Dril-Flex® Structural Fasteners

Dril-Flex® Structural Self-Drilling Fasteners

Offers virtual immunity to hydrogen-assisted stress corrosion cracking for maximum performance in the field

Dril-Flex® fasteners are specially designed and processed to help prevent hydrogen-induced brittle failures. Each fastener undergoes the unique Flex Technology® dual-hardening process to ensure the optimal combination of ductility and hardness required for maximum performance in the field.

Testing of this product, in accordance with ASTM standards, has proven that Dril-Flex® fasteners provide the same resistance to hydrogen-assisted cracking (HAC) as a Grade 5 fastener.

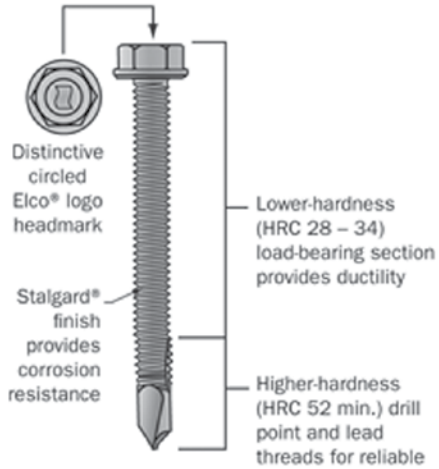
Unique Hardening and Finishing Processes Provide High Performance

Hydrogen-Assisted Stress Corrosion Cracking (HASCC) refers to a time-delayed failure that is aggravated or accelerated by hydrogen generated in the application. This is most often encountered and associated with dissimilar metal applications through the galvanic corrosion process. Most self-drilling fasteners, including 410 fasteners, are case or similarly hardened, which provides the necessary hardness for drilling and tapping, but leaves the screws vulnerable to HASCC due to their high surface or core hardness.

Dril-Flex fasteners offer the unique Flex Technology® dual-hardening process. The self-drilling point and lead tapping threads are selectively hardened to a minimum of HRC 52. The load-bearing portion of the screw is held at or below the critical HRC 34 level. This reduced hardness level also meets SAE J429 Grade 5 and ASTM A449 strength and ductility standards.

Dril-Flex fasteners are then coated with silver Stalgard® finish to provide superior corrosion resistance and enhanced galvanic compatibility. Fasteners coated with Stalgard® finish typically show no red rust or other base metal corrosion on significant surfaces even after 800 hours of 5% neutral salt spray exposure (ASTM B117).

The combination of this unique dual-hardening process and Stalgard® finish results in a strong, reliable fastener that can be used where other self-drillers would fail. Dril-Flex self-drilling fasteners are the ideal fastening solution for demanding construction applications.



Features

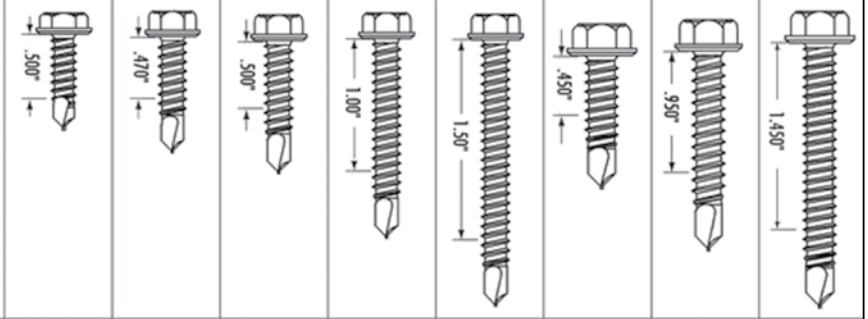
- Self-drilling point
- Higher hardness (HRC 52 min.) point and lead threads
- Lower-hardness (HRC 28 – 34) load-bearing threads
- Silver Stalgard® multi-layered corrosion resistant finish

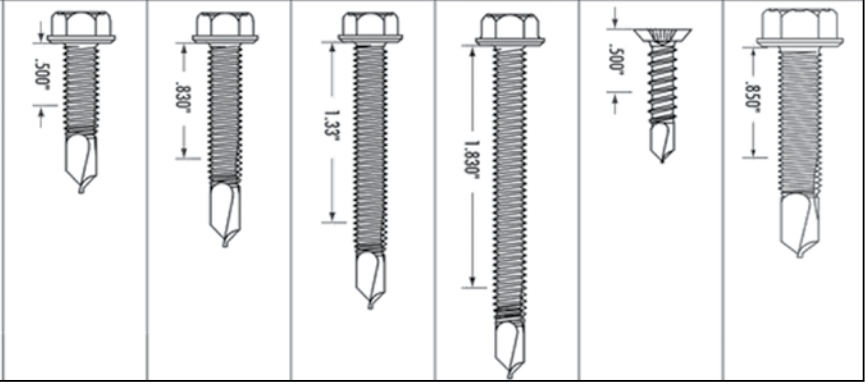
Benefits

- Virtually immune to delayed HASCC brittle failures found with other hardened fasteners
- Provides the same high resistance to hydrogen-assisted failure as a Grade 5 fastener
- Precision self-drilling point ensures consistent, reliable drilling and tapping
- Eliminates separate drilling and tapping operations
- Corrosion resistance superior to zinc- or cadmium-based finishes
- Provides enhanced galvanic compatibility in dissimilar metal applications
- Approvals: ICC ES ER-4780 Legacy Report; COLA (City of Los Angeles) Research Report #25095

SIZES AND SPECIFICATIONS

SELECTION GUIDE*

Size	10-16	12-14	12-14	12-14	12-14	1/4-14	1/4-14	1/4-14
Length	3/4"	7/8"	1"	1-1/2"	2"	1"	1-1/2"	2"
Head Style	HWH #3	HWH #3	HWH #3	HWH #3	HWH #3	HWH #3	HWH #3	HWH #3
Application Use	steel and aluminum	aluminum only	steel and aluminum	steel and aluminum	steel and aluminum	steel and aluminum	steel and aluminum	steel and aluminum
Drilling Capacity	.150"	.187"	.187"	.187"	.187"	.210"	.210"	.210"
Catalog Number	AF 430	AF 621	AF 641	AF 681	AF 690	AF 816	AF 841	AF846
Maximum Load-Bearing Area** Indicated By Arrows								

Size	1/4-20	1/4-20	1/4-20	1/4-20	12-14	5/16-24
Length	1-1/8"	1-1/2"	2"	2-1/2"	1"	1-1/2"
Head Style	HWH #4	HWH #4	HWH #4	HWH #4	Undercut Flat Head #3	HWH #4
Application Use	steel and aluminum	steel and aluminum	steel and aluminum	steel and aluminum	steel and aluminum	steel and aluminum
Drilling Capacity	.210" to .312"	.210" to .312"	.210" to .312"	.210" to .312"	.187"	steel: 0.187" aluminum: 0.25"
Catalog Number	AF 865	AF 876	AF 886	AF 890	BL 215	AF960
Maximum Load-Bearing Area** Indicated By Arrows						

SHEAR AND PULL-OUT VALUES

Pull-out Tests – Steel

Pull-out values shown are in lbs.

Screw Size	Point Type	Drill Cap	Steel							
			18	16	14	12	1/8	3/16	1/4	5/16
10-16	3	.150	396	501	634	1595	1693			
12-14	3	.187	396	527	710	1678	2061	2898		
1/4-14	3	.187	398	530	686	1950	2264	3919		
1/4-20	4	.312		516	649	1912	2296	2928	3561	4488
5/16-24	4	.312				2148	2573	4226	5424	6622

Pull-out Tests – Aluminum

Pull-out values shown are in lbs.

Screw Size	Point Type	Drill Cap	Aluminum 6063-T5		
			1/8"	1/4"	3/8"
10-16	3	.150			
12-14	3	.187	939	2286	
1/4-14	3	.187	1003	2424	
1/4-20	4	.312	897	2075	3683
5/16-24	4	.312	1043	2566	

Shear Tests – Steel

Shear values shown are in lbs.

Screw Size	Point Type	Drill Cap	Steel						
			18-18 gage	18-14 gage	16-16 gage	14-14 gage	1/8"-3/16"	3/16"-1/4"	1/4"-12 gage
10-16	3	.150	1362	1733	1462				
12-14	3	.187	1315	2118	1655	1816			
1/4-14	3	.187	1395	2313	1681	2417	2600		
1/4-20	4	.312	1350	2086	1582	2450	2814	2810	2706
5/16-24	4	.312					5486	5283	4761

Shear Tests – Aluminum

Shear values shown are in lbs.

Screw Size	Point Type	Drill Cap	Aluminum 6063-T5	
			1/8" - 1/8"	1/8" - 1/4"
10-16	3	.150	1466	
12-14	3	.187	1797	2483
1/4-14	3	.187	1996	2883
1/4-20	4	.312	2006	2926
5/16-24	4	.312	1849	2926

NOTE: All test setups and dimensions were as limited and outlined in AISI Test Method for Mechanically Fastened Cold-Formed Steel Connections (CF92-1) document. Performance values listed are ultimate values obtained under laboratory conditions. Appropriate safety factors should be applied for design purposes.