

CONTEC

Comissão de Normalização
Técnica

SC-22

Utility Equipment

Water Process Filter - Data Sheet

Revalidation

Revalidated em 02/2017.

Water Process Filter - Data Sheet

Procedure

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

Comissão de Normalização
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SC - 22

Utility Equipment

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 04/2012) of PETROBRAS N-2165 REV. C 03/2011. 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 Data Sheet form for Water Process Filter for the following types:

- a) surface filter;
- b) depth filter.

1.2 This Standard applies to projects started from the date of its issuance.

1.3 This Standard contains Technical Requirements only.

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.

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

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

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 General Conditions

3.1 The Data Sheet is intended to record the purchaser's requirements and supplier's design details, and once completed, it shall be part of permanent document of the equipment.

3.2 The Data Sheet form is standardized in A4 format as per:

- a) Annex A: Data Sheet - Water Process Filter - Surface Filter;
- b) Annex B: Data Sheet - Water Process Filter - Depth Filter.

NOTE Annex A, from sheet 01/07 to sheet 07/07, contains the same data, respectively, as Annex B, from sheet 01/08 to sheet 08/08.

3.3 To fill the footer and header of Data Sheet comply with PETROBRAS [N-381](#).

3.4 The Annex applicable to PETROBRAS [N-381](#) shall be used for continuation of any item exceeding Annexes A and B of this Standard.



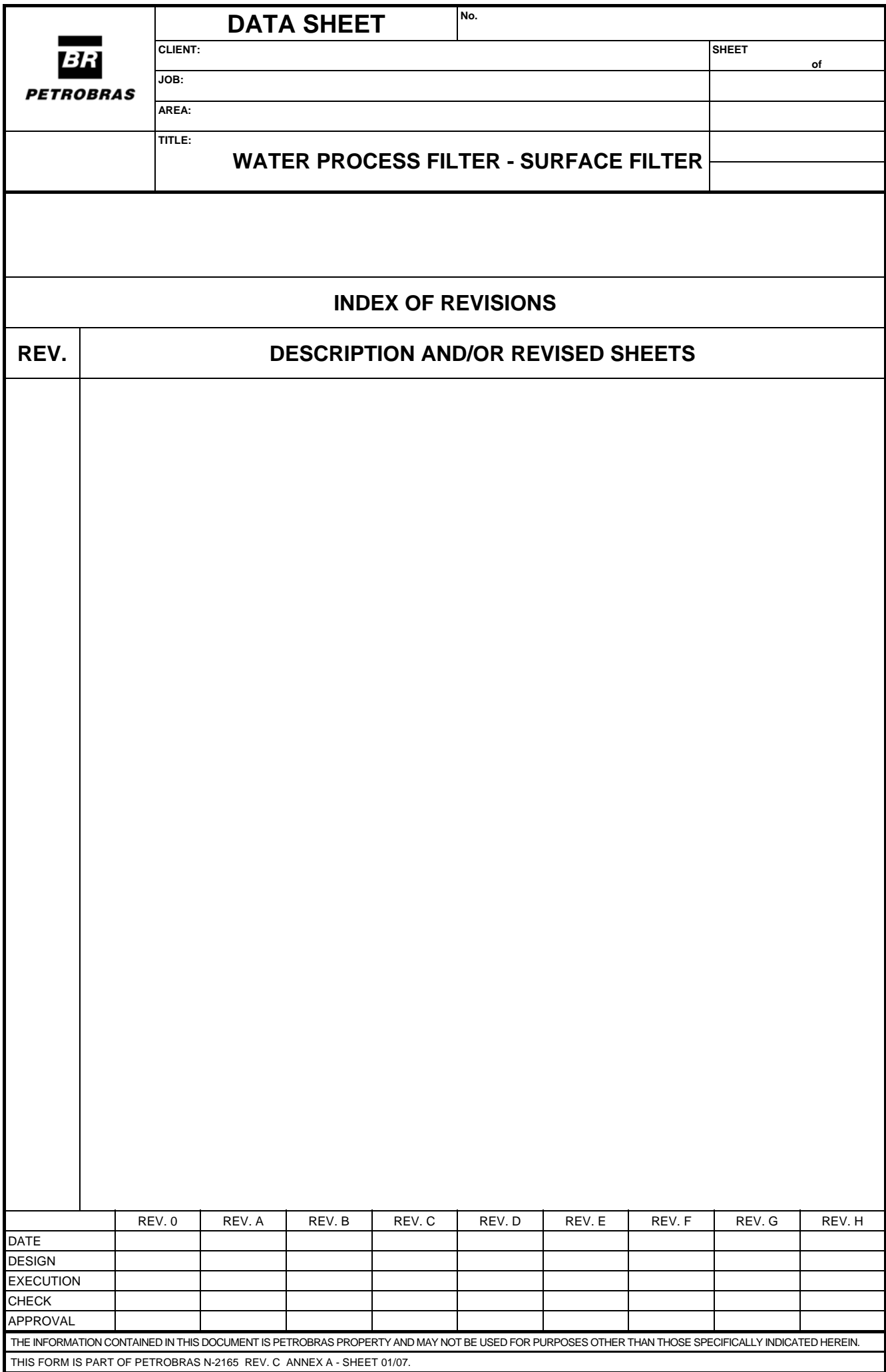
3.5 The identification of Water Process Filter shall comply with PETROBRAS [N-1521](#), and written in the "Title" field of the header, after the name of the equipment (Water Process Filter - Surface Filter or Depth Filter), on the right side.


3.6 The last 3 sheets of Annexes A and B show schematic drawings of 3 types of filter. Sheet with proper drawing shall be chosen upon completing Data Sheet. If the type of filter is different from the 3 presented, make the drawing of the filter on the appropriate form of PETROBRAS [N-381](#).

3.7 Upon completing the Data Sheet, the following requirements shall be met:

- a) complete only the applicable fields, eliminating, with a horizontal line, the fields that are not applicable to the specific project;
- b) in the white lines, add any further data on the specific project.

3.8 This Data Sheet shall be reproduced for its routine use.



	No.		REV.
	TITLE: WATER PROCESS FILTER - SURFACE FILTER		SHEET
			of

1 - SERVICE:

2 - TYPE OF FILTER:
 ☐ CARTRIDGE
 ☐ BASKET
 ☐ SCREEN
 ☐ OTHER

3 - MANUFACTURER:

4 - QUANTITY:
 ☐ SIMPLEX
 ☐ DUPLEX
 ☐ TRIPLEX
 ☐ MULTIPLE

5 - PROCESS DATA

5.1 - FLUID:

5.2 - DENSITY:

5.3 - VISCOSITY (Pa.s) (cP):

5.4 - SUSPENDED SOLIDS (mg/l):

5.5 - CORROSIVE AND TOXIC COMPOUNDS:

5.6 - OIL CONTENT IN AFFLUENT (mg/L):

5.7 - TOTAL FLOW RATE (m³/h):

5.8 - OPERATING TEMPERATURE (°C):

5.9 - OPERATING PRESSURE (ABSOLUTE) (kPa) (kgf/cm²):

5.10 - MAXIMUM PRESSURE DROP (WHEN CLEAN) (kPa) (kgf/cm²):

5.11 - MAXIMUM PRESSURE DROP (WHEN DIRTY) (kPa) (kgf/cm²):

5.12 - DISTRIBUTION OF PARTICLES IN AFFLUENT	% ACCUMULATED	SIZE (µm)

5.13 - MINIMUM SIZE OF PARTICLES TO BE FILTERED (µm):

5.14 - TOTAL OF PARTICLES REMOVED (%):

6 - PROJECT DATA

6.1 - PROJECT TEMPERATURE (°C):

6.2 - PROJECT PRESSURE (ABSOLUTE) (kPa) (kgf/cm²):

6.3 - HYDROSTATIC TEST PRESSURE (kPa) (kgf/cm²):

6.4 - CORROSION ALLOWANCE (mm):

6.5 - CATHODIC PROTECTION AS PER STANDARD:
 ☐ YES
 ☐ NO

6.6 - BODY THICKNESS (mm):

7 - MECHANICAL CHARACTERISTICS

7.1 - FILTER ELEMENT MATERIAL:

7.2 - NUMBER OF FILTERS (FOR MULTIPLE UNIT):

7.3 - NUMBER OF ELEMENTS PER FILTER:

7.4 - FILTER SURFACE AREA OF CARTRIDGE OR BASKET (cm²):

7.5 - MAXIMUM DIFFERENTIAL PRESSURE THROUGH THE FILTER ELEMENT (kPa) (kgf/cm²):

7.6 - BACKWASH: <input type="checkbox"/> YES <input type="checkbox"/> NO	TYPE: <input type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL
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7.7 - MAXIMUM BACKWASH FLOW RATE (m³/h):

7.8 - BACKWASH DURATION (min):

7.9 - TIME INTERVAL BETWEEN BACKWASHES (h):

7.10 - TYPE OF FILTER SUPPORT:

7.11 - COMMENTS:

7.12 - COMMENTS:

7.13 - COMMENTS:

7.14 - COMMENTS:

7.15 - COMMENTS:

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7.99 - COMMENTS:

7.100 - COMMENTS:

					No.	REV.	
						SHEET	of
	TITLE: <b style="font-size: large;">WATER PROCESS FILTER - SURFACE FILTER						

8 - MATERIALS

8.1 - COVER/BODY:

8.2 - NOZZLES:

8.3 - FLANGES:

8.4 - JOINTS:

8.5 - NUTS/BOLTS:

8.6 - COUPLINGS:

8.7 - SUPPORTS:

8.8 - INTERNAL PARTS (RODS - BOLTS - PLATES):

9 - NOZZLES (SEE FIGURES A.1, A.2 and A.3)

NOZZLE	QUANTITY	DIAMETER	CLASS	FACE	SERVICE
A					
B					
C					
D					
E					
F					
G					
H					

10 - STANDARDS AND TESTS

10.1 - TECHNICAL SPECIFICATION:

10.2 - PROJECT STANDARD:

10.3 - WELDING STANDARD:

10.4 - CERTIFICATES OF MECHANICAL AND CHEMICAL TESTS FOR MATERIALS: ☐ YES ☐ NO

10.5 - X-RAYS IN WELDING: ☐ PARTIAL ☐ TOTAL

10.6 - ULTRASOUND IN INACCESSIBLE WELDING: ☐ YES ☐ NO

10.7 - TEST WITNESSED: ☐ YES ☐ NO

11 - UTILITIES

11.1 - FLUID:

11.2 - ABSOLUTE PRESSURE (kPa) (kgf/cm²):

11.3 - TEMPERATURE (°C):

11.4 - AIR PRESSURE (INSTRUM. - SERVICE) (ABSOLUTE) (kPa) (kgf/cm²):

11.5 - AIR TEMPERATURE (INSTRUM. - SERVICE) (°C):

11.6 - ELECTRICITY: VOLTAGE (V): NUMBER OF FREQUENCY (Hz):

12 - OTHER CHARACTERISTICS

12.1 - BLASTING:

12.2 - PAINTING:

12.3 - GALVANIZING:

12.4 - INSULATION: THICKNESS (mm):

12.5 - INTERNAL COATING:

12.6 - FILTER WEIGHT (EMPTY/FULL) (kN):

12.7 - INTERNAL FILTER VOLUME (m³):

12.8 - GROUNDING:

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THIS FORM IS PART OF PETROBRAS N-2165 REV. C ANNEX A - SHEET 03/07.



No.

REV.

SHEET

of

TITLE:

WATER PROCESS FILTER - SURFACE FILTER**13 - SCOPE OF SUPPLY (INCLUDED)**

- ☐ FILTER WITH FILTER ELEMENT
- ☐ SKID
- ☐ INTERCONNECTION PIPE BETWEEN FILTERS
- ☐ 3-WAY VALVES
- ☐ DAVIT
- ☐ DIFFERENTIAL PRESSURE GAUGE
- ☐ PRESSURE INDICATOR
- ☐ TEMPERATURE INDICATOR
- ☐ LEVEL INDICATOR
- ☐ DRAIN VALVE
- ☐ SAFETY VALVE
- ☐ ALARMS
- ☐ AUTOMATIC BACKWASH SYSTEM WITH CONTROL PANEL
- ☐ PARTS FOR START-UP AND 1 YEAR OF OPERATION
- ☐ NAME PLATE
- ☐ PLC (SEE NOTE 2) FOR COMPLETE CONTROL OF THE OPERATING CYCLE
- ☐ FACTORY TEST

NOTE 1 BOLTS AND NUTS SHALL BE CADMIUM AND BICHROMATE TYPE.

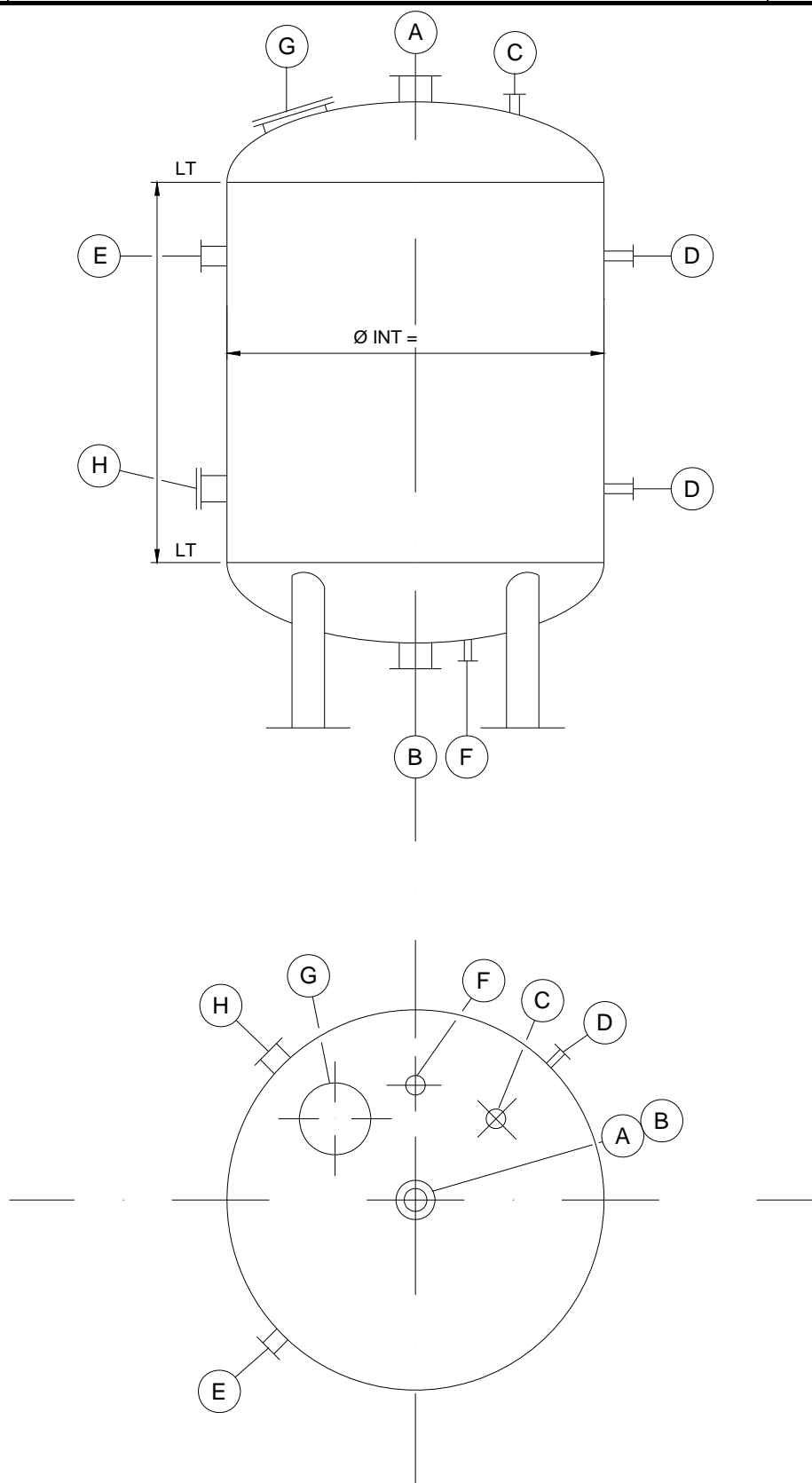
NOTE 2 PLC = PROGRAMMABLE LOGIC CONTROLLER.

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THIS FORM IS PART OF PETROBRAS N-2165 REV. C ANNEX A - SHEET 04/07.

TITLE:

WATER PROCESS FILTER - SURFACE FILTER



NOTE POSITION OF NOZZLES SHALL BE CONFIRMED LATER BY DESIGNER.

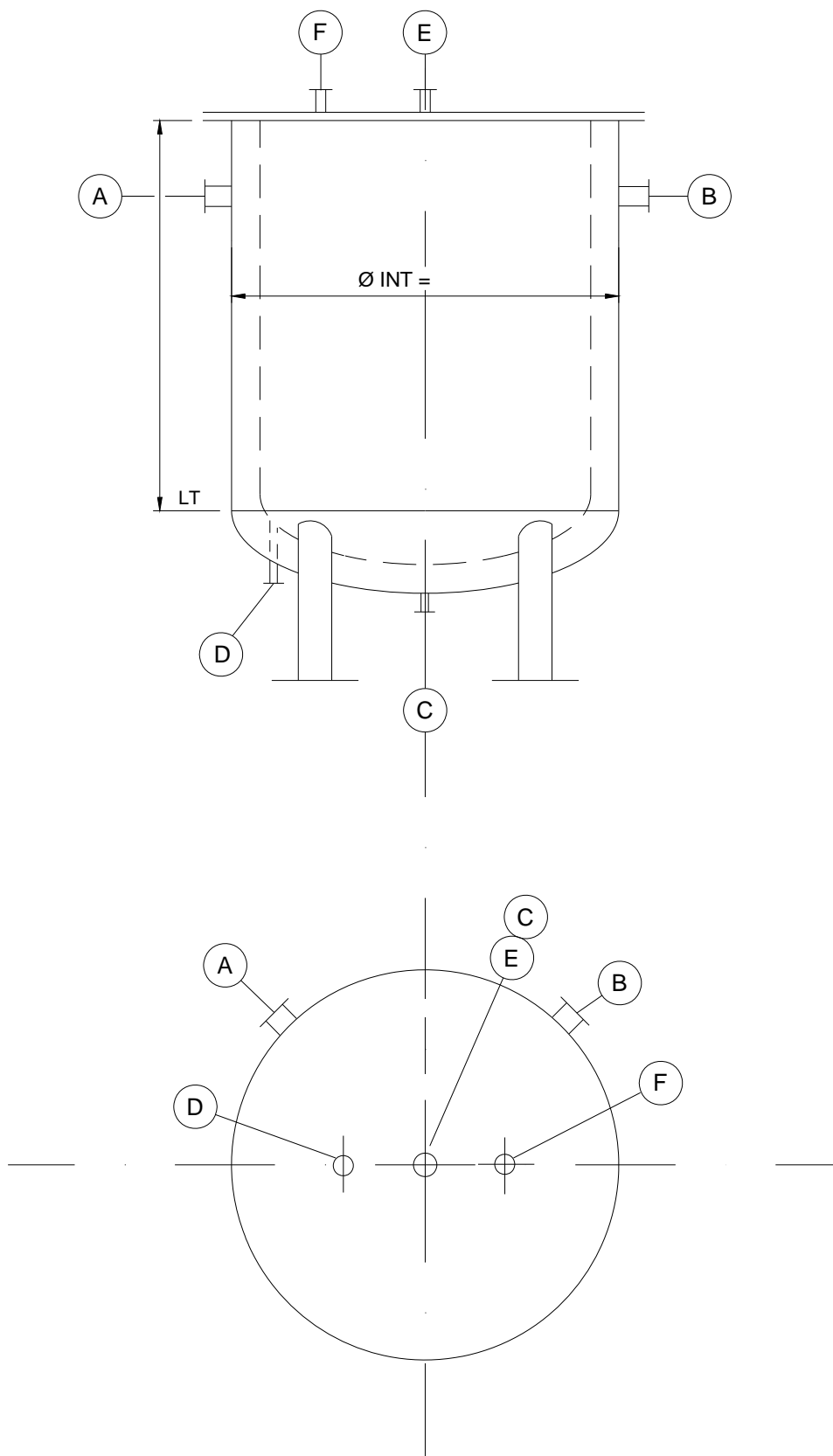
FIGURE A.1 - FILTER TYPE I

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TITLE:

WATER PROCESS FILTER - SURFACE FILTER



NOTE POSITION OF NOZZLES SHALL BE CONFIRMED LATER BY DESIGNER.

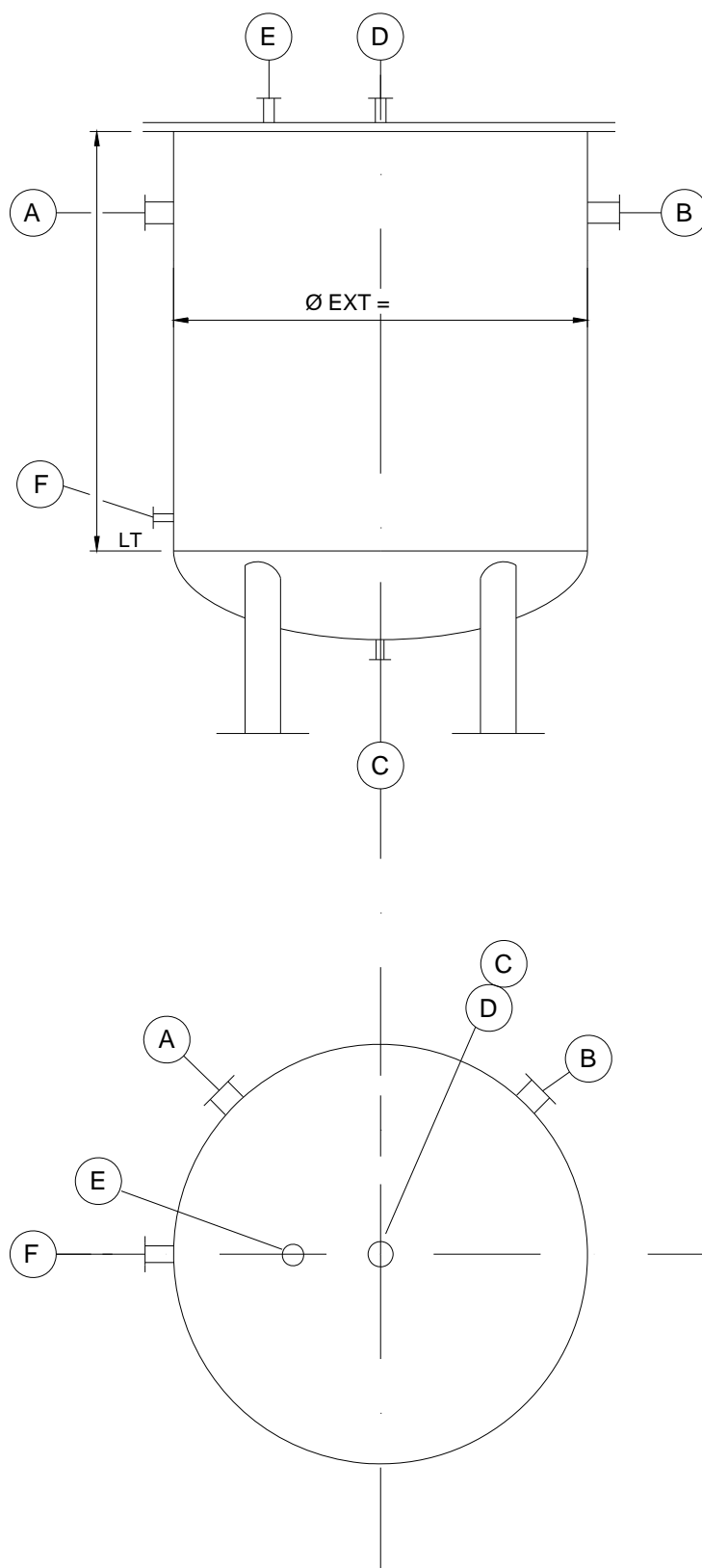
FIGURE A.2 - FILTER TYPE II

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THIS FORM IS PART OF PETROBRAS N-2165 REV. C ANNEX A - SHEET 06/07.

TITLE:

WATER PROCESS FILTER - SURFACE FILTER



NOTE POSITION OF NOZZLES SHALL BE CONFIRMED LATER BY DESIGNER.


FIGURE A.3 - FILTER TYPE III

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THIS FORM IS PART OF PETROBRAS N-2165 REV. C ANNEX A - SHEET 07/07.

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[illegible]

<div> PETROBRAS</div>	No.		REV.	
	TITLE: WATER PROCESS FILTER - DEPTH FILTER		SHEET _____ of _____	

7 - MECHANICAL CHARACTERISTICS

7.1 - SPECIFICATION OF COMPONENTS OF THE BED

LAYER	MATERIAL	HEIGHT (cm)	DENSITY	EFFECTIVE SIZE E = T 10 %	COEFFICIENT OF UNIFORMITY U = T 60 % / T 10 %	POROSITY
1 st						
2 nd						
3 rd						

7.2 - SPECIFICATION OF SUPPORT BED

LAYER	MATERIAL	HEIGHT (cm)	PARTICLE SIZE
1 st			
2 nd			
3 rd			

7.3 - FILTRATION AREA (m²):

7.4 - FILTRATION RATE (m³ / m²h):

7.5 - MATERIAL OF FALSE FLOOR:


7.6 - NUMBER OF DIFFUSERS BY m² / TOTAL PER FILTER: _____ / _____

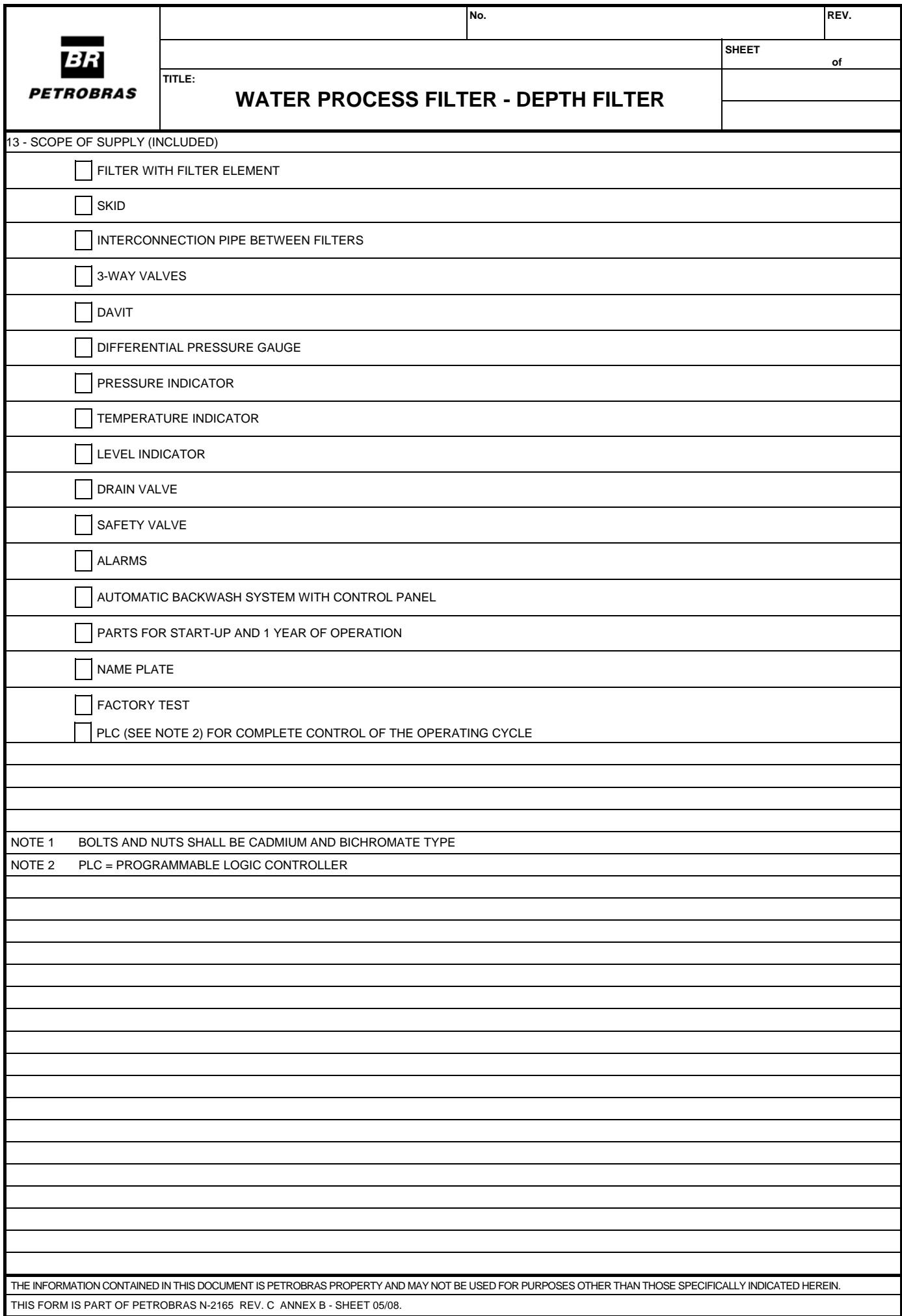
BACKWASH

7.7 - TYPE	<input type="checkbox"/> AUTOMATIC	<input type="checkbox"/> MANUAL
	<input type="checkbox"/> AIR AND WATER	<input type="checkbox"/> WATER ONLY
	7.8 - FLOW RATE (m ³ /h):	
	NORMAL:	
	MAX:	
	7.9 - EXPANSION OF FILTER BED IN BACKWASH (%):	
7.10 - LOSS OF LOAD (kPa) (kgf/cm ²):		
7.11 - TIME (MIN):		
7.12 - INTERVAL BETWEEN WASHES (h):		

THE INFORMATION CONTAINED IN THIS DOCUMENT IS PETROBRAS PROPERTY AND MAY NOT BE USED FOR PURPOSES OTHER THAN THOSE SPECIFICALLY INDICATED HEREIN.

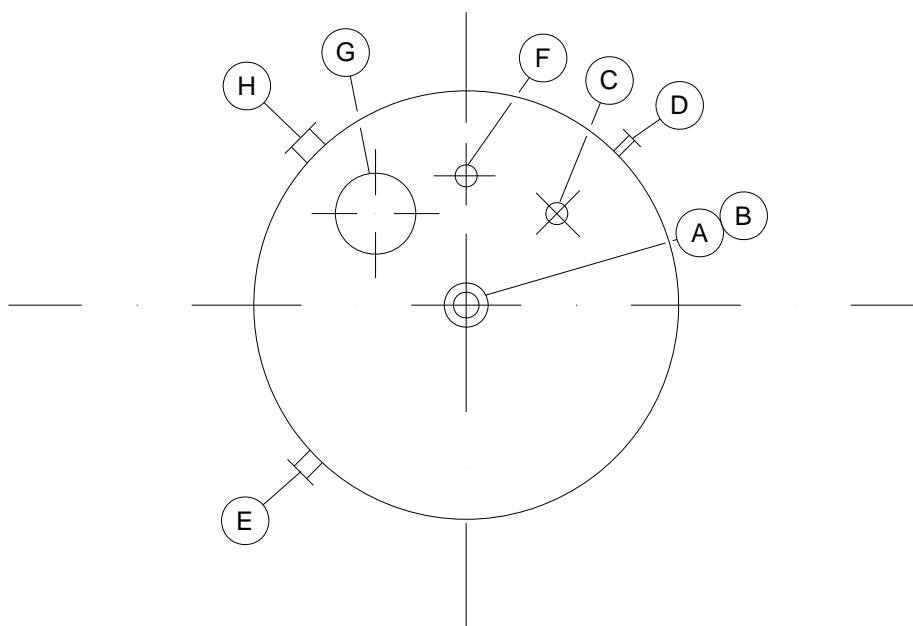
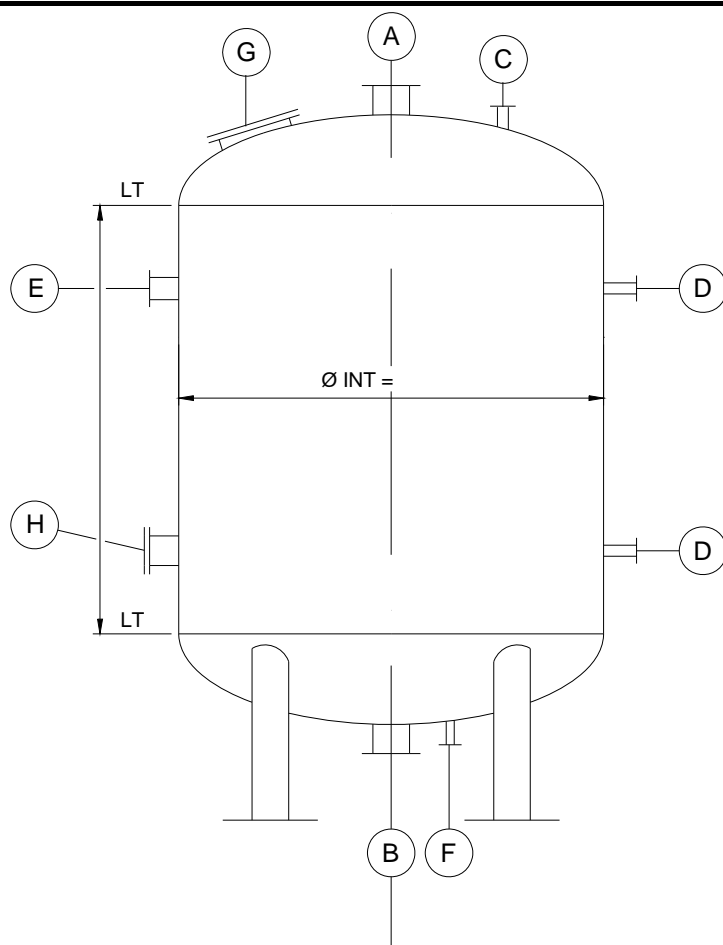
THIS FORM IS PART OF PETROBRAS N-2165 REV. C ANNEX B - SHEET 03/08.

			No.		REV.
	TITLE: <div style="font-size: 1.2em; font-weight: bold; margin-top: 10px;">WATER PROCESS FILTER - DEPTH FILTER</div>				SHEET
					of
8 – MATERIALS					
8.1 - COVER/BODY:					
8.2 - NOZZLES:					
8.3 - FLANGES:					
8.4 - JOINTS:					
8.5 - NUTS/BOLTS:					
8.6 - COUPLINGS:					
8.7 - SUPPORTS:					
8.8 - INTERNAL PARTS (RODS - BOLTS - PLATES - COLLECTORS - NOZZLES):					
9 - NOZZLES (SEE FIGURES A.1, A.2 and A.3)					
NOZZLE	QUANTITY	DIAMETER	CLASS	FACE	SERVICE
A					
B					
C					
D					
E					
F					
10 - STANDARDS AND TESTS					
10.1 - TECHNICAL SPECIFICATION:					
10.2 - PROJECT STANDARD:					
10.3 - WELDING STANDARD:					
10.4 - CERTIFICATES OF MECHANICAL AND CHEMICAL TESTS FOR MATERIALS:				<input type="checkbox"/> YES	<input type="checkbox"/> NO
10.5 - X-RAYS IN WELDING:			<input type="checkbox"/> PARTIAL	<input type="checkbox"/> TOTAL	
10.6 - ULTRASOUND IN INACCESSIBLE WELDING:			<input type="checkbox"/> YES	<input type="checkbox"/> NO	
10.7 - TEST WITNESSED:			<input type="checkbox"/> YES	<input type="checkbox"/> NO	
11 – UTILITIES					
11.1 - FLUID:					
11.2 - ABSOLUTE PRESSURE (kPa) (kgf/cm ²):					
11.3 - TEMPERATURE (°C):					
11.4 - AIR PRESSURE (INSTRUM. - SERVICE) (ABSOLUTE) (kPa) (kgf/cm ²):					
11.5 - AIR TEMPERATURE (INSTRUM. - SERVICE (°C):					
11.6 - POWER CITY:	VOLTAGE (V):		NUMBER PHASES:	OF	FREQUENCY (Hz):
12 - OTHER CHARACTERISTICS					
12.1 - BLASTING:					
12.2 - PAINTING:					
12.3 - GALVANIZING:					
12.4 - INSULATION:			THICKNESS (mm):		
12.5 - INTERNAL COATING:					
12.6 - FILTER WEIGHT (EMPTY/FULL) (kN):					
12.7 - INTERNAL FILTER VOLUME (m ³):					
12.8 - GROUNDING:					
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TITLE:

WATER PROCESS FILTER - DEPTH FILTER



NOTE POSITION OF NOZZLES SHALL BE CONFIRMED LATER BY DESIGNER.

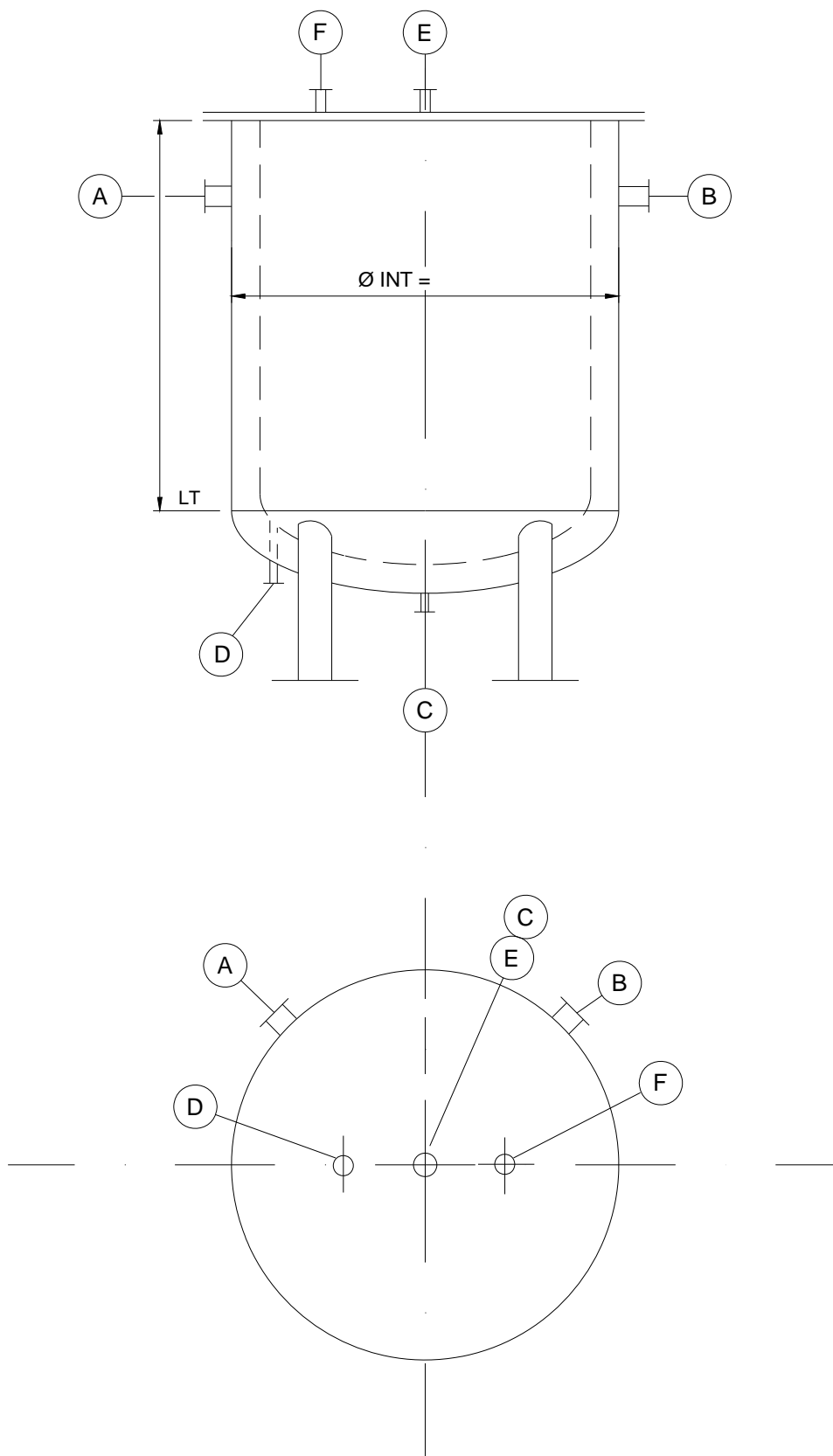
FIGURE A.1 - FILTER TYPE I

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TITLE:

WATER PROCESS FILTER - DEPTH FILTER



NOTE POSITION OF NOZZLES SHALL BE CONFIRMED LATER BY DESIGNER.

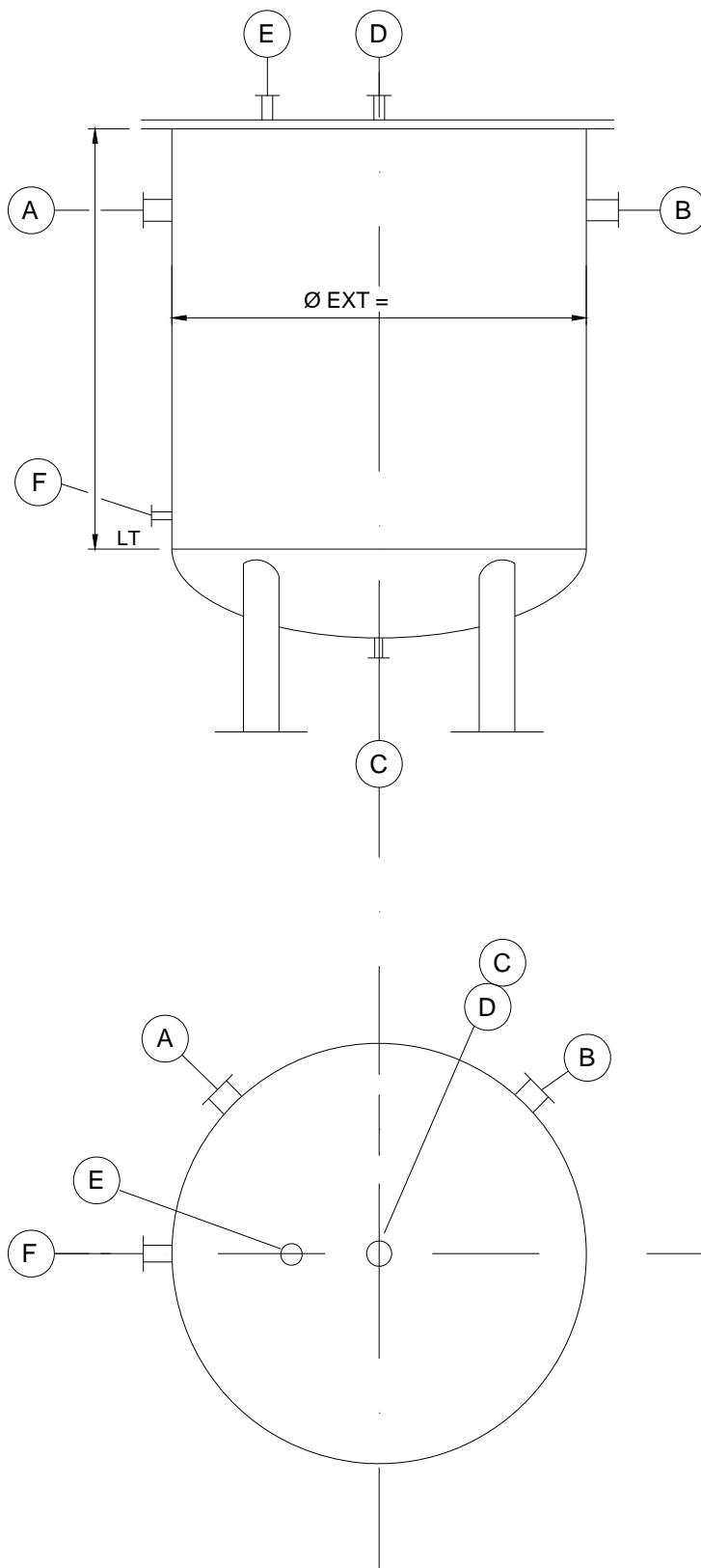
FIGURE A.2 - FILTER TYPE II

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TITLE:

WATER PROCESS FILTER - DEPTH FILTER



NOTE POSITION OF NOZZLES SHALL BE CONFIRMED LATER BY DESIGNER.

FIGURE A.3 - FILTER TYPE III

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THIS FORM IS PART OF PETROBRAS N-2165 REV. C ANNEX B - SHEET 08/08.

INDEX OF REVISIONS

REV. A

There is no index of revision.

REV. B

Affected Parts	Description of Alteration
	Revalidation

REV. C

[illegible]