Thermo Scientific Finnpipette Performance Specifications

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Key words

- **ISO 8655** - Calibration standard for the piston operated volumetric devices
- **Factory Specifications** - Often more stringent requirements than the above ISO 8655, these are set by manufacturers in the development phase of a new product
- **Systematic error** - The difference between the dispensed volume and the selected volume of a pipette
- **Random error** - Error referring to the repeatability of pipetting
- **Pipetting Systems** - In liquid handling, pipettes and tips always form a pipetting system. Using a pipette with the pipette tip it was designed, developed and manufactured to fit to allow for ideal pipetting performance
- **ISO 9001** - Standard for Quality management systems
- **ISO 13485** - Quality management standard for medical devices



ISO 8655 Specifications

The ISO 8655 standard forms a guideline for industry and independent service companies concerning the entire calibration process of piston operated volumetric devices. The acceptance limits stated in the ISO standard are designed to be used by manufacturers, service companies as well as end users. The standard criteria are agreed to be sufficient for the use with the devices described therein.

The standard gives the maximum permissible limits for systematic and random error, also referred to as inaccuracy and imprecision, respectively. Systematic error is the difference between the dispensed volume and the selected volume of a pipette. The error is repeated in each measurement taken but can be eliminated if the error source, such as imperfect calibration or a change in the environment where the testing is performed, is identified. Random error, on the other hand, refers to the repeatability of the pipetting. It is caused by random factors including features of the pipette, laboratory practice and user experience.

Factory Specifications

All manufacturers, Thermo Fisher Scientific included, use their own factory performance specifications to describe the actual functionality of their pipettes. As the factory specifications are tighter than those required by the ISO 8655 standard, this is an acceptable practice in the industry. These specifications are provided for pipetting systems, which comprises both pipette and tip. Performance achievements may be different if using non-system tips. The Finnpipette performance has been tested using their system tip which are Thermo Scientific Finntips.

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Optima Pipetting Per ormance wit t e ermo Scientific Systems

The main difference between the factory and ISO 8655 specifications is that the factory error limits are testing volume dependent for variable volume pipettes. The ISO 8655 standard, on the other hand, gives the same error limits for the whole volume range of each pipette. The difference is especially noticeable in the lower volume error limits ensured by Thermo Scientific. For the mid and minimum volumes, the factory specifications are remarkably tighter than what is required by the ISO standard. ith more stringent specifications, pipetting performance is guaranteed with the Finnpipettes.

To demonstrate the difference, ISO 8655 specifies a systematic error of 8 for a pipette regardless of the selected volume. Thermo Scientific F and F - pipettes are however given a systematic error of at minimum and 6 at maximum volume. Thus, when pipetting a sample of , the maximum permissible error according to Thermo Scientific factory specifications will be only but 8 according to ISO 8655 Table . The same applies for all Finnpipette models as demonstrated in Table

a ity matters

our tip choice has a big impact on the pipetting performance, which is why Finnpipettes are designed for use with the Finntips. oth Finnpipettes and Finntips are manufactured from high quality raw materials, tested thoroughly and certified according to strict quality standards. Specifically, Thermo Fisher Scientific Oy is a company certified to the standards ISO and ISO 85, taking quality matters seriously. Further, the pipetting systems comprising Finnpipettes and Finntips are -marked according to I irective in urope and intended for use in in-vitro diagnostics for transferring of liquids.

For further information on calibration of pipettes, refer to The ood aboratory Pipetting uide.

o me	Inacc racy	Imprecision	Inacc racy	Imprecision

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Thermo Scientific Finnpipette F2 Pipettes



Finnpipette F2 Variable Volume Single Channel Pipettes

			Thermo Scientific Factory Calibration Specifications		ISO 8655 Calibration Specifications	
Cat. No.	Range	Volume (µL)	Inaccuracy (µL)	Imprecision (µL)	Inaccuracy (µL)	Imprecision (µL)
4642010	0.2-2 µL	2	±0,050	0,040	±0,080	0,040
		1	±0,040	0,035	±0,080	0,040
		0,2	±0,024	0,020	±0,080	0,040
4642020	0.5-5 µL	5	±0,075	0,050	±0,125	0,075
		2,5	±0,063	0,038	±0,125	0,075
		0,5	±0,030	0,025	±0,125	0,075
4642030	1-10 µL	10	±0,100	0,050	±0,120	0,080
		5	±0,075	0,040	±0,120	0,080
		1	±0,025	0,020	±0,120	0,080
4642040	1-10 µL	10	±0,100	0,080	±0,120	0,080
		5	±0,075	0,040	±0,120	0,080
		1	±0,035	0,030	±0,120	0,080
4642050	2-20 µL	20	±0,20	0,08	±0,20	0,10
		10	±0,15	0,06	±0,20	0,10
		2	±0,06	0,05	±0,20	0,10
4642060	2-20 µL	20	±0,20	0,08	±0,20	0,10
		10	±0,15	0,06	±0,20	0,10
		2	±0,06	0,05	±0,20	0,10
4642120	5-50 µL	50	±0,30	0,15	±0,50	0,20
		25	±0,25	0,13	±0,50	0,20
		5	±0,15	0,125	±0,50	0,20
4642130	5-50 µL	50	±0,30	0,15	±0,50	0,20
		25	±0,25	0,13	±0,50	0,20
		5	±0,15	0,125	±0,50	0,20
4642070	10-100 µL	100	±0,80	0,20	±0,80	0,30
		50	±0,60	0,20	±0,80	0,30
		10	±0,30	0,10	±0,80	0,30
4642080	20-200 µL	200	±1,2	0,4	±1,60	0,60
		100	±1,0	0,4	±1,60	0,60
		20	±0,36	0,14	±1,60	0,60
4642090	100-1000 µL	1000	±6,0	2,0	±8,0	3,0
		500	±4,0	1,5	±8,0	3,0
		100	±1,0	0,6	±8,0	3,0
4642100	0,5-5 mL	5000	±25,0	10,0	±40,0	15,0
		2500	±17,5	7,5	±40,0	15,0
		500	±10,0	4,0	±40,0	15,0
4642110	1-10 mL	10000	±50,0	20,0	±60,0	30,0
		5000	±40,0	15,0	±60,0	30,0
		1000	±20,0	8,0	±60,0	30,0

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