

ISO 18976:2026-01 (E)

Testing of refrigerant compressors

Contents

	Page
Foreword.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms, definitions and symbols.....	1
3.1 Terms and definitions.....	1
3.2 Symbols.....	3
4 Uncertainty of measurement and test conditions.....	5
4.1 Uncertainty of performance data.....	5
4.2 Uncertainty of measurement.....	5
4.3 Refrigerant circuit state points.....	6
4.4 Test conditions.....	6
5 General requirements.....	7
5.1 Calculation methods.....	7
5.1.1 Principle.....	7
5.1.2 Specific enthalpy.....	8
5.1.3 Refrigerant mass flow.....	8
5.1.4 Power input.....	8
5.1.5 Basic formulae.....	8
5.2 Requirements for the selection of a test method.....	10
5.2.1 General.....	10
5.2.2 Second concurrent test.....	10
5.3 Test period.....	11
5.3.1 General.....	11
5.3.2 Steady state conditions.....	11
5.3.3 Recording of measured data.....	11
5.4 Pressure and temperature measuring points.....	11
5.5 Oil circulation.....	11
5.6 Fractionation.....	12
5.7 Calibration of calorimeters.....	12
5.7.1 Heat leakage.....	12
5.7.2 Reference temperature.....	12
5.7.3 Calibration procedure.....	12
5.8 Source of refrigerant data.....	13
5.9 Kinetic refrigerant properties.....	13
6 Test methods.....	13
6.1 General.....	13
6.2 List of test methods.....	13
6.2.1 Calorimetric methods.....	13
6.2.2 Flow meter methods.....	13
6.3 Choice of test methods for test X and test Y.....	14
6.4 Method A: Secondary fluid calorimeter.....	14
6.4.1 Description.....	14
6.4.2 Calibration.....	17
6.4.3 Test procedure.....	17
6.4.4 Requirements.....	17
6.4.5 Additional information.....	17
6.4.6 Determination of refrigerant mass flow.....	17
6.5 Method B: Flooded system calorimeter.....	17
6.5.1 Description.....	17

6.5.2	Calibration.....	18
6.5.3	Test procedure.....	18
6.5.4	Requirements.....	18
6.5.5	Additional information.....	18
6.5.6	Determination of refrigerant mass flow.....	18
6.6	Method C: Dry system refrigerant calorimeter.....	19
6.6.1	Description.....	19
6.6.2	Calibration.....	23
6.6.3	Test procedure.....	23
6.6.4	Requirements.....	23
6.6.5	Additional information.....	23
6.6.6	Determination of refrigerant mass flow.....	23
6.7	Method G: Water-cooled condenser/gas cooler on the discharge side.....	24
6.7.1	Description.....	24
6.7.2	Calibration.....	25
6.7.3	Test procedure.....	25
6.7.4	Requirements.....	25
6.7.5	Additional information.....	25
6.7.6	Determination of refrigerant mass flow.....	25
6.8	Method D: Refrigerant gas flow meter.....	25
6.8.1	Description.....	25
6.8.2	Requirements.....	27
6.8.3	Additional information.....	28
6.8.4	Determination of refrigerant mass flow.....	28
6.9	Method F: Refrigerant flow meter in the liquid line.....	28
6.9.1	General.....	28
6.9.2	Description.....	28
6.9.3	Test procedure.....	29
6.9.4	Requirements.....	29
6.9.5	Additional information.....	29
6.9.6	Determination of the refrigerant and oil mass flow.....	30
6.10	Method M: Energy balance on compressor.....	30
6.10.1	General.....	30
6.10.2	Description.....	30
6.10.3	Calibration.....	30
6.10.4	Test procedure.....	31
6.10.5	Requirements.....	31
6.10.6	Additional information.....	31
6.10.7	Determination of refrigerant mass flow.....	32
7	Determination of the power input by the compressor.....	34
7.1	Measurement.....	34
7.1.1	General.....	34
7.1.2	Measurement for externally driven compressors.....	34
7.1.3	Measurement for motor compressors.....	34
7.2	Calculation.....	34
8	Test report.....	35
8.1	General.....	35
8.2	Test results.....	35
Annex A (normative) Conversion of measured performance data to specified test conditions for compressors with intermediate pressure port.....		37
Annex B (informative) Estimation of errors.....		40
Bibliography.....		43