WORKSAFE
NEW ZEALAND | MAHI HAUMARU AOTEAROA

FACT SHEET

CNC (COMPUTER NUMERICAL CONTROL) TURRET PUNCH

Sheet metal moves in two axes (towards the back or front of the machine, and from side-to-side). When the tool begins to work, the sheet metal stops and the tool powers down to perform its operation.

On simple machines the operator will fasten the tool in the tool holder. On more complex machines, CNC instructions will tell the tool holder to select a tool from a magazine, and then carry out the programmed operations.

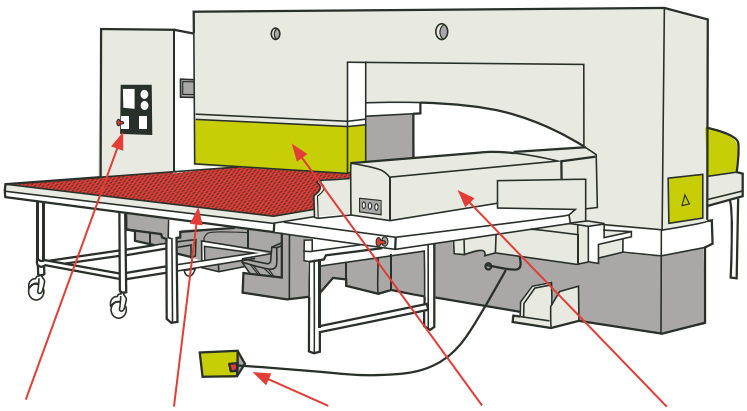
On some machines, the sheet metal is fixed, and the tool holder moves to the point of operation.

The CNC turret punch can perform the following operations:

> Basic punching
> Extruding
> Countersinks
> Piercing
> Slotting and recessing
> Forming tabs
> Nibbling
> Louvring
> Creating ribs
> Embossing
> Coining
> Creating hinges

The tool will form, mark, or cut out shapes from the metal sheet. Scrap metal falls through the machine bed for collection. Completed products are collected from the machine bed.

FIGURE 1: CNC TURRET PUNCH



Control panel
Table to support sheet metal
Covered pedal
Tool magazine
Assembly which clamps and moves workpiece

HAZARDS:

> Contact or impact from moving parts/unwanted movement
> Hands or fingers trapped by tools/ tool holder
> Noise
> Slips, trips and falls
> Contact, impact or trapping from unexpected movement (during maintenance, cleaning & repairs)

PPE:

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TASK – LOAD/UNLOAD MATERIALS

Hazard	Harm	Controls
Contact or impact from moving parts/ unwanted movement	> Bruising > Fractures	> DO NOT operate the turret punch during loading and unloading.

TASK – MACHINING PROCESS (TOOL SELECTION, PROGRAMMED OPERATIONS)

Hazard	Harm	Controls
Hands or fingers trapped by tools/ tool holder	> Crush injuries	> DEFINE a "no go" area around the machine, where entry is detected and machine movement stopped until the area is clear. > ENSURE that shutting down the main source of power also prevents unsafe operation of the control system.

Most tools operate so close to the sheet metal that they actually operate as a closed tool, that is, too close to the workpiece for fingers to reach between the workpiece and stripper plate. If the purpose of the tool is to form a shape above the sheet metal, eg. spikes on gang nails or louvres on the side of a cabinet, the tool may present an open space as it lifts above the sheet.

OTHER (NON-MECHANICAL) HAZARDS

Hazard	Harm	Controls
Noise	> Hearing damage or loss	> REDUCE noise levels by isolating machines or enclosing within noise barriers. > ASSESS noise levels. > ARRANGE hearing screenings. > ALWAYS WEAR hearing protection.

A safe noise level over an eight hour day is 85db(A). A CNC turret punch may exceed this noise intensity.

Slips, trips and falls	> Cuts > Bruising > Contact or impact injuries	> KEEP up-to-date housekeeping procedures. > KEEP the area around machines clear of slip and trip hazards.

TASK – MAINTENANCE, CLEANING & REPAIRS

Hazard	Harm	Controls
Contact, impact or trapping from unexpected movement	> Crush injuries > Bruising > Fractures	> LOCK-OUT all power supplies before maintenance, cleaning and repairs. > KEEP written safety procedures, and ARRANGE regular inspections by a competent person. > REMOVE or LOCK-OUT machines that fail inspection, and DO NOT USE until repaired or replaced. > When a machine is altered, eg. changes to guards or barriers, a new hazard assessment MUST be carried out, and safety improvements made.

References, current standards and further information can be found on the Safe Use of Machinery project page at: **www.worksafe.govt.nz**

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