PHARMA DEVILS

ENGINEERING DEPARTMENT

STANDARD OPERATING PROCEDURE	
Department: Engineering	**SOP No.:**
Title: Operation of 100 TR Screw Chiller	**Effective Date:**
Supersedes: Nil	**Review Date:**
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1.0 OBJECTIVE

To lay down the procedure for the operation of 100 TR Screw chillers.

2.0 SCOPE

This standard operating procedure (SOP) is applicable for the operation of 100 TR Screw chillers.

Location	Equipment Description	Model	Equipment ID
Utility	Chiller 100 Tr.	CSH8591-140Y-40P	U/045
Utility	Chiller 100 Tr	CSH8591-140Y-40P	U/046

3.0 RESPONSIBILITY.

Engineering Supervisor/technician will operate the 100 TR Screw chillers 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 100 TR SCREW CHILLER

4.1.1 Switch ON main supply from main electrical panel.

4.1.2 Ensure RYB indicator is glowing from chiller electrical panel.

4.1.3 Fill the cooling tower CT1/CT2 is upto sufficient level. If water level is low then open the make up valveSWV07/SWV08 for CT1/CT2.And ensure that drain valveCWV21/CWV22 of cooling tower CT1/CT2 are in closed position

4.1.4 Fill the expansion tank up to full level by opening make up valve SWV11 then close and ensure that drain valve CHWV14 of expansion is in closed position.

4.1.5 Open the inlet/outlet valves CHWV12/CHWV13 of expansion tank.

4.1.6 Open the inlet/outlet valve CHWV06/CHWV09 of chilled water pumps no 1 and inlet/outlet valves CHWV07/CHWV10 of pump no 2.

4.1.7 Open the chilled water supply/return valve CHWV01/CHWV03 of chiller no1and supply/return valve CHWV02/CHWV04 of chiller no2.

4.1.8 Open the cooling tower inlet/outlet valve CWV17/CWV19 of CT1and CWV18/CWV20 of cooling tower no2.

4.1.9 Open the inlet/outlet valve CWV09/CWV08 of cooling tower pump no1 and CWV11/CWV10 for cooling tower pump no2.

4.1.10 Open the cooling water supply/return valve CWV15/CWV16 of chiller no1 and CWV24/CWV25 of chiller no2.

4.1.11 Start the cooling tower fan motor of cooling tower1/2 by pushing button PB11/PB13 from main electrical panel

4.1.12 Start the cooling water pump 1/2 by push button PB01/PB03 from drive panel.

4.1.13 Ensure the cooling water pressure from gauge CWPG05/CWPG06 from discharge line of pump1/2 is around 2-3Kg/cm2

4.1.14 Ensure the cooling water inlet and outlet pressure from gauge CWPG10/CWPG12 of condenser no1andCWPG11/CWPG13 of condenser no2 is approximately 1.5 to 2 Kg/cm2..

4.1.15 Start the chilled water pump 1/2 by push button PB19/PB21 from drive panel.

4.1.16 Ensure the chilled water pressure from gauge CHWPG06/CHWPG07 from discharge line of pump1/2 is around 2-3Kg/cm2

4.1.17 Ensure the chilled water inlet and outlet pressure from gauge CHWPG01/CHWPG03 of chiller no1and CHWPG02/CHWPG04 of chiller no2 is approximately 1.5 to 2 Kg/cm2.

4.1.18 Switch ON the main control supply from chiller control panel..

4.1.19 Switch ON the control supply by operating switches S1 of compressor no1 and S2 for compressor no2.

4.1.20 Switch ON auto switch S3 of Screw compressor1 and S4 for Screw Compressor no 2.

4.1.21 Monitor INLET/OUTLET Chilled water temperature from display panel of compressor no1/2

4.1.22 Ensure the system is running satisfactory and record the data in log book as per Annexure-II.

4.2 STOPPING OF 100 TR SCREW CHILLER

4.2.1 Switch OFF the S3/S4 auto switch of compressor no1/2

4.2.2 Switch OFF SW1 the control supply of compressor no1 and S2 for compressor no2

4.2.3 Switch OFF the chilled water pump no1/2 by push button PB20/PB22 from drive panel

4.2.4 Switch OFF the cooling tower fan no1/2 by push button PB12/PB14 from main panel

4.2.5 Switch off the cooling tower pump no1/2 by push button PB04/PB06 from drive panel

4.2.6 Close the cooling tower inlet/outlet valve CWV17/CWV19 of CT1and CWV18/CWV20 of cooling tower no2

4.2.7 Close the inlet/outlet valve CWV09/CWV08 of cooling tower pump no1 and CWV11/CWV10 for cooling tower pump no2

4.2.8 Close the inlet/outlet valve CHWV06/CHWV09 of chilled water pumps no 1 and inlet/outlet valves CHWV07/CHWV10 of pump no 2.

4.2.9 Close the chilled water supply/return valve CHWV01/CHWV03 of chiller no1and supply/return valve CHWV02/CHWV04 of chiller no2.

4.2.10 Close the CHW1/CHW2 inlet/outlet valves of expansion tank.

4.2.11 Switch OFF the main control supply of chiller no1/2 from the chiller control panel.

5.0 SAFETY AND PRECAUTIONS:

5.1 After starting the screw chiller ensure that only one liquid line in progress at 0% load.

5.2 Timing of 0-25% 25-50% 50-75% 75-100% should be one minute.

5.3 All electrical leads are secure and in good order.

5.4 Monitor all the parameter from display panel such as High pressure, Low pressure, Water flow switch, and antifreeze switch, Temperature setting in as per manufacturer recommendation.

5.5 Chilled water Temperature setting should not be less then 10^{o}c.

Ensure proper earthing for compressor motor

6.0 REVISION HISTORY

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

7.0 REFERENCES

Manufacturer Manual of 100 Tr. Screw Chillers

8.0 ABBREVIATIONS

SOP: Standard Operating Procedure.

9.0 ANNEXURE

Annexure I: Valves, Pressure Gauge And Push Button Details
Annexure II: Daily Log sheet of 100 TR Screw Chiller

Annexure I
Valves, Pressure Gauge And Push Button Details

Valve Serial No.	Valve Description	Button No.	Push Button Description
CHWV01	Inlet of chiller no1	PB01	ON condenser pump no.1
CHWV02	Inlet of chiller no2	PB02	OFF condenser pump no.1
CHWV03	Outlet of chiller no1	PB03	ON condenser pump no.2
CHWV04	Outlet of chiller no2	PB04	OFF condenser pump no.2
CHWV06	Suction of chiller pump no1	PB011	ON CT 1 Fan
CHWV07	Suction of chiller pump no2	PB012	PB13:ON CT 2 Fan
CHWV08	Discharge of chiller pump no1	PB013	OFF CT 1 Fan
CHWV09	Discharge of chiller pump no2	PB014	PB14: OFF CT 2 Fan
CHWV11	Make up of Expansion tank	PB019	ON chilled water pumpno.1
CHWV12	Inlet of expansion tank	PB020	OFF chilled water pump no.1
CHWV13	Outlet of expansion tank	PB021	ON chilled water pump no.2
CHWV14	Drain of expansion tank	PB022	OFF chilled water pump no.2
SWV07	Make up of CT1	Pr Gauge Sr. No.	Pressure Gauge Details
SWV08	Make up of CT2		
CWV08	Discharge of condenser pumpno.1	CWPG05	Discharge of condenser pump no.1
CWV09	Suction of condenser pump no.1.	CWPG06	Discharge of condenser pump no.2
CWV10	Discharge of condenserpumpno.2	CWPG10	Inlet pressure of condenser no.1
CWV11	Suction of condenser pump no.2	CWPG11	Inlet pressure of condenser no.2
CWV15	Condenser no.1 inlet valve	CWPG12	Outlet pressure of condenser no.1
CWV16	Condenser no.1 outlet	CWPG13	Outlet pressure of condenser no.2
CWV17	Inlet of CT1	CHWPG01	Inlet of chiller no.1.
CWV18	Inlet of CT2	CHWPG02	Inlet of chiller no.2.
CWV19	Outlet of CT1	CHWPG03	Outlet of chiller no.1.
CWV20	Outlet of CT2	CHWPG04	Outlet of chiller no.2.
CWV21	Drain of CT.no.1	CHWPG06	Discharge of chiller pump no.1
CWV22	Drain of CT.no.2	CHWPG07	Discharge of chiller pump no.2
CWV24	Condenser no.2 inlet valve		
CWV25	Condenser no.2 outlet		

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Annexure II

Daily Log sheet of 100 TR Screw Chiller

	CHILLER No-1												CHILLER No-2						CHW PUMP			CW PUMP				CHILLER			REMARKS	
TIME	SP	DP	CHW TEMP		CHW PR		CW TEMP		CW PR		SP	DP	CHW TEMP		CHW PR		CW TEMP		CW PR		LOAD (AMP)			LOAD (AMP)		VOLTS R/Y/B	NO-1	NO-2	
	PSI	PSI	IN	OUT	IN	OUT	IN	OUT	IN	OUT	PSI	PSI	IN	OUT	IN	OUT	IN	OUT	IN	OUT	1	2	3	1	2	3		AMP	AMP	
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EQUIPMENT NAME			**CHILLER-1**	**CHILLER-2**	**CHW PUMP-1**	**CHW PUMP-2**	**CHW PUMP-3**	**CW PUMP-3**
RUNNING HOURS								

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PREVIOUS RUN HOURS																		
TOTAL RUN HOURS																		
WATER METER			CT-REF. PLANT			CT PROCESS		CT DG SET		SOFT WATER		PORTABLE WATER				KWH		
FINAL																		
INTIAL																		
CONS.																		