DIGITAL	FCO	CATEGORY [I]	PAGE 1 OF 12

FIELD CHANGE ORDER   NUMBER: HSC50-I011

APPLICABILITY: When installing a 9XXX or 65XX system with a CIXCD or when upgrading an existing cluster with a CIXCD, replace ALL L0100 Rev "D" modules with L0118-** or L0100 Rev "E" module (if available). This FCO affects all CI750, CI780, CIBCI and HSC50/70 nodes in VAXclusters containing a CIXCD.
NOTE   An L0100 Rev E can co-exist with L0118s except in a greater than 16 node environment or when used with HSC60/90s.

PROBLEM & SYMPTOM: The CIXCD option requires an L0118 or an L0100 Min. Rev E. The L0100 Rev E cannot be used when the cluster is over 16 nodes or contains an HSC60/90.

SOLUTION: Replace all L0100 Rev D modules when installing CIXCD.

QUICK CHECK: Check that link module is part number L0118-** or L0100 Min. Rev E.

PRE/CO-REQUISITE FCO: | MTTI HRS
                                                             | 1 Hr./Node

TOOL/TEST EQUIPMENT: See Page 2.

FCO PARTS INFORMATION

FCO KIT NO.	DESCRIPTION OF CONTENTS	EQ KIT VARIATION APPLICABILITY
EQ-01616-XX FA-04949-XX	See Page 2 for description of contents and ordering information.	

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 Tom Swett	CS LOGISTICS Ric Little	FS PRODUCT SAFETY Robert Brister
CSSE MANAGER Ric Grogan	This Document is published on multiple media including Hardcopy, Customer Services	FCO RELEASE DATE 30 May 1991
MICROMEDIA	Microfiche Libraries,	FCO REVISION

Diane MacDonald	Customer Services CD-ROM and	A
	MDS Microfiche Libraries.	
POPULATION		PARTS AVAILABILITY
		June, 1991

Tools/Test Equipment (Continued from Page 1)

     Field Service Tool Kit
     VELOSTAT Electrostatic Field Service Kit (P/N 29-26246-00)

Parts List (Continued from Page 1)

EQ-01616-01	1	L0118-**	Link Module
	1	FA-04949-06	Document Ordering Form
EQ-01616-02	5	FA Documents (listed below)	
		FA-04949-01	FCO Doc for CI750-I007
		FA-04949-02	FCO Doc for CI780-I007
		FA-04949-03	FCO Doc for CIBCI-I003
		FA-04949-04	FCO Doc for HSC50-I011
		FA-04949-05	FCO Doc for HSC70-I003

FOLLOWING KIT FOR SELF-MAINTENANCE CUSTOMERS ONLY:

EQ-01616-03	1	L0118-**	Link Module
	5	FA Documents (listed below)	
		FA-04949-01	FCO Doc for CI750-I007
		FA-04949-02	FCO Doc for CI780-I007
		FA-04949-03	FCO Doc for CIBCI-I003
		FA-04949-04	FCO Doc for HSC50-I011
		FA-04949-05	FCO Doc for HSC70-I003

CI ADAPTER MODULE SWITCH and JUMPER SETTING MATRIX				
ADAPTER TYPE(s)	HOST SYSTEM(s)	LINK MODULE	FUNCTION	SWITCH/ JUMPER
CI750	11/750	L0118 Rev B	Slot = 7	S3-4 "OFF"
CI780	11/78x,86x0		Slot = 10	S3-4 "ON"
CIBCI	82x0, 83x0			
	87x0, 8800		Clu_size 16	S3-1 OFF
	HSCxx		Clu_size 32	S3-1 on

CIBCA-Ax	82x0, 83x0	T1025	Slot = 7	Jumper E11-41 out
CIBCA-Bx	85x0, 8700	T1046	Slot = 10	Jumper E11-41 in
	88x0, 6000		Clu_size 16	Jumper D30-60 out
			Clu_size 32	Jumper D30-60 in
CIXCD-xx	6000, 9000	T2080	Slot = 7	NOT SUPPORTED
			Slot = 10	Jumper E15-45 in
			Clu_size 16	Jumper D15-45 out
			Clu_size 32	Jumper D15-45 in

NOTES: On L0118 modules;

    (1) All ON-MODULE jumpers MUST be left in their default positions.
    (2) S3-2 & 3 MUST remain in the "OFF" position.

    For CIBCA options, all reference jumpers are on the backplane slot
    for the PORT (T1015/T1045) module.

    For CIBCA and CIXCD options, install ONLY those backplane jumpers
    listed above and those required to specify the node address.

    NOTE: All nodes should be set to 10 tick mode regardless of the
    VAXcluster system size.

    L0118 - Rev "B" - See step 9 for 7/10-TICK, Cluster-size
                                   Switch set-up, and Misc. Function Jumpers.

    CIBCA-**   - Add Jumper from E11 to E41 on VAXBI Backplane
                                   for "10-TICK INCOMPATIBLE" mode operation.
                                   Verify no jumpers D29-D59 and D30-D60 for cluster-
                                   size (NODE-COUNT) of 16 or less. Refer to
                                   CIBCA User Guide Pg. 2-10 to 2-13 for set-up.

    CI-LINK MODULE FCO INSTALLATION SUMMARY

```
      *********************************************************************
      *            INCOMPATIBILITY WARNING  -   L0118                     *
      *            ---------------------------------------------          *
      *  Mixed "7 and 10-TICK-MODE" CI-LINK operation can have severe     *
      *  impact on CI-arbitration performance and collision-rate (NO_RSP).*
      *  For this reason, DEC does not support "10-TICK-MODE" CI-LINK     *
      *  ROLLING-UPGRADES, thus requiring a CLUSTER SHUTDOWN to "ENABLE"  *
      *  10-TICK-MODE ** ONLY ** after all CI/HSC-nodes have been FCO'd.  *
```

```
   *                                                                      *
   *       NOTE: High-availability customer exceptions to CLUSTER-        *
   *       SHUTDOWN "rule" should be referred to CSSE for advice on       *
   *       minimizing risks; DEC will not assume any liabilities          *
   *       for lost data/time with such CLUSTER upgrade programs.         *
   ***********************************************************************
```

   o Forecast and obtain sufficient CI/HSCxx FCO kits for all CI7x0,
     CIBCI, HSCxx Cluster Nodes, ensuring availability of 1 (one) spare
     for every 10 (ten) FCO kits. FCO kits should NOT BE "P1 ORDERED",
     but should be ordered according to the Corporate Implementation
     Plan. CIxxx Functional Diags (EVGAA/B) from VAX Diag. Rel #31 are
     also recommended for checkout.

   o Study SWITCH/JUMPER SET-UP Procedures for L0118 and CIBCA
     T1025 modules for adjusting the following CI-LINK functions/modes:

          - "7/10-TICK" DELTA-TIME/QUIET-SLOT:
                  + L0118   Step 9
                  + T1025/CIBCA-A Step 9 and CIBCA USER'S GUIDE Pg. 2012.
                  + T1046/CIBCA-B Step 9

          - CLUSTER-SIZE of 16/32 NODES:
                  + L0118   Step 9
                  + T1025/CIBCA   Step 9 and CIBCA USER'S GUIDE Pg. 2-13
                  + T1046/CIBCA-B Step 9

          - L0118 CI-LINK-MODE JUMPERS: Step 9.

   o Install L0118 set to"10-TICK/INCOMPATABLE-MODE"in all CI780, CI750,
     CIBCI, and HSCxx Cluster nodes. There are no prerequisite/co-
     requisite CIxxx or HSCxx FCOs (modules or microcode) required for
     L0118 upgrade in "10-TICK 16-NODE MODE", but CI780.BIN Version V8.0
     and CIBCA.BIN Version V5.3 are recommended.

   o Schedule and perform cluster shutdown after all non-CIBCA nodes are
     upgraded/FCO'd, and have been tested and verified to function in
     "10-TICK-MODE" operation under VMS. VMS system-testing is important
     to early detection and repair of any DOA FCO modules, prior to
     disrupting VAXcluster for CI-LINK 7-to-10-TICK mode-change.

```
          ***********************************************************
          *        IMPORTANT  NOTE  ===  IMPORTANT NOTE            *
          *   Customer should be involved or perform all CLUSTER-  *
          *   wide or node-specific VAX and HSC STARTUPS, BOOTS,   *
          *   and SHUTDOWNS.                                       *
          ***********************************************************
```

o Switch all L0100 Rev E, L0118, T1025 and T1046 to "10-TICK-MODE"
  "INCOMPATIBLE" operation. Ensure all CIs and HSCs are powered-off
  before changing switches/jumpers. Refer to appropriate FCO steps.
  Any planned CI-NODE-ADDRESS changes should also be made at this
  time, with consideration of VMS SYSGEN and DECNET parameter changes
  required on reboot.

o Reboot cluster, with customer consent, starting with HSCs.

                CI-LINK MODULE FCO INSTALLATION PROCEDURE
                ----

1. Ensure the customer has suspended all traffic from all Hosts to the
    HSC50 node that is to be upgraded by ensuring that the customer has
    either dismounted all drives (disk and tape) connected to the HSC50,
    or by manually failing the units over to an alternate HSC.


```
 _ _ _ _ _ _ _             |      FCO    HSC50-I011
| | | | | | | |            |
|d|i|g|i|t|a|l|            |      PAGE  5  OF  12
|_|_|_|_|_|_|_|            |
                           |
_____|_____
```

        Press the ONLINE switch to the OUT position.

        ****
        *   NOTE   *
        *   The first step may be precluded by shutting down   *
        *   all Host Systems that utilize the HSC50 node.   *
        ****

2. Open the HSC50 front door.

3. Then set the Enable/Disable switch on the inside front door of
    the HSC50 to the Enable position.

4. Gain access to the maintenance panel by loosening the captive
    screws securing the maintenance panel access cover.

5. Remove D.C. power to the HSC50 by pushing the D.C. power switch
    on the maintenance panel to the 0 (OFF) position.

6. Open the HSC50 card cage cover by releasing the card cage cover
    locks.

    ****
    *   C A U T I O N   *
    *   *
    *   The L0118 module, as all VAX modules do,   *
    *   contains electrostatic discharge sensitive   *
    *   devices (ESDS). The use of the VELOSTAT kit   *
    *   is essential to prevent damage which may not   *
    *   be noticed immediately.   *
    *   *

```
    *********************************************************************

    7.   Set up VELOSTAT KIT.

         a.  Unfold the VELOSTAT mat to full size (24" x 24").
         b.  Attach the 15 foot ground cord to the VELOSTAT
             snap fastener on the mat.
         c.  Attach the alligator clip end of the ground cord
             to a good ground on the system.
         d.  Attach the wrist strap to either wrist and the
             alligator clip to a convenient portion of the mat.


    8.   Remove the L0100 or L0118 module from its HSCxx module slot
         and place it on the mat.  Check the revision and module type:

             - L0118 - check set-ups, reinstall in same slot, and
               go to step 11 (no upgrade needed).
             - L0100 go to step 9 to continue with upgrade.
```

```
         Record old CI-NODE ADDRESS settings on SW1 and SW2 switches
         (8-switch DIP on module handle).

    9.   With L0118 on ESD Mat, configure and verify CI-LINK mode
         jumpers/switches for "10-TICK/INCOMPATABLE" mode operation.
         The L0118 also contains CLUSTER-SIZE switch and 4 (four) jumpers
         for MISC-FUNCTIONAL-MODES which should be checked.   Install the
         new L0118 in the HSCxx option slot.

             ****************************************************************
             *                     IMPORTANT  -  NOTE                      *
             *   Copy old CI-NODE ADDRESS to new L0118.                    *
             *   Ensure"10-TICK/INCOMPATABLE"mode is ENABLED/SET to avoid *
             *   CI-PATH errors.Default L0118 manufacturing switch sett-   *
             *   ing is now "10-TICK/INCOMPATABLE.                         *
             ****************************************************************

         SET L0118 SWITCH/JUMPER SETTINGS AS FOLLOWS:
         ----------------------------------------------
             *********************************************
             *   NOTE: REFER TO L0118 FIGURES ON FCO PAGES 11    *
             *   AND 12 FOR SW3 AND JUMPERS W1-W4 LOCATIONS.     *
             *********************************************

         o 7/10-TICK COMPAT. MODE SET BY DIP-SWITCH SW3-4 LOCATED AT
           TOP CENTER OF L0118 TO LEFT (BELOW IF VERTICAL) OF 2 CI-
           NODE-ADDRESS 8-SWITCH PACKS.
             - "10-TICK INCOMPAT.,ECO ON" : SW3-4 SWITCH "ON" .
```

- SWITCHES SW3-2 AND SW3-3 MUST BE "OFF" (AFFECTS
                  DELTA-TIME/QUIET-SLOT).

        o CLUSTER-SIZE FOR 16/32-NODE ADDRESSING AND ARBITRATION IS
          CONTROLLED BY SWITCH SW3-1. DEFAULT = 16-NODE-MODE = "OFF".
                - 16-NODE MODE (DEFAULT WITH NO CISCE): SW3-1 "OFF".
                - 32-NODE MODE (CISCE 24-NODE CLUSTER): SW3-1 "ON" .

     NOTE: The cluster_size parameter MUST be consistent throughout
           the cluster at a value of either 16 or 32. If all nodes in
           your cluster are numbered in the range of 0 to 15,you may
           select a cluster_size of * either * 16 or 32;if your cluster
           has any node numbered in the range of 16 to 31, you * MUST *
           select a cluster_size of 32.

        o L0118 FUNCTION-MODE JUMPERS W1-W4 DEFAULT SETTINGS CHECK:
             View module with HANDLE-UP and FINGERS-DOWN.
             Refer to L0118 Figures on FCO page 11 and 12.

```
 _ _ _ _ _ _ _          |        FCO    HSC50-I011
| | | | | | | |         |
|d|i|g|i|t|a|l|         |        PAGE  7  OF  12
|_|_|_|_|_|_|_|         |
                        |
_____|_____
```

                - L0118-B1 HAS ECO-WIRES ON E83-3 and E150-1:
                        = W1 located left of E2: plugged on left 2
                          stake-pins, marked with "box".
                        = W3 located between E54 and E75: plugged on
                          horizontal stake-pins, marked with "box".
                        = W2 and W4 located as 4 stake pins below E24
                          and E62: W2 and W4 "OUT".
                - L0118-B2 HAS NO ECO-WIRES TO E83-3 AND E150-1:
                        = W1 located left of E2: W1 on left 2
                          stake-pins, marked with "box".
                        = W3 located between E54 and E75: W3 on
                          horizontal stake-pins, marked with "box".
                        = W2 located below junction of E24 and E62:
                          W2 on left 2 stake-pins marked with "box".
                        = W4 located below E24: W4 plugged on left 2
                          stake-pins marked with "box".

        SET CIBCA BACKPLANE JUMPER SETTINGS AS FOLLOWS:(FOR QUICK REFERENCE)

             Refer to CIBCA Users Guide Pg. 2-10 to 2-13.
             All jumpers are located behind T1015 Module.
             Jumper changes DO NOT take effect until SELF-TEST
             EXECUTED.

        o "7/10-TICK ALTER-DELTA-TIME" CONTROLLED BY JUMPER ON
          T1015 BACKPLANE PINS E11-E41, E09-E39, and E10-E40:
                - ENSURE E09-E39 and E10-E40 JUMPERS "OUT".

- "7 -TICK COMPAT., ECO-OFF": Jumper OUT E11-E41.
- "10-TICK INCOMPAT.,ECO-ON" : Jumper IN E11-E41.

   o CLUSTER-SIZE FOR 16/32-NODE ADDRESSING AND ARBITRATION IS
     SET BY JUMPER ON T1015 PINS D30-D60 AND D29-D59:
- Ensure E29-E59 out for both 16 or 32-NODE mode.
- 16-NODE mode (default no CISCE): D30-D60 "OUT".
- 32-NODE mode (CISCE 24-NODE   ): D30-D60 "IN" .

10. Close the HSC50 card cage cover and close the card cage locks.

11. Ensure that the HSC50 auxiliary terminal is powered on and is
    ON-LINE.

12. Locate the "HSC50 OFF-LINE DIAGS" tape. This is typically stored
    in the disk storage tray inside the HSC50 front door.

13. Ensure that the write protect tab on the tape cartridge is moved
    to the left (inner) position to write protect the "HSC50 OFF-LINE
    DIAGS" tape.

14. Locate the TU58 tape drive inside the front door.

```
 _ _ _ _ _ _ _              |        FCO    HSC50-I011
| | | | | | | | |           |
|d|i|g|i|t|a|l|             |        PAGE   8  OF  12
|_|_|_|_|_|_|_|             |
                            |
_____|_____
```

15. Insert the "HSC50 OFF-LINE DIAGS" tape cartridge into drive 0 of
    the TU58

16. Restore DC power to the HSC50 by pushing the DC power switch
    located on the maintenance panel, to the 1 (ON) position.

17. The HSC50 will automatically boot the "HSC50 OFF-LINE DIAGS" tape.

18. After two minutes of loading the "HSC50 OFF-LINE DIAGS" tape into
    the HSC50 memory, the HSC50 auxiliary terminal will print:

       HSC50 OFL Diagnostic Loader, Version Vnnn-nnn
       Radix - Octal, Data Length = Word, Reloc = 00000000
       ODL>

19. At the ODL> prompt, type:

       TEST K

    This command loads and starts the off-line K test selector. The
    TU58 Drive 0 run indicator will light as the test is loaded.

    After the diagnostics is loaded, you will receive the following
    display:

The off-line K test selector first prompts:

REQUESTER # (1 THRU 7) [ ]?

20. Respond with a number "1" for K.CI Test.

Then hit a Carriage Return.

21. The test then prompts:

TEST # (1 THRU 11) (0) [ ]?

Run #1 first time through.

22. The port processor module is the selected requester, run octal test
numbers 1 thru 4, 6, 7, 10 and 11 two times each.

```
*************************************************************
*                          NOTE                            *
*                                                          *
*    OCTAL TEST 11 REQUIRES THAT ONE CI CHANNEL BE         *
*    LOOPED BACK WITH AN ATTENUATOR OR CONNECTED TO A      *
*    STAR COUPLER.                                         *
*                                                          *
*************************************************************
```

```
 _ _ _ _ _ _ _                  |     FCO    HSC50-I011
| | | | | | | | |               |
|d|i|g|i|t|a|l|                 |     PAGE  9  OF  12
|_|_|_|_|_|_|_|                 |
                                |
_____|_____
```

23. The test then prompts:

OF PASSES TO PERFORM (D) [ ]?

Answer with a 2 and a RETURN.

24. The I/O control processor now instructs the requester to perform the
selected test. If the requester fails to complete the test within
the allotted time, the I/O control processor will display a
requester error message. Refer to Chapter 4 of the HSC Service
Manual.

25. The following prompt will ask you if you want to repeat this
diagnostic.

RE-USE PARAMETERS (Y/N) [Y]?

Reply N and repeat steps 20 through 26 for TWO passes of each
recommended test.

26. Type a CTRL C to end this routine after all tests have been
    completed.

27. Install the HSC50 system tape into Drive 0 and the Utility tape
    to Drive 1. Now press and release the INIT switch.

```
   ********************************************************************
   *                            NOTE                                 *
   * INSURE THE SYSTEM TAPE IS WRITE ENABLED. BY ENSURING  THAT THE   *
   * WRITE PROTECT TAB ON THE TAPE CARTRIDGE IS MOVED TO THE RIGHT    *
   * (OUTER) POSITION TO WRITE ENABLE THE "HSC50 SYSTEM" TAPE.        *
   ********************************************************************
```

28. Wait approximately 4.5 minutes for the system tape to boot.
    After it has booted, the console will say:

    HSC50 Version V4nn 2-Nov-1987 00:00:00 System XXXXXX

29. Now push the on-line switch in, located on the HSC50 front door.
    This will allow Virtual Circuits to be established with any host
    CPU's that will be using the HSC50.

30. Resume normal disk-activity on HSCxx using disk/HSC-failover
    or VAX/VMS remount/reboot, if necessary, to ensure HSC receives
    system testing in 10-TICK mode. IT IS PREFERRED THAT THE CUSTOMER
    PERFORM THIS STEP.

31. Upgrade remaining CI750, CI780, CIBCI, HSC50, and HSC70 nodes
    that do not contain L0118 CI-LINK modules.

    *** REPEAT STEP 1 UNTIL ALL NODES ARE COMPLETED. ***

```
 _ _ _ _ _ _ _              |        FCO    HSC50-I011
| | | | | | | | |           |
|d|i|g|i|t|a|l|             |        PAGE   10  OF  12
|_|_|_|_|_|_|_|             |
                            |
_____|_____
```

32. Set all CI/HSC nodes to "10-TICK, INCOMPATIBLE, ECO-ENABLED
    MODE" operation. *** THIS REQUIRES ENTIRE CLUSTER-SHUTDOWN
    TO AVOID CI-PATH FAILURES, CLUSTER-MEMBER LOSS, AND RISKS TO
    DATA-INTEGRITY.   *** Ensure each CI is powered off when
    changing jumpers.

    Set "10-TICK, INCOMPATIBLE, ECO-ENABLED MODE" by referring
    to Step 9.

33. Set the Secure/Enable switch on the HSC50 inside the front door,
    to the Secure position.

34. Close the Maintenance Panel by securing the captive screws that
    secure the Maintenance Panel access cover.

35. Close the HSC50 front door and secure it by locking the front door

key lock.

36. Boot all systems back into VAXcluster, starting with HSCs, using customer's "standard operating procedures". IT IS PREFERRED THAT THE CUSTOMER PERFORM THIS STEP.

    Have the customer resume normal activity on the HSC50. This could mean either restarting the host system, or just logically connecting the HSC50 to each system it is attached to and mounting all drives connected to this HSC50.

37. Verify proper operation of the HSC50 subsystems with the customer. (Normal system activity is acceptable.) Also ensure that all tape drives connected to this HSC50 will function properly with a host system.

38. Report the FCO activity on the LARS form in the "module/fail/area/ FCO" column as "FCO HSC50-I011" as indicated.

                              LARS

                      USA   GIA   EUROPE

Activity -
   Contract and Warranty   W   U   Y
   Non Contract/Non Warranty F   F   F
DEC Option   HSC50   HSC50   HSC50
Type of Call   M   M   M
Action Taken   D   D   I
Fail Area-Module-FCO-Comments HSC50-I011   HSC50-I011   HSC50-I011
Material Used   EQ-01616-01   EQ-01616-01   EQ-01616-01
                              EQ-01616-02   EQ-01616-02   EQ-01616-02


```
  _ _ _ _ _ _ _          |        FCO     HSC50-I011
 | | | | | | | | |       |
 |d|i|g|i|t|a|l|         |        PAGE   11  OF   12
 |_|_|_|_|_|_|_|         |
                         |
_____|_____
```

            FIGURE 1 - L0118 LINK MODULE SWITCHES


```
  _ _ _ _ _ _ _          |        FCO     HSC50-I011
 | | | | | | | | |       |
 |d|i|g|i|t|a|l|         |        PAGE   12  OF   12
 |_|_|_|_|_|_|_|         |
                         |
_____|_____
```

            FIGURE 2 - L0118 LINK MODULE SETTINGS

```
\^ HSC50
\\FCO_DOCS
\\HSC50
\\CIXCD
\\1991
\\MAY
\\65XX
\\9XXX
```