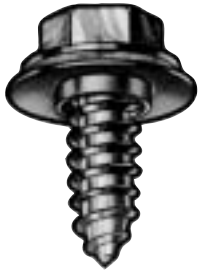


## STEMS™ FASTENERS SCREW AND WASHER ASSEMBLIES

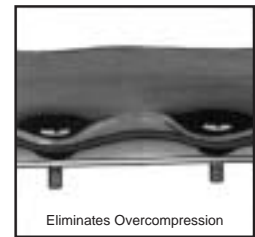
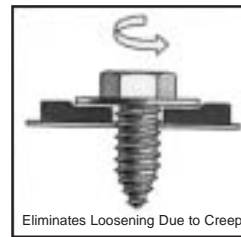
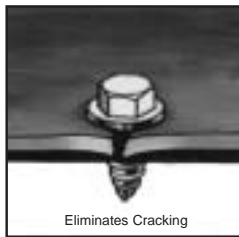
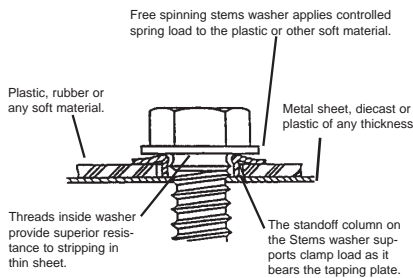


The Stems fastener is specifically designed for assembling plastic, rubber and other materials to metal or plastic bearing plates **without causing dimpling or cracking** under conventional tightening torques.

It is extremely difficult to generate and sustain adequate clamping force in a joint that involves the fastening of plastic, rubber or other soft materials to metal because the material creeps under load relieving the clamping force. The unique washer assembled to the Stems fastener is usually conical and has a standoff column that bears against the metal tapping plate to support the clampload without deforming or cracking any plastic, rubber or fragile bearing material. Creep or cold flow problems are eliminated and the fastener joint maintains the initial clamp load.

The washer's conical shape helps absorb driving torque and prevent stripping of the screw. The spring load generated as the washer deflects sustains tension in the assembly. The screw threads go up inside the washer to provide added resistance to stripping in thin sheet.

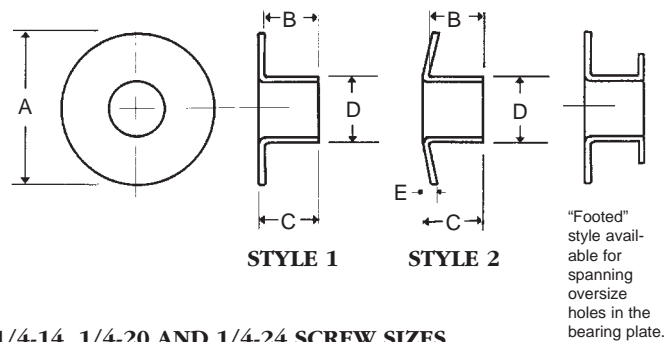
The Stems fasteners from WCL Company through ITW Shakeproof are available in a variety of head styles and thread forms.



### STEMS WASHER SPECIFICATIONS — INCH DIMENSIONS

#### 8-18 AND 8-32 SCREW SIZES

WASHER STYLE	(A) WASHER O.D.	(B) MEAN STEM HEIGHT (±.005")	(C) OVERALL HEIGHT	(D) HUB MAX DIA	(E) CROWN HEIGHT	MATERIAL THICKNESS
1	.465 .455	.103	.130 .120	.240	N/A	.022
2	.551 .541	.103	.130 .120	.240	.039 .030	.022
2	.669 .659	.103	.130 .120	.240	.047 .037	.022
1	.465 .455	.123	.150 .140	.240	N/A	.022
2	.484 .469	.133	.156 .146	.240	.045 .035	.018
1	.390 .375	.135	.162 .152	.240	N/A	.022
1	.787 .767	.137	.162 .155	.240	N/A	.022
2	.669 .659	.142	.165 .155	.240	.067 .057	.018
2	.551 .541	.148	.175 .165	.240.240	.039 .029	.022
2	.590 .580	.148	.175 .165	.240	.039 .029	.022
1	.465 .455	.182	.208 .199	.240	N/A	.022
2	.551 .541	.162	.185 .175	.240	.039 .029	.018
2	.551 .541	.182	.209 .199	.240	.047 .037	.022
2	.669 .659	.182	.205 .195	.240	.046 .036	.018
1	.787 .767	.182	.209 .199	.240	N/A	.022
2	.669 .659	.249	.276 .266	.240	.047 .037	.022
1	.390 .375	.400	.427 .417		N/A	.022



#### 1/4-14, 1/4-20 AND 1/4-24 SCREW SIZES

WASHER STYLE	(A) WASHER O.D.	(B) MEAN STEM HEIGHT (±.005")	(C) OVERALL HEIGHT	(D) HUB MAX DIA	(E) CROWN HEIGHT	MATERIAL THICKNESS
2	.944 .924	.098	.128 .118	.315	.070 .060	.025
2	.679 .659	.152	.196 .186	.346	N/A	.039
2	.945 .925	.176	.205 .197	.315	.080 .070	.025
2	.944 .924	.216	.246 .236	.315	.080 .070	.025
2	.784 .768	.298	.328 .318	.315	.074 .064	.025
1	.685 .665	.349	.393 .383	.350	N/A	.039

Washer Material: SAE 1050 — RC 42-46.  
For other sizes or lengths, contact your Shakeproof representative.

**Note:** STEMSTM is a registered trademarks of Illinois Tool Works Incorporated.