



**Title:** Operation of Air Handling Unit / Fresh Air Unit /Exhaust Air Unit/ FDV

<b>SOP No.:</b>		<b>Revision No.:</b>	00
<b>Effective Date:</b>		<b>Supersedes No.</b>	Nil
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## 1.0 OBJECTIVE:

To lay down a procedure for Operation of Air Handling Units / Fresh Air Units /Exhaust Air Units/ FDV's.

## 2.0 SCOPE:

This SOP is applicable for Operation/recording/monitoring of Differential Pressure, chilled water & hot water across Air **Handling Unit / Fresh Air Unit /Exhaust Air Unit/ FDV**.

## 3.0 RESPONSIBILITY:

**Operator/Officer/Executive-** Engineering

## 4.0 ACCOUNTABILITY:

Head – Engineering

## 5.0 ABBREVIATIONS:

AHU	Air Handling Unit
Ltd.	Limited
mm	mili meter
Pvt.	Private
SOP	Standard Operating Procedure
wg	water gauge
FDV	Force Draft Ventilation
NMT	Not More Than
NLT	Not Less Than
Diff.	Differential

## 6.0 PROCEDURE:

### 6.1 PRE STARTUP CHECKUP:

- 6.1.1** Ensure that Utilities are “ON”, if “OFF” then inform to utility department for starting the utilities.
- 6.1.2** Ensure Power supply shall “ON” from Electrical panel for all Air Handling Units, Exhaust and Supply and Ventilations Units.
- 6.1.3** Ensure that all the valves of chilled water header are in open condition.
- 6.1.4** Ensure Chilled Water and Hot water circulation (wherever applicable) is on.
- 6.1.5** Ensure that chilled water inlet pressure is NLT than 1.5 Kg/cm<sup>2</sup> and outlet pressure is not less than 1.0 Kg/cm<sup>2</sup>.



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**6.1.6** Ensure that chilled water inlet temperature is NMT than 12°C and outlet temperature is NMT 18°C.

**6.1.1** Ensure that hot water inlet pressure is NLT than 1.5 Kg/cm<sup>2</sup> and outlet pressure is not less than 1.0 Kg/cm<sup>2</sup>.

**6.1.2** Ensure that hot water inlet temperature is NMT than 25°C.

**6.1.7** Check and ensure that differential pressure gauges located at AHU/FAU/EXU/FDV are in calibrated stage.

**6.1.8** Make sure that negative port is in negative pressure side and positive port is in positive pressure side in differential pressure gauge.

**6.1.9** Check and ensure that differential pressure gauge shall be shown '0' mmWG before starting the AHU/FAU/EXU/FDV.

**6.1.10** Ensure that all the supply & return dampers of AHU's are in open condition at validated position.

## **6.2 SEQUENCING OPERATION FOR AHU RUNNING:**

**6.2.1** First Run the corridor AHU/FCU/ FAU/ EXU and then run the linked cubical AHU/FCU/FAU/ EXU in Tablet are, Capsule Area, Dry Syrup Area and Primary packing in G & F Block.

**6.2.2** First Run the Cubical AHU/FCU/ FAU/ EXU and then run the linked Corridor AHU/FCU/FAU/ EXU in liquid area of Q Block.

**6.2.3** First Run the Sterile area AHU/FCU/ FAU/ EXU then run the Air Lock, Change room and outer corridor AHU/FCU/ FAU/ EXU in Injection area, Dispensing area and Sampling area of I & Q Block.

**6.2.4** In case of power failure, all the HVAC system shall start in same sequence as mentioned in point no. 6.2.1, 6.2.2 & 6.2.3.

## **6.3 STARTING PROCEDURE:**

**6.3.1** Turn the selector switch of AHU's operating panel towards manual mode & checks the glowing of green lamp, which indicates that AHU is on.

**6.3.2** AHU shall start 15 minutes before Production Activity for Maintain Room Condition as per verbal/Telephonic or written Intimation from Concern Department.

**6.3.3** Check and ensure that differential pressure limit across pre filter shall be in the range of 05 to 20 mmWG and 07 to 25 mmWG across fine filter of AHU's. If any differential pressure limit found beyond than above mentioned limit then inform the same to respective department through telephonically /IOM and clean the filter as per respective SOP of filter cleaning after getting



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approval from concern area.If the filter pressure differential doesn't come in range after filter cleaning then replace the filter with the new one of same specification and update the record accordingly.

**6.3.4** In case of any breakdown in AHU system during running condition then intimation shall be provided to the concerned department and same shall be rectified by initiating breakdown intimation as per **SOP**, incident shall be raised for impact assessment.

## **6.4 STOPPING PROCEDURE FOR AHU:**

### **6.4.1 Sequencing operation for AHU stopping:**

**6.4.1.1** First Stop the Cubical AHU/FCU/ FAU/ EXU and then stopped the linked area corridors and Air Lock area AHU/FCU/ FAU/ EXU in tablet area, Capsule Area, Dry Syrup and Primary Packing Area.

**6.4.1.2** First Stop the Corridor AHU/FCU/ FAU/ EXU and then stop the Linked Air Lock and cubical AHU in liquid Area.

**6.4.1.3** First Stop the Non-Sterile Area likes as Outer corridor, Air Locks Change rooms and then stops the sterile area AHU in sterile area and Sampling and Dispensing.

**6.4.2** Turn the selector switch of AHU's operating panel towards OFF position.

**6.4.3** After AHU stopping, Check and ensure that differential pressure gauge shall be shown '0' mmWG of AHU/FAU/EXU/FDV.

**6.5** All the AHUs of G, I & Q (Three Piece, Micro & QC) Block remains in operation (24hrs X 7 days) and shall be stooped as per intimation received from user department or in case while attending breakdown/ for scheduled preventive maintenance.

**6.6** Record the operation record of AHU as per **Annexure – I** "Operation Record of AHU".

## **7.0 ANNEXURES:**

<b>ANNEXURE No.</b>	<b>TITLE OF ANNEXURE</b>	<b>FORMAT No.</b>
Annexure-I	Operation Record of AHU	

**ENCLOSURES:** SOP training record



# PHARMA DEVILS

ENGINEERING DEPARTMENT

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## 8.0 DISTRIBUTION:

- Controlled Copy No. 01                      Quality Assurance
- Controlled Copy No. 02                      Engineering
- Master Copy                                      Quality Assurance

## 9.0 REFERENCES:

Manufacturer Instruction

## 10.0 REVISION HISTORY:

### CHANGE HISTORY LOG

Revision No.	Change Control No.	Details of Changes	Reason for Change	Effective Date	Updated By



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## ANNEXURE-I OPERATION RECORD OF AHU

**BLOCK:**

**Frequency:** Once in a day

**AHU ID:**

S. No.	Date	Time			Diff. Press. Across		Chilled Water inlet		Chilled Water Outlet		Hot Water inlet		Hot Water outlet Pressure NLT:1.0 Kg/cm <sup>2</sup>	Done By Sign & Date	Remarks
		Start	Stop	Reading	Pre Filter (05-20 mmWG)	Fine Filter (07-25 mmWG)	Temp. NMT:12°C	Pressure NLT: 1.5 Kg/cm <sup>2</sup>	Temp. NMT: 18°C	Pressure NLT: 1.0 Kg/cm <sup>2</sup>	Temp. NLT: 25°C	Pressure: NLT: 1.5 Kg/cm <sup>2</sup>			

**Review By (Engg.)  
Sign & Date**