March 2016
Volume 26-1

USATF
CERTIFIED OFFICIAL

The Equipment and Facilities Specifications Newsletter

An official copyrighted publication of the Equipment and Facilities Specifications Subcommittee of the National Officials Committee in its 26th year of publication

WELCOME TO NEW SUBSCRIBERS

This Newsletter is a semi-annual educational tool for Implement Inspectors, Technical Managers, interested Throws Officials, and certification chairs. Input and suggestions are always welcome. This copy is being sent to about **880** officials around the world. We welcome our new subscribers with this issue:

Last Name	First Name	Association
Fearheiley	Jason	Univ. of Idaho
Matrahazi	Imre	IAAF
Schutz	Jason	Univ. of Washington

If you know someone who could benefit by getting this information, please send his or her address or e-mail address to the editor. Likewise, if you are no longer interested in being on our mailing list, also let me know. For faster delivery, and for updates in between newsletters, send me your e-mail address. If you're getting this by US mail, I don't have your current e-mail address.

CHAIRMAN'S CORNER

There were three rules changes that bear on the implement inspector this year.

The NFHS approved a change that relieved the implement inspector from being responsible for checking starting blocks. The starters are now in charge of that. Implement inspectors have expertise in the shot, discus, hammer and javelin. They have little knowledge of why a starting block may not be usable. Our technical managers should know though.

In another column I mentioned a problem with the throwing weight. The way the rule was worded, it would be possible to insist that the length be measured to the bottom of the ball, not the bag. That wording problem was taken care of and we now will always measure to the bottom of the complete implement. As part of that rule, the length was changed to match the Master's implement. The total length is now a maximum of 410.0 mm. The difference was really the rounding, or not, of the conversion from 16 inches. WMA rounded that value and USATF did not.

The third change has to do with the 11-12 year old javelin. The Youth Committee decided to add a training javelin that will provide a transition from the mini-javelin that has been used to the real javelin. Ivars will cover this in much more detail later on in this newsletter.

E&FSS ANNUAL MEETING

The subcommittee annual meeting was held on Dec. 3rd in Houston, TX.

The meeting minutes are available at: https://www.dropbox.com/s/22hr3ki9dcgfqr2/2015_EFSS_meeting_minutes.pdf?dl=0

RULE CHANGES AFFECTING EQUIPMENT OR FACILITIES

The following **USATF** rules change proposals, as regards equipment & facilities specifications, have been made at the annual meeting in Houston:

Item 2: Adds new Rule 193.11 which creates a new type and configuration of javelin, to be known as the Aero Javelin. This change is paired with Item 9. *Tabled from last year (Item 56).*

Final status: **Passed**

Item 9: Amends Rule 301 by specifying the use of the Aero Javelin by the Youth athletes. This change is paired with Item 2. *Tabled from last year (Item 81).*

Final status: **Passed as amended** *(the Aero Jav will be thrown by only the 11-12 year group; it may be thrown as an exhibition event in 2016; its full use will be effective in 2017).*

Item 71: Amends Rule 195.8 to clarify how the length of the throwing weight is measured. Also, the maximum length is increased to 410.0 mm to standardize between the Open and Masters implements.

Final Status: **Passed as amended** (*it is measured from the bottom of the "compete implement with its head in a spherical shape"*).

THE TRAINING CENTER

This is a regular feature of this newsletter, where we discuss the method of measuring an implement, venue or a track facility. Your comments or areas of interest are welcome. It is through this kind of dialogue that we learn from each other and improve our skills. Send the editor your stories and questions.

Inspecting the javelin

This section addresses the traditional javelin; the aero jav is discussed in a later section.

The javelin requires the most amount of time and, arguably, the most amount of technique to inspect properly. This leads to two considerations when planning for an upcoming meet:

A.. There are occasions when the full inspection can not be performed due to time constraints. High school and college invitationals, when some schools show up at the last moment, are examples of this. In these situations, the Inspector may have no choice except to perform an abbreviated inspection on all javelins.

B. The javelin has the most required measurements so it is very important that the inspection be done in approximately the order listed to limit the measurements on an implement that won't pass. The most common reasons for failure are listed first (and also form the core of the abbreviated inspection).

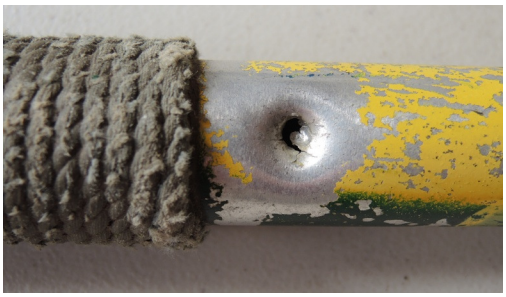
1. Hold the javelin vertically, first tip down then rotate so the tip is up and shake. Listen for any internal movement. Internal movement might impact the center of gravity and therefore its flight characteristics. This may be due to a loose lead slug that was originally affixed in the head of the javelin. Loose or rusted internal parts may also be an indication of imminent failure of the javelin – usually snapping in half during the throw or landing.

2. Check the javelin whipcord (grip) to see if it is damp which might help it make weight. If the grip is damp, impound the javelin. Also check the grip to see if it is unraveling, fraying, or otherwise not attached to the shaft. A loose cord can be repaired with Superglue, but a cord that is coming apart should be impounded.

Remove tape from the grip cord or impound the javelin

3. Check for indentations, rings, roughness, flutes or other aerodynamic improvements, i.e. non-smooth finish. Normal wear is acceptable as long as the grooves aren't symmetric. Remove any clumps of dirt, as this may affect the balance.

Check the javelin for tape or decals. Manufacturer stickers are ok, but other tape is not, which may affect balance or aerodynamic characteristics.



Dents or punctures are cause for disqualification.

4. Make sure that there isn't any paint or solder on the tip that might come off during the competition thus altering the balance point. Use nail polish remover if you need to remove the paint.

5. Check the overall length of the javelin. Less-expensive javelins periodically are found to be too long or too short; therefore, this measurement should not be ignored. There are at least three ways to perform the length measurement:

a. Measure each javelin on an inspection board that, among other things, includes a length scale.
b. Measure each javelin on a table with a measuring tape or other markings that denote the maximum and minimum lengths for each size of javelin.
c. Line up all javelins of one size against a wall. Pick out the longest and shortest one, and measure those with a tape; if those two pass, then all the rest will pass also.

These two 400 gram javelins were found to be considerably over the maximum allowable length. This is not common, but it happens

6. Weigh the javelin. The nominal weights are 400, 500, 600, 700 and 800 grams. This covers the full spectrum of

high school, college, Youth, Open, Juniors and Masters javelins.

The javelin in the following picture was sold as, and labeled as a 50 meter, 600 gram jav. Its physical dimensions and balance conformed to those of a 600 g javelin. However, its actual weight was 517 grams. Although underweight javelins are, as a rule, uncommon, this sort of manufacturing problem does happen on occasion.

7. Check the center of gravity by performing the balance test. Most javelins balance at about the second cord on the grip. That is not a specification, just a fact. By rule, the balance point must be somewhere on the grip cord. Any type of fulcrum can be made to work, but a knife edge gives the best results when the balance point is barely on the first wrap of the grip. If the balance point is off the grip, impound the javelin. If the balance point is on the grip, it passes; mark this point (this is where a silver Sharpie pen is very useful if the cord is black).

Measure the distance from the mark on the grip to the forward tip of the javelin. The allowable distance is different for every size of javelin; therefore, a handy spec sheet is advisable, particularly for Masters meets where all five sizes are thrown. See Table 4 of the Implement Inspector's Handbook, for dimensions. This measurement can be done with a tape, but a measurement board with a built-in fulcrum and length scale will greatly speed up the process.

Most javelins are balanced by the manufacturers to be near the maximum allowable CG-to-tip length. If it exceeds the minimum or maximum allowed length, impound the javelin.

One additional point should be made here. If the CG-to-tip length is more than slightly out of spec long, you may be dealing with an "old rules" javelin. For example, the CG spec for an 800 g jav is a maximum of 1060 mm. If you measure a jav to have a forward CG length of 1070 mm or more, it was probably built to pre-1986 rules. It would be good to advise affected the athlete and/or coach of this fact, and tell them that the jav definitely needs to be rebuilt to today's specifications.

NOTE
The above steps are generally known as the abbreviated inspection. If there is insufficient time to perform *all* measurements on *all* javelins submitted for inspection, it is recommended that, as a minimum, the above inspections be performed.

The remaining checks should be made whenever possible, but generally don't change with use, i.e., they are characteristic of the javelin manufacturing process. Thus, if these have been previously checked as signified by the mark of the day or one you recognize then, with limited time, skip them. The first time a javelin is inspected each year you should check these items. Then use a special mark to indicate that these have inspected. These points can then be overlooked for the rest of the season.

8. Check the forward tip for the forty-degree maximum taper using the tip guide. This can also be done with a plastic protractor and several pieces of tape. The very tip may be rounded due to wear, but the taper of the head into the tip must be 40° or less.

9. Check the length of the head. The spec varies by the size of the javelin.

10. Check the length of the grip cord. The spec varies by the size of the javelin.

11. Check the diameter of the tail. It must be no less than 3.5 mm. Be aware that some athletes drag their javelins around the field by the head, thus scraping the tail on the ground and "sharpening" it. This type of abuse can bring the tail diameter down to less than 3.5 mm.

This jav's tail was "sharpened" and then painted over. However, it fits within a 3.5 mm notch. It should be repaired or disqualified

12. Mark the javelin in preparation for the profile measurements:

a. Place a small mark that is 150 mm behind the tip of the javelin. This applies to all except the 400 g javelin; the location of the mark is 125 mm behind the tip of a 400 g jav.

b. Place a small mark that is 150 mm in front of the tail of the javelin. This applies to all except the 400 g javelin; the location of the mark is 125 mm in front of the tail of a 400 g jav.

c. Place a mark that is exactly half-way between the balance point (Step 7) and the forward tip of the javelin. This can be done by measuring the distance, dividing by two, then remeasuring and marking the half-way point. It can be done faster by measuring with center point tape which also provides the center position. This point is alternately called the *forward mid-point* by some inspectors.

NOTE: It is very important that the measurement is made between the *balance point* and the tip. Some Inspectors measure from the *front of the grip cord* to the tip – this is an incorrect procedure.

d. Place a mark that is exactly half-way between the balance point (Step 7) and the tail of the javelin. The same comments apply from above. This point is alternately called the *aft mid-point* by some inspectors.

13. Measure the diameter of the javelin shaft just in front of the grip cord. This should be done with a caliper at 3 or 4 locations ("clockings" of the javelin). Each measurement will be slightly different – mentally calculate the average value of the measurements and make a note of it (this value will be used as the basis for several other measurements). The diameter value at this location is called "D0" (D-zero) in the IAAF rule book, the "thickest point" in the USATF rule book, and the "max diameter" by many Inspectors. Check the measured value against minimum and maximum values in the rule book or in Table 4.

NOTE 1: When using the calipers don't pinch the jav too much. Lightly snug the caliper at the measurement point and rotate it slightly to ensure the instrument is at a right angle to the shaft.

NOTE 2: Some inspectors use precut gauges with the max and min values of D0. This provides an approximation of the true value of D0, but can lead to false rejections or false passes. Caliper measurements provide the best answer.

14. The cross section of the shaft is supposed to be circular but there is a 2% allowance between the largest and smallest diameters at any location. Multiply the average value of D0 by 2% (0.02) and compare that with the largest and smallest individual measured values. For example, if the average value of D0 is 29 mm (on an 800 g jav), then the 2% out-of-round allowance is 0.58 mm. Accordingly, the max and min measured diameters must differ by no more than 0.58 mm.

15. Measure the diameter of the shaft immediately behind the grip cord. It must be no larger than the D0 value less 0.25 mm.

16. Measure the diameter of the grip cord. Take care to not to squeeze the grip which would provide a false reading. The diameter at the grip must be no larger than D0 + 8 mm.

17. Measure the diameter of the point that was marked 150 mm behind the tip (125 mm for 400 g javs). This diameter must be 80% of the value of D0 ***or less***.

18. Measure the diameter of the forward mid-point. This diameter must be 90% of the value of D0 ***or less***.

19. Measure the diameter of the aft mid-point. This diameter must be 90% of the value of D0 ***or more***.

20. Measure the diameter of the point that was marked 150 mm in front of the tail (125 mm for 400 g javs). This diameter must be 40% of the value of D0 ***or more***.

In the interest of time, some of these measurements may be excluded if a visual check does not show a gross or obvious problem.

The javelin gauges are quick to use, but not as accurate as calipers. An apparent failure, or a measurement close to the limit, with a javelin gauge should be double-checked with a caliper. Otherwise, experience from the field indicates that some false DQs will occur.

21. There can be no abrupt changes in diameter along the length of the javelin, except where the head transitions to the shaft. In the case of the latter, the maximum diameter change can be 2.5 mm.

22. The javelin shaft must be cylindrical or slightly convex in profile, except at the grip cord. That is, a straight edge, when placed along the shaft must rock slightly or exactly join the shaft. It must be impossible to insert a 0.20 mm feeler gauge between the straight edge and the shaft.

If the javelin passes all the tests, mark it on the forward end near the grip cord or just above the metal head. Do not mark it behind the grip because the athlete's hand will rub it off.

Inspecting the aero javelin

The aero javelin was adopted as an exhibition implement during 2016 for the 11-12 year Youth group while maintaining the 300 g mini javelin as the competition implement. However, starting in 2017 the aero jav will replace the mini jav as the competition javelin for the 11-12 Youth group.

The purpose of this article is to familiarize Inspectors with this new implement.

The aero jav is either nearly or entirely constructed of synthetic material, depending on the configuration of the grip. The grip may be constructed of plastic, or wound with cord same as the regular javelins. It weighs no less than 450 g, and has the following specifications (all dimensions in mm):

Dimension	Min	Max
Overall length	1765	1785
Length of head *	140	160
Distance from tip to CG **	760	770
Diameter of shaft §	20	28
Length of grip ***	115	120
Location of front of grip from tip	755	770
Length of tail	175	195

* The max diameter of the head shall not exceed the nominal shaft diameter by more than 10 mm

** The grip is not required to cover the CG

*** The max grip diameter shall not exceed the nominal shaft diameter by more than 8 mm

§ The diameter of the shaft shall not vary from the nominal diameter by more than ±2 mm anywhere along the length of the shaft.

Inspecting the aero jav is fairly straight-forward, but with a few deviations from how a regular javelin is handled.

1. If so equipped, check the grip cord to see if it is damp which might help it make weight. If the grip is damp, impound the javelin. Also check the grip to see if it is unraveling, fraying, or otherwise not attached to the shaft. A loose cord can be repaired with Superglue, but a cord that is coming apart should be impounded.

2. Check for indentations, rings, roughness, flutes or other aerodynamic improvements, i.e. a rougher finish than the stock texture of the shaft. Normal wear is acceptable as long as the grooves aren't symmetric. Remove any clumps of dirt, as this may affect the balance.

Check the javelin for tape or decals. Manufacturer stickers are ok, but other tape is not, which may affect balance or aerodynamic characteristics.

3. Check the overall length of the javelin.

4. Weigh the javelin. Minimum passing weight is 450 g.

5. Check the center of gravity by performing the balance test. The aero jav is unlike regular javelins in that the center of gravity does not have to be on the grip; a balance point forward of the grip on the shaft is acceptable. Mark the balance point; then measure the distance from the mark to the forward tip. If it exceeds the minimum or maximum allowed length, impound the javelin.

6. Measure the distance between the front of the grip and tip. This is a separate consideration than the balance point.

NOTE

The above steps are generally known as the abbreviated inspection. If there is insufficient time to perform *all* measurements on *all* javelins submitted for inspection, it is recommended that, as a minimum, the above inspections be performed.

7. Measure the lengths of the head and tail.

8. Measure the length of the grip.

9. Measure the diameter of the shaft in four locations. None of the measurements should be more than ±2 mm from the average value.

DOCUMENT LINKS

The Implement Specifications Best Practice is available at:
https://my.usatfofficials.com/resources/best-practices

Older **EFSS newsletters** are located at:
http://www.usatf.org/groups/officials/newsletters/

More recent newsletters are located at:

24-1:
https://www.dropbox.com/s/86ev84lwpr8hpxp/Newsletter%2024-1%2C%20FEB_14_RevA.pdf?dl=0

24-2:
https://www.dropbox.com/s/pj0xdkqvu0erdn5/Newsletter%2024-2%2C%20OCT_14.pdf?dl=0

25-1:
https://www.dropbox.com/s/ogkb90s3wk1ug87/Newsletter%2025-1%2C%20MAR_15.pdf?dl=0

25-2:
https://www.dropbox.com/s/kq6aehj1og3tg1l/Newsletter%2025-2%2C%20NOV_15.pdf?dl=0