

**Stanley Tools**  
**Product Specification**

For the following Rafter and Carpenter Squares:

45-010/011 Rafter Square *(45-010 Discontinued)*  
45-020/021 Rafter Square - *Discontinued*  
45-118 Contractor Grade™ Metric Rafter Square  
45-120/119 Rafter Square *(45-120 Discontinued)*  
45-910 Rafter Square  
45-300 & 305 Carpenter Squares  
45-500 Carpenter Square  
45-530 Metric Rafter Square  
45-600 English/Metric Carpenter Square  
45-012 & 912 One Foot Square  
45-068 Eight Inch Square

Prepared by: Bob Owens                      Date: 9/23/93

Marketing: Theresa Loughran              Date:

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(See last page for revision history)

Revised by: Bob Owens

Marketing: John Rose                      Date: 8/5/95

1. Proposed Use or Purpose:

For checking or marking 90-degree squareness and making linear and angular measurements and layouts.

2. Features:

2.1 Graduations and other graphics are to be imprinted on the square to a minimum depth of .004" (0.10 mm).

2.2 The graduation increments on the various edges of the square shall be as described in the "Carpenter and Rafter Features Table" on page 2 of this specification.

2.3 See the "Carpenter and Rafter Features Table" on page 2 of this specification for the type of graduations and tables imprinted on the square.

2.4 See the "Carpenter and Rafter Features Table" on page 2 of this specification for the square material.

# CARPENTER AND RAFTER SQUARE FEATURES TABLE

		SQUARES													
		010	020	118	119	910	300	305	500	600	530	012	912	068	
<b>Features</b> Graduations: Bodyfront Inside Bodyfront Outside Bodyback Inside Bodyback Outside  Tonguefront Inside Tonguefront Outside Tongueback Inside Tongueback Outside	1/8	020	1/8	2mm	1/8	1/8	1/8	1/8	1/8	2mm	2mm	1/16	1/16	1/16	
	1/16	021	1/16	2mm	1/16	1/16	1/8	1/8	1/8	2mm	2mm	1/16	1/16	1/16	
	1/16		1/16	2mm	1/16	1/16	1/8	1/8	1/8	1/8	2mm	1/16	1/16	1/16	
	1/12		1/12	2mm	1/12	1/12	1/8	1/8	1/8	1/8	2mm	1/16	1/16	1/16	
	1/8		1/8	2mm	1/8	1/8	1/8	1/8	1/8	2mm	2mm	1/16	1/16	1/16	
	1/16		1/16	2mm	1/16	1/16	1/8	1/8	1/8	2mm	2mm	1/16	1/16	1/16	
	1/10		1/10	2mm	1/10	1/10	1/8	1/8	1/8	1/8	2mm	1/16	1/16	1/16	
	1/12		1/12	2mm	1/12	1/12	1/8	1/8	1/8	1/8	2mm	1/16	1/16	1/16	
	Material	ALUM	SS	STL	STL	STL	ALUM	ALUM	ALUM	STL	STL	STL	ALUM	AL/S	AL/S
	Finish	B/Y	POL	B/Y	P&L	P&L	POL	B/Y	B/Y	P&L	P&L	P&L	B/Y	P&L	P&L
Table style	A	A	A	B	B	D	D	D	E	E	C	NONE	NONE	NONE	
Length of Body															
Length of Tongue															

**Material Codes**

- ALUM = Aluminum
- STL = Steel
- SS = Stainless Steel
- AL/S = Aluminum or Steel

**Finish Codes**

- POL = Polished
- P&L = Polished & Lacquered
- B/Y = Black with Yellow Fill

**Table Codes**

- A = Framing Tables: Rafter & Board tables with lines. Brace and octagon tables
- B = Framing Tables: Rafter, board, brace and octagon tables
- C = Metric Tables, without lines
- D = Carpenter Tables: Angle markings, screw sizes, conversion, equivalents tables
- E = Reverse Read Table only
- F = Metric Tables with lines

2.5 The body of the squares shall be;

2.5.1 45-068: 8" x 1 1/2" (203mm x 38mm)

2.5.2 45-012 & 912: 12" x 1 1/2" (305mm x 38mm)

2.5.3 All others: 24" x 2" (610mm x 51mm)

2.6 The tongue of the squares shall be;

2.6.1 45-068: 6" x 1" (152mm x 25mm)

2.6.2 45-012 & 912: 8" x 1" (203mm x 25mm)

2.6.3 All others: 18" x 1 1/2" (457mm x 38mm)

### 3. Performance:

#### 3.1 Accuracy

##### 3.1.1 Scales

3.1.1.1 The tolerance between any two adjacent graduations shall not exceed .005" (0.13 mm).

3.1.1.2 The accumulated scale tolerance along any edge shall not exceed .012" (0.3 mm) from that first edge's graduation to any other graduation.

3.1.1.3 The tolerance from the outside or inside corner of the square to the first graduation on the tongue or body shall not exceed .005" (0.13 mm).

3.1.1.4 The registration of graduations along the inside edge to those along the outside edge shall not exceed .005" (0.13 mm) misalignment.

##### 3.1.2 Flatness

The square shall be flat within .016 in./ft. (1.3 mm/m).

##### 3.1.3 Straightness

The body and tongue outside edges shall not deviate from true straightness by more than .007" (0.18 mm).

##### 3.1.4 Squareness

The Out-of-Square tolerance of the outside edge of the tongue with respect to the outside edge of the body shall not exceed .010" (0.25 mm), except for the 45-012, 45-912 and 45-068 which will be .015"

(0.38) The tolerance is to be determined at the extreme ends of the edges.

### 3.2 Environmental

#### 3.2.1 Temperature

The product shall remain functional after exposure to the following temperature ranges:

Normal Operating 0° F to 120° F (-20° C to 50° C)

Shipping -32° F to 140° F (-35° C to 60° C)

Storage -65° F to 180° F (-55° C to 80° C)

#### 3.2.2 Corrosion Resistance

The packaged product shall withstand the Stanley 50 hour programmed humidity test.

#### 3.2.3 Drop Test

The square shall withstand one drop from a height of 39 inches (1 m) onto a concrete surface in any attitude, and retain the accuracy specified in 3.1.4. (Exception: Out-of-Squareness can be .012", (0.5 mm) as a result of dropping.) Maximum damage shall be no more than a nick or burr that can be removed by filing.

#### 3.2.4 Strength (This test only for full size squares)

The square body shall be placed across two rounded supports which provide line contact. The distance between the centers of support shall be .75 in. (19mm) less than the square body length. The load shall be applied gradually, using a cylinder to provide line contact at the midpoint of the square. The square body shall be subjected to a load of 20 lbs. (90 N) and then released gradually. The permanent deflection at midpoint after the load is removed shall not exceed .039" (1 mm).

### 4. Life:

With reasonable care and use, The square should perform satisfactorily for more than 10 years. The square should be replaced if it becomes bent or the graduations are illegible.

5. Appearance:

5.1 Graphics shall be distinct and legible.

5.2 The square shall be smoothly and uniformly buffed or polished and finished as specified in the "Carpenter and Rafter Features Table" on page 2 of this specification.

5.3 All surfaces, edges, and corners shall be free of burrs and sharp projections.

5.4 The packaged square shall be free of fingerprints, nonspecified oil or grease, foreign matter, and dirt.

5.5 Branding or labeling shall be legible.

6. Proper Use and Care:

6.1 Permanent deformation may occur for the following reasons:

6.1.1 If subjected to excessive force loads.

6.1.2 If used as a pry bar.

6.2 Failure to maintain adequate surface protection may allow corrosion to occur.

7. Standardization:

There is no possible product substitutions for these products from other divisions at this time, 9/23/93.

8. Private Brands:

All the Products described in this Product Performance Specification are available for private brands.

9. Government Specifications:

The squares described in this Product Performance Specification do not conform to the requirements of U.S. Government Specification GGG-S-656C dated February 5, 1973 for squares, Carpenters, Diemakers, and Machinists, Type II, Class A, Style 2, Graduation Style A or B for various reasons. See a current copy of this government specification for areas of nonconformance.

10. Labeling or Branding:

10.1 Package shall warn, caution and instruct the user of the hazards and use as described in Section 6, Proper Use and Care.

10.2 The product will be branded with the Stanley logo, product number and U.S.A. or with appropriate logo, number, and U.S.A. when sold under a private brand.

11. Tests

Performance tests for this product are filed in the Engineering Laboratory under its appropriate product number as designated on the first page of this specification.

## REVISION HISTORY

<u>Date of Revision</u>	<u>OC/ECR</u>	<u>Revised By</u>
8/5/95	95-165	Bob Owens

## Metric/English Conversion Reference Table

<u>Metric</u>	<u>English</u>
-55 C -----	-65 F
-35 C -----	-32 F
-20 C -----	0 F
4 C -----	38 F
24 C -----	75 F
38 C -----	100 F
50 C -----	120 F
60 C -----	140 F
80 C -----	180 F
0.1 mm -----	.004 in.
0.13 mm -----	.005 in.
0.25 mm -----	.010 in.
0.4 mm -----	.015 in.
1.3 mm -----	.051 in.
1.9 mm -----	.075 in.
2.0 mm -----	.079 in.
100 mm -----	3.94 in.
305 mm -----	12.00 in.
1 m -----	39.37 in.
0.4 mm/m -----	.0004 in./in.
1 mm/m -----	.001 in./in.
2.5 mm/m -----	.0025 in./in.
3 mm/m -----	.003 in./in.
60 N -----	13.5 lb.
0.4 N-m -----	3.5 in.-lb.
0.5 N-m -----	4.5 in.-lb.
1.7 N-m -----	15 in.-lb.
3.4 N-m -----	30 in.-lb.
100 mm/sec -----	3.9 in./sec.
10 grams -----	.3527 oz.

**Note:** Conversions between metric and English units of measure listed on this page are rounded values. For exact values convert by calculation.