\_ FCO RF31-0001-DAS, Command Timeouts

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Quick Check (Continued)

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This FCO introduces Firmware V254 (V256 after July 1991) and requires that all RF31's installed in VAXft, VAX 4000, DS 5000 and Dual Host 3800 systems or RF31's that contain firmware V246 be upgraded. The RF31 module (54-18329-00) will have a new ROM in location E-4. The new ROM is identified by Digital P/N 23-019EA-00, V254 or P/N 23-022EA-00, V256.

Module check, the "Stat Config" command in PARAMS will display the firmware revision as "Software RFXX V254 built 01-FEB-1991". Refer to the RF31 Users Guide.

Or:

Module check, the "Stat Config" command in PARAMS will display the firmware revision as "Software RFXX V256 built ??-FEB-1991". Refer to the RF31 Users Guide.

This FCO corrects drive diagnostic and system level interface problems detailed below.

Problems (Continued)

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- 1. "Command Timeouts" problems have been identified by both customers and internal VAX 4000, 5000 and dual host 3800 sites with firmware V246 resulting in CLD'S.
- Unacceptably high ECC uncorrectable errors reported running DRVTST (local to DUP).
- 3. Introduction of Single Crystal Ferrite (SCF) heads requires changes to read-after-write timing.
- 4. Possibility of inconsistent Revector Control Table (RCT).

5. Excessive Positioning in Progress (PIP) Errors.

Symptoms (Continued)

1. Command timeouts result in Virtual Circuit closure and the drive hangs.

- 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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 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	Dual-host system under heavy
	'No Response' error log	load.
Ultrix	MSCP - resynching controller dsscN `SCS REQUEST TIMEOUT' error log	Running `dskx' or booting system.

 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.

- 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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 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

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 (KO6)
				Label

		1	FA-04950-03	A01	FCO Documentation
Contents	of Kits shipped	l after	Jun 1991		
	EQ Kit Number	Qty	Contents of Kit	Rev	Description
	EO-01617-03			 B01	Module Replacement Kit
	~	1	54-18329-01	в01	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 VAXIE IS DESCRIBED ON PAGE 7.

- 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

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)

Some RF31 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 modules with your left hand remove the flex connector by carefully pulling on the tabs and place it on the anti-static work surface.

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- 10. Remove the replacement module from the shipping container and the anti-static bag. Holding the module as you did in Step 9, 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.
- 13. Cut the option revision label as shown in Figure 4, discarding the module revision (E01) portion.
- 14. Turn the RF31 over and attach the two piece option revision label over the existing label.
- 15. Return the RF31 to the proper canister, or install the mount hardware removed in Step 5.
- 16. Re-install in the system enclosure or expander cabinet and apply power.

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

- 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 VAXIT SYSTEMS

### \*\*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

SystemID e. f. Forcenam NOTE: e and f will only be valid for systems using version 246 and above of the firmware. 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> 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

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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.
- 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)</dssi>
	NOTE: <n> equals previously recorded value.</n>
	PARAMS> SET allclass <n> PARAMS&gt; SET forceuni <n> PARAMS&gt; SET nodename <n> PARAMS&gt; SET unitnum <n></n></n></n></n>
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Figure 1 Before Module Removed

			Ele	ectroni	cs Module
	Fle	ex Ciro	cuit		Grasp Here
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Anti-static bubble wra	ap -> %%%%%%%%%%%%	58888	+====		====+
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	of	8	+		+
Work Surface	Paper	8			
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Figure 2 After Module Removal

Electronics Module

Flex Circuit



Figure 3, Module, side 1 up.

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- 0 Four Mounting Screw Holes
- [] Three Tooling Holes

Figure 4. Option/Module Revision Label

Cut Here ---->

+-   	Rev K06	(Bar Code)	(Bar Code)   E01
	Option R	evision	Module
	Porti	on	Revision

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