PHARMA DEVILS

ENGINEERING DEPARTMENT

STANDARD OPERATING PROCEDURE	
Department: Engineering	**SOP No.:**
Title: Operation of Water Ring Vacuum Plant	**Effective Date:**
Supersedes: Nil	**Review Date:**
Issue Date:	**Page No.:**

1.0 OBJECTIVE

To lay down the procedure for the operation of water ring vacuum plant.

2.0 SCOPE

This standard operating procedure (SOP) is applicable for the operation of water ring vacuum plant.

MACHINE DETAIL	
Model:	
Capacity	175M³/Hr
Motor HP	7.5

3.0 RESPONSIBILITY.

Engineering Supervisor/technician will operate the water ring vacuum plant and maintained the daily log sheet
Executive Engineering will check the daily log sheet
Manager Engineering will verify the daily log sheet

4.0 PROCEDURE

4.1 STARTING OF WATER RING VACUUM PLANT

4.1.1 The Vacuum pump and cooling water pump marked “1” start on ODD dates and vacuum pump and cooling water pump marked “2” start on EVEN dates.

4.1.2 Open cooling tower CT3 discharge valve PCWV24.

4.1.3 Ensure cooling water in sump up to full level.

4.1.4 Open the suction valve PCWV1/PCWV2 and discharge valve PCWV3/PCWV4 of the condenser water pump.

4.1.5 Ensure drain valve PCWV5 of cooling tower CT3 is closed.

4.1.6 Start cooling tower fan motor by pressing the push button PB25 from electrical panel.

4.1.7 Start condenser water pump by pressing PB27/PB29from electrical panel.

4.1.8 Ensure cooling water pressure from pressure gauge PCWPG1/PCWPG2 is approximately1.5 to 3 $Kg/cm^{2.}$

4.1.9 Open suction and discharge valve PCWV21 and PCWV22 of heat exchanger line.

4.1.10 Open suction valve VV1/VV2 of vacuum pump1/2 and VV3 main suction valve.

4.1.11 Switch ON main supply for vacuum plant from production electrical panel.

4.1.12 Ensure RYB indicator glow from vacuum plant electrical panel.

4.1.13 Ensure the water level from sight glass is upto sufficient level in circulation tank If water level is low then fill it by opening valve SWV25 upto sufficient level then close the valveSWV25.

4.1.14 Ensure that water supply valve of vacuum pump 1/2 SWV27/SWV28 inlet valve of soft water circulation pump SWV26 in open position.

4.1.15 Switch ON the vacuum pump by push button PB40/PB41

4.1.16 Switch ON soft water circulation pump by push button PB39.

4.1.17 Ensure the water pressure from pressure gauge SWPG1 pressure is minimum 1.5$Kg/cm^{2.}$

4.1.18 Ensure vacuum increases gradually in gauge VPG3 of main receiver tank.

4.1.19 Ensure the system is running satisfactory and Record the parameter in daily log sheet as per Annexure II.

4.2 STOPPING OF WATER RING VACUUM PLANT

4.2.1 Switch OFF the vacuum pump by pushing PB40/PB41.

4.2.2 Switch OFF water circulation pump by operating PB42.

4.2.3 Close suction valve VV1/VV2 of vacuum pump1/2 and VV3 main suction valve

4.2.4 Close suction and discharge valvePCWV21 and PCWV22 of heat exchanger line..

4.2.5 Switch OFF main supply for vacuum plant from production electrical panel.

5.0 SAFETY AND PRECAUTIONS:

5.1 Ensure that the direction of rotation is clockwise when viewed from coupling end or drive end**.**

5.2 All guards are in place and securely fastened.

5.3 The Electrical connection should be corresponding to the local code.

5.4 The unit should be grounded.

6.0 REVISION HISTORY

Revision No.	Reason for Revision	Superseded from & date
00	New	-----

7.0 REFERENCES

Manufacturer Manual of water ring vacuum plant.

8.0 ABBREVIATIONS

SOP: Standard Operating Procedure.

ID: Identification Number

9.0 ANNEXURE

Annexure I: Valves, pressure gauge and Push button details

Annexure II: Daily log sheet of Water Ring Vacuum Plant

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ANNEXURE I
Valves, pressure gauge and Push button details
VALVES DETAIL

PCWV1:Suction of cooling tower pump no1.
PCWV2:Suction of cooling tower pump no2.
PCWV3:Discharge of cooling tower pump no1.
PCWV4:Discharge of cooling tower pump no2.
PCWV5:Drain of cooling tower no3.
PCWV21: Inlet of heat exchanger.
PCWV22:Outlet of heat exchanger.
SWV25: Soft water make up supply.
SWV27: Soft water supply to vacuum pump1.
SWV28: Soft water supply to vacuum pump2.
SWV26:Inlet of circulation pump.
VV1: Suction valve of vacuum pump1.
VV2: Suction valve of vacuum pump2.
VV3: Main suction valve of receiver tank.

PUSH BUTTONS DETAIL

PB25: On cooling tower fan.
PB27:On cooling tower pump1.
PB29:On cooling tower pump2.
PB26: Off cooling tower fan.
PB28:Off cooling tower pump1.
PB30:Off cooling tower pump2.
PB39: On circulation pump.
PB40:On vacuum pump1.
PB41:On vacuum pump2.
PB42:Off vacuum pump1.
PB43:Off vacuum pump2.
PB44: Off circulation pump.
PCWPG1: Pump no1.
PCWPG2: Pump no2 .
PCWPG21: heat exchanger inlet.
PCWPG22: heat exchanger outlet.
SWPG1: Soft water.

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Annexure II

Time HRS	HEAT EXCHANGER Cooling water Kg/cm²		Soft WATER PRESSURE IN Kg/cm²	VACUUM IN INCHES OF Hg	Remarks	Sign
	INLET	OUTLET				
07.00						
08.00						
09.00						
10.00						
11.00						
12.00						
13.00						
14.00						
15.00						
16.00						
17.00						
18.00						
19.00						
20.00						
21.00						
22.00						
23.00						
00.00						
01.00						
02.00						
03.00						
04.00						
05.00						
06.00						

SHIFT	NAME
1	
2	
3	

Date:

Executive Engineering

Manager Engineering