

DKU205I Specifications (2/5) (DK308-90, RAID5)

Item		Specification						
		3390-9	3390-3	3390-2	3390-1	3380-J	3380-E	3380-K
Logical volumes per unit	Minimum	6	16	16 or 24 or 32 *1				
	Maximum	192	256					
	Increment	6	16	16 or 24 or 32 *1				
RAID level		5 (6 data + 1 parity configuration)						
Spare drives (optional)		Max. 2 per 32 logical volumes						
Logical volume characteristics	Capacity (GB)	8.49	2.83	1.89	0.95	0.63	1.26	1.89
	Data format	CKD						
	Bytes per track	56,664				47,476		
	Tracks per cylinder	15						
	Cylinders	10,017	3,339	2,226	1,113	885	1,770	2,655
Drive characteristics	Capacity (GB)	9.23						
	Data format	FBA						
	Average latency (ms)	4.8						
	Average seek time (ms)	12.5						
	Data transfer rate (MB/s)	7.6 - 10.7						
	Ports	2						
	Access mechanism	1						
Drive/Unit		Max. 64 (Containing 8 spare drives)						

*1 : 32 is available only in 3380-J emulation.

DKU205I Specifications (3/5) (DK308-90, RAID1)

Item		Specification					
		3390-3	3390-2	3390-1	3380-J	3380-E	3380-K
Logical volumes per unit	Minimum	6	8	16	16	12	8
	Maximum	252	256			252	256
	Increment	6	8	16	16	12	8
RAID level		1 (1 data + 1 parity configuration)					
Spare drives (optional)		Max. 2 per 32 logical volumes					
Logical volume characteristics	Capacity (GB)	2.83	1.89	0.95	0.63	1.26	1.89
	Data format	CKD					
	Bytes per track	56,664			47,476		
	Tracks per cylinder	15					
	Cylinders	3,339	2,226	1,113	885	1,770	2,655
Drive characteristics	Capacity (GB)	9.23					
	Data format	FBA					
	Average latency (ms)	4.8					
	Average seek time (ms)	12.5					
	Data transfer rate (MB/s)	7.6 - 10.7					
	Ports	2					
	Access mechanism	1					
Drive/Unit		Max. 64 (Containing 8 spare drives)					

DKU205I Specifications (4/5) (DK309-180, RAID5)

Item			Specification		
			3390-9	3390-3	3380-K
Logical volumes per unit	Minimum		6	16 or 18	16 or 18
	Maximum		348	1024	1024
	Increment		6	16 or 18	16 or 18
RAID level			5 (3 data + 1 parity configuration)		
Spare drives (optional)			Max. 8		
Logical volume characteristics	Capacity (GB)		8.49	2.83	1.89
	Data format		CKD		
	Bytes per track		56,664		47,476
	Tracks per cylinder		15		
	Cylinders		10,017	3,339	2,655
Drive characteristics	Capacity (GB)		18.46		
	Data format		FBA		
	Average latency (ms)		4.8		
	Seek time (Read/Write)	Min. (ms)	2.0 / 2.0		
		Ave. (ms)	11.5 / 12.5		
		Max. (ms)	24.0 / 26.0		
	Data transfer rate (MB/s)		10.0 - 15.3		
	Ports		2		
	Access mechanism		1		
Drive/Unit			Max. 64 (Containing 8 spare drives)		

DKU205I Specifications (5/5) (DK309-180, RAID1)

Item			Specification		
			3390-9	3390-3	3380-K
Logical volumes per unit	Minimum		6	16 or 18	16 or 18
	Maximum		348	1024	1024
	Increment		6	16 or 18	16 or 18
RAID level			1 (1 data + 1 parity configuration)		
Spare drives (optional)			Max. 8		
Logical volume characteristics	Capacity (GB)		8.49	2.83	1.89
	Data format		CKD		
	Bytes per track		56,664		47,476
	Tracks per cylinder		15		
	Cylinders		10,017	3,339	2,655
Drive characteristics	Capacity (GB)		18.46		
	Data format		FBA		
	Average latency (ms)		4.8		
	Seek time (Read/Write)	Min. (ms)	2.0 / 2.0		
		Ave. (ms)	11.5 / 12.5		
		Max. (ms)	24.0 / 26.0		
	Data transfer rate (MB/s)		10.0 - 15.3		
	Ports		2		
	Access mechanism		1		
Drive/Unit			Max. 64 (Containing 8 spare drives)		

3.1.8.2.2 DKC210I Physical Specifications

The DKC210I physical specifications are shown in the following table:

DKC210I Physical Specifications (1/2)

Model Name		DKC210I-5	DKC210I-0	DKC-F210I -20	DKC-F210I-256 or DKC-F310I-256	DKC-F210I -64
Item	Width	750 ^{*1}	750 ^{*1}	—	—	—
	Depth	800	800	—	—	—
	Height	1,790	1,790	—	—	—
Weight (kg)		334	334	2.16	0.08	0.08
Heat Output (kW)		0.735	0.735	0.037	0.002	0.001
Power Consumption (kVA)		0.79	0.79	0.04	0.002	0.001
Air Flow (m ³ /min.)		12	12	—	—	—

Model Name		DKC-F210I-32 or DKC-F310I-32	DKC-F210I -2048	DKC-F210I -40	DKC-F210I -50,-51 ^{*2}	DKC-F210I -4S
Item	Width	—	—	—	—	—
	Depth	—	—	—	—	—
	Height	—	—	—	—	—
Weight (kg)		0.02	2.9	49.89	2.02	3.38
Heat Output (kW)		0.001	0.047	0.39	0.093	0.07
Power Consumption (kVA)		0.001	0.05	0.42	0.1	0.075
Air Flow (m ³ /min.)		—	—	—	—	—

Model Name		DKC-F210I -8S	DKC-F210I -8P	DKC-F210I -70	DKC-F210I -71	DKC-F210I -72
Item	Width	—	—	—	—	—
	Depth	—	—	—	—	—
	Height	—	—	—	—	—
Weight (kg)		3.72	3.24	4.8	14.4	9.6
Heat Output (kW)		0.14	0.14	0.056	0.186	0.093
Power Consumption (kVA)		0.15	0.15	0.06	0.2	0.1
Air Flow (m ³ /min.)		—	—	—	—	—

DKC210I Physical Specifications (2/2)

Model Name		DKC210I-5E (RAID5)	DKC210I-5E (RAID1)	DKC210I-0E (RAID0)	DKC-F210I -4SE	DKC-F210I -8SE
Item	Width	750 ^{*1}	750 ^{*1}	750 ^{*1}	—	—
	Depth	800	800	800	—	—
	Height	1,790	1,790	1,790	—	—
Weight (kg)		334	334	334	3.38	3.72
Heat Output (kW)		0.736	0.736	0.736	0.07	0.14
Power Consumption (kVA)		0.79	0.79	0.79	0.078	0.155
Air Flow (m ³ /min.)		12	12	12	—	—

Model Name		DKC-F210I -8PE	DKC-F210I -50E,51 ^{*2}	DKC-F210I -5E	DKC-F210I -8C	
Item	Width	—	—	—	—	
	Depth	—	—	—	—	
	Height	—	—	—	—	
Weight (kg)		3.24	2.02	2.02	1.70	
Heat Output (kW)		0.14	0.094	0.094	0.07	
Power Consumption (kVA)		0.155	0.105	0.105	0.08	
Air Flow (m ³ /min.)		—	—	—	—	

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

*2: The heat output value of the DKC-F210I-51(RAID5 Booster) is listed together in the column of the DKC-F210I-50 or -50E since it is infinitesimally small(5mW).

3.1.8.2.3 DKU205I Physical Specifications

(1) Physical specifications for RAID 5 (DK306-45 or DK308-45)

The DKU205I physical specifications are shown in the following table:

DKU205I Physical Specifications for RAID 5 (DK306-45 or DK308-45)

Item	DKU205I -14	DKU-F205I -B4	DKU-F205I -406	DKU-F205I -401	configu- ^{*1} ration
Dimension (mm)	Width	550	—	—	550
	Depth	800	—	—	800
	Height	1,790	—	—	1,790
Weight (kg)	230	70	13	2	436
Heat Output (kW)	0.44	0.44	0.16	0.026	2.45
Power Consumption (kVA)	0.56	0.56	0.16	0.026	2.60
Air Flow (m ³ /min.)	6	6	0	0	12

*1: Configuration (180GB + Spare 8HDA):

DKU205I-14 + DKU-F205I-B4 + DKU-F205I-406 × 8 + DKU-F205I-401 × 16

(2) Physical specifications for RAID 0 (DK306-35)

The DKU205I physical specifications are shown in the following table:

DKU205I Physical Specifications for RAID 0 (DK306-35)

Item	DKU205I -14	DKU-F205I -B4	DKU-F205I -304	configu- ^{*1} ration
Dimension (mm)	Width	550	—	550
	Depth	800	—	800
	Height	1,790	—	1,790
Weight (kg)	230	70	8.5	436
Heat Output (kW)	0.44	0.44	0.11	2.45
Power Consumption (kVA)	0.56	0.56	0.11	2.60
Air Flow (m ³ /min.)	6	6	0	12

*1: Configuration (180GB):

DKU205I-14 + DKU-F205I-B4 + DKU-F205I-304 × 16

(3) Physical specifications for RAID5(DK308-90)

Specifications are shown in the following table.

DKU205I Physical Specifications for RAID 5 (DK308-90)

Item	DKU205I-14	DKU-F205I-B4	DKU-F205I-906	DKU-F205I-901	configuration*1
Dimension (mm)	Width	550	—	—	550
	Depth	800	—	—	800
	Height	1,790	—	—	1,790
Weight (kg)	230	70	13	2	436
Heat Output (kW)	0.44	0.44	0.16	0.026	2.45
Power Consumption (kVA)	0.56	0.56	0.16	0.026	2.60
Air Flow (m ³ /min.)	6	6	0	0	12

*1: Configuration (360GB + Spare 8HDA):

$$\text{DKU205I-14} + \text{DKU-F205I-B4} + \text{DKU-F205I-906} \times 8 + \text{DKU-F205I-901} \times 16$$

(4) Physical specifications for RAID1(DK308-90)

Specifications are shown in the following table.

DKU205I Physical Specifications for RAID 1 (DK308-90)

Item	DKU205I-14	DKU-F205I-B4	DKU-F205I-904	DKU-F205I-901	configuration*1
Dimension (mm)	Width	550	—	—	550
	Depth	800	—	—	800
	Height	1,790	—	—	1,790
Weight (kg)	230	70	8.5	2	436
Heat Output (kW)	0.44	0.44	0.11	0.026	2.45
Power Consumption (kVA)	0.56	0.56	0.11	0.026	2.60
Air Flow (m ³ /min.)	6	6	0	0	12

*1: Configuration (238GB×2 + Spare 8HDA):

$$\text{DKU205I-14} + \text{DKU-F205I-B4} + \text{DKU-F205I-904} \times 14 + \text{DKU-F205I-901} \times 8$$

(5) Physical specifications for DK309-180

Specifications are shown in the following table.

DKU205I Physical Specifications for DK309-180

Item	DKU205I-14	DKU-F205I-B4	DKU-F305I-1804	DKU-F305I-1801
Dimension (mm)	Width	550	—	—
	Depth	800	—	—
	Height	1,790	—	—
Weight (kg)	230	70	8.5	2.1
Heat Output (kW)	0.44	0.44	0.10	0.024
Power Consumption (kVA)	0.56	0.56	0.10	0.024
Air Flow (m ³ /min.)	6	6	0	0

3.1.8.3 Environmental Specifications

The environmental specifications are shown in the following table:

Environmental Specifications

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

Note: 1. Environmental specification for operating condition should be satisfied before the disk subsystem is powered on. Max. temperature of 32° should be strictly satisfied at the air inlet portion. The recommended temperature range is 21~24°.

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 and shock apply to all three axes.
6. See ASTM D999-86 Standard Methods for Vibration Testing of Shipping Containers.
7. See ASTM D880-86 Standard Methods of Incline Impact Test for Shipping Containers.
8. See ASTM D775-80 Standard Methods for Drop Test for Loaded Boxes.

3.1.8.4 Power Requirement

The input voltage and input frequency are as follows:

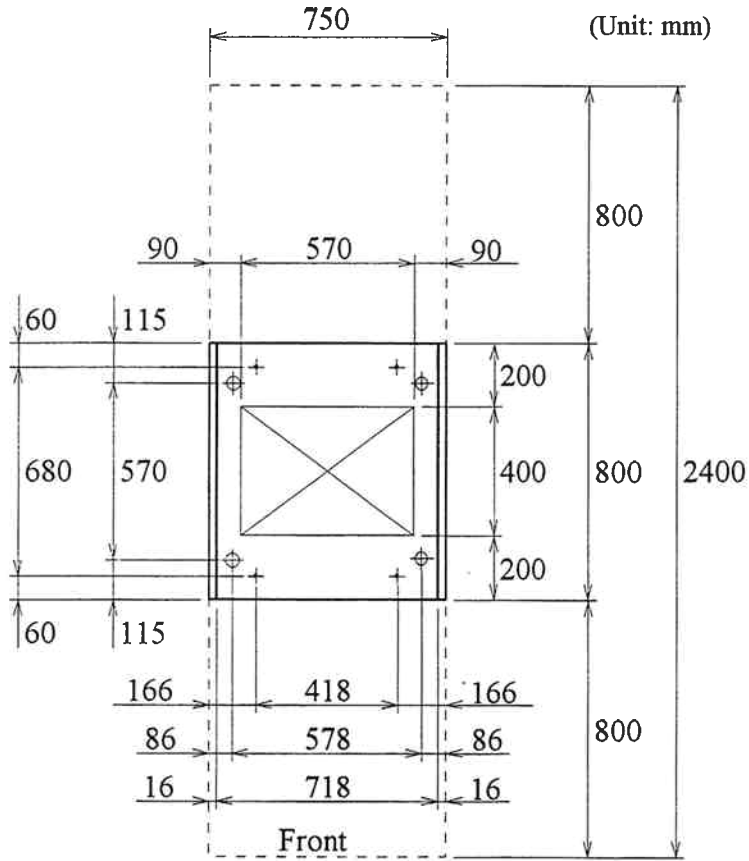
- DKU205IE/TU
 - +6%
 - One of 208V or 230V AC -8%
 - 60Hz ± 0.5 Hz 3 Phase 3 Wire + Ground
 - +6%
 - One of 220V, 230V, or 240V AC -8%
 - 50Hz ± 0.5 Hz 3 Phase 3 Wire + Ground
 - +6%
 - One of 380V, 400V, or 415V AC -8%
 - 50Hz ± 0.5 Hz 3 Phase 4 Wire + Ground
- DKU205ID
 - +6%
 - One of 200V, 208V, 220V, 230V, or 240V AC -8%
 - 50/60Hz ± 0.5 Hz 3 Phase 3 Wire + Ground

Note: The distribution board with circuit breaker or equivalent is rated 30A for the Disk Drive Unit.

3.1.8.5 Service Clearance and Floor Cutout

3.1.8.5.1 DKC210I

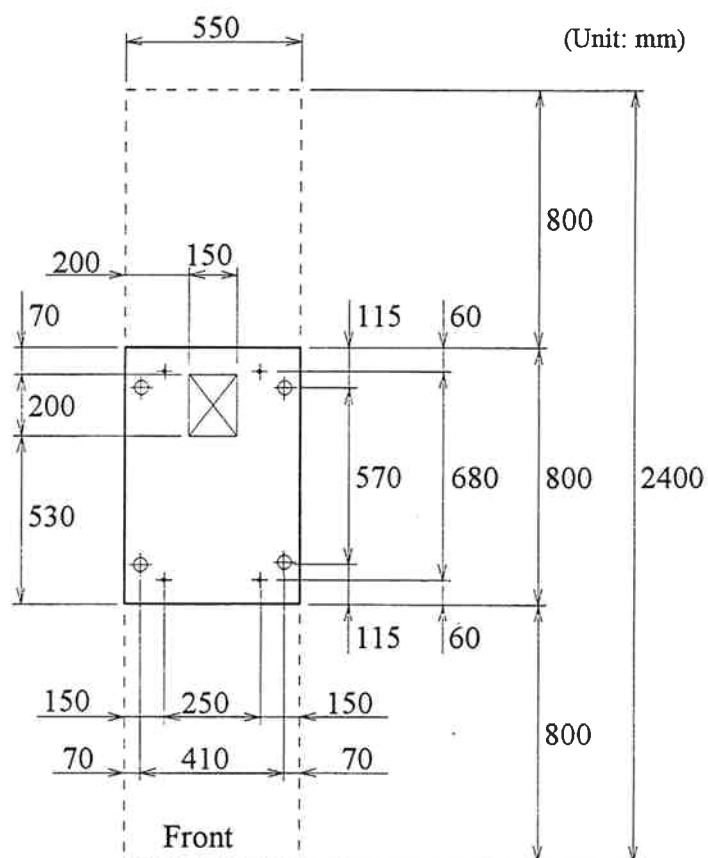
The service clearance is the space required for CE work. Never use this space for storage of any article to prevent damage.



-  Floor cutout area for cables
-  Screw jack
-  Caster
-  Service clearance

3.1.8.5.2 DKU205I

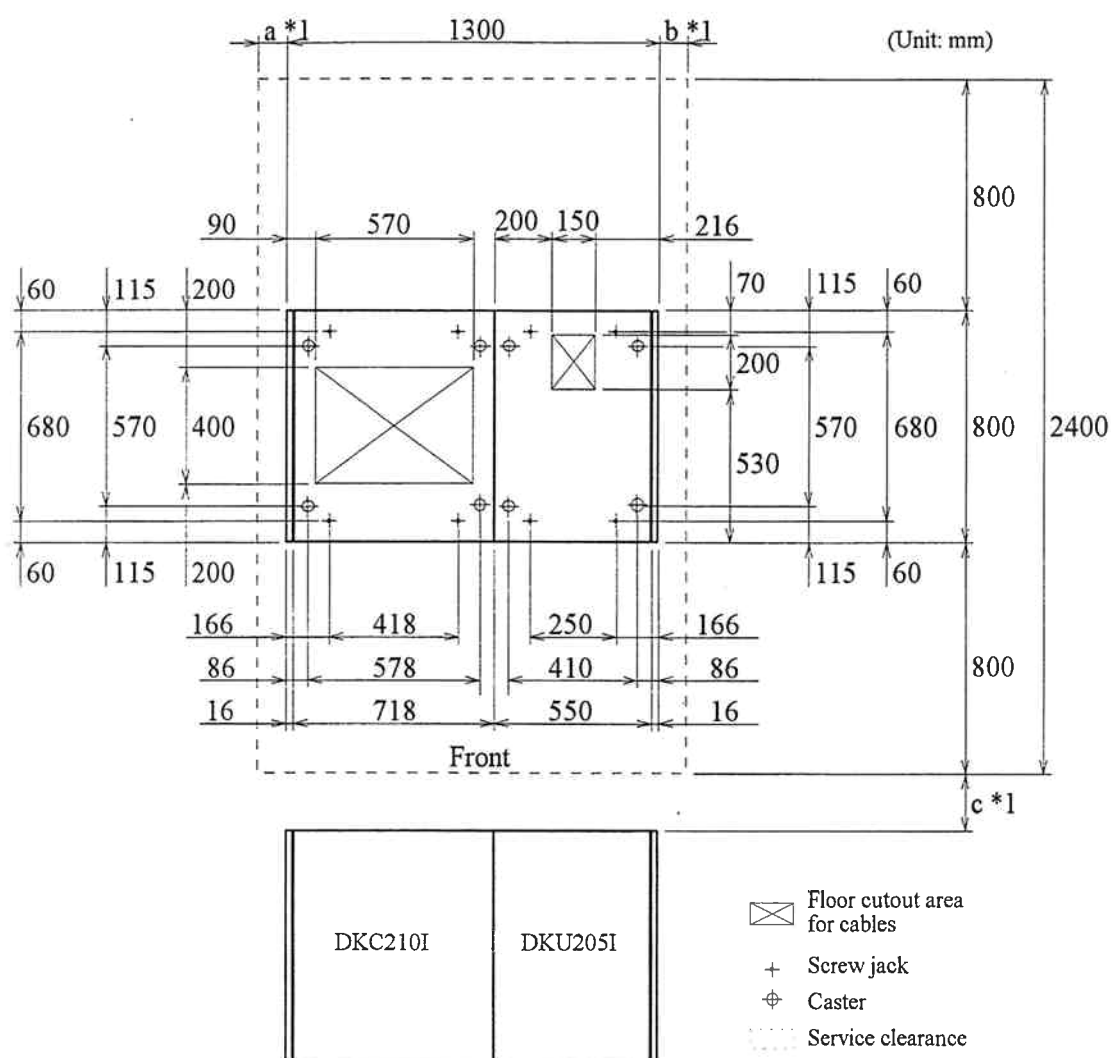
The service clearance is the space required for CE work. Never use this space for storage of any article to prevent damage.



-  Floor cutout area for cables
-  Screw jack
-  Caster
-  Service clearance

3.1.8.5.3 Subsystem Basic configuration

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



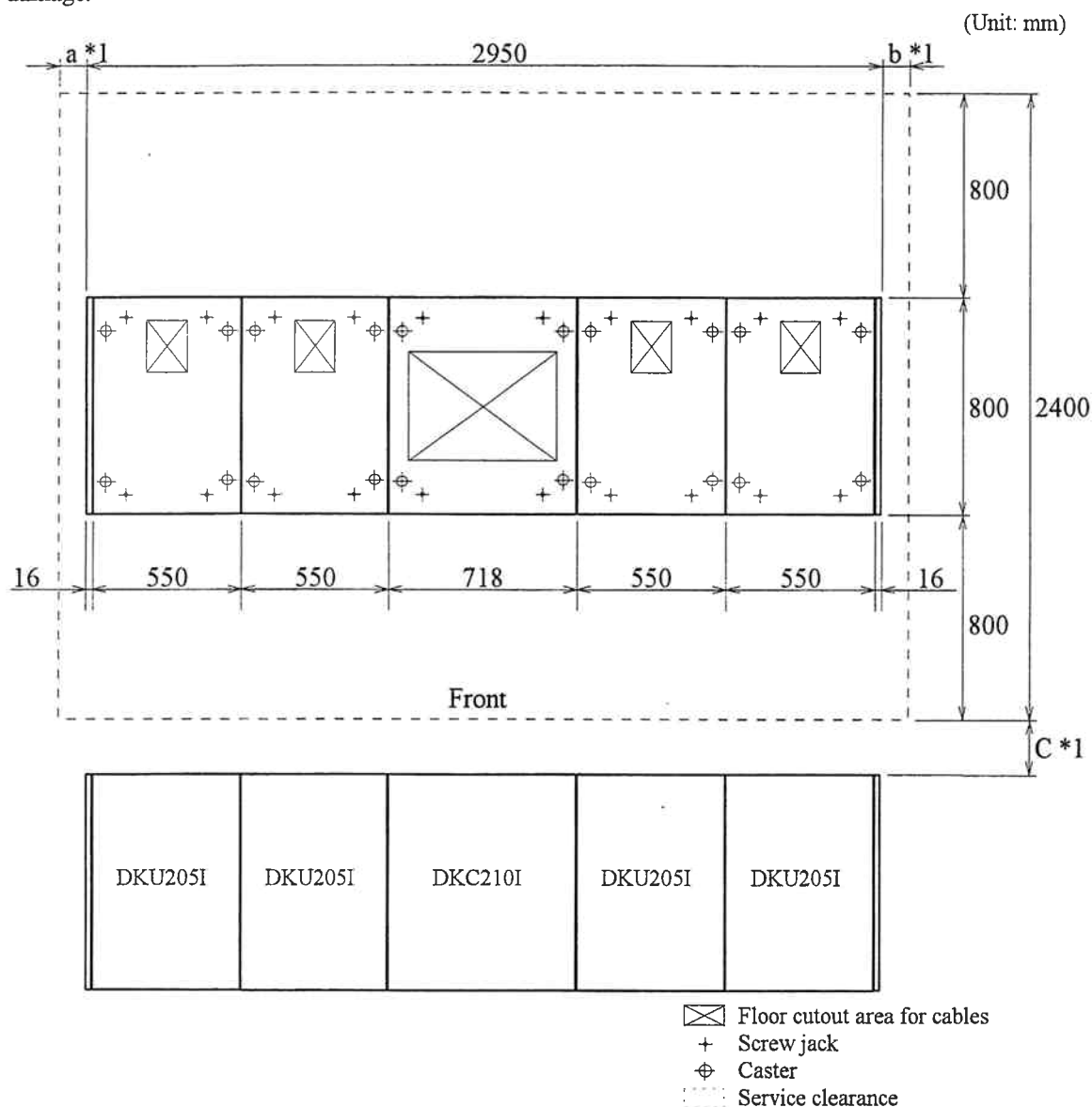
*1: Clearance (a+b) is dependent on the floor load rating and clearance c.

Floor load rating and required clearances are shown below.

Floor load rating (kg/m ²)	Required clearance (a+b) (mm)				
	C=0	C=200	C=400	C=600	C=1000
500	0	0	0	0	0
450	200	100	0	0	0
400	500	300	100	0	0
350	900	700	500	300	100
300	1500	1200	1000	800	400

3.1.8.5.4 Subsystem Full configuration

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



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

Floor load rating and required clearances are shown below.

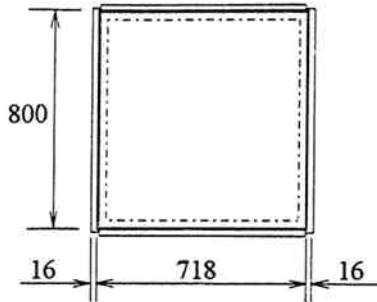
Floor load rating (kg/m ²)	Required clearance (a+b) (mm)				
	C=0	C=200	C=400	C=600	C=1000
500	400	0	0	0	0
450	900	400	100	0	0
400	1600	1100	700	300	0
350	2600	1900	1500	1100	400
300	4100	3300	2700	2200	1400

3.1.8.6 Layout

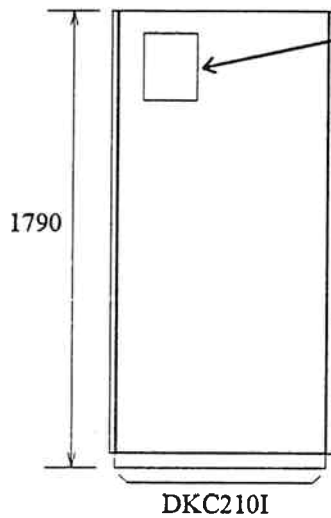
3.1.8.6.1 DKC210I Layout

TOP VIEW

(Unit: mm)

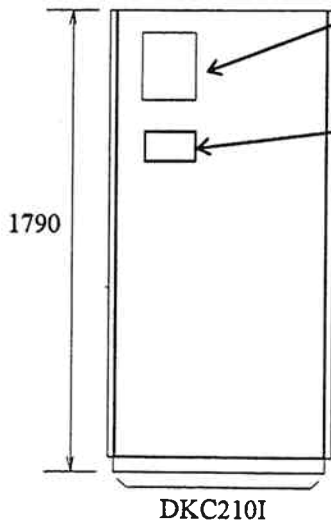


FRONT VIEW



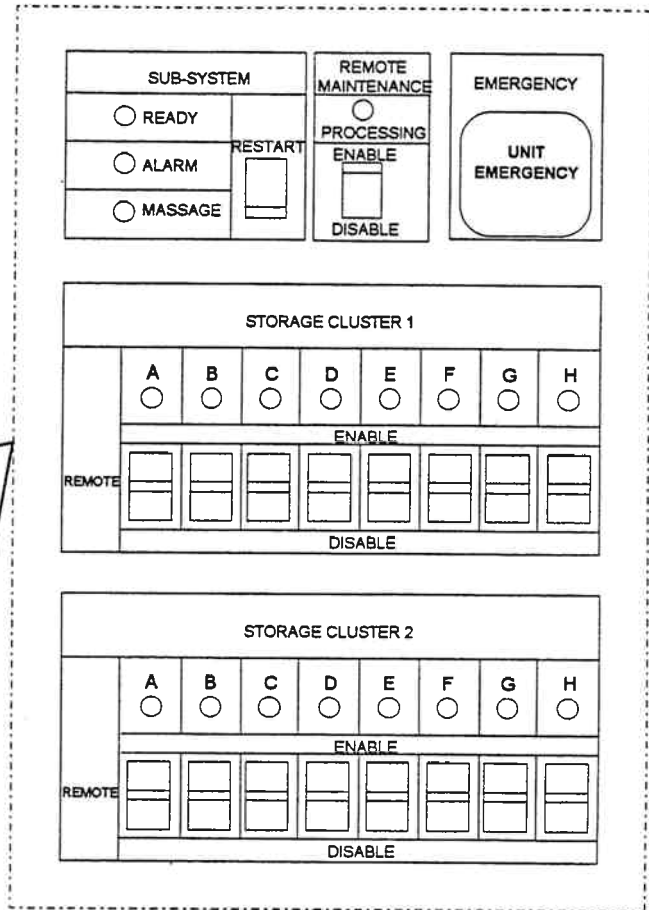
DKC210I

Modified Model *1

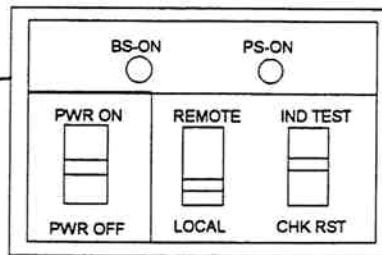


DKC210I

OPERATOR PANEL 1



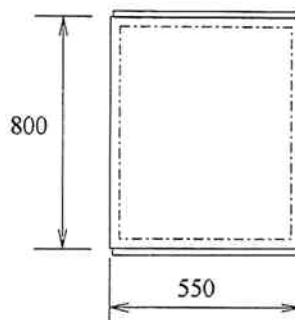
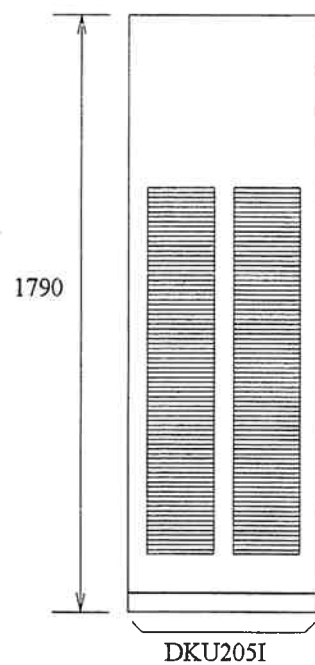
OPERATOR PANEL 2



*1: This model modified the front door to enable powering-ON/OFF the subsystem without opening the front door.

3.1.8.6.2 DKU205I Layout

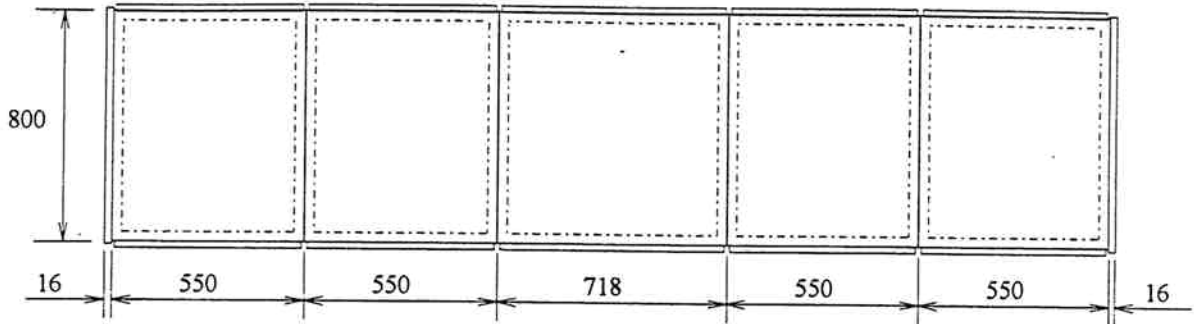
(Unit: mm)

TOP VIEWFRONT VIEW

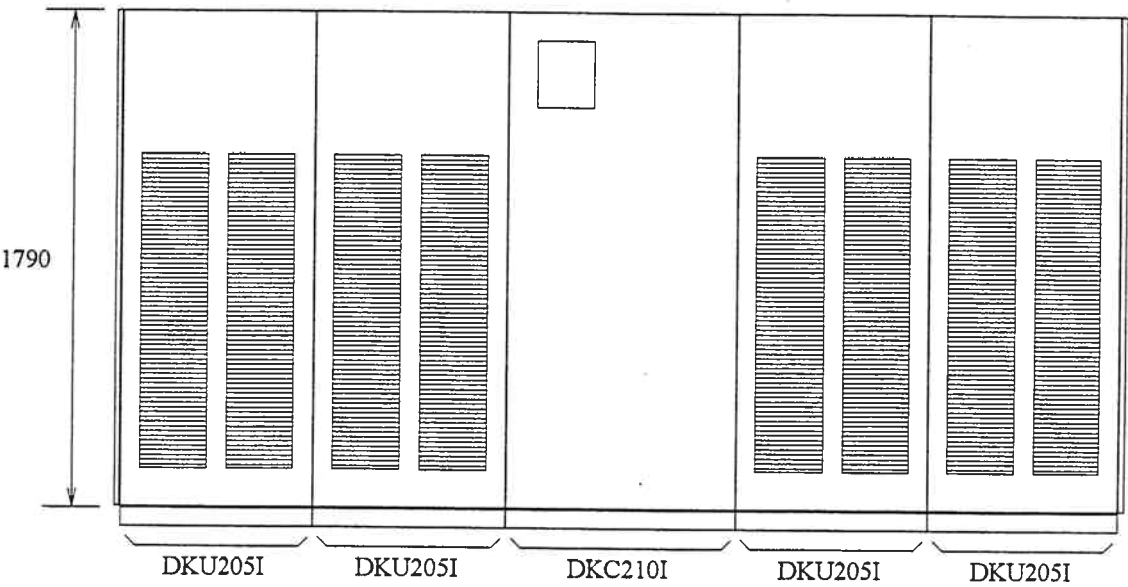
3.1.8.6.3 Full configuration of DKC210I and DKU205I

TOP VIEW

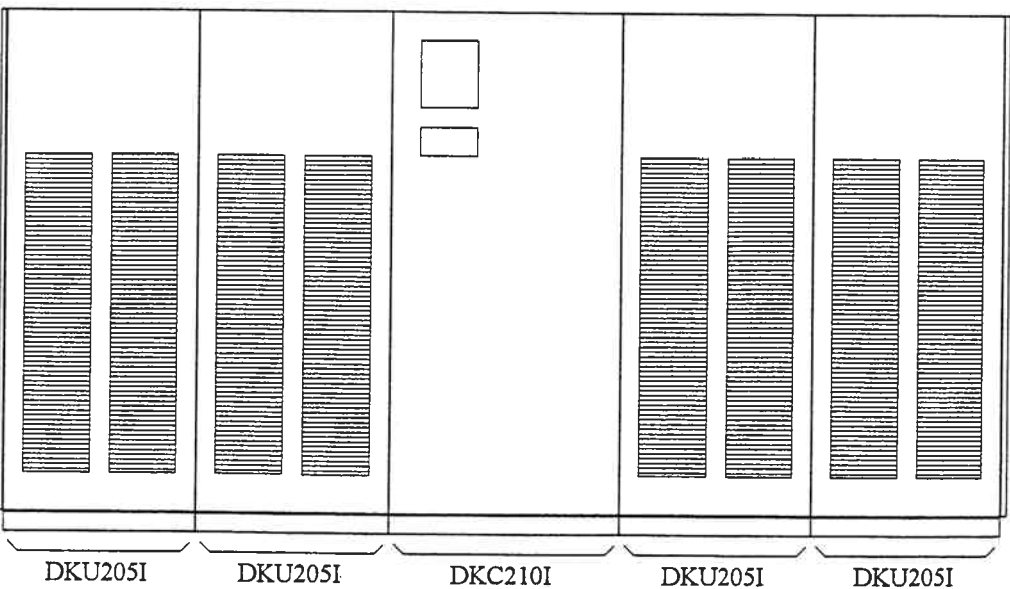
(Unit: mm)



FRONT VIEW



FRONT VIEW (Modified Model)



3.1.8.7 Power and Grounding Check

3.1.8.7.1 Facility power check

The customer's outlet for the 60Hz UL Listed unit must be either of the followings.

Connector R & S 3934

Receptacle R & S 3754

The plug type for the AC power cable must be R & S 3760 or 3760PDG.

3.1.8.7.2 Facility grounding check

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

- a. An insulated grounding conductor that is identical in size and insulation material and thickness to the grounded and ungrounded branch-circuit supply conductors. Although it is green, with or without yellow stripes, and is to be installed as a part of the branch circuit that supplies the unit or system.
- b. The grounding conductor mentioned in item (a.), should be grounded to earth at the service equipment or other acceptable building earth ground such as the building frame in the case of a high rise steel-frame structure.
- c. The attachment-plug receptacles in the vicinity of the unit or system are all to be a grounding type. The grounding conductors serving these receptacles should be connected to earth ground at the service equipment or other acceptable building earth ground such as the building frame in the case of a high-rise steel-frame structure.

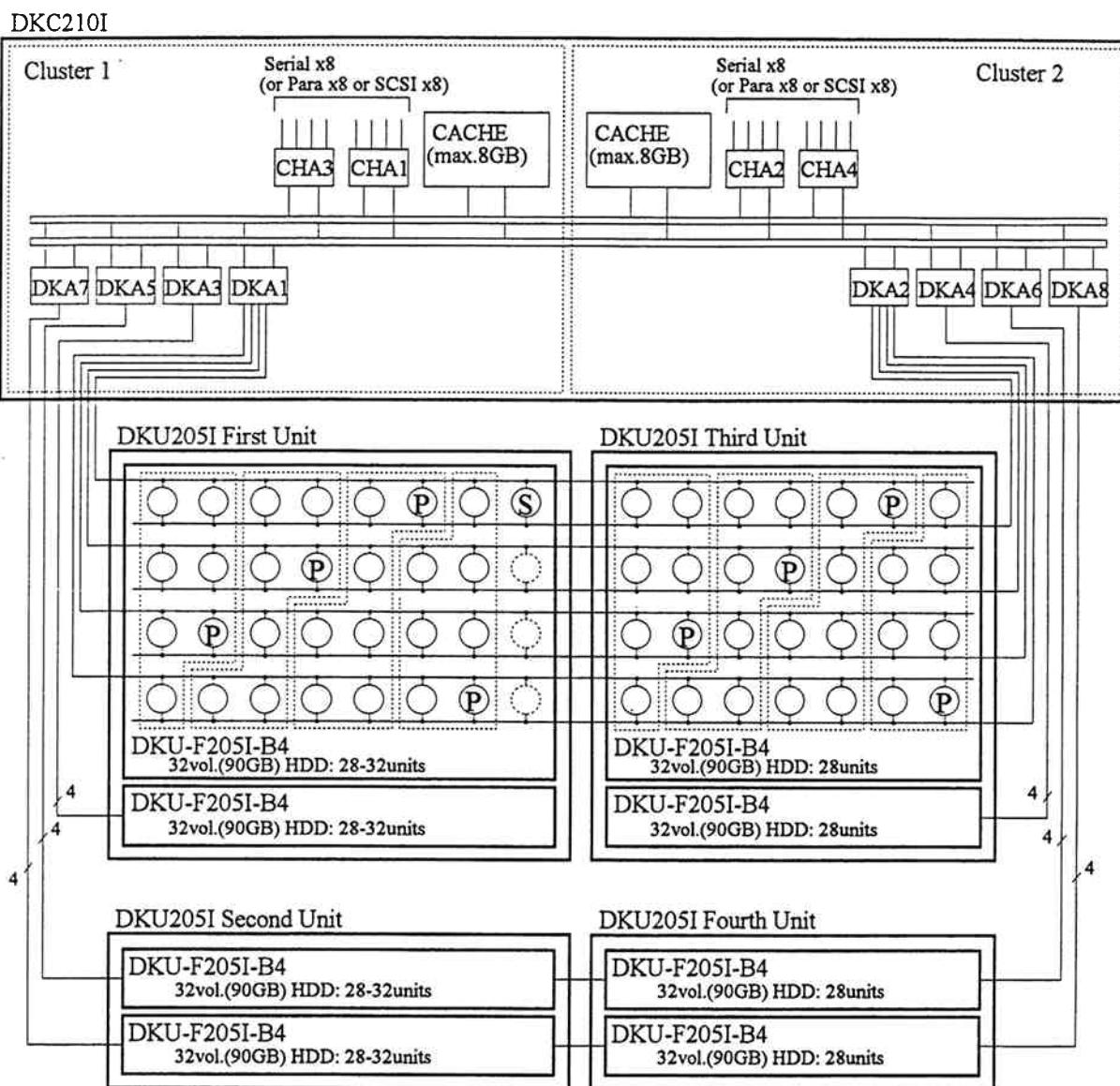
3.1.8.8 Configuration

DKC210I Disk Controller controls up to four DKU205I Units.

DKU205I Disk Drive Unit has maximum 64 spindles in each unit.

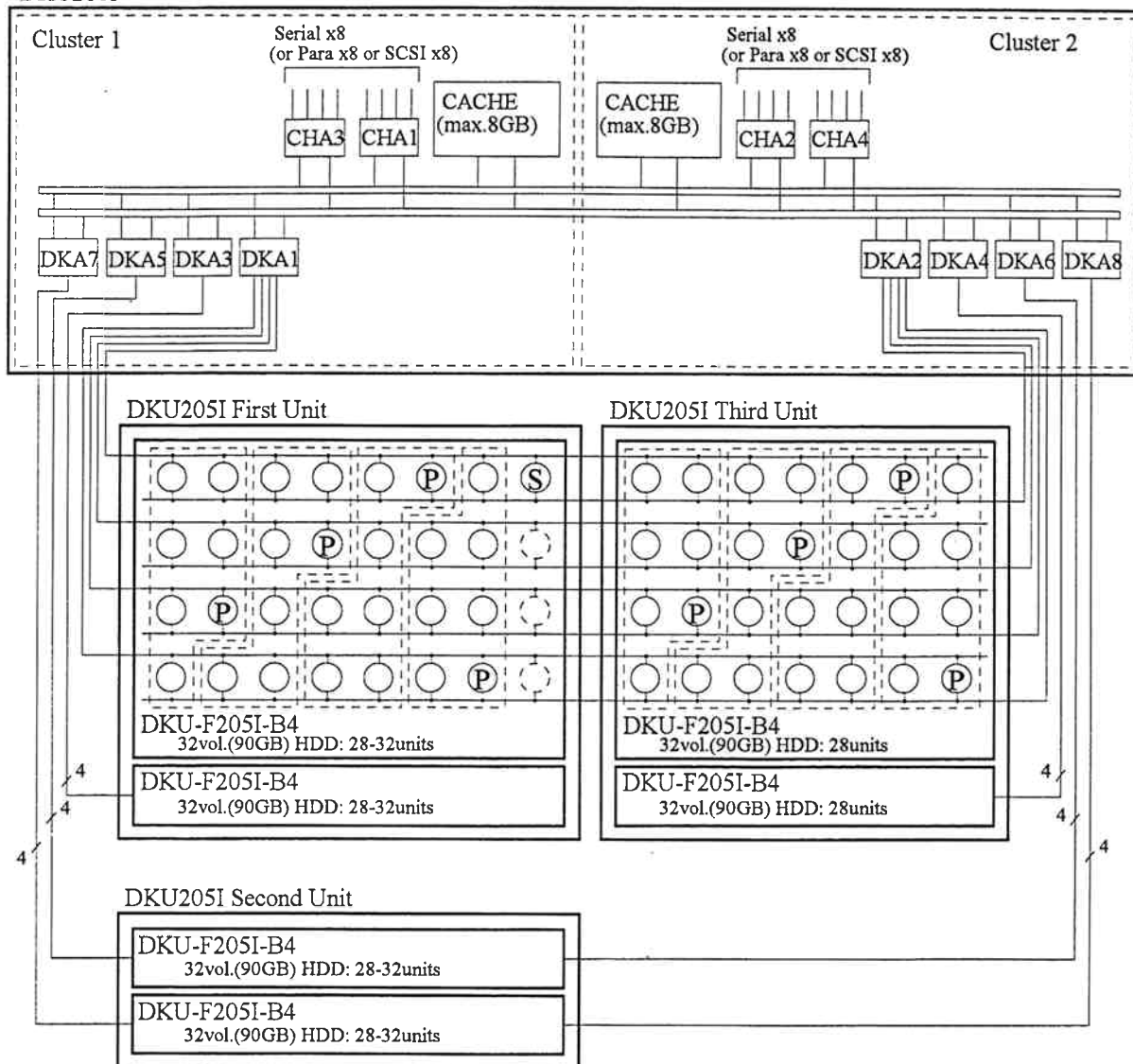
(1) Configuration for RAID 5 (DK306-45 or DK308-45)

Configuration samples are shown in the figures.

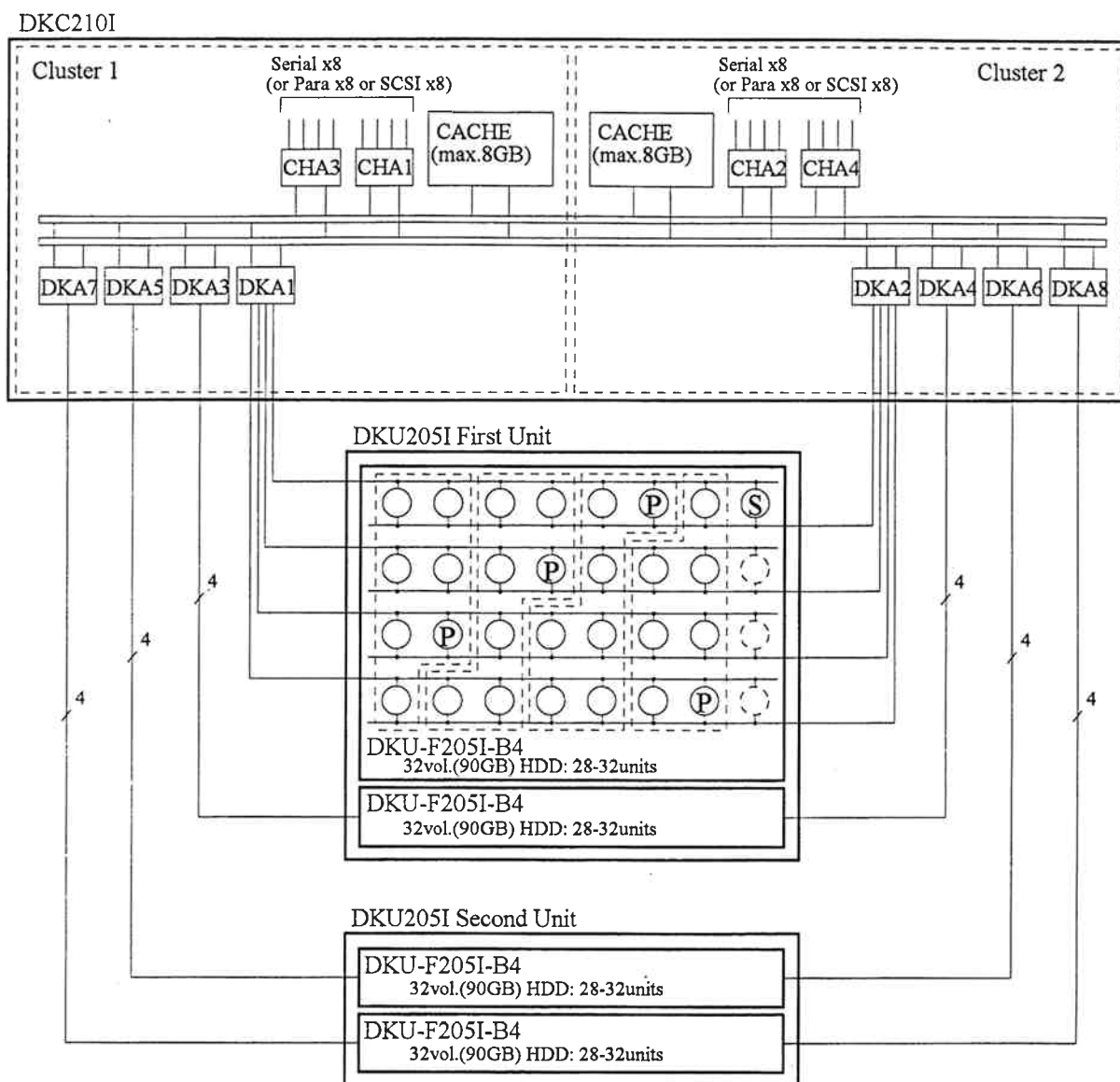


Maximum 724GB Configuration

DKC210I

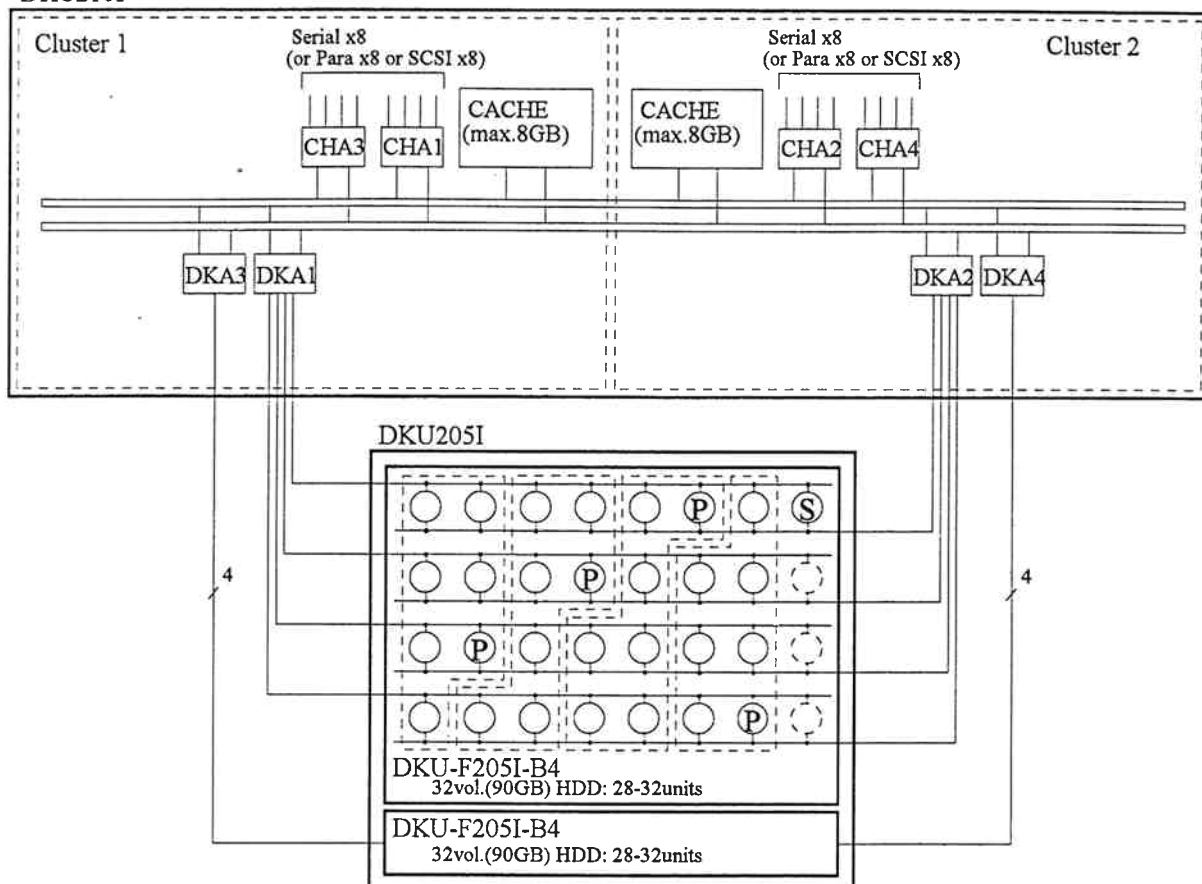


540GB Configuration



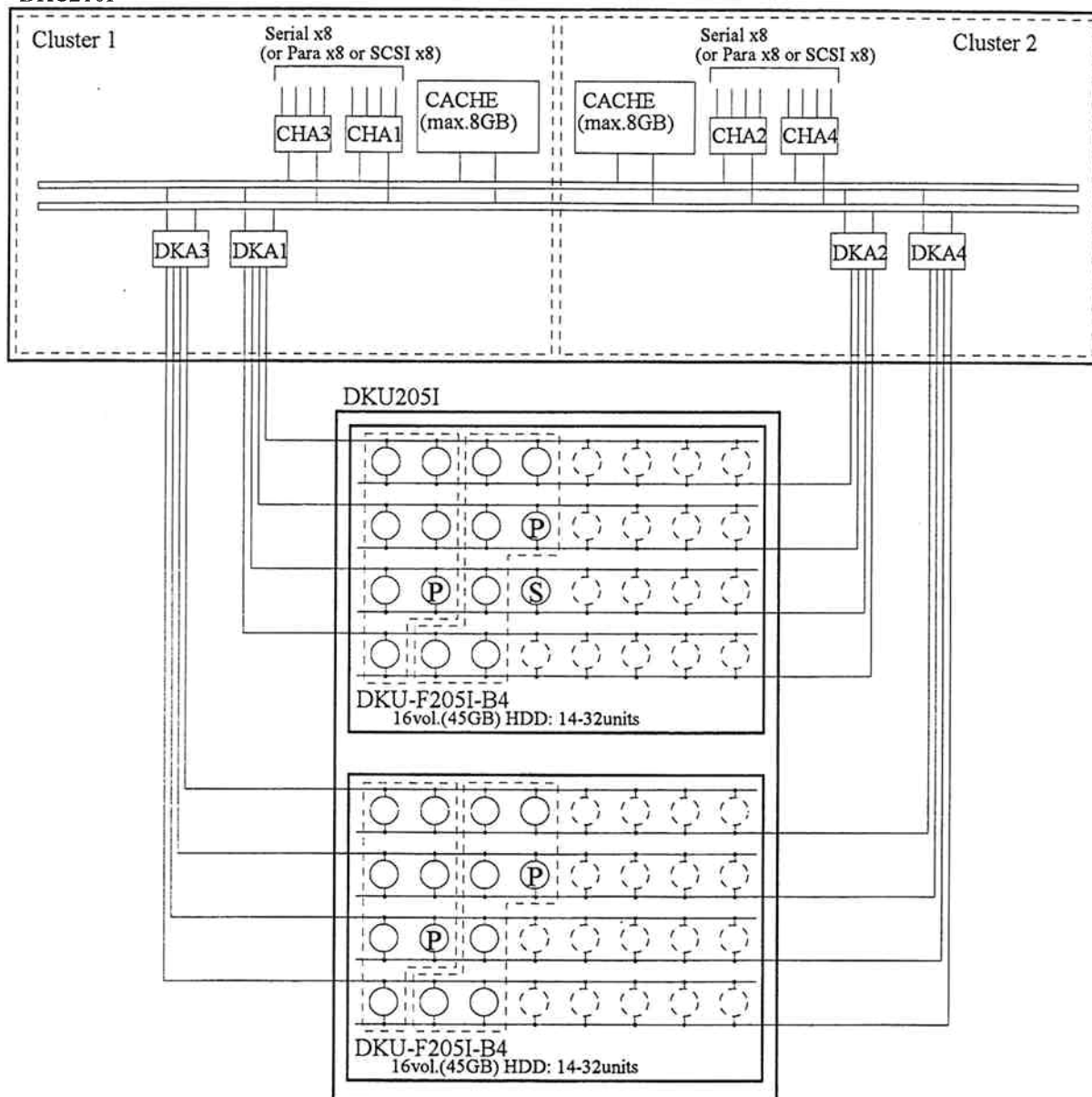
360GB Configuration

DKC210I



180GB Configuration

DKC210I

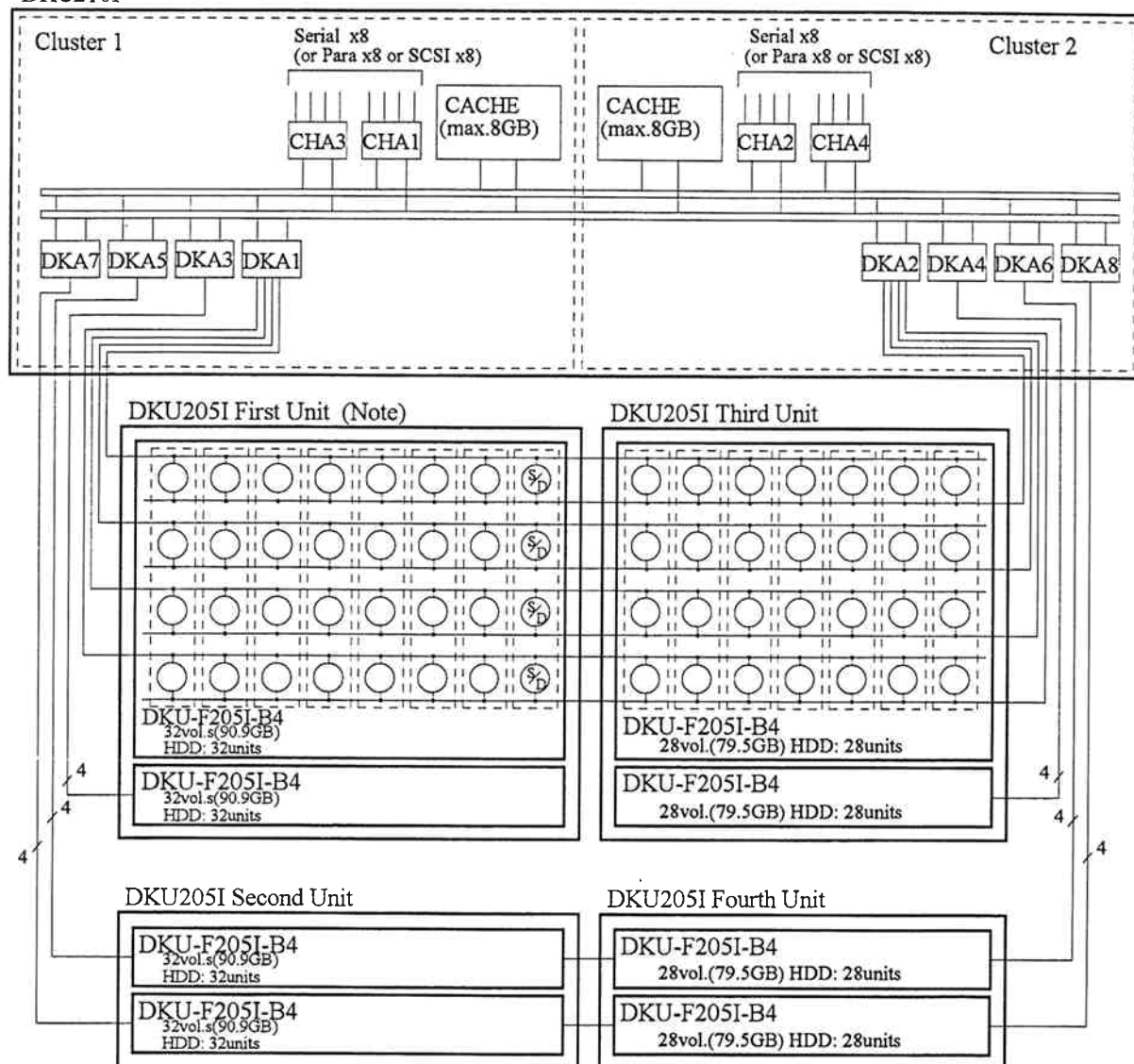


90GB Configuration

(2) Configuration for RAID 0 (DK306-35)

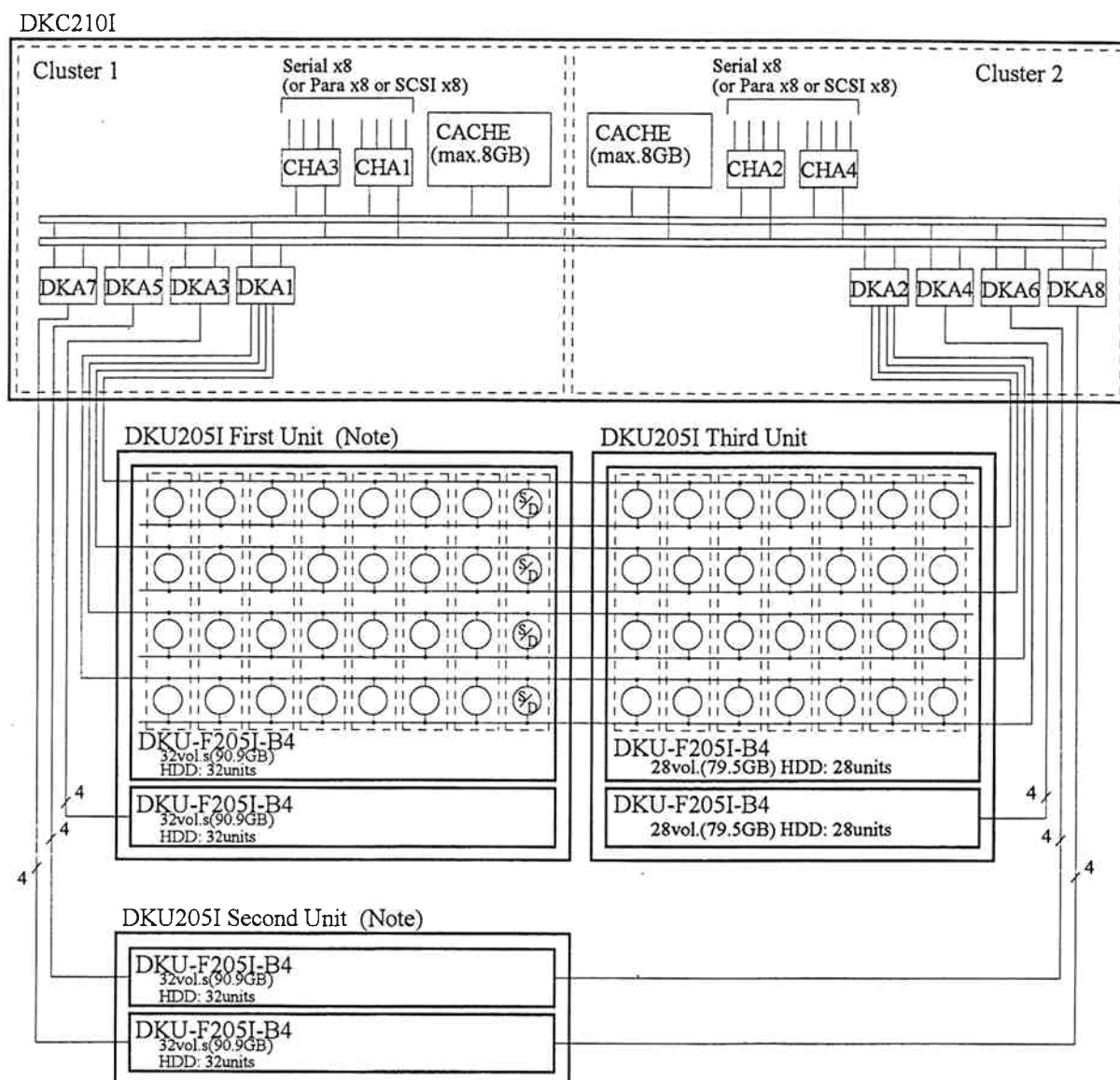
Configuration samples are shown in the figures.

DKC210I



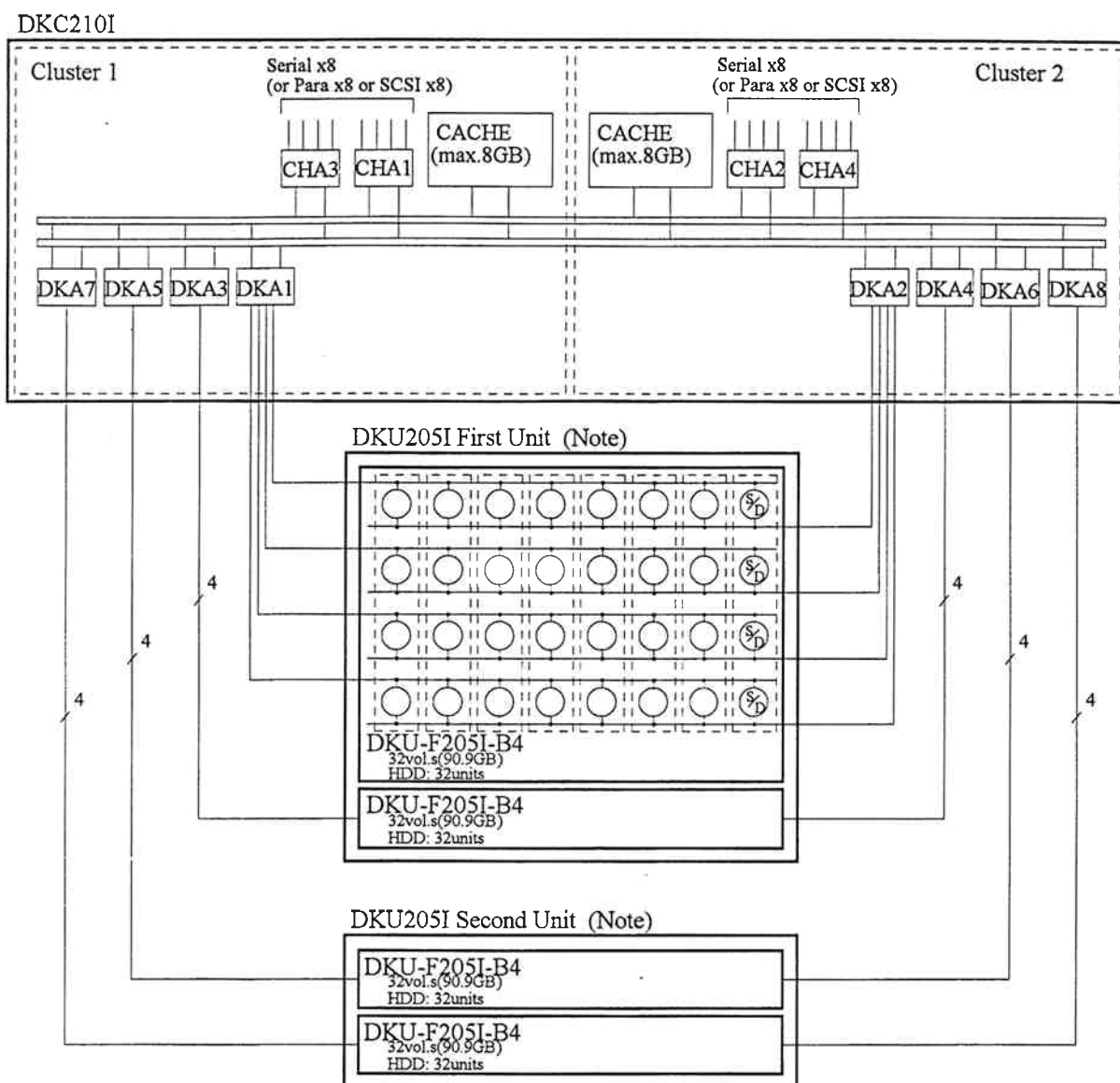
(Note) Maximum fore spare drives among 32vol.s are able to be converted into data drives.

Maximum 680GB Configuration (RAID0)



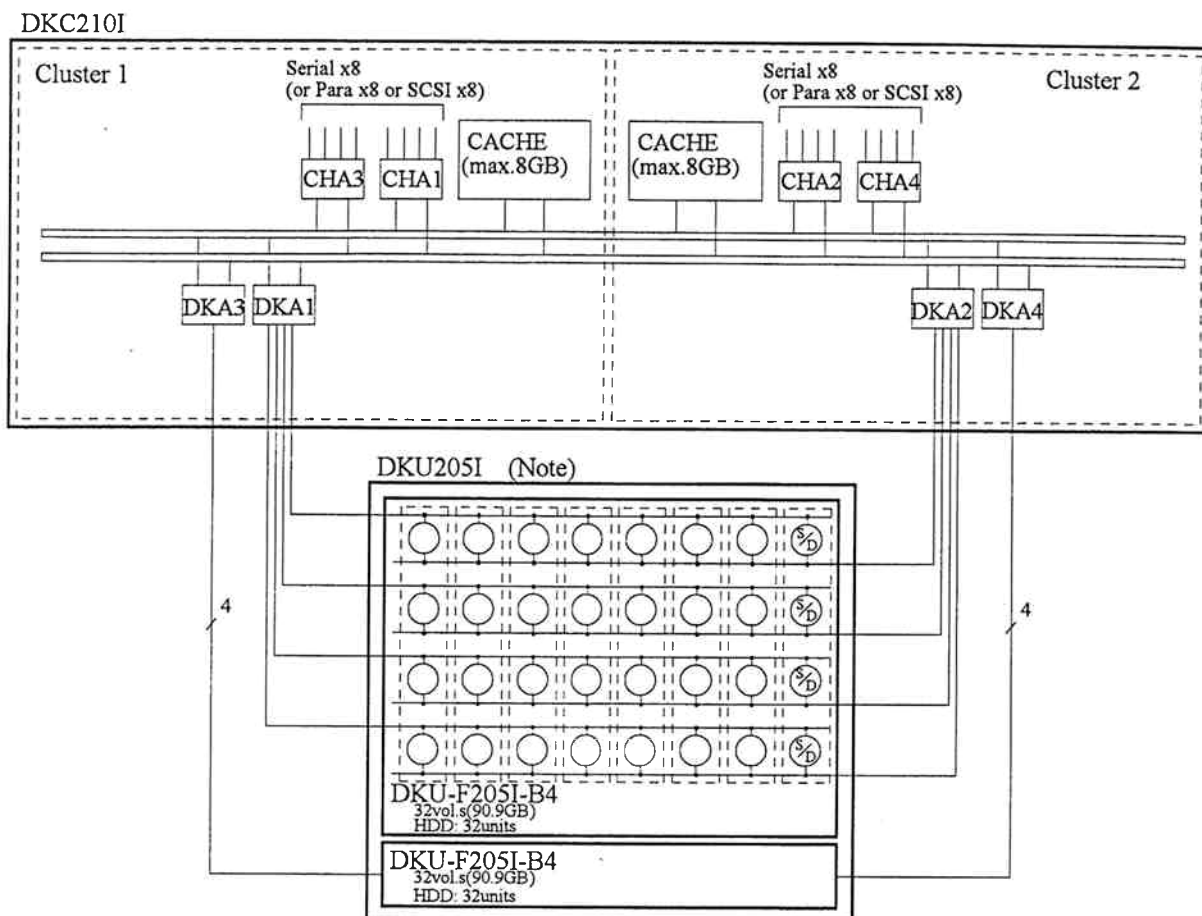
(Note) Maximum four spare drives among 32vol.s are able to be converted into data drives.

520GB Configuration (RAID0)



(Note) Maximum four spare drives among 32vol.s are able to be converted into data drives.

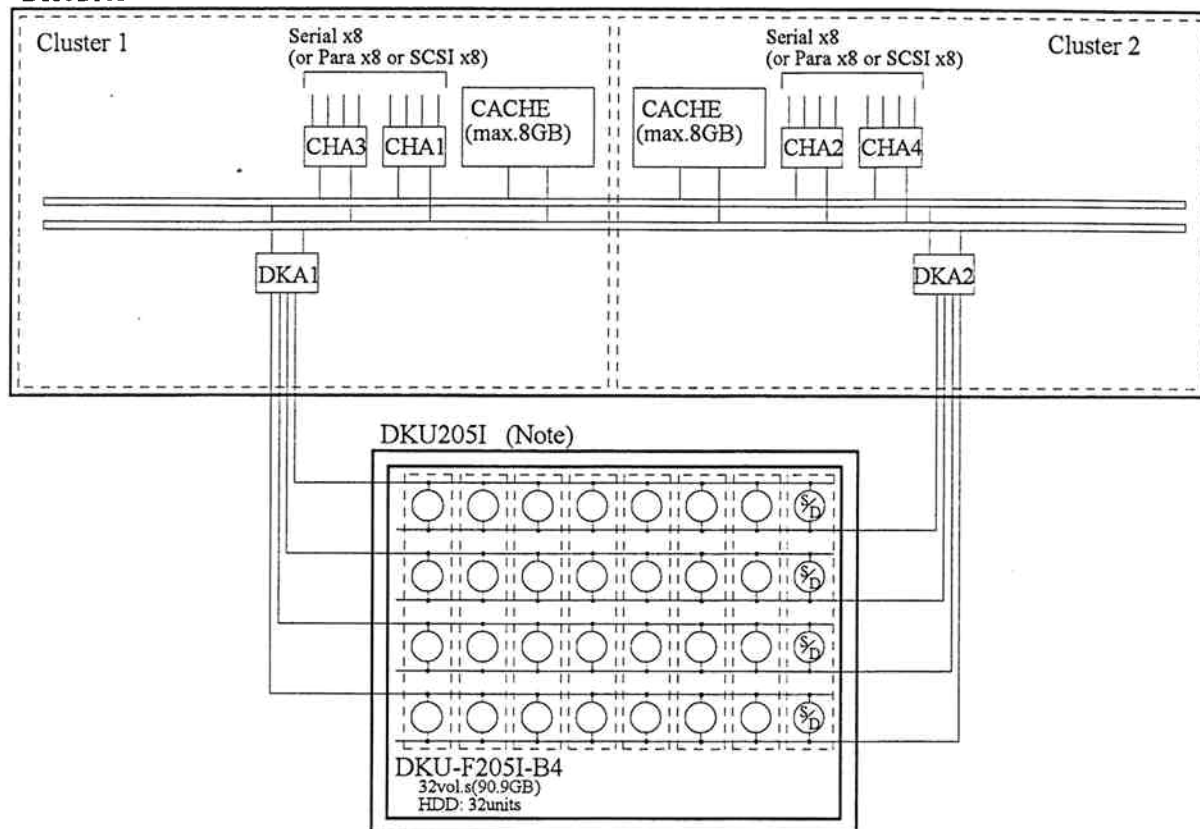
360GB Configuration (RAID0)



(Note) Maximum four spare drives among 32vol.s are able to be converted into data drives.

180GB Configuration (RAID0)

DKC210I



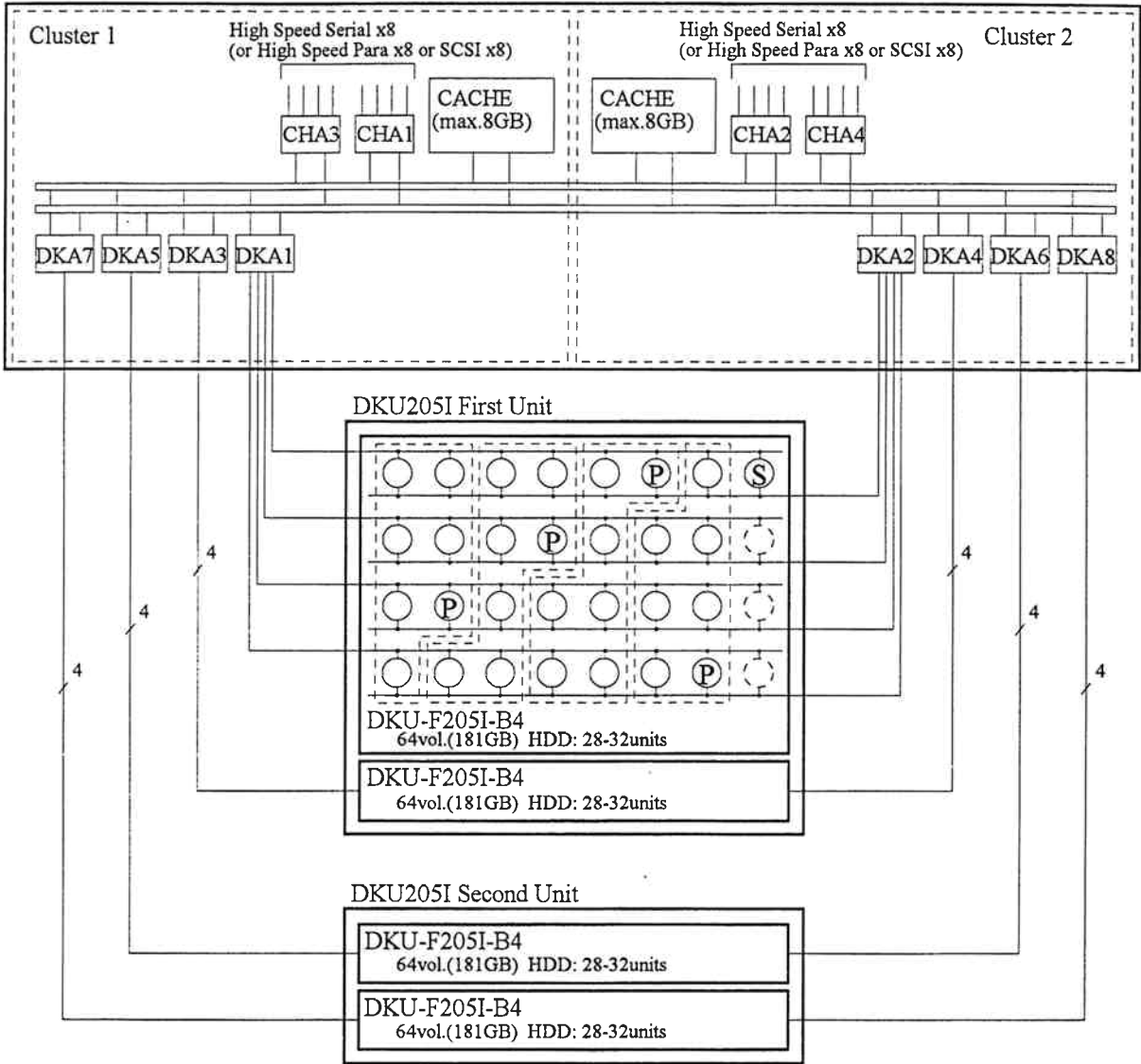
(Note) Maximum four spare drives among 32vol.s are able to be converted into data drives.

90GB Configuration (RAID0)

(3) Configuration for RAID5 (DK308-90)

Configuration samples are shown in the figures.

DKC210I-5E

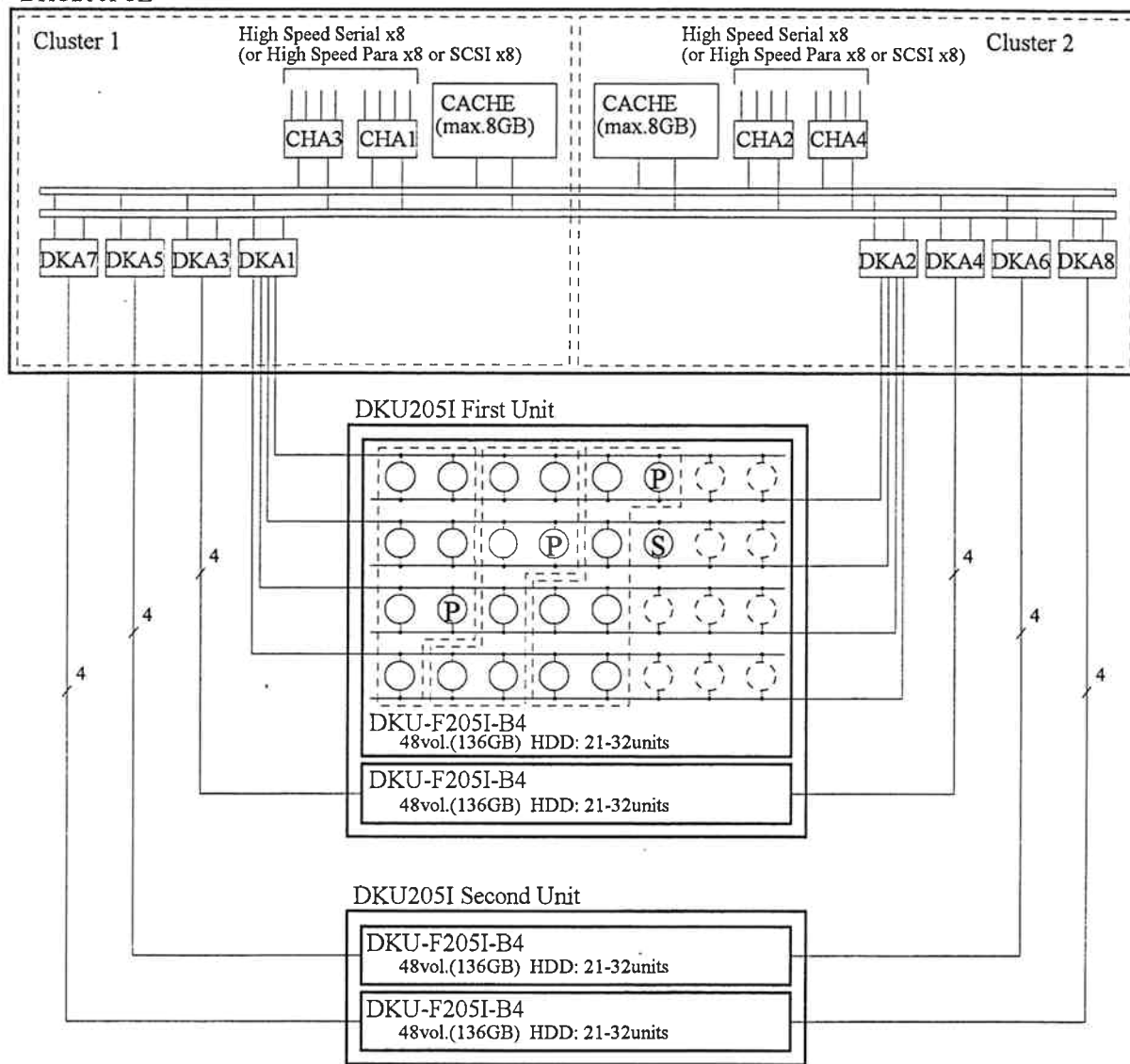


724GB Configuration for RAID5 (DK308-90)

0)

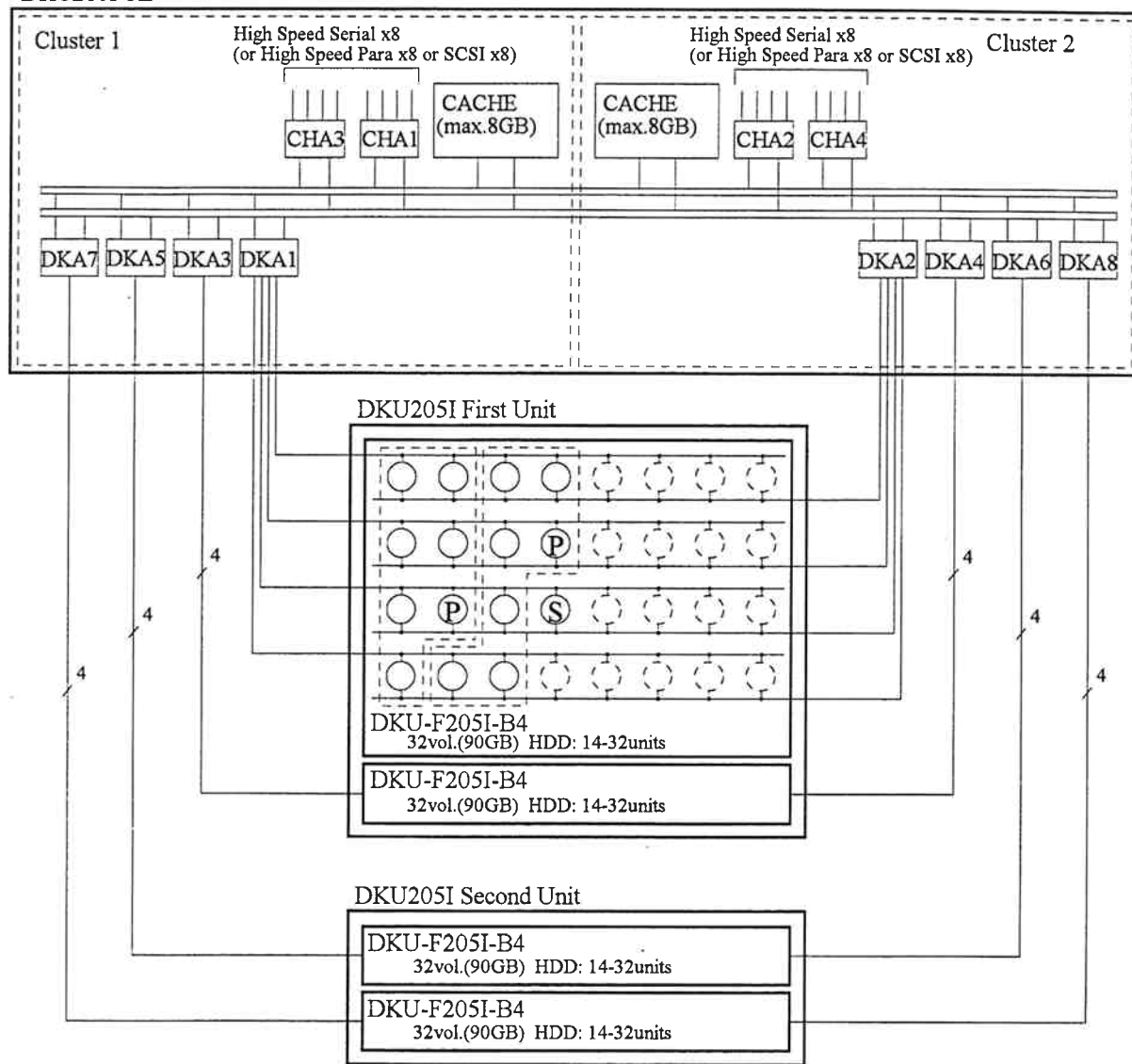
01

DKC210I-5E



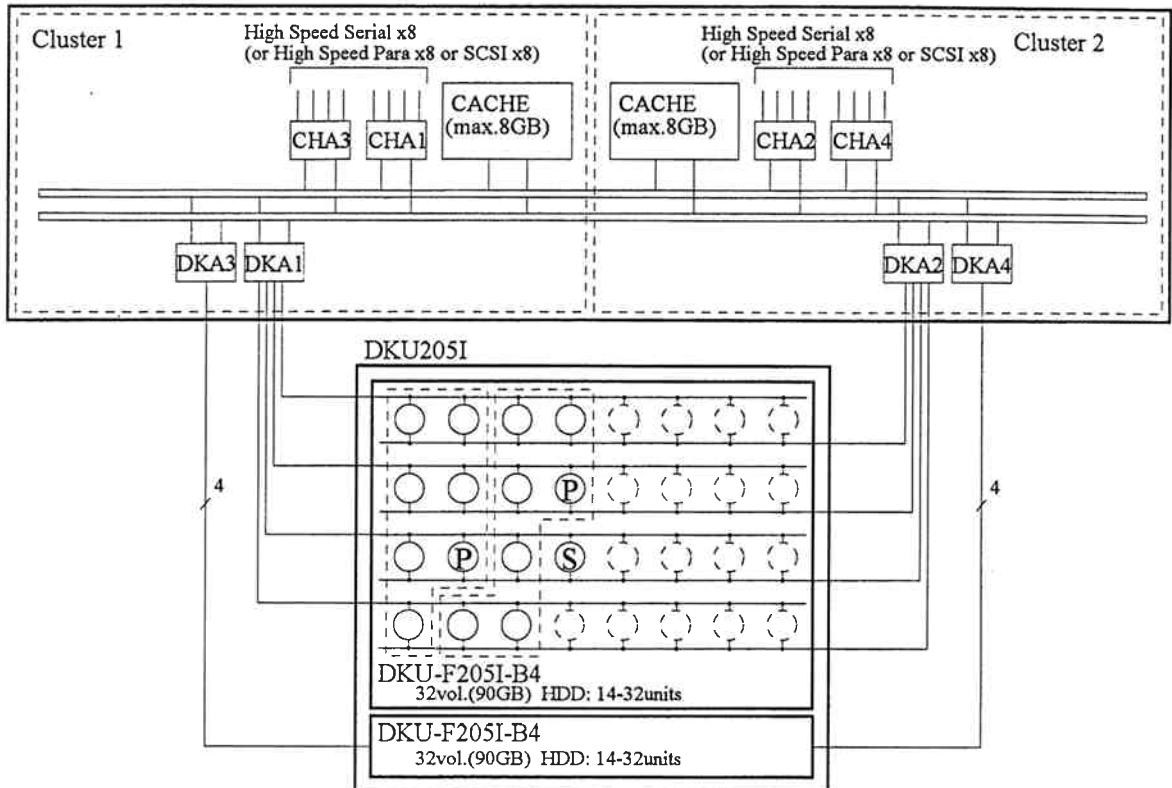
540GB Configuration for RAID5 (DK308-90)

DKC210I-5E



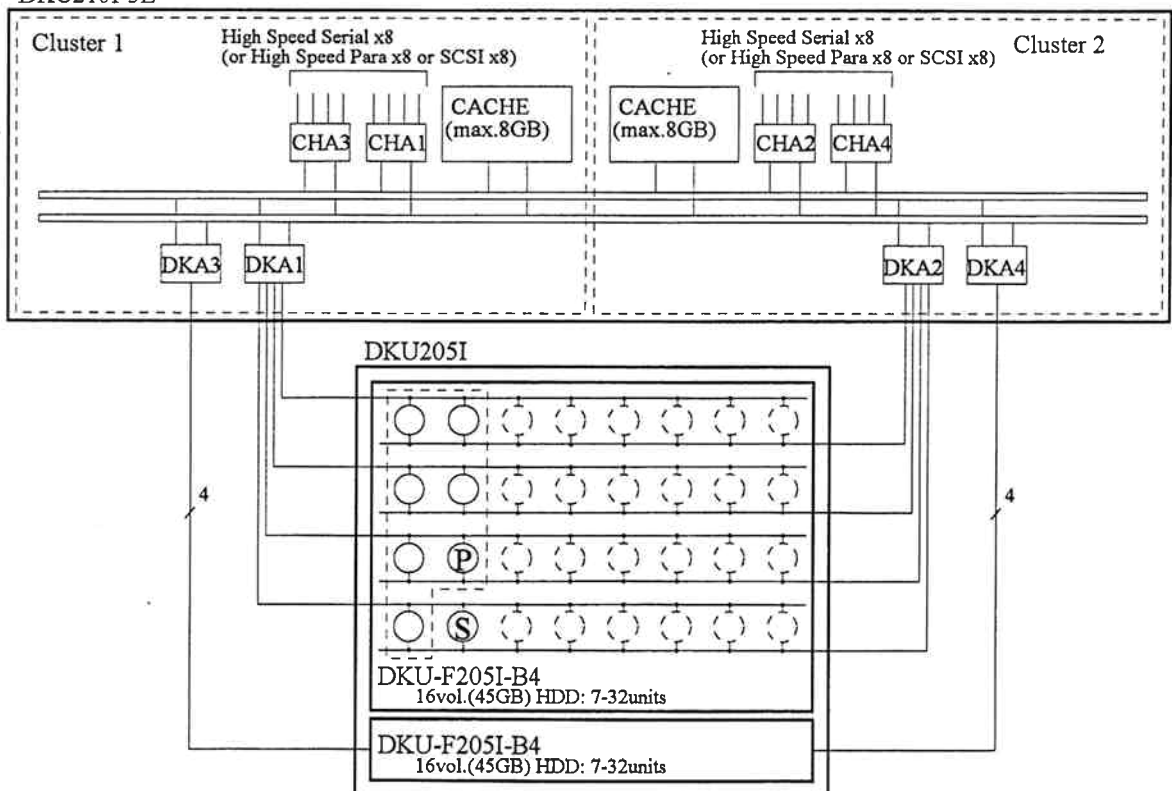
360GB Configuration for RAID5 (DK308-90)

DKC210I-5E



180GB Configuration for RAID5 (DK308-90)

DKC210I-5E

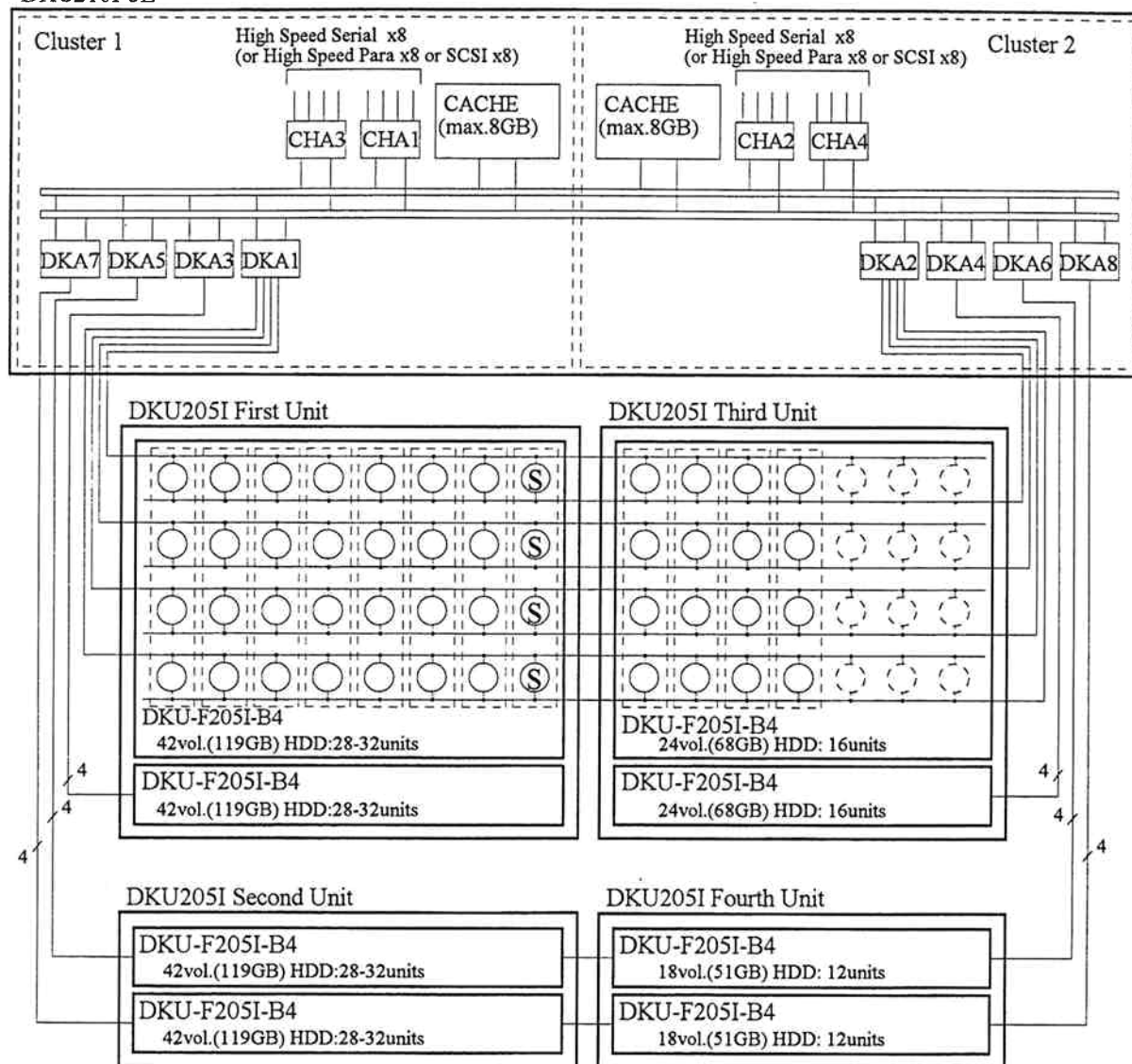


90GB Configuration for RAID5 (DK308-90)

(4) Configuration for RAID1 (DK308-90)

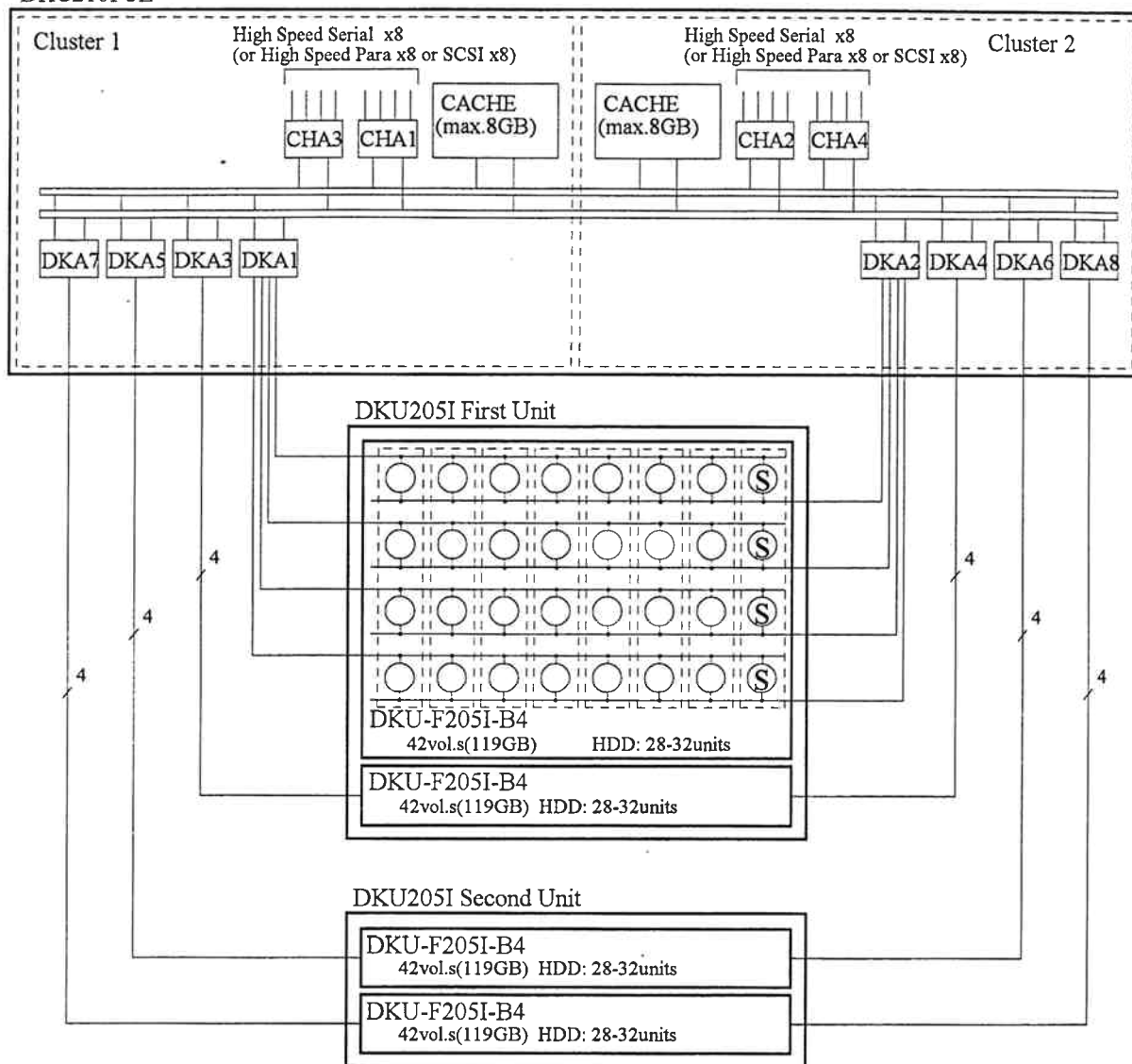
Configuration samples are shown in the figures.

DKC210I-5E



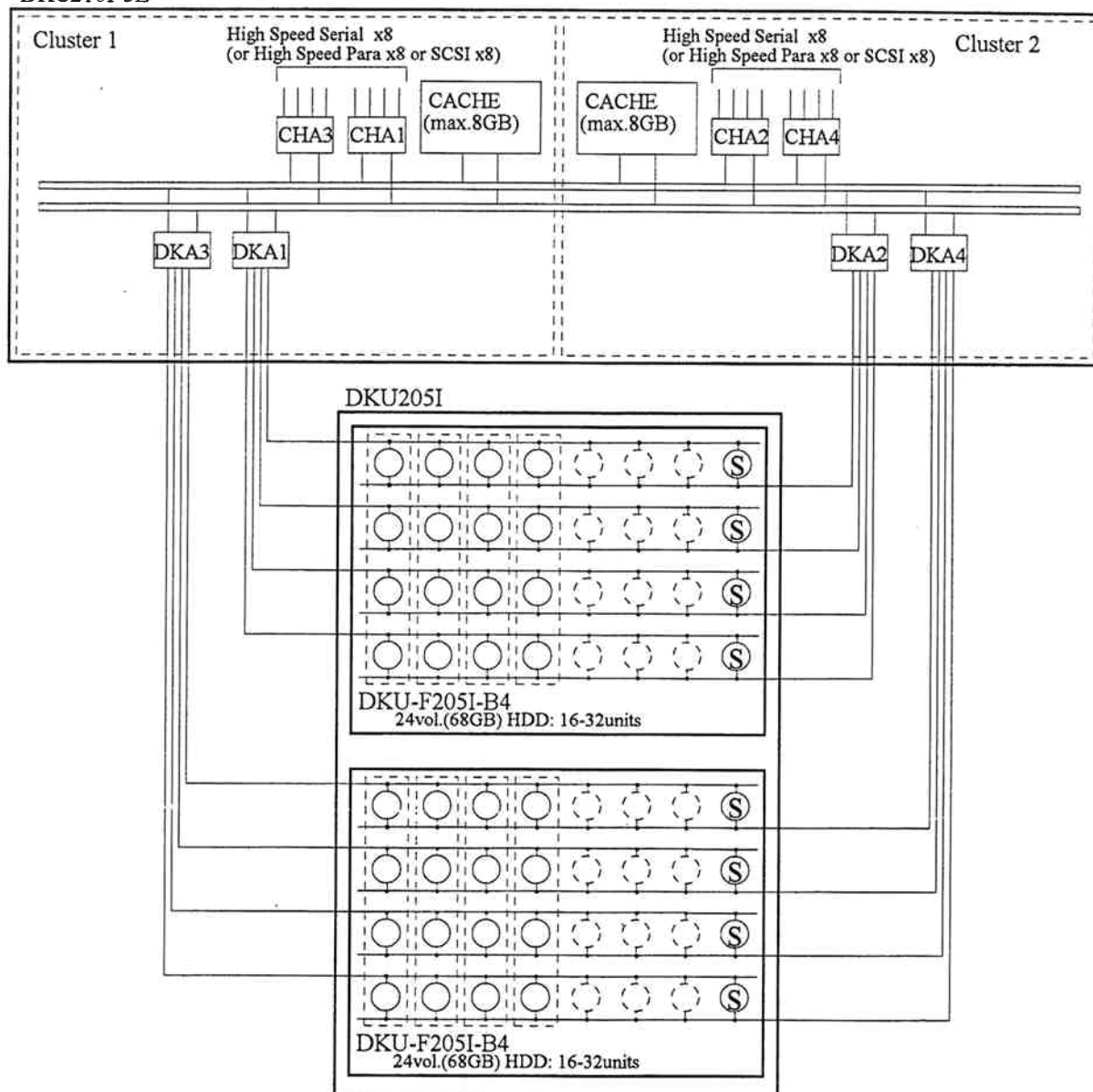
Maximum 714GB Configuration for RAID1 (DK308-90)

DKC210I-5E



476GB Configuration for RAID1 (DK308-90)

DKC210I-5E



136GB Configuration for RAID1 (DK308-90)

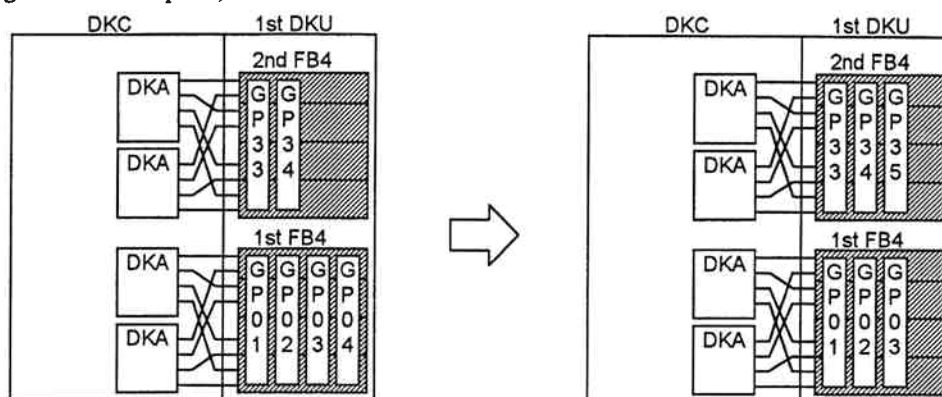
3.1.9 Advice about installation

3.1.9.1 Optimization of arrangement of DKU

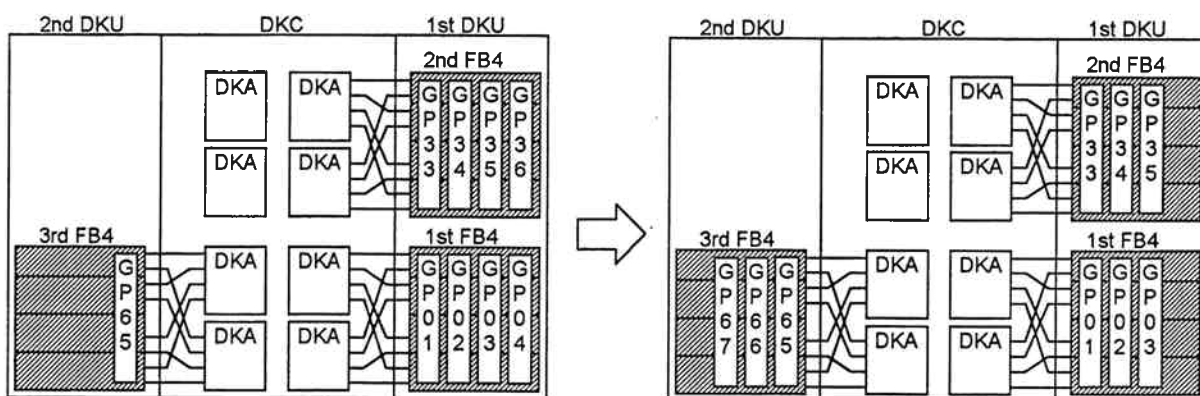
Arrangement of DKU should be changed as the following example of configuration 1, 2.

That balances number of logical device that one DKA handles and optimizes load of DKA. (Balance of load may change according to ratio of HOST's using logical device.)

(Configuration Example 1)



(Configuration Example 2)



GPXX : GROUP No. (corresponding to parity group No. displayed on SVP panel)

3.1.9.2 Setting of CU address in case of parallel channel

In case of parallel channel, as described by Table 3.1.9.2-1 and Table 3.1.9.2-2, extent of setting logical address is limited by number of LOGICAL DEVICE defined concerning the subsystem.

Table 3.1.9.2-1 CU address setting (except TPF)

Number of LOGICAL DEVICE address	Extent of LOGICAL DEVICE address	CU address
1 ~ 32	00-1F	00,20,40,60,80,A0,C0,E0
33 ~ 64	00-3F	00,40,80,C0
65 ~ 128	00-8F	00,80
129 ~ 256	00-FF	(Unnecessary to set)

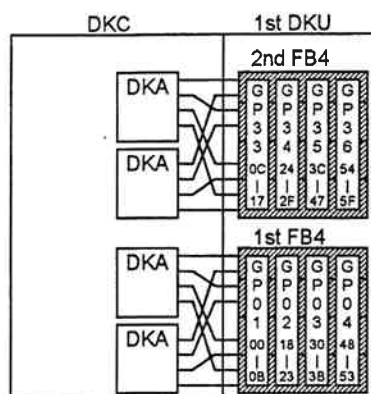
Table 3.1.9.2-2 CU address setting (TPF)

Number of LOGICAL DEVICE address	Extent of LOGICAL DEVICE address	CU address
1 ~ 32	00-1F	00, 20, 40, 60, 80, A0, C0, E0

3.1.9.3 Advice about definition of HOST address

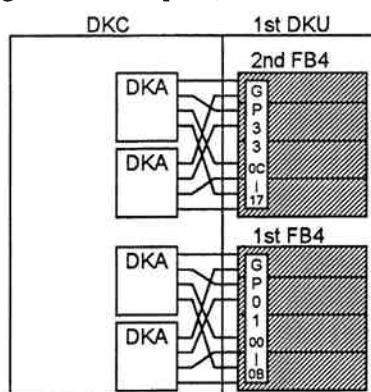
In defining HOST address, as described by the following example of configuration 1,2, you should define extent according to number of LOGICAL DEVICE assigned to drive installed in DKU.

(Configuration Example 1)



In this configuration, number of installed LOGICAL DEVICE is 00 through 5F. You should define the extent from 00 to a number not less than 7F.

(Configuration Example 2)



In this configuration, number of installed LOGICAL DEVICE is 00 through 17. You should define the extent from 00 to a number not less than 3F.

GPXX : GROUP No. (corresponding to parity group No. displayed on SVP panel)

XX-XX : Extent of definition of LOGICAL DEVICE address

3.1.9.4 Intermix case of Install more devices

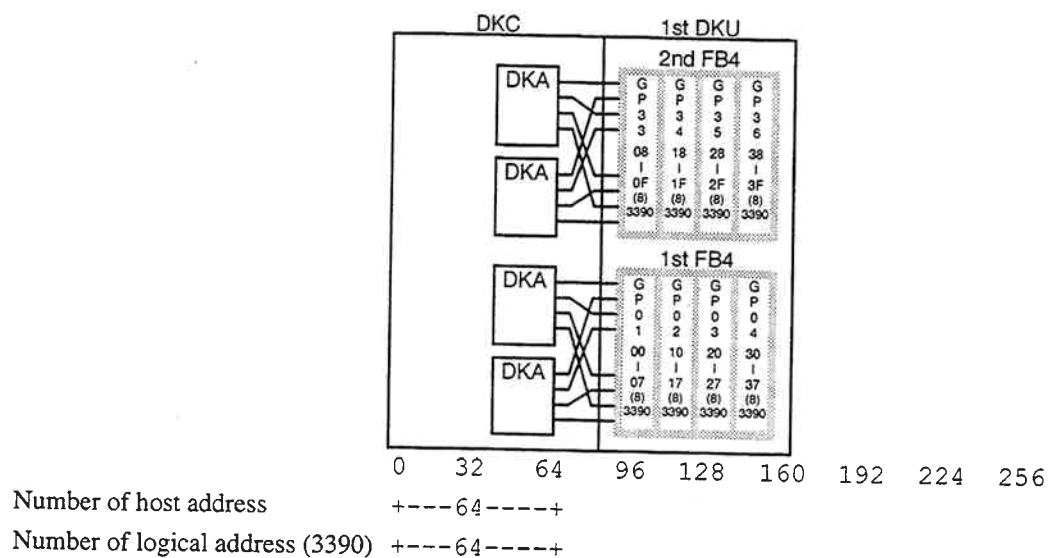
 : HDU BOX

GPXXX: GROUP No XXX

XX-XX in GPXXX shows a first logical device address of parity group.

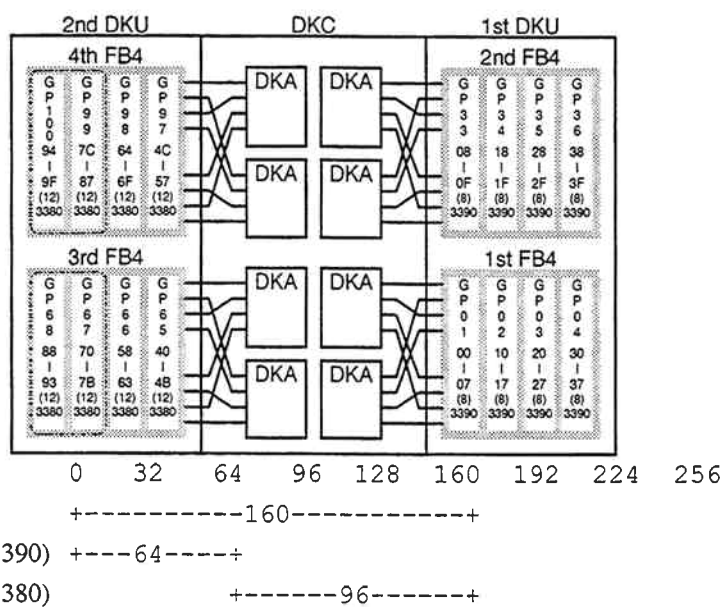
A value 0 shows a number of logical device.

① Installation of 3380 to the subsystem with only 3390

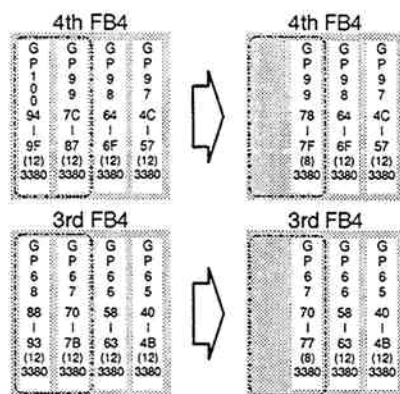


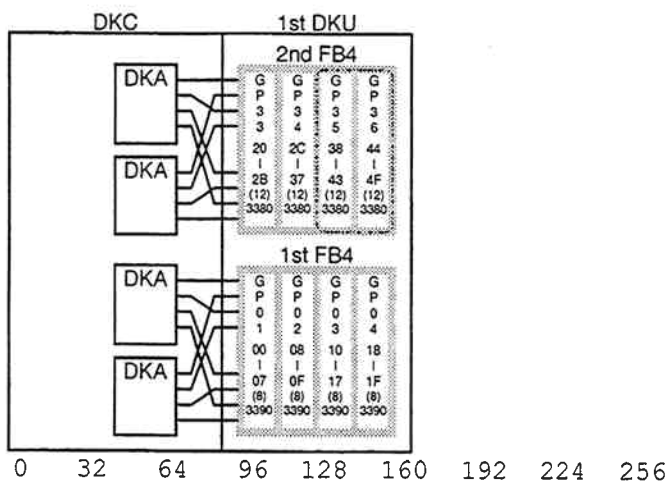
Installation of 3380
↓
INST01-460

Installation of 3390
and
installation of 3380
↓
INST01-470



Installation of 3380 (8 and 12 logical address mixed) c.



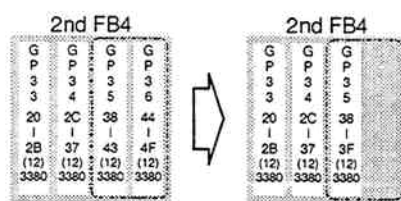


Number of host address +-----96-----+

Number of logical address (3390) +-32-+

Number of logical address (3380) +---48---+

Installation of 3380 (8 and 12 logical address mixed) c.



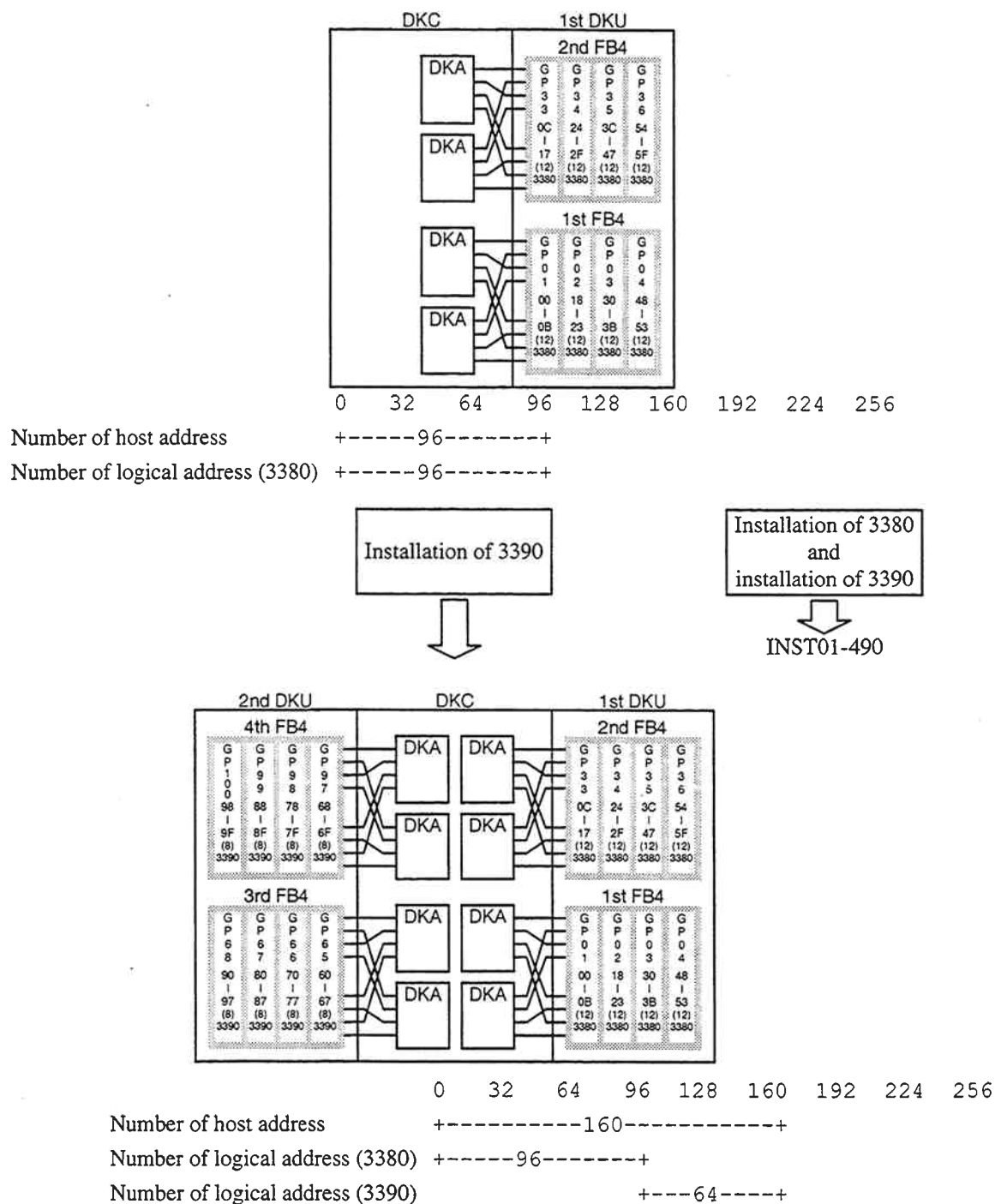
0 32 64 96 128 160 192 224 256

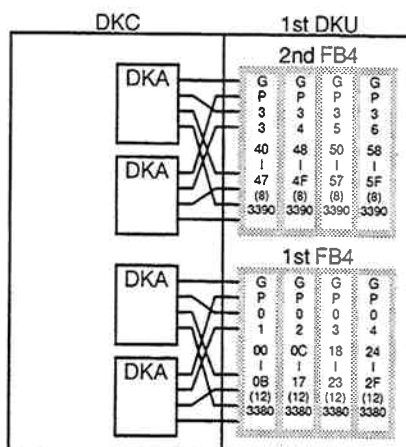
Number of host address +---64---+

Number of logical address (3390) +-32-+

Number of logical address (3380) +-32-+

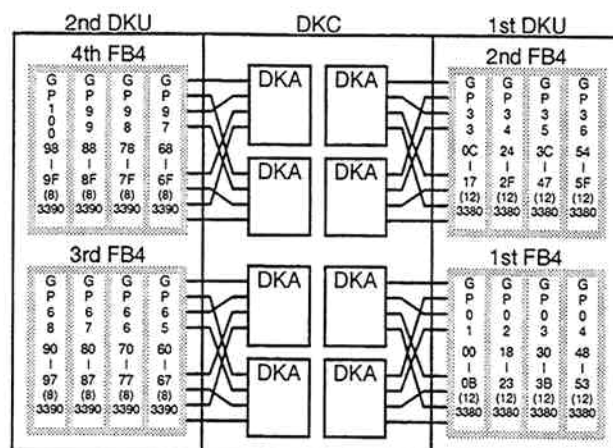
② Installation of 3390 to the subsystem with only 3380



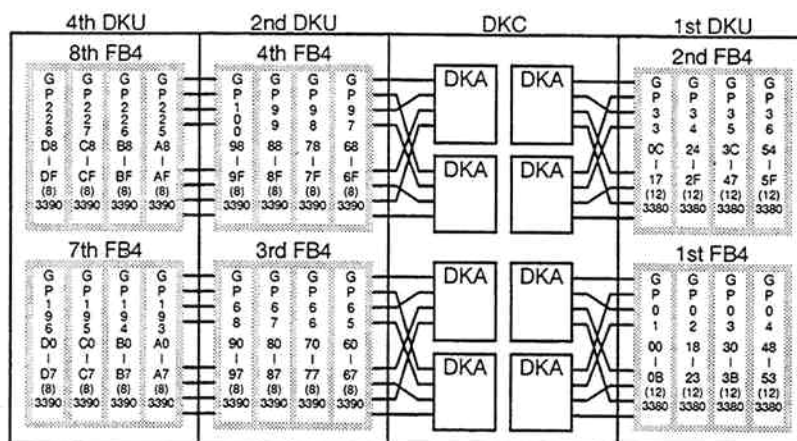
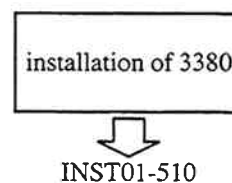
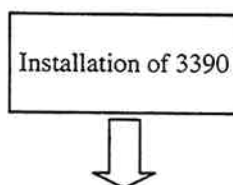


	0	32	64	96	128	160	192	224	256
Number of host address	+-----96-----+								
Number of logical address (3380)	+--48--+								
Number of logical address (3390)	+--32--+								

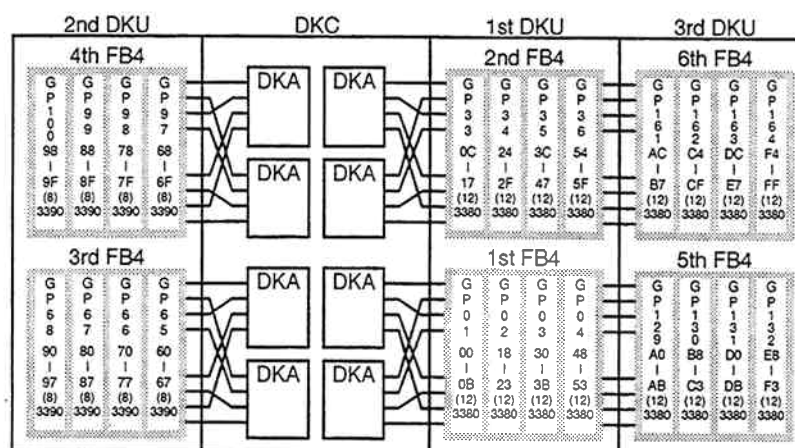
③ Installation of 3390 and 3380 to the subsystem with intermix



	0	32	64	96	128	160	192	224	256
Number of host address	+-----160-----+								
Number of logical address (3380)	+-----96-----+								
Number of logical address (3390)					+---64---+				



	0	32	64	96	128	160	192	224	256
Number of host address	+-----224-----+								
Number of logical address (3380)	+-----96-----+								
Number of logical address (3390)	+-----128-----+								



	0	32	64	96	128	160	192	224	256
Number of host address	+-----256-----+								
Number of logical address (3380)	+-----96-----+			+-----96-----+					
Number of logical address (3390)	+-----64-----+								

3.1.9.5 High Speed Adapter specification

(1) About High Speed Adapter

- High Speed Adapter has SRAM, DRAM and high-speed microprocessor.
- High Speed Adapter is High speed CHA and High speed DKA.
- High speed DKC has High speed CHA and High speed DKA (High Speed Adapter).
- Previous equipment is called Previous DKC.

(2) Configuration

- High speed DKC is different from Previous DKC.
- In case of High speed DKC, you can only use option for High speed DKC in High speed DKC.
- For example, you can not install DKC-F210I-8S in High speed DKC (Example; DKC210I-5E).
- This time, you must install DKC-F210I-8SE (Option for High speed DKC) in High speed DKC.
(High speed DKC can not use option for Previous DKC (DKC210I-5))
- High speed DKC can have the same configuration as Previous DKC.
- Namely, you use only High Speed Adapter or Previous Adapter, allowing configuration is same from Previous DKC.
- Refer the following ①~②.

① The relation between High speed DKC and Previous DKC is described as follows.

	High speed DKC model number	Previous DKC model number
Disk Controller	DKC210I-5E	DKC210I-5
	DKC210IU-5E	DKC210IU-5
	DKC210IE-5E	DKC210IE-5
Option	DKC-F210I-4SE	DKC-F210I-4S
	DKC-F210I-8SE	DKC-F210I-8S
	DKC-F210I-8PE	DKC-F210I-8P
	DKC-F210I-50E	DKC-F210I-50

② The Specification between High speed Adapter and Previous Adapter is described as follows.

(a) High speed DKC;

- High speed DKC does not allow intermix between High Speed Adapter and Previous Adapter.

(b) Previous DKC;

- Previous DKC allow intermix by Installation and Configuration change (ex. From Parallel CH to Serial CH).
- Unit of installation is two adapter (Unit of Subsystem options for DKC).
- Both High Speed Adapter and Previous Adapter intermix is allowed at voluntary.

(c) Failure PCB (Adapter);

- In case of failure at High Speed Adapter; Replace it with only High Speed Adapter.
- In case of failure at Previous Adapter ; Replace it with only Previous Adapter.

DKC Model	Intermix Specification
High speed DKC DKC210I-5E DKC210IU-5E DKC210IE-5E	(1) Installation; Only High Speed Adapter can be installed. (2) Failure; Only High Speed Adapter can be maintained.
Previous DKC DKC210I-5 DKC210IU-5 DKC210IE-5	(1) Up-grade (From Previous DKC to High speed DKC) Replace Previous Adapter by High Speed Adapter in Previous DKC. (note) Before replacing High Speed Adapter, you need to install "DKCMAIN Ver. After 02-08-XX" in Previous DKC. High Speed DKC can not use "DKCMAIN Ver. 01-08-XX" (2) Installation: You can install High Speed Adapter or Previous Adapter in Previous DKC. (3) Failure - In case of failure at Previous Adapter; Only Previous Adapter can be maintained. - In case of failure at High Speed Adapter; Only High Speed Adapter can be maintained.

- Need to install "DKCMAIN Ver ; After 02-08-XX" in DKC.
- You can not use "DKCMAIN Ver ; 01-08-XX for High Speed Adapter.

(3) How to install

- Concerning High Speed DKC, you must use High Speed Adapter.
And you can install by the same way as Previous DKC.
- De-installation is the same way.
Refer (4) Used micro-program.

(4) Concerning micro-program

- You must use "DKCMAIN Ver ; After 02-08-XX" on High speed DKC.
- In case of you must use "DKCMAIN Ver ; After 02-08-XX" against Previous DKC,
 - (a) In case of Up-grade (From Previous DKC to High Speed DKC).
 - (b) In case of Installation (Installation High Speed Adapter on Previous DKC).
 Before exchanging to High Speed Adapter, you need to install "DKCMAIN Ver: After: 02-08-XX" in Previous DKC. You can not use "DKCMAIN Ver: 01-08-XX" for High Speed Adapter.

(5) How to maintain

- You can not use intermix (Both High Speed Adapter and Previous Adapter) on High speed DKC.
- High Speed DKC must be used with High Speed Adapter.
- In order to avoid intermix (Both High Speed Adapter and Previous Adapter) on High Speed DKC, SIM has information about the kind of Adapter.
- If failure occurred, you need to check SIM.
And ACC is different between High Speed Adapter and Previous Adapter.
In order to avoid mistake, when you finish maintenance, you must confirm no intermix Status on SVP (In case of High speed DKC).

(6) High speed adapter check function

- High speed adapter check function checks kind of Adapter intermix (Both High Speed Adapter and Previous Adapter) on High Speed DKC.
- Setting High Speed Adapter check function can be done by System Option Setup on SVP.
- In case of High Speed DKC; Select "Do".
(If you try to intermix Previous Adapter in High speed DKC, SVP displays Warning Message, and SIM is issued.)
In case of Previous DKC; Select "Do not".
- In case of Up-grade (From Previous DKC to High speed DKC), you must select "Do" by System Option Setup on SVP.
- This function is service function.
Namely, you need to do Maintenance by referring SIM, ACC and Status (From SVP).

3.1.9.6 Advised about intermix

(1) This Subsystem is HDD and Emulation type intermix supported.

Specification are shown in the following Table 3.1.9.6-1.

Table 3.1.9.6-1 Intermix Specification

	Specification	
HDD type intermix *2	① DK306-45 or DK308-45 or DK308-90 and DK309-180 can be mixed by DKA pair granularity. ② DKA which controls DK308-90 and DK309-180 should be high speed adapter. ③ DKA which controls DK306-45 or DK308-45 may either high speed adapter or previous adapter. ④ When the number of Shared Memory is Table 3.1.5-1 (INST01-120), the restriction for the number of spare HDDs. SVP rejects the excessive installation of spare HDDs according to the condition bellow Fig 3.1.9.6-1. If you have the number of Shared Memory as Table 3.1.5-2 when install procedure, there is no restriction of that. ⑤ DK309-180 is installed in subsystem, the number of spare drives is restricted as 8 spare drives.	
Emulation type intermix	① DK306-45 or DK308-45 can be emulated as 3380-K, 3390-2 or 3390-3. *1 ② DK308-90 can be emulated as 3390-3, 3390-9, 3380-K or 3390-2. ③ DK309-180 can be emulated as 3390-3, 3390-9, 3380-K. ④ Granularity for emulation type is also parity group. ⑤ Any configuration including at least one 3390-9 emulation need additional SM. ⑥ Total number of LDEV is 256. ⑦ Concurrent copy function is not supported for 3390-9 emulation LDEV.	*1 specification shows Table 3.1.6.3-1 (INST01-158A)
RAID level intermix	① RAID5 and RAID1 can be mixed by DKA pair granularity.	

*2 In DKAs which control RAID1, spare HDD type should be DK308-90.

Fig 3.1.9.6-1 The number of spare HDDs restriction

		The number of DK308-90 spare HDDs											
		0	1	2	3	4	5	6	7	8	9	10	11-16
DK306-45 or DK308-45	0	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	NG
	1	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	NG	NG
	2	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	NG	NG
	3	OK	OK	OK	OK	OK	OK	OK	OK	OK	NG	NG	NG
	4	OK	OK	OK	OK	OK	OK	OK	OK	OK	NG	NG	NG
	5	OK	OK	OK	OK	OK	OK	OK	OK	NG	NG	NG	NG
	6	OK	OK	OK	OK	OK	OK	OK	OK	NG	NG	NG	NG
	7	OK	OK	OK	OK	OK	OK	OK	OK	NG	NG	NG	NG
	8	OK	OK	OK	OK	OK	OK	OK	NG	NG	NG	NG	NG
	9	OK	OK	OK	OK	OK	OK	OK	NG	NG	NG	NG	NG
	10	OK	OK	OK	OK	OK	OK	NG	NG	NG	NG	NG	NG
	11	OK	OK	OK	OK	OK	OK	NG	NG	NG	NG	NG	NG
	12	OK	OK	OK	OK	OK	NG	NG	NG	NG	NG	NG	NG
	13	OK	OK	OK	OK	NG	NG	NG	NG	NG	NG	NG	NG
	14	OK	OK	OK	NG	NG	NG	NG	NG	NG	NG	NG	NG
	15	OK	OK	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
	16	OK	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG

OK : The number of spare HDDs for the best

(2) HDD Intermix case of additional logical devices Example

 : HDU BOX in DK306-45 or DK308-45
  : HDU BOX in DK308-90
  : HDU BOX in DK309-180
 : DRAM TYPE DKA
 : SRAM TYPE DKA

GPXXX: GROUP No XXX

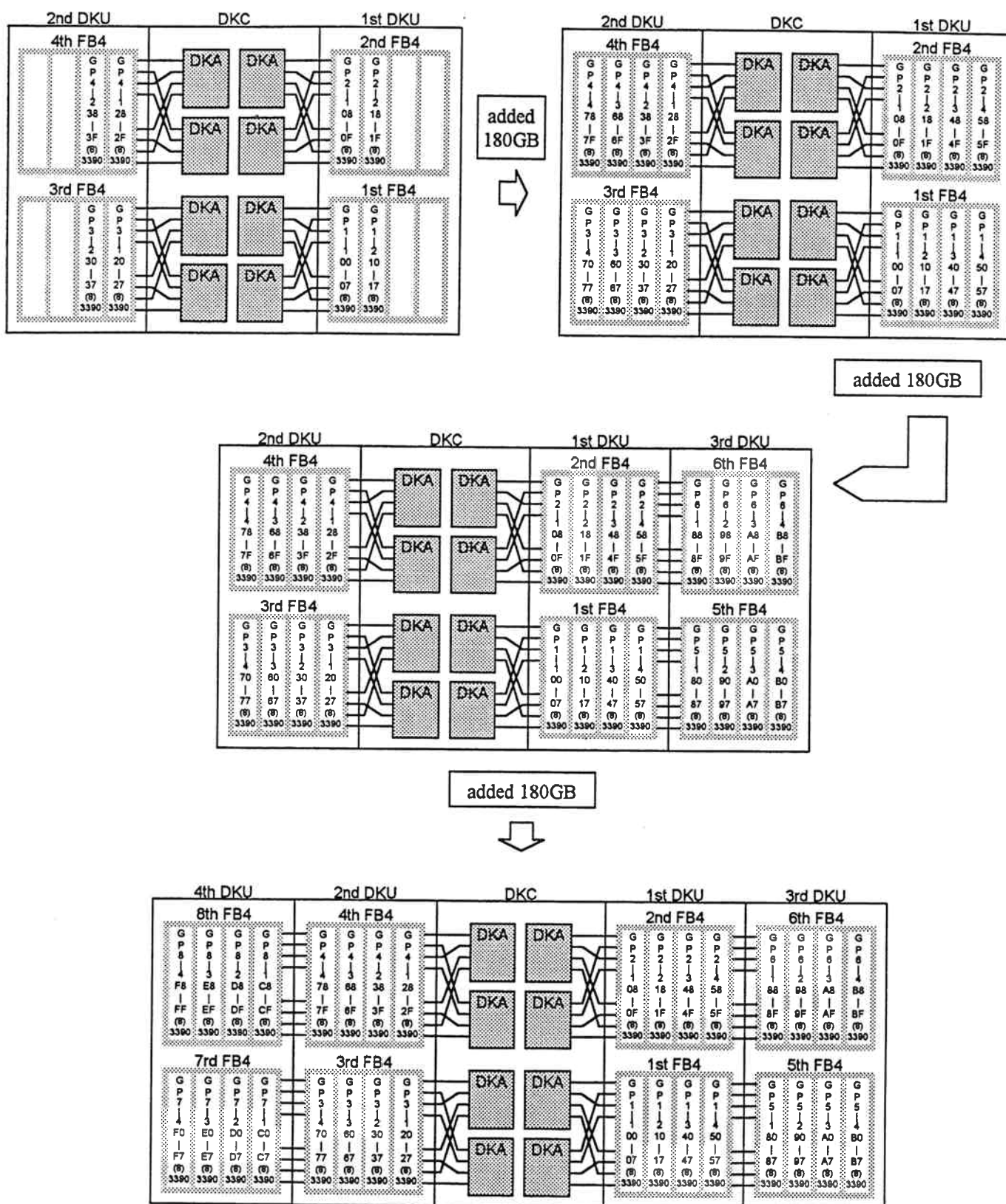
XX-XX in GPXXX shows a first logical device address of parity group.

A value () shows a number of logical device.

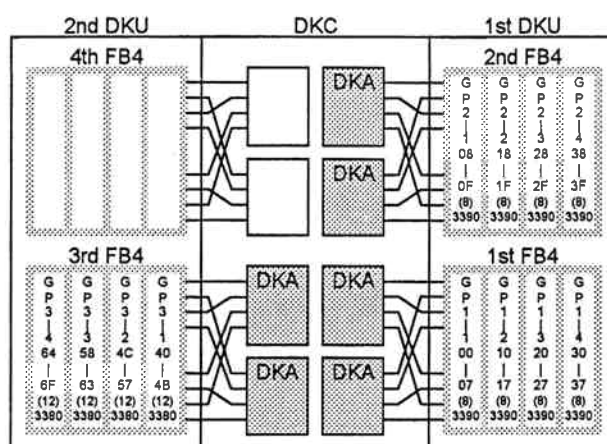
① already installed 90GB configuration by DK306-45 or DK308-45



② already installed 180GB configuration by DK306-45 or DK308-45

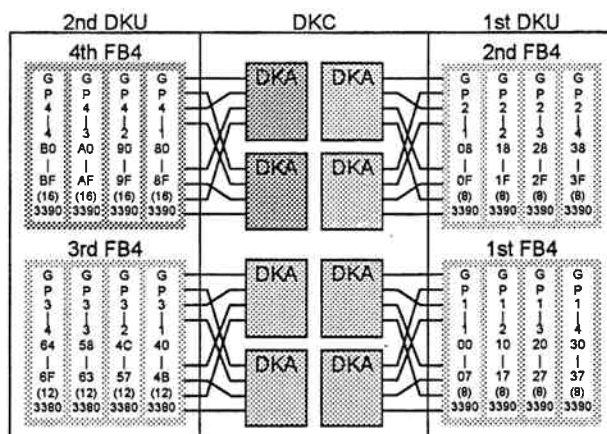


③ already installed 270GB configuration by DK306-45



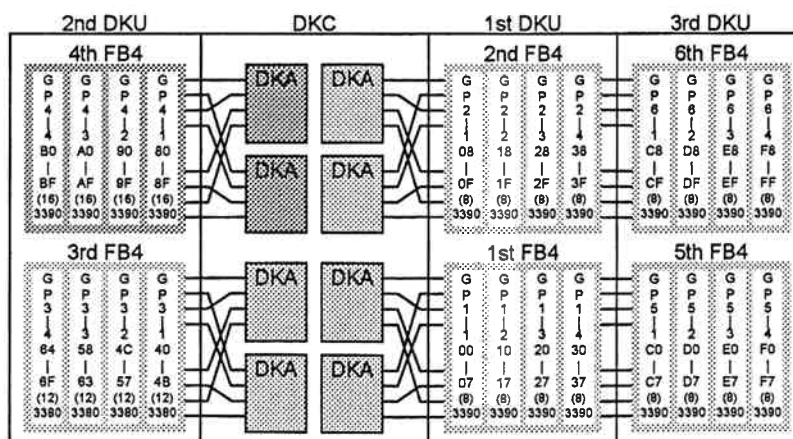
added 180GB
by 3390-3

added 203GB
by 3390-9

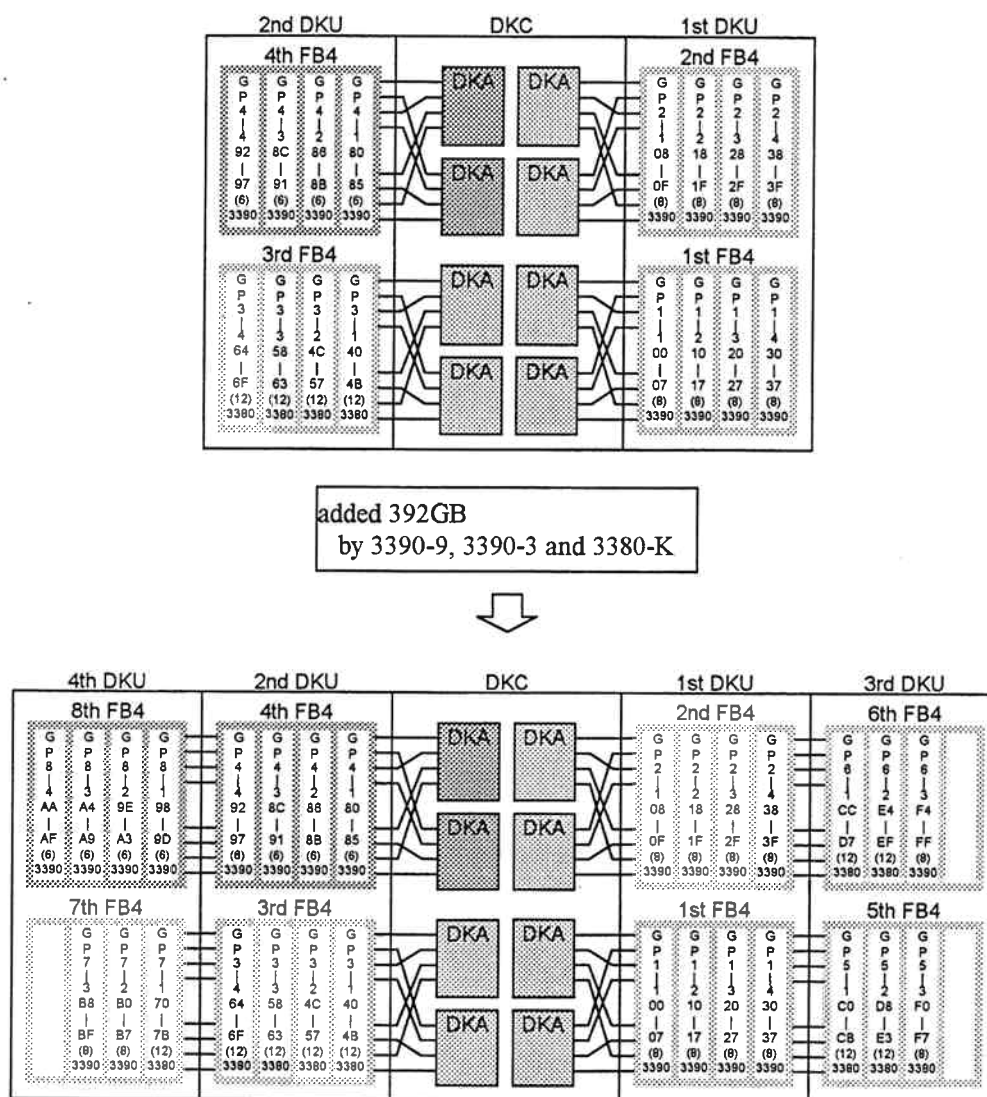


INST01-590

added 180GB



When you used 3390-9, Shared Memory is added.

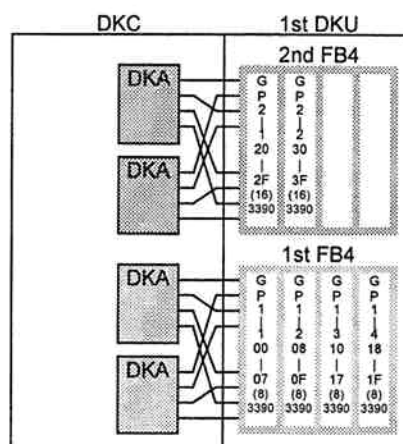


Notice) CHA is technically not depend on HDD type, any combination of PK is available.

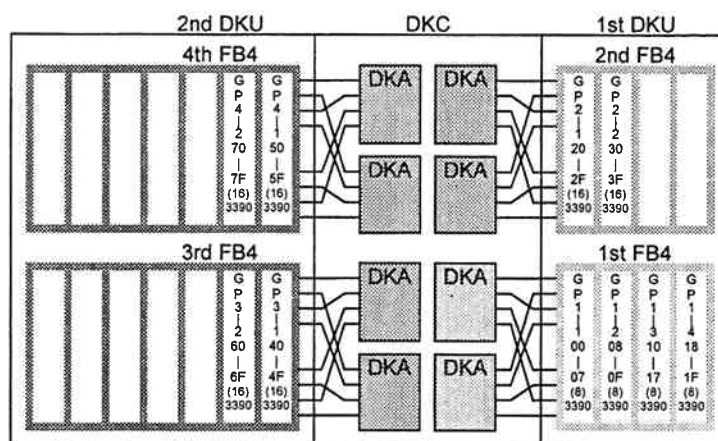
Especially, the combination of DRAM CHA and SRAM DKA are available.

SRAM CHA is better to use for high cache friendly application or high traffic application, because SRAM CHA will make connect time and disconnect time less than DRAM CHA.

④ already installed 180GB configuration by DK306-45 and DK308-90



added 180GB with DK309-180 by RAID5



360GB System

(3) RAID Level Intermix case of additional logical devices Example

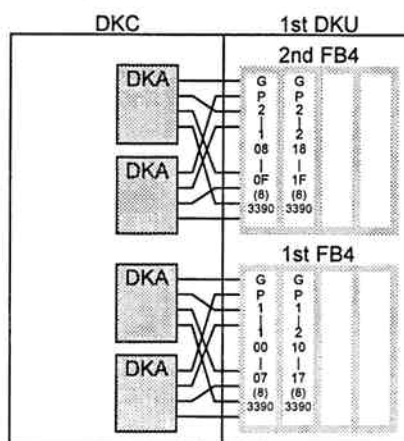
 : HDU BOX in DK306-45 or DK308-45
  : HDU BOX in DK308-90
  : HDU BOX in DK309-180
 : DRAM TYPE DKA
 : SRAM TYPE DKA

GPXXX: GROUP No XXX

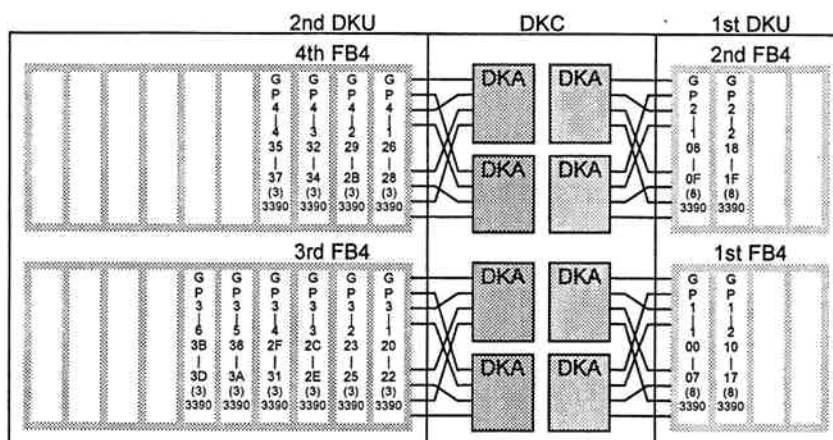
XX-XX in GPXXX shows a first logical device address of parity group.

A value () shows a number of logical device.

① already installed 90GB configuration by DK306-45 or DK308-45 with RAID5

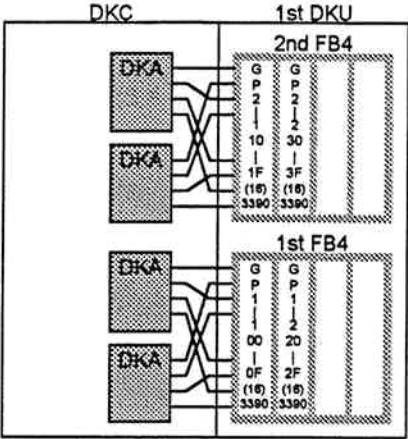


added 90GB with RAID1

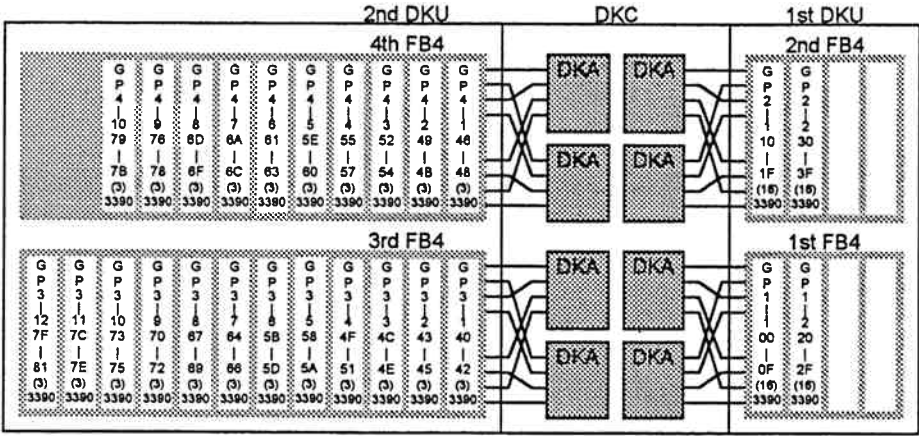


174GB System

② already installed 180GB configuration by DK308-90 with RAID5

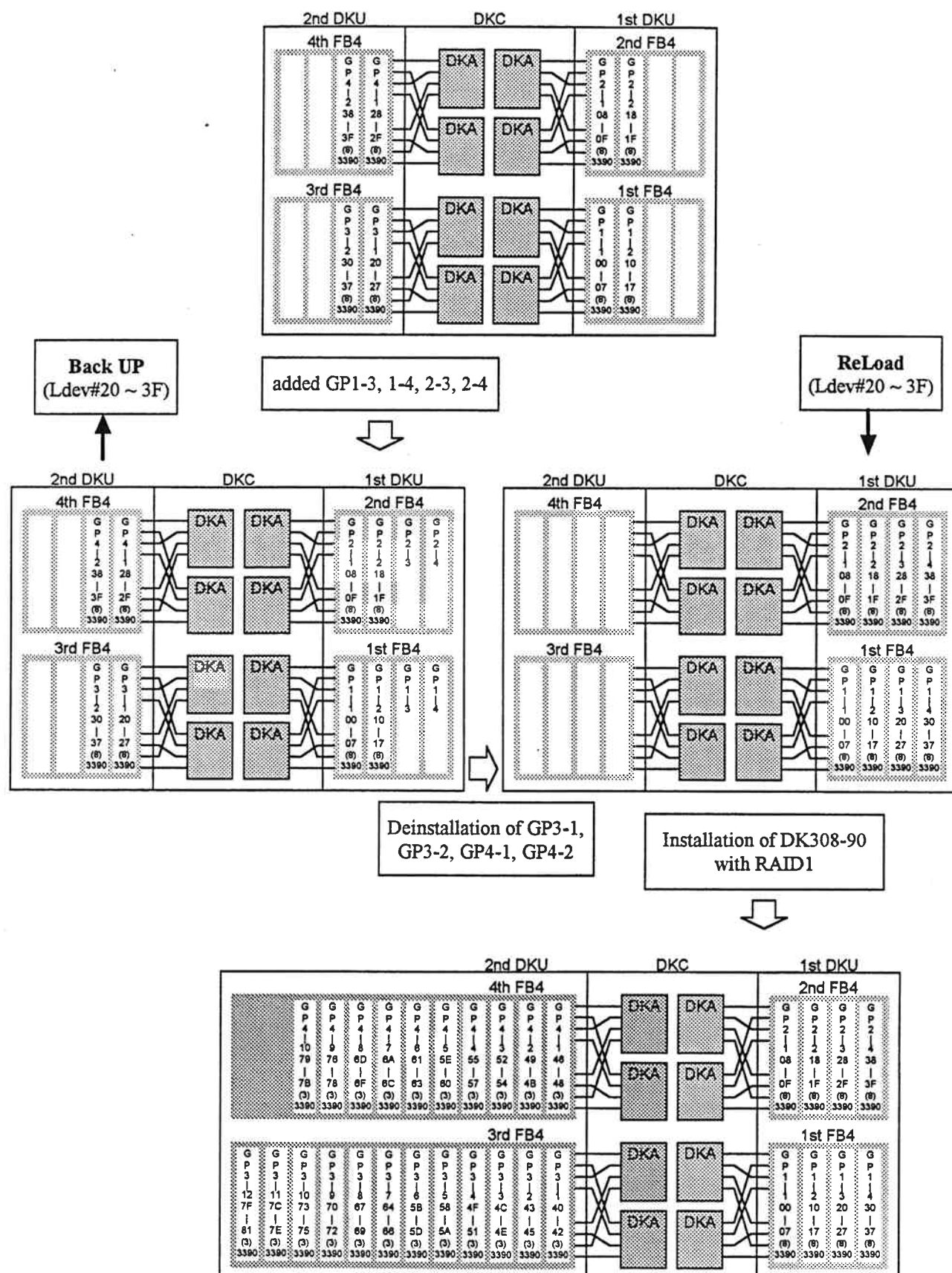


added 185GB with RAID1

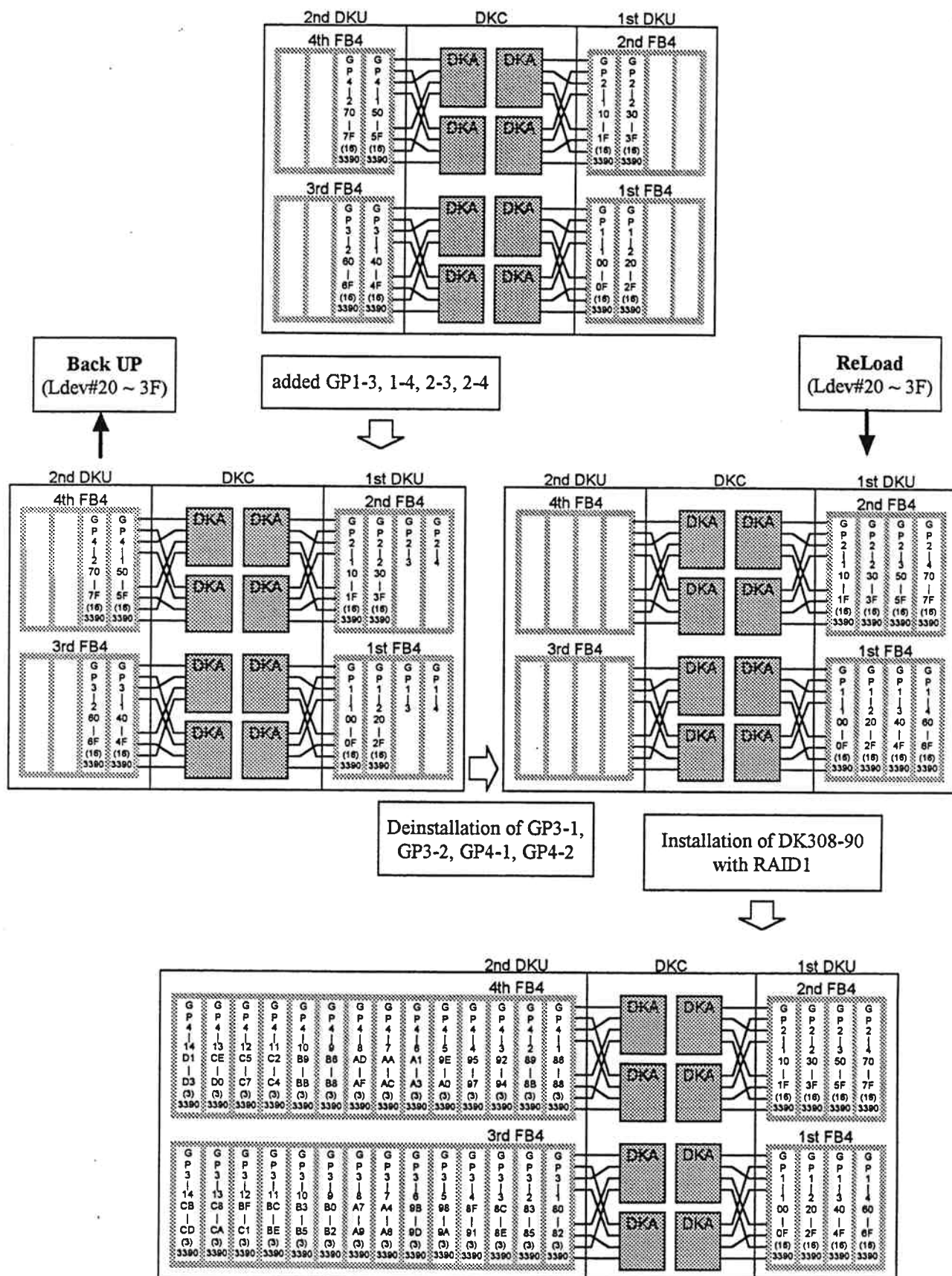


365GB System

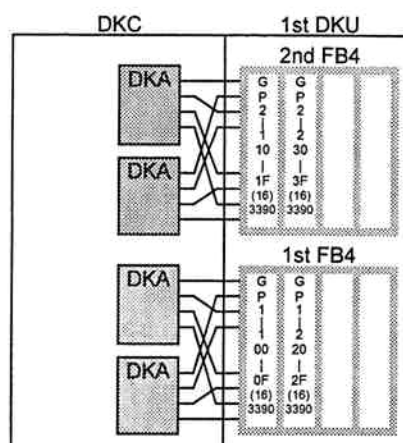
③ already installed 180GB configuration by DK306-45 or DK308-45 with RAID5



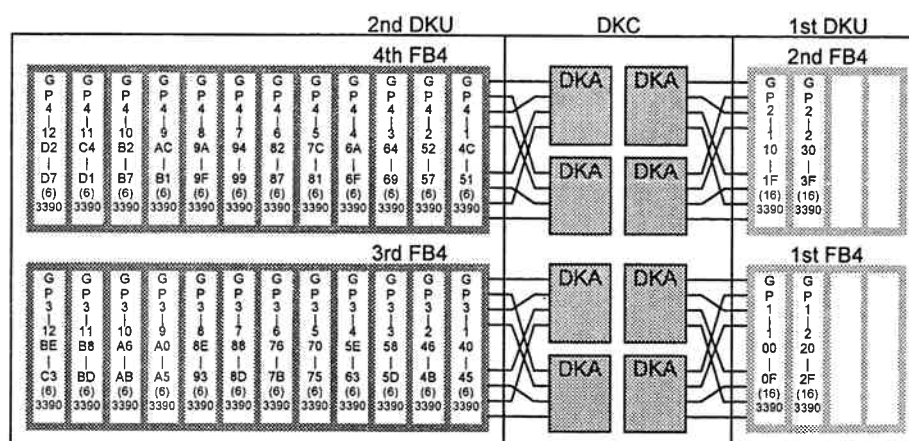
④ already installed 360GB configuration by DK308-90 with RAID5



⑤ already installed 180GB configuration by DK308-90 with RAID5



added 405GB with RAID1



585GB System

3.2 Installation and De-installation procedure

3.2.1 New Installation Procedure General Flow

When installing DKC210I/DKU205I subsystem for the first time, perform all hardware installation procedures before initiating the installation through SVP procedure.

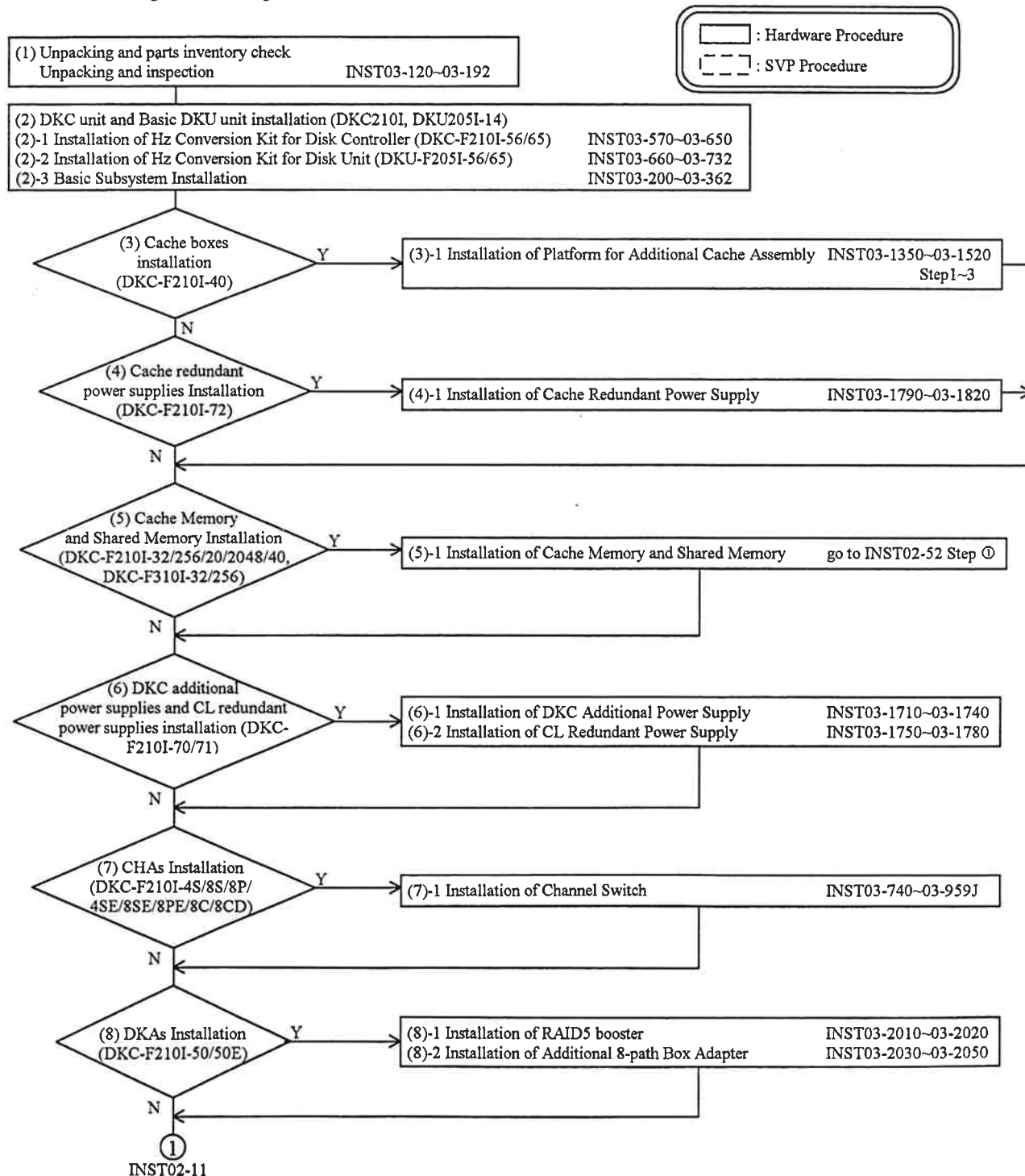
The general procedure for installing a new DKC210I/DKU205I subsystem is shown below.

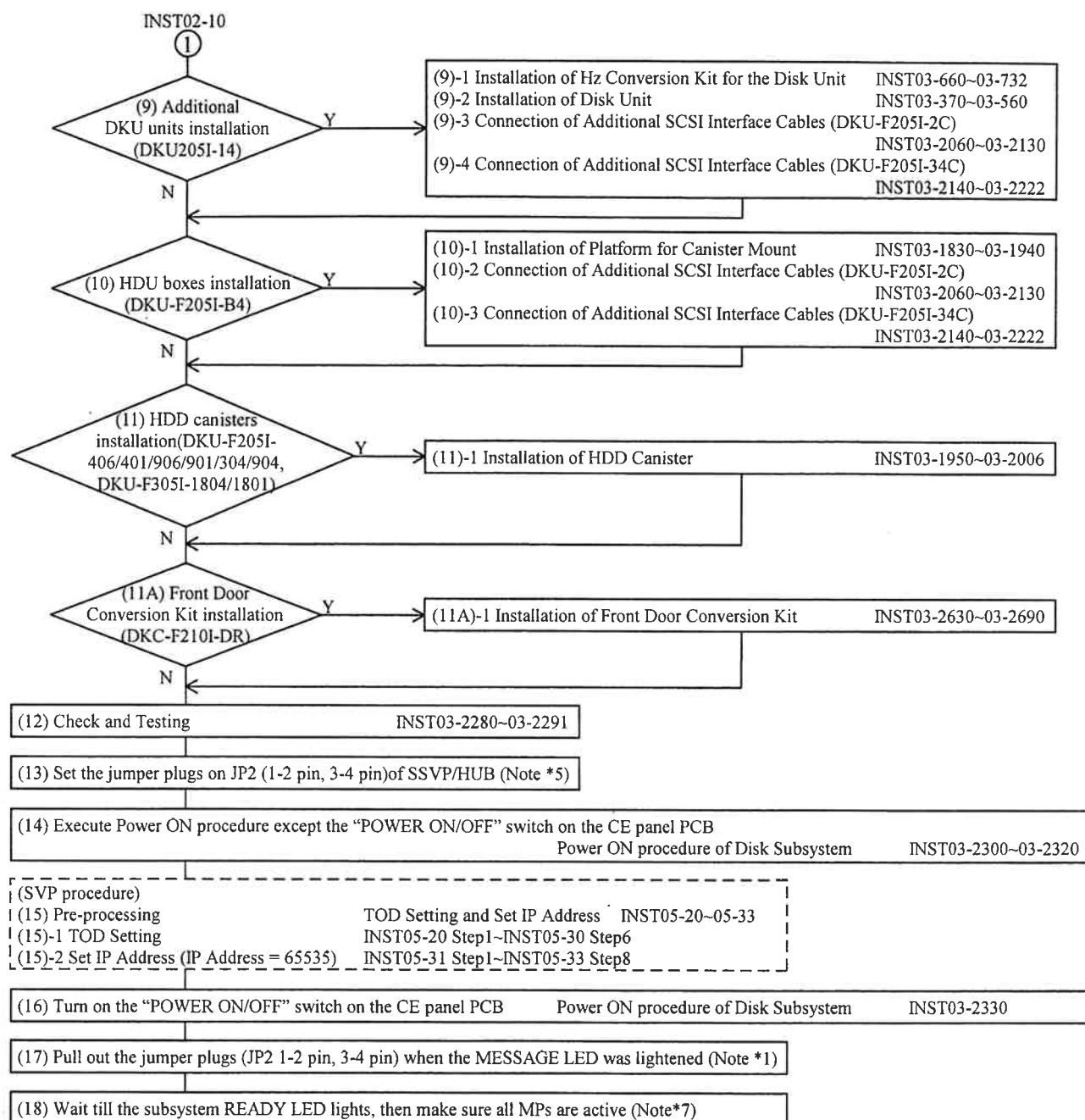
Each procedure is performed referring to the following flow chart.

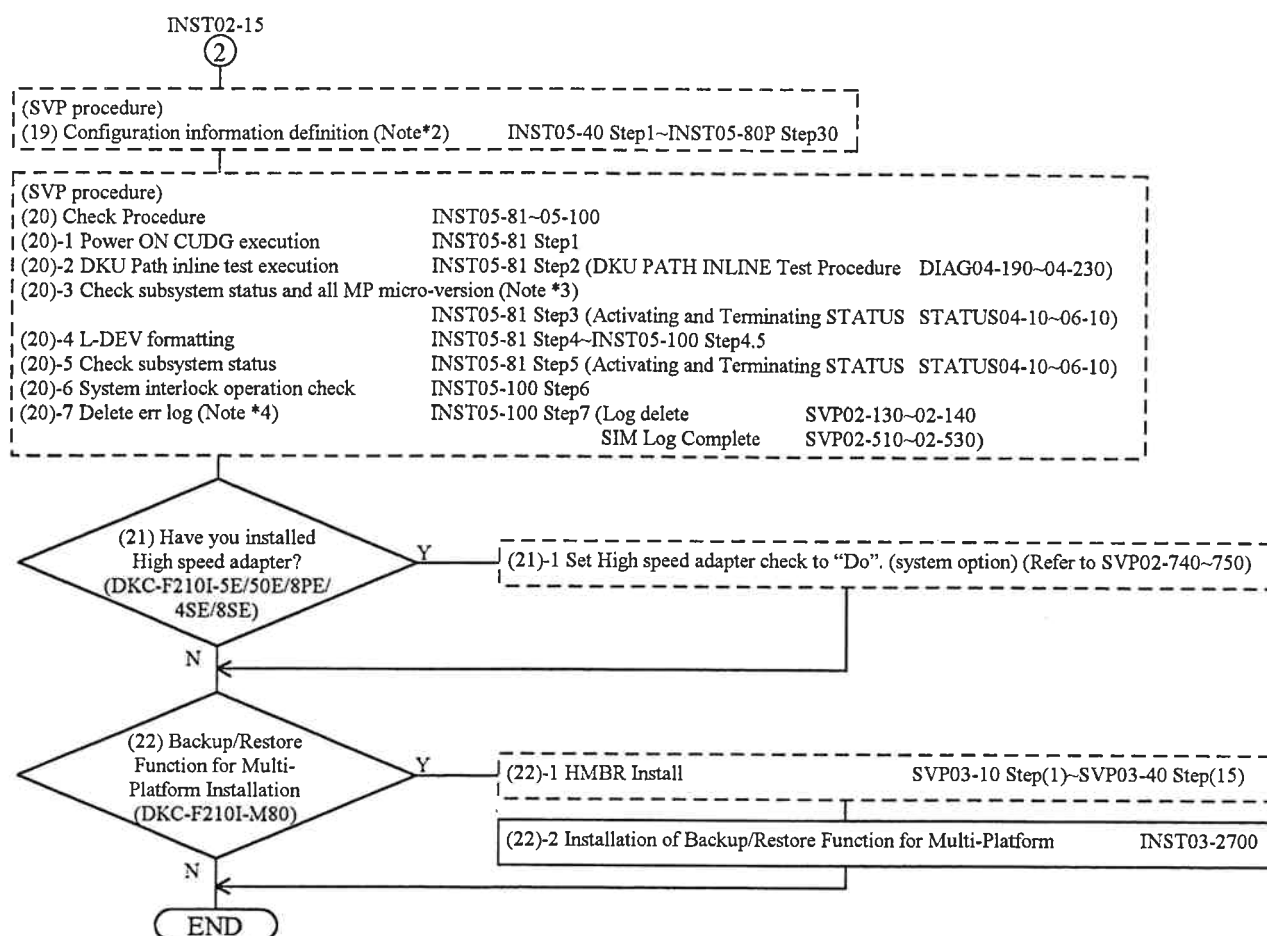
Skip the next procedure when the procedure is not necessary.

If any problems arise during the following procedure, isolate failure part with analysis of SIM log or SSB log.

If neither SIM log nor SSB log has been created, see TROUBLE SHOOTING SECTION.







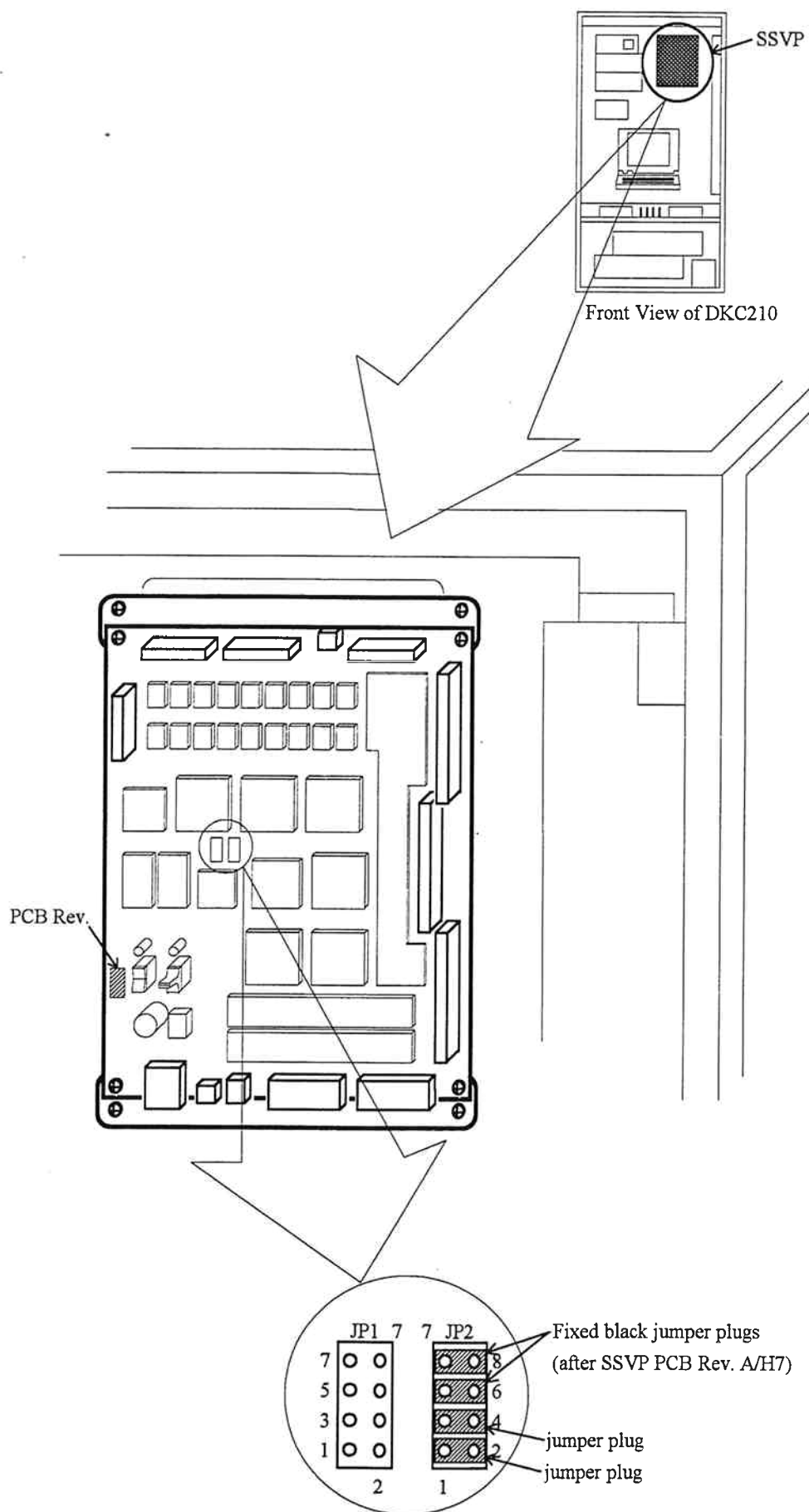
Note *1 : Pull out jumper plugs when the MESSAGE LED is lightened and while it's lighting. The MESSAGE LED is lightened for 3 minutes as soon as the Power on. The jumper plugs must not be set after it. If you forget or failed to pull out them while the MESSAGE LED is lighting, execute "Power Off Procedure". And then, re-execute from step (13).

Note *2 : At this time, specify the "DKC Serial Number" without fail. Refer to INST02-14 Note *6.

Note *3 : If the micro version is different from expected ones, execute the "Micro-Program Exchange". The procedure to exchange the Micro-Program, refer to MICRO-FC01-10~07-50.

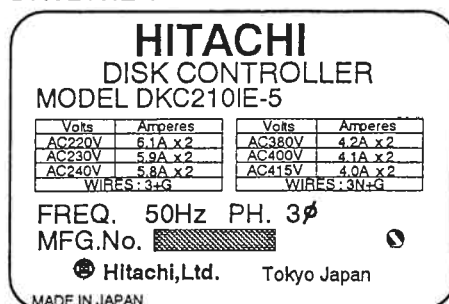
Note *4 : It's necessary to execute the procedure of "SIM Log Complete" before deleting SIM data.

Note *5

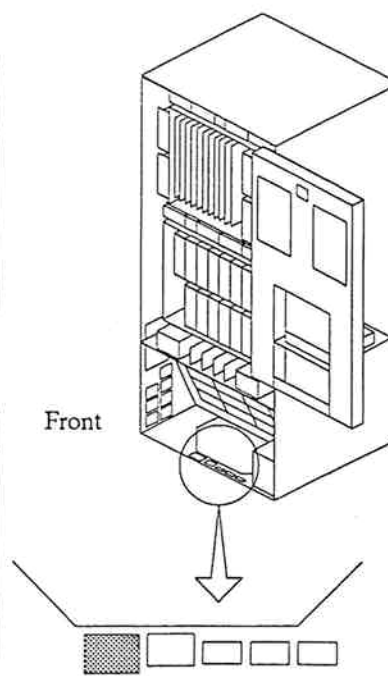


Note *6

• DKC210IE-5

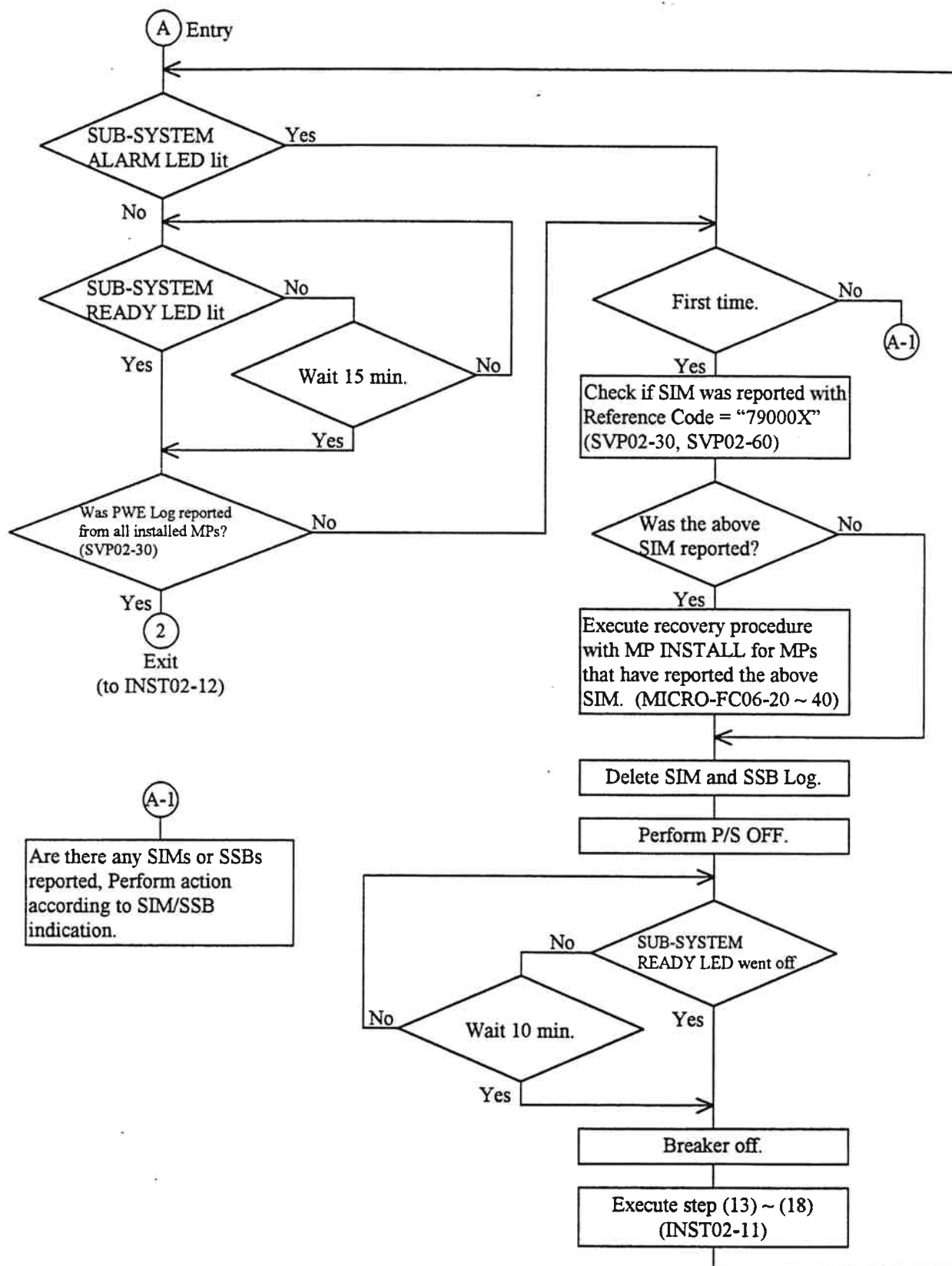


• DKC210IU-5



Note *7 : Refer to Note *8 for the procedure. If Power Event Log (SYSTEM ON) was reported from all installed MPs, go to step (19) in the procedure. For MPs that did not report Power Event Log, execute the procedure shown in Note *8.

Note *8



3.2.2 Non-Disruptive Installation General Flow

When performing non-disruptive installation, install hardware components one by one according to the following general flow. Follow the order of appearance in the general flow, because hardware components have the order of priority in the installation. Follow the guidelines on the screens that appear during SVP operation when installing the memory. (Since non-disruptive installation assumes that it can be carried out while the subsystem is running, hardware operations on the memory must be performed one side at a time according to the SVP guidelines so that the subsystem is not affected by the hardware operations.)

When installing 3rd and 4th frames, it is necessary to block the target DKA from the SVP before connecting the SCSI cables.

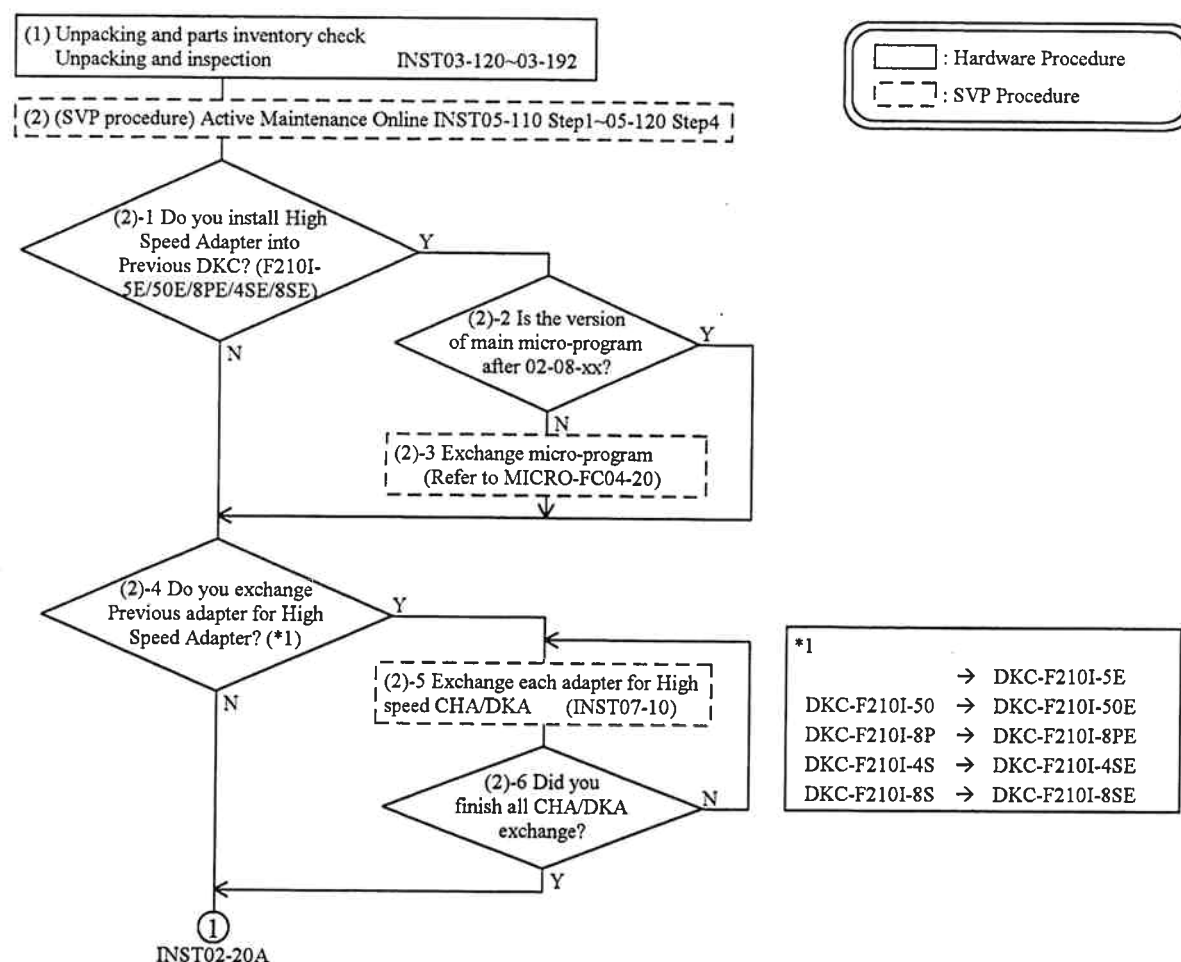
When the type of the CHAs is changed (e.g. from parallel to serial channel), de-install the old CHAs temporarily before installing new CHAs.

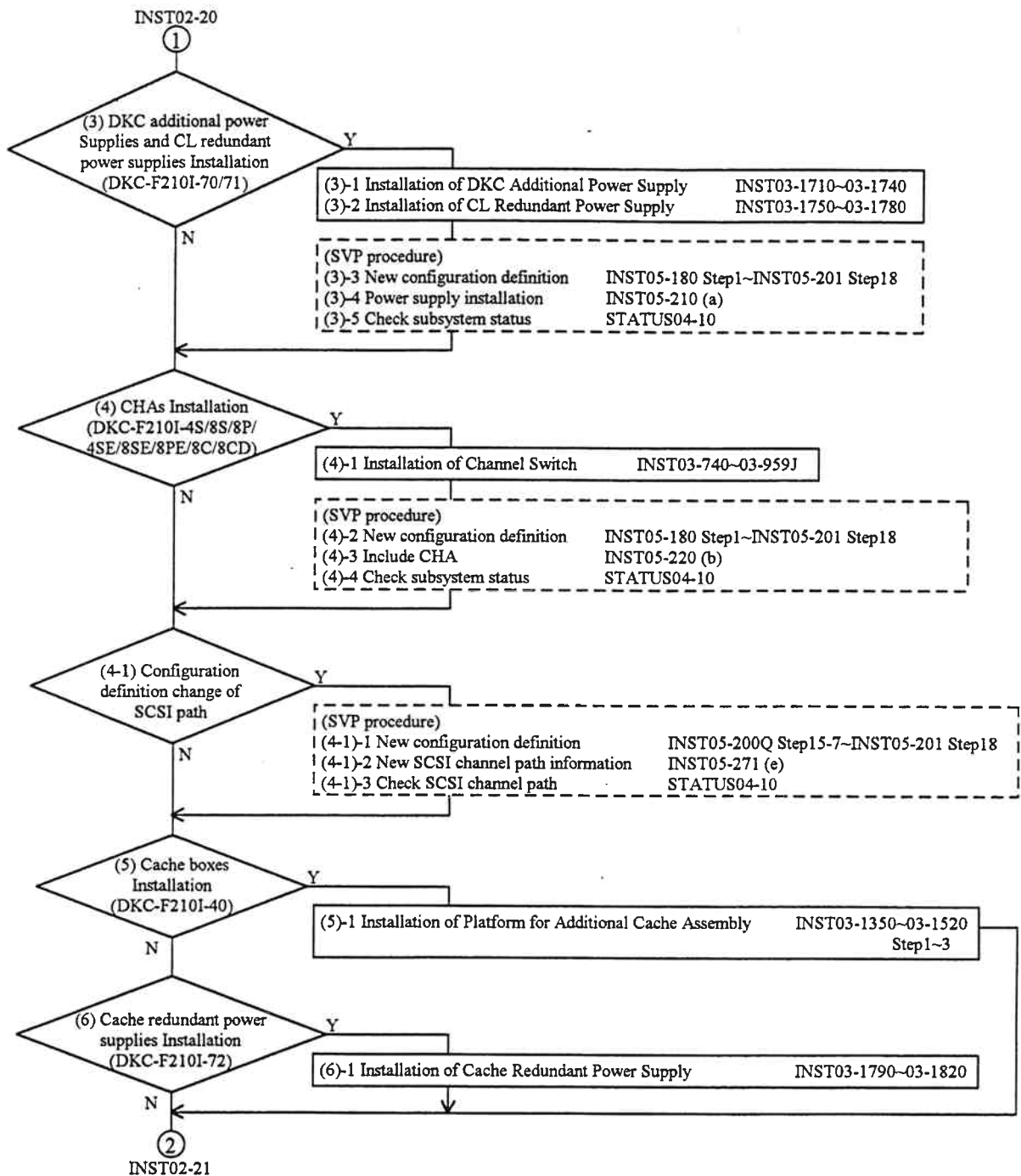
When adding a new HDD Box (FB4) to the first or second DKU or both, perform DKA upgrade procedure before proceeding with HDD upgrade procedure.

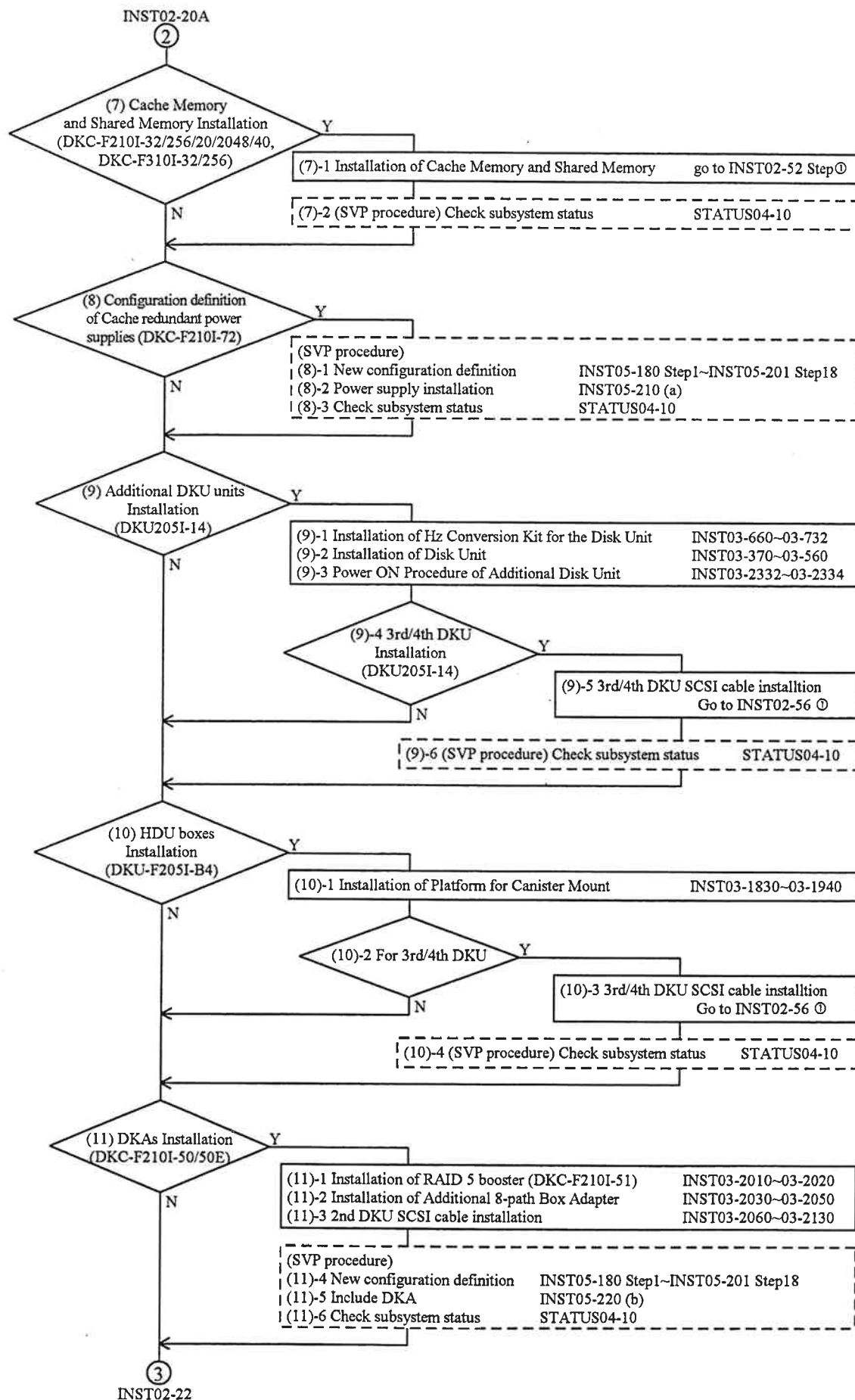
If problems occur during the following procedure, go to INST02-60

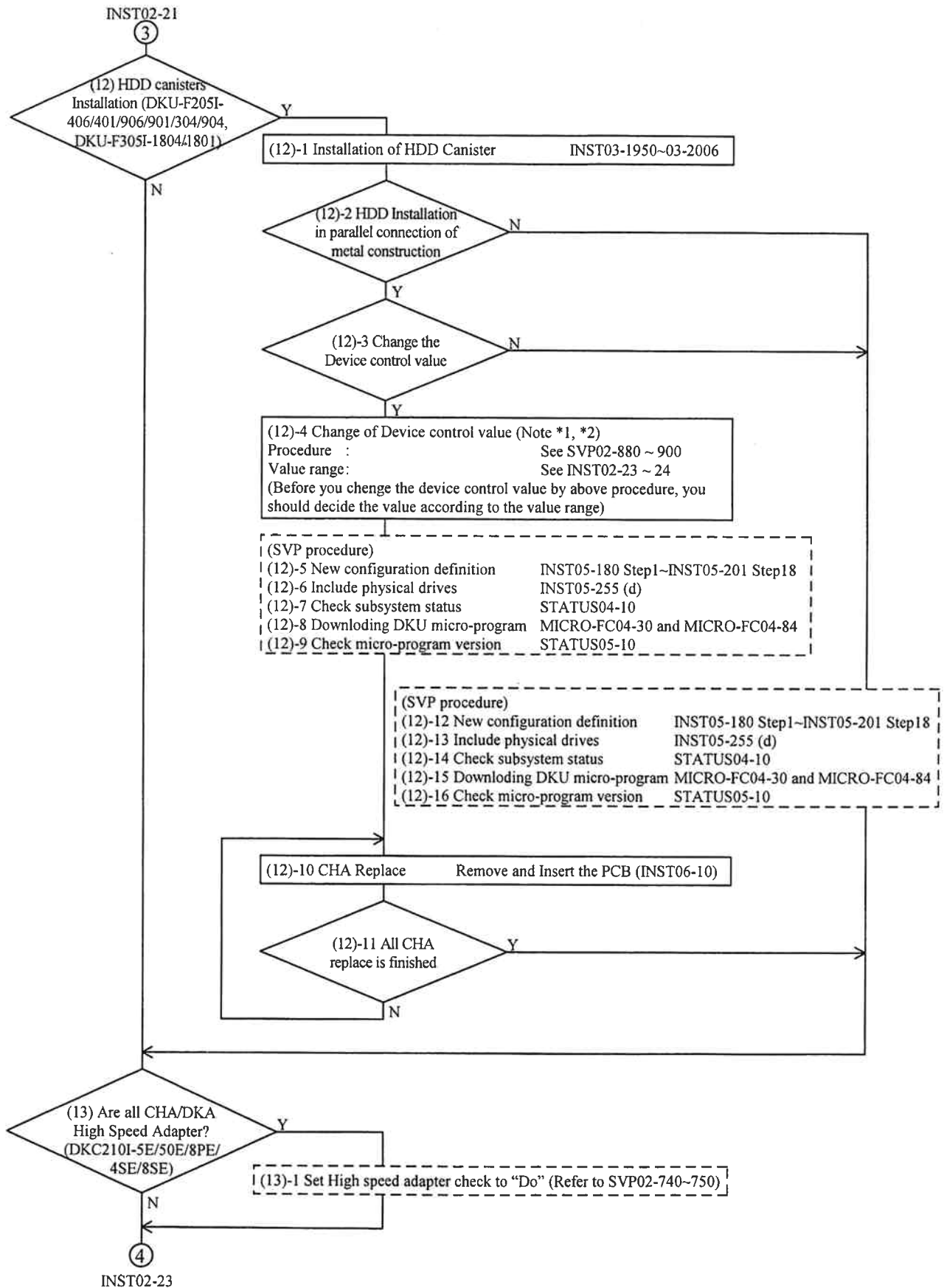
When a message other than a record is displayed, refer to SVPMSG section.

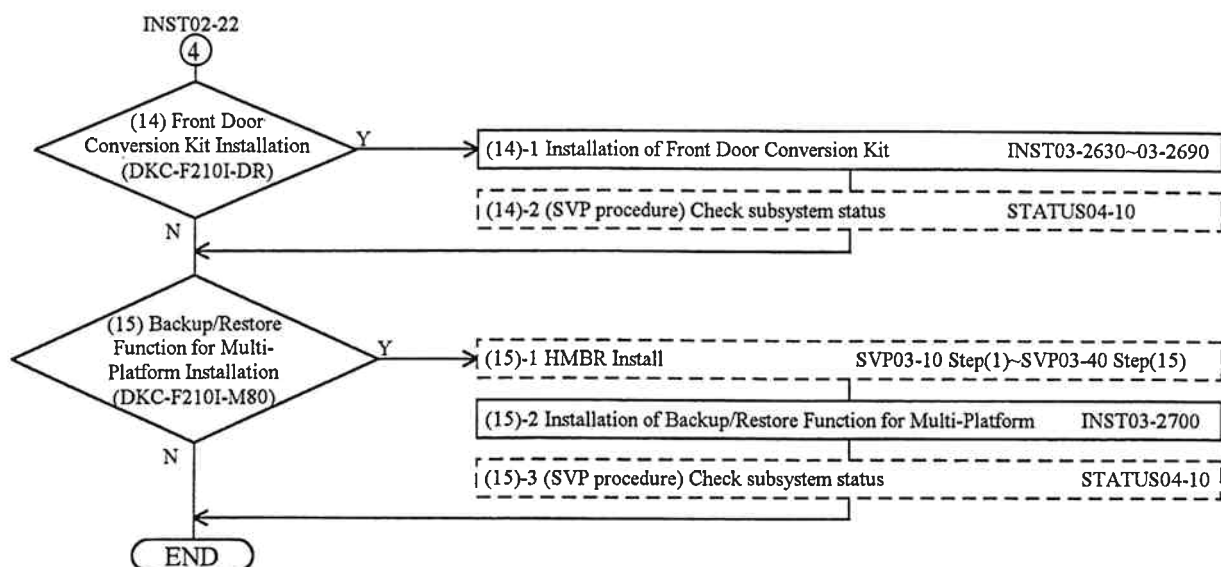
When changing configuration definition of SCSI path, it is necessary to stop concerned SCSI channel path before proceeding with configuration definition change procedure.





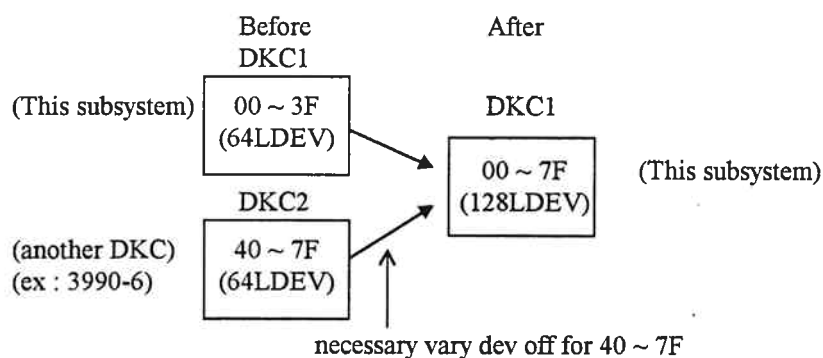






Note *1 : Preparation for changing Device control value in HDD installation

EXAMPLE : In the case of extension by HDD installation



Note *2 Available range of HDD installation

32LDEV control → 64LDEV control

	LDEVNO.	0 ~ 31	32 ~ 63	64 ~ 95	96 ~ 127	128 ~ 159	160 ~ 191	192 ~ 223	224 ~ 255
case 1	before	◀.....▶							
	after	◀.....▶							
case 2	before			◀.....▶					
	after			◀.....▶					
case 3	before					◀.....▶			
	after					◀.....▶			
case 4	before							◀.....▶	
	after							◀.....▶	

32LDEV control → 128LDEV control

	LDEVNO.	0 ~ 31	32 ~ 63	64 ~ 95	96 ~ 127	128 ~ 159	160 ~ 191	192 ~ 223	224 ~ 255
case 5	before	◀.....▶							
	after	◀.....▶							
case 6	before					◀.....▶			
	after					◀.....▶			

32LDEV control → 256LDEV control

	LDEVNO.	0 ~ 31	32 ~ 63	64 ~ 95	96 ~ 127	128 ~ 159	160 ~ 191	192 ~ 223	224 ~ 255
case 7	before	◀.....▶							
	after	◀.....▶							

64LDEV control → 128LDEV control

	LDEVNO.	0 ~ 31	32 ~ 63	64 ~ 95	96 ~ 127	128 ~ 159	160 ~ 191	192 ~ 223	224 ~ 255
case 8	before	◀.....▶							
	after	◀.....▶							
case 9	before					◀.....▶			
	after					◀.....▶			

64LDEV control → 256LDEV control

	LDEVNO.	0 ~ 31	32 ~ 63	64 ~ 95	96 ~ 127	128 ~ 159	160 ~ 191	192 ~ 223	224 ~ 255
case 10	before	◀.....▶							
	after	◀.....▶							

128LDEV control → 256LDEV control

	LDEVNO.	0 ~ 31	32 ~ 63	64 ~ 95	96 ~ 127	128 ~ 159	160 ~ 191	192 ~ 223	224 ~ 255
case 11	before	◀.....▶							
	after	◀.....▶							

3.2.3 Non-Disruptive De-installation General Flow

When performing non-disruptive de-installation, de-install hardware components one by one according to the following general flow. Follow the order of appearance in the general flow, because hardware components have the order of priority in the de-installation. Since non-disruptive hardware de-installation on the memory system can be carried out while the subsystem is running, hardware operations on the memory systems must be performed one side at a time according to the SVP guidelines so that the subsystem is not affected by the hardware operations.

When de-installing DKU-F205I-B4 options from the third and fourth frames, it is necessary to maintenance-block the counterpart DKA from the SVP before disconnecting the SCSI cables.

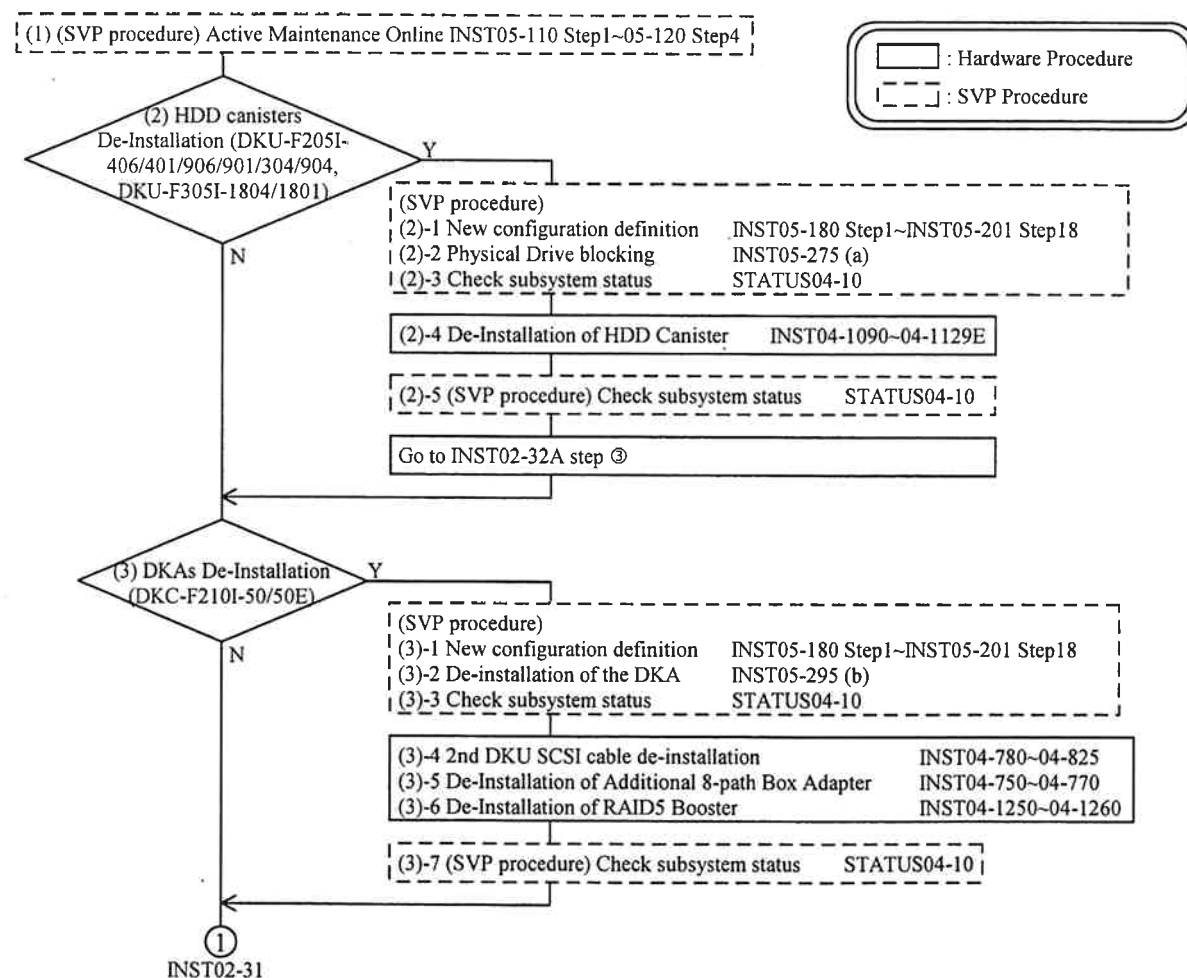
When de-installing DKU-F205I-B4 options from the first or second DKU or both, perform DKA de-installing procedure after proceeding with HDD de-installing procedure.

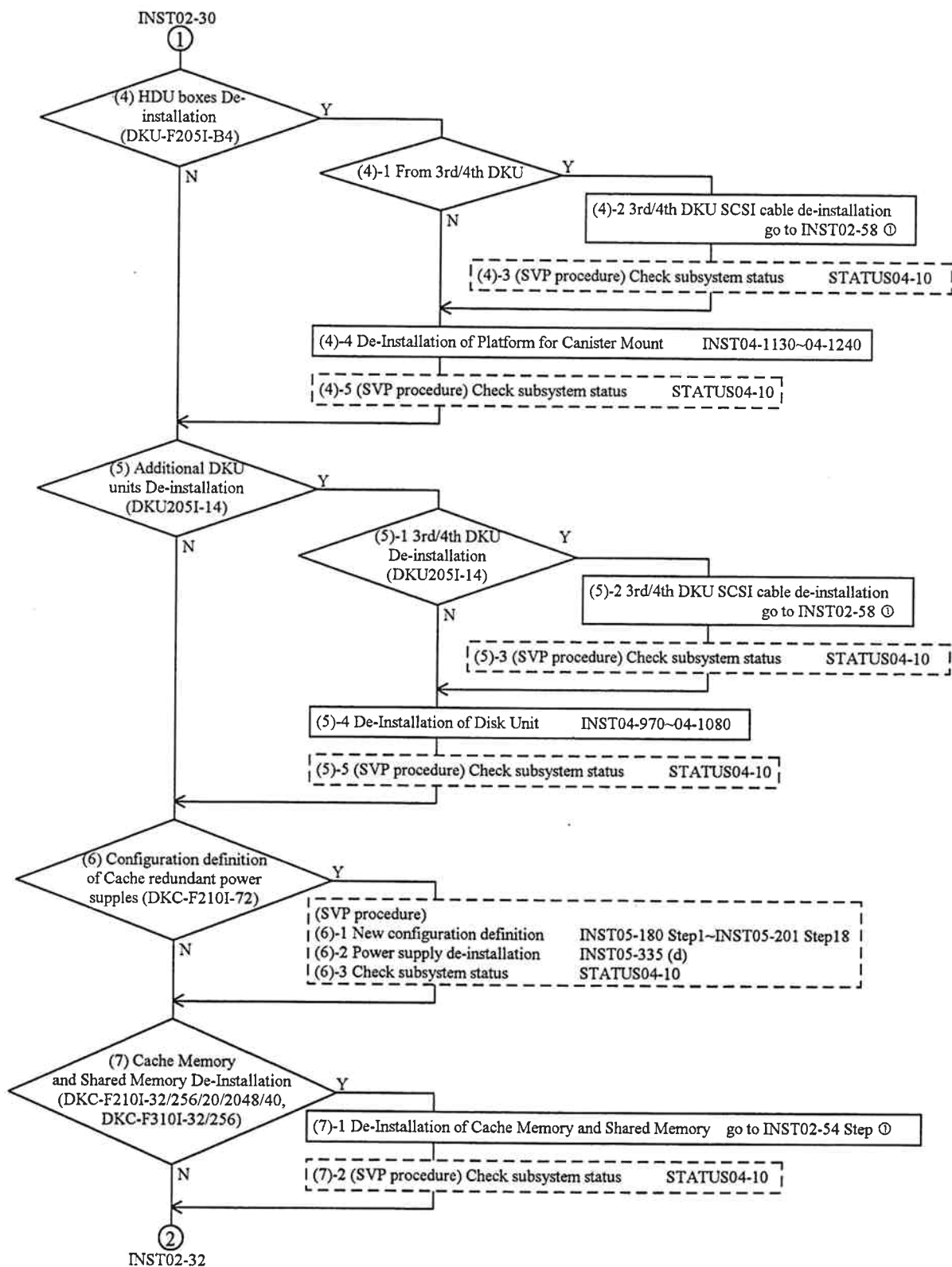
After finishing all procedures shown below, confirm the status of all de-installed parts show 'empty' and check normality of other parts by checking STATUS display.(See STATUS SECTION.)

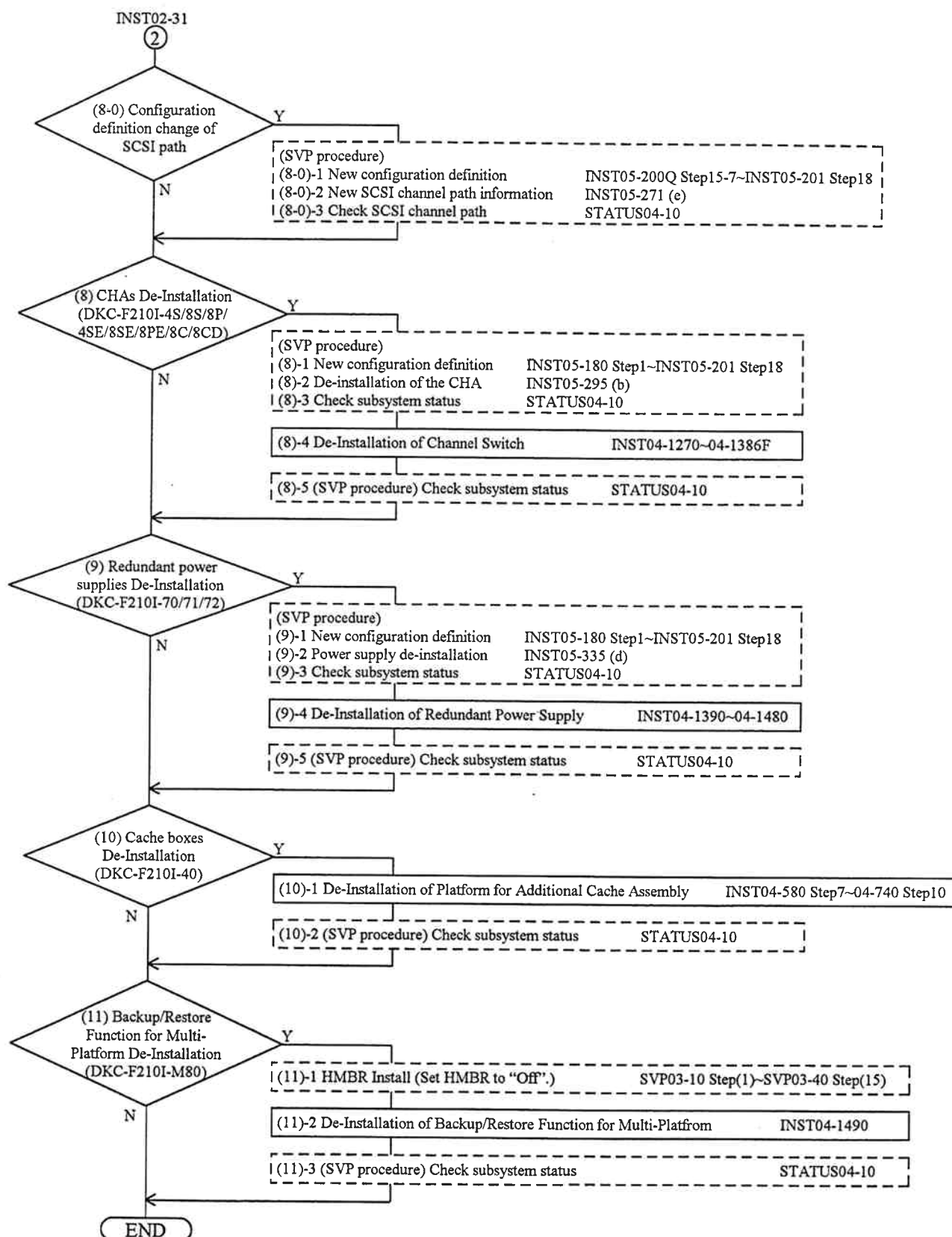
If problems occur during the following procedure, go to INST02-70.

When a message other than a record is displayed, refer to SVPMSG section.

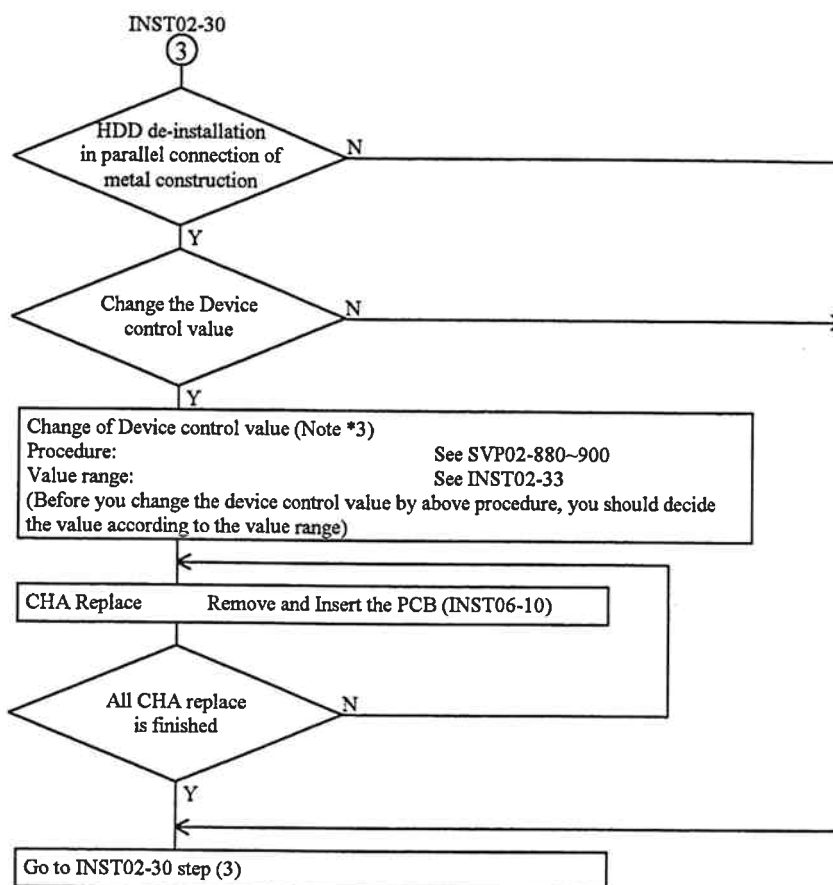
When de-installing SCSI channel adapter, HDD assigned to SCSI volumes, or configuration definition of SCSI path, it is necessary to stop concerned SCSI channel path before proceeding with de-installing procedure.







Note : If any trouble has occurred during following procedure, go to INST02-60.



Note *3 Available range of HDD de-installation

256LDEV control → 32LDEV control

	LDEVNO.	0 ~ 31	32 ~ 63	64 ~ 95	96 ~ 127	128 ~ 159	160 ~ 191	192 ~ 223	224 ~ 255
case 1	before	◀-----▶							
	after	◀-----▶							

256LDEV control → 64LDEV control

	LDEVNO.	0 ~ 31	32 ~ 63	64 ~ 95	96 ~ 127	128 ~ 159	160 ~ 191	192 ~ 223	224 ~ 255
case 2	before	◀-----▶							
	after	◀-----▶							

256LDEV control → 128LDEV control

	LDEVNO.	0 ~ 31	32 ~ 63	64 ~ 95	96 ~ 127	128 ~ 159	160 ~ 191	192 ~ 223	224 ~ 255
case 3	before	◀-----▶							
	after	◀-----▶							

128LDEV control → 32LDEV control

	LDEVNO.	0 ~ 31	32 ~ 63	64 ~ 95	96 ~ 127	128 ~ 159	160 ~ 191	192 ~ 223	224 ~ 255
case 4	before	◀-----▶							
	after	◀-----▶							
case 5	before					◀-----▶			
	after					◀-----▶			

128LDEV control → 64LDEV control

	LDEVNO.	0 ~ 31	32 ~ 63	64 ~ 95	96 ~ 127	128 ~ 159	160 ~ 191	192 ~ 223	224 ~ 255
case 6	before	◀-----▶							
	after	◀-----▶							
case 7	before					◀-----▶			
	after					◀-----▶			

64LDEV control → 32LDEV control

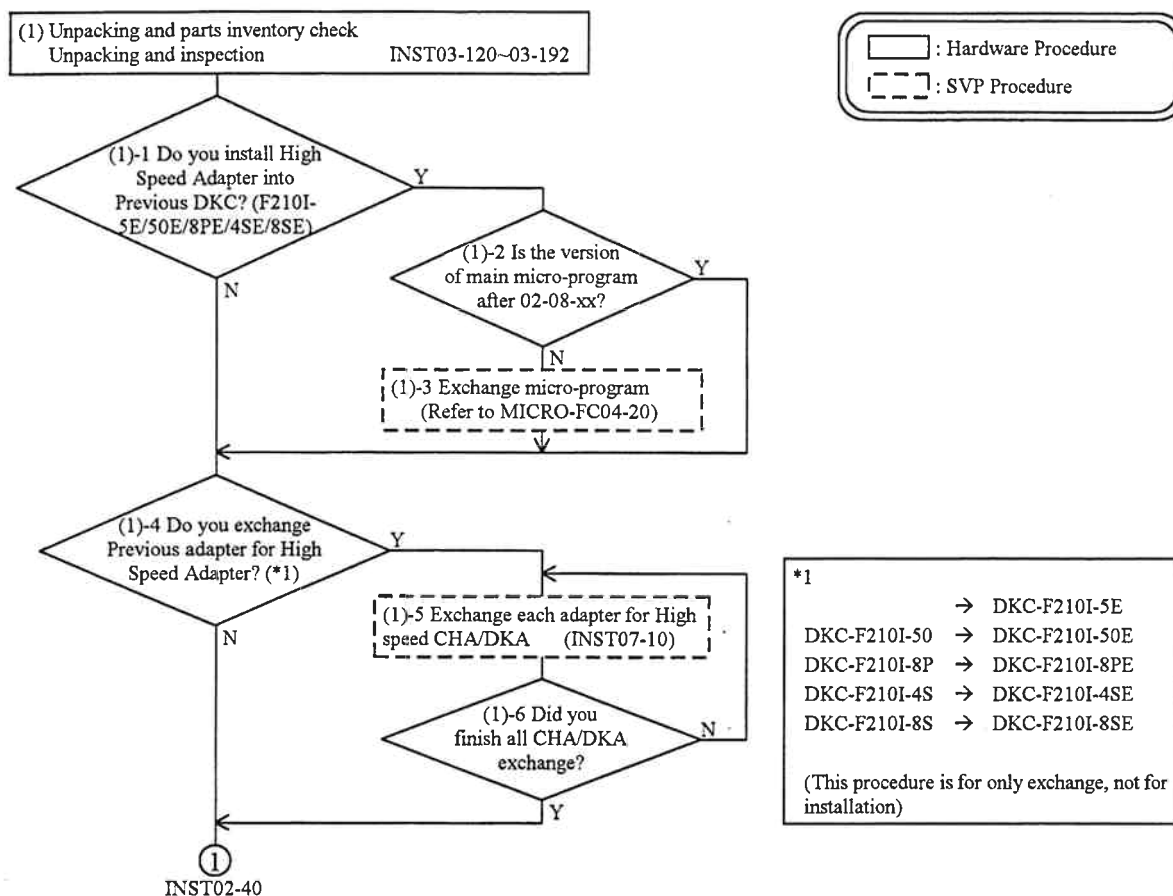
	LDEVNO.	0 ~ 31	32 ~ 63	64 ~ 95	96 ~ 127	128 ~ 159	160 ~ 191	192 ~ 223	224 ~ 255
case 8	before	◀-----▶							
	after	◀-----▶							
case 9	before			◀-----▶					
	after			◀-----▶					
case 10	before					◀-----▶			
	after					◀-----▶			
case 11	before							◀-----▶	
	after							◀-----▶	

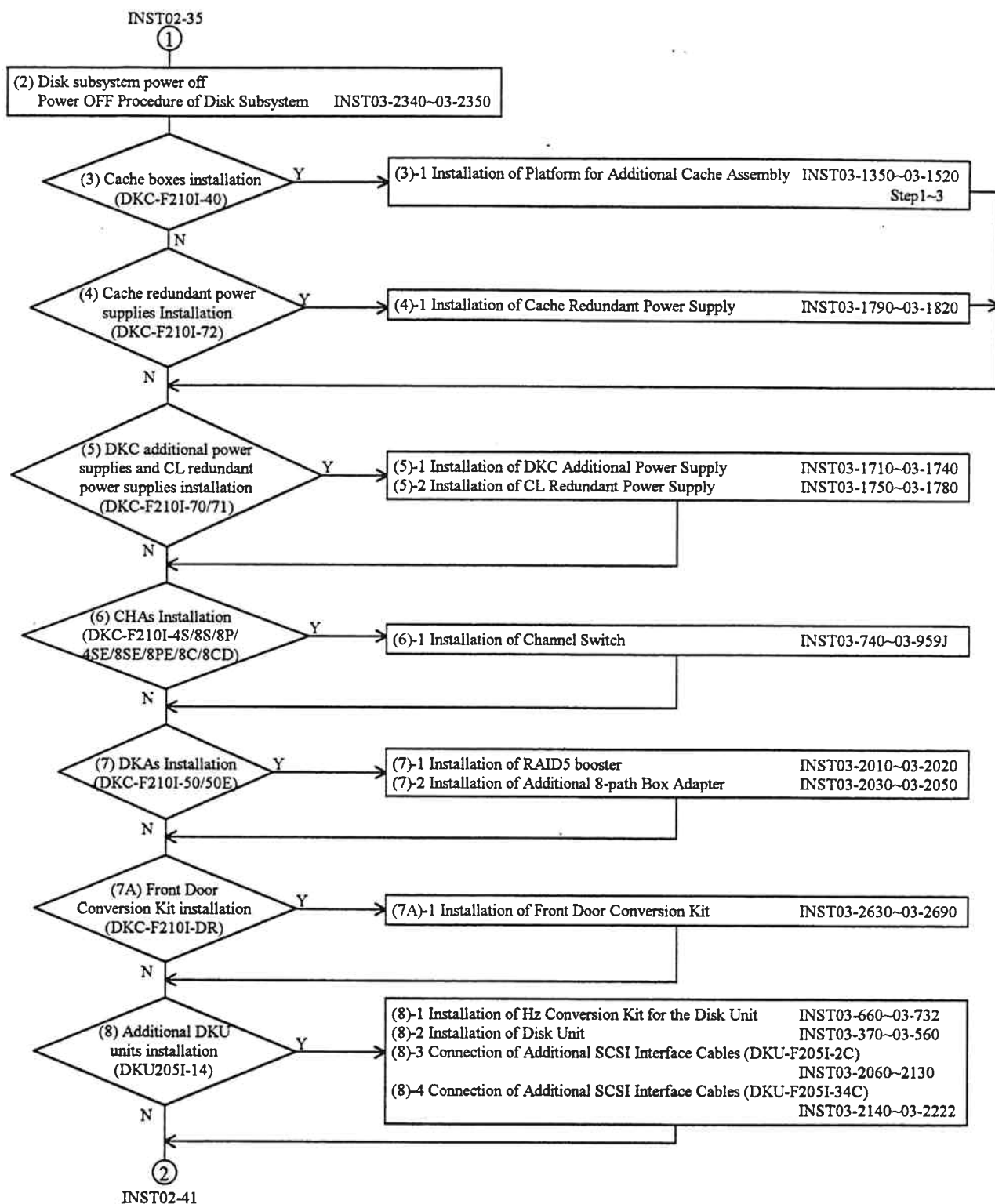
3.2.4 Disruptive Installation Procedure General Flow

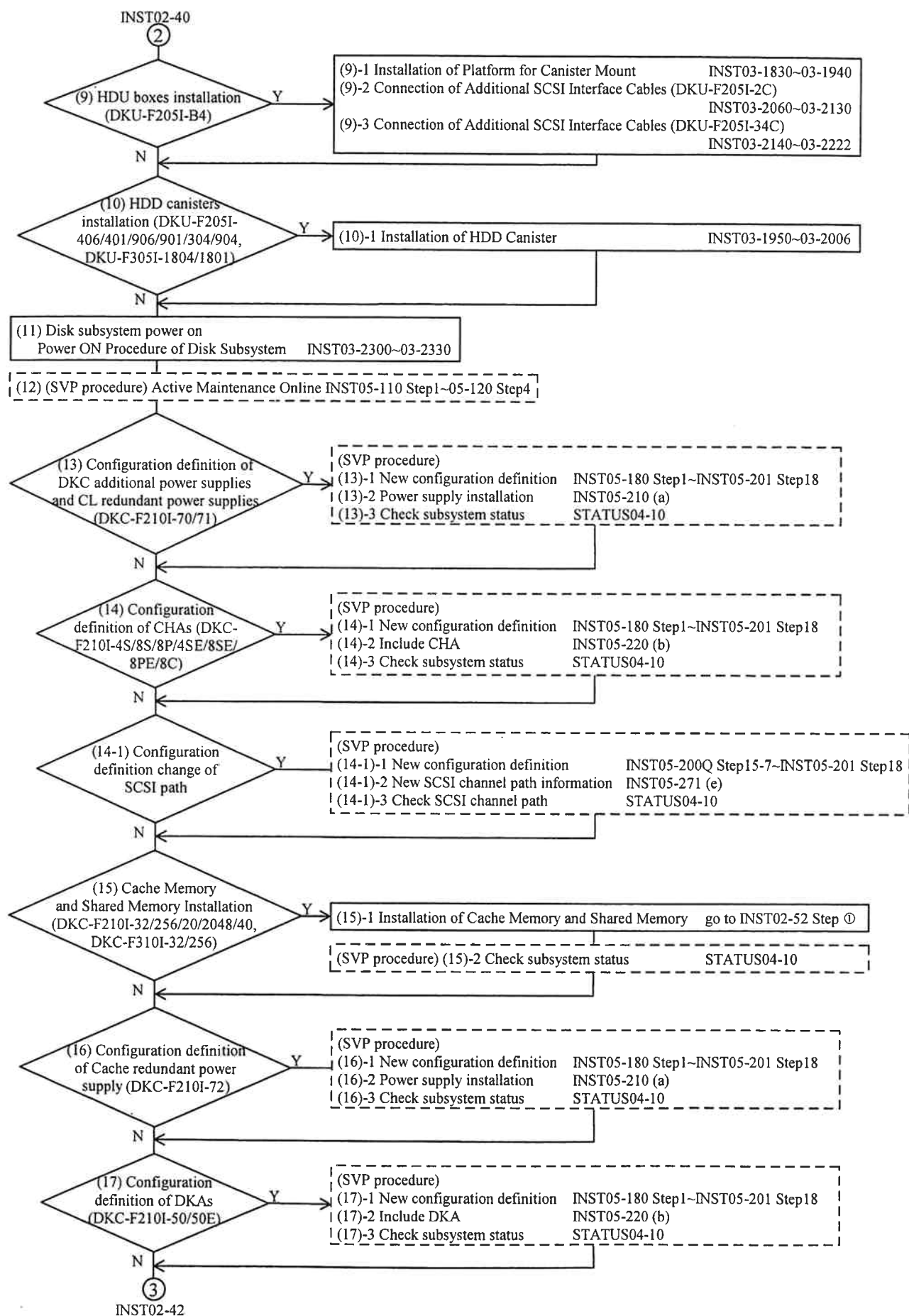
Disruptive means disconnecting the DKC subsystem from the HOST channels. Any addition to the subsystem is to be performed after powering off the subsystem, (Cache related option installation is same as Non-disruptive Installation) Any other hardware related work to the cache box, is to be performed while the subsystem is down. The disruptive installation general flow shown below, install hardware components one by one according to the following general flow. Follow the order of appearance in the general flow, because hardware components have the order of priority in the installation.

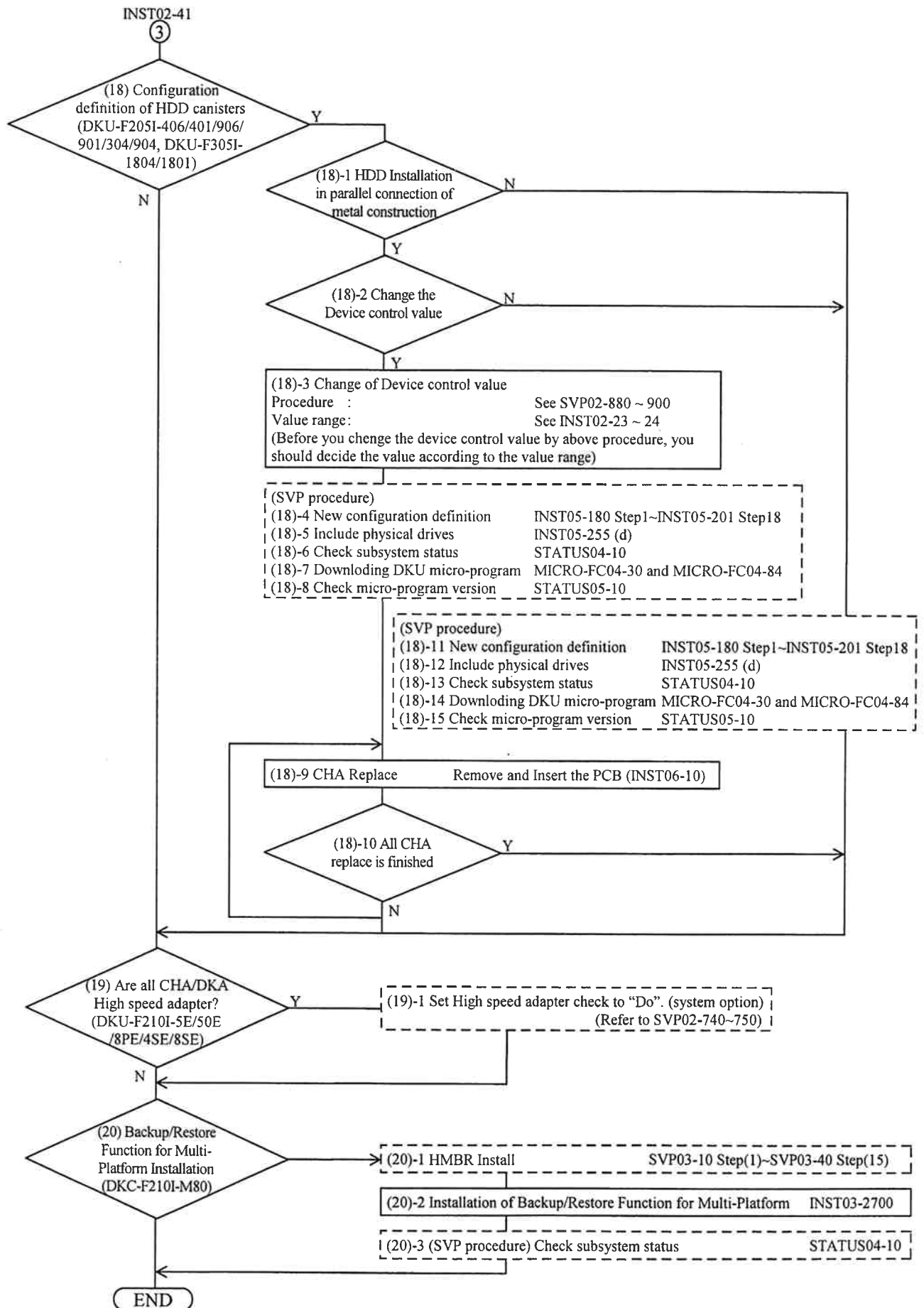
If any problems occur during the following procedure, go to INST02-60.

When a message other than a record is displayed, refer to SVPMSG section.









3.2.5 Disruptive De-installation Procedure General Flow

Unlike disruptive installation, de-installation of the subsystem in a disruptive state is exercised with the power to the subsystem on. (The purpose of this is to preclude possible operating errors, such as the de-installation of improper hardware resources which would occur if de-installation procedures were exercised according to the guidance given by the SVP.) However, hardware de-installation operations on frames, cache boxes, and HDD boxes must be performed with the subsystem power off for safety reasons.

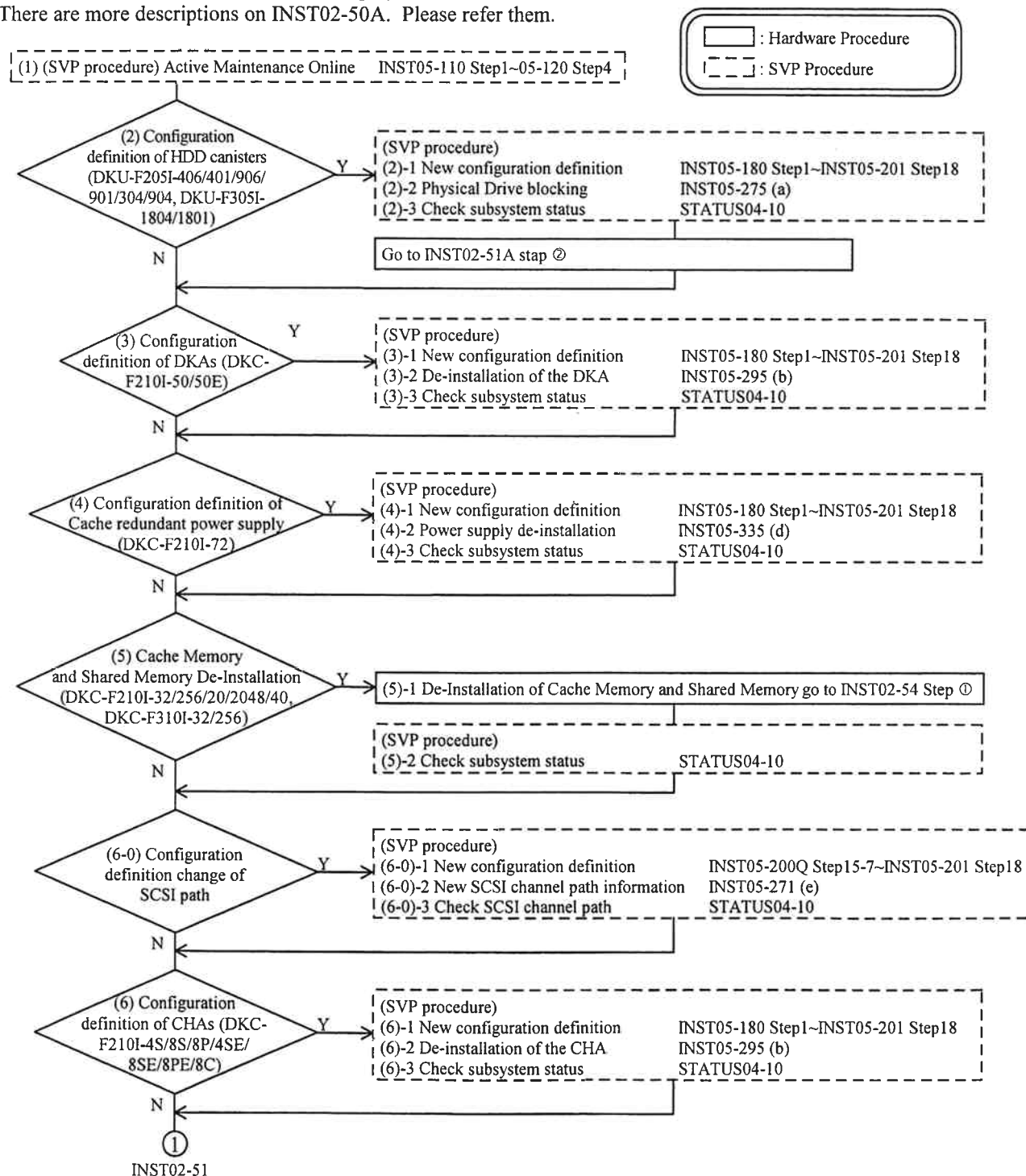
The disruptive de-installation general flow shown below, de-install hardware components one by one according to the following general flow. Follow the order of appearance in the general flow, because hardware components have the order of priority in the de-installation.

After completing one procedure shown below, confirm that the component locations are empty, Check the condition of the parts while referring to the STATUS display (See the STATUS SECTION).

If any problems occur during the following procedures, go to INST02-70.

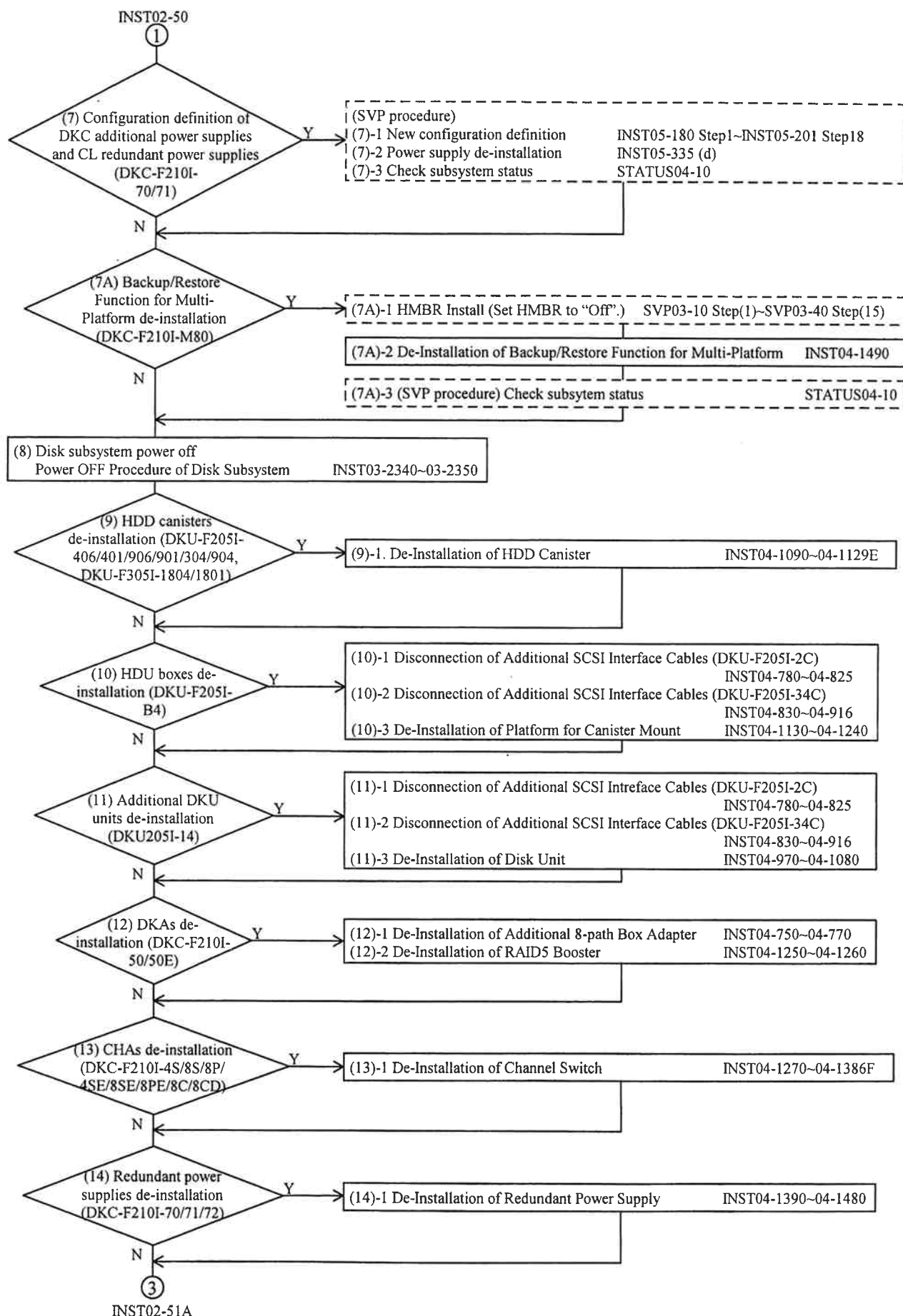
When a message other than a record is displayed, refer to SVPMSG section.

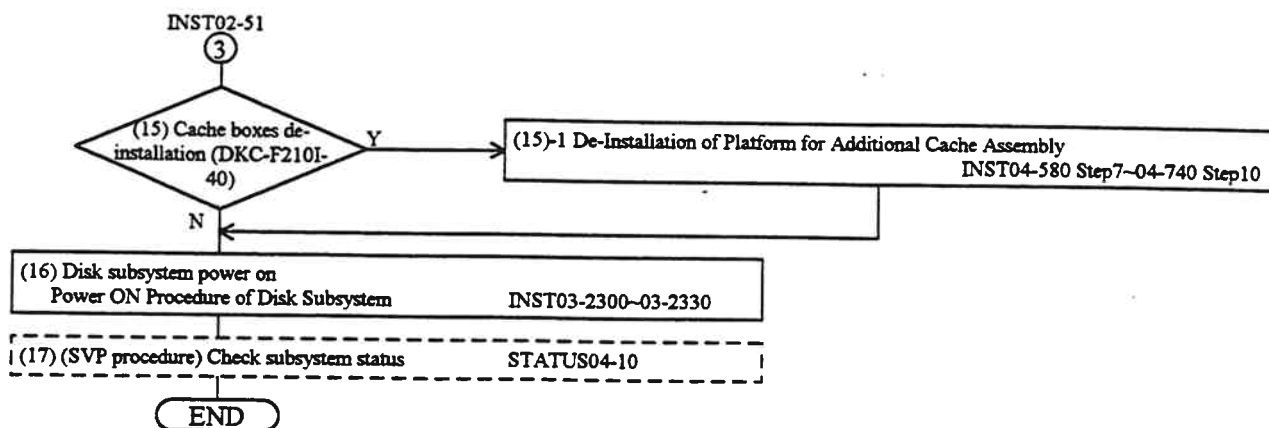
There are more descriptions on INST02-50A. Please refer them.



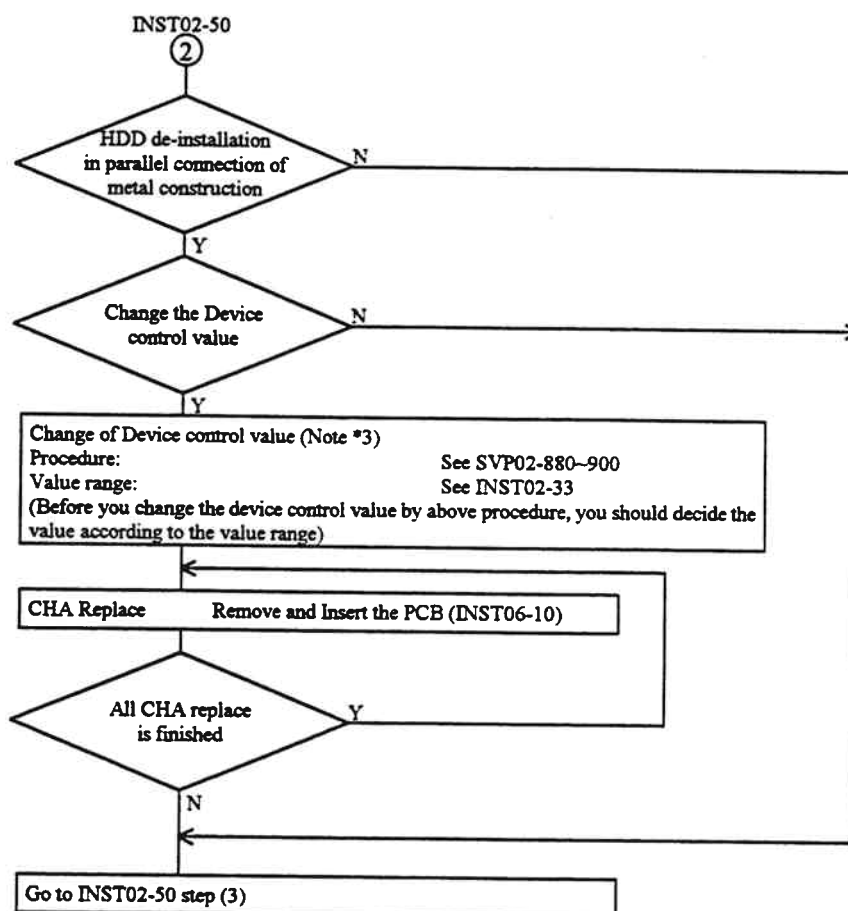
(continue from INST02-50 descriptions)

When de-installing SCSI channel adapter or HDD assigned to SCSI Volumes, it is necessary to stop concerned SCSI channel path before proceeding with de-installation procedure.

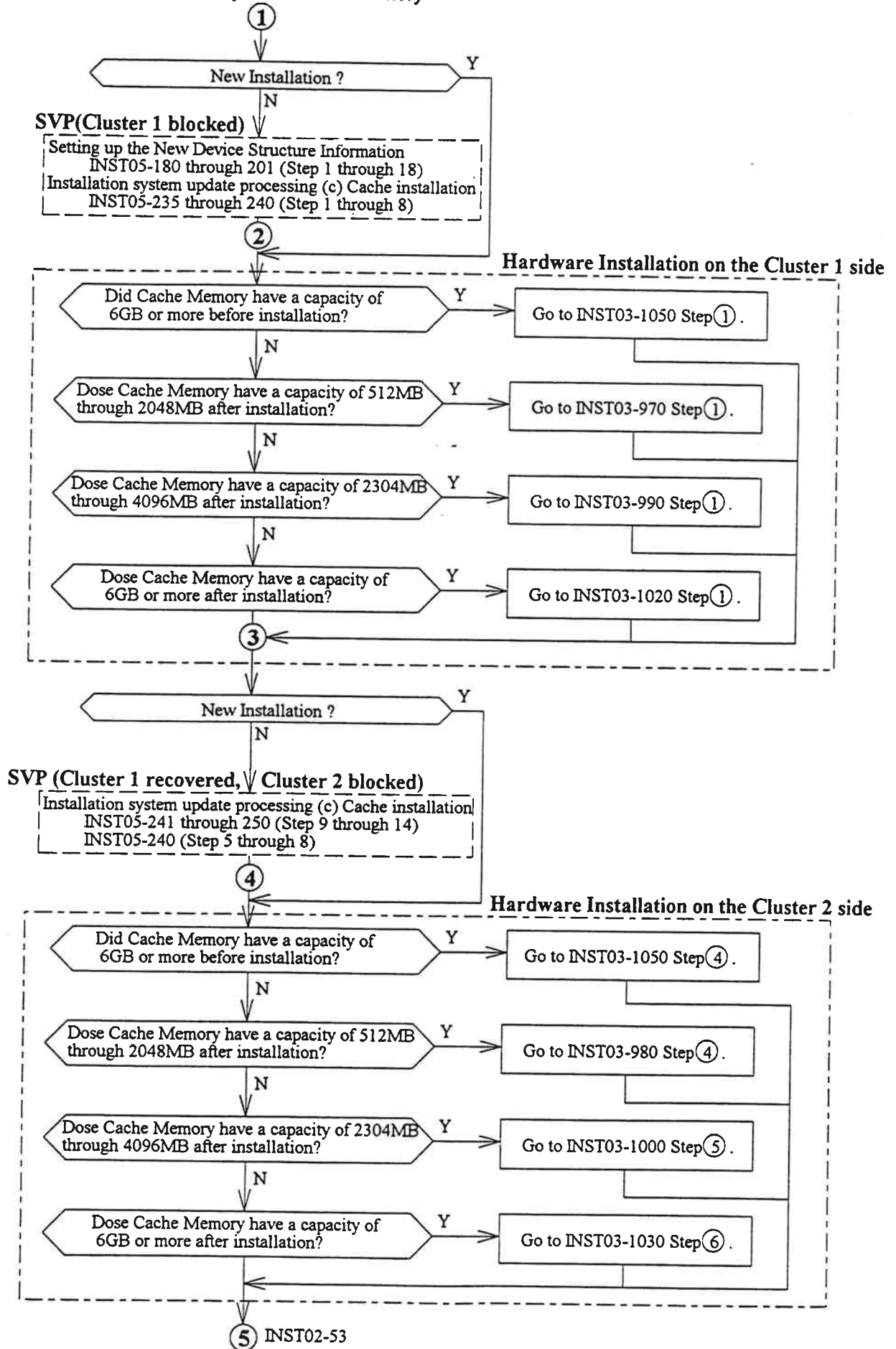


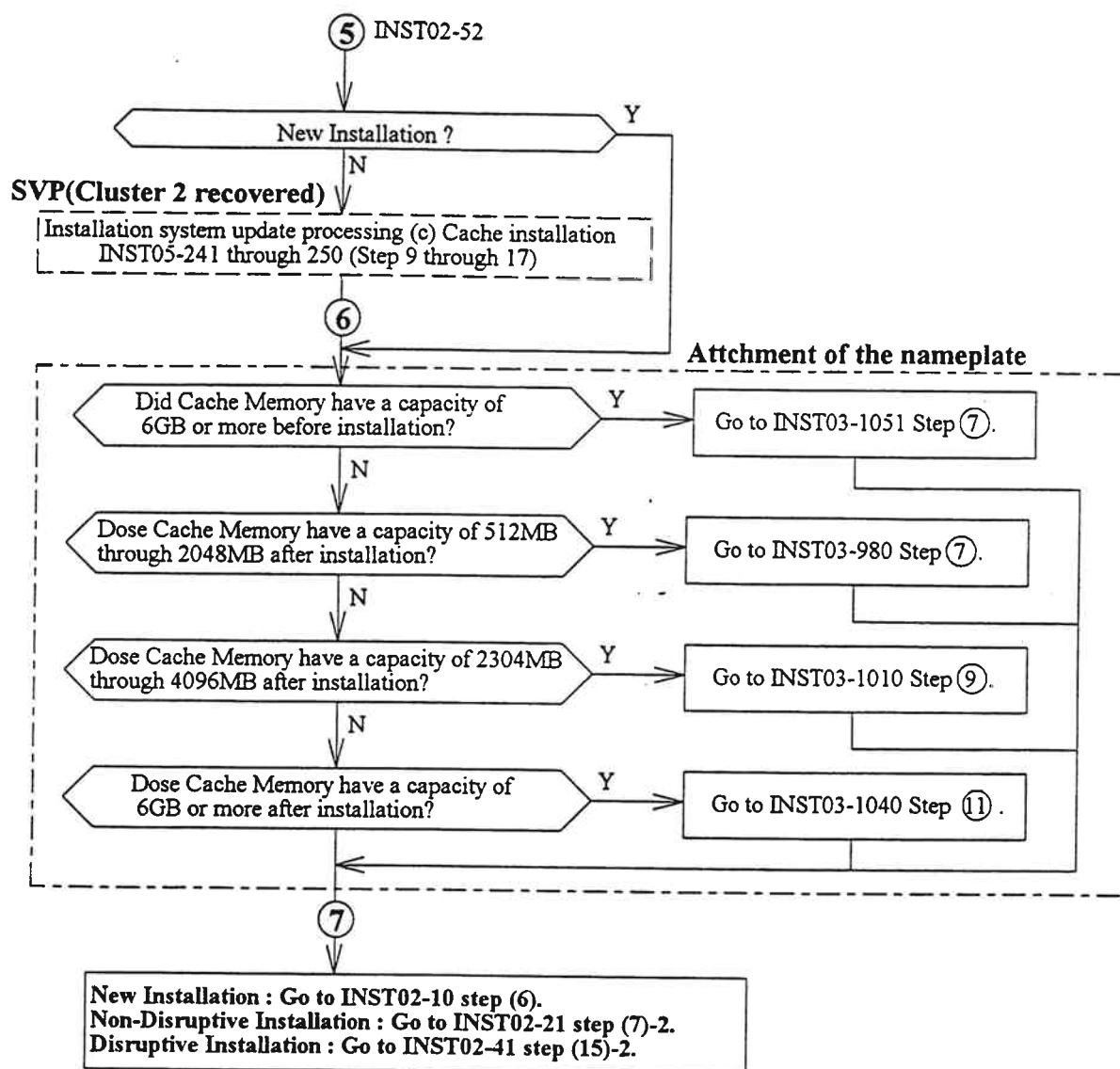


Note : If any trouble has occurred during following procedure, go to INST02-60.

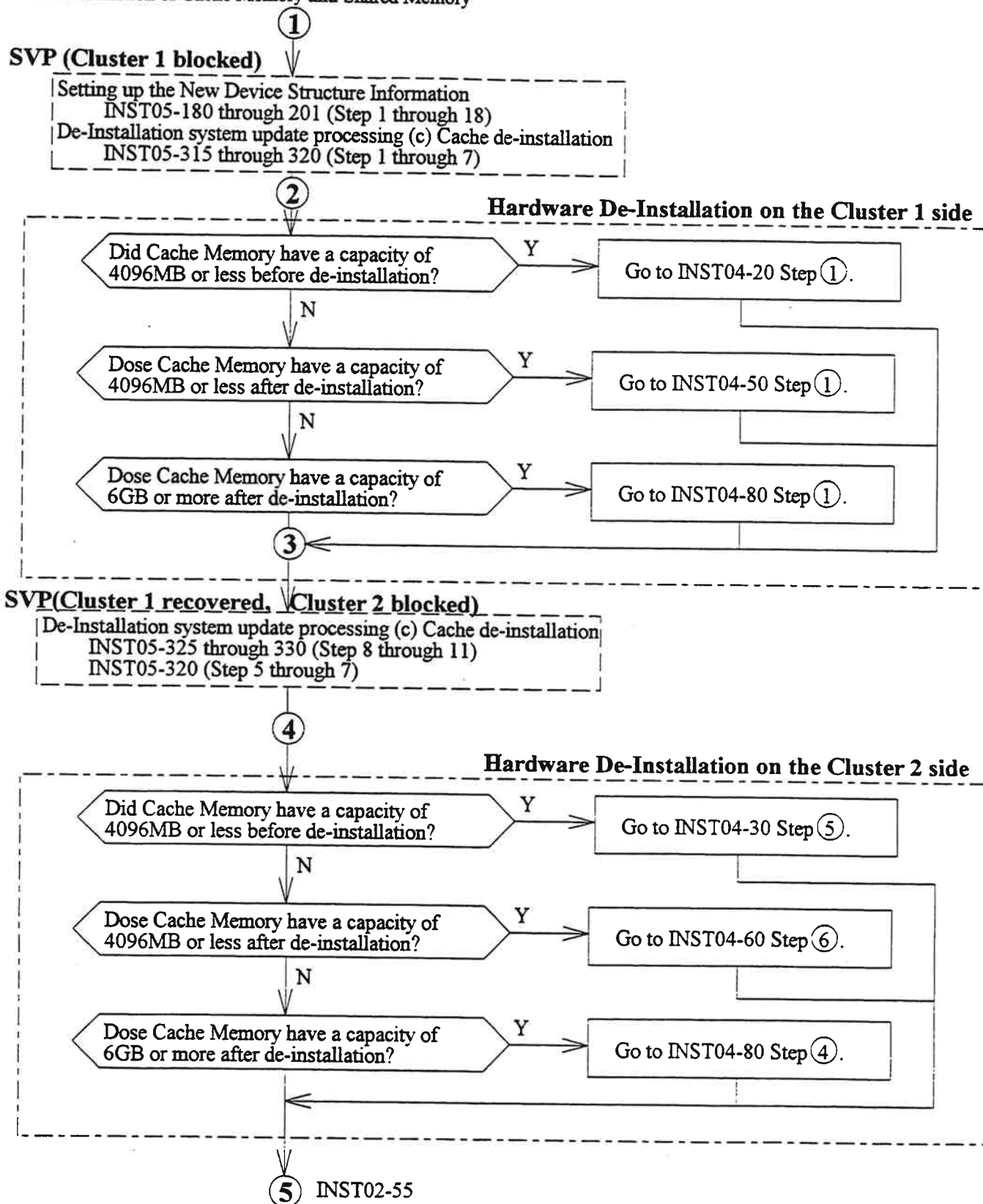


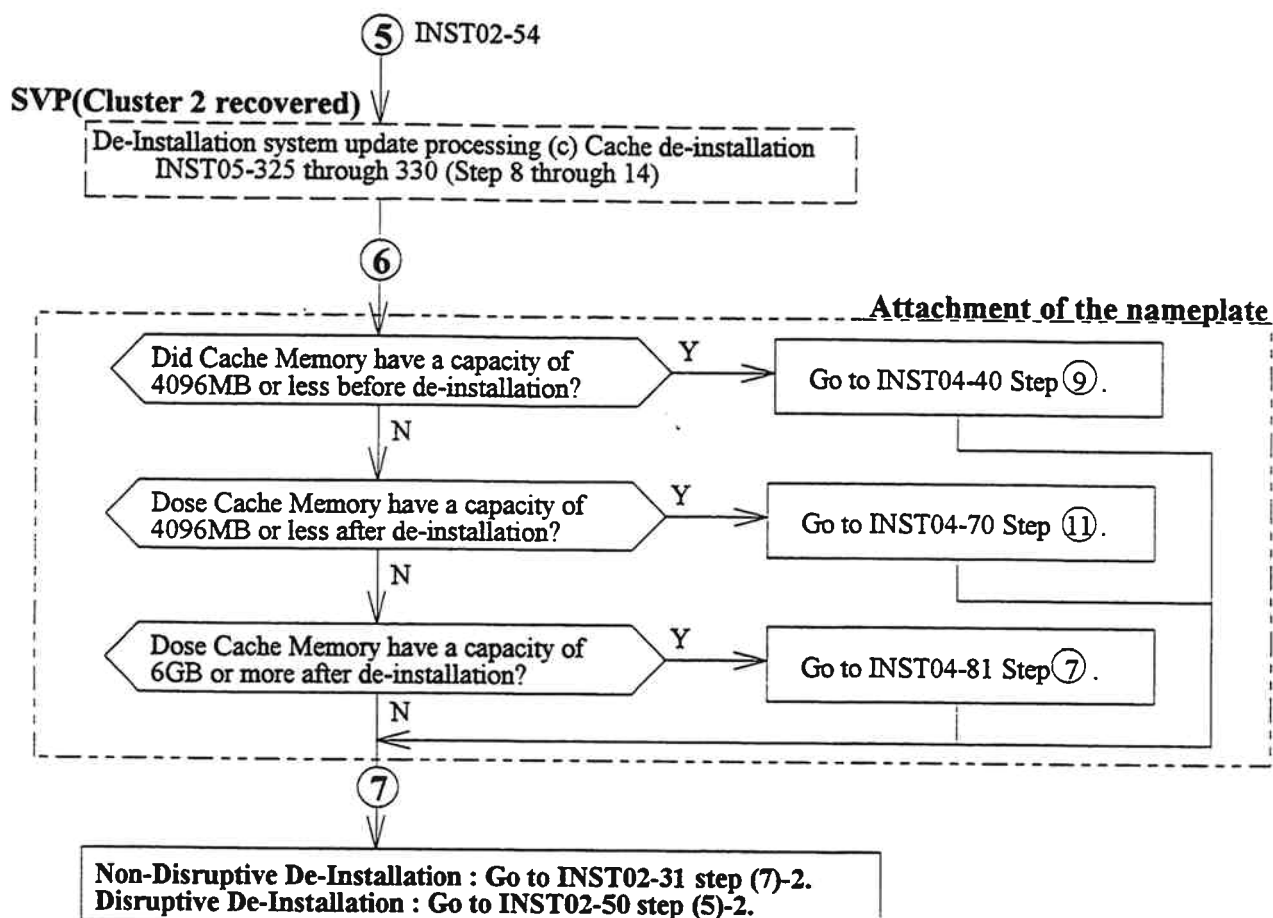
1. Installation of Cache Memory and Shared Memory



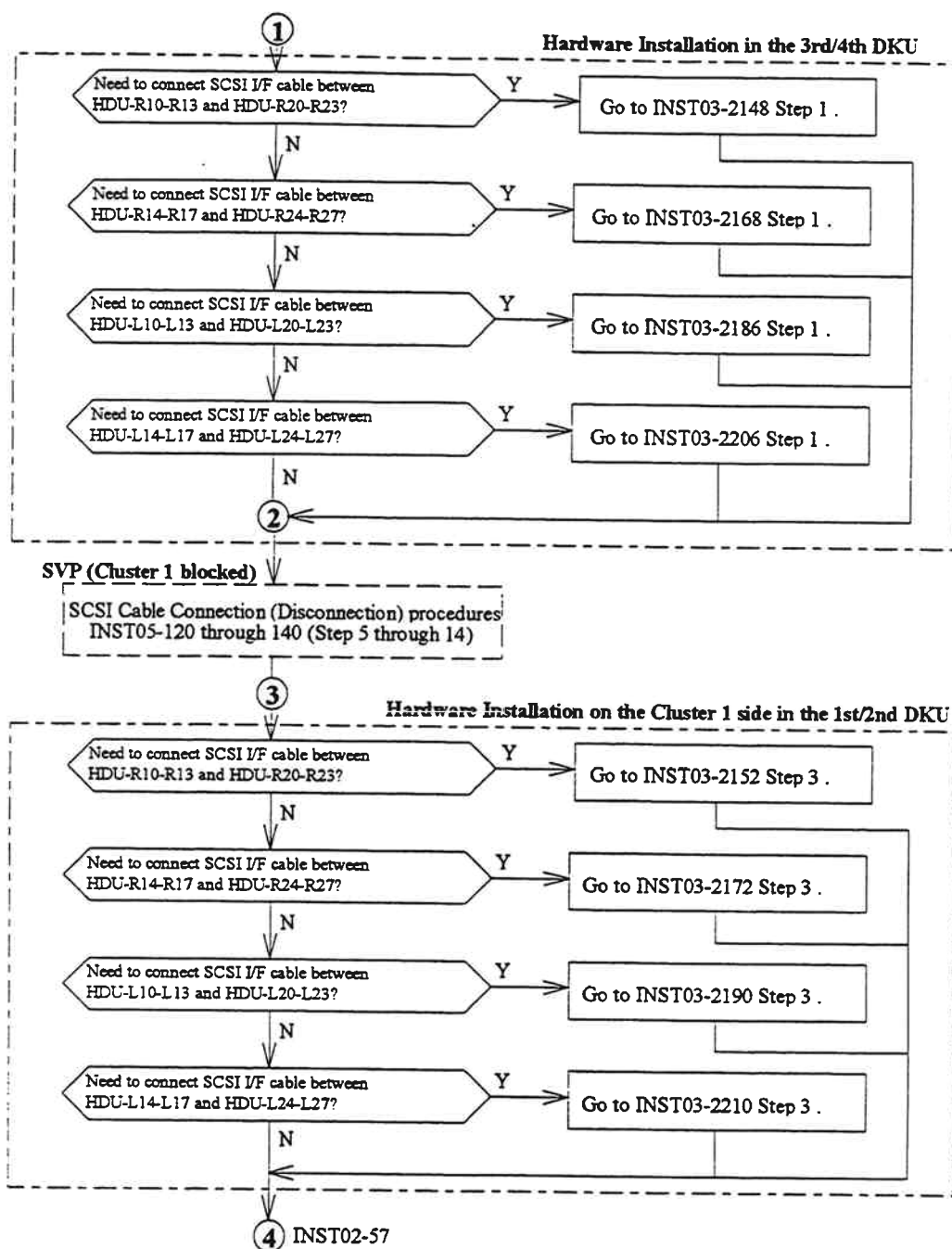


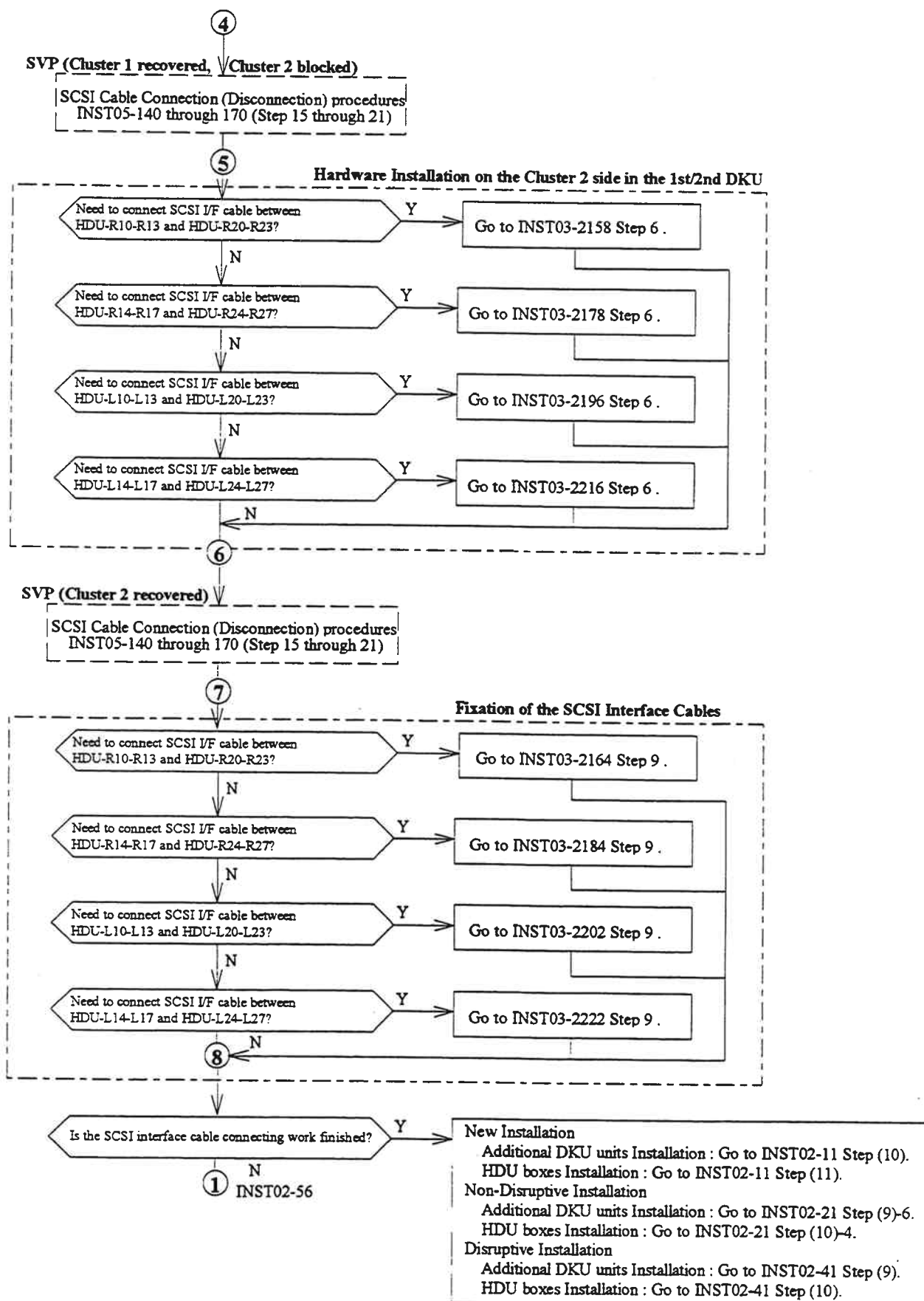
2. De-Installation of Cache Memory and Shared Memory



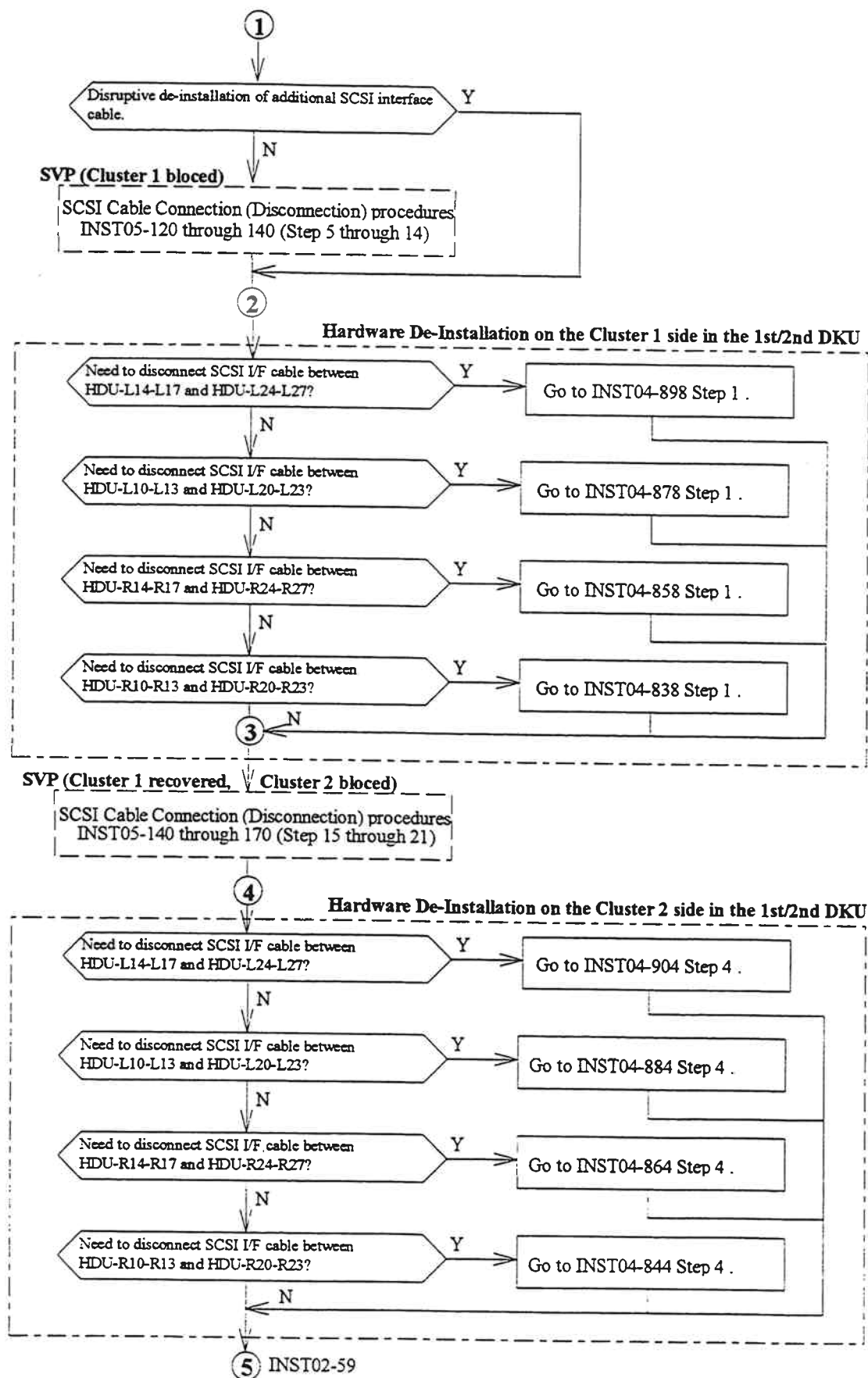


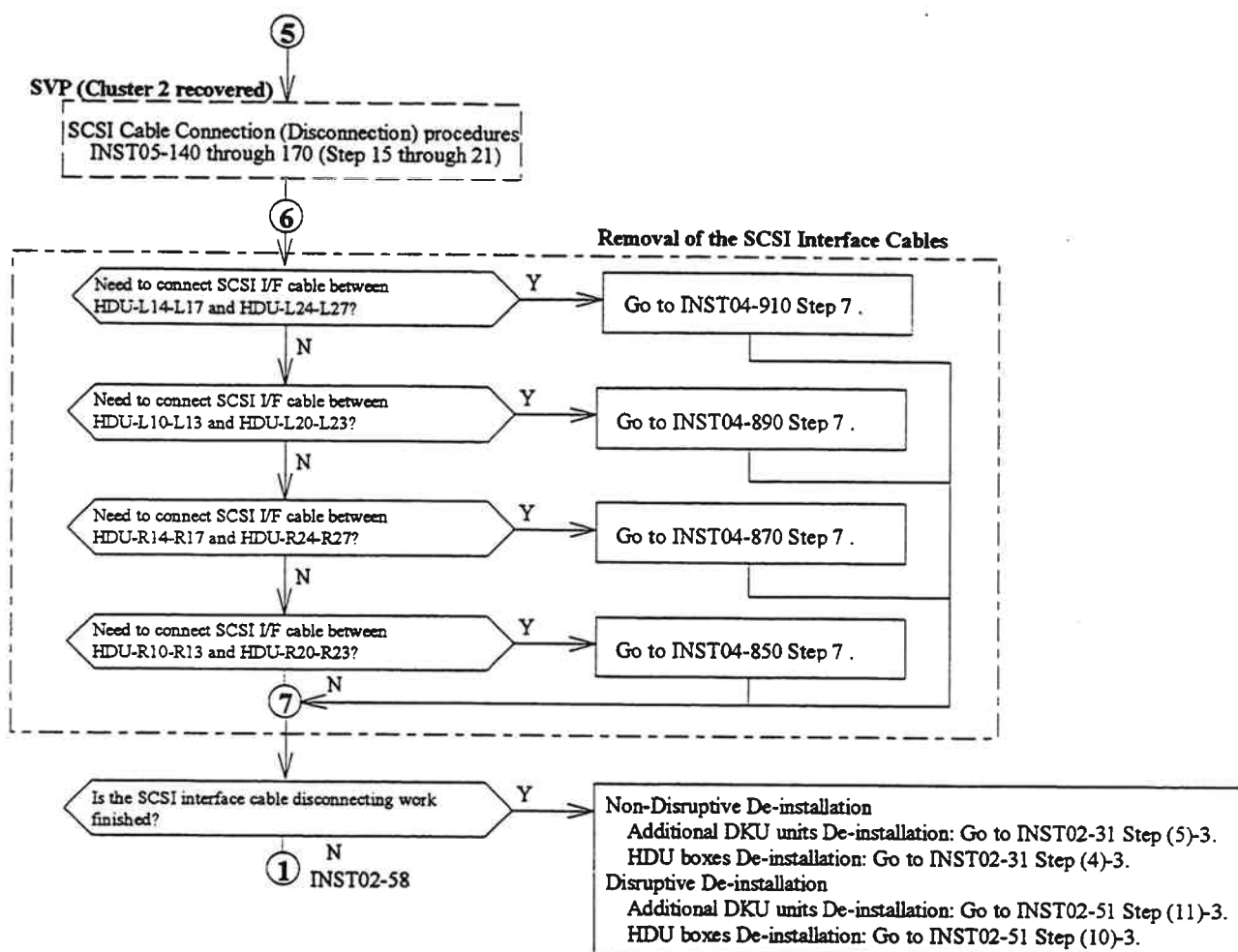
Non-Disruptive / Disruptive Installation General Flow of Additional SCSI Interface Cables (DKU-F205-34C)



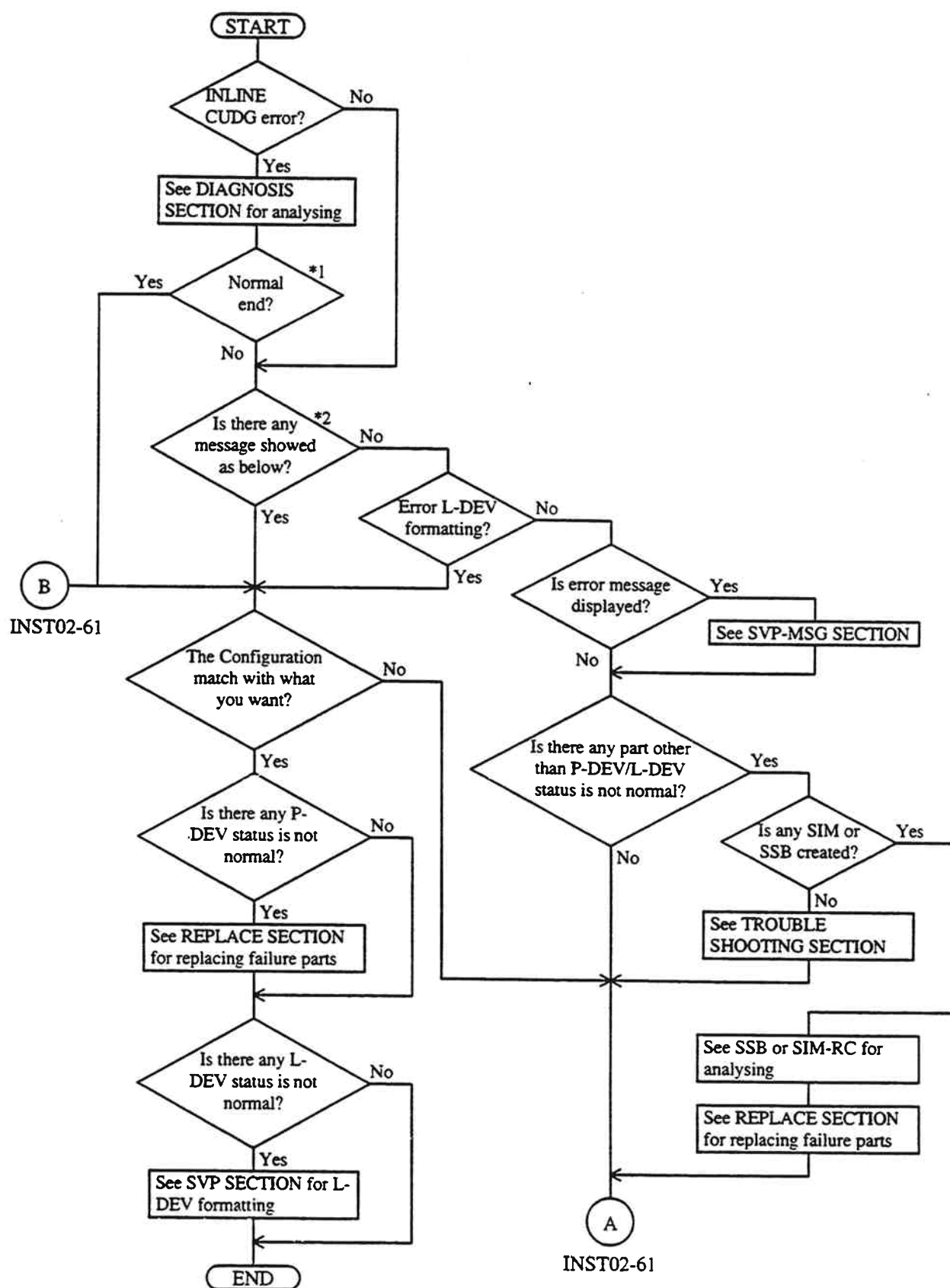


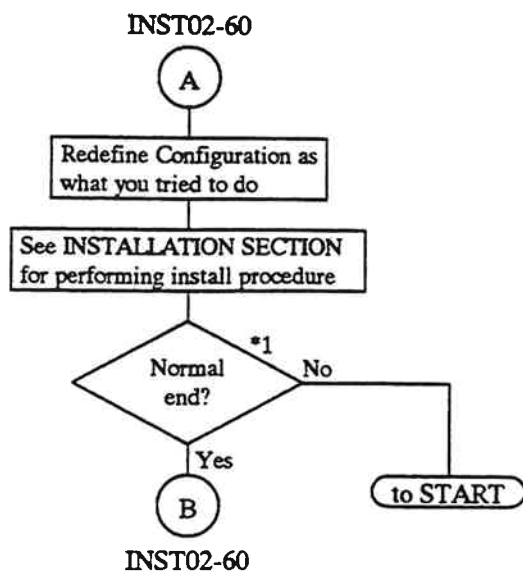
Non-Disruptive / Disruptive De-Installation General Flow of Additional SCSI Interface Cables (DKU-F205-34C)





3.2.6 Trouble shooting for errors in install SVP procedure





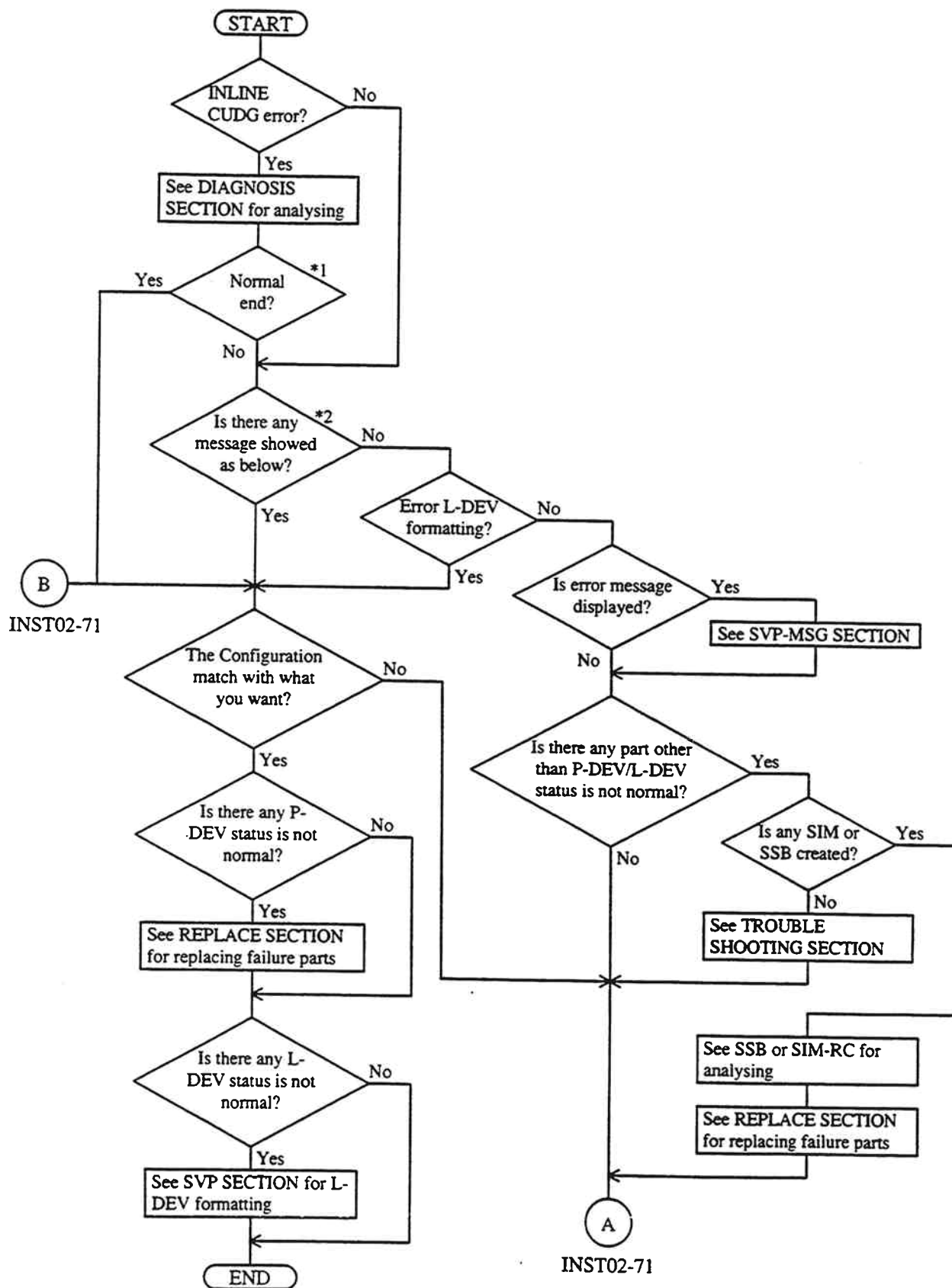
*1 In case of the message "Renewal process has completed"

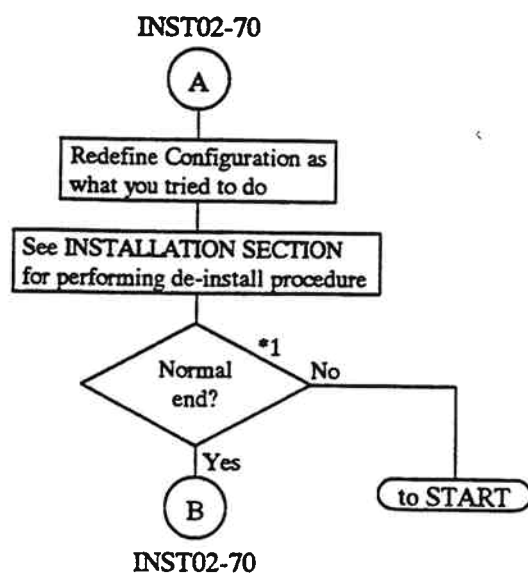
*2 "There is no change in configuration data (upgrade/de-install)"

"Some physical devices were failed to equip. You should check the physical/logical device status"

"Confirm all the Physical Devices has been restored, and please format all the blocked Logical Devices."

3.2.7 Trouble shooting for errors in de-install SVP procedure





*1 In case of the message "Renewal process has completed"

*2 "There is no change in configuration data (upgrade/de-install)"

"Some physical devices were failed to equip. You should check the physical/logical device status"

"Confirm all the Physical Devices has been restored, and please format all the blocked Logical Devices."

3.2.8 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

3.2.9 Availability of Installation and De-installation

(1) Availability of the online maintenance when HRC is used

Component	Maintenance Type	Condition	HRC path established		During initial copy		After finished copy		Suspend	
			MCU	RCU	MCU	RCU	MCU	RCU	MCU	RCU
HDD canister	Installation	—	×	×	ONL2059W	ONL2079W	×	×	×	×
	De-installation	—	×	×	ONL2031W (ONL2059W)	ONL2034W (ONL2079W)	ONL2031W	ONL2034W	ONL2031W	ONL2034W
Cache PCB	Installation	—	×	×	ONL2059W	ONL2079W	×	×	×	×
	De-installation	—	×	×	ONL2059W	ONL2079W	×	×	×	×
CHA	Installation	Alternate path exist.	×	×	×	×	×	×	×	×
		Alternate path not exist.	×	×	×	×	×	×	×	×
	De-installation	Alternate path exist.	×	×	×	ONL2038W	×	ONL2038W	×	ONL2038W
		Alternate path not exist.	×	×	ONL2073W *	ONL2038W	ONL2074W *	ONL2038W	ONL2075W *	ONL2038W
DKA	Installation	—	×	×	×	×	×	×	×	×
	De-Installation	—	×	×	×	×	×	×	×	×

(2) Availability of the online maintenance when HODM is used

(1/2)

Component	Maintenance Type	Condition	HODM path established		During initial copy		Waiting for erase		Suspend	
			MCU	RCU	MCU	RCU	MCU	RCU	MCU	RCU
HDD canister	Installation	—	×		ONL2059W		×		×	
	De-installation	—	×		ONL2031W (ONL2059W)		ONL2031W		ONL2031W	
Cache PCB	Installation	—	×		ONL2059W		×		×	
	De-installation	—	×		ONL2059W		×		×	
CHA	Installation	Alternate path exist.	×		×		×		×	
		Alternate path not exist.	×		×		×		×	
	De-installation	Alternate path exist.	×		×		×		×	
		Alternate path not exist.	×		ONL2076W *		ONL2078W *		ONL2077W *	
DKA	Installation	—	×		×		×		×	
	De-Installation	—	×		×		×		×	

× : Maintenance is available

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

* : In the case of that all connected HRC/HODM Path(s) will be deleted by this operation, SVP displays a warning message with ONL2032W.

(2/2)

Component	Maintenance Type	Condition	During for R-Vol Erasing		Erasing Error	
			MCU	RCU	MCU	RCU
HDD canister	Installation	—	×		×	
	De- installation	—	ONL2031W		ONL2031W	
Cache PCB	Installation	—	×		×	
	De- installation	—	×		×	
CHA	Installation	Alternate path exist.	×		×	
		Alternate path not exist.	×		×	
	De- installation	Alternate path exist.	×		×	
		Alternate path not exist.	ONL2078W		ONL2078W	
DKA	Installation	—	×		×	
	De- Installation	—	×		×	

× : Maintenance is available

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

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

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

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

Component	Maintenance Type	During initial copy		Established		Suspend	
		Primary	Secondary	Primary	Secondary	Primary	Secondary
HDD canister	Installation	*	x	*	x	*	x
	De-installation	*	x	*	x	*	x
Cache PCB	Installation	*	x	*	x	*	x
	De-installation	*	x	*	x	*	x
CHA	Installation	x	x	x	x	x	x
	De-installation	x	x	x	x	x	x
DKA	Installation	x	x	x	x	x	x
	De-installation	x	x	x	x	x	x

x: Maintenance is available.

*: When a maintenance operation is needed while HXRC is using, I/O's for HXRC pair volumes or HXRC itself should be stopped before the maintenance operation.

If the maintenance operation must be done while HXRC is using, you must confirm that the usage of Sidefile monitor less than 20% of total Cache capacity before you start the maintenance operation. Only when the usage of Sidefile monitor is less than 20% of total Cache capacity, you can proceed the maintenance operation.

Refer to "Monitoring" in the SVP SECTION about sidefile monitor.

Select the [Information] icon in the 'SVP' window.

Next select the [Monitor] menu in the 'Information' window and select [start....].

Next select the 'Sidefile' box in the 'Item' menu in the 'Monitoring' window and select [OK].

(5) Availability of the System tuning when HXRC is used.

When the following System tuning operation is needed while HXRC is using, HXRC should be stopped before the System tuning operation.

- It is impossible to change the DKC No, SSID, or DKC Emulation type by System tuning operation while HXRC is using.
- When the DRV emulation type of HXRC pair volumes are 3390-3 or 3390-3R, it is impossible to change the emulation type between 3390-3 and 3390-3R by CHANGE EMULATION operation while HXRC is using.