MECHANICHAL DATA SHEET FOR FIRE WATER JOCKEY PUMPS

1	**GENERAL DATA (NOTE 5)**					
2	ITEM	**10-P-0802 A/B (NOTE 3 & 10)**		NO. OF MAIN / STAND BY UNITS	**1 / 1**	
3	SERVICE	**FIRE WATER JOCKEY PUMPS**		*INSTALLATION:*	**UNDER SHELTER**	
4	OPERATION:	**DISCONTINUOUS**		PARALLEL/SINGLE	**SINGLE**	
5	TYPE OF DRIVER	**ELECTRICAL MOTOR**	FOR UNITS	DATA SHEET NO.		
6	TYPE OF DRIVER		FOR UNITS	DATA SHEET NO.		
7	ELECTRICAL SUPPLY:	VOLTAGE **400 V**		FREQUENCY **50 HZ**	PHASES NO. **3**	
8		*HEATING*	*VOLTAGE*	*FREQUENCY*	*PHASES NO.*	
9	**CHARACTERISTICS OF HANDEL LIQUID (NOTE 11)**					
10	TYPE OF HANDLED LIQUID			**FIRE WATER (NOTE 9)**		
11	PUMPING TEMPERATURE	MIN/ NORM/ MAX (NOTE 1)	˚C	/ **AMB** /		
12	DENSITY AT TEMPERATURE MIN/ NORM/ MAX		**kg/m^3**	/ **998** /		
13	VISCOSITY AT TEMPERATURE MIN/ NORM/ MAX		**mPa.s**	/ **0.8804** /		
14	VAPOR PRESSURE AT NORMAL PUMPING TEMPERATURE		**bar a**	**0.1107**		
15	FREEZING POINT / POUR POINT		˚C	**Not applicable**		
16	DISSOLVED GAS		**(yes-no)**	**NO**		
17	CORROSIVE/ EROSIVE/ HAZARDOUS AGENTS		**(yes-no)**	**NO** / **NO** / **NO**		
18	SUSPENDED SOLIDS:	TYPE/ DIMENSIONS/ VOLUME%	**mm**	**NO** / **NO** / **NO**		
19	**OPERATING CONDITIONS**					
20	SUCTION PRESSURE	MIN/ NORM/ MAX	**bar a**	**1.117** / **2.404** / **2.434**		
21	DISCHARGE PRESSURE AT RATED CAPACITY		**bar a**	/ **9.50** /		
22	DEFERENTIAL PRESSURE AT RATED CAPACITY		**bar**	**8.383 (NOTE 4)**		
23	CAPACITY	MIN/ NORM/ RATED	**m^3/h**	/ **30** /		
24	HEAD AT RATED CAPACITY		**m**	**85.625**		
25	NPSH AVAILABLE		**m**	**10.063**		
26	MAX ALLOWABLE HEAD AT SHUT-OFF		**m**	**144.734 (NOTE 8)**		
27	ESTIMATED ABSORBED POWER AT PUMP SHAFT		**KW**	**14 (NOTE 16)**		
28	FLOW CONTROLLED BY: pressure controller- level controlled- flow controller- other					
29	REACCELERATION/ AUTOMATIC START-UP		**(yes-no)**	**NO** / **YES**		
30	START-UP WITH DELIVERY VALVE:		**(open- closed)**	**OPEN**		
31						
32						
33						
34	**MECHANICAL DATA**					
35	SEALING TYPE			**MECHANICAL SEAL**		
36	CONTAMINATION OF LIQUID HANDLED ALLOWED		**(yes-no)**			
37	AIR ENTERAINMENT ALLOWED		**(yes-no)**			
38	LEAKS ALLOWED		**(yes-no)**	**YES**		
39	ANT FREEZING PROTECTION		**(yes-no)**	**NO**		
40	PUMP DESIGN CODE			**NFPA 20- Latest Edition**		
41	PROJECT SPECIFICATION					
42						
43						
44						
45						

1	**MECHANICAL DATA**			
2	SUCTION LINE: DIAMETER/ RATING/ FACING ANSI		**NSP**	**4"** / **150#** / **RF**
3	DISCHARGE LINE: DIAMETER/ RATING/ FACING ANSI		**NSP**	**3"** / **150#** / **RF**
4	VENT/ DRAIN REQUIRED		(yes-no)	**YES** / **YES**
5	MATERIAL IN CONTACT WITH LIQUID HANDLED (minimum requirement)			**CAST IRON(VENDOR TO VERIFY/CONFIRM)**
6	PUMP CASING MATERIAL (minimum requirement)			**CAST IRON(VENDOR TO VERIFY/CONFIRM)**
7	PUMP IMPELLER MATERIAL (minimum requirement)			**CAST IRON(VENDOR TO VERIFY/CONFIRM)**
8	PUMP INTERNAL PARTS MATERIAL (minimum requirement)			**CAST IRON(VENDOR TO VERIFY/CONFIRM)**
9	CASING CORROSION ALLOWANCE		**mm**	
10	MINIMUM DESIGN METAL TEMP./ AT A PRESSURE OF		◦**C** / **bar g**	
11	COOLING FLUID: TYPE/ DESIGN PRESS./ OPERATING TEMP.		bar g / ◦**C**	/
12	HEATING FLUID: TYPE/ DESIGN PRESS./ OPERATING TEMP.		bar g / ◦**C**	/
13				
14	**FLUSHING FLUID**			
15	TYPE			
16	PRESSURE	MIN/ NORM/ MAX	**bar g**	
17	TEMPERATURE	MIN/ NORM/ MAX	◦**C**	
18	DENSITY AT TEMPERATURE	MIN/ NORM/ MAX	**kg/m3**	
19	VAPOR PRESSURE AT MAX TEMPERATURE		**bar**	
20	FREEZING POINT/ POUR POINT		◦**C**	
21	HAZARDOUS AGENTS		(yes-no)	
22				
23				
24				
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1	MFR			MODEL	
2	PURCHASE ORDER	NO.		REV.	DATE
3	OFFER	NO.		REV.	DATE
4	CODES AND STD FOR CONSTRUCTION			**NFPA 20**	
5	**PERFORMANCE**			**REQUIRED DATA**	**SUPPLIER DATA**
6	CHARACTERISTIC CURVE NO.				
7	RATED CAPACITY (line 22 sh. 3)		**m^3/h**	**30**	
8	CAPACITY AT BEST EFFICIENCY POINT		**m^3/h**		
9	MINIMUM CONTINUOUS CAPACITY		**m^3/h**		
10	HEAD AT RATED CAPACITY (line 23 sh. 3)		**m**	**85.625**	
11	MAXIMUM HEAD		**m**		
12	HEAD WITH MAXIMUM IMPELLER DIAMETER @ RATED CAPACITY		**m**		
13					
14					
15	PUMP SPEED		**RPM**		
16	NPSH REQUIRED AT RATED CAPACITY		**m**		
17	EFFICIENCY AT RATED CAPACITY		**%**		
18	ABSORBED POWER RATED CAPACITY		**KW**		
19	MAX ABSORBED POWER WITH IMPELLER DESIGN/ MAX DIAMETER		**KW**	/	
20	ABSORBED POWER BY OIL PUMP / HEATER		**KW**	/	
21	DIFFERENCE: (NPSH AVAILABLE -NPSH REQUIRED)		**m**		
22	MAX OPERATION TIME AT SHUT-OFF		**s**		
23	RATIO: IMPELLER DIAMETER / IMPELLER EYE AREA				
24	SPECIFIC SPEED				
25	SUCTION SPECIFIC SPEED	(SI UNITS: RPM, M^3 ***/ s,m)***			
26	CAPTIVITY RATIO: RATED / AT B. E. P.		**%**		
27	HEAD RATIO: MAX / AT RATED CAPACITY		**%**		
28	IMPELLER RATIO: DESIGN IMPELLER DIAMETER / MAX IMPELLER DIAMETER		**%**		
29	**CONSTRUCTION FEATURES**				
30	MAX ALLOWABLE TEMPERATURE		**°C**		
31	MAX ALLOWABLE PRESSURE AT MAX ALLOWABLE TEMPERATURE		**barg**		
32	HYDROSTATIC TEST PRESSURE		**barg**	**1.5x MAWP**	
33	ALLOWABLE LOADS ON FLANGES AS PER API 610		**(yes-no)**	**2 X API610**	
34	LATERAL CRITICAL SPEED		**RPM**		
35	MOMENT OF INERTIA		**kg/m3**		
36	AXIAL THRUST ON SHAFT (+ = to driver; - = opposite to driver)		**N**		
37	MAX TORQUE AT 100% OF PUMP SPEED		**N.m**		
38	MASSES:	PUMP/ 1GEARBOX/ BASE PLATE	**kg**		
39		DRIVER/ TOTAL	**kg**		
40	OUTLINE DIMENSIONS OF UNIT:	LENGTH / WIDTH/ HEIGHT	**m**		
41	NOISE LEVEL OF COMPLETE UNIT:	SPLAT 1m/ PWL **(NOTE 6)**	**dB(A)**	**≤85**	
42					
43					
44					

	CONSTRUCTION FEATURES				REQUIRED DATA	SUPPLIER DATA
2	CASING:	MOUNTING:	centerline- foot- near centerline		**CENTERLINE**	
3		SPLIT:	axial- radial- barrel		**RADIAL**	
4		TYPE:	single volute- double volute- diffuser			
5		THICKNESS/ CORROSION/ ALLOWANCE		**mm**	**/ -**	
6	IMPELLERS:	NUMBER			**1**	
7		TYPE:	open - closed		**CLOSED**	
8		DIAMETER:	MIN/ DESIGN/ MAX		**/ /**	
9		MOUNTING:	overhung- between bearings		**OVERHUNG**	
10		CONFIGURATION:	one way- opposed			
11		1st STAGE SUCTION:	single- double			
12	ROTATION VIEWED FROM COUPLING END			**(CW-CCW)**		
13	CASING WEAR RINGS:		SUCTION/ REAR	**(yes-no)**	**YES / YES**	
14	IMPELLER WEAR RINGS:		SUCTION/ REAR	**(yes-no)**	**YES / YES**	
15	RADIAL / THRUST BEARING TYPE				**BALL / BALL**	
16	LUBRICATION TYPE:		grease - oil ring- forced		**OIL RING**	
17	SUCTION NOZZLE:		SIZE / RATING/ FACING	**NPS**	**4"/ 150# / *RF***	
18			FINISHING/ LOCATION		**125AARH**	
19	DISCHARGE NOZZLE:		SIZE / RATING/ FACING	**NPS**	**3" / 150# / *RF***	
20			FINISHING/ LOCATION		**125AARH**	
21	SEAL:	TYPE			**MECHANICAL SEAL**	
22		MANUFACTURER/ MODEL			**/**	
23		API CODE				
24		API FLUSHING PLAN			**11/61**	
25		STUFFING BOX PRESSURE		**bar**		
26		SHAFT DIAMETER AT SEAL		**mm**		
27	EXTERNAL FLUSHING CONSUMPTION			**m^3/h**		
28	PUMP COOLING API PLAN / CONSUMPTION			**m^3/h**	**/**	
29	HEATING FLUID CONSUMPTION			**kg/h**		
30	COUPLING MANUFACTURER / MODEL				**/ FLEX METAL**	
31	GEARBOX:	TYPE/ MANUFACTURER			**/**	
32		AGMA SERVICE FACTOR				
33		INTEL / OUTLET ROTATIONAL SPEED		**RPM**	**/**	
34		DATA SHEET N0.				
35	**MATERIALS**					
36	API 610 CODE					
37	CASING/ BARREL				**CAST IRON (VENDOR TO VERIFY/CONFIRM)**	**/**
38	IMPELLER				**CAST IRON (VENDOR TO VERIFY/CONFIRM)**	
39	SHAFT SLEEVE					
40	SHAFT					
41	CASING/ IMPELLER WEAR RING					**/**
42	INTERNAL PARTS					
43	FLUSHING/ COOLING/ OIL PIPING				**/ /**	**/ /**
44	BASE PLATE				**STEEL**	

EXTERNAL OF SUPPLY (X INCLUSIONS)

X	DRIVERS		GEARBOXES	X	COMMON BASE PLATES FOR PUMP/ DRIVER/CONTROLLER		
X	COUPLINGS	X	COUPLING GUARDS	X NOT- SPARKING	X	FOUNDATION BOLTS	X BOLTS FOR DRIVERS AND GEARBOXES
X	UNIT ASSEMBLY AT FACTORY			X	CASING DRAINS	X WITH VALVES	**FLANGED**
X	MECHANICAL SEALS			X	CASING VENTS	X WITH VALVES	**(IF ANY)**
X	MECHANICAL SEALS ACCESSORIES			X	SHOP TESTS		
	COOLING AND FLUSHING PIPING			X	SPARE PARTS FOR START-UP		
	LUBRICATION SYSTEM			X	SPARE PARTS FOR	2 YEARS OF OPERATION	
	SHOP FABRICATION OF PIPING FROM OIL CONSOLE TO PUMP			X	SPECIAL TOOLS AND WRENCHES		
	AUTOMATIC AIR RELEASE			X	INSTRUCTION MANUALS NO.	COPIES (IN ENGLISH) **(NOTE 12)**	
X	INSTRUMENTS AS PER PID #10-08-A1-SA-0804-N			X	PAINTING		
X	PUMP SUCTION LINE STRAINER AS PER PID #10-08-A1-SA-0804-N			X	DOCUMENTATION		
				X	LOCAL CONTROL PANEL		

INSPECTION AND TESTING **X INCLUSIONS)**

- X HYDROSTATIC TEST
- X PERFORMANCE TEST (WITNESS)
- X NPSH TEST (IF REQUIRED)
- X MECHANICAL RUNNING TEST (4 HR)(WITNESS)
- X DISMANTELLING AFTER MECHANICAL RUNNING TEST **(NOTE 14)**
- X SITE PERFORMANCE TEST

NOTES

1) Pumps Design temperature 65º C.

2) Deleted

3) Pumps shall comply with NFPA 20 requirements(latest revision)

4) The worst case is considered for differential pressure

5) This document is based on process data sheet Nº 10-08-DSH-SA-0802-N.

6) Including driver.

7) Pumps, drivers, materials are requested to be listed for fire pump service by U.L.and approved by F.M.

8) Shut off pressure shall not exceed 140% of rated head. PSV, if any , corresponding flow detector will be provided by pump vendor

9) For fire water quality refer to Utilities Specification Nº 10-00-DSH-PR-0002-L

10) Hazardous Area Classification: Non- hazardous.

11) A certified test curve indicating the flow, head, power and efficiency will be provided after finalizing with pump supplier

12) As per related material requisition

13) All the instrumentation & signal interfaces in the relevant package battery limit shall be considered.

14) COMPANY / PURCHASER inspectors shall have the right to order dismantelling the pumps, after mechanical running test, if test resultrs are not in accordance with NFPA 20 and related project specification.

15) Start ,Stop & Select shall be provided on the local control panel.

16) Shall be finalized by vendor, with considering 50% efficiency, at least

17) Suction strainer and discharge PSV according to PID should be supplied by pump vendor

DESIGN DATA

Rated Power:		kW	–								
Rated Voltage (Un):	400	V	–	Combined fluctuation V & Hz:	*+/- 10% & +/- 2%*		Frequency:	50Hz			
System neutral point:			–	N. of poles:		–	Shape:				
Duty: continuous ■	–	intermittent ☐	–	Duty cycle period:		s	– Cyclic duration factor:		%		
Cooling:											
Execution and degree of protection	Frame:	IP55									
	Terminal box:	IP66									
Lubrication:											
Star - up: direct ■	–	Y/D ☐	–	auto- transformer ☐	–						☐
Main. Voltage at terminals:		**80**	% Vn	– I.s.c. max at terminals	100	kA	1 s				
DATA OF DRIVEN MACHINE	Type			– ■ Coupling: direct ■	–	gear ☐	–	belt ☐			
	I = mr^2:	kgm	–	Base plate: common ■	– not common ☐	–		☐			
	Stalling torque (Tr):										
	Thrust to:	–	kg	–							

PERFORMANCE AND CONSTRUCTION ATA

MFR. And construction type:											
Rated current:					A	– start- up current:	A		p.u.	± **5**	%
Rated torque (Tu):					N m	– Locked rotor torque (Tl):	**Nm**				p.u.
Minimum torque (Tu):		aprox.		N m	p.u.	– Maximum torque (Tb):	**Nm**				p.u.
Load					locked rotor	– Full load speed:					RPM
Efficiency p.u.						– Specific Start- up time(t_{AS}):					s
Power factor						– Locked rotor time: t_{RB}					s
Successive start- ups N.:	cold/warm	–	Insulation class:	F	–	Temperature rise:	B				
Overall noises level:	dBA -										
Lubricant:						– Lubricating interval:					
Type of bearings D.E.:						– N.D.E.:					
Direction of rotation with phases time sequence and connection: L1- U, L2- V, L3- W(1):											
Terminal box	Quality/ entry diameter N	/				mm – Position					
	Entry type:	cable gland ■	–	cone ☐	–	threaded ☐	thread type:				
Enclosure dimensions:						– I = mr^2	kgm^2	–			
Mass: Total	kg	–	Rotor	kg	–						
paint: Color:											

ACCESSORY AND ANCILLARY EQUIPMENT

Anti - condensation heater ■	N. of phases:	–	V	–	W	–	
Resistance temperature detectors (RTD):	☐ Quantity N.:		– Type:				
Bearing thermometer: ☐	electrical contact ☐						