ZWILLING J.A.HENCKELS

Scissors: Production

Forging or stamping?

Depending on the manufacturing process there is a clear distinction between stamped and forged scissors and shears.

Traditionally scissors and shears are forged. However, following market requirements the latest type of scissors and shears are increasingly stamped. Stamped scissors by ZWILLING J.A. HENCKELS hold their own ground in any comparison.

Because it is more expensive to forge scissors and shears, their price is usually higher than that of the stamped variety. It is important to know that owing to the poor quality of some imports there are great differences in the quality of stamped scissors and shears with plastic handles.

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A. The production of forged scissors and shears

Accurate work at all stages of the production process is decisive for the quality of scissors and shears by ZWILLING J.A. HENCKELS. Before a pair of forged scissors is fully finished, it will have passed more than 60 individual manufacturing steps.

The most important processing steps for forged scissors and shears are shown below.

1. Production of blanks
In the very early stages of production the basic materials are given the appropriate form for further processing. For the production of scissors and shears flat material made of carbon steel is used (ZWILLING J.A. HENCKELS special formula).

The most important manufacturing steps are:

a) cutting to shape: slugs formed in the shape of long, pointed triangles are split from the flat material
b) heating: the slugs are heated up to white heat
c) forging: in the forging die (forging form) the slug is given its first rough shape of a scissor (upper and lower shear blades).
d) cutting out the blank: burrs and excess material are cut off on an eccentric press and the scissor eye rings are punched out.

2. Machining the blank
The blanks leave the forge to be further processed by machining. The following manufacturing steps are being carried out:

a) milling of the closing surfaces (handle, joint area projection and the blade inset)
b) drilling of the screw or stud hole
c) cutting the thread into the lower shear blade
d) stamping the trademark onto the joint area of the lower shear blade.

3. Hardening
The blade and joint area of forged scissors and shears are hardened right up to the crescent. The shanks must remain soft, otherwise straightening work cannot be carried out later.

The most important manufacturing steps are:

a) heating in a salt bath
b) chilling in an oil bath
c) rustproof scissors: undercooling using ZWILLING J.A. HENCKELS special ice-hardening process FRIODUR.
These scissors are marked with "FRIODUR".
d) tempering: this heat treatment takes tension off the steel

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e) hard-straightening: the scissor blades are pressed against each other (draw) and turned (twist). ZWILLING J.A. HENCKELS has optimised this hardening process.

ZWILLING J.A. HENCKELS uses the special ice-hardened steel for the Original Kitchen Shears and the TWIN scissors. The ice-hardening process stands for a further quality-determining refinement of the material.

4. Surface treatment
Grinding scissors and shears is an elaborate manufacturing process which is either carried out by hand (eye rings and handles cannot be machined) or by special precision machines. ZWILLING J.A. HENCKELS pays particular attention to the interaction of crescent, draw and twist. This is decisive in ensuring that the blades meet only at one single point along the length of the blades and that the material is cleanly held and cut.

The most important manufacturing steps are:

a) eye rings and shank: rough and dry-fine grinding inside and out
b) joint area and blade edges: rough and dry-fine grinding, smoothing, nickel-plating
c) grinding between, cutting edge and inner side: the grinding must follow the twist or turn of the blade's inside.

In order to protect the surface against corrosion, scissors and shears made of normal steel are nickel-plated. Subsequently the scissors or shears blades are ground on the inside. Scissors and shears made of stainless steel are polished or brushed.

5. Assembly
During final assembly the shear blades are screwed together. The cutting performance and the easy closing action along the whole cutting length of the scissors or shears are determined at this stage. ZWILLING J.A. HENCKELS fitters and controllers are highly skilled specialists.

The following steps are carried out during assembly:

a) honing the cutting edges on the oilstone
b) screwing the shear blades together and pointing them, i.e. straightening
c) final inspection: testing the cutting property and action of the scissors or shears
d) extremely stringent quality control is carried out by ZWILLING J.A. HENCKELS during each production stage.

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The production of stamped scissors and shears

The most important processing steps for stamped scissors and shears are shown below.

1. Production of blanks
In the very early stages of production the basic materials are given the appropriate form for further processing. ZWILLING J.A. HENCKELS uses high-grade stainless steel strips for stamped scissors and shears.

The most important manufacturing steps are:

a) punching out blanks: one half of a pair of scissors is punched out of stainless steel strips.
b) the blank is pressed by machine into draw and twist
c) drilled holes are made: holes are punched out in order to fit the plastic bracket and screw.

2. Hardening
For stamped scissors and shears the whole blade is hardened. The actual handles are made of plastic and are injected at a later stage.

The most important manufacturing steps are:

a) heating: the scissor blank is hardened in a continuous process in a blank-hardening furnace
b) deep freezing: the blank is ice-hardened
c) double tempering: to relieve the blank from tension after the ice-hardening.

3. Mechanical and surface treatment
Grinding scissors and shears is an elaborate manufacturing process that needs to be done with precision machines. ZWILLING J.A. HENCKELS pays particular attention to the interaction of crescent, draw and twist. This is decisive in ensuring that the blades meet only at one single point along the length of the blades and that the material is cleanly held and cut.

The manufacturing steps are:

a) punching out blank from strips of steel
b) grinding the blank: working the edges and surface of the blank
c) grinding inside and crescent
d) grinding of the blades with inset and cutting edge
e) shank and eye rings: the plastic handles (glass fibre reinforced polyamide) are being attached.

4. Assembly
During final assembly the shear blades are screwed together. The cutting performance and the easy closing action along the whole length of the blades are determined at this stage.

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ZWILLING J.A. HENCKELS fitters and controllers are highly skilled specialists.

The following steps are carried out during assembly:

a) assembly: the upper and lower shear blades are assembled with a bearing bush and screw and then pointed, i.e. straightened
b) marking: the trademark is etched in
c) final inspection: testing the cutting property and action of the scissors or shears and honing on an oilstone
d) extremely stringent quality control is carried out by ZWILLING J.A. HENCKELS during each production stage.