

CONTEC

Comissão de Normalização
Técnica

SC-11

Machines

General Purpose Gear Units - Data Sheet

Revalidation

Revalidated in 04/2020.

General Purpose Gear Units - Data Sheet

Standardization

This Standard replaces and cancels its previous revision.

The CONTEC - Authoring Subcommittee provides guidance on the interpretation of this Standard when questions arise regarding its contents. The Department of PETROBRAS that uses this Standard is responsible for adopting and applying the sections, subsections and enumerates thereof.

Technical Requirement: A provision established as the most adequate and which shall be used strictly in accordance with this Standard. If a decision is taken not to follow the requirement ("non-conformity" to this Standard) it shall be based on well-founded economic and management reasons, and be approved and registered by the Department of PETROBRAS that uses this Standard. It is characterized by imperative nature.

Recommended Practice: A provision that may be adopted under the conditions of this Standard, but which admits (and draws attention to) the possibility of there being a more adequate alternative (not written in this Standard) to the particular application. The alternative adopted shall be approved and registered by the Department of PETROBRAS that uses this Standard. It is characterized by verbs of a nonmandatory nature. It is indicated by the expression: **[Recommended Practice]**.

Copies of the registered "non-conformities" to this Standard that may contribute to the improvement thereof shall be submitted to the CONTEC - Authoring Subcommittee.

Proposed revisions to this Standard shall be submitted to the CONTEC - Authoring Subcommittee, indicating the alphanumeric identification and revision of the Standard, the section, subsection and enumerate to be revised, the proposed text, and technical/economic justification for revision. The proposals are evaluated during the work for alteration of this Standard.

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CONTEC

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Machines

Introduction

PETROBRAS Technical Standards are prepared by Working Groups - WG (consisting specialized of Technical Collaborators from Company and its Subsidiaries), are commented by Company Units and its Subsidiaries, are approved by the Authoring Subcommittees - SCs (consisting of technicians from the same specialty, representing the various Company Units and its Subsidiaries), and ratified by the Executive Nucleus (consisting of representatives of the Company Units and its Subsidiaries). A PETROBRAS Technical Standard is subject to revision at any time by its Authoring Subcommittee and shall be reviewed every 5 years to be revalidated, revised or cancelled. PETROBRAS Technical Standards are prepared in accordance with PETROBRAS Technical Standard [N-1](#). For complete information about PETROBRAS Technical Standards see PETROBRAS Technical Standards Catalog.

Foreword

This Standard is the English version (issued in 12/2012) of PETROBRAS N-2921 REV. A 12/2012. In case of doubt, the Portuguese version, which is the valid document for all intents and purposes, shall be used.

1 Scope

1.1 This Standard covers general purpose gear data sheets to be used in PETROBRAS designs.

1.2 This Standard shall be applied to supplies beginning from its issue date.

1.3 This Standard contains only Technical Requirements.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies..

PETROBRAS [N-381](#) - Execution of Drawing and Other General Technical Documents;

PETROBRAS [N-1521](#) - Identification of Industrial Equipment;

API [STD 677:2006](#) - General Purpose Gear Units for Petroleum, Chemical, and Gas Industry Services.

NOTE For documents referred in this Standard and for which only the Portuguese version is available, the PETROBRAS department that uses this Standard should be consulted for any information required for the specific application.

3 Basic Considerations

3.1 The Annex A is the data sheet to be used to general purpose gear units, parallel shaft, according to API [STD 677:2006](#).


3.2 The Annex B is the data sheet to be used to general purpose gear units, bevel mounted, according to API [STD 677:2006](#).


3.3 These data sheets shall be attached to a Material Requisition (RM), to be considered a purchasing document.

3.4 These data sheets shall be considered a lasting document of the equipment after they have been fulfilled (as built) by the Manufacturer or Engineering Company.

3.5 The heading and footnotes shall be filled in accordance with PETROBRAS [N-381](#).


3.6 The tag number of the equipment shall be written in an outstanding position as per PETROBRAS [N-1521](#).

						No.				
	CLIENT:							SHEET		
								of		
	JOB:									
AREA:										
TITLE:							GENERAL PURPOSE GEAR UNITS, PARALLEL SHAFT			
INDEX OF REVISIONS										
REV.	DESCRIPTION AND/OR REVISED SHEETS									
	REV. 0	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H	
DATE										
DESIGN										
EXECUTION										
CHECK										
APPROVAL										
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		No.		REV.
		SHEET of		
		TITLE: GENERAL PURPOSE GEAR UNITS, PARALLEL SHAFT		
1	APPLICABLE TO: <input type="checkbox"/> PROPOSAL <input type="checkbox"/> PURCHASER <input type="checkbox"/> AS BUILT			
2	FOR:		MANUFACTURER:	
3	SITE:		MODEL No.:	
4	UNIT:		SERIAL No.:	
5	SERVICE:		DRIVER TYPE:	
6	No. REQUIRED:		DRIVEN EQUIPMENT:	
7	NOTE: NUMBERS WITHIN () REFER TO APPLICABLE API STD 677:2006 PARAGRAPHS: <input type="checkbox"/> INFORMATION TO BE COMPLETED BY PURCHASER			
8	<input type="checkbox"/> INFORMATION TO BE COMPLETED BY MANUFACTURER <input type="checkbox"/> A DECISION IS REQUIRED OR FURTHER INFORMATION IS TO BE PROVIDED BY THE PURCHASER			
9	DRIVEN EQUIP. POWER:	NORMAL:	MAX.:	<input type="checkbox"/> BASIC GEAR DATA
10	DRIVER POWER:	RATED:	MAX.:	MECHANICAL RATING: kW rpm
11	GEAR RATED POWER:			THERMAL RATING: kW rpm
12	TORQUE @ MAX. CONT. SPEED:		kg.m	FULL LOAD HORSEPOWER LOSS:
13	MAX. TORQUE :	kg.m;	rpm	MECHANICAL EFFICIENCY: %
14	RATED SPEED, rpm:			PITCH LINE VELOCITY: m/sec
15	INPUT:	<input type="checkbox"/> SPECIFIED <input type="checkbox"/> NOMINAL		TOOTH PITTING INDEX, "K":
16	OUTPUT:	<input type="checkbox"/> SPECIFIED <input type="checkbox"/> NOMINAL		ACTUAL: ALLOWABLE:
17	ALLOW. VAR. IN GEAR RATIO (+)(-):		%	TANGENTIAL LOAD, "Wt": N
18	MAX. CONTINUOUS SPEED:		rpm	BENDING STRESS NUMBER, "St"
19	TRIP SPEED:		rpm	
20	GEAR SERVICE FACTOR:		(MIN.)	ACTUAL
21	PIN/GEAR HARDNESS:		/	
22	SHAFT ASSEMBLY DESIGNATION:			MATERIAL INDEX NUMBER:
23	HS SHAFT ROTATION FACING CPL'G. END:	<input type="checkbox"/> CW <input type="checkbox"/> CCW		ANTICIPATED SOUND PRESS LEVEL: dBA @ m
24	LS SHAFT ROTATION FACING CPL'G. END:	<input type="checkbox"/> CW <input type="checkbox"/> CCW		JOURNAL STATIC WEIGHT LOADS::
25	HS SHAFT END: <input type="checkbox"/> CYLINDRICAL <input type="checkbox"/> TAPER <input type="checkbox"/> HYD. TAPER			PINION kg GEAR kg
26	<input type="checkbox"/> 1-KEY <input type="checkbox"/> 2-KEYS			WR? REFERRED TO LS SHAFT: kg.m²
27	LS SHAFT END: <input type="checkbox"/> CYLINDRICAL <input type="checkbox"/> TAPER <input type="checkbox"/> HYD. TAPER			BREAKAWAY TORQUE: kg.m @ LOW SPEED
28	<input type="checkbox"/> 1-KEY <input type="checkbox"/> 2-KEYS <input type="checkbox"/> INTEGRAL PLANGE			OVERHUNG LOAD FACTOR:
29	EXTERNAL LOADS :			<input type="checkbox"/> CONSTRUCTION FEATURES
30	OTHER OPERATING CONDITIONS:			TYPE OF GEAR <input type="checkbox"/> REDUCER <input type="checkbox"/> INCREASER
31				<input type="checkbox"/> SINGLE STAGE <input type="checkbox"/> DOUBLE STAGE
32	<input type="checkbox"/> INSTALLATION DATA			<input type="checkbox"/> SINGLE HELICAL <input type="checkbox"/> DOUBLE HELICAL
33	<input type="checkbox"/> INDOOR <input type="checkbox"/> HEATED <input type="checkbox"/> UNDER ROOF			<input type="checkbox"/> OTHER
34	<input type="checkbox"/> OUTDOOR <input type="checkbox"/> UNHEATED <input type="checkbox"/> PARTIAL SIDES			
35	<input type="checkbox"/> GRADE <input type="checkbox"/> MEZZANINE <input type="checkbox"/>			
36	<input type="checkbox"/> WINTERIZATION REQ'D <input type="checkbox"/> TROPICALIZATION REQ'D			
37	ELECTRICAL AREA:	CLASS:	GRP.:	DIV.:
38	MAX ALLOW SPL:	dBA @		m
39	ELEVATIO N	m;	BAROMETER:	(kPa)
40	RANGE OF AMBIENT TEMPERATURES:			(BAR)
41		DRY BULB	WET BULB	
42	NORMAL	°C	°C	
43	MAXIMUM	°C	°C	
44	MINIMUM	°C	°C	
45	UNUSUAL CONDITIONS:			TEETH
46	<input type="checkbox"/> DUST <input type="checkbox"/> FUME <input type="checkbox"/>			NUMBER OF TEETH: PINION: GEAR:
47	NOTES:			GEAR RATIO: CENTER DISTANCE: mm
48				PITCH DIA. mm: PINION: GEAR:
49				FINISH: (RA) AGMA GEOMETRY FACTOR "J":
50				PINION: GEAR:
				HELIX ANGLE: Deg NORMAL PRESS ANGLE: Deg
				NET FACE WIDTH, "F": mm ; PINION L/D:
				NORMAL DIAMETRICAL PITCH, "PND": ; BACKLASH: mm
	MANUFACTURING METHODS			
	TEETH GENERATING PROCESS			PINION
	TEETH FINISHING PROCESS			GEAR
	TEETH HARDENING METHOD			
	PINION TO SHAFT			<input type="checkbox"/> INTEGRAL <input type="checkbox"/> SHRUNK-ON
	GEAR TO SHAFT			<input type="checkbox"/> INTEGRAL <input type="checkbox"/> SHRUNK-ON


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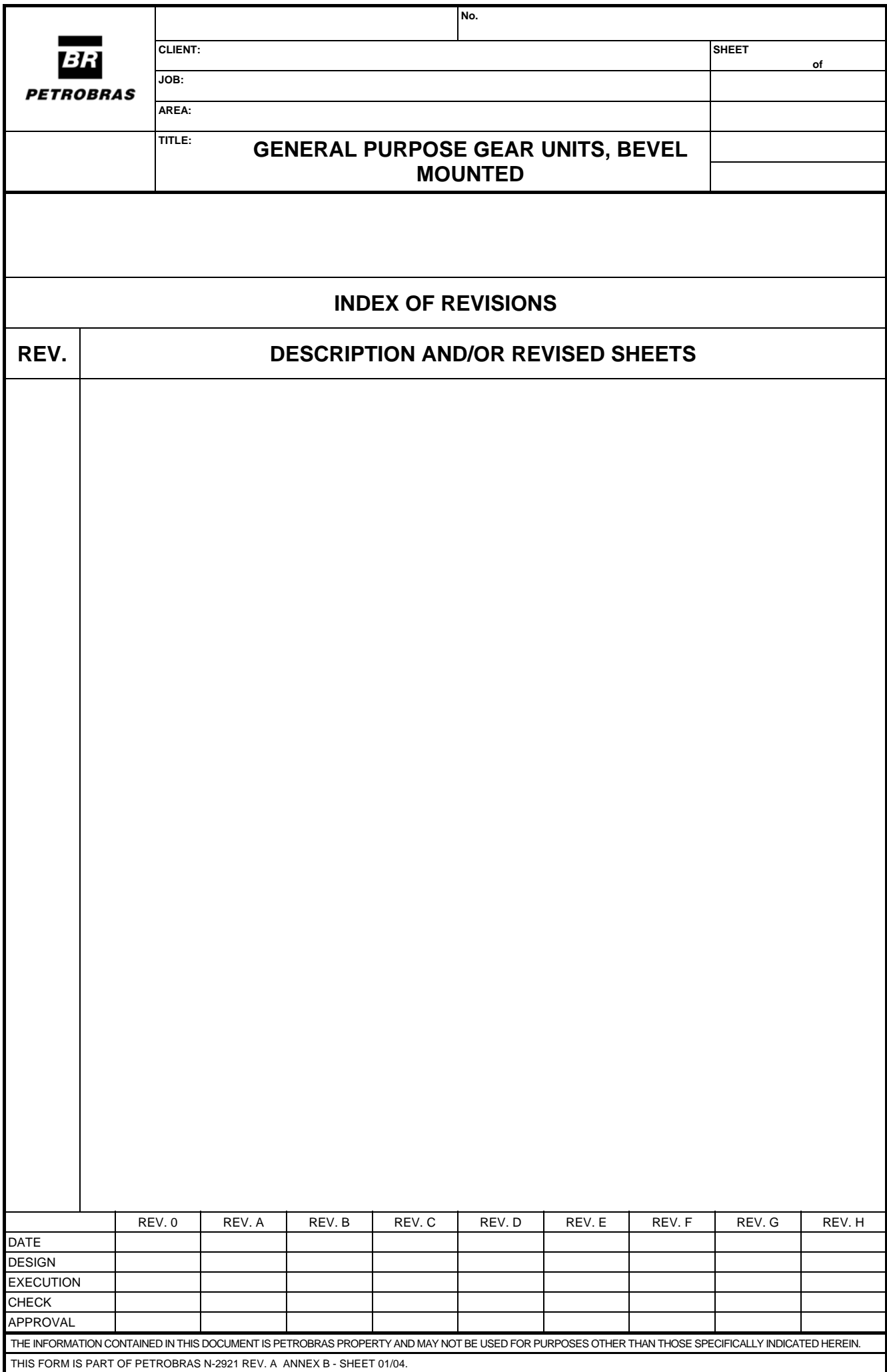
		No.		REV.
		SHEET		
		of		
TITLE:		GENERAL PURPOSE GEAR UNITS, PARALLEL SHAFT		


1	<input type="checkbox"/> ADDITIONAL REQUIREMENTS		<input type="checkbox"/> RADIAL BEARINGS	
2	MOUNTING PLATES			
3	<input type="checkbox"/> GEAR FURNISHED WITH:		TYPE	PINION
4	<input type="checkbox"/> BASEPLATE	<input type="checkbox"/> SOLEPLATE	DIAMETER, mm	GEAR
5	<input type="checkbox"/> BASEPLATE SUITABLE FOR COLUMN MOUNTING		LENGTH, mm	
6	<input type="checkbox"/> GROUT TYPE:	<input type="checkbox"/> EPOXY <input type="checkbox"/> OTHER:	JOURNAL VELOCITY, m/sec	
7			LOADING, kPa	
8	<input type="checkbox"/> PAINTING	<input type="checkbox"/>	CLEARANCE (MIN-MAX), mm	
9			SPAN, mm	
10	MISCELLANEOUS		L10, Hrs (ROLLER ELM'T)	
11	<input type="checkbox"/> TORSIONAL ANALYSIS BY: <input type="checkbox"/> GEAR VENDOR <input type="checkbox"/> OTHER:		<input type="checkbox"/> THRUST BEARINGS	
12	<input type="checkbox"/> LATERAL ANALYSIS BY:		LOCATION	
13	<input type="checkbox"/> GEAR VENDOR	<input type="checkbox"/> OTHER:	MANUFACTURER	
14	<input type="checkbox"/> SPARE SET OF GEAR ROTORS		TYPE	
15	<input type="checkbox"/> ORIENTATION OF OIL INLET		SIZE	
16			AREA, mm ²	
17			LOADING, kPa	
18	<input type="checkbox"/> VIBRATION DETECTORS		RATING, kPa	
19	PER API STD 670 EXCEPT WHERE INDICATED OTHERWISE BELOW		L10, HRS (ROLLER ELM'T)	
20	RADIAL		INT. THRUST LOAD, N (+) (-)	
21	MANUFACTURER:		EXT. THRUST LOAD, N (+) (-)	
22	<input type="checkbox"/> NO. AT EACH SHAFT BEARING: TOTAL No.		<input type="checkbox"/> COUPLINGS	
23	<input type="checkbox"/> OSCILLATOR-DEMODULATORS SUPPLIED BY:		MANUFACTURER	
24	<input type="checkbox"/> MANUFACTURER:		MODEL	
25	<input type="checkbox"/> MOTOR SUPPLIED BY:		CPLG. RATING, kW/ 100 rpm	
26	<input type="checkbox"/> LOCATION:	ENCLOSURE:	CYLINDRICAL / 1-KEY	<input type="checkbox"/>
27	<input type="checkbox"/> MANUFACTURER:		CYLINDRICAL / 2-KEYS	<input type="checkbox"/>
28	<input type="checkbox"/> ALARM:	SHUTDOWN:	TAPERED / 1-KEY	<input type="checkbox"/>
29			TAPERED / 2-KEYS	<input type="checkbox"/>
30	AXIAL		TAPERED / KEYLESS	<input type="checkbox"/>
31	<input type="checkbox"/> MANUFACTURER: No. REQUIRED:		<input type="checkbox"/> MATERIALS	
32	<input type="checkbox"/> LOCATION:		GEAR CASING: OIL SEALS:	
33	<input type="checkbox"/> OSCILLATOR-DEMODULATORS SUPPLIED BY:		RADIAL BEARINGS:	
34	<input type="checkbox"/> MANUFACTURER:		THRUST BEARING(S):	
35	<input type="checkbox"/> SHUTDOWN:	TIME DELAY: SECONDS	HS SHAFT:	LS SHAFT:
36	<input type="checkbox"/> MONITOR SUPPLIED BY:		PINION(S):	HARDNESS
37	<input type="checkbox"/> LOCATION:	ENCLOSURE:	GEAR RIM(S):	HARDNESS
38	<input type="checkbox"/> MANUFACTURER:		LOW TEMP. OPERATION:	
39	<input type="checkbox"/> ALARM:	SHUTDOWN:	<input type="checkbox"/> PIPING CONNECTIONS	
40	<input type="checkbox"/> SHUTDOWN:	TIME DELAY: SECONDS	SERVICE	No. SIZE TYPE
41			LUBE OIL INLET	
42	ACCELEROMETER		LUBE OIL OUTLET	
43	<input type="checkbox"/> MANUFACTURER: No. REQUIRED:		CASING DRAIN	
44	<input type="checkbox"/> LOCATION:		VENT	
45	<input type="checkbox"/> MONITOR SUPPLIED BY:		CASING PURGE	
46				
47	NOTES		NOTES	
48				
49				
50				

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		No.		REV.	
		SHEET			
		of			
TITLE:		GENERAL PURPOSE GEAR UNITS, PARALLEL SHAFT			
1	<input type="checkbox"/> INSTRUMENTS		<input type="checkbox"/> LUBRICATION REQUIREMENTS		
2	<input type="checkbox"/> PRESSURE TRANSMITTER WITH LOW OIL PRESSURE ALARM		SYSTEM TYPE: <input type="checkbox"/> SELF-CONTAINED SPLASH		
3	<input type="checkbox"/> TEMP.TRANS.M.WITH HIGH OIL TEMP ALARM:		<input type="checkbox"/> CIRCULATING <input type="checkbox"/> PRESSURIZED		
4	<input type="checkbox"/> TEMPERATURE MEASURING DEVICES:		<input type="checkbox"/> FILTERS, MICRON RATING:		
5	<input type="checkbox"/> THERMOMETERS:		<input type="checkbox"/> MINIMUM STARTUP OIL TEMPERATURE: °C		
6	<input type="checkbox"/> THERMOCOUPLES:		<input type="checkbox"/> OIL FLOW: m³/h		
7	<input type="checkbox"/> RESISTANCE		<input type="checkbox"/> OIL PRESSURE: kPa		
8	<input type="checkbox"/> LIQUID		<input type="checkbox"/> UNIT POWER LOSS: kW		
9	<input type="checkbox"/> THERMAL RELIEF VALVES:		RESERVOIR: <input type="checkbox"/> GEAR CASING <input type="checkbox"/> SEPARATE		
10			<input type="checkbox"/> LUBE OIL INLET SIZE: mm		
11	<input type="checkbox"/> CONTRACT DATA		<input type="checkbox"/> LUBE OIL OUTLET SIZE: mm		
12	<input type="checkbox"/> TEST DATA PRIOR TO SHIPMENT:		<input type="checkbox"/> WEIGHTS AND DIMENSIONS		
13	<input type="checkbox"/> PROGRESS REPORTS:		NET WEIGHT: GEAR: kg <input type="checkbox"/> AUXILIARIES: kg		
14			MAX. MAINTENANCE WEIGHT (IDENTIFY): kg		
15			TOTAL SHIPPING WEIGHT(S): kg		
16	<input type="checkbox"/> CONTRACT DATA		TOTAL SHIPPING DIMENSIONS: X X		
17	CONTRACT UNIT SPARES		NOTES:		
18	EXPORT BOXING	<input type="checkbox"/>			<input type="checkbox"/>
19	DOMESTIC BOXING	<input type="checkbox"/>			<input type="checkbox"/>
20	OUTDOOR STORAGE OVER 6 MONTHS	<input type="checkbox"/>			<input type="checkbox"/>
21	FIT-UP & ASSEMBLY OF MOUNTED	<input type="checkbox"/>			<input type="checkbox"/>
22					
23	<input type="checkbox"/> COUPLINGS AND GUARDS				
24		HIGH SPEED			LOW SPEED
25	COUPLING FURNISHED BY				
26	COUPLING TYPE				
27	CPLG RATING kW / 100 rpm				
28	COUPLING MANUFACTURER				
29	COUPLING LUBRICATION				
30	MOUNT CPLG HALVES				
31	TAPER, mm/m				
32	TAPER GAUGE FURNISHED BY				
33	LIMITED END FLOAT				
34	CPLG GUARD FURNISHED BY				
35	NOTES:				
36					
37					
38	<input type="checkbox"/> LUBRICATION REQUIREMENTS:				
39	<input type="checkbox"/> OIL SYSTEM FURNISHED BY:				
40	<input type="checkbox"/> GEAR VENDOR: <input type="checkbox"/> OTHER:				
41	<input type="checkbox"/> OIL VISC.: cP @ 40 °C cP @ 100 °C				
42	<input type="checkbox"/> LUBRICATION REQUIREMENTS				
43	<input type="checkbox"/> STANDBY OIL PUMP:				
44	<input type="checkbox"/> OIL PUMP CASING: <input type="checkbox"/> CAST IRON <input type="checkbox"/> STEEL				
45	<input type="checkbox"/> OIL COOLER: <input type="checkbox"/> WATER COOLED <input type="checkbox"/> AIR COOLED				
46	<input type="checkbox"/> HEATERS REQUIRED:				
47	<input type="checkbox"/> ELECTRIC WITH THERMOSTATS <input type="checkbox"/> STEAM				
48	<input type="checkbox"/> DUPLEX FILTERS				
49					
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		No.		REV.		
		SHEET				
		of				
TITLE:		GENERAL PURPOSE GEAR UNITS, PARALLEL SHAFT				
1	<input type="checkbox"/> INSPECTION AND TESTS				NOTES:	
2						
3		REQ'D	WIT- NESSED	OBSER- VED		LOG
4	SHOP INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5	CLEANLINESS INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6	HARDNESS VERIFICATION INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
7	MAG. PARTICLE INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8	ULTRASONIC INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9	WELD INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10	DISMANTLE-REASSEMBLY INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11	CONTACT CHECK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
12	CONTACT CHECK TAPE LIFT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
13	BEARING VISUAL CHECK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
14	AXIAL STABILITY CHECK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
15	RESIDUAL UNBALANCE CHECK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
16	MECHANICAL RUN TEST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
17	EXTENDED MECHANICAL RUN TEST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
18	MECHANICAL RUN TEST (SPARE ROTORS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
19	PART OR FULL LOAD AND FULL SPEED TEST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
20	FULL TORQUE, SLOW ROLL TEST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
21	FULL TORQUE STATIC TEST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
22	SOUND LEVEL TEST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
23	MECHANICAL RUN TEST COUPLING:					
24	COUPLING INSTALLED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
25	COUPLING HUBS WITH IDLERS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
26	USE SHOP LUBE SYSTEM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
27	USE JOB LUBE SYSTEM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
28	USE SHOP VIBRATION PROBES etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
29	USE JOB VIBRATION PROBES, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
30	FINAL ASSEMBLY, MAINTENANCE &					
31	RUNNING CLEARANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
32	OIL SYSTEM CLEANLINESS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
33	OIL SYSTEM-CASING JOINT TIGHTNESS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
34	WARNING AND PROTECTION DEVICES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
35	OIL SYSTEM LEAK TEST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
36	NOTES:					
37						
38						
39						
40						
41						
42						
43						
44						
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		No.		REV.																		
		SHEET of																				
		TITLE: GENERAL PURPOSE GEAR UNITS, BEVEL MOUNTED																				
1	APPLICABLE TO: <input type="checkbox"/> PROPOSAL <input type="checkbox"/> PURCHASER <input type="checkbox"/> AS BUILT																					
2	FOR:		MANUFACTURER:																			
3	SITE:		MODEL No.:																			
4	UNIT:		SERIAL No.:																			
5	SERVICE:		DRIVER TYPE:																			
6	No. REQUIRED:		DRIVEN EQUIPMENT:																			
7	NOTE: NUMBERS WITHIN () REFER TO APPLICABLE API STD 677:2006 PARAGRAPHS: <input type="checkbox"/> INFORMATION TO BE COMPLETED BY PURCHASER																					
8	<input type="checkbox"/> INFORMATION TO BE COMPLETED BY MANUFACTURER <input type="checkbox"/> A DECISION IS REQUIRED OR FURTHER INFORMATION IS TO BE PROVIDED BY THE PURCHASER																					
9	DRIVEN EQUIP. POWER:	NORMAL:	MAX.:	<input type="checkbox"/> BASIC GEAR DATA MECHANICAL RATING: kW rpm THERMAL RATING: kW rpm FULL LOAD HORSEPOWER LOSS: kW MECHANICAL EFFICIENCY: % PITCH LINE VELOCITY: m/s TOOTH PITTING INDEX, "K": ACTUAL: ALLOWABLE: TANGENTIAL LOAD, "Wt" : kg BENDING STRESS NUMBER, "St" <table border="1"> <tr> <td></td> <td>PINION</td> <td>GEAR</td> </tr> <tr> <td>ACTUAL</td> <td></td> <td></td> </tr> <tr> <td>ALLOWABLE</td> <td></td> <td></td> </tr> </table> MATERIAL INDEX NUMBER: ANTICIPATED SOUND PRESS LEVEL: dBA @ m MOUNTING OF BEVEL GEARS: <input type="checkbox"/> STRADDLE <input type="checkbox"/> OVERHUNG JOURNAL STATIC WEIGHT LOADS: PINION kg GEAR kg WR ² REFERRED TO LS SHAFT: kg.m ² BREAKAWAY TORQUE: N.m OVERHUNG LOAD FACTOR:		PINION	GEAR	ACTUAL			ALLOWABLE											
	PINION	GEAR																				
ACTUAL																						
ALLOWABLE																						
10	DRIVER POWER:	RATED:	MAX.:																			
11	GEAR RATED POWER:		kW																			
12	TORQUE @ MAX. CONT. SPEED:		kg.m																			
13	MAX. TORQUE:	kg.m;	rpm																			
14	RATED SPEED, rpm:																					
15	INPUT:	<input type="checkbox"/> SPECIFIED <input type="checkbox"/> NOMINAL																				
16	OUTPUT:	<input type="checkbox"/> SPECIFIED <input type="checkbox"/> NOMINAL																				
17	ALLOW. VAR. IN GEAR RATIO(+)(-):		%																			
18	MAX. CONTINUOUS SPEED:		rpm																			
19	TRIP SPEED:		rpm																			
20	GEAR SERVICE FACTOR		(MIN.)																			
21	PIN/GEAR HARDNESS:		/																			
22	SHAFT ASSEMBLY DESIGNATION:																					
23	HS SHAFT ROTATION FACING CPL'G. END:	<input type="checkbox"/> CW <input type="checkbox"/> CCW																				
24	LS SHAFT ROTATION FACING CPL'G. END:	<input type="checkbox"/> CW <input type="checkbox"/> CCW																				
25	HS SHAFT END: <input type="checkbox"/> CYLINDRICAL <input type="checkbox"/> TAPER / KEYED																					
26	<input type="checkbox"/> 1-KEY <input type="checkbox"/> 2-KEYS																					
27	LS SHAFT END: <input type="checkbox"/> CYLINDRICAL <input type="checkbox"/> TAPER / KEYED																					
28	<input type="checkbox"/> 1-KEY <input type="checkbox"/> 2-KEYS																					
29	EXTERNAL LOADS:																					
30	OTHER OPERATING CONDITIONS:																					
31																						
32	<input type="checkbox"/> INSTALLATION DATA			TYPE OF GEAR <input type="checkbox"/> REDUCER <input type="checkbox"/> INCREASER <input type="checkbox"/> SINGLE STAGE <input type="checkbox"/> DOUBLE STAGE <input type="checkbox"/> OTHER: TEETH NUMBER OF TEETH: PINION: GEAR: GEAR RATIO: MOUNTING DISTANCE: mm PITCH DIA. mm: PINION: GEAR: FINISH: (RA) AGMA GEOMETRY FACTOR "J": PINION: GEAR: HELIX ANGLE: Deg TRANSVERSE PRESS ANGLE: Deg FACE WIDTH, "F": mm ; PINION L/D: NORMAL DIAMETRAL PITCH, "PND": BACKLASH: mm MANUFACTURING METHODS <table border="1"> <tr> <td></td> <td>PINION</td> <td>GEAR</td> </tr> <tr> <td>TEETH GENERATING PROCESS</td> <td></td> <td></td> </tr> <tr> <td>TEETH FINISHING PROCESS</td> <td></td> <td></td> </tr> <tr> <td>TEETH HARDENING METHOD</td> <td></td> <td></td> </tr> <tr> <td>PINION TO SHAFT</td> <td><input type="checkbox"/> INTEGRAL <input type="checkbox"/> SHRUNK-ON</td> <td></td> </tr> <tr> <td>GEAR TO SHAFT</td> <td><input type="checkbox"/> INTEGRAL <input type="checkbox"/> SHRUNK-ON</td> <td></td> </tr> </table>		PINION	GEAR	TEETH GENERATING PROCESS			TEETH FINISHING PROCESS			TEETH HARDENING METHOD			PINION TO SHAFT	<input type="checkbox"/> INTEGRAL <input type="checkbox"/> SHRUNK-ON		GEAR TO SHAFT	<input type="checkbox"/> INTEGRAL <input type="checkbox"/> SHRUNK-ON	
	PINION	GEAR																				
TEETH GENERATING PROCESS																						
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GEAR TO SHAFT	<input type="checkbox"/> INTEGRAL <input type="checkbox"/> SHRUNK-ON																					
33	<input type="checkbox"/> INDOOR <input type="checkbox"/> HEATED <input type="checkbox"/> UNDER PROOF																					
34	<input type="checkbox"/> OUTDOOR <input type="checkbox"/> UNHEATED <input type="checkbox"/> PARTIAL SIDES																					
35	<input type="checkbox"/> GRADE <input type="checkbox"/> MEZZANINE <input type="checkbox"/>																					
36	<input type="checkbox"/> WINTERIZATION REQ'D <input type="checkbox"/> TROPICALIZATION REQ'D																					
37	ELECTRICAL AREA:	CLASS:	GRP.: DIV.:																			
38	MAX ALLOW SPL:	dBA @	m																			
39	ELEVATION m;	BAROMETER:	kPa abs																			
40	RANGE OF AMBIENT TEMPERATURES: (BAR)																					
41		DRY BULB	WET BULB																			
42	NORMAL	°C	°C																			
43	MAXIMUM	°C	°C																			
44	MINIMUM	°C	°C																			
45	UNUSUAL CONDITIONS:																					
46	<input type="checkbox"/> DUST <input type="checkbox"/> FUMES <input type="checkbox"/>																					
47	NOTES:																					
48																						
49																						
50																						


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		No.		REV.
		SHEET		
		of		
TITLE:		GENERAL PURPOSE GEAR UNITS, BEVEL MOUNTED		
1	<input type="checkbox"/> ADDITIONAL REQUIREMENTS		<input type="checkbox"/> RADIAL BEARINGS	
2	MOUNTING PLATES			PINION
3	<input type="checkbox"/> GEAR FURNISHED WITH:		MANUFACTURER	GEAR
4	<input type="checkbox"/> BASEPLATE <input type="checkbox"/> SOLEPLATE		TYPE	
5	<input type="checkbox"/> BASEPLATE SUITABLE FOR COLUMN MOUNTING		CLASS	
6	<input type="checkbox"/> GROUT TYPE: <input type="checkbox"/> EPOXY <input type="checkbox"/> OTHER:		CAGE SPEED, m/s	
7	MOUNTING FLANGES		<input type="checkbox"/> B10 <input type="checkbox"/> L10 HOURS	
8	<input type="checkbox"/> CLEARANCE FIT WITH JACKBOLTS		NOTES:	
9	<input type="checkbox"/> REGISTER FIT			
10	<input type="checkbox"/> PAINTING <input type="checkbox"/>			
11	MISCELLANEOUS		<input type="checkbox"/> THRUST BEARINGS	
12	<input type="checkbox"/> TORSIONAL ANALYSIS BY: <input type="checkbox"/> GEAR VENDOR <input type="checkbox"/> OTHER:		MANUFACTURER	PINION
13	<input type="checkbox"/> LATERAL ANALYSIS BY:		TYPE	GEAR
14	<input type="checkbox"/> GEAR VENDOR <input type="checkbox"/> OTHER:		CLASS	
15	<input type="checkbox"/> SPARE SET OF GEAR ROTORS		CAGE SPEED, m/s	
16	<input type="checkbox"/> ORIENTATION OF OIL INLET AND DRAIN CONNECTIONS:		<input type="checkbox"/> B10 <input type="checkbox"/> L10 HOURS	
17			DOWN THRUST CAPACITY, N	
18	<input type="checkbox"/> VIBRATION DETECTORS (3.4.5)		UP THRUST CAPACITY, N	
19	PER API STD 670 EXCEPT WHERE INDICATED OTHERWISE BELOW		NOTES:	
20	ACCELEROMETER			
21	<input type="checkbox"/> MANUFACTURER: No. REQUIRED:			
22	<input type="checkbox"/> LOCATION:			
23	<input type="checkbox"/> MOTOR SUPPLIED BY:			
24	<input type="checkbox"/> INSTRUMENTS		<input type="checkbox"/> COUPLINGS	PINION
25			MANUFACTURER	GEAR
26	<input type="checkbox"/> TEMP.TRANSM.WITH HIGH OIL TEMP.ALARM:		MODEL	
27	<input type="checkbox"/> TEMPERATURE MEASURING DEVICES:		CPLG. RATING, kW/ 100 rpm	
28	<input type="checkbox"/> THERMOMETERS:		CYLINDRICAL / 1-KEY	<input type="checkbox"/>
29	<input type="checkbox"/> THERMOCOUPLES:		CYLINDRICAL / 2-KEYS	<input type="checkbox"/>
30	<input type="checkbox"/> RESISTANCE:		TAPERED / 1-KEY	<input type="checkbox"/>
31	<input type="checkbox"/> LIQUID:		TAPERED / 2-KEYS	<input type="checkbox"/>
32	<input type="checkbox"/> THERMAL RELIEF VALVES:		TAPERED / KEYLESS	<input type="checkbox"/>
33			<input type="checkbox"/> MATERIALS	
34	<input type="checkbox"/> CONTRACT DATA		GEAR CASING: OIL SEALS:	
35	<input type="checkbox"/> TEST DATA PRIOR TO SHIPMENT:		RADIAL BEARINGS:	
36	<input type="checkbox"/> PROGRESS REPORTS:		THRUST BEARING(S):	
37			HS SHAFT: LS SHAFT:	
38			PINION(S): HARDNESS:	
39	<input type="checkbox"/> SHIPMENT		GEAR RIM(S): HARDNESS:	
40			LOW TEMP. OPERATION:	
41	CONTRACT UNIT SPARES		<input type="checkbox"/> PIPING CONNECTIONS	
42	EXPORT BOXING	<input type="checkbox"/>	<input type="checkbox"/>	
43	DOMESTIC BOXING	<input type="checkbox"/>	<input type="checkbox"/>	
44	OUTDOOR STORAGE OVER 6 MONTHS	<input type="checkbox"/>	<input type="checkbox"/>	
45	FIT-UP & ASSEMBLY OF MOUNTED	<input type="checkbox"/>	<input type="checkbox"/>	
46				
47	NOTES:			
48				
49				
50				

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					No.			REV.
							SHEET	
		TITLE: GENERAL PURPOSE GEAR UNITS, BEVEL MOUNTED					of	
1	<input type="checkbox"/> COUPLINGS AND GUARDS				<input type="checkbox"/> LUBRICATION REQUIREMENTS			
2		HIGH SPEED	LOW SPEED	SYSTEM TYPE: <input type="checkbox"/> SELF-CONTAINED SPLASH				
3	COUPLING FURNISHED BY			<input type="checkbox"/> CIRCULATING <input type="checkbox"/> PRESSURIZED				
4	COUPLING TYPE			<input type="checkbox"/> FILTERS, MICRON RATING:				
5	CPLG RATING kW/ 100 rpm			<input type="checkbox"/> COOLER NOT REQUIRED				
6	COUPLING MANUFACTURER			<input type="checkbox"/> MINIMUM STARTUP OIL TEMPERATURE: °C				
7	COUPLING LUBRICATION			<input type="checkbox"/> OIL FLOW: GP m³/h				
8	MOUNT CPLG HALVES			<input type="checkbox"/> OIL PRESSURE: kPa				
9	TAPER			<input type="checkbox"/> UNIT POWER LOSS: kW				
10	TAPER GAUGE FURNISHED BY			RESERVOIR <input type="checkbox"/> GEAR CASING <input type="checkbox"/> SEPARATE				
11	LIMITED END FLOAT			<input type="checkbox"/> LUBE OIL INLET SIZE: mm				
12	CPLG GUARD FURNISHED BY			<input type="checkbox"/> LUBE OIL OUTLET SIZE: mm				
13	NOTES:			<input type="checkbox"/> WEIGHT AND DIMENSIONS				
14				NET WEIGHT: GEAR kg <input type="checkbox"/> AUXILIARIES kg				
15	<input type="checkbox"/> LUBRICATION REQUIREMENTS			MAX. MAINTENANCE WEIGHT (IDENTIFY): kg				
16	<input type="checkbox"/> OIL SYSTEM FURNISHED BY:			TOTAL SHIPPING WEIGHT (S): kg				
17	<input type="checkbox"/> GEAR VENDOR <input type="checkbox"/> OTHER:			TOTAL SHIPPING DIMENSIONS: X X				
18	<input type="checkbox"/> OIL VISC.: cP @ 40 °C cP @ 100 °C							
19	<input type="checkbox"/> LUBRICATION REQUIREMENTS <input type="checkbox"/> FIG C-1 <input type="checkbox"/> FIG C-2							
20	MAIN OIL PUMP <input type="checkbox"/> SHAFT DRIVEN <input type="checkbox"/> MOTOR DRIVEN							
21	<input type="checkbox"/> STANDBY OIL PUMP:							
22	OIL PUMP CASINGS: <input type="checkbox"/> CAST IRON <input type="checkbox"/> STEEL			USE SHOP LUBE SYSTEM <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				
23	<input type="checkbox"/> OIL COOLER: <input type="checkbox"/> WATER COOLED <input type="checkbox"/> AIR COOLED			USE JOB LUBE SYSTEM <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				
24	<input type="checkbox"/> HEADERS REQUIRED:			FINAL ASSEMBLY, MAINTENANCE &				
25	<input type="checkbox"/> ELECTRIC WITH THERMOSTATS <input type="checkbox"/> STEAM			RUNNING CLEARANCE <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				
26	<input type="checkbox"/> DUPLEX FILTERS:			OIL SYSTEM CLEANLINESS <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				
27	<input type="checkbox"/> INSPECTIONS AND TESTS			OIL SYSTEM-CASING JOINT TIGHTNESS <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				
28		REQ'D	WIT- NESSED	OBSER- VED	LOG	WARNING AND PROTECTION DEVICES <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
29						OIL SYSTEM LEAK TEST <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
30	SHOP INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		NOTES:		
31	CLEANLINESS INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
32	HARDNESS VERIFICATION INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
33	MAG. PARTICLE INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
34	ULTRASONIC INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
35	WELD INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
36	DISMANTLE-REASSEMBLY INSPECTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
37	CONTACT CHECK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
38	CONTACT CHECK TAPE LIFT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
39	BEARING VISUAL CHECK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
40	BEVEL BACKLASH CHECK (APPENDIX G OF API STD 677:2006)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
41	RESIDUAL UNBALANCE CHECK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
42	MECHANICAL RUN TEST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
43	EXTENDED MECHANICAL RUN TEST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
44	MECHANICAL RUN TEST (SPARE ROTORS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
45	SOUND LEVEL TEST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
46	MECHANICAL RUN TEST COUPLING:							
47	COUPLING INSTALLED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
48	COUPLING HUBS WITH IDLERS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
49								
50								
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