

DIGITAL

FCO

CATEGORY

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FIELD CHANGE ORDER

NUMBER: RF72-0001

APPLICABILITY:

This "O" coded FCO should be installed in all RF72, option revision C01, installed in VAX 6000, DS 5000 and VAXft systems.

PROBLEM & SYMPTOM:

"Command Timeouts" caused by a corrupted list pointer in DSSI interface Chip. (Continued on Page 2)

SOLUTION:

The FCO consists of a module with new firmware (PN 23-024EA-00) to be installed. This will change the option revision to D01.(Continued on Page 2.)

QUICK CHECK:

Check Option revision label for "E01", module revision "D02". (Continued on Page 2)

PRE/CO-REQUISITE FCO:

None

MTTI HRS

.75 HRS.

TOOL/TEST EQUIPMENT:

Anti-static Kit

FCO PARTS INFORMATION

FCO KIT NO.	DESCRIPTION OF CONTENTS	EQ KIT VARIATION APPLICABILITY
EQ-01617-04	See page 4 for contents of EQ kit	
FA-04950-04	FCO Document	N/A

FCO CHARGING INFORMATION

WARRANTY/CONTRACT

NONWARRANTY/NONCONTRACT

ON-SITE

OFF-SITE

ON-SITE

OFF-SITE

MATERIAL ONLY

TRAVEL/	EQ	INSTALL	EQ	TRAVEL/	EQ	INSTALL	EQ	ORDER-ADMIN, HANDLING
INSTALL	KIT	INSTALL	KIT	INSTALL	KIT	INSTALL	KIT	PKG, SHIPPING & EQ KIT
DEC	DEC	DEC	DEC	CUS	CUS	CUS	CUS	CUSTOMER

APPROVALS

CSSE Walt Clark	CSL LOGISTICS Brenda Modrak	CS PRODUCT SAFETY Bob Brister
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CSSE MANAGER Steve Dail	This document is published on multiple media including hardcopy, Customer Services	FCO RELEASE DATE
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MICROMEDIA	Microfiche Libraries,	FCO REVISION
Diane MacDonald	Customer Services CD-ROM,	B
	MDS Microfiche Libraries. It	
POPULATION	is also available	PARTS AVAILABILITY
500	electronically via TIMA.	May, 1991

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Quick Check (Continued)

The RF72 module, 54-19091-01 Rev. D02 will have a new ROM in location E-4. The new ROM is identified by DIGITAL P/N 23-015EA-00, module revision E02 will have new ROM P/N 23-024EA-00.

Module check, the "Stat Config" command in PARAMS will display the firmware revision as "Software RFXX (??) built (???) 01-FEB-1991". Refer to the RF72 Users Guide.

Problems (Continued)

1. Command Timeouts caused by excessive BBRs (V256)
2. Improper reporting of MSCP End Packet Status for "Compare Host Data " command processing block with "Forced Error Flag Set". (V256)
3. Fixes problem with Verify utility reporting "Primary" revectorred block as "Non-Primary" and vice versa. (V256)
4. BBRs resulting from marginally good blocks. (V256)
5. ADDA chip diagnostic failing on acceptable devices. (V256)
6. Improved algorithm for read/write test data. (V256)
7. "Command Timeouts" problems have been identified by Engineering affecting the VAX 6000 DS 5000 and VAXft systems. (V255)
8. Unacceptably high ECC uncorrectable errors reported running DRVTST (local to DUP). (V255)
9. Introduction of Single Crystal Ferrite (SCF) heads requires changes to read-after-write timing. (V255)
10. Possibility of inconsistent Revector Control Table (RCT). (V255)

Symptoms (Continued)

1. Commands Timeouts results in virtual circuit closures.
2. "Success" status returned to host.
3. Primary replacement blocks report as terror replacement block & vice versa.
4. Excessive BBR growth.
5. Module faults with Red LEDS and drive bugcheck code of "9075".
6. N/A
7. Command timeouts result in Virtual Circuit closure and the drive hangs.

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8. ECC uncorrectable error reporting includes results from first read attempt after repositioning.
9. Excessive BBR's with SCF heads /timing problem.
10. MSCP error code in BBR log "Inconsistent RCT".

RF72 Module Part Revision E02

This FCO introduces (V256) (23-024EA-00) Firmware and mandates that all RF72 installed in a VAX 6000 DS 5000 and VAXft configurations be upgraded. This FCO also corrects drive diagnostic and system level interface problems detailed below.

Module Revision D02 is the minimum shippable revision effective March, 1991.

NOTE 1: THERE IS NO NEED TO REPLACE MODULES REVISION "D02" WITH REVISION "E02".

NOTE 2: All RF72s shipped for VAX 6000 use (SF72 and SF200) are at firmware (V255 or V256). This FCO applies to any RF72 shipped prior to Feb. 91 and later connected to a VAX 6000.

System

1. Under heavy loads (high queue depth), the connection to the drive can be lost which will result in an aborted/retried operation. No data is lost. The table below shows the possible symptoms under VMS and Ultrix with certain configurations.

OS	Symptom	Configuration
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VMS	'Command Timeout' error log	Drive mounted with DATACHECK set to READ and/or WRITE.

Drive Diagnostics

1. The DUP local program DRVEXR can give the impression that the drive is defective when it is not. When running the DUP local program DRVEXR in 'Read Only' mode AND the DBN area is selected, a large number of 'uncorrectable ECC errors' could result.
2. Due to incorrect fail limits, the DUP local program DRVTST could 'Fail' drives that are working correctly.

Miscellaneous

1. Possibility of inconsistent Revector Control Table (RCT). Due to an oversight in the DSDF architecture specification, the possibility of a copy of the RCT being inconsistent exists. This has been fixed by adding multi-read protection to all RCT blocks.

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Manufacturing Enhancements

1. Support for Single Crystal heads has been included. Read-after-write timing modified to incorporate SCF heads into product.

Contents of EQ Kit

EQ Kit Number	Contents of Kit	Qty	Description
EQ-01617-04	54-19091-01	1	Module, Rev E02
	36-36037-01	1	Option Revision Label
	FA-04950-04	1	FCO Document

RF72 Module Replacement Procedure

NOTE: A separate procedure for upgrading the VAXft appears on Page 6. It differs from the following procedure and the steps are numbered FT n.

***** WARNING *****

The FRUs handled during this procedure are sensitive to electrostatic discharge (ESD) and to shock. The use of the Anti-Static kit is essential when handling the RF72 FRUs and the EPROM supplied in the FCO kit.

1. Insure that you have performed a complete backup of the RF72 to be upgraded.
2. Record the programmable parameters, these will be loaded into the new firmware. Refer to the RF72 Users Guide. Params are:

Nodename, Allclass, Unitnum, Forceuni, Forcenam, SystemID
3. Perform an orderly system shutdown, using the appropriate system shutdown procedures.
4. Power down the entire system and expander boxes if applicable.
5. Setup an anti-static work surface as shown in Figure 1. Note the stack of paper (manuals, etc.), that is used to support the module once it is removed from the Mechanic Set (HDA).
6. Remove the RF72 from the storage enclosure, or mounting hardware as required, consult the appropriate manuals for this procedure.
7. Place the RF72 to be upgraded on the Anti-static work surface with the HDA down and the module facing up. Locate the 4 screws securing the module to the HDA.
8. Remove the 4 (4-40 x 1/2")screws, the module can now be removed from the HDA using the "Flex" connection as a hinge. (See Figure 2)

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Some RF72 chassis may have been manufactured very close to minimum width. In this case the module will be difficult to remove, using your hands spread the chassis, this will make the removal and re-installation easier.

9. Holding the module with your left hand grasp the flex connector by tabs with your right hand and remove by carefully pulling, you may need to to wiggle the connector. Once removed, place the module on the the anti-static work surface.
10. Remove the replacement module from the shipping container and the anti-static bag. Holding the module as you did in step 9, align and reconnect the flex connector.
11. Re-install the module.

- A. Holding the module with both hands, lift module, using the flex as the hinge, and fold it back towards the drive until it is about 1/2 ' above the chassis.
- B. With the module about a 1/2" above the screw post apply a slight pressure to the left against the flex to align the screw holes.
- C. With the 4 screw holes aligned, press down slightly to engage the spindle connector.

D. Then apply slight downward pressure to seat the connector, then install the 4 mounting screws.

12. Cut the option/module revision label as shown in Figure 4, and discard the module revision (E02) portion.

13. Turn the RF72 over and attach the two piece option revision label over the existing label.

14. Return the RF72 to the proper canister, or install the mount hardware remove in step 5.

15. Re-install in the system enclosure or expander cabinet and apply power.

16. The RF72 will begin to execute Power ON Self Test (POST).

Upon successful completion of POST the RF72 will begin a long calibration, this is noted by the flashing of the Fault "Red" LED, while the Ready "Green" LED remains lite. This should take between 10 to 20 minutes.

17. Once POST completes, the RF72 will light the Green "Ready" LED.

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18. Using console commands or MDM set host to the RF72 check the customer programmable that were saved in Step 2. When complete answer "Yes" to the question, "Do you want initialize the drive?".

19. Run DrvTst to verify the upgrade. If you choose to run DrvTst in the diagnostics area only the customer may not have to restore the data.

20. Return the old module to the container and return to Digital.

21. The upgrade is now complete and may be returned to the customer.

UPGRADE PROCEDURE FOR VAXFT SYSTEMS

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* NOTE *
* Read this complete procedure prior to beginning the FCO *
* for the VAXft. *

* WARNING *
* * * * *
* Ensure that the customer's data has been backed up. *
* * * * *
* ISE is static sensitive. Proper ESD cautions must be observed *
* before attempting following procedure. *

FT 1. Before powering off the RF72 disk(s) obtain a list of customer set-able parameters using PARAMS.

- a. Nodename
- b. Allclass
- c. Forceuni
- d. Unitnum
- e. SystemID
- f. Forcenam

This can be done either from VMS with the commands:

```
$ MC SYSGEN <cr>
SYSGEN> CONNECT FYA0:/NOADAPTER
SYSGEN> <cntrl z>
$ SET HOST/DUP/SERVER=MSCP$DUP/TASK=PARAMS <nodename>
(Continued)
```

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- OR

it can be done from HALT mode using the commands:
(REMEMBER to use proper system shutdown command first).

```
>>> MIO
MIO> RBD
RBD1> SHOW_DSSI
```

This will allow you to record the nodename and

unitnumber for all drives on the bus.

RBD1> DUP <DSSI nodenumber> params (This must be performed on each drive in the system)

PARAMS> SHOW allclass

PARAMS> SHOW forceuni

NOTE: Do the above for SystemID and Forcenam in any drives using firmware version 246 and above.

Record this data. These should be the same in each drive.

FT 2. Shutdown system using proper shutdown command, if not already done.

FT 3. Power down system and expander cabinet when appropriate.

FT 4. Remove drive from cabinet.

FT 5. Disassembly

A. Canister

1. Remove the 4 screws holding the front panel. Remove the front panel.
2. Remove the 2 screws holding the top cover. Remove the top cover.
3. Remove the 4 screws holding the rear cover. Remove the rear cover.
4. Remove the 4 screws securing the DSSI adapter module.
5. Disconnect all cables on DSSI adapter module. Remove module.
6. Remove the disk drive (HDA and module) from the casing.
7. Remove 4 screws from the shock mount assembly to allow module access.

B. Carrier

1. Remove the 2 screws on the bottom of the casing.
2. Remove the 2 screws on the right side of the casing.
3. Disconnect all cables on DSSI adapter module. Remove module.
4. Remove the disk drive (HDA and module) from the casing.

FT 6. Remove the 4 screws securing module to HDA.

FT 7. Separate the 2 FRU's by lifting module from DSSI connector end.

WARNING: Proceed with caution, flex circuit is very delicate and can be easily damaged.

FT 8. CAREFULLY disconnect flex circuit connector from module.

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- FT 9. Remove 54-19091-01 module from assembly. Check the revision. If it is revision "D02 or higher, reinstall. The FCO has already been installed. If it is below revision "D01" go to the next step.
- FT 10. Replace old rev module with new module contained in EQ-01617-04.
- FT 11. Carefully reconnect flex circuit connector from HDA to ECM module.
- FT 12. Position ECM module over HDA lining up screw holes. The connector in the center of the board should line up with the connector on the HDA.
- FT 13. Apply gentle pressure to seat the center connector.
- FT 14. Re-install screws. Screws should be tightened firmly.
- FT 15. Reconnect all cables.
- FT 16. Re-install drive in casing.
- FT 17. Re-assemble casing.
- FT 18. Install drive in system.
- FT 19. Apply power. Drive will execute power-on self test (POST).
- FT 20. Drive will then recalibrate (fault lamp will blink at a 5 Hz rate). THIS IS A VITAL POINT. Therefore keep hands OFF system and console terminal. A command from the console terminal can stop the recalibration before it is finished.
- FT 21. The recalibration will take 15 to 20 minutes for the RF72. If it is finished in just 10 seconds check to see if the drive is ready on the OCP panel. If NOT, pressing the READY button will resume the recalibration.
- FT 22. Restore previously recorded data.

```
>>> MIO
MIO> RBD
RBD1> DUP <DSSI nodenumber> params (This must be performed on each
      drive in the system)
```

NOTE: <n> equals previously recorded value.

```
PARAMS> SET allclass <n>
PARAMS> SET forceuni <n>
PARAMS> SET nodename <n>
PARAMS> SET unitnum <n>
```


