

DIGITAL

FCO

CATEGORY [I]

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FIELD CHANGE ORDER

NUMBER: VT420-I001

Note: The VT420 meets all its product specifications and design goals. However, a particular component within the VT420 may vent. This may be noticed by an odor emanating from the terminal or a whisp of smoke.

Note: IN ALL OCCURRENCES, THIS IS NOT A SAFETY ISSUE.

APPLICABILITY: This part of the "I" coded FCO should be installed on a VT420 on a restricted basis provided all the following conditions have been met:

- 1) VT420 products manufactured during or before April 1992 are candidates.
- 2) This FCO is for customers where the failure of the VT420 may have a serious impact.
- 3) Each case will be handled on a case-by-case basis per IPMT customer action plan.
- 4) The field must log an IPMT case.

Availability of the restricted EQ kits (EQ-01685-XX) will be managed by the IPMT action planning process.

PROBLEM 1 & SYMPTOM 1: Although capacitor C621 on the VT420 Terminal Board meets its reliability metric, the capacitor can overheat and may fail over a period of time, usually in a one to five year timeframe.

Symptoms may include: (1) Puff of smoke and possible odor
(2) Cycling of power supply (See page 2)

SOLUTION 1: Modify the Terminal Board (70-26536) by replacing capacitor C621 with the new red Wima capacitor. See below for Min Rev.

QUICK CHECK 1: 1) Check the date on the back of the unit.

- 2) Verify that the terminal board to be modified is at the following revision level or below:

70-26536-01 to 04, 10 Rev D 70-26536-05 to 09, 11, 13 Rev C
70-26536-12, 14, 15, 16 Rev B 70-26536-17, 18 Rev A (See page 2)

- 3) Check to see if the board already has a red Wima capacitor.

PRE/COREQUISITE FCO: N/A MFIT HRS 0.6 hrs - Avg. FCO time per unit

TOOL/TEST EQUIPMENT: Standard FS Tool Kit and ESD Kit. Pen-tip soldering iron, solder sucker, needle-nose pliers, and crimping tool P/N 29-10566-00.

FCO PARTS INFORMATION

FCO KIT NO	DESCRIPTION OF CONTENTS
EQ-01685-01	Qty 10 capacitor P/N10-33421-02, Qty 10 Green Dot P/N36-24490-01 Qty 10 4 wire yoke cable assembly P/N 17-03950-01 Qty 10 6 pin header connector P/N12-27325-02 for PCB Qty 40 in-line pins P/N 90-08091-00

FA-05026-01

Field Application Document (FA)

FCO CHARGING INFORMATION (See Last Page)

APPROVALS

TECH. ENGINEER Henri Lefebvre	ENG. BUSINESS MGR. David Cotton	DS LOGISTICS Peter LaPointe	DS PRODUCT SAFETY Robert Brister
IDC PUBLISHING Brenda Rogers	PARTS AVAILABILITY December 1993	FCO REVISION A	FCO RELEASE DATE December 16, 1993

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CATEGORY [I]

FIELD CHANGE ORDER

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PROBLEM 2 & SYMPTOM 2: The contacts in the connector used on the yoke cable may develop high contact resistance which may lead to overheating.

Symptoms include: (1) Jittery display

(2) Discoloration of the yoke connector

SOLUTION 2: Replace the yoke cable assembly with the new cable assembly. If necessary, replace the header connector on the terminal board only if it is discolored or damaged.

QUICK CHECK 2: Verify that the yoke cable connector and/or PCB header is discolored or damaged.

FCO PARTS INFORMATION

FCO KIT NO

DESCRIPTION OF CONTENTS

EQ-01685-02	Qty 50 capacitor P/N10-33421-02, Qty 50 Green Dot P/N36-24490-01 Qty 50 4 wire yoke cable assembly P/N 17-03950-01 Qty 50 6 pin header connector P/N12-27325-02 for PCB Qty 200 in-line pins P/N 90-08091-00 Qty 50 tie wraps P/N 90-07031-00
EQ-01685-03	Qty100 capacitor P/N10-33421-02, Qty100 Green Dot P/N36-24490-01 Qty 100 4 wire yoke cable assembly P/N 17-03950-01 Qty 100 6 pin header connector P/N12-27325-02 for PCB Qty 400 in-line pins P/N 90-08091-00 Qty 100 tie wraps P/N 90-07031-00
EQ-01685-04	Qty 10 capacitor P/N10-33421-02, Qty 10 Green Dot P/N36-24490-01 Qty 10 6 wire yoke cable assembly P/N 17-03950-02 Qty 10 6 pin header connector P/N12-27325-02 for PCB

	Qty 60 in-line pins P/N 90-08091-00
	Qty 10 tie wraps P/N 90-07031-00
EQ-01685-05	Qty 50 capacitor P/N10-33421-02, Qty 50 Green Dot P/N36-24490-01
	Qty 50 6 wire yoke cable assembly P/N 17-03950-02
	Qty 50 6 pin header connector P/N12-27325-02 for PCB
	Qty 300 in-line pins P/N 90-08091-00
	Qty 50 tie wraps P/N 90-07031-00
EQ-01685-06	Qty100 capacitor P/N10-33421-02, Qty100 Green Dot P/N36-24490-01
	Qty 100 6 wire yoke cable assembly P/N 17-03950-02
	Qty 100 6 pin header connector P/N12-27325-02 for PCB
	Qty 600 in-line pins P/N 90-08091-00
	Qty 100 tie wraps P/N 90-07031-00
	(See page 5 for help in ordering the kits.)
FA-05026-01	Field Application Document (FA)

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RESTRICTED FCO PROCESS

1. MCS Field Service Engineer escalates a call with the Customer Support Center (CSC) based on the FCO applicability conditions. If the conditions are not met, then this FCO definitely does not apply.
2. If the FCO conditions are met, the CSC may immediately escalate the IPMT case to C&P Video Support Engineering.
3. The C&P Video Support Group will develop an IPMT action plan stating how the case is to be addressed.
4. If the decision is "NOT" to implement the FCO, the local problem manager will convey the IPMT action plan to the customer.
5. C&P Video Support Engineering will close the IPMT case based on implementation of FCO as specified.
6. If the decision is to implement the FCO, then EQ Kits will be released to the local field unit by C&P video support engineering.
7. Field service then contacts the customer and installs the kits.

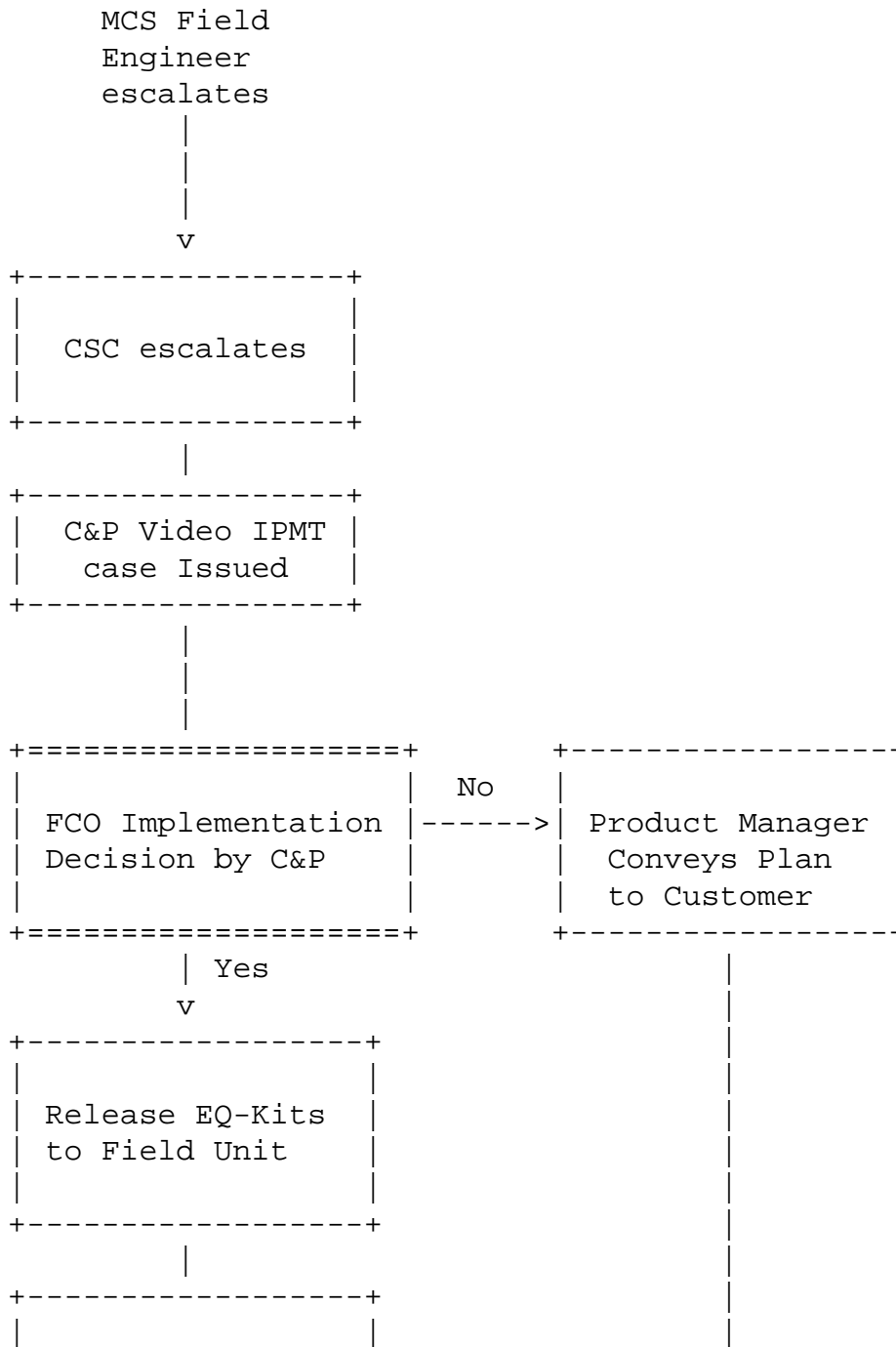
8. After the FCO is implemented, the call is closed.

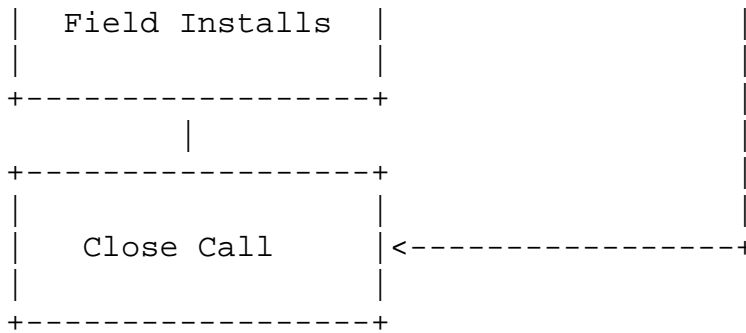
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RESTRICTED FCO PROCESS FLOWCHART





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PRESERVICE PREPARATION

In order to implement this FCO, the service person must have the skills to properly use a soldering iron and crimping tool. If fully implemented, this FCO will require removal and upgrade of the VT420 Terminal Board (70-26536-XX) and yoke cable assembly at the customer site.

When scheduling the on-site visit with the customer, request a work location at the customer site to disassemble and upgrade each unit that will receive either or both parts of this FCO. Ensure that the work area will have an electrical outlet available for powering the tools, an adequate work table, and be reasonably well illuminated. If the customer insists that the upgrade be done offsite, then make the appropriate arrangements at the Digital local office or repair center.

WHAT EQ KITS TO ORDER

To simplify the service at the customer site, it will be necessary to procure all the EQ kits that are potentially necessary for the VT420's that will receive the FCO. Boards will not be in the EQ Kit.

If the VT420 terminal is the non-international model with MMJ connectors in the rear, then the 4 wire yoke cable assembly EQ Kit is the one to order. If the VT420 terminal is the international model without MMJ connectors, then the 6 wire yoke cable assembly EQ Kit is the one needed.

ORDERING METHOD

- All kits should be ordered via the P1 order mode.

- US and APA locations should place orders on stockroom 17, and European locations should order through Nijmegen.
- The size of the effected customer base will determine which EQ Kit(s) to order. Orders should be as close to kit sizes of 10, 50, or 100.
- EQ-Kits will not be shipped unless planners get approval from C&P Video Engineering.

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ON-SITE SERVICE INSTRUCTIONS

After arriving at the customer site, proceed to the customer approved rework location. Ensure that the area is acceptable for the rework. If not, request another location for rework.

Set-up the rework area by plugging in the soldering iron and setting up the ESD protection as defined in the following instructions.

ESD ANTISTATIC INSTRUCTIONS

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*****
*                               *
*           C A U T I O N       *
*                               *
*   The module, as with all modules, contain electrostatic discharge *
*   sensitive devices (ESDS).  The use of the Velostat Kit or ESD   *
*   module box is essential to prevent damage which may not be     *
*   noticed immediately.                                             *
*****

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SETTING 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 cabinet.
- d. Attach the wrist strap to either wrist and the alligator clip

to a convenient portion of the mat.

- e. Remove the module from it's CPU option slot and place it on the mat.

Or:

- e. Remove the module from the spares kit and lay it on the velostat mat.

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*****
*                                     *
*                   C A U T I O N   *
*                                     *
* If using a module in an ESD box, insure wrist strap is connected *
* to the box and the box is connected to chassis of the device   *
* being upgraded.                                                 *
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After the rework area is setup, proceed to the VT420 location.

1. Turn off the terminal and unplug the power cord from the wall outlet. On worldwide models, disconnect the power cord from the back of the terminal as well. Disconnect all other cables from the terminal and move the terminal to the customer approved rework location.

INSTRUCTIONS FOR THE VT420 TERMINAL BOARD REMOVAL

For an illustrated example of the disassembly procedure, refer to Chapter 3 of the VT420 Service Guide (EK-VT420-PS.002): "Removing and Replacing FRU's."

Note: FRU swap should only be done at a location that is acceptable to the customer and should minimize any interference with normal operations.

REMOVE THE TOP COVER

2. Place the terminal facedown on a clean piece of paper, to avoid scratching the bezel and CRT face.
3. Loosen the two captive screws at the base of the bezel so the screws extend out from the top cover.
4. Grasp the rear of the top cover firmly with one hand securely on the base assembly.
5. With your hands in position, push down on the base assembly and pull the top cover away from the base. Place the cover aside.

REMOVE THE CRT/YOKE/BEZEL ASSEMBLY

6. Discharge the anode with the anode discharge tool (P/N 29-24717-00) as follows:
 - a) Attach the alligator clip of the anode discharge tool to the grounding braid on the rear of the CRT.
 Note: The support bracket assembly is not a grounded point.
 - b) Insert the tool under the rubber anode cap until you make contact with the anode connector. Discharge the anode for at least five seconds.
 - c) The CRT should now be discharged. Remove the anode discharge tool.
7. Remove the CRT anode connector from the CRT.
 - a) Grasp the rubber anode cap and push the cap away from you.
 - b) Press the front of the cap with your thumb and lift the front up to get one of the wire prongs out of the anode hole. Lift the cap to ensure the wire prong is out of the hole.
 - c) If both of the wire prongs are still in the anode hole, repeat the previous steps until one is out.
 - d) Pull the back of the rubber anode cap forward and lift up to get the other wire prong (the anode connector) out of the anode hole.

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8. On worldwide models, disconnect the ground clip from the hood at the neck of the CRT.
9. On worldwide models, loosen the screws securing the hood and remove the hood.
10. Disconnect the ground clip from the arc protection board.
11. Remove the arc protection board from the back of the CRT.
12. Disconnect the locking connector on the yoke wiring harness from the terminal board by pushing the locking tab and pulling the connector.

Note: Use care when you unlock and remove the yoke wiring harness connector. Only pull on the connector and not the wires to prevent wire damage.
13. Separate the base from the CRT/yoke/bezel assembly, as follows:
 - a) Release the two base support brackets.
 - b) Lift or pull the base away from the CRT/yoke/bezel assembly.

TERMINAL BOARD FRU REMOVAL

14. Loosen the captive screw in the center of the terminal board.
15. Pull the board away from the plastic tab on the connector side of the terminal board. Release the tab by inserting a screwdriver through the hole below the tab.
16. Lift the terminal board out of the base.
17. Inspect the board for discoloration or damage of the header connector.
18. Inspect the yoke connector for discoloration or damage.
19. Determine whether
 - a) the header on the board is to be replaced
 - b) the yoke cable assembly is to be replaced

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TERMINAL BOARD MODIFICATION INSTRUCTIONS

20. In all cases, replace capacitor C621 with the new red WIMA capacitor, P/N 10-33421-02.
 - a) Locate capacitor C621. If the board is in the same position that it would be if you were facing the VT420 CRT, then the capacitor is towards the rear of the board right of center. The capacitor is located on the printed circuit board within a 'U' shaped heat sink that is about two inches tall.
 - b) Hold the board up vertically on its left side and grip the C621 capacitor with the needle nose pliers with one hand.
 - c) With the other hand using the soldering iron, apply heat on the opposite side of the PCB to the capacitor solder points. When the solder has melted enough, use the solder sucker to remove the solder.
 - d) Use the pliers to pull the capacitor and remove it.
Apply more heat to the solder points as necessary.
 - e) After removing the old capacitor, insert the new red WIMA in the holes on the board inside the heat shield. The Wima capacitor should fit exactly in the holes on the PCB. The capacitor can be installed either way in the holes as it is not polarity sensitive.
 - f) Using the soldering iron, apply heat and solder to the capacitor leads and capacitor holes on the rear of the board until the component is seated on the board.

- g) After ensuring that it is firmly attached, cut any excess lead length from the capacitor now mounted on the board.
21. As required, replace the damaged header connector on the board.
- a) Apply heat to the connector solder points on the rear of the board and then use the solder sucker to remove the solder. Apply as little heat to the solder points as possible.
 - b) Place the terminal board vertically on the table and support it by holding the connector. Pull the connector to remove it.
 - c) After removing the old connector, insert the new connector on the same side through the holes on the board.
 - d) Using the soldering iron, apply solder to the posts and holes on the rear of the board until the connector is seated properly.

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YOKE CABLE REPLACEMENT INSTRUCTIONS

22. As required, replace the damaged yoke cable connector assembly.
- a) Ensure that the EQ-Kit yoke cable assembly used has the same number of wires as the one being replaced. The number of wires will be either 4 or 6. If not then the other EQ-Kit is needed.
 - b) Care must be exercised not to disturb the metal rings or the magnets at the neck of the CRT. If disturbed sufficiently, a realignment may be needed.
 - c) Remove and replace the yoke cable assembly by either of the two following methods.
- Preferred Method

- 1) Cut the 4 or 6 yoke cable assembly wires approximately two inches before the plastic hood protecting the solder points.
 - 2) Remove the ferrite bead from the old yoke cable assembly if one exists. Insert the wires on the new cable assembly through the ferrite bead and position it in the same location as on the old cable assembly. Use the tie wrap around the wires to hold the bead in place.
 - 3) Remove 1/8 inch of insulation from each wire in the remaining wires

of the old assembly as well as the wires on the new assembly. Using the crimping tool insert the in-line splice into the tool and the wire into the pin and crimp them together. Continue until all the wires of the new assembly have an in-line pin crimped to them.

Match up the wire colors between the new assembly and the wires still fastened to the neck of the CRT, insert one of these crimps into the tool and the corresponding wire and attach it until all wires are done.

Alternative Method

- 1) Unsolder the 4 or 6 yoke cable assembly wires at the yoke end. In order to unsolder the wires, the plastic hood must be pulled back along the wires until the solder points are exposed. Care must be exercised in unsoldering so as not to disconnect the fine wires also connected at these points.
Note: Write down the color of the wire removed from each point.
- 2) Remove the ferrite bead from the old yoke cable assembly, if one exists. Insert the wires on the new cable assembly through the ferrite bead and position it in the same location as on the old cable assembly. Use the tie wrap around the wires to hold the bead in place.
- 3) Remove the plastic hood from the old assembly and place the wires of the new assembly through it. Carefully solder each colored wire of the new assembly to the correct solder point.

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REASSEMBLY INSTRUCTIONS

INSTALL THE CRT/YOKE/BEZEL ASSEMBLY

23. Install the terminal board by reversing steps 14 thru 16.

INSTALL THE CRT/YOKE/BEZEL ASSEMBLY

24. Install the CRT/yoke/bezel assembly by reversing steps 6 thru 13.

INSTALL THE TOP COVER

25. Install the top cover assembly by reversing steps 2 thru 5.

26. Set the terminal in its normal position and reattach the power cable.
27. Attach a circular green dot label on the rear of the VT420 to identify that the FCO has been done to the terminal.
28. Plug-in the power cable, turn the power on, and ensure that the terminal operates satisfactorily. Make any necessary external adjustments for brightness, size, etc.
29. If the terminal operates satisfactorily, bring the terminal back to the user location and reattach all cables. If not, then recheck the work or send it back to the Digital repair center.
30. Repeat the FCO for all eligible terminals within the customer facility.
31. Report this FCO activity on the LARS form in the "Fail Area/Module/FCO/Comments" column as follows: FCO: VT420-I001
(See the following LARS example).

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LARS

	USA	APA	EUROPE
Activity -			
(a)Contract	W	U	K
Warranty	W	U	W
(b)IN-DEC Contract	K	U	A
Non Contract/Non Warranty	F	F	F
(c)RTD/Off-site Agreement	F	U	F
Hardware Segment Code	111	111	111
Product Line	031		031
DEC Option	VT420	VT420	VT420
Option ID	X	N/A	N/A
Type of Call	M	M	M
Action Taken	D	D	I/V
Fail Area-Module-FCO-Comments	VT420-I001	VT420-I001	VT420-I001
Material Used	(SEE NOTE)	(SEE NOTE)	(SEE NOTE)

NOTE: USA and APA Material
EQ-01685-01 QTY 10 of each with 4 wire yoke cable assy
EQ-01685-02 QTY 50 of each with 4 wire yoke cable assy
EQ-01685-03 QTY 100 of each with 4 wire yoke cable assy

USA, Europe, and APA Material

EQ-01685-04 QTY 10 of each with 6 wire yoke cable assy
 EQ-01685-05 QTY 50 of each with 6 wire yoke cable assy
 EQ-01685-06 QTY 100 of each with 6 wire yoke cable assy

- (a) Warranty Optimum, Warranty Standard and Warranty Basic (on-site) Agreements; * Note material (only) free of charge for all customers.
- (b) Applies to IN-DEC Area Only
- (c) RTD=Return to Digital or Off-site Agreements; If Field Engineer On-site, use Activity Code "F".

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	DEC	DEC	DEC	DEC	DEC

\\ FCO_DOCS