

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)							 	
شماره پیمان: 053 – 073 – 9184	SHAFT COUPLING ASSEMBLY DRAWING AND BILL OF MATERIAL							شماره صفحه : 1 از 6	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	HY	120	ME	DW	0002		V01

طرح نگهداشت و افزایش تولید 27 مخزن

SHAFT COUPLING ASSEMBLY DRAWING AND BILL OF MATERIAL

نگهداشت و افزایش تولید میدان نفتی بینک

V01	OCT.2023	IFI	Havayar Co.	M.Fakharian	S.Faramarzipur	
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Rev.	Date	Purpose of Issue/Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval

Status:

IFA: Issued for Approval

IFR: Issued for Review

IFI: Issued for Information

AFC: Approved for Construction

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	SHAFT COUPLING ASSEMBLY DRAWING AND BILL OF MATERIAL <table border="1"> <tr> <td>نسخه</td> <td>سریال</td> <td>نوع مدرک</td> <td>رشته</td> <td>تسهیلات</td> <td>صادر کننده</td> <td>بسته کاری</td> <td>پروژه</td> </tr> <tr> <td>V01</td> <td>0002</td> <td>DW</td> <td>ME</td> <td>120</td> <td>HY</td> <td>GCS</td> <td>BK</td> </tr> </table>						نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه	V01	0002	DW	ME	120	HY	GCS	BK	شماره صفحه : 2 از 6
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه																
V01	0002	DW	ME	120	HY	GCS	BK																
شماره پیمان : 053 - 073 - 9184																							

REVISION RECORD SHEET

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COUPLING DATASHEET API 671 5th Edition SI units						
1 Note: Information to be completed ☐ by Purchaser ☒ by Coupling manufacturer 2 Applicable to: ☐ Proposal ☒ Purchase ☐ As built 3 ☐ Owner: <u>HAVAYAR INDUSTRIAL GROUP</u> No. required <u>3</u> 4 Site: <u>Binak Oil Field Development Project</u> Service: <u>Sour Gas Compressor</u>						
5 ☐ Driver: Type <u>ELECTRIC MOTOR</u> Manufacturer _____ Model _____ 6 Nameplate power (kW) <u>1,050</u> Service factor <u>1.0</u> Serial No. _____ Tag. No. _____ 7 ☐ Driven unit: <u>RECIPROCATING COMP.</u> Manufacturer <u>KWANGSHIN</u> Model <u>KSOPT</u> 8 Nameplate power (kW) _____ Service factor _____ Serial No. _____ Tag. No. _____						
9 Coupling type: ☒ Flexible element ☐ Gear ☐ Quill shaft ☐ Torsional Damp/Resilient ☐ Other 10 ☐ Manufacturer: <u>NARA CORPORATION</u> Model <u>NPE-B API</u> Size <u>840S</u> Drawing Number <u>NPE-B API 84000S</u> 11 ☐ CONDITIONS CONSIDERED FOR COUPLING SELECTION ☐ RATINGS						
Conditions		Torque (N.m)	Speed (r/min)	Torque (N.m)	Speed (r/min)	Service factor
14 Steady state (normal) (6.6a)		<u>23,875</u>	<u>420</u>	Steady state (normal) (6.6a)	<u>90,300</u>	<u>3,600</u>
15 Max driver power (3.1.30 & 6.6b)		<u>1,050 kW</u>	<u>420</u>	Max driver power (3.1.30 & 6.6b)	<u>1,050 kW</u>	<u>420</u>
16 Rated (6.7)		<u>23,875</u>	<u>420</u>	Rated (6.7)	<u>90,300</u>	<u>3,600</u>
17 Maximum transient (5.2 & 6.2p)				Peak (7.3)	<u>180,600</u>	<u>3,600</u>
18 Trip condition (6.2f)				Momentary (7.3)	<u>90,300</u>	<u>3,600</u>
19 Continuous cyclic (5.2 & 6.2p)				Shaft juncture driving (6.14)		
20 Minimum operating speed (3.1.32 & 6.2e)				Shaft juncture driven (6.14)		
21 Maximum continuous speed (3.1.29 & 6.2f)						
22 Other:						
23 ☐ Frequency of transients (events/time) (6.2p & 7.4.3) _____ ☐ Non-synchronous exciting frequency (8.12.1) _____ 24 ☐ Number of starts (6.12) _____ ☐ Period of Uninterrupted Operation (5.2.1) _____ 25 ☐ Minimum required coupling service factor (6.9) <u>2.8</u> Based on either: ☐ Normal (6.6a) ☐ Max Driver Power (6.6b) ☐ Rated (6.7) 26 ☐ As designed coupling service factor(6.9) <u>3.78</u> (Based on purchaser's selection) ☐ Other (6.10) 27 ☐ Cyclic torque rating (7.4.3) _____ ☐ Coupling to shaft juncture (6.12) _____ 28 ☐ Allowable shaft unbalance (9.3.5.6, 9.3.6 or 9.3.7.4) _____ ☐ Future Conditions (5.3) _____ 29 ☐ Ambient temperature (6.2k) (°C) Maximum <u>50</u> Minimum <u>5</u> 30 Environment (10.3)(10.4) ☐ Hydrogen chloride ☐ Hydrogen sulfide ☒ Other : _____						
LUBRICATION						
31 ☐ Continuous (C.3.9 & C.3.10) ☐ Batch (C.3.9) ☒ Non-lubricated ☐ Oil Spray (8.1.6) 32 ☐ Viscosity (SSU) _____ @ _____ °C ☐ Filtration () _____ 33 ☐ Pressure (kPa) _____ ☐ Temperature (°C) _____ ☐ Flow (l/s) _____						
COUPLING DATA						
34 ☐ Shaft separation (including thermal growths), DBSE (mm) : 35 @ Ambient temperature _____ In normal operation _____ @ maximum transient _____ 36 ☐ Motor float (mm.) _____ ☐ Limited end float (mm.)(C.3.1) _____ ☐ Spacer / non-spacer (B.2.11) _____ 37 ☐ Load transmission to continue after flex-element failure (8.1.6) ☐ Electrically insulated (8.11) 38 ☐ Marine type required (C.3.3) ☐ Flex-hub type required (C.3.3) ☐ Torsional damping (b.2.6) _____ ☐ Engagement (B.2.10) _____ 39 ☐ Required misalignment & displacement capability (6.2, 6.3, 6.4 & D.2.2) ☐ Restrictions of elastomer in shear (b.2.7) _____ 40 Steady state : Angular (DEG.) _____ Parallel offset (in.) _____ Axial (in.) _____ ☐ Materials (B.4.1) _____ 41 Transient: Angular (DEG.) _____ Parallel offset (in.) _____ Axial (in.) _____ ☐ Life exp (B.5.3) _____ 42 ☐ Maximum allowable misalignment (O.3.2.2.p) 43 Steady state : Angular (DEG.) <u>0.05</u> Parallel offset (mm) <u>0.26</u> Axial (mm) <u>±0.5</u> Transient axial (mm) _____ 44 Transient: Angular (DEG.) <u>0.50</u> Parallel offset (mm) <u>2.60</u> Axial (mm) <u>±5.4</u> Transient axial (mm) _____ 45 ☐ Component balance (9.2.1) or ☐ Component balance with assembly check balance (9.2.1 & 9.2.2) 46 or ☐ Component balance with assembly balance (9.2.3 & 9.3.7) ☐ Potential unbalance calc. Required 47 ☐ Residual unbalance check of assembled coupling (9.3.8) ☐ Balance repeatability check (9.3.9) 48 ☐ Maximum allowable shaft unbalance (g · mm)(9.3.5.6, 9.3.6 & 9.3.7.4) Driver end _____ Driven end _____ 49 ☐ Maximum allowable residual unbalance (g · mm)(9.3.6 & 9.3.7) Driver end <u>20,009</u> Driven end <u>11,425</u> 50 ☐ Maximum actual residual unbalance (g · mm)(Annex G) Driver end <u>20,009</u> Driven end <u>11,425</u> 51 ☐ Torsional stiffness (N · m/rad)(O.3.2.2.j) <u>4.519x10^7</u> 52 ☐ Moment of inertia (kg · m²)(O.3.2.2.i) Driver end <u>46.0</u> Driven end <u>45.4</u> 53 ☐ Spacer lateral natural freq. (8.12.2 & O.3.2.2.k) <u>11,392</u> 54 ☐ Torque capacity of hub/shaft interface for keyless fits (N · m)(O.3.2.2.s) - <u>KEY TYPE</u> 55 ☐ List required of similar couplings (O.2.3.2.m)						

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COUPLING DATASHEET API 671 5th Edition SI units					
COUPLING DATA (Continued)					
Flexible-element coupling :					
☐ initial deflection (mm.) ☐ Prestretch ☐ Compression ☐ Maximum axial deflection (mm) <u>±5.4</u>					
☐ Calculated axial natural freq., ANF (O.3.2.2.h) <u>24.8</u> ☐ Test of ANF (12.4.1) ☐ Actual ANF					
☐ Maximum enclosure temperature at maximum continuous speed (°C) O.3.2.3)					
MATERIALS (10.1)					
		Drive end materials		Driven end materials	
Hub / flange		<u>A108-1045 (SM45C)</u>		<u>A108-1045 (SM45C)</u>	
Spacer		<u>A108-1045 (SM45C)</u>		<u>A108-1045 (SM45C)</u>	
Sleeve		<u>N/A</u>		<u>N/A</u>	
Flexible element		<u>A276-304 (STS304)</u>		<u>A276-304 (STS304)</u>	
Flexible-element guard		<u>A108-1045 (SM45C)</u>		<u>A108-1045 (SM45C)</u>	
Bolts		<u>A322-4140 (SCM440)</u>		<u>A322-4140 (SCM440)</u>	
Nuts		<u>A108-1045 (SM45C)</u>		<u>A108-1045 (SM45C)</u>	
☐ Protective coating (10.6) ☐ Vendor standard ☒ Customer Specified <u>Zinc phosphate</u>					
☐ Internal teeth hardness (Rockwell C) (C.3.8)		Driver end actual _____		Driven end actual _____	
☐ External teeth hardness (Rockwell C) (C.3.8)		Driver end actual _____		Driven end actual _____	
COUPLING HUB MACHINING					
		Driver end		Driven end	
☐ Type (integral, cylindrical, taper) (8.4 & 8.6.1.1)		<u>Cylindrical</u>		<u>Integral</u>	
☐ Keyed or hydraulically fitted (8.6.1.1 & 8.6.1.2)		<u>Keyed</u>		<u>Bolt</u>	
☐ Taper (1 deg. included angle, 1:24, 1:16.)		<u>N/A</u>		<u>N/A</u>	
(8.6.2.1, 8.6.2.2 & 8.6.2.3)		<u>N/A</u>		<u>N/A</u>	
☐ Keyway dimensions and number (8.6.3)		<u>50x28, Single</u>		<u>N/A</u>	
☐ Nominal bore diameter (mm)		<u>Ø220</u>		<u>N/A</u>	
☐ Interference fit (mm.) max / min. (8.6.1.3 & 8.6.1.4)		<u>+0.046 / -0.029</u>		<u>N/A</u>	
☐ Alternative hub interference fit (mm) max / min (8.6.4)		<u>N/A</u>		<u>N/A</u>	
☐ Puller holes (8.6.3.4)		<u>2-M20 TAP</u>		<u>2-M20 TAP</u>	
☐ Trim balance holes (9.4)		<u>N/A</u>		<u>N/A</u>	
COUPLING GUARD (Annex H)					
☐ Coordinator (H.2.1)		☐ Regulation (H.2.8) _____			
☐ Type (H.2.2 & H.2.6)		☐ Internal Temp Calculation by (H.2.14) _____			
☒ Base mounted (H.3)		☐ Purge gas _____ ☐ Dry air purge (H.4.7)			
☒ Spark resistant (H.2.11)		☐ Purge connection size and type _____			
☐ Transparent window for each oil spray point (H.5.4)		☐ Purge rate required (/h) _____			
☐ Vent connection (H.4.5)		☐ Oil mist cooling ☐ Gas Cooling			
☐ Dn 25 with filter / breather		☐ Contract guard to be used during shop test (H.4.8)			
☐ Dn 25 flanged, rating and facing		☐ Additional guard details _____			
ACCESSORIES					
☐ One set of ring and plug gages by (11.2.5)		☐ Hydraulic installation / removal tooling (to include hand pumps, pressure gauge(s), fittings & hoses by : (11.2.1)			
☐ Coupling manufacturer ☐ Purchaser		☐ Coupling manufacturer ☐ Purchaser			
☐ Drill template for integral flanged shaft ends by (8.5.1)		☐ Puller by : (11.2.4)			
☐ Coupling manufacturer ☐ Purchaser		☐ Coupling manufacturer ☐ Purchaser			
☐ Lapping tools by (11.2.6)		☐ Idling adapter (Solo) plate by coupling manufacturer (8.7)			
☐ Coupling manufacturer ☐ Purchaser		☐ Moment simulator by coupling manufacturer (8.8.1)			
☐ Two-piece stop rings bt : (11.2.3)		☒ Torque Measuring System (11.3.1)			
☐ Coupling manufacturer ☐ Purchaser		☐ Supplier (11.3.2) : _____			
APPLICABLE SPECIFICATIONS			PREPARATION FOR SHIPMENT		
☒ API-671, Special purpose couplings			☐ Outdoor storage for more than 3 months (12.5.2)		
☐ Keyless-fit design code ANSI / AGMA 9003 / DIN 7190			☐ Expected storage time : _____		
MEETINGS / TESTING			☐ Shipping : ☐ Domestic Storage : ☐ Indoor		
			(12.5.3) ☒ Export (12.5.2) ☒ Outdoor		
☐ Information determined in (13.1.2)			☐ Additional inscribed information (12.5.8) _____		
☐ Testing to be observed or witnessed (12.2.1)			☐ See coupling purchase order for preservation, boxing, and shipping instructions		

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COUPLING DATASHEET API 671 5th Edition SI units					

1	TORQUE MEASURING SYSTEM				
2	☐ Manufacturer : _____ Model _____ Size _____ Assy. Dwg. No. _____				
3					
4	○ CONDITIONS CONSIDERED FOR TORQUE MEASURING SYSTEM SELECTION(S) (11.3.1 & Annex L)				
5	Conditions to be Specified for Torque Measuring System		Torque Measuring System		
6					
7	Torque measuring system coupling location (between which machines?)				
8	Normal Torque (Nm) to be measured (1% accuracy)				
9	Maximum torque (Nm) to be measured				
10	Maximum number of times maximum torque expected				
11	Maximum torque components capability (Nm)				
12	Minimum speed (RPM) at which torque measurement is required				
13	Maximum speed (RPM) at which torque measurement is required				
14	Which torque measurements are to be taken				
15	System bandwidth minimum frequency system capable of resolving (Hz)				
16	System bandwidth maximum frequency system capable of resolving (Hz)				
17	Accuracy of torsional amplitude value (where different than stead state) (%)				
18	Units of torsional amplitude value (where different than stead state)				
19	Requirements for analog output				
20	Visual display requirements				
21	Machine movements from the cold installed position to the hot running condition				
22	Convention : state for each machine				
23	Axial : (state direction and amount of movement)				
24	Vertical : (state direction and amount of movement)				
25	Horizontal : (state direction and amount of movement)				
26	What is the requested accuracy for :				
27	Maximum torque the system will display				
28	Cyclic, maximum (or what) torque and frequencies				
29	Advise if any rotordynamic restrictions apply such as torsional stiffness				
30	Signal output				
31	Requirements for analog output (if not 4 - 20 mA)				
32	Requirements for visual display unit				
33	Location of visual display unit				
34	Ranges of output scaling for each parameter				
35	Measurement requirement of negative torque (same direction of rotation)				
36	Maximum allowable temperature for components within coupling guard (Deg C)				
37	Calibration temperature compensation range (Deg C)				
38	Electro-magnetic interference (noise) specific requirements				
39	Rotation and power flow – specify A or B from diagram below				
40	Spare components, shafts or system desired				
41	Advise if torque measuring system is incorporated into the safety trip loop				
42	AREA CLASSIFICATION		POWER		
43	☐ ELEC. AREA CLASS. ☐ NEC ☒ IEC ☐ ATEX ☐ FM ☐ GOST ☐ IECEx ☐ CEC ☐ Other.		☐ Available Volts <u>11000</u> Hertz <u>50</u> Cycles <u>14P</u>		
44			☐ Usage Volts _____ Hertz _____ Cycles _____		
45			☐ Power Consumption Wattage <u>1050kw rated</u>		
46			☐ Power Consumption Rotation : "A" ☐ "B" ☒		
47	EQUIPMENT INDOOR _____ OUTDOOR <u>YES</u> CLASS _____ GROUP _____ DIVISION _____ ZONE <u>II</u> GROUP <u>IIC</u> TEMP CLASS <u>T4</u>				
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