



# A 204 CNC Punching and Shearing System for Angles



## TECHNICAL DESCRIPTION

### *Size of the material to be processed*

Angle capacity based upon

A-36 material	minimum	1-5/8" x 1-5/8" x 3/16"
	maximum	8" x 8" x 1"

Grade 50 material	minimum	1-5/8" x 1-5/8" x 3/16"
	maximum	8" x 8" x 1"

Flats (with optional device)	minimum	2" x 1/4"
	maximum	8" x 1"

Diameters available for each leg of the angle	2
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Maximum diameter with standard tooling	1-1/4"
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Diameter through thickness in A-36 material	1-1/4" x 1"
	Grade 50 material

Maximum speed of the angle	131 FPM
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Maximum gauge line positioning speed	23 FPM
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Length of bar to be processed (as standard) minimum	59"
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CNC axes	5
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Minimum programmable increment	X axis	± 0,01 mm [1/25"]
	Y axis	± 0,01 mm [1/25"]
	Z axis	± 0,01 mm [1/25"]

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**TECHNICAL DESCRIPTION (continued)**

Positioning tolerance within (\*)

Within holes or hole pattern positioned at

**L** distance (**L** measured in **meters**)

$$\pm 0,3 + (L \times 0,14)$$

L in meters and accuracy in millimeters

Accuracy between two holes at L distance =  $\pm 0,3 + (L \times 0,14)$

Considering a 49 ft. bar: 49 ft. = 14,9 meters — we will consider 15 meters

Accuracy =  $\pm 0,3 + (15 \times 0,14) = 2,4 \text{ mm} = 0.0944" = \pm 1/10"$

Considering a 61 ft. bar: 61 ft. = 18,59 meters — we will consider 19 meters

Accuracy =  $\pm 0,3 + (19 \times 0,14) = 2,96 \text{ mm} = 0,12" = \pm 1/8"$

E  
X  
A  
M  
P  
L  
E

(\*) The above accuracies apply only to properly adjusted machines with sharp and correctly fitted tools and do not consider possible distortions of the section occurred during the working operations.

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## SYSTEM CONFIGURATION

### **WU    WORKING UNITS**

#### **WU-1    Main Base for Working Units**

This base can hold the two punching units, the shearing unit and as an alternate, the marking unit or versa press.



#### **WU-2    Punching Units**



Two hydraulic presses — one unit is provided to punch one leg of the angle and the second unit is to punch the second leg of the angle. Each press is equipped with two quick-change punch holders to permit a punch and die change in seconds.

The positioning of each quick-change punching tool is accomplished with a ball screw and a servomotor to achieve an infinite number of gauge lines by selection from the program. Each press is fixed mounted to the table for maximum rigidity. Only the inner c-frame that contains the punch and die is positioned to the programmed gauge line. Each press is equipped with multiple hydraulic hold-downs and strippers to clamp the angle securely during punching.

#### **Main specifications of each punch station:**

▶ Capacity		112 tons
▶ Throat depth		6-1/8"
▶ Stroke		1-3/4"
▶ Maximum diameter with standard tooling		1-1/4"
▶ Maximum thickness		1"
▶ Gauge line stroke with respect to the inside of the angle leg	minimum	0.4"
	maximum	6.69"

Each punching unit is provided with two punches and two dies for round holes.

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### **WU-3 Shearing Unit**

The shearing unit is made of one hydraulic single cut shear complete with hydraulic hold-down. The shear is furnished with one set of angle blades.



#### **Shearing capacity**

- ▶ Maximum available shearing capacity 505 tons

### **WU-4 Angle Positioning and Measuring System**



The longitudinal angle positioning system is CNC controlled and composed of two devices (one at the infeed side of the punch units; one at the infeed side of the shear). Each device adjusts automatically to the material according to its mill tolerance and consists of rolls to support and

transfer the angle and vertical hold-downs to ensure the angle is clamped securely and is always a true 90 degrees when measured to ensure accuracy as angle material can vary significantly. The roller feed drive and measuring systems float both vertically and horizontally to accommodate rolling mill deviations that differs from one bundle of angle to the next. A servomotor controls the movement of the positioning roll with encoder feedback from the measuring rolls.

## **OC INFEEED MATERIAL HANDLING**

### **OOC-01/2 Idler Roller Infeed Conveyor for 40 ft. Angles**

Idler roller infeed conveyor for the manual conveying of angles having a maximum length of 40 ft.



### **OOC-04 Powered Device for Infeed Conveyor**

Device to be positioned on the edge of the idler roller infeed conveyor, suitable to transfer the angle from the conveyor to the first group of rollers for the longitudinal positioning, placed on board of the machine.

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**HY HYDRAULIC AND PNEUMATIC SYSTEM**

**HY-1 Hydraulic Power Pack**

The system includes:

- Hydraulic power pack to generate the high and low pressure for the press cylinders and for the auxiliary circuitries.
- Hoses and connections.
- Cooling system with air/oil heat exchanger.
- Hydraulic system complete with solenoid valves and required hoses.
- ▶ Working Pressure (high) 3915 PSI
- ▶ Working Pressure (low) 725 PSI

**EL ELECTRIC SYSTEM**

**EL-1 Interconnecting Machine Wiring**

**EL-2 Electrical Cabinet**

The electrical cabinet contains the power and control equipment for the unit's positioning axes and for the auxiliary services.

The standard equipment is manufactured according to established standards. Specific requests requiring both special rules and regulations will be considered upon the customer's request.

The power supply is **460 V – 60 HZ – 3 Phases**.

*Note: Our equipment as quoted complies with the CE electrical code which is required for European manufactured machine tools. In the event that you require compliance with a special local electrical code, please provide the specifications so we can respond accordingly.*

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## **CN FICEP PEGASO CONTROL SYSTEM**

The new generation control unit, with seven controlled axes, is based on a fieldbus CAN (Computer Area Network) open technology.

The CNC is positioned on a pedestal in a mobile control panel so that the operator can have a complete view of the machine.

All the input and output cards are connected to the bus and located on the machine.

*The CNC is equipped with:*

- digital inputs (24V - optoisolated)
- digital outputs (24V – protected transistors)
- analog inputs, analog outputs

The control system is an industrial PC that hosts the CNC, the PLC and the HMI. The power supply and the three CUPs (HMI, realtime and CANbus) are all mounted on a single board. Mass storage relies on solid state technology (flash memory) and the operating system image is write-protected against voltage dips or power losses.

Specifications:

### ***HMI section (Human Machine Interface)***

- 1.6 Ghz CPU dual core
- 2 GB DDR3 RAM with 512 kB x 2 L2 cache
- 8 GB compact flash
- 6 USB ports
- Touch screen color video LCD TFT 15"
- 10/100/1000 Mbit/s RJ45 Ethernet port
- Serial port RS232
- WINDOWS 7 embedded operative system

### ***Realtime section***

- Processor 800 Mhz ARM RISC 32 bit
- 1 MB PC dual port memory
- 128 kB CANbus dual port memory
- 128 MB RAM DDR2 memory

### ***CANbus section***

- Fujitsu processor with 3 CANbus controllers
- 1 MB flash memory

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### ***Programming***

- Simplified data input (with tables and workpiece on-screen graphics)
- Base line and hole to hole dimensioning
- Diameter input
- Simplified data input for symmetrical hole patterns

### ***Processing***

- Tool position tracking
- Automatic system offset
- Quantity tracking

### ***Execution***

- Automatic cycle stop for setup, modification and on-screen indication of the tools to be changed

### ***3D Graphics***

- Display of the piece in 2D
- Display of the piece in 3D. With this modality, operations such as pan and zoom are possible.

*All the indications are clearly displayed on the screen, for example:*

- Current program indication with a clear description of the program running at the moment
- CNC inside and outside alarms
- Registration of the date and time of the last 100 alarm messages
- Diagnostic messages to the operator

### ***Diagnostics***

- The Pegaso control system incorporates extremely comprehensive diagnostic software that is uniquely tailored to the FICEP product line and their applications.

The user can utilize this capability directly or via internet connection to FICEP Corporation's technical support team located in Forest Hill, Maryland. From this remote location, our support staff can perform all the testing routines as if they were standing in front of the control such as:

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- ◆Review ladder logic
  - ◆Analyze past alarm messages that were generated
  - ◆Verify the part program
  - ◆Check hardware functionality at the board and component level
  - ◆Place remotely an oscilloscope on the respective servo drives to analyze their performance
  - ◆Remotely activate specific components such as valves to isolate and identify a faulty component

This diagnostic capability of the Pegaso system translates into quick resolution of problems to reduce your downtime and to eliminate the time and cost after the warranty period to have a service technician visit your facility to diagnose a problem. This service is without charge for as long as you own the FICEP product.

**PA     *STANDARD PAINTING***

The system is painted in the following standard colors:

- |             |          |
|-------------|----------|
| ●Light Grey | RAL 7035 |
| ●Black Grey | RAL 7021 |
| ●Yellow     | RAL 1028 |

**TD     *TECHNICAL DOCUMENTATION***

The system is supplied with the following technical documentation:

- Programming, maintenance, operator and instruction manuals
- Electric schematics
- Pneumatic schematics



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**SP SAFETY PROTECTIONS**

**SP-1 *Protections on the Machine (Included)***

**SP-2 *Outside Protections***

Proper protection barriers, suitable to prevent the access of people to the working and material handling areas must surround the system. Such barriers need to be determined according to the system location inside your plant. Once you have determined what perimeter guarding would be desired, we are prepared to render an appropriate quotation.

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## INSTALLATION & TRAINING

**CO**

***INSTALLATION***

***(TRAVEL, MEALS AND LODGING EXPENSES ARE INCLUDED)***

The supply includes services of our personnel to supervise the installation, initial start-up and training at the customer's site. This includes the supervision of the electric, electronic, hydraulic and pneumatic connections.

Excessive installation hours due to reasons beyond our control will be paid for by the customer in accordance with standard FICEP Corporation rates applicable at the time.

***The following costs are not included:***

- The customer must provide skilled personnel to assist our service engineer during the installation and operation of the system as well as the necessary rigging.
- All required foundation work is to be completed by the customer's personnel in accordance with the drawings supplied by FICEP Corporation.

***The supply of the following is excluded:***

- Material and parts for the electric, hydraulic and air connections
- Air compressor for the air-operated equipment
- Oil and lubricants
- Customer specific materials for parts that are to be processed on the line are not included in the quote price.

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**SUPPLIED WITH FOLLOWING OPTIONAL FEATURES**

**OWU-01 Marking Unit with 38 Positions Mod. MKT 38N**  
*(One set of alphanumeric characters included)*

The marking unit is suitable to mark (one character at a time) on flange of angles, flats and the web of channels.

The marking unit is fitted with a 38 position turret whose rotation is CNC controlled by means of a servomotor. The marking cycle is automatically selected by the CNC program and synchronized with the movement of the angle through the line to accommodate the required part marking.



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|---|-------------|
| ▶ Marking stations                      | 38          |
| ▶ Size of letter / number               | 5/8" x 3/8" |
| ▶ Marking strength (on every character) | 9 tons      |

**OWU-011 Device for Processing Flats**

Device to process flats having the following technical specifications:

- |             |         |      |
|-------------|---------|------|
| ▶ Width     | minimum | 2"   |
|             | maximum | 8"   |
| ▶ Thickness | minimum | 1/4" |
|             | maximum | 3/4" |

**Note: The effective measuring accuracy when processing flat material becomes  $\pm 1/8"$  in lengths up to 20 ft.**

**OOC-02/X Idler Outfeed Table for 10 ft. Long Angles**  
*(one-side unloading)*

Idler outfeed table for the manual conveying of angles having a maximum length of 10 ft. The table can be tilted to one side to unload finished parts.

Note: The bin to be positioned near the outfeed table to receive the unloaded pieces is customer supplied.



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**OCN-04    *Air Conditioning for Electrical Equipment***

This accessory is necessary to use the system in extremely hot and humid climates.

**OSW-01    *Office Technology Central — 1<sup>st</sup> License***  
***(Hardware excluded; commissioning and training included)***

Office Technology Central (first licence) includes:

- a) • 2D & 3D visualization
  - Multi-companies, multi-sites and multi-projects management
  - Documents traceability management
  - The software is storing all the data in a Microsoft SQL Server database.
  
- b) • Import of parts and bars from other modules
  - Post-processor
  - Parts 2D and 3D view
  - Production feedback (automatic or manual) on the CNC machines
  
- c) • Nesting automatic assistant
  - Management of commercial length, scrap and offcut
  - 3D vision of bars
  - Material and production optimization
  - Section lot management
  - Multi Projects nesting
  - The software is storing all the data in a Microsoft SQL Server database.
  
- d) • Import of files under DSTV format into the database
  - Managing of all the geometric and processing data of the workpieces already drawn with a CAD system

*Minimum configuration: Microsoft SQL Server express 2008 R2 or 2012 (the Microsoft SQL Server license has to be provided by the customer).*

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***Installation & Training***

It consists of loading the software on the personal computers. Please note that the Customer should install the computers and connect them to a network in advance, according to the technical specifications that will be supplied by Ficep. The training and installation period will depend on the final software configuration chosen by the customer.

***PRICE of A 204 equipped as described above -----\$395,900***

**SOFTWARE MAINTENANCE**

Steel Projects software includes updates and support for one year from the date of installation. Additional support can be secured for an annual fee.

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<b>CONDITIONS OF SUPPLY</b>
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**W      WARRANTY**

Labor — 6 months

Parts — 12 months or 2000 hours  
whichever comes first

Our warranty requires the exclusive use  
of original FICEP spare parts.

*Note: Our ability to provide tech support is greatly enhanced by having an internet connection to the CNC control on your FICEP equipment. It is for this reason that we can only extend our service warranty as stated if we have the ability to make a remote connection to the CNC control on your FICEP equipment through an internet connection.*

*Throughout the life of the system there maybe situations which extend beyond the warranty period where it could be advantageous to enter your CNC control as part of our remote "TeleService" diagnostic process. This tech support is without cost to you even after the warranty period, thus we strongly recommend that this link be established at the time of the installation of the FICEP line to minimize any downtime that could occur during the useful life of the CNC system.*

**D      DELIVERY TIME**

Stock – subject to prior sale

**DT      DELIVERY TERMS**

CIF Forest Hill, Maryland

*Ownership of the machine will be transferred to customer at the date of the bill of lading.*

**PT      PAYMENT TERMS**

40% with order

55% prior to shipment

5% net 30 days