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FIELD CHANGE ORDER	NUMBER: RF31-0001
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## APPLICABILITY:

This "0" coded FCO is applicable only to RF31 options, revisions F06, H06, or J06, installed in VAX 4000, 5000, dual host 3800 and VAXft systems.

## PROBLEM &amp; SYMPTOM:

"Command Timeouts"  
(Continued on Page 2)

## SOLUTION:

The FCO consists of a module with new firmware (PN 23-019EA-00) to be installed. This will change the option revision from F06, H06, J06 to K06.  
(Continued on Page 2)

## QUICK CHECK:

Check Option revision label for "K06", module revision "E01".  
(Continued on Page 2)

## PRE/CO-REQUISITE FCO:

None	MTTI HRS .75 HRS
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## TOOL/TEST EQUIPMENT:

Anti-static Kit

## FCO PARTS INFORMATION

FCO KIT NO.	DESCRIPTION OF CONTENTS	EQ KIT VARIATION APPLICABILITY
EQ-01617-03 FA-04950-03	See Page 4 for contents of EQ kit FCO Documentation	N/A

## FCO CHARGING INFORMATION

## WARRANTY/CONTRACT

## NONWARRANTY/NONCONTRACT

## ON-SITE

## OFF-SITE

## ON-SITE

## OFF-SITE

## MATERIAL ONLY

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

## 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 12 August 1991
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2. ECC uncorrectable error reporting includes results from first read attempt after repositioning.
3. Excessive BBR's with SCF heads/timing problem.
4. MSCP error code in BBR log "Inconsistent RCT".
5. System error log file containing MSCP event code "6B" Servo Performance Warning.

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RF31 Module Part Revision E01

This FCO introduces V254 Firmware and requires that all RF31 with V246 (54-18329-01 Rev. D01) be upgraded. This FCO corrects drive diagnostic and system level interface problems detailed below.

The module (54-18329-01 Rev. E01) is to replace the preceding modules, revisions B01, C01, and D01. This module is the minimum shippable effective February 1991.

Kits ordered after July 1991 will contain ROM P/N 23-022EA-00. Installation of this ROM will change the module revision to F01 and Option revision to L07. Module revision E01 need not be upgraded.

System

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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
--	-----	-----
VMS	'Command Timeout' error log	Drive mounted with DATACHECK set to READ and/or WRITE.
VMS	'Command Timeout' error log	Running heavy load on DSSI bus.
VMS	'Can't Make Progress' error log OR 'No Response' error log	Dual-host system under heavy load.
Ultrix	MSCP - resynching controller dsscN 'SCS REQUEST TIMEOUT' error log	Running 'dskx' or booting system.

2. If Bad Block Replacement is invoked with work outstanding (operations in progress), the drive will now respond and a VMS 'Command Timeout' error log will be generated.

## Drive Diagnostics

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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

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1. Ready' LED is left illuminated when drive is offline. If the position of the 'Ready' switch is 'disabled' for more than 60 seconds after the drive is powered on, it will not respond to host commands. The drive must be powered cycled to work around this problem.

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2. 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 exist. this has been fixed by adding multi-read protection to all RCT blocks.
3. Excessive Positioning in Progress (PIP) errors. If periodic calibration are prevented from running due to heavy drive activity the possibility of grease build up exist. This may could excessive PIP timeouts, and subsequently generate an error log , MSCP event code "6B" Servo Performance Warning.

## Manufacturing Enhancements

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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-01617-03

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EQ Kit Number	Qty	Contents of Kit	Rev	Description
EQ-01617-03			A01	Module Replacement Kit
	1	54-18329-01	A01	Module Rev. D01
	1	36-36035-01	A01	Option Revision (K06) Label

Contents of Kits shipped after Jun 1991

EQ Kit Number	Qty	Contents of Kit	Rev	Description
EQ-01617-03			B01	Module Replacement Kit
	1	54-18329-01	B01	Module Rev. F01
	1	36-36035-01	B01	Option Revision (L07) Label
	1	FA-04950-03	A01	FCO Document

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RF31 Module Replacement Procedure

NOTE: THE INSTALLATION PROCEDURE FOR THE VAXft IS DESCRIBED ON PAGE 7.

\*\*\*\*\* 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 RF31 FRUs and the EPROM supplied in the FCO kit.

1. Insure that you have performed a complete backup of the RF31 to be upgraded.
2. Record the programmable parameters, these will be loaded into the new firmware. Refer to the RF31 Users Guide. Params are:  
  
Nodename, Allclass, Unitnum, Forceuni, Forcename, 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.), this paper is used to support the module once it is removed from the Mechanic Set (HDA).
6. Remove the RF31 from the storage enclosure, or mounting hardware as required, consult the appropriate manuals for this procedure.
7. Place the RF31 to be upgraded on the Anti-static work surface with



17. The RF31 will begin to execute Power ON Self Test (POST).

\*\*\*\*\*  
Upon successful completion of POST the RF31 will 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 7 to 10 minutes.  
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18. Once POST completes, the RF31 will light the Green "Ready" LED.

19. Using console commands or MDM set host to the RF31 check the customer programmable ? that were saved in Step 2. When complete answer "Yes" to the question, "Do you want initialize the drive?".

20. 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.

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

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

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INSTALLATION PROCEDURE FOR VAXft SYSTEMS

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\*  
\* Read this complete procedure prior to beginning the FCO \*  
\*  
\*\*\*\*\*

\*\*WARNING\*\*

Ensure that the customer's data has been backed up.

ISE is static sensitive, proper ESD cautions must be observed before attempting to follow this procedure.

PROCEDURE

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FT 1. Before powering off the RF31 disk(s) obtain a list of customer set-able parameters using PARAMS.

- a. Nodename
- b. Allclass
- c. Forceuni
- d. Unitnum



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.

FT 9. Remove 54-18329-01 module from assembly. Check the revision. If it is revision E01 or higher, re-install as described below. If it is below revision E01, go to the next step.

FT 10. Replace with new module, revision F01 contained in EQ-01617-03.

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.

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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 5 to 10 minutes for the RF31. 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>
```

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Figure 1 Before Module Removed

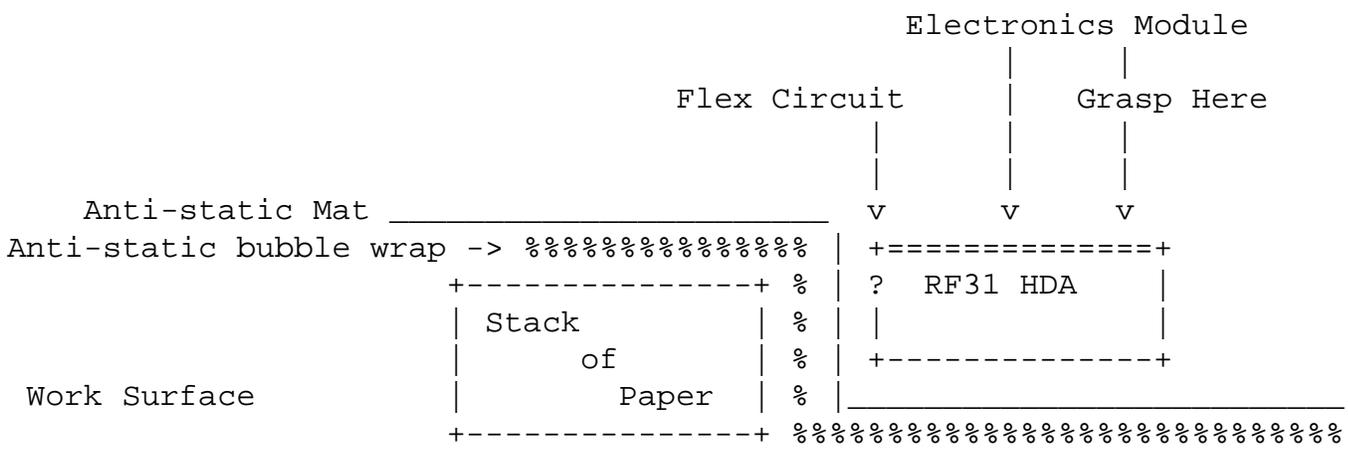
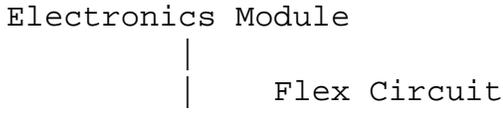
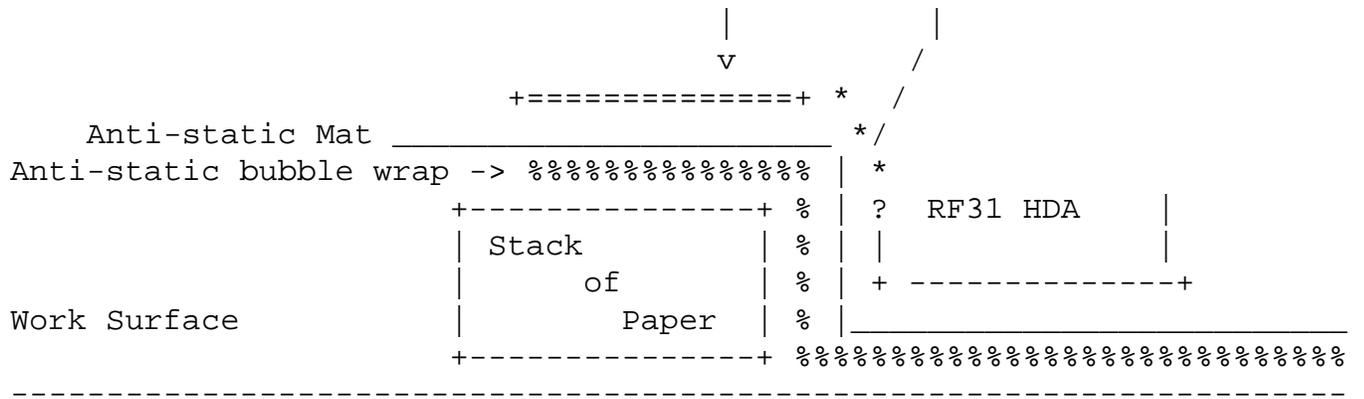


Figure 2 After Module Removal



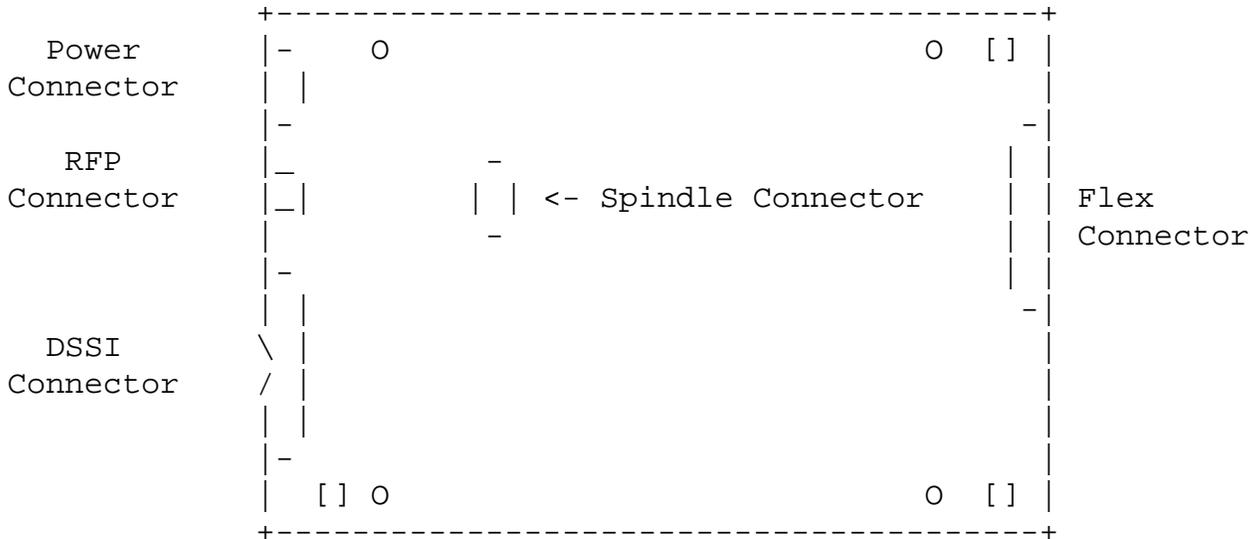


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Figure 3, Module, side 1 up.



O - Four Mounting Screw Holes

[] - Three Tooling Holes

Figure 4. Option/Module Revision Label

Cut Here ----->

Rev K06 (Bar Code)	(Bar Code) E01
Option Revision Portion	Module Revision

\\RF31  
 \^ RF31  
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 \\AUG  
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