

INSTALLATION SECTION

INSTALLATION

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1 Subsystem Configuration Outline

1.1 General Information

1.1.1 Model List

(1) Model of DKC460I

Table 1.1.1-1 shows the model list of DKC460I.

Table 1.1.1-1 Model List of DKC460I

No	Model Number	Model Name	Major Part	Remarks
1	DKC460I-5 DKC460I-5F	Disk Control Frame Disk Control Frame without doors	• SVP PC • LR013-A (PS-PL) • LR014-A (SH-PL) • SH302-A(DKC-PANEL) • Special PCB • 3VPS × 4 • 5/3VPS × 4 • SUBPS × 2 • FAN ASSY × 16 • LR009-A (L/G-PL) • DKA × 2 • CACHE-A × 2 • CSW × 4 • Battery Assy × 4 • Battery Control × 4 • Device I/F Cable×16 (DKC – R1-DKU)	DKC460I Disk Subsystem doesn't contain channel adapters, cache memory modules, shared memory modules, AC Box Kit and AC Power cables. It is necessary to attach the following options according to the configuration. • Channel Adapters DKC-F460I-8S/8GS/4HSE/8HSE/8HLE/8MS/8ML • Cache Memory Modules DKC-F460I-2048 • Shared Memory Modules DKC-F460I-S512 • AC Box Kit DKC-F460I-1PS/3PS/1PSD/3PSD • AC Power cables DKC-F460I-1EC/1UC/1ECD/1UCD/3ECD/3UCD • HDD canisters DKU-F455I-18K4/18K1/36J4/36J1/36K4/36K1/72J4/72J1
2	DKC-F460I-1PS	AC Box Kit for Single Phase/40A	• AC Box × 2	
3	DKC-F460I-1EC	Power Cable Kit for Single Phase/50A (50Hz for Europe)	• Power Cable Unit (IE)	
4	DKC-F460I-1UC	Power Cable Kit for Single Phase/50A (60Hz for USA)	• Power Cable Unit (IU)	
5	DKC-F460I-3PS	Breaker Box Kit for 3 Phase	• Breaker Box × 2	
6	DKC-F460I-1PSD	AC Box Kit for Single Phase/30A	• AC Box × 2	
7	DKC-F460I-1ECD	Power Cable Kit for Single Phase/30A (50Hz for Europe)	• Power Cable Unit (IE)	
8	DKC-F460I-1UCD	Power Cable Kit for Single Phase/30A (60Hz for USA)	• Power Cable Unit (IU)	
9	DKC-F460I-3PSD	AC Box Kit for 3 Phase/30A	• AC Box × 2	

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No	Model Number	Model Name	Major Part	Remarks
10	DKC-F460I-3ECD	Power Cable Kit for 3 Phase/ 30A (50Hz for Europe)	• Power Cable Unit (IE)	
11	DKC-F460I-3UCD	Power Cable Kit for 3 Phase/ 30A (60Hz for USA)	• Power Cable Unit (IU)	
12	DKC-F460I-80	DKC Additional Power Supply	• 3VPS × 4	This model must be installed when the total number of the installation of CHA and DKA options are 4 or more.
13	DKC-F460I-41	Cache Access Throughput Expansion Kit	• Cache-B × 2	This model must be installed when access performance to the cache memory is expanded in two times.
14	DKC-F460I-42	Additional Battery for Cache Memory	• Battery Assy × 2 • Battery Control × 2	This model must be installed when the cache memory is installed 34GB or more
15	DKC-F460I-2048	Additional Cache Memory Module (2048 MB)	• SH288-B (512 MB) × 4	
16	DKC-F460I-S512	Additional Shared Memory Module (512 MB)	• SH287-B (256 MB) × 2	
17	DKC-F460I-200	Additional High Performance Disk Adapter	• WP471-B SH281-B × 4 } × 2	
18	DKC-F460I-18	PCI I/F Connector	• PCI I/F Con.	
19	DKC-F460I-UPS	UPS Connection Kit	• DKC Panel • UPS CON	
20	DKC-F460I-SVP	SVP High Reliability Kit	• SVP	
21	DKC-F460I-L1C	Device Interface Cable 1	• FC Cable × 16 • LED Cable × 16	

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No	Model Number	Model Name	Major Part	Remarks
22	DKC-F460I-U405R	DKU405 Connection Kit (for R1 DKU)	• MONI Cable (R1) × 2 • MONI CON × 2 • DEV I/F cable, CAP	
23	DKC-F460I-U405L	DKU405 Connection Kit (for L1 DKU)	• MONI Cable (L1) × 2 • MONI CON × 2 • DEV I/F cable, CAP	
24	DKC-F460I-8S	Serial 8-port Adapter	• WP462-A } × 2 • SH281-C × 4 } • I/F Con. Panel	
25	DKC-F460I-8GSE	Fibre 8-port Adapter for Short Wavelength (1Gbps support)	• WP461-D } × 2 • SH281-A × 2 } • I/F Con. Panel	
26	DKC-F460I-4HSE	Fibre 4-port Adapter for Short Wavelength (1-2Gbps support)	• WP461-E } × 2 • SH281-A × 2 } • I/F Con. Panel	
27	DKC-F460I-8HSE	Fibre 8-port Adapter for Short Wavelength (1-2Gbps support)	• WP461-B } × 2 • SH281-A × 4 } • I/F Con. Panel	
28	DKC-F460I-8HLE	Fibre 8-port Adapter for Long Wavelength (1-2Gbps support)	• WP461-C } × 2 • SH281-A × 4 } • I/F Con. Panel	
29	DKC-F460I-8MS	Mainframe Fibre 8-port Adapter for Short Wavelength (1Gbps support)	• WP465-A } × 2 • SH281-A × 4 } • I/F Con. Panel	
30	DKC-F460I-8ML	Mainframe Fibre 8-port Adapter for Long Wavelength (1Gbps support)	• WP465-B } × 2 • SH281-A × 4 } • I/F Con. Panel	
31	DKC-F460I-256M	256MB Additional Memory for SVP	• Additional SVP Memory × 2	
32	DKC-F460I-8GSF	Fibre 8-port Adapter for Short Wavelength (1Gbps support)	• WP461-H } × 2 • SH281-A × 2 } • I/F Con. Panel	Check data assist support
33	DKC-F460I-4HSF	Fibre 4-port Adapter for Short Wavelength (1-2Gbps support)	• WP461-J } × 2 • SH281-A × 2 } • I/F Con. Panel	Check data assist support
34	DKC-F460I-8HSF	Fibre 8-port Adapter for Short Wavelength (1-2Gbps support)	• WP461-F } × 2 • SH281-A × 4 } • I/F Con. Panel	Check data assist support
35	DKC-F460I-8HLF	Fibre 8-port Adapter for Long Wavelength (1-2Gbps support)	• WP461-G } × 2 • SH281-A × 4 } • I/F Con. Panel	Check data assist support
36	DKC-F460I-DH	Door Kit for Lightning 9980V	• Front and Rear doors • Side doors	
37	DKC-F460I-DS	Door Kit for StorEdge 9980V	• Front and Rear doors • Side doors	

(2) Model of DKU455I

Table 1.1.1-2 shows the model list of DKC460I.

Table 1.1.1-2 Model List of DKU455I

No	Model Number	Model Name	Major Part	Remarks
1	DKU455I-18 DKU455I-18F	Disk Array Frame Disk Array Frame without doors	• HDU Box × 8 • HDD PL × 8 • HDD-PS PL × 8 • FSW-A × 16 • FSW-B × 16 • FAN ASSY × 4 • 5/12V PS × 16 • JMP PK × 32	DKU455I Disk Unit doesn't contain AC Box Kit, AC Power cables and HDD canisters.
2	DKU-F455I-1PS	AC Box Kit for Single Phase/50A	• AC Box × 2	
3	DKU-F455I-1EC	Power Cable Kit for Single Phase/50A (50Hz for Europe)	• Power Cable Unit (IE)	
4	DKU-F455I-1UC	Power Cable Kit for Single Phase/50A (60Hz for USA)	• Power Cable Unit (IU)	
5	DKU-F455I-3PS	AC Box Kit for 3 Phase/60A	• AC Box × 2	
6	DKU-F455I-3EC	Power Cable Kit for 3 Phase/60A (50Hz for Europe)	• Power Cable Unit (IE)	
7	DKU-F455I-3UC	Power Cable Kit for 3 Phase/60A (60Hz for USA)	• Power Cable Unit (IU)	
8	DKU-F455I-1PSD	AC Box Kit for Single Phase/30A	• AC Box × 2	
9	DKC-F460I-1ECD	Power Cable Kit for Single Phase/30A (50Hz for Europe)	• Power Cable Unit (IE)	
10	DKC-F460I-1UCD	Power Cable Kit for Single Phase/30A (60Hz for USA)	• Power Cable Unit (IU)	
11	DKU-F455I-3PSD	AC Box Kit for 3 Phase/30A	• AC Box × 2	
12	DKC-F460I-3ECD	Power Cable Kit for 3 Phase/30A (50Hz for Europe)	• Power Cable Unit (IE)	
13	DKC-F460I-3UCD	Power Cable Kit for 3 Phase/30A (60Hz for USA)	• Power Cable Unit (IU)	
14	DKU-F455I-EXC	Device Interface Cable 2	• FC Cable × 16 • LED Cable × 16	
15	DKU-F455I-36K4	4 HDD Canisters	• DKS2B-K36FC × 4	
16	DKU-F455I-36K1	1 HDD Canister	• DKS2B-K36FC × 1	
17	DKU-F455I-72J4	4 HDD Canisters	• DKR2D-J72FC × 4	
18	DKU-F455I-72J1	1 HDD Canister	• DKR2D-J72FC × 1	
19	DKU-F455I-DH	Door Kit for Lightning 9980V	• Front and Rear doors	
20	DKU-F455I-DS	Door Kit for StorEdge 9980V	• Front and Rear doors	

SVP displays each drive model as the following table.

Disk drive model	SVP screen
DKS2B-K36FC	DKS2B-K036FC
DKR2D-J72FC	DKR2D-J072FC

1.1.2 Configuration and number of necessary options

NOTICE:

The installed Shared Memory capacity and maximum Cache Memory capacity with using HMRCF/HOMRCF/HRC/HORC/HHSM functions is different from ones without using these functions.

(1) Refer to the “[INST01-80] Table 1.1.2-3B” in these functions use.

(Note1) When you use these functions, you need to install more Shared Memory.

(Note2) When you use these functions with over 8CUs, the maximum Cache Memory capacity you can install is up to 58GB.

(2) Refer to the “[INST01-70] Table 1.1.2-3A” in these functions non-use.

1.1.2.1 Shared memory capacity and number of necessary options

Shared memory capacity and corresponding number of options required are shown in Table 1.1.2-1.

Table 1.1.2-1 Shared memory capacity and number of necessary options

Shared memory Capacity	Number of options
	DKC-F460I-S512
512MB	1
1,024MB	2
1,536MB	3
2,048MB	4
2,560MB	5
3,072MB	6

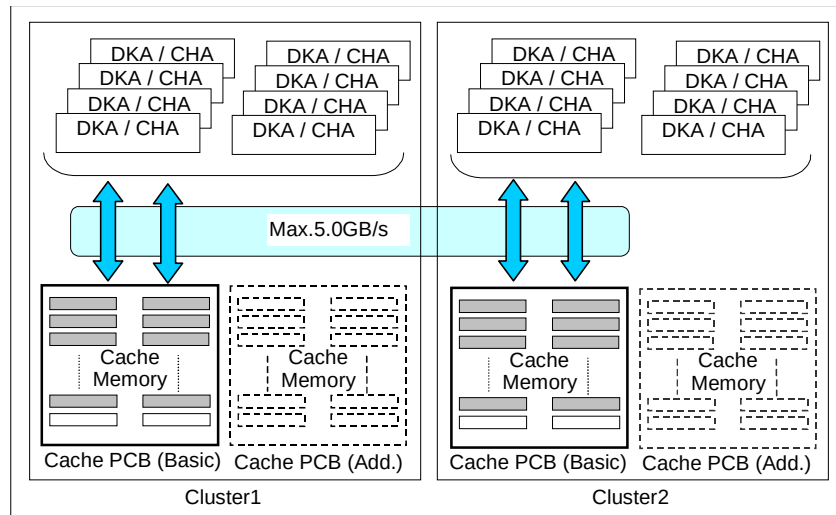
Note. Please note that location of shared memory module varies according to the purpose such as additional cache installation or additional LDEV installation.

(Refer to table 1.1.2-31 and 1.1.2-32)

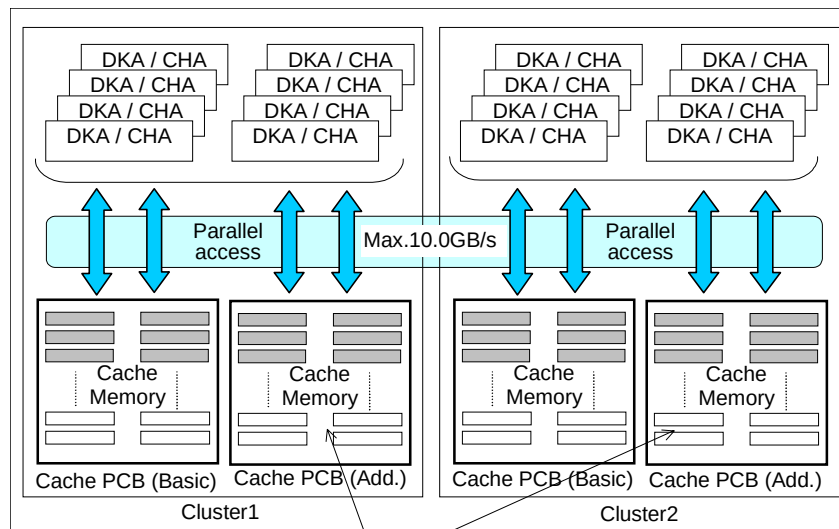
1.1.2.2 Cache memory capacity and number of necessary options

There are two types of cache memory upgrade. The first one is called Standard Model Installation in which firstly Basic PCB fully is installed then additional PCB (DKC-F460I-41) is installed. The second one is High Performance Model installation in which Basic PCB and additional PCB (DKC-F460I-41) are installed parallels.

RAID450 improves the hierarchical star net, and access time to the cache memory is sped up. Furthermore, it is improved so that two paths can access the cache memory on Cache PCB at the same time. RAID450 is realized the data transfer speed of the maximum 10.0GB/s when the DKC-F460I-41 (Cache Access Throughput Expansion Kit) is installed and cache memory capacity is installed 8GB or more.



Standard Model installation



DKC-F460I-41(Cache Access Throughput Expansion Kit)

High Performance Model installation

Cache memory capacities and corresponding number of options required are shown in Table 1.1.2-2.

Table 1.1.2-2 Cache memory capacity and number of necessary options

Cache Memory Capacity	Standard Model				High Performance Model				DKC-F460I-42 Additional Battery
	DKC-F460I-2048			DKC- F460I -41	DKC-F460I-2048			DKC- F460I -41	
	Install PCB		Total		Install PCB				
	Basic PCB	Add. PCB			Basic PCB	Add. PCB	Total		
2GB	1	0	1	0	-	-	-	-	0
4GB	2	0	2	0	1	1	2	1	0
6GB	3	0	3	0	-	-	-	1	0
8GB	4	0	4	0	2	2	4	1	0
10GB	5	0	5	0	-	-	-	1	0
12GB	6	0	6	0	3	3	6	1	0
14GB	7	0	7	0	-	-	-	1	0
16GB	8	0	8	0	4	4	8	1	0
18GB	9	0	9	0	-	-	-	1	0
20GB	10	0	10	0	5	5	10	1	0
22GB	11	0	11	0	-	-	-	1	0
24GB	12	0	12	0	6	6	12	1	0
26GB	13	0	13	0	-	-	-	1	0
28GB	14	0	14	0	7	7	14	1	0
30GB	15	0	15	0	-	-	-	1	0
32GB	16	0	16	0	8	8	16	1	0
34GB	16	1	17	1	-	-	-	1	1
36GB	16	2	18	1	9	9	18	1	1
38GB	16	3	19	1	-	-	-	1	1
40GB	16	4	20	1	10	10	20	1	1
42GB	16	5	21	1	-	-	-	1	1
44GB	16	6	22	1	11	11	22	1	1
46GB	16	7	23	1	-	-	-	1	1
48GB	16	8	24	1	12	12	24	1	1
50GB	16	9	25	1	-	-	-	1	1
52GB	16	10	26	1	13	13	26	1	1
54GB	16	11	27	1	-	-	-	1	1
56GB	16	12	28	1	14	14	28	1	1
58GB	16	13	29	1	-	-	-	1	1
60GB	16	14	30	1	15	15	30	1	1
62GB	16	15	31	1	-	-	-	1	1
64GB	16	16	32	1	16	16	32	1	1

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

High performance model is effective when the cache memory is installed 8GB or more, and recommend the addition of 8GB.

1.1.2.3 Relation between Shared Memory and Cache Memory

The relationship between Cache Memory and Shared Memory is shown in following table. Please note that Location of shared memory varies according to the purpose such as additional cache installation or additional LDEV installation.

Notice

The required capacity of the shared memory varies depending on whether the HRC/HORC/HMRCF/HOMRCF/HHSM function is supported or not.

Calculate the required shared memory capacity referring to Table 1.1.2-3A when none of the functions is supported (in the case of basic configuration) or Table 1.1.2-3B when at least one of the functions is supported.

**Table 1.1.2-3A Size of Cache Memory and Shared Memory
(HRC/HORC/HMRCF/HOMRCF/HHSM not supported)**

Cache Memory Capacity	Number of CU:1-4 (to 1024LDEV)			Number of CU:5-8 (to 2048LDEV)			Number of CU:9-16 (to 4096LDEV)			Number of CU:17-32 (to 8192LDEV)		
	SM (MB)	S512	Install loc.*1	SM (MB)	S512	Install loc.*1	SM (MB)	S512	Install loc.*1	SM (MB)	S512	Install loc.*1
2GB	512	1	③	1536	3	③①④	1536	3	③①④	2048	4	③①②④
4GB	512	1	③	1536	3	③①④	1536	3	③①④	2048	4	③①②④
6GB	512	1	③	1536	3	③①④	1536	3	③①④	2048	4	③①②④
8GB	512	1	③	1536	3	③①④	1536	3	③①④	2048	4	③①②④
10GB	1024	2	③④	1536	3	③①④	1536	3	③①④	2048	4	③①②④
12GB	1024	2	③④	1536	3	③①④	1536	3	③①④	2048	4	③①②④
14GB	1024	2	③④	1536	3	③①④	1536	3	③①④	2048	4	③①②④
16GB	1024	2	③④	1536	3	③①④	1536	3	③①④	2048	4	③①②④
18GB	1024	2	③④	1536	3	③①④	2048	4	③①④⑤	2560	5	③①②④⑤
20GB	1024	2	③④	1536	3	③①④	2048	4	③①④⑤	2560	5	③①②④⑤
22GB	1024	2	③④	1536	3	③①④	2048	4	③①④⑤	2560	5	③①②④⑤
24GB	1024	2	③④	1536	3	③①④	2048	4	③①④⑤	2560	5	③①②④⑤
26GB	1024	2	③④	1536	3	③①④	2048	4	③①④⑤	2560	5	③①②④⑤
28GB	1024	2	③④	1536	3	③①④	2048	4	③①④⑤	2560	5	③①②④⑤
30GB	1024	2	③④	1536	3	③①④	2048	4	③①④⑤	2560	5	③①②④⑤
32GB	1024	2	③④	1536	3	③①④	2048	4	③①④⑤	2560	5	③①②④⑤
34GB	1024	2	③④	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
36GB	1024	2	③④	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
38GB	1024	2	③④	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
40GB	1024	2	③④	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
42GB	1024	2	③④	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
44GB	1024	2	③④	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
46GB	1536	3	③④⑤	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
48GB	1536	3	③④⑤	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
50GB	1536	3	③④⑤	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
52GB	1536	3	③④⑤	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
54GB	1536	3	③④⑤	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
56GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
58GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
60GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
62GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
64GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
Subsystem Capacity *2	to 18TB			to 72TB			to 144TB			over 144TB		
Number of HDD	DKU-F4551-36K4:	128		DKU-F4551-36K4:	256		DKU-F4551-36K4:	256		DKU-F4551-36K4:	256	
Canister Options *3	DKU-F4551-72J4:	64		DKU-F4551-72J4:	256		DKU-F4551-72J4:	256		DKU-F4551-72J4:	256	
	DKU-F4051-18J4:	256 *4		DKU-F4051-18J4:	256 *4		DKU-F4051-18J4:	256 *4		DKU-F4051-18J4:	256 *4	
	DKU-F4051-47J4:	98 *4		DKU-F4051-47J4:	256 *4		DKU-F4051-47J4:	256 *4		DKU-F4051-47J4:	256 *4	
	DKU-F4051-72J4:	64 *4		DKU-F4051-72J4:	256 *4		DKU-F4051-72J4:	256 *4		DKU-F4051-72J4:	256 *4	
	DKU-F4051-180H4:	24 *4		DKU-F4051-180H4:	96 *4		DKU-F4051-180H4:	128 *4		DKU-F4051-180H4:	128 *4	

Note. *1: Location ①-⑥ shows actual location of shared memory module on Cache PCB.
(Refer to Fig. 1.1.2.3-1)

- *2: This is raw capacity. You have to increase SM capacity, when subsystem raw capacity exceeds this. When the HDD option is intermixed in one subsystem, subsystem capacity must not exceed this.
- *3: The number of HDD canister options controllable by the LDEV numbers and SM capacities. You have to increase SM capacity, when the number of HDD canister options exceeds.
- *4: When DKU405I is connected to DKC460I.

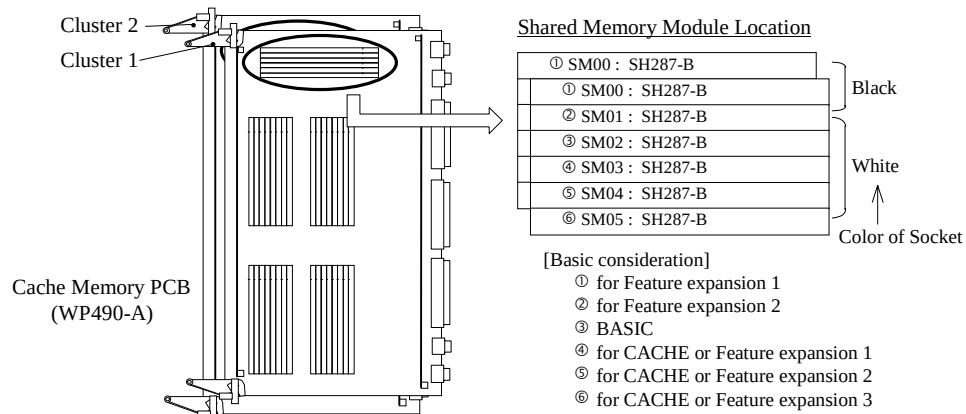


Fig. 1.1.2.3-1 Location of shared memory module

**Table 1.1.2-3B Size of Cache Memory and Shared Memory
(HRC/HORC/HMRCF/HOMRCF/HHSM supported)**

Cache Memory Capacity	Number of CU:1-4 (to 1024LDEV)			Number of CU:5-8 (to 2048LDEV)			Number of CU:9-16 (to 4096LDEV)			Number of CU:17-32 & TPF (to 8192LDEV)		
	SM (MB)	S512	Install loc.*1	SM (MB)	S512	Install loc.*1	SM (MB)	S512	Install loc.*1	SM (MB)	S512	Install loc.*1
2GB	1024	2	③④	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
4GB	1024	2	③④	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
6GB	1024	2	③④	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
8GB	1024	2	③④	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
10GB	1536	3	③④⑤	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
12GB	1536	3	③④⑤	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
14GB	1536	3	③④⑤	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
16GB	1536	3	③④⑤	2048	4	③①④⑤	2048	4	③①④⑤	2560	5	③①②④⑤
18GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
20GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
22GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
24GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
26GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
28GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
30GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
32GB	1536	3	③④⑤	2048	4	③①④⑤	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
34GB	1536	3	③④⑤	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
36GB	1536	3	③④⑤	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
38GB	1536	3	③④⑤	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
40GB	1536	3	③④⑤	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
42GB	1536	3	③④⑤	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
44GB	1536	3	③④⑤	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
46GB	2048	4	③④⑤⑥	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
48GB	2048	4	③④⑤⑥	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
50GB	2048	4	③④⑤⑥	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
52GB	2048	4	③④⑤⑥	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
54GB	2048	4	③④⑤⑥	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
56GB	2048	4	③④⑤⑥	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
58GB	2048	4	③④⑤⑥	2560	5	③①④⑤⑥	2560	5	③①④⑤⑥	3072	6	③①②④⑤⑥
60GB	2048	4	③④⑤⑥	2560	5	③①④⑤⑥	-	-	-	-	-	-
62GB	2048	4	③④⑤⑥	2560	5	③①④⑤⑥	-	-	-	-	-	-
64GB	2048	4	③④⑤⑥	2560	5	③①④⑤⑥	-	-	-	-	-	-
Subsystem Capacity *2	to 18TB			to 72TB			to 144TB			over 144TB		
Number of HDD	DKU-F455I-36K4: 128			DKU-F455I-36K4: 256			DKU-F455I-36K4: 256			DKU-F455I-36K4: 256		
Canister Options *3	DKU-F455I-72J4: 64			DKU-F455I-72J4: 256			DKU-F455I-72J4: 256			DKU-F455I-72J4: 256		
	DKU-F405I-18J4: 256 *4			DKU-F405I-18J4: 256 *4			DKU-F405I-18J4: 256 *4			DKU-F405I-18J4: 256 *4		
	DKU-F405I-47J4: 98 *4			DKU-F405I-47J4: 256 *4			DKU-F405I-47J4: 256 *4			DKU-F405I-47J4: 256 *4		
	DKU-F405I-72J4: 64 *4			DKU-F405I-72J4: 256 *4			DKU-F405I-72J4: 256 *4			DKU-F405I-72J4: 256 *4		
	DKU-F405I-180H4: 24 *4			DKU-F405I-180H4: 96 *4			DKU-F405I-180H4: 128 *4			DKU-F405I-180H4: 128 *4		

Note. *1: Location ①-⑥ shows actual location of shared memory module on Cache PCB. (Refer to Fig. 1.1.2.3-2)

A shared memory can't be set up in the ' - ' mark.

*2: This is raw capacity. You have to increase SM capacity, when subsystem raw capacity exceeds this. When the HDD option is intermixed in one subsystem, subsystem capacity must not exceed this.

*3: The number of HDD canister options controllable by the LDEV numbers and SM capacities. You have to increase SM capacity, when the number of HDD canister options exceeds.

*4: When DKU405I is connected to DKC460I.

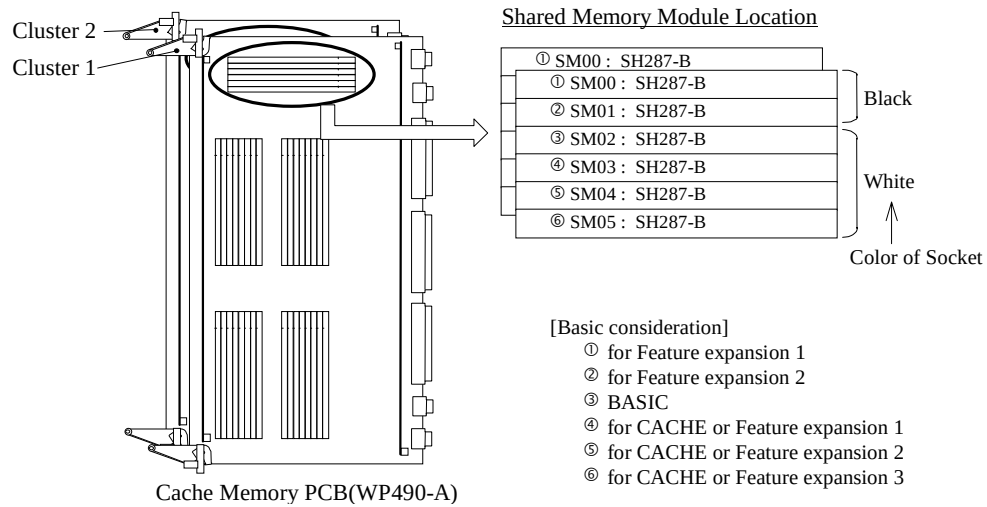
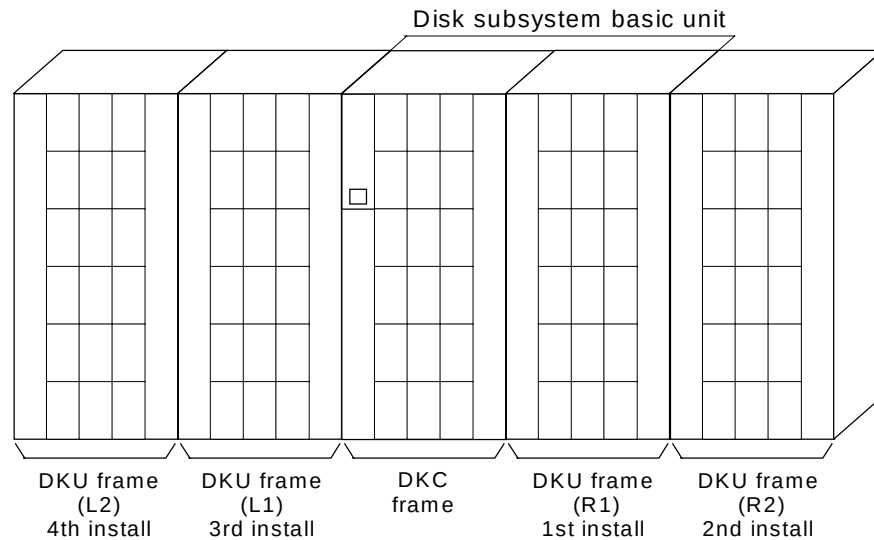


Fig. 1.1.2.3-2 Location of shared memory module

1.1.2.4 DKU Frame and RAID Group Installation Order

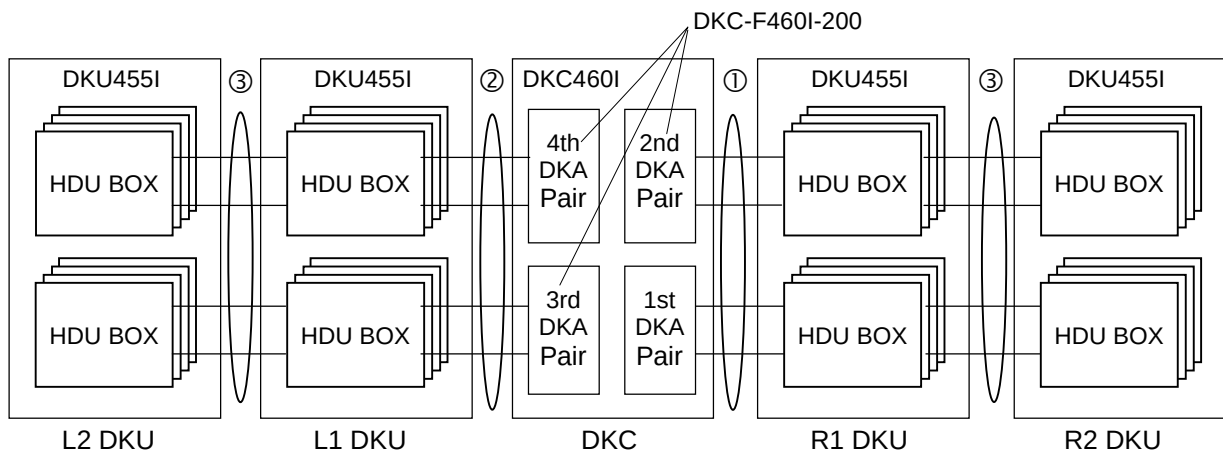
(1) DKU Frame installation order

DKU frame installation order is shown in the following figure in principle.



(2) Subsystem Layout and number of necessary option

The relationship between subsystem layout and device interface cable option is shown in the following figure.

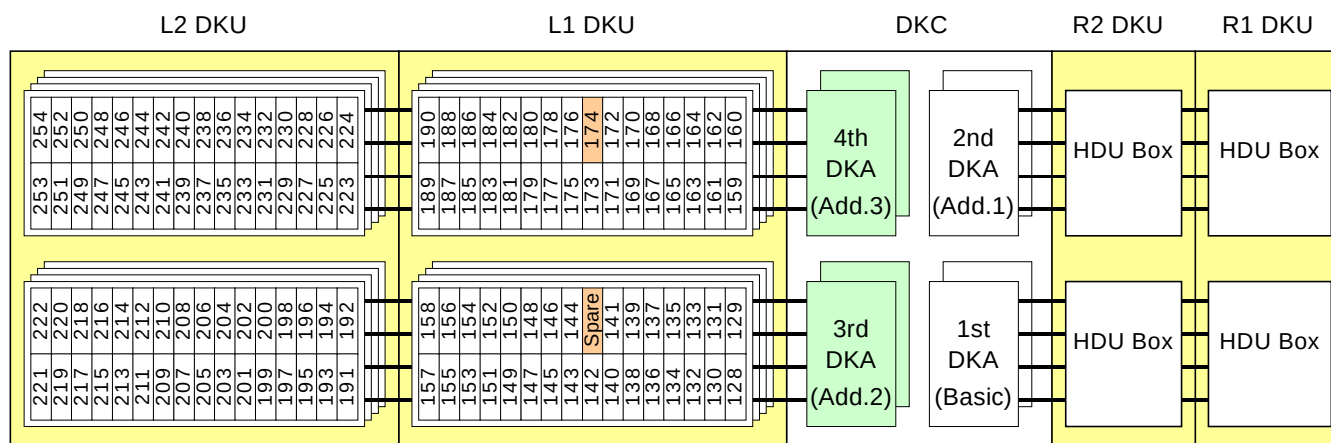
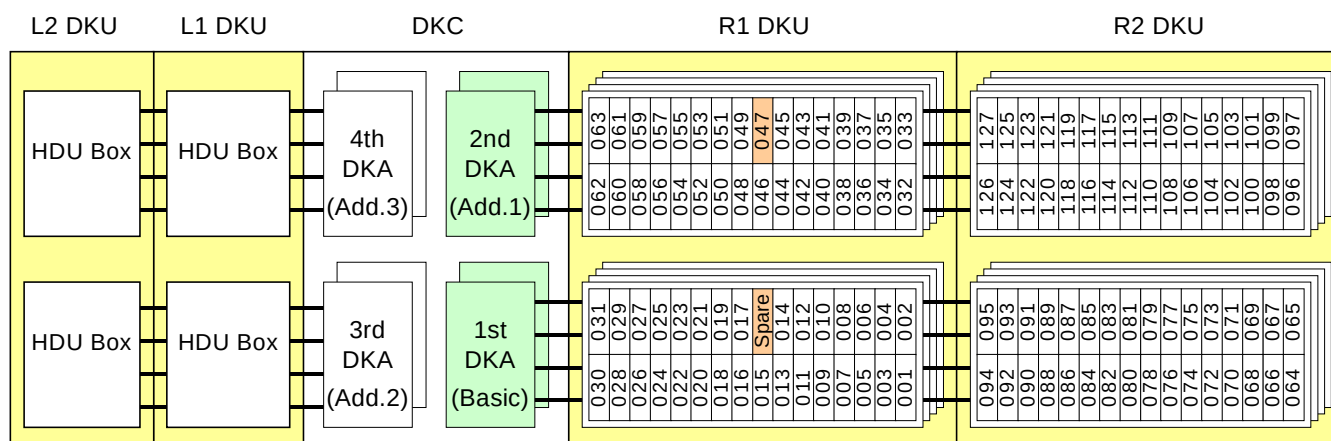


- ①: Standard equipment of DKC460I (between DKC to R1 DKU)
- ②: DKC-F460I-L1C (between DKC to L1 DKU)
- ③: DKU-F455I-EXC (between DKU to DKU)

(3) RAID Group Installation Order

RAID group installation order is shown in the following figure in principle.

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



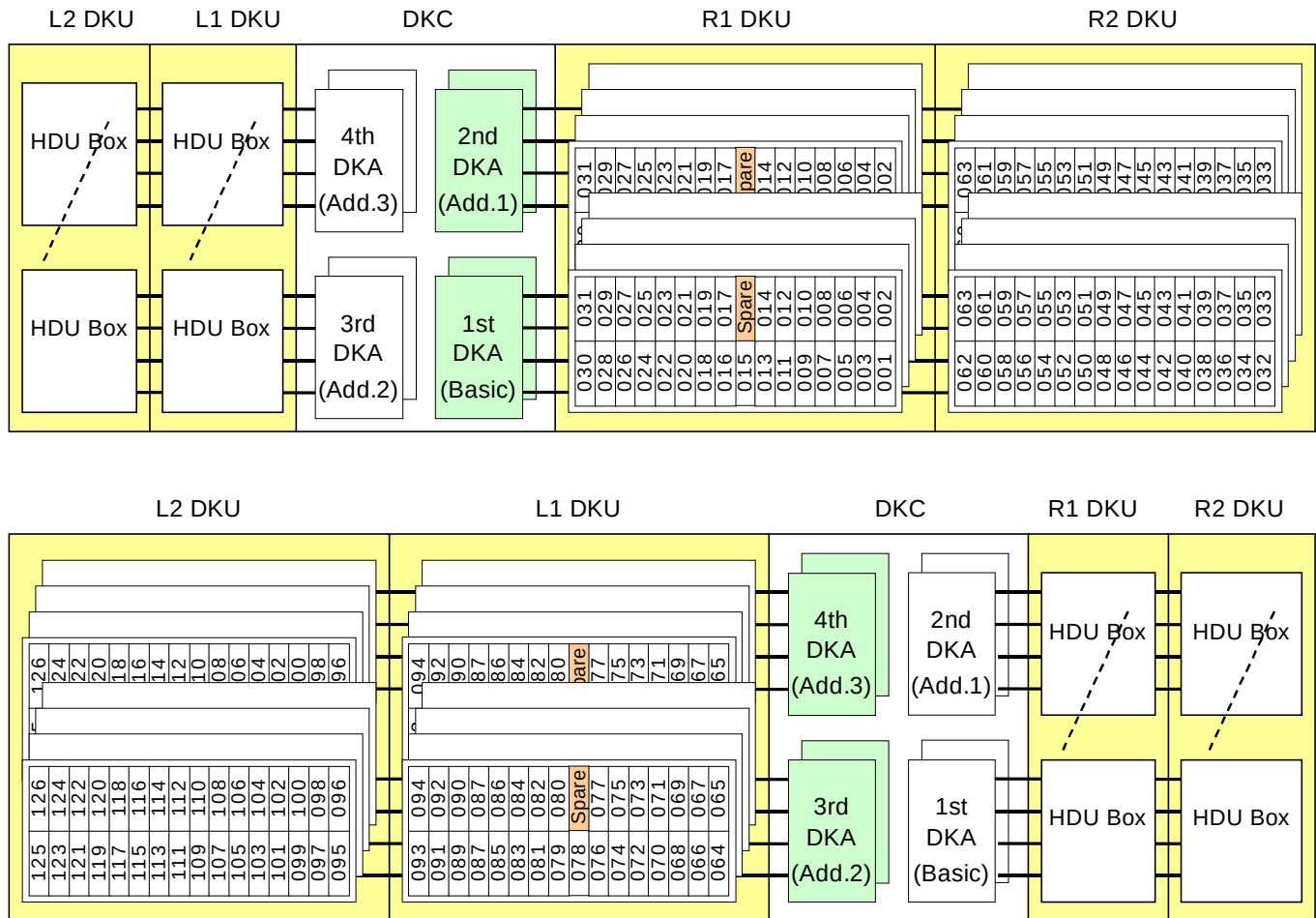
nnn shows the installation order of the RAID group(3D+1P/2D+2D).

RAID group install location of No.047 and 174 can be used as a spare disk. In this case, the number of RAID groups can be installed up to 252.

The relationship between subsystem layout and number of necessary options is shown in the following table.

Frame Layout Configuration					Number of Options				
L2	L1	DKC	R1	R2	DKC460I	DKC-F460I	DKU455I-	DKC-F460I	DKU-F455I
					-5	-200	18	-L1C	-EXC
		DKC	R1 DKU		1	0 or 1	1	0	0
		DKC	R1 DKU	R2 DKU	1	1	2	0	1
	L1 DKU	DKC	R1 DKU		1	2 or 3	2	1	0
	L1 DKU	DKC	R1 DKU	R2 DKU	1	2 or 3	3	1	1
L2 DKU	L1 DKU	DKC	R1 DKU		1	3	3	1	1
L2 DKU	L1 DKU	DKC	R1 DKU	R2 DKU	1	3	4	1	2

• RAID5(7D+1P)



nnn shows the installation order of the RAID group(7D+1P).

In this case, install two sets of DKU-F455I-18K4, DKU-F455I-36J4, DKU-F455I-38K4 or DKU-F455I-72J4 respectively.

The relationship between subsystem layout and number of necessary options is shown in the following table.

Frame Layout Configuration					Number of Options				
L2	L1	DKC	R1	R2	DKC460I-5	DKC-F460I-200	DKU455I-18	DKC-F460I-L1C	DKU-F455I-EXC
		DKC	R1 DKU		1	1	1	0	0
		DKC	R1 DKU	R2 DKU	1	1	2	0	1
	L1 DKU	DKC	R1 DKU		1	3	2	1	0
	L1 DKU	DKC	R1 DKU	R2 DKU	1	3	3	1	1
L2 DKU	L1 DKU	DKC	R1 DKU		1	3	3	1	1
L2 DKU	L1 DKU	DKC	R1 DKU	R2 DKU	1	3	4	1	2

1.1.3 Specifications

(1) DKC460I Physical Specifications

The DKC460I physical specifications are shown in the following table:

Table 1.1.3-1 DKC460I Physical Specifications

No	Model Number	Weight (kg)	Heat Output (kW)	Power Consumption (kVA)	Dimension (mm)			Air Flow (m ³ /min.)
					Width	Depth	Height	
1	DKC460I-5	466.0	0.73	0.77	782 *1	800	1,860	18
	DKC460I-5F	395.0	0.73	0.77	782 *1	800	1,860	18
2	DKC-F460I-1PS	10.0	—	—	—	—	—	—
3	DKC-F460I-1EC	7.5	—	—	—	—	—	—
4	DKC-F460I-1UC	10.5	—	—	—	—	—	—
5	DKC-F460I-3PS	7.0	—	—	—	—	—	—
6	DKC-F460I-200	3.6	0.21	0.22	—	—	—	—
7	DKC-F460I-2048	0.2	0.007	0.008	—	—	—	—
8	DKC-F460I-S512	0.05	0.004	0.004	—	—	—	—
9	DKC-F460I-8S	4.2	0.28	0.29	—	—	—	—
10	DKC-F460I-8MS	4.2	0.31	0.33	—	—	—	—
11	DKC-F460I-8ML	4.2	0.31	0.33	—	—	—	—
12	DKC-F460I-8GSE	4.0	0.15	0.15	—	—	—	—
13	DKC-F460I-4HSE	4.2	0.12	0.13	—	—	—	—
14	DKC-F460I-8HSE	4.2	0.21	0.22	—	—	—	—
15	DKC-F460I-8HLE	4.2	0.21	0.22	—	—	—	—
16	DKC-F460I-SVP	5.5	0.07	0.07	—	—	—	—
17	DKC-F460I-UPS	1.2	0.01	0.01	—	—	—	—
18	DKC-F460I-80	8.8	—	—	—	—	—	—
19	DKC-F460I-41	5.6	0.06	0.06	—	—	—	—
20	DKC-F460I-42	42.2	0.09	0.10	—	—	—	—
21	DKC-F460I-L1C	3.5	—	—	—	—	—	—
22	DKC-F460I-U405R	10.0	0.06	0.07	—	—	—	—
23	DKC-F460I-U405L	10.0	0.06	0.07	—	—	—	—
24	DKC-F460I-18	0.6	0.002	0.003	—	—	—	—
25	DKC-F460I-256M	0.04	0.003	0.003	—	—	—	—
26	DKC-F460I-1PSD	11.0	—	—	—	—	—	—
27	DKC-F460I-1ECD	8.0	—	—	—	—	—	—
28	DKC-F460I-1UCD	10.0	—	—	—	—	—	—
29	DKC-F460I-3PSD	12.0	—	—	—	—	—	—
30	DKC-F460I-3ECD	8.0	—	—	—	—	—	—
31	DKC-F460I-3UCD	11.0	—	—	—	—	—	—
32	DKC-F460I-8GSF	4.0	0.15	0.15	—	—	—	—
33	DKC-F460I-4HSF	4.2	0.12	0.13	—	—	—	—
34	DKC-F460I-8HSF	4.2	0.21	0.22	—	—	—	—
35	DKC-F460I-8HLF	4.2	0.21	0.22	—	—	—	—
36	DKC-F460I-DH	71.0	—	—	—	—	—	—
37	DKC-F460I-DS	71.0	—	—	—	—	—	—

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

(1) DKU455I Physical Specifications

The DKU455I physical specifications are shown in the following table:

Table 1.1.3-2 DKU455I Physical Specifications

No	Model number	Weight (kg)	Heat Output (kW)	Power Consumption (kVA)	Dimension (mm)			Air Flow (m ³ /min.)
					Width	Depth	Height	
1	DKU455I-18	460.0	0.51	0.54	750	800	1,860	32
	DKU455I-18F	419.0	0.51	0.54	750	800	1,860	32
2	DKU-F455I-1PS	20.0	—	—	—	—	—	—
3	DKU-F455I-1EC	7.0	—	—	—	—	—	—
4	DKU-F455I-1UC	10.0	—	—	—	—	—	—
5	DKU-F455I-3PS	20.0	—	—	—	—	—	—
6	DKU-F455I-3EC	11.0	—	—	—	—	—	—
7	DKU-F455I-3UC	16.0	—	—	—	—	—	—
8	DKU-F455I-EXC	3.0	—	—	—	—	—	—
9	DKU-F455I-36K1	1.0	0.022	0.024	—	—	—	—
10	DKU-F455I-36K4	4.0	0.088	0.096	—	—	—	—
11	DKU-F455I-72J1	1.0	0.023	0.025	—	—	—	—
12	DKU-F455I-72J4	4.0	0.092	0.100	—	—	—	—
13	DKU-F455I-1PSD	20.0	—	—	—	—	—	—
14	DKC-F460I-1ECD	8.0	—	—	—	—	—	—
15	DKC-F460I-1UCD	10.0	—	—	—	—	—	—
16	DKU-F455I-3PSD	20.0	—	—	—	—	—	—
17	DKC-F460I-3ECD	8.0	—	—	—	—	—	—
18	DKC-F460I-3UCD	11.0	—	—	—	—	—	—
19	DKU-F455I-DK	41.0	—	—	—	—	—	—
20	DKU-F455I-DS	41.0	—	—	—	—	—	—

1.1.4 Environmental Specifications

The environmental specifications are shown in the following table.

Item	Condition		
	Operating ^{Note 1}	Non-operation ^{Note 2}	Shipping & Storage ^{Note 3}
Temperature (°C)	16 ~ 32	-10 ~ 43	-25 ~ 60
Relative Humidity (%) ^{Note 4}	20 ~ 80	8 ~ 90	5 ~ 95
Max. Wet Bulb (°C)	26	27	29
Temperature Deviation (°C/hour)	10	10	20
Vibration ^{Note 5}	5~10Hz: 0.25mm 10~300Hz: 0.05G	5~10Hz: 2.5mm 10~70Hz: 0.5G 70~99Hz: 0.05mm 99~300Hz: 1.0G	0.5G, 15min. At four most severe resonance between 5~200Hz ^{Note 6}
Shock	—	8G, 15ms	Horizontal: Incline Impact 1.22m/s ^{Note 7} Vertical: Rotational Edge 0.1m ^{Note 8}
Acoustic level ^{Note 9}	65 dB	—	—

Note: 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 21~24°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 apply to all three axes.
6. See ASTM D999-91 Standard Methods for Vibration Testing of Shipping Containers.
7. See ASTM D5277-92 Standard Test Methods for Performing Programmed Horizontal Impacts Using an Inclined Impact Tester.
8. See ASTM D1083-91 Standard Test Methods for Mechanical Handling of Unitized Loads and Large Shipping Cases and Creates.
9. Measurement Condition: The point 1m far from floor and surface of the product.

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 $\pm$ 0.5Hz	200V, 208V or 230V	3 Phase 3 Wire + Ground	+6% or -8%	for North America 200V : for Japan
50Hz $\pm$ 0.5Hz	200V, 220V, 230V or 240V	3 Phase 3 Wire + Ground	+6% or -8%	for Europe 200V : for Japan
50Hz $\pm$ 0.5Hz	380V, 400V or 415V	3 Phase 4 Wire + Ground	+6% or -8%	for Europe

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

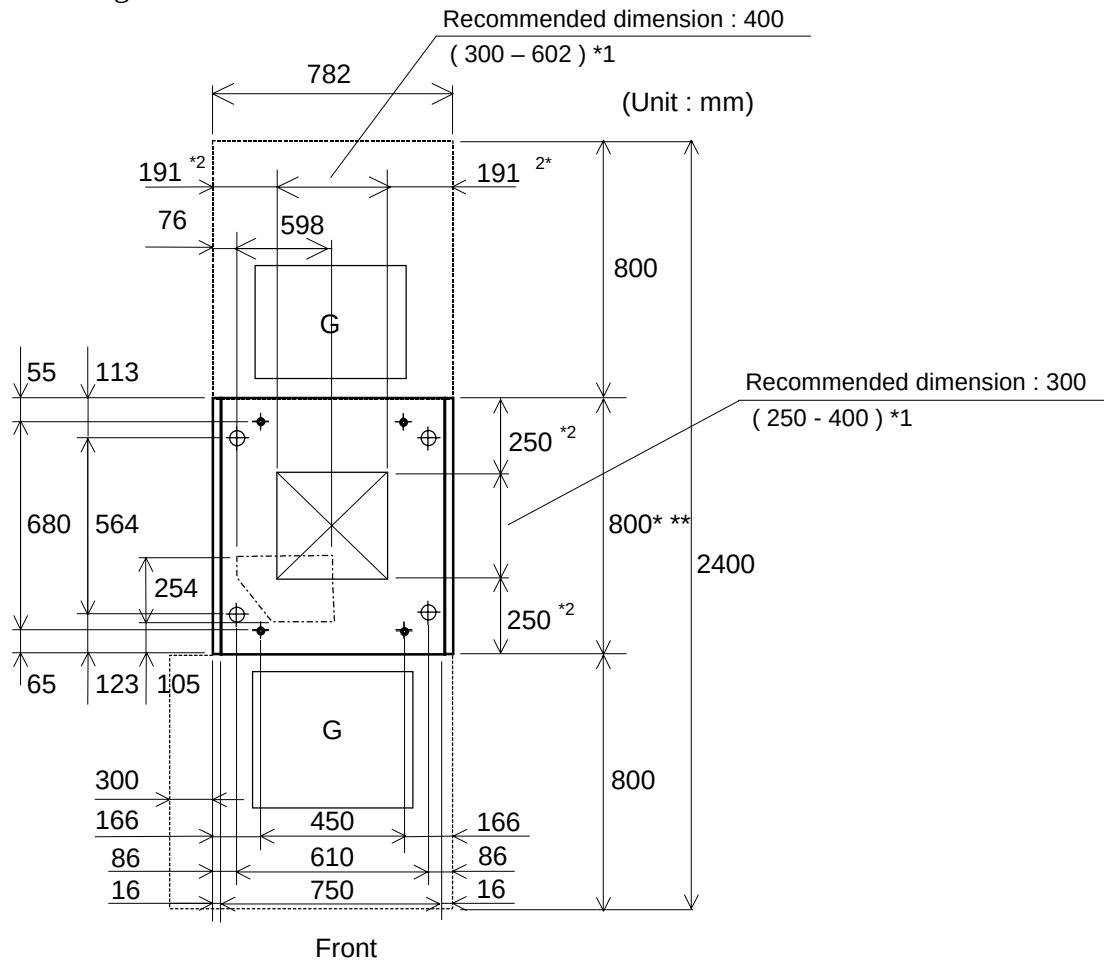
(2) Single phase AC input

Frequency	Input Voltages (AC)	Conditions	Tolerance (%)	Remarks
60Hz $\pm$ 0.5Hz	200V, 208V or 230V	1 Phase 2 Wire + Ground	+6% or -8%	for North America 200V : for Japan
50Hz $\pm$ 0.5Hz	200V, 220V, 230V or 240V	1 Phase 2 Wire + Ground	+6% or -8%	for Europe 200V : for Japan

1.1.6 Service Clearance and Floor Cutout

(1) DKC460I

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



- | | | | |
|--|------------------------------|--|---|
| | Floor cutout area for cables | | Grid panel (over 450mm × 450mm) |
| | Screw jack | | Opening on the bottom of the frame (for external cable entry) |
| | Caster | | |
| | Service clearance | | |

*1 Values of parenthesis show allowable range of the floor cutout dimension.

The floor cutout should be planned in the center of the DKC. In case that the floor cutout is planned in a right position for the external cable work and it is within the allowable range, the cutout position may be off-center.

In this case, check the relation between the positions of the cutout and the opening on the bottom of the frame.

If the floor cutout width is planned more than 552 mm, be careful about the restriction of the movable direction because there is a possibility that the caster wheels fall down into the cutout.

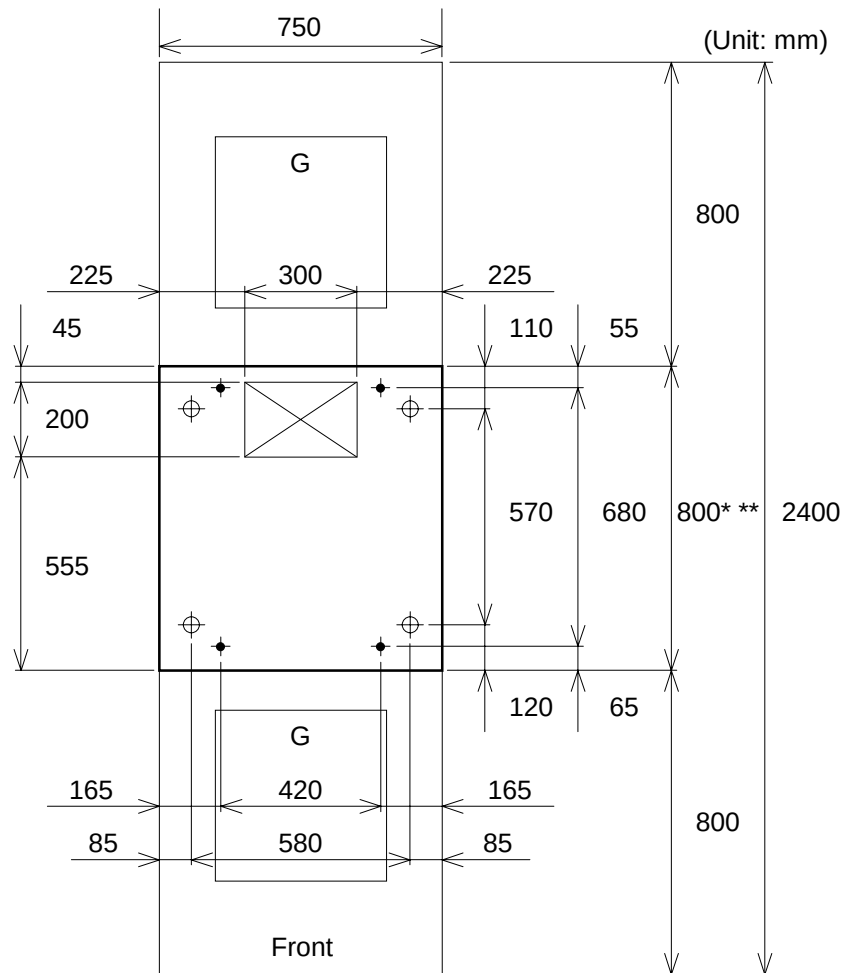
*2 These dimensions vary with the floor cutout dimension.

*: The thickness of the door is different in the FRONT(35mm) from the REAR(25mm).

**: Overhang of the MOSAIC(LOUVER) of the FRONT DOOR(7mm) is not included.

(2) DKU455I

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



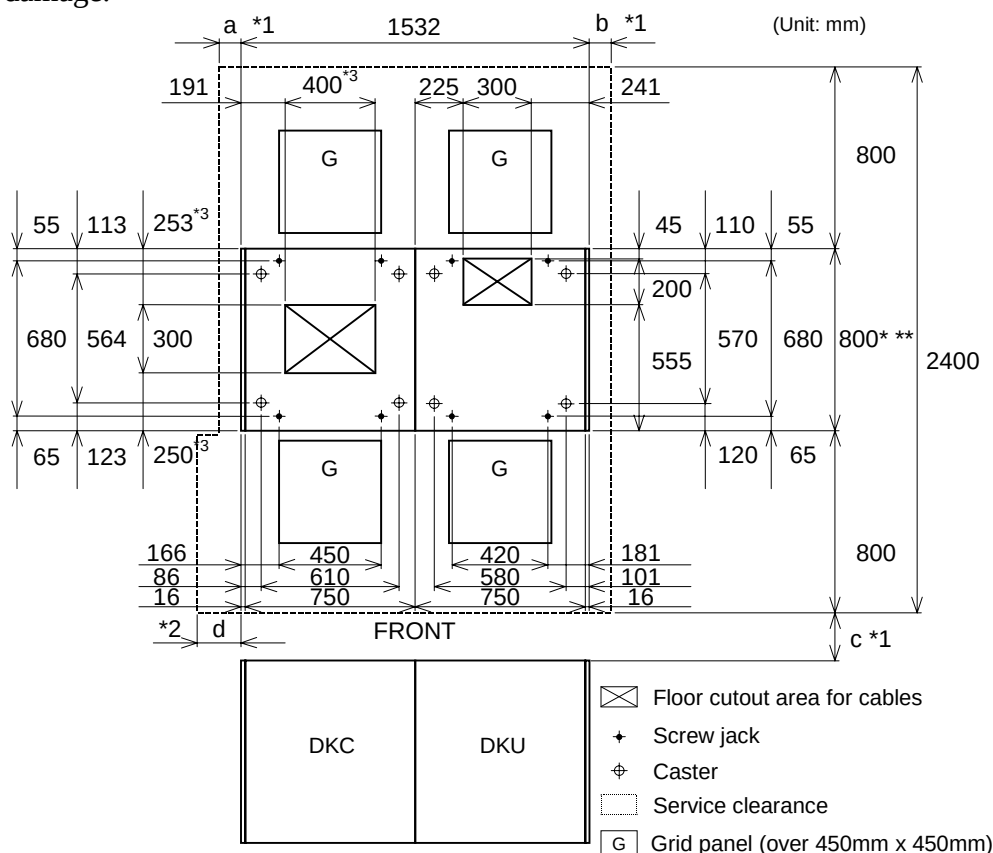
-  Floor cutout area for cables
-  Screw jack
-  Caster
-  Service clearance
-  Grid panel (over 450mm x 450mm)

*: The thickness of the door is different in the FRONT(35mm) from the REAR(25mm).

***: Overhang of the MOSAIC(LOUVER) of the FRONT DOOR(7mm) is not included.

(2) Subsystem Basic Configuration

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



*: The thickness of the door is different in the FRONT(35mm) from the REAR(25mm).

** : Overhang of the MOSAIC(LOUVER) of the FRONT DOOR(7mm) is not included.

- *1: Clearance (a+b) depend on the floor load rating and clearance (c). Floor load rating and required clearances are shown below.
- *2: Clearance (d) is required over 0.3m so as to open the DKC front door, refer to page [INST01-160](#). In case that clearance (d) is less than clearance (a), give priority to clearance (a).
- *3: See INST01-160 about details of the DKC floor cutout.

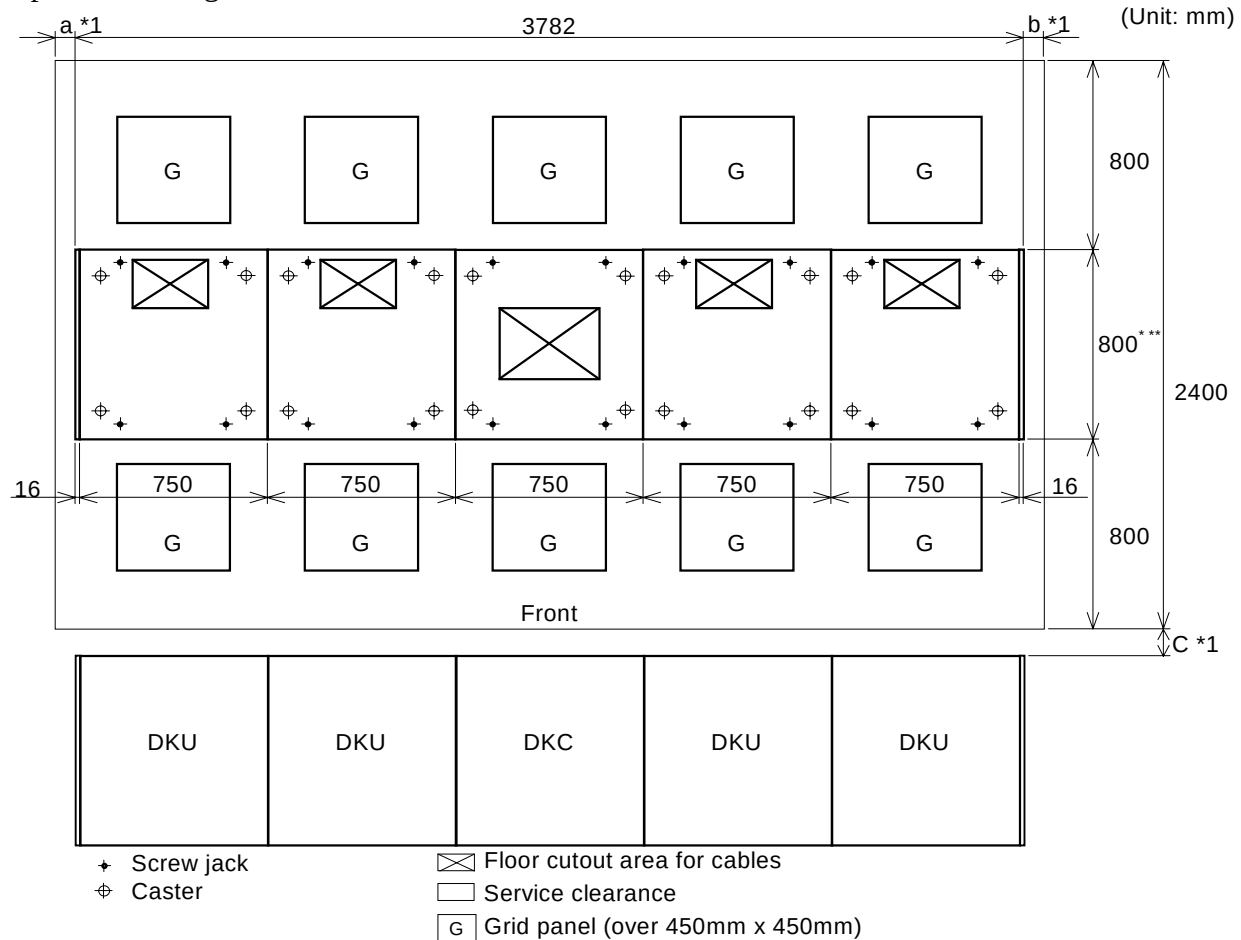
Floor Load Rating for Service Clearances (Minimum Configuration)

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	0.6	0.4	0.2	0	0
450	0.9	0.7	0.4	0.3	0
400	1.4	1.0	0.8	0.6	0.3
350	2.0	1.6	1.3	1.0	0.7
300	3.0	2.5	2.1	1.8	1.3

- 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.
2. When various configurations of subsystems are arranged in a row, clearance values based on the largest subsystem configuration should be used.
3. From the viewpoint of maintenance operations, it is suggested that clearance (c) be made as large as possible.

(4) Subsystem Full configuration

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



*: The thickness of the door is different in the FRONT(35mm) from the REAR(25mm).

**: Overhang of the MOSAIC(LOUVER) of the FRONT DOOR(7mm) is not included.

*1: Clearance (a+b) depend on the floor load rating and clearance (c).

Floor load rating and required clearances are shown below.

Floor Load Rating for Service Clearances (Maximum Configuration)

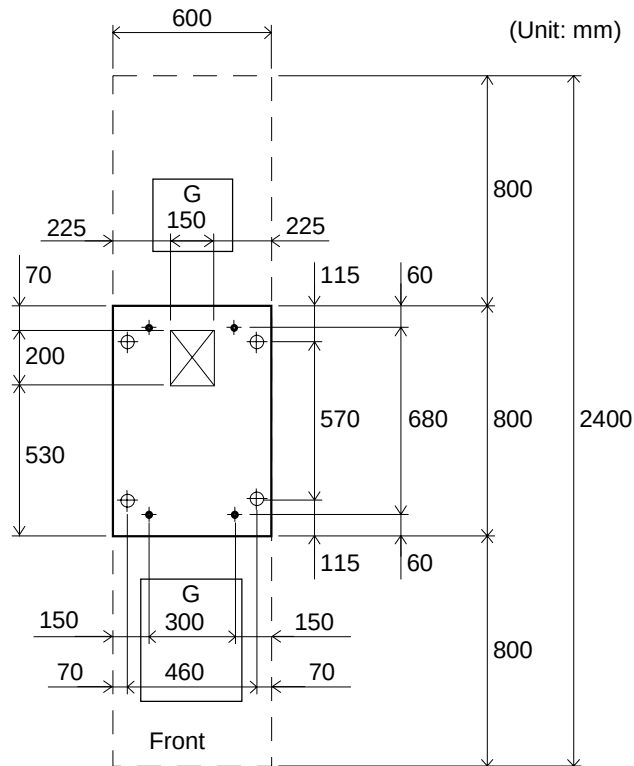
Floor load rating (kg/m ²)	Required clearance (a+b)m				
	Clearance (c)m				
	C=0	C=0.2	C=0.4	C=0.6	C=1.0
500	1.9	1.2	0.8	0.3	0
450	2.7	2.0	1.4	1.0	0.2
400	3.9	3.1	2.4	1.8	1.0
350	5.6	4.6	3.7	3.1	2.0
300	8.3	6.9	5.9	5.0	3.7

- NOTE:**
- 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.
 - When various configurations of subsystems are arranged in a row, clearance values based on the largest subsystem configuration should be used.
 - From the viewpoint of maintenance operations, it is suggested that clearance (c) be made as large as possible

(5) DKU405 Connection

a) DKU405I

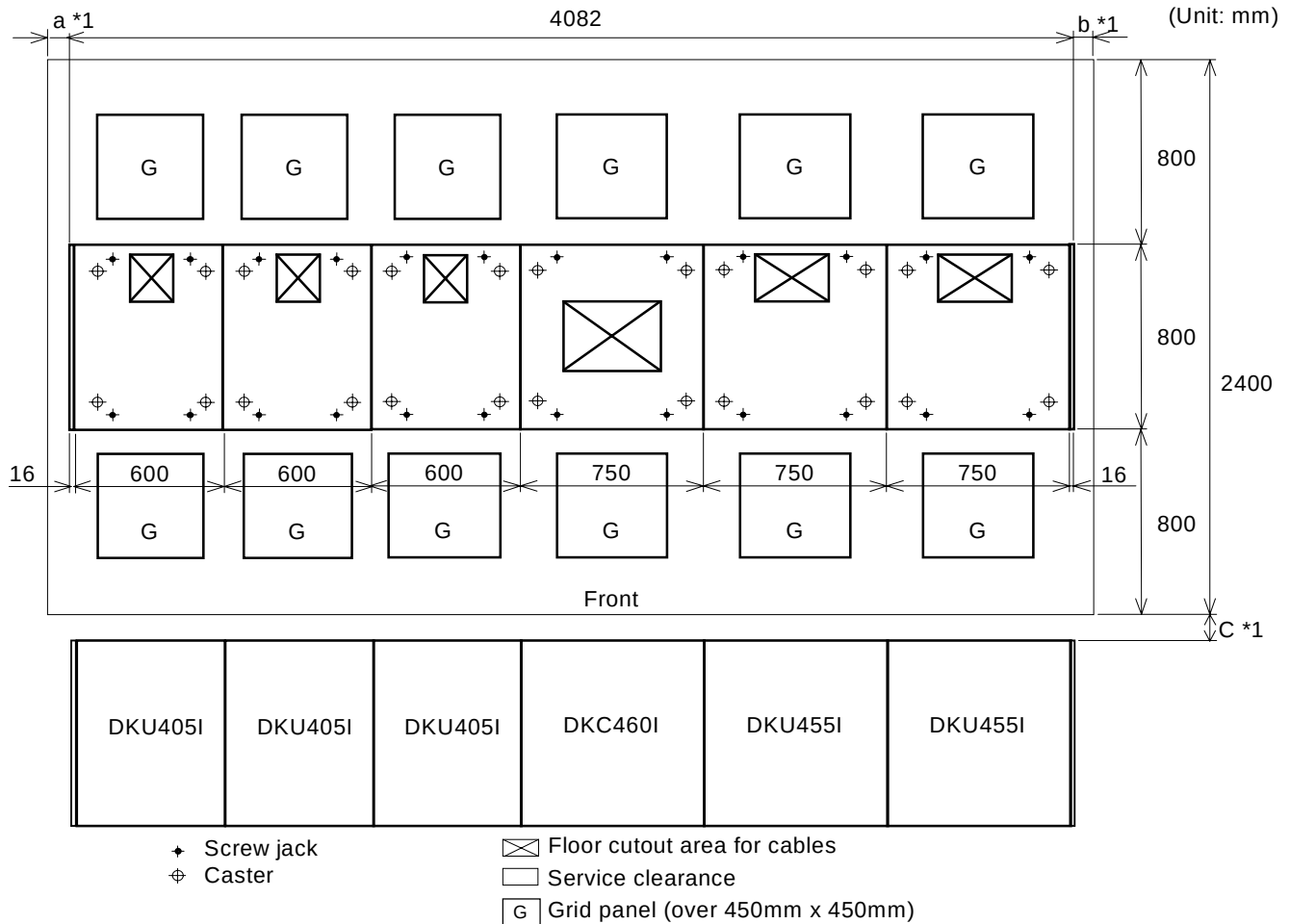
The service clearance is the space for CE work. Never use this space for storage of any article to prevent damage.



-  Floor cutout area for cables
-  Screw jack
-  Caster
-  Service clearance
-  Grid panel (over 450mm x 450mm)

b) DKU405I Mixture Configuration

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



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

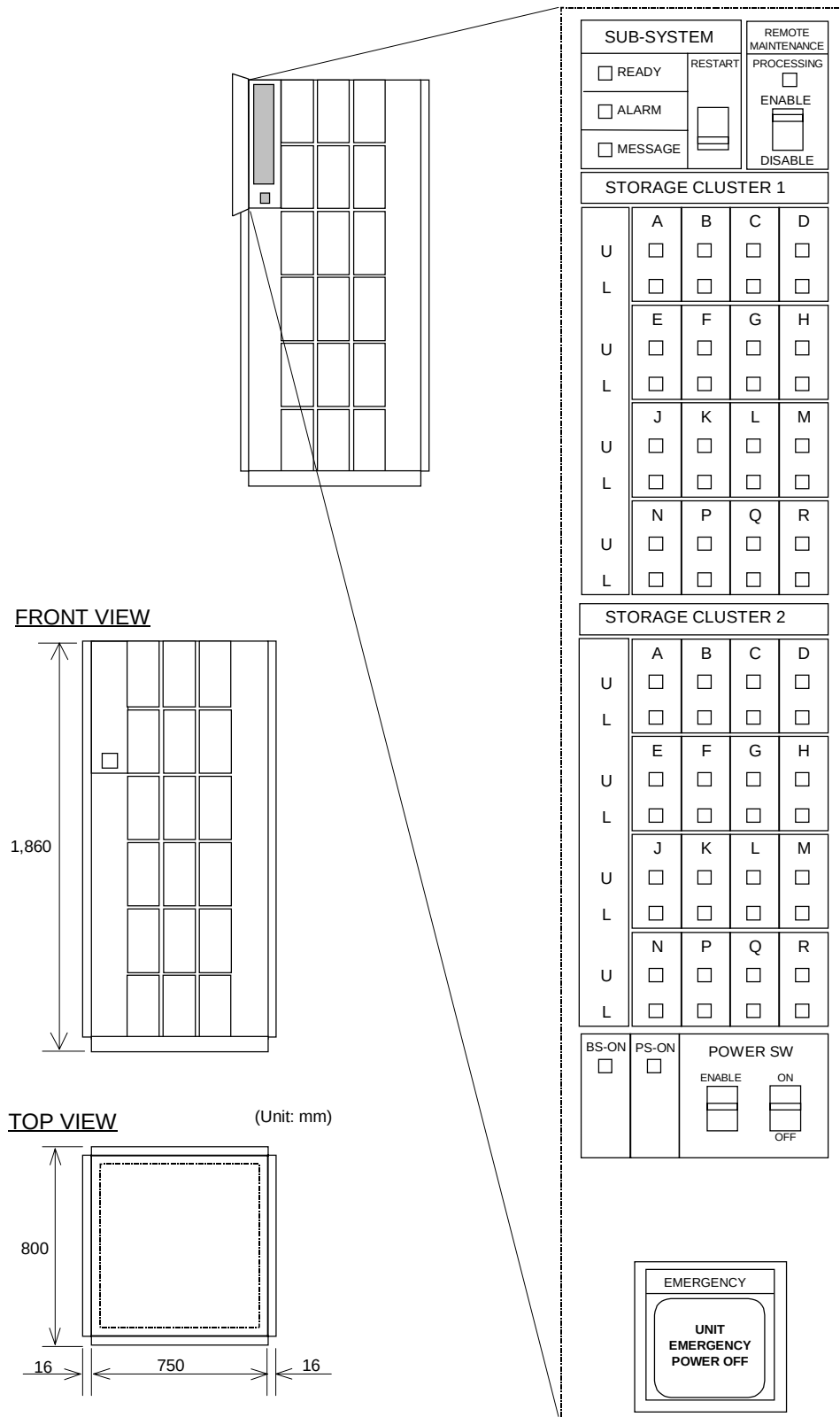
Floor Load Rating for Service Clearances (DKU405I Mixture Configuration)

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	1.7	1.0	0.5	0.1	0
450	2.5	1.8	1.2	0.7	0
400	3.7	2.9	2.2	1.6	0.7
350	5.5	4.4	3.6	2.9	1.8
300	8.2	6.8	5.7	4.8	3.5

- NOTE:**
- 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.
 - When various configurations of subsystems are arranged in a row, clearance values based on the largest subsystem configuration should be used.
 - From the viewpoint of maintenance operations, it is suggested that Clearance (c) be made as large as possible.

1.1.7 Layout

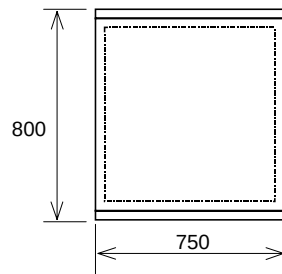
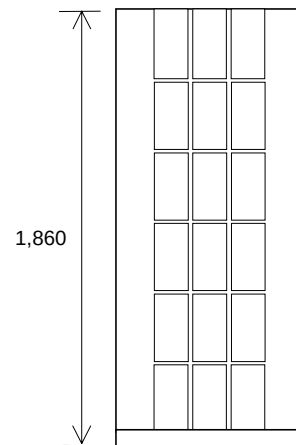
(1) DKC460I Layout



(2) DKU455I Layout

TOP VIEW

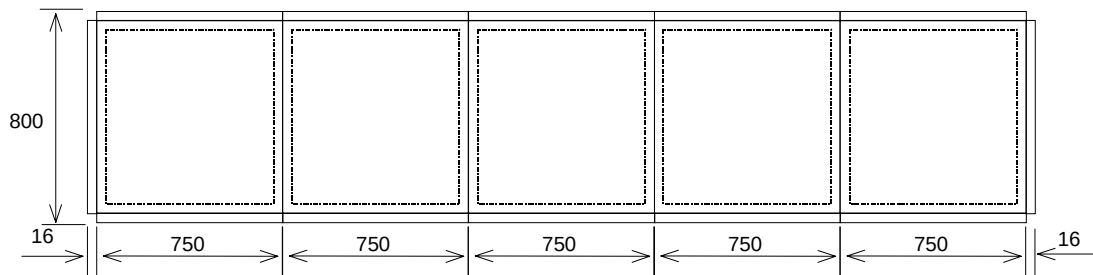
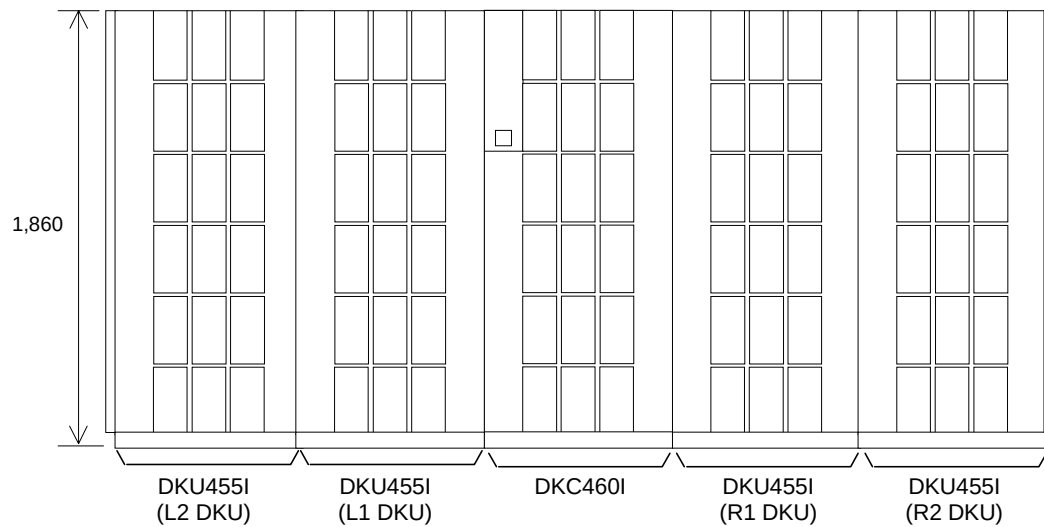
(Unit: mm)

FRONT VIEW

(3) Full Configuration of Disk Subsystem

TOP VIEW

(Unit: mm)

FRONT VIEW

1.1.8 Power and Grounding Check

1.1.8.1 Facility power check

AC power cable plug and receptacle for 60Hz are following part number or an equivalent.

Model Number	Plug			Receptacle	
	Rating	Maker	Part Number	Maker	Part Number
DKC-F460I-1UC	50 A	Thomas & Betts	9P53U2	Thomas & Betts	9C53U2 or 9R53U2W
DKU-F455I-1UC	50 A	Thomas & Betts	9P53U2	Thomas & Betts	9C53U2 or 9R53U2W
DKU-F455I-3UC	60 A	Thomas & Betts	RS460P9W	Thomas & Betts	RS460C9W
DKC-F460I-3UCD	30A	Thomas & Betts	3760PDG	Thomas & Betts	3934
		DDK	115J-AP8508	Thomas & Betts	3934
DKC-F460I-1UCD	30A	Thomas & Betts	3750DP	Thomas & Betts	3933

1.1.8.2 Facility grounding check

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

- 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.
- 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.
- 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.

1.2 Drive Expansion Sequence

The order in which DKU-F455I-36K4/72J4 (4 HDD canisters) units are to be installed in Fig. 1.2-1 and Fig. 1.2-2, the order in which DKU-F455I-36K1/72J1 (spare HDD) units are to be installed in Fig. 1.2-3.

NOTICE:

(1) Specifications for the selection of the spare HDD are shown below.

A sparing of an HDD with a smaller capacity for an HDD with a larger capacity is possible. However, there are some cases in which an HDD cannot be assigned depending on the drive type as shown in the table below.

Copy destination spare HDD Copy source data HDD	DKR2D-JxxFC	DKS2B-KxxFC
DKR2D-JxxFC	A spare HDD can be assigned when the following condition is satisfied. Capacity of a copy source data HDD $\leq$ Capacity of a copy destination spare HDD.	Assignment cannot be done.
DKS2B-KxxFC	Assignment cannot be done	A spare HDD can be assigned when the following condition is satisfied. Capacity of a copy source data HDD $\leq$ Capacity of a copy destination spare HDD.

No.	Model Number	Model Name	Data and Parity
1	DKU-F455I-36K4/72J4	4 HDD Canisters	Data and Parity Drive

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

		R1 DKU				R2 DKU			
L2 DKU	L1 DKU	DKC				DKC			
		HDU-R15				HDU-R25			
		P	P	S	S	P	P	S	S
		062	063	060	061	126	127	124	125
		058	059	056	057	122	123	120	121
		054	055	052	053	118	119	116	117
		050	051	048	049	114	115	112	113
		046	047	044	045	110	111	108	109
		042	043	040	041	106	107	104	105
		038	039	036	037	102	103	100	101
		034	035	032	033	098	099	096	097
		HDU-R14				HDU-R24			
		P	P	S	S	P	P	S	S
		062	063	060	061	126	127	124	125
		058	059	056	057	122	123	120	121
		054	055	052	053	118	119	116	117
		050	051	048	049	114	115	112	113
		046	047	044	045	110	111	108	109
		042	043	040	041	106	107	104	105
		038	039	036	037	102	103	100	101
		034	035	032	033	098	099	096	097
		HDU-R11				HDU-R21			
		P	P	S	S	P	P	S	S
		030	031	028	029	094	095	092	093
		026	027	024	025	090	091	088	089
		022	023	020	021	086	087	084	085
		018	019	016	017	082	083	080	081
		015	014	013	012	078	079	076	075
		011	010	009	008	074	073	072	071
		007	006	005	004	070	069	068	067
		003	002	001	000	066	065	064	063
		HDU-R10				HDU-R20			
		P	P	S	S	P	P	S	S
		030	031	028	029	094	095	092	093
		026	027	024	025	090	091	088	089
		022	023	020	021	086	087	084	085
		018	019	016	017	082	083	080	081
		015	014	013	012	078	079	076	075
		011	010	009	008	074	073	072	071
		007	006	005	004	070	069	068	067
		003	002	001	000	066	065	064	063

Front View

001-127: 4HDD canisters installation order

		R2 DKU				R1 DKU					
L2 DKU	L1 DKU	DKC				DKC				L1 DKU	L2 DKU
		HDU-R27				HDU-R17					
		P	P	S	S	P	P	S	S		
		126	127	124	125	062	063	060	061		
		122	123	120	121	058	059	056	057		
		118	119	116	117	054	055	052	053		
		114	115	112	113	050	051	048	049		
		110	111	108	109	046	047	044	045		
		106	107	104	105	042	043	040	041		
		102	103	100	101	038	039	036	037		
		098	099	096	097	034	035	032	033		
		HDU-R26				HDU-R16					
		P	P	S	S	P	P	S	S		
		126	127	124	125	062	063	060	061		
		122	123	120	121	058	059	056	057		
		118	119	116	117	054	055	052	053		
		114	115	112	113	050	051	048	049		
		110	111	108	109	046	047	044	045		
		106	107	104	105	042	043	040	041		
		102	103	100	101	038	039	036	037		
		098	099	096	097	034	035	032	033		
		HDU-R23				HDU-R13					
		P	P	S	S	P	P	S	S		
		094	095	092	093	030	031	028	029		
		090	091	088	089	026	027	024	025		
		086	087	084	085	022	023	020	021		
		082	083	080	081	018	019	016	017		
		078	079	076	075	015	014	013	012		
		074	073	072	071	011	010	009	008		
		070	069	068	067	007	006	005	004		
		066	065	064	063	003	002	001	000		
		HDU-R22				HDU-R12					
		P	P	S	S	P	P	S	S		
		094	095	092	093	030	031	028	029		
		090	091	088	089	026	027	024	025		
		086	087	084	085	022	023	020	021		
		082	083	080	081	018	019	016	017		
		078	079	076	075	015	014	013	012		
		074	073	072	071	011	010	009	008		
		070	069	068	067	007	006	005	004		
		066	065	064	063	003	002	001	000		

Rear View

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

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

L2 DKU				L1 DKU				DKC	R1 DKU	R2 DKU										
HDU-L25				HDU-L15																
S	S	P	P	S	S	P	P				S	S	P	P						
															253	254	189	190	173	174
															251	252	187	188	171	172
															249	250	185	186	169	170
															247	248	183	184	167	168
															245	246	181	182	165	166
															243	244	179	180	163	164
															241	242	177	178	161	162
															239	240	175	176	159	160
															237	238	173	174		
															235	236	171	172		
															233	234	169	170		
															231	232	167	168		
															229	230	165	166		
															227	228	163	164		
															225	226	161	162		
															223	224	159	160		
															221	222				
															219	220				
															217	218				
															215	216				
															213	214				
															211	212				
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												205	206							
												203	204							
												201	202							
												199	200							
												197	198							
												195	196							
												193	194							

Front View

128-254: 4HDD canisters installation order

L1 DKU				L2 DKU			
HDU-L17				HDU-L27			
S	189	P	190	S	253	P	254
S	187	P	188	S	251	P	252
S	185	P	186	S	249	P	250
S	183	P	184	S	247	P	248
S	181	P	182	S	245	P	246
S	179	P	180	S	243	P	244
S	177	P	178	S	241	P	242
S	175	P	176	S	239	P	240
S	173	P	174	S	237	P	238
S	171	P	172	S	235	P	236
S	169	P	170	S	233	P	234
S	167	P	168	S	231	P	232
S	165	P	166	S	229	P	230
S	163	P	164	S	227	P	228
S	161	P	162	S	225	P	226
S	159	P	160	S	223	P	224
HDU-L16				HDU-L26			
S	189	P	190	S	253	P	254
S	187	P	188	S	251	P	252
S	185	P	186	S	249	P	250
S	183	P	184	S	247	P	248
S	181	P	182	S	245	P	246
S	179	P	180	S	243	P	244
S	177	P	178	S	241	P	242
S	175	P	176	S	239	P	240
S	173	P	174	S	237	P	238
S	171	P	172	S	235	P	236
S	169	P	170	S	233	P	234
S	167	P	168	S	231	P	232
S	165	P	166	S	229	P	230
S	163	P	164	S	227	P	228
S	161	P	162	S	225	P	226
S	159	P	160	S	223	P	224
HDU-L13				HDU-L23			
S	157	P	158	S	221	P	222
S	155	P	156	S	219	P	220
S	153	P	154	S	217	P	218
S	151	P	152	S	215	P	216
S	149	P	150	S	213	P	214
S	147	P	148	S	211	P	212
S	145	P	146	S	209	P	210
S	143	P	144	S	207	P	208
S	142	P	Spare	S	205	P	206
S	140	P	141	S	203	P	204
S	138	P	139	S	201	P	202
S	136	P	137	S	199	P	200
S	134	P	135	S	197	P	198
S	132	P	133	S	195	P	196
S	130	P	131	S	193	P	194
S	128	P	129	S	191	P	192
HDU-L12				HDU-L22			
S	157	P	158	S	221	P	222
S	155	P	156	S	219	P	220
S	153	P	154	S	217	P	218
S	151	P	152	S	215	P	216
S	149	P	150	S	213	P	214
S	147	P	148	S	211	P	212
S	145	P	146	S	209	P	210
S	143	P	144	S	207	P	208
S	142	P	Spare	S	205	P	206
S	140	P	141	S	203	P	204
S	138	P	139	S	201	P	202
S	136	P	137	S	199	P	200
S	134	P	135	S	197	P	198
S	132	P	133	S	195	P	196
S	130	P	131	S	193	P	194
S	128	P	129	S	191	P	192

Rear View

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

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

Table 1.2-1 Relation between HDDs installation order and RAID group number (3D+1P/2D+2D)

	L2 DKU		L1 DKU		DKC		R1 DKU		R2 DKU	
	Installation Order	RAID Group No.	Installation Order	RAID Group No.			Installation Order	RAID Group No.	Installation Order	RAID Group No.
Upper	223	8-1	159	4-1	4th DKA Pair	2nd DKA Pair	032	2-1	096	6-1
	224	8-2	160	4-2			033	2-2	097	6-2
	225	8-3	161	4-3			034	2-3	098	6-3
	226	8-4	162	4-4			035	2-4	099	6-4
	227	8-5	163	4-5			036	2-5	100	6-5
	228	8-6	164	4-6			037	2-6	101	6-6
	229	8-7	165	4-7			038	2-7	102	6-7
	230	8-8	166	4-8			039	2-8	103	6-8
	231	8-9	167	4-9			040	2-9	104	6-9
	232	8-10	168	4-10			041	2-10	105	6-10
	233	8-11	169	4-11			042	2-11	106	6-11
	234	8-12	170	4-12			043	2-12	107	6-12
	235	8-13	171	4-13			044	2-13	108	6-13
	236	8-14	172	4-14			045	2-14	109	6-14
	237	8-15	173	4-15			046	2-15	110	6-15
	238	8-16	174(Spare)	4-16			047(Spare)	2-16	111	6-16
	239	8-17	175	4-17			048	2-17	112	6-17
	240	8-18	176	4-18			049	2-18	113	6-18
	241	8-19	177	4-19			050	2-19	114	6-19
	242	8-20	178	4-20			051	2-20	115	6-20
	243	8-21	179	4-21			052	2-21	116	6-21
	244	8-22	180	4-22			053	2-22	117	6-22
	245	8-23	181	4-23			054	2-23	118	6-23
	246	8-24	182	4-24			055	2-24	119	6-24
Lower	247	8-25	183	4-25	3rd DKA Pair	1st DKA Pair	056	2-25	120	6-25
	248	8-26	184	4-26			057	2-26	121	6-26
	249	8-27	185	4-27			058	2-27	122	6-27
	250	8-28	186	4-28			059	2-28	123	6-28
	251	8-29	187	4-29			060	2-29	124	6-29
	252	8-30	188	4-30			061	2-30	125	6-30
	253	8-31	189	4-31			062	2-31	126	6-31
	254	8-32	190	4-32			063	2-32	127	6-32
	191	7-1	128	3-1			001	1-1	064	5-1
	192	7-2	129	3-2			002	1-2	065	5-2
	193	7-3	130	3-3			003	1-3	066	5-3
	194	7-4	131	3-4			004	1-4	067	5-4
	195	7-5	132	3-5			005	1-5	068	5-5
	196	7-6	133	3-6			006	1-6	069	5-6
	197	7-7	134	3-7			007	1-7	070	5-7
	198	7-8	135	3-8			008	1-8	071	5-8
	199	7-9	136	3-9			009	1-9	072	5-9
	200	7-10	137	3-10			010	1-10	073	5-10
	201	7-11	138	3-11			011	1-11	074	5-11
	202	7-12	139	3-12			012	1-12	075	5-12
	203	7-13	140	3-13			013	1-13	076	5-13
	204	7-14	141	3-14			014	1-14	077	5-14
	205	7-15	142	3-15			015	1-15	078	5-15
	206	7-16	Spare	3-16			Spare	1-16	079	5-16
	207	7-17	143	3-17			016	1-17	080	5-17
	208	7-18	144	3-18			017	1-18	081	5-18
	209	7-19	145	3-19			018	1-19	082	5-19
	210	7-20	146	3-20			019	1-20	083	5-20
	211	7-21	147	3-21			020	1-21	084	5-21
	212	7-22	148	3-22			021	1-22	085	5-22
	213	7-23	149	3-23			022	1-23	086	5-23
	214	7-24	150	3-24			023	1-24	087	5-24
	215	7-25	151	3-25			024	1-25	088	5-25
	216	7-26	152	3-26			025	1-26	089	5-26
	217	7-27	153	3-27			026	1-27	090	5-27
	218	7-28	154	3-28			027	1-28	091	5-28
	219	7-29	155	3-29			028	1-29	092	5-29
	220	7-30	156	3-30			029	1-30	093	5-30
	221	7-31	157	3-31			030	1-31	094	5-31
	222	7-32	158	3-32			031	1-32	095	5-32

No.	Model Number	Model Name	Data and Parity
1	DKU-F455I-36K4/72J4	4 HDD Canisters x 2sets	Data and Parity Drive

(2) RAID5 (7D+1P)

R1 DKU																		R2 DKU																																																					
L2 DKU	L1 DKU	DKC	HDU-R15																		HDU-R25																																																		
			P									S									P									S																																									
			030	031	028	029	026	027	024	025	022	023	020	021	018	019	016	017	015	Spare	013	014	011	012	009	010	007	008	005	006	003	004	001	002																																					
W																		W																		W																		W																	
S																		S																		S																		S																	
030																		031																		062																		063																	
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Front View

001-063: 8HDD canisters installation order

R2 DKU																		R1 DKU																		DKC			L1 DKU			L2 DKU		
HDU-R27																		HDU-R17																										
P		P		S		S		062		061		059		057		055		053		051		049		047		045		043		041		039		037		035		033						
S		S		062		060		058		056		054		052		050		048		046		044		042		040		038		036		034		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
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W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
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W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
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W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
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W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
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W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
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W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
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W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
W		S		046		044		042		040		038		036		034		032		033		032		033		032		033		032		033		032		033								
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W		S		046		044		042		040		038		036		034		032		033		032		033																				

Rear View

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

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

L2 DKU										L1 DKU										DKC	R1 DKU	R2 DKU
HDU-L25										HDU-L15												
P		P		S		S		T		P		P		S		S		T				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
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097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117		118		115		116		105		087		088		074		075		074				
113		114		111		112		103		085		086		072		073		072				
109		110		107		108		101		083		084		070		071		070				
097		098		095		096		099		081		082		068		069		068				
093		094		091		092		097		079		080		066		067		066				
125		126		123		124		109		093		094		078		Spare		077				
121		122		119		118		107		091		092		076		077		076				
117																						

L1 DKU										L2 DKU												
R2 DKU	R1 DKU	DKC	HDU-L17										HDU-L27									
			P					S					P					S				
			094					093					126					125				
			091					091					123					123				
			092					092					124					124				
090					089					121					121							
088					087					120					120							
086					085					119					119							
084					083					118					118							
082					081					116					116							
080					079					114					114							
078					078					112					112							
077					077					110					110							
075					074					108					108							
073					072					106					106							
071					070					104					104							
069					068					102					102							
067					066					100					100							
065					064					098					098							
										096					096							

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

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

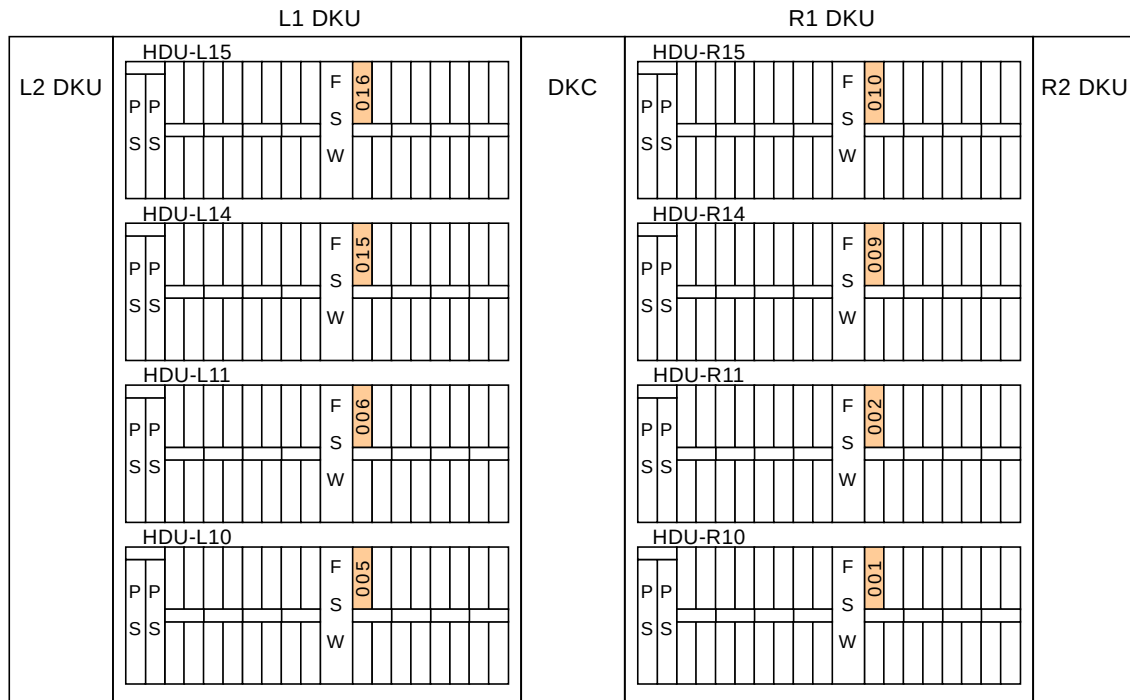
Table 1.2-2 Relation between HDDs installation order and RAID group number (7D+1P)

L2 DKU		L1 DKU		DKC		R1 DKU		R2 DKU	
Installation Order	RAID Group No.	Installation Order	RAID Group No.			Installation Order	RAID Group No.	Installation Order	RAID Group No.
095	7-1 , (8-1)	064	3-1 , (4-1)	3rd / 4th DKA Pairs	1st / 2nd DKA Pairs	001	1-1 , (2-1)	032	5-1 , (6-1)
096	7-2 , (8-2)	065	3-2 , (4-2)			002	1-2 , (2-2)	033	5-2 , (6-2)
097	7-3 , (8-3)	066	3-3 , (4-3)			003	1-3 , (2-3)	034	5-3 , (6-3)
098	7-4 , (8-4)	067	3-4 , (4-4)			004	1-4 , (2-4)	035	5-4 , (6-4)
099	7-5 , (8-5)	068	3-5 , (4-5)			005	1-5 , (2-5)	036	5-5 , (6-5)
100	7-6 , (8-6)	069	3-6 , (4-6)			006	1-6 , (2-6)	037	5-6 , (6-6)
101	7-7 , (8-7)	070	3-7 , (4-7)			007	1-7 , (2-7)	038	5-7 , (6-7)
102	7-8 , (8-8)	071	3-8 , (4-8)			008	1-8 , (2-8)	039	5-8 , (6-8)
103	7-9 , (8-9)	072	3-9 , (4-9)			009	1-9 , (2-9)	040	5-9 , (6-9)
104	7-10 , (8-10)	073	3-10 , (4-10)			010	1-10 , (2-10)	041	5-10 , (6-10)
105	7-11 , (8-11)	074	3-11 , (4-11)			011	1-11 , (2-11)	042	5-11 , (6-11)
106	7-12 , (8-12)	075	3-12 , (4-12)			012	1-12 , (2-12)	043	5-12 , (6-12)
107	7-13 , (8-13)	076	3-13 , (4-13)			013	1-13 , (2-13)	044	5-13 , (6-13)
108	7-14 , (8-14)	077	3-14 , (4-14)			014	1-14 , (2-14)	045	5-14 , (6-14)
109	7-15 , (8-15)	078	3-15 , (4-15)			015	1-15 , (2-15)	046	5-15 , (6-15)
110	7-16 , (8-16)	(Spare)	3-16 , (4-16)			(Spare)	1-16 , (2-16)	047	5-16 , (6-16)
111	7-17 , (8-17)	079	3-17 , (4-17)			016	1-17 , (2-17)	048	5-17 , (6-17)
112	7-18 , (8-18)	080	3-18 , (4-18)			017	1-18 , (2-18)	049	5-18 , (6-18)
113	7-19 , (8-19)	081	3-19 , (4-19)			018	1-19 , (2-19)	050	5-19 , (6-19)
114	7-20 , (8-20)	082	3-20 , (4-20)			019	1-20 , (2-20)	051	5-20 , (6-20)
115	7-21 , (8-21)	083	3-21 , (4-21)			020	1-21 , (2-21)	052	5-21 , (6-21)
116	7-22 , (8-22)	084	3-22 , (4-22)			021	1-22 , (2-22)	053	5-22 , (6-22)
117	7-23 , (8-23)	085	3-23 , (4-23)			022	1-23 , (2-23)	054	5-23 , (6-23)
118	7-24 , (8-24)	086	3-24 , (4-24)			023	1-24 , (2-24)	055	5-24 , (6-24)
119	7-25 , (8-25)	087	3-25 , (4-25)			024	1-25 , (2-25)	056	5-25 , (6-25)
120	7-26 , (8-26)	088	3-26 , (4-26)			025	1-26 , (2-26)	057	5-26 , (6-26)
121	7-27 , (8-27)	089	3-27 , (4-27)			026	1-27 , (2-27)	058	5-27 , (6-27)
122	7-28 , (8-28)	090	3-28 , (4-28)			027	1-28 , (2-28)	059	5-28 , (6-28)
123	7-29 , (8-29)	091	3-29 , (4-29)			028	1-29 , (2-29)	060	5-29 , (6-29)
124	7-30 , (8-30)	092	3-30 , (4-30)			029	1-30 , (2-30)	061	5-30 , (6-30)
125	7-31 , (8-31)	093	3-31 , (4-31)			030	1-31 , (2-31)	062	5-31 , (6-31)
126	7-32 , (8-32)	094	3-32 , (4-32)			031	1-32 , (2-32)	063	5-32 , (6-32)

- Install RAID 5 (7D+1P) forming pairs using the same number of the two RAID groups (RAID groups 1 and 2, 3 and 4, 5 and 6, and 7 and 8) of RAID 5 (3D+1P).
(Example: RAID group numbers 1-1 and 2-1)
The types of HDDs to be installed in each pair must be the same.
- In the case of RAID 5 (7D+1P), only odd RAID numbers are displayed on the SVP. (Group numbers shown in parentheses in the table above are not displayed.)
- When RAID 5 (3D+1P) or RAID 1 (2D+2D) and RAID 5 (7D+1P) are configured mixture, note that duplicated group numbers are excluded.
Example: When Group No. 1-1 is configured for RAID 5 (7D+1P), Group No. 2-1 is excluded and cannot be configure for RAID 5 (3D+1P).

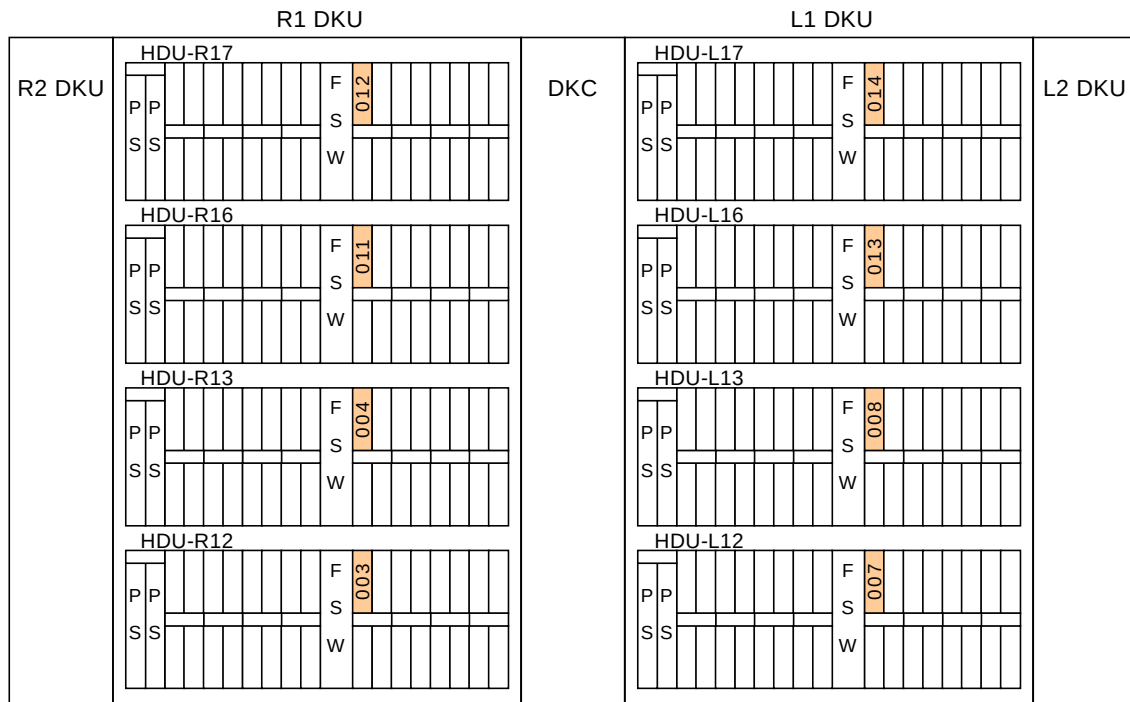
No.	Model Number	Model Name	Data and Parity
1	DKU-F455I-36K1/72J1	1 HDD Canister	Spare Drive

(3) Spare HDD



Front View

001-016: Spare HDD canister installation order



Rear View

Fig. 1.2-3 Spare Drive Expansion Sequence

1.3 Explanation of Channel Option Configuration

1.3.1 List of Channel Options

Channel options which can be installed in the DKC465I are shown in Table 1.3-1. Up to 4 sets of them can be installed in the entire subsystem.

Table 1.3-1 List of Channel Options

No.	Model Number	Model Name	Major Part	Remarks
1	DKC-F460I-8S	Serial 8-port Adapter	- WP462-A } × 2 - SH281-C × 4 } - I/F Con. Panel	For connection to the main frame
2	DKC-F460I-8GSE	Fibre 8-port Adapter for Short Wavelength (1Gbps support)	- WP461-D } × 2 - SH281-A × 2 } - I/F Con. Panel	For connection to the open system
3	DKC-F460I-4HSE	Fibre 4-port Adapter for Short Wavelength (1-2Gbps support)	- WP461-E } × 2 - SH281-A × 2 } - I/F Con. Panel	For connection to the open system
4	DKC-F460I-8HSE	Fibre 8-port Adapter for Short Wavelength (1-2Gbps support)	- WP461-B } × 2 - SH281-A × 4 } - I/F Con. Panel	For connection to the open system
5	DKC-F460I-8HLE	Fibre 8-port Adapter for Long Wavelength (1-2Gbps support)	- WP461-C } × 2 - SH281-A × 4 } - I/F Con. Panel	For connection to the open system
6	DKC-F460I-8MS	Mainframe Fibre 8-port Adapter for Short Wavelength (1Gbps support)	- WP465-A } × 2 - SH281-A × 4 } - I/F Con. Panel	For connection to the main frame
7	DKC-F460I-8ML	Mainframe Fibre 8-port Adapter for Long Wavelength (1Gbps support)	- WP465-B } × 2 - SH281-A × 4 } - I/F Con. Panel	For connection to the main frame
8	DKC-F460I-8GSF	Fibre 8-port Adapter for Short Wavelength (1Gbps support)	- WP461-H } × 2 - SH281-A × 2 } - I/F Con. Panel	For connection to the open system Check data assist support
9	DKC-F460I-4HSF	Fibre 4-port Adapter for Short Wavelength (1-2Gbps support)	- WP461-J } × 2 - SH281-A × 2 } - I/F Con. Panel	For connection to the open system Check data assist support
10	DKC-F460I-8HSF	Fibre 8-port Adapter for Short Wavelength (1-2Gbps support)	- WP461-F } × 2 - SH281-A × 4 } - I/F Con. Panel	For connection to the open system Check data assist support
11	DKC-F460I-8HLF	Fibre 8-port Adapter for Long Wavelength (1-2Gbps support)	- WP461-G } × 2 - SH281-A × 4 } - I/F Con. Panel	For connection to the open system Check data assist support

1.3.2 Channel Specifications

Specifications for each channel option are shown in table 1.3-2.

Table 1.3-2 Channel Specifications

Item	Serial	Mainframe fibre	
	8-port	Short Wave 8-port	Long Wave 8-port
Option name	8S	8MS	8ML
Data transfer rate (MB/s)	17	100	100
Number of connected ports/option	8	8	8
Host interface	Serial	FICON	FICON
Number of installable options/subsystem	1/2/3/4	1/2/3/4	1/2/3/4
Cable length	3km	500m *1	10km

Item	Fibre Short Wave			Fibre Long Wave
	1Gbps 8-port	2Gbps 4-port	2Gbps 8-port	2Gbps 8-port
Option name	8GSE/8GSF	4HSE/4HSF	8HSE/8HSF	8HLE/8HLF
Data transfer rate (MB/s)	100	100/200	100/200	100/200
Number of connected ports/option	8	4	8	8
Host interface	FCP	FCP	FCP	FCP
Number of installable options/subsystem	1/2/3/4	1/2/3/4	1/2/3/4	1/2/3/4
Cable length	500m *1	500m / 300m *2	500m / 300m *2	10km

*1 Indicates when 50/125 μ m multi-mode fiber cable is used. If 62.5/125 μ m multi-mode fibre cable is used, maximum length is decreased to 300m.

*2 Indicates when 50/125 μ m multi-mode fiber cable is used. If 62.5/125 μ m multi-mode fibre cable is used, 500m(100MB/s) and 300m(200MB/s) is decreased to 300m and 150m respectively.

Up to 4 sets of combinations of the aforementioned channel options and up to 32 ports can be connected to each subsystem.

1.3.3 Installing Location

(1) Option installing location

The channel option installing location and the interface connector panels position are shown in Fig. 1.3-1.

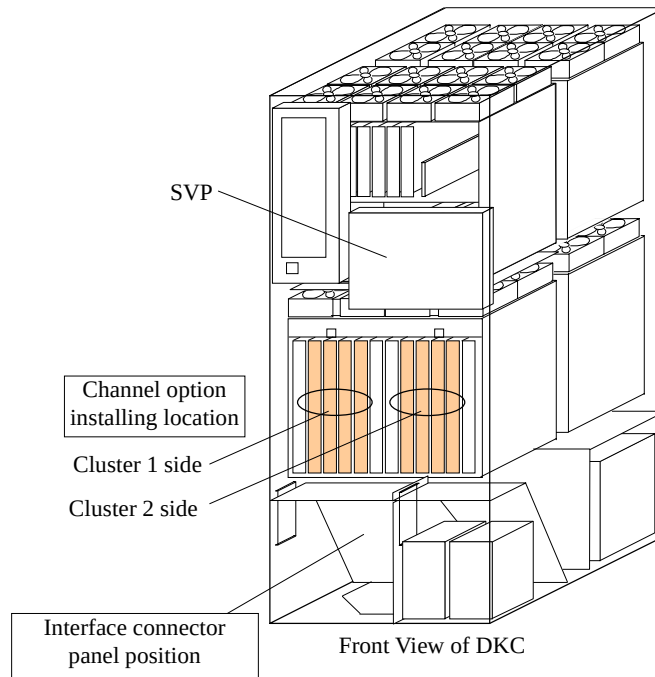


Fig. 1.3-1 Channel Option Installation

(2) PCB location diagram

Location of channel option PCBs are shown in Table 1.3-3.

Table 1.3-3 PCB Location Diagram

CL1							CL2				
N	P	Q	R	S	T	U	V	W	X	Y	Z
W	8S	8S	8S	8S	W	W	8S	8S	8S	8S	W
P	8GSE/F	8GSE/F	8GSE/F	8GSE/F	P	P	8GSE/F	8GSE/F	8GSE/F	8GSE/F	P
4	4HSE/F	4HSE/F	4HSE/F	4HSE/F	4	4	4HSE/F	4HSE/F	4HSE/F	4HSE/F	4
8	8HSE/F	8HSE/F	8HSE/F	8HSE/F	9	9	8HSE/F	8HSE/F	8HSE/F	8HSE/F	8
1	8HLE/F	8HLE/F	8HLE/F	8HLE/F	0	0	8HLE/F	8HLE/F	8HLE/F	8HLE/F	1
-	8MS	8MS	8MS	8MS	-	-	8MS	8MS	8MS	8MS	-
A	8ML	8ML	8ML	8ML	A	B	8ML	8ML	8ML	8ML	B
CSW-1N	CHA-1P (Basic)	CHA-1Q (Add.1)	CHA-1R (Add.2)	CHA-1S (Add.3)	CACHE-1T	CACHE-1U	CHA-2V (Basic)	CHA-2W (Add.1)	CHA-2X (Add.2)	CHA-2Y (Add.3)	CSW-2Z

8S: PCB for DKC-F460I-8S
 8GSE/F: PCB for DKC-F460I-8GSE/8GSF
 4HSE/F: PCB for DKC-F460I-4HSE/4HSF
 8HSE/F: PCB for DKC-F460I-8HSE/8HSF

8HLE/F: PCB for DKC-F460I-8HLE/8HLF
 8MS: PCB for DKC-F460I-8MS
 8ML: PCB for DKC-F460I-8ML

Note. For the configuration of each PCB, see Table 1.3-1.

(3) Interface connector panel location

The interface connector panel location is shown in Fig. 1.3-2.

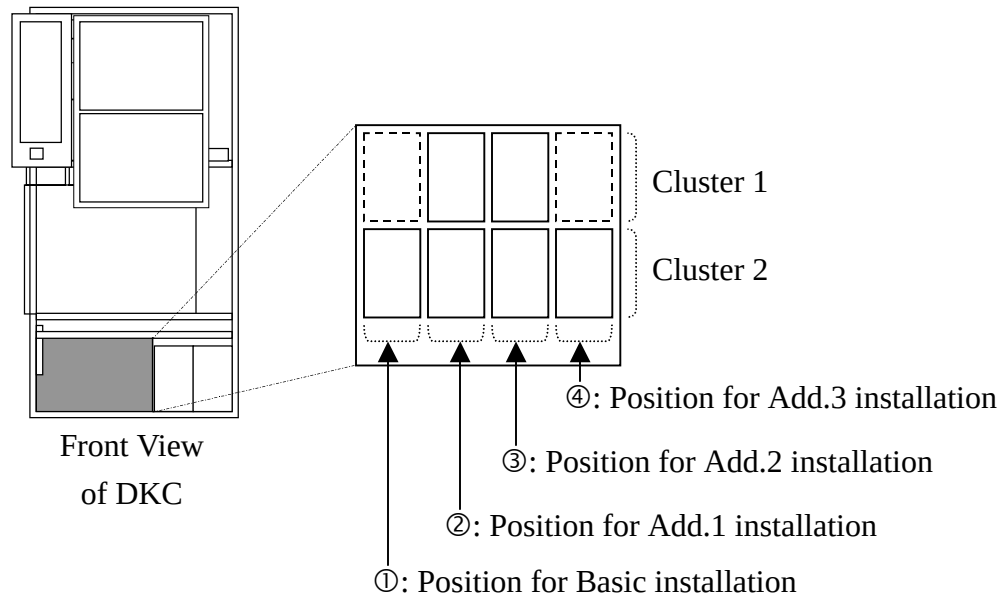


Fig. 1.3-2 Interface connector panel location

Refer to the [LOCATION04-80](#) for how to attach the cable clamp and channel interface cable routing.

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.

When the SVP High Reliability Kit is installed, however, it is not required to connect the following cables since they are to be connected in the SVP Procedure: Cable (P41) and LAN Cable (LSVP-2) (See [INST03-SVP-70](#).)

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

- The DKC Additional Power Supply (DKC-F460I-80) must be installed when the total numbers of the installation of CHA and DKA options are 4 or more.

Table 2.1-1 New Installation Procedure Table

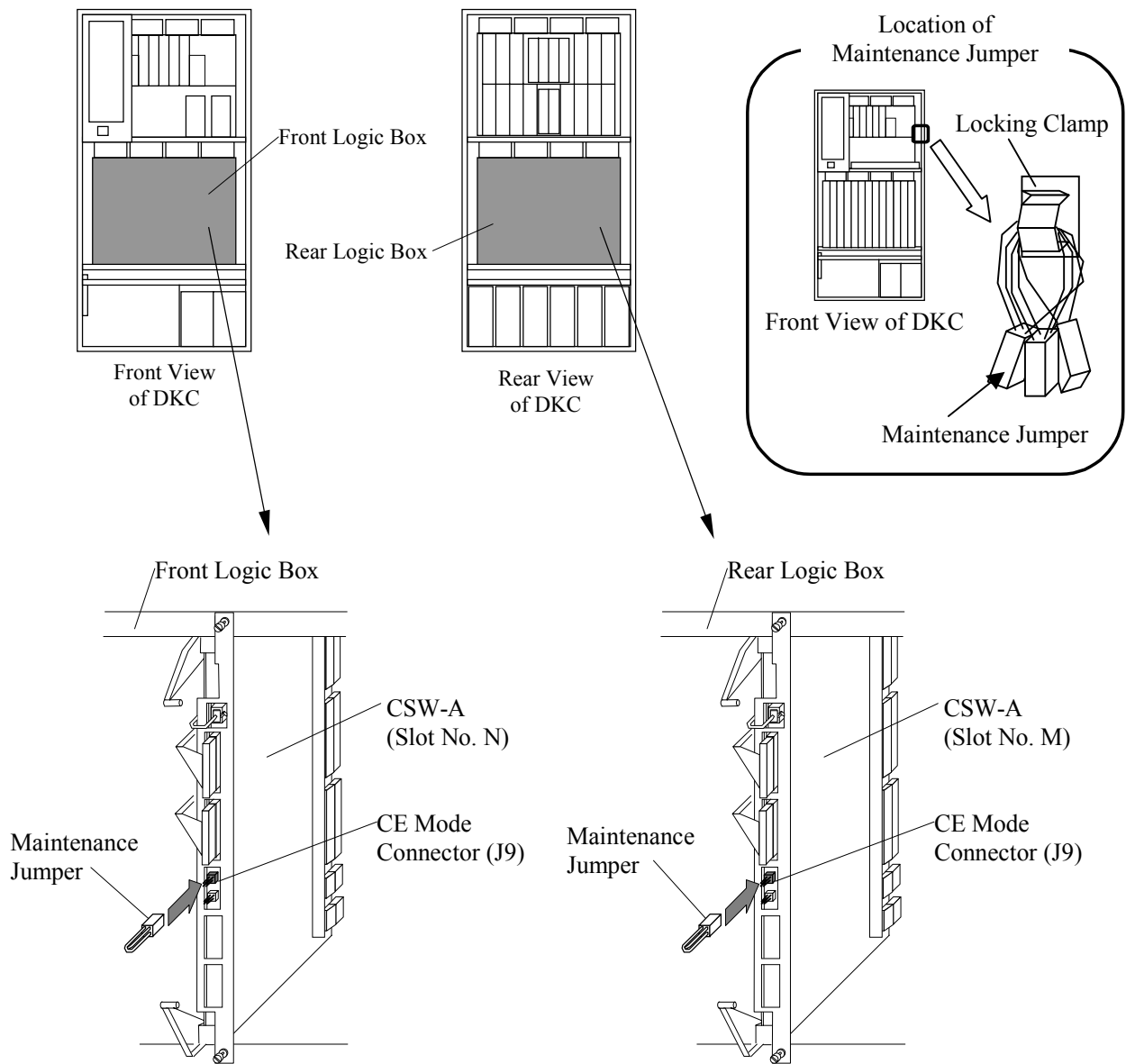
No.	Working Item	Model Number	Page
1	Unpacking and Inspection	—	INST03-INS-10 through 70
2	Basic Subsystem Installation (DKC460I-5)	←	INST03-SUB-10 through 240
3	Disk Unit Installation (DKU455I-18)	←	INST03-DKU-10 through 260
4	Breaker Box Installation (DKC-F460I-3PS)	←	INST03-BBK-10 through 50
5	AC Box Installation (DKC-F460I-1PS/1PSD/3PSD, DKU-F455I-1PS/3PS/1PSD/3PSD)	←	INST03-ACB-10 through 210
6	AC Power Cable Installation (DKC-F460I-1EC/1UC/1ECD/1UCD/3ECD/3UCD, DKU-F455I-1EC/1UC/3EC/3UC)	←	INST03-PCK-10 through 260
7	PCI I/F Connector Installation (DKC-F460I-18)	←	INST03-PCI-10 through 50
8	DKC Additional Power Supply Installation (DKC-F460I-80)	←	INST03-PS-10 through 90
9	Channel Adapter Installation (DKC-F460I-8S/8MS/8ML/8GSE/4HSE/8HSE/8HLE/8GSF/4HSF/8HSF/8HLF)	8S	INST03-8S-10 through 100 (Only hardware procedure)
		8GSE/8GSF 4HSE/4HSF 8HSE/8HSF 8HLE/8HLF	INST03-FIB-10 through 90 (Only hardware procedure)
		8MS 8ML	INST03-MF-10 through 100 (Only hardware procedure)

(To be continued.)

(Continued from preceding sheet.)

No.	Working Item	Model Number	Page
10	Cache memory and Shared memory Installation (DKC-F460I-41/42/S512/2048)	S512	INST03-SM-10 through 170 (Only hardware procedure)
		41/42/2048	INST03-CM-10 through 210 (Only hardware procedure)
11	DEV Interface Cable, Additional Disk Adapter and HDD Canister Installation (DKC-F460I-L1C/200, DKU-F455I-36K1/36K4/72J1/72J4/EXC)	←	INST03-DKA-10 through 3000 (Only hardware procedure)
12	SVP High Reliability Kit Installation (DKC-F460I-SVP)	←	INST03-SVP10 through 250 (Only hardware procedure)
13	UPS Connection Kit Installation (DKC-F460I-UPS)	←	INST03-UPS-10 through 140
14	256MB Additional Memory for SVP Installation (DKC-F460I-256M)	←	INST03-SVM-10 through 120
15	SVP "New Installation" Procedure	—	INST02-520
	END		

Note *1 : The Maintenance Jumper of the CE Mode Connector (J9).



2.2 Non-Disruptive Installation Procedure Table

CAUTION

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.12) 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 [INST02-420](#) 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).
- Install additional Cache Memory and Shared Memory (DKC-F460I-41/42/S512/2048) on one side j first without affecting subsystem operation according to the SVP guidance.
- The DKC Additional Power Supply (DKC-F460I-80) must be installed when the total numbers of the installation of CHA and DKA options are 4 or more.
In such a case, be sure to add the channel option(s) after the DKC Additional Power Supply is added.
- 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.

Table 2.2-1 Non-Disruptive Installation Procedure Table

No.	Working Item	Model Number	Page
1	Start UP the Install	—	—
2	Unpacking and Inspection	—	INST03-INS-10 through 70
3	DKC Additional Power Supply Installation (DKC-F460I-80)	—	INST03-PS-10 through 90
4	Channel Adapter Installation (DKC-F460I-8S/8MS/8ML/8GSE/4HSE/8HSE/8HLE/8GSF/4HSF/8HSF/8HLF)	8S	INST03-8S-10 through 100
		8GSE/8GSF 4HSE/4HSF 8HSE/8HSF 8HLE/8HLF	INST03-FIB-10 through 90
		8MS 8ML	INST03-MF-10 through 100
5	Cache memory and Shared memory Installation (DKC-F460I-41/42/S512/2048)	S512	INST03-SM-10 through 170
		41/42/ 2048	INST03-CM-10 through 210
6	AC Box Installation (for Additional DKU) (DKU-F455I-1PS/3PS/1PSD/3PSD)	←	INST03-ACB-10 through 210
7	AC Power Cable Installation (DKU-F455I-1EC/1UC/3EC/3UC, DKC-F465I-1ECD/1UCD/3ECD/3UCD)	←	INST03-PCK-10 through 260

(To be continued.)

(Continued from preceding sheet.)

No.	Working Item	Model Number	Page
8	Disk Unit Installation (DKU455I-18) Perform the installation of the DKU frame, setting of the MPS jumper, setting of the JMP switch, and connection of the power cable.	←	INST03-DKU-10 through 260
9	POWER ON of Disk Unit (DKU455I-18)	←	INST03-PWR-10
Note	Caution: When the addition of the DKU frame (DKU-455I-18) is accompanied, perform the work No.8 (Disk Unit Installation) and the work No.9 (POWER ON of Disk Unit) beforehand.		
10	DEV Interface Cable, Additional Disk Adapter and HDD Canister Installation (DKC-F460I-L1C/200, DKU-F455I-36K1/36K4/72J1/72J4/EXC)	←	INST03-DKA-10 through 3000
11	SVP High Reliability Kit Installation (DKC-F460I-SVP)	←	INST03-SVP-10 through 250
12	PCI I/F Connector Installation (DKC-F460I-18)	←	INST03-PCI-10 through 100
13	256MB Additional Memory for SVP Installation (DKC-F460I-256M)	←	INST03-SVM-10 through 120
	END		

2.3 Non-Disruptive De-installation Procedure Table

CAUTION

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.10) shown in the table below. Neglect a 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 [INST02-440](#) 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).
- Remove additional Cache Memory and Shared Memory (DKC-F460I-41/42//S512/2048) on one side first without affecting subsystem operation according to the SVP guidance.

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

No.	Working Item	Model Number	Page
1	Start UP the Install	—	—
2	DEV Interface Cable, HDD Canister and Additional Disk Adapter De-installation (DKC-F460I-200/L1C, DKU-F455I-36K1/36K4/72J1/72J4/EXC)	←	INST04-DKA-10 through 2910
Note	Proceed to the work No.3 after performing the work No.2. The system goes down if the main breaker of the DKU 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 Unit De-installation (DKU455I-18) Turn off the main breaker of the DKU.	←	INST04-DKU-10 through 170
4	Cache memory and Shared memory De-installation (DKC-F460I-41/42/S512/2048)	S512	INST04-SM-10 through 190
		41/42/ 2048	INST04-CM-10 through 220
5	Channel Adapter De-installation (DKC-F460I-8S/8MS/8ML/8GSE/4HSE/8HSE/8HLE/8GSF/4HSF/8HSF/8HLF)	8S	INST04-8S-10 through 90
		8GSE/8GSF 4HSE/4HSF 8HSE/8HSF 8HLE/8HLF	INST04-FIB-10 through 90
		8MS 8ML	INST04-MF-10 through 90
6	DKC Additional Power Supply De-installation (DKC-F460I-80)	←	INST04-PS-10 through 100
7	SVP High Reliability Kit De-installation (DKC-F460I-SVP)	←	INST04-SVP-10 through 120

(To be continued.)

(Continued from preceding sheet.)

No.	Working Item	Model Number	Page
8	PCI Connector De-installation (DKC-F460I-18)	←	INST04-PCI-10 through 40
9	AC Power Cable De-installation (DKU-F455I-1EC/1UC/3EC/3UC, DKC-F460I-1ECD/1UCD/3ECD/3UCD)	←	INST04-PCK-10 through 200
10	AC Box De-installation (for Removal DKU) (DKU-F455I-1PS/3PS/1PSD/3PSD)	←	INST04-ACB-10 through 200
11	256MB Additional Memory for SVP De-installation (DKC-F460I-256M)	←	INST04-SVM-10 through 120
	END		

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 [INST02-420](#) 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	Disk Subsystem Power OFF	—	INST03-PWR-70 through 90
2	UPS Connection Kit Installation (DKC-F460I-UPS)	←	INST03-UPS-10 through 100 (Only hardware procedure)
3	PCI I/F Connector Installation (DKC-F460I-18)	←	INST03-PCI-10 through 50 (Only hardware procedure)
4	256MB Additional Memory for SVP Installation (DKC-F460I-256M)	←	INST03-SVM-10 through 120
5	AC Box Installation (DKC-F460I-1PS/1PSD/3PSD, DKU-F455I-1PS/3PS/1PSD/3PSD)	←	INST03-ACB-10 through 210
6	AC Power Cable Installation (DKC-F460I-1EC/1UC/1ECD/1UCD/3ECD/3UCD, DKU-F455I-1EC/1UC/3EC/3UC)	←	INST03-PCK-10 through 260
7	Disk Subsystem Power on	—	INST03-PWR-10 through 50
8	Change Configuration Information for UPS Connection Kit	←	INST03-UPS-110 through 140
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 [INST02-440](#) 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

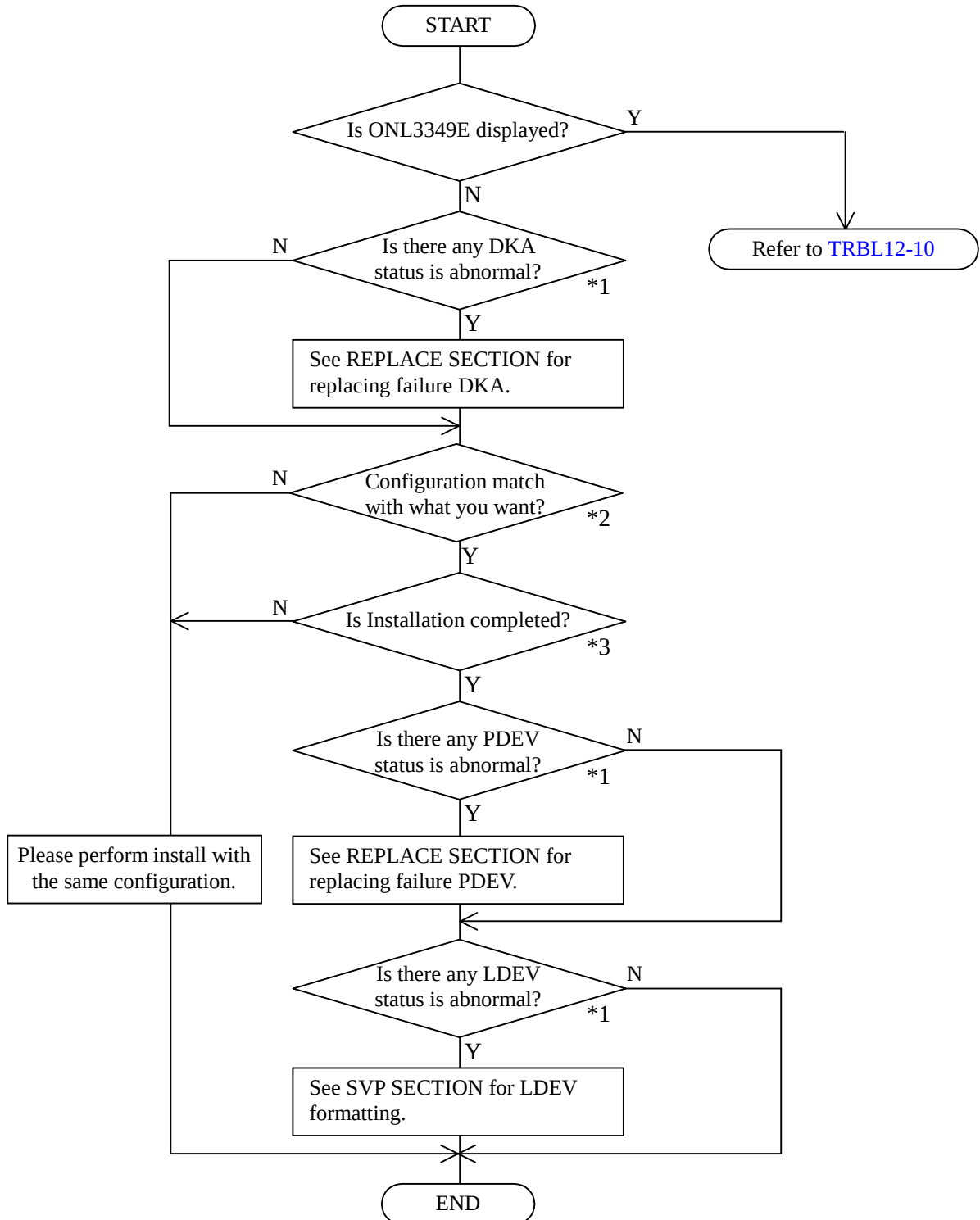
No.	Working Item	Model Number	Page
1	Disk Subsystem Power OFF	←	INST03-PWR-70 through 90
2	UPS Connection Kit De-Installation (DKC-F460I-UPS)	←	INST04-UPS-10 through 140 (Only hardware procedure)
3	PCI I/F Connector De-Installation (DKC-F460I-18)	←	INST04-PCI-10 through 40 (Only hardware procedure)
4	256MB Additional Memory for SVP Installation (DKC-F460I-256M)	←	INST04-SVM-10 through 120
5	AC Power Cable De-Installation (DKC-F460I-1EC/1UC/3EC/3UC/1ECD/1UCD/3ECD/3UCD, DKU-F455I-1EC/1UC/3EC/3UC)	←	INST04-PCK-10 through 200
6	AC Box De-Installation (DKC-F460I-1PS/3PS/1PSD/3PSD, DKU-F455I-1PS/3PS/1PSD/3PSD)	←	INST04-ACB-10 through 200
7	Disk Subsystem Power ON		INST03-PWR-10 through 50
	END		

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2.6 Trouble shooting for errors in install SVP procedure

2.6.1 DKA + &ECC group + LDEV

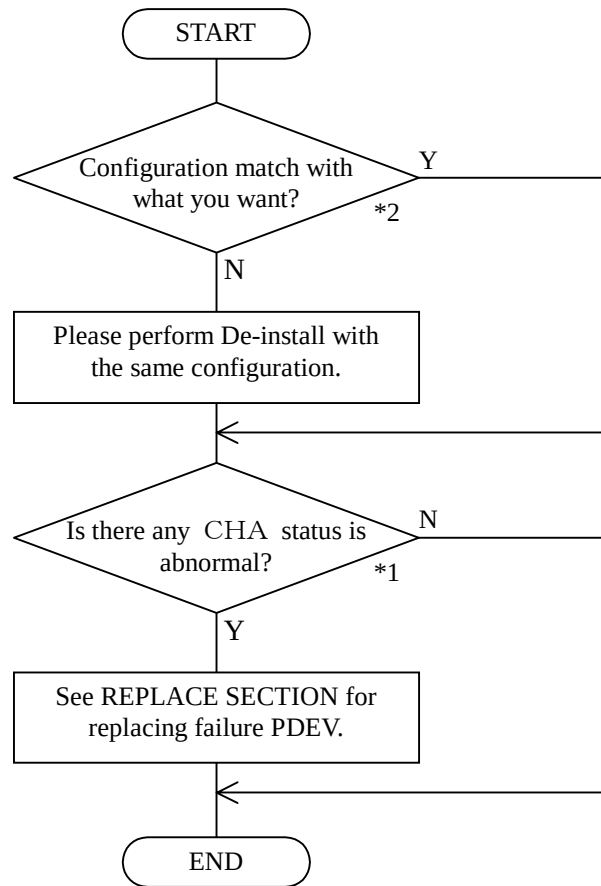


*1 Select (CL) [Maintenance] in the 'SVP' Window.

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

*3 Wasn't INS2450I displayed when select (CL) [Install] – [Change Configuration] in the 'SVP' Window?

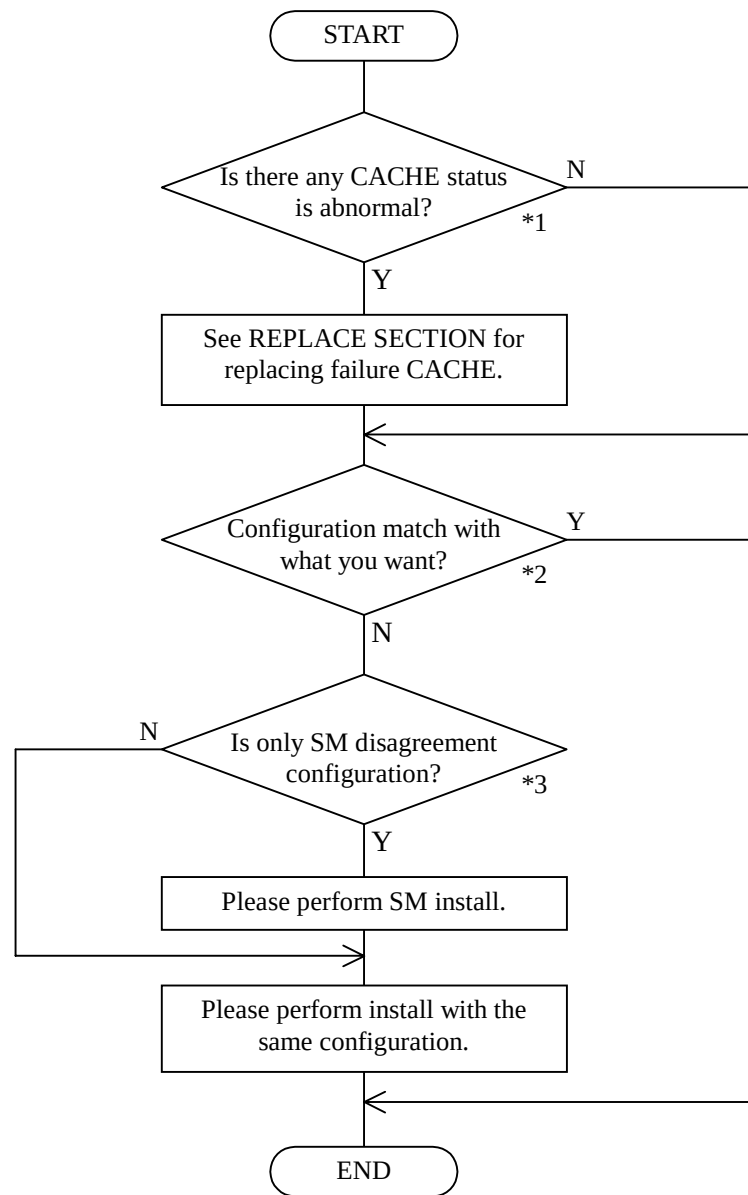
2.6.2 Number of Channel



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

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

2.6.3 Cache Capacity

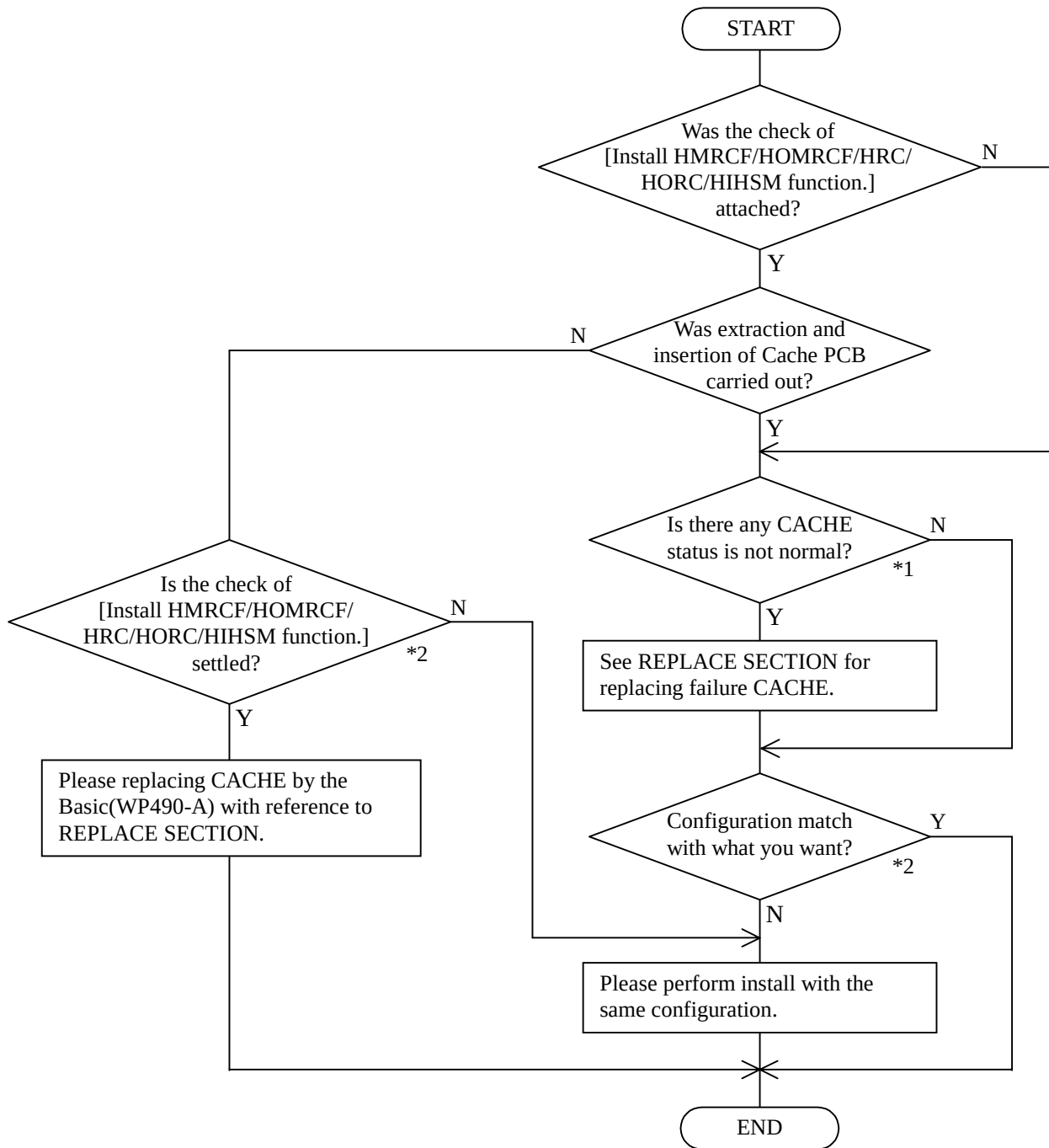


*1 Select (CL) [Maintenance] in the 'SVP' Window.

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

*3 Was INS2566I displayed when select (CL) [Install] – [Change Configuration] in the 'SVP' Window?

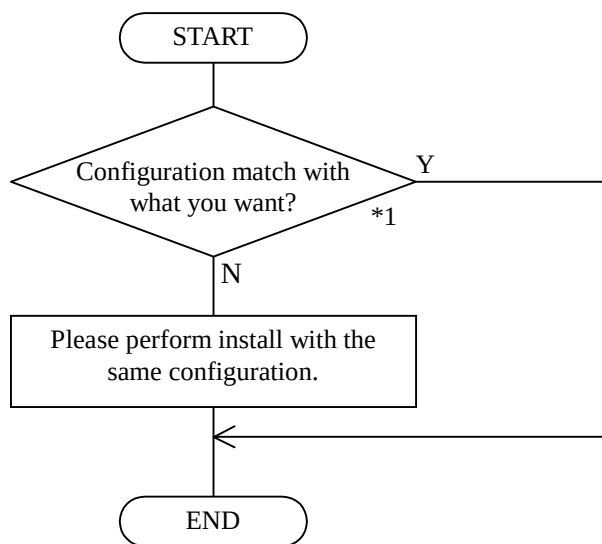
2.6.4 SM Capacity



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

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

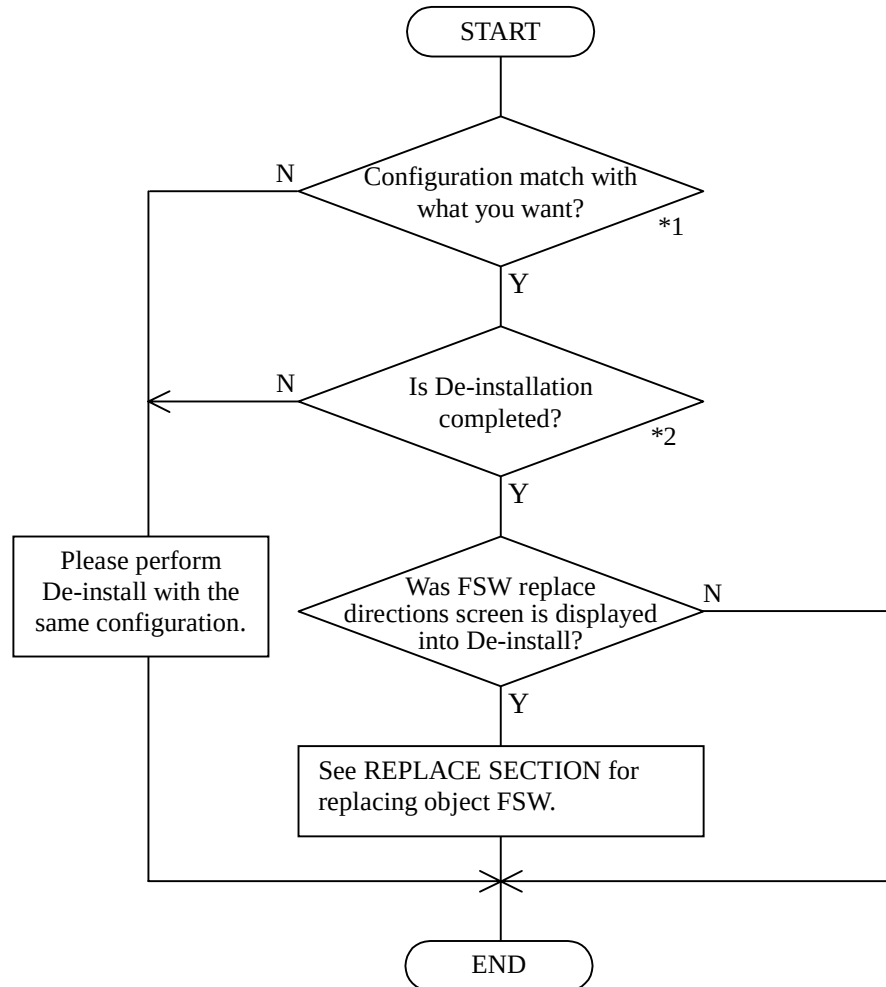
2.6.5 Power Supply



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

2.7 Trouble shooting for errors in de-install SVP procedure

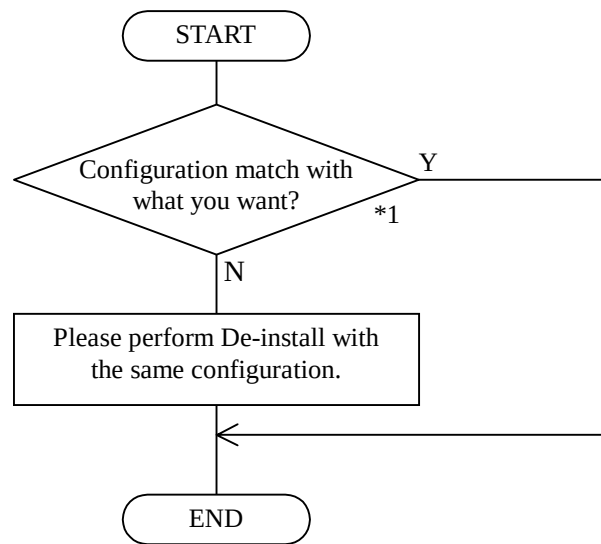
2.7.1 DKA + ECC group + LDEV



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

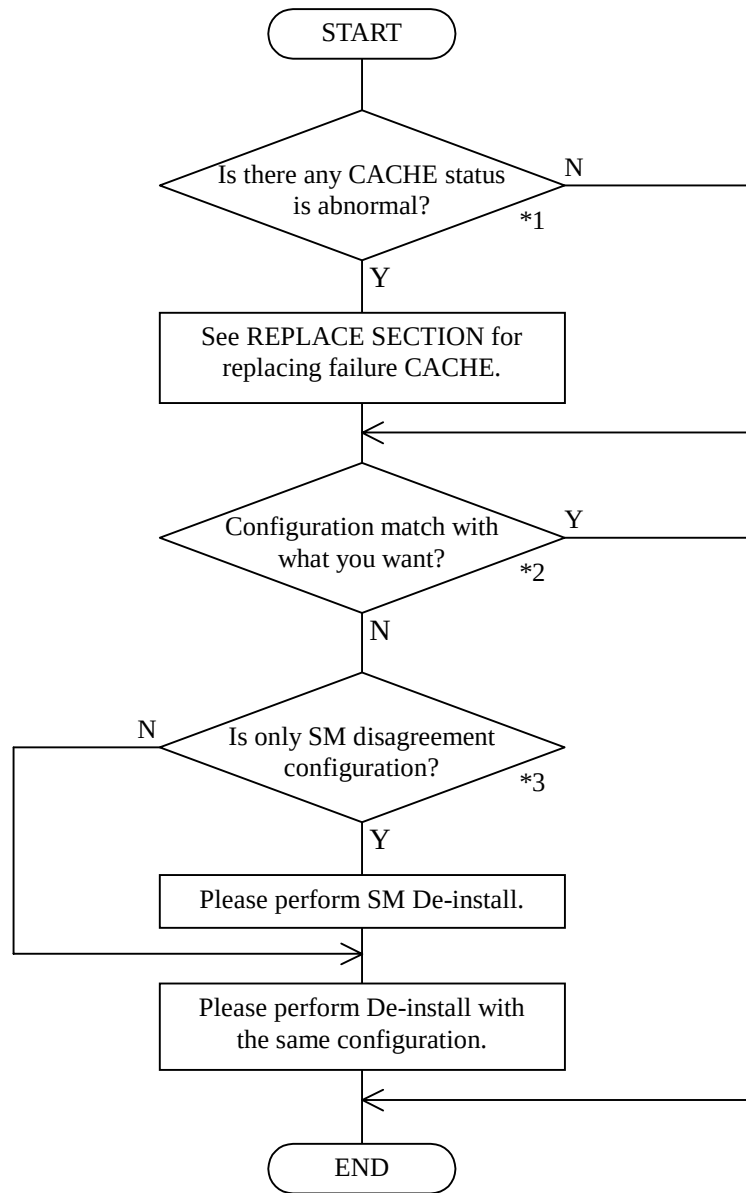
*2 Wasn’t INS2450I displayed when select (CL) [Install] – [Change Configuration] in the ‘SVP’ Window?

2.7.2 Number of Channel



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

2.7.3 Cache Capacity

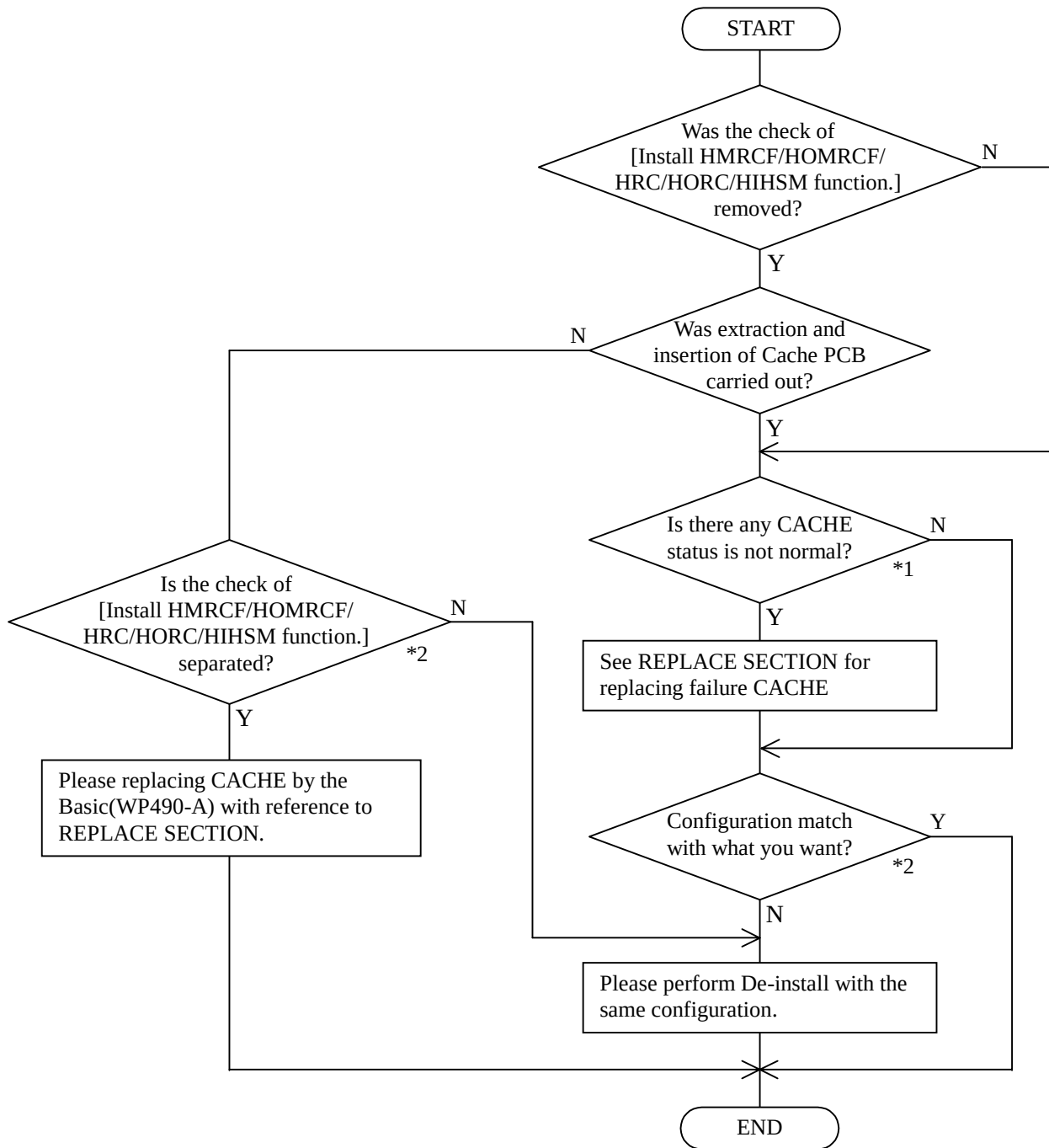


*1 Select (CL) [Maintenance] in the 'SVP' Window.

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

*3 'Was INS2566I displayed when select (CL) [Install] – [Change Configuration] in the 'SVP' Window?

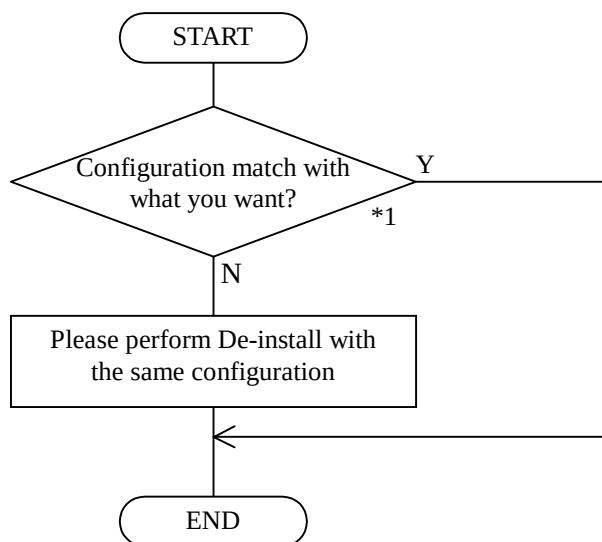
2.7.4 SM Capacity



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

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

2.7.5 Power Supply



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

2.8 Change Configuration

When Changing Configuration Information such as subsystem ID, DKC Emulation Type, Control Devices, Device Address, and Channel Speed, perform the following General flow chart.

Above Configuration Information can not change while subsystem is running.

After changing Configuration Information, PS off/on required.

System tuning

1) Device Structure Set Up

2) Channel Configuration

3) System Option

2.9 Availability of Installation and De-installation

(1) Availability of the Installation and De-installation when HRC/HORC is used

Component	Maintenance Type	Condition	HRC path established		During initial copy		After completing initial copy		Suspend	
			MCU	RCU	MCU	RCU	MCU	RCU	MCU	RCU
HDD canister	Installation	—	×	×	×	×	×	×	×	×
	De-installation	—	×	×	SVP2031W (*)	SVP2034W	SVP2031W (*)	SVP2034W	SVP2031W (*)	SVP2034W
Cache PCB	Installation	—	×	×	SVP2059W	SVP2079W	×	×	×	×
	De-installation	—	×	×	SVP2059W	SVP2079W	×	×	×	×
CHE or CHF	Installation	With Alternate path.	×	×	×	×	×	×	×	×
		Without Alternate path.	×	×	×	×	×	×	×	×
	De-installation	With Alternate path.	×	×	×	SVP2038W	×	SVP2038W	×	SVP2038W
		Without Alternate path.	×	×	SVP2073W	SVP2038W	SVP2074W	SVP2038W	SVP2075W	SVP2038W
DKA	Installation	—	×	×	×	×	×	×	×	×
	De-Installation	—	×	×	×	×	×	×	×	×

(To be continued)

(Continued from preceding sheet)

Component	Maintenance Type	Condition	Suspending		Deleting	
			MCU	RCU	MCU	RCU
HDD canister	Installation	—	×	×	×	×
	De-Installation	—	SVP2031W (*)	SVP2034W	SVP2031W (*)	SVP2034W
CACHE	Installation	—	×	×	×	×
	De-Installation	—	(**)	(**)	(**)	(**)
CHE or CHF	Installation	With Alternate path.	×	×	×	×
		Without Alternate path.	(***)	(***)	(***)	(***)
	De-Installation	With Alternate path.	×	SVP2038W	×	SVP2038W
		Without Alternate path.	(***)	(***)	(***)	(***)
DKA	Installation	—	×	×	×	×
	De-Installation	—	×	×	×	×

× : Maintenance is available.

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

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.

- * : 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.
- ** : For HRC ASYNC Pairs, a maintenance with the cache blockage is recommended to operate with capacities of Side file and Write Pending Data being 20% below. If the above maintenance is Performed with high capacities of side file 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 side file monitor.
- *** : When the different 'DKC – Emuration –Type' of CHE is installed, SVP displays a warning message with SVP 3289W.

(2) Availability of the Installation and De-installation when HODM is used

Component	Maintenance Type	Condition	HODM path established		During initial copy		Waiting to be erased	
			MCU	RCU	MCU	RCU	MCU	RCU
HDD canister	Installation	—	×		×		×	
	De-installation	—	×		SVP2031W (*)		SVP2031W (*)	
Cache PCB	Installation	—	×		SVP2059W		×	
	De-installation	—	×		SVP2059W		×	
CHE	Installation	With Alternate path.	×		×		×	
		Without Alternate path.	×		×		×	
	De-installation	With Alternate path.	×		×		×	
		Without Alternate path.	×		SVP2076W		SVP2078W	
CHF	Installation	—	×		×		×	
	De-installation	—	×		×		×	
DKA	Installation	—	×		×		×	
	De-Installation	—	×		×		×	

Component	Maintenance Type	Condition	Suspend		During for R-Vol Erasing		Erasing Error	
			MCU	RCU	MCU	RCU	MCU	RCU
HDD canister	Installation	—	×		×		×	
	De-installation	—	SVP2031W (*)		SVP2031W (*)		SVP2031W (*)	
Cache PCB	Installation	—	×		×		×	
	De-installation	—	×		×		×	
CHE	Installation	With Alternate path.	×		×		×	
		Without Alternate path.	×		×		×	
	De-installation	With Alternate path.	×		×		×	
		Without Alternate path.	SVP2077W		SVP2078W		SVP2078W	
CHF	Installation	—	×		×		×	
	De-installation	—	×		×		×	
DKA	Installation	—	×		×		×	
	De-Installation	—	×		×		×	

× : Maintenance is available

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

* : 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.

(3) Availability of the System tuning when HRC/HODM/HORC is used.

It is impossible to change the DKCNo ,SSID ,or DKC Emulation type by system tuning when HRC, HODM or HORC is used.

(4) Availability of the online maintenance when HMRCF is used

Component	Maintenance Type	Condition	HMRCF Reserve Volume	Pending/Resync /SP-Pend		Duplex		Split		Suspend	
				S-VOL	T-VOL	S-VOL	T-VOL	S-VOL	T-VOL	S-VOL	T-VOL
HDD canister (DATA)	Installation	—	×	×		×		×		×	
	De-installation	—	SVP2485W	SVP2485W		SVP2485W		SVP2485W		SVP2485W	
HDD canister (SPARE)	Installation	—	×	×		×		×		×	
	De-installation	—	×	×		×		×		×	
Cache PCB	Installation	—	×	SVP2486W		×		×		×	
	De-installation	—	×	SVP2486W		×		×		×	
CHA	Installation	—	×	×		×		×		×	
	De- installation	—	×	×		×		×		×	
DKA	Installation	—	×	×		×		×		×	
	De-Installation	—	×	×		×		×		×	

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.

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.)
However, when the SVP High Reliability Kit is installed, the cables, Cable (P41) and LAN Cable (LSVP-2), have not been connected. (See [INST03-SVP-70](#).)
- ② The PC (SVP) is installed and can be used. (For the SVP installation, refer to “[REP04-460 ~ REP04-560](#)” of Maintenance Manual.)

2.10.3 Procedures

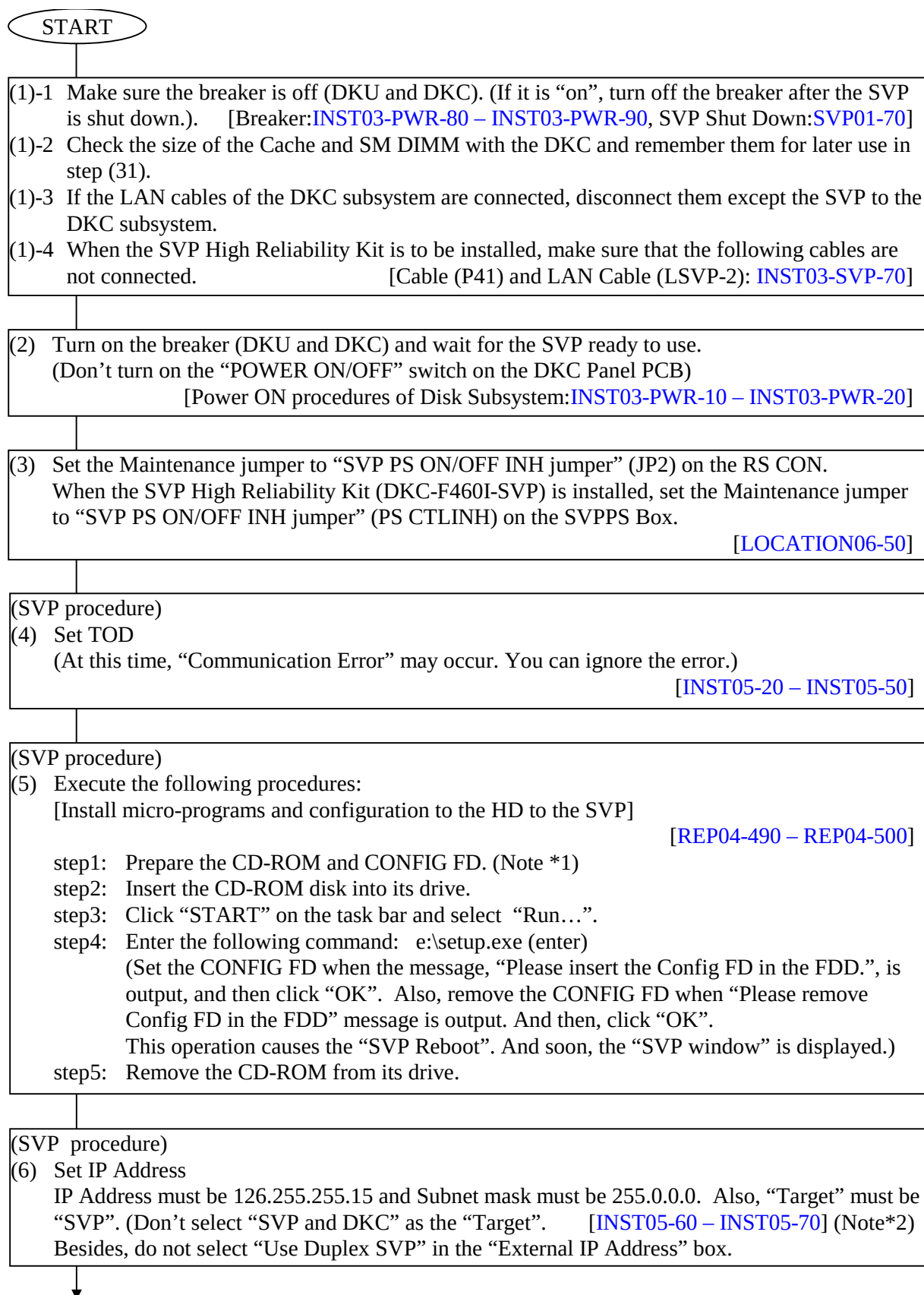
(1) Summary

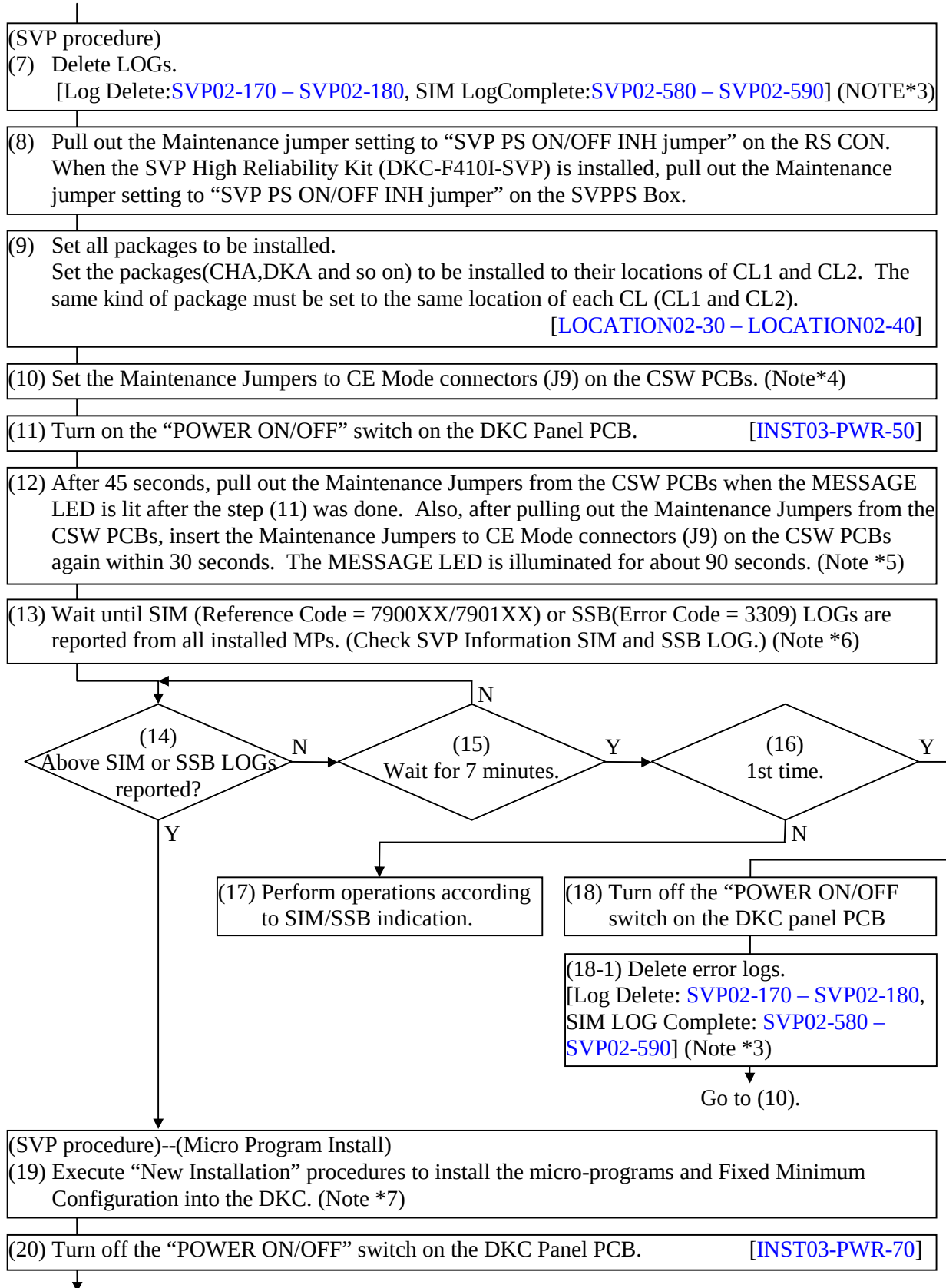
The procedures are divided roughly into 4 processes.

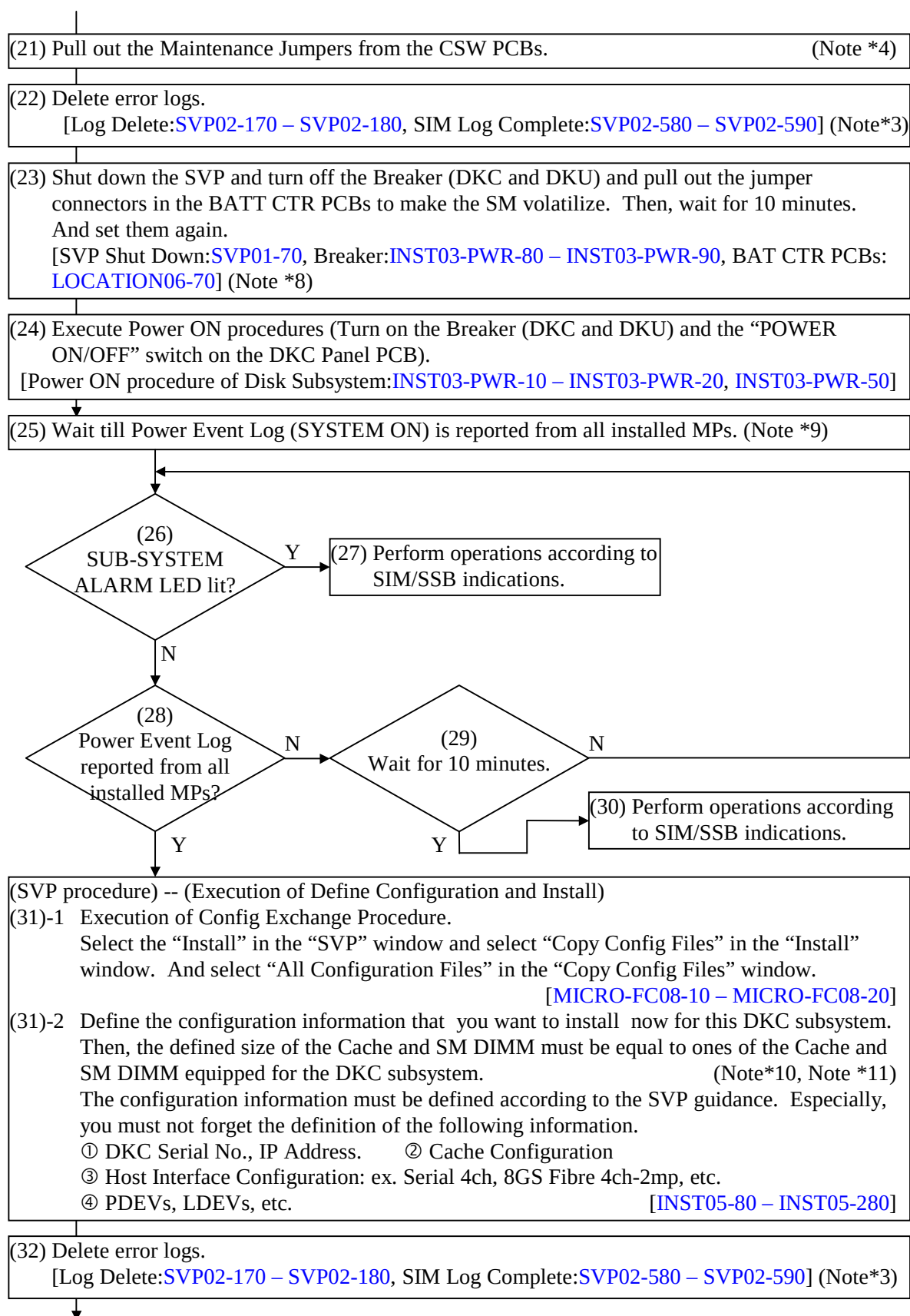
- ① Pre-processing (the installation of the micro-programs into the SVP HD : (1)-(8) in the following flow)
- ② Execution of “New Installation” by the SVP. (By this procedure, the micro-programs and Fixed Minimum configuration are installed into PCBs (packages). : (9)-(20) in the following flow)
- ③ Execution of “Define Configuration and Install” by the SVP.(By this procedure, the customer’s configurations are defined.) : ((21)-(32) in the following flow)
- ④ Others ((33)-(50) in the following flow)

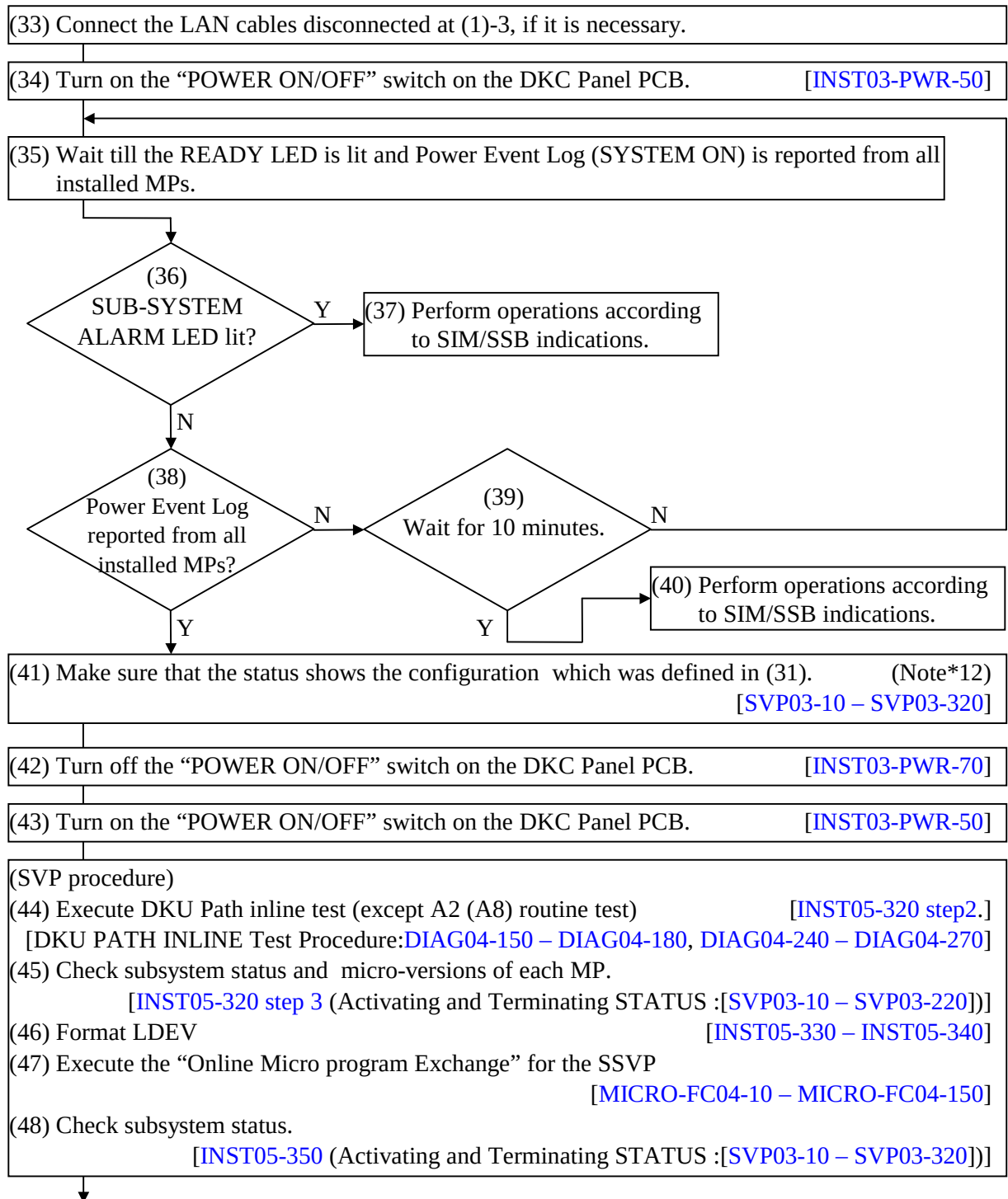
(2) Processing Flow

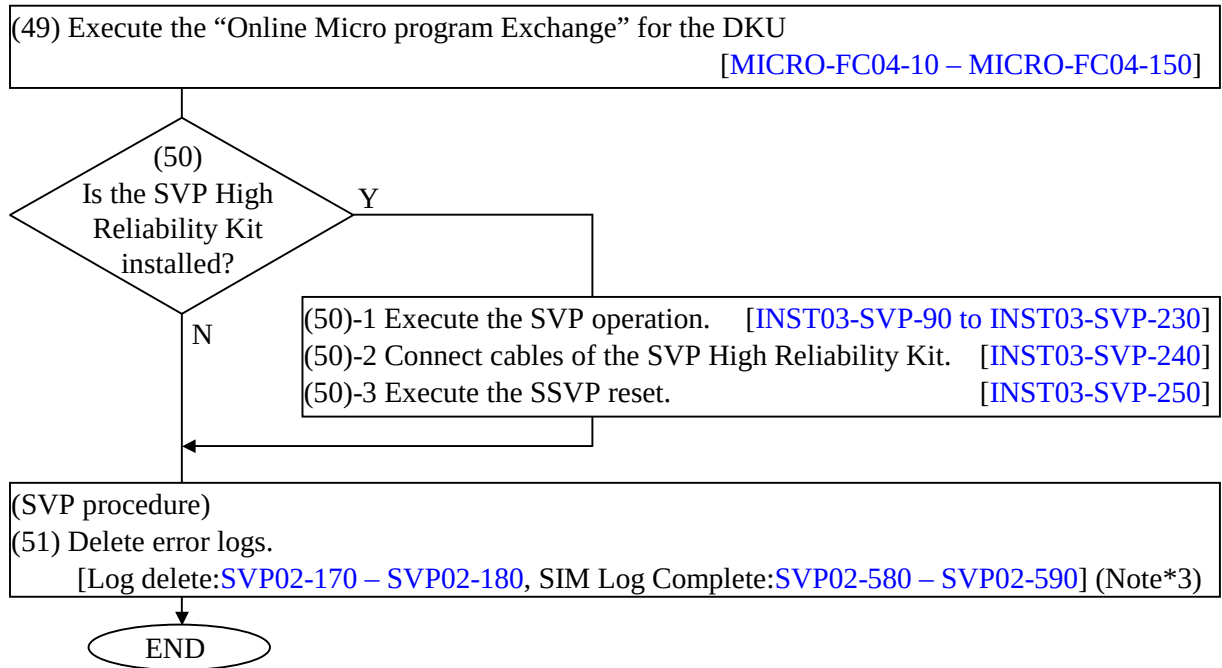
The processing flow of the new installation is as follow:











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

And the FD should correspond to the micro-program version.

Note *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.”.

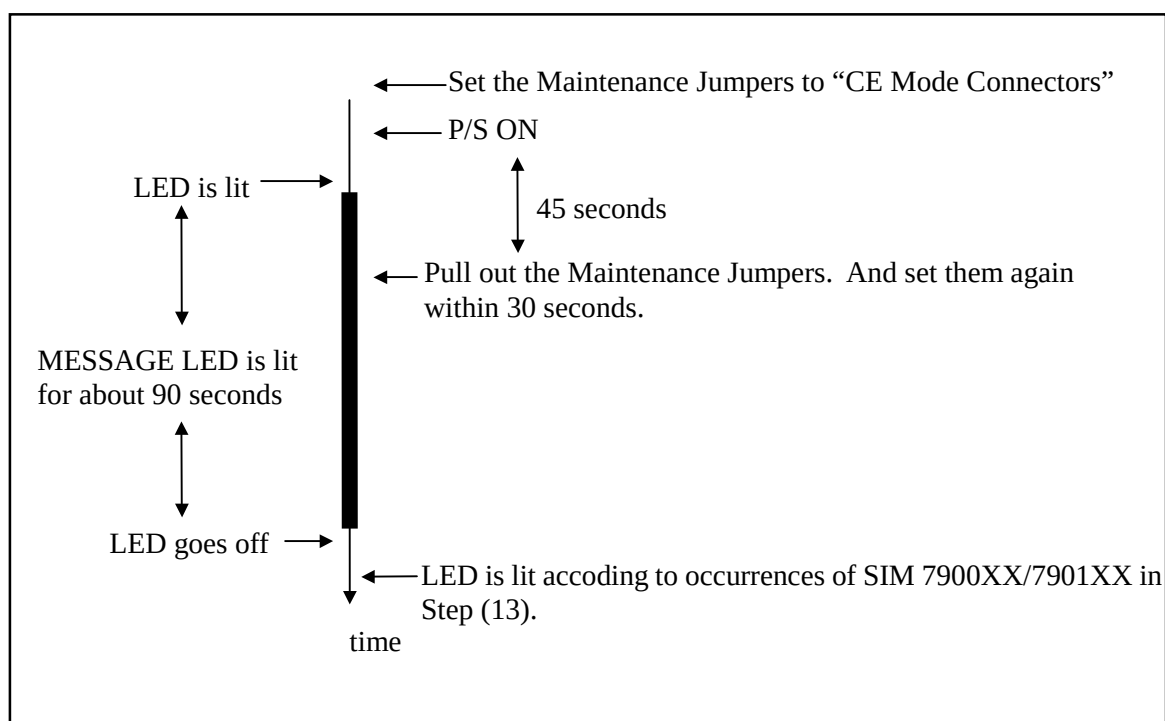
Note *3 : It’s necessary to execute the procedure of “SIM Log Complete” before deleting the SIM data.

Note *4 : Refer to the following about the Maintenance Jumpers.

- “INST02-30 Note *1”

Note *5 : The detail of the jumper operation is as follows.

- (1) Turn on the P/S ON switch.
- (2) At 45 seconds after (1), pull out the Maintenance Jumpers from the CSW PCBs. Then, MESSAGE LED illuminates. The LED is lighting for about 90 seconds.
- (3) Insert the Maintenance Jumpers to the CE Mode connectors (J9) on the CSW PCBs again quickly (within 30 seconds) after pulling out the Jumpers at (2).
Operations (2) and (3) must be executed during the Message LED is lighting.



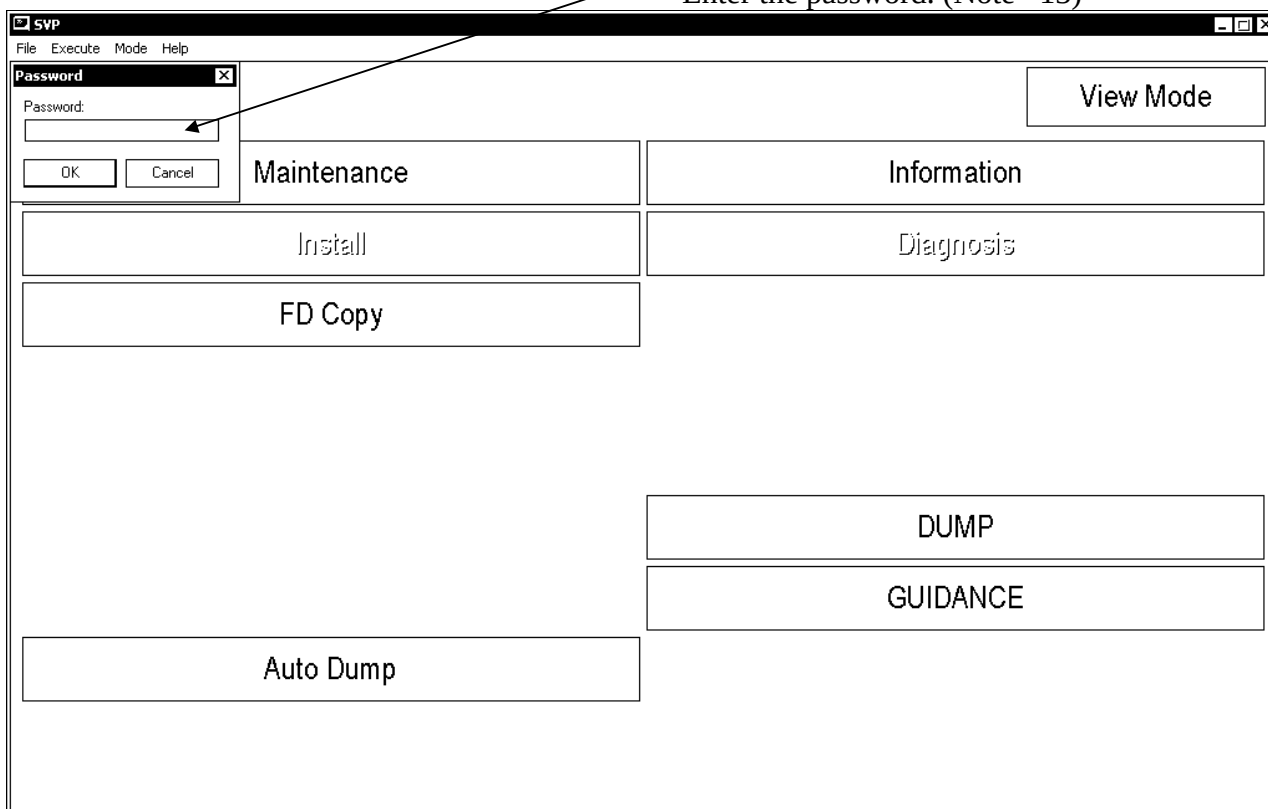
Note *6 : Count SSB Logs (Error Code = 3309). The number is same as the number of the installed MPs.

Note *7 : 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.

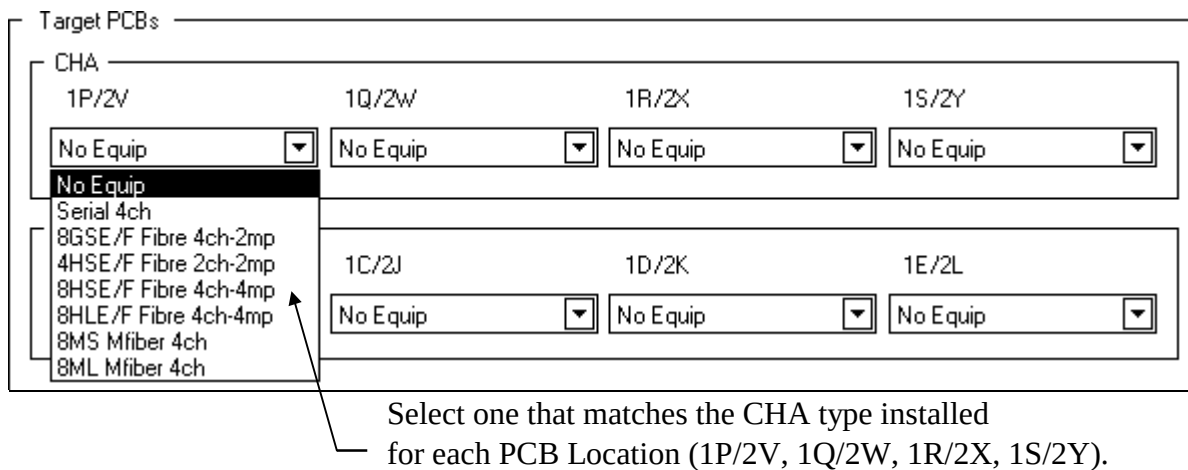
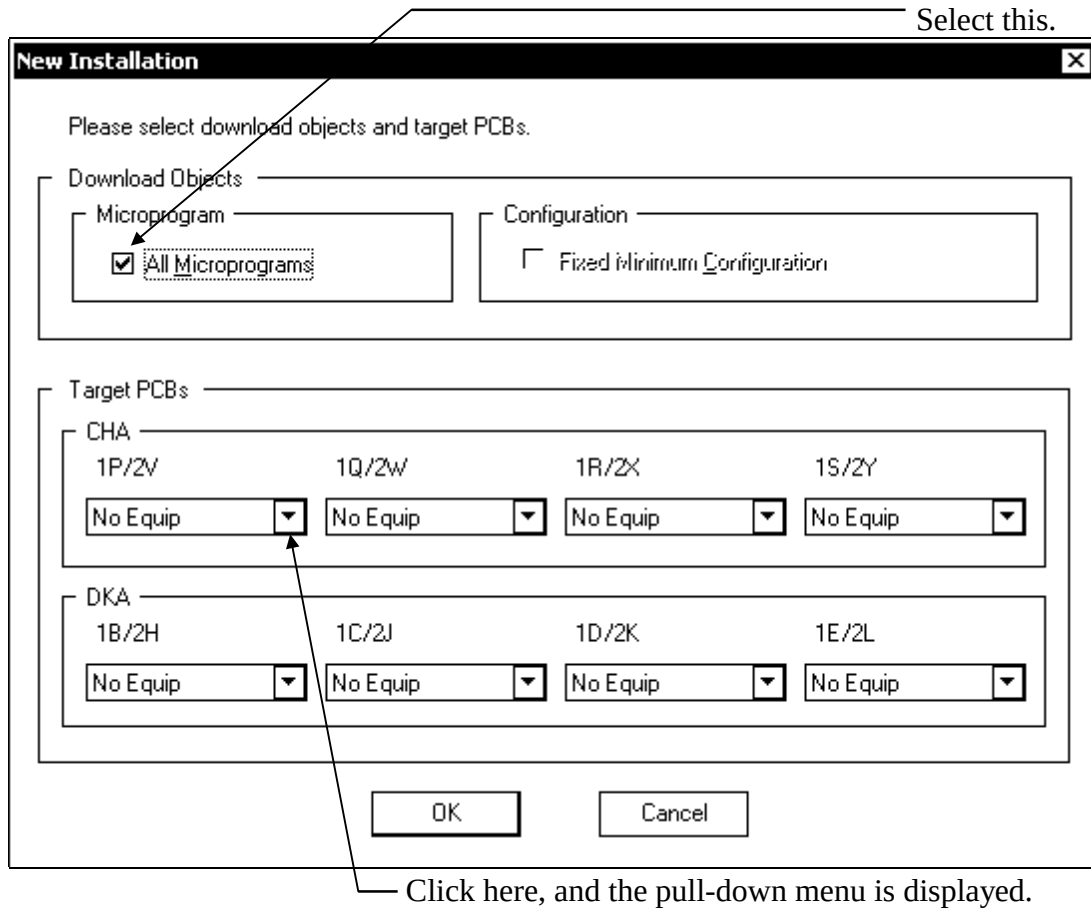
This password must be used only for this procedure. Don't use for other purposes without approval by the technical support center or the factory.

Enter the password. (Note *13)



- (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 “All microprograms”. (“Fixed Minimum Configuration” should be selected automatically.) (Note *14)
 - ② Select the package type (host interface and so on) of the current packages setting in their locations of “CHA” or “DKA”.
 - ③ Select “OK” after finishing the above specifications.

[Example of operations]



Target PCBs

CHA			
1P/2V	1Q/2W	1R/2X	1S/2Y
No Equip	No Equip	No Equip	No Equip

DKA			
1B/2H	1C/2J	1D/2K	1E/2L
No Equip	No Equip	No Equip	No Equip

Click here, and the pull-down menu is displayed.

Target PCBs

CHA			
1P/2V	1Q/2W	1R/2X	1S/2Y
No Equip	No Equip	No Equip	No Equip

DKA			
1B/2H	1C/2J	1D/2K	1E/2L
No Equip	No Equip	No Equip	No Equip
No Equip			
DKF 4mp			
DKF 2mp			

Select one that matches the DKA type installed for each PCB location. (1B/2H, 1C/2J, 1D/2K, 1E/2L)

- (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 [INST02-530](#).)

- Note *8 : The following SIM Logs are output by pulling out the jumper connectors in the BATCTR PCBs.
SIM Logs: bf5010, bf5210, bf5020, bf5220
But you can ignore them.
- Note *9 : 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 (Note *14). So, the READY LED is not lit. Also, the SIM Log (3073XX, 3173XX, 3390XX, 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 (31).
- Note *10: Press the following keys at the same time to change the mode to “Initial Setting”.
[SHIFT], [CTRL], [I]
And input the password. (Note *13)
- Note *11: 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, P/S OFF of the DKC and the reboot of the SVP will be executed.
- Note *12: Surely, check the following status:
- (1) the condition of each PCB status.----- PCB Kind/Normal or not/etc
 - (2) the micro-program version
- Note *13: For the password, ask the technical support center. And use it with their approval.

Note *14: The “Fixed Minimum configuration” is a temporary configuration to unify the condition of the power-on processing in Step (24) 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 (1P/2V for “CHA”, 1B/2H for “DKA”)
IP Address = 126.255.255.xx
Serial 4ch for Host interface configuration
4mp for the DKA
- ② Option PCBs Configuration (1Q/2W, 1R/2X, 1S/2Y, 1C/2J, 1D/2K, 1E/2L)
: None (No equip)
- ③ Cache size : 512 MB for each side.
- ④ SM size : 256 MB for each side.
(DIMM : 128 MB × 2)
- ⑤ LDEV/PDEV/LCP Configuration : None