 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
شماره پیمان: 053 - 073 - 9184	MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMP (API 610)								شماره صفحه: 1 از 10
	پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	PEDCO	120	ME	DT	0024	D04	

طرح نگهداشت و افزایش تولید 27 مخزن



MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMP (P-2201 A/B)

نگهداشت و افزایش تولید میدان نفتی بینک

D04	SEP. 2022	AFC	H. Adineh	M.Fakharian	M. Mehrshad	
D03	APR. 2022	IFA	H. Adineh	M.Fakharian	M. Mehrshad	
D02	MAR. 2022	IFA	H. Adineh	M.Fakharian	M. Mehrshad	
D01	JAN. 2022	IFA	H. Adineh	M.Fakharian	M. Mehrshad	
D00	NOV. 2021	IFC	H. Adineh	M.Fakharian	M. Mehrshad	
REV.	Date	Purpose of Issue/Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval



Class: 2	CLIENT Doc. Number: F0Z-708855
----------	--------------------------------

status:	IDC: Inter-Discipline Check IFC: Issued For Comment IFA: Issued For Approval AFD: Approved For Design AFC: Approved For Construction AFP: Approved For Purchase AFQ: Approved For Quotation IFI: Issued For Information AB-R: As-Built for CLIENT Review AB-A: As-Built -Approved
---------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							
	MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMP (API 610)						شماره صفحه: 2 از 10	
شماره پیمان: 053 - 073 - 9184	پروژه BK	بسته کاری GCS	صادر کننده PEDCO	تسهیلات 120	رشته ME	نوع مدرک DT		

REVISION RECORD SHEET

page	D00	D01	D02	D03	D04	page	D00	D01	D02	D03	D04
1	x	x	x	x	x	65					
2	x	x	x	x	x	66					
3	x	x	x	x	x	67					
4	x					68					
5	x	x	x	x	x	69					
6	x	x	x	x	x	70					
7	x				x	71					
8	x	x				72					
9	x	x			x	73					
10					x	74					
11						75					
12						76					
13						77					
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57						121					
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59						123					
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61						125					
62						126					
63						127					
64						128					

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک</p> <p>سطح الارض</p> <p>احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک</p>																									
شماره پیمان: 053 - 073 - 9184	<table><tr><th colspan="8">MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMPS (API 610)</th></tr><tr><th>نسخه</th><th>سریال</th><th>نوع مدرک</th><th>رشته</th><th>تسهیلات</th><th>صادر کننده</th><th>بسته کاری</th><th>پروژه</th></tr><tr><td>D04</td><td>0024</td><td>DT</td><td>ME</td><td>120</td><td>PEDCO</td><td>GCS</td><td>BK</td></tr></table>	MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMPS (API 610)								نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه	D04	0024	DT	ME	120	PEDCO	GCS	BK	شماره صفحه: 3 از 10
MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMPS (API 610)																										
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه																			
D04	0024	DT	ME	120	PEDCO	GCS	BK																			

GENERAL NOTES	
1	Density at normal temperature is 980 kg/m3.
2	Viscosity at normal temperature is 0.46 cP.
3	Suction & Discharge line diameters are 2".
4	Mechanical Seal data sheet shall be filled in by vendor as per API 682, 4th edition.
5	Pump drain shall be terminated at skid edge with flange connection and valved. Valves in the piping system shall be Welded Flanged type.
6	Material class of 'I-1', 'I-2', 'S-1', 'S-2', 'S-3', 'S-4', 'S-5', 'S-6', 'C-6' 'A-7' and 'A-8', which is defined in API 610 table H.1, shall be provided with full chemical analysis and mechanical test certification to BS EN 10204:2004 "3.1". Material class of 'D-1' and 'D-2', which is defined in API 610 table H.1 and also titanium materials shall be provided with full chemical analysis and mechanical test certification to BS EN 10204:2004 "3.2".
7	PMI Testing for Alloy Steel Shall be Done. If NPSH margin be less than 1m, NPSH test Shall be Done.
9	API Plan 31-53B shall be considered. (vendor to confirm)
10	Min. / Max. Design temperature (°c): 5 / 85
11	Temperature finalize after depressurizing study.
12	Vendor shall fill in the blanks and return the completed data sheet along with Motor data sheet, "DOC NO.: BK-GCS-PEDCO-120-EL-DT-0008" with his proposal.
13	Vendor shall submit ITP (Inspection & Testing Plan) with his proposal.
14	Vendor is requested to confirm the material, or propose appropriate alternative.
15	The Tie-in flanges shall conform to ASME B-16.5.
16	Vendor to indicate which minimum flow pumps can achieve.
17	Pumps shall be designed, fabricated, tested, and inspected in accordance with the requirements of API 610 11th edition.
18	Welding repair procedures shall be submitted for approval.
19	If pump is self venting there is no need for vent.
20	Ultrasonic Test shall be performed for forged shaft.
21	For pumps with vacuum suction pressure the minimum NPSH margin shall be 2 m. for other pumps the minimum NPSH margin shall be 1 m.
22	Spare parts shall be supplied by vendor according to 'MR's appendix for Centrifugal Pumps; Doc. No.: BK-GCS-PEDCO-120-ME-MR-0009"
23	Bearing temperature shall be measured during mechanical run test.
24	For electrical motor descriptions, refer to 'Specification For LV induction Motors' Doc. No. BK-GNRAL-PEDCO-000-EL-SP-0010. and 'Specification for MV induction motors' Doc.No. BK-GNRAL-PEDCO-000-EL-SP-0017.
25	Electrical motor shall be rated for the end of curve.
26	For site conditions refer to Process Basis of Design Document. Doc.No. BK-GNRAL-PEDCO-000-PR-DB-0001.
27	Power Factor, efficiency, frequent, voltage, frequent variation and voltage variation of motor shall be specified by vendor in data sheet.
28	Allowable external forces and moments on nozzle are equal to two times of table 5 of API 610-11th edition.
29	The material shall be in compliance with NACE MR0175/ISO15156 and Specification For Material Requirements in Sour service Document No. BK-GNRAL-PEDCO-000-PI-SP-0008
30	Range of Amb.Temp. : Min. ambient temperature: 5 °C , Max. ambient temperature: 50 °C.
31	Coupling shall be flexible with spacer.
32	The motors, pump mechanical seal, pump coupling and pump accessories shall be supplied from the project's approved vendor list (A.V.L.). Chinese & Indian vendors are not acceptable for Mechanical seal , Electro motor and coupling subvendors.
33	Max Allowable Pressure at Shut-Off at rated impeller (barg) : 9.6
	
34	Barometric pressure in Binak new GCS; winter: 14.37 psia summer: 13.26 psia



احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک



شماره پیمان:

053 - 073 - 9184

MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMP (API 610)

شماره صفحه: 4 از 10

نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه
D04	0024	DT	ME	120	PEDCO	GCS	BK

API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2201 A/B (Sheet 1 of 6)

CLIENT: National Iranian South Oil Company (NISOC)

PROJECT TITLE: BINAK New Compressor Gas Station

JOB NUMBER: _____

EQUIPMENT NUMBER: P-2201A/B

EQUIPMENT SERVICE: FLARE KO DRUM PUMPS

SERIAL NUMBER: _____

REO. / SPEC NO. : BK-GCS-PEDCO-120-ME-SP-0003

PURCH ORDER NO. _____

Cells coloured thus contain drop-down options

contain calculated values based on input data; do not change.

- identify a cross referenced paragraph in the document note, and may also contain a drop down list

When you have completed the DS, highlight the whole page format cells pattern none
Delete these notes on completion

COMMENTS:

DATA SHEETS					
ITEM No.	ATT	ITEM No.	ATT	ITEM No.	ATT
P-2201 A		P-2201 B			

PUMP
MOTOR
GEAR
TURBINE

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک																	
شماره پیمان:	MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMP (API 610)	شماره صفحه: 10 از 15																
053 - 073 - 9184	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>نسخه</td><td>سریال</td><td>نوع مدرک</td><td>رشته</td><td>تسهیلات</td><td>صادرکننده</td><td>بسته کاری</td><td>پروژه</td> </tr> <tr> <td>D04</td><td>0024</td><td>DT</td><td>ME</td><td>120</td><td>PEDCO</td><td>GCS</td><td>BK</td> </tr> </table>	نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه	D04	0024	DT	ME	120	PEDCO	GCS	BK	
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه											
D04	0024	DT	ME	120	PEDCO	GCS	BK											

API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2201 A/B (Sheet 2 of 6)

APPLICABLE TO: <u>PROPOSAL</u> FOR: <u>NISOC</u> SITE: <u>BINAK Gas Compressor Station</u> NO. REQ: <u>2 operating</u> PUMP SIZE: _____ MANUFACTURER: _____				API 610 - 11th Edition, IPS-G-PM-105 No. STAGES: <u>V.T.A</u> SERIAL NO.: _____																																																															
LIQUID CHARACTERISTICS <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th></th><th>Units</th><th>Maximum</th><th>Minimum</th><th>Note</th></tr> <tr> <td>LIQUID TYPE OR NAME :</td><td></td><td><u>HC</u></td><td></td><td>Max & min values refer only to the property listed</td></tr> <tr> <td>VAPOR PRESSURE :</td><td>bara</td><td><u>1.20</u></td><td></td><td></td></tr> <tr> <td>DENSITY : (Note 1)</td><td>kg/m³</td><td></td><td></td><td></td></tr> <tr> <td>SPECIFIC HEAT :</td><td>kJ/kgC</td><td></td><td></td><td></td></tr> <tr> <td>VISCOSITY : (Note 2)</td><td>cP</td><td></td><td></td><td></td></tr> </table>					Units	Maximum	Minimum	Note	LIQUID TYPE OR NAME :		<u>HC</u>		Max & min values refer only to the property listed	VAPOR PRESSURE :	bara	<u>1.20</u>			DENSITY : (Note 1)	kg/m³				SPECIFIC HEAT :	kJ/kgC				VISCOSITY : (Note 2)	cP				• IF INTERMITTENT NO. OF STARTS : _____ PUMPS OPERATE IN: _____ CORROSION DUE TO : (6.12.1.9) _____ EROSION DUE TO : (6.12.1.9) _____ H2S CONCENTRATION (ppm) : _____ CHLORIDE CONCENTRATION : _____ PARTICULATE SIZE (DIA IN M) : _____ PARTICULATE CONCENTRATION : _____ SOUR SERVICE: _____																																	
	Units	Maximum	Minimum	Note																																																															
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OPERATING CONDITIONS (6.1.2) <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th></th><th>Units</th><th>Maximum</th><th>Rated</th><th>Normal</th><th>Min</th></tr> <tr> <td>NPSH_A Datum:</td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>PUMPING TEMPERATURE :</td><td>°C</td><td></td><td></td><td><u>5 (worse case)</u></td><td></td></tr> <tr> <td>FLOW :</td><td>m³/hr</td><td></td><td><u>2.20</u></td><td><u>2.00</u></td><td></td></tr> <tr> <td>DISCHARGE PRESSURE:</td><td>barg</td><td></td><td><u>1.6</u></td><td></td><td></td></tr> <tr> <td>SUCTION PRESSURE :</td><td>barg</td><td><u>0.6</u></td><td></td><td></td><td><u>0.00</u></td></tr> <tr> <td>DIFFERENTIAL PRESSURE :</td><td>bar</td><td></td><td><u>1.5</u></td><td></td><td></td></tr> <tr> <td>DIFFERENTIAL HEAD :</td><td>m</td><td></td><td><u>15.6</u></td><td></td><td></td></tr> <tr> <td>NPSH_A :</td><td>m</td><td></td><td><u>1.0</u></td><td></td><td></td></tr> <tr> <td>HYDRAULIC POWER:</td><td>KW</td><td></td><td><u>0.1</u></td><td></td><td></td></tr> </table>					Units	Maximum	Rated	Normal	Min	NPSH _A Datum:						PUMPING TEMPERATURE :	°C			<u>5 (worse case)</u>		FLOW :	m³/hr		<u>2.20</u>	<u>2.00</u>		DISCHARGE PRESSURE:	barg		<u>1.6</u>			SUCTION PRESSURE :	barg	<u>0.6</u>			<u>0.00</u>	DIFFERENTIAL PRESSURE :	bar		<u>1.5</u>			DIFFERENTIAL HEAD :	m		<u>15.6</u>			NPSH _A :	m		<u>1.0</u>			HYDRAULIC POWER:	KW		<u>0.1</u>			INTERMITTENT barrel and pump shall have the same MAWP and to be hydrotest in same value with pump Hiran Reply: Noted, will be added as note			
	Units	Maximum	Rated	Normal	Min																																																														
NPSH _A Datum:																																																																			
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LOCATION: <u>OUTDOOR</u> <u>UNHEATED</u> MOUNTED AT : _____ ELECTRIC AREA CLASSIFICATION: (6.1.22) ZONE <u>1</u> GROUP <u>II B</u> TEMP CLASS <u>T3</u>				COOLING WATER : <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th></th><th>RETURN</th><th>DESIGN</th></tr> <tr> <td>TEMP</td><td></td><td></td></tr> <tr> <td>PRESS.</td><td></td><td></td></tr> <tr> <td>SOURCE</td><td></td><td></td></tr> </table> COOLING WATER CHLORIDE CONCENTRATION: _____ INSTRUMENT AIR : _____ kg MIN _____ kg STEAM <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th></th><th>DRIVERS</th><th>HEATING</th></tr> <tr> <td>TEMP</td><td></td><td></td></tr> <tr> <td>PRESS.</td><td></td><td></td></tr> </table>					RETURN	DESIGN	TEMP			PRESS.			SOURCE				DRIVERS	HEATING	TEMP			PRESS.		
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TEMP																												
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SOURCE																												
	DRIVERS	HEATING																										
TEMP																												
PRESS.																												
SITE DATA : ELEVATION (MSL) : <u>12.5</u> m RANGE OF DESIGN TEMPS: MIN / MAX <u>5</u> <u>85</u> °C RELATIVE HUMIDITY: MIN / MAX <u>0</u> <u>100</u> % (@ 25.6 °C) UNUSUAL CONDITIONS: _____ UTILITY CONDITIONS : <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>ELECTRICITY :</th><th>DRIVERS</th><th>HEATING</th><th>CONTROL</th><th>SHUTDOWN</th></tr> <tr> <td>VOLTAGE</td><td><u>400</u></td><td></td><td></td><td></td></tr> <tr> <td>PHASE</td><td><u>3</u></td><td></td><td></td><td></td></tr> <tr> <td>HERTZ</td><td><u>50</u></td><td></td><td></td><td></td></tr> </table>				ELECTRICITY :	DRIVERS	HEATING	CONTROL	SHUTDOWN	VOLTAGE	<u>400</u>				PHASE	<u>3</u>				HERTZ	<u>50</u>				BAROMETER : (Note 35) _____ mBar B.1.22 ZONE <u>1</u> TEMP CLASS <u>T3</u>				
ELECTRICITY :	DRIVERS	HEATING	CONTROL	SHUTDOWN																								
VOLTAGE	<u>400</u>																											
PHASE	<u>3</u>																											
HERTZ	<u>50</u>																											

PERFORMANCE PROPOSAL CURVE NO. _____ RPM As Tested Curve No. _____ IMPELLER DIA.: _____ MAX. _____ MIN. _____ mm RATED POWER _____ Kw EFFICIENCY _____ (%) RATED CURVE BEP FLOW (at rated impeller dia) _____ m³/hr MIN FLOW : _____ kJ/Nm³ _____ m³/hr PREFERRED OPERATING REGION (6.1.11) _____ to _____ m³/hr ALLOWABLE OPERATING REGION _____ to _____ m³/hr MAX HEAD @ RATED IMPELLER _____ m MAX POWER @ RATED IMPELLER _____ kW NPSH ₃ AT RATED FLOW : _____ m CL PUMP TO U/S BASEPLATE _____ m NPSH MARGIN AT RATED FLOW : _____ m SPECIFIC SPEED (6.1.9) _____ SUCTION SPECIFIC SPEED LIMIT _____ SUCTION SPECIFIC SPEED _____ MAX. ALLOW. SOUND PRESS. LEVEL (dBA) EST MAX SOUND PRESS. LEVEL (dBA) MAX. SOUND POWER LEVEL REQ'D (6.1.14) _____ EST MAX SOUND POWER LEVEL _____				DRIVER (7.1.5) (Note 27) Driver Type <u>MOTOR</u> GEAR <u>NO</u> VARIABLE SPEED REQUIRED <u>NO</u> SOURCE OF VARIABLE SPEED _____ OTHER _____ MANUFACTURER _____ NAMEPLATE POWER AND POWER FACTOR @ Site Condition _____ KW Nominal RPM _____ RATED LOAD RPM _____ FRAME OR MODEL _____ ORIENTATION <u>HORIZONTAL</u> LUBE _____ BEARING TYPE: _____ RADIAL _____ THRUST _____ STARTING METHOD _____ SEE DRIVER DATA SHEET _____ Max Voltage Variation <u>±5%</u> Max Frequency Variation <u>±2%</u> Max Voltage and Frequency Variation together <u>±5%</u>			
NSS limitation shall be considered 213 Hiran Reply: No limitation has been specified in project specification and related standards. NSS limitation will be checked and finalized at vendor's offer stage.				Insulation/ temp rise to be mentioned : F/B Hiran Reply: Noted			

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض			
	احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک			
شماره پیمان: 053 - 073 - 9184	MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMP (API 610)			
	پروژه BK	بسته کاری GCS	صادر کننده PEDCO	تسهیلات 120
			رشته ME	نوع مدرک DT
			سریال 0024	نسخه D04
شماره صفحه: 10 از 16				



API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2201 A/B (Sheet 3 of 6)

CONSTRUCTION																
API PUMP TYPE: VS6 [Based on API 610 d]		CASING MOUNTING: CENTERLINE														
NOZZLE CONNECTIONS: (6.5.5) (Notes 3,28)		CASING TYPE: (6.3.10)														
<table border="1"> <tr> <th>Size</th> <th>Facing</th> <th>Rating</th> </tr> <tr> <td></td> <td>RF</td> <td>300</td> </tr> <tr> <td></td> <td>RF</td> <td>300</td> </tr> </table>		Size	Facing	Rating		RF	300		RF	300	OH3 BACKPULLOUT LIFTING DEVICE REQD. (9.1.2.6)					
Size	Facing	Rating														
	RF	300														
	RF	300														
SUCTION		CASE PRESSURE RATING:														
DISCHARGE		MAWP : (6.3.5) 40 barg @ °C														
PRESSURE CASING AUX. CONNECTIONS: (6.4.3.2)		HYDROTEST : 1.5*MAWP barg @ °C														
<table border="1"> <tr> <th>No.</th> <th>Size</th> <th>Type</th> <th>Facing</th> </tr> <tr> <td></td> <td></td> <td></td> <td>RF</td> </tr> <tr> <td></td> <td></td> <td></td> <td>RF</td> </tr> </table>		No.	Size	Type	Facing				RF				RF	HYDROTEST OH PUMP AS ASSEMBLY YES		
No.	Size	Type	Facing													
			RF													
			RF													
BAL./LEAK OFF		SUCT'N PRESS. REGIONS DESIGNED FOR MAWP YES														
DRAIN		ROTATION: (VIEWED FROM COUPLING END)														
VENT		IMPELLERS INDIVIDUALLY SECURED : YES														
PRESSURE GAGE		BOLT OH 3/4/5 PUMP TO PAD / FOUNDATION :														
TEMP GAGE		PROVIDE SOLEPLATE FOR OH 3/4/5 PUMPS														
WARM-UP LINE		ROTOR:														
Drain Valve Supplied By VENDOR		SHAFT FLEXIBILITY INDEX (SFI) (9.1.1.3)														
DRAINS MANIFOLDED VENDOR		First Critical Speed Wet (Multi stage pumps only)														
VENT Valve Supplied By VENDOR		COMPONENT BALANCE TO ISO 10438														
VENTS MANIFOLDED YES		SHRINK FIT - LIMITED MOVEMENT														
THREAD, CONS FOR PIPELINE SERVICE & < 50°C (6.4.3.2)		COUPLING: (7.2.3) Non-Sparking														
SPECIAL FITTINGS FOR TRANSITIONING (6.4.3.3)		MANUFACTURER														
CYLINDRICAL THREADS REQUIRED (6.4.3.8)		MODEL														
GUSSET SUPPORT REQUIRED YES If Needed		RATING (POWER/100 RPM)														
MACHINED AND STUDDED CONNECTIONS (6.4.3.12)		SPACER LENGTH														
VS 6 DRAIN		SERVICE FACTOR														
DRAIN TO SKID EDGE YES		RIGID (Note 31)														
MATERIAL (6.12.1.1)		COUPLING WITH HYDRAULIC FIT (7.2.10)														
APPENDIX H CLASS S-6 (VTC)		COUPLING BALANCED TO ISO 1940-1 G6.3 (7.2.3)														
MIN DESIGN METAL TEMP (6.12.4.1) 5 °C		COUPLING WITH PROPRIETARY CLAMPING DEVICE (7.2.1)														
REDUCED-HARDNESS MATERIALS REQ'D (6.12.1.12.1) YES (Note 29)		COUPLING IN COMPLIANCE WITH (7.2.4)														
Applicable Hardness Standard (6.12.1.12.3)		COUPLING GUARD STANDARD PER (7.2.13.a)														
BARREL :		Window on Coupling Guard														
CASE :		BASEPLATE														
DIFFUSERS		API BASEPLATE NUMBER :														
IMPELLER :		BASEPLATE CONSTRUCTION (7.3.14)														
IMPELLER WEAR RING :		BASEPLATE DRAINAGE (7.3.1) Entire Baseplate Drain Pan														
CASE WEAR RING :		CONSTRUCTION : (7.3.13)														
SHAFT:		LEVELING SCREWS : REQUIRED														
Bowl (if VS-type)		LONGITUDINAL DRIVER POSITIONING SCREWS : REQUIRED														
Inspection Class Level 2		SUPPLIED WITH :														
BEARINGS AND LUBRICATION (6.10.1.1)		GROUT AND VENT HOLES														
BEARING (TYPE / NUMBER): (6.11.4)		DRAIN CONNECTION														
RADIAL /		OR BASEPLATE LEVELING (7.3.5)														
THRUST /		MACHINED (7.3.6)														
REVIEW AND APPROVE THRUST BEARING SIZE : (9.2.5.2.4)		PROVIDE SPACER PLATE UNDER ALL EQUIPMENT FEET														
LUBRICATION : (6.10.2.2) (6.11.3) (9.2.6) RING OIL		OTHER														
PRESSURE LUBE SYSTEM TO ISO 10438- (9.2.6.5)		REMARKS :														
ISO 10438 DATA SHEETS ATTACHED																
Pressurized Lube Oil System mtd on pump baseplate																
Location of Pressurized Lube Oil System mounted on baseplate :																
INTERCONNECTING PIPING PROVIDED BY VENDOR																
OIL VISC. ISO GRADE VG																
CONSTANT LEVEL OILER : REQUIRED																

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک								
	MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMP (API 610)								
شماره پیمان: 053 - 073 - 9184	پروژه BK	بسته کاری GCS	صادر کننده PEDCO	تسهیلات 120	رشته ME	نوع مدرک DT	سریال 0024	نسخه D04	شماره صفحه: 10 از 7

API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2201 A/B (Sheet 4 of 6)

INSTRUMENTATION	SEAL SUPPORT SYSTEM MOUNTING
SEE ATTACHED API-670 DATA SHEET	SEAL SUPPORT SYSTEM MOUNTED ON PUMP BASEPLATE
ACCELEROMETER (7.4.2.1)	(7.5.1.4)
Number of Accelerometers	IDENTIFY LOCATION ON BASEPLATE
Mounting Location of Accelerometers	INTERCONNECTING PIPING BY VENDOR
PROVISION FOR MTG ONLY (6.10.2.10)	MECHANICAL SEAL (6.8.1) (VTS)
Number of Accelerometers	SEE ATTACHED ISO 21049/API 682 DATA SHEET (Note 4)
Mounting Location of Accelerometers	ADDITIONAL CENTRAL FLUSH PORT (6.8.9)
FLAT SURFACE REQUIRED (6.10.2.11) YES	HEATING JACKET REQ'D. (6.8.11)
Number of Accelerometers	FLUSH PLAN 31+53B D04
Mounting Location of Accelerometers	HEATING AND COOLING (6.1.17) (VTS)
VIBRATION PROBES (7.4.2.2)	COOLING REQ'D
PROVISIONS FOR VIB. PROBES	COOLING WATER PIPING PLAN
NUMBER PER RADIAL BEARING	COOLING WATER PIPING
NUMBER PER AXIAL BEARING	FITTINGS
MONITORS AND CABLES SUPPLIED BY (7.4.2.4)	COOLING WATER PIPING MATERIALS
TEMPERATURE (7.4.2.3)	COOLING WATER REQUIREMENTS:
PROVISIONS FOR TEMP PROBES	TOTAL COOLING WATER
RADIAL BEARING TEMP.	HEATING MEDIUM
NUMBER PER RADIAL BEARING	OTHER
THRUST BEARING TEMP.	HEATING PIPING
NUMBER PER THRUST BEARING ACTIVE SIDE	PIPING & yes
NUMBER PER THRUST BEARING INACTIVE SIDE	MANIFOLD PIPING FOR PURCHASER CON
TEMP. GAUGES (WITH THERMOWELLS) (9.1.3.6)	VENT
PRESSURE GAUGE TYPE	DRAIN
Remarks	VALVES
	COOLING WATER
	TAG ALL ORIFICES (7.5.2.4)
	SOCKET WELD CONN ON SEAL GLAND (7.5.2.8)
	yes Hirgan Reply: Noted
	YES YES (NOTE 5) YES YES

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک						
	شماره پیمان: 053 - 073 - 9184						
MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMP (API 610)							
پروژه BK		بسته کاری GCS		صادر کننده PEDCO		تسهیلات 120	
رشته ME		نوع مدرک DT		سریال 0024		نسخه D04	
شماره صفحه: 10 از 10							

API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2201 A/B (Sheet 5 of 6)

SURFACE PREPARATION AND PAINT				TEST			
MANUFACTURER'S STANDARD OTHER (SEE BELOW) YES				SHOP INSPECTION (8.1.1) YES			
SPECIFICATION NO. BK-GNRL-PEDCO-000-PI-SP-0012 "Specification for Painting"				PERFORMANCE CURVE YES			
PUMP: PUMP SURFACE PREPARATION BY VENDOR				& DATA APPROVAL PRIOR TO SHIPMENT. YES			
PRIMER BY VENDOR				TEST WITH SUBSTITUTE SEAL (8.3.3.2.b) NO			
FINISH COAT BY VENDOR				MATERIAL CERTIFICATION REQUIRED YES			
BASEPLATE: BASEPLATE SURFACE PREPARATION BY VENDOR				CASING (6.12.1.8) IMPELLER YES			
PRIMER: BY VENDOR				OTHER YES (Casing and Impeller Wear ring) NOTE 6			
FINISH COAT BY VENDOR				CASTING REPAIR WELD PROCEDURE APPR REQD YES			
DETAILS OF LIFTING DEVICES EXPORT				INSPECTION REQUIRED FOR CONNECTION WELDS (6.12.3.4.d) YES			
SHIPMENT: (8.4.1) EXPORT BOXING REQUIRED YES				LIQUID PENETRANT YES MAG PARTICLE YES			
OUTDOOR STORAGE MORE THAN 6 MONTHS YES				ULTRASONIC YES RADIOGRAPHY YES			
ROTOR STORAGE ORIENTATION (9.2.8.2) YES				INSPECTION REQUIRED FOR CASTINGS YES			
SHIPPING & STORAGE CONTAINER FOR VERT STORAGE (9.2.8.3) YES				LIQUID PENETRANT YES MAG PARTICLE YES			
N ₂ PURGE (9.2.8.4) YES				ULTRASONIC YES RADIOGRAPHY YES			
SPARE PARTS START-UP YES				HARDNESS TEST REQUIRED (8.2.2.7) YES			
NORMAL MAINTENANCE YES				ADDNL SUBSURFACE EXAMINATION (6.12.1.5) (8.2.1.3) YES			
OTHER PURCHASES				FOR YES			
COORDINATION MEETING REQUIRED (10.1.3) YES				METHOD YES			
MAXIMUM DISCHARGE PRESSURE TO INCLUDE YES				PMI TESTING REQUIRED (8.2.2.8) (NOTE 7) YES			
MAX RELATIVE DENSITY YES				COMPONENTS TO BE TESTED YES			
OPERATION TO TRIP SPEED YES				RESIDUAL UNBALANCE TEST (J.4.1.2) YES			
MAX DIA. IMPELLERS AND/OR NO OF STAGES YES				NOTIFICATION OF SUCCESSFUL YES			
CONNECTION DESIGN APPROVAL (9.2.1.4) YES				PERFORMANCE TEST (8.1.1.c) (8.3.3.3) YES			
TORSIONAL ANALYSIS / REPORT (6.9.2.10) YES				BASEPLATE TEST (7.3.21) WIT			
PROGRESS REPORTS YES				HYDROSTATIC WIT			
OUTLINE OF PROC FOR OPTIONAL TESTS (10.2.5) YES				HYDROSTATIC TEST OF BOWLS & COLUMN (9.3.13.2) WIT			
ADDITIONAL DATA REQUIRING 20 YEARS RETENTION (8.2.1.1) YES				PERFORMANCE TEST WIT			
LATERAL ANALYSIS REQUIRED (9.1.3.4) (9.2.4.1.3) YES				TEST IN COMPLIANCE WITH (8.3.3.2) WIT			
MODAL ANALYSIS REQUIRED (9.3.9.2) YES				TEST DATA POINTS TO (8.3.3.3) WIT			
DYNAMIC BALANCE ROTOR (6.9.4.4) YES				TEST TOLERANCES TO (8.3.3.4) WIT			
INSTALLATION LIST IN PROPOSAL (10.2.3.1) YES				NPSH (8.3.4.3.1) (8.3.4.3.4) WIT			
VFD STEADY STATE DAMPED RESPONSE ANALYSIS (6.9.2.3) YES				NPSH-1ST STG ONLY (8.3.4.3.2) WIT			
TRANSIENT TORSIONAL RESPONSE YES				NPSH TESTING TO HI 1.6 OR ISO 9906 (8.3.4.3.3) WIT			
BEARING LIFE CALCULATIONS REQUIRED (6.9.1.6) YES				TEST NPSHA LIMITED TO 110% SITE NPSHA (8.3.3.6) WIT			
IGNITION HAZARD ASSMT TO EN 13463-1 (7.2.13.e) YES				ADJ (8.3.3.7.b) WIT			
CASING RETIREMENT THICKNESS DRAWING (10.3.2.3) YES				ONLY (8.2.2.6) NON-WIT			
FLANGES RQD IN PLACE OF SKT WELD UNIONS (7.5.2.8) YES				LOCATION OF CLEANLINESS INSPECTION WIT			
INCLUDE PLOTTED VIBRATION SPECTRA (6.9.3.3) YES				NOZZLE LOAD TEST WIT			
CONNECTION BOLTING (7.5.4.7) YES				CHECK FOR CO-PLANAR MOUNTING PAD SURFACES WIT			
CADMIUM PLATED BOLTS PROHIBITED YES				MECHANICAL RUN TEST UNTIL OIL TEMP STABLE WIT			
VENDOR TO KEEP REPAIR AND HT RCDS (8.2.1.1.c) YES				4 HR. MECH RUN AFTER OIL TEMP STABLE (8.3.4.2.1) WIT			
VENDOR SUBMIT TEST PROCEDURES (8.3.1.1) YES				4 HR. MECH RUN TEST (8.3.4.2.2) WIT			
SUBMIT INSPECTION CHECK LIST (8.1.5) YES				BRG HSG RESONANCE TEST (8.3.4.7) WIT			
				STRUCTURAL RESONANCE TEST (9.3.9.2) WIT			
				REMOVE / INSPECT HYDRODYNAMIC BEARINGS AFTER TEST WIT			
				(9.2.7.5) WIT			
				AUXILIARY EQUIPMENT TEST (8.3.4.6) WIT			
				EQUIPMENT TO BE INCLUDED IN AUXILIARY TESTS WIT			
				LOCATION OF AUXILIARY EQUIPMENT TEST WIT			
				IMPACT TEST PER EN 13445 WIT			
				PER ASME SECTION VIII WIT			
				REMOVE CASING AFTER TEST WIT			

it has mentioned yes but the max density has not specified

Hirgan Reply: Noted, Max. density will be specified in next revision.

WIT
Hirgan Reply: Noted

8.3.3.2
Hirgan Reply: Noted

8.3.3.3
Hirgan Reply: Noted

yes
Hirgan Reply: Not applicable for this pump because the pump is constant speed.

yes
Hirgan Reply: Noted

SS
Hirgan Reply: Noted



نگهداشت و افزایش تولید میدان نفتی بینک
سطح الارض



احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

053-073-9184

شماره پیمان:

MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMP (API 610)

شماره صفحه: 10 از 10

پروژه	بسته کاری	صادر کننده	تجهیزات	رشته	نوع مدرک	سریال	نسخه
BK	GCS	PEDCO	120	ME	DT	0024	D04

API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2201 A/B (Sheet 6 of 6)

1	Note	VERTICAL TYPE (FIG 1.1)	VS6	Rev
2	REMARKS	For P&ID refer to BK-GCS-PEDCO-120-PR-PI-0020		
3				
4				
5				
6		VERTICAL PUMPS		VERTICAL PUMPS (CONT'D)
7		PUMP THRUST:	(+) UP (-) DOWN	LINE SHAFT:
8		STATIC THRUST	N N	LINE SHAFT DIAMETER mm
9		AT MIN FLOW	N N	TUBE DIAMETER mm
10		AT RATED FLOW	N N	LINE SHAFT COUPLING:
11		AT MAX FLOW	N N	LINESHAFT CONNECTION
12		MAX THRUST	N N	
13		SOLEPLATE REQUIRED		• SUCTION STRAINER TYPE
14		SOLEPLATE Length x Width	m X m	• LEVEL CONTROL
15		SOLEPLATE THICKNESS	mm	IMPELLER COLLETS ACCEPTABLE
16		MOUNTING FLANGE REQUIRED		HARDENED SLEEVES UNDER BEARINGS (9.3.10.5)
17		COLUMN PIPE:		RESONANCE TEST
18		DIAMETER	mm	STRUCTURAL ANALYSIS (9.3.5)
19		LENGTH	m	
20		NUMBER		DRIVER ALIGNMENT SCREWS
21		SPACING	m	SUCTION CAN
22		GUIDE BUSHINGS:		SUCTION CAN THICKNESS mm
23		NUMBER		LENGTH m
24		LINE SHAFT BEARING SPACING		DIAMETER mm
25		GUIDE BUSHING LUBE:		SEPARATE MOUNTING PLATE (9.3.8.3.1)
26				PROVIDE SEPARATE SOLEPLATE (9.3.8.3.3)
27				DRAIN PIPED TO SURFACE (9.3.13.5)
28				BOWL HEAD CALCULATION REQUIRED
29		MATERIALS (additional)		
30		SUCTION CAN / BARREL:		LINESHAFT SLEEVES:
31		DISCHARGE HEAD:		BEARING RETAINER:
32		BOWL SHAFT:		SHAFT ENCLOSING TUBE:
33		LINESHAFT:		DISCHARGE COLUMN:
34		LINESHAFT HARDFACING:		PRESSURE RATING:
35		BELLMOUTH:		HEAD MAWP HYDRO
36		BOWL BEARING:		COLUMN PIPE
37		LINESHAFT BEARING:		BOWL
38		SUMP ARRANGEMENT		
39		SUMP DIMENSIONS:		
40		GRADE ELEVATION	1 m	
41		LOW LIQUID LEVEL	2 m	
42		C.L. OF DISCHARGE	3 m	
43		SUMP DEPTH	l_1 m	
44		PUMP LENGTH	l_2 m	
45		GRADE TO DISCH.	l_3 m	
46		GRADE TO LOW LIQUID LVL	l_4 m	
47		GRADE TO 1ST STG IMPL'R.	l_5 m	
48		SUBMERGENCE REQ'D	l_6 m	
49		SUMP DIAMETER	Φd m	
50				
51				
52				
53				
54				
55				
56				



احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک



MECHANICAL DATA SHEETS FOR FLARE KO DRUM PUMP (API 610)

نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه
D04	0024	DT	ME	120	PEDCO	GCS	BK

شماره صفحه: 10 از 10

API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2201 A/B (Sheet 6 of 6)

PRESSURE VESSEL DESIGN CODE REFERENCES

THESE REFERENCES MUST BE LISTED BY THE MANUFACTURER
CASTING FACTORS USED IN DESIGN (TABLE 3)
SOURCE OF MATERIAL PROPERTIES

WELDING AND REPAIRS

THESE REFERENCES MUST BE LISTED BY THE PURCHASER. (DEFAULT TO TABLE 11 IF NO PURCHASER PREFERENCE IS STATED)

ALTERNATE WELDING CODES AND STANDARDS

WELDING REQUIREMENT (APPLICABLE CODE OR STANDARD)

WELDER/OPERATOR QUALIFICATION

WELDING PROCEDURE QUALIFICATION

NON-PRESSURE RETAINING STRUCTURAL WELDING SUCH AS BASEPLATES OR SUPPORTS

MAGNETIC PARTICLE OR LIQUID PENETRANT EXAMINATION OF PLATE EDGES

POSTWELD HEAT TREATMENT

POSTWELD HEAT TREATMENT OF CASING FABRICATION WELDS

REQUIRED

REQUIRED

MATERIAL INSPECTION

THESE REFERENCES MUST BE LISTED BY THE PURCHASER

DEFAULT TO TABLE 14

YES

ALTERNATIVE MATERIAL INSPECTIONS AND ACCEPTANCE CRITERIA (SEE TABLE 15) (8.2.2.5)

TYPE OF INSPECTION	METHOD	FOR FABRICATIONS	FOR CASTINGS
RADIOGRAPHY			
ULTRASONIC INSPECTION			
MAGNETIC PARTICLE INSPECTION			
LIQUID PENETRANT INSPECTION			
VISUAL INSPECTION (all surfaces)			

REMARKS :

For P&ID refer to "BK-GCS-PEDCO-120-PR-PI-0020"