



The following pages are an excerpt from the North American Product Technical Guide, Volume 1: Direct Fastening Technical Guide, Edition 24.

Please refer to the publication in its entirety for complete details on this product including data development, base materials, general suitability, installation, corrosion, and product specifications.

[Direct Fastening Technical Guide, Edition 24](#)

To consult directly with a team member regarding our direct fastening products, contact Hilti's team of technical support specialists between the hours of 7:00am - 5:00pm CST.

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3.4 GRATING AND CHECKERPLATE

3.4.1 GRATING AND CHECKERPLATE FASTENER SELECTION

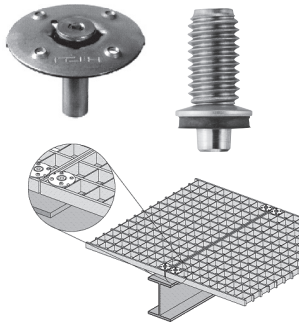
The following sections describe grating and checkerplate fastening solutions for marine and industrial environments. These solutions consist of powder-actuated, screw-in and mechanical fasteners which provide the installer with highly productive, high quality solutions which are designed to fit the needs of the particular application.

The primary concern when determining which solution to choose is the level of corrosion resistance required. For marine environments, Hilti offers a stainless steel grating or checkerplate disk and powder-actuated or screw-in stud. Stainless steel studs are attached directly to the base steel, while the disk is then attached using a screw fastening tool. If through penetration of the base material is not desired, or if the base material onto which the grating panels are installed is very thick, an option for stud attachment is the Hilti X-BT-GR system. The Hilti X-BT-GR system consists of a specialized tool set which enables the installer to pre-drill a small pilot hole into the base steel. A blunt tip stud, the diameter of which is slightly larger than that of the pre-drilled hole is then fastened with a Hilti powder-actuated tool directly into the pilot hole. Finally, the disk is installed on the stud with a screw fastening tool.

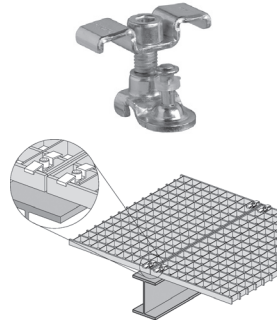
The Hilti S-BT system offers solutions to not only thick base material but also thin base material in which through penetration is acceptable. The Hilti S-BT system also consists of a specialized tool for pre-drilling the base steel, a threaded tip which cuts into the pre-drilled hole using a Hilti screw fastening tool equipped with proper depth gauge. And similarly the disk can be installed on the S-BT stud. More information about the innovative S-BT fastening system can be found in Section 3.2.15.

For less corrosive environments, Hilti offers the X-GR powder-actuated fasteners which feature stainless steel fasteners and duplex coated (similar to hot dip galvanized) pre-mounted saddle clip fasteners. These fasteners offer high productivity and corrosion resistance at a level which is typically needed in non-marine, semi-corrosive exposed environments. For those cases where powder-actuated solutions are not desired, Hilti also offers a mechanical clamp, the X-MGR. This fastener features a hot dip galvanized coating and will fit most standard open bar grating panels.

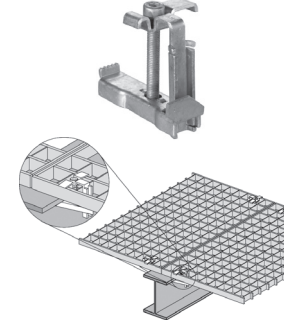
X-FCM Grating Disk System



X-GR Grating Fastening System



X-MGR Grating Fastening System



Hilti grating and checkerplate product selection guide^{1,5}

Hilti system	Corrosion resistance ²		Grating/ checkerplate height in. (mm)	Base steel thickness in. (mm)	Connection type
	Hot-dipped galvanized	Stainless steel			
X-FCM Grating Disk System	X-FCM-F Duplex Coated ²	X-FCM-R	Steel or FRP grating 1 to 2 (25 to 50)	≥ 1/4 ³ (≥ 6)	Powder-actuated or screw-in
X-FCP Checkerplate Disk System	X-FCP-F Duplex Coated ²	X-FCP-R	Checkerplate 1/4 to 1/2 (6 to 12)		Powder-actuated
X-GR Grating Fastening System	Duplex Coated ²	-	Steel grating 1 to 1-1/2 (25 to 38)	3/16 to 1/2 ^{4,5} (4 to 12)	Powder-actuated
X-MGR Grating Fastening System	HDG minimum 45 µm	-	Steel grating 1 to 1-1/2 (25 to 38)	1/8 to 1 (3 to 25)	Mechanical

1 Reference entire section for specific details on allowable load values, selection and installation. More information on X-FCM Grating and X-FCP Checkerplate Disk Systems can be found in Section 3.4.2. More information on X-GR and X-MGR Grating Systems can be found in Section 3.4.3.
 2 Reference Section 2.3.3.1 for more information on coatings and corrosion resistance.
 3 X-BT-GR M8 threaded studs require a minimum steel thickness of 5/16" (8 mm) to ensure no through point penetration. Refer to Section 3.2.15 for steel thickness requirement for S-BT screw-in studs. X-ST-GR M8 threaded studs have a maximum application limit of 1/2" (12 mm).
 4 Disk or saddle may be removed easily. Threaded stud or base will remain in base steel unless removed by overloading fastener.
 5 Fastening in base material thickness beyond 1/2" (12 mm) is possible for A36 and Grade 40 steels. Site testing required.