



The Equipment and Facilities Specifications Newsletter

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of the National Officials Committee in its 25th 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:

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CHAIRMAN'S CORNER

Marking Throws

Like many associations, our throws crews use two people to mark a throw with one operating from each sector line. Each gets a direction and where the two lines intersect they should find the mark. Where this breaks down is when the mark is directly between the two people. Those two directions don't meet in one point, but an area. This can lead to not getting the correct mark.

When coaches are able to, they like to watch from behind the circle. What they see is the direction of the throw. When they see the two markers converge on a spot that is not on that direction, they know the mark is wrong. It may well be the correct distance, but it is not where the implement landed.

Ivars was watching some throws from roughly behind the circle since that is where the implement inspection is done. He went out to the far end of the landing area and watched only for the direction the implement traveled. After talking to him about this, I went out there as well. If the two markers come to a spot that is not along that line, it is an easy correction to make and find the proper mark. He was able to correct a bad mark a few times.

This method requires someone to stand in the sector and so that person needs to be able to move quickly to either side to avoid getting hit. That person also needs to be far enough out to keep from getting in the way and also be able to determine the direction of the implement thrown.

NCAA Weight Throw Measurement

Recently Bob Podkaminer had to make a ruling that changes how we normally measure the length of a weight. The NCAA rule states that the measurement is made to the bottom of the "head" and not the complete implement. This is not how we do things and, in fact, is almost impossible to do without having to estimate where that spot is. The USATF rule is not as restrictive, but could be interpreted the same way.

The committee has reviewed the USATF rule (195.8) and has come up with a revision that should work. That proposal is:

8. Length - The maximum overall length of the complete implement as thrown, measured from the bottom surface of the complete implement head in its spherical shape, or harness, to the inside surface of the middle of the handle (grip) shall not exceed 406.4mm at any time.

NOTE 1: The overall length for Masters is 410.0mm.

NOTE 2: An implement presented for inspection must be measured for length with all components at their maximum lengths as designed by the manufacturer. Once the implement has been inspected and approved for competition, the implement shall not be altered or adjusted other than to be repaired by the Inspector of Implements.

This will be submitted to the Rules Committee prior to the USATF Annual Meeting next year. This year will be a

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rules year again so it will be reviewed by the Rules Committee. If USATF makes the change, then the

NCAA will follow suit.

At the same time, the question of the different length for the Masters was brought up. The 410.0 mm is the WMA rule and we can't change that. The difference between that and the 406.4 mm is only about an eighth of an inch. The reason for this appears to originate from when the length was changed from 16 inches to a metric equivalent. The direct conversion is 406.4 mm which is what USATF chose (and NCAA followed). WMA rounded that distance up to 410.0 mm. We will also propose to change this so that there is only the one measurement we need to deal with. By picking the WMA rule, no current weight would be disallowed.

E&FSS ANNUAL MEETING

The subcommittee annual meeting was held on Tuesday, Dec. 2nd at 4:50 PM in Anaheim, CA. The meeting minutes are located at:
http://home.comcast.net/~ikstrums/2014_EFSS_Minutes.pdf

RULE CHANGES AFFECTING EQUIPMENT OR FACILITIES

The following USATF rules changes for equipment & facilities were examined at the annual meeting in Anaheim. The final dispositions are in bold:

Item 5 (Tabled 2013 Item 64): Amends Rule 181.18 by specifying in more detail the pegs which hold the cross bar for the PV and HJ events. **Tabled**

Item 6 (Tabled 2013 Item 66): Amends Rule 181.20 by redefining the dimensions and configuration of the PV and HJ pits. **Tabled**

Item 36: Amends Rule 162.5.b to define "suitable loudness" for electronic start devices. **Approved**

Item 49: Revises Rule 181.18 by requiring the use of a pole vault box collar for all USATF-sanctioned events. **Approved as amended** (applies to Youth only)

Item 54: Amends Rule 187.7.b by changing the measurement of a javelin landing to the point where the head strikes the ground, rather than where the tip strikes the ground (IAAF compliance). **Approved**

Item 55: Amends Rule 187.10 by limiting the number of personal throwing implements submitted for inspection to four per competitor per event. **Withdrawn**

Item 56: 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 81. **Tabled**

Items 60 & 61: Refines Rules 242.7 & 244.4 with respect to transponder timing equipment. **Both Approved**

Item 81: Amends Rule 301 by specifying the use of the Aero Javelin by the Youth 11-12 and 13-14 Groups. This change is paired with Item 56. **Tabled**

Item 96: Amends Rule 187.18 to reword the required surface finish of the throws circles. **Rejected**

Item 97: Clarifies Rule 191.9, requiring the hammer loop diameter to be measured on the inside of the loop. **Approved as amended** (the loop max diameter specification and its measurement have been deleted).

Item 99: Amends Rule 195.5.b to eliminate the wording about the shape of the throwing weight handle. This puts the emphasis on the max length of the implements, not the shape of the handle. **Approved**
[Note: The effect of this item was to remove the equilateral or isosceles triangle requirement. Some handles are close to that, but not exactly, and required a judgment call; this change eliminates that subjectivity.]

Item 100: Amends Rule 195.7 to specifically disallow the use of wire for connecting the handle to the throwing weight. **Approved**

EQUIPMENT CORNER

If you have any information on equipment that you have purchased or built to help with your weight and measures or technical managers' activities, please pass along the information. One of our goals is to disseminate this type of information.

Course measurement with GPS

The last newsletter contained some data which compared the consistency of GPS receivers. However, following link contains the "USATF/RRTC Position on GPS used by runners":

<http://www.usatf.org/Products/-/Services/Course-Certifications/USATF-Certified-Courses/Certify-Your-Course/Statement-on-GPS-Use-by-Runners.aspx>

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.

Hammer recap

There have been a few rules changes for the hammer in recent years. This is a recap of what's still in, and what is out.

Length: USATF and NCAA now have specifications for maximum hammer length only. There is no minimum length.

Diameter of head: Unchanged for USATF and NCAA; each hammer size has its minimum and maximum diameters.

Center of Gravity of head: Unchanged (± 6 mm).

Weight: Unchanged.

Handle: The handle length specification has been eliminated by both USATF and NCAA. However, additional wording is still in force regarding the handle's ultimate strength, elasticity and rigidity.

Wire: The USATF rule for the loop diameter has been eliminated. This makes the USATF and NCAA rules for the wire essentially identical.

Throwing Weight recap

There have been a few rules changes for the weight in recent years. This is a recap of what's still in, and what is out.

Length: The max length values have not changed (40.64 cm for USATF Open and NCAA; 41.00 cm for USATF Masters). However, there have been some rules refinements and interpretation that should be noted.

Both USATF and NCAA now measure the length of the weight from the inside surface of the *middle* of the handle. USATF measures the length to the bottom of the head or harness, as appropriate ("the complete implement as thrown"). The NCAA wording measures the length to the bottom of the head (not the bottom of the harness), and this interpretation was recently affirmed during a college meet.

Diameter of head: USATF has minimum and maximum diameters for the head; NCAA only has minimum diameter specifications.

Center of Gravity of head: Unchanged (± 9 mm).

Weight: Unchanged.

Handle: There are fine differences between the handle rules. At their core they are made of steel rod, bent into a triangular shape with straight sides. They must be rigid and show no evidence of elasticity or malformation before, during or after the competition.

The NCAA specifically disallows the use of hammer handles on the weight. While the USATF rules do not overtly prohibit the use of the hammer handle, the construction clause ("round steel metal rod") achieves that purpose.

The USATF indoor handle shall have sides that do not exceed 160 mm, nor are smaller than 100 mm, inside measurement. A handle with no permanent connection point shall have all three sides of equal length.

The USATF outdoor handle shall have sides that do not exceed 190 mm, nor are smaller than 100 mm, inside measurement. A handle with no permanent connection point shall be constructed in such a manner that regardless of how the handle is turned, the length of the implement does not exceed the specified maximum length of the implement.

The NCAA handle shall have sides that do not exceed 19 cm, nor are smaller than 10 cm, inside measurement. A handle with no permanent connection point shall only be used with the all-metal head, and must have all side the same length.

The head: Both the USATF and NCAA rules were rewritten a few short years ago to line up with each other. Specific criteria are provided for both the metal (outdoor) and filled (indoor) heads.

Harness: The USATF and NCAA rules are virtually identical. Recent additions include the requirement that the harness does not display evidence of elasticity or malformation before, during or after the competition.

Connection: While the USATF and NCAA rules have differences in their wording, the intent is the same. Both books now do not allow the use of wire in the connection.

Weigh-ins at altitude

A reader recently posed a question about weighing implements at high altitude. Specifically, are there any USATF or NCAA rules governing this due to the altitude and the attending lower atmospheric pressure?

That's a good question because it actually covers two separate issues. And, no, there are no specific rules about weighing at altitude.

1. **Altitude.** By way of example, let's pick Western State Colorado University whose track is at an elevation of 7769 ft. How much gravity is at that location? This can be estimated with reasonable certainty using the National Geodetic Survey's gravity prediction tool (<http://www.ngs.noaa.gov/TOOLS/Gravity/gravcon.html>) which yields a value of 9.79323 m/s^2 at the WSCU track.

Now let's go directly west, maintaining the same latitude, until we get to sea level. This places us on a California sea shore about 60 miles NW of San Francisco. The NGS tool provides a gravity value of 9.80058 m/s^2 at this location.

There is a difference in gravity between the two locations, and the value at altitude is less than at sea level, which was expected.

[Note: Think of the earth as a very large merry-go-round: There is no effect at the poles, but at the equator the earth's tangential speed is about 1,000 mph. This spinning introduces the "merry-go-round" effect, otherwise called centripetal force, which will noticeably alter the reading of a scale. By keeping the same latitude in this example we do not alter the effect due to the spinning earth. This subject was discussed in detail in Newsletter 20-2, starting on page 11. <http://www.usatf.org/groups/officials/files/newsletters/efs-newsletter/efs-newsletter-201009.pdf>]

Now let's say we properly adjust and calibrate a scale at the sea shore location, and then bring it to the WSCU track without further adjustments or modifications. What would that do to a shot that is a perfect 7.260 kg? The impact is a simple ratio between the two gravity values, and that shot would now appear to be 7.255 kg.

However, this problem is entirely avoidable by adjusting and calibrating the scale at the WSCU track. Now it will indicate 7.260 kg because it is actually set to measure mass, not weight.

2. **Air density.** When someone jumps into a swimming pool, they appear to weigh less due to the buoyancy of the water. Through the same principle, the earth's atmosphere also provides buoyancy, although to a lesser degree. And that buoyancy changes with altitude (that is, less buoyancy at higher altitudes due to less air pressure).

Looking up air properties, we find the air density at the WSCU track to be about 75% of the value at sea level. Assuming a 130 mm shot, we get a difference in air displacement (buoyancy) of about 0.3 gram (meaning the shot will appear to be 0.3 g heavier at altitude). The majority of T&F scales will not detect this difference.

Conclusion. The difference in air density is essentially a non-issue. The other problems are fixed by getting your scale adjusted and calibrated at the location where it will be used.

DOCUMENT LINKS

The Implement Inspector's Handbook is available at the bottom of this link:

<http://www.usatf.org/groups/officials/resources/field-events/>

The 2015 revision of the Implement Inspector's Handbook is in final review. Look for the announcement of its release in the NOC newsletter.

The Implement Specifications Best Practice has been updated for the revised Youth group designations and is available at:

<https://my.usatfofficials.com/resources/best-practices>

Past **EFSS newsletters** are located at:

<http://www.usatf.org/groups/officials/newsletters/>