



**PHARMA DEVILS**

QUALITY ASSURANCE DEPARTMENT

**FAT FOR AIR HANDLING UNIT**

**FACTORY ACCEPTANCE TEST  
OF  
AIR HANDLING UNIT**

|                         |     |
|-------------------------|-----|
| <b>Document No.</b>     |     |
| <b>Supersedes</b>       | Nil |
| <b>Approval Date</b>    |     |
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### 1.0 PROTOCOL PRE APPROVAL:

#### PROTOCOL PREPARED BY:

| Department        | Name | Signature | Date |
|-------------------|------|-----------|------|
| Quality Assurance |      |           |      |

#### PROTOCOL REVIEWED BY:

| Department        | Name | Signature | Date |
|-------------------|------|-----------|------|
| Quality Assurance |      |           |      |
| Production        |      |           |      |
| Maintenance       |      |           |      |

#### PROTOCOL APPROVED BY:

| Department        | Name | Signature | Date |
|-------------------|------|-----------|------|
| Quality Assurance |      |           |      |



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### 2.0 MACHINE SPECIFICATIONS:

| S.No                  | AHU Parameters                                 | Specification                                    | Checked By | Verified By | Remark |
|-----------------------|------------------------------------------------|--------------------------------------------------|------------|-------------|--------|
| 1.                    | <b>Blower:</b>                                 |                                                  |            |             |        |
|                       | Make                                           | Kruger                                           |            |             |        |
|                       | Model no.                                      | BDB355 "CM"<br>D30                               |            |             |        |
|                       | CFM                                            | 4700                                             |            |             |        |
|                       | Static Pressure (mmwg)                         | 135                                              |            |             |        |
|                       | Fan diameter                                   | 355 R                                            |            |             |        |
|                       | Type                                           | DIDW Backward<br>Curved                          |            |             |        |
|                       | RPM                                            | 3752                                             |            |             |        |
| 2.                    | <b>Motor:</b>                                  |                                                  |            |             |        |
|                       | Make                                           | ABB                                              |            |             |        |
|                       | Capacity                                       | 5.5 KW                                           |            |             |        |
|                       | Type                                           | 3 Phase Induction<br>motor                       |            |             |        |
|                       | RPM                                            | 2890                                             |            |             |        |
|                       | Pole                                           | 2                                                |            |             |        |
|                       | Fan Pully                                      | 125 x 2                                          |            |             |        |
|                       | Motor Pully                                    | 132 x 2                                          |            |             |        |
|                       | Belt Nos.                                      | 2                                                |            |             |        |
| Type of Drive         | Belt Driven                                    |                                                  |            |             |        |
| 3.                    | <b>Pre Filter:</b>                             |                                                  |            |             |        |
|                       | Rating                                         | EU - 5                                           |            |             |        |
|                       | Make                                           | Mechmark                                         |            |             |        |
|                       | Type                                           | Box Type                                         |            |             |        |
|                       | MOC                                            | Media: Non woven<br>Synthetic<br>Frame: Al Frame |            |             |        |
|                       | Sealant Used                                   | Epoxy                                            |            |             |        |
|                       | Size of each filter in mm                      | 540 x 540 x 50                                   |            |             |        |
|                       | Quantity Nos. (Ft <sup>2</sup> )               | 1                                                |            |             |        |
|                       | Initial Pressure drop at rated capacity (mmwc) | 12 – 15 mmwg                                     |            |             |        |
|                       | Final pressure drop at rated capacity (mmwc)   | 18 – 20 mmwg                                     |            |             |        |
| Arrestance Efficiency | 99 % down to 5<br>micron                       |                                                  |            |             |        |



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| S.No                  | AHU Parameters                                      | Specification                                                 | Checked By | Verified By | Remark |
|-----------------------|-----------------------------------------------------|---------------------------------------------------------------|------------|-------------|--------|
| 4.                    | <b>Fine Filter:</b>                                 |                                                               |            |             |        |
|                       | Rating                                              | EU - 07                                                       |            |             |        |
|                       | Make                                                | Mechmark                                                      |            |             |        |
|                       | Type                                                | Flange Type                                                   |            |             |        |
|                       | MOC                                                 | Media: Non woven<br>Synthetic<br>Frame: Al Frame              |            |             |        |
|                       | Sealant used                                        | Epoxy                                                         |            |             |        |
|                       | Size of each filter in mm                           | 610 x 610 x 300                                               |            |             |        |
|                       | Quantity Nos.                                       | 1                                                             |            |             |        |
|                       | Initial Pressure drop at rated capacity (mm of wc)f | 14 mmwg                                                       |            |             |        |
|                       | Final pressure drop at rated capacity (mmwc)        | 25 mmwg                                                       |            |             |        |
| Arrestance Efficiency | 99 % down to 3 micron                               |                                                               |            |             |        |
| 5.                    | <b>Fire Damper:</b>                                 |                                                               |            |             |        |
|                       | Type                                                | Fire damper with actuators                                    |            |             |        |
|                       | Make                                                | Caryaire                                                      |            |             |        |
|                       | Rating                                              | 90 Minutes                                                    |            |             |        |
|                       | Installation                                        | SA & RA AHU Duct connection                                   |            |             |        |
| Actuator make         | Siemens                                             |                                                               |            |             |        |
| 6.                    | <b>Condensing unit</b>                              |                                                               |            |             |        |
|                       | Make                                                | Carrier                                                       |            |             |        |
|                       | Modal                                               | 40LC010DR                                                     |            |             |        |
|                       | Capacity                                            | 8.5 TR                                                        |            |             |        |
|                       | Quantity                                            | 1                                                             |            |             |        |
|                       | Fan type                                            | Direct driven<br>DIDW Forward<br>Curved Centrifugal<br>Blower |            |             |        |
|                       | Fan quantity                                        | 02 nos.                                                       |            |             |        |
|                       | Motor type                                          | Permanent Split<br>Capacitor Type                             |            |             |        |
| Motor                 | 01 nos.                                             |                                                               |            |             |        |



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### 3.0 BASIC ASSEMBLY OF MACHINE:

| S.No. | Basic Assembly           | Availability<br>Yes/No | Checked by | Verified by | Remark |
|-------|--------------------------|------------------------|------------|-------------|--------|
| 1.    | AHU Plenum               |                        |            |             |        |
| 2.    | Blower                   |                        |            |             |        |
| 3.    | Motor                    |                        |            |             |        |
| 4.    | Cooling Coil             |                        |            |             |        |
| 5.    | Flow switch              |                        |            |             |        |
| 6.    | Condensing unit          |                        |            |             |        |
| 7.    | Heater                   |                        |            |             |        |
| 8.    | Pre Filter               |                        |            |             |        |
| 9.    | Fine Filter              |                        |            |             |        |
| 10.   | HEPA Filter              |                        |            |             |        |
| 11.   | Electrical Starter Panel |                        |            |             |        |

### 4.0 SAFETY INSPECTION FOR ELECTRICAL PART:

| S.No. | Parameter                                                                                            | Checked by | Verified by | Remark |
|-------|------------------------------------------------------------------------------------------------------|------------|-------------|--------|
| 1.    | Check if there are any possibilities to occur a danger of electric shock by a leakage of electricity |            |             |        |
| 2.    | During machine operation ,check if there are any causes for safety accident                          |            |             |        |
| 3.    | Check the Fire Damper in case of Safety from fire                                                    |            |             |        |
| 4.    | Check the Limit Switch in AHU in Case of unauthorized opening of blower motor section                |            |             |        |

### 5.0 MOC VERIFICATION:

| S.No.                                      | Component name    | Material of Construction | Checked by | Verified by | Remark |
|--------------------------------------------|-------------------|--------------------------|------------|-------------|--------|
| <b>Grills for Supply &amp; Return Air:</b> |                   |                          |            |             |        |
| 1.                                         | Ducting           | GSS sheet                |            |             |        |
| 2.                                         | Insulation        | XLPE Al Foil Faced       |            |             |        |
| <b>Filter &amp; Filter Frames</b>          |                   |                          |            |             |        |
| 3.                                         | Primary Filters   | Settled in Al frame      |            |             |        |
| 4.                                         | Secondary Filters | Settled in Al frame      |            |             |        |
| 5.                                         | HEPA Filter       | Settled in Al frame      |            |             |        |



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### 6.0 CLEANLINESS:

| S.No. | PARTICULARS                                     | Checked by | Verified by | Remark |
|-------|-------------------------------------------------|------------|-------------|--------|
| 1.    | Easy Cleaning of AHU                            |            |             |        |
| 2.    | There is no unwanted gap through Doors & Plenum |            |             |        |
| 3.    | There should be no water seepage on the floor   |            |             |        |
| 4.    | Easy cleaning of AHU Pre filter fine filter     |            |             |        |

### 7.0 SAFETY LABELS INSPECTIONS:

These labels are attached as a caution to the operator /maintenance personnel.

| S.No. | Location                                                              | Present /Absent |
|-------|-----------------------------------------------------------------------|-----------------|
| 1.    | Front door safety note label (affix at the front door)                |                 |
| 2.    | Affix at electrical panel cover                                       |                 |
| 3.    | Electrical panel safety note label                                    |                 |
| 4.    | Rotating component safety label                                       |                 |
| 5.    | Main rotary switch lock pad type(mounted at left side of the machine) |                 |
| 6.    | Emergency stop (mounted at front control panel of the machine)        |                 |

### 8.0 ELECTRICAL COMPONENT DETAIL:

| S.No. | Component name  | Specification | Checked by | Verified by | Remarks |
|-------|-----------------|---------------|------------|-------------|---------|
| 1.    | Main motor      | 5.5 kw/2Pole  |            |             |         |
| 2.    | Motor Frequency | 50 Hz         |            |             |         |
| 3.    | Motor Voltage   | 415 V         |            |             |         |

### 9.0 SUMMARY:

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### 10.0 CONCLUSION:

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### 11.0 PROTOCOL POST APPROVAL:

This is to certify that Air Handling Unit is designed as per GMP and requirements and the equipment design fulfill the GMP requirements.

#### APPROVED BY:

| DEPARTMENT        | NAME | SIGNATURE | DATE |
|-------------------|------|-----------|------|
| Production        |      |           |      |
| Maintenance       |      |           |      |
| Quality Assurance |      |           |      |