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**Petroleum and liquid petroleum  
products — Calibration of vertical  
cylindrical tanks —**

**Part 3:  
Optical-triangulation method**

*Pétrole et produits pétroliers liquides — Jaugeage des réservoirs  
cylindriques verticaux —*

*Partie 3: Méthode par triangulation optique*



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# Contents

Page

Foreword.....	iv
Introduction .....	v
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions.....	1
4 Precautions .....	1
5 Equipment .....	2
5.1 Equipment for measurement of angles .....	2
5.2 Stadia .....	2
6 Equipment set-up and procedure .....	2
6.1 Preparation of tank .....	2
6.2 Establishment of calibration conditions .....	2
6.3 Set-up of theodolites and/or total stations.....	3
7 Stadia set-up and procedure .....	3
8 Measurement of horizontal distance between two theodolite stations using a stadia .....	3
9 Measurement of horizontal distance between two theodolite stations using a total station .....	5
10 Procedure for internal optical tank wall measurements.....	5
11 Procedures for external measurements.....	8
11.1 General.....	8
11.2 Reference circumference measured by strapping .....	8
11.3 Reference distances measured between pairs of theodolite stations .....	10
12 Tolerances .....	11
12.1 Distances between theodolites .....	11
12.2 Horizontal angles.....	11
12.3 Reference circumference .....	11
13 Other measurements for tank calibrations .....	12
13.1 Tank-bottom calibrations .....	12
13.2 Other measurements and data .....	12
14 Calculations and development of tank capacity tables .....	13
14.1 From the internal procedure.....	13
14.2 From the reference circumference procedure .....	13
14.3 From the reference distances between pairs of theodolites.....	13
14.4 Corrections.....	13
14.5 Tank capacity table.....	13
Annex A (normative) Computation of internal radii from internal measurements.....	14
Annex B (normative) Determination of the radius of the circle by the least-squares method.....	15
Annex C (normative) Computation of internal radii from reference circumference and external measurements.....	20
Annex D (normative) Computation of internal radii from reference distances between pairs of theodolite stations .....	22
Annex E (informative) Calibration uncertainties .....	24
Annex F (normative) Procedure for checking the theodolite(s).....	36
Bibliography .....	38

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 7507-3 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*, Subcommittee SC 3, *Static petroleum measurement*.

This second edition cancels and replaces the first edition (ISO 7507-3:1993), which has been technically revised.

ISO 7507 consists of the following parts, under the general title *Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks*:

- *Part 1: Strapping method*
- *Part 2: Optical-reference-line method*
- *Part 3: Optical-triangulation method*
- *Part 4: Internal electro-optical distance-ranging method*
- *Part 5: External electro-optical distance-ranging method*

## Introduction

This part of ISO 7507 describes the calibration of vertical cylindrical tanks by means of optical triangulation using theodolites. The circumference of the tank is determined at different levels by reference to a base line, which can be either a reference circumference measured by strapping or a base line between two stations of a theodolite measured by means of a tape or by an optical method. External circumferences are corrected to give true internal circumferences.

The method is an alternative to other methods such as strapping (ISO 7507-1) and the optical-reference-line method (ISO 7507-2).

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# Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks —

## Part 3: Optical-triangulation method

### 1 Scope

This part of ISO 7507 specifies a calibration procedure for application to tanks above 8 m in diameter with cylindrical courses that are substantially vertical. It provides a method for determining the volumetric quantity contained within a tank at gauged liquid levels. The measurements required to determine the radius are made either internally (Clause 10) or externally (Clause 11). The external method is applicable only to tanks that are free of insulation.

This method is suitable for tanks tilted up to a 3 % deviation from the vertical provided that a correction is applied for the measured tilt as described in ISO 7507-1.

### 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.

ISO 7507-1:2003, *Petroleum and liquid petroleum products — Calibration of vertical cylindrical tanks — Part 1: Strapping method*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7507-1 and the following apply.

#### 3.1

##### **total station**

theodolite with built-in distance meter that coincides with the optical axis of the instrument

### 4 Precautions

The general precautions and safety precautions specified in ISO 7507-1 shall apply to this part of ISO 7507.