



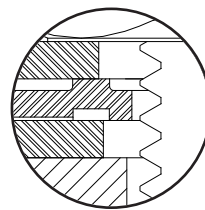
OPTIMUM FLAT WASHER CONFIGURATION CHART FOR USE WITH SQUIRTER® DTIs

Non-standard holes in outer plies must be covered by an appropriate ASTM F436 flat washer (see RCSC Table 6.1).

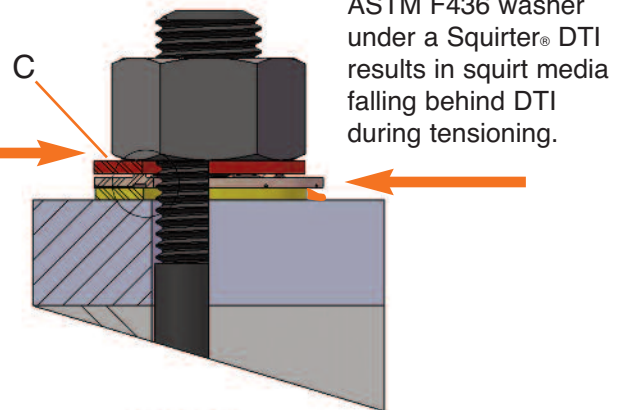
If an ASTM F436 washer is required under a Squirter® DTI, a special flat washer should be procured for optimum squirt performance. While standard ASTM F436 washers are acceptable per specification, their use sacrifices some of the benefits of a Squirter® DTI. See below for details.

See flat washer information on reverse side, call us, or see our website for details.

Detail C of Figure 1.2 illustrates problematic use of standard ASTM F436 washers on top of DTI bumps, eccentricity due to sloppy washer inner diameters, may result in partial compression of DTI bumps.

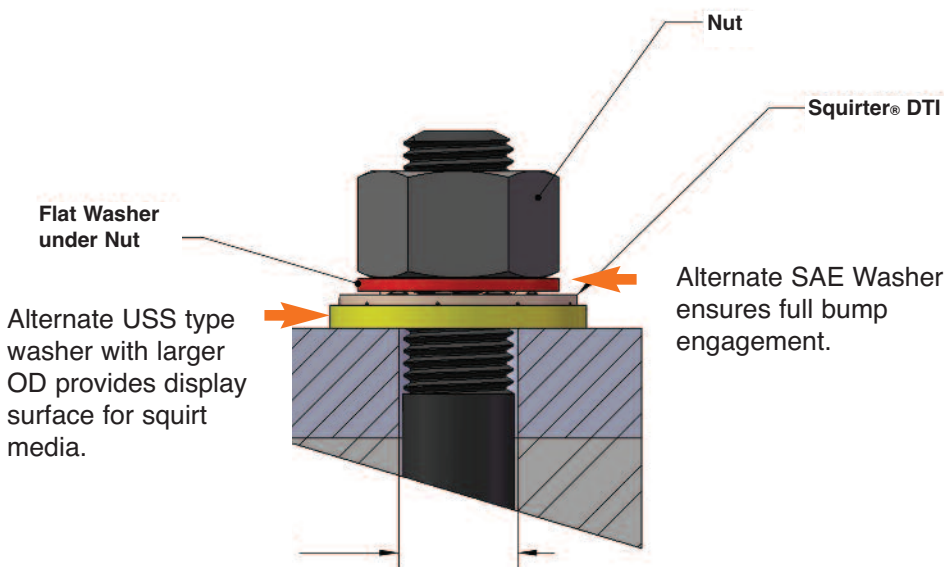


Detail C



Use of a Standard ASTM F436 washer under a Squirter® DTI results in squirt media falling behind DTI during tensioning.

FIGURE 1.2



Flat Washer under Nut

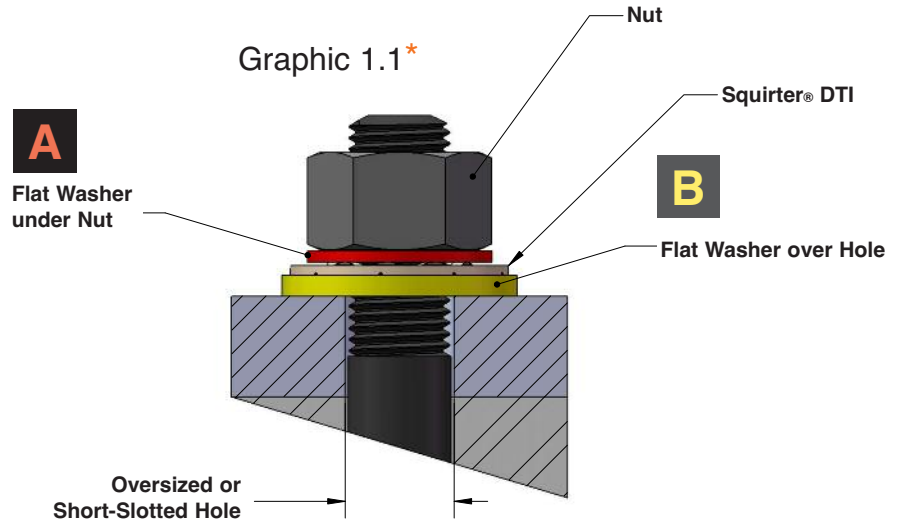
Alternate USS type washer with larger OD provides display surface for squirt media.

Alternate SAE Washer ensures full bump engagement.

Flat Washer Recommendations for Use With Squirter DTI's

Optimum Washer (See Graphic 1.1)	Bolt Type	Bolt/Squirter DTI Size						
		3/4"	7/8"	1"	1-1/8"	1-1/4"	1-3/8"	1-1/2"
A flat washer under nut	A325 or A490	3/4" F436	7/8" F436	1" F436	1-1/8" F436	SAE 1-1/8"	SAE 1-1/4" or 1-1/4" F436	SAE 1-3/8" or 1-3/8" F436
B flat washer over OS/SS	A325	3/4" USS	7/8" USS	1" USS	118UH	114UH	138UH	112UH
	A490	3/4" USS	7/8" USS	1" USS	118USPTKH	114USPTKH	138USPTKH	112USPTKH

Washer A (red washer per table above and Graphic 1.1 right) is recommended for all Standard and Squirter® DTI applications. **Washer B** (yellow washer per 1.1 and table) is only recommended for oversized and short-slotted hole configurations.



Various Flat Washer Dimensions ¹			
Size/Type	ID	OD	Thickness
3/4" F436	13/16"	1-15/32"	.122-.177
7/8" F436	15/16"	1-3/4"	.136-.177
1" F436	1-1/16"	2"	.136-.177
1-1/8" F436	1-3/16"	2-1/4"	.136-.177
1-1/4" F436	1-3/8"	2-1/2"	.136-.177
1-3/8" F436	1-1/2"	2-3/4"	.136-.177
1-1/2" F436	1-5/8"	3"	.136-.177

3/4" USS	13/16"	2"	.122-.177
7/8" USS	15/16"	2-1/4"	.136-.192
1" USS	1-1/16"	2-1/2"	.136-.192

1-1/8" SAE	1-1/4"	2-1/4"	.108-.160
1-1/4" SAE	1-3/8"	2-1/2"	.136-.192
1-3/8" SAE	1-1/2"	2-3/4"	.136-.192
1-1/2" SAE	1-5/8"	3"	.136-.192

Applied Bolting Special USS washers

118UH	1-3/16"	2-3/4"	.136 min
114UH	1-5/16"	3"	.136 min
138UH	1-7/16"	3-1/4"	.136 min
112UH	1-9/16"	3-1/2"	.136 min

118USPTKH	1-3/16"	2-3/4"	5/16"
114USPTKH	1-5/16"	3"	5/16"
138USPTKH	1-7/16"	3-1/4"	5/16"
112USPTKH	1-9/16"	3-1/2"	5/16"

¹ F436 Dimensions per ASTM Specifications, USS and SAE dimensions per ANSI B18.22.1

ASTM F 959 DTI Dimensions			
3/4" A325	.790"	1.625"	.126-.230
7/8" A325	.921"	1.875"	.142-.240
1" A325	1.048"	2.000"	.158-.270
1-1/8" A325	1.179"	2.250"	.158-.270
1-1/4" A325	1.311"	2.500"	.158-.270
1-3/8" A325	1.442"	2.750"	.158-.270
1-1/2" A325	1.573"	3.000"	.158-.270

3/4" A490	.790"	1.750"	.126-.230
7/8" A490	.921"	2.000"	.142-.240
1" A490	1.048"	2.250"	.158-.270
1-1/8" A490	1.179"	2.500"	.158-.270
1-1/4" A490	1.311"	2.750"	.158-.270
1-3/8" A490	1.442"	3.000"	.158-.270
1-1/2" A490	1.573"	3.250"	.158-.270

F436 washers have a tight ID (+1/16") up to and including 1-1/8" bolt size and sloppy ID's (+1/8") 1-1/4" up to 1-1/2".

USS washers have a tighter ID and an OD sufficiently bigger than the DTI up to and including 1". USS flat washers are available both hardened and unhardened. Use only hardened.

Suggested SAE washers have a tighter ID than ASTM F436 washers, and therefore fit better. SAE washers are available both hardened and unhardened. Use ONLY hardened SAE washers over DTI bumps.

UH and USPTKH washers are special washers for use under Squirter® DTIs wherever oversized and short-slotted holes are encountered 1-1/8" up to 1-1/2". These washers have the OD of a USS washer with a tight ID (1/16" over nominal bolt size). Call Applied Bolting for availability.

ASTM F959 DTI Dimensions.

* Nut side installation illustrated, for other configurations please call Applied Bolting.

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For more information about Squirter® DTIs, other products and services we offer and projects we've worked on, visit our website.