1. Background and Rationale

1.1. This policy and guidance document specifies how to select, check, and use Go-No-Go gauges that are used to check the dimensions of the openings of sieves.

2. Terminology

2.1. *Test Uncertainty Ratio (TUR)*, n – the comparison between the tolerance requirement of the test method and the estimated calibration uncertainty of the reference equipment.

2.2. *Standardization*, n – the process of comparing the measured values of a caliper to the value(s) assigned to the reference equipment.

2.3. *Calibration*, n – the process of determining the estimated measurement uncertainty and comparing the measured value of a sieve opening to the value(s) assigned to the reference equipment.

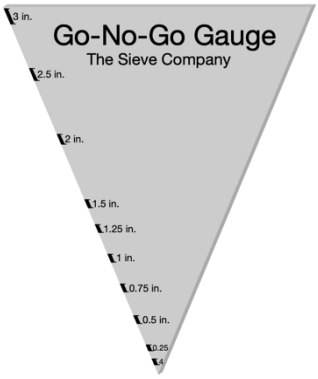
3. Requirements of the Go-No-Go Gauge

3.1. Gauges can be of any shape or design (for example: conical, cube- or rectangular-shaped, or flat) that meet the following requirements:

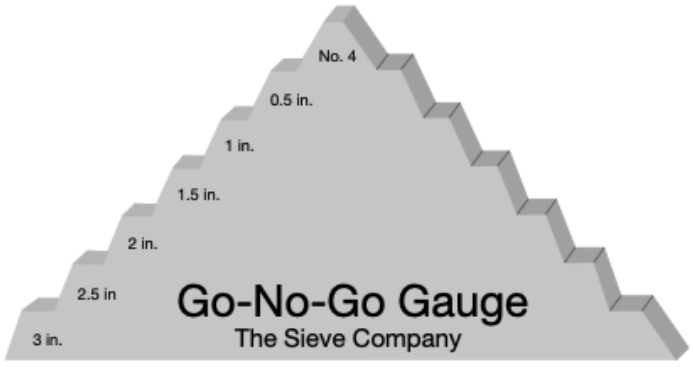
3.1.1. The minimum and maximum allowable diameter values for each sieve size shall be either clearly marked on the gauge, or a part of the physical design of the device.

3.1.2. In certain cases, it may be acceptable for the laboratory to mark the minimum and maximum allowable diameter values on the Go-No-Go Gauge. This will be accepted by the AASHTO Accreditation Program on a case-by-case basis.

*Examples of possible Go-No-Go gauge designs include, but are not limited to the following designs (**NOTE** – the gauges pictured below are for visual purposes only, and are not drawn to scale)*:



Flat Go-No-Go Gauge



Stepped Go-No-Go Gauge

4. Checking the Go-No-Go Gauge

4.1. The laboratory must check the minimum and maximum diameter allowable values of the Go-No-Go Gauge at each nominal sieve size using calibrated or standardized calipers to ensure that the gauge meets the tolerances in ASTM E11, Table 1, Column 5 (*Maximum Variation for Opening*). Go-No-Go Gauges that fail to meet the tolerances specified shall be found not fit for purpose.

4.2. A record of checking the minimum and maximum allowable diameter values of the Go-No-Go Gauge shall be created. The record shall include all of the information required in AASHTO R18, *Equipment Records* and shall be kept by the laboratory for a period of no less than five years. A manufacturer's certificate shall be accepted if it complies with AASHTO R18, *Equipment Records*.

4.3. Go-No-Go Gauges shall be re-checked at an interval of twenty-four (24) months.

4.4. If the laboratory standardizes their calipers in-house:

4.4.1. The calipers used to check the Go-No-Go Gauge shall be standardized using gauge blocks that have been calibrated by an ISO/IEC 17025 accredited agency. The records for the gauge blocks shall include the estimated measurement uncertainty for the gauge blocks.

4.4.2. The estimated measurement uncertainty of the gauge blocks shall have a test uncertainty ratio (TUR) of 4:1.

> *Example:* In order to use the Go-No-Go Gauge to check the No. 4 sieve, which has a maximum variation of opening of 0.37 mm, the estimated measurement uncertainty of the gauge blocks must be a quarter of that value, 0.09 mm (0.004 in), or better.

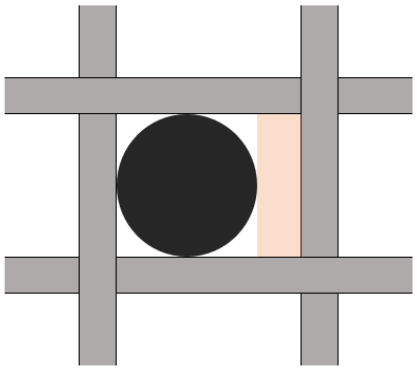
5. Using the Go-No-Go Gauge

5.1. The laboratory shall have a written procedure for checking sieves using the Go-No-Go Gauge. The written procedure shall comply with AASHTO R18, *Procedures for Individual Pieces of Equipment*.

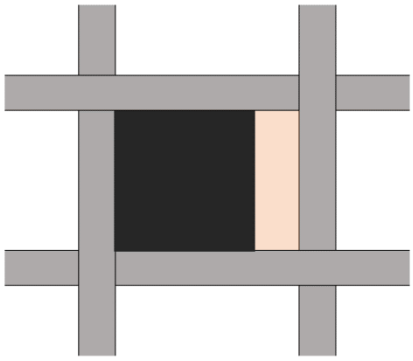
5.2. Records for sieves must conform to the requirements in AASHTO R18, *Equipment Records*. In lieu of recorded measurements (as required in AASHTO R18), an indication of pass/fail is acceptable.

5.2.1. If the Go-No-Go is a three-dimensional shape (like a cube- or rectangular-shaped gauge or a conical gauge), then both measurements in the x- and y-directions must pass. If one direction fails, then the measured opening will be considered to fail.

Example:



A conical gauge that does not fit both the x- and y-direction.



A cube-shaped gauge that does not fit both the x- and y-direction.