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LICENSING AND CERTIFICATION COMMAND

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3 November 2005

Dear Sirs/Madams,

FSD Circular Letter No. 2/2005
Ventilation/Air Conditioning (V/AC) Control System

Ventilation/air conditioning control system is classified as fire service installation. The relevant specification is detailed in Section 5.25 of current Code of Practice for Minimum Fire Service Installations and Equipment.

In the past, there have been a lot of enquiries from the industry and trade in connection with how different configurations of air conditioning and mechanical ventilation (ACMV) system could meet the requirements of this control system. With a view to facilitating the industry and trade to understand the relevant requirements in a more comprehensible approach, a set of schematic drawings appended to this Circular Letter is prepared for general reference. These drawings are the results of co-operation between the industry and this Department after meticulous reviews and discussions on various probable scenarios. A summary of the requirements in table form for typical cases is also produced at Annex for easy reference.

The cases presented in these drawings basically cover different ACMV system layouts commonly encountered. However, should there be other cases requiring further clarifications, enquiry can be made to Fire Service Installations Division of this Department.

As this Circular Letter does not involve any change of current statutory requirements, it is effective immediately.

Yours faithfully,

(LO Chun-hung)
for Director of Fire Services

Encl.

ANNEX

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

Features / Highlights :

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

	Operational Response to VAC Control		
Scenario	PAU	FCU ≤ 1000 l/s	FCU > 1000 l/s
PAU ≤ 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.

	Operational Response to VAC Control			
Scenario	PAU	EAF	FCU ≤ 1000 l/s	FCU > 1000 l/s
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
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 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.

	Operational Response to VAC Control			
Scenario	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 3/1

Features / Highlights :

1. PAU is deemed to serve single compartment.

	Operational Response to VAC Control		
Scenario	PAU	FCU ≤ 1000 l/s	FCU > 1000 l/s
PAU ≤ 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.

	Operational Response to VAC Control		
Scenario	PAU	FCU ≤ 1000 l/s	FCU > 1000 l/s
PAU ≤ 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.

	Operational Response to VAC Control			
Scenario	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.

	Operational Response to VAC Control			
Scenario	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 ≤ 1000 l/s	FCU > 1000 l/s
PAU ≤ 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 ≤ 1000 l/s	FCU > 1000 l/s
PAU ≤ 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.

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

	Operational Response to VAC Control				
Scenario	PAU	AHU (single compartment)	AHU (multi-compartments)	FCU ≤ 1000 l/s	FCU > 1000 l/s
PAU ≤ 1000 l/s, AHU ≤ 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
PAU > 1000 l/s, AHU ≤ 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.

	Operational Response to VAC Control		
Scenario	PAU	AHU ≤ 1000 l/s	AHU > 1000 l/s
PAU ≤ 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.

	Operational Response to VAC Control			
Scenario	PAU	AHU	FCU ≤ 1000 l/s	FCU > 1000 l/s
PAU ≤ 1000 l/s, AHU ≤ 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
PAU > 1000 l/s, AHU ≤ 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.

	Operational Response to VAC Control			
Scenario	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.

	Operational Response to VAC Control			
Scenario	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.

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

Case 12/4

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.

	Operational Response to VAC Control			
Scenario	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 & NOTE

	PROBE TYPE SMOKE DETECTOR
	SMOKE DETECTOR (250 sq.m/UNIT COVERAGE) FOR TRIPPING OF VENT A/C CONTROL SYSTEM ONLY
AHU	AIR HANDLING UNIT
EAD	EXHAUST AIR DUCT
EAF	EXHAUST AIR FAN
EF	PROPELLER TYPE EXHAUST FAN OR SIMILAR
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 VAC control system:–

i) 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.

ii) Method "B" – Smoke detectors of a type suitable for use in air ducts (duct 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.

iii) Method "C" – Shut down all the fans in the building instead of isolated compartments/units by the actuation of building fire alarm system.

iv) Method "D" (Modified shut down method) – Shut down all the fans in the affected compartment by the actuation of smoke detector(s) installed in suitable position under false ceiling at space of 250m^2 of net floor area for each detector.(Please refer to Part IV Clause 1.10 of FSD Circular Letter 4/96.)

v) A combination of any methods mentioned above except Method "C".

(2) For "Licensed Premises" (See Drawings No. FS–VEN–126 to 132):

i) If the mechanical ventilating system of a "Licensed Premises" is connected to the central exhaust/supply systems of the building, it may be accepted as an independent system provided that a fire and smoke damper (F&SD) or a smoke damper (SD) as appropriate is installed at the interconnection to the central exhaust/supply 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&SD/SD shall be closed by a fire signal from the "Licensed Premises". Under such circumstance, the provision of a seperate manual override switch at a location agreeable to the Director of Fire Services may be accepted as an alternative to the manual override switch installed at the central fire control panel for the "Licensed Premises".

ii) If the "Licensed Premises" have their own mechanical ventilating system, the provision of a manual override switch at a location agreeable to the Director of Fire Services may be accepted as an alternative to the one installed at the central fire control panel of the building, provided that there are specific reasons for such provision or difficulties to install a manual override switch at the central fire control panel as accepted by the Director of Fire Services.

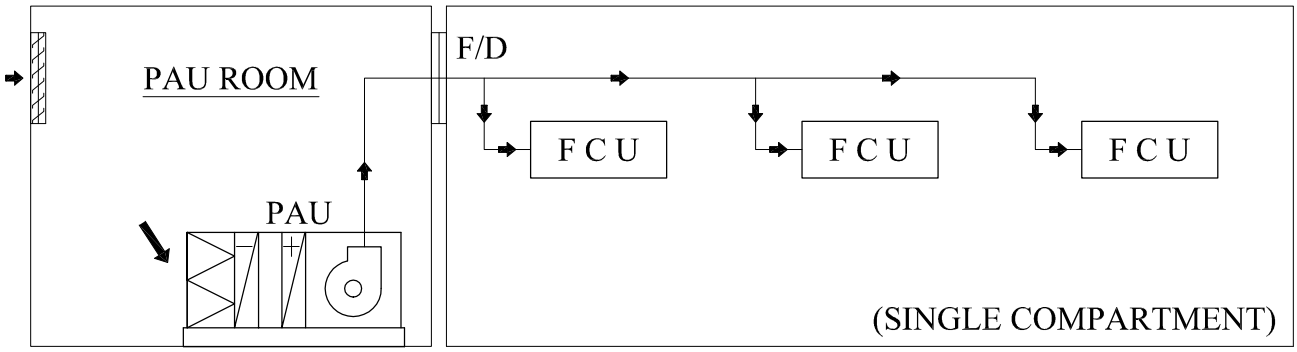
(3) Please refer to the Code of Practice for Minimum Fire Service Installations and Equipment for mechanical ventilating systems that can be exempted from the provisioning of automatic override control function at the V/AC control system.

Title : LEGEND & NOTE

Drawn by : C. H. WONG Checked by : K. C. HEUNG	Drawing No. : FS–VEN–101 Scale : NIL Issue Date : AUG. 2005 Revision Date :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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.

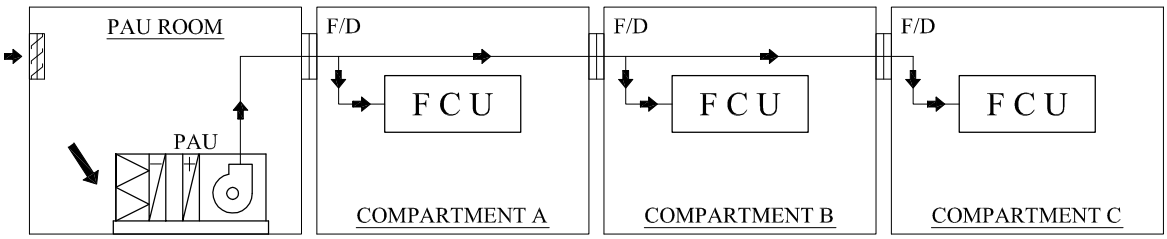
(d) PAU < 1000 l/s, any FCU > 1000 l/s
Requirement : PAU and these FCUs should be shut down. (Note: FCUs < 1000l/s within the compartment are not required to be shut down)

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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.

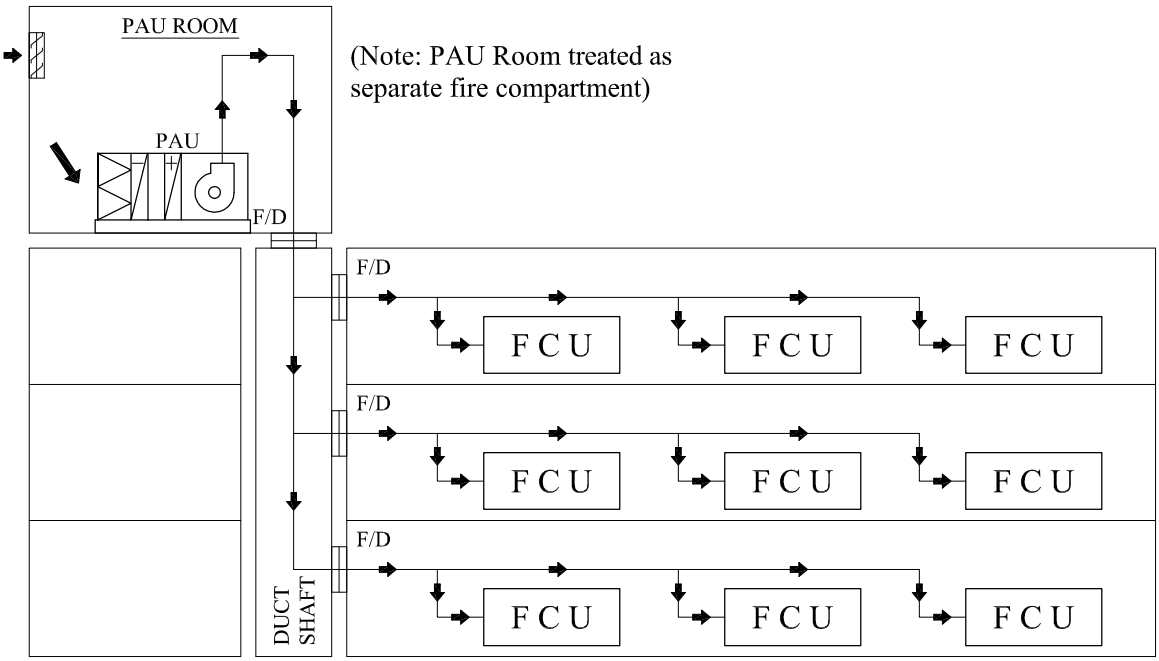
(d) PAU < 1000 l/s, any FCU > 1000 l/s
Requirement : PAU and these FCUs should be shut down. (Note: FCUs < 1000l/s within the compartment are not required to be shut down)

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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 VENTIALTED 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 :	FIRE SERVICES DEPARTMENT 消 防 處

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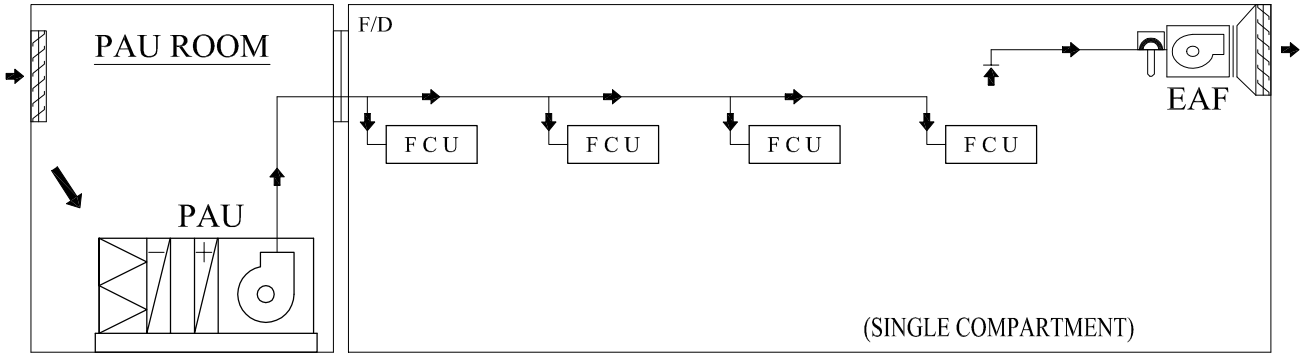
CASE 2/1 - PAU IN OPEN VENTILATED ROOM SERVING SINGLE COMPARTMENT WITH DUCTED EXHAUST



(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)

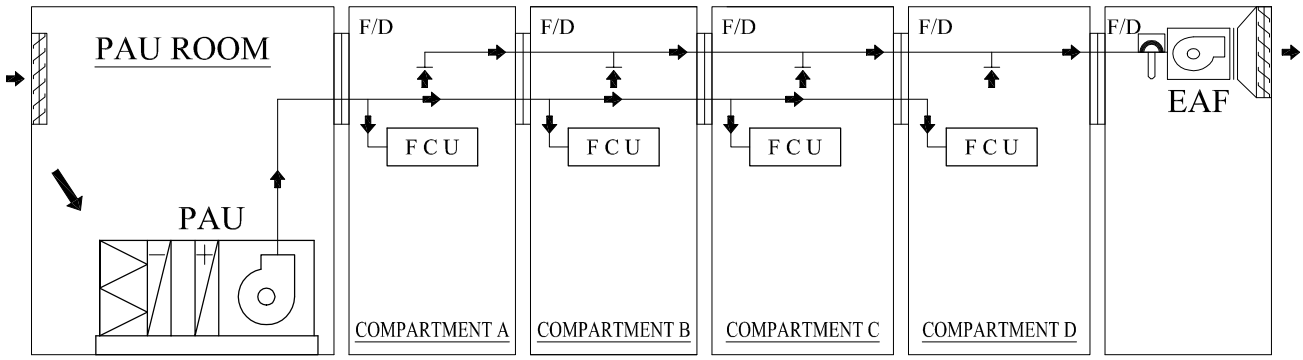
(e) Other cases
Requirement : PAU should be shut down. Only those EAF and FCUs > 1000 l/s should be shut down
(Tripping method in item (a) can be followed but application is only limited to location where the probe type smoke detector can detect smoke within the fire compartments at early stage.)
(Note: 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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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.)

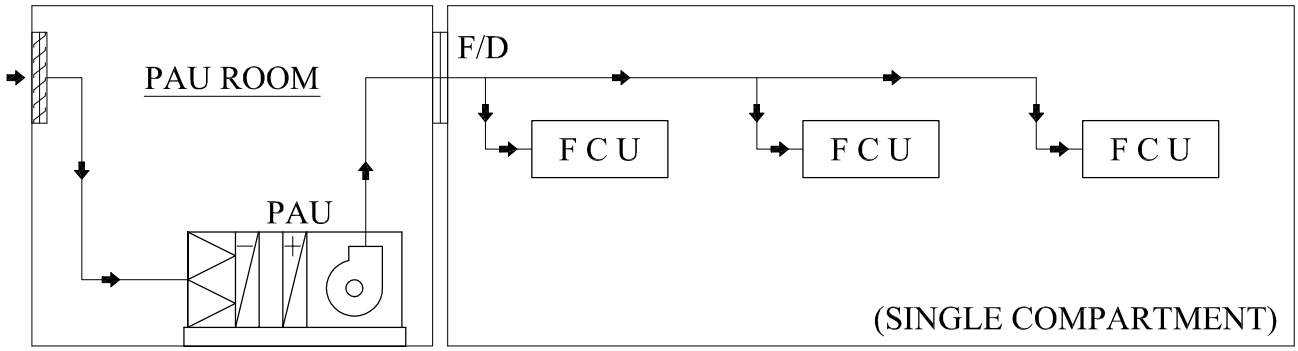
(d) PAU < 1000 l/s, EAF - any rating, any FCU > 1000 l/s
Requirement : PAU, EAF and these FCUs should be shut down.
(Tripping method in item (a) can be followed.)
(Note: FCUs < 1000l/s within the compartment are not required to be shut down)

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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.

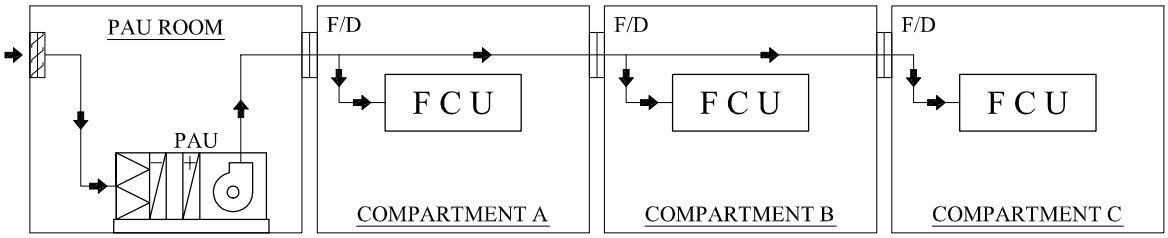
(d) PAU < 1000 l/s, any FCU > 1000 l/s
Requirement : Only these FCUs should be shut down.
(Note: FCUs < 1000l/s within the compartment are not required to be shut down)

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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)

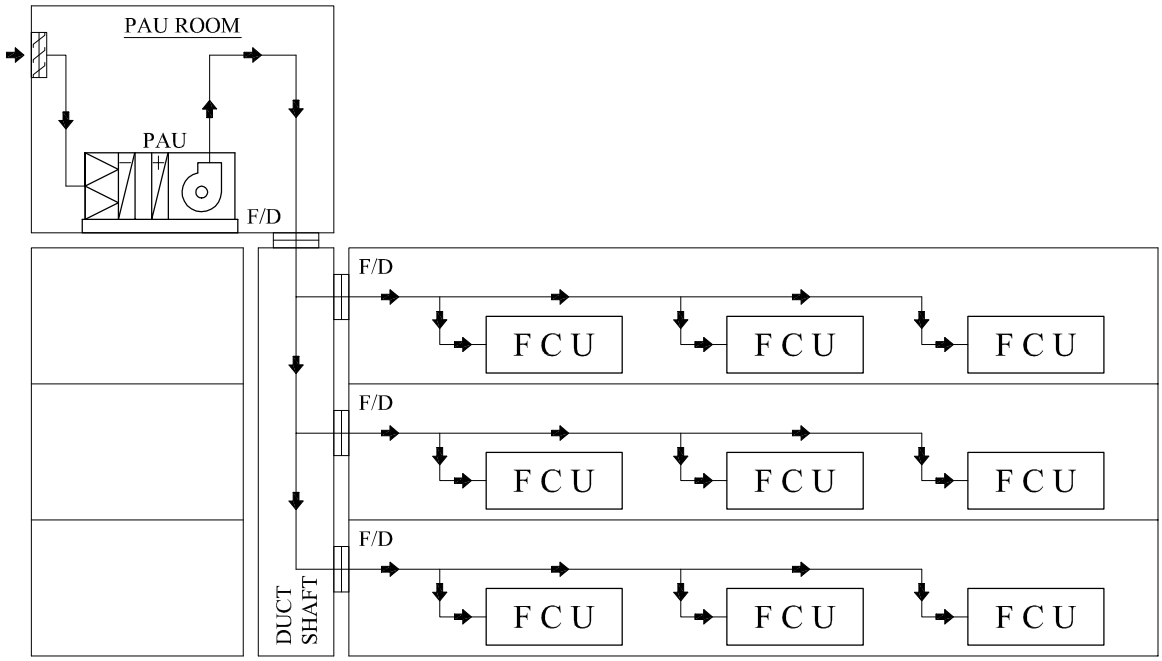
Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

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

Drawn by : C. H. WONG	Drawing No. : FS–VEN–108	FIRE SERVICES DEPARTMENT 消 防 處
Checked by : K. C. HEUNG	Scale : NIL	
:	Issue Date : AUG. 2005	
:	Revision Date :	

XREF_FILE

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.

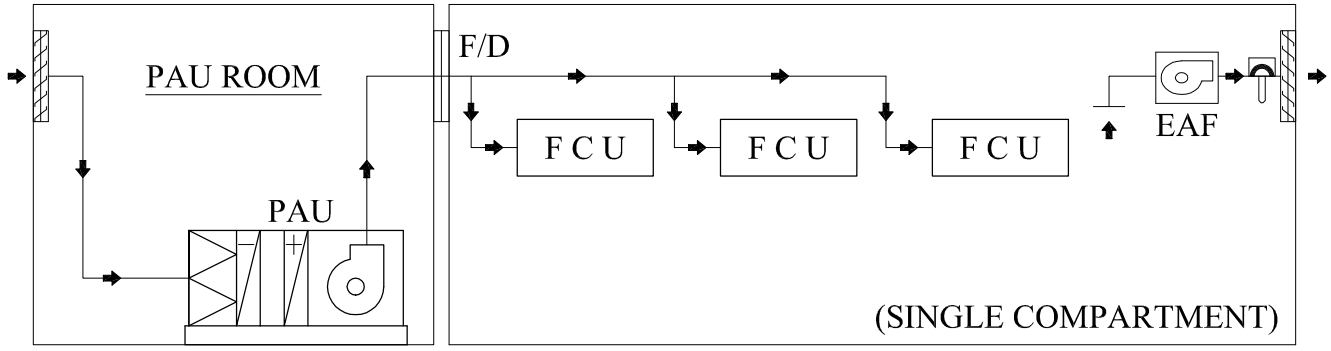
(d) PAU < 1000 l/s, any FCU > 1000 l/s
Requirement : PAU and these FCUs should be shut down.
(Note: FCUs < 1000 l/s within the compartment are not required to be shut down)

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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.)

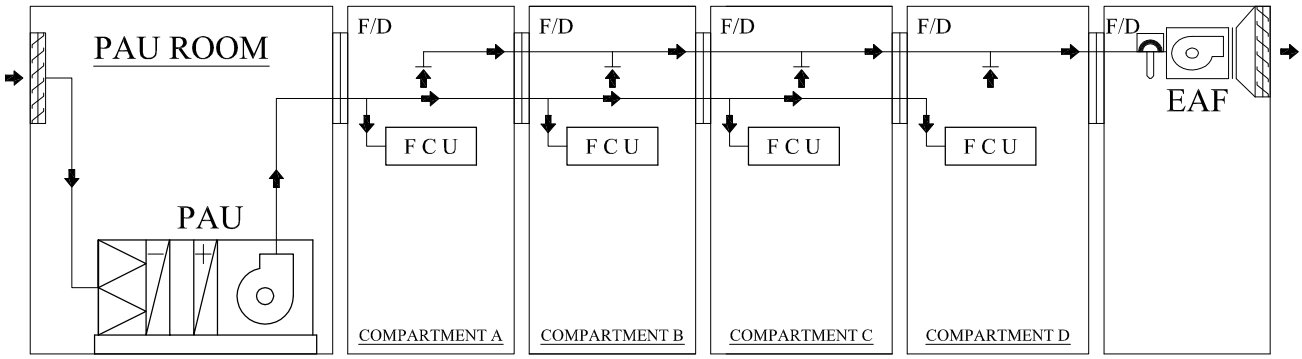
(d) PAU < 1000 l/s, EAF > 1000 l/s, any FCU > 1000 l/s
Requirement : Only EAF and these FCUs should be shut down.
(Tripping method in item (a) can be followed)
(Note: FCUs < 1000 l/s within the compartment are not required to be shut down)

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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.)

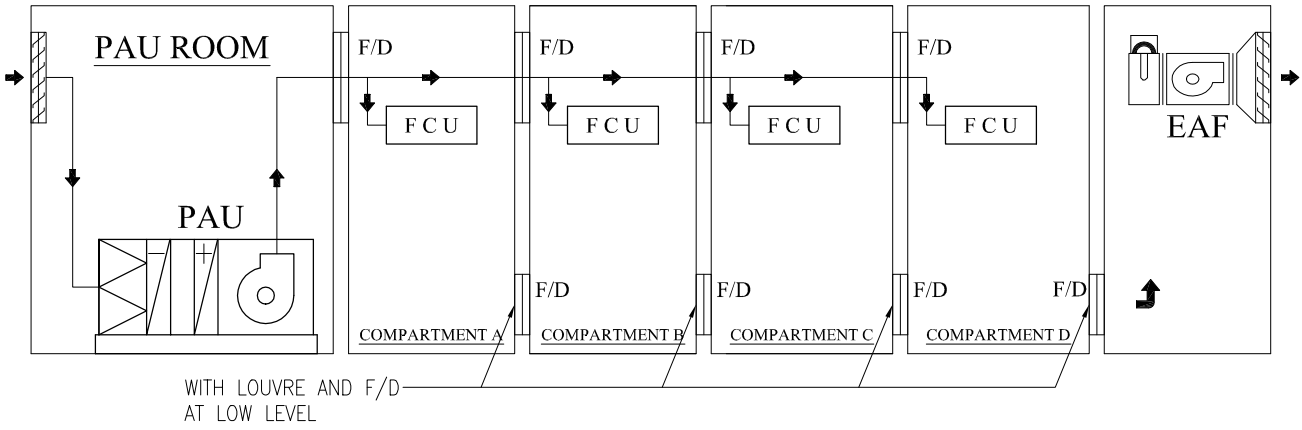
(d) PAU < 1000 l/s, EAF - any rating, any FCU > 1000 l/s
Requirement : PAU, EAF and these FCUs should be shut down.
(Tripping method in item (a) can be followed.)
(Note: FCUs < 1000 l/s within the compartment are not required to be shut down)

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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.)

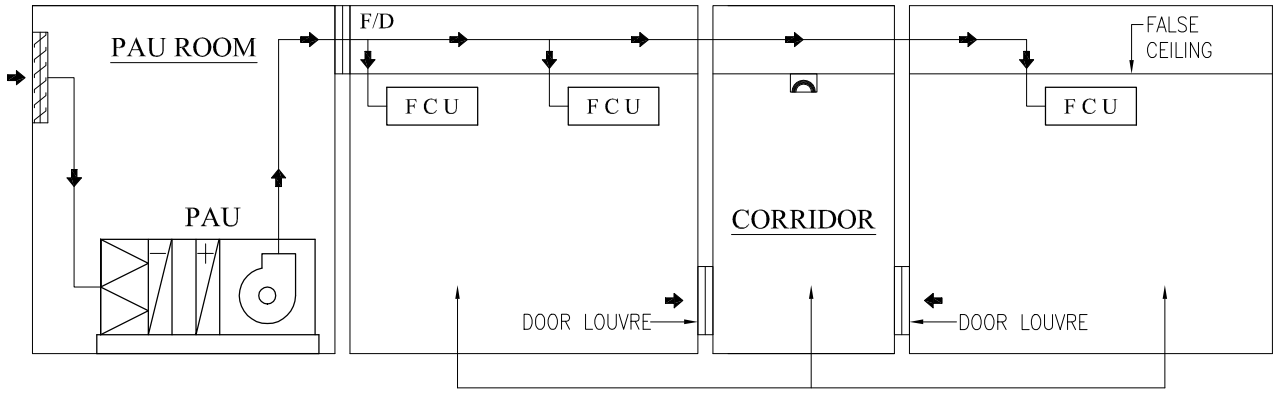
(d) PAU < 1000 l/s, EAF - any rating, any FCU > 1000 l/s
Requirement : PAU, EAF and these FCUs should be shut down.
(Tripping method in item (a) can be followed.)
(Note: FCUs < 1000 l/s within the compartment are not required to be shut down)

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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)

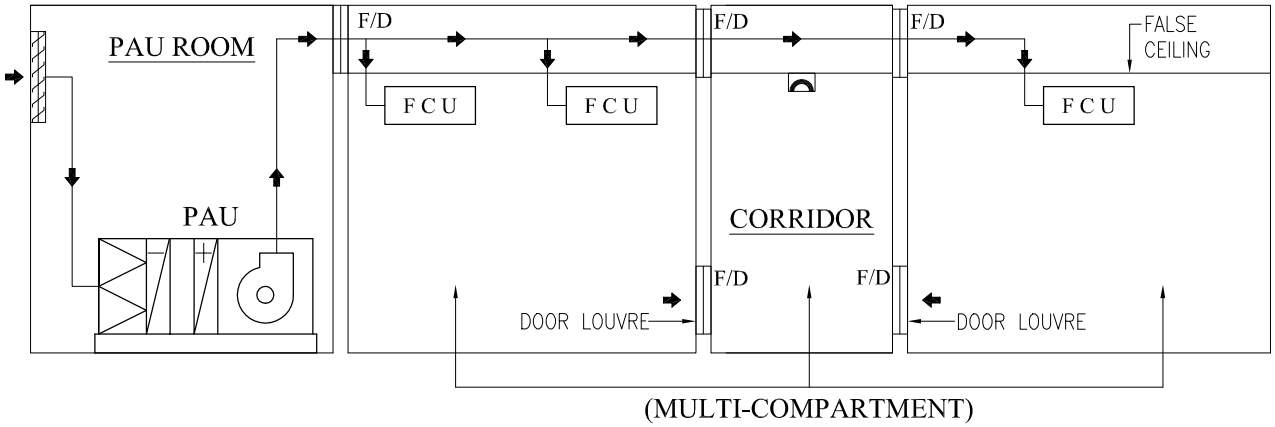
(Remark: Exhaust fan > 1000 l/s connected with the corridor, if any, should be shut down following the same principle in case 4/1)

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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)

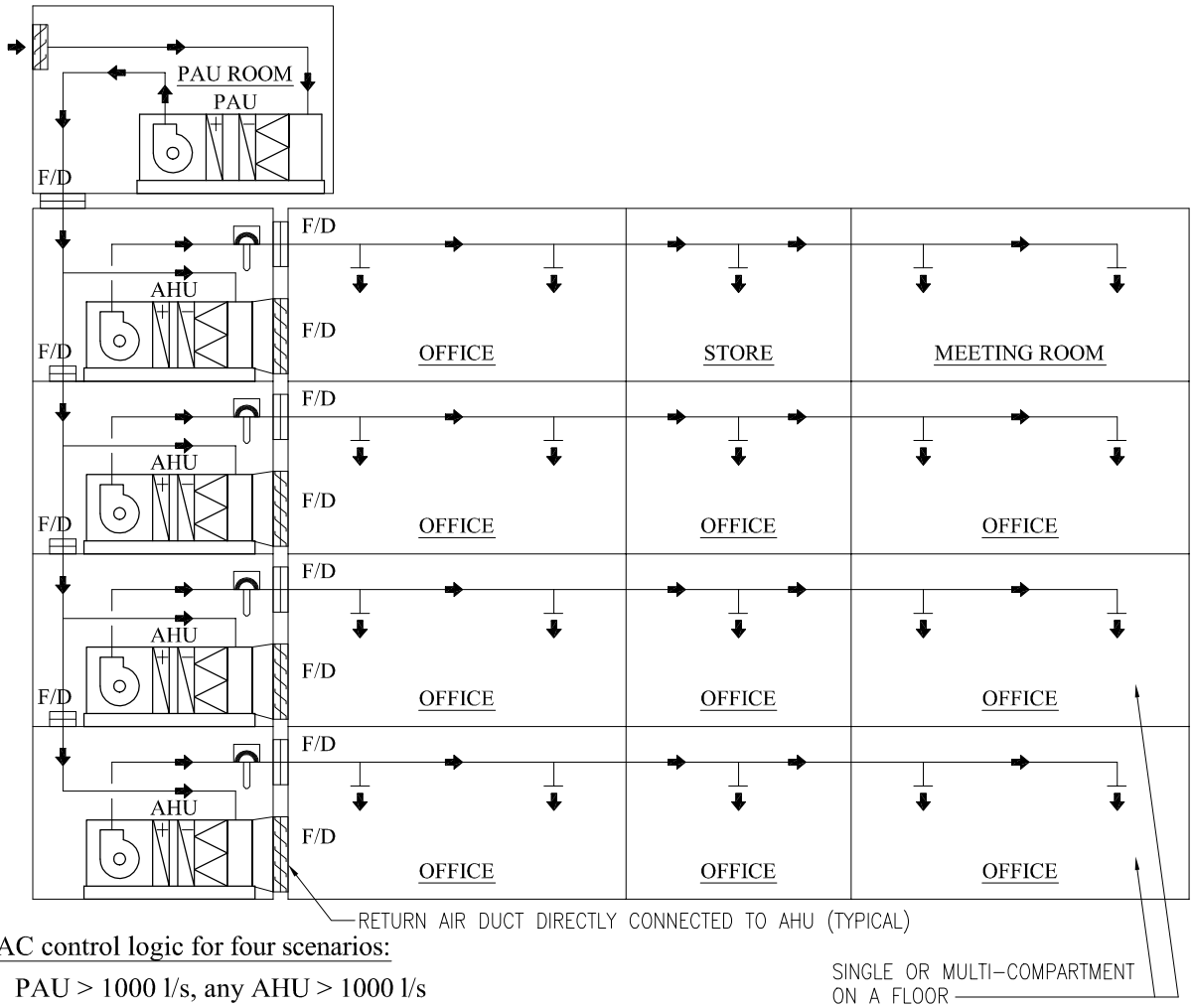
When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

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

Drawn by : C. H. WONG	Drawing No. : FS–VEN–114	FIRE SERVICES DEPARTMENT 消 防 處
Checked by : K. C. HEUNG	Scale : NIL	
	Issue Date : AUG. 2005	
	Revision Date :	

XREF_FILE

CASE 6/1 - PAU WITH DUCTED FRESH AIR SUPPLY FOR AHUs WITH DUCTED 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 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.)

(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)

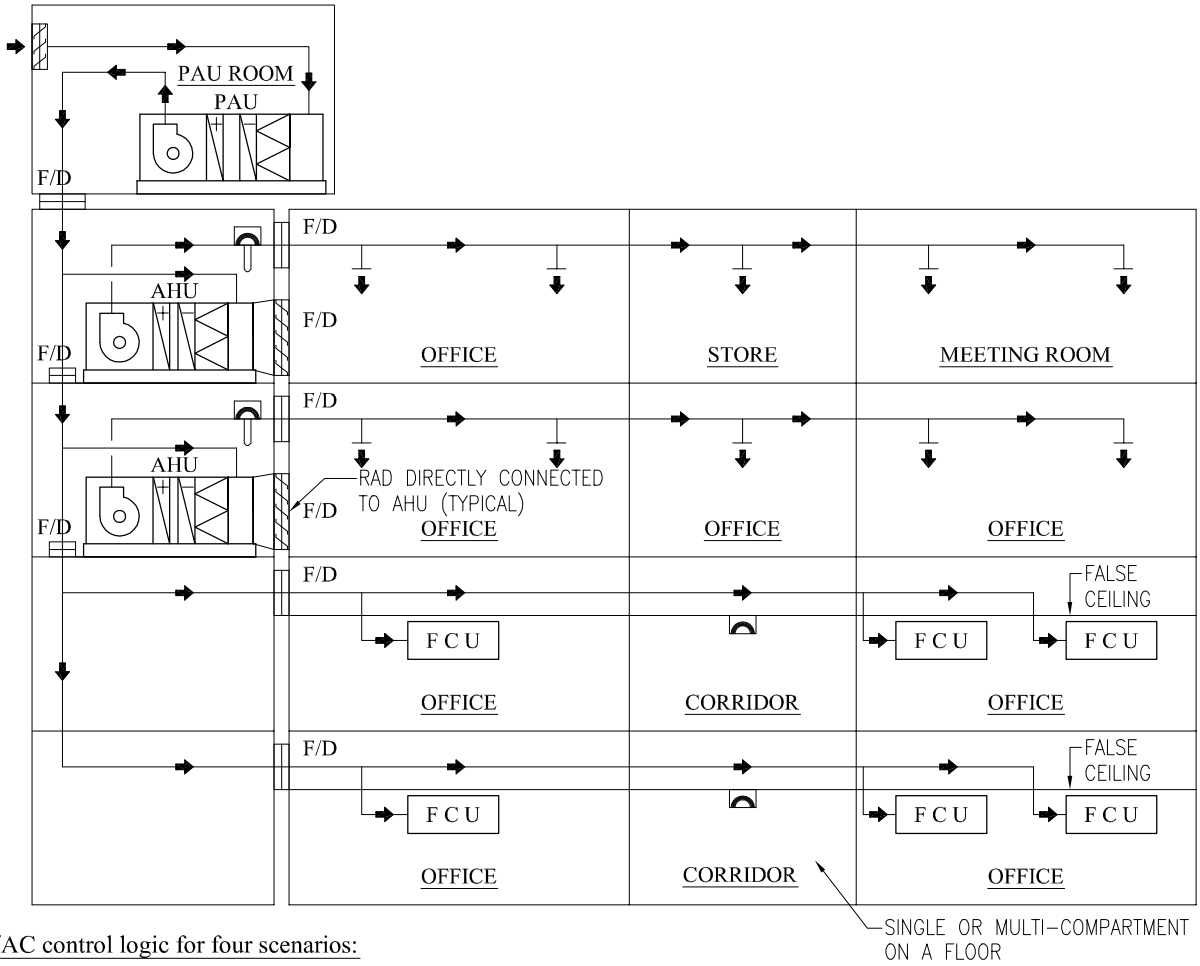
When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

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	Drawing No. : FS-VEN-115	FIRE SERVICES DEPARTMENT 消 防 處
Checked by : K. C. HEUNG	Scale : NIL	
	Issue Date : AUG. 2005	
	Revision Date :	

XREF_FILE

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.)

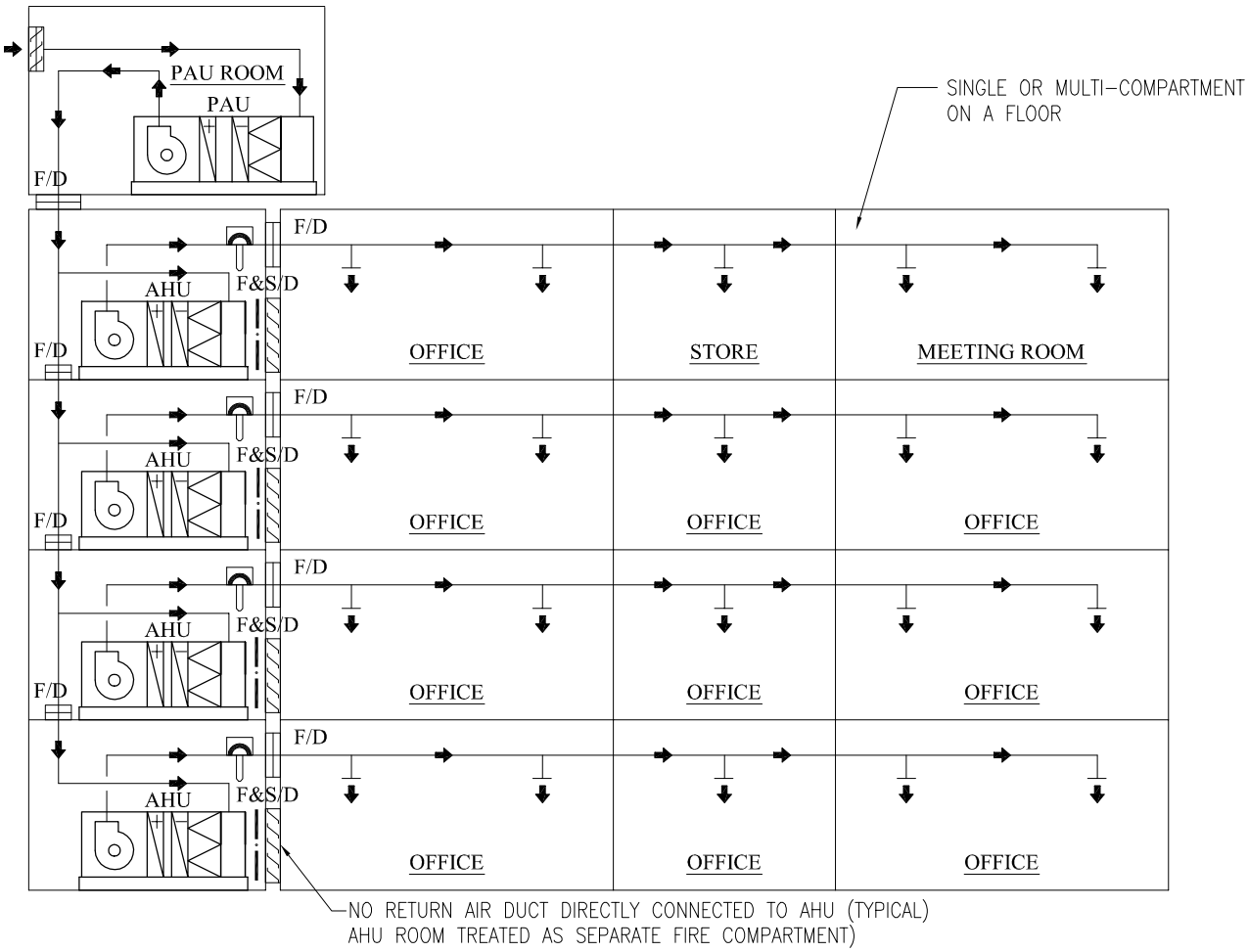
(Remark: Exhaust fan, if any, should be shut down following the same principle in cases 4/1, 4/2, 4/3, 5/1, 5/2, 10/1 and 10/2)

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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

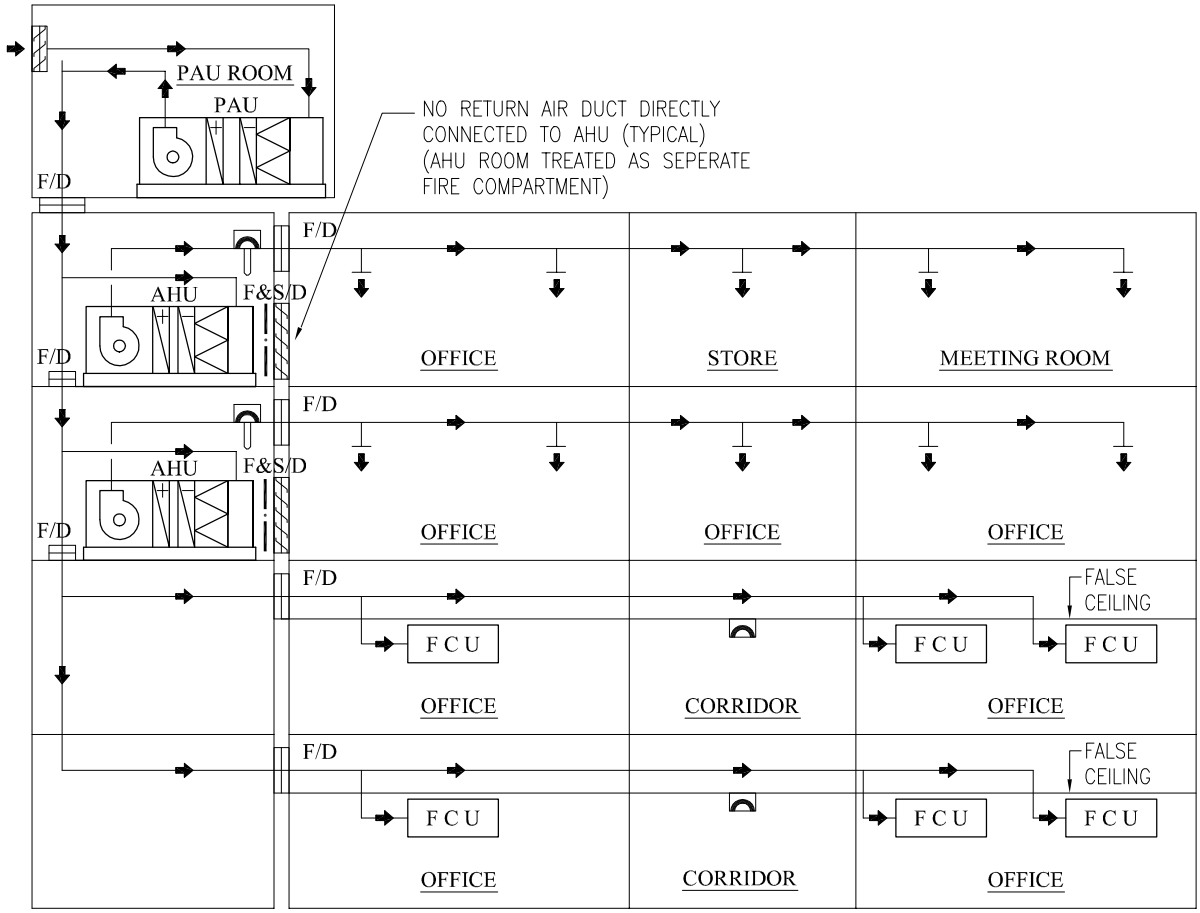
When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

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	Drawing No. : FS–VEN–117	FIRE SERVICES DEPARTMENT 消 防 處
Checked by : K. C. HEUNG	Scale : NIL	
Designed by :	Issue Date : AUG. 2005	
SSG Advisor :	Revision Date :	

XREF_FILE

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)

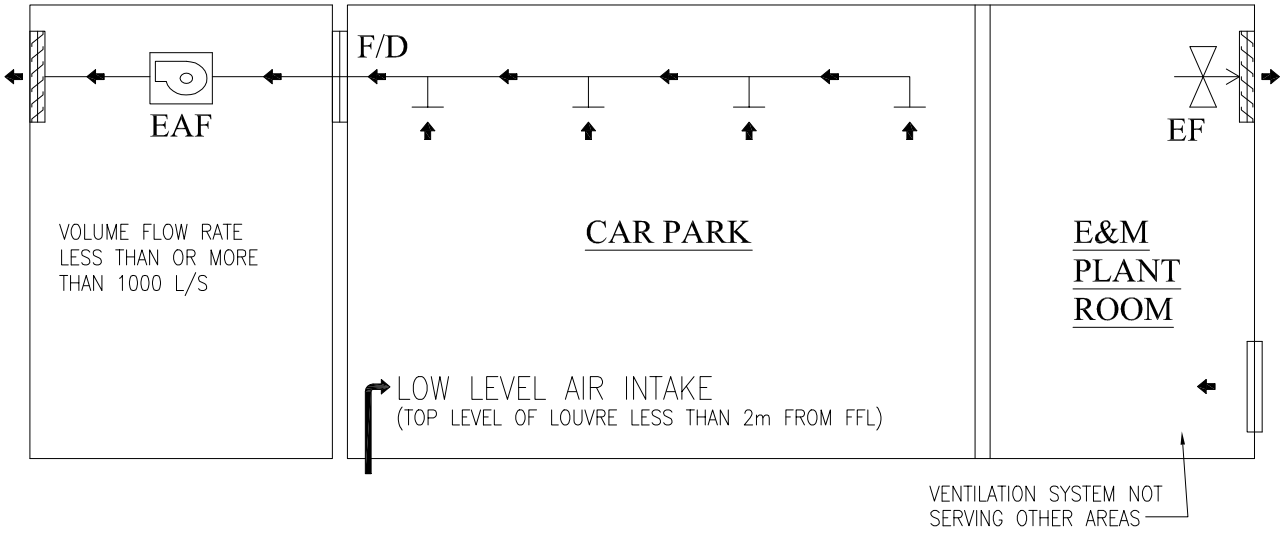
When method in item (a) is not applicable, please refer to "Notes" on drawing no. FS-VEN-101 for other acceptable methods to activate the V/AC control system.

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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



V/AC control logic:

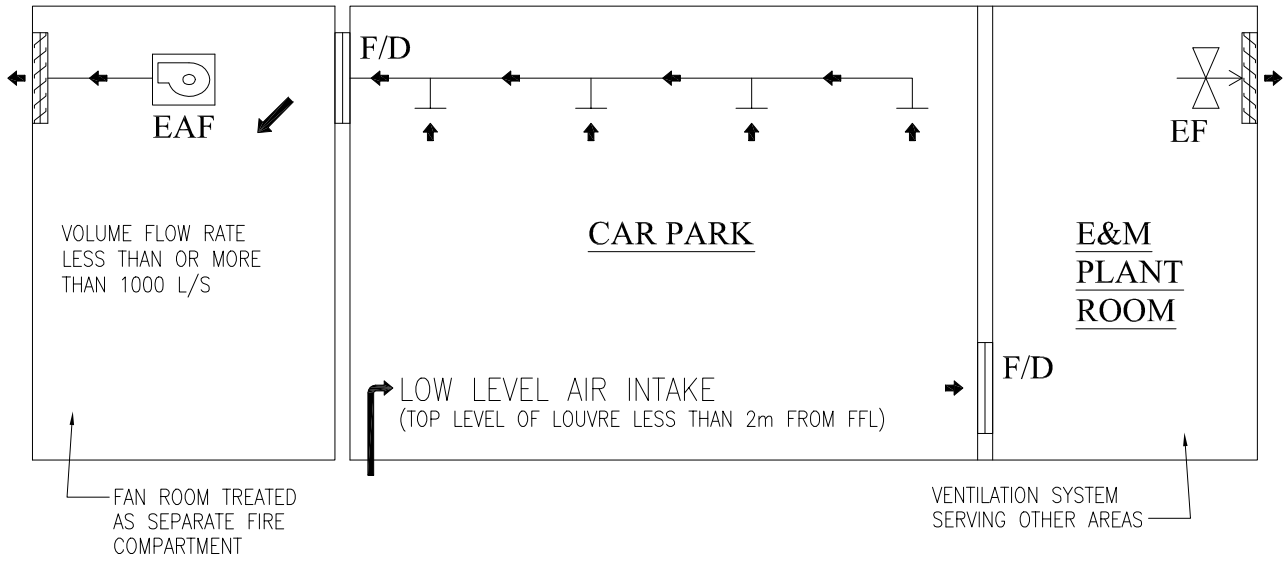
EAFs - any rating, EFs - any rating
Requirement : Tripping is not required.

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

Drawn by : C. H. WONG	Drawing No. : FS–VEN–119	FIRE SERVICES DEPARTMENT 消 防 處
Checked by : K. C. HEUNG	Scale : NIL	
	Issue Date : AUG. 2005	
	Revision Date :	

XREF_FILE

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



V/AC control logic:

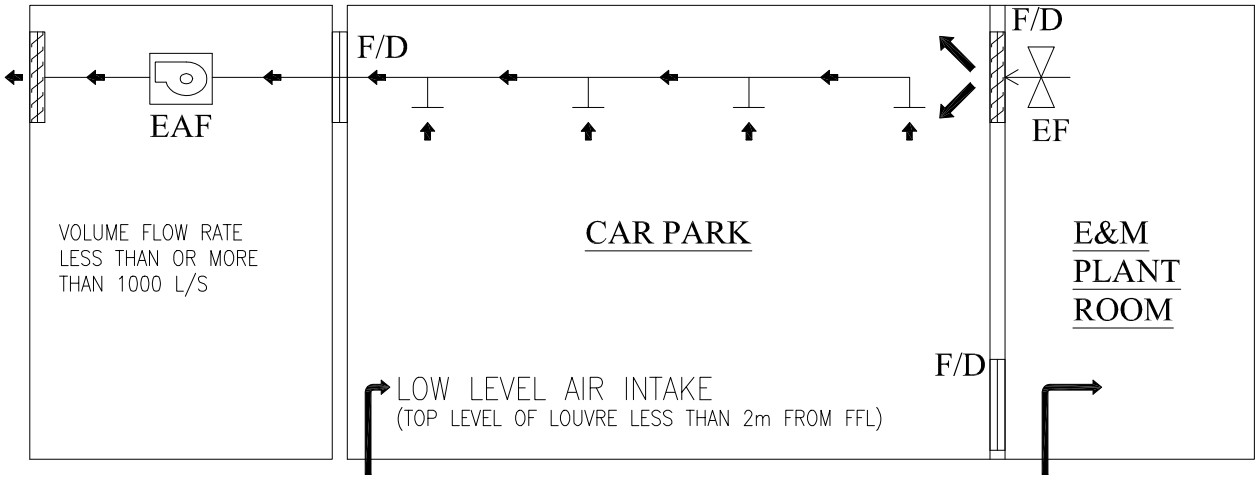
EAFs - any rating, EFs - any rating
Requirement : EAFs and EFs should be shut down..

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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



V/AC control logic:

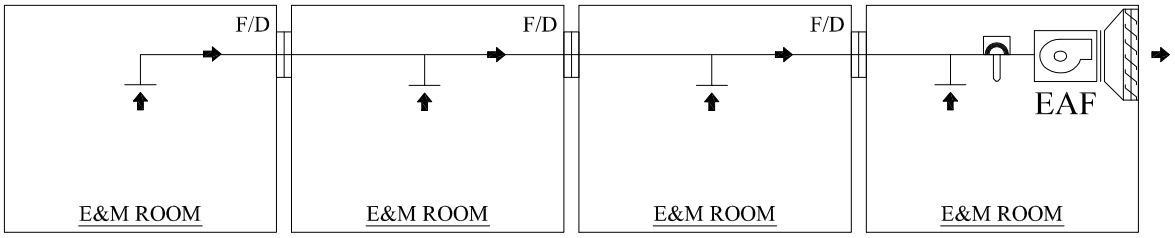
EAFs - any rating, EFs - any rating
Requirement : Only EFs should be shut down.

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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



V/AC control logic:

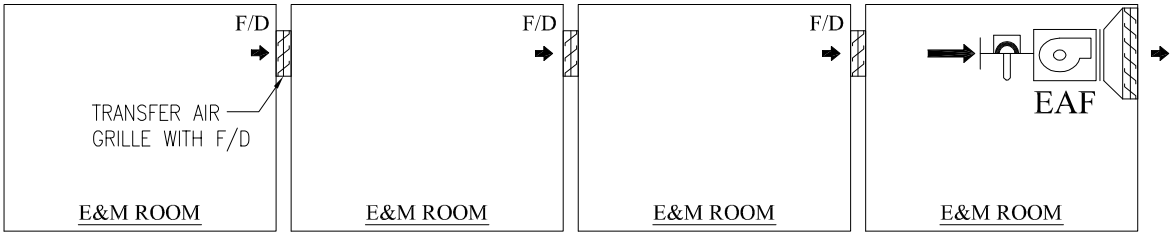
EAFs - any rating
Requirement : EAFs should be shut down.
(Tripping can be made by probe type smoke detector(s) installed at exhaust air duct)

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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



V/AC control logic:

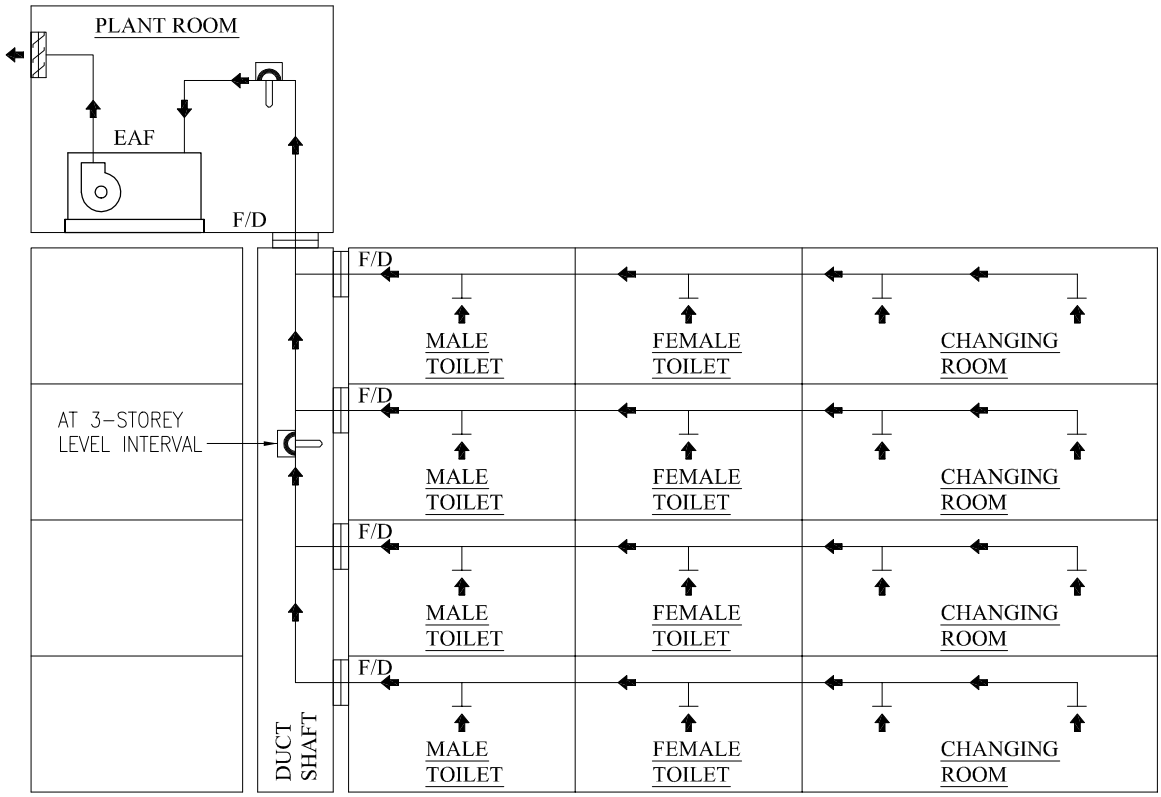
EAFs - any rating
Requirement : EAFs should be shut down.
(Tripping can be made by probe type smoke detector(s) installed at exhaust air duct)

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 Checked by : K. C. HEUNG	Drawing No. : FS–VEN–123 Scale : NIL Issue Date : AUG. 2005 Revision Date :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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



V/AC control logic:

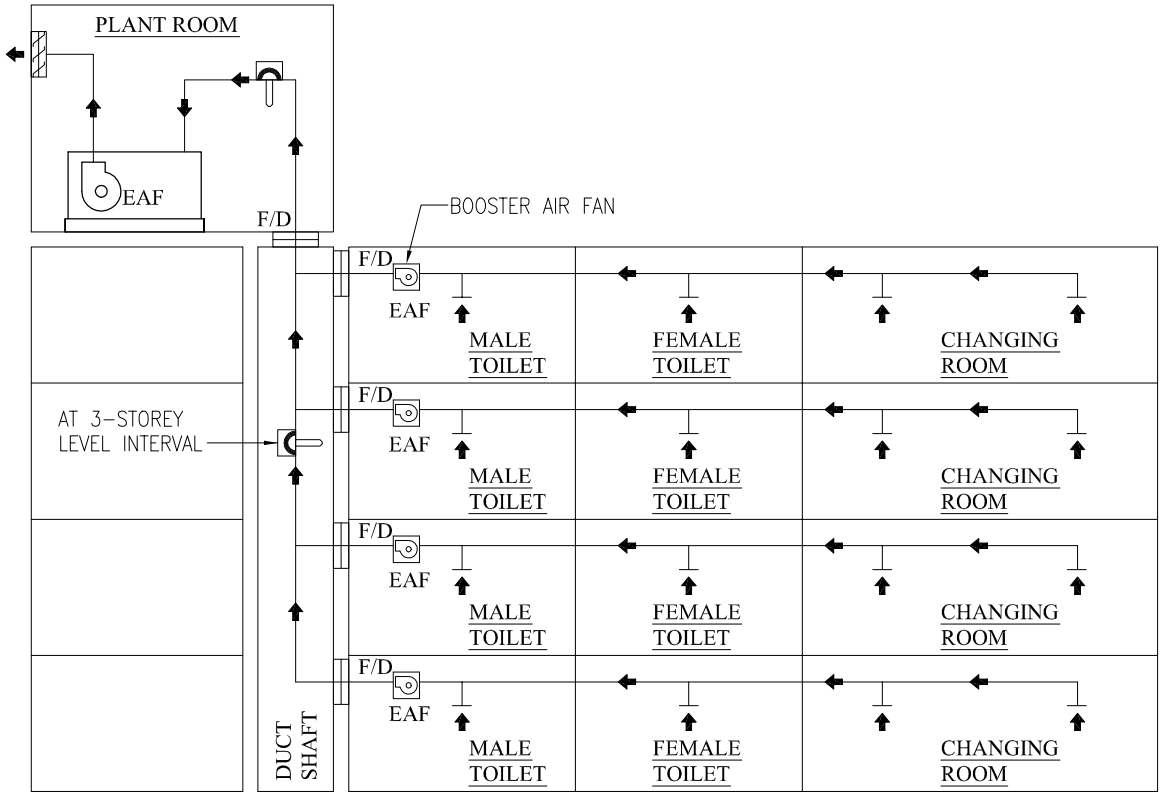
EAFs - any rating
Requirement : EAF should be shut down.
(Tripping can be made by probe type smoke detector(s) installed at exhaust air duct in fan room and where required at 3-storey level intervals in duct shaft of the main exhaust air duct when the building is over 3-storey.)

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 :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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.)

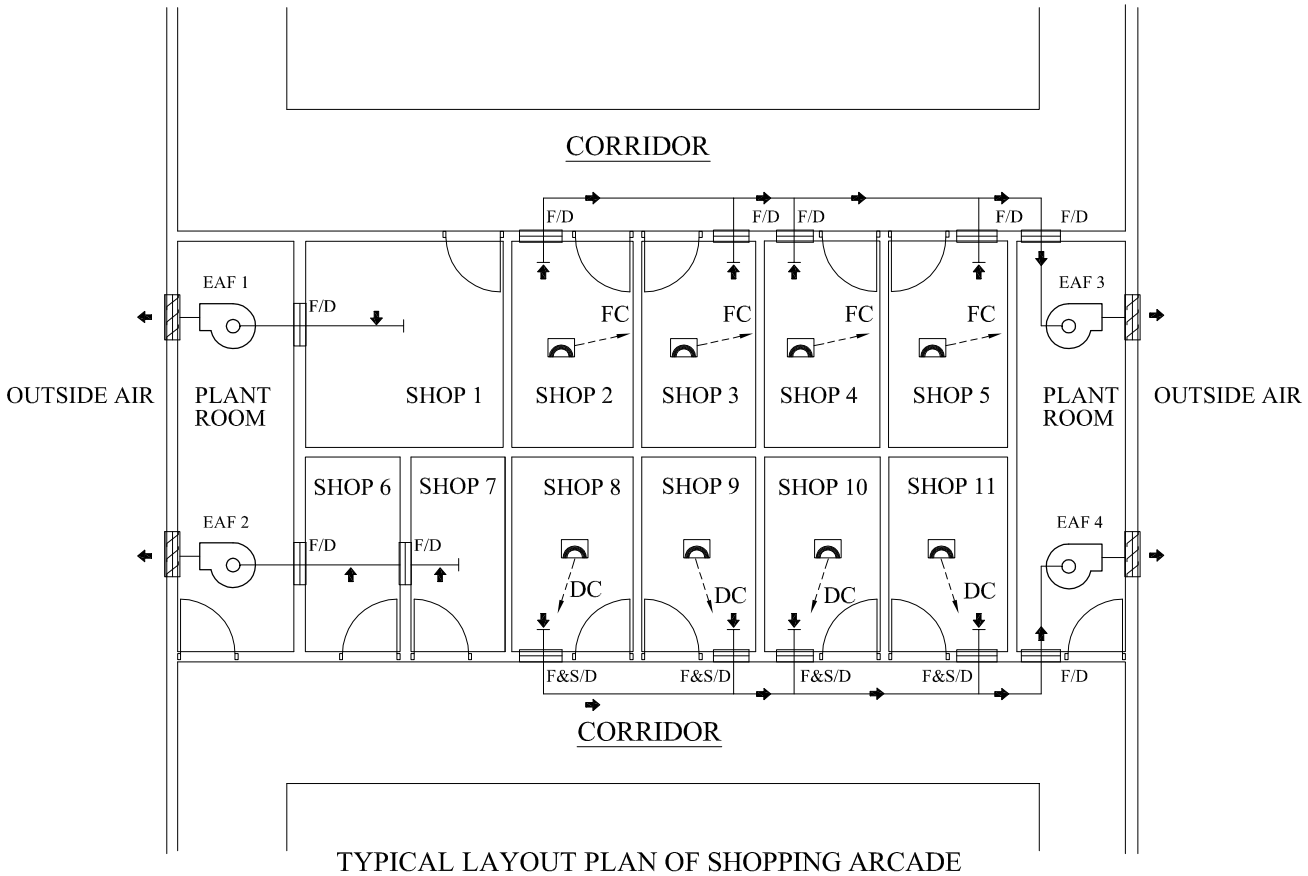
Please refer to "Notes" on drawing no. FS-VEN-101 for acceptable methods to activate the V/AC control system.

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	Drawing No. : FS-VEN-125	FIRE SERVICES DEPARTMENT 消 防 處
Checked by : K. C. HEUNG	Scale : NIL	
	Issue Date : AUG. 2005	
	Revision Date :	

XREF_FILE

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



TYPICAL LAYOUT PLAN OF SHOPPING ARCADE

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

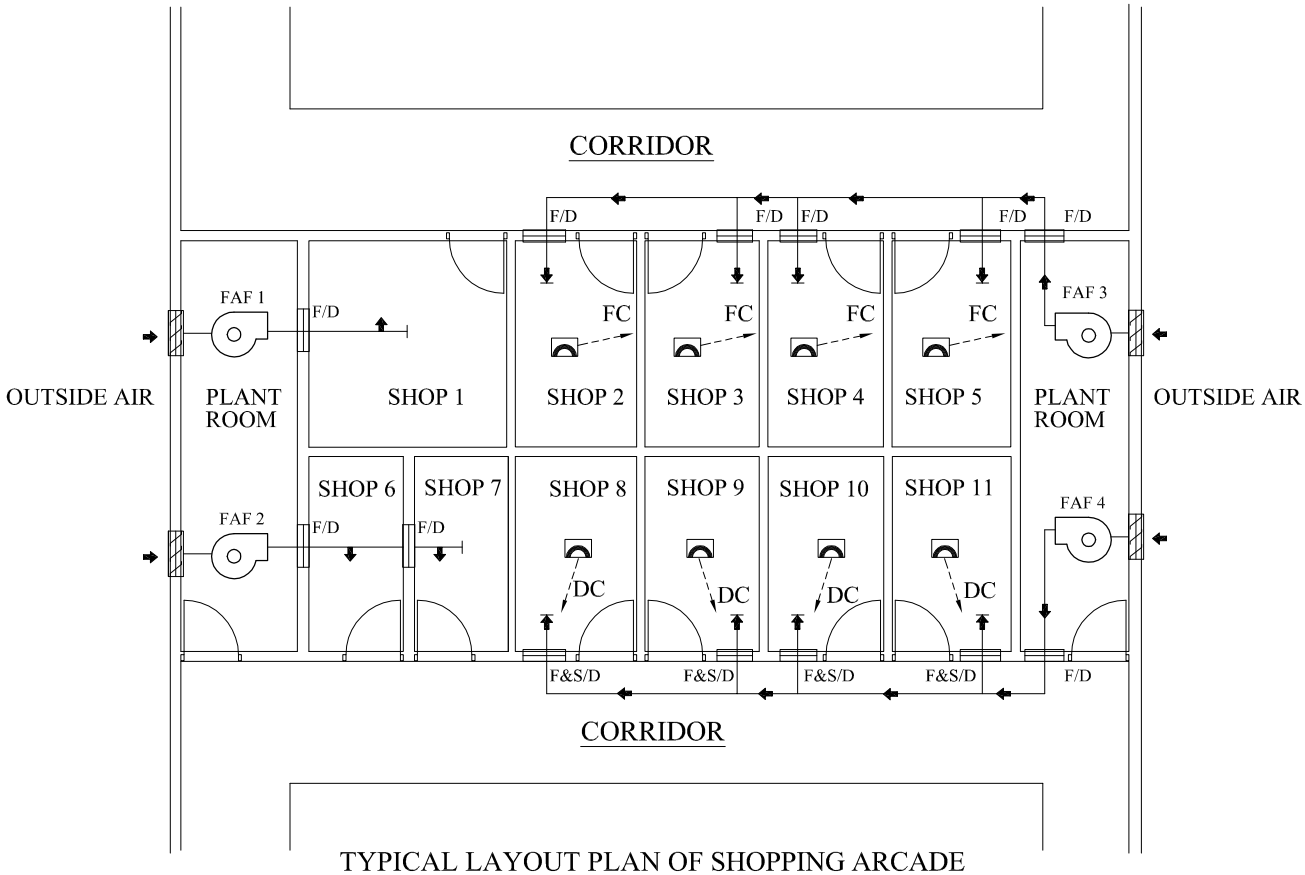
DC : Damper control

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 :	FIRE SERVICES DEPARTMENT 消 防 處	

XREF_FILE

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



TYPICAL LAYOUT PLAN OF SHOPPING ARCADE

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

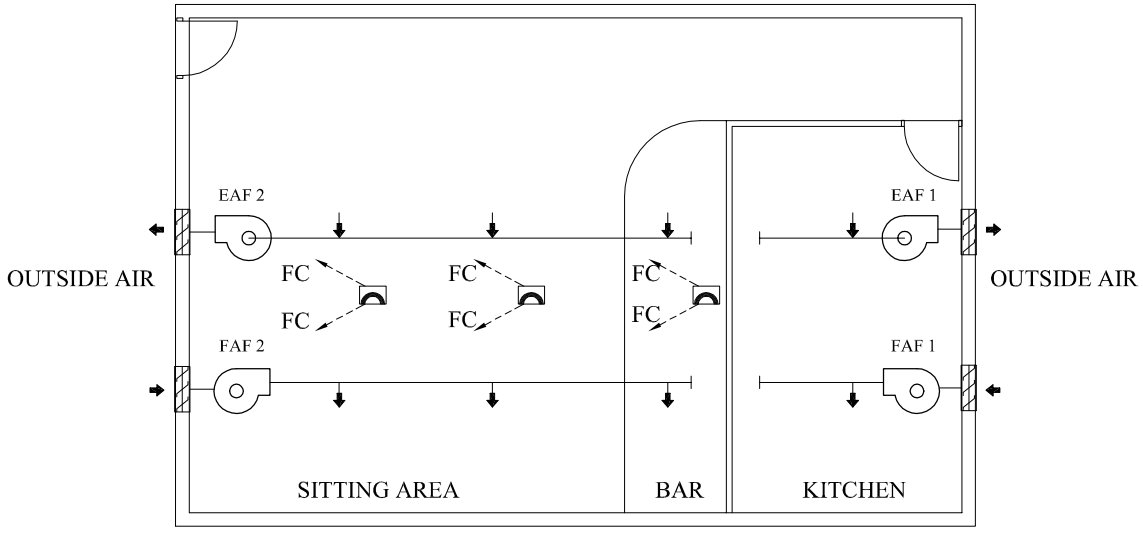
DC : Damper control

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 :	FIRE SERVICES DEPARTMENT 消 防 處	

XREF_FILE

CASE 12/1 - TYPICAL KITCHEN VENTILATING SYSTEM (FLOOR PLAN)



LAYOUT PLAN OF TYPICAL RESTAURANT

V/AC control logic for two scenarios:

(a) Fans < or = 1000 l/s

Requirement: EAF 1, EAF 2, FAF 1 & FAF 2 are not required to be shutdown.

(b) Fans > 1000 l/s

Requirement: EAF 2 & FAF 2 should be shutdown.
EAF 1 & FAF 1 are not required to be shutdown provided that the fans are electrically interlocked.

Remarks

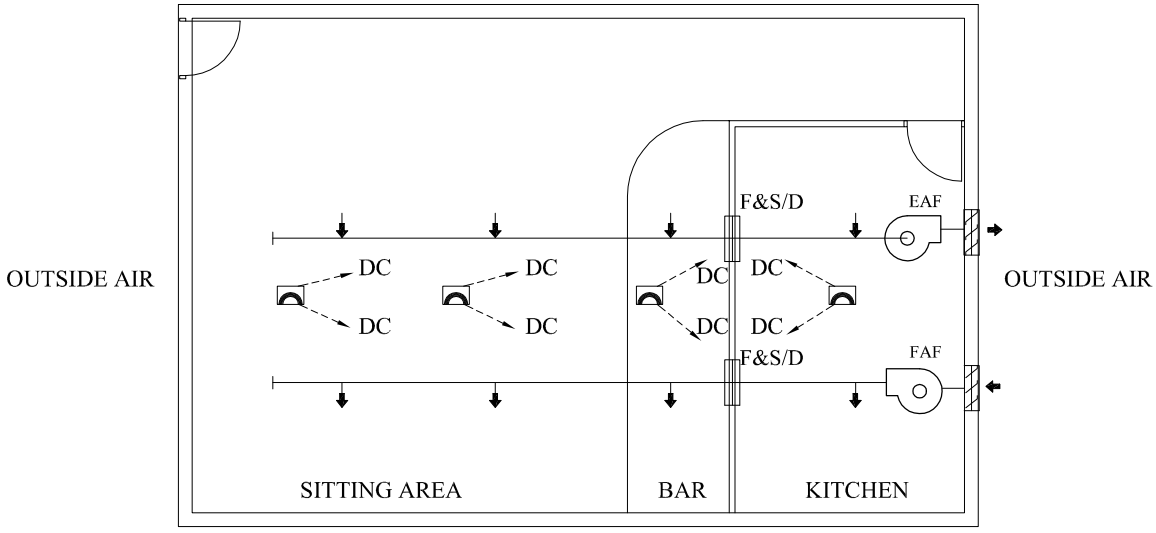
FC : Fan control

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 12/1 – TYPICAL KITCHEN VENTILATING SYSTEM			
Drawn by : C. H. WONG Checked by : K. C. HEUNG	Drawing No. : FS-VEN-128 Scale : NIL Issue Date : AUG. 2005 Revision Date :	FIRE SERVICES DEPARTMENT 消 防 處	

XREF_FILE

CASE 12/2 - KITCHEN VENTILATING SYSTEM WITH FANS INSTALLED AT KITCHEN SIDE AND USING FIRE & SMOKE DAMPER (FLOOR PLAN)



LAYOUT PLAN OF TYPICAL RESTAURANT

Important Note : Ventilating system using common air duct for both kitchen and other areas must be approved by the Director of Food & Environmental Hygiene before installation.

V/AC control logic:

EAF & FAF are not required to be shutdown.

Requirement: Fire & smoke dampers (F&S/D) shall be installed to maintain compartmentation between kitchen and other areas in the event of fire. F&S/D should be activated either by local space smoke detectors installed at the non-kitchen areas or by an automatic detection device such as smoke detector, heat detector or flow switch of sprinkler system etc. as appropriate installed in the kitchen.

Remarks

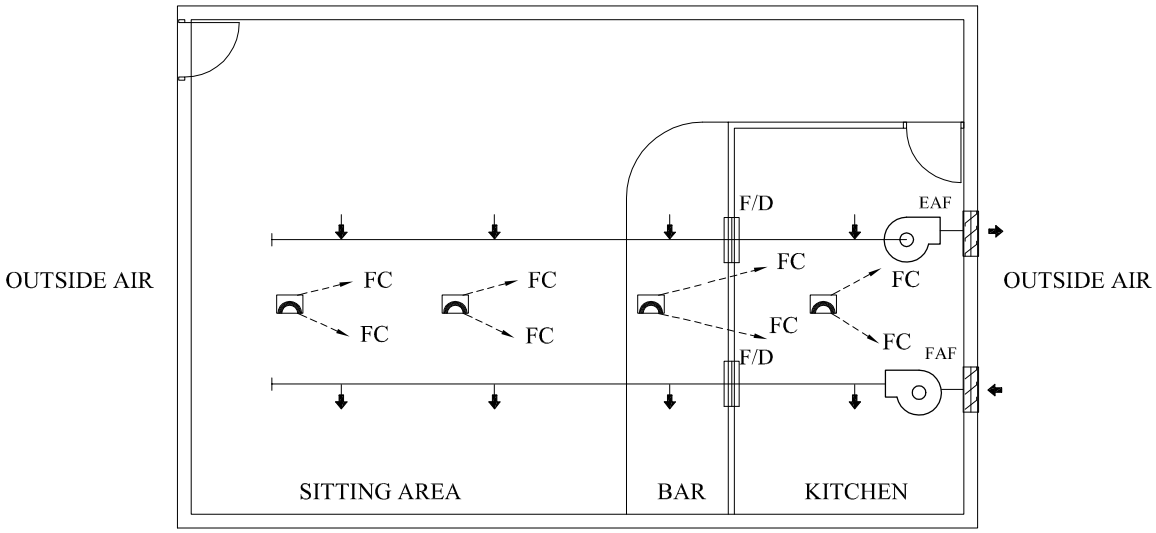
DC : Damper control

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 12/2 – KITCHEN VENTILATING SYSTEM WITH FANS INSTALLED AT KITCHEN SIDE AND USING FIRE & SMOKE DAMPER		
Drawn by : C. H. WONG Checked by : K. C. HEUNG	Drawing No. : FS-VEN-129 Scale : NIL Issue Date : AUG. 2005 Revision Date :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

CASE 12/3 - KITCHEN VENTILATING SYSTEM WITH FANS INSTALLED AT KITCHEN SIDE WITHOUT USING FIRE & SMOKE DAMPER (FLOOR PLAN)



LAYOUT PLAN OF TYPICAL RESTAURANT

Important Note : Ventilating system using common air duct for both kitchen and other areas must be approved by the Director of Food & Environmental Hygiene before installation.

V/AC control logic:

EAF & FAF must be shutdown irrespective of any air flow rate.

The space smoke detector installed in the kitchen may be replaced by heat detector or flow switch of sprinkler system.

Remarks

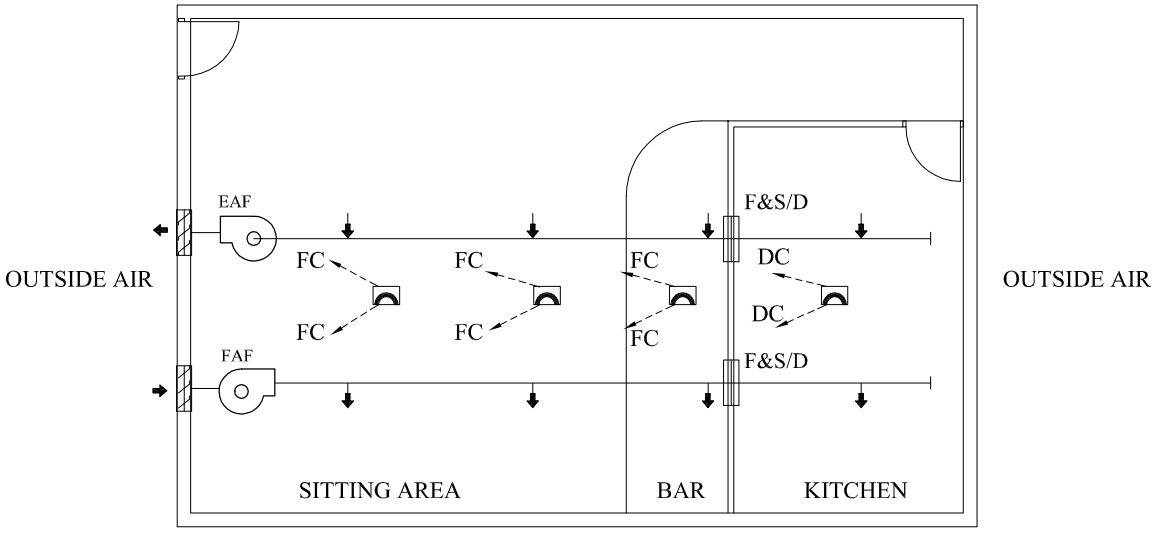
FC : Fan control

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 12/3 – KITCHEN VENTILATING SYSTEM WITH FANS INSTALLED AT KITCHEN SIDE WITHOUT USING FIRE & SMOKE DAMPER		
Drawn by : C. H. WONG Checked by : K. C. HEUNG	Drawing No. : FS-VEN-130 Scale : NIL Issue Date : AUG. 2005 Revision Date :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

CASE 12/4 - KITCHEN VENTILATING SYSTEM WITH FANS INSTALLED AT NON-KITCHEN SIDE AND USING FIRE & SMOKE DAMPER (FLOOR PLAN)



LAYOUT PLAN OF TYPICAL RESTAURANT

Important Note : Ventilating system using common air duct for both kitchen and other areas must be approved by the Director of Food & Environmental Hygiene before installation.

V/AC control logic:

(a) Fire breakout in kitchen

Requirement: EAF & FAF are not required to be shutdown, fire & smoke dampers (F&S/D) shall be installed to maintain compartmentation between kitchen and other areas. F&S/D should be activated by an automatic detection device such as smoke detector, heat detector or flow switch of sprinkler system etc. as appropriate installed in the kitchen.

(b) Fire breakout in sitting area

Requirement: EAF & FAF are required to be shutdown.

Remarks

FC : Fan control

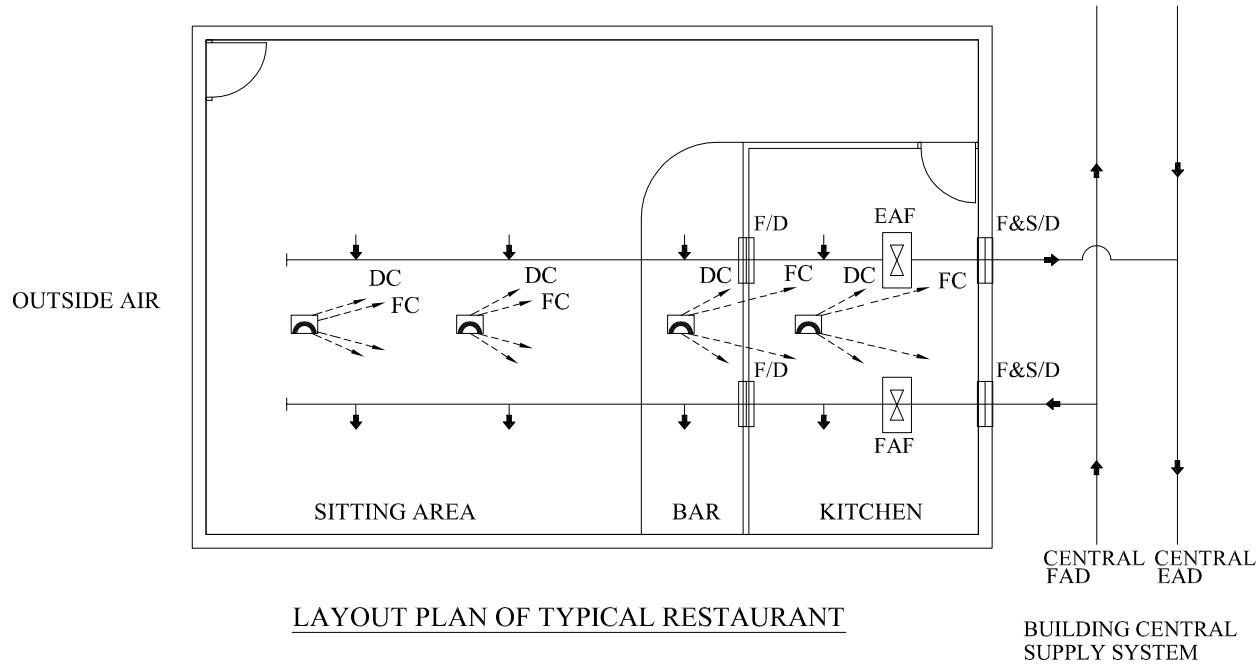
DC : Damper control

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 12/4 – KITCHEN VENTILATING SYSTEM WITH FANS INSTALLED AT NON–KITCHEN SIDE AND USING FIRE & SMOKE DAMPER		
Drawn by : C. H. WONG Checked by : K. C. HEUNG	Drawing No. : FS–VEN–131 Scale : NIL Issue Date : AUG. 2005 Revision Date :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE

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



LAYOUT PLAN OF TYPICAL RESTAURANT

Important Note : Ventilating system using common air duct for both kitchen and other areas must be approved by the Director of Food & Environmental Hygiene before installation.

V/AC control logic:

The building central exhaust/supply fans may keep on continuous running while EAF & FAF of the "Licensed Premises" should be shutdown.

Requirement: F&S/D shall be installed to maintain compartmentation between "Licensed Premises" and the central air duct. F&S/D should be activated by an automatic detection device at the "Licensed Premises". The space smoke detector installed in the kitchen may be replaced by heat detector or flow switch of sprinkler sysem.

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 12/5 – KITCHEN VENTILATING SYSTEM WITH BOOSTER FANS AND CENTRAL SYSTEM		
Drawn by : C. H. WONG Checked by : K. C. HEUNG	Drawing No. : FS-VEN-132 Scale : NIL Issue Date : AUG. 2005 Revision Date :	FIRE SERVICES DEPARTMENT 消 防 處

XREF_FILE