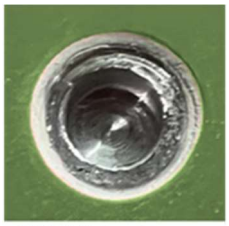
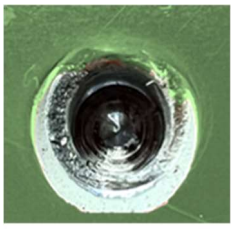
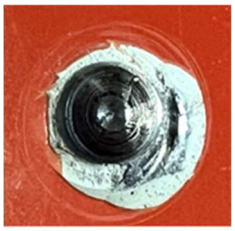
HILTI S-BT HL VISUAL EXAMINATION CATALOG

This document provides guidance for installing and inspecting Hilti S-BT HL studs.
This process is referred to as visual examination and assessment and is split into two parts.
First, the examination of the drilling operation (Section 1 and 2) before the setting process.
Second, the examination for the S-BT HL stud after installation(Section 3, 4 and 5).

This catalog is provided to help assess the visual appearance of the pilot hole and installed stud as acceptable or in need of corrective action and/or additional quality checks.

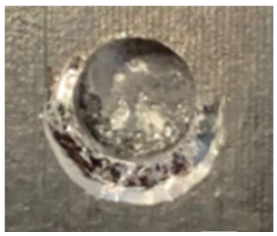
Section 1: Drilling the pilot hole

	Indicator	Assessment	Corrective Action
 *100% Shiny Ring*	✓	Correct drilling angle and depth.	
 *>50% Shiny Ring*	✓	Acceptable drilling angle and depth.	
 *<50% Shiny Ring*	✗	The drilling is either too inclined or not deep enough.	Finish drilling till the shiny ring reaches >50% but do not wobble the tool during drilling. The drill should remain perpendicular to surface during drilling. Apply recommended pressure per IFU.

✓ Ok ✗ Not Ok

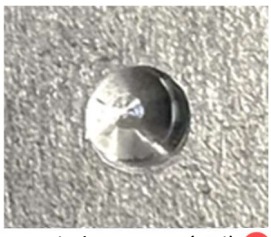
Example scenarios for uncoated Steel

100% Shiny Ring ✓



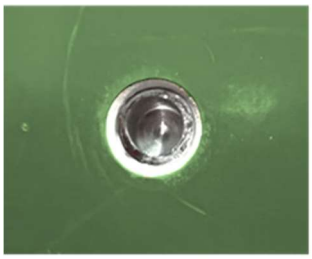
>50% Shiny Ring ✓

<50% Shiny Ring ✗



<50% Shiny Ring (0%) ✗

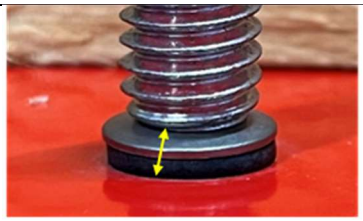
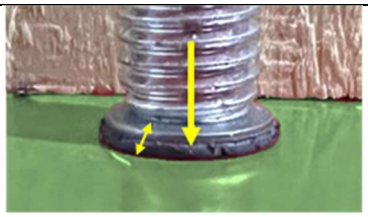
Section 2: Cleanliness of pilot hole

	Indicator	Assessment	Corrective Action
 *Clean*	✓	All debris has been removed from the surface.	
 *Not Cleaned*	✗	Operator did not clean the drilling area.	Remove chips from pilot hole and proximity.
 *Water Contamination*	✗	Pilot hole under wet conditions.	Remove water and keep pilot hole dry before installing S-BT.

✓ Ok ✗ Not Ok

Section 3: Setting at the correct depth – visual examination

*SS = stainless stud
*CS = carbon stud

	Indicator	Assessment	Corrective Action
 *Underset - SS*	✗	Stud is underset with little to no compression of the washer.	Set the SBT 6 back on the stud in BT mode and Gear 1 to finish the setting. The tool will only do ¼ turn increments with each trigger-pull to complete the setting.
 *Correctly Set - SS*	✓	Stud has been set to the correct depth.	
 *Overset - SS*	✗	Stud is overset and washer is heavily compressed.	The fastening point cannot be used. For future installations, operator should ensure SBT 6 is in BT mode, Gear 1 when installing the stud.

Example Angles and Possible Scenarios


Underset - SS


Underset - CS


Underset - CS


Correctly Set - SS


Correctly Set - CS


Correctly Set - CS


Overset - SS

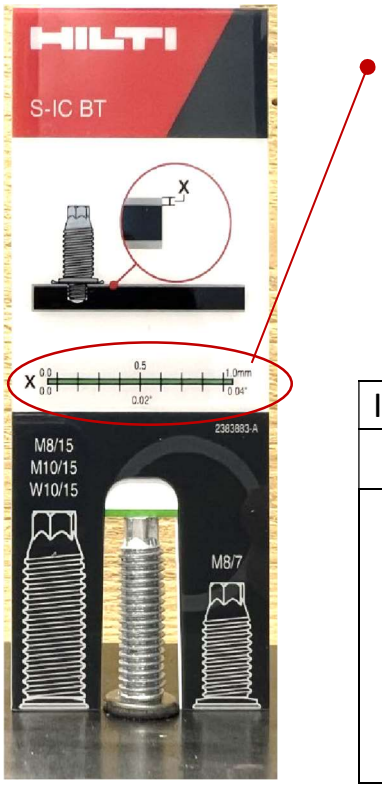

Overset - CS


Overset - CS

✓ Ok ✗ Not Ok

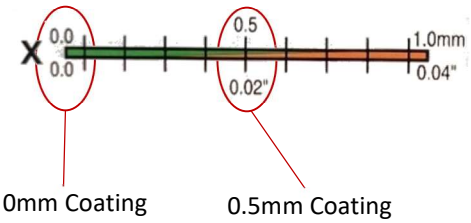
Section 4: Setting at the correct depth – Inspection card

IMPORTANT: Using the Inspection card for checking the correct setting of the stud is not required for every stud. Under most circumstances the visual examination highlighted above is sufficient. However, in case of uncertainty we offer the possibility to check the setting of the stud with the Inspection card. Below you can find a detailed description.



Example Scenario

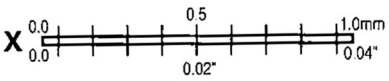
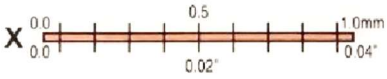
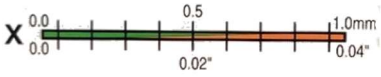
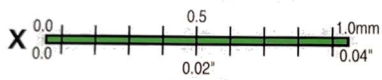
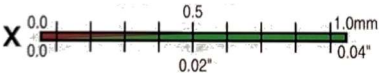
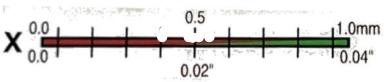
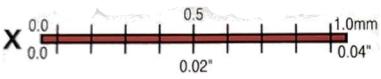
The X on the Inspection card shows the acceptability over the range of coating thickness. Depending on which coating thickness is present on the base material will determine which X value to read from. Green is acceptable and any other color represents a possible issue, see relevant scenarios below.



Indicator		Description	
0mm Coating	0.5mm Coating	0mm Coating	0.5mm Coating
✓	✗	The coating is 0mm, therefore we need to check if the card shows green when the X is 0 in the coating range.	When the coating is 0.5mm, we would need to check the window where the X is 0.5mm. In the above example it shows orange at 0.5 meaning the stud is overset.

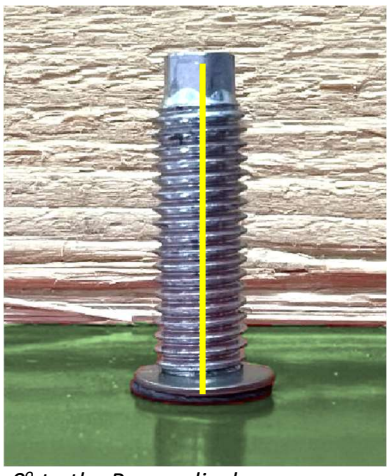
✓ Ok ✗ Not Ok

Inspection card scenarios

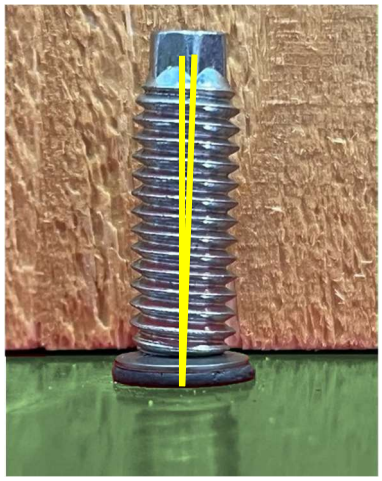
	Indicator		Assessment	Corrective Action
	0mm Coating	0.5mm Coating		
	✗	✗	Either the inspection card is being used incorrectly or the stud is either underset or overset.	Double check inspection card IFU otherwise the fastening point cannot be used.
	✗	✗	Underset.	Set the SBT 6 back on the stud in BT mode and Gear 1 to finish the setting. The tool will only do ¼ turn increments with each trigger-pull to complete the setting.
	✓	✗	If the coating is >0.4mm the stud is underset. If the coating is 0mm up to 0.4mm, the stud is installed to the proper depth.	Depending on coating thickness refer to the corresponding color example.
	✓	✓	The correct setting has been completed within the correct tolerance.	
	✗	✓	If the coating is 0mm up to 0.4mm, the stud is overset. If the coating is >0.4mm, the stud is installed to the proper depth.	Depending on coating thickness refer to the corresponding color example.
	✗	✗	If the coating is <0.9mm the stud is overset. Else correct setting.	Depending on coating thickness refer to the corresponding color example.
	✗	✗	Overset.	The fastening point cannot be used. For future installations, operator should ensure SBT 6 is in BT mode, Gear 1 when installing the stud.

✓ Ok ✗ Not Ok

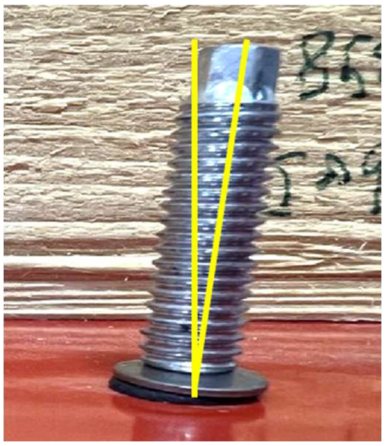
Section 5: Setting the stud at the correct angle



0° to the Perpendicular



≤5° to the Perpendicular



>5° to the Perpendicular

Indicator	Assessment	Corrective Action
✓	Sufficient stability when setting.	
✓	Acceptable level of misalignment in positioning or minimal loss of control during setting.	
✗	Unacceptable loss of control during installation. Also, can be misalignment while positioning the stud.	The fastening point cannot be used.

✓ Ok ✗ Not Ok