



	
DOC NUMBER: 569-DB7B-MEC-711-004		CLIENT NUMBER: PRD-MEC-DSH-019	
CLIENT: TAKEDA			
PROJECT: BURITI EPCVM PROJECT			

DATA SHEET
 CENTRIFUGAL PUMP
 CHILLED WATER PUMP - PROCESS
 P-PCH-7B-5 / P-PCH-7A-6

0	30/JUL/2021	ISSUED FOR CONSTRUCTION	ASO	LUIS	RSP
B	16/JUN/2021	90% DD ISSUE	ASO	LUIS	RSP
A	08/FEB/2021	30% BD ISSUE	ASO	LUIS	MAJ
REV	DATE	DESCRIPTION	EXEC	CHECK	APPROV

 		 	
NUMBER: 569-DB7B-MEC-711-004		CLIENT NR: PRD-MEC-DSH-019	
TITLE CENTRIFUGAL PUMP - P-PCH-7B-5 / P-PCH-7B-6			SHEET: 2/5 REV.: 0

1. REVISION HISTORY

Rev	Reason For Change
A	ORIGINAL ISSUE
B	PAGE 3, line 2.2: changed from normal to design
	PAGE 3, line 2.3 to 2.12: added values for minimum and maximum conditions
	PAGE 3, line 2.3: changed operation flow from 54.0m ³ /h to 168.0 m ³ /h for design condition
	PAGE 3, line 2.5: changed temperature from 15°C to 6°C
	PAGE 3, line 2.6: changed viscosity from 1.14 cP to 1.47 cP
	PAGE 3, line 2.7: changed vapour pressure from 0.017 bar abs to 0.0093 bar abs
	PAGE 3, line 2.8: changed suction pressure from 0.33 barg to 0.2119 barg for design condition
	PAGE 3, line 2.9: changed discharge pressure from 3.1 barg to 3.513 barg for design condition
	PAGE 3, line 2.10: changed differential pressure from 2.77 barg to 3.330 barg for design condition
	PAGE 3, line 2.11: changed total head from 30.0 mH ₂ O to 34.0 mH ₂ O for design condition
	PAGE 3, line 2.12: changed NPSH available from 13.61mH ₂ O to 12.89 mH ₂ O for design condition
	PAGE 3, note 4: changed temperature from 1°C to 0°C
	PAGE 3: added note 5
	PAGE 5: added note 6
0	ISSUED FOR CONSTRUCTION

NUMBER: 569-DB7B-MEC-711-004

CLIENT NR: PRD-MEC-DSH-019

TITLE

SHEET: 3/5

CENTRIFUGAL PUMP - P-PCH-7B-5 / P-PCH-7B-6

REV.: 0

1	GENERAL				
1.1	ITEM N°:	P-PCH-7B-5 / 6		QUANTITY:	2
1.2	SERVICE:	CHILLED - PROCESS (FUTURE)			
1.3	LOCAL:	DRUG SUBSTANCE BUILDING (7B)			
1.4	PUMP TYPE:	CENTRIFUGAL			
1.5	MANUFACTURER:	Note 1			
1.6	MODEL:	Note 1	MANUFACTURING STANDARD: ASME B 73.1		
1.7	APLICABLE:	PURPOSE			
1.8	DRIVING:	ELECTRIC MOTOR			
2	OPERATION CONDITIONS (Note 1 / 4)				
2.1	FLUID:				
2.2			MINIMUM	DESIGN	MAXIMUM
2.3	OPERATION FLOW (m³/h):		32.8	168.0	121.2
2.4	DENSITY AT OPERATION TEMPERATURE (kg/m³):		1,000	1,000	1,000
2.5	OPERATION TEMPERATURE (°C):		6.0	6.0	6.0
2.6	VISCOSITY AT OPERATION TEMPERATURE (cP):		1.47	1.47	1.47
2.7	WATER VAPOUR PRESSURE AT OPERATION TEMP.(bar abs):		0.0093	0.0093	0.0093
2.8	SUCTION PRESSURE (bar g):		0.2485	0.2119	0.2301
2.9	DISCHARGE PRESSURE (bar g):		2.206	3.513	2.980
2.10	DIFFERENTIAL PRESSURE (bar):		1.987	3.330	2.780
2.11	TOTAL HEAD (mH2O):		20.26	34.0	28.35
2.12	NPSH AVAILABLE (mH2O):		13.28	12.89	13.07
2.13	OPERATION:	CONTINUOUS	CYCLE (h/day):	24 e 365	INSTALLATION: SHELTERED
3.0	CONSTRUCTION				
3.1	IMPELLER (note 2):	CONSTRUCTION: TYPE: RADIAL		ARRANGEMENT:	OVERHUNG
3.2		STAGES: SIMPLE		QUANTITY: 1	SUCTION: SIMPLE
3.3	BIPARTITE CASING (note 3): RADIAL		SUPPORT: FOOT	VOLUTE: SIMPLE	DIFFUSER: NO
3.4	CONNECTIONS:	DN	PN/CLASS	STANDARD	NUMBER
3.5	SUCTION:	note 1	150#	ASME/ANSI	B16.5
3.6	DISCHARGE:	note 1	150#	ASME/ANSI	B16.5
3.7	CASING DRAIN:	note 1	3000#	ASME/ANSI	B1.20.1 (NPT)
3.8	AUXILIARY CONNECTIONS:		TYPE:	PURGE	PRES. INDICATOR
SUPPLY			Yes	No	
3.10			DN:	note 1	-
3.11	LUBRICATION BEARINGS: note 1				
4.0	PERFORMANCE (note 1)				
4.1	CURVE N°:		MAX. AMT ROTOR SELECTED (mm):		
4.2	REQUIRED NPSH (mcl):		BEST EFFICIENCY POINT (m³/h):		
4.3	EFFICIENCY (%):		MINIMUM STABLE FLOW (m³/h):		
4.4	BRAKE HORSEPOWER - BHP (kW/CV):		DIAMETER MÍN/SELEC./MÁX. (mm):		
4.5	MAX. POWER SELECTED IMPELLER (kW/CV):		SOUND PRESSURE (dB):		
4.6	ROTATION (RPM):		LOAD GD² (kg. M2):		
4.7	VIEW COUPLING ROTATION:				

NOTES:

- 1) To be filled by supplier.
- 2) The impeller must be dynamically and statically balanced.
- 3) Back Pull Out.
- 4) The equipment shall be able to operate with propylene glycol at 0°C.
- 5) Pumps with variable water flow.

NUMBER: 569-DB7B-MEC-711-004

CLIENT NR: PRD-MEC-DSH-019

TITLE

SHEET: 4/5

CENTRIFUGAL PUMP - P-PCH-7B-5 / P-PCH-7B-6

REV.: 0

5	SEALING (Note 1)		
5.1	SHAFT SEALING:	MECHANICAL SEAL	
6	GASKET		
6.1	MATERIAL:	N/A	
6.2	MAX. TEMPERATURE (°C):	N/A	
6.3	MAX. PRESSURE CHAMBER (kgf/cm ² / MPa):	N/A	
6.4	MAX. PERIPHERAL SPEED (m/s):	N/A	
7	MECHANICAL SEAL (note 2)		
7.1	SEALING PLAN:		
7.2	CONSTRUCTION STANDARD:	ASME B73.1 or EN 12756 or similar	
7.3	SEAL SIZE:		
7.4	CONSTRUCTION:		
7.5	TYPE:		
7.6	MODEL:		
7.7	MANUFACTURER:		
7.8	SUPPLY OF THE SEALING SYSTEM:	PUMP MANUFACTURER	
8	MATERIAL OF MECHANICAL SEAL (note 2)		
8.1		INTERNAL	EXTERNAL
8.2	ROTARY RING:		
8.3	STATIONARY RING:		
8.4	SECONDARY SEALING:		
8.5	SPRING / BELLOWS:		
8.6	BODY:		
9	COOLING (note 2)		
9.1	PLAN:		
9.2	FLOW (m ³ /h):		
9.3	PRESSURE (kgf/cm ²):		
9.4	BEARINGS:		
9.5	OVERLAY:		
9.6	GASKET BOX:		
9.7	PEDESTAL:		
10	SEALING INJECTION (note 2)		
10.1	SEALING PLAN:		
10.2	FLOW (m ³ /h):		
10.3	PRESSURE (kgf/cm ²):		
10.4	FLUID:		
10.5	FLUID TEMPERATURE (°C):		
11	AUXILIARY SEALING		
11.1	PLAN:	N/A	
11.2	FLOW (m ³ /h):	N/A	
11.3	PRESSURE (kgf/cm ²):	N/A	
11.4	FLUID:	N/A	
11.5	FLUID TEMPERATURE (°C):	N/A	
12	HEATING		
12.1	HEATING SYSTEM:	NOT REQUIRED	
12.2	FLUID:	N/A	

NOTAS:

1) The Supplier shall provide the Data Sheet for the Mechanical Seal and the Sealing System separately.

2) To be filled by supplier.

NUMBER: 569-DB7B-MEC-711-004

CLIENT NR: PRD-MEC-DSH-019

TITLE

SHEET: 5/5

CENTRIFUGAL PUMP - P-PCH-7B-5 / P-PCH-7B-6

REV.: 0

13	COUPLING (note 4)		
13.1	MODEL:	note 1	
13.2	TYPE:	FLEXIBLE	
13.3	SIZE:	note 1	
13.4	DISPLACEMENT (mm):	5.0	
13.5	MANUFACTURER:	note 1	
14	MATERIALS		
14.1	CASING:	A48CL 30B OR SIMILAR	
14.2	IMPELLER:	A48CL 30B OR SIMILAR	
14.3	SHAFT:	SAE 1045	
14.4	SHAFT SLEEVE:	AISI 316	
14.5	LANTERN RING:	N/A	
14.6	METALLIC BASE:	ASTM A36	
14.7	COUPLING PROTECTION:	BRASS	
14.8	CASE WEAR RING:	AISI 316	
14.9	IMPELLER WEAR RING:	AISI 316	
14.10	AUXILIARY PIPING:	AISI 316	
14.11	NAMEPLATE:	AISI 304	
15	DRIVER 2) 3)		
15.1	TYPE:	ELECTRIC MOTOR (TFVE)	INSULATION CLASS: F
15.2	POWER (CV):	note 1	SERVICE FACTOR: 1.25
15.3	ROTATION (RPM):	1800	ZONE / TEMP. CLASS / GROUP: N/A
15.4	TENSION (V)	220/380/440	PROTECTION: IP55
15.5	N° OF PHASES :	3	CONSTRUCTIVE FORM / ASSEMBLY: B3D
15.6	FREQUENCY (Hz):	60	MANUFACTURER: ACCORDING TO VENDOR LIST
15.7	SPEED CONTROL:	Yes (note 6)	SCOPE: PUMP MANUFACTURER
17	TESTS		
17.1	HIDROSTATIC:	CERTIFIED	
17.2	PERFORMANCE:	CERTIFIED	
17.3	MECHANICAL OPERATION:	CERTIFIED	
17.4	NPSH:	CERTIFIED	
17.5	DISASSEMBLY AFTER TEST:	CERTIFIED	
17.6	HIDROSTATIC TEST PRESSURE (bar g):	note 1	
17.7	CASING DESIGN PRESSURE (bar g):	note 1	
18	WEIGHTS		
18.1	PUMP (kg):	note 1	DRIVER (kg): note 1
18.2	COUPLING (kg):	note 1	BASE (kg): note 1
18.3	COUPLING PROTECTION (kg):	note 1	TOTAL (kg): note 1
19	PAINTING		
19.1	SPECIFICATION:	note 1	
19.2	SCHEME:	note 1	

NOTAS:

- 1) To be filled by supplier.
- 2) The Supplier shall provide the Data Sheet for Electric Motor separately.
- 3) The motor must be dimensioned to meet the demand corresponding to all operating points of the characteristic curve, referring to the selected impeller.
- 4) The coupling protection must comply with NR-12.
- 5) Reference document: PRD-MEC-TSP-005 (TECHNICAL SPECIFICATION – WATER PUMPS)
- 6) The electric motor has a frequency inverter to enable balancing and control water flow. The frequency inverter shall be supplied with communication protocol in Ethernet and compatible with the Wonderware platform (BMS System).