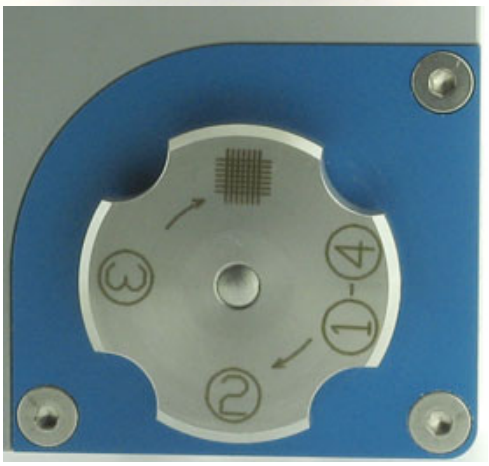
# SuperPIG
## SP1000

**USER MANUAL**


**DESCRIPTION**
The SuperPIG is a very precise destructive thickness gauge that can be applied to measure coating thickness on almost any substrates according (ISO 2808). The optimum guidance and therefore a reliable reading is SUPER! The SuperPIG is applicable to measure one or more coating layers on almost any substrate and can be used to perform a cross-cut adhesion test as well.

1. Revolving knife holder
2. Selected cutter knife
3. Microscope with scale
4. Light on/off
5. Guidance wheel
6. Knob for microscope focus
7. Illuminated inspection area
8. Access for cutter change (not visible)

**BASIC SET-UP**
**Placing cutter 1,2,3 and/or 4**
The knife holder can hold three cutters knifes at the same time. The wheel of the knife holder has engraved numbers. On the bottom of the wheel you see the number of the current selected cutter. While assembling, make sure this number corresponds with the cutter. Cutter number 1 and 4 share one place.

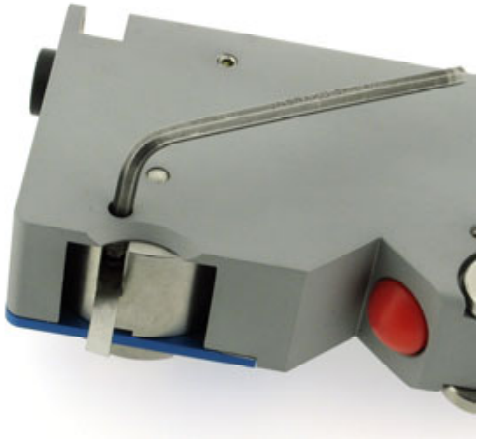


1. Place the SuperPIG sideways on a flat surface with the wheel of the knifeholder (1) facing downwards.

2. Use the enclosed hex-diagonal wrench-3 to loosen the bolt (8). Place the cutter in the holder, with the number facing upwards, and slide the cutter (CAREFULLY!) inside until you feel some resistance. (see 3th picture)

3. Use the enclosed hex-diagonal wrench-3 to tighten the screw.

4. Use the wheel to enter the next knife holder and place the cutter as described above. Don't forget that a cutter is already loaded; be careful



**Placing a crosshatch cutter**
One crosshatch cutter can be mounted to provide an assessment of the quality of bond to the substrate.

1. Turn the crosshatch holder a little bit further than the 'click'.

2. Use the enclosed hex-diagonal wrench-3 to loosen the bolt (8, so the crosshatch cutter fits over the screw.

3. Use the enclosed hex-diagonal wrench-3 to tighten the bolt (8).

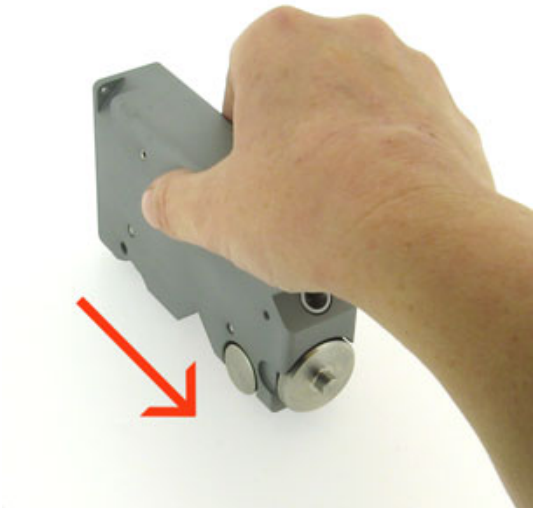
**Preparations before measuring**

Preceding actual use of the SuperPIG first several settings shall be made with a test plate:

1. Mark the test plate with a black line of approximately 20mm for contrast on white light coatings.
2. Push the red button (4) to activate the illumination and place the illuminated spot (with the SuperPIG rectilineair) at the center of the black line
3. Look through the microscope (3) to the surface and adjust the focus of the microscope with the knob (6) until the borders of the black line become sharp.
4. The SuperPIG is now adjusted and ready for use.

**MEASURE**

1. Mark the inspecting surface with a black line of approximately 20mm.



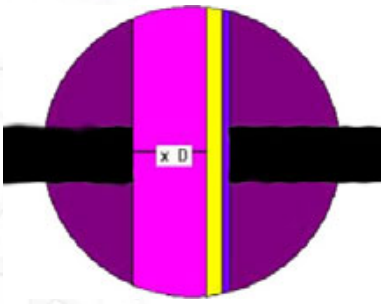
2. Place the SuperPIG with its cutter behind the line and pull (without putting pressure on the gauge) the SuperPIG across it (in the direction shown on the picture) just cutting through the coating.
3. Tilt the SuperPIG and place the illuminated area (7) at the intersection of the cut with the black line.
4. Look through the microscope (3) and turn the knob (6) to focus on the inspection area. (see picture)

5. Read the graduation-scale and multiply the divisions with the D factor engraved on the SuperPIG.

| Cutter number | Cut angle ( º ) | D Factor ( µm ) | Range ( µm ) |
|---|---|---|---|
| 1. | 45 | 20 | 20 - 2000 |
| 2. | 26,6 | 10 | 10 -1000 |
| 3. | 14 | 5 | 5 -600 |
| 4. | 5,7 | 2 | 2 -250 |

**REMARKS:**
Several layers can be inspected at once because the differences in color and/or dry surface of each individual layer become visible. Adjusting the brightness, focus and changing the position of the SuperPIG or moistening the cut edge also will show layers with low pigment.

The microscope will inverse the view, which will cause the SuperPIG movement and the inspection surface to be inversed with respect to reality.




Left the image as is visible through the microscope of the SuperPIG after cut with chisel X, from left to right:

| | |
|---|---|
| Purple | The coating |
| Pink | The coating cut with the cutters cut angle |
| Yellow | The substrate |
| Blue | The coating cut with the 90° side of the cutter |

The coating thickness is obtained by counting the divisions of the graduation-scale on top of the pink surface multiplied with the D factor.

In order to determine the coating thickness only the graduation-scale is counted and multiplied with the D factor of the cutter. Irregularity at the borders of the cut shall not be added to the count on the graduation scale!

**SPECIFICATIONS:**

| | |
|---|---|
| Microscope: | Magnification 50X (with graduation-scale) |
| Scale range: | 0,00 – 2,50 mm (rectilinear measured) |
| Measure range: | 2 – 2000 µm |
| Variation: | Accuracy depends on cutters cut angle and users reading |
| Battery: | 4x AG3 coin cell batteries |

**REPLACING BATTERIES**
The bright white LED's use 4xAG3 coin cell batteries which guarantees many hours of illumination. In case the batteries are exhausted, follow the steps below to replace them.

1. Loosen the bolts shown on the picture with hex diagonal wrench 1,5 and 2. Now it is possible to separate the torch from the instrument.
2. Remove the back of the torch by turning it. See picture for battery compartment unlock direction. The first caps have no groove as in the picture, they can be unlocked by pushing the cap while rotating it. If this does not work please make a small groove in the cap and unlock it with a (minus) screw driver.
3. Remove the AG3 coin cell batteries, and replace them by new ones.
4. Replace the back of the torch by turning it.
5. Place the torch back in the instrument and tighten the bolts with wrench 1,5 and 2