



## Hilti adaptive torque - How to find the right bolt setting

### 1. General:

The Hilti AT system (cordless impact wrenches SIW 4AT-22 / SIW 6AT-22 + adaptive torque module SI-AT-22) can be used for pre-tightening standard bolts to a repeatable pretension/torque level. This helps to protect the bolts from being over-torqued. A final check with a calibrated torque wrench may still be needed.

Hilti's SI-AT-22 adaptive torque module contains the operation mode "Tightening". In this operation mode, a total of 30 settings for each cordless impact wrench are available. The setting to be selected for a particular application depends on the diameter of the threaded fastener, the parts to be fixed, the specific torque and ambient conditions. The setting has to be determined step by step on the basis of this data.

For the "Tightening" operation mode, the display shows the following:



The number on the right of the bolt shows the selected setting.

### 2. Starting to select the right bolting setting:

As a starting point for the iterative method for selecting the right setting, the following four charts provide a first reference on what torque level each setting of the Hilti AT system could generate in an application. Chart 1 and Chart 2 show possible generated torque values for metric bolts and fractional bolts respectively, with SIW 4AT-22 + SI-AT-22; Chart 3 and Chart 4 show possible generated torque values for metric bolts and fractional bolts respectively, with SIW 6AT-22 + SI-AT-22.

#### Note:

The values illustrated on this chart are provided for reference purposes only. The actual tightening torque varies with ambient conditions (the bolt being tightened, hardware being used, method of holding the bolt in place, etc.). The following chart provides only a rough estimation and does not substitute the step by step selection of the right setting.

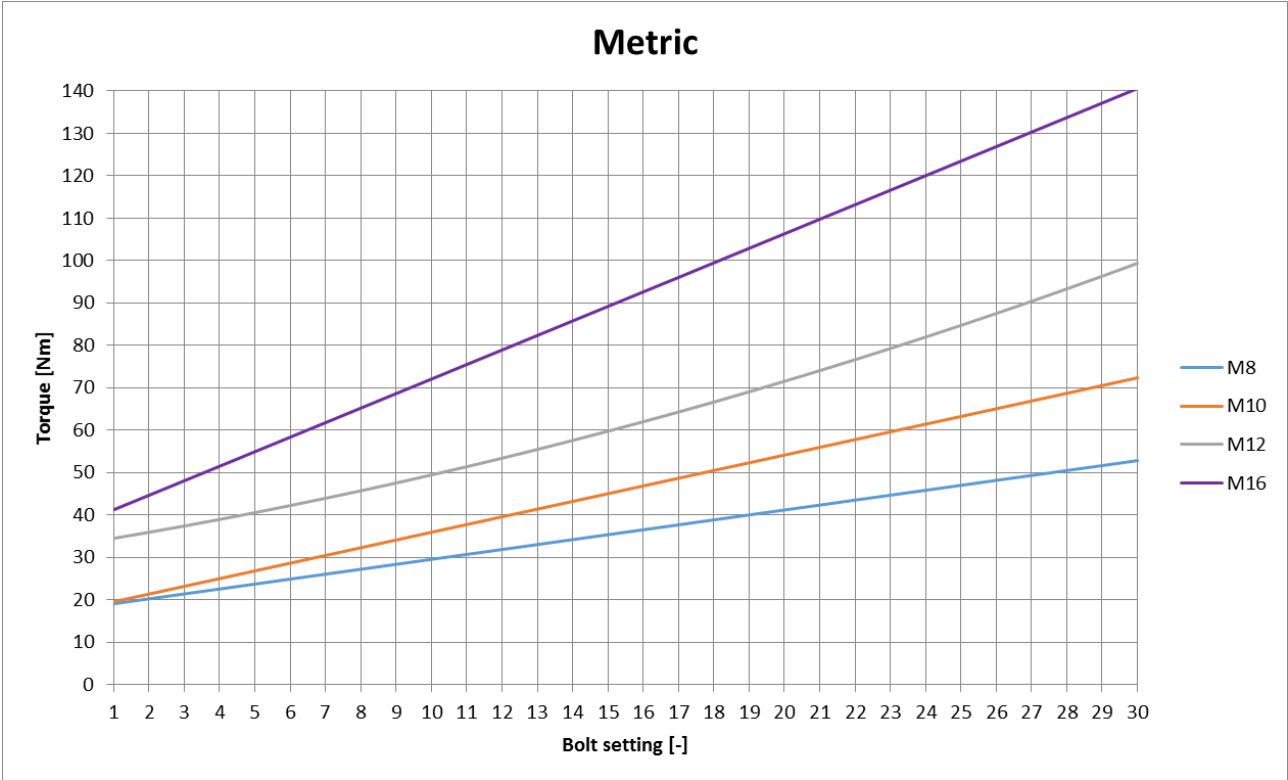


Chart 1: Possible torque values for metric bolts with SIW 4AT-22 + SI-AT-22. (for reference purpose only)

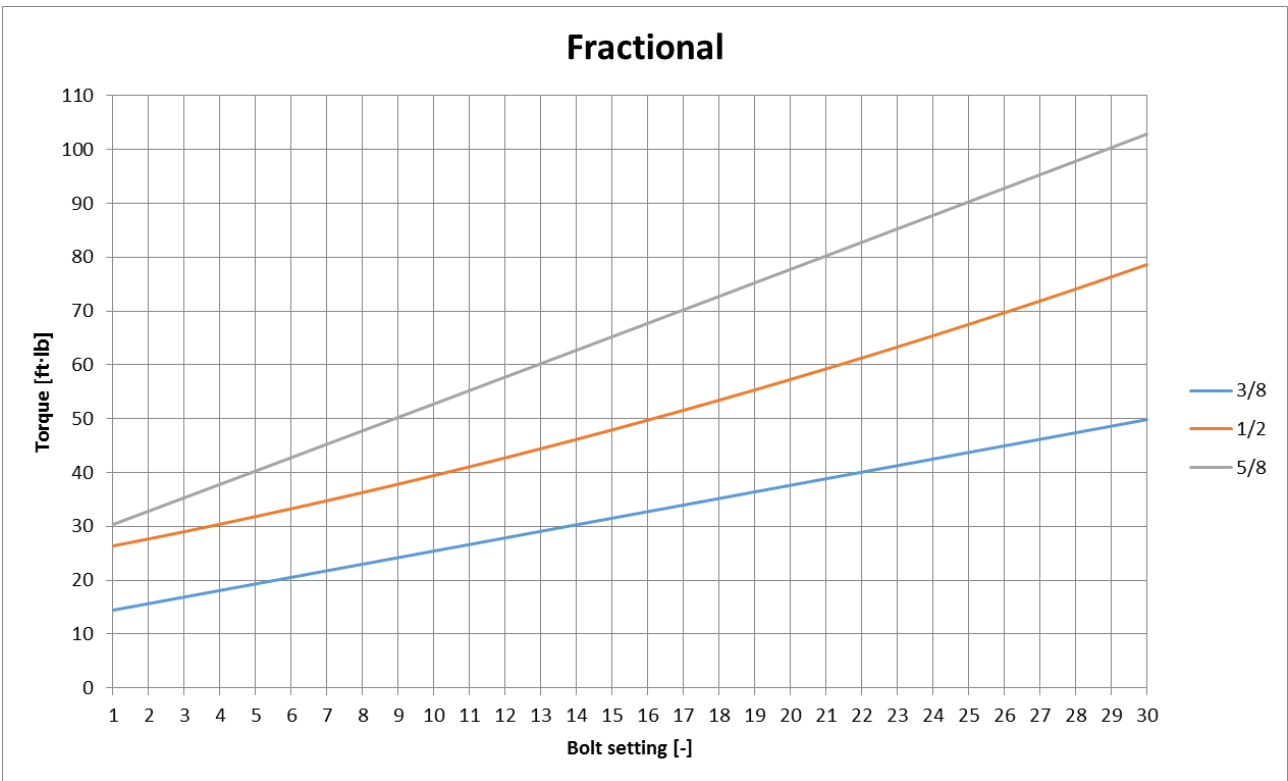
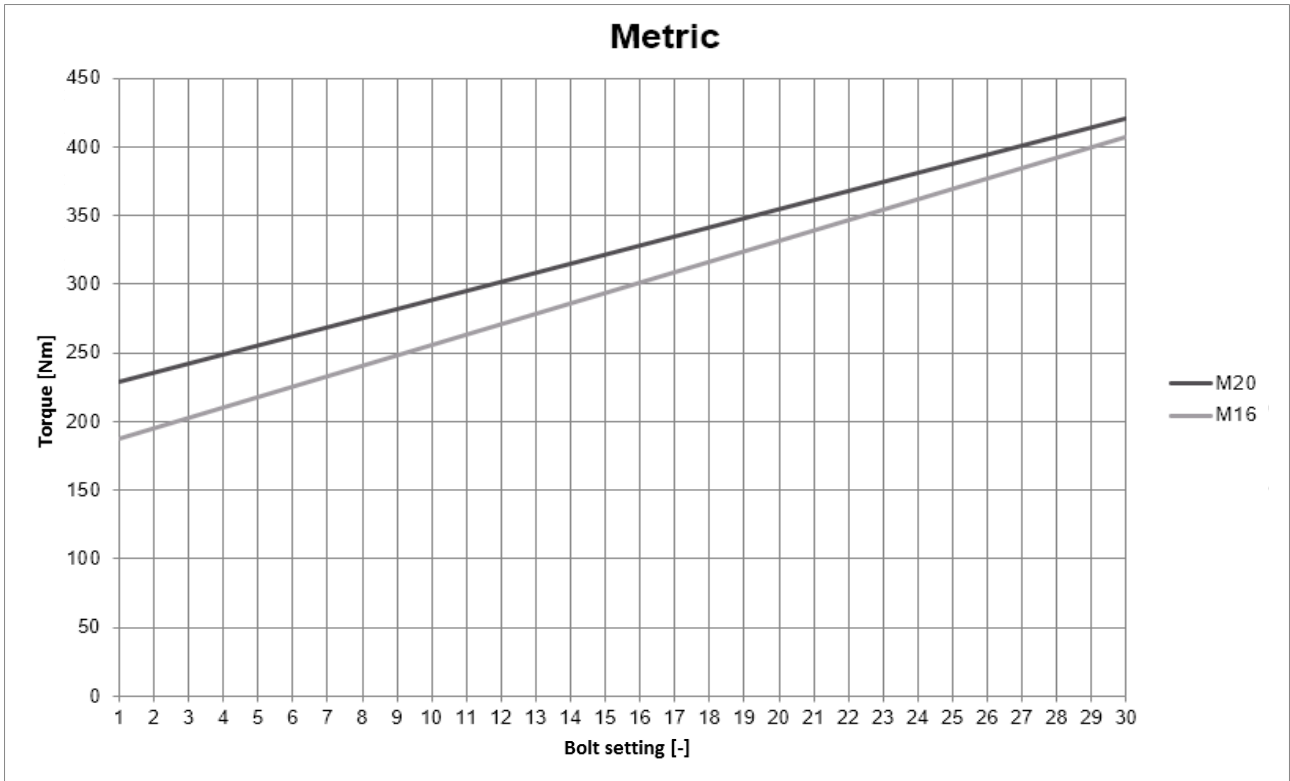
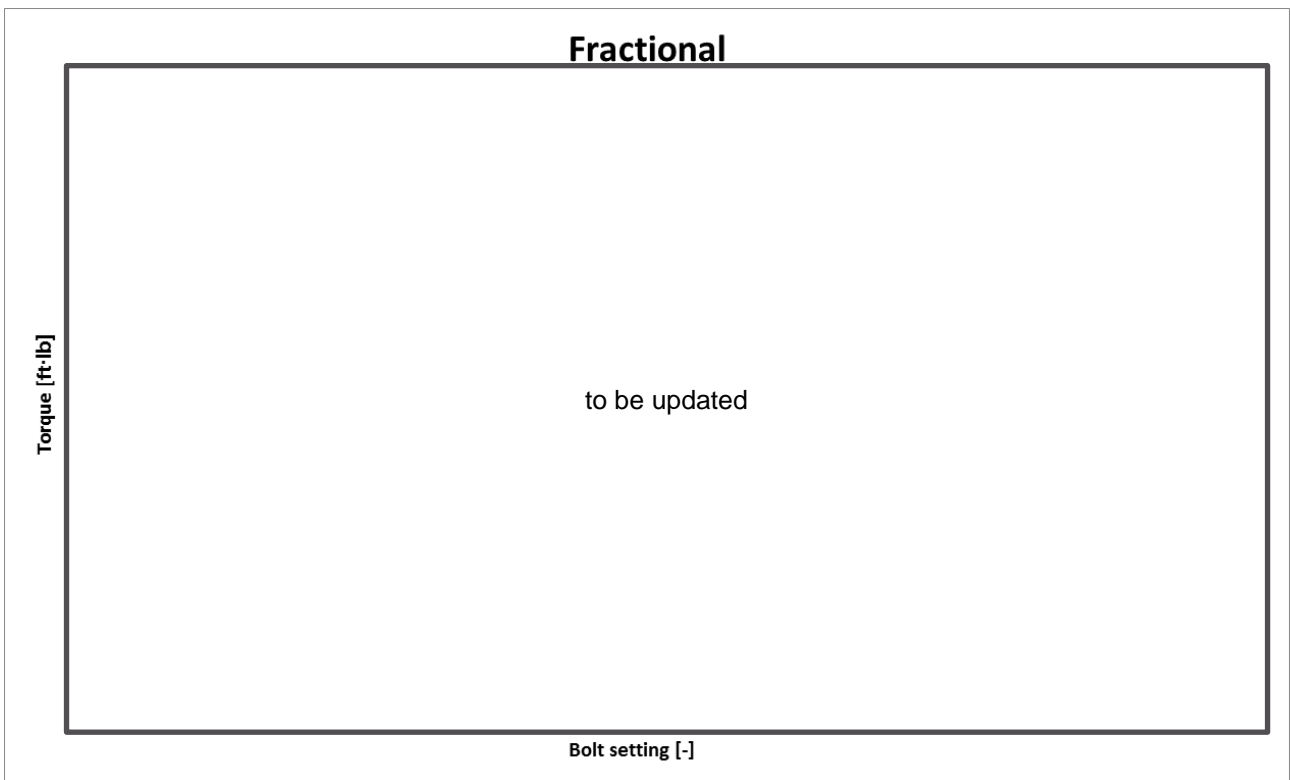


Chart 2: Possible torque values for fractional bolts SIW 4AT-22 + SI-AT-22. (for reference purpose only)



**Chart 3:** Possible torque values for metric bolts with SIW 6AT-22 + SI-AT-22. (for reference purpose only)



**Chart 4:** Possible torque values for fractional bolts SIW 6AT-22 + SI-AT-22. (for reference purpose only)

**3. Step by step selection of the right bolting setting:**

**Note:** Steel plates must be in contact and nut must be screwed down to baseplate before torquing!

For a repeatable torquing of two or more bolts, make sure that all torquing conditions remain unchanged. A change in torquing conditions can necessitate a change to a different setting.



	Iterative method
1. Step	Check that the mating faces of the components to be joined are seated flat against each other and that the nut has been screwed down until it is seated against the component.
2. Step	Use a low setting for the initial tightening of the nut of your threaded fastener you are going to tighten.
3. Step	Use a calibrated torque wrench to check the torque applied to the bolt to be fastened.
4. Step	Depending on the result, adjust setting to a higher or lower setting, loosen the bolt and repeat step 2.
5. Step	After the right setting is found, you can use the Hilti bolting QR codes displayed in this document for quick and easy selection.

**Note:** To ensure that the specified pretension/torque has been correctly applied when the "Adaptive" operating mode is used to tighten the fastener, the first and the last fastener always have to be checked with a calibrated torque wrench.

#### 4. Hilti QR-codes

The following displayed Hilti bolting QR codes can be used for quick and easy selection of the right bolt setting on the Hilti SI-AT-22 adaptive torque module.

#### **Warning:**

QR- Codes contained in this document are provided by Hilti only as blank icons and solely being compatible with SI-AT-22 Hilti Adaptive Torque Module. The configurations being made to each QR Code are solely your responsibility and are essentially based on the data you put in. You bear the sole responsibility for the absence of errors, the completeness and the relevance of the data and the sole responsibility for having the configurations checked and cleared by an expert against local valid standards, approvals and plausibility.

Hilti's Terms and Conditions of Sale, available at [www.hilti.com](http://www.hilti.com) apply.



## Bolting QR Codes



BOLT 1



BOLT 2



BOLT 3



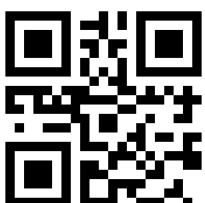
BOLT 4



BOLT 5



BOLT 6



BOLT 7



BOLT 8



BOLT 9



BOLT 10



BOLT 11



BOLT 12



BOLT 13



BOLT 14



BOLT 15



BOLT 16



BOLT 17



BOLT 18



BOLT 19



BOLT 20



BOLT 21



BOLT 22



BOLT 23



BOLT 24



BOLT 25



BOLT 26



BOLT 27



BOLT 28



BOLT 29



BOLT 30