



National
Measurement
Office

Gas Meters – Disputed Meter Accuracy

**Analysis of Findings of Gas Meters Disputed
Between 1 January and 31 December 2013.**

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1. Background

- 1.1 This report details the accuracy findings of gas meters submitted for disputed accuracy testing between 1st January 2013 and 31st December 2013.
- 1.2 The statutory responsibility for the metrological performance of electricity and gas meters was transferred from Ofgem to the National Measurement Office (NMO) on 1st April 2009.
- 1.3 All gas meters in Great Britain (GB) have to be approved¹ and verified² by NMO, or another European Member State, before they can be used for billing purposes. Meters must conform to prescribed accuracy limits for the operating life of the instrument.
- 1.4 There are obligations under the Gas Act 1986 for the owners of meters to 'keep all meters in proper order for correctly registering the quantity of gas supplied'. As such meter owners have a duty to ensure meters are accurate for billing purposes and should make arrangements to monitor their populations of meters and, if required, take action if meters no longer perform to the accuracy limits.
- 1.5 In parallel, NMO provides a service to test and certify the accuracy of gas meters when either a consumer or supplier disputes the meter reading. This work is undertaken, under contract, by NMO appointed meter examiners employed by SGS (UK).

¹ Laboratory testing of a meter, often a prototype, to ensure it operates accurately in all working conditions

² The checking of meters (either singularly or in batches), often at the premises of the manufacturer or repairer, to ensure they are identical to the model that was type approved and conform to the statutory requirements.

2. Disputed Gas Meter Findings – Key Points

2.1 This information within this report is not intended to represent the overall accuracy of gas meters in Great Britain. The following points should be considered in this context:

- the meters tested were initiated by the consumer or the supplier in circumstances where it was suspected that the meter was measuring erroneously – i.e. the sample is not representative of the whole meter population;
- only a relatively small sample of 3536 meters, manufactured by seven manufacturers, was tested. This needs to be considered against the overall population of gas meters in GB that is in excess of 22 million;
- the sample figure for 2013 is higher than those submitted in previous years which we believe is primarily due to the long and severe winter conditions experienced during that period which resulted in an increase in dispute tests; and
- this report includes the results of meter tests of types already identified for policy replacement where residual action to remove populations, of the same type, is ongoing.

3. Prescribed Limits of Accuracy

3.1 Limits of meter accuracy for meters approved under UK national legislation are prescribed under the following Regulations:

- The Gas (Meters) Regulations 1983 (SI 1983/684)³
- The Gas (Meters) (Amendment) Regulations 1993 (SI 1993/1521)⁴
- The Measuring Instruments (EEC Requirements) (Gas Volume Meters) (Amendment) Regulations 1996 (SI 1996/319)⁵

Unlike most other countries, there is no additional tolerance for meters operating in-service and are required to meet the same limits of accuracy as when new.

3.2 Gas meters are accurate if they meet the following performance requirements:

• Domestic Mechanical:	±2% at both maximum flow rate; and
	±2% at 20% of maximum flow rate.
• Domestic Electronic:	±2% at both maximum flow rate; and
	±2% at 20% of maximum flow rate; and
	±3% at the minimum flow rate.
• Commercial Mechanical (Diaphragm):	±2% at both maximum flow rate; and
	±2% at 20% of maximum flow rate.
• Industrial (other than Diaphragm):	±1% at 20% of maximum flow rate; and
	±2% at the minimum flow rate.

3.3 Since October 2006 meters may also be approved under the European Measuring Instruments Directive (MID 2004/22/EC). For MID meters the limits of meter accuracy are prescribed in The Measuring Instruments (Gas Meters) Regulations 2006 (SI 2006/2647)⁶, with both initial verification and in-service tolerances summarised in the table below. However, there has been an increase in the number of MID gas meters installed in GB and, to date, some of these have been submitted for dispute testing since 2013.

		Initial Verification	In-Service
MID Gas Meters- Accuracy Class 1.5	Maximum flow rate	±1.5%	±3.0%
	Transitional flow rate ⁷	±1.5%	±3.0%
	Minimum flow rate	±3.0%	±6.0%
MID Gas Meters- Accuracy Class 1.0*	Maximum flow rate	±1.0%	±1.0%
	Transition flow rate	±1.0%	±1.0%
	Minimum flow rate	±2.0%	±2.0%

(*No additional in-service tolerance)

³ <http://www.legislation.gov.uk/uksi/1983/684/resources>

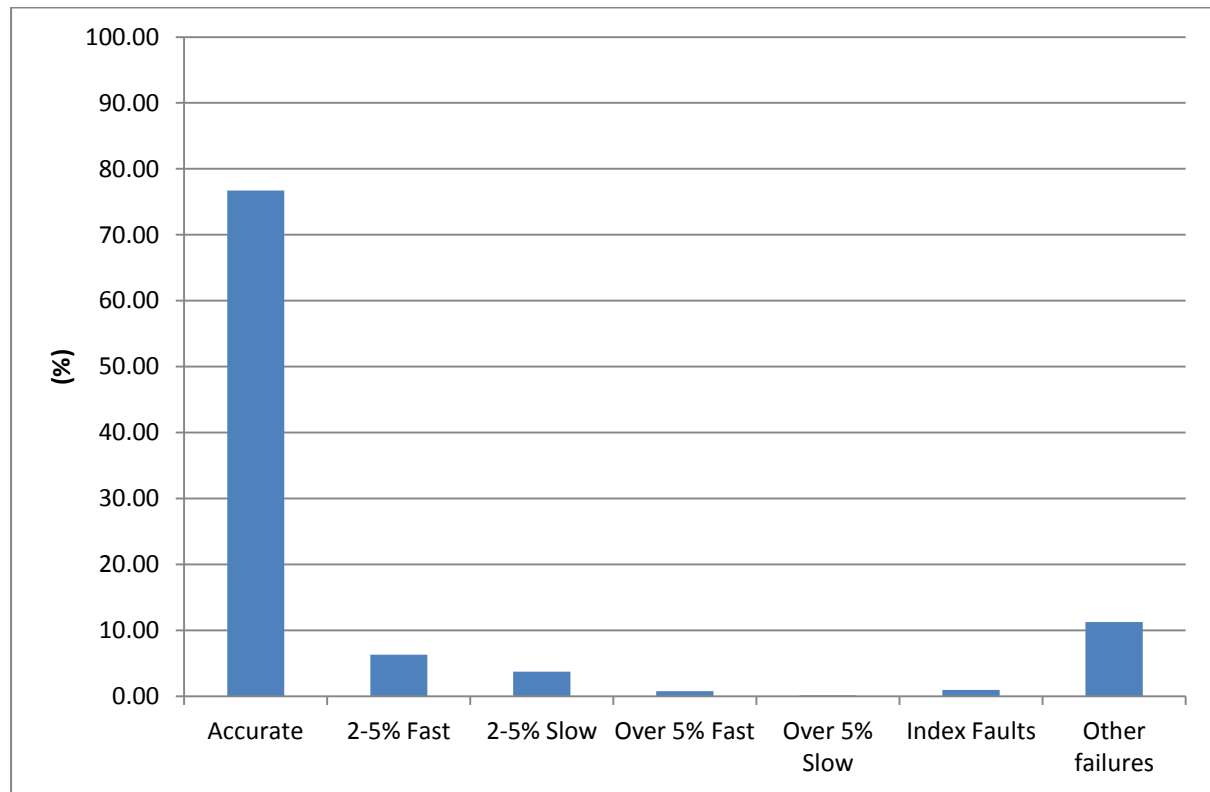
⁴ <http://www.legislation.gov.uk/uksi/1993/1521/contents/made>

⁵ <http://www.legislation.gov.uk/uksi/1996/319/contents/made>

⁶ <http://www.legislation.gov.uk/uksi/2006/2647/contents/made>

⁷ Flow rate value between maximum and minimum flow rates divided into separate zones (upper and lower) and each one has a characteristic Maximum Permissible Error (MPE)

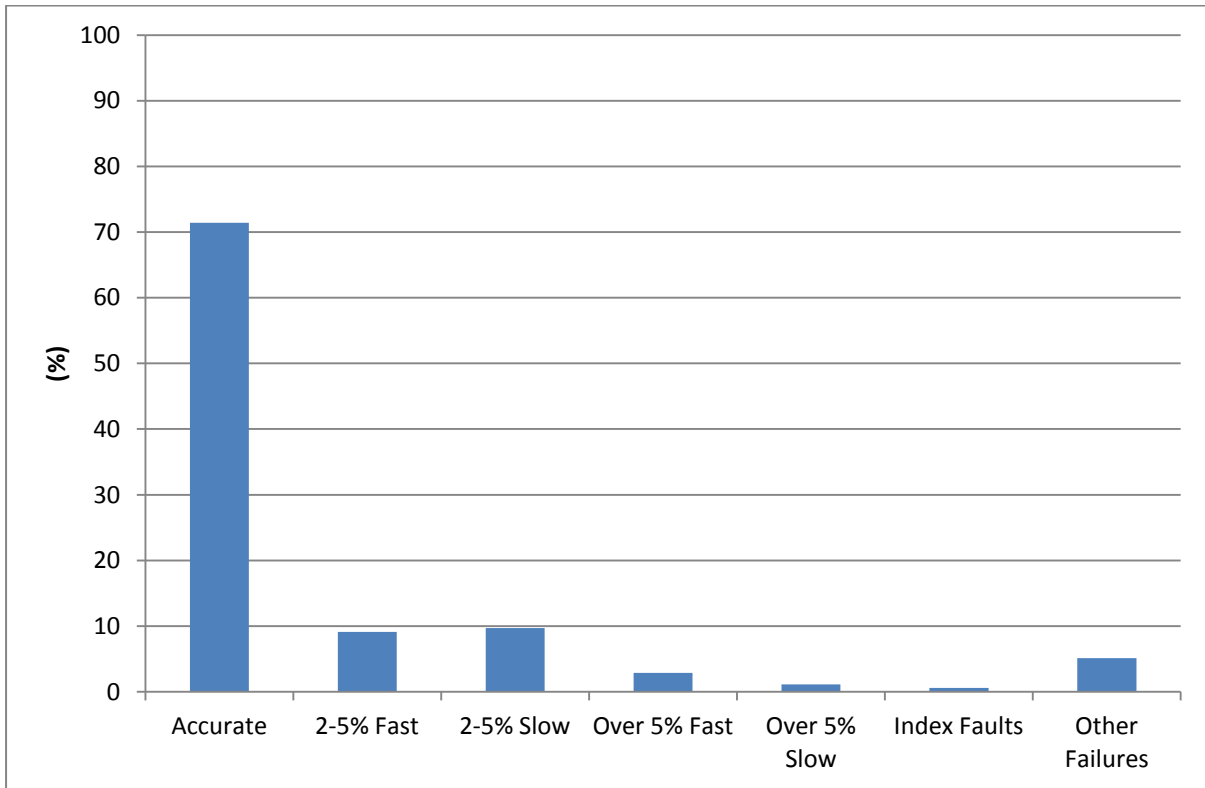
4. Domestic Meters



4.1 Summary

- Meters approved under national legislation designed for a maximum flow rate of 6m³/hr.
- 3345 meters disputed.
- 77% of disputed meters were found to be accurate.
- Other failures – includes meters not registering, not passing gas, excessive leakage, operational problems/events, diagnostic resets, incrementing in a no flow state, and battery failures. These faults prevented meter accuracy from being obtained.

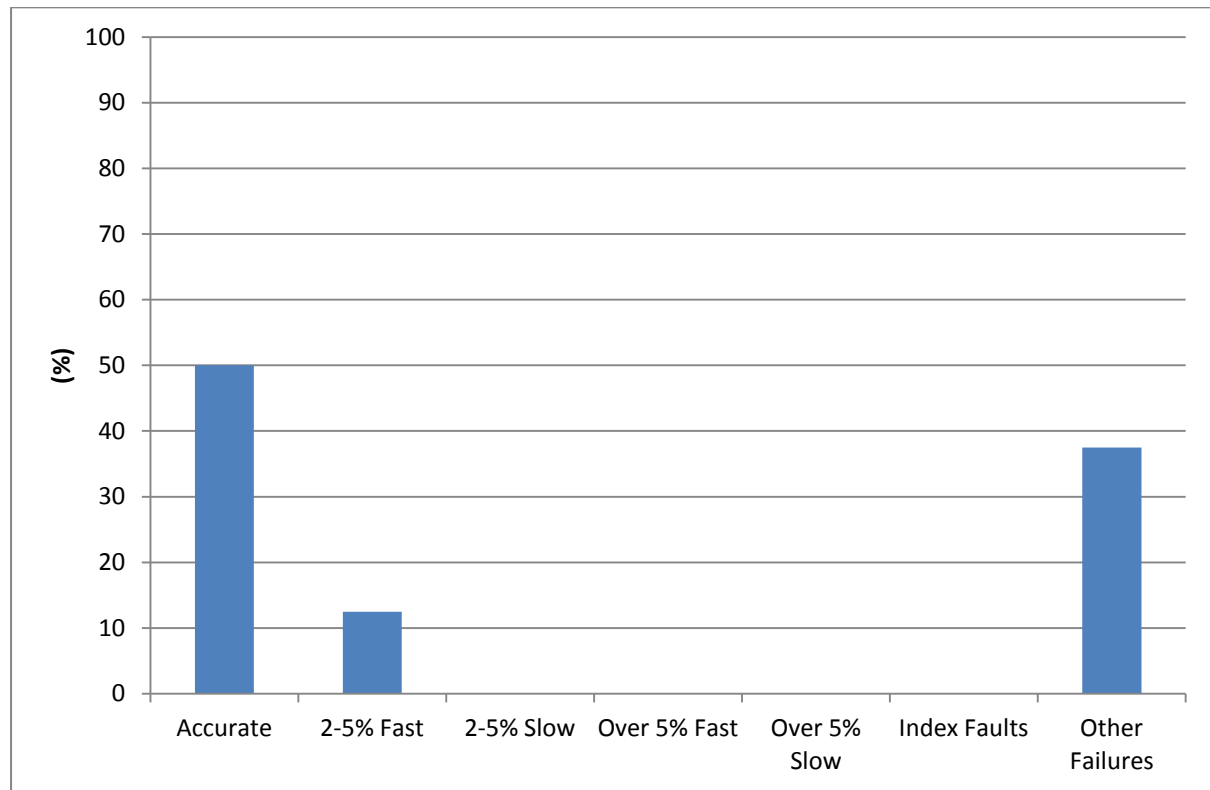
5. Commercial Mechanical (Diaphragm) Meters



5.1 Summary:

- Meters approved under national legislation designed for a maximum flow rate between 6m³/hr and 160m³/hr.
- 175 meters tested.
- 71% of disputed meters were found to be accurate.
- Other failures – includes meters not registering, not passing gas, excessive leakage, etc. These faults prevented the meter accuracy from being obtained.

6. All Industrial (Other than Diaphragm) Meters



6.1 Summary:

- Meters, of all sizes and manufacturers, comprising of Rotary Positive Displacement (RPD) or Turbine based technology as the principle method for volumetric measurement.
- 16 meters disputed.
- 50% of disputed meters were found to be accurate.
- Other failures – includes meters not registering, not passing gas, excessive leakage, etc. These faults prevented the meter accuracy from being obtained.

7. Conclusions

- 7.1 NMO does not use this data for any formal purposes other than to initiate action with meter manufacturers and owners when meter examiners identify systematic faults with certain meter types. This report includes the results of meter tests of types already identified for policy replacement where residual action to remove populations, of the same type, is ongoing. It is important that these factors are considered in context with the information provided.
- 7.2 NMO are working with all industry stakeholders with metering responsibility to implement the in-service testing (IST) scheme for domestic type gas and electricity meters. This is a statistically based sampling scheme based on the ongoing monitoring of meter accuracy which will enable energy suppliers and asset owners to demonstrate their meter populations conform to the legal requirements. Further information on the IST scheme is available from the NMO website- <https://www.gov.uk/in-service-testing-for-gas-and-electricity-meters>.
- 7.3 Moving forward, NMO intends to publish the findings of meter dispute testing on an annual basis covering the same parameters as reported in this document.
- 7.4 Further information on gas meter accuracy and billing disputes is available from the NMO website: <https://www.gov.uk/gas-meter-accuracy-and-billing-disputes>.
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