

# SQUARE CONE® WASHER SEMS

## SCREW AND WASHER ASSEMBLIES



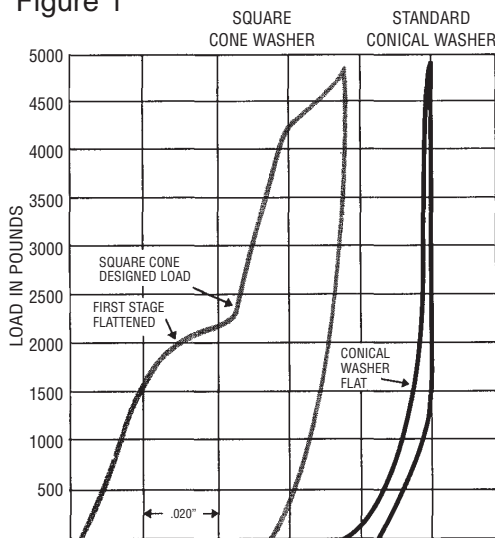
This unique Sems fastener features an integral, free-spinning, Square Cone washer. With two distinct configurations, this dual action spring washer has two separate load deflection rates. The configurations act in unison to provide a reliable low-torque, controlled tension fastener. The Square Cone Sems assembly provides a higher retained clamp load and improved compensation for thermal cycling and vibration. This fastener is capable of accepting a high tension load while maintaining alive spring action and generates a constant load, even with variations in installation torques. By increasing the acceptable driving torque range, it enhances flexibility in component design.

The Square Cone washer's long deflection period and two-stage loading contribute to better control during installation, improve tool bit life and **reduce operator fatigue**. (See Fig. 1) Load is directed toward the outer diameter of the washer, making the fastener ideal for clamping fragile materials and preventing stress cracking problems around clearance holes.

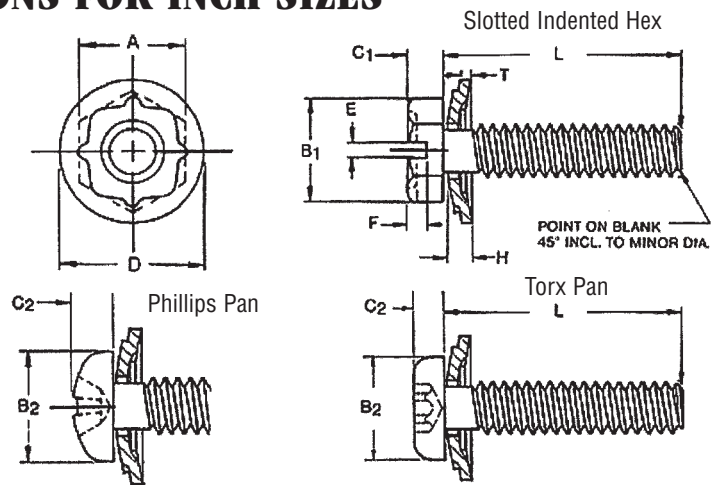
## SLOTTED INDENTED HEX HEAD, TORX® AND PHILLIPS PAN HEAD

### SPECIFICATIONS FOR INCH SIZES

Figure 1



TYPICAL DEFLECTION REACTION CURVE



- A = Across Flats
- B<sub>1</sub> = Across Corners
- B<sub>2</sub> = Pan Head O.D.
- C<sub>1</sub> = Hex Head Height
- C<sub>2</sub> = Pan Head Height
- D = Washer Diameter

- H = Overall Washer Height
- T = Washer Material Thickness
- E = Slot Width
- F = Slot Depth

Other head styles and drives may be specified

### INCH SIZES

SIZE	A Wash	B <sub>1</sub> Hex	B <sub>2</sub> Pan	C <sub>1</sub> Hex	C <sub>2</sub> Pan	PHILLIPS DRIVER	TORX DRIVER	D Wash	H Wash	T Wash	E Hex	F Hex	WASHER NO.
4-40	.187	.202	.219	.096	.080	No. 1	T10	.250	.039	.015	.039	.054	6904-61-02
	.181	MIN.	.205	.084	.070			.244	.021		.031	.044	
6-32	.250	.272	.270	.096	.097	No. 2	T15	.320	.061	.025	.048	.054	6906-61-02
	.244	MIN.	.256	.084	.087			.307	.039		.038	.044	
8-32	.250	.272	.322	.120	.115	No. 2	T20	.383	.073	.030	.054	.066	6908-61-02
	.244	MIN.	.306	.105	.105			.370	.050		.045	.052	
10-32	.312	.340	.373	.141	.133	No. 2	T25	.446	.075	.032	.060	.080	6910-61-54
	.305	MIN.	.357	.126	.122			.433	.051		.050	.066	
1/4-20	.375	.409	.492	.206	.175	No. 3	T30	.508	.088	.039	.075	.101	6914-61-07
	.367	MIN.	.473	.140	.162			.495	.064		.064	.083	

**Note:** Square Cone® is a Registered Trademark of Illinois Tool Works Incorporated Inc. Torx® is a Registered Trademark of Camcar-Textron Incorporated.

\* Slotted Hex Optional

WCL also stocks Square Dome imported Sems

# SQUARE CONE® WASHER SEMS

## SCREW AND WASHER ASSEMBLIES

### APPROXIMATE TIGHTENING TORQUES FOR MACHINE SCREW SEMS WITH TOOTH LOCK WASHERS OR SQUARE CONE® WASHERS



CUSTOMARY DIMENSIONS  
EXPRESSED AS INCH-POUNDS GRADE 2 SCREW MATERIAL

SIZE	4-40	6-32	8-32	10-32	1/4-20
TORQUE	5.0	11.0	21.0	35.0	75.0

METRIC DIMENSIONS  
EXPRESSED IN NEWTON-METERS (N.m) PROPERTY CLASS 5.8 SCREW MATERIAL

SIZE	M2.0	M3.0	M3.5	M4.0	M5.0	M6.0
TORQUE	.3	.6	1.2	2.4	4.0	7.5

(1 N.m = 8.85 Inch-pounds. N.m X 8.85 = inch pounds. Inch pounds x .113 = N.m)  
Data also applicable to over-the-thread style Tooth and Square Cone washers.

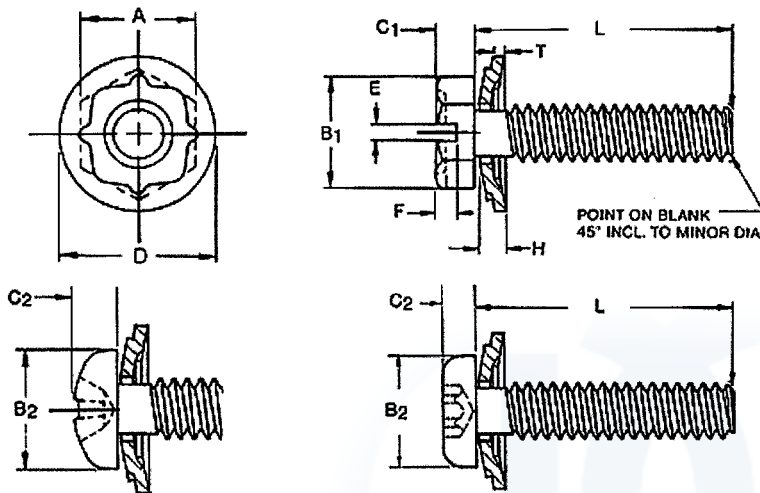
## SLOTTED INDENTED HEX HEAD, TORX® AND PHILLIPS PAN HEAD SPECIFICATIONS FOR METRIC SIZES

### METRIC SIZES

SIZE	A Wash	B <sub>1</sub> Hex	B <sub>2</sub> Pan	C <sub>1</sub> Hex	C <sub>2</sub> Pan	PHILLIPS DRIVER	TORX DRIVER	D Wash	H Wash	T Wash	E Hex	F Hex	WASHER NO.
M3X0.3	5.00 4.82	5.40 MIN.	5.60 5.30	2.30 2.00	2.40 2.20	No. 1	T10	6.19 6.34	1.55 0.99	0.64	1.00 0.80	1.17 0.84	6904-61-02
M3.5X0.6	5.50 5.32	5.96 MIN.	7.00 6.60	2.60 2.30	2.60 2.30	No. 2	T15	7.82 7.52	1.55 0.99	0.64	1.20 1.00	1.47 1.17	6906-61-02
M4X0.7	7.00 6.78	7.59 MIN.	8.00 7.60	3.00 2.60	3.10 2.80	No. 2	T20	8.46 8.20	1.65 1.32	0.76	1.50 1.20	1.75 1.40	6908-61-02
M5X0.8	8.00 7.78	8.74 MIN.	9.50 9.10	3.80 3.30	3.70 3.40	No. 2	T25	9.73 9.47	2.59 1.65	0.94	1.59 1.20	2.18 1.78	6910-61-54
M6X1.0	10.00 9.78	10.95 MIN.	12.00 11.50	4.70 4.10	4.60 4.30	No. 3	T30	12.90 12.57	2.24 1.63	.099	1.90 1.60	2.36 1.91	6914-61-07

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\* Slotted Hex Optional



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