

silver schmidt



The first integrated Concrete Test Hammer

The SilverSchmidt features true Rebound Value, unmatched Repeatability and intuitive Operation all in a rugged and ergonomic Unit.

Traditional Hammers vs. SilverSchmidt

The classical hammers suffer from the following insufficiencies:

1. The rebound value is dependent on the impact direction.
2. The rebound value is affected by internal friction.
3. Limited tightness of sealing causes premature loss of accuracy.

The unique design and high quality construction of the SilverSchmidt address all of these issues and makes rebound hammer testing quicker and more accurate than ever before.

Benefits to the Customer

Ergonomics: The SilverSchmidt body lies very comfortably in the hand. The display is highly readable under any conditions.

Robustness: A two-layer seal prevents dust and dirt from penetrating to the interior of the instrument.

Impact direction independence: The forward and the rebound velocity of the hammer mass are both measured in close proximity to the point of impact. The rebound value requires no angular correction.

Measurement accuracy and repeatability: The new measurement principle and the design of the mechanics enable the SilverSchmidt to outperform its predecessors.

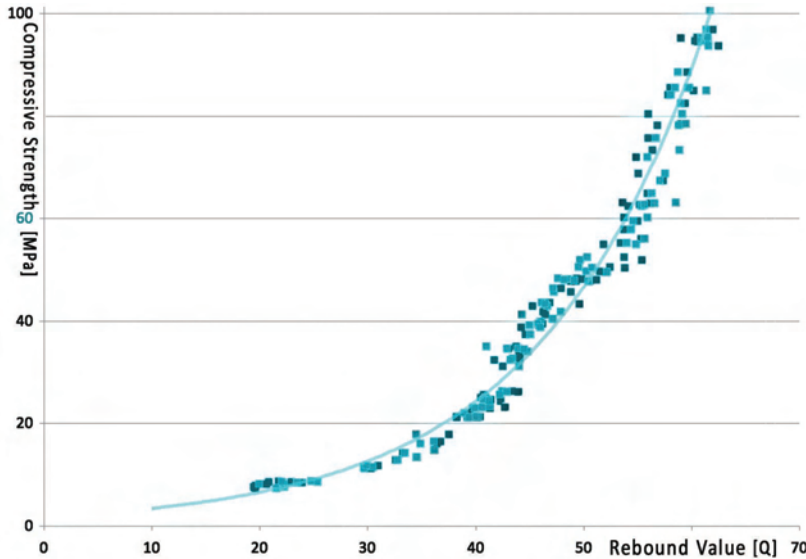
Objective evaluation: A larger number of measurement points can be easily collected by the instrument and automatically evaluated according to statistical criteria.

PC connection: The application "Hammerlink" allows all data to be uploaded via USB. Firmware upgrades are also possible over this connection.

Improved Performance

Two factors contribute to the improved performance of the SilverSchmidt over its predecessors:

1. Velocity based detection of the rebound quotient.
2. The lightweight hybrid design of the impact plunger is made from aerospace alloy, matched to the elastic properties of the concrete and equipped with a hardened steel cap.



Independent validation testing by BAM (Bundesanstalt für Materialforschung und -prüfung, Federal Institute for Materials Research and Testing) in Berlin has shown the SilverSchmidt to have less dispersion than the classical hammer over the entire range.

Intuitive User Interface

The language independent user interface is simple to use and provides all of the functionality necessary for a rapid assessment of the structure. An inclination sensor allows the user to navigate from left to right within the menu. By depressing the single push-button [SELECT], the particular function is activated.

The menu structure is simple, similar to the interface of a mobile phone. Practically every command can be activated either directly or via no more than 2 consecutive steps. This allows the choice of: the measurement mode (single impact mode – various averaging modes) and the desired conversion curve (compressive strength with form factor and unit / rebound value Q). All data is automatically saved and may be reviewed via the data list.



SilverSchmidt along with a selection of various screens

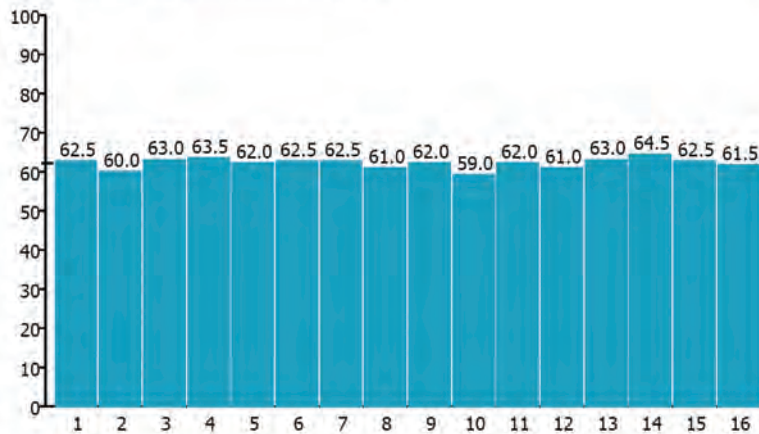
Data Acquisition and Processing

Pre-programmed statistical methods in-line with all of the major standards allows an error-free, rapid determination of the rebound value. Summary views in Hammerlink make uniformity testing a simple matter. Reduced dispersion and direct conversion to compressive strength based on validated curves, regional curves or user defined curves bring improved accuracy to compressive strength estimates.

Hammerlink - Data Analysis made simple

The Windows based software Hammerlink, developed by Proceq SA, unlocks the full capabilities of the SilverSchmidt, making it an even more powerful instrument for structural assessment (SilverSchmidt PC version only).

Q-Values diagram [measurement order]



Q-Values	Statistics
62.5	Measurements N = 16
60.0	Invalid measurements Ni = 0 (0%)
63.0	Mean value f = 74.5 N/mm ² (62.0 Q)
63.5	Standard deviation s = 1.5 N/mm ² (1.3 Q)
62.0	
62.5	
62.5	
61.0	
62.0	
59.0	
62.0	
61.0	
63.0	
64.5	
62.5	
61.5	

Settings	
Averaging mode	Mean
Conversion curve	REF N
Form factor	1.00
Carbonation depth	0.0 mm
Unit	N/mm ²
Serial number	SH01-001-0115
Spring type	SilverSchmidt N

Comment
[Add]

Hammerlink Features

- Extended memory usage
- Rapid uniformity assessment with the summary view
- Sorting of data
- User-defined conversion curves (polynomial and exponential)
- User-defined statistical methods
- Highlighting of mean, median and outliers
- Carbonation correction
- Print outs
- Export to third party software

Technical Information SilverSchmidt


Mechanical Data	Type N	Type L
Impact energy	2.207 Nm (1.63 lb ft)	0.735 Nm (0.54 lb ft)
Concrete Compressive Strength Range	10-100 N/mm ² (1450-14500 psi)	
Hammer mass	135 g	
Spring extension	75 mm (2.95")	
Dimensions of housing	55 x 55 x 255 mm (2.16" x 2.16" x 9.84")	
Weight	570 g (1.3 lb)	
Memory Data		
Max No. of impacts in a series	99	
Memory capacity	Dependent on length of test series Example >400 series with 10 values per series Example >200 series with 20 values per series	
Electrical Data		
Display	17 x 71 pixel, graphic	
Battery life	>5000 impacts between charges	
Charger connection	USB type B (5 V, 100 mA)	
Environmental conditions		
Operating temperature	0 to 50 °C (32 to 122 °F)	
Storage temperature	-10 to 70 °C (14 to 158 °F)	

Technical Information Hammerlink Software

System requirements: Windows XP, Windows Vista, Windows 7, USB-connector.

An Internet connection is necessary for automatic Hammerlink software updates and for SilverSchmidt firmware updates (using PqUpgrade), if available. PDF Reader is required to show the "Help Manual".

Ordering Information

Units	Part No. / Description
	SilverSchmidt consisting of: SilverSchmidt hammer, standard accessories (battery charger with USB cable, data carrier with software, carrying strap, grinding stone, chalk, documentation) and carrying bag
SilverSchmidt ST Type N	341 30 000
SilverSchmidt ST Type L	341 40 000
SilverSchmidt PC Type N	341 31 000
SilverSchmidt PC Type L	341 41 000

Parts and Accessories

341 10 113	Cover for USB port
341 10 315	Plunger SilverSchmidt ST/PC complete
341 10 400	SilverSchmidt anvil
342 10 400	Low range anvil
341 10 395	Upgrade kit for existing Euro anvil
341 80 211	Grinding stone
341 80 105	Carrying bag
351 90 018	USB cable 1.8 m (71 inches)
341 80 112	USB charger, global
341 80 203	Carrying strap

SilverSchmidt Models

ST Standard model. Software provided for performing firmware upgrades and selecting presets only.

PC Extended memory usage. Custom curves. Download to PC. Full Hammerlink Software functionality.

N-Type standard impact energy. The test object should have a min. thickness of 100 mm and be firmly fixed in the structure.

L-Type low impact energy. Suitable for brittle objects or structures less than 100 mm thick.

Service and Warranty Information

Proceq is committed to providing complete support for the SilverSchmidt testing instruments by means of our global service and support facilities. Furthermore, each instrument is backed by the standard Proceq 2-year warranty and extended warranty options.

Standard warranty

- Electronic portion of the instrument: 24 months
- Mechanical portion of the instrument: 6 months

Extended warranty

When acquiring a SilverSchmidt, max. 3 additional years of warranty coverage can be purchased (for the electronic portion of the instrument). The additional warranty must be requested at time of purchase or within 90 days of purchase

Applicable Standards

The following standards have been applied in SilverSchmidt for the procedure to determine the rebound number:

EN12504-2 (European Standard)

ASTM C 805 (North American Standard)

JGJ/T 23-2001 (Chinese Standard)



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schmidt

混凝土試驗錘



混凝土回弹仪是广泛使用的便携式无损测量仪器，用于快速评估混凝土结构的状态。Proceq 推出的 Schmidt 回弹仪系列是当前市的最全面产品。

混凝土回弹仪由 Ernst O. Schmidt 开发，且于 20 世纪 50 年代由 Proceq 推出。自那时起，Proceq 不断完善 Schmidt 系列，以使其涵盖抗压强度类别的全部范围。






回弹仪标准

SilverSchmidt 完全符合 EN 12504-2 和 EN 13791 标准。

SilverSchmidt 中已针对确定回弹次数的程序应用了以下标准：ASTM C805 和 JGJ/T23-2011。

Original Schmidt 完全符合所有主要标准。

每一个回弹仪都设计用于不同的用途，以满足客户的特定需求。下表概述了每款仪器的规格和应用范围。

		混凝土抗压强度范围					
		1 - 5 MPa 145 - 725 psi	5 - 10 MPa 725 - 1,450 psi	10 - 30 MPa 1,450 - 4,351 psi	30 - 70 MPa 4,351 - 10,152 psi	70 - 100 MPa 10,152 - 14,504 psi	> 100 MPa > 14,504 psi
		新浇混凝土 强度极低的混凝土		常规混凝土		高强度混凝土	超高性能混凝土
SilverSchmidt				SilverSchmidt ST/PC N 型			仅带有用户自定义曲线
				SilverSchmidt ST/PC L 型			
Original Schmidt Digi-Schmidt				带有蘑菇式冲击棒的 SilverSchmidt PC L 型			
				Original Schmidt N/ND/NR 型			
Schmidt OS-120		Schmidt OS-120PT		Original Schmidt L/LD/LR 型			

N 型

标准冲击能量。测试对象的厚度至少应达 100 mm (3.9")，并应牢牢地固定在构件上。

L 型

低冲击能量。适用于厚度小于 100 mm (3.9") 的易碎物体或构件。

ST 型： 标准型号。Hammerlink 软件仅用作固件升级和选择统计信息预置。有用内存仅限于最后 20 组数据。

PC 型： Hammerlink 软件的全部功能。扩展内存占用。下载到 PC。用户自定义曲线。

SilverSchmidt



ST/PC N/L 型：世界上最先进的回弹仪，拥有不可匹敌的离散性、耐久性和测量范围。

德国 BAM 的独立验证测试显示，SilverSchmidt 的**专利测量**原则在整体范围内具有比传统回弹仪更低的离散性。

其**固有冲击角度**独立性完全排除了用户操作失误的这一可能性。自动评估将根据预定义统计标准并使用软件分析工具，极大地增强了均匀性评估应用。

所有主要标准建议设定混合物特定曲线。**用户自定义的关联曲线**可通过强大的HammerLink软件（仅限PC版）下载到回弹仪上。这一功能再加上对形状系数和碳化作用的修正，可评估最佳抗压强度。

SilverSchmidt PC L 型回弹仪结合蘑菇式冲击棒，可测量范围最低为大约 5 MPa (725 psi)。再结合 SilverSchmidt 的固有角度独立性，使得其成为确定何时除去隧道衬砌内的模板等应用的最佳工具。



Original Schmidt / Digi-Schmidt



N/L 型：用作所有回弹仪与之进行比较的基准，以及每项国际性回弹仪标准的基础。该产品具有不同的冲击能量，允许客户测试多种类型的材料和结构。

NR/LR 型：之前的流行版本为了易于控制，在记录纸上以条形图记录冲击值，极大简化了回弹值的计算和测试中对象均匀性的检查。一卷纸可记录多达 4'000 个冲击值。

ND/LD 类 (Digi-Schmidt)：世界上第一款带有数据存储、冲击角度修正和直接显示抗压强度的数字回弹仪。Digi-Schmidt 允许对形状系数和碳化作用进行修正。它附带了一些预编程的相关曲线，允许用户对测试中的混合物选择最适用的曲线。所有数据和参数都可传送至 PC，以使用 ProVista 软件进行进一步评估。

Schmidt OS-120



PT 型：这一产品配有大型冲击锤表面，特别适用于对软性材料进行测试，如轻质混凝土、灰泥板和新拌混凝土。它通常用于确定取走模板的恰当时间。

PM 型：适用于测试砖块中的灰浆接缝。它拥有专门开发的冲击棒，其外形确保冲击可作用于接缝的表面。可根据回弹值对灰浆质量进行分类。

订购信息

SilverSchmidt 仪器

产品编号	产品描述
341 30 000	SilverSchmidt ST N 型
341 40 000	SilverSchmidt ST L 型
341 31 000	SilverSchmidt PC N 型
341 41 000	SilverSchmidt PC L 型

Original Schmidt 仪器 / Digi-Schmidt 仪器

产品编号	产品描述
310 01 001	Original Schmidt N 型
310 01 002	Original Schmidt N 型 (PSI)
310 02 000	Original Schmidt NR 型
310 03 002	Original Schmidt L 型
310 04 000	Original Schmidt LR 型
340 00 202	Digi-Schmidt ND
340 00 211	Digi-Schmidt LD

Schmidt OS-120 仪器

产品编号	产品描述
310 06 001	Schmidt OS-120PT
310 06 002	Schmidt OS-120PM

配件

产品编号	产品描述
341 90 002	蘑菇式冲击棒*
341 10 400	SilverSchmidt 钢砧
342 10 400	低强度钢砧
310 09 040	测试欧洲钢砧 N/NR/ND/L/LR/LD
310 10 000	测试钢砧 P/PT/PM
341 89 001	SilverSchmidt 钢砧优质校准证书
310 89 002	欧洲钢砧优质校准证书
341 89 000	SilverSchmidt 优质校准证书
310 89 000	Original Schmidt 优质校准证书
310 99 072	记录纸 (5 卷/包), 编号 31 (NR/LR)

*仅用于 SilverSchmidt PC L 型

服务和保修信息

Proceq 致力于通过我们的全球服务和支持设施为其混凝土回弹仪提供全方位的支持。此外, 所有仪器都可享受标准 Proceq 保修, 并可选择延长保修期。

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