IMPLEMENT INSPECTOR'S HANDBOOK

Volume 2: Appendices

PREPARED BY THE EQUIPMENT AND FACILITIES SPECIFICATIONS SUBCOMMITTEE OF THE NATIONAL OFFICIALS COMMITTEE OF USA TRACK AND FIELD

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February, 2017-0

PRICE $5.00

This manual is part of the USATF National Officials Monograph Series on how to officiate. Each monograph covers the various techniques for each officiating assignment. These monographs are intended for more in depth understanding of each job. They are intended for both the novice and seasoned official. They cover the real details of the job and how it should be preformed. They summarize various techniques to accomplish the job. These monographs can be copied and used for officials training only.

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APPENDIX A: THE W&M ROOM

W&M Room
20'x20'

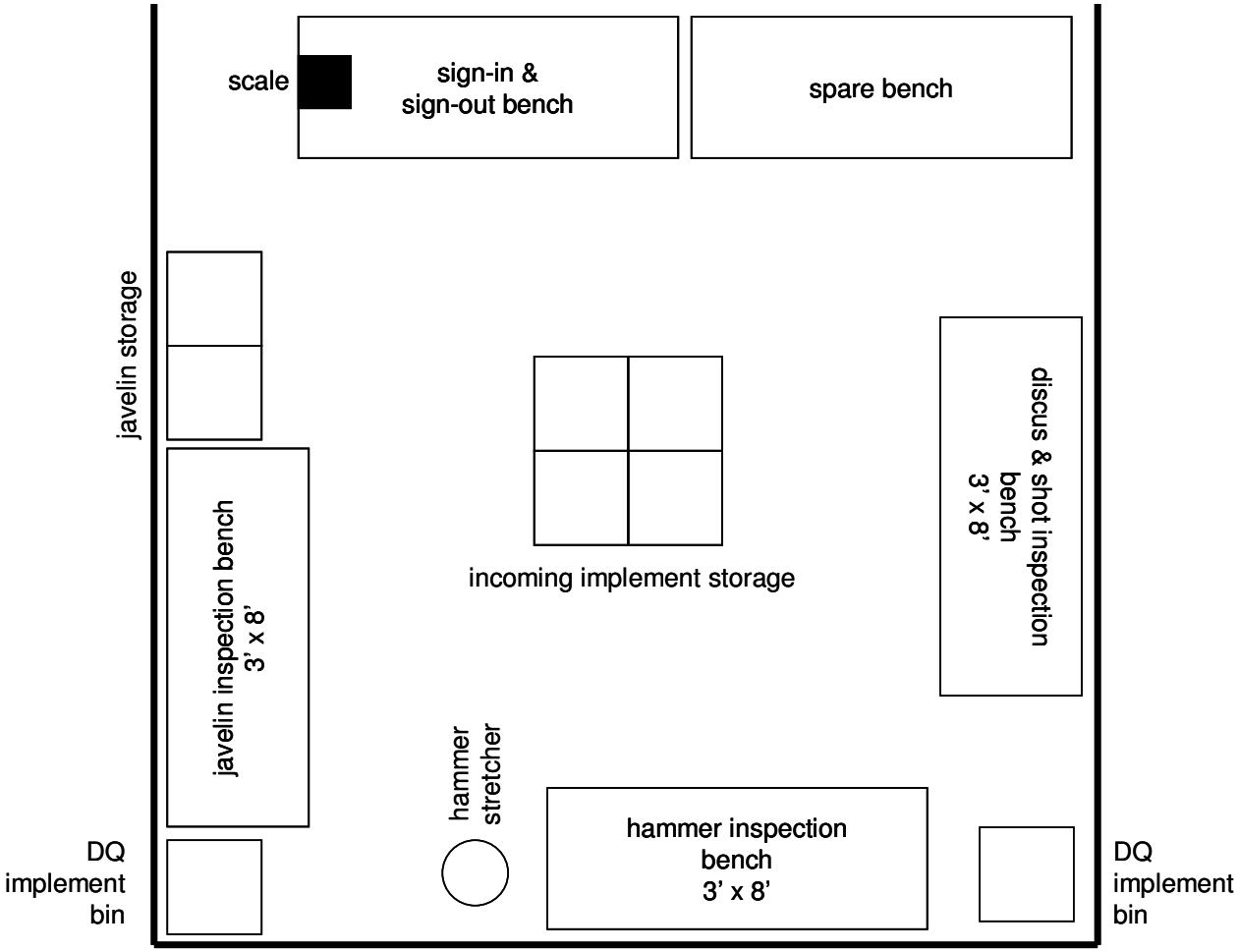


Figure 1: W&M Room Layout - Minimum

Notes:

1. This is a recommendation for adapting an existing space for W&M purposes.
2. Recommended dimensions are 20' x 20'. Spaces as small as 10' x 10' are possible, but are cramped.
3. Ceiling height is 12 ft minimum to accommodate javelin handling.
4. Javelin bench is 44" high; all others are 36" high.
5. Certified implements are stored under the benches or in a separate room.
6. The check-in table should be set up to block general access to the room. Otherwise, the check-in table can be in a separate room.

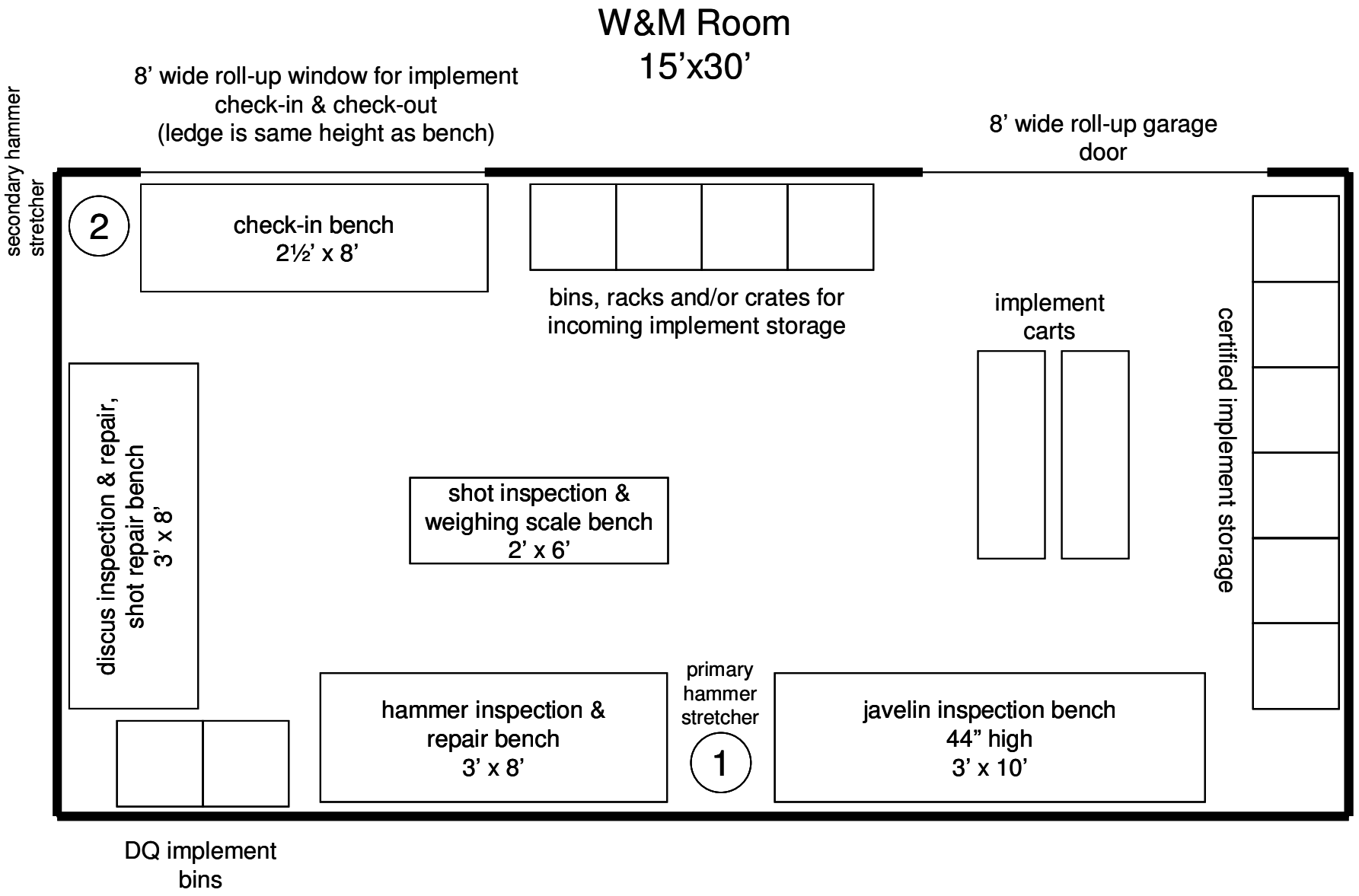


Figure 2: W&M Room Layout - Recommended

See notes on next page.

Notes:

1. This is a recommendation for the design of a new W&M room.
2. Room is 15’ x 30’ inside dimensions
3. Ceiling height is 12 ft minimum to accommodate javelin handling
4. Garage door height must accommodate vertical 800 g javelins which are stored on a cart (~10 ft)
5. Roll-up door & window must be lockable
6. Javelin bench is 44” high; all others are 36” high
7. Weighing table must hold 200 lb without deflecting; others must be sturdy (not flimsy fold-up plastic tables)
8. Benches have space underneath for equipment storage
9. The check-in bench is deliberately narrower than the others
10. Two AC power receptacles required at each wall bench; one receptacle OK at weighing bench – route power under floor rather than a ceiling drop
11. Lighting is required above each work bench
12. Secondary hammer stretcher is for informal length checks at the request of the athlete
13. The basic concept is:

    a. Incoming implements go to the center table for weighing
    b. Then they immediately go to their respective benches for further inspection and repair, if necessary
    c. The exception to (b) is the shot – it can be checked with ring gauges on the scale; it only goes to the discus table if it requires weight addition or surface filing
    d. The javelin bench location is deliberate – this minimizes the distance traveled by a javelin from receipt to storage.

Figure 2: W&M Room Layout - Recommended (cont)

Figure 3: Beijing Implement Storage

Figure 4: Layout at Des Moines NCAA Division I

APPENDIX B: SAMPLE IMPLEMENT CHECK-IN SHEETS

IMPLEMENT TYPE _____

MEET: _____

EVENT: _____ AGE GROUP: _____ BY INSPECTOR

SEX: _____ QUALIFYING DATE:___/____/____ DAY: _____ FINALS DATE:___/____/____ DAY: _____

NO. OF IMPLEMENTS INSPECTED:_____ IMPOUNDED:_____ PRELIM. MARK/COLOR OF DAY: _____

COLUMNS TO BE FILLED OUT BY ATHLETE OR COACH FINAL MARK/COLOR OF DAY: _____

	COMPETITOR	AFFILIATION SCHOOL/CLUB/BIB NO.	IMPLEMENT MANUFACTURER	SIZE DIAM./DISTANCE	COLOR/ DESCRIPTION	ALTERNATE NUMBER	IF IMPOUNDED REASON	FLT	FINAL	CLAIM SIGNATURE
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										

Implement Check-In / Check-Out Log

Meet: _____ **Event:** _____ **Page:** _____

Date: _____ **Age Group(s):** _____ **Mark:**

Age Grp	#	Name of Competitor	Mfr, weight, diameter	color, material, distance, markings	Cert (C) Imp (I)	Claim Signature

IMPLEMENT IMPOUND FORM PAGE 1 OF__

MEET: _____

NO.	NAME OF COMPETITOR	AFFILICATION SCHOOL/CLUB/BIB NO.	TYPE OF IMPLEMENT	IMPLEMENT MANUFACTURER	SIZE DIAM./DISTANCE	COLOR/ DESCRIPTION	IMPOUND REASON	ATHLETE/COACH NOTIFIED	ISSUE RESOLVED
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									

APPENDIX C
THROWING IMPLEMENT SPECIFICATIONS SUMMARY
IAAF AGE GROUP IMPLEMENTS

Men

Event/Division	Boys (Youth)	Men (Junior)	Men (Senior)
Shot	5 kg	6 kg	7.260 kg
Discus	1.5 kg	1.75 kg	2 kg
Javelin	700 g	800 g	800 g
Hammer	5 kg	6 kg	7.260 kg

Women

Event/Division	Girls (Youth)	Women (Junior)	Women (Senior)
Shot	3 kg	4 kg	
Discus	1 kg		
Javelin	500 g	600 g	
Hammer	3 kg	4 kg	

age	16-17	18-19	20-34

Per 2012 IAAF Rule 187.1

THROWING IMPLEMENT SPECIFICATIONS SUMMARY
USATF MASTERS IMPLEMENTS

	Men													
Event/Age	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99+
Shot	7.260 kg				6 kg		5 kg		4 kg		3 kg			
Discus	2 kg				1.5 kg		1 kg							
Javelin	800 g				700 g		600 g		500 g		400 g			
Hammer	7.260 kg				6 kg		5 kg		4 kg		3 kg			
Weight	35 lb				25 lb		20 lb		16 lb		12 lb			
Superweight	56 lb						20 kg		35 lb		25 lb			
Ultraweight	98 lb, 200 lb, 300 lb						56 lb, 98 lb, 200 lb		20 kg, 56 lb, 98 lb		35 lb, 20 kg, 56 lb			

	Women													
Event/Age	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99+
Shot	4 kg				3 kg					2 kg				
Discus	1 kg									0.750 kg				
Javelin	600 g				500 g					400 g				
Hammer	4 kg				3 kg					2 kg				
Weight	20 lb				16 lb		12 lb			4 kg				
Superweight	35 lb				25 lb		20 lb			16 lb				
Ultraweight	20 kg, 56 lb, 98 lb				35 lb, 20 kg, 56 lb		25 lb, 35 lb, 20 kg			20 lb, 25 lb, 35 lb				

Per 2014 USATF Rules 332.3.g & 203.3

THROWING IMPLEMENT SPECIFICATIONS SUMMARY
WMA MASTERS IMPLEMENTS

Men

Event/Age	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99+
Shot	7.260 kg			6 kg		5 kg		4 kg		3 kg			
Discus	2 kg			1.5 kg		1 kg							
Javelin	800 g			700 g		600 g		500 g		400 g			
Hammer	7.260 kg			6 kg		5 kg		4 kg		3 kg			
Weight	35 lb			25 lb		20 lb		16 lb		12 lb			

Women

Event/Age	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99+
Shot	4 kg			3 kg					2 kg				
Discus	1 kg								0.750 kg				
Javelin	600 g			500 g					400 g				
Hammer	4 kg			3 kg					2 kg				
Weight	20 lb			16 lb		12 lb			4 kg				

Per 2014 WMA rules Appendix A

THROWING IMPLEMENT SPECIFICATIONS SUMMARY
USATF YOUTH IMPLEMENTS

	Boys					
Event/Division	8 & Under	9-10	11-12	13-14	15-16	17-18
Shot	2 kg	6 lb		4 kg	12 lb	
Discus			1 kg		1.6 kg	
Javelin	300 g Mini		450 g Aero	600 g	800 g	
Hammer					12 lb	
Weight					25 lb	

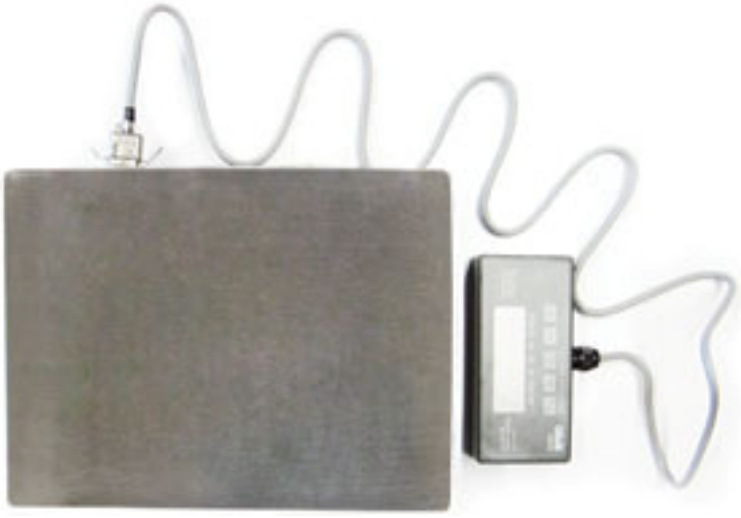
	Girls					
Event/Division	8 & Under	9-10	11-12	13-14	15-16	17-18
Shot	2 kg	6 lb			4 kg	
Discus			1 kg			
Javelin	300 g Mini		450 g Aero	600 g		
Hammer					4 kg	
Weight					20 lb	

Per USATF Rules 300.1.b & 301

Figure 5: Implement Inspection and Scale at Gateshead, England

Figure 6: Old Trackmaster Level Scale with Weight

Figure 7: Doran Scale used in Pacific and So. California



UCS Kit Scale

MF Athletics Scale

Figure 8: UCS and MF Athletics Scales

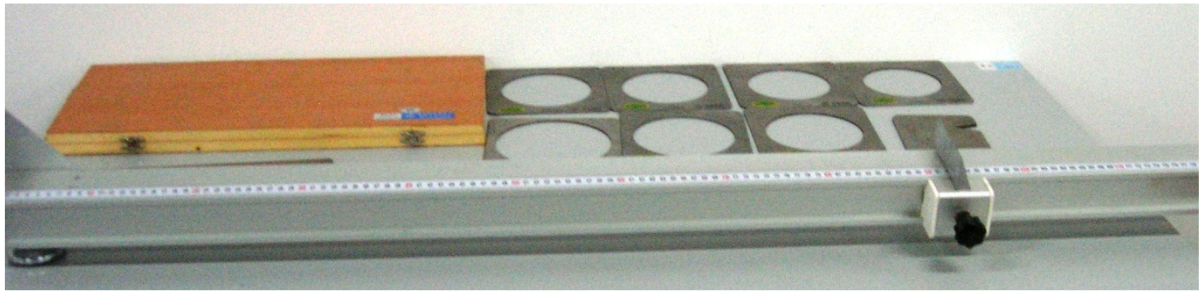
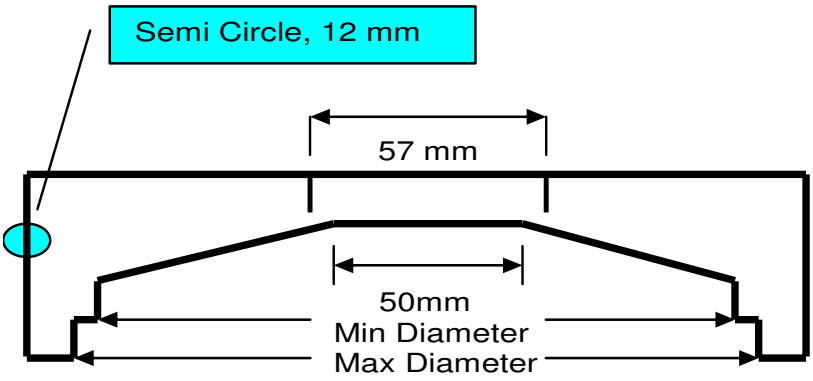


Figure 9: Shot/Hammer Diameters and Javelin at Beijing Olympic Games

Figure 10: Original Trackmaster ™ Discus Measurements

Figure 11: Discus Measurements for Beijing Olympics



Note: Not to scale although dimensions are correct.

Figure 12: Discus Gauge used in England

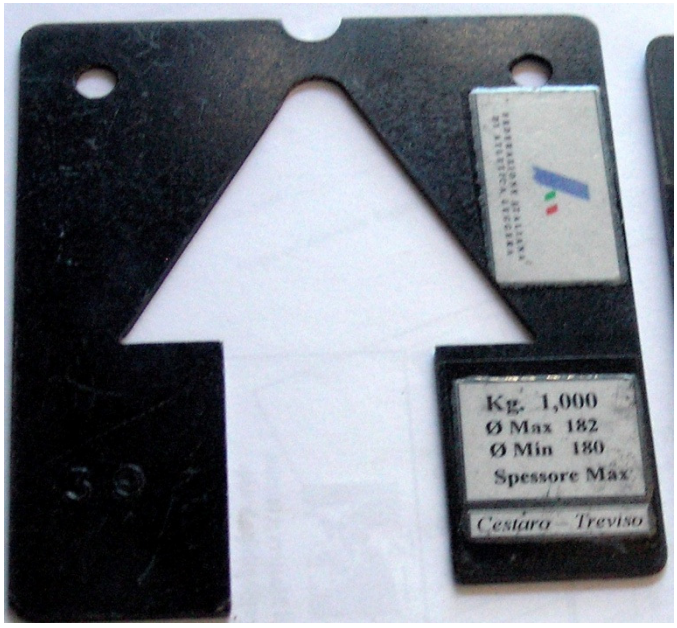


Figure 13: Discus Gauge used in Italy

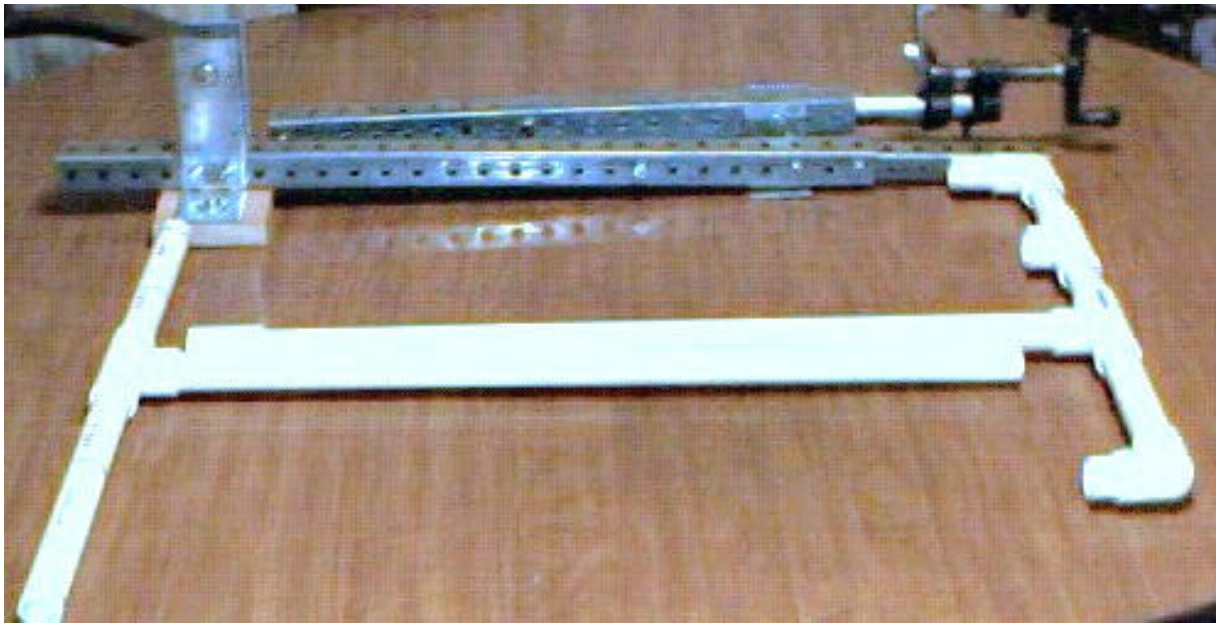
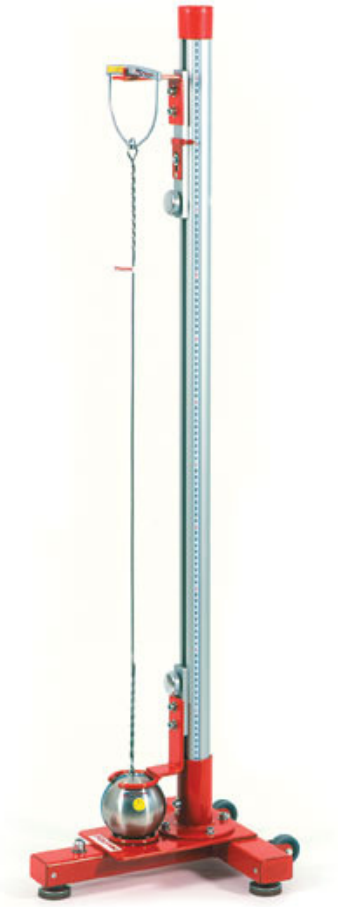


Figure 14: Hammer Stretcher and Length Gauge used in Pacific Association

Fig. 15: Beijing Hammer Stretcher & Scale

Fig. 16: Nordic Hammer Stretcher



Italian Version at WMA Championships 2007 **Polanik Version**

Figure 17: Hammer Stretchers

Figure 18: Weight Length Measurement

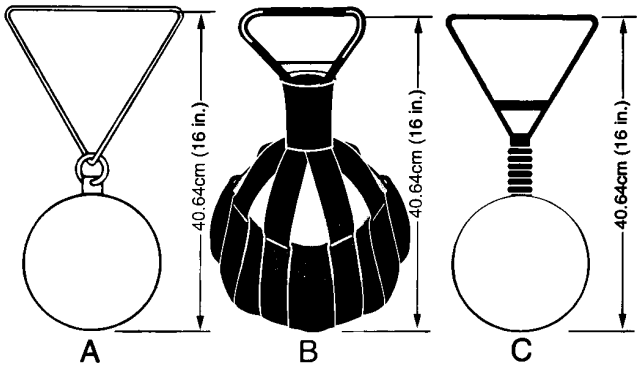


Figure 22—The Weight

Figure 19: Types of Weights (NCAA Rulebook)

Figure 20: Polanik and VS Athletics Weights

Figure 21: Italian Shot, Hammer & Weight Rings

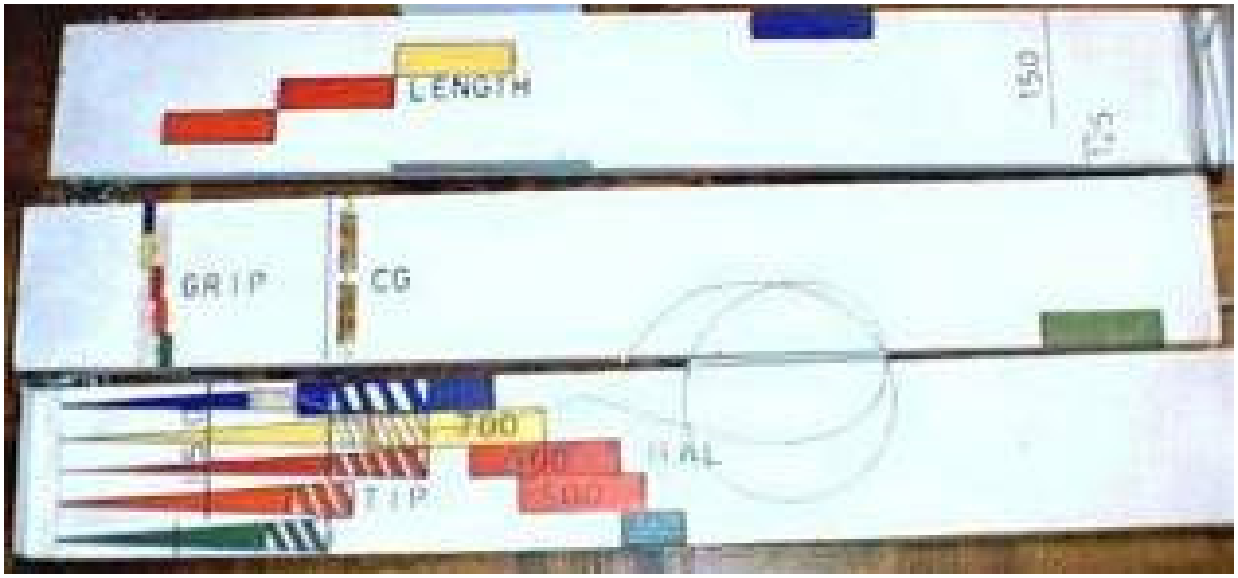


Figure 22: My Javelin Board for All Five Javelin Size in Three Pieces

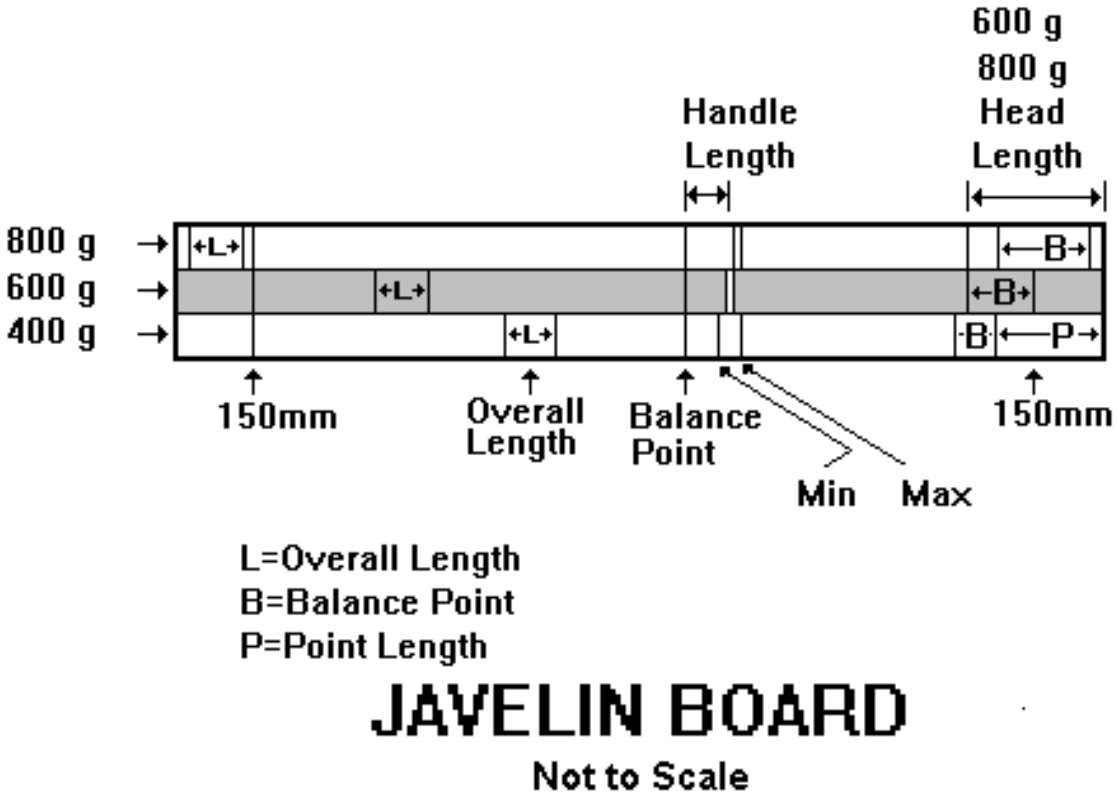


Figure 23: My Original Javelin Board for Three Sizes

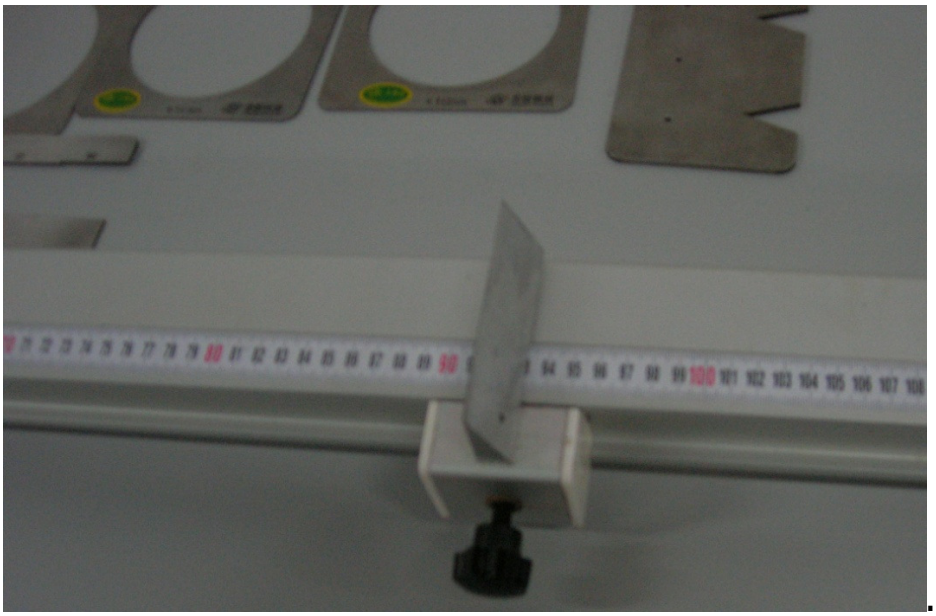


Figure 24: Beijing Javelin Board and Templates

Nordic Balance Detail

Figure 25: Nordic Javelin Balance and Length Measurements in Australia

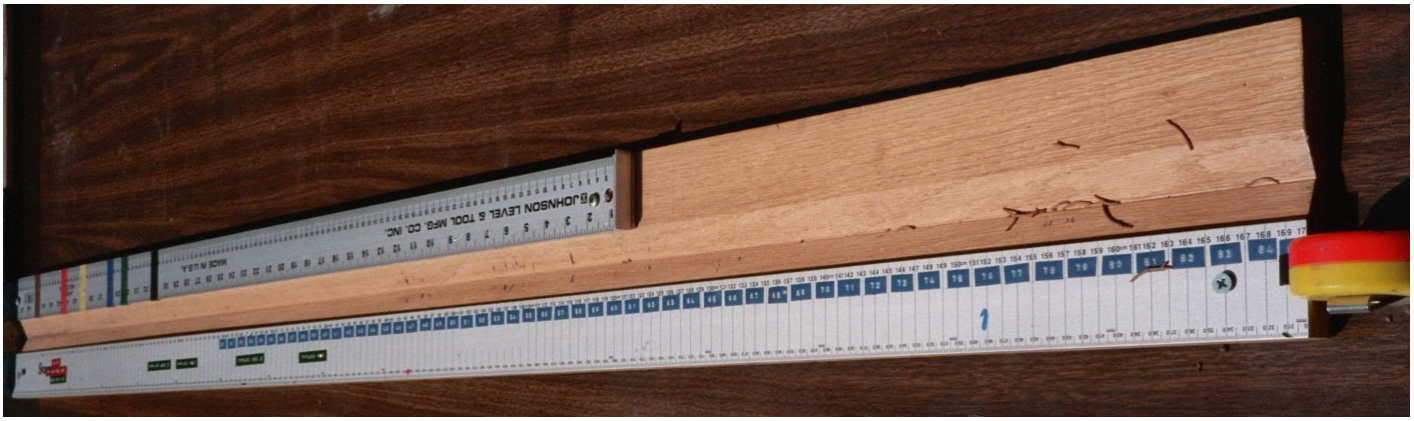


Figure 26: So. California Seaman Javelin Board

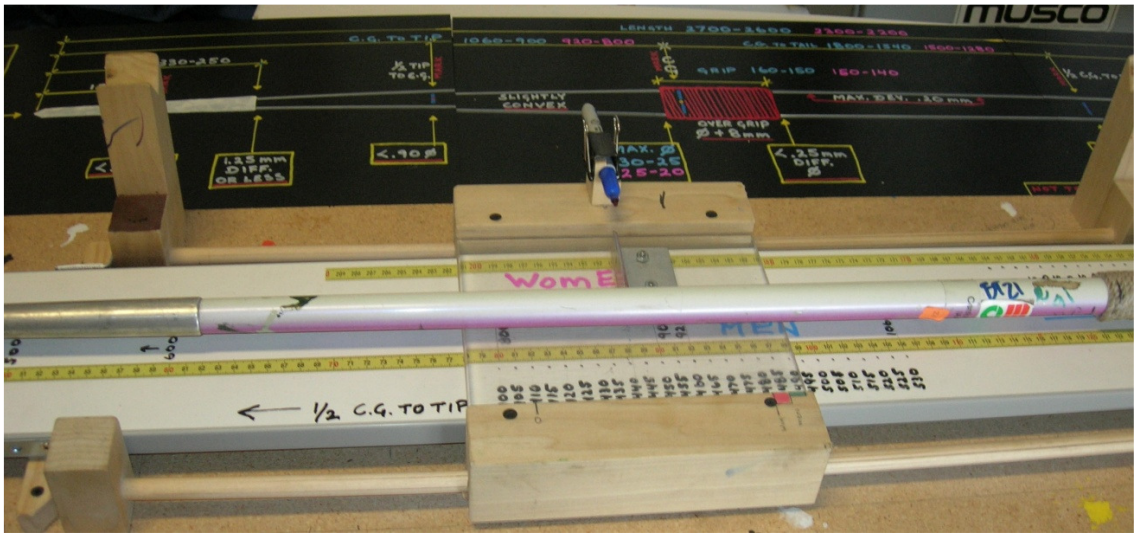


Figure 27: Moveable Javelin Balance and Length Measurement used in Iowa

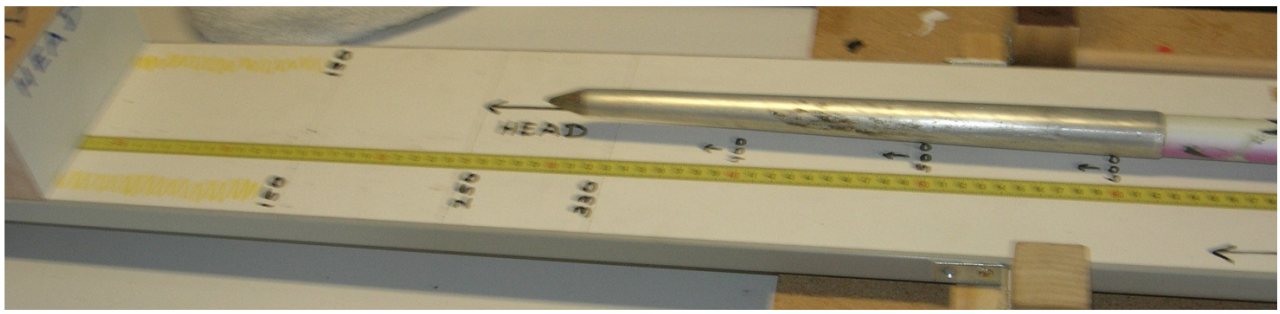


Figure 28: Head Measurement for Javelin (Iowa)

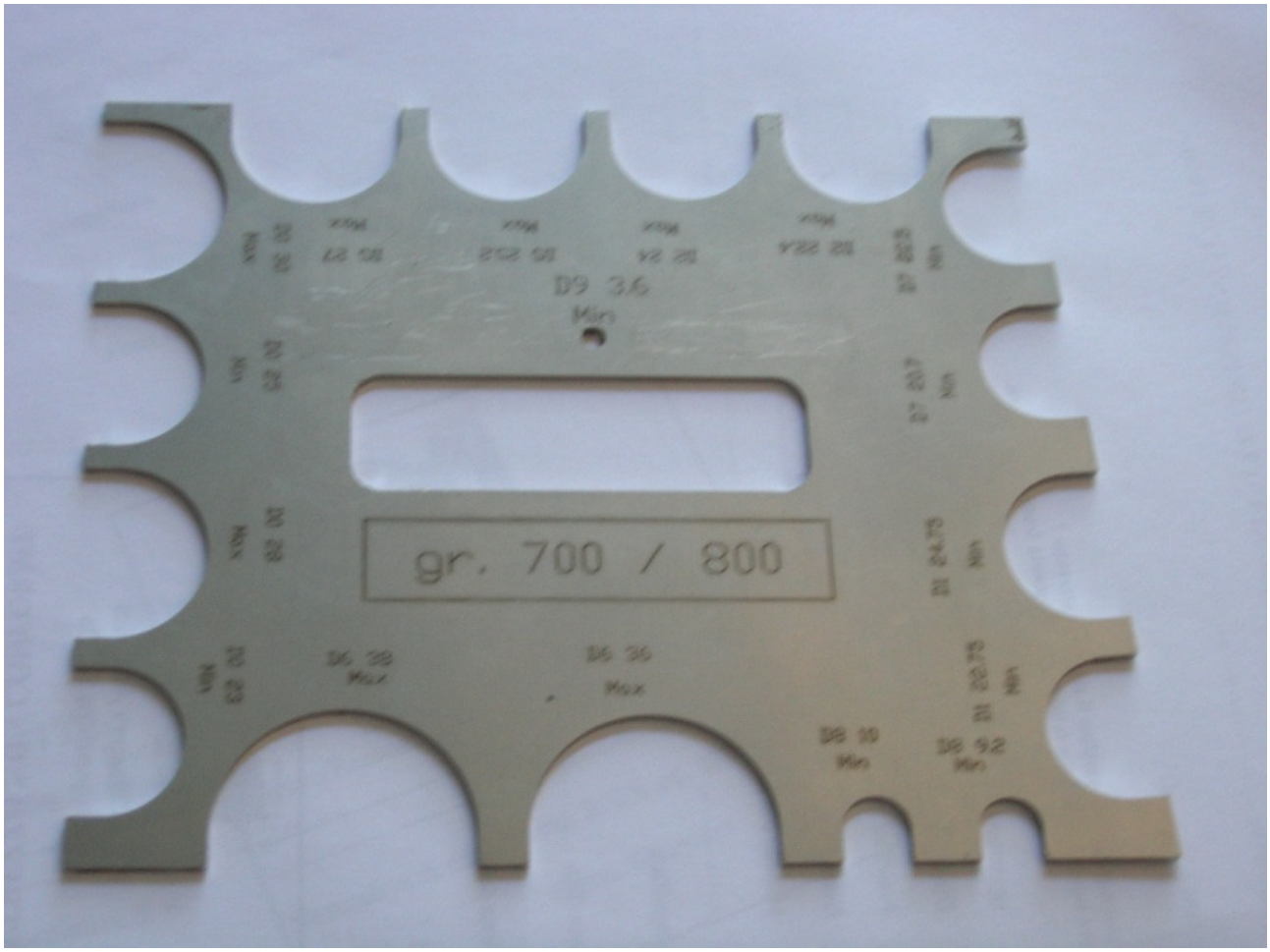


Figure 29: Javelin Diameter Measurement used in Italy

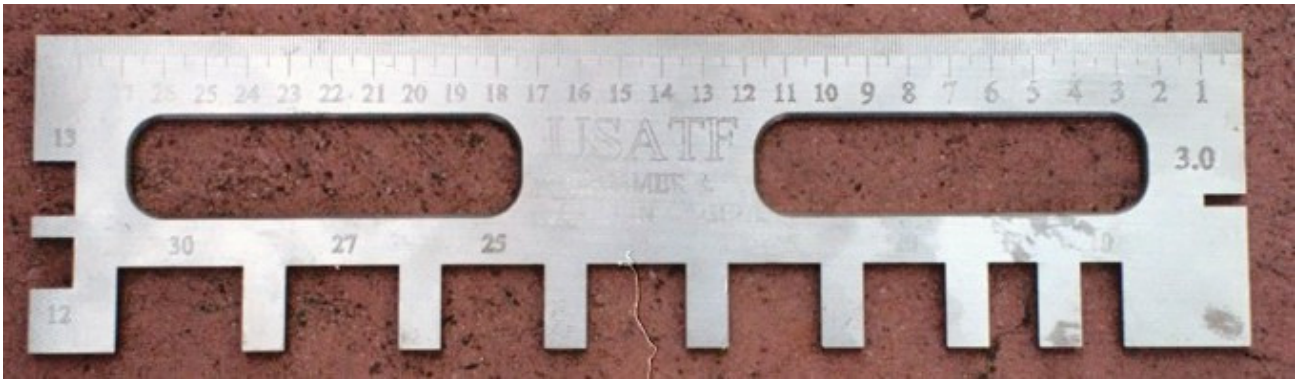


Figure 30: Javelin Contour Gauge used in So. California

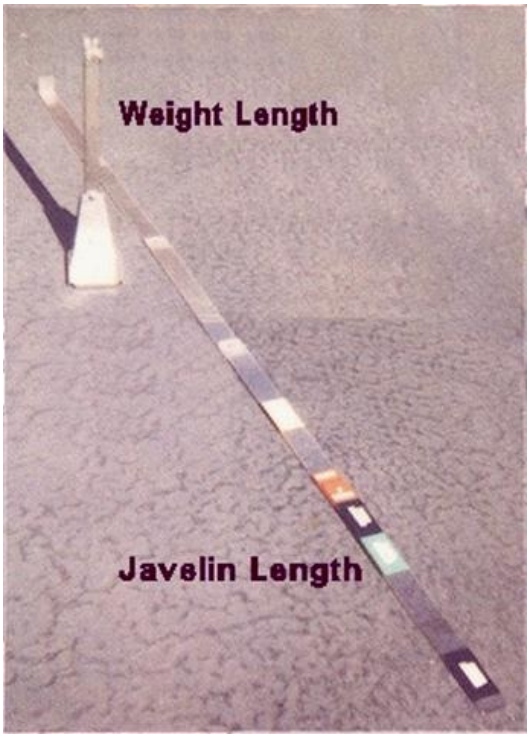


Figure 31: Gill Javelin Overall Length Measuring Device

Figure 32: Mini Javelin

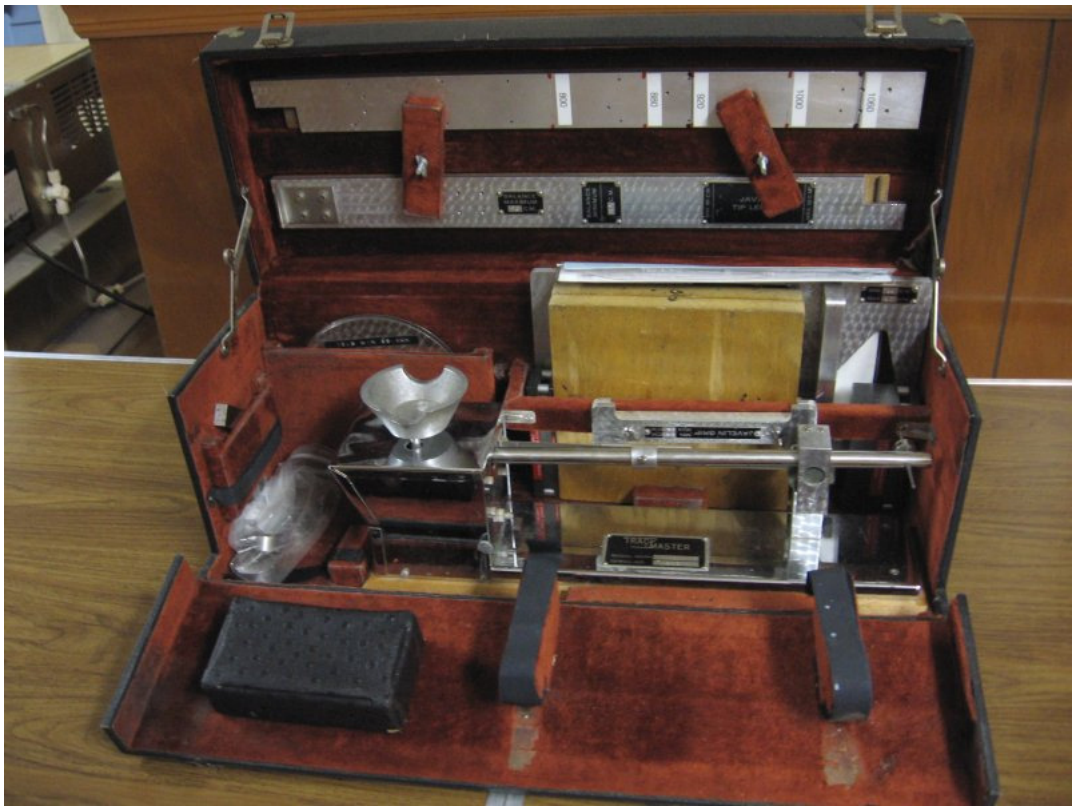


Figure 33: Original Trackmaster Case

Figure 34: Trackmaster Kit Laid out

IAAF/WMA/NCAA/NFHS Implement Certification Kit #93080

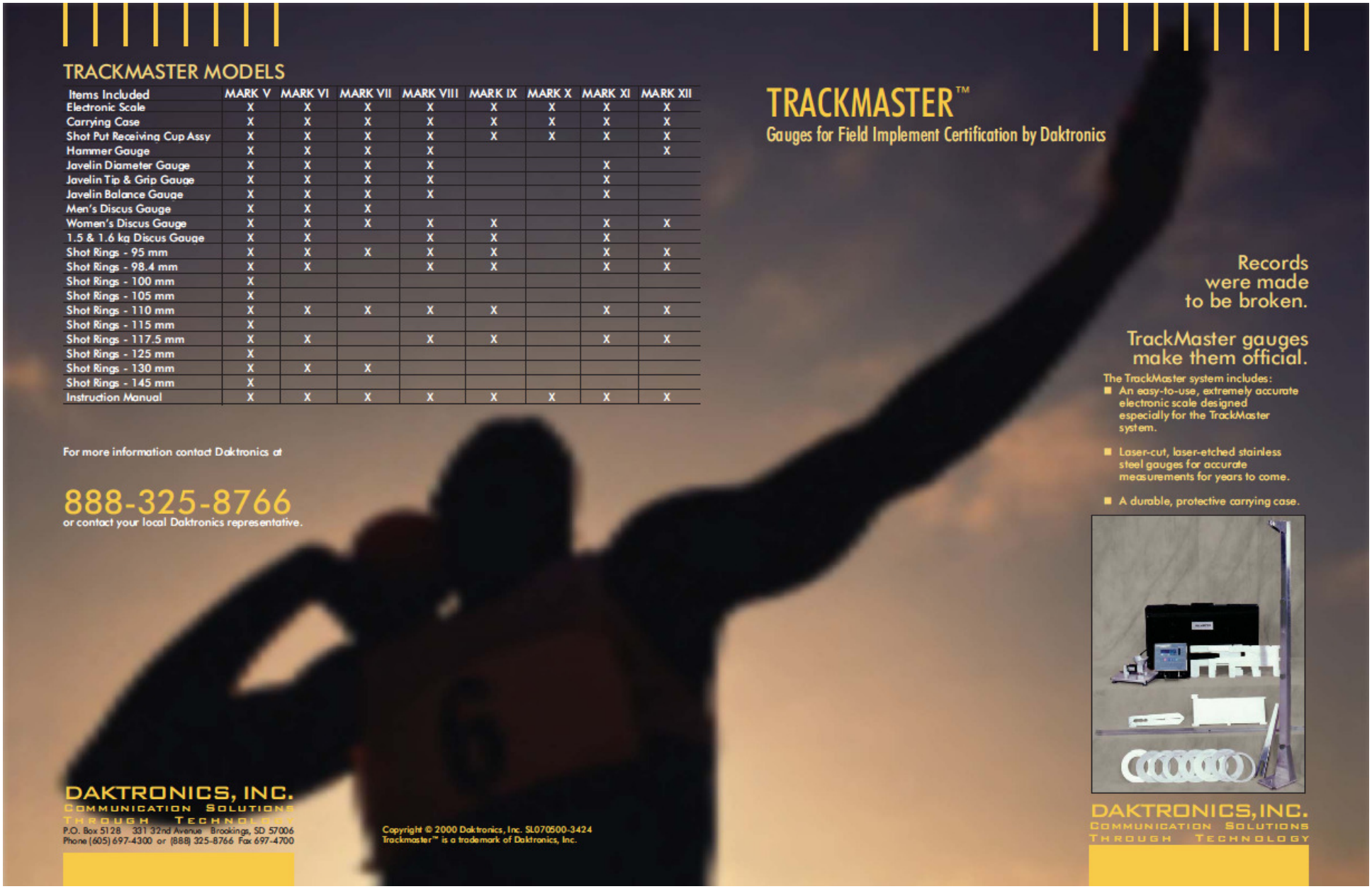
With the Gill Implement Certification Kit, officials can be assured that each implement meets specifications. This self-contained unit, including scale, checks the specifications for the discus, javelin, shot put and hammer. The gauges and labels are laser cut stainless steel for extreme accuracy and permanency.
Kit Includes:

- 85 mm and 120 mm ring gauges
- 1k, 1.5k and 2k discus gauges
- 400 g, 500 g, 600 g, 700 g and 800 g javelin grip and tip gauges
- Javelin balance and diameter gauges
- Hammer length gauge
- 20k electronic scale
- Scale ring
- Aluminum case with foam

Price: $3,590.00

Figure 35: Gill Measuring Kit

Figure 36
Daktronics Trackmaster Kit



Items Included	MARK V	MARK VI	MARK VII	MARK VIII	MARK IX	MARK X	MARK XI	MARK XII
Electronic Scale	X	X	X	X	X	X	X	X
Carrying Case	X	X	X	X	X	X	X	X
Shot Put Receiving Cup Assy	X	X	X	X	X	X	X	X
Hammer Gauge	X	X	X	X				X
Javelin Diameter Gauge	X	X	X	X			X	
Javelin Tip & Grip Gauge	X	X	X	X			X	
Javelin Balance Gauge	X	X	X	X			X	
Men's Discus Gauge	X	X	X					
Women's Discus Gauge	X	X	X	X	X		X	X
1.5 & 1.6 kg Discus Gauge	X	X		X	X		X	
Shot Rings - 95 mm	X	X	X	X	X		X	X
Shot Rings - 98.4 mm	X	X		X	X		X	X
Shot Rings - 100 mm	X							
Shot Rings - 105 mm	X							
Shot Rings - 110 mm	X	X	X	X	X		X	X
Shot Rings - 115 mm	X							
Shot Rings - 117.5 mm	X	X		X	X		X	X
Shot Rings - 125 mm	X							
Shot Rings - 130 mm	X	X	X					
Shot Rings - 145 mm	X							
Instruction Manual	X	X	X	X	X	X	X	X

Figure 37
Daktronics Trackmaster

TRACKMASTER™ Gauges for Field Implement Certification by Daktronics

For years track and field officials, coaches and athletes have depended on Trackmaster gauges to certify that the implements used during events meet specifications. Certified implements ensure that athletes can qualify for state, regional or national competition, and that new records will go in the books.

Daktronics has redesigned the Trackmaster system, adding exciting new features while maintaining the proven go/no go system. All of the implements are easy to use and are designed and manufactured for years of trouble-free use.

All TrackMaster gauges are laser cut stainless steel to provide extremely accurate measurements that will always be correct. All labels on the gauges are laser-etched for accuracy and permanency.

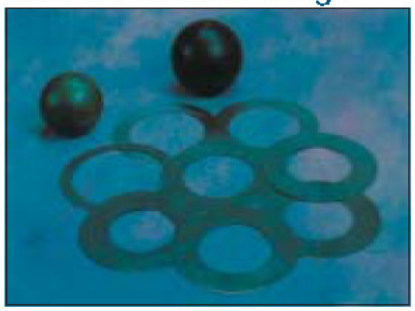
More than 500 TrackMaster systems are currently in use throughout the United States. TrackMaster implements were used at the 1996 Centennial Olympic Games in Atlanta, Georgia.

Digital Electronic Scale

Daktronics, in association with Mettler Toledo, a leading scale manufacturer, has developed a unique digital scale especially for the TrackMaster system.
Now it's easy to read the exact weight of your implement and know exactly how close it is to the specification. Just press a button to reset the scale to zero, place the implement on the receiver cup, and read the weight.

- Easy to use - no tip weights or scale calibration required
- Works for javelin, discus, hammer, shot
- Easy reset to zero prior to weighing
- Easy to read illuminated digits
- Accurate to the nearest 5/1000 of a pound (2 grams)
- Weighs implements up to 40 pounds (20,000 grams)

Shot & Hammer Rings



The standard set of shot rings has been expanded to include gauges for all WAVA shots and hammers. The shot rings are designed to check for the maximum and minimum implement diameters.

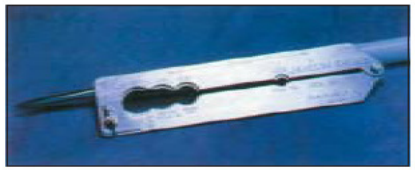
Hammer Gauge

The hammer gauge now incorporates gauge marks for the men's hammer, women's hammer, and 35 pound weight. A wire tension device allows the inspector to apply tension to the hammer wire to completely straighten it before measurement. A hammer balance test pin is mounted on the base of the hammer gauge and calipers are provided to measure the hammer wire size.

Javelin Gauges

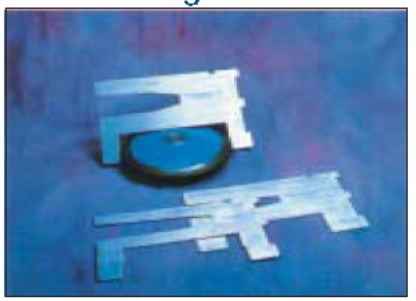
The javelin tip and grip gauge is used to measure the tip length and grip length of the javelin. This gauge includes measurements for all javelins used including those for high school, college, international and WAVA men's and women's competition.

The javelin balance gauge is used to ensure the javelin is properly weighted. All javelins pivot from a single point. The gauge folds neatly inside itself for easy storage.



The javelin diameter gauge is used to verify that the implement is the correct diameter at various points along the length of the javelin as specified by the rules.

Discus Gauges



All dimensional measurements required in testing a discus are now available with one gauge plate. Separate gauge plates are also available for the men's, women's and 1.5/1.6 kg discus. The new gauge designs use the same proven go/no go procedure to check implements.

Other Daktronics Products for Track & Field

- Scoreboards
- Timing Systems
- Start Systems
- Manual Timing
- Meet Management Systems

Available Models:

Mark V	for Collegiate, High School and WAVA competition
Mark VI	for Collegiate and High School competition
Mark VII	for Collegiate competition
Mark VIII	for High School competition
Mark IX	for High School competition without Hammer and Javelin measuring devices
Mark X	scale and carrying case

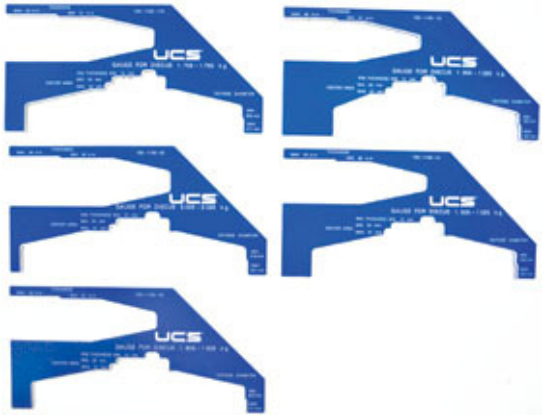
All of the models listed above include gauges for both men's and women's implements. See back page for details.

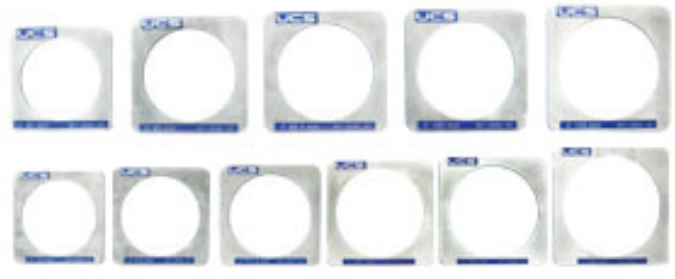
DAKTRONICS, INC.
COMMUNICATION SOLUTIONS THROUGH TECHNOLOGY

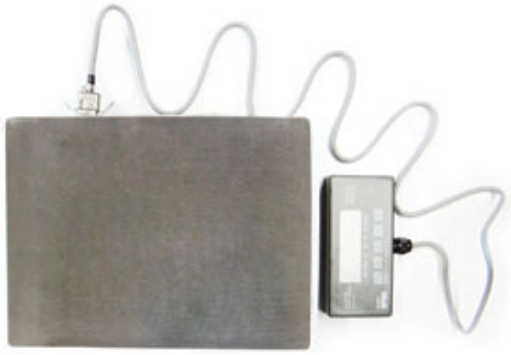
UCS Implement Certification Unit / 726-2600

Designed, engineered and manufactured to look, feel, and measure the way high quality measuring gauges should.

All UCS Implement Certification Unit are machined for the upmost accuracy, as well as, being safe and easy to use. Each unit that is comfortable to handle and aesthetically pleasing, comes complete with discus, javelin, shot put gauges and digital scale to measure implements meeting the standards of the IAAF, NCAA, and the National High School Federation. Hammer certification unit is sold separately. To protect your investment each unit comes complete with a padded rotationally molded, rolling carrying case.







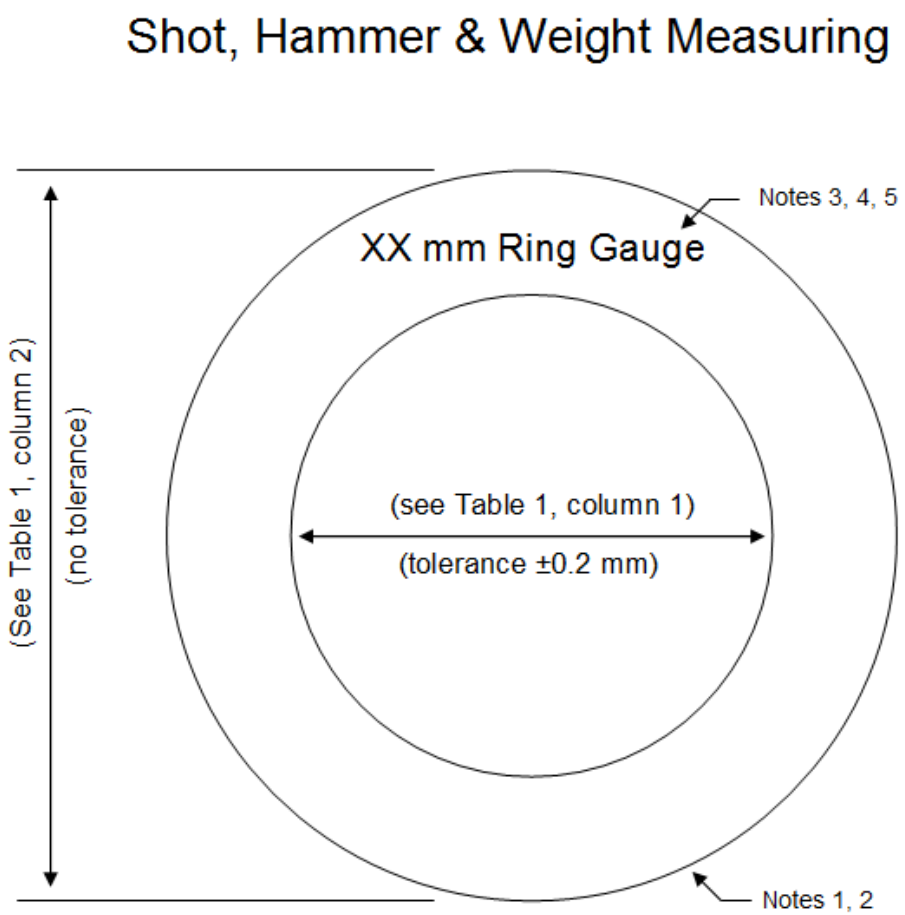
$3,700.00

Figure 38: UCS Measuring Kit

UCS Implement Carts

VS Athletic Carts

Figure 39: Implement Carts



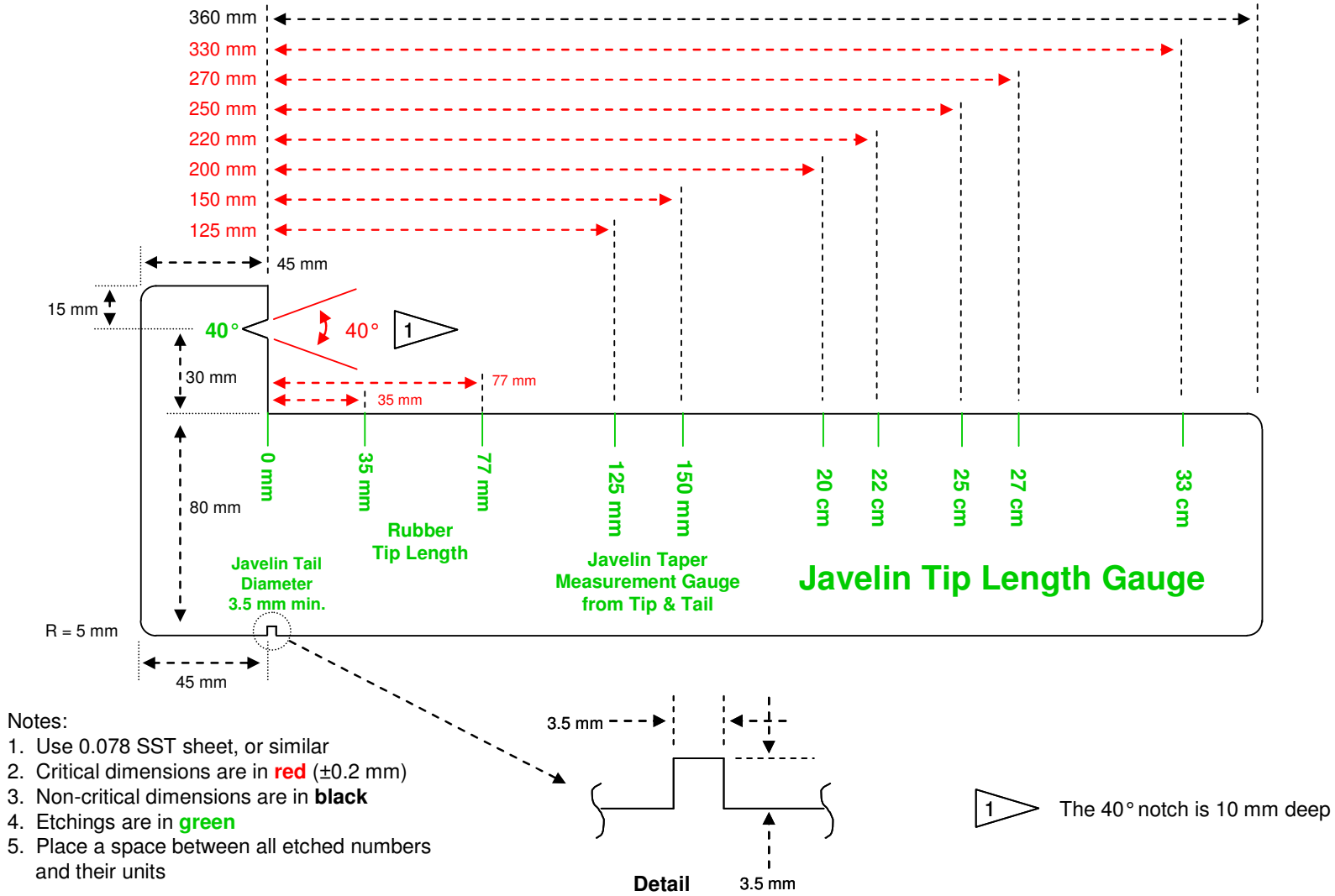
Notes:
1. Use 0.078 SST sheet, or similar
2. Inner & outer diameters to be approx. concentric, but no req'd tolerance
3. Etched text; no specified font size
4. "XX" value is from Table 1, column 1 entry
5. Put space between "XX" value and "mm" per ISO 31-0

Table 1: ring dimensions

Inner dia, **mm** (column 1)	Outer dia, **inch** (column 2)
80	7
85	7
90	7
95	7
98.4	7
100	7
105	7
110	7
117.5	7
120	7
125	7
130	7
132.5	7
135	9
140	9
145	9
150	9
155	9
165	9
180	9

Figure 40: Ring Gauge Templates

Javelin Tip & Taper Length Gauge



Notes:
1. Use 0.078 SST sheet, or similar
2. Critical dimensions are in **red** (±0.2 mm)
3. Non-critical dimensions are in **black**
4. Etchings are in **green**
5. Place a space between all etched numbers and their units

Figure 41: Javelin Head Template

Osaka

Beijing

Eugene

Figure 42: Retrieval Vehicles

Figure 43: Remote site scale setup in Pacific Northwest

Doubly redundant scales deployed at throwing location: Sartorius CPA34001S scale on left, powered by factory-optional battery pack (hidden behind scale), and an older model Trackmaster scale (RLWS load cell connected to Mettler-Toledo Panther terminal) powered by a deep-cycle battery via a static inverter.