

SI 631 Torque settings guideline 1.1 en

This Service Information (SI) provides basic knowledge of fastener tightening specifications and lists general torque values for various screws commonly used with d&b products.

Introduction

Specifying correct torque values for fasteners depends on many parameters that affect the desired result. These include, for example, the type of material and its strength, the required insertion depth (material thickness), the hole diameter, the used tools, the tightening speed, the surface treatment, the effect of the mating surfaces or even human error.

Generic information on tightening fasteners

- The quality of a screw joint is significantly affected by the tightening process.
 - ⇒ A joint tightened by hand behaves completely differently from one tightened using a power tool.
 - ⇒ Different types of tools also have a decisive influence on the result.
- Overtightening can overstress the fastener or part and damage threads. Damage to the thread leads to an increased resistance when turning the screw, so that the specified torque is reached before the correct clamping force is achieved.
- Insufficient torque may allow movement between parts, which can cause premature failures or loosening of fasteners.

The International System of Units (SI)

Denotation of units

Torque can be specified in various measurement systems. The most widely accepted system worldwide is the International System of Units (SI) with the unit newton meter (N·m). The Imperial and US customary measurement systems are also commonly used. The proper way to express torque in these systems is pound-force foot (lbf·ft) or pound-foot (lb·ft).

Note: In common practice however, there are numerous specifications that incorrectly express torque as foot-pound, denoted as ft·lb or inch-pound, denoted as in·lb.

Conversion factors

To ensure compatibility and precision of torque measurements, it is important to convert units accurately.

- **Pound-force foot ⇒ Newton meter**

To convert pound-feet (lb·ft) to Newton meters (N·m), multiply by 1.356

⇒ 1 N·m ≈ 0.737 lb·ft

- **Pound-force inch ⇒ Newton meter**

To convert inch-pounds (lb·in) to Newton meters (N·m), multiply by 0.113

⇒ 1 N·m ≈ 8.851 lb·in

Note: For your convenience, you can also use calculation tools for converting torque units, which you can find on the websites of various manufacturers e.g. the [Torque Unit Converter](#)  of Norbar Torque Tools Ltd..

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Torque chart

In preparing this guideline, the following basic assumptions have been made:

- The tightening torque is achieved smoothly and slowly, until the torque tool indicates that the full torque has been reached.
- Screws are new, standard finish and not lubricated.
- Only tools and test equipment suitable for the task at hand are used.
- No worn or damaged tools are used.

Some torque values can only be determined by testing with actual parts under actual fastening and assembly conditions. For this reason, our technical documentation does not contain specific torque values for every screw connection.

First check the technical documentation on [Backstage](#) , i.e. the available exploded view drawings, to determine whether product-specific torque data is available.

Fastener type	Drive type	Thread size Grade/Class	Torque values SI unit (Imperial unit)	Usage/Remarks
Construction screw	TORX T20	SPAX 4x15	1.5 N·m (13.3 in·lb)	Crossover, Distribution board
Machine screw	TORX T10	M3	1.0 N·m (8.85 in·lb)	Housing cover amplifiers
Machine screw	TORX T20	M4x20	4.0 N·m (35.4 in·lb)	Rigging parts
Machine screw	TORX T25	M5x18/20	3.0 N·m (26.6 in·lb)	Driver mounting
Machine screw	TORX T25	M5x25/30	6.0 N·m (53.1 in·lb)	Pole mount socket, Driver mounting
Machine screw	TORX T25	M5x35	Slightly countersunk only	J Cover plate
Machine screw	TORX T25	M5x35	3.0 N·m (26.6 in·lb)	MF Driver mounting (GSL/KSL)
Machine screw	TORX T25	M5x35	5.0 N·m (44.3 in·lb)	Front grill mounting
Machine screw	TORX T30	M6x20	8.0 N·m (70.8 in·lb)	Rigging components
Machine screw	TORX T30	M6x30/35	10.0 N·m (88.5 in·lb)	Driver mounting, Threaded flange, Rigging components
Machine screw	TORX T40	M8x31/35	12.0 N·m (106.2 in·lb)	Rigging components (GSL/KSL/XSL)
Machine screw	TORX T40	M8x31	18.0 N·m (159.3 in·lb)	Rigging components (J)
Screw/washer assy.	TORX T20	M4x8	2.0 N·m (17.7 in·lb)	PCB mounting amplifiers
Screw + washer	TORX T25	M5x35	2.5 N·m (22.1 in·lb)	Horn mounting (M4 monitor)
Screw + washer	TORX T25	M5x35	4.0 N·m (35.4 in·lb)	Horn mounting (M2 monitor)
Self-tapping screw	TORX T10	PT K 30x10	0.4 N·m (3.5 in·lb)	Direct fastening into thermoplastics
Self-tapping screw	TORX T10	PT K 35x10/16	1.2 N·m (10.6 in·lb)	Direct fastening into thermoplastics
Self-tapping screw	TORX PLUS T20IP	DELTA PT 40x14	1.5 N·m (13.3 in·lb)	Direct fastening into thermoplastics
Self-tapping screw	TORX PLUS T20IP	Cell PT 45x20	3.0 N·m (26.6 in·lb)	Direct fastening into cellular foamed thermoplastics (XSL)
Serrated flange hex head bolt	HX AF13	M8x20 8.8 (DIN EN 1665)	18.0 N·m (159.3 in·lb)	Swivel caster mounting (Subwoofers)

Notes:

- A required specific (e.g. criss-cross) tightening sequence of the screws.
- Additional mounting specifications e.g. "first tighten only slightly, then retighten to the final torque".
- The use of thread-locking fluid on certain fasteners.

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