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15 January 2019

To: Recipients of FSD Circular Letters  
and Members of the VILG

Dear Sir/Madam,

**FSD Circular Letter No. 1/2019**  
**Ventilation / Air Conditioning (V/AC) Control System**

To facilitate the trade in proper installation of Ventilation/Air conditioning control system, the relevant specification has been detailed in Section 5.27 of the current Code of Practice for Minimum Fire Service Installations and Equipment, and the specific applications were promulgated vide FSD Circular Letter No. 2/2005 with simplified schematic drawings.

Recently, a review on FSD Circular Letter No. 2/2005 has been conducted and the Fire Safety Standard Advisory Group as well as the Ventilation Installation Liaison Group have been consulted. In gist, to facilitate the industry and trade in fulfilling the relevant specification of V/AC Control System, drawings covering Case 12/1, 12/2, 12/3 and 12/5 have been updated to provide better illustration, whilst Case 12/4 has become obsolete.

This Circular Letter serves to provide a summary of the requirements of V/AC control system together with a set of schematic drawings as attached to Annex for reference. As this Circular Letter does not involve any change of the current requirements, it will take immediate effect. FSD Circular No. 2/2005 is hereby superseded.

Should there be any enquiries, please contact the Ventilation Division of this Department at 2718 7567.

Yours faithfully,

(LEUNG Kwun-hong)

for Director of Fire Services

## Summary of Amendments to FSD Circular Letter No. 2/2005

Drawing Title	Drawing Number in FSD Circular No. 2/2005	Drawing Number in FSD Circular No. 1/2019
Legend & Note	FS-VEN-101	FS-VEN-101A
Case 12/1 – Typical Kitchen Ventilating System	FS-VEN-128	FS-VEN-128A
Case 12/2 – Kitchen Ventilating System with Fans Installed At Kitchen Side And Using Fire & Smoke Damper	FS-VEN-129	FS-VEN-129A
Case 12/3 - Kitchen Ventilating System with Fans Installed At Kitchen Side Without Using Fire & Smoke Damper	FS-VEN-130	FS-VEN-130A
Case 12/4 - Kitchen Ventilating System with Fans Installed At Non-Kitchen Side Without Using Fire & Smoke Damper	FS-VEN-131	Obsolete
Case 12/5 - Kitchen Ventilating System with Booster Fans And Central System	FS-VEN-132	FS-VEN-132A

Case 1/1, 1/2, 1/3

Features / Highlights :

1. PAU is deemed to serve multi-compartments for cases 1/2 and 1/3.

Scenario	Operational Response to VAC Control		
	PAU	FCU $\leq$ 1000 l/s	FCU $>$ 1000 l/s
PAU $\leq$ 1000 l/s	Shutdown	No need to shutdown	Shutdown
PAU $>$ 1000 l/s	Shutdown	No need to shutdown	Shutdown

Case 2/1

Features / Highlights :

1. PAU is deemed to serve multi-compartments.
2. PAU can only be operated when the EAF is running.
3. Probe type smoke detector installed at the inlet side of the EAF activates the tripping function.

Scenario	Operational Response to VAC Control			
	PAU	EAF	FCU $\leq$ 1000 l/s	FCU $>$ 1000 l/s
PAU $\leq$ 1000 l/s, EAF $\leq$ 1000 l/s	Shutdown	No need to shutdown	No need to shutdown	Shutdown
PAU $\leq$ 1000 l/s, EAF $>$ 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown
PAU $>$ 1000 l/s, EAF $\leq$ 1000 l/s	Shutdown	No need to shutdown	No need to shutdown	Shutdown
PAU $>$ 1000 l/s, EAF $>$ 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown

Case 2/2

Features / Highlights :

1. PAU and EAF are serving multi-compartments.
2. PAU can only be operated when the EAF is running.
3. Probe type smoke detector installed at the inlet side of the EAF activates the tripping function.

Scenario	Operational Response to VAC Control			
	PAU	EAF	FCU $\leq$ 1000 l/s	FCU $>$ 1000 l/s
PAU $\leq$ 1000 l/s, EAF $\leq$ 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown
PAU $\leq$ 1000 l/s, EAF $>$ 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown
PAU $>$ 1000 l/s, EAF $\leq$ 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown
PAU $>$ 1000 l/s, EAF $>$ 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown

Case 3/1

Features / Highlights :

1. PAU is deemed to serve single compartment.

Scenario	Operational Response to VAC Control		
	PAU	FCU $\leq$ 1000 l/s	FCU $>$ 1000 l/s
PAU $\leq$ 1000 l/s	No need to shutdown	No need to shutdown	Shutdown
PAU $>$ 1000 l/s	Shutdown	No need to shutdown	Shutdown

Case 3/2, 3/3

Features / Highlights :

1. PAU is serving multi-compartments.

Scenario	Operational Response to VAC Control		
	PAU	FCU $\leq$ 1000 l/s	FCU $>$ 1000 l/s
PAU $\leq$ 1000 l/s	Shutdown	No need to shutdown	Shutdown
PAU $>$ 1000 l/s	Shutdown	No need to shutdown	Shutdown

Case 4/1

Features / Highlights :

1. PAU and EAF are serving single compartment.
2. PAU can only be operated when the EAF is running.
3. Probe type smoke detector installed nearest to EAF activates the tripping function.

Scenario	Operational Response to VAC Control			
	PAU	EAF	FCU ≤ 1000 l/s	FCU > 1000 l/s
PAU ≤ 1000 l/s, EAF ≤ 1000 l/s	No need to shutdown	No need to shutdown	No need to shutdown	Shutdown
PAU ≤ 1000 l/s, EAF > 1000 l/s	No need to shutdown	Shutdown	No need to shutdown	Shutdown
PAU > 1000 l/s, EAF ≤ 1000 l/s	Shutdown	No need to shutdown	No need to shutdown	Shutdown
PAU > 1000 l/s, EAF > 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown

Case 4/2, 4/3

Features / Highlights :

1. PAU and EAF are serving multi-compartments.
2. PAU can only be operated when the EAF is running.
3. Probe type smoke detector installed at the inlet side of the EAF activates the tripping function.

Scenario	Operational Response to VAC Control			
	PAU	EAF	FCU ≤ 1000 l/s	FCU > 1000 l/s
PAU ≤ 1000 l/s, EAF ≤ 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown
PAU ≤ 1000 l/s, EAF > 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown
PAU > 1000 l/s, EAF ≤ 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown
PAU > 1000 l/s, EAF > 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown

Case 5/1

Features / Highlights :

1. PAU is serving single compartment.
2. Space smoke detector installed at corridor activates the tripping function by Method "D".
3. Rooms and corridor are considered as single compartment.
4. EAF if provided at corridor, shutdown principles follow the case 4/1.

	Operational Response to VAC Control		
Scenario	PAU	FCU $\leq$ 1000 l/s	FCU > 1000 l/s
PAU $\leq$ 1000 l/s	No need to shutdown	No need to shutdown	Shutdown
PAU > 1000 l/s	Shutdown	No need to shutdown	Shutdown

Case 5/2

Features / Highlights :

1. PAU is serving multi-compartments.
2. Space smoke detector installed at corridor activates the tripping function by Method "D".
3. Rooms and corridor are considered as individual fire compartments.
4. EAF if provided at corridor, shutdown principles follow the case 4/3.

	Operational Response to VAC Control		
Scenario	PAU	FCU $\leq$ 1000 l/s	FCU > 1000 l/s
PAU $\leq$ 1000 l/s	Shutdown	No need to shutdown	Shutdown
PAU > 1000 l/s	Shutdown	No need to shutdown	Shutdown

Case 6/1

Features / Highlights :

1. PAU is serving multi-compartments.
2. AHU of each floor may serve single or multi-compartments depending on individual situation.
3. PAU can only be operated when any one of the AHU is running.
4. Probe type smoke detector installed at any AHU will activate the tripping function of PAU and AHU of respective floor.

Scenario	Operational Response to VAC Control		
	PAU	AHU (single compartment)	AHU (multi-compartments)
PAU $\leq$ 1000 l/s, AHU $\leq$ 1000 l/s	Shutdown	No need to shutdown	Shutdown
PAU $\leq$ 1000 l/s, AHU $>$ 1000 l/s	Shutdown	Shutdown	Shutdown
PAU $>$ 1000 l/s, AHU $\leq$ 1000 l/s	Shutdown	No need to shutdown	Shutdown
PAU $>$ 1000 l/s, AHU $>$ 1000 l/s	Shutdown	Shutdown	Shutdown

Case 6/2

Features / Highlights :

1. PAU is serving multi-compartments.
2. AHU of each floor may serve single or multi-compartments depending on individual situation.
3. PAU can only be operated when any one of the AHU is running.
4. Probe type smoke detector installed at any AHU and space detector installed at corridor will activate the tripping function of PAU, AHU / FCU of respective floor.

Scenario	Operational Response to VAC Control				
	PAU	AHU (single compartment)	AHU (multi-compartments)	FCU $\leq 1000$ l/s	FCU $> 1000$ l/s
PAU $\leq 1000$ l/s, AHU $\leq 1000$ l/s	Shutdown	No need to shutdown	Shutdown	No need to shutdown	Shutdown
PAU $\leq 1000$ l/s, AHU $> 1000$ l/s	Shutdown	Shutdown	Shutdown	No need to shutdown	Shutdown
PAU $> 1000$ l/s, AHU $\leq 1000$ l/s	Shutdown	No need to shutdown	Shutdown	No need to shutdown	Shutdown
PAU $> 1000$ l/s, AHU $> 1000$ l/s	Shutdown	Shutdown	Shutdown	No need to shutdown	Shutdown

Case 7/1

Features / Highlights :

1. PAU and AHU are serving multi-compartments.
2. PAU can only be operated when any one of the AHU is running.
3. Probe type smoke detector installed at any AHU will activate the tripping function of PAU, AHU and close the Fire & Smoke Damper of respective floor.

Scenario	Operational Response to VAC Control		
	PAU	AHU $\leq 1000$ l/s	AHU $> 1000$ l/s
PAU $\leq 1000$ l/s	Shutdown	Shutdown	Shutdown
PAU $> 1000$ l/s	Shutdown	Shutdown	Shutdown

Case 7/2

Features / Highlights :

1. PAU and AHU are serving multi-compartments.
2. PAU can only be operated when any one of the AHU is running.
3. Probe type smoke detector installed at AHU and space smoke detector installed at corridor will activate the tripping function of PAU, AHU and FCU and close the Fire & Smoke Damper of AHU of respective floor.

Scenario	Operational Response to VAC Control			
	PAU	AHU	FCU $\leq$ 1000 l/s	FCU $>$ 1000 l/s
PAU $\leq$ 1000 l/s, AHU $\leq$ 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown
PAU $\leq$ 1000 l/s, AHU $>$ 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown
PAU $>$ 1000 l/s, AHU $\leq$ 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown
PAU $>$ 1000 l/s, AHU $>$ 1000 l/s	Shutdown	Shutdown	No need to shutdown	Shutdown

Case 8/1

Features / Highlights :

1. Fans are serving separate compartment.
2. Ventilation is by low level intake and high level exhaust.

	Operational Response to VAC Control			
Scenario	EAF	EF		
Fan of All Capacity	No need to shutdown	No need to shutdown		

Case 8/2

Features / Highlights :

1. Fans are serving multi-compartments.
2. Ventilation is by low level intake and high level exhaust.

	Operational Response to VAC Control			
Scenario	EAF	EF		
Fan of All Capacity	Shutdown	Shutdown		

Case 8/3

Features / Highlights :

1. EAF is serving single compartment while EF is serving multi-compartments.
2. Ventilation is by low level intake and high level exhaust.

	Operational Response to VAC Control			
Scenario	EAF	EF		
Fan of All Capacity	No need to shutdown	Shutdown		

Case 9/1, 9/2, 10/1

Features / Highlights :

1. EAF is serving multi-compartments.

	Operational Response to VAC Control			
Scenario	EAF			
Fan of All Capacity	Shutdown			

Case 10/2

Features / Highlights :

1. EAF and booster fans are serving multi-compartments.

	Operational Response to VAC Control			
Scenario	EAF	Booster Fan of Incident Floor		
Fan of All Capacity	Shutdown	Shutdown		

Case 11/1

Features / Highlights :

1. EAF1 is a dedicated system serving a single shop.
2. EAF2 is central system serving multi-shops.
3. EAF3 is central system serving multi-shops and ductwork exits from shop front associated with fire damper.
4. EAF4 is central system serving multi-shops and ductwork exits from shop front associated with fire and smoke damper.
5. Fire and smoke dampers at shop 8 to 11 will respond and close up according to smoke detector signal inside individual shop.
6. If the partition at shop front do NOT have fire rating requirement, the fire damper for shops 2 to 5 can be waived and the fire & smoke damper at shop 8 to 11 can be replaced by smoke damper.

	Operational Response to VAC Control			
Scenario	EAF1	EAF2	EAF3	EAF4
Fan > 1000 l/s	Shutdown	Shutdown	Shutdown	No need to shutdown
Fan ≤ 1000 l/s	No need to shutdown	Shutdown	Shutdown	No need to shutdown

Case 11/2

Features / Highlights :

1. FAF1 is a dedicated system serving a single shop.
2. FAF2 is central system serving multi-shops.
3. FAF3 is central system serving multi-shops and ductwork enters from shop front associated with fire damper.
4. FAF4 is central system serving multi-shops and ductwork enters from shop front associated with fire and smoke damper.
5. Fire and smoke dampers at shop 8 to 11 will respond and close up according to smoke detector signal inside individual shop.
6. If the partition at shop front do NOT have fire rating requirement, the fire damper for shops 2 to 5 can be waived and the fire & smoke damper at shop 8 to 11 can be replaced by smoke damper.

	Operational Response to VAC Control			
Scenario	FAF1	FAF2	FAF3	FAF4
Fan > 1000 l/s	Shutdown	Shutdown	Shutdown	No need to shutdown
Fan ≤ 1000 l/s	No need to shutdown	Shutdown	Shutdown	No need to shutdown

Case 12/1

Features / Highlights :

1. Kitchen ventilation is independent from that of non-kitchen areas.

Scenario	Operational Response to VAC Control			
	FAF1	EAF1	FAF2	EAF2
Fan > 1000 l/s	No need to shutdown	No need to shutdown	Shutdown	Shutdown
Fan ≤ 1000 l/s	No need to shutdown	No need to shutdown	No need to shutdown	No need to shutdown

Case 12/2

Features / Highlights :

1. Kitchen ventilation is share used with other non-kitchen areas. At the kitchen compartment wall, fire & smoke dampers have been provided.
2. Smoke detectors or method D are generally used. For fire detection inside kitchen area, automatic detection device other than smoke sensing (e.g. heat detector, flow switch at sprinkler system, etc.) can be acceptable.
3. Fire and smoke dampers will close up upon any smoke or fire detector signal.

Scenario	Operational Response to VAC Control			
	FAF	EAF		
Fan > 1000 l/s	No need to shutdown	No need to shutdown		
Fan ≤ 1000 l/s	No need to shutdown	No need to shutdown		

Case 12/3

Features / Highlights :

1. Kitchen ventilation is share used with other non-kitchen areas. At the kitchen compartment wall, only fire dampers have been provided.
2. Smoke detectors or method D are generally used. For fire detection inside kitchen area, automatic detection device other than smoke sensing (e.g. heat detector, flow switch at sprinkler system, etc.) can be acceptable.

Scenario	Operational Response to VAC Control			
	FAF	EAF		
Fan > 1000 l/s	Shutdown	Shutdown		
Fan ≤ 1000 l/s	Shutdown	Shutdown		

Case 12/4 Obsolete

Features / Highlights :

- ~~1. Kitchen ventilation is share used with other non-kitchen areas but the fans are installed at non kitchen side. At the kitchen compartment wall, fire & smoke dampers have been provided.~~
- ~~2. Smoke detectors or method D are generally used. For fire detection inside kitchen area, automatic detection device other than smoke sensing (e.g. heat detector, flow switch at sprinkler system, etc.) can be acceptable.~~
- ~~3. Fire and smoke dampers will close up when fire or smoke alarm signal actuated inside kitchen.~~

Scenario	Operational Response to VAC Control			
	FAF	EAF	Fire & Smoke Damper	
Fire broke out inside kitchen	No need to shutdown	No need to shutdown	Close up	
Fire broke out outside kitchen	Shutdown	Shutdown	Open or close up	

Case 12/5

Features / Highlights :

1. Kitchen ventilation is share used with other non-kitchen areas.
2. Booster fans have been installed and Fire & Smoke Dampers have been provided at interconnection to building central systems.
3. Smoke detectors or method D are generally used. For fire detection inside kitchen area, automatic detection device other than smoke sensing (e.g. heat detector, flow switch at sprinkler system, etc.) can be acceptable.

	Operational Response to VAC Control			
Scenario	FAF	EAF	Fire & Smoke Damper	
Booster Fan > 1000 l/s	Shutdown	Shutdown	Close up	
Booster Fan ≤ 1000 l/s	Shutdown	Shutdown	Close up	

## LEGEND & NOTES:

	PROBE TYPE SMOKE DETECTOR
	SMOKE DETECTOR (250 sq.m /UNIT COVERAGE) FOR V/AC CONTROL SYSTEM ONLY
	RANGE HOOD
AHU	AIR HANDLING UNIT
EAD	EXHAUST AIR DUCT
FAD	FRESH AIR DUCT
EAF	EXHAUST AIR FAN
EF	PROPELLER TYPE EXHAUST FAN
E&M	ELECTRICAL & MECHANICAL
FA	FRESH AIR
FAF	FRESH AIR FAN
FCU	FAN COIL UNIT
F/D	FIRE DAMPER
F&S/D	FIRE & SMOKE DAMPER
PAU	PRIMARY AIR HANDLING UNIT
RAD	RETURN AIR DUCT
TAG	TRANSFER AIR GRILLE
V/AC	VENTILATION/AIR CONDITIONING

### NOTES:

- (1) Any one of the following methods can be used to activate a V/AC control system:-
- Method "A" - If the compartment/unit is provided with a smoke detector automatic fire alarm system, on activation of that system all fans serving the compartment shall be shut down.
  - Method "B" - Smoke detectors of a type suitable for use in air ducts (probe type smoke detector), shall be installed in the exhaust and/ or recirculation ductwork serving the compartment/unit, which on sensing smoke, will automatically shut down all fans in the mechanical ventilating system serving the compartment/unit.
  - Method "C" - Shut down all the fans in the building instead of isolated compartments / units by the actuation of the building fire alarm system.
  - Method "D"(modified shutdown method) - Shut down all fans in the affected compartment by the actuation of evenly spaced smoke detectors installed at suitable locations under ceiling or false ceiling, where applicable. There shall be at least one smoke detector for every 250m<sup>2</sup> of net floor area. (Please refer to Clause 1.10 in Part IV of FSD Circular Letter No. 4/96.)
  - A combination of any of the methods mentioned above except Method "C".
- (2) For "Licensed Premises" (See Drawings No. FS-VEN-128A to 130A and 132A):
- If the mechanical ventilating system of a "Licensed Premises" is connected to central exhaust/supply system(s) of the building, it may be accepted as on independent system provided that a fire and smoke damper (F&S/D) or a smoke damper (S/D) as appropriate is installed at the points where the ventilating ducts penetrate the boundary of the premises for connection to the central system(s). In the event of a fire inside the "Licensed Premises", the central exhaust/supply fan(s) are not required to be shut down, but the F&S/D/ S/D shall be closed by a fire signal from the "Licensed Premised". Under such circumstances, the provision of a separate manual override switch at a location agreed by the Director of Fire Services to activate the V/AC control in the premises may be accepted as an alternative to the manual override switch at the central fire control panel.
  - If the "Licensed Premises" have its own independent mechanical ventilating system, the provision of a manual override switch at a location agreed by the Director of Fire Services may be accepted as on an alternative to the one installed at the central fire control panel of the building, provided that there are well justified reasons for not providing the latter.
- (3) Please refer to the Code of Practice for Minimum Fire Service Installations and Equipment for mechanical ventilating systems that can be exempted from the provision of automatic control function of the V/AC control system.

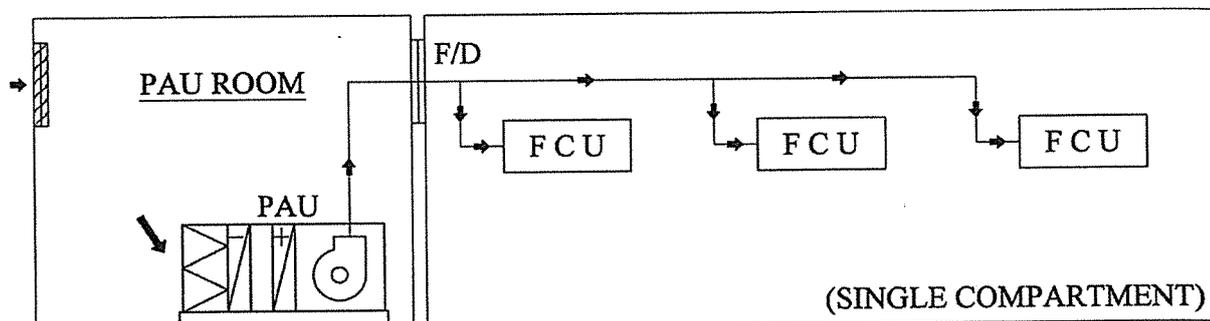
Title : **LEGEND & NOTES**

Drawn by	: C. H. WONG	Drawing No.	: FS-VEN-101A
Checked by	: H. Y. NGAN	Scale	: NIL
		Issue Date	: AUG. 2005
		Revision Date	: SEPT. 2018



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## CASE 1/1 - PAU IN OPEN VENTILATED ROOM SERVING SINGLE COMPARTMENT



(Note: PAU Room treated as separate fire compartment)

### V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down. (Note: FCUs < 1000l/s within the compartment are not required to be shut down)
- (b) PAU < 1000 l/s, each FCU < 1000 l/s  
Requirement : Only PAU should be shut down. (Remark: PAU is taken to be serving two fire compartments including PAU Room)
- (c) PAU > 1000 l/s , each FCU < 1000 l/s  
Requirement : Only PAU should be shut down.
- (d) PAU < 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down. (Note: FCUs < 1000l/s within the compartment are not required to be shut down)

Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

Title : CASE 1/1 – PAU IN OPEN VENTILATED ROOM  
SERVING SINGLE COMPARTMENT

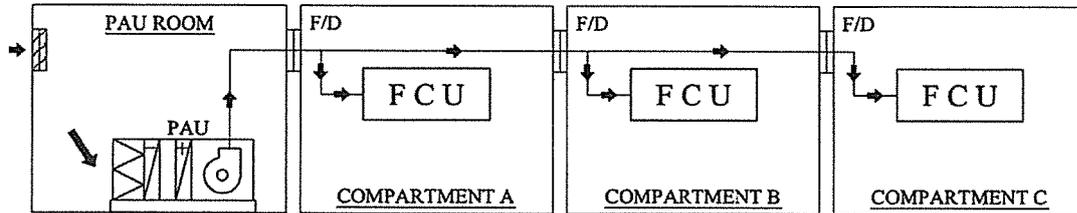
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-102  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 1/2 - PAU IN OPEN VENTILATED ROOM SERVING MULTI-COMPARTMENT SINGLE FLOOR



(Note: PAU Room treated as separate fire compartment)

### V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down. (Note: FCUs < 1000l/s within the compartment are not required to be shut down)
- (b) PAU < 1000 l/s, each FCU < 1000 l/s  
Requirement : Only PAU should be shut down.
- (c) PAU > 1000 l/s, each FCU < 1000 l/s  
Requirement : Only PAU should be shut down.
- (d) PAU < 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down. (Note: FCUs < 1000l/s within the compartment are not required to be shut down)

Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

Title : CASE 1/2 – PAU IN OPEN VENTILATED ROOM  
SERVING MULTI-COMPARTMENT SINGLE FLOOR

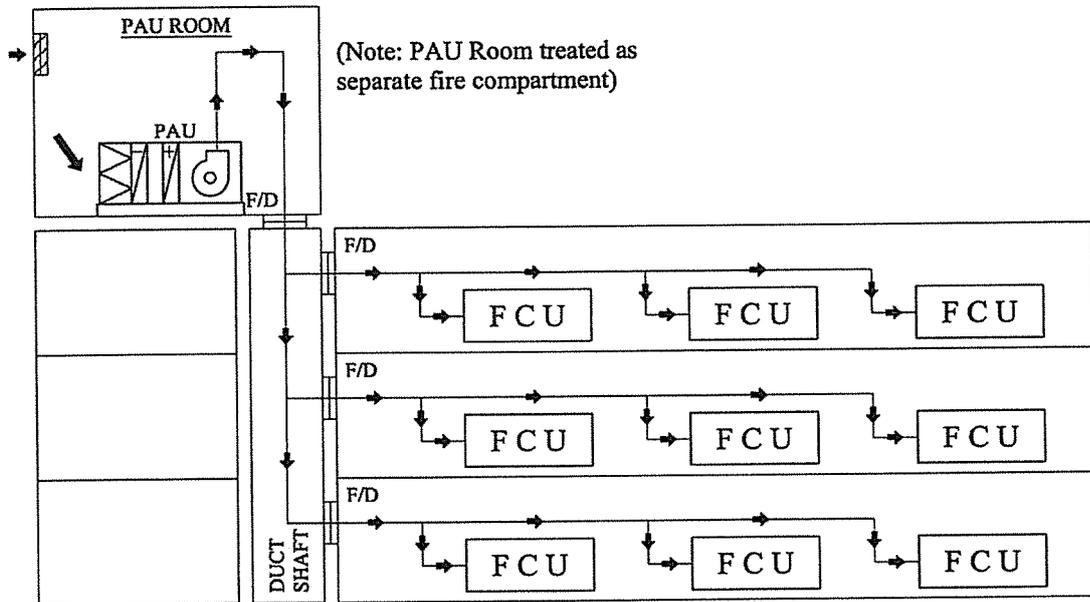
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-103  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 1/3 - PAU IN OPEN VENTILATED ROOM SERVING MULTI-COMPARTMENT MULTI-FLOOR



### V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down. (Note: FCUs < 1000l/s within the compartment not required to be shut down)
- (b) PAU < 1000 l/s, each FCU < 1000 l/s  
Requirement : Only PAU should be shut down.
- (c) PAU > 1000 l/s, each FCU < 1000 l/s  
Requirement : Only PAU should be shut down.
- (d) PAU < 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down. (Note: FCUs < 1000l/s within the compartment are not required to be shut down)

Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

Title : CASE 1/3 - PAU IN OPEN VENTILATED ROOM  
SERVING MULTI-COMPARTMENT MULTI-FLOOR

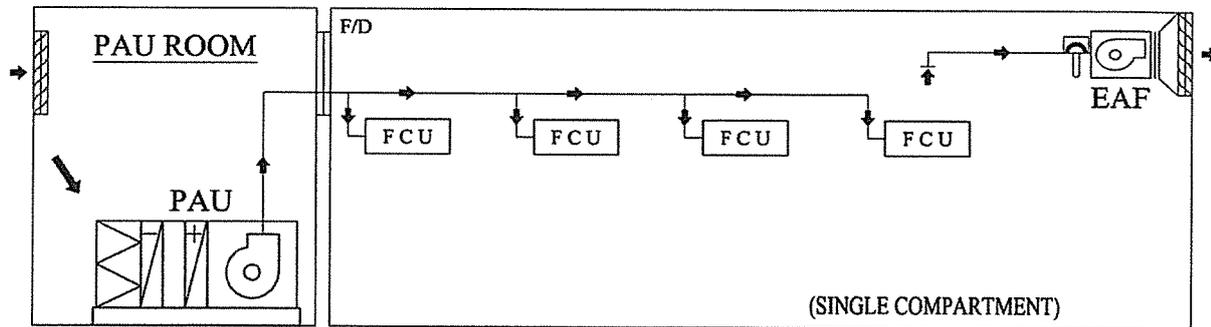
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-104  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 2/1 - PAU IN OPEN VENTILATED ROOM SERVING SINGLE COMPARTMENT WITH DUCTED EXHAUST



(Note: PAU Room treated as separate fire compartment)

### V/AC control logic for five scenarios:

- (a) PAU > 1000 l/s, EAF > 1000 l/s, any FCU > 1000 l/s  
 Requirement : PAU, EAF and these FCUs should be shut down.  
 (Tripping can be made by the probe type smoke detector installed in exhaust air fan and electrically interlocking the exhaust air fan and PAU, such that the PAU can be operated only when the exhaust air fan is in operation.)  
 (Note: FCUs < 1000l/s within the compartment are not required to be shut down)
- (b) PAU < 1000 l/s, EAF < 1000 l/s, each FCU < 1000 l/s  
 Requirement : Only PAU should be shut down.  
 (Tripping method in item (a) can be followed but application is only limited to location where the probe type smoke detector can detect smoke within the fire compartments at early stage.)
- (c) PAU > 1000 l/s, EAF < 1000 l/s, each FCU < 1000 l/s  
 Requirement : Only PAU should be shut down.  
 (Tripping method in item (a) can be followed but application is only limited to location where the probe type smoke detector can detect smoke within the fire compartments at early stage.)
- (d) PAU < 1000 l/s, EAF > 1000 l/s, any FCU > 1000 l/s  
 Requirement : PAU, EAF and these FCUs should be shut down.  
 (Tripping method in item (a) can be followed.)  
 (Note: FCUs < 1000l/s within the compartment are not required to be shut down)
- (e) Other cases  
 Requirement : PAU should be shut down. Only those EAF and FCUs > 1000 l/s should be shut down  
 (Tripping method in item (a) can be followed but application is only limited to location where the probe type smoke detector can detect smoke within the fire compartments at early stage.)  
 (Note: FCUs < 1000l/s within the compartment are not required to be shut down)

When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

Title : CASE 2/1 - PAU IN OPEN VENTILATED ROOM SERVING  
SINGLE COMPARTMENT WITH DUCTED EXHAUST

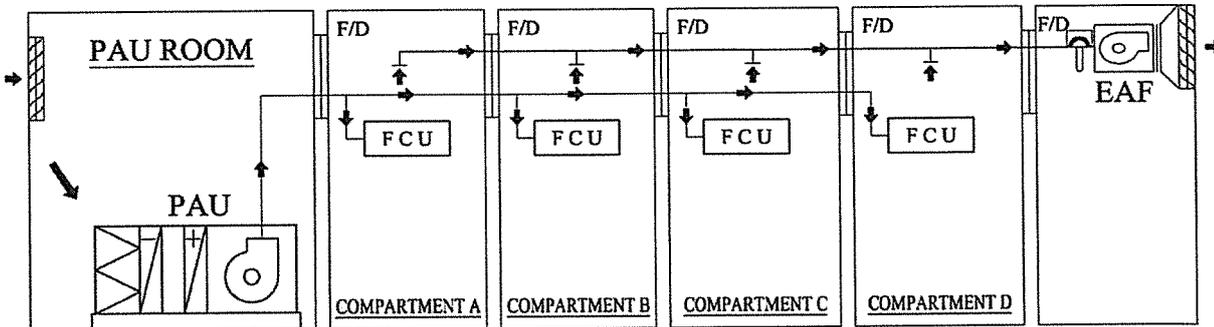
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-105  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 2/2 - PAU IN OPEN VENTILATED ROOM SERVING MULTI-COMPARTMENT WITH DUCTED EXHAUST



(Note: PAU Room treated as separate fire compartment)

### V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, EAF - any rating, any FCU > 1000 l/s  
Requirement : PAU, EAF and these FCUs should be shut down.  
(Tripping can be made by the probe type smoke detector installed in exhaust air fan and electrically interlocking the exhaust air fan and PAU, such that the PAU can be operated only when the exhaust air fan is in operation.)  
(Note: FCUs < 1000l/s within the compartment are not required to be shut down)
- (b) PAU < 1000 l/s, EAF - any rating, each FCU < 1000 l/s  
Requirement : Only PAU and EAF should be shut down.  
(Tripping method in item (a) can be followed.)
- (c) PAU > 1000 l/s, EAF - any rating, each FCU < 1000 l/s  
Requirement : Only PAU and EAF should be shut down.  
(Tripping method in item (a) can be followed.)
- (d) PAU < 1000 l/s, EAF - any rating, any FCU > 1000 l/s  
Requirement : PAU, EAF and these FCUs should be shut down.  
(Tripping method in item (a) can be followed.)  
(Note: FCUs < 1000l/s within the compartment are not required to be shut down)

When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

Title : CASE2/2 - PAU IN OPEN VENTILATED ROOM SERVING  
MULTI-COMPARTMENT WITH DUCTED EXHAUST

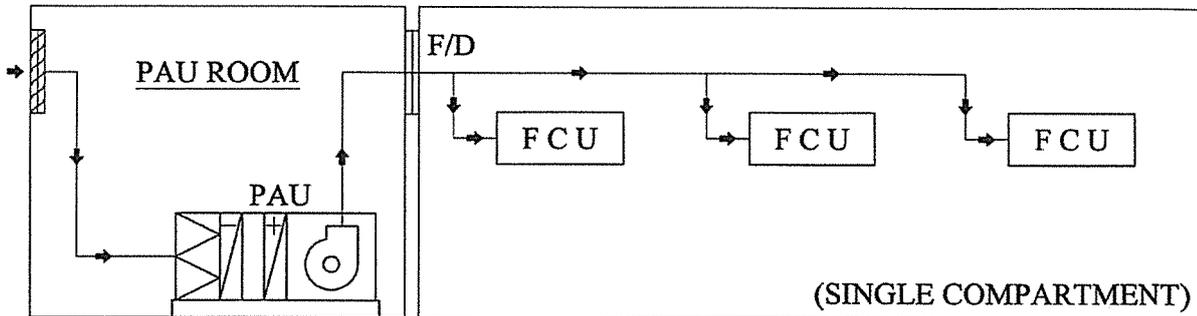
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-106  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 3/1 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING SINGLE COMPARTMENT



### V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down.  
(Note: FCUs < 1000l/s within the compartment are not required to be shut down)
- (b) PAU < 1000 l/s, each FCU < 1000 l/s  
Requirement : Tripping is not required.
- (c) PAU > 1000 l/s, each FCU < 1000 l/s  
Requirement : Only PAU should be shut down.
- (d) PAU < 1000 l/s, any FCU > 1000 l/s  
Requirement : Only these FCUs should be shut down.  
(Note: FCUs < 1000l/s within the compartment are not required to be shut down)

Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

Title : CASE 3/1 – PAU WITH DUCTED FRESH AIR SUPPLY  
SERVING SINGLE COMPARTMENT

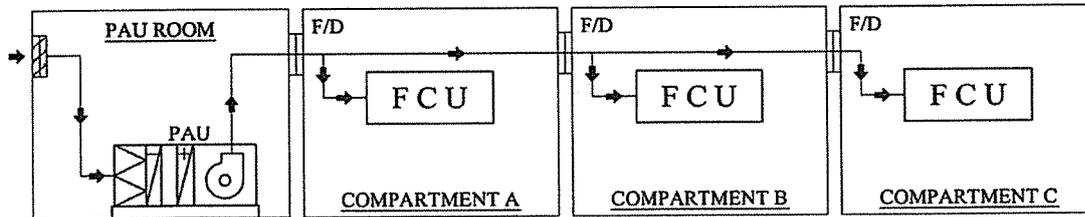
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-107  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 3/2 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING MULTI-COMPARTMENT SINGLE FLOOR



### V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down.  
(Note: FCUs < 1000 l/s within the compartment are not required to be shut down)
- (b) PAU < 1000 l/s, each FCU < 1000 l/s  
Requirement : Only PAU should be shut down.
- (c) PAU > 1000 l/s, each FCU < 1000 l/s  
Requirement : Only PAU should be shut down.
- (d) PAU < 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down.  
(Note: FCUs < 1000 l/s within the compartment are not required to be shut down)

Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

Title : CASE 3/2 - PAU WITH DUCTED FRESH AIR SUPPLY  
SERVING MULTI-COMPARTMENT SINGLE FLOOR

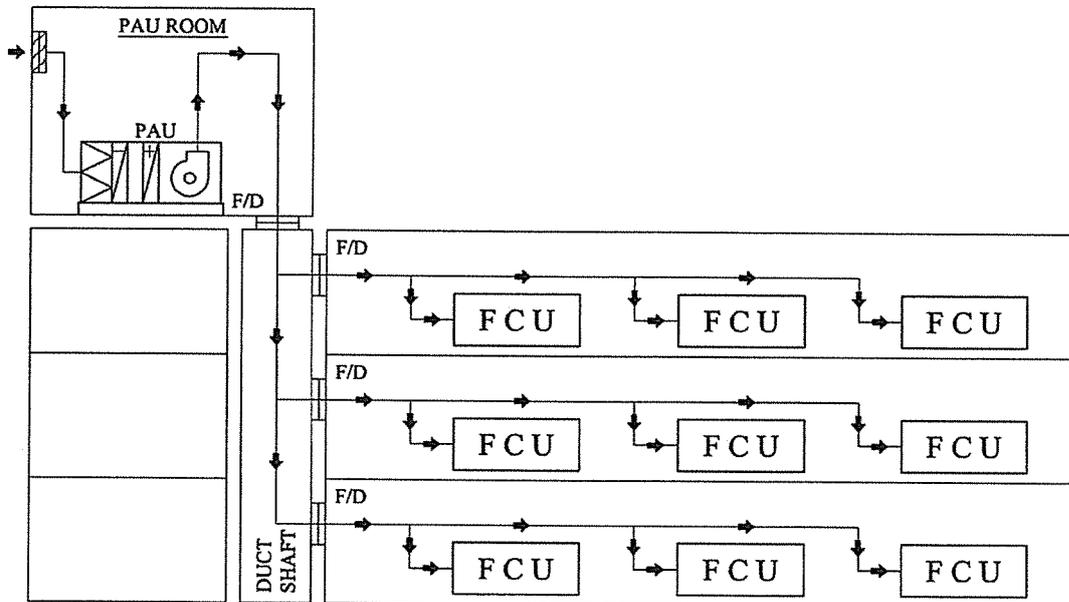
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG  
:  
:

Drawing No. : FS-VEN-108  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 3/3 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING MULTI-COMPARTMENT MULTI-FLOOR



### V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down.  
(Note: FCUs < 1000 l/s within the compartment are not required to be shut down)
- (b) PAU < 1000 l/s, each FCU < 1000 l/s  
Requirement : Only PAU should be shut down.
- (c) PAU > 1000 l/s, each FCU < 1000 l/s  
Requirement : Only PAU should be shut down.
- (d) PAU < 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down.  
(Note: FCUs < 1000 l/s within the compartment are not required to be shut down)

Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

Title : CASE 3/3 – PAU WITH DUCTED FRESH AIR SUPPLY  
SERVING MULTI-COMPARTMENT MULTI-FLOOR

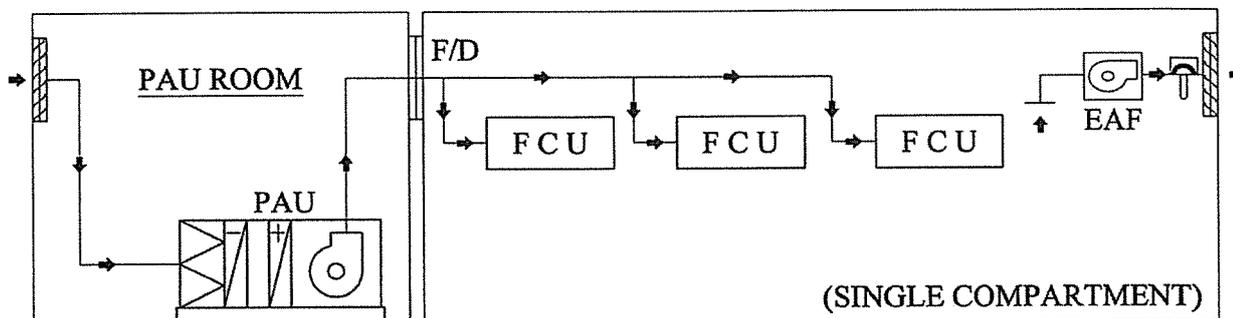
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-109  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 4/1 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING SINGLE COMPARTMENT WITH DUCTED EXHAUST



### V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, EAF > 1000 l/s, any FCU > 1000 l/s  
 Requirement : PAU, EAF and these FCUs should be shut down.  
 (Tripping can be made by the probe type smoke detector installed in exhaust air fan and electrically interlocking the exhaust air fan and PAU, such that the PAU can be operated only when the exhaust air fan is in operation.)  
 (Note: FCUs < 1000 l/s within the compartment are not required to be shut down)
- (b) PAU < 1000 l/s, EAF < 1000 l/s, each FCU < 1000 l/s  
 Requirement : Tripping is not required.
- (c) PAU > 1000 l/s, EAF < 1000 l/s, each FCU < 1000 l/s  
 Requirement : Only PAU should be shut down.  
 (Tripping method in item (a) can be followed but application is only limited to location where the probe type smoke detector can detect smoke within the fire compartment at early stage.)
- (d) PAU < 1000 l/s, EAF > 1000 l/s, any FCU > 1000 l/s  
 Requirement : Only EAF and these FCUs should be shut down.  
 (Tripping method in item (a) can be followed)  
 (Note: FCUs < 1000 l/s within the compartment are not required to be shut down)

When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

Title : CASE 4/1 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING  
 SINGLE COMPARTMENT WITH DUCTED EXHAUST

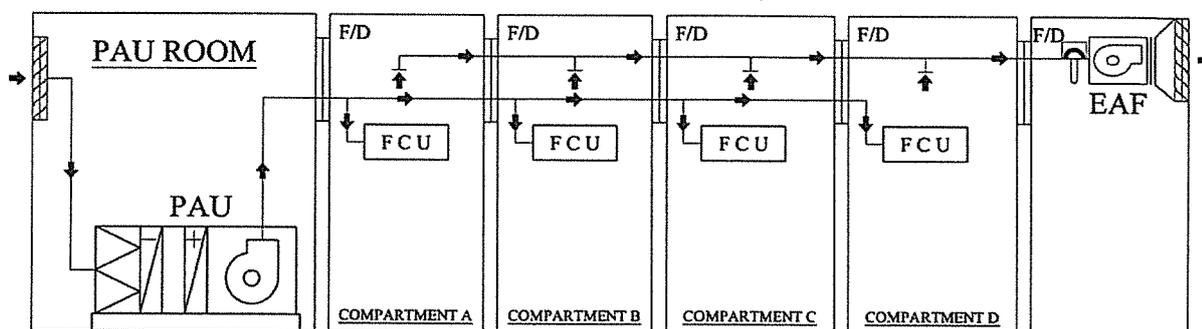
Drawn by : C. H. WONG  
 Checked by : K. C. HEUNG

Drawing No. : FS-VEN-110  
 Scale : NIL  
 Issue Date : AUG. 2005  
 Revision Date :



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## CASE 4/2 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING MULTI-COMPARTMENT WITH DUCTED EXHAUST



### V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, EAF - any rating, any FCU > 1000 l/s  
 Requirement : PAU, EAF and these FCUs should be shut down.  
 (Tripping can be made by the probe type smoke detector installed in exhaust air fan and electrically interlocking the exhaust air fan and PAU, such that the PAU can be operated only when the exhaust air fan is in operation.)  
 (Note: FCUs < 1000 l/s within the compartment are not required to be shut down)
- (b) PAU < 1000 l/s, EAF - any rating, each FCU < 1000 l/s  
 Requirement : PAU and EAF should be shut down.  
 (Tripping method in item (a) can be followed.)
- (c) PAU > 1000 l/s, EAF - any rating, each FCU < 1000 l/s  
 Requirement : PAU and EAF should be shut down.  
 (Tripping method in item (a) can be followed.)
- (d) PAU < 1000 l/s, EAF - any rating, any FCU > 1000 l/s  
 Requirement : PAU, EAF and these FCUs should be shut down.  
 (Tripping method in item (a) can be followed.)  
 (Note: FCUs < 1000 l/s within the compartment are not required to be shut down)

When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

Title : CASE 4/2 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING  
MULTI-COMPARTMENT WITH DUCTED EXHAUST

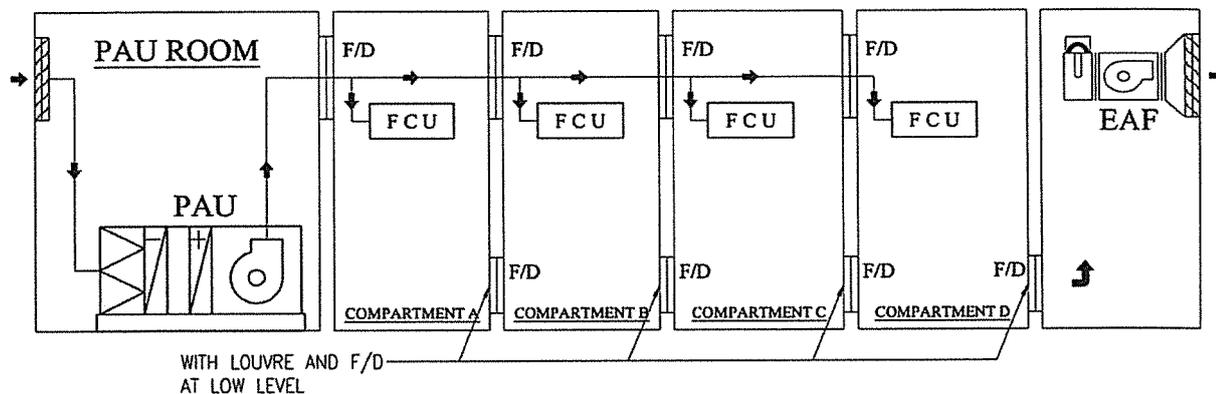
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-111  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 4/3 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING MULTI-COMPARTMENT WITH OPEN EXHAUST



### V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, EAF - any rating, any FCU > 1000 l/s  
Requirement : PAU, EAF and these FCUs should be shut down.  
(Tripping can be made by the probe type smoke detector installed in exhaust air fan and electrically interlocking the exhaust air fan and PAU, such that the PAU can be operated only when the exhaust air fan is in operation.)  
(Note: FCUs < 1000 l/s within the compartment are not required to be shut down)
- (b) PAU < 1000 l/s, EAF - any rating, each FCU < 1000 l/s  
Requirement : PAU and EAF should be shut down.  
(Tripping method in item (a) can be followed.)
- (c) PAU > 1000 l/s, EAF - any rating, each FCU < 1000 l/s  
Requirement : PAU and EAF should be shut down.  
(Tripping method in item (a) can be followed.)
- (d) PAU < 1000 l/s, EAF - any rating, any FCU > 1000 l/s  
Requirement : PAU, EAF and these FCUs should be shut down.  
(Tripping method in item (a) can be followed.)  
(Note: FCUs < 1000 l/s within the compartment are not required to be shut down)

When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

Title : CASE 4/3 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING  
MULTI-COMPARTMENT WITH OPEN EXHAUST

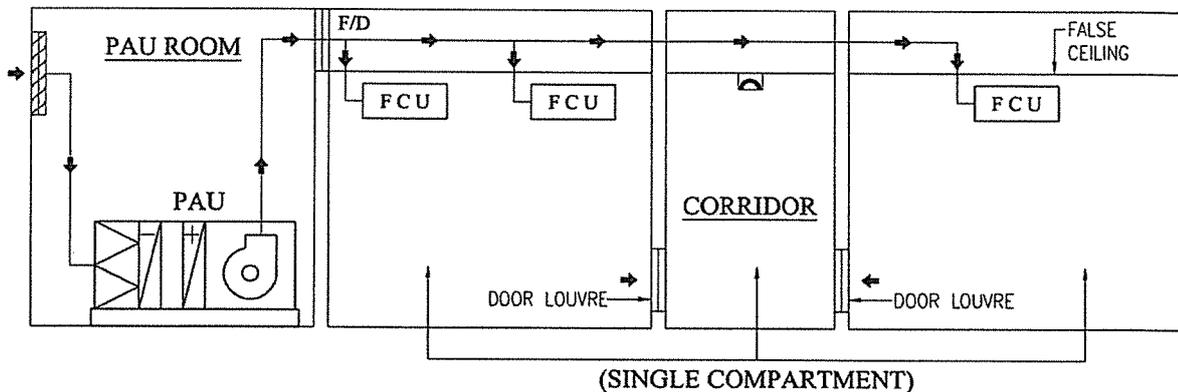
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-112  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 5/1 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING SINGLE COMPARTMENT WITH A CORRIDOR



### V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, any FCU > 1000 l/s  
 Requirement : PAU and these FCUs should be shut down.  
 (Tripping can be made by additional smoke detector installed at corridor for V/AC control system only, i.e. by modified method 'D'.)  
 (Note: FCUs < 1000 l/s within the compartment are not required to be shut down)
- (b) PAU < 1000 l/s, each FCU < 1000 l/s  
 Requirement : Tripping is not required.
- (c) PAU > 1000 l/s, each FCU < 1000 l/s  
 Requirement : Only PAU should be shut down.  
 (Tripping can be made by additional smoke detector installed at corridor for V/AC control system only, i.e. by modified method 'D'.)
- (d) PAU < 1000 l/s, any FCU > 1000 l/s  
 Requirement : Only these FCUs should be shut down.  
 (Tripping can be made by additional smoke detector installed at corridor for V/AC control system only, i.e. by modified method 'D'.)  
 (Note: FCUs < 1000 l/s within the compartment are not required to be shut down)

(Remark: Exhaust fan > 1000 l/s connected with the corridor, if any, should be shut down following the same principle in case 4/1)

When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

Title : CASE 5/1 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING  
SINGLE COMPARTMENT WITH A CORRIDOR

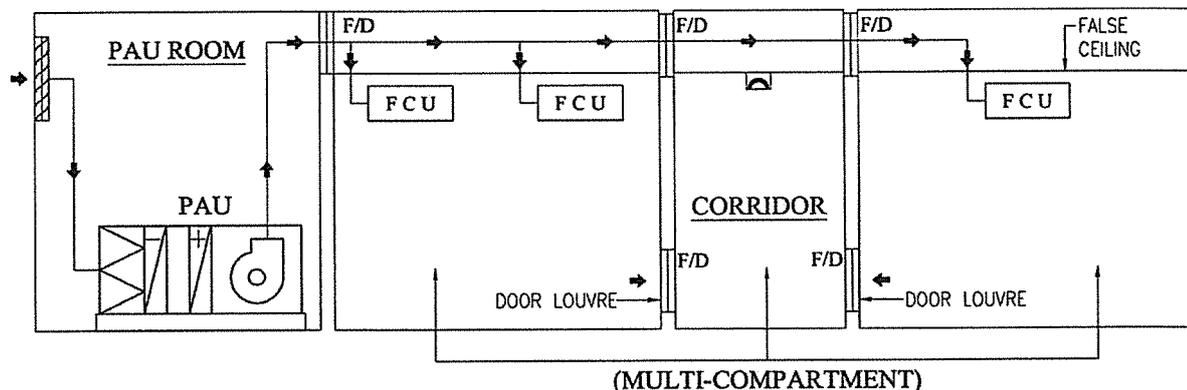
Drawn by : C. H. WONG  
 Checked by : K. C. HEUNG

Drawing No. : FS-VEN-113  
 Scale : NIL  
 Issue Date : AUG. 2005  
 Revision Date :



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## CASE 5/2 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING MULTI-COMPARTMENT WITH A CORRIDOR



### V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down.  
(Tripping can be made by additional smoke detector installed at corridor for V/AC control system only, i.e. by modified method 'D').  
(Note: FCUs < 1000 l/s within the compartment are not required to be shut down)
- (b) PAU < 1000 l/s, each FCU < 1000 l/s  
Requirement : Only PAU should be shut down.  
(Tripping can be made by additional smoke detector installed at corridor for V/AC control system only, i.e. by modified method 'D').
- (c) PAU > 1000 l/s, each FCU < 1000 l/s  
Requirement : Only PAU should be shut down.  
(Tripping can be made by additional smoke detector installed at corridor for V/AC control system only, i.e. by modified method 'D').
- (d) PAU < 1000 l/s, any FCU > 1000 l/s  
Requirement : PAU and these FCUs should be shut down.  
(Tripping can be made by additional smoke detector installed at corridor for V/AC control system only, i.e. by modified method 'D').  
(Note: FCUs < 1000 l/s within the compartment are not required to be shut down)

(Remark: Exhaust fan connected with the corridor, if any, should be shut down in all scenarios following the same principle in case 4/3)

When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

Title : CASE 5/2 - PAU WITH DUCTED FRESH AIR SUPPLY SERVING  
MULTI-COMPARTMENT WITH A CORRIDOR

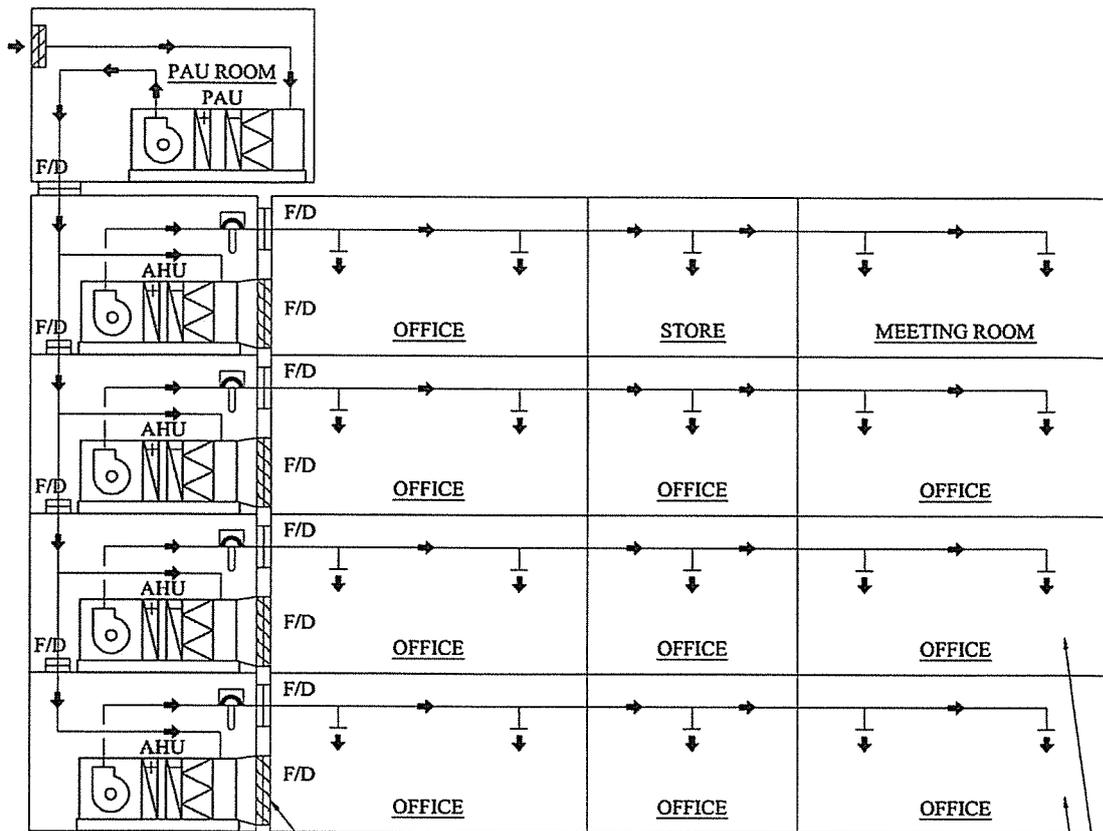
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-114  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 6/1 - PAU WITH DUCTED FRESH AIR SUPPLY FOR AHUs WITH DUCTED RETURN SERVING MULTI-COMPARTMENT MULTI-FLOOR



—RETURN AIR DUCT DIRECTLY CONNECTED TO AHU (TYPICAL)

**V/AC control logic for four scenarios:**

- (a) PAU > 1000 l/s, any AHU > 1000 l/s  
 Requirement : PAU and relevant AHUs should be shut down.  
 (Tripping can be made by probe type smoke detector installed at each AHU and electrically interlocking with PAU, such that the PAU can be operated only when any one of the AHU is in operation)  
 (Note: Relevant AHUs include AHUs > 1000 l/s and AHUs serving multi-compartment for that fire compartment should be shut down.)
- (b) PAU > 1000 l/s, each AHU < 1000 l/s  
 Requirement : PAU should be shut down. AHUs serving multi-compartment for that fire compartment should be shut down.  
 (Tripping method in item (a) can be followed, but application is only limited to location where the probe type smoke detector can detect smoke within the fire compartments at early stage.)
- (c) PAU < 1000 l/s, any AHU > 1000 l/s  
 Requirement : PAU and relevant AHU should be shut down.  
 (Tripping method in item (a) can be followed.)  
 (Note: Relevant AHUs include AHUs > 1000 l/s and AHUs serving multi-compartment for that fire compartment)
- (d) PAU < 1000 l/s, each AHU < 1000 l/s  
 Requirement : PAU should be shut down. AHUs serving multi-compartment for that fire compartment should be shut down.  
 (Tripping method in item (a) can be followed.)

SINGLE OR MULTI-COMPARTMENT  
ON A FLOOR

(Remark: Exhaust fan, if any, should be shut down following the same principle in cases 4/1, 4/2, 4/3, 10/1 and 10/2)  
 When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

Title : CASE 6/1 – PAU WITH DUCTED FRESH AIR SUPPLY FOR AHUs WITH DUCTED RETURN SERVING MULTI-COMPARTMENT MULTI-FLOOR

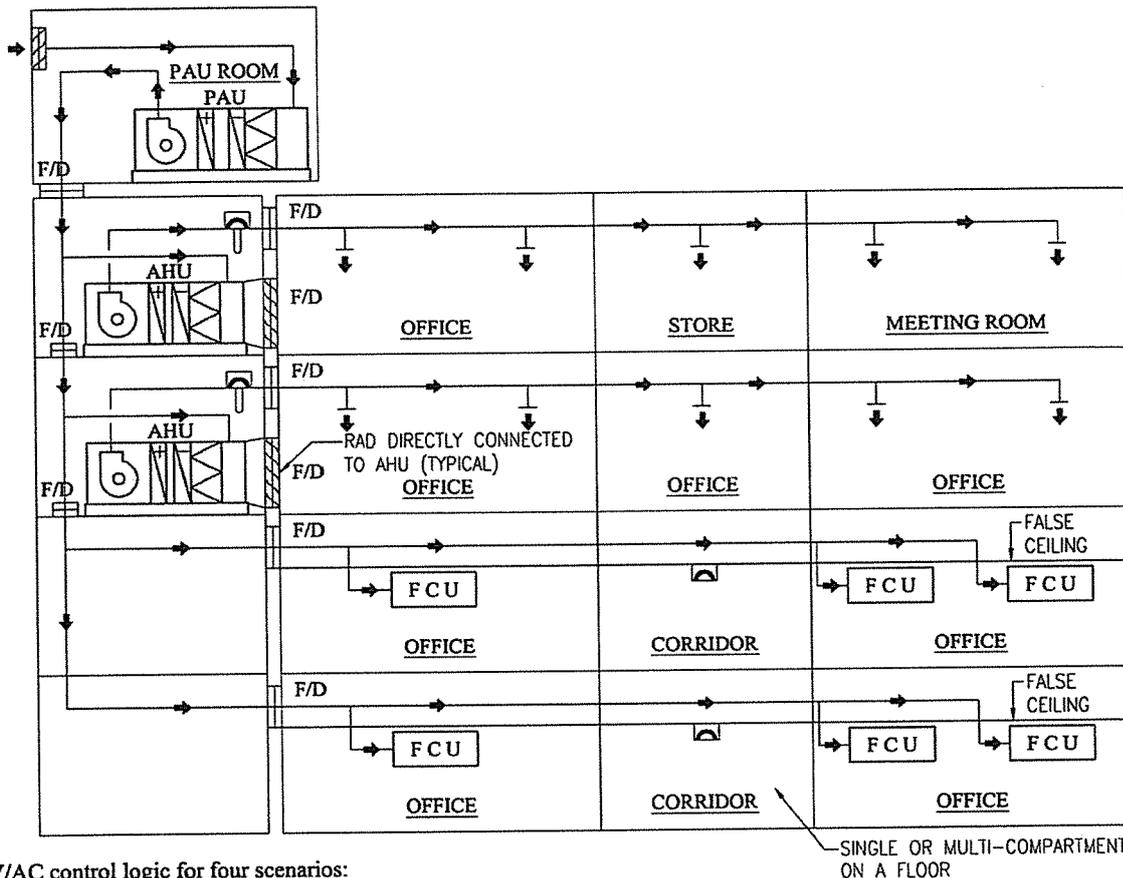
Drawn by : C. H. WONG  
 Checked by : K. C. HEUNG

Drawing No. : FS-VEN-115  
 Scale : NIL  
 Issue Date : AUG. 2005  
 Revision Date :



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**CASE 6/2 - PAU WITH DUCTED FRESH AIR SUPPLY FOR AHUs WITH DUCTED RETURN & FCUs SERVING MULTI-COMPARTMENT MULTI-FLOOR WITH CORRIDOR**



V/AC control logic for four scenarios:

- (a) PAU > 1000 l/s, any AHU (and FCU) > 1000 l/s  
 Requirement : PAU and relevant AHUs and FCUs should be shut down.  
 (Tripping can be made by smoke detector installed at corridor or probe type smoke detector installed at each AHU and electrically interlocking with PAU, such that the PAU can be operated only when any one of the AHU is in operation)  
 (Note: Relevant AHUs include AHUs > 1000l/s and AHUs serving multi-compartment for that fire compartment.  
 Relevant FCUs include FCUs > 1000 l/s at that fire compartment should be shut down)
- (b) PAU > 1000 l/s, each AHU < 1000 l/s, each FCU < 1000 l/s  
 Requirement : PAU should be shut down. AHUs serving multi-compartment for that fire compartment should be shut down.  
 (Tripping method in item (a) can be followed, but application is only limited to location where the probe type smoke detector can detect smoke within the fire compartments at early stage.)
- (c) PAU < 1000 l/s, any AHU (and FCU) > 1000 l/s  
 Requirement : PAU and relevant AHUs and FCUs should be shut down.  
 (Tripping method in item (a) can be followed.)  
 (Note: Relevant AHUs include AHUs > 1000 l/s and AHUs serving multi-compartment for that fire compartment.  
 Relevant FCUs include FCUs > 1000 l/s at that fire compartment should be shut down)
- (d) PAU < 1000 l/s, each AHU < 1000 l/s, each FCU < 1000 l/s  
 Requirement : PAU should be shut down. AHUs serving multi-compartment for that fire compartment should be shut down.  
 (Tripping method in item (a) can be followed.)

(Remark: Exhaust fan, if any, should be shut down following the same principle in cases 4/1, 4/2, 4/3, 5/1, 5/2, 10/1 and 10/2)

When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

Title : CASE 6/2 - PAU WITH DUCTED FRESH AIR SUPPLY FOR AHUs WITH DUCTED RETURN & FCUs SERVING MULTI-COMPARTMENT MULTI-FLOOR WITH CORRIDOR

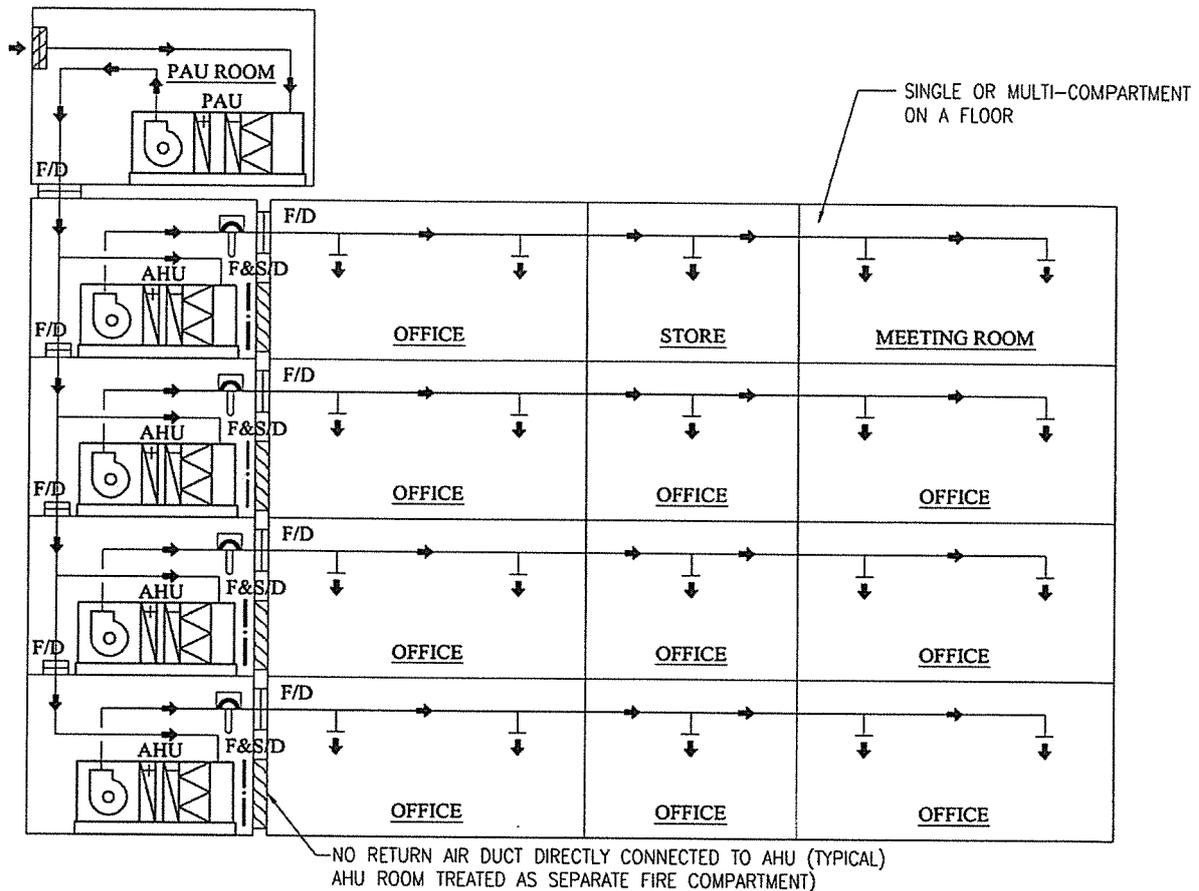
Drawn by : C. H. WONG  
 Checked by : K. C. HEUNG

Drawing No. : FS-VEN-116  
 Scale : NIL  
 Issue Date : AUG. 2005  
 Revision Date :



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**CASE 7/1 - PAU WITH DUCTED FRESH AIR SUPPLY FOR AHUs WITH ROOM RETURN SERVING MULTI-COMPARTMENT MULTI-FLOOR**



**V/AC control logic for four scenarios:**

- (a) PAU > 1000 l/s, any AHU > 1000 l/s  
Requirement : PAU and relevant AHU should be shut down.  
(Tripping can be made by probe type smoke detector installed at each AHU and electrically interlocking with PAU, such that the PAU can be operated only when any one of the AHU is in operation)
- (b) PAU > 1000 l/s, each AHU < 1000 l/s  
Requirement : PAU and relevant AHU should be shut down.  
(Tripping method in item (a) can be followed.)
- (c) PAU < 1000 l/s, any AHU > 1000 l/s  
Requirement : PAU and relevant AHU should be shut down.  
(Tripping method in item (a) can be followed.)
- (d) PAU < 1000 l/s, AHUs < 1000 l/s  
Requirement : PAU and relevant AHU should be shut down.  
(Tripping method in item (a) can be followed.)

(Remark: Exhaust Fan, if any, should be shut down following the same principle in cases 4/1, 4/2, 4/3, 10/1 and 10/2)

When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

Title : CASE 7/1 – PAU WITH DUCTED FRESH AIR SUPPLY FOR AHUs WITH ROOM RETURN SERVING MULTI-COMPARTMENT MULTI-FLOOR

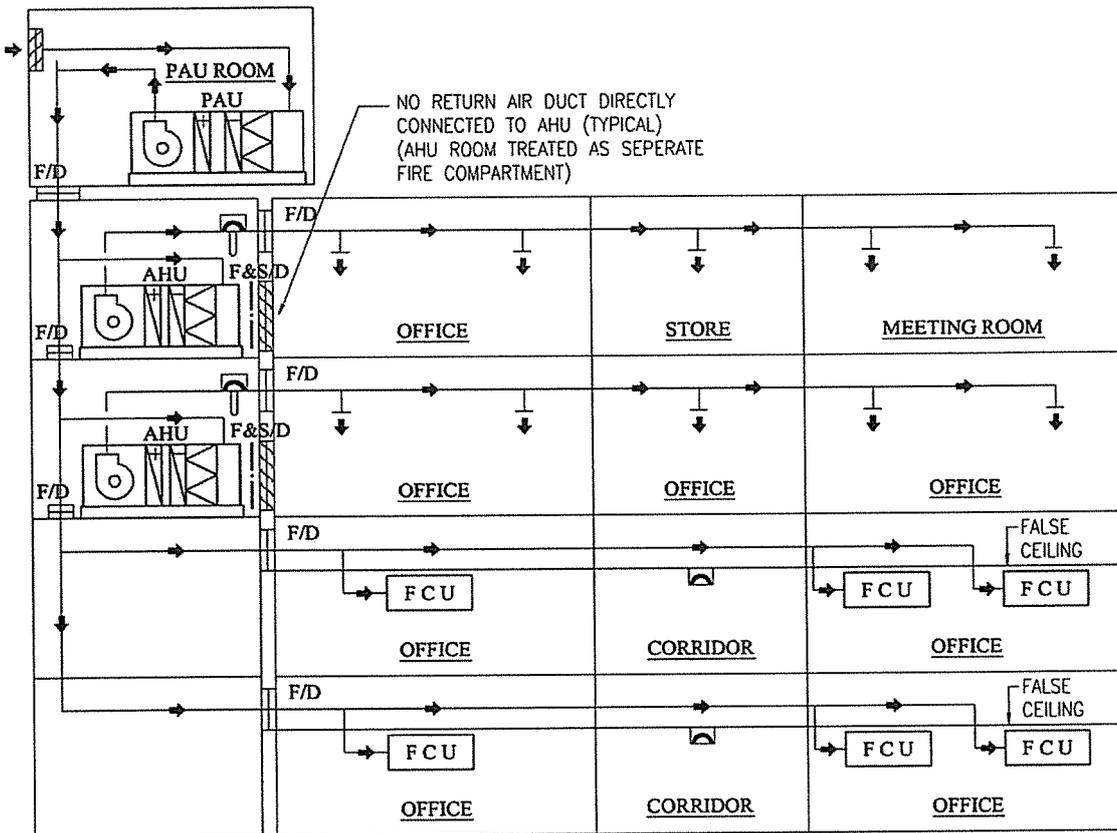
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG  
Designed by :  
SSG Advisor :

Drawing No. : FS-VEN-117  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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**CASE 7/2 - PAU WITH DUCTED FRESH AIR SUPPLY FOR AHUs WITH ROOM RETURN & FCUs SERVING MULTI-COMPARTMENT MULTI-FLOOR WITH CORRIDOR**



**V/AC control logic for four scenarios:**

- (a) PAU > 1000 l/s, any AHU (and FCU) > 1000 l/s  
 Requirement : PAU & relevant AHUs and FCUs should be shut down.  
 (Tripping can be made by probe type smoke detector installed at corridor or at each AHU and electrically interlocking with PAU, such that the PAU can be operated only when any one of the AHU is in operation)  
 (Note: Relevant AHUs include all AHUs for that fire compartment and relevant FCUs include FCUs > 1000 l/s at that fire compartment.)
- (b) PAU > 1000 l/s, each AHU < 1000 l/s, each FCU < 1000 l/s  
 Requirement : PAU & relevant AHU should be shut down.  
 (Tripping method in item (a) can be followed.)  
 (Note: Relevant AHUs include all AHUs for that fire compartment)
- (c) PAU < 1000 l/s, any AHU (and FCU) > 1000 l/s  
 Requirement : PAU & relevant AHUs and FCUs should be shut down.  
 (Tripping method in item (a) can be followed.)  
 (Note: Relevant AHUs include all AHUs for that fire compartment and relevant FCUs include FCUs > 1000 l/s at that fire compartment.)
- (d) PAU < 1000 l/s, each AHU < 1000 l/s, each FCU < 1000 l/s  
 Requirement : PAU & relevant AHU should be shut down.  
 (Tripping method in item (a) can be followed.)  
 (Note: Relevant AHUs include all AHUs for that fire compartment)

(Remark: Exhaust Fan, if any, should be shut down following the same principle in cases 4/1, 4/2, 4/3, 5/1, 5/2, 10/1 and 10/2)  
 When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

Title : CASE 7/2 – PAU WITH DUCTED FRESH AIR SUPPLY FOR AHUs WITH ROOM RETURN & FCUs SERVING MULTI-COMPARTMENT MULTI-FLOOR WITH CORRIDOR

Drawn by : C. H. WONG  
 Checked by : K. C. HEUNG

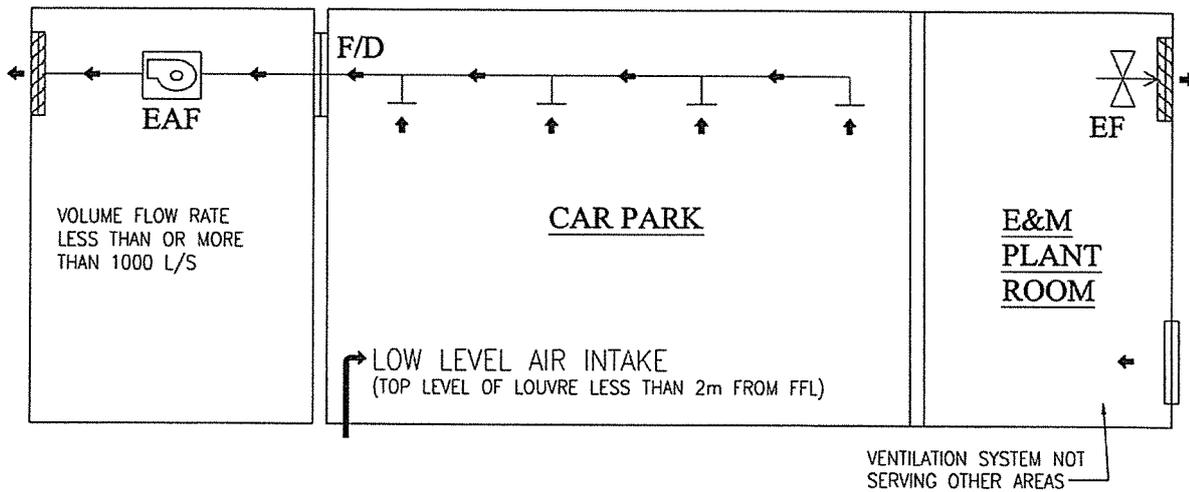
Drawing No. : FS-VEN-118  
 Scale : NIL  
 Issue Date : AUG. 2005  
 Revision Date :



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XREF\_FILE

CASE 8/1 - MECHANICAL VENTILATION SYSTEM  
WITH LOW LEVEL AIR INTAKE AND EXHAUSTED  
DIRECTLY TO OUTSIDE



V/AC control logic:

EAFs - any rating, EFs - any rating  
Requirement : Tripping is not required.

Title : CASE 8/1- MECHANICAL VENTILATION SYSTEM WITH LOW LEVEL AIR  
INTAKE AND EXHAUSTED DIRECTLY TO OUTSIDE

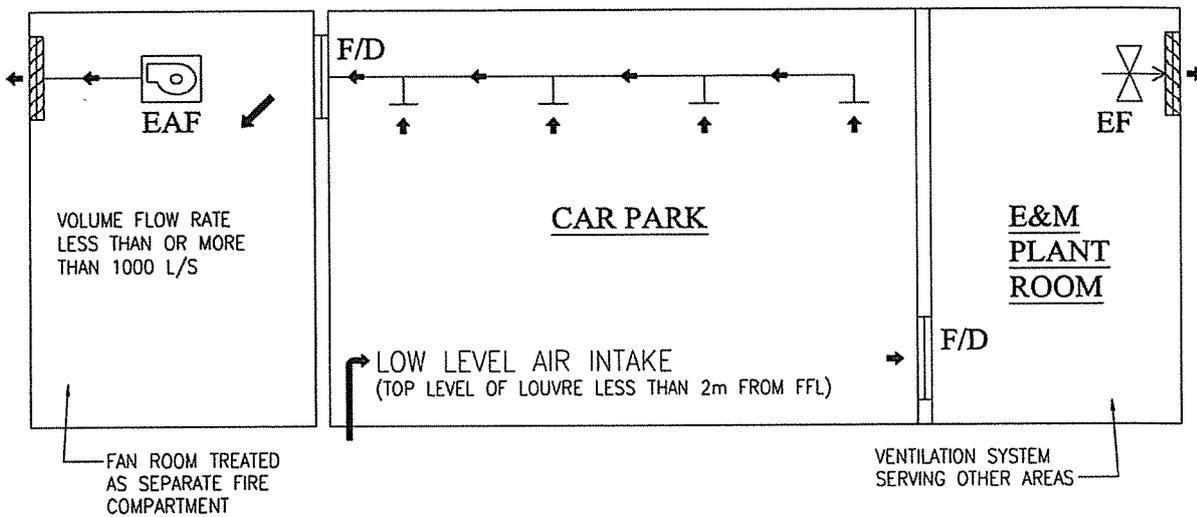
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-119  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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CASE 8/2 - MECHANICAL VENTILATION SYSTEM  
WITH LOW LEVEL AIR INTAKE AND EXHAUSTED  
VIA OTHER AREAS TO OUTSIDE



V/AC control logic:

EAFs - any rating, EFs - any rating

Requirement : EAFs and EFs should be shut down..

Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

Title : CASE 8/2 – MECHANICAL VENTILATION SYSTEM WITH LOW LEVEL AIR INTAKE AND EXHAUSTED VIA OTHER AREAS TO OUTSIDE

Drawn by : C. H. WONG

Checked by : K. C. HEUNG

Drawing No. : FS-VEN-120

Scale : NIL

Issue Date : AUG. 2005

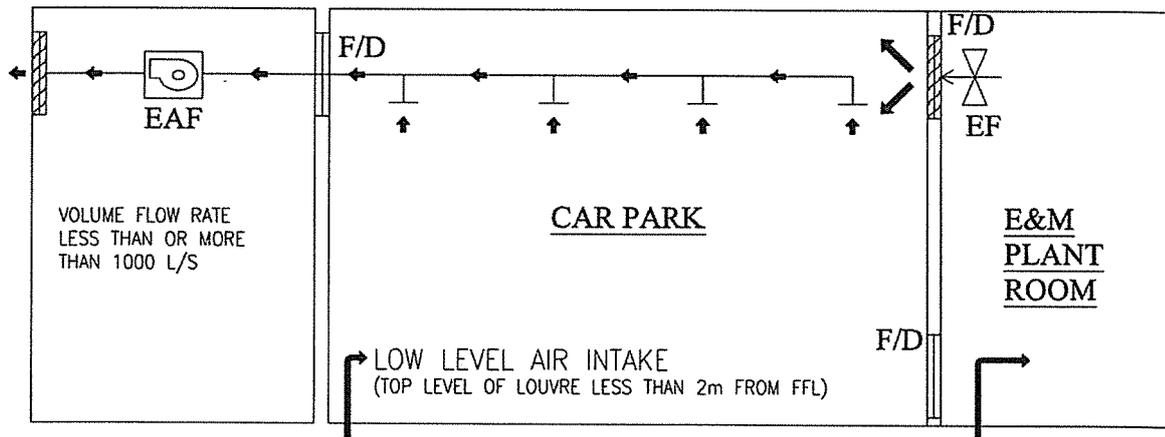
Revision Date :



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**CASE 8/3 - MECHANICAL VENTILATION SYSTEM  
WITH LOW LEVEL AIR INTAKE AND EXHAUSTED  
DIRECTLY TO OUTSIDE HAVING VENTILATION  
FLOW FROM INTERNAL PLANT ROOMS**



LOW LEVEL  
AIR INTAKE  
(EITHER FROM CAR PARK  
THROUGH FIRE DAMPER, OR  
DIRECTLY FROM OUTSIDE AIR)

**V/AC control logic:**

EAFs - any rating, EFs - any rating  
Requirement : Only EFs should be shut down.

Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

Title : CASE 8/3 - MECHANICAL VENTILATION SYSTEM WITH LOW LEVEL AIR INTAKE AND EXHAUSTED DIRECTLY TO OUTSIDE HAVING VENTILATION FLOW FROM INTERNAL PLANT ROOMS

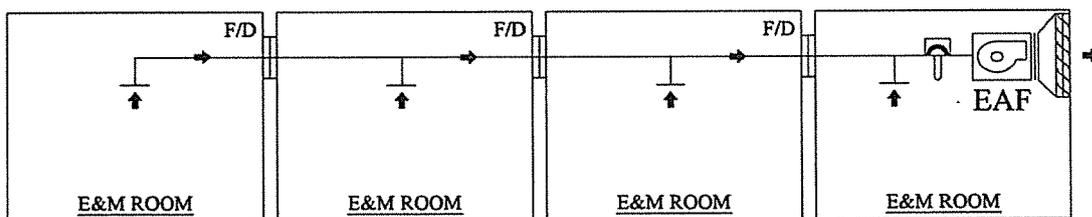
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-121  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 9/1 - MECHANICAL VENTILATION SYSTEM WITH EXHAUST AIR DUCT SERVING MULTI-COMPARTMENT



### V/AC control logic:

EAFs - any rating

Requirement : EAFs should be shut down.

(Tripping can be made by probe type smoke detector(s) installed at exhaust air duct)

Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

Title : CASE 9/1 — MECHANICAL VENTILATION SYSTEM WITH EXHAUST AIR DUCT SERVING MULTI-COMPARTMENT

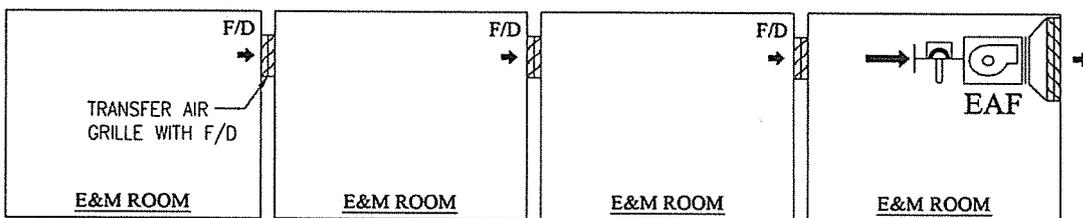
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-122  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 9/2 - MECHANICAL VENTILATION SYSTEM WITHOUT EXHAUST AIR DUCT SERVING MULTI-COMPARTMENT



### V/AC control logic:

EAFs - any rating

Requirement : EAFs should be shut down.

(Tripping can be made by probe type smoke detector(s) installed at exhaust air duct)

Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

Title : CASE 9/2 - MECHANICAL VENTILATION SYSTEM WITHOUT EXHAUST AIR DUCT SERVING MULTI-COMPARTMENT

Drawn by : C. H. WONG

Drawing No. : FS-VEN-123

Checked by : K. C. HEUNG

Scale : NIL

Issue Date : AUG. 2005

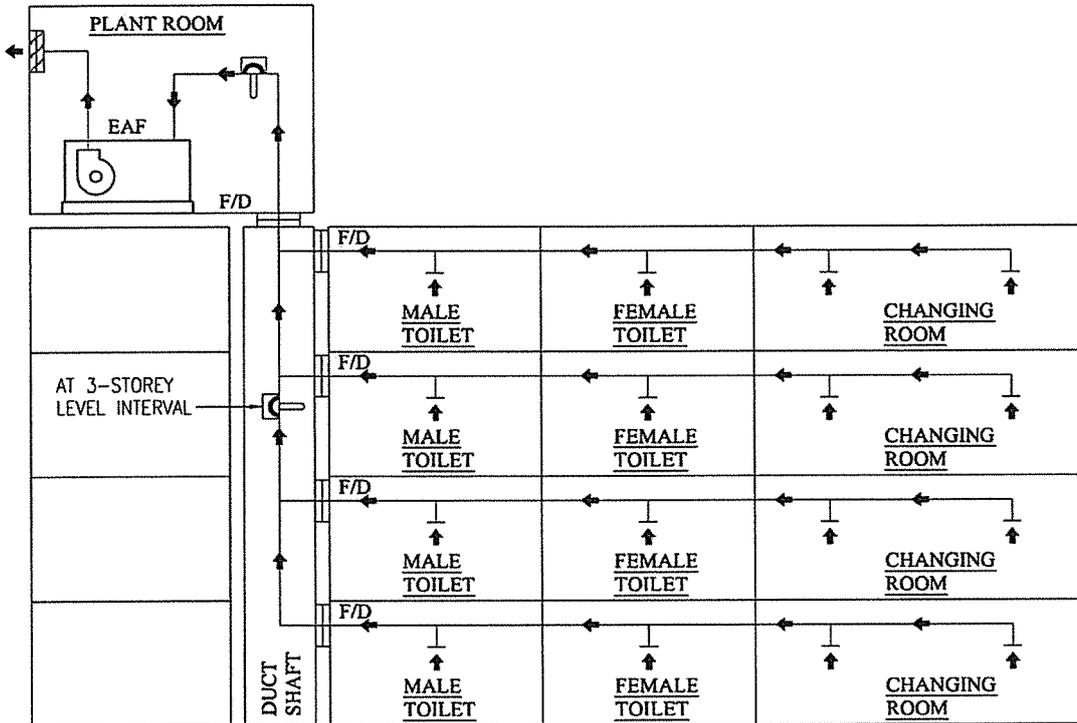
Revision Date :



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# CASE 10/1 - MECHANICAL VENTILATION SYSTEM WITH EXHAUST AIR DUCT SERVING MULTI-COMPARTMENT MULTI-FLOOR



V/AC control logic:

EAFs - any rating

Requirement : EAF should be shut down.

(Tripping can be made by probe type smoke detector(s) installed at exhaust air duct in fan room and where required at 3-storey level intervals in duct shaft of the main exhaust air duct when the building is over 3-storey.)

Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

Title : CASE 10/1 – MECHANICAL VENTILATION SYSTEM WITH EXHAUST AIR DUCT SERVING MULTI-COMPARTMENT MULTI-FLOOR

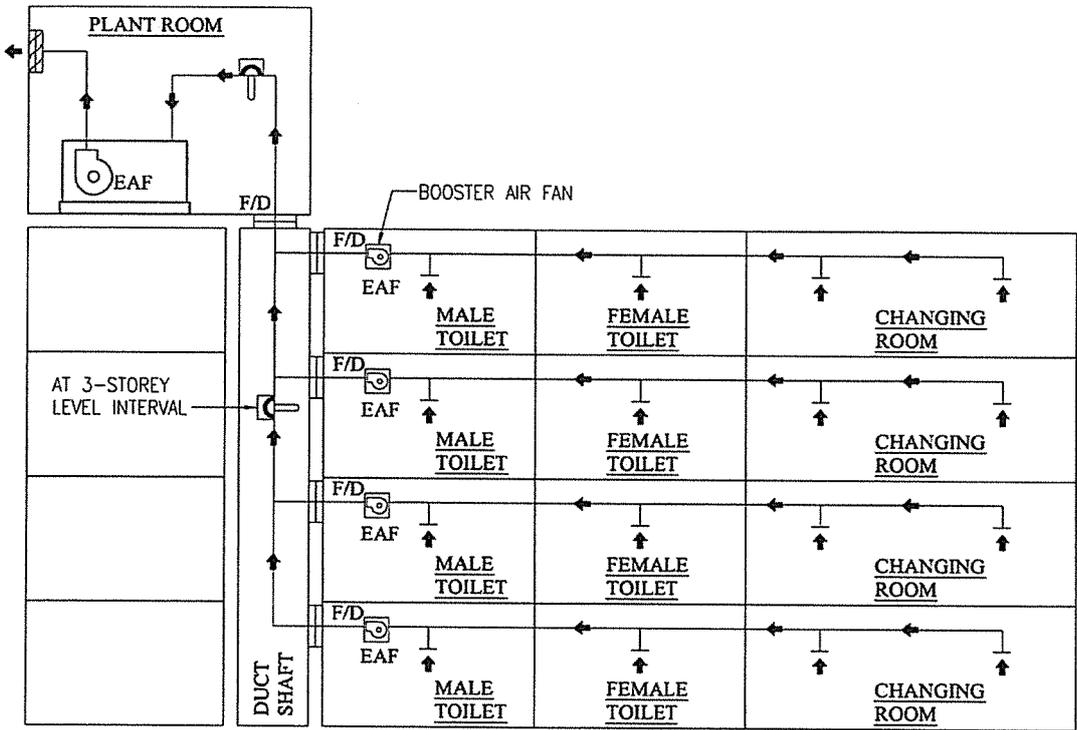
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-124  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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# CASE 10/2 - MECHANICAL VENTILATION SYSTEM WITH EXHAUST AIR DUCT AND BOOSTER AIR FANS SERVING MULTI-COMPARTMENT MULTI-FLOOR



V/AC control logic:

EAFs - any rating, Booster Air Fans - any rating

Requirement : EAFs and relevant booster air fans should be shut down.

(Tripping can be made by probe type smoke detector(s) installed at exhaust air duct in fan room and where required at 3-storey level intervals in duct shaft of the main exhaust air duct when the building is over 3-storey.)

(Note: Relevant booster air fans include booster air fans for that fire compartment should be shut down.)

Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

Title : CASE 10/2 – MECHANICAL VENTILATION SYSTEM WITH EXHAUST AIR DUCT AND BOOSTER AIR FANS SERVING MULTI-COMPARTMENT MULTI-FLOOR

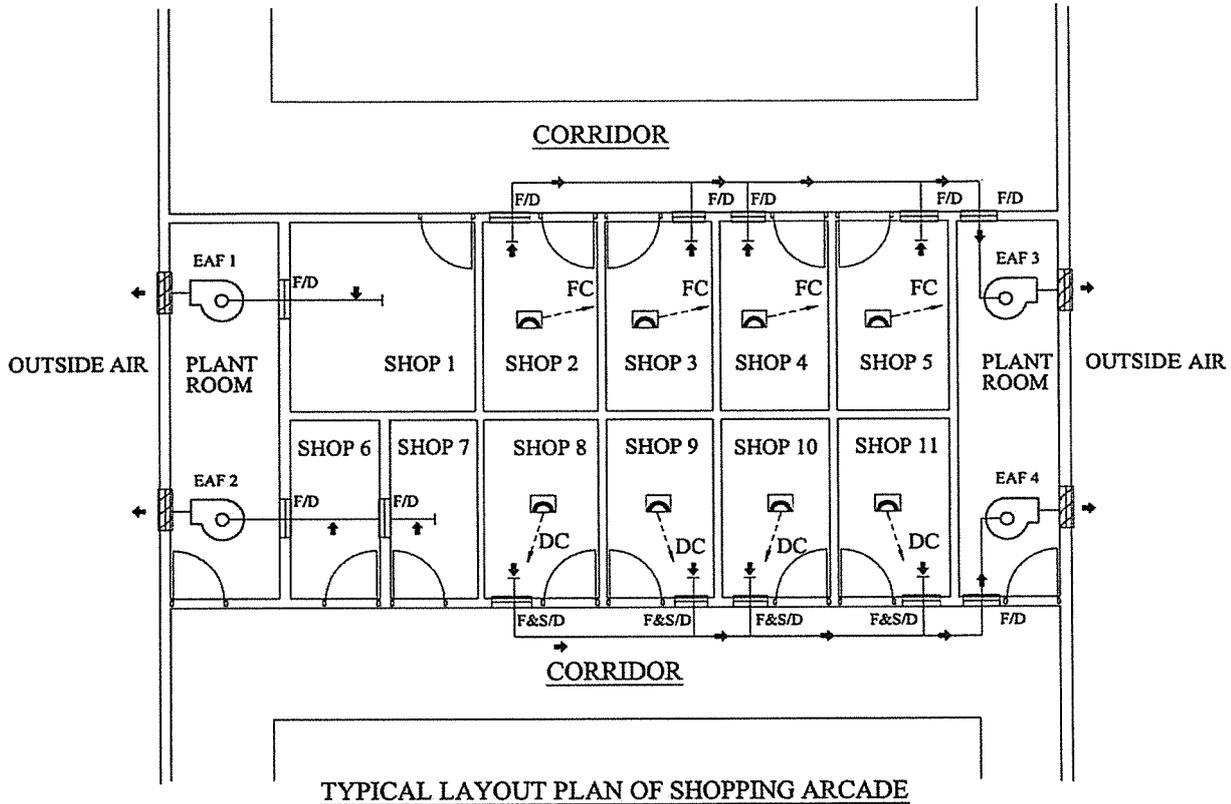
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-125  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 11/1 - CENTRAL EXHAUST SYSTEM AT SHOPPING ARCADE (FLOOR PLAN)



V/AC control logic for four scenarios:

- (a) EAF 1 should be shutdown when air flow exceeds 1000 l/s.
- (b) EAF 2 should be shutdown.
- (c) EAF 3 should be shutdown, the F/D is not required if the shop front is not a fire rated wall/partition.
- (d) EAF 4 is not required to be shutdown, the F&S/D should be activated by space smoke detector(s) installed at each shop; the F&S/D may be replaced by smoke damper if the shop front is not a fire rated wall/partition.

Remarks

FC : Fan control

DC : Damper control

Please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system when the automatic detection device as shown above is not applicable.

Title : CASE 11/1 – CENTRAL EXHAUST SYSTEM AT SHOPPING ARCADE

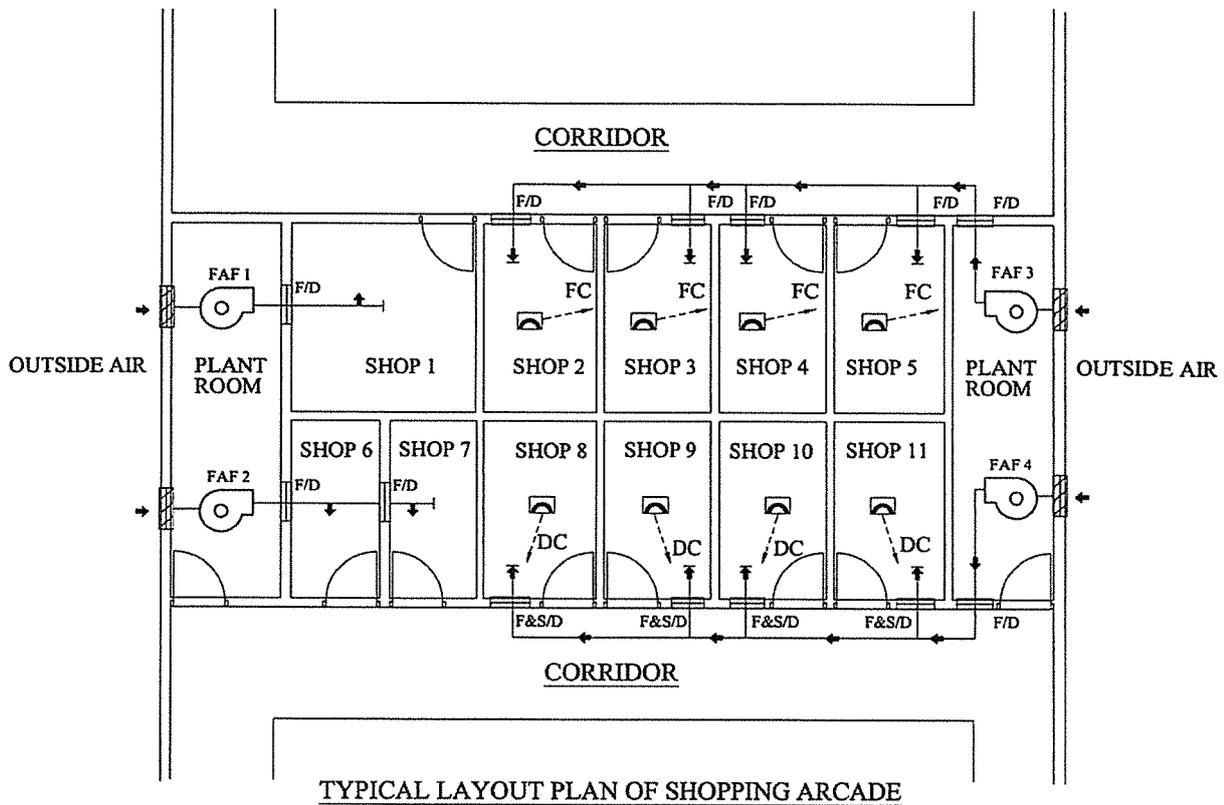
Drawn by : C. H. WONG  
Checked by : K. C. HEUNG

Drawing No. : FS-VEN-126  
Scale : NIL  
Issue Date : AUG. 2005  
Revision Date :



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## CASE 11/2 - CENTRAL FRESH AIR SUPPLY SYSTEM AT SHOPPING ARCADE (FLOOR PLAN)



V/AC control logic for four scenarios:

- (a) FAF 1 should be shutdown when air flow exceeds 1000 l/s.
- (b) FAF 2 should be shutdown.
- (c) FAF 3 should be shutdown, the F/D is not required if the shop front is not a fire rated wall/partition.
- (d) FAF 4 is not required to be shutdown, the F&S/D should be activated by space smoke detector(s) installed at each shop; the F&S/D may be replaced by smoke damper if the shop front is not a fire rated wall/partition.

Remarks

FC : Fan control  
 DC : Damper control

Please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system when the automatic detection device as shown above is not applicable.

Title : CASE 11/2 – CENTRAL FRESH AIR SUPPLY SYSTEM AT SHOPPING ARCADE

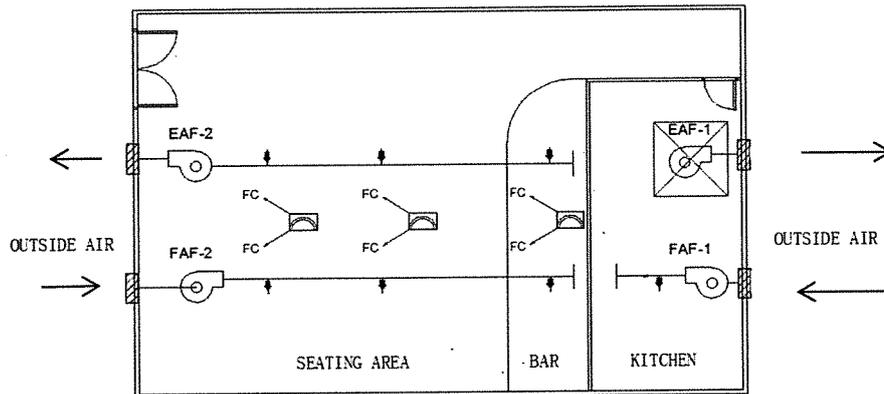
Drawn by : C. H. WONG  
 Checked by : K. C. HEUNG

Drawing No. : FS-VEN-127  
 Scale : NIL  
 Issue Date : AUG. 2005  
 Revision Date :



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**CASE 12/1 – TYPICAL LICENSED PREMISES VENTILATING SYSTEM (FLOOR PLAN)**



LAYOUT PLAN OF TYPICAL FOOD PREMISES

V / A C control logic for two scenarios:

When  smoke detector ((250 sq.m/unit coverage) for tripping of V/AC control system) is activated:

- (a) For fan capacity  $\leq$  1000 l/s  
EAF - 1, EAF - 2, FAF - 1 & FAF - 2 are not required to be shut down.
- (b) For fan capacity  $>$  1000 l/s  
EAF - 2 & FAF - 2 should be shut down.  
EAF - 1 & FAF - 1 are not required to be shut down provided that the fans are electrically interlocked\*.  
(EAF - 1 is connected with range hood)

Remarks :

- FC : Fan control operated with smoke detector
- Please refer to notes in drawing no. FS-VEN-101A for other acceptable methods to activate the V/AC control system in case the automatic detection device as shown above is not suitable.

\*- Electrical interlock is an electrical control circuit designed to switch on and off the fans with following operation modes:-

Switch on:

The exhaust air fan is switched on then followed by fresh air fan sequentially.

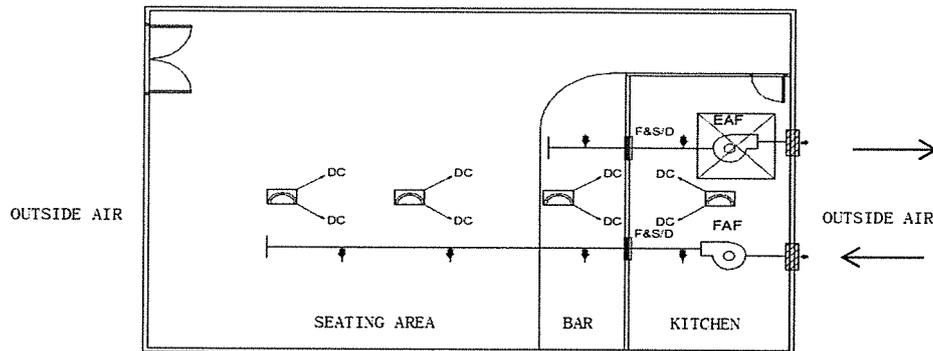
Switch Off:

The fresh air fan, exhaust air fan are switched off simultaneously. The exhaust air flow rate should be maintained higher than the fresh air flow rate in the kitchen at all times.

Title : TYPICAL LICENSED PREMISES VENTILATING SYSTEM (FLOOR PLAN)

Drawn by : C. H. WONG	Drawing No. : FS-VEN-128A		<b>FIRE SERVICES DEPARTMENT</b> 消防處
Checked by : H. Y. NGAN	Scale : NIL		
	Issue Date : AUG.2005		
	Revision Date : SEPT. 2018		

**CASE 12/2 —KITCHEN VENTILATING SYSTEM WITH FANS INSTALLED IN KITCHEN AND USING FIRE & SMOKE DAMPERS (FLOOR PLAN)**



LAYOUT PLAN OF TYPICAL FOOD PREMISES

Note : If the kitchen ventilating system is shared with other non-kitchen areas, prior approval shall be obtained from the Director of Food & Environmental Hygiene before installation.

V/AC control logic:

- When  smoke detector ((250 sq.m/unit coverage) for tripping of V/AC control system) is activated:
- EAF & FAF are not required to be shut down provided that the fans are electrically interlocked\*.
- (EAF is connected with range hood)
- Fire & smoke dampers (F&S/D) shall be provided at the points where the air ducts penetrate the boundary wall separating the kitchen and other areas to maintain compartmentation in case of fire, F&S/D should be activated either by local space smoke detectors installed in the non-kitchen areas or by automatic detection device such as smoke detectors, heat detectors or flow switch of sprinkler system etc. as appropriate installed in the kitchen.

Remarks

- DC : Fire & smoke damper control operated with smoke detector
- Please refer to note in drawing no. FS-VEN-101A for other acceptable methods to activate the V/AC control system in case the automatic detection device as shown above is not suitable.

\*- Electrical interlock is an electrical control circuit designed to switch on and off the fans with following operation modes:-

Switch on:

The exhaust air fan is switched on then followed by fresh air fan sequentially.

Switch Off:

The fresh air fan, exhaust air fan are switched off simultaneously. The exhaust air flow rate should be maintained higher than the fresh air flow rate in the kitchen at all times.

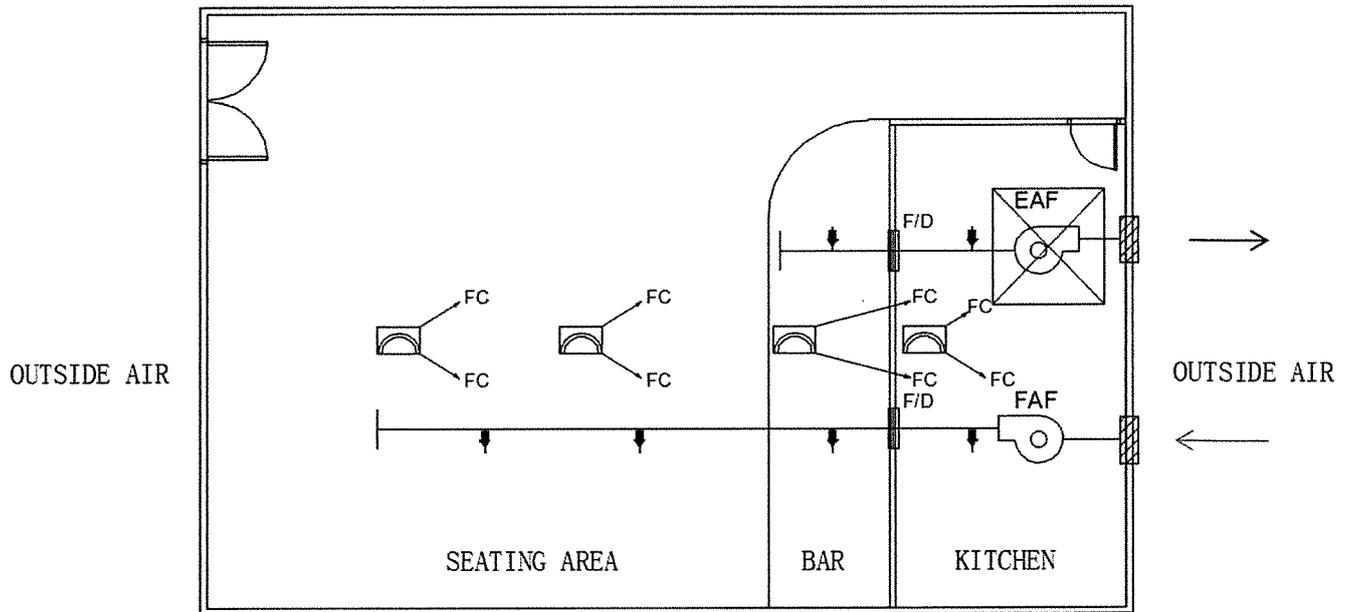
Title : **CASE 12/2 —KITCHEN VENTILATING SYSTEM WITH FANS INSTALLED IN KITCHEN AND USING FIRE & SMOKE DAMPERS (FLOOR PLAN)**

Drawn by	: C. H. WONG	Drawing No.	: FS-VEN-129A
Checked by	: H. Y. NGAN	Scale	: NIL
		Issue Date	: AUG.2005
		Revision Date	: SEPT. 2018



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**CASE 12/3 –KITCHEN VENTILATING SYSTEM WITH FANS INSTALLED IN KITCHEN AND USING FIRE DAMPERS (FLOOR PLAN)**



**LAYOUT PLAN OF TYPICAL FOOD PREMISES**

Note : If the ventilating system in kitchen is shared with other non-kitchen areas, prior approval shall be obtained from the Director of Food & Environmental Hygiene before installation.

**V /AC control logic:**

- When  smoke detector ((250 sq.m/unit coverage) for tripping of V/AC control system) is activated:
- EAF & FAF are to be shut down irrespective of any air flow rates.
- Heat detectors or flow switch of sprinkler system can be used to activate the V/AC control system in lieu of space smoke detectors for the kitchen area.

**Remarks:**

- FC : Fan control operated with smoke detector
- Please refer to note in drawing no. FS-VEN-101A for other acceptable methods to activate the V/AC control system in case the automatic detection device as shown above is not suitable.
- The exhaust air flow rate should be maintained higher than the fresh air flow rate in the kitchen at all times.

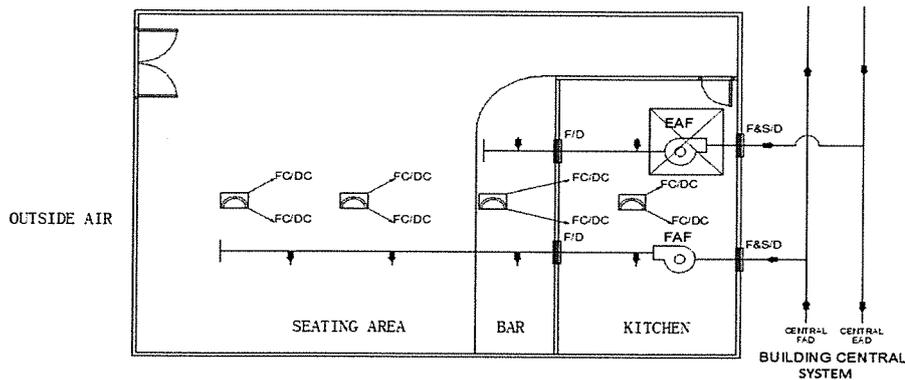
Title : **CASE 12/3 –KITCHEN VENTILATING SYSTEM WITH FANS INSTALLED IN KITCHEN AND USING FIRE DAMPERS (FLOOR PLAN)**

Drawn by : C. H. WONG	Drawing No. : FS-VEN-130A
Checked by : H. Y. NGAN	Scale : NIL
	Issue Date : AUG.2005
	Revision Date : SEPT. 2018



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**CASE 12/5 – KITCHEN VENTILATING SYSTEM WITH BOOSTER FANS AND CENTRAL SYSTEMS (FLOOR PLAN)**



**LAYOUT PLAN OF TYPICAL FOOD PREMISES**

Note: If the ventilating system for both kitchen and non-kitchen areas is shared, prior approval shall be obtained from the Director of Food & Environmental Hygiene before installation.

**V /AC control logic:**

- When  smoke detector ((250 sq.m/unit coverage) for tripping of V/AC control system) is activated:
- The building central exhaust/supply fans may keep on running while EAF and FAF of the licensed premises shall be shut down. The fire & smoke dampers (F&S/D) shall also be closed.
- Fire & smoke dampers (F&S/D) shall be provided at the points where the air ducts penetrate the premises boundary wall for connection to the central supply/exhaust air ducts to maintain compartmentation in case of fire, the F&S/D should be activated by an automatic detection device in the licensed premises. Heat detectors or flow switch of sprinkler system can be used to activate the V/AC control system in lieu of space smoke detector for the kitchen area.

**Remarks :**

- FC/DC : Fan control operated with smoke detector / Fire & smoke damper control operated with smoke detector
- Please refer to note in drawing no. FS-VEN-101A for other acceptable methods to activate the V/AC control system in case the automatic detection device as shown above is not suitable.
- The exhaust air flow rate should be maintained higher than that of fresh air flow rate in the kitchen at all times.

Title : **CASE 12/5 — KITCHEN VENTILATING SYSTEM WITH BOOSTER FANS AND CENTRAL SYSTEMS (FLOOR PLAN)**

Drawn by : **C. H. WONG**  
 Checked by : **H. Y. NGAN**

Drawing No. : **FS-VEN-132A**  
 Scale : **NIL**  
 Issue Date : **AUG.2005**  
 Revision Date : **SEPT. 2018**



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