

SOFTTOOL ENGINEERING

Certificate
DC-3
STPS

TRAINING PROGRAM · PUNCHING

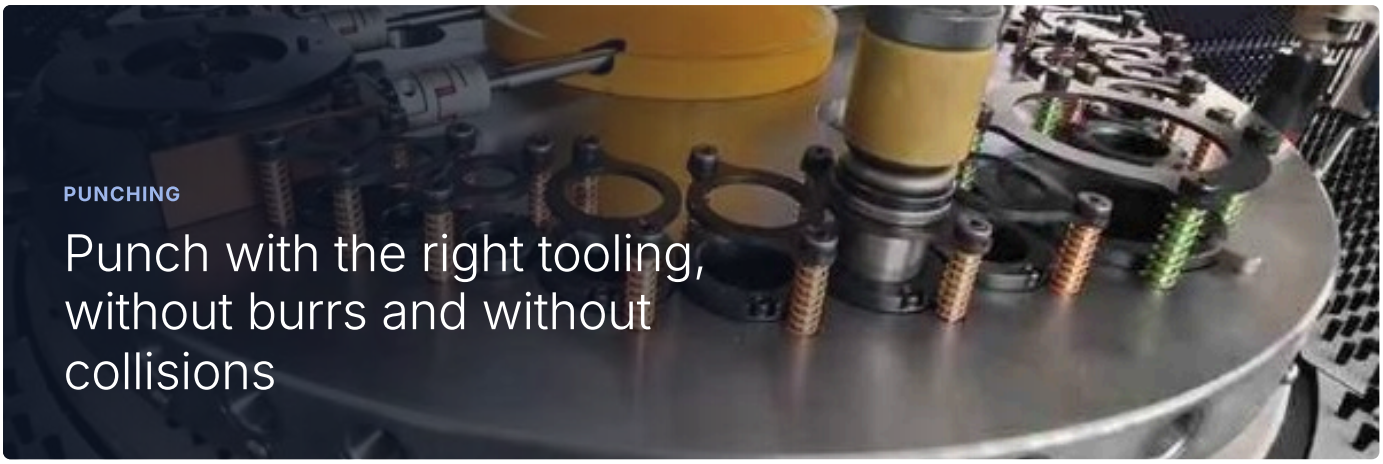
Complete CNC punching process

Tooling, operation and setup of turret punch presses

From the punching principle to machine set-up: tooling, control, sequences and safety on your punch press.

11	88	32 h	DC-3
modules	topics	duration	STPS certified

Soft Tool Engineering softooling.com info@softooling.com



PUNCHING

Punch with the right tooling, without burrs and without collisions

OBJECTIVE

Train punching personnel to operate and set up CNC turret punch presses, select and mount the right tooling, and define safe and efficient punching sequences.

We work with your plant's machine, tooling and parts, from reading the drawing to the set-up sheet.

ON COMPLETION, PARTICIPANTS WILL BE ABLE TO

- Explain the phases of punching and how they affect cut quality.
- Identify punches, dies, strippers and canisters, and define die clearances.
- Know the parts of the punch press: RAM, turret, clamps, table and loading systems.
- Use the control panel: screens, alarms, tool layout and G and M codes.
- Read drawings, measure with calipers and define optimal punching sequences.
- Prepare the machine with the set-up sheet and work safely.

Course data sheet

DURATION
32 h

INTENDED FOR
CNC punch press operators, technicians and programmers

FORMAT
On site, at your plant and with your machinery

APPROACH
Applied theory and machine practice

GROUP
By role and level of experience

EVALUATION
Theoretical and practical, with results for each participant

CERTIFICATE
DC-3 certificate recognized by the STPS

EQUIPMENT
CNC turret punch presses

SYLLABUS

Course content

11 modules and 88 topics. The order and depth of each module are adjusted to the machinery and the group's level.

01 Punching fundamentals
02 Materials
03 Tools
04 Machines
05 Control panel
06 Blueprint reading
07 Dimensional metrology
08 Sequences
09 Process instructions
10 Set-up
11 Safety

01 Punching fundamentals

- 1.1 Punching principle
- 1.2 Punching
- 1.3 Sheet metal punching
- 1.4 Material removal
- 1.5 Phases of punching
- 1.6 Deformation
- 1.7 Penetration
- 1.8 Fracture
- 1.9 Forming force diagram
- 1.10 Punching cycles

02 Materials

- 2.1 Types of materials used in punching
- 2.2 Cold rolled steel (CRS)
- 2.3 Hot rolled steel (HRS)
- 2.4 Galvanized steel
- 2.5 Stainless steels
- 2.6 Aluminum
- 2.7 Copper

03 Tools

- 3.1 Punch mechanisms
- 3.2 Types of dies
- 3.3 Stripper plate
- 3.4 Canister
- 3.5 Guide
- 3.6 Die clearances
- 3.7 Tool styles
- 3.8 Station type and size
- 3.9 Tool manufacturers

04 Machines

- 4.1 Description of a punch press
- 4.2 Types of punch presses
- 4.3 Parts of a CNC punch press
- 4.4 RAM
- 4.5 Clamps
- 4.6 Controller
- 4.7 Loading systems
- 4.8 Machine manufacturers
- 4.9 Turret
- 4.10 Worktable and stop
- 4.11 Mechanical arm
- 4.12 Scrap chute
- 4.13 Chiller
- 4.14 Hydraulic unit
- 4.15 Safety zones

05 Control panel

- 5.1 Main control
- 5.2 Keyboard functions
- 5.3 Screens
- 5.4 Machine status
- 5.5 Operating mode
- 5.6 Alarm indicators
- 5.7 Tool layout
- 5.8 RAM control
- 5.9 G codes
- 5.10 M codes
- 5.11 Program handling

06 Blueprint reading

- 6.1 Technical drawing
- 6.2 Components of a drawing
- 6.3 Drawing views
- 6.4 Interpretation systems
- 6.5 American (third-angle) projection system
- 6.6 European (first-angle) projection system
- 6.7 Title block
- 6.8 Grid zones
- 6.9 Notes
- 6.10 Sections
- 6.11 Details

07 Dimensional metrology

- 7.1 Converting mm to inches
- 7.2 Universal caliper
- 7.3 Types of calipers
- 7.4 Parts of a digital caliper
- 7.5 Correct use of the caliper

08 Sequences

- 8.1 Punching sequences
- 8.2 Method for determining an optimal sequence
- 8.3 Sequence constraints
- 8.4 Tool height in the sequence
- 8.5 Macros

09 Process instructions

- 9.1 Set-up sheet
- 9.2 Reading the set-up sheet
- 9.3 Release drawings

10 Set-up

- 10.1 Set-up definition
- 10.2 Set-up variables
- 10.3 Tool arrangement
- 10.4 Tool setting
- 10.5 Programming

11 Safety

- 11.1 Personal protective equipment
- 11.2 Part holding methods
- 11.3 Hand care
- 11.4 Tool mounting
- 11.5 Working together
- 11.6 Safety light curtains
- 11.7 Material handling

METHODOLOGY

You learn by doing, not by watching slides

01
Assessment

We review your machinery, materials, parts and the group's level to adjust the program.

02
Applied theory

Fundamentals with examples from your own production.

03
Hands-on practice

Exercises on your equipment and with your parts, in small groups.

04
Evaluation

Theoretical and practical exam with results for each participant.

05
Certificate and report

DC-3 certificate and improvement recommendations for the area.



Training group receiving their certificates.



INSTRUCTORS

People who started on the shop floor

More than 20 years in sheet metal fabrication: cutting, punching, bending and welding at manufacturing companies. The Soft Tool Engineering team also authored technical books on cost engineering and flat pattern development that are used as support material.

Includes

- Program adjusted to your plant
- Course material for each participant
- Theoretical and practical evaluation
- DC-3 certificate (STPS)
- Results report and recommendations

SOFTTOOL ENGINEERING

TRAINING PROGRAM

Bring this course to your plant

Send us your machinery, the materials you process and the number of participants. We'll propose the program, duration and dates.

EMAIL

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OTHER COURSES

Sheet and tube laser cutting · Complete laser cutting process · CNC sheet metal bending processes · CNC Bending Application Engineer · Sheet metal flat pattern calculation · Blueprint reading · Expert programmer for cutting processes · Sheet metal process expert · Sheet metal cost engineering · Welding training · Fiber laser welding · Laser Welding Application Engineer

Content can be adjusted to the machinery and the group's level. Images for reference only.