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INSTALLATION SECTION

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1. Subsystem Configuration Outline

1.1 General Information

1.1.1 Model List

(1) Model of DKC610I
Table 1.1.1-1 shows the model list of DKC610I.

Table 1.1.1-1 Model List of DKC610I

No.	Model Number	Model Name	Major Part	Remarks
1	DKC610I-5 DKC610I-5P	Disk Control Frame Disk Control Frame for hp	DKC • SVP ×1 • SH455-A (SSVP/MN) × 1 • SH456-A (SVP-PNL) × 1 • SH457-A (DKCPANEL) × 1 • LR031-A (PS-PL1) × 1 • LR032-A (BAT-PL) × 1 • DKCPS × 4 • Battery Box × 4 • DKC FAN ASSY ×8 • I/F Cable ×16 (DKA – HDU-R0) • LR025-A (Logic PL) × 1 • WP630-A (CSW) × 2 DKU • HDU Box × 4 • HDD PL × 4 • FSW × 8 • HDD FAN ASSY ×6 • LR031-A (HDD-PS-PL) × 1 • SVR × 18 • DKUPS × 2	DKC610I Disk Subsystem doesn't contain AC Box, AC Power cables, Channel Adapters (CHA), Disk Adapter (DKA), Cache Memory (CM), Shared Memory(SM), HDD and SSD. *1

(To be continued)

*1: SVP (Windows Vista is installed) corresponding to IPv6 is installed as a standard for products with the following serial numbers.
- 28001 to 29999 (manufactured by RSD)
- 48001 to 49999 (manufactured by HICAM)
- 78001 to 79999 (manufactured by HICEF)

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(Continued from the preceding page)

No.	Model Number	Model Name	Major Part	Remarks
2	DKC-F610I-DH	DKC Door Kit for HDS	• Front/Rear/Side Doors	
3	DKC-F610I-DS	DKC Door Kit for SUN	• Front/Rear/Side Doors	
4	DKC-F610I-3PS	AC Box Kit (3 Phase/30A)	• AC Box × 2	
5	DKC-F610I-3EC	Power Cable Kit (3 Phase/30A for Europe)	• Power Cable Unit (IE)	
6	DKC-F610I-3UC	Power Cable Kit (3 Phase/30A for USA)	• Power Cable Unit (IU)	
7	DKC-F610I-1PS	AC Box Kit (1 Phase/50A)	• AC Box × 2	
8	DKC-F610I-1EC	Power Cable Kit (1 Phase/50A for Europe)	• Power Cable Unit (IE)	
9	DKC-F610I-1UC	Power Cable Kit (1 Phase/50A for USA)	• Power Cable Unit (IU)	

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(Continued from the preceding page)

No.	Model Number	Model Name	Major Part	Remarks
10	DKC-F610I-1PSD	AC Box Kit (1 Phase/30A)	• AC Box × 2	*2
11	DKC-F610I-1ECD	Power Cable Kit (1 Phase/30A for Europe)	• Power Cable Unit (IE)	*2
12	DKC-F610I-1UCD	Power Cable Kit (1 Phase/30A for USA)	• Power Cable Unit (IU)	*2
13	DKC-F610I-APC	Additional Power Supply	• DKCPS × 4	*3

(To be continued)

*2: When the option is installed in the DKC frame
- In case of the DKC configuration that the second set of DKC-F610I-APC is not installed and 64 or less HDDs/SSDs are installed
  Two 30A breakers are prepared on the equipment side, and connected to the AC Box using one set of the DKC-F610I-1UCD/1ECD cables.
- In case of the DKC configuration that two sets of DKC-F610I-APC are installed or 65 or more HDDs/SSDs are installed
  Four 30A breakers are prepared on the equipment side, and connected to the AC Box using two sets of the DKC-F610I-1UCD/1ECD cables.

When the option is installed in the DKU frame
- In case of the configuration that DKC-F605I-AKT is not necessary
  Two 30A breakers are prepared on the equipment side, and connected to the AC Box using one set of the DKC-F610I-1UCD/1ECD cables.
- In case of the configuration that DKC-F605I-AKT is necessary
  Four 30A breakers are prepared on the equipment side, and connected to the AC Box using two sets of DKC-F610I-1UCD/1ECD cables.

*3: The Installation becomes indispensable when the configuration of DKC is corresponding to any of the following cases.

① Addition of the first set
- When the total of the DKA and CHA options is five sets or more
- When two sets or more of DKC-F610I-CX are installed
- When two sets or more of DKC-F610I-SX are installed

② Addition of the second set
- When the total of the DKA and CHA options is 11 sets or more
- When three sets or more of DKC-F610I-CX are installed

However, the addition can be performed independently even if the indispensable installation conditions are not met.

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No.	Model Number	Model Name	Major Part	Remarks
14	DKC-F610I-AB	Additional Battery-1	• Battery Box (12V) × 2	*4
15	DKC-F610I-ABX	Additional Battery-2	• Battery Box (56V) × 4	*5

(To be continued)

*4: The installation becomes indispensable when the configuration of DKC is corresponding to any of the following cases.

① Addition of the first set
- When the Cache memory capacity is 52GB or more
- When the shared memory capacity is 14GB or more
- When the total of the DKA and CHA options is five sets or more (Note 1)
- When two sets or more of DKC-F610I-CX are installed (Note 1)
- When two sets or more of DKC-F610I-SX are installed (Note 1)

Note 1: It is the same as the condition that the 1st set of Additional Power Supply (DKC-F610I-APC) becomes indispensable.

② Addition of the second set
- When the Cache memory capacity is 68GB or more
- When the total of the DKA and CHA options is 11 sets or more (Note 2)
- When three sets or more of DKC-F610I-CX are installed (Note 2)

Note 2: It is the same as the condition that the 2nd set of Additional Power Supply (DKC-F610I-APC) becomes indispensable.

③ Addition of the third set
- When the Cache memory capacity is 100GB or more

However, the addition can be performed independently even if the indispensable installation conditions are not met.

*5: The installation becomes indispensable when it is corresponding to any of the following cases.

① When the backup mode is selected

DKC frame
- When the cache memory capacity is 260GB or more, one set is installed.

DKU frame
- When the cache memory capacity is 360GB or more, two sets are installed.
  In this case, one set of DKC-F610I-CBEX and DKC-F610I-DBEX must be installed in DKC, and one set of DKC-F610I-DBEX must be installed in DKU-R1.

② When the destage mode is selected

DKC frame
- One set is installed.

DKU frame
- When there is no DKC-F605I-AKT, one set is installed.
- When there is DKC-F605I-AKT, two sets are installed.

However, the addition can be performed independently even if the indispensable installation conditions are not met.

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No.	Model Number	Model Name	Major Part	Remarks
16	DKC-F610I-SVP	SVP High Reliability Support Kit	• SVP (XP) × 1 • FDD (USB) × 1	*6
17	DKC-F610I-SVPV	SVP High Reliability Support Kit (IPv6)	• SVP (VISTA) × 1 • FDD (USB) × 1	*7
18	DKC-F610I-PCI	Power Control Interface Kit	• PCICON × 1	
19	DKC-F610I-MDM	Modem Card Kit	• MODEM Card • TEL Cable • MODEM Cable Coupler • CD-ROM (Driver)	
20	DKC-F610I-IPV6	IPv6 Upgrade Kit	• Windows Vista Business • DVD-R × 1 • FD × 2	
21	DKC-F610I-R1DC	Device Interface Cable (DKC to DKU-R1)	• Fibre Cable × 16 • HBC Cable × 8	
22	DKC-F610I-R1UC	Device Interface Cable (DKC to DKU-R1)	• Fibre Cable × 16 • HBC Cable × 8	
23	DKC-F610I-L1DC	Device Interface Cable (DKC to DKU-L1)	• Fibre Cable × 16 • HBC Cable × 8	
24	DKC-F610I-L1UC	Device Interface Cable (DKC to DKU-L1)	• Fibre Cable × 16 • HBC Cable × 8	
25	DKC-F610I-8FS	Fibre 8-port Adapter (1-4Gbps)	• WP610-B × 1 SH444-A × 2] × 2	
26	DKC-F610I-16FS	Fibre 16-port Adapter (1-4Gbps)	• WP610-A × 1 SH444-A × 2] × 2	
27	DKC-F610I-8S	Serial 8-port Adapter	• WP612-A × 1 SH343-C × 2] × 2	
28	DKC-F610I-8MFS	Mainframe Fibre 8-port Adapter (Short Wavelength 1-4Gbps)	• WP611-A × 1 SH444-A × 2] × 2	
29	DKC-F610I-8MFL	Mainframe Fibre 4-port Adapter (Long Wavelength 1-4Gbps)	• WP611-B × 1 SH444-A × 2] × 2	
30	DKC-F610I-1FL	Fibre SFP Transceiver (Long Wavelength 4G)	• Transceiver for Fibre Long Wave × 1	
31	DKC-F610I-1FS	Fibre SFP Transceiver (Short Wavelength 4G)	• Transceiver for Fibre Short Wave × 1	
32	DKC-F610I-8US	Fibre 8-port Adapter (2-8Gbps)	• WP614-B × 1 SH444-B × 2] × 2	

(To be continued)

*6: Unable to use this option for DKC610I-5/5P with SVP corresponding to IPv6 installed. However, it is able to use this option with DKC-F610I-IPV6 installed.

*7: Unable to use this option for DKC610I-5/5P with non-IPv6-compliant SVP installed.

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No.	Model Number	Model Name	Major Part	Remarks
33	DKC-F610I-1UL	Fibre SFP Transceiver (Long Wavelength 8G)	• Transceiver for Fibre Long Wave × 1	
34	DKC-F610I-1US	Fibre SFP Transceiver (Short Wavelength 8G)	• Transceiver for Fibre Short Wave × 1	
35	DKC-F610I-CSW	Data Path Expansion Kit	• WP630-A × 2	*8
36	DKC-F610I-DKA	Disk Adapter	• WP620-A × 1 SH444-A × 2] × 2	
37	DKC-F610I-EDKA	Encrypt Disk Adapter	• WP620-B × 1 SH444-A × 2] × 2	
38	DKC-F610I-CX	Cache Memory Adapter	• WP641-A × 2	
39	DKC-F610I-C4G	Cache Memory Module (4GB)	• SH454-C × 4	
40	DKC-F610I-C8G	Cache Memory Module (8GB)	• SH454-E × 4	
41	DKC-F610I-C16G	Cache Memory Module (16GB)	• SH454-G × 4	
42	DKC-F610I-SX	Shared Memory Adapter	• WP651-A × 1 • WP652-A × 1	
43	DKC-F610I-S2GQ	Shared Memory Module (2GB)	• SH453-C × 4	
44	DKC-F610I-S4GQ	Shared Memory Module (4GB)	• SH453-E × 4	

(To be continued)

*8: The installation becomes indispensable when it is corresponding to any of the following cases.

① Addition of the first set (1DL/2PL)
- When the CHA is installed in the Option 2 (1EL/2QL) or the Option 3 (1FL/2RL) of the CHA slots
- When the DKA or the CHA is installed in the Option 2 (1AL/2ML) or the Option 3 (1BL/2NL) of the DKA slots

② Addition of the second set (1JU/2VU)
- When the CHA is installed in the Option 4 (1GU/2TU) or the Option 5 (1HU/2UU) of the CHA slots
- When the DKA or the CHA is installed in the Option 4 (1LU/2XU) or the Option 5 (1KU/2WU) of the DKA slots

③ Addition of the third set (1JL/2VL)
- When the CHA is installed in the Option 6 (1GL/2TL) or the Option 7 (1HL/2UL) of the CHA Slots
- When the DKA or the CHA is installed in the Option 6 (1LL/2XL) or the Option 7 (1KL/2WL) of the DKA slots

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No.	Model Number	Model Name	Major Part	Remarks
45	DKC-F610I-CBEX	Memory Backup Expansion Kit (12V)	• SH459-A (BAT-REG) × 2	*9
46	DKC-F610I-DBEX	Memory Backup Expansion Kit (56V)	• SH458-A (Fuse) × 2	*10

(To be continued)

*9: Add 1 set of this option in DKC when either of the following conditions is met.
① When memory back up mode is chosen
• Cache memory capacity is 260GB or more.
② When destage mode is chosen
• This option is not necessary.

*10: This option is indispensable when one of the following conditions is met.
① When memory back up mode is chosen
• Add 1 set of the option in DKC when cache memory capacity is 260GB or more.
• Add 1 set of the option in DKU-R1 when cache memory capacity is 360GB or more.
② When destage mode is chosen
• This option is not necessary.

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No.	Model Number	Model Name	Major Part	Remarks
47	DKC-F605I-18 DKC-F605I-18P	Disk Array Frame Disk Array Frame for hp	• HDU Box × 8 • (HDD PL) × 8 • (FSW) × 8 • (SVR) × 18 • (PS PNL) × 1 • DKUPS × 2 • HDD FAN ASSY × 6	Disk Array Frame doesn't contain AC Box Kit, AC Power cables, HDD canisters and SSD canisters.
48	DKC-F605I-AKT	DKU Expansion Kit	• DKUPS × 2 • (FSW) × 8 • (SVR) × 18	
49	DKC-F605I-DH	DKU Door Kit for HDS	• Front and Rear doors	
50	DKC-F605I-DS	DKU Door Kit for SUN	• Front and Rear doors	
51	DKC-F605I-EXC	Device Interface Cable (DKU – DKU)	• Fibre Cable × 16 • HBC Cable × 8	
52	DKC-F605I-72KS	1 HDD Canister (72GB/ $15kmin^{-1}$/4G-FC)	• HDU600-72KSFC × 1	
53	DKC-F605I-146KS	1 HDD Canister (146GB/ $15kmin^{-1}$/4G-FC)	• HDU600-146KSFC × 1	
54	DKC-F605I-300JS	1 HDD Canister (300GB/ $10kmin^{-1}$/2G-FC)	• HDU600-300JSFC × 1	
55	DKC-F605I-300KM	1 HDD Canister (300GB/ $15kmin^{-1}$/4G-FC)	• HDU600-300KMFC × 1	
56	DKC-F605I-300KS	1 HDD Canister (300GB/ $15kmin^{-1}$/4G-FC)	• HDU600-300KSFC × 1	
57	DKC-F605I-400JS	1 HDD Canister (400GB/ $10kmin^{-1}$/4G-FC)	• HDU600-400JSFC × 1	
58	DKC-F605I-450KS	1 HDD Canister (450GB/ $15kmin^{-1}$/4G-FC)	• HDU600-450KSFC × 1	
59	DKC-F605I-600KS	1 HDD Canister (600GB/ $15kmin^{-1}$/4G-FC)	• HDU600-600KSFC × 1	
60	DKC-F605I-0R7HS	1 HDD Canister (750GB/ $7.2kmin^{-1}$/4G-FC)	• HDU600-0R7HSFC × 1	
61	DKC-F605I-1R0HS	1 HDD Canister (1TB/ $7.2kmin^{-1}$/4G-FC)	• HDU600-1R0HSFC × 1	
62	DKC-F605I-2R0HS	1 HDD Canister (2TB/ $7.2kmin^{-1}$/4G-FC)	• HDU600-2R0HSFC × 1	
63	DKC-F605I-72S1	1 SSD Canister (72GB/ 4G-FC)	• SSD600-72S1FC × 1	
64	DKC-F605I-146S1	1 SSD Canister (146GB/ 4G-FC)	• SSD600-146S1FC × 1	
65	DKC-F605I-200S1	1 SSD Canister (200GB/ 4G-FC)	• SSD600-200S1FC × 1	
66	DKC-F605I-400S1	1 SSD Canister (400GB/ 4G-FC)	• SSD600-400S1FC × 1	

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(2) Disk drive model

SVP displays each drive model as the following table.

Disk drive model	SVP screen	Available Back-end fibre Transfer Rate	FC/SATA HDD
SDT2A-S72FC	SDT2A-S072FC	2Gbps / 4Gbps	FC HDD
DKS2E-K72FC	DKS2E-K072FC	2Gbps / 4Gbps	FC HDD
DKS2F-K72FD	DKS2F-K072FC	2Gbps / 4Gbps	FC HDD
DKS2G-K72FD	DKS2G-K072FC	2Gbps / 4Gbps	FC HDD
DKR2F-K72FC	DKR2F-K072FC	2Gbps / 4Gbps	FC HDD
DKR2G-K72FC	DKR2G-K072FC	2Gbps / 4Gbps	FC HDD
DKR2J-K72FD	DKR2J-K072FC	2Gbps / 4Gbps	FC HDD
SDT2A-S146FC	SDT2A-S146FC	2Gbps / 4Gbps	FC HDD
DKS2E-K146FC	DKS2E-K146FC	2Gbps / 4Gbps	FC HDD
DKS2F-K146FC	DKS2F-K146FC	2Gbps / 4Gbps	FC HDD
DKS2G-K146FD	DKS2G-K146FC	2Gbps / 4Gbps	FC HDD
DKR2F-K146FC	DKR2F-K146FC	2Gbps / 4Gbps	FC HDD
DKR2G-K146FC	DKR2G-K146FC	2Gbps / 4Gbps	FC HDD
DKR2J-K146FD	DKR2J-K146FC	2Gbps / 4Gbps	FC HDD
SDT2A-S200FC	SDT2A-S200FC	2Gbps / 4Gbps	FC HDD
SDT2C-S200FC	SDT2C-S200FC	2Gbps / 4Gbps	FC HDD
DKS2D-J300FC	DKS2D-J300FC	2Gbps	FC HDD
DKR2F-J300FC	DKR2F-J300FC	2Gbps	FC HDD
DKR2G-J300FC	DKR2G-J300FC	2Gbps	FC HDD
DKR2J-J300FC	DKR2J-J300FC	2Gbps	FC HDD
DKS2E-K300FC	DKS2E-K300FC	2Gbps / 4Gbps	FC HDD
DKS2F-K300FC	DKS2F-K300FC	2Gbps / 4Gbps	FC HDD
DKS2G-K300FC	DKS2G-K300FC	2Gbps / 4Gbps	FC HDD
DKR2G-K300FC	DKR2G-K300FC	2Gbps / 4Gbps	FC HDD
DKR2H-K300FC	DKR2H-K300FC	2Gbps / 4Gbps	FC HDD
DKR2J-K300FC	DKR2J-K300FC	2Gbps / 4Gbps	FC HDD
SDT2A-S400FC	SDT2A-S400FC	2Gbps / 4Gbps	FC HDD
SDT2C-S400FC	SDT2C-S400FC	2Gbps / 4Gbps	FC HDD
DKS2E-J400FC	DKS2E-J400FC	2Gbps / 4Gbps	FC HDD
DKS2G-J400FD	DKS2G-J400FC	2Gbps / 4Gbps	FC HDD
DKS2F-K450FC	DKS2F-K450FC	2Gbps / 4Gbps	FC HDD
DKS2G-K450FC	DKS2G-K450FC	2Gbps / 4Gbps	FC HDD
DKR2H-K450FC	DKR2H-K450FC	2Gbps / 4Gbps	FC HDD
DKR2J-K450FC	DKR2J-K450FC	2Gbps / 4Gbps	FC HDD
DKS2G-K600FC	DKS2G-K600FC	2Gbps / 4Gbps	FC HDD
DKR2J-K600FC	DKR2J-K600FC	2Gbps / 4Gbps	FC HDD

(To be continued)

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Disk drive model	SVP screen	Available Back-end fibre Transfer Rate	FC/SATA HDD
DKS2A-H0R7AT	DKS2A-H0R7AT	2Gbps / 4Gbps	SATA HDD
DKR2B-H0R7AT	DKR2B-H0R7AT	2Gbps / 4Gbps	SATA HDD
DKR2C-H0R7AD	DKR2C-H0R7AT	2Gbps / 4Gbps	SATA HDD
DKR2D-H0R7AD	DKR2D-H0R7AT	2Gbps / 4Gbps	SATA HDD
DKR2B-H1R0AT	DKR2B-H1R0AT	2Gbps / 4Gbps	SATA HDD
DKR2C-H1R0AD	DKR2C-H1R0AT	2Gbps / 4Gbps	SATA HDD
DKR2D-H1R0AD	DKR2D-H1R0AT	2Gbps / 4Gbps	SATA HDD
DKS2C-H2R0AT	DKS2C-H2R0AT	2Gbps / 4Gbps	SATA HDD
DKR2C-H2R0AT	DKR2C-H2R0AT	2Gbps / 4Gbps	SATA HDD
DKR2D-H2R0AT	DKR2D-H2R0AT	2Gbps / 4Gbps	SATA HDD

[Back-end Fibre (DKA-HDD) transfer rate and setting condition of disk type]

- When you set the Back-end Fibre (DKA-HDD) transfer rate to 4Gbps, you cannot set the disk type of which only 2Gbps is usable for the disk type connected to the DKA.
- The Back-end Fibre transfer rate can be changed by System Tuning.
  However, this operation requires PS OFF/ON. When the disk type of which only 2Gbps is usable is set to the DKA of the change target, you cannot change the Back-end Fibre (DKA-HDD) transfer rate.

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(3) SVP screen display and conversion table of option type names

• SVP screen display of AC power unit kit

Model Number	SVP screen
DKC-F610I-3PS	3-phase AC Box(30A)
DKC-F610I-1PS	1-phase AC Box(50A)
DKC-F610I-1PSD	
(1) A case to connect one cable to one AC BOX	1-phase AC Box(30A(1Cable))
(2) A case to connect two cables to one AC BOX	1-phase AC Box(30A(2Cables))

• SVP screen display of DKC additional power unit

Model Number	SVP screen
DKC-F610I-APC	
(1) Addition of the first set	CL Additional Power Supply
(2) Addition of the second set	CL Additional Power Supply2

• SVP screen display of CHA

Model Number	SVP screen
DKC-F610I-8S	8S Serial 4ch-4mp
DKC-F610I-8MFS, DKC-F610I-8MFL	8M Mfibre 4ch-4mp
DKC-F610I-16FS	16FS Fibre 8ch-4mp
DKC-F610I-8FS	8FS Fibre 4ch-4mp
DKC-F610I-8US	8US Fibre 4ch-4mp

• SVP screen display of DKA

Model Number	SVP screen
DKC-F610I-DKA	DKF 4MP
DKC-F610I-EDKA	EDKF 4MP

• SVP screen display of Cache memory

Model Number	SVP screen	
DKC-F610I-C4G	CMG 2048 MByte (C4G)	*1
DKC-F610I-C8G	CMG 4096 MByte (C8G)	*1
DKC-F610I-C16G	CMG 8192 MByte (C16G)	*1

*1: In the SVP screen, the capacity of each cluster is displayed.

• SVP screen display of Shared memory

Model Number	SVP screen	
DKC-F610I-S2GQ	512MByte	*2
DKC-F610I-S4GQ	1024MByte	*2

*2: In the SVP screen, the capacity of each sheet is displayed.

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1.1.2 Configuration and number of necessary options

NOTICE:

1. When the number of CUs is added accompanying the HDD installation, there is a case that expansion of shared memory is required. If necessary, see INST03-08A-10.
2. Required shared memory capacity is determined by cache memory capacity, the number of LDEV, and the kind of program product to apply. Furthermore, when connecting an external storage, required shared memory capacity differs.
3. To create a CLPR, if your subsystem has any additional printed circuit boards (PCBs), you must install the cache memories with the High Performance Cache Access Model. There is a case of that expansion of cache memory. If necessary, see INST03-08B-10.

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1.1.2.1 Shared memory upgrade table

There are two methods for mounting the shared memories: Standard SM Access Model and High Performance SM Access Model.
In the case of the Standard SM Access Model, the shared memories are mounted on the 1st SMA that is installed in the DKC610I as the standard.
In case of the high performance SM access model, it installs the shared memories in both of 1st SMA which a standard was mounted on and added 2nd SMA.
The required shared memory capacity is decided depending on the cache capacity of the subsystem, disk capacity (number of LDEV), and program products to be installed.
Shared memory capacity and corresponding number of options required are shown in Table 1.1.2.1-1 and Table 1.1.2.1-2.

Table 1.1.2.1-1 Shared memory capacity / Installing Location of SM Module and number of necessary options (Standard SM Access Model)

No.	SM Capacity	SM Capacity (One side)		SM Module Location *1		Number of options			
		Basic	Option 1	Basic PCB (SM-1SA/2SB)	Option 1 PCB (SM-1SC/2SD)	DKC-F610I-			
						S2GQ	S4GQ	SX	AB
1	2GB	1GB	—	①②	—	1	0	1	0
2	4GB	2GB	—	①②③④	—	2	0	1	0
				[1][2]	—	0	1		
3	6GB	3GB	—	①②③④⑤⑥	—	3	0	1	0
4	8GB	4GB	—	①②③④⑤⑥⑦⑧	—	4	0	1	0
				①②③④[5][6]	—	2	1		
				[1][2][3][4]	—	0	2		
5	20GB	5GB	—	①②③④⑤⑥[7][8]	—	3	1	1	0
				①②[3][4][5][6]	—	1	2		
6	12GB	6GB	—	①②③④[5][6][7][8]	—	2	2	1	0
				[1][2][3][4][5][6]	—	0	3		
7	14GB	7GB	—	①②[3][4][5][6][7][8]	—	1	3	1	1
8	16GB	8GB	—	[1][2][3][4][5][6][7][8]	—	0	4	1	1

*1: Location ① - ⑯ and [1] - [16] represent the SM Module locations shown in Fig. 1.1.2.1-1.

*2: The shared memory capacity indicated as '—' in the table cannot be specified.

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Table 1.1.2.1-2 Shared memory capacity / Installing Location of SM Module and number of necessary options (High Performance SM Access Model)

No.	SM Capacity	SM Capacity (One side)		SM Module Location *1		Number of options			
		Basic	Option 1	Basic PCB (SM-1SA/2SB)	Option 1 PCB (SM-1SC/2SD)	DKC-F610I-			
						S2GQ	S4GQ	SX	AB
9	4GB	1GB	1GB	①②	⑨⑩	2	0	2	1
10	6GB	2GB	1GB	①②③④	⑨⑩	3	0	2	1
				[1][2]	⑨⑩	1	1		
11	8GB	3GB	1GB	①②③④⑤⑥	⑨⑩	4	0	2	1
12	10GB	4GB	1GB	①②③④⑤⑥⑦⑧	⑨⑩	5	0	2	1
				①②③④[5][6]	⑨⑩	3	1		
				[1][2][3][4]	⑨⑩	1	2		
13	12GB	5GB	1GB	①②③④⑤⑥[7][8]	⑨⑩	4	1	2	1
				①②[3][4][5][6]	⑨⑩	2	2		
14	14GB	6GB	1GB	①②③④[5][6][7][8]	⑨⑩	3	2	2	1
				[1][2][3][4][5][6]	⑨⑩	1	3		
15	6GB	1GB	2GB	①②	⑨⑩⑪⑫	3	0	2	1
				①②	[9][10]	1	1		
16	8GB	2GB	2GB	①②③④	⑨⑩⑪⑫	4	0	2	1
				①②③④	[9][10]	2	1		
				[1][2]	⑨⑩⑪⑫	2	1		
				[1][2]	[9][10]	0	2		
17	10GB	3GB	2GB	①②③④⑤⑥	⑨⑩⑪⑫	5	0	2	1
				①②③④⑤⑥	[9][10]	3	1		
18	12GB	4GB	2GB	①②③④⑤⑥⑦⑧	⑨⑩⑪⑫	6	0	2	1
				①②③④⑤⑥⑦⑧	[9][10]	4	1		
				①②③④[5][6]	⑨⑩⑪⑫	4	1		
				①②③④[5][6]	[9][10]	2	2		
				[1][2][3][4]	⑨⑩⑪⑫	2	2		
				[1][2][3][4]	[9][10]	0	3		
19	14GB	5GB	2GB	①②③④⑤⑥[7][8]	⑨⑩⑪⑫	5	1	2	1
				①②③④⑤⑥[7][8]	[9][10]	3	2		
				①②[3][4][5][6]	⑨⑩⑪⑫	3	2		
				①②[3][4][5][6]	[9][10]	1	3		
20	16GB	6GB	2GB	①②③④[5][6][7][8]	⑨⑩⑪⑫	4	2	2	1
				①②③④[5][6][7][8]	[9][10]	2	3		
				[1][2][3][4][5][6]	⑨⑩⑪⑫	2	3		
				[1][2][3][4][5][6]	[9][10]	0	4		
21	14GB	4GB	3GB	①②③④⑤⑥⑦⑧	⑨⑩⑪⑫⑬⑭	7	0	2	1
				①②③④[5][6]	⑨⑩⑪⑫⑬⑭	5	1		
				[1][2][3][4]	⑨⑩⑪⑫⑬⑭	3	2		

(To be continued)

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(Continued from the preceding page)

No.	SM Capacity	SM Capacity (One side)		SM Module Location *1		Number of options			
		Basic	Option 1	Basic PCB (SM-1SA/2SB)	Option 1 PCB (SM-1SC/2SD)	DKC-F610I-			
						S2GQ	S4GQ	SX	AB
22	16GB	4GB	4GB	①②③④⑤⑥⑦⑧	⑨⑩⑪⑫⑬⑭	8	0	2	1
				①②③④⑤⑥⑦⑧	⑨⑩⑪⑫13 14	6	1		
				①②③④⑤⑥⑦⑧	9 10 11 12	4	2		
				①②③④5 6	⑨⑩⑪⑫⑬⑭⑮⑯	6	1		
				①②③④5 6	⑨⑩⑪⑫13 14	4	2		
				①②③④5 6	9 10 11 12	2	3		
				1 2 3 4	⑨⑩⑪⑫⑬⑭⑮⑯	4	2		
				1 2 3 4	⑨⑩⑪⑫13 14	2	3		
				1 2 3 4	9 10 11 12	0	4		
23	18GB	4GB	5GB	①②③④⑤⑥⑦⑧	⑨⑩⑪⑫⑬⑭15 16	7	1	2	1
				①②③④⑤⑥⑦⑧	⑨⑩11 12 13 14	5	2		
				①②③④5 6	⑨⑩⑪⑫⑬⑭15 16	5	2		
				①②③④5 6	⑨⑩11 12 13 14	3	3		
				1 2 3 4	⑨⑩⑪⑫⑬⑭15 16	3	3		
				1 2 3 4	⑨⑩11 12 13 14	1	4		
24	20GB	4GB	6GB	①②③④⑤⑥⑦⑧	⑨⑩⑪⑫13 14 15 16	6	2	2	1
				①②③④⑤⑥⑦⑧	9 10 11 12 13 14	4	3		
				①②③④5 6	⑨⑩⑪⑫13 14 15 16	4	3		
				①②③④5 6	9 10 11 12 13 14	2	4		
				1 2 3 4	⑨⑩⑪⑫13 14 15 16	2	4		
				1 2 3 4	9 10 11 12 13 14	0	5		
25	16GB	5GB	3GB	①②③④⑤⑥7 8	⑨⑩⑪⑫⑬⑭	6	1	2	1
				①②3 4 5 6	⑨⑩⑪⑫⑬⑭	4	2		
26	18GB	5GB	4GB	①②③④⑤⑥7 8	⑨⑩⑪⑫⑬⑭⑮⑯	7	1	2	1
				①②③④⑤⑥7 8	⑨⑩⑪⑫13 14	5	2		
				①②③④⑤⑥7 8	9 10 11 12	3	3		
				①②3 4 5 6	⑨⑩⑪⑫⑬⑭⑮⑯	5	2		
				①②3 4 5 6	⑨⑩⑪⑫13 14	3	3		
				①②3 4 5 6	9 10 11 12	1	4		
27	20GB	5GB	5GB	①②③④⑤⑥7 8	⑨⑩⑪⑫⑬⑭15 16	6	2	2	1
				①②③④⑤⑥7 8	⑨⑩11 12 13 14	4	3		
				①②3 4 5 6	⑨⑩⑪⑫⑬⑭15 16	4	3		
				①②3 4 5 6	⑨⑩11 12 13 14	2	4		
28	18GB	6GB	3GB	①②③④5 6 7 8	⑨⑩⑪⑫⑬⑭	5	2	2	1
				1 2 3 4 5 6	⑨⑩⑪⑫⑬⑭	3	3		

(To be continued)

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(Continued from the preceding page)

No.	SM Capacity	SM Capacity (One side)		SM Module Location *1		Number of options			
		Basic	Option 1	Basic PCB (SM-1SA/2SB)	Option 1 PCB (SM-1SC/2SD)	DKC-F610I-			
						S2GQ	S4GQ	SX	AB
29	20GB	6GB	4GB	①②③④[5][6][7][8]	⑨⑩⑪⑫⑬⑭⑮⑯	6	2	2	1
				①②③④[5][6][7][8]	⑨⑩⑪⑫[13][14]	4	3		
				①②③④[5][6][7][8]	[9][10][11][12]	2	4		
				[1][2][3][4][5][6]	⑨⑩⑪⑫⑬⑭⑮⑯	4	3		
				[1][2][3][4][5][6]	⑨⑩⑪⑫[13][14]	2	4		
				[1][2][3][4][5][6]	[9][10][11][12]	0	5		
30	22GB	6GB	5GB	①②③④[5][6][7][8]	⑨⑩⑪⑫⑬⑭[15][16]	5	3	2	1
				①②③④[5][6][7][8]	⑨⑩[11][12][13][14]	3	4		
				[1][2][3][4][5][6]	⑨⑩⑪⑫⑬⑭[15][16]	3	4		
				[1][2][3][4][5][6]	⑨⑩[11][12][13][14]	1	5		
31	24GB	6GB	6GB	①②③④[5][6][7][8]	⑨⑩⑪⑫[13][14][15][16]	4	4	2	1
				①②③④[5][6][7][8]	[9][10][11][12][13][14]	2	5		
				[1][2][3][4][5][6]	⑨⑩⑪⑫[13][14][15][16]	2	5		
				[1][2][3][4][5][6]	[9][10][11][12][13][14]	0	6		
32	26GB	6GB	7GB	①②③④[5][6][7][8]	⑨⑩[11][12][13][14][15][16]	3	5	2	1
				[1][2][3][4][5][6]	⑨⑩[11][12][13][14][15][16]	1	6		
33	28GB	6GB	8GB	①②③④[5][6][7][8]	[9][10][11][12][13][14][15][16]	2	6	2	1
				[1][2][3][4][5][6]	[9][10][11][12][13][14][15][16]	0	7		

*1: Location ① - ⑯ and [1] - [16] represent the SM Module locations shown in Fig. 1.1.2.1-1.

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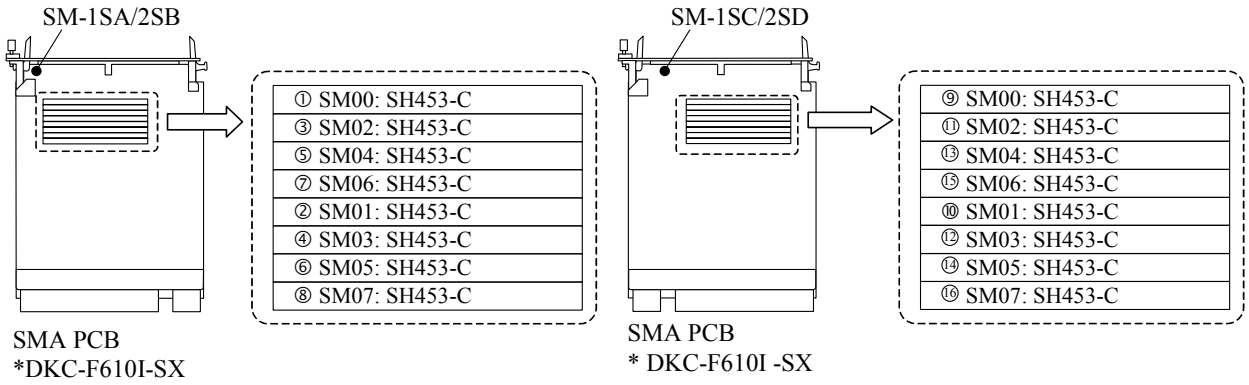
The SM-DIMM location on Shared Memory Adapter is shown in the following figure.

SM Module Location (DKC-F610I-S2GQ)



SM Module Location (DKC-F610I-S4GQ)

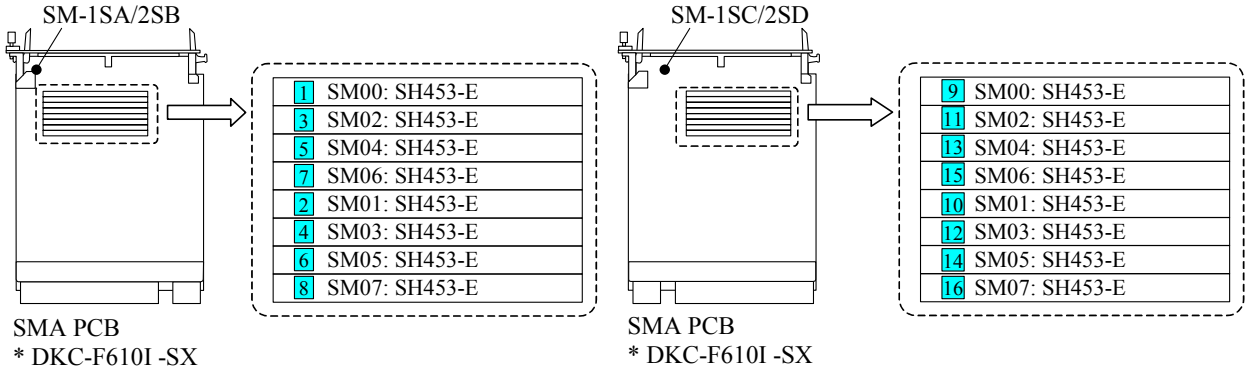


Fig. 1.1.2.1-1 Shared Memory Adapter locations

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1.1.2.2 Cache memory upgrade table

There are two methods for mounting the cache memories: Standard Cache Access Model and High Performance Cache Access Model.

Standard Cache Access Model

When the CM-DIMM is installed on the 1st CMA to the full (32GB, 64GB or 128GB), add the next CMA in order to add the CM-DIMM.

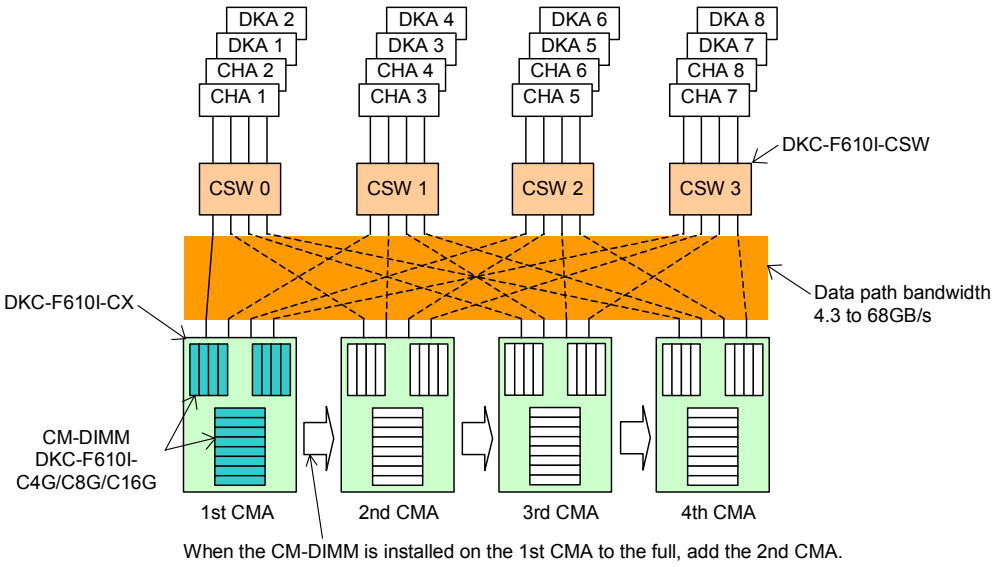

Fig. 1.1.2.2-1 Standard Cache Access Model

High Performance Cache Access Model

It installs CM-DIMM in all CMA in parallel.

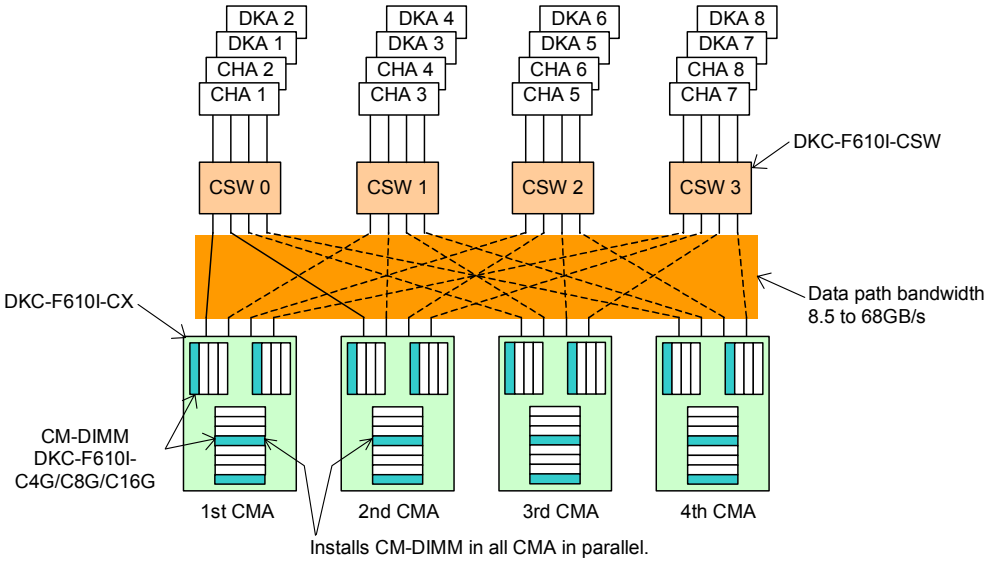

Fig. 1.1.2.2-2 High Performance Cache Access Model

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Cache memory capacities and corresponding number of options required are shown in Table 1.1.2.2-1 to 1.1.2.2-5.

Table 1.1.2.2-1 Cache memory capacity and number of necessary options (Standard Cache Access Model ①)

Standard Cache Access Model						
Cache Memory Capacity	Number of options					
	Using DKC-F610I-C4G			Using DKC-F610I-C8G		
	DKC-F610I-C4G	DKC-F610I-CX	DKC-F610I-AB	DKC-F610I-C8G	DKC-F610I-CX	DKC-F610I-AB
4GB	1	1	0	—	—	—
8GB	2	1	0	1	1	0
12GB	3	1	0	—	—	—
16GB	4	1	0	2	1	0
20GB	5	1	0	—	—	—
24GB	6	1	0	3	1	0
28GB	7	1	0	—	—	—
32GB	8	1	0	4	1	0
36GB	9	2	1	—	—	—
40GB	10	2	1	5	1	0
44GB	11	2	1	—	—	—
48GB	12	2	1	6	1	0
52GB	13	2	1	—	—	—
56GB	14	2	1	7	1	1
60GB	15	2	1	—	—	—
64GB	16	2	1	8	1	1
68GB	17	3	2	—	—	—
72GB	18	3	2	9	2	2
76GB	19	3	2	—	—	—
80GB	20	3	2	10	2	2
84GB	21	3	2	—	—	—
88GB	22	3	2	11	2	2
92GB	23	3	2	—	—	—
96GB	24	3	2	12	2	2
100GB	25	4	3	—	—	—
104GB	26	4	3	13	2	3
108GB	27	4	3	—	—	—
112GB	28	4	3	14	2	3
116GB	29	4	3	—	—	—
120GB	30	4	3	15	2	3
124GB	31	4	3	—	—	—
128GB	32	4	3	16	2	3

(To be continued)

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Standard Cache Access Model						
Cache Memory Capacity	Number of options					
	Using DKC-F610I-C4G			Using DKC-F610I-C8G		
	DKC-F610I-C4G	DKC-F610I-CX	DKC-F610I-AB	DKC-F610I-C8G	DKC-F610I-CX	DKC-F610I-AB
136GB	—	—	—	17	3	3
144GB	—	—	—	18	3	3
152GB	—	—	—	19	3	3
160GB	—	—	—	20	3	3
168GB	—	—	—	21	3	3
176GB	—	—	—	22	3	3
184GB	—	—	—	23	3	3
192GB	—	—	—	24	3	3
200GB	—	—	—	25	4	3
208GB	—	—	—	26	4	3
216GB	—	—	—	27	4	3
224GB	—	—	—	28	4	3
232GB	—	—	—	29	4	3
240GB	—	—	—	30	4	3
248GB	—	—	—	31	4	3
256GB	—	—	—	32	4	3

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Table 1.1.2.2-2 Cache memory capacity and number of necessary options (Standard Cache Access Model ②)

Standard Cache Access Model						
Cache Memory Capacity	Number of options					
	Using DKC-F610I-C16G			DKC-F610I-ABX (Note 1)	DKC-F610I-CBEX (Note 1)	DKC-F610I-DBEX (Note 1)
	DKC-F610I-C16G	DKC-F610I-CX	DKC-F610I-AB			
16GB	1	1	0	0	0	0
32GB	2	1	0	0	0	0
48GB	3	1	0	0	0	0
64GB	4	1	1	0	0	0
80GB	5	1	2	0	0	0
96GB	6	1	2	0	0	0
112GB	7	1	3	0	0	0
128GB	8	1	3	0	0	0
144GB	9	2	3	0	0	0
160GB	10	2	3	0	0	0
176GB	11	2	3	0	0	0
192GB	12	2	3	0	0	0
208GB	13	2	3	0	0	0
224GB	14	2	3	0	0	0
240GB	15	2	3	0	0	0
256GB	16	2	3	0	0	0
272GB	17	3	3	1	1	1
288GB	18	3	3	1	1	1
304GB	19	3	3	1	1	1
320GB	20	3	3	1	1	1
336GB	21	3	3	1	1	1
352GB	22	3	3	1	1	1
368GB	23	3	3	3	1	2
384GB	24	3	3	3	1	2
400GB	25	4	3	3	1	2
416GB	26	4	3	3	1	2
432GB	27	4	3	3	1	2
448GB	28	4	3	3	1	2
464GB	29	4	3	3	1	2
480GB	30	4	3	3	1	2
496GB	31	4	3	3	1	2
512GB	32	4	3	3	1	2

Note 1: When memory backup mode is selected.

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Table 1.1.2.2-3 Cache memory capacity and number of necessary options (High Performance Cache Access Model ①)

High Performance Cache Access Model						
Cache Memory Capacity	DKC-F610I-C4G	DKC-F610I-CX			DKC-F610I-AB	
		2 CMA Mode	3 CMA Mode	4 CMA Mode	2 CMA Mode	3 or 4 CMA Mode
8GB	2	2	—	—	1	—
12GB	3	—	3	—	—	2
16GB	4	2	—	4	1	2
24GB	6	2	3	—	1	2
32GB	8	2	—	4	1	2
36GB	9	—	3	—	—	2
40GB	10	2	—	—	1	—
48GB	12	2	3	4	1	2
56GB	14	2	—	—	1	—
60GB	15	—	3	—	—	2
64GB	16	2	—	4	1	2
72GB	18	—	3	—	—	2
80GB	20	—	—	4	—	2
84GB	21	—	3	—	—	2
96GB	24	—	3	4	—	2
112GB	28	—	—	4	—	3
128GB	32	—	—	4	—	3

Note: A cache memory can't be set up in the '—' mark.

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Table 1.1.2.2-4 Cache memory capacity and number of necessary options (High Performance Cache Access Model ②)

High Performance Cache Access Model						
Cache Memory Capacity	DKC-F610I-C8G	DKC-F610I-CX			DKC-F610I-AB	
		2 CMA Mode	3 CMA Mode	4 CMA Mode	2 CMA Mode	3 or 4 CMA Mode
16GB	2	2	—	—	1	—
24GB	3	—	3	—	—	2
32GB	4	2	—	4	1	2
48GB	6	2	3	—	1	2
64GB	8	2	—	4	1	2
72GB	9	—	3	—	—	2
80GB	10	2	—	—	2	—
96GB	12	2	3	4	2	2
112GB	14	2	—	—	3	—
120GB	15	—	3	—	—	3
128GB	16	2	—	4	3	3
144GB	18	—	3	—	—	3
160GB	20	—	—	4	—	3
168GB	21	—	3	—	—	3
192GB	24	—	3	4	—	3
224GB	28	—	—	4	—	3
256GB	32	—	—	4	—	3

Note: A cache memory can't be set up in the '—' mark.

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Table 1.1.2.2-5 Cache memory capacity and number of necessary options (High Performance Cache Access Model ③)

High Performance Cache Access Model									
Cache Memory Capacity	DKC-F610I-C16G	DKC-F610I-CX			DKC-F610I- (Note 2)				
		2 CMA Mode (Note 1)	3 CMA Mode (Note 1)	4 CMA Mode (Note 1)	AB		ABX	CBEX	DBEX
					2 CMA Mode (Note 1)	3 or 4 CMA Mode (Note 1)			
32GB	2	2	—	—	1	—	0	0	0
48GB	3	—	3	—	—	2	0	0	0
64GB	4	2	—	4	1	2	0	0	0
96GB	6	2	3	—	2	2	0	0	0
128GB	8	2	—	4	3	3	0	0	0
144GB	9	—	3	—	—	3	0	0	0
160GB	10	2	—	—	3	—	0	0	0
192GB	12	2	3	4	3	3	0	0	0
224GB	14	2	—	—	3	—	0	0	0
240GB	15	—	3	—	—	3	0	0	0
256GB	16	2	—	4	3	3	0	0	0
288GB	18	—	3	—	—	3	1	1	1
320GB	20	—	—	4	—	3	1	1	1
336GB	21	—	3	—	—	3	1	1	1
384GB	24	—	3	4	—	3	3	1	2
448GB	28	—	—	4	—	3	3	1	2
512GB	32	—	—	4	—	3	3	1	2

Note 1: When memory backup mode is selected.

Note 2: A cache memory can't be set up in the '—' mark.

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1.1.2.3 Frame Configurations and RAID Group Installation Order

1.1.2.3.1 Connection of DKA to HDU-BOX

(1) 2 DKA pairs model

The 2 DKA pairs model controls DKU frame in 16 paths.

In case of the 2 DKA pairs model, the upper HDU-BOX of DKU frame cannot be installed with HDD.

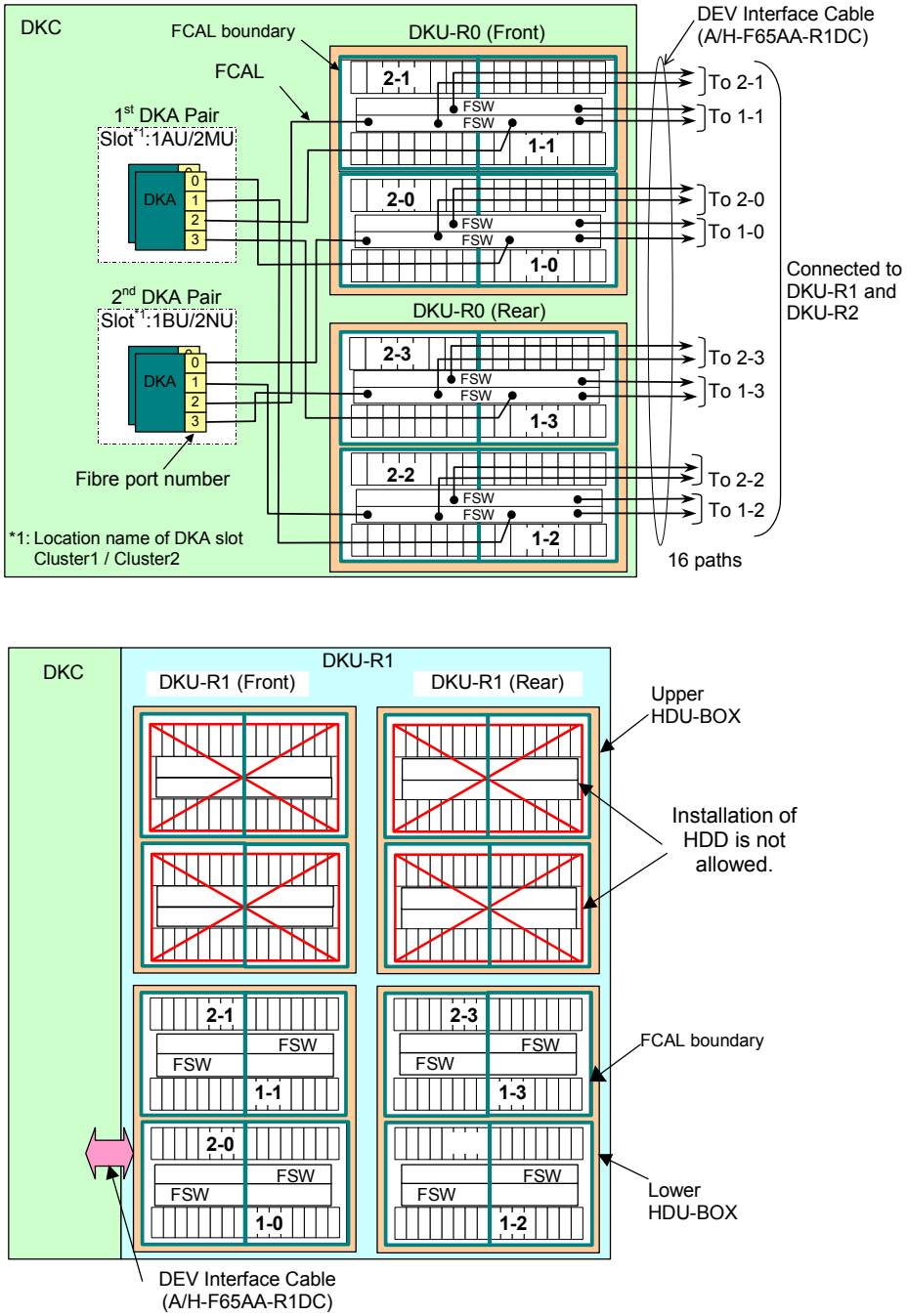

Fig. 1.1.2.3.1-1 2 DKA pairs model configurations

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(2) 4 DKA pairs Model, 6 DKA pairs Model and 8 DKA pairs Model

The 4 DKA pairs model controls DKU frame in 32 paths.

The 6 DKA pairs model controls DKU frame in 48 paths.

The 8 DKA pairs model controls DKU frame in 64 paths.

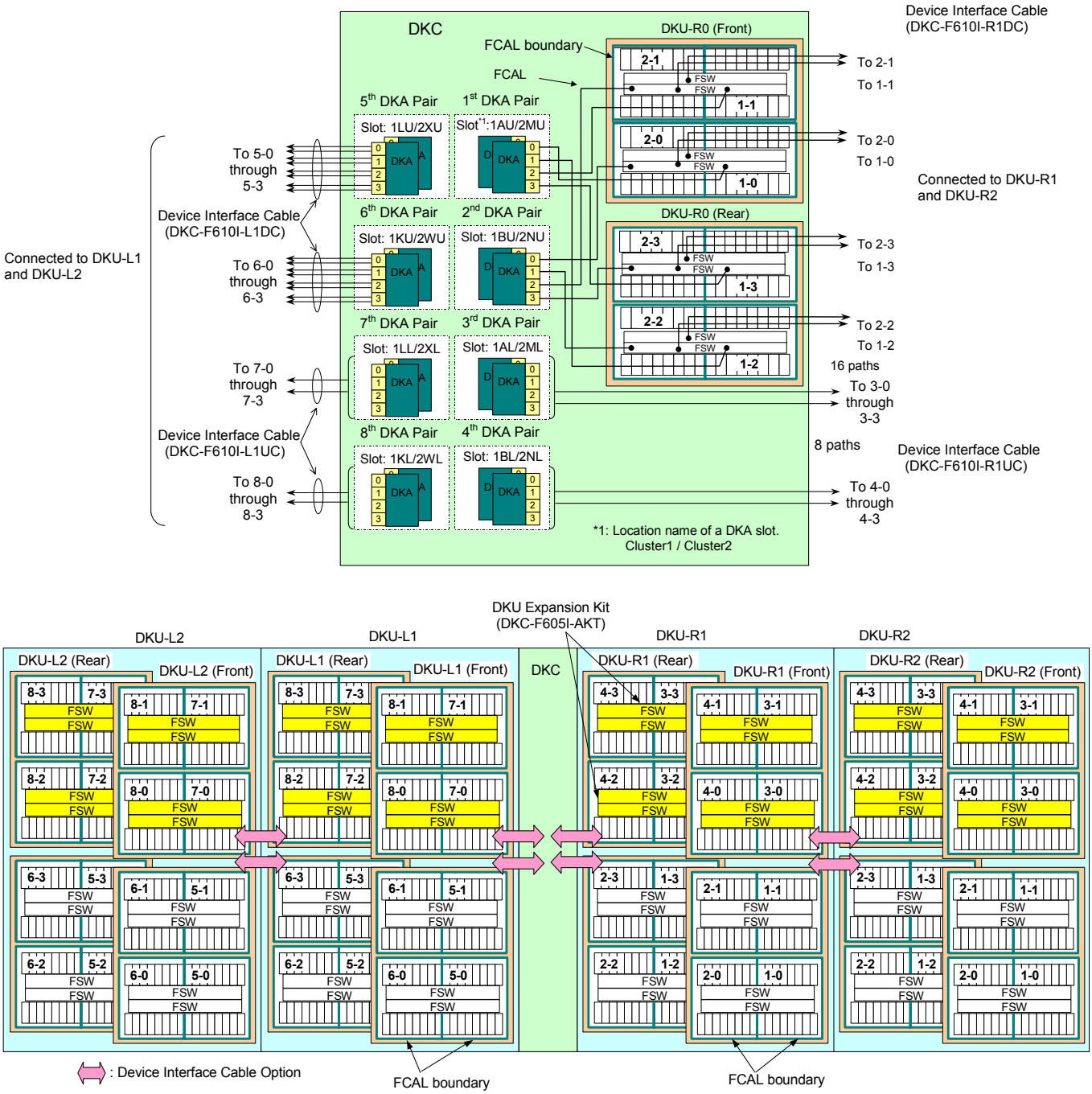

Fig. 1.1.2.3.1-2 8 DKA pairs model configurations

As to this model, installation of the DKC-F605I-AKT is indispensable for each DKU frame.

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1.1.2.3.2 Subsystem configurations and numbers of options required

The subsystem configuration and numbers of required options for each model are shown below.

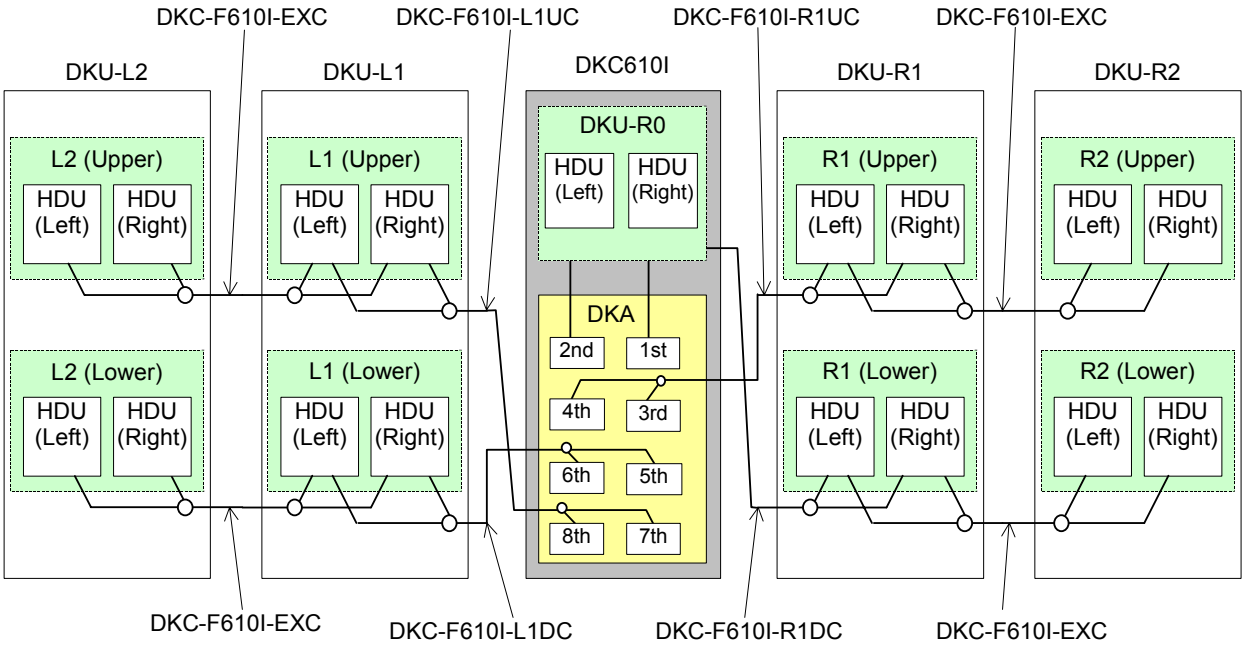

Fig. 1.1.2.3.2-1 Subsystem configurations and required device interface cable options

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Table 1.1.2.3.2-1 Frame layout and required options

Frame Layout					Required Number of Options									
DKU -L2	DKU -L1	DKC	DKU -R1*1	DKU -R2	DKC 610I-5	DKC-F610I-					DKC-F605I-			
						DKA/ EDKA	R1DC	R1UC	L1DC	L1UC	18	EXC	AKT*3	HDD/SSD*2
		✓			1	2	0	0	0	0	0	0	0	Max.128/32
		✓	✓		1	2	1	0	0	0	1	0	0	Max.256/32
		✓	✓		1	4	1	1	0	0	1	0	1	Max.384/64
		✓	✓	✓	1	4	1	1	0	0	2	1	1	Max.512/64
		✓	✓	✓	1	4	1	1	0	0	2	2	2	Max.640/64
	✓	✓	✓	✓	1	6	1	1	1	0	3	2	2	Max.768/96
	✓	✓	✓		1	8	1	1	1	1	2	0	2	Max.640/128
	✓	✓	✓	✓	1	8	1	1	1	1	3	2	3	Max.896/128
✓	✓	✓	✓	✓	1	8	1	1	1	1	4	3	3	Max.1024/128
✓	✓	✓	✓	✓	1	8	1	1	1	1	4	4	4	Max.1152/128

*1: When installing the DKU frame, be sure to install the DKU-R1 first.
The configuration with no DKU-R1 installed is not allowed.

*2: The maximum number of installable HDDs includes the spare drive(s).
The maximum number of installable SSDs does not include the spare drive(s).
The maximum number of installable HDDs includes the SSDs.

*3: When not installing HDD in HDU (upper), there is no necessity of installing DKC-F605I-AKT.

*4: When the installing HDD, use the HDU BOX of the right side first.

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1.1.2.3.3 RAID Group Installation Order

The RAID group is recommended to install under each DKA evenly for the balance of the subsystem performance.

(1) Order of HDD installation in the HDU Box

The order of HDD installation in the HDU Box for the each model is as follows.
HDD is installed from HDD location '00' to '0F' in regular order.
Right HDU is controlled by DKA of the odd number. Left HDU is controlled by DKA of the even number.

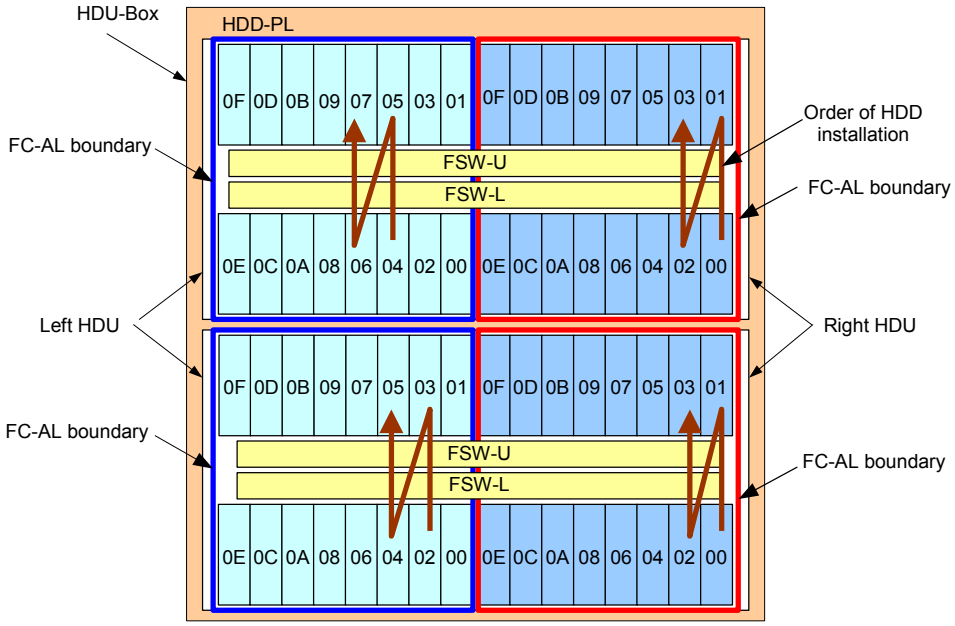

Fig. 1.1.2.3.3-1 HDD installation order to the HDU box

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(2) Order of HDD installation in the subsystem

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■ 2/4/6/8 DKA pairs Model

Installation orders of HDUs and HDDs connected to each DKA are as follows.

1st DKA pair (1AU/2MU) ..... DKU-R0 (right) → DKU-R1 (lower right) → DKU-R2 (lower right)
2nd DKA pair (1BU/2NU) ..... DKU-R0 (left) → DKU-R1 (lower left) → DKU-R2 (lower left)
3rd DKA pair (1AL/2ML)..... DKU-R1 (upper right) → DKU-R2 (upper right)
4th DKA pair (1BL/2NL)..... DKU-R1 (upper left) → DKU-R2 (upper left)
5th DKA pair (1LU/2XU) ..... DKU-L1 (lower right) → DKU-L2 (lower right)
6th DKA pair (1KU/2WU)..... DKU-L1 (lower left) → DKU-L2 (lower left)
7th DKA pair (1LL/2XL) ..... DKU-L1 (upper right) → DKU-L2 (upper right)
8th DKA pair (1KL/2WL)..... DKU-L1 (upper left) → DKU-L2 (upper left)

In the case of the 2/4/6/8 DKA pairs configuration, the HDDs are installed evenly under the each DKA pair according to the installation order shown above.
2nd DKA pair can connect 64 more HDD than other DKA pair to connect to DKU-R0.

Connections between the DKA pairs and the HDUs in each DKU frame are shown in the figure below.

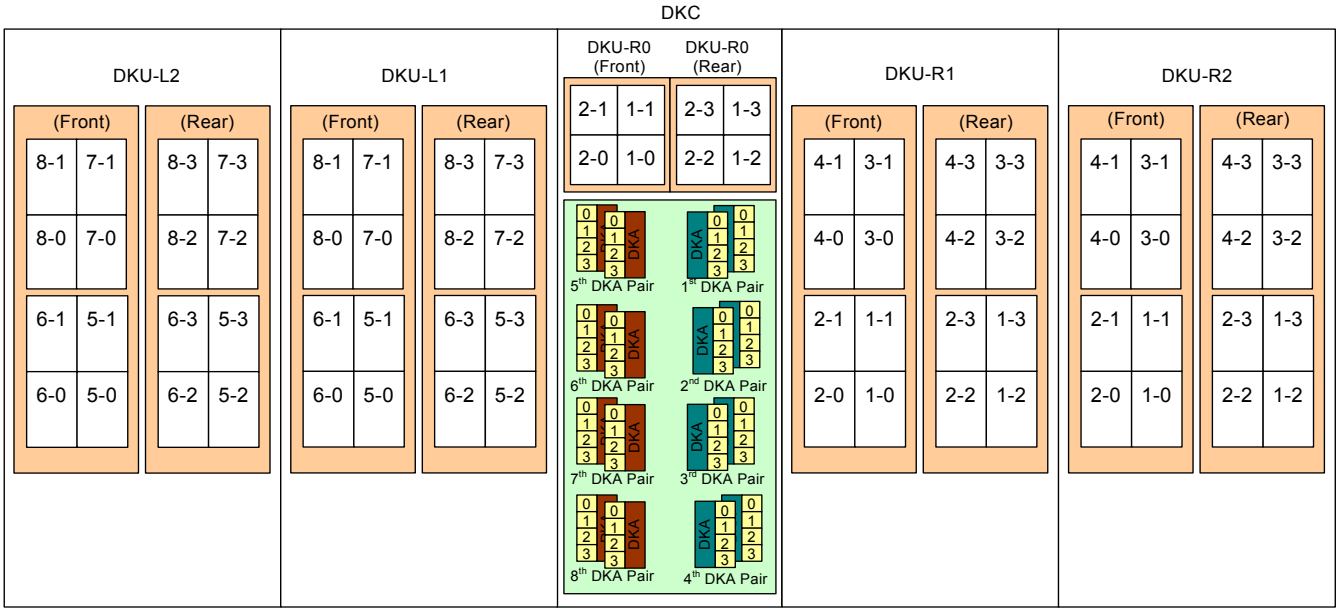

Fig. 1.1.2.3.3-3 Connection order of HDU for 8 DKA pairs model

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1.1.2.4 Cache memory capacity and necessary battery number

Backup process of the subsystem has 2 styles-memory backup mode and destage mode.
When memory backup mode is selected and cache memory capacity (CM) is 360GB or more, it is necessary to install the additional battery (DKC-F610I-ABX) in DKU-R1 frame.
When destage mode is selected, the CM capacity should be 256GB or less. In case that the CM capacity is 260 or more, destage mode is unable to select.

1. CM capacity and necessary battery number are shown in the table below. Fig. 1.1.2.4-1 and Fig. 1.1.2.4-2 are block diagrams.

Table 1.1.2.4-1 CM capacity and necessary battery number

Mode	No.	CM Capacity	Number of necessary battery options (DKC-F610I-)					
			DKC Frame				DKU Frame	
			AB	ABX	CBEX	DBEX	ABX	DBEX
Memory Backup Mode	1	4 - 48GB	0	0	0	0	0	0
	2	52 - 64GB	1	0	0	0	0	0
	3	68 - 96GB	2	0	0	0	0	0
	4	100 - 128GB	3	0	0	0	0	0
	5	132 - 256GB	3	0	0	0	0	0
	6	260 - 352GB	3	1	1	1	0	0
	7 (*1)	360 - 512GB	3	1	1	1	2	1
Destage Mode	1	4 - 48GB	0	1	—	—	(*2)	—
	2	52 - 64GB	1	1	—	—	(*2)	—
	3	68 - 96GB	2	1	—	—	(*2)	—
	4	100 - 128GB	3	1	—	—	(*2)	—
	5	132 - 256GB	3	1	—	—	(*2)	—
	6	260 - 512GB	Unable to select					

*1: Install the additional battery in DKU-R1 frame.

*2: The necessary number of the option is determined by the number of DKU frames.

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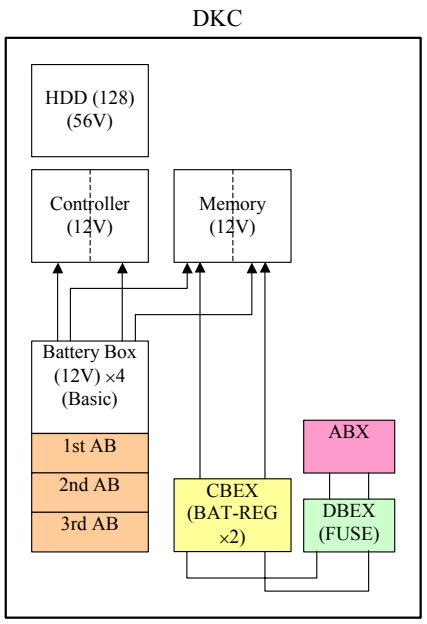
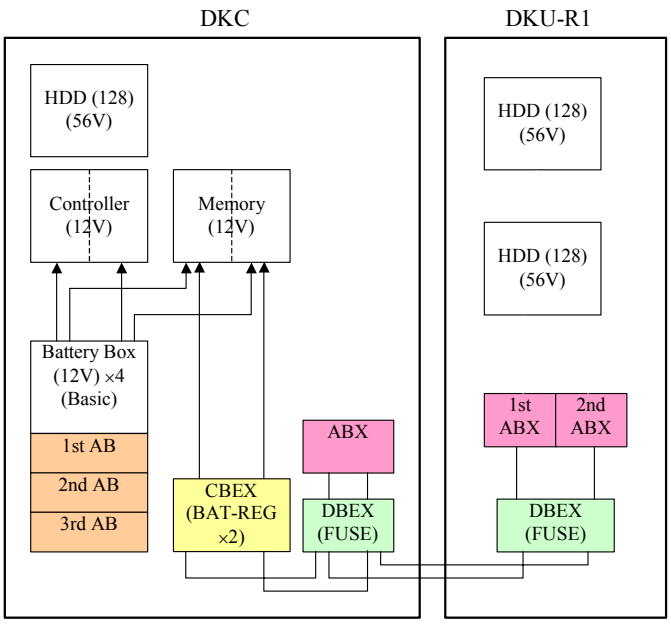
Memory Backup Mode

CM Capacity: 4 - 352GB



CM Capacity: 360 - 512GB(Configuration with DKU-R1)

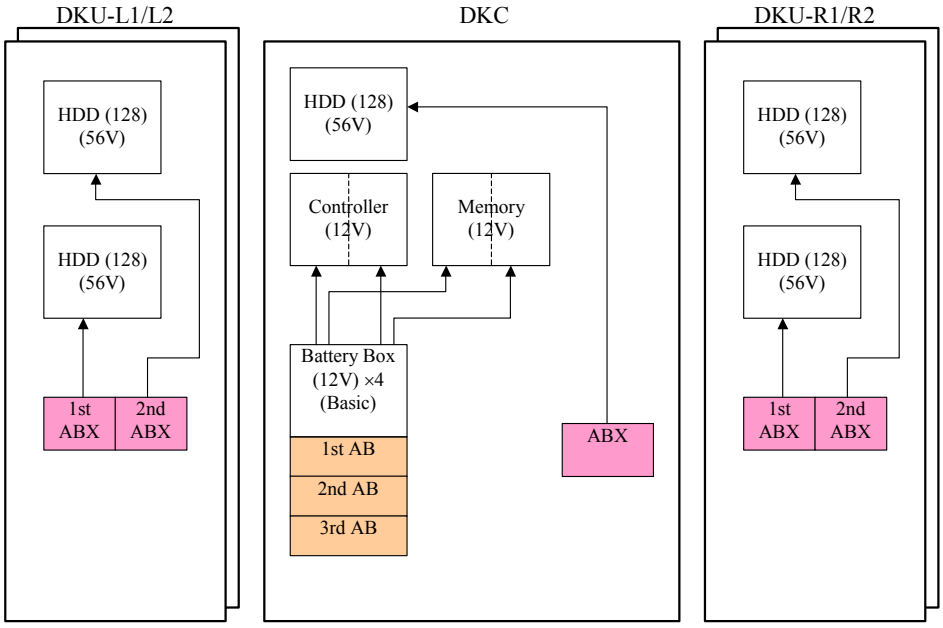


Note: AB: Battery Box (12V) ×2
ABX: Battery Box (56V) ×4

Fig. 1.1.2.4-1 Block Diagram (Memory backup mode)

Destage Mode

CM Capacity: 4 - 256GB



Note: AB: Battery Box (12V) ×2
ABX: Battery Box (56V) ×4

Fig. 1.1.2.4-2 Block Diagram (Destage mode)

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1.1.2.5 Notes for installing Flash Drives

Up to 4 Flash Drives (SSD) can be connected per 1 port in Disk Adapter (DKA). However, it is recommended to connect 2 Flash Drives or less if the performance is more important. The maximum and recommended numbers of flash drives installed in each model are shown in the Table 1.1.2.5-1.
Flash Drive and HDD can be mixed, and the location to install Flash Drive is not restricted. However, it is not recommended to connect Flash Drives to DKA set at a speed of 2Gbps because Flash Drives cannot achieve the specific performance of a high-speed response.

Table 1.1.2.5-1 Flash Drive Installing Specifications

Model Type	Maximum number of flash drives *1	Recommended number of flash drives *1
2DKA pairs model	32	16
4DKA pairs model	64	32
6DKA pairs model	96	48
8DKA pairs model	128	64

*1: The number of spare drive is not included.

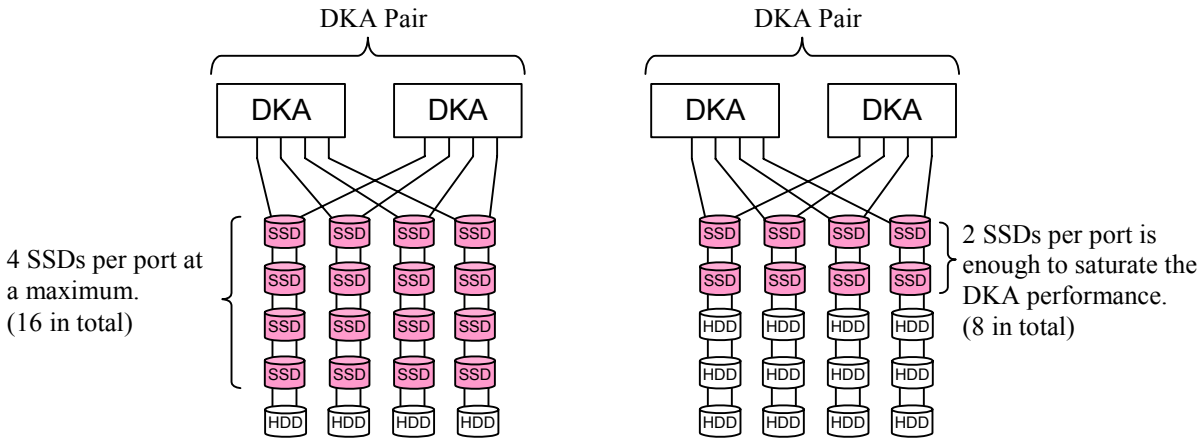

Fig. 1.1.2.5-1 Recommended Location of SSD

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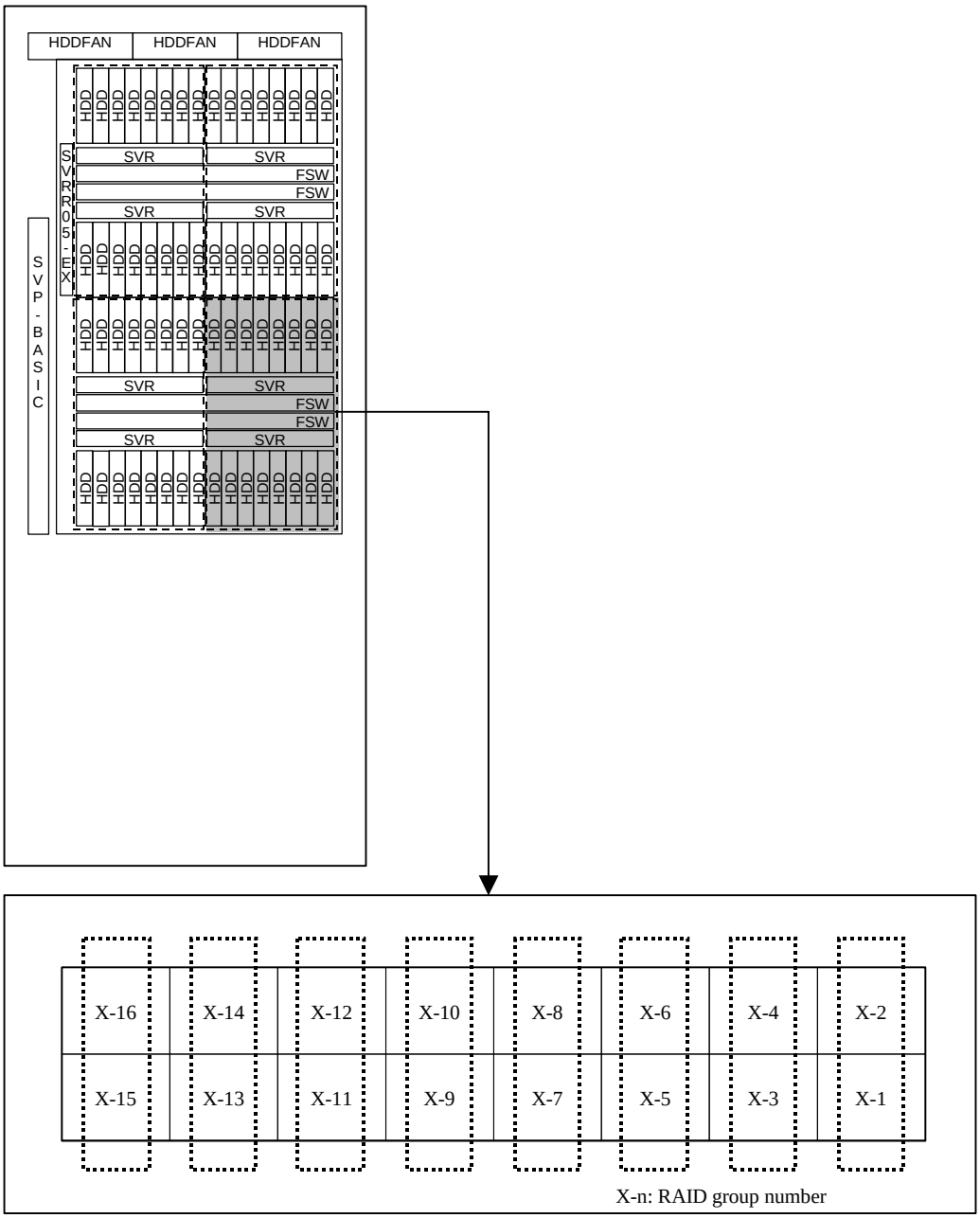
1.1.2.6 Notes on installing 2TB SATA M/F Drives

(1) Restrictions on 2TB SATA M/F drive installation
In the RAID groups of 2TB SATA M/F surrounded by the dotted line in each HDU Box shown in the figure below, drive installation may be restricted.



<Conditions under which drives can be installed>
(a) Drives can be installed only in locations with “X-Odd number”.
(b) No drive is installed in locations with “X-Even number”.
(c) If X-16 is a spare drive, a drive can be installed in X-15.

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Eg: The following shows whether RAID groups of 2TB SATA M/F can be installed in the installation example of HDU Box. Gray parts indicate that they are RAID groups of other than 2TB SATA M/F or that spare drives are installed.

2-16	• • •	2-10	2-8	2-6	2-4 7D+1P	2-2	1-16 Spare	• • •	1-10	1-8 3D+1P	1-6	1-4 7D+1P	1-2
2-15	• • •	2-9 2D+2D	2-7	2-5 6D+2P	2-3	2-1	1-15	• • •	1-9	1-7	1-5 6D+2P	1-3	1-1

No.	Installation location	Installation		Reason
		2D+2D/3D+1P	7D+1P/6D+2P	
1	1-1	Possible	Possible	Because RG1-2/RG2-2 are not installed, the conditions are met.
2	1-2	Impossible	Impossible	Condition (a) is not met.
3	1-3	Impossible	Impossible	Because of RG1-4 installation, Condition (b) is not met.
4	1-4	Impossible	Impossible	RG1-4 (7D+1P) has been installed.
5	1-5	Impossible	Impossible	RG1-5 (6D+2P) has been installed.
6	1-6	Impossible	Impossible	Condition (a) is not met.
7	1-7	Impossible	Impossible	Because of RG1-8 installation, Condition (b) is not met.
8	1-8	Impossible	Impossible	RG1-8 (3D+1P) has been installed.
9	1-9	Possible	Impossible	Because of RG2-9 installation, Condition (b) is not met.
10	1-10	Impossible	Impossible	Condition (a) is not met.
11	1-15	Possible	Possible	Because only a spare drive is installed, the conditions are met.
12	1-16	Impossible	Impossible	A spare drive has been installed.
13	2-1	Possible	Possible	Because RG1-2/RG2-2 are not installed, the conditions are met.
14	2-2	Impossible	Impossible	Condition (a) is not met.
15	2-3	Impossible	Impossible	Because of RG1-4 installation, Condition (b) is not met.
16	2-4	Impossible	Impossible	RG1-4 (7D+1P) has been installed.
17	2-5	Impossible	Impossible	RG1-5 (6D+2P) has been installed.
18	2-6	Impossible	Impossible	Condition (a) is not met.
19	2-7	Possible	Impossible	Because of RG1-8 installation, Condition (b) is not met.
20	2-8	Impossible	Impossible	Condition (a) is not met.
21	2-9	Impossible	Impossible	RG2-9 (2D+2D) has been installed.
22	2-10	Impossible	Impossible	Condition (a) is not met.
23	2-15	Possible	Possible	Because only a spare drive is installed, the conditions are met.
24	2-16	Impossible	Impossible	Condition (a) is not met.

Note: When changing the OPEN emulation type of SATA 2TB HDD to the M/F emulation type, if a RAID group that does not meet Condition (b) is installed, you need to change the installation location of HDD.
For details, contact Technical Support Division.

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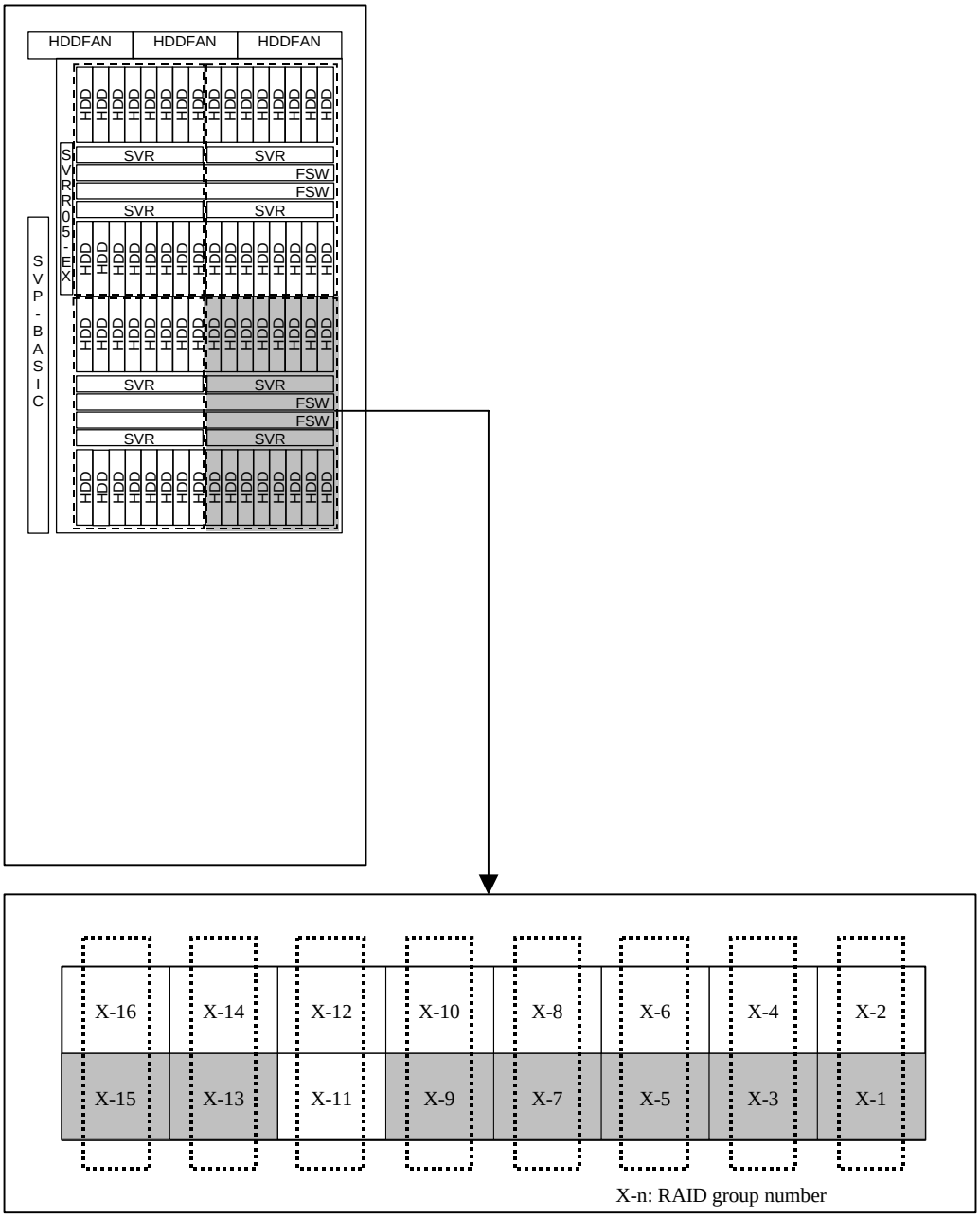
(2) Restrictions on drive installation in the configuration in which 2TB SATA M/F drives are installed

In the storage system in which 2TB SATA M/F drives are installed, installation is restricted in the locations in the groups surrounded by the dotted line in each HDU Box.



Note: Gray parts indicate that data drives of 2TB SATA M/F are installed.

When 2TB SATA M/F drives are installed in locations with “X-Odd number”, RAID groups cannot be installed in locations with “X-Even number”. Note that in X-16, a spare drive can be installed. Only when 2TB SATA M/F is not installed (Example: X-11), RAID groups can be installed in X-11 and X-12.

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Eg: The following shows whether RAID groups of other than 2TB SATA M/F can be installed in the installation example of HDU Box. Gray parts indicate that data drives of 2TB SATA M/F are installed.

2-16	• • •	2-10	2-8	2-6	2-4	2-2	1-16	• • •	1-10	1-8	1-6	1-4	1-2
2-15 6D+2P	• • •	2-9	2- 7	2-5 7D+1P	2-3 2D+2D	2-1	1-15 6D+2P	• • •	1-9	1-7 3D+1P	1-5 7D+1P	1-3	1-1

No.	Installation location	Installation		Reason
		2D+2D/3D+1P	7D+1P/6D+2P	
1	1-1	Possible	Possible	It can be installed because it is not restricted.
2	1-2	Possible	Possible	It can be installed because it is not restricted.
3	1-3	Possible	Impossible	It cannot be installed because of RG2-3 installation.
4	1-4	Possible	Impossible	It cannot be installed because of RG2-3 installation.
5	1-5	Impossible	Impossible	RG1-5 (7D+1P) has been installed.
6	1-6	Impossible	Impossible	It cannot be installed because of RG1-5 installation.
7	1-7	Impossible	Impossible	RG1-7 (3D+1P) has been installed.
8	1-8	Impossible	Impossible	It cannot be installed because of RG1-7 installation.
9	1-9	Possible	Possible	It can be installed because it is not restricted.
10	1-10	Possible	Possible	It can be installed because it is not restricted.
11	1-15	Impossible	Impossible	RG1-15 (6D+2P) has been installed.
12	1-16	Impossible	Impossible	It cannot be installed because of RG1-15 installation. Note that a spare drive can be installed.
13	2-1	Possible	Possible	It can be installed because it is not restricted.
14	2-2	Possible	Possible	It can be installed because it is not restricted.
15	2-3	Impossible	Impossible	RG2-3 (2D+2D) has been installed.
16	2-4	Impossible	Impossible	It cannot be installed because of RG2-3 installation.
17	2-5	Impossible	Impossible	RG1-5 (7D+1P) has been installed.
18	2-6	Impossible	Impossible	It cannot be installed because of RG1-5 installation.
19	2-7	Possible	Impossible	It cannot be installed because of RG1-7 installation.
20	2-8	Possible	Impossible	It cannot be installed because of RG1-7 installation.
21	2-9	Possible	Possible	It can be installed because it is not restricted.
22	2-10	Possible	Possible	It can be installed because it is not restricted.
23	2-15	Impossible	Impossible	RG1-15 (6D+2P) has been installed.
24	2-16	Impossible	Impossible	It cannot be installed because of RG1-15 installation. Note that a spare drive can be installed.

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(3) RAID groups in which 2TB SATA M/F drives can be installed

RAID groups in which 2TB SATA M/F drives of 7D+1P/6D+2P can be installed

Group that can have 2TB SATA (M/F)	Restricted groups (*1)	
	3D+1P/2D+2D	7D+1P/6D+2P
1-1	1-2/2-1/2-2	1-2
1-3	1-4/2-3/2-4	1-4
1-5	1-6/2-5/2-6	1-6
1-7	1-8/2-7/2-8	1-8
1-9	1-10/2-9/2-10	1-10
1-11	1-12/2-11/2-12	1-12
1-13	1-14/2-13/2-14	1-14
1-15	1-16/2-15/2-16	1-16
3-1	3-2/4-1/4-2	3-2
3-3	3-4/4-3/4-4	3-4
3-5	3-6/4-5/4-6	3-6
3-7	3-8/4-7/4-8	3-8
3-9	3-10/4-9/4-10	3-10
3-11	3-12/4-11/4-12	3-12
3-13	3-14/4-13/4-14	3-14
3-15	3-16/4-15/4-16	3-16
5-1	5-2/6-1/6-2	5-2
5-3	5-4/6-3/6-4	5-4
5-5	5-6/6-5/6-6	5-6
5-7	5-8/6-7/6-8	5-8
5-9	5-10/6-9/6-10	5-10
5-11	5-12/6-11/6-12	5-12
5-13	5-14/6-13/6-14	5-14
5-15	5-16/6-15/6-16	5-16
7-1	7-2/8-1/8-2	7-2
7-3	7-4/8-3/8-4	7-4
7-5	7-6/8-5/8-6	7-6
7-7	7-8/8-7/8-8	7-8
7-9	7-10/8-9/8-10	7-10
7-11	7-12/8-11/8-12	7-12
7-13	7-14/8-13/8-14	7-14
7-15	7-16/8-15/8-16	7-16
9-1	9-2/10-1/10-2	9-2
9-3	9-4/10-3/10-4	9-4
9-5	9-6/10-5/10-6	9-6
9-7	9-8/10-7/10-8	9-8
9-9	9-10/10-9/10-10	9-10
9-11	9-12/10-11/10-12	9-12
9-13	9-14/10-13/10-14	9-14
9-15	9-16/10-15/10-16	9-16

Group that can have 2TB SATA (M/F)	Restricted groups (*1)	
	3D+1P/2D+2D	7D+1P/6D+2P
11-1	11-2/12-1/12-2	11-2
11-3	11-4/12-3/12-4	11-4
11-5	11-6/12-5/12-6	11-6
11-7	11-8/12-7/12-8	11-8
11-9	11-10/12-9/12-10	11-10
11-11	11-12/12-11/12-12	11-12
11-13	11-14/12-13/12-14	11-14
11-15	11-16/12-15/12-16	11-16
13-1	13-2/14-1/14-2	13-2
13-3	13-4/14-3/14-4	13-4
13-5	13-6/14-5/14-6	13-6
13-7	13-8/14-7/14-8	13-8
13-9	13-10/14-9/14-10	13-10
13-11	13-12/14-11/14-12	13-12
13-13	13-14/14-13/14-14	13-14
13-15	13-16/14-15/14-16	13-16
15-1	15-2/16-1/16-2	15-2
15-3	15-4/16-3/16-4	15-4
15-5	15-6/16-5/16-6	15-6
15-7	15-8/16-7/16-8	15-8
15-9	15-10/16-9/16-10	15-10
15-11	15-12/16-11/16-12	15-12
15-13	15-14/16-13/16-14	15-14
15-15	15-16/16-15/16-16	15-16
17-1	17-2/18-1/18-2	17-2
17-3	17-4/18-3/18-4	17-4
17-5	17-6/18-5/18-6	17-6
17-7	17-8/18-7/18-8	17-8
17-9	17-10/18-9/18-10	17-10
17-11	17-12/18-11/18-12	17-12
17-13	17-14/18-13/18-14	17-14
17-15	17-16/18-15/18-16	17-16

*1: When 2TB SATA (M/F) is installed in the group that can have 2TB SATA (M/F), installation of the RAID groups is restricted (impossible). If the restricted RAID groups have been installed, 2TB SATA (M/F) cannot be installed in the group that can have 2TB SATA (M/F).

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RAID groups in which 2TB SATA M/F drives of 2D+2D/3D+1P can be installed (1/2)

Group that can have 2TB SATA (M/F)	Restricted groups (*1)	
	3D+1P/2D+2D	7D+1P/6D+2P
1-1	1-2	1-2
1-3	1-4	1-4
1-5	1-6	1-6
1-7	1-8	1-8
1-9	1-10	1-10
1-11	1-12	1-12
1-13	1-14	1-14
1-15	1-16	1-16
2-1	2-2	1-1/1-2
2-3	2-4	1-3/1-4
2-5	2-6	1-5/1-6
2-7	2-8	1-7/1-8
2-9	2-10	1-9/1-10
2-11	2-12	1-11/1-12
2-13	2-14	1-13/1-14
2-15	2-16	1-15/1-16
3-1	3-2	3-2
3-3	3-4	3-4
3-5	3-6	3-6
3-7	3-8	3-8
3-9	3-10	3-10
3-11	3-12	3-12
3-13	3-14	3-14
3-15	3-16	3-16
4-1	4-2	3-1/3-2
4-3	4-4	3-3/3-4
4-5	4-6	3-5/3-6
4-7	4-8	3-7/3-8
4-9	4-10	3-9/3-10
4-11	4-12	3-11/3-12
4-13	4-14	3-13/3-14
4-15	4-16	3-15/3-16
5-1	5-2	5-2
5-3	5-4	5-4
5-5	5-6	5-6
5-7	5-8	5-8
5-9	5-10	5-10
5-11	5-12	5-12
5-13	5-14	5-14
5-15	5-16	5-16

Group that can have 2TB SATA (M/F)	Restricted groups (*1)	
	3D+1P/2D+2D	7D+1P/6D+2P
6-1	6-2	5-1/5-2
6-3	6-4	5-3/5-4
6-5	6-6	5-5/5-6
6-7	6-8	5-7/5-8
6-9	6-10	5-9/5-10
6-11	6-12	5-11/5-12
6-13	6-14	5-13/5-14
6-15	6-16	5-15/5-16
7-1	7-2	7-2
7-3	7-4	7-4
7-5	7-6	7-6
7-7	7-8	7-8
7-9	7-10	7-10
7-11	7-12	7-12
7-13	7-14	7-14
7-15	7-16	7-16
8-1	8-2	7-1/7-2
8-3	8-4	7-3/7-4
8-5	8-6	7-5/7-6
8-7	8-8	7-7/7-8
8-9	8-10	7-9/7-10
8-11	8-12	7-11/7-12
8-13	8-14	7-13/7-14
8-15	8-16	7-15/7-16
9-1	9-2	9-2
9-3	9-4	9-4
9-5	9-6	9-6
9-7	9-8	9-8
9-9	9-10	9-10
9-11	9-12	9-12
9-13	9-14	9-14
9-15	9-16	9-16
10-1	10-2	9-1/9-2
10-3	10-4	9-3/9-4
10-5	10-6	9-5/9-6
10-7	10-8	9-7/9-8
10-9	10-10	9-9/9-10
10-11	10-12	9-11/9-12
10-13	10-14	9-13/9-14
10-15	10-16	9-15/9-16

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RAID groups in which 2TB SATA M/F drives of 2D+2D/3D+1P can be installed (2/2)

Group that can have 2TB SATA (M/F)	Restricted groups (*1)	
	3D+1P/2D+2D	7D+1P/6D+2P
11-1	11-2	11-2
11-3	11-4	11-4
11-5	11-6	11-6
11-7	11-8	11-8
11-9	11-10	11-10
11-11	11-12	11-12
11-13	11-14	11-14
11-15	11-16	11-16
12-1	12-2	11-1/11-2
12-3	12-4	11-3/11-4
12-5	12-6	11-5/11-6
12-7	12-8	11-7/11-8
12-9	12-10	11-9/11-10
12-11	12-12	11-11/11-12
12-13	12-14	11-13/11-14
12-15	12-16	11-15/11-16
13-1	13-2	13-2
13-3	13-4	13-4
13-5	13-6	13-6
13-7	13-8	13-8
13-9	13-10	13-10
13-11	13-12	13-12
13-13	13-14	13-14
13-15	13-16	13-16
14-1	14-2	13-1/13-2
14-3	14-4	13-3/13-4
14-5	14-6	13-5/13-6
14-7	14-8	13-7/13-8
14-9	14-10	13-9/13-10
14-11	14-12	13-11/13-12
14-13	14-14	13-13/13-14
14-15	14-16	13-15/13-16

Group that can have 2TB SATA (M/F)	Restricted groups (*1)	
	3D+1P/2D+2D	7D+1P/6D+2P
15-1	15-2	15-2
15-3	15-4	15-4
15-5	15-6	15-6
15-7	15-8	15-8
15-9	15-10	15-10
15-11	15-12	15-12
15-13	15-14	15-14
15-15	15-16	15-16
16-1	16-2	15-1/15-2
16-3	16-4	15-3/15-4
16-5	16-6	15-5/15-6
16-7	16-8	15-7/15-8
16-9	16-10	15-9/15-10
16-11	16-12	15-11/15-12
16-13	16-14	15-13/15-14
16-15	16-16	15-15/15-16
17-1	17-2	17-2
17-3	17-4	17-4
17-5	17-6	17-6
17-7	17-8	17-8
17-9	17-10	17-10
17-11	17-12	17-12
17-13	17-14	17-14
17-15	17-16	17-16
18-1	18-2	17-1/17-2
18-3	18-4	17-3/17-4
18-5	18-6	17-5/17-6
18-7	18-8	17-7/17-8
18-9	18-10	17-9/17-10
18-11	18-12	17-11/17-12
18-13	18-14	17-13/17-14
18-15	18-16	17-15/17-16

*1: When 2TB SATA (M/F) is installed in the group that can have 2TB SATA (M/F), installation of the RAID groups is restricted (impossible). If the restricted RAID groups have been installed, 2TB SATA (M/F) cannot be installed in the group that can have 2TB SATA (M/F).

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1.1.3 Specifications

(1) DKC610I Physical Specifications

The DKC610I physical specifications are shown in the following table:

Table 1.1.3-1 DKC610I Physical Specifications

No.	Model Number	Weight (kg)	Heat Output (kW)	Power Consumption (kVA)	Dimension (mm)			Air Flow (m^3/min.)
					Width	Depth	Height	
1	DKC610I-5	386.0	0.834	0.860	782 *1	925	1,920	34
2	DKC-F610I-DH	90	—	—	—	—	—	—
3	DKC-F610I-DS	90	—	—	—	—	—	—
4	DKC-F610I-3PS	4.3	—	—	—	—	—	—
5	DKC-F610I-3EC	2.8	—	—	—	—	—	—
6	DKC-F610I-3UC	4.9	—	—	—	—	—	—
7	DKC-F610I-1PS	4.0	—	—	—	—	—	—
8	DKC-F610I-1EC	2.8	—	—	—	—	—	—
9	DKC-F610I-1UC	4.7	—	—	—	—	—	—
10	DKC-F610I-1PSD	4.3	—	—	—	—	—	—
11	DKC-F610I-1ECD	2.8	—	—	—	—	—	—
12	DKC-F610I-1UCD	4.7	—	—	—	—	—	—
13	DKC-F610I-APC	12	—	—	—	—	—	—
14	DKC-F610I-AB	14	0.029	0.030	—	—	—	—
15	DKC-F610I-ABX	36	0.128	0.132	—	—	—	—
16	DKC-F610I-CX	2.2	0.005	0.005	—	—	—	—
17	DKC-F610I-SX	1.2	0.005	0.005	—	—	—	—
18	DKC-F610I-C4G	0.08	0.015	0.015	—	—	—	—
19	DKC-F610I-C8G	0.08	0.019	0.020	—	—	—	—
20	DKC-F610I-C16G	0.08	0.019	0.020	—	—	—	—
21	DKC-F610I-S2GQ	0.08	0.013	0.013	—	—	—	—
22	DKC-F610I-S4GQ	0.08	0.013	0.013	—	—	—	—
23	DKC-F610I-CSW	1.8	0.029	0.030	—	—	—	—
24	DKC-F610I-DKA	2.6	0.097	0.100	—	—	—	—
25	DKC-F610I-EDKA	2.6	0.099	0.102	—	—	—	—
26	DKC-F610I-SVP	4.1	0.073	0.075	—	—	—	—
27	DKC-F610I-SVPV	4.1	0.073	0.075	—	—	—	—
28	DKC-F610I-PCI	0.3	0.002	0.002	—	—	—	—
29	DKC-F610I-R1DC	4.4	—	—	—	—	—	—
30	DKC-F610I-R1UC	5.7	—	—	—	—	—	—
31	DKC-F610I-L1DC	4.3	—	—	—	—	—	—
32	DKC-F610I-L1UC	5.8	—	—	—	—	—	—
33	DKC-F610I-MDM	0.07	0.006	0.006	—	—	—	—

(To be continued)

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(Continued from preceding sheet)

No.	Model Number	Weight (kg)	Heat Output (kW)	Power Consumption (kVA)	Dimension (mm)			Air Flow (m^3/min.)
					Width	Depth	Height	
34	DKC-F610I-8FS	2.8	0.130	0.135	—	—	—	—
35	DKC-F610I-16FS	3.0	0.146	0.150	—	—	—	—
36	DKC-F610I-8S	2.7	0.146	0.150	—	—	—	—
37	DKC-F610I-8MFS	3.0	0.146	0.150	—	—	—	—
38	DKC-F610I-8MFL	3.0	0.146	0.150	—	—	—	—
39	DKC-F610I-1FL	0.02	—	—	—	—	—	—
40	DKC-F610I-1FS	0.02	—	—	—	—	—	—
41	DKC-F610I-8US	3.0	0.146	0.150	—	—	—	—
42	DKC-F610I-1UL	0.02	—	—	—	—	—	—
43	DKC-F610I-1US	0.02	—	—	—	—	—	—
44	DKC-F610I-CBEX	0.12	0.01	0.01	—	—	—	—
45	DKC-F610I-DBEX	0.12	0.001	0.001	—	—	—	—
46	DKC-F605I-18	324	0.601	0.620	650	925	1,920	32
47	DKC-F605I-DH	40	—	—	—	—	—	—
48	DKC-F605I-DS	40	—	—	—	—	—	—
49	DKC-F605I-AKT	37.7	0.291	0.300	—	—	—	—
50	DKC-F605I-EXC	2.8	—	—	—	—	—	—
51	DKC-F605I-72KS	0.9	0.020	0.021	—	—	—	—
52	DKC-F605I-146KS	0.9	0.020	0.021	—	—	—	—
53	DKC-F605I-300JS	0.9	0.020	0.021	—	—	—	—
54	DKC-F605I-300KM	0.9	0.020	0.021	—	—	—	—
55	DKC-F605I-300KS	0.9	0.020	0.021	—	—	—	—
56	DKC-F605I-400JS	0.9	0.020	0.021	—	—	—	—
57	DKC-F605I-450KS	0.9	0.020	0.021	—	—	—	—
58	DKC-F605I-600KS	0.9	0.020	0.021	—	—	—	—
59	DKC-F605I-0R7HS	0.9	0.018	0.019	—	—	—	—
60	DKC-F605I-1R0HS	0.9	0.019	0.020	—	—	—	—
61	DKC-F605I-2R0HS	0.9	0.019	0.020	—	—	—	—
62	DKC-F605I-72S1	0.5	0.010	0.011	—	—	—	—
63	DKC-F605I-146S1	0.5	0.010	0.011	—	—	—	—
64	DKC-F605I-200S1	0.5	0.013	0.014	—	—	—	—
65	DKC-F605I-400S1	0.5	0.013	0.014	—	—	—	—

*1: This includes the thickness of side covers (16mm × 2).

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1.1.4 Environmental Specifications

The environmental specifications are shown in the following table.

Table 1.1.4-1 Environmental specifications

Item	Condition		
	Operating *1	Non-operation *2	Shipping & Storage *3
Temperature (°C)	16 ~ 32	-10 ~ 43	-25 ~ 60
Relative Humidity (%) *4	20 ~ 80	8 ~ 90	5 ~ 95
Max. Wet Bulb (°C)	26	27	29
Temperature Deviation (°C/hour)	10	10	20
Vibration *5	5 ~ 10Hz: 0.25mm 10 ~ 300Hz: 0.49m/s^2	5 ~ 10Hz: 2.5mm 10 ~ 70Hz: 4.9m/s^2 70 ~ 99Hz: 0.05mm 99 ~ 300Hz: 9.8m/s^2	Sine Vibration: 4.9m/s^2, 5min. At the resonant frequency with the highest displacement found between 3 ~ 100Hz *6
			Random Vibration: 0.147m^2/s^3, 30min, 5 ~ 100Hz *7
Shock	—	78.4m/s^2, 15ms	Horizontal: Incline Impact 1.22m/s *8
			Vertical: Rotational Edge 0.15m *9
Altitude	-60 ~ 3,000m		—

*1: Environmental specification for operating condition should be satisfied before the disk subsystem is powered on. Maximum temperature of 32°C should be strictly satisfied at air inlet portion.
Recommended temperature range is 21 to 24°C.

*2: Non-operating condition includes both packing and unpacking conditions unless otherwise specified.

*3: On shipping/storage condition, the product should be packed with factory packing.

*4: No condensation in and around the drive should be observed under any conditions.

*5: The above specifications of vibration are applied to all three axes.

*6: See ASTM D999-01 The Methods for Vibration Testing of Shipping Containers.

*7: See ASTM D4728-01 Test Method for Random Vibration Testing of Shipping Containers.

*8: See ASTM D5277-92 Test Method for Performing Programmed Horizontal Impacts Using an Inclined Impact Tester.

*9: See ASTM D6055-96 Test Methods for Mechanical Handling of Unitized Loads and Large Shipping Cases and Crates.

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1.1.5 Power requirement

The input voltage and input frequency are as follows:

(1) 3 phase AC input

Frequency	Input Voltages (AC)	Conditions	Tolerance (%)	Remarks
60Hz ±2Hz	200V, 208V or 230V	3 Phase 3 Wire + Ground	+6% or -8%	for North America200V : for Japan
50Hz ±3Hz	200V, 220V, 230V or 240V	3 Phase 3 Wire + Ground	+6% or -8%	for Europe200V : for Japan
50Hz ±3Hz	380V, 400V or 415V	3 Phase 4 Wire + Ground	+6% or -8%	for Europe

Note: This unit does not apply to IT power system.

(2) Single phase AC input

Frequency	Input Voltages (AC)	Conditions	Tolerance (%)	Remarks
60Hz ±2Hz	200V, 208V or 230V	1 Phase 2 Wire + Ground	+6% or -8%	for North America200V : for Japan
50Hz ±3Hz	200V, 220V, 230V or 240V	1 Phase 2 Wire + Ground	+6% or -8%	for Europe200V : for Japan

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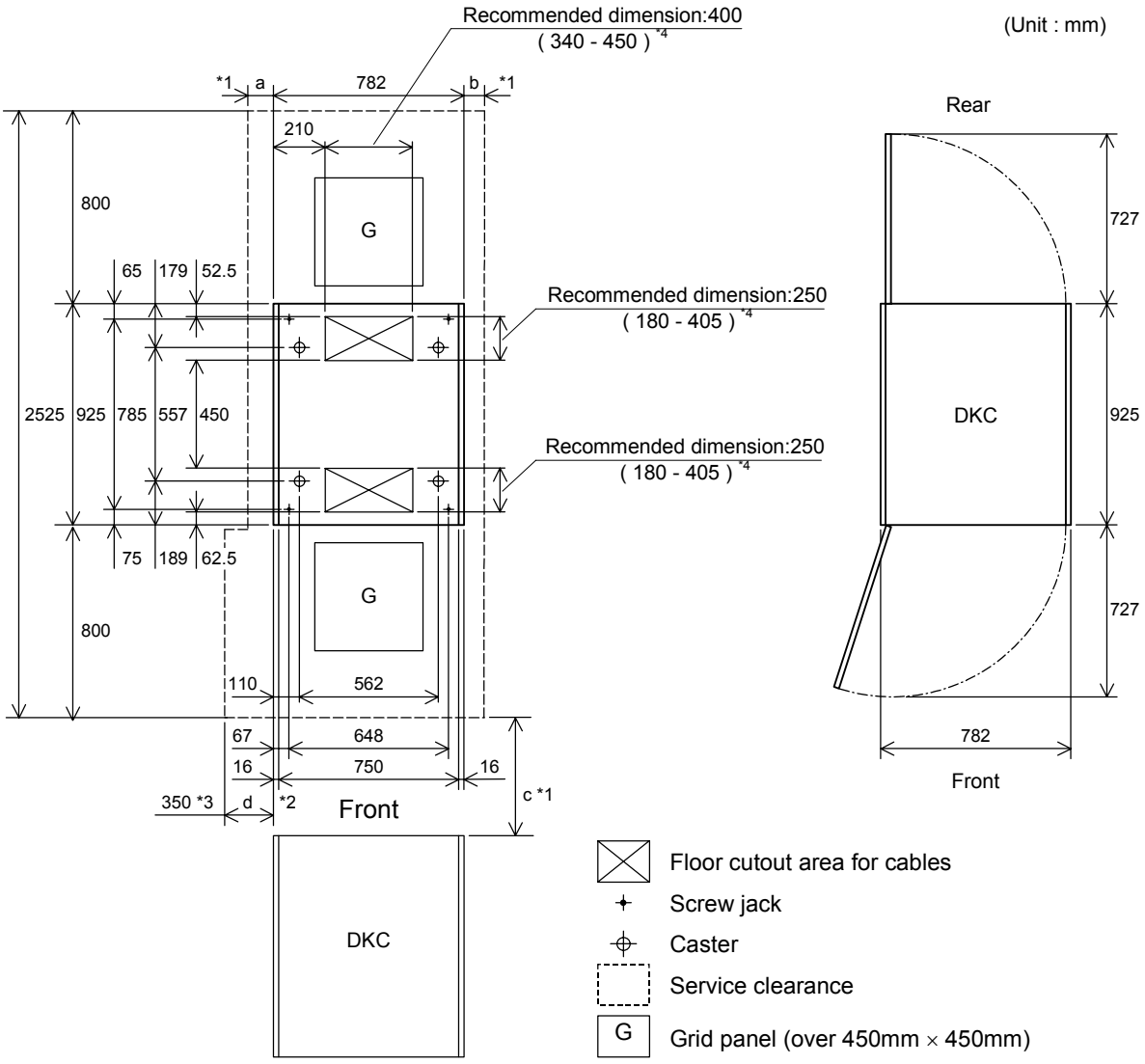
1.1.6 Service Clearance and Floor Cutout

(1) Stand Alone Configuration

The service clearance is the space for CE work. Never use this space for storage of any article to prevent damage.



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*1: Clearance (a+b) depends on the floor load rating and clearance (c).
Floor load rating and required clearances are shown below.

Floor Load Rating for Service Clearances (Stand alone)

Floor load rating (kg/m^2)	Required clearance (a+b)m				
	Clearance (c)m				
	C=0	C=0.2	C=0.4	C=0.6	C=1.0
500	0.4	0.3	0.2	0.1	0.0
450	0.5	0.4	0.3	0.2	0.1
400	0.8	0.6	0.5	0.4	0.2
350	1.1	0.9	0.8	0.6	0.4
300	1.7	1.4	1.2	1.1	0.8

Give clearance of 100 mm on both sides of the subsystem when the kick plates are to be attached after the subsystem is installed. However, when the subsystems of the same type are to be installed adjacently to each other, a clearance between the subsystem may be 100 mm.

*2: Clearance (d) is required over 350 mm so as to open the subsystem front door. In case that clearance (d) is less than clearance (a), give priority to clearance (a).

*3: The side clearance on the front left side of the subsystem must be 350 mm or wider in order to open the DKC front door. However, priority should be given to the side clearance value “a” according to the load on the floor when the dimension “a” exceeds 350 mm.

*4: Dimensions in parentheses show allowable range of the floor cutout dimensions.
Basically, position the floor cutout in the center of the subsystem.
However, the position may be off-center as long as the cutout allows smooth entrance of an external cable (check the relation between the positions of the cutout and the opening on the bottom plate of the subsystem) and it is within the allowable range.

*5: This dimension varies depending on the floor cutout dimensions.

Note 1: Actual clearances for installation should be decided after consulting with construction specialist responsible for installation building, as they could vary depending on the size/layout of the system and building conditions.

Note 2: When various configurations of subsystems are arranged in a row, clearance values based on the largest subsystem configuration should be used.

Note 3: From the viewpoint of maintenance operations, it is suggested that Clearance (c) be made as large as possible.

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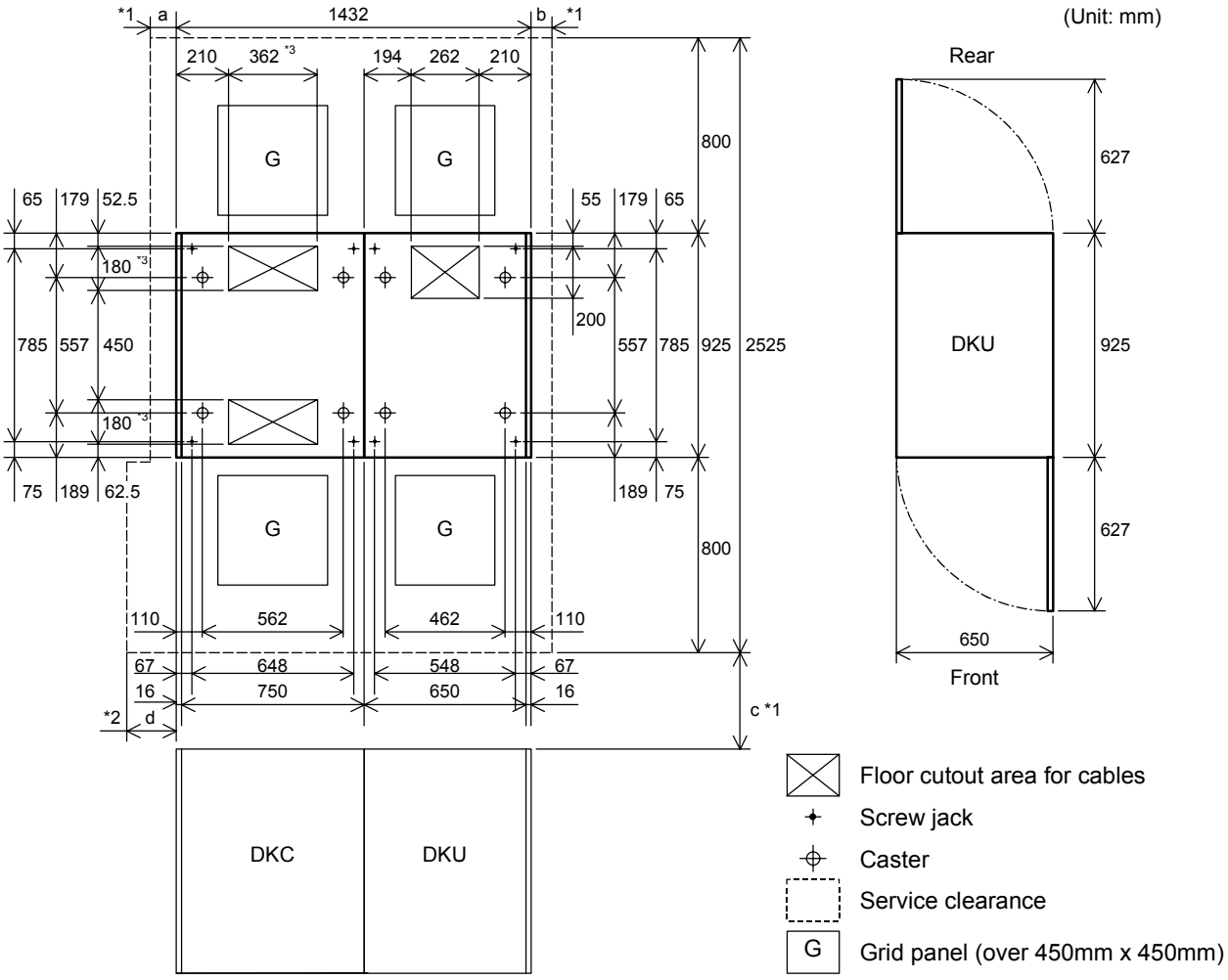
(2) DKC+1DKU Configuration

The service clearance is the space for CE work. Never use this space for storage of any article to prevent damage.



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*1: Clearance (a+b) depends on the floor load rating and clearance (c). Floor load rating and required clearances are shown below.

*2: Clearance (d) is required over 350 mm so as to open the DKC front door, refer to INST01-270. In case that clearance (d) is less than clearance (a), give priority to clearance (a).

*3: See INST01-270 about details of the DKC floor cutout.

Floor Load Rating for Service Clearances (DKC+1DKU Configuration)

Floor load rating (kg/m^2)	Required clearance (a+b)m				
	Clearance (c)m				
	C=0	C=0.2	C=0.4	C=0.6	C=1.0
500	0.8	0.6	0.4	0.2	0.0
450	1.1	0.9	0.6	0.5	0.2
400	1.6	1.3	1.0	0.8	0.5
350	2.3	1.9	1.6	1.3	0.9
300	3.3	2.8	2.4	2.1	1.6

Note 1: Actual clearances for installation should be decided after consulting with construction specialist responsible for installation building, as they could vary depending on the size/layout of the system and building conditions.

Note 2: When various configurations of subsystems are arranged in a row, clearance values based on the largest subsystem configuration should be used.

Note 3: From the viewpoint of maintenance operations, it is suggested that Clearance (c) be made as large as possible.

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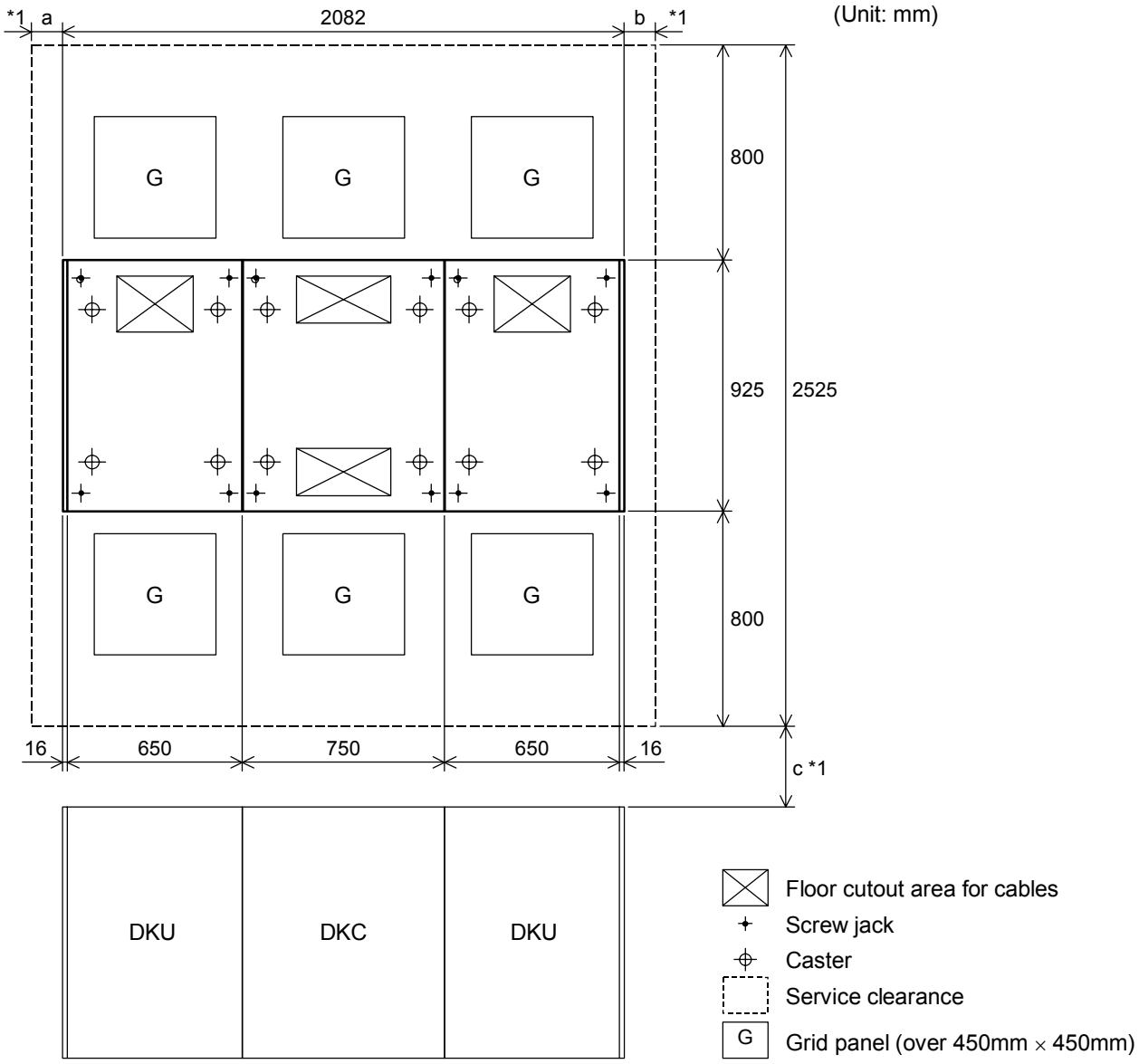
(3) Three Cabinets Configuration

The service clearance is the space for CE work. Never use this space for storage of any article to prevent damage.



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*1: Clearance (a+b) depends on the floor load rating and clearance (c).
Floor load rating and required clearances are shown below.

Floor Load Rating for Service Clearances (Three Cabinets Configuration)

Floor load rating (kg/m^2)	Required clearance (a+b)m				
	Clearance (c)m				
	C=0	C=0.2	C=0.4	C=0.6	C=1.0
500	1.2	0.9	0.6	0.3	0.0
450	1.7	1.3	1.0	0.7	0.3
400	2.4	1.9	1.5	1.2	0.7
350	3.4	2.8	2.3	2.0	1.4
300	4.9	4.2	3.6	3.1	2.4

Note 1: Actual clearances for installation should be decided after consulting with construction specialist responsible for installation building, as they could vary depending on the size/layout of the system and building conditions.

Note 2: When various configurations of subsystems are arranged in a row, clearance values based on the largest subsystem configuration should be used.

Note 3: From the viewpoint of maintenance operations, it is suggested that Clearance (c) be made as large as possible.

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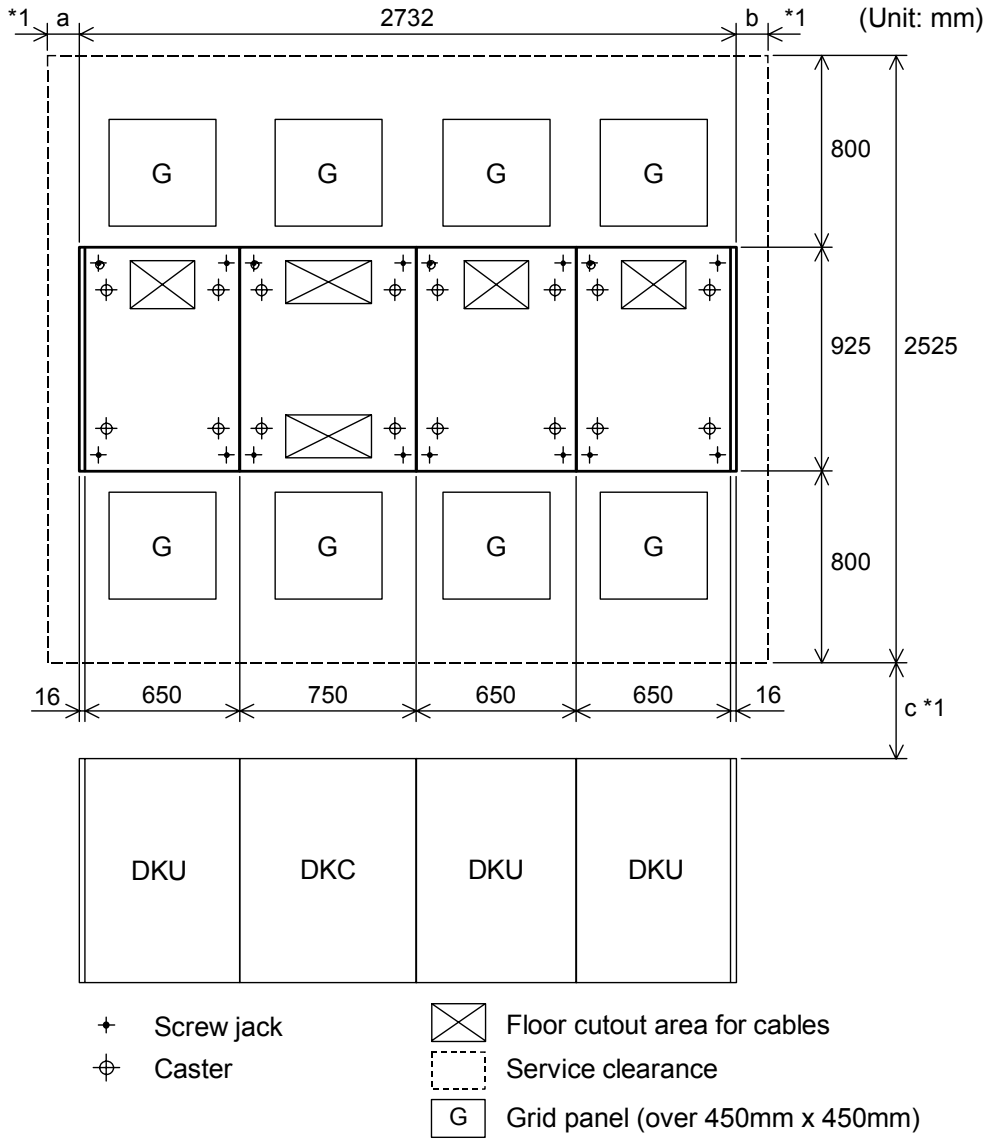
(4) Four Cabinets Configuration

The service clearance is the space for CE work. Never use this space for storage of any article to prevent damage.



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*1: Clearance (a+b) depends on the floor load rating and clearance (c).
Floor load rating and required clearances are shown below.

Floor Load Rating for Service Clearances (Four Cabinets Configuration)

Floor load rating (kg/m^2)	Required clearance (a+b)m				
	Clearance (c)m				
	C=0	C=0.2	C=0.4	C=0.6	C=1.0
500	1.6	1.2	0.8	0.5	0.0
450	2.3	1.8	1.3	1.0	0.4
400	3.2	2.6	2.1	1.7	1.0
350	4.5	3.8	3.1	2.6	1.8
300	6.5	5.6	4.8	4.2	3.1

Note 1: Actual clearances for installation should be decided after consulting with construction specialist responsible for installation building, as they could vary depending on the size/layout of the system and building conditions.

Note 2: When various configurations of subsystems are arranged in a row, clearance values based on the largest subsystem configuration should be used.

Note 3: From the viewpoint of maintenance operations, it is suggested that Clearance (c) be made as large as possible.

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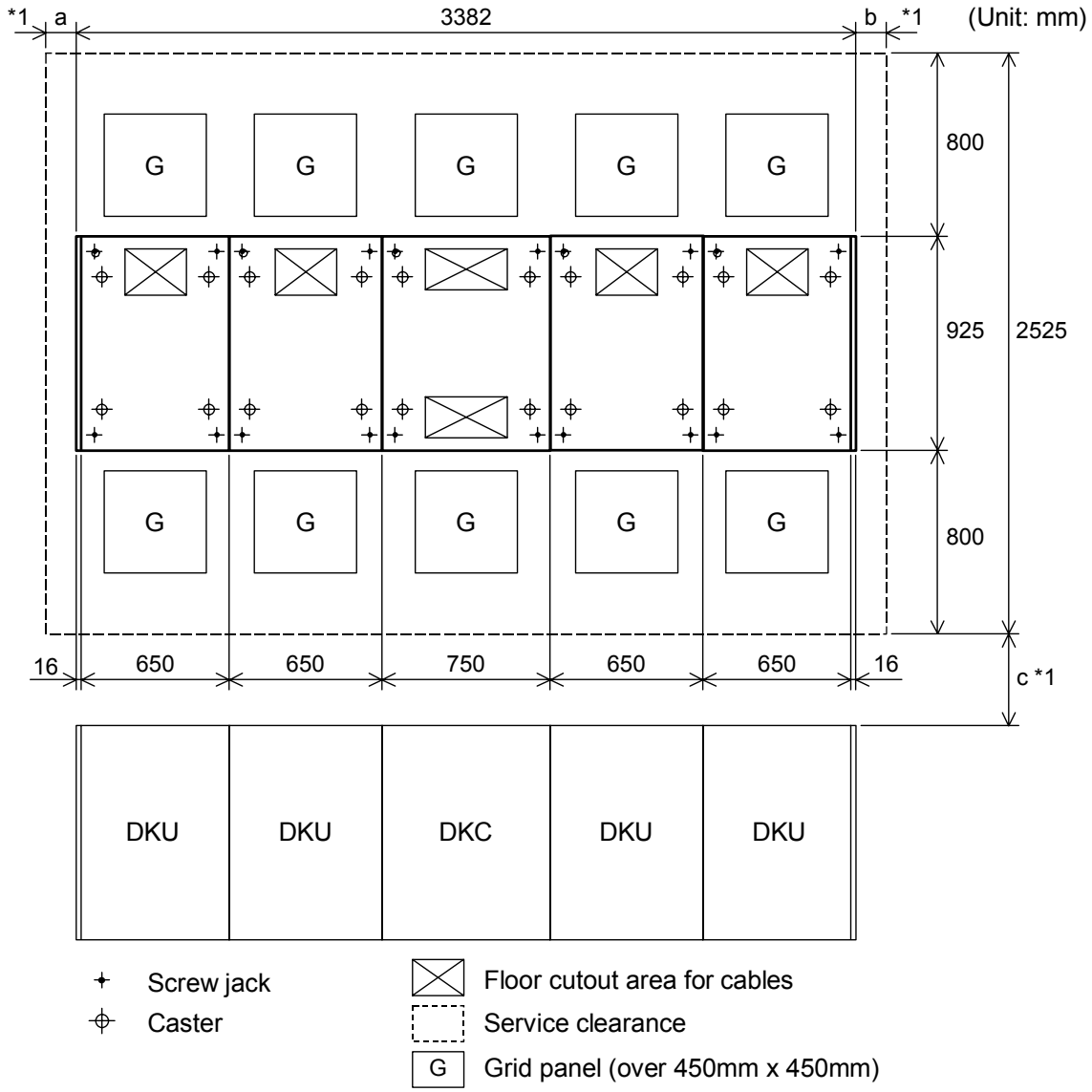
(5) Five Cabinets Configuration

The service clearance is the space for CE work. Never use this space for storage of any article to prevent damage.



DKC610I
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*1: Clearance (a+b) depends on the floor load rating and clearance (c).
Floor load rating and required clearances are shown below.

Floor Load Rating for Service Clearances (Five Cabinets Configuration)

Floor load rating (kg/m^2)	Required clearance (a+b)m				
	Clearance (c)m				
	C=0	C=0.2	C=0.4	C=0.6	C=1.0
500	2.0	1.5	1.0	0.6	0.0
450	2.8	2.2	1.7	1.2	0.6
400	4.0	3.2	2.6	2.1	1.3
350	5.6	4.7	3.9	3.3	2.3
300	8.2	7.0	6.0	5.2	3.9

Note 1: Actual clearances for installation should be decided after consulting with construction specialist responsible for installation building, as they could vary depending on the size/layout of the system and building conditions.

Note 2: When various configurations of subsystems are arranged in a row, clearance values based on the largest subsystem configuration should be used.

Note 3: From the viewpoint of maintenance operations, it is suggested that Clearance (c) be made as large as possible.

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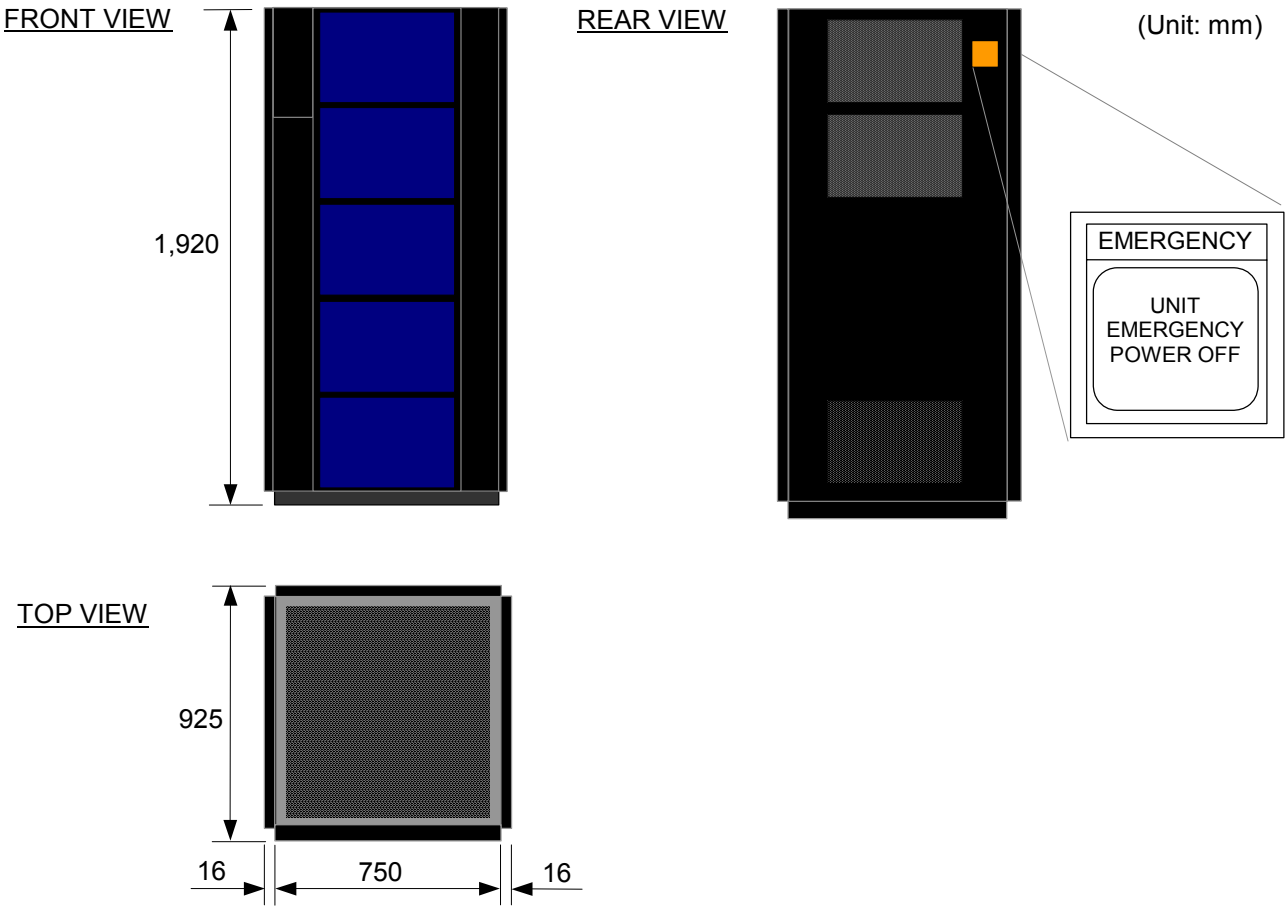
1.1.7 Layout

(1) DKC610I Layout



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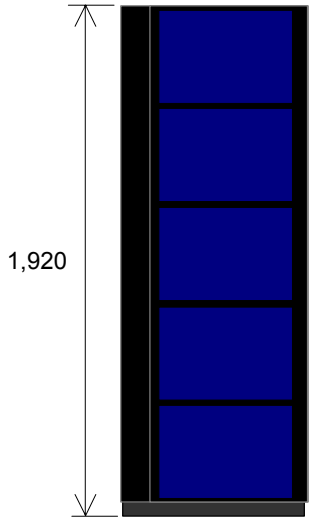
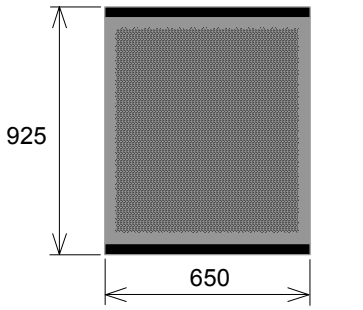
(2) DKC-F605I-18 Layout

FRONT VIEW



TOP VIEW

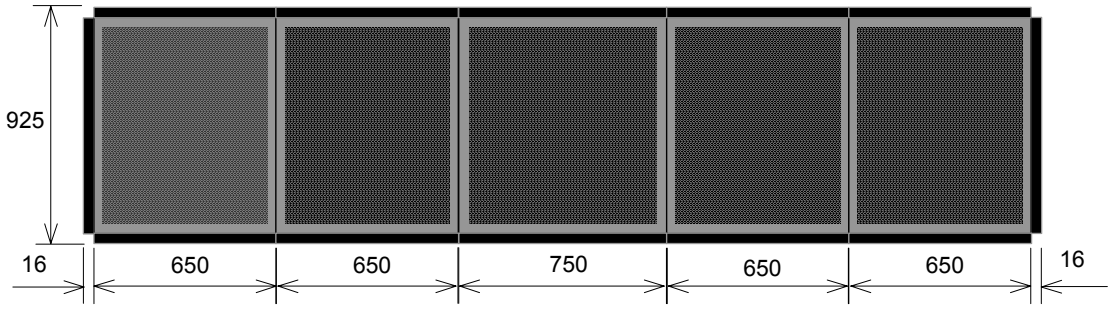
(Unit: mm)



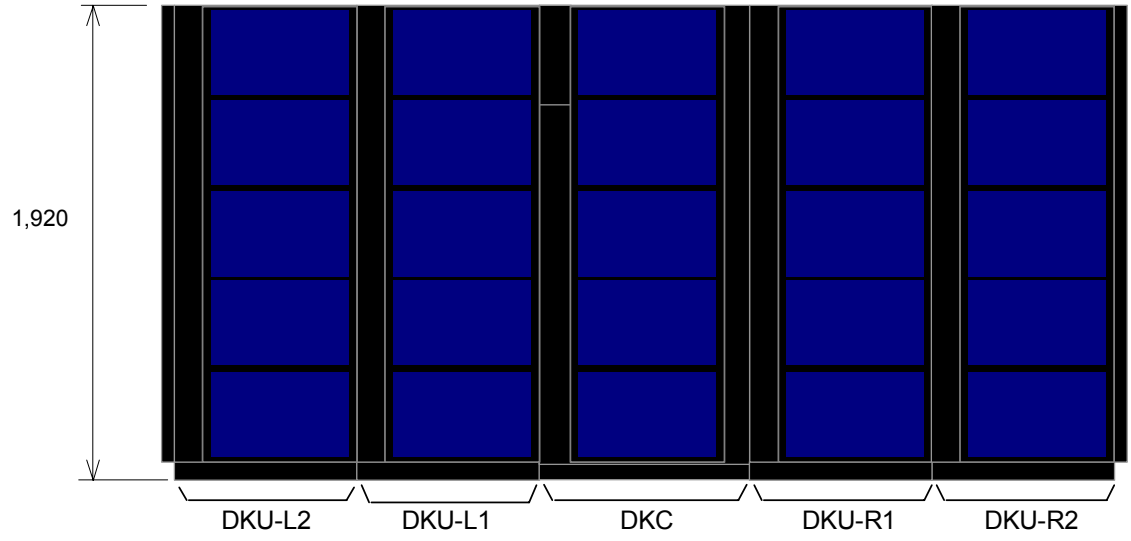
(3) Five Cabinets Configuration Layout

TOP VIEW

(Unit: mm)



FRONT VIEW



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1.1.8 Power and Grounding Check

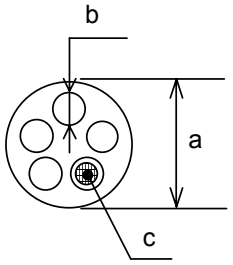
1.1.8.1 Facility power check

1. AC Power Cable Plug and Receptacle (only for 60Hz)
   AC power cable plug and receptacle for 60Hz are following part number or an equivalent.

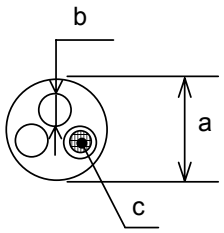
Model	Model Number	Plug			Receptacle	
		Rating	Maker	Part Number	Maker	Part Number
Single phase	DKC-F610I-1UCD	30 A	Thomas & Betts	3750DP	Thomas & Betts	3933
	DKC-F610I-1UC	50 A	Thomas & Betts	9P53U2	Thomas & Betts	9C53U2 or 9R53U2W
3 phase	DKC-F610I-3UC	30A	Thomas & Betts	3760PDG	Thomas & Betts	3934
			DDK	115J-AP8508	Thomas & Betts	3934

2. AC Power Cable and Terminal specifications (only for 50Hz)
   AC power cable and terminal specifications for 50Hz are following table.

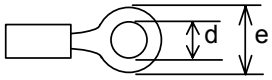
Model	Model Number	Rating	Power Cable			Terminal	
			Outer sheath overall diameter	Insulator outer diameter	Electric wire cross-section area	Internal Diameter	External Diameter
			a	b	C	d	e
Single phase	DKC-F610I-1ECD	30A	14.5-20.0mm	5.2mm	6.0mm^2	6.4mm	12.0mm
	DKC-F610I-1EC	50A	20.0-25.5mm	6.6mm	10.0mm^2	6.4mm	12.0mm
3 phase	DKC-F610I-3EC	30A	18.0-24.5mm	5.2mm	6.0mm^2	6.4mm	12.0mm



Cable section (3 Phase)



Cable section (Single Phase)



Terminal

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1.1.8.2 Facility grounding check

The subsystem must meet all of the following three conditions of installation for GROUNDING.

a. An insulated grounding conductor that is identical in size and insulation material and thickness to the grounded and ungrounded branch-circuit supply conductors. It should be green, with or without yellow stripes, and is to be installed as a part of the branch circuit that supplies the unit or system.

b. The grounding conductor mentioned in item (a.), should be grounded to earth at the service equipment or other acceptable building earth ground such as the building frame in the case of a high rise steel-frame structure.

c. The attachment-plug receptacles in the vicinity of the unit or system are all to be a grounding type. The grounding conductors serving these receptacles should be connected to earth ground at the service equipment or other acceptable building earth ground such as the building frame in the case of a high-rise steel-frame structure.

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1.2 Drive Expansion Sequence

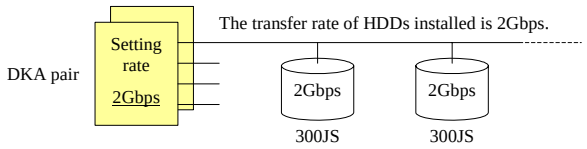
Caution of disk drive and flash drive installation
DKC610I supports disk drives (HDD) and flash drives (SSD) at data transfer rate of 2Gbps and 4Gbps, and the DKA (2 units of pairs) must be set transfer rate to HDDs/SSDs in subsystem configuration.

1. Caution in new installation
   The rotation, data transfer rate of HDD/SSD, and setting data transfer rate of DKA supported in DKC610I, are shown in the following table.

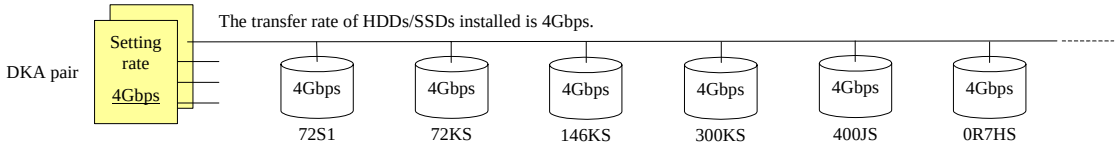
Possible transfer rate of each HDD/SSD type

Model Name	HDD/ SSD	Capacity/Rotation	Date transfer rate	Setting data transfer rate of DKA	
				2Gbps	4Gbps
DKC-F605I-300JS	FC HDD	300GB/10kmin^{-1}	2Gbps	Yes	No
DKC-F605I-72KS	FC HDD	72GB/15kmin^{-1}	4Gbps	Yes	Yes
DKC-F605I-146KS	FC HDD	146GB/15kmin^{-1}	4Gbps	Yes	Yes
DKC-F605I-300KM/300KS	FC HDD	300GB/15kmin^{-1}	4Gbps	Yes	Yes
DKC-F605I-400JS	FC HDD	400GB/10kmin^{-1}	4Gbps	Yes	Yes
DKC-F605I-450KS	FC HDD	450GB/15kmin^{-1}	4Gbps	Yes	Yes
DKC-F605I-600KS	FC HDD	600GB/15kmin^{-1}	4Gbps	Yes	Yes
DKC-F605I-0R7HS	SATA HDD	750GB/7.2kmin^{-1}	4Gbps	Yes	Yes
DKC-F605I-1R0HS	SATA HDD	1TB/7.2kmin^{-1}	4Gbps	Yes	Yes
DKC-F605I-2R0HS	SATA HDD	2TB/7.2kmin^{-1}	4Gbps	Yes	Yes
DKC-F605I-72S1	SSD	72GB/—	4Gbps	Yes	Yes
DKC-F605I-146S1	SSD	146GB/—	4Gbps	Yes	Yes
DKC-F605I-200S1	SSD	200GB/—	4Gbps	Yes	Yes
DKC-F605I-400S1	SSD	400GB/—	4Gbps	Yes	Yes

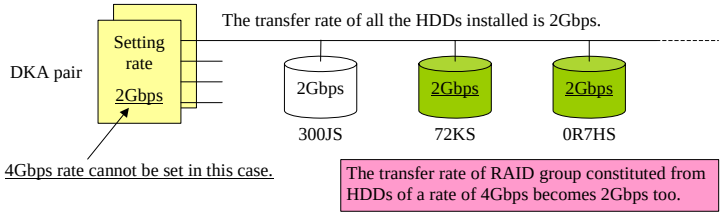
- The DKA is set rate as 2Gbps when only the HDDs of a transfer rate of 2Gbps are installed in it.



- The DKA is set rate as 4Gbps when only the HDDs/SSDs of a transfer rate of 4Gbps are installed in it.



- The DKA is set rate as 2Gbps when the HDDs of transfer rates of 2Gbps and 4Gpbs are intermingled and installed.



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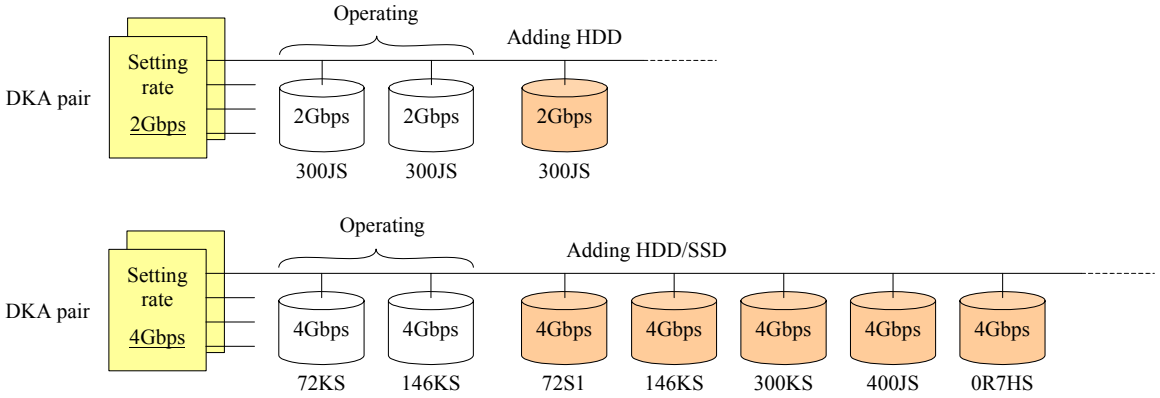
2. Caution of adding disk drives and flash drives
   Take care about the following restriction matters when adding HDDs/SSDs at a different rate with the rate of operating DKA.

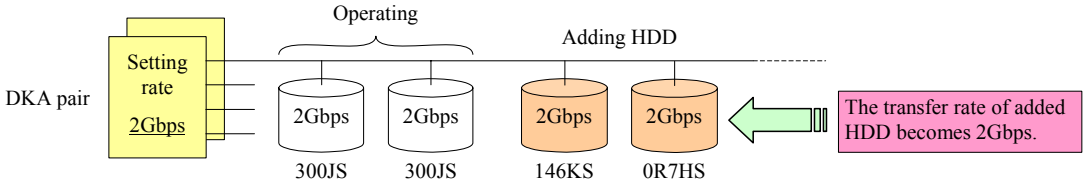
Relation between setting rate of operating DKA and added HDD/SSD

Case	Setting rate of DKA	Added HDD/SSD	Non-disruptive service	Rate after adding	Remarks
①	2Gbps	2Gbps	Yes	2Gbps	
②	4Gbps	4Gbps	Yes	4Gbps	
③	2Gbps	4Gbps	Yes	2Gbps	The transfer rate of added HDD is 2Gbps.
④	4Gbps	2Gbps	No	2Gbps	After PS-Off/On, the transfer rate of added HDD is 2Gbps.

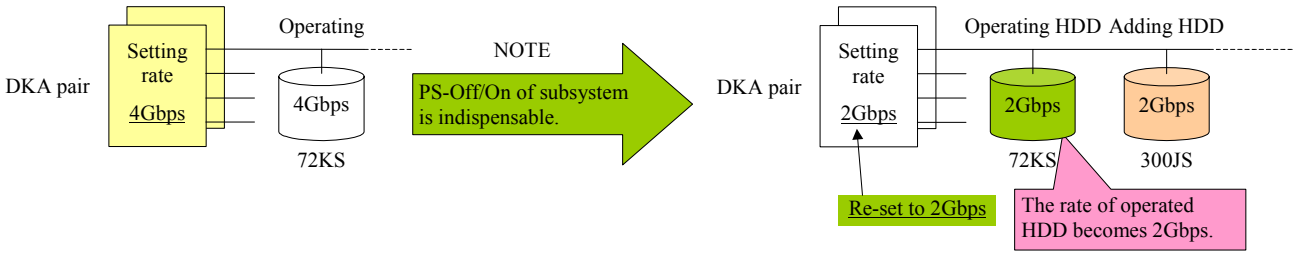
- It is possible to add HDD/SSD at the same rate as the setting rate of DKA during subsystem operation.



- It is possible to add HDD at a rate of 4Gbps to the DKA at a setting rate of 2Gbps during operation, but the transfer rate of added HDD becomes 2Gbps.



- It is impossible to add HDD at a rate of 2Gbps to the DKA at a setting rate of 4Gbps during operation. PS-Off/On of subsystem is indispensable.



Note: Non-disruptive service doesn't apply to the case of adding 2Gbps HDD to the DKA at a setting rate of 4Gbps.
Sequence: change rate of DKA to 2Gbps → PS-Off → PS-On → put 2Gbps HDD into the slot → operation.

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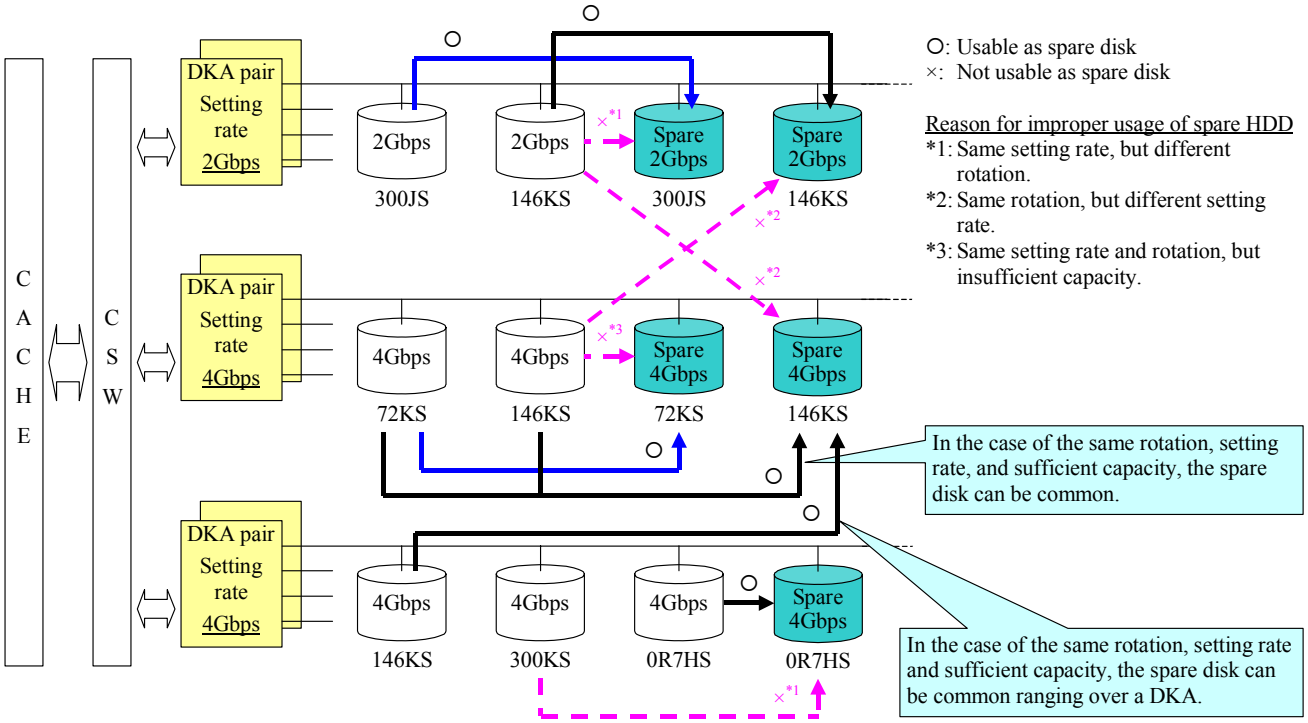
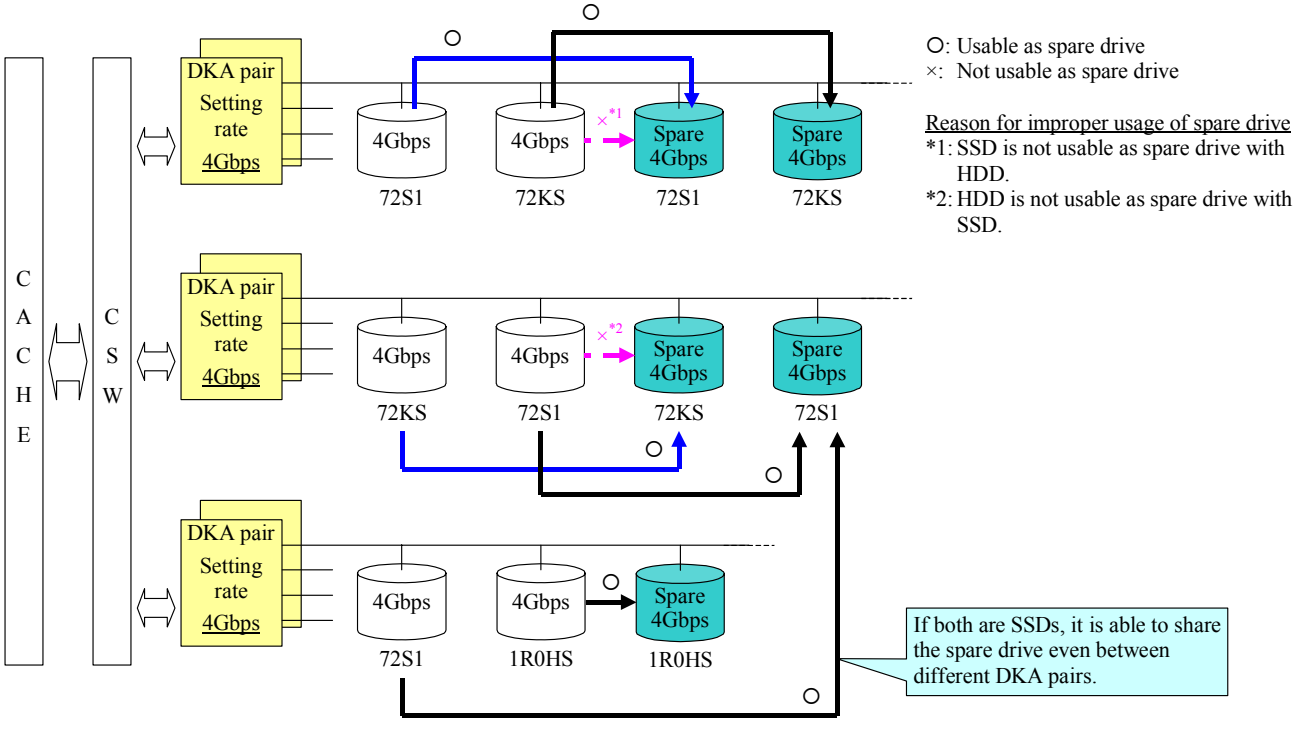
3. Caution of spare disk installation
   The HDD, which is usable as spare disk, must be the same rotation and the same data transfer rate.





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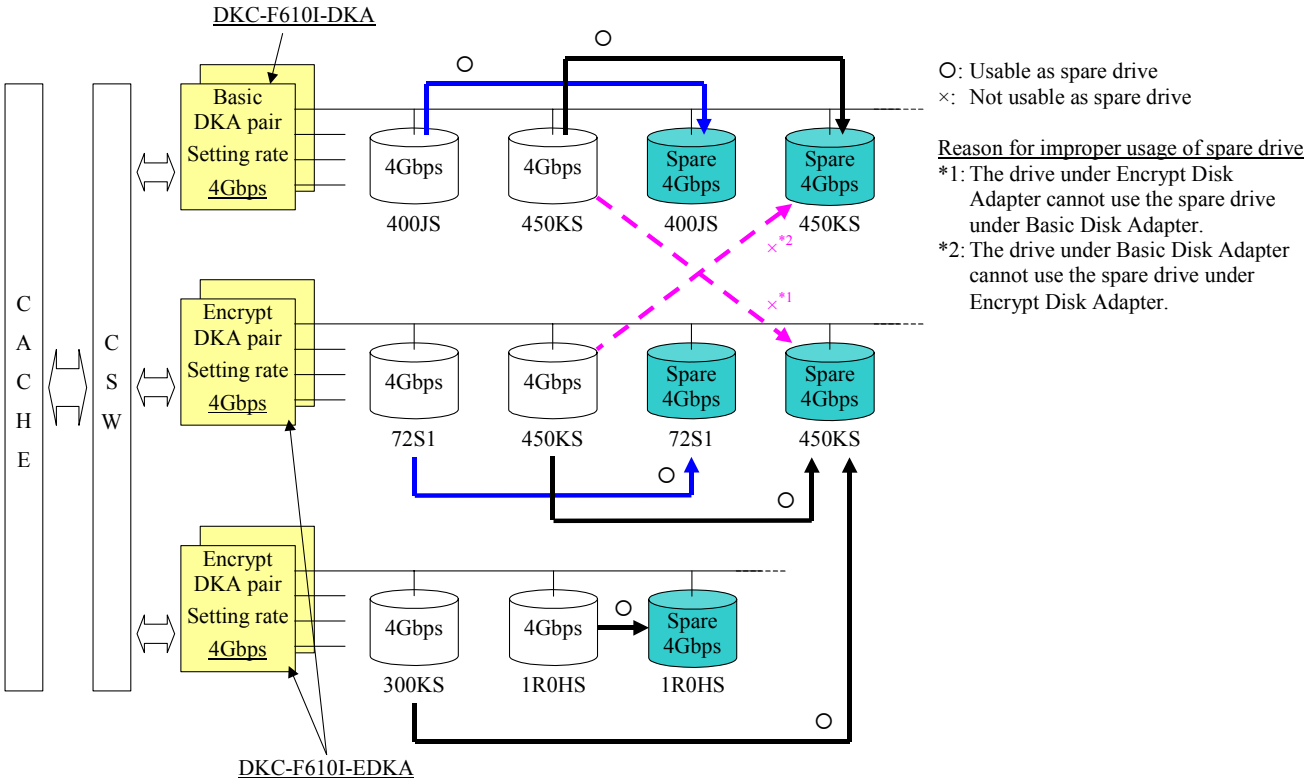
When Encrypt Disk Adapter (DKC-F610I-EDKA) and Basic Disk Adapter (DKC-F610I-DKA) are mixed, the restriction is put on the use of spare drives.
The drive under Encrypt Disk Adapter cannot use the spare drive under Basic Disk Adapter.
The drive under Basic Disk Adapter cannot use the spare drive under Encrypt Disk Adapter.



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4. Recommended subsystem configuration
   When the HDDs of different types are intermixed within a subsystem according to customers' request, based on the features, such as performance, cost, etc. of each disk drive, the following installation rules are recommended.
   - Intermingling of disk drives
     Intermingling and installing disk drives of different transfer rates per 2 DKA pairs [*1] are recommended. (*1: installation unit of DKA)
     When disk drives of 2Gbps and 4Gbps transfer rates are intermingled and installed in the same DKA, the transfer rate of all the disk drives installed in becomes 2Gbps.

   - Installation of spare disks
     Installing the spare disk [*2] that has the same rotation and data transfer rate as the installed HDDs in the same DKA is recommended. (*2: 1 or more spare disk for 32 data disks.)

   - Adding to operating subsystem
     When adding RAID group to operating subsystem, it is necessary to confirm the consistency between the transfer rate of added HDD and setting rate of DKA.
     In new installation/adding, please create the table on setting rate of DKA according to order requirement 3, manage and confirm the setting rate of the subsystem and installed HDD type based on it.

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Table 1.2-1 Examples: Setting rate of each DKA pair

DKA pair			300JS	72KS		146KS		300KM/KS		400JS		450KS		600KS		Remarks
Location	Setting rate	HDD	2Gbps	2Gbps	4Gbps	2Gbps	4Gbps	2Gbps	4Gbps	2Gbps	4Gbps	2Gbps	4Gbps	2Gbps	4Gbps	
1st	4Gbps	Data	×		●		○		○		○		○		○	
2nd		Spare	×		●		○		○		○		○		○	
3rd	2Gbps	Data	●	○	□	○	□	○	□	○	□	○	□	○	□	
4th		Spare	●	○	□	○	□	○	□	○	□	○	□	○	□	
5th		Data														
6th		Spare														
7th		Data														
8th		Spare														
Installation number in total																

DKA pair			0R7HS		1R0HS		2R0HS		72S1		146S1		200S1		400S1		Remarks
Location	Setting rate	HDD	2Gbps	4Gbps	2Gbps	4Gbps	2Gbps	4Gbps	2Gbps	4Gbps	2Gbps	4Gbps	2Gbps	4Gbps	2Gbps	4Gbps	
1st	4Gbps	Data		○		○		○		○		○		○		○	Impossible installation of 300JS
2nd		Spare		○		○		○		○		○		○		○	
3rd	2Gbps	Data	○	□	○	□	○	□	○	□	○	□	○	□	○	□	The transfer rate of 72KS/146KS/300KM/300KS/400JS/450KS/
4th		Spare	○	□	○	□	○	□	○	□	○	□	○	□	○	□	600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1 is 2Gbps
5th		Data															
6th		Spare															
7th		Data															
8th		Spare															
Installation number in total																	

(examples) ●: Installation finished ○: Possible installation
□: Transfer rate is 2Gbps ×: Impossible installation

The order in which DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/450KS/600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1 units are to be installed in Fig. 1.2-1 to Fig. 1.2-3.

In case of RAID1(4D+4D), two RAID groups of RAID1(2D+2D) are concatenated and composed. Each RAID1(2D + 2D) can be arranged under the control of an arbitrary DKA pair though the arrangement of each RAID1(2D+2D) is similar to below-mentioned RAID1(2D+2D).
The source (7D+1P) can be arranged under the optional DKA pair as well as RAID1(4D+4D) for two concatenation and four concatenation of RAID5(7D+1P).
However, it is recommended to arrange it under the control of the same DKA pair because there is a possibility that the state of the load is different in each DKA pair.

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No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 4	1 HDD Canister	
2	DKC-F605I-72S1/146S1/200S1/400S1 × 4	1 SSD Canister	(Note)

Note: See Notes for installing Flash Drives. (INST01-243)

(1) RAID5 (3D+1P) / RAID1 (2D+2D)

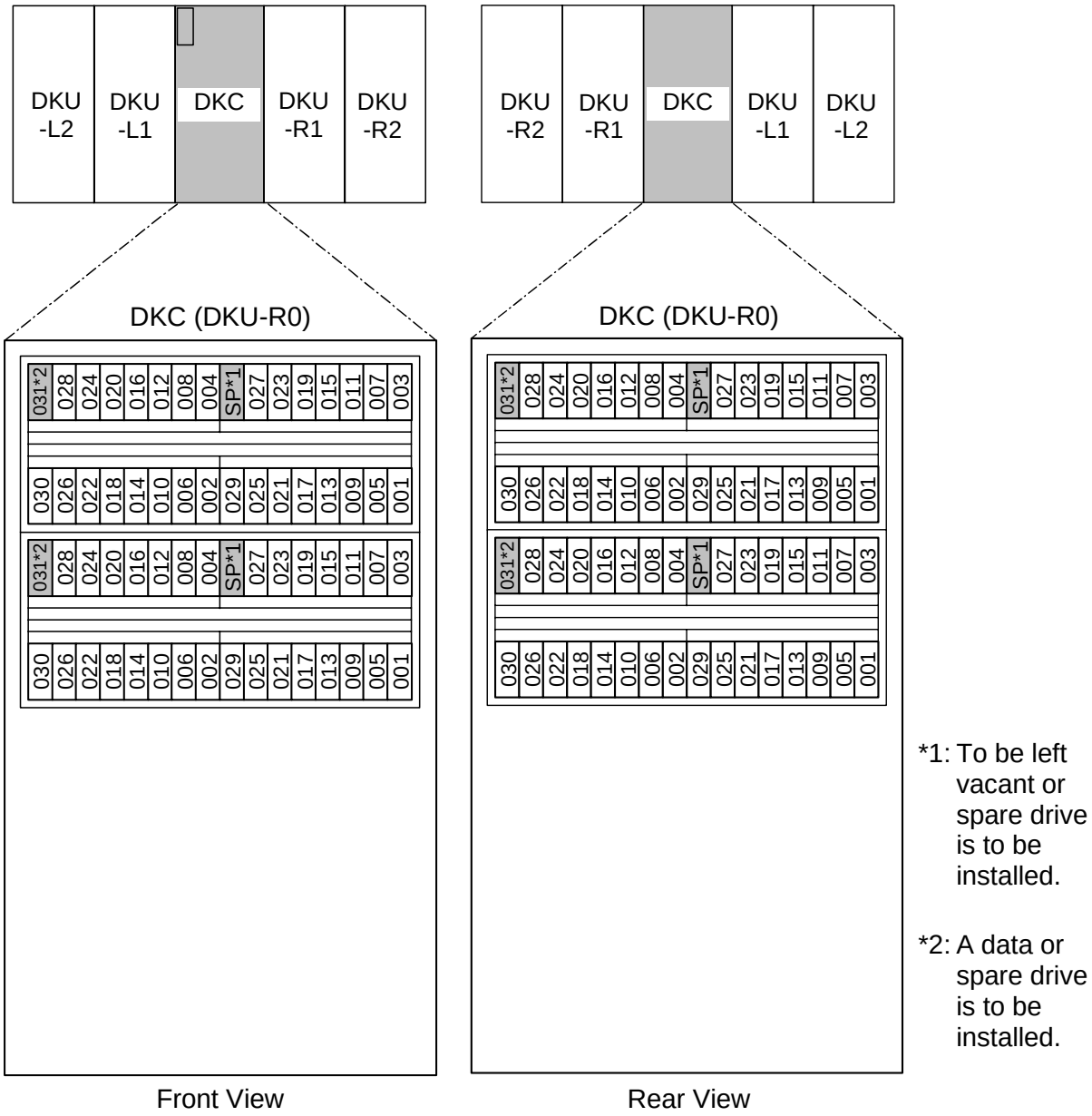

Fig. 1.2-1 (3D+1P/2D+2P) Data Drive/Parity Drive Expansion Sequence (1/5)

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 1.2-1.

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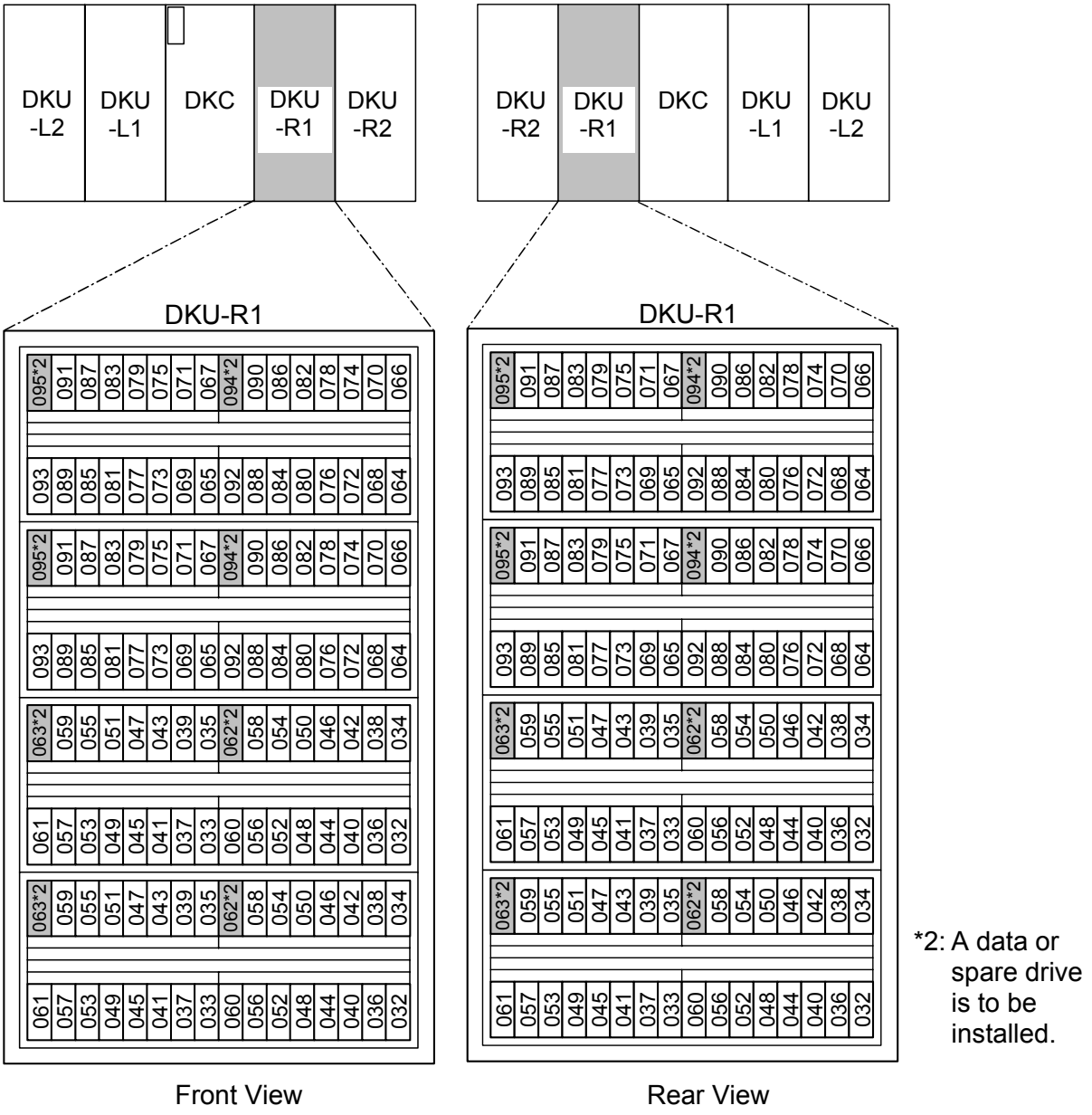

Fig. 1.2-1 (3D+1P/2D+2P) Data Drive/Parity Drive Expansion Sequence (2/5)

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 1.2-1.

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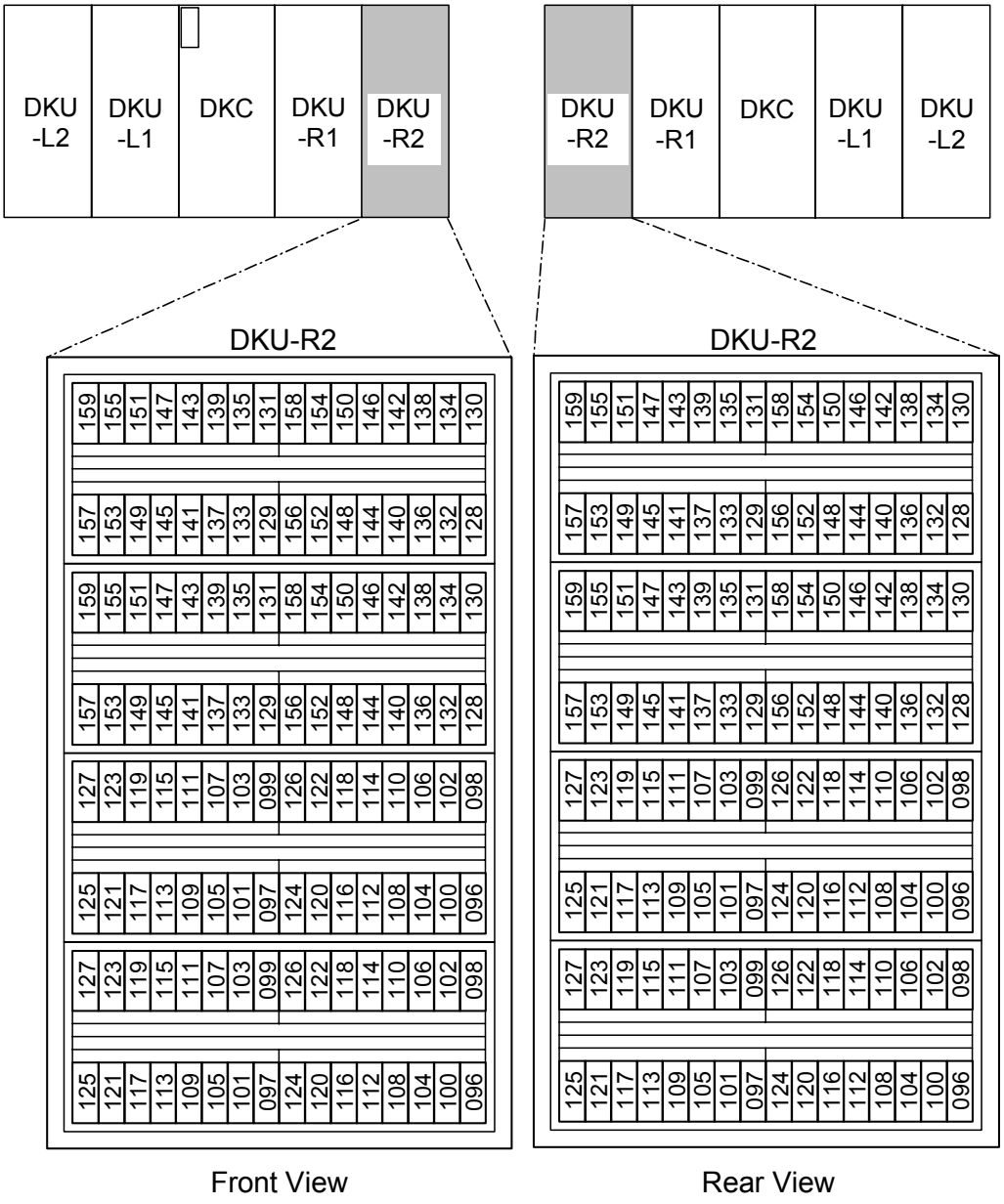

Fig. 1.2-1 (3D+1P/2D+2P) Data Drive/Parity Drive Expansion Sequence (3/5)

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 1.2-1.

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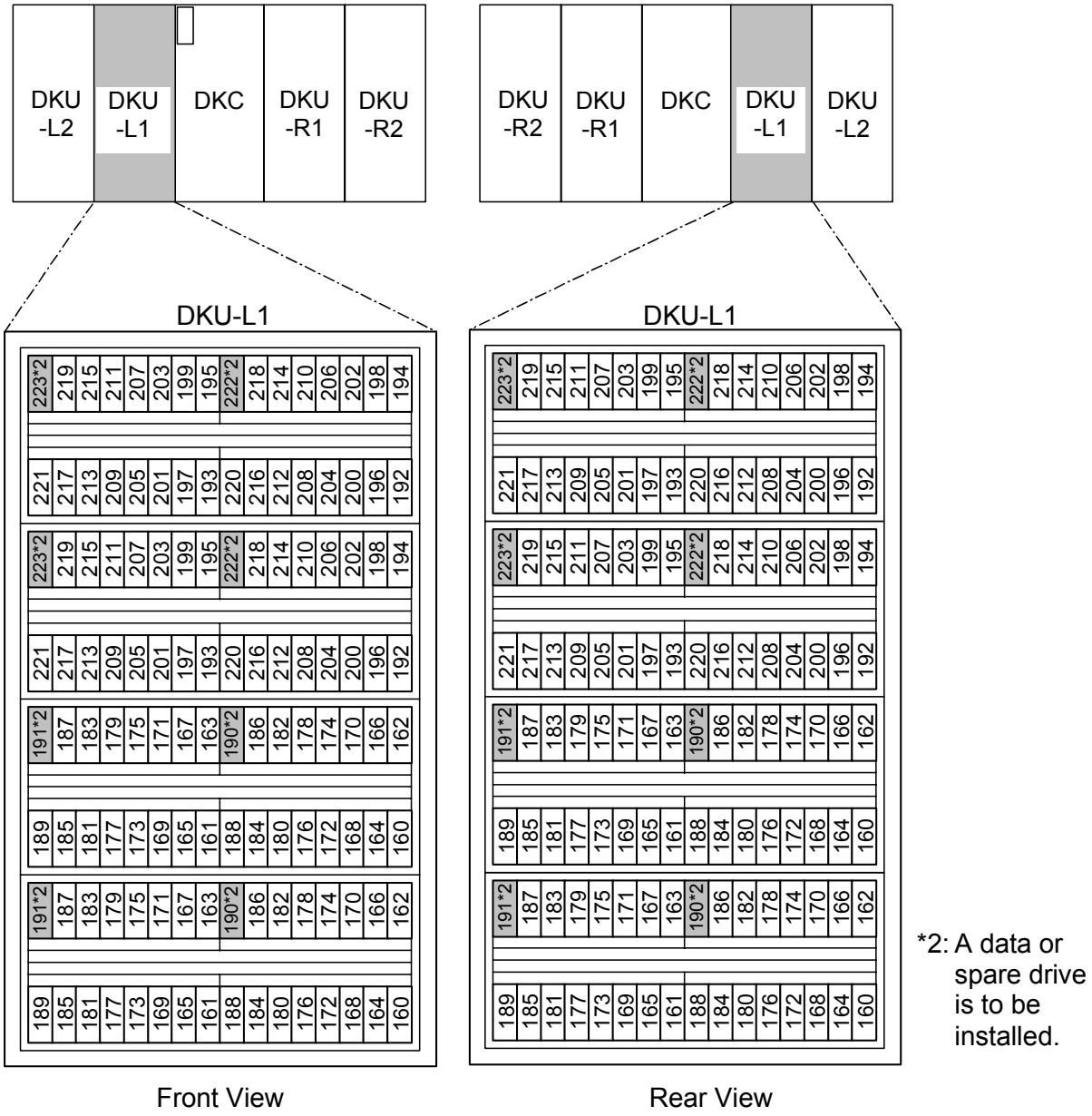

Fig. 1.2-1 (3D+1P/2D+2P) Data Drive/Parity Drive Expansion Sequence (4/5)

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 1.2-1.

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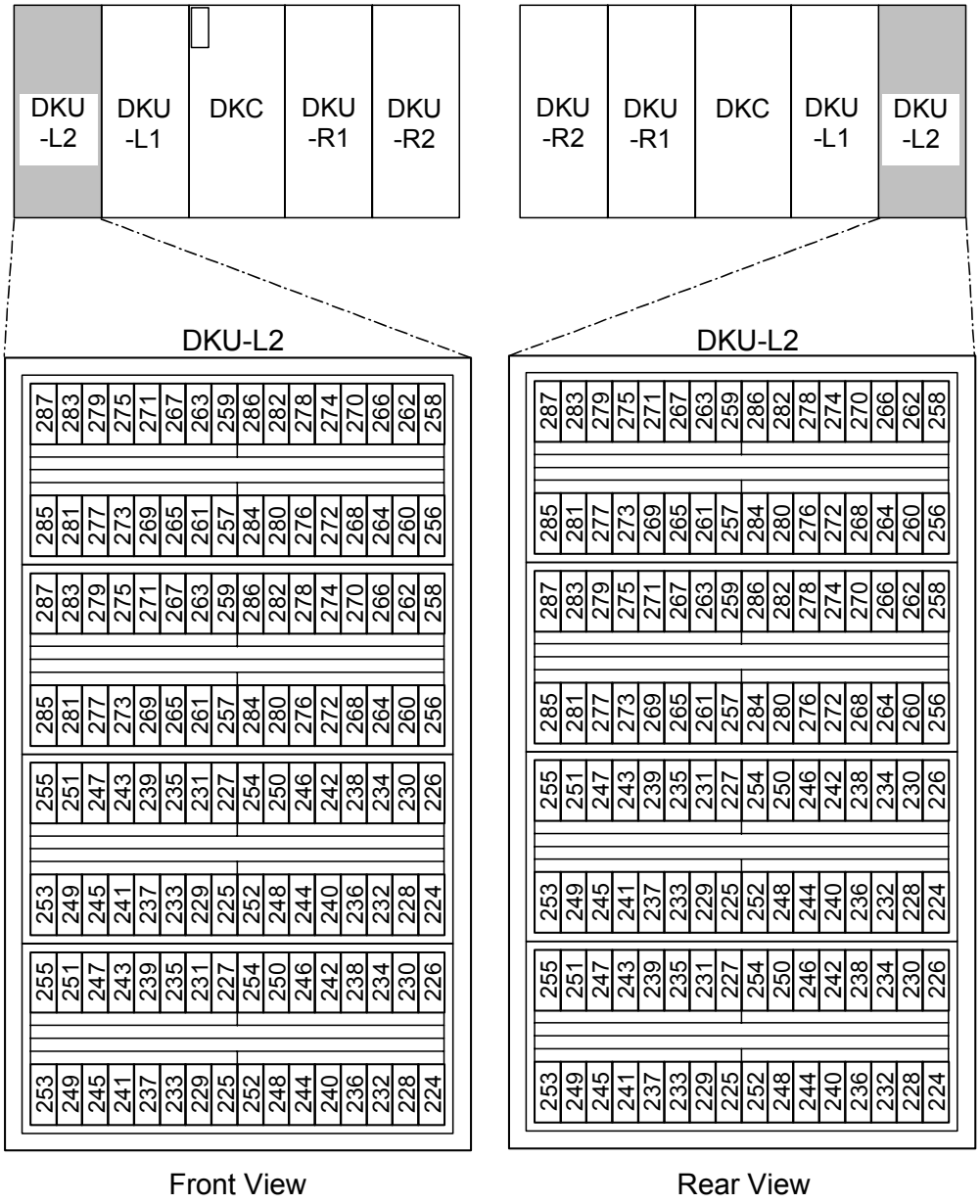

Fig. 1.2-1 (3D+1P/2D+2P) Data Drive/Parity Drive Expansion Sequence (5/5)

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 1.2-1.

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Table 1.2-1 Relation between HDDs/SSDs installation order and RAID group number (3D+1P/2D+2D, 2/4 DKA Pairs Model)

DKU-L2		DKU-L1		DKC		DKU-R1		DKU-R2	
Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.
224	15-1	160	7-1	001	1-1	032	3-1	096	11-1
225	16-1	161	8-1	002	2-1	033	4-1	097	12-1
226	15-2	162	7-2	003	1-2	034	3-2	098	11-2
227	16-2	163	8-2	004	2-2	035	4-2	099	12-2
228	15-3	164	7-3	005	1-3	036	3-3	100	11-3
229	16-3	165	8-3	006	2-3	037	4-3	101	12-3
230	15-4	166	7-4	007	1-4	038	3-4	102	11-4
231	16-4	167	8-4	008	2-4	039	4-4	103	12-4
232	15-5	168	7-5	009	1-5	040	3-5	104	11-5
233	16-5	169	8-5	010	2-5	041	4-5	105	12-5
234	15-6	170	7-6	011	1-6	042	3-6	106	11-6
235	16-6	171	8-6	012	2-6	043	4-6	107	12-6
236	15-7	172	7-7	013	1-7	044	3-7	108	11-7
237	16-7	173	8-7	014	2-7	045	4-7	109	12-7
238	15-8	174	7-8	015	1-8	046	3-8	110	11-8
239	16-8	175	8-8	016	2-8	047	4-8	111	12-8
240	15-9	176	7-9	017	1-9	048	3-9	112	11-9
241	16-9	177	8-9	018	2-9	049	4-9	113	12-9
242	15-10	178	7-10	019	1-10	050	3-10	114	11-10
243	16-10	179	8-10	020	2-10	051	4-10	115	12-10
244	15-11	180	7-11	021	1-11	052	3-11	116	11-11
245	16-11	181	8-11	022	2-11	053	4-11	117	12-11
246	15-12	182	7-12	023	1-12	054	3-12	118	11-12
247	16-12	183	8-12	024	2-12	055	4-12	119	12-12
248	15-13	184	7-13	025	1-13	056	3-13	120	11-13
249	16-13	185	8-13	026	2-13	057	4-13	121	12-13
250	15-14	186	7-14	027	1-14	058	3-14	122	11-14
251	16-14	187	8-14	028	2-14	059	4-14	123	12-14
252	15-15	188	7-15	029	1-15	060	3-15	124	11-15
253	16-15	189	8-15	030	2-15	061	4-15	125	12-15
254	15-16	190 (Spare)*2	7-16 (Spare)	Spare*1	Spare	062 (Spare)*2	3-16 (Spare)	126	11-16

(To be continued.)

*1: To be left vacant or a spare drive is to be installed.
*2: A data or spare drive is to be installed.

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(Continued from preceding sheet.)

DKU-L2		DKU-L1		DKC		DKU-R1		DKU-R2	
Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.
255	16-16	191 (Spare)*2	8-16 (Spare)	031 (Spare)*2	2-16 (Spare)	063 (Spare)*2	4-16 (Spare)	127	12-16
256	17-1	192	9-1	–	–	064	5-1	128	13-1
257	18-1	193	10-1	–	–	065	6-1	129	14-1
258	17-2	194	9-2	–	–	066	5-2	130	13-2
259	18-2	195	10-2	–	–	067	6-2	131	14-2
260	17-3	196	9-3	–	–	068	5-3	132	13-3
261	18-3	197	10-3	–	–	069	6-3	133	14-3
262	17-4	198	9-4	–	–	070	5-4	134	13-4
263	18-4	199	10-4	–	–	071	6-4	135	14-4
264	17-5	200	9-5	–	–	072	5-5	136	13-5
265	18-5	201	10-5	–	–	073	6-5	137	14-5
266	17-6	202	9-6	–	–	074	5-6	138	13-6
267	18-6	203	10-6	–	–	075	6-6	139	14-6
268	17-7	204	9-7	–	–	076	5-7	140	13-7
269	18-7	205	10-7	–	–	077	6-7	141	14-7
270	17-8	206	9-8	–	–	078	5-8	142	13-8
271	18-8	207	10-8	–	–	079	6-8	143	14-8
272	17-9	208	9-9	–	–	080	5-9	144	13-9
273	18-9	209	10-9	–	–	081	6-9	145	14-9
274	17-10	210	9-10	–	–	082	5-10	146	13-10
275	18-10	211	10-10	–	–	083	6-10	147	14-10
276	17-11	212	9-11	–	–	084	5-11	148	13-11
277	18-11	213	10-11	–	–	085	6-11	149	14-11
278	17-12	214	9-12	–	–	086	5-12	150	13-12
279	18-12	215	10-12	–	–	087	6-12	151	14-12
280	17-13	216	9-13	–	–	088	5-13	152	13-13
281	18-13	217	10-13	–	–	089	6-13	153	14-13
282	17-14	218	9-14	–	–	090	5-14	154	13-14
283	18-14	219	10-14	–	–	091	6-14	155	14-14
284	17-15	220	9-15	–	–	092	5-15	156	13-15
285	18-15	221	10-15	–	–	093	6-15	157	14-15
286	17-16	222 (Spare)*2	9-16 (Spare)	–	–	094 (Spare)*2	5-16 (Spare)	158	13-16
287	18-16	223 (Spare)*2	10-16 (Spare)	–	–	095 (Spare)*2	6-16 (Spare)	159	14-16

*2: A data or spare drive is to be installed.

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No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 8	1 HDD Canister	
2	DKC-F605I-72S1/146S1/200S1/400S1 × 8	1 SSD Canister	(Note)

Note: See Notes for installing Flash Drives. (INST01-243)

(2) RAID5 (7D+1P) / RAID6 (6D+2P)

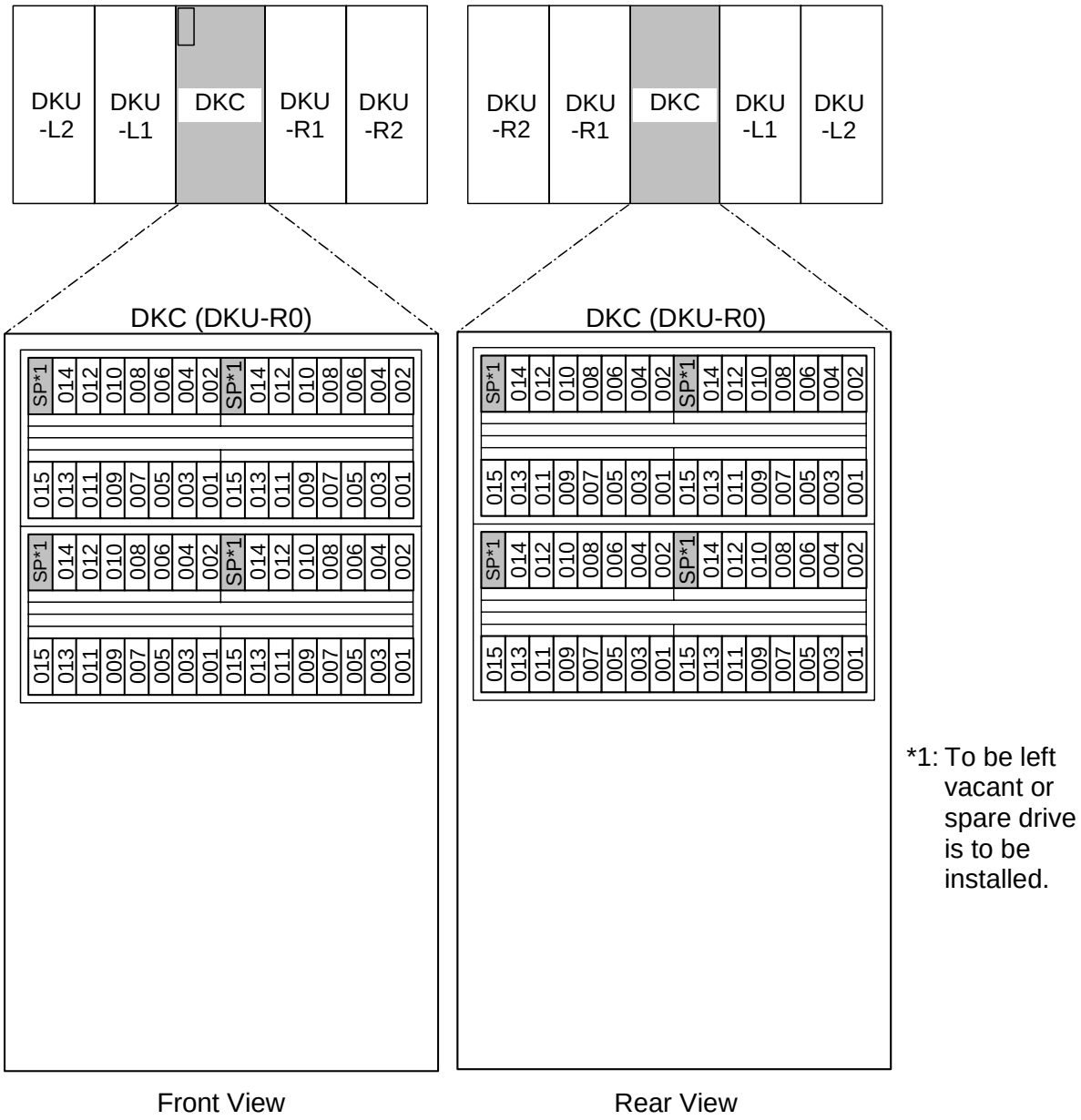

Fig. 1.2-2 (7D+1P/6D+2P) Data Drive/Parity Drive Expansion Sequence (1/5)

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 1.2-2.

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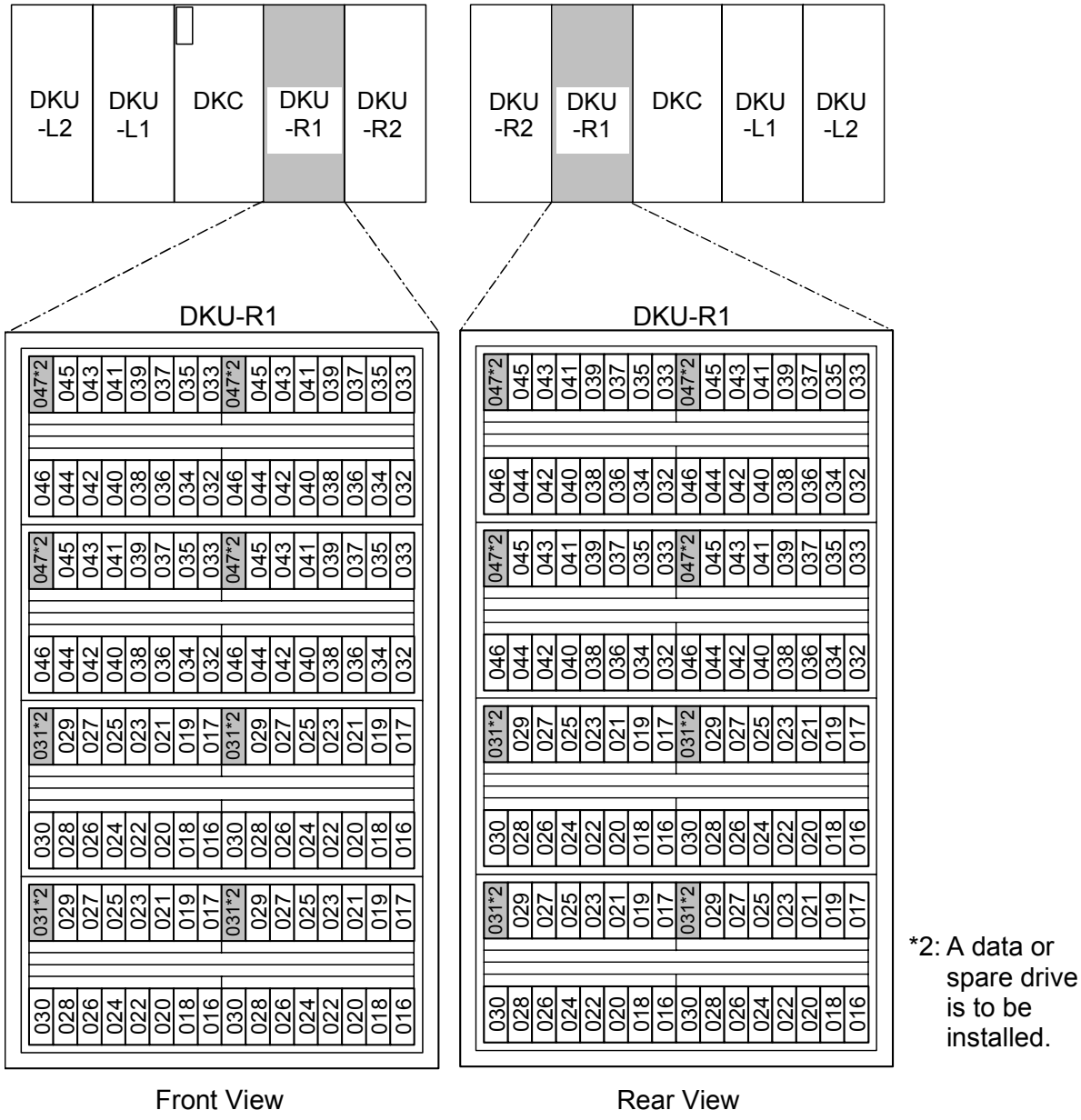

Fig. 1.2-2 (7D+1P/6D+2P) Data Drive/Parity Drive Expansion Sequence (2/5)

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 1.2-2.

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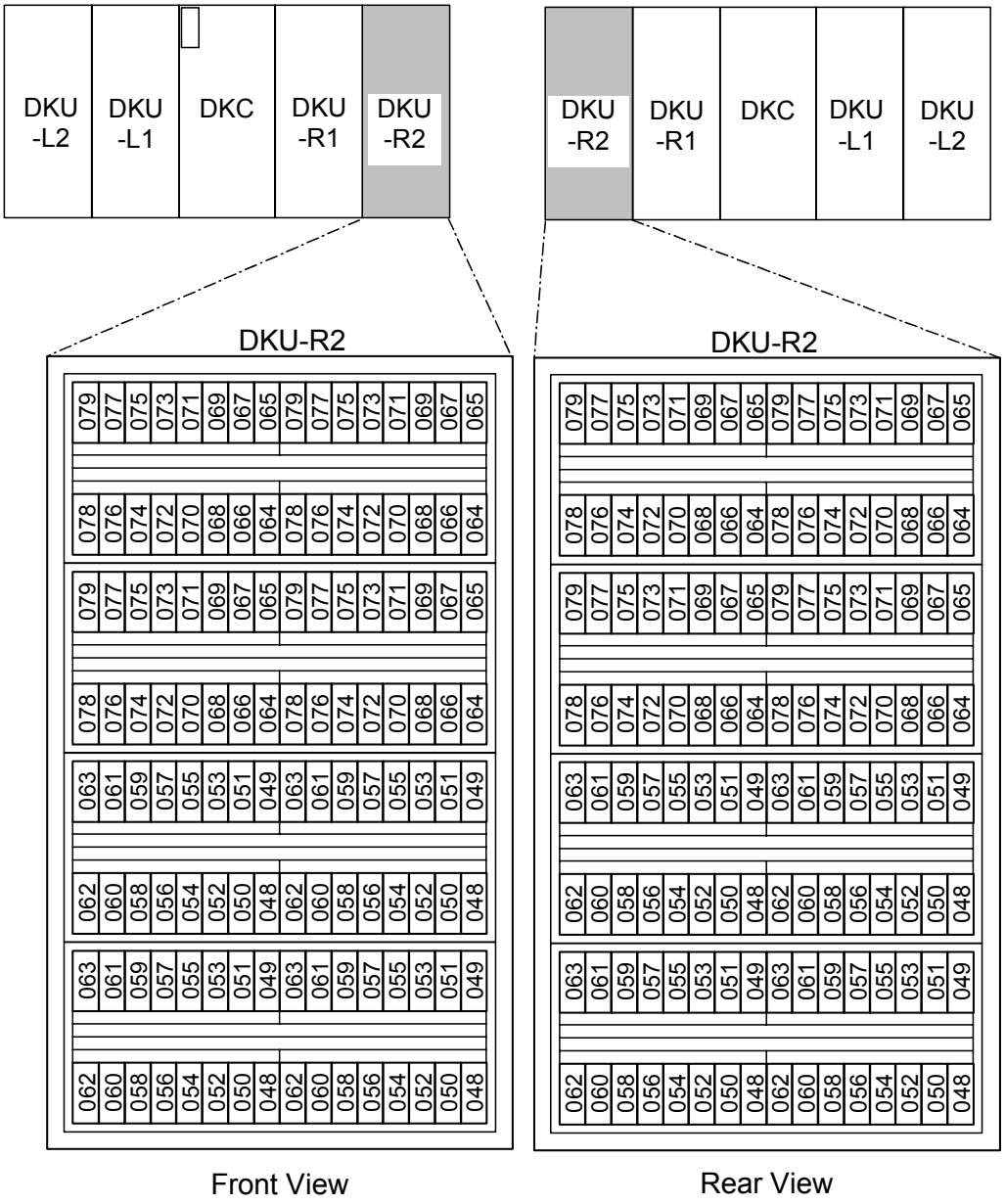

Fig. 1.2-2 (7D+1P/6D+2P) Data Drive/Parity Drive Expansion Sequence (3/5)

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 1.2-2.

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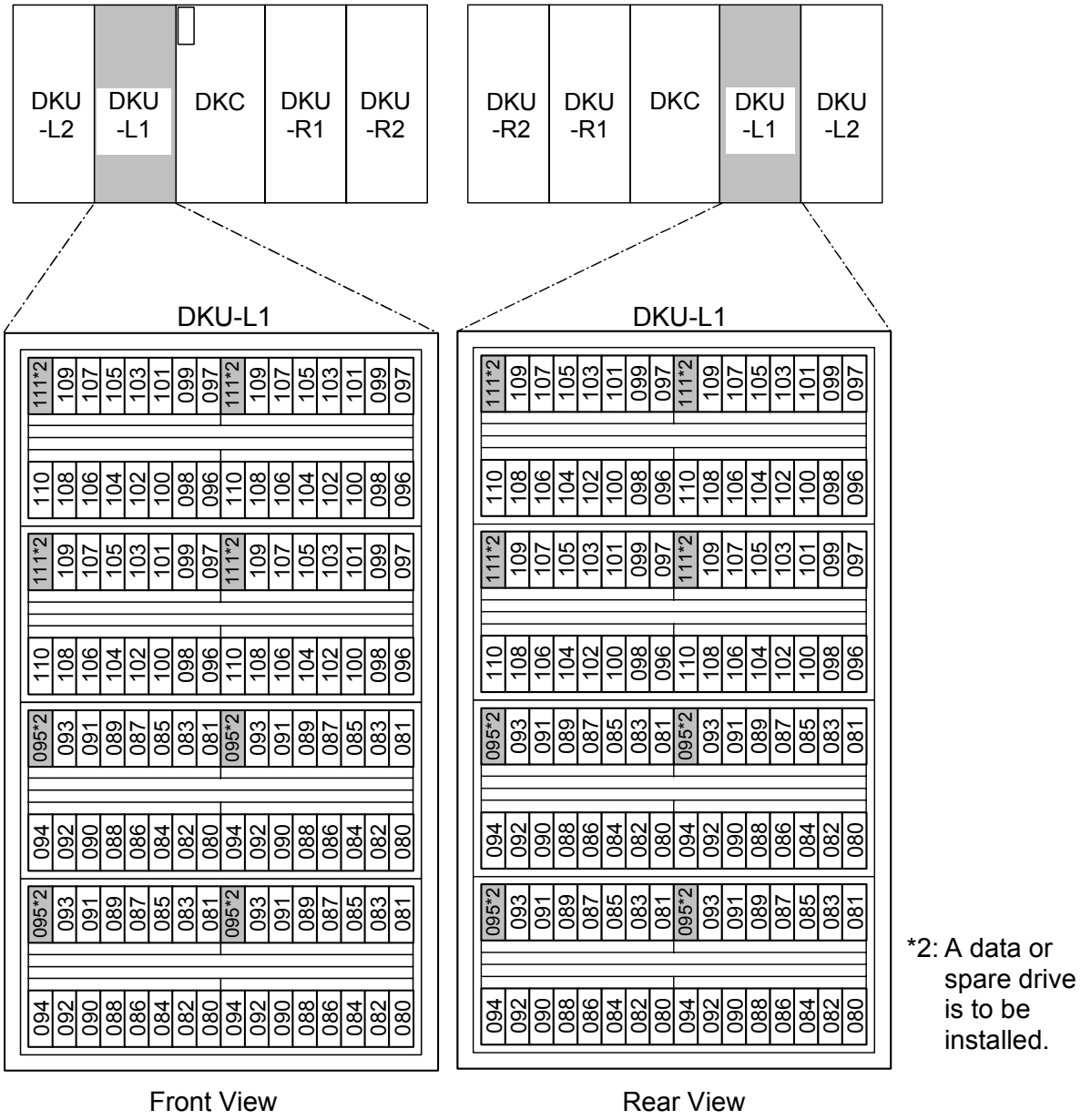

Fig. 1.2-2 (7D+1P/6D+2P) Data Drive/Parity Drive Expansion Sequence (4/5)

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 1.2-2.

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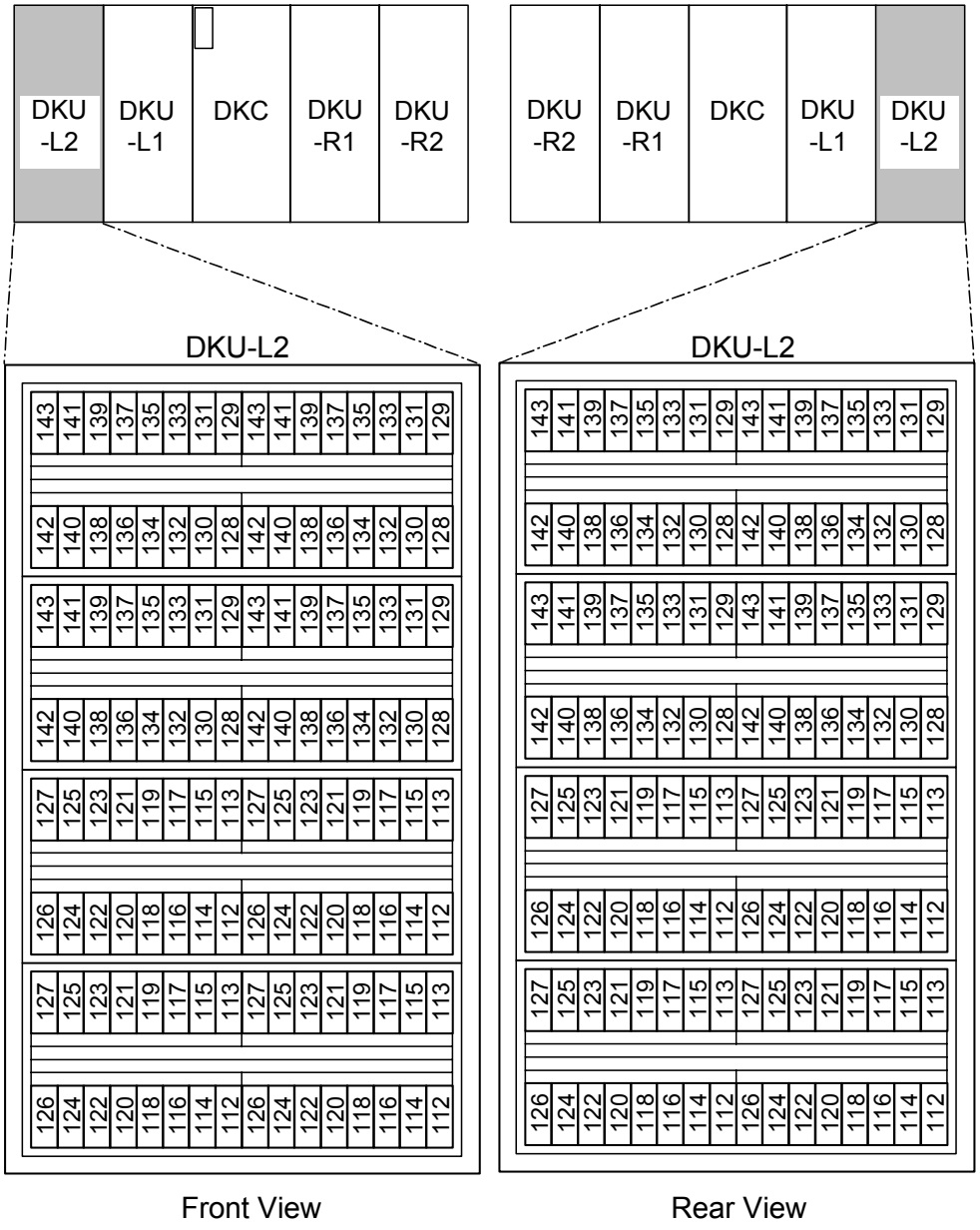

Fig. 1.2-2 (7D+1P/6D+2P) Data Drive/Parity Drive Expansion Sequence (5/5)

The relationship between HDDs/SSDs installation order and RAID group number is shown in the Table 1.2-2.

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Table 1.2-2 Relation between HDDs/SSDs installation order and RAID group number (7D+1P/6D+2P)

DKU-L2		DKU-L1		DKC		DKU-R1		DKU-R2	
Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.	Installation Order	RAID Group No.
112	15-1	080	7-1	001	1-1	016	3-1	048	11-1
113	15-2	081	7-2	002	1-2	017	3-2	049	11-2
114	15-3	082	7-3	003	1-3	018	3-3	050	11-3
115	15-4	083	7-4	004	1-4	019	3-4	051	11-4
116	15-5	084	7-5	005	1-5	020	3-5	052	11-5
117	15-6	085	7-6	006	1-6	021	3-6	053	11-6
118	15-7	086	7-7	007	1-7	022	3-7	054	11-7
119	15-8	087	7-8	008	1-8	023	3-8	055	11-8
120	15-9	088	7-9	009	1-9	024	3-9	056	11-9
121	15-10	089	7-10	010	1-10	025	3-10	057	11-10
122	15-11	090	7-11	011	1-11	026	3-11	058	11-11
123	15-12	091	7-12	012	1-12	027	3-12	059	11-12
124	15-13	092	7-13	013	1-13	028	3-13	060	11-13
125	15-14	093	7-14	014	1-14	029	3-14	061	11-14
126	15-15	094	7-15	015	1-15	030	3-15	062	11-15
127	15-16	095 (Spare)*2	7-16 (Spare)	Spare *1	Spare	031 (Spare)*2	3-16 (Spare)	063	11-16
128	17-1	096	9-1	–	–	032	5-1	064	13-1
129	17-2	097	9-2	–	–	033	5-2	065	13-2
130	17-3	098	9-3	–	–	034	5-3	066	13-3
131	17-4	099	9-4	–	–	035	5-4	067	13-4
132	17-5	100	9-5	–	–	036	5-5	068	13-5
133	17-6	101	9-6	–	–	037	5-6	069	13-6
134	17-7	102	9-7	–	–	038	5-7	070	13-7
135	17-8	103	9-8	–	–	039	5-8	071	13-8
136	17-9	104	9-9	–	–	040	5-9	072	13-9
137	17-10	105	9-10	–	–	041	5-10	073	13-10
138	17-11	106	9-11	–	–	042	5-11	074	13-11
139	17-12	107	9-12	–	–	043	5-12	075	13-12
140	17-13	108	9-13	–	–	044	5-13	076	13-13
141	17-14	109	9-14	–	–	045	5-14	077	13-14
142	17-15	110	9-15	–	–	046	5-15	078	13-15
143	17-16	111 (Spare)*2	9-16 (Spare)	–	–	047 (Spare)*2	5-16 (Spare)	079	13-16

*1: To be left vacant or a spare drive is to be installed.

*2: A data or spare drive is to be installed.

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No.	Model Number	Model Name	Remarks
1	DKC-F605I-72KS/146KS/300JS/300KM/300KS/400JS/ 450KS/600KS/0R7HS/1R0HS/2R0HS × 1	1 HDD Canister	Spare Drive
2	DKC-F605I-72S1/146S1/200S1/400S1 × 1	1 SSD Canister	Spare Drive

(5) Spare Drive

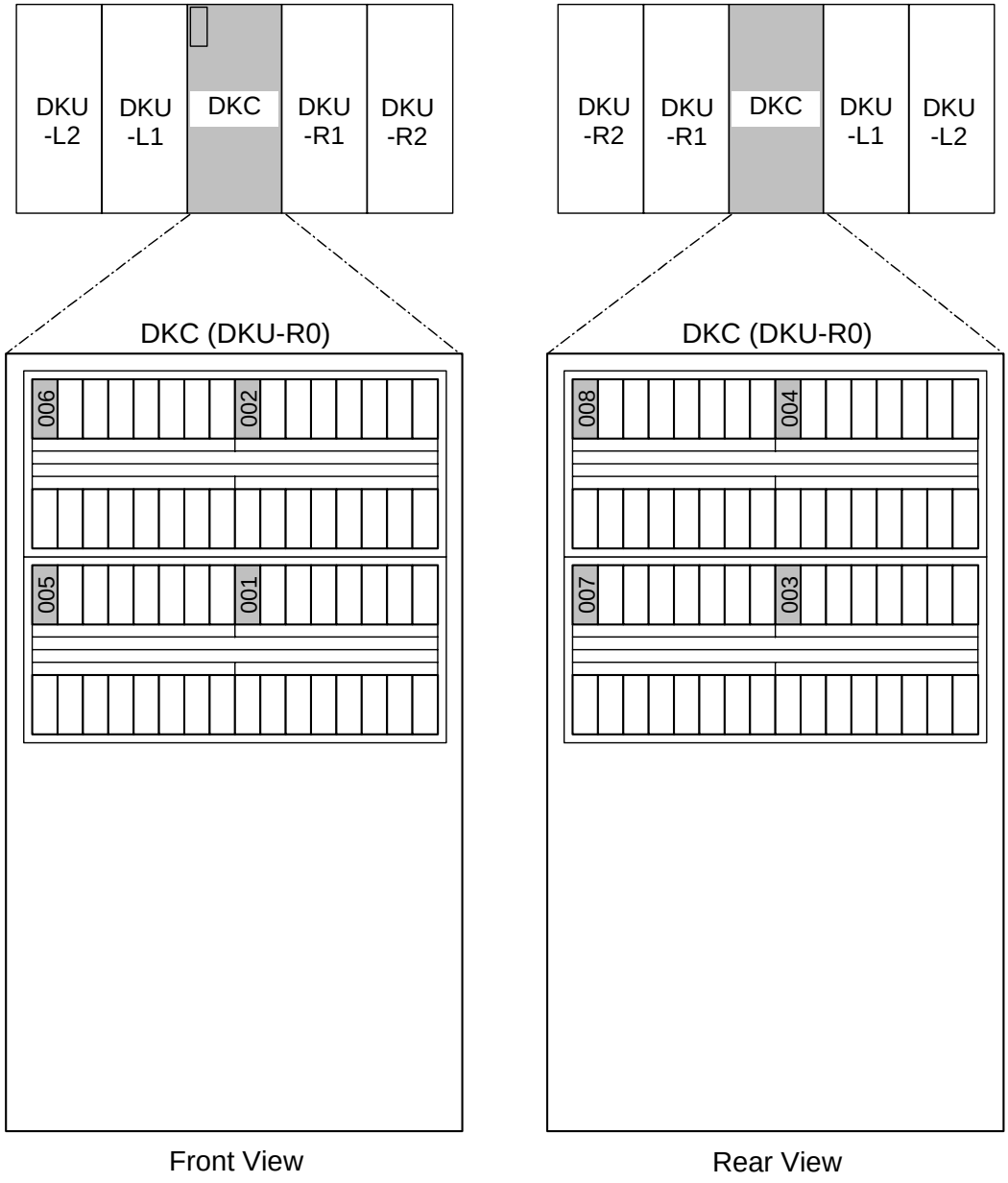

Fig. 1.2-3 Spare Drive Expansion Sequence (1/3)

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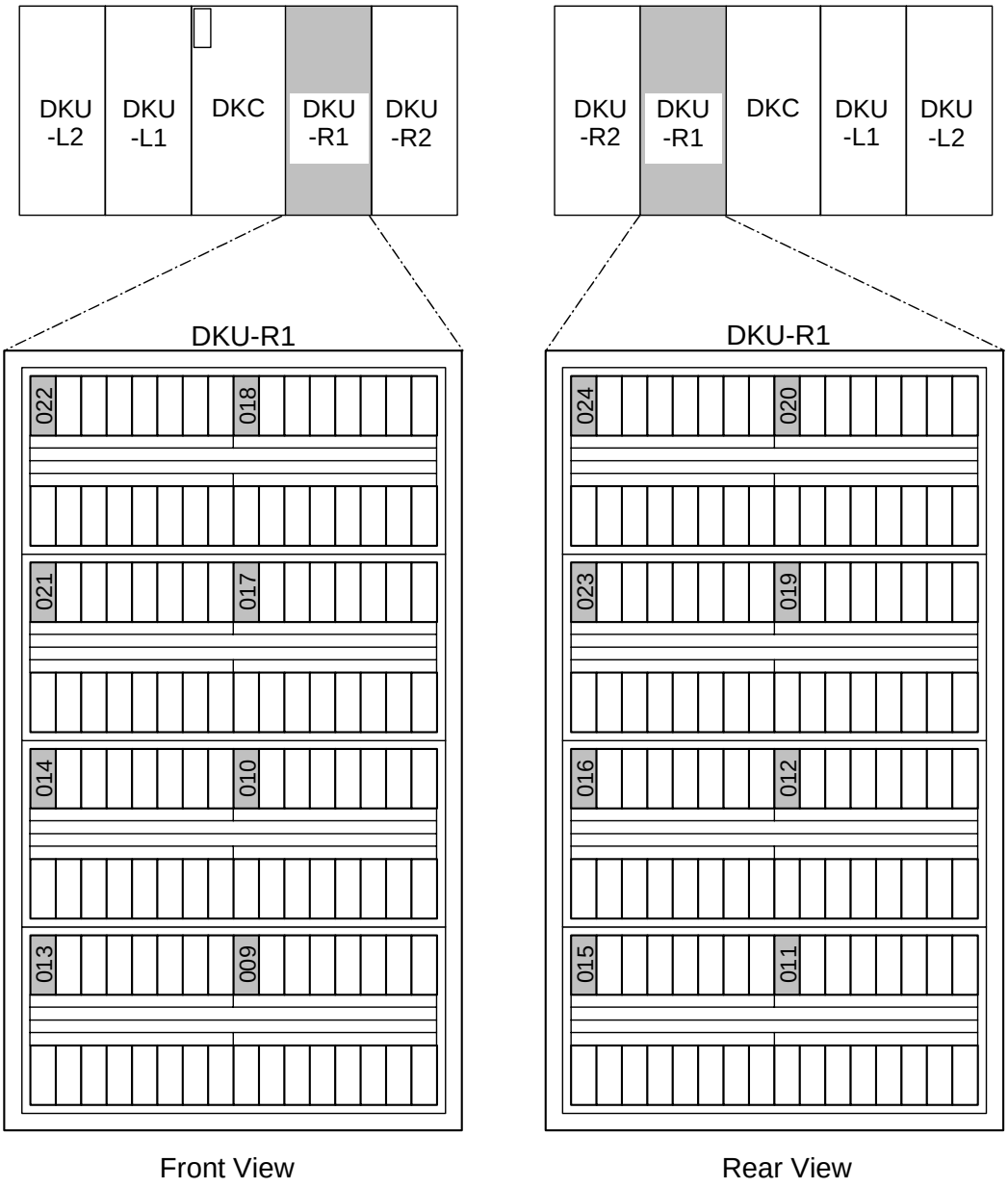

Fig. 1.2-3 Spare Drive Expansion Sequence (2/3)

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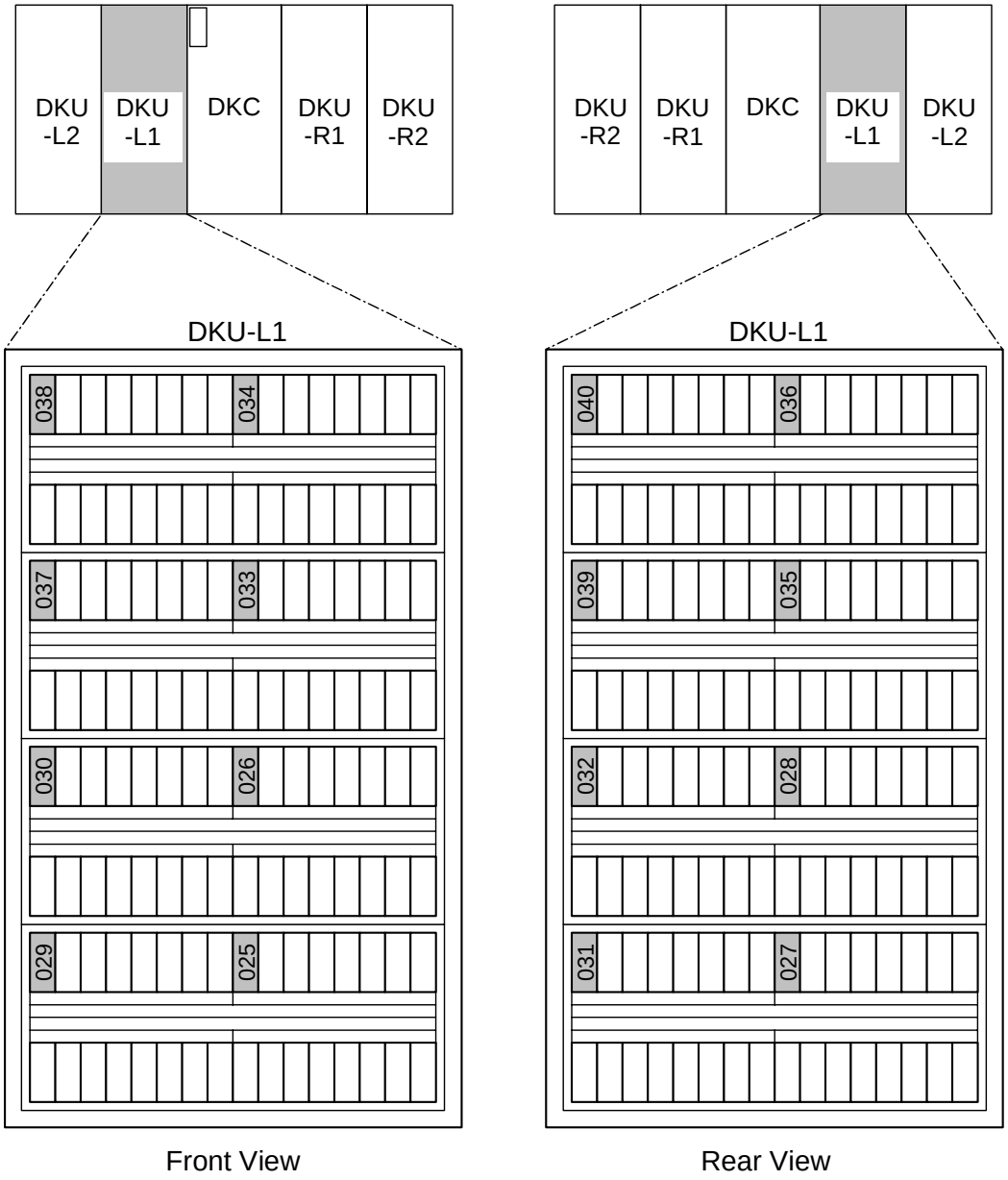

Fig. 1.2-3 Spare Drive Expansion Sequence (3/3)

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Table 1.2-3 Relation between HDDs/SSDs installation order and Spare Drive number

DKU-L1			DKC			DKU-R1		
Installation Order	B4 No.	Spare Drive No.	Installation Order	B4 No.	Spare Drive No.	Installation Order	B4 No.	Spare Drive No.
025	7th	Spare1	001	1st	Spare1	009	3rd	Spare1
026	7th	Spare2	002	1st	Spare2	010	3rd	Spare2
027	7th	Spare3	003	1st	Spare3	011	3rd	Spare3
028	7th	Spare4	004	1st	Spare4	012	3rd	Spare4
029	8th	Spare1	005	2nd	Spare1	013	4th	Spare1
030	8th	Spare2	006	2nd	Spare2	014	4th	Spare2
031	8th	Spare3	007	2nd	Spare3	015	4th	Spare3
032	8th	Spare4	008	2nd	Spare4	016	4th	Spare4
033	9th	Spare1	—	—	—	017	5th	Spare1
034	9th	Spare2	—	—	—	018	5th	Spare2
035	9th	Spare3	—	—	—	019	5th	Spare3
036	9th	Spare4	—	—	—	020	5th	Spare4
037	10th	Spare1	—	—	—	021	6th	Spare1
038	10th	Spare2	—	—	—	022	6th	Spare2
039	10th	Spare3	—	—	—	023	6th	Spare3
040	10th	Spare4	—	—	—	024	6th	Spare4

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1.3 AC Power Cable Specification

1.3.1 3 Phase/30A Model for USA

The DKC has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines) so that AC Power of the unit can be supplied from the separate power distribution board with Two Power Supply Cords. Similarly, each of the DKU-R1, the DKU-R2, the DKU-L1 and the DKU-L2 also has Two Main Disconnect Devices.
Observe all instructions described in this manual before connecting the equipment to the power source and before servicing.

A. Connection of Power Supply Cord
The unit has two power supply cords with attachment plug type Thomas & Betts 3760PDG or DDK 115J-AP8508. Be sure to prepare the following socket receptacles and power cords between the power distribution board of the building and the attachment plugs for the unit.

Socket Receptacle: Thomas & Betts 3934
Power Cord: Type ST or equivalent, non-shielded type, with four min. #8 AWG conductors. Terminated at one end with an assembled on above socket receptacle cap.

B. Requirements to Branch Circuit
This unit relies on the building installation for protection of the internal components of the equipment. Each line (R/S/T line) should be protected by a short circuit protective device and by an over current protective device rated 30 amp on building installation.
The protective device on building installation shall comply with the NEC requirements (or CEC requirements when installed in Canada), and if a protective device interrupts a conductor, it shall also interrupt all other supply conductors.
This protection is not required for the neutral line of this unit.

C. Disconnection from Power Supply
DKC has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines). Each DKU has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines). To remove all utility power from the unit, turn off both main disconnect device CB100s at the same time.

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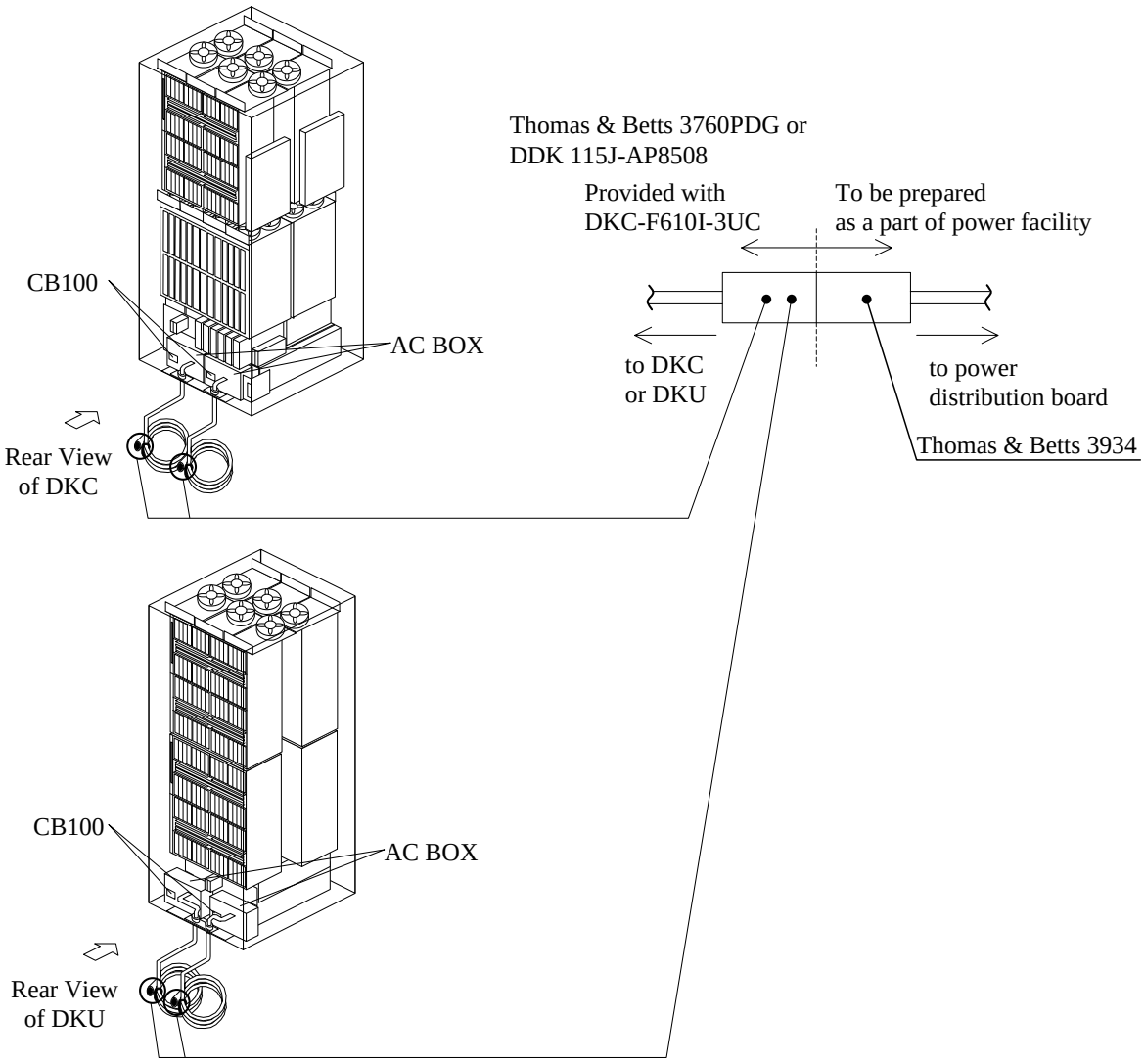

Fig. 1.3.1-1 3 Phase/30A Model for USA

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1.3.2 3 Phase/30A Model for Europe

The DKC has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines) so that AC Power of the unit can be supplied from the separate power distribution board with Two Power Supply Cords. Similarly, each of the DKU-R1, the DKU-R2, the DKU-L1 and the DKU-L2 also has Two Main Disconnect Devices.
Observe all instructions described in this manual before connecting the equipment to the power source and before servicing.

A. Connection of Power Supply Cord
The unit has two power supply cords. Be sure to prepare the following socket receptacles and power cords between the power distribution board of the building and the power cords for the unit.

Socket Receptacle : As shown in the following figure.
Power Cord : Type H07RN-F or equivalent, with five 6 mm^2 conductors.

Be sure to connect a power cord to the distribution box as illustrated in the following figure.
The wrong connection of neutral line may cause damages or fire of the equipment.
To reduce the risk of wrong connection, you should use approved type attachment plug and socket for power cord connection.
High leakage current may be caused between the power supply and this unit. To avoid an electric shock by high leakage current, perform the protective earth connection before the supply connections and disconnect it after the supply connections.

B. Requirements to Branch Circuit
This unit relies on the building installation for protection of the internal components of the equipment. Each line (R/S/T/N line) should be protected by a short circuit protective device and by an over current protective device rated 30 amp on building installation.
The protective device on building installation shall be comply with National Standards of the country where the units shall be installed, and if a protective device interrupts a conductor, it shall also interrupt all other supply conductors.
This protection is also required for the neutral line of this unit.

C. Disconnection from Power Supply
DKC has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines).
Each DKU has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines).
To remove all utility power from the unit, turn off both main disconnect device CB100s at the same time.

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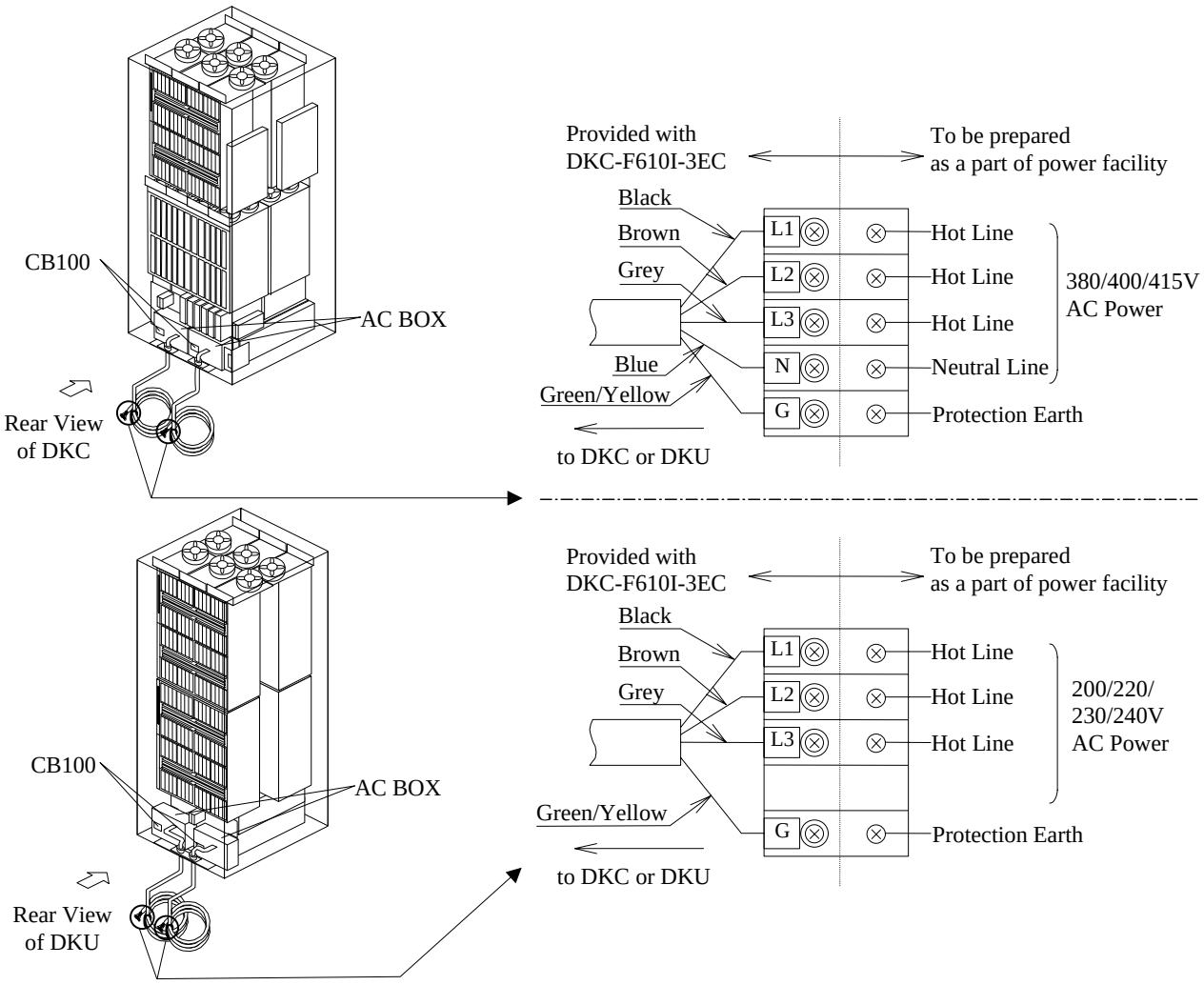

Fig. 1.3.2-1 3 Phase/30A Model for Europe

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1.3.3 Single Phase/50A Model for USA

The DKC has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines) so that AC Power of the unit can be supplied from the separate power distribution board with Two Power Supply Cords. Similarly, each of the DKU-R1, the DKU-R2, the DKU-L1, and the DKU-L2 also has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines). Observe all instructions described in this manual before connecting the equipment to the power source and before servicing.

A. Connection of Power Supply Cord
The unit has two power supply cords with attachment plug type Thomas & Betts 9P53U2. Be sure to prepare the following socket receptacles and power cords between the power distribution board of the building and the attachment plugs for the unit.

Socket Receptacle: Thomas & Betts 9C53U2 or 9R53U2W
Power Cord: Type ST or equivalent, non-shielded type, with three min. #6 AWG conductors. Terminated at one end with an assembled on above socket receptacle cap.

B. Requirements to Branch Circuit
This unit relies on the building installation for protection of the internal components of the equipment. Each line (U/L1, V/L2 line) should be protected by a short circuit protective device and by an over current protective device rated 50 amp on building installation.
The protective device on building installation shall comply with the NEC requirements (or CEC requirements when installed in Canada), and if a protective device interrupts a conductor, it shall also interrupt all other supply conductors.
This protection is not required for the neutral line of this unit.

C. Disconnection from Power Supply
DKC has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines). Each DKU has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines). To remove all utility power from the unit, turn off both main disconnect device CB100s at the same time.

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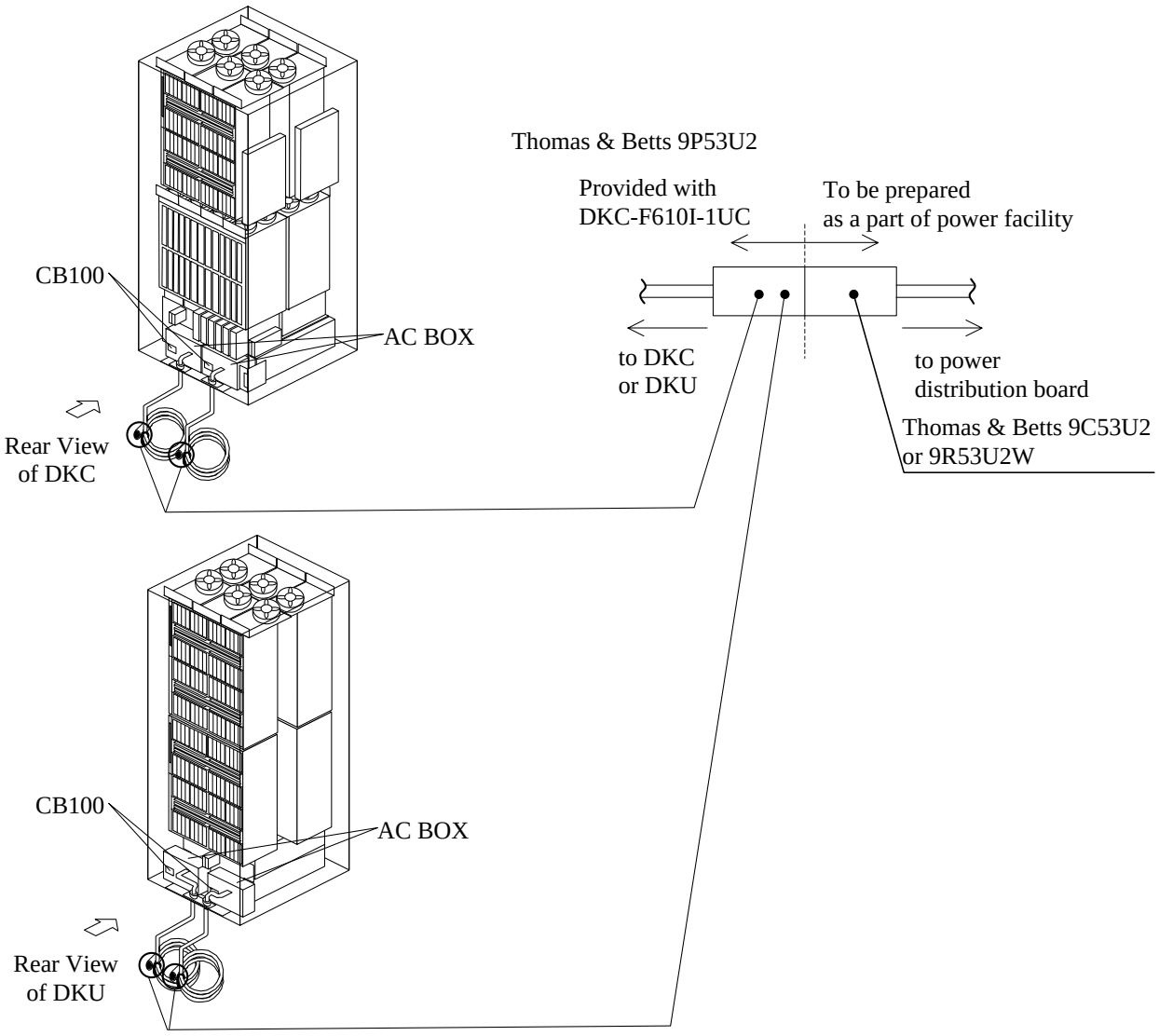

Fig. 1.3.3-1 Single Phase/50A Model for USA

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1.3.4 Single Phase/50A Model for Europe

The DKC has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines) so that AC Power of the unit can be supplied from the separate power distribution board with Two Power Supply Cords. Similarly, each of the DKU-R1, the DKU-R2, the DKU-L1, and the DKU-L2 also has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines). Observe all instructions described in this manual before connecting the equipment to the power source and before servicing.

A. Connection of Power Supply Cord
The unit has two power supply cords. Be sure to prepare the following socket receptacles and power cords between the power distribution board of the building and the power cords for the unit.

Socket Receptacle: As shown in the following figure.
Power Cord: Type H07RN-F or equivalent, with three 10 mm^2 conductors.

Be sure to connect a power cord to the distribution box as illustrated in the following figure.
The wrong connection of neutral line may cause damages or fire of the equipment.
To reduce the risk of wrong connection, you should use approved type attachment plug and socket for power cord connection.
High leakage current may be caused between the power supply and this unit. To avoid an electric shock by high leakage current, perform the protective earth connection before the supply connections and disconnect it after the supply connections.

B. Requirements to Branch Circuit
This unit relies on the building installation for protection of the internal components of the equipment. Each line (U/L1, N/L2 line) should be protected by a short circuit protective device and by an over current protective device rated 50 amp on building installation.
The protective device on building installation shall be comply with National Standards of the country where the units shall be installed, and if a protective device interrupts a conductor, it shall also interrupt all other supply conductors.
This protection is also required for the neutral line of this unit.

C. Disconnection from Power Supply
DKC has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines).
Each DKU has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines).
To remove all utility power from the unit, turn off both main disconnect device CB100s at the same time.

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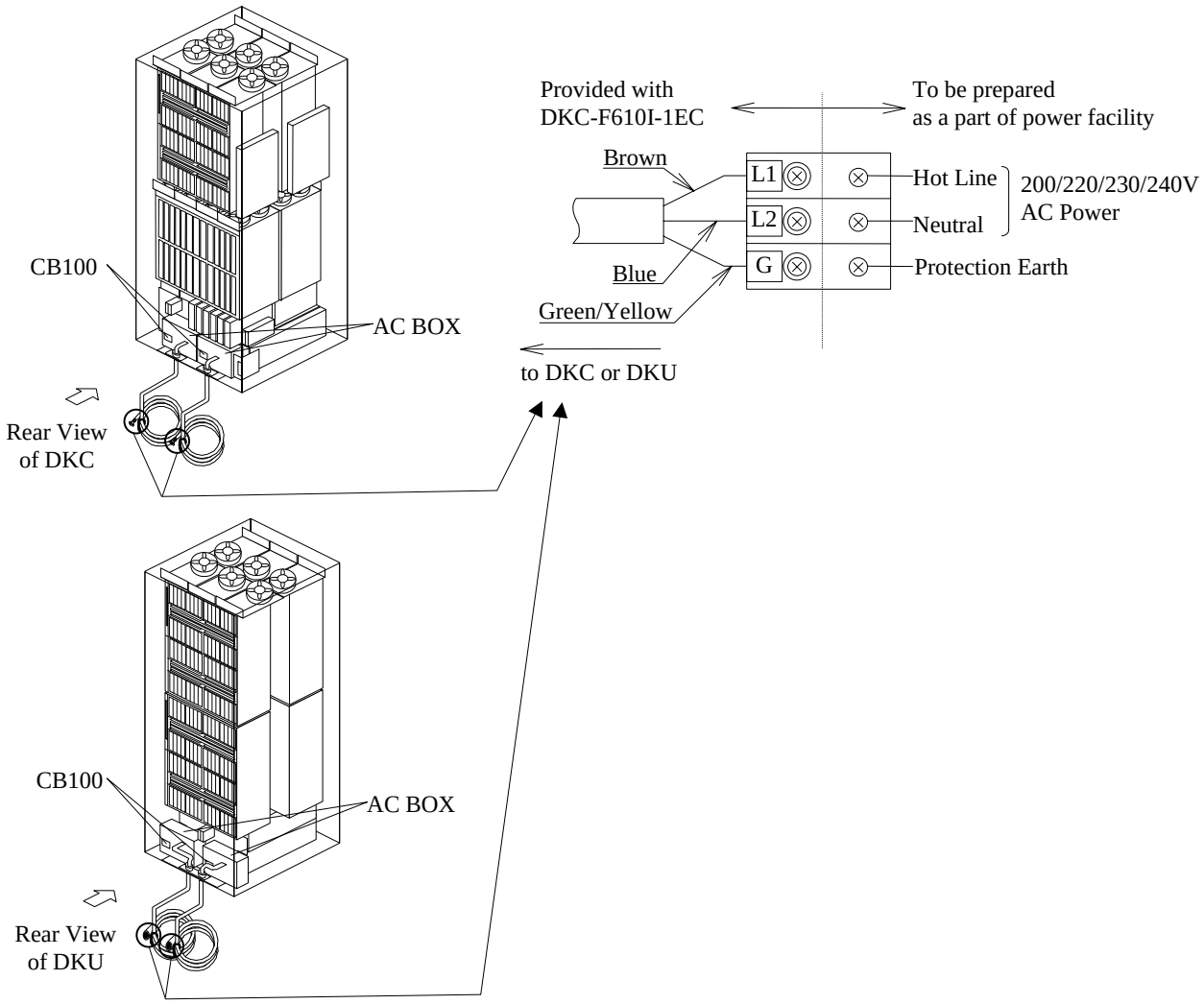

Fig. 1.3.4-1 Single Phase/50A Model for Europe

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1.3.5 Single Phase/30A Model for USA

The DKC has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines) so that AC Power of the unit can be supplied from the separate power distribution board with Four Power Supply Cords. Similarly, each of the DKU-R1, the DKU-R2, the DKU-L1, and the DKU-L2 also has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines). Observe all instructions described in this manual before connecting the equipment to the power source and before servicing.

A. Connection of Power Supply Cord
The unit has four power supply cords with attachment plug type Thomas & Betts 3750DP. Be sure to prepare the following socket receptacles and power cords between the power distribution board of the building and the attachment plugs for the unit.

Socket Receptacle: Thomas & Betts 3933
Power Cord: Type ST or equivalent, non-shielded type, with three min. #10 AWG conductors. Terminated at one end with an assembled on above socket receptacle cap.

B. Requirements to Branch Circuit
This unit relies on the building installation for protection of the internal components of the equipment. Each line (U/L1, V/L2 line) should be protected by a short circuit protective device and by an over current protective device rated 30 amp on building installation.
The protective device on building installation shall comply with the NEC requirements (or CEC requirements when installed in Canada), and if a protective device interrupts a conductor, it shall also interrupt all other supply conductors.
This protection is not required for the neutral line of this unit.

C. Disconnection from Power Supply
DKC has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines). Each DKU has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines). To remove all utility power from the unit, turn off both main disconnect device CB100s at the same time.

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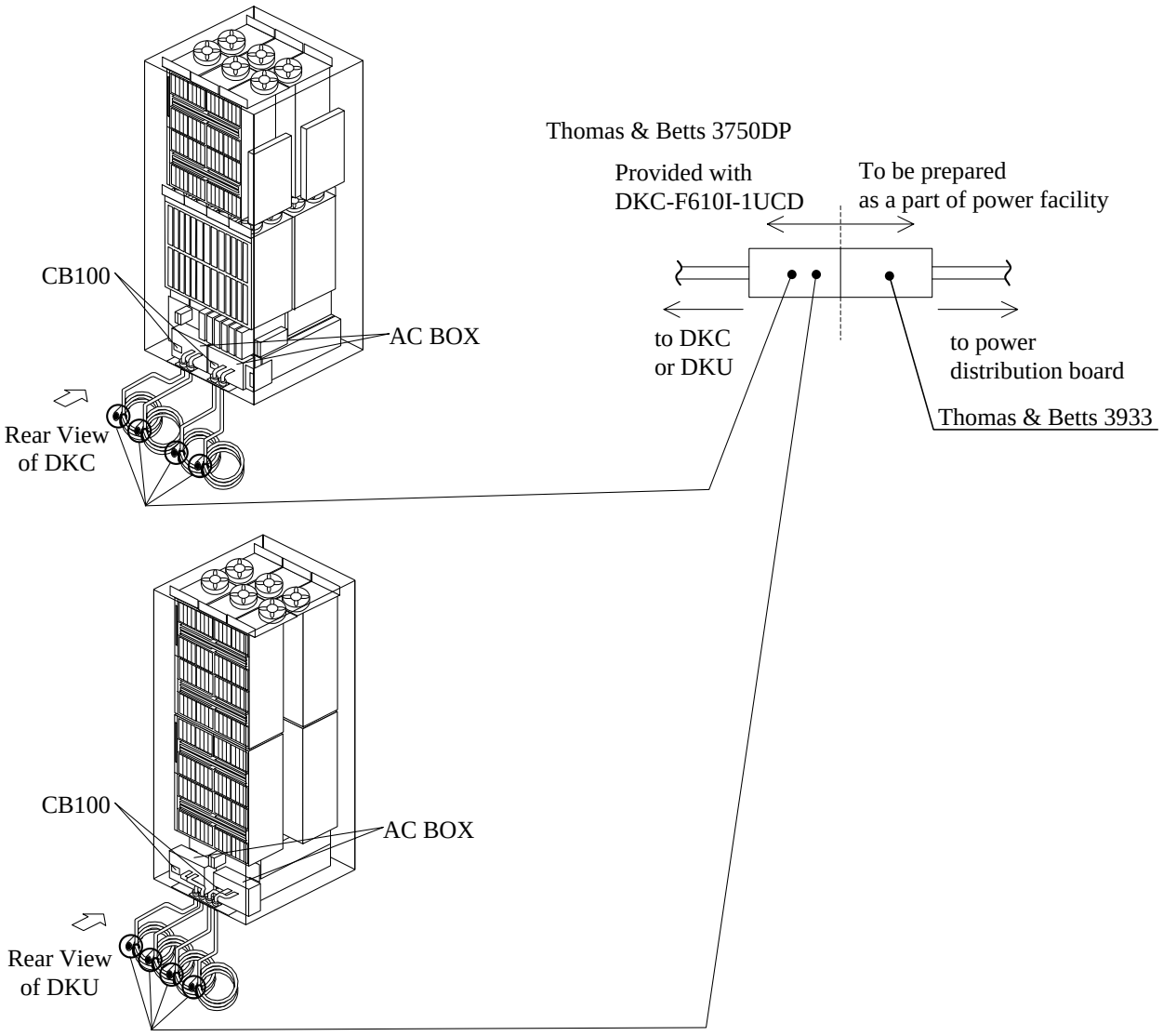

Fig. 1.3.5-1 Single Phase/30A Model for USA

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1.3.6 Single Phase/30A Model for Europe

The DKC has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines) so that AC Power of the unit can be supplied from the separate power distribution board with Four Power Supply Cords. Similarly, each of the DKU-R1, the DKU-R2, the DKU-L1, and the DKU-L2 also has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines). Observe all instructions described in this manual before connecting the equipment to the power source and before servicing.

A. Connection of Power Supply Cord
The unit has four power supply cords. Be sure to prepare the following socket receptacles and power cords between the power distribution board of the building and the power cords for the unit.

Socket Receptacle : As shown in the following figure.
Power Cord : Type H07RN-F or equivalent, with three 6 mm^2 conductors.

Be sure to connect a power cord to the distribution box as illustrated in the following figure.
The wrong connection of neutral line may cause damages or fire of the equipment.
To reduce the risk of wrong connection, you should use approved type attachment plug and socket for power cord connection.
High leakage current may be caused between the power supply and this unit. To avoid an electric shock by high leakage current, perform the protective earth connection before the supply connections and disconnect it after the supply connections.

B. Requirements to Branch Circuit
This unit relies on the building installation for protection of the internal components of the equipment. Each line (U/L1, N/L2 line) should be protected by a short circuit protective device and by an over current protective device rated 30 amp on building installation.
The protective device on building installation shall be comply with National Standards of the country where the units shall be installed, and if a protective device interrupts a conductor, it shall also interrupt all other supply conductors.
This protection is also required for the neutral line of this unit.

C. Disconnection from Power Supply
DKC has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines).
Each DKU has Two Main Disconnect Devices (Two Main Breaker CB100s for Dual Power Lines).
To remove all utility power from the unit, turn off both main disconnect device CB100s at the same time.

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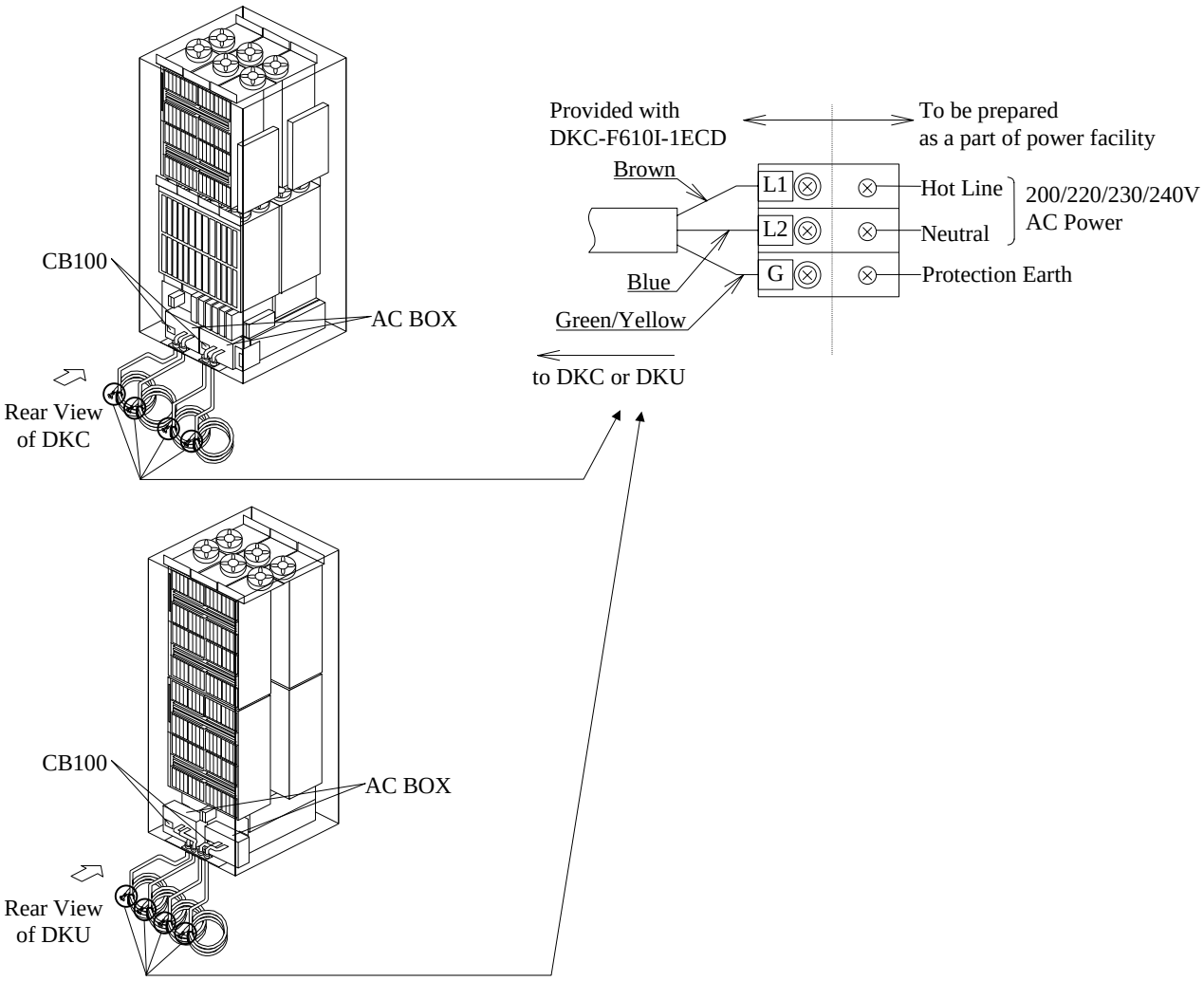

Fig. 1.3.6-1 Single Phase/30A Model for Europe

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2. Installation and De-installation procedure

2.1 New Installation Procedure Table

Note: Perform the new installation in numerical order shown in the following table. Proceed to the next work neglecting unnecessary ones.

When installing Subsystem for the first time, perform all hardware installation procedures before initiating the installation through SVP procedure. Skip the next procedure when the procedure is not necessary.
If any problems arise during the following procedure, isolate failure part with analysis of SIM log or SSB log. If neither SIM log nor SSB log has been created, re-check the general procedure and see TROUBLE SHOOTING SECTION.

Precaution on New Installation

- When the cables (CONSOLE, PUBLIC, INT, and MODEM) are connected to SVP, pull out the cables from the hole of Side Plate. If the cable isn't pulled out from the hole of Side Plate, the Side Plate cannot be removed, which may interfere with maintenance work.
  For detail, refer to "3.18 Cable wiring to SVP" (INST03-18-10).
- See "3.1.8 Working Procedure for Upgrade or Replacement of HDD Canister (INST03-01-170)" before starting the work.

Table 2.1-1 New Installation Procedure Table

No.	Working Item	Model Number	Page
1	Unpacking and Inspection	—	INST03-02-10 through 80
2	DKC or DKU Door Kit Installation (DKC-F610I-DH/DS, DKC-F605I-DH/DS)	←	INST03-17-10 through 120
3	Basic Subsystem Installation (DKC610I-5)	←	INST03-03-10 through 90
4	Disk Array Frame Installation (DKC-F605I-18)	←	INST03-04-10 through 270
Caution	**Caution of the ACBOX Installation/De-installation** **If revision control does not indicates "C" or "T", it means that the FC of "SVP down induced by USB memory insertion" has been applied yet, please carry out the FC according to the FCB.** **If voltages are abnormal or if there appears to be damage to the cable, then please contact Technical Support Team for guidance.**		
5	AC Box Installation (DKC-F610I-1PS/1PSD/3PS)	←	INST03-05-10 through 150
6	AC Power Cable Installation (DKC-F610I-1EC/1UC/1ECD/1UCD/3EC/3UC)	←	INST03-06-10 through 430
7	Power Control Interface kit Installation (DKC-F610I-PCI)	←	INST03-12-10 through 60
8	Additional Power Supply Installation (DKC-F610I-APC)	←	INST03-09-10 through 110 (Only Hardware Procedure)

(To be continued.)

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(Continued from preceding sheet.)

No.	Working Item	Model Number	Page
9	Channel Adapter, CSW and Battery (DKC-F610I-8S/8FS/16FS/8US/8MFS/8MFL/ CSW/AB)	8S/CSW/AB	INST03-07A-10 through 250 (Only Hardware Procedure)
		8FS/16FS/8US/ CSW/AB	INST03-07B-10 through 250 (Only Hardware Procedure)
		8MFS/8MFL/ CSW/AB	INST03-07C-10 through 250 (Only Hardware Procedure)
10	Shared memory Installation (DKC-F610I-AB/SX/S2GQ/S4GQ)	←	INST03-08A-10 through 350 (Only Hardware Procedure)
11	Cache memory Installation (DKC-F610I-AB/ABX/CX/C4G/C8G/C16G/ CBEX/DBEX)	←	INST03-08B-10 through 550 (Only Hardware Procedure)
11A	Simultaneous Installation of Additional Shared Memory and Additional Cache Memory (DKC-F610I-AB/ABX/SX/S2GQ/S4GQ/CX/C4G/ C8G/C16G/CBEX/DBEX)	←	INST03-08D-10 through 980 (Only Hardware Procedure)
Note	**Disk drives at data transfer rate of 2Gbps and 4Gbps are supported in this subsystem. There are some restriction matters in installing process in the case that the disk drives at different transfer rates are intermingled and installed. For details, refer to "Caution of disk drives installation (INST01-430)".**		
12	DEV Interface Cable, Battery, CSW, Additional Disk Adapter, FSW and HDD/SSD Canister Installation (DKC-F610I-DKA/EDKA/CSW/AB/ABX/R1DC/ R1UC/L1DC/L1UC, DKC-F605I-AKT/EXC/72KS/ 146KS/300JS/300KM/300KS/400JS/450KS/600KS/ 0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)	←	INST03-10-10 through 10C-1470 (Only Hardware Procedure)
13	SVP High Reliability Kit Installation (DKC-F610I-SVP/SVPV/MDM)	←	INST03-11-10 through 690 (Only Hardware Procedure)
14	Changing of Fibre SFP Transceiver (DKC-F610I-1FL/1FS/1UL/1US)	←	INST03-15-10 through 80 (Only Hardware Procedure)
15	Additional Battery Installation (DKC-F610I-AB/ABX/CBEX/DBEX)	←	INST03-16-10 through 290 (Only Hardware Procedure)
16	SVP "New Installation" Procedure	—	INST02-300
17	END		

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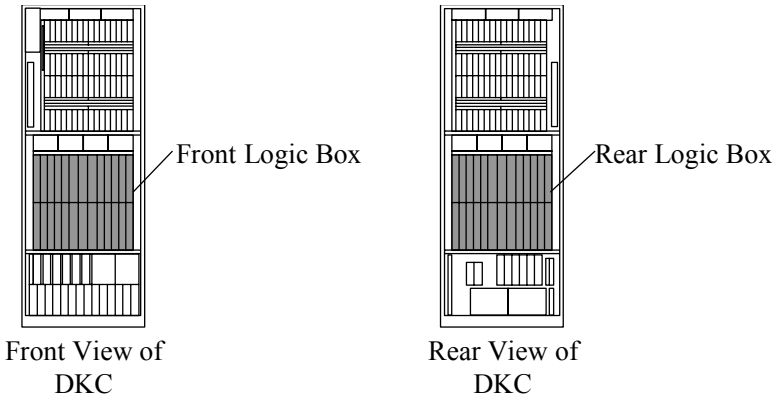
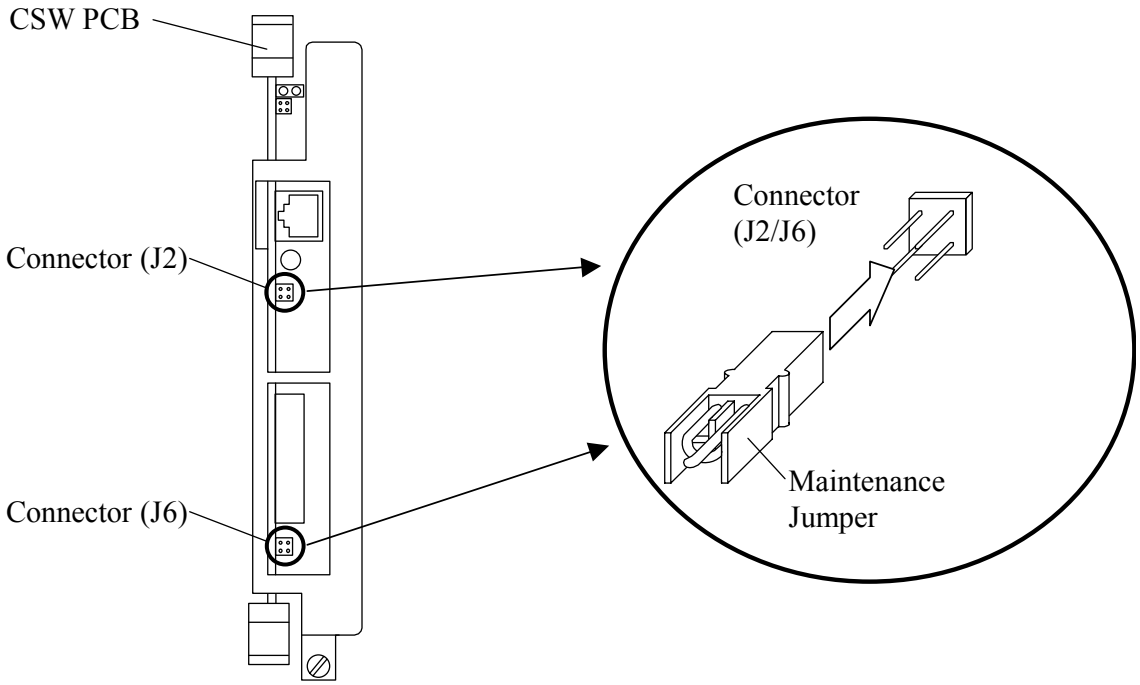
Note: The Maintenance Jumpers of the Connectors (J2 and J6).



Front View of DKC

Rear View of DKC



CSW-1DU/2PU

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2.2 Non-Disruptive Installation Procedure Table

Note: A serious failure will occur if the works are not done in numerical order shown in the table.
Perform the non-disruptive addition of the options in numerical order (from No.1 to No.17) shown in the table below. Neglect a unnecessary work and proceed to the next work.

Install additional non-disruptive options according to the flow shown below. This work is completed by installing additional hardware for each option and performing SVP-controlled installation.
If a fault occurs during or after additional installation, see INST02-110 to locate a faulty unit and take action. If any other message than the list is displayed, see the SVP Message section.

Precautions on Non-Disruptive Installation

- "Non-Disruptive" means that the subsystem is connected to the host (OS). Non-Disruptive Installation shall be done with the subsystem power ON. However, the subsystem may be disconnected from the host (OS).
- When the type of the CHAs is changed (e.g. from serial to fibre channel), de-install the old CHAs temporarily before installing new CHAs.
- When the cables (CONSOLE, PUBLIC, INT, and MODEM) are connected to SVP, pull out the cables from the hole of Side Plate. If the cable isn't pulled out from the hole of Side Plate, the Side Plate cannot be removed, which may interfere with maintenance work.
  For detail, refer to "3.18 Cable wiring to SVP" (INST03-18-10).
- See "3.1.8 Working Procedure for Upgrade or Replacement of HDD Canister (INST03-01-170)" before starting the work.

Table 2.2-1 Non-Disruptive Installation Procedure Table

No.	Working Item	Model Number	Page
1	Display the SVP initial screen	←	SVP01-10 through
2	Confirm the micro-version		OPTVER01-10
3	Additional Power Supply Installation (DKC-F610I-APC)	←	INST03-09-10 through 110
Note	**When the number of CU is set to 65 or more, check the required shared memory capacity in advance. If the expansion of the share memory is necessary, perform the work No.5, No.4 in this order.**		
4	Channel Adapter, CSW and Battery (DKC-F610I-8S/8FS/16FS/8US/8MFS/8MFL/CSW/AB)	8S/CSW/AB	INST03-07A-10 through 250
		8FS/16FS/8US/CSW/AB	INST03-07B-10 through 250
		8MFS/8MFL/CSW/AB	INST03-07C-10 through 250

(To be continued.)

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(Continued from preceding sheet.)

No.	Working Item	Model Number	Page
5	Shared memory Installation (DKC-F610I-AB/SX/S2GQ/S4GQ)	←	INST03-08A-10 through 350
6	Cache memory Installation (DKC-F610I-AB/ABX/CX/C4G/C8G/C16G/ CBEX/DBEX)	←	INST03-08B-10 through 550
6A	Simultaneous Installation of Additional Shared Memory and Additional Cache Memory (DKC-F610I-AB/ABX/SX/S2GQ/S4GQ/CX/C4G/ C8G/C16G/CBEX/DBEX)	←	INST03-08D-10 through 980
7	AC Box Installation (DKC-F610I-1PS/1PSD/3PS)	←	INST03-05-10 through 150
8	AC Power Cable Installation (DKC-F610I-1EC/1UC/1ECD/1UCD/3EC/3UC)	←	INST03-06-10 through 430
9	DKU Door Kit Installation (DKC-F605I-DH/DS)	←	INST03-17-90 through 120
10	Disk Array Frame Installation (DKC-F605I-18) Perform the installation of the DKC frame, setting of the PSPNL jumper, setting of the FSW switch, and connection of the power cable.	←	INST03-04-10 through 270
Note	**Caution: When the addition of the DKU frame (DKC-F605I-18) is accompanied, perform the work No.10 (Disk Array Frame Installation) and the work No.11 (POWER ON of Disk Unit) beforehand.**		
Note	**Check CU number and necessary shared memory capacity, and make sure whether expansion of shared memory is necessary (See INST07-20 ~ 90). If necessary, see INST03-08A-10.**		
Note	**When the number of CU is set to 65 or more, check that the range of the CU number that can be connected to the port with CHA is set to 40-FE. (Refer to INST05-450 through 560.)**		
Note	**Disk drives at data transfer rate of 2Gbps and 4Gbps are supported in this subsystem. There are some restriction matters in installing process in the case that the disk drives at different transfer rates are intermingled and installed. For details, refer to "Caution of disk drives installation (INST01-430)".**		
Note	**If FC HDD and SATA HDD are concurrently installed, and LDEV Format is performed, the FC HDD is unavailable until Format of the SATA HDD is completed. In this case, install the HDDs separately, first the FC HDD, and then the SATA HDD. To identify FC HDD/SATA HDD, please refer to INST01-80.**		
Note	**For performing LDEV Format after installing an HDD, Quick Format can be selected. When Quick Format is performed, make sure that the system disk is already installed in the current configuration. (To check to see if the system disk is installed, refer to SVP03-300 through 380 (3.6.1 List of Group Information).)**		
11	POWER ON of Disk Unit (DKC-F605I-18)	—	INST03-14-10 through 20
12	DEV Interface Cable, Battery, CSW, Additional Disk Adapter, FSW and HDD/SSD Canister Installation (DKC-F610I-DKA/EDKA/CSW/AB/ABX/R1DC/ R1UC/L1DC/L1UC, DKC-F605I-AKT/EXC/72KS/ 146KS/300JS/300KM/300KS/400JS/450KS/600KS/ 0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/400S1)	←	INST03-10-10 through 10C-1470
Note	**To newly install EDKA only, or to install EDKA and a parity group with 0 LDEV, you need to create an encryption key. To create an encryption key, see SVP02-1920. For other than above, you do not have to create any encryption key.**		

(To be continued.)

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No.	Working Item	Model Number	Page
13	SVP High Reliability Kit Installation (DKC-F610I-SVP/SVPV/MDM)	←	INST03-11-10 through 690
14	IPv6 Upgrade Kit Installation (DKC-F610I-IPV6)	←	INST03-19-10 through 250
15	Power Control Interface Kit Installation (DKC-F610I-PCI)	←	INST03-12-10 through 60
16	Changing of Fibre SFP Transceiver (DKC-F610I-1FL/1FS/1UL/1US)	←	INST03-15-10 through 80
17	Additional Battery Installation (DKC-F610I-AB/ABX/CBEX/DBEX)	←	INST03-16-10 through 290
18	END	—	—

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2.3 Non-Disruptive De-installation Procedure Table

Note: A serious failure occurs if the works are not done in numerical order shown in the table.
Perform the non-disruptive removal of the options in numerical order (from No.1 to No.16) shown in the table below. Neglect an unnecessary work and proceed to the next work.

This work is completed by removing hardware for each option and performing SVP-controlled removal.
When De-Installation has been all done, make sure that all the removed units are displayed as "empty" and that the other units are normal (See the STATUS Section).
If a fault occurs during or after removal, see INST02-180 to locate a faulty unit and take action. If any other message than the list is displayed, see the SVP Message section.

Precautions on Non-Disruptive De-Installation

- "Non-Disruptive" means that the subsystem is connected to the host (OS). Non-Disruptive De-Installation shall be done with the subsystem power ON. However, the subsystem may be disconnected from the host (OS).
- See "3.1.8 Working Procedure for Upgrade or Replacement of HDD Canister (INST03-01-170)" before starting the work.

Table 2.3-1 Non-Disruptive De-installation Procedure Table

No.	Working Item	Model Number	Page
1	Display the SVP initial screen	←	SVP01-10 through
2	DEV Interface Cable, Battery, CSW, Additional Disk Adapter, FSW and HDD/SSD Canister De-Installation (DKC-F610I-DKA/EDKA/CSW/AB/R1DC/R1UC/ L1DC/L1UC, DKC-F605I-AKT/EXC/72KS/72K1/ 146KS/146K1/300JS/300KM/300KS/400JS/450KS/ 600KS/0R7HS/1R0HS/2R0HS/72S1/146S1/200S1/ 400S1)	←	INST04-01-10 through 01C-1470
Note	**Proceed to the work No.3 after performing the work No.2.** **The system goes down if the main breaker of the DKC to be removed in the work No.3 is turned off without performing an option removal work, that is, the work No.2.**		
3	Disk Array Frame De-Installation (DKC-F605I-18) **Turn off the main breaker of the DKC.**	←	INST04-02-10 through 120

(To be continued.)

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(Continued from preceding sheet.)

No.	Working Item	Model Number	Page
Note	**When the number of CU is set to 64 or less from 65 or more in No.5, de-install all CHAs, whose range of the CU number that can be connected to the port is set to 40-FE, in No.4 in advance, and then go to No. 5.**		
4	Channel Adapter, CSW and Battery De-Installation (DKC-F610I-8S/8FS/16FS/8US/8MFS/8MFL/ CSW/AB)	8S/CSW/AB	INST04-04A-10 through 250
		8FS/16FS/8US/ CSW/AB	INST04-04B-10 through 250
		8MFS/8MFL/ CSW/AB	INST04-04C-10 through 250
5	Shared memory De-Installation (DKC-F610I-AB/SX/S2GQ/S4GQ)	←	INST04-03A-10 through 370
6	Cache memory De-Installation (DKC-F610I-AB/ABX/CX/C4G/C8G/C16G/ CBEX/DBEX)	←	INST04-03B-10 through 490
6A	Simultaneous De-Installation of Shared Memory and Cache Memory (DKC-F610I-AB/ABX/SX/ S2GQ/S4GQ/CX/C4G/C8G/C16G/CBEX/DBEX)	←	INST04-03D-10 through 950
7	Channel Adapter and CSW and Battery De-Installation (DKC-F610I-8S/8FS/16FS/8US/8MFS/8MFL/ CSW/AB)	8S/CSW/AB	INST04-04A-10 through 250
		8FS/16FS/8US/ CSW/AB	INST04-04B-10 through 250
		8MFS/8MFL/ CSW/AB	INST04-04C-10 through 250

(To be continued.)

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No.	Working Item	Model Number	Page
8	Additional Power Supply De-Installation (DKC-F610I-APC)	←	INST04-05-10 through 110
9	AC Box De-Installation (DKC-F610I-1PS/1PSD/3PS)	←	INST04-08-10 through 110
10	AC Power Cable De-Installation (DKC-F610I-1EC/1UC/1ECD/1UCD/3EC/3UC)	←	INST04-09-10 through 350
11	IPv6 Upgrade Kit De-Installation (DKC-F610I-IPV6)	←	INST04-12-10 through 120
12	SVP High Reliability Kit De-Installation (DKC-F610I-SVP/SVPV/MDM)	←	INST04-06-10 through 260
13	Power Control Interface Kit De-Installation (DKC-F610I-PCI)	←	INST04-07-10 through 50
14	Changing of Fibre SFP Transceiver (DKC-F610I-1FL/1FS/1UL/1US)	←	INST03-15-10 through 80
15	Additional Battery De-Installation (DKC-F610I-AB/ABX/CBEX/DBEX)	←	INST04-10-10 through 270
16	DKC or DKU Door Kit De-Installation (DKC-F605I-DH/DS)	←	INST04-11-10 through 110
17	END	—	—

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2.4 Disruptive Installation Procedure Table

Note: Perform the disruptive de-installation of options in numerical order shown in the following table. Proceed to the next work neglecting unnecessary ones.

If a fault occurs during or after additional installation, see INST02-110 to locate a faulty unit and take action. If any other message than the list is displayed, see the SVP Message section.

Precautions on Disruptive Installation

- "Disruptive" means that the subsystem is disconnected from the host (OS). Disruptive Installation shall be done with the subsystem power OFF.

Table 2.4-1 Disruptive Installation Procedure Table

No.	Working Item	Model Number	Page
1	Display the SVP initial screen	←	SVP01-10 through
2	Confirm the micro-version		OPTVER01-10
3	POWER OFF of Disk Subsystem	—	INST03-14-40 through 60
4	Power Control Interface kit Installation (DKC-F610I-PCI)	←	INST03-12-10 through 60 (Only Hardware Procedure)
Caution	**Caution of the ACBOX Installation/De-installation** **If revision control does not indicates "C" or "T", it means that the FC of "SVP down induced by USB memory insertion" has been applied yet, please carry out the FC according to the FCB.** **If voltages are abnormal or if there appears to be damage to the cable, then please contact Technical Support Team for guidance.**		
5	AC Box Installation (DKC-F610I-1PS/1PSD/3PS)	←	INST03-05-10 through 150 (Only Hardware Procedure)
6	AC Power Cable Installation (DKC-F610I-1EC/1UC/1ECD/1UCD/3EC/3UC)	←	INST03-06-10 through 430 (Only Hardware Procedure)
7	POWER ON of Disk Subsystem	—	INST03-14-10 through 20 (Only Hardware Procedure)
8	AC Box Configuration Setting and Confirmation	—	INST03-05-160 through 280
9	END	—	—

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2.5 Disruptive De-installation Procedure Table

Note: Perform the disruptive de-installation of options in numerical order shown in the following table. Proceed to the next work neglecting unnecessary ones. Remove additional disruptive options according to the flow shown below.

When De-Installation has been all done, make sure that all the removed units are displayed as "empty" and that the other units are normal (See the STATUS Section).
If a fault occurs during or after removal, see INST02-180 to locate a faulty unit and take action. If any other message than the list is displayed, see the SVP Message section.

Precautions on Disruptive De-Installation

- "Disruptive" means that the subsystem is disconnected from the host (OS). Disruptive De-installation shall be done with the subsystem power OFF.

Table 2.5-1 Disruptive De-installation Procedure Table

No.	Working Item	Model Number	Page
1	Display the SVP initial screen	←	SVP01-10 through
2	AC Box Configuration Setting and Confirmation	—	INST03-05-160 through 280
3	POWER OFF of Disk Subsystem	—	INST03-14-40 through 60
Caution	**Caution of the ACBOX Installation/De-installation** **If revision control does not indicates "C" or "T", it means that the FC of "SVP down induced by USB memory insertion" has been applied yet, please carry out the FC according to the FCB.** **If voltages are abnormal or if there appears to be damage to the cable, then please contact Technical Support Team for guidance.**		
4	AC Box De-Installation (DKC-F610I-1PS/1PSD/3PS)	←	INST04-08-10 through 110 (Only Hardware Procedure)
5	AC Power Cable De-Installation (DKC-F610I-1EC/1UC/1ECD/1UCD/3EC/3UC)	←	INST04-09-10 through 350 (Only Hardware Procedure)
6	Power Control Interface kit De-Installation (DKC-F610I-PCI)	←	INST04-07-10 through 50
7	POWER ON of Disk Subsystem	—	INST03-14-10 through 20
8	END	—	—

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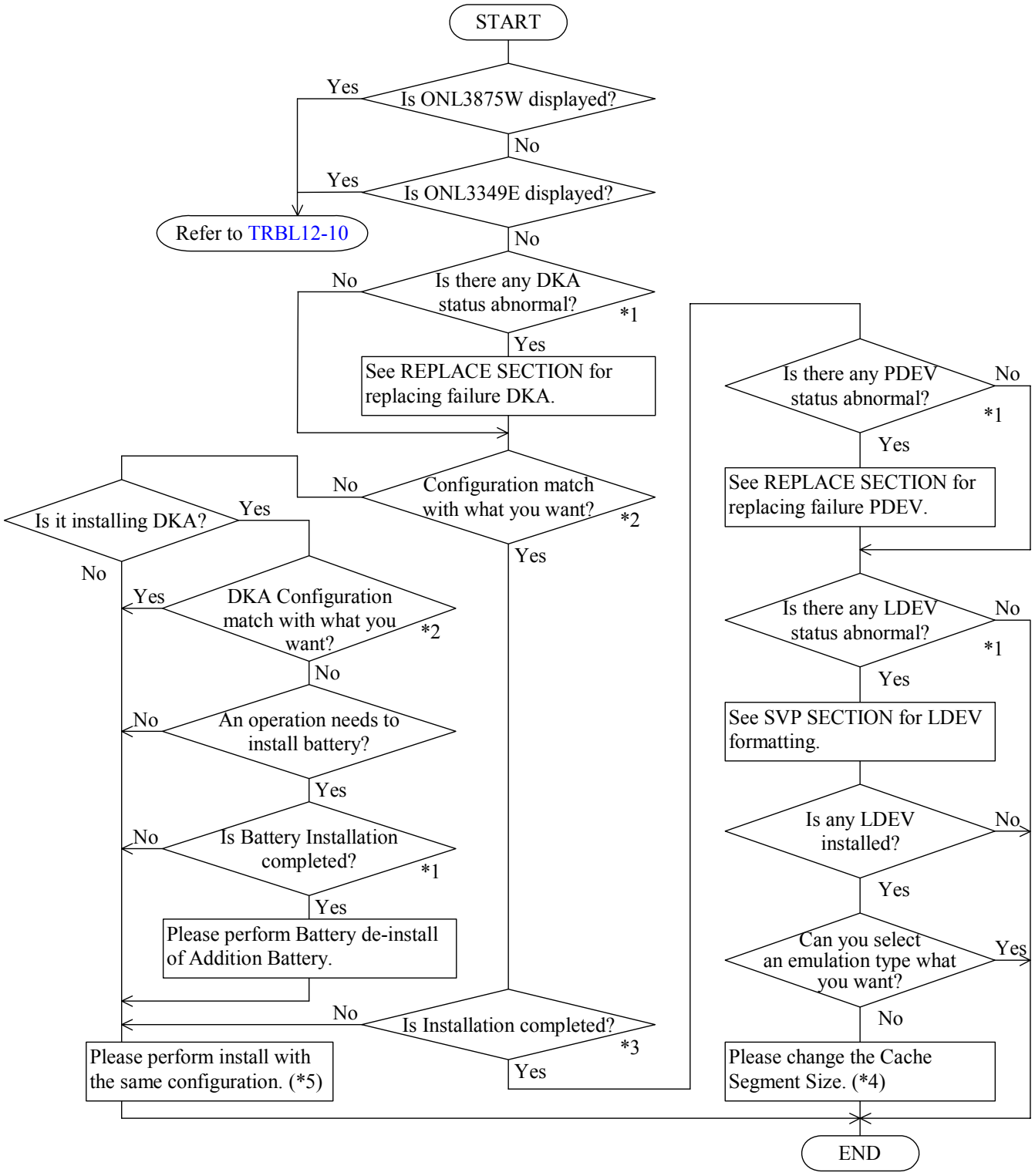
2.6 Trouble shooting for errors in install SVP procedure

2.6.1 DKA + ECC group + LDEV



*1: Select (CL) [Maintenance] in the 'SVP' Window.
*2: Select (CL) [Install] – [Refer Configuration] in the 'SVP' Window.
*3: Wasn't INS2450E displayed when select (CL) [Install] – [Change Configuration] in the 'SVP' Window?

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*4: [Procedure]

(1) Select “Cache Segment Size” in the “System Option” Window.
(Refer SVP02-1090)

Table 2.6.1-1 Cache Segment Size and that support emulation type

Cache Segment Size	Emulation Type
48 K byte	3380-K/3, H6586-K, F642X-H
58 K byte	3390-M/L/9/3/2, K-6588-3/9
64 K byte	All

Note: When you select some LDEV emulation types of different Cache Segment Size in a subsystem, Cache Segment Size treated with the subsystem is the maximum value.

(2) Replace SM-1SA and SM-2SB.
SM PK is used that has been used.
(Refer REP03-70)

*5: There is a case where you cannot change the type of spare drive.
In that case, please install again with the same configuration except for the spare drive.
After this operation is complete, please uninstall the spare drive and install the spare drive again.

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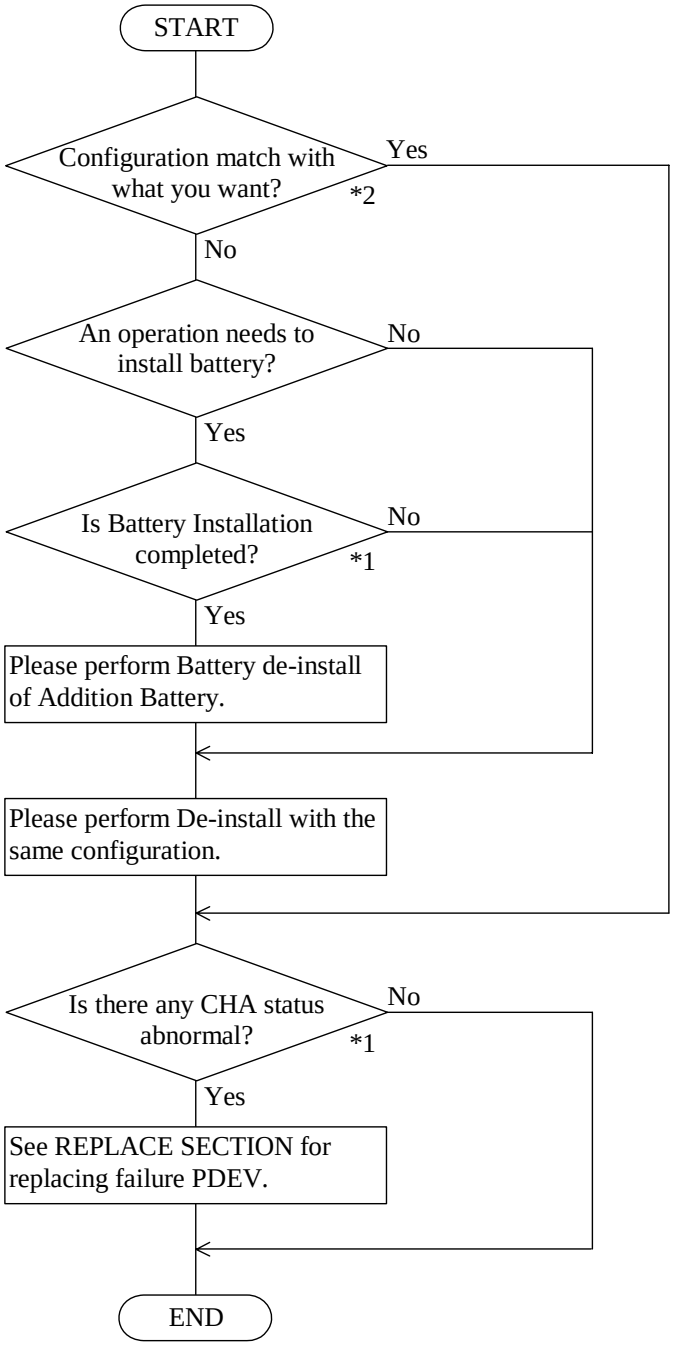
2.6.2 Number of Channel



*1: Select (CL) [Maintenance] in the 'SVP' Window.

*2: Select (CL) [Install] – [Refer Configuration] in the 'SVP' Window.

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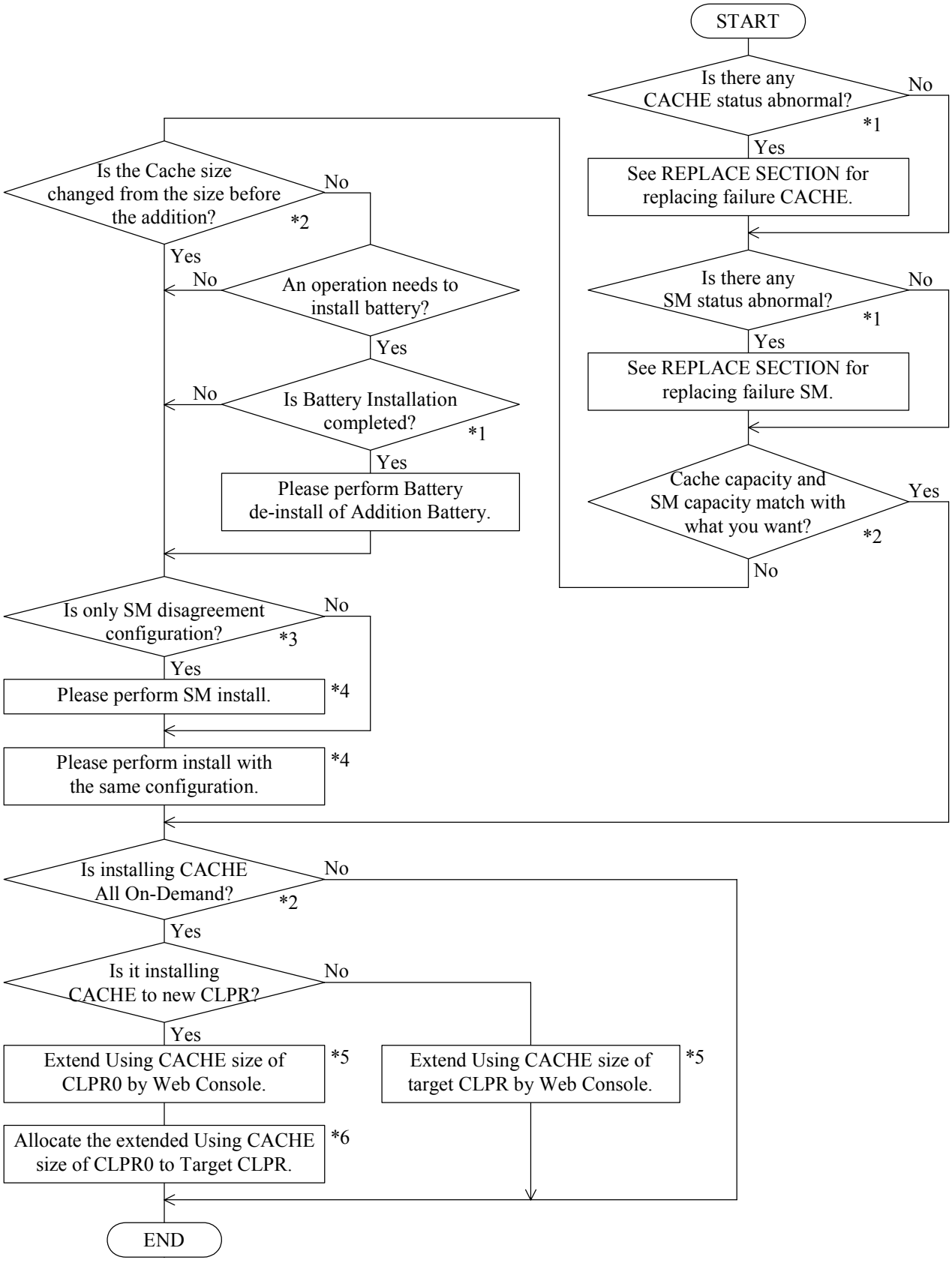
2.6.3 Cache Capacity



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*1: Select (CL) [Maintenance] in the 'SVP' Window.

*2: Select (CL) [Install] – [Refer Configuration] in the 'SVP' Window. Cache capacity may be on-demand capacity.

*3: Was INS2566W displayed when select (CL) [Install] – [Change Configuration] – [Installation] in the 'SVP' Window?

*4: The installation of the cluster 1 may be completed depending on the contents of the installation failure. In this case, if the installation is performed again, processing will begin from the cluster 2.

*5: Select (CL) [Web Console] – [Environmental Settings] – [On-Demand] in the 'SVP' Window. (Refer WEB05-10)

*6: Select (CL) [Web Console] – [Environmental Settings] – [Partition Definition] in the 'SVP' Window.
Extend Cache memory reference to [Remote Console – Virtual Partition Manager User's Guide] – 4.3.

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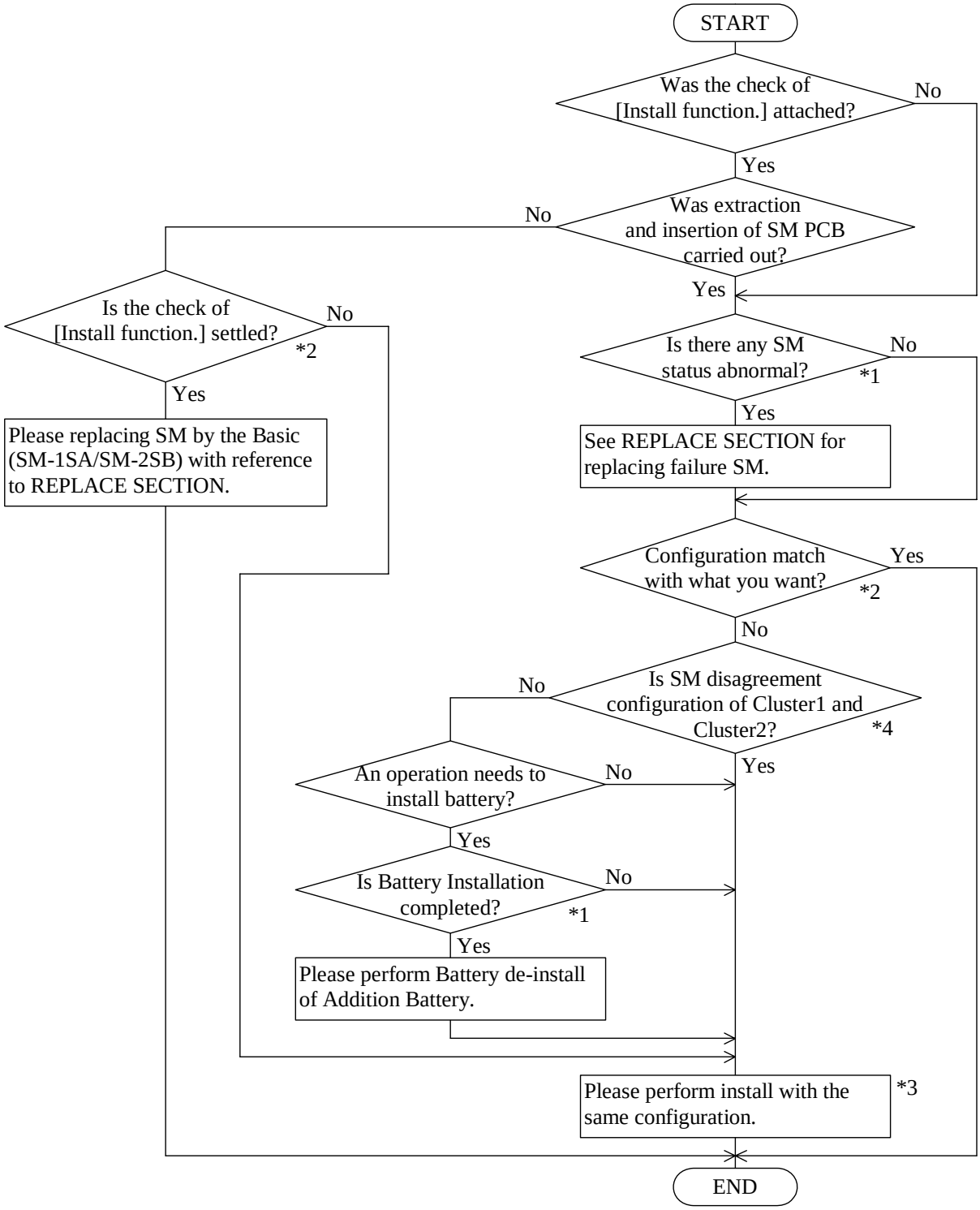
2.6.4 SM Capacity



*1: Select (CL) [Maintenance] in the 'SVP' Window.
*2: Select (CL) [Install] – [Refer Configuration] in the 'SVP' Window.
*3: The installation of the cluster 1 may be completed depending on the contents of the installation failure. In this case, if the installation is performed again, processing will begin from the cluster 2.
*4: Was INS2566W displayed when select (CL) [Install] – [Change Configuration] – [Installation] in the 'SVP' Window?

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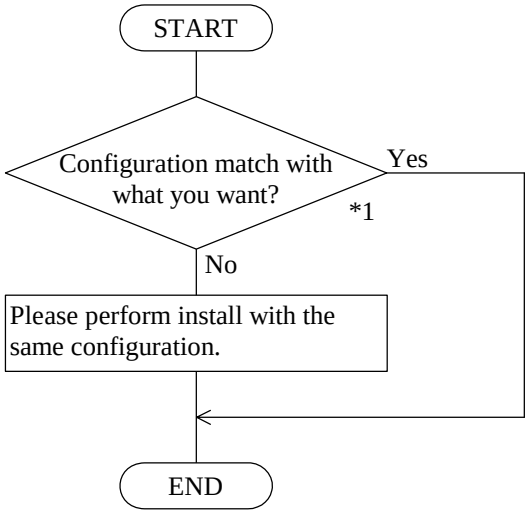
2.6.5 Power Supply



*1: Select (CL) [Install] – [Refer Configuration] in the 'SVP' Window.

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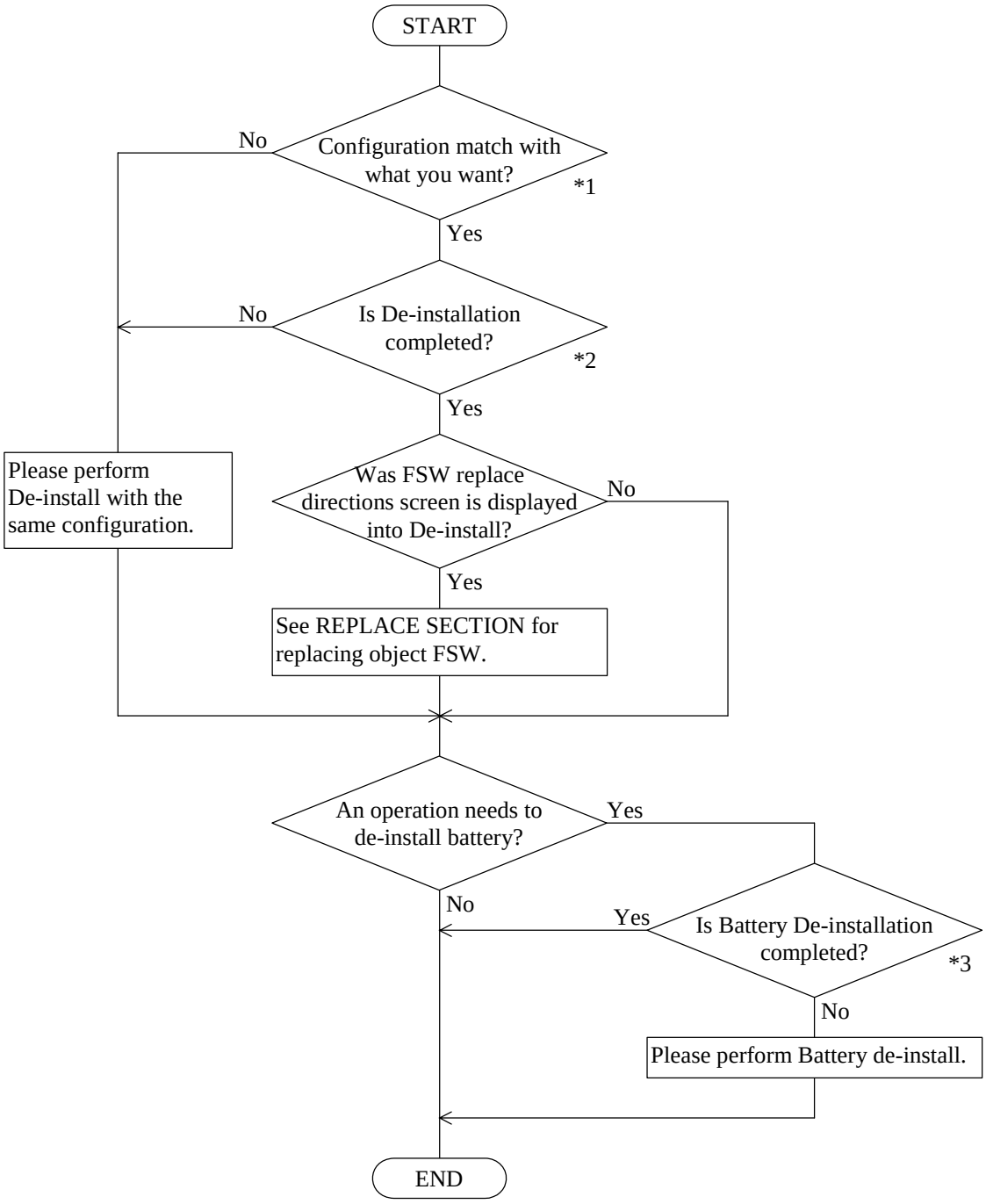
2.7 Trouble shooting for errors in de-install SVP procedure

2.7.1 DKA + ECC group + LDEV



*1: Select (CL) [Install] – [Refer Configuration] in the 'SVP' Window.
*2: Wasn't INS2450E displayed when select (CL) [Install] – [Change Configuration] in the 'SVP' Window?
*3: Select (CL) [Maintenance] in the 'SVP' Window.

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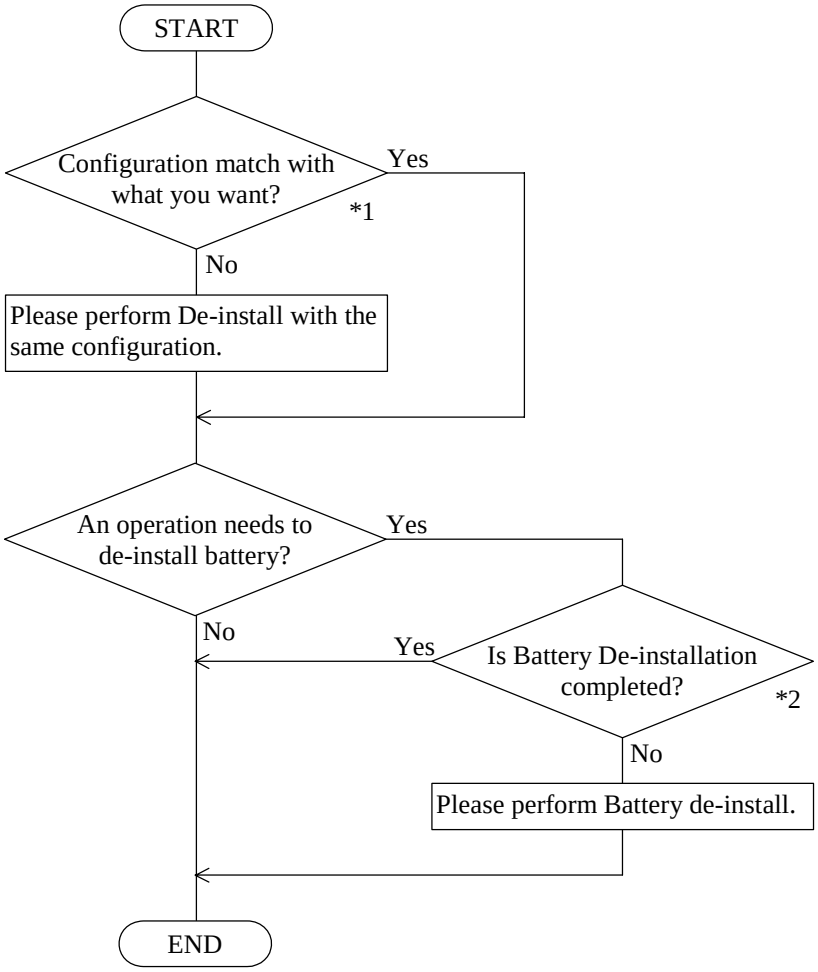
2.7.2 Number of Channel



*1: Select (CL) [Install] – [Refer Configuration] in the 'SVP' Window.

*2: Select (CL) [Maintenance] in the 'SVP' Window.

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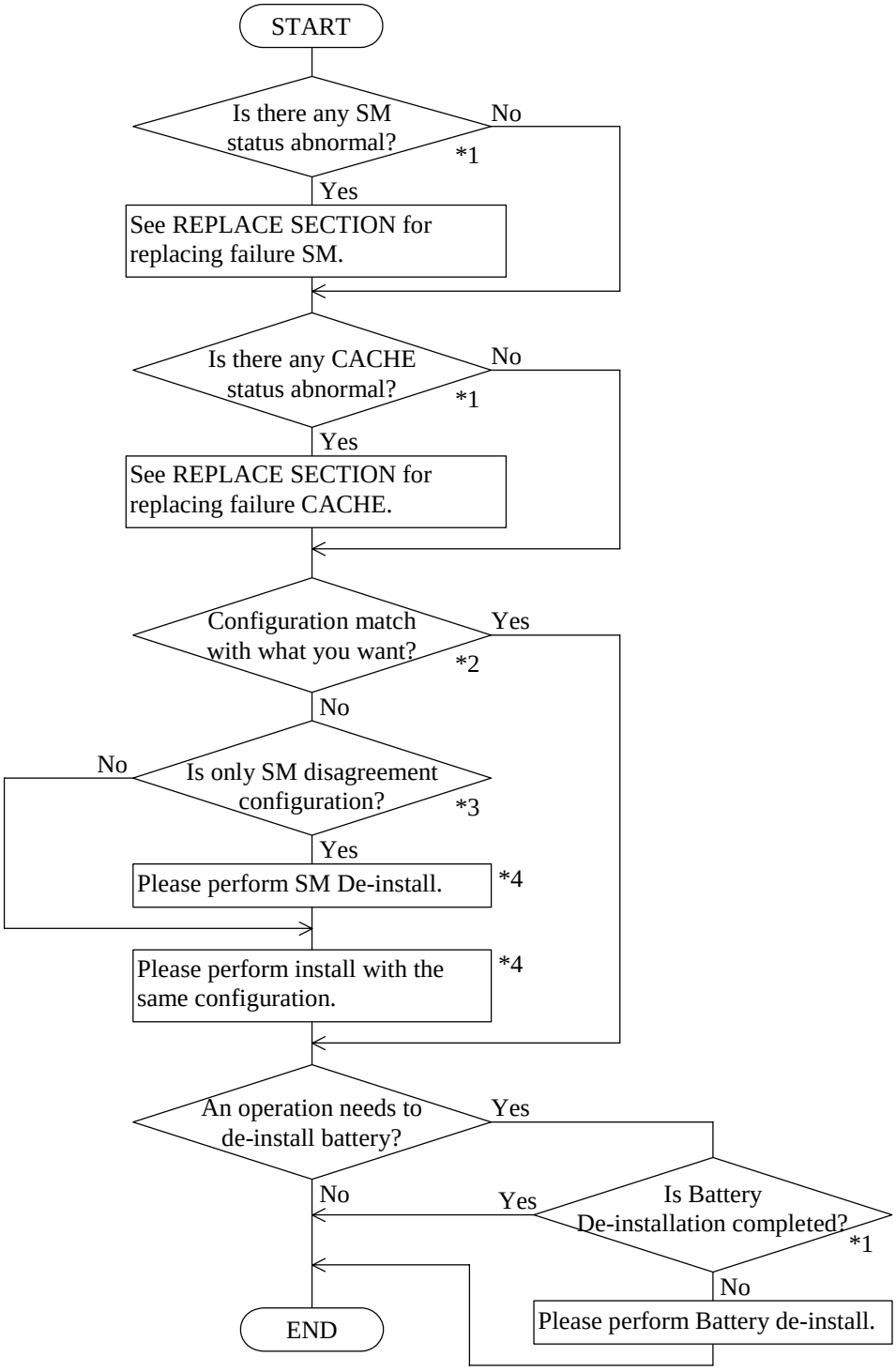
2.7.3 Cache Capacity



*1: Select (CL) [Maintenance] in the 'SVP' Window.
*2: Select (CL) [Install] – [Refer Configuration] in the 'SVP' Window.
*3: Was INS2566W displayed when select (CL) [Install] – [Change Configuration] – [De-installation] in the 'SVP' Window?
*4: The de-installation of the cluster 1 may be completed depending on the contents of the de-installation failure. In this case, if the de-installation is performed again, processing will begin from the cluster 2.

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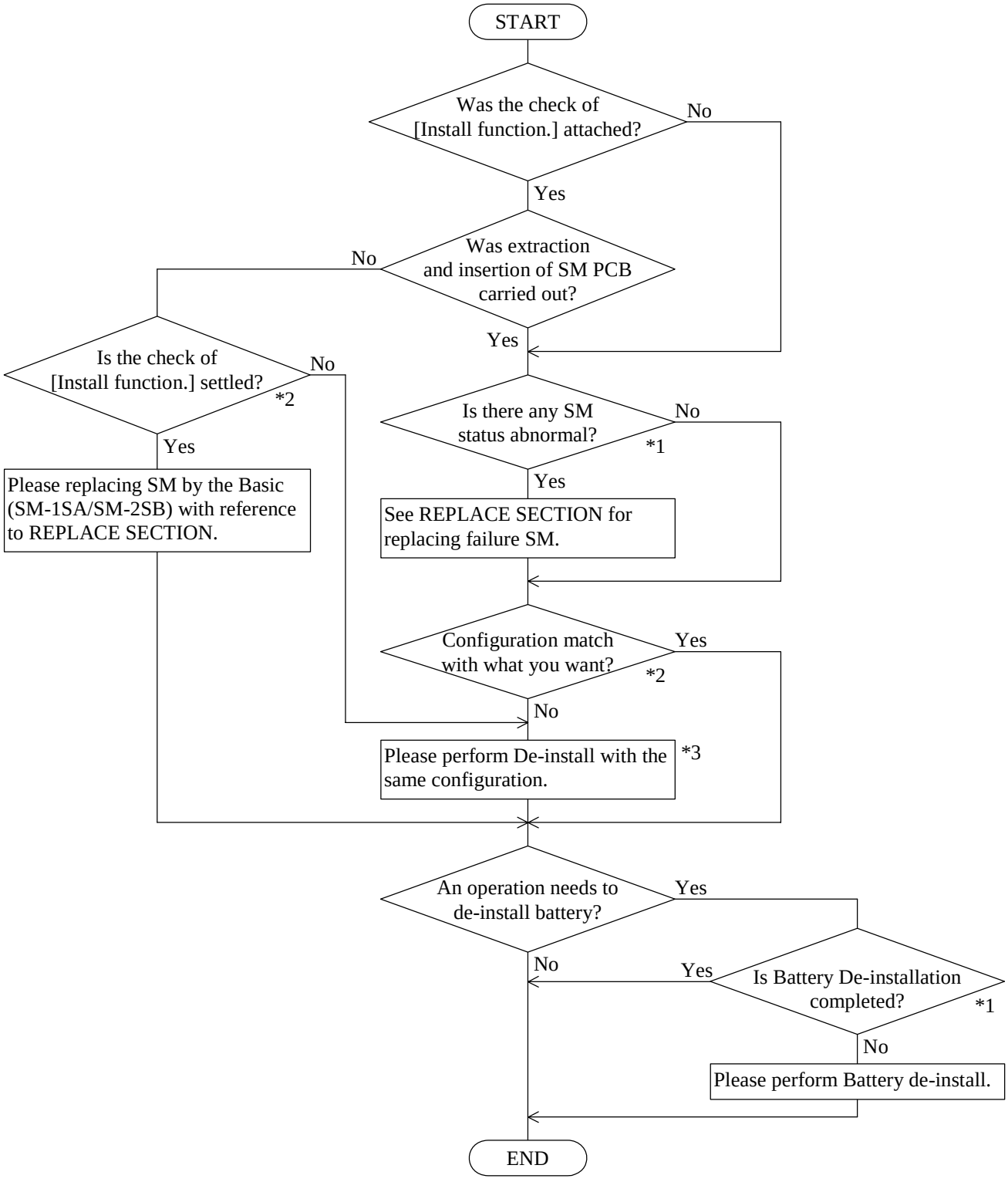
2.7.4 SM Capacity



*1: Select (CL) [Maintenance] in the 'SVP' Window.
*2: Select (CL) [Install] – [Refer Configuration] in the 'SVP' Window.
*3: The de-installation of the cluster 1 may be completed depending on the contents of the de-installation failure. In this case, if the de-installation is performed again, processing will begin from the cluster 2.

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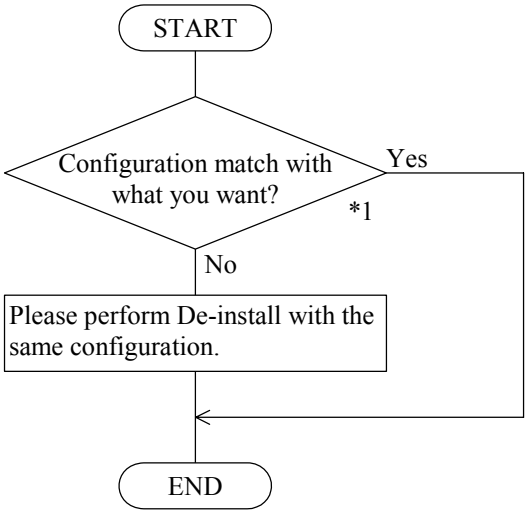
2.7.5 Power Supply



*1: Select (CL) [Install] – [Refer Configuration] in the 'SVP' Window.

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2.9 Availability of Installation and De-installation

The pair can be suspended if the ESTPAIR or paircreate (pairesync) command is issued during the HDD Canister or the Cache PCB installation/de-installation. Please ask your customer before the online maintenance operation.

PP	Status		HDD Canister			Cache PCB	CHA			DKA
			DATA		SPARE		Installation	De-installation		
			Installation	De-installation	Installation/ De-installation	Installation/ De-installation	With/Without Alternate path	With Alternate path	Without Alternate path	Installation/ De-installation
HRC/ HORC (*6)	HRC path established	MCU	×	× (*1)	×	×	×	×	×	×
		RCU	×	×	×	×	×	×	×	×
	During initial copy	MCU	×	SVP2031W (*1)	×	SVP2059W	× (*3)	×	SVP2073W	×
		RCU	×	SVP2034W	×	SVP2079W	× (*3)	SVP2038W	SVP2038W	×
	After completing initial copy	MCU	×	SVP2031W (*1)	×	× (*2)	× (*3)	×	SVP2074W	×
		RCU	×	SVP2034W	×	×	× (*3)	SVP2038W	SVP2038W	×
	Suspend	MCU	×	SVP2031W (*1)	×	×	× (*3)	×	SVP2075W	×
		RCU	×	SVP2034W	×	×	× (*3)	SVP2038W	SVP2038W	×
	Suspending	MCU	×	SVP2031W (*1)		× (*2)	× (*3)	×	SVP2075W	×
		RCU	×	SVP2034W		×	× (*3)	SVP2038W	SVP2038W	×
	Deleting	MCU	×	SVP2031W (*1)		× (*2)	× (*3)	×	SVP2075W	×
		RCU	×	SVP2034W		×	× (*3)	SVP2038W	SVP2038W	×

(To be continued)

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(Continued from preceding sheet)

PP	Status		HDD Canister			Cache PCB	CHA			DKA
			DATA		SPARE		Installation	De-installation		
			Installation	De-installation	Installation/ De-installation	Installation/ De-installation	With/Without Alternate path	With Alternate path	Without Alternate path	Installation/ De-installation
UR (JNL-GROUP)	HRC path established	MCU	×	×	×	×	×	×	×	×
		RCU								
	Initial	MCU	×	SVP3825W	×	×	×	×	×	×
		RCU								
	Active	MCU	×	SVP3825W	×	×	×	×	×	×
		RCU								
	Halt	MCU	×	SVP3825W		×	×	×	×	×
		RCU								
	Halting	MCU	×	SVP3825W	×	×	×	×	×	×
		RCU								
	Stop	MCU	×	SVP3825W	×	×	×	×	×	×
		RCU								
	Stopping	MCU	×	SVP3825W	×	×	×	×	×	×
		RCU								
UR (DATA-VOL)	HRC path established	MCU	×	×	×	×	×	×	×	×
		RCU	×	×	×	×	×	×	×	×
	During initial copy	MCU	×	SVP2031W	×	SVP2059W	×	SVP3848W	SVP3848W	×
		RCU	×	SVP2034W	×	SVP2079W	×	×	SVP2073W	×
	After completing initial copy	MCU	×	SVP2031W	×	×	×	SVP3848W	SVP3848W	×
		RCU	×	SVP2034W	×	×	×	×	SVP2074W	×
	Suspend	MCU	×	SVP2031W	×	×	×	SVP3848W	SVP3848W	×
		RCU	×	SVP2034W	×	×	×	×	SVP2075W	×
	Suspending	MCU	×	SVP2031W	×	×	×	SVP3848W	SVP3848W	×
		RCU	×	SVP2034W	×	×	×	×	SVP2075W	×
	Deleting	MCU	×	SVP2031W	×	×	×	SVP3848W	SVP3848W	×
		RCU	×	SVP2034W	×	×	×	×	SVP2075W	×

(To be continued)

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(Continued from preceding sheet)

PP	Status		HDD Canister			Cache PCB	CHA	DKA
			DATA		SPARE			
			Installation	De-installation	Installation/ De-installation	Installation/ De-installation	Installation/ De-installation	Installation/ De-installation
HMRCF	Reserve	—	×	SVP2485W	×	×	×	×
	Pending/ Resync/ SP-Pend	S-VOL	×	SVP2485W	×	SVP2486W	×	×
		T-VOL						
	Duplex	S-VOL	×	SVP2485W	×	×	×	×
		T-VOL						
	Split	S-VOL	×	SVP2485W	×	×	×	×
		T-VOL						
	Suspend	S-VOL	×	SVP2485W	×	×	×	×
		T-VOL						
FlashCopy (R)	During copy	S-VOL	×	SVP2485W	×	×	×	×
		T-VOL	×	SVP2485W	×	SVP2486W	×	×
	NOCOPY	S-VOL	×	SVP2485W	×	×	×	×
		T-VOL						
FlashCopy (R) version 2	During copy	S-VOL	×	SVP2485W	×	×	×	×
		T-VOL	×	SVP2485W	×	SVP2486W	×	×
	NOCOPY	S-VOL	×	SVP2485W	×	×	×	×
		T-VOL						
	Incremental FlashCopy	S-VOL	×	SVP2485W	×	×	×	×
		T-VOL						
XRC	During initial copy	Primary	×	(*4)	×	(*5)	×	×
		Secondary	×	(*4)	×	×	×	×
	Established	Primary	×	(*4)	×	(*5)	×	×
		Secondary	×	(*4)	×	×	×	×
	Suspend	Primary	×	(*4)	×	(*5)	×	×
		Secondary	×	(*4)	×	×	×	×

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× : Maintenance is available.

SVPXXXXW : Maintenance is not available based on the specification. Refer to SVP MESSAGE SECTION.

*1: If CU which all HDEV's are deleted from by this operation exists and there is registration of RCU in this CU, SVP will display a warning message with SVP2466W.

*2: For HRC ASYNC Pairs, a maintenance with the cache blockage is recommended to operate with capacities of Sidefile and Write Pending Data being 20% below. If the above maintenance is Performed with high capacities of Sidefile and Write Pending Data, the operation will take long and way cause impact such as MIH occurrence on the host operation.
Refer to "Monitoring" in the SVP SECTION for the Sidefile monitor.

*3: When the different 'DKC – Emulation –Type' of CHA is installed, SVP displays a warning message with SVP3289W.

*4: When a maintenance operation is needed while XRC is being used, XRC should be stopped before the maintenance operation.

*5: When a maintenance operation is needed while XRC is being used, I/O's for XRC pair volumes or XRC itself should be stopped before the maintenance operation.
If the maintenance operation must be done while XRC is being used, you must confirm that the usage of Sidefile monitor is less than 20% of total Cache capacity by monitoring each combination of MPPK and CLPR usage before you start the maintenance operation.
Only when the usage of Sidefile monitor is less than 20% of total Cache capacity, you can proceed the maintenance operation.
Refer to SVP SECTION "2.4 Monitoring" (SVP02-200) about Sidefile monitor.
Select the [Monitor] icon in the 'SVP' window.
Next select the [Monitor] menu in the 'Information' window and select [start....].
Next select the 'Sidefile' box in the 'Item' menu in the 'Monitoring' window and select [OK].

*6: It is impossible to change the DKC No, SSID, or DKC Emulation type by system tuning when TrueCopy for Mainframe or TrueCopy is used.

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2.10 New Installation procedures without the pre-installation at a customer site

2.10.1 Application

These procedures are applied to a new installation without the pre-installation at a customer site or the pre-installation at the warehouse as shown below.

- Installing the micro programs into the DKC subsystem. Its version must be appropriate one.
- Installing the configuration information which is appropriate to the customer.

If these procedures are used in other cases, their processes are not assured.

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2.10.2 Conditions to use these procedures

These procedures can be used in the following conditions:

① The installation of the Hardware parts (for example, the connections of cables, power supplies and so on) have been finished. (For the Hardware installation, refer to "2.1 New Installation Procedure Table" (INST02-10 ~ INST02-20) of Maintenance Manual.)

② The PC (SVP) is installed and can be used. (For the SVP installation, refer to "REP04-380 ~ REP04-730" of Maintenance Manual.)

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2.10.3 Procedures

(1) Summary

The procedures are divided roughly into 4 processes.

① Pre-processing (the installation of the micro-programs into the SVP HD : (1)-(8) in the following flow)

② Execution of "New Installation" by the SVP. (By this procedure, the micro-programs and Fixed Minimum configuration are installed into PCBs (packages). : (9)-(19) in the following flow)

③ Execution of "Define Configuration and Install" by the SVP.(By this procedure, the customer's configurations are defined.) : ((20)-(30) in the following flow)

④ Others ((31)-(50) in the following flow)

(2) Processing Flow

The processing flow of the new installation is as follow:

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START

(1)-0 Back up the current Config in the ConfigFD of the same value.
(1)-1 Check the size of the Cache, SM DIMM, CU number and IP address with the DKC and remember them for later use in step (30)-1, (30)-2.
(1)-2 Turn off the "POWER ON/OFF" switch on the DKCPANEL.
(1)-3 Make sure the breaker is off (DKU and DKC). (If it is "on", turn off the breaker after the SVP is shut down.).
[Breaker:INST03-14-40 ~ 60 , SVP Shut Down:SVP01-190]
(1)-4 If the PUBLIC (SNMP Web Console) or INT (ASSIST) or MODEM cables in the SVP are connected, disconnect them. Do not disconnect other cables. [LOC04-70]

(2) Turn on the breaker (DKU and DKC) and wait for the SVP ready to use.
(Don't turn on the "POWER ON/OFF" switch on the DKCPANEL)
[Power ON procedures of Disk Subsystem:INST03-14-10 ~ INST03-14-20]

(3) Set the Maintenance jumper to "SVP PS ON/OFF INH jumper" (JP1).
When the SVP High Reliability Kit is installed, set the Maintenance jumper to "SVP PS ON/OFF INH jumper" (JP1) on the Additional SVP.
[LOC06-40]

(SVP procedure)
(4) Set TOD
(At this time, "Communication Error" may occur. You can ignore the error.)
[INST05-20 ~ INST05-40]

(SVP procedure)
(5) Execute the following procedures: (*15)
[Install micro-programs and configuration to the HD to the SVP]
[REP04-410 ~ REP04-620]
step0: Connect to the SVP display from the client PC by the remote desktop.
step1: Prepare the CD-ROM. (*1)
step2: Click "START" on the task bar and select "Control Panel"-"Add or Remove Programs".
Uninstall JRE, Apache, and Perl.
step3: Insert the CD-ROM disk into the client PC's drive.
step4: Enter the following command: \\tsclient\E\setup.exe (enter).
* In the case client PC's CD-ROM drive is "E:".
Select [CD-R] to install configuration information from CD-R, when the message CNF4061i.
Enter the key code of the configuration information when the message CNF4055i, and then click [OK]. (*14)
Insert the second CD-R (OSS), and select [OK].
This operation causes the "SVP Reboot". Then wait few minutes and reconnect by the remote desktop.
step5: Remove the CD-ROM from the client PC's drive.

(SVP procedure)
(6) Set IP Address
IP Address must be 126.255.255.15 and Subnet mask must be 255.0.0.0. Also, "Target" must be "SVP".
(Don't select "SVP and DKC" as the "Target". [INST05-50 ~ INST05-70] (*2)
Besides, do not select "Use Duplex SVP" in the "External IP Address" box.
Config BackUp is accompanies.

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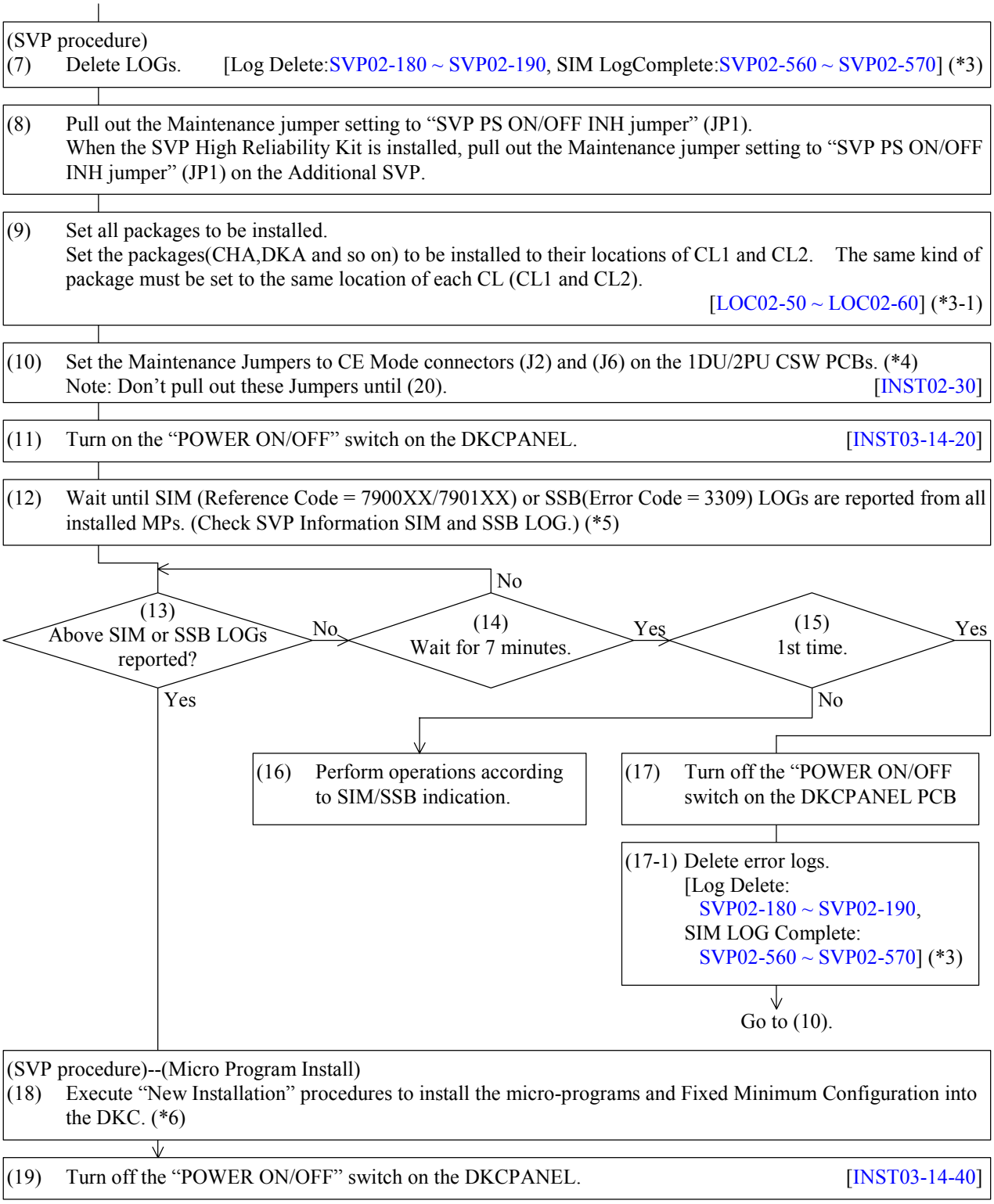

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(20) Pull out the Maintenance Jumpers from the all CSW PCBs. (*4)

(21) Delete error logs.
[Log Delete:SVP02-180 ~ SVP02-190, SIM Log Complete:SVP02-560 ~ SVP02-570] (*3)

(22) Shut down the SVP, turn off the Battery and turn off the Breaker (DKC and DKU) to volatilize SM. Then, wait for 10 minutes.
When you apply the enhanced configuration, it is necessary to insert the memory in the SM slot in advance. (Refer to INST07-10.)
Turn on the Breaker (DKC and DKU).
[SVP Shut Down:SVP01-190, Breaker:INST03-14-40 ~ INST03-14-60, Battery Boxes: LOC06-50] (*7)

(23) Execute Power ON procedures
(23)-1 Turn on the Breaker DKC and DKU. [Power ON procedure of Disk Subsystem:INST03-14-10]
(23)-2 (SVP procedure)
Wait until the SVP is ready and change the SVP mode to "Initial setup". (*9)
(23)-3 Turn on the "POWER ON/OFF" switch on the DKCPANEL.
[Power ON procedure of Disk Subsystem:INST03-14-20]
(23)-4 Turn on the battery switch.

(24) Wait till Power Event Log (SYSTEM ON) is reported from all installed MPs. (*8)

(25) SUB-SYSTEM ALARM LED lit? — Yes → (26) Perform operations according to SIM/SSB indications.

No

(27) Power Event Log reported from all installed MPs? — No → (28) Wait for 10 minutes. — No → back to (25)

Yes

(28) Wait for 10 minutes. — Yes → (29) Perform operations according to SIM/SSB indications.

Change the SVP mode to "Initial Setting". (*9)
(SVP procedure) -- (Execution of Define Configuration and Install)
(30)-1 Execution of Config Exchange Procedure.
Select the "Install" in the "SVP" window and select "Copy Config Files" in the "Install" window. And select "All Configuration Files" in the "Copy Config Files" window.
[MICRO08-60 ~ MICRO08-70]
(30)-2 Define the configuration information that you want to install now for this DKC subsystem.
Then, the defined size of the Cache and SM DIMM must be equal to ones of the Cache and SM DIMM equipped for the DKC subsystem. (*10)
The configuration information must be defined according to the SVP guidance. Especially, you must not forget the definition of the following information.
① DKC Serial No., IP Address.
② Cache Configuration
③ Host Interface Configuration:
④ PDEVs, LDEVs, etc.
[INST05-80 ~ INST05-370]

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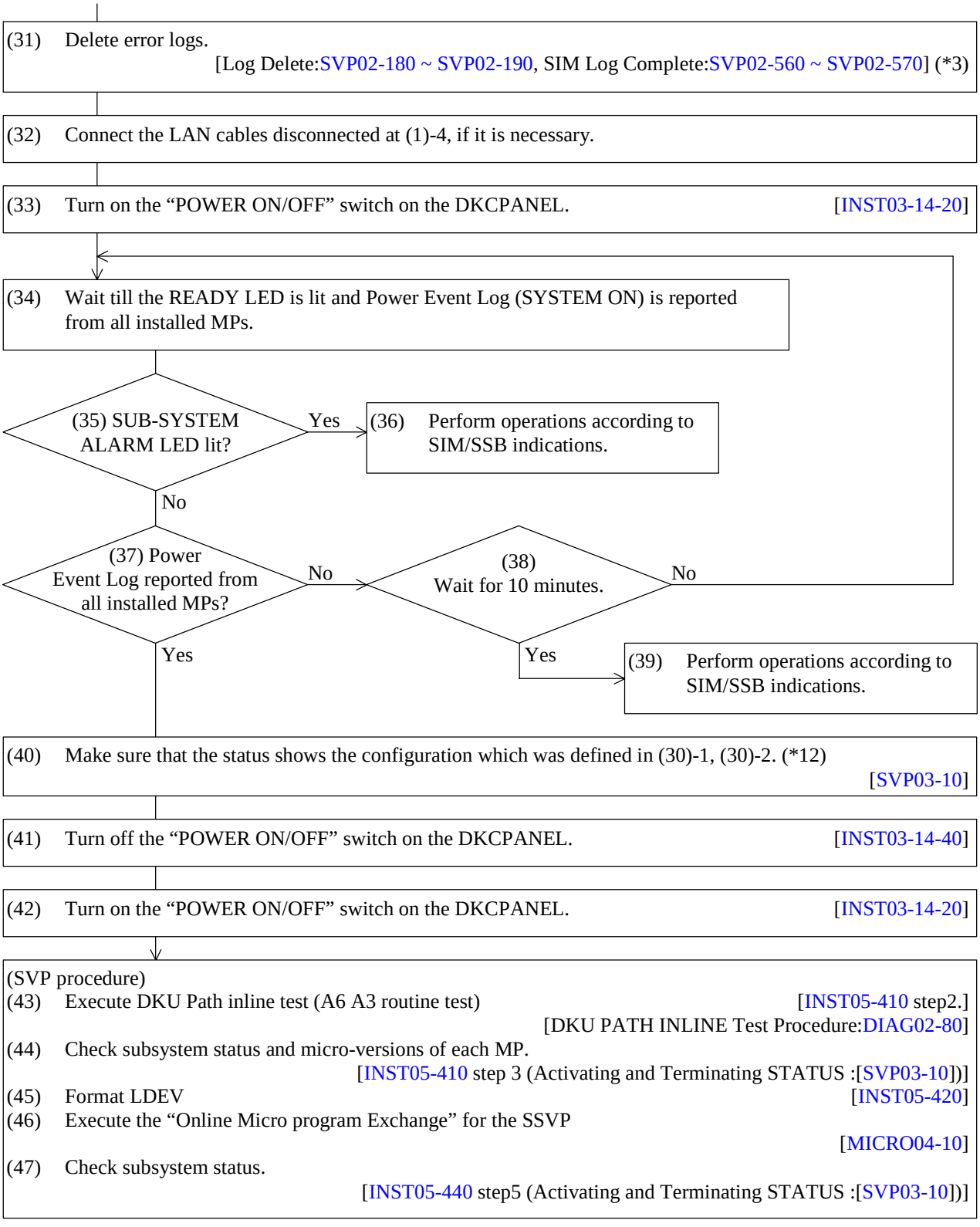

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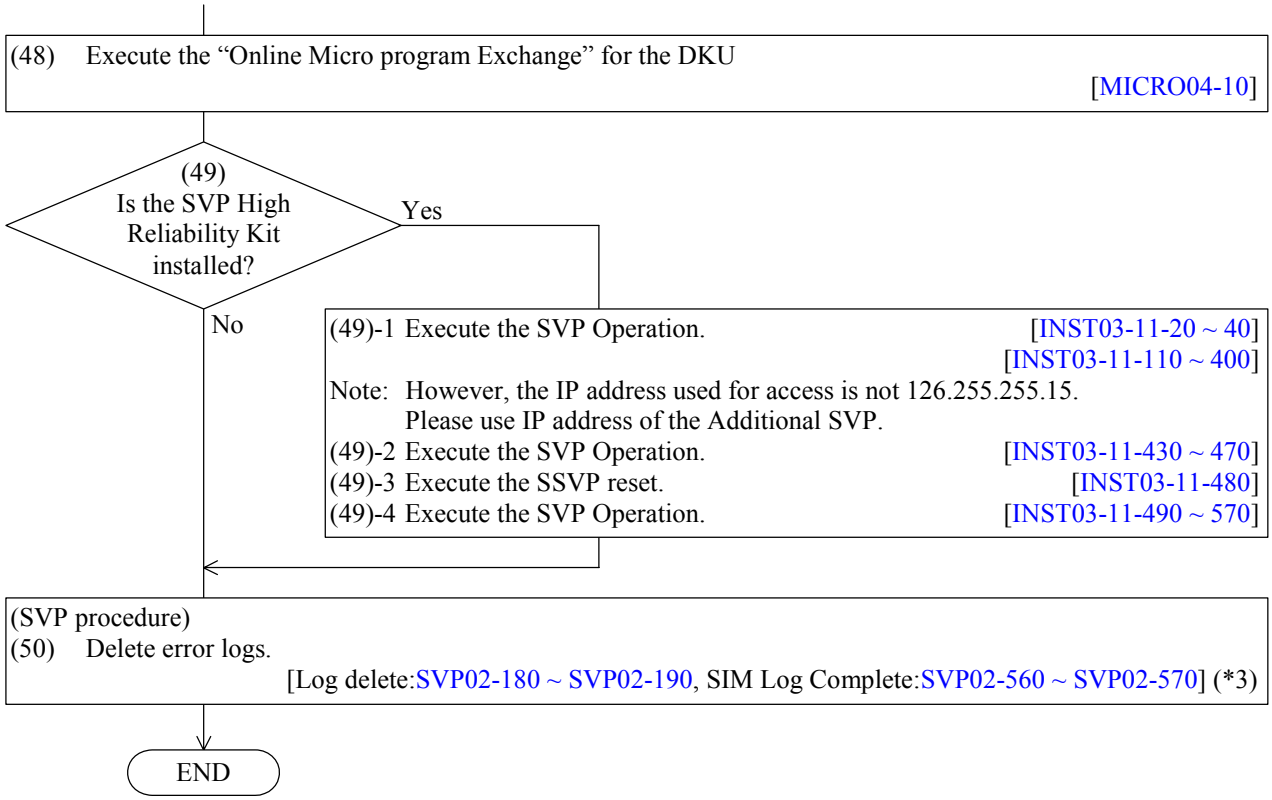

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*1 : The CD-ROM includes the micro-programs and configuration information to be installed into the DKC subsystem.

*2 : Even if the “IP Address” is “126.255.255.15” and the “Subnet Mask” is “255.0.0.0” on the screen of “Set IP Address”, be sure to select “OK” and reply “OK” to the message “This will reboot SVP.”.

*3 : It’s necessary to execute the procedure of “SIM Log Complete” before deleting the SIM data.

*3-1: At least, a pair of CHAs must be installed in the front and back box PCB locations. Also, a pair of DKAs must be installed in the front and back box PCB locations.

*4 : Refer to the following about the Maintenance Jumpers.
- “INST02-30 Note”

*5 : Count SSB Logs (Error Code = 3309). The number is same as the number of the installed MPs.

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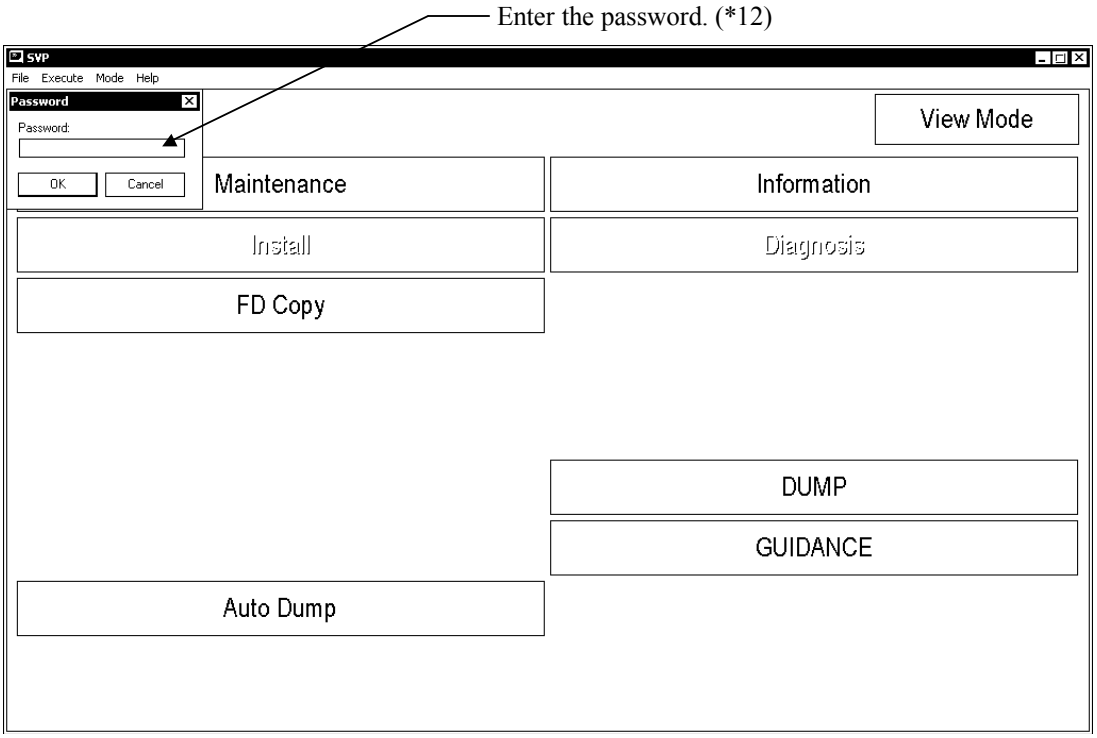
*6 : The procedures of "New Installation" are as follows.

(1) Return to the SVP window.

(2) Press the following keys at the same time to change the mode to "Initial Setting".
[SHIFT], [CTRL], [I]

(3) Enter the password.
This password must be used only for this procedure. Don't use for other purposes without approval by the technical support division or the factory.



(4) Select "Install".

(5) <Install Window>
Select "Micro Program Install".

(6) <Menu Dialog Window>
Select "New Installation".

(7) Select "Yes" to the following message.
"Are you sure you want to execute new installation?"

(8) <New Installation PCB configuration Window>
After (7), the following window is displayed. At the window, specify as follows:
① Select the package type (host interface and so on) of the current packages setting in their locations of "CHA" or "DKA".
② Select "All microprograms". ("Fixed Minimum Configuration" should be selected automatically.) (*13)
③ Select "OK" after finishing the above specifications.

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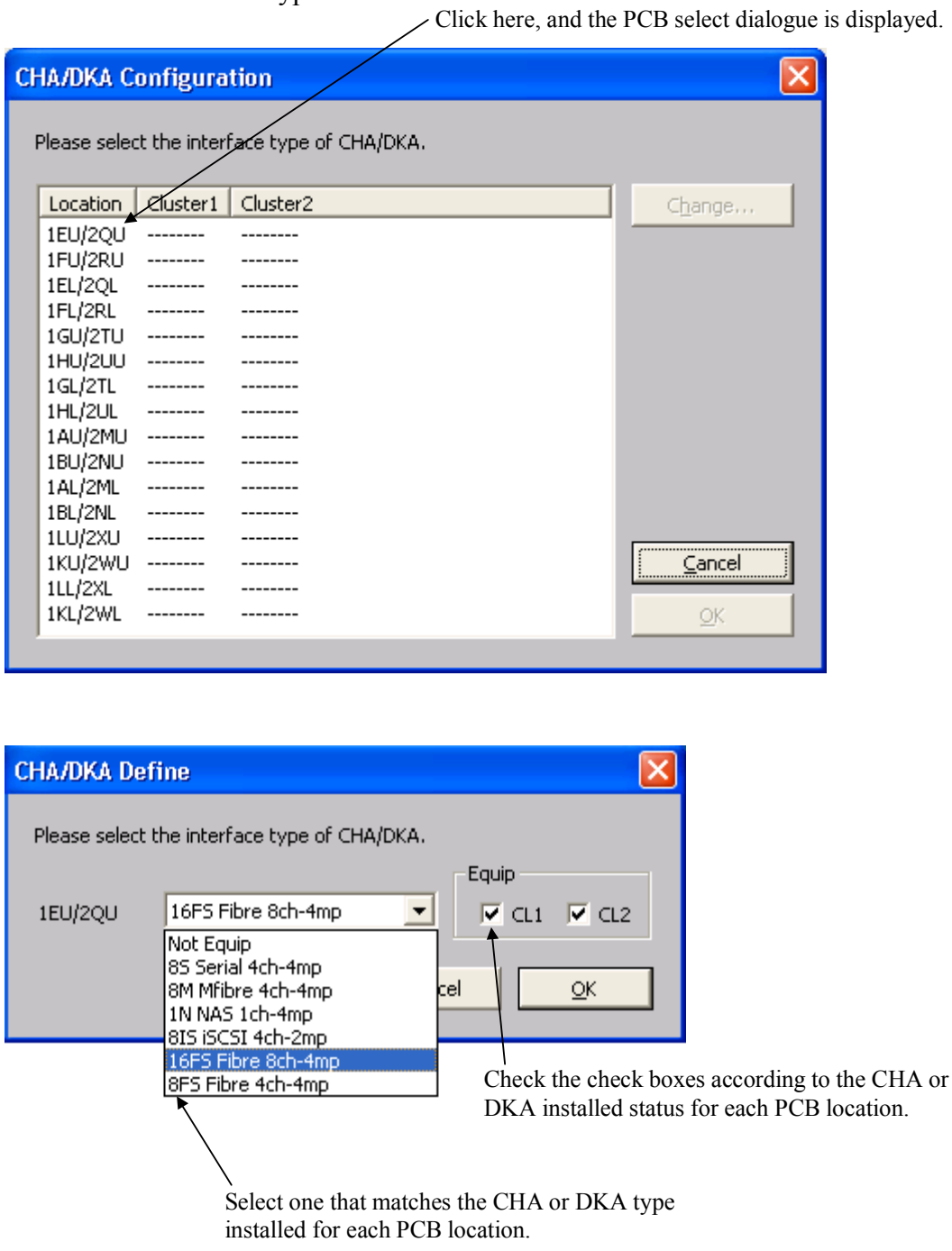
[Example of operations]

- Select installed PCB type



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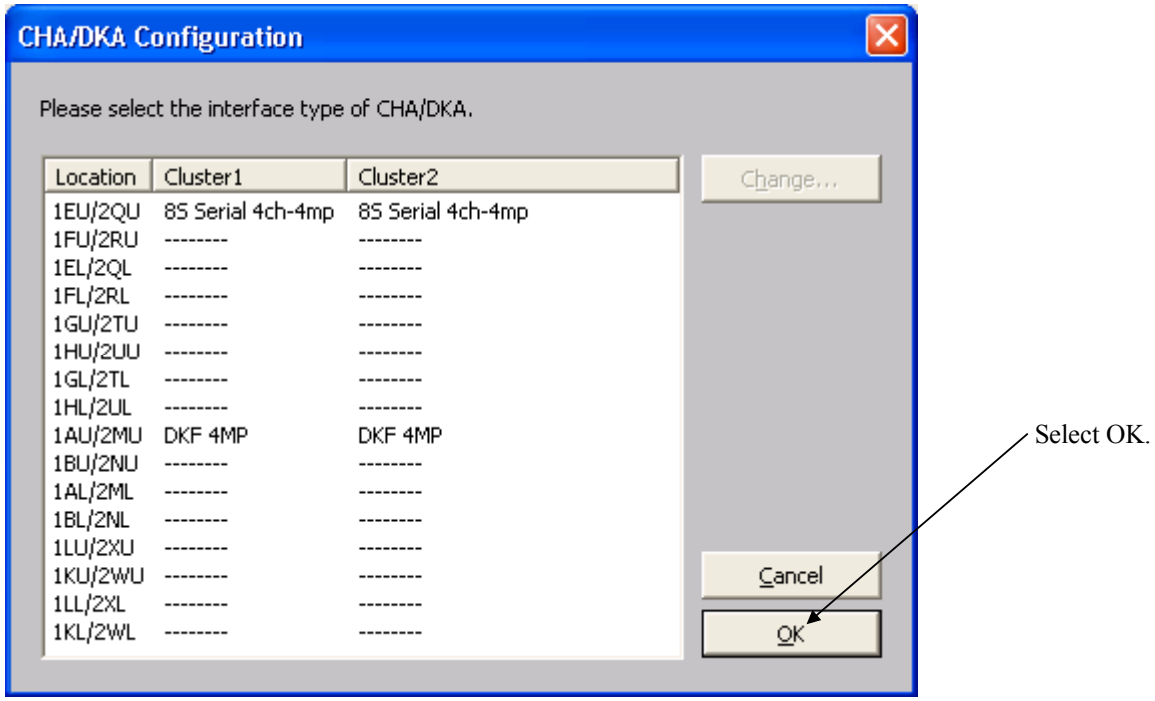
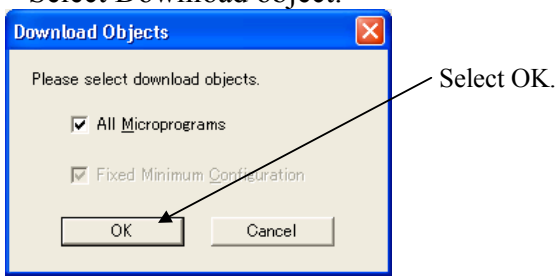


• Select Download object.



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(9) The message, "[INS3302i] New installation finished normally.", is output.
Then, click "OK", and the "Installation window" is closed.
(Till the message, "[INS3302i] New installation finished normally.", is output, you must not select "Cancel" in the "Shell Batch Execute Status" window. If "Cancel" is selected, this process is interrupted. If "Cancel" is selected by a mistake operation, try again from (6) of INST02-330.)
(If the message "[INS3005E] New installation process failed." was output, try again from the step (6) of INST02-330.)

*7 : The following SIM Logs are output by turning off the battery switches.
SIM Logs: bf5010, bf5210, bf5020, bf5220
But you can ignore them.

*8 : At this time, the initializing processings of the DKC subsystem are performed by using the minimum configuration. The minimum configuration is the special configuration for the New Installation Procedure (*13). So, the READY LED is not lit. Also, the SIM Log (3073XX, 3173XX, 3990XX, 3D90XX and FFE800) may be output if the current configuration is different from the "Fixed Minimum Configuration". But they should be ignored. And you should not select "Maintenance" in "SVP window" until the Define Configuration Procedure is performed at step (30)-1, (30)-2.

*9: Press the following keys at the same time to change the mode to "Initial Setting".
[SHIFT], [CTRL], [I]
And input the password. (*12)

*10: In this definition, specify the actual DKC Serial Number.
Also, "IP Address" should be specified as follows:

① Specifying the IP Address according to the DKC Serial Number Select "Based on Serial Number", and the IP Address will be assigned automatically.

② Specifying the IP Address according to the magic number.
Select "Based on Magic Number" and specify a magic number. Then, the IP Address will be assigned automatically.

③ Specifying in option
Select "Specified" and specify the optional address for the IP Address.
And, the defined value for the size of the Cache and SM DIMM should be equal to the value that was confirmed at (1) in the processing flow. After the configuration information is defined, Turn on the "POWER ON/OFF" switch of the DKC and the reboot of the SVP will be executed.

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*11: Surely, check the following status:
(1) the condition of each PCB status.----- PCB Kind/Normal or not/etc
(2) the micro-program version

*12: For the password, ask the technical support division. And use it with their approval.

*13: The "Fixed Minimum configuration" is a temporary configuration to unify the condition of the power-on processing in Step (23) and is not concerned with the current configuration. It is used only in "New Installation" procedure.
The following information is defined in the "Fixed Minimum Configuration".

① Basic DKC Configuration (1E-U/2Q-U for "CHA", 1A-U/2M-U for "DKA")
IP Address = 126.255.255.xx
8S Serial 4ch-4mp for Host interface configuration
4mp for the DKA

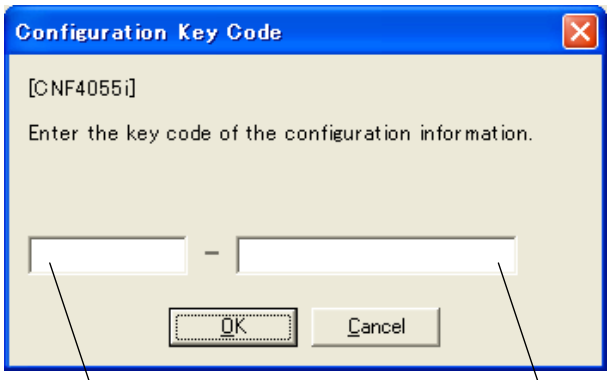
② Option PCBs Configuration : None (No equip)

③ Cache size : 4 GB for each side.

④ SM size : 1 GB for each side.

⑤ LDEV/PDEV/LCP Configuration : None

*14: The following tables show all the configuration key codes.



Configuration Model
FC

Type	Configuration key code
/00	TagmaStore
/07	TagmaStoreF
/10	XP24000
/15	TPF24000
/17	XP24000F
/50	TPF

*15: SIM (BFE3A2: SVP duplication setting defect) will be create.
But you can ignore it.

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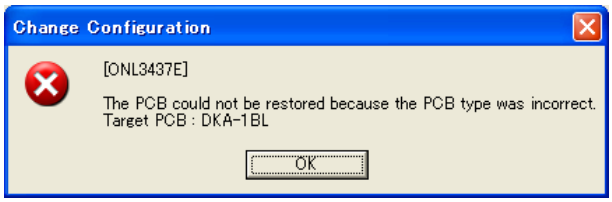
2.11 Obstacle part replacement procedure in install

2.11.1 Replacement procedure when PCB could not be restoring

(1)

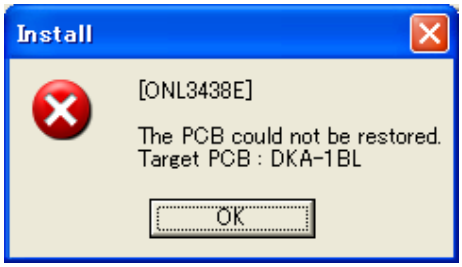
The following messages are displayed when PCB could not be restoring.

When "The PCB could not be restored because the PCB type was incorrect. Target PCB : ****" is displayed, please check the PCB type. (The target PCB location is displayed on Target PCB : ****.)



Please select(CL) [OK] after a check.

When "The PCB could not be restored. Target PCB : ****" is displayed, please check the PCB. (The target PCB location is displayed on Target PCB : ****.)

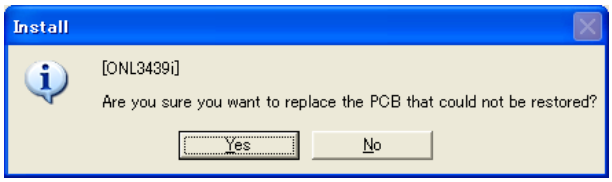


Please select(CL) [OK] after a check.

---

(2)

"Are you sure you want to replace the PCB that could not be restored?" is displayed.

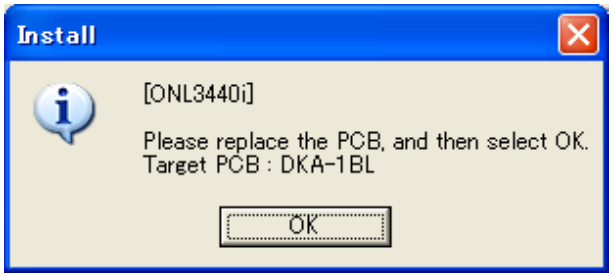


When the maintenance parts to replace exist, please select [Yes]. → Go to (3)
When the maintenance parts to replace do not exist, please select [No] and refer to trouble shooting for errors in install. (INST02-110, INST02-130)

---

(3)

"Please replace the PCB, and then select OK. Target PCB : ****" is displayed.
(The target PCB location is displayed on Target PCB : ****.)



Please select OK(CL), after replacing the target PCB.

It returns to the former install section.

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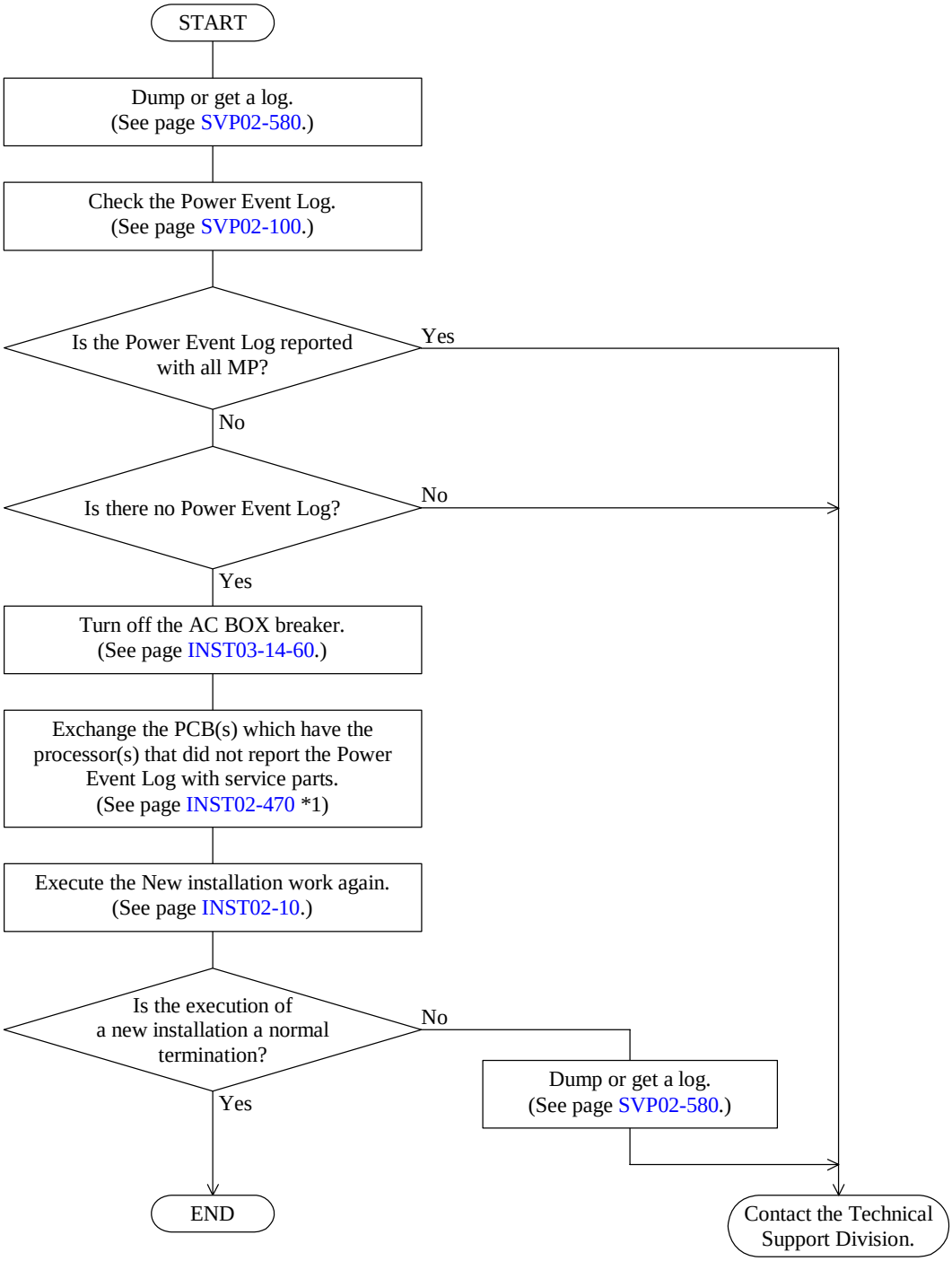
2.12 Troubleshooting at the time of new installation

(1) When the ALARM LED comes on



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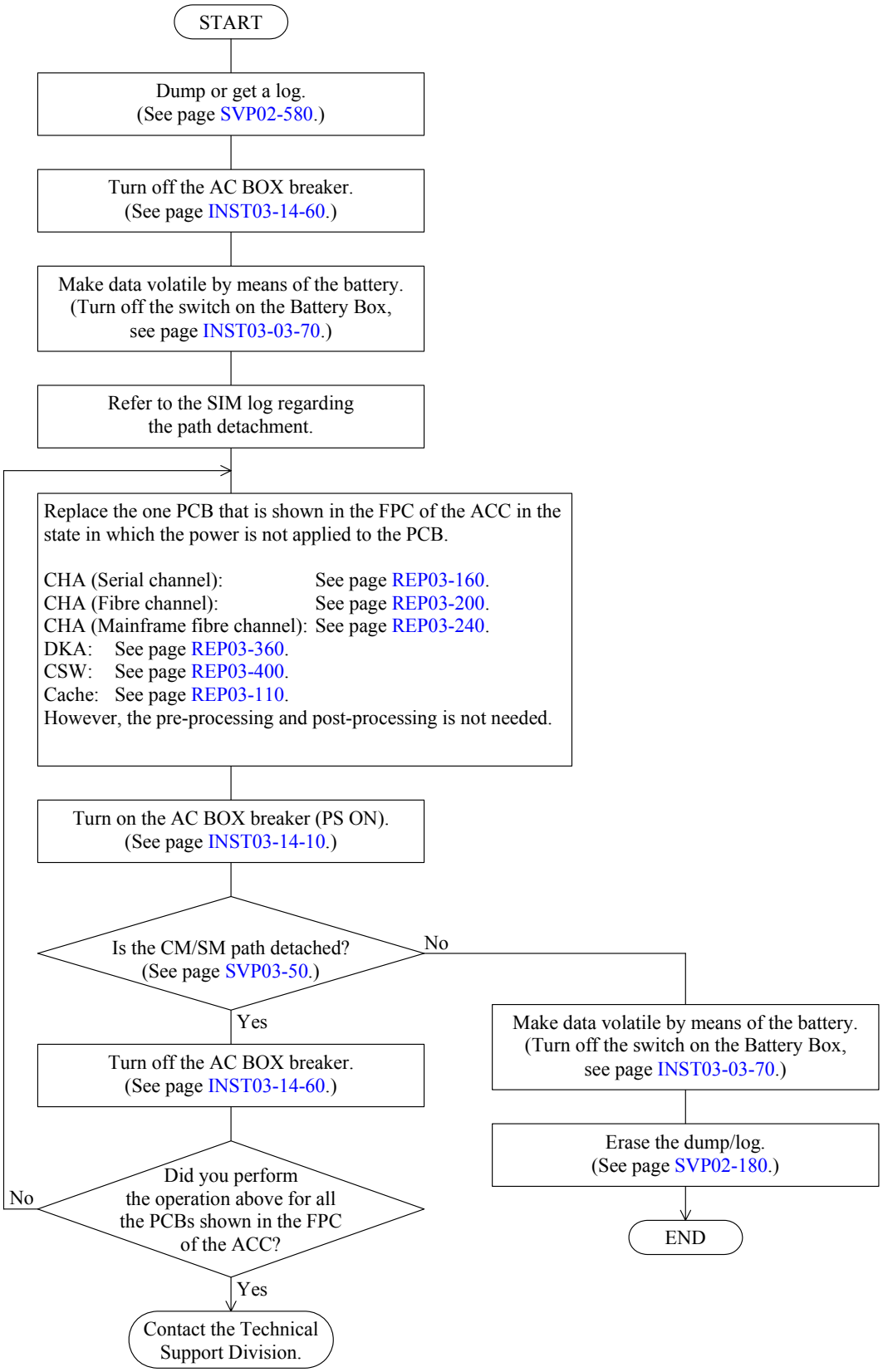
(2) When the CM/SM path is detached



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*1: Pulling out of the processor PCB
DKA: Refer to "Removing disk adapter PCB" on page INST04-01C-380.
CHA:
- Serial 4-port adapter — Refer to page INST04-04A-60.
- Fibre 4/8-port adapter — Refer to page INST04-04B-60.
- Mainframe fibre 4-port adapter — Refer to page INST04-04C-60

*2: Insertion of the processor PCB
DKA: Refer to "Adding disk adapter PCB" on page INST03-10B-70.
CHA:
- Serial 4-port adapter — Refer to page INST03-07A-100.
- Fibre 4/8-port adapter — Refer to page INST03-07B-100.
- Mainframe fibre 4-port adapter — Refer to page INST03-07C-100.

*3: Pulling out of the cache PCB
Refer to page INST04-03B-110.

*4: Insertion of the cache PCB
Refer to page INST03-08B-400.