

# FINN-POWER

- ▶ **PUNCHING**
- LASER CUTTING
- BENDING
- INTEGRATED PUNCHING & SHEARING
- INTEGRATED PUNCHING & LASER CUTTING
- FLEXIBLE MANUFACTURING SYSTEMS



## **X5 TURRET PUNCH PRESS**

# **X5 TURRET PUNCH PRESS WELCOMES YOU TO FLEXIBLE & PRODUCTIVE SHEET METAL WORKING**

*With the new FINN-POWER X5, leading hydraulic punching technology is now more accessible than ever before. The X5 is a true, highly productive FINN-POWER equipped with many FINN-POWER features, which offers performance and reliability at low investment and operating cost.*

*FINN-POWER X5 provides a cost-efficient entry into the flexibility and productivity made possible by versatility, manufacturing speed and user-friendliness of FINN-POWER technology.*



## **X5 FEATURES**

**23 metric ton (25 US ton) hydraulic punching force**

**Max. sheet size 1,250 mm x 2,500 mm (48" x 96")**

**Punching capacity up to 8mm (0.314") sheet thickness**

**Flexible 20-station turret**

**Fast tool change & indexing**

**Digitally controlled punch stroke**

**High-end CNC controls by Fanuc**

**Thought-out ergonomics for easy, productive operation  
– designed with the operator in mind**





***Performance and  
reliability at  
low investment  
and operating cost***

# FINN-POWER X5: SOLID ENGINEERING – PRODUCTIVE FEATURES

## Machine frame and coordinate table

The X5 has a robust O-frame of welded construction. The rigid machine frame and coordinate table construction permit high axis speed and acceleration. O-frame ensures perfect tool alignment when using full tonnage or nibbling processes.

The coordinate table moves the work piece in X and Y directions. The slides move on hardened precision linear ball guides and are driven by maintenance free AC servo motors. The rotation movement of the motors is transformed into linear movement over precision ball screws. Acceleration and deceleration of the axes is programmable. At the lowest acceleration level the axes start and stop smoothly, i.e. even heavy work pieces can be processed without loss in precision.

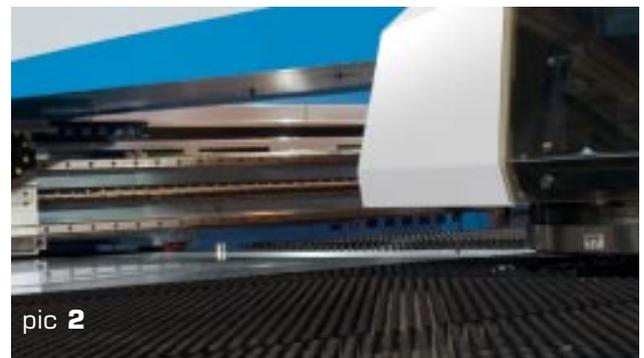
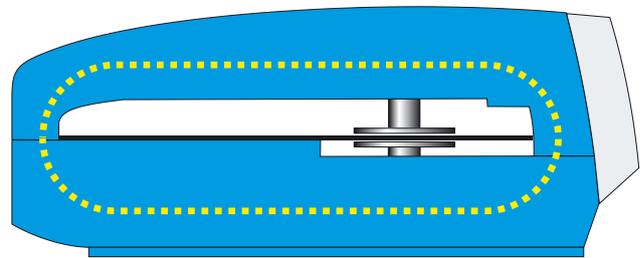
The X traverse is 2,584 mm (100.3"); thus, 1,250 x 2,500 mm (48" x 96") sheet can be processed without repositioning. Working area can be expanded in X direction by automatic repositioning.

## Machine tables

Brush tables prevent noise build up and protect sheet surface from scratches. The sheet is well supported and moves smoothly, and the table structure does not cause vibration which could be hazardous for micro joints.

Full support tables for the maximum 1,250 x 2,500 mm (48" x 96") sheet size are included as standard. Maximum sheet weight is 200 kg (440 lbs).

A metal strip installed at table edge facilitates loading of heavy or large sheets (pic. 1). Only a simple push is needed to load larger sheets against the X pin located in the back part of the table (pic 2). For loading smaller sheet sizes, another X pin is used and one of 5 alternative table positions is chosen (pic 3). Thus loading is made easy, whatever the sheet size.



## Clamps

FINN-POWER X5 is equipped with two pneumatic clamps. They are closed by large pneumatic cylinders inside the clamp, and three hardened spikes ensure maximum grip during high-speed punching processes. The numerical control gives clear indication of correct clamp positions, to which clamps can be moved easily. All clamps have pneumatic central locking, and no screws or handles need to be opened or closed.



The clamps are equipped with sheet detecting sensors, which continuously monitor sheet security in the clamp, ensuring accuracy and reliable machine operation.



Sheet clamps are operated by a foot switch, which can be located freely.



**Central locking** •  
for fast clamp positioning

**5-position table** •  
for easy loading

**Adaptive hydraulics and** •  
**digital punch control**

## Hydraulic system



All our skills and years of experience are the basis of the hydraulic system used in X5 machines. This technically advanced system offers reliable and fast punching and nibbling at lower noise levels. The latest generation of adaptive hydraulic system allows continuous punching under very long stroke length and high ambient temperature conditions.

The X5 hydraulic system provides the basis for the following productive features:

**Full 230 kN (25 US ton) punching force throughout the stroke =**

*Greater range in material thickness and hole size.*

**CNC programmable continuous speed control of punching =**

*Optimization of efficiency and noise level.*

**Individual electronic control of stroke depth =**

*No need for manual shimming after sharpening the tools.*

**Up to 600 hits per minute punching speeds when nibbling =**

*Unmatched productivity.*

**Highly accurate digital punch control for special tools and applications =**

*Ease and accuracy in forming operations. Unmatched productivity.*

**Adaptive hydraulics =**

*Continuous punching operation.*

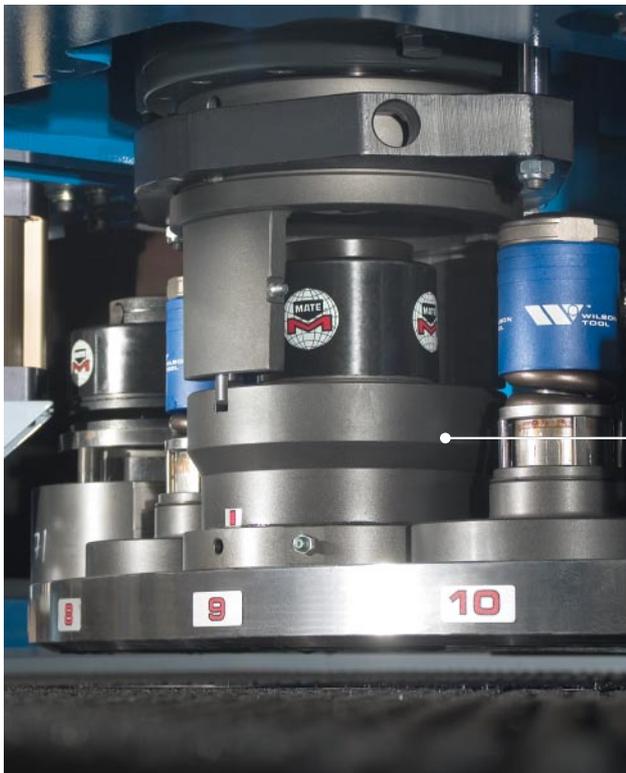
# FINN-POWER X5: SOLID ENGINEERING – PRODUCTIVE FEATURES

## Auto-Index system

The X5 auto-index concept is one of the many record-breaking FINN-POWER design features in sheet metal working technology. The system rotates the punch and the die precisely in their tool holders using a single AC servomotor.

The auto-index system is rigidly built into the upper and lower frame of the press; there are no gearboxes built inside the turret. This system allows you to add or change index or MultiTool® stations whenever the need should arise.

This exclusive FINN-POWER auto-index design allows full tonnage work at maximum material thickness as well as nibbling at maximum speed with all auto-index stations using appropriate tooling.



## Turret

In its flexibility, FINN-POWER's tool carrier is unique. Automatic tool changing is accomplished by a bi-directionally rotating turret. The dies in the FINN-POWER turret are supported during the punching cycle by a die support anvil that directs the punching force into the frame of the machine. The upper and lower turrets are machined together as a set to ensure permanent perfect alignment.

The FINN-POWER turret is equipped with a large hub design, it is gear driven and 30 mm (1.18") diameter shot pins are used. This allows perfect alignment in any plane during the punching cycle. Tool change is performed parallel to the sheet positioning.

The tool holders for punching tools are installed separately in the turret plates. This gives total flexibility in service, maintenance and upgrading of the turret with additional index or Multi-Tool® tooling.

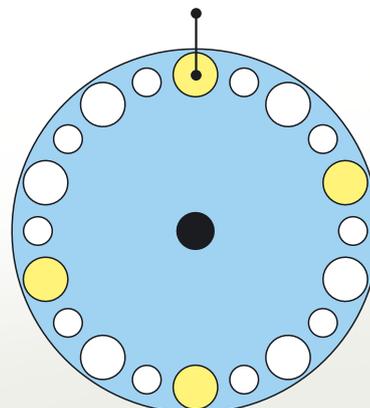
## Increased tool capacity with customer specification

Sixteen tool holders are factory specified, and four are free for customer selection – total number of tools can be increased even to over 100. Max. tool diameter is 88.9 mm (3.5").

## Fast Indexing

## Easy operation and program loading

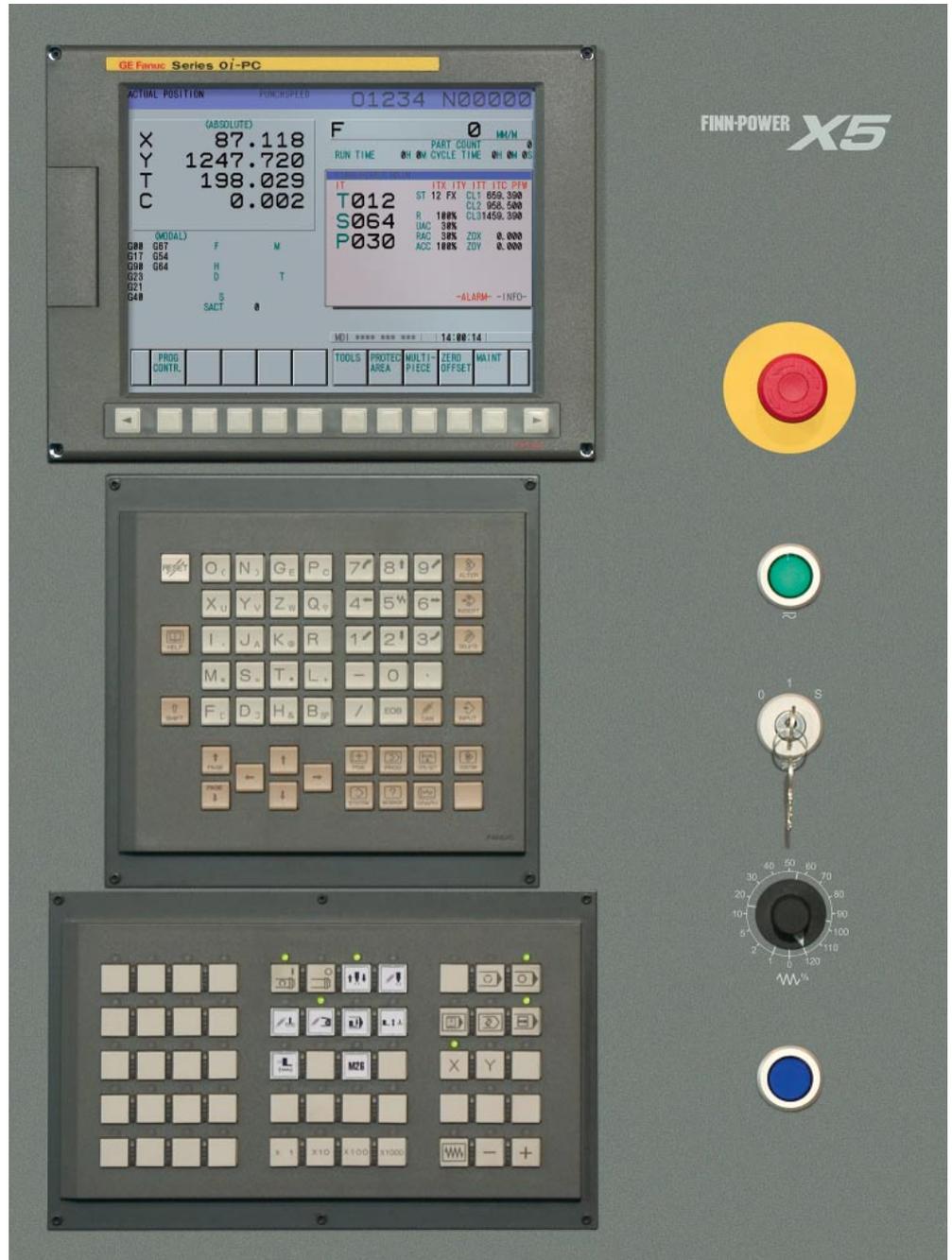
## Four stations for customer specified FINN-POWER tool holders



## CNC control

FINN-POWER machines are equipped with the latest Fanuc O iP NC controllers with 256 kB work memory and a standard NC user interface. Standard features include multi-piece function and machine diagnostics. RS 232 and a flash card slot are also included as standard for program transfer.

Control panel is integrated in the electric cabinet for easy cabinet placing and easy access to machine controls.



# A RANGE OF OPTIONS FOR MEETING YOUR NEEDS

## Shop floor conditions and safety

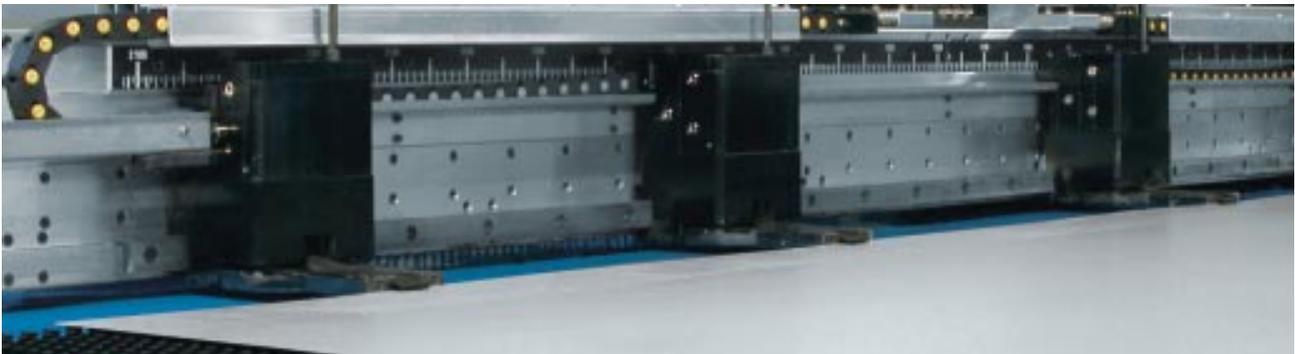
Entering the safety zones of the machine must be prevented by appropriate safety devices. The X5 can be equipped with electrical connection for safety equipment to fulfill **CE requirements and local safety codes**. (photoelectric safety beams, light beams, gates etc.).

A **Remote control** can be chosen to make machine operation even more convenient.

If ambient temperature exceeds +30°C (+86°F), a **Control cabinet cooler** and **Additional air cooler** for hydraulics are available to assure system functionality. An additional cooling capacity will ensure reliable machine operation.



*Left: remote control  
Middle: control cabinet cooler  
Right: additional air cooler for hydraulics*



## Clamping

With **Auto-clamping** clamps close automatically once the sheet is fed into the clamps. Thus, the operator has no need to use the foot switch.

FINN-POWER's patented **Programmable clamp setting (PCS)** eliminates the need for clamp protection areas and automates clamp position set-up. The machine is therefore ready for another job in a matter of seconds.

The X5 machine has a connection for the **Third sheet clamp** and **Automatic individual clamp move** options. These options allow repositioning of each clamp while holding the sheet with the other clamps.

## Punching

Two index stations are part of the standard delivery. **Additional index stations** can be installed at any time.



The turret can be equipped with **MultiTool® stations** to increase the number of tools. The MultiTool® station is mounted on the turret like a normal tool station and the tools are mounted in rapidly changeable punch and die cassettes, which are available also as additional equipment.

**Optional tooling software** is available for drop-in MultiTools®, shearing, tapping, diamond and wheel tools.

Automatic **Tool lubrication** extends the lifetime of spring housing, sliding surfaces of tool and punch, and makes stripping easier.

The **Sheet lubrication** extends the lifetime of the punch and makes stripping more effective. Mineral oil or alcohol can be chosen as lubricant.

### Material flow

As such, the X5 has been designed and built for ease, safe and productive operation. Choosing from a range of options, you can facilitate operation further.

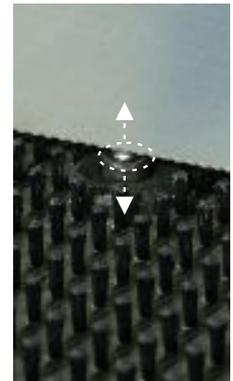
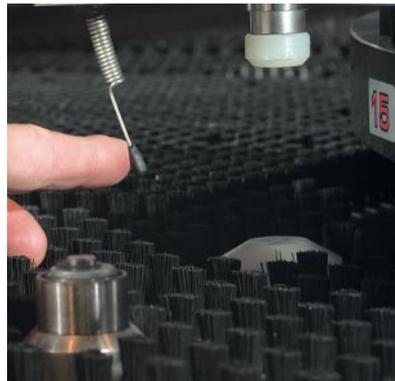
X5 options include a large **Work chute** for removing parts up to 500 mm x 500 mm (19.7" x 19.7") in size from the table. In small part production this makes micro jointed parts unnecessary. Skeleton shaking or micro joint cracking is needed only for very big parts.



**Part detection** and **Part conveyor** can also be added.



*Mate Easy Tapping  
Wilson Wheel*



Two **Sheet distortion sensors** can be installed in front of the turret for automatic stopping of axis movement in case of sheet distortion due to material, wrong tooling, problems in programming sequence, etc.

Vertically moving **Sheet supports** make it easy to move heavy sheets on the table surface during loading.

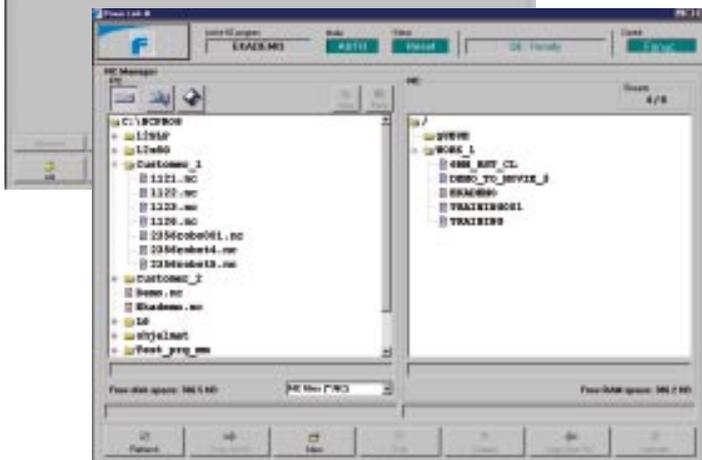
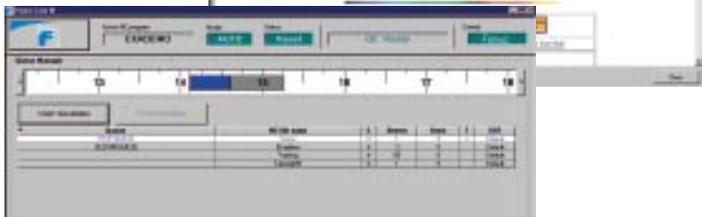
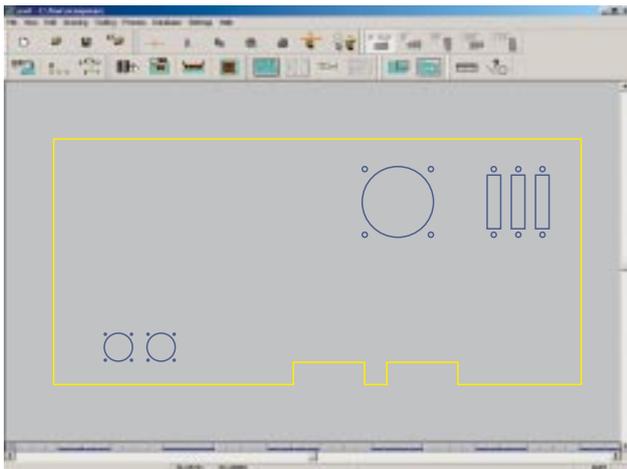
**Scrap conveyor SC1** removes the slugs and other punching scrap to a more accessible position from under the machine, making it easy to keep the working area clean and safe.

The **Lifting scrap conveyor SC2** removes slugs and other punching scrap from SC1 lifting it up into a scrap barrel or bin. **Vacuum assisted slug removal** is available with the SCV1 option



## Programming software NC Express

is an advanced 2D-CAM programming system designed by FINN-POWER to support all FINN-POWER machines and machine combinations. The strength of the system is its high integration with the FINN-POWER equipment, which ensures the best machine performance in terms of machining speed, accuracy and overall process efficiency.



NC Express with its easy-to-use 2D-CAD, advanced auto tool placement, automatic nesting and optimizer, parametric programs as well as a versatile interface for order management aims to minimize programming times, which means higher machine utilization especially in short-run production.

### Control options

CNC program memory can be extended with an optional 256 MB flash **Memory card**. The multi-functional memory card is a reliable and fast way to transfer the NC-programs from a programming PC to the X5, being also a swift tool to backup the NC-programs saved on the CNC.

An **External flash card reader/writer** connects to the USB-port of the programming PC and allows the PC user to manage the memory card with standard MS Windows functions as any other connected data storage media.

An **Ethernet connection card** allows the X5 CNC to be connected to company's computer network. The NC-programs can be stored on any workstation in the network and copied directly to CNC memory whenever required.

With the option **SDF (Screen display function)** the X5 machine operator user interface can be duplicated and displayed on any computer connected to the company's network. The SDF displays exactly the same information as the machine operator user interface does (status, axis coordinates, alarms etc.).

**Cell control PC** is a heavy duty PC, Windows XP operating system and a cell software package with an impressive amount of software features designed and developed especially for FINN-POWER machines. The cell software package ensures continuous and effective machine operation offering features like for example:

- Machine operator interface specially designed for FINN-POWER punch presses
- NC program management
- Automatic work queue
- Extended diagnostics
- Information system with on-line documentation
- Connection interface for remote production work queues



## **FINN-POWER IN BRIEF**

***FINN-POWER Oy and its worldwide network of subsidiaries and representatives specialize in advanced sheet metal working technology. The company was established in 1969. Since February 2008 the group is owned by Prima Industrie S.p.A.***

***Following the introduction of its first hydraulic turret punch press in 1983, FINN-POWER has developed a modular product range for:***

- ▶ ***punching***
- ▶ ***laser cutting***
- ▶ ***punching/shearing***
- ▶ ***punching/laser cutting***
- ▶ ***bending***
- ▶ ***automation of the entire material flow.***

Flexibly yours®



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