

CONTEC

Comissão de Normalização
Técnica

SC-11

Machines

Controlled Volume Pump - Data Sheet

Revalidation

Revalidated in 03/2020.

Controlled Volume Pump - 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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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 10/2013) of PETROBRAS N-1712 REV. C 10/2013. 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 standardizes the Datasheet for Controlled Volume Pump used in designs for PETROBRAS.

1.2 This Standard applies to design starting from its issue date.

1.3 This Standard is based on API [STD 675](#) (Third Edition).

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 applies.

API [STD 675](#) (Third Edition) - Positive Displacement Pumps - Controlled Volume.

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 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

3.1

hazardous service

refers to the following fluids and operational conditions:

- a) H₂S (Hydrogen Sulphide) concentrations above 500 ppm;
- b) hydrocarbons with hydrogen at a partial pressure above 7 bar (abs);
- c) hydrocarbons at pumping temperatures above their auto-ignition temperatures;
- d) other toxic and lethal substances, which will result in death or permanent personal injury through inhalation, exposition, or contact, to be specified and defined in the inquiry documents.

3.2

material requisition (MR)

document that aims to establish the scope of delivery, technical requirements and additional instructions necessary to purchase materials, systems and equipment

3.3

SI

international system of units

3.4**ST**

international system of modified units

4 General Requirements

4.1 In order to purchase a Controlled Volume Pump, Annex A or Annex B Datasheet, after being completed, shall be attached to a Material Requisition (RM), in order to constitute a purchase document.

4.2 Annex A or Annex B Data sheet, after being completed by the designer and supplemented by manufacturer, if such is the case, shall constitute a permanent document of the equipment.


5 Annexes


This Standard contains the following annex:


- a) Annex A - Data Sheet - Controlled Volume Pump (SI Unit);
- b) Annex B - Data Sheet - Controlled Volume Pump (ST Unit).


[illegible]

<div><div><div>BR</div><div>PETROBRAS</div></div></div>		DATA SHEET			Nº		REV.			
		AREA:				SHEET		0G	of	04
		TITLE:				CONTROLLED VOLUME PUMP (SI - INTERNATIONAL SYSTEM)				
1 APPLICABLE TO: <input type="radio"/> PROPOSAL <input type="radio"/> PURCHASE <input type="radio"/> AS BUILT										
2 FOR: UNIT:										
3 SITE: SERVICE:										
4 N° REQ'D: MANUFACTURER:										
5 MODEL: GEAR (YES/ NO):										
6 SIZE/TYPE: DRIVER (MOTOR/TURBINE):										
7 SERIAL N°: MANUFACTURER N°:										
8 NOTE: INFORMATION TO BE COMPLETED BY: <input type="radio"/> PURCHASER <input type="checkbox"/> MANUFACTURER										
9 OPERATING CONDITIONS					LIQUID					
10 O CAPACITY @ PT, l/h :					O TYPE OR NAME OF LIQUID:					
11 MAXIMUM MINIMUM RATED					O PUMPING TEMPERATURE, °C :					
12 O DISCHARGE PRESSURE, kPag:					NORM MAX MIN					
13 MAXIMUM MINIMUM					O SP. GRAVITY: NORM MAX MIN					
14 O SUCTION PRESSURE, kPag:					O SPECIFIC HEAT: kJ/kg °C					
15 MAXIMUM MINIMUM					O VISCOSITY, mPa.s: MAXIMUM MINIMUM					
16 O DIFFERENTIAL PRESSURE, kPa:					O CORROSIVE / EROSION AGENTS:					
17 MAXIMUM MINIMUM					O CHLORIDE CONCENTRATION: ppm					
18 O NPSH AVAILABLE, m: (W/O ACCELERATION HEAD)					O H ₂ S CONCENTRATION: ppm					
19 O TURNDOWN RATIO:					LIQUID: O TOXIC O FLAMMABLE O HAZARDOUS					
20 O SERVICE:					O OTHER:					
21 O CONTINUOUS					O VAPOR PRESS. @ MAX. TEMP.: kPa a					
22 O INTERMITTENT STARTS/DAY: _____					O SOLID IN SUSP.: MAX. DIAM., mm: CONCENT. %:					
23 O SUCTION PIPING: DIAM, in: LENGTH, m:										
24 O DISCH. PIPING: DIAM, in: LENGTH, m:										
25										
26 <input type="checkbox"/> PERFORMANCE					SITE AND UTILITY DATA					
27 CURVE N°					LOCATION: O INDOOR O OUTDOOR					
28 <input type="checkbox"/> N° OF HEAD: RAT. CAPACITY, l/h:					O HEATED O UNHEATED O UNDER ROOF					
29 <input type="checkbox"/> NPSH REQUIRED, m:					O ELECTRICAL AREA: ZONE GROUP TEMP					
30 <input type="checkbox"/> ACCELERATION HEAD, m:					O WINTERIZATION REQ'D O TROPICALIZATION REQ'D					
31 <input type="checkbox"/> kW RATED: AT RELIEF SETTING:					SITE DATA					
32 <input type="checkbox"/> PLUNGER SPEED (stk/min): DESIGN MAX.:					O RANGE OF AMBIENT TEMPS: MIN/MAX / °C					
33 <input type="checkbox"/> DIAMETER, mm: LENGTH OF STROKE, mm:					UNUSUAL CONDITIONS:					
34 PUMP HEAD, m: VOL. EFFIC., %:					O DUST O FUMES O SALTY ATMOSPHERE					
35 MAWP, kPag:					O OTHER					
36 <input type="checkbox"/> HYDRO TEST PRESSURE, kPa g:					O UTILITY CONDITIONS:					
37 <input type="checkbox"/> MAX DISCH PRESS. W/ JOB DRIVER, kPag:					ELECTRICITY DRIVER HEATING CONTROL SHUTDOWN					
38 <input type="checkbox"/> MAX kW BASIS GEAR STRENGTH:					VOLTAGE HERTZ PHASE					
39										
40 CONSTRUCTION										
41 CONNECTIONS SIZE ANSI RATING FACING POSITION					COOLING WATER INLET RETURN DESIGN MAX Δ					
42 SUCTION					TEMP., °C : MAX.					
43 DISCHARGE					PRESS., kPag : MIN.					
44 FLUSH					SOURCE:					
45 LIQUID END: O JACKET REQ'D					INSTRUMENT AIR MAX NORM MIN					
46 TYPE: O DIAPHRAGM O PLUNGER					PRESS., kPag :					
47 <input type="checkbox"/> DIAPH./PLUNG. DIA, mm: N° REQ.:					O SEE SITE AND UTILITY DATA SHEET N°:					
48 DIAPHRAGM <input type="checkbox"/> SINGLE <input type="checkbox"/> DOUBLE										
49 <input type="checkbox"/> VALVES/FEED SUCTION DISCHARGE										
50 TYPE					APPLICABLE SPECIFICATIONS					
51 NUMBER					O API 675 POSITIVE DISPLACEMENT PUMPS-CONTROLLED VOLUME					
52					O GOVERNING SPECIFICATION (IF DIFFERENT)					
REMARKS:										
INFORMATION IN THIS DOCUMENT IS PROPERTY OF PETROBRAS, BEING PROHIBITED OUTSIDE OF THEIR PURPOSE.										
FORM OWNED TO PETROBRAS N-1712 REV. C ANNEX A.										

		DATA SHEET				Nº		REV.	
		AREA:						SHEET 0H of 04	
		TITLE: CONTROLLED VOLUME PUMP (SI - INTERNATIONAL SYSTEM)							
1	<input type="checkbox"/> MATERIALS				CONTROLS				
2	LIQUID END				TYPE:		SIGNAL:		
3	CONTOUR PLATE				<input type="radio"/> MANUAL	<input type="radio"/> REMOTE	<input type="radio"/> PNEUMATIC		
4	HYDRAULIC DIAPHRAGM				<input type="radio"/> AUTOMATIC	<input type="radio"/> LOCAL	<input type="radio"/> ELECTRONIC		
5	PROCESS DIAPHRAGM				STROKE CONTROL:				
6	PLUNGER				PNEUMATIC, kPag :				
7	LANTERN RING				MINIMUM		MAXIMUM		
8	PACKING GLAND				ELECTRONIC, mA :				
9	PACKING				MINIMUM		MAXIMUM		
10	VALVES								
11	VALVE SEAT				OTHER PURCHASE REQUIREMENTS				
12	VALVE GUIDE				NAMEPLATE UNITS	<input type="radio"/> SI MODIFIED	<input type="radio"/> SI		
13	VALVE BODY				<input type="radio"/> VENDOR FURNISHED PROCESS PIPING				
14	VALVE GASKET				<input type="radio"/> VENDOR REVIEW PIPING DRAWINGS				
15	FRAME				<input type="radio"/> VENDOR FURNISHED PULSATION SUPPRESSION DEVICES				
16	PINION / GEAR				<input type="radio"/> WITHOUT INTERNALS	<input type="radio"/> BLADDER	<input type="radio"/> SPECIAL TYPE		
17	CONNECT'G ROD / CRANKSHAFT				<input type="radio"/> VENDOR FURNISHED RELIEF VALVE				
18	QA INSPECTION AND TEST				<input type="radio"/> INTERNAL	<input type="radio"/> EXTERNAL			
19	<input type="radio"/> COMPLIANCE WITH INSPECTORS CHECK LIST				<input checked="" type="checkbox"/> RELIEF VALVE SETTING, kPag				
20	<input type="radio"/> CERTIFICATION OF MATERIALS				<input type="radio"/> VENDOR FURNISHED BACK-PRESSURE VALVE				
21	<input type="radio"/> FINAL ASSEMBLY CLEARANCES				<input type="radio"/> DOUBLE CHECK VALVES REQUIRED				
22	<input type="radio"/> SURFACE AND SUBSURFACE EXAMINATIONS				<input type="radio"/> OIL-FILLED PRESSURE GAUGES REQUIRED				
23	<input type="radio"/> RADIOGRAPHY				<input type="radio"/> VENDOR FURNISHED CONTROL PANEL				
24	<input type="radio"/> ULTRASONIC				<input type="radio"/> BASEPLATE PREPARED FOR GROUT				
25	<input type="radio"/> MAGNETIC PARTICLE				<input type="radio"/> PROVIDE TECHNICAL DATA MANUAL				
26	<input type="radio"/> LIQUID PENETRANT				<input type="radio"/>				
27	<input type="radio"/> CLEANLINESS PRIOR TO FINAL ASSEMBLY								
28	<input type="radio"/> HARDNESS OF PARTS, WELDS & HEAT AFFECTED ZONES				PREPARATION FOR SHIPMENT				
29	<input type="radio"/> FURNISH PROCEDURES FOR OPTIONAL TESTS				<input type="radio"/> DOMESTIC	<input type="radio"/> EXPORT	<input type="radio"/> EXPORT BOXING		
30	SPECIAL MATERIAL TESTS				<input type="radio"/> OUTDOOR STORAGE MORE THAN MONTHS				
31	<input type="radio"/> LOW AMBIENT TEMPERATURE MATERIALS TESTS				<input type="checkbox"/> WEIGHTS, N				
32	TESTS	REQ'D	WIT	OBS	PUMP	BASE	GEAR	DRIVER	
33	HYDROSTATIC	●	○	○	TOTAL				
34	STEADY STATE ACCURACY	●	○	○	DRIVERS				
35	REPEATABILITY	○	○	○	<input type="radio"/> MOTOR:				
36	LINEARITY	○	○	○	<input type="checkbox"/> MANUFACTURER				
37	MECHANICAL RUNNING	●	○	○	<input type="checkbox"/> TYPE				
38	NPSH	○	○	○	<input type="checkbox"/> FRAME Nº				
39					<input type="radio"/> CONSTANT SPEED				
40	LUBRICATION FLUID				<input type="radio"/> VARIABLE SPEED				
41	<input type="checkbox"/> CRANKCASE	<input type="checkbox"/> INTERMEDIATE			<input type="checkbox"/> POWER, kW	SPEED, rpm			
42	<input type="checkbox"/> HYDRAULIC FLUID				<input type="radio"/> VOLTS	PHASE			
43	ACCESSORIES				<input type="radio"/> HERTZ	SERVICE FACTOR			
44	<input type="checkbox"/> SPEED REDUCER MANUFACTURER				<input type="radio"/> ENCLOSURE				
45	<input type="radio"/> INTEGRAL	<input type="radio"/> SEPARATE			<input type="radio"/> OTHER (SEE SEPARATE DATA SHEETS):				
46	MODEL				<input type="radio"/> GAS DRIVEN				
47	RATIO				<input type="radio"/> STEAM TURBINE				
48	<input type="radio"/> BASEPLATE:	<input type="radio"/> COMMON	<input type="radio"/> SEPARATED		<input type="radio"/> OTHER				
49	<input type="checkbox"/> COUPLING MANUFACTURER								
50	<input type="checkbox"/> TYPE								
51									
REMARKS:									
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FORM OWNED TO PETROBRAS N-1712 REV. C ANNEX A.									

	DATA SHEET		Nº	REV.
	AREA:			SHEET 01 of 04
	TITLE: CONTROLLED VOLUME PUMP (SI - INTERNATIONAL SYSTEM)			
<p style="text-align: center;">NOTES</p> <ol style="list-style-type: none"> 1. Unless otherwise specified, the number of strokes per minute of the selected pump shall not exceed 90 (SPM ≤ 90); 2. Double-diaphragm type pumps fitted with leakage detector between diaphragms shall be applied for flammable or hazardous services; 3. Pulsation suppressor devices shall be provided at both pump inlet and discharge lines. Whenever pulsation dampeners are required, Nitrogen gas (N₂) filled bladder shall be applied. 				
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	DATA SHEET					Nº				
	CLIENT:							SHEET 01 of 04		
	JOB:							C.C.		
	AREA:									
		TITLE: CONTROLLED VOLUME PUMP (ST - INTERNATIONAL SYSTEM MODIFIED)								
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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FORM OWNED TO PETROBRAS N-1712 REV. C ANNEX B.										

	DATA SHEET		Nº _____		REV. _____	
	AREA: _____				SHEET 0G of 04	
	TITLE: CONTROLLED VOLUME PUMP (ST - INTERNATIONAL SYSTEM MODIFIED)					

1	APPLICABLE TO: <input type="radio"/> PROPOSAL <input type="radio"/> PURCHASE <input type="radio"/> AS BUILT					
2	FOR: _____			UNIT: _____		
3	SITE: _____			SERVICE: _____		
4	Nº REQ'D: _____			MANUFACTURER: _____		
5	MODEL: _____			GEAR (YES/ NO): _____		
6	SIZE/TYPE: _____			DRIVER (MOTOR/TURBINE): _____		
7	SERIAL Nº: _____			MANUFACTURER Nº: _____		
8	NOTE: INFORMATION TO BE COMPLETED BY: <input type="radio"/> PURCHASER <input type="checkbox"/> MANUFACTURER					

OPERATING CONDITIONS	LIQUID
10 <input type="radio"/> CAPACITY @ PT, l/h : 11 MAXIMUM _____ MINIMUM _____ RATED _____ 12 <input type="radio"/> DISCHARGE PRESSURE, kgf/cm ² g: 13 MAXIMUM _____ MINIMUM _____ 14 <input type="radio"/> SUCTION PRESSURE, kgf/cm ² g: 15 MAXIMUM _____ MINIMUM _____ 16 <input type="radio"/> DIFFERENTIAL PRESSURE, kgf/cm ² : 17 MAXIMUM _____ MINIMUM _____ 18 <input type="radio"/> NPSH AVAILABLE, m _____ (W/O ACCELERATION HEAD) 19 <input type="radio"/> TURNDOWN RATIO _____ 20 <input type="radio"/> SERVICE: 21 <input type="radio"/> CONTINUOUS 22 <input type="radio"/> INTERMITTENT STARTS/DAY: _____ 23 <input type="radio"/> SUCTION PIPING: DIAM, in: _____ LENGTH, m: _____ 24 <input type="radio"/> DISCH. PIPING: DIAM, in: _____ LENGTH, m: _____ 25	O TYPE OR NAME OF LIQUID: _____ O PUMPING TEMPERATURE, °C : NORM _____ MAX _____ MIN _____ O SP. GRAVITY: NORM _____ MAX _____ MIN _____ O SPECIFIC HEAT: _____ kcal/kg °C O VISCOSITY, cP: MAXIMUM _____ MINIMUM _____ O CORROSIVE / EROSION AGENTS: _____ O CHLORIDE CONCENTRATION: _____ ppm O H ₂ S CONCENTRATION: _____ ppm LIQUID: <input type="radio"/> TOXIC <input type="radio"/> FLAMMABLE <input type="radio"/> HAZARDOUS <input type="radio"/> OTHER: _____ O VAPOR PRESS. @ MAX. TEMP.: _____ kgf/cm ² a O SOLID IN SUSP.: MAX. DIAM.mm: _____ CONCENT. %


<input type="checkbox"/> PERFORMANCE	SITE AND UTILITY DATA
27 CURVE Nº _____ 28 <input type="checkbox"/> Nº OF FEEDS: _____ RAT. CAPACITY, l/h: _____ 29 <input type="checkbox"/> NPSH REQUIRED, m: _____ 30 <input type="checkbox"/> ACCELERATION HEAD, m: _____ 31 <input type="checkbox"/> KW RATED: _____ AT RELIEF SETTING: _____ 32 <input type="checkbox"/> PLUNGER SPEED (stk/min): _____ DESIGN MAX: _____ 33 <input type="checkbox"/> DIAMETER, mm: _____ LENGTH OF STROKE, mm: _____ 34 PUMP HEAD, m: _____ VOL. EFFIC., %: _____ 35 MAWP, kgf/cm ² g: _____ 36 <input type="checkbox"/> HYDRO TEST PRESSURE, kgf/cm ² : _____ 37 <input type="checkbox"/> MAX. DISCH PRESS. W/ JOB DRIVER, kgf/cm ² g: _____ 38 <input type="checkbox"/> MAX. KW BASIS GEAR STRENGTH: _____ 39	LOCATION: <input type="radio"/> INDOOR <input type="radio"/> OUTDOOR O HEATED <input type="radio"/> UNHEATED <input type="radio"/> UNDER ROOF O ELECTRICAL AREA: ZONE _____ GROUP _____ TEMP _____ O WINTERIZATION REQ'D <input type="radio"/> TROPICALIZATION REQ'D SITE DATA: O RANGE OF AMBIENT TEMPS: MIN/MAX _____ / _____ °C UNUSUAL CONDITIONS: O DUST <input type="radio"/> FUMES <input type="radio"/> SALTY ATMOSPHERE O OTHER _____ O UTILITY CONDITIONS: ELECTRICITY DRIVER HEATING CONTROL SHUTDOWN VOLTAGE _____ HERTZ _____ PHASE _____ COOLING WATER INLET RETURN DESIGN MAX Δ TEMP., °C: MAX _____ PRESS., kgf/cm ² g: MIN _____ SOURCE: _____ INSTRUMENT AIR MAX NORM MIN PRESS., kgf/cm ² g: _____ O SEE SITE AND UTILITY DATA SHEET Nº: _____


CONSTRUCTION				
41 CONNECTIONS	SIZE	ANSI RATING	FACING	POSITION
42 SUCTION				
43 DISCHARGE				
44 FLUSH				
45 LIQUID END: <input type="radio"/> JACKET REQ'D 46 TYPE: <input type="radio"/> DIAPHRAGM <input type="radio"/> PLUNGER 47 <input type="checkbox"/> DIAPH./PLUNG. DIA, mm : _____ Nº REQ. _____ 48 DIAPHRAGM: <input type="checkbox"/> SINGLE <input type="checkbox"/> DOUBLE 49 <input type="checkbox"/> VALVES/FEED SUCTION DISCHARGE 50 TYPE _____ 51 NUMBER _____ 52 53				

APPLICABLE SPECIFICATIONS	
O API 675 POSITIVE DISPLACEMENT PUMPS-CONTROLLED VOLUME O GOVERNING SPECIFICATION (IF DIFFERENT) _____	

REMARKS:

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FORM OWNED TO PETROBRAS N-1712 REV. C. ANNEX B.

		DATA SHEET				Nº		REV.				
		AREA:						SHEET 0H of 04				
		TITLE: CONTROLLED VOLUME PUMP (ST - INTERNATIONAL SYSTEM MODIFIED)										
1	<input type="checkbox"/> MATERIALS				CONTROLS							
2	LIQUID END				TYPE:			SIGNAL:				
3	CONTOUR PLATE				<input type="radio"/> MANUAL	<input type="radio"/> REMOTE	<input type="radio"/> PNEUMATIC					
4	HYDRAULIC DIAPHRAGM				<input type="radio"/> AUTOMATIC	<input type="radio"/> LOCAL	<input type="radio"/> ELECTRONIC					
5	PROCESS DIAPHRAGM				STROKE CONTROL:							
6	PLUNGER				PNEUMATIC, kgf/cm ² g :							
7	LANTERN RING				MINIMUM		MAXIMUM					
8	PACKING GLAND				ELECTRONIC, mA :							
9	PACKING				MINIMUM		MAXIMUM					
10	VALVES											
11	VALVE SEAT				OTHER PURCHASE REQUIREMENTS							
12	VALVE GUIDE				NAMEPLATE UNITS	<input type="radio"/> SI MODIFIED	<input type="radio"/> SI					
13	VALVE BODY				<input type="radio"/> VENDOR FURNISHED PROCESS PIPING							
14	VALVE GASKET				<input type="radio"/> VENDOR REVIEW PIPING DRAWINGS							
15	FRAME				<input type="radio"/> VENDOR FURNISHED PULSATION SUPPRESSION DEVICES							
16	PINION / GEAR				<input type="radio"/> WITHOUT INTERNALS	<input type="radio"/> BLADDER	<input type="radio"/> SPECIAL TYPE					
17	CONNECT'G ROD / CRANKSHAFT				<input type="radio"/> VENDOR FURNISHED RELIEF VALVE							
18	QA INSPECTION AND TEST				<input type="radio"/> INTERNAL	<input type="radio"/> EXTERNAL						
19	<input type="radio"/> COMPLIANCE WITH INSPECTORS CHECK LIST				<input checked="" type="checkbox"/> RELIEF VALVE SETTING, kgf/cm ² g							
20	<input type="radio"/> CERTIFICATION OF MATERIALS				<input type="radio"/> VENDOR FURNISHED BACK-PRESSURE VALVE							
21	<input type="radio"/> FINAL ASSEMBLY CLEARANCES				<input type="radio"/> DOUBLE CHECK VALVES REQUIRED							
22	<input type="radio"/> SURFACE AND SUBSURFACE EXAMINATIONS				<input type="radio"/> OIL-FILLED PRESSURE GAUGES REQUIRED							
23	<input type="radio"/> RADIOGRAPHY				<input type="radio"/> VENDOR FURNISHED CONTROL PANEL							
24	<input type="radio"/> ULTRASONIC				<input type="radio"/> BASEPLATE PREPARED FOR GROUT							
25	<input type="radio"/> MAGNETIC PARTICLE				<input type="radio"/> PROVIDE TECHNICAL DATA MANUAL							
26	<input type="radio"/> LIQUID PENETRANT				<input type="radio"/>							
27	<input type="radio"/> CLEANLINESS PRIOR TO FINAL ASSEMBLY											
28	<input type="radio"/> HARDNESS OF PARTS, WELDS & HEAT AFFECTED ZONES				PREPARATION FOR SHIPMENT							
29	<input type="radio"/> FURNISH PROCEDURES FOR OPTIONAL TESTS				<input type="radio"/> DOMESTIC	<input type="radio"/> EXPORT	<input type="radio"/> EXPORT BOXING					
30	SPECIAL MATERIAL TESTS				<input type="radio"/> OUTDOOR STORAGE MORE THAN				MONTHS			
31	<input type="radio"/> LOW AMBIENT TEMPERATURE MATERIALS TESTS				<input type="checkbox"/> WEIGHTS, kgf							
32	TESTS	REQ'D	WIT	OBS	PUMP		BASE		GEAR		DRIVER	
33	HYDROSTATIC	●	O	O	TOTAL							
34	STEADY STATE ACCURACY	●	O	O	DRIVERS							
35	REPEATABILITY	O	O	O	<input type="radio"/> MOTOR:							
36	LINEARITY	O	O	O	<input type="checkbox"/> MANUFACTURER							
37	MECHANICAL RUNNING	●	O	O	<input type="checkbox"/> TYPE							
38	NPSH	O	O	O	<input type="checkbox"/> FRAME Nº							
39					<input type="radio"/> CONSTANT SPEED							
40	LUBRICATION FLUID				<input type="radio"/> VARIABLE SPEED							
41	<input type="checkbox"/> CRANKCASE	<input type="checkbox"/> INTERMEDIATE			<input type="checkbox"/> POWER, kW		SPEED, rpm					
42	<input type="checkbox"/> HYDRAULIC FLUID				<input type="radio"/> VOLTS		PHASE					
43	ACCESSORIES				<input type="radio"/> HERTZ		SERVICE FACTOR					
44	<input type="checkbox"/> SPEED REDUCER MANUFACTURER				<input type="radio"/> ENCLOSURE							
45	<input type="radio"/> INTEGRAL	<input type="radio"/> SEPARATE			<input type="radio"/> OTHER (SEE SEPARATE DATA SHEETS)							
46	MODEL				<input type="radio"/> GAS DRIVEN							
47	RATIO				<input type="radio"/> STEAM TURBINE							
48	<input type="radio"/> BASEPLATE:	<input type="radio"/> COMMON	<input type="radio"/> SEPARATED		<input type="radio"/> OTHER							
49	<input type="checkbox"/> COUPLING MANUFACTURER											
50	<input type="checkbox"/> TYPE											
51												
REMARKS:												
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FORM OWNED TO PETROBRAS N-1712 REV. C. ANNEX B.												

	DATA SHEET		Nº	REV.
	AREA:			SHEET 01 of 04
	TITLE: CONTROLLED VOLUME PUMP (ST - INTERNATIONAL SYSTEM MODIFIED)			
<p style="text-align: center;">NOTES</p> <ol style="list-style-type: none"> 1. Unless otherwise specified, the number of strokes per minute of the selected pump shall not exceed 90 (SPM ≤ 90); 2. Double-diaphragm type pumps fitted with leakage detector between diaphragms shall be applied for flammable or hazardous services; 3. Pulsation suppressor devices shall be provided at both pump inlet and discharge lines. Whenever pulsation dampeners are required, Nitrogen gas (N₂) filled bladder shall be applied. 				
INFORMATION IN THIS DOCUMENT IS PROPERTY OF PETROBRAS, BEING PROHIBITED OUTSIDE OF THEIR PURPOSE. FORM OWNED TO PETROBRAS N-1712 REV. C ANNEX B.				

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