24 steps from raw material to top quality PB screwdriver

PB BAUMANN
SWISS QUALITY TOOLS

1

The raw material for the screwdriver blades is delivered in four metre long rods. These must pass a basic quality control test for incoming materials (dimensional accuracy, surface, hardness, toughness).

2

The steel rods are cut to the required blade length.

3

The sharp edges caused by the cutting process are broken off and the parts turned around on their length.

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Before further processing, the parts are cleaned (degreased).

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The blades are heated inductively up to 900 °C. Whilst still red-hot, the blade is pressed into shape.

6

The blade is die cut…

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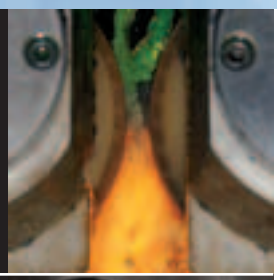

…and ground on both sides. The sides of the blade tip are parallel. Please see the back page of this brochure for more information on this.

8

For Size 6 and above, a square socket is forged on, so that an open-end wrench can be added for greater torque.

9

"Wings" are pressed into the end of the blade, so as to transmit the torque from the handle to the blade.

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The blades, which have now reached their finished shape, are degreased once again…

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…before being hardened in the latest heat treatment plant. The tools now have a hardness of 60° HRC.

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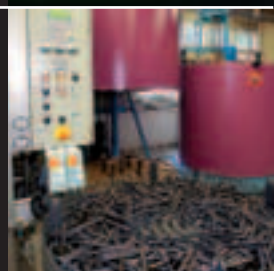

In order to increase toughness and elasticity, they are again heated up to approximately 200 °C (annealed). They now have a hardness of 59° HRC.

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The surface is then prepared for galvanising by grinding.

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The tips are covered with special caps and remain uncoated during the plating process. This increases dimensional accuracy and helps the blade grip the screw slot.

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The parts are then nickel-plated and chromium-plated in an automatic unit…

16

…after which they are heated up to approximately 200 °C in an oven, to counteract the effects of so-called "hydrogen brittleness".

17

A laser system is then used to apply the screwdriver size and serial number. This means that even after they are sold, we can still identify exactly which raw materials were used to make PB tools.

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The uncoated tips are burnished in an automatic unit, the resulting dark colour giving the so-called "Black Point".

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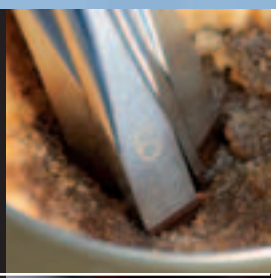

The finished blades are treated with a corrosion protection agent. Even the "Black Point" is protected against rust by this process.

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During the final inspection, the blades are checked for material or manufacturing faults.

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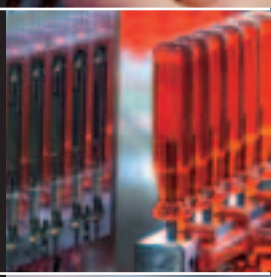

The handles are manufactured fully automatically from thermoplastic using an injection moulding technique.

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The handles are printed using a pad printing process.

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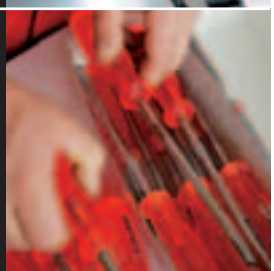
The labelling on the handle and blade is lined up and the two parts are brought together.

24



The screwdrivers are packed and sent for dispatch.

The parallel shape of the PB tip

Conventional conical tip

Parallel PB tip with chamfered corners

Line contact

Surface contact – full utilization of the screw slot

Torque
Damaged screw

Torque + 50%
Undamaged screw

Protruding corners in countersunk screw

"Fitted" shape of PB screwdriver tip

The parallel screwdriver tip is a Swiss speciality. It does not feature in international standards (e.g. ISO, DIN) and only exists in the Swiss VSM standard. The manufacturing accuracy of the parallel shape and sloping corners is due to real Swiss precision.

1. The parallel shape of the PB tip guarantees optimum transmission of force to a surface. Stress on the material is therefore much lower than with the conical tip, where the force is transmitted along a line. When torque is applied with a conical tip, ejection force ("cam-out" effect) occurs, pushing the screwdriver out of the screw...

...which results in damage to the screw. With the same contact pressure, you get up to 50% higher torque with the parallel PB tip, without damage to the screw!

2. The chamfering of the PB tip obviates the nuisance of protruding corners, when used on countersunk screws. This means that the screw does not get scratched and the screwdriver is not pushed out of the screw.

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