 => 4690 OS**

**Explanation:** The fiscal unit detected an internal hardware error. The request is not processed.

**User Response:** Run the printer test to determine the cause of the problem. Service the printer.

---

**136 => DOS/WINDOWS 80900221 => 4690 OS**

**Explanation:** A ticket related command was issued while a sales transaction was not in progress. The request is not processed.

**User Response:** Correct the application program sequence.

---

**138 => DOS/WINDOWS 80900223 => 4690 OS**

**Explanation:** A ticket invoice or credit note related command was issued while a ticket invoice or credit note was not in progress. The request is not processed.

**User Response:** Correct the application program sequence.

---

**139 => DOS/WINDOWS 80900224 => 4690 OS**

**Explanation:** The ticket invoice/credit note set customer information table has not been set or description data (Line 1) has not been set. The request is not processed.

**User Response:** Use the ticket invoice/credit note set customer information (25 cmd.) to load the information or issue the cmd 25 with cmd.ext. 01 to set the description data (line 1).

---

**140 => DOS/WINDOWS 80900225 => 4690 OS**

**Explanation:** A ticket, ticket invoice or credit note related command was issued before printing the header. The request is not processed.

**User Response:** Correct the application program sequence.

---

**141 => DOS/WINDOWS 80900226 => 4690 OS**

**Explanation:** A command was issued that is not allowed before the total command is successfully executed. The request is not processed.

**User Response:** Correct the application program sequence.

---

**142 => DOS/WINDOWS 80900227 => 4690 OS**

**Explanation:** The transaction payment procedure is not in progress. The request is not processed.

**User Response:** Correct the application program sequence.

---

**144 => DOS/WINDOWS 80900229 => 4690 OS**

**Explanation:** The command was issued before the store header was set. The request is not processed.

**User Response:** Correct the application program sequence to set the store headers before issuing this command.

---

**145 => DOS/WINDOWS 80900691 => 4690 OS**

**Explanation:** The command is not accepted when the J4/CE jumper is not active. The request is not processed.

**User Response:** Activate the J4/CE jumper and try issuing the command again.

---

**146 => DOS/WINDOWS 80900692 => 4690 OS**

**Explanation:** A command not related to a NFH document was issued while a NFH document is in progress. The request is not processed.

**User Response:** Issue the command again after the NFH document is completed.

---

**147 => DOS/WINDOWS 80900693 => 4690 OS**

**Explanation:** A NFH related command was issued while a NFH document was not in progress. The request is not processed.

**User Response:** Correct the application program sequence.

---

**148 => DOS/WINDOWS 80900694 => 4690 OS**

**Explanation:** The NFH document type specified don't correspond with the NFH document type in progress. The request is not processed.

**User Response:** Correct the NFH document type and issue the command again.

---

---

**149 => DOS/WINDOWS 80900695 => 4690 OS**

**Explanation:** When command extension 00 is selected the customer document type and/or customer document number and/or taxpayer customer condition and/or customer name must be loaded OR the customer document type and/or customer document number and/or taxpayer customer condition and/or customer name is/are invalid. The request is not processed.

**User Response:** Issue the ticket invoice/credit not set customer information (25 cmd.) to load the information correctly.

---

**150 => DOS/WINDOWS 80900696 => 4690 OS**

**Explanation:** The first two digits of UTIK user number are invalid. The request is not processed.

**User Response:** Correct the UTIK user number and try the command again.

---

**151 => DOS/WINDOWS 80900697 => 4690 OS**

**Explanation:** The UTIK user number is invalid. The request is not processed.

**User Response:** Correct the UTIK user number and try the command again.

---

**152 => DOS/WINDOWS 80900698 => 4690 OS**

**Explanation:** Invalid ticket invoice or credit note type selected. The request is not processed.

**User Response:** Correct the ticket invoice type (E0 cmd.) or credit note type (30 cmd.) and issue the command again.

---

**154 => DOS/WINDOWS 8090069A => 4690 OS**

**Explanation:** The taxpayer issuer condition is invalid. The request is not processed.

**User Response:** Correct the taxpayer issuer condition and issue the command again.

---

**155 => DOS/WINDOWS 8090069B => 4690 OS**

**Explanation:** The ordinal item number in the negative item operation is not valid. The request is not processed.

**User Response:** Correct the ordinal item number and issue the command again.

---

**156 => DOS/WINDOWS 8090069C => 4690 OS**

**Explanation:** The NFH field line number (for field) specified could be out of range, or it wasn't set for the document type in progress, or the NFH field line (user defined w/A7 cmd.) has already been used the maximum of times allowed. The request is not processed.

**User Response:** Issue the command again with the correct NFH field line number.

---

**157 => DOS/WINDOWS 8090069D => 4690 OS**

**Explanation:** The correct operation of credit card slip printing is not in progress. The request is not processed.

**User Response:** Correct the application program sequence.

---

---

**158 => DOS/WINDOWS 8090069E => 4690 OS**

**Explanation:** The date is not set by application program. The request is not processed.

**User Response:** Correct the application program sequence.

---

**159 => DOS/WINDOWS 8090069F => 4690 OS**

**Explanation:** The fiscal printer is locked. The request is not processed.

**User Response:** Reset the printer using the J4/CE jumper procedure and initialize the printer again.

**Note:** Only authorized service personnel can move the J4/CE jumper.

---

**160 => DOS/WINDOWS 80900330 => 4690 OS**

**Explanation:** Fiscal memory is serialized. The request is not processed.

**User Response:** No action is required.

---

**161 => DOS/WINDOWS 80900331 => 4690 OS**

**Explanation:** The fiscal unit is in fiscal mode. The request is not processed.

**User Response:** No action is required.

---

**163 => DOS/WINDOWS 809006A3 => 4690 OS**

**Explanation:** Invalid command after a printer error or PLD. The request is not processed.

**User Response:** After a printer error or PLD, the same command that was in progress during a printer error or PLD to be issued again or a cancel transaction if is it allowed. Query commands like DA, DB, F8, F9 ..... are accepted too.

---

**164 => DOS/WINDOWS 80900350 => 4690 OS**

**Explanation:** The power-on sequence is in progress.

**User Response:** No action is required.

---

**165 => DOS/WINDOWS 809006A5 => 4690 OS**

**Explanation:** The retrieve/send interrupted (08 cmd.) was issued without a printer error or PLD previous. The request is not processed.

**User Response:** Correct the application program sequence.

---

**166 => DOS/WINDOWS 809006A6 => 4690 OS**

**Explanation:** The set NFH information (A7 cmd.) cannot be issued because any non-fiscal homologated document was printed after the last daily closure. The request is not processed.

**User Response:** Issue the daily closure (13 cmd.) and issue the set NFH information (A7 cmd.) before to start any NFH document.

---

**167 => DOS/WINDOWS 80900230 => 4690 OS**

**Explanation:** The requested command cannot be issued while a sales period is in progress. The request is not processed.

**User Response:** Perform a daily closure command and then issue the command again.

---

**168 => DOS/WINDOWS 80900231 => 4690 OS**

**Explanation:** A command not related to a sales transaction was issued while a sales transaction is in progress. The request is not processed.

**User Response:** Issue the command again after the ticket is completed. If this error was encountered during the online printer diagnostic test, it indicates that the test cannot be completed because a sales transaction is in progress. Either have the salesperson end the transaction or diagnose the printer problem using the offline printer test that is invoked by pressing the keys on the printer in the correct sequence.

---

**169 => DOS/WINDOWS 80900232 => 4690 OS**

**Explanation:** A command not related to credit note was issued while a credit note is in progress. The request is not processed.

**User Response:** Issue the command again after the credit note is complete.

---

**170 => DOS/WINDOWS 80900233 => 4690 OS**

**Explanation:** A command not related to a ticket invoice was issued while a ticket invoice is in progress. The request is not processed.

**User Response:** Issue the command again after the ticket invoice is complete.

---

**171 => DOS/WINDOWS 80900234 => 4690 OS**

**Explanation:** A command not related to a ticket invoice was issued while a ticket invoice is in progress. The request is not processed.

**User Response:** Issue the command again after the ticket invoice is complete.

---

**172 => DOS/WINDOWS 80900235 => 4690 OS**

**Explanation:** Only a fiscal ticket related sales transaction command is accepted after the header is printed. The request is not processed.

**User Response:** Check the application program.

---

**173 => DOS/WINDOWS 80900236 => 4690 OS**

**Explanation:** After the total command was issued, the command sequence is not valid. The request is not processed.

**User Response:** If the ticket invoice 'A' is in progress only ticket invoice payment (B5 cmd.) or ticket invoice cancel (0F cmd.) or ticket invoice end (E3 cmd.) are allowed.

If the credit note 'A' is in progress only credit note payment (38 cmd.), credit note cancel (3A cmd.) or credit note end (39 cmd.) are allowed.

If ticket is in progress, item/negative items sale are not allowed.

If ticket invoice 'B' or 'C' is in progress, item/negative items sale are not allowed.

If credit note 'B' or 'C' is in progress, item/negative items sale are not allowed.

---

**174 => DOS/WINDOWS 80900237 => 4690 OS**

**Explanation:** A payment is in progress. The request is not processed.

**User Response:** After the payment processing is complete, issue the request again.

---

**175 => DOS/WINDOWS 80900238 => 4690 OS**

**Explanation:** Training mode is in progress. The request is not processed.

**User Response:** Correct the application program sequence or issue a set training mode Off command.

---

**176 => DOS/WINDOWS 80900239 => 4690 OS**

**Explanation:** The payments are already completed and printed, so you can't continue paying. The request is not processed.

**User Response:** Continue with ordinary printing lines or end transaction.

---

**177 => DOS/WINDOWS 809006B1 => 4690 OS**

**Explanation:** The POS Id number is invalid. The request is not processed.

**User Response:** Correct the POS Id number and issue the command again.

---

**178 => DOS/WINDOWS 809006B2 => 4690 OS**

**Explanation:** Invalid C.U.I.T. or C.U.I.L. or document number. The request is not processed.

**User Response:** Correct the C.U.I.T or C.U.I.L or document number and issue the command again.

---

**179 => DOS/WINDOWS 809006B3 => 4690 OS**

**Explanation:** Invalid taxpayer customer condition selected. The request is not processed.

**User Response:** Correct the taxpayer customer condition and issue the command again.

---

**180 => DOS/WINDOWS 809006B4 => 4690 OS**

**Explanation:** Fiscal EPROM is in error. EPROM serialized but pattern not found.

**User Response:** Service the printer.

---

**181 => DOS/WINDOWS 809006B5 => 4690 OS**

**Explanation:** Fiscal RAM is in error. Return to the FB command.

**User Response:** Service the printer.

---

**182 => DOS/WINDOWS 809006B6 => 4690 OS**

**Explanation:** An error occurred on an end transaction (06 cmd.). The request is not processed.

**User Response:** Issue the end transaction command again or issue a cancel transaction command. If this error was encountered during the online printer diagnostic test, it indicates that the test cannot be completed because a sales transaction is in progress. Either have the salesperson end the transaction or diagnose the printer problem using the offline printer test that is invoked by pressing the keys on the printer in the correct sequence.

---

**183 => DOS/WINDOWS 809006B7 => 4690 OS**

**Explanation:** An error occurred on a cancel transaction (07 cmd.). The request is not processed.

**User Response:** Issue the cancel transaction command again. If this error was encountered during the online printer diagnostic test, it indicates that the test cannot be completed because a sales transaction is in progress. Either have the salesperson end the transaction or diagnose the printer problem using the offline printer test that is invoked by pressing the keys on the printer in the correct sequence.

---

**184 => DOS/WINDOWS 809006B8 => 4690 OS**

**Explanation:** The command sequence is not valid.

- A command not related to application-originated report was requested that is not allowed during a application-originated report.
- If CR application-originated report is in progress, ordinary printing line on DI station (EB cmd.) is not allowed at this point.
- If SJ application-originated report is in progress, ordinary printing line on DI station (EB cmd.) is not allowed at this point.
- If DI application-originated report is in progress, ordinary printing line on CR or SJ station (EA cmd.) is not allowed at this point.

The request is not processed.

**User Response:** Check the application program sequence.

---

**185 => DOS/WINDOWS 809006B9 => 4690 OS**

**Explanation:** An EPROM load error occurred on the printer logic card. The request is not processed.

**User Response:** Service the printer.

---

**186 => DOS/WINDOWS 809006BA = 4690 OS**

**Explanation:** Mismatch between RAM fiscalization flag and EPROM Mark. The request is not processed.

**User Response:** Insert the jumper and reinitialize the printer.

If the problem persists, service the printer.

---

**187 => DOS/WINDOWS 809006BB => 4690 OS**

**Explanation:** Block read from fiscal memory empty. The request is not processed.

**User Response:** Check the application program.

---

**188 => DOS/WINDOWS 809006BC => 4690 OS**

**Explanation:** Invalid customer document type selected. The request is not processed.

**User Response:** Correct the customer document type and issue the command again.

---

**192 => DOS/WINDOWS 80900524 => 4690 OS**

**Explanation:** The command is rejected from the printer logic card. The request is not processed.

**User Response:** Check for a device driver programming error.

---

---

**194 => DOS/WINDOWS 80900521 => 4690 OS**

**Explanation:** A print head home error occurred. The request is not processed.

**User Response:** If the problem persists, service the printer.

---

**200 = DOS/WINDOWS 8090070D => 4690 OS**

**ONLY VALID FOR 4610 USB**

**Explanation:** CR printer cover is open or CR out of paper occurred. The request is not processed.

**User Response:** Close the CR cover or ensure the CR paper is installed correctly. If the problem persists, service the printer.

---

**201 => DOS/WINDOWS 80900528 => 4690 OS**

**Explanation:** The front-insert document is not present. The request is not processed.

**User Response:** Insert the document or if a document is already inserted, try removing and reinserting it. If the problem persists, service the printer.

---

**202 => DOS/WINDOWS 80900527 => 4690 OS**

**Explanation:** The inserted document is not ready. The request is not processed.

**User Response:** Try removing the document and reinserting it. If the problem persists, service the printer.

---

**203 = DOS/WINDOWS 80900522 = 4690 OS**

**ONLY VALID FOR 4610 USB**

**Explanation:** The DI printer cover is open. The request is not processed.

**User Response:** Close the DI printer cover.

If the cover is already closed, service the printer.

---

**203 = DOS/WINDOWS 80900522 = 4690 OS**

**ONLY VALID FOR 4610 RS-485**

**Explanation:** The CR, SJ or DI printer cover is open, or CR out of paper occurred. The request is not processed.

**User Response:** Close the CR, SJ or DI printer cover or ensure the CR paper is installed correctly.

If the problem persists, service the printer.

---

**204 => DOS/WINDOWS 80900711 => 4690 OS**

**Explanation:** Internal Error. The request is not processed.

**User Response:** Service the printer.

---

**205 => DOS/WINDOWS 80900526 => 4690 OS**

**Explanation:** A printer keybutton is pressed. The request is not processed.

**User Response:** Release the pressed keybutton. If a keybutton is not pressed, service the printer.

---



---

**206 => DOS/WINDOWS 80900525 => 4690 OS**

**Explanation:** SJ paper error occurred. The request is not processed.

**User Response:** Ensure the paper is installed correctly.

If the problem persists, service the printer.

---

**208 => DOS/WINDOWS 809006D0 => 4690 OS**

**Explanation:** Printer Error. The request is not processed.

**User Response:** Service the printer.

---

**209 = DOS/WINDOWS 80900522 = 4690 OS**

**ONLY VALID FOR 4610 USB**

**Explanation:** The SJ printer cover is open. The request is not processed.

**User Response:** Close the SJ printer cover.

If the cover is already closed, service the printer.

---

**210 => DOS/WINDOWS 809006D2 => 4690 OS**

**Explanation:** Printer DI throat is opened. The request is not processed.

**User Response:** Close the throat and issue the command print again.

---

**214 => DOS/WINDOWS 80900527 => 4690 OS**

**Explanation:** A feed paper error occurred. The request is not processed.

**User Response:** Ensure that the paper is inserted correctly.

---

**235 => DOS/WINDOWS 809006EB => 4690 OS**

**Explanation:** EPROM load error. The request is not processed.

**User Response:** Service the printer.

## Return Code Conversion Table (4690 OS to DOS/WINDOWS)

The following table is for converting 4690 OS return codes into DOS/WINDOWS return codes. Find the DOS/WINDOWS return code under "Fiscal Unit Return Codes" on page 3.

Table 1 (Page 1 of 2). 4690 OS to DOS/WINDOWS  
Return Code Conversion

4690 OS Return Code	Equivalent DOS/WINDOWS Return Code
80900102	002
80900104	004
80900106	006
80900108	008
80900110	010
80900112	012
80900114	014
80900115	015
80900116	016
80900118	018
80900120	020
80900122	022
80900123	023
80900124	024
80900125	025
80900126	026
80900127	064
80900129	029
80900130	030
80900140	096
80900141	033
80900142	034
80900143	035
80900144	036
80900145	037
80900146	038
80900150	056
80900151	057
80900201	065
80900202	066
80900203	055
80900204	068
80900205	069
80900209	075
80900210	076
80900211	077
80900212	079
80900213	080
80900220	135
80900221	136
80900223	138
80900224	139
80900225	140
80900226	141
80900227	142
80900229	144
80900230	167
80900231	168
80900232	169
80900233	170

Table 1 (Page 1 of 2). 4690 OS to DOS/WINDOWS  
Return Code Conversion

4690 OS Return Code	Equivalent DOS/WINDOWS Return Code
80900234	171
80900235	172
80900236	173
80900237	174
80900238	175
80900239	176
80900303	073
80900304	078
80900306	082
80900307	083
80900308	084
80900309	085
80900312	089
80900314	091
80900315	092
80900318	099
80900320	128
80900321	129
80900323	131
80900324	109
80900325	134
80900326	101
80900327	102
80900328	108
80900329	100
80900330	160
80900331	161
80900341	113
80900350	164
80900363	114
80900364	133
80900401	086
80900410	097
80900411	098
80900421	103
80900425	095
80900521	194
80900522	203
80900524	192
80900525	206
80900526	205
80900527	202
80900527	214
80900528	201
8090061B	027
8090061C	028
8090061F	031
80900620	032
80900627	039
80900628	040

Table 1 (Page 2 of 2). 4690 OS to DOS/WINDOWS  
Return Code Conversion

<b>4690 OS Return Code</b>	<b>Equivalent DOS/WINDOWS Return Code</b>
80900629	041
8090062A	042
8090062B	043
8090062C	044
8090062D	045
80900630	048
80900631	049
80900632	050
80900633	051
80900634	052
80900635	053
80900636	054
8090063A	058
8090063B	059
8090063C	060
8090063D	061
8090063E	062
8090063F	063
80900643	067
80900651	081
80900657	087
8090065A	090
8090066B	107
80900670	112
80900677	119
80900678	120
80900679	121
8090067B	123
8090067C	124
8090067D	125
80900691	145
80900692	146
80900693	147
80900694	148
80900695	149
80900696	150
80900697	151
80900698	152
8090069A	154
8090069B	155
8090069C	156
8090069D	157
8090069E	158
8090069F	159
809006A3	163
809006A5	165
809006A6	166
809006B1	177
809006B2	178
809006B3	179
809006B4	180
809006B5	181
809006B6	182
809006B7	183
809006B8	184
809006B9	185
809006BA	186

Table 1 (Page 2 of 2). 4690 OS to DOS/WINDOWS  
Return Code Conversion

<b>4690 OS Return Code</b>	<b>Equivalent DOS/WINDOWS Return Code</b>
809006BB	187
809006BC	188
809006BF	191
809006D0	208
809006D1	209
809006D2	210
809006EB	235
80900701	115
80900702	116
80900704	118
8090070D	200



---

## Suggestions for Application Developers

This chapter is to suggest some hints for the application programs to improve the performance.

- The usage of the emphasized and double-high characters should be minimized in order to reduce the printing time, due to the lines that contains such characters take four times more than the regular printing.
- If the totals in regular vouchers are calculated by the application instead of be requested to the fiscal printer, generally takes less time.
- We recommend the usage the DA (Electronic Read Fiscal Memory Tables) and DB (Electronic Read Counters and Accumulators ) commands after any type of interrupts, like power down, paper out to determine the state of the fiscal printer and the values of internal counters and accumulators to allow the continuation of the current document in progress, if any.  
Fiscal memory tables can also be interrogated.
- In some countries, all the header and trailer lines are not mandatory, so the use of less lines result in a better performance.