

ISO/TR 9464:2023-09 (E)

Guidelines for the use of ISO 5167:2022

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 How the structure of this guide relates to the ISO 5167:2022 series	1
5 Guidance on the use of the ISO 5167:2022 series	2
5.1 Guidance specific to the use of ISO 5167-1:2022	2
5.1.1 Scope	2
5.1.2 Normative references	2
5.1.3 Terms and definitions	2
5.1.4 Symbols and subscripts	2
5.1.5 Principle of the method of measurement and computation	2
5.1.6 General requirements for the measurements	4
5.1.7 Installation requirements	5
5.1.8 Uncertainty on the measurement of flowrate	7
5.2 Guidance specific to the use of ISO 5167-2:2022	7
5.2.1 Scope	7
5.2.2 Normative references	7
5.2.3 Terms, definitions and symbols	8
5.2.4 Principles of the method of measurement and computation	8
5.2.5 Orifice plates	8
5.2.6 Installation requirements	15
5.2.7 Flow calibration of orifice meters	21
5.3 Guidance specific to the use of ISO 5167-3:2022	21
5.3.1 Scope	21
5.3.2 Normative references	21
5.3.3 Terms and definitions	21
5.3.4 Principles of the method of measurement and computation	22
5.3.5 Nozzles and Venturi nozzles	22
5.3.6 Installation requirements	22
5.3.7 Flow calibration of nozzles	22
5.4 Guidance specific to the use of ISO 5167-4:2022	22
5.5 Guidance specific to the use of ISO 5167-5:2022	22
5.6 Guidance specific to the use of ISO 5167-6:2022	22
6 Information of a general nature relevant to the application of ISO 5167:2022 (all parts)	23
6.1 Secondary instrumentation	23
6.1.1 General	23
6.1.2 General requirements concerning installation of secondary instruments	23
6.2 Measurement of pressure and differential pressure	25
6.2.1 General	25
6.2.2 Connections for pressure signal transmissions between primary and secondary elements	25
6.2.3 Pressure measurement devices	25
6.3 Measurement of temperature	27
6.3.1 General	27
6.3.2 Fundamentals of measuring the temperature of a moving fluid	27

6.3.3	Sensor installation.....	28
6.3.4	Precautions for accurate measurement.....	28
6.3.5	Restrictions on thermowells	29
6.3.6	Additional precautions in the case of fluctuating temperatures	29
6.3.7	Devices for temperature measurement.....	29
6.4	Determination of density.....	31
6.4.1	General	31
6.4.2	Installation of density transducers	32
6.4.3	Additional method for the determination of the density of gas.....	35
6.4.4	Special consideration concerning gas density	35
6.4.5	Special considerations concerning liquid density	35
6.5	Electrical supply and electrical installations.....	36
6.5.1	Potentially explosive atmospheres.....	36
6.5.2	Cabling.....	36
6.5.3	Electronic equipment.....	36
Annex A (informative) Principles of measurement and computation	37
Annex B (informative) Computation of compressibility factor for natural gases	53
Annex C (informative) Orifice plate assembly	54
Bibliography	63